STANDARD PLANS

STATE OF CALIFORNIA
CALIFORNIA STATE TRANSPORTATION AGENCY
DEPARTMENT OF TRANSPORTATION

2023 Edition

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PREFACE

This 2023 edition of the California Department of Transportation Standard Plans is based on U.S. Customary units. This is the Department's sixth edition Standard Plans since the Department reverted back to U.S. Customary units as its base units. U.S. Customary units ("inch-pound") are defined by the National Institute of Standards and Technology (NIST). The previous edition of the Department's Standard Plans published in U.S. Customary units was the 2022 edition.

This 2023 edition of the Department's Standard Plans is to be used in conjunction with the 2023 edition of the Department's Standard Specifications.

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BIK BLACK CP CANDLEPOWER, ELECTRICAL FT FOOTING ABBREVIATIONS BLW BRIDGE-LOG MILE CATCH POINT, Elev ELEVATION FV FLUSH VALVE BUY BENCH MARK COPPER PIPE BMP BEST MANAGEMENT PRACTICE BM BOTTOM BUBBE VIATION FT FOOTING FW FLUSH VALVE FWBT FACING WESTBOUND TRAFFIC FWY FREEWAY CSHEET 1 OF 3)	-								
BLM BRIDGE-LOG MILE CATCH POINT, ELEV ELEVATION FV FLUSH VALVE ABBREVIATIONS BIVE BOULEVARD COPPER PIPE BM BENCH MARK BP BEST MANAGEMENT PRACTICE BOT BOTTOM BOTTOM ABBREVIATIONS FWBT FACING WESTBOUND TRAFFIC (SHEET 1 OF 3) Fwy FREEWAY	Blk								
BIVE BOULEVARD COPPER PIPE FWBT FACING WESTBOUND TRAFFIC (SHEET 1 OF 3) BM BENCH MARK BOTTOM BEST MANAGEMENT PRACTICE BOT BOTTOM					Elev				ABBREVIATIONS
BM BENCH MARK BMP BEST MANAGEMENT PRACTICE Bo+ BOTTOM	BLM								
BOT BOTTOM BOTTOM	BLM Blvd			COPPER PIPE					
	BLM Blvd BM	BENCH MARK		COPPER PIPE			Fwy	FREEWAY	(SHEEL LOF 3)
	BLM BIVd BM BMP	BENCH MARK BEST MANAGEMENT PRACTICE		COPPER PIPE			Fwy	FREEWAY	(SHEEL LOP 3)

J+

JOINT

A3B

	(R continued)		(S continued)		U	
Rel	RELOCATE	Sq	SQUARE	UC	UNDERCROSSING	
Repl	REPLACEMENT	SS	SLOPE STAKE	UD	UNDERDRAIN	
Req	REQUIRED	SSBM	STRAP AND SADDLE BRACKET METHOD	UG	UNDERGROUND	
Re†	RETAINING	SSD	STRUCTURAL SECTION DRAIN	UON	UNLESS OTHERWISE NOTED	
Rev	REVISED,	SSPA	STRUCTURAL STEEL PLATE ARCH	UP	UNDERPASS	
	REVISION	SSPP	STRUCTURAL STEEL PLATE PIPE	UPS	UNINTERRUPTIBLE POWER SU	JPPLY
RHMA	RUBBERIZED HOT MIX ASPHALT	SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH	UPSC	UNINTERRUPTIBLE POWER SU	JPPLY CONTROLLER
RICS	REMOTE IRRIGATION CONTROL SYSTEM	SSRP	STEEL SPIRAL RIB PIPE	UPSM	UPS MODE	
Riv	RIVER	SST	SIDE STRIP			
RM	ROAD-MIXED.	S†	STREET		V	
	RAMP METERING	Sta	STATION			UNITS
RP	RADIUS POINT,	STBB	SINGLE THRIE BEAM BARRIER	V	VALVE,	Some of the un
	REFERENCE POINT	Std	STANDARD		DESIGN SPEED	quantity tables
RR	RAILROAD	Str	STRUCTURE	Var	VARIABLE,	
RSP	ROCK SLOPE PROTECTION,	Surf	SURFACING		VARIES	UNIT
	REVISED STANDARD PLAN	SW	SIDEWALK,	VC	VERTICAL CURVE	ACRE
R†	RIGHT		SOUND WALL	VCP	VITRIFIED CLAY PIPE	CF
Rte	ROUTE	Swr	SEWER	Veh	VEHICLE	CY
RW	REDWOOD,	Sym	SYMMETRICAL	Vert	VERTICAL	EA
	RETAINING WALL	S4S	SURFACE 4 SIDES	Via	VIADUCT	GAL
R/W	RIGHT OF WAY	0.10	30111 1102 1 31323	VIVDS	VIDEO IMAGE VEHICLE	LB
RWIS	ROADSIDE WEATHER INFORMATION SYSTEM		T		DETECTION SYSTEM	LF
Rwy	RAILWAY			Vol	VOLUME	LNMI
11119	notenal	Т	SEMI-TANGENT.		, ocome	LS
	S	•	THIRD CIRCLE.			SQFT
	<u> </u>		THREAD,		(W)	SQYD
s	SOUTH,		TRUCK TRAFFIC VOLUME (IN PERCENT)	W	WEST,	STA
3	SLIP,		OF DESIGN HOURLY VOLUME		WIDTH	TON
	SUPPLEMENT	Tan	TANGENT	W/	WITH	
SAE	STRUCTURE APPROACH EMBANKMENT	TB	TERMINAL BOARD	W/O	WITHOUT	
Salv	SALVAGE	TBB	THRIE BEAM BARRIER	WB	WESTBOUND	
SAPP	STRUCTURAL ALUMINUM PLATE PIPE	Tbr	TIMBER	WH	WEEP HOLE	
SAPP		T&B	TOP AND BOTTOM	Wht	WHITE	Some of the u
56	SOUTHBOUND,	TCB				than in the pr
	SLIP BASE		TRAFFIC CONTROL BOX	MIM	WEIGH-IN-MOTION	
SC	SAND CUSHION	TCE	TEMPORARY CONSTRUCTION EASEMENT	WM	WIRE MESH,	UNIT
S/C	SAW CUT LINE	TDC	TELEPHONE DEMARCATION CABINET	wc	WATER METER	
Sch	SCHEDULE	Temp	TEMPORARY,	WS	WATER SURFACE,	ksi
SCSP	SLOTTED CORRUGATED STEEL PIPE		TEMPERATURE,		WYE STRAINER	ksf
SD	STORM DRAIN		TEMPERED	WSA	WYE STRAINER ASSEMBLY	psi
Sec	SECOND,	TG	TOP OF GRADE	WSP	WELDED STEEL PIPE	psf
	SECTION	TI	TRAFFIC INDEX	W+	WEIGHT	lb/ft3, pcf
Sep	SEPARATION	TLS	TRUCK LOADING STAND PIPE	WV	WATER VALVE	tsf
SG	SUBGRADE	TMS	TRAFFIC MONITORING STATION	ww	WINGWALL	mph, MPH *
ShId	SHOULDER	TOS	TRAFFIC OPERATIONS SYSTEM	WWLOL	WINGWALL LAYOUT LINE	oz
Sht	SHEET	Tot	TOTAL	WWM	WELDED WIRE MESH	Ib
SIC	SIGNAL INTERCONNECT CABLE	TP	TELEPHONE POLE			kip
Sig	SIGNAL	TPB	TREATED PERMEABLE BASE		(X	cal
Sim	SIMILAR	TPM	TREATED PERMEABLE MATERIAL			
SM	SELECTED MATERIAL	TQ	THREE-QUARTER CIRCLE	Xfmr	TRANSFORMER	f†
SMA	SIGNAL MAST ARM	Trans	TRANSITION	X Sec	CROSS SECTION	gal
SNS	STREET NAME SIGN	TRM	TURF REINFORCEMENT MAT	Xing	CROSSING	* For use on
SP	STAND PIPE,	TS	TRANSVERSE,			
	SERVICE POINT		TRAFFIC SIGNAL,		Y	
Spec	SPECIAL,		TUBULAR STEEL		<u> </u>	
	SPECIFICATION(S)	TT	TWO-THIRDS CIRCLE	Yr	YEAR	
SPP	SLOTTED PLASTIC PIPE	TWSA	TREE WELL SPRINKLER ASSEMBLY	Yrs	YEARS	
		Тур	TYPICAL			

W

Dist	COUNTY	ROUTE	TOTAL PROJECT	SHEET No.	SHEETS
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	NS APPRO			C70022 9-30-24	_
OR AGE	ENTS SHALL	IFORNIA OR ITS NOT BE RESPON COMPLETENESS AN SHEET.		CIVIL F CAL IFORM	

UNITS OF MEASUREMENT:

Some of the units used in the project plan quantity tables and in the Bid Item List are: TABLE A

UNIT	DEFINITION
ACRE	ACRE
CF	CUBIC FOOT
CY	CUBIC YARD
EA	EACH
GAL	GALLON
LB	POUND
LF	LINEAR FOOT
LNMI	LANE MILE
LS	LUMP SUM
SQFT	SQUARE FOOT
SQYD	SQUARE YARD
STA	100 FEET
TON	2,000 POUNDS

Some of the units used in the plans other than in the project plan quantity tables are:

TABLE B

UNIT	DEFINITION			
ksi	KIPS PER SQUARE INCH			
ksf	KIPS PER SQUARE FOOT			
psi	POUNDS PER SQUARE INCH			
psf	POUNDS PER SQUARE FOOT			
lb/ft3, pcf	POUNDS PER CUBIC FOOT			
tsf	TONS PER SQUARE FOOT			
mph, MPH *	MILES PER HOUR			
oz	OUNCE			
Ιb	POUND			
kip	1,000 POUNDS			
cal	CALORIE			
ft	FOOT OR FEET			
gal	GALLON			
* For use on a sign panel only				

* For use on a sign panel only

Some of the units used in the Electrical plans are: TABLE C

UNIT	DEFINITION			
А	AMPERE			
bps	BITS PER SECOND			
Bps	BYTES PER SECOND			
FC	FOOT-CANDLE			
Hz	HERTZ			
k *	KILO			
kV	KILOVOLT			
KVA	KILOVOLT-AMPERE			
kW	KILOWATT			
M * MEGA				
m *	MILLI			
mA	MILLIAMPERE			
min	MINUTE			
p *	PICO			
s	SECOND			
V	VOLT			
VA	VOLT-AMPERE			
V(dc)	VOLT (DIRECT CURRENT)			
V(ac)	VOLT (ALTERNATING CURRENT)			
W WATT				
Ω ОНМ				
μ *	MICRO			

* Prefix to a unit

SYMBOLS:

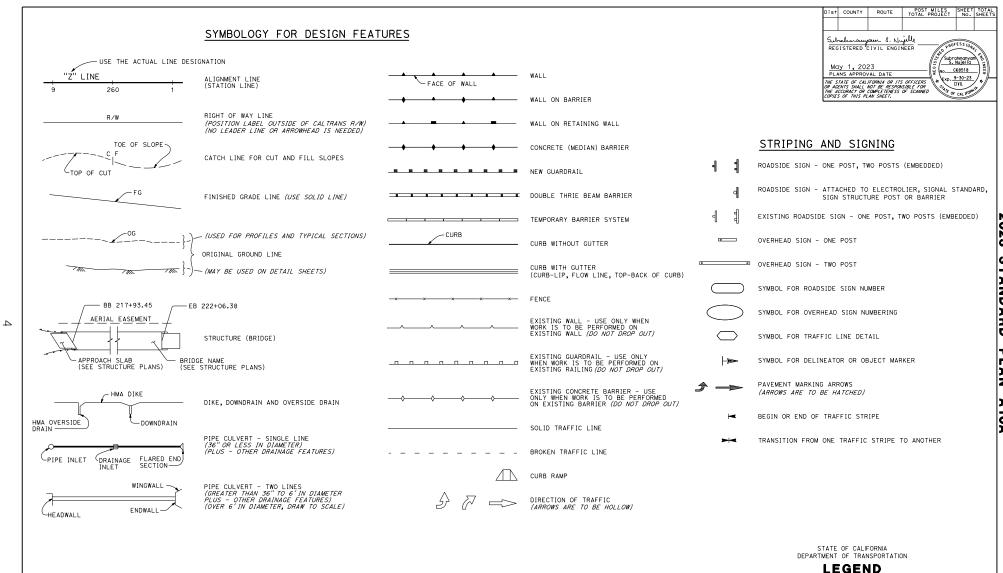
Commonly used symbols for U.S. customary units TABLE D

SYMBOL	DEFINITION
Œ.	AT
Œ.	CENTERLINE
ø	NOMINAL DIAMETER, DIAMETER, PHASE
PL	PLATE
S _E	STATIONLINE

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ABBREVIATIONS (SHEET 3 OF 3)

A3C



LINES AND SYMBOLS (SHEET 1 OF 5)

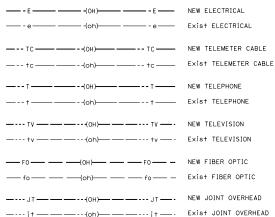
NO SCALE

A10A

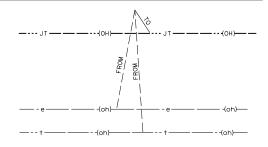
WATER POLLUTION -xx THVF xx xx	Temp HIGH-VISIBILITY FENCE Temp SILT FENCE Temp Reinf SILT FENCE Temp FIBER ROLL	ENVIRONMENTALLY SENSITIVE AREA (ESA)	DIST COUNTY ROUTE POST MILES SHEET TOTAL PROJECT NO. SHEETS SUMMUM 8. NIJHUR REGISTERED CIVIL ENGINEER May 1, 2023 PLANS APPROVAD DATE THE STATE OF CUMONIA OF ITS OFFICERS OF ACCURACY OF COMMETTINGS OF SCANNED COPIES OF MIS PLAN SHEET.
WASH SP	Temp GRAVEL BAG BERM Temp STAW BALE BARRIER Temp SLOPE DRAIN FLEX PIPE Temp EARTH BERM Temp DITCH/SWALE Temp CONCRETE WASHOUT Temp DRAINAGE INLET PROTECTION Temp DRAINAGE OUTLET PROTECTION Temp CHECK DAM Temp CONSTRUCTION ENTRANCE Temp STOCKPILE	DRAINAGE DIRECTION FLOW OF WATER DRAINAGE SYSTEM SYMBOL DRAINAGE UNIT SYMBOL DRAINAGE INLET DITCH FLOW LINE	DRAFTING TILDE - DESIGNATES AN AREA NORTH ARROW ADDENDUM SHEET SYMBOL (ADDENDUM NUMBER IS INCLUDED INSIDE THE SYMBOL) MATCH LINE BREAK LINE
BOUNDARY LINE STATE OR COUNTRY COUNTY OR RESERVATION BOUNDARY CITY OR MILITARY BOUNDARY FOREST SUBDIVISION, SECTION, GRANT RANCHO			STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION LEGEND LINES AND SYMBOLS (SHEET 2 OF 5) NO SCALE

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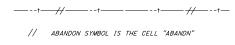
OVERHEAD FACILITIES



SHOWING THE RELOCATION OF EXISTING FACILITIES TO THE NEW LOCATION



ABANDONED FACILITY



THERE ARE LINE STYLES FOR ABANDONED UNDERGROUND UTILITIES IN THE CALTRANS LINE STYLE RESOURCE FILE (C+is+yie-SS3.rsc)



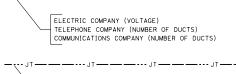
NOTE:

IDENTIFY (LABEL) THE OWNER OF EACH FACILITY PLUS THE SIZE, PRESSURE AND VOLTAGE (IF APPLICABLE) FOR ALL FACILITIES (WHETHER PART OF A JOINT OVERHEAD, JOINT TRENCH OR SOLO INSTALLATION).

THE TYPE OF FACILITY IS IDENTIFIED BY THE SYMBOLOGY OF THE LINE STYLE CHOSEN (SEE LINE STYLES ON THIS STANDARD PLAN SHEET).

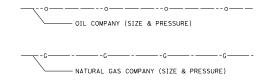
WHEN USING THE JOINT OVERHEAD OR JOINT TRENCH SYMBOLOGY (SEE THE CALTRANS LINE STYLES ON THIS PAGE), USE A BRACKET TO GROUP AND LABEL ALL THE FACILITIES ASSOCIATED WITH THE JOINT OVERHEAD OR TRENCH (SEE THE EXAMPLES BELOW).

JOINT OVERHEAD/TRENCH



GAS COMPANY (SIZE & PRESSURE)
WATER COMPANY (SIZE & PRESSURE IF APPLICABLE)
SEWER COMPANY (SIZE)

SOLO FACILITY



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LEGEND LINES AND SYMBOLS (SHEET 3 OF 5)

NO SCALE

A10C

THE LEVEL AND COLOR OF AN EXISTING UTILITY POINT FEATURE SYMBOL MATCHES THE UTILITY TYPE LINE STYLE THAT IT IS ASSOCIATED WITH. THE NAME OF THE STANDARD CELLS FOR EACH SYMBOL VARY SLIGHTLY ACCORDING TO THE FACILITY TYPE LO. 9. UT-MM-SEWER, UT-MM-CASS, WILTIPLE VERSIONS OF A PARTICULAR SYMBOL PEPPESSUTTING AN EXISTING UTILITY POINT FEATURES USED WHEN EACH IS ASSOCIATED WITH A DIFFERENT FOR STANDARD OF THE STORY OF THE

EXISTING UTILITY CELL SYMBOLOGY REPRESENTING UTILITY POINT FEATURES

ATTRIBUTES (METADATA) FOR UTILITY FEATURES WILL BE LOCATED IN UTILITY DATABASE. ONLY AS-BUILT FACILITIES ARE IN THE UTILITY DATABASE. UTILITY DATABASE DOES NOT DINCTUDE NEW FACILITIES TO BE CONSTRUCTED.

CABINET:

ELECTRICAL, FIBER OPTIC, TELECOMMUNICATION, TELEPHONE, TELEVISION

€ ≣ €

DRAINAGE INLET: SEWER, STORM DRAIN

+0+

FIRE HYDRANT: WATER

ت (<u>)</u>

LAMP POST: ELECTRICAL

0

7

METER: ELECTRICAL, NATURAL GAS, WATER

(:)

NHOLE:
ELECTRICAL, FIBER OPTIC, GAS, JOINT FACILITY,
NATURAL GAS, OIL, RECYCLED WATER, SEWER,
STEAM, STORM DRAIN, TELECOMMUNICATION,
TELEPHONE, TELEVISION, WATER

U

PULL BOX: ELECTRIC

ELECTRICAL, FIBER OPTIC, JOINT FACILITY, TELECOMMUNICATION, TELEPHONE, TELEVISION

- ⊣@⊢ -

POWER POLE:

ELECTRICAL, FIBER OPTIC, JOINT FACILITY,
TELECOMMUNICATION, TELEPHONE, TELEVISION

TRANSMISSION TOWER:
ELECTRICAL, FIBER OPTIC, JOINT FACILITY,
TELECOMMUNICATION, TELEPHONE, TELEVISION

د کے

VALVE: WATER, NATURAL GAS

.....

(-X-)

ENT: GAS, NATURAL GAS, SEWER, STEAM

57

VAULT:

ELECTRICAL, JOINT FACILITY

Dist	COUNTY	ROUTE	TOTAL	PROJECT	No.	SHEETS
		eur 8. No		ALO PROF	ESS ION	
	y 1, 202			- (S (No. C	hmanyar Nujella 68518 1-30-23	E INEE A
OR AG	ENTS SHALL .	IFORNIA OR ITS NOT BE RESPON COMPLETENESS	SIBLE FOR	120	IVII .	/*/

POSITIVE LOCATION

 \bigcirc

POSITIVE LOCATION SYMBOL IDENTIFYING THE POTHOLING NUMBER



POTHOLING SYMBOL MARKING THE EXACT LOCATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LEGEND Lines and Symbols (Sheet 4 of 5)

NO SCALE

A 10D

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Dist	COUNTY	ROUTE	TOTAL PROJECT	SHEET No.	SHEETS
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CEMENTATION				
DESCRIPTION	CRITERIA			
WEAK	CRUMBLES OR BREAKS WITH HANDLING OR LITTLE FINGER PRESSURE.			
MODERATE	CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE.			
STRONG	WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE.			

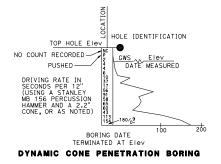
ABBREVIATION:

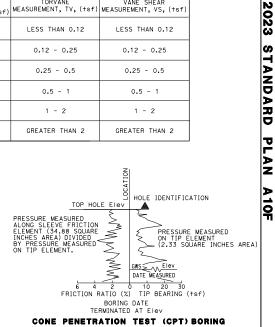
GWS - GROUND WATER SURFACE

	BOREHOLE IDENTIFICATION				
SYMBOL	HOLE TYPE	DESCRIPTION			
Size	А	AUGER BORING (HOLLOW OR SOLID STEM BUCKET)			
Size	R RW RC P	ROTARY DRILLED BORING (CONVENTIONAL) ROTARY DRILLED WITH SELF-CASING WIRE-LINE ROTARY CORE WITH CONTINUOUSLY-SAMPLED, SELF-CASING WIRE-LINE ROTARY PERCUSSION BORING (AIR)			
N N N N N N N N N N N N N N N N N N N	R RC	ROTARY DRILLED DIAMOND CORE ROTARY DRILLED DIAMOND CORE, CONTINUOUSLY SAMPLED			
Size	HD HAND DRIVEN (1-INCH SOIL TUBE) HA HAND AUGER				
•	D	DYNAMIC CONE PENETRATION BORING			
A	CPT	CONE PENETRATION TEST (ASTM D5778)			
15	0	OTHER (NOTE ON LOTB)			
	NOTE: SIZE IN INCHES.				

CASING DRIVEN TOP HOLE ELEV TOP HOLE ELEV CASING DRIVEN INCRE DIAMETER OF SAMPLER (INCHES) TIG 11.4 CHER ASTM D1586 OR D3550) P FOR PUSH SAMPLE (PER ASTM D1587) DATE MEASURED P FOR PUSH SAMPLE (PER ASTM D1587) BORING DATE TERMINATED AT ELEV BORING DATE TERMINATED AT ELEV	TOP HOLE EIEV BLOWS PER 12" (USING 28 Ib HAMDE WITH A 12") DROP OR AS NOTED) PULLED PIPE 60 PSOUND TAKEN BORING DATE BORING DATE BORING DATE
HAMMER ENERGY RATIO (ER;) = %	TERMINATED AT Elev
ROTARY BORING	HAND BORING

	CONSISTENCY OF COHESIVE SOILS				
DESCRIPTION	SHEAR STRENGTH (†sf)	POCKET PENETROMETER MEASUREMENT, PP, (†sf)	TORVANE MEASUREMENT, TV, (†sf)	VANE SHEAR MEASUREMENT, VS, (†sf)	
VERY SOFT	LESS THAN 0.12	LESS THAN 0.25	LESS THAN 0.12	LESS THAN 0.12	
SOFT	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25	
MEDIUM STIFF	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5	
STIFF	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1	
VERY STIFF	1 - 2	2 - 4	1 - 2	1 - 2	
HARD	GREATER THAN 2	GREATER THAN 4	GREATER THAN 2	GREATER THAN 2	





STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LEGEND - SOIL (SHEET 1 OF 2)

NO SCALE

A 10F

1-31-2

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2022)

SILTY GRAVEL SILTY GRAVEL WITH SAND GC GC CLAYEY GRAVEL WITH SAND GC-GM SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL GC-GM SILTY, CLAYEY GRAVEL WITH SAND GG-GM SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL WITH SAND SW WELL-GRADED SAND WELL-GRADED SAND WITH GRAVEL SP-SM WELL-GRADED SAND WITH GRAVEL SW-SM WELL-GRADED SAND WITH GRAVEL SW-SM WELL-GRADED SAND WITH GRAVEL SW-SM WELL-GRADED SAND WITH SILT WELL-GRADED SAND WITH SILT WELL-GRADED SAND WITH SILT WELL-GRADED SAND WITH SILT WELL-GRAVEL SANDY GRAVELLY FAT CLAY WITH GRAVEL GRAVELLY FAT CLAY WITH GRAVEL SW-SC WELL-GRADED SAND WITH SILT WELL-GRAVED SAND WITH CLAY (OR SILTY CLAY) POORLY-GRADED SAND WITH SILT AND GRAVEL SP-SC POORLY-GRADED SAND WITH SILT AND GRAVEL SP-SC SP-SC CLAYEY SAND SILTY SAND WITH GRAVEL SC-SM SILTY SAND WITH GRAVEL SC-SM SILTY SAND WITH GRAVEL SC-SM SILTY SAND WITH GRAVEL ORGANIC ELAN CLAY WITH GRAVEL ORGANIC SILT WITH GRAVEL ORGANIC SILT WITH GRAVEL ORGANIC SILT WITH GRAVEL SANDY GRAVELLY FAT CLAY WITH GRAVEL GRAVELLY FAT CLAY WITH GRAVEL SANDY GRAVELLY ELASTIC SILT WITH GRAVEL GRAVELLY ELASTIC SILT WITH GRAVEL SANDY GRAVEL CAT CLAY GRAVELLY ELASTIC SILT WITH GRAVEL SANDY GRAVEL FAT CLAY WITH GRAVEL SANDY ORGANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FAT CLAY WITH GRAVEL SANDY ORGANIC FAT CLAY SANDY GRANIC FAT CLAY WITH GRAVEL SANDY ORGANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FAT CLAY WITH GRAVEL SANDY ORGANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FAT CLAY WITH GRAVEL SANDY ORGANIC FAT CLAY SANDY GRANIC FAT CLAY WITH GRAVEL SANDY ORGANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FAT CLAY SANDY GRANIC FA	GROUP SYMBOLS AND NAMES					
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FIELD	AND	LABOR	ATORY
	TES	TING	

- C CONSOLIDATION
- (CR) CORROSIVITY TESTING
- CU CONSOLIDATED UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- (EI) EXPANSION INDEX
- (HC) HYDRAULIC CONDUCTIVITY
- OC) ORGANIC CONTENT-%
- PA PARTICLE SIZE ANALYSIS
- PI PLASTICITY INDEX
- (PL) POINT LOAD INDEX
- UC UNCONFINED COMPRESSION SOIL UNCONFINED COMPRESSION ROCK
- UU UNCONSOLIDATED UNDRAINED TRIAXIAL
- W 200 SIEVE TEST

Dist	COUNTY	ROUTE	POST M TOTAL PR	ILES DJECT	SHEET No.	TOTAL SHEETS		
	Ol hil							
CERTIFIED ENGINEERING GEOLOGIST								
V 4 2007								
Mdy 1, 2023 PLANS APPROVAL DATE (CERTIFIED ENGNEERING GEOLOGIST)								
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.								

APPARENT DENSI	TY OF COHESIONLESS SOILS				
DESCRIPTION	SPT N ₆₀ (BLOWS/12 INCHES)				
VERY LOOSE	0 - 5				
LOOSE	5 - 10				
MEDIUM DENSE	10 - 30				
DENSE	30 - 50				
VERY DENSE	GREATER THAN 50				

MOISTURE					
DESCRIPTION	CRITERIA				
DRY	NO DISCERNABLE MOISTURE				
MOIST	MOISTURE PRESENT, BUT NO FREE WATER				
WET	VISIBLE FREE WATER				

PERCENT OR PROPORTION OF SOILS						
DESCRIPTION	CRITERIA					
TRACE	PARTICLES ARE PRESENT BUT ESTIMATED TO BE LESS THAN 5%					
FEW	5% - 10%					
LITTLE	15% - 25%					
SOME	30% - 45%					
MOSTLY	50% - 100%					

	PARTICLE SIZE					
DES	SCRIPTION	SIZE				
BOULDER		GREATER THAN 12"				
COBBLE		3" - 12"				
GRAVEL	COARSE	3/4" - 3"				
GRAVEL	FINE	1/5" - 3/4"				
	COARSE	/ ₁₆ " - / ₅ "				
SAND	MEDIUM	1/64" - 1/16"				
	FINE	1/300" - 1/64"				
SILT AND	CLAY	LESS THAN 1/300"				

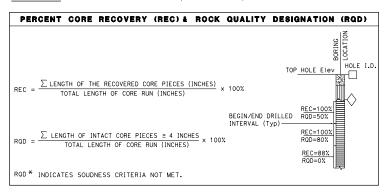
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LEGEND - SOIL (SHEET 2 OF 2)

NO SCALE

A10G

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2022)



	ROCK HARDNESS
DESCRIPTION	CRITERIA
EXTREMELY HARD	CANNOT BE SCRATCHED WITH A POCKETKNIFE OR SHARP PICK. CAN ONLY BE CHIPPED WITH REPEATED HEAVY HAMMER BLOWS.
VERY HARD	CANNOT BE SCRATCHED WITH A POCKETKNIFE OR SHARP PICK. BREAKS WITH REPEATED HEAVY HAMMER BLOWS.
HARD	CAN BE SCRATCHED WITH A POCKETKNIFE OR SHARP PICK WITH DIFFICULTY (HEAVY PRESSURE). BREAKS WITH HEAVY HAMMER BLOWS.
MODERATELY HARD	CAN BE SCRATCHED WITH POCKETKNIFE OR SHARP PICK WITH LIGHT OR MODERATE PRESSURE. BREAKS WITH MODERATE HAMMER BLOWS.
MODERATELY SOFT	CAN BE GROOVED $N_{\rm B}$ " DEEP WITH A POCKETKNIFE OR SHARP PICK WITH MODERATE OR HEAVY PRESSURE. BREAKS WITH LIGHT HAMMER BLOW OR HEAVY MANUAL PRESSURE.
SOFT	CAN BE GROOVED OR GOUGED EASILY BY A POCKETKNIFE OR SHARP PICK WITH LIGHT PRESSURE, CAN BE SCRATCHED WITH FINGERNAIL. BREAKS WITH LIGHT TO MODERATE MANUAL PRESSURE.
VERY SOFT	CAN BE READILY INDENTED, GROOVED OR GOUGED WITH FINGERNAIL, OR CARVED WITH A POCKETKNIFE. BREAKS WITH LIGHT MANUAL PRESSURE.

FRACTURE DENSITY				
DESCRIPTION	OBSERVED FRACTURE DENSITY			
UNFRACTURED	NO FRACTURES.			
VERY SLIGHTLY FRACTURED	CORE LENGTHS GREATER THAN 3 ft.			
SLIGHTLY FRACTURED	CORE LENGTHS MOSTLY FROM 1 TO 3 ft.			
MODERATELY FRACTURED	CORE LENGTHS MOSTLY FROM 4 INCHES TO 1 ft.			
INTENSELY FRACTURED	CORE LENGTHS MOSTLY FROM 1 TO 4 INCHES.			
VERY INTENSELY FRACTURED	MOSTLY CHIPS AND FRAGMENTS.			

BEDDING	SPACING
DESCRIPTION	THICKNESS/SPACING
MASSIVE	GREATER THAN 10'
VERY THICKLY BEDDED	3' - 10'
THICKLY BEDDED	1'- 3'
MODERATELY BEDDED	4" - 1′
THINLY BEDDED	1" - 4"
VERY THINLY BEDDED	1/4" - 1"
LAMINATED	LESS THAN 1/4"

	Dist	COUNTY	ROUTE	POS' TOTAL	PROJECT	SHEET No.	TOTAL SHEETS
LEGEND OF ROCK MATERIALS IGNEOUS ROCK SEDIMENTARY ROCK METAMORPHIC ROCK	CERT MO PLA THE S. OR ACC	y 1, 202 INS APPROV TATE OF CALL	NEERING GEOL 23 /AL DATE IFORNIA OR IT. NOT BE RESPOI COMPLETENESS	S OFFICERS	CERTIFIE OF NO.	ED GEO/ B A. Risder ED ENGINEER EOLOGIST 2541 D-9-30-23 OF CALIFORNIA	- / /

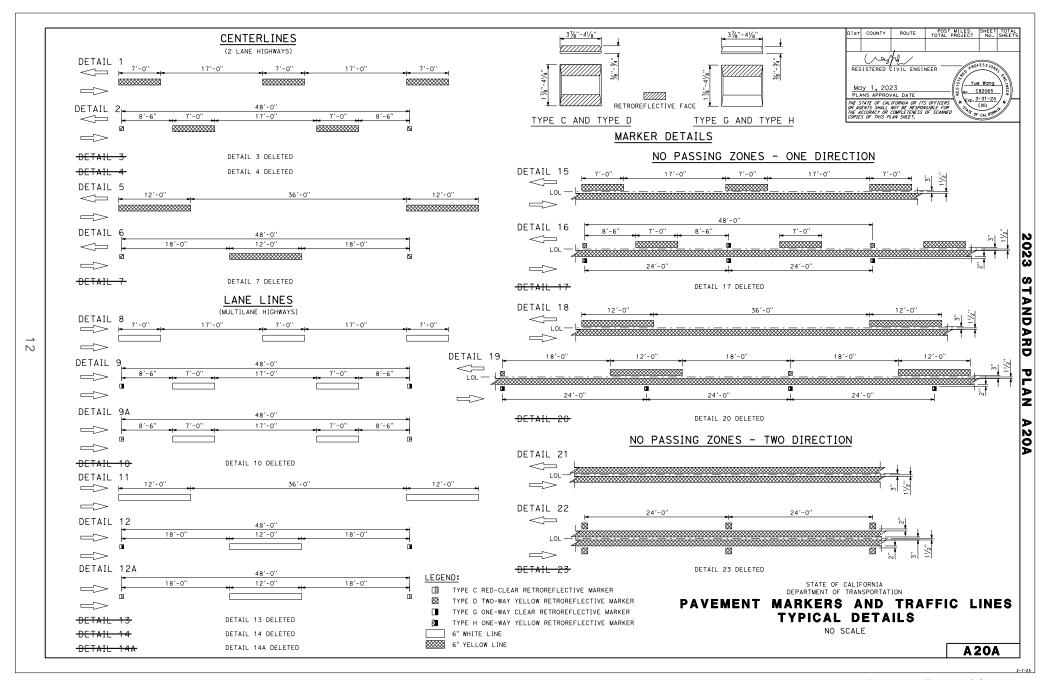
		WEATHERING	DESCRIPTORS FOR	R INTACT RO	СК	
DESCRIPTION	AND/OR OXIDATION		MECHANICAL WEATHERING- GRAIN BOUNDARY CONDITIONS	TEXTURE AND LEACHING		GENERAL CHARACTERISTICS
	BODY OF ROCK	BODY OF ROCK FRACTURE FOR GRANITICS AND SOME TEXTURE SURFACES COARSE-GRAINED SEDIMENTS TEXTURE		LEACHING		
FRESH	NO DISCOLORATION, NOT OXIDIZED.	NO DISCOLORATION OR OXIDATION.	NO SEPARATION, INTACT (TIGHT).	NO CHANGE	NO LEACHING	HAMMER RINGS WHEN CRYSTALLINE ROCKS ARE STRUCK.
SLIGHTLY WEATHERED	DISCOLORATION OR OXIDATION IS LIMITED TO SURFACE OF, OR SHORT DISTANCE FROM, FRACTURES; SOME FELDSPAR CRYSTALS ARE DULL.	MINOR TO COMPLETE DISCOLORATION OR OXIDATION OF MOST SURFACES.	NO VISIBLE SEPARATION, INTACT (TIGHT).	PRESERVED	MINOR LEACHING OF SOME SOLUBLE MINERALS.	HAMMER RINGS WHEN CRYSTALLINE ROCKS ARE STRUCK. BODY OF ROCK NOT WEAKENED.
MODERATELY WEATHERED	DISCOLORATION OR OXIDATION EXTENDS FROM FRACTURES USUALLY THROUGHOUT; Fe-Mg MINERALS ARE "CLOUDY."	ALL FRACTURE SURFACES ARE DISCOLORED OR OXIDIZED.	PARTIAL SEPARATION OF BOUNDARIES VISIBLE.	GENERALLY PRESERVED	SOLUBLE MINERALS MAY BE MOSTLY LEACHED.	HAMMER DOES NOT RING WHEN ROCK IS STRUCK. BODY OF ROCK IS SLIGHTLY WEAKENED.
INTENSELY WEATHERED	DISCOLORATION OR OXIDATION THROUGHOUT; ALL FELDSPARS AND F6-Mg MINERALS ARE ALTERED TO CLAY TO SOME EXTENT; OR CHEMICAL ALTERATION PRODUCES IN-SITU DISACGREGATION, SEE GRAIN BOUNDARY CONDITIONS.	ALL FRACTURE SURFACES ARE DISCOLORED OR OXIDIZED, SURFACES FRIABLE.	PARTIAL SEPARATION, ROCK IS FRIABLE; IN SEMIARID CONDITIONS GRANITICS ARE DISAGGREGATED.	TEXTURE ALTERED BY CHEMICAL DISINTEGRATION (HYDRATION, ARGILLATION).	LEACHING OF SOLUBLE MINERALS MAY BE COMPLETE.	DULL SOUND WHEN STRUCK WITH HAMMER, USUALLY CAN BE BROKEN WITH MODERATE TO HEAVY MANUAL PRESSURE OR BY LIGHT HAMMER BLOW WITHOUT REFREENCE TO PLANES OF WEANNESS TO AS INCIPIENT OR HARLINE FRACTURES, OR VENLETS, ROCK IS SIGNIFICANTLY WEAKENED.
DECOMPOSED	DISCOLORED OR OXIDIZED THROUGHOUT, BUT RESISTANT MINERALS SUCH AS OUARTZ MAY BE UNALTERED; ALL FELDSPARS AND FE-MG MINERALS ARE COMPLETELY ALTERED TO CLAY.		COMPLETE SEPARATION OF GRAIN BOUNDARIES (DISAGGREGATED).	RESEMBLES A S OR COMPLETE R STRUCTURE MAY LEACHING OF S MINERALS USUA	EMNÁNT ROCK BE PRESERVED; OLUBLE	CAN BE GRANULATED BY HAND. RESISTANT MAY BEFASENT AS QUARTZ MAY BE PRESENT AS "STRINGERS" OR "DIKES."

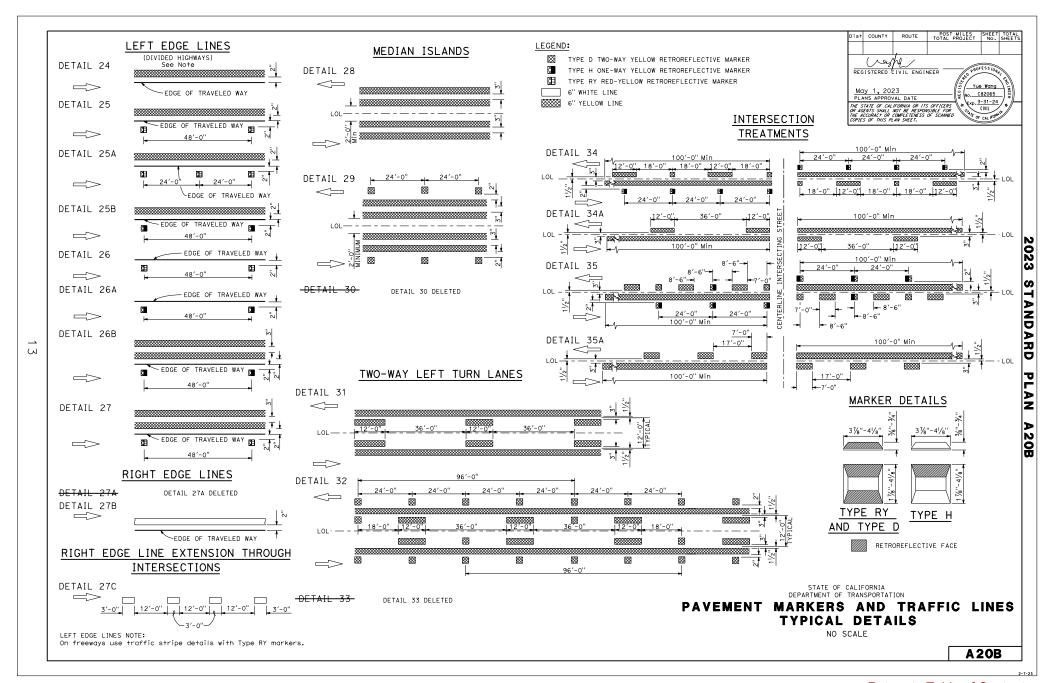
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DEPARTMENT OF TRANSPORTATION

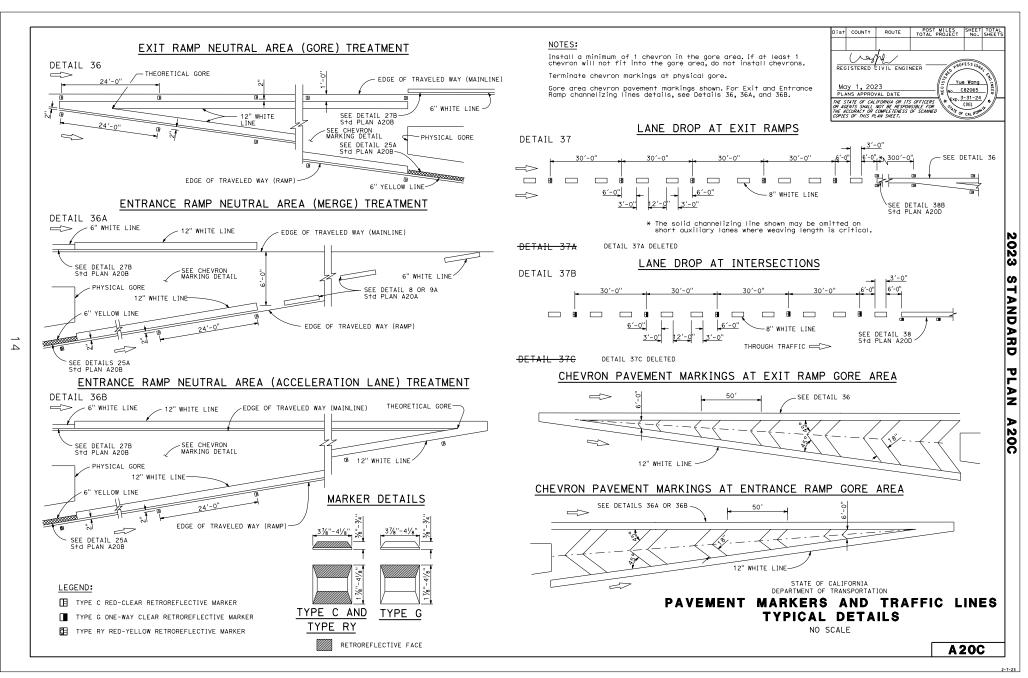
LEGEND - ROCK

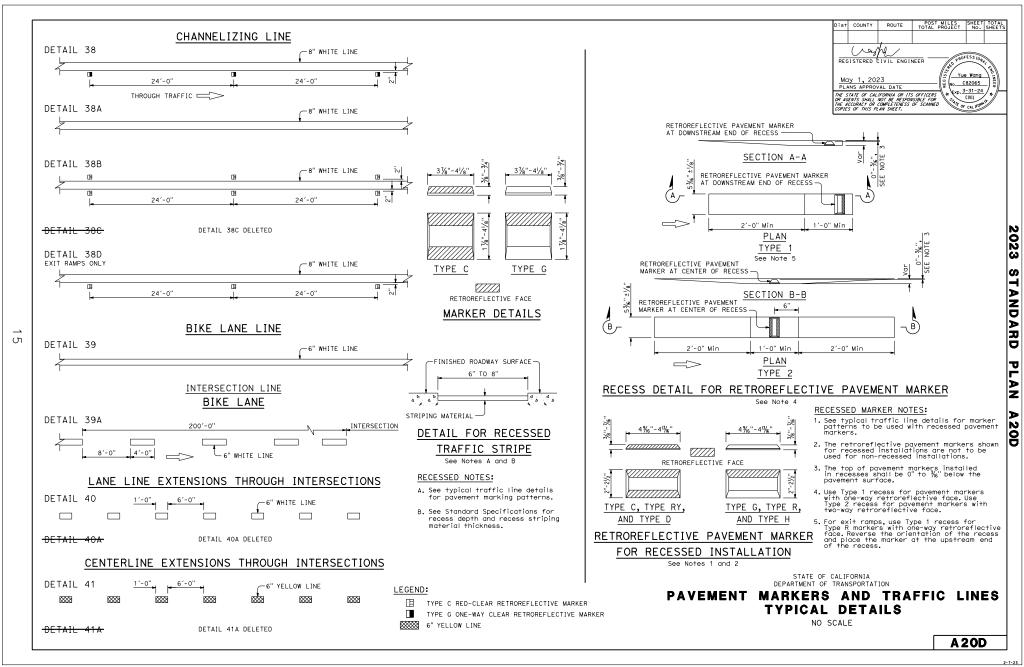
NO SCALE

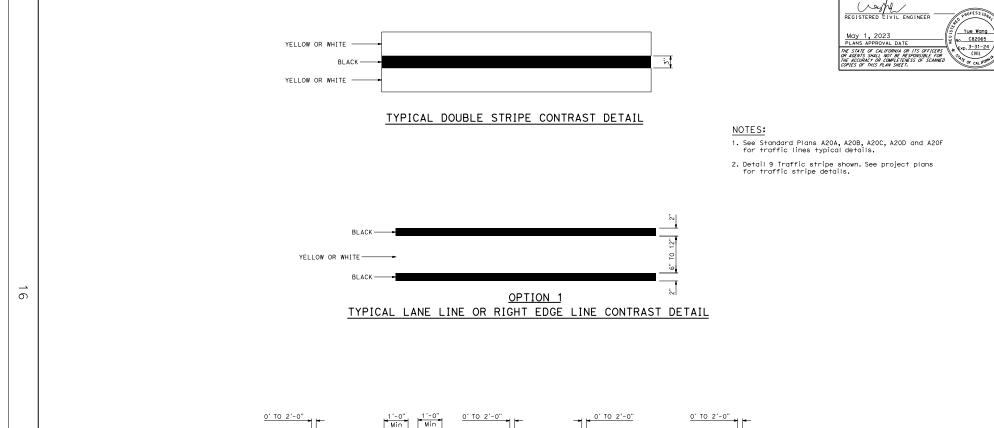
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TYPICAL LANE LINE CONTRAST DETAIL

See Note 2

RETROREFLECTIVE MARKER

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

Dist COUNTY

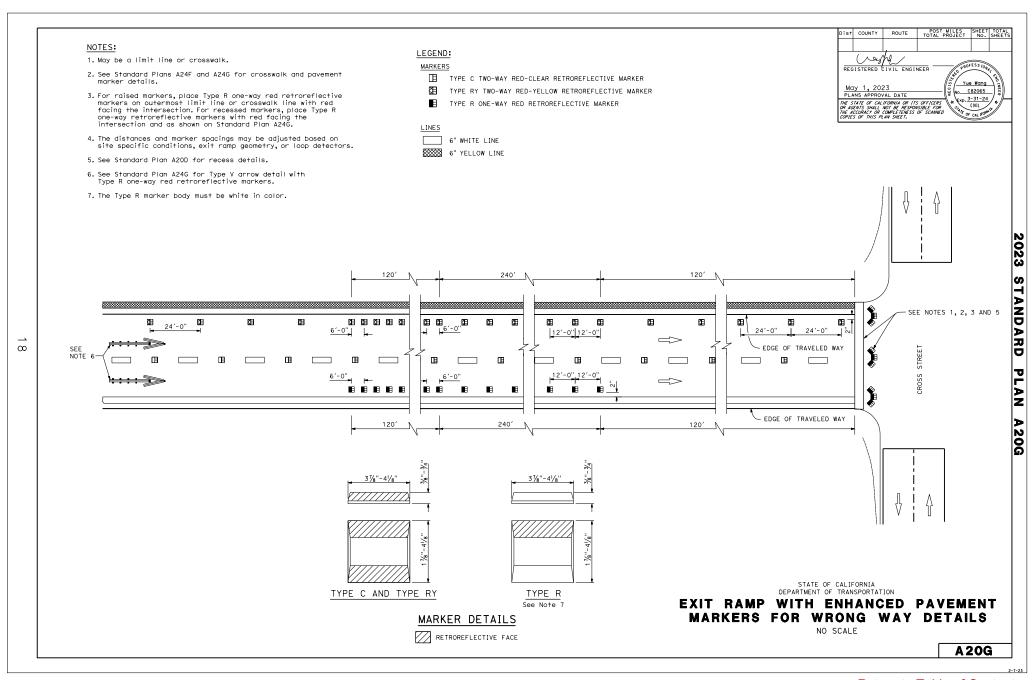
ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

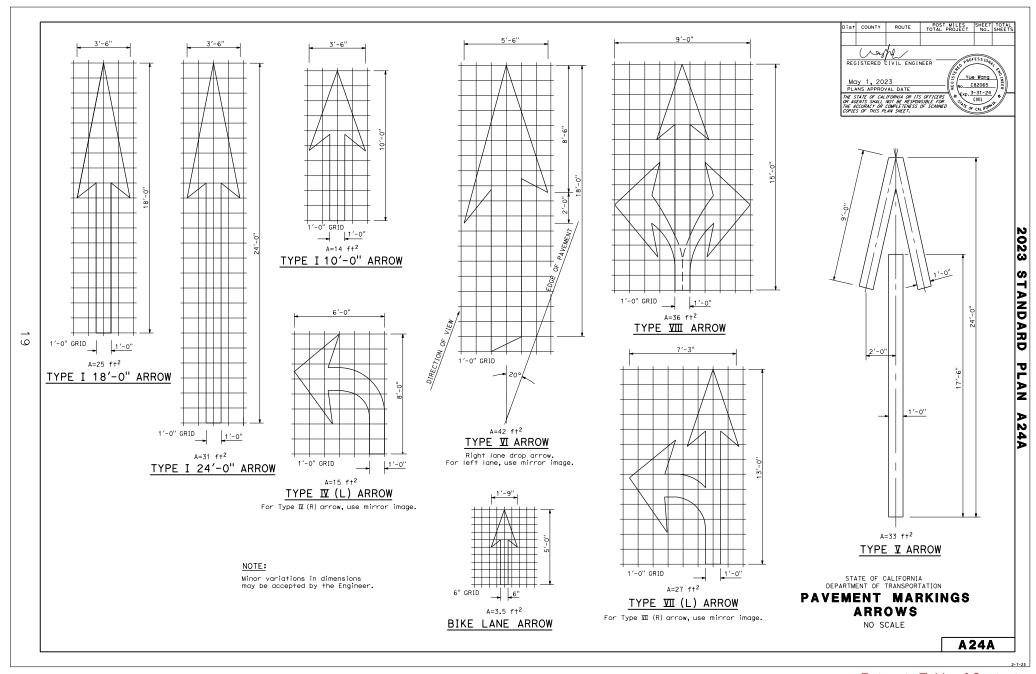
TRAFFIC LINES
TYPICAL DETAILS
FOR CONTRAST STRIPING

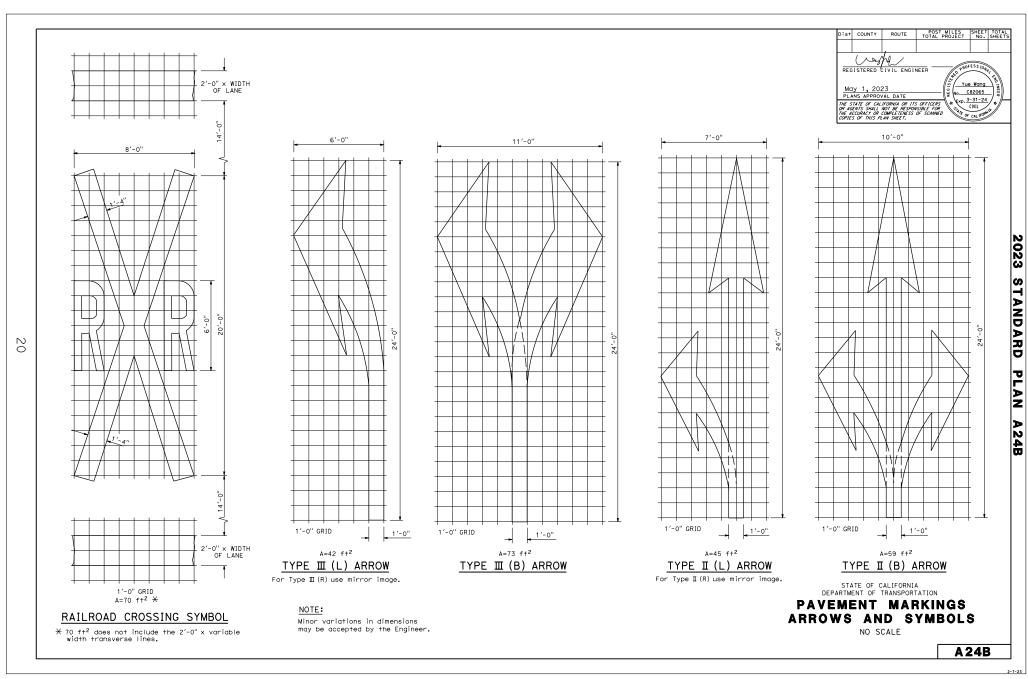
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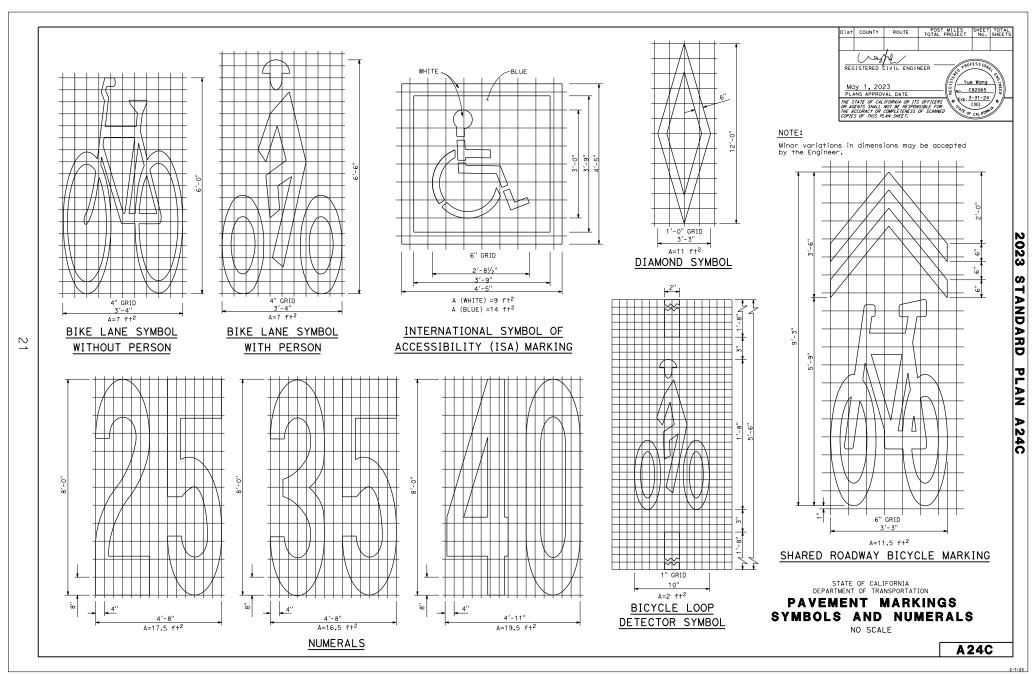
A 20E

Return to Table of Contents



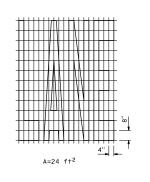


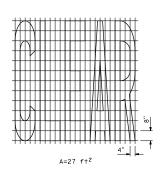


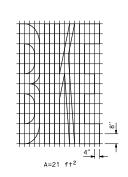


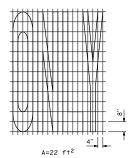
ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

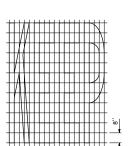
A=14 f+2



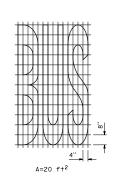


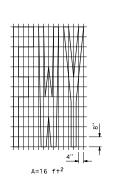


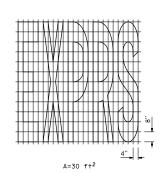


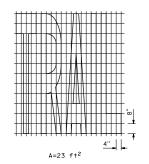


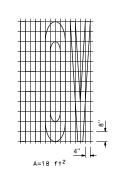
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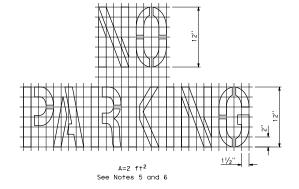












- If a message consists of more than one word, it must read "UP",i.e., the first word must be nearest the driver.
- The space between words must be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
- 3. Minor variations in dimensions may be accepted by the Engineer.
- 4. Portions of a letter, number, or symbol may be separated by connecting segments not to exceed 2" in width.
- 5. The words "NO PARKING" pavement marking is to be used for parking facilities. For typical locations of markings, see Standard Plans A90A and A90B.
- 6. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials.

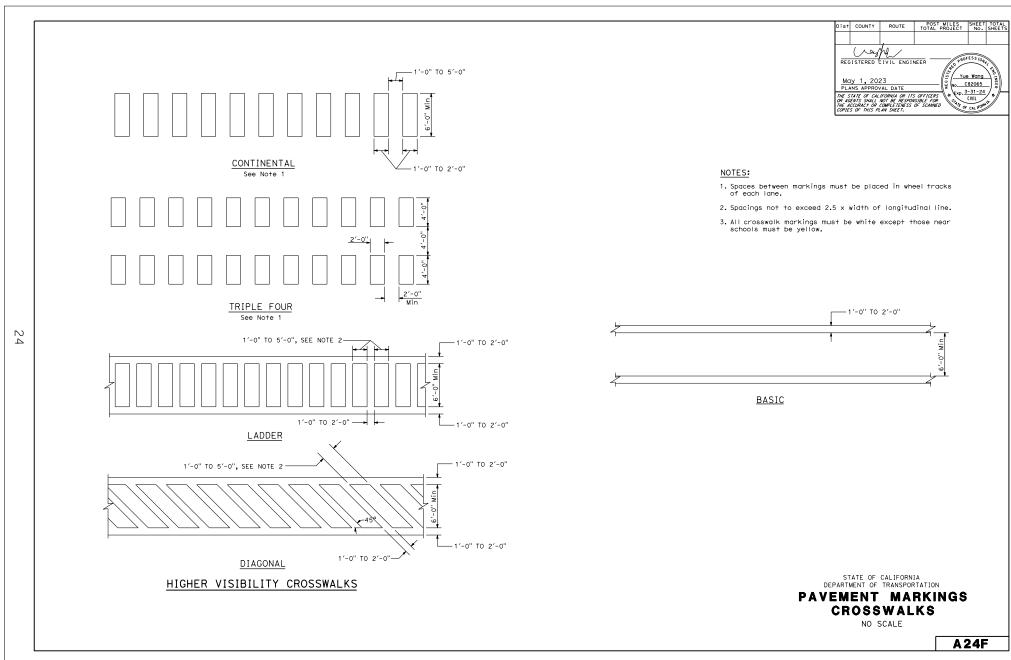
WORD MARKINGS					
ITEM	SQFT	ITEM	SQFT		
LANE	24	NO.	14		
CLEAR	27	BIKE	21		
KEEP	24	BUS	20		
HOV	18	ONLY	22		
TRAIL	23	FWY	16		
EXPRS	30				

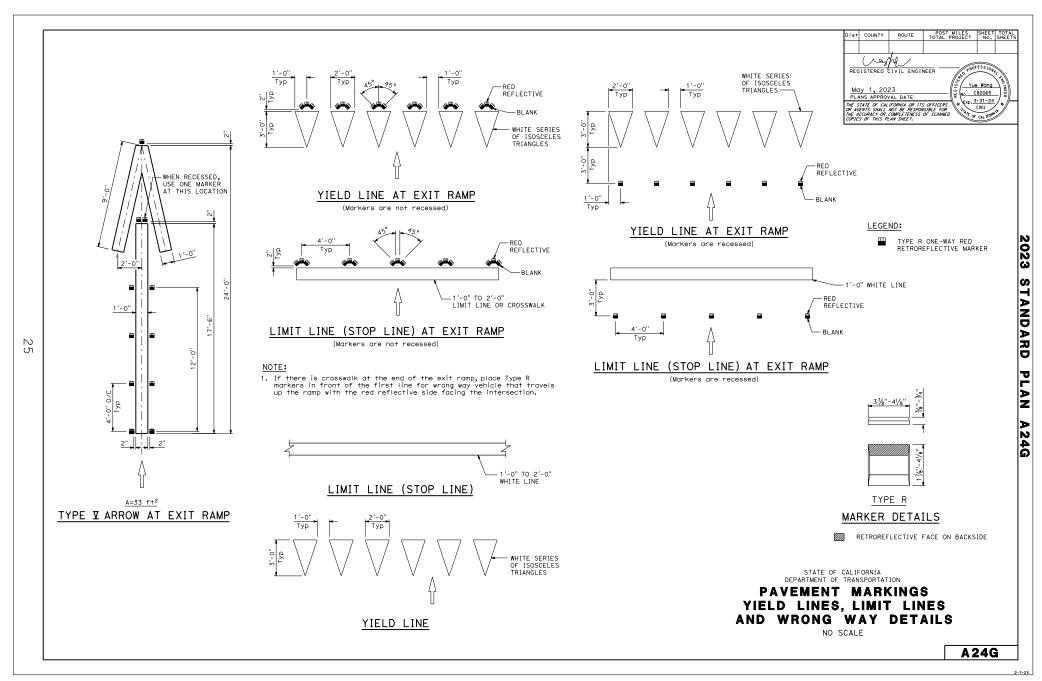
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

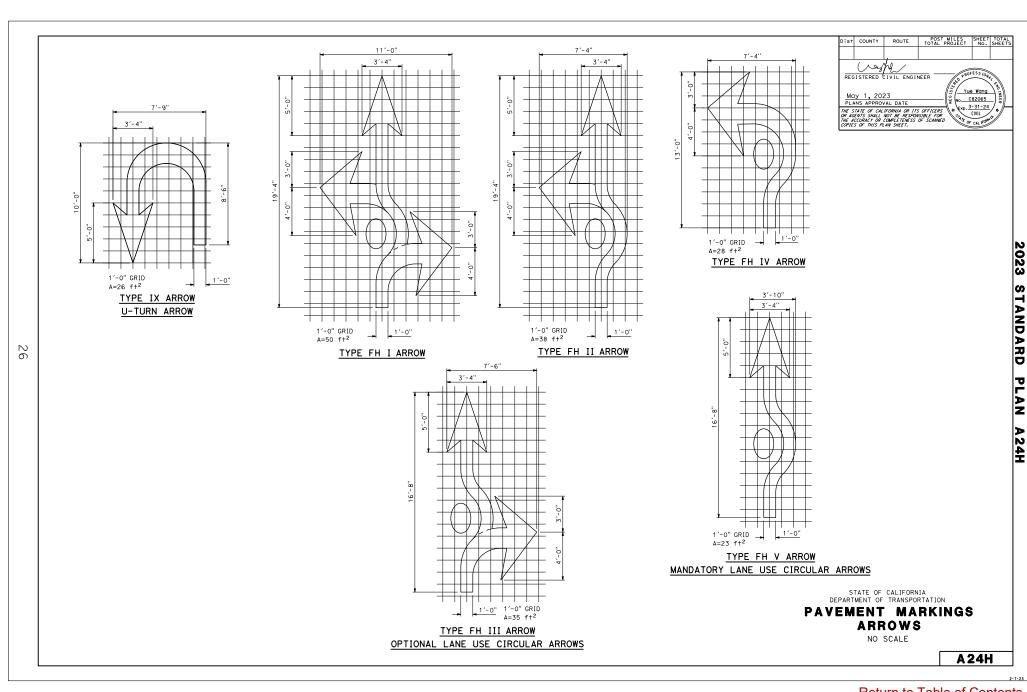
PAVEMENT MARKINGS WORDS

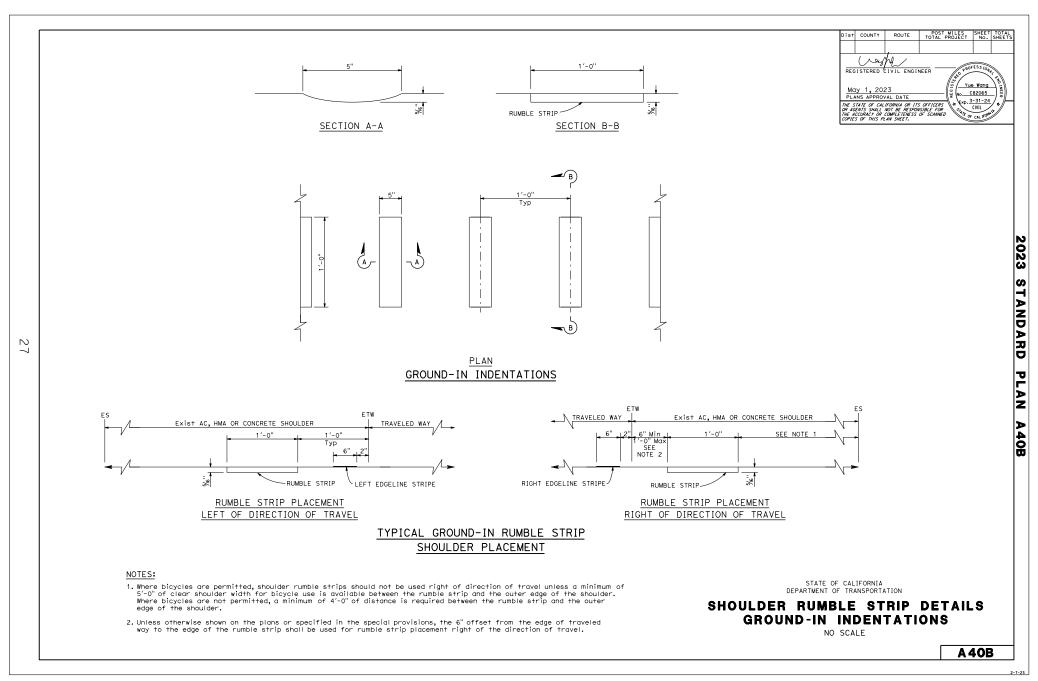
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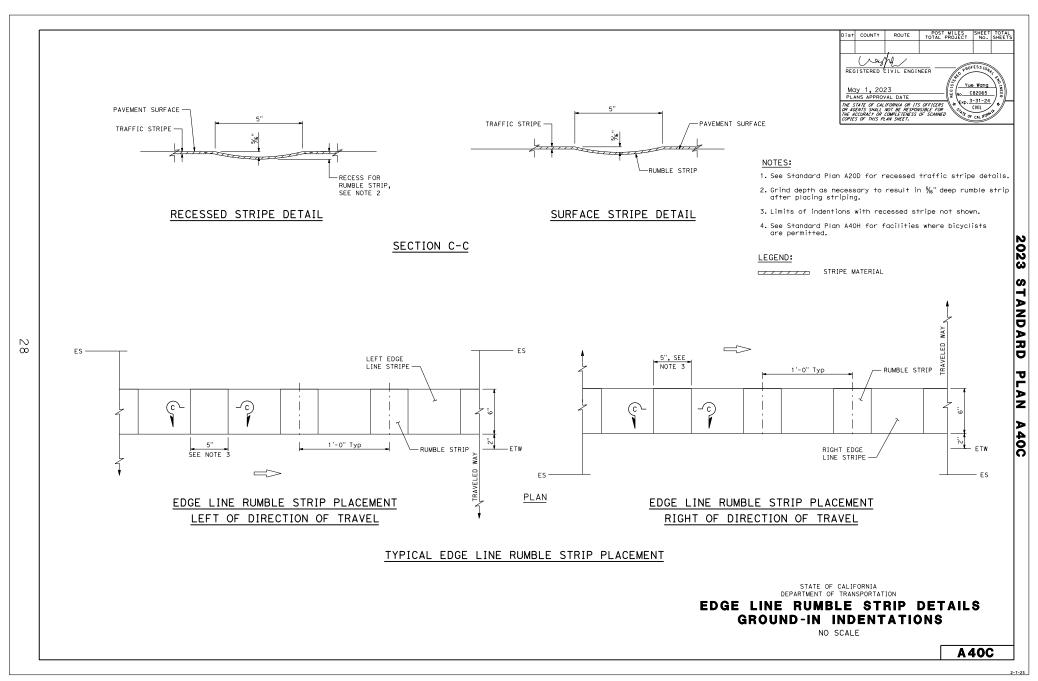
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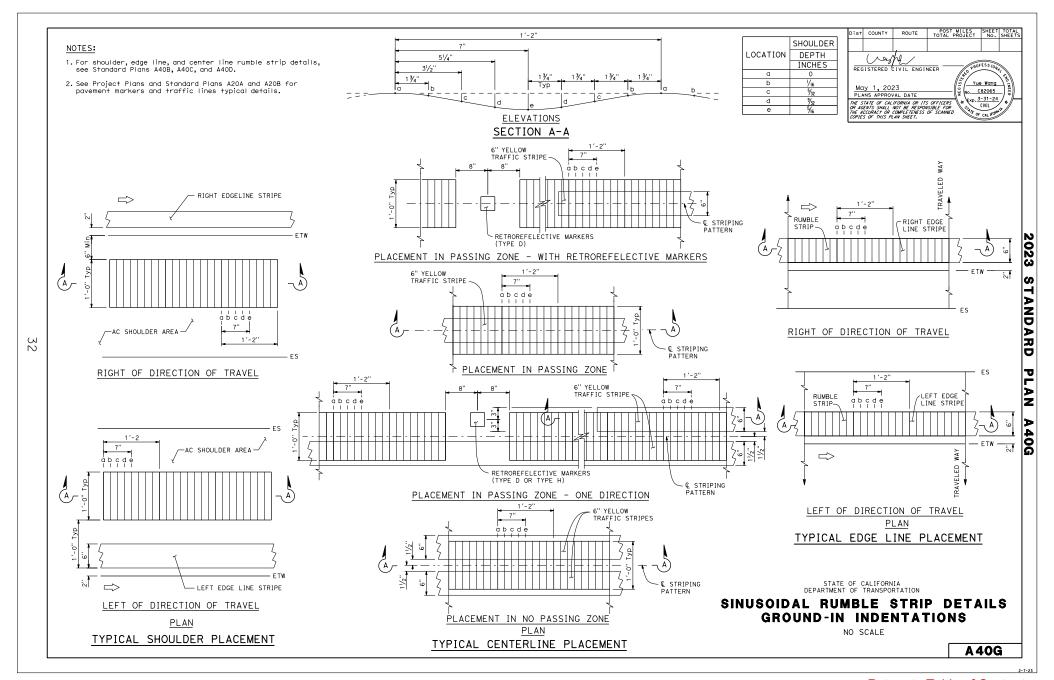


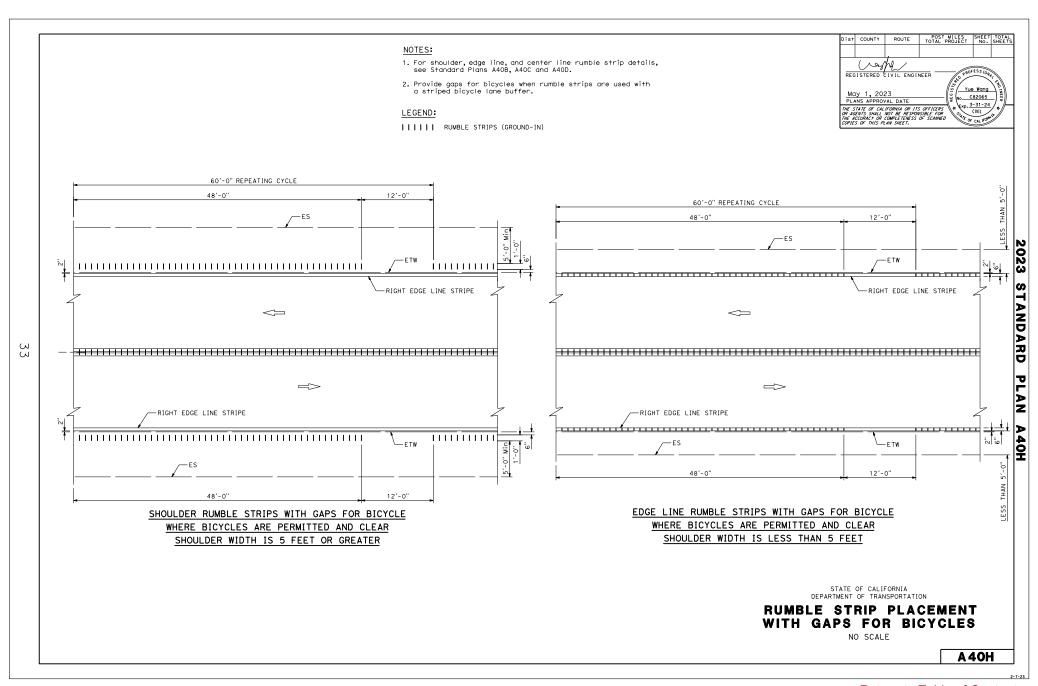




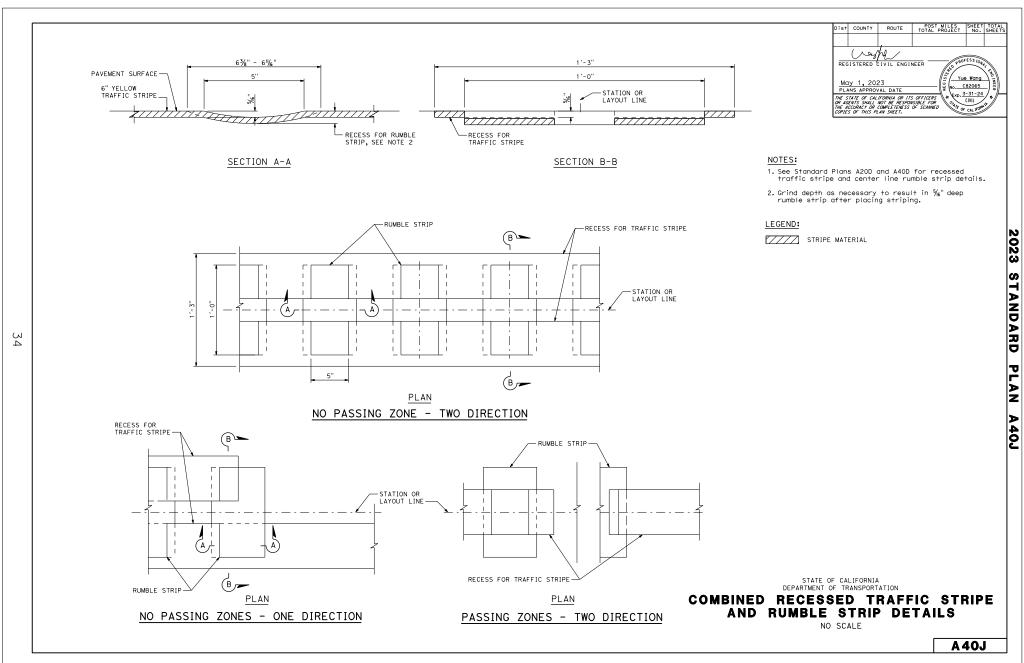


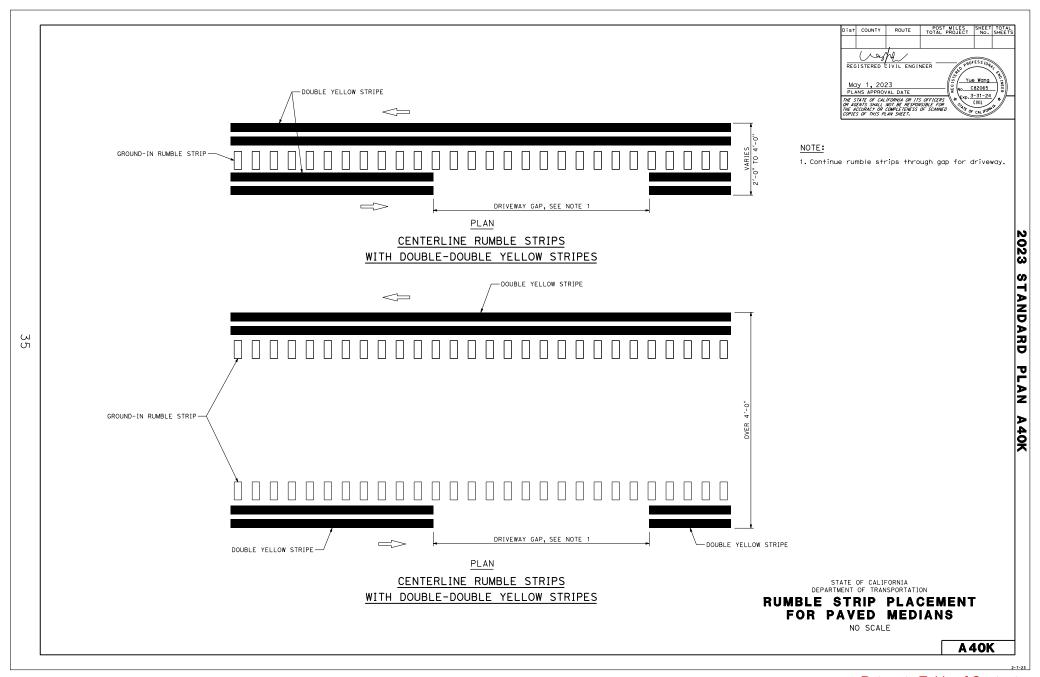


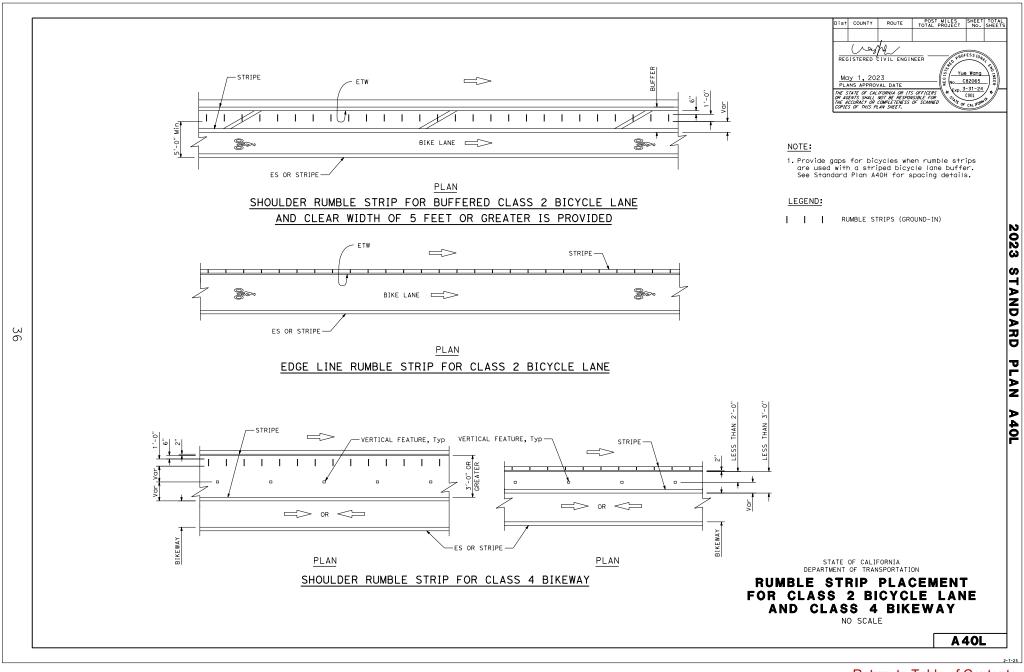


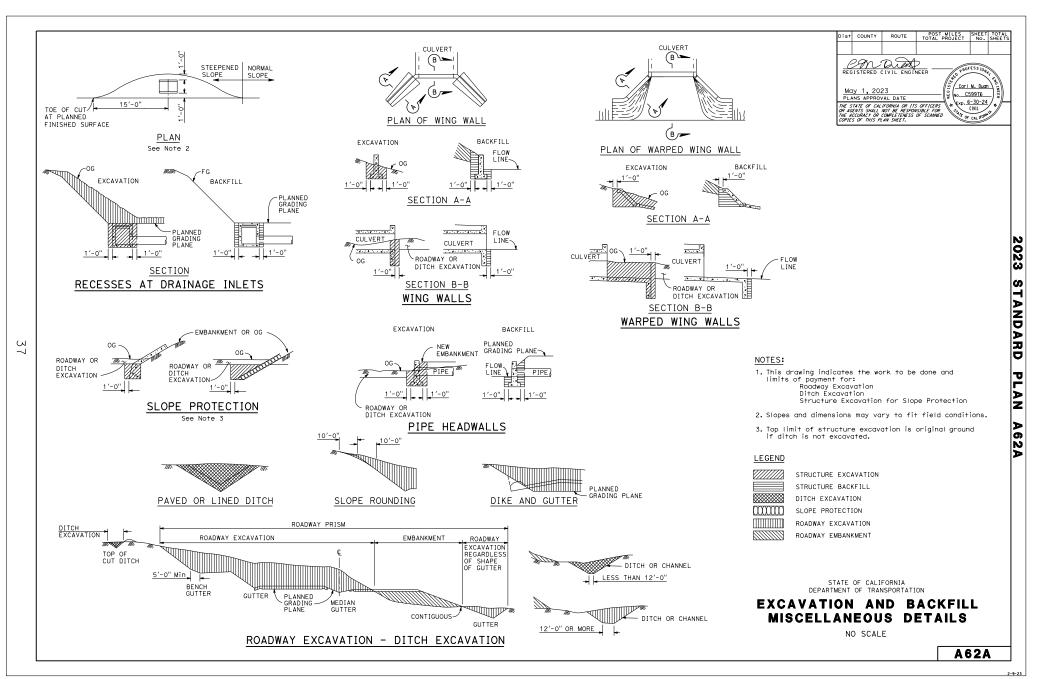


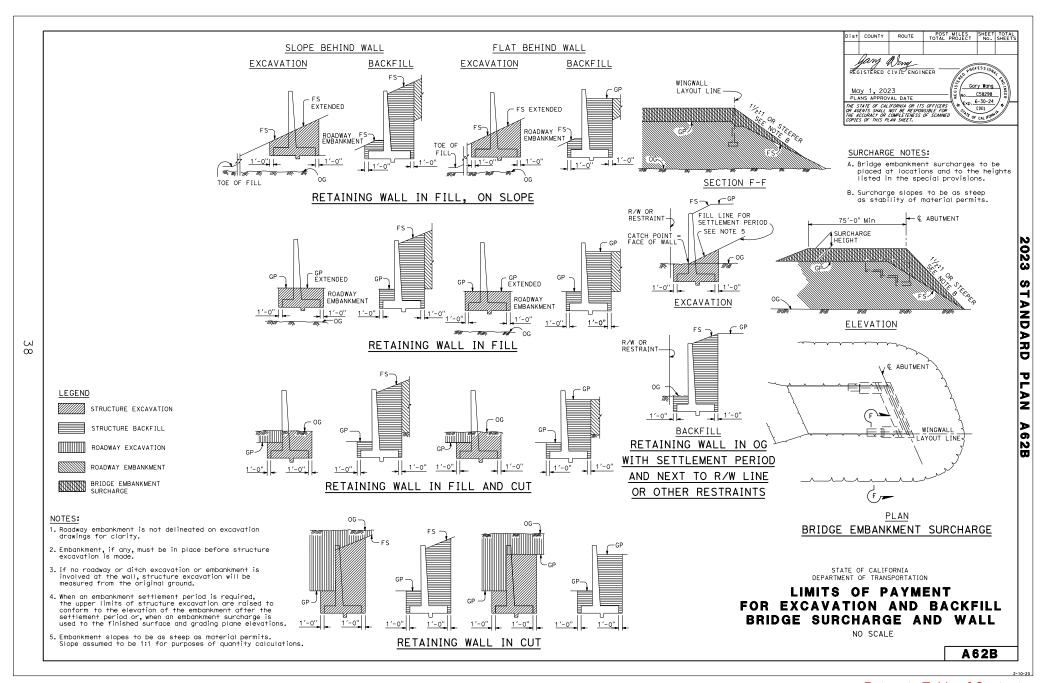


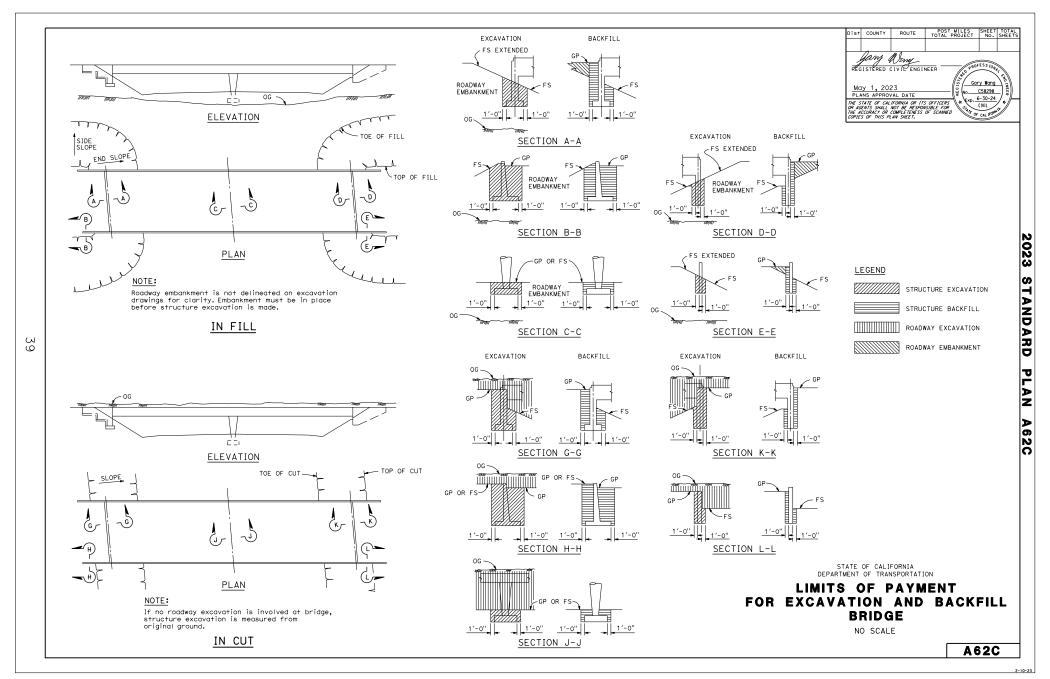












POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS



Dist COUNTY

IN TRENCH IN TRENCH

EXCAVATION

EXCAVATION

0

OG OR GF

BACKFILL

SAND BEDDING SOIL CEMENT BEDDING IN TRENCH

EXCAVATION BACKFILL

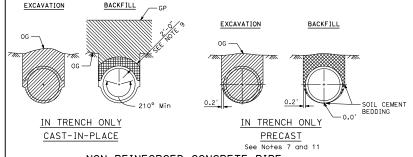
EXCAVATION BACKFILL

EXCAVATION BACKFILL EXCAVATION BACKFILL EXCAVATION BACKFILL EXCAVATION EMBANKMENT .FMRANKMENT CONSTRUCTED CONSTRUCTED EMBANKMENT CONSTRUCTED PRIOR TO EXCAVATION PRIOR TO EXCAVATION 2'-0" 2'-0" IN EMBANKMENT IN EMBANKMENT SAND BEDDING SOIL CEMENT BEDDING

BACKFILL

IN EMBANKMENT

REINFORCED CONCRETE PIPE See Notes 1, 2, 7 and 10						
METHOD 1		N	METHOD 2		METHOD 3	
MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 1		F RCP FOR METHOD 1 MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 2		MINIMUM ALLOWABLE CO	ASSES OF RCP FOR METHOD 3	
COVER	MINIMUM CLASS AND D-LOAD	COVER	MINIMUM CLASS AND D-LOAD	COVER	MINIMUM CLASS AND D-LOAD	
5.9'	CLASS II 1000D	15.9'	CLASS II 1000D	25.9'	CLASS II 1000D	
6.0' - 7.9'	CLASS III 1350D	16.0' - 19.9'	CLASS III 1350D	26.0' - 31.9'	CLASS III 1350D	
8.0' - 9.9'	CLASS III SPECIAL 1700D	20.0' - 24.9'	CLASS III SPECIAL 1700D	32.0′ - 37.9′	CLASS III SPECIAL 1700D	
10.0′ - 11.9′	CLASS IX 2000D	25.0′ - 27.9′	CLASS IX 2000D	38.0′ - 44.9′	CLASS IX 2000D	
12.0' - 13.9'	CLASS IX SPECIAL 2500D	28.0′ - 34.9′	CLASS IX SPECIAL 2500D	45.0′ - 55.9′	CLASS IX SPECIAL 2500D	
14.0' - 16.9'	CLASS ¥ 3000D	35.0′ - 41.9′	CLASS ¥ 3000D	56.0' - 67.9'	CLASS ▼ 3000D	
17.0′ - 20.0′	CLASS ¥ SPECIAL 3600D	42.0′ - 50.0′	CLASS ▼ SPECIAL 3600D	68.0′ - 80.0′	CLASS ¥ SPECIAL 3600D	
SEE NOTES 6 AND 9		SEE NOTES 8 AND 9				



NON-REINFORCED CONCRETE PIPE

- 1. Unless otherwise shown on the plans or specified in the special provisions, the Contractor shall have the option of selecting the class of RCP and the method of backfill to be used, provided the height of cover does not exceed the value shown for the RCP selected.
 - Example: 2'-0" RCP culvert with maximum cover of 19'-0" the options are:
 - a) Class ▼ Special or stronger with Method 1. b) Class Ⅲ or stronger with Method 2.
 - c) Class I or stronger with Method 3.
 - Cover is defined as the maximum vertical distance from top of pipe to finished grade within the length of any given culvert.
- 2. The class of RCP, method of backfill and bedding selected shall be the same throughout the length of any given culvert.
- 3. The "length of any culvert" is defined as the culvert between:
 - a) Successive drainage structures (inlets, junction boxes, headwalls, etc.).
 b) A drainage structure and the inlet or outlet end of the culvert.
 - c) The inlet and outlet end of the culvert when there are no intervening
- drainage structures. 4. Slope or shore excavation sides as necessary.
- 5. Embankment height prior to excavation for installation of all classes of RCP under Methods 2 and 3A shall be as follows:

Pipe sizes 1'-0" to 3'-6", ID = 2'-6" Pipe sizes 4'-0" to 7'-0", ID = $\frac{2}{3}$ OD Pipe sizes larger than 7'-0", ID = 5'-0"

- 6. The maximum size for all classes of RCP placed under Method 1 is 6'-6" ID.
- 7. Non-reinforced precast pipe sizes 1'-0" or smaller may also be placed under
- 8. Elliptical shaped RCP shall be placed under Method 2 only.
- 9. Embankment compaction requirements govern over the 90% relative compaction backfill requirement within 2'-6" of finished grade.
- 10. Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimums.
- 11. Where the precast non-reinforced concrete pipe is used as a substitute for the cast-in-place pipe, both the wall thickness and the concrete strength shall be at least as great as that specified for the cast-in-place pipe. The fill height allowed shall not exceed that shown for the cast-in-place pipe.

LEGEND:

STRUCTURE EXCAVATION (CULVERT)

STRUCTURE BACKFILL (CULVERT) 95% RELATIVE COMPACTION

STRUCTURE BACKFILL (CULVERT)
90% RELATIVE COMPACTION

LOOSE BACKFILL SOIL CEMENT BEDDING SAND BEDDING

ROADWAY EMBANKMENT

- OD = OUTSIDE DIAMETER FOR CIRCULAR PIPES AND MAXIMUM VERTICAL DIMENSION FOR OTHER SHAPES
- ID = INSIDE DIAMETER FOR CIRCULAR PIPES AND MINIMUM VERTICAL DIMENSION FOR OTHER SHAPES

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

NO SCALE

A62D

DESIGN NOTES:

AASHTO LRFD Bridge Design Specifications, 8th edition with California Amendments. Design:

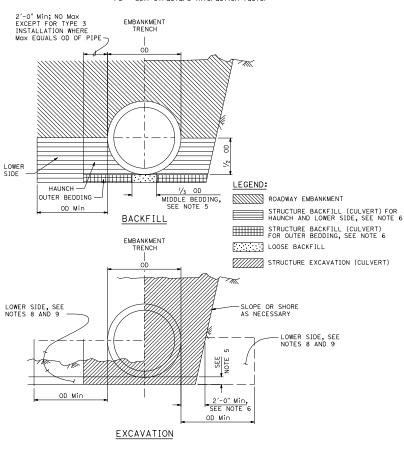
INDIRECT DESIGN METHOD

w Fe = 162 pcf Installation Type 1 Soil:

w Fe = 168 pcf Installation Types 2 & 3

w = Unit weight of soil (pcf)

Fe = Soil-structure interaction factor



INSTALLATION TYPE 1:

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 30 and the maximum percentage passing the No. 200 sieve size shall be 5.

INSTALLATION TYPE 2:

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 25.

INSTALLATION TYPE 3:

The haunch and outer bedding shall be compacted to a minimum 85 percent relative compaction. 90 percent relative compaction will be required where the fill over the pipe is less than 4'-0" or $\frac{1}{2}$ OD. In addition, the minimum sand equivalent in these areas shall be 25.

INSTALLATION TYPE 1				
MINIMUM CLASS AND D-LOAD	COVER			
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max		
CLASS II 1000D	14.9'	12.9′		
CLASS III 1350D	15.0' - 21.3'	13.0' - 18.9'		
CLASS III SPECIAL 1700D	22.0' - 26.8'	19.0' - 24.9'		
CLASS IX 2000D	28.0' - 31.5'	25.0' - 29.9'		
CLASS IX SPECIAL 2500D	33.0′ - 37.8′	30.0′ - 38.9′		
CLASS ¥ 3000D	42.0' - 47.5'	39.0′ - 46.9′		
CLASS ¥ SPECIAL 3600D	50.0' - 57.3'	47.0' - 58.0'		

INSTALLATION TYPE 2			
MINIMUM CLASS AND D-LOAD	COVER		
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max	
CLASS II 1000D	11.9′	9.9'	
CLASS III 1350D	12.0' - 15.9'	10.0' - 14.9'	
CLASS III SPECIAL 1700D	16.0' - 20.5'	15.0′ - 19.9′	
CLASS IX 2000D	21.0' - 24.3'	20.0' - 23.9'	
CLASS IX SPECIAL 2500D	25.0' - 30.3'	24.0' - 30.9'	
CLASS ¥ 3000D	32.0' - 36.3'	31.0′ - 37.9′	
CLASS I SPECIAL 3600D	38.0' - 43.8'	38.0' - 46.0'	

INSTALLATION TYPE 3			
MINIMUM CLASS AND D-LOAD	COVER		
	60" Dia AND SMALLER	OVER 60" Dia TO 120" Dia Max	
CLASS II 1000D	8.9'	5.9'	
CLASS III 1350D	9.0' - 11.9'	6.0' - 10.9'	
CLASS III SPECIAL 1700D	12.0' - 15.9'	11.0′ - 13.9′	
CLASS IX 2000D	16.0' - 18.9'	14.0' - 17.9'	
CLASS IX SPECIAL 2500D	19.0' - 23.3'	18.0' - 22.9'	
CLASS ¥ 3000D	25.0' - 28.3'	23.0′ - 28.9′	
CLASS ¥ SPECIAL 3600D	30.0' - 34.3'	29.0' - 35.0'	

Dis+	COUNTY	ROUTE	POST P		SHEET No.	TOTAL SHEETS	
	REGISTERED CIVIL ENGINEER SPROFESSIONAL						
REC	[in the state of t						
	May 1, 2023						
PLA	PLANS APPROVAL DATE						
OR AC	THE STATE OF CALIFORNIA OR ITS OFFICERS WE ASSET SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.						

1. Unless otherwise shown on the plans or specified in the special provisions, the Contractor shall have the option of selecting the class of RCP and the type of installation to be used, provided the height of cover does not exceed the value shown for the RCP selected.

Example: 24" RCP culvert with maximum cover of 24'-0" the

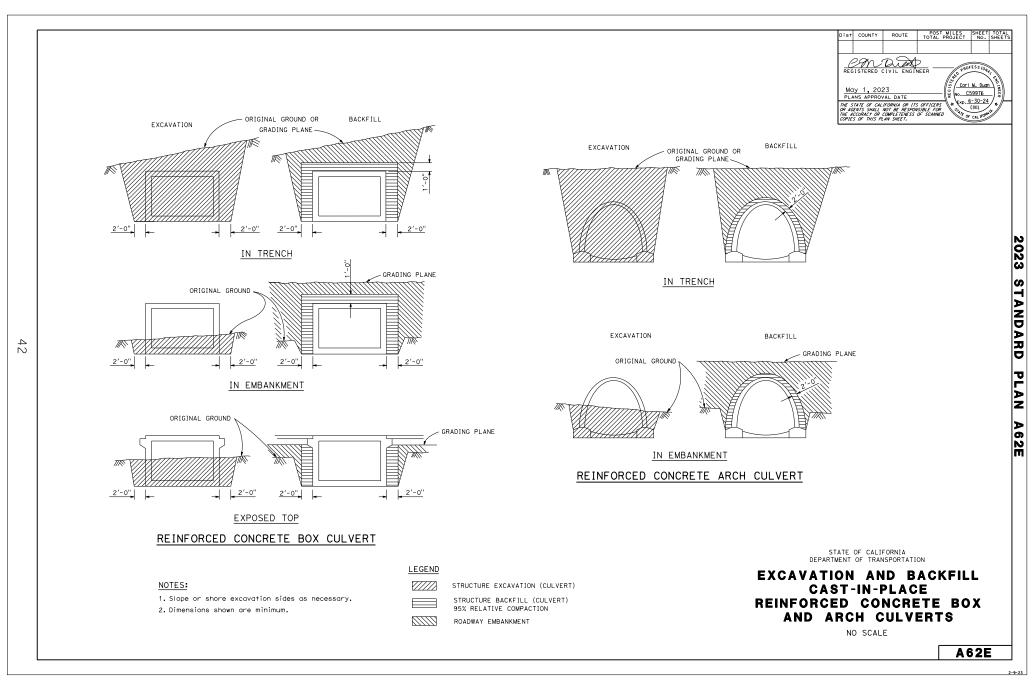
- a) Class II Special or stronger with Installation Type 1.
- b) Class II or stronger with Installation Type 2. c) Class X Special or stronger with Installation Type 3. Cover is defined as the maximum vertical distance from top of the pipe to finished grade within the length of any given culvert.
- 2. The class of RCP and Installation Type selected shall be the same throughout the length of any given culvert.
- 3. The "length of any culvert" is defined as the culvert between: a) Successive drainage structure (inlets, junction boxes, headwalls, etc.).
 - b) A drainage structure and the inlet or outlet end of the culvert.
 - c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
- 4. Elliptical shaped RCP shall not be used.
- 5. Bedding depth: 1/24 OD Min, not less than 3" for soil foundation; 1/2 OD Min, not less 6" for rock foundation.
- 6. Slurry cement backfill may be substituted for backfill in the outer bedding and haunch areas. If slurry is used, the outer and middle beddings shall be omitted. Prior to installation, the soil under the middle V_3 of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of 1 24 OD, but not less than 3". Where slurry cement backfill is used, clear distance to trench wall may be reduced as set forth in the Standard Specifications.
- Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimum.
- 8. Structure backfill for lower side in embankment installations shall be the same as in haunch. Lower side in trench installation shall at least have the same firmness as in baunch.
- 9. Where the pipe is placed in a trench, if the trench walls are sloped at 5 vertical to 1 horizontal or steeper for at least 90 percent of the trench height or up to not less than 12" from the grading plane, the firmness of the soil in the lower side need not be considered.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

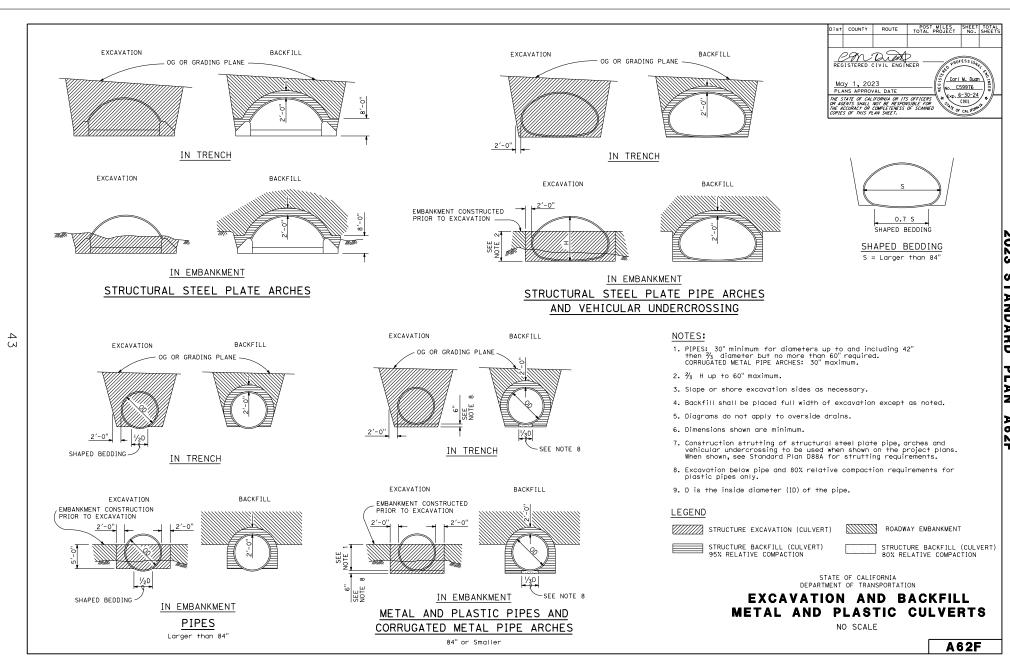
EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS INDIRECT DESIGN METHOD

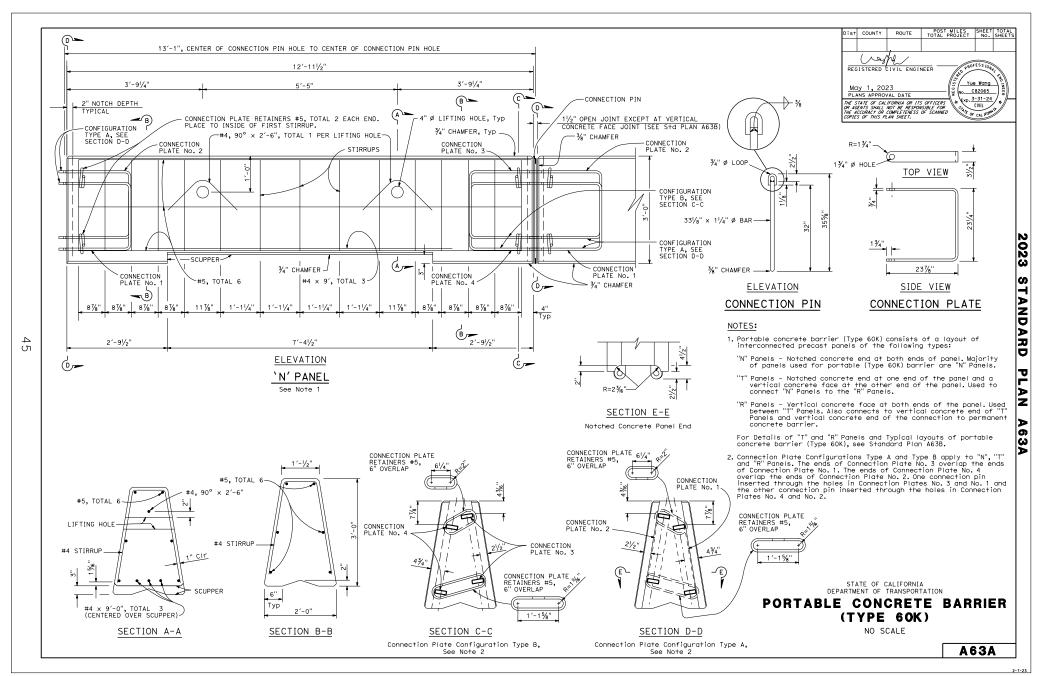
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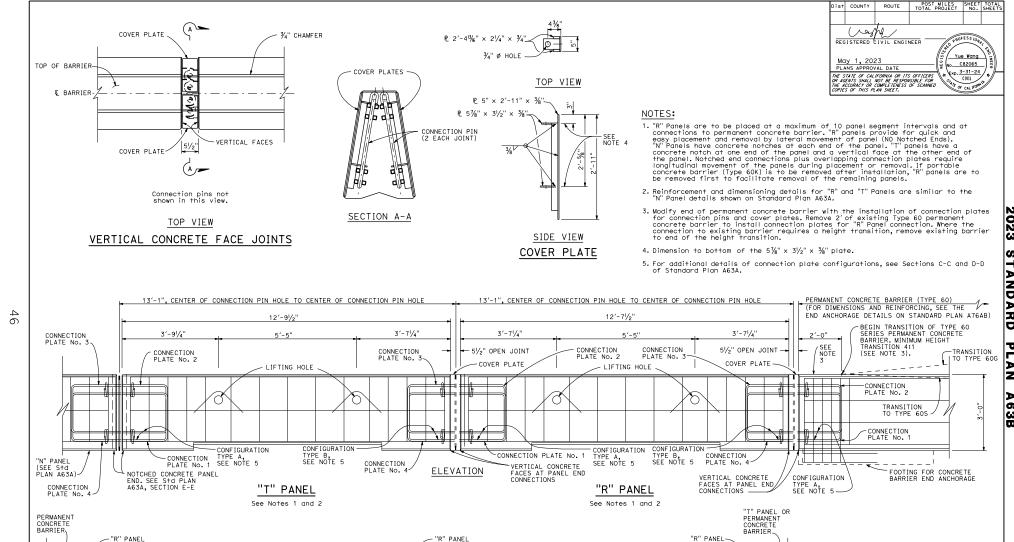
A62DA











"N" PANELS

"T" PANELS-

PLAN

TYPICAL PORTABLE CONCRETE BARRIER (TYPE 60K) LAYOUT

See Note 1

"T" PANEL-

"N" PANELS

A63B

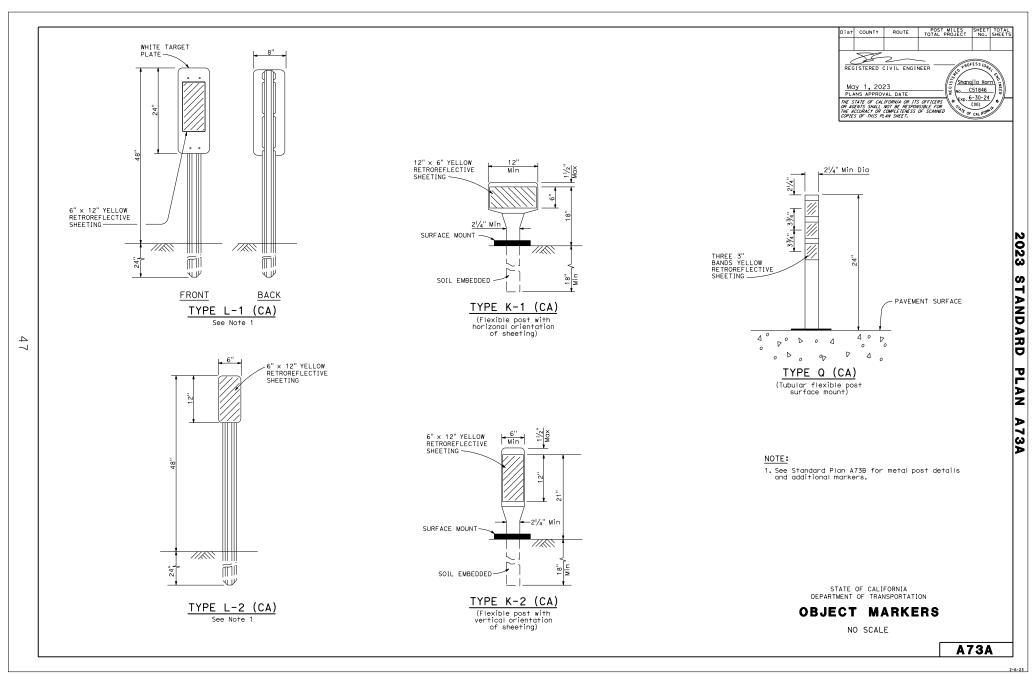
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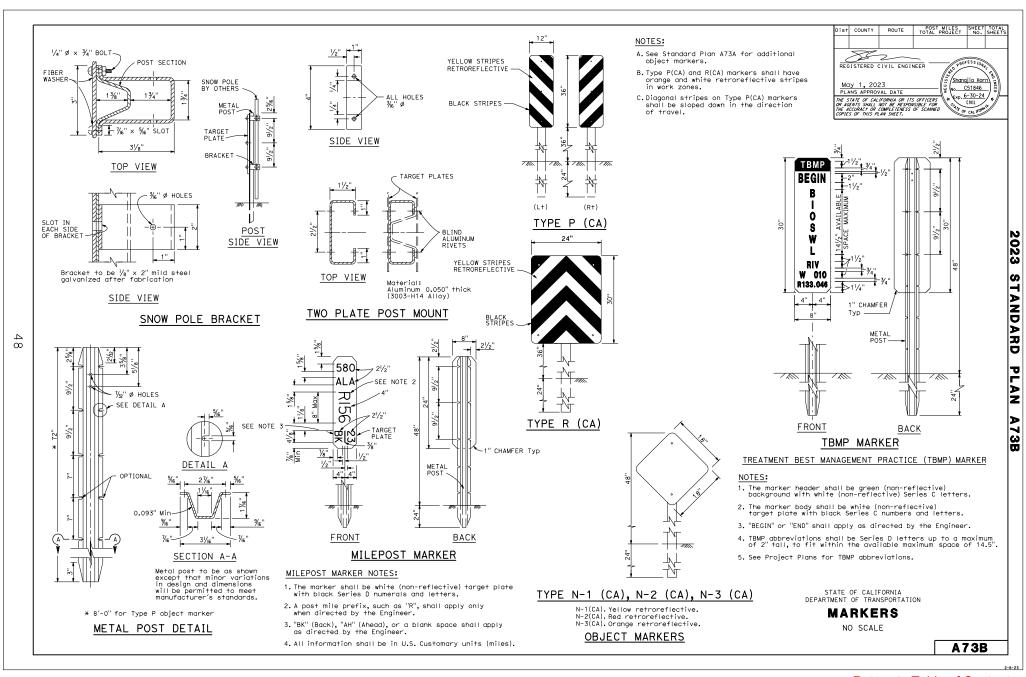
(TYPE 60K)

NO SCALE

DEPARTMENT OF TRANSPORTATION PORTABLE CONCRETE BARRIER

"T" PANEL





POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

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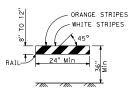
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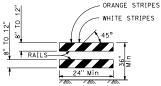
TABLE I - DELINEATORS RETROREFLECTIVE SHEETING TYPE FRONT BACK WHITE WHITE (SEE NOTE 1) WHITE NONE YELLOW NONE RED NONE

CHANNELIZERS





Ø



TYPE I BARRICADE

WHITE STRIPES 2 TYPE III BARRICADE

DELINEATORS

BARRICADES (See Note 3)

Only face of rails shown. Barricade construction materials and supports as specified in the specifications.

TABLE 2 - BARRICADES				
BARRICADE	TYPE I	TYPE II	TYPE III	
WIDTH OF RAIL	8" Min - 12" Max *	8" Min - 12" Max *	8" Min - 12" Max *	
LENGTH OF RAIL	24" Min	24" Min	48" Min	
WIDTH OF STRIPES * *	6"	6"	6"	
HEIGHT	36" Min	36" Min	60" Min	
NUMBER OF RETROREFLECTIVE RAIL FACES	2 (ONE EACH DIRECTION)	4 (TWO EACH DIRECTION)	3 IF FACING TRAFFIC IN ONE DIRECTION 6 IF FACING TRAFFIC IN TWO DIRECTION	

- * For the wooden option dimensions are nominal lumber dimensions.
- * * For rails less than 36" long, 4" wide stripes shall be used.

NOTE A:

Barricades to have a minimum of 270 square inches of retroreflective area facing traffic when used on freeways, expressways, and other high speed highways.

NOTES:

- 1. The retroreflective sheeting used on the back of delineator shall be a minimum size of 3" x 3".
- 2. The type of delineator to be installed will be designated on the plans.
- 3. All barricade stripes shall be retroreflective and sloped downward in the direction of the opened traffic lane.

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Mdy 1, 2023 PLANS APPROVAL DATE

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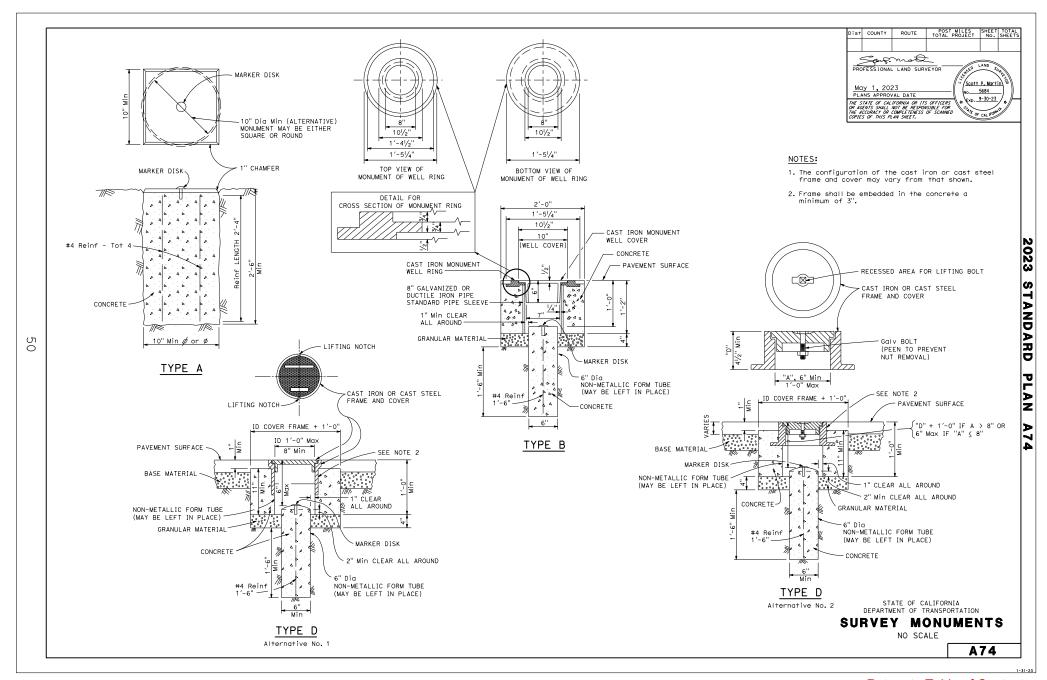
- 4. See Standard Plan A73B for Metal Post Details.
- 5. Unless shown otherwise on the plans, or as directed by the Engineer, the color of the retroreflective sheeting for permanent channelizers shall conform to the color of the pavement markings it supplements.
- 6. Except, Class 1 (Flexible Post) temporary delineators and temporary channelizers in work zones shall be orange post with white retroreflective sheeting.

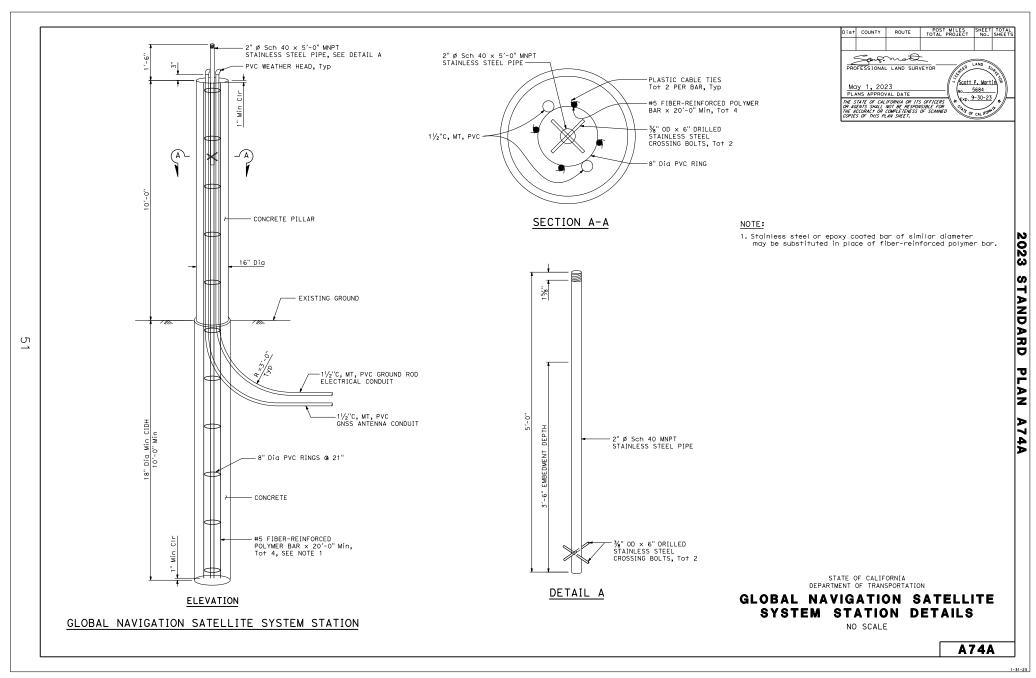
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DELINEATORS, CHANNELIZERS AND BARRICADES

NO SCALE

A73C





>

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

BRIDGE DECK #5 DOWELS @ 24

51/4 Mark Ballestine REGISTERED CIVIL ENGINEER ¾" CHAMFER OR Mark Ballentine 1/2" R (TYPICAL) May 1, 2023 C64101 PLANS APPROVAL DATE ī €×p.09-30-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET. - #5 Cont Tot 10, EVENLY SPACED Pvmt OR WELL COMPACTED BASE ROADBED SURFACES Max OFFSET 11/2" 24" 0% SLOPE SEE NOTE 4 -

CONCRETE BARRIER TYPE 60M DELINEATION

See Note 5

CONCRETE BARRIER TYPE 60MA

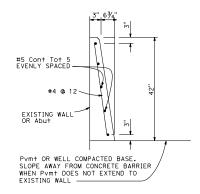
Details similar to Type 60M except as noted.

contains similar to type dom sheeps as note.

€ Conc BARRIER 51/4", 51/4" • • OPTIONAL Const Jt #4 BAR ROADBED STRUCTURAL SECTION Max Min 18 SEE NOTE 7 #4 \(\) @ 12 SEE NOTE 6 VARIES Pvm+ OR WELL COMPACTED BASE 0% SLOPE OFFSET ROADBED SURFACES

CONCRETE BARRIER TYPE 60MC

Details similar to Type 60M except as noted. Use concrete barrier end anchor when necessary. 36" roadbed surfaces offset shown.



CONCRETE BARRIER TYPE 60MD

See Note 8

CONCRETE BARRIER TYPE 60M

€ Conc BARRIER

NOTES:

- See Standard Plans A76AB and A76AC for details of Concrete Barrier Type 60M end anchors, connection to structures and transitions to Concrete Barrier Type 50 and Concrete Barrier Type 60MS.
- See Standard Plan A76C for Concrete Barrier Type 60M transitions at bridge column and sign pedestals.
- Where glare screen is required on Concrete Barrier Type 60M, use Concrete Barrier Type 60MG.
- 4. Where roadbed offset is greater than $1\frac{1}{2}$, see Concrete Barrier Type 60MC.
- 5. See Project Plans for barrier delineation locations.
- 6. Reinforcing stirrup not required for roadbed offsets less than 1'-0".
- 7. For roadbed surfaces offset greater than 1/2" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface for roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.
- For weep hole alignment and drainage details not shown, see Standard Plans B0-3 and B3-5.

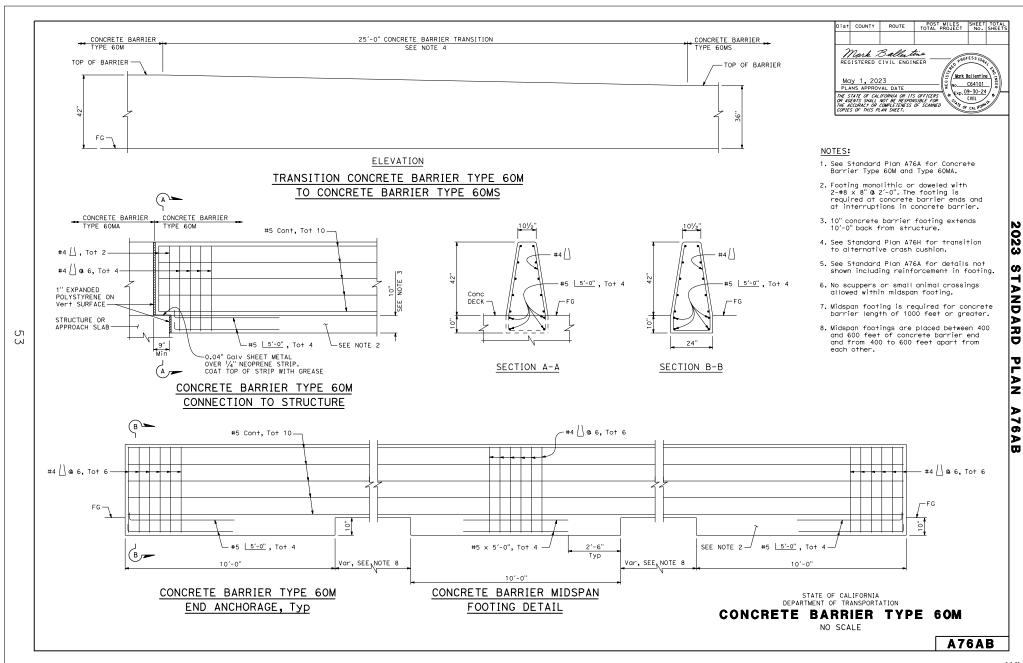
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

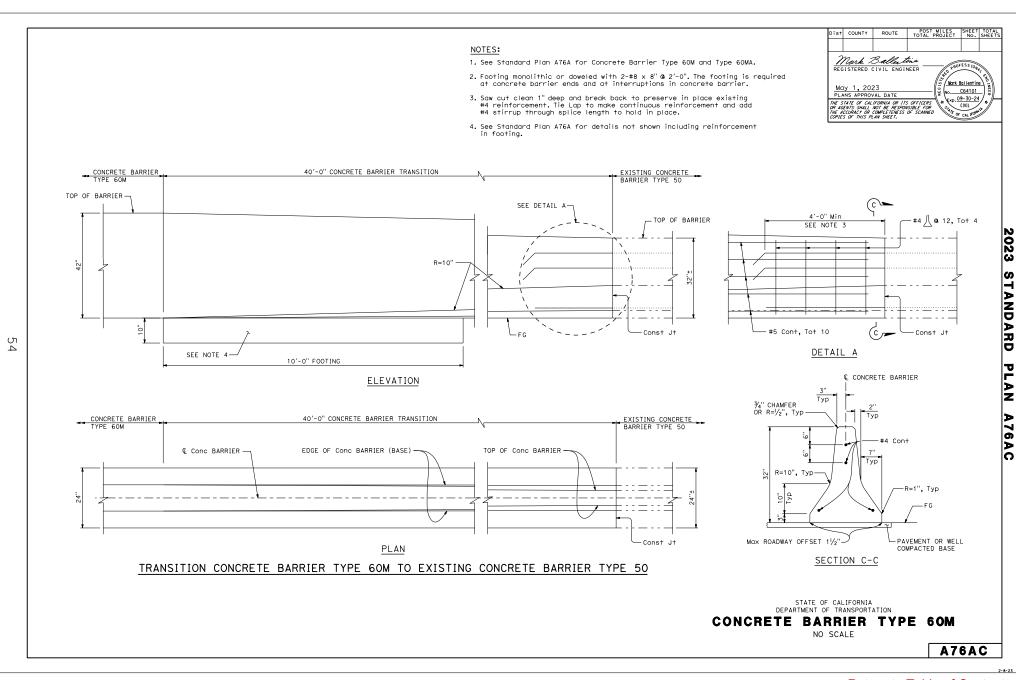
CONCRETE BARRIER TYPE 60M

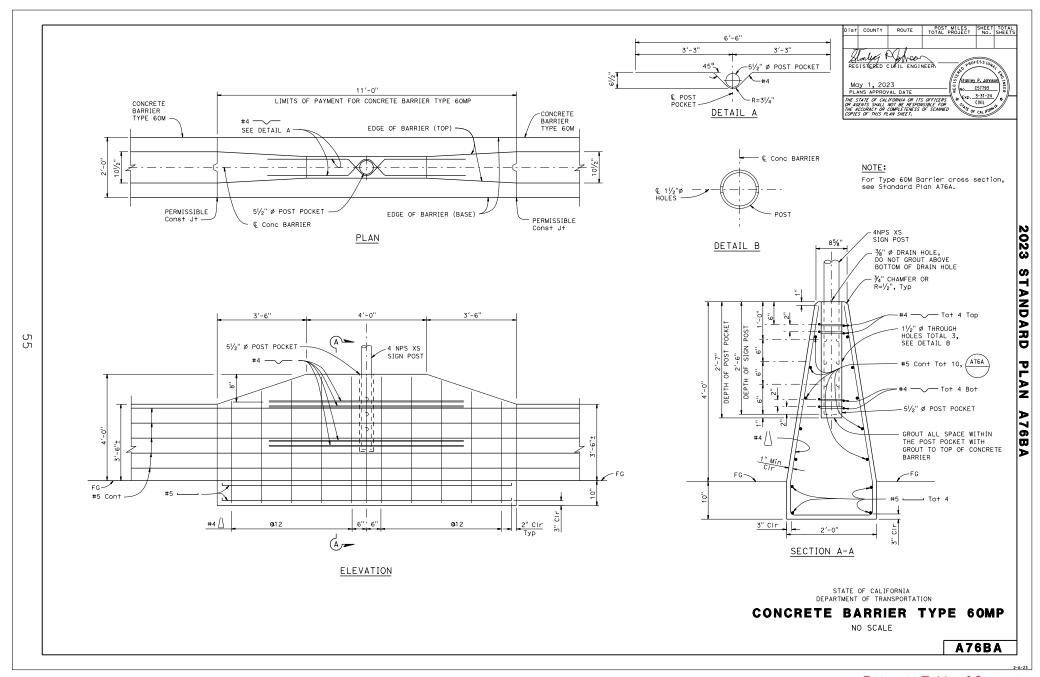
NO SCALE

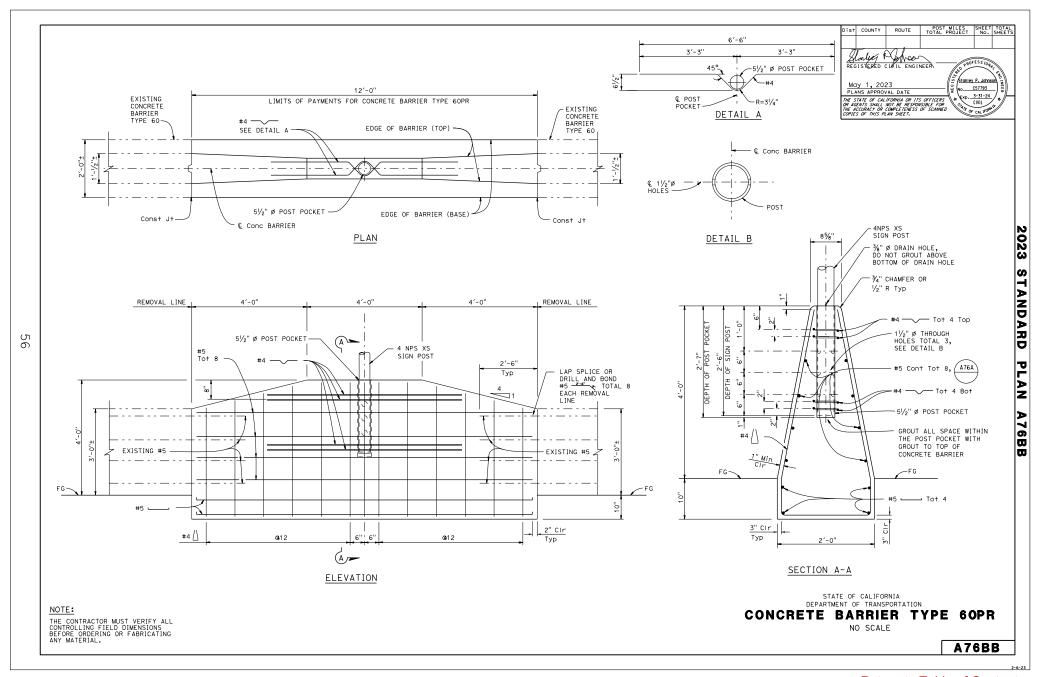
A76A

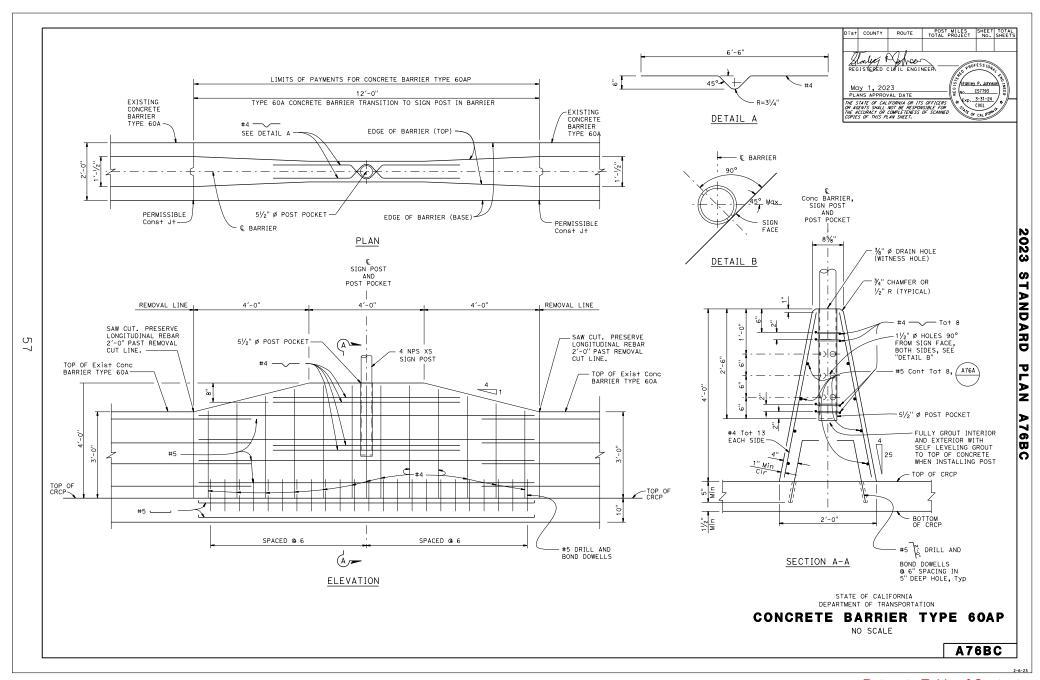
2-15-23

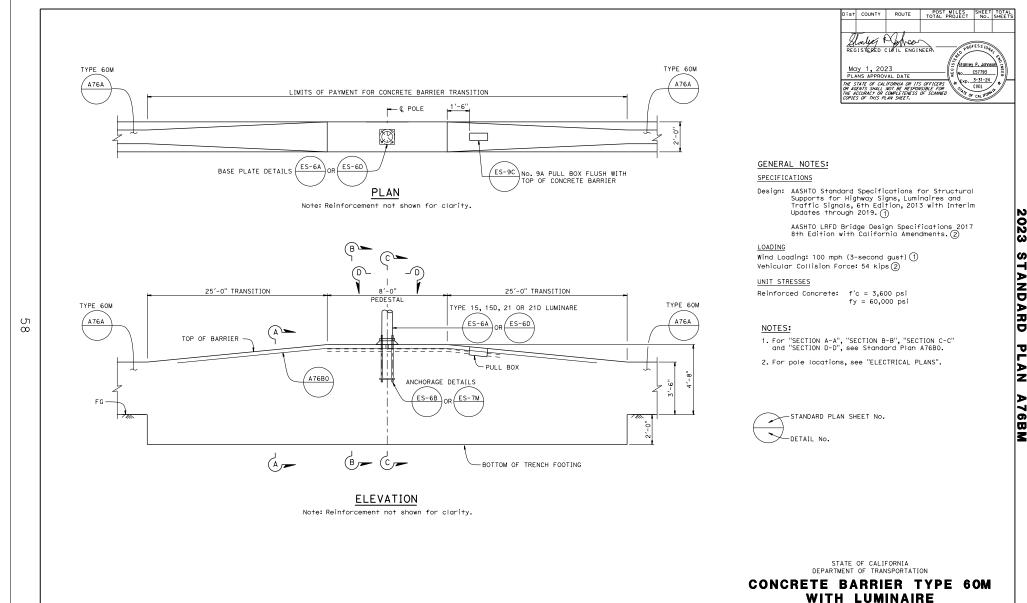






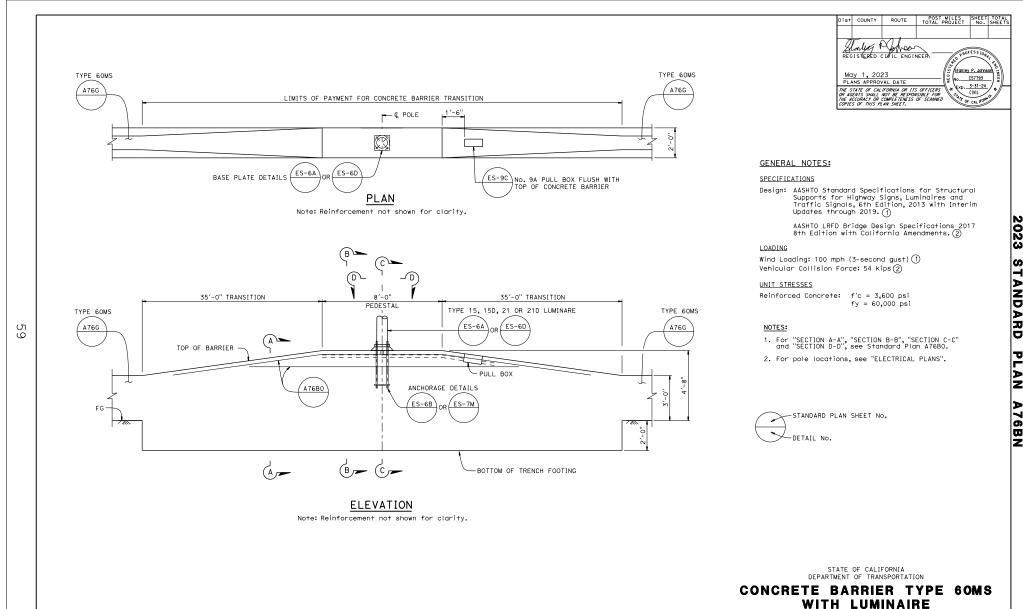






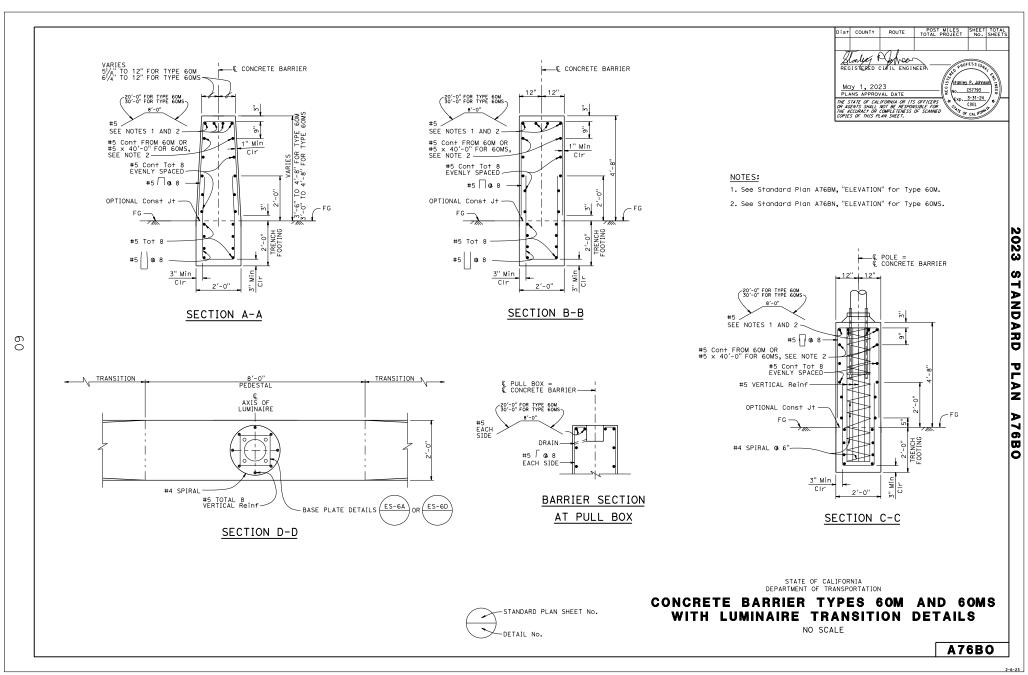
A76BM

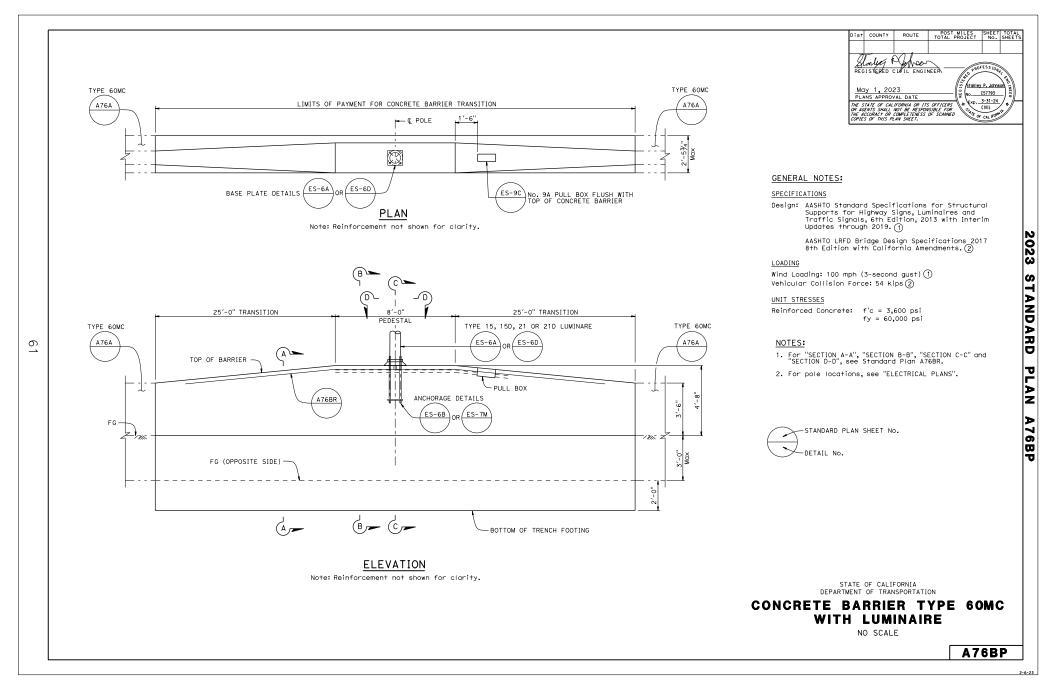
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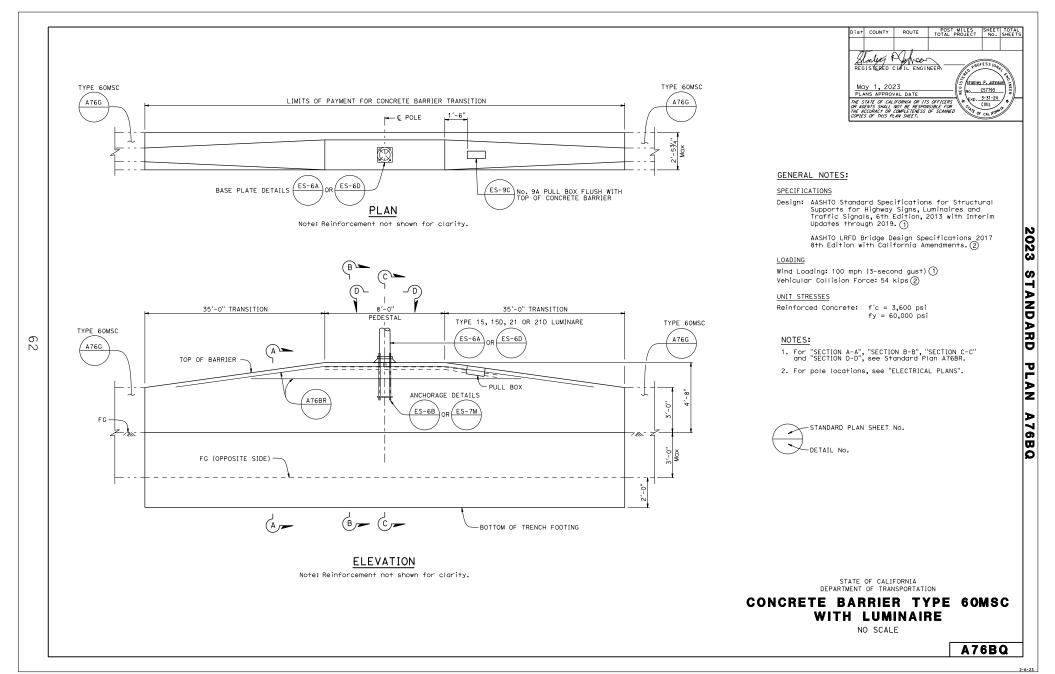


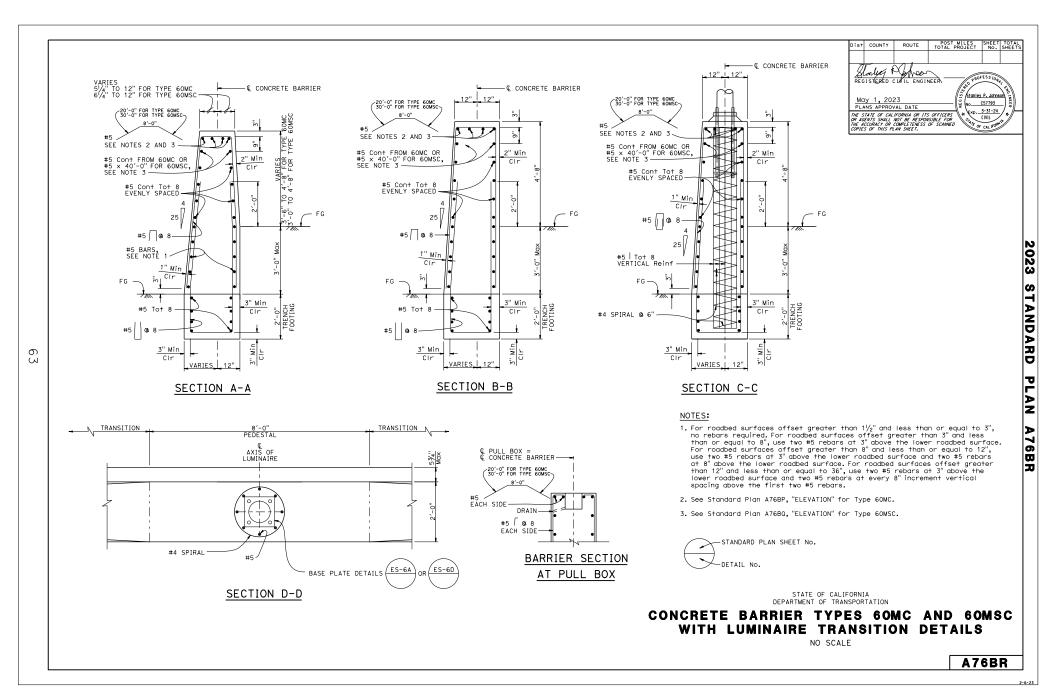
A76BN

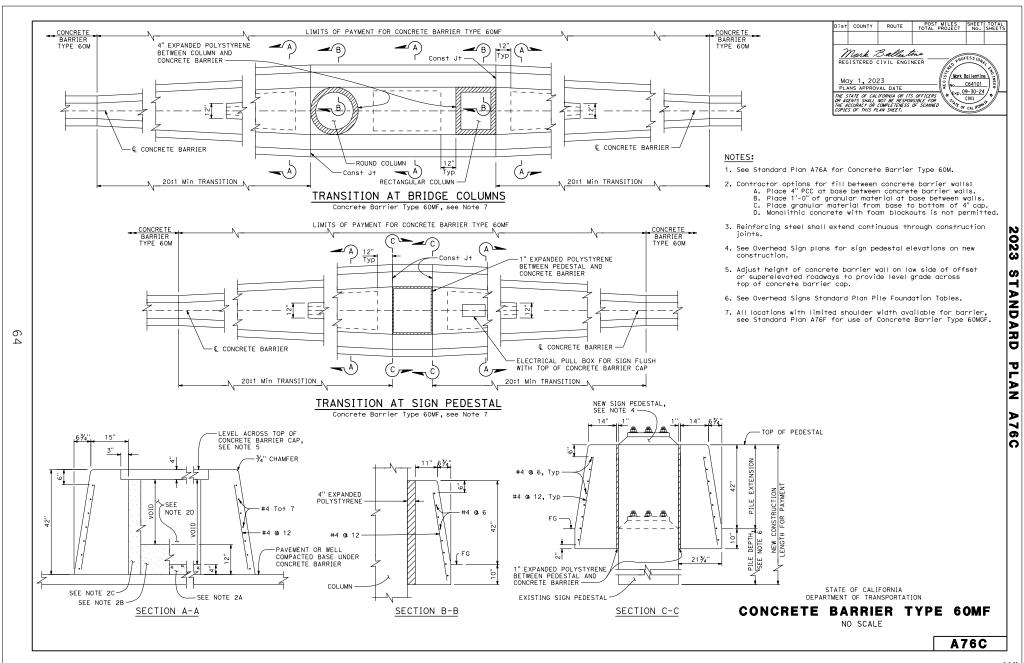
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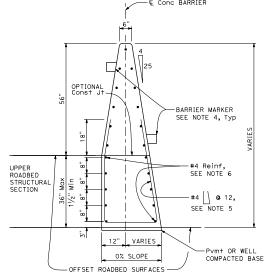








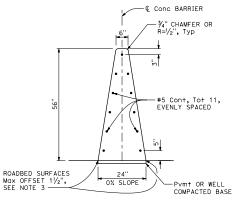
ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS



CONCRETE BARRIER TYPE 60MGC

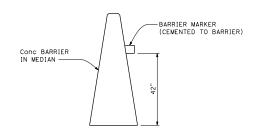
 Ω

Details similar to Type 60MG except as noted. 36" roadbed surfaces offset shown.



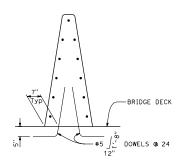
CONCRETE BARRIER TYPE 60MG

(Monolithic concrete glare screen/barrier)



CONCRETE BARRIER TYPE 60MG DELINEATION

See Note 4



CONCRETE BARRIER TYPE 60MGA

Details similar to Type 60MG except as noted.

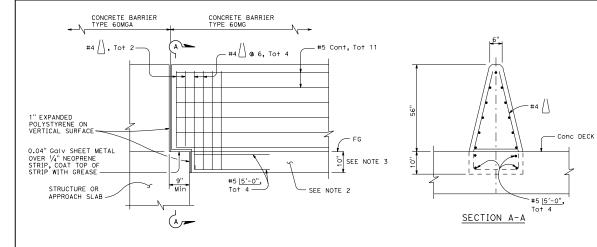
- 1. See Standard Plan A76E for details of Concrete Barrier Type 60MG end anchors, connection to structures and transitions to Concrete Barrier Type 60M.
- 2. See Standard Plan A76F for Concrete Barrier Type 60MG transitions at bridge column and sign pedestals.
- 3. Where roadbed offset is greater than $1\frac{1}{2}$, see Concrete Barrier Type 60MGC.
- 4. Barrier marker to be used when required by the Special Provisions. Bottom of barrier marker to be placed 42" above the roadway.
- 5. Reinforcing stirrup not required for offsets less than 1'-0".
- 6. For roadbed surfaces offset greater than $1/2^\circ$ and less than or equal to 3", no additional reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" doove the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MG

NO SCALE

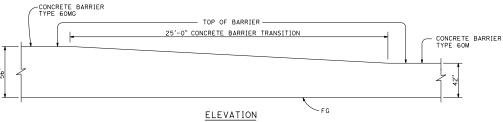
A76D



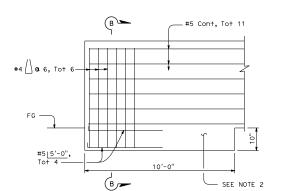
Dist COUNTY POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS Mark Ballestine REGISTERED CIVIL ENGINEER Mark Ballentine Mdy 1, 2023 PLANS APPROVAL DATE C64101 €×p.09-30-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

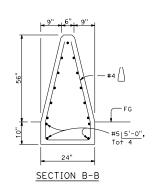
- 1. See Standard Plan A76D for Concrete Barrier Type 60MG and Type 60MGA.
- 2. Footing monolithic or doweled with 2-#8 x 8" @ 2'-0". The footing is required at concrete barrier ends and at interruptions in concrete barrier.
- 3. 10" concrete barrier footing extends 10' back from structure.
- 4. See Standard Plan A76H for transition to crash cushion.
- 5. See Standard Plan A76AC for transition to existing Type 50 barrier.
- 6. Top of barrier elevation change should be no less than 20:1 for change of concrete barrier types.



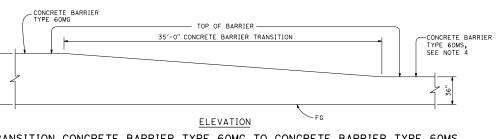
CONCRETE BARRIER TYPE 60MG CONNECTION TO STRUCTURE



0



TRANSITION CONCRETE BARRIER TYPE 60MG TO CONCRETE BARRIER TYPE 60M



TRANSITION CONCRETE BARRIER TYPE 60MG TO CONCRETE BARRIER TYPE 60MS

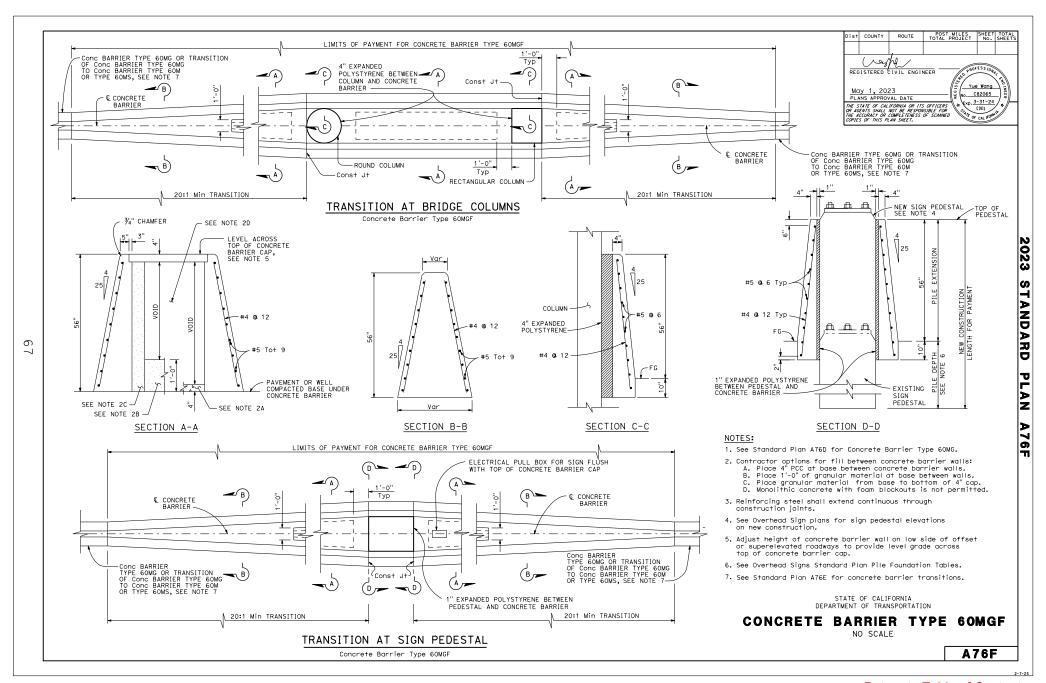
CONCRETE BARRIER TYPE 60MG END ANCHORAGE

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MG

NO SCALE

A76E



ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Yue Wang

C82065 Exp. 3-31-24

CIVIL

REGISTERED CIVIL ENGINEER

Mdy 1, 2023 PLANS APPROVAL DATE

BARRIER MARKER (CEMENTED TO BARRIER) -CONCRETE BARRIER IN MEDIAN

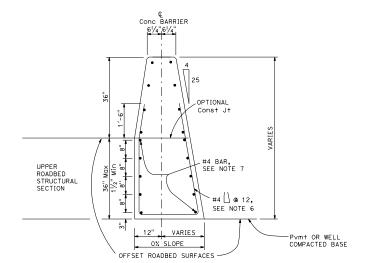
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET. BRIDGE DECK DOWELS @ 24

CONCRETE BARRIER TYPE 60MS

CONCRETE BARRIER TYPE 60MS DELINEATION See Note 5

CONCRETE BARRIER TYPE 60MSA

Details similar to Type 60MS except as noted.



CONCRETE BARRIER TYPE 60MSC

Use concrete barrier end anchor when necessary.

Details similar to Type 60MS except as noted.

36" roadbed surfaces offset shown.

NOTES:

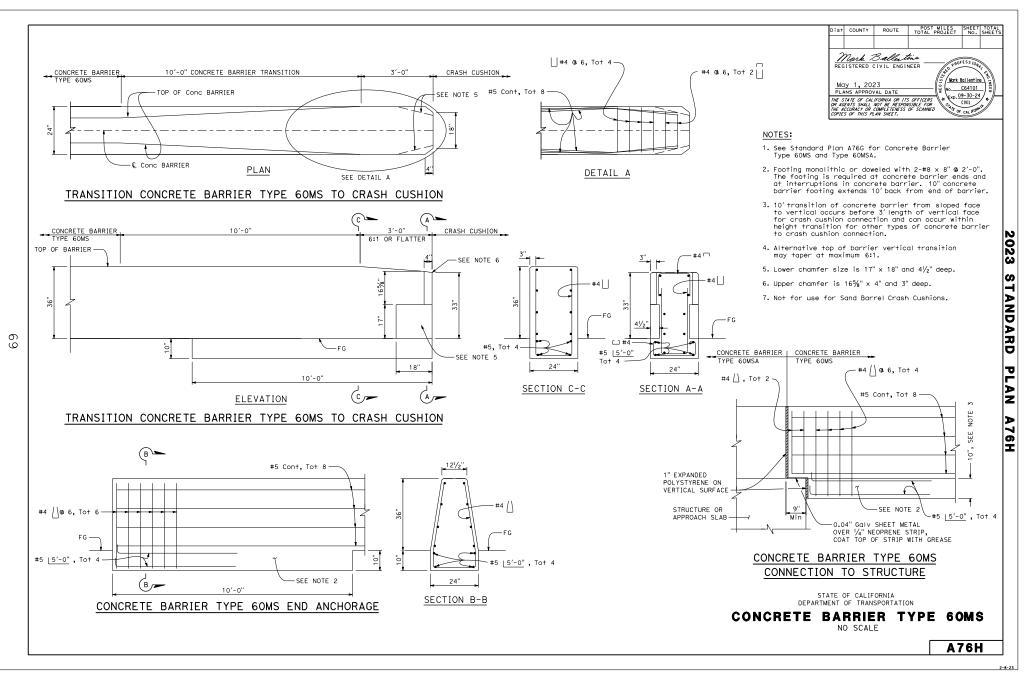
- 1. See Standard Plan A76H for details of Concrete Barrier Type 60MS end anchors, connection to structures and transitions to Concrete Barrier Type 50.
- 2. See Standard Plan A76I for Concrete Barrier Type 60MS transitions at bridge column and sign pedestals.
- Where glare screen is required on top of concrete barrier, use Concrete Barrier Type 60MG.
- 4. Where roadbed offset is greater than $1\frac{1}{2}$, see Concrete Barrier Type 60MSC.
- 5. Barrier delineation to be used when required by the Special Provisions.
- 6. Reinforcing stirrup not required for roadbed offsets less than 1'-0".
- 7. For roadbed surfaces offset greater than 1/2" and less than or equal to 3", no reinforcement required. For roadbed surfaces offset greater than 3" and less than or equal to 8", use two #4 Reinf at 3" above the lower roadbed surface. For roadbed surfaces offset greater than 8" and less than or equal to 12", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at 8" above the lower roadbed surface. For roadbed surfaces offset greater than 12" and less than or equal to 36", use two #4 Reinf at 3" above the lower roadbed surface and two #4 Reinf at every 8" increment vertical spacing above the first two #4 Reinf.

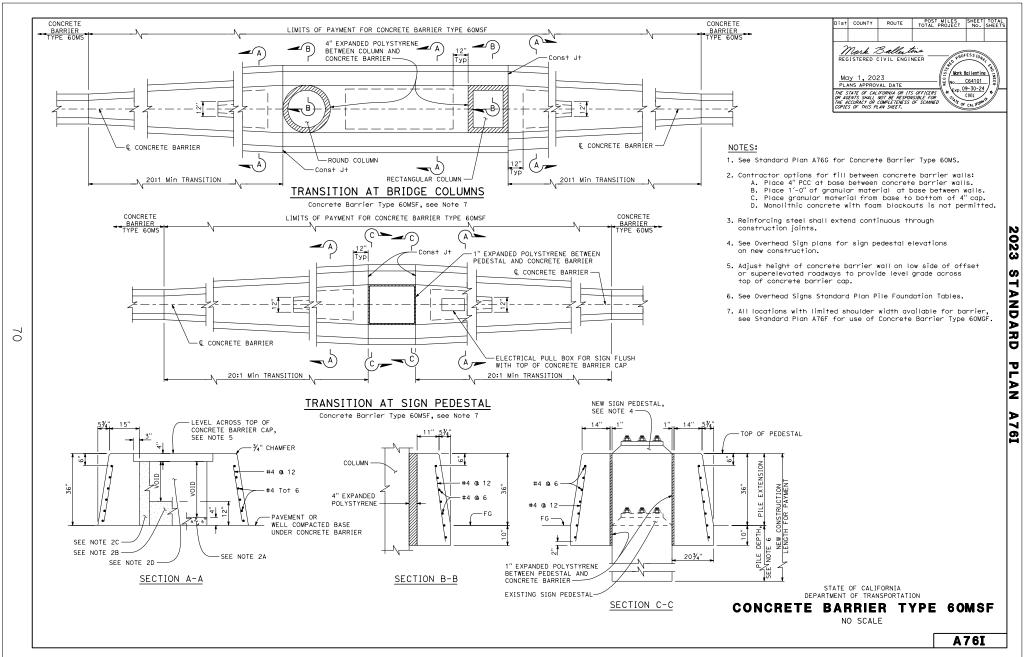
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60MS

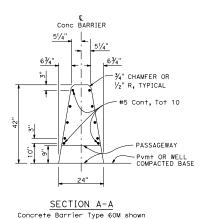
NO SCALE

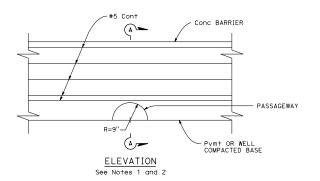
A76G





- Wildlife Passageway (Type MS) typically used for crossing of small size animals.
- 2. See Standard Plan A76A for typical details of Concrete Barrier Type 60M.
- 3. Wildlife Passageway (Type MS) should be placed a minimum of 100 feet apart.



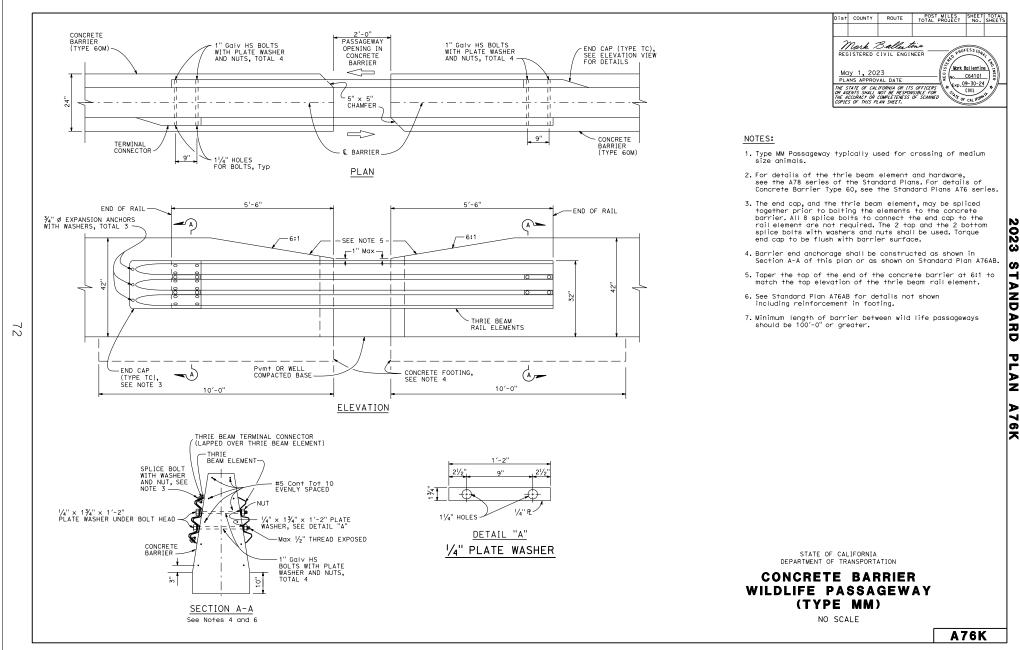


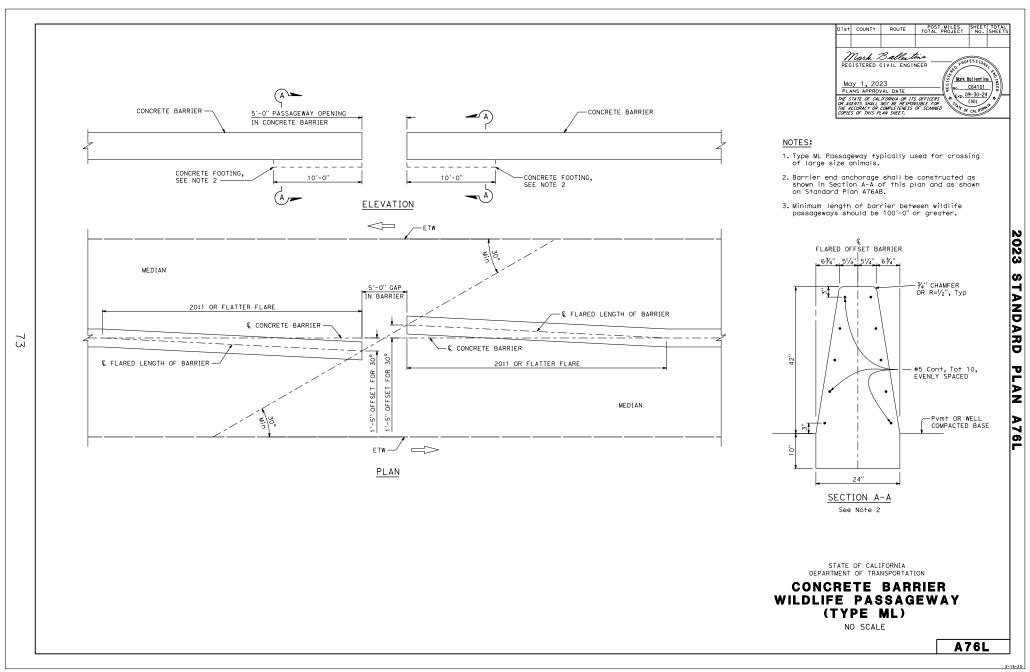
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

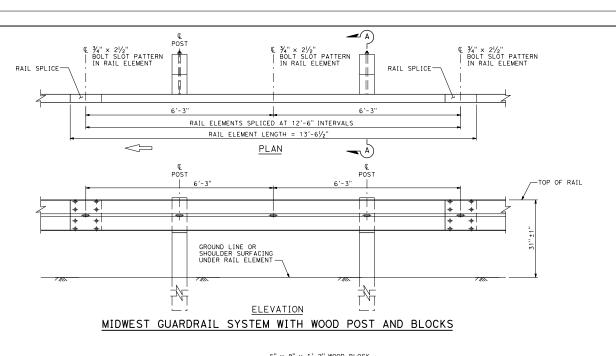
CONCRETE BARRIER WILDLIFE PASSAGEWAY (TYPE MS)

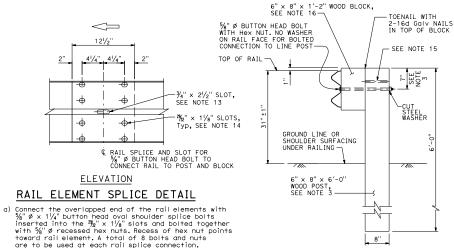
NO SCALE

A76J









b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

c) Where end can is to be attached to the end of a rail

bolts and nuts are to be used.

element, a total of 4 of the above described splice

SECTION A-A
TYPICAL WOOD LINE
POST INSTALLATION
See Note 4

SEE NOTE 13.

SEE NOTE 14, Typ

O.108" NOMINAL

SECTION THRU RAIL ELEMENT

DIST COUNTY ROUTE TOTAL PROJECT SHEET TOTAL PROJECT NO. SHEETS OF THE SHEET TOTAL PROJECT NO. SHEETS OF THE SHEET TOTAL PROJECT NO. SHEETS OF THE SHEETS OF

NOTES:

- 1. For details of steel post installations, see Standard Plan A77L2.
- For details of standard hardware used to construct MGS, see Standard Plan A77M1.
- For details of wood posts and wood blocks used to construct MGS, see Standard Plan A77N1.
- 4. For additional installation details, see Standard Plan A77N3.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- For MGS typical layouts, see the A77P, A77Q and A77R series of Standard Plans.
- If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
- 8. For MGS end anchor details, see Standard Plans A77S1 and A77T2.
- For details of MGS transition to bridge railing, see Standard Plan A77U4.
- For additional details of MGS connection to bridge railing, see Standard Plans A77U1, A77U2 and A77V1.
- 11. For MGS connection details to abutments and walls, see Standard Plans A77U3A and A77U3B.
- 12. For typical MGS delineation and dike positioning details, see Standard Plan A77N4.
- Slotted hole for bolted connection of rail element to block and post.
- 14. Slotted holes for splice bolts to overlap ends of rail element.
- Additional hole in uppermost portion of line post is for potential future adjustments of railing height. See Standard Plan A77N1.
- 16. 6" \times 12" \times 1'-2" block must be used with 6" Type A dike.
- 17. Install posts in soil.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD RAILING SECTION (WOOD POST WITH WOOD BLOCK)

NO SCALE

A77L1

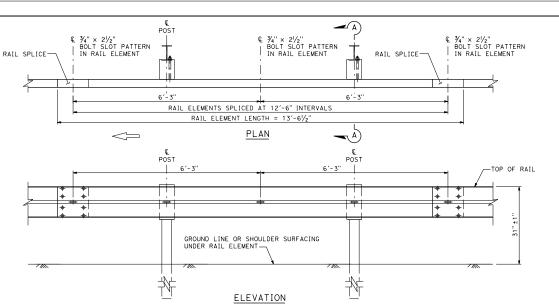
2-15-23

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

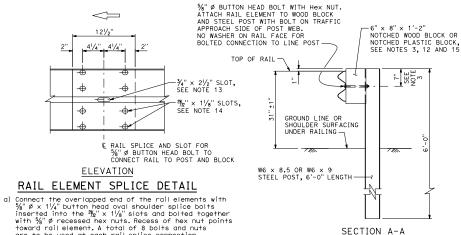
Mark Ballentine

€×p.09-30-24

C64101



MIDWEST GUARDRAIL SYSTEM WITH STEEL POSTS AND NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCKS



TYPICAL STEEL LINE

POST INSTALLATION

See Note 4

are to be used at each rail splice connection.

b) The ends of the rail elements are to be overlapped in the direction of traffic (see details).

 Ω

c) Where end cap is to be attached to the end of a rail element, a total of 4 of the above described splice bolts and nuts are to be used. 3/4"

3/6" TOLERANCE

3/6" TOLERANCE

11/8"

12

13

14

15

16

SYMMÉTRICAL ABOUT © ©

SEE NOTE 13

SEE NOTE 14, Typ

0.108" NOMINAL

SECTION THRU RAIL ELEMENT

NOTES:

1. For details of wood post installations, see Standard Plan A77L1.

Mark Ballestine REGISTERED CIVIL ENGINEER

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May 1, 2023

PLANS APPROVAL DATE

- For details of standard hardware used to construct MGS, see Standard Plan A77M1.
- For details of steel posts and notched wood blocks used to construct MGS, see Standard Plan A77N2.
- 4. For additional installation details, see Standard Plan A77N3.
- 5. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- For MGS typical layouts, see the A77P, A77Q and A77R series of Standard Plans.
- 7. If railing is connected to terminal system end treatment, use 31" height terminal system end treatment.
- 8. For MGS end anchor details, see Standard Plans A77S1 and A77T2.
- For details of MGS transition to bridge railing, see Standard Plan A77U4.
- For additional details of MGS connection to bridge railings, see Standard Plans A77U1, A77U2 and A77V1.
- For dike positioning and MGS delineation details, see Standard Plan A77N4.
- 12. Notched face of block faces steel post.
- Slotted hole for bolted connection of rail element to block and post.
- 14. Slotted holes for splice bolts to overlap ends of rail element.
- 15.6" \times 12" \times 1'-2" block must be used with 6" Type A dike.
- 16. Install posts in soil.

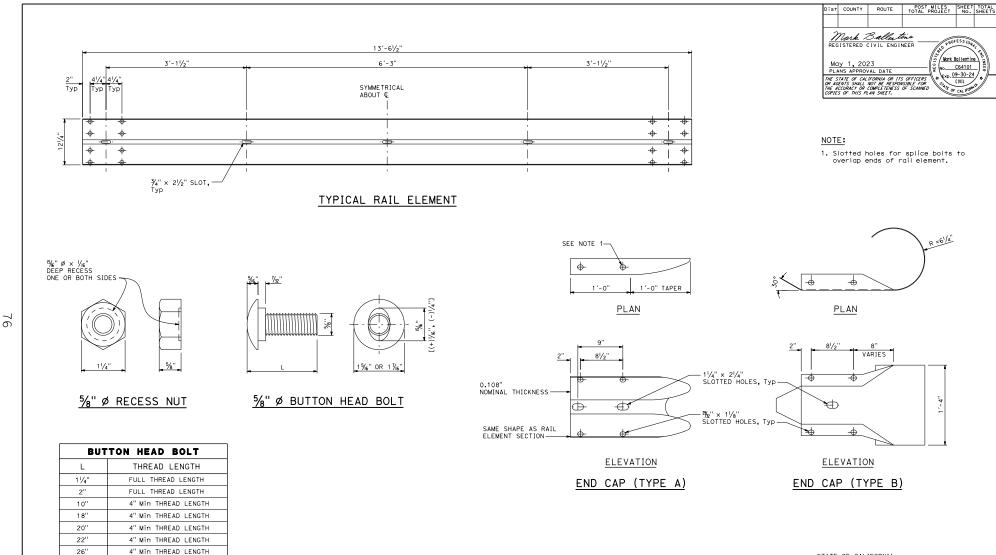
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM STANDARD RAILING SECTION (STEEL POST WITH NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCK)

NO SCALE

A77L2

.



4" Min THREAD LENGTH 2" Min THREAD LENGTH

4" Min THREAD LENGTH

** For nested rail applications

** 2¾"

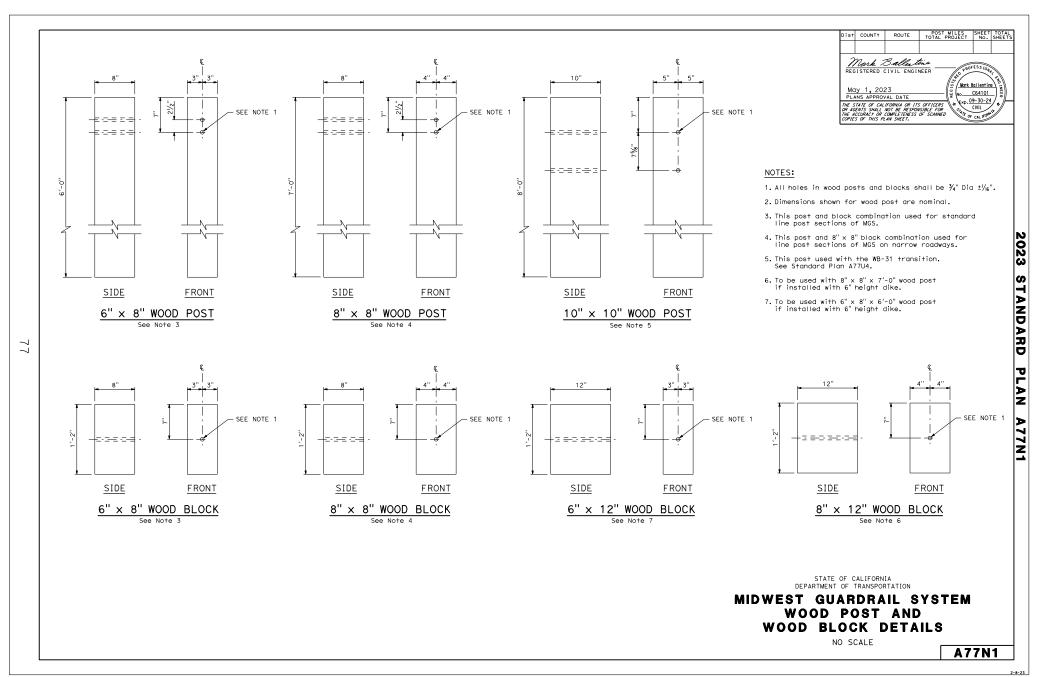
** 19"

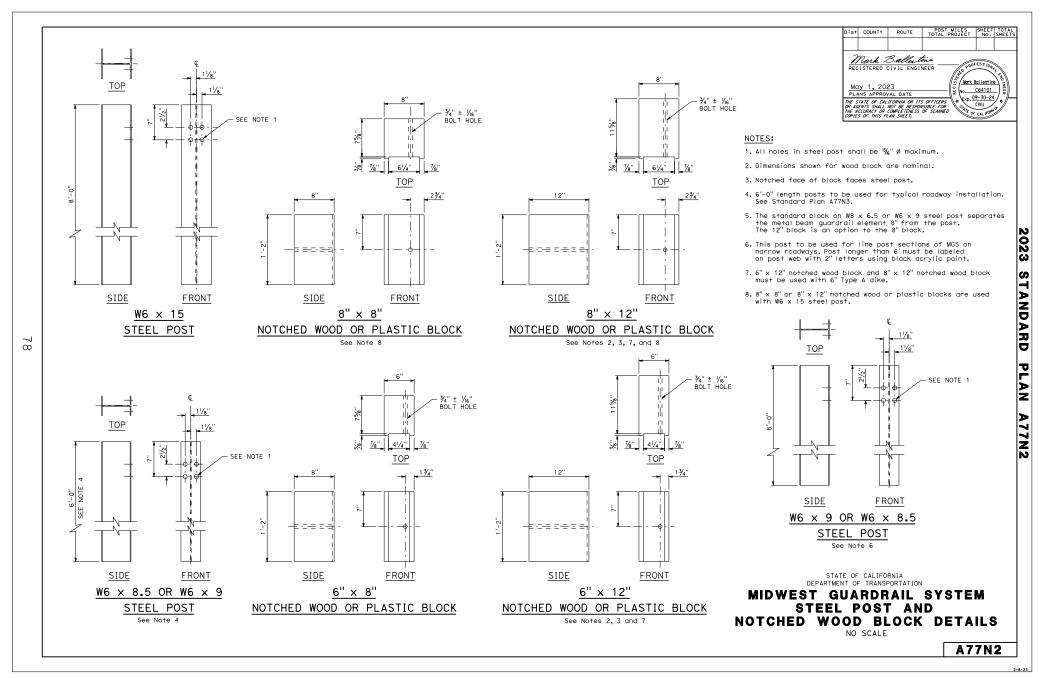
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

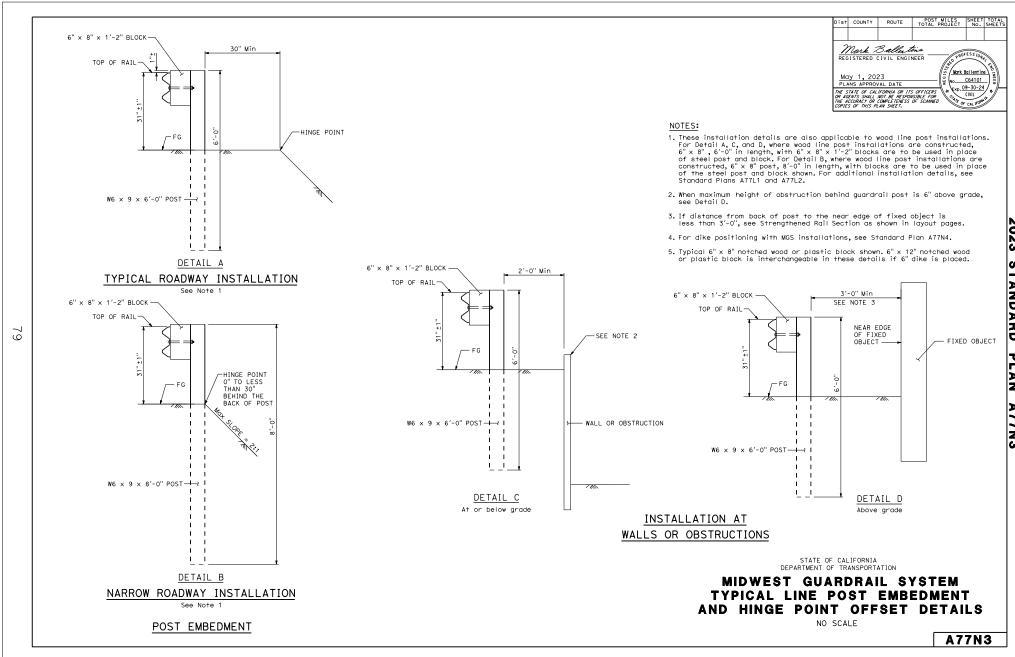
MIDWEST GUARDRAIL SYSTEM STANDARD HARDWARE

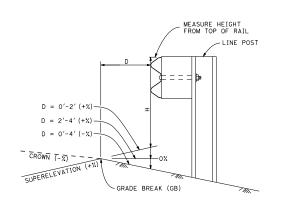
NO SCALE

A77M1





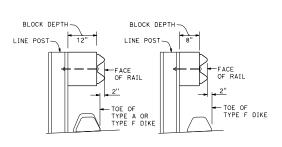




D = DISTANCE, GB TO FACE OF RAIL H = HEIGHT AT FACE OF RAIL FROM EXTENDED LINE, BASED ON D

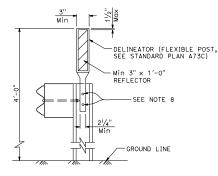
 $H = 31" \pm 1"$ FOR MGS $H = 32" \pm 1"$ FOR THRIE BEAM (NOT SHOWN)

MEASURE HEIGHT DETAIL AT GRADE BREAK (GB)



GUARDRAIL DIKE POSITIONING

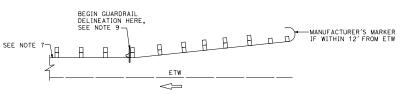
Standard position for new or existing dike or curb, see Notes 2 through 6



GUARDRAIL DELINEATION

NOTES:

- 1. Details shown on this sheet apply to w-beam guardrail and thrie beam.
- 2. Dike must be placed in the standard position unless otherwise shown. For curb and dike details, see Standard Plans A87A and A87B.
- 3. See Standard Plans for dike type and placement within and near terminal systems.
- 4. See Standard Plan A77S1 for dike placement near SFT-M end anchor.
- 5. The maximum height of the dike or curb shall be 6" for MGS with 12" blocks.
- 6. When shown on plans, front toe of dike may extend up to 7" in front of rail face when used with 12" blocks.
- 7. Do not install marker on the trailing end of a guardrail run.
- 8. Use 1/4" 20 self-tapping screws in 0.22" Ø holes or 1/4" bolts in 1/3" Ø holes for steel post, or use 16d galv nails for wood post.
- 9. When guardrail end treatment is placed in a flared or offset configuration, always use at least one delineator at location shown. See project plans for other placement of guardrail delineation.
- 10. When installing MGS with dike in areas requiring snow removal or frequently plowed areas, use 12" blocks.
- 11. Do not place mountable dike under guardrail.

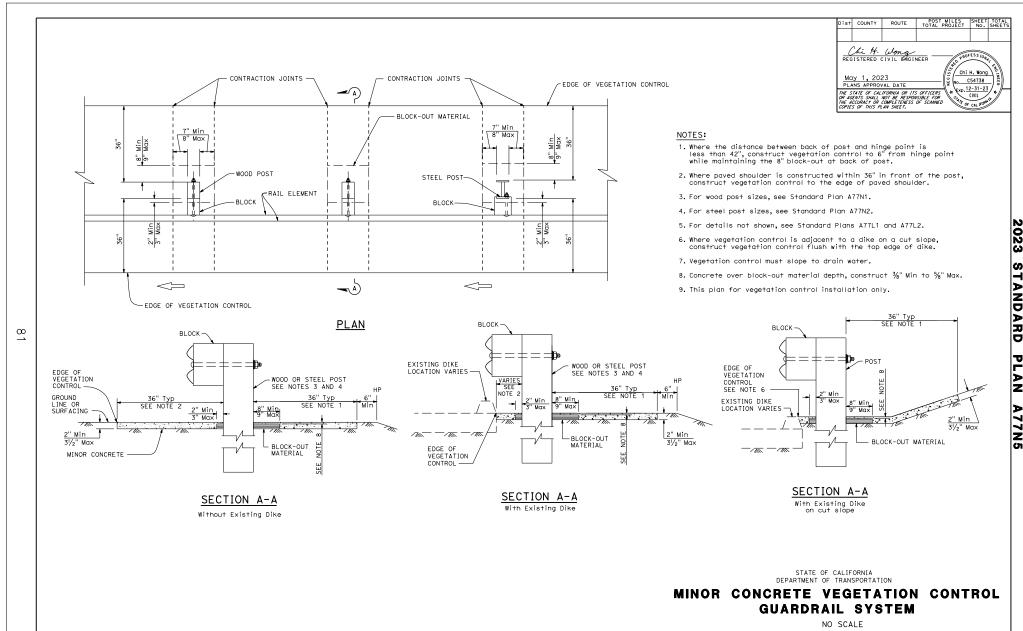


MARKER PLACEMENT GUARDRAIL DELINEATION

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

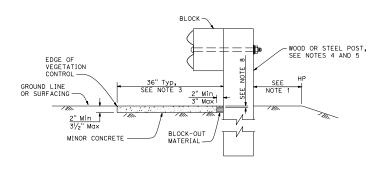
MIDWEST GUARDRAIL SYSTEM TYPICAL RAILING DELINEATION AND DIKE POSITIONING DETAILS

NO SCALE





- 1. Use the details on this sheet when the length from the back of post to the hinge point is less than 18". Use the details on Standard Plan 477N5 when the length from the back of the post to the hinge point is greater than 18".
- 2. Construct vegetation control flush with the back edge of post.
- 3. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
- 4. For wood post sizes, see Standard Plan A77N1.
- 5. For steel post sizes, see Standard Plan A77N2.
- 6. For details not shown, see Standard Plans A77L1 and A77L2.
- 7. Vegetation control must slope to drain water.
- 8. Concrete over block-out material depth, construct $\frac{3}{6}$ " Min to $\frac{5}{6}$ " Max.
- 9. This plan for vegetation control installation only.



WOOD POST

CONTRACTION JOINTS -

BLOCK

RAIL ELEMENT

8" Max

-EDGE OF VEGETATION CONTROL

Ä.

SECTION A-A

PLAN

BLOCK-OUT MATERIAL

STEEL POST-

BLOCK-

 \triangleleft

-EDGE OF VEGETATION

7" Min 8" Max

M i X

2 5

CONTRACTION JOINTS

Without Existing Dike

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

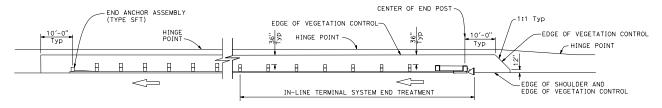
MINOR CONCRETE VEGETATION CONTROL **GUARDRAIL SYSTEM** NARROW VEGETATION CONTROL INSTALLATION

NO SCALE

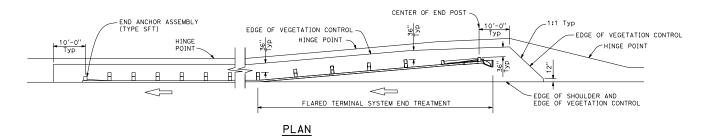
A77N5A



- See Standard Plan A77N5 for additional vegetation control details.
- 2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post.
- 3. Vegetation control must slope to drain water.
- 4. This plan for vegetation control installation only.



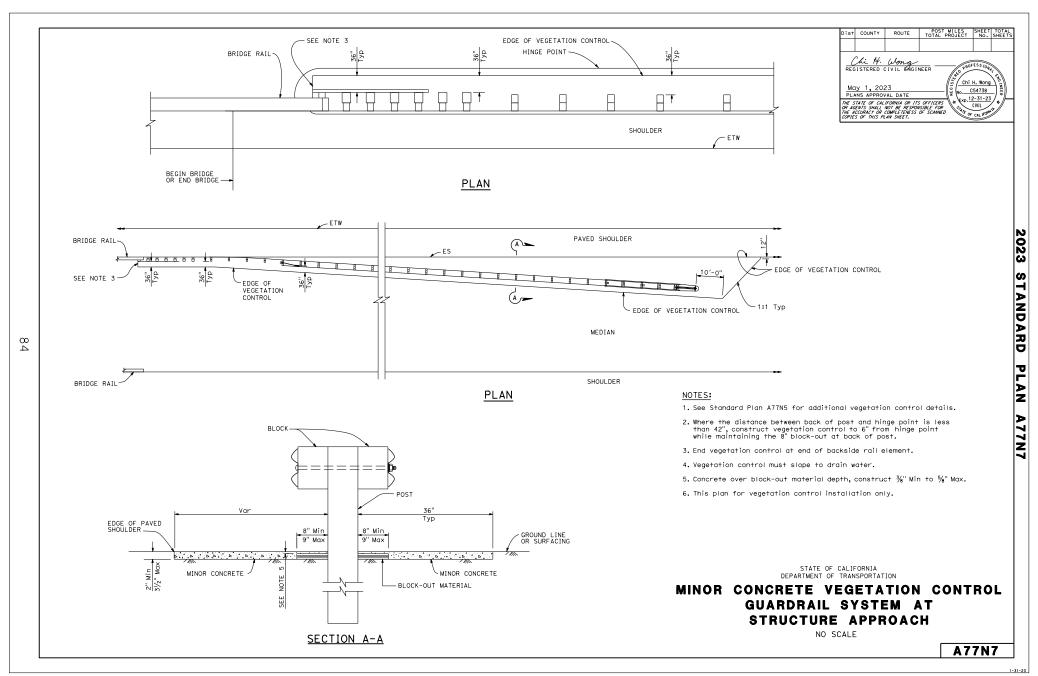
PLAN



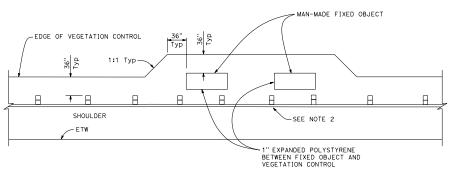
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM FOR TERMINAL SYSTEM END TREATMENTS

NO SCALE



- 1. See Standard Plan A77N5 for additional vegetation control details.
- 2. Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
- 3. Vegetation control must slope to drain water.
- 4. This plan for vegetation control installation only.



85

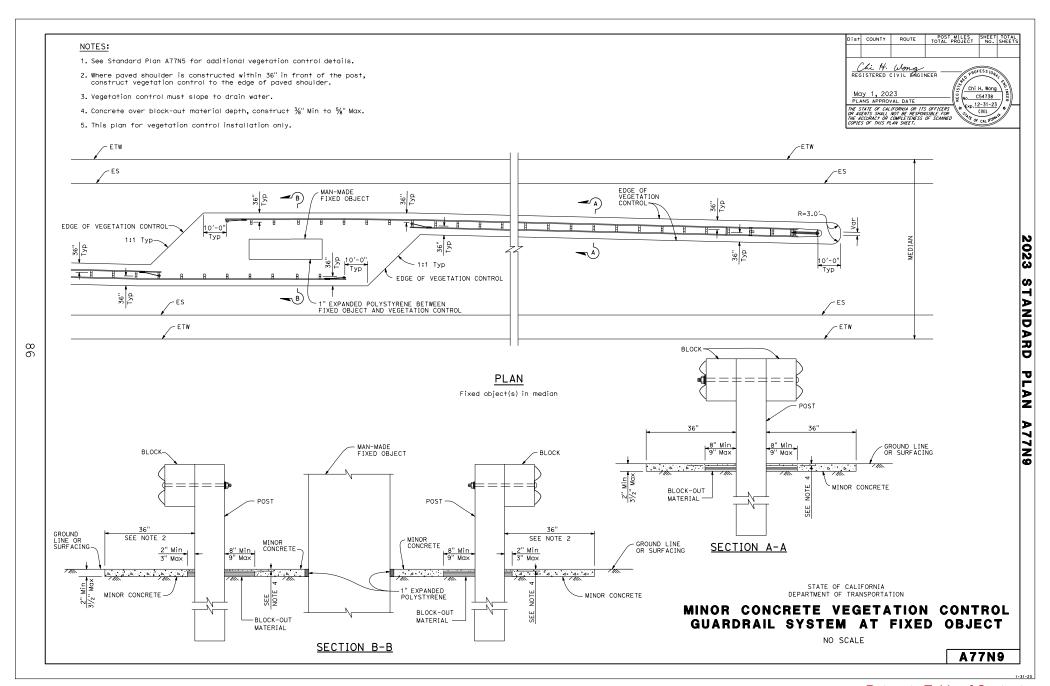
PLAN

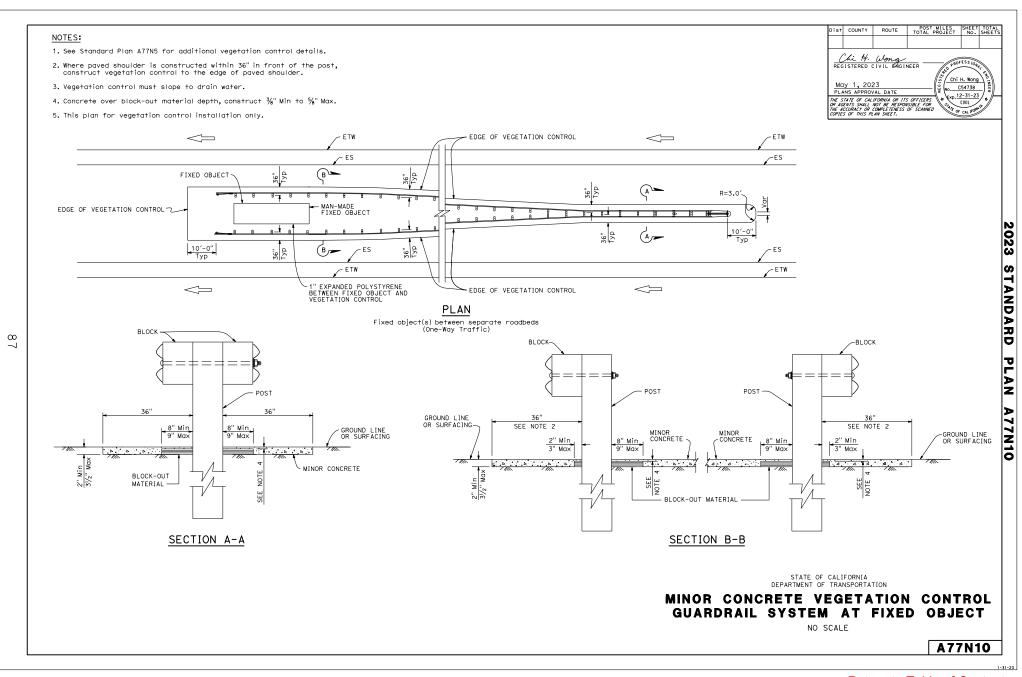
Fixed object(s) on shoulder

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL GUARDRAIL SYSTEM AT FIXED OBJECT

NO SCALE

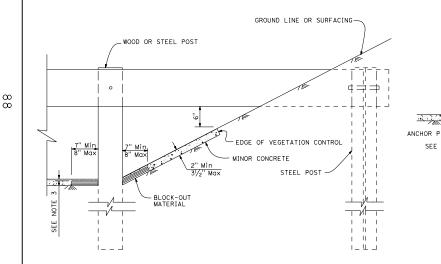




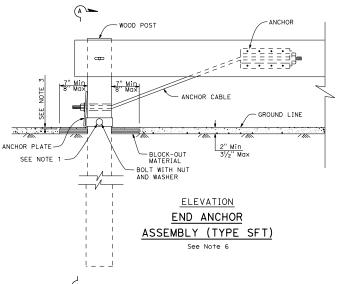


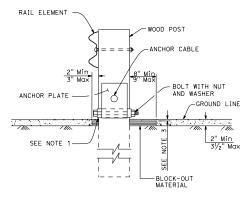
- 1. Minor concrete must be placed below anchor cable, bolt with nut and washer, or anchor plate.
- 2. Vegetation control must slope to drain water.
- 3. Concrete over block-out material depth, construct 36° Min to 56° Max.
- 4. This plan for vegetation control installation only.
- 5. For buried post end anchor, refer to Standard Plan A77T2.
- 6. For end anchor assembly, refer to Standard Plan A77S1.





BURIED POST END ANCHOR See Note 5



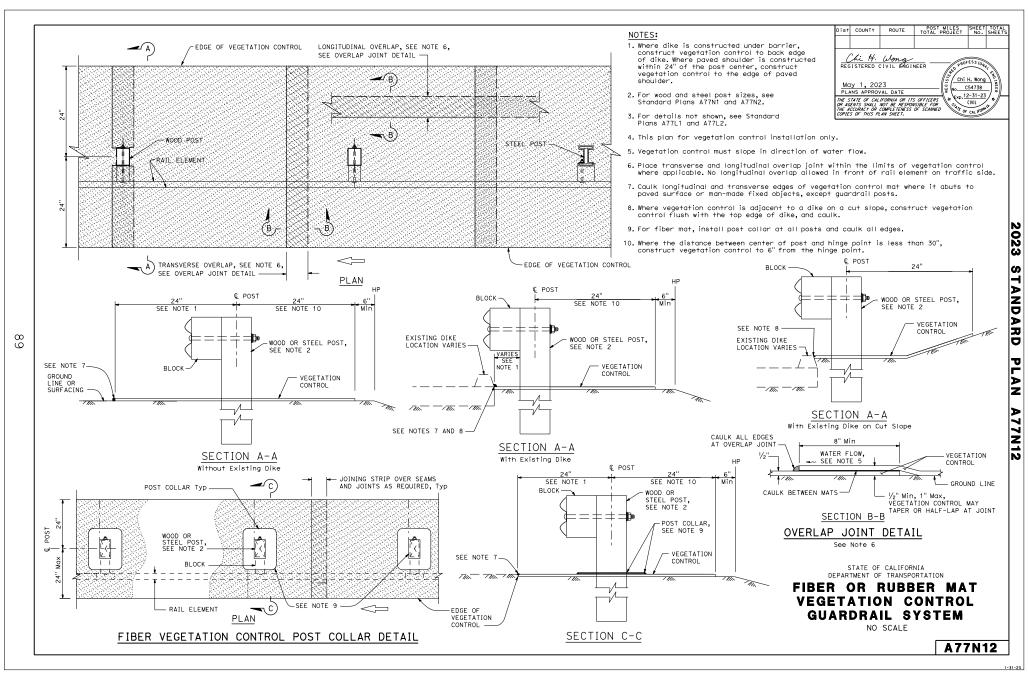


SECTION A-A

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

MINOR CONCRETE VEGETATION CONTROL **GUARDRAIL SYSTEM** MISCELLANEOUS DETAILS

NO SCALE

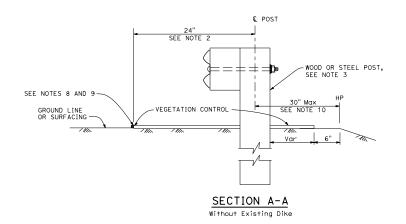




EDGE OF VEGETATION CONTROL

BLOCK

- 1. For additional vegetation control details, see Standard Plan A77N12.
- 2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
- 3. For wood and steel post sizes, see Standard Plans A77N1 and A77N2.
- 4. For details not shown, see Standard Plans A77L1 and A77L2.
- 5. This plan for vegetation control installation only.
- 6. Vegetation control must slope in direction of water flow.
- Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
- Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
- Where vegetation control is adjacent to a dike on a cut slope, construct vegetation control flush with the top edge of dike, and caulk. See Standard Plan A77M12.
- 10. Where the distance between center of post and hinge point is less than 30", construct vegetation control to 6" from the hinge point.



-RAIL ELEMENT

TRANSVERSE OVERLAP, SEE OVERLAP

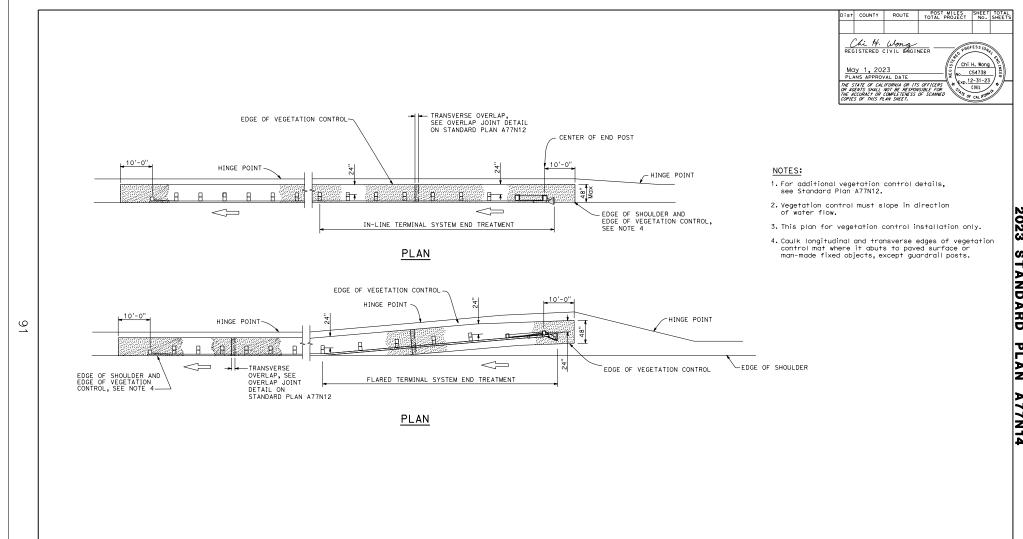
JOINT DETAIL ON STANDARD PLAN A77N12

PLAN

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL GUARDRAIL SYSTEM NARROW VEGETATION CONTROL INSTALLATION

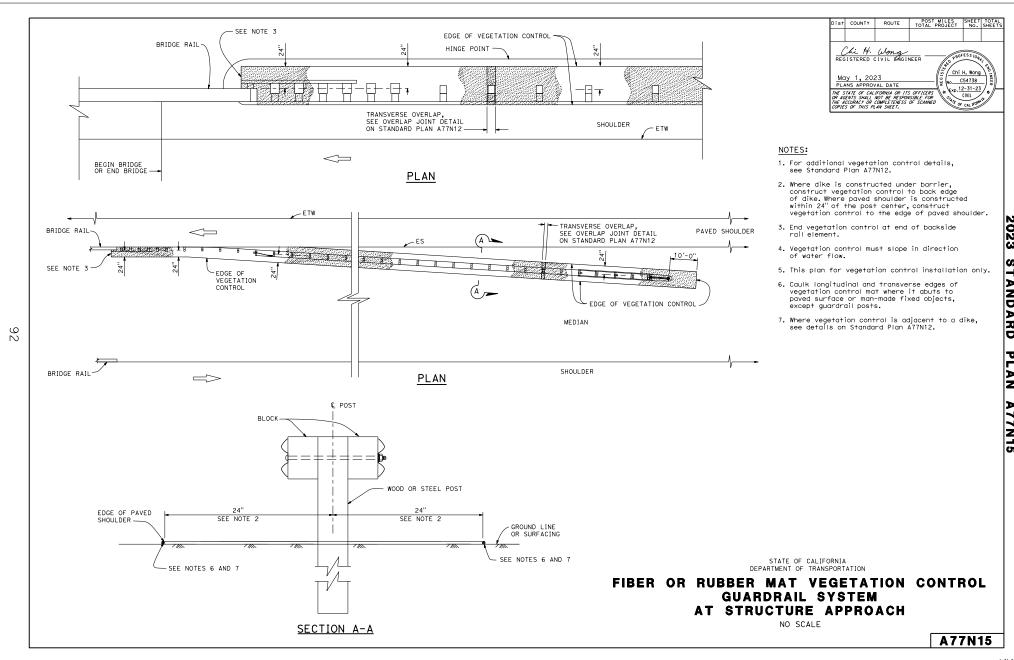
NO SCALE



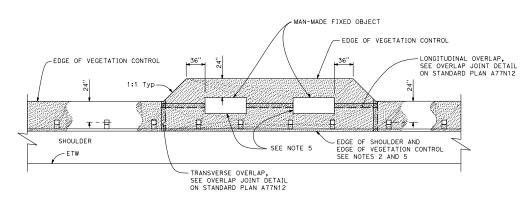
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL **GUARDRAIL SYSTEM** FOR TERMINAL SYSTEM END TREATMENTS

NO SCALE







PLAN

Fixed object(s) on shoulder

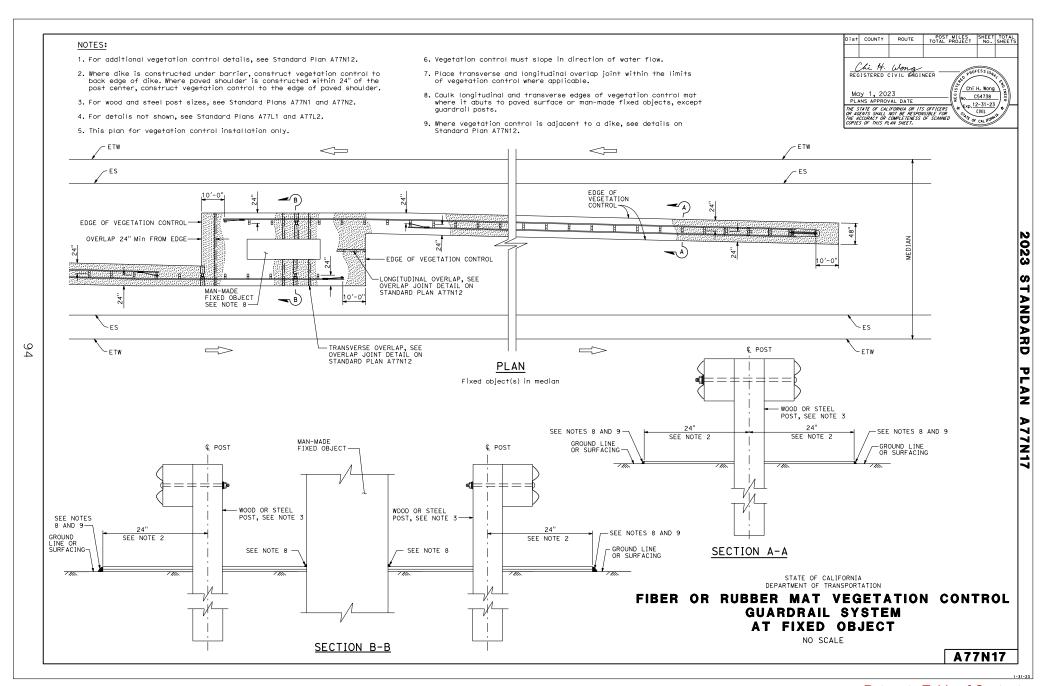
NOTES:

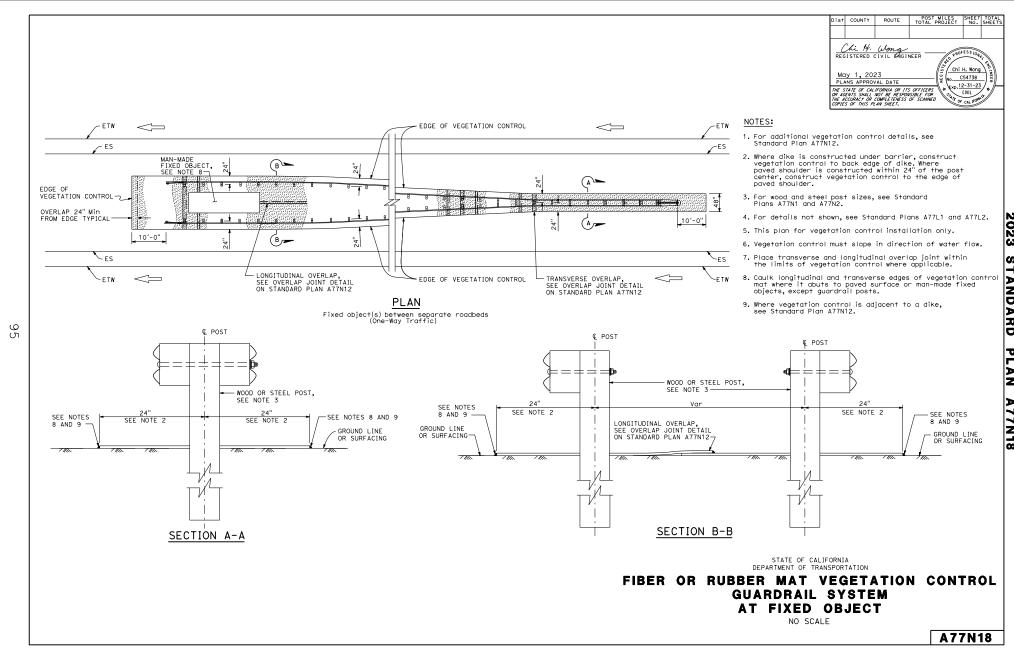
- For additional vegetation control details, see Standard Plan A77N12.
- 2. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
- 3. Vegetation control must slope in direction of water flow.
- 4. This plan for vegetation control installation only.
- 5. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.

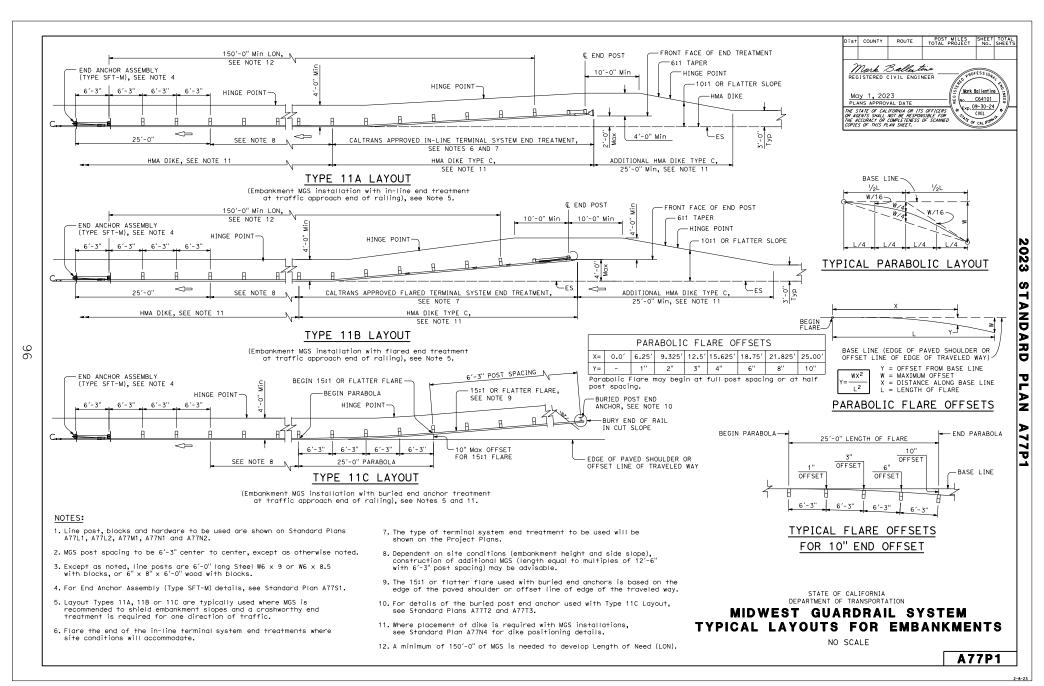
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

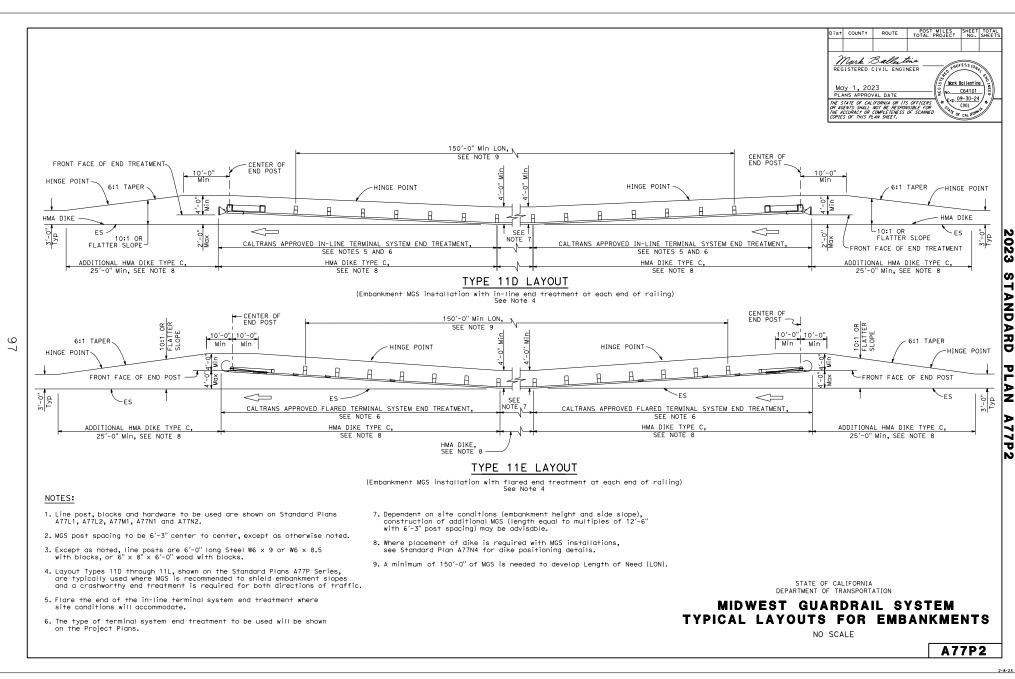
FIBER OR RUBBER MAT VEGETATION CONTROL **GUARDRAIL SYSTEM** AT FIXED OBJECT

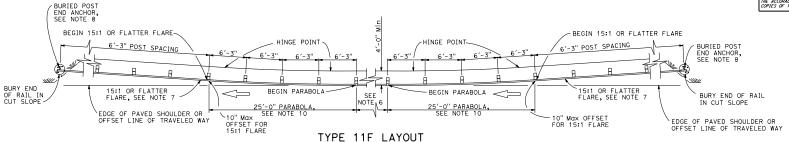
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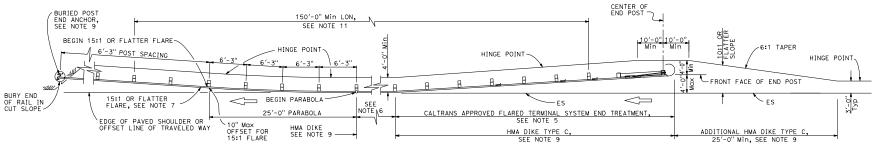








(Embankment MGS installation with a buried end anchor treatment at each end of railing) See Notes 4 and 9



TYPE 11G LAYOUT

(Embankment MGS installation with flared end treatment and a buried end anchor treatment at the ends of railing) See Notes 4 and 9

NOTES:

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- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.
- 2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or 6" x 8" x 6'-0" wood with blocks.
- 4. Layout Types 11D through 11L, shown on the Standard Plans A77P Series, are typically used where MGS is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- 5. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 6. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.

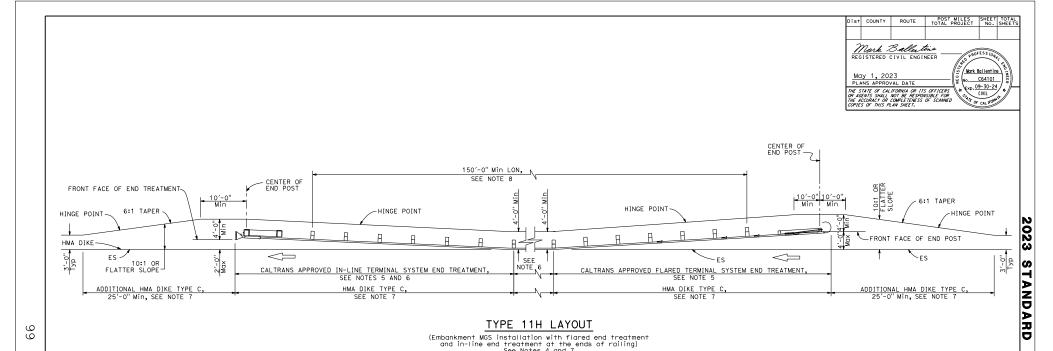
- 7. The 15:1 or flatter flare used with buried end anchors is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- 8. For details of the buried post end anchor used with Type 11F and 11G Layouts, see Standard Plans A77T2 and A77T3.
- 9. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
- 10. For typical flare offsets for 25'-0" length parabola with maximum offset of 10", see Standard Plan A77P1.
- 11. A minimum of 150'-0" of MGS is needed to develop Length of Need (LON).

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

NO SCALE

A77P3



TYPE 11H LAYOUT

HMA DIKE TYPE C,

SEE NOTE 7

HMA DIKE TYPE C.

SEE NOTE 7

(Embankment MGS installation with flared end treatment and in-line end treatment at the ends of railing)

See Notes 4 and 7

1. Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.

ADDITIONAL HMA DIKE TYPE C 25'-0" Min, SEE NOTE 7

- 2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or $6" \times 8" \times 6'-0"$ wood with blocks.
- 4. Layout Types 11D through 11L, shown on the Standard Plans A77P Series, are typically used where MGS is recommended to shield embankment slopes and a crashworthy end treatment is required for both directions of traffic.
- 5. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 6. Dependent on site conditions (embankment height and side slope), construction of additional MGS (length equal to multiples of 12'-6" with 6'-3" post spacing) may be advisable.
- 7. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
- 8. A minimum of 150'-0" of MGS is needed to develop Length of Need (LON).

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR EMBANKMENTS

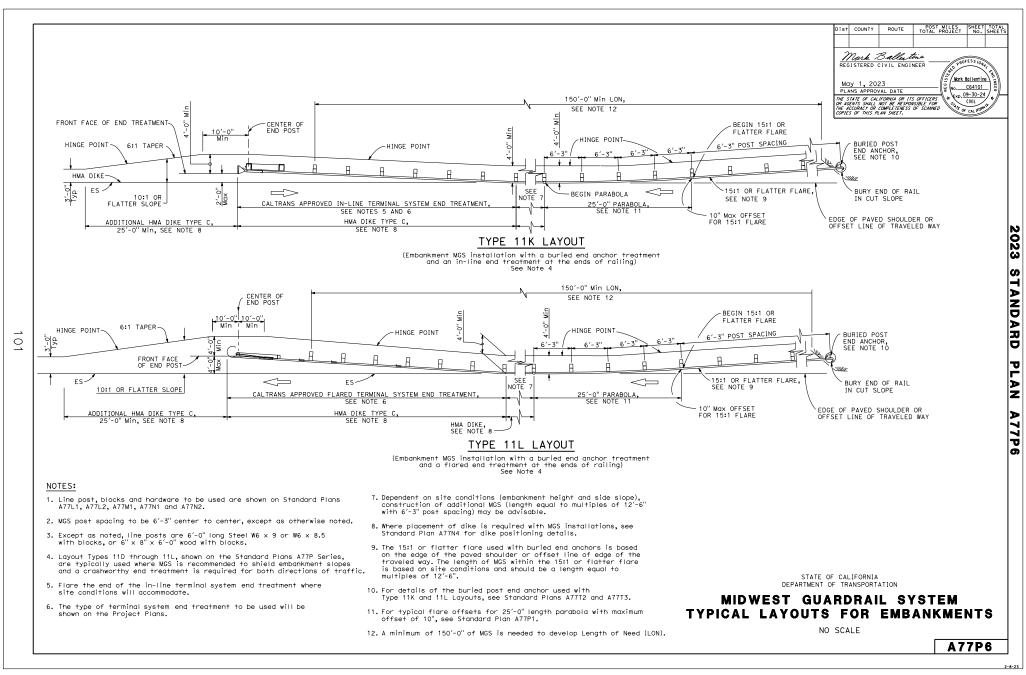
NO SCALE

A77P4

PLAN

A77P4

ADDITIONAL HMA DIKE TYPE C, 25'-0" Min, SEE NOTE 7



3. Except as noted, line posts are 6'-0" long Steel W6 \times 9 or W6 \times 8.5 with blocks, or $6" \times 8" \times 6'$ -0" wood with blocks.

02

- 4. For Transition Railing (Type WB-31) details for Types 12A and 12B Layouts, see Standard Plan A77U4.
- 5. A minimum of 150'-0" of MGS is needed to develop Length of Need (LON).
- 6. The type of terminal system end treatment to be used will be shown on the Project Plans.
- 7. Dependent on site conditions (embankment height, side slopes or other fixed objects), it may be advisable to construct additional guard railing (a length equal to multiples of 12'-6" with 6'-3" post spacing) between the transition railing and end treatment.

- of a structure, to the right or left on two-lane conventional highway where the roadbed width across the structure is 40 feet or less.
- 10. See Standard Plan A7703 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
- 11. For additional details of typical connections to bridge rail, see Connection Detail AA on Standard Plans A77U1 and A77U2 and Connection Detail FF on Standard Plans A77V1 and A77V2.
- For additional details of a typical connection to walls or abutments, see Standard Plans A77U3A and A77U3B.

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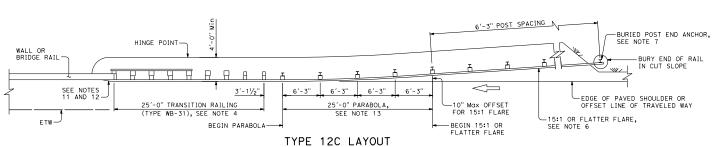
MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

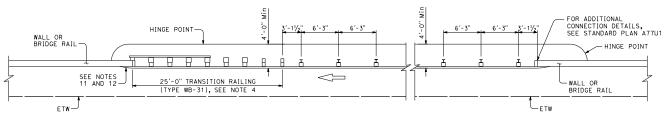
A77Q1

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Mark Ballestine REGISTERED CIVIL ENGINEER



(MGS installation at structure approach with a Buried end anchor treatment at traffic approach end of railing), see Notes 8 and 9.



TYPE 12D LAYOUT

(Continuous MGS installation between structures), see Notes 5 and 9.

NOTES:

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- Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.
- 2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or 6'' x 8'' x 6'-0" wood with blocks.
- For Transition Railing (Type WB-31) details for Types 12C and 12D Layouts, see Standard Plan A77U4.
- Type 12D layout is typically used where continous MGS is recommended between structures.
- 6. The 15:1 or flatter flare for Type 12C Layout is based on the edge of offset line of edge of the traveled way. The length of MCS with the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of elements at 12'-6".
- For details of the buried post end anchor used with Type 12C Layout, see Standard Plans A77T2 and A77T3.
- 8. Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.

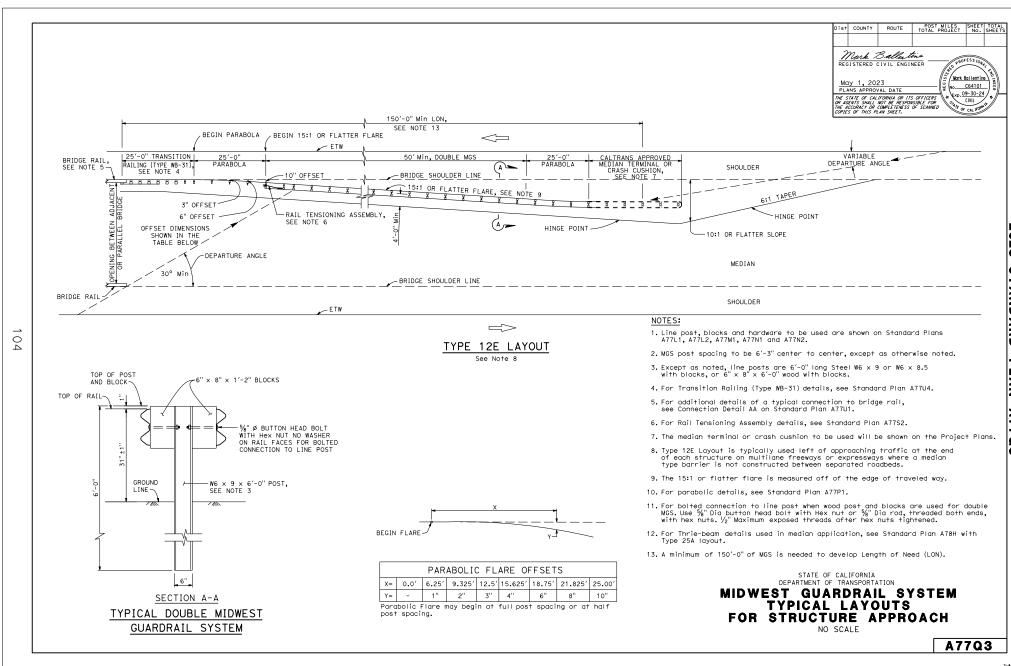
- Type 12C Layout is typically used at the approach end of the structure to the right or left, on two-lane conventional highway where the roadbed width across the structure is 40 feet or less.
- 10. See Standard Plan A7703 for typical layout used left of approaching traffic at the ends of each structure on multilane freeways or expressways with separate adjacent or parallel bridges.
- 11. For additional details of typical connections to bridge rail, see Connection Detail AA on Standard Plans A77U1 and A77U2 and Connection Detail FF on Standard Plans A77V1 and A77V2.
- 12. For additional details of a typical connection to walls or abutments, see Standard Plans A77U3A and A77U3B.
- 13. For typical flare offsets for 25′-0" length parabola with maximum offset of 10", see Standard Plan A77P1.
- 14. Where continuous Thrie-beam is recommended between structures, see Standard Plans A78U1 and A78U2 for structure connection details.

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MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH AND BETWEEN STRUCTURES

NO SCALE

A77Q2



POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Mark Ballentine

C64101

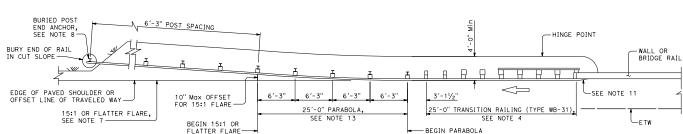
Exp. 09-30-24

Mark Ballestine REGISTERED CIVIL ENGINEER

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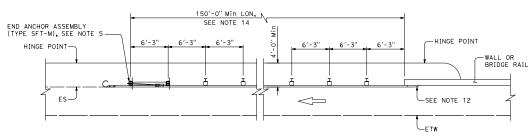
May 1, 2023

PLANS APPROVAL DATE



TYPE 12CC LAYOUT

(MGS installation at structure departure with a buried end anchor treatment at trailing end of railing), see Notes 9 and 10.



TYPE 12DD LAYOUT

(MGS installation at structure departure with end anchor assembly at trailing end of railing), see Notes 6 and 9.

NOTES:

90

- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2,
- 2. MSG post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or 6" x 8" x 6'-0" wood with blocks.
- 4. For Transition Railing (Type WB-31) details for Type 12CC Layout, see Standard Plan A77U4.
- 5. For details of End Anchor Assembly (Type SFT-M) used with Type 12DD Layout, see Standard Plan A77S1.
- 6. Type 12DD layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is equal to or greater than 40 feet and MGS is recommended (embankment height, side slopes or other fixed objects). Length of railing to be equal to multiples of 12'-6". For MGS connection details to bridge rail, see Standard Plans A77UI and A77V1. For MGS connection details to wall, see Standard Plans A77U3A and A77U3B.
- 7. The 15:1 or flatter flare for Type 12CC Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".

- 8. For details of the buried post end anchor used with Type 12CC Layout, see Standard Plans A77T2 and A77T3.
- Where placement of dike is required with MGS installations, see Standard Plan A77N4 for dike positioning details.
- 10. Type 12CC Layout is typically used to the right of traffic departing a structure on two-way conventional highways where the roadbed width across the structure is less than 40 feet.
- 11. For additional details of a typical connection to bridge rail for Layout Type 12CC, see Connection Detail CC on Standard Plan A77U2 and Connection Detail HH on Standard Plan A77V2.
- 12. For additional details of a typical connection to bridge rail for Layout Type 12DD, see Connection Detail BB on Standard Plan A77U1 and Connection Détail GG on Standard Plan A77V1.
- 13. For typical flare offsets for 25'-0" length parabola with maximum offset of 10", see Standard Plan A77P1.
- 14. A minimum of 150'-0" of MGS is needed to develop Length of Need (LON).

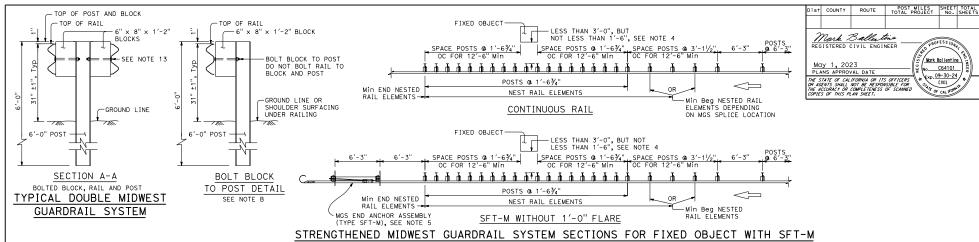
STATE OF CALLEORNIA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE DEPARTURE

NO SCALE

A77Q5

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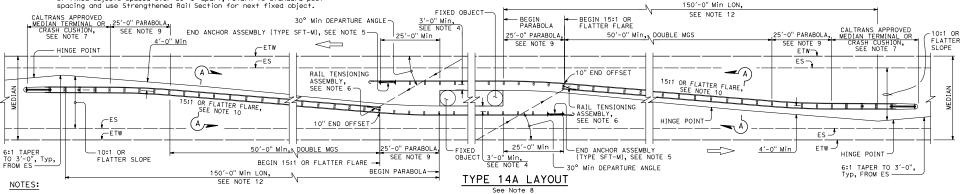


Use strengthened MGS sections with Type 14A layout where minimum clearance between the back of post and the fixed object(s) is less than 3'-0", but not less than 1'-6"

NOTE A: For a series of fixed objects 25'-0" or less apart, continue the post spacing at 1'-6¾" OC between fixed objects. For a series of fixed objects 25'-0" to 50'-0" OC space post at 3'-1½" OC until last 12'-6" prior to next fixed object, and space post at 1'-6¾" OC. For a series of fixed objects spaced over 50'-0" apart, return to standard post spacing and use Strengthened Rail Section for next fixed object.

NOTE B: Bolt rail element to post through block only when there is a manufactured slot in the rail element, but not at rail splices. Do not bolt rail element to block and post at rail element splices.

Nested Rail must continue through entire length of 1'-634' NOTE C: post spacing, and minimum 1 post upstream (prior).



- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.
- 2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long steel, W6 x 9 or W6 x 8.5 with blocks, or 6" x 8" x 6'-0" wood with blocks.
- 4. A minimum clearance is required between the back of post and the face of a fixed object located directly behind MGS sections with post spacing of 6'-3". Construct MGS as shown in the detail "Strenathened Midwest Guardrail System Sections for Fixed Object with SFT-M" on this plan, where the clearance between the back of post and the face of a fixed object is less than 3'-0", but not less than 1'-6". Where the clearance is less than 1'-6", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. For End Anchor Assembly (Type SFT-M) details, see Standard Plan A77S1.

- 6. For details of Rail Tensioning Assembly, see Standard Plan A77S2.
- 7. The median terminal or crash cushion to be used will be shown on the Project Plans.
- 8. Type 14A layout is typically used on multilane freeways or expressways to shield fixed objects where a median type barrier is not constructed between the separated roadbeds.
- 9. See Standard Plan A77P1 for parabolic flare offset details.
- 10. The 15:1 or flatter flare is measured off of the edge of traveled way.
- 11. Standard 6'-0" long steel or wood post with blocks to be used in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object"
- 12. A minimum of 150'-0" MGS is needed to develop Length of Need (LON).

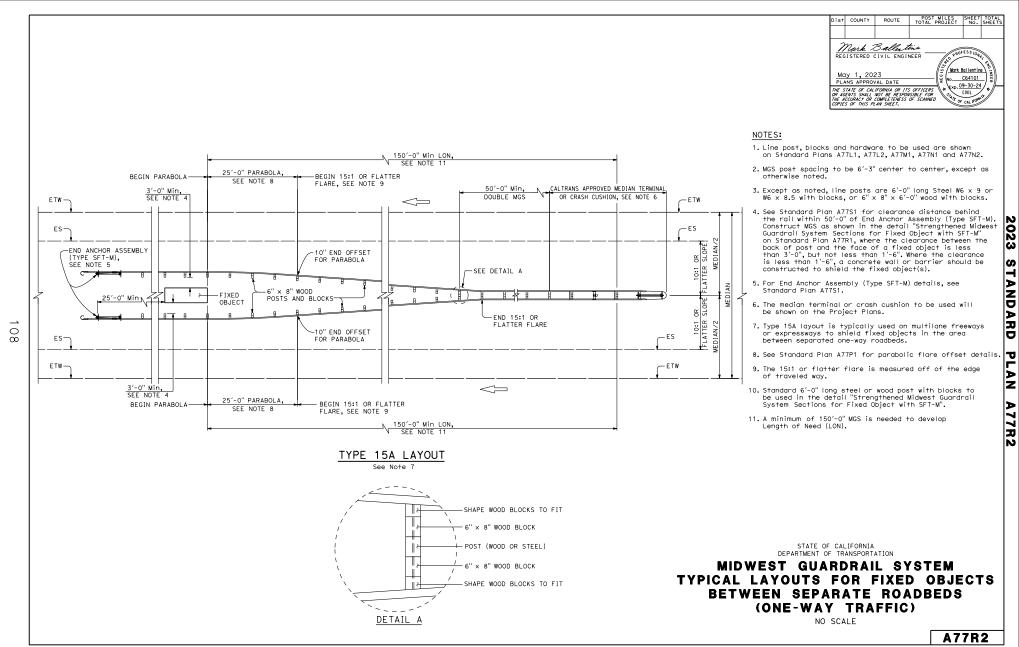
13. For steel posts, use 5/8" Ø button head bolt with hex nut. For wood post, use \%" \phi button head bolt or threaded rod with hex nut. After hex nut(s) are fightened, maximum exposed thread are $\frac{1}{2}$. No washer on rail faces.

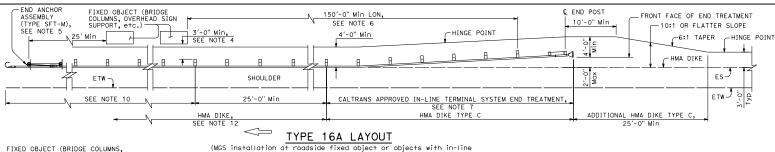
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MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR FIXED OBJECTS BETWEEN SEPARATE ROADBEDS (TWO-WAY TRAFFIC)

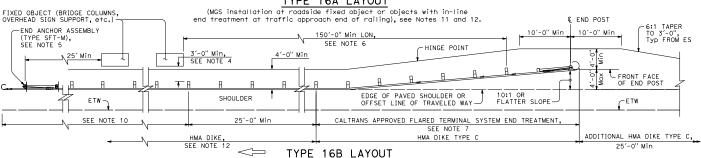
NO SCALE

A77R1

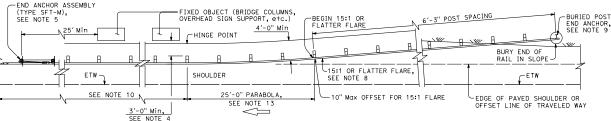








(MGS installation at roadside fixed object or objects with flared end treatment at traffic approach end of railing), see Notes 11 and 12.



TYPE 16C LAYOUT

(MGS installation at roadside fixed object or objects with a buried end anchor treatment at traffic approach end of railing), see Note 11.

NOTES

9

- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.
- 2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or 6" x 8" x 6'-0" wood with blocks.
- 4. A minimum clearance is required between the back of post and the face of a fixed object located directly behind MGS sections with post spacing of 6'-3'. Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object with SFT-M' on Standard Plan A77R1, where the clearance between the back of post and the face of a fixed object is less than 3'-0", but not less than 1'-6". Where the clearance is less than 1'-6", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. For End Anchor Assembly (Type SFT-M) details, see Standard Plan A77S1.
- 6. A minimum of 150'-0" MGS is needed to develop Length of Need (LON).

- 7. The type of terminal system to be used will be shown on the Project Plans.
- 8. The 15:1 or flatter flare used with Type 16C Layout is based on the edge of paved shoulder or offset line of edge of traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a lenath edual to multiples of 12'-6".
- For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plans A77T2 and A77T3.
- 10. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
- Layout Types 16A, 16B or 16C are typically used where MGS is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for only one direction of traffic.

- 12. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
- 13. See Standard Plan A77P1 for parabolic flare offset details.
- 14. Standard 6' long steel or wood post with blocks to be used in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object with SFT-M".

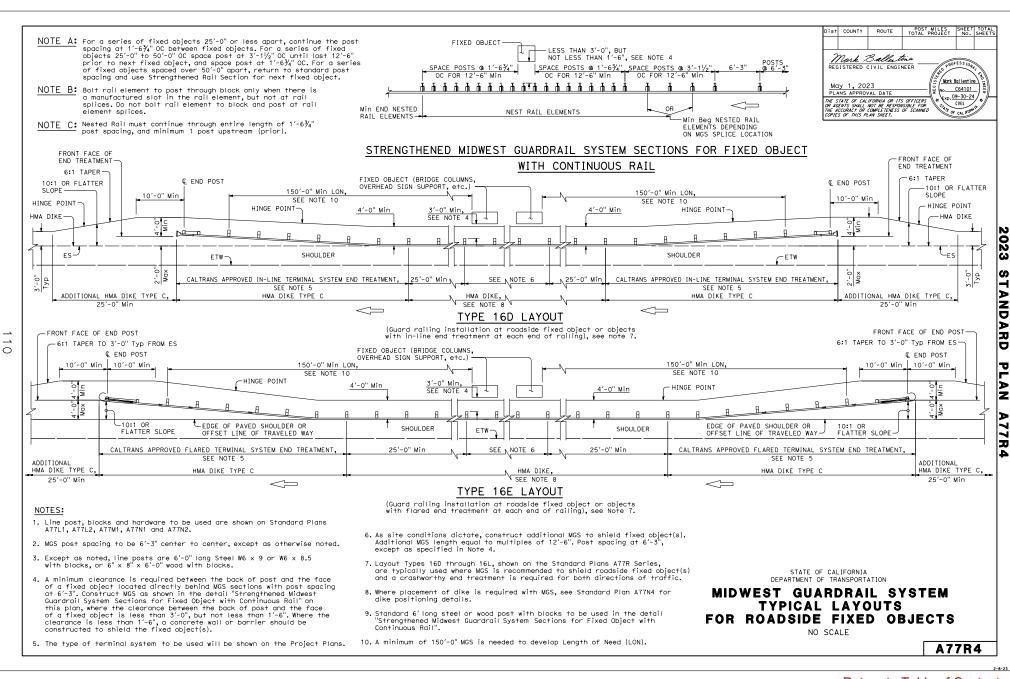
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

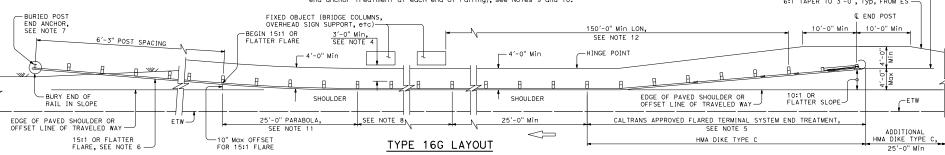
MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

NO SCALE

A77R3

Return to Table of Contents





(MGS installation at roadside fixed object or objects with in-line end treatment and a buried end anchor treatment at the ends of railing), see Notes 9 and 10.

NOTES:

- Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.
- 2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or 6" x 8" x 6'-0" wood with blocks.
- 4. A minimum clearance is required between the back of post and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object with Continuous Rall" on Standard Plan A77R4, where the clearance between the back of post the face of a fixed object is less than 3'-0", but not less than 1'-6". Where the clearance is less than 1'-6", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. The type of terminal system to be used will be shown on the Project Plans.
- 6. The 15:1 or flatter flare for the buried post anchor is based on the edge of paved shoulder or offset line of edge of traveled way. The length of MGS within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".

- 7. For details of the Buried Post End Anchor, see Standard Plans A77T2 and A77T3.
- 8. As site conditions dictate, construct additional MGS to shield fixed object(s). Additional MGS length, equal to multiples of 12° -6". Post spacing at 6° -3", except as specified in Note 4.
- Layout Types 16D through 16L, shown on the Standard Plans A77R Series, are typically used on highways where MSS is recommended to shield roadside fixed object(s) and a crashworthy end treatment isrequired for both directions of traffic.
- 10. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.
- 11. See Standard Plan A77P1 for parabolic flare offset details.
- 12. A minimum of 150'-0" MGS is needed to develop Length of Need (LON).

STATE OF CALIFORNIA
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MIDWEST GUARDRAIL SYSTEM
TYPICAL LAYOUTS
FOR ROADSIDE FIXED OBJECTS

NO SCALE

A77R5

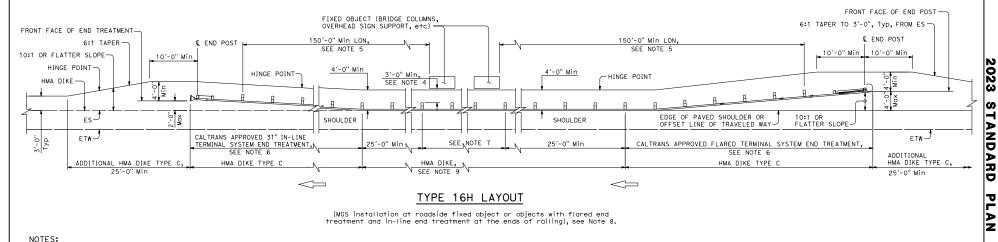
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PLAN

7**R**

G





(MGS installation at roadside fixed object or objects with flared end treatment and in-line end treatment at the ends of railing), see Note 8.

- 1. Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.
- 2. MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or 6" imes 8" imes 6'-0" wood with $reve{b}$ locks.
- 4. A minimum clearance is required between the back of post and the face of a fixed object located directly behind MGS sections with post spacing at 6'-3". Construct MGS as shown in the detail "Strengthened Midwest Guardrail System Sections for Fixed Object with Continuous Rail" on Standard Plan A77R4, where the clearance between the back of post and the face of a fixed object is less than 3'-0", but not less than 1'-6". Where the clearance is less than 1'-6", a concrete wall or barrier should be constructed to shield the fixed object(s).
- 5. A minimum of 150'-0" MGS is needed to develop Length of Need (LON).
- 6. The type of terminal system to be used will be shown on the Project Plans.
- As site conditions dictate, construct additional MGS to shield fixed object(s).
 Additional MGS length equal to multiples of 12'-6". Post spacing at 6'-3", except as specified in Note 4.
- 8. Layout Types 16D through 16L, shown on the Standard Plans A77R Series, are typically used where MGS is recommended to shield roadside fixed object(s) and a croshworthy end treatment is required for both directions of traffic.
- 9. Where placement of dike is required with MGS, see Standard Plan A77N4 for dike positioning details.

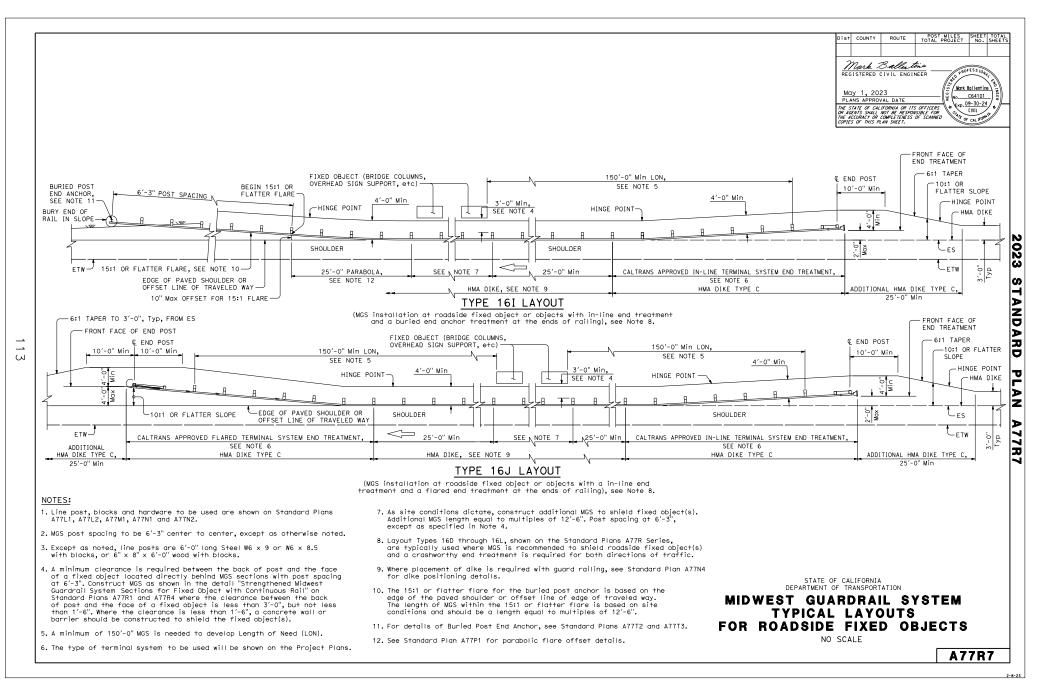
STATE OF CALLEORNIA DEPARTMENT OF TRANSPORTATION

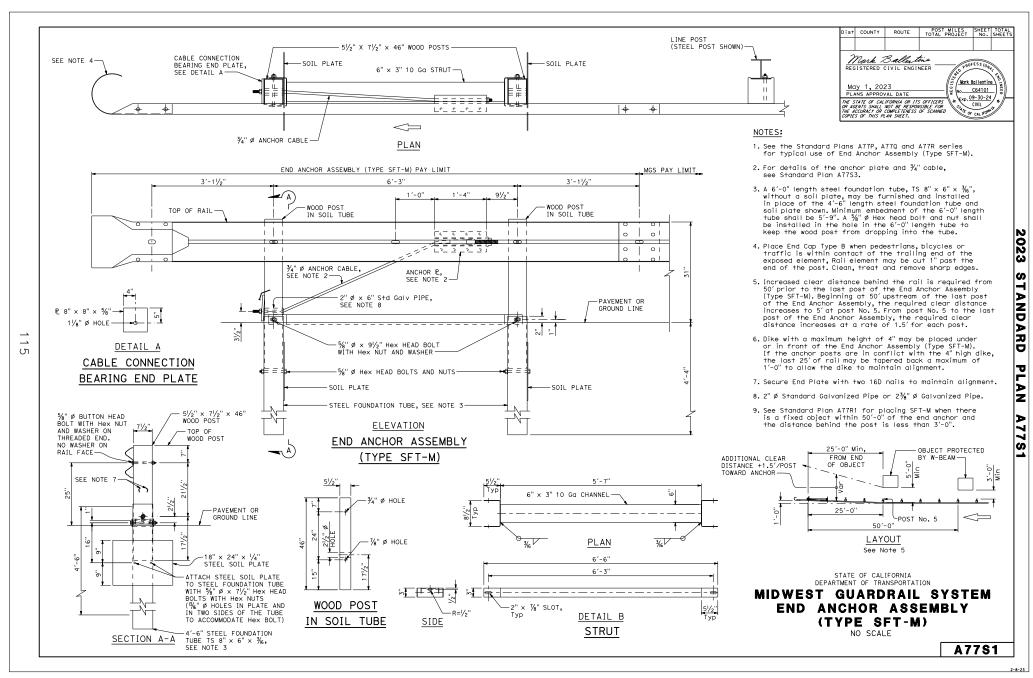
MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS

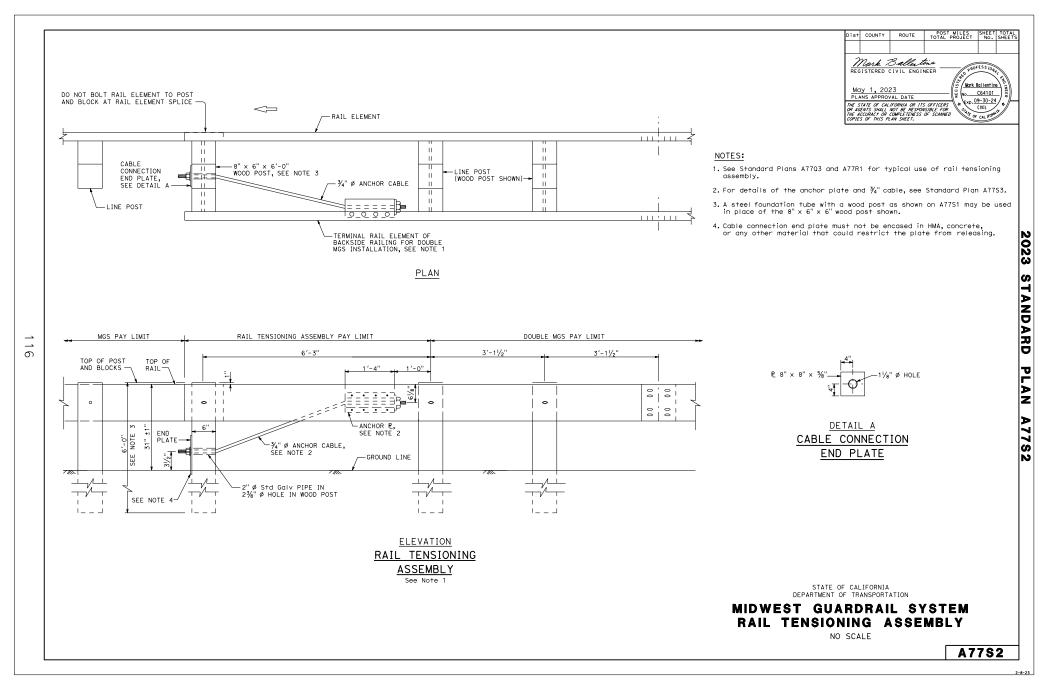
NO SCALE

A77R6

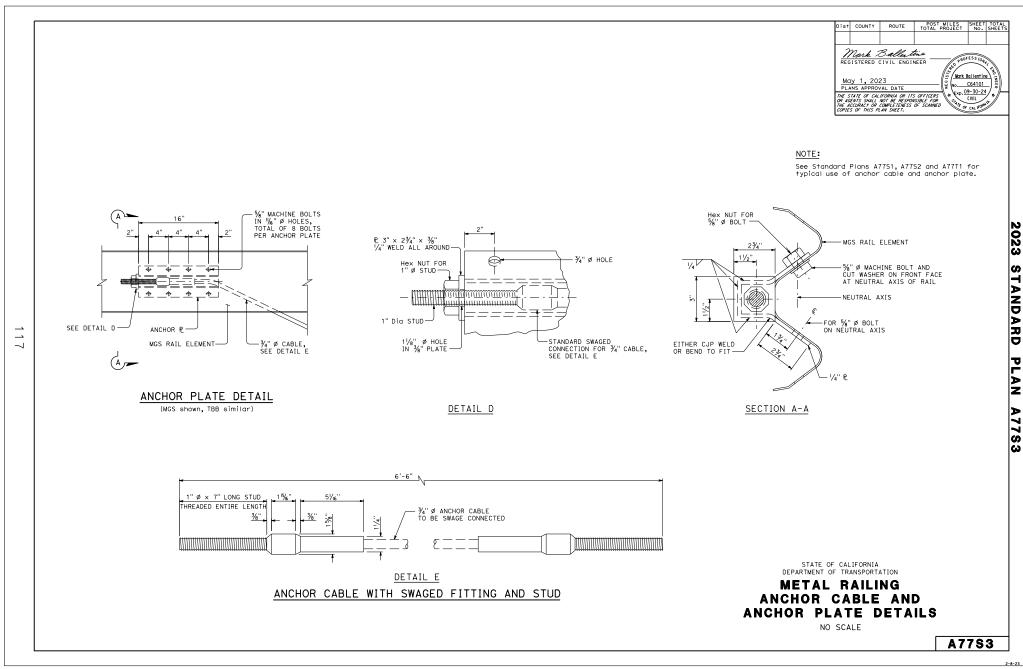
A77R6

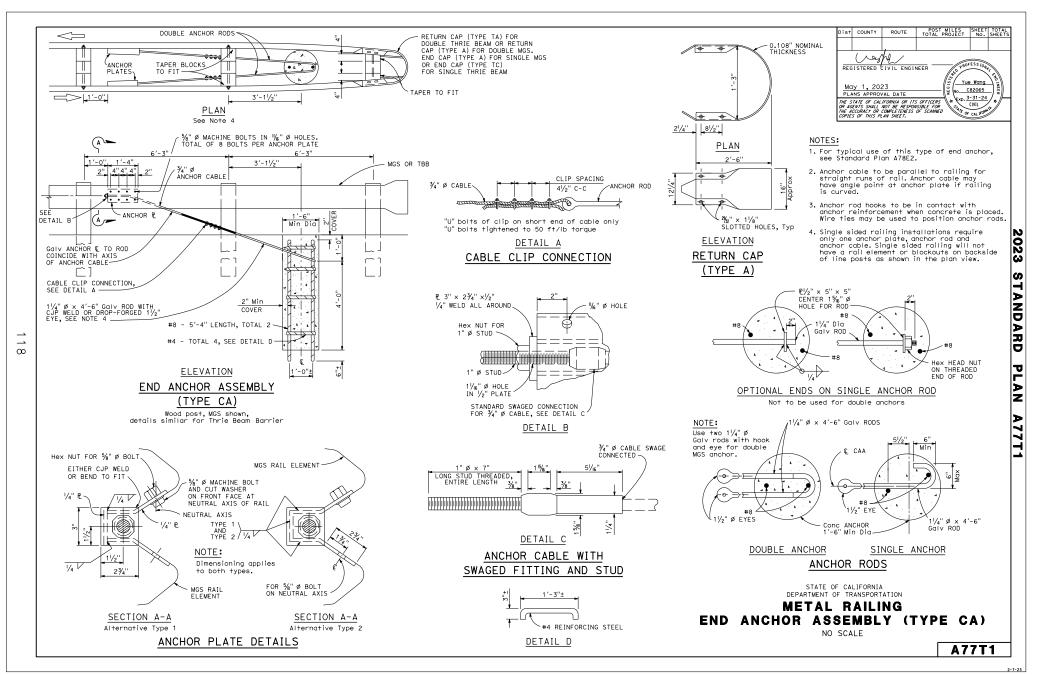


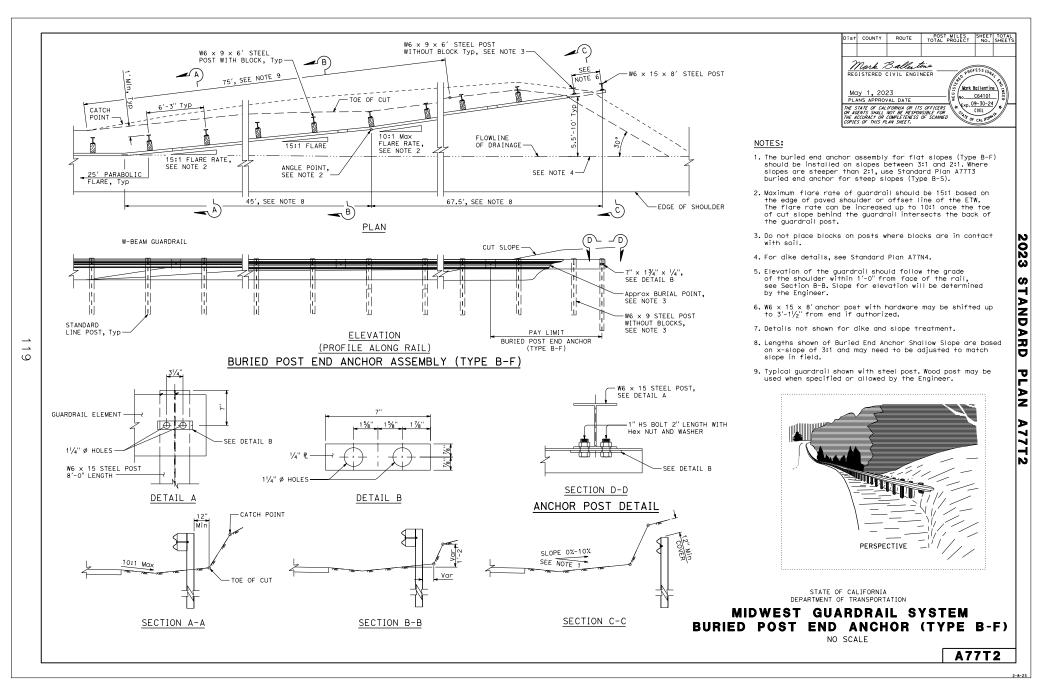


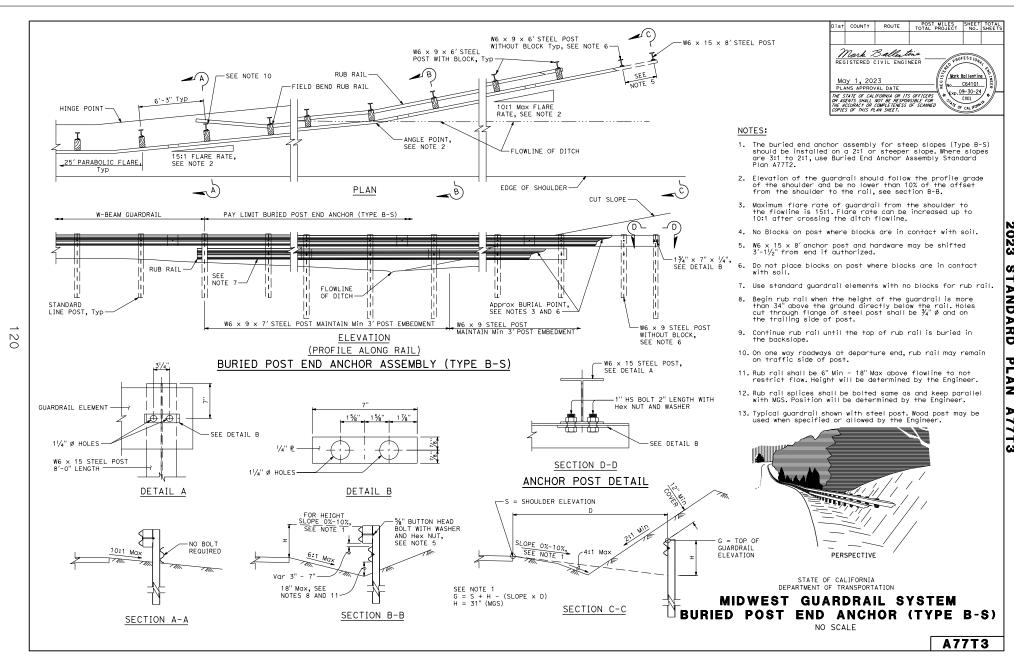


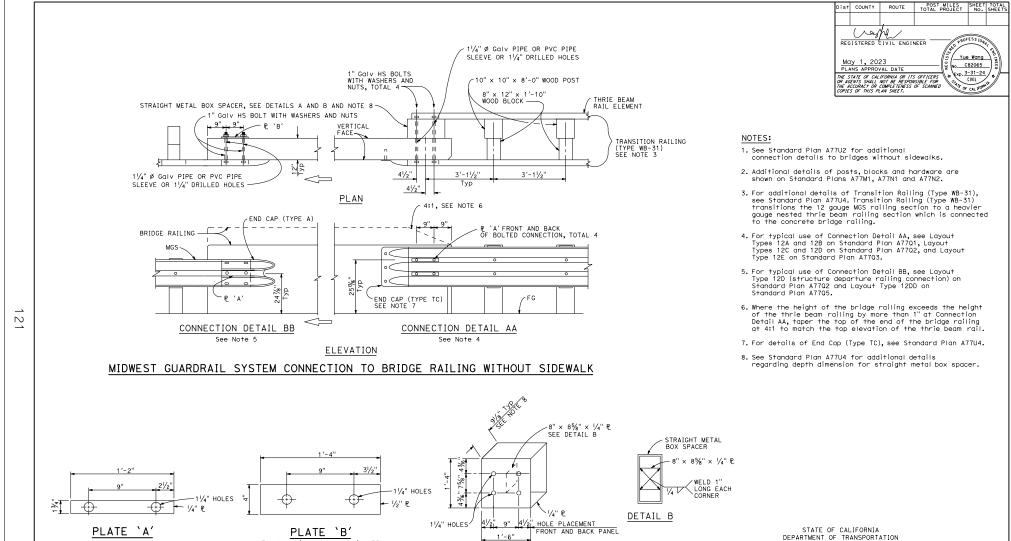












DETAIL A

STRAIGHT METAL BOX SPACER

For backside of connection BB

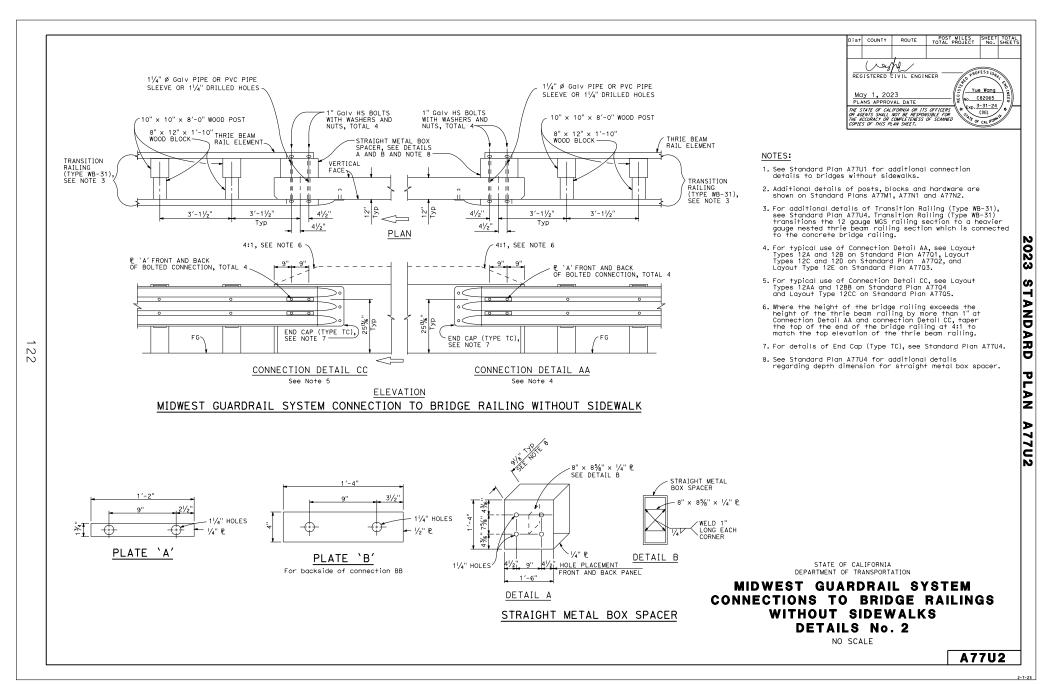
A77U1

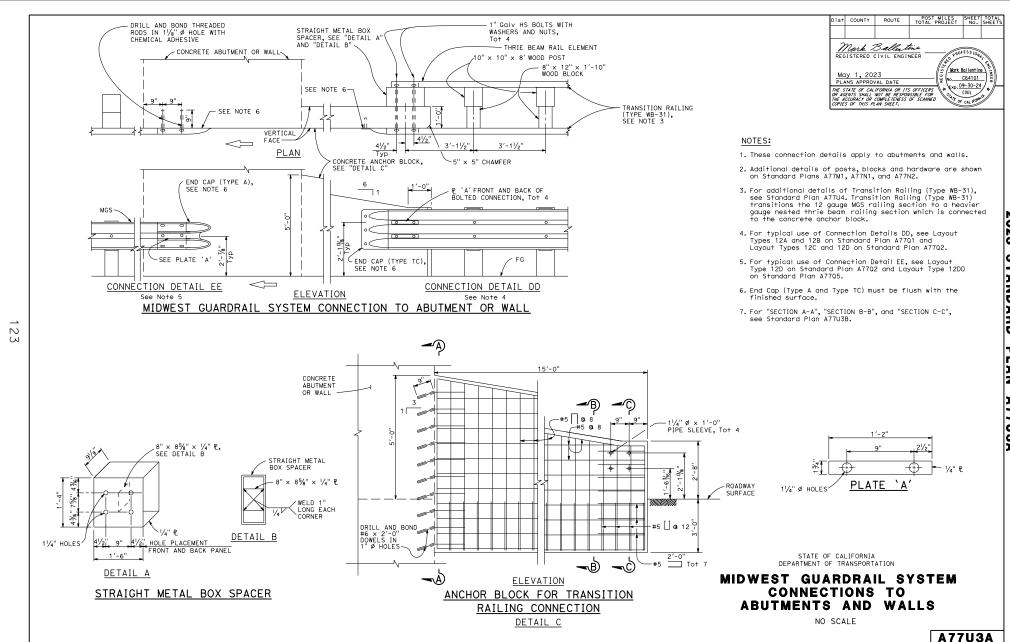
MIDWEST GUARDRAIL SYSTEM

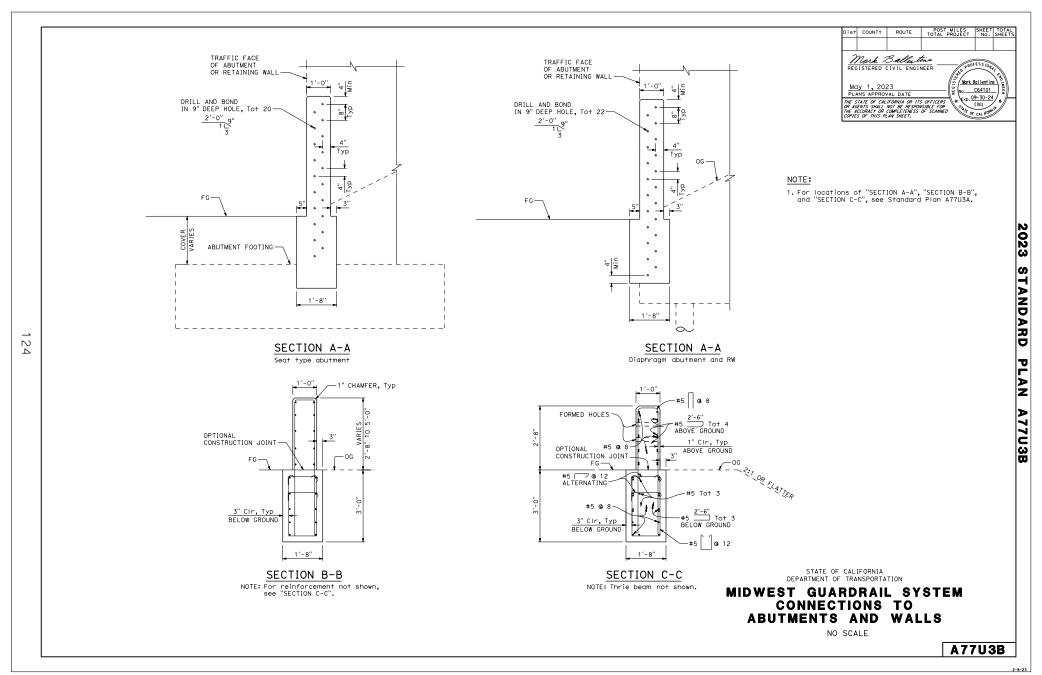
CONNECTIONS TO BRIDGE RAILINGS

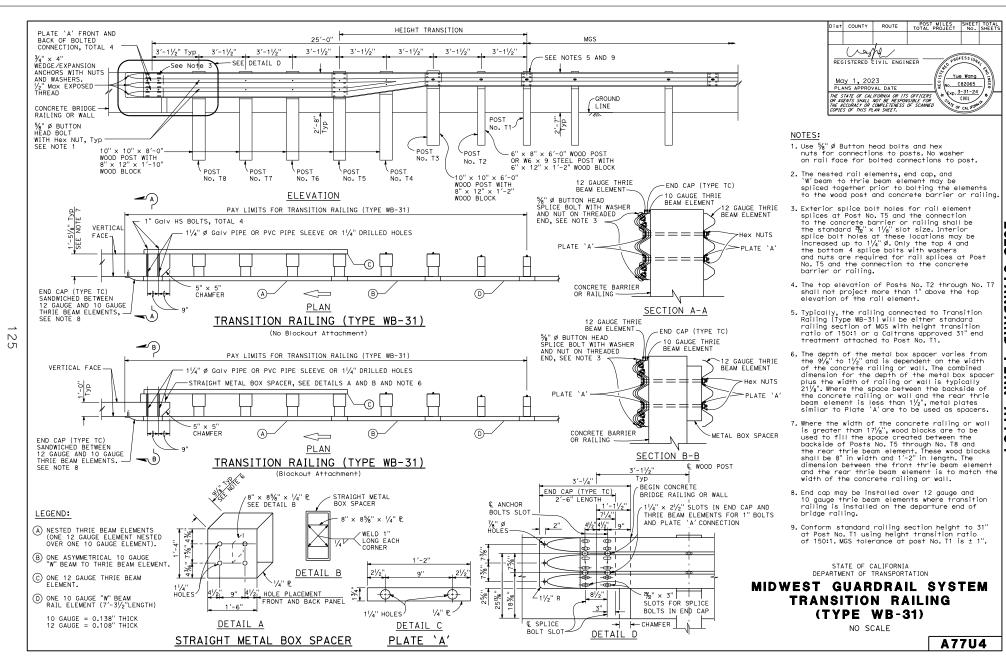
WITHOUT SIDEWALKS
DETAILS No. 1

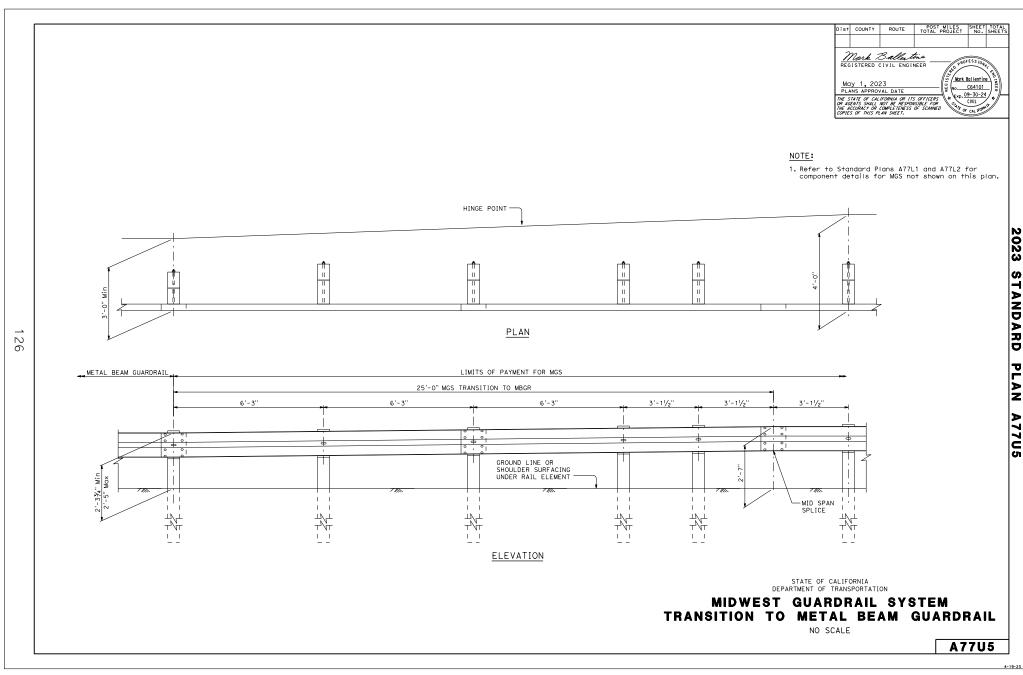
NO SCALE

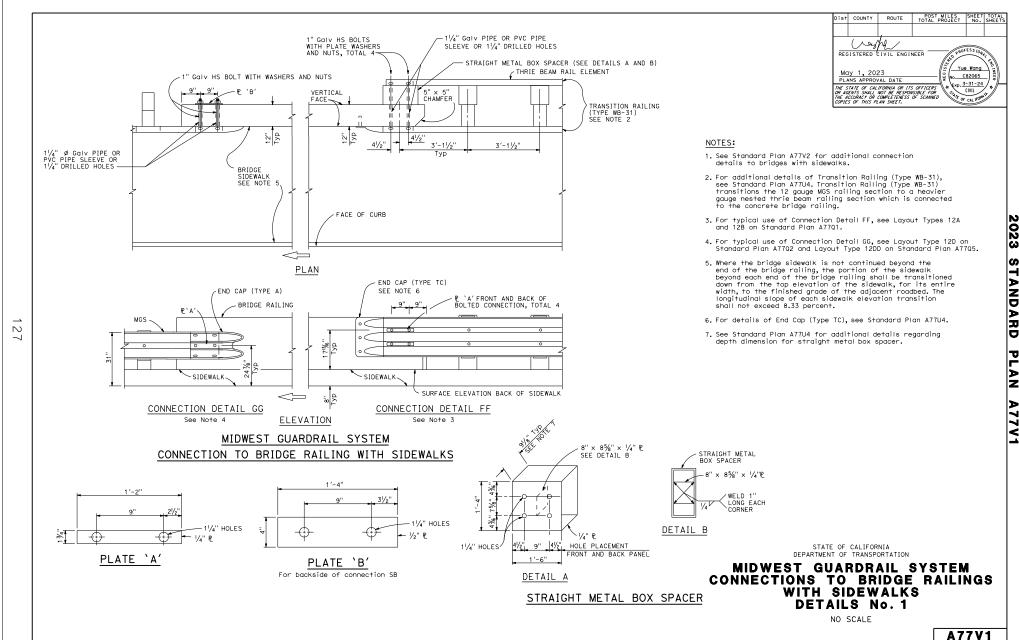


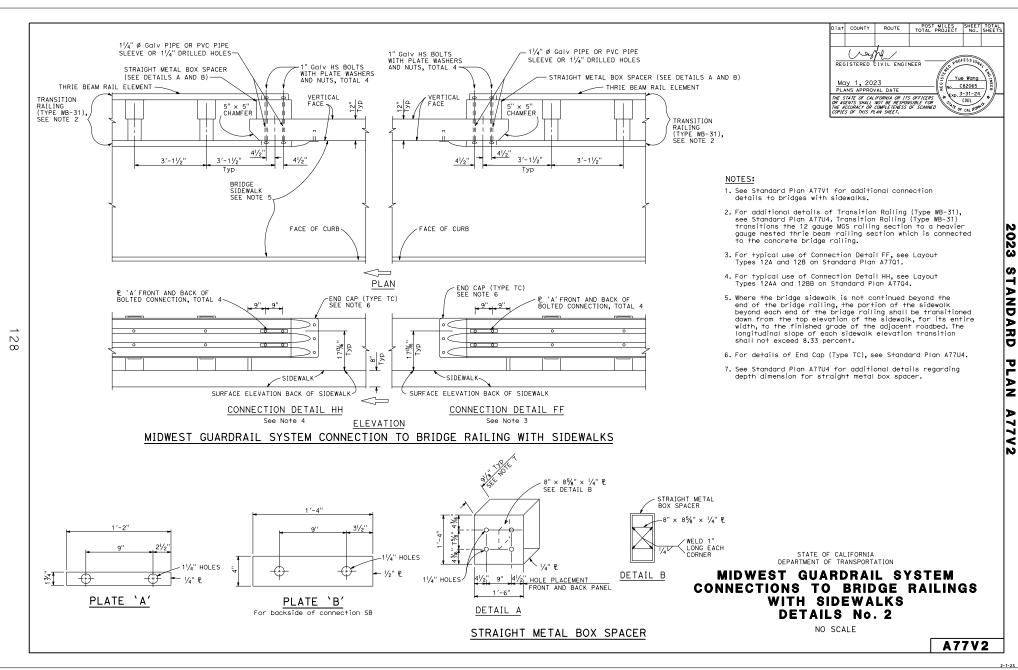


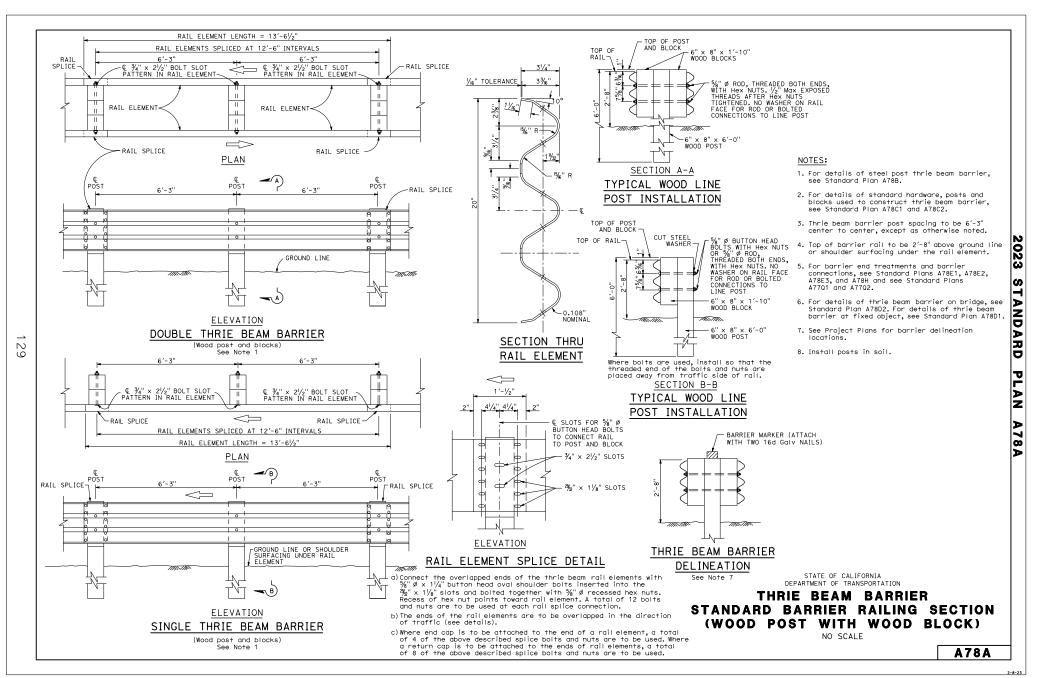




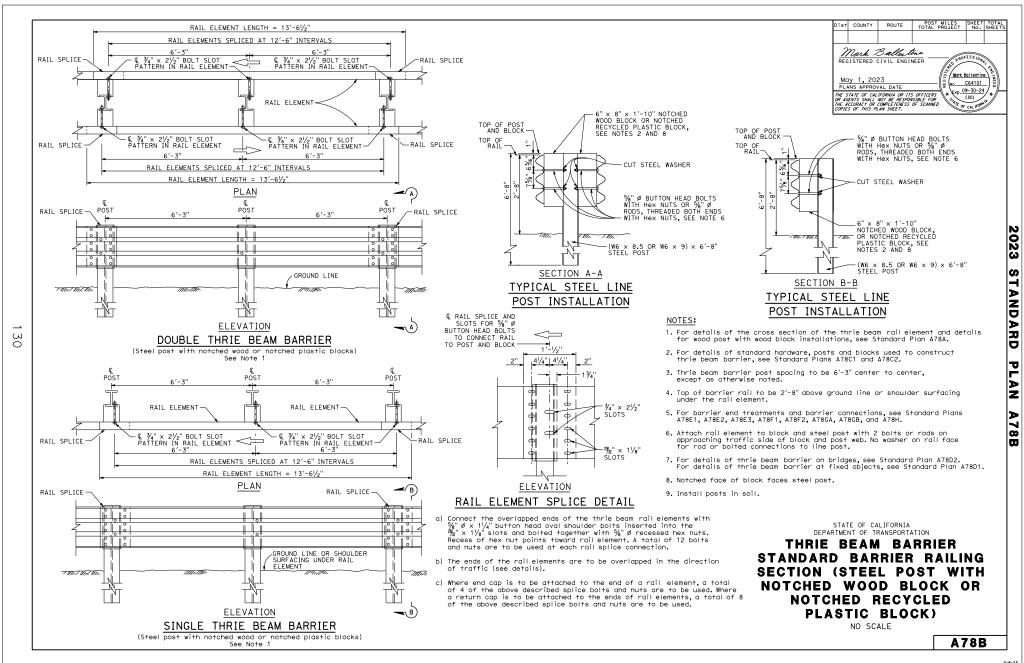




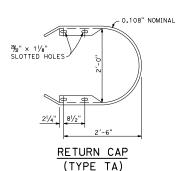


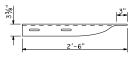


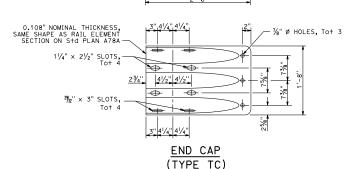


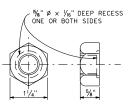




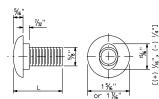








%" Ø RECESS NUT



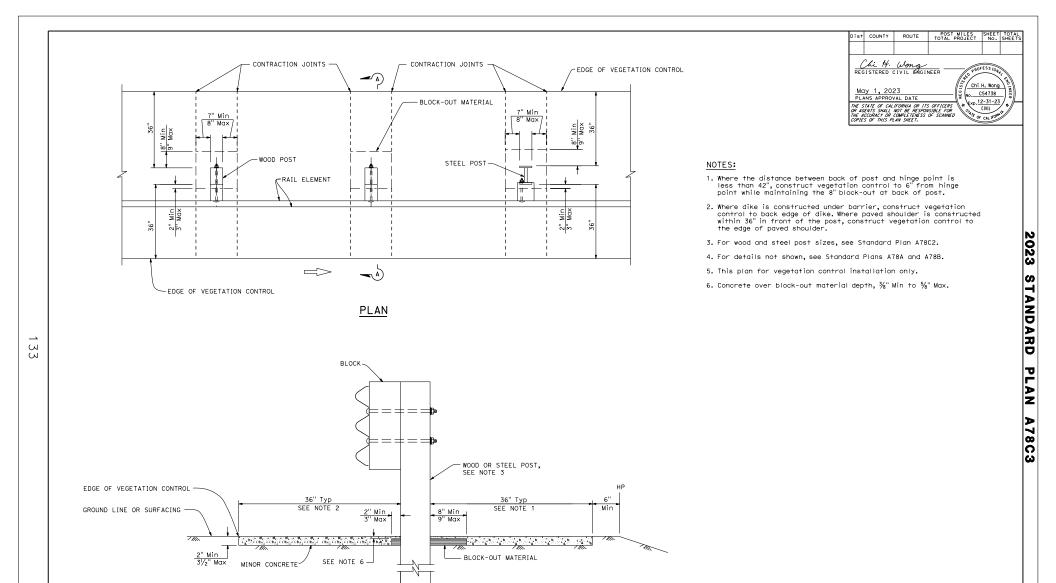
5%" Ø BUTTON HEAD BOLT

L	THREAD LENGTH
11/4"	FULL THREAD LENGTH
2"	FULL THREAD LENGTH
91/2"	4" Min THREAD LENGTH
18"	4" Min THREAD LENGTH
27"	4" Min THREAD LENGTH

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

THRIE BEAM BARRIER STANDARD HARDWARE DETAILS

NO SCALE

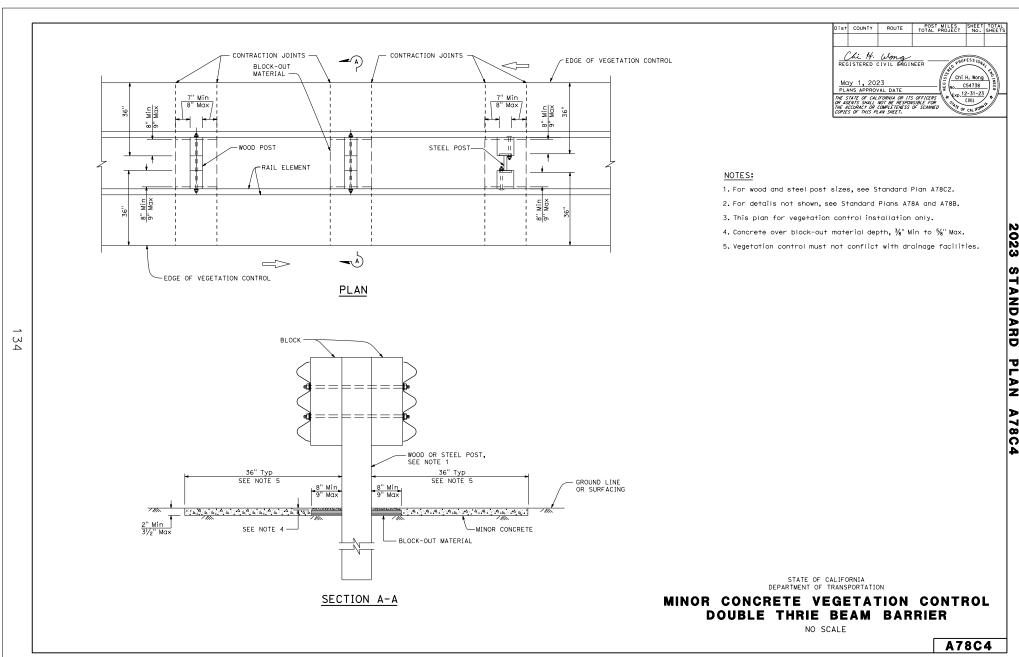


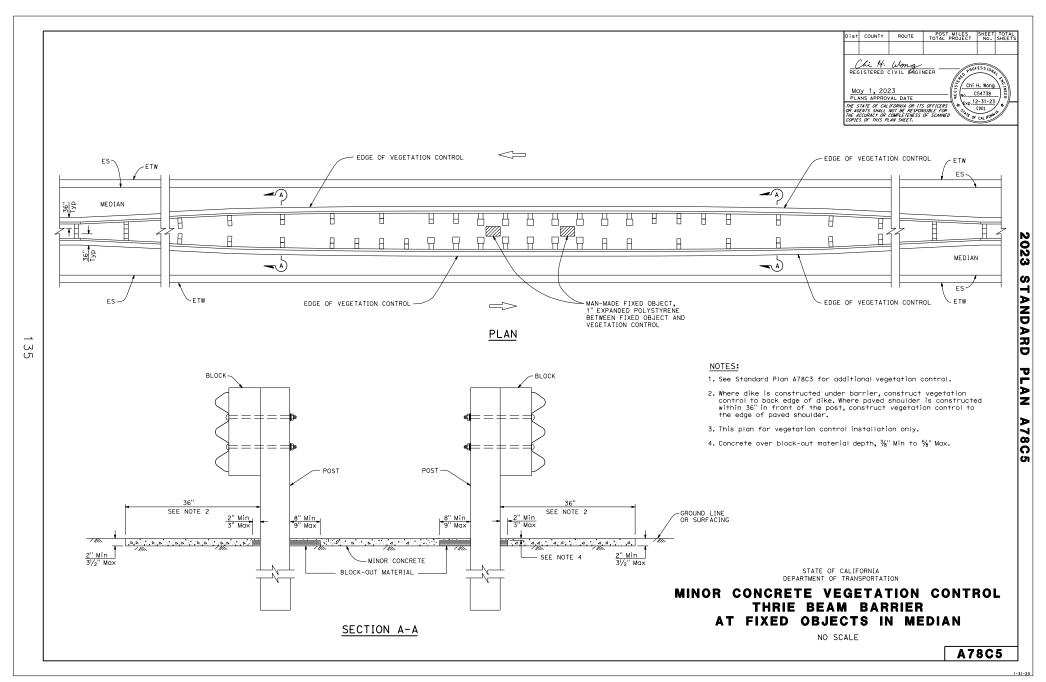
SECTION A-A

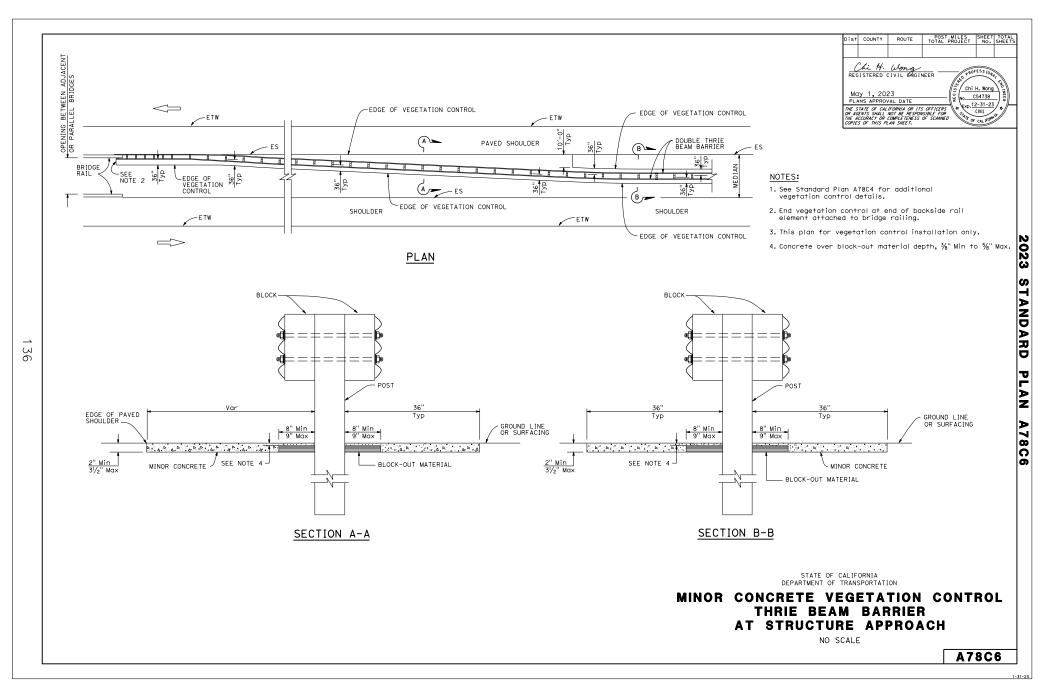
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

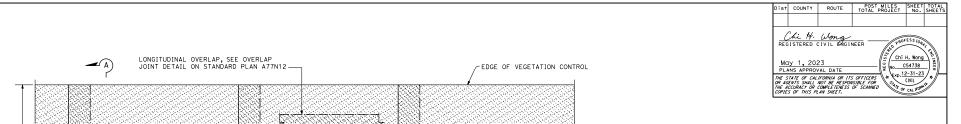
MINOR CONCRETE VEGETATION CONTROL SINGLE THRIE BEAM BARRIER

NO SCALE







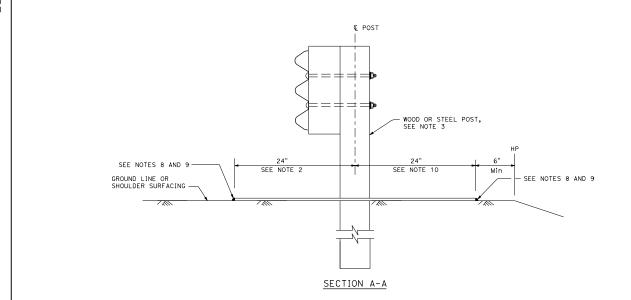


STEEL POST -

EDGE OF VEGETATION CONTROL

NOTES:

- 1. For additional vegetation control details, see Standard Plan A77N12.
- Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
- 3. For wood and steel post sizes, see Standard Plan A78C2.
- 4. For details not shown, see Standard Plans A78A and A78B.
- 5. This plan for vegetation control installation only.
- 6. Vegetation control must slope in direction of water flow.
- Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
- Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except guardrail posts.
- Where vegetation control is adjacent to a dike, see details on Standard Plan A77N12.
- 10. Where the distance between center of post and hinge point is less than 30", construct vegetation control to 6" from the hinge point. For narrow installation, see Standard Plan A77N13.



PLAN

WOOD POST

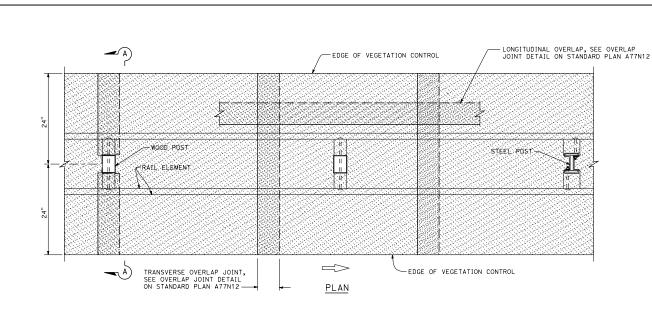
TRANSVERSE OVERLAP JOINT, SEE OVERLAP JOINT DETAIL ON STANDARD PLAN A77N12

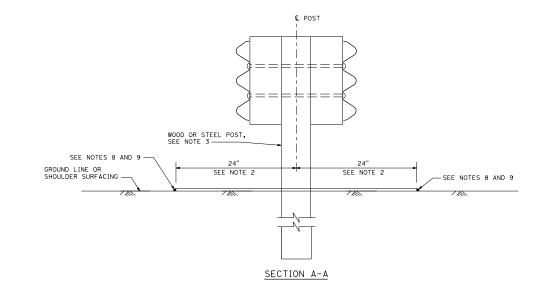
RAIL ELEMENT

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL SINGLE THRIE BEAM BARRIER

NO SCALE





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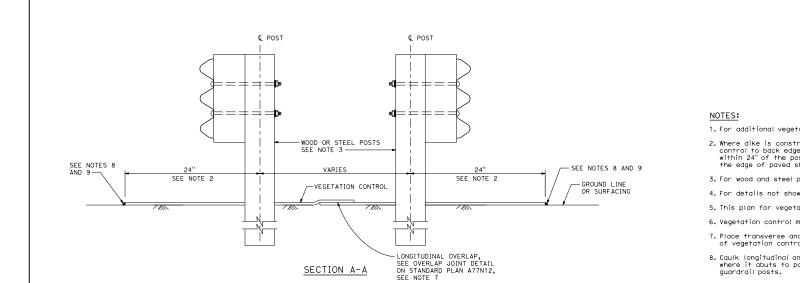
NOTES:

- 1. For additional vegetation control details, see Standard Plan A77N12.
- Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
- 3. For wood and steel post sizes, see Standard Plan A78C2.
- 4. For details not shown, see Standard Plans A78A and A78B.
- 5. This plan for vegetation control installation only.
- 6. Vegetation control must slope in direction of water flow.
- 7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
- Caulk longitudinal and transverse edges of vegetation control mot where it abuts to paved surface or man-made fixed objects, except guardrall posts.
- 9. Where vegetation control is adjacent to a dike, see details on Standard Plan A77N12.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT VEGETATION CONTROL DOUBLE THRIE BEAM BARRIER

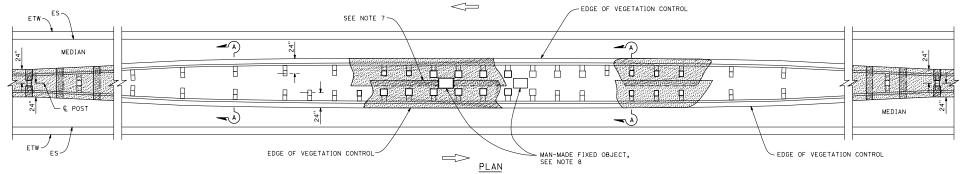
NO SCALE



Ö



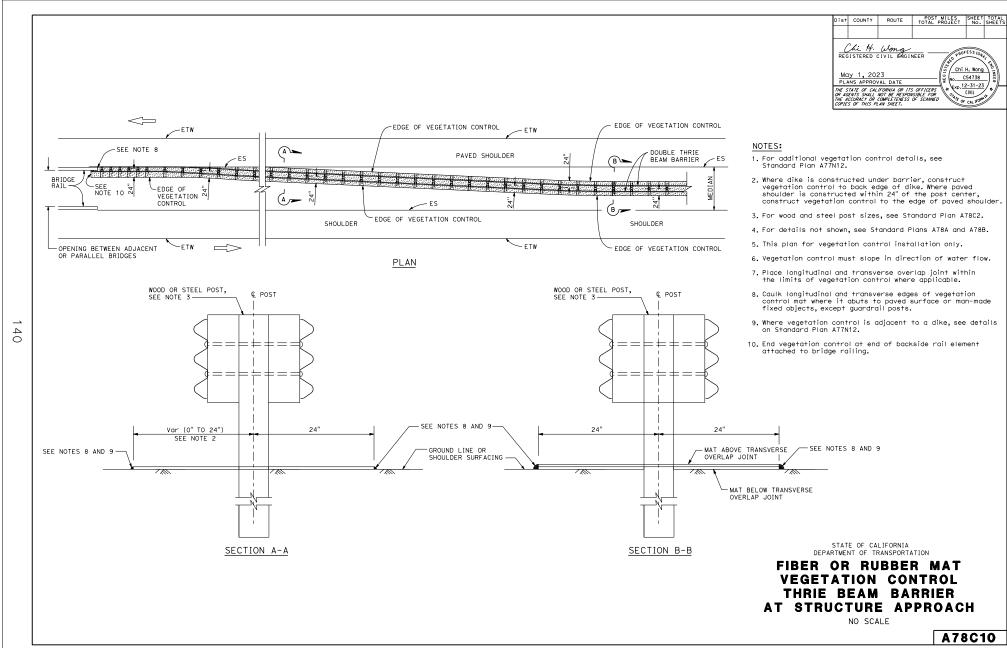
- 1. For additional vegetation control details, see Standard Plan A77N12.
- 2. Where dike is constructed under barrier, construct vegetation control to back edge of dike. Where paved shoulder is constructed within 24" of the post center, construct vegetation control to the edge of paved shoulder.
- 3. For wood and steel post sizes, see Standard Plan A78C2.
- 4. For details not shown, see Standard Plans A78A and A78B.
- 5. This plan for vegetation control installation only.
- 6. Vegetation control must slope in direction of water flow.
- 7. Place transverse and longitudinal overlap joint within the limits of vegetation control where applicable.
- 8. Caulk longitudinal and transverse edges of vegetation control mat where it abuts to paved surface or man-made fixed objects, except
- Where vegetation control is adjacent to a dike, see details on Standard Plan A77N12.

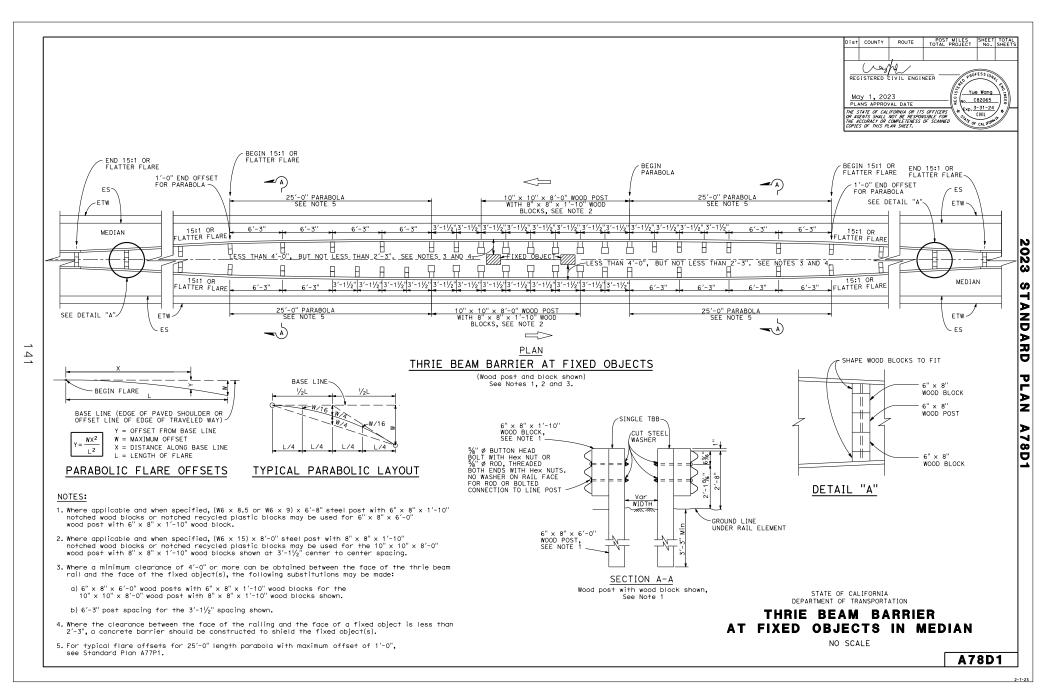


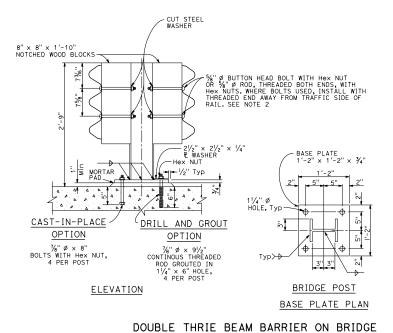
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

FIBER OR RUBBER MAT **VEGETATION CONTROL** THRIE BEAM BARRIER AT FIXED OBJECTS IN MEDIAN

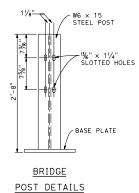
NO SCALE







42



NOTES:

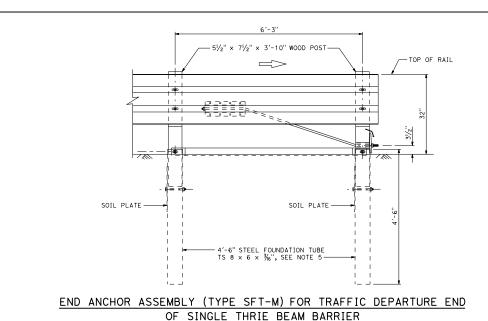
- See Standard Plan A78B for steel post with notched wood block construction details.
- Attach rail element to wood block and steel post with 2 bolts or rods on approaching traffic side of block and post web. No washer on rail faces for rods or bolted connections to post.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DOUBLE THRIE BEAM BARRIER ON BRIDGE

NO SCALE

A78D2



(For one-way roadways)

See Note 1

4

W

DIST COUNTY ROUTE POST MILES SHEET TOTAL PROJECT NO. SHEETS TOTAL PROJECT NO. SHEETS OF SHEETS NO. SHEETS OF SHEETS

NOTES:

- For additional details of End Anchor Assembly (Type SFT-M), see Standard Plan A77S1.
- The W-beam to thrie beam section is only required where the terminal system connection to the thrie beam barrier is a W-beam rail.
- The type of terminal system to be used will be shown on the Project Plans.
- 4. A Caltrans approved crash cushion should be used in place of a terminal system end treatment where the backside of the railing would be exposed to traffic.
- 5. A 6'-0" length steel foundation tube, TS 8 x 6 x $\frac{9}{16}$, without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A $\frac{9}{16}$ when kead boil and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.

POSTS NOT TO BE INSTALLED IN SURFACING MGS CALTRANS APPROVED 31" TERMINAL SYSTEM, 3'-11/2" 3'-11/2' SEE NOTES 3 AND 4 HEIGHT TRANSITION, SEE NOTE 2 -STANDARD THRIE BEAM ELEMENT RAIL W-BEAM TO SPLICE THRIE BEAM ELEMENT **≇** € € • GROUND LINE 7 OR SURFACING

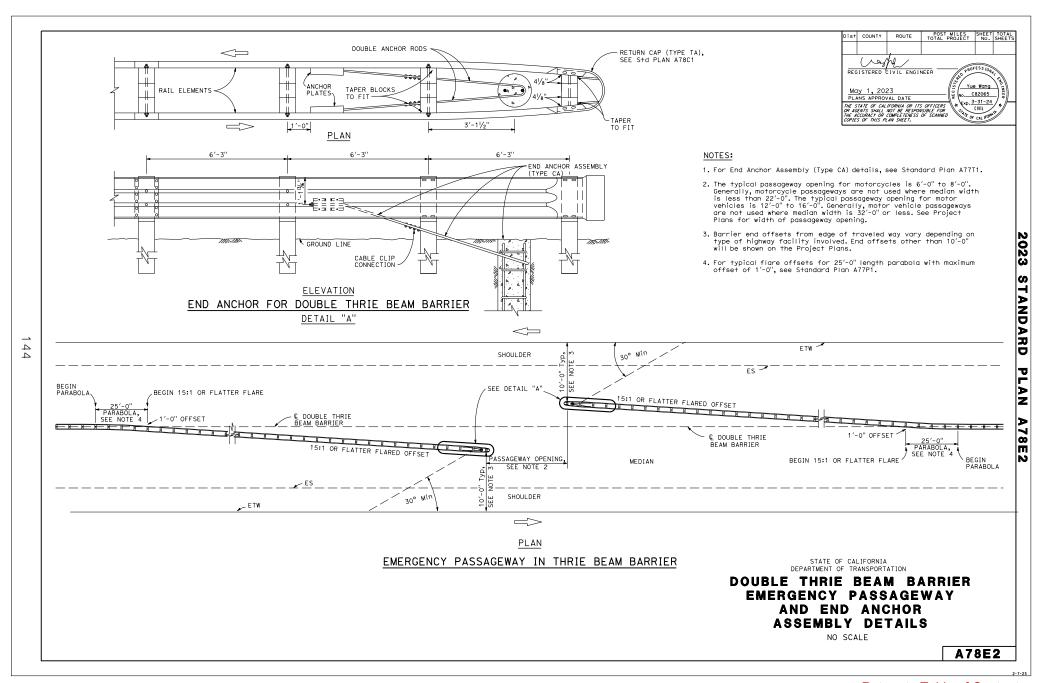
END TREATMENT FOR TRAFFIC APPROACH END
OF SINGLE THRIE BEAM BARRIER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SINGLE THRIE BEAM BARRIER END ANCHOR ASSEMBLY AND TERMINAL SYSTEM END TREATMENT

NO SCALE

A78E1

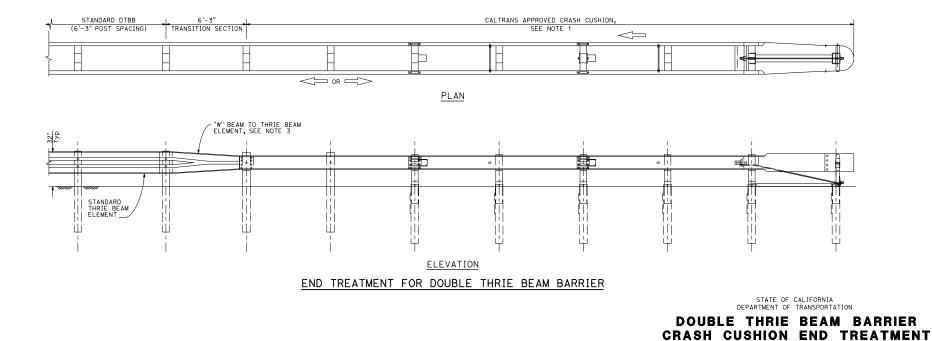




 For the type of Crash Cushion to be used, see Project Plans and Special Provisions.

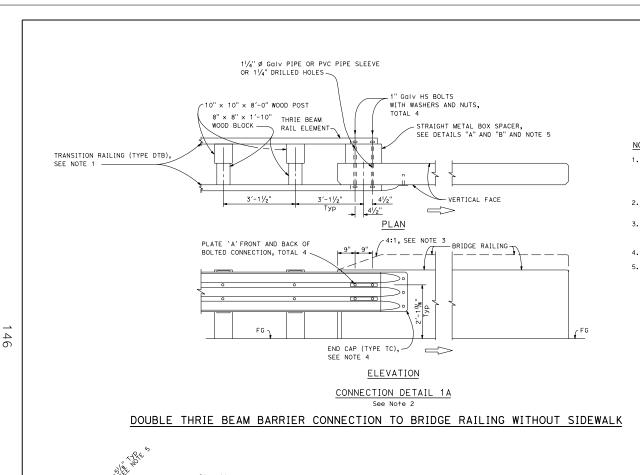
NO SCALE

- 2. For details of standard double thrie beam barrier, see Standard Plans A78A, A78B, A78C1, and A78C2.
- 3. The 'W' beam to thrie beam sections are only required where the crash cushion connection to the thrie beam barrier assembly is a 'W' beam rail.



45

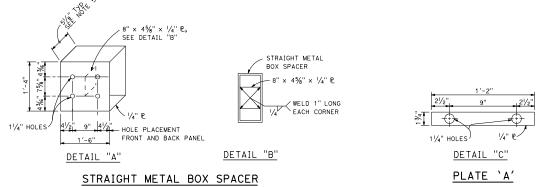
A78E3



Dist COUNTY ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS westle Yue Wang Mdy 1, 2023 PLANS APPROVAL DATE C82065 €xp. 3-31-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET. CIVIL

NOTES:

- For additional details of Transition Railing (Type DTB), see Standard Plans A78K. Transition Railing (Type DTB) transitions the standard 12 gauge double thrie beam barrier to a heavier gauge double thrie beam railing section then to a heavier gauge nested double thrie beam barrier section which then is connected to the concrete bridge railing.
- 2. For typical use of Connection Detail 1A, see Type 25A Connection Layout on
- 3. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail 1a, toper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
- 4. For details of End Cap (Type TC), see Standard Plan A78C1.
- 5. See Standard Plan A78K for additional details regarding depth dimension for straight metal box spacer.

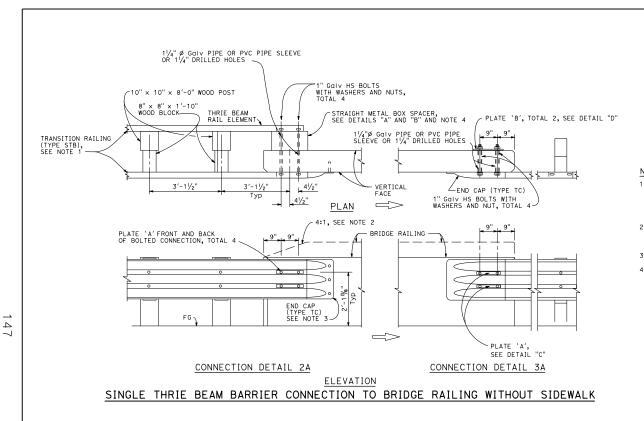


STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DOUBLE THRIE BEAM BARRIER CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS

NO SCALE

A78F1



Dist COUNTY ROUTE POST MILES SHEET TOTAL PROJECT NO. SHEETS

REGISTERED LIVIL ENGINEER

MOJ 1, 2023

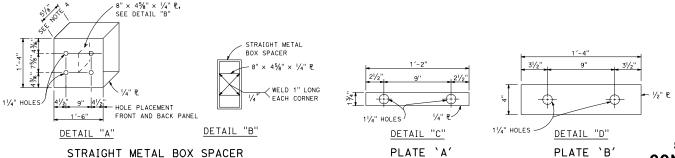
PLANS APPROVAL DATE

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OF ACCUSACY OF COMPLETERSS OF SCAMED

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NOTES:

- 1. For additional details of Transition Railing (Type STB), see Standard Plans A78J. Transition Railing (Type STB) transitions the standard 12 gauge single thrie beam barrier to a heavier gauge single thrie beam railing section then to a heavier gauge nested double thrie beam barrier section which then is connected to the concrete bridge railing.
- 2. Where the height of the bridge railing exceeds the height of the thrie beam railing by more than 1" at Connection Detail 2A, taper the top of the end of the bridge railing at 4:1 to match the top elevation of the thrie beam railing.
- 3. For details of End Cap (Type TC), see Standard Plan A78C1.
- See Standard Plan A78J for additional details regarding depth dimension for straight metal box spacer.

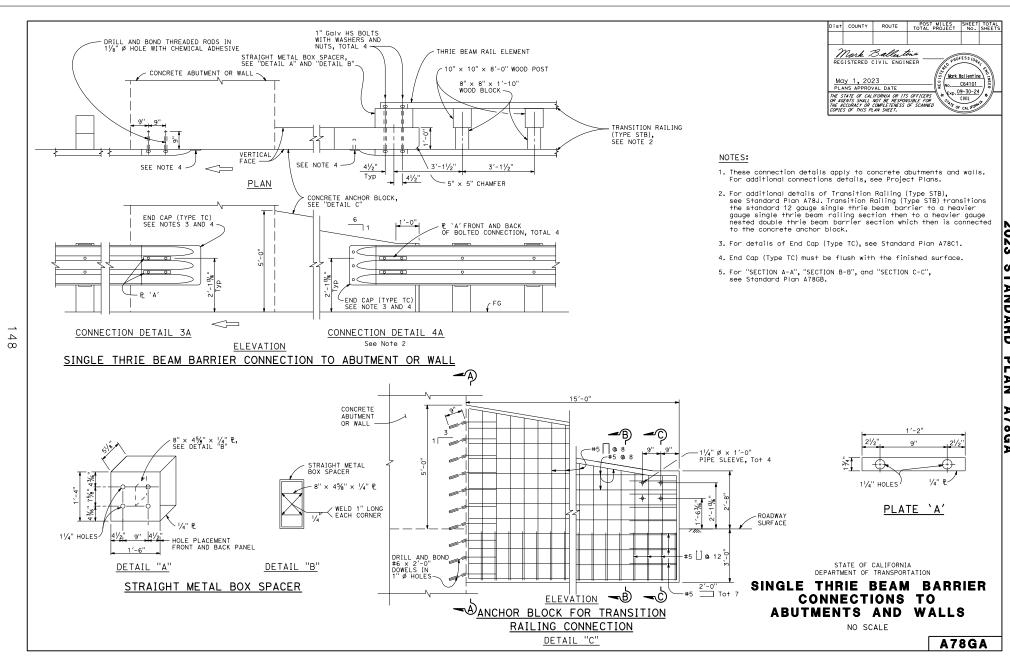


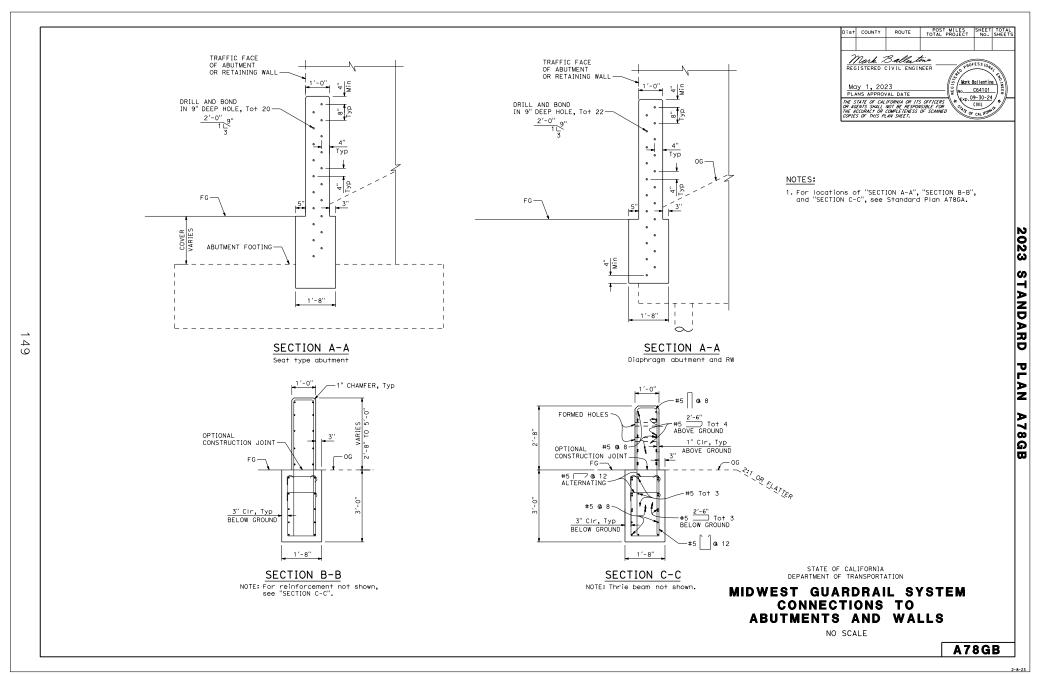
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

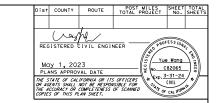
SINGLE THRIE BEAM BARRIER CONNECTIONS TO BRIDGE RAILINGS WITHOUT SIDEWALKS

NO SCALE

A78F2

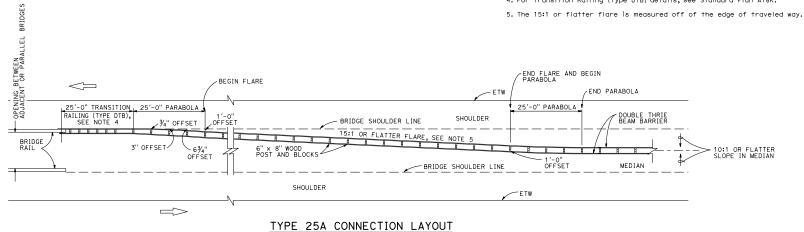






NOTES:

- 1. Line post, blocks and hardware to be used are shown on Standard Plans A78A,
- 2. Post spacing to be 6'-3" center to center, except as otherwise noted.
- 3. Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-10" wood blocks. (W6 x 8.5 or W6 x 9) steel posts, 6'-8" in length, with 6" x 8" x 1'-10" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood posts with 6" x 8" x 1'-10" wood blocks where applicable and when specified.
- 4. For Transition Railing (Type DTB) details, see Standard Plan A78K.



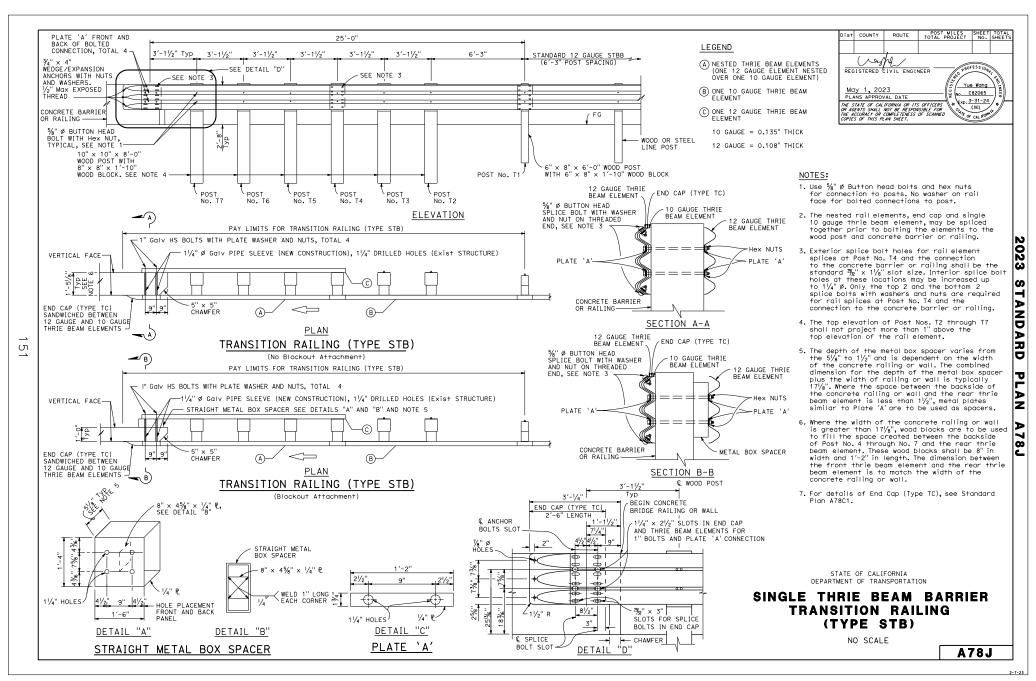
50

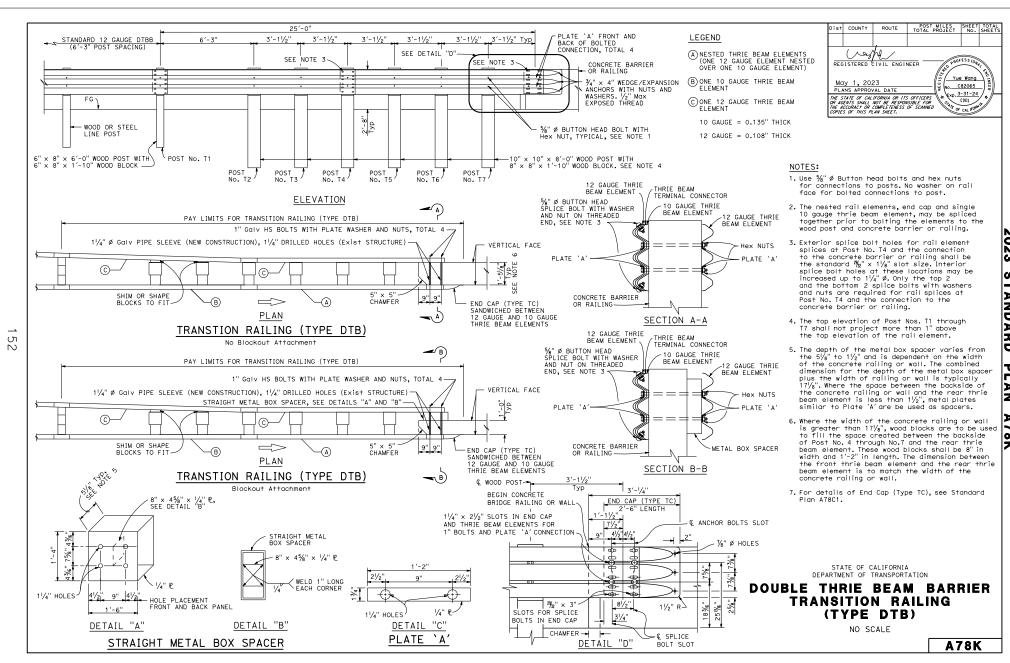
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

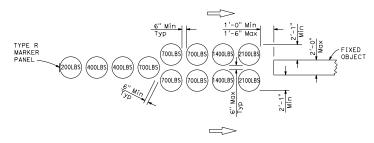
THRIE BEAM BARRIER TYPICAL LAYOUT FOR CONNECTION TO BRIDGE RAILING

NO SCALE

A78H







ARRAY 'U12M'

Approach speed 45 mph or more

NOTES:

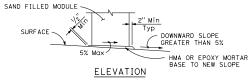
DIRECTION OF

1" THICK PLYWOOD HALF CIRCLE

ALTERNATIVE 2

DOWNWARD SLOPE

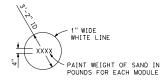
- 1. (xxx) Indicates module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the modules.
- 2. All sand weights are nominal. Sand must contain no more than 7 percent water.
- Modules shall be placed on hot mix asphalt, epoxy mortar or concrete surface. Modules to be placed on surfacing with greater than 5% downward slope shall be seated as shown.
- 4. Weight of sand and outline of each module shall be painted on the surface at each module location.
- 5. Module blocking, epoxied to the deck surface, is required for all modules placed on bridge decks. Two acceptable alternatives are shown. Other alternatives recommended by the manufacturer and approved by the Engineer will be accepted.
- 6. Approach speeds indicated conform to MASH criteria.



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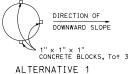
SLOPED SEAT DETAIL

See Note 3



PAINTING DETAIL

See Note 4



SAND FILLED MODULE SURFACE DOWNWARD SLOPE 5% Max PLYWOOD BLOCKING FOR ALTERNATIVE 2 SHOWN -

PLAN

ELEVATION

BRIDGE DECK MODULE BLOCKING DETAILS

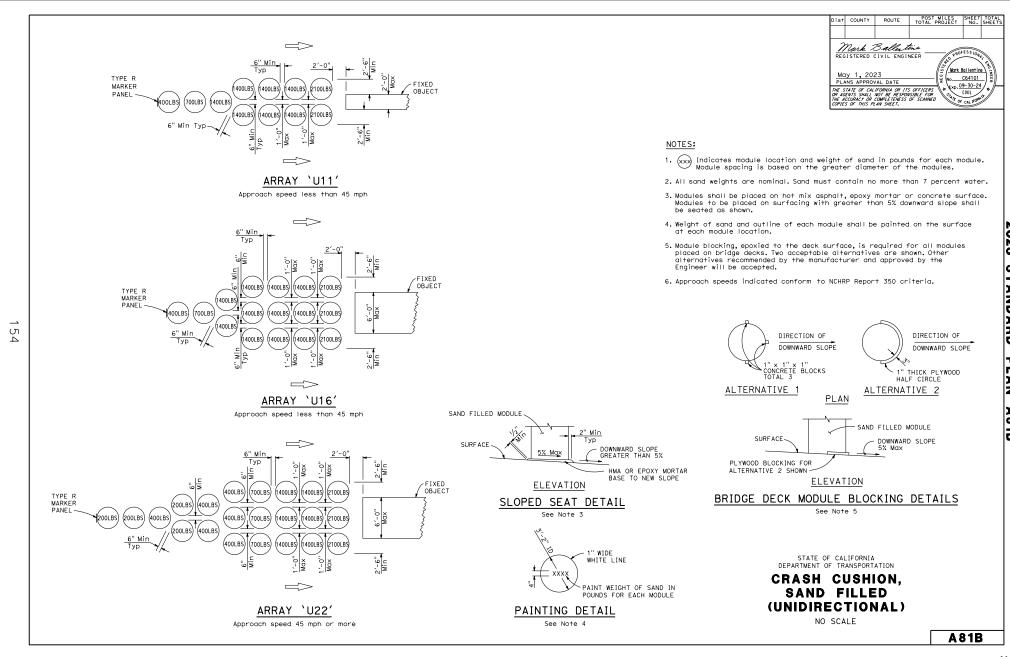
See Note 5

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CRASH CUSHION, SAND FILLED (UNIDIRECTIONAL)

NO SCALE

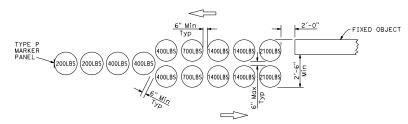
A81A





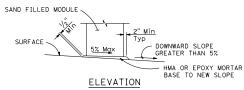
ARRAY 'B11'

Approach speed less than 45 mph



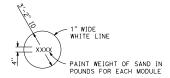
ARRAY 'B14'

Approach speed 45 mph or more



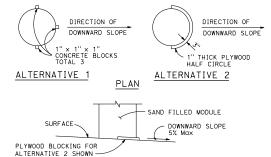
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SLOPED SEAT DETAIL



PAINTING DETAIL

See Note 5



ELEVATION

BRIDGE DECK MODULE BLOCKING DETAILS

NOTES:

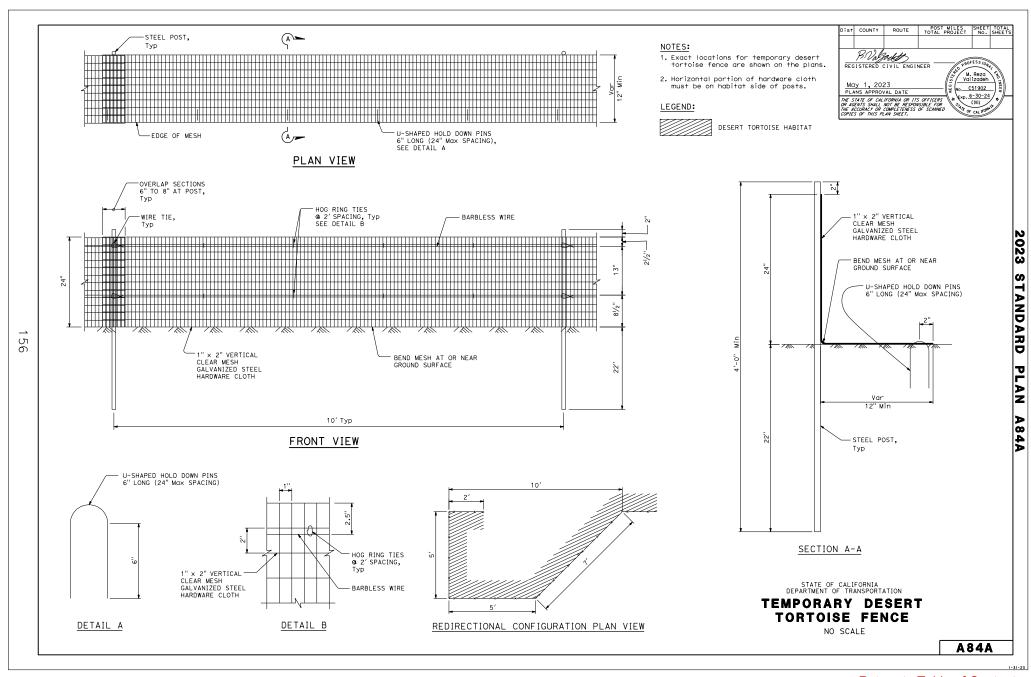
- 1. (xxx) Indicates module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the modules.
- 2. All sand weights are nominal. Sand must contain no more than 7 percent water.
- 3. Bidirectional crash cushion arrays may be angled toward approaching traffic.
- 4. Modules shall be placed on hot mix asphalt, epoxy mortar or concrete surface. Modules to be placed on surfacing with greater than 5% downward slope shall be seated as shown.
- 5. Weight of sand and outline of each module shall be painted on the surface at each module location.
- 6. Module blocking, epoxied to the deck surface, is required for all modules placed on bridge decks. Two acceptable alternatives are shown. Other alternatives recommended by the manufacturer and approved by the Engineer will be accepted.
- 7. Approach speeds indicated conform to NCHRP Report 350 criteria.

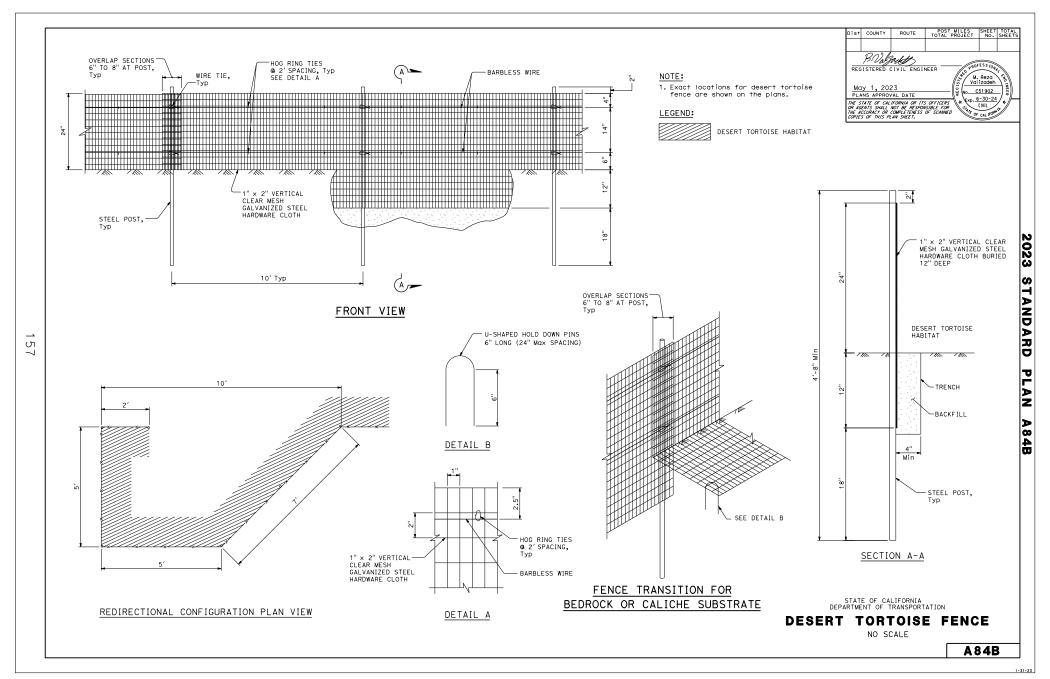
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CRASH CUSHION, SAND FILLED (BIDIRECTIONAL)

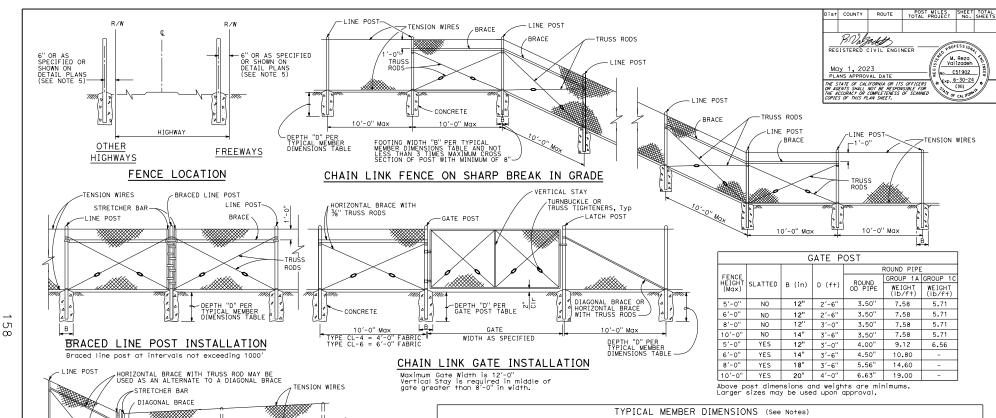
NO SCALE

A81C









l	HORIZONTAL BRACE WITH TRUSS ROD MAY BE USED AS AN ALTERNATE TO A DIAGONAL BRACE	Maximum Vertical
l	STRETCHER BAR TENSION WIRES	gate gr
l	DIAGONAL BRACE	
l		
l		
l		
l		
l		"D" PER
l	I POST ASSEMBLY SOUTH THE TOTAL TOTA	AL MEMBER SIONS TABLE
l	TYPICAL MEMBER	
I	10'-0" Max PER TYPICAL	TH "B" . MEMBER
l	10'-0" Max DIMENSIONS	
۱	CORNER POST 3 TIMES MAX CROSS SECTI	IMUM
١	NOTES: CORNER POST WITH MINIMUL	vi OF 8"
1	A The table to the winds above minimum along and a set on the control of the cont	

					LINE POSTS						BRA	CES										
	ROUND PIPE			ROLL FORME	D	ROUND PIPE			ROLL FORMED													
FENCE HEIGHT	SLATTED	TED B (in)	B (in)	B (in)	D (f+)	ROUND	GROUP 1A	GROUP 1C	П		ROUND	GROUP 1A	GROUP 1C	П	П							
(Max)	0 0 (111)				0 (111)	0 (111)	0 (111)	0 (111)	U (111)	J (111)	J (111)	J (111)	D (111)	U (1117)	5 (117	OD PIPE	WEIGHT (Ib/ft)	WEIGHT (Ib/ft)	SECTION	WEIGHT (Ib/ft)	OD PIPE	WEIGHT (Ib/f+)
5′-0"	NO	8"	2'-6"	1.90"	2.72	2.28	1.875" x 1.625"	1.85	1.90"	2.72	2.28	1.625" x 1.250"	1.35									
6'-0"	NO	10"	2'-6"	2.38"	3.66	3.12	1.875" x 1.625"	2.40	2.38"	3.66	3.12	1.625" x 1.250"	1.35									
8'-0"	NO	12"	3'-0"	2.88"	5.80	4.64	3.250" x 2.500"	4.50	2.38"	3.66	3.12	1.625" x 1.250"	1.35									
10'-0"	NO	14"	3'-6"	3.50"	7.58	5.71	3.250" x 2.500"	4.50	2.88"	5.80	4.64	1.625" x 1.250"	1.35									
5'-0"	YES	12"	3'-0"	4.00"	9.12	6.56	N/A	-	2.38"	3.66	3.12	N/A	-									
6'-0"	YES	14"	3'-0"	4.50"	10.80	-	N/A	-	2.38"	3.66	3.12	N/A	-									
8'-0"	YES	18"	3'-6"	5.56"	14.60	-	N/A	-	2.38"	3.66	3.12	N/A	-									
10'-0"	YES	20"	4'-0"	6.63"	19.00	-	N/A	-	2.88"	5.80	4.64	N/A	-									

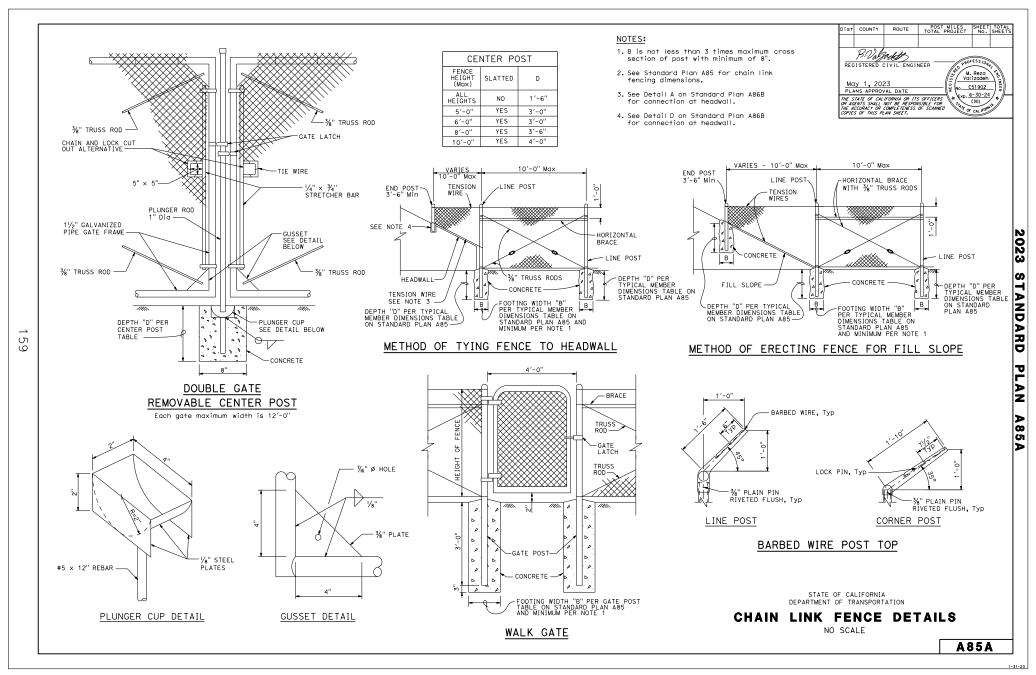
- The table to the right shows minimum sized posts and braces complying with the specifications. Larger or heavier post and brace sizes may be used upon approval.
- 2. Sections shown in the tables must also comply with the strength requirements and other provisions of the Specifications.
- 3. Other sections which comply with the strength requirements and other provisions of the Specifications may be used upon approval.
- 4. Options exercised shall be uniform on any one project.
- 5. Offset to be 2'-0" at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 20'-0" long,
- 6. See Standard Plan A85B for Brace, Stretcher Bar, and Truss Tightener Details.

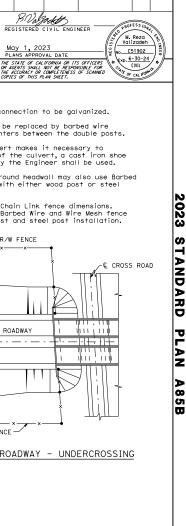
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

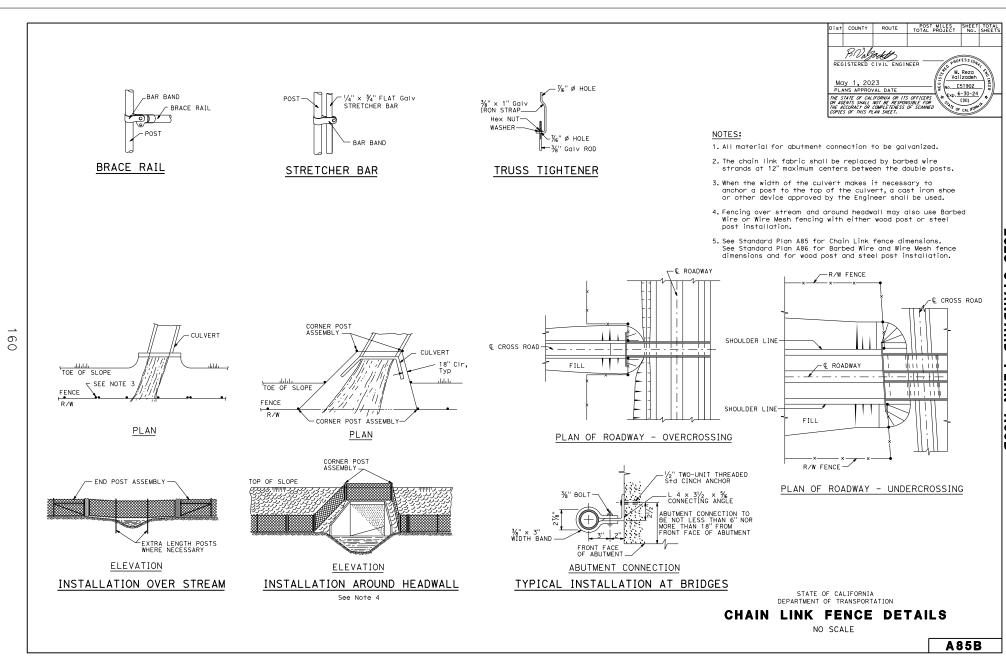
CHAIN LINK FENCE

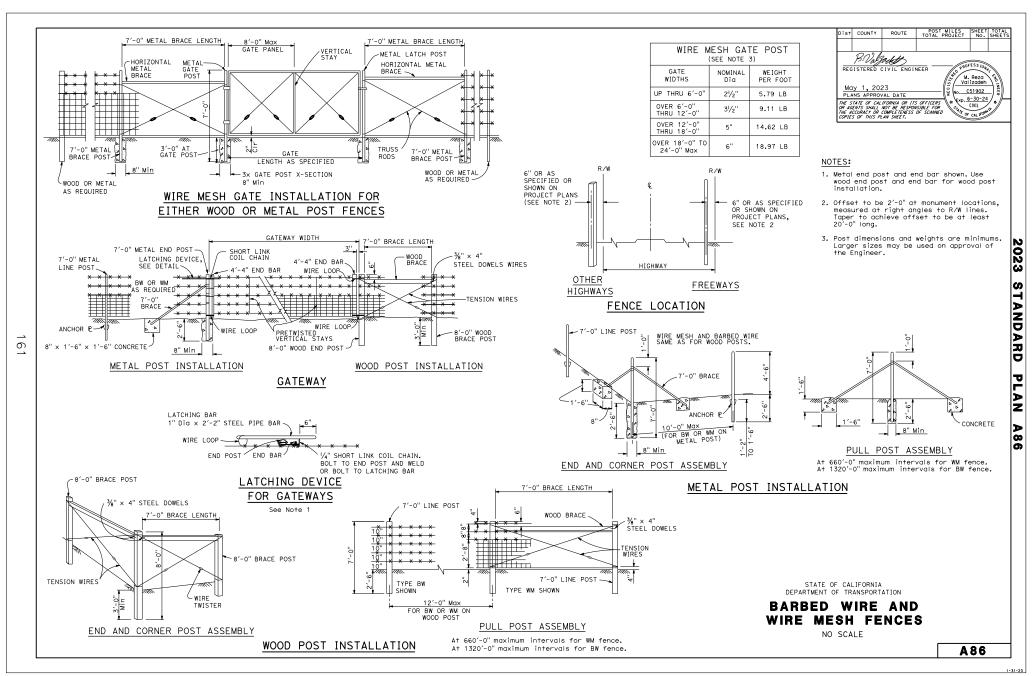
NO SCALE

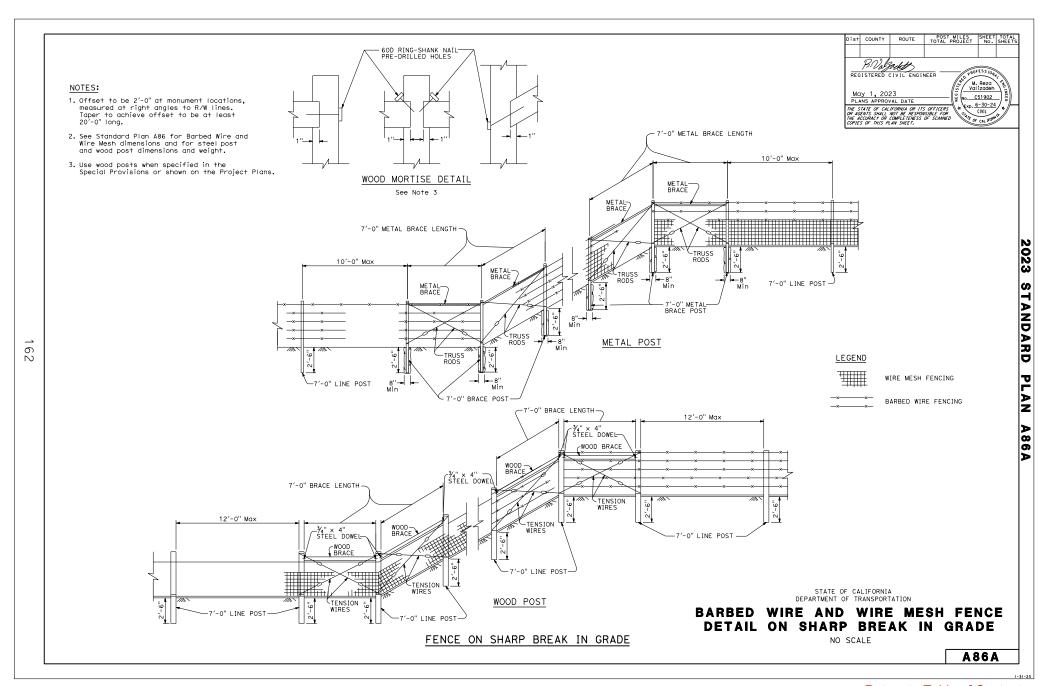
A85

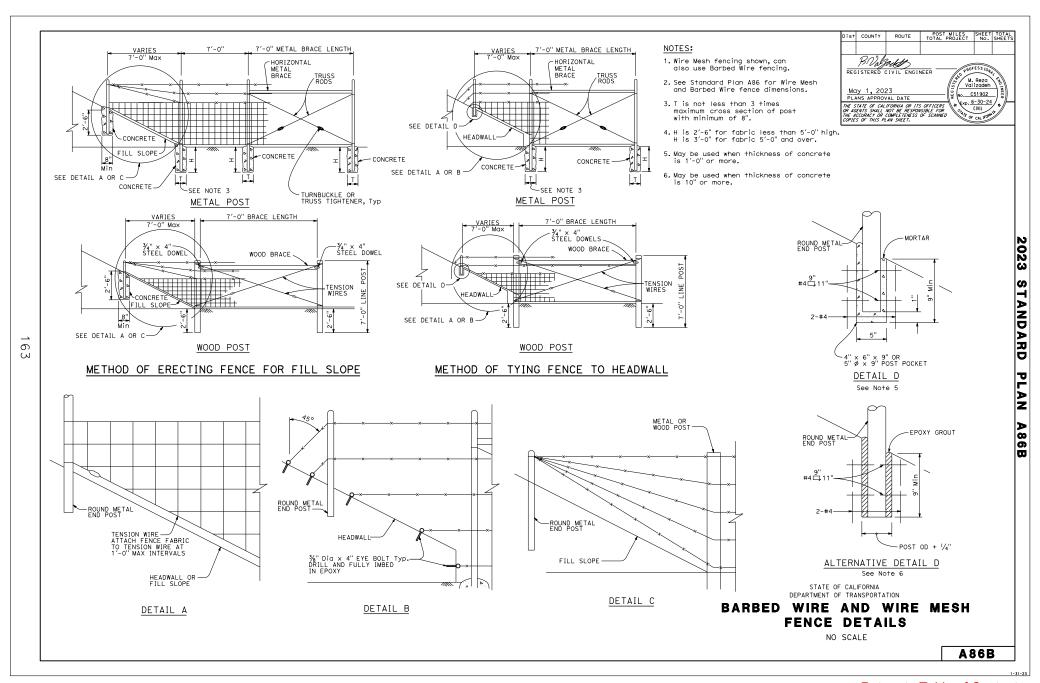


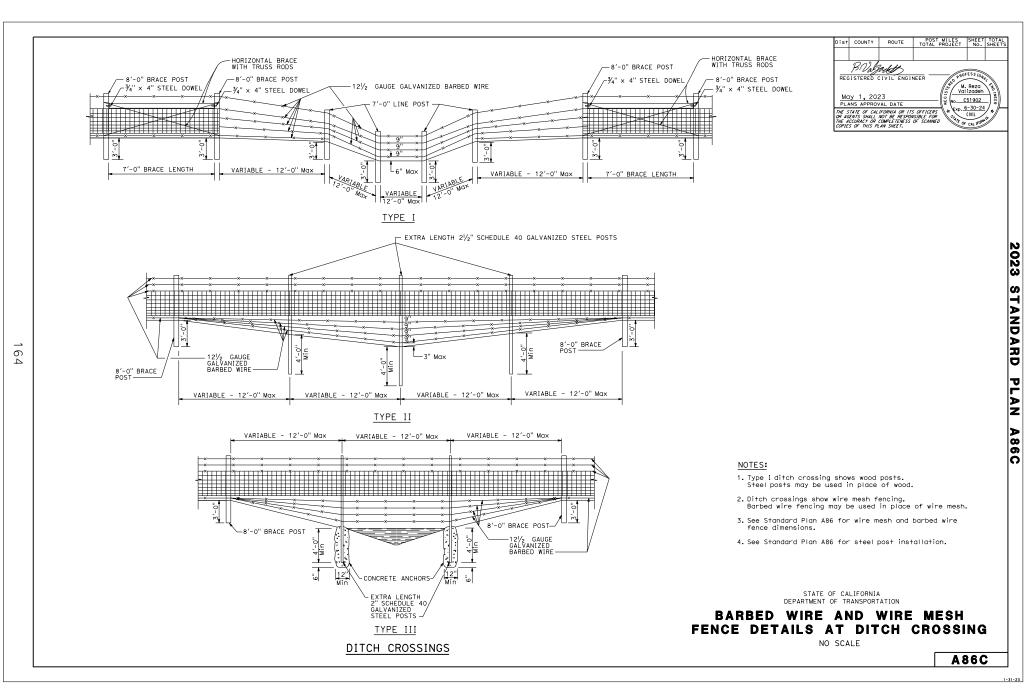


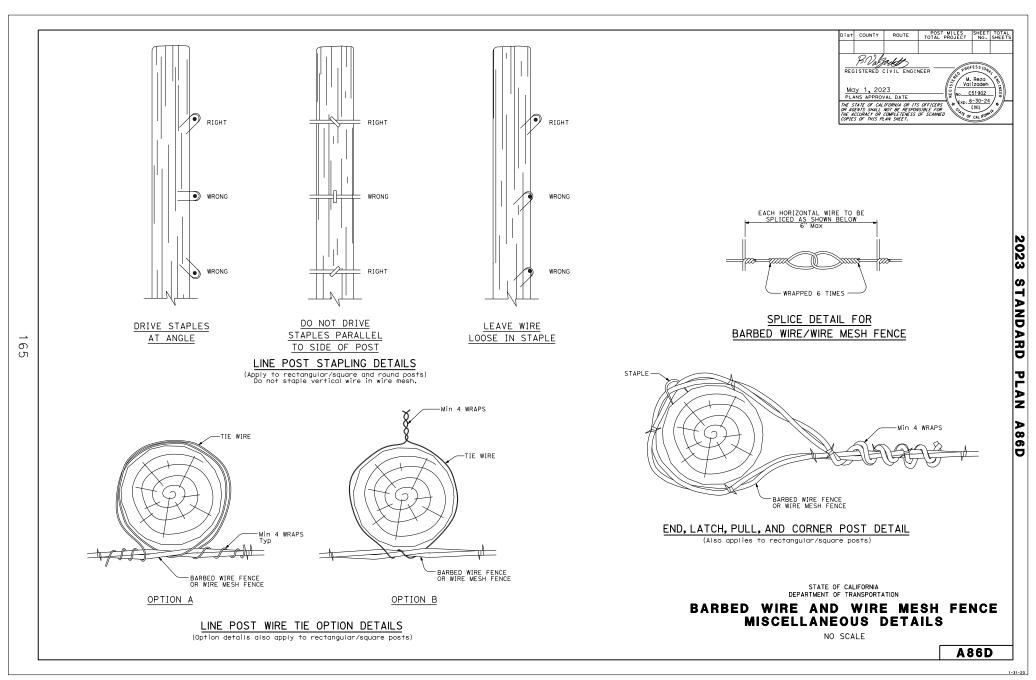


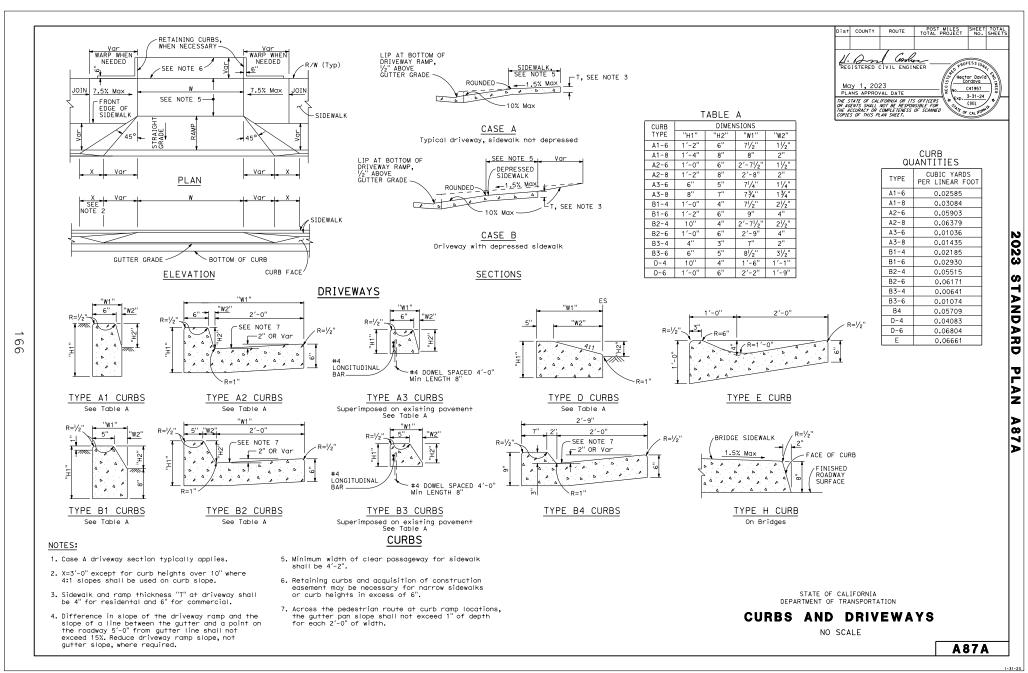




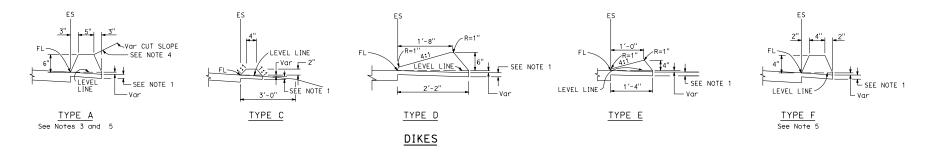


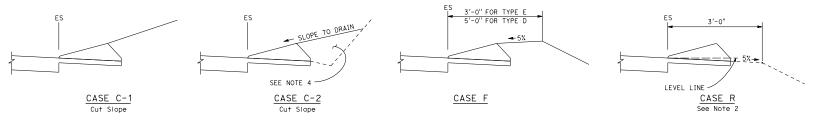












TYPE D AND E BACKFILL DETAILS

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- For HMA shoulders only, extend top layer of HMA placed on the shoulder under dike with no joint at the ES. For projects with OGFC shoulders, do not extend OGFC under dike. See project plans for modified dike detail.
- 2. Case R applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
- 3. Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
- 4. Fill and compact with excavated material to top of dike.
- Use Type A or Type F dike, where dike is required with guardrall installations. See Standard Plan A77N4 for dike positioning details. See Standard Plan A77N3 for hinge point offsets with guardrall.

DIKE OLIANTITIES

QUANTITIES					
	CUBIC YARDS				
TYPE	PER LINEAR FOOT				
Α	0.0135				
С	0.0038				
D	0.0293				
E	0.0130				
F	0.0066				

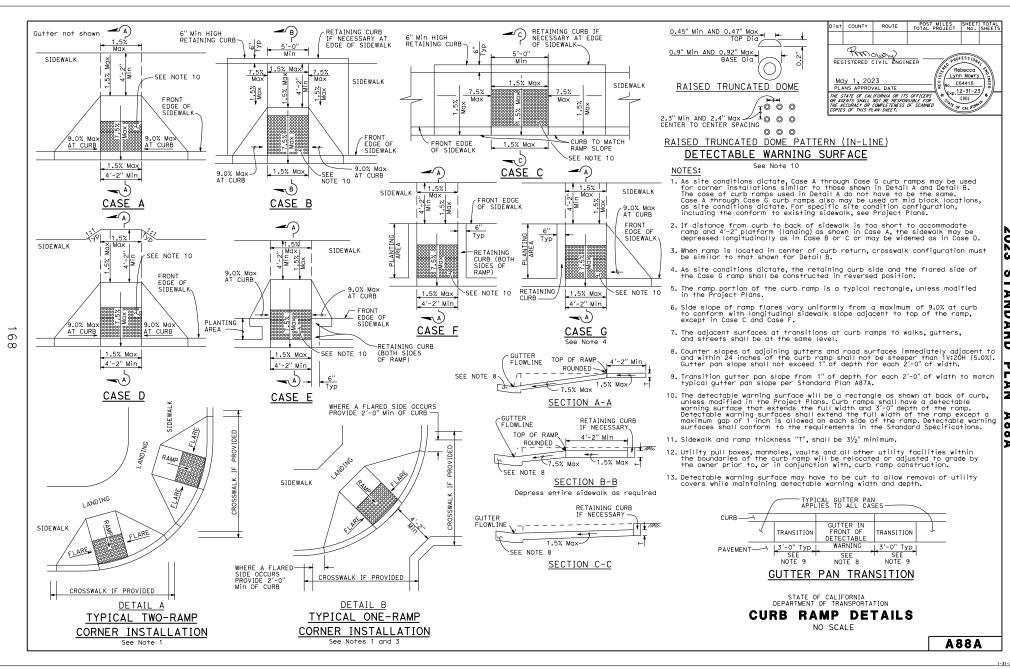
Quantities based on 5% cross slope.

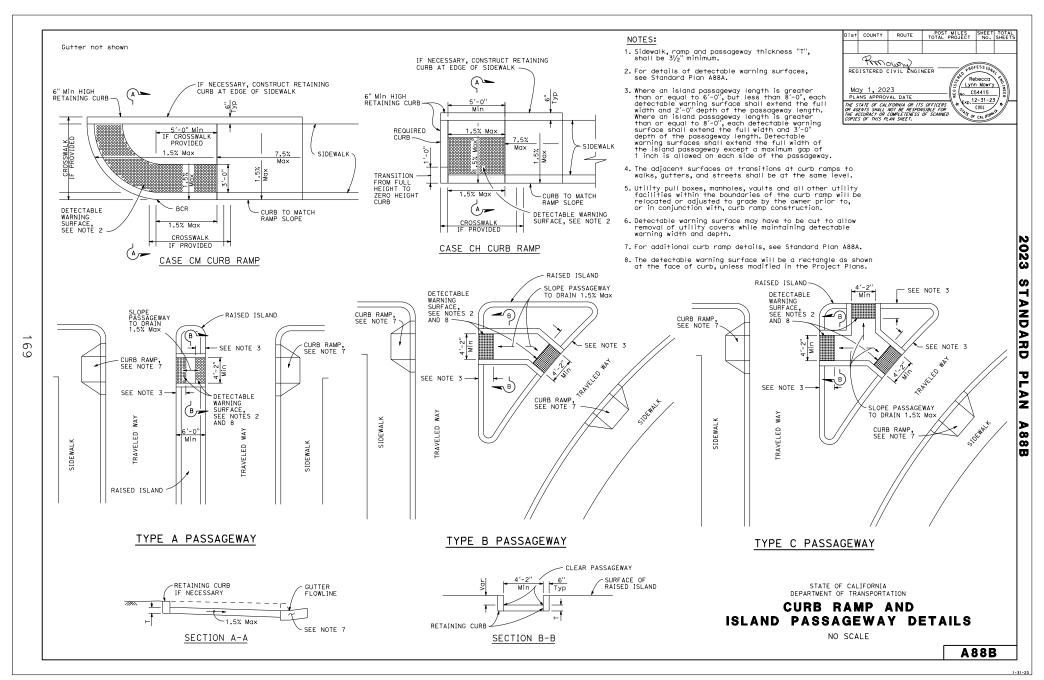
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

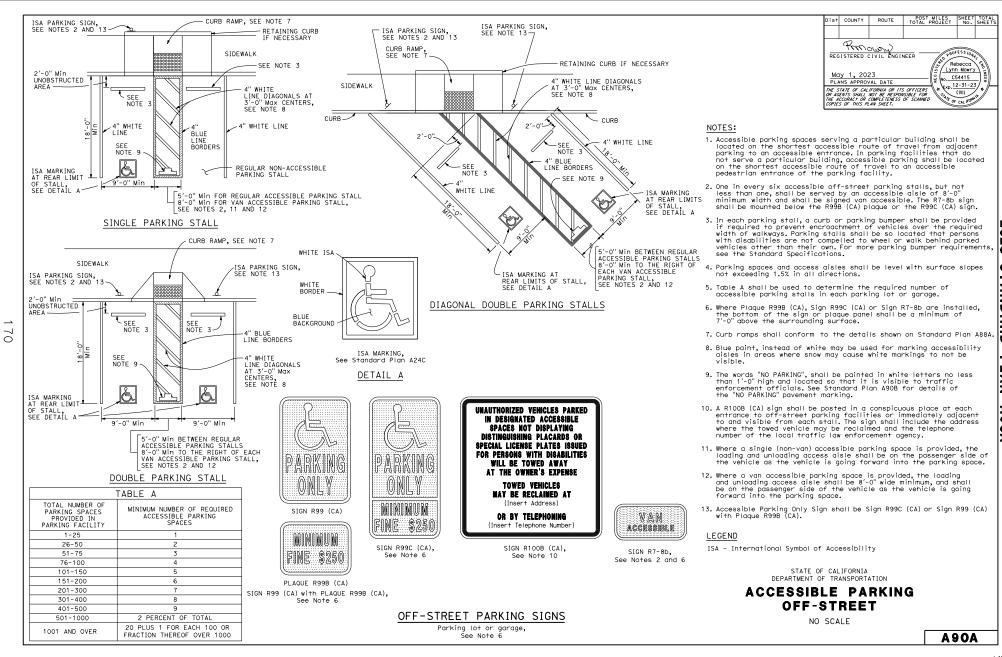
HOT MIX ASPHALT DIKES

NO SCALE

A87B







ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

Rebecca Lynn Mowry

o. C54415

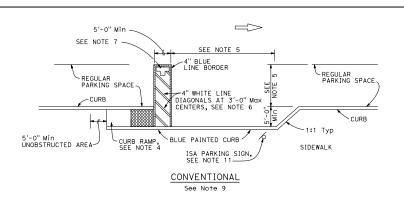
€xp.12-31-23

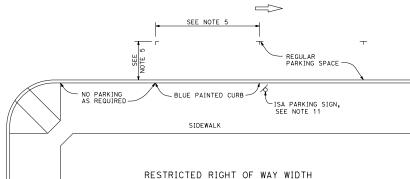
CIVIL

REGISTERED CIVIL ENGINEER

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Mdy 1, 2023 PLANS APPROVAL DATE





ON-STREET PARKING

Parallel parking, see Note 10

PAVEMENT MARKING See Note 7





See Note 3

PLAQUE R99B (CA) SIGN R99 (CA) with PLAQUE R99B (CA),



SIGN R99 (CA)



SIGN R99C (CA) See Note 3

NOTES:

- 1. Parking spaces shall be so located that persons with disabilities are not compelled to wheel or walk behind parked vehicles other than their own.
- 2. Surface slopes of accessible on-street parking spaces shall be the minimum feasible.
- 3. Where Plaque R99B (CA) or Sign R99C (CA) are installed, the bottom of the sign or plaque panel shall be a minimum of 7'-0" above the surrounding surface.
- 4. Curb ramps shall conform to the details shown on Standard Plan A88A.
- 5. Accessible on-street parking spaces shall not be smaller in length or width than that specified by the local jurisdiction for other parking spaces, but not less than 20'-0" in length and not less than 8'-0" in width.
- 6. Blue paint, instead of white may be used for marking accessibility aisles in areas where snow may cause white markings to not be visible.
- 7. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials. See Standard Plan A24E for square foot area for painting the words "No PARKING".
- 8. There shall be no obstructions on the sidewalk adjacent to and for the full length of the parking space, except for the ISA parking sign shown.
- The Conventional detail should be the primary choice of accessible on-street parking. However, if the sidewalk lacks adequate space to construct a standard curb ramp, the Restricted Right of Way detail should be used.
- 10. If the Restricted Right of Way width detail is selected and it conflicts with a bus stop or other uses, this detail may apply to the other end of the block.
- 11. Accessible Parking Only Sign shall be Sign R99C (CA) or Sign R99 (CA) with Plaque R99B (CA).

LEGEND

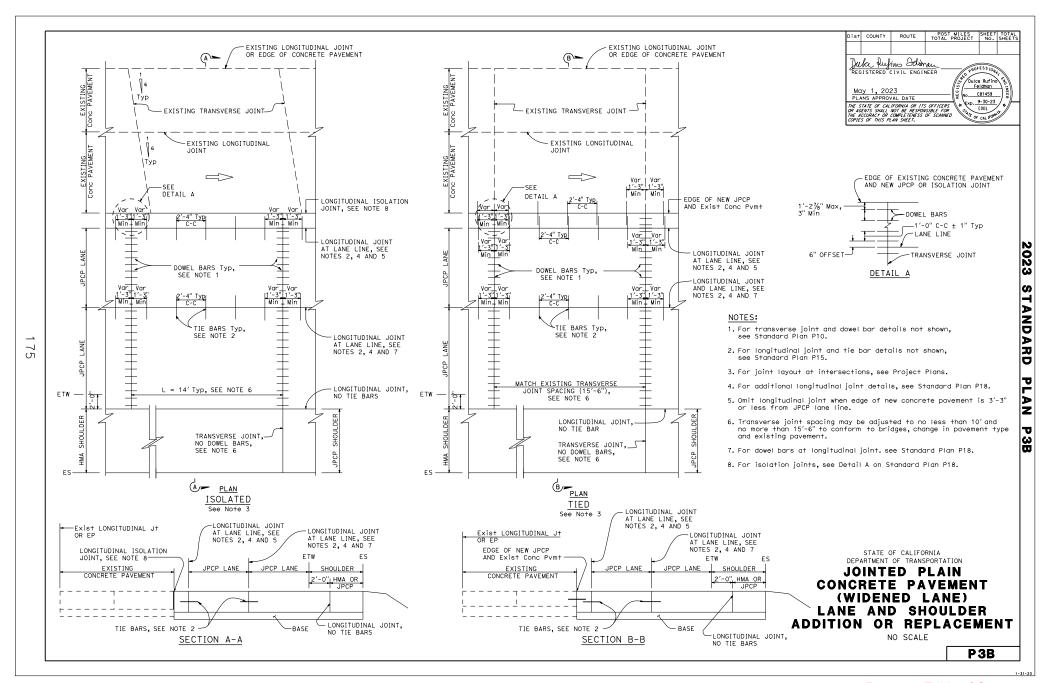
ISA - International Symbol of Accessibility

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

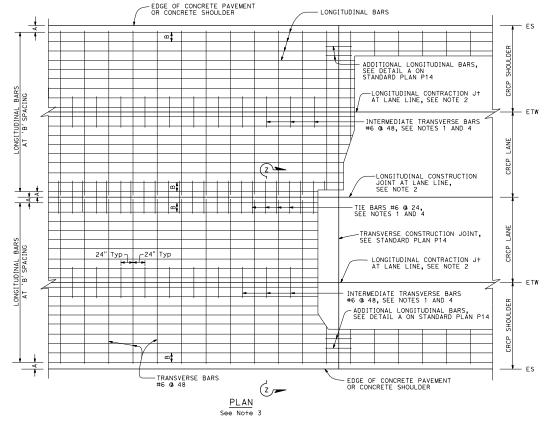
ACCESSIBLE PARKING **ON-STREET**

NO SCALE

A 9 0B







CRCP LANE OR SHOULDER

LONGITUDINAL CONTRACTION JOINT
AT LANE LINE, SEE NOTE 2

LONGITUDINAL BARS

INTERMEDIATE TRANSVERSE BARS, SEE NOTES 1 AND 4

B A

76

CRCP

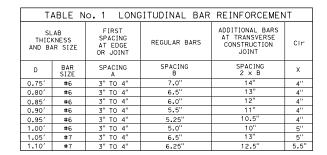
CRCP LANE

TIE BARS, SEE NOTES 1 AND 4

LONGITUDINAL CONSTRUCTION JOINT AT LANE LINE, SEE NOTE 2

TRANSVERSE BARS

SECTION Z-Z



NOTES:

-EDGE OF CONCRETE PAVEMENT OR CONCRETE SHOULDER

- Place tie bars and intermediate transverse bars parallel to and in the same plane as transverse bars.
- 2. For longitudinal contraction and construction joint details, see Standard Plan P16.
- 3. For curved lane layout see Standard Plan P16.
- 4. For tie bar and intermediate transverse bar details, see Standard Plan P16.

ABBREVIATION:

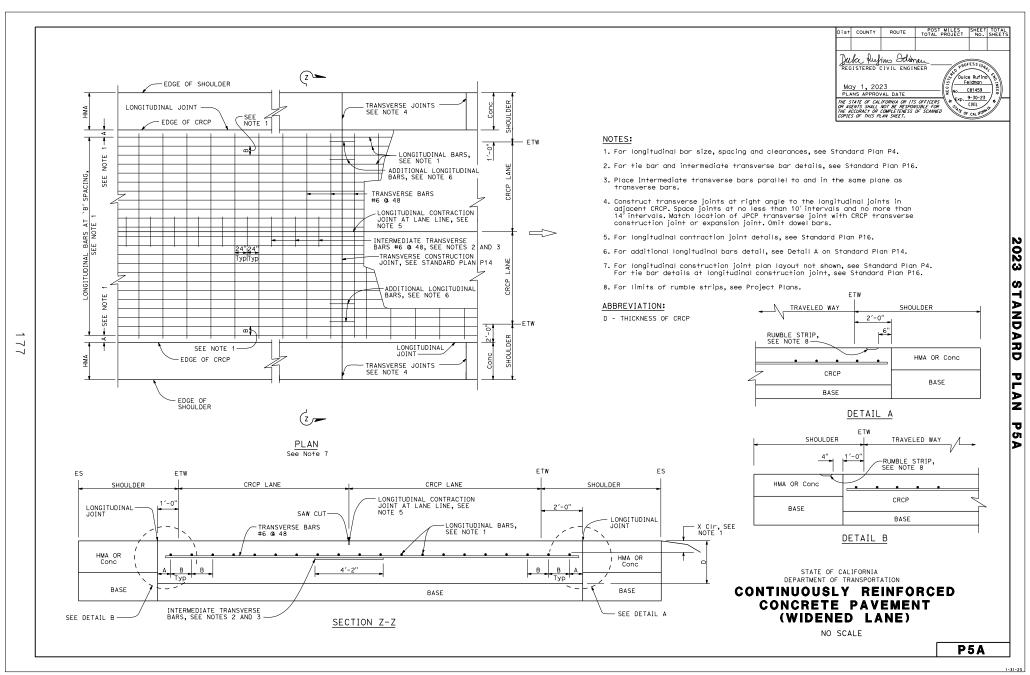
D - THICKNESS OF CRCP

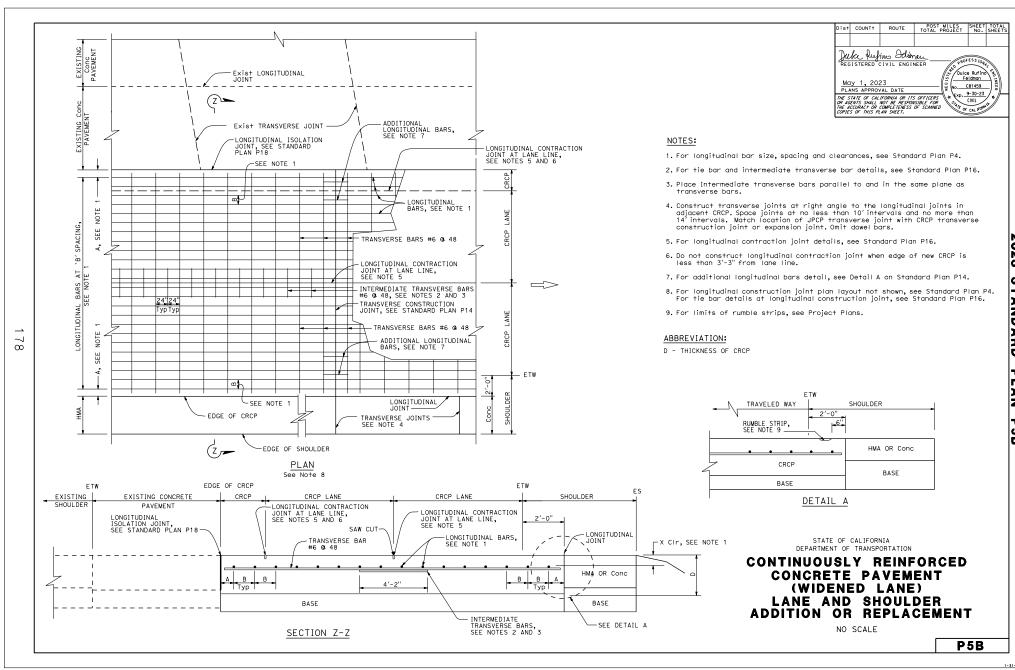
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

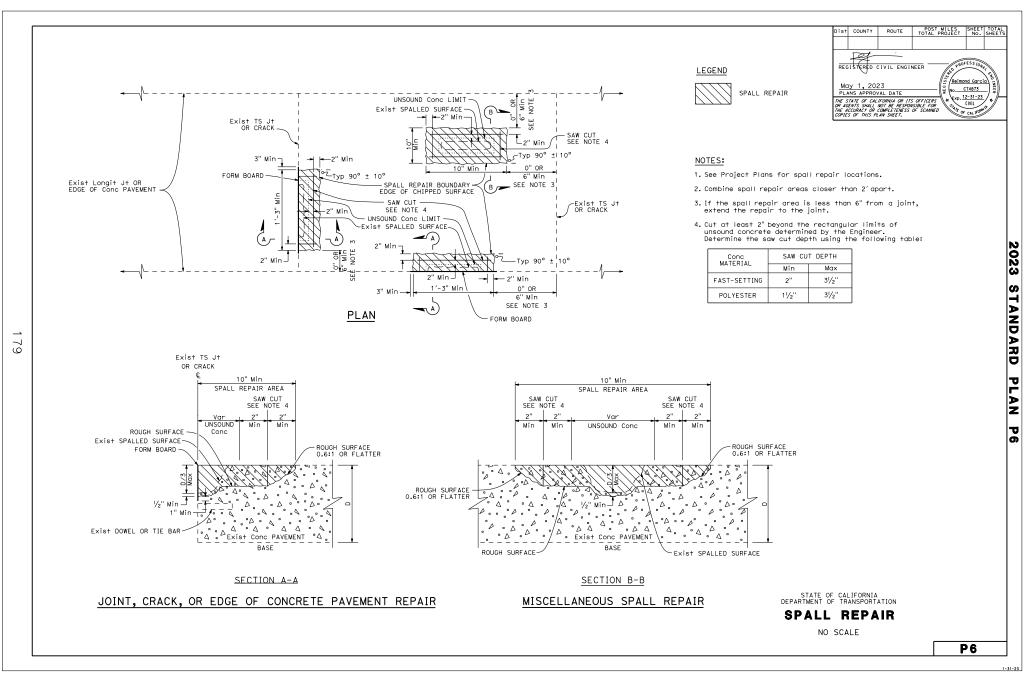
CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

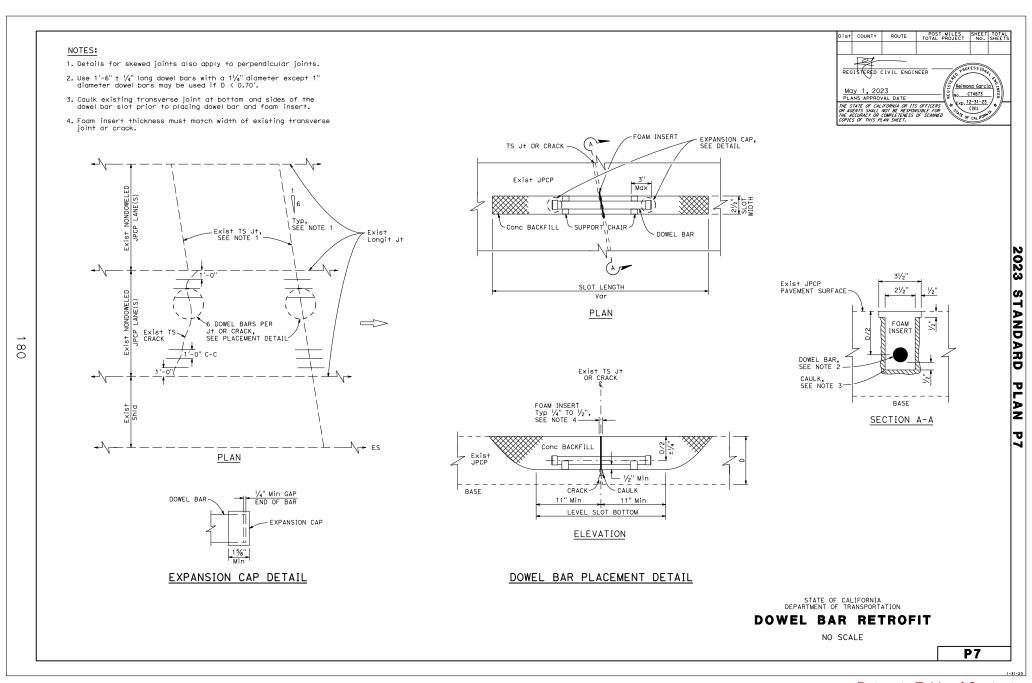
NO SCALE

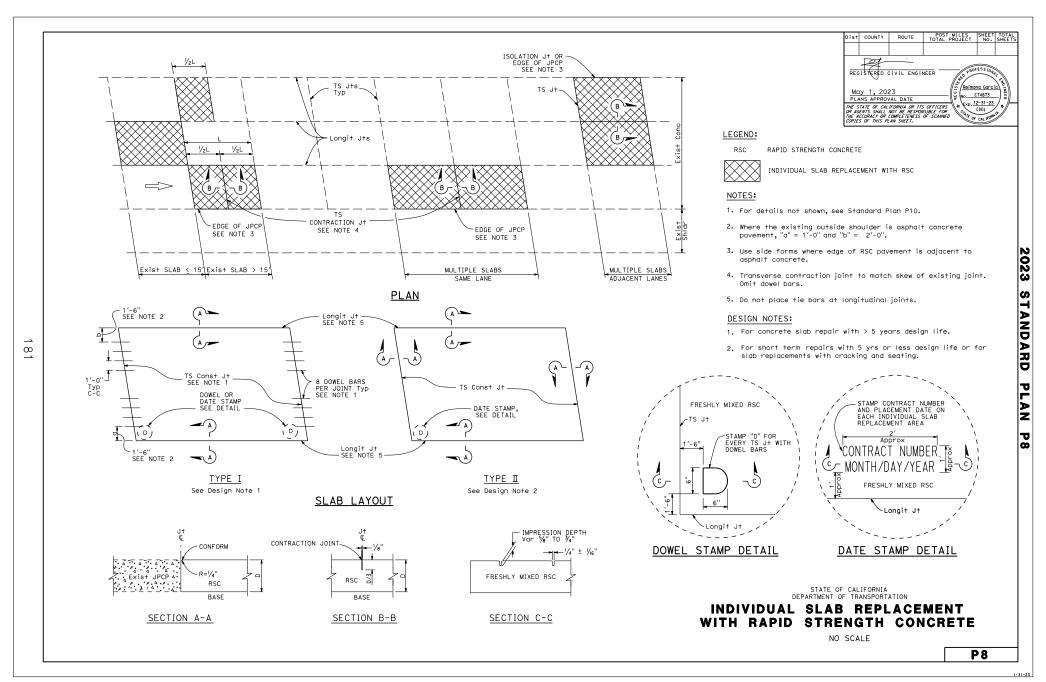
Р4



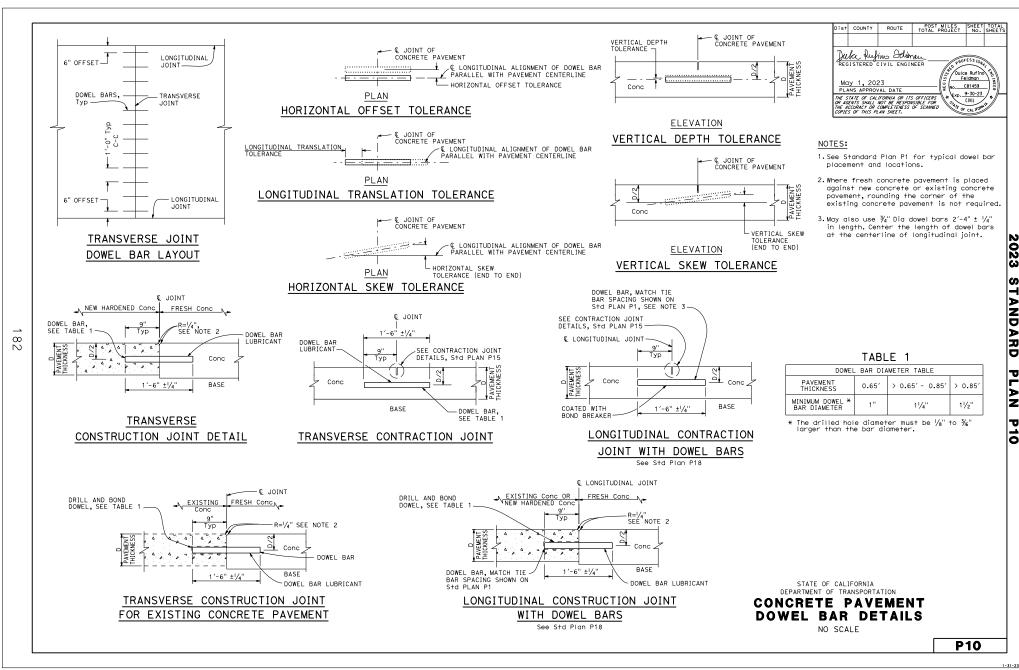


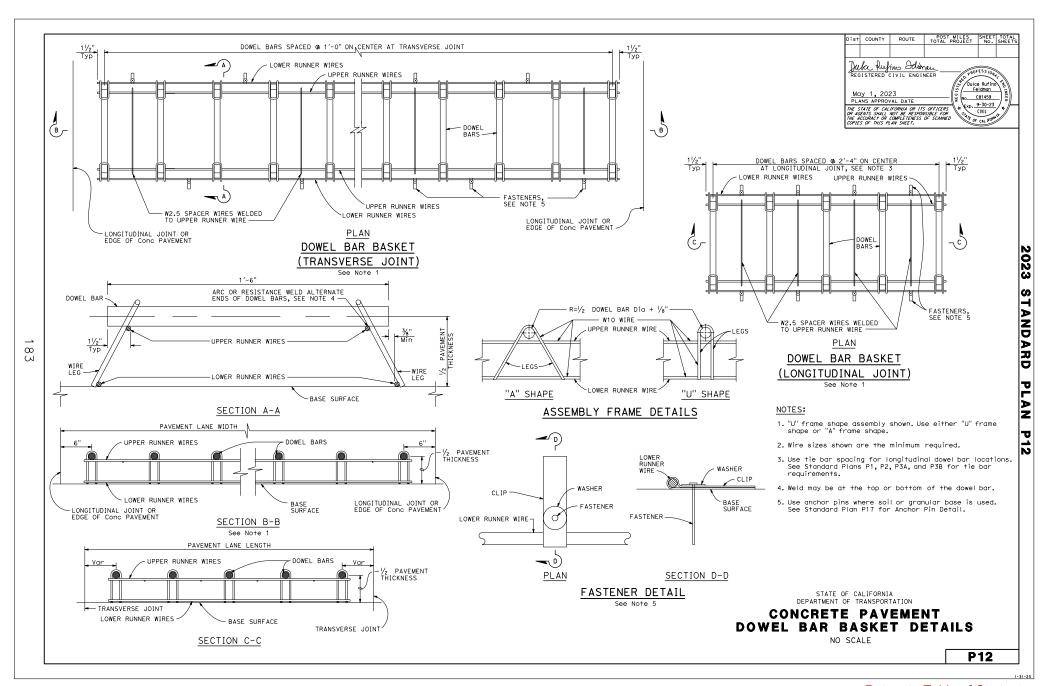


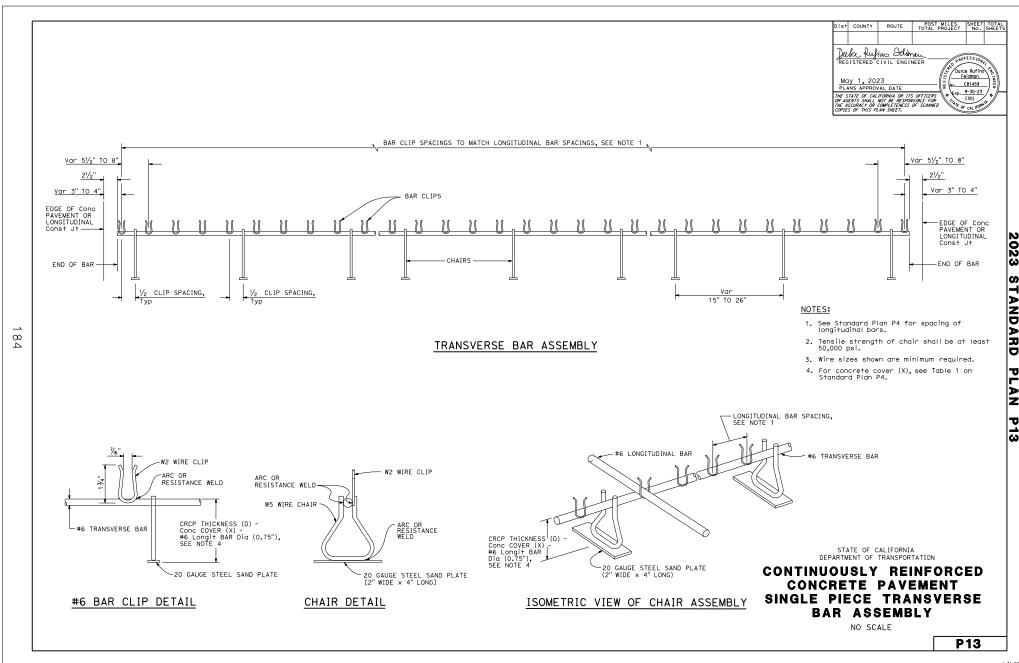










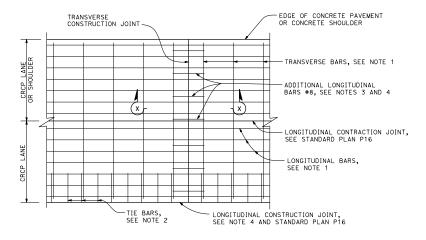


- For transverse and longitudinal bar sizes, spacing and clearances, see Table 1 on Standard Plan P4.
- 2. For tie bars in longitudinal construction joint, see Standard Plan P16.
- 3. Place additional longitudinal bars parallel to and in the same plane as the longitudinal bars.
- 4. Place additional longitudinal bars symmetrically about longitudinal construction joint.

DIST COUNTY ROUTE POST MILES SHEET TOTAL PROJECT NO. SHEETS DUTAL PROJECT SHEET TOTAL PROJECT SHEET TOTAL PROJECT SHEET TOTAL PROJECT SHEET SHEET TOTAL PROJECT SHEET S

ABBREVIATION

D - THICKNESS OF CRCP

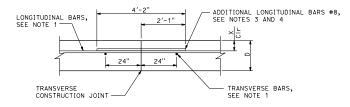


DETAIL A

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Additional longitudinal bars at transverse construction joint



SECTION X-X

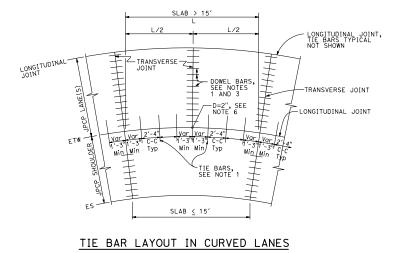
TRANSVERSE CONSTRUCTION JOINT

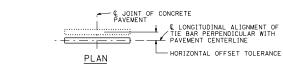
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT TRANSVERSE CONSTRUCTION JOINT

NO SCALE

P14

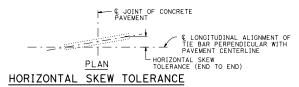




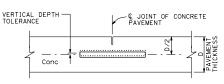
HORIZONTAL OFFSET TOLERANCE



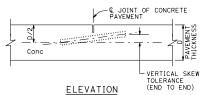
PLAN LONGITUDINAL TRANSLATION TOLERANCE



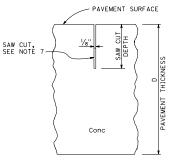




ELEVATION VERTICAL DEPTH TOLERANCE



VERTICAL SKEW TOLERANCE



CONTRACTION JOINT DETAIL

TIE BAR DETAILS

P15

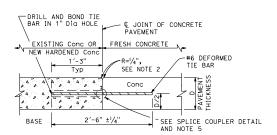
& JOINT OF CONCRETE -PAVEMENT FRESH CONCRETE FRESH CONCRETE SEE CONTRACTION JOINT DETAIL 1'-3" #6 DEFORMED TIE BAR Тур Conc BASE

LONGITUDINAL CONTRACTION JOINT

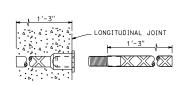
NOTES:

86

- 1. See Standard Plan P1 for typical dowel bar and tie bar placement and locations.
- 2. Where new pavement is placed against existing concrete pavement, rounding the corner is not required.
- 3. For dowel bar sizes, See Standard Plan P10.
- 4. Tie bar details apply to inside widenings.
- 5. Use either drill and bond or splice couplers.
- 6. Full depth drilled hole. Fill hole with filler material.
- 7. The bottom of the saw cut must be at least 0.5" clear of any dowel bar, tie bar and bar reinforcement.



LONGITUDINAL CONSTRUCTION JOINT

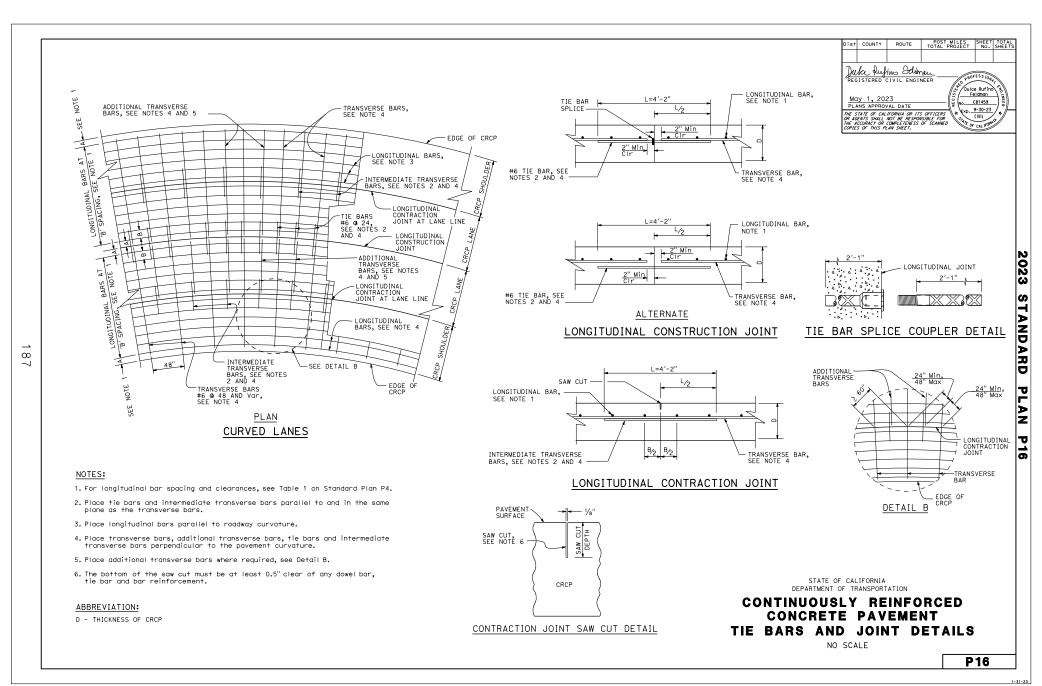


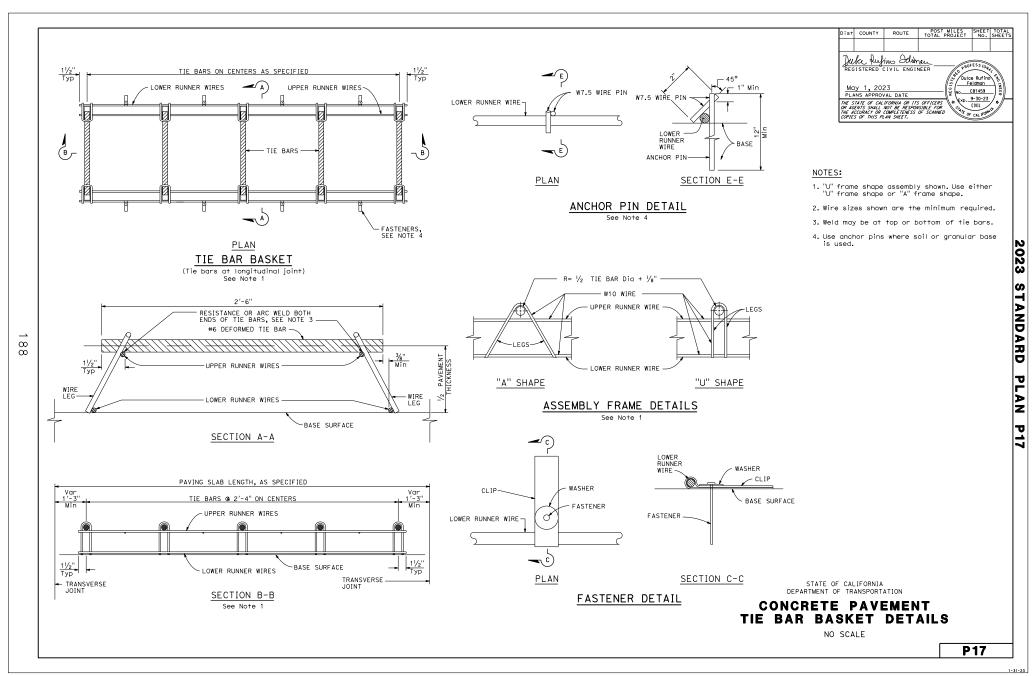
ALTERNATIVE SPLICE COUPLER

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

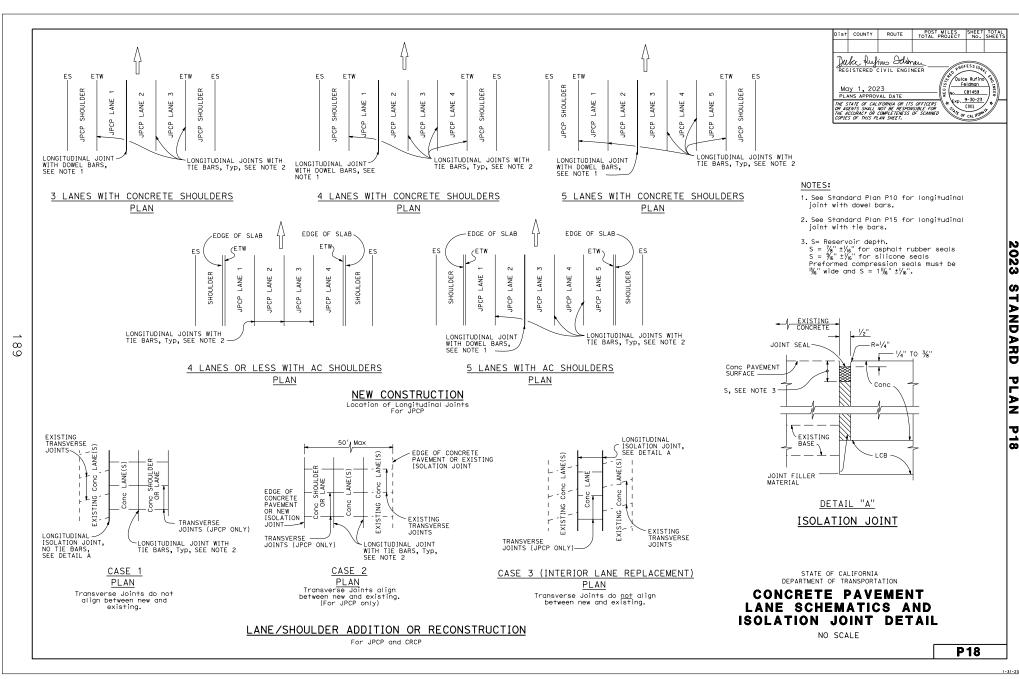
CONCRETE PAVEMENT

NO SCALE

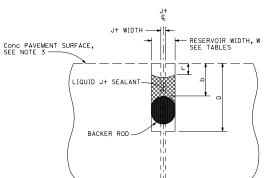






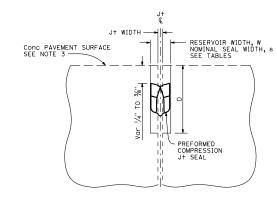


Dist	COUNTY	ROUTE		MILES PROJECT	SHEET No.	TOTAL SHEETS
	Iet-	· .		_		
REC	REGISTERED CIVIL ENGINEER					
Mgy 1, 2023						
					1 % N	
12-31-23				/~/ <u>/</u>		
OR AG	ENTS SHALL	IFORNIA OR IT: NOT BE RESPON	ISIBLE FOR	114 /	CIVIL CAL IFORM	*/ */
	CCUHACY OH S OF THIS PL	COMPLETENESS AN SHEET.	OF SCANNEL	O. C. CA	CAL IFORM	//



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LIQUID JOINT SEALANT



PREFORMED COMPRESSION JOINT SEAL

RESERVOIR	PREFORMED (JOINT SEAL	COMPRESSION DIMENSIONS	
w ± ⅓6"	NOMINAL SEAL WIDTH S	RESERVOIR DEPTH D ± 1/4"	
1/4"	⅓ ₆ ''	11/4"	
3/8"	11/16 ''	1 7/6"	
1/2"	13//6''	1 11/16"	
5/8"	1"	1 1/8"	
3/4"	1 1/4"	21/8"	
%"	1 5/8"	25/8"	
1"	1 1/8"	2%"	
11/8"	2"	2 1/8"	



	LIQUID JOINT SEALANT DIMENSIONS							
RESERVOIR WIDTH	BACKER ROD	DEPTHS (ASPH.	ALT RUBBER) **	DEPTHS (SILICONE)				
w ± 1/16"	NOMINAL Dia *	RESERVOIR D ± 1/4"	BACKER ROD b ± 1/16"	RESERVOIR D ± 1/4"	BACKER ROD b ± /16"	RECESS r ± 1/16"		
1/4"	3/8"	13/4"	7∕8''	1 3/8"	1/2"	1/4"		
3/8"	/2"	1 1/8"	7∕8"	11/2"	1/2"	1/4"		
1/2"	3/4"	2"	7/8"	1 3/4"	%"	5/6"		
5/8"			1"	2"	5/8"	%6"		
3/4"	1"	2¾"	11/8"	21/4"	3/4"	3/8"		
7/8"	7/8" 11/4"		11/4"	21/2"	13/16"	3/8"		
1"	11/2"	31/4"	13/8"	25/8"	7∕8"	3/8"		
11/8"	11/2"	31/2"	11/2"	213/6"	1"	1/2"		

* Larger diameter backer rods may be substituted according to manufacturer recommendations if reservoir depth is increased equivalently.

** Asphalt rubber sealant recess depth "r" varies from $\frac{1}{4}$ " to $\frac{3}{8}$ ".

NOTES:

- Details do not apply to isolation joints and longitudinal construction joints.
- 2. Tie bars, dowel bars, and bar reinforcement are not shown.
- 3. Depths are measured from the final concrete pavement surface elevation after any grinding.

Const SEASON	Min RESERVOIR WIDTH * W ± 1/16"		
WINTER	1/4"		
SPRING			
SUMMER	3%"		
FALL			

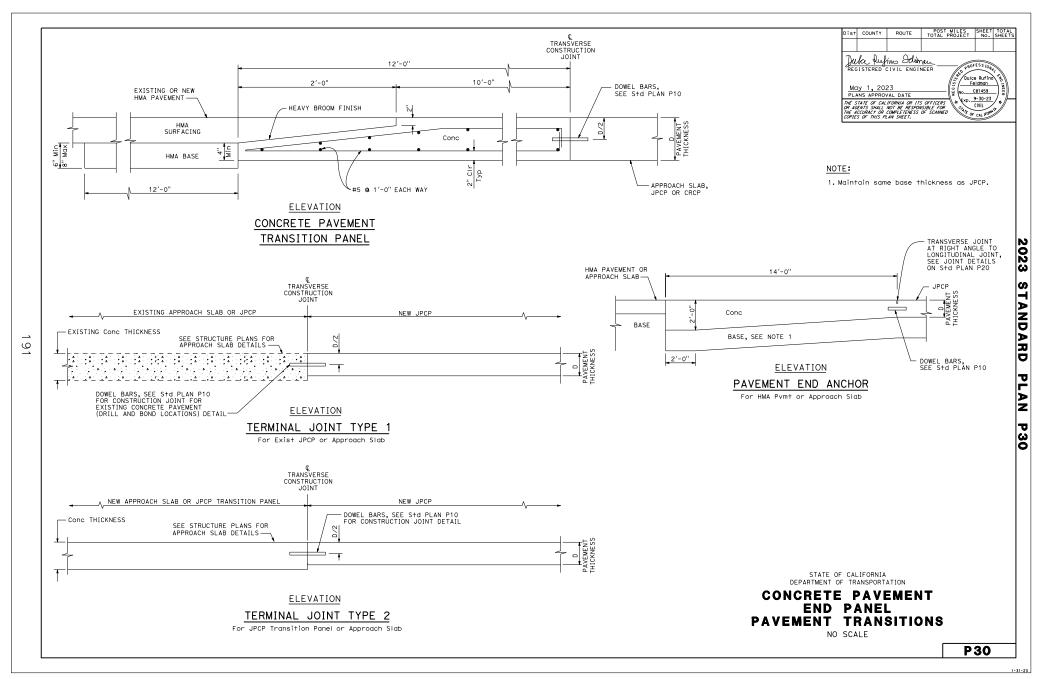
* Minimum reservoir width for replace joint seal = existing joint width + ½"

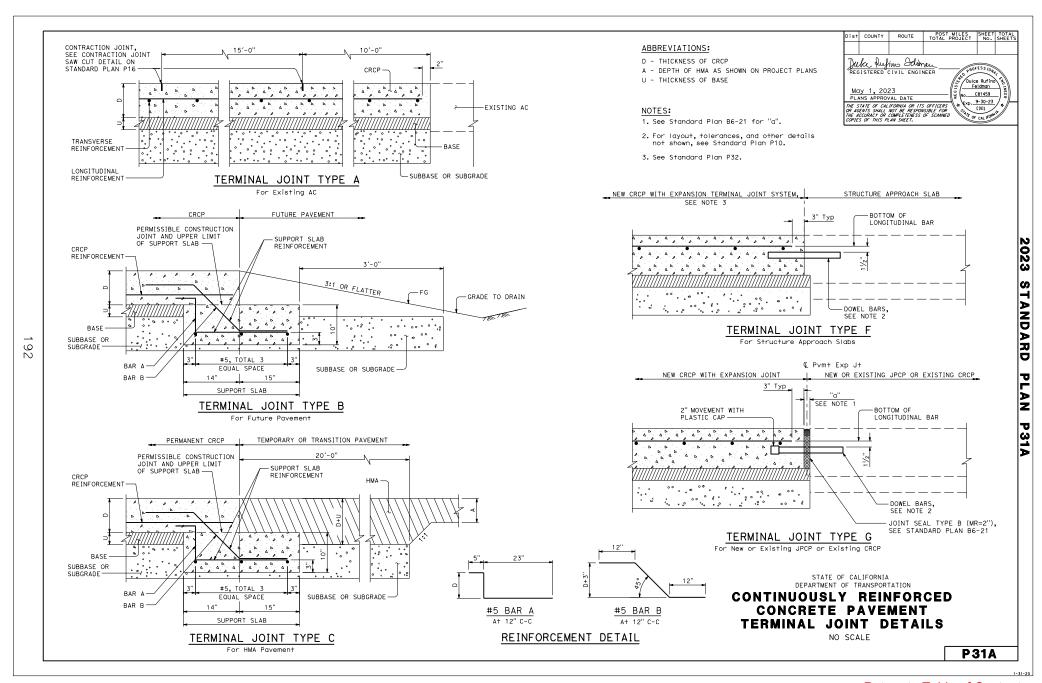
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

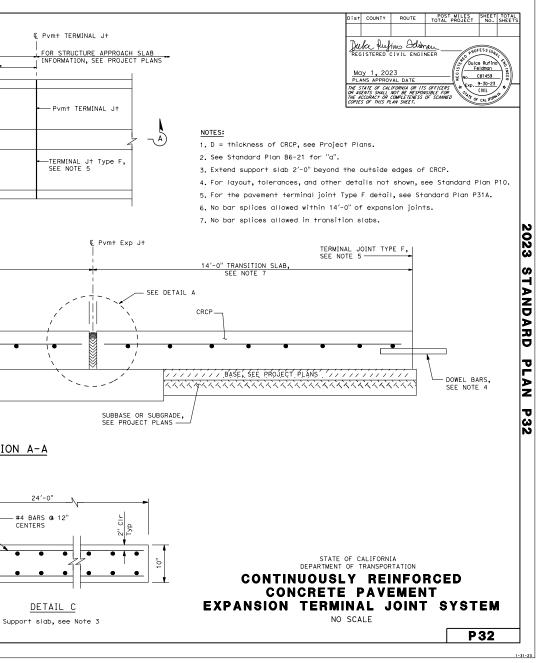
JOINT SEALS

NO SCALE

P20







& Pvmt Exp Jt

LIMIT OF CRCP

-Pvmt Exp Jt

∠ € ROADWAY

 \Rightarrow

SHOULDER

SHOULDER

SEE STANDARD PLAN P4

SUBBASE OR SUBGRADE, SEE PROJECT PLANS

DETAIL A

& Pvmt Exp Jt

, BAŞE, ŞEE PROJECT PLANS

"a" SEE NOTE 2 3" Typ

SUPPORT SLAB, SEE DETAIL C

SHOULDER

(A ,

CRCP-

9 W 14'-0" TRANSITION SLAB,

SEE NOTE 7

 \triangleleft

Longit Jt√

PLAN

SEE DETAIL A

CRCP-

SUPPORT SLAB, SEE DETAIL C-

Longit Jt~

& Pvmt Exp Jt

JOINT SEAL TYPE B (MR=2"), SEE STANDARD PLAN B6-21

GEOSYNTHETIC

BOND BREAKER

SHOULDER

& Pvmt Exp Jt

-Pvmt Exp Jt

14'-0" TRANSITION SLAB,

SEE NOTE 7

SECTION A-A

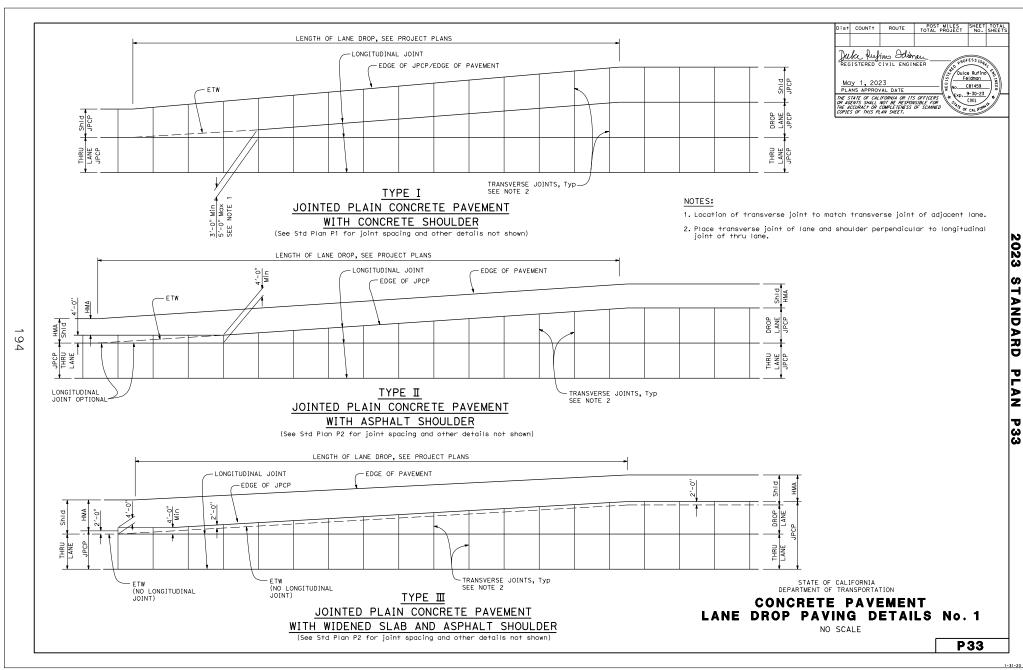
24'-0"

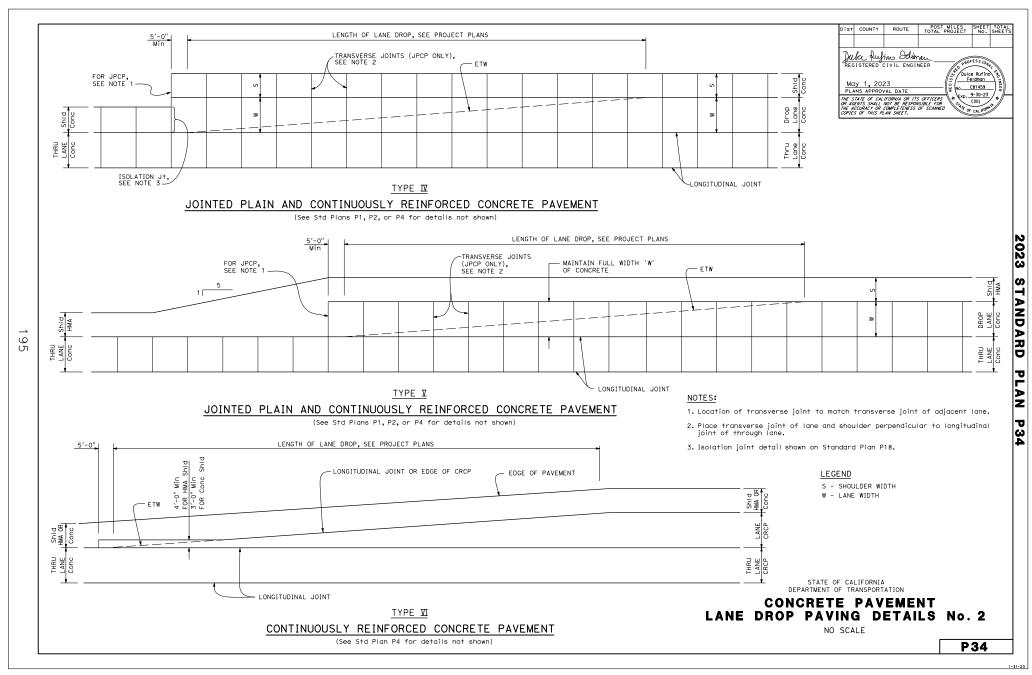
#4 BARS @ 12" CENTERS

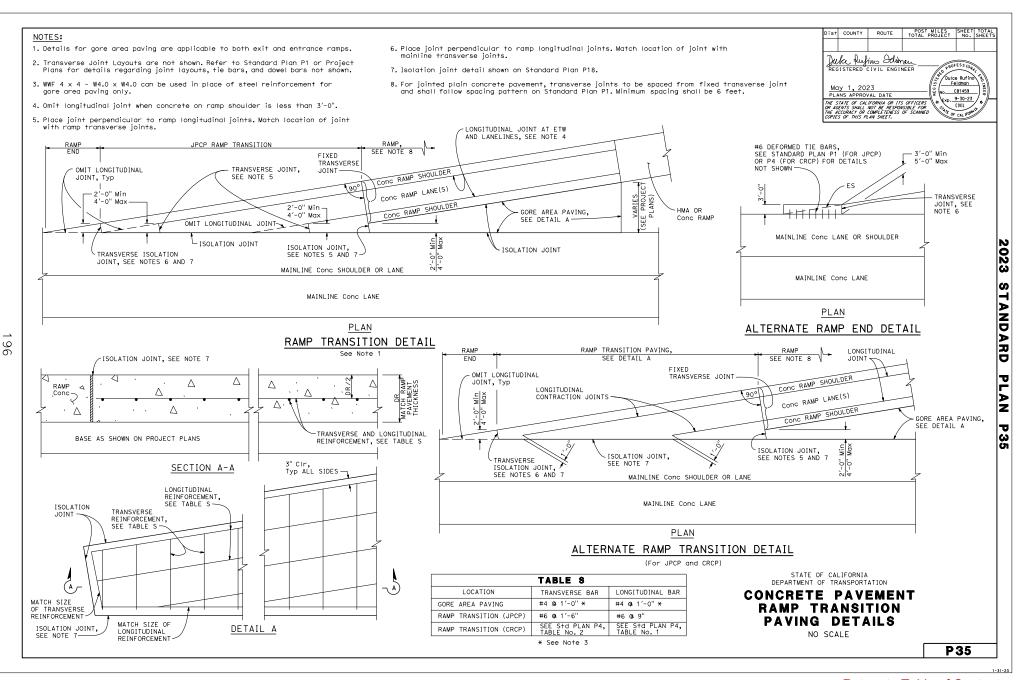
DETAIL C

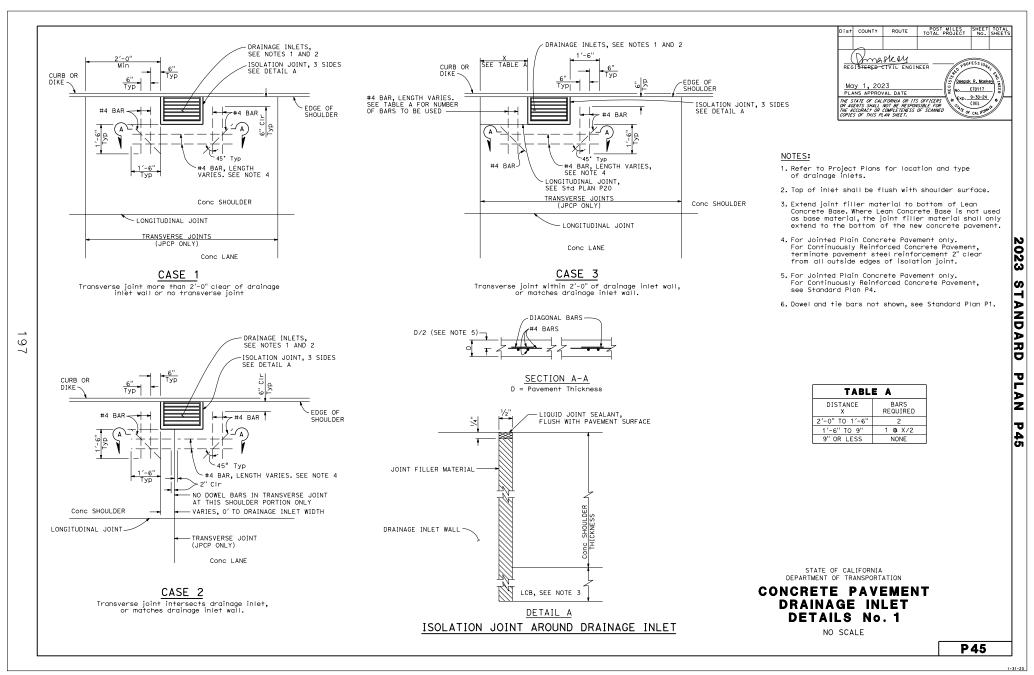
14'-0" TRANSITION SLAB,

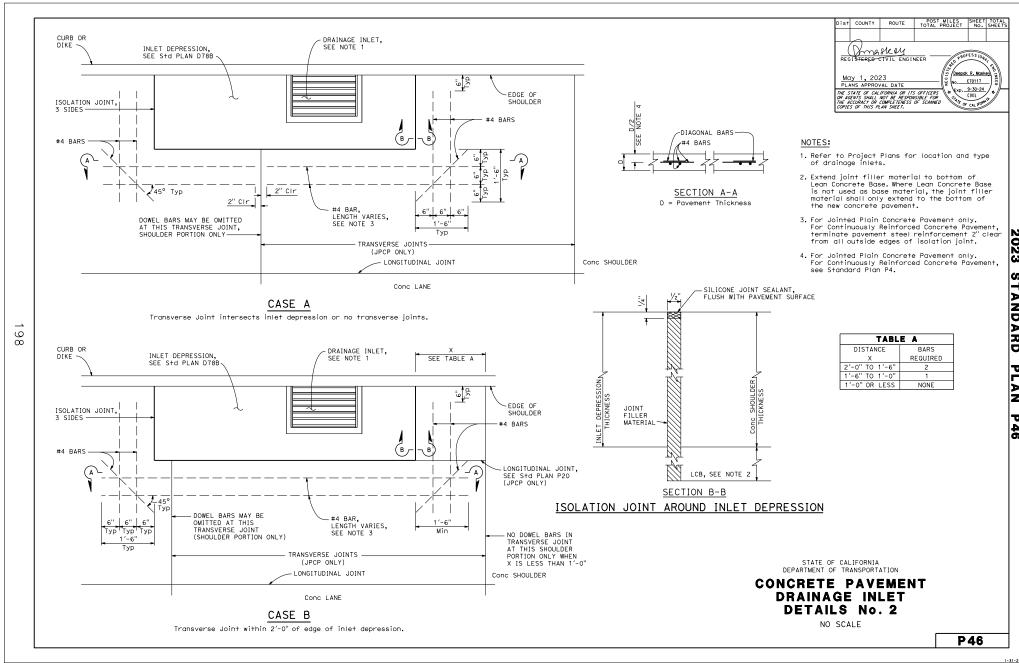
SEE NOTE 7

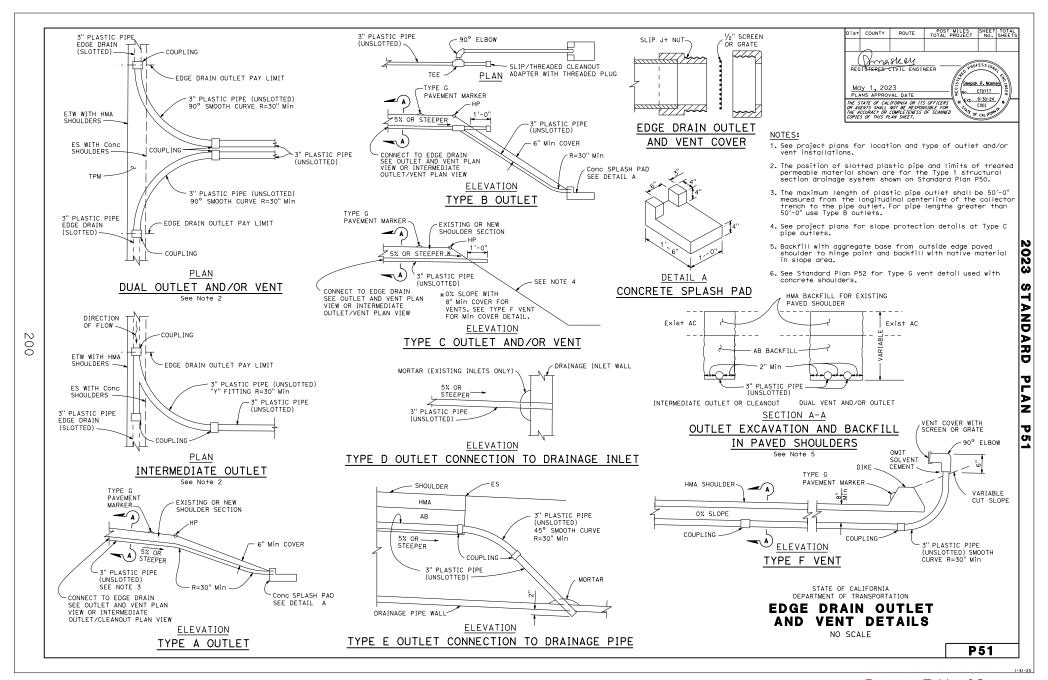


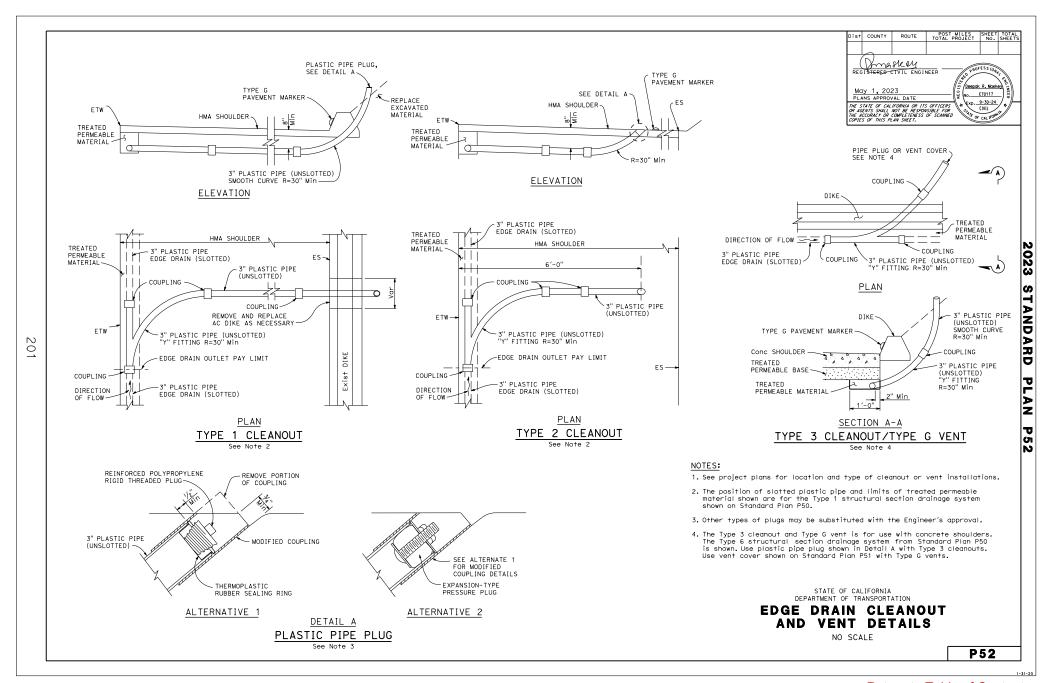


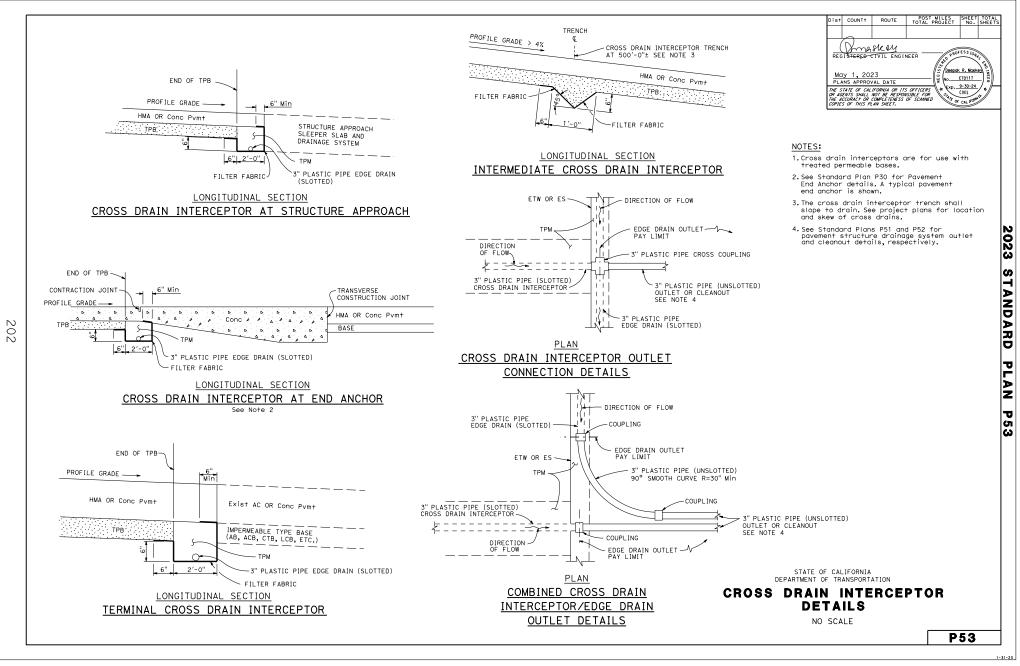


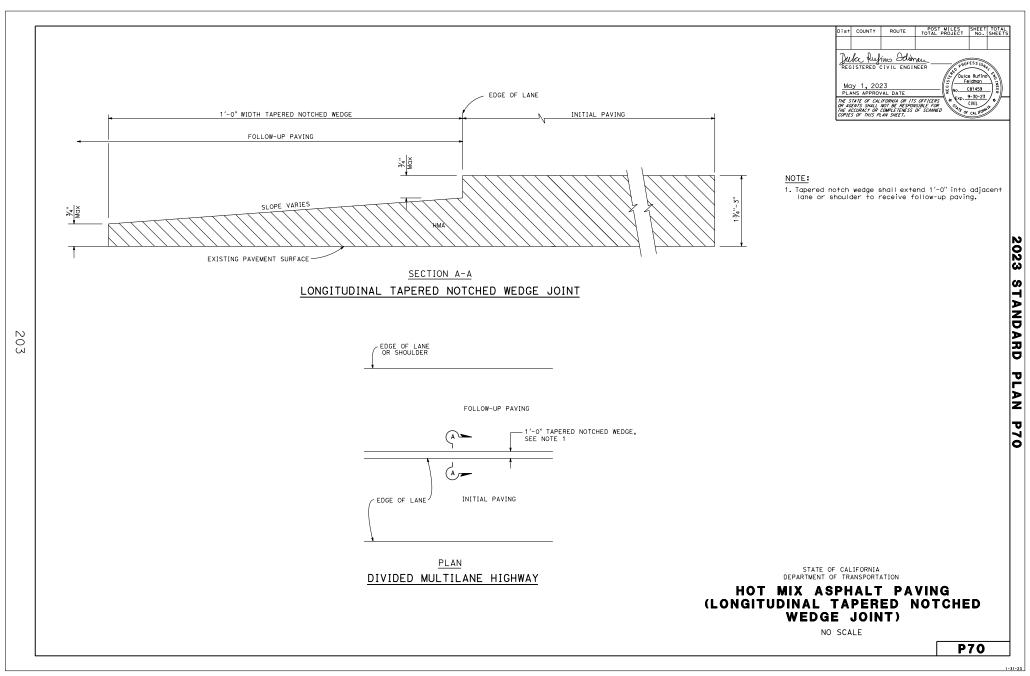


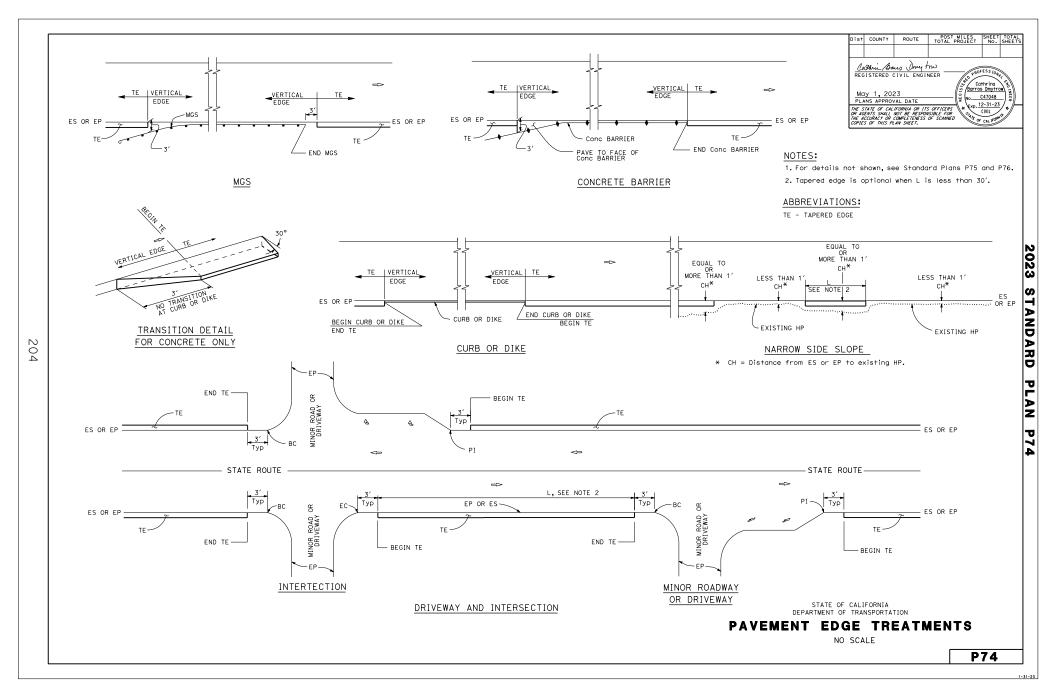


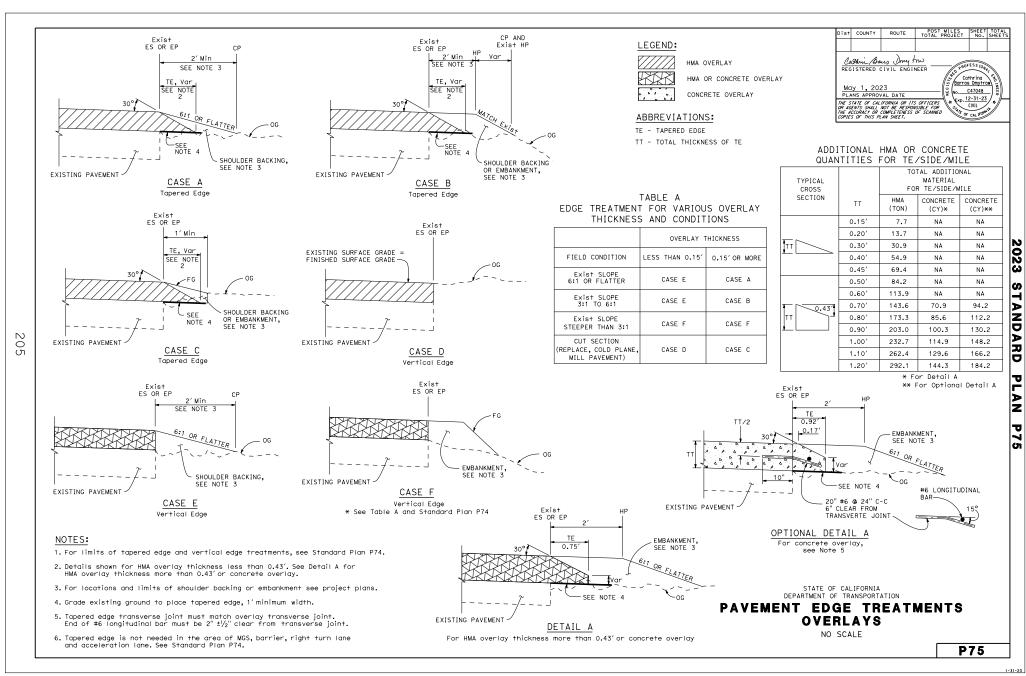


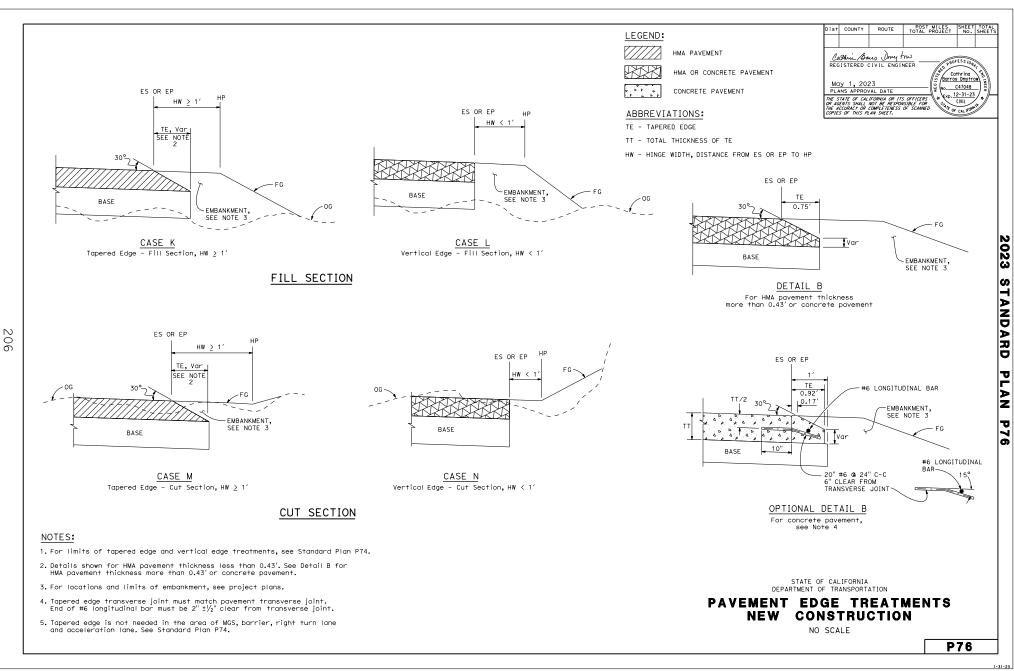


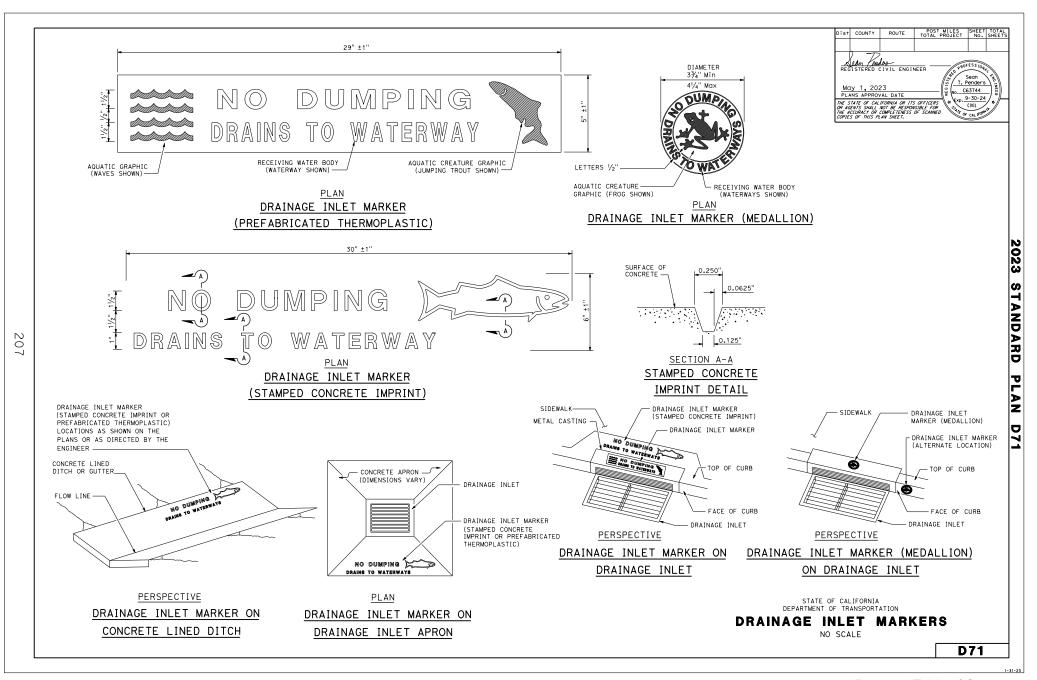


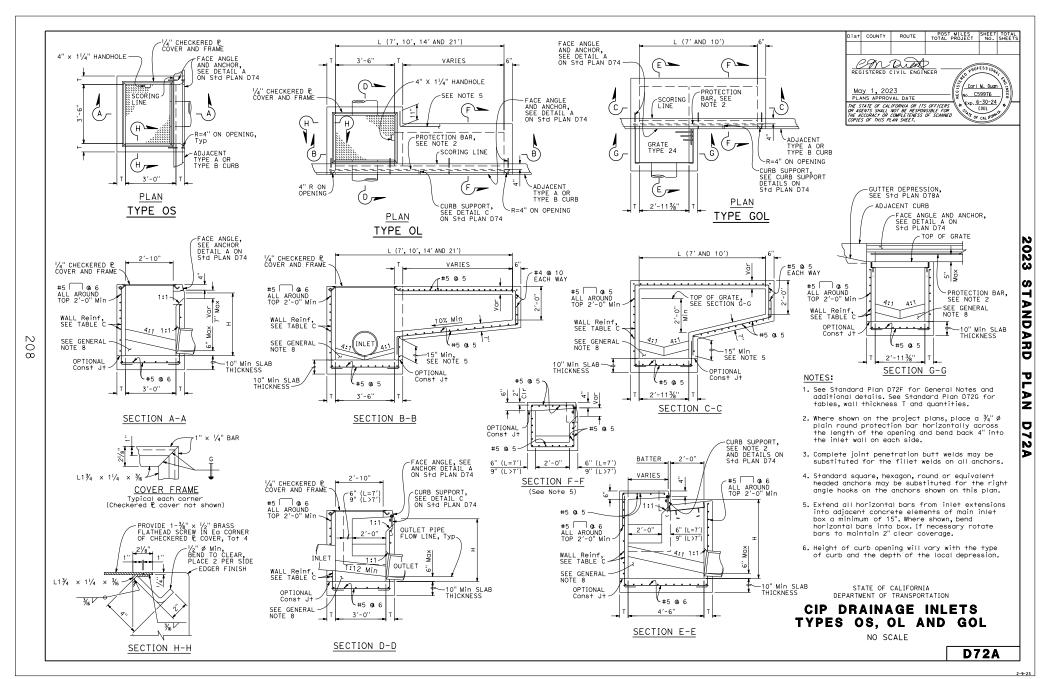


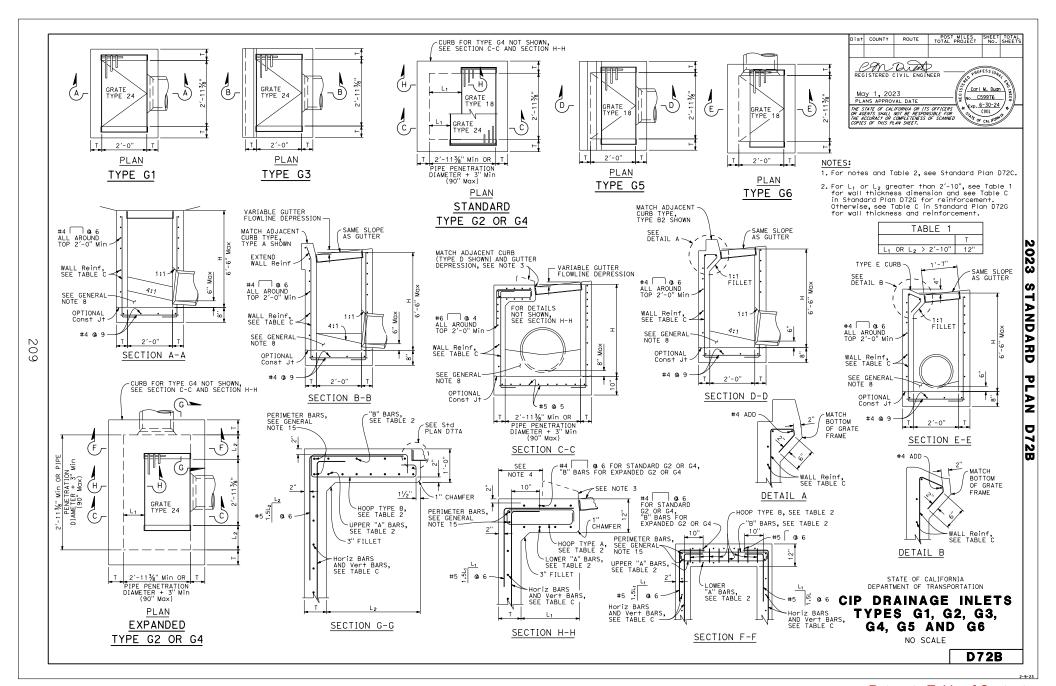


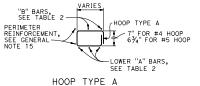












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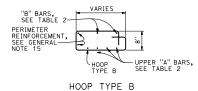


TABLE 2	- TOP SLAB RE	INFORCEMENT				
16 BAR TIAN BERNET TO THE TRANSPORT OF T						
VARIES						
	W/ CURB	W/O CURB				
"A" BARS	#4 @ 5 (2 BARS Min)	#5 @ 5 (3 BARS Min)				
"B" BARS	#4 @ 10 (2 BARS Min)	#4 @ 12 (2 BARS Min)				
HOOPS ("A" & "B")	#4 @ 5	#5 @ 5				
ROTATE "A" AND "B" BARS SO HOOKED ENDS WILL MAINTAIN 2" CLEAR COVERAGE.						

NOTES:

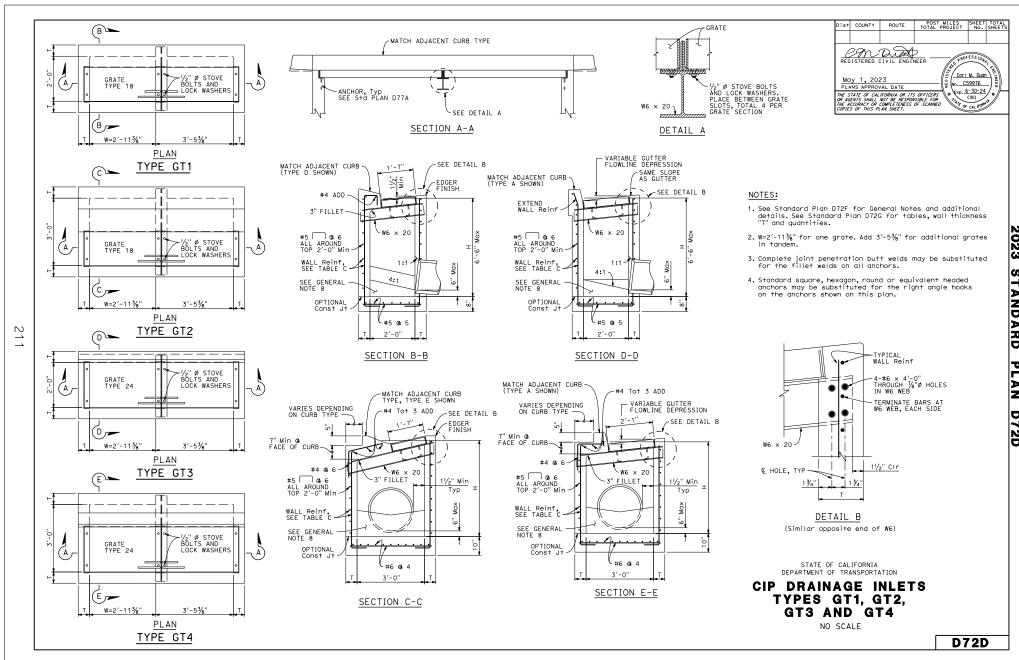
- 1. See Standard Plan D72F for General Notes and additional details. See Standard Plan D72G for tables and quantities.
- 2. Type G4 inlet can use Grate Type 18 or 24. Type G2 inlet uses Grate Type 24.
- Type G4 inlet details are similar to Type G2 inlet details, except for the addition of a curb and sloped grate to match the adjacent curb and gutter depression.
- Dimension will vary with different grates, curb types, box width and wall thickness.

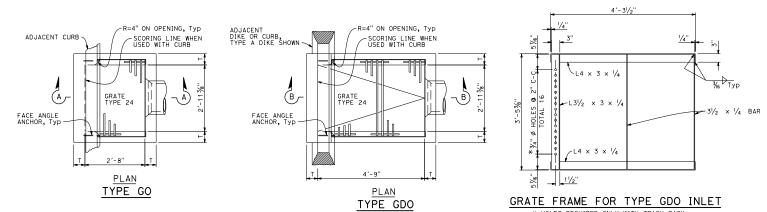
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLETS TYPES G1, G2, G3, G4, G5 AND G6

NO SCALE

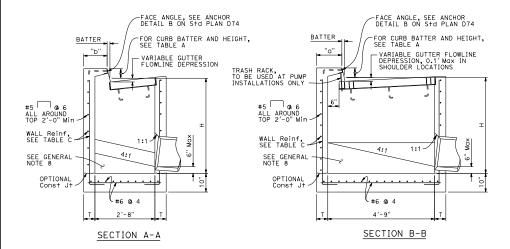
D72C



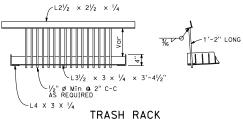




* HOLES REQUIRED ONLY WITH TRASH RACK



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(FOR USE WITH PUMP INSTALLATION)

NOTES:

- 1. See Standard Plan D72F for General Notes and additional details. See Standard Plan D72G for tables, wall thickness "T" and quantities.
- 2. Where shown on the project plans, place a $\frac{\pi}{4}$ "ø plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
- 3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
- Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLETS TYPES GO AND GDO

NO SCALE

D72E

TABLE A						
CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION		
A1-6	6"	11/2"	T+71/2"	T+6½"		
A1-8	8"	2"	T+7"	T+6"		
B1-6	6"	4"	T+5"	T+4"		
TYPE A DIKE	6"	3"	T+6"	T+5"		

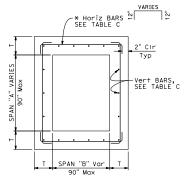
Height of curb opening will vary with the type of curb and the depth of the local depression.

GENERAL NOTES:

- 1. "H" is measured from top of bottom slab to the normal gutter grade line undepressed at the curb face.
- 2. For "T" wall thickness and reinforcement, see Table C on Standard Plan D72G.
- Wall reinforcement must be placed in the center of the wall thickness with horizontal 3. bars placed on the exterior face. Bottom slab concrete cover must be 3" clear on the interior face unless otherwise noted. Top slab concrete cover must be 2" clear on the exterior face unless otherwise noted. Reinforcement spacing is in inches unless otherwise noted.
- 4. Steps None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below bottom of ild. The distance between steps must not exceed 1'-0" and be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts must comply with State Industrial Safety Requirements. See Standard Plan D74 for step details.
- 5. Pipe(s) can be placed in any wall. Adjacent to each side of the opening, place additional reinforcement equivalent to half the interupted main reinforcement. For larger pipes greater than or equal to 42" diameter, also add 4 diagonal bars, 1 bar each side. Bars must be the same size as the larger of the main vertical or horizontal bars. Extend bars one development length post the intersection with the adjacent diagonal bar, or where bars intersect mid thickness of adjacent wall bottom or top of non-continuous wall, bend ends as required into same plane.
- 6. Set inlet so that grate bars are parallel to direction of principal surface flow.
- 7. Curb section must match adjacent curb.
- 8. Except for inlets used as junction boxes, basin floors must have wood trowel finish and a minimum slope of 4:1, unless otherwise noted, from all directions toward outlet pipe by casting grout fill on top of the bottom slab. The additional volume to achieve the 4:1 slope may also be achieved by casting the bottom slab and fill as a composite concrete element.
- 9. See Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
- 10. See Standard Plans D78A and D78B for gutter depression details.
- 11. See Standard PlanS A87A and A87B for curb and dike details.
- 12. Details shown apply to metal, concrete and plastic pipe(s).
- 13. The Contractor may use WWR instead of bar reinforcement. The ratio of bar reinforcement to WWR shall be based on the yield strength ratio.
- 14. Cast-in-place (CIP) inlets to be formed around all pipes/stubs intersecting the inlet, and concrete poured in one continuous operation.
- 15. Perimeter reinforcement must not be smaller than main bars and #4 and serves as a rigid frame to position and attach the required structural reinforcement and may be tack welded at outer corners when using ASTM A706 weldable bars.

DESIGN NOTES:

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 6th edition with 2012 Interims and Errata and CA Amendments.
- Live Load (AASHTO LRFD 3.6.1.2):
 HL-93, consists of design truck or tandem, and design lane load.
 Dynamic Load Allowance, IM = 33%
 Multiple Presence Factor, m = 1.0
 Design lane load was excluded in Top Slab design.
 A wheel load of 8 kips without impact factor was used for top slabs that are above a curb.
- 3. Earth Load:
 - terrin Load:
 Vertical pressure = 140 pcf
 Lateral pressure:
 = 100 pcf for walls with flat embankment
 = 140 pcf For walls with slope embankment, 1.5:1 Max
- 4. Downdrag: $\emptyset = 34^{\circ}$ and $\gamma_{\rm E} = 120$ pcf.
- 5. Buoyancy: γ_w = 62.4 pcf to finished grade
- 6. Reinforced Concrete: f'c = 3.6 ksi, fy = 60.0 ksi.
- 7. Soil pressures shown are factored per AASHTO LRFD and include self-weight, live load and downdrag.

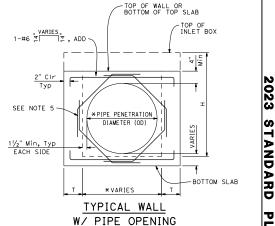


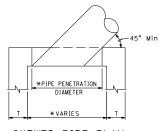
TYPICAL INLET PLAN

* ALTERNATIVE HORIZONTAL BARS









* SEE "SKEWED PIPE PLAN"

SKEWED PIPE PLAN

* ADJUST PIPE PENETRATION AND BOX WIDTH FOR SKEWED PIPES.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CIP DRAINAGE INLET NOTES

NO SCALE

D72F

PLAN

D72F

-	TABLE A - CONCRETE QUANTITIES							
	H=3'-0	" TO 8'-0"	H=8'-1" TO 20'-0"					
TYPE	H=3'-0" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)				
G1	0.95	0.220	SEE NOTE 2	SEE NOTE 2				
G2*	2.00	0.411	5.11	0.525				
G3	1.03	0.220	SEE NOTE 2	SEE NOTE 2				
G4 (TYPE 18)*	2.02	0.411	5.14	0.525				
G4 (TYPE 24)*	1.99	0.411	5.10	0.525				
G5	1.02	0.220	SEE NOTE 2	SEE NOTE 2				
G6	1.04	0.220	SEE NOTE 2	SEE NOTE 2				
OS	1.53	0.278	5.08	0.504				
OL7	2.06	0.278	6.17	0.566				
0L10	2.85	0.278	6.85	0.566				
0L14	3.81	0.278	7.78	0.566				
0L21	5.71	0.278	9.62	0.566				
GOL7	2.48	0.313	6.89	0.630				
GOL10	3.41	0.313	7.85	0.630				
GT1	1.72	0.248	SEE NOTE 2	SEE NOTE 2				
GT2	2.93	0.530	7.73	0.762				
GT3	1.74	0.348	SEE NOTE 2	SEE NOTE 2				
GT4	2.83	0.530	7.62	0.762				
GO	1.26	0.245	4.90	0.506				
GDO	1.74	0.322	6.33	0.647				

TABLE B - REINFORCEMENT QUANTITIES						
	H=3'-0	" TO 8'-0"	H=8'-1	" TO 20'-0"		
TYPE	H=3'-0" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)	H=8'-1" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)		
G1	118	22.20	SEE NOTE 2	SEE NOTE 2		
G2*	729	86.48	1794	171.79		
G3	118	22.20	SEE NOTE 2	SEE NOTE 2		
G4 (TYPE 18)*	647	86.48	1675	171.79		
G4 (TYPE 24)*	647	86.48	1675	171.79		
G5	118	22.20	SEE NOTE 2	SEE NOTE 2		
66	118	22.20	SEE NOTE 2	SEE NOTE 2		
0S	245	49.88	1057	120.77		
OL7	458	50.53	1324	126.75		
0L10	729	50.53	1595	126.75		
0L14	982	50.53	1849	126.75		
0L21	1453	50.53	2320	126.75		
GOL7	644	83.57	1969	148.79		
GOL10	883	83.57	2208	148.79		
GT1	486	96.91	SEE NOTE 2	SEE NOTE 2		
GT2	1040	117.08	2543	233.37		
GT3	486	96.91	SEE NOTE 2	SEE NOTE 2		
GT4	1001	117.08	2556	237.88		
GO	308	32.44	1013	96.56		
GDO	519	57.09	1654	165.66		

€ (Ouantities	are	based	on	the	minimum	interior	dimensions.
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TAB	LE D
INLET	CURB USED IN QUANTITIES
G1	-
G2	-
G3	A1-6
G4 (Type 18)	A1-6
G4 (Type 24)	A1-6
G5	B1-4
G6	1/2E
os	-
OL7	-
0L10	-
0L14	-
0L21	-
GOL7	-
GOL10	-
GT1	D-6
GT2	E
GT3	A2-8
GT4	A2-8
GO	-
GDO	-

Dis+	COUNTY	ROUTE	TOTAL P	ROJECT	No.	SHEETS
Mc	SISTERED (ANS APPROV		NEER —	Sar Car		CHO INEER
OR AG	ENTS SHALL	IFORNIA OR IT: NOT BE RESPON COMPLETENESS AN SHEET.	ISTBLE FOR		CIVIL CAL IFORM	/ 4-//

TABLE C - WALL REINFORCEMENT					
TYPE	H≤8 (T=	6",UON)	8 <h≤20 (t='11",UON)</td'></h≤20>		
	HORIZ	VERTICAL	HORIZ	VERTICAL	
os	#4 @ 8	#4 @ 6	#5 0 6	#6 @ 4.5	
OL	#4 @ 6	#4 @ 6	#5 0 6	#6 @ 4.5	
GOL	#5 @ 6	#5 @ 8	#6 @ 5	#6 @ 4.5	
G1 (H≤6-6")	#3 @ 6	#3 @ 6	-	-	
G2	T=9" #5 @ 5	#5 @ 5	T=11" #6 @ 4	#6 @ 4.5	
G3 (H≤6-6")	#3 @ 6	#3 @ 6	-	-	
G4	T=9" #5 @ 5	#5 @ 5	T=11" #6 @ 4	#6 @ 4.5	
G5 (H≤6-6")	#3 @ 6	#3 @ 6	-	-	
G6 (H≤6-6")	#3 @ 6	#3 @ 6	-	-	
GT1 (H≤6-6")	#5 0 6	#5 @ 6	-	-	
GT2	T=8" #5 @ 6	#5 0 6	#6 @ 4	#6 @ 4.5	
GT3 (H≤6-6")	#5 @ 6	#5 @ 6	-	-	
GT4	T=8" #5 @ 6	#5 @ 6	#6 @ 4	#6 @ 4.5	
GO	#4 @ 9	#4 @ 6	#4 @ 6	#6 @ 4.5	
GDO	#4 @ 6	#4 @ 6	#5 0 4	#6 @ 4.5	

	TABLE E						
SOIL PRES	SOIL PRESSURE BELOW BASE SLAB (ksf)						
TYPE	H=8'-0"	8'-0"< H <u><</u> 20'-0"					
os	2.93	5.56					
OL*	2.93	5.56					
GOL*	2.50	5.06					
G1	3.67	-					
G2	2.99	5.91					
G3	3.67	-					
G4	2.99	5.91					
G5	3.67	-					
G6	3.67	-					
GT1	3.66	-					
GT2	3.91	6.07					
GT3	3.86	-					
GT4	3.91	6.07					
GO	3.42	6.11					
GDO	2.52	6.95					

^{*} Main Box

NOTES:

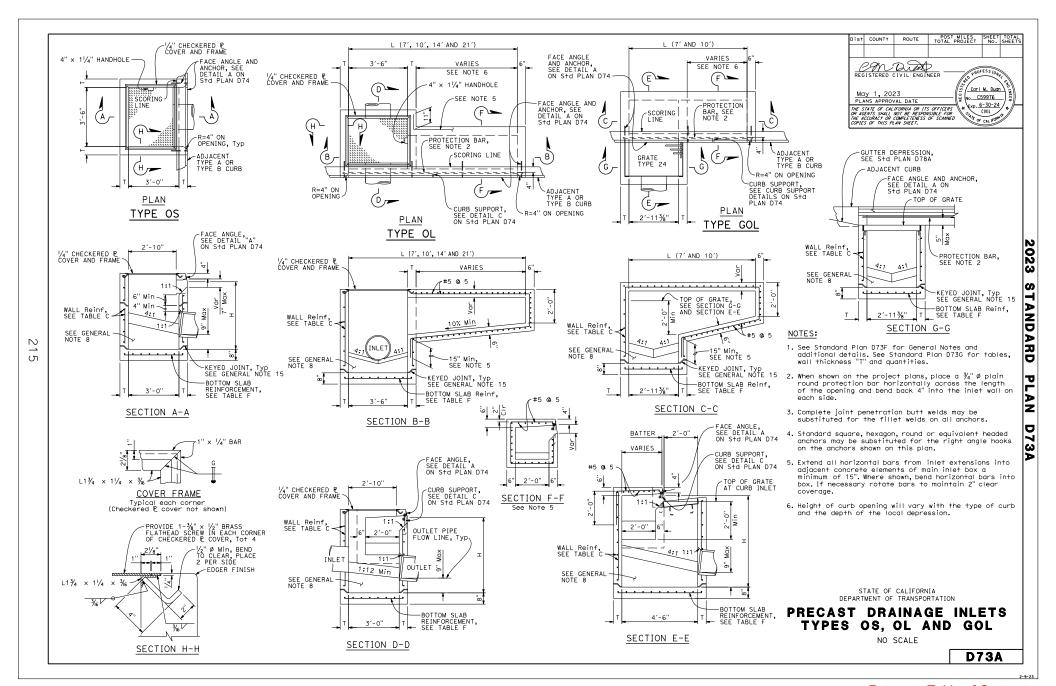
- No deduction or adjustment was made to the quantities of concrete and reinforcement for pipe openings, floor alternatives or curb type.
- 2. Maximum allowable height is 6'-6".
- 3. Quantities are approximate and for design purposes only.
- 4. Design is based on envelope of level and sloped ground.

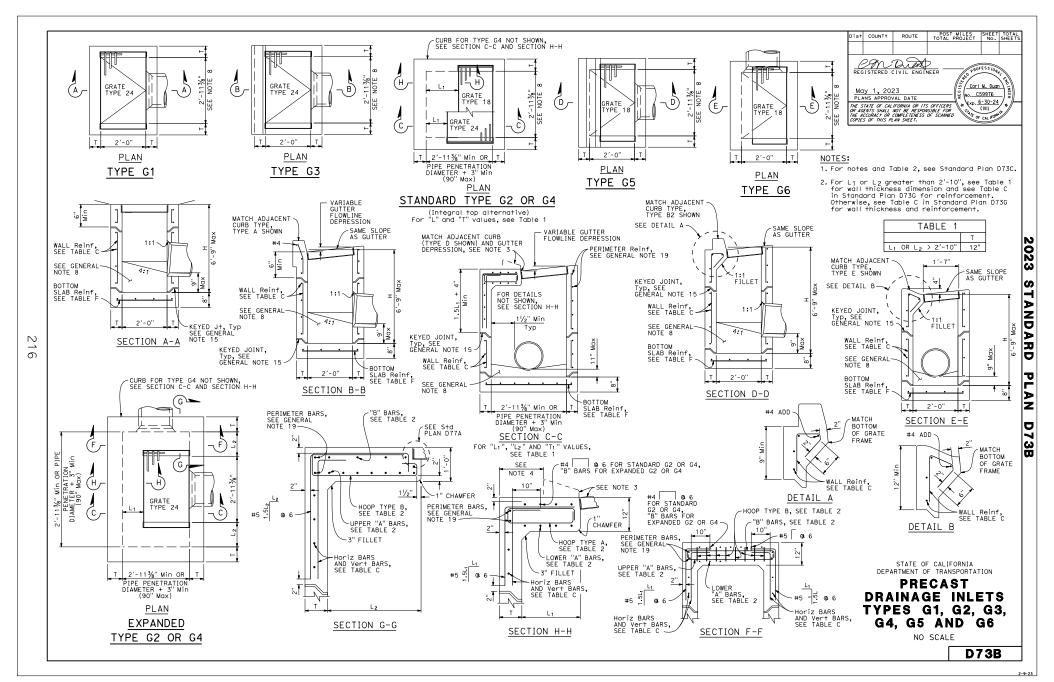
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

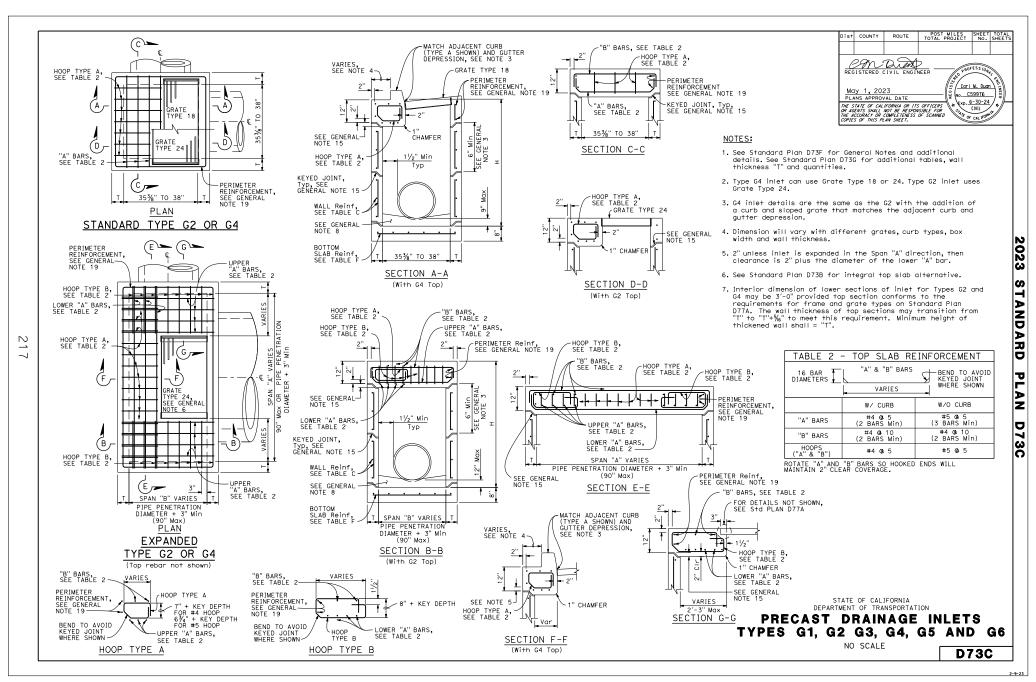
CIP DRAINAGE INLET TABLES

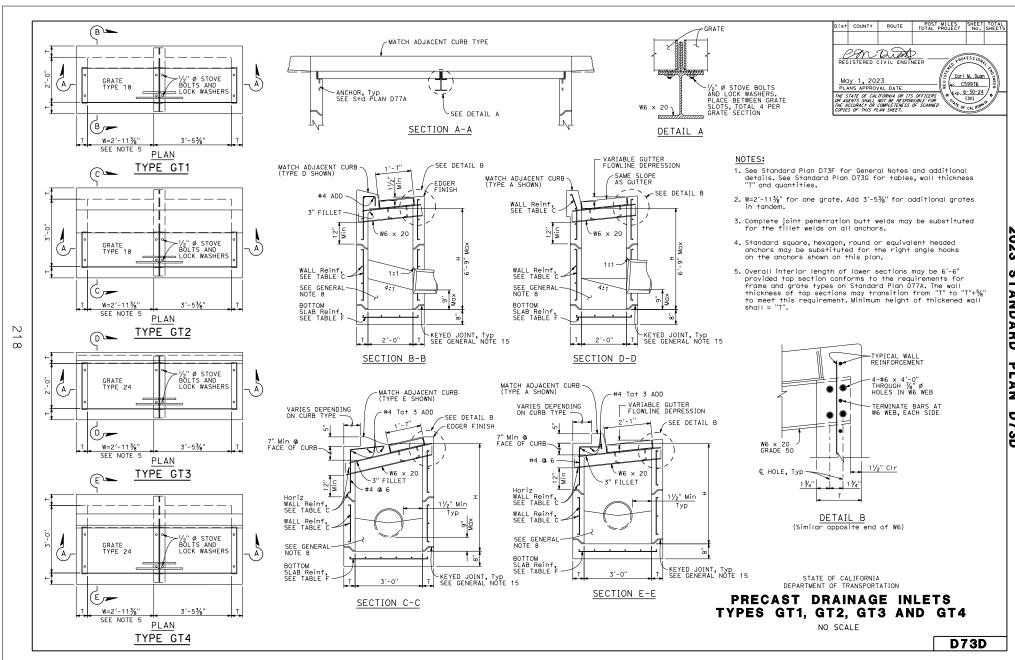
D72G

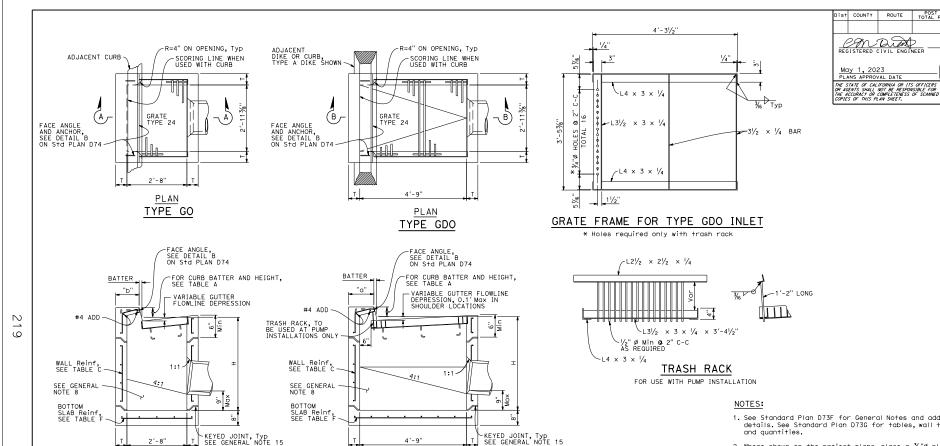
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SECTION B-B

SECTION A-A

TABLE A						
CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"a" DIMENSION	"b" DIMENSION		
A1-6	6"	11/2"	T+71/2"	T+61/2"		
A1-8	8"	2"	T+7"	T+6"		
B1-6	6"	4"	T+5"	T+4"		
TYPE A DIKE	6"	3"	T+6"	T+5"		

Height of curb opening will vary with the type of curb and the depth of the local depression.

1. See Standard Plan D73F for General Notes and additional details. See Standard Plan D73G for tables, wall thickness "T" and quantities.

ROUTE

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Carl M. Duan

C59976 €×p. 6-30-24

- 2. Where shown on the project plans, place a $\frac{7}{4}$ " ϕ plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.
- 3. Complete joint penetration butt welds may be substituted for the fillet welds on all anchors.
- 4. Standard square, hexagon, round or equivalent headed anchors may be substituted for the right angle hooks on the anchors shown on this plan.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLETS TYPES GO AND GDO

NO SCALE

D73E

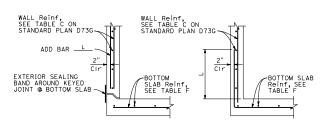
GENERAL NOTES:

- 1. "H" is measured from top of bottom slab to the normal autter grade line undepressed at the curb face.
- 2. For "T" wall thickness and reinforcement, see Table C on Standard Plan D73G.
- 3. Wall reinforcement must be placed at the center of wall thickness with horizontal bars placed on the exterior face. Bottom slab concrete cover must be 3" clear on the interior side face unless otherwise noted. Top slab concrete cover must be 2" clear on the exterior face unless otherwise noted. Short independent wall sections or height adjustment rings 6" to 24" high must have a minimum of two #4 horizontal bars. Reinforcement spacing is in inches unless otherwise noted.
- 4. Steps None required where "H" is less than 2'-6". Where "H" is 2'-6" or more, install steps with lowest rung 1'-0" above the floor and highest rung not more than 6" below bottom of lid. The distance between steps must not exceed 1'-0" and be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts must comply with State Industrial Safety Requirements. See Standard Plan D74 for step details.
- 5. Pipe(s) can be placed in any wall. Adjacent to each side of the opening, place additional reinforcement equivalent to half the interupted main reinforcement. For larger pipes greater than or equal to 42" diameter, also add 4 diagonal bars, 1 bar each side. Bars must be the same size as the larger of the main vertical or horizontal bars. Extend bars one development length past the intersection with the adjacent diagonal bar, or where bars intersect mid thickness of adjacent wall bottom or top of non-continuous wall, bend ends as required into same plane.
- 6. Set inlet so that grate bars are parallel to direction of principal surface flow.
- 7. Curb section must match adjacent curb.
- 8. Except for inlets used as junction boxes, basin floors must have wood trowel finish and a minimum slope of 4:1, unless otherwise noted, from all directions toward outlet pipe by casting grout on top of the bottom slab. Grout must be placed prior to backfill.
- 9. See Standard Plans D77A and D77B for grate and frame details and weights of miscellaneous iron and steel.
- 10. See Standard Plans D78A and D78B for gutter depression details.
- 11. See Standard Plans A87A and A87B for curb and dike details.
- 12. Details shown apply to metal, concrete and plastic pipe(s).
- 13. The Contractor may use WWR instead of bar reinforcement. The ratio of bar reinforcement to WWR shall be based on the yield strength ratio.
- 14. Seal precast inlets connection openings between wall and pipe with non-shrink grout or resilient connectors as specified in the Special Provisions. Precast inlets shall have mortared connections conforming to details for Type GCP Inlet shown on Standard Plan D75B. See Standard Specifications for mortar composition.
- 15. Where shown, provide precast inlets with separate top sections for final grade adjustment. Provide keyed joints with butyl rubber sealant between the top section and wall, multiple wall sections, and wall and bottom slab. Joint design may vary but must be 1 to 3" in depth. For tongue type joints, tongue down orientation is not allowed. For keyed joints, keyway up, keyway down or tongue up configurations are allowed. Only one key type is allowed for each drainage inlet.
- 16. Non-shrink grout can be used for upper most joint to facilitate final top grade adiustment.
- 17. Provide a level and firm sand bedding on which to place precast inlets. Extend sand bedding under all structure backfill.
- 18. For Integral Base, see Detail A.
- 19. Perimeter reinforcement must not be smaller than main bars and #4 and serves as a rigid frame to position and attach the required structural reinforcement and may be tack welded at outer corners when using ASTM A706 weldable bars.
- 20. Inlet extensions may be cast in place after placement of main box and placement and compaction of backfill. Concrete strength must be 3.6 ksi minimum. All slab and wall thicknesses must be per Standard Plan D72A. All reinforcement shall extend a minimum of 24" from precast main inlet box.

DESIGN NOTES:

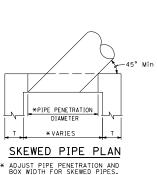
- Design Specifications: AASHTO LRFD Bridge Design Specifications, 6th edition with 2012 Interims and Errata and CA Amendments.
- 2. Live Load (AASHTO LRFD 3.6.1.2): Live Load (AASHIO LRFD 5.6.7.2):
 HL-93, consists of design truck or tandem, and design lane load.
 Dynamic Load Allowance, IM = 33%
 Multiple Presence Factor, m = 1.0
 Design lane load was excluded in Top Slab design.
 A wheel load of 8 klps without impact factor was used for top slabs that are above a curb.

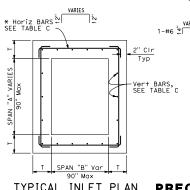
- Vertical pressure = 140 pcf
 - Verlicd pressure: Lateral pressure: = 100 pcf for walls with flat embankment = 140 pcf for walls with slope embankment, 1.5:1 Max
- 4. Downdrag: $Ø = 34^{\circ}$ and $\gamma_{e} = 120$ pcf.
- 5. Buoyancy: $\gamma_w = 62.4$ pcf to finished grade.
- 6. Reinforced Concrete: f'c = 5.0 ksi, fy = 60.0 ksi.
- 7. Tables are based on the worst case from the level ground and sloped ground.
- Soil pressures shown are factored per AASHTO LRFD and include self-weight, live load and downdrag.



BASE WITH KEYED JOINT INTEGRAL BASE

> DETAIL FOR INTEGRAL BASE, CLEARANCE BETWEEN PIPE PENETRATION AND BASE SLAB MAY BE AS SHOWN IN CIP ALTERNATIVE STANDARD PLAN SHEET.





TYPICAL INLET PLAN * ALTERNATIVE HORIZONTAL BARS

SEE NOTE 5 VARIES 4 , ADD For details not shown, see "BASE WITH KEYED JOINT" W/ PIPE OPENING

SPAN "OR "B'

<38

51 TO 64 47 65 TO 76 53 77 TO 90 60

(IN)

34

40

VARIES

2" CIr

Тур

SEE NOTE 5

11/2" Min, Typ

EACH SIDE

ADD و عَالَ

1-#6 4

" OR " (IN)

38 TO 50

* See "SKEWED PIPE PLAN" STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLET NOTES

NO SCALE

D73F

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Carl M. Duan

C59976

€×p. 6-30-24

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THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TOP OF PRECAST PANEL OR BOTTOM OF TOP OF SLAB: MAY BE ADDITIONAL PRECAST SECTION(S) OR CIP SECTION BETWEEN PANEL CONTAINING OPENING AND TOP OF BOX

TOP OF INLET BOX

2023

STAND

ARD

T

Ž

D7

3F

SLAB

TOP OF KEY

BOTTOM SLAB

VARIES

May 1, 2023

PLANS APPROVAL DATE

*PIPE PENETRATION

DIAMETER (OD)

* VARIES

BASE WITH KEYED JOINT

* VARIES

INTEGRAL BASE

TYPICAL WALL

Return to Table of Contents

	TABLE A	- CONCRETE	QUANTITIE	ES
	H=3'-0)" TO 8'-0"	H=8'-1'	' TO 20'-0"
TYPE	H=3'-0" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL CONCRETE PER FOOT (CY)
G1	0.95	0.220	SEE NOTE 2	SEE NOTE 2
G2*	1.25	0.255	2.55	0.255
G3	1.06	0.220	SEE NOTE 2	SEE NOTE 2
G4 (TYPE 18)*	1.41	0.255	2.71	0.255
G4 (TYPE 24)*	1.36	0.255	2.65	0.255
G5	1.09	0.220	SEE NOTE 2	SEE NOTE 2
G6	1.14	0.220	SEE NOTE 2	SEE NOTE 2
OS	1.28	0.278	2.69	0.278
OL7	1.92	0.278	3.33	0.278
OL10	2.43	0.278	3.84	0.278
0L14	3.16	0.278	4.57	0.278
0L21	4.58	0.278	5.99	0.278
GOL7	2.36	0.313	4.04	0.434
GOL10	2.84	0.313	4.53	0.434
GT1	2.30	0.480	SEE NOTE 2	SEE NOTE 2
GT2	2.71	0.530	5.40	0.530
GT3	2.29	0.480	SEE NOTE 2	SEE NOTE 2
GT4	2.69	0.530	5.39	0.530
GO	1.25	0.245	2.37	0.245
GDO	1.64	0.322	3.37	0.446

×	Quantities	are	based	on	the	minimum	interior	dimensions.	

TABLE B - REINFORCEMENT QUANTITIES							
H=3'-0" TO 8'-0" H=8'-1" TO 20'-0"							
	H=3°-0		H=8'-1				
TYPE	H=3'-0" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)	H=8'-1" (LB)	ADDITIONAL REINFORCEMENT PER FOOT (LB)			
G1	88.5	21.90	SEE NOTE 2	SEE NOTE 2			
G2*	151.5	24.54	277.4	38.64			
G3	92.9	21.90	SEE NOTE 2	SEE NOTE 2			
G4 (TYPE 18)*	134.4	24.54	260.3	38.64			
G4 (TYPE 24)*	125.1	24.54	251.0	38.64			
G5	92.5	21.90	SEE NOTE 2	SEE NOTE 2			
G6	92.5	21.90	SEE NOTE 2	SEE NOTE 2			
OS	145.8	35.57	327.8	49.60			
OL7	328.0	35.57	510.0	49.60			
OL10	467.5	35.57	649.5	49.60			
OL14	667.5	35.57	849.5	49.60			
0L21	1056.1	35.57	1238.1	49.60			
GOL7	474.7	45.17	706.8	74.02			
GOL10	604.9	45.17	836.9	74.02			
GT1	349.0	80.48	SEE NOTE 2	SEE NOTE 2			
GT2	403.7	86.82	849.1	135.15			
GT3	347.0	80.48	SEE NOTE 2	SEE NOTE 2			
GT4	403.7	86.82	849.1	135.15			
GO	99.8	23.75	221.7	37.46			
GDO	208.8	46.22	446.2	75.61			

×	Quantities	are	based	on	the	minimum	interior	dimensions.

TAB	TABLE D						
INLET	CURB USED IN QUANTITIES						
G1	-						
G2	-						
G3	A1-6						
G4 (Type 18)	A1-6						
G4 (Type 24)	A1-6						
G5	B1-4						
G6	1/2E						
OS	-						
OL7	-						
0L10	-						
0L14	-						
0L21	-						
GOL7	-						
GOL10	-						
GT1	D-6						
GT2	E						
GT3	A2-8						
GT4	A2-8						
GO	-						
GDO	-						

CURB USED	Mc PL	REGISTERED CIVIL ENGINEER MGy 1, 2023 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OF ILS OFFICERS WE CONT M. DUON ROO, 6-30-24 WE CO. CALIFORNIA OF ILS OFFICERS WE CO. C.						
- QUANTITIES	THE A	CCURACY OR	COMPLETENESS	OF SCANNED 4TE OF	CAL IFORM	*/		
_								

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

TABLE C - WALL REINFORCEMENT							
TYPE	H ≤8	'-0" (T=6", l	JON)	8'-0"< H ≤20'-0" (T=8", UON)			
1172	HORIZONTAL	VERTICAL	*ADD	HORIZONTAL	VERTICAL	*ADD	
os	#406	#3@8	#3@8	#4@4 (T=6")	#3@8	#3@8	
OL	#4@6	#3@8	#3@8	#4@4 (T=6")	#3@8	#3@8	
GOL	#4@5	#3@8	#3@8	#5@5	#3@6	#3@6	
G1 (H <u>≤</u> 6′-9")	#4@9	#3@8	#3@8	-	-	-	
G2 & G4 (a** ≤38")	#4@9	#3@8	#3@8	#4@5 (T=6")	#3@8	#3@8	
G2 & G4 (38" < a×× ≤50")	#4@6	#3@8	#3@8	#4@4 (T=6")	#3@8	#3@8	
G2 & G4 (50" < a×× ≤64")	#4@5	#3@8	#3@8	#5@5	#3@6	#3@6	
G2 & G4 (64"< a×× ≤76")	#5@7 (T=8")	#3@6	#3@6	#5@4	#3@6	#5@6	
G2 & G4 (76" < a×× ≤90")	#5@5 (T=8")	#3@6	#3@6	#5@3	#3@6	#5@6	
G3 (H <u>≤</u> 6′-9")	#4@9	#3@8	#3@8	-	1	1	
G5 (H <u>≤</u> 6′-9")	#4@9	#3@8	#3@8	-	1	1	
G6 (H ≤6′-9")	#4@9	#308	#308	-	1	1	
GT1 (H ≤6'-9")	#5@5 (T=8")	#3@6	#3@6	-	1	1	
GT2	#5@5 (T=8")	#3@6	#3@6	#5@3	#3@6	#5@6	
GT3 (H ≤6'-9")	#5@5 (T=8")	#3@6	#3@6	-	1	1	
GT4	#5@5 (T=8")	#3@6	#3@6	#5@3	#3@6	#5@6	
GO	#4@9	#3@8	#3@8	#4@5 (T=6")	#3@8	#3@8	
GDO	#4@5	#3@8	#3@8	#5@5	#3@6	#3@6	

 $[\]mbox{*}$ See Detail A on Standard Plan D73F for additional vertical bars at the base. $\mbox{**}$ a = Larger interior span

TABLE E						
SOIL PRESSURE BELOW BASE SLAB (ksf)						
TYPE	H ≤8'-0"	8'-0"< H ≤20'-0"				
OS	2.89	5.68				
OL*	2.89	5.68				
GOL*	2.36	4.93				
G1 (H ≤6'-9")	3.51	-				
G2 & G4 (a×× ≤38")	2.96	5.79				
G2 & G4 (38" < a×× ≤50")	2.21	4.51				
G2 & G4 (50" < a** ≤64")	3.19	4.89				
G2 & G4 (64"< a** ≤76")	2.50	4.23				
G2 & G4 (76" < a×× ≤90")	2.04	3.56				
G3 (H ≤6′-9")	3.51	-				
G5 (H ≤6′-9")	3.51	-				
G6 (H ≤6′-9")	3.51	-				
GT1 (H ≤6'-9")	3.41	-				
GT2	3.60	6.42				
GT3 (H ≤6'-9")	3.41	-				
GT4	3.60	6.42				
GO	3.37	6.46				
GDO	2.48	7.30				

* Main Box

** a = Larger interior span

NOTES:

- No deduction or adjustment was made to the quantities of concrete and reinforcement for pipe openings, floor alternatives or curb type.
- 2. Maximum allowable height is 6'-9".
- 3. Quantities are approximate and for design purposes only.
- 4. Design is based on envelope of level and sloped ground.

TABLE F						
BASE SLAB REIN	ORCEMENT (T=	8", UON)				
TYPE	H ≤8'-0"	8'-0"< H ≤20'-0"				
os	#4@8 (EW)	#4@45 (EW)				
OL*	#4@8 (EW)	#4@45 (EW)				
GOL*	#4@6 (EW)	#4@4 (EW)				
G1 (H <u><</u> 6'-9")	#4@10 (EW)	-				
G2 & G4 (a** ≤38")	#4@10 (EW)	#4@6 (EW)				
G2 & G4 (38" < a×× ≤50")	#4@8 (EW)	#4@45 (EW)				
G2 & G4 (50" < a×× ≤64")	#4@6 (EW)	#4@4 (EW)				
G2 & G4 (64"< a** ≤76")	#4@5 (EW)	#4@3 (EW)				
G2 & G4 (76" < a×× ≤90")	#4@4 (EW)	#5@3 (EW)				
G3 (H ≤6'-9")	#4@10 (EW)	-				
G5 (H ≤6'-9")	#4@10 (EW)	-				
G6 (H ≤6'-9")	#4@10 (EW)	-				
GT1 (H ≤6'-9")	#4@4 (EW)	-				
GT2	#4@4 (EW)	#5@3 (EW)				
GT3 (H ≤6'-9")	#4@4 (EW)	-				
GT4	#4@4 (EW)	#5@3 (EW)				
GO	#4@10 (EW)	#4@46 (EW)				
GDO	#4@6 (EW)	#4@4 (EW)				

(EW) Each Way * Main Box

** a = Larger interior span

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

PRECAST DRAINAGE INLET TABLES

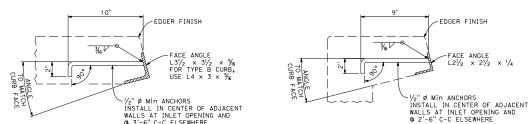
D73G

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Carl M. Duan

c59976

Exp. 6-30-24



NOTE:

 When shown on the project plans, place a ¾," Ø plain round protection bar horizontally across the length of the opening and bend back 4" into the inlet wall on each side.

CON DUTANTE REGISTERED CIVIL ENGINEER

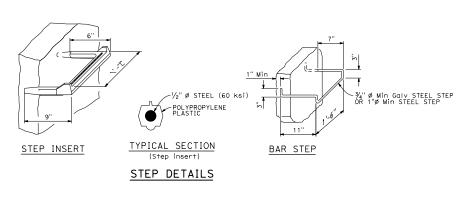
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

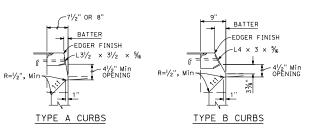
Mdy 1, 2023 PLANS APPROVAL DATE

WALLS AT INLET OPENING AND @ 3'-6" C-C ELSEWHERE

DETAIL A

FACE ANGLE AND ANCHOR





FACE ANGLE DETAIL "A"

ANCHORS

LENGTH OF

CURB OPENING

3'-6" OR LESS 7'-0"

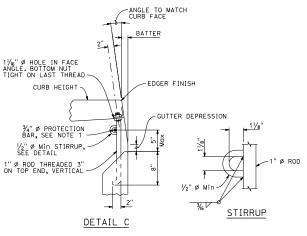
> 10'-0" 14'-0"

> 21'-0"

(

22

CURB OPENING DETAILS



DETAIL B

CURB SUPPORT

CURB SUPPORTS SHALL BE EVENLY SPACED AND MINIMAL IN NUMBER SUCH THAT MAXIMUM SPAN OF UNSUPPORTED CURB IS 7'-0".

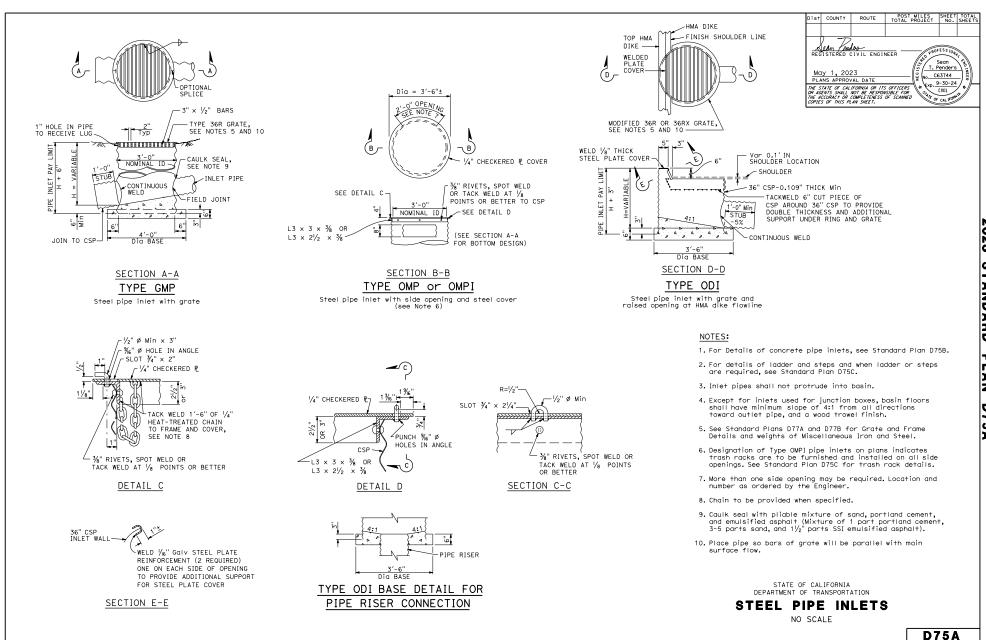
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET DETAILS

NO SCALE

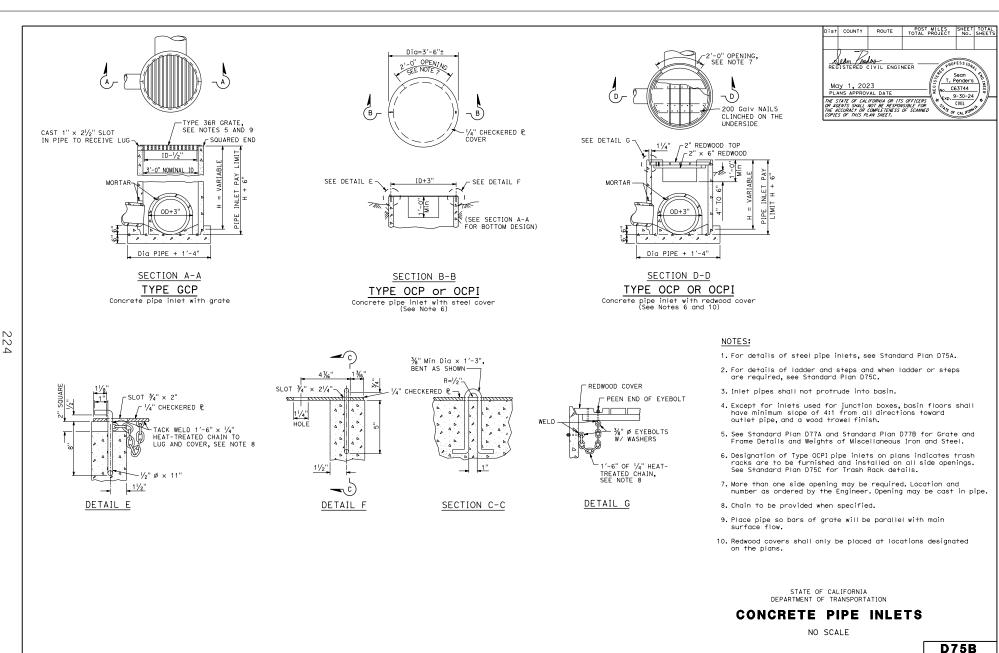
D74

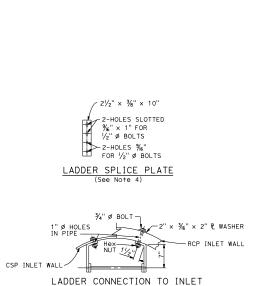




N

W





LADDER DETAILS See Notes 1, 2, 3 and 4

-6" × 1/4" × 6" ₽ WITH 7/8" Ø HOLE

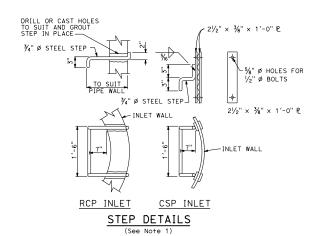
 $4\frac{1}{2}$ " × $\frac{1}{4}$ " BENT PLATE

LADDER SPLICE PLATE

5/8" Ø HOLES IN BRACKET

AND RAIL FOR 1/2" Ø BOLTS

BRACKETS @ 10'-0" Ctrs Max



- ¾" Ø STEEL RUNGS

GRIND ALL EXPOSED CORNERS 1/4" RADIUS-

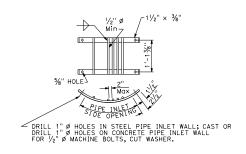
-%" Ø HOLE

IN BRACKET

1'-4" Min

21/2" x 3/8" RAILS-

25



TRASH RACK DETAILS

(See Note 5)

NOTES:

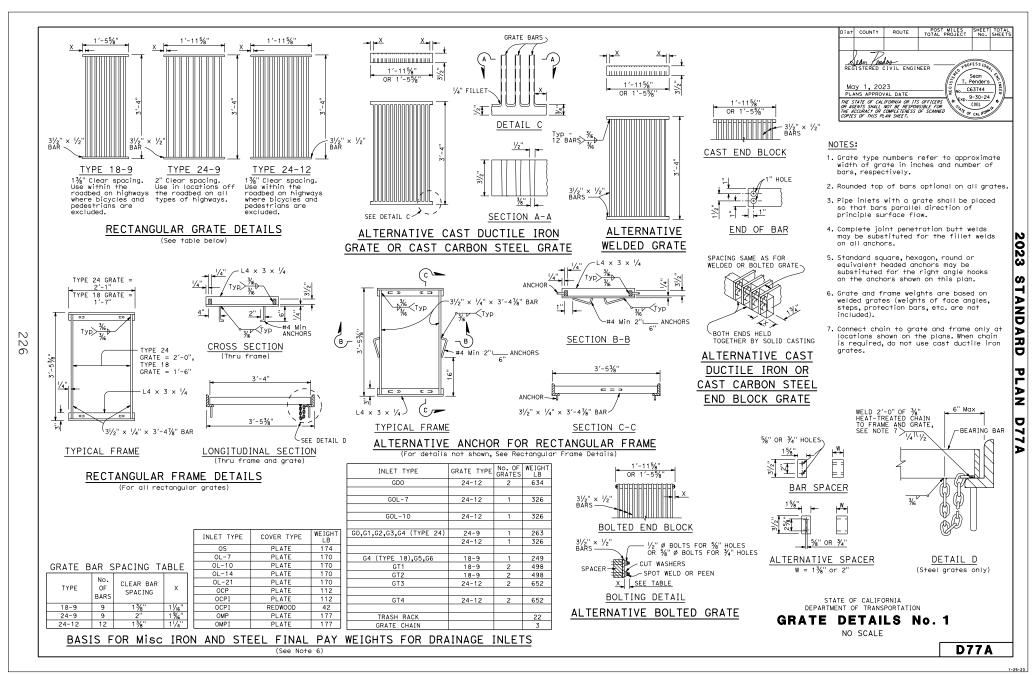
- 1. Ladders and Steps None required where "H" dimension of pipe inlet is less than 2'-6". Where "H" is 2'-6" or more, instal steps or ladder with lowest rung not more than 1'-0" above the floor and highest rung not more than 1 '-0" below top of inlet. The distance between steps or rungs shall not exceed 1'-0" and shall be uniform throughout the length of the wall. Place steps or ladder in the wall without an opening.
- 2. Ladder may be constructed in one length at contractor's option on RCP inlet.
- 3. On CSP inlet, connect ladder splice plate so joint can compress $\frac{1}{2}$ ".
- 4. Ladder splice plate to be connected with $\frac{1}{2}$ " \emptyset bolts with double nuts.
- Trash racks used on Type OCPI and OMPI inlets. Trash racks required for pumping installations.

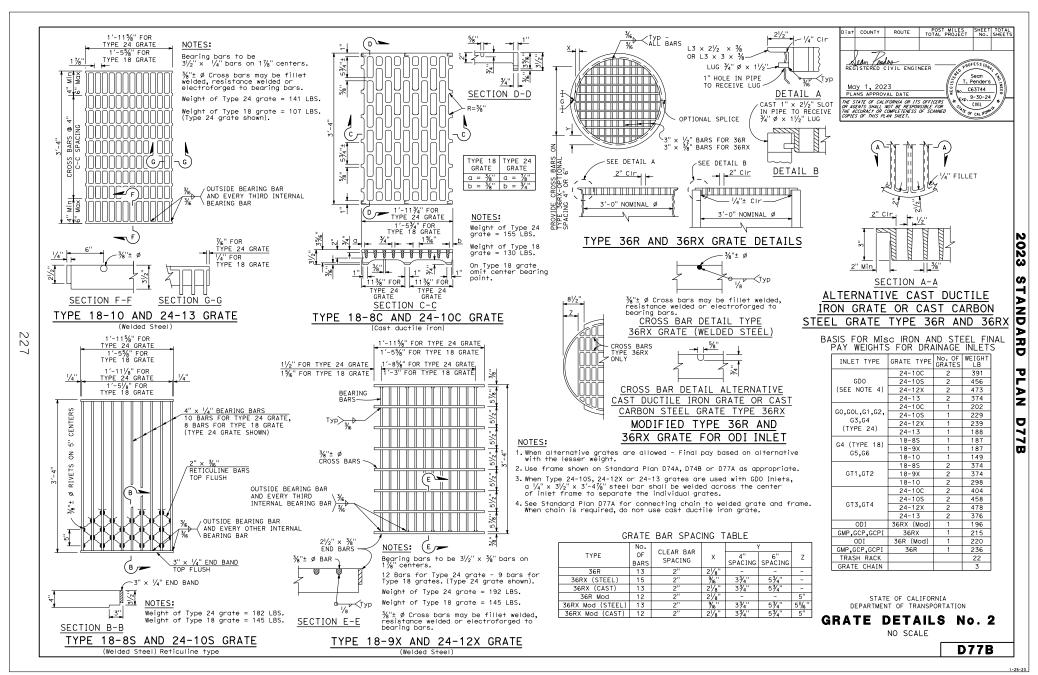
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

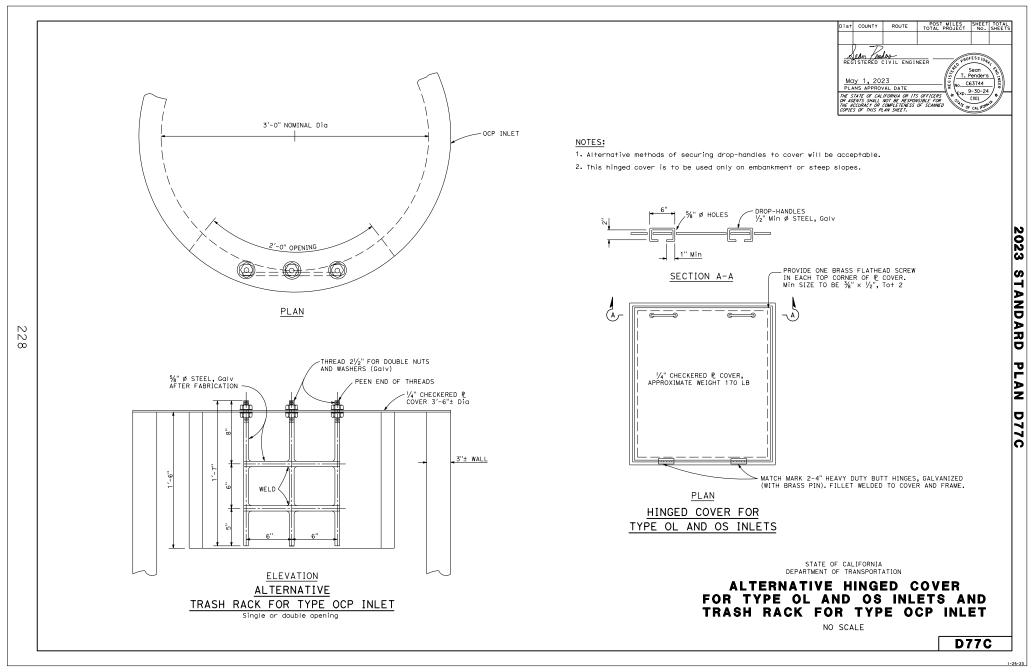
PIPE INLETS LADDER AND TRASH RACK DETAILS

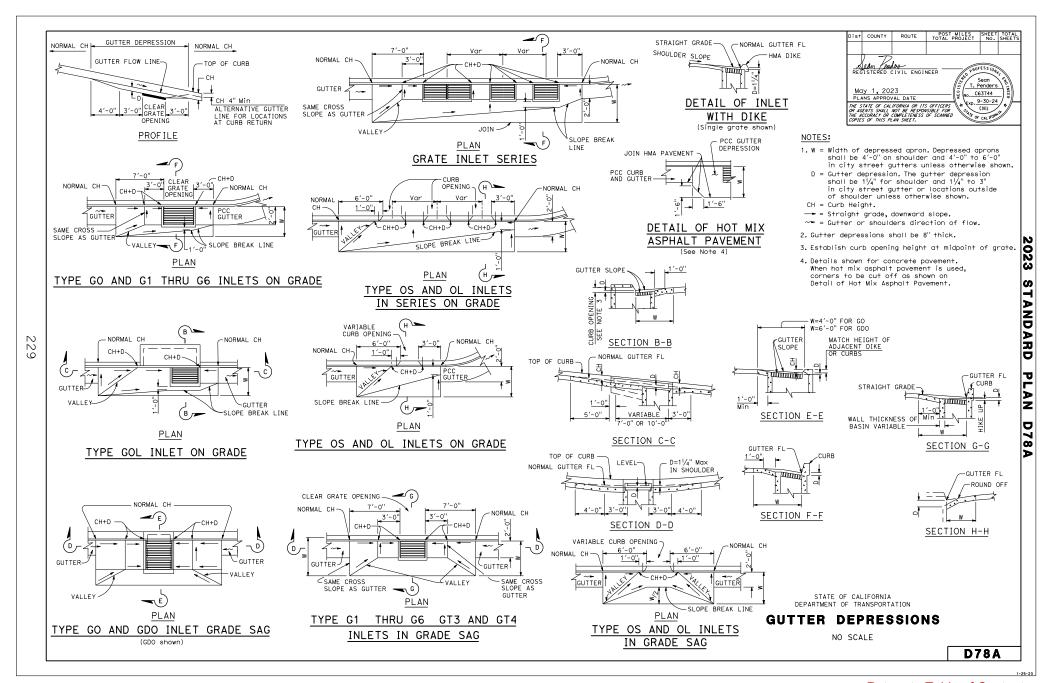
NO SCALE

D75C

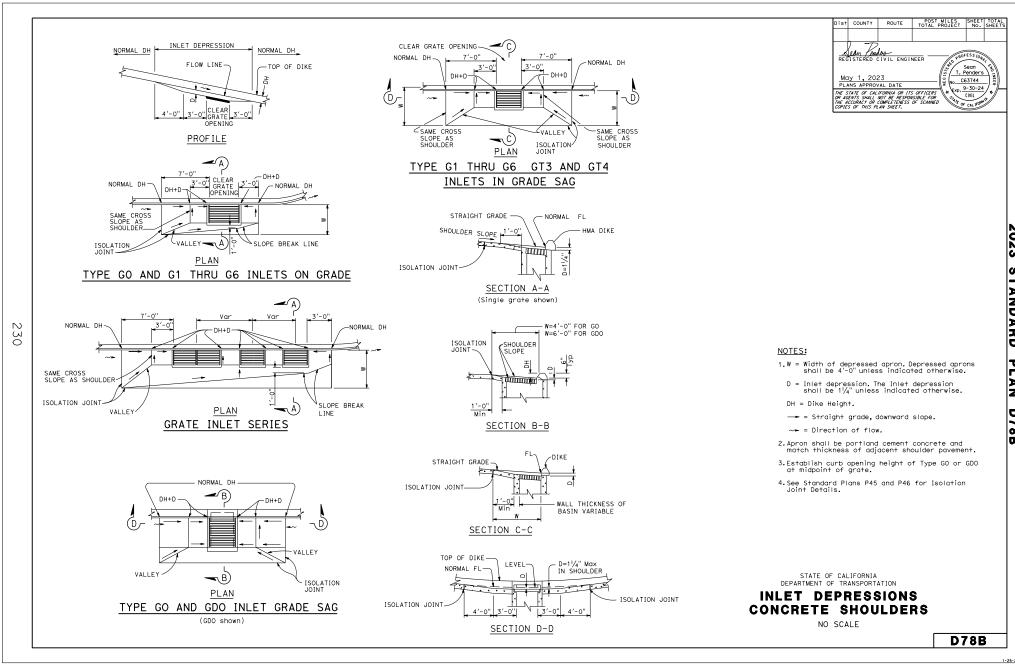




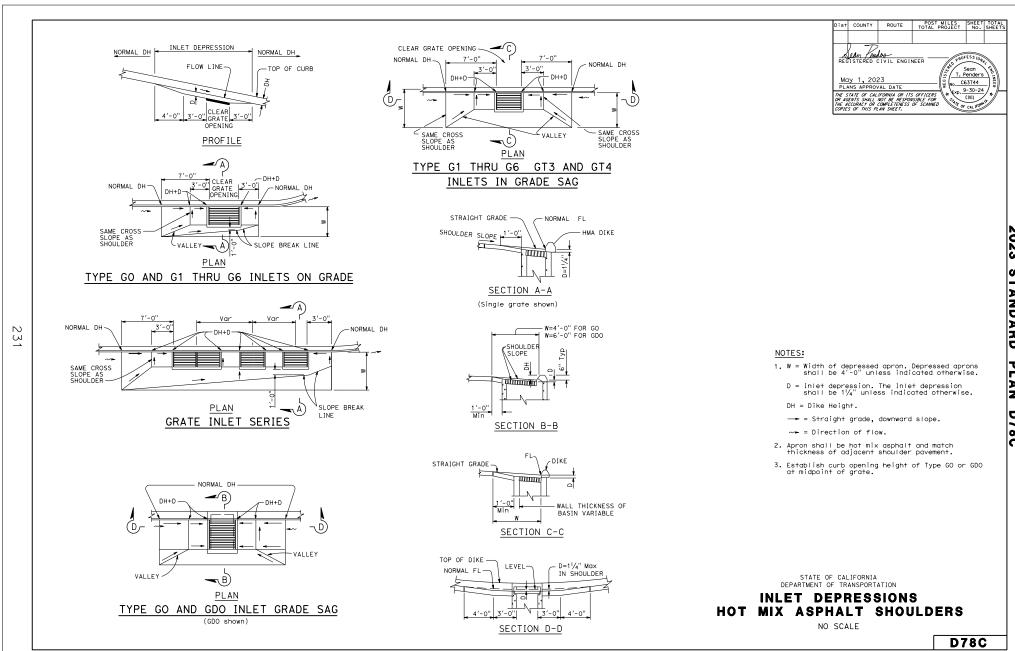












ID

30"

36"

42"

48" 54"

60'

72"

78'

84"

90"

96

102"

108"

114

П												w	ALL	. A										
			N	INIM	ЈМ СС	VER	TO 1	0'-0"	Max	COVE	R			2	0'-0"	Max	COVE	R			40'-0" Mo	x COVER	40'-0" Mo	ax COVER
	ID	+	ME	THOD) 1	ME	THOD	2	ME.	THOD	3A	ME	THOD	1	ME	THOD	2	ME	THOD	3A	METHO	D 3A	METHO	D 3B
			Asi	Aso	Ase	Asi	Aso			Aso	Ase	Asi	Аво	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Asi	Aso
	24"		0.23			0.16		0.16				0.25			0.17			0.14		0.14	0.25	0.20	0.24	0.16
	30"		0.29		0.27			0.20					0.20		0.25			0.19		0.18	0.37	0.25	0.31	0.22
ŝ.	36"							0.22				-	-					0.21			0.47	0.32	0.37	0.27
1 1	42"							0.22				_	-					0.24			0.53	0.40	0.42	0.29
9	48"							0.23					-					0.28				-	0.47	0.31
"	54"							0.24					-					0.30				-	0.57	0.34
4	60"							0.25				-	-					0.32				-	0.63	0.37
	66"							0.27				-	-					0.33			-	-	0.65	0.39
	72"							0.28					-					0.34			-	-	0.68	0.42
	78"							0.29				-	-					0.35			-	-	0.74	0.45
	84"							0.31				-	-					0.37			-	-	-	-
	90"							0.34					-					0.40			-	-	-	-
	96"							0.36					-					0.42			-	-	-	-
	102"							0.39					-	-	0.85	0.44		0.45				-	-	-
	108"		0.83	0.70	0.87	0.41	0.26	0.42	0.38	0.21	0.42	-	-	-	-	-	-	0.48	0.34	0.49	-	-	-	-
	114"							0.47				-	-	-	-	-	-	0.51	0.36	0.52	-	-	-	-
Ш	120"	10"	0.89	0.74	0.93	0.53	0.34	0.54	0.44	0.27	0.52	-	-	-	-	-	-	0.54	0.38	0.56	-	-	-	-

]				
		WAL	LAA	
			40'-0" Mo	x COVER
	ID	+	METHO	DD 3B
			Asi	Aso
	84"	7"	0.75	0.46
ķsi	90"	71/2"	0.81	0.49
	96"	8"	0.87	0.52
=	102"	81/2"	0.93	0.55
	108"	91/2"	0.94	0.56
Ļ,	114"	101/2"	0.96	0.57
	120"	11"	1.02	0.60

WALL BB

0.31

0.33

0.48

0.57

0.63

0.65

53/4"

6"

71/2" 42"

36" 61/2" 0.39

54" 10" 0.61

72" 12½" 0.73

84" 14¾" 0.83

90" 16" 0.86

96" 171/4" 0.90

131/2" 0.80

11"

111/2"

ID

24"

30"

48" 81/2" 80'-0" Max COVER

METHOD 3B Aso

0.18

0.22

0.36

0.45

0.55

0.61

0.63

0.71

0.78

0.81

0.84

0.88

0.58

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL
REG	9N	CIVIL ENGI	NEER - PR	OF ESS ION	
	y 1, 20		S Car	1 M. Duar C59976	121
THE S OR AG THE A	ENTS SHALL	IFORNIA OR 11 NOT BE RESPO COMPLETENESS	S OFFICERS * EXP.	6-30-24 CIVIL 3F CAL IFORM	/ 4//

NOTES:

- For details of the method of excavation, backfill and bedding (Method 1, Method 2, etc.), see Standard Plan A62D.
- 2. The tables for minimum allowable classes and D-loads of RCP on Standard Plan A62D shall not apply to direct design RCP.
- 3. Notes 3, 9 and 10 on Standard Plan A62D shall apply to direct
- 4. Throughout the length of any given culvert, the direct design selected by the Contractor shall be the same, including the method of excavation, backfill and bedding,
- 5. The embankment height prior to excavation specified in note 5 of the Standard Plan A62D shall apply to the direct design RCP installation when Method 2, 3A or 3B are used.
- 6. For single circular cage reinforcement, minimum clearance shall be 40% of the wall thickness (t). For elliptical and double circular cage reinforcement where the wall thickness (t) is less than $2\frac{1}{2}$ ", the minimum clearance (CIr) for reinforcement shall be 3/4", and where the wall thickness (t) is $2\frac{1}{2}$ " or more, the minimum clearance (CIr) for reinforcement shall be 1".
- 7. Minimum cover measured at the Edge of Traveled Way (ETW) shall be 2'-0" to top of HMA or existing AC pavement and 1'-0" to bottom
- 8. Cover greater than the table maximum requires a special design.

	WALL B MINIMUM COVER TO 10'-0" Max COVER 20'-0" Max COVER 40'-0" Max COVER 40'-0" Max COVER 40'-0" Max COVER																							
			, N	MINIM	ЈМ СС	VER	TO 1	0'-0"	Max	COVE	R			2	0'-0"	Max	COVE	R			40'-0" Mc	x COVER	40'-0" Mo	x COVER
	ID	+	ME	THOD) 1	ME	THOD	2	ME	THOD	3A	ME	THOD	1	ME	THOD	2	ME.	THOD	3A	METHO	D 3A	METHO	D 3B
			Asi	Aso	Ase	Asi	Aso	Ase		A _{so}	Аве	Asi	Aso	Аве		Aso	Ase		Aso	Ase	Asi	Aso	Asi	Aso
	24"		0.18		0.16			0.12				0.22			0.15		0.14	0.12	-	0.11	0.21	0.18	0.19	0.12
	30"		0.27		0.19			0.14			0.15				0.21			0.18		0.12	0.25	0.20	0.29	0.14
	36"																	0.15			0.29	0.23	0.30	0.17
	42"																	0.17			0.34	0.25	0.32	0.21
1.	48"		0.33	0.19	0.38	0.17	0.10	0.19	0.15	0.09	0.16	0.43	0.22	0.44	0.27	0.16	0.27	0.19	0.13	0.20	0.38	0.32	0.35	0.24
ş	54"		0.40	0.24	0.44	0.18	0.10	0.20	0.16	0.10	0.17	0.51	0.27	0.52	0.30	0.19	0.31	0.22	0.14	0.22	0.40	0.43	0.42	0.27
S	60"												0.31					0.25				-	0.50	0.35
"	66"		0.56	0.33	0.62	0.21	0.13	0.22	0.20	0.12	0.18	-	-	-	0.37	0.23	0.38	0.27	0.18	0.28	-	-	0.58	0.38
, o	72"							0.23				-	-	-	0.41	0.26	0.42	0.30	0.20	0.30	-	-	0.59	0.45
1	78"							0.26				-	-	-	0.46	0.28	0.47	0.32	0.22	0.33	-	-	0.60	0.50
	84"		0.67	0.50	0.69	0.28	0.17	0.28	0.23	0.13	0.26	-	-	-	0.52	0.31	-	0.35	0.24	0.36	-	-	-	-
	90"		0.69	0.52	0.71	0.30	0.18	0.31	0.25	0.16	0.30	-	-	-	0.59	0.33	-	0.38	0.26	0.39	-	-	-	-
	96"		0.71	0.57	0.73	0.33	0.20	0.34	0.29	0.17	0.34	-	-	-	0.65	0.36	-	0.41	0.28	0.42	-	-	-	-
	102"	91/2"	0.75	0.68	0.75	0.35	0.22	0.38	0.36	0.20	0.38	-	-	-	0.72	0.39	-	0.44	0.30	0.45	-	-	-	-
	108"							0.43					-	-	0.79	0.42	-	0.47	0.32	0.48	-	-	-	-
	114"	101/2"	0.78	0.70	0.79	0.41	0.25	0.48	0.41	0.24	0.48	-	-	-	-	-	-	0.50	0.34	-	-	-	-	-
	120"	11"	0.80	0.72	0.82	0.49	0.30	0.53	0.45	0.27	0.53	-	-	-	-	-	-	0.53	0.36	-	-	-	-	-

WALL X

Asi Aso Ase Asi Aso

61/2" 0.40 0.29 0.43 0.38 0.26 0.42 0.48 0.34 0.49 0.38 0.30 0.39 0.84 0.60 0.62 0.43

0.41 0.29 0.45 0.40 0.26 0.44 0.53 0.36 0.54 0.39 0.32 0.41

0.42 0.30 0.47 0.41 0.27 0.45 0.57 0.38 0.58 0.42 0.34 0.45

0.43 0.31 0.50 0.43 0.27 0.50 0.62 0.41 0.64 0.45 0.36 0.50

20'-0" Max COVER

METHOD 3A METHOD 3B METHOD 3A METHOD 3B METHOD 3A METHOD 3B

Min COVER TO 10'-0" Max COVER

0.19

0.23

0.19 0.18 - 0.18 0.19

- 0.21 0.22 - 0.20 0.23

SINGLE CIRCULAR CAGE (A ₈₁)	INNER CIRCULAR CAGE (A ₆₁) OUTER CIRCULAR CAGE (A ₈₀)	CLLIPTICAL AGE (A _{eq})—TOP
CIr	† - C	O CIF
SINGLE	DOUBLE	ELLIPTICAL

- 0.19 0.18 - 0.18 0.22 0.17 0.18 0.15 - 0.21 0.22 - 0.20 0.23 0.19 0.20 0.17 0.23 0.17 0.25 0.21 0.16 0.22 0.23 0.17 0.23 0.21 0.16 0.22 0.25 0.21 0.21 0.18 2¾" 0.26 0.19 0.27 0.24 0.18 0.25 0.26 0.19 0.26 0.24 0.18 0.25 0.35 0.27 0.26 0.24 0.28 0.29 0.28 0.21 0.28 0.26 0.20 0.27 0.28 0.21 0.28 0.26 0.20 0.27 0.28 0.21 0.28 0.26 0.20 0.27 0.33 0.30 0.28 31/4" | 0.29 | 0.22 | 0.31 | 0.27 | 0.20 | 0.29 | 0.21 | 0.30 | 0.27 | 0.20 | 0.29 | 0.47 | 0.34 | 0.32 | 0.29 0.30 0.23 0.32 0.28 0.21 0.31 0.30 0.24 0.30 0.27 0.21 0.29 0.56 0.42 0.40 0.33 3¾" 0.31 0.24 0.34 0.29 0.21 0.33 0.36 0.27 0.37 0.28 0.24 0.30 0.66 0.50 0.48 0.39 0.33 0.24 0.36 0.31 0.22 0.35 0.37 0.27 0.37 0.30 0.24 0.32 0.68 0.52 0.48 0.40 0.34 0.25 0.38 0.32 0.23 0.37 0.37 0.27 0.38 0.32 0.24 0.33 0.70 0.53 0.49 51/4" 0.36 0.25 0.39 0.33 0.24 0.38 0.38 0.28 0.39 0.33 0.24 0.36 0.71 0.55 0.50 0.41 5¾" 0.37 0.26 0.40 0.34 0.24 0.39 0.39 0.30 0.40 0.34 0.26 0.37 0.73 0.57 0.52 0.42 0.38 0.27 0.42 0.36 0.25 0.40 0.43 0.31 0.44 0.36 0.28 0.38 0.77 0.58 0.55

30'-0" Max COVER

- 0.68 0.46

0.81 0.53

CAGE REINFORCEMENT

- t = Pipe barrel wall thickness, inches A_{si} = Inner cage reinforcement, or single circular cage reinforcement, square inches/LF
- Aso = Outer cage reinforcement, square inches/LF
- A_{se} = Elliptical single cage reinforcement, square inches/LF
- Cir = Design clearance, inches (see Note 6)

DESIGN NOTES:

AASHTO LRFD Bridge Design Specifications, 8th edition with California Amendments. DIRECT DESIGN METHOD Design:

Paris/Uniform Soil Pressure Distribution Earth Loadina:

Vertical: 140 pcf Horizontal: Varies, see design lateral pressure chart (Circular Pipe only)

Unit Stresses: (Used in Design Tables) fy = 65 ksi f'c = See Tables

The RCP as shown on this sheet is not intended to be used in a corrosive environment. A special design may be required.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED **CONCRETE PIPE** DIRECT DESIGN METHOD

NO SCALE

D79

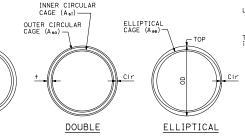
											_									$\overline{}$
									WA	LL	В									
			M	INIMU	JM CC	VER	TO 10	0'-0"	Max	COVE	R			2	0'-0"	Max	COVE	R		
				ALLA			ALLA			ALLA				TION		ALLA			ALLA	
	ID	+		YPE			YPE	-		YPE	-		YPE	_		YPE :	-		YPE	-
			Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase
	24"	3"	0.17	-	0.16	0.19	-	0.17	0.21	-	0.19	0.17	-	0.16	0.19	-	0.17	0.21	-	0.19
	30"	31/2"	0.21	-	0.17	0.22	-	0.18	0.25	-	0.21	0.21	-	0.17	0.22	-	0.18	0.25	-	0.24
	36"	4"	0.17	0.09	0.18	0.18	0.10	0.19	0.21	0.11	0.22	0.17	0.09	0.18	0.21	0.11	0.22	0.28	0.16	0.30
	42"	41/2"	0.18	0.09	0.19	0.21	0.12	0.23	0.22	0.12	0.23	0.19	0.10	0.19	0.25	0.14	0.26	0.36	0.19	0.36
	48"	5"	0.19	0.10	0.20	0.24	0.14	0.27	0.23	0.13	0.24	0.22	0.12	0.23	0.29	0.16	0.31	0.44	0.23	0.45
κS	54"	51/2"	0.20	0.11	0.22	0.29	0.17	0.32	0.24	0.14	0.25	0.25	0.14	0.28	0.33	0.20	0.37	0.52	0.28	0.53
9	60"	6"	0.21	0.12	0.23	0.34	0.20	0.38	0.25	0.15	0.27	0.29	0.17	0.32	0.40	0.23	0.44	-	-	-
П	66"	61/2"	0.21	0.13	0.24	0.41	0.24	0.45	0.32	0.19	0.35	0.36	0.22	0.40	0.48	0.28	0.53	-	-	-
٠,0	72"	7"	0.22	0.14	0.25	0.49	0.29	0.54	0.37	0.22	0.41	0.43	0.25	0.47	0.57	0.34	0.63	-	-	-
4	78"	71/2"	0.23	0.15	0.26	0.57	0.34	0.63	0.42	0.25	0.47	0.50	0.30	0.55	0.66	0.39	0.66	-	-	- 1
	84"	8"	0.26	0.16	0.31	0.64	0.38	0.69	0.48	0.29	0.54	0.57	0.34	0.63	0.69	0.45	-	-	-	- 1
	90"	81/2"	0.34	0.21	0.38	0.69	0.41	0.72	0.54	0.33	0.61	0.63	0.37	0.70	0.72	0.51	-	-	-	- 1
	96"	9"	0.39	0.24	0.44	0.70	0.45	0.74	0.61	0.36	0.68	0.70	0.41	0.74	-	-	-	-	-	-
	102"	91/2"	0.48	0.29	0.49	0.72	0.54	0.76	0.73	0.44	0.74	0.75	0.50	0.78	-	-	-	-	-	-
	108"	10"	0.57	0.30	0.55	0.75	0.65	0.79	0.76	0.53	0.80	0.77	0.60	0.80	-	-	-	-	-	-
	114"	101/2"	0.66	0.31	0.60	0.78	0.76	0.81	0.80	0.62	0.83	0.79	0.69	0.82	-	-	-	-	-	-
	120"	11"	0.75	0.31	0.66	0.81	0.86	0.83	0.84	0.72	0.86	0.81	0.79	0.84	1	ı	1	1	-	-

									WA	LL	C									
			, k	MINIM	ЈМ СС	VER	TO 10	0'-0"	Max	COVE	R			2	0'-0"	Max	COVE	R		
	ID	+		ALLA YPE	TION 1	INST T	ALLA YPE	TION 2		ALLA YPE			ALLA YPE	TION 1		ALLA YPE			ALLA YPE	
			Ast	Aso	Ase	Ast	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Ast	Aso	Ase	Asi	Aso	Ase
	24"	3¾"	0.15	-	0.12	0.15	-	0.13	0.18	-	0.14	0.15	-	0.12	0.15	-	0.13	0.18	-	0.14
	30"	41/4"	0.18	-	0.14	0.19	-	0.14	0.21	-	0.16	0.18	-	0.14	0.19	-	0.14	0.25	-	0.19
	36"	4¾"	0.14	0.07	0.14	0.15	0.08	0.16	0.17	0.09	0.17	0.14	0.07	0.14	0.18	0.09	0.18	0.23	0.12	0.23
	42"	51/4"	0.15	0.07	0.16	0.16	0.09	0.17	0.18	0.10	0.20	0.16	0.08	0.16	0.21	0.11	0.22	0.27	0.14	0.28
11:	48"	5¾"	0.16	0.07	0.17	0.19	0.10	0.21	0.19	0.11	0.21	0.19	0.10	0.19	0.25	0.13	0.25	0.32	0.17	-
X	54"	61/4"	0.17	0.08	0.18	0.21	0.12	0.23	0.20	0.12	0.22	0.22	0.11	0.22	0.28	0.15	0.29	0.40	0.21	-
2	60"	6¾"	0.18	0.09	0.19	0.24	0.15	0.27	0.22	0.15	0.24	0.25	0.14	0.26	0.32	0.18	0.33	0.49	0.25	-
11"	66"	71/4"	0.22	0.11	0.20	0.31	0.19	0.34	0.25	0.16	0.28	0.28	0.17	0.31	0.37	0.23	-	-	-	-
1 4	72"	73/4"	0.24	0.15	0.26	0.36	0.21	0.40	0.31	0.19	0.34	0.34	0.20	0.37	0.44	0.26	-	-	-	-
11	78"	81/4"	0.28	0.18	0.31	0.42	0.24	0.47	0.36	0.22	0.41	0.40	0.23	0.44	0.51	0.30	-	-	ı	-
	84"	8¾"	0.32	0.18	0.35	0.50	0.30	0.56	0.43	0.25	0.47	0.47	0.28	0.52	0.62	0.37	-	-	ı	-
	90"	91/4"	0.38	0.23	0.41	0.59	0.35	0.66	0.51	0.30	0.56	0.56	0.33	0.62	0.65	0.44	-	-	ı	-
	96"	9¾"	0.42	0.25	0.47	0.65	0.42	0.68	0.59	0.35	0.65	0.64	0.40	0.65	0.68	0.51	-	-	ı	-
	102"	101/4"	0.44	0.27	0.54	0.67	0.50	0.70	0.68	0.40	0.71	0.67	0.47	0.69	ı	-	-	-	ı	-
	108"	10¾"	0.46	0.28	0.60	0.69	0.59	0.72	0.71	0.50	0.73	0.69	0.55	1	1	-	-	-	ı	-
	114"	111/4"	0.47	0.31	0.67	0.71	0.68	0.74	0.73	0.59	0.75	0.71	0.64	-	-	-	-	-	-	-
IL	120"	113/4"	0.49	0.35	0.73	0.73	0.77	0.76	0.75	0.59	0.77	0.73	0.73	-	-	-	-	-	-	-

				WA	LL X			
			10′-	-0" Max C0	OVER	20'-	·0" Max C0	OVER
	ID	+	INST	LLATION	TYPE 1	INSTA	LLATION	TYPE 1
			Asi	Aso	Ase	Asi	Aso	Ase
	24"	2"	0.25	0.16	0.25	0.25	0.16	0.25
	30"	23/8"	0.26	0.16	0.26	0.26	0.16	0.26
	36"	23/4"	0.31	0.20	0.32	0.31	0.20	0.32
	42"	3"	0.32	0.21	0.34	0.41	0.25	0.44
÷	48"	31/2"	0.33	0.22	0.35	0.46	0.27	0.51
¥	54"	3¾"	0.34	0.24	0.36	0.54	0.28	0.55
9	60"	41/4"	0.35	0.26	0.38	0.56	0.29	0.57
П	66"	43/4"	0.36	0.27	0.40	0.59	0.31	0.60
ů,	72"	51/4"	0.38	0.28	0.42	0.62	0.32	0.63
	78"	5¾"	0.39	0.28	0.43	0.66	0.34	0.67
	84"	61/4"	0.41	0.29	0.44	0.70	0.36	0.71
	90"	7"	0.42	0.31	0.46	0.71	0.37	0.73
	96"	71/2"	0.44	0.32	0.48	0.72	0.38	0.74
	102"	8"	0.45	0.32	0.50	0.77	0.40	0.79
	108"	81/2"	0.47	0.33	0.51	0.82	0.43	-
	114"	91/4"	0.49	0.34	0.52	0.85	0.44	-
	120"	9¾"	0.50	0.35	0.54	0.87	0.45	-

		WA	LL BB	
			40'-0" Mo	x COVER
	ID	+	INSTAL TYP	
			Asi	Aso
	24"	3"	0.22	0.13
	30"	31/2"	0.27	0.14
Š.	36"	4"	0.33	0.17
9	42"	41/2"	0.42	0.22
	48"	5"	0.52	0.27
"	54"	53/4"	0.54	0.29
Ļ,	60"	61/2"	0.57	0.34
	66"	71/4"	0.60	0.38
	72"	81/2"	0.62	0.40
	78"	91/2"	0.64	0.42
	84"	101/4"	0.65	0.43
	90"	101/2"	0.66	0.44
Ϋ́	96"	10¾"	0.79	0.46
7	102"	113/4"	0.80	0.48
Ш	108"	121/4"	0.88	0.53
į,o	114"	131/4"	0.90	0.55
	120"	14"	0.93	0.56

		WAL	L CC	
			80'-0" Md	x COVER
6 Ks	ID	+		LATION PE 1
"		· ·	Asi	Aso
"	24"	61/2"	0.21	0.19
Ť,	30"	71/2"	0.35	0.30
	36"	81/2"	0.45	0.42
	42"	101/4"	0.49	0.45
	48"	101/2"	0.52	0.49
	54"	111/2"	0.60	0.58
÷.	60"	12¾"	0.65	0.63
×	66"	141/2"	0.68	0.67
1	72"	161/2"	0.70	0.68
"	78"	18"	0.73	0.72
ţ,	84"	191/2"	0.76	0.75
	90"	20¾"	0.80	0.79
	96"	221/2"	0.82	0.81



CAGE REINFORCEMENT

- t = Pipe barrel wall thickness, inches
- A_{si} = Inner cage reinforcement, or single circular cage reinforcement, square inches/LF
- A₈₀ = Outer cage reinforcement, square inches/LF

SINGLE CIRCULAR

SINGLE

CAGE (Asi) ¬

- Ase = Elliptical single cage reinforcement, square inches/LF
- CIr = Design clearance, inches (see Note 5)

Dis+	COUNTY	ROUTE	POST TOTAL	MILES PROJECT	SHEET No.	TOTAL
MC PL	ISTERED (/AL DATE		San Carl	M. Duan 59976 -30-24	CHIO INEER
OR AG	ENTS SHALL	IFORNIA OR ITS NOT BE RESPON COMPLETENESS AN SHEET.	SIBLE FOR	100		/ 4-//

- For details of the method of excavation, backfill and bedding (Installation Type 1, Installation Type 2, etc.), see Standard Plan A62DA.
- 2. The tables for minimum allowable classes and D-loads of RCP on Standard Plan A62DA shall not apply to direct design RCP.
- 3. Notes 3 and 7 on Standard Plan A62DA shall apply to direct design RCP.
- 4. Throughout the length of any given culvert, the direct design selected by the Contractor shall be the same, including the method of excavation, backfill and bedding.
- 5. For single circular cage reinforcement, minimum clearance shall be 40% of the wall thickness (t). For elliptical and double circular cage reinforcement where the wall thickness (t) is less than 2/2", the minimum clearance (CIr) for reinforcement shall be $\frac{1}{2}$, and where the wall thickness (t) is 2/2" or more, the minimum clearance (CIr) for reinforcement shall be 1".
- 6. Minimum cover measured at the Edge of Traveled Way (ETW) shall be 2'-0" to top of HMA or existing AC pavement and 1'-0" to bottom of rigid pavement.
- 7. Cover greater than the table maximum requires a special design.

DESIGN NOTES:

AASHTO LRFD Bridge Design Specifications, 8th edition with California Amendments. DIRECT DESIGN METHOD Design:

Earth Loading: Heger Soil Pressure Distribution

 $\gamma = 140 \text{ pcf}$

VAF & HAF modification factor = 0.86

Unit Stresses: (Used in Design Tables) $f_y = 65 \text{ ksi}$

f'c = See Tables

The RCP as shown on this sheet is not intended to be used in a corrosive environment. A special design may be required.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE PIPE DIRECT DESIGN METHOD

NO SCALE

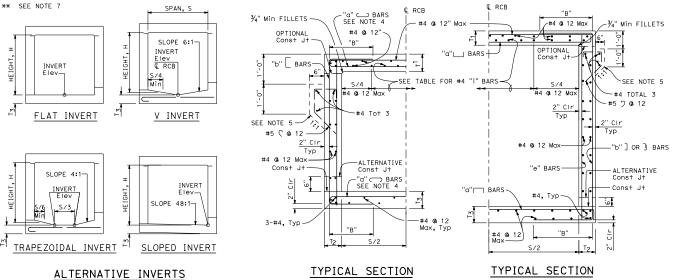
D79A

Dis	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL
_(99N	West		15512	
RE	GISTERED	CIVIL ENGI	NEER Carl	ESS ION	12
	ay 1, 20		(S) (Carl	M. Duar 59976	
THE		IFORNIA OR 17	S OFFICERS * EXP.	5-30-24 CIVIL /	/ <i>*</i> /
THE		NOT BE RESPO COMPLETENESS LAN SHEET.	OF SCANNED	CAL IFORM	*/
_					

- For boxes with span or height less than any of those shown in table, use next greater size box concrete dimensions and reinforcement. Make necessary changes in bar lengths and quantities.
- 2. Quantities are approximate and for design
- 3. For boxes with span or height or cover greater than those shown in tables, a special design is required.
- 4. It is permissible to eliminate the 180° hooks on
- Provide paving notch when top is exposed and when pavement is concrete, and adjust quantities.
- 6. For design and details not shown, see Standard
- 7. Soil pressures shown are factored per AASHTO LRFD BDS and include soil weight of fill over box, self weight of box, and live load where applicable.
- 8. Stagger rebars for wall thickness less than 8".

"i" BARS, FOR EAF	RTH CO	VERS	UP T	ΓΟ ΑΝ	D INC	CLUDI	NG 10	0'-0"
SPAN	4'	5′	6'	7'	8′	10'	12'	14'
NUMBER	7	8	9	10	11	12	15	20

NOTE: For earth cover over 10'-0", use #4 @ 12 Max spacing for "i" bars.



SPANS 4' THRU 8

SPANS 10' THRU 14'

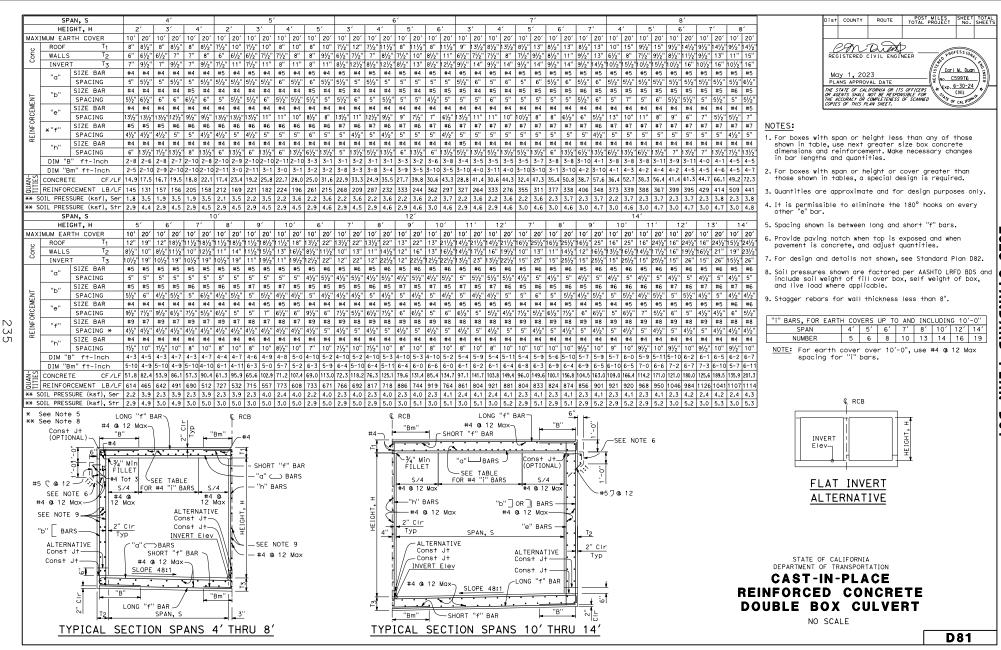
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STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

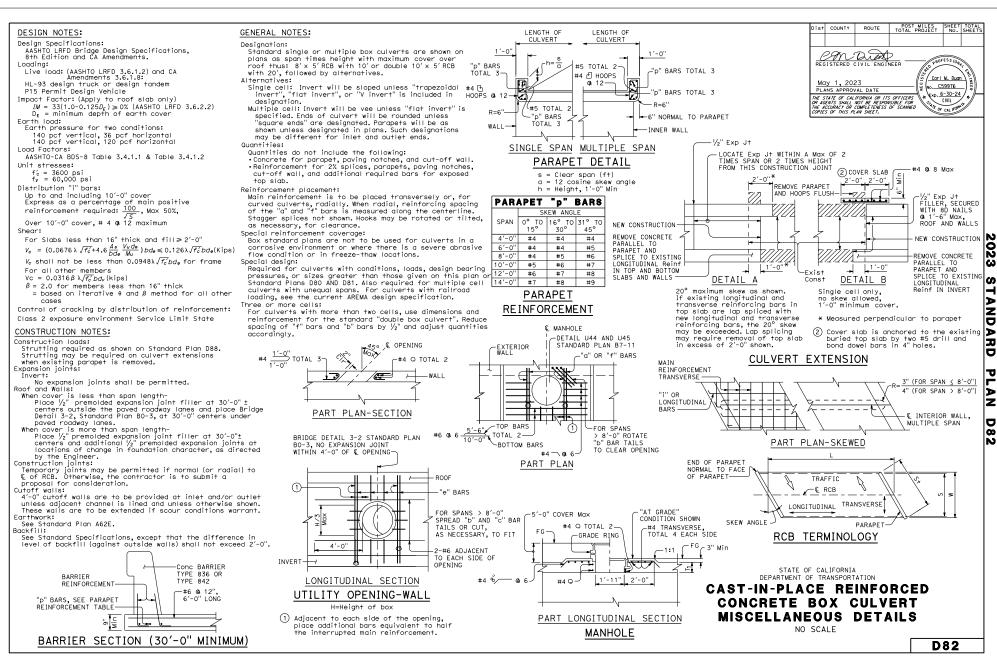
CAST-IN-PLACE REINFORCED CONCRETE SINGLE BOX CULVERT

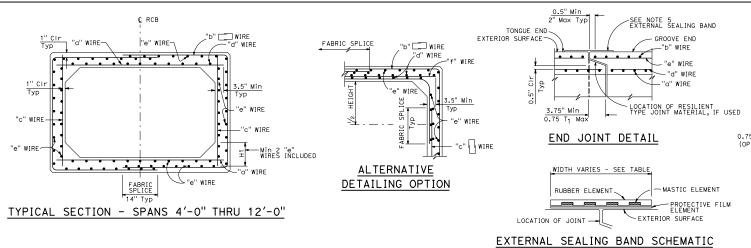
NO SCALE

D80









	SPAN, S				4'							5	′							6	′								7′					
Н	EIGHT, H		1	2′		3′	-	4′	2			3'	-	4′		5′		3'	4	ľ		5′	(5′		3′		4′		5′	6	Ĭ,	7	
MAX	IMUM EARTH CO	OVER	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	201	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'	10'	20'
	ROOF	T ₁	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	7"	7"	7"	7"	7"	7"	7"	7"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
CONCRETE (INCH)	SIDE WALL	T ₂	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	7"	7"	7"	7"	7"	7"	7"	7"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
(111011)	INVERT	Тз	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	7"	7"	7"	7"	7"	7"	7"	7"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
		"a"	.33	.47	.34	.49	.34	.50	.40	.62	.41	.62	.42	.64	.43	.64	.44	.67	.45	.70	.46	.71	.47	.72	.47	.72	.48	.75	.50	.78	.50	.79	.51	.80
MATNITANIIN	M WELDED	"b"	.23	.28	.23	.25	.21	.23	.26	.36	.24	.36	.24	.33	.24	.30	.28	.44	.27	.40	.27	.37	.27	.38	.33	.52	.31	.48	.30	.45	.30	.43	.30	.48
	FABRIC	"c"	.11	.11	.11	.12	.18	.24	.11	.11	.11	.11	.13	.23	.24	.34	.11	.11	.11	.12	.19	.27	.27	.42	.11	.11	.11	.11	.13	.20	.26	.31	.30	.50
(incl	n ² /ft)	"d"	.16	.11	.16	.11	.16	.11	.17	.11	.18	.11	.18	.11	.18	.11	.17	.11	.18	.11	.18	.11	.18	.11	.17	.11	.17	.11	.18	.11	.18	.11	.18	.11
(,,,,,	,	"e"	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
		"f"	.22	.36	.23	.37	.22	.26	.29	.51	.30	.51	.29	.41	.26	.30	.33	.56	.34	.58	.27	.44	.21	.30	.36	.61	.37	.64	.37	.57	.25	.48	.21	.30
*	Conc	CY/LF	.3	31	.3	4	.3	8	.3	7	.4	1	.4	14	.4	8	.5	1	.5	6	.6	0	.6	4	.6	3	.6	8	.7	3	.7	8	.83	; —
QUANTITY	Reinf	LB/LF	35	41	39	45	45	51	49	58	49	62	54	69	62	78	60	79	64	83	72	93	80	107	72	98	76	102	81	110	92	120	101	143
** SOIL PR	ESSURE (ksf)	*	2.3	4.4	2.4	4.5	2.4	4.5	3.1	4.4	3.1	4.5	3.1	4.5	3.2	4.5	2.7	4.5	2.8	4.5	2.8	4.6	2.8	4.6	2.5	4.5	2.5	4.6	2.5	4.6	2.5	4.6	2.6	4.6

	SPAN, S				8′					1	0'						12'			
Н	EIGHT, H		4'	5'	6'	7'	8'	5′	6′	7'	8'	9'	10'	6'	7'	8'	9'	10'	11'	12'
MAX1	MUM EARTH CO	OVER	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'	10' 20'
	ROOF	T ₁	8.5"8.5"	8.5" 8.5'	8.5"8.5"	8.5"8.5"	8.5"8.5"	10" 10"	10" 10"	10" 10"	10" 10"	10" 10"	10" 10"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"
CONCRETE (INCH)	SIDE WALL	T ₂	8.5"8.5"	8.5"8.5'	8.5"8.5"	8.5" 8.5'	8.5"8.5"	10" 10"			10" 10"	10" 10"	10" 10"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"
(211011)	INVERT	Тз	8.5"8.5"	8.5"8.5"	8.5" 8.5"	8.5"8.5"	8.5" 8.5"	10" 10"	10" 10"	10" 10"	10" 10"	10" 10"	10" 10"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"	12" 12"
		"a"	.55 .87	.56 .90	.57 .92	.58 .93	.58 .94	.66 1.0	7.67 1.10	.69 1.13	.70 1.14	.70 1.16	.71 1.16	.73 1.21	1.211.24	.77 1.27	1.241.29	1.271.31	.78 1.32	21.291.32
MINITMUN	M WELDED	"b"	.37 .59	.35 .55	.33 .52	.33 .52	.36 .57	.45 .74	.43 .70	.41 .67	.40 .64	.43 .67	.48 .67	.51 .85	.85 .81	.49 .77	.81 .74	.77 .77	.53 .79	.74 .79
	FABRIC	"c"	.11 .11	.11 .11	.20 .31	.31 .42	.38 .62	.11 .11	.11 .11	.22 .31	.36 .42	.40 .62	.54 .86	.11 .11	.11 .11	.23 .30	.37 .42	.42 .60	.54 .82	.42 1.06
(inch	$n^2/ft)$	"d"	.19 .11	.19 .11	.20 .11	.20 .11	.20 .11	.20 .11	.20 .11	.21 .11	.21 .11	.21 .11	.21 .11	.20 .11	.20 .11	.21 .11	.22 .11	.22 .11	.22 .11	.22 .11
(,	"e"	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11	.11 .11
		"f"	.44 .76	.45 .79	.37 .61	.27 .52	.20 .31	.55 .96	.56 .99	.47 .81	.34 .73	.31 .53	.16 .30	.62 1.10	1.101.13	.64 .97	1.13.87	.97 .71	.40 .50	.87 .26
*	Conc	CY/LF	.78	.83	.88	.94	.99	1.10	1.17	1.23	1.29	1.35	1.41	1.56	1.63	1.70	1.78	1.85	1.93	2.00
QUANTITY	Reinf	LB/LF	93 129	97 133	105 148	117 161	131 189	133 191	138 196	148 212	191 225	176 253	201 282	174 255	179 261	191 279	207 293	223 323	249 357	281 393
** SOIL PR	ESSURE (ksf)		2.5 4.6	2.5 4.6	2.5 4.6	2.5 4.6	2.5 4.6	3.8 4.6	3.8 4.7	3.8 4.7	4.6 4.7	3.9 4.7	3.9 4.8	3.6 4.7	3.7 4.7	3.7 4.8	3.7 4.8	3.7 4.8	3.8 4.9	3.8 4.9

* See Note 3

** See Note 6

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	Dist	COUNTY	ROUTE	POST MI TOTAL PRO	LES JECT	SHEET No.	TOTAL SHEETS	
	PL A	y 1, 202	IAL DATE IFORNIA OR ITS NOT BE RESPON COMPLETENESS			M. Duan 59976 -30-24 CIVIL	A BERNIONS	
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		-	SPAN, S					
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		T.						2023
		SO	HEMAT	I C				23
				<u>. </u>				
			TABLE					တ္
		SPAN	EXTERNAL BAND WIL					STANDARD
		4'-6'	9					Z
		7′-8′		1"				2
	1	0'-12'	13	3"				7
								õ
NOTES:								
110163								ı —

SCHEMATIC

	TABLE
SPAN	EXTERNAL SEALING BAND WIDTH, Min
4'-6'	9"
7'-8'	11"
10'-12'	13"

NOTES:

- The inside and outside surfaces of the RCB roof shall be marked "TOP".
- 2. H1 minimum shall equal the wall thickness. H1 maximum shall be 8" for spans through 8' and 14" for spans over 8'.
- Quantities are approximate and for design purposes only.
- For design and details not shown, see Standard Plan D83B.
- 5. For external sealing band applications see Standard Plan A62G.
- Soil pressures shown are factored per AASHTO LRFD and include soil weight of fill over box, self weight of box and live load where applicable.
- 7. If earth cover is less than 2', the concrete cover for the reinforcement at the top of top slob shall be 2', Ti in the Table shall have an additional 1" and quantities shall be revised accordingly in this case.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

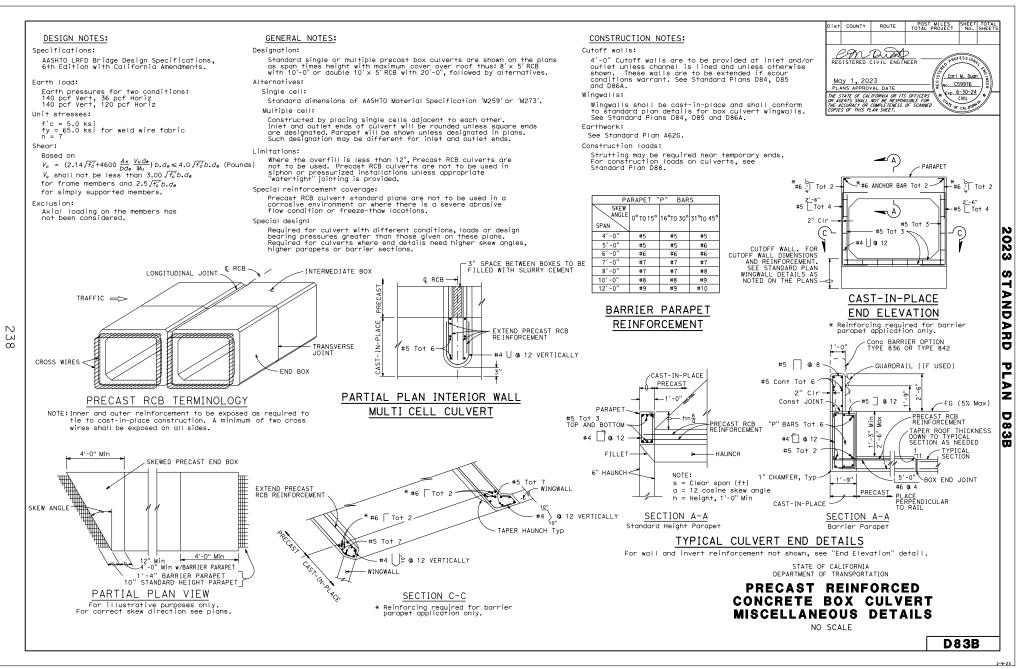
PRECAST REINFORCED CONCRETE BOX CULVERT

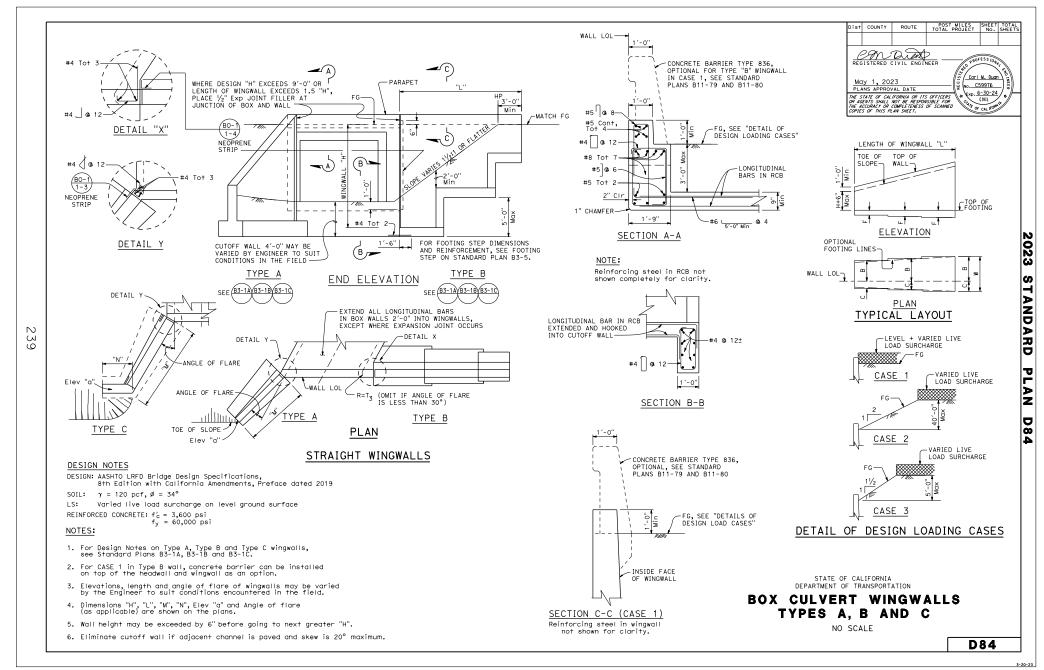
NO SCALE

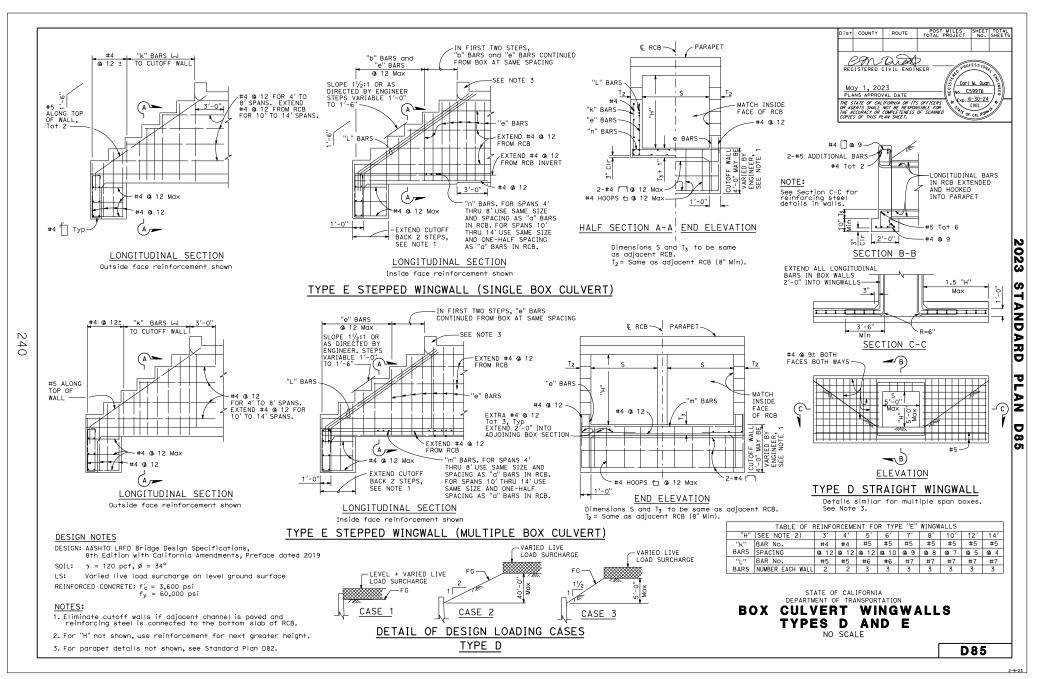
D83A

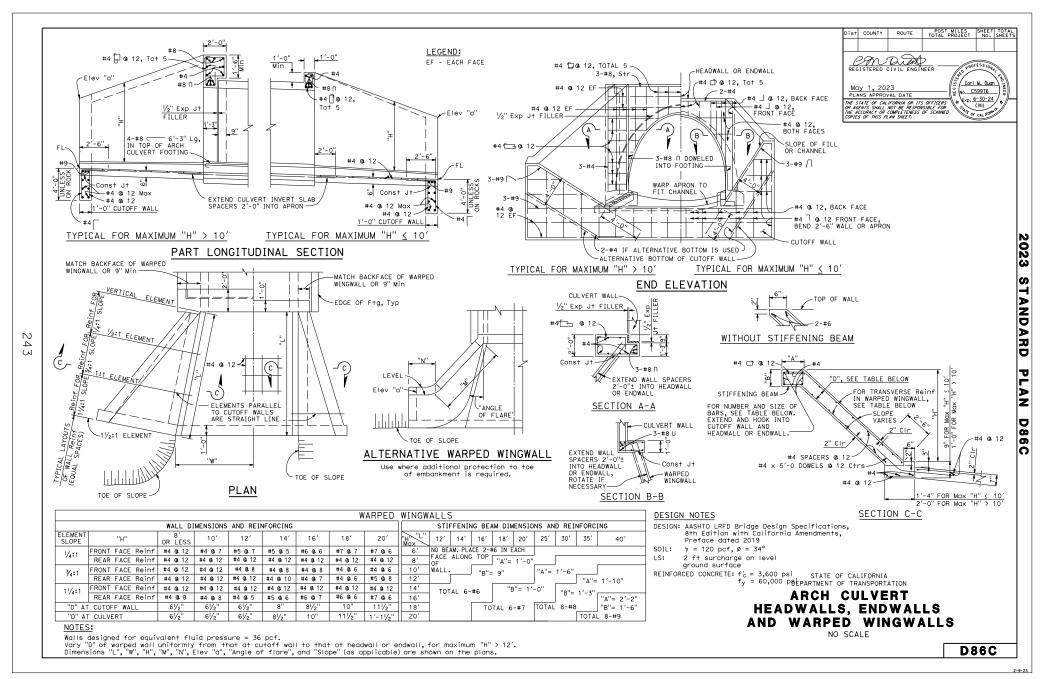
PLAN

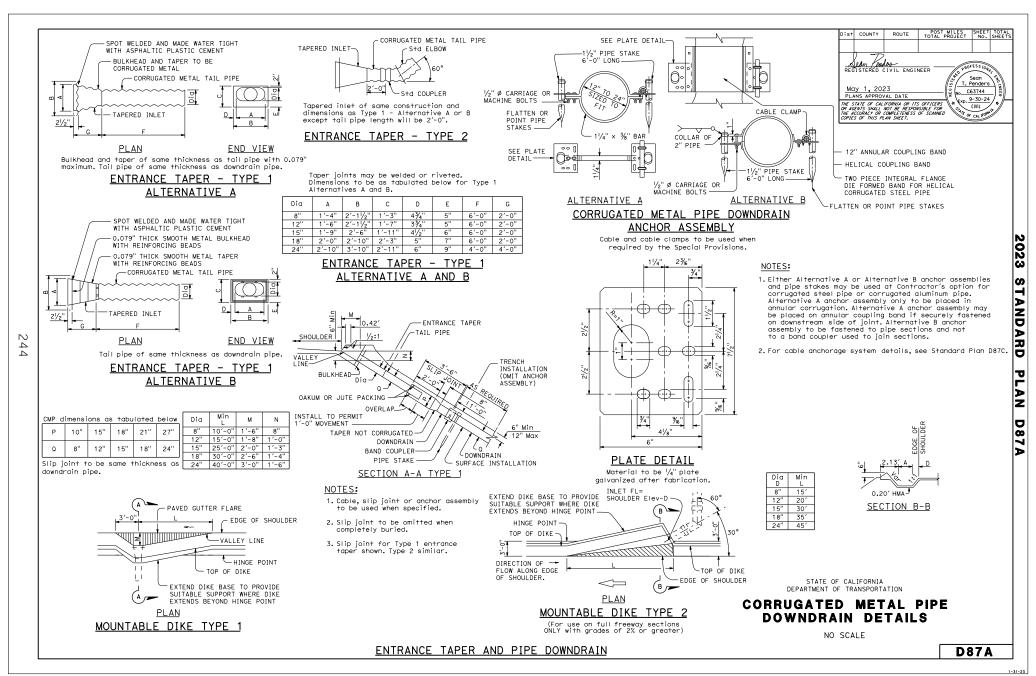
D83A

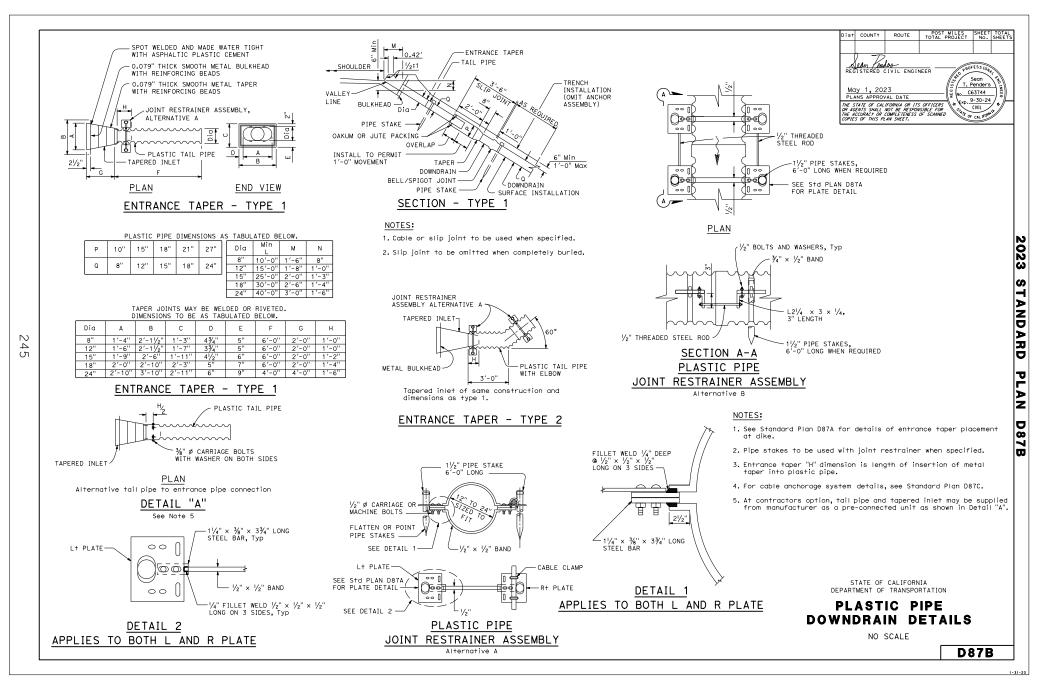










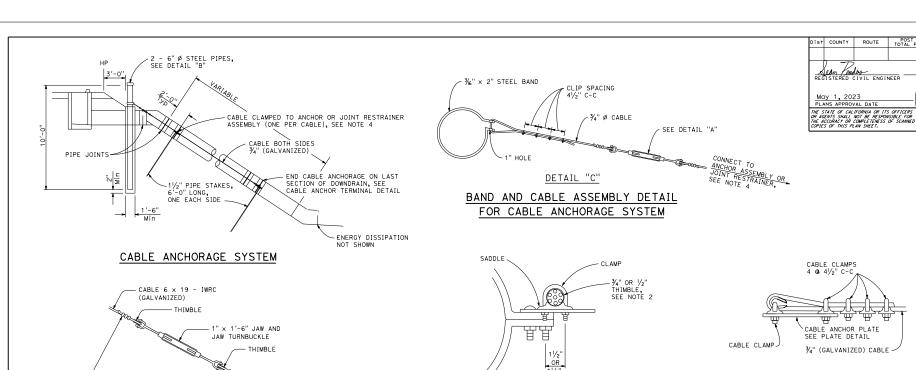


POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Sean T. Penders

C63744 Exp. 9-30-24

CIVIL



CABLE ANCHOR TERMINAL DETAIL

NOTES:

- 1. Diameter of downdrain 24" maximum.
- 2. $\frac{y}{4}$ " ø cable shown, $\frac{y}{2}$ " ø cable is allowable for pipe downdrain diameters of 8" to 15". Use $1\frac{y}{2}$ " dimension for $\frac{y}{4}$ " cable and $1\frac{1}{4}$ " dimension for $\frac{1}{2}$ " cable.
- 3. Slip joints not shown.
- 4. See Standard Plan D87A for Corrugated Metal Pipe Downdrain Anchor Assembly. See Standard Plan D87B for Plastic Pipe Joint Restrainer Assembly.
- 5. Cable shall not contact soil in finished position. Either adjust position, or replace affected portion of cable with galvanized steel rod of equivalent diameter.

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CABLE ANCHORAGE SYSTEM

NO SCALE

D87C

CONNECT TO ANCHOR

ASSEMBLY OR ANCHOR

STORING RESTRAINER, SEE

AND D878 DETAIL "B" STEEL PIPE PILE DETAILS FOR CABLE ANCHORAGE SYSTEM

CABLE CLAMPS

OG OR FILL SLOPE

PIPE CAP

DETAIL "A"

- 3/6" WALL THICKNESS

PIPE DOWNDRAIN

¾" Ø CABLE

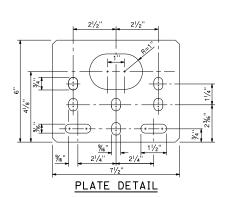
SEE DETAIL "C"

STEEL PIPE

-CONCRETE

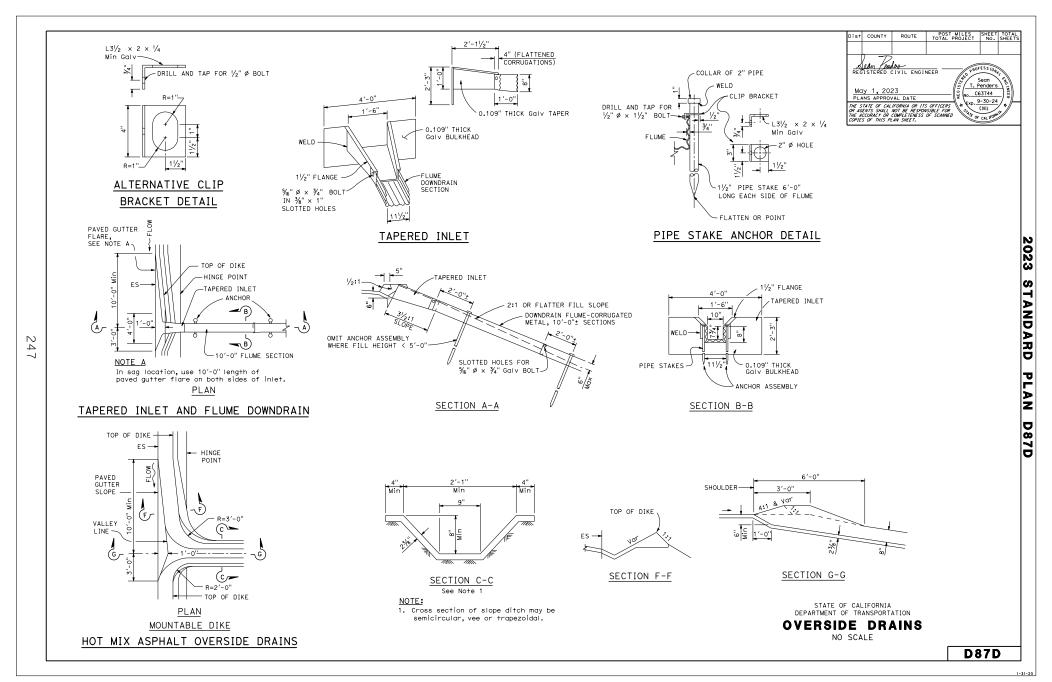
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SEE NOTE 2

END VIEW



D88

TABLE OF MINIMUM COVER AND STRUTTING REQUIREMENTS FOR CONSTRUCTION LOADS

		170	LL OI WITI	VIIVIOIVI (JOVEN AI	10 3 INO I II	INO INLUO	THE WEITT ON	2011211100	TION LOADS		
		TYI	PE		18-50	k AXLE	50)-75 k AXLE	75	-110 k AXLE	110	0-150 k AXLE
	MAXIMUM DESIGN FILL	SPAN	CELLS	Min COVER	STRUTS REQUIRED	STRUT SIZE AND SPACING	STRUTS REQUIRED	STRUT SIZE AND SPACING	STRUTS REQUIRED	STRUT SIZE AND SPACING	STRUTS REQUIRED	STRUT SIZE AND SPACING
	10'-0" AND 20'-0"	4'-0" TO 8'-0"	SINGLE AND MULTIPLE	5′-0"								
BOX CULVERTS	10'-0"	10'-0" TO 14'-0"	SINGLE AND MULTIPLE	5'-0"			√3 Points	STRUTS 6" × 6" @ 3'-6" SILLS 6" × 8"	√ ₃ Points	STRUTS 6" × 8" @ 3'-6" SILLS 6" × 8"	⅓ Points	STRUTS 6" × 8" @ 3'-6" SILLS 6" × 8"
	20'-0"	10'-0" TO 14'-0"	SINGLE AND MULTIPLE	5′-0"								

POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS CON DUTANT REGISTERED CIVIL ENGINEER Carl M. Duar Mdy 1, 2023 PLANS APPROVAL DATE C59976 €×p. 6-30-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

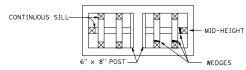
Min COVER

TABLE OF MINIMUM COVER FOR CONSTRUCTION LOADS

	TYPE	Dia OR SPAN	18-50 k AXLE	50-75 k AXLE	75-110 k AXLE	110-150 k AXLE
	PIPES	Dia 12" TO 39"	2'-0"	3'-0"	3'-0"	3'-0"
REINFORCED CONCRETE	PIPES	Dia 42" TO 108"	Dia 1.75 OR 3'-0"	Dia 1.75 OR 3'-0"	Dia 1.75 OR 3'-0"	Dia 1.75 OR 3'-0"
CULVERTS	ARCHES	SPANS TO 14'-0"	SPAN OR 4'-0"	SPAN OR 4'-0"	SPAN OR 4'-0"	SPAN or 4'-0"
	ARCHES	SPANS 15'-0" TO 22'-0"	SPAN 3.5 OR 6'-0"	SPAN OR 6'-0"	SPAN 3.5 OR 6'-0"	SPAN OR 6'-0"
	PIPES	Dia TO 120"	Dia OR 4'-0"	<u>Dia</u> OR 4'-0"	Dia 1.75 OR 4'-0"	Dia 1.75 OR 4'-0"
METAL		Dia OVER 120"	Dia OR 6'-0"	Dia OR 6'-0"	Dia OR 6'-0"	Dia OR 6'-0"
CULVERTS	PIPE ARCHES	AII Spans	SPAN OR 4'-0"	SPAN OR 4'-0"	SPAN OR 4'-0"	SPAN OR 4'-0"
	STRUCTURAL PLATE PIPE, ARCHES AND VEHICULAR UNDERCROSSINGS	ALL SPANS	SPAN OR 5'-0"	SPAN OR 5'-0"	SPAN OR 5'-0"	SPAN OR 5'-0"
PLA:	STIC PIPE	Dia 12" TO 60"	Dia 1.75 OR 4'-0"	Dia 1.75 OR 4'-0"	Dia 1.75 OR 4'-0"	Dia 1.75 OR 4'-0"

MINIMUM LENGTH OF STRUTTING

LENGTH TO BE STRUTTED



RCB STRUTTING DETAILS

NOTES:

RCB CULVERT

Length of strutting to be determined by the Engineer, but shall not be less than as shown in the sketch above.

Assumed tire patterns:

50 k axle 2'-0" x 1'-6" 75 k axle 3'-0" x 2'-0" 110 k axle 3'-0" x 2.5' 150 k axle 3'-0" x 3'-0"

Impact = 10%

Sills to be glue-laminated or solid timber.

For strutting requirements of Structural Steel Plate Vehicular Undercrossing, Structural Steel Plate Arches and Structural Steel Plate Pipes during construction, see Standard Plan D88A.

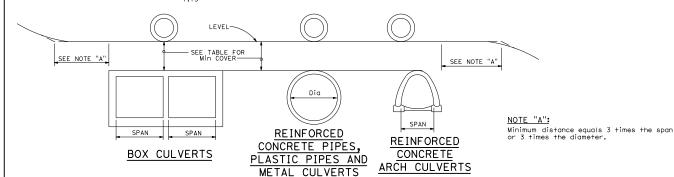
> STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION LOADS

NO SCALE

D88

NOTE: Minimum cover shall be the greater value of alternatives shown. The diameter and spans shown in the table to calculate. the minimum cover (Example: $\frac{\text{Dia}}{1.75}$) is the diameter or span of the facility expressed in number of feet.



ON CULVERTS

Dist	COUNTY	ROUTE	POS"	MILES PROJECT	SHEET No.	TOTAL
Ŀ	29n	Di Tank			ESSU	
REG	ISTERED (CIVIL ENGI	NEER	200 × 80	ESS ION	18
	y 1, 20			- (S) (Carl	M. Duar 59976	1
PLA	NS APPROV	AL DATE			-30-24	_ <i> ∞ </i> _
THE S	TATE OF CAL	IFORNIA OR IT.	S OFFICERS	# Exb.7	CIVII 2	/ <i>*/</i> /

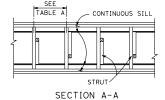
TABLE A

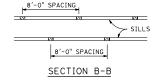
			MBER STRUTS FOR URAL STEEL PLAT					
I	PIPE	STRUT	HEIGH	HT OF FILL				
	Dia	SIZE	0 TO 20'-0"	GREATER THAN 20'-0"				
	240" THRU	8" × 8"	5'-0" SPACING	3'-0" SPACING				
	252"	10" x 10"	8'-0" SPACING	4'-6" SPACING				

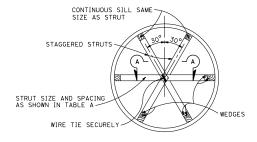
TABLE B

TIMBER S STRUCTURAL VEHICULAR L	STEEL PI	_ATE
SPAN	STRUT SIZE	SILL SIZE
13'-2" - 15'-6"	4" × 4"	4" × 6"
15'-9" - 17'-3"	4" × 4"	4" × 8"
Over 17'-3"	6" × 6"	6" × 8"

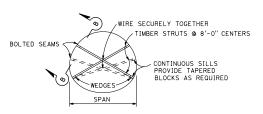
Tabular data in Table B based on 6" x 2" corrugations, (Structural steel plate).



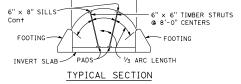




TYPICAL SECTION STRUCTURAL STEEL PLATE PIPES



TYPICAL SECTION STRUCTURAL STEEL PLATE VEHICULAR UNDERCROSSING



STRUCTURAL STEEL PLATE ARCHES

Struts required when span of structural steel plate arch exceeds 18'-0" pad size as directed by Engineer.

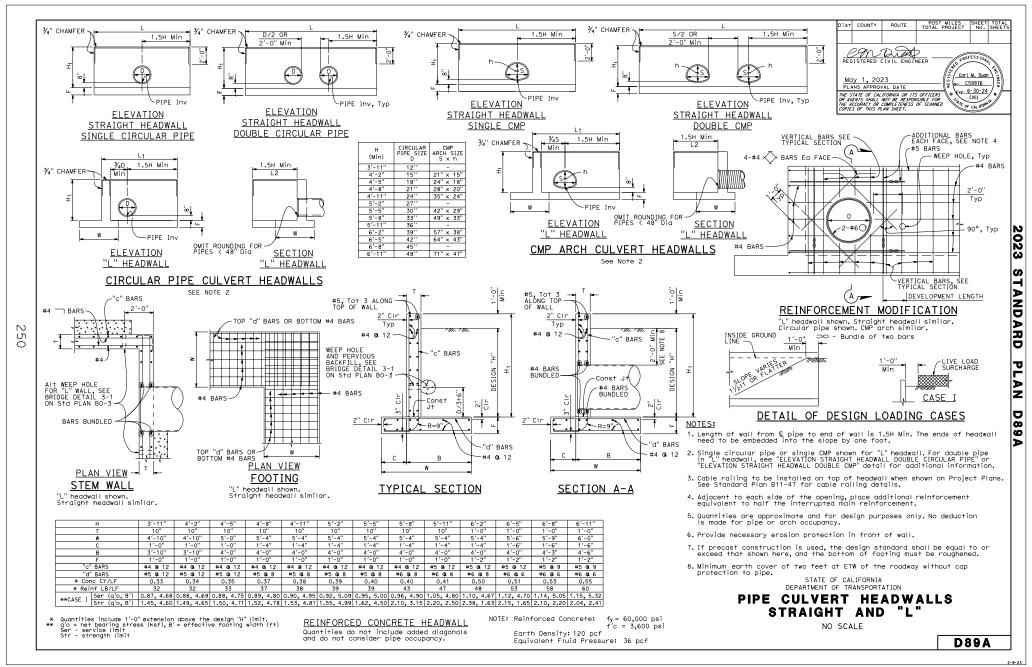
- 1. Struts shown are minimum required during construction when construction vehicle loading exceeds 32 kip/axle, and minimum cover is less than that shown for metal culverts in the table on Standard Plan D88.
- 2. Backfill shall be brought up uniformly on both sides of the structure.
- 3. For minimum cover over structure for construction loads, see Standard Plan D88.
- 4. Strut all situations where overfill is removed in an unbalanced manner.

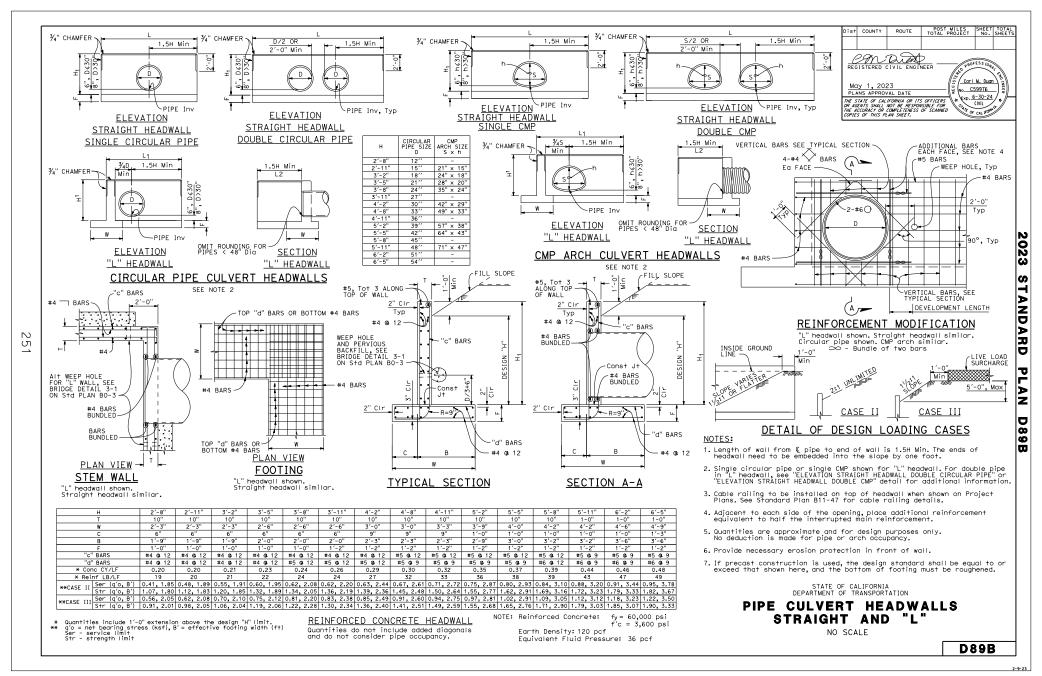
STATE OF CALIFORNIA
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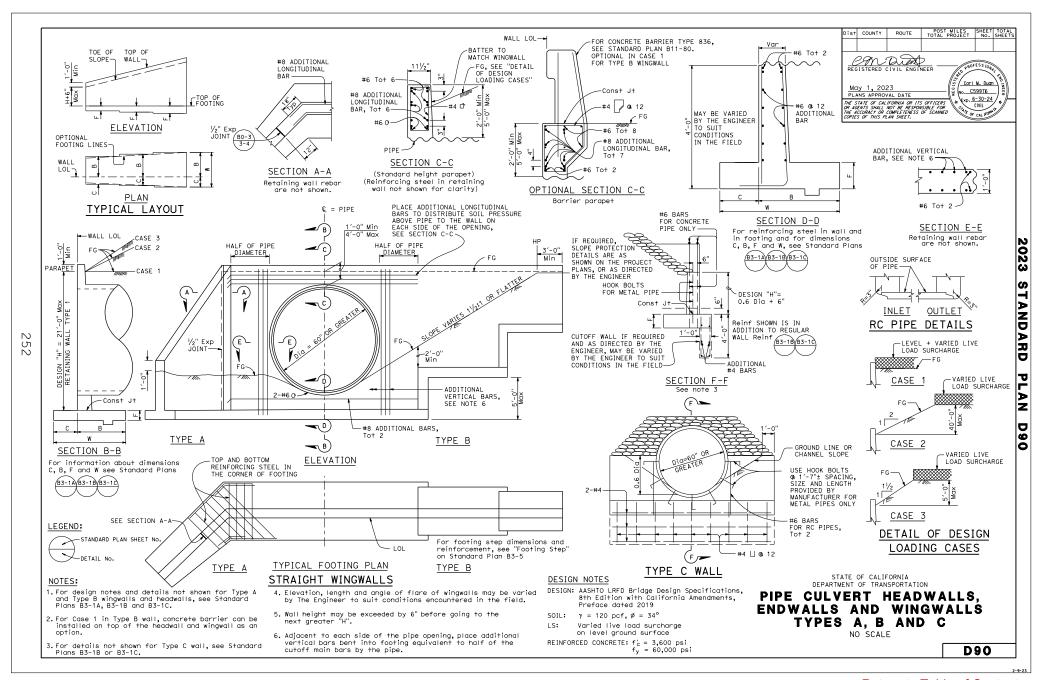
STRUT DETAILS FOR STRUCTURAL STEEL PIPES. ARCHES AND VEHICULAR UNDERCROSSING

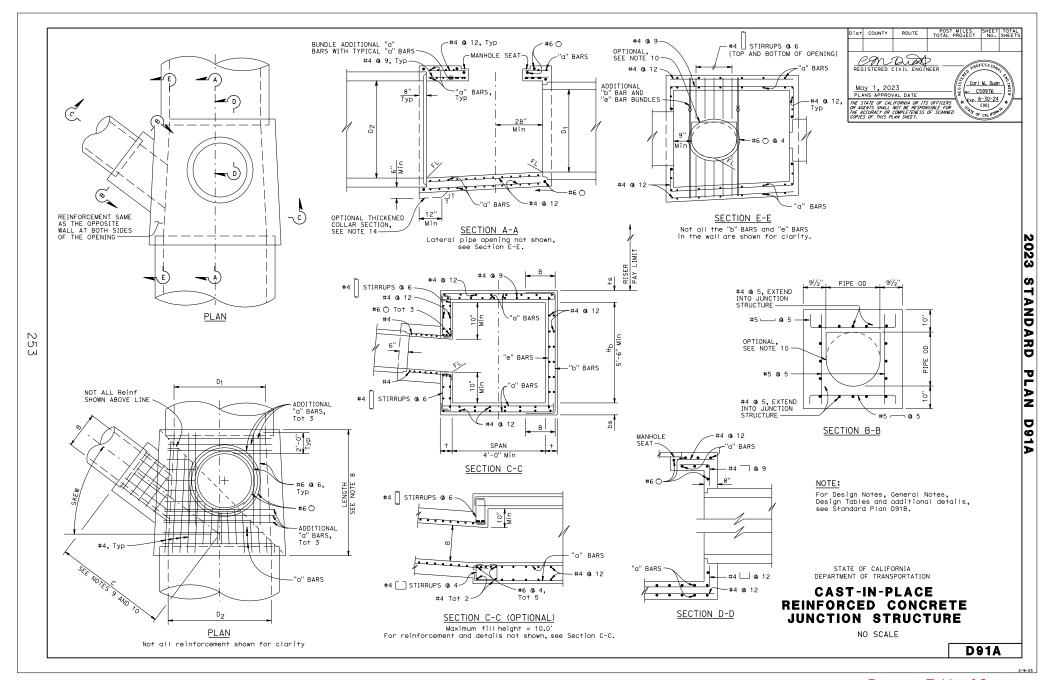
NO SCALE

D88A





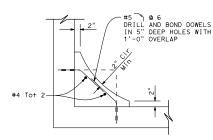




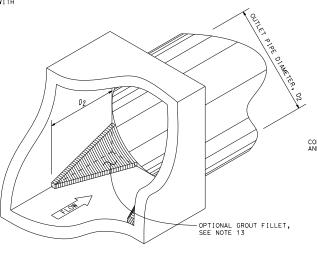
DESIGN NOTES: Design Specifications: AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated 2019 Loading: Live load: (AASHTO LRFD Chapter 3.6.1.2) HL-93 consists of design truck or design tandem and design lane load Dynamic Load Allowance: (Apply to top slab only) $IM = 33(1.0-0.125D_E) \ge 0\%$ $D_E = minimum depth of earth cover$

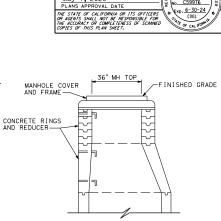
Earth load: Unfactored earth pressure: 120 pcf vertical 60 pcf horizontal Max load factors: 1.35 vertical, 2.0 horizontal Min load factors: 0.9 vertical, 0.5 horizontal

Unit stresses: f's = 3,600 psi fy = 60,000 psi Shear:



TYPICAL FILLET SECTION Reinforcing steel in the junction structure not shown for clarity.





CAN DUTANT REGISTERED CIVIL ENGINEER

May 1, 2023

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Carl M. Duan

C59976

2023 STANDARD

PLAN

D91B

ISOMETRIC FILLET DETAIL

TYPE MH UPPER STRUCTURE

GENERAL NOTES:

- 1. Each riser shall have a ladder. For details, see Standard Plan D93A.
- 2. Thickness of top slab shall vary as necessary to provide a level manhole seat. Hb is equal to the largest inside height dimension between the top and bottom slabs.
- 3. Reinforcing steel shall be placed with 2" clearance, except as shown.
- 4. Maximum skew for lateral pipe B is 45°.
- 5. Lateral pipe may be placed in either side of wall.
- 6. D_1 and D_2 are limited to 12' maximum diameter.
- 7. Side walls shall be flush with the inside of the inlet and outlet pipes when pipe diameters are 3.5^{\prime} or more. Span is equal to the larger inside width dimension between the side walls.
- 8. Junction structure length shall be 6'-0" minimum.
- 9. When C is not specified, bring the lateral pipe directly into the wall of the structure.
- 10. When C is specified, the Contractor may, at his option, bring the lateral pipe directly into the wall for use as an inside form. A collar conforming with the wall thickness and reinforcement as shown in section B-B shall be poured around the pipe.
- 11. When the lateral pipe is extended directly into the wall, it shall be mitered as necessary to be flush with wall.
- Adjacent to each side of the opening, place additional reinforcement equivalent to half the interrupted main reinforcement.
- 13. Optional fillet at outlet pipe placed at the direction of the Engineer.
- 14. Minimum thickness ground nine connections shall be 8". Wall and slab thicknesses may be increased beyond the minimums shown in the design tables or a thickened collar may be added to the local pipe connection area to achieve the minimum connection thickness. If a thickened collar is used, minimum width shall be one half of the corresponding pipe diameter and centered on the pipe section.
- 15. Soil pressures include soil weight of fill over junction structure, self weight of junction structure, and live load where applicable.

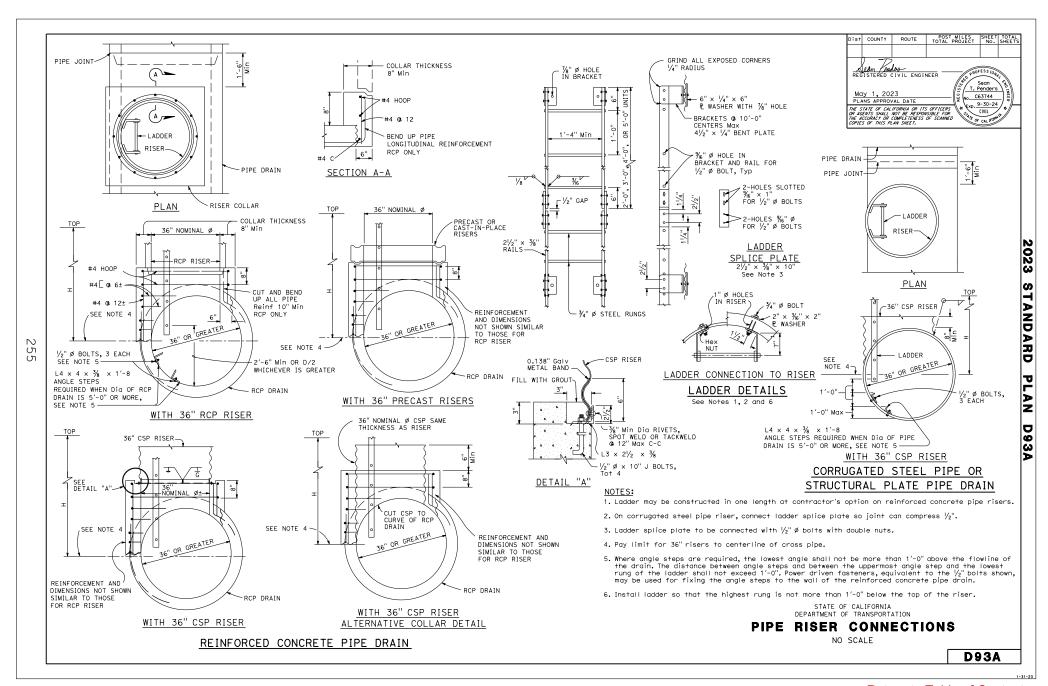
				C I	IP JL	JNCT:	ION S	STRU	CTUR	Ε ΤΑ	BLE							
HEIGHT, H _D			5′-6"		6	.′	7	,,	8	31	9) '	1.	0′	1	1′	1	2′
SPAN		4′		5′	6		7	, ,	8	3'	9)′	1-	0′	1	1′	1	2'
Max EARTH COVER	10'	20'	10'	20'	10'	20′	10'	20′	10'	20'	10'	20′	10'	20'	10'	20′	10'	20'
CONCRETE																		
TOP SLAB THICKNESS (+s)	8''	8''	8"	8"	8"	9"	8"	10"	8"	11"	9"	12"	11"	13"	11"	14"	12"	16"
WALL THICKNESS (+)	8''	8"	8"	8"	8"	9"	8"	10"	8"	12"	9"	13"	12"	14"	13"	18"	14"	20"
BOTTOM SLAB THICKNESS (bs)	8''	8''	8"	8"	8"	9"	8"	10"	8"	12"	10"	13"	11"	14"	12"	15"	13"	17"
REINFORCEMENT																		
"a" BARS (SLABS, TOP AND BOTTOM)	#4 @ 10	#4 @ 6	#4 @ 6	#4 @ 5	#4 @ 5	#5 @ 6	#4 @ 5	#5 Q 5	#5 @ 6	#5 Q 5	#5 @ 5	#5 @ 5	#5 @ 5	#6 @ 6	#5 @ 5	#6 @ 6	#6 @ 6	#7 @ 6
"e" BARS (WALL Ext)	#4 @ 10	#4 @ 6	#4 @ 6	#4 @ 5	#4 @ 5	#4 @ 6	#4 @ 5	#4 @ 5	#4 @ 6	#4 @ 5	#4 @ 5	#5 @ 5	#5 @ 5	#6 @ 6	#4 @ 5	#6 @ 6	#5 @ 6	#5 @ 6
"b" BARS (WALL In+)	#4 @ 10	#4 @ 6	#4 @ 6	#4 @ 6	#4 @ 5	#4 @ 6	#4 @ 5	#4 @ 5	#4 @ 6	#4 @ 5	#4 @ 5	#5 @ 5	#4 @ 5	#5 @ 6	#4 @ 5	#6 @ 6	#5 @ 6	#5 @ 6
DIMENSION "B"	2'-4"	2'-4"	2'-7"	2'-3"	2'-7"	2'-5"	3'-0"	2'-9"	2'-11"	3'-3"	3′-6"	3'-8"	4'-0"	4'-1"	4'-4"	4'-5"	4'-10"	5′-0"
SOIL PRESSURES																		
SOIL PRESSURE (ksf), Ser	1.5	2.8	1.5	2.8	1.5	2.8	1.5	2.8	1.6	2.9	1.6	3.0	1.7	3.0	1.7	3.1	1.8	3.2
SOIL PRESSURE (ksf), Str	2.2	4.1	2.2	4.1	2.2	4.1	2.2	4.1	2.3	4.2	2.3	4.3	2.4	4.4	2.5	4.5	2.5	4.6

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

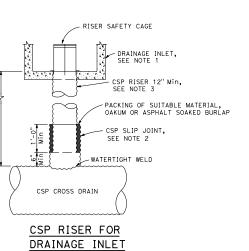
CAST-IN-PLACE REINFORCED CONCRETE JUNCTION STRUCTURE

NO SCALE

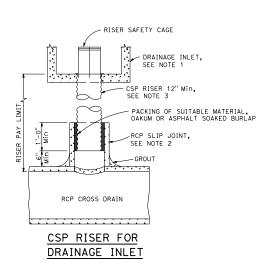
D91B

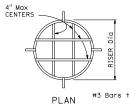


- 1. Structure at top of riser may be any standard drainage inlet or pipe inlet.
- 2. Diameter of slip joint to be 3" greater than diameter of riser.
- 3. Plastic pipe riser may be substituted for CSP riser shown. Slip joint diameter to be as necessary to accommodate plastic pipe outside diameter.
- 4. For plastic pipe cross drain, use fabricated reducing tee of same material as cross drain as appropriate to provide watertight connection.

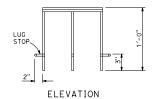


256





#3 Bars throughout with welded joints



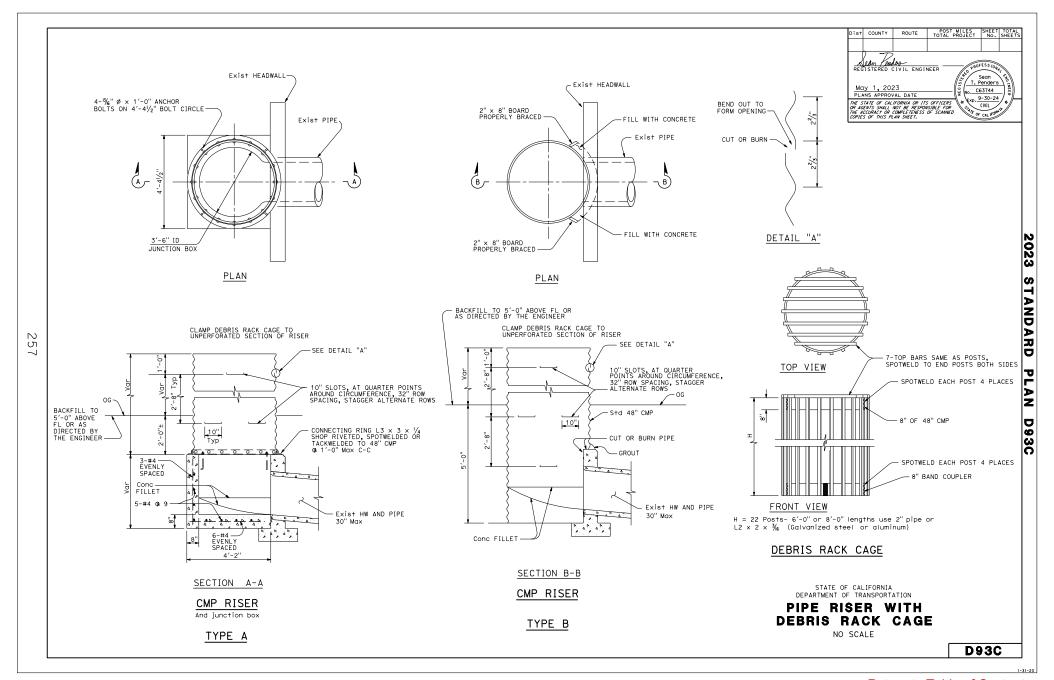
RISER SAFETY CAGE DETAIL

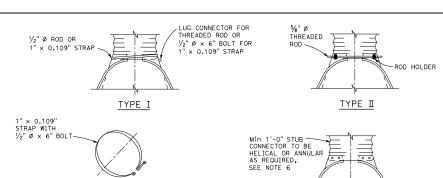
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET RISER CONNECTIONS

NO SCALE

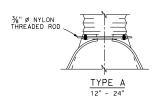
D93B



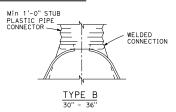


ALTERNATIVE CONNECTIONS FOR PIPE TO METAL FLARED END SECTIONS

See Note 7



CONNECTOR STRAP DETAIL



TYPE III

ALTERNATIVE CONNECTIONS FOR PIPE TO PLASTIC FLARED END SECTIONS

	CIRCULAR PIPES END DIMENSION											
PIPE			D1	MENSIO	N							
Dia	SECTION	Α	В	Н	L	W						
	INICKNESS	1"±	Max	1"±	11/2"±	2"±						
12"*	0.064"	6"	6"	6"	1'-9"	2'-0"						
15"*	0.064"	7"	8"	6"	2'-2"	2'-6"						
18"*	0.064"	8"	10"	6"	2'-7"	3'-0"						
21"	0.064"	9"	1'-0"	6"	3'-0"	3′-6"						
24" *	0.064"	10"	1'-1"	6"	3'-5"	4'-0"						
30"*	0.079"	1'-0"	1'-4"	8"	4'-3"	5′-0"						
36"*	0.079"	1'-2"	1'-7"	9"	5'-0"	6'-0"						
42"	0.109"	1'-4"	1'-10"	11"	5'-9"	7'-0"						
48"	0.109"	1'-6"	2'-3"	1'-0"	6'-6"	7'-6"						
54"	0.109"	1'-6"	2'-6"	1'-0"	7'-0"	8'-6"						
60"	0.109"	1′-6"	2'-9"	1'-0"	7′-3"	9'-6"						
66"	0.109"	1'-6"	3'-0"	1'-0"	7'-3"	10'-0"						
72"	0.109"	1'-6"	3'-3"	1'-0"	7′-3"	10'-6"						
78"	0.109"	1′-6"	3'-6"	1'-0"	7'-3"	11'-0"						
84"	0.109"	1′-6"	3'-9"	1'-0"	7'-3"	11'-6"						

* Equivalent plastic FES to meet AASHTO M-294 and ASTM D-1248 Specifications, and shall conform to all dimensions shown above except for end section FLARED END SECTIONS FOR thickness, which may be 0.004" thinner.

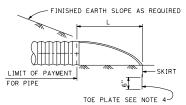
TYPICAL CROSS-SECTION

	PIPE-ARCHES														
DESIGN	IA T I ON	END		DI	MENSIO	V									
DE3101	NATION	SECTION	A	В	Н	L	W								
SPAN	RISE	THICKNESS	1"±	Max	1"±	1½"±	2"±								
21"	15"	0.064"	7"	10"	6"	1'-11"	3'-0"								
24"	18"	0.064"	8"	1'-0"	6"	2'-4"	3'-6"								
28"	20"	0.064"	9"	1'-2"	6"	2'-8"	4'-0"								
35"	24"	0.079"	10"	1'-4"	6"	3'-3"	5'-0"								
42"	29"	0.079"	1'-0"	1'-6"	8"	3'-10"	6'-3"								
49"	33"	0.109"	1'-1"	1'-9"	9"	4'-5"	7'-1"								
57"	38"	0.109"	1'-6"	2'-2"	1'-0"	5'-3"	7'-6"								
64"	43"	0.109"	1'-6"	2'-6"	1'-0"	5'-10"	8'-6"								
71"	47"	0.109"	1'-6"	2'-9"	1'-0"	6'-5"	9'-6"								
77"	52"	0.109"	1'-6"	3'-0"	1'-0"	6'-5"	10'-6"								
83"	57"	0.109"	1'-6"	3'-3"	1'-0"	6'-5"	11'-6"								

CORRUGATED METAL AND PLASTIC PIPE CULVERTS

Dia or SPAN REINFORCED EDGE. SEE NOTE 2 PLAN SKIRT + - - -TOE P TOE P SHALL BE SECURELY ATTACHED TO THE SKIRT, SEE NOTE 4

ELEVATION



LIMIT OF PAYMENT FOR RCP OR ALTERNATIVE PIPE 2" X 4" - W1.2 X W1.2 WELDED WIRE FABRIC COMMERCIAL QUALITY RCP FLARED END SECTION END SECTION WORTAR COLLAR 3" Min COVER OVER WWF THICKNESS AS FES TOE P IF		Mdy 1, 2023 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OF ITS OFFICERS OF AGENTS SHALL NOT BE RESONSTILE FOR THE ACCURACY OR COMPLETENESS OF SCAMMED COPIES OF THIS FLAM SHEET.	T. Pender No. C63744 Exp. 9-30- CIVIL
2" × 4" - W1.2 × W1.2 WELDED WIRE FABRIC COMMERCIAL QUALITY RCP FLARED END SECTION MORTAR COLLAR 3'' Min COVER DOVER WWE STUB 1'-0" SAME			
MORTAR COLLAR Y'' Min COVER OVER UWE STUB 1'-0" SAME	FOR RCP OR ALTERNATIVE PIPE		
4" Min REQUIRED	MORTAR COLLAR AUMORTAR	RRUGATED PIPE JB 1'-0" SAME ICKNESS AS FES TOE	P IF

Dist COUNTY

ROUTE

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

FLARED END SECTION CONNECTION TO RCP

NOTES:

- 1. All 3-piece bodies to have 0.109" thick sides and 0.138" thick center panels. Width of center panels to be greater than 20% of the pipe periphery. Wultiple panel bodies to have lap seams which are to be tightly joined by rivets or bolts.
- 2. Reinforced edges to be supplemented with stiffener angles for the 60" thru 84" round, 77" x 52" and 83" x 57" pipe-arch sizes. The angles will be 2" x 2" x $/_4$ " for the 60" thru 72" round, 77" x 52" and 83" x 57" pipe-arch sizes and $2/_2$ " x $2/_2$ " x $/_4$ " for 78" and 84" round. The angles to be attached by $\frac{3}{8}$ " and and bolts.
- 3. Angle reinforcement shall be placed under the center panel seams on the 77" x 52" and 83" x 57" pipe-arch sizes.
- 4. Toe plate to be available as an accessory when specified.
- 5. End of pipe to be finished with annular corrugations to conform flared end section so that minimal leakage results from the connection. Other designs may be used with approval of the Engineer.
- 6. For 12" thru 24" helical end section connection, a universal coupling band attached to the metal end section by rivets, bolts or 1" long shop tack welds spaced at same intervals as dimples may be used in place of the 12" stub. See Standard Plan D97C.
- 7. The types of alternative connections for pipe to metal flared end sections shall conform to the following:

CIRCULAR PIPES -12" thru 24" Type I or Ⅲ 30" thru 84" Type I or Ⅲ PIPE-ARCHES - 21" \times 15" thru 57" \times 38" Type I or II 64" \times 43" thru 83" \times 57" Type II

> STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

METAL AND PLASTIC FLARED END SECTIONS

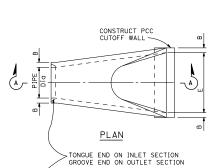
NO SCALE

D94A

2023 STANDARD

PLAN

D94A

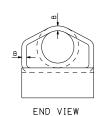


SECTION A-A

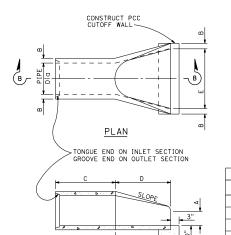
LIMIT OF PAYMENT -

FOR PIPE

259



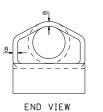
MINIMUM DIMENSIONS PIPE Dia SLOPE 12" 4" 13/4" 2'-0" 2'-0" 18" 9" 21/4" 2'-3" 3'-0" 24" 91/2" 23/4" 3'-71/2" 4'-0" 30" 1′-0" 31/4" 4'-6" 5'-0" R 6'-0" 36" 1'-3" 3¾" 5'-3" 1'-9" 41/4" 5'-3" 6'-6" 48" 2'-0" 4¾" 6'-0" 7′-0" 2'-3" 51/4" 5'-5"



LIMIT OF PAYMENT -

SECTION B-B

FOR PIPE



MINIMUM DIMENSIONS														
PIPE Dia	А	SLOPE												
12"	4"	11/2"		1'-10"	2'-0"									
18"	9"	1 3/4"	~	2'-1"	3'-0"	EB								
24"	91/2"	21/4"		3'-6"	4'-0"	FLATTER								
30"	1'-0"	2¾"	NOTE	4'-5"	5'-0"									
36"	1′-3"	31/4"	SEE	5'-2"	6'-0"	8								
42"	1′-9"	31/2"	S	5′-3"	6'-6"	2:1								
48"	2'-0"	4"		6'-0"	7′-0"									
54"	2'-3"	43/8"		5'-6"	6'-10"									

PRECAST CONCRETE FLARED END SECTION TYPE A

PRECAST CONCRETE FLARED END SECTION TYPE B

NOTES:

- Contractor has the option of using either Type A or B precast concrete flared end section.
- 2. "C" dimension varies by manufacturer and will be paid for as concrete pipe.

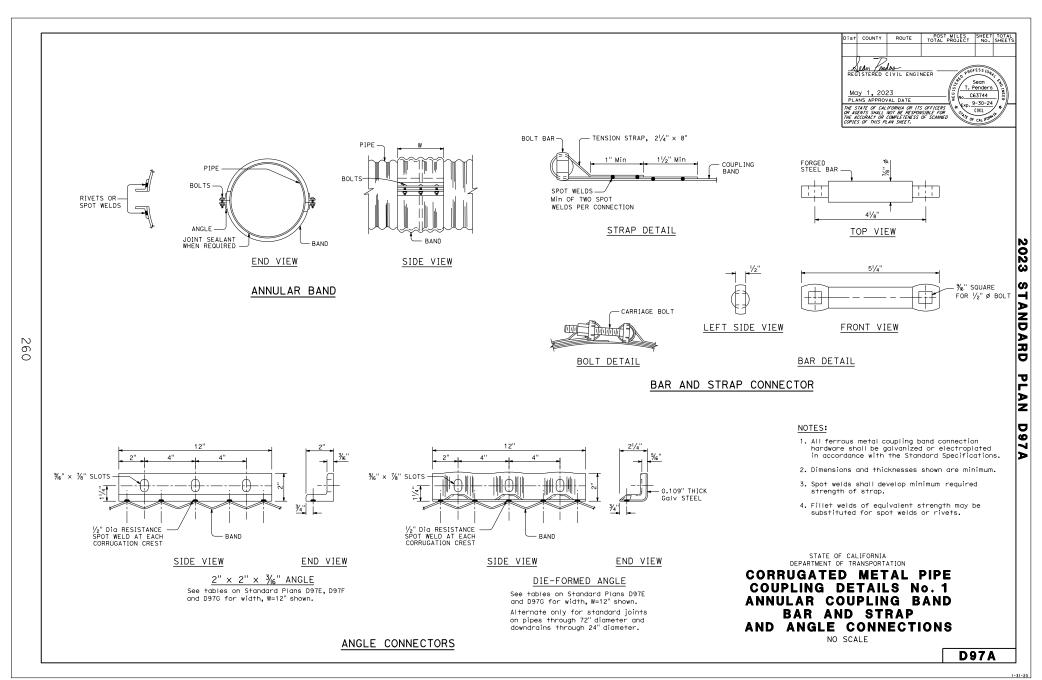
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

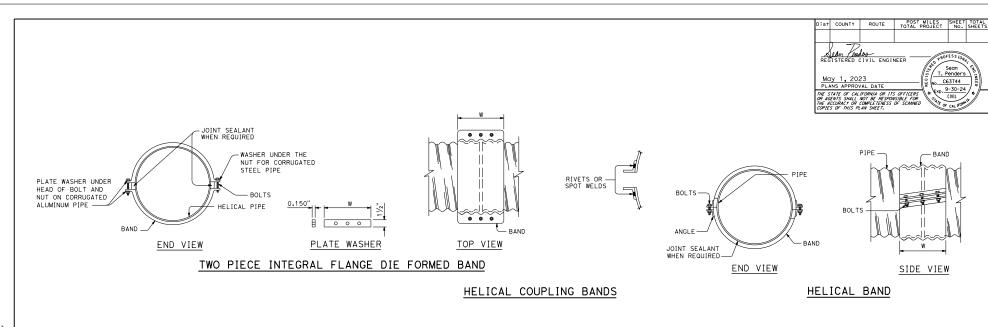
CONCRETE FLARED END SECTIONS

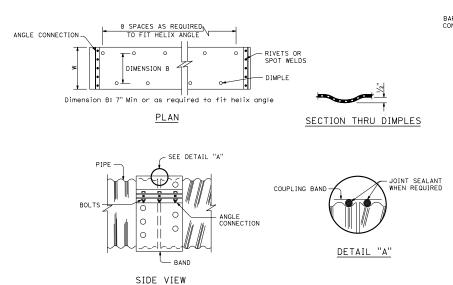
NO SCALE

D94B

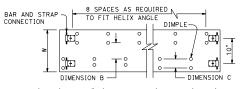
1-31-





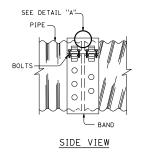


9



Dimension B: 7" Min or as required to fit helix angle. Dimension C: $2\frac{9}{3}$ " Min or as required to fit helix angle. (Double dimple shown for use with $16\frac{1}{4}$ " bands)

PLAN



UNIVERSAL COUPLING BANDS

NOTES:

- All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard specifications.
- 2. Dimensions and thicknesses shown are minimum.
- Spot welds shall develop minimum required strength of strap.
- Fillet welds of equivalent strength may be substituted for spot welds or rivets.

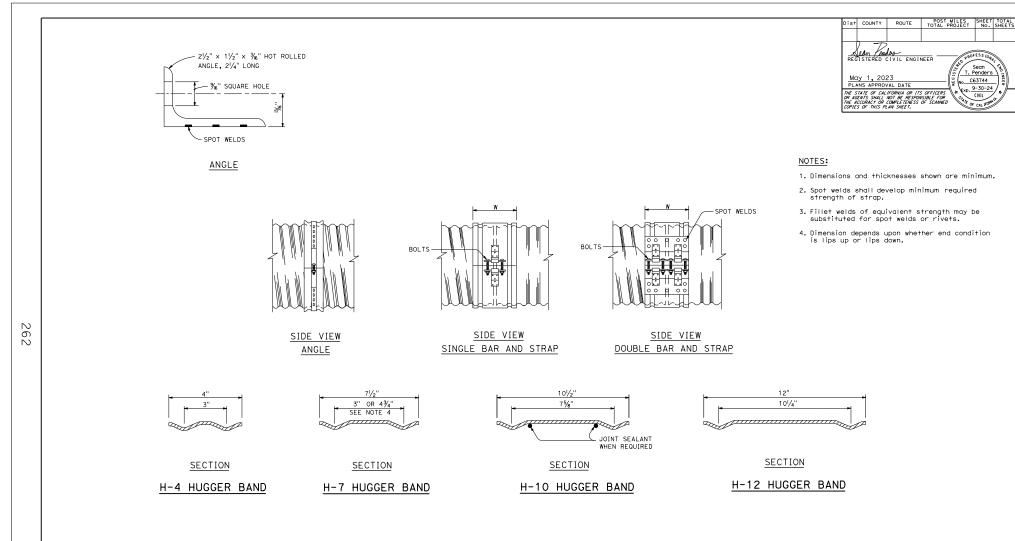
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 3 HELICAL AND UNIVERSAL COUPLERS

NO SCALE

D97C

1-31-23



HUGGER COUPLING BANDS

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 4 HUGGER COUPLING BANDS

NO SCALE

D97D

ANNULAR AND HELICAL PROFILE

									BAR AN		AP			ANGLE				
				DIDE WALL	THICKNESS	BAND TH	TOVNECO		(CSP	ONLY)		DIMEN	SIONS		LTS - Dia)	RIV ANGLE		SPOT WELDS
COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	W OR A		CAP	CSP	CAP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	CSP	CAP	CSP	CAP	CSP	CAP	CSP
TWO PIECE	11/2' × 1/4"	6"-10"	7"	0.052"-0.079"	0.048"-0.060"	0.052"	0.060"							2-3/8"	2-3/8"			
INTEGRAL		12"-18"	7"	0.052"-0.079"		0.064"								2-1/2"	1			
FLANGE	$2^{2/3}$ " × $1/2$ "	12"-24"	7"		0.060"-0.105"	0.064"	0.060"							2-1/2"	2-1/2"			
	.,	THROUGH 36"	1 12"		0.060"-0.135"		0.060"					2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
UNIVERSAL	-3/11 1/11	42"-60"	12"	0.052"-0.168"	0.075"-0.164"		0.060					2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
UNIVERSAL	2 ² / ₃ " × ¹ / ₂ "	THROUGH 72'	12"	0.052"-0.168"	0.164"	0.052"	0.105	0.079"	1/2"	7/8"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		78"-84"	161/4"	0.168"		0.079"		DOUBLE 0.079"	1/2"	7∕8"	32 ksi							
		THROUGH 36"	' 7"	0.064"-0.138"	0.060"-0.135"	0.052"	0.060	0.079"	1/2"	7∕8"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	2-1/2"	2-1/2"	3-3/8"	3-3/8"	3-1/2"
	2 ² / ₃ " × 1/ ₂ "	42"-72"	12"	0.064"-0.168"	0.075"-0.164"	0.052"	0.105	0.079"	1/2"	7∕8''	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
ANNULAR		78"-84"	12"	0.168"		0.079"		0.109"	1/2"	7/8"	45 ksi	2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
/		48"-90"	14"	0.064"-0.109"		0.052"		0.079"	1/2"	7/8"	32 ksi	2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
	3" x 1"	96"-120"	14"	0.079"-0.109"		0.052"		0.109"	1/2"	7/8"	45 ksi	2" × 2" × 3/6"		3-1/2"		4-3/8"		
		42"-108"	14"		0.060"-0.135"		0.060"						2" × 2" × 3/6"		3-1/2"		3-3/8"	
	2 ² / ₃ " × 1/ ₂ " 4	THROUGH 36"	12"		0.060"-0.135"			0.079"	1/2"	7/8"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-%"	3-3/8"	3-1/2"
		42"-72"	12"		0.075"-0.164"	0.052"	0.060	0.079"	1/2"	%"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
HELICAL	-	78"-84"	12"	0.168"		0.079"		0.109"	1/2"	7∕8"	45 ksi	2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
		48"-90"	14"	0.064"-0.109"		0.052"		0.079"	1/2"	7∕8"	32 ksi	2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
	3" × 1"	96"-120"	14"	0.079"-0.109"		0.052"		0.109"	1/2"	7∕8''	45 ksi	2" × 2" × 3/6"		3-1/2"		4-3/8"		
		42"-108"	14"		0.060"-0.135"		0.060"						2" × 2" × 3/6"		3-1/2"		3-3/8"	
		12"-54"	4"	0.052"-0.109"		0.052"							21/2" × 11/2" × 3/6"					3-1/2"
		60"-66"	4"	0.109"		0.064"							21/2" × 11/2" × 3/6"					3-1/2"
	$2^{2}/_{3}$ " × $1/_{2}$ "	36"-48"	4"	0.138"		0.064"						2½" × 1½" × ¾6"	2½" x 1½" x ¾6"	1-1/2"				3-1/2"
	REROLLED END		101/2"	0.052"-0.168"		0.052"		0.079"	1/2"	%"	32 ksi							
		78"-84"	101/2"	0.168"		0.079"		0.109"	1/2"	%"	45 ksi							
	3" × 1"	48"-90"	101/2"	0.064"-0.109"		0.052"		0.079"	1/2"	%"	32 ksi							
HUGGER	REROLLED END		101/2"	0.079"-0.109"		0.052"		0.109"	1/2"	%"	45 ksi							
		48"-66"	71/2"	0.064"-0.109"		0.064"		0.079"	1/2"	%"	32 ksi		2½" × 1½" × ¾6"					3-1/2"
ll .		72"-90"	71/2"	0.064"-0.079"		0.064"		0.079"	1/2"	7/8"	32 ksi	2½" × 1½" × ¾6"	2½" x 1½" x ¾"	1-1/2"				3-1/2"
ll .	5" × 1"	48"-90"	71/2"	0.064"-0.138"		0.064"		0.079"	1/2"	7/8"	32 ksi							
ll .	REROLLED END			0.064"-0.109"		0.064"		0.079"	1/2"	%"	32 ksi							
ll .		48"-84"	12" NOTE	0.138"		0.064"		0.079"	1/2"	7∕8''	32 ksi							
		90"-120"	12") 10	0.138"		0.064"		DOUBLE 0.079"	1/2"	%"	32 ksi							

							FILE 1											
								JI INAL	. 1110	1110	166			ANGLE				
PIPE WALL THICKNESS BAND THICKNESS BAR AND STRAP (SSRP ONLY)												DIMEN	SIONS		LTS - Dia)	RIV ANGLE T		SPOT WELDS ANGLE TO BAND
COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	w	SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
		24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.052"	0.060"	0.079"	1/2"	%"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
ANNULAR	2 ² / ₃ " × 1/ ₂ " * [42"-60"	12"	0.064"-0.109"	0.075"-0.105"	0.052"	0.105"	0.079"	1/2"	7∕8"	32 ksi	2" × 2" × ¾6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
ANNOLAN	REROLLED END	66"-72"	12"	0.064"-0.109"		0.052"		0.079"	1/2"	%"	32 ksi	2" × 2" × ¾6"	2" × 2" × ¾6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		78"-114"	12"	0.079"-0.109"		0.079"		0.109"	1/2"	7∕8''	45 ksi	2" × 2" × 3/6"	2" × 2" × ¾6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
HUGGER	2 ² / ₃ " × 1/ ₂ " *	24"-72"	101/2"	0.064"-0.109"		0.052"		0.079"	1/2"	7∕8"	32 ksi							
HOGGEN	REROLLED END	78"-84"	101/2"	0.109"		0.079"		0.109"	1/2"	%"	45 ksi							

* See Note 13.



NOTES:

- For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
- Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
- 3. Use $1^{1}\!/_{4}^{1}$ gage line dimension on attached angle leg for rivets and spot welds.
- 4. Band thickness shall not be less than:

 a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pine.
 - b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
- 5. Dimensions, thicknesses and strengths shown are minimum.
- For pipe arches use same width band as for round pipe of equal periphery.
- 7. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
- Spot welds shall develop minimum required strength of strap.
- 9. Pipe with rerolled ends having at least two $2^{k}y'' \times V_2'''$ annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having $2^{k}y' \times V_2''$ corrugations.
- 10. In the case of H-12 huggerbands, two piece bands are required for diameters through 96" and three piece bands are required for diameters 102" through 120".
- 11. Two piece bands are required for pipes greater than 42" diameter.
- 12. The $2 V_4$ " \times 2" \times 0.109" thick galvanized die-formed angle connector may be used in lieu of the 2" \times 2" \times %" angle connector for standard joints only on pipes through 72" diameter.
- 13. All profiles of Spiral Rib Pipe (¾" x ¾" ribs at 1½" pitch and ¾" x 1" ribs at 1½" pitch in both steel and aluminum and ¾" x 1" ribs at 8½" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 2¾" x ½" annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 5 STANDARD JOINT

D97E

1-31-23

ROUTE POST MILES SHEET TOTAL SHEETS

 Use 11/4" gage line dimension on attached angle leg for rivets and spot welds. .e 1/4 your or rivets and spot we...

and thickness shall not be less than:
a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe.
b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for cated Aluminum Pipe. 4. Band thickness shall not be less than: a. 3 standard thicknesses lighter than the

NOTES:

5. Dimensions, thicknesses and strengths shown are

6. For pipe arches use same width band as for round pipe of equal periphery.

7. Fillet welds of equivalent strength may be substituted for spot welds or rivets.

Spot welds shall develop minimum required strength of strap.

9. Pipe with rerolled ends having at least two $2^2 f'' \times \frac{1}{2}''$ annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having $2^2 4'' \times \frac{1}{2}''$ corrugations.

10. In the case of H-12 huggerbands, two piece bands are required for diameters through 96" and three piece bands are required for diameters 102" through 120".

11. Two piece bands are required for pipes greater than 42" diameter.

12. All profiles of Spiral Rib Pipe ($\frac{1}{4}$ " x $\frac{1}{4}$ " ribs at $\frac{7}{2}$ " pitch and $\frac{1}{4}$ " x 1" ribs at $\frac{11}{2}$ " pitch in both steel and aluminum and $\frac{1}{4}$ " x 1" ribs at $\frac{8}{2}$ " pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be $2\frac{1}{3}$ " x $\frac{1}{2}$ " annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 6 **POSITIVE JOINT**

D97F

								ANNULAR AND HELICAL PRO										
								BAR	AND S	TRAP				Д	NGLE			
								(C:	SP ONL	Y)		DIMEN	ISIONS		LTS	RIVE		SPOT WELDS
COUPLING	PIPE	PIPE		PIPE WALL	THICKNESS	BAND TH	ICKNESS	STRAP	BOLTS	BAR	BAR YIELD	DIWEN	1310113	(No	- Dia)	ANGLE 1	O BAND	ANGLE TO BAND
TYPE	CORRUGATION	SIZE	W OR A	CSP	CAP	CSP	CAP	THICKNESS	Dia	Dia	STRENGTH	CSP	CAP	CSP	CAP	CSP	CAP	CSP
INTEGRAL	1½" × ¼"	6"-10"	7"	0.064"-0.079"	0.060"	0.064"	0.060"							2-3/8"	2-3/8"			
FLANGE	2 ² / ₃ " × 1/ ₂ "	12"-24"	12"		0.060"-0.105"		0.060"								3-1/2"			
IINTVERSAL	2 ² / ₃ " × 1/ ₂ "	THROUGH 36"		0.064"-0.138"				0.079"	1/2"	7/8"		2" × 2" × 3/6"		3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
OHITEKOAL	2 /3 ^ /2	42"-60"	, -	0.064"-0.168"				DOUBLE 0.079"	1/2"	%"	32 ksi	2" × 2" × 1/4"		4-1/2"	4-1/2"	5-3/8"	5-3/8"	
		THROUGH 36"	12"	0.064"-0.138"	0.060"-0.135"	0.064"	0.060"					2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		42"-60"	12"	0.064"-0.079"		0.064"						2" × 2" × ¾6"		3-1/2"		3-3/8"		5-1/2"
	2 ² / ₃ " × ¹ / ₂ "	42"-60"	12"	0.109"-0.168"								2" × 2" × 1/4"		3-1/2"	3-1/2"	5-3/8"	5-3/8"	
	2/3 ^ /2	66"-72"	24"		0.164"		0.105"						2" × 2" × 1/4"		5-1/2"		5-1/2"	
		66"-84"	24"	0.109"-0.168"		0.064"						2" × 2" × 1/4"		5-1/2"		7-3/8"		
ANNULAR		42"-54"	12"		0.060"-0.105"		0.060"						2" × 2" × 3/6"	1.5.0	3-1/2"		3-3/8"	
		48"-60"	14"	0.064"-0.079"		0.064"						2" × 2" × ¾6"		3-1/2"		3-3/8"		5-1/2"
		48"-60"	14"	0.109"		0.064"						2" × 2" × ¾6"		3-1/2"		5-3/8"		
		66"-120"		0.064"-0.109"		0.064"						2" × 2" × 3/6"	-11 -11 -7/ 11	5-1/2"	- 17.0	9-3/8"	7	
	3" × 1"	42"-60"	14"		0.060"-0.105"		0.060"						2" × 2" × 3/6"		3-1/2"		5-3/8"	
		42"-60"	14"		0.135"		0.075"						2" × 2" × 1/4"		3-1/2"		5-3/8"	
		66"-96"	25"		0.060"-0.135"		0.060"						2" × 2" × 1/4"		5-1/2"		7-3/8"	
		96"-108"	25"		0.135"		0.075"						2" × 2" × 1/4"		5-1/2"		7-3/8"	
		THROUGH 36"	12"	0.064"-0.138"			0.060"					2" × 2" × 3/6"		3-/2	3-1/2"	3-3/8"	3-3/8"	5-1/2"
		42"-54"	12"	0.004 0.070	0.060"-0.105"		0.060"						2" × 2" × 3/6"	- 170	3-1/2"	- 7/11	3-3/8"	- 1/11
	2 ² / ₃ " × 1/ ₂ "	42"-60"	12"	0.064"-0.079"		0.064"						2" × 2" × 3/6"	-0 -0 170	3-1/2"	- I/II	3-3/8"	- 7(1)	5-1/2"
	- 75 72	42"-60"	12"	0.109"-0.168"	0.135"-0.164"	0.064"	0.075"					2" × 2" × 1/4"	2" × 2" × 1/4"	3-1/2"	3-1/2"	5-3/8"	5-3/8"	
		66'-84"	24" 24"	0.109"-0.168"		0.064"	0.40511					2" × 2" × 1/4"	ell ell 1711	5-1/2"	e 17.0	7-3/8"	c 3/11	
		66"-72"		0.004 0.070	0.164"		0.105"						2" × 2" × 1/4"	- 1/11	5-1/2"	- 7/11	5-3/8"	- 170
HELICAL		48"-60"	14"	0.064"-0.079"		0.064"						2" × 2" × 3/6"		3-1/2"		3-3/8"		5-1/2"
		48"-60"	14"	0.109"		0.064"						2" × 2" × 3/6"		3-1/2"		5-3/8"		
	-0 -0	66"-120"	25"	0.064"-0.109"		0.064"						2" × 2" × 3/6"	ell ell 3/ II	5-1/2"	7 1/11	9-3/8"	- 7/11	
	3" × 1"	42"-60"	14"		0.060"-0.105"		0.060"						2" × 2" × 3/6"		3-1/2"		5-3/8"	
		42"-60"	14"				0.075"						2" × 2" × 1/4"		3-1/2"		5-3/8"	
		66"-96"	25"		0.060"-0.135" 0.135"		0.060"						2" × 2" × 1/4"		5-1/2" 5-1/2"		7-3/8"	
		96"-108"	25"	0.400	0.135		0.075"	0.070	17.0	7/11	70 1 1		2" × 2" × 1/4"		5-72		7-3/8"	
		THROUGH 48"	101/2"	0.109"		0.064"		0.079"	1/2"	7/8"	32 ksi							$\overline{}$
	2 ² / ₃ " × 1/ ₂ "	54"- 66"	101/2"			0.064"		DOUBLE 0.079"	1/2"	7/8"	32 ksi							$\overline{}$
	REROLLED	THROUGH 54"		0.064"-0.079"		0.064"		0.079"	1/2"	76"	32 ksi							$\overline{}$
	END	THROUGH 60"	101/2"			0.079"		DOUBLE 0.079"	1/2"	76"	32 ksi							
HUGGER		66"-72"	101/2"	0.138"		0.109"		DOUBLE 0.079"	1/2"	76"	32 ksi							
		THROUGH 72"	101/2"	0.168"		0.109"		DOUBLE 0.109"	1/2"	7/8"	45 ksi							
	3" × 1"	48"-84"	101/2"	0.109"		0.079"		DOUBLE 0.079"	1/2"	7/8"	32 ksi							
	REROLLED	48"-90"	. 4/2	0.064"-0.079"		0.064"		DOUBLE 0.079"	1/2"	7/8" 7/11	32 ksi							
	END	96"-102"	101/2"	0.079"		0.079"		DOUBLE 0.079"	1/2"	7/8"	32 ksi							
		90"-120"	101/2"	0.109"		0.109"		DOUBLE 0.109"	1/2"	7∕8"	45 ksi							

					FILE			1A	IGLE				1						
	PIPE WALL THICKNESS BAND THIC								AR AND (SSRP			DIM	ENSIONS		LTS - Dia)	RIV ANGLE	ETS FO BAND	SPOT WELDS ANGLE TO BAND	1
COUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	w	SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP]
		24"-36"	12"	0.064"-0.109"	0.060"-0.105"	0.064"	0.060"	0.079"	1/2"	7∕8"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"] ''
ANNULAR	2 ² / ₃ " × 1/ ₂ " *	42"-60"	12"	0.064"-0.079"	0.075"-0.105"	0.064"	0.075"	0.079"	1/2"	7∕8"	32 ksi	2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	5-1/2"]
ANNOLAN	REROLLED END	42"-60"	12"	0.109"		0.064"		0.079"	1/2"	7∕8"	32 ksi	2" × 2" × 1/4"		3-1/2"		5-3%"]
		66"-84"	24"	0.109"		0.064"		0.079"	1/2"	7∕8"	32 ksi	2" × 2" × 1/4"		5-1/2"		7-3/8"]
	2 ² / ₃ " × 1/ ₂ " ×	24"-54"		0.064"-0.079"		0.064"		0.079"	1/2"	7∕8"	32 ksi]
	REROLLED END	24"-48"	101/2"	0.109"		0.064"		0.079"	1/2"	7∕8"	32 ksi]
	MENOCEED END	54"-66"	101/2"	0.109"		0.064"		DOUBLE 0.079"	1/2"	7∕8"	32 ksi]

* See Note 12.

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
MC PL I THE S OR AU THE A	IY 1, 202 ANS APPROV TATE OF CAL	IAL DATE IFORNIA OR IT: NOT BE RESPON COMPLETENESS	No. C	Sean Penders 63744 9-30-24 CIVIL	THE FRANCE OF THE PARTY OF THE

ANNULAR AND HELICAL PROFILE

									BAR AN	ND STR.	AP			ANGL	_E			
									(CSP	ONLY)		DIME	NSIONS		LTS		ETS	SPOT WELDS
	COUPLING PIPE PIPE WALL THICKNESS BAND THICK					ICKNESS			BAR	BAR YIELD	DIMEI	4210142	(No	- Dia)	ANGLE 1	TO BAND	ANGLE TO BAND	
TYPE	CORRUGATION	PIPE SIZE	W OR A	CSP	CAP	CSP	CAP	STRAP THICKNESS	BOLTS Dia	Dia	STRENGTH	CSP	CAP	CSP	CAP	CSP	CAP	CSP
TWO PIECE INTEGRAL	1½' × ¼"	6"	7"	0.064"-0.168"		0.052"								3-3/8"				
FLANGE	1½' × ¼"	8"-10"	7"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"							3-3/8"	3-3/8"			
ANNULAR		THROUGH 24"	12"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"					2" × 2" × 3/6"	$2^{\prime\prime}$ \times $2^{\prime\prime}$ \times $\frac{3}{16}^{\prime\prime}$	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
HUGGER	$2^2/_3$ " × $1/_2$ " REROLLED END	THROUGH 24"	101/2"	0.064"-0.168"		0.064"		0.079"	1/2"	⅓"	32 ksi							

							OFILE												
									31 11/	4L 1/1	D FIN	OFILL			ANGI	LE			
					PIPE WALL	BAND THICKNESS		BAR AND STRAP (SSRP ONLY)				DIMEN	BOLTS (No Dia)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND		
	OUPLING TYPE	PIPE CORRUGATION	PIPE SIZE	w	SSRP	ASRP	SSRP	ASRP	STRAP THICKNESS	BOLTS Dia	BAR Dia	BAR YIELD STRENGTH	SSRP	ASRP	SSRP	ASRP	SSRP	ASRP	SSRP
1A	NNULAR	2 ² / ₃ " × 1/ ₂ " * REROLLED END	24"	12"	0.064"-0.168"	0.060"-0.164"	0.064"	0.060"					2" × 2" × 3/6"	2" × 2" × 3/6"	3-1/2"	3-1/2"	3-3/8"	3-3/8"	3-1/2"
Н	IUGGER	2 ² / ₃ " × 1/ ₂ " * REROLLED END	24"	101/2"	0.064"-0.168"		0.064"		0.079"	1/2"	7/8"	32 ksi							

* See Note 11.

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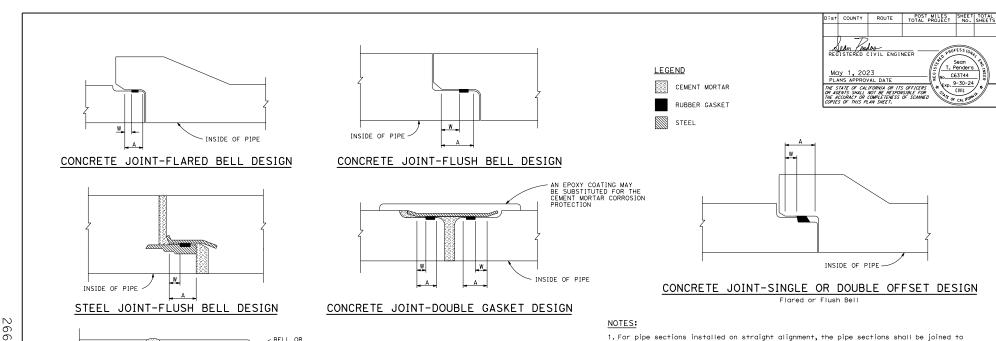
NOTES:

- 1. For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
- Tension strap may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
- 3. Use $1\frac{1}{4}$ gage line dimension on attached angle leg for rivets and spot welds.
- 4. Band thickness shall not be less than: a. 3 standard thicknesses lighter than the thickness of the pipe for Corrugated Steel Pipe. b. 2 standard thicknesses lighter than the thickness of the pipe and in no case lighter than 0.060" for Corrugated Aluminum Pipe.
- 5. Dimensions, thicknesses and strengths shown are
- 6. For pipe arches use same width band as for round pipe of equal periphery.
- 7. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
- 8. Spot welds shall develop minimum required strength of strap.
- 9. Pipe with rerolled ends having at least two 2²/₈" x ½" annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having $2^2 6'' \times \frac{1}{2}''$ corrugations.
- 10. For downdrain applications, two piece integral flange couplers shall have factory applied sleeve type rubber gaskets with a minimum length of 7" measured along the length of the pipe.
- 11. All profiles of Spiral Rib Pipe (¾" x ¾" ribs at 7½" pitch and ¾" x 1" ribs at 11½" pitch in both steel and aluminum and ¾" x 1" ribs at 8½" pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be $2\frac{n}{3}$ " x $\frac{n}{2}$ " annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

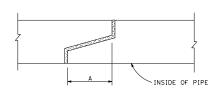
CORRUGATED METAL PIPE COUPLING DETAILS No. 7 **DOWNDRAIN**

D97G



SPIGOT OR TONGUE BELL OR GROOVE END INSIDE OF PIPE

SELF-CENTERING TONGUE & GROOVE



TONGUE & GROOVE DESIGN

TABLE A

	MINIMUM JOINT OVERLAP				
PIPE DIAMETER LIMITS	STANDARD "A"	POSITIVE "A"	STANDARD "W"	POSITIVE "W"	
6" THROUGH 12"	1/4"	1/2"	1/4"	3/8"	
15" THROUGH 33"	1/2"	3/4"	1/4"	1/2"	
GREATER THAN 33"	3/4"	1"	3/8"	5/8"	

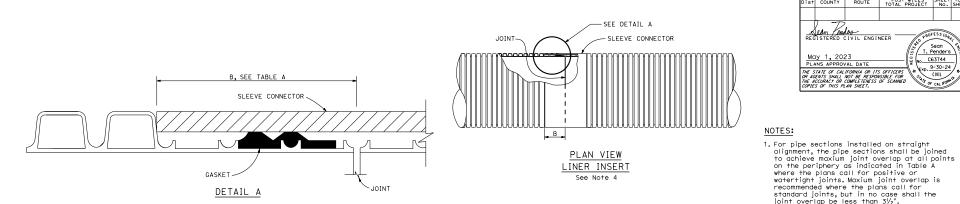
- 1. For pipe sections installed on straight alignment, the pipe sections shall be joined to provide maximum joint overlap at all points on the joint periphery, but in no case less than the values shown in Table A for "W" if the installation is required to be watertight or "A" for all other installations.
- 2. For pipe sections installed on curved alignment, the pipe sections shall be joined to provide maximum joint overlap on one side of the joint and not less than $\frac{1}{4}$ overlap on the other. The $\frac{1}{4}$ overlap shall be the "W" dimension for installations required to be watertight, or the "A" dimension for all other installations.
- 3. Watertight joint requirement shall typically be met with the use of rubber gaskets as shown. Pipe installed with rubber gaskets shall have a minimum overlap meeting or exceeding the indicated "Wi dimension shown in Table A or indicated in Note 2. Joints shown with rubber gaskets may be installed without gaskets in non-watertight applications, in which case the joint shall be sealed with sealing materials and the minimum joint overlap shall meet or exceed the "A" dimension shown in Table A or indicated in Note 2.
- 4. For Self-Centering Tongue and Groove Joints, the mortar shall be applied after the pipe ends are pushed together. The mortar shall be applied to the joint gap on the inside of the pipe for pipe diameters of 24" or more, or to the gap on the outside of the pipe for pipe smaller than 24" in diameter.
- 5. When watertight joints are required (See Note 3) and cement mortar joints are not allowed, the taper on surfaces within the "W" dimension at full joint closure and the opposing sealing surfaces of the bells and spigots on which the rubber goskes may bear during closure of the joint and at any degree of partial closure shall form an angle of not more than 2 degrees with the longitudinal axis of the pipe.

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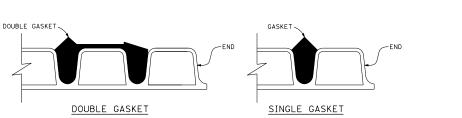
REINFORCED CONCRETE PIPE OR NON-REINFORCED CONCRETE PIPE STANDARD AND POSITIVE JOINTS

NO SCALE

D97H



BELL



~ GASKET

DETAIL B

A, SEE TABLE A

DETAIL C

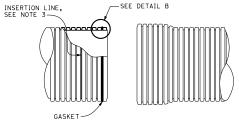
Single gasket shown

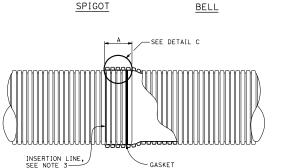
END-

SPIGOT

INSERTION LINE, SEE NOTE 3

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For pipe sections installed on curved alignment, the maximu angle of deflection from straight alignment at any joint shall not exceed two degrees. Where the plans call for waterflightness, field testing for compliance is required. Where plans call for positive joints, the pipe sections shall be joined to achieve Table A Dimensions on one side of the joint. Joints classified as standard shall have no less than $3\frac{1}{2}$ " joint overlap at any point on the periphery.

3. Factory applied insertion line limit shall be placed on spigot.

Dist COUNTY

Mdy 1, 2023 PLANS APPROVAL DATE

joint overlap bé less than 31/2".

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ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Sean T. Penders

C63744 E×p. 9-30-24

CIVIL

4. Liner insert to be used inside of existing pipe.

TABLE A

JOINT OVERLAP DIMENSIONS						
PIPE Did (NOMINAL)	А	В				
12"	5¾"	41/4"				
15"	6¾"	55%"				
18"	6¾"	5%"				
21"	81/2"	5%"				
24"	81/2"	61/8"				
30"	81/2"	71/8"				
36"	81/2"	81/8"				

BELL AND SPIGOT JOINT

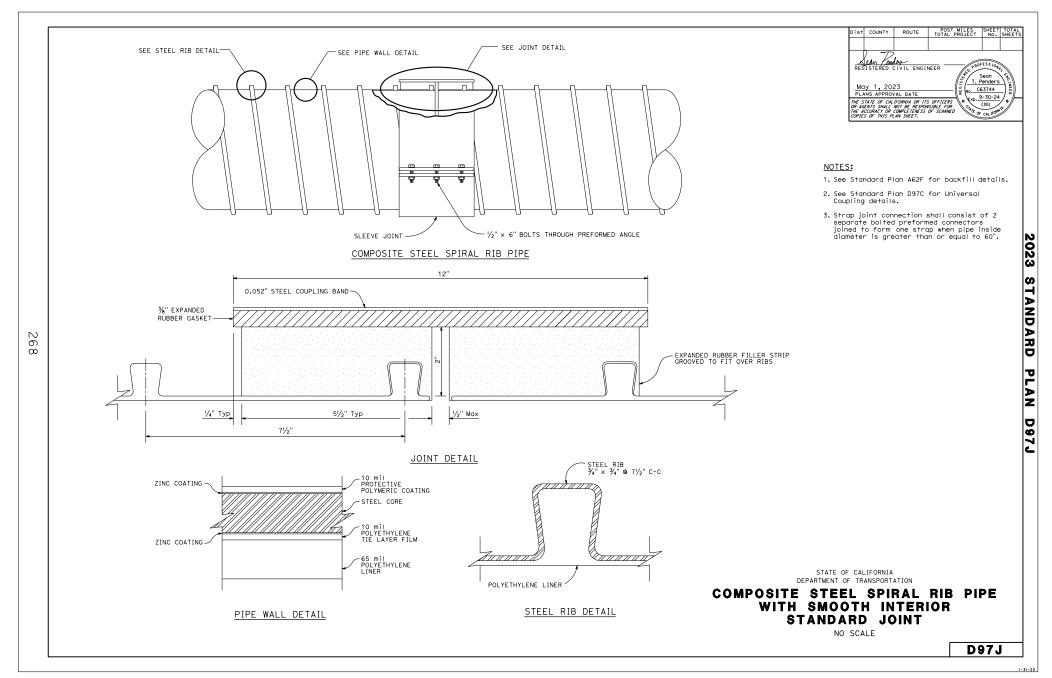
GASKET

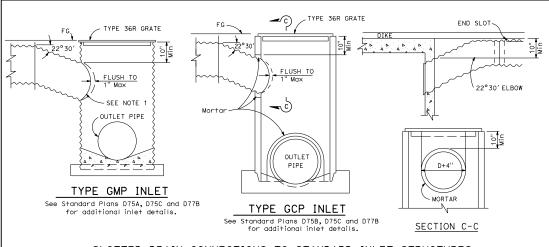
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

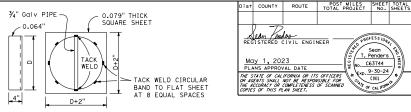
CORRUGATED POLYVINYL CHLORIDE PIPE WITH SMOOTH INTERIOR STANDARD AND POSITIVE JOINTS

NO SCALE

D97I



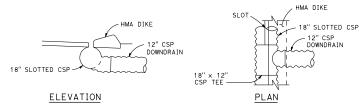




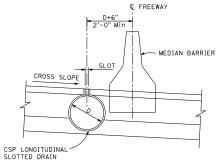
METAL CAP DETAIL See Note 2

NOTES:

- 1. Either field joint sealed with a pliable mixture of sand, portland cement and emulsified asphalt (mixture of 1 part portland cement, 3-5 parts sand and 11/2 parts SSI emulsified asphalt) or continuous weld.
- 2. "D" equals nominal pipe diameter.

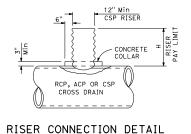


SLOTTED DRAIN CONNECTIONS TO STANDARD INLET STRUCTURES

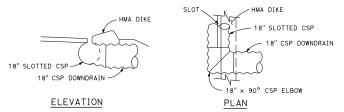


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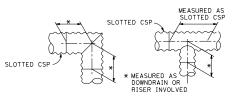
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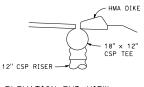


SHOULDER INSTALLATION 18" SLOTTED CSP TO 12" DOWNDRAIN

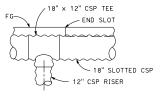


TYPICAL CROSS SECTION





SHOULDER INSTALLATION 18" SLOTTED CSP TO 18" CSP DOWNDRAIN



ELEVATION-SIDE VIEW

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

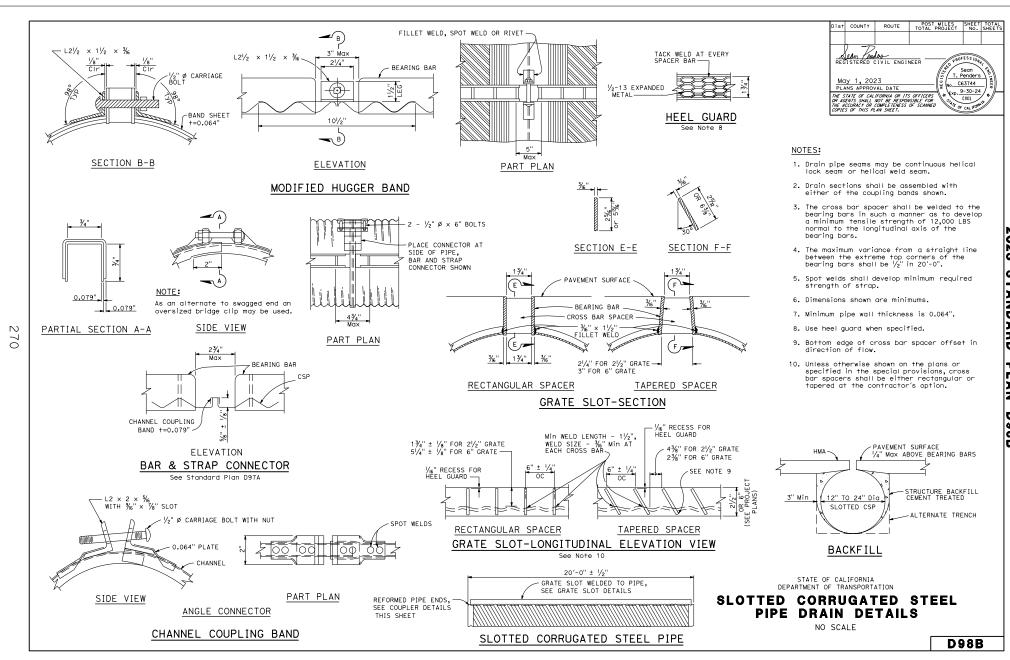
MEASUREMENT OF CORRUGATED STEEL PIPE ELBOWS AND TEES USED WITH SLOTTED DRAINS ELEVATION-END VIEW

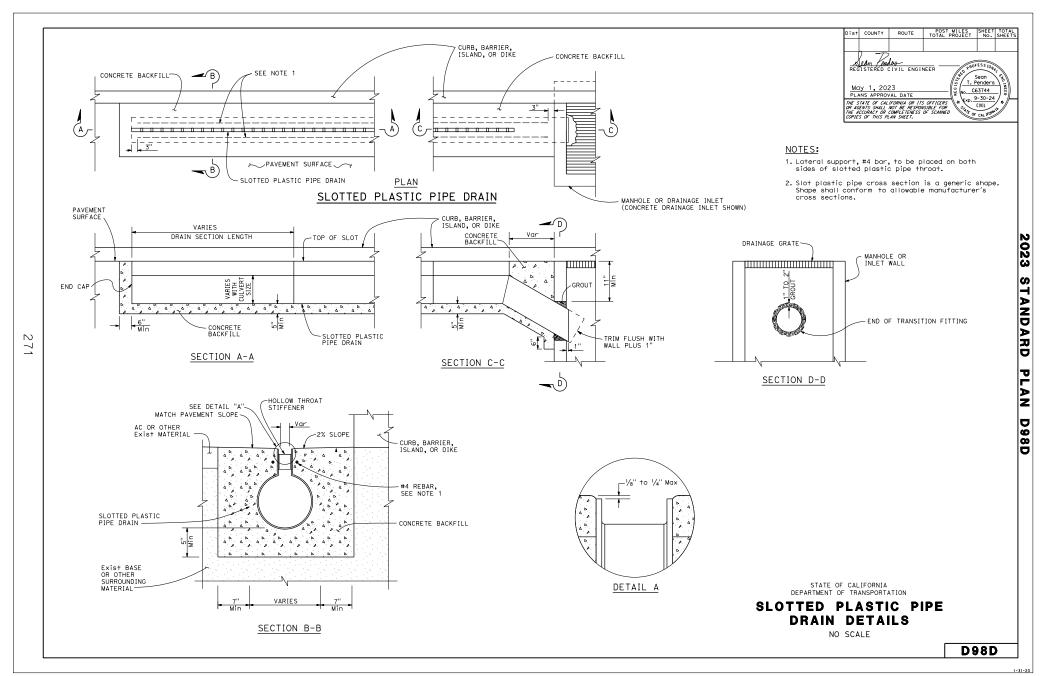
SHOULDER INSTALLATION 18" SLOTTED CSP TO 12" CSP RISER

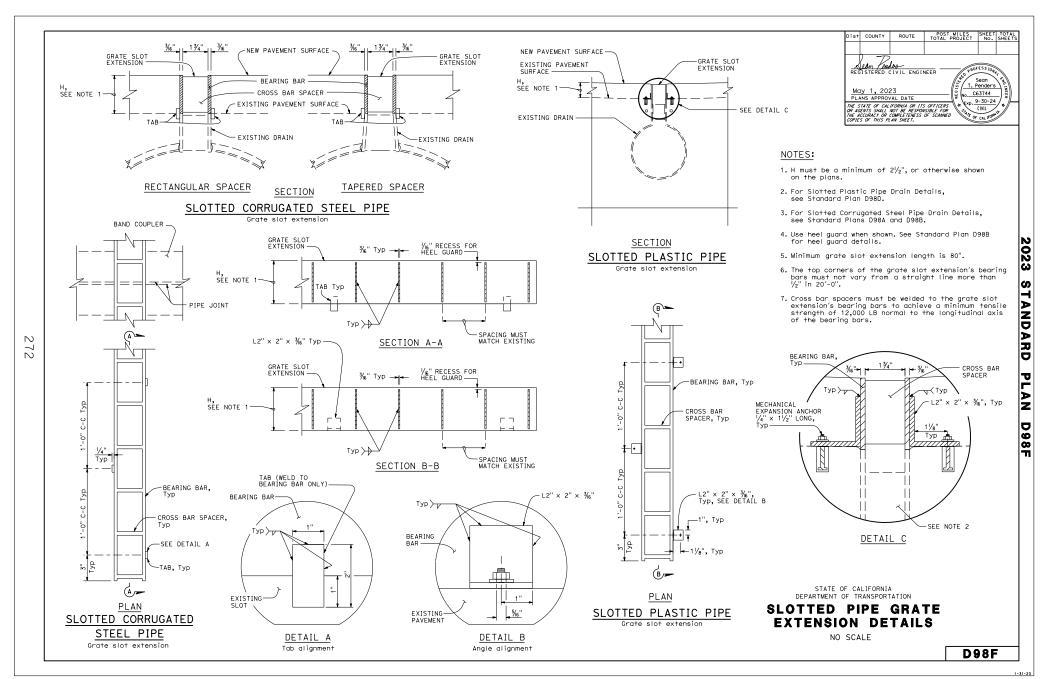
SLOTTED CORRUGATED STEEL PIPE DRAIN DETAILS

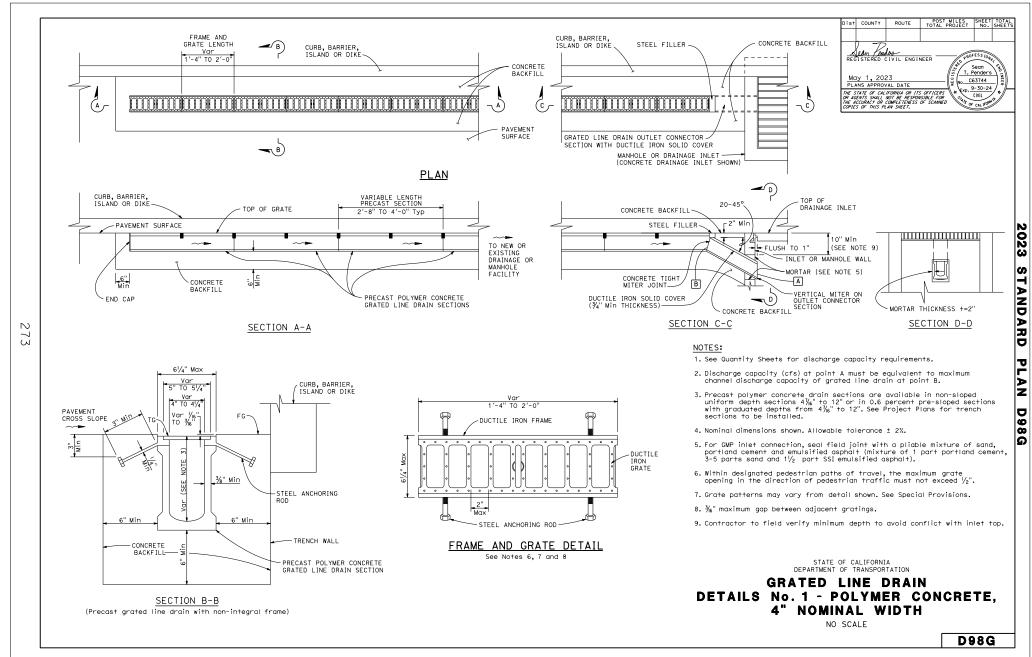
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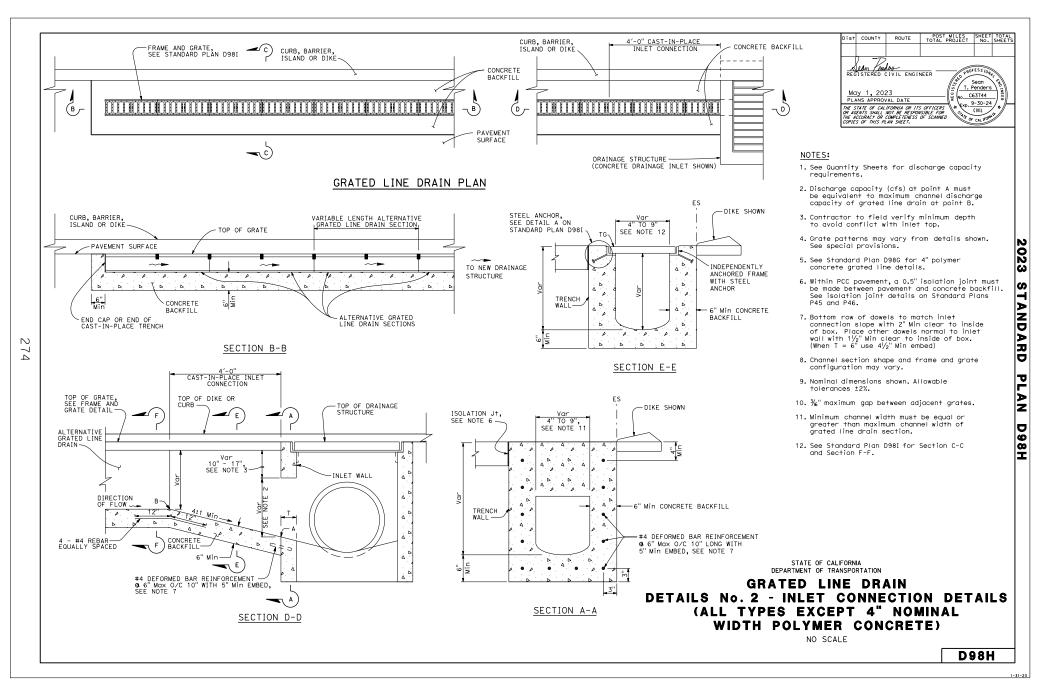
D98A

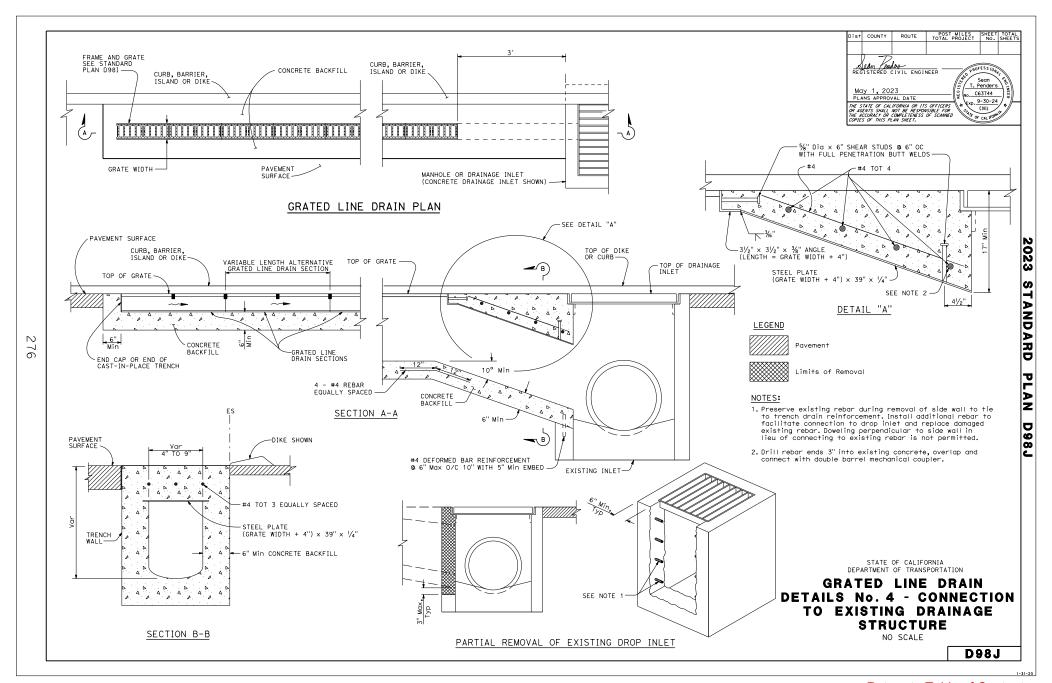


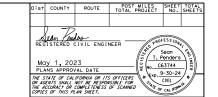


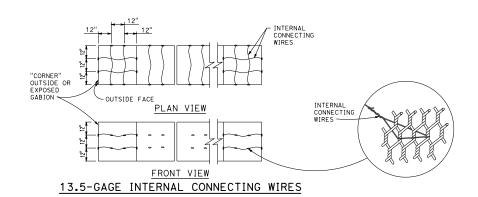




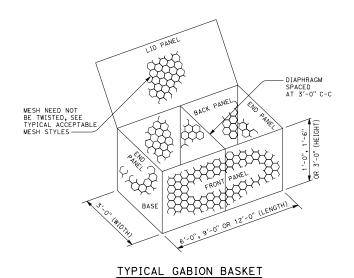




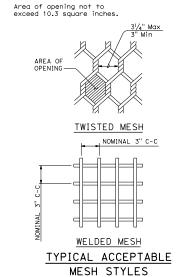




STANDARD GABION SIZES							
LETTER	LENGTH	WIDTH	HEIGHT	NUMBER OF DIAPHRAGMS	VOLUME		
CODE				DIAPHRAGMS	CY		
А	6'-0"	3'-0"	3'-0"	1	2.0		
В	9'-0"	3'-0"	3'-0"	2	3.0		
С	12'-0"	3'-0"	3'-0"	3	4.0		
D	6'-0"	3'-0"	1′-6"	1	1.0		
E	9'-0"	3'-0"	1′-6"	2	1.5		
F	12'-0"	3'-0"	1′-6"	3	2.0		
G	6'-0"	3'-0"	1'-0"	1	0.66		
н	9'-0"	3'-0"	1'-0"	2	1.0		
I	12'-0"	3'-0"	1'-0"	3	1.33		



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NOTE:

NOTES:

- Internal connecting wire (13.5-gage) to be installed across width of interior gabions and across width and length of end gabions.
- 2. Internal connecting wires required on all gabions 3'-0" high.
- 3. Preformed stiffeners (11-gage or 9-gage) are an acceptable alternative to internal connecting wires. Install them as recommended by manufacturer or as directed by the Engineer at 1/3 points.
- Place rock in end gabion cell first, and continue by filling interior gabion cells.
- 5. For gabion dimensions, refer to table "Standard Gabion Sizes".

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

GABION BASKET DETAILS No. 1

NO SCALE

D100A

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Sean T. Penders

C63744

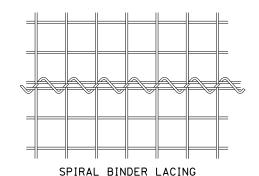
Exp. 9-30-24

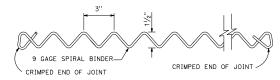
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STANDARD TIE WIRE DETAIL Alternating single and double half hitches (locked loops), see Note 2

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STANDARD SPIRAL BINDER

1.40 0.45" WIRE DIAMETER 0.120"

BEFORE CLOSURE

AFTER CLOSURE

INTERLOCKING FASTENER



BEFORE CLOSURE

AFTER CLOSURE

OVERLAPPING FASTENER

ALTERNATIVE GABION JOINT MATERIAL FASTENERS

Fastener dimensions nominal, see Note 3

LID PANEL BACK PANEL

DIAPHRAGM &£™ 8 END BASE PANEL 3 PANEL "B" PANEL "A J. 388 -@ KK 1 FRONT PANEL **X** 4

> FLAT LAYOUT OF GABION BASKET

To Assemble Transitional Gabion Basket:

Step 1 Cut mesh along joint between Front Panel and Base Panel.

Unfasten End Panel "A" from Base Panel and rotate End Panel "A". Fasten End Panel Panel "A" to Back Panel.

Step 3 Fold the cut portion of the Base Panel into upright position along diagonal from the diaphragm to the corner of the Back Panel.

\Step 4 Fold the Back Panel, Front Panel and End Panel "B" into upright positions. Fasten End Panel "B" to the Back Panel and the Front Panel.

Step 5 Rotate End Panel "A" and the cut portion of Rotate End Manel A and the cut portion of the Front Panel inward against the upturned portion of the Base Panel. Fasten along the overlapped portion of the Front Panel and End Panel "A". Fasten the overlapped portion of the Front Panel and End Panel "A" to the folded upright portion of the Base Panel along the diagonal (described in Step 3).

Step 6 Fill the Transitional Gabion Basket with rock as per specifications.

Step 7 Close lid and fold over corner of Lid Panel. Fasten along Lid Panel edges.

ASSEMBLED TRANSITIONAL GABION BASKET

May 1, 2023

1. A joint connection must be made where any panel edge meets another panel. This includes adjacent gabion baskets, individual panels within a basket, diaphragm edges, etc.

2. Standard tie wire may be used as a joint connector for either twisted or welded mesh. Spiral binder is to be

3. When alternative gabion joint material fasteners are not

spiral binder, as applicable, must be used.

capable of enclosing all wires along a joint, especially at Basket-To-Basket Joints, either standard tie wire or

used with welded mesh only.

NOTES:

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TRANSITIONAL GABION BASKET

(For 6'-0", 9'-0" or 12'-0" gabion)

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

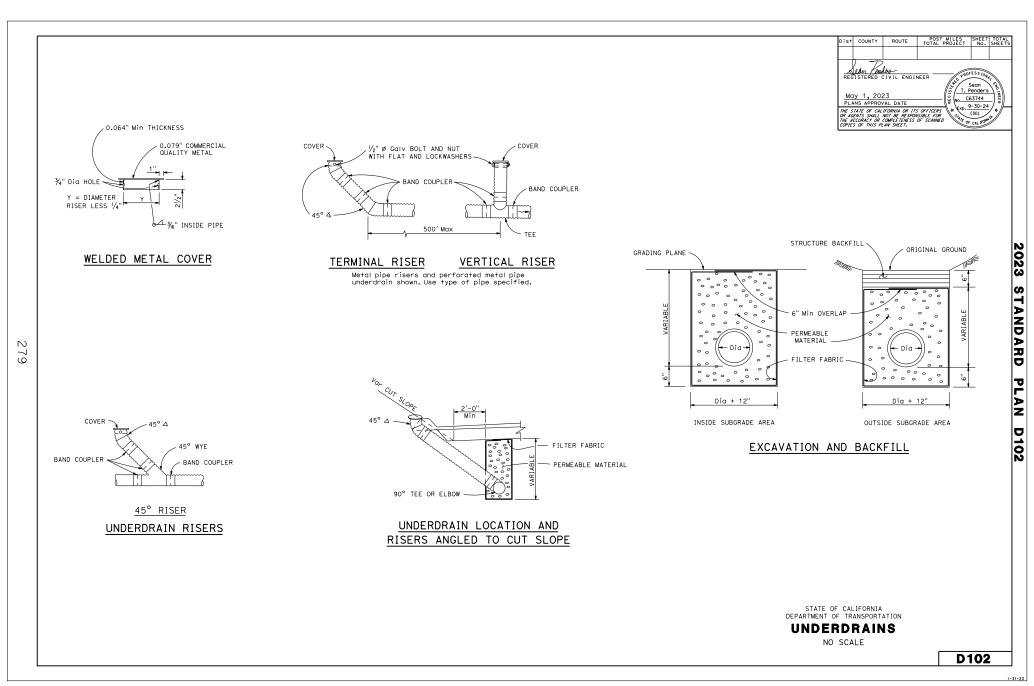
GABION BASKET DETAILS No. 2

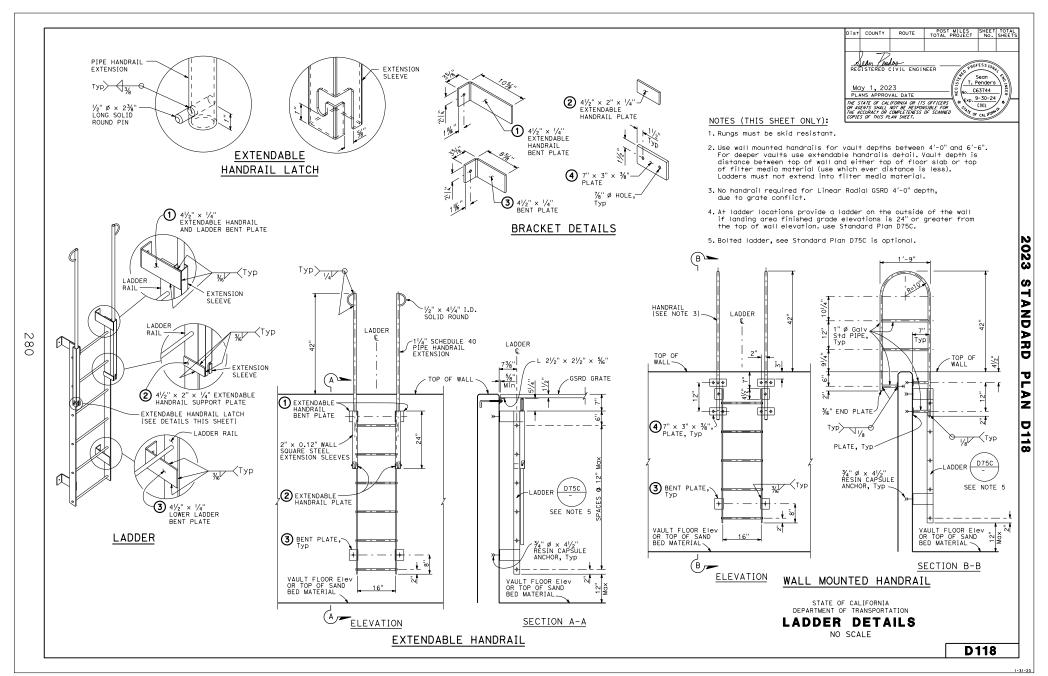
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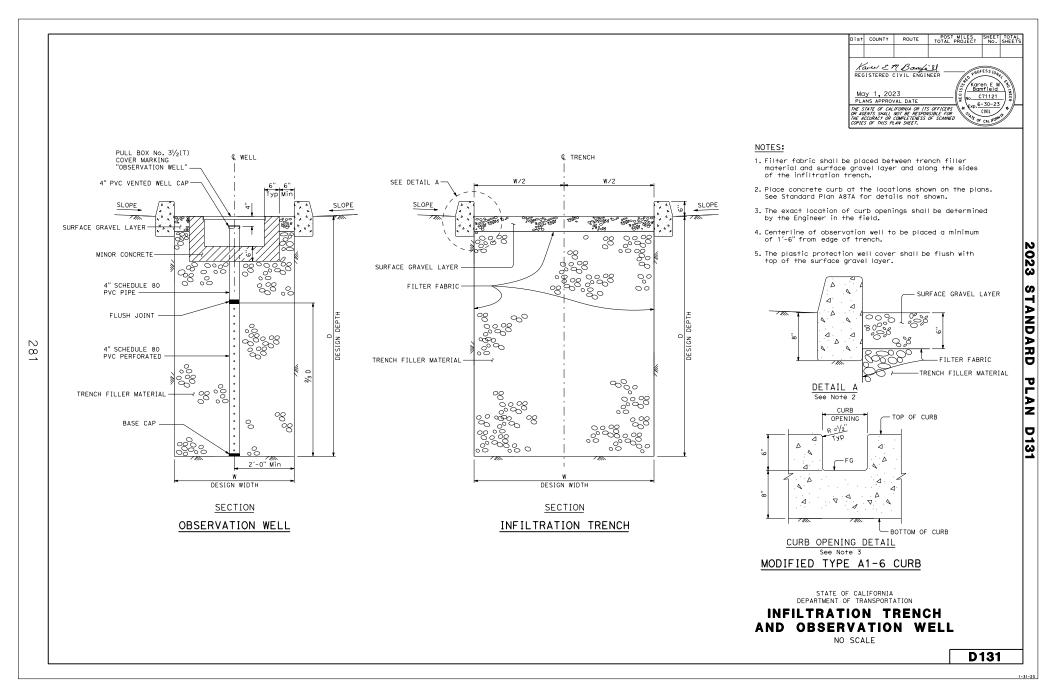
END PANEL "A"

D100B

Return to Table of Contents







GENERAL NOTES:

Designation:

esignation: Types of Gross Solids Removal Devices (GSRDs) are Linear Radial (LR) and Inclined Screen. The Linear Radial has either a standard or high velocity configuration noted as Linear Radial or Linear Radial (HV). All GSRD Marc Detail Drawlings are applicable for velocities up to 20 Mps.

Special Reinforcement Coverage: GSRD BMP Detail Drawings are not to be used in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

Special Design:
Required for ground water conditions above bottom
of GSRD, surcharge loads exceeding HS20 truck load,
design bearing pressures or sizes greater than those
on this plan.

Traffic Loading:
No traffic load is allowed over GSRDs. As determined by the Engineer, barriers or MBGR shall be provided between GSRDs and traffic lanes.

INCLINED SCREEN DESIGN FLOW CHART						
GSRD TYPE	TOTAL SCREEN LENGTH "C"	FLOW RATE (cfs)	DEBRIS AREA (acres)			
Α	3'-4"	5.83	2.21			
В	5′-0"	8.74	3.31			
С	6'-8"	11.65	4.41			
D	8'-4"	14.57	5.52			
E	10'-0"	17.48	6.63			
F	11'-8"	20.39	7.74			

NOTE:

1. The total screen length "C" is shown on Standard Plans D139B, D139F1 and D139G1.

DESIGN NOTES:

Specifications:

Decign:

Bridge Design Specification April 2000 (LFD)
(1996 AASHTO) with interims and revisions by Caltrans

Wall (LFD) : 1.5D + 1.5E and 1.5D + W Footing (LFD): 1.5D + 1.5E Where: D = Dead Load E = Earth Load

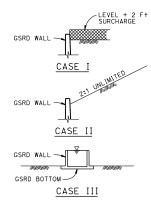
Capacity reduction factor is included.

Earth Load: 125 lb/ft vertical,

Water Load: 62.4 lb/ft horizontal,

Equivalent Fluid Pressure = 100 lb/ft horizontal (Case I).

Earth pressure for 2:1 unlimited slope determined from Rankine's formula with $\emptyset = 33^{\circ}42'$ (Case II).



DETAIL OF DESIGN LOADING CASES

CASE I Level + 2'-0" surcharge, GSRD empty CASE II 2:1 Unlimited slope, GSRD empty CASE III GSRD full of water, no soil pressure

Grating (LL) Load :

Unit Stresses:

f'_C = 4.0 ksi fy = 60 ksi (bar reinforcing)

Design Soil Bearing Pressure (Service Load) = 20 psi

ABBREVIATIONS:

CUBIC FEET PER SECOND EWT&B EACH WAY TOP AND BOTTOM

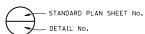
fps FEET PER SECOND GROSS SOLIDS REMOVAL DEVICE

LIVE LOAD 1.1

FRP FIBERGLASS REINFORCED PLASTIC

LEGEND

DESIGN WATER DEPTH



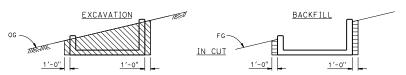
NOTES:

Expansion joints: kpansion joints: Inverts – No expansion joints permitted. Walls – Place 1/2" expansion joint filler vertically 80-1at 26'-0" centers with strip water stop 1-3.

Construction Joints: Construction joints may be permitted if normal (or radial) to © of GSRD.

ackTill: See Standard Specifications, except the difference in backfill will not exceed 4 ft between side walls and will not exceed the lesser of wall height "H" or 4 ft between inlet and outlet walls.

Earthwork:
Excavation and Backfill with Cut and Exposed conditions:



INCLINED SCREEN

LEGEND

STRUCTURE EXCAVATION

STRUCTURE BACKFILL 90% RELATIVE COMPACTION

NOTES:

Slope or shore excavation sides as necessary.

Dist COUNTY

May 1, 2023

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

Sean T. Penders

C63744

€×p. 9-30-24

CIVIL

2023 STANDARD

PLAN

D139A

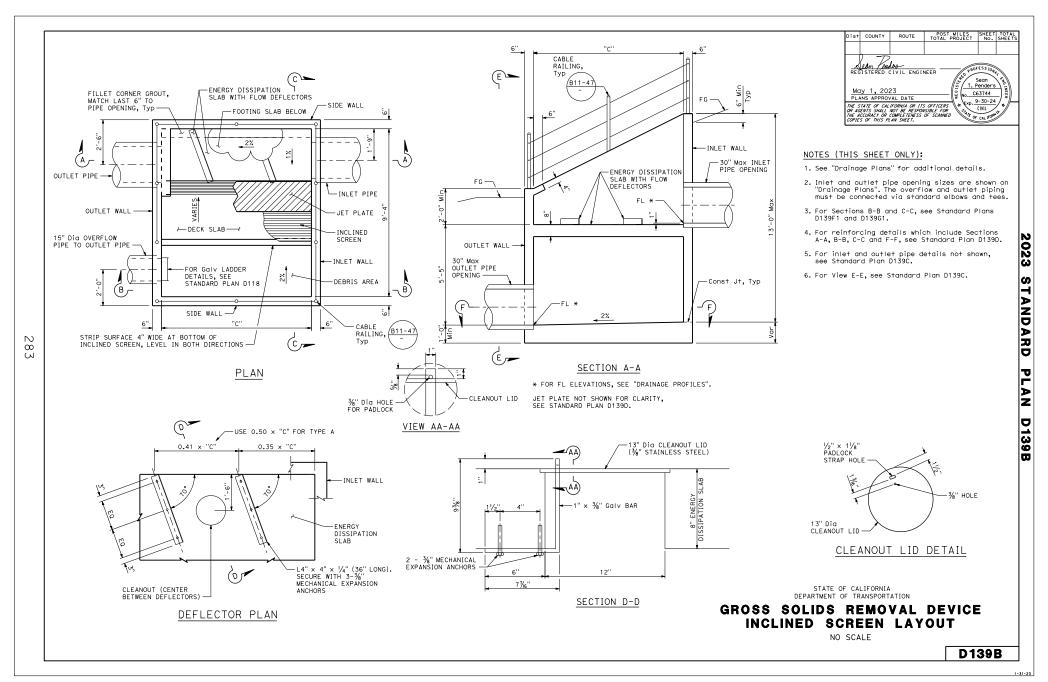
2. Dimensions shown are minimum.

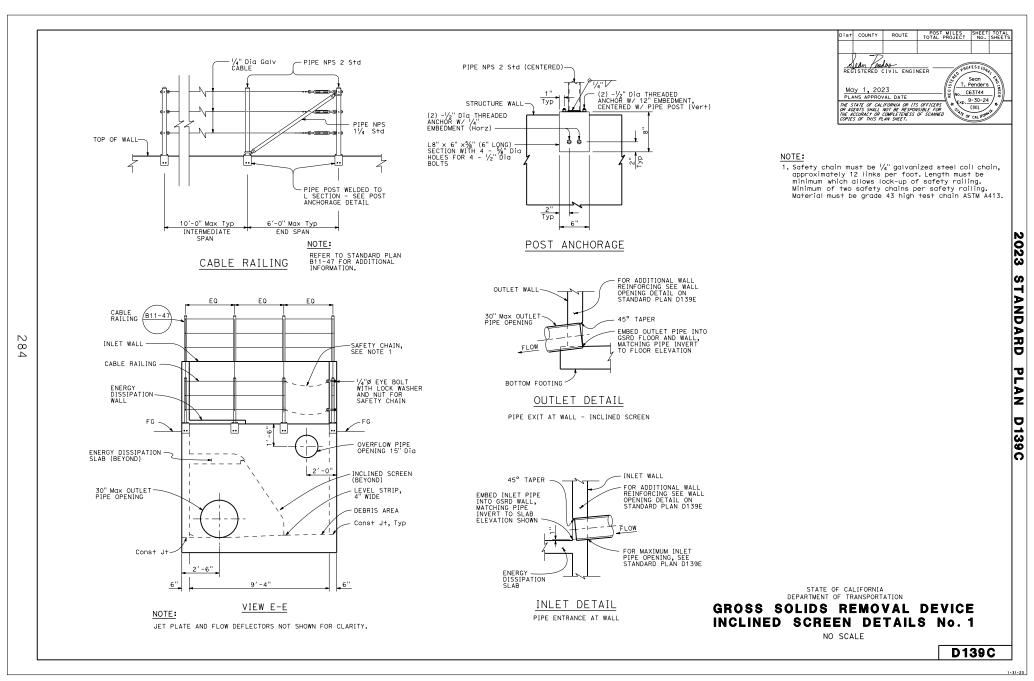
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN LEGEND

NO SCALE

D139A





ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Mdy 1, 2023 PLANS APPROVAL DATE

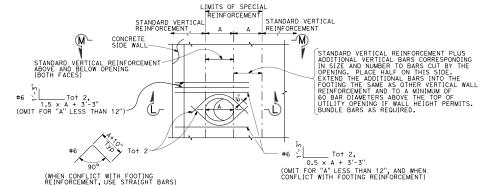
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Sean T. Penders

C63744 €×p. 9-30-24

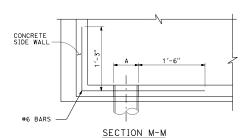
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SECTION L-L



WALL OPENING

To be used at inlet and outlet pipe locations



(Only specified horizontal bars are shown)

In all opening locations, horizontal reinforcement to be standard except as shown. All reinforcement to clear opening by 2" minimum.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 3 WALL OPENING DETAILS

NO SCALE

986

ENERGY DISSIPATION SLAB

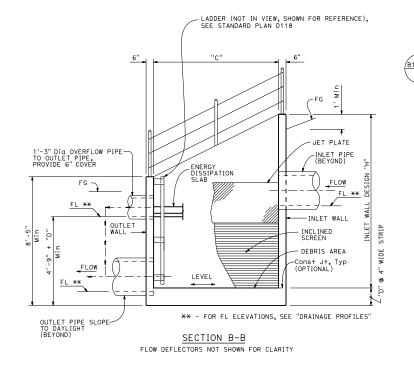
To be used at cleanout (Place 8 - #5 as shown top and bottom. Extend bars 1'-3" past the opening or use 6" hook if development length is not available.)

D139E

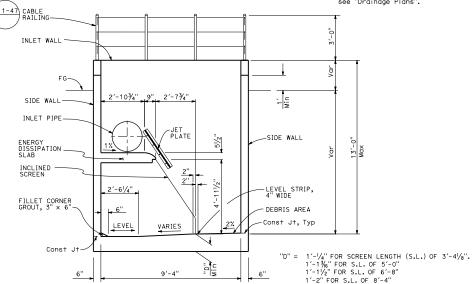


NOTES:

- 1. See "Drainage Plans" for additional details.
- 2. For Section B-B and C-C locations, see Standard Plan D139B.
- Inlet and outlet piping opening sizes are shown on the "Drainage Plans."
 The overflow and outlet piping shall be connected via standard elbows and tees.
- 4. For inlet and outlet pipe details not shown, see "Drainage Plans".



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SECTION C-C FLOW DEFLECTORS NOT SHOWN FOR CLARITY

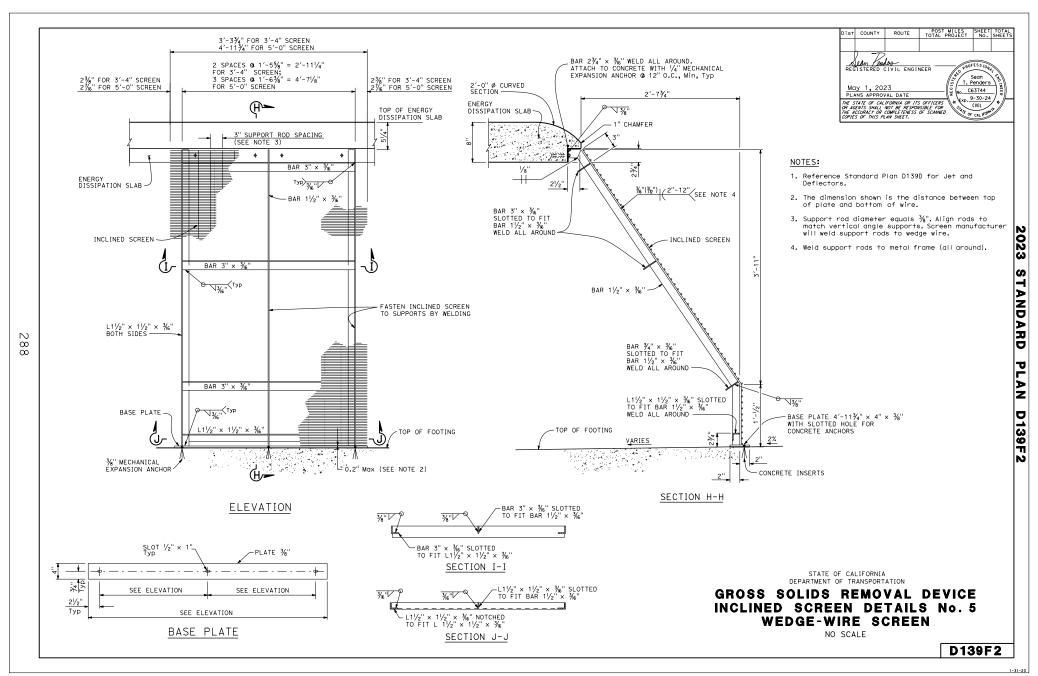
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

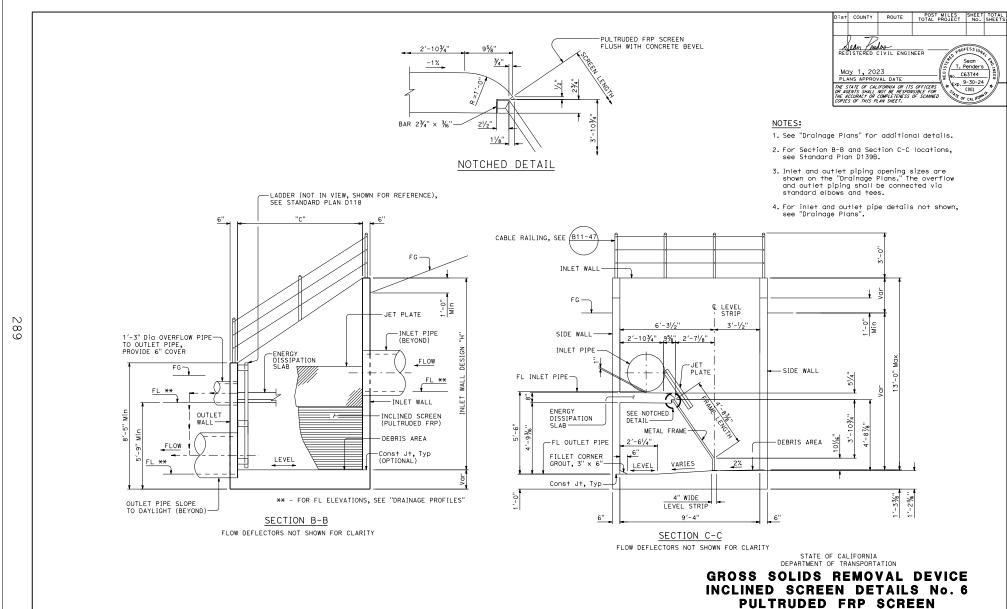
1'-23%" FOR S.L. OF 10'-0" 1'-234" FOR S.L. OF 11'-81/8"

GROSS SOLIDS REMOVAL DEVICE INCLINED SCREEN DETAILS No. 4 **WEDGE-WIRE SCREEN**

NO SCALE

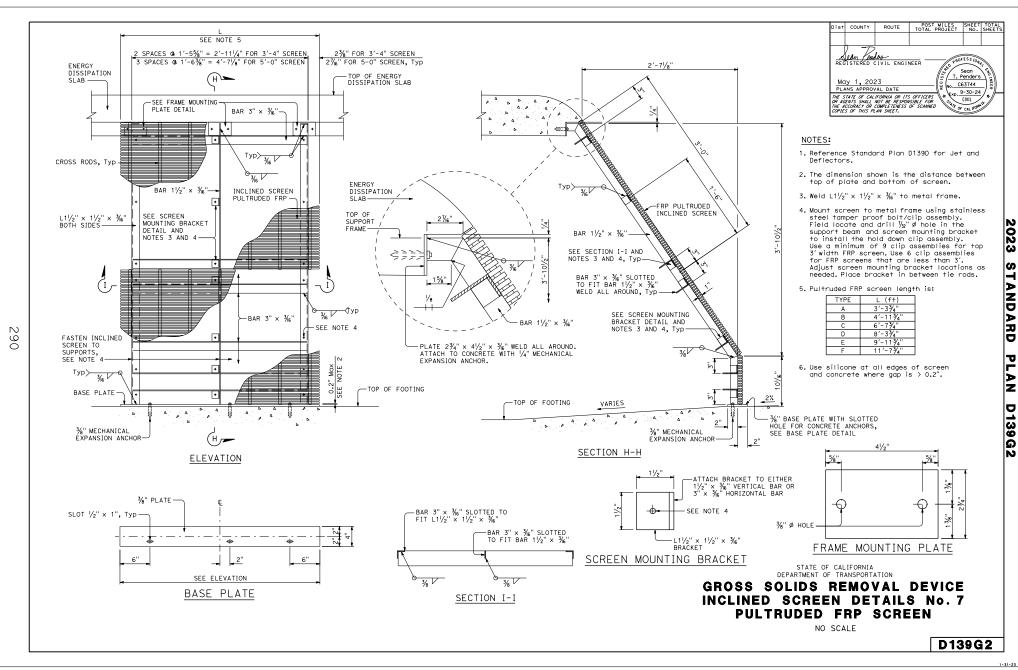
D139F1





D139G1

NO SCALE



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GENERAL NOTES

Designation:

Types of Gross Solids Removal Devices (GSRDs) are Linear Radial (LR) and Inclined Screen, The Linear Radial has either a standard or high velocity configuration noted as Linear Radial or Linear Radial (HV). All GSRD BMP Detail Drawings are applicable for velocities up to 20 fps.

Special Reinforcement Coverage: GSRD BMP Detail Drawings are not to be used in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

Special Design:

Required for ground water conditions above bottom of GSRD, surcharge loads exceeding HS20 truck load, design bearing pressures or sizes greater than those on this plan.

Traffic Loading:

No traffic load is allowed over GSRDs. As determined by the Engineer, barriers or MBGR shall be provided between GSRDs and traffic lanes.

	LINEAR RADIAL DESIGN CHART							
GSRD TYPE	TOTAL SCREENED PIPE LENGTH "TS"	FLOW RATE (cfs)	DEBRIS AREA (acres)	INSIDE LENGTH "L"	HIGH VELOCITY INSIDE LENGTH "LHV" *	No. OF INTERMEDIATE SCREENED PIPES		
LR-1	5′-6"	3.54	0.79	11'-11"	14'-3¾"	0		
LR-2	10'-6"	7.07	1.58	16'-11"	19′-3¾"	1		
LR-3	15′-6"	10.96	2.25	21'-11"	24′-3¾"	2		
LR-4	20'-6"	14.49	3.16	26'-11"	29′-3¾"	3		
LR-5	25′-6"	18.38	3.95	31′-11"	34′-3¾"	4		
LR-6	30'-6"	21.91	4.74	36'-11"	39′-3¾"	5		

* High velocity is achieved when inlet Velocity exceeds 8.2 fps.

NOTES:

- 1. The total screened pipe length "Ts" is the sum of the end screened and intermediate screened pipes. For dimension " T_S " and location of end screened pipe and intermediate screened pipes, see Standard Plan D140B.
- 2. Example of Linear Radial nomenclature is LR-1 (6'-0"); for high velocity type LR(HV)-3 (3'-0"). The wall height is the number represented in the parentheses.
- 3. The inside length "L" is shown on Standard Plan D140B, see plan view. Likewise, the inside length "LHV" is shown on Standard Plan D140G, see plan view.

DESIGN NOTES

Specifications:

Design:
Bridge Design Specification April 2000 (LFD) (1996 AASHTO) with interims and revisions by Caltrans

: 1.5 D + 1.5 E and 1.5 D + W Footing (LFD) : 1.5 D + 1.5 E Where: D = Dead Load

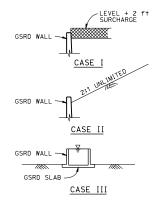
E = Earth Load Capacity reduction factor is included.

Earth Load: 125 lb/ft³ vertical,

Water Load: 62.4 lb/ft³ horizontal,

Equivalent Fluid Pressure = 100 lb/ft³ horizontal (Case I).

Earth pressure for 2:1 unlimited slope determined from Rankine's formula with $\emptyset = 33^{\circ}42'$ (Case II).



DETAIL OF DESIGN LOADING CASES

CASE I Level + 2'-0" surcharge, GSRD empty CASE II 2:1 Unlimited slope, GSRD empty CASE III GSRD full of water, no soil pressure

Grating (LL) Load : 0.5 psi

Unit Stresses: f'_C = 3.6 ksi fy = 60 ksi (bar reinforcing)

Design Soil Bearing Pressure (Service Load) = 20 psi

ABBREVIATIONS

CUBIC FEET PER SECOND

fps FEET PER SECOND

GROSS SOLIDS REMOVAL DEVICE GSRD

HIGH VELOCITY HV

LL LIVE LOAD

LINEAR RADIAL

Sean T. Penders May 1, 2023 C63744 PLANS APPROVAL DATE €×p. 9-30-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET. CIVIL

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

2023

STANDARD

PLAN

D140A

Dist COUNTY

LEGEND



NOTES:

Expansion joints: Walls - Place $\frac{1}{2}$ expansion joints shall be permitted. Walls - Place $\frac{1}{2}$ expansion joint filler vertically at 26'-0" centers with strip water stop

Construction Joints:

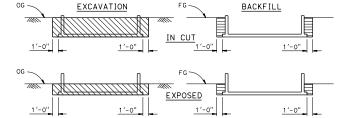
Construction joints may be permitted if normal (or radial) to C of GSRD.

Backfill:

See Standard Specifications, except the difference in backfill shall not exceed 4 ft between side walls and shall not exceed the lesser of wall height "H" or 4 ft between inlet and outlet walls.

Farthwork:

Excavation and Backfill with Cut and Exposed conditions:



LINEAR RADIAL

LEGEND

STRUCTURE EXCAVATION

STRUCTURE BACKFILL 90% RELATIVE COMPACTION

NOTES:

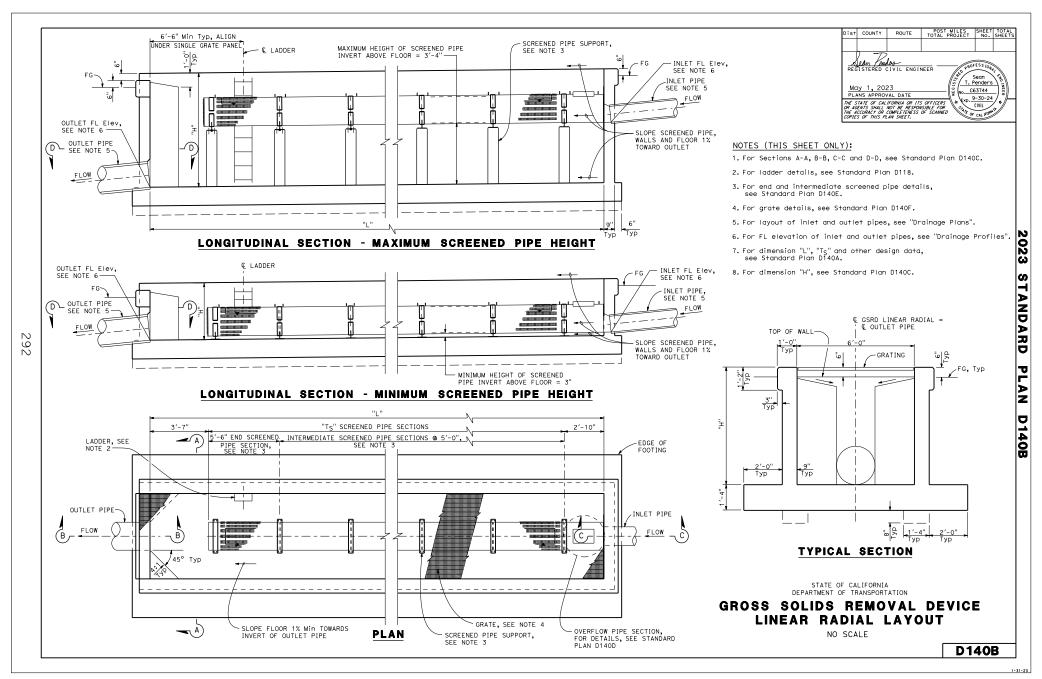
- 1. Slope or shore excavation sides as necessary.
- 2. Dimensions shown are minimum.

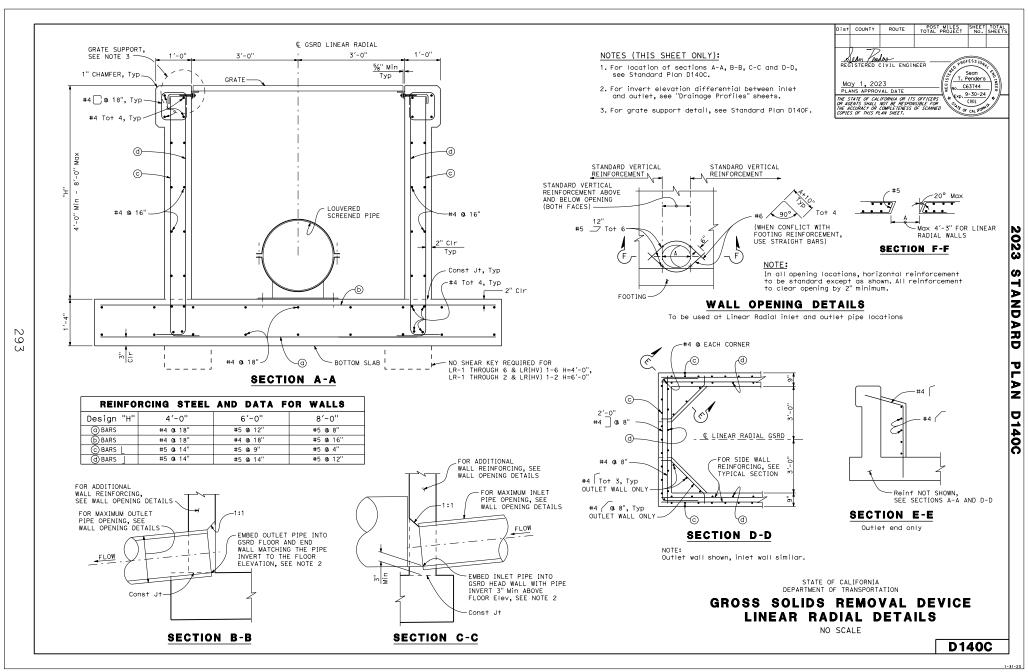
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

GROSS SOLIDS REMOVAL DEVICE LINEAR RADIAL LEGEND

NO SCALE

D140A

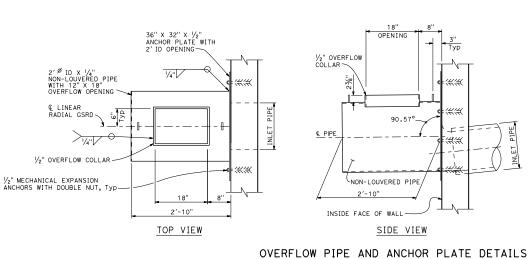




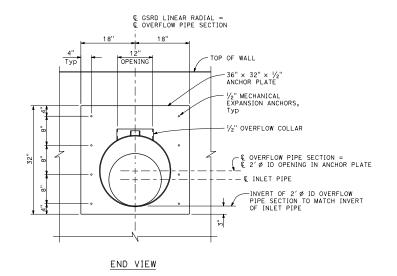
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	y 1, 202			S No. CE	ean `enders 3744 -30-24	
OR AG	ENTS SHALL	IFORNIA OR IT: NOT BE RESPON COMPLETENESS AN SHEET.	SIBLE FOR			

NOTE (THIS SHEET ONLY):

All metal components of screen pipe including connections to concrete must be stainless steel.



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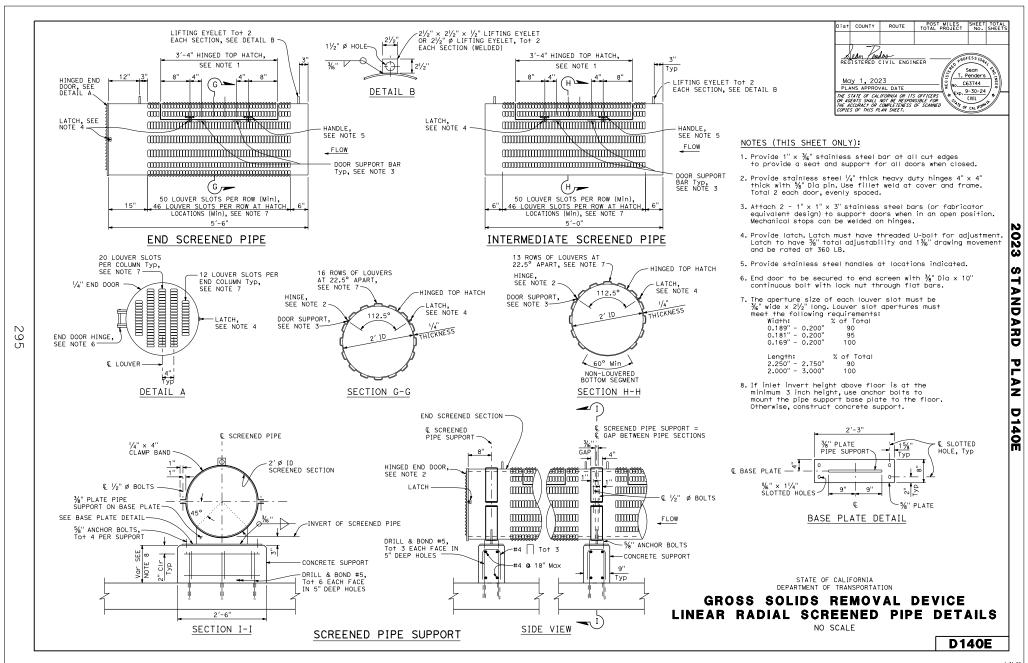


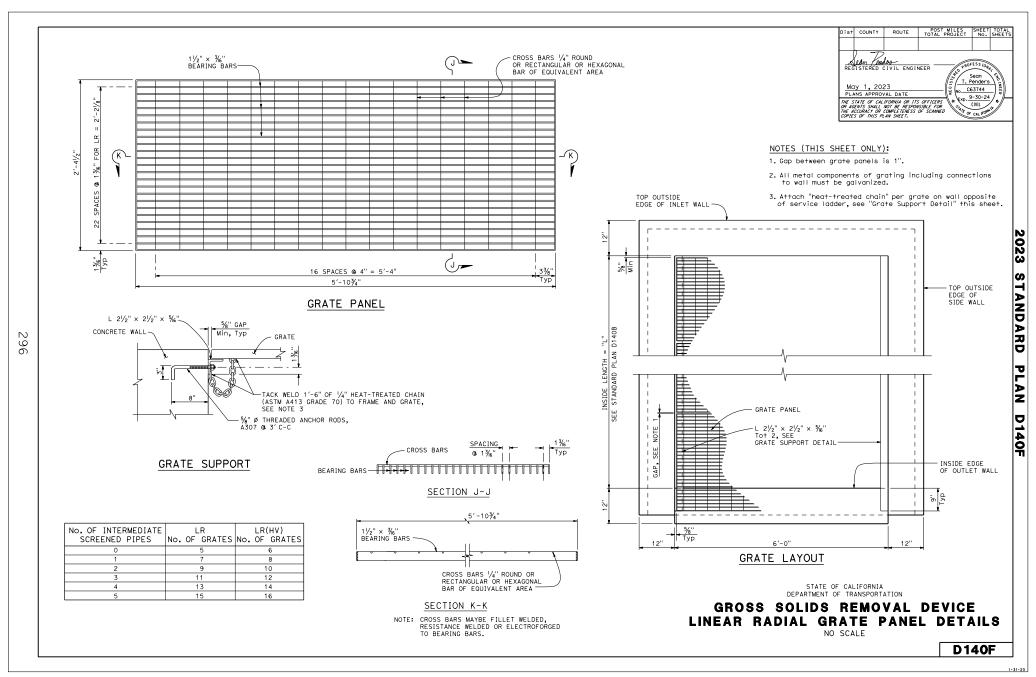
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

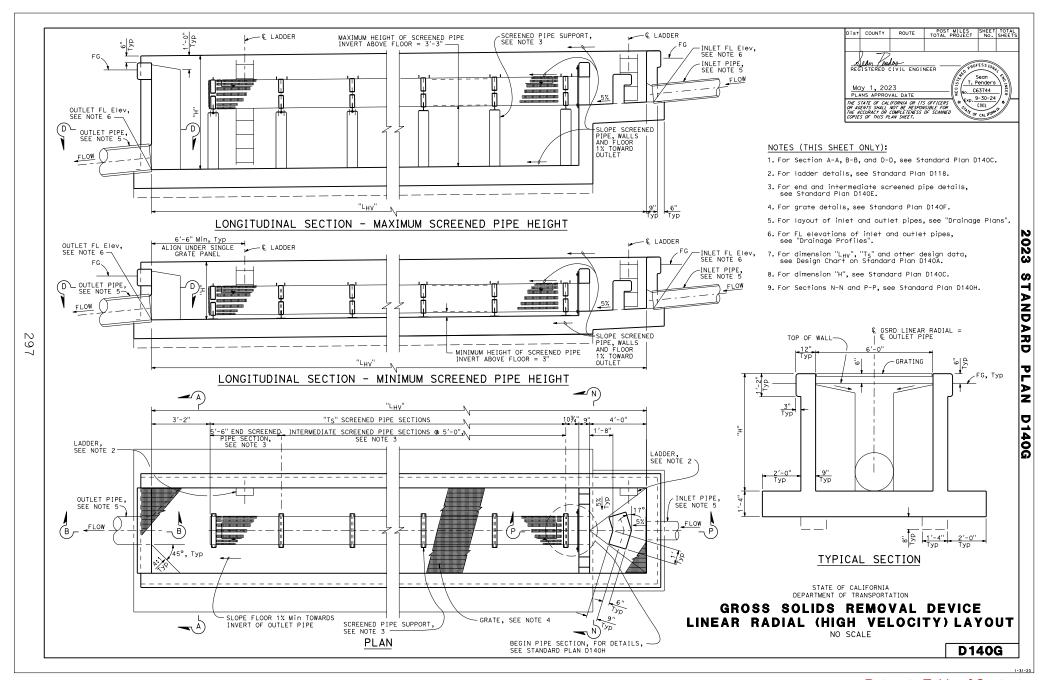
GROSS SOLIDS REMOVAL DEVICE LINEAR RADIAL OVERFLOW PIPE DETAILS

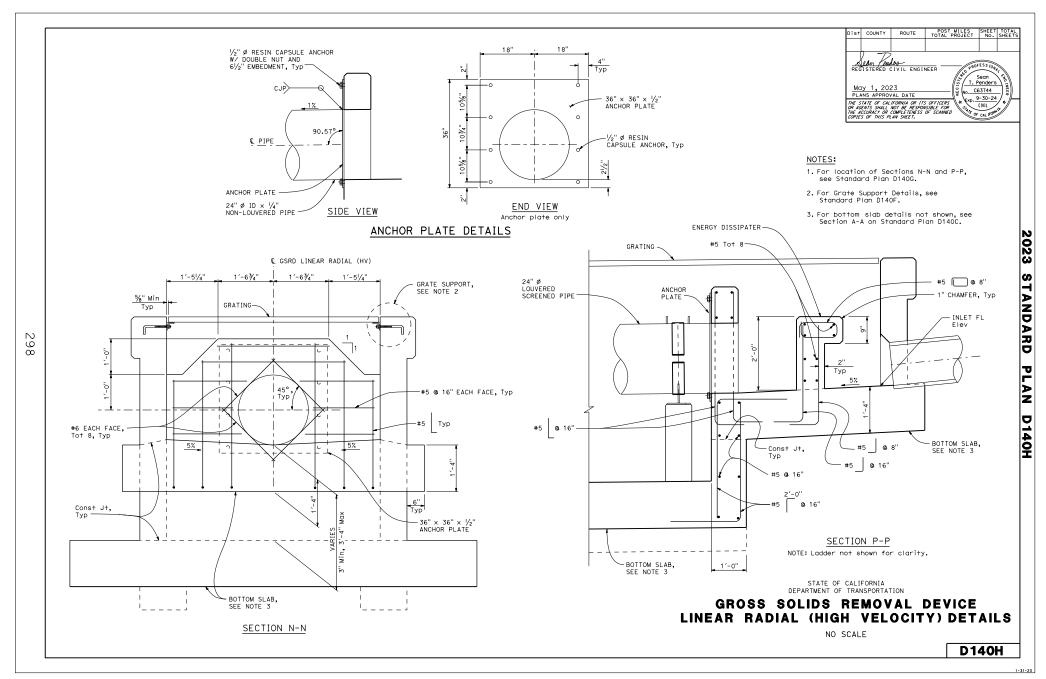
NO SCALE

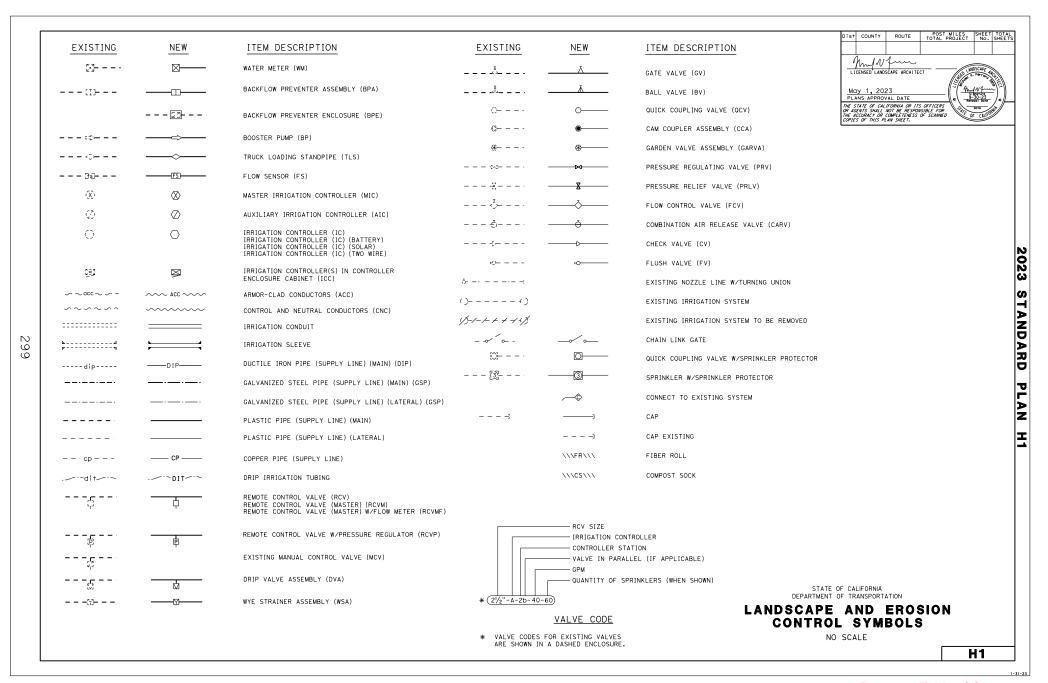
D140D

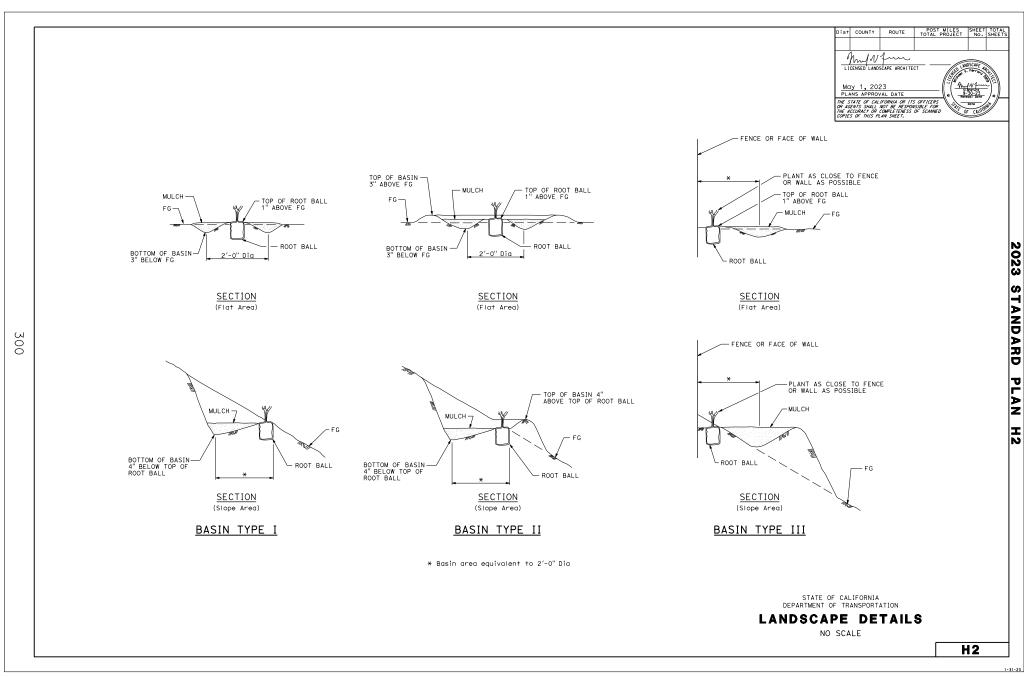


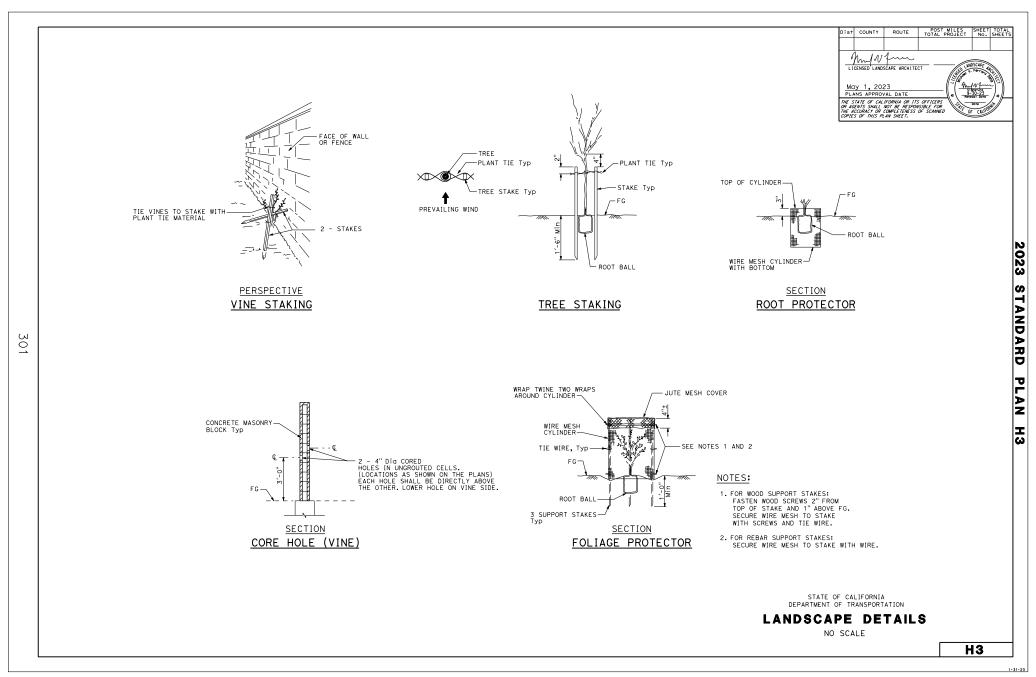


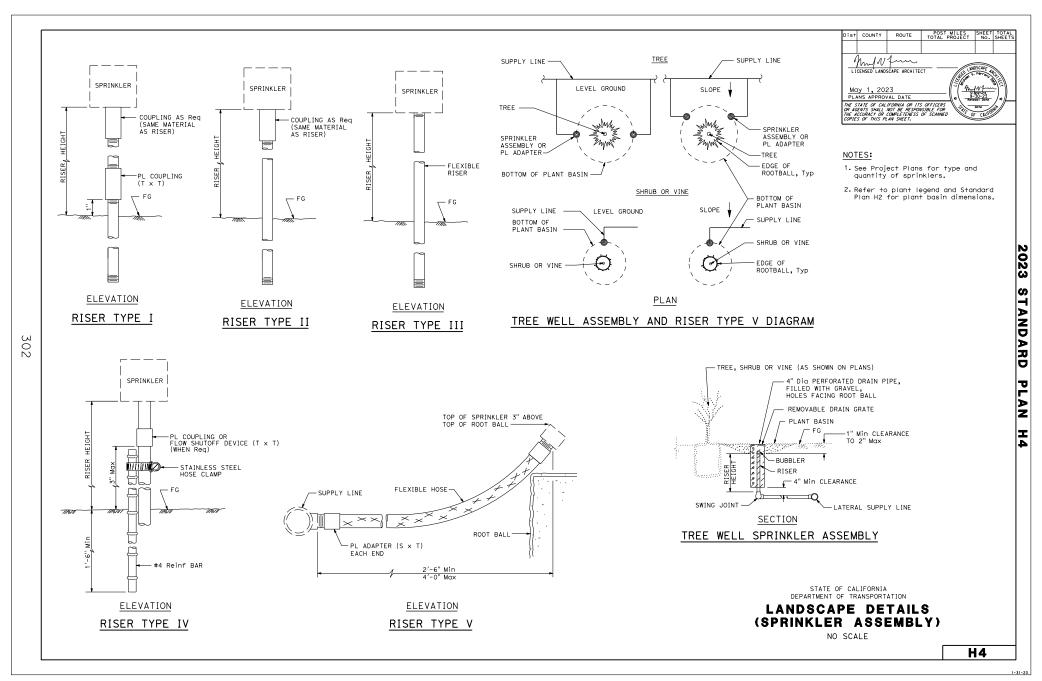


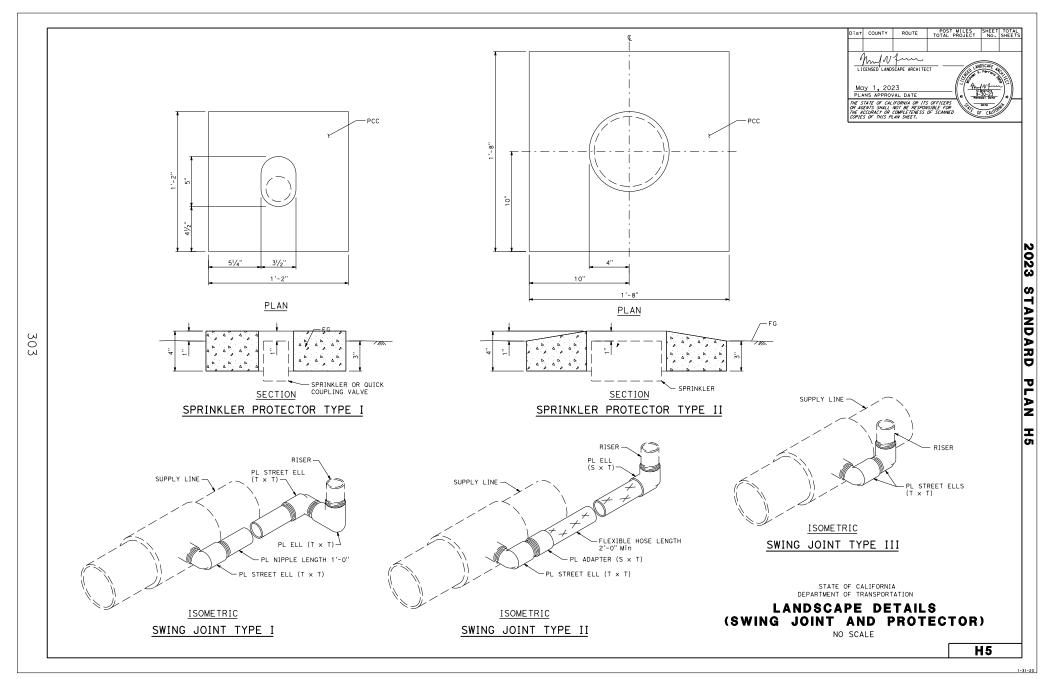


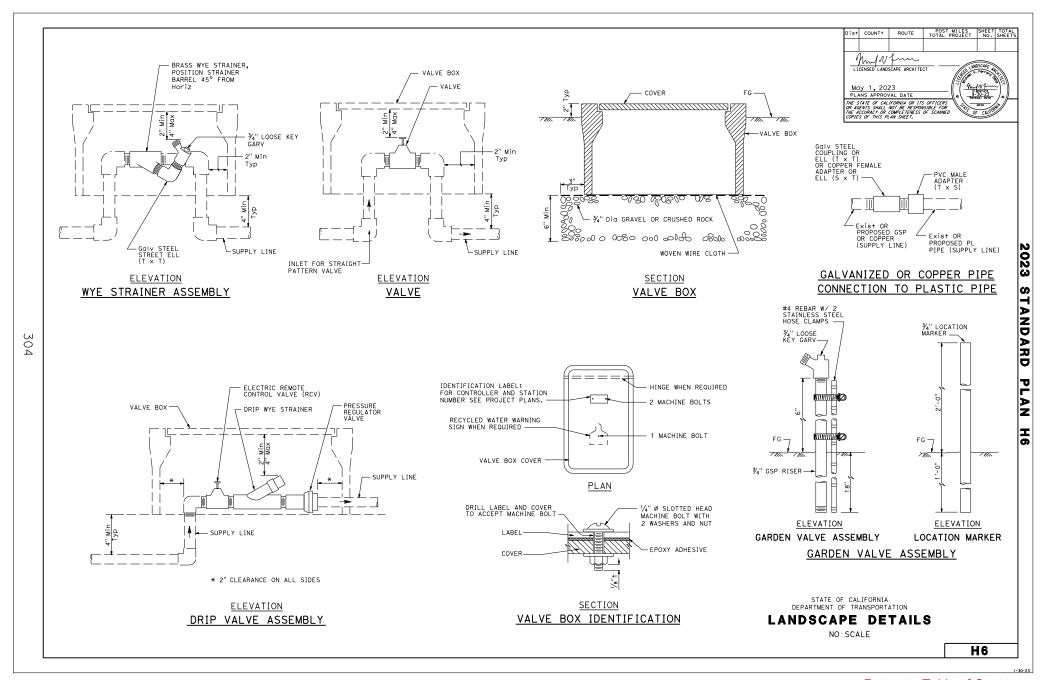


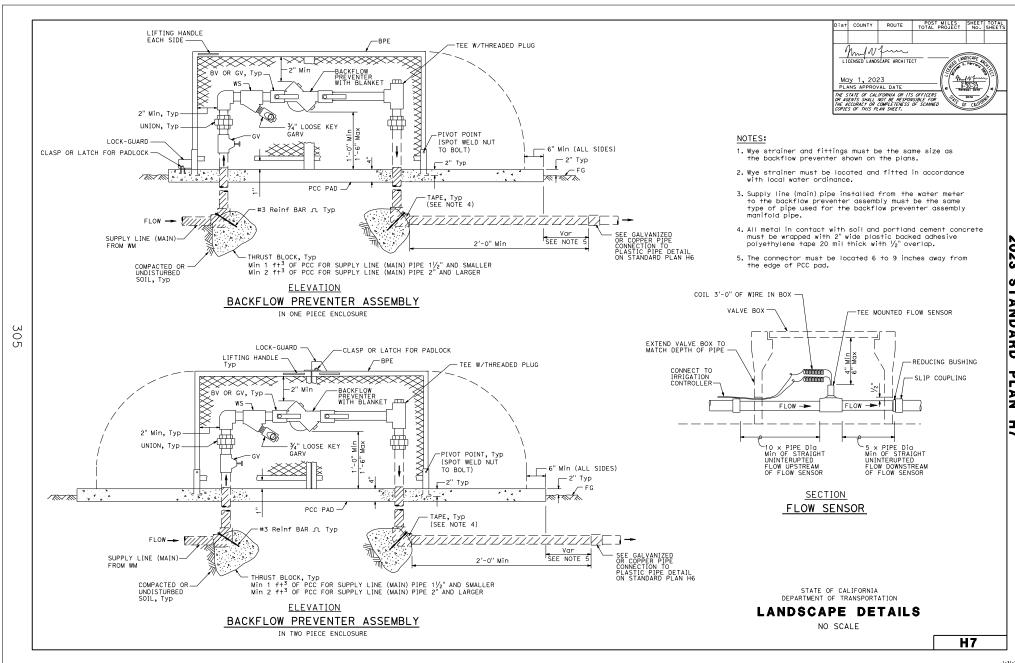


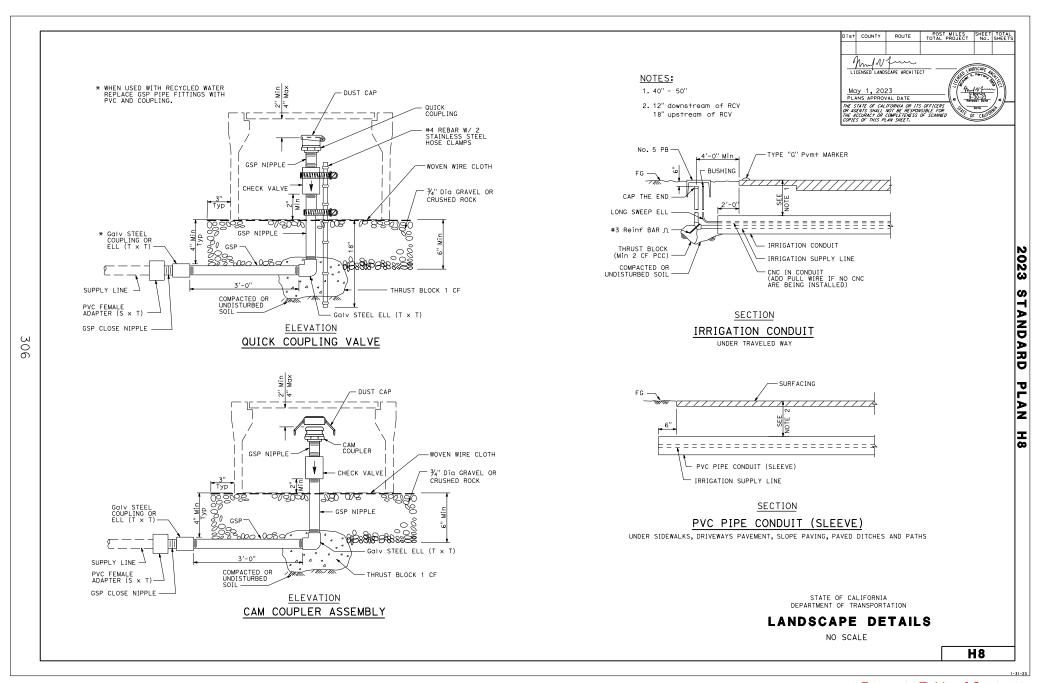












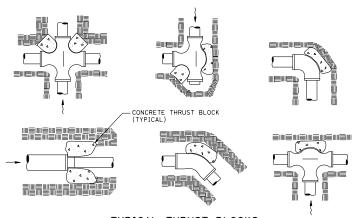
NOTES:

- 1. Use for non solvent welded pipe.
- Thrust block must be poured against undisturbed soil.

LEGEND:

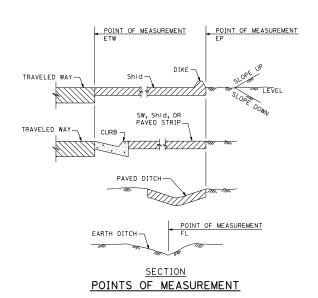
307

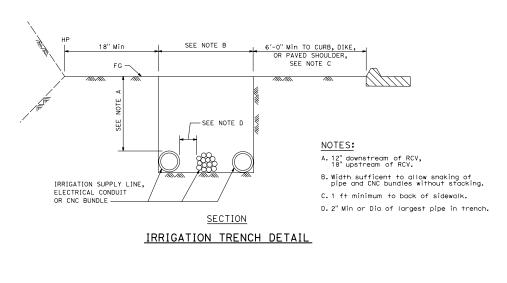
→ DIRECTION OF FLOW





TYPICAL THRUST BLOCKS



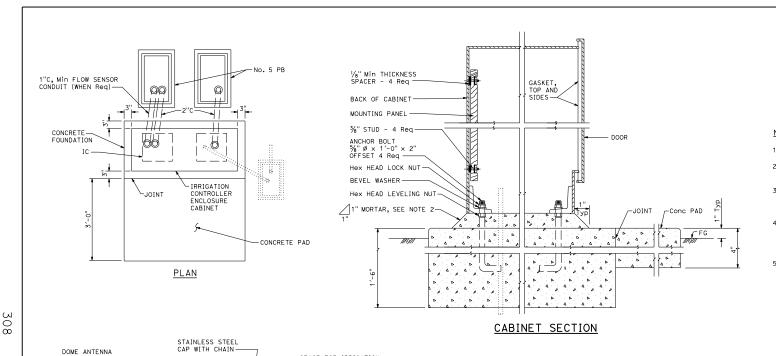


STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

Н9



(WHEN Req)-

RAIN SENSOR UNIT,

SEE NOTE 3 AND

MOUNTING DETAIL-

VANDAL RESISTANT

1/2"C, CONTROL WIRES AS Req

TERMINAL BLOCK-

ELEVATION

6" × 6" × 1'-6" GUTTER-

LACE WIRING WITH NO SLACK

MOUNTING PANEL-

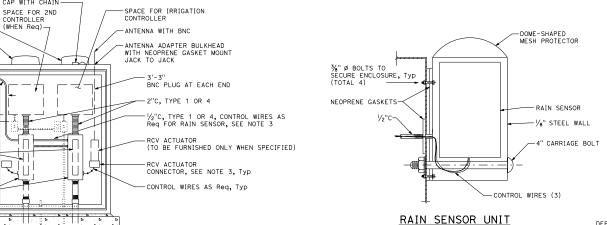
ENCLOSURE FOR

RAIN SENSOR -

2" Min-

NOTES:

- 1. All dimensions are nominal.
- 2. Mortar shall be 1-part cement, 2-parts plaster
- 3. Rain sensor unit and remote control valve actuator connectors to be provided when specified.
- 4. See project plans for location and number of irrigation controllers for each cabinet. Install the cabinet with the back facing the direction of oncoming traffic in the nearest traffic lane.
- 5. The electrical items shown in dropout are not labeled. See Standard Plan ES-3H for electrical requirements.

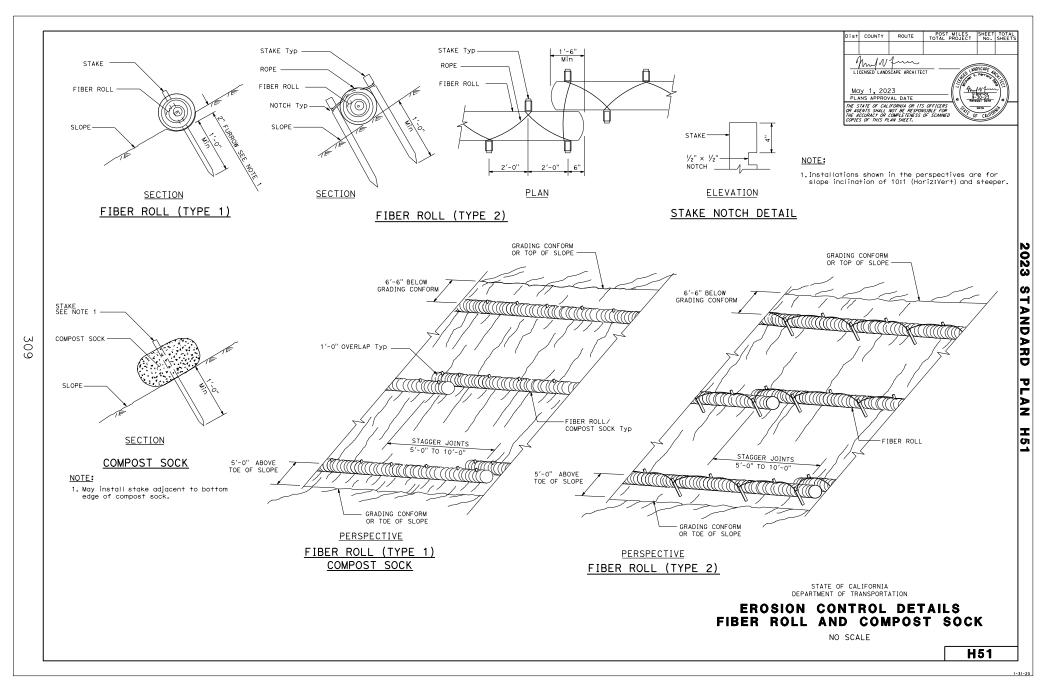


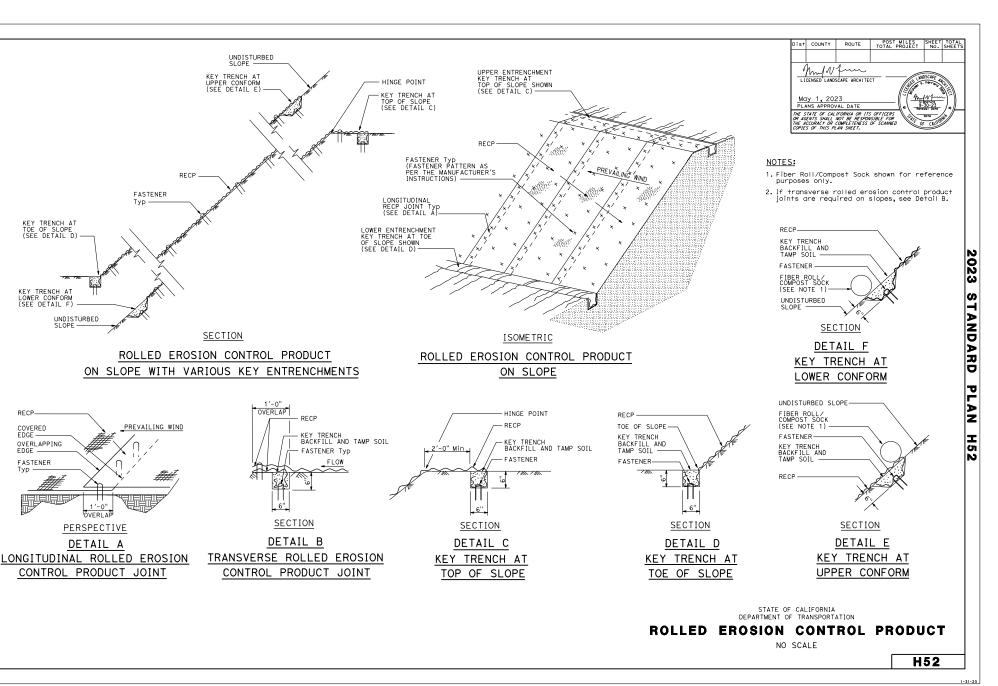
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

IRRIGATION CONTROLLER **ENCLOSURE CABINET**

NO SCALE

H10





KEY TRENCH AT TOE OF SLOPE (SEE DETAIL D)

KEY TRENCH AT LOWER CONFORM (SEE DETAIL F)

RECP-

EDGE

COVERED EDGE —

FASTENER

OVERLAPPING

0

UNDISTURBED SLOPE

OVERLAP

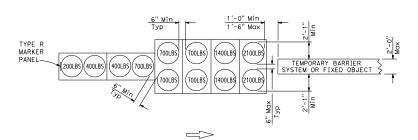


(XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.

2. All sand weights are nominal. Sand must contain no more than 7 percent water.

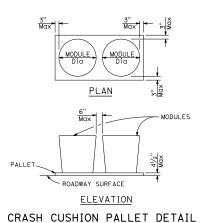
3. Refer to Standard Plan A73B for marker details.

4. Approach speeds indicated conform to MASH criteria.



ARRAY 'TU12M'

Approach speed 45 mph or more



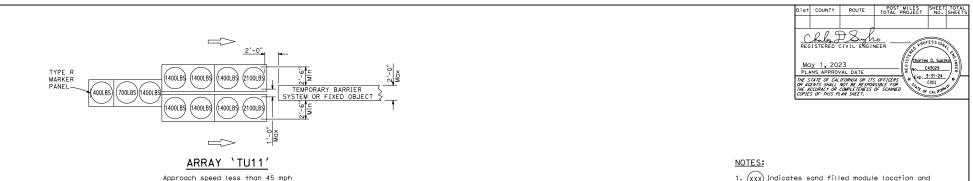
NOTES:

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION TEMPORARY CRASH CUSHION, SAND FILLED (UNIDIRECTIONAL)

NO SCALE

T1A

2-2-23

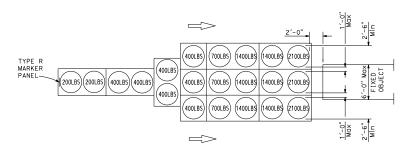


TEMPORARY BARRIER SYSTEM OR FIXED OBJECT 1400LBS 1400LB\$ (1400LBS) (2100LBS TYPE R MARKER PANEL-400LBS) (700LBS)(1400LBS) (1400LBS) (1400LBS) 1400LB\$ (2100LB

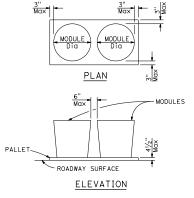
 \Rightarrow ARRAY 'TU17' Approach speed less than 45 mph

1400LB\$ (1400LBS) ((1400LBS) (2100LBS)

 \sim



ARRAY 'TU21' Approach speed 45 mph or more



CRASH CUSHION PALLET DETAIL

- Indicates sand filled module location and weight of sand in pounds for each module.

 Module spacing is based on the greater

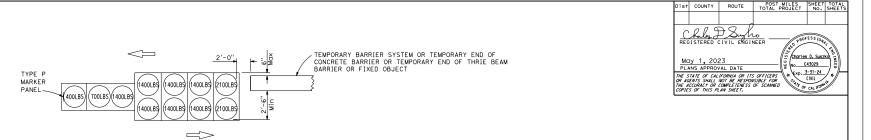
 Module spacing is based on the greater. diameter of the module.
- 2. All sand weights are nominal. Sand must contain no more than 7 percent water.
- 3. Refer to Standard Plan A73B for marker details.
- 4. Approach speeds indicated conform to NCHRP Report 350 criteria.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY CRASH CUSHION, SAND FILLED (UNIDIRECTIONAL)

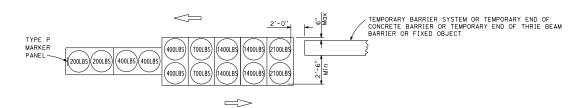
NO SCALE

T1A1



ARRAY 'TB11'

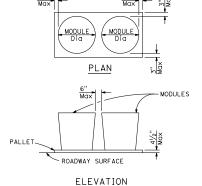
Approach speed less than 45 mph



ARRAY 'TB14'

W

Approach speed 45 mph or more



CRASH CUSHION PALLET DETAIL

NOTES:

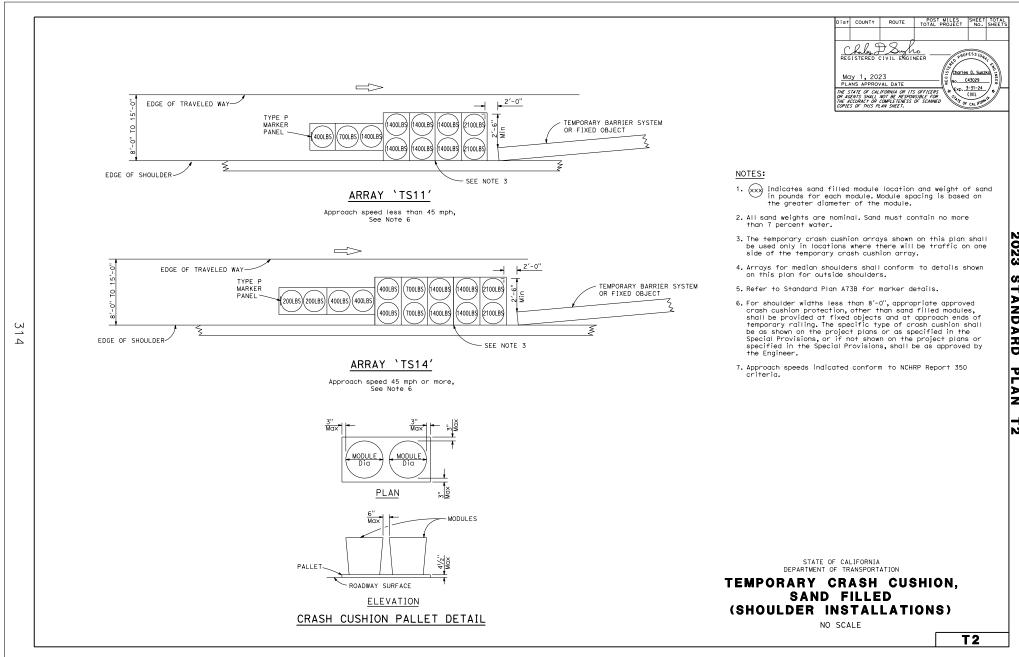
- 1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the modules.
- 2. All sand weights are nominal. Sand must contain no more than 7 percent water.
- 3. Refer to Standard Plan A73B for marker details.
- 4. Approach speeds indicated conform to NCHRP Report 350 criteria.

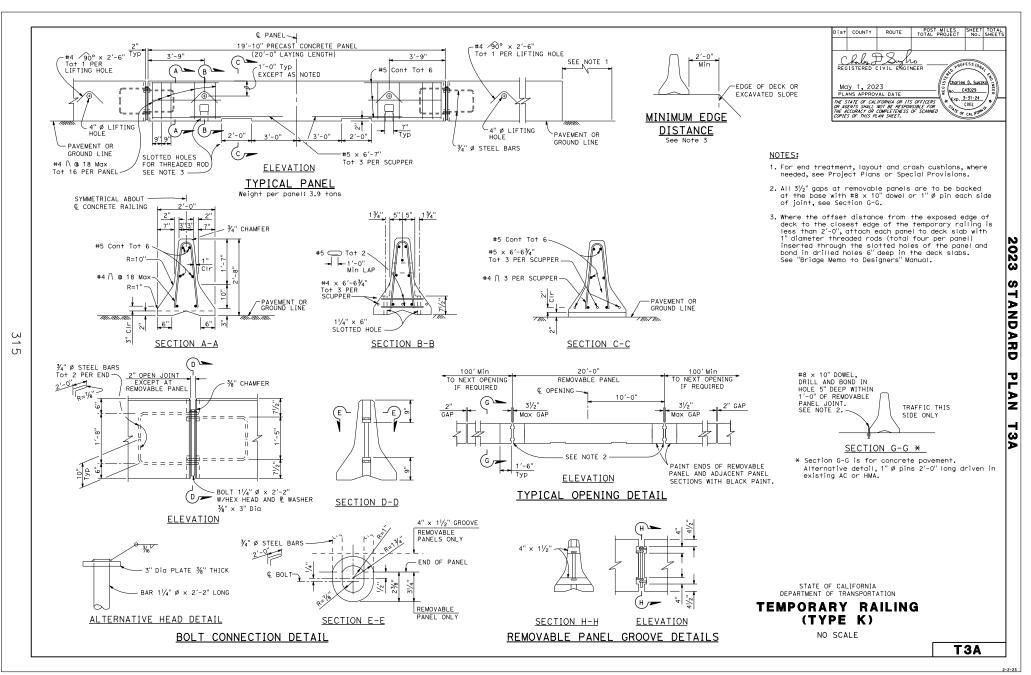
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

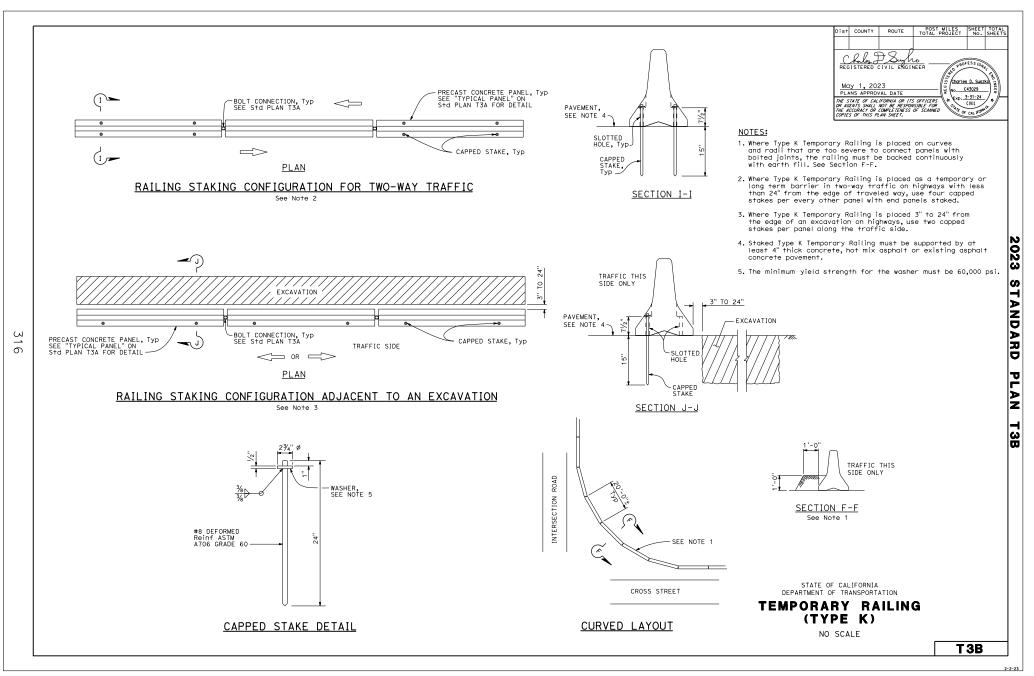
TEMPORARY CRASH CUSHION, SAND FILLED (BIDIRECTIONAL)

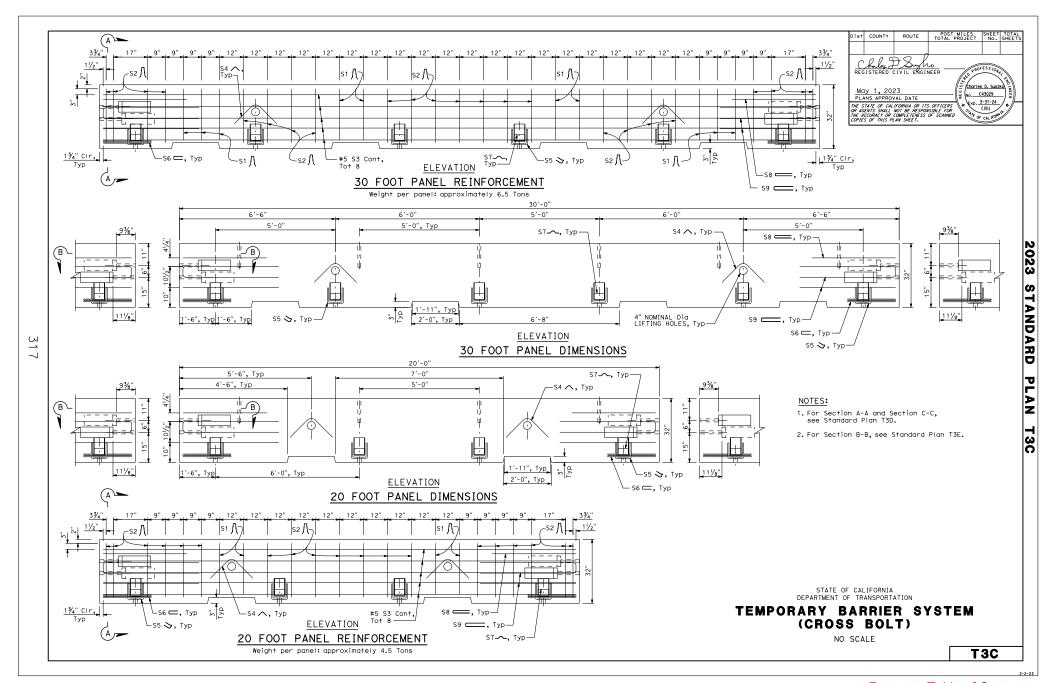
NO SCALE

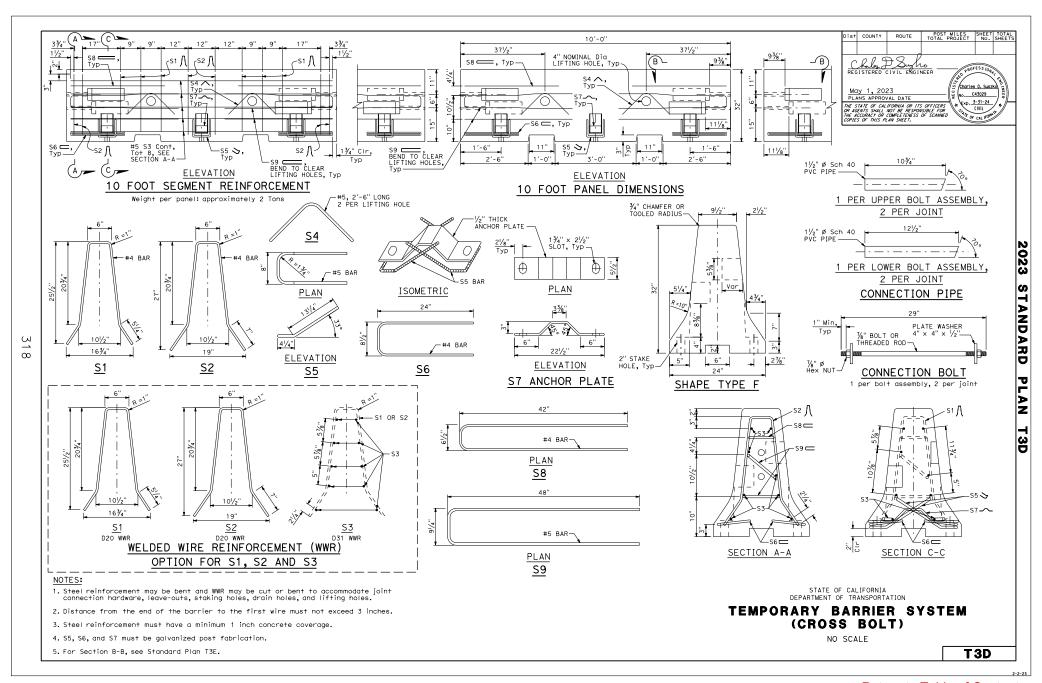
T1B

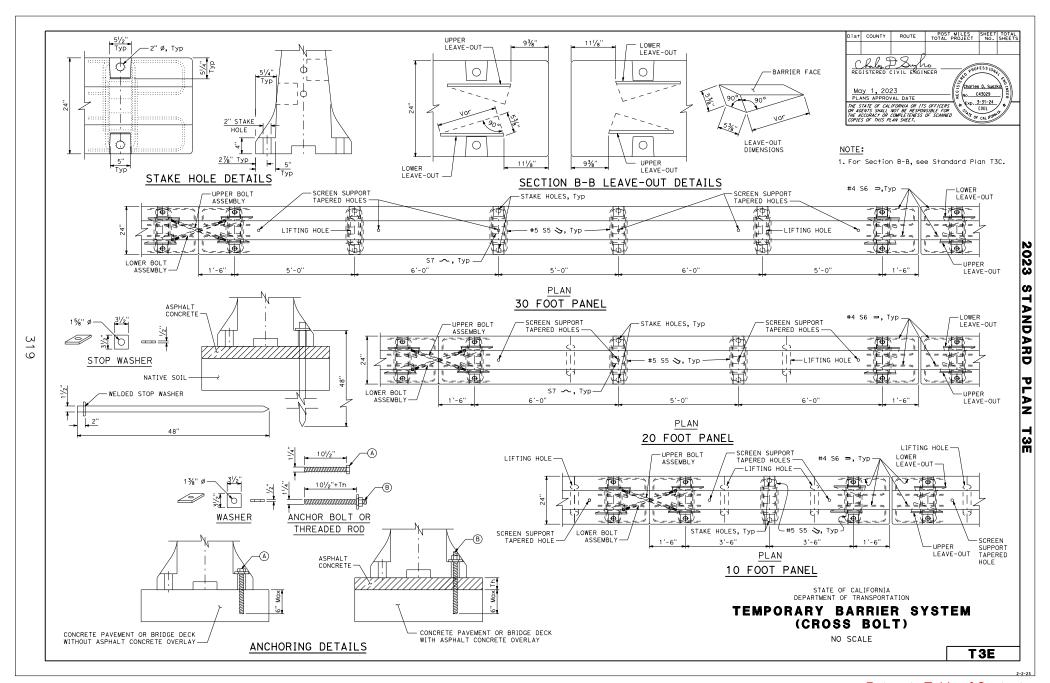


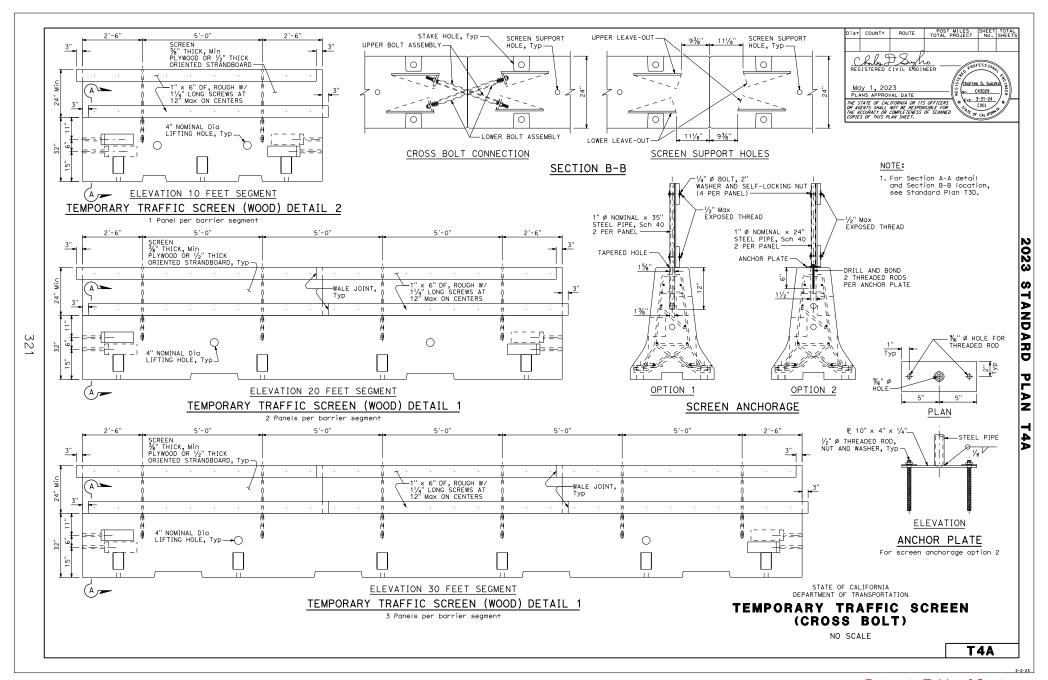


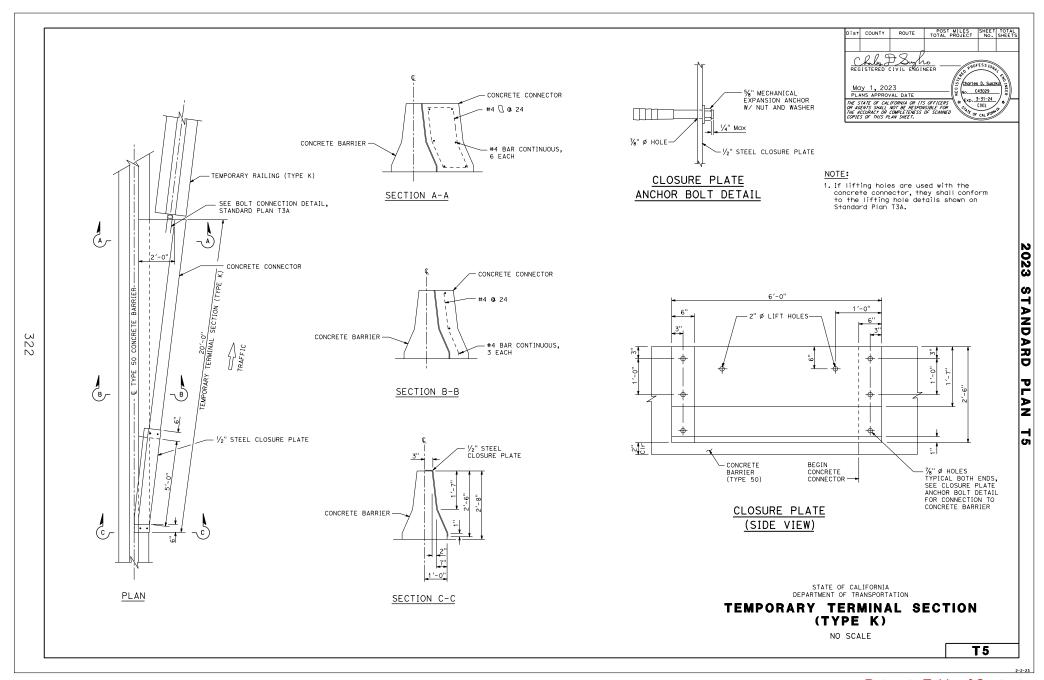












Dis+	COUNTY	ROUTE	POST TOTAL P	MILES ROJECT	SHEET No.	TOTAL
REGISTERED CIVIL ENGINEER POFESSIONS						
	y 1, 20			S Charles	0. Suszi	WEE A

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Exp. 3-31-24 CIVIL

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING							
	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)			MAXIMUM CHANNELIZING DEVICE SPACING			
SPEED	TOK WIDTH OF OFFSET 12 FEET (W)				Х	Y	z **
(S)	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	TAPER	TANGENT	CONFLICT
mph	ft	ft	f†	f†	f†	f†	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	50	100	25
60	1440	720	360	240	50	100	25
65	1560	780	390	260	50	100	25
70	1680	840	420	280	50	100	25
75	1800	900	450	300	50	100	25

* - For other offsets, use the following merging taper length formula for L: For speed of 40 mph or less, L = WS^2/60 For speed of 45 mph or more, L = WS

Where: L = Taper length in feet

323

W = Width of offset in feet

S = Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Use for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers (CA).

TABLE 2

	LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING					
ſ			DOWNGRADE Min D ***			
	SPEED *	Min D**	-3%	-6%	-9%	
	mph	ft	f†	ft	ft	
	20	115	116	120	126	
	25	155	158	165	173	
F	30	200	205	215	227	
	35	250	257	271	287	
F	40	305	315	333	354	
	45	360	378	400	427	
	50	425	446	474	507	
	55	495	520	553	593	
	60	570	598	638	686	
	65	645	682	728	785	
	70	730	771	825	891	
	75	820	866	927	1003	

- * Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph
- ** Longitudinal buffer space or flagger station spacing
- *** Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

TABLE 3

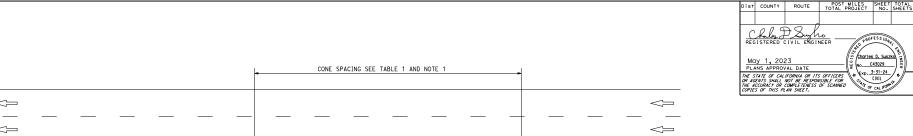
ADVANCE WARNING SIGN SPACING						
	DISTANCE BETWEEN SIGNS*					
ROAD TYPE	Α	В	С			
	ft	ft	ft			
URBAN - 25 mph OR LESS	100	100	100			
URBAN - MORE THAN 25 mph TO 40 mph	250	250	250			
URBAN - MORE THAN 40 mph	350	350	350			
RURAL	500	500	500			
EXPRESSWAY / FREEWAY	1000	1500	2640			

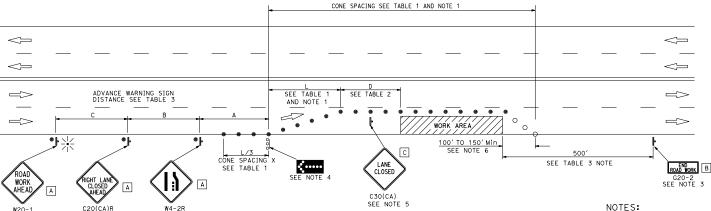
 \star - The distances are approximate, are intended for guidance purposes only, and should be applied with engineering judgment. These distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommmended distances.

> STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM TABLES FOR LANE AND RAMP CLOSURES

T9





TYPICAL LANE CLOSURE

NOTES:

See Standard Plan T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone

Provide at least one person to continuously maintain traffic control devices for lane closures.

LEGEND

SIGN PANEL SIZE (Min) A 48" × 48"

B 36" x 18"

C 30" x 30"

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- ç..... FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER 000
- 6. Length may be reduced by the Engineer to address site conditions. 7. Median lane closures shall conform to the details shown
- 8. For approach speeds over 50 MPH, use the "Traffic Control System" for Lane Closure on Freeways and Expressways" plan for lane closure details and requirements.

5. Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals

except that C20(CA)L and W4-2L signs shall be used.

throughout extended work area.

PORTABLE FLASHING BEACON

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS

NO SCALE

T11

NOTES:

SEE NOTE 2

 Portable delineators placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.

SEE NOTES 2

SEE NOTES 2

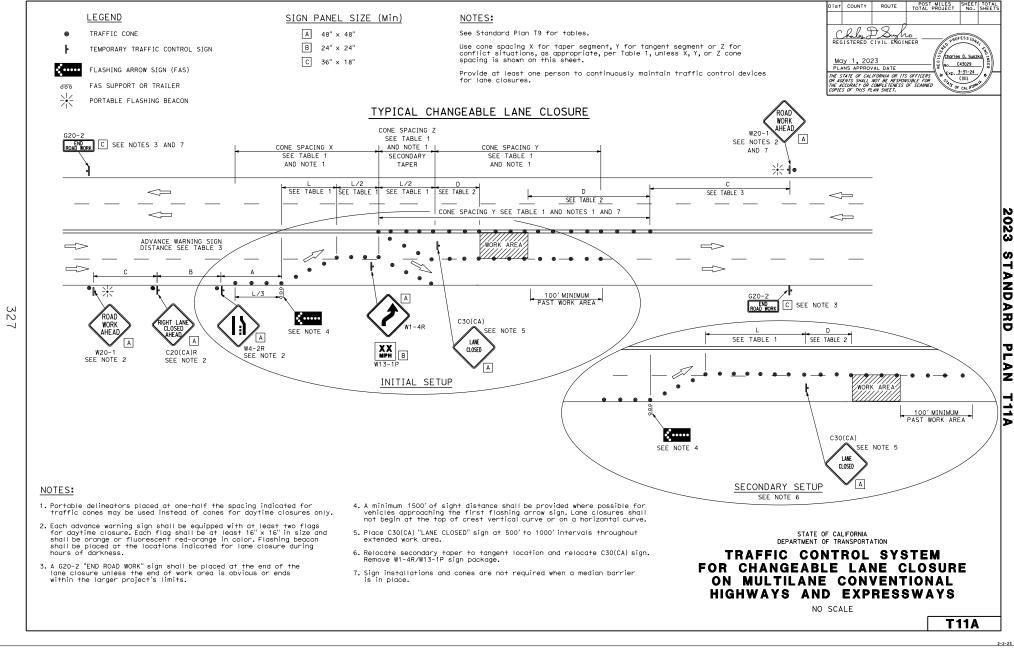
- 2. Each advance warning sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" X 16" in size and shall be orange or fluorescent red-orange in color. Flashing become shall be placed at the locations indicated for lane closure during hours of darkness.
- A G20-2 "END ROAD WORK" sign shall be placed at the end of the lane closure unless the end of work area is obvious or ends within the larger project's limits.
- 4. A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of creat vertical curve or on a horizontal curve.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

2023

STANDARD

PLAN



LEGEND TRAFFIC CONE TEMPORARY TRAFFIC CONTROL SIGN FLASHING ARROW SIGN (FAS) FAS SUPPORT OR TRAILER PORTABLE FLASHING BEACON

SIGN PANEL SIZE (Min)

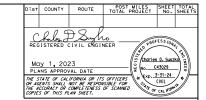
- A 48" × 48"
- B 24" × 24"
- C 36" x 18"

NOTES:

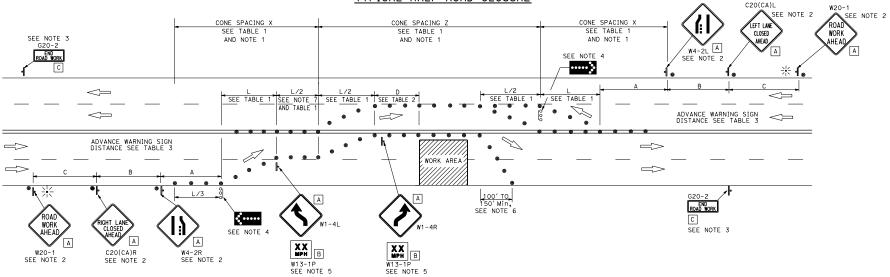
See Standard Plan T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Provide at least one person to continuously maintain traffic control devices for lane closures.



TYPICAL HALF ROAD CLOSURE



NOTES:

- Portable delineators placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
- 2. Each advance warning sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
- A G20-2 "END ROAD WORK" sign, shall be placed at the end of the lane closure unless the end of work area is obvious or ends within the larger project's limits.
- 4. A minimum 1500' sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of crest verticle curve or on a horizontal curve.
- Advisory speed will be determined by the Engineer. The W13-1P Plaque will not be required when advidory speed is more than the posted or maximum speed limit.
- 6. Length may be reduced by the Engineer to address site conditions.
- 7. The tangent (L/2) shall be used.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR HALF ROAD CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS AND EXPRESSWAYS

NO SCALE

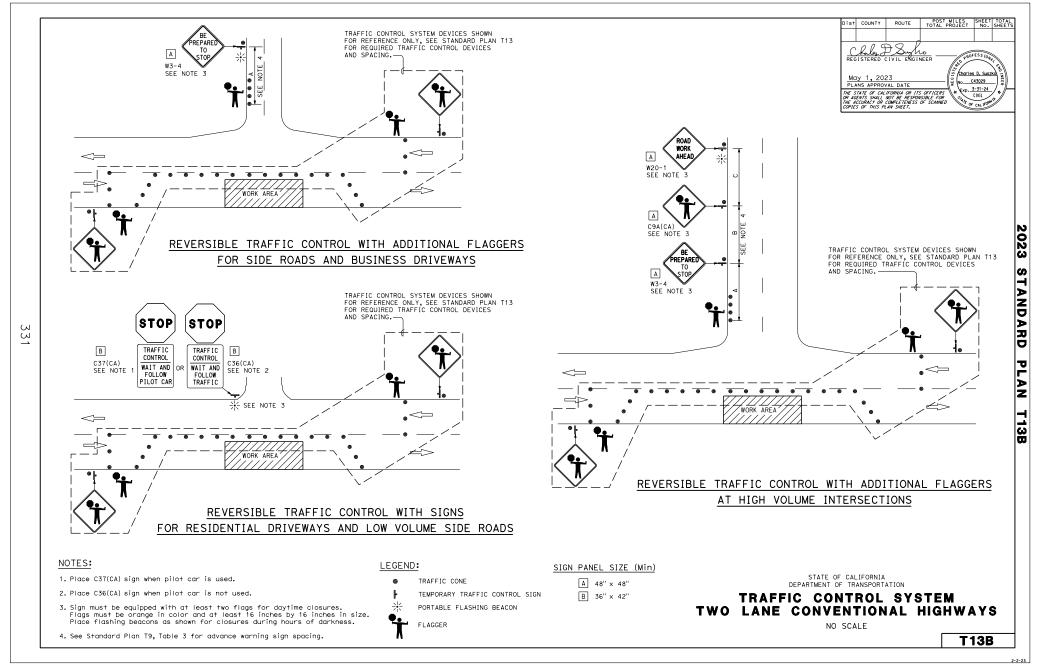
T12

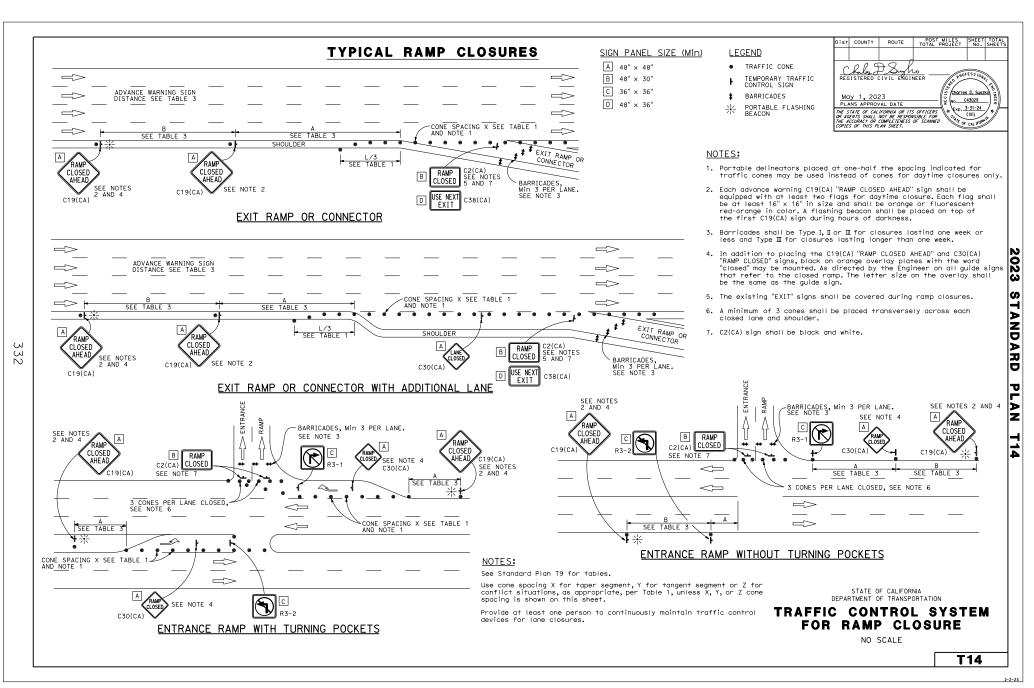
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2023 STANDARD

PLAN

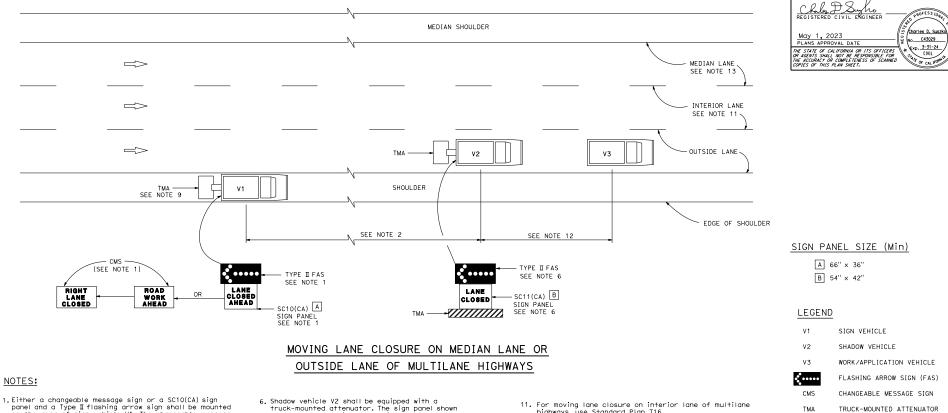
T12





T15

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS



NOTES:

- panel and a Type II flashing arrow sign shall be mounted on the rear of sign vehicle VI. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "RIGHT LANE CLOSED" message For median lane closure, the flashing arrow symbol shall be reversed with the arrowhead on the right and the changeable message sign shall show "LEFT LANE
- 2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders
- 3. A minimum sight distance of 1500' should be provided in advance of sign vehicle V1.
- 4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500'.
- 5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.

- and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2. For median lane closure the flashing arrow sign symbol shall be displayed with the arrowhead on the right.
- 7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application
- 8. All vehicles shall be equipped with flashing or rotating amber lights.
- 9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
- 10. Where workers would be on foot in the work area, stationary type lane closure (Standard Plan T10, T11, etc., as applicable) shall be used instead of this plan.

- highways, use Standard Plan T16.
- 12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
- 13. When the work/application vehicle V3 occupies the median lane, sign vehicle V1 should drive in the median shoulder and indicate left lane closed ahead.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

Dist COUNTY

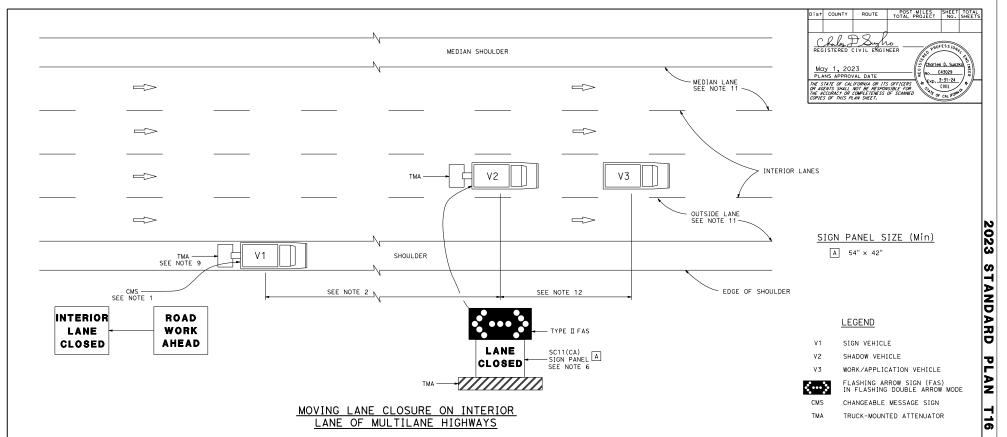
ROUTE

TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON MULTILANE HIGHWAYS

NO SCALE

T15

Return to Table of Contents



NOTES:

- 1. A changeable message sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "INTERIOR LANE CLOSED" message. The message "CENTER LANE CLOSED" may be used in place of the "INTERIOR LANE CLOSED" message.
- If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
- 3. A minimum sight distance of 1500' should be provided in advance of sign vehicle V1.
- 4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500'.
- 5. Vehicle-mounted sign panels shall have Type II or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.

- 6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2
- 7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
- 8. All vehicles shall be equipped with flashing or rotating amber lights.
- 9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
- 10. Where workers would be on foot in the work area, a stationary type lane closure (Standard Plan T10, T11 etc., as applicable) shall be used instead of this plan.
- 11. For moving lane closure on median lane or outside lane of multilane highways, use Standard Plan T15.
- 12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON MULTILANE HIGHWAYS

NO SCALE

T16

SHOULDER

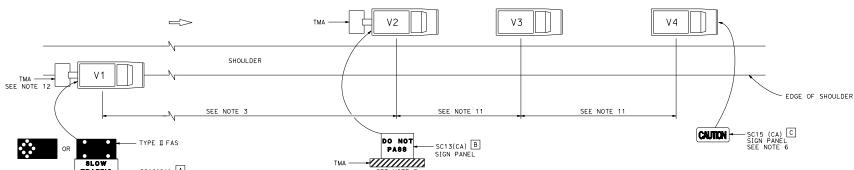
SIGN PANEL SIZE (Min)

A 72" x 42"

B 54" x 42"

54" × 24"

 \langle



NOTES:

- 1. Either a changeable message sign or a SC12(CA) "SLOW TRAFFIC AHEAD" sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "CAUTION" message first, follow by the "SLOW TRAFFIC AHEAD" message. A Type II flashing arrow sign may be used with the SC12(CA) sign panel.
- 2. Sign vehicle V1 should be positioned where highly visible when shoulders are not available.
- 3. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue.
- 4. Vehicle-mounted sign panels shall have Type II or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
- 5. Shadow vehicle shall be equipped with a truck-mounted attenuator. The sign panel shown shall be mounted on the rear of shadow vehicle V2. The message "LANE CLOSED" may be used in place of the "DO NOT PASS" message.
- 6. The sign panel shown shall be mounted on the front of sign vehicle V4, facing opposing traffic.

- 7. All vehicles shall be equipped with flashing or rotating amber lights.
- 8. Sign vehicle V4 will not be required when the work and vehicles V2 and V3 are 2' or more from the centerline of the highway during the work or application operations.
- 9. All vehicles used for lane closures shall be equipped with two-way radios and the vehicle operators shall maintain communication during the work or application
- 10. This plan shall not be used where workers would be on foot in the work area. Use a stationary type lane closure (Standard Plan T13) for this condition.
- 11. Minimize spacing between vehicles V2 and V3 and vehicles V3 and V4 to deter road users from driving in between them.
- 12. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.

LEGEND

SIGN VEHICLE V1

٧2 SHADOW VEHICLE

٧3 WORK/APPLICATION VEHICLE

٧4 SIGN VEHICLE

TRUCK-MOUNTED ATTENUATOR TMA

FLASHING ARROW SIGN (FAS) IN FLASHING CAUTION MODE

FLASHING ARROW SIGN (FAS) IN ALTERNATING DIAMOND CAUTION

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

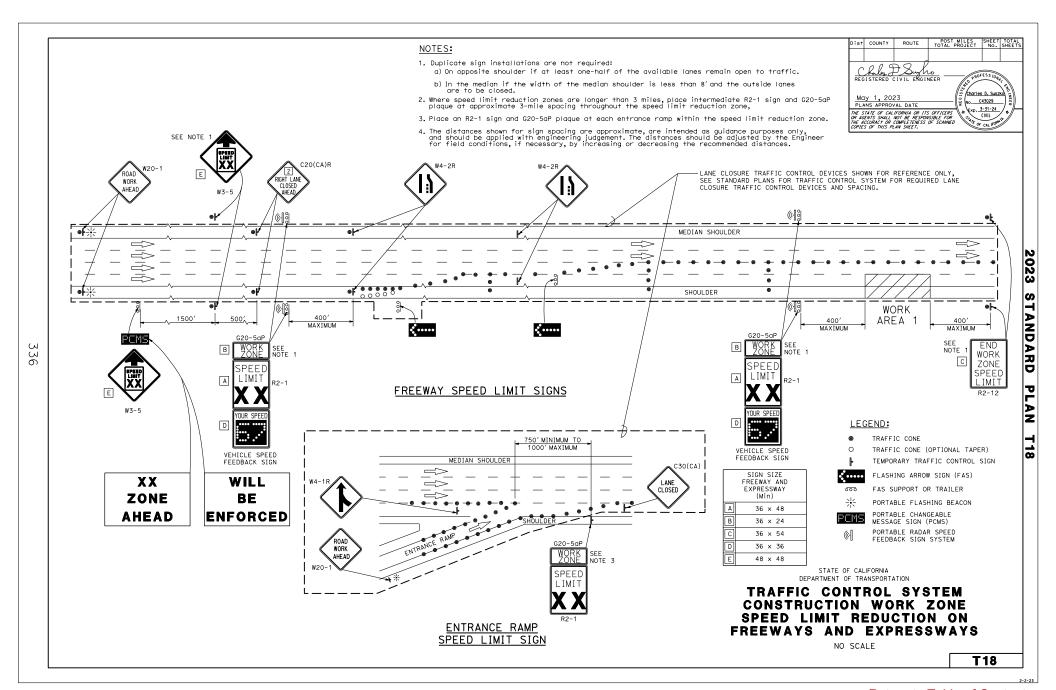
TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON TWO LANE HIGHWAYS

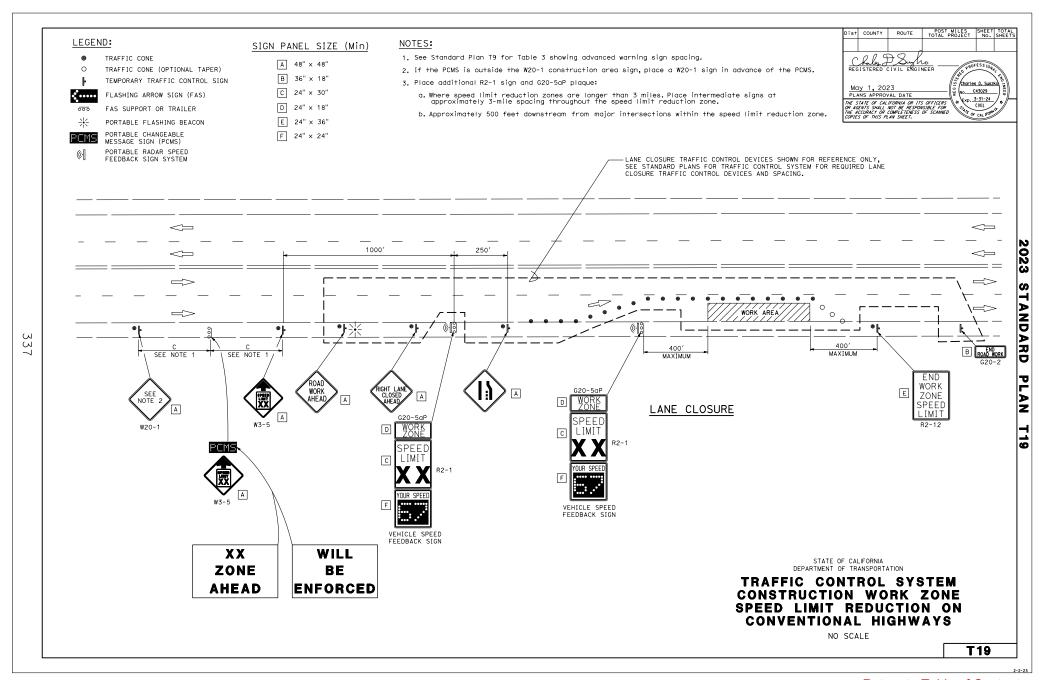
NO SCALE

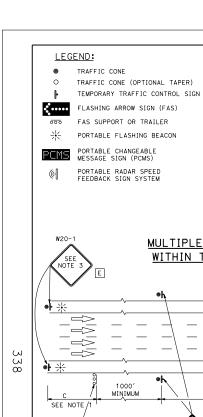
T17

2023 STANDARD

PLAN



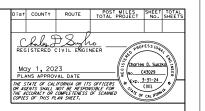


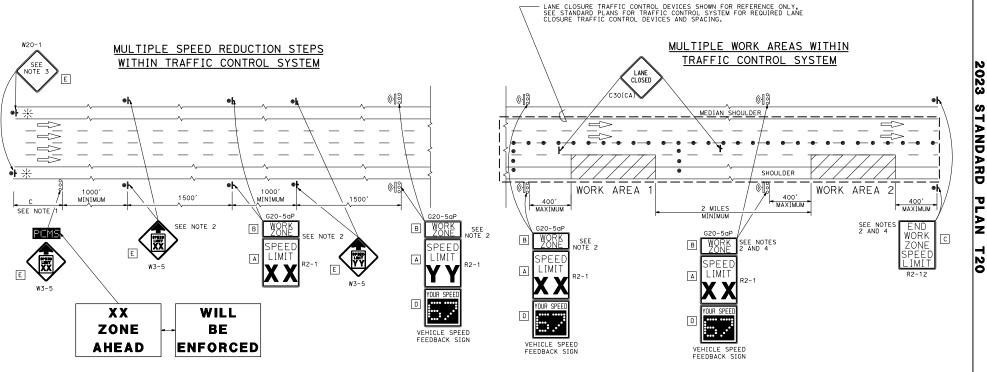


	SIGN SIZ	E (Min)
	FREEWAY AND EXPRESSWAY	CONVENTIONAL SINGLE LANE AND MULTILANE
Α	36 × 48	24 × 30
В	36 × 24	24 × 18
С	36 × 54	24 × 36
D	36 × 36	24 × 24
Ε	48 × 48	48 × 48

NOTES:

- 1. See Standard Plan T9 for Table 3 showing advanced warning sign spacing.
- 2. Duplicate sign installations are not required:
 - a) On opposite shoulder if at least one-half of the available lanes remain open to traffic.
 - b) In the median if the width of the median shoulder is less than 8' and the outside lanes are to be closed.
- 3. If the PCMS is outside the W20-1 construction area sign, place a W20-1 sign in advance of the PCMS.
- 4. Place the R3(CA) sign 400 feet downstream from the end of the last work area and place an additional vehicle speed feedback sign system 400 feet upstream from the beginning of each work area with a separation of more than 2 miles.
- 5. The distances shown for sign spacing are approximate, are intended as guidance purposes only, and should be applied with engineering judgement. The distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommended distances.

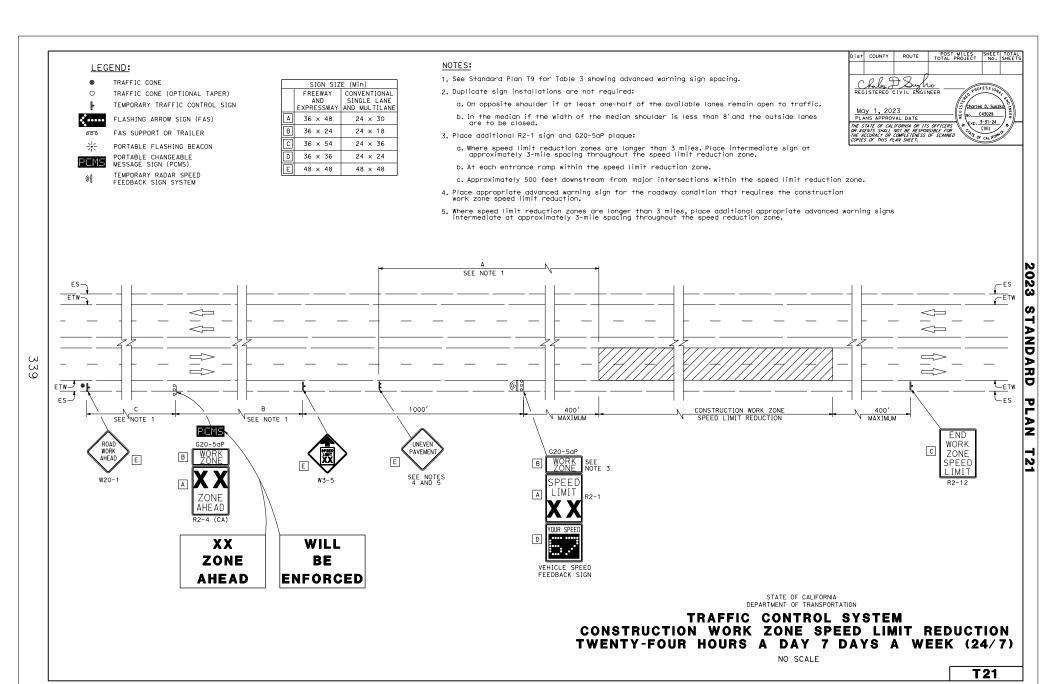


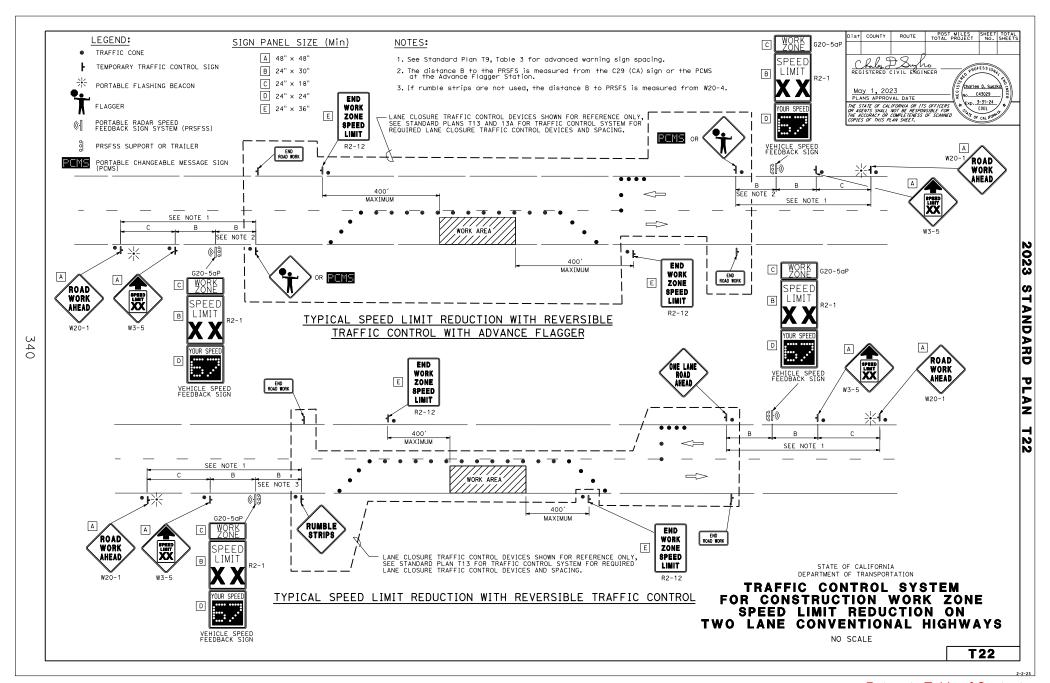


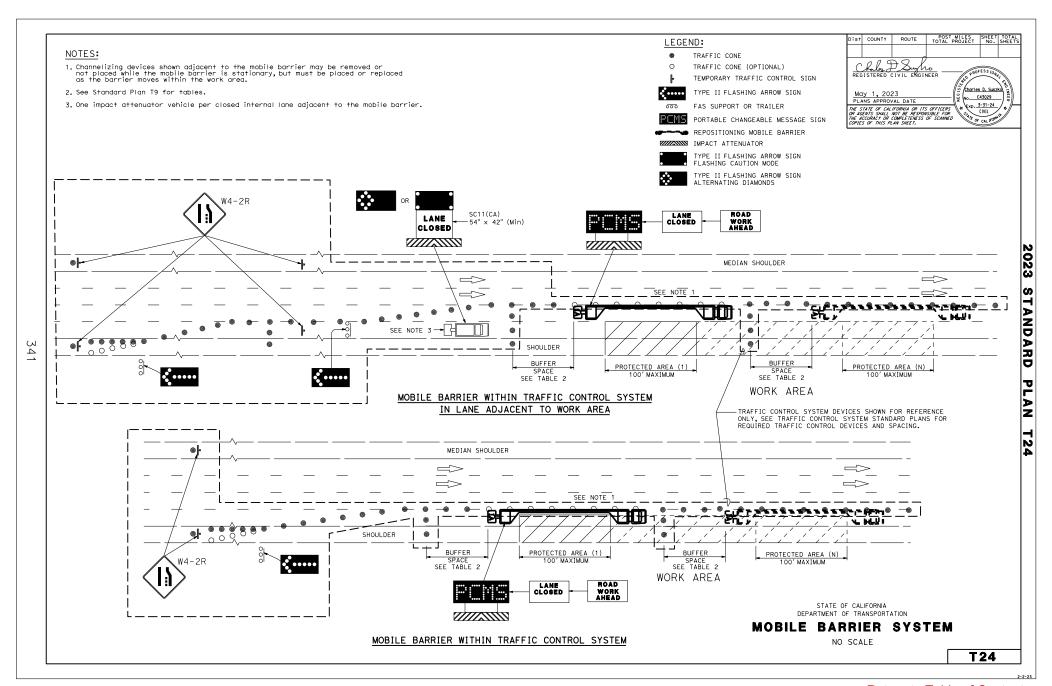
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

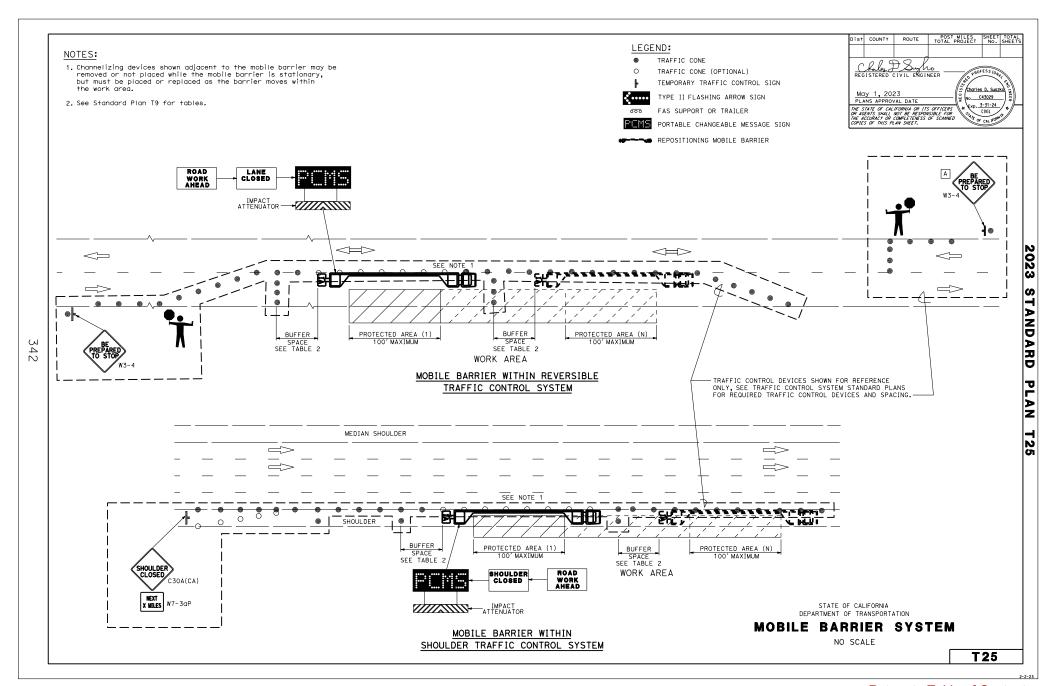
TRAFFIC CONTROL SYSTEM CONSTRUCTION WORK ZONE SPEED LIMIT REDUCTION DETAILS

NO SCALE







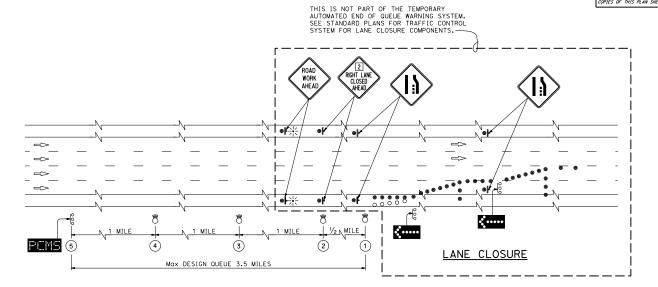


LEGEND:

- PORTABLE VEHICLE SPEED SENSOR
- TRAFFIC CONF
- O TRAFFIC CONE (OPTIONAL TAPER)
- PORTABLE FLASHING BEACON
- L SIGN
- SUPPORT OR TRAILER
- (1) LOCATION

FLASHING ARROW SIGN

PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



OPERATIONAL GUIDELINE FOR PCMS MESSAGES FOR POSTED SPEED LIMIT 55 MPH						
	LA:	LAST 5 Min SPEED AVERAGES, V(MPH)				
MESSAGE AT	SENSOR AT	SENSOR AT	SENSOR AT	SENSOR AT		
ROAD WORK AHEAD	> 45	> 45	> 45	=> 45		
SLOW TRAFFIC 3 MILES	> 45	> 45	=> 45	25 < V < 45		
SLOW TRAFFIC 2 MILES	> 45	=> 45	25 < V < 45			
SLOW TRAFFIC 1 MILE	=> 45	25 < V < 45				
SLOW TRAFFIC AHEAD	25 < V < 45					
STOPPED TRAFFIC 3 MILES	> 25	> 25	> 25	<= 25		
STOPPED TRAFFIC 2 MILES	> 25	> 25	<= 25			
STOPPED TRAFFIC 1 MILE	> 25	<= 25				
STOPPED TRAFFIC AHEAD	<= 25					

For other posted speed limits adjust speeds shown on the table by adding or subtracting the calculated speed adjustment using the following formula:

Speed Adjustment = X posted speed limit - 55 mph Add speed adjustments to speed averages.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

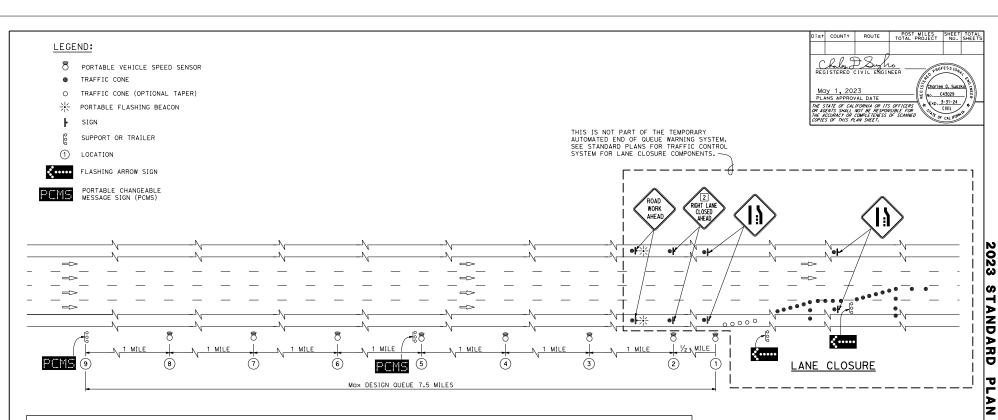
TEMPORARY AUTOMATED END OF QUEUE WARNING SYSTEM TYPE 1 (QUEUE <= 3.5 MILES)

NO SCALE

T26

2023 STANDARD PLAN





OPERATIONAL GUIDELINE FOR PCMS MESSAGES FOR POSTED SPEED LIMIT 55 MPH									
	LAS	ST 5 Min SPEED	AVERAGES, V(MP	H)		LAS	ST 5 Min SPEED	AVERAGES, V(MF	rH)
MESSAGE AT	SENSOR AT	SENSOR AT	SENSOR AT	SENSOR AT	MESSAGE AT (5)	SENSOR AT	SENSOR AT	SENSOR AT	SENSOR AT
ROAD WORK AHEAD	> 45	> 45	> 45	=> 45	ROAD WORK AHEAD	> 45	> 45	> 45	=> 45
SLOW TRAFFIC 3 MILES	> 45	> 45	=> 45	25 < V < 45	SLOW TRAFFIC 3 MILES	> 45	> 45	=> 45	25 < V < 45
SLOW TRAFFIC 2 MILES	> 45	=> 45	25 < V < 45		SLOW TRAFFIC 2 MILES	> 45	=> 45	25 < V < 45	
SLOW TRAFFIC 1 MILE	=> 45	25 < V < 45			SLOW TRAFFIC 1 MILE	=> 45	25 < V < 45		
SLOW TRAFFIC AHEAD	25 < V < 45				SLOW TRAFFIC AHEAD	25 < V < 45			
STOPPED TRAFFIC 3 MILES	> 25	> 25	> 25	<= 25	STOPPED TRAFFIC 3 MILES	> 25	> 25	> 25	<= 25
STOPPED TRAFFIC 2 MILES	> 25	> 25	<= 25		STOPPED TRAFFIC 2 MILES	> 25	> 25	<= 25	
STOPPED TRAFFIC 1 MILE	> 25	<= 25			STOPPED TRAFFIC 1 MILE	> 25	<= 25		
STOPPED TRAFFIC AHEAD	<= 25				STOPPED TRAFFIC AHEAD	<= 25			

For other posted speed limits adjust speeds shown on the table by adding or subtracting the calculated speed adjustment using the following formula:

Speed Adjustment = X posted speed limit - 55 mph

Add speed adjustments to speed averages.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

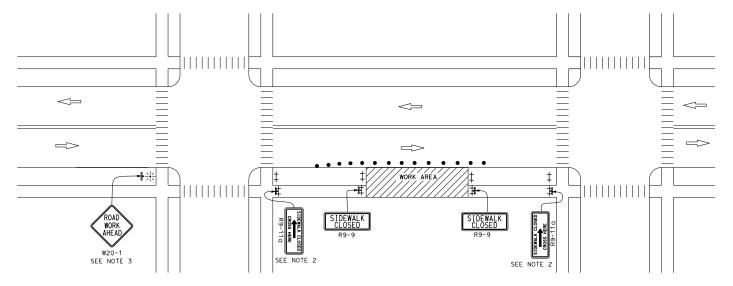
TEMPORARY AUTOMATED END OF QUEUE WARNING SYSTEM TYPE 2 (QUEUE <= 7.5 MILES)

NO SCALE

See Standard Plan T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1 unless X,Y, or Z cone spacing is shown

Dis+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL	
2	hales J	∋ Suzh	0	ESS/ON		
REGISTERED CIVIL ENGINEER ROFESS JONA CONTROL OF THE PROPERTY						
	y 1, 20		No4		ko) (2)	
	NS APPROV		——————————————————————————————————————	3-31-24	/ <u>.</u> */	
OR AG	ENTS SHALL	IFORNIA OR ITS NOT BE RESPON COMPLETENESS AN SHEET.		CIVIL CAL IFORM		



NOTES:

345

fluorescent red-orange in color.

1. Only signs related to pedestrians are shown. For all other signs see appropriate T-sheets.

Barricades closing sidewalk shall cover the full width of the sidewalk. Use R9-11 sign when there are destination points between the detour and the work area. Locate the R9-11 sign to allow pedestrian access.

Advance warning sign is not required if the work area is within the limits of a larger work zone.Sign shall be equipped with at least two flags for daytime closure. Each flag shall be orange or

LEGEND:

- BARRICADE
- TRAFFIC CONE
- PORTABLE FLASHING BEACON
- TEMPORARY TRAFFIC CONTROL SIGN ON BARRICADE

SIGN PANEL SIZE (Min)

SIGN DESIGNATION	SIGN OR PLAQUE	SIGN SIZE
R9-9	SIDEWALK CLOSED	24" x 12"
R9-11	SIDEWALK CLOSED AHEAD CROSS HERE	24" × 18"
R9-11a	SIDEWALK CLOSED CROSS HERE	24" x 12"
W20-1	ROAD WORK AHEAD	36" × 36"

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY PEDESTRIAN ACCESS ROUTES TYPICAL SIDEWALK CLOSURE AND PEDESTRIAN DETOUR

NO SCALE

- 1. Only signs related to pedestrians are shown. For all other signs see appropriate T-sheets.
- 2. Separate pedestrian walkway from traffic and work zone activities, when temporary walkway is adjacent to traffic.
- 3. The temporary pedestrian access route must not lead into conflict with vehicles or work.
- 4. Advance warning sign is not required if the work area is within the limits of a larger work zone. Sign shall be equipped with at least two flags for daytime closure. Each flag shall be orange or fluorescent red-orange in color.
- All devices used to channelize pedestrian flow must connect such that gaps do not allow pedestrians to stray from the channelized path.
- 6. Barricades closing sidewalk shall cover the full width of the sidewalk.
- 7. Separate the temporary pedestrian access route from traffic using a temporary barrier and a crash cushion if necessary.

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SIDEWALK CLOSED

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DETOUR

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- 8. When it is not possible to maintain a minumum of 60 inches throughout the length of the pedestrian route, maintain a minimum width of 48 inches and provide a 60 X 60-inch passing space at least every 200 feet.
- 9. See Standard Plan A88A for detectable warning surface for curb ramps to apply to temporary curb ramps.
- 10. See Standard Plan T34 for temporary curb ramp options.

ROAD

WORK

W20-1 SEE NOTE 4

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6

NOTES:

TEMPORARY BARRIER IE NEXT TO TRAFFIC

WORK AREA

-48" Min TO 60" Max (SEE NOTE 8)

/ **∄-**-

DETOUR

See Standard Plan T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1 unless X,Y, or Z cone spacing is shown on this sheet.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL
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	y 1, 202		We No.	s D. Susz 243029 3-31-24	FEE NEES
OR AG	ENTS SHALL	IFORNIA OR ITS NOT BE RESPON COMPLETENESS AN SHEET.	OFFICERS NA CT	CIVIL CAL IFORM	\ \\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

LEGEND:

BARRICADE

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- TEMPORARY CURB RAMP
- CHANNELIZING DEVICE
- TRAFFIC CONE
- PORTABLE FLASHING BEACON
- TEMPORARY TRAFFIC CONTROL SIGN
- TEMPORARY TRAFFIC CONTROL SIGN ON BARRICADE

SIGN PANEL SIZE (Min)

SIGN DESIGNATION	SIGN OR PLAQUE	SIGN SIZE
M4-9b	PEDESTRIAN DETOUR	30" × 24"
R9-9	SIDEWALK CLOSED	24" × 12"
W20-1	ROAD WORK AHEAD	36" × 36"

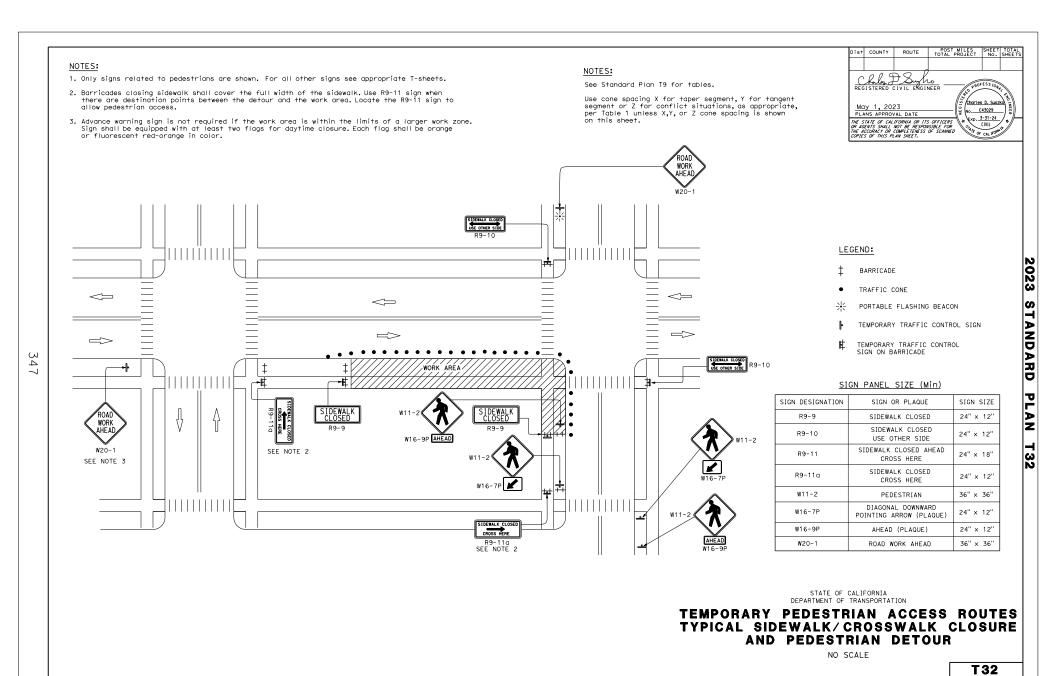
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

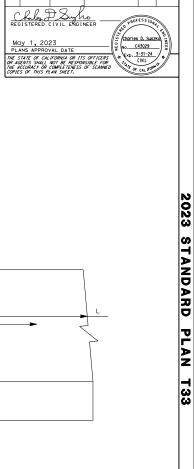
TEMPORARY PEDESTRIAN ACCESS ROUTES TYPICAL SIDEWALK DIVERSION WITHIN ROADBED

NO SCALE

T31

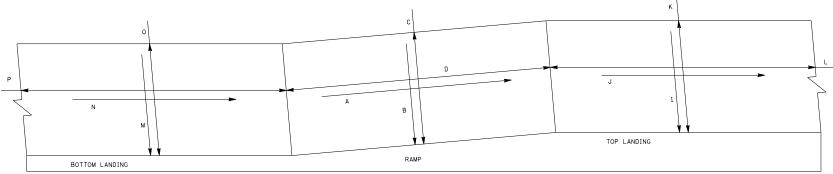
Return to Table of Contents





ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

	RA	MP		HAND	RAIL	EDGE PF	OTECTION
SLOPE	CROSS SLOPE	WIDTH	LENGTH	HEIGHT RIGHT SIDE	HEIGHT LEFT SIDE	RAIL RIGHT SIDE	RAIL LEFT SIDE
Α	В	С	D	E	F	G	Н
8.3% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	30 FEET OR LESS	34 TO 38 INCHES	34 TO 38 INCHES	WITHIN 2 INCHES FROM GROUND	WITHIN 2 INCHES FROM GROUND
	TOP L	ANDING			воттом	LANDING	
CROSS SLOPE	SLOPE	WIDTH	DEPTH	CROSS SLOPE	SLOPE	WIDTH	DEPTH
I	J	К	L	М	N	0	Р
2.0% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	60 INCHES OR GREATER	2.0% OR LESS	2.0% OR LESS	48 INCHES OR GREATER	60 INCHES OR GREATER

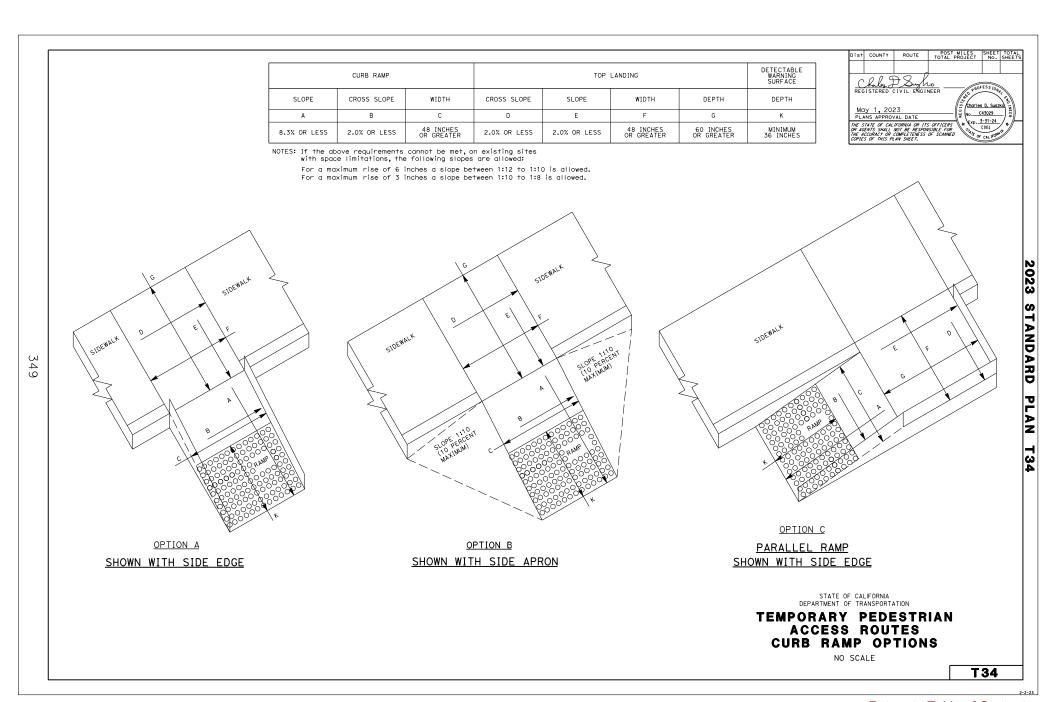


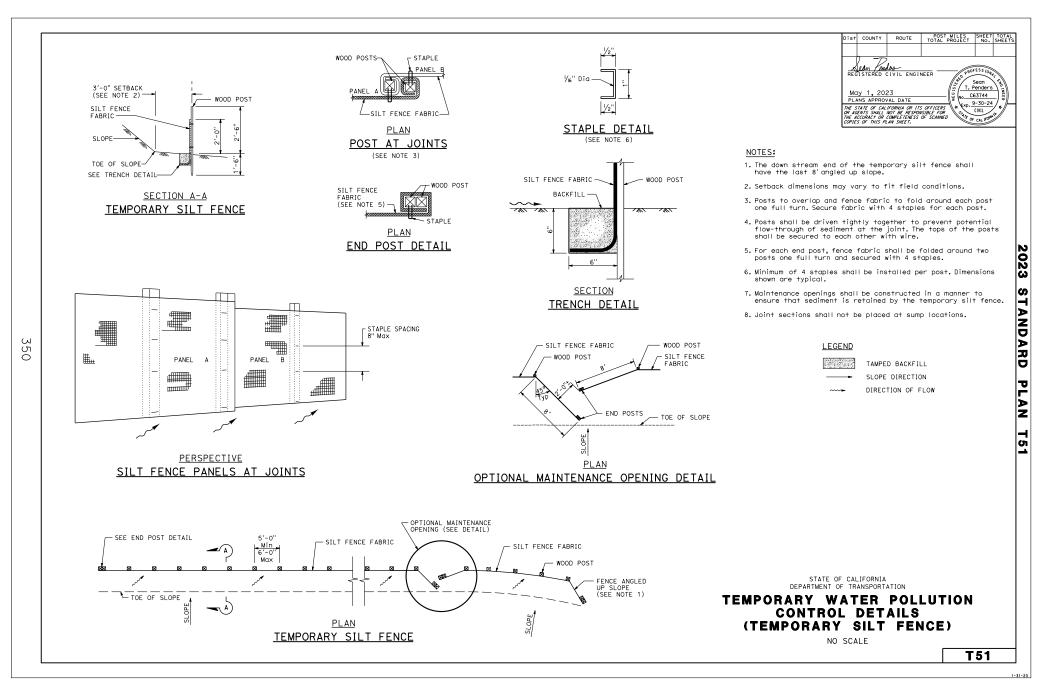
348

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY PEDESTRIAN ACCESS ROUTES RAMP

NO SCALE





Temporary silt fence and temporary high-visibility fence shown for reference purposes only.

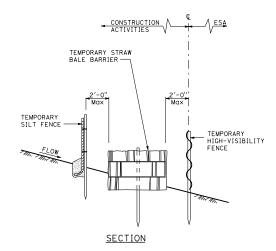
ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Sean T. Penders

C63744

хр. 9-30-24

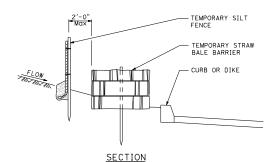
TEMPORARY STRAW BALE BARRIER



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PLACEMENT DETAIL FOR TEMPORARY SILT FENCE AND TEMPORARY HIGH-VISIBILITY FENCE USED WITH TEMPORARY STRAW BALE BARRIER

(See Note 1)



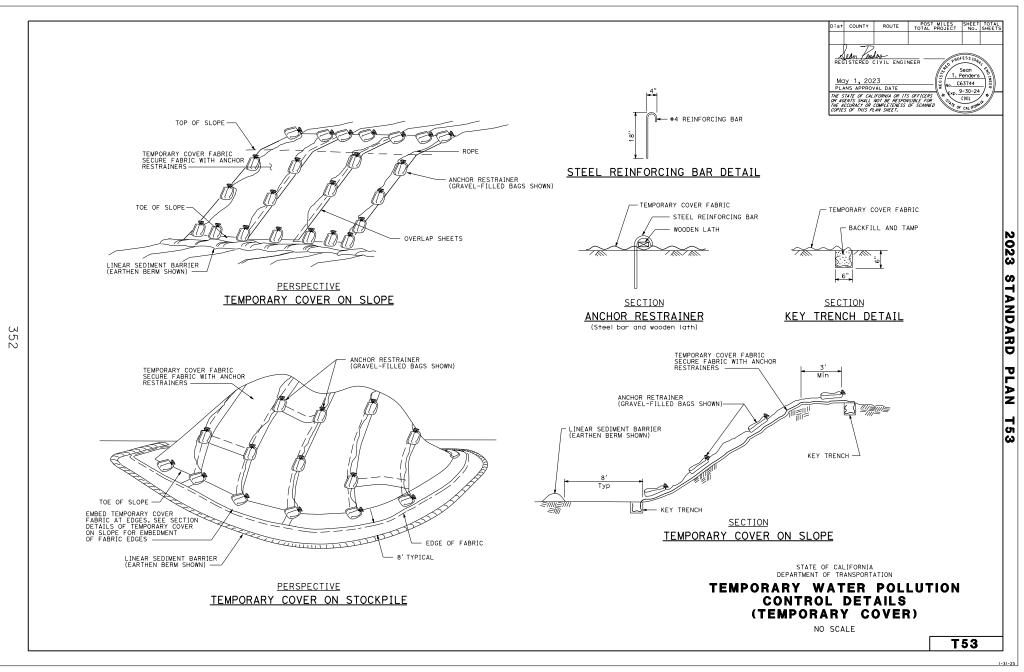
PLACEMENT DETAIL FOR TEMPORARY SILT FENCE USED WITH TEMPORARY STRAW BALE BARRIER

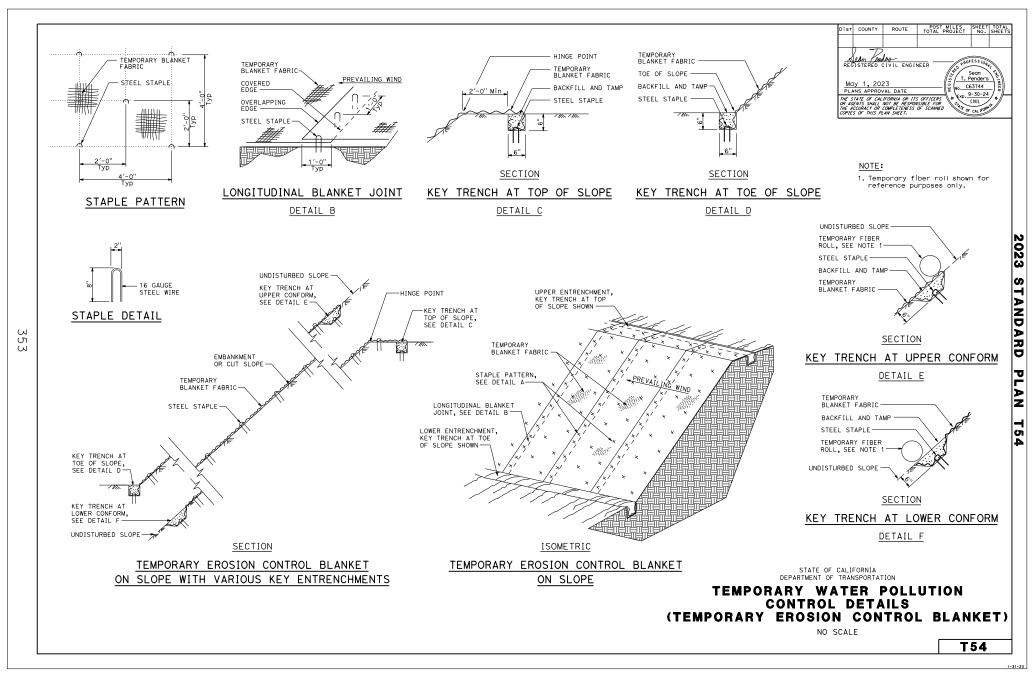
(See Note 1)

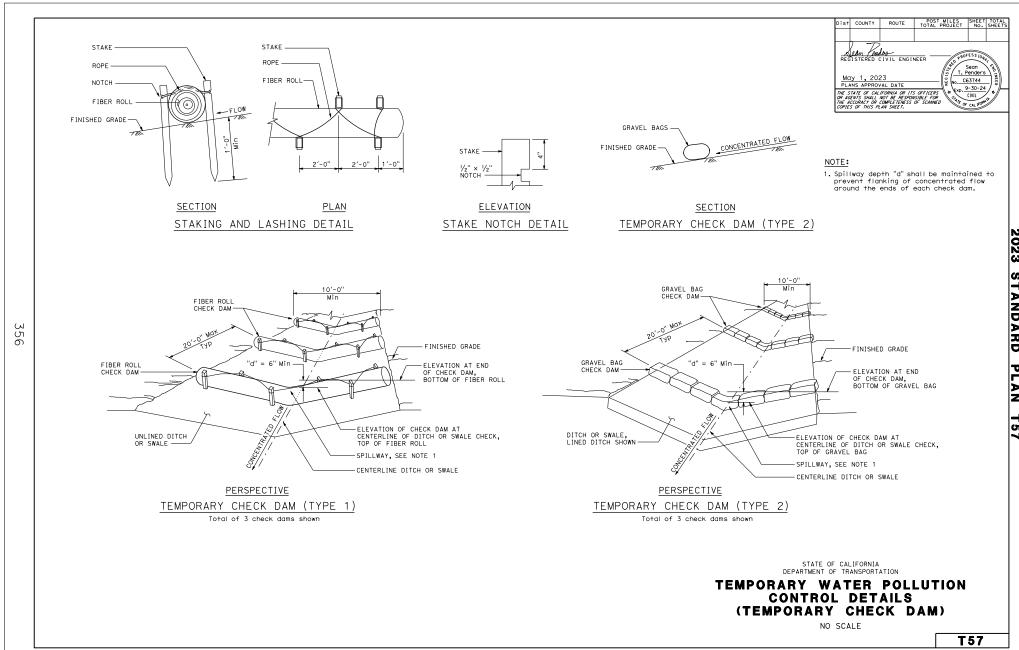
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

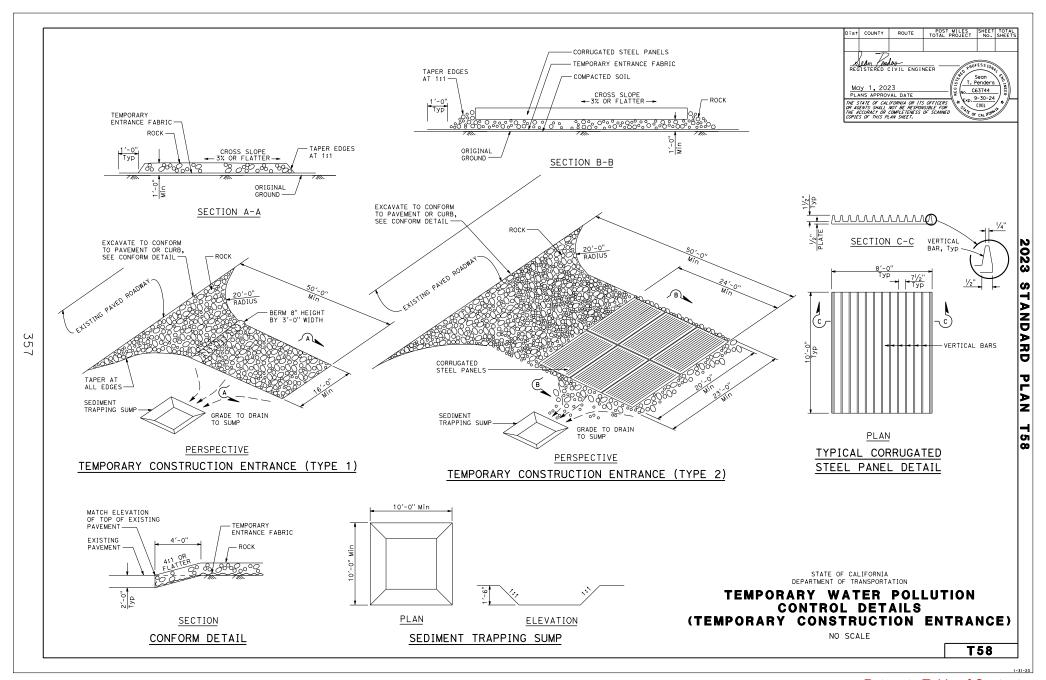
TEMPORARY WATER POLLUTION **CONTROL DETAILS** (TEMPORARY STRAW BALE BARRIER)

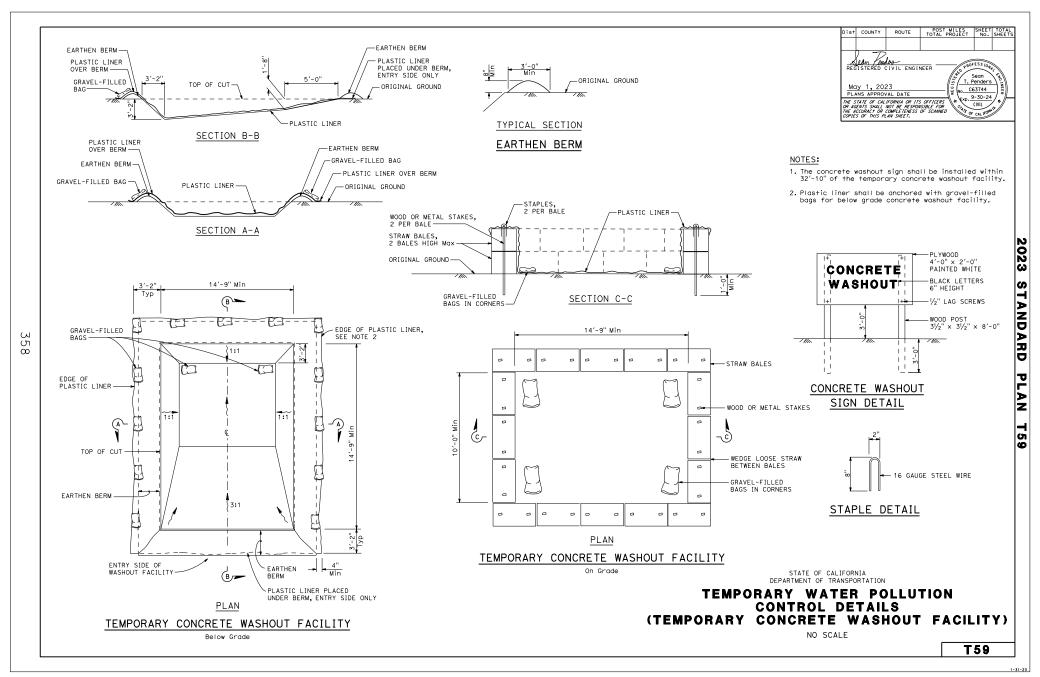
NO SCALE

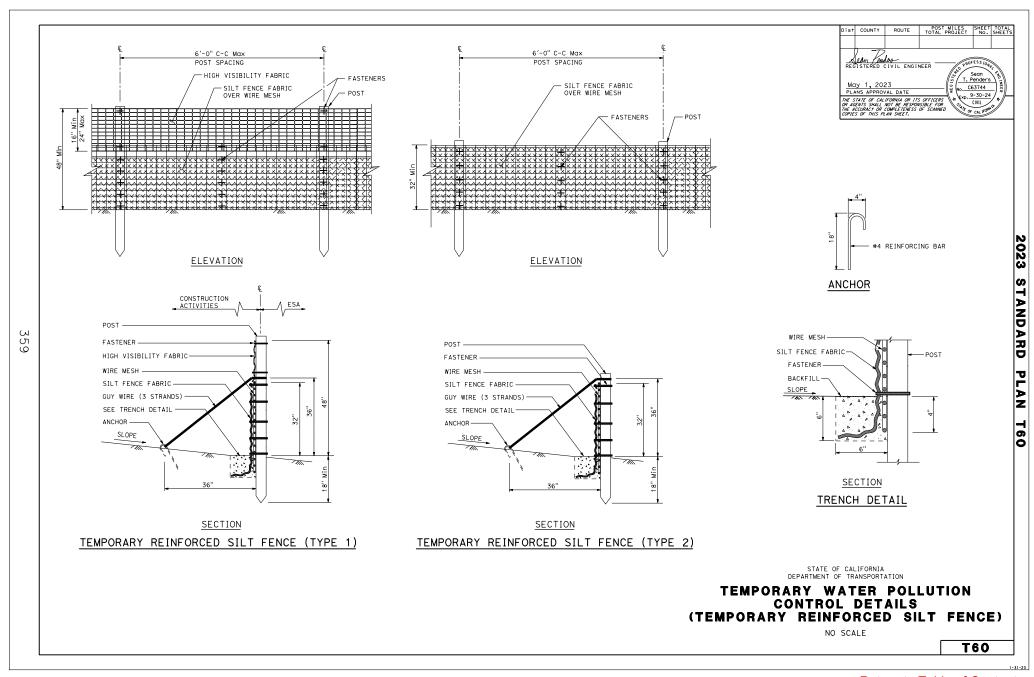


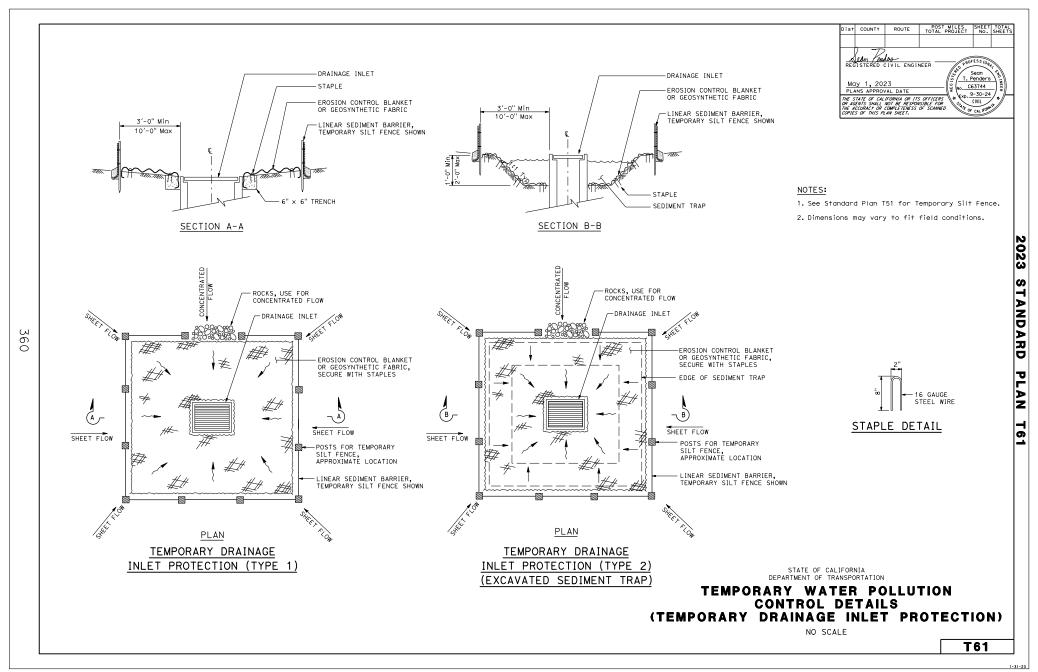


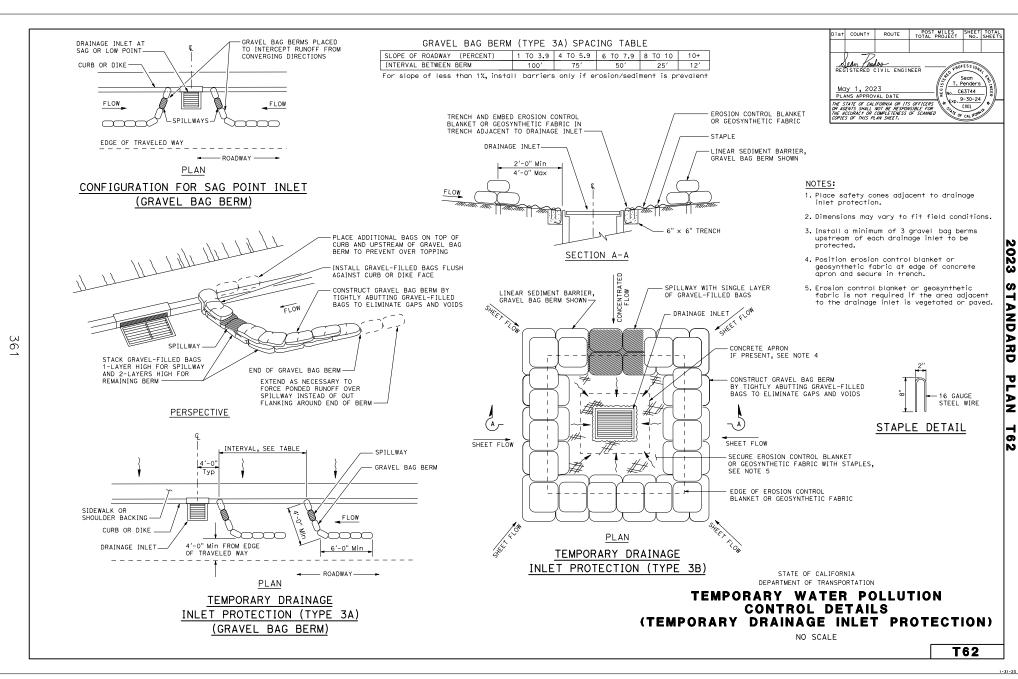


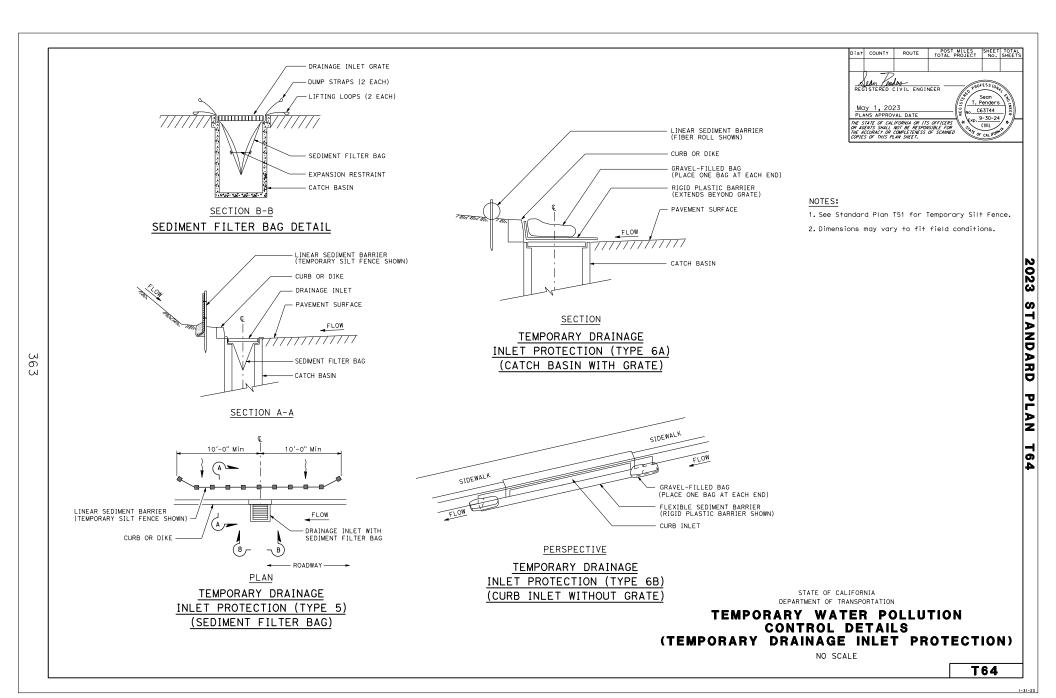


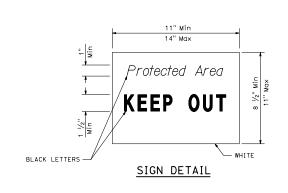


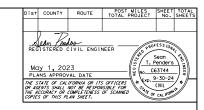


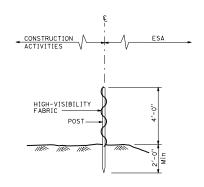






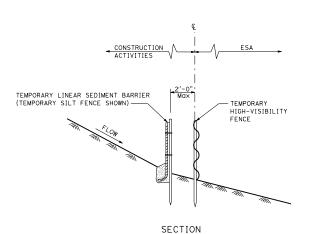




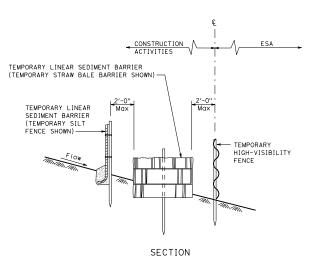


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SECTION
TEMPORARY HIGH-VISIBILITY FENCE



PLACEMENT DETAIL FOR TEMPORARY LINEAR SEDIMENT
BARRIER USED WITH TEMPORARY HIGH-VISIBILITY FENCE



PLACEMENT DETAIL FOR TEMPORARY SILT FENCE

AND TEMPORARY STRAW BALE BARRIER USED

WITH TEMPORARY HIGH-VISIBILITY FENCE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

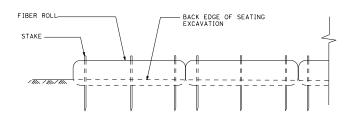
TEMPORARY WATER POLLUTION
CONTROL DETAILS
(TEMPORARY HIGH-VISIBILITY FENCE)

NO SCALE



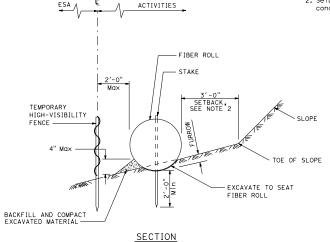
NOTES:

- 1. Temporary high-visibility fence shown for reference purposes only.
- 2. Setback dimension may vary according to field conditions or as designated on plans.



365

FRONT ELEVATION TEMPORARY LARGE SEDIMENT BARRIER



CONSTRUCTION

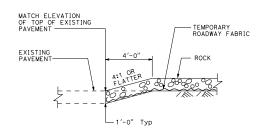
PLACEMENT DETAIL FOR TEMPORARY HIGH-VISIBILITY FENCE USED WITH TEMPORARY LARGE SEDIMENT BARRIER

See Note 1

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DEPARTMENT OF TRANSPORTATION

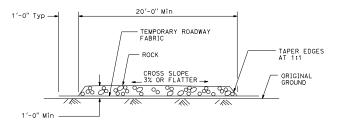
TEMPORARY WATER POLLUTION **CONTROL DETAILS** (TEMPORARY LARGE SEDIMENT BARRIER)

NO SCALE



366

SECTION CONFORM DETAIL



SECTION TEMPORARY CONSTRUCTION ROADWAY

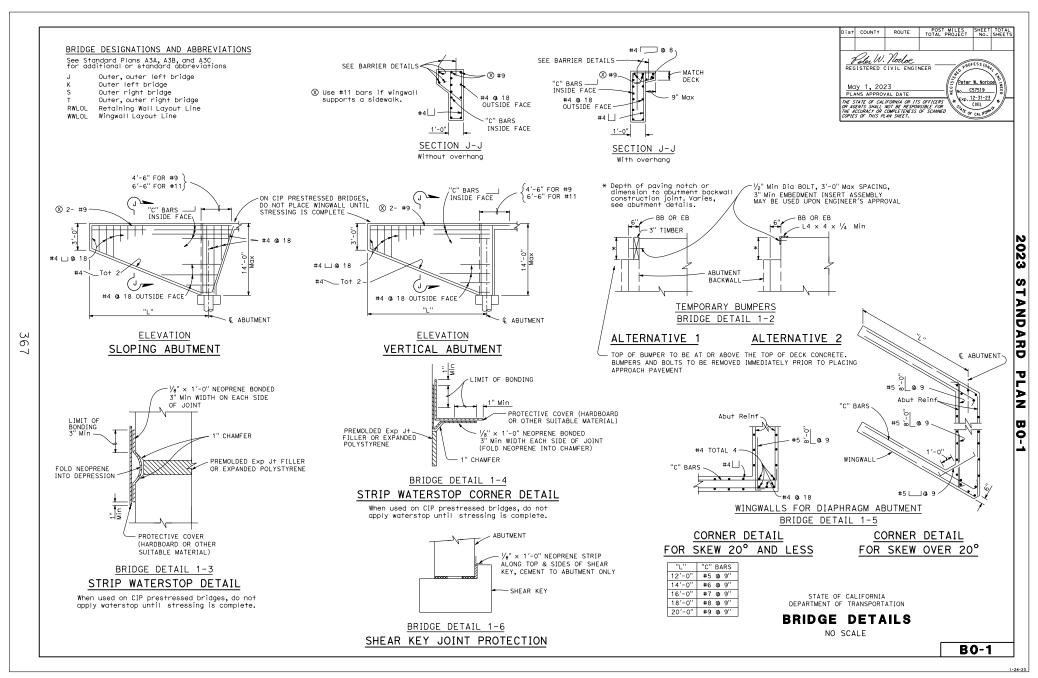
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY CONSTRUCTION ROADWAY)

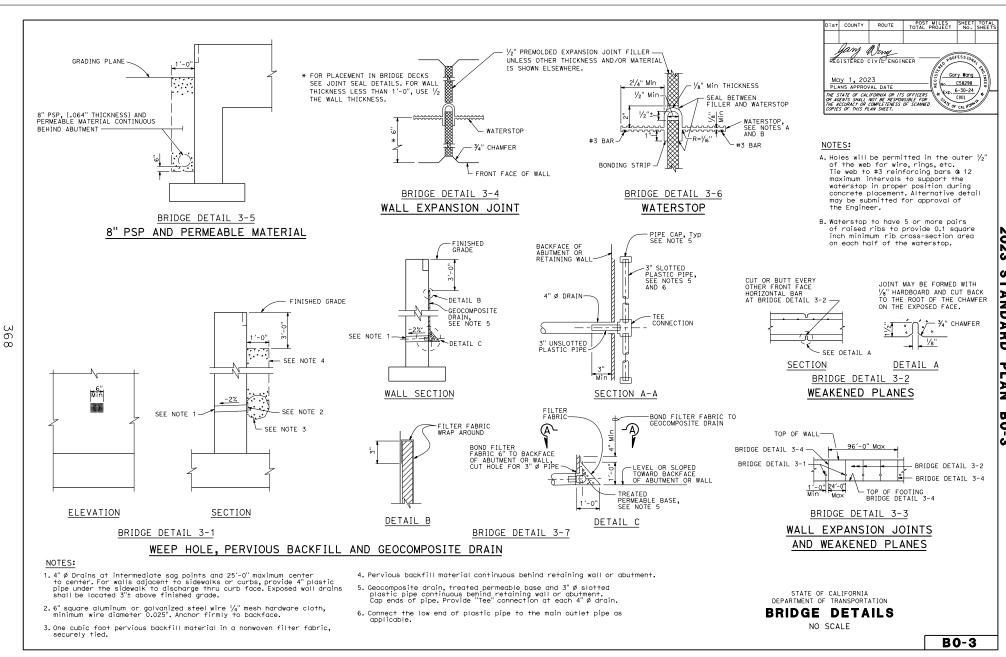
NO SCALE

T67

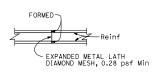
2023 STANDARD PLAN T67





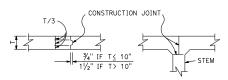


POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS Poler W. Nocloe REGISTERED CIVIL ENGINEER Peter W. Norbo Mdy 1, 2023 PLANS APPROVAL DATE C57519 €×p. 12-31-23 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETERESS OF SCANNED COPIES OF THIS PLAN SHEET.



ALTERNATIVE DECK CONSTRUCTION JOINTS

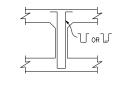
369



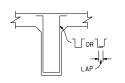
DECK CONSTRUCTION JOINTS

BRIDGE DETAIL 5-2 Top or bottom slab

BRIDGE DETAIL 5-3



REINFORCED BOX GIRDER Girder or diaphragm



T-BEAM Girder, bent cap or diaphragm



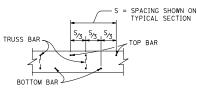
PRECAST GIRDER

STIRRUP ΙΔΡ SIZE #4 6" #5 #6 #8

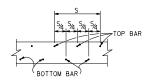
A reinforcement bar must be placed inside of each stirrup hook or 90° bend.

BRIDGE DETAIL 5-5

ALTERNATIVE STIRRUPS

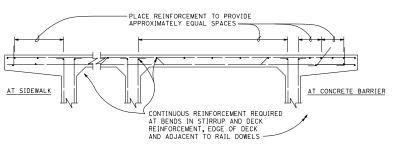


BRIDGE DETAIL 5-10



BRIDGE DETAIL 5-11

TRANSVERSE DECK REINFORCEMENT SPACING DIAGRAMS



BRIDGE DETAIL 5-15

TOP GIRDER REINFORCEMENT

NOTES:

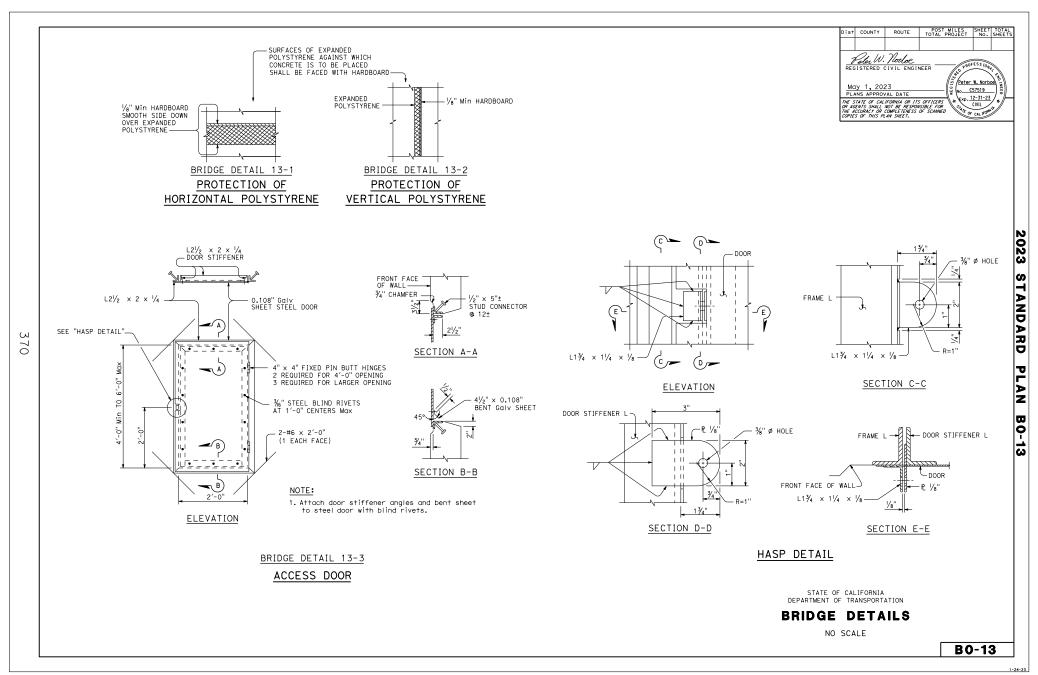
- 1. In simple spans, transverse joints are not permitted unless approved by the Engineer.
- 2. In continuous spans, transverse joints may be located at about the $\frac{1}{4}$ point of the span.
- 3. Reinforcing steel shall be continuous through all construction joints.
- 4. Longitudinal joints shall be located at the edge of a traffic lane unless otherwise permitted by the Engineer.

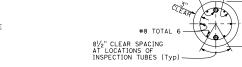
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BRIDGE DETAILS

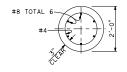
NO SCALE

BO-5





INSPECTION TUBES (2" ID) TOTAL 2 -



REGISTERED CIVIL ENGINEER

MGY 1, 2023
PLANS APPROVAL DATE

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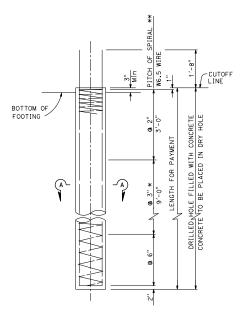
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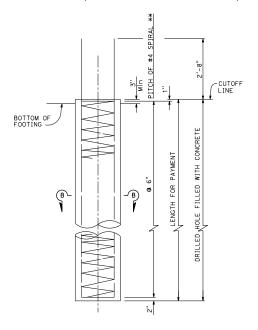
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ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

SECTION A-A

SECTION B-B With inspection tubes SECTION B-B Without inspection tubes





ELEVATION

200 kip DESIGN CAPACITY

DESIGN CAPACITY

* @ 2" at option of Contractor

ELEVATION

90 kip AND 140 kip

** Extend at 2" pitch to top of anchor piles and load test piles. For longitudinal reinforcement for anchor piles and load test piles, see "Load Test Pile Details (2)", Standard Plan B2-10.

NOTES:

- Reinforcement extending into footing shall be hooked as required to provide clearance to top of footing.
- 2. Piles shall be extended only in accordance with details shown on the Project Plans.

DESIGN NOTES:

REINFORCED CONCRETE

fy = 60,000 psi

 $f_C' = 4,000 \text{ psi}$

DESIGN CAPACITY

90 kip and 140 kip PILE

COMPRESSION:

140 kip (Service state)

280 kip (Nominal axial structural resistance)

TENSION:

56 kip (Service state)

140 kip (Nominal axial structural resistance)

200 kip PILE

COMPRESSION:

200 kip (Service state)

400 kip (Nominal axial structural resistance)

TENSION:

80 kip (Service state)

200 kip (Nominal axial structural resistance)

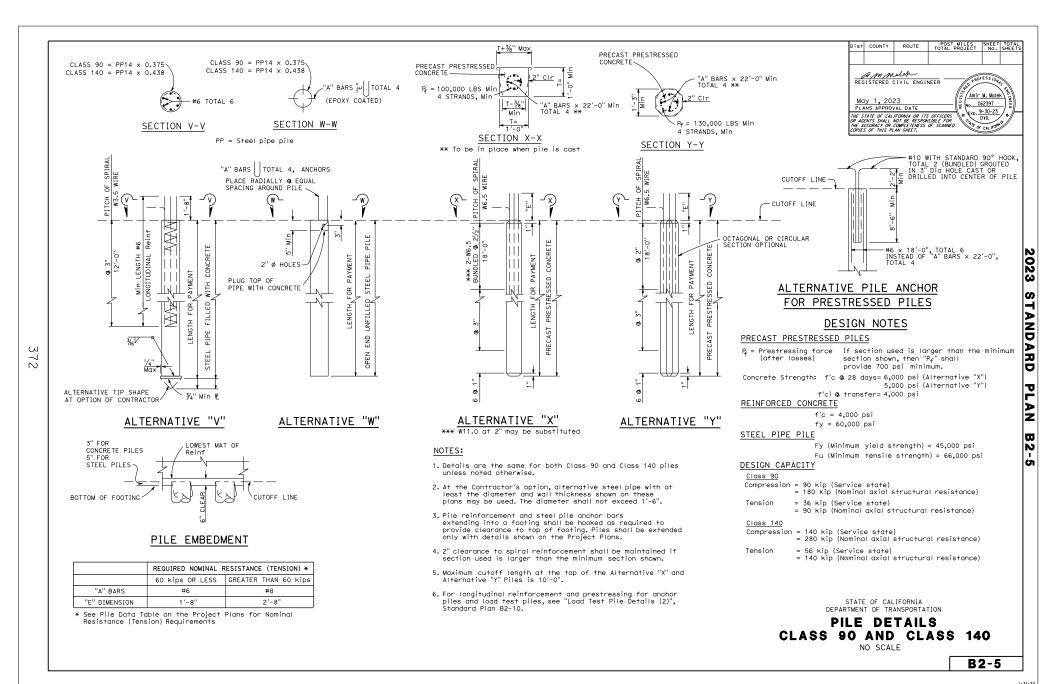
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

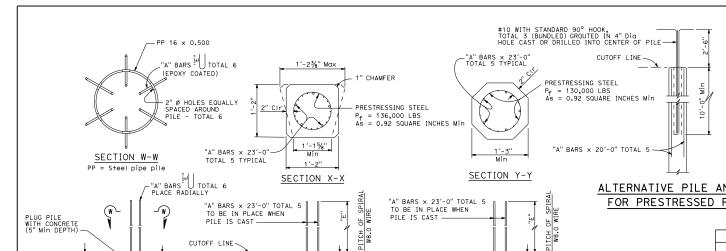
16" AND 24" CAST-IN-DRILLED-HOLE CONCRETE PILE

NO SCALE

B2-3

1-31-23





LENGTH FOR

601

Pile reinforcement extending into footing shall be hooked as required to provide clearance to top of footing. Piles shall be extended only with details shown on the Project Plans.

At the Contractor's option, alternative steel pipe with at least the diameter and wall thickness shown on these plans may be used. The diameter shall not exceed 1'-6".

3. Maximum cut-off length at the top of the Alternative "X"

4. 2" clearance to spiral reinforcement shall be maintained if section used is larger than the minimum section shown.

** W11.0 @ $1\frac{3}{4}$ " may be substituted

ALTERNATIVE "X"

and Alternative "Y" piles is 10'-0".

NOTES:

OCTAGONAL OR CIRCULAR SECTION
OPTIONAL

2" Ø HOLES

ũ

STEEL

UNFILLED

END

FOR,

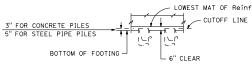
ALTERNATIVE "W"

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL
	A.M.M	alek			
		CIVIL ENGI	NEER PROPERTY AMI	FESS ION	
	1y 1, 202			M. Male 262397	K) 25
THE S	TATE OF CAL	IFORNIA OR IT.	S OFFICERS & Exp.	9-30-23 CIVIL	./ <i>.</i> //
THE A		NOT BE RESPON COMPLETENESS AN SHEET.	ISIBLE FOR STATE	F CAL IFORM	*/

ALTERNATIVE PILE ANCHOR FOR PRESTRESSED PILE

	REQUIRED NOMINAL RESISTANCE (TENSION) *			
	75 kips OR LESS	GREATER THAN 75 kips		
"A" BARS	#6	#8		
"E" DIMENSION	1 '-8"	2'-8"		

* See Pile Data Table on the Project Plans for Nominal Resistance (Tension) Requirements



DESIGN NOTES:

PILE EMBEDMENT

DESIGN CAPACITY

2W8.0

** W11.0 @ $1\frac{3}{4}$ " may be substituted

ALTERNATIVE "Y"

Compression = 200 kip (Service state)

= 400 kip (Nominal axial structural resistance)

Tension = 80 kip (Service state)

= 200 kip (Nominal axial structural resistance)

REINFORCED CONCRETE

f'_C = 4,000 psi fy = 60,000 psi

PRECAST PRESTRESSED PILES

Pr = Prestress Force (After losses)

Concrete Strength f'C & 28 days = 7,000 psi

f'c; @ transfer = 4,000 psi

STEEL PIPE PILE

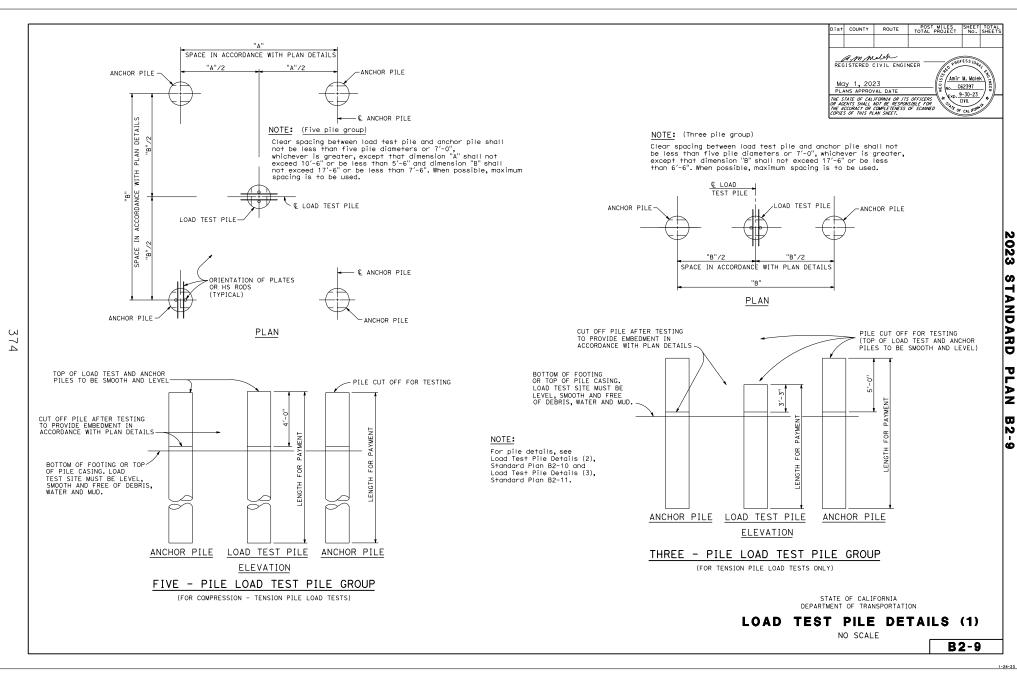
Fy (minimum yield strength) = 45,000 psi Fu (minimum tensile strength) = 66,000 psi

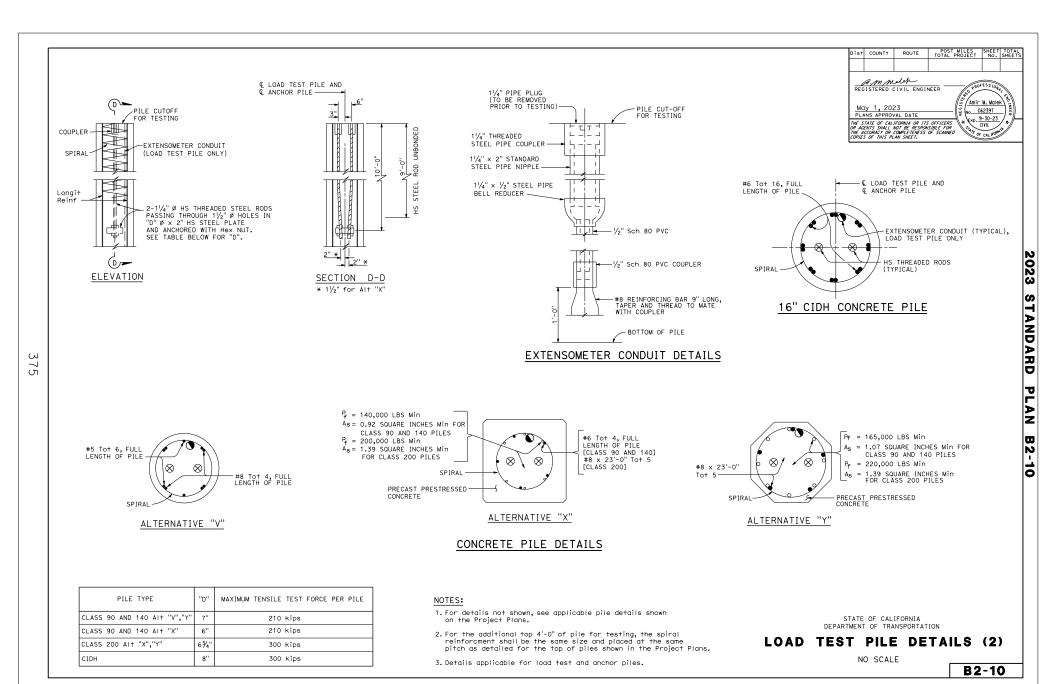
> STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

PILE DETAILS

B2-8

CLASS 200 NO SCALE





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o. C62397 Exp. 9-30-23 CIVIL

SECTION B-B

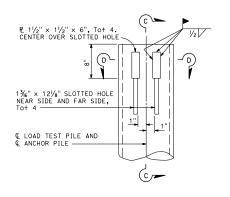
€ LOAD TEST PILE AND € ANCHOR PILE $-12.1\frac{1}{2}$ " × 6" × 8", Tot 2 (B) ₽ 1½" × 6" × 8", ₽ 1" x 12" x 3'-3", Tot 2 Tot 2 -1¾6" × 12½" SLOTTED HOLES, NEAR SIDE AND FAR SIDE, SECTION A-A

Maximum Tensile Test Force Per Pile : HP 10 \times 42 = 180 kips HP 10 \times 57 = 245 kips HP 14 \times 89 = 300 kips

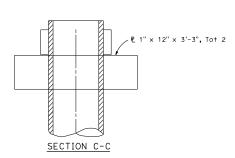
STEEL H-PILE DETAILS

NOTE:

Alignment of slots and 1/2" R's shall permit a R 1" x 12" x 3'-3" to pass through pile parallel to C web of pile and achieve a snug fit. Details applicable for load test and anchor piles. Slots to be cut after piles are driven.



76





ALTERNATIVE "W" STEEL PIPE - PILE

Alignment of slots and 1½" ½'s shall permit a ½ 1" x 12" x 3'-3" to pass through pile.

Details applicable for load test and anchor piles.

Slots to be cut after piles are driven.

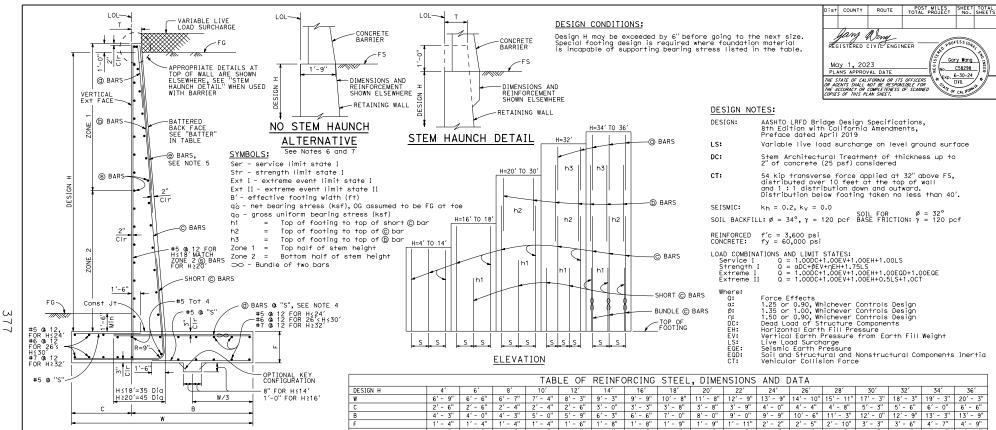


STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

LOAD TEST PILE DETAILS (3)

NO SCALE

B2-11



TYPICAL SECTION

1. For details not shown and drainage notes, see B3

2. For wall stem joint details, see $\frac{80-3}{3-3}$ and $\frac{80-3}{3-4}$.

3. At @ bars:

H < 6', no splices are allowed within 1'-8" above the top of footing.

H > 6', no splices are allowed within H/4 above the top of footing.

- 4. Bundle d bars from H = 22' to 36'.
- 5. Provide #6 @ 10" x 18'-0" bars over a distance of 8'-0" measured from all expansion joints, begin wall and end wall locations. For H \(\) 16', hook bar into footing and reduce bar length as needed to maintain Min CIr cover.
- 6. For no stem haunch alternative, where H \leq 18': Increase stem thickness, "T", to constant 1'-9" with no batter.
- For no stem haunch alternative, where H > 18': Adjust stem batter to maintain original stem thickness at top of footing according to data defined in table.

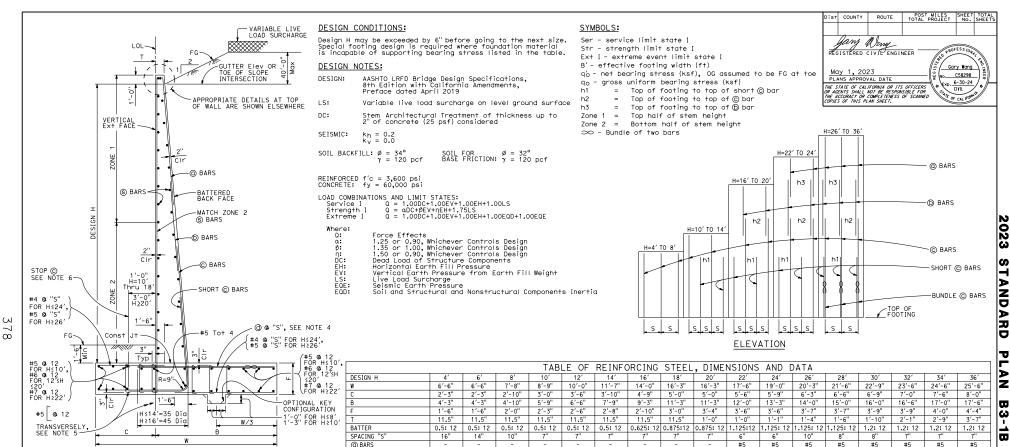
				TAB	LE OF	REINFO	ORCING	STEEL	, DIME	NSIONS	AND [ATA					
DESIGN H	4'	6′	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'	34'	36'
W	6' - 9"	6' - 6"	6' - 7"	7' - 4"	8' - 3"	9' - 3"	9' - 9"	10' - 8"	11' - 8"	12' - 9"	13' - 9"	14' - 10"	15' - 11"	17' - 3"	18' - 3"	19' - 3"	20' - 3"
C	2' - 6"	2' - 6"	2' - 4"	2' - 4"	2' - 6"	3' - 0"	3' - 3"	3' - 8"	3' - 8"	3' - 9"	4' - 0"	4' - 4"	4' - 8"	5' - 3"	5' - 6"	6' - 0"	6' - 6"
В	4' - 3"	4' - 0"	4' - 3"	5' - 0"	5' - 9"	6' - 3"	6' - 6"	7' - 0"	8' - 0"	9' - 0"	9' - 9"	10' - 6"	11' - 3"	12' - 0"	12' - 9"	13' - 3"	13' - 9"
F	1' - 4"	1' - 4"	1' - 4"	1'- 4"	1' - 6"	1' - 8"	1' - 8"	1'-9"	1' - 9"	1' - 11"	2' - 2"	2' - 5"	2' - 10"	3' - 3"	3' - 6"	4' - 7"	4' - 9"
T	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	1' - 1"	1' - 1"
BATTER	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.625: 12	0.625: 12	0.75: 12	1: 12	1: 12	1.2: 12	1.2: 12
SPACING "S"	12"	12"	12"	11"	9"	8"	6"	5"	6"	5"	5"	5"	5"	5"	6"	10"	8"
@ BARS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#7	#6	#6
(b) BARS	-	-	-	-	-	-	-	-	#7	#6	#6	#6	#6	#6	#9	#9	#8
© BARS	#6	#6	#6	#6	#6	#6	#7	#7	#8	#8	#8	#9	#9	#9	#10	#11	#11
O DADO																	
@ BARS	#5	#5	#5	#6	#6	#6	#6	#6	#8	#7	#8	#9	#9	#9	#10	#11	#11
h1	#5 -	#5 -	#5 -	#6 -	#6 -	#6	#6 9'-5"	#6 9'-7"	12'-8"	12'-7"	13'-7"	14'-8"	#9 15'-8"	#9 15'-8"	#10 19'-5"	16'-6"	14'-8"
																	14'-8" 21'-6"
h1 h2 h3	-	-	-	-	-	-		9'-7"	12'-8"	12'-7"	13'-7" 17'-7" -	14'-8" 20'-5" -	15'-8"	15'-8"	19'-5"	16'-6"	14'-8"
h1 h2	-	-	-	-	-	-	9'-5"	9'-7"	12'-8" 14'-2"	12'-7" 16'-10"	13'-7" 17'-7" -	14'-8"	15′-8" 21′-11"	15'-8" 23'-8"	19'-5" 21'-9"	16'-6" 21'-6"	14'-8" 21'-6"
h1 h2 h3	-		-	-	- - - #5 @ 18"		9'-5"	9'-7"	12'-8" 14'-2" -	12'-7" 16'-10" -	13'-7" 17'-7" - #5 @ 18"	14'-8" 20'-5" -	15'-8" 21'-11" -	15'-8" 23'-8" -	19'-5" 21'-9" 24'-10" #5 @ 12"	16'-6" 21'-6" 24'-5"	14'-8" 21'-6" 26'-4" #5 @ 12"
h1 h2 h3 ZONE 1 (§) BARS	- - - #4 @ 18"	- - - #5 @ 18"	- - - #5 @ 18"	- - - #5 @ 18"	- - - #5 @ 18"	- - - #5 @ 18"	9'-5" - - #5 @ 18"	9'-7" - - #5 @ 18"	12'-8" 14'-2" - #5 @ 18"	12'-7" 16'-10" - #5 @ 18"	13'-7" 17'-7" - #5 @ 18"	14'-8" 20'-5" - #5 @ 18"	15'-8" 21'-11" - #5 @ 18"	15'-8" 23'-8" - #5 @ 12"	19'-5" 21'-9" 24'-10" #5 @ 12" #6 @ 12"	16'-6" 21'-6" 24'-5" #5 @ 12"	14'-8" 21'-6" 26'-4" #5 @ 12" #7 @ 12"
h1 h2 h3 ZONE 1 ® BARS ZONE 2 ® BARS Ser: B', q'o Str: B', qo	- - - #4 @ 18" #5 @ 18"	- - - #5 @ 18" #5 @ 18"	- - - #5 @ 18" #5 @ 18"	- - - #5 @ 18" #5 @ 18"	- - - #5 @ 18" #5 @ 18"	- - - #5 @ 18" #5 @ 18"	9'-5" - - #5 @ 18" #4 @ 12"	9'-7" - - #5 @ 18" #5 @ 12"	12'-8" 14'-2" - #5 @ 18" #5 @ 12"	12'-7" 16'-10" - #5 @ 18" #5 @ 12"	13'-7" 17'-7" - #5 @ 18" #5 @ 12"	14'-8" 20'-5" - #5 @ 18" #5 @ 12"	15'-8" 21'-11" - #5 @ 18" #5 @ 12"	15'-8" 23'-8" - #5 @ 12" #6 @ 12"	19'-5" 21'-9" 24'-10" #5 @ 12" #6 @ 12" 12.9, 4.7	16'-6" 21'-6" 24'-5" #5 @ 12" #7 @ 12"	14'-8" 21'-6" 26'-4" #5 @ 12" #7 @ 12" 13.9, 5.4
h1 h2 h3 ZONE 1 ® BARS ZONE 2 ® BARS Ser: B', q'o	#4 @ 18" #5 @ 18" 6.5, 0.8	#5 @ 18" #5 @ 18" 6.1, 1.0	- - #5 @ 18" #5 @ 18" 5.4, 1.4 2.7, 2.8	#5 @ 18" 5.7, 1.8	- #5 @ 18" #5 @ 18" 6.2, 2.1 3.1, 4.1	#5 @ 18" 7.0, 2.2	9'-5" - - #5 @ 18" #4 @ 12" 7.1, 2.5	9'-7" - - #5 @ 18" #5 @ 12" 7.7, 2.7	12'-8" 14'-2" - #5 @ 18" #5 @ 12" 8.4, 3.0	12'-7" 16'-10" - #5 @ 18" #5 @ 12" 9.1, 3.4	13'-7" 17'-7" - #5 @ 18" #5 @ 12" 9.7, 3.7 5.2, 7.0	14'-8" 20'-5" - #5 @ 18" #5 @ 12" 10.5, 4.0	15'-8" 21'-11" - #5 @ 18" #5 @ 12" 11.1, 4.3	15'-8" 23'-8" - #5 @ 12" #6 @ 12" 12.3, 4.4	19'-5" 21'-9" 24'-10" #5 @ 12" #6 @ 12" 12.9, 4.7 7.1, 8.9	16'-6" 21'-6" 24'-5" #5 @ 12" #7 @ 12" 13.2, 5.2	14'-8" 21'-6" 26'-4" #5 @ 12" #7 @ 12" 13.9, 5.4 7.1, 11.2

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 1)

NO SCALE

B3-1A



NOTES:

1. For details not shown and drainage notes, see

2. For wall stem joint details, see

TYPICAL SECTION

3. At @ and short @ bars: H ≤ 6', no splices are allowed within 1'-8" above the top of footing. $\rm H$ > 6', no splices are allowed within H/4 above the top of footing.

- 4. Bundle @ bars for H ≥ 26'.
- 5. Hook stirrups around & space with alternating transverse reinforcement at 2 x "S". For required number of toe or heel stirrup rows, see table. The first stirrups are placed adjacent to the stem as shown.
- 6. Extend © bars to end of toe for H=4' to 8'.

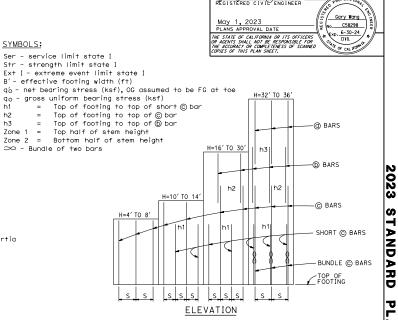
≧H -					IAB	LE OF	KEINE	RCING	SIEEL	, DIME	N210N2	AND L	DATA					
	DESIGN H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'	34'	36'
22'	W	6'-6"	6'-6"	7'-8"	8'-9"	10'-0"	11'-7"	14'-0"	16'-3"	16'-3"	17'-6"	19'-0"	20'-3"	21'-6"	22'-9"	23'-6"	24'-6"	25'-6"
22.	С	2'-3"	2'-3"	2'-10"	3'-0"	3'-6"	3'-10"	4'-9"	5'-0"	5'-0"	5'-6"	5'-9"	6'-3"	6'-6"	6'-9"	7'-0"	7'-6"	8'-0"
΄ [В	4'-3"	4'-3"	4'-10"	5'-9"	6'-6"	7'-9"	9'-3"	11'-3"	11'-3"	12'-0"	13'-3"	14'-0"	15'-0"	16'-0"	16'-6"	17'-0"	17'-6"
N	F	1'-6"	1'-6"	2'-0"	2'-3"	2'-6"	2'-8"	2'-10"	3'-0"	3'-4"	3'-6"	3'-6"	3'-7"	3'-7"	3'-9"	3'-9"	4'-0"	4'-4"
8′, t	T	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	1'-0"	1'-0"	1'-1"	1'-4"	1'-6"	1'-10"	2'-1"	2'-9"	3'-7"
'° [BATTER	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.625: 12	0.875:12	0.875: 12	1.125:12	1.125: 12	1.125: 12	1.125: 12	1.2: 12	1.2: 12	1.2: 12	1.2: 12
	SPACING "S"	16"	14"	10"	7"	7"	7"	7"	7"	7"	6"	6"	10"	8"	8"	7"	7"	7"
	@ BARS	-	-	-	-	-	-	-	-		#5	#5	#5	#5	#5	#5	#5	#5
	(b) BARS	-	-	-	-	-	-	#6	#6	#6	#7	#7	#7	#7	#7	#7	#7	#7
	© BARS	#5	#5	#6	#6	#7	#8	#8	#9	#10	#10	#11	#11	#11	#11	#11	#11	#11
L	@ BARS	#5	#6	#5	#6	#6	#7	#8	#10	#10	#10	#10	#10	#10	#10	#10	#10	#10
	h1	-	-	-	8'-3"	10'-0"	10'-7"	12'-2"	12'-11"	13'-8"	12'-7"	13'-9"	14'-6"	15'-0"	16'-3"	17'-0"	17'-9"	18'-8"
	h2	-	-	-	-	-	-	15'-1"	17'-8"	20'-3"	19'-4"	21'-9"	21'-9"	21'-4"	22'-3"	22'-6"	23'-0"	23'-6"
	h3	-	-	-		-	-	-	-		20'-4"	22'-1"	22'-7"	22'-10"	23'-10"	28'-7"	30'-1"	31'-0"
	No. of Toe Stirrups	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6
L	No. of Heel Stirrups	0	0	0	0	0	0	0	2	3	4	6	7	7	8	8	8	8
L	ZONE 1 (S) BARS	#4 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"						#5 @ 12"						
	ZONE 2 (S) BARS	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#6 @ 12"	#6 @ 12"	#7 @ 12"	#7 @ 12"	#7 @ 12"	#8 @ 12"	#8 @ 12"
	Ser: B', q'o	6.2, 0.6	6.5, 0.8	7.5, 1.1	8.2, 1.5							17.6, 3.4						
	Str: B', qo	6.0, 1.3	6.4, 1.6	7.3, 2.1	8.1, 2.6	9.1, 3.0						17.2, 5.6						
L	Ext I: B', qo	5.8, 1.7	4.8, 2.6	5.2, 3.5	5.5, 4.5	6.1, 5.1	7.2, 5.6	9.7, 5.3	11.7, 5.6	10.4, 7.0	11.2, 7.5	12.3, 7.9	13.2, 8.2	14.0, 8.7	14.7, 9.2	14.8, 9.9	15.4, 10.4	15.9, 11.0

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 2)

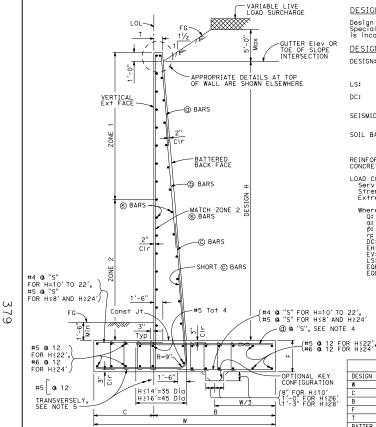
NO SCALE

B3-1B



ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

yang Deny



DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019 DESIGN:

Variable live load surcharge on level ground surface

DC: Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

SEISMIC:

SOIL BACKFILL: $\emptyset = 34^{\circ}$ $\gamma = 120$ pcf SOIL FOR $\emptyset = 32^{\circ}$ BASE FRICTION: $\gamma = 120$ pcf

REINFORCED f'c = 3,600 psi CONCRETE: fy = 60,000 psi

0: a:

Force Effects
1.25 or 0.90, Whichever Controls Design
1.35 or 1.00, Whichever Controls Design
1.30 or 0.90, Whichever Controls Design
Dead Load of Structure Components
Wertzeld Earth Pressure
Wertzeld Earth Pressure from Earth Fill Weight
Live Load Surcharges

ρ: n: DC:

Live Load Surcharge Seismic Earth Pressure Soil and Structural and Nonstructural Components Inertia

H=10' TO 14' H=4' TO 8'

TYPICAL SECTION

1. For details not shown and drainage notes, see

2. For wall stem joint details, see

3. At @ bars:

H ≤ 6', no splices are allowed within 1'-8" above the top of footing. H > 6', no splices are allowed within H/4 above the top of footing.

4. Bundle (d) bars for H = 36'.

5. Hook stirrups around & space with alternating transverse reinforcement at 2 x "S". For required number of toe or heel stirrup rows, see table. The first stirrups are placed adjacent to the stem as shown.

H 2 Z 4																	
				TAB	LE OF	REINFO	DRCING	STEEL	., DIME	NSIONS	AND [ATA(
DESIGN H	4'	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'	34'	36'
W	5'-9"	6'-0"	6'-9"	8'-2"	9'-9"	11'-1"	12'-6"	13'-5"	14'-5"	15'-4"	16'-3"	17'-6"	19'-3"	20'-0"	21'-0"	22'-3"	23'-6"
С	1'-9"	2'-0"	2'-3"	2'-8"	3'-0"	3'-6"	3'-9"	4'-3"	4'-9"	5'-0"	5'-3"	6'-0"	7'-6"	7'-9"	8'-0"	8'-6"	9'-3"
В	4'-0"	4'-0"	4'-6"	5'-6"	6'-9"	7'-7"	8'-9"	9'-2"	9'-8"	10'-4"	11'-0"	11'-6"	11'-9"	12'-3"	13'-0"	13'-9"	14'-3"
F	1'-4"	1'-4"	1'-4"	1'-4"	1'-6"	1'-8"	1'-10"	2'-1"	2'-2"	2'-3"	2'-10"	2'-10"	2'-10"	3'-0"	3'-3"	3'-3"	3'-3"
T	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	11.5"	1'-3"	1'-6"	1'-8"	2'-1"
BATTER	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.5: 12	0.75: 12	0.875:12	0.75: 12	1: 12	1.125: 12	1.2: 12	1.2: 12	1.2: 12	1.2: 12
SPACING "S"	16"	16"	14"	8"	8"	7"	6"	6"	6"	6"	7"	7"	6"	6"	6"	5"	8"
@ BARS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#5	#6	#6
(D) BARS	-	-	-	-	-	-	#5	#5	#5	#6	#7	#7	#7	#7	#8	#9	#9
© BARS	#5	#5	#6	#5	#7	#6	#7	#8	#8	#9	#10	#10	#10	#10	#10	#10	#11
@ BARS	#5	#5	#6	#6	#8	#7	#10	#9	#8	#9	#11	#10	#10	#10	#11	#11	#11
h1	-	-	-	7'-3"	10'-6"	9'-8"	11'-2"	12'-7"	13'-4"	14'-6"	17'-10"	18'-5"	17'-4"	18'-4"	19'-1"	16'-10"	16'-9"
h2	-	-	-	-	-	-	13'-11"	16'-8"	18'-1"	19'-5"	22'-2"	23'-4"	23'-4"	24'-10"	23'-7"	19'-7"	19'-6"
h3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28'-1"	27'-5"	27'-8"
No. of Toe Stirrups	0	0	0	0	0	0	0	0	0	0	3	4	4	5	5	6	6
No. of Heel Stirrups	0	0	0	0	0	0	0	3	3	4	5	5	5	5	5	5	5
ZONE 1 (S) BARS	#4 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#4 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#6 @ 12"
ZONE 2 S BARS	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#5 @ 18"	#4 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#5 @ 12"	#6 @ 12"	#6 @ 12"	#7 @ 12"	#7 @ 12"	#7 @ 12"	#7 @ 12"
Ser: B', q'o	5.5, 0.6	4.4, 1.2	4.5, 1.7	5.5, 1.9	6.5, 2.2	7.4, 2.4	8.4, 2.7	9.1, 2.9	9.8, 3.2	10.5, 3.4	11.2, 3.7	12.3, 3.8	14.5, 3.6	14.5, 4.0	15.2, 4.3	16.5, 4.4	17.7, 4.5
Str: B', qo	5.5, 1.3	3.1, 2.3	2.7, 3.4	3.1, 3.9	3.6, 4.5	4.0, 5.1	4.5, 5.5	4.7, 6.2	4.9, 6.9	5.3, 7.3	5.7, 7.7	6.4, 7.8	8.1, 6.8	7.7, 8.1	8.1, 8.7	9.1, 8.6	10.0, 8.5
Ext I: B', qo	4.4, 1.3	3,1, 2,1	4.1, 2.5	4.9, 2.8	5.8, 3.3	6.6, 3.6	7.3, 4.2	7.7, 4.7	8.1, 5.2	8.4, 5.7	8.7, 6.4	9.4, 6.8	11.6. 6.1	11.6. 6.7	12.0. 7.4	12.9. 7.6	13.9, 7.6

SYMBOLS:

Ser - service limit state I

 ∞ - Bundle of two bars

Str - strength limit state I Ext I - extreme event limit state I

B' - effective footing width (ft)

qo - gross uniform bearing stress (ksf)

Zone 1 = Top half of stem height Zone 2 = Bottom half of stem height

= Top of footing to top of short @ bar Top of footing to top of ⊚ bar

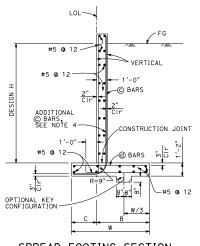
Top of footing to top of 🔊 bar

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 1 (CASE 3)

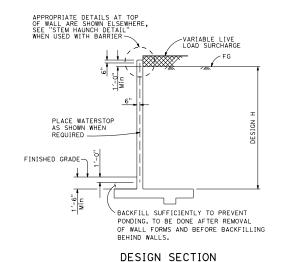
NO SCALE

B3-1C



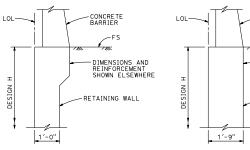
SPREAD FOOTING SECTION

Place concrete in toe against undisturbed material, except as permitted by the Engineer.



80

H=12 -© BARS H=4' ELEVATION



STEM HAUNCH DETAIL

NO STEM HAUNCH **ALTERNATIVE**

TABLE OF RE	INFORCIN	G STEEL	, DIMENS	IONS AND	DATA
DESIGN H	4'	6′	8′	10'	12'
W	6'-0"	6'-3"	6'-6"	7'-4"	8'-2"
С	2'-0"	2'-0"	2'-0"	2'-4"	2'-7"
В	4'-0"	4'-3"	4'-6"	5'-0"	5'-7"
© BARS	#6 @ 10	#6 @ 9	#7 @ 10	#7 @ 9	#7 0 8
@ BARS	#5 @ 10	#5 @ 9	#6 @ 10	#7 @ 9	#7 0 8
Ser: B', q'o	6.0, 0.8	5.6, 1.1	5.2, 1.5	5.7, 1.7	6.2, 2.0
Str: B', qo	4.5, 1.4	3.2, 1.9	2.5, 3.0	2.8, 3.4	3.1, 3.9
Ext I: B', qo	4.4, 1.2	4.1, 1.7	3.7, 2.4	4.1, 2.8	4.4, 3.2
Ext II: B', qo	1.1, 4.7	1.6, 4.3	2.0, 4.3	3.4, 3.3	4.6, 3.1

SYMBOLS:

Ser - service limit state I Str - strength limit state I

CONCRETE BARRIER

DIMENSIONS AND REINFORCEMENT

-RETAINING WALL

Ext I - extreme event limit state I Ext II - extreme event limit state II B' - effective footing width (ft)

go - net bearing stress (ksf), OG assumed to be FG at toe

qo - gross uniform bearing stress (ksf)



DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

DESIGN: AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019

LS: Variable live load surcharge on level ground surface DC:

Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

54 kip transverse force applied at 32" above FS, distributed over 10 feet at the top of wall and 1:1 distribution down and outward.
Distribution below footing taken no less than 40'.

SEISMIC:

SOIL BACKFILL: $\emptyset = 34^{\circ}$ $\gamma = 120 \text{ pcf}$ SOIL FOR $\emptyset = 32^{\circ}$ BASE FRICTION: $\gamma = 120$ pcf

REINFORCED CONCRETE:

LOAD COMBINATIONS AND LIMIT STATES:
Service I 0 = 1.00DC+1.00EV+1.00EH+1.00LS
Strength I 0 = aDC+9EV+1RH+1.75LS
Extreme I 0 = 1.00DC+1.00EV+1.00EH+1.00ED+1.00EDE
Extreme I 0 = 1.00DC+1.00EV+1.00EH+0.5LS+1.0CT

Where: 0: 0: 0: 0: 0: EH: EV: LS: Force Effects
1.25 or 0.90, Whichever Controls Design
1.35 or 1.00, Whichever Controls Design
1.50 or 0.90, Whichever Controls Design
Dead Load of Structure Components
Horizontal Earth Fill Pressure
Vertical Earth Pressure from Earth Fill Weight
List Control Control Control Control
Set of Control Control Control
Set of Control Control
Set of Control Control
Set of Control
Set of

Soil and Structural and Nonstructural Components Inertia Vehicular Collision Force

NOTES:

1. For details not shown and drainage notes, see

2. For wall stem joint details, see 3. At © bars:

H < 6', no splices are allowed within 1'-8" above the top of footing. H > 6', no splices are allowed within H/4 above the top of footing.

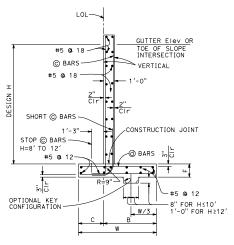
4. Provide #6 @ 8"© bars in addition to tabulated © bars over a distance of 8'-0" measured from all expansion joints, begin wall and end wall location.

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RETAINING WALL TYPE 1A (CASE 1)

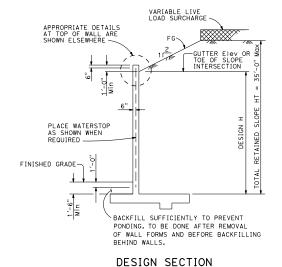
NO SCALE

B3-3A



SPREAD FOOTING SECTION

Place concrete in toe against undisturbed material, except as permitted by the Engineer.



 $\tilde{\infty}$

TABLE OF REINFORCING STEEL, DIMENSIONS AND DATA DESIGN H 12 4'-3" 5'-9" 7'-4" 8'-3" 1'-3" 1'-9' 2'-6" 5'-9" 1'-9" 1'-9" © BARS #5 @ 18 #5 @ 12 #5 **@** 7 #7 @ 6 #6 @ 7 #5 @ 12 #5 @ 18 #5 @ 7 #5 @ 7 #6 @ 6 Ser: B', q'o 3.9, 0.7 5.3, 1.0 6.0, 1.2 6.2, 1.7 6.8, 2.0 Str: B', qo 3.8.1.4 5.2. 1.8 6.0, 2.8 6.6, 3.4 Ext I: B', qo 2.6, 2.6 3.6, 3.1

NUMBERS ABOVE SHORT © BARS INDICATE DISTANCE FROM H=12' TOP OF FOOTING TO UPPER END OF SHORT (C) BARS H=10 -(©) BARS H=6 SHORT @ BARS ELEVATION

SYMBOLS:

Ser - service limit state I Str - strength limit state I

Ext I - extreme event limit state I

B' - effective footing width (ft)

 q_0' - net bearing stress (ksf), 0G assumed to be FG at toe

qo - gross uniform bearing stress (ksf)

yang Wing Gary Wang May 1, 2023 C58298 PLANS APPROVAL DATE Exp. 6-30-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETERESS OF SCANNED COPIES OF THIS PLAN SHEET. CIVIL

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

15:

AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019 DESIGN:

Variable live load surcharge on level ground surface

Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered DC:

SEISMIC:

SOIL BACKFILL: $\emptyset = 34^{\circ}$, $\gamma = 120$ pcf SOIL FOR $\emptyset = 32^{\circ}$ BASE FRICTION: $\gamma = 120$ pcf

REINFORCED CONCRETE:

f'c = 3,600 psi fy = 60,000 psi

Where:

Force Effects
1.25 or 0.90, Whichever Controls Design
1.35 or 1.00, Whichever Controls Design
1.50 or 0.90, Whichever Controls Design
Dead Load of Structure Components
Horizontal Earth Fill Pressure
Vertical Earth Pressure from Earth Fill Weight Q: α: β: η: DC:

Live Load Surcharge Seismic Earth Pressure Soil and Structural and Nonstructural Components Inertia

NOTES:

1. For details not shown and drainage notes, see

2. For wall stem joint details, see

3. At @ and short @ bars:

H ≤ 6', no splices are allowed within 1'-8" above the top of footing. H > 6', no splices are allowed within H/4

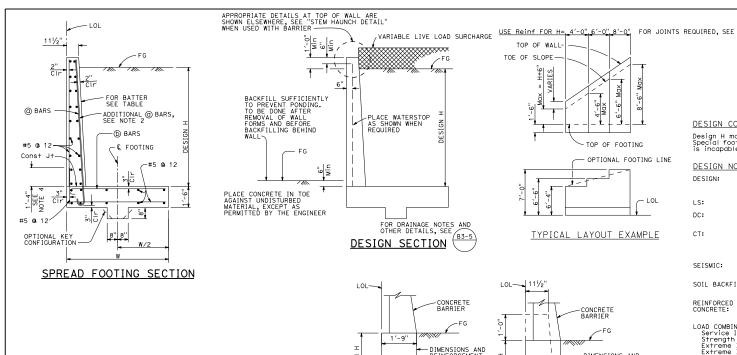
above the top of footing.

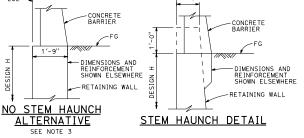
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

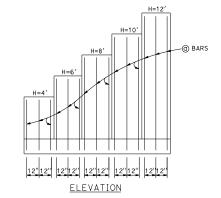
RETAINING WALL TYPE 1A (CASE 2)

NO SCALE

B3-3B







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SYMBOLS:

Ser – service limit state I Str - strength limit state I Ext I - extreme event limit state I Ext II - extreme event limit state II B' - effective footing width (ft)

qo - net bearing stress (ksf), OG assumed to be FG at toe

qo - gross uniform bearing stress (ksf)

TABLE OF RE	INFORCIN	G STEEL	, DIMENS	IONS AND	DATA
DESIGN H	4'	6'	8'	10'	12'
W	6'-4"	6'-6"	7′-0"	8'-0"	8'-10"
BATTER	NONE	1/4 : 12	1/4 : 12	3/8 : 12	1/2 : 12
BARS ■ ■ BARS ■ ■ BARS ■ ■ BARS ■	#7 @ 12	#7 @ 12	#7 @ 12	#7 @ 12	#7 @ 12
BARS ■ ■ BARS ■ ■ BARS ■ ■ BARS ■ ■ BARS ■	#5 @ 6	#5 @ 6	#5 @ 6	#6 @ 6	#7 0 6
Ser: B', q'o	5.0, 1.6	4.6, 2.1	4.6, 2.6	5.2, 3.0	5.6, 3.4
Str: B', qo	3.6, 2.4	2.5, 3.3	2.4, 4.3	2.9, 4.7	3.2, 5.3
Ext I: B', qo	3.0, 2.3	2.6, 3.4	2.5, 4.8	2.8, 5.5	3.0, 6.6
Ext II: B', qo	0.9, 7.3	1.3, 6.6	2.1, 5.6	3.4, 4.5	4.5, 4.4

DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

Jang Deny

May 1, 2023

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETERSS OF SCANNED COPIES OF THIS PLAN SHEET.

DESIGN NOTES:

AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019 DESIGN:

LS: Variable Live Load surcharge on level ground surface

DC:

Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

54 kip transverse force applied at 32" above FG, distributed over 10 feet at the top of wall and 1:1 distribution down and outward.
Distribution below footing taken no less than 40'. CT:

SEISMIC:

SOIL BACKFILL: $\emptyset = 34^{\circ}$ $\gamma = 120$ pcf

SOIL FOR $\emptyset = 32^{\circ}$ BASE FRICTION: $\gamma = 120$ pcf

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Gary Wang

€×p. 6-30-24

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C58298

REINFORCED CONCRETE:

LOAD COMBINATIONS AND LIMIT STATES:
Service I 0 = 1.00DC+1.00EV+1.00EH+1.00LS
Strength I 0 = 0DC+9EV-HEH+1.75LS
Extreme I 0 = 1.00DC+1.00EV+1.00EH+1.00EOB+1.00EOE
Extreme II 0 = 1.00DC+1.00EV+1.00EH+0.50LS+1.00CT

Where:

Force Effects
1.25 or 0.90, Whichever Controls Design
1.35 or 1.00, Whichever Controls Design
1.50 or 0.90, Whichever Controls Design
Dead Load of Structure Components
Horizontal Earth Fill Pressure
Vertical Earth Pressure from Earth Fill Weight
Live Load Surchorge 0: 0: 0: 0: EH: EV: LS:

Seismic Earth Pressure

Soil and Structural and Nonstructural Components Inertia Vehicular Collision Force

NOTES:

1. At @ bars:

 $H \le 6'$, no splices are allowed within 1'-8" above the top of footing. H > 6', no splices are allowed within H/4 above the top of footing.

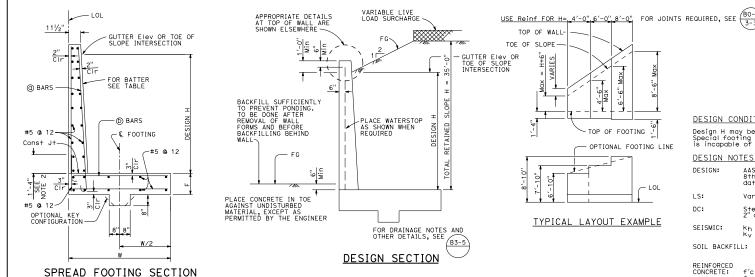
- 2. Provide #6 @ 8" @ bars in addition to tabulated @ bars over a distance of 8'-0" measured from all expansion joints, begin wall and end wall locations.
- 3. Constant stem thickness of 1'-9" at all DESIGN H, in No Stem Haunch Alternative.
- 4. Non-contact lap splice length. Maximum transverse spacing of spliced rebars to be 3 inches.

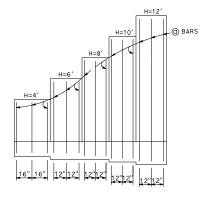
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 5 (CASE 1)

NO SCALE

B3-4A





ELEVATION

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SYMBOLS:

Ser - service limit state I Str - strength limit state I Ext I - extreme event limit state I B' - effective footing width (ft)

q'o - net bearing stress (ksf), OG assumed to be FG at toe

qo - gross uniform bearing stress (ksf)

TABLE OF RE	INFORCIN	G STEEL	, DIMENS	IONS AND	DATA
DESIGN H	4'	6'	8′	10'	12'
W	6'-10"	7'-10"	8'-10"	9'-10"	11'-0"
F SPREAD FOOTING	1'-4"	1'-4"	1'-6"	1'-6"	1'-10"
BATTER	NONE	NONE	3%:12	1/2 : 12	% : 12
⊕ BARS	#5 @ 12	#6 @ 12	#7 @ 12	#8 @ 12	#9 @ 12
BARS ■ ■ BARS ■ ■ BARS ■ ■ BARS ■	#5 @ 6	#5 @ 6	#6 @ 6	#7 @ 6	#8 @ 6
Ser: B', q'o	4.1, 1.5	6.8, 1.5	7.4, 2.0	8.0, 2.4	8.7, 3.0
Str: B', qo	2.4, 2.8	2.7, 3.6	3.0, 4.6	3.3, 5.4	3.8, 6.2
Ext I: B', qo	5.3, 2.3	4.8, 2.9	4.8, 3.9	5.0, 4.9	5.2, 6.2

DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019. DESIGN:

LS: Variable live load surcharge on level ground surface

Jang Deny

May 1, 2023

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETERSS OF SCANNED COPIES OF THIS PLAN SHEET.

Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered DC:

SEISMIC:

SOIL BACKFILL: $\emptyset = 34^{\circ}$ $\gamma = 120 \text{ pcf}$

SOIL FOR $\emptyset = 32^{\circ}$ BASE FRICTION: $\gamma = 120$ pcf

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Gary Wang

€×p. 6-30-24

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C58298

REINFORCED CONCRETE: f'c = 3,600 psify = 60,000 psi

Where:

Force Effects
1.25 or 0.90, Whichever Controls Design
1.35 or 1.00, Whichever Controls Design
1.50 or 0.90, Whichever Controls Design
Dead Load of Structure Components
Horizontal Earth Fill Pressure
Vertical Earth Pressure from Earth Fill Weight
Load Surforge
Sets Load Surforge
Sets Control Fill Pressure Nonstructural Components nere Q: Q: p: p: DC: EH:

EV: LS: EQE:

Soil and Structural and Nonstructural Components Inertia

NOTES:

1. At @ bars: H ≤ 6', no splices are allowed within 1'-8"

above the top of footing.
H > 6', no splices are allowed within H/4

above the top of footing.

2. Non-contact lap splice length. Maximum transverse spacing of spliced rebars to be 3 inches.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 5 (CASE 2)

NO SCALE

B3-4B

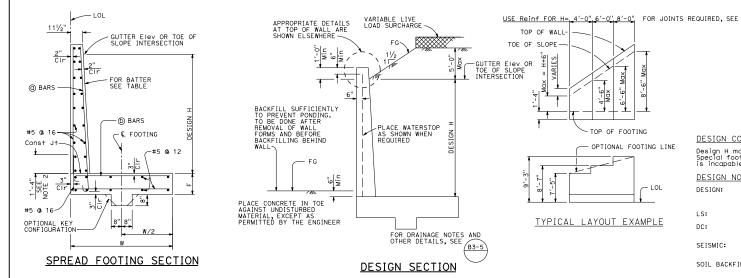
POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Gary Wang

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@ BARS ELEVATION

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SYMBOLS:

Ser - service limit state I Str - strength limit state I Ext I - extreme event limit state I

B' - effective footing width (ft)

 q_0^\prime - net bearing stress (ksf), OG assumed to be FG at toe

qo - gross uniform bearing stress (ksf)

TABLE OF REI	INFORCIN	G STEEL	, DIMENS	IONS AND	DATA
DESIGN H	4'	6′	8'	10'	12'
W	7'-5"	8'-7"	9'-3"	10'-0"	10'-9"
F SPREAD FOOTING	1'-4"	1'-4"	1'-4"	1'-4"	1'-7"
BATTER	NONE	3/8 : 12	3/8 : 12	5/8 : 12	5% : 12
@ BARS	#5 @ 12	#5 @ 12	#5 @ 12	#6 @ 12	#7 @ 12
⑤ BARS	#5 0 6	#6 @ 6	#7 @ 6	#8 @ 6	#8 @ 6
Ser: B', q'o	4.5, 1.6	5.2, 2.1	5.7, 2.5	6.2, 3.0	6.3, 3.6
Str: B', qo	2.5, 3.1	3.0, 3.8	3.2, 4.7	3.5, 5.3	3.9, 6.0
Ext I: B', qo	4.8, 1.8	5.1, 2.6	4.9, 3.5	4.8, 4.5	4.7, 5.9

DESIGN CONDITIONS:

Design H may be exceeded by 6" before going to the next size. Special footing design is required where foundation material is incapable of supporting bearing stress listed in the table.

May 1, 2023

PLANS APPROVAL DATE

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DESIGN NOTES:

AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019. DESIGN:

LS: Variable live load surcharge on level ground surface

Stem Architectural Treatment of thickness up to 2" of concrete (25 psf) considered

SEISMIC:

SOIL BACKFILL: $\emptyset = 34^{\circ}$ $\gamma = 120 \text{ pcf}$ SOIL FOR $\emptyset = 32^{\circ}$ BASE FRICTION: $\gamma = 120$ pcf

REINFORCED CONCRETE:

f'c = 3,600 psi fy = 60,000 psi

Where:
Q:
Q:
P:
DC:
EH:
EV:
LS:
EQE:
EQD: Force Effects
1.25 or 0.90, Whichever Controls Design
1.35 or 1.00, Whichever Controls Design
1.50 or 0.90, Whichever Controls Design
Dead Load of Structure Components
Horizontal Earth Fill Pressure
Vertical Earth Pressure from Earth Fill Weight

Live Load Surcharge Seismic Earth Pressure Soll and Structural and Nonstructural Components Inertia

NOTES:

1. At @ bars: H ≤ 6', no splices are allowed within 1'-8" above the top of footing.
H > 6', no splices are allowed within H/4

above the top of footing.

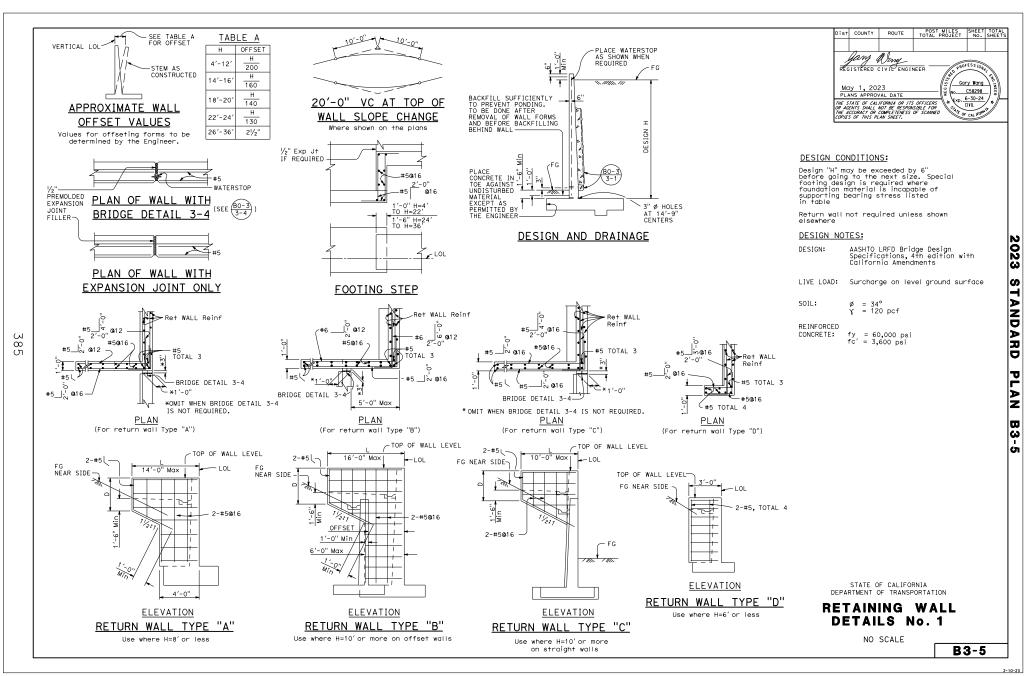
2. Non-contact lap splice length. Maximum transverse spacing of spliced rebars to be 3 inches.

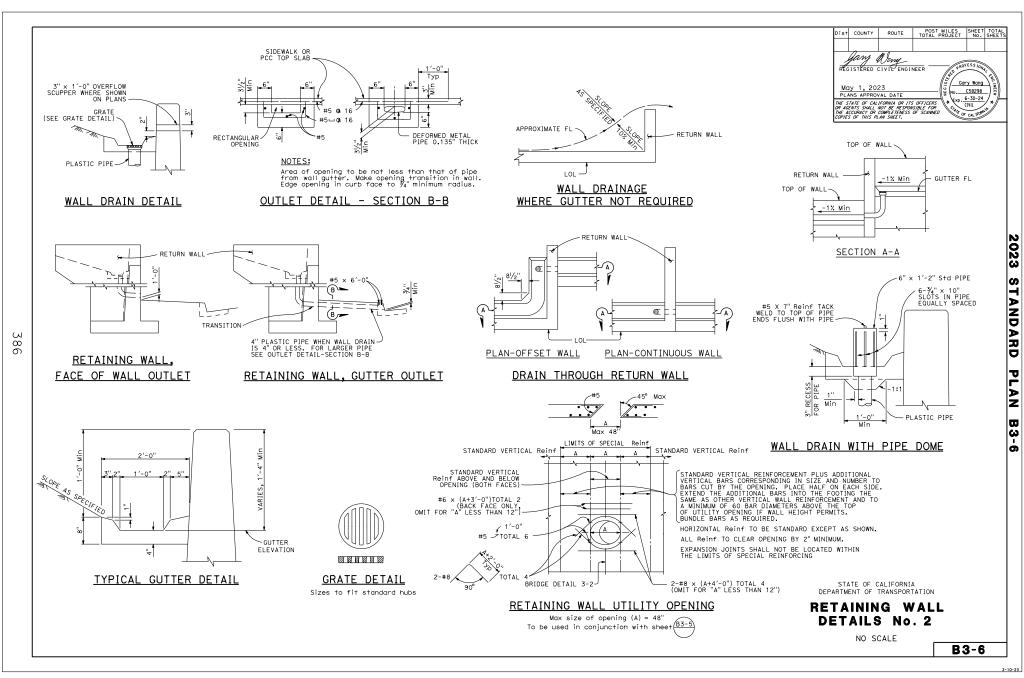
> STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

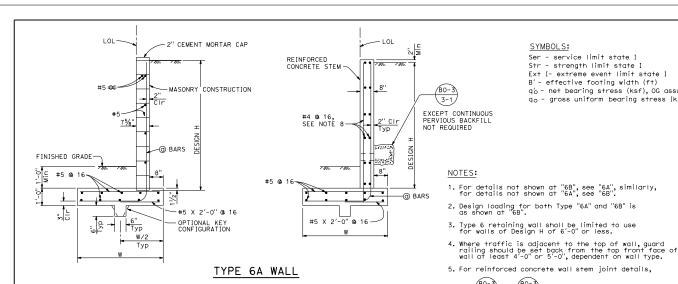
RETAINING WALL TYPE 5 (CASE 3)

NO SCALE

B3-4C







4'-0" Min FOR TYPE 6A WALL 5'-0" Min FOR TYPE 6B WALL

 ∞



and (3-3)

6. No splices are allowed on @ bars.

Ser - service limit state I Str - strength limit state I Ext I- extreme event limit state I B' - effective footing width (ft)

q'o - net bearing stress (ksf), OG assumed to be FG at toe

qo - gross uniform bearing stress (ksf)



DESIGN NOTES:

DESIGN:

AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments, Preface dated April 2019.

Building Code Requirements and Specification for Masonry Structures (TMS 402/602-16)

240 psf live load surcharge on level ground surface as limited by Guard Railing location

SEISMIC:

SOIL BACKFILL: $\emptyset = 34^{\circ}$ $\gamma = 120 \text{ pcf}$

SOIL FOR $\emptyset = 32^{\circ}$ BASE FRICTION: $\gamma = 120$ pcf

REINFORCED CONCRETE: f'c = 3,600 psi fy = 60,000 psi

REINFORCED MASONRY: fm' = 1.500 psify = 60,000 psi

LOAD COMBINATIONS AND LIMIT STATES:
Service I 0 = 1.00DC+1.00EV+1.00EH+1.00LS
Strength I 0 = 0DC+9EV+nEH+1.75LE
Extreme I 0 = 1.00DC+1.00EV+1.00EH+1.00E0D+1.00E0E

Force Effects
1.25 or 0.90, Whichever Controls Design
1.35 or 1.00, Whichever Controls Design
1.50 or 0.90, Whichever Controls Design
Dead Load of Structure Components
Horizontal Earth Fill Pressure
Vertical Earth Pressure from Earth Fill Weight α: β: Π: DC:

EH: EV: LS: EQE: EQD:

Live Load Surcharge Seismic Earth Pressure Soll and Structural and Nonstructural Components Inertia

7. See "Retaining Wall Type 6 Details" sheet for Elevation View and Footing Step Details. GUARD RAILING, SEE NOTE 4 Contractor must verify minimum spacing requirements for the horizontal stem reinforcement based on maximum aggregate size for the concrete mix being used. Horizontal stem reinforcement may be staggered by up to 2". LOL-- LOL LIVE LOAD SURCHARGE AT 1'-0" CLEAR OF GUARD RAILING EDGE OF TRAVELED 9. Hook of (a) bar should be rotated to maintain minimum bottom clearance of 3" or replaced with a 180 degree hook. FG~ REINFORCED CONCRETE STEM -@ BARS -(a) BARS -MASONRY CONSTRUCTION EXCEPT CONTINUOUS PERVIOUS BACKFILL NOT REQUIRED -⊕ BARS, SEE NOTE 9 -@ BARS, SEE NOTE 9 T 78 78 #5 @ 16

TYPE 6B WALL

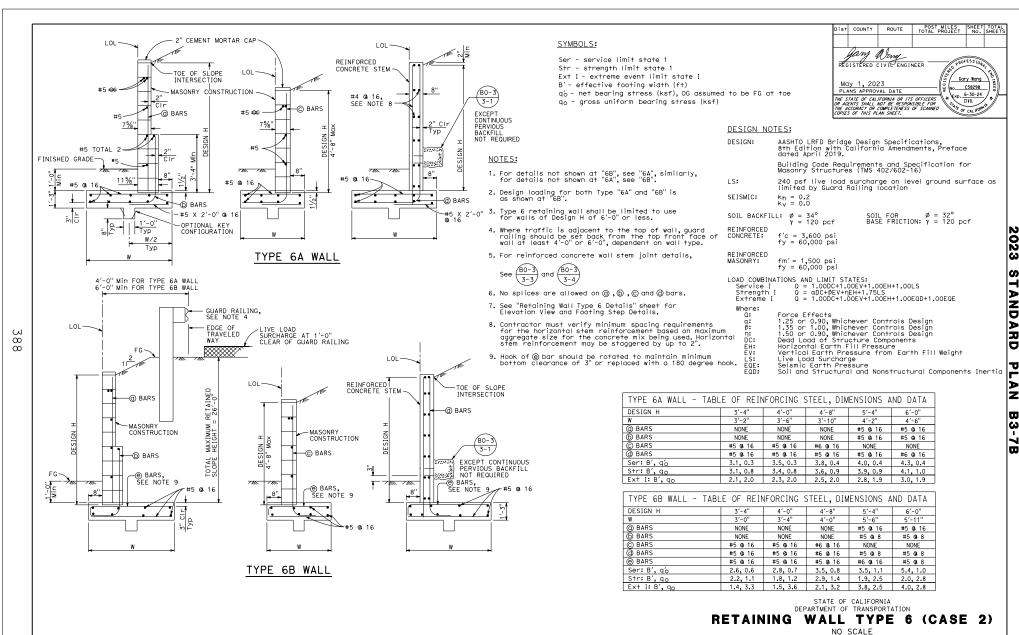
4" 4'-0"	4'-8"	5'-4"	6'-0"
) -4	1 6 -0
2" 3'-6"	3'-10"	4'-2"	4'-6"
16 #5 @ 16	#5 @ 16	#5 @ 16	#5 @ 16
0.2 3.4, 0.2	3.6, 0.3	3.8, 0.3	4.0, 0.3
0.6 3.2, 0.6	3.4, 0.7	3.6, 0.7	3.0, 0.7
0.6 2.8, 0.6	3.1, 0.7	3.4, 0.7	3.7, 0.7
	0.2 3.4, 0.2 0.6 3.2, 0.6	3 16 #5 @ 16 #5 @ 16 0.2 3.4, 0.2 3.6, 0.3 0.6 3.2, 0.6 3.4, 0.7	8 16 #5 @ 16 #5 @ 16 #5 @ 16 0.2 3.4, 0.2 3.6, 0.3 3.8, 0.3 0.6 3.2, 0.6 3.4, 0.7 3.6, 0.7

TYPE 6B WALL - TABL	E OF REIN	FORCING S	TEEL, DIM	ENSIONS AI	ND DATA
DESIGN H	3'-4"	4'-0"	4'-8"	5'-4"	6'-0"
W	2'-8"	3'-0"	3'-4"	4'-2"	4'-6"
@ BARS	#5 @ 16	#5 @ 16	#5 @ 16	#5 @ 16	#5 @ 16
@ BARS	#5 @ 16	#5 @ 16	#5 0 16	#5 @ 16	#6 @ 16
Ser: B', q'o	2.2, 0.4	2.5, 0.5	2.7, 0.6	2.7, 0.9	2.9, 1.1
Str: B', qo	2.2, 0.8	2.4, 1.0	2.6, 1.1	1.5, 2.0	1.6, 2.2
Ext I: B', q ₀	1.5, 1.0	1.7, 1.2	1.8, 1.4	2.5, 1.4	2.6, 1.6

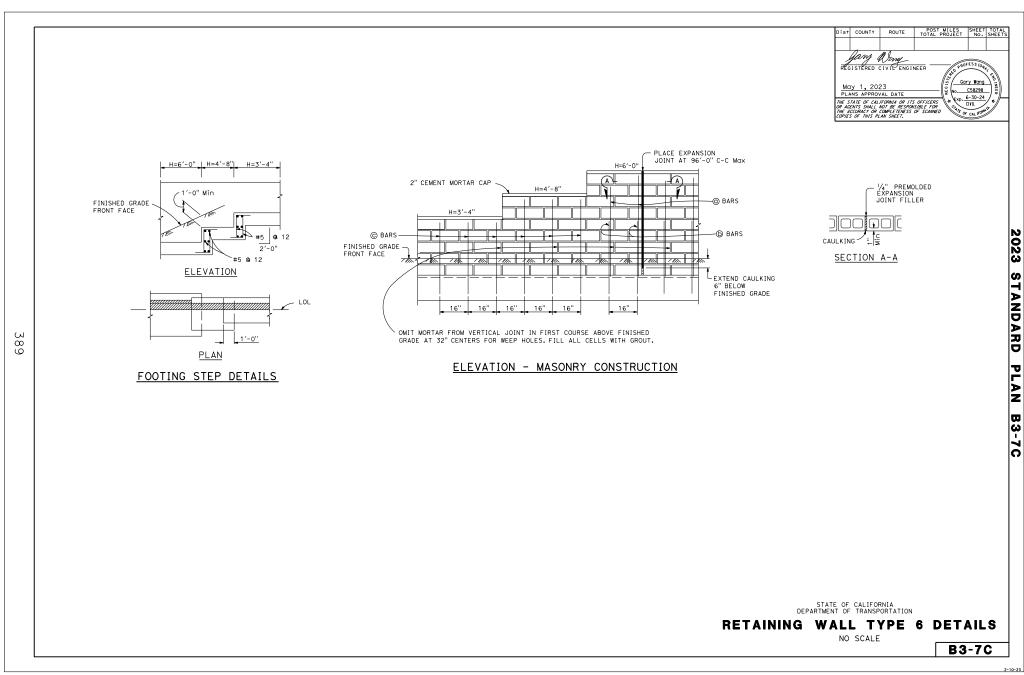
STATE OF CALIFORNIA
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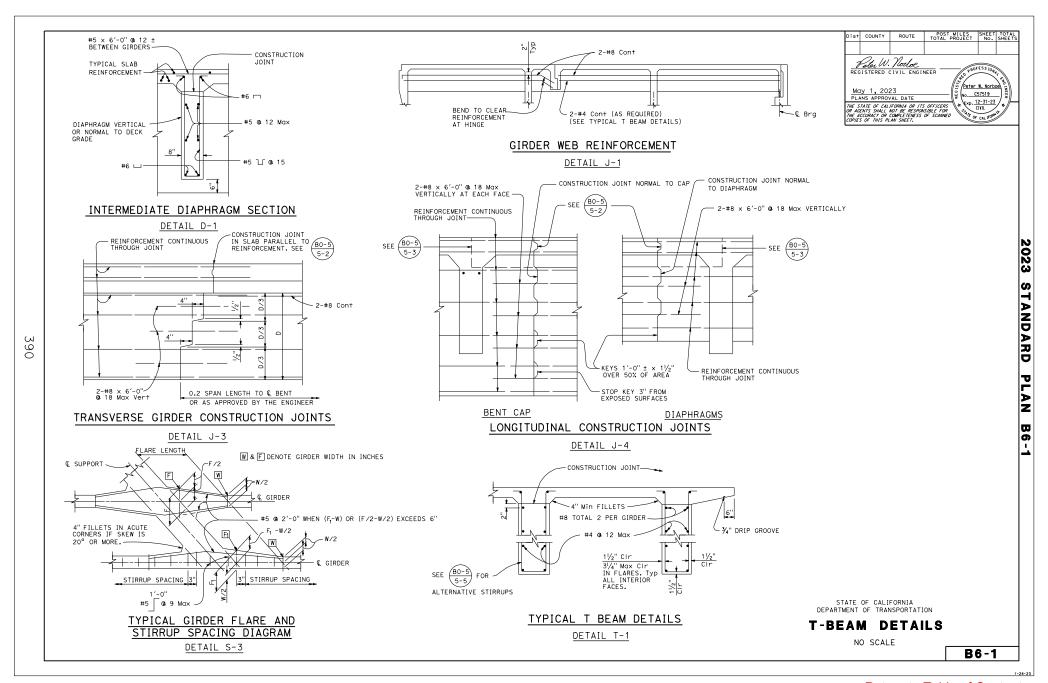
RETAINING WALL TYPE 6 (CASE 1)

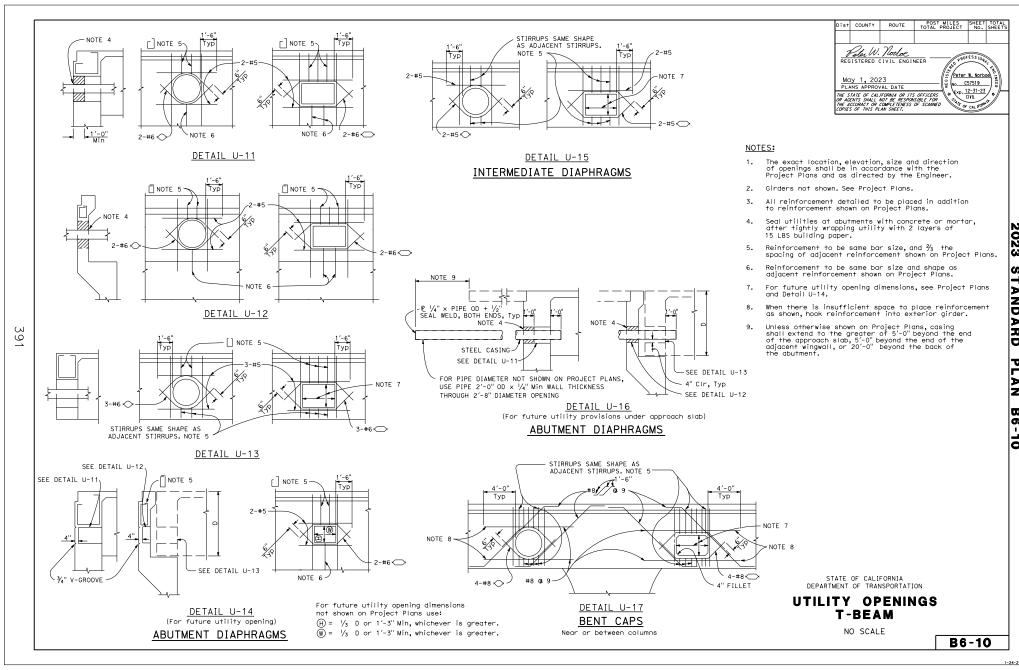
B3-7A

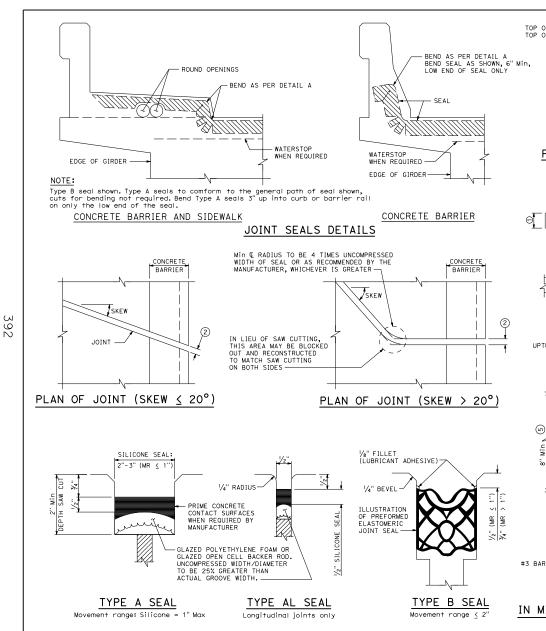


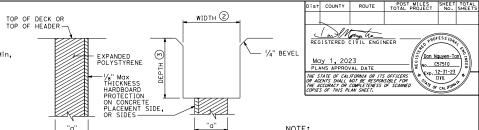
B3-7B











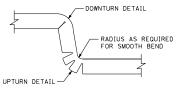
FORMING DETAIL

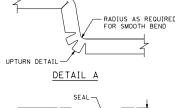
SAWCUT DETAIL

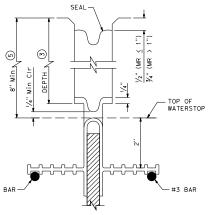
NOTE:

Verify all controlling field dimensions before ordering or fabricatiing any material.

TOP OF SEAL DRILL 1/2" HOLE AND REMOVE WEDGE ∠DRILL 1/2" HOLE THRU SEALER AND CUT TO HOLE







TYPE B JOINT SEAL IN MINIMUM WIDTH POSITION (W2)

NOTES:

- (1) Make smooth cuts from the bottom of seal to $1/y_c$ " clear of top leaving at least one complete cell between the top of the cut and top of the seal. When necessary cut back of seal to clear conduit and round openings.
- 2 Sawcut groove widths shall be as ordered by the Engineer.
- 3 Depth of sawcut:

Type A - Depth to be 2" minimum.

Type B - Depth to be equal to or greater than the depth of seal measured along the contact surface, when compressed to minimum width position (W₂) plus dimensions shown.

- (4) MR (movement range) as shown on other plan sheets.
- (5) Other depths must be approved by the Engineer.
- 6 Cover sidewalk joint with expansion joint armor. Expansion joint armor details shown on other plan sheets.

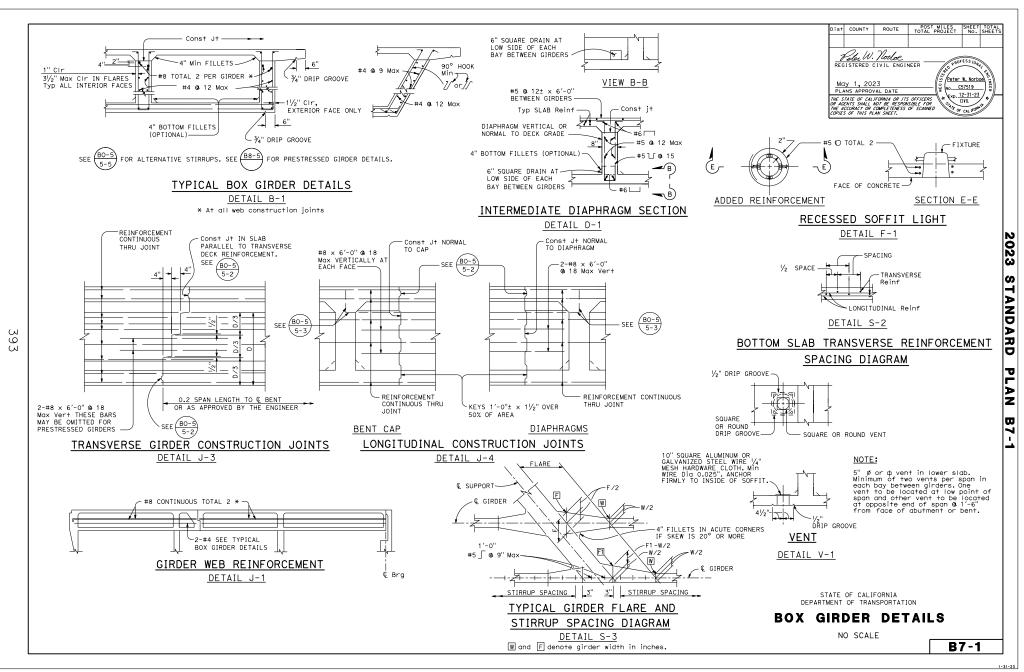
DIMENSIONS	"a" OF	JOIN'	T REC	UIRED			
HOVENEUT BANGE		"a" DIMENSION					
MOVEMENT RANGE (MR)	BRIDGE	DECK C	PLACED				
4	TYPE	WINTER	FALL- SPRING	SUMMER			
2"	ALL EXCEPT CIP/PS	11/2"	11/4"	3/4"			
-	CIP/PS	11/4"	1"	1/2"			
11/2"	ALL EXCEPT CIP/PS	11/4"	1"	1/2"			
172	CIP/PS	1"	3/4"	1/2"			
1"	ALL EXCEPT CIP/PS	1"	3/4"	1/2"			
1	CIP/PS	3/4"	1/2"	1/2"			
1/2"	ALL EXCEPT CIP/PS	3/4"	3/4"	1/2"			
/2	CIP/PS	1/2"	1/2"	1/2"			

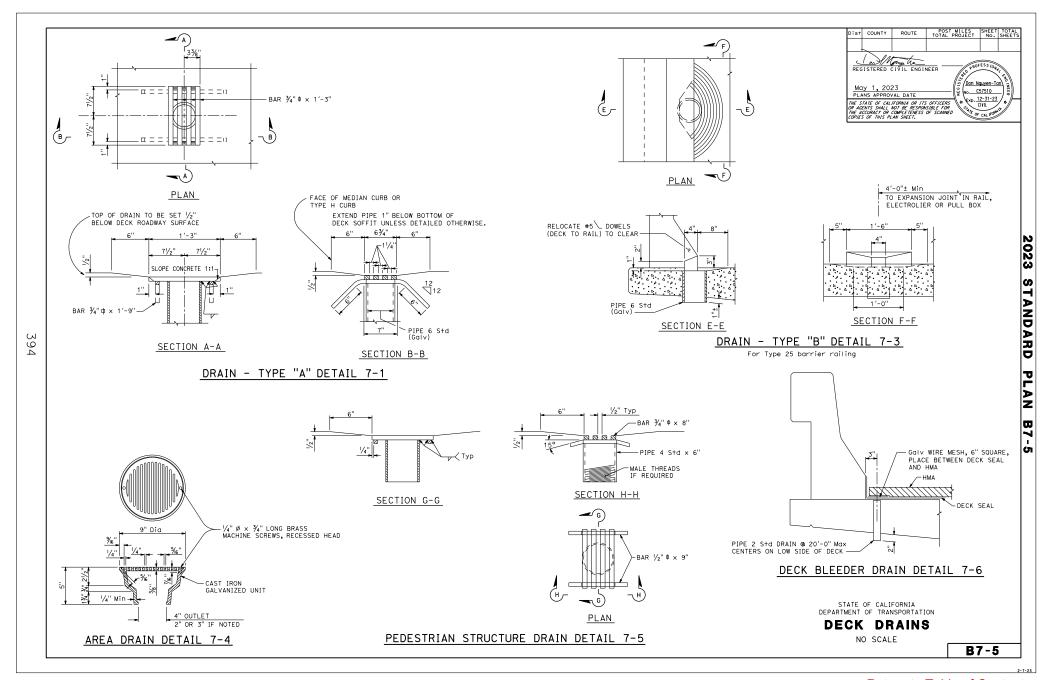
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

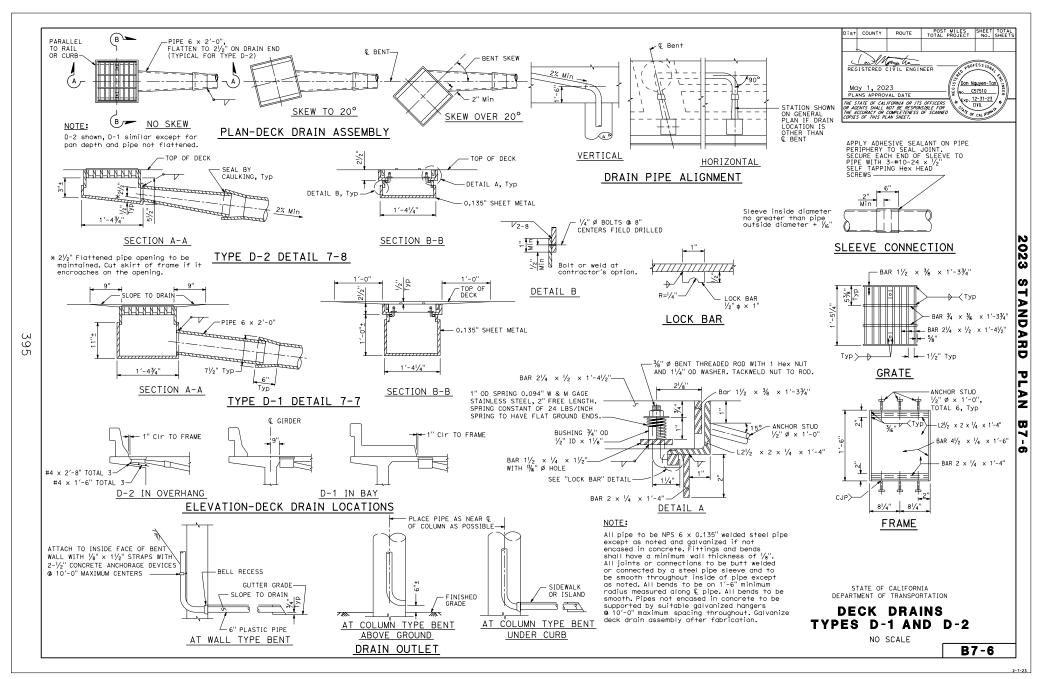
JOINT SEALS (MAXIMUM MOVEMENT RANGE = 2"

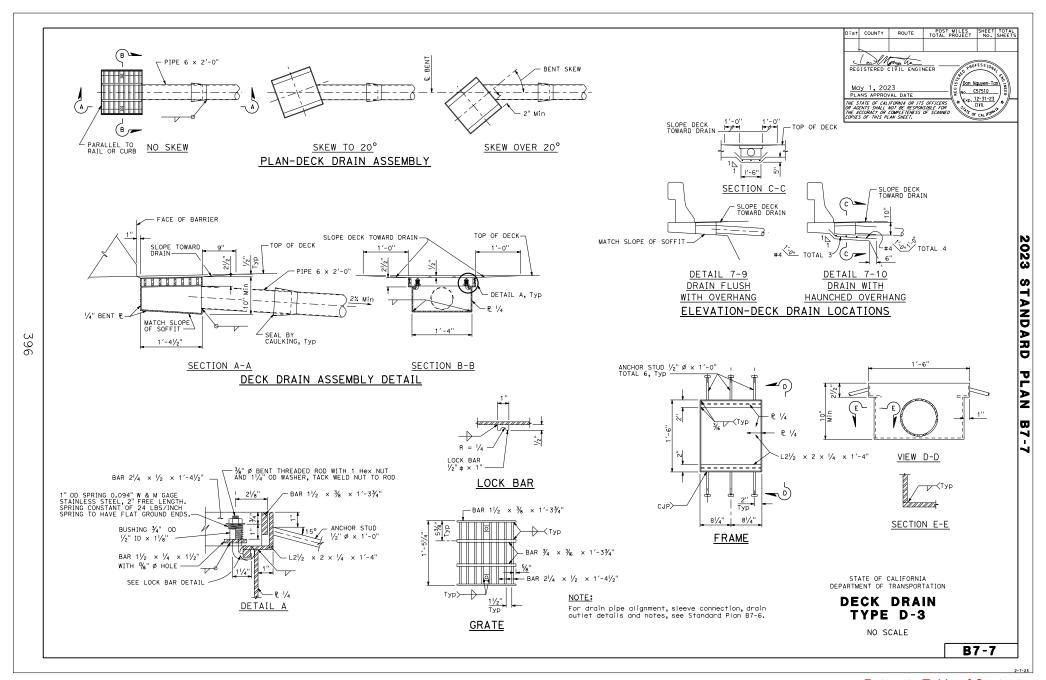
NO SCALE

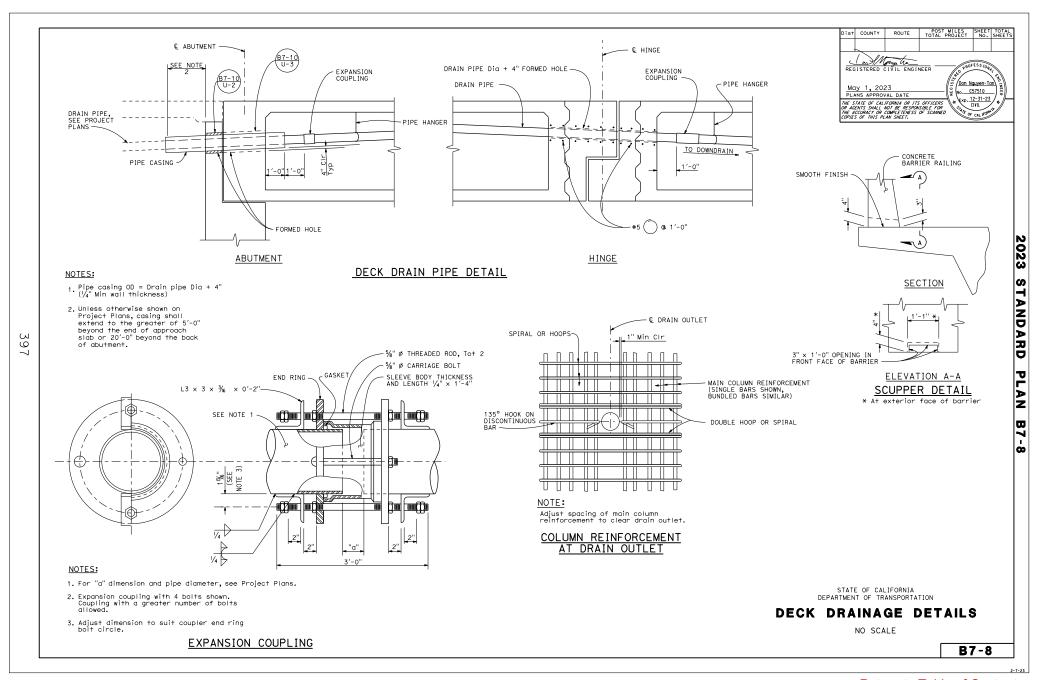
B6-21

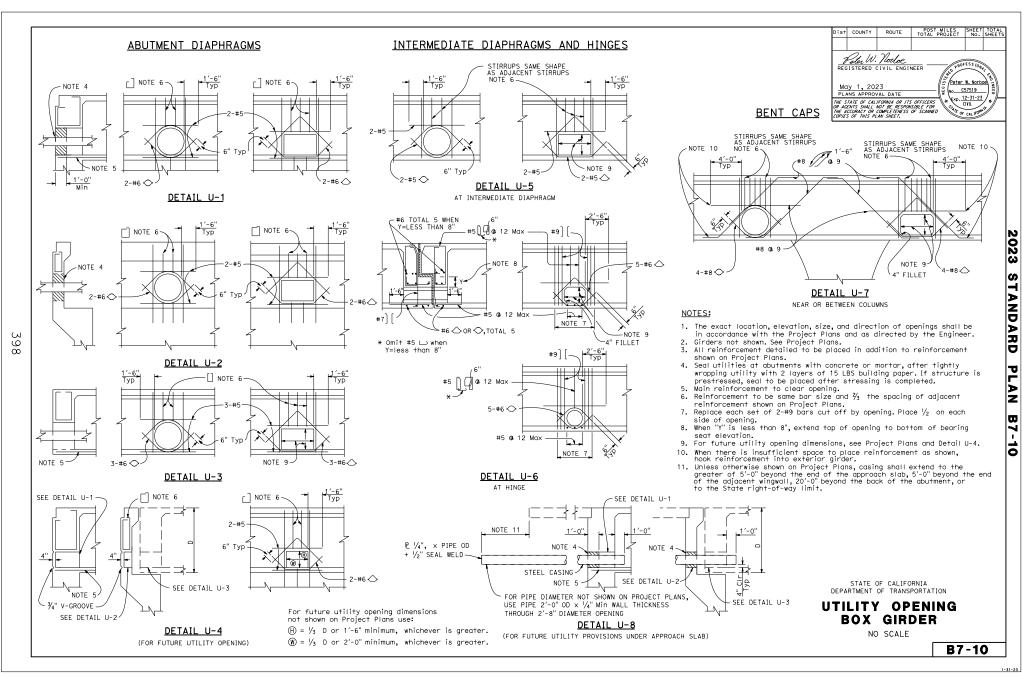


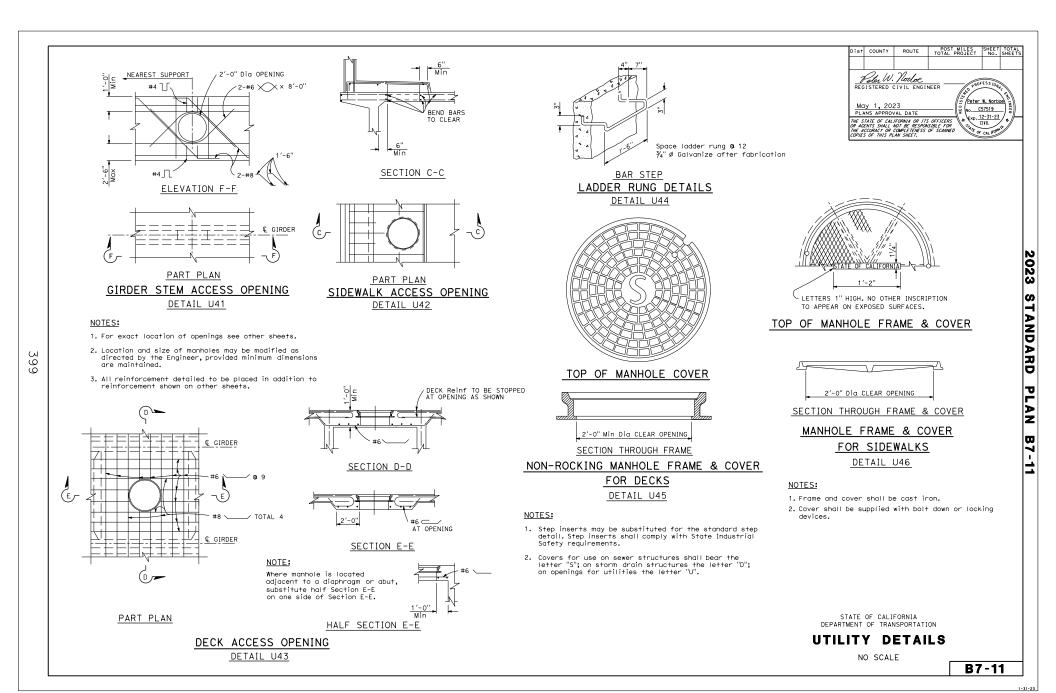




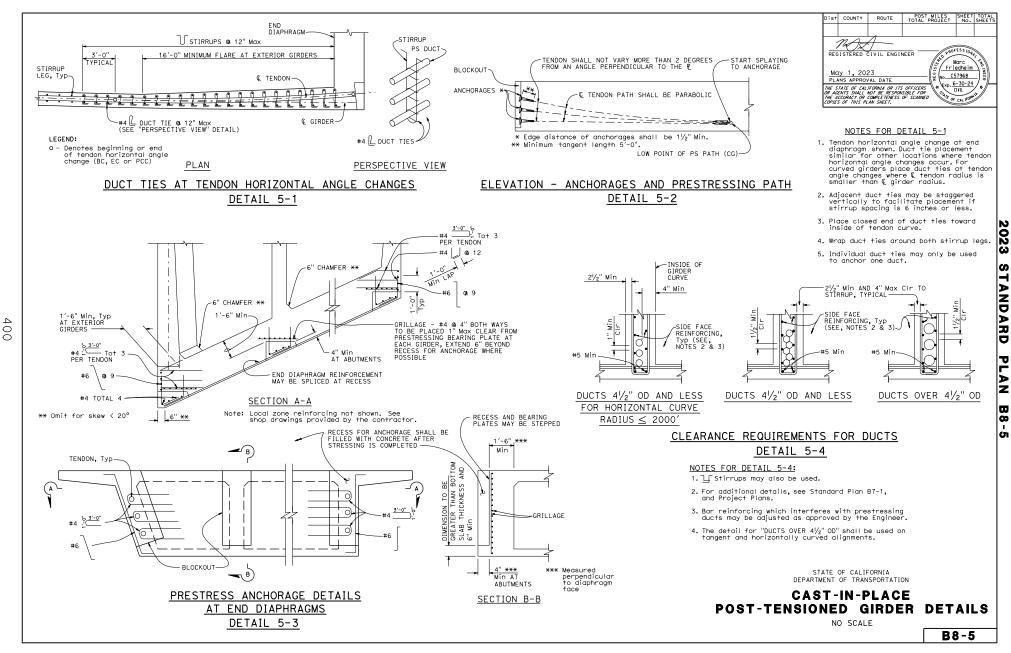


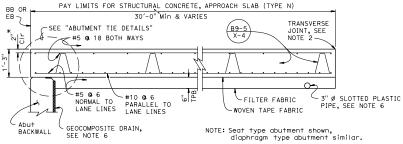






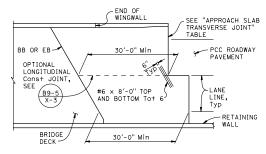






APPI	ROACH SLAB TRAN	SVERSE JOINT
APPROACH SKEW, x	WITH HMA ROADWAY PAVEMENT	WITH PCC ROADWAY PAVEMENT
x < 20°	PARALLEL TO BB OR EB	PARALLEL TO BB OR EB
20°<×<45°	PARALLEL TO B9-5	STAGGER AT LANE LINES 24'TO 36'APART, SEE "END STAGGER DETAIL"
× > 45°	PARALLEL TO B9-5 BB OR EB A	STAGGER AT EACH LANE LINE, SEE "END STAGGER DETAIL"





END STAGGER DETAIL

FXPANDED POLYSTYRENE

ASSEMBLY

AROUND ANCHOR

LEGEND:

* - All approach slab reinforcement shall be epoxy coated and minimum top mat cover $2 \frac{1}{2}$ in Freeze-Thaw Area.

NOTES:

- For MR ≤ 2", adjust reinforcement to clear sawcut for sealed joint. For MR > 2", reinforcement must be normal to BB or EB and spaced to avoid joint seal assembly anchorage.
- 2. Transverse Joint must be a minimum of 5'-0" from an existing or constructed weakened plane joint in approach PCC roadway pavement.
- 3. Place dowels into the adjacent PCC pavement along the Transverse Joint, refer to Standard Plans P10 and P30.
- 4. At the Contractor's option, approach slab transverse reinforcement may be placed parallel to BB or EB. Spacing of transverse reinforcement is measured along € roadway.
- 5. For details not shown, refer to Standard Plan B9-5.
- For structure approach drainage details, refer to Standard Plan B9-6.

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STRUCTURE APPROACH **TYPE N (30)**

NO SCALE

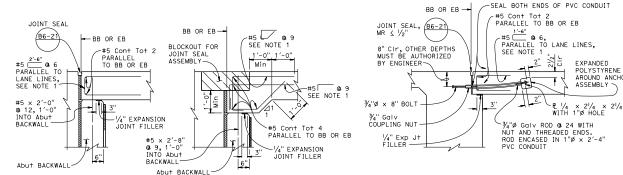
B9-1

SECTION A-A

MR > 2"

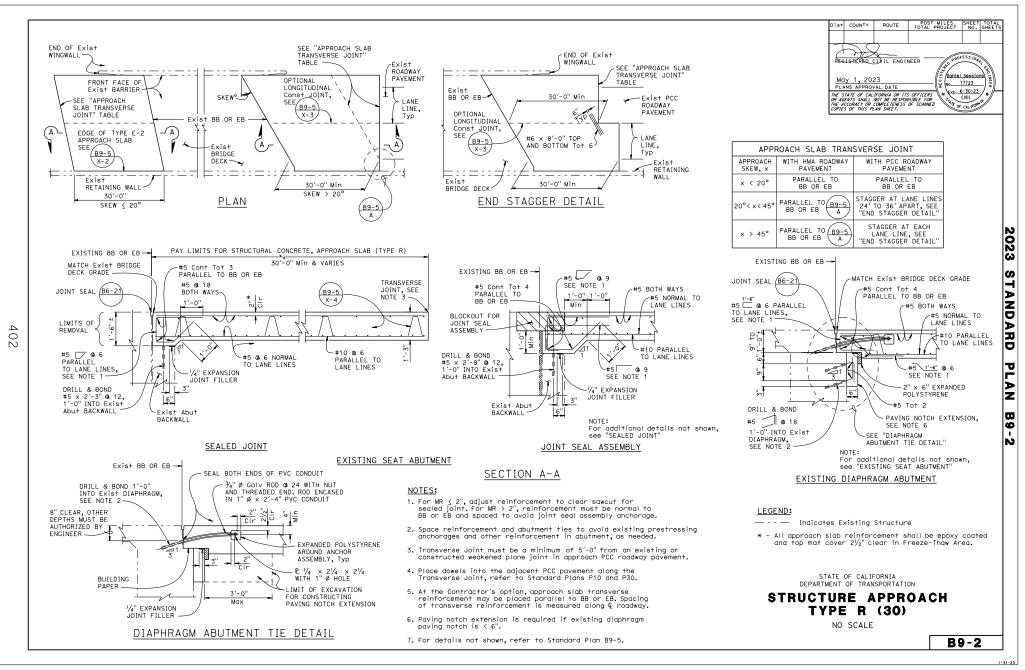
SEAT TYPE ABUTMENT (B9-5)

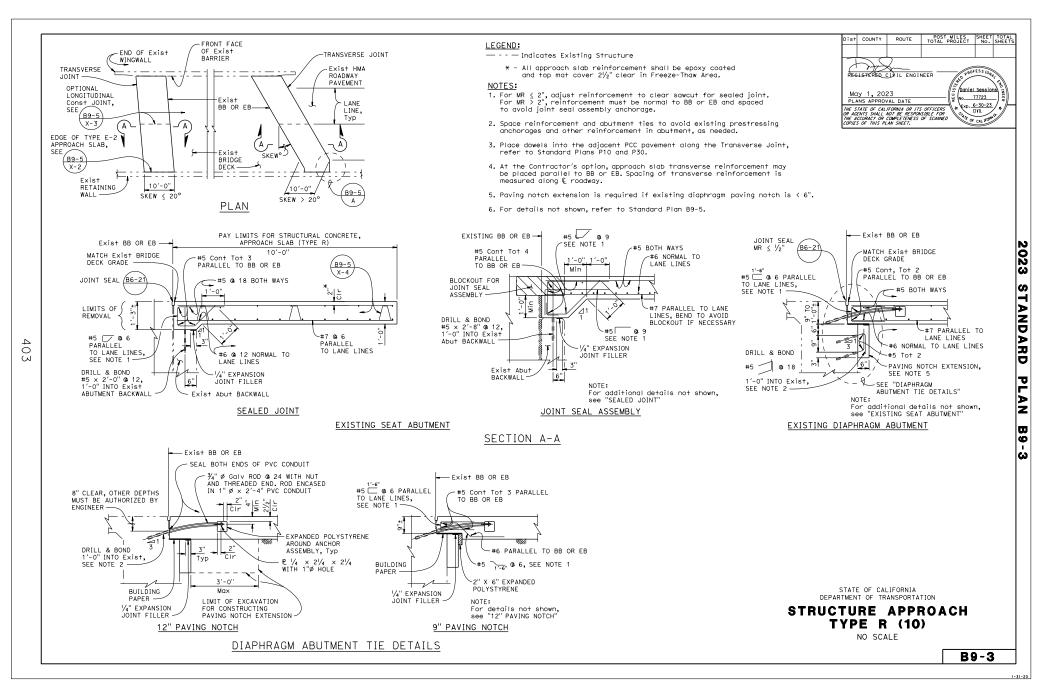
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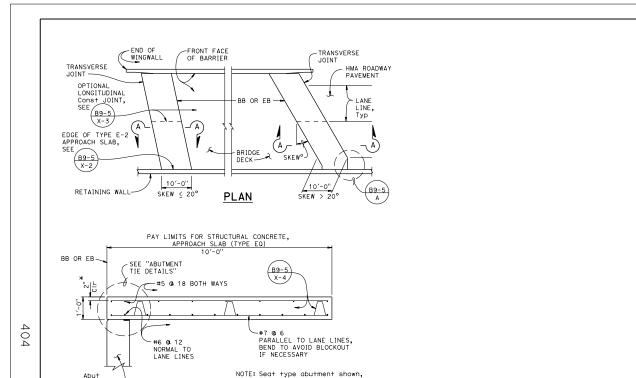


ABUTMENT TIE DETAILS

DIAPHRAGM TYPE ABUTMENT







diaphragm type abutment similar.

BLOCKOUT FOR JOINT SEAL

ASSEMBLY

#5 × 2'-8" @ 9, 1'-0" INTO Abut

BACKWALL

SEAT TYPE ABUTMENT B9-5

Abut BACKWALL-

BB OR EB

SEE NOTE 1

Min

MR > 2"

1'-0",1'-0

#5 Cont Tot 4

PARALLEL

1/4" EXPANSION JOINT FILLER

ABUTMENT TIE DETAILS

SECTION A-A

-BB OR EB

PARALLEL

Тур

MR ≤ 2"

#5 Cont Tot 2

-#5 ^{2'-6"}

PARALLEL TO

LANE LINES,

SEE NOTE 1

" EXPANSION

JOINT FILLER

TO BB OR EB

BACKWALL

JOINT SEAL B6-21

#5 x 2'-0"

@ 12, 1'-3" INTO Abut

Abut BACKWALL

BACKWALL

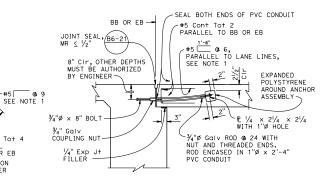
Dist COUNTY ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS REGISTERED CLYIL ENGINEER May 1, 2023 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OF PLANSIFICATION OF PLANS APPROVAL DATE THE STATE OF CALIFORNIA OF PLANSIFICATION OF PLANSIFICA

LEGEND:

* - All approach slab reinforcement shall be epoxy coated and minimum top mat cover 21/2" in Freeze-Thaw Area.

NOTES:

- 1. For MR \leq 2", adjust reinforcement to clear sawcut for sealed joint. For MR > 2", reinforcement must be normal to BB or EB and spaced to avoid joint seal assembly anchorage.
- 2. Place dowels into the adjacent PCC pavement along the Transverse Joint, refer to Standard Plans P10 and P30.
- 3. At the Contractor's option, approach slab transverse reinforcement may be placed parallel to BB or EB. Spacing of transverse reinforcement is measured along <code>@ roadway.</code>
- 4. For details not shown, refer to Standard Plan B9-5.



DIAPHRAGM TYPE ABUTMENT

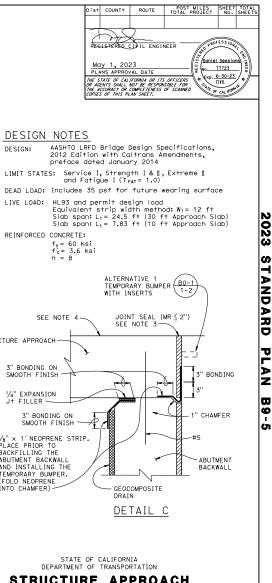
STATE OF CALIFORNIA
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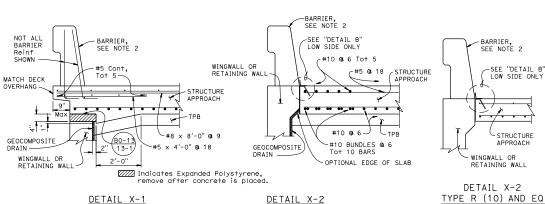
STRUCTURE APPROACH Type EQ (10)

NO SCALE

B9-4

- - -





DETAIL X-1 TYPE E-1

100

STAGE 1 STAGE 2

STAGE 2

Min LAP

Min LAP*

DETAIL X-3

LONGITUDINAL CONSTRUCTION

JOINT ALTERNATIVES

STAGE 2

3" Typ____

OR Frist

3" Typ_

STAGE 1

3" Typ

STAGE 1

#5 6" 1'-3" @ 12 **

INTO 6" DEEP HOLE

 $-1\frac{1}{2}$ " x $3\frac{1}{2}$ " CONTINUOUS RECESSED KEY, OMIT IF CONNECTING TO EXISTING

STRUCTURE APPROACH

3/4" Ø x 1'-0" @ 12 **

THREADED ROD, Galv

- 11/2" x 31/2" CONTINUOUS

DRILL AND BOND

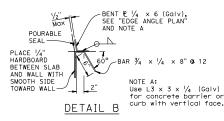
BARRIER.

TYPE E-2

SEE NOTE 2 ~SEE NOTE 1 BENT P 1/4 BRIDGE OR L3 × 3 × 1/4 BB OR EB EDGE ANGLE PLAN

-#5 @ 3'-0"± TRANSVERSELY AND 4'-0"± LONGITUDINALLY DETAIL X-4

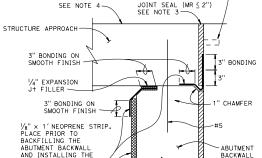
TRANSVERSE JOINT FOR HMA ROADWAY PAVEMENT - FDGE OF APPROACH SLAB DETAIL A



NOTES:

BAR CHAIR DETAIL

- 1. End the plate or edge angle at beginning of barrier transition, end of wingwall or end of structure approach as applicable.
- 2. Solid concrete barrier shown, details similar for all concrete and standard post-beam barriers.
- 3. Joint protection details shown for MR \leq 2". Details similar when joint seal assembly is required.
- Polyester concrete shall be placed across approach slab to match bridge deck protection in Freeze-Thaw Area.



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TEMPORARY BUMPER.

(FOLD NEOPRENE

INTO CHAMFER) -

STRUCTURE APPROACH SLAB DETAILS

NO SCALE

B9-5

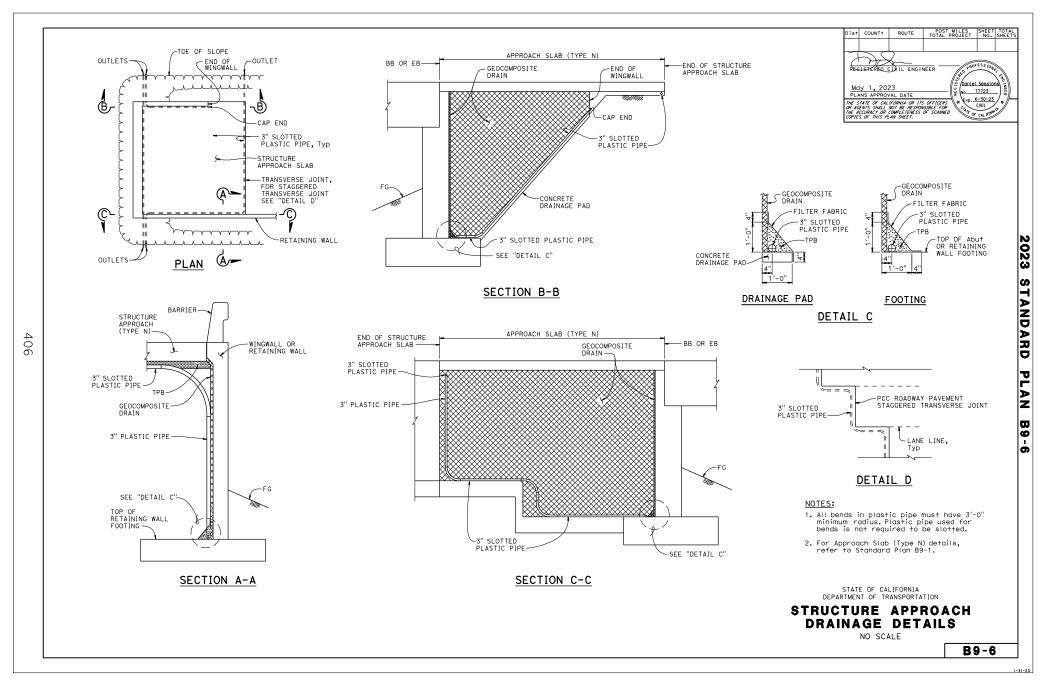
LEGEND:

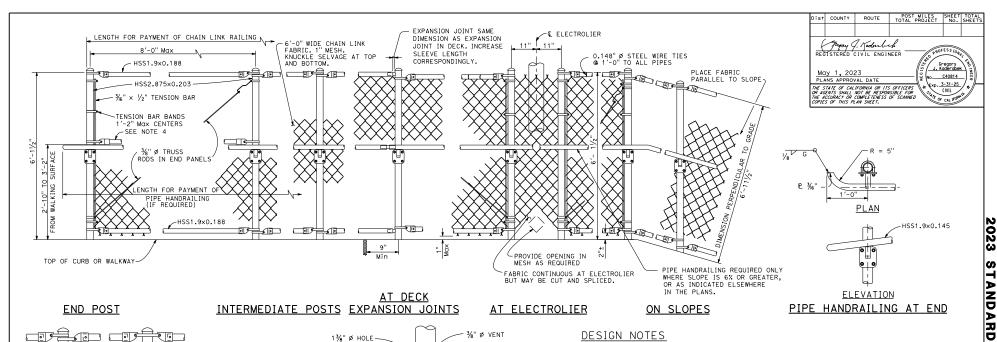
COUPLING NUT, **

3/4" Ø × 8" BOLT **

05

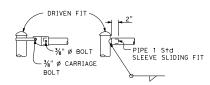
- * Min Lap splice for bottom Reinf in Freeze-Thaw Area shall be 3'-6".
- ** Threaded Rods and Dowels in Freeze-Thaw Area shall be stainless steel or epoxy-coated prefabricated 9" Drill and Bond dowels into a 9" deep hole.







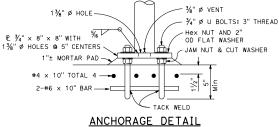
ALTERNATIVE DETAILS



TYPICAL CONNECTION DETAILS

NOTES:

- 1. Peen all bolt threads.
- 2. Railing shall conform to horizontal and vertical alignment. Posts shall be vertical. Top and bottom pipes shall be bent if radius is 148'-0" or less; may be on 8'-0" chords if radius is over 148'-0".
- 3. When railing is on slope, 6'-0" chain link fabric shall be placed parallel to slope.
- 4. Additional HSS 1.9 \times 0.188 required when radius is less than 150'-0".



5" Ø x 9" POST POCKET

ALTERNATIVE ANCHORAGE DETAIL

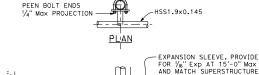
May be used when thickness of concrete is 1'-0" or more.

DESIGN NOTES

AASHTO LRFD Bridge Design Specifications 8th Edition 2017 with California Amendments April 2019

CONCRETE:

fy = 60 ksi $f_C^7 = 3.6 \text{ ksi}$ STRUCTURAL STEEL HSS: $f_y = 50 \text{ ksi}$





PIPE HANDRAILING BRACKET

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

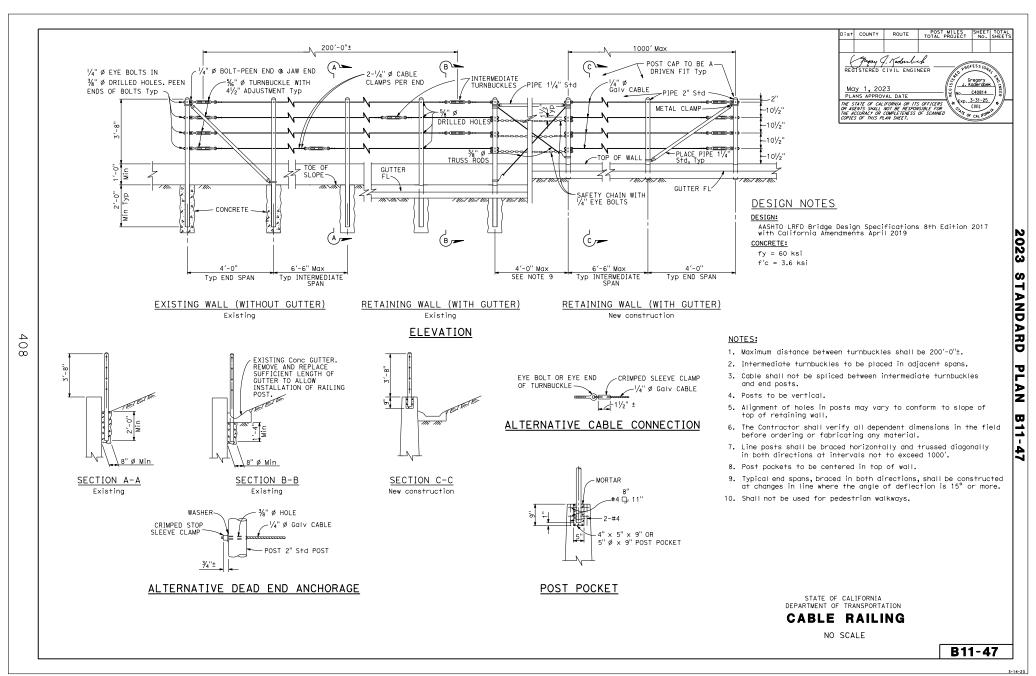
CHAIN LINK RAILING

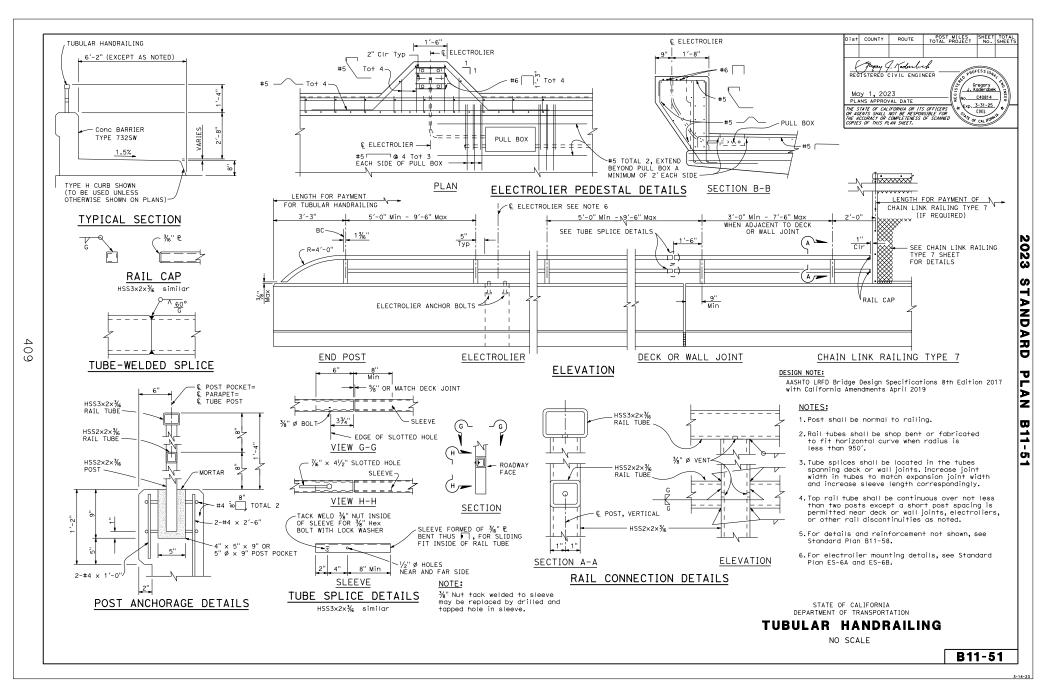
NO SCALE

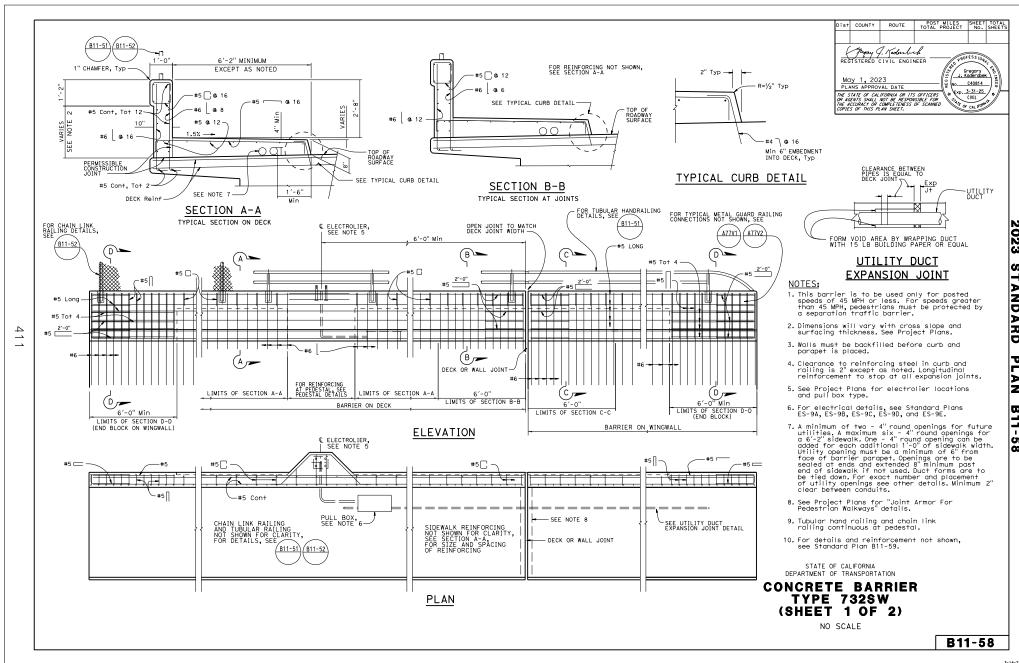
B11-7

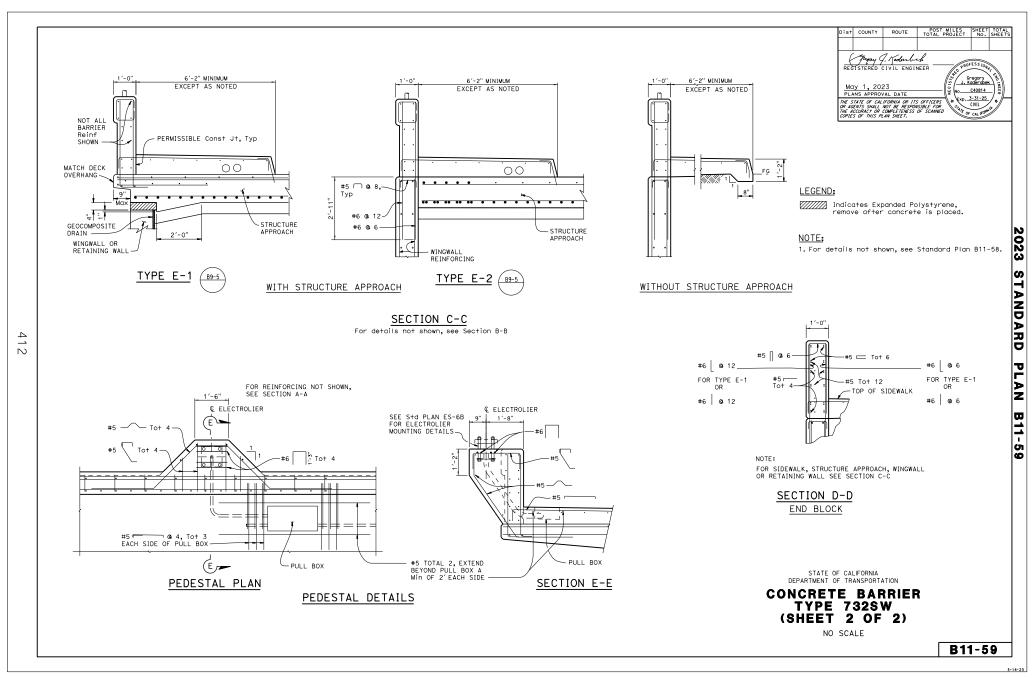
PLAN

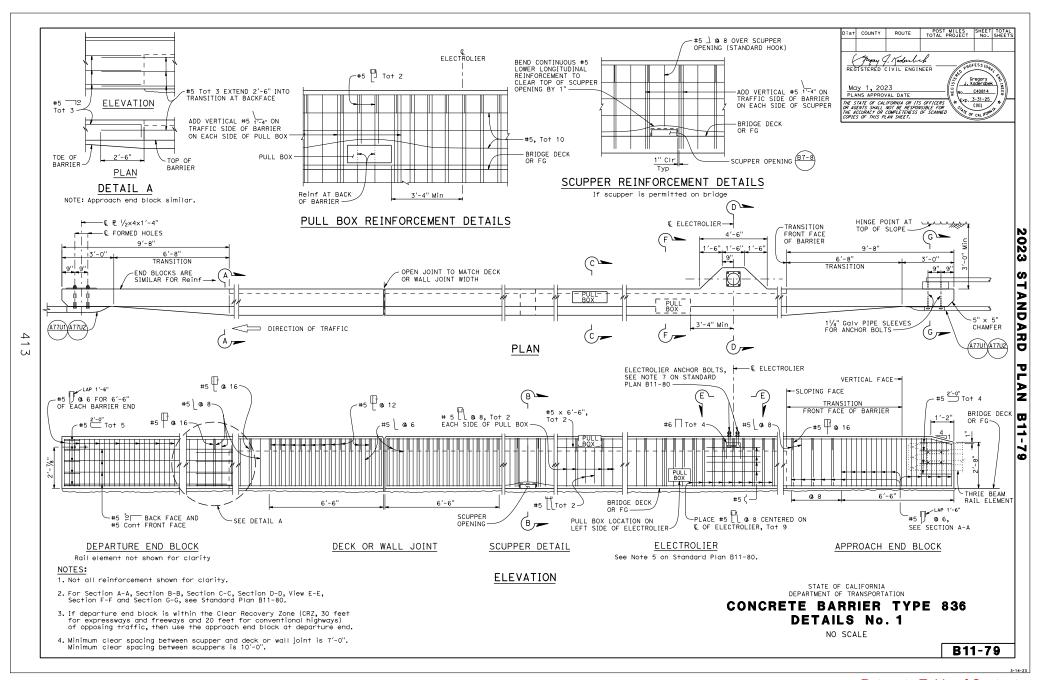
B11-

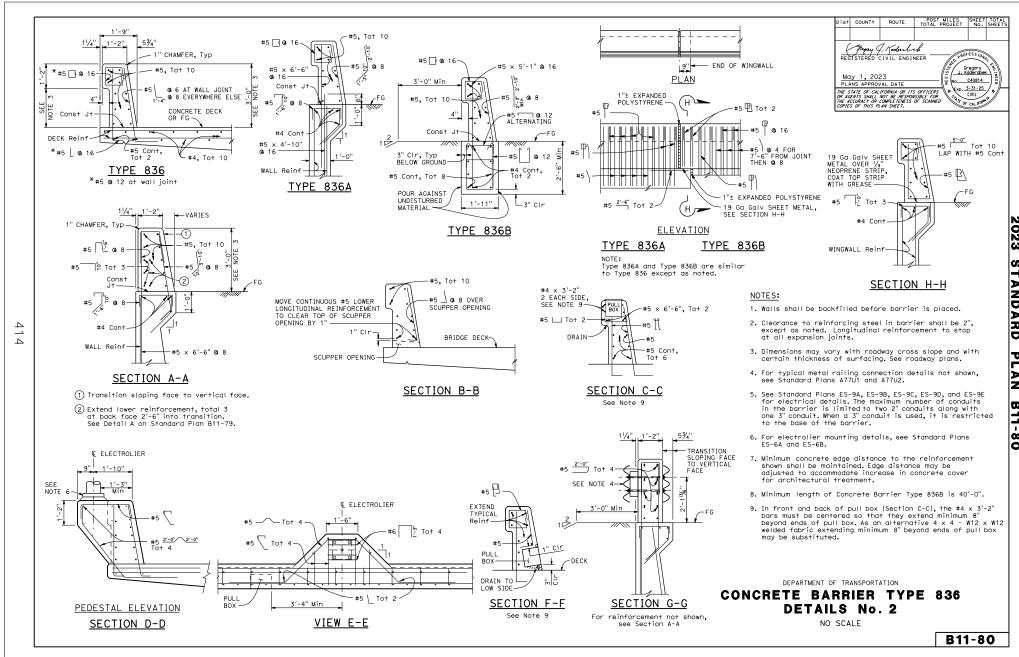


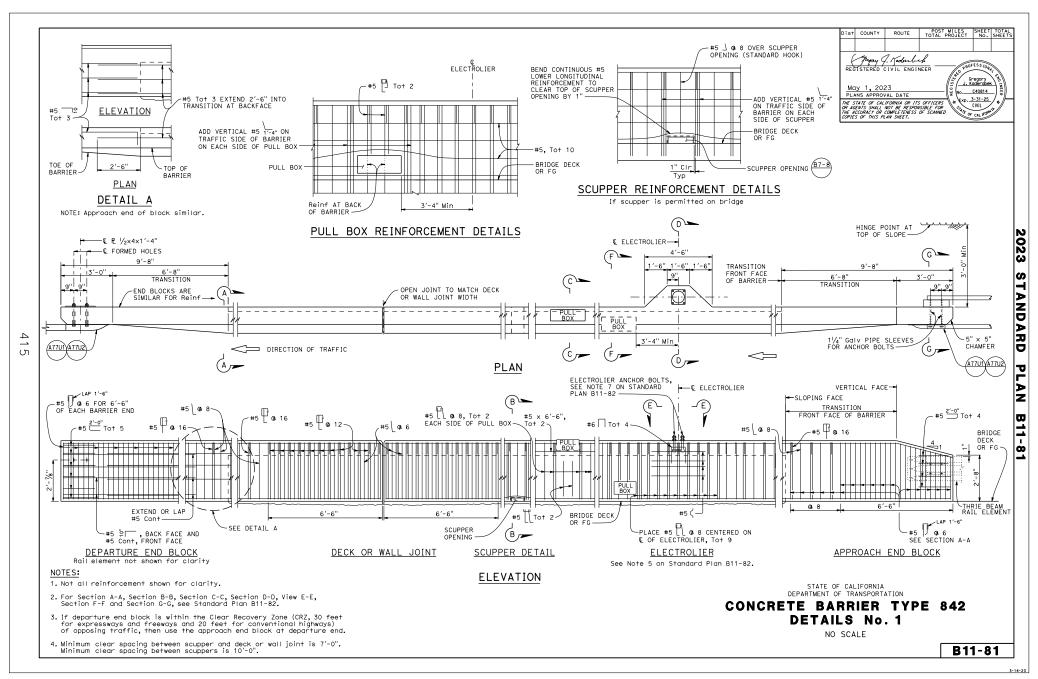


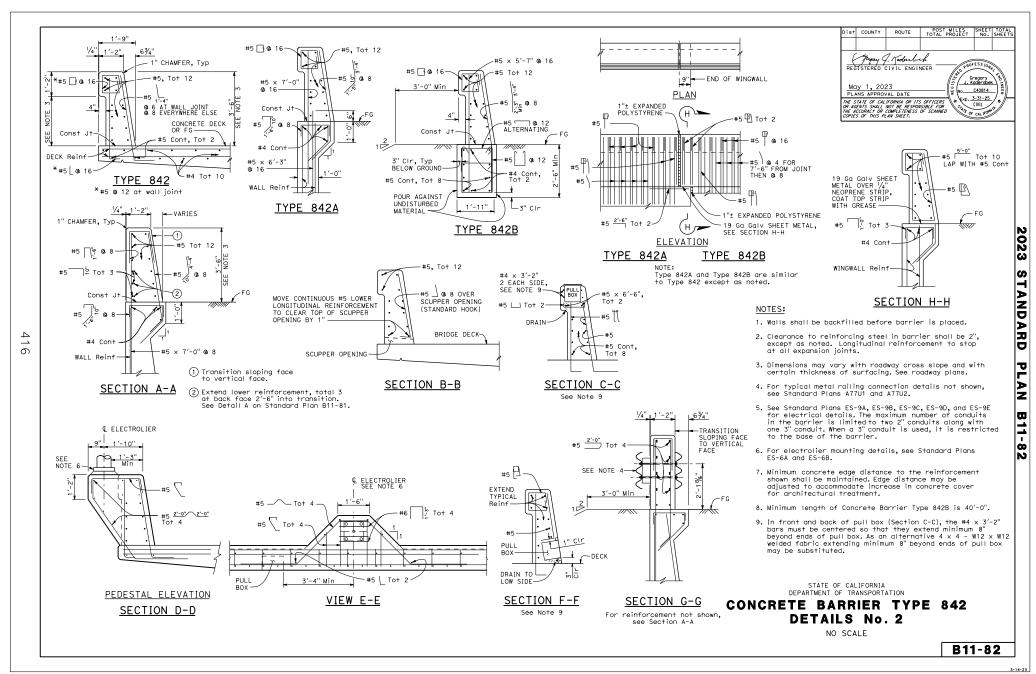


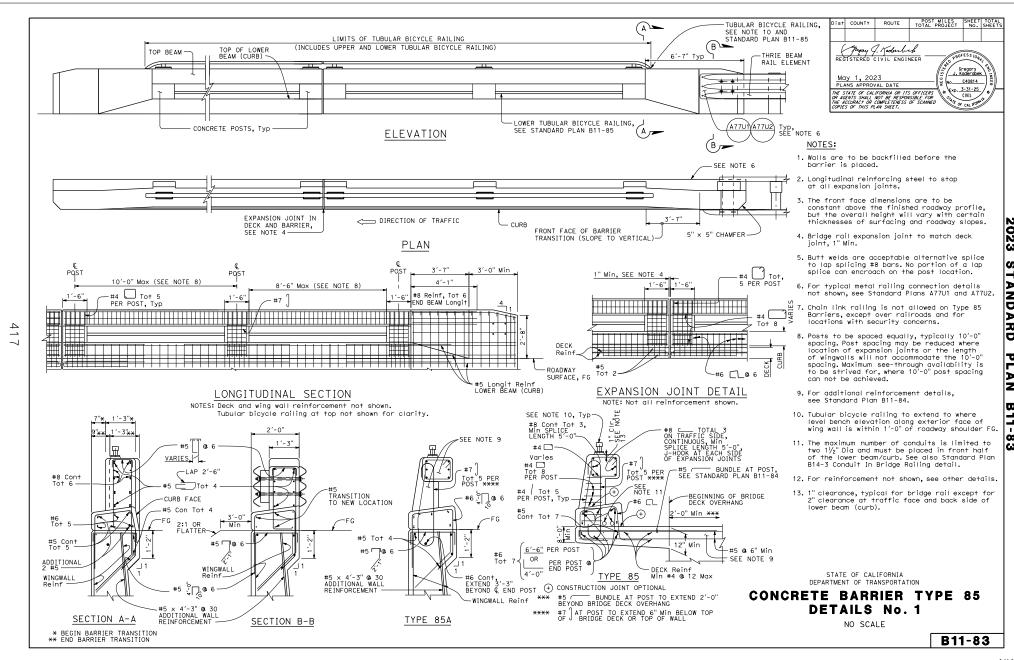


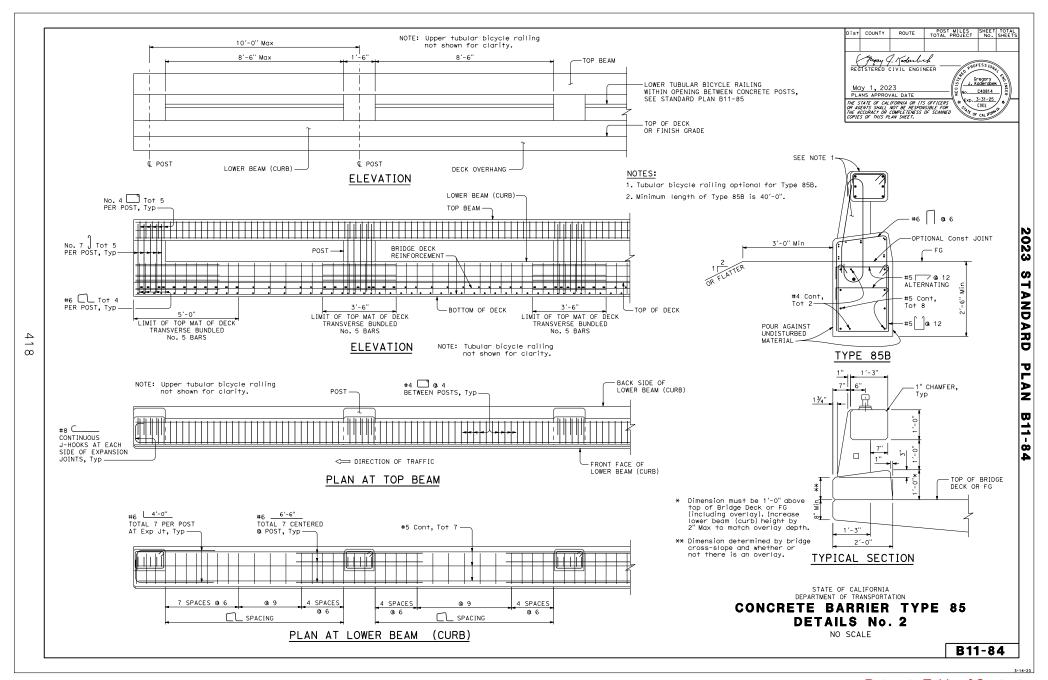


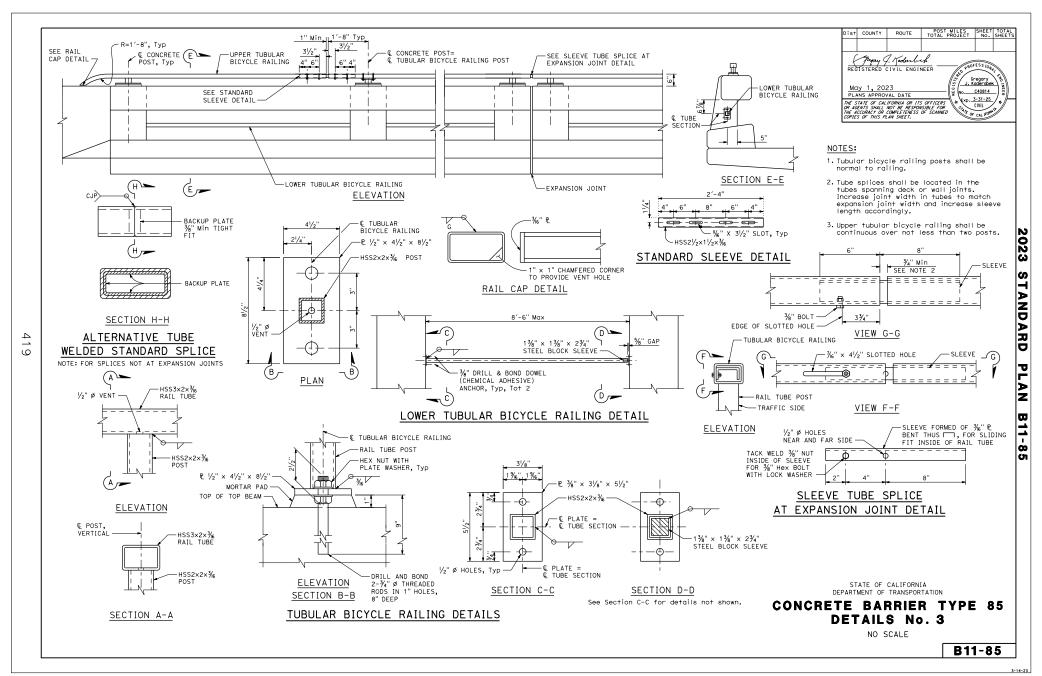












120

DESIGN NOTES:

AASHTO LRFD Bridge Design Specifications, 4th edition with California Amendments. Design:

Soil: $\gamma = 140 \text{ pcf}$

Reinforced Concrete:

fy = 60 ksi n = 8 $f_C' = 3.6$ ksi

Structural Steel Plate:

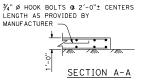
 $6" \times 2"$ Annular Corrugations $f_y = 33$ ksi

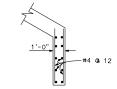
Specified thickness includes galvanization

NOTES:

- 1. For strutting requirements of structural steel plate vehicular undercrossing during construction, see Standard Plan D88A.
- 2. Minimum cover from crown to shoulder hinge point = 5'-0".
- 3. Backfill shall be brought up uniformly on both sides of the structure.
- 4. Minimum cover for construction loading, see Standard Plan D88.







SIDE ELEVATION

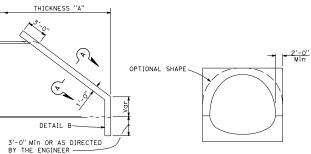
END BEVELS

#4 @ 12 both ways. Maximum skew is 35°.



END ELEVATION

Reinforce both faces of concrete collar with



ALTERNATIVE 2

TOP OF CORNER P

SIDE ELEVATION

FILL SLOPE

THICKNESS THICKNESS

NOTE:

Thickness "B" two thicknesses greater than thickness "A" except for 0.249" and 0.280" thicknesses. Skew-bevels not permitted with Alternative 1.

L1/5 ± RISE

Cutoff dimensions are approximate only and may be varied by fabricator to suit plate layout.

ALTERNATIVE 1

TABLE A										
GAGE	12	10	8	5	3	1				
THICKNESS	0.110"	0.140"	0.170"	0.218"	0.249"	0.280"				
SPANS STRENGTH I SOIL PRESSURE (Ks						ksf)				
12'-2" TO 16'-9"	6.0	10.0	12.0	17.0	20.0	22.0				
17'-3" TO 20'-4"	4.9	8.1	9.7	13.7	16.2	17.8				

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STRUCTURAL STEEL PLATE VEHICULAR UNDERCROSSING

NO SCALE

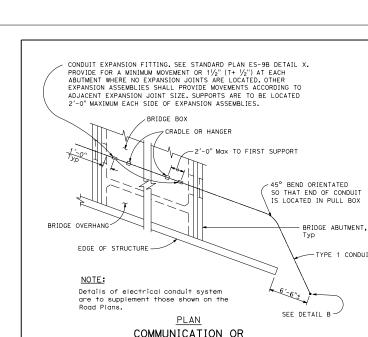
B14-1

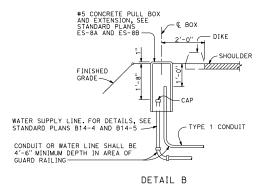
		MAX	(IMUM	HEIGH	T OF I	FILL							
GA	GE	12	10	12	10	8	5	3	1] ,	LAYOU'	T DAT	
THIC	KNESS	0.110"	0.140"	0.110"	0.140"	0.170"	0.218"	0.249"	0.280"	'	LATOU	I DAI	4
SPAN	RISE			FOR S	OIL P	RESSU	RES S	EE TA	BLE A	RT	RS	RC	RB
12'-2"	11'-0"	14.0'	14.0'	14.0'	25.0'	31.0	44.0'	53.0'	58.0'	5′-8"	7′-9"	3'-2"	11′-2
12'-11"	11'-3"	13.0'	13.0′	13.0′	24.0'	29.0'	42.0'	49.0'	55.0′	6'-1"	7′-11"	3'-2"	12'-0
13'-2"	11'-11"	13.0'	13.0′	13.0′	23.0′	28.0'	41.0	48.0'	54.0′	6'-1"	8'-7"	3'-2"	13′-3
13'-10"	12'-3"	12.0'	12.0'	12.0'	22.0′	27.0'	39.0′	46.0'	51.0′	6'-5"	9'-0"	3'-2"	13′-8
14'-1"	12'-10"	12.0'	12.0'	12.0'	21.0	26.0'	38.0′	45.0'	50.0	6'-5"	9'-7"	3'-2"	15′-2
14'-6"	13'-6"	11.0′	11.0′	11.0′	20.0'	25.0'	37.0′	44.0'	48.0′	6'-6"	10'-11"	3'-2"	14'-6
14'-10"	14'-0"	11.0′	11.0′	11.0′	20.0'	24.0'	36.0	42.0'	47.0′	6'-7"	11'-4"	3'-2"	16'-0
15'-6"	14'-4"	10.0'	10.0'	10.0'	19.0′	23.0′	34.0'	40.0'	45.0′	7′-0"	11'-6"	3'-2"	16'-9
15'-9"	15′-1"	10.0'	10.0'	10.0'	18.0'	22.0′	33.0′	40.0'	44.0'	6'-11"	12'-6"	3'-2"	17′-8
16'-4"	15'-5"	9.0'	9.0'	9.0'	18.0'	22.0′	32.0′	38.0'	42.0'	7′-2"	13′-1"	3'-2"	17′-1
16'-5"	16'-1"	8.0′	8.0'	8.0′	17.0'	21.0	31.0′	37.0′	41.0′	7′-4"	13'-2"	3'-2"	22'-7
16'-9"	16'-3"	8.0′	8.0'	9.0'	17.0′	20.0'	30.0	36.0	40.0'	7′-5"	13′-11"	3'-2"	20'-7
17'-3"	17'-0"	11.0′	11.0′	8.0'	16.0	20.0'	29.0′	36.0	39.0′	7′-6"	14'-6"	3′-11"	17′-11
18'-4"	16'-11"	10.0'	10.0′	6.0′	15.0′	19.0′	28.0′	33.0′	37.0′	8'-3"	13'-1"	3′-11"	20'-9
19'-2"	17'-2"		9.0′		14.0′	18.0′	26.0'	32.0′	35.0′	8'-9"	13'-0"	3′-11"	22'-0
19'-6"	17'-7"	*	9.0'	*	14.0′	17.0′	25.0′	31.0′	34.0′	8'-11"	13'-2"	3′-11"	24'-9
20'-4"	17'-10"	1	9.0'		13.0′	16.0'	24.0'	29.0'	32.0′	9'-5"	13'-0"	3′-11"	26'-2

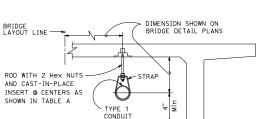
* - Strutting required. See Note 1.

2023 STANDARD

PLAN B14-1







-STRAP 0.105" x 11/2" RADIUS AS REQUIRED ALLOW FREEDOM TO SLIDE TO MATCH CONDUIT ATTACH WITH 2-1/2" Ø Galv BOLTS OR PIPE SIZE HALF CONDUIT Dia VARIES 4" Min 2" × 2" - W2.0 × W2.0 WELDED WIRE FABRIC

Jayuunder & Cill REGISTERED CIVIL ENGINEER

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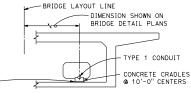
May 1, 2023

PLANS APPROVAL DATE

NOTES:

- 1. Cradles to be precast concrete.
- Secure all cradles to bottom slab of bridge with epoxy adhesive, except as provided below.

CONCRETE CRADLE



UNDER THE FIRST CRADLE SUPPORT INSIDE BRIDGE NEAR ABUTMENT OR HINGE, EPOXY 12 GAGE GALVANIZE STEEL SHEET 2-8" x 1'-4" TO THE FLOOR OF CELL. DO NOT SECURE CRADLE TO STEEL SHEET. CRADLE SHALL BE FREE TO SLIDE TO ACCOMMODATE LATERAL MOVEMENT.

BOX GIRDER CONDUIT SUPPORT DETAILS

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

SPRINKLER CONTROL CONDUITS (CONDUIT LESS THAN 4")

NO SCALE

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Jaswinder S. Gill

E18551

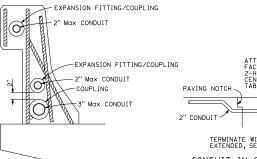
EXP.12-31-24

2023 STANDARD

PLAN

B14-

COMMUNICATION OR SPRINKLER CONTROL CONDUITS



OTHER THAN BOX GIRDER CONDUIT HANGER SUPPORT DETAILS

2" Max PLACE CONDUIT BETWEEN TOP AND BOTTOM

LAYERS OF REINFORCING STEEL

CONDUIT IN OVERHANG

ATTACH CONDUIT TO INSIDE FACE OF WINGWALL WITH 2-HOLE PIPE STRAP AT CENTERS AS SHOWN IN WINGWALL 5 TABLE A TERMINATE WITH PLUG UNTIL CONDUIT IS EXTENDED. SEE STANDARD PLAN ES-9A DETAIL C

TYPE 1 CONDUIT

CONDUIT IN OVERHANG-WINGWALL DETAIL

CONDUIT LOCATIONS

(For 2" conduit only except as noted) For location see Bridge Detail plans.

1. The maximum conduit sizes shown are for a straight run across the bridge without pull boxes.

NOTES:

CONDUIT IN BRIDGE RAILING

2. In a bridge railing with lighting standards or pull boxes, reduce size of affected conduits as needed.

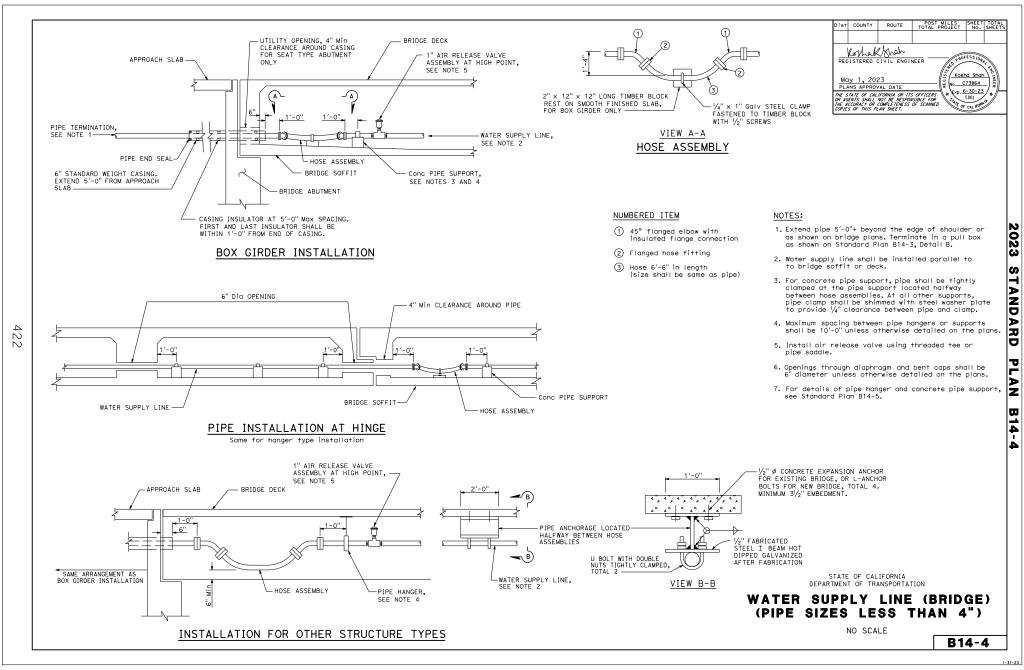
CONDUIT	21/2" OR LESS	3"	31/2"	
ROD	3%" ø	1/2" ø	5⁄8" ø	
STRAP	0.090" x 1"	0.090" x 1"	0.105" x 11/2"	
SUPPORT SPACING	10'-0"	10'-0"	10'-0"	

TABLE A

COMMUNICATION AND

B14-3

Return to Table of Contents





ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

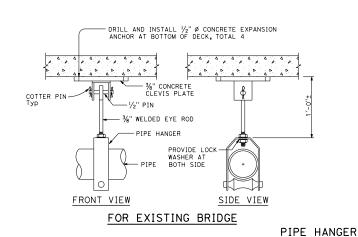
Kosha Shah

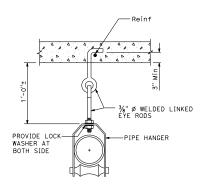
c73864 Exp. 6-30-23

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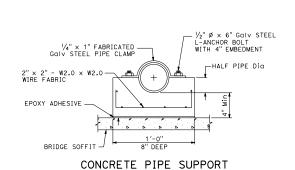
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Mdy 1, 2023 PLANS APPROVAL DATE





FOR NEW BRIDGE



123

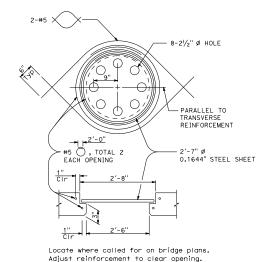


Plate must be installed before top deck is placed.

SOFFIT ACCESS OPENING

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

WATER SUPPLY LINE (DETAILS)
(PIPE SIZES LESS THAN 4")

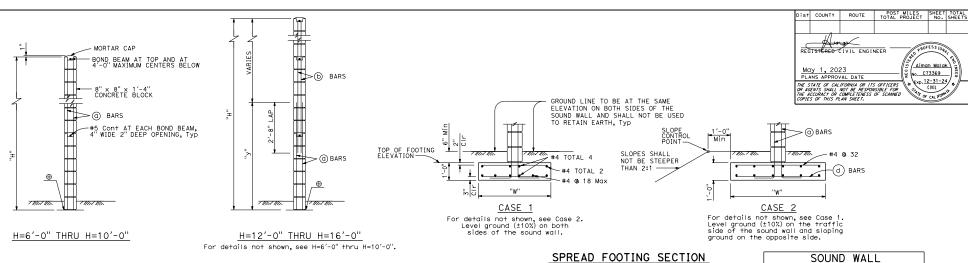
NO SCALE

B14-5

Alman Malak

C73369

€×p.12-31-24/



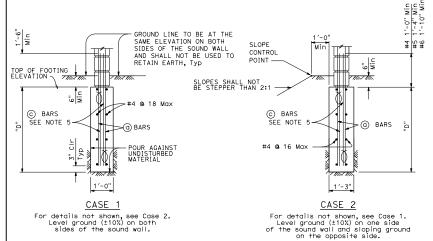
LEGEND:

Bundled reinforcement

TYPICAL SECTION

⊕ Full mortar bed at bottom of wall

N \triangle



TRENCH FOOTING SECTION

	TRENCH FOOTING											
	CASE 1 CASE 2											
MAXIMUM	Ø = 25 Min	ø = 30 Min	Ø = 35 Min	Ø = 30 Min	Ø = 35 Min	c)BARS @						
н	D	D	D	D	D	1'-4" Max						
6'-0"	5′-3"	4'-3"	3'-9"	7'-9"	5'-0"							
8'-0"	6'-0"	5'-0"	4'-6"	8'-9"	6'-0"	#4						
10'-0"	6'-9"	5′-9"	5'-0"	10'-0"	6'-9"	#4						
12'-0"	7'-9"	6'-6"	5′-6"	11'-0"	7'-9"	#5						
14'-0"	8'-6"	7'-3"	6'-0"	11'-9"	8'-6"	#5						
16'-0"	9'-3"	7′-9"	6'-6"	12'-9"	9'-3"	#6						

Case 1 - Level ground ($\pm 10\%$) on both sides of the sound wall. Case 2 - Level ground (±10%) on one side of the sound wall and sloping ground on opposite side.

SPRE	SPREAD FOOTING							
MAXIMUM H	w	d BARS						
6'-0"	3'-3"	#5 @ 16						
8'-0"	4'-0"	#5 @ 16						
10'-0"	5′-0"	#5 @ 16						
12'-0"	5'-9"	#5 @ 16						
14'-0"	6'-6"	#4 @ 8						
16'-0"	7'-6"	#4 @ 8						

MAXIMUM H	a BARS @ 1'-4" Max	b)BARS @ 1'-4" Max	"у"
6'-0"	#4		
8'-0"	#4		
10'-0"	#4		
12'-0"	#5	#4	6'-0"
14'-0"	#6	#4	8'-0"
16'-0"	#6	#4	10'-0"

REINFORCEMENT TABLE

NOTES:

- 1. For type of block and joint finish, see other sheets.
- 2. When blocks are laid in stacked bond, ladder type, galvanized joint reinforcement shall be provided. A minimum of 2-9 gauge wires continuous at 4'-0" maximum to be used. Locate reinforcement in joints that are at the approximate midpoint between bond beams.
- Horizontal joints shall be tooled concave or weathered. vertical joints shall be tooled concave or raked.
- 4. For intermediate wall heights that are between the "H's" given, use the tabular information for the next higher "H".
- 5. Bundle additional (c) bars with typical (a) bars.
- 6. If wall is placed behind traffic barriers, clear distance from face of barrier to face of wall shall exceed 4'-0". Wall is not designed for impact loading.
- 7. Ultimate spread footing factored bearing pressure demand, $g_{\rm o}$ = 1.25 ksf, B' = W/3 Where B' is the effective footing width (ft).

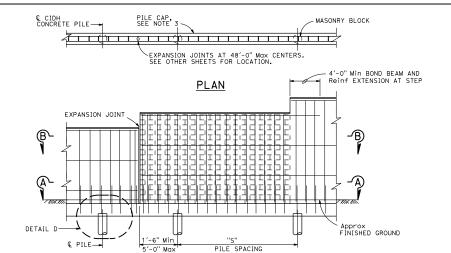
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON FOOTING DETAILS (1)

NO SCALE

1. For Detail D, see Standard Plan B15-5.

2. For sections and details not shown, see Standard Plans B15-4 and B15-5.

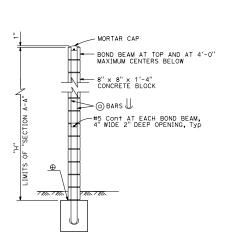


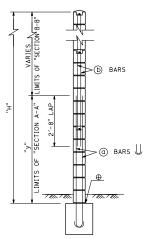
ELEVATION

SOUND WALL REINFORCEMENT TABLE

_				
	MAXIMUM H	a BARS @ 1'-4" Max	b)BARS @ 1'-4" Max	"у"
	6'-0"	#4		
	8'-0"	#4		
	10'-0"	#4		
	12'-0"	#5	#4	6'-0"
	14'-0"	#6	#4	8'-0"
	16'-0"	#6	#4	10'-0"







H=6'-0" THRU H=10'-0"

 $\frac{H=12^{\prime}-0"\ THRU\ H=16^{\prime}-0"}{\text{For details not shown, see H=6^{\prime}-0" thru}}\ _{H=10^{\prime}-0"}.$

TYPICAL SECTION

⊕ Full mortar bed at bottom of wall.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

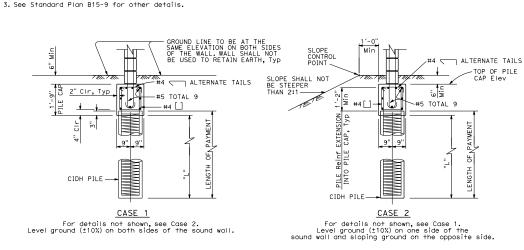
SOUND WALL MASONRY BLOCK ON PILE CAP DETAILS (1)

NO SCALE

B15-3

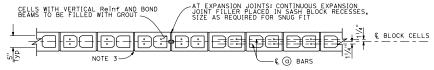
2023 STANDARD

PLAN B15-3



PILE CAP SECTION

- 1. For type of block and joint finish, see other sheets.
- 2. When blocks are laid in stacked bond, ladder type, galvanized joint reinforcement shall be provided. A minimum of 2-9 gauge wires continuous at 4'-0" maximum to be used. Locate reinforcement in joints that are at the approximate midpoint between bond beams.
- 3. Horizontal joints shall be tooled concave or weathered. Vertical joints shall be tooled concave or raked.
- 4. For intermediate wall heights that are between the "H's" given, use the tabular information for the next higher "H".
- 5. If wall is placed behind traffic barriers, clear distance from face of barrier to face of wall shall exceed 4'-0". Wall is not designed for impact loading.



SECTION A-A

For details not shown, see other sections.

H=6'-0" THRU H=10'-0"



SECTION A-A

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SECTION B-B

For details not shown, see other sections.

H=12'-0" THRU H=16'-0"

Alman Malak Mdy 1, 2023 PLANS APPROVAL DATE C73369 €xp.12-31-24/ THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET. CIVIL

Dist COUNTY

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

DESIGN NOTES

DESIGN: AASHTO LRFD Bridge Design Specifications, 8th Edition 2017 with Colifornia Amendment, Preface date April 2019 TMS. 402-16 2019 California Building Code

DESIGN WIND LOAD: 36.5 psf

DESIGN SEISMIC LOAD: 0.57 Dead Load

REINFORCED CONCRETE AND CONCRETE MASONRY:

 $f_y = 60 \text{ ksi}$ $f_c' = 3.6 \text{ ksi}$

f'm = 2000 psi *

* Provide materials to achieve the net compressive strength of concrete masonry unit equal or greater than the specified f'm

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON PILE CAP DETAILS (2)

NO SCALE

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

o, C73369 Exp. 12-31-24

NOTE:

1. For details not shown, see Standard Plans B15-3 and B15-4.

Mdy 1, 2023 PLANS APPROVAL DATE

			CAS	E 1:	PILE	DATA TA	BLE			
		ø = 25 Min			ø = 30 Min			ø = 35	Min	
MAXIMUM H	S	L	PILE Reinf	s	L	PILE Reinf	S	L	PILE Reinf	MAXIMUM H
6'-0"	16'-0"	9'-6"	#6 Tot 6	16'-0"	7'-6"	#6 Tot 6	16'-0"	6'-0"	#6 To+ 6	6'-0"
8'-0"	16'-0"	10'-6"	#6 Tot 7	16'-0"	8'-6"	#6 Tot 7	16'-0"	7'-0"	#6 Tot 7	8'-0"
10'-0"	16'-0"	11'-6"	#7 Tot 6	16'-0"	9'-6"	#7 To+ 6	16'-0"	8'-0"	#7 To+ 6	10'-0"
12'-0"	15'-0"	12'-6"	#8 To+ 7	16'-0"	10'-6"	#8 Tot 7	16'-0"	8'-6"	#8 To† 7	12'-0"
14'-0"	13'-0"	13'-0"	#8 To+ 7	14'-0"	11'-0"	#8 To+ 7	14'-0"	9'-0"	#8 Tot 7	14'-0"
16'-0"	12'-0"	13'-6"	#8 Tot 7	13'-0"	11'-6"	#8 To+ 7	13'-0"	9'-6"	#8 Tot 7	16'-0"

© PILE →

DETAIL D

428

Case 1 - Level ground ($\pm 10\%$) on both sides of the sound wall.

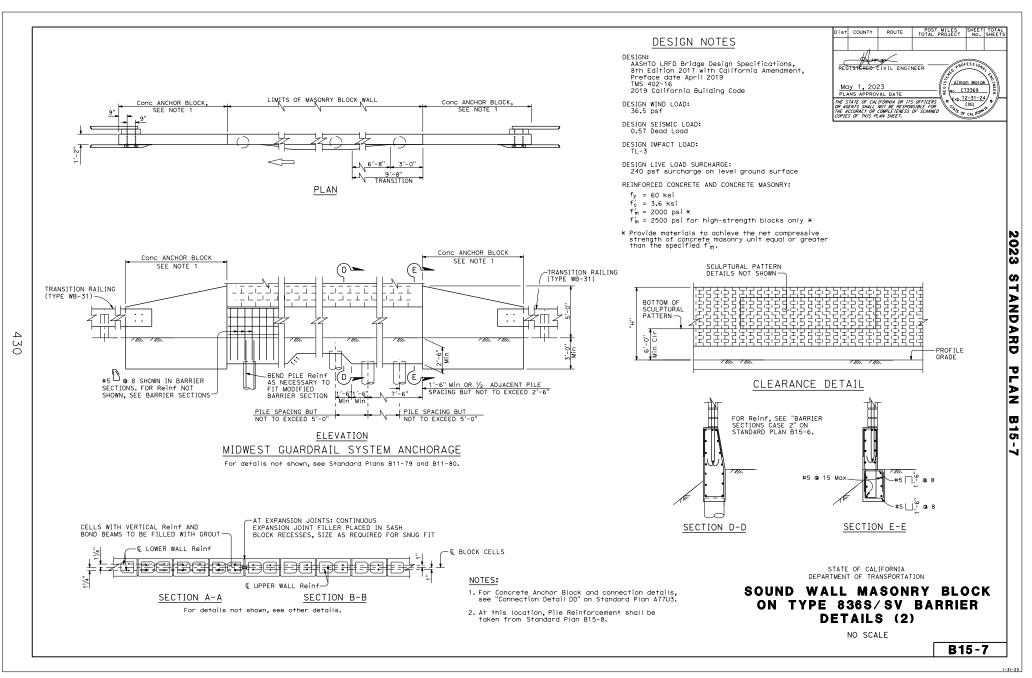
		CAS	E 2 : PI	LE DA	ТА ТА	BLE	
		ø = 30 N	/lin		Min		
MAXIMUM H	S	L	PILE Reinf	S	L	PILE Reinf	MAXIMUM H
6'-0"	16'-0"	13'-0"	#8 Tot 7	16'-0"	9'-6"	#6 Tot 7	6'-0"
8'-0"	16'-0"	15'-0"	#8 Tot 7	16'-0"	10'-6"	#7 To+ 6	8'-0"
10'-0"	15'-0"	16'-0"	#8 Tot 7	16'-0"	12'-0"	#7 Tot 7	10'-0"
12'-0"	12'-0"	16'-0"	#8 To+ 7	15'-0"	13'-6"	#8 Tot 7	12'-0"
14'-0"	10'-0"	16'-0"	#8 To+ 7	12'-0"	13'-6"	#8 To+ 7	14'-0"
16'-0"	8'-0"	16'-0"	#8 Tot 7	11'-0"	14'-0"	#8 To+ 7	16'-0"

Case 2 - Level ground (±10%) on traffic side of the sound wall and sloping ground on opposite side.

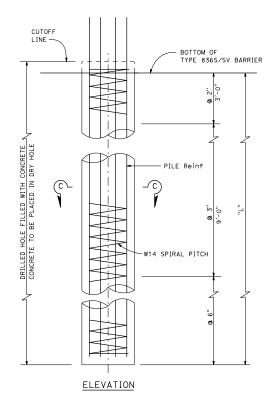
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON PILE CAP DETAILS (3)

NO SCALE



SECTION C-C



	CASE 1: PILE DATA TABLE											
	g	s = 25 M	in	Ø	= 30 M	in		ø = 35 I	vlin			
MAXIMUM H	s	L	PILE Reinf	s	L	PILE Reinf	s	L	PILE Reinf			
8'-4"	10'-0"	16'-0"	#7 To+ 7	10'-0"	10'-0"	#7 Tot 7	10'-0"	8'-0"	#8 To+ 6			
10'-4"	10'-0"	16'-0"	#7 Tot 7	10'-0"	10'-0"	#7 To+ 7	10'-0"	8'-0"	#8 Tot 6			
12'-4"	10'-0"	16'-0"	#7 Tot 7	10'-0"	10'-0"	#7 Tot 7	10'-0"	8'-6"	#8 Tot 6			
14'-4"	10'-0"	16'-0"	#7 To+ 7	10'-0"	10'-6"	#7 Tot 7	10'-0"	9'-0"	#8 To+ 6			
16'-4"	10'-0"	16'-0"	#8 To+ 7	10'-0"	11'-6"	#8 Tot 7	10'-0"	9'-6"	#8 Tot 6			

	CASE 2: PILE DATA TABLE											
Нe	MAXIMUM	Q	5 = 30 M	lin	ø	= 35 M	in					
··e	Н	s	L	PILE Reinf	s	L	PILE Reinf					
	8'-4"	10'-0"	16'-0'	#7 To+ 7	10'-0"	11'-6"	#7 To+ 7					
	10'-4"	9'-7"	16'-0"	#7 To+ 7	10'-0"	12'-6"	#7 Tot 7					
1 '-0"	12'-4"	8'-4"	16'-0"	#7 Tot 7	10'-0"	13'-0"	#8 Tot 7					
	14'-4"	7'-1"	16'-0"	#7 To+ 7	10'-0"	14'-0'	#8 To+ 7					
	16'-4"	6'-3"	16'-0"	#7 To+ 7	10'-0"	14'-6"	#8 To+ 7					
	8'-4"	8'-4"	16'-0"	#7 To+ 7	10'-0"	13'-0"	#7 To+ 7					
	10'-4"	7'-6"	16'-0"	#7 Tot 7	10'-0"	13'-6'	#8 To† 7					
2'-0"	12'-4"	6'-3"	16'-0"	#7 To+ 7	10'-0"	14'-6"	#8 To† 7					
	14'-4"	5'-10"	16'-0"	#7 To+ 7	10'-0"	15'-0"	**#8 To+ 10					
	16'-4"	5'-0"	16'-0"	#7 To+ 7	9'-7"	15'-6"	**#8 To+ 10					
	8'-4"	6'-3"	16'-0"	#7 To+ 7	10'-0"	14'-6"	#8 To+ 7					
	10'-4"	5'-5"	16'-0"	#7 To+ 7	10'-0"	15'-0"	**#8 To+ 10					
3'-0"	12'-4"	5'-0"	16'-0"	#7 Tot 7	10'-0"	15'-6"	**#8 To+ 10					
	14'-4"	4'-7'	16'-0"	#7 Tot 7	9'-7"	16'-0"	**#8 To+ 10					
	16'-4"	4'-2"	16'-0"	#7 To+ 7	8'-4"	16'-0"	**#8 To+ 10					
	8'-4"	4'-7"	16'-0"	#7 To+ 7	10'-0"	16'-0"	#9 To+ 6					
	10'-4"	4'-2"	16'-0"	#7 Tot 7	9'-2"	16'-0"	**#8 To+ 10					
4'-0"	12'-4"	3'-9"	16'-0"	#7 To+ 7	8'-4"	16'-0"	**#8 To+ 10					
	14'-4"	3'-4"	16'-3"	#7 To+ 7	7'-11"	16'-0"	**#8 To+ 10					
	16'-4"	3'-4"	16'-6"	#7 To+ 7	7'-1"	16'-0"	**#8 To+ 10					

** Indicates bundled bars (bundle of two bars)

REGISTERED CIVIL ENGINEER May 1, 2023 PLANS APPROVAL DATE PHE STATE OF AUTOMIA DE ITS OFFICES OF ACETYS SMAL NOT BE PRESPOSED FOR PROPERTY OF COUNTY OF COMPANY OF COUNTY OF	Dis+	COUNTY	ROUTE	POST I	MILES ROJECT	SHEET No.	TOTAL
May 1, 2023 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OR ITS OFFICERS Alman Maick No. C73369 Web. 12-31-24							
THE STATE OF CALIFORNIA OR ITS OFFICERS * Exp. 12-31-24	Mc	ıy 1 , 20	23	NEER	Aima No. Ci	n Malai 73369	CHO INEE
	OR AG	ENTS SHALL CCURACY OR	NOT BE RESPON COMPLETENESS	ISIBLE FOR	// * / · · ·	ALUIT .	/ 4//

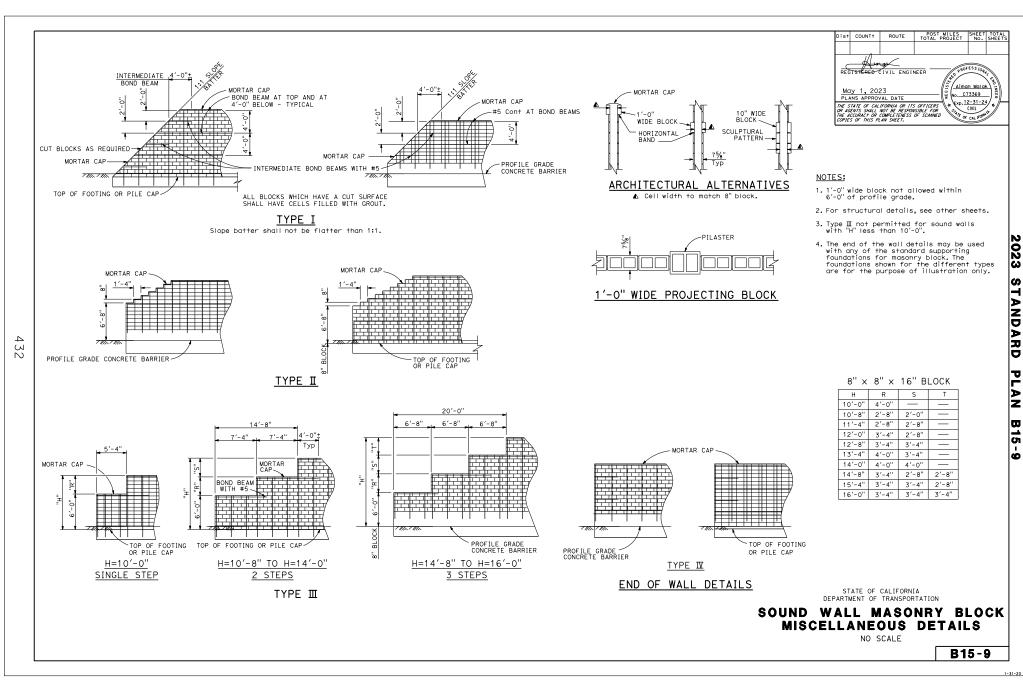
NOTE:

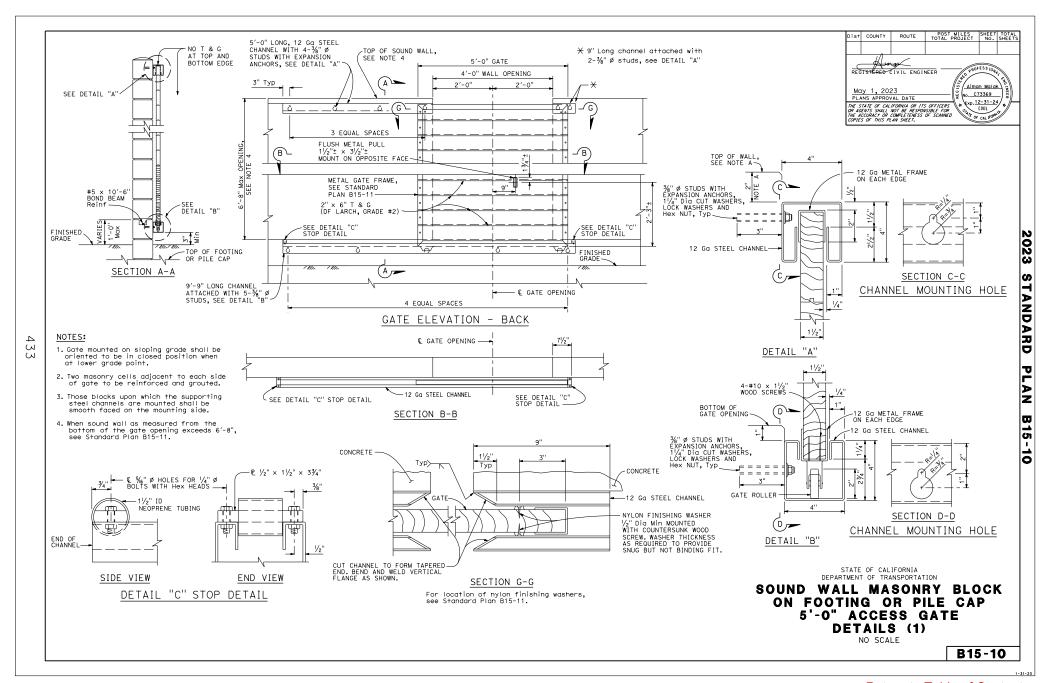
For details not shown, see Standard Plans B15-6 and B15-7.

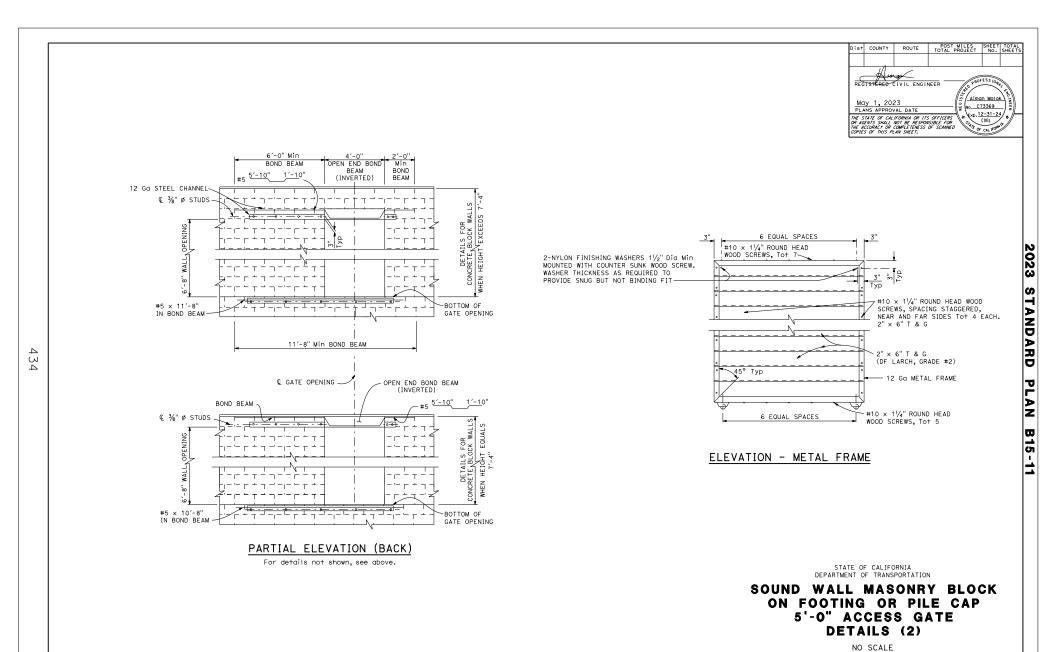
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

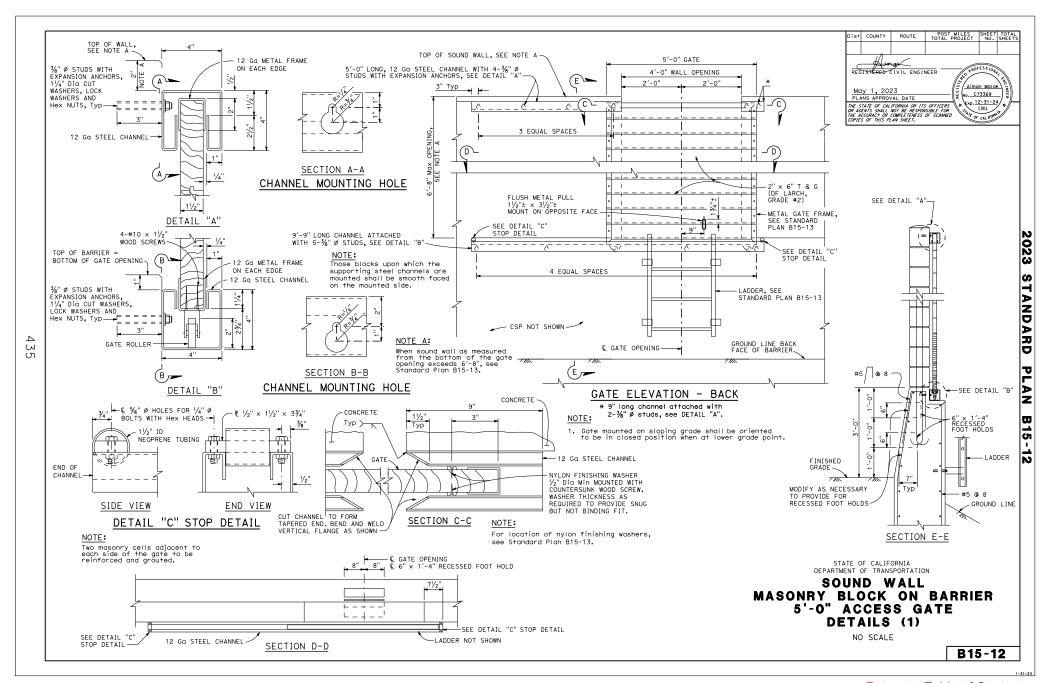
SOUND WALL MASONRY BLOCK ON TYPE 836S/SV BARRIER DETAILS (3)

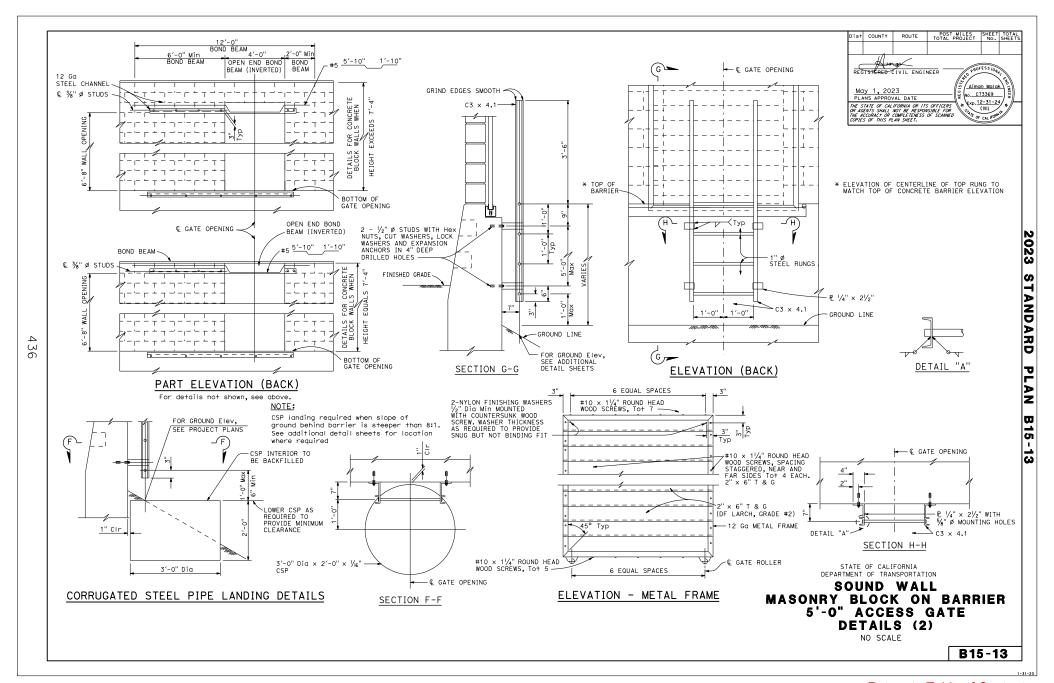
NO SCALE

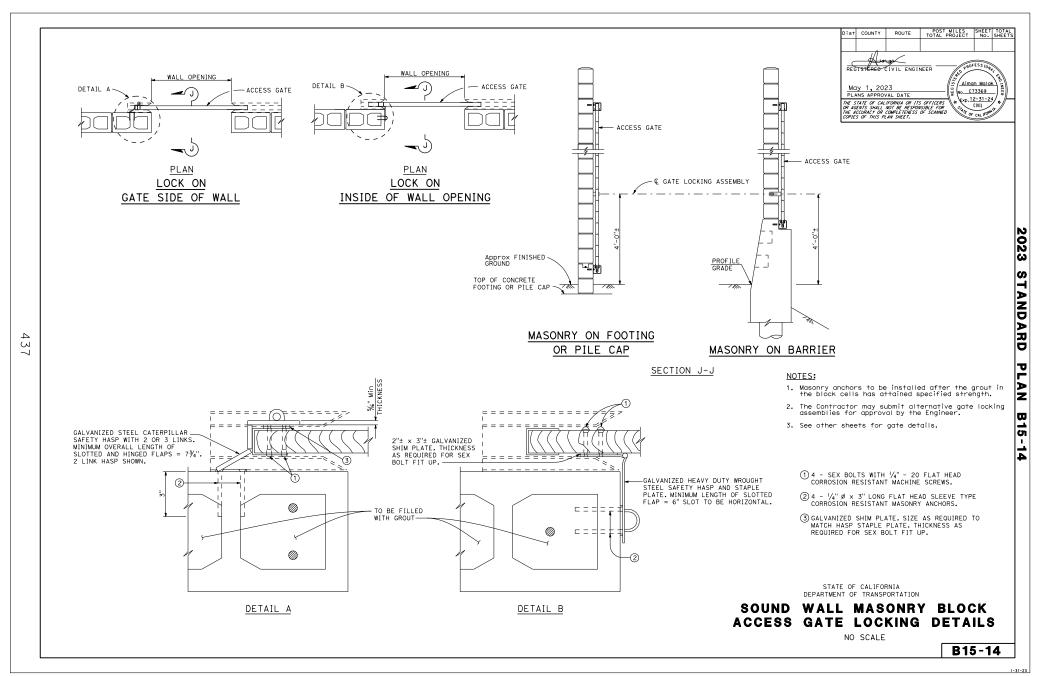


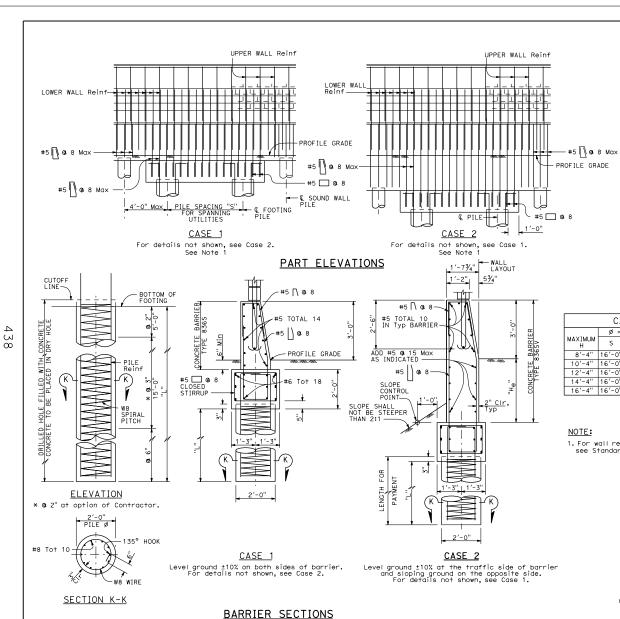












Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS					
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	PLANS APPROVAL DATE									
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DESIGN NOTES:

DESIGN

AASHTO LRFD Bridge Design Specifications, 8th Edition 2017 with California Amendment, Preface date April 2019 TMS 402-16 2019 California Building Code

DESIGN WIND LOAD DESIGN SEISMIC LOAD DESIGN IMPACT LOAD 0.57 Dead load

DESIGN LIVE LOAD SURCHARGE

240 psf surcharge on level ground surface

REINFORCED CONCRETE AND CONCRETE MASONRY

 $f'_c = 3.6 \text{ ksi}$

 $f_y = 60 \text{ ksi}$ $f'_m = 2000 \text{ psi } *$

 $f_{m}' = 2500$ psi for high-strength blocks only *

* Provide materials to achieve the net compressive strength of concrete masonry unit equal or greater than the specified f^\prime_m .

ſ	CASE 1 : PILE DATA TABLE										
Γ		ø =	25	ø =	30	ø =					
	MAXIMUM H	s	L	s	L	s	L	MAXIMUM H			
ſ	8'-4"	16'-0"	13'-6"	16'-0"	10'-0"	16'-0"	8'-0"	8'-4"			
ſ	10'-4"	16'-0"	14'-0"	16'-0"	10'-6"	16'-0"	8'-6"	10'-4"			
ſ	12'-4"	16'-0"	14'-6"	16'-0"	11'-0"	16'-0"	8'-6"	12'-4"			
Γ	14'-4"	16'-0"	15'-0"	16'-0"	11'-6"	16'-0"	9'-0"	14'-4"			
	16'-4"	16'-0"	15'-6"	16'-0"	12'-0"	16'-0"	9'-6"	16'-4"			

For wall reinforcement details, see Standard Plan B15-6.

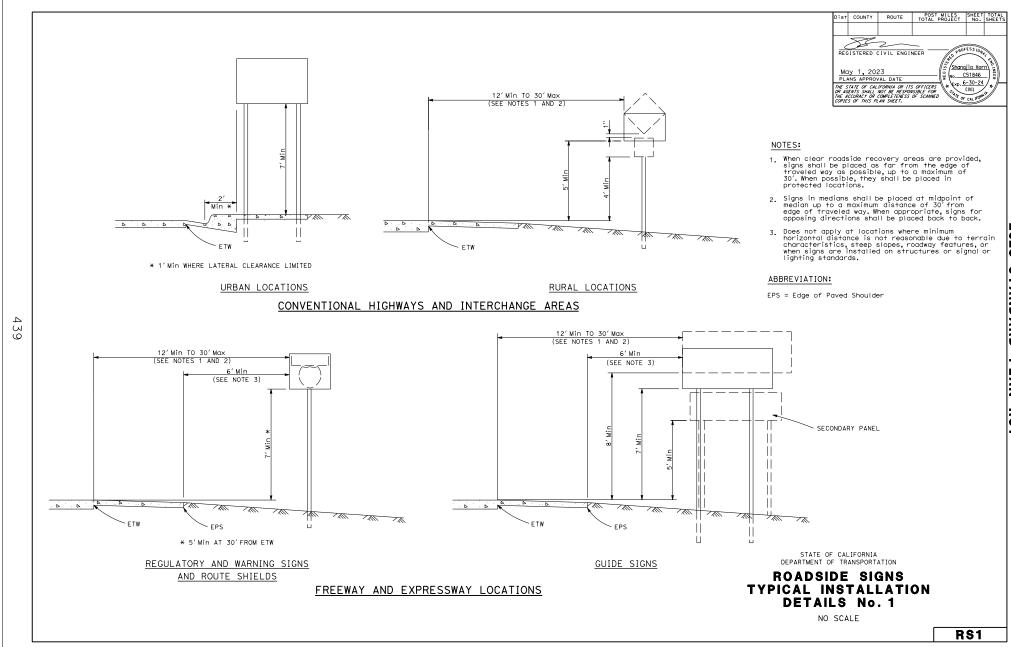
Нe	н		= 30 fin	ø	н	
···e		S	L	S	L	
	8'-4"	16'-0"	18'-0"	16'-0"	13'-6"	8'-4"
	10'-4"	16'-0"	19'-0"	16'-0"	14'-6"	10'-4"
1 '-0"	12'-4"	16'-0"	19'-6"	16'-0"	15'-6"	12'-4"
	14'-4"	16'-0"	20'-6"	16'-0"	16'-6"	14'-4"
	16'-4"	16'-0"		16'-0"		16'-4"
	8'-4"	16'-0"		16'-0"		
	10'-4"			16'-0"		10'-4"
2'-0"	12'-4"	16'-0"	21'-6"	16'-0"	17'-0"	12'-4"
	14'-4"	16'-0"	22'-6"	16'-0"	18'-0"	14'-4"
1'-0" 2'-0" 3'-0"	16'-4"	14'-6"	22'-6"	16'-0"	18'-6"	16'-4"
	8'-4"	16'-0"	22'-0"	16'-0"	16'-6"	8'-4"
	10'-4"			16'-0"		10'-4"
3'-0"	12'-4"	14'-0"	22'-6"	16'-0"	18'-6"	12'-4"
	14'-4"	13'-0"	22'-6"	15'-6"	19'-0"	14'-4"
	16'-4"		22'-6"	14'-0"	19'-0"	16'-4"
	8'-4"	12'-3"	22'-6"	15'-3"	18'-0"	8'-4"
	10'-4"	11'-6"	22'-6"	14'-3"	18'-6"	10'-4"
4'-0"	12'-4"	10'-9"	22'-6"	13'-3"		12'-4"
	14'-4"	10'-0"	22'-6"		18'-6"	14'-4"
	16'-4"	9'-6"	22'-6"	11'-3"	19'-0"	16'-4"

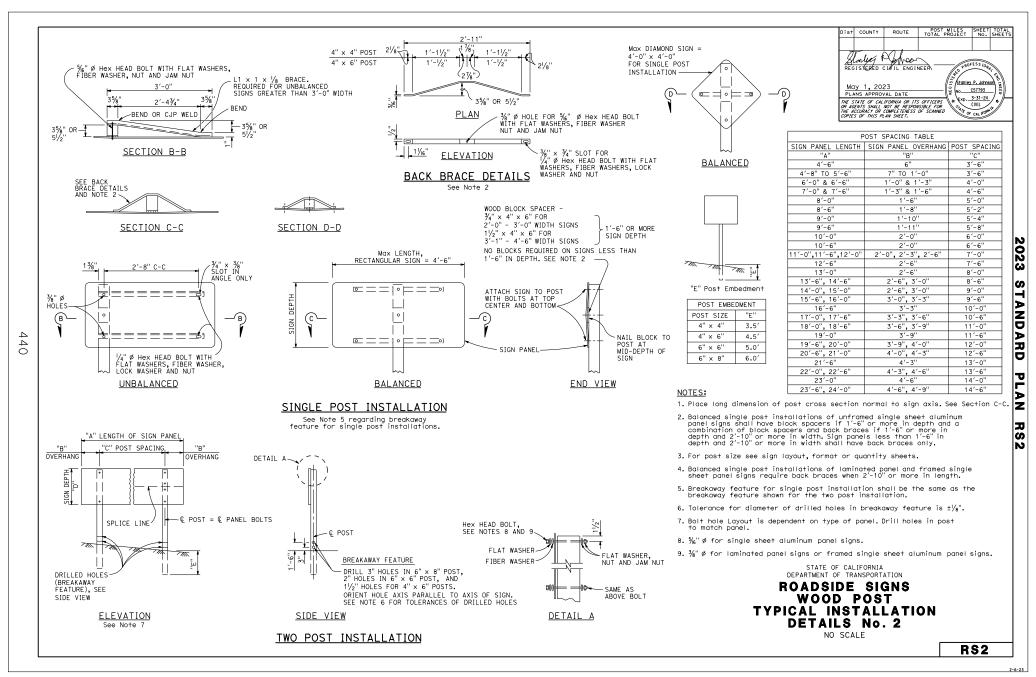
CASE 2 : PILE DATA TABLE

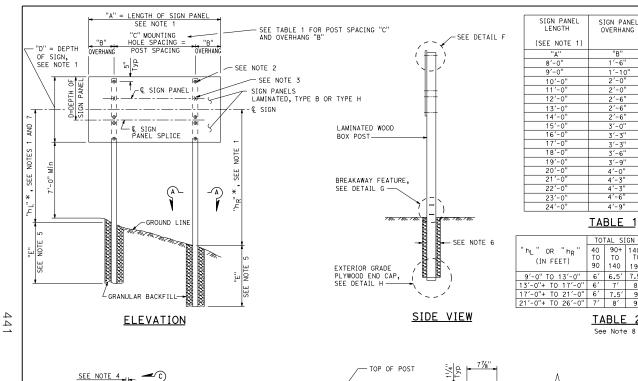
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SOUND WALL MASONRY BLOCK ON TYPE 836S/SV BARRIER ON PILE FOOTING FOR SPANNING UTILITIES

NO SCALE







SECTION C-C

11" × 71/8" ×1/8"

PLYWOOD -

1'-2 1/8"

TYPE L POST

.035" THICK Galv

Galv NAILS

METAL CAP Galv NAILS

SAW CUT NEAR AND FAR SIDE

FLAT METAL WASHER

Max DIAMETER

OF HOLES IS 1

1/2" Ø LAG SCREW

SIGN PANEL

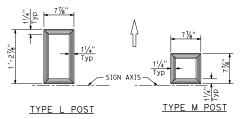
DETAIL F

DETAIL G

CTON DANIEL		
SIGN PANEL LENGTH	SIGN PANEL OVERHANG	MOUNTING HOLE SPACING
(SEE NOTE 1)		
"A"	"B"	"C"
8'-0"	1'-6"	5'-0"
9'-0"	1'-10"	5'-4"
10'-0"	2'-0"	6'-0"
11'-0"	2'-0"	7′-0"
12'-0"	2'-6" 2'-6" 2'-6"	7'-0"
13'-0"	2'-6"	8'-0"
14'-0"	2'-6"	9'-0"
15′-0"	3'-0"	9'-0"
16'-0"	3'-3"	9'-6"
17'-0"	3'-3"	10'-6"
18'-0"	3'-6"	11'-0"
19'-0"	3'-9"	11'-6"
20'-0"	4'-0"	12'-0"
21'-0"	4'-3"	12'-6"
22'-0"	4'-3"	13'-6"
23'-0"	4'-6"	14'-0"
24'-0"	4'-9"	14'-6"

	TOTAL SIGN AREA SQFT								
"hL" OR "hR" (IN FEET)	40 90+ TO TO 90 140		140+ TO 190	190+ T0 240	240+ T0 290				
9'-0" TO 13'-0"	6′	6.5	7.5	8.5	9′				
13'-0"+ TO 17'-0"	6′	7'	8'	9′	10'				
17'-0"+ TO 21'-0"	6′	7.5	9'	9′					
21'-0"+ TO 26'-0"	7'	8′	9'						

TABLE 2



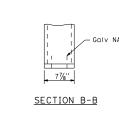
SECTION A-A

TYPE M POST

DETAIL H

4" × 71/8" ×1/8"

PLYWOOD



Galv NAILS, Typ

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION ROADSIDE SIGNS

LAMINATED WOOD BOX POST TYPICAL INSTALLATION **DETAILS No. 3**

NO SCALE

RS3

NOTES:

1. See Project Plans for:

Location of each sign.

Length of sign panel "A".

Depth of sign "D".

Height "h₀" and "h_R" of centerline of sign above ground line at each post.

Type of post. Lond M. Type of post, L and M. See Standard Plan RS1 for other details.

Dist COUNTY

May 1, 2023

PLANS APPROVAL DATE

ROUTE

Stally Popular REGISTERED CIVIL ENGINEER

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Stanley P. Johns

C57793 €×p. 3-31-24

CIVIL

- 2. "e" Indicates location of $\frac{1}{2}$ " lag screws and existing holes in panels. Lag screws are to be embedded at least 1" into post using $\frac{1}{6}$ " diameter pilot holes.
- 3. "x" Indicates location of additional $\frac{1}{2}$ " lag screws required when the depth of sign panel (d) and the length of sign panel (A)

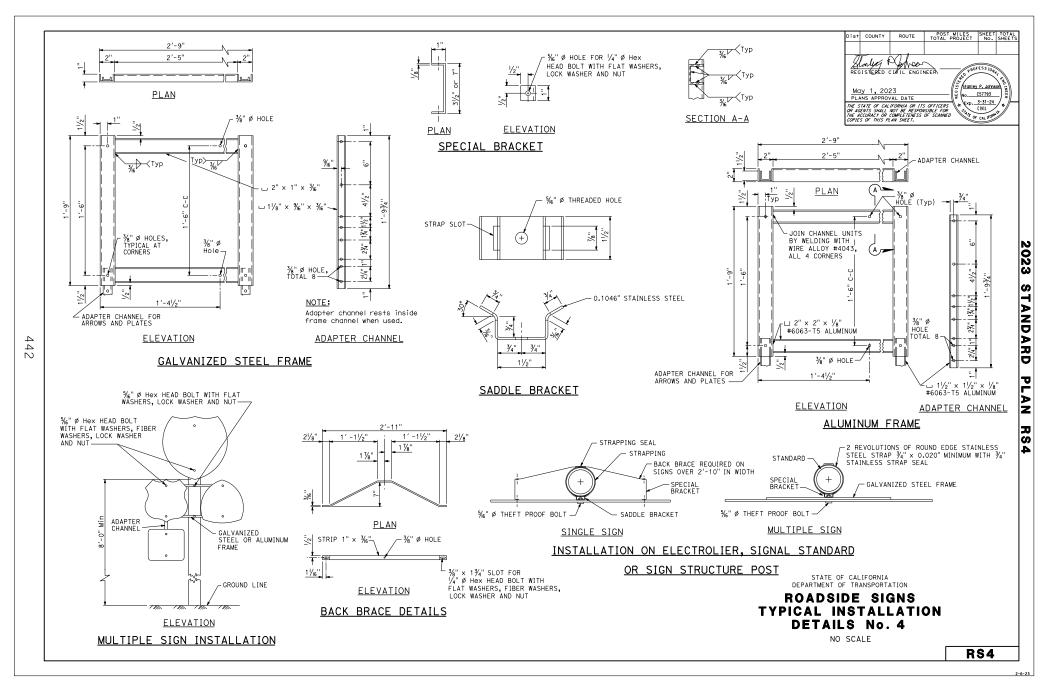
A	d
17'-0" to 24'-0"	5'-0"
19'-0" to 24'-0"	4'-6"
21'-0" to 24'-0"	4'-0"
24'-0"	3'-6"

- 4. Type B laminated sign panels are 1" nominal thick for sign lengths of 15-0" and less. Panels over 15-0" in length and Type H laminated sign panels are $2 \frac{1}{2}$ " nominal thick.
- Embedment "E" for Type L post shall conform to the requirements in Table 2. Embedment for Type M posts shall be 6'-0' minimum.
- 6. Diameter of post holes for Type L posts shall be at least 2'-6".

 Diameter of post holes for Type M posts shall be at least 2'-0".
- 7. Dimensions shown on project plans are for fabrication. During installation adjust these dimensions to provide A level sign appoximately 7'-0" above roadway shoulder.
- 8. Minimum post embedment "E" for Type L post.



GALV METAL CAP



SINGLE POST INSTALLATION

POST SIZE	Max AREA (SQUARE FEET) OF SIGN							SLEEVE SIZE			
2" x 2" x 12 Ga	10.8	8.9	7.6	6.6	5.9	5.3	4.8	21/4" ×	21/4"	× 10	Ga
2½" × 2½" × 10 Ga	20	18	16	14	12	11	10	2¾" ×	2¾"	× 10	Ga
HEIGHT TO CENTER OF SIGN SINGLE POST GROUND SIGNS 100 MPH WIND SPEED	5′-0"	6'-0"	7′-0"	8'-0"	9'-0"	10'-0"	11'-0"		-		

-PERFORATED SQUARE STEEL TUBE (PSST) SIGN POST 0 %₀" Dia HOLE D - 1" CENTER TO CENTER 0 0 0 0 0 0 0 -SQUARE STEEL ANCHOR SLEEVE (SEE NOTE 4) DRIVE RIVET ~ (SEE NOTE 2) 3/8" DRIVE RIVET (SEE NOTE 2) %" Dia HOLES (4 REQUIRED 1-EACH SIDE)

NOTES:

1. The sign post shall have $\frac{1}{16}$ diameter perforations 1" on center on all four sides for the full length.

Dist COUNTY

ROUTE

Starting Pyron REGISTERED CIVIL ENGINEER

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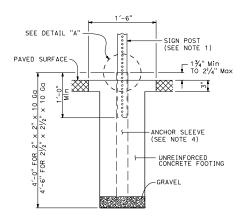
Mdy 1, 2023 PLANS APPROVAL DATE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Stanley P. Johns

io. <u>C57793</u> Exp. <u>3-31-24</u>

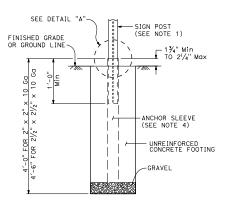
- Use two drive rivets to fasten assembled sign and sign post into anchor sleeve. Install drive rivets or fastener alternative into the sides facing traffic.
- 3. All steel sign posts and anchor sleeves shall be galvanized.
- 4. All anchor sleeves shall be embedded in PCC.
- 5. For details not shown, see Standard Plans RS1 and RS2.
- 6. Steel post: fy = 60 ksi

DETAIL "A"

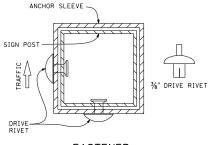


143

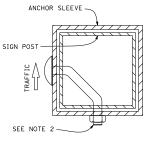
ANCHOR SLEEVE IN PAVED SURFACE



ANCHOR SLEEVE IN UNPAVED SURFACE



FASTENER



FASTENER ALTERNATIVE

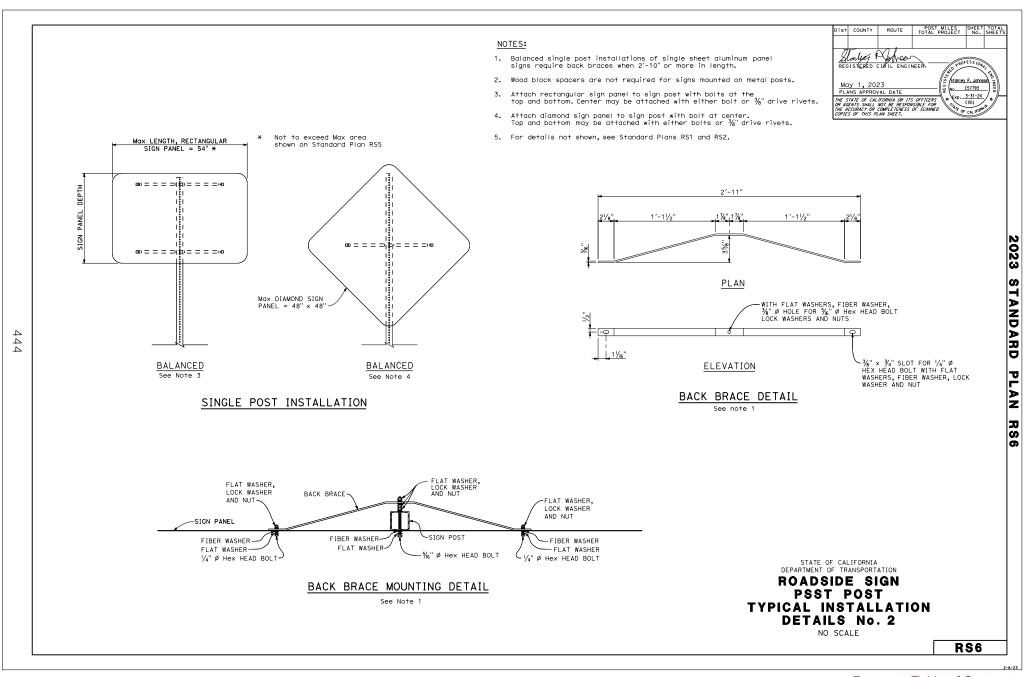
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

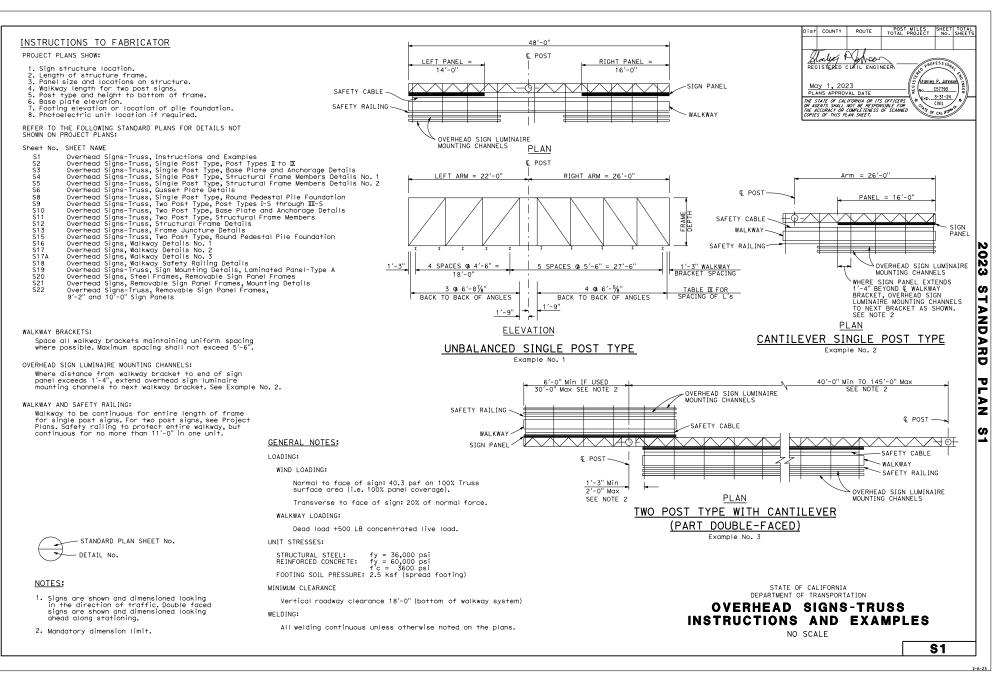
ROADSIDE SIGN
PSST POST
TYPICAL INSTALLATION
DETAILS No. 1

NO SCALE

RS5

2-6-23

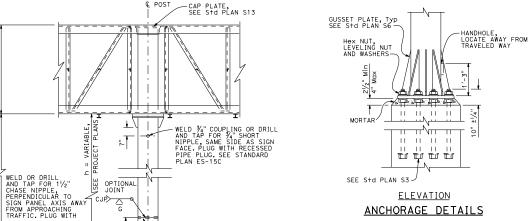




POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

TABLE XX

							ROLIND	PEDES"	EAL			SOI	IARE	PEDESTAL				SPREAD	FOOTIN	G		
POS	ST	PIF	PE	CAP PLATE SIZE FOR CHORD	CAP PLATE SIZE FOR CHORD		VERTICAL .		_	RAL	PEDESTAL			J-BARS	H	HOOP		SI ILAD			RCEMENT	
TYP		_		L's 5 x 5	L's 6 x 6	SIZE	EQUALLY	BAR SIZE	BAR SIZE	PITCH	SIZE	EQUALLY SPACED TOTAL	BAR	# OF BARS EA FACE	BAR	SPACING	(SEE NOTE 2)	WIC	OTH	LONGI	TUDINAL	FOOTING
	NP:	S TH	ICKNESS			Dia	SPACED TOTAL	SIZE	SIZE	PITCH	SQUARE	TOTAL	SIZE	EA FACE	SIZE			TOP	воттом	TOP	воттом	STIRRUPS
I	14	4	1/2"	2'-0" x 2'-0" x 1"	2'-2" x 2'-2" x 1"	5'-3"	16	#10	#5	31/2"	5'-3"	16	#10	5	#5	31/2"	12'-0" x 14'-0" x 2'-6"	14-#6	14-#7	13-#9	13-#9	#5 @ 12
Ш	16	5		2'-2" x 2'-2" x 1"	2'-4" x 2'-4" x 1"				1				_				12'-0" × 14'-0" × 2'-6"	15-#6	15-#7			
IV	18	3		2'-4" x 2'-4" x 1"	2'-6" x 2'-6" x 1"												12'-0" × 14'-0" × 2'-6"	15-#6	15-#7	†	•	
V	20)		2'-6" × 2'-6" × 1"	2'-8" × 2'-8" × 1"	1		*			+		*				13'-0" × 14'-0" × 2'-6"	15-#6	15-#7	14-#9	14-#9	
M	24	4	+	2'-10" x 2'-10" x 1"	3'-0" × 3'-0" × 1"	5'-9"		#11			5′-9"		#11				13'-0" × 16'-0" × 2'-6"				14-#11	
ΔII	24	4	3/4"	I				1			1		- 1				13'-0" × 17'-0" × 2'-6"	18-#7	18-#7		_	
ΔIII	I 24	4	31/32"														13'-0" × 18'-0" × 2'-6"	19-#7	19-#7			
IX	24	4	31/32"	•	,	٠,	,	+	*	*	+	*	*	٠,	٠	,	13'-0" x 18'-0" x 2'-6"	19-#7	19-#7	*	,	+



1/4" x 1" Min BACKING RING

-ENCLOSURE, SEE STANDARD PLAN ES-15C

-BASE PLEIev

AWAY FROM TRAFFIC

DETAILS"

SEE Ψ "ANCHORAGE &

BOTTOM OF

FOOTING Elev

-#5 □ @ 31/2 FOR SQUARE PEDESTAL, #5 SPIRAL @ 31/2 FOR ROUND PEDESTAL

GROUND SURFACE

P

õ

BO.

2

CLEARANCE

Ë

RECESSED PLUG. SEE STANDARD PLAN ES-15C

TRAFFIC

CONDUIT, SEE ELECTRICAL PLANS

#5 STIRRUPS @ 12

EXCAVATE TO NEAT LINES
AND PLACE CONCRETE
AGAINST UNDISTURBED
MATERIAL. PAY LIMIT
FOR EXCAVATION IS 1'-0"
OUTSIDE EDGE OF FOOTING

BOTH WAYS

GROUND SURFACE ADJACENT TO

VARIES Min, 6"

BARS

NOT ALL FOOTING

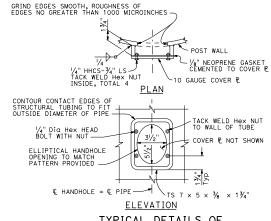
REINFORCEMENT
SHOWN, FOR FOOTING
DIMENSIONS AND Reinf,
SEE TABLE XX

ELEVATION

See Note 5

6

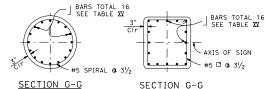
ANCHORAGE DETAILS



DETAILS OF HANDHOLE AND COVER

NOTES:

- 1. For "General Notes", see Standard Plan S1.
- 2. Longer side of footing (longitudinal) shall be normal to axis of sign.
- 3. Backfill shall be in place prior to erection of post.
- 4. Thread upper 10" of anchor bolts and galvanize upper 1'-0".
- 5. Spread footing with square pedestal foundation shown, use Pile Foundation when shown on the Project Plans. For pile foundation details, see Standard Plan S8.
- 6. Anchor plates may be retained with hexagon nut or formed head as alternatives to details shown.
- 7. On single post sign structures, the post shall be raked out of plumb, with the use of the leveling nuts to make the bottom of the sign frame level.
- 8. At final position of post all top and bottom nuts shall be tightened against base plate.
- When foundation is located on a steep slope with exposed face of concrete adjacent to traffic, see Detail C on Standard Plan S8, as applicable.
- 10. Slope protection required when indicated on the Project Plans.



Dist COUNTY

ROUTE

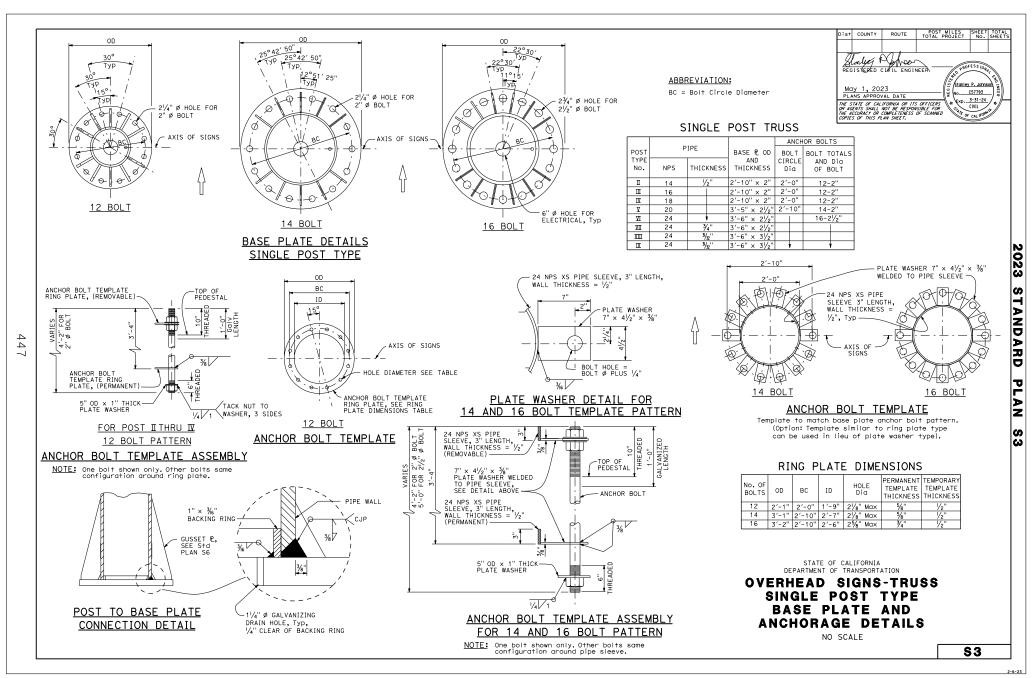
ROUND PEDESTAL

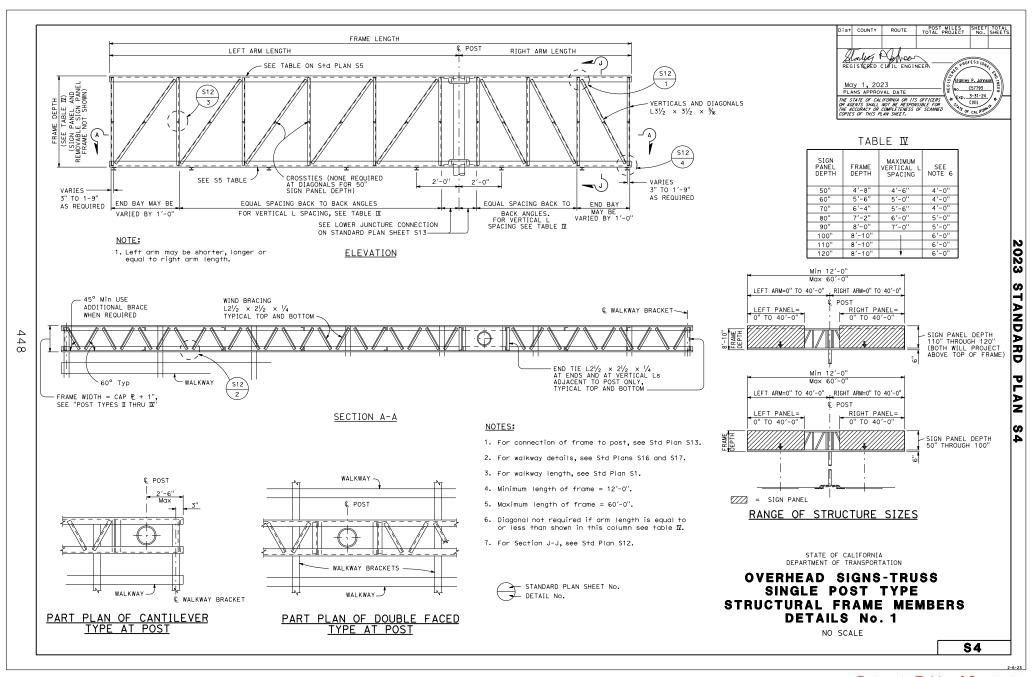
SQUARE PEDESTAL

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TRUSS SINGLE POST TYPE POST TYPES II THROUGH IX

NO SCALE





SPAN			50"	SIGN PANEL DEPT	TH .	
L ₁ + L ₂	FRAME DEPTH		CHORD L's	VERTICAL L's	DIAGONAL L's	TOP AND BOTTOM WIND BRACING L's
12'-0"	4'-8"	SEE NOTE	5 × 5 × ½	31/2 × 31/2 × 1/6	31/2 × 31/2 × 1/6	21/2 × 21/2 × 1/4
OVER 12'-0" TO 20'-0"	1		5 × 5 × ½	1	1	
OVER 20'-0" TO 30'-0"			5 × 5 × ½			
OVER 30'-0" TO 40'-0"			6 × 6 × ½			
OVER 40'-0" TO 50'-0"			6 × 6 × ½			
OVER 50'-0" TO 60'-0"	+	+	6 × 6 × ½	ų.	,	•

SPAN			60	O" SIGN PANEL DE	РТН	
L ₁ + L ₂	FRAME DEPTH	FRAME WIDTH	CHORD L's	VERTICAL L's	DIAGONAL L's	TOP AND BOTTOM WIND BRACING L's
12'-0"	5'-6"	SEE NOTE	5 x 5 x 1/2	31/2 × 31/2 × 1/6	31/2 × 31/2 × 1/6	21/2 × 21/2 × 1/4
OVER 12'-0" TO 20'-0"			5 × 5 × ½	1		
OVER 20'-0" TO 30'-0"			5 × 5 × ½			
OVER 30'-0" TO 40'-0"			6 × 6 × ½			
OVER 40'-0" TO 50'-0"			6 × 6 × ½			
OVER 50'-0" TO 60'-0"	+	+	6 × 6 × ½	•	•	+

	Dis+	COUNTY	ROUTE	POST TOTAL P	MILES ROJECT	SHEET No.	TOTAL SHEET:
S , 4	MC_	INLEGED IN 1, 20:		NEER)	Stanley No	P. Johns 057793 3-31-24	131
	OR AG	ENTS SHALL	IFORNIA OR IT: NOT BE RESPON COMPLETENESS LAN SHEET.	ISTBLE FOR			*/
- 1							

SPAN			70" :	SIGN PANEL DEPTH	1	
L ₁ + L ₂	FRAME DEPTH	FRAME WIDTH	CHORD L's	VERTICAL L's	DIAGONAL L's	TOP AND BOTTOM WIND BRACING L's
12'-0"	6'-4"	SEE NOTE	5 × 5 × ½	3½ × 3½ × 5/6	31/2 × 31/2 × 1/6	21/2 × 21/2 × 1/4
OVER 12'-0" TO 20'-0"			5 × 5 × ½			
OVER 20'-0" TO 30'-0"			5 × 5 × ½			
OVER 30'-0" TO 40'-0"			6 × 6 × ½			
OVER 40'-0" TO 50'-0"			6 × 6 × ½			
OVER 50'-0" TO 60'-0"	+	Ť	6 × 6 × ½	¥	į į	

SPAN			. 80	" SIGN PANEL DE	PTH	
L ₁ + L ₂	FRAME DEPTH		CHORD L's	VERTICAL L's	DIAGONAL L's	TOP AND BOTTOM WIND BRACING L's
12'-0"	7'-2"	SEE NOTE	5 x 5 x 1/2	31/2 × 31/2 × 5/6	31/2 × 31/2 × 1/6	21/2 × 21/2 × 1/4
OVER 12'-0" TO 20'-0"			5 × 5 × ½	1		
OVER 20'-0" TO 30'-0"			5 × 5 × ½			
OVER 30'-0" TO 40'-0"			6 × 6 × ½			
OVER 40'-0" TO 50'-0"			6 × 6 × ½			
OVER 50'-0" TO 60'-0"	+ T	+	6 × 6 × ½	•	•	+

SPAN								90'	' 5	SIGN	PAI	NEL	DEPT	Н								
L ₁ + L;	2	FRAME DEPTH		AME DTH	С	ноі	RD	L's	s	VEF	RTIC	CAL	L's	DI	AGO	NAL	L's		TOP WIND	AND BR	BOT	TOM G L's
12'-0"		8'-0"	SEE	NOTE	5	×	5	x ½	/23	31/2	× 3	31/2	× %	31/2	×	31/2	×	%	21/2	×	21/2	× 1/4
OVER 12'-0" 1	TO 20'-0"			1	5	×	5	×γ	/2												1	
OVER 20'-0" 1	TO 30'-0"				5	×	5	×γ	/2													
OVER 30'-0" 1	TO 40'-0"				6	×	6	×Ί	/2													
OVER 40'-0" 1	TO 50'-0"				6	×	6	×Ί	/2													
OVER 50'-0" 1	TO 60'-0"	1		ŧ -	6	×	6	×Ί	/2		•					†					•	

	SPAN			10	OO" SIGN PANEL D	EPTH	
	L ₁ + L ₂	FRAME DEPTH		CHORD L's	VERTICAL L's	DIAGONAL L's	TOP AND BOTTOM WIND BRACING L's
	12'-0"	8'-10'	SEE NOTE	5 x 5 x 1/2	31/2 × 31/2 × 5/6	31/2 × 31/2 × 1/6	21/2 × 21/2 × 1/4
OVER	12'-0" TO 20'-0"			5 × 5 × ½	1		
OVER	20'-0" TO 30'-0"			5 × 5 × ½			
OVER	30'-0" TO 40'-0"			6 × 6 × ½			
OVER	40'-0" TO 50'-0"			6 × 6 × ½			
OVER	50'-0" TO 60'-0"	†	+	6 × 6 × ½	†	†	•

SPAN			110"	SIGN PANEL DEPT	Н	
L ₁ + L ₂	FRAME DEPTH	FRAME WIDTH	CHORD L's	VERTICAL L'S	DIAGONAL L's	TOP AND BOTTOM WIND BRACING L's
12'-0"	8'-10"	SEE NOTE	5 × 5 × ½	31/2 × 31/2 × 1/4	31/2 × 31/2 × 1/6	$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$
OVER 12'-0" TO 20'-0"			5 × 5 × ½		1	
OVER 20'-0" TO 30'-0"			5 × 5 × ½			
OVER 30'-0" TO 40'-0"			6 × 6 × ½			
OVER 40'-0" TO 50'-0"			6 × 6 × ½			
OVER 50'-0" TO 60'-0"	†	+	6 × 6 × ½	i	•	į į

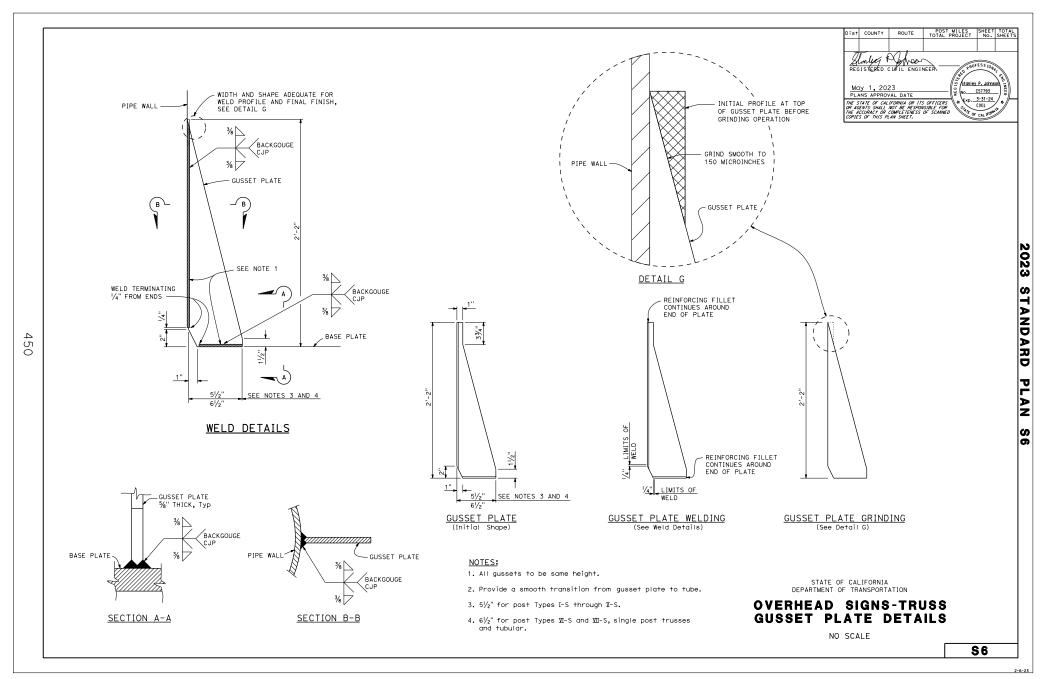
SPAN			12	0" SIGN PANEL D	EPTH	
L ₁ + L ₂	FRAME DEPTH	FRAME WIDTH	CHORD L's	VERTICAL L's	DIAGONAL L's	TOP AND BOTTOM WIND BRACING L's
12'-0"	8'-10"	SEE NOTE	5 × 5 × ½	31/2 × 31/2 × 5/6	31/2 × 31/2 × 1/6	21/2 × 21/2 × 1/4
OVER 12'-0" TO 20'-0"	1		5 × 5 × ½			
OVER 20'-0" TO 30'-0"			5 x 5 x 1/2			
OVER 30'-0" TO 40'-0"			6 × 6 × ½			
OVER 40'-0" TO 50'-0"			6 × 6 × ½			
OVER 50'-0" TO 60'-0"	+	¥	6 × 6 × ½	+	•	•

NOTES:

- 1. Frame width = Pipe Dia plus 2 \times shorter L leg plus 1".
- 2. Frame length L_1 = Left arm length.
- 3. Frame length L_2 = right arm length.
- 4. For full cantilever, short arm used to compute $L_1 + L_2$ on this sheet shall be taken as 2'-6".

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TRUSS SINGLE POST TYPE STRUCTURAL FRAME MEMBERS DETAILS No. 2





GROUND SURFACE AWAY FROM TRAFFIC —	BASE P. EI				ANCHOR BC	LTS
- O	4" Mo 2½"	IX MORTAR Min SEE NOTE 6 — GROUND SURFACE ADJACENT ⊥ TO TRAFFIC	POST TYPE No.	BOLT CIRCLE	BOLT TOTAL AND Dig	TOTAL LENGTH
ION DEPTH #5 @ 3/2" PITCH #5 @ 3/2" PITCH		CONDUIT, SEE ELECTRICAL PLANS SEE "ANCHORAGE DETAILS" ON STITUTE OF THE PLAN STITUTE O			12-2" 12-2" 12-2" 14-2" 16-21/2"	
CIDH PILE LIMITS OF PILE REINFORCEMENT Min Min	B PED SEE	PILE SPIRAL #7 @ 7" PITCH DESTAL VERTICAL REINFORCEMENT, TABLE FOR SIZE ACE CONCRETE AGAINST DISTURBED MATERIAL PERMISSIBLE Const JOINT PILE Vert Reinf	,	otherwi	se shown	on the
VERTICAL REINFORCEMENT -	PILE DIAMETER SEE TABLE SPIRAL R		AWAY F SLOPE PROI SEE NOTE !	SURFACE FROM TR.	AFFIC	æ
		<u>DETAIL (</u>	2			

SECTION B-B

SECTION A-A

ū

	,	ANCHOR BO	LTS		ROUND	PILE P	EDESTA	L		CII	DH PI	LE		
POST TYPE	BOLT	BOLT	TOTAL		VERT REINFO	ICAL ORCING	SP	IRAL	PILE	VERTI REINFOR		SP	IRAL	FOUNDATION DEPTH
No.	CIRCLE	TOTAL AND Dia	LENGTH	Dia	TOTAL	BAR SIZE	BAR SIZE	PITCH	Dia	TOTAL	BAR SIZE	BAR SIZE	PITCH	* *
I	2'-0"	12-2"	4'-2"	5'-3"	16	#10	#5	31/2"	4'-6"	26	#10	#5	31/2"	14'-9"
Ш	2'-0"	12-2"										1		16'-0"
ΙV	2'-0"	12-2"												18'-0"
¥	2'-10"	14-2"	*	*		*			*	+	1			19'-0"
VI		16-21/2"	5'-0"	5'-9"		#11			5'-0"	28	#11			22'-0"
ΔΠ														23'-0"
VIII														25'-0"
IX	1	•	+	†	1	1	1	Ť	1	+	Ť	,	T .	25'-0"

shown in table unless ne Project Plans.

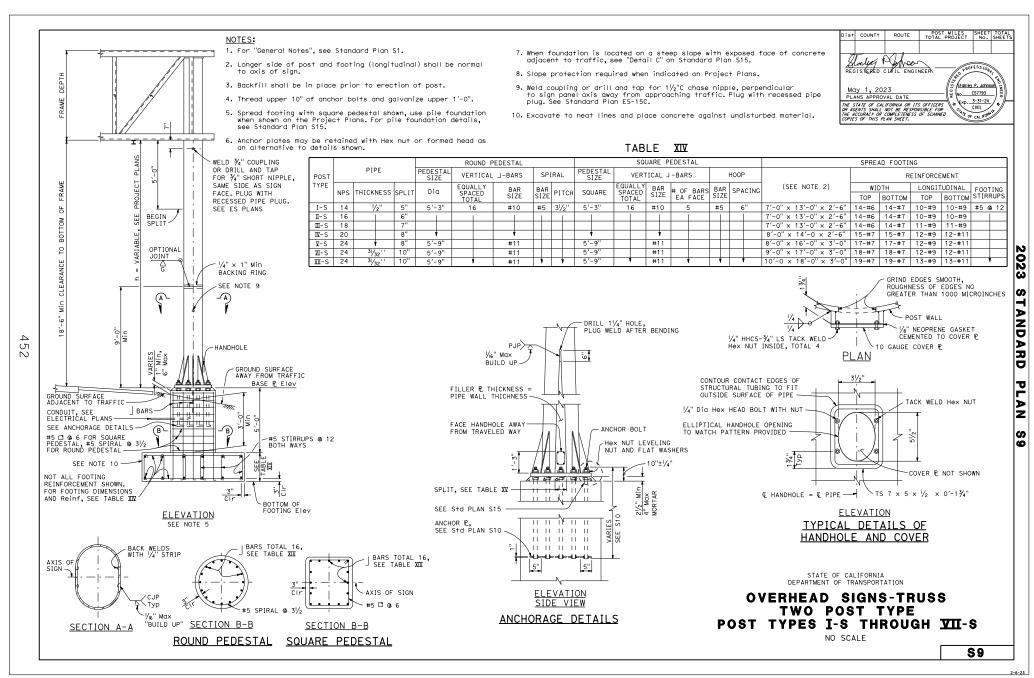
NOTES:

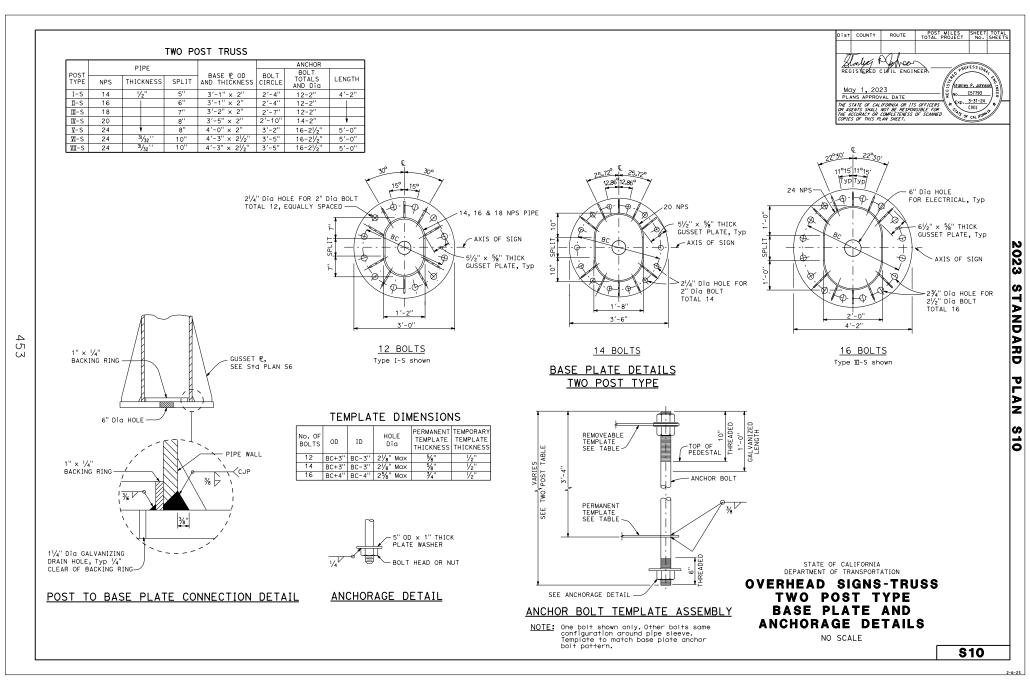
- 1. For anchor bolt layout, see Standard Plan S3.
- 2. For "Base & elevation" see Project Plans.
- Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
- Pedestal shall be formed 6" minimum below ground surface. Remainder to be placed against undisturbed material.
- 5. Slope protection required when indicated on the Project Plans.
- 6. For drain holes and central void in mortar see Standard Plan ES-6B

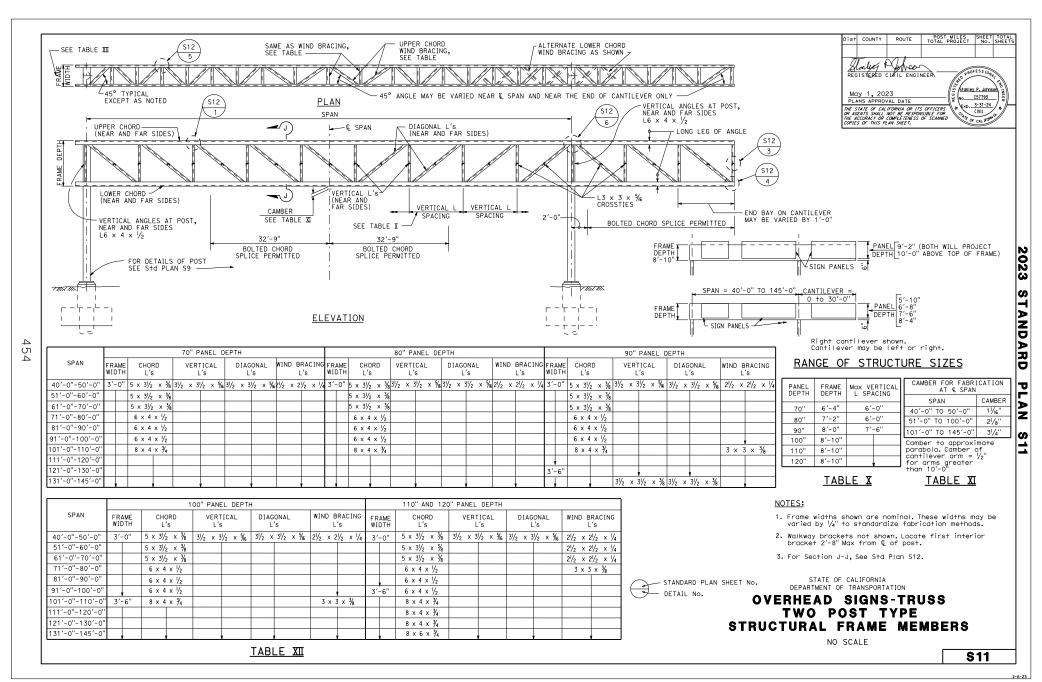
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

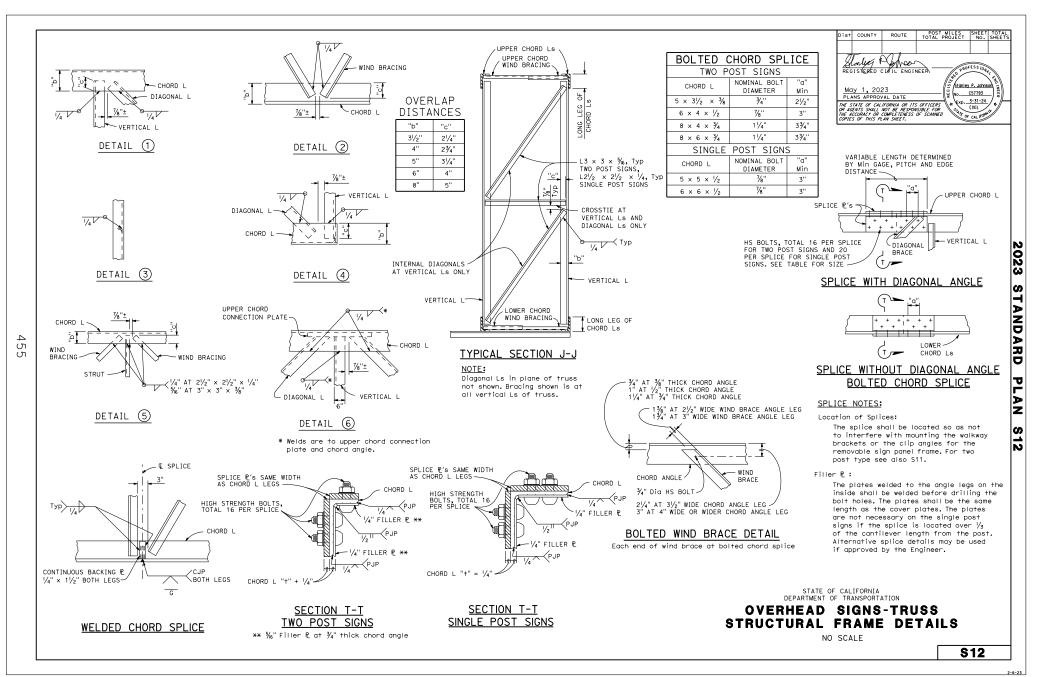
OVERHEAD SIGNS-TRUSS SINGLE POST TYPE ROUND PEDESTAL PILE FOUNDATION

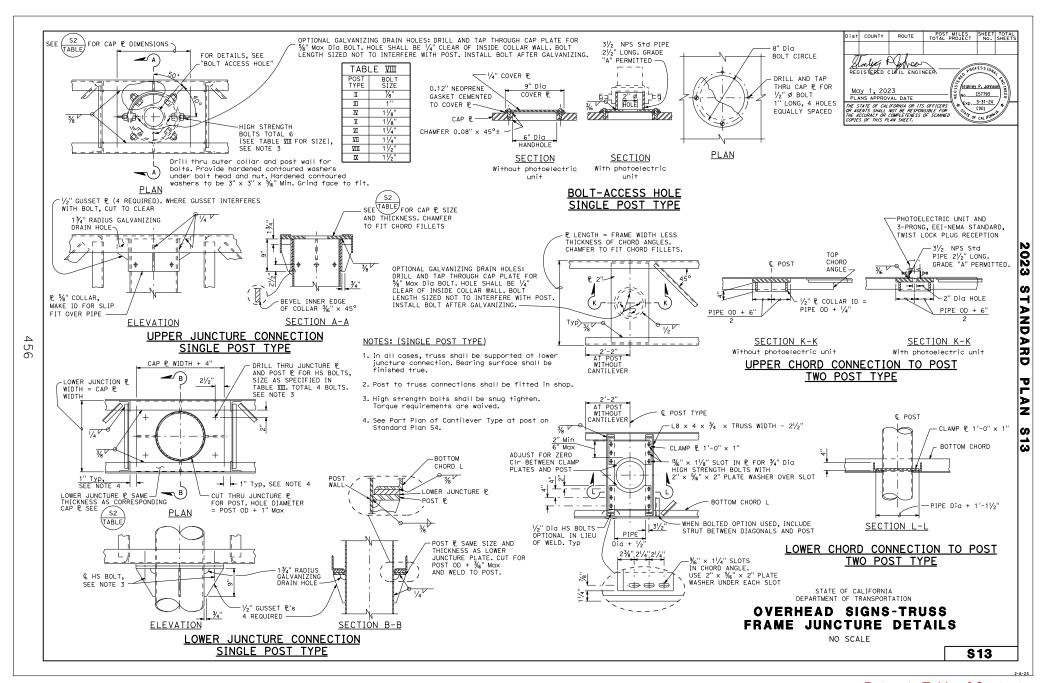
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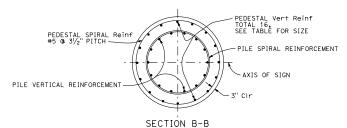


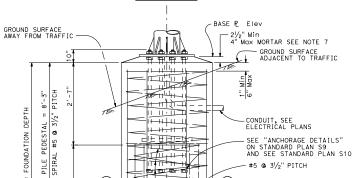












PILE DIAMETER SEE TABLE

SECTION A-A

B

FOR

LENGTH

IMITS

VERTICAL REINFORCEMENT

EQUALLY SPACED, SEE TABLE

CIDH

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#5 @ 31/2" PITCH

PEDESTAL VERTICAL REINFORCEMENT, SEE TABLE FOR SIZE

PLACE CONCRETE AGAINST UNDISTURBED MATERIAL

PERMISSIBLE Const JOINT

GROUND SURFACE ADJACENT TO TRAFFIC

PILE Vert Reinf

SPIRAL Reinf

		ANCH	OR BOL	TS		RO	UND	PILE F	PEDE	STA	L				(CIDH P	LE			
POST			DOL T	TOT41				ICAL ORCING		SP	IRAL	-		_	VERT REINFO		S	PI	RAL	FOUNDATION
TYPE	TOTAL	Dia	BOLT CIRCLE	TOTAL LENGTH	Dia	тот	AL	BAR SIZE	B/ SI		PIT	сн	PIL		TOTAL	BAR SIZE	BA SIZ		PITCH	* *
I-S	12	2"	2'-4"	4'-2"	5'-3"	11	6	#10	#	5	31,	/ ₂ ''	4'-6	6"	26	#10	#5		31/2"	18'-0"
II-S	12	1	2'-4"					1					П				П			19'-8"
III-S	12		2'-7"										П							23'-0"
IV-S	14	+	2'-10"	+	*			*					,		*	+				23'-0"
⊻ -S	16	21/2"	3'-2"	5'-0"	5'-9"			#11					5'-0	0"	28	#11				26'-3"
¥I-S	16	21/2"	3'-5"	5'-0"	5'-9"			#11					5'-0	o''	28	#11				27'-10"
W II−S	16	21/2"	3′-5"	5′-0"	5′-9"	7		#11	_			· _	5′-0	ט"	28	#11	ŧ		+	27′-10"

* * Use Foundation Depth shown in table unless otherwise shown on the Project Plans.

GROUND SURFACE AWAY FROM TRAFFIC

1" Min 6" Max

SLOPE PROTECTION, SEE NOTE 6 <

DETAIL C

NOTES:

- 1. For anchor bolt layout, see Standard Plan S10.
- 2. For "Base & elevation", see Project Plans.
- 3. Longer side of post shall be normal to axis of sign.
- 4. Prior to erection of the post, backfill which is equivalent to the surrounding material, shall be in place.
- Pedestal shall be formed 6" Min below ground surface. Remainder to be placed against undisturbed material.
- 6. Slope protection required when indicated on the Project Plans.
- 7. For drain holes and central void in mortar, see Standard Plan ES-6B detail N.

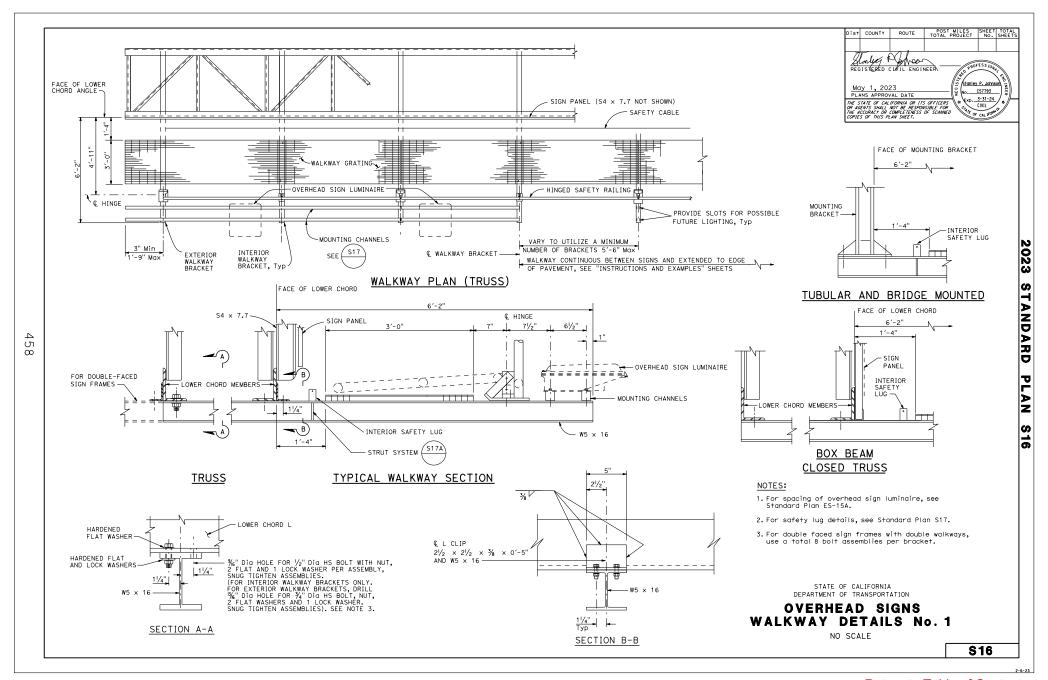
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TRUSS TWO POST TYPE **ROUND PEDESTAL PILE FOUNDATION**

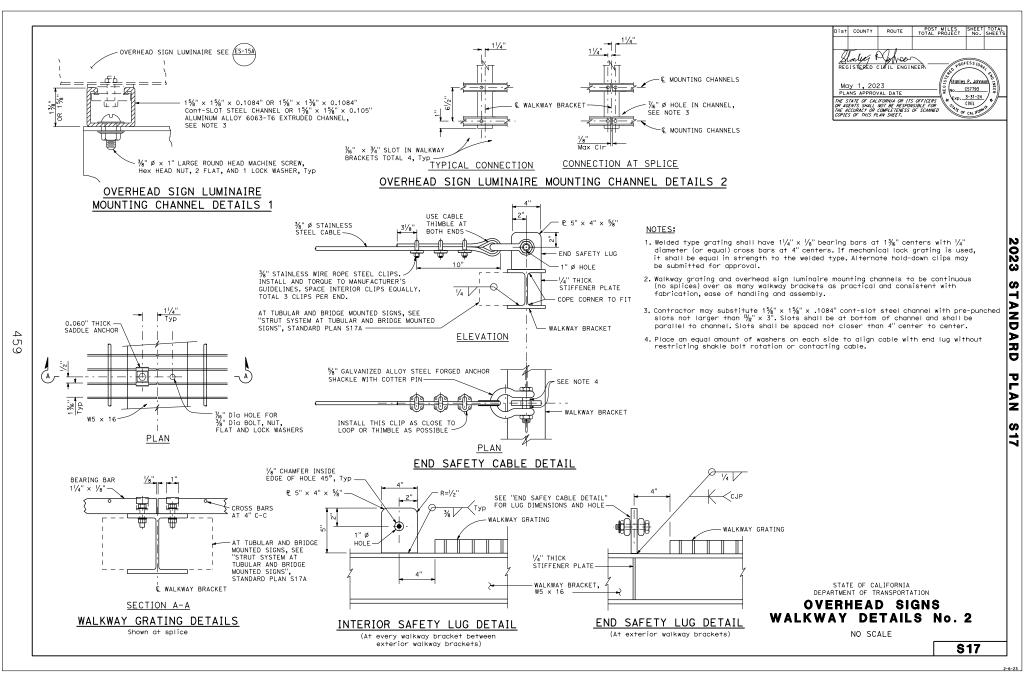
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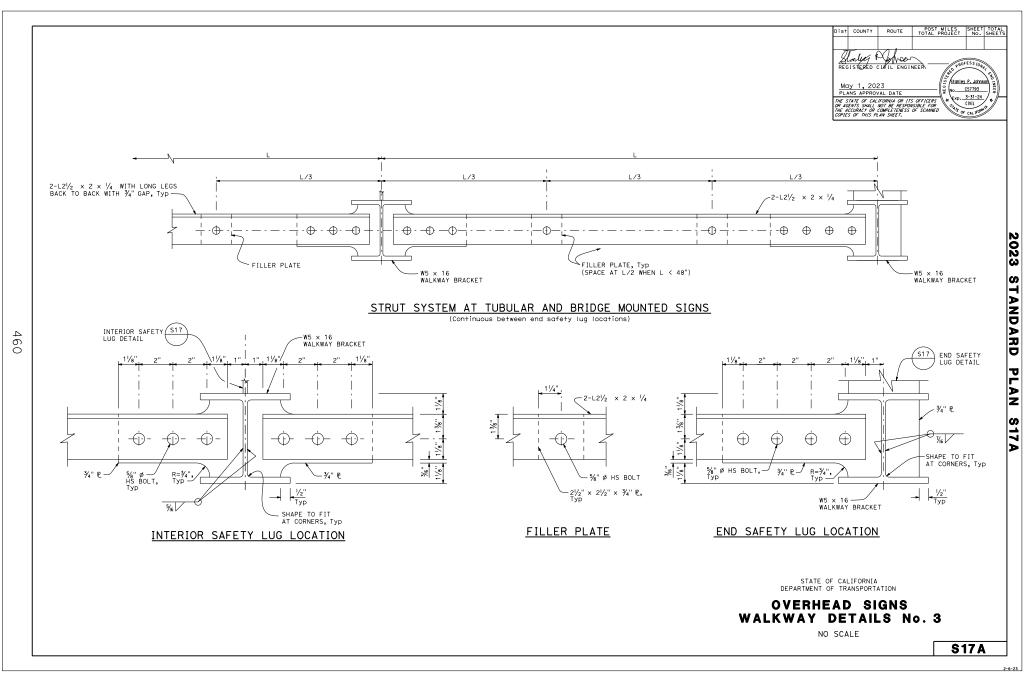
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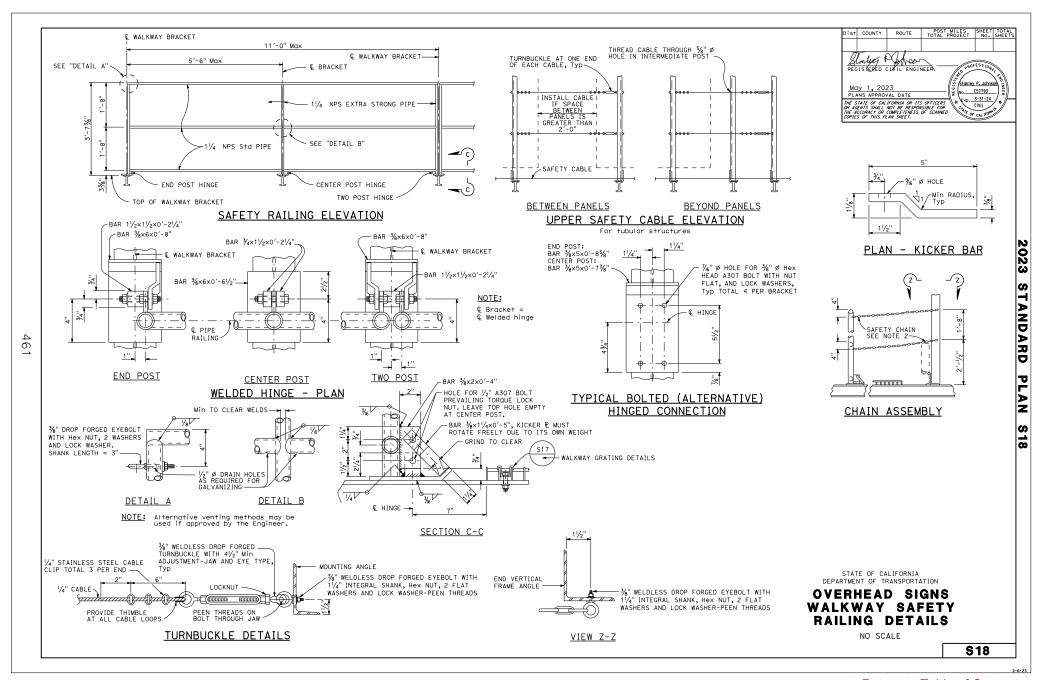
Return to Table of Contents

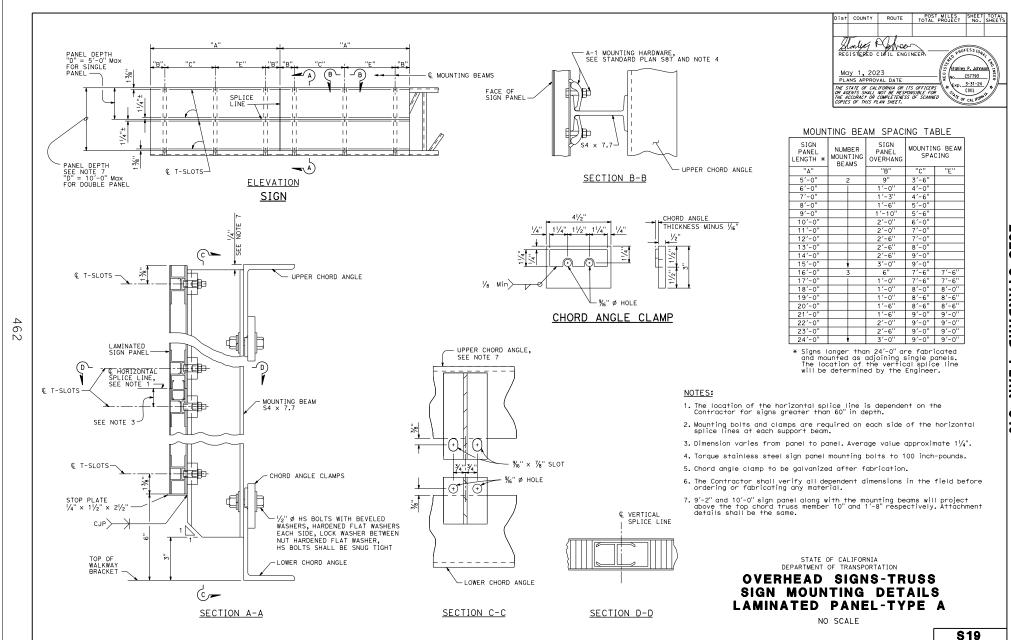


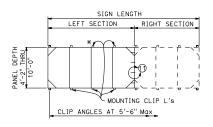






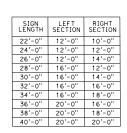






REMOVABLE FRAME GREATER THAN 20'-0"

* 9'-2" & 10'-0" sign panel frames will project above the topchord of the truss. In these cases the top clips shall be bolted to vertical frame members. See Standard Plan S22 for details.

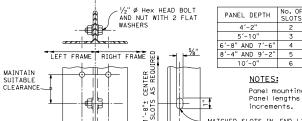


NOTES:

Frames for signs greater than 20'-0" in length shall be fabricated in two sections with left section a multiple of 4'-0" in length. See table above.

Sections shall be hoisted into place individually and bolted together as per detail (1) prior to tightening

Bolting two sections together and hoisting simultaneously will not be permitted.



Panel mounting holes not shown. Panel lengths available in 2'-0'

-MATCHED SLOTS IN, END L's. FOR NUMBER REQUIRED,

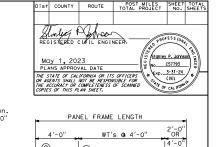
Std GAGE

C PANEL MOUNTING HOLES DETAIL

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3"± CENT

FRAME TO FRAME CONNECTION DETAILS



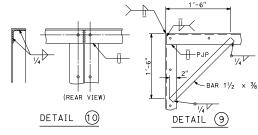
E E — WT3 × € BAR 11/2 x 3/8 FRAME I's 3 x 3 x 3/

TYPICAL REMOVABLE FRAME

(4'-0" thru 20'-0")

NOTES:

- 1. Frames shall be all-welded construction.
- 2. Panel mounting holes shall be drilled by template. Sign panel may be considered as a template.
- 3. Drilled and tapped holes $\frac{1}{4}$ may be used where interference due to welds or structural members is encountered.
- 4. WT3 \times 6 shall be flush with faces of frame angles.
- 5. Mounting clip angles shall be located such as to allow the top and bottom frame angles of the removable sign panel to lie on a straight horizontal line.
- 6. Holes for mounting removable sign panel frame may be slotted 1" maximum parallel to the axis of the sign.
- 7. WT3 \times 6 may be crimped at ends to join frame angles. Fillet weld all around.



TYPICAL FRAME JOINT DETAILS

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS STEEL FRAMES REMOVABLE SIGN PANEL FRAMES

NO SCALE

S20

4'-0' 103/4" 2 @ 103/4 103/4 11/4" _11/4" 11/4" 21/2" 21/2" 4'-2" THRU 1 SIGN PANELS FRAME L's WALKWAY BEAM -

TYPICAL 4'-0" PANEL

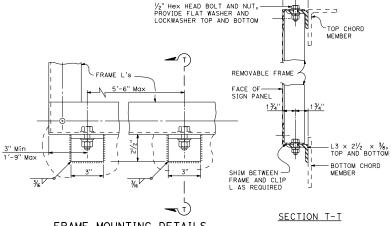
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TYPICAL 2'-0" PANEL

All holes 1/2" diameter maximum.

MOUNTING HOLE SPACING SIGN PANEL & FRAME

Hole spacing is for single sheet sign panels. For Overhead Formed Panels refer to "Removable Sign Panel Frames, Mounting Details" Sheet.



FRAME MOUNTING DETAILS

Details shown apply for sign panel frames ≤ 8'-4" deep. Mounting details for deeper panels shown on Standard Plan S22.



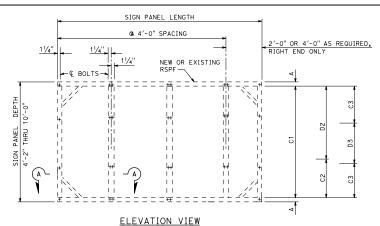


TABLE 1

	MOUNTING BOLT SPACING													
PANEL		1 SPACE	2 SF	PACE		3 SPACE								
DEPTH	Α	C1	C2	D2	С3	D3	С3							
50"	11/4"	3'-111/2"												
60"			2'-43/4"	2'-43/4"										
70"			1'-6¾"	4'-3/4"										
80"			3'-23/4"	3'-23/4"										
90"			3'-23/4"	4'-3/4"										
100"			4'-3/4"	4'-3/4"										
110"					3'-23/4"	2'-6"	3'-23/4"							
120"	11/4"				4'-3/4"	1 '-8"	4'-3/4"							

Dis+	COUNTY	ROUTE	POST TOTAL F		SHEET No.	TOTAL
Z	onlyg &	Thou	_			
		IN IL ENGI	NEER	PROF	ESS IONA	13.5
Mc	ıy 1 , 202	23		Stanley	P. Johns	1 % N
	NS APPROV			1 = 1 = -	3-31-24	-) 5
OR AG	ENTS SHALL .	IFORNIA OR IT: NOT BE RESPON COMPLETENESS AN SHEET.	ISIBLE FOR	1200		* -

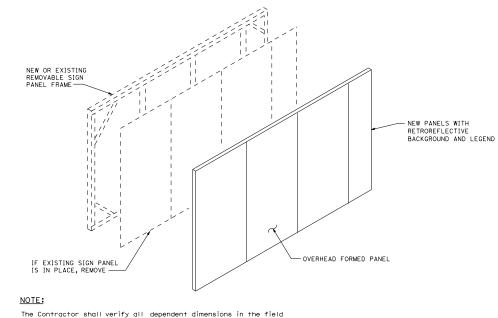
NEW OR EXISTING REMOVABLE SIGN PANEL FRAME MOUNTING HOLE SPACING

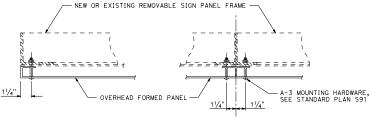
before ordering or fabricating any material.

NOTE:

464

Sign panel mounting holes $\frac{1}{2}$ ø maximum for $\frac{3}{8}$ ø bolts.





CORNER DETAIL

PANEL CONNECTION

SECTION A-A

NOTES:

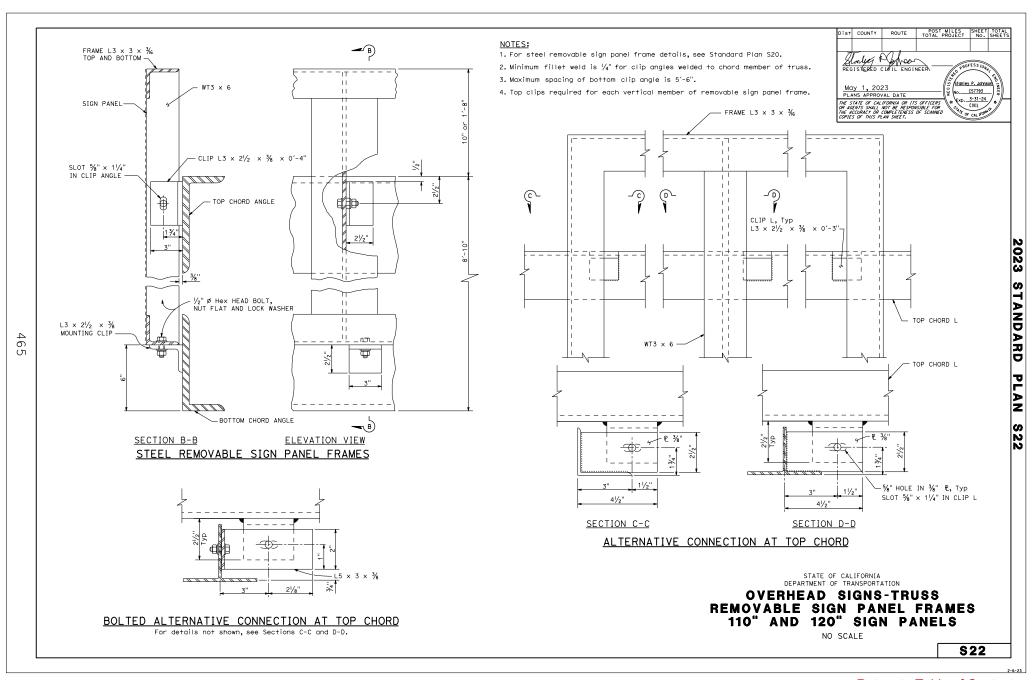
When constructing a new frame:

- (1) Refer to Standard Plan Sheet S20 for structural details.
- (2) Sign panels shall be considered as a template for drilling holes for mounting bolts.

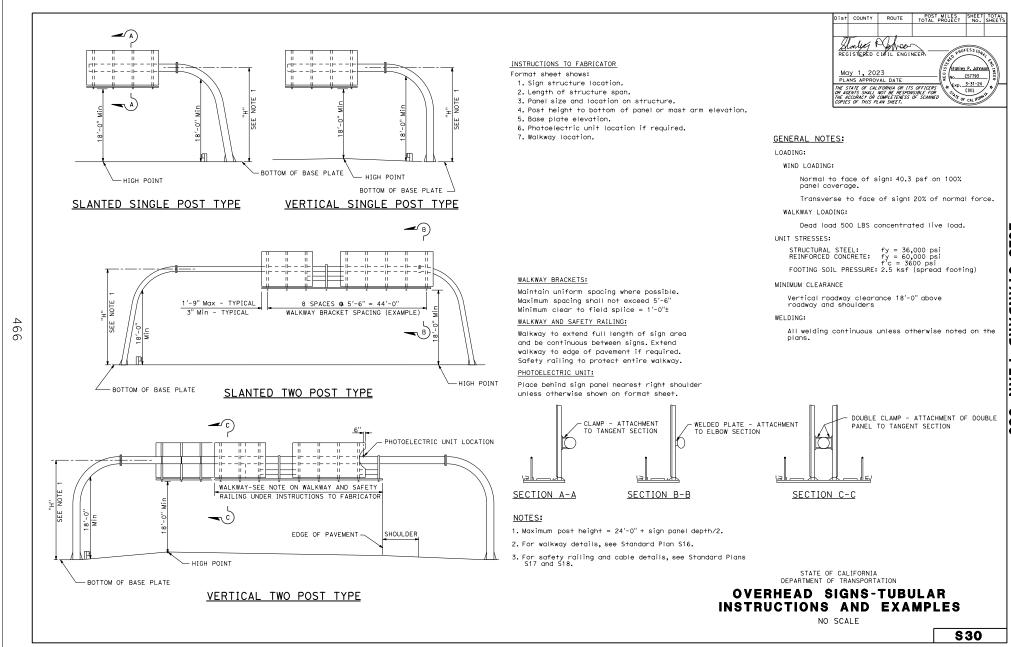
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

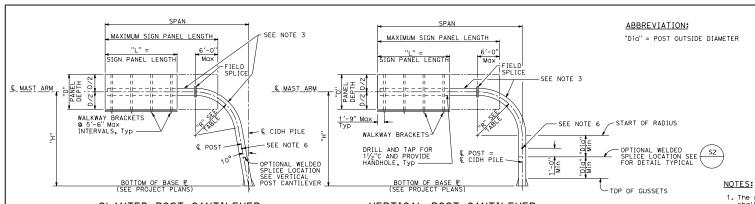
OVERHEAD SIGNS REMOVABLE SIGN PANEL FRAMES MOUNTING DETAILS

NO SCALE









Dist	COUNTY	ROUTE	POST TOTAL P	MILES ROJECT	SHEET No.	TOTAL
REC	Inly 1	CIVIL ENGI	NEER -	15	ESS ION	181
	y 1, 202			₩ No1	P. Johns 57793 3-31-24	ord (RE
OR AC	ENTS SHALL	IFORNIA OR IT: NOT BE RESPON COMPLETENESS AN SHEET.	ISIBLE FOR			/*// */

- The maximum sign panel overlap onto the post elbow shall not exceed 6'-0" from the field splice.
- When several sign panels are to be installed with a space between the panels, the space shall be as small as possible and 2'-0" maximum.
- 3. All posts between base plate and field splice shall be as scheduled in table. All mast arms are standard pipe.
- 4. During sign erection the post shall be raked as necessary with the use of leveling nuts to level the sign panel.
- 5. At final position of post all top and bottom anchor bolt nuts shall be snug tighten against base plate.
- 6. Drill and tap for $1\frac{1}{2}$ "C chase nipple and plug with recessed pipe plugs. Place perpendicular to sign panel axis and away from approaching traffic. See Standard Plan ES-15C.

POST		PE	"R"
TYPE No.	NPS	THICKNESS	RADIUS
I	20	1/2"	12'-0"
II	24	1/2"	
Ш	24	5/8"	
IV	30	1/2"	
₹	30	5/8"	
M	30	3/4"	'

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TUBULAR SINGLE POST TYPE LAYOUT AND PIPE SELECTION

NO SCALE

S31

SLANTED POST CANTILEVER

167

VERTICAL POST CANTILEVER

"D"	"H"							POST	TYPE	No. FC	R SPA			LEVER						
PANEL	POST	38'-0"	37'-0"	36'-0"	35'-0"	34'-0"	33'-0"	32'-0"	31'-0"	30'-0"	29'-0"	28'-0"	27'-0"	26'-0"	25'-0"	24'-0"	23'-0"	22'-0"	21'-0"	20'-0'
DEPTH	HEIGHT	SPAN																		
		Col #																		
	29'-0"	M	Y	¥	¥	V	Y	V	Y	IV	IV	IV	IV	IV	III	Ш	II	III	I	I
	27'-0"	¥	Y	¥	¥	V	IV.	IV.	IV	IV	IV.	IV	IV	Ш	III	Ш	Ш	I	I	II
120"	25'-0"	¥	Y	¥	¥	IV.	IΣ	IV.	IV	IV	IV	IV	Ш	Ш	Ш	Ш	I	I	I	II
	23'-0"	¥	N Z	¥	IV.	IV.	IV	IV.	IV	IV.	I	Ш	Ш	ш	III	I	I	I	I	I
	21'-0"	¥	V V	IV	IV.	IV.	IV	IV.	IV	Ш	Ⅲ	II	Ш	ш	I	I	I	I	I	I
	29'-0"	Y	Y	Y	¥	Y	IV.	IV	IV	IV	IV	IV	IV	ш	III	Ш	II	I	I	I
	27'-0"	¥	¥	¥	IV	IV.	IV.	IV	IV	IV.	IV	IV	II	Ш	III	II	I	I	I	I
110"	25'-0"	¥	¥	IV	IV	IV	IV.	IV	IV	IV	IV	III	Ш	Ш	III	I	I	I	I	I
	23'-0"	¥	IV	IX	IV	IV.	IV.	IV	IV	Ш	Ш	III	Ш	ш	I	I	I	I	I	I
	21'-0"	IV	IV	IV	IV	IV	IV.	IV	Ш	Ш	Ш	Ш	I	I	I	I	I	I	I	I
	29'-0"	¥	▼	V	₹	¥	IV	IV.	IV	IV	Ⅳ	Ш	Ш	ш	Ш	I	I	I	I	I
	27'-0"	¥	¥	IV	IV	IV	IV	IV	IV.	IV	Ш	Ш	Ш	ш	Ш	I	I	I	I	I
100"	25'-0"	IV	IV	IV	IV	IV.	IV.	IV	IV	Ш	Ш	Ш	Ш	II	I	I	I	I	I	I
	23'-0"	IV	IV	IV	IV	IV.	IV.	IV	Ш	Ш	Ш	Ш	I	I	I	I	I	I	I	I
	21'-0"	IV	IV	IV	IV	IV.	IV.	Ш	ш	Ш	Ш	I	I	I	I	I	I	I	I	I
	29'-0"	¥	V	¥	¥	IV	IV.	IV	IV	IV	Ш	II	Ш	II	I	I	I	I	I	I
	27'-0"	IV	IV	IV	IV.	IV	IV.	IV	IV	Ш	Ш	II	Ш	1	I	I	I	I	I	I
90"	25'-0"	IV	IV.	IV.	IV.	IV	I¥	IV	Ш	Ш	Ш	II	I	1	I	I	I	I	I	I
	23'-0"	IV	IV	IV	IV.	IV	IV.	Ш	II	Ш	Ш	I	I	I	I	I	I	I	I	I
	21'-0"	IV	IV	IV	IV.	IV.	Ш	Ш	Ш	Ш	I	I	I	I	I	I	I	I	I	I
	29'-0"	IV	ш	Ш	Ⅲ	Ш	Ш	I	I	I	I	I	I	I						
	27'-0"	IV	IV	IV	IV	IV	IV	II	ш	Ш	ш	Ш	I	1	I	I	I	I	I	I
80"	25'-0"	IV	IV	IV	IV.	IV	Ш	II	ш	Ш	ш	I	I	1	I	I	I	I	I	I
	23'-0"	IV	IV	IV	IV	II	Ш	III	II	Ш	I	I	I	I	I	I	I	I	I	I
	21'-0"	IV	IV	IV	IV.	Ш	Ш	Ш	Ш	I	I	I	I	I	I	I	I	I	I	I
	29'-0"	IX	IV	IV	IV	IV	Ш	Ш	Ⅲ	Ш	Ⅲ	I	I	I	I	I	I	I	I	I
	27'-0"	IV	IZ	IV.	IV	IV	ш	ш	Ⅲ	Ш	I	I	I	I	I	I	I	I	I	I
70"	25'-0"	IV	IV	IV.	IV.	Ⅲ	Ш	ш	Ⅲ	Ш	I	I	I	I	I	I	I	I	I	I
	23'-0"	IV	IZ	IV.	Ш	Ⅲ	Ш	ш	I	I	I	I	I	I	I	I	I	I	I	I
	21'-0"	IV	IV	Ш	Ш	ш	Ш	I	I	I	I	I	I	I	I	I	I	I	I	I
	29'-0"	IV	IV	IV	IV	ш	Ш	ш	ш	I	I	I	I	I	I	I	I	I	I	I
	27'-0"	IV	IV	IV	IV	ш	Ш	ш	I	I	I	I	I	I	I	I	I	I	I	I
60"	25'-0"	IX	IV	Ш	Ш	Ⅲ	Ш	I	I	I	I	I	I	I	I	I	I	I	I	I
	23'-0"	IV	II	Ш	Ш	Ш	Ш	I	I	I	I	I	I	I	I	I	I	I	I	I
	21'-0"	Ш	II	ш	Ш	ш	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	29'-0"	IV	II	Ш	Ш	ш	Ш	I	I	I	I	I	I	I	I	I	I	I	I	I
	27'-0"	IX	II	Ш	Ш	Ш	I	I	I	I	I	I	I	I	I	I	I	I	I	I
50"	25'-0"	Ш	Ш	Ш	Ш	Ш	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	23'-0"	Ш	Ш	Ш	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	21'-0"	Ш	ш	II	I	I	II	I	I	I	I	I	I	I	I	I	I	I	I	I

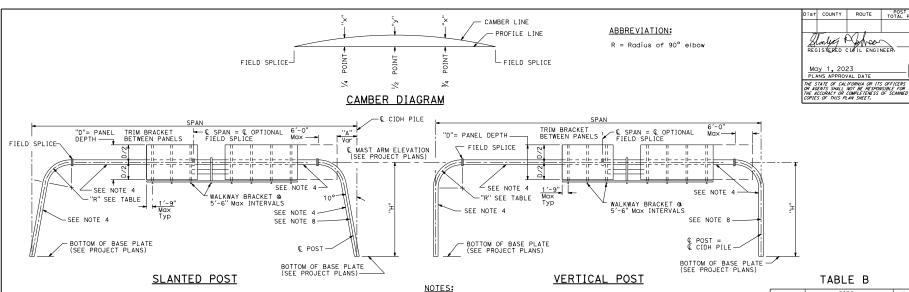


TABLE A

6 α

			Р	OST T	YPE No	. FOR	SPAN	LENGTH	H BELC	W	
"D"	"H"	140'-0"	130'-0"	120'-0"	110'-0"	100'-0"	90'-0"	80'-0"	70'-0"	60'-0"	50'-0"
PANEL	POST	TO	то	TO	TO	то	TO	TO	то	TO	то
DEPTH	HEIGHT	145'-0"	139'-0"	129'-0"	119'-0"	109'-0"	99'-0"	89'-0"	79'-0"	69'-0"	59'-0"
	29'-0"	M	M	M	VI.	¥	V	IV	Ш	Ш	I
	27'-0"	M	M	∑ I	A	¥	IV	IV	Ш	I	I
120"	25'-0"	M	M	¥	A	IV	IV	Ш	Ⅲ	I	I
	23'-0"	M	¥	V.	IV.	IV	IV.	Ш	I	I	I
	21'-0"	¥	¥	IV.	IV.	IV	Ш	II	I	I	I
	29'-0"	M	M	M	V	Y	IV	IV	III	I	I
	27'-0"	M	M	Y	¥	IV	IV	III	III	I	I
110"	25'-0"	¥	¥	¥	IV.	IΨ	IV	Ш	II	I	I
	23'-0"	¥	¥	IV	IV.	IV	Ш	Ш	I	I	I
	21'-0"	¥	¥	IV.	IV.	Ш	Ш	I	I	I	I
	29'-0"	M	¥	¥	¥	IΨ	IV.	Ш	III	I	I
	27'-0"	¥	¥	Y	IV.	IΨ	IV	II	I	I	I
100"	25'-0"	V	Y	IV.	IV.	IV	Ш	III	II	I	I
	23'-0"	V	IV.	IV.	IV.	Ш	Ш	I	II	I	I
	21'-0"	¥	IV	IV.	Ш	Ш	II	I	II	I	I
	29'-0"	¥	¥	¥	IV.	IV	Ш	Ш	II	I	I
	27'-0"	¥	¥	IV.	IV.	IV	Ш	I	I	I	I
90"	25'-0"	IV.	IΣ	IV	IV.	III	Ш	I	I	I	I
	23'-0"	IV.	IV	IV	Ш	III	I	I	I	I	I
	21'-0"	IV.	IΣ	Ш	Ш	II	II	I	I	I	I
	29'-0"	¥	IΣ	IV.	IV.	Ш	Ш	I	II	II	I
	27'-0"	IV	IV	IV	Ш	Ш	I	I	II	I	I
80"	25'-0"	IV	IV	IV	Ш	Ш	I	I	I	I	I
	23'-0"	IV	IV	Ш	Ш	II	I	I	I	I	I
	21'-0"	IV.	III	Ш	II	II	I	I	I	I	I
	29'-0"	IV.	IΣ	IV	Ш	Ш	I	I	II	I	I
	27'-0"	IV.	IΣ	Ш	Ш	II	I	I	I	I	I
70"	25'-0"	Ш	Ш	Ш	I	II	I	I	I	I	I
. •	23'-0"	ш	Ш	I	I	II	I	I	I	I	I
	21'-0"	Ш	Ш	I	I	I	I	I	I	1	I

- 1. The maximum sign panel overlap onto elbow shall not exceed 6'-0" from the field splice.
- 2. When several sign panels are to be installed with spaces between panels, the total sign panel length is the sum of individual sign panel lengths only.
- 3. For spans ranging from 50'-0" to 145'-0", maximum sign panel coverage is as follows:
 - a) For slanted post type: Span "A" on both sides from & of CIDH Pile.
 - b) For vertical post type: Span 6'-0" on both sides from & of CIDH Pile.
- 4. All posts between base plate and field plate splice shall be as scheduled in table. All mast arms are standard pipe.
- 5. Before any portion of sign frame is assembled in its final position, the Contractor shall demonstrate to the Engineer by preassembly or other approved methods that the span length of the frame, with no load condition, is within ±½" of field measured span length between foundations.
- If sign frames are erected as one unit, they shall be adequately suspended to avoid distortions or changes in span lengths between base plates.
- At final position of post, all top and bottom anchor bolt nuts shall be snug tighten against base plate.
- 8. Drill and tap for $1/\!\!/_2$ C chase nipple and plug with recessed pipe plugs. Place perpendicular to sign panel axis and away from approaching traffic. See Standard Plan ES-15C.
- 9. Maximum difference between post heights on an individual frame = 5'-0".
- 10. For standard pipe members (mast arms) with lengths greater than 78'-9", an optional field splice will be permitted at the centerline of span to facilitate hauling operations.
- 11. For location of optional welded splice in post, see Standard Plan S31.

TABLE B

ROUTE

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Stanley P. Johns

C57793

€×p. 3-31-24

CIVIL

POST	PIF	E	"R"
TYPE No.	NPS	THICKNESS	RADIUS
I	20	1/2"	12'-0"
I	24	1/2"	
Ш	24	5%"	
IV	30	1/2"	
¥	30	5/8"	
M	30	3/4"	*

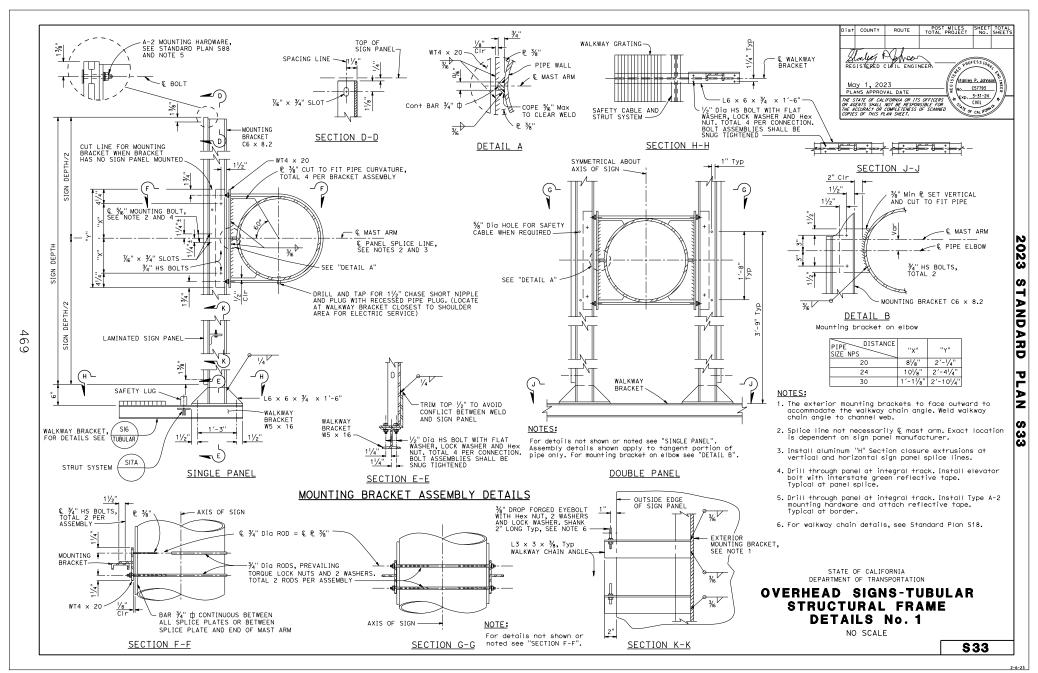
TABLE C

	CAMBER		
POST			
TYPE No.	SPAN LENGTH	Х	Υ
I	50'-0" TO 119'-0"	21/4"	31/2"
I	120'-0" TO 145'-0"	33/4"	5"
Ш	50'-0" TO 119'-0"	21/4"	31/2"
II	120'-0" TO 145'-0"	3¾"	5"
IV	50'-0" TO 119'-0"	21/4"	31/2"
IΣ	120'-0" TO 145'-0"	3¾"	5"
¥	50'-0" TO 119'-0"	21/4"	31/2"
¥	120'-0" TO 145'-0"	3¾"	5"
M	50'-0" TO 119'-0"	21/4"	31/2"
M	120'-0" TO 145'-0"	3¾"	5"

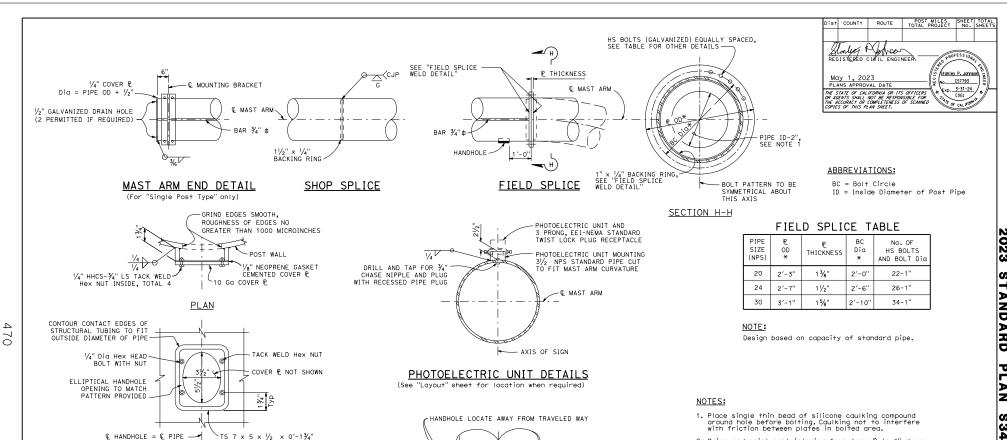
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVEREHEAD SIGNS-TUBULAR TWO POST TYPE LAYOUT AND PIPE SELECTION

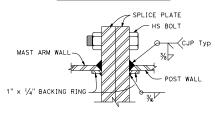
NO SCALE



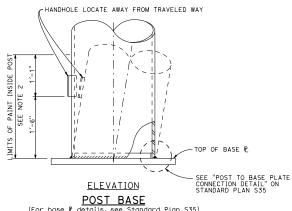




ELEVATION DETAILS OF LOWER HANDHOLE & COVER



FIELD SPLICE WELD DETAIL



(For base P details, see Standard Plan S35)

- 2. Prime and paint post interior from base ${\mathbb R}$ to 6" above lower handhole unless post is galvanized.
- Field splice diameters marked "*" may be increased 2" to facilitate bolting.

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OVERHEAD SIGNS-TUBULAR STRUCTURAL FRAME **DETAILS No. 2**

NO SCALE



BOLT CIRCLE PLATE WASHER 8" × 4½" × ¾" WELDED TO PIPE PIPE SIZE TO MATCH SIZE OF POST, Typ XS PIPE SLEEVE, 3" LONG, Typ AXIS OF SIGNS 14 BOLTS 16 BOLTS

ANCHOR BOLT TEMPLATE

Template to match base plate anchor bolt pattern (Option: Template similar to ring plate type can be used in lieu of plate washer type).

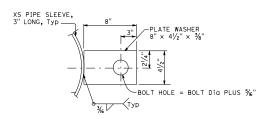
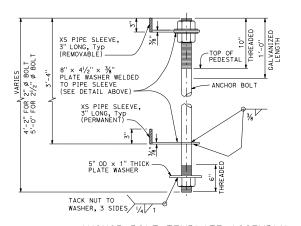


PLATE WASHER DETAIL FOR 14 AND 16 BOLT TEMPLATE PATTERN

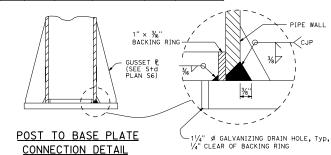


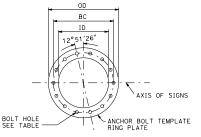
ANCHOR BOLT TEMPLATE ASSEMBLY PLATE WASHER TYPE

NOTE: One bolt shown only. Other bolts same configuration around pipe sleeve.

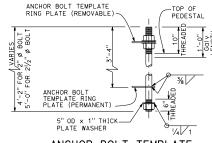
SINGLE POST AND TWO POST TUBULAR

POST	P.	IPE	D105 B	ANCHOR BOLTS						
TYPE	NPS	THICKNESS	BASE PL OD AND THICKNESS	BOLT CIRCLE Dia	BOLT TOTALS AND Dia OF BOLT					
I	20	1/2"	3'-1" × 21/2"	2'-6"	14-2"					
II	24	1/2"	3'-6" × 21/2"	2'-10"	14-21/2"					
Ш	24	5/8"	3'-6" x 21/2"	2'-10"	14-21/2"					
IV	30	1/2"	4'-0" x 21/2"	3'-4"	16-21/2"					
Y	30	5/8"	4'-0" × 21/2"	3'-4"	16-21/2"					
Δl	30	3/,"	4'-0" x 3"	3'-4"	16-21/2"					





14 BOLTS Type I shown



ANCHOR BOLT TEMPLATE RING PLATE TYPE

NOTE: One bolt shown only. Other bolts same configuration around ring plate.

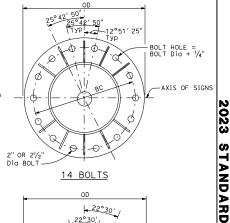
ABBREVIATION:

BC = Bolt Circle Diameter

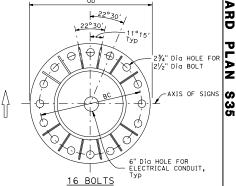
TEMPLATE DIMENSIONS

I E IVIE	LAIL	210112	
TYPE	F	POST TYPE	No.
DIMENSIONS	I	п то ш	ny to yn
OD	2'-9"	3'-2"	3'-10"
ID	2'-3"	2'-6"	2'-10"
BC	2'-6"	2'-10"	3'-4"
HOLE Dia	21/8" Max	25%" Max	25%" Max
PERMANENT TEMPLATE THICKNESS	5/8"	3/4"	3/4"
TEMPORARY TEMPLATE THICKNESS	1/2"	1/2"	11/2"





OD



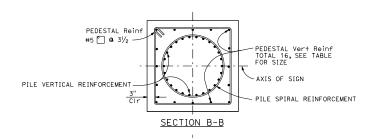
BASE PLATE DETAILS SINGLE AND TWO POST TYPE

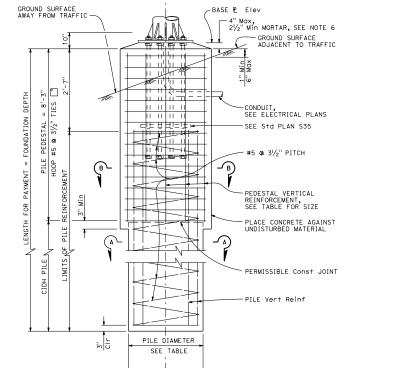
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TUBULAR SINGLE AND TWO POST TYPE BASE PLATE AND ANCHORAGE DETAILS

NO SCALE







3" CIT

SECTION A-A

SPIRAL Reinf

VERTICAL REINFORCEMENT -EQUALLY SPACED (SEE TABLE)

72

		ANCHOR BOL	TS		SQU	ARE P	ILE PED	EST	AL					C	IDH F	ILE			
POST TYPE	BOLT			PEDESTAL	VERTICAL R		REINFORCING		HOOP			VERTICAL REINFORC		RCING	G SPIRAL		FOUNDATION		
No.	CIRCLE	AND Dia	TOTAL LENGTH	SQUARE ONE SIDE	TOTAL	BAR SIZE	# OF B	ARS ACE	BAR SIZE SPACING		CING	PILE Dia	тот	AL		AR ZE	BAR SIZE	PITCH	× ×
I	2'-6"	14-2"	4'-2"	5'-6"	16	#11	5		#5	31/	′2"	5'-0"	28	3	#	11	#5	31/2"	25'-0"
II	2'-10"	14-21/2"	5'-0"	1		1	1		1		1	- 1	1			1	1	1	25'-0"
III	2'-10"	14-21/2"																	25'-0"
IV	3'-4"	16-21/2"																	33'-0"
¥	3'-4"	16-21/2"																	33'-0"
M	3'-4"	16-21/2"	,	+	T +	+			*	Ι.		+	,			*	*	1	33'-0"

* * Use Foundation Depth shown in table unless otherwise shown on the Project Plans.

GROUND SURFACE AWAY FROM TRAFFIC

SLOPE PROTECTION, SEE NOTE 5 \

DETAIL C

GROUND SURFACE ADJACENT TO TRAFFIC

NOTES:

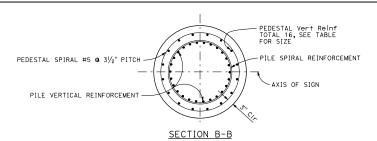
- 1. For anchor bolt layout, see Standard Plan S35.
- 2. For "Base & elevation", see Project Plans.
- 3. Before erection of the post, backfill which is equivalent to the surrounding material, shall be in place.
- Pedestal shall be formed 6" minimum below ground surface. Remainder to be placed against undisturbed material.
- 5. Slope protection required when indicated on the Project Plans.
- 6. For drain holes and central void in mortar, see Standard Plan ES-6B

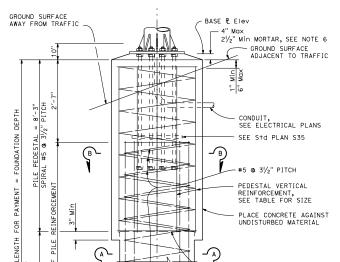
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-TUBULAR SINGLE POST AND TWO POST TYPE SQUARE PEDESTAL PILE FOUNDATION

NO SCALE







PILE DIAMETER SEE TABLE

SECTION A-A

PLACE CONCRETE AGAINST

UNDISTURBED MATERIAL

PERMISSIBLE Const JOINT

-GROUND SURFACE ADJACENT TO TRAFFIC

PILE Vert Reinf

SPIRAL Reinf

73

PILE N

CIDH

CIr

VERTICAL REINFORCEMENT EQUALLY SPACED (SEE TABLE)

	ANCHOR BOLTS				ROUND PILE PEDESTAL			CIDH PILE						
					VERTICAL	REINFORCING	SP	IRAL		VERTICAL F	REINFORCING	SP	IRAL	FOUNDATION
POST TYPE No.	BOLT CIRCLE Dia	BOLT TOTAL AND Dia	TOTAL LENGTH	Dia	TOTAL	BAR SIZE	BAR SIZE	PITCH	PILE Dia	TOTAL	BAR SIZE	BAR SIZE	PITCH	DEPTH * *
I	2'-6"	14-2"	4'-2"	5'-6"	16	#11	#5	31/2"	5'-0"	28	#11	#5	31/2"	25'-0"
II	2'-10"	14-21/2"	5'-0"	1	1	1	1	1	1	1		1	1	25'-0"
III	2'-10"	14-21/2"	1											25'-0"
IV	3'-4"	16-21/2"												33'-0"
¥	3'-4"	16-21/2"												33'-0"
M	3'-4"	16-21/2"	+	,	,	+	•	+	+	*		+		33'-0"

* * Use Foundation Depth shown in table unless otherwise shown on the Project Plans.

GROUND SURFACE AWAY FROM TRAFFIC -

MG X

SLOPE PROTECTION, SEE NOTE 5

DETAIL C

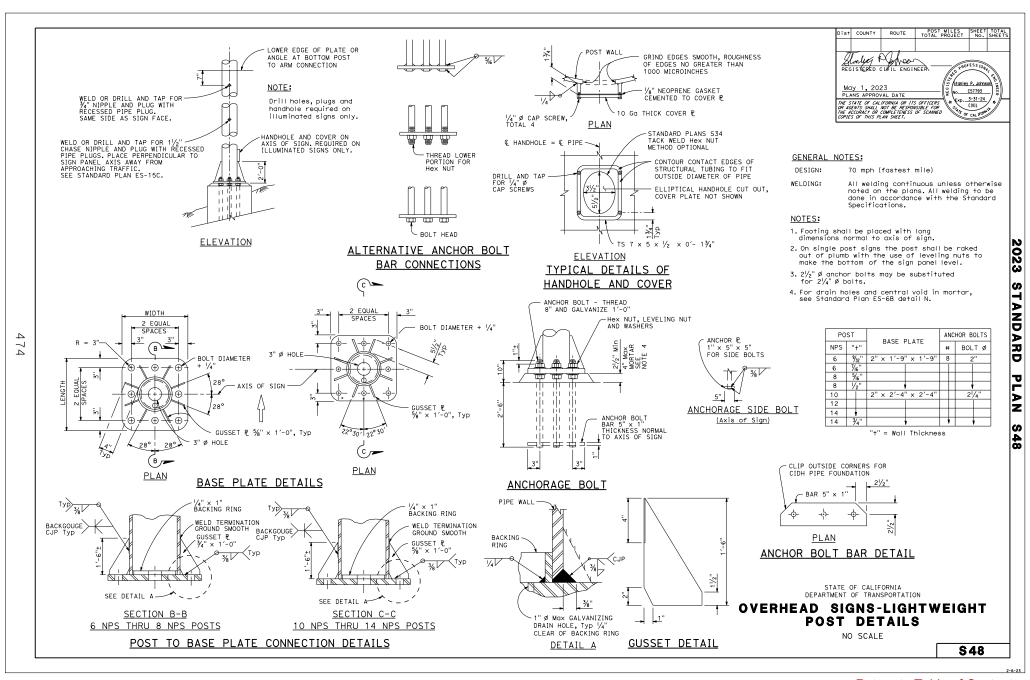
NOTES:

- 1. For anchor bolt layout, see Standard Plan S35.
- 2. For "Base & elevation", see Project Plans.
- 3. Before erection of the post, backfill which is equivalent to the surrounding material, shall be in place.
- 4. Pedestal shall be formed 6" minimum below ground surface. Remainder to be placed against undisturbed material.
- 5. Slope protection required when indicated on the Project Plans.
- 6. For drain holes and central void in mortar, see Standard Plan ES-6B Detail N.

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OVERHEAD SIGNS-TUBULAR SINGLE POST AND TWO POST TYPE ROUND PEDESTAL PILE FOUNDATION

NO SCALE



2023 STANDARD PLAN

\$49

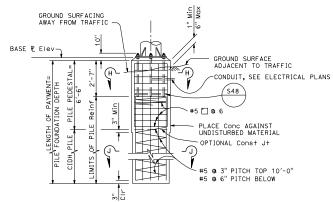
POST PILE FOUNDATION					SPREAD FOOTING					
NPS	"†"	PEDESTAL	PILE Dia	PILE DEPTH	VERTICAL Reinf	PEDESTAL	FOOTING WIDTH × LENGTH	TOP	EINFORCEI BOTTOM	MENT L BAR
6	9/32''	2'-10" x 2'-10"	30"	10'-0"	#6	2'-6" × 2'-6"	4'-0" × 6'-0"	#5	#5	#5
6	7/16"			10'-0"	#6		4'-0" x 7'-0"			
8	%"			10'-0"	#6		5'-0" x 8'-0"			
8	1/2"	•	+	11'-0"	#7	į.	6'-0" × 9'-0"		+	+
10		3'-4" x 3'-4"	36"	13'-0"	#8	3'-0" × 3'-0"	7'-0" x 10'-0"	+	#8	#8
12				15'-0"	#10		7'-0" x 12'-0"	#6	#8	
14	+			15'-0"	#10		7'-0" x 13'-0"	#8	#9	
14	3/4"	+	,	16'-0"	#10		8'-0" x 14'-0"	#8	#9	,

NOTES:

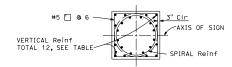
- 1. Backfill shall be in place before erection of post.
- 2. Slope protection required when indicated on the plans.
- Pile pedestal shall be formed 6" minimum below ground surface. Remainder to be placed against undisturbed material.



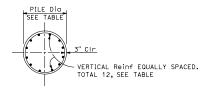




ELEVATION

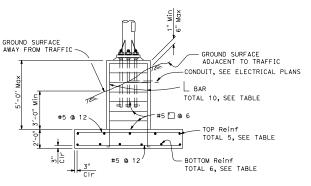


SECTION H-H

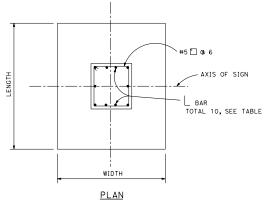


SECTION J-J 6 NPS THRU 14 NPS POSTS

PILE FOUNDATION



ELEVATION

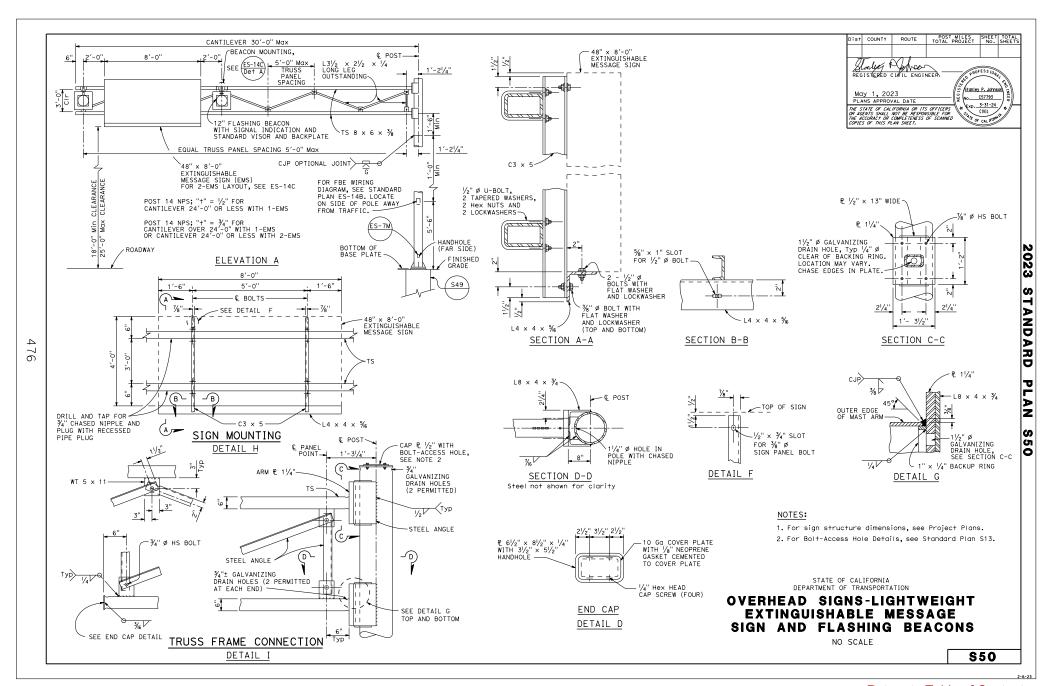


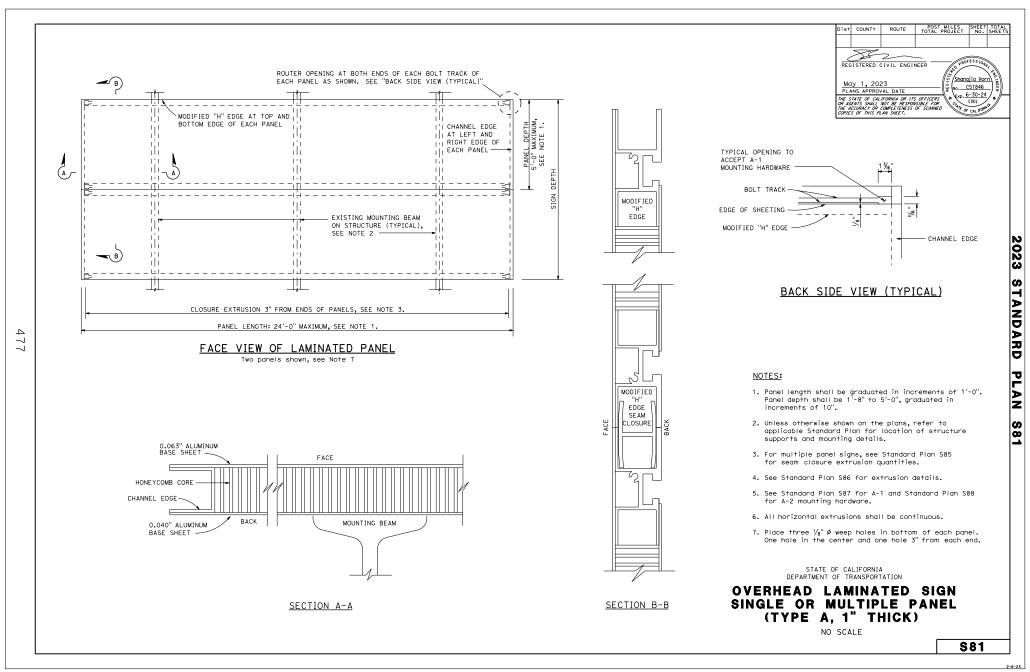
SPREAD FOOTING

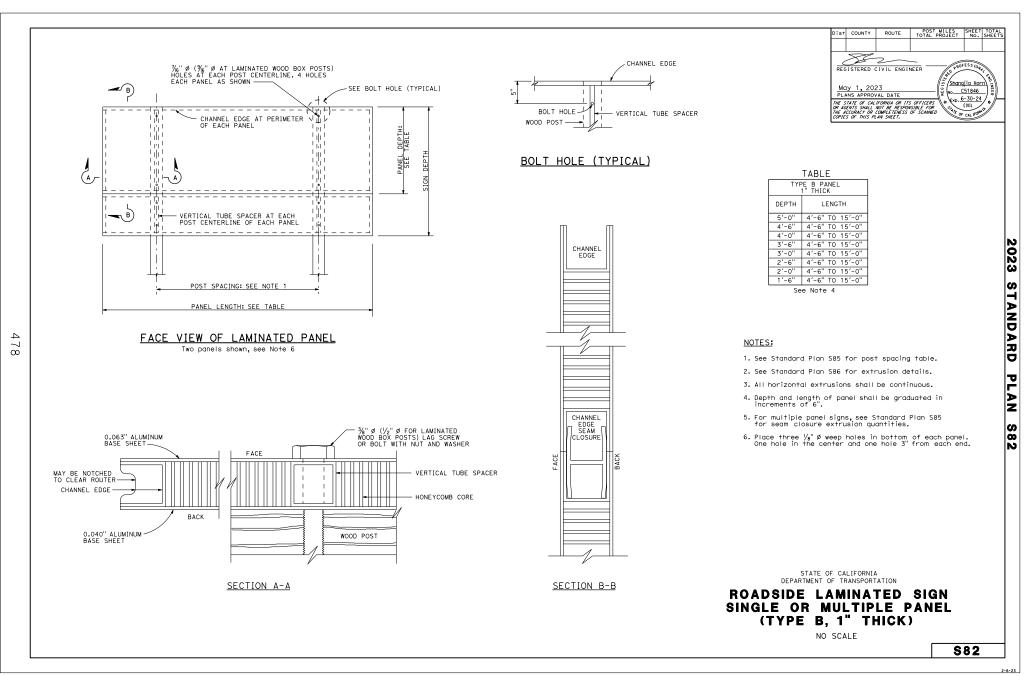
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-LIGHTWEIGHT FOUNDATION DETAILS

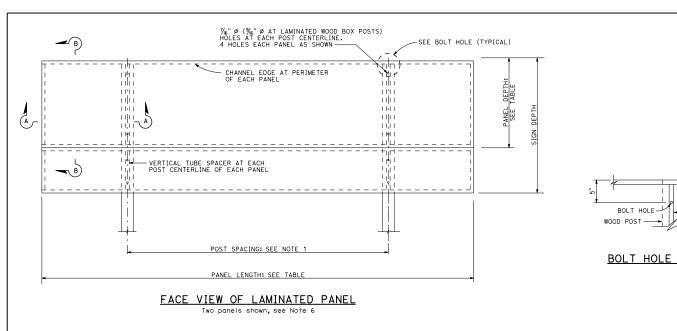
NO SCALE



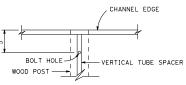








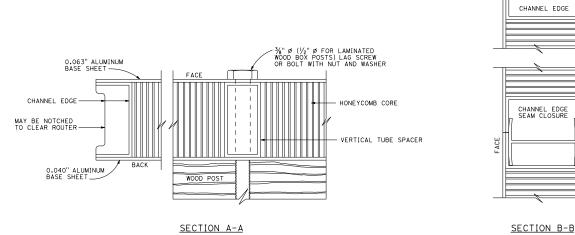




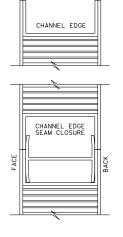
BOLT HOLE (TYPICAL)

TABLE									
TYPE B PANEL 21/2" THICK									
DEPTH	LENGTH								
5'-0"	15'-6" TO	16'-6'							
4'-6"	15'-6" TO	18'-6'							
4'-0"	15'-6" TO	20'-6'							
3'-6"	15'-6" TO	23'-6'							
3'-0"	15'-6" TO	24'-0'							
2'-6"	15'-6" TO	24'-0'							
2'-0"	15'-6" TO	24'-0'							
1'-6"	15'-6" TO	24'-0'							

See Note 4



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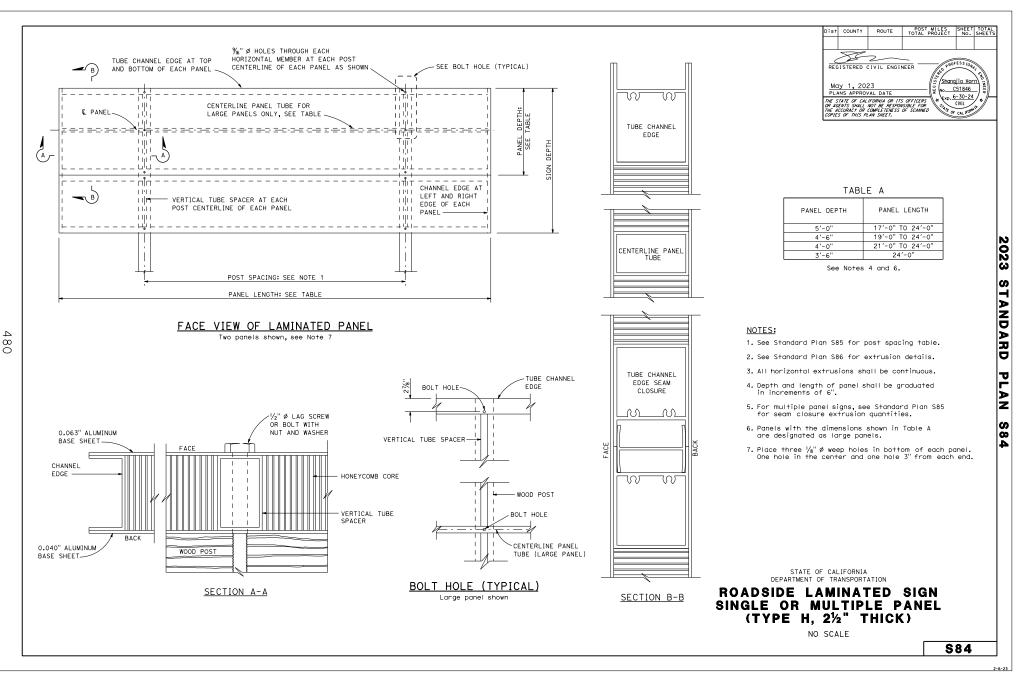
NOTES:

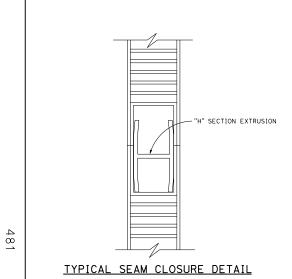
- 1. See Standard Plan S85 for post spacing table.
- 2. See Standard Plan S86 for extrusion details.
- 3. All horizontal extrusions shall be continuous.
- 4. Depth and length of panel shall be graduated in increments of 6".
- 5. For multiple panel signs, see Standard Plan S85 for seam closure extrusion quantities.
- 6. Place three V_8 " Ø weep holes in bottom of each panel. One hole in the center and one hole 3" from each end.

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ROADSIDE LAMINATED SIGN SINGLE OR MULTIPLE PANEL (TYPE B, 2½" THICK)

NO SCALE

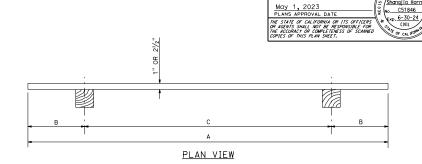




PANEL	CLOSURE	NUMBER OF PIECES
LENGTH	LENGTH	& LENGTH REQUIRED
3'-6"	3'-0"	One 3'-0"
4'-0"	3'-6"	One 3'-6"
4'-6"	4'-0"	One 4'-0"
5'-0"	4'-6"	One 4'-6"
5′-6"	5′-0"	One 5'-0"
6'-0"	5′-6"	One 5'-6"
6'-6"	6'-0"	Two 3'-0"
7'-0"	6'-6"	One 3'-0", One 3'-6" Two 3'-6"
7'-6"	7'-0"	
8'-0"	7'-6"	One 3'-6", One 4'-0"
8'-6"	8'-0"	Two 4'-0"
9'-0"	8'-6"	One 4'-0", One 4'-6" Two 4'-6"
9'-6"	9'-0"	
10'-0"	9'-6"	One 4'-6", One 5'-0"
10'-6"	10'-0"	Two 5'-0"
11'-0"	10'-6"	One 5'-0", One 5'-6" Two 5'-6"
11'-6"	11'-0"	
12'-0"	11'-6"	Two 4'-0", One 3'-6" Three 4'-0"
12'-6"	12'-0"	
13'-0"	12'-6"	Two 4'-0", One 4'-6" Two 4'-6"
13'-6"	13'-0"	
14'-0"	13'-6"	Three 4'-6", One 4'-0
14'-6"	14'-0"	Two 4'-6", One 5'-0"
15'-0"	14'-6"	Two 5'-0", One 4'-6"
15'-6"	15'-0"	Three 5'-0"
16'-0"	15'-6"	Two 5'-6", One 4'-6"
16'-6"	16'-0"	Two 5'-6"
17'-0"	16'-6"	Three 5'-6", One 5'-0
17′-6"	17'-0"	Three 4'-0", One 5'-0
18'-0"	17'-6"	Three 4'-6", One 4'-0
18'-6"	18'-0"	Four 4'-6"
19'-0"	18'-6"	Three 4'-6", One 5'-0 Three 5'-0", One 4'-0
19'-6"	19'-0"	Three 5'-0", One 4'-0
20'-0"	19'-6"	Three 5'-0", One 4'-6
20'-6"	20'-0"	Four 5'-0"
21'-0"	20'-6"	Three 5'-6", One 4'-0 Three 5'-6", One 4'-6
21'-6"	21'-0"	Three 5'-6", One 4'-6
22'-0"	21'-6"	Three 5'-6", One 5'-0
22'-6"	22'-0"	Four 5′-6"
23'-0"	22'-6"	Five 4'-6"
23'-6"	23'-0"	Four 4'-6", One 5'-0"
24'-0"	23'-6"	Three 4'-6", Two 5'-0

"H" sections will be set in 3" from edge of panels to allow for rivet clearance in borders. Standard length in stock: 3'-0", 3'-6", 4'-0", 4'-6", 5'-0" and 5'-6".

SEAM CLOSURE "H" SECTION EXTRUSION



1" PANEL

21/2" PANEL

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

Shangjia Horn

	NUMBER		
LENGTH OF SIGN	OF	OVERHANG	POST SPACING
Α	POSTS	В	С
4'-6"	2	6"	3′-6"
5′-0"	2	9"	3'-6"
5′-6"	2	1'-0"	3'-6"
6'-0"	2	1'-0"	4'-0"
6′-6"	2	1'-3"	4'-0"
7'-0"	2	1'-3"	4'-6"
7′-6"	2	1′-6"	4'-6"
8'-0"	2	1′-6"	5'-0"
8'-6"	2	1'-8"	5'-2"
9'-0"	2	1'-10"	5'-4"
9'-6"	2	1'-11"	5'-8"
10'-0"	2	2'-0"	6'-0"
10'-6"	2	2'-0"	6'-6"
11'-0"	2	2'-0"	7'-0"
11'-6"	2	2'-3"	7'-0"
12'-0"	2	2'-6"	7'-0"
12'-6"	2	2'-6"	7′-6"
13'-0"	2	2'-6"	8'-0"
13'-6"	2	2'-6"	8'-6"
14'-0"	2	2'-6"	9'-0"
14'-6"	2	3'-0"	8'-6"
15'-0"	2	3'-0"	9'-0"

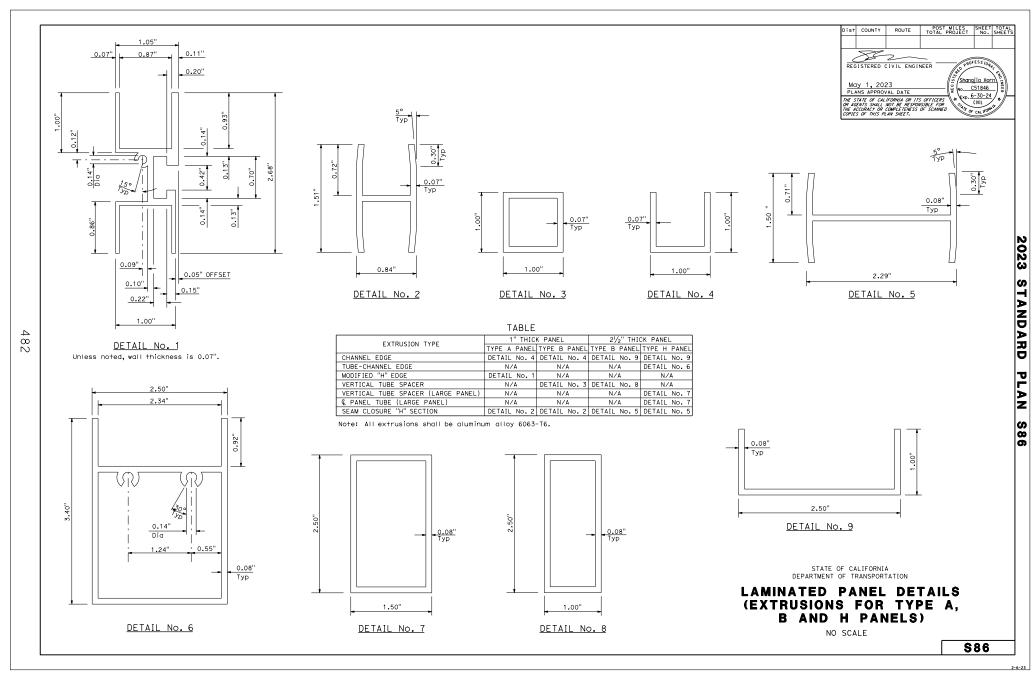
	-, -		
	NUMBER		
LENGTH OF SIGN	OF	OVERHANG	POST SPACING
Α	POSTS	В	С
15'-6"	2	3'-0"	9'-6"
16'-0"	2	3'-3"	9'-6"
16'-6"	2	3'-3"	10'-0"
17'-0"	2	3'-3"	10'-6"
17'-6"	2	3′-6"	10'-6"
18'-0"	2	3′-6"	11'-0"
18'-6"	2	3′-9"	11'-0"
19'-0"	2	3′-9"	11'-6"
19'-6"	2	3'-9"	12'-0"
20'-0"	2	4'-0"	12'-0"
20'-6"	2	4'-0"	12'-6"
21'-0"	2	4'-3"	12'-6"
21'-6"	2	4'-3"	13'-0"
22'-0"	2	4'-3"	13'-6"
22'-6"	2	4'-6"	13'-6"
23'-0"	2	4'-6"	14'-0"
23'-6"	2	4'-6"	14'-6"
24'-0"	2	4'-9"	14'-6"
`	•		

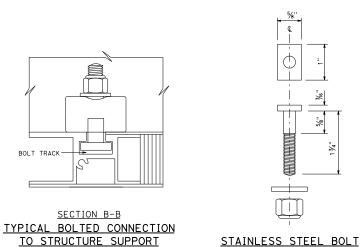
STANDARD POST SPACING

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

SEAM CLOSURE, "H" SECTION EXTRUSION AND POST SPACING TABLES (MULTI-HORIZONTAL LAMINATED PANEL ALUMINUM SIGNS)

NO SCALE

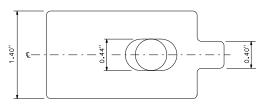






A-1 HARDWARE QUANTITY TABLE

0.7011 1.5110.511	SIGN DEPTH	UNITS REQUIRED			
SIGN LENGTH	SEE NOTE 4	SEE NOTE 3			
15'-0" OR LESS	4'-2" - 5'-0"	4			
16'-0" - 24'-0"	4'-2" - 5'-0"	6			
15'-0" OR LESS	5'-10" - 10'-0"	8			
16'-0" - 24'-0"	5'-10" - 10'-0"	12			



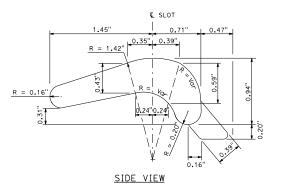
TYPICAL ALUMINUM CLAMP MOUNTING

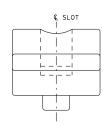
MOUNTING BEAM

SIGN PANEL

 $\overline{\infty}$

TOP VIEW





ALUMINUM MOUNTING CLAMP

FRONT VIEW

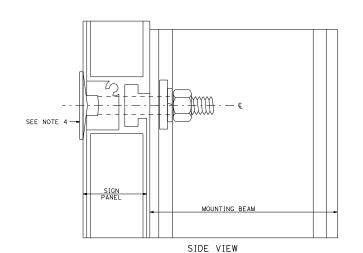
NOTES:

- 1. Refer to applicable Standard Plan for additional mounting details.
- 2. Rectangular head bolt, hexagon stop nut, and flat washer shall be $^3\!8^{\rm m}$ diameter (18–8) stainless steel.
- 3. One unit of A-1 hardware shall consist of two sets of these components: clamp, bolt, nut and washer.
- Signs 9'-2" and 10'-0" in depth may be fabricated in three panel sections to avoid legend from being placed on a horizontal seam. Increase number of units of mounting hardware accordingly.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TYPE A-1 MOUNTING HARDWARE FOR OVERHEAD LAMINATED TYPE A PANEL (TRUSS AND LIGHTWEIGHT SIGN STRUCTURES)

NO SCALE



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A-2 HARDWARE QUANTITY TABLE

(STANDARD TODOLAR)					
SIGN LENGTH	SIGN DEPTH SEE NOTE 6	UNITS REQUIRED SEE NOTE 5			
14'-0" OR LESS	4'-2" TO 5'-0"	9			
15'-0" TO 20'-0"	4'-2" TO 5'-0"	13			
21'-0" TO 24'-0"	4'-2" TO 5'-0"	17			
14'-0" OR LESS	5'-10" TO 10'-0"	17			
15'-0" TO 20'-0"	5'-10" TO 10'-0"	25			
21'-0" TO 24'-0"	5'-10" TO 10'-0"	33			

NOTES:

- 1. Refer to applicable Standard Plan for additional mounting details.
- 2. Beveled washer for tapered flange only.
- 3. Elevator head bolt, hexagon nut, and lock washer shall be $\frac{1}{16}$ " diameter (18-8) stainless steel.
- Furnish retroflective stick-ons for bolt head in same color as sign. Apply during installation.
- 5. One unit of A-2 hardware shall consist of one each; bolt nut, lock washer and beveled washer. Quantity listed includes 1 spare unit.
- Signs 9'-2" and 10'-0" in depth may be fabricated in three panel sections to avoid legend from being placed on a horizontal seam. Increase number of units of mounting hardware accordingly.

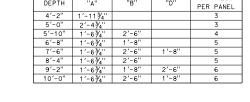
SEE NOTE 2

MOUNTING HARDWARE

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TYPE A-2 MOUNTING HARDWARE FOR OVERHEAD LAMINATED TYPE A PANEL (BRIDGE MOUNTED AND TUBULAR SIGN STRUCTURES)

NO SCALE

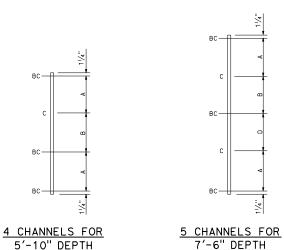


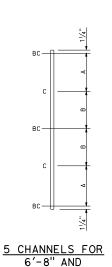
DIMENSION DIMENSION DIMENSION

TOTAL No. OF

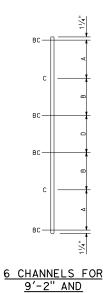
CHANNELS

5'-10" DEPTH





8'-4" DEPTH



10'-0" DEPTH

Mdy 1, 2023 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

Shanaiia Hor

C51846 Exp. 6-30-24

LEGEND:

981

PANEL

DEPTH

"C" INDICATES LOCATION OF CHANNEL.

3 CHANNELS FOR

4'-2" AND

5'-0" DEPTH

"BC" INDICATED LOCATION OF BOLT AND CHANNEL.

* THIS BOLT MAY BE OMITTED WHEN DEPTH IS 4'-2".

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

CHANNEL AND BOLT HOLE LOCATION FOR OVERHEAD FORMED SIGN PANEL

NO SCALE

S90

2023 STANDARD PLAN S90





ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

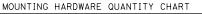
Shangjia Horn

Exp. 6-30-24

Dist COUNTY

Mdy 1, 2023 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

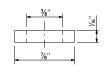


MOUNTING HA	RDWARE QUANTIT	Y CHARI
SIGN LENGTH	SIGN DEPTH	NUMBER OF UNITS REQUIRED
8'-0"	4'-2"	8
10'-0" TO 12'-0"	4'-2"	12
14'-0" TO 16'-0"	4'-2"	16
18'-0" TO 20'-0"	4'-2"	20
22'-0" TO 24'-0"	4'-2"	24
26'-0" TO 28'-0"	4'-2"	28
30'-0" TO 32'-0"	4'-2"	32
34'-0" TO 36'-0"	4'-2"	36
38'-0" TO 40'-0"	4'-2"	40
42'-0" TO 44'-0"	4'-2"	44
46'-0" TO 48'-0"	4'-2"	48
8'-0"	5'-0" TO 8'-4"	12
10'-0" TO 12'-0"	5'-0" TO 8'-4"	18
14'-0" TO 16'-0"	5'-0" TO 8'-4"	24
18'-0" TO 20'-0"	5'-0" TO 8'-4"	30
22'-0" TO 24'-0"	5'-0" TO 8'-4"	36
26'-0" TO 28'-0"	5'-0" TO 8'-4"	42
30'-0" TO 32'-0"	5'-0" TO 8'-4"	48
34'-0" TO 36'-0"	5'-0" TO 8'-4"	54
38'-0" TO 40'-0"	5'-0" TO 8'-4"	60
42'-0" TO 44'-0"	5'-0" TO 8'-4"	66
46'-0" TO 48'-0"	5'-0" TO 8'-4"	72
8'-0"	9'-2" TO 10'-0"	16
10'-0" TO 12'-0"	9'-2" TO 10'-0"	24
14'-0" TO 16'-0"	9'-2" TO 10'-0"	32
18'-0" TO 20'-0"	9'-2" TO 10'-0"	40
22'-0" TO 24'-0"	9'-2" TO 10'-0"	48
26'-0" TO 28'-0"	9'-2" TO 10'-0"	56
30'-0" TO 32'-0"	9'-2" TO 10'-0"	64
34'-0" TO 36'-0"	9'-2" TO 10'-0"	72
38'-0" TO 40'-0"	9'-2" TO 10'-0"	80
42'-0" TO 44'-0"	9'-2" TO 10'-0"	88
46'-0" TO 48'-0"	9'-2" TO 10'-0"	96
Unit - 1 Truss bead bo	14 4 10-1 1 1-	-1

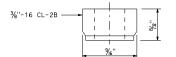
PHILLIPS RECESS		8/1
	3%"-16 UNC-2A	1 %
TRUSS HEAD BOLT 2024 Aluminum alloy per QQ-A-430 or ASTM B316 Anodize interstate green per MIL-A-8625		

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WASHER Fiber/Nylon



WASHER 2024 Aluminum alloy Clear anodize per MIL-A-8625



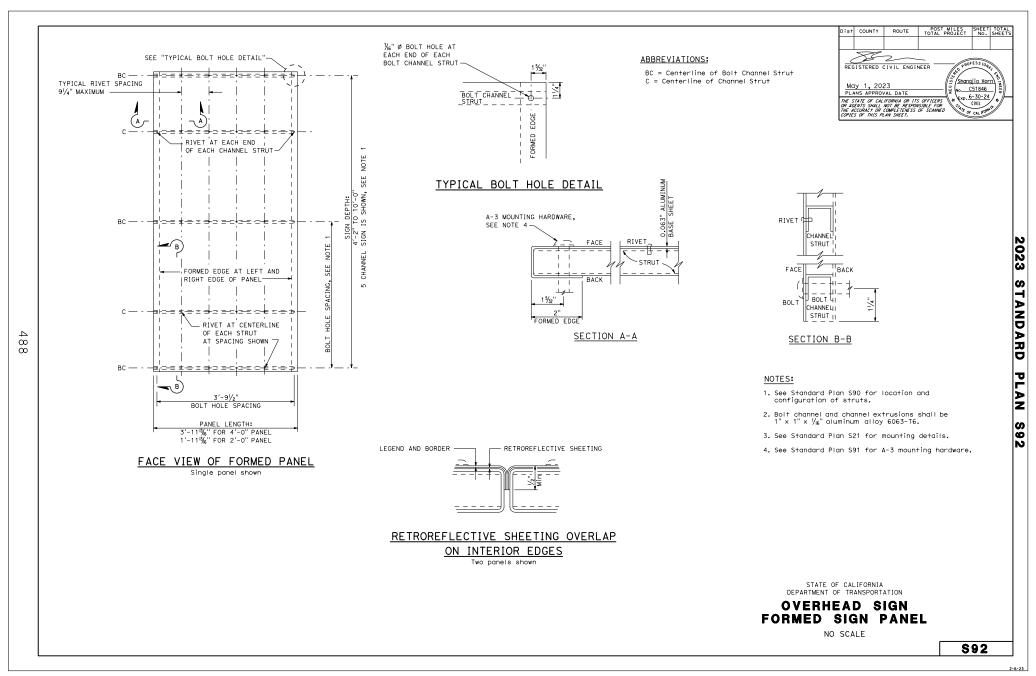
LOCKNUT WITH NYLON INSERT

6061-T6 or 2011-T3 Aluminum alloy or equivalent Anodize per MIL-A-8625 Maximum torque - 60 in-lbs

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN FORMED SIGN PANEL TYPE A-3 MOUNTING HARDWARE

NO SCALE



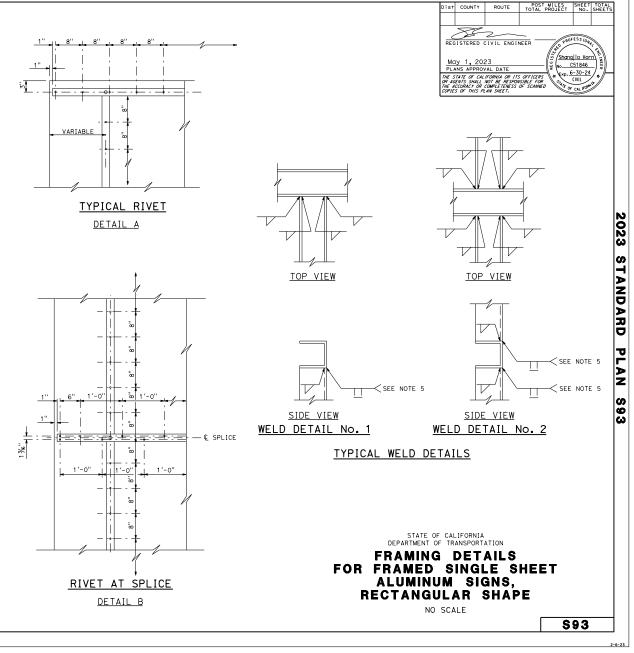
CHANNEL SIZES							
SIGN LENGTH	SIGN DEPTH	PANEL THICKNESS	No. OF HORIZONTAL MEMBERS	No. OF VERTICAL MEMBERS	Horiz MEMBER TYPE	Vert MEMBER TYPE	
UP TO 3'-11"		0.063"	NO FRAME	REQUIRED			
4'-0" TO 4'-7"		0.080"	NO FRAME	REQUIRED			
4'-8" TO 5'-10"	1'-0" TO 2'-0"	0.063"	2		Α		
	2'-1" TO 3'-0"	0.063"	2	2	Α	А	
	3'-1" TO 4'-0"	0.063"	2	3	Α	Α	
	4'-1" TO 8'-0"	0.063"	3	3	В	Α	
6'-0" TO 6'-6"	1'-0" TO 2'-0"	0.063"	2		Α		
	2'-1" TO 3'-0"	0.063"	2	2	А	Α	
	3'-1" TO 4'-0"	0.063"	2	3	А	Α	
	4'-1" TO 6'-0"	0.063"	3	3	В	В	
	6'-1" TO 8'-0"	0.063"	3	3	С	С	
6'-8" TO 7'-6"	1'-6" TO 4'-0"	0.080"	2	3	В	В	
	4'-1" TO 6'-0"	0.080"	3	3	В	В	
	6'-1" TO 8'-0"	0.080"	3	3	С	С	
7'-8" TO 8'-6"	1'-6" TO 4'-0"	0.080"	2	3	В	В	
	4'-1" TO 8'-0"	0.080"	3	3	С	С	
8'-8" TO 9'-6"	1'-6" TO 4'-0"	0.080"	2	3	В	В	
	4'-1" TO 8'-0"	0.080"	3	3	С	С	
9'-8" TO 11'-0"	1'-6" TO 4'-0"	0.080"	2	3	С	С	
	4'-1" TO 8'-0"	0.080"	3	3	С	С	
	8'-1" TO 11'-0"	0.080"	4	3	С	С	

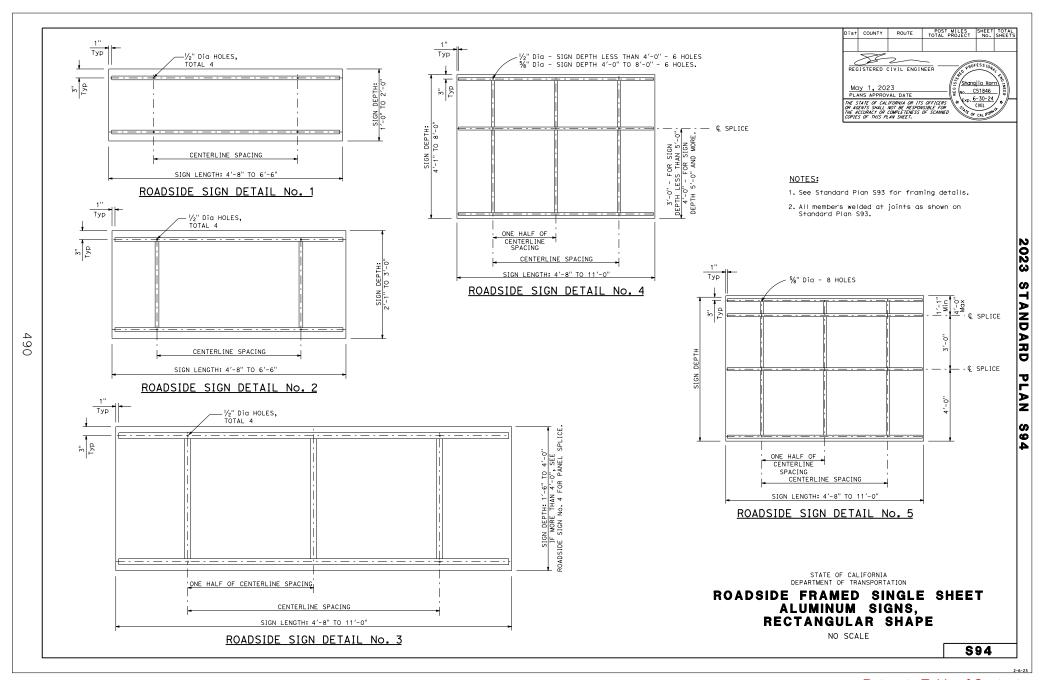
NOTES:

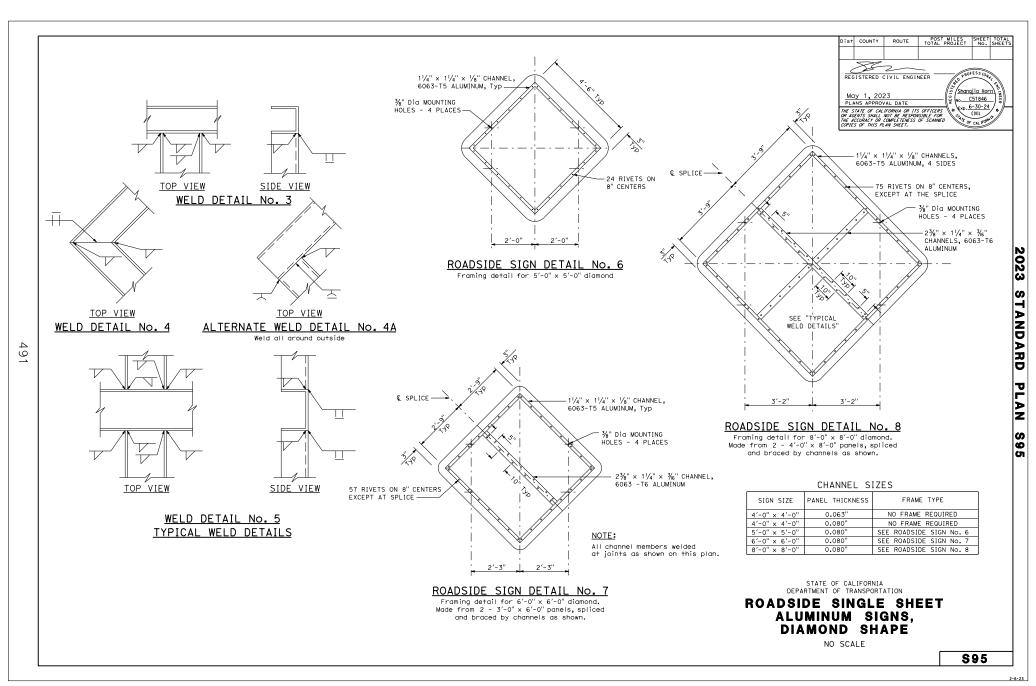
- 1. Type A $1\frac{1}{4}$ " x $1\frac{1}{4}$ " x $\frac{1}{8}$ " Channel to be aluminum alloy 6063-T5.
- 2. Type B $2\frac{3}{8}$ " \times $1\frac{1}{4}$ " \times $\frac{3}{6}$ " Channel to be aluminum alloy 6063-T6.
- 3. Type C 2" \times 2" \times $\frac{1}{4}$ " Channel to be aluminum alloy 6063-T6.
- 4. $1\frac{7}{4}$ " x $1\frac{1}{2}$ " x $\frac{1}{6}$ " Rectangular tubing aluminum alloy 6063–T6 may be substituted for Types B and C, but more than one type of framing material used on one sign is unacceptable.
- For rectangular tubing, weld all around and grind beads flush where weld contacts sign panel.

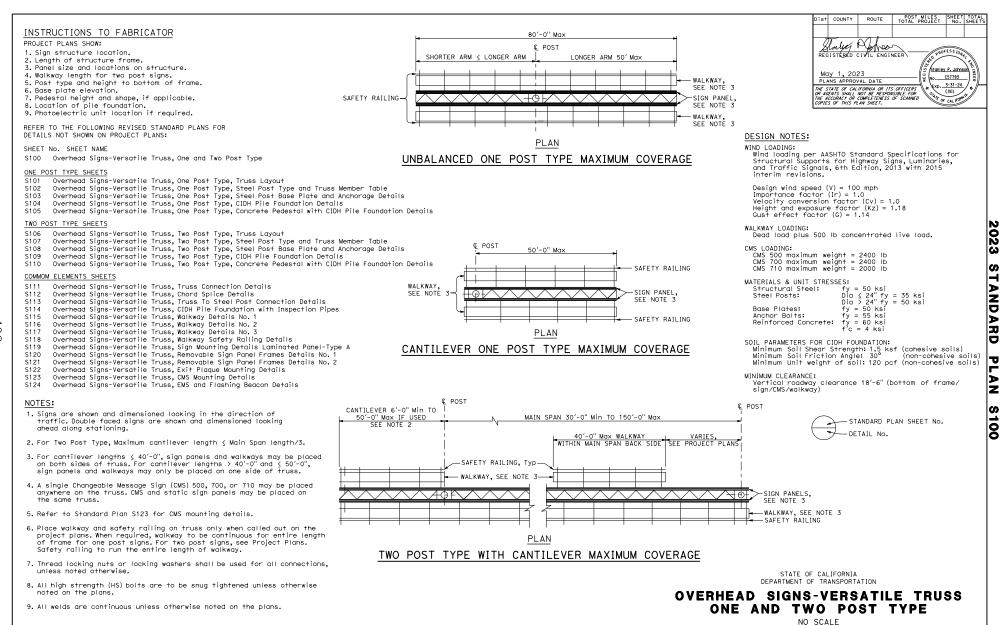
POST SPACING

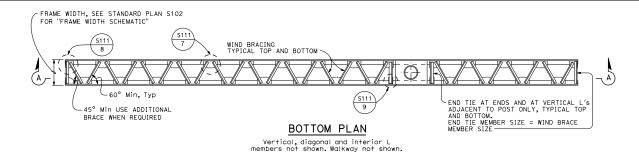
SIGN LENGTH	CENTERLINE SPACING
4'-8" TO 5'-8"	3'-6"
5'-10" TO 6'-8"	4'-0"
6'-10" TO 7'-8"	4'-6"
7'-10" TO 8'-2"	5′-0"
8'-4" TO 8'-8"	5′-2"
8'-10" TO 9'-2"	5′-4"
9'-4" TO 9'-8"	5′-8"
9'-10" TO 10'-2"	6'-0"
10'-4" TO 10'-10"	6′-6"
10'-11" TO 11'-0"	7′-0"







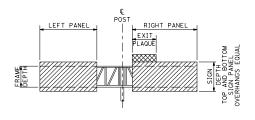




FRAME LENGTH POST LONGER ARM LENGTH SHORTER ARM LENGTH S111 S111 SEE TABLE ON STANDARD PLAN S102 3 FRAME DEPTH
(SEE TABLE)
(SIGN PANEL AND
REMOVABLE SIGN PANEL
FRAME NOT SHOWN) VERTICAL AND DIAGONAL L's EQUAL SPACING BACK TO BACK ANGLES EQUAL SPACING BACK TO BACK ANGLES FOR VERTICAL L SPACING SEE TABLE FOR VERTICAL L SPACING, SEE TABLE SEE LOWER JUNCTURE CONNECTION ON STANDARD PLAN S113

SECTION A-A

Walkway and wind bracing not shown



SIGN AND EXIT PLAQUE PLACEMENT

NOTE:

6

Equal sign panel overhangs apply to sign panels only. The exit plaque is mounted above sign panels and the walkway is mounted below the sign panels, when used.



NOTES:

- 1. For connection of frame to post, see Standard Plan S113.
- For walkway details, see Standard Plans S115, S116, and S117.
- 3. For walkway length, see Standard Plan S100.
- 4. Minimum length of frame varies by frame depth, see Standard Plan S102.
- For interior members, refer to "Typical Section B-B" on Standard Plan S111.
- 6. A single exit plaque may be placed above the sign, at any location on the truss. Maximum exit plaque length = 16'-0". Maximum exit plaque depth = 5'-0".
- 7. See Standard Plan S122 for Exit Plaque Mounting Details.

LEGEND:

SIGN PANEL

EXIT PLAQUE

	FRAME DE Angle Sp <i>a</i>	PTH AND Cing Table
MAXIMUM SIGN PANEL DEPTH	FRAME DEPTH	MAXIMUM VERTICAL L SPACING
80"	60"	45"
180"	72"	54"
240"	120"	90"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE TRUSS LAYOUT

NO SCALE

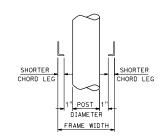
)23	
STAN	
ANDARD	
PLAN	
S102	

TRUSS MEMBER TABLE										
			SIGN PANEL	. DE	PTH ≤ 80"					
LONGER ARM LENGTH	FRAME		ANGLE MEMBER SI	ZE	AND MINIMUM OVE	RLAF	LENGTH TO GUSS	SET	PLATE	
L	DEPTH	CHORD	VERTICAL	Lv	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
10'-0" ≤ L ≤ 20'-0"	60"	L4 × 4 × 3/8	L3 × 2 × 3/8	3	L21/2 × 21/2 × 1/4	3	L21/2 x 21/2 x 1/4	3	L21/2 x 21/2 x 1/4	3
20'-0" < L ≤ 30'-0"	60"	L5 × 5 × 1/2	L3 × 2 × 1/2	3	L3 × 3 × 3/8	4	L21/2 x 21/2 x 1/4	3	L21/2 × 21/2 × 1/4	3
30'-0" < L ≤ 40'-0"	60"		$1.5 \times 3\frac{1}{2} \times \frac{1}{2}$	3	L4 × 4 × 1/2	4	/2 / -/2 / /4	4	L21/2 x 21/2 x 1/4	3
40'-0" < L ≤ 50'-0"	60"	L5 × 5 × ½	L5 × 5 × 1/2	4	L5 × 5 × 1/2	4	L3 × 3 × 1/6	4	L21/2 × 21/2 × 1/4	3
					L DEPTH ≤ 180"					
LONGER ARM LENGTH	FRAME		ANGLE MEMBER SI	ZE		RLAF	LENGTH TO GUSS	SET		
L	DEPTH	CHORD	VERTICAL	Lv	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
15'-0" ≤ L ≤ 20'-0"	72"	L5 x 5 x 1/2	L3 × 2 × 3/8	4	L3 × 3 × 3/8	4	L21/2 × 21/2 × 1/4	4	L21/2 × 21/2 × 1/4	3
20'-0" < L ≤ 30'-0"	72"	L5 x 5 x 1/2		3	L4 × 4 × 1/2	4		4	L21/2 × 21/2 × 1/4	3
30'-0" < L ≤ 40'-0"		L6 × 6 × 5/8		3	L4 × 4 × 1/2	5	L3 × 3 × 3/8	5	L3 × 3 × 1/6	3
40'-0" < L ≤ 50'-0"	72"	L6 × 6 × ¾	$1.5 \times 3\frac{1}{2} \times \frac{3}{4}$	3	L5 x 5 x 1/2	5	L4 × 3 × 3/8	5	L3 × 3 × 1/6	3
			180" < SIGN	PAN	EL DEPTH ≤ 240"					
LONGER ARM LENGTH	FRAME		ANGLE MEMBER SI	ZE	AND MINIMUM OVE	RLA	LENGTH TO GUSS	SET	PLATE	
L	DEPTH	CHORD	VERTICAL	Lv	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
20'-0"	120"	L6 × 6 × 5/8		4	L5 × 5 × 1/2	3		3	L21/2 × 21/2 × 1/4	3
20'-0" < L ≤ 30'-0"	120"	L6 × 6 × 5/8		4	L5 x 5 x 1/2	4	L3 × 3 × 3/8	5	L3 × 3 × 1/6	3
30'-0" < L ≤ 40'-0"	120"	L6 × 6 × 1	L5 × 3 × ½	3	L5 × 5 × 1/2	4	L3 × 3 × 3/8	5	L3 × 3 × 1/6	3
40'-0" < L < 50'-0"	120"	L6 × 6 × 1	L5 × 3 × 1/2	3	L5 x 5 x 1/2	5	L4 × 3 × 3/8	5	L3 × 3 × 1/6	3

BAAT AFLEATION TABLE						
POST SELECTION TABLE						
SIGN PANEL DEPTH	LONGER ARM LENGTH	POST TY	PE BY PC	ST CLEAF	HEIGHT	
D	L	≤ 16 ft	≤ 20 ft	≤ 24 ft	≤ 28 ft	
	20'-0"	1 A	1 A	1 A	1B	
D < 80"	20'-0" < L ≤ 30'-0"	1B	1B	1 D	1 D	
D 7 90	30'-0" < L ≤ 40'-0"	10	1 D	1 D	1F	
	40'-0" < L ≤ 50'-0"	1F	1F	1F	1F	
	20'-0"	1 A	1 A	1B	1 C	
80" < D ≤ 100"	20'-0" < L ≤ 30'-0"	1B	1 D	1 D	1 E	
90 / D Z 100	30'-0" < L ≤ 40'-0"	1 D	1 D	1F	1F	
	40'-0" < L ≤ 50'-0"	1F	1F	1F	1F	
	20'-0"	1 A	1 B	1 C	1 C	
100" < D < 120"	20'-0" < L ≤ 30'-0"	1 C	1 D	1E	1F	
100 (D 2 120	30'-0" < L ≤ 40'-0"	1 D	1F	1F	1F	
	40'-0" < L ≤ 50'-0"	1F	1F	1F	1F	
	20'-0"	1B	1 C	1 D	1 D	
120" < D < 150"	20'-0" < L ≤ 30'-0"	1 D	1E	1F	1F	
120 (0 2 130	30'-0" < L ≤ 40'-0"	1F	1F	1F	1 G	
	40'-0" < L ≤ 50'-0"	1F	1F	1 G	1 G	
	20'-0"	1B	1 C	1 D	1 D	
150" < D < 180"	20'-0" < L ≤ 30'-0"	1E	1F	1F	1F	
130 (D 2 100	30'-0" < L ≤ 40'-0"	1F	1 G	1 G	1 G	
	40'-0" < L ≤ 50'-0"	1F	1 G	1 G	1 G	
	20'-0"	1D	1 D	1E	1 F	
180" < D < 210"	20'-0" < L ≤ 30'-0"	1F	1F	1 G	1 G	
180 (D 5 510	30'-0" < L ≤ 40'-0"	1G	1 G	1 G	1 G	
	40'-0" < L ≤ 50'-0"	1 G	1 G	1 G	1 H	
	20'-0"	1 D	1 E	1F	1F	
210" < D < 240"	20'-0" < L ≤ 30'-0"	1F	1 G	1 G	1 G	
210 10 2 240	30'-0" < L ≤ 40'-0"	1 G	1 G	1 G	1 H	
	40'-0" < L ≤ 50'-0"	1H	1 H	1H	1 H	

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POST	TYPE T	ABLE
POST TYPE	DIAMETER	Min NOMINAL THICKNESS
1 A	16"	1.218"
1B	18"	1.156"
1C	20"	1.031"
1D	22"	1.125"
1E	24"	0.969"
1F	30"	0.625"
1G	30"	1"
1H	36"	1"



FRAME WIDTH SCHEMATIC

Di	s+	COUNTY	ROUTE	POS'	MILES PROJECT	SHEET No.	TOTAL SHEETS
	Ü	only f	Thou	_		_	
Ř	EG	ISTEPED (IN IL ENGI	NEEK/	ALD PROF	ESS ION	
	Мa	y 1, 20	23		11.01-	P. Johns	7 č1
		NS APPROV			11 2 110.	2 71 24	-) =)
OR THE	AG	ENTS SHALL	IFORNIA OR IT: NOT BE RESPON COMPLETENESS AN SHEET.	ISTBLE FOR	1.0	3-31-24 CIVIL CAL IFORM) * - *)

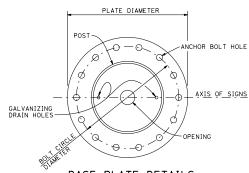
NOTES:

- Shorter arm member sizes shall match the member sizes selected for the longer arm.
- Post clear height is measured to underside of bottom truss chord.
- 3. Refer to Standard Plan S111 for connection details.
- 4. Minimum overlap lengths to gusset plates (Lv, Ld, Lw, and Li) are in inches.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE STEEL POST TYPE AND TRUSS MEMBER TABLE

NO SCALE



	BA	SE PLAT	E AND	ANCHOR	BOLT	DIMENSI	ONS			
		BASE PLATE		ANCHOR BOLTS						
POST TYPE	PLATE THICKNESS	PLATE DIAMETER	OPENING DIAMETER	NUMBER OF BOLTS	BOLT DIAMETER	BOLT LENGTH	BOLT HOLE DIAMETER	BOLT CIRCLE DIAMETER		
1 A	31/2"	2'-7"	5"	14	1 3/4"	5'-0"	2"	2'-0"		
1B	31/2"	2'-10"	6"	14	2"	5'-0"	21/4"	2'-2"		
1 C	3"	3'-0"	6"	16	2"	5'-0"	21/4"	2'-4"		
1 D	31/2"	3'-2"	7"	16	2"	5'-0"	21/4"	2'-6"		
1 E	3"	3'-6"	71/2"	18	2"	5'-0"	21/4"	2'-10"		
1 F	3"	4'-0"	9"	20	2"	5'-0"	21/4"	3'-4"		
1 G	31/2"	4'-2"	9"	20	21/2"	5'-0"	23/4"	3'-4"		
1 H	31/2"	4'-8"	11"	24	21/2"	5'-0"	23/4"	3'-10"		

Dist COUNTY ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS Starting Popular REGISTERED CIVIL ENGINEER Stanley P. Johns Mdy 1, 2023 PLANS APPROVAL DATE C57793 €×p. 3-31-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET. CIVIL

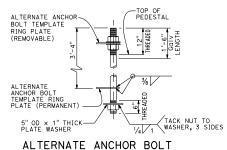
HANDHOLE, LOCATE AWAY FROM TRAVELED WAY

- ANCHOR BOLT

-SEE ANCHOR BOLT

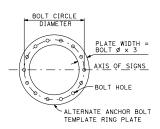
BASE PLATE DETAILS SINGLE POST TYPE

14 bolt base plate depicted. Others similar.



TEMPLATE ASSEMBLY

CONNECTION DETAIL



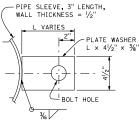


PLATE WASHER DETAIL

POST AND ANCHORAGE DETAIL

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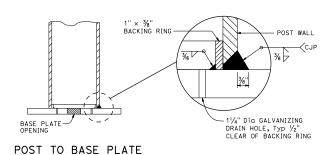
Hex NUT, LEVELING NUT AND WASHERS-

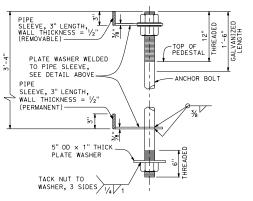
MORTAR'

BASE P. ELEVATION

ALTERNATE ANCHOR BOLT TEMPLATE

NOTE: One bolt shown only. Other bolts same configuration around ring plate. 14 bolt template depicted. Others similar. NOTE: Permanent plate thickness = $\frac{3}{4}$ ", Removable plate thickness = 1/2"





ANCHOR BOLT TEMPLATE 14 bolt template depicted. Others similar. NOTE: Template to match base plate anchor bolt pattern. Pipe sleve diameter same as post type diameter

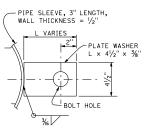
ANCHOR BOLT TEMPLATE ASSEMBLY

NOTE: One bolt shown only, Other bolts same configuration around pipe sleeve.

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE STEEL POST BASE PLATE AND ANCHORAGE DETAILS

NO SCALE

S103



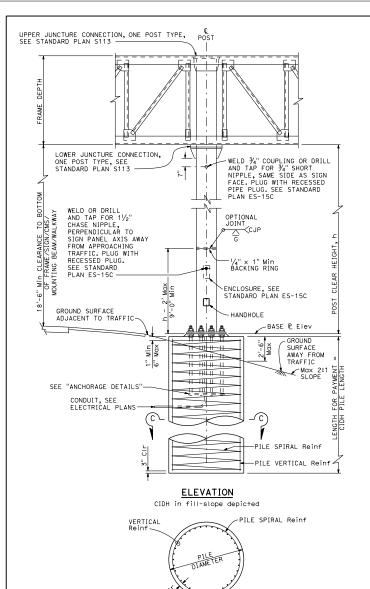
BOLT CIRCLE DIAMETER PLATE WASHER L × 41/2" × 3/8" WELDED TO PIPE SLEEVE PIPE SLEEVE 3" LENGTH, WALL THICKNESS = 1/2", Min AXIS OF SIGNS

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

2023

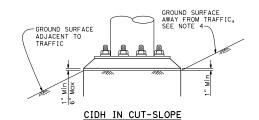
STANDARD

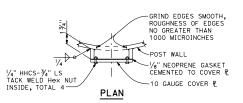
PLAN

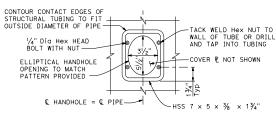


SECTION C-C

96







ELEVATION

TYPICAL DETAILS OF HANDHOLE AND COVER



NOTES:

- 1. For "ANCHORAGE DETAILS", see Standard Plan S103.
- 2. For "Base P Elevation", see Project Plans.
- 3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
- 4. Slope stabilization required when indicated on the Project Plans.
- For drain holes and central void in mortar, see Standard Plan ES-6B Detail N.
- 6. Refer to Standard Plan S102 for "Post Type Table".
- 7. Use pedestal with CIDH pile foundation when shown on the Project Plans. See Standard Plan S105.
- On single post sign structures, the post shall be raked out of plumb, with the use of the leveling nuts to make the bottom of the sign frame level.
- At final position of post all top and bottom nuts shall be tightened against base plate.
- For CIDH pile foundation with inspection pipes, see Standard Plan S114.
- 11. Maximum electrical conduit diameter is 3".

	CIDH CONCRETE PILE TABLE											
POST TYPE	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH						
1 A	5'-0"	#10	30	#6	5"	22'-0"						
1B	5′-0"	#10	30	#6	5"	22'-0"						
1 C	5′-0"	#10	30	#6	5"	22'-0"						
1 D	5′-0"	#10	30	#6	5"	22'-0"						
1E	5′-0"	#10	32	#6	5"	24'-0"						
1F	5′-0"	#10	36	#6	5"	27'-0"						
1 G	5'-0"	#10	36	#6	4"	30'-0"						
1 H	5′-6"	#10	40	#6	4"	32'-0"						

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OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE CIDH PILE FOUNDATION DETAILS

NO SCALE

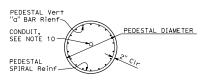
ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

Stanley P. Johns

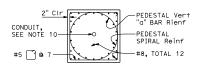
io. <u>C57793</u> Exp. <u>3-31-24</u>

CIVIL

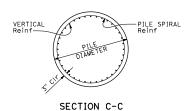
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SECTION D-D ROUND PEDESTAL



SECTION D-D SQUARE PEDESTAL



See Note 9

NOTES:

- 1. For "ANCHORAGE DETAILS", see Standard Plan S103.
- 2. For "Base ₧ Elevation", see Project Plans.
- 3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
- 4. For "PEDESTAL HEIGHT" and "PEDESTAL SHAPE", see Project Plans.
- Refer to Standard Plan S104 for CIDH pile foundation details when a pedestal is not indicated in the Project Plans.

Dist COUNTY

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- Refer to Standard Plan S104 for additional details and notes not shown on this sheet.
- For drain holes and central void in mortar, see Standard Plan ES-6B detail N.
- 8. Refer to Standard Plan S102 for "Post Type Table".
- For CIDH pile foundation with inspection pipes, see Standard Plan S114.
- 10. Maximum electrical conduit diameter is 3".

			CON	ICRETE P	EDESTA	L AND	CIDH CO	NCRETE	PILE .	FABLE			
CONCRETE PEDESTAL										CIDH CONCRETE	PILE		
POST TYPE	ROUND PEDESTAL DIAMETER	SQUARE PEDESTAL SIDES LENGTH	VERTICAL "a" BAR SIZE	NUMBER OF VERTICAL "a" BARS	SPIRAL BAR SIZE	SPIRAL PITCH	Min "a" BAR EMBEDMENT	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH
1 A	3'-6"	3'-6"	#8	18	#5	31/2"	54"	5'-0"	#10	30	#6	5"	20'-0"
1B	3'-8"	3'-8"	#8	20	#5	31/2"	54"	5'-0"	#10	30	#6	5"	20'-0"
1 C	3'-10"	3'-10"	#9	18	#5	31/2"	72"	5'-0"	#10	30	#6	5"	20'-0"
1 D	4'-0"	4'-0"	#9	22	#5	31/2"	72"	5'-0"	#10	30	#6	5"	20'-0"
1 E	4'-4"	4'-4"	#9	24	#5	31/2"	72"	5'-0"	#10	32	#6	5"	22'-0"

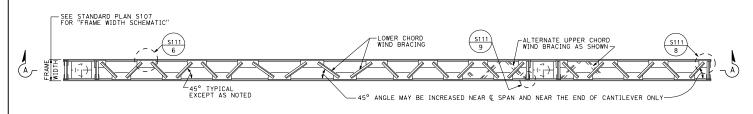
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS ONE POST TYPE CONCRETE PEDESTAL WITH CIDH PILE FOUNDATION DETAILS

NO SCALE

S105

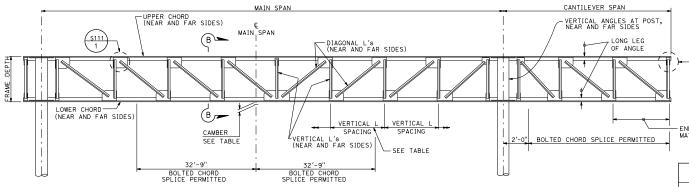
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DIST COUNTY ROUTE TOTAL PROJECT SHEET TOTAL NO. SHEETS REGISTERED CIVIL ENGINEER MOY 1, 2023 PLANS APPROVAL DATE THE STATE OF CUMPONIS OF ISS OFFICE FOR THE STATE OF CUMPONIS OF ISS OF SCAMED OUTS OF THE PLAN SHEET.

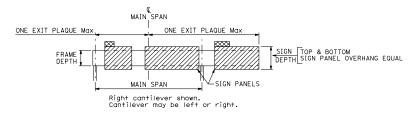
BOTTOM PLAN

Vertical, diagonal and interior L members not shown, walkway not shown



SECTION A-A

Walkway and wind bracing not shown



SIGN AND EXIT PLAQUE PLACEMENT

98

NOTE: Equal sign panel overhangs apply to sign panels only.

The exit plaque is mounted above the sign panels and the walkway is mounted below the sign panels, when used.

NOTES:

- 1. Frame widths shown are nominal. These widths may be varied by $\frac{1}{4}$ " to standardize fabrication methods.
- 2. For Section B-B, see Standard Plan S111.
- 3. No crossties on diagonals.
- See Standard Plan S122 for exit plaque mounting details.

LEGEND:

SIGN

EXIT PLAQUE

-END BAY ON CANTILEVER MAY BE VARIED BY 1'-0"

CAMBER FOR FABRICATION At Main Span Centerline											
SPAN	FRAME DEPTH	CAMBER	FRAME DEPTH	CAMBER	FRAME DEPTH	CAMBER					
30'-0" TO 60'-0"	60"	11/2"	72"	11/4"	120"	1"					
61'-0" TO 105'-0"	60"	31/2"	72"	3"	120"	2"					
106'-0" TO 150'-0"	60"	8"	72"	61/4"	120"	31/2"					

Camber to approximate parabola. Camber of cantilever arm = $\frac{1}{2}$ " for arms greater than 10'-0".

TRUSS F Vertical an		PTH AND Cing table
MAXIMUM SIGN PANEL DEPTH	FRAME DEPTH	MAXIMUM VERTICAL L SPACING
80"	60"	45"
180"	72"	54"
240"	120"	90"

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OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE TRUSS LAYOUT

NO SCALE

	POST	SELEC	TION	TABLI	•	
SIGN PANEL DEPTH	MAIN SPAN L	FNGTH	POST TY	PE BY PC		HEIGHT
D	L		≤ 16 ft		≤ 24 ft	
	30'-0'		2A	2A	2A	2B
	30'-0" < L ≤	45'-0"	2A	2B	2C	2D
	45'-0" < L <		2C	2C	2E	2E
	60'-0" < L <	75'-0"	2D	2E	2E	2E
D ≤ 80"	75'-0" < L <	90'-0"	2E	2E	2E	2E
	90'-0" < L ≤		2E	2E	2E	2F
	105'-0" < L <		2E	2E	2F	2F
	120'-0" < L <		2E	2F	2F	2G
	135'-0" < L s	150'-0"	2F	2F	2G	2G
	30'-0'		2A	2A	2B	2C
	30'-0" < L <		2B	2C	2D	2E
	45'-0" < L <		2C	2E	2E	2E
80" < D ≤ 100"			2E	2E	2E 2F	2E 2F
90 / D 7 100			2E 2E	2E 2F	2F	2F 2G
			2E	2F	2G	2G
	105'-0" < L <		2F	2F	2G	2G
	135'-0" < L <		2F	2G	2G	2H
	30'-0'		2A	2B	2C	2D
		45'-0"	2C	2D	2E	2E
	45'-0" < L <		2E	2E	2E	2E
	60'-0" < L <		2E	2E	2E	2F
100" < D ≤ 120"	75'-0" < L <		2E	2E	2F	2F
_	90'-0" < L <		2E	2F	2G	2G
	105'-0" < L <	120'-0"	2F	2F	2G	2G
	120'-0" < L <	135'-0"	2F	2G	2G	2H
	135'-0" < L <	150'-0"	2G	2G	2H	2H
	30'-0'		2B	2C	2D	2E
	30'-0" < L ≤		2D	2E	2E	2E
	45'-0" < L <		2E	2E	2E	2F
	60'-0" < L <		2E	2F	2F	2G
120" < D ≤ 150"	75'-0" < L <		2F	2F	2G	2G
	90'-0" < L <		2F	2G	2G	2H
	105'-0" < L <	120′-0" 135′-0"	2F 2G	2G 2H	2H 2H	2H 2H
	120'-0" < L <	150′-0"	2G 2G	2H 2H	2H 2H	2H 2H
	30′-0'	150 -0	2C	2D	2E	2E
	30′-0" < L ≤	45'-0"	2E	2E	2E	2E
	45'-0" < L <		2E	2E	2F	2F
	60'-0" < L <		2E	2F	2G	2G
150" < D ≤ 180"	75'-0" < L <		2F	2G	2G	2H
=	90'-0" < L <		2G	2G	2H	2H
	105'-0" < L ≤		2G	2H	2H	2H
	120'-0" < L <	135'-0"	2H	2H	2H	2H
	135'-0" < L <	150′-0"	2H	2H	2H	2H
	30'-0'		2D	2E	2E	2E
	30′-0" < L ≤		2E	2E	2F	2F
	45'-0" < L <		2F	2F	2G	2G
40011 4 5 1 5 1 "	60'-0" < L <		2F	2G	2G	2H
180" < D ≤ 210"	75'-0" < L <		2G	2G	2H	2H
	90'-0" < L <		2H	2H	2H	2H
	105'-0" < L <		2H	2H	2H	2H
	120'-0" < L <		2H	2H	2H	2H
	135'-0" < L < 30'-0		2H 2E	2H 2E	2H 2E	2H 2E
	30'-0" < L ≤		2E 2E	2F	2E 2F	2G
	45'-0" < L <		2F	2F	2G	2G
	60'-0" < L <		2G	2G	26 2H	26 2H
210" < D ≤ 240"	75'-0" < L <		2G	2H	2H	2H
_10 10 2 240	90'-0" < L <		2H	2H	2H	2H
	105'-0" < L ≤		2H	2H	2H	2H
	120'-0" < L <		2H	2H	2H	2H
	135'-0" < L <		2H	2H	2H	-

			TRUSS MI	EMI	BER TABLE	:				
			SIGN PANE	L DE	EPTH < 80"				-	
MAIN SPAN LENGTH	FRAME	Al	NGLE MEMBER SIZ	E A	ND MINIMUM OVE	RLAF	LENGTH TO GUSS	ET I	PLATE	
L	DEPTH	CHORD	VERTICAL	Lv	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
30'-0"	60"	L4 × 4 × 3/8	L3 × 3 × 3/8	3	L3 × 3 × 1/6	3	L21/2 × 21/2 × 1/4	3	L21/2 × 21/2 × 1/4	
30'-0" < L ≤ 45'-0"	60"	L4 × 4 × 3/8	L3 × 3 × 3/8	3		4	L21/2 × 21/2 × 1/4	3	L21/2 × 21/2 × 1/4	3
45'-0" < L ≤ 60'-0"	60"	L4 × 4 × 1/2	L3 × 2 × 3/8	3	L3 × 3 × 3/8	4	L21/2 x 21/2 x 1/4	3	L21/2 x 21/2 x 1/4	3
60'-0" < L ≤ 75'-0"	60"	L4 × 4 × 1/2	L3 × 2 × 3/8	3	L4 × 3 × 3/8	4	L21/2 x 21/2 x 1/4	4	L21/2 x 21/2 x 1/4	3
75'-0" < L ≤ 90'-0"	60"	L5 x 5 x 1/2	L4 × 4 × 1/2	3	L4 × 4 × 1/2	4	L3 × 3 × 1/6	4	L21/2 × 21/2 × 1/4	3
90'-0" < L ≤ 105'-0"	60"	L5 × 5 × 5/8	L5 x 3 x 1/2	3	L5 × 3 × 1/2	4	L3 × 3 × 3/8	4	L21/2 × 21/2 × 1/4	3
105'-0" < L ≤ 120'-0"	60"		L5 x 3½ x ½		L5 × 3 × ½	4	L3 × 3 × 3/8	4		3
120'-0" < L ≤ 135'-0"	60"	L6 × 6 × ¾	L5 × 3½ × ¾	3		5	L3 x 3 x 3/8	4	L21/2 × 21/2 × 1/4	3
135′-0" < L ≤ 150′-0"	60"	L8 × 6 × 1/8	L5 x 5 x 1/8	4	L5 x 5 x 1/2	6	L3½× 3½× ¾	5	L21/2 × 21/2 × 1/4	3
			aall (atau s							
					L DEPTH ≤ 180"					
MAIN SPAN LENGTH	FRAME DEPTH						LENGTH TO GUSS			Τ.
L		CHORD	VERTICAL	L _V	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
30'-0"	72"	L4 × 4 × 3/4	L3 × 3 × 1/6	3		3	L21/2 × 21/2 × 1/4			3
30'-0" < L ≤ 45'-0"	72"	L4 × 4 × 3/4	L3 × 3 × 3/8	3	L4 × 4 × 3/8	4	L21/2 × 21/2 × 3/8		L21/2 × 21/2 × 1/4	
45'-0" < L ≤ 60'-0"	72"	L5 × 5 × 1/8	L3 × 3 × 3/8	3	L4 × 4 × 3/8	4	L3 × 3 × 1/6	5	L2½ × 2½ × ¼	
60'-0" < L ≤ 75'-0"	72"	L5 × 5 × 3/4	L3 × 3 × 3/8	3	L4 × 4 × 3/8	5	L3 × 2½ × 3/8	5	L21/2 × 21/2 × 1/4	3
75'-0" < L < 90'-0"	72"	L6 × 6 × 5/8	L4 × 4 × ½	3	L4 × 4 × ½	5	L4 × 3 × 3/8	-	L21/2 × 21/2 × 1/4	3
90'-0" < L \(\) 105'-0"	72"	L6 × 6 × ¾	L5 × 3 × ½	3	L5 × 5 × ½	5	L4 × 4 × 3/8	6	L3 × 3 × 1/6	3
105'-0" < L ≤ 120'-0"	72"	L6 × 6 × 1	L5 × 3 × ½	3	L5 × 5 × ½	5	L4 × 4 × 3/8	6	L3 × 3 × 1/6	3
120'-0" < L ≤ 135'-0" 135'-0" < L < 150'-0"	72" 72"	L8 × 6 × 1	L6 × 6 × 5/8	4	L5 × 5 × 5/8	5	L4 × 4 × ½	6	L3 × 3 × 5/6	3
135 -0	72"	L8 × 8 × 1	L6 × 6 × %	4	L6 × 6 × 1/8	5	L4 × 4 × ½	ь	L3 × 3 × 1/6	1 2
			180" < SIGN	PAN	IEL DEPTH ≤ 240)"				
MAIN SPAN LENGTH	FRAME	Al					LENGTH TO GUSS	ET I	PLATE	
L	DEPTH	CHORD	VERTICAL	L _V	DIAGONAL	Ld	WIND BRACE	Lw	INTERIOR	Li
30'-0"	120"	L5 × 5 × 1/8	L3 × 3 × 3/8	3	L5 x 5 x 1/2	3	L21/2 x 21/2 x 1/4	3	L3 × 3 × 1/6	3
30'-0" < L ≤ 45'-0"	120"	L6 × 6 × 5/8	L3 × 3 × 3/8	3	L5 × 5 × 1/2	3	L21/2 × 21/2 × 3/8	3	L3 × 3 × 1/6	3
45'-0" < L ≤ 60'-0"	120"	L6 × 6 × 1/8	L3 × 3 × 3/8	3	L5 × 5 × 1/2	3	L3 × 21/2 × 3/8	4	L3 × 3 × 1/6	3
60'-0" < L ≤ 75'-0"	120"	L6 × 6 × 5/8	L3 × 3 × 3/8	3	L5 x 5 x 1/2	4	L3 x 3 x 1/2	4	L3 × 3 × 1/6	3
75'-0" < L ≤ 90'-0"	120"	L6 × 6 × 5/8	L4 × 4 × 1/2	3	L5 x 5 x 1/2	5	L4 × 4 × 3/8	6	L3 × 3 × 1/6	3
90'-0" < L ≤ 105'-0"	120"	L6 x 6 x 1	L5 × 3 × 1/2	3	L5 × 5 × 1/2	5	L4 × 4 × 1/2	6	L3 × 3 × 1/6	3
105'-0" < L ≤ 120'-0"	120"	L6 × 6 × 1	L5 × 3 × ½	3	L5 × 5 × 1/2	5	L4 × 4 × 1/2	6	L3 × 3 × 1/6	3
120'-0" < L ≤ 135'-0"	120"	L8 × 8 × ¾	L5 x 3 x 1/2	3	L5 × 5 × 5/8	5	L5 x 5 x 1/2	6	L3 × 3 × 1/6	3
135'-0" < L ≤ 150'-0"	120"	L8 × 8 × 1/8	L5 × 31/2 × 3/4	3	L5 × 5 × 1/8	5	L5 x 5 x 1/2	6	L3 × 3 × 1/6	3

POST TYPE TABLE

Min NOMINAL SPLIT

N/A

N/A

N/A

N/A

N/A

12" 12" 12"

THICKNESS 1.218"

1.156"

1.031"

1,125"

0.969"

0.625"

DIAMETER

16"

18"

20"

22"

24"

30"

30" 36"

POST TYPE

2A

2B

2C

2D

2F

2G

2H

SHORTER CHORD LEG	SHORTER CHORD LEG
-	FRAME WIDTH
FRAME W	IDTH SCHEMATIC

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Stanley P. Johns

No. <u>C57793</u> Exp. <u>3-31-24</u> CIVIL

2023 STANDARD

PLAN

S107

Stanley Popular REGISTER CIVIL ENGINEER

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Mdy 1, 2023 PLANS APPROVAL DATE

NOTES:

- If a cantilever span is added, the same member sizes and weld lengths shall be used on the main and cantilever spans. Refer to Standard Plan S100 for rules on span lengths.
- 2. Post clear height is measured to underside of bottom truss chord.
- 3. Refer to Standard Plan S111 for connection details.
- 4. Minimum overlap lengths to Gusset Plates (Lv, Ld, Lw, and Li) are in inches.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE STEEL POST TYPE AND TRUSS MEMBER TABLE

NO SCALE

S107

2-

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Stanley P. Johns

C57793

Exp. 3-31-24

		BASE I	PLATE	AND ANC	HOR BO	LT DIME	ENSIONS		
		BASE	PLATE			Δ	NCHOR BOLT	S	
POST TYPE	PLATE THICKNESS	PLATE RADIUS	SPLIT	OPENING RADIUS	NUMBER OF BOLTS	BOLT DIAMETER	BOLT LENGTH	BOLT HOLE DIAMETER	BOLT CIRCLE RADIUS
2A	31/2"	1'-3"	N/A	21/2"	14	11/2"	5′-0"	13/4"	1'-0"
2B	31/2"	1'-41/2"	N/A	3"	14	1 3/4"	5'-0"	2"	1'-1"
2C	3"	1'-51/2"	N/A	3"	16	1 3/4"	5'-0"	2"	1'-2"
2D	31/2"	1'-61/2"	N/A	31/2"	16	1 3/4"	5'-0"	2"	1'-3"
2E	3"	1'-9"	N/A	33/4"	18	2"	5′-0"	21/4"	1′-5"
2F	3"	2'-0"	12"	41/2"	22	2"	5′-0"	21/4"	1'-8"
2G	31/2"	2'-0"	12"	41/2"	22	2"	5′-0"	21/4"	1'-8"
2H	31/2"	2'-4"	12"	51/2"	24	21/2"	5′-0"	23/4"	1'-11"

1/16" Max BUILD UP-

FILLER & THICKNESS = PIPE WALL THICHNESS -

FACE HANDHOLE AWAY

FROM TRAVELED WAY-

BASE ₽

ELEVATION

SPLIT, SEE TABLE-

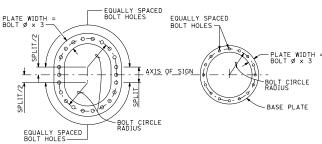
500

Thread locking nuts not required for anchor bolts.

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11 11 11 11 11

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TEMPLATE WITHOUT SPLIT

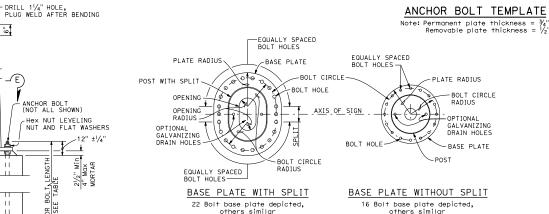
16 Bolt base plate depicted, others similar

ANCHOR BOLT TEMPLATE

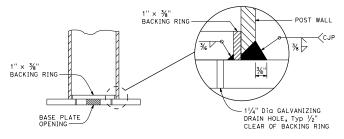
TEMPLATE WITH SPLIT

22 Bolt base plate depicted,

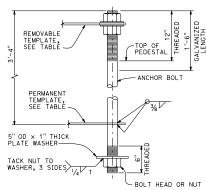
others similar



BASE PLATE DETAILS



POST TO BASE PLATE CONNECTION DETAIL



Dist COUNTY

May 1, 2023

PLANS APPROVAL DATE

Started Civil ENGINEER

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ANCHOR BOLT TEMPLATE ASSEMBLY

Note: One bolt shown only. Other bolts same configuration around pipe sleeve. Template to match base plate

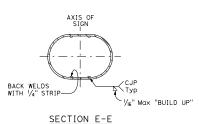
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

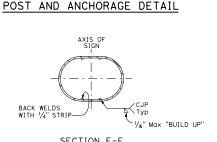
OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE STEEL POST BASE PLATE AND ANCHORAGE DETAILS

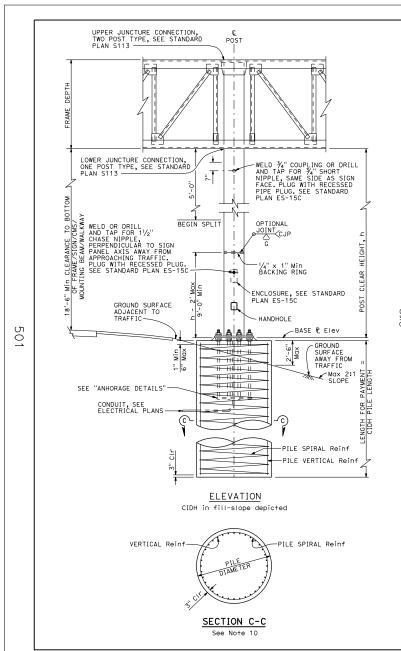
NO SCALE

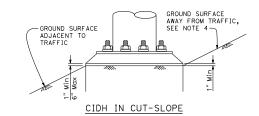
S108

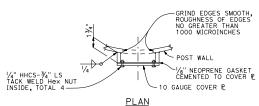
Return to Table of Contents

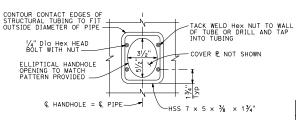












ELEVATION

TYPICAL DETAILS OF HANDHOLE AND COVER



NOTES:

- 1. For "ANCHORAGE DETAILS", see Standard Plan S108.
- 2. For "Base & Elevation", see Project Plans.
- 3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
- 4. Slope stabilization required when indicated on the Project Plan.
- 5. For drain holes and central void in mortar, see Standard Plans ES-6B Detail N.
- 6. Refer to Standard Plan S107 for "Post Type Table".
- 7. Use Pedestal with CIDH pile foundation when shown on the Project Plans. See Standard Plan S110.
- 8. On single post sign structures, the post shall be raked out of plumb, with the use of the leveling nuts to make the bottom of the sign frame level.
- 9. At final position of post all top and bottom nuts shall be tightened against base plate.
- For CIDH Pile Foundation with Inspection Pipes, see Standard Plan S114.
- 11. Maximum electrical conduit diameter is 3".

	CIDH CONCRETE PILE TABLE											
POST TYPE	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH						
2A	5'-0"	#10	30	#6	5"	22'-0"						
2B	5'-0"	#10	30	#6	5"	22'-0"						
2C	5'-0"	#10	30	#6	5"	22'-0"						
2D	5'-0"	#10	30	#6	5"	22'-0"						
2E	5'-0"	#10	32	#6	5"	24'-0"						
2F	6'-0"	#10	36	#6	5"	25'-0"						
2G	6'-0"	#10	36	#6	4"	29'-0"						
2H	6'-6"	#10	40	#6	4"	36'-0"						

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE CIDH PILE FOUNDATION DETAILS

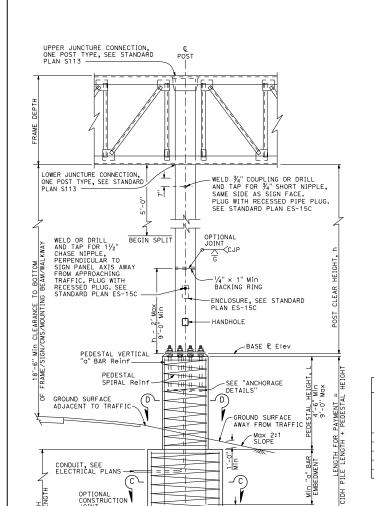
NO SCALE

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

Stanley P. Johns

C57793 €×p. 3-31-24

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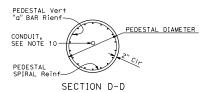
ELEVATION

PILE SPIRAL Reinf

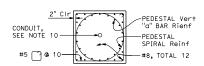
PILE VERTICAL Reinf

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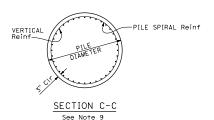
OPTIONAL CONSTRUCTION JOINT



ROUND PEDESTAL



SECTION D-D SQUARE PEDESTAL



- 1. For "ANCHORAGE DETAILS", see Standard Plan S108.
- 2. For "Base P elevation", see Project Plans.
- 3. Prior to erection of the post, backfill which is equivalent to the surrounding material shall be in place.
- 4. For "PEDESTAL HEIGHT" and "PEDESTAL SHAPE", see Project Plans.

Dist COUNTY

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Mdy 1, 2023 PLANS APPROVAL DATE

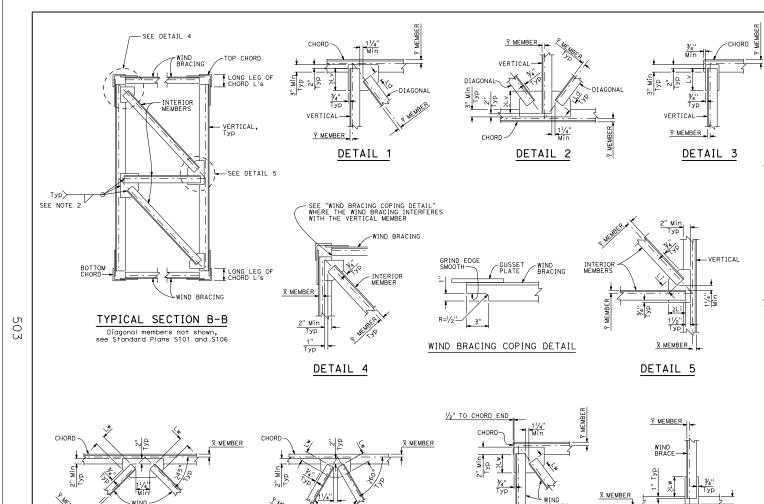
- 5. Refer to Standard Plan S109 for CIDH pile foundation details when a pedestal is not indicated in the Project Plans.
- 6. Refer to Standard Plan S109 for additional details and notes not shown on this sheet.
- 7. For drain holes and central void in mortar, see Standard Plan ES-6B Detail N.
- 8. Refer to Standard Plan S107 for "Post Type Table".
- For CIDH Pile Foundation with Inspection Pipes, see Standard Plan S114.
- 10. Maximum electrical conduit diameter is 3".

			COM	ICRETE P	EDESTA	L AND	CIDH CO	NCRETE	PILE '	TABLE			
	CONCRETE PEDESTAL									CIDH CONCRETE	PILE		
POST TYPE	ROUND PEDESTAL DIAMETER	SQUARE PEDESTAL SIDES LENGTH	VERTICAL "a" BAR SIZE	NUMBER OF VERTICAL "a" BARS	SPIRAL BAR SIZE	SPIRAL PITCH	Min "a" BAR EMBEDMENT	DIAMETER	VERTICAL BAR SIZE	TOTAL NUMBER OF VERTICAL BARS	SPIRAL BAR SIZE	SPIRAL PITCH	MINIMUM CIDH PILE LENGTH
2A	3'-6"	3'-6"	#8	18	#5	5"	54"	5'-0"	#10	30	#6	5"	20'-0"
2B	3'-8"	3'-8"	#8	20	#5	5"	54"	5'-0"	#10	30	#6	5"	20'-0"
2C	3'-10"	3'-10"	#9	22	#5	5"	72"	5'-0"	#10	30	#6	5"	20'-0"
2D	4'-0"	4'-0"	#9	24	#5	5"	72"	5'-0"	#10	30	#6	5"	20'-0"
2E	4'-4"	4'-4"	#9	22	#5	5"	72"	5′-0"	#10	32	#6	5"	22'-0"

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS TWO POST TYPE CONCRETE PEDESTAL WITH CIDH PILE FOUNDATION DETAILS

NO SCALE



DETAIL 7

DETAIL 6

Y MEMBER

DETAIL 8

Dist	COUNTY	ROUTE		MILES PROJECT	SHEET No.	TOTAL
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		CINIL ENGI	NEER -	PRO	ESS ION	
				Stonley	P. Johns	18/
Ma	y 1, 20	23		0	C57793	on [8]
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OR AG	ENTS SHALL	IFORNIA OR IT. NOT BE RESPO COMPLETENESS	VSIBLE FOR	// # / · ·	CIVIL CAL IFORM] *] ?

NOTES:

- Lv, Ld, Lw and Li indicate minimum overlap lengths for member to gusset plates. Refer to Standard Plans S102 and S107 for values.
- Unless otherwise noted, connections between members and gusset plates are fillet welds around all edges. See "Weld Table" for fillet weld size.
- 3. Gusset plate thickness = 5/8".
- 4. Gusset plate dimensions vary based on connecting member sizes and the orientation of their centroids.
- All connection details are typical and may be mirrored depending on the connection location.

ABBREVIATIONS:

- $\overline{\mathbf{X}}$ = Distance to centroid of L along the short leg
- $\overline{Y}\,$ = Distance to centroid of L along the long leg

WELD	TABLE
THICKNESS OF ANGLE	WELD SIZE
1/4"	3/16"
5/16"	3/16"
3/8"	1/4"
1/2"	3/8"
5/8"	1/2"
≥ ¾"	%6"

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DEPARTMENT OF TRANSPORTATION

DETAIL 9

OVERHEAD SIGNS-VERSATILE TRUSS TRUSS CONNECTION DETAILS

NO SCALE

Ī	TABLE 1 Bolted Chord Splice						
CHORD THICKNESS	NOMINAL BOLT DIAMETER	"a" Min	"b" Min				
3/8"	3/4"	21/4"	1"				
1/2"	7∕8"	25/8"	11/8"				
5/8"	1"	3"	11/4"				
3/4"	11/4"	3¾"	1 5/8"				
7∕8"	11/2"	41/2"	1 1/8"				
1"	11/2"	41/2"	1 1/8"				

VERTICAL-

04

BOLTED WIND	TABLE 2 Brace at Ch	ORD SPLICE
	BOLTED WI	ND BRACE
CHORD THICKNESS	BOLTED LEG Min WIDTH	Min THICKNESS
3%"	21/2"	5/6"
1/2"	3"	5/6"
5/8"	3"	3/8"
3/4"	3"	1/2"
7∕8"	31/2"	1/2"
1"	31/2"	1/2"

	TABL	.E 3	
BOLTED	MEMBER 1	TO GUSSE	T PLATE
MEMBER THICKNESS	NOMINAL BOLT DIAMETER	"c" Min	"d" Min
5/16"	5%"	1 1/8"	7/8"
3/8"	3/4"	21/4"	1"
1/2"	%"	25/8"	11/8"
5/8"	1"	3"	11/4"
3/4"	11/4"	3¾"	1 5/8"

Dist	COUNTY	ROUTE	POST MIL TOTAL PROJ		SHEET No.	TOTAL
Q	nles 1	Dana				
		CIVIL ENGI	NEER /	PROF	ESS IONA	
			NEEK	2	P. Johns	18
	y 1, 20				57793	ord [#]
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	ENTS SHALL	IFORNIA OR IT. NOT BE RESPOI COMPLETENESS	S OFFICERS VSIBLE FOR			/ #//_ *

NOTES:

- 1. All bolted connections for the chord splice and gusset plate connections are fully tensioned.
- 2. See "Truss Member Table" on Standard Plans S102 and \$107 for the size of bolted wind brace angle.
 The bolted wind brace leg width and thickness shall be increased if necessary in order to meet the minimum dimensions on "Table 2".
- 3. See "Table 3" for nominal bolt diameter and spacing for bolted members to gusset plate.
- 4. The bolt spacing for the bolted chord splice may be increased up to 1" in order to accompdate the bolted wind brace. The unbolted leg of the wind brace may be trimmed in order to avoid conflicts with the chord splice bolts, see "Wind Bracing Coping Detail" on Standard Plan S111.
- 5. See Standard Plan S111 for details not shown.

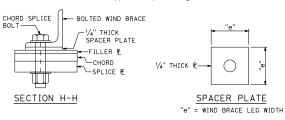
SPLICE NOTES:

Location of Splices:

The splice shall be located so as not to interfere with the gusset plate connections for the vertical and diagonal Ls. For two post type, see also Standard Plan S106.

Filler P:

The filler plates welded to the angle legs on the inside shall be welded before drilling the bolt holes. The filler plates shall be the same length as the splice plates. The filler plates are not necessary on the single post signs if the splice is located over 1/3 of the cantilever length from the post. Alternative splice details may be used if approved by the Engineer.

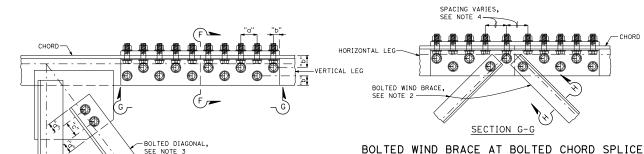


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OVERHEAD SIGNS-VERSATILE TRUSS CHORD SPLICE DETAILS

NO SCALE

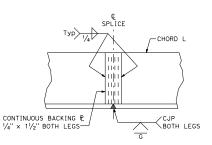
S112



CHORD -



BOLTED WIND BRACE AT GUSSET PLATES



WELDED CHORD SPLICE

HIGH STRENGTH BOLTS. TOTAL 20 PER SPLICE 1/4" FILLER EXX 1/4" FILLER E** CHORD L "+" + 1/4"

SPLICE P's SAME WIDTH AS CHORD L LEGS

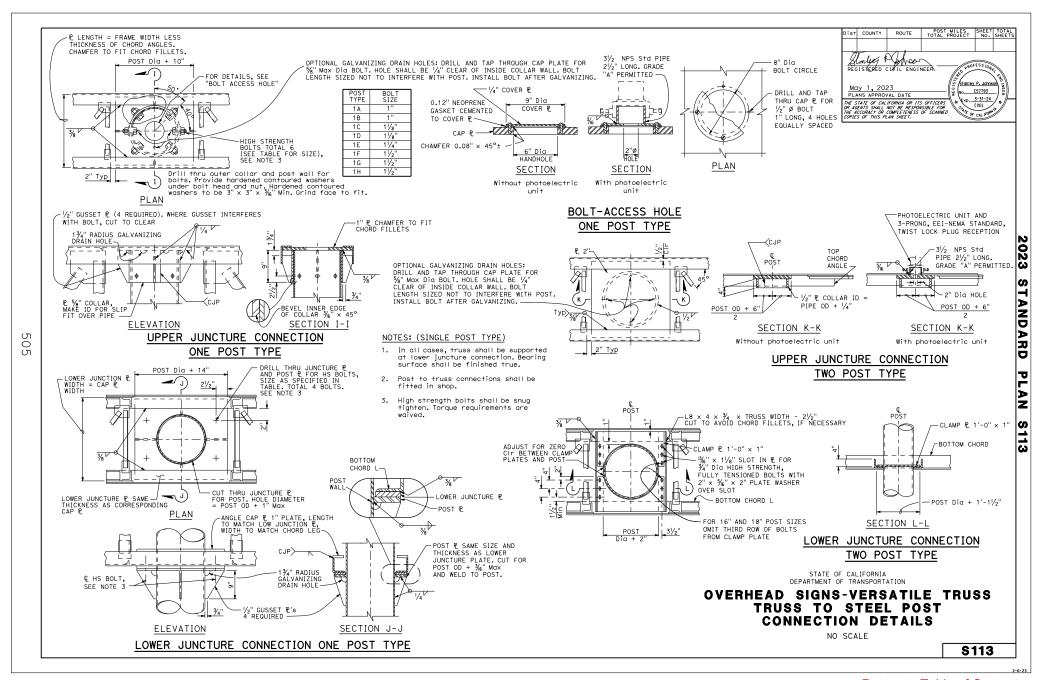
SECTION F-F

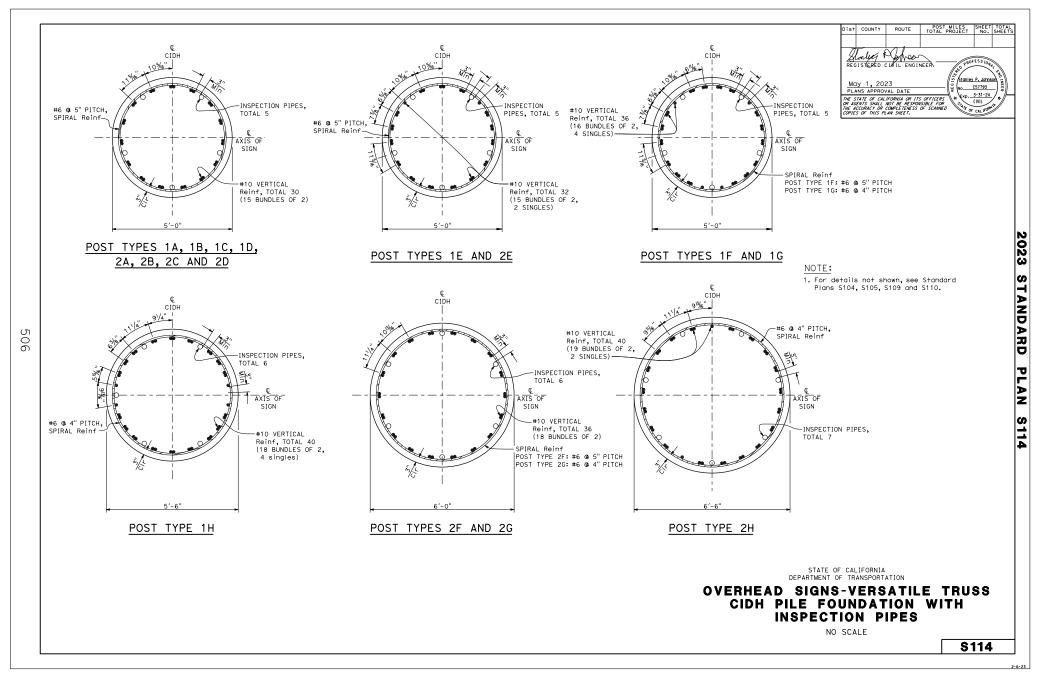
BOLTED CHORD SPLICE

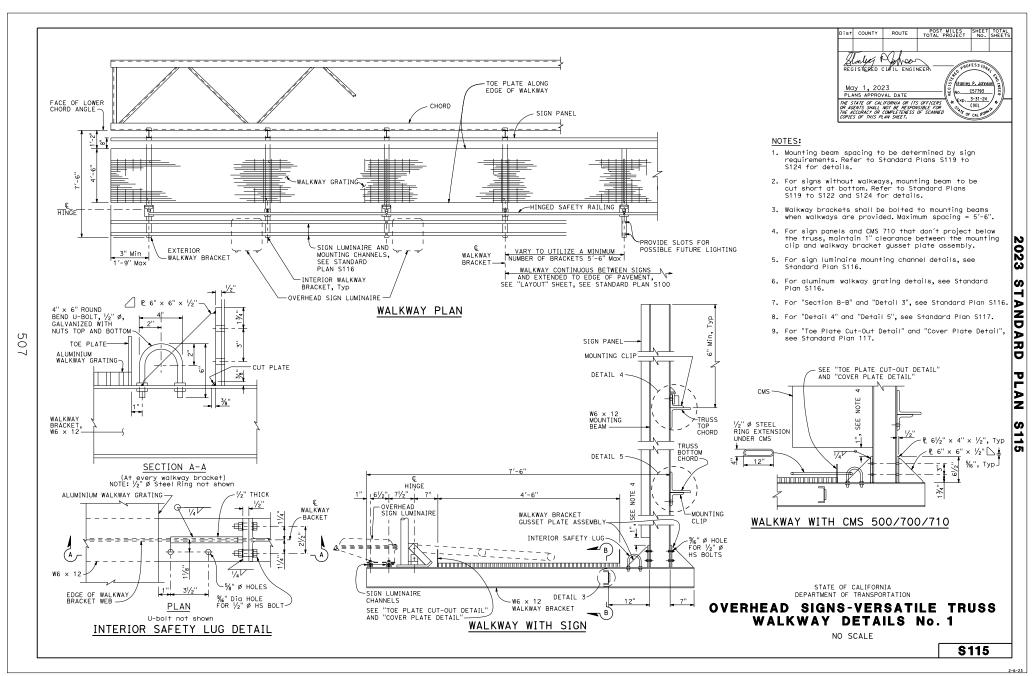
Wind bracing not shown

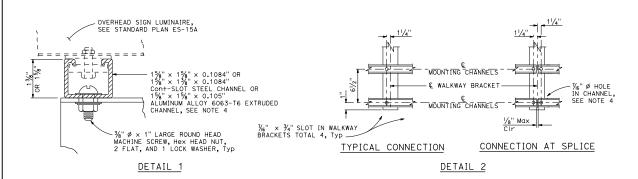
** 56" Filler P at 34" thick chord angle ** %" Filler £ at %" and 1" thick chord angle

SPACER PLATE







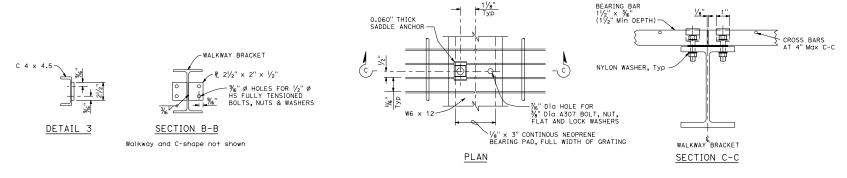


SIGN LUMINAIRE MOUNTING CHANNEL

80

NOTES:

- Aluminum walkway grating and light fixture mounting channels to be continuous (no splices) over as many walkway brackets as practical and consistent with fabrication, ease of handling, and assembly.
- 3. Hold down saddle anchors shall be installed at every walkway bracket (not just spliced locations). At non-splice locations, saddle anchors may be installed on one side of girder web only. All hold-down hardware shall be galvanized, the hold-down saddle clip shall be aluminum, and a nylon washer shall be installed on the underside of the nut.
- 4. Contractor may substitute $1\frac{5}{8}$ " x $1\frac{5}{8}$ " x .1084" cont-slot steel channel with pre-punched slots not larger than $\frac{5}{9}$ " x 3". Slots shall be at bottom of channel and shall be parallel to channel. Slots shall be spaced not closer than 4" center to center.



ALUMINIUM WALKWAY GRATING DETAILS

Shown at splice

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DEPARTMENT OF TRANSPORTATION

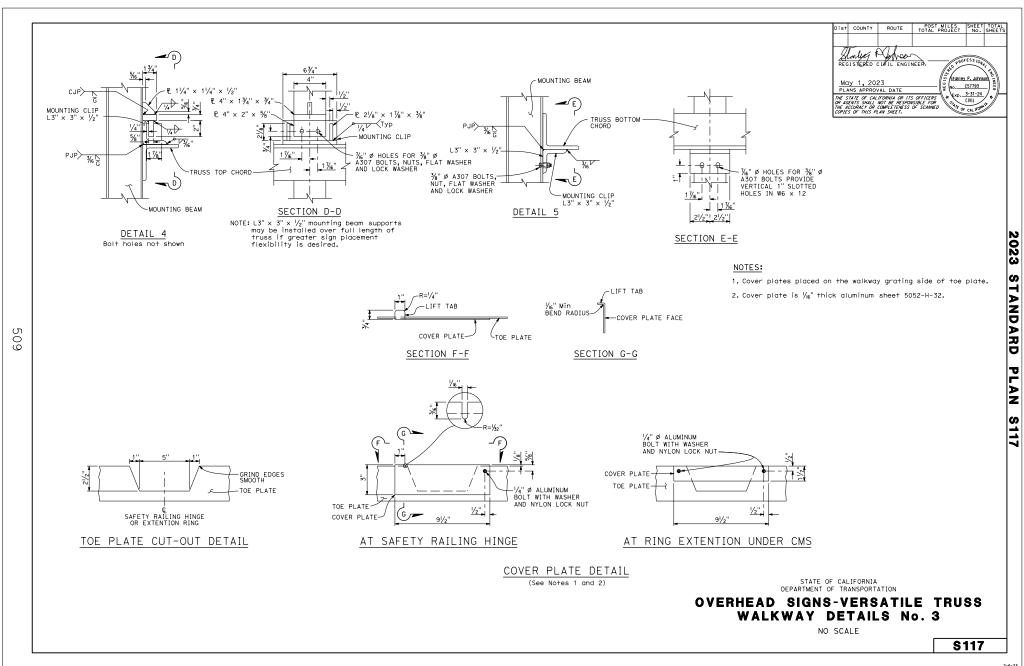
OVERHEAD SIGNS-VERSATILE TRUSS WALKWAY DETAILS No. 2

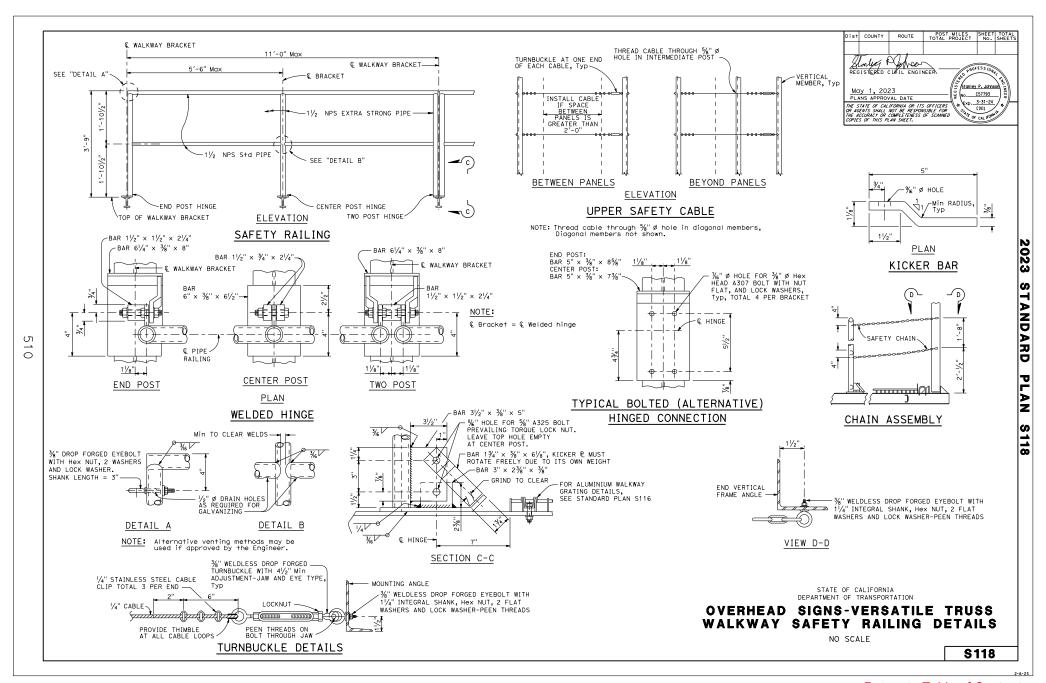
NO SCALE

S116

9-1-22





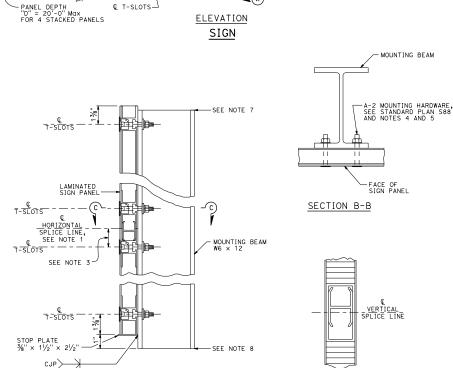




NOTES:

- 1. The location of the horizontal splice line is dependent on the Contractor for signs greater than 60" in depth.
- Mounting bolts and clamps are required on each side of the horizontal splice lines at each support beam.
- 3. Dimension varies from panel to panel. Average value
- 4. Torque stainless steel sign panel mounting bolts to
- 5. Drill through panel at integral track. Install Type A-2 mounting hardware and attach reflective tape.
- 6. Refer to Standard Plan S115 for mounting beam to truss connection details.
- For sign panel depths of 70" or less the top of the mounting beam extends beyond the limits of the sign panel. Refer to Standard Plan S115.
- 8. For sign panel depths of 60" or less, or where a walkway is installed, the bottom of the mounting beam extends further than 1" from the bottom of the sign panel. Refer to Standard Plan S115.
- The Contractor must verify all dependent dimensions in the field before ordering or fabricating any material.





SPLICE LINE —

1.1

1.1

1.1

1.1

1.1

11

11

€ T-SLOTS-

SECTION A-A

PANEL DEPTH
"D" = 5'-0" MGX
FOR SINGLE
PANEL

 Ω $\stackrel{\sim}{\rightharpoonup}$

MOUNTI	IG BEA	M SPA	CING TABLE
SIGN PANEL LENGTH *	NUMBER MOUNTING BEAMS	SIGN PANEL OVERHANG	MOUNTING BEAM SPACING
"A"		"B"	"C"
5′-0"	2	9"	3′-6"
6'-0"		1'-0"	4'-0"
7'-0"		1'-3"	4'-6"
8'-0"		1'-6"	5'-0"
9'-0"		1'-10"	5′-6"
10'-0"		2'-0"	6'-0"
11'-0"		2'-0"	7'-0"
12'-0"		2'-6"	7'-0"
13'-0"	.	2'-6"	8'-0"
14'-0"	3	1'-0"	6'-0"
15'-0"		1'-0"	6'-6"
16'-0"		6"	7′-6"
17'-0"		1'-0"	7′-6"
18'-0"		1'-0"	8'-0"
19'-0"		1'-6"	8'-0"
20'-0"	ļ ,	2'-0"	8'-0"
21'-0"	4	1'-6"	6'-0"
22'-0"		2'-0"	6'-0"
23'-0"		1'-0"	7′-0"
24'-0"		1'-6"	7'-0"

€ MOUNTING BEAMS

11

1.1

SECTION C-C

Mounting beam not shown

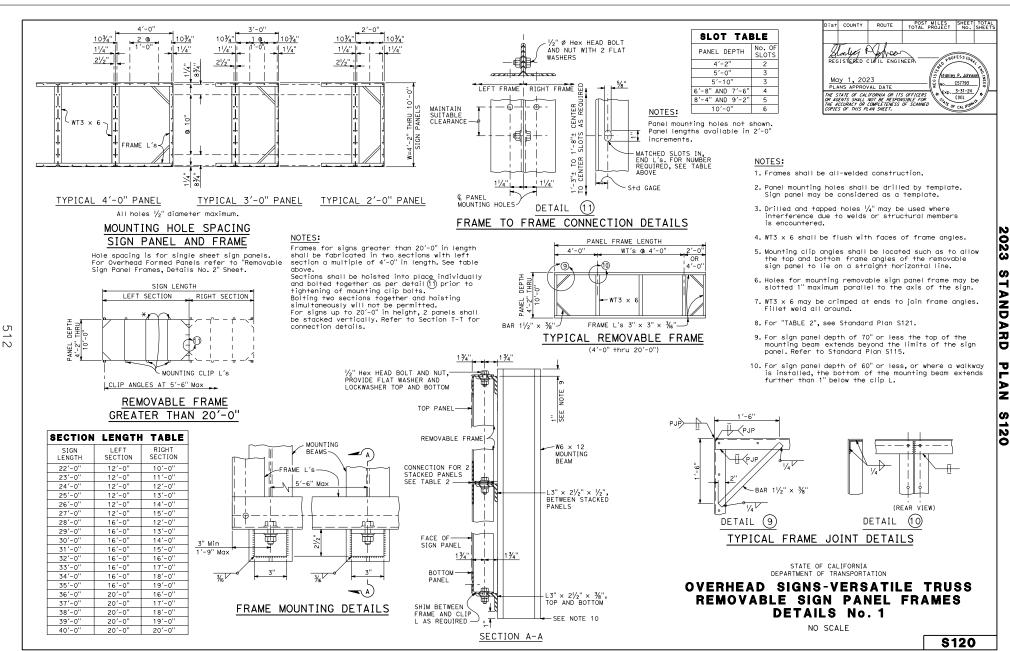
* Signs longer than 24'-0" are fabricated and mounted as adjoining single panels. The location of the vertical splice line will be determined by the Engineer.

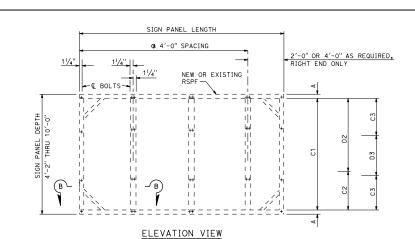
STATE OF CALIFORNIA
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OVERHEAD SIGNS-VERSATILE TRUSS SIGN MOUNTING DETAILS LAMINATE PANEL - TYPE A

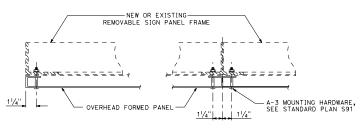
NO SCALE







NEW OR EXISTING REMOVABLE SIGN PANEL FRAME MOUNTING HOLE SPACING



Dist COUNTY POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS Starting Popular REGISTERED CIVIL ENGINEER Stanley P. Johns Mdy 1, 2023 PLANS APPROVAL DATE C57793 €×p. 3-31-24 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

CORNER DETAIL

NEW PANELS WITH RETROREFLECTIVE BACKGROUND AND LEGEND PANEL CONNECTION

SECTION B-B

NOTES:

When constructing a new frame:

- 1. Refer to Standard Plan S120 for structural
- 2. Sign panels shall be considered as a template for drilling holes for mounting bolts.

•	TABLE	: 1						
MOUNTING BOLT SPACING								
1 SPACE	2 SF	PACE		3 SPACE				
C1	C2	D2	С3	D3	С3			
3'-111/2"								
	2'-43/4"	2'-43/4"						
	1'-6¾"	4'-3/4"						
	3'-23/4"	3'-23/4"						
	3'-23/4"	4'-3/4"						
	4'-3/4"	4'-3/4"						
			3'-23/4"	2'-6"	3'-23/4"			
			4'-3/4"	1'-8"	4'-3/4"			

TABLE 2							
PANEL DEPTH GREATER THAN 120"							
TOTAL PANEL DEPTH	TOP PANEL	BOTTOM PANEL					
1 30"	70"	60"					
140"	70"	70"					
150"	80"	70"					
160"	80"	80"					
170"	90"	80"					
180"	90"	90"					
190"	100"	90"					
200"	100"	100"					
210"	110"	100"					
220"	110"	110"					
230"	120"	110"					
240"	120"	120"					

	TABLE 1								
	MOUNTING BOLT SPACING								
PANEL	А	1 SPACE	2 SF	PACE		3 SPACE			
DEPTH	A	C1	C2	D2	С3	D3	С3		
50"	11/4"	3'-111/2"							
60"			2'-43/4"	2'-43/4"					
70"			1'-6¾"	4'-3/4"					
80"			3'-23/4"	3'-23/4"					
90"			3'-23/4"	4'-3/4"					
100"			4'-3/4"	4'-3/4"					
110"					3'-23/4"	2'-6"	3'-23/4"		
120"	11/4"				4'-3/4"	1'-8"	4'-3/4"		

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS REMOVABLE SIGN PANEL FRAMES **DETAILS No. 2**

NO SCALE

S121

IF EXISTING SIGN PANEL IS IN PLACE, REMOVE	OVERHEAD FORMED PANEL

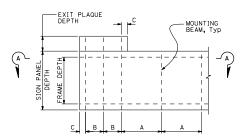
NOTE:

NOTE:

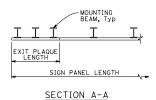
NEW OR EXISTING REMOVABLE SIGN PANEL FRAME

 Ω W Sign panel mounting holes 1/2" Ø maximum for 3%" Ø bolts.

> The Contractor shall verify all dependent dimensions in the field before ordering or fabricating any material.



 Ω 4



SIGN PANEL ELEVATION

MOUNTING BEAM SPACING NOTES AND ABBREVIATIONS:

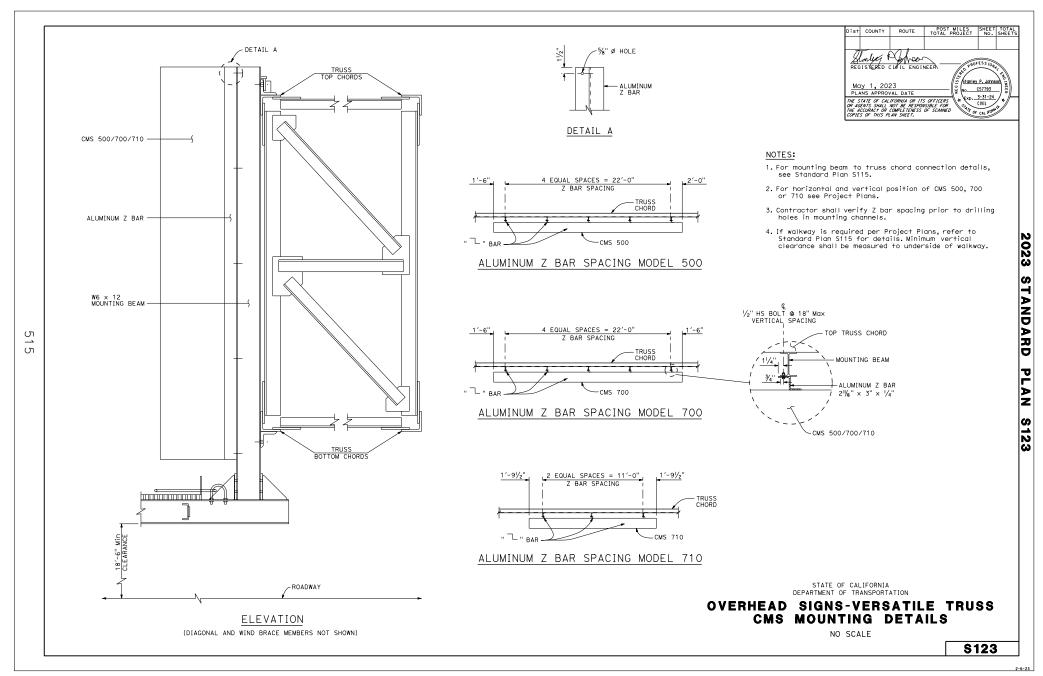
- A: Maximum mounting beam spacing for sign support = 8'-0".
- B: Maximum mounting beam spacing for exit plaque support. A minimum of 2 mounting beams are required per exit plaque. Refer to "EXIT PLAQUE MOUNTING BEAM TABLE" for "B" values.
- C: Maximum sign panel/exit plaque overhang length. Refer to Standard Plans S119 and S120 for permissible overhang values.
- Note: Additional mounting beams will be required when walkways are installed. Maximum mounting beam spacing at walkways = 5'-6". Refer to Standard Plan S115 for walkway mounting beam details. When mounting beams are added for walkway or exit plaque support, they are not required to be attached to the sign panels.

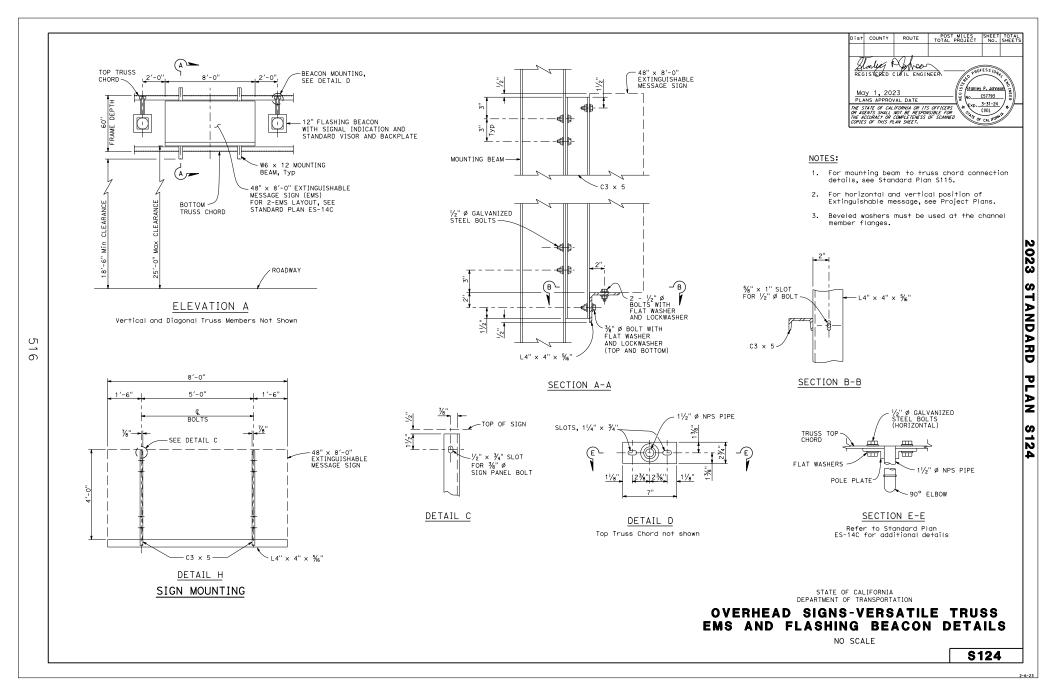
EXIT PLAQUE BEAM	
SIGN PANEL DEPTH, D	В
D ≤ 80"	8'-0"
80"< D ≤100"	8'-0"
100"< D ≤120"	8'-0"
120"< D <u>≤</u> 150"	7'-0"
150"< D ≤180"	6'-0"
180"< D ≤210"	7′-0"
210"< D ≤240"	4'-0"

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGNS-VERSATILE TRUSS EXIT PLAQUE MOUNTING DETAILS

NO SCALE





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%}---;

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SOFFIT AND WALL-MOUNTED LUMINAIRES

EQUIPMENT OR MATERIAL TO BE REMOVED AND BECOME THE PROPERTY OF THE CONTRACTOR

←	PENDANT SOFFIT LUMINAIRE
	FLUSH-MOUNTED SOFFIT LUMINAIRE
→	WALL-MOUNTED LUMINAIRE
$\!$	EXISTING SOFFIT OR WALL-MOUNTED LUMINAIRE TO REMAIN UNMODIFIED
$\!$	EXISTING SOFFIT OR WALL-MOUNTED LUMINAIRE TO BE MODIFIED AS SPECIFIED

NOTE:

NS

PEC

PEU

RC RL

RR

RS

SC

SD

TSP

SYMBOL

NO SLIP BASE ON STANDARD

PHOTOELECTRIC CONTROL

PHOTOELECTRIC UNIT

RELOCATE EQUIPMENT

SERVICE DISCONNECT

DESCRIPTION

TELEPHONE SERVICE POINT

REMOVE AND REUSE EQUIPMENT REMOVE AND SALVAGE EQUIPMENT

SPLICE NEW TO EXISTING CONDUCTORS

Arrow indicates "street side" of luminaire.

NEW	EXISTING	DESCRIPTION
$\bigcirc \rightarrow$	(Z)¢	LUMINAIRE ON WOOD POLE
\bigcirc —	(∑)∘	NON-STANDARD ELECTROLIEF (SEE PROJECT LEGEND)
\odot	(<u>0</u>)	CITY ELECTROLIER
\longrightarrow	(<u>m</u>)	ELECTROLIER FOUNDATION (FUTURE INSTALLATION)

MISCELLANEOUS ELECTROLIERS

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND)

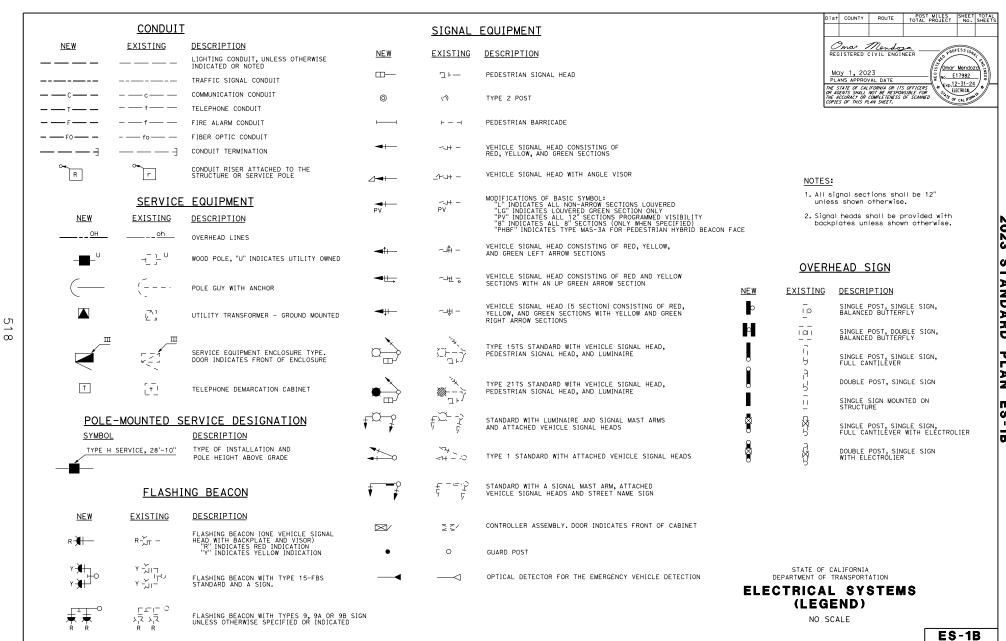
NO SCALE

ES-1A

2023 STANDARD

PLAN

ES-1A



ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Omar Mendozo

E17982

EXP.12-31-24

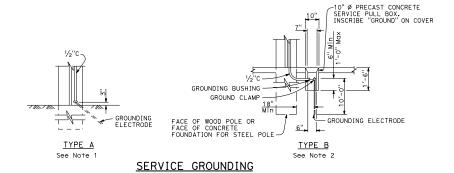
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Return to Table of Contents

ES-1C

POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS



POLE MOUNTED SERVICE INSTALLATIONS

LEGEND:

- 1 METER SOCKET.
- 2 SERVICE ENCLOSURE WITH A MINIMUM 60 A RATED MAIN CIRCUIT BREAKER, UNLESS OTHERWISE SHOWN.
- 3 A. UTILITY OWNED POLE. THE SERVICE UTILITY WILL FURNISH AND INSTALL REQUIRED SERVICE RISER, PEU WITH CONDUCTORS AND OTHER EQUIPMENT AS NEEDED.
 - B. STATE OWNED POLE. THE CONTRACTOR SHALL FURNISH AND INSTALL REQUIRED SERVICE RISER AND EQUIPMENT.
- 4 2"C, SERVICE CONDUIT MUST HAVE A GROUNDED TYPE BUSHING INSTALLED AT UPPER END OF THE METALLIC POLE RISER CONDUIT. A GROUNDING CONDUCTOR MUST BE ATTACHED TO THE BUSHING CARRIED THROUGH THE CONDUIT RUN AND ATTACHED TO THE SERVICE EQUIPMENT ENCLOSURE'S GROUNDING ELECTRODE.
- 5 CONDUIT, LENGTH AND SIZE AS REQUIRED.
- 6 1/2"C, 1#6. SEE SERVICE GROUNDING.
- 7 FLASHING BEACON ENCLOSURE.
- B SERVICE PULL BOX, No. 5 UNLESS OTHERWISE NOTED, FURNISHED AND INSTALLED BY THE CONTRACTOR. SERVICE UTILITY SHALL DETERMINE THE EXACT LOCATION.

NOTES:

- Ground clamp and required fittings must be accessible. Conduit must extend to protect grounding electrode conductor from mechanical damage.
- 2. Use where service utility requires 18" clearance between grounding electrode and the pole or service equipment enclosure. Installation shown is for sidewalk or paved areas. In unpaved areas, omit special service pull box and locate ground clamp above ground or locate ground clamp in nearest pull box.

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ELECTRICAL SYSTEMS (SERVICE EQUIPMENT)

NO SCALE

ES-2A

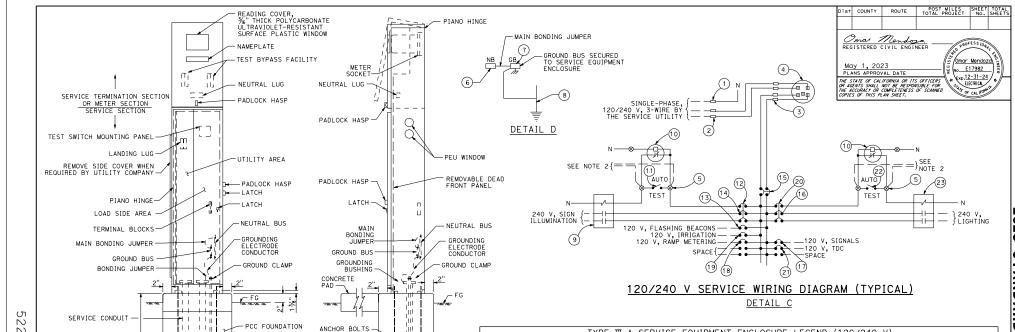
1-31-23

2023

STANDARD

PLAN

ES-2A



	I YPE 1	M-A SERVICE EQUIPMENT	ENCL	OSURE LEGEND (120/240) V)
ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
1	NEUTRAL LUG		13	15 A, 120 V, 1P, CB	FLASHING BEACON
2	LANDING LUG		149	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
3	TEST BYPASS FACILITY		(5)	100 A, 240 V, 2P, CB	MAIN BREAKER
4	METER SOCKET AND SUPPORT		16	30 A, 240 V, 2P, CB	LIGHTING
5	TERMINAL BLOCKS		10	50 A, 120 V, 1P, CB	SIGNALS
6	NEUTRAL BUS		13	30 A, 120 V, 1P, CB	RAMP METERING
7	GROUND BUS		19	20 A, 120 V, 1P, CB	IRRIGATION
8	GROUNDING ELECTRODE		20	15 A, 120 V, 1P, CB	LIGHTING CONTROL
9	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	2	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
10	PHOTOELECTRIC UNIT (NOTE 4)	PEU	2	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
11	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	23	60 A, 2P, NO CONTACTOR	LIGHTING
12	15 A, 120 V, 1P, CB	SIGN ILLUMINATION CONTROL			

TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (TYPICAL) DETAIL A

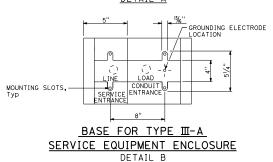
ANCHOR BOLTS, 5/8" Ø Min x 18" Galv, 4"-90° BEND (4 REQUIRED)

GROUNDING ELECTRODE

LOAD CONDUIT

11 111

FRONT VIEW



NOTES:

SIDE VIEW

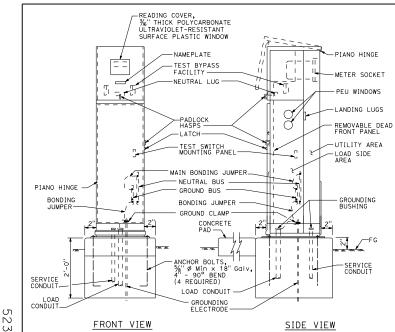
- Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
- 2. Connect to remote test switch mounted on lighting standards, sign post, or structure when required.
- 3. Items 1 and 6 shall be isolated from the service equipment enclosure.
- 4. Type I photoelectric control shall be used unless otherwise indicated on the plans.
- 5. Item (2) and (20) shall be ganged operated CB.
- 6. The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

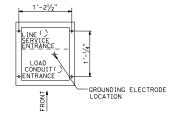
ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-A SERIES)

NO SCALE

ES-2D

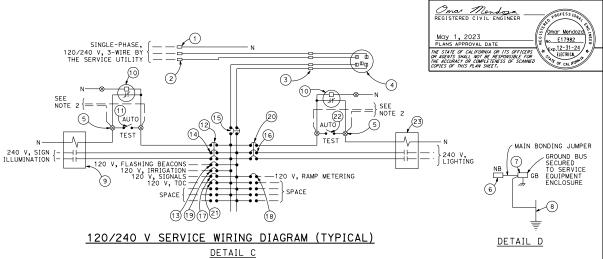


TYPE III-BF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)



BASE FOR TYPE III-B
SERVICE EQUIPMENT ENCLOSURE

DETAIL B



	TYPE III-B SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)										
ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION						
1	NEUTRAL LUG		13	15 A, 120 V, 1P, CB	FLASHING BEACON						
2	LANDING LUG		14	30 A, 240 V, 2P, CB	SIGN ILLUMINATION						
3	TEST BYPASS FACILITY		13	100 A, 240 V, 2P, CB	MAIN BREAKER						
4	METER SOCKET AND SUPPORT		16	30 A, 240 V, 2P, CB	LIGHTING						
(5)	TERMINAL BLOCKS		10	50 A, 120 V, 1P, CB	SIGNALS						
6	NEUTRAL BUS		13	30 A, 120 V, 1P, CB	RAMP METERING						
7	GROUND BUS		19	20 A, 120 V, 1P, CB	IRRIGATION						
8	GROUNDING ELECTRODE		20	15 A, 120 V, 1P, CB	LIGHTING CONTROL						
9	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	2)	20 A, 120 V, IP, CB	TELEPHONE DEMARCATION CABINET						
0	PHOTOELECTRIC UNIT (NOTE 4)	PEU	23	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH						
10	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	23	60 A, 2P, NO CONTACTOR	LIGHTING						
(12)	15 A, 120 V, 1P, CB	SIGN ILLUMINATION CONTROL		-							

NOTES:

- 1. Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
- 2. Connect to remote test switch mounted on lighting standards, sign post, or structure when required.
- 3. Items (1) and (6) shall be isolated from the service equipment enclosure.
- 4. Type ${\mathbb Y}$ photoelectric control shall be used unless otherwise indicated on the plans.
- 5. Item ② and ② shall be ganged operated CB.
- The plan shows the approximate location of devices within the enclosure. Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

Dist COUNTY

ROUTE

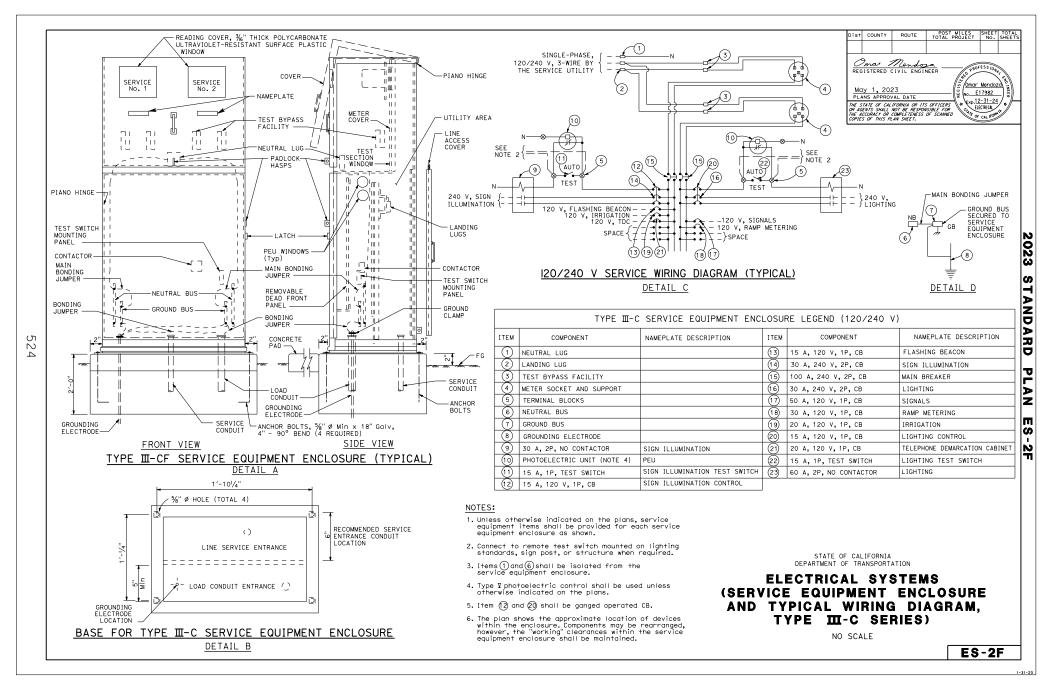
POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

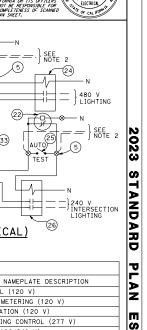
ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-B SERIES)

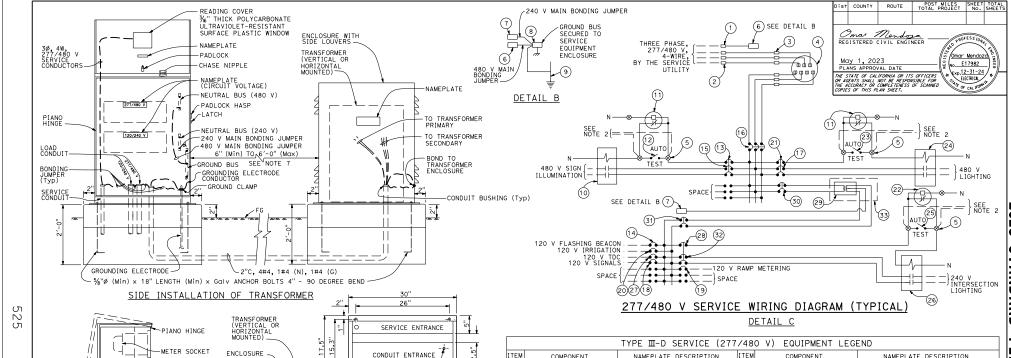
NO SCALE

ES-2E

1-31







BAS	SE FOR	TYPE	Ξ Ⅲ-D
SERVICE	EQUIP	MENT	ENCLOSURE
	DET	AIL A	

00 0

GROUNDING ELECTRODE LOCATION

NOTES:

FILTERD VENTILATION LOUVERS (4 Typ)

Ш

IJ

-LANDING LUG

PELL WINDOW

FRONT PANEL

REMOVABLE DEAD

ALUMINUM WIRE

SCREEN (4 Typ)

LOAD SIDE AREA UTILITY AREA

3'-6" (Min)

TO 6'-0" (Max) SEE NOTE 7

-SERVICE CONDUIT

CONCRETE

REAR INSTALLATION OF TRANSFORMER

TYPE III-DF SERVICE EQUIPMENT ENCLOSURE

TYPICAL

PADLOCK

LATCH

GROUND CLAMP -

CONCRETE

LOAD CONDUIT

GROUNDING

PAD

PIANO HINGED

- Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
- 2. Connect to remote test switch mounted on lighting standards, sign post, or structure when required.
- 3. Items No.(1),(6), and (7) shall be isolated from the service equipment enclosure.
- 4. Type I photoelectric control shall be used unless otherwise indicated on the plans.
- Color of insulation of the neutral shall be gray for the 277/480 V system and shall be white for the 120/240 V system.

 Items (3), (2), and (28) shall be ganged operated CB.
- The enclosure shall be located to the side of the service equipment enclosure unless otherwise indicated on the plans.
- 8. The base dimension for the enclosure for the transformer shall be as per manufacturer's design.
- The plan shows the approximate location of devices within the enclosure, Components may be rearranged, however, the "working" clearances within the service equipment enclosure shall be maintained.

		TYPE Ⅲ-D SERVICE (277	/48	O V) EQUIPMENT LEG	END
ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
1	NEUTRAL LUG		13	50 A, 120 V, 1P, CB	SIGNAL (120 V)
2	LANDING LUG		1	30 A, 120 V, 1P, CB	RAMP METERING (120 V)
3	TEST BYPASS FACILITY		20	20 A, 120 V, 1P, CB	IRRIGATION (120 V)
(4)	METER SOCKET AND SUPPORT		2	10 A, 277 V, 1P, CB	LIGHTING CONTROL (277 V)
(5)	TERMINAL BLOCKS		23	PHOTOELECTRIC UNIT (NOTE 4)	PEU (120/240 V)
6	NEUTRAL BUS	NEUTRAL BUS (480 V)	23	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH (277 V)
7	NEUTRAL BUS	NEUTRAL BUS (240 V)	23	30 A, 2P, NO CONTACTOR	LIGHTING (480 V)
(8)	GROUND BUS		23	15 A, 1P, TEST SWITCH	INTERSECTION LIGHTING TEST SWITCH (120 V)
9	GROUNDING ELECTRODE		29	30 A, 2P, NO CONTACTOR	INTERSECTION LIGHTING (120 V)
10	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION (480 V)	0	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET (120 V)
1	PHOTOELECTRIC UNIT (NOTE 4)	PEU (277/480 V PEU)	23	10 A, 120 V, 1P, CB	INTERSECTION LIGHTING CONTROL (120 V)
12	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH (277 V)	29	15 kVA, 480-120/240 V TRANSFORMER	TRANSFORMER, 15 kVA, 480-240 V
13	10 A, 277 V, 1P, CB	SIGN ILLUMINATION CONTROL (277 V)	33	40 A, 480 V, 2P, CB	TRANSFORMER PRIMARY (480 V)
14	15 A, 120 V, 1P, CB	FLASHING BEACON (120 V)	31	80 A, 240 V, 2P, CB	TRANSFORMER SECONDARY (240 V)
15	15 A, 480 V, 2P, CB	SIGN ILLUMINATION (480 V)	32	30 A, 240 V, 2P, CB	INTERSECTION LIGHTING (240 V)
16	100 A, 480 V, 3P, CB	MAIN BREAKER (480 V)	33	ENCLOSURE	TRANSFORMER, 15 kVA, 480-240 V
(17)	15 A, 480 V, 2P, CB	LIGHTING (480 V)		CTATE OF OUR	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM. TYPE III-D SERIES)

NO SCALE

ES-2G

-2G

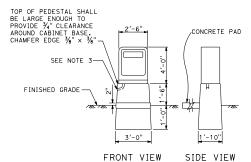
26

NOTES:

- Cabinet shall be installed with the back toward the nearest lane of traffic.
- In unpaved areas, a raised portland cement concrete pad shall be constructed in front of each controller cabinet. The pad shall be 3'-0" x 4" thick x width of foundation.
- 3. A 1" drain shall be provided through the foundation of a cabinet. Drain pipe shall be screened.
- Cabinet shelves shall be adjustable for vertical spacing and shall be removable.
- Controller units, plug-mounted equipment, shelf-mounted equipment and wall-mounted equipment shall be located to permit safe and easy removal or replacement without removing any other piece of equipment.
- 6. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
- 7. Telephone interconnect conductors shall be enclosed in a $\frac{7}{4}$ "C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in cabinets or pedestals.
- 8. Anchor bolts for cabinet shall be $\frac{3}{4}$ " ø x 1'-6" with a 2" 90° bend.

DIST COUNTY ROUTE TOTAL PROJECT No. SHEET OTAL TOTAL PROJECT No. SHEETS

PLANS APPROVAL DATE
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PEDESTAL FOUNDATION FOR MODEL 336LS CABINET

DETAIL A

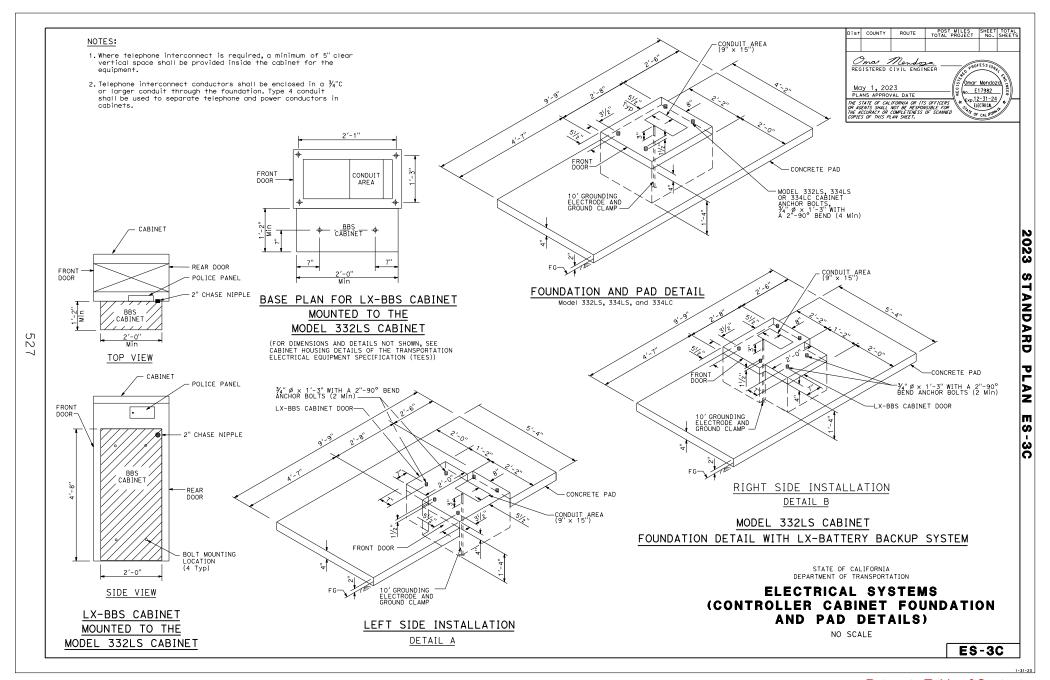
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

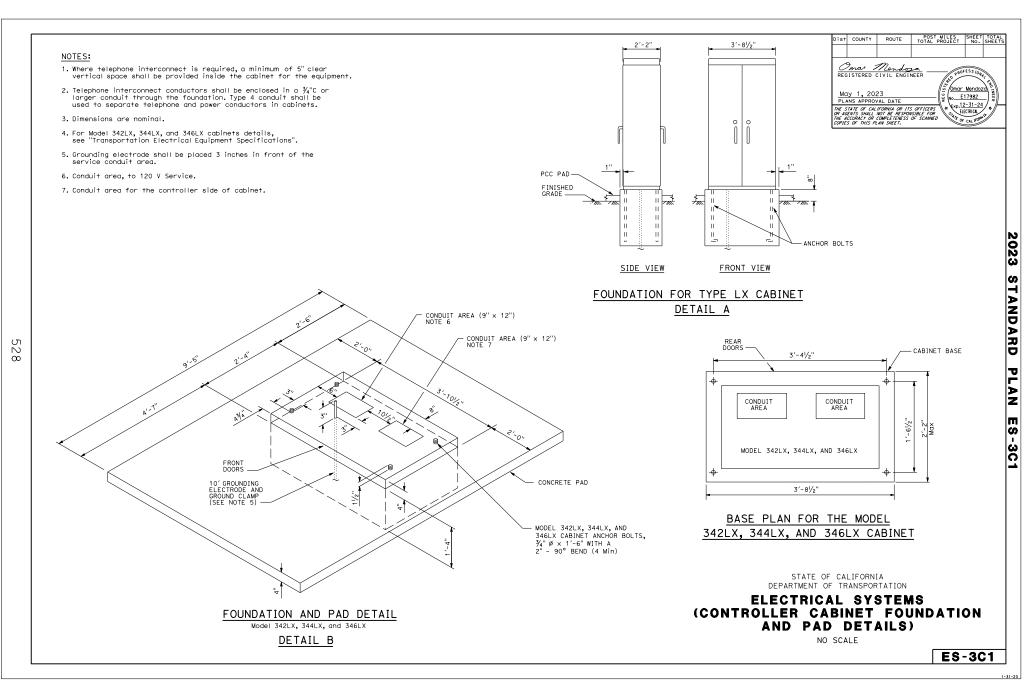
ELECTRICAL SYSTEMS
(CONTROLLER CABINET ADAPTER,
FOUNDATIONS, AND PAD DETAILS)

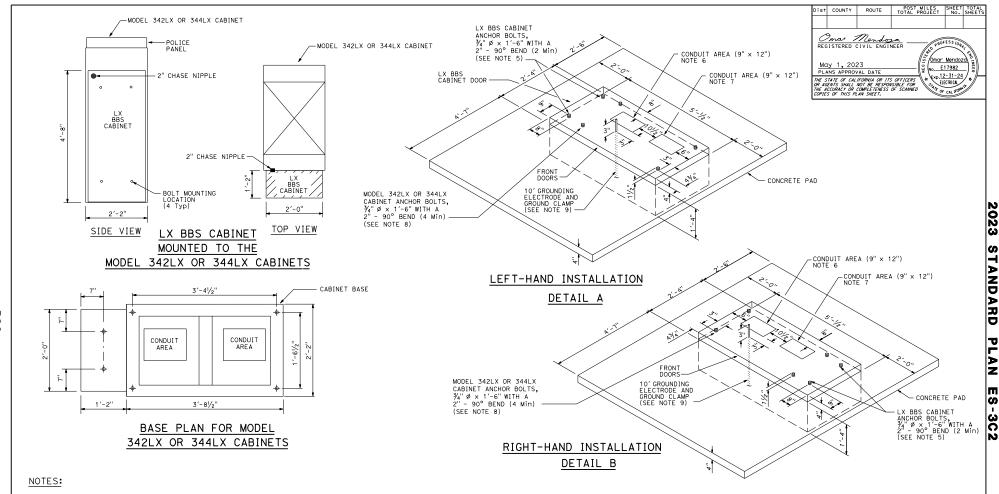
NO SCALE

ES-3B

1-31-23







- Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
- Telephone interconnect conductors shall be enclosed in a ¾"C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in cobinets.
- 3. The LX BBS cabinet shall be mounted to the Model 342LX or 344LX cabinet with four 18-8 stainless steel hex head, fully-threaded, % "16 x 1" bolts; two woshers per bolt, designed for % bolts and are 18-8 stainless steel, 1" outside diameter, round, and flat; and one K-Lock nut per bolt that is 18-8 stainless steel and a hex-nut
- 4. All dimensions are nominal.
- 5. The dimensions of the BBS cabinet shall be verified prior to constructing the foundation of the Model 342LX or 344LX cabinet foundation.
- 6. Conduit area, to 120 V Service.
- 7. Conduit area for the controller side of cabinet.
- For Type LX cabinets details, see "Transportation Electrical Equipment Specifications".
- 9. Grounding electrode shall be placed 3 inches in front of the service conduit area.

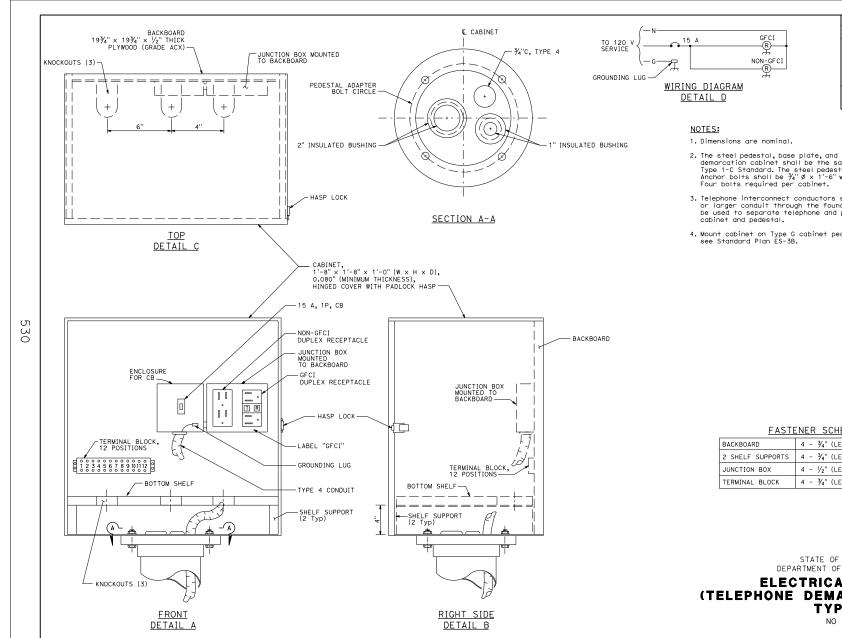
MODEL 342LX OR 344LX CABINET
FOUNDATION DETAIL WITH BATTERY BACKUP SYSTEM

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROLLER CABINET FOUNDATION DETAILS)

NO SCALE

ES-3C2



Dist	COUNTY	ROUTE	POST P	MILES ROJECT	SHEET No.	TOTAL SHEETS
MO PLA	ISTERED (IN 1, 202 INS APPROVI	CIVIL ENGIN	NEER	0mar No. E1	Mendoz 17982 -31-24	EMO INEER
			UF SCAMMED	Ot.	CAL IFORM	/
	MC PLA THE S OR AG THE A	May 1, 202 PLANS APPROVING STATE OF CAL OF AGENTS SHALL HE ACCURACY OF	Cmas Mondage REGISTERED CIVIL ENGIN MGY 1, 2023 PLANS APPROVAL DATE THE STAIT OF CALIFORNIA OF THE RESPON	COMMY NOUSE TOTAL PI Comma Mandona REGISTERED CIVIL ENGINEER May 1, 2023 PILANS APPROVAL DATE THE STATE OF CALVOOMS OF ILS OF ICERS THE ACCURACY OF COMPLETERS'S OF SANKED	Coma Mandora REGISTERED CIVIL ENGINEER May 1, 2023 PLANS APPROVAL DATE PLANS APPROVAL DATE THE SILIF OF LUT GONER APEN US CHEFFES APPROVAL DATE THE SILIF OF LUT GONER APEN US CHEFFES APPROVAL DATE REGISTER OF LUT GONER APPROVAL DATE REGISTER OF LUT	COUNTY ROUTE TOTAL PROJECT NO. PLANS APPROVAL DATE WE STATE OF CHITCHEN OF THE STATE OF CHITCHEN OF THE STATE OF CHITCHEN OF THE STATE OF COUNTY OF THE STATE OF T

- 2. The steel pedestal, base plate, and bolt circle for the telephone demarcation cabinet shall be the same as that shown for a Type 1-C Standard. The steel pedestal shall be $2^{\prime}-1^{\prime}$ to $2^{\prime}-6^{\prime}$ in length. Anchor bolts shall be 3^{\prime} 0 x 1 $^{\prime}-6^{\prime}$ with a 2 $^{\prime\prime}$ 90 $^{\prime\prime}$ bend. Four bolts required per cabinet.
- 3. Telephone interconnect conductors shall be enclosed in a $\frac{1}{2}$ "C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in the
- Mount cabinet on Type G cabinet pedestal and foundation, see Standard Plan ES-3B.

FASTENER SCHEDULE

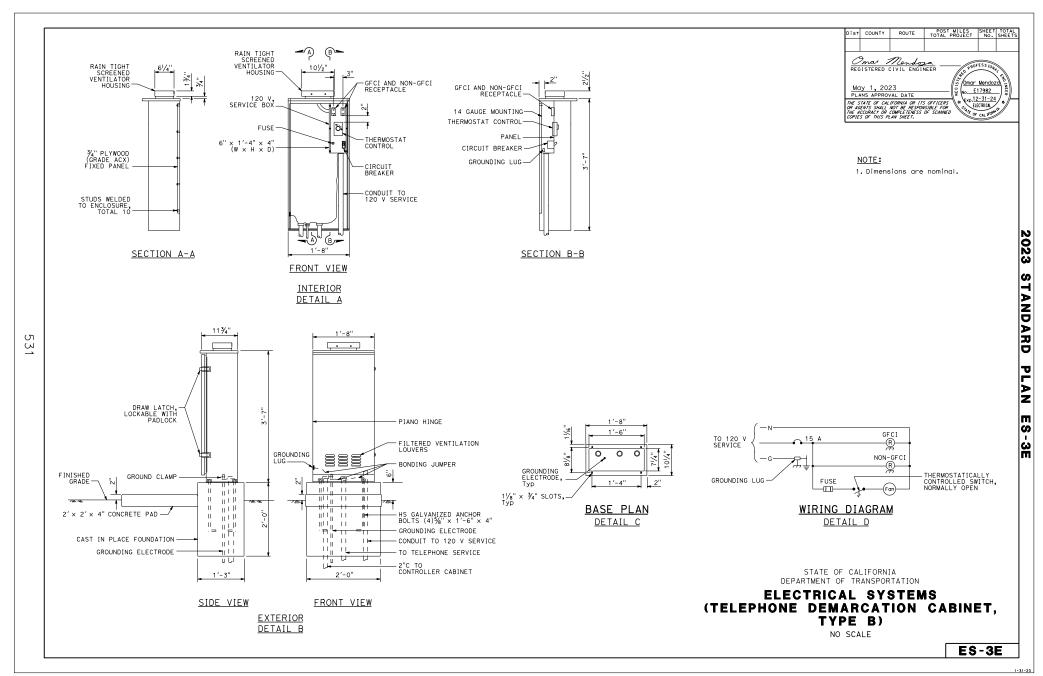
BACKBOARD	4 - ¾" (LENGTH) WOOD SCREWS
2 SHELF SUPPORTS	4 - ¾" (LENGTH) WOOD SCREWS
JUNCTION BOX	4 - 1/2" (LENGTH) WOOD SCREWS
TERMINAL BLOCK	4 - 3/4" (LENGTH) WOOD SCREWS

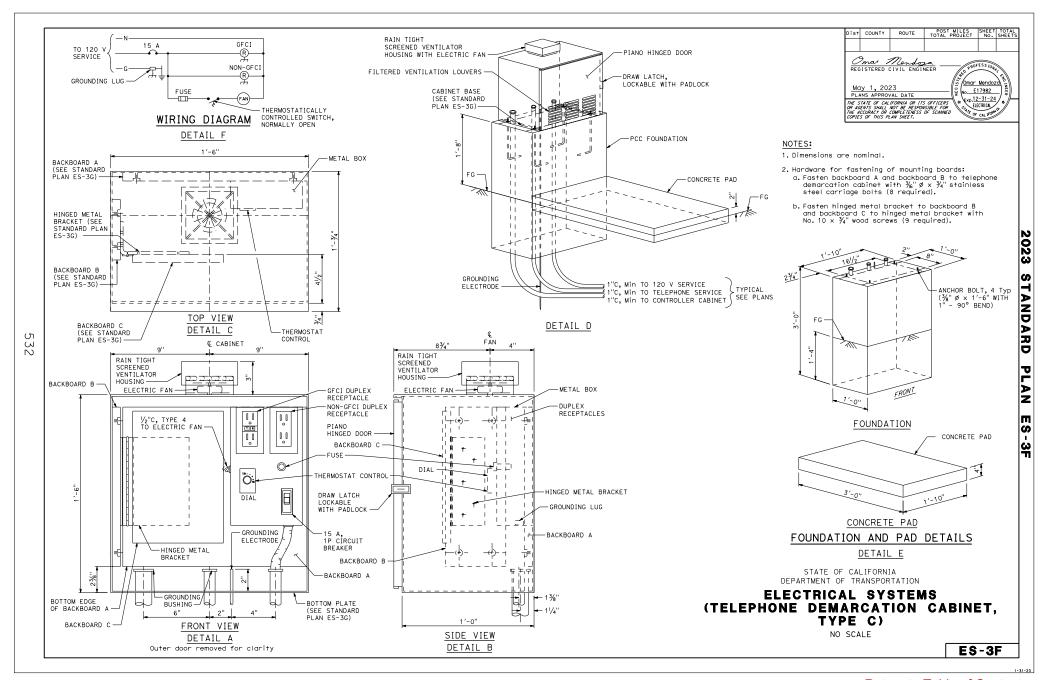
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

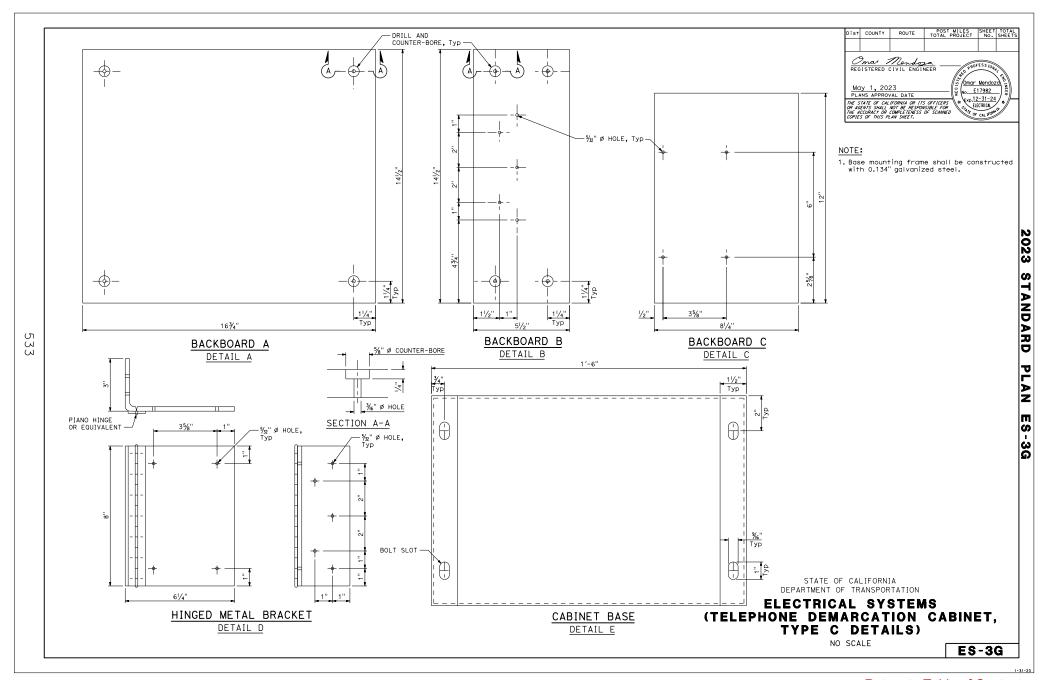
ELECTRICAL SYSTEMS (TELEPHONE DEMARCATION CABINET, TYPE A)

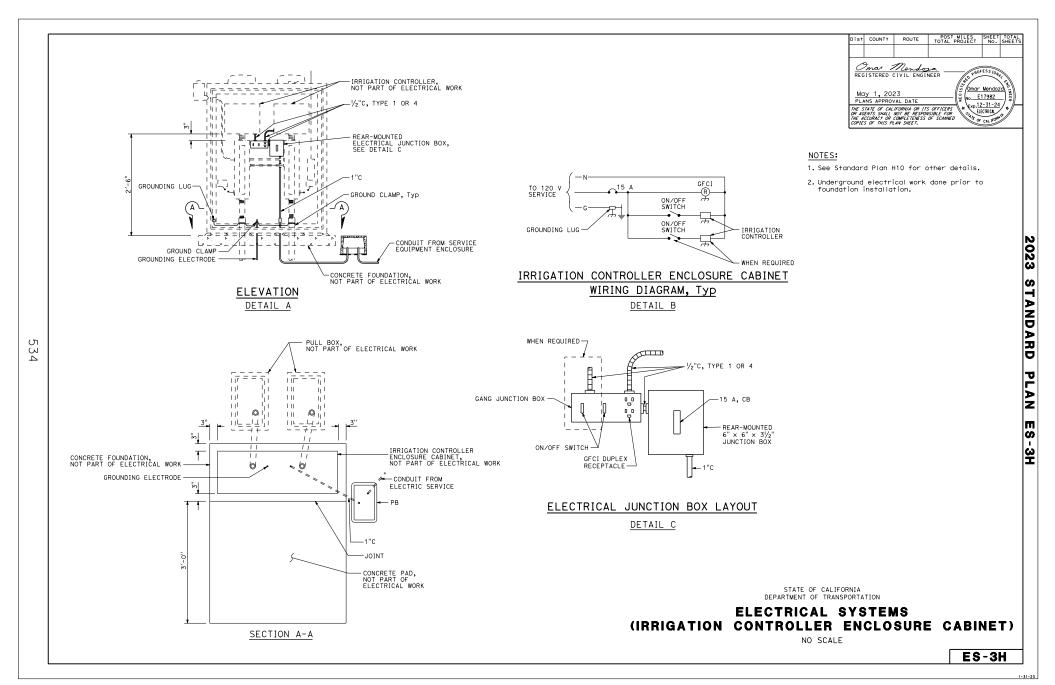
NO SCALE

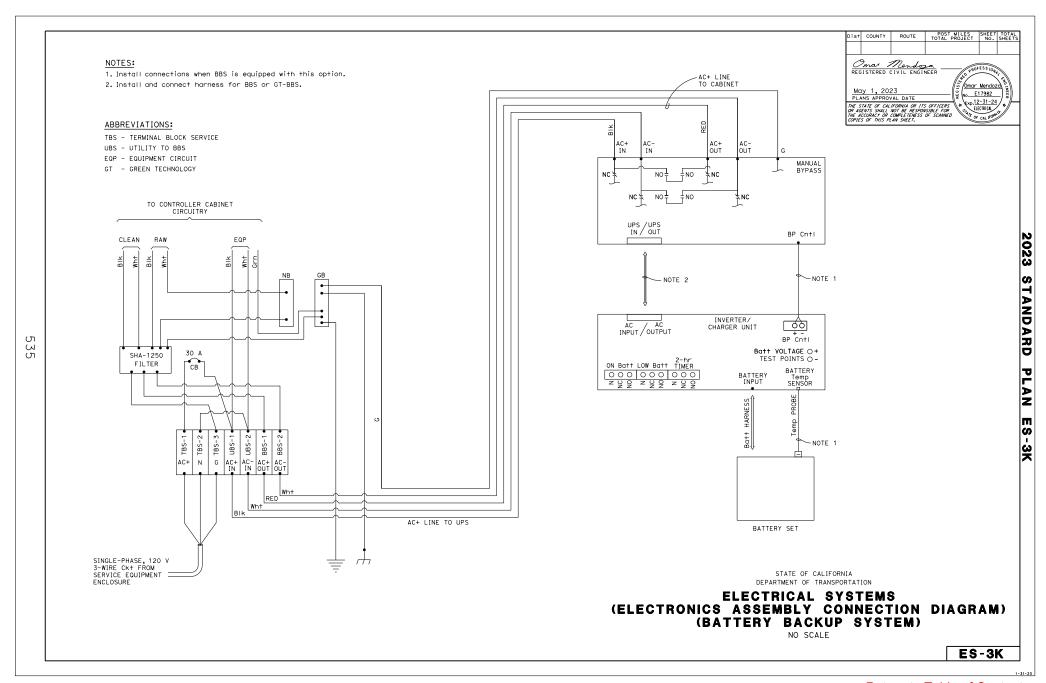
ES-3D

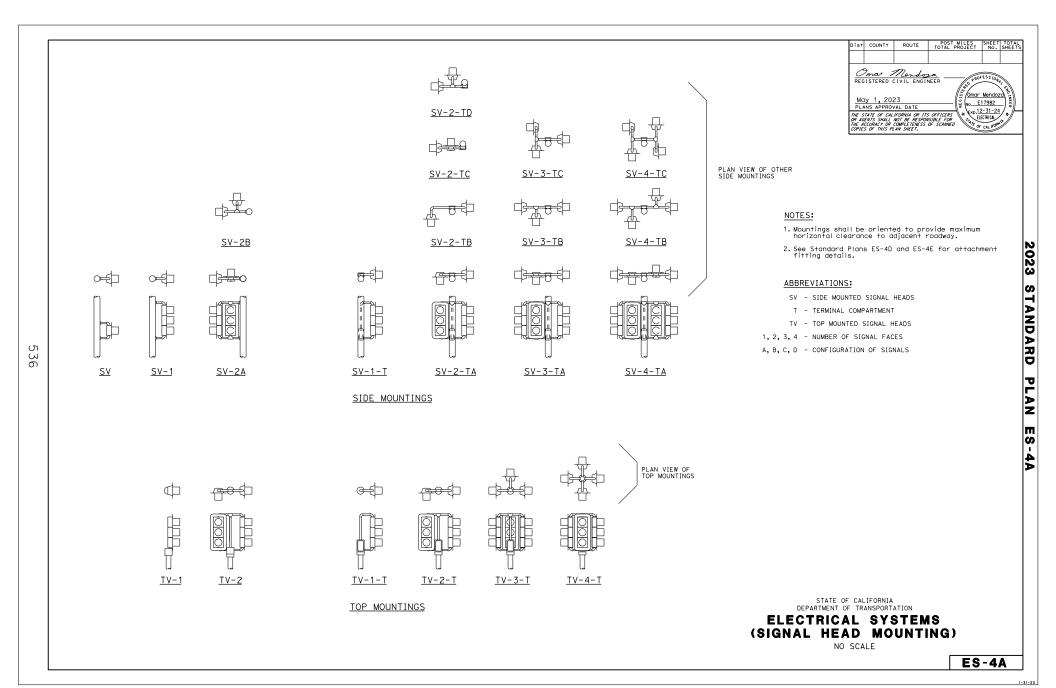




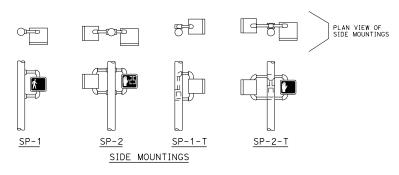


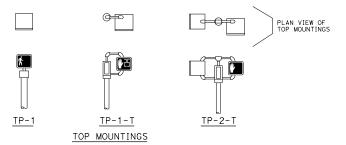






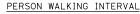






PEDESTRIAN SIGNAL HEAD MOUNTINGS DETAIL A







FLASHING UPRAISED HAND INTERVAL



STEADY UPRAISED HAND INTERVAL

LED COUNTDOWN PEDESTRIAN SIGNAL FACE MODULE DETAIL B

NOTES:

- 1. Mounting shall be oriented to provide maximum horizontal clearance to adjacent roadway.
- See Standard Plan ES-4D for attachment fittings details.

ABBREVIATIONS:

- 1, 2 NUMBER OF SIGNAL FACES
- SP SIDE MOUNTED PEDESTRIAN SIGNAL
- T TERMINAL COMPARTMENT
- TP TOP MOUNTED PEDESTRIAN SIGNAL

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

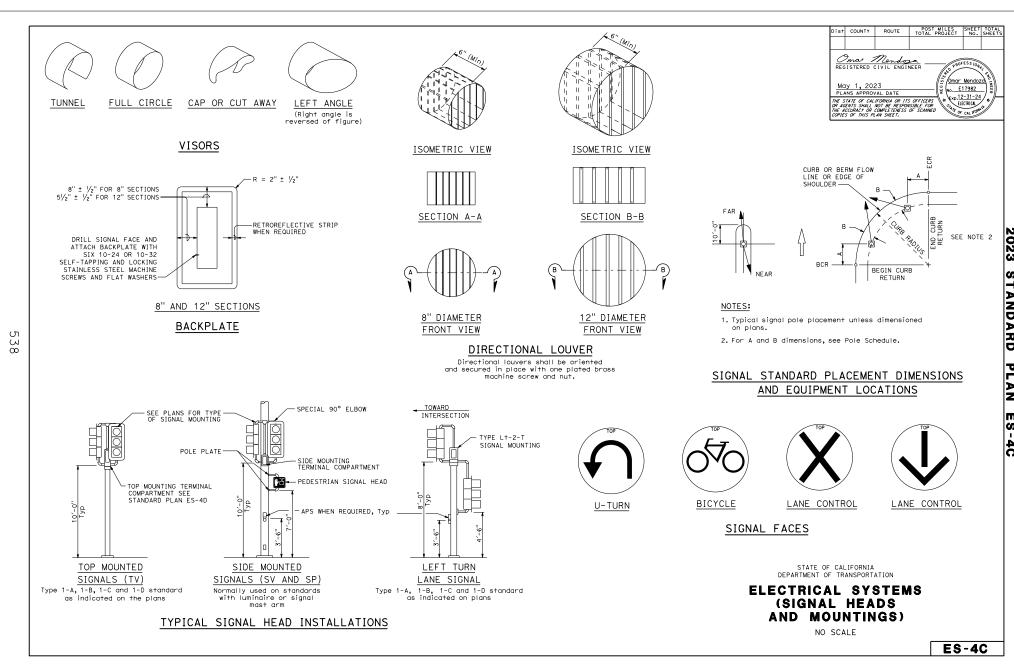
ELECTRICAL SYSTEMS (PEDESTRIAN SIGNAL HEADS)

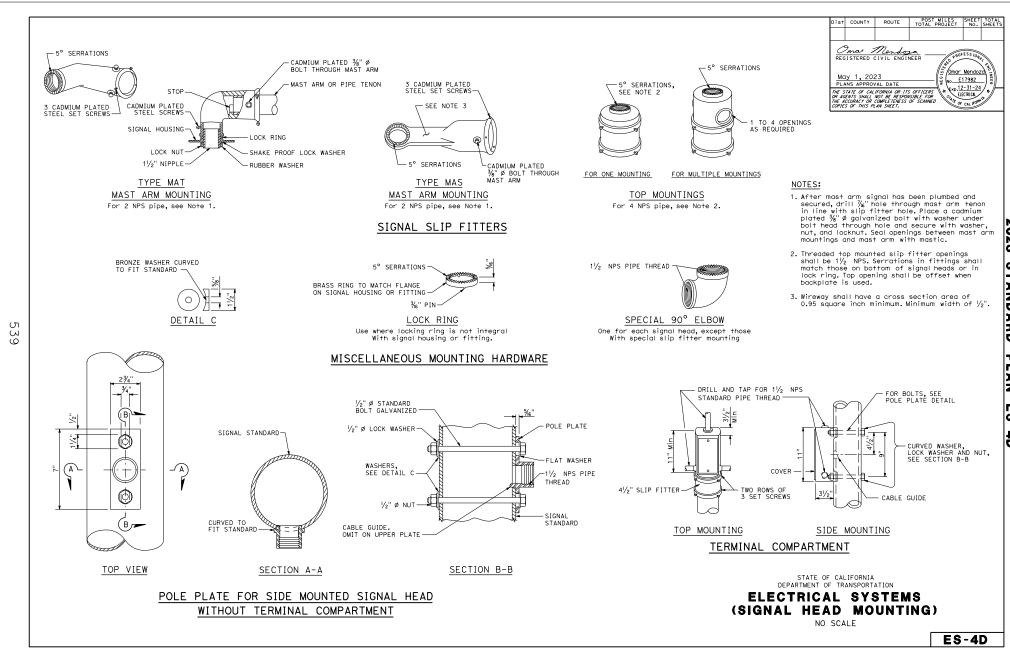
NO SCALE

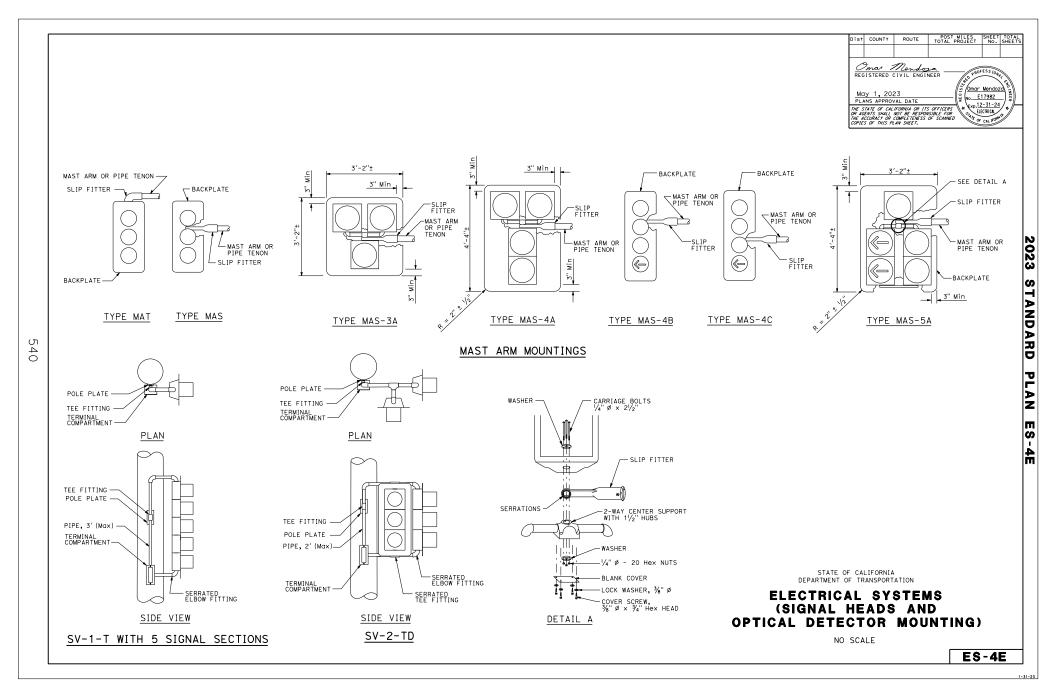
ES-4B

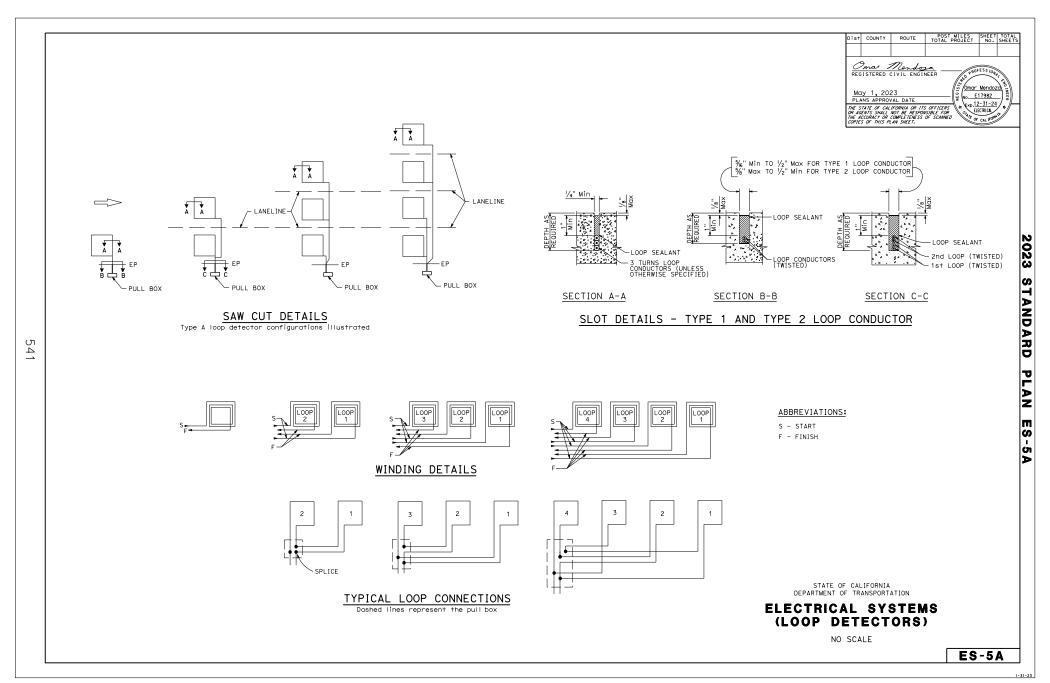
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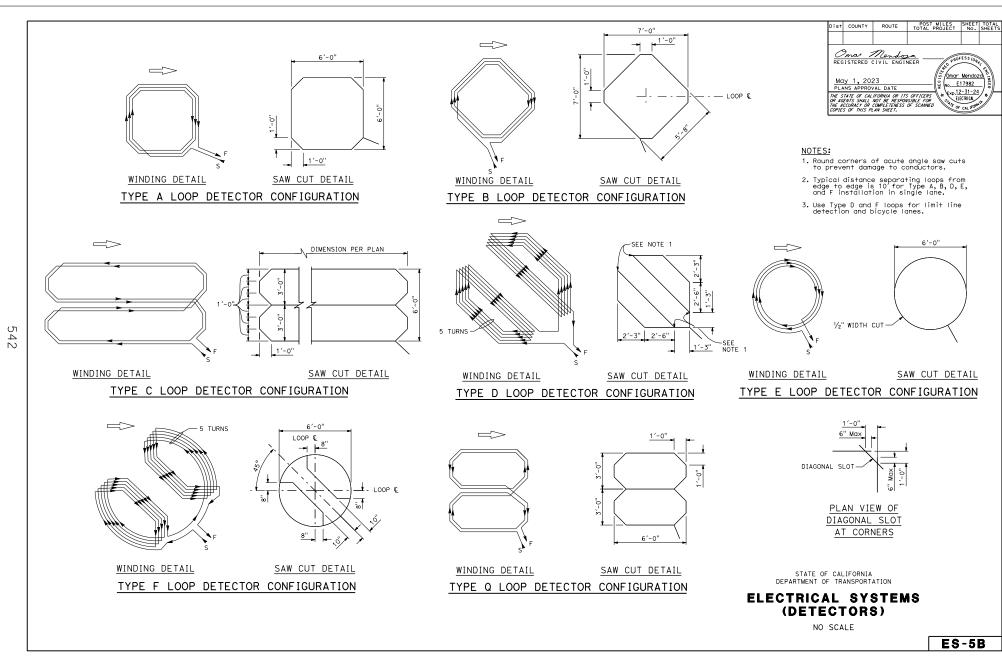




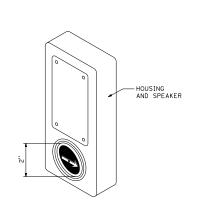






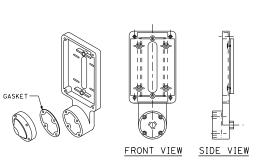








543

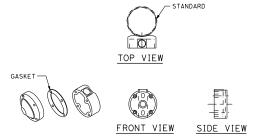


-STANDARD

TOP VIEW

TYPE B PUSH BUTTON ASSEMBLY

DETAIL B



TYPE C PUSH BUTTON ASSEMBLY

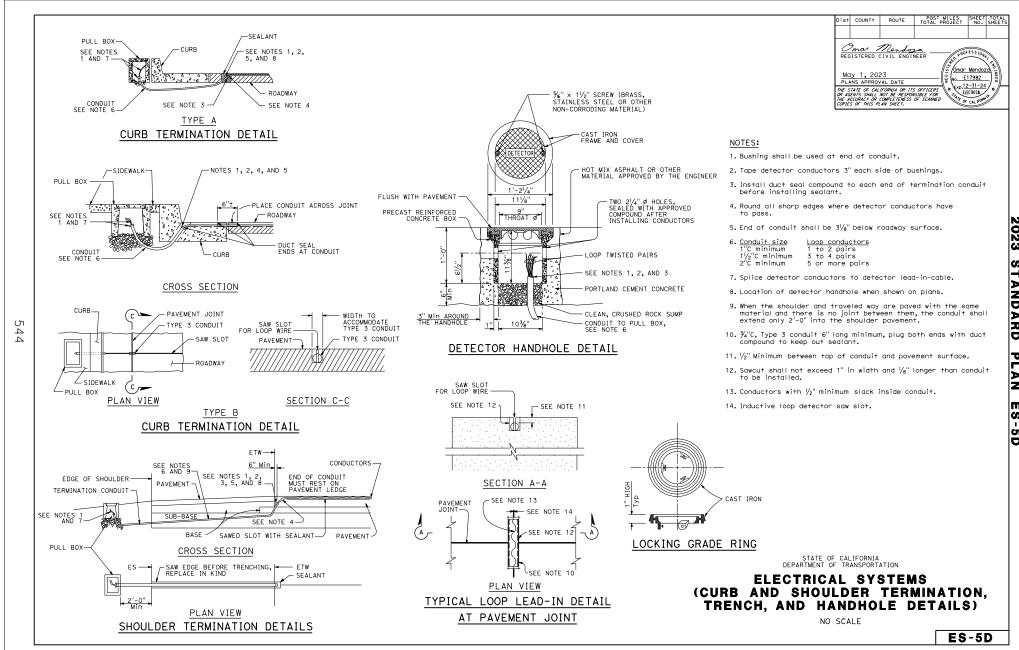
DETAIL C

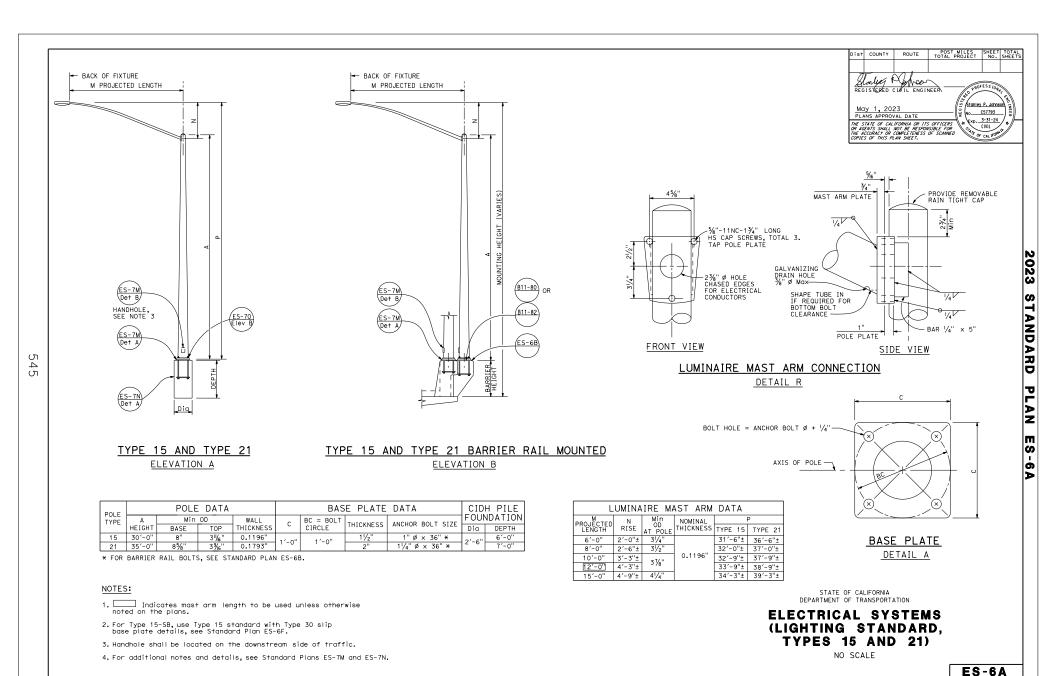
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ACCESSIBLE PEDESTRIAN SIGNAL AND PUSH BUTTON ASSEMBLIES)

NO SCALE

ES-5C





1. Anchor bolt or stud length shall be such that thread

2. Electrolier anchor bolts shall be held in position for

3. See railing sheets for reinforcement and structural

details at electroliers and pull boxes.

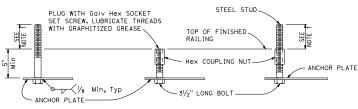
Deviation from the true position, vertical and height

pouring by means of anchor plates and suitable templates.

extends 1/2" maximum above nut on level base plate

after grouting, see Detail N.

shall not exceed $\frac{1}{16}$ ".



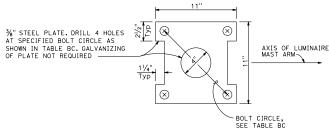
FOR IMMEDIATE
INSTALLATION
DETAIL B-1

FOR FUTURE
INSTALLATION
WITH PLUG
DETAIL B-2

FOR INSTALLATION
ON FUTURE ANCHORAGE
WITH STUD
DETAIL B-3

ELECTROLIER ANCHORAGES

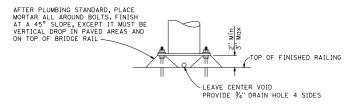
DETAIL B



546

ANCHOR PLATE DETAIL A

		TABL	E BC					
TYPE	BC = BOLT CIRCLE		COUPLING NUT BASIC LENGTH	SET SCREW LENGTH DETAIL B-2				
15	1'-0"	1"	3"	11/2"				
21	1 -0	11/4"	3¾"	1 1/8"				



NOTES:

GROUTING AT ELECTROLIER

DETAIL N

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(ELECTROLIER ANCHORAGE
AND GROUTING FOR
TYPE 15 AND TYPE 21
BARRIER RAIL MOUNTED)

NO SCALE

ES-6B

2-6-23

SHIM DETAIL

DETAIL B

547

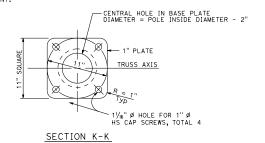
POLE DATA								
POLE EXTENSION	HEIGHT "H"	Min	THICKNESS					
TYPE	HEIGHT H	BASE	TOP	THICKNESS				
5	5′-0"	61/2"	511/6"	0.1793"				
10	10'-0"	71/4"	3 716	0.1793				

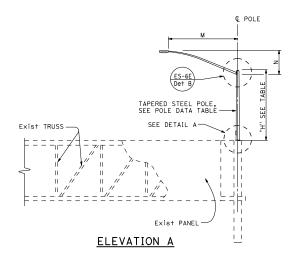


NOTES:

- The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.
- 2. Bolt hole locations may vary at the discretion of the Engineer.
- 3. For Wind Loading see Standard Plan ES-7M.
- 4. See Standard Plans S13 and S113.
- 5. Materials (Structural Steel):

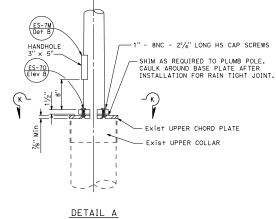
a. fy = 55,000 psi tapered steel tube (pole) b. fy = 50,000 psi unless otherwise noted



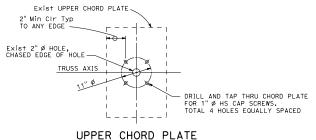


FURNISH SHIMS 0.012" THICK AND 0.036" THICK. SHIM SHALL BE FABRICATED BRASS SHIM

STOCK OR GALVANIZED STEEL.



€ Exist POST



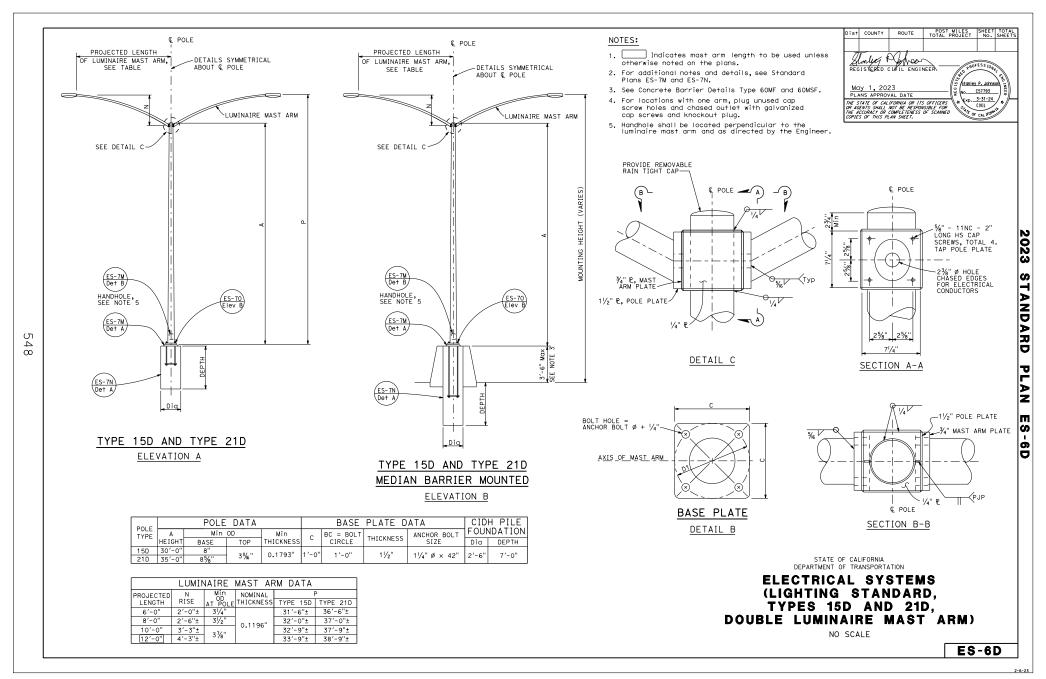
DETAIL C
See Note 4

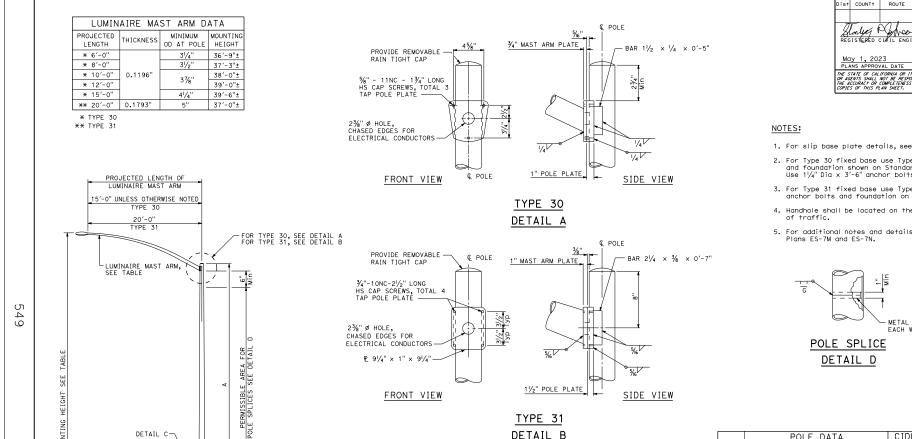
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS
(LIGHTING STANDARD,
TYPES 5 AND 10,
OVERHEAD SIGN MOUNTED)

NO SCALE

ES-6C





FRONT VIEW

DETAIL C-

Dia

ELEVATION A

SLIP BASE P.

11/2" POLE PLATE

TYPE 31

DETAIL B

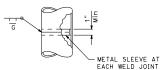
DETAIL C

HANDHOLE, SEE NOTE 4

SIDE VIEW

Dist	COUNTY	ROUTE	POST TOTAL F	MILES PROJECT	SHEET No.	TOTAL
REC	_	The ENGIN	NEER -	[[\$]	ESS IONA	121
	ny 1, 202			1 a 100.	57793	_) 🕏 📗
OR AC	ENTS SHALL	IFORNIA OR ITS NOT BE RESPON COMPLETENESS AN SHEET.	SIBLE FOR		3-31-24 CIVIL CAL IFORM) */ - */

- 1. For slip base plate details, see Standard Plan ES-6F.
- For Type 30 fixed base use Type 15 base plate and foundation shown on Standard Plan ES-6A. Use 11/4" Dia x 3'-6" anchor bolts.
- For Type 31 fixed base use Type 32 base plate, anchor bolts and foundation on Standard Plan ES-6G.
- 4. Handhole shall be located on the downstream side
- 5. For additional notes and details, see Standard Plans ES-7M and ES-7N.



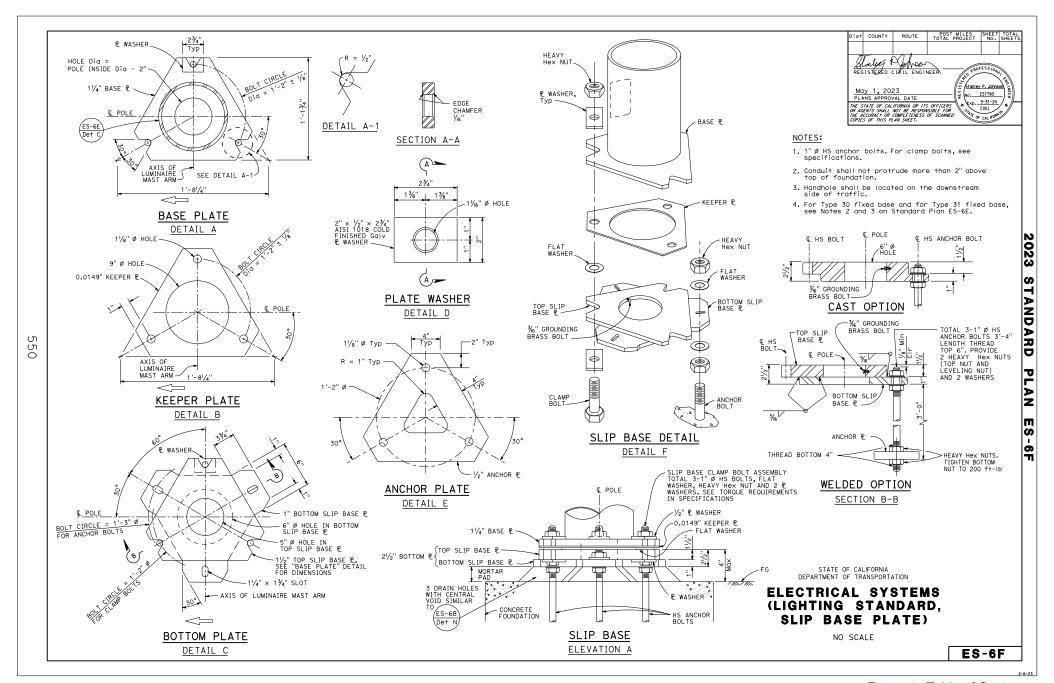
POLE TYPE		POLE	CID			
	Α	Min OD		Min	FOUNDATION	
	HEIGHT	BASE	TOP	THICKNESS	Dia	DEPTH
30	35′-0"	8¾"	311/6"	0.1196"	2'-6"	7'-0"
31		10¾"	51//6"	0.1793"	3'-0"	8'-0"

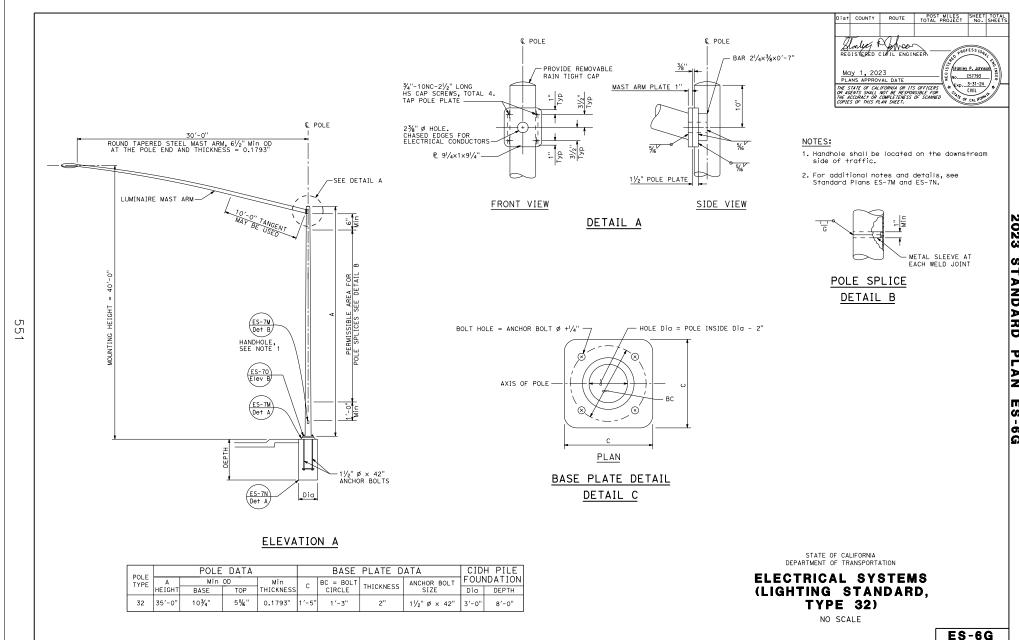
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

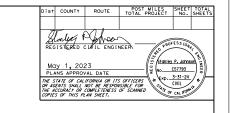
ELECTRICAL SYSTEMS (LIGHTING STANDARD, **TYPES 30 AND 31)**

NO SCALE

ES-6E

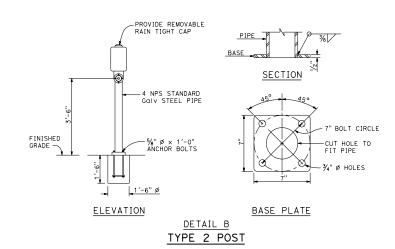


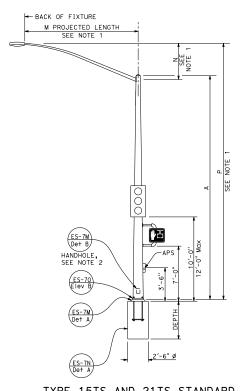




NOTES:

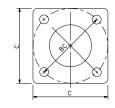
- 1. For additional notes, details and data for Type 15TS and Type 21TS Standards, see Standard Plan ES-6A.
- 2. Handhole shall be located on the downstream side of traffic.





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TYPE 15TS AND 21TS STANDARD ELEVATION A See Note 1



BASE PLATE TYPE 15TS AND 21TS DETAIL A

DOL E	POLE DATA				BASE PLATE DATA				
Α	Min OD		WALL	С	BC = BOLT	THICKNESS	ANCHOR BOLT	DEPTH	
	HEIGHT	BASE	TOP	THICKNESS	Ü	CIRCLE	THICKNESS	SIZE	DEI III
15TS	30'-0"	8"	311/6"		1′-1½"	1'-0"	2"	41/11 - 4 - 4011	7′-6"
21TS	35'-0"	9¾"	3%"	0.1793"	1'-3"	1'-2"		2" 1½" ø x 42"	8'-6"

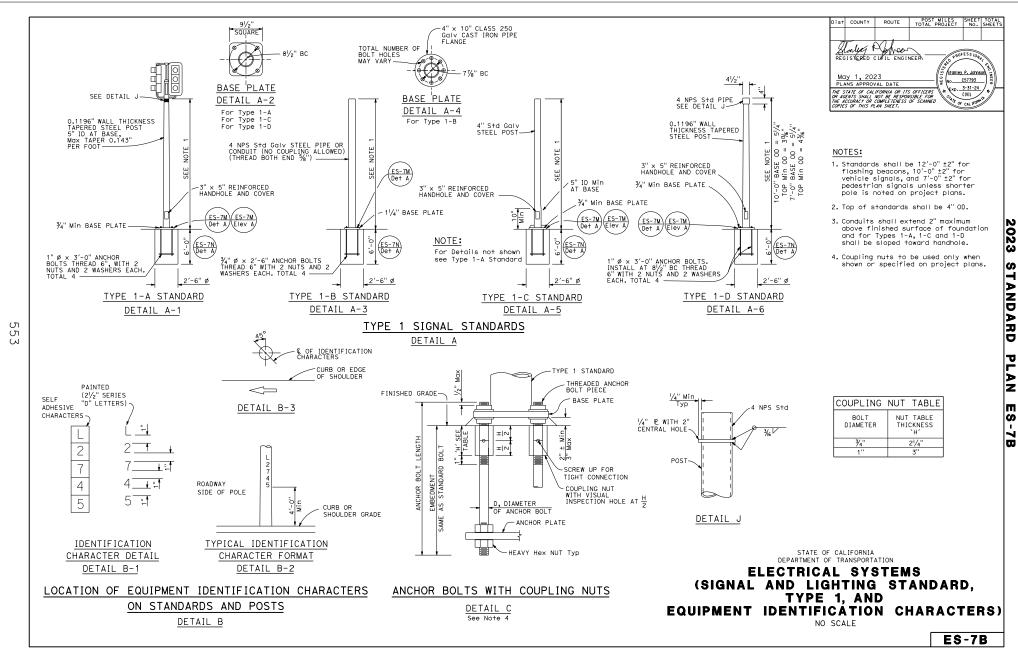
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

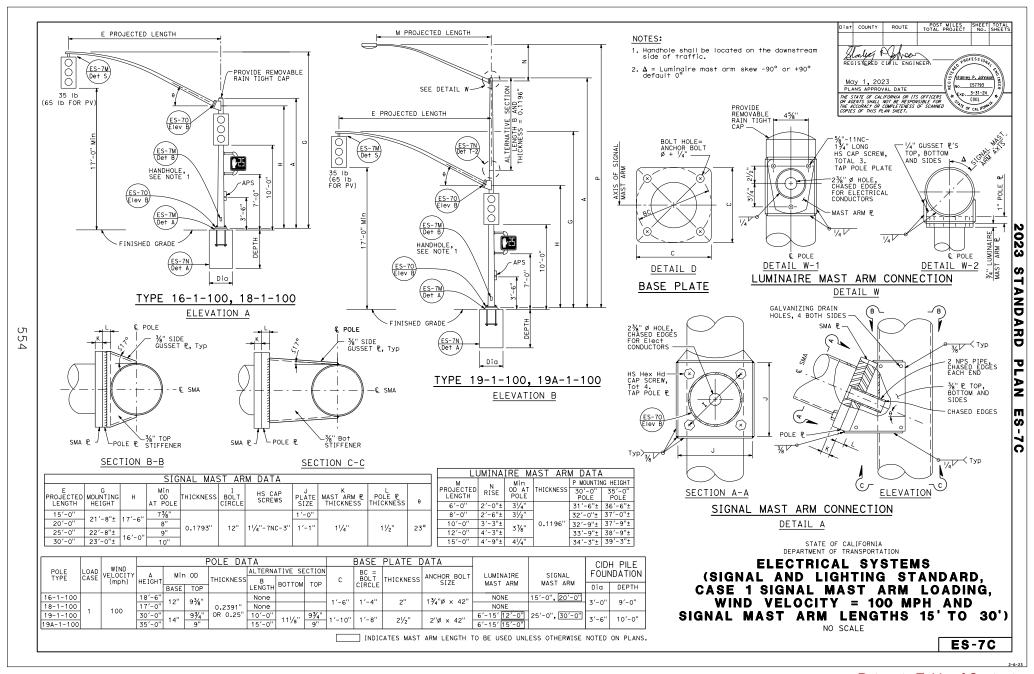
ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, TYPE TS, AND TYPE 2 POST)

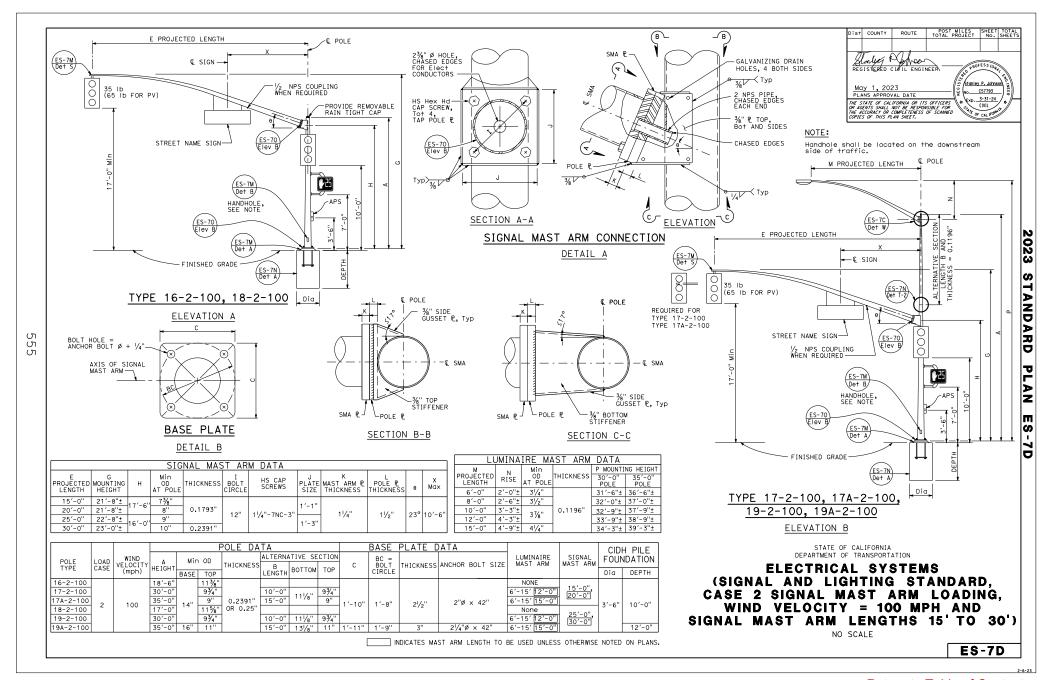
NO SCALE

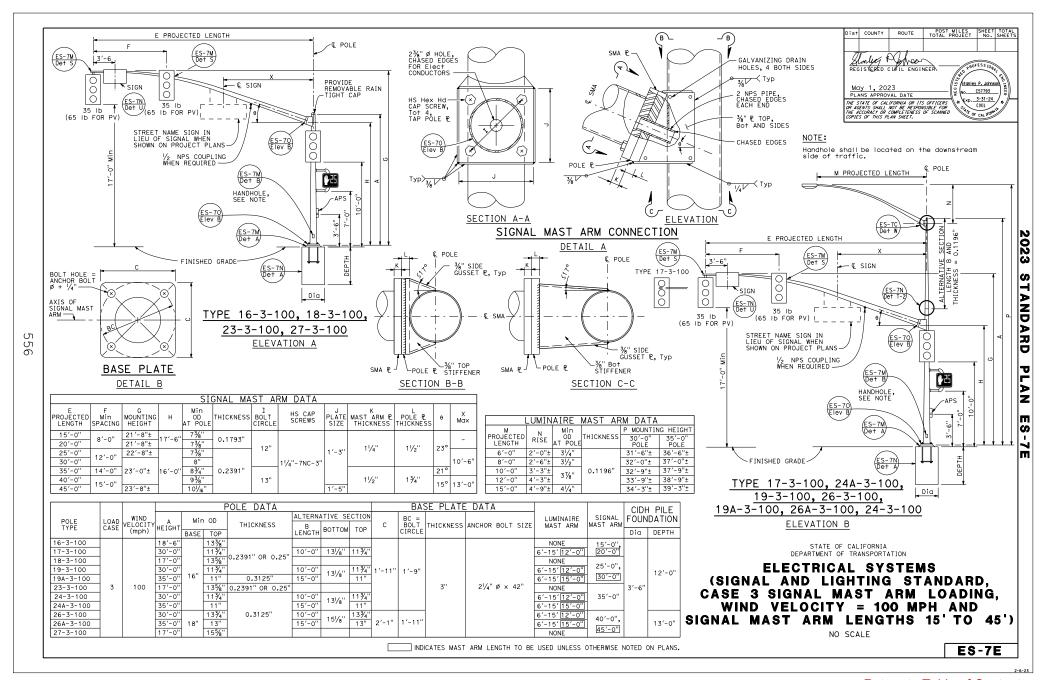
ES-7A

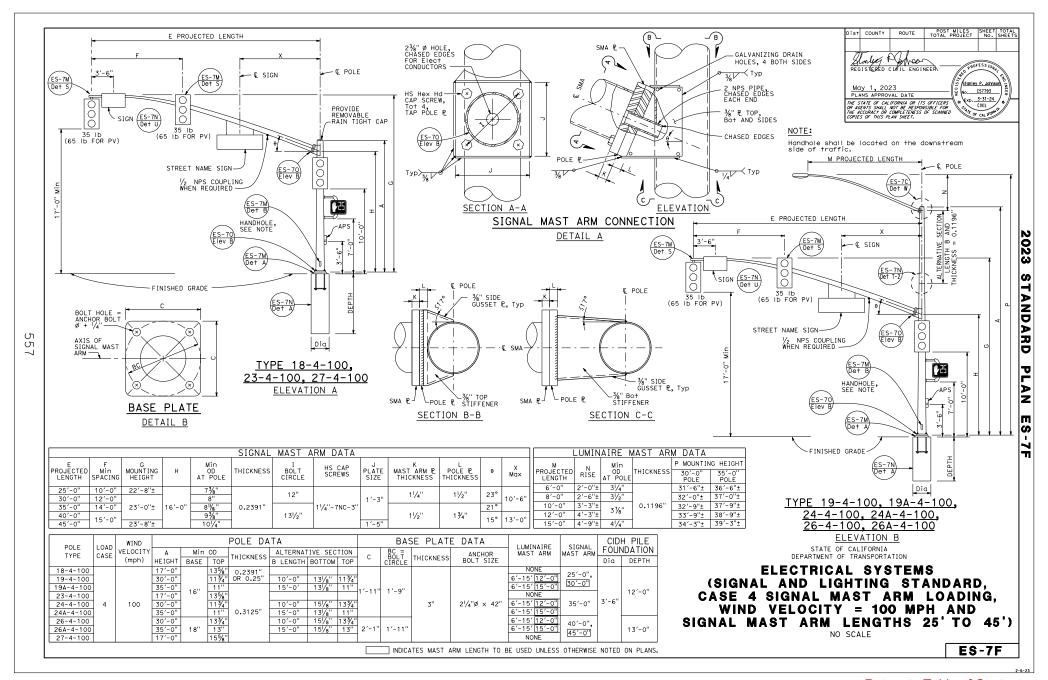


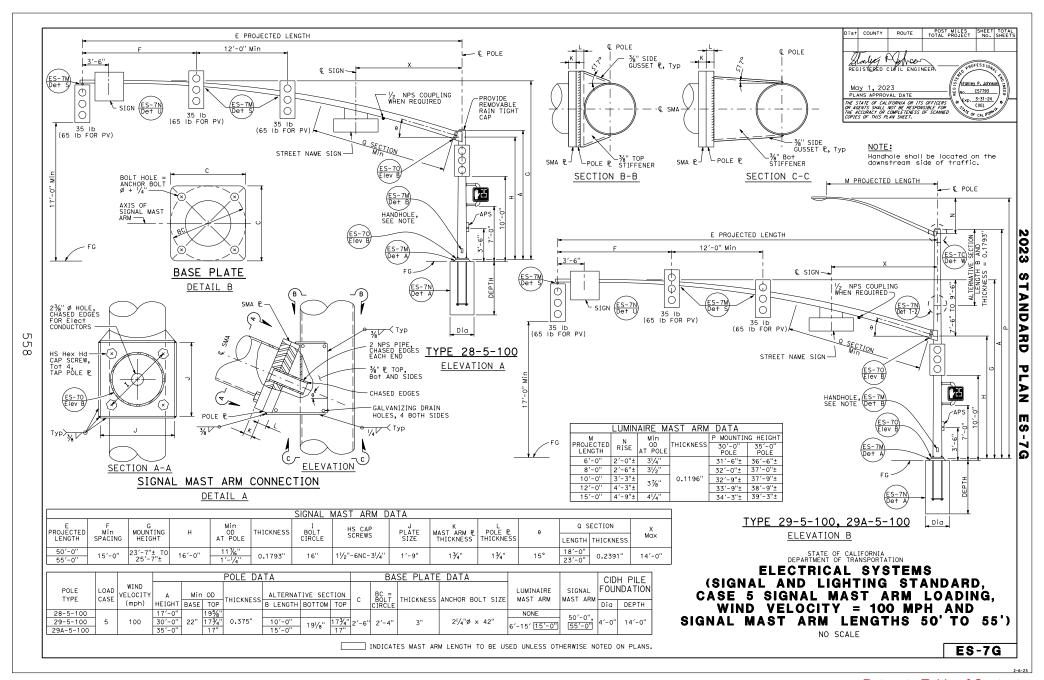


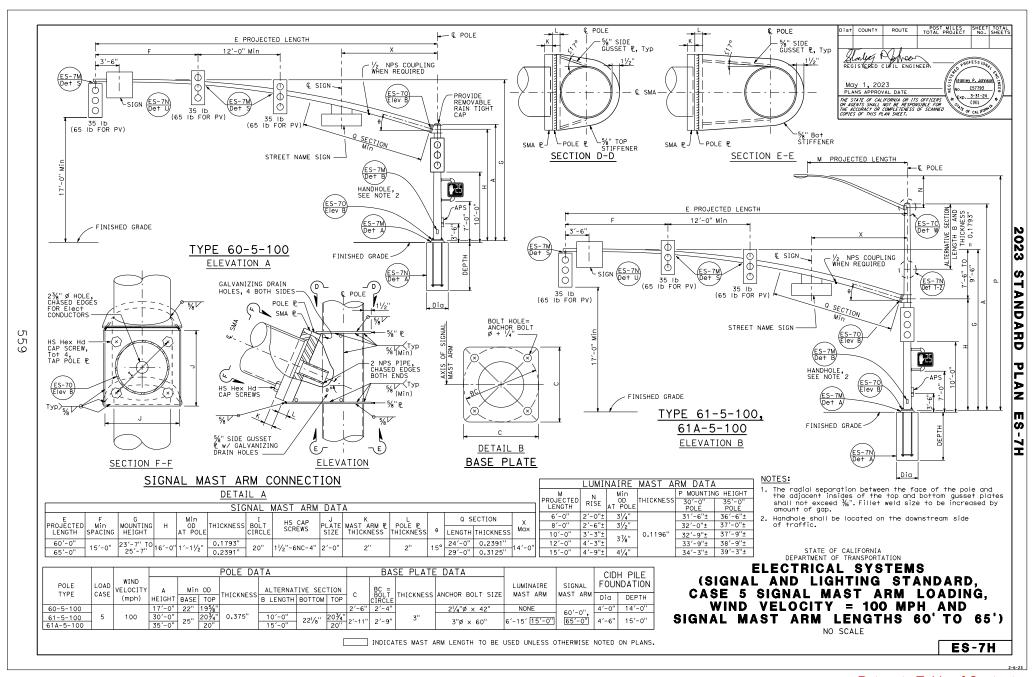


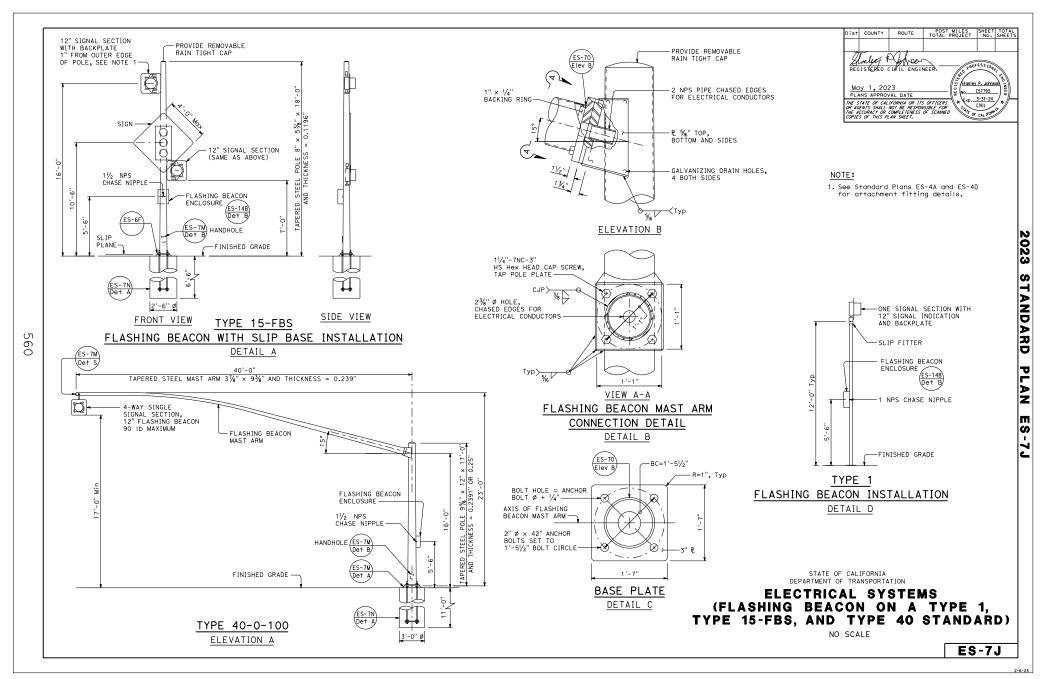


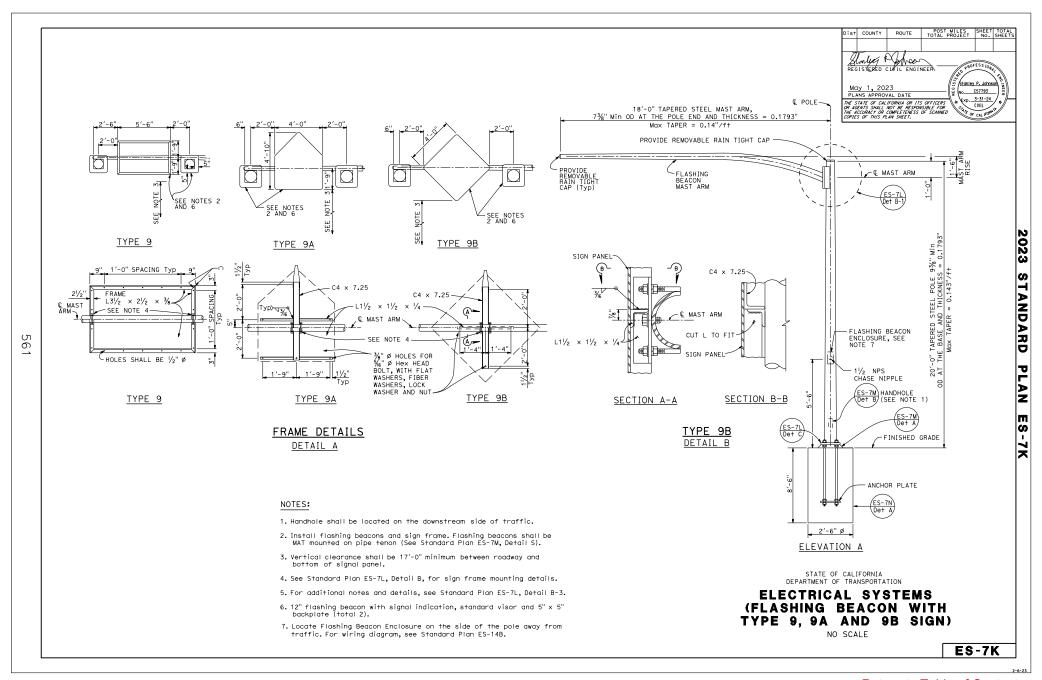


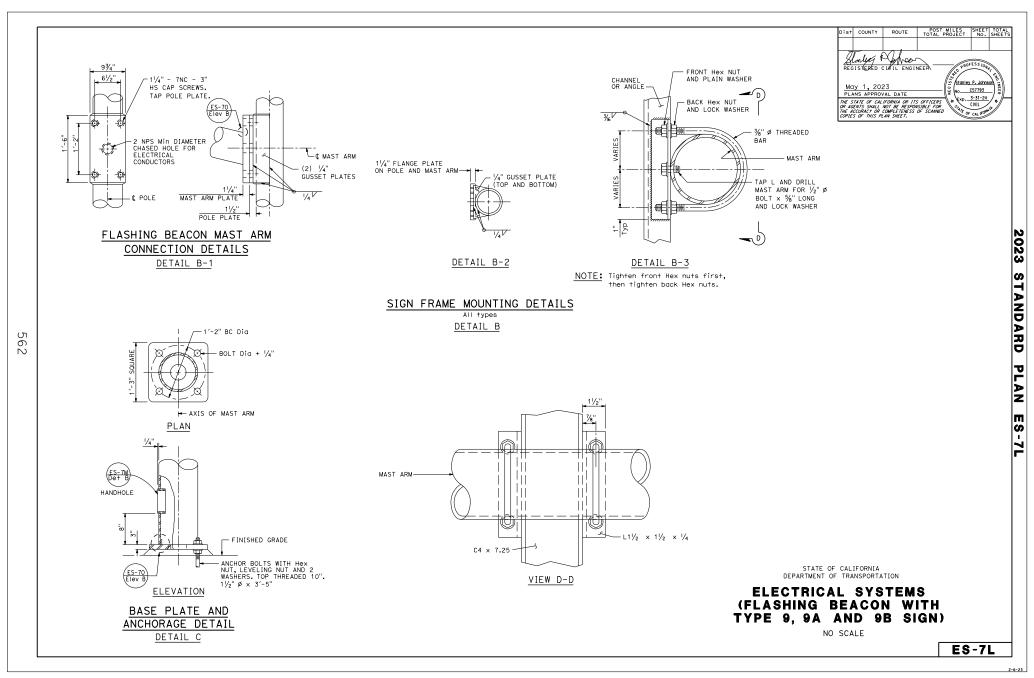


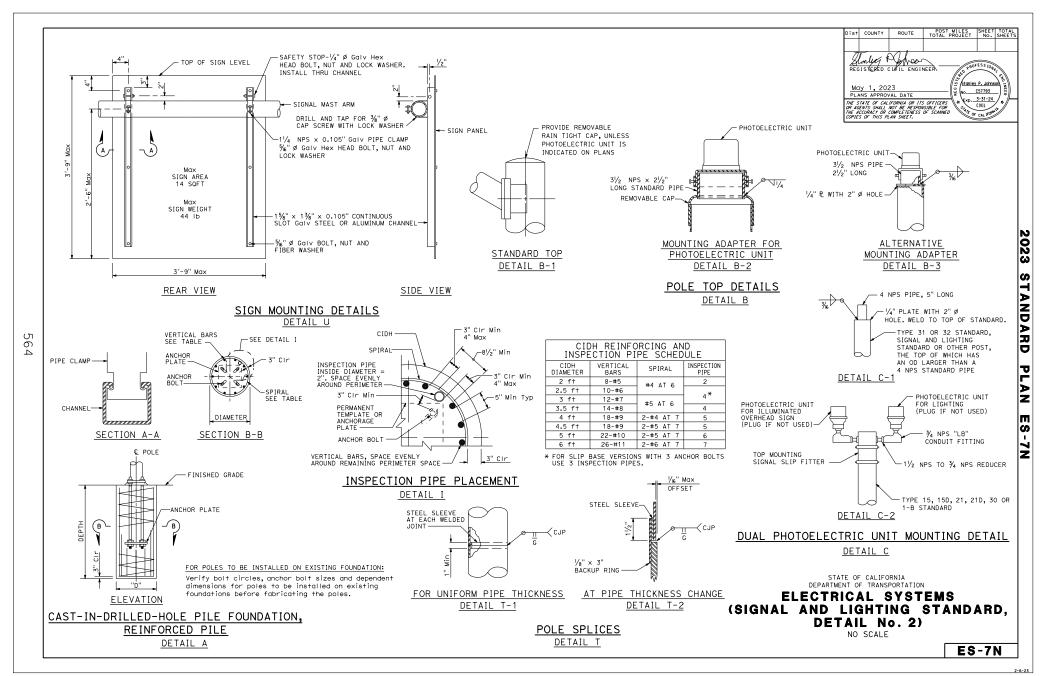


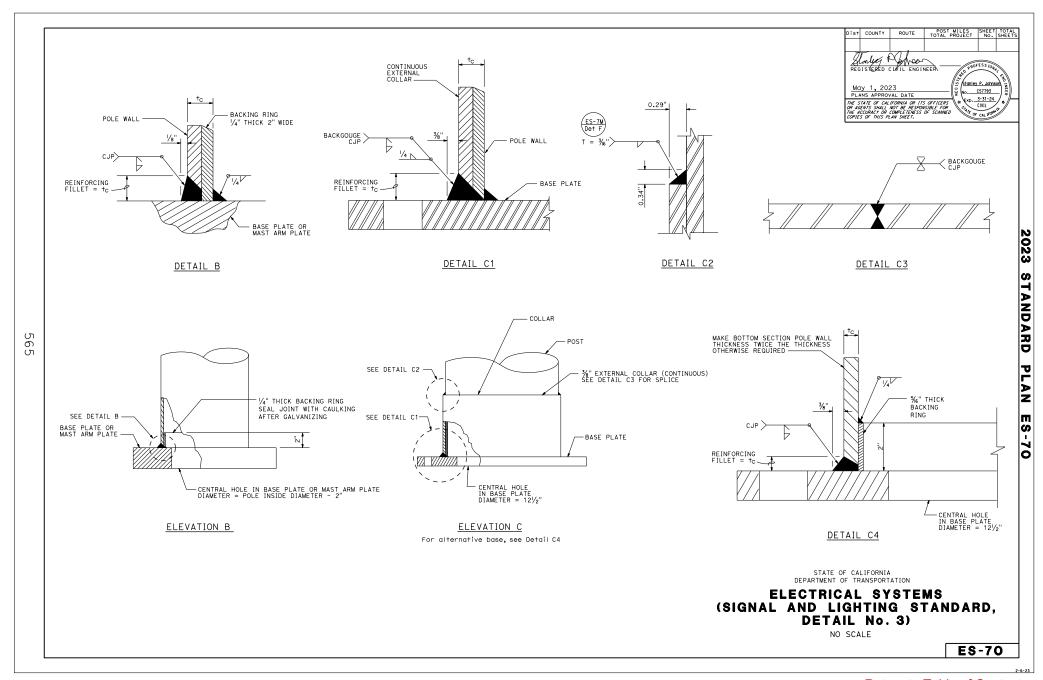


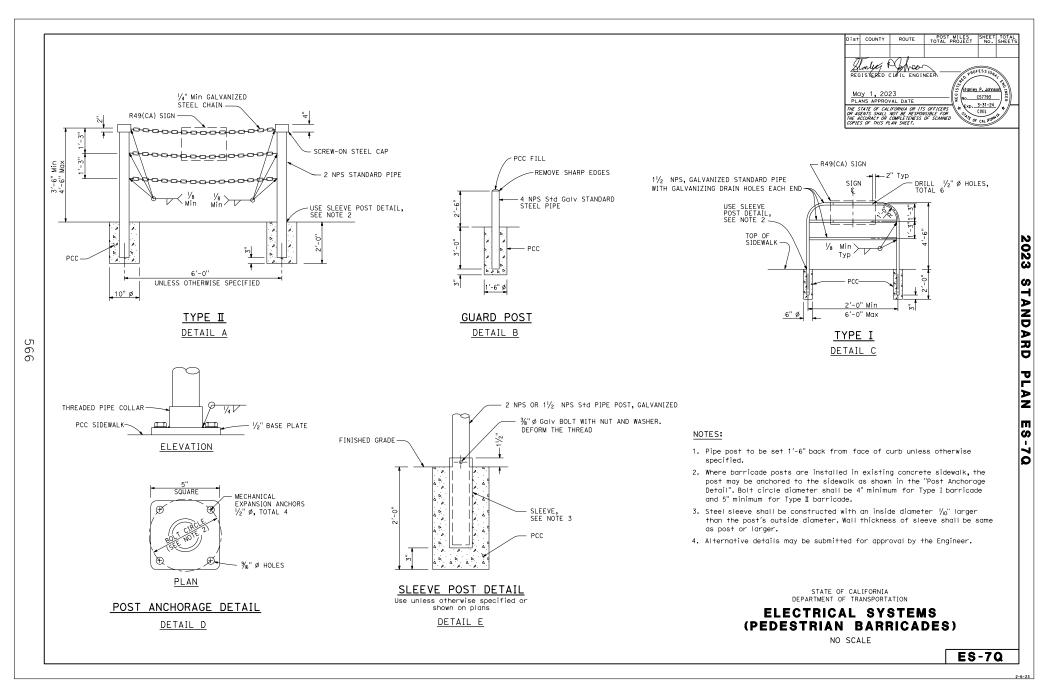


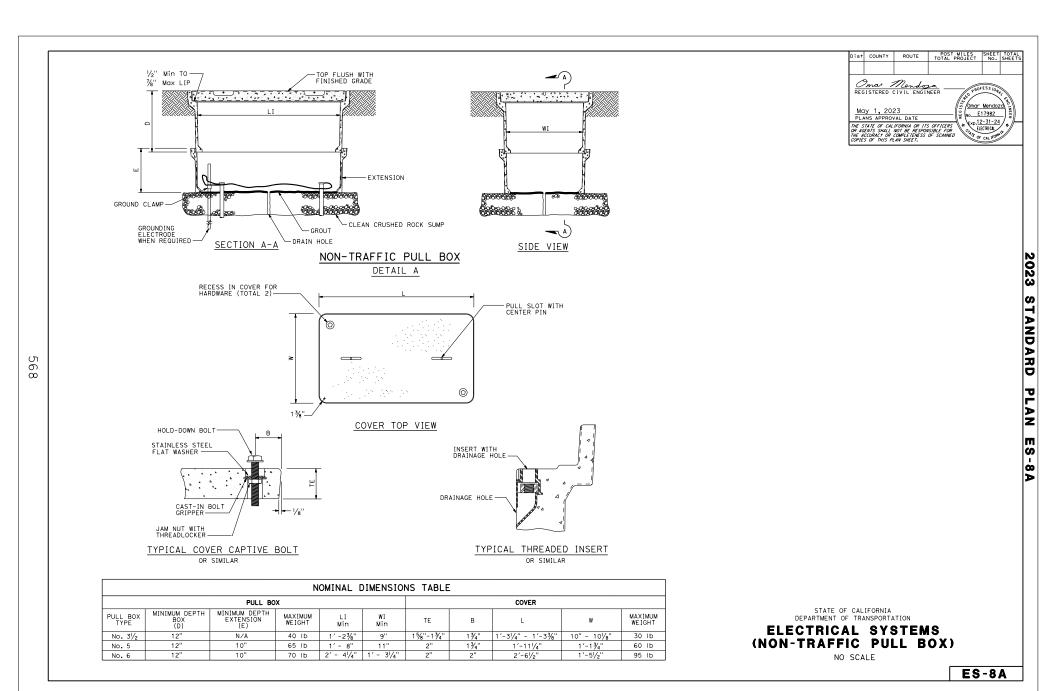


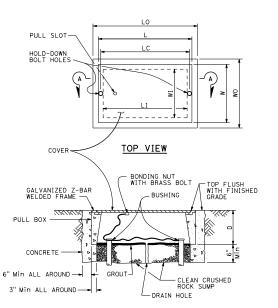












SECTION A-A

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TRAFFIC PULL BOX

DETAIL A

NOMINAL DIMENSIONS TABLE									
PULL BOX COVER									
PULL BOX TYPE	MINIMUM THICKNESS	MINIMUM DEPTH D	LO	LI	wo	WI	L	w	LC
No. $3\frac{1}{2}(T)$	11/2"	1'-0"	1'-10" - 1'-11"	1'-5" - 1'-61/2"	1'-3" - 1'-4"	10" - 1'-0"	1'-8" - 1'-81/2"	1'-1" - 1'-2"	-
No. 5(T)	13/4"	1'-0"	2'-5" - 2'-6"	2'-0" - 2'-1"	1'-6" - 1'-7"	1'-1" - 1'-2"	2'-3" - 2'-31/2"	1'-4" - 1'-41/2"	251/4"
No. 6(T)	2"	1'-0"	2'-11" - 3'-1"	2'-6" - 2'-7"	1'-10" - 2'-0"	1'-5" - 1'-6"	2'-9" - 2'-91/2"	1'-8" - 1'-81/2"	311/4"

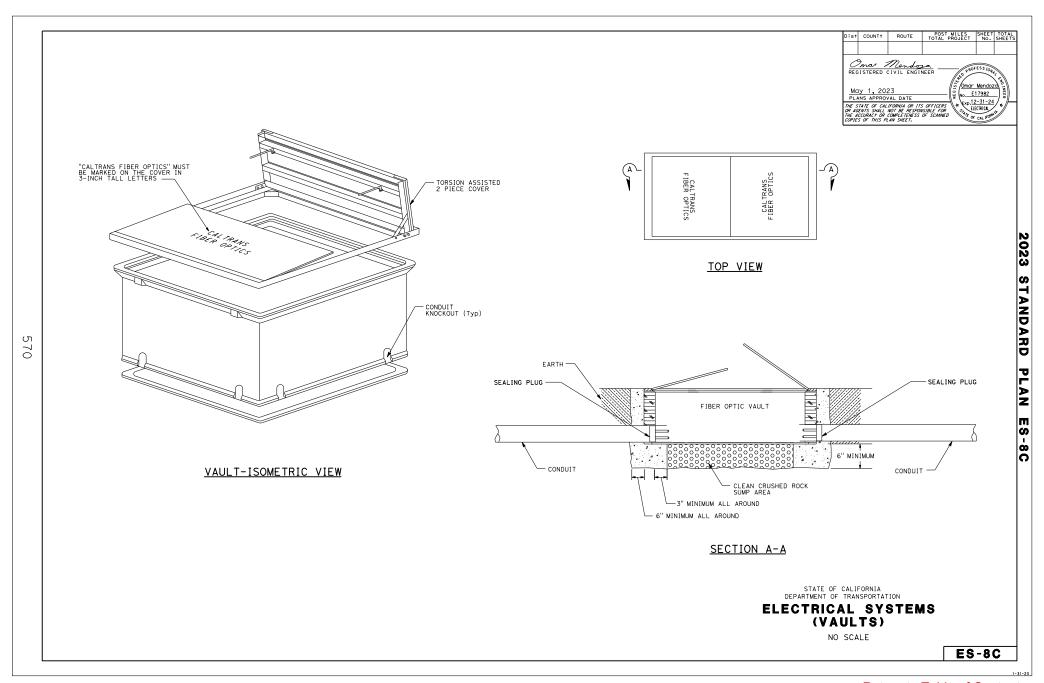
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

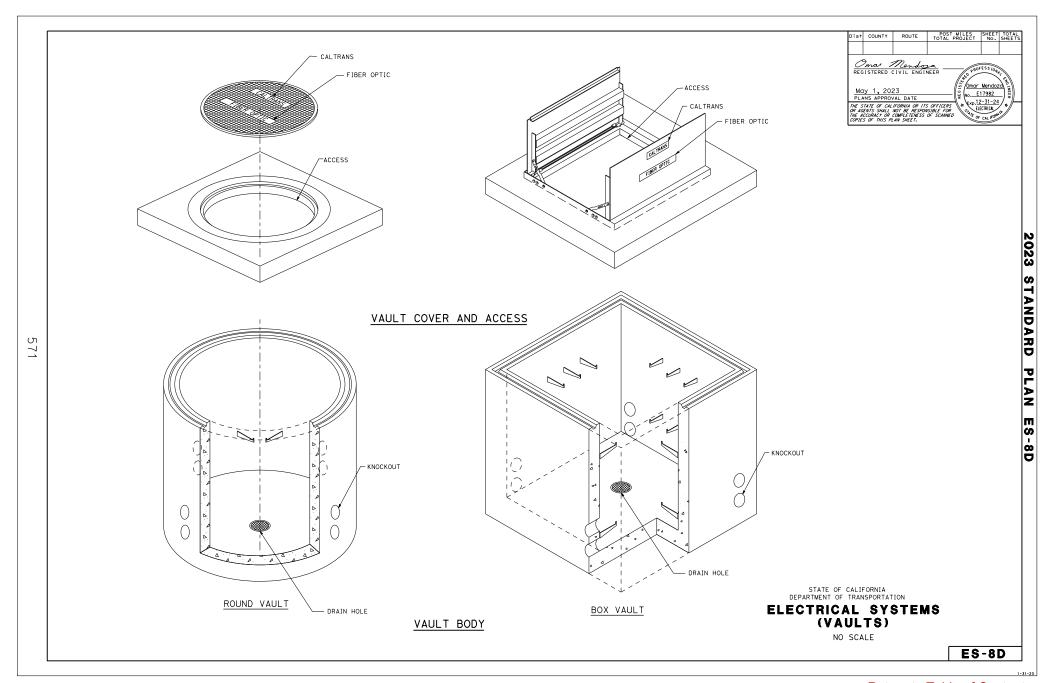
ELECTRICAL SYSTEMS (TRAFFIC PULL BOX)

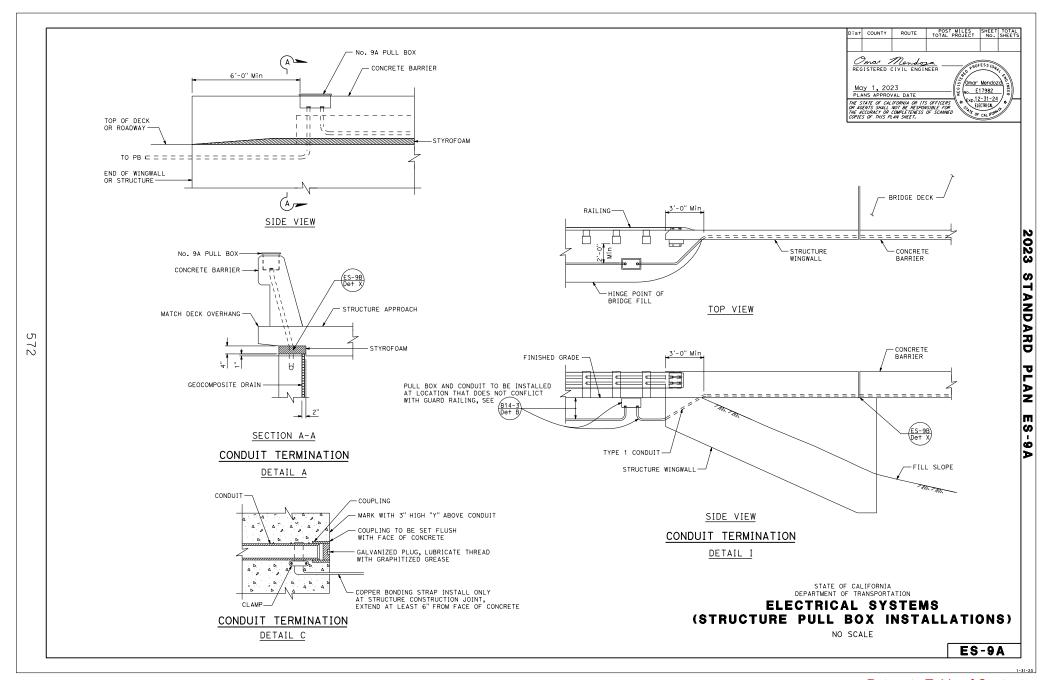
NO SCALE

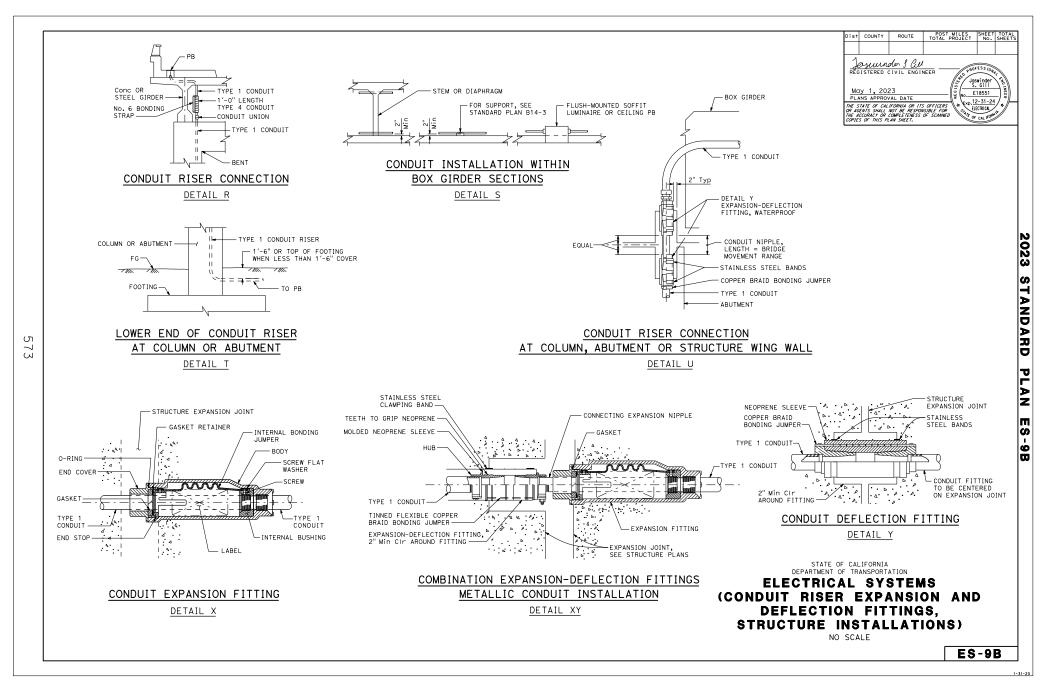
ES-8B

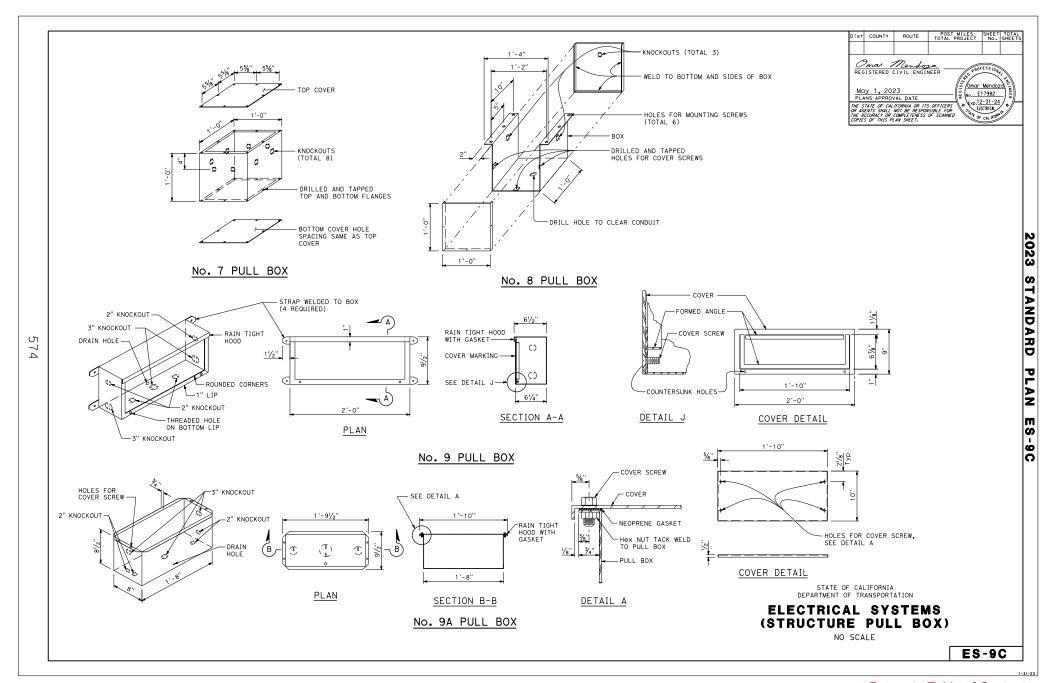
2023 STANDARD PLAN ES-8B

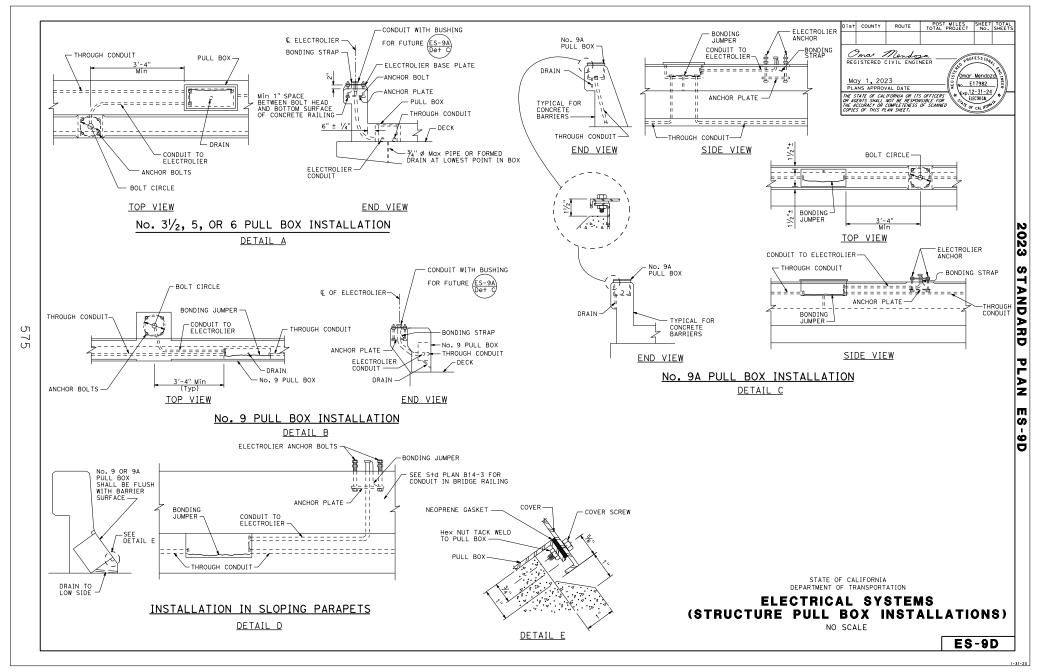












POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

Omar Mendozo

o. E17982

EXP.12-31-24

Omas Mendosa REGISTERED CIVIL ENGINEER

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Mdy 1, 2023 PLANS APPROVAL DATE

CENTER BETWEEN GIRDERS

DECK SLAB

DECK SLAB

CONDUIT

CONDUIT STRAPS

No. 8 PULL BOX

FLEXIBLE FIXTURE HANGER
WITH FLANGE AND INSULATED BUSHING, WELD OR BOLT TO BOX

SUSPENSION CONDUIT 34"C Min LENGTH
AS REQUIRED

EVEN WITH BOTTOM GIRDER

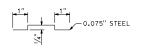
PENDANT SOFFIT LUMINAIRE INSTALLATION DETAIL P

FLUSH-MOUNTED SOFFIT LUMINAIRE INSTALLATION

DETAIL F

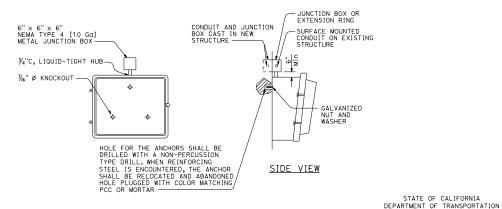
DRILL AND TAP
FOR No. 10 \$\text{ MACHINE SCREW} \\
\frac{1}{\sqrt{20}} \\
\frac{1}{\sqrt{20

576



SIDE VIEW

TERMINAL BLOCK MOUNTING BRACKET DETAIL T



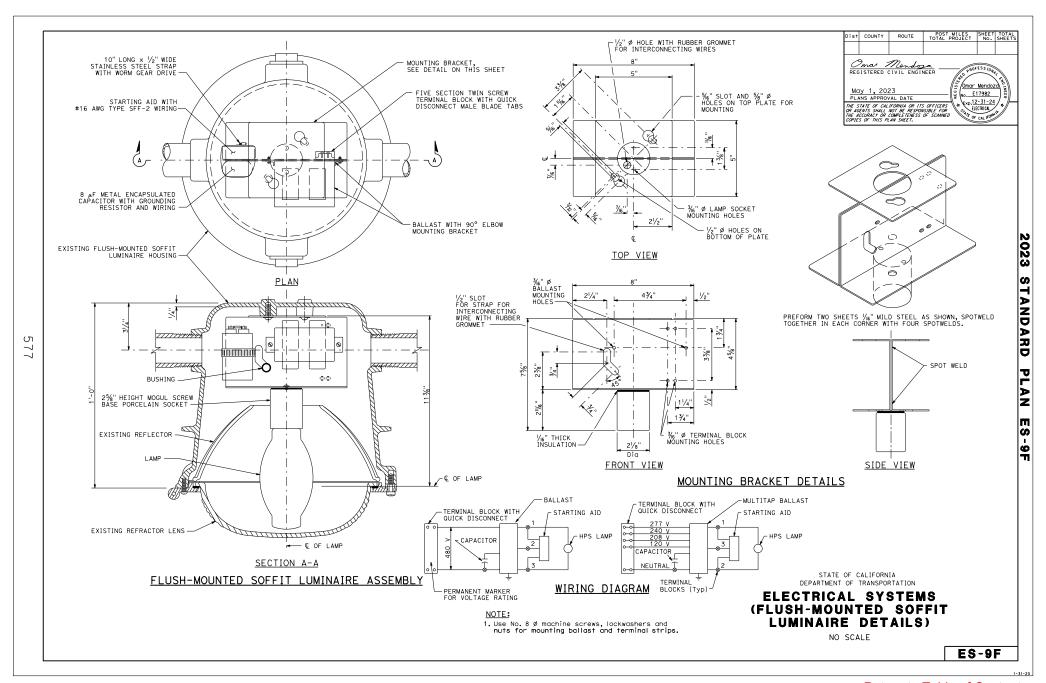
WALL-MOUNTED LUMINAIRE INSTALLATION
DETAIL W

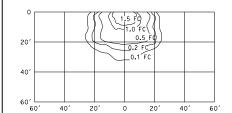
ELECTRICAL SYSTEMS
(FLUSH-MOUNTED SOFFIT,
PENDANT SOFFIT
AND WALL-MOUNTED LUMINAIRE
STRUCTURE INSTALLATIONS)

NO SCALE

ES-9E

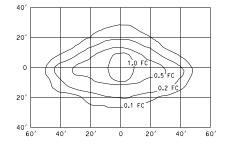
Return to Table of Contents





WALL-MOUNTED

15' Mounting Height ANSI Designation S62 Lamp operated at 5,800 lm 70 W (Max)

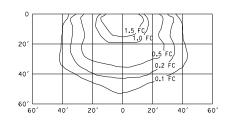


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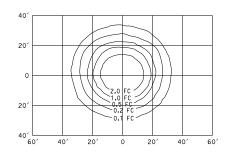
PENDANT SOFFIT TYPE III SHORT

17' Mounting Height
ANSI Designation S62
Lamp operated at 5,800 lm
70 W (Max)



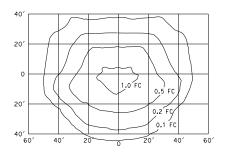
WALL-MOUNTED

15' Mounting Height ANSI Designation S54 Lamp operated at 9,500 lm 100 W (Max)



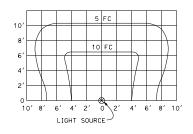
PENDANT SOFFIT

17' Mounting Height ANSI Designation S62 Lamp operated at 5,800 lm 70 W (Max)



FLUSH-MOUNTED SOFFIT

17' Mounting Height ANSI Designation S62 Lamp operated at 5,800 lm 70 W (Max)



OVERHEAD SIGN LUMINAIRE

60 W (Max)

REGISTERED CIVIL ENGINEER

MOY 1, 2023
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OF ITS OFFICERS
OF AGAINS AND LOSS OF SCHOOL OF COMMENT OF

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT NO. SHEETS

NOTE:

Curves represent the minimum maintained illuminance (FC).

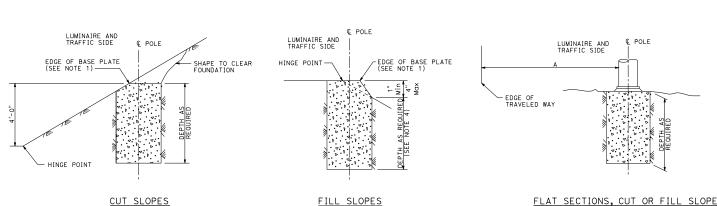
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ISOFOOTCANDLE CURVES)

NO SCALE

ES-10B





Dis+	COUNTY	ROUTE	POS TOTAL	T MILES PROJECT	SHEET No.	TOTAL SHEETS
\mathcal{Q}	onlyes &	Show	_			
OROFESS ION						
May 1, 2023						
PLANS APPROVAL DATE						
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED CORPLES OF THIS PLAN SUFFT						
	CCURACY OR	COMPLETENESS AN SHEET.	OF SCANNE	O PATE OF	CAL IFORM	<i>*/</i>
_						

STANDARD TYPE	SETBACK (DIMENSION A)
32	30'-0" (Min)
31	20'-0" (Min)
15, 15D, 15-SB, 21, 21D, 30	ARM LENGTH (Min)

FLAT SECTIONS, CUT OR FILL SLOPES 4:1 OR FLATTER

DETAIL A-3

See Note 2

FOUNDATIONS ADJACENT TO ALL ROADWAYS EXCEPT IN SIDEWALK, MEDIAN AND ISLAND AREAS

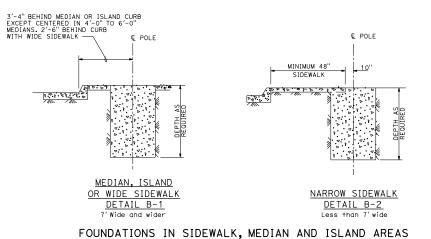
STEEPER THAN 4:1,

LESS THAN 2:1

DETAIL A-2

See Note 2 and 3

DETAIL A



DETAIL B

STEEPER THAN 4:1,

LESS THAN 2:1

DETAIL A-1

See Note 2 and 3

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NOTES:

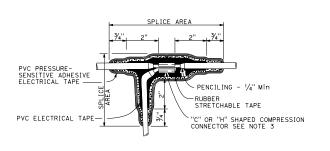
- 1. Where a portion of the foundation is above grade, the top edges shall have a 1" chamfer.
- 2. Slopes shall be horizontal to vertical ratio (Horizontal: Vertical).
- 3. Horizontal setbacks on cut and fill slopes steeper than 4:1 shall not exceed the distance shown for flat sections.
- CIDH embedment depth shall be increased beyond standard depths by the diameter of the CIDH.

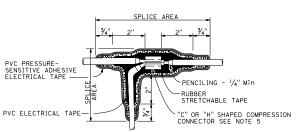
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FOUNDATION INSTALLATIONS)

NO SCALE

ES-11

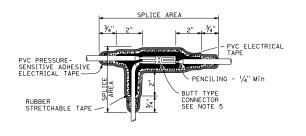




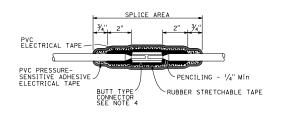


NOTES:

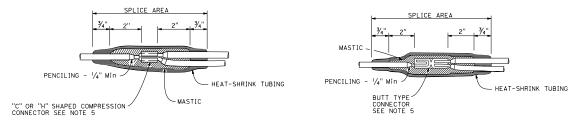
- 1. Dimensions are minimum.
- 2. Rubber tapes shall be rolled after application.
- 3. Between 1 free-end and 1 through conductor.
- 4. Between 2 free-end conductors.
- 5. Between 3 free-end conductors.

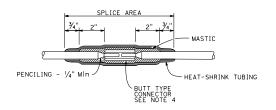


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TYPICAL SPLICE INSULATION METHOD B





TYPICAL SPLICE INSULATION HEAT-SHRINK TUBING

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

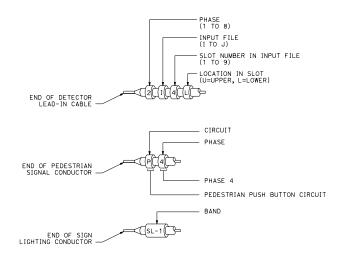
ELECTRICAL SYSTEMS (SPLICE INSULATION METHODS DETAILS)

NO SCALE

ES-13A

 $\tilde{\infty}$

KINKING DETAIL FOR SLIP BASE STANDARDS DETAIL A



TYPICAL BANDING DETAILS

DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

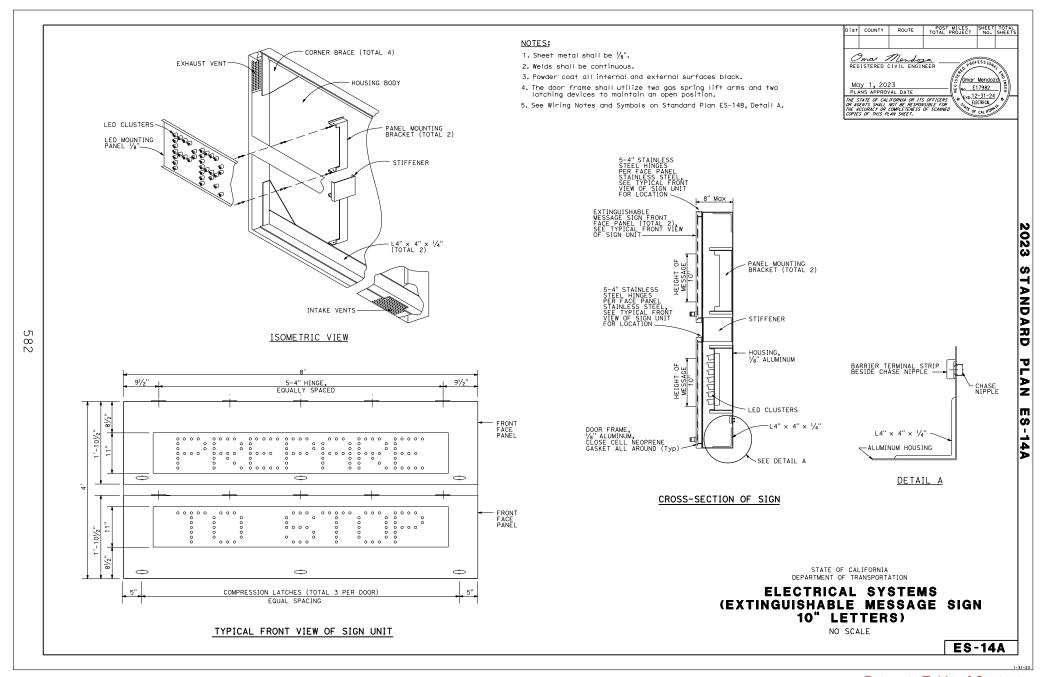
ELECTRICAL SYSTEMS (KINKING AND BANDING DETAIL)

NO SCALE

ES-13B

1-31-23

2023 STANDARD PLAN ES-13B





THE FLASHER SHALL MATE WITH A CINCH-JONES SOCKET S-406-SB OR EQUAL AND CONNECTED AS FOLLOWS:

____SIGN_UNIT____ ORANGE > SIGN_ON

YELLOW DIM

BLACK

WHITE

120 V

SOLID STATE FLASHER UNIT - TERMINAL BLOCK MOUNTED WITHIN SIGN HOUSING

BEACON 1

BEACON 2

YELLOW

-15 A, 2P CIRCUIT BREAKER

DIM

YELLOW BLACK WHITE

WIRING DIAGRAM

EXTINGUISHABLE MESSAGE SIGN

DETAIL A

SIGN TEST

DIMMING AND SIGN CONTROL UNITS WITH ENCLOSURE MOUNTED ON SIGN POST

CONTROL -

BROWN

WHITE

FROM CONTROLLER CABINET

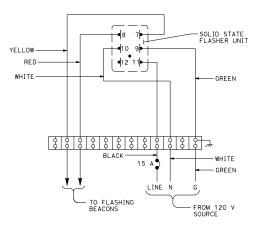
58

BL ACK

ON EGGAL AND CONNECTED AS FOLLOWS:							
PIN	CIRCUIT	PIN	CIRCUIT				
7	LOAD	10	NEUTRAL				
8	LOAD	11	LINE				
9	CHASSIS GROUND	12	NOT USED				

8 | 7 | 7 | 10 | 9 | 12 | 11

CONNECTOR SOCKET SOLID STATE FLASHER UNIT



WIRING DIAGRAM
FLASHING BEACON ENCLOSURE
DETAIL B

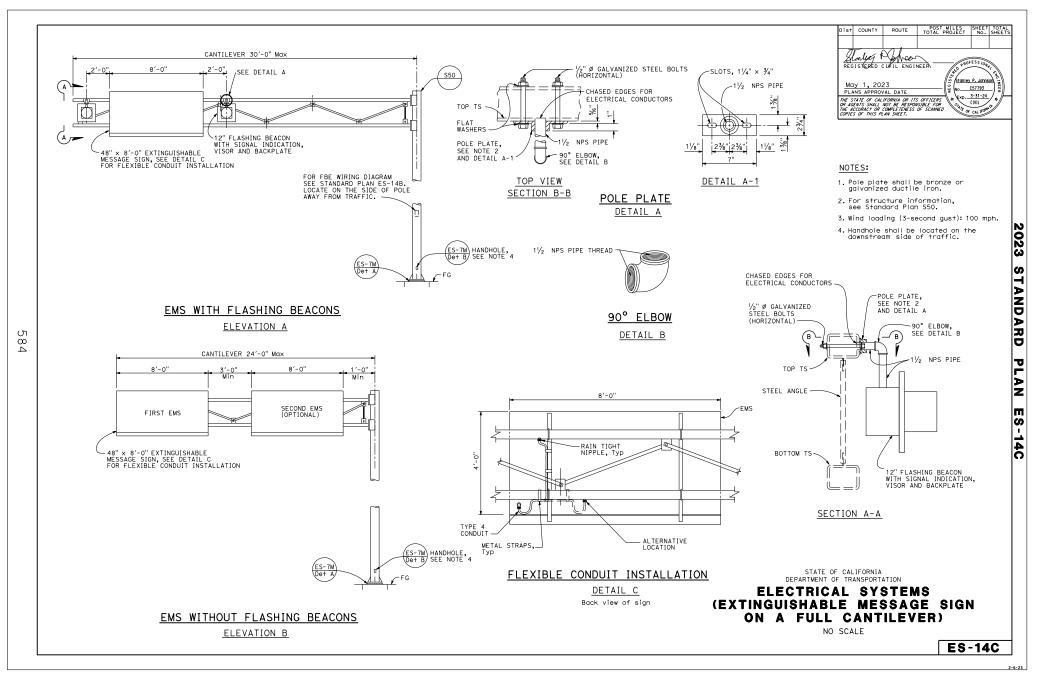
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

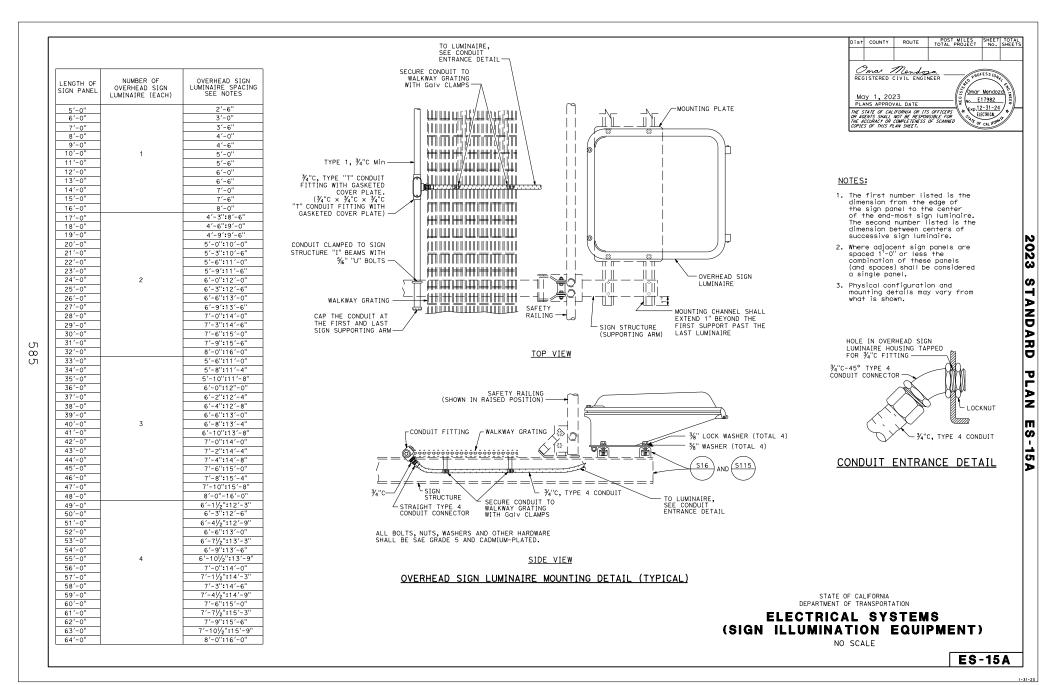
ELECTRICAL SYSTEMS (EMS AND FBE WIRING DIAGRAMS)

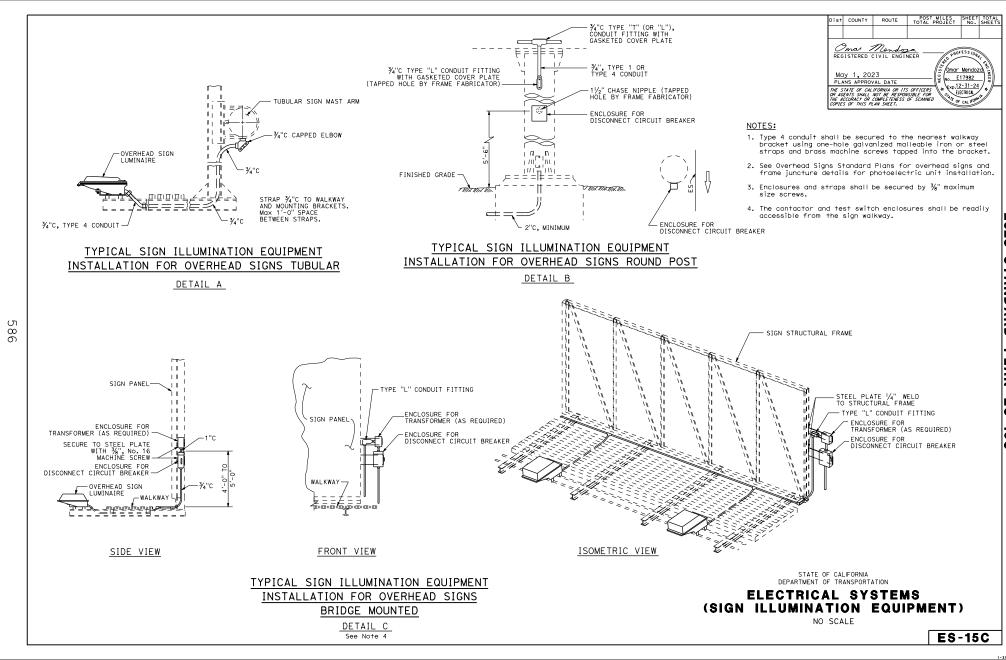
NO SCALE

ES-14B

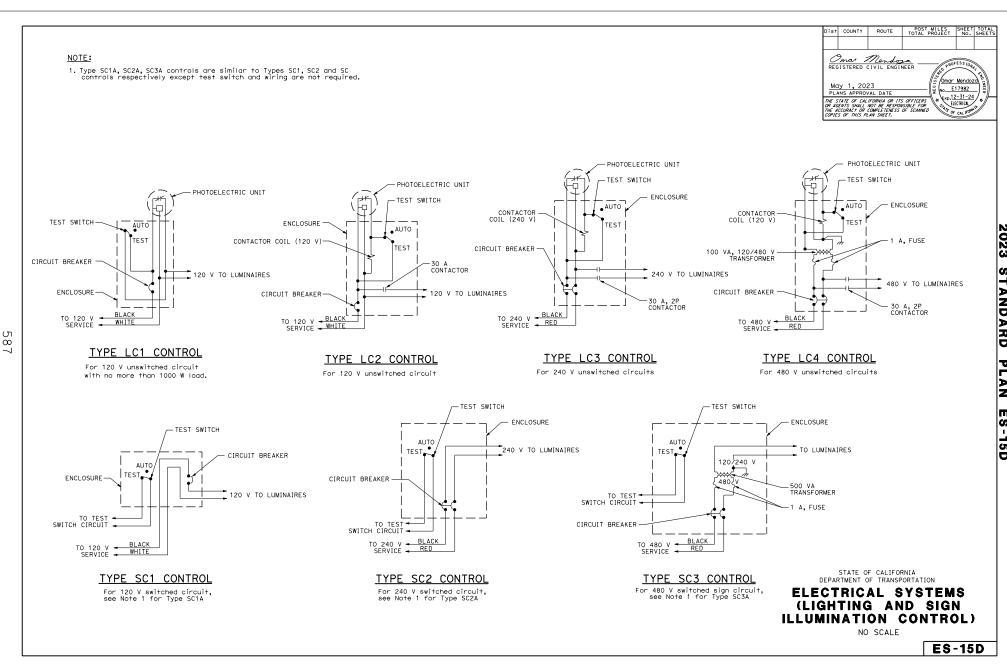
| 63-146

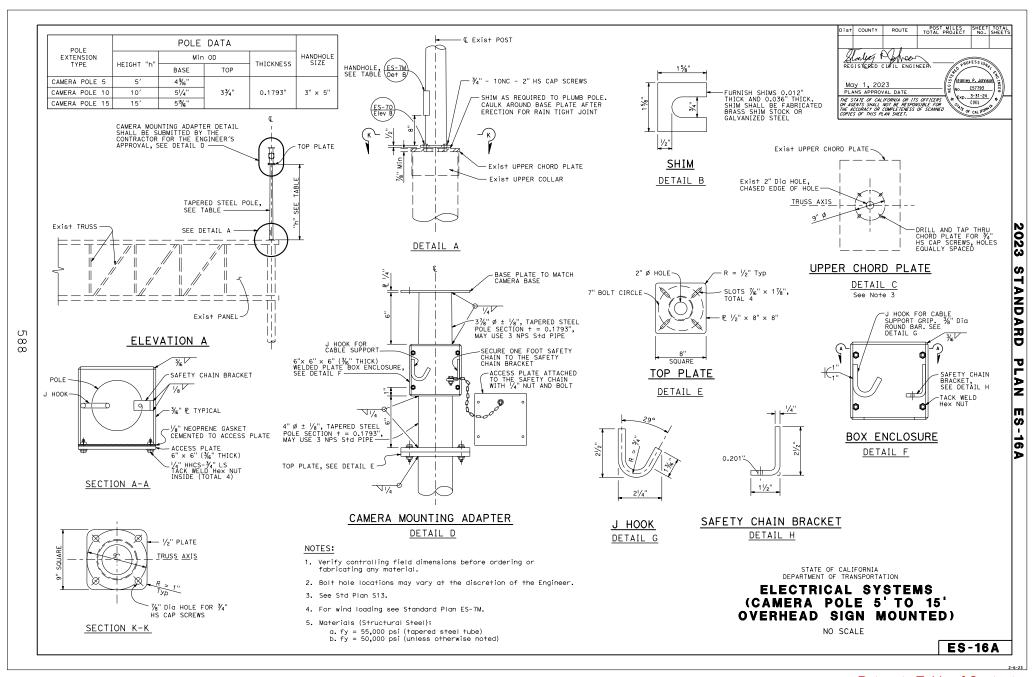


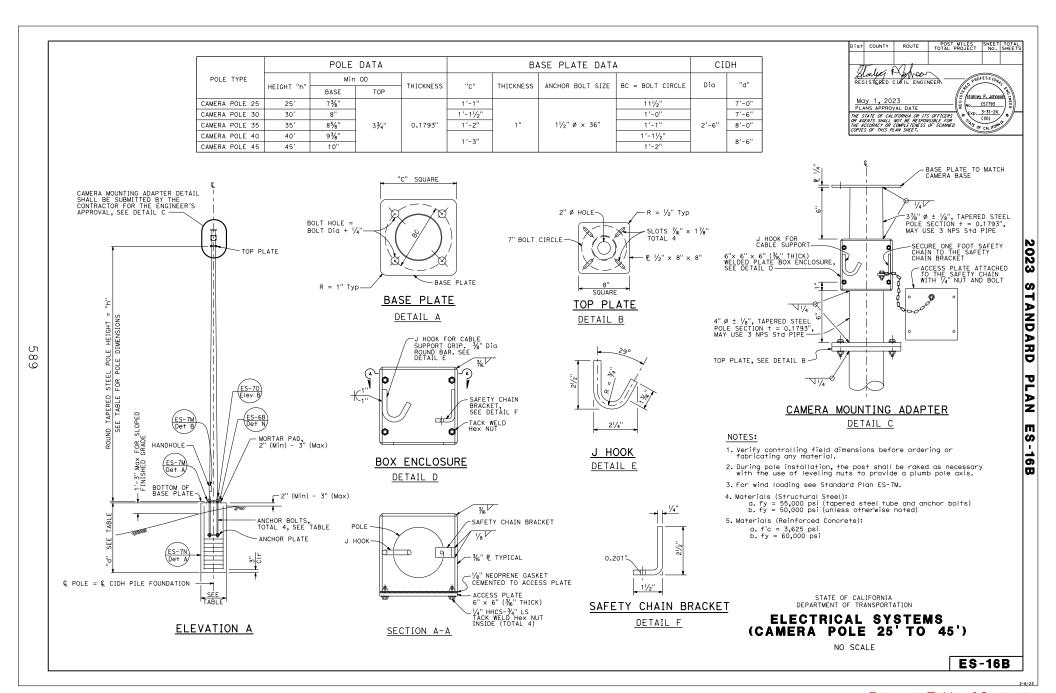












	POLE DATA				BASE PLATE DATA				CIDH PILE DATA			
POLE TYPE	HEIGHT	Min	OD	THICKNESS	Min	Dia	THICKNESS	ANCHOR	BOLT SIZE	BC = BOLT CIRCLE	"D"	"L"
	"h"	BASE	TOP	BOTTOM SEGMENT (Min 25' LONG)	THICKNESS UPPER SEGMENT(S)	DIG	INICKNESS	TOTAL	"d"	be - boer enter	"	L
HM CAMERA POLE 50	50′	18"	10%"			32"	2"			25"	3′-6"	13'-0"
HM CAMERA POLE 60	60′	10	91/2"	0.3125"	0.1875"	32			21/4"	2	, ,	13
HM CAMERA POLE 70	70′	22"	12"			36"		12		29"	4'-0"	14'-0"
HM CAMERA POLE 80	80′	22"	115%"	0.375"	0.25"	39"	3"		3"	30"	4'-6"	14 -0
HM CAMERA POLE 90	90′	25"	171/8"	0.375	0.25	46"				37"	6'-0"	15'-0"

PEDESTAL

- ANCHOR PLATE

*

"D"

MEDIAN LOCATION

ELEVATION C

ROUND TAPERED

1' + "L", SEE TABLE CIDH PILE PAY

CAST AGAINST UNDISTURBED MATERIAL

STEEL TUBE

CAMERA IN

CIDH PILE

ES-7N Det A

POLE

ELEVATION A

NOTE

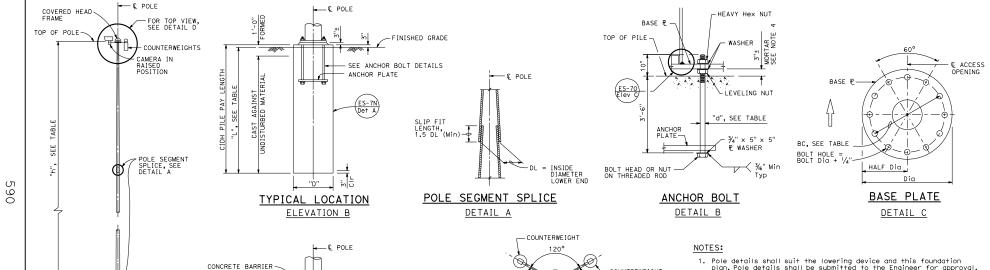
SEE

ACCESS OPENING-REINFORCED, Max CLEAR OPENING 10"(W) x 30"(H)

-SEE DETAIL B

FINISHED GRADE





120°

- Pole details shall suit the lowering device and this foundation plan. Pole details shall be submitted to the Engineer for approval.
- 2. Access opening shall be located on the downstream side of traffic unless otherwise determined by the Engineer.
- 3. Foundation design is based on a 3-second wind gust of 100 mph.
- 4. For central void and drain holes in mortar, see Standard Plan ES-6B detail N.
- 5. For wind loading see Standard Plan ES-7M.

-COUNTERWEIGHT

120°

-CAMERA

TOP VIEW DETAIL D

6. Materials (Structural Steel):

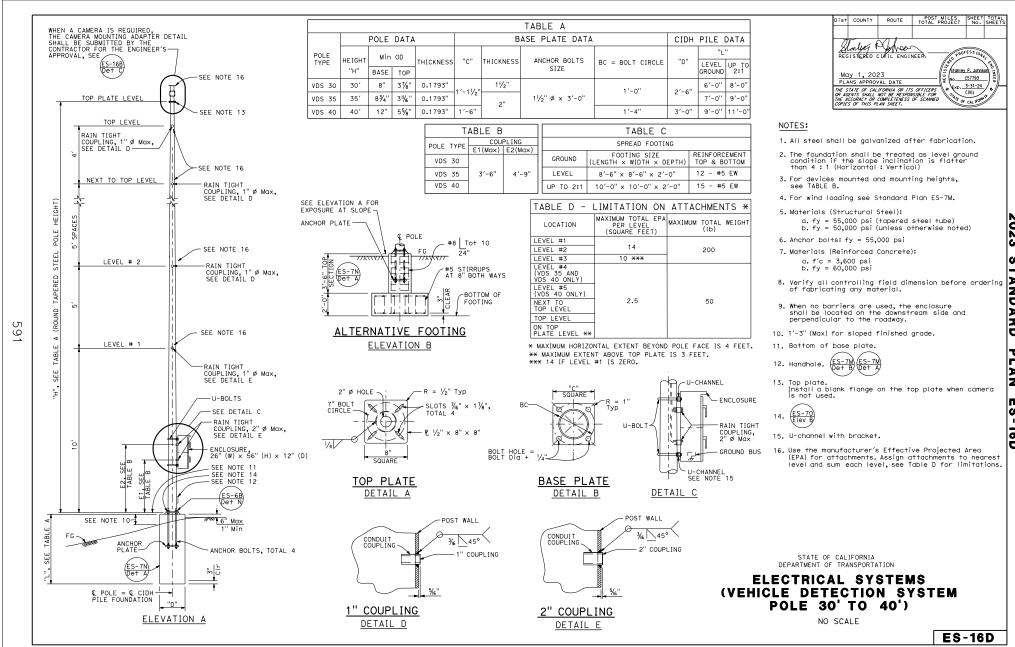
fy = 55,000 psi (tapered steel tube) fy = 50,000 psi (unless otherwise noted)

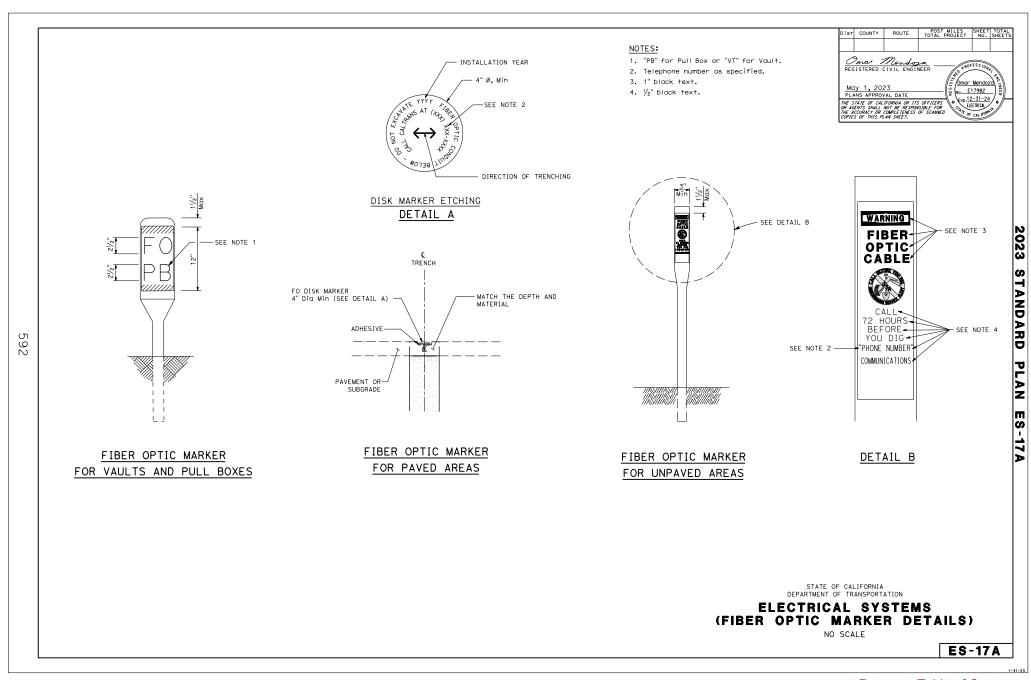
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

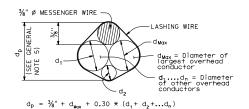
ELECTRICAL SYSTEMS (HIGH MAST CAMERA POLE 50' TO 90')

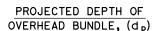
NO SCALE

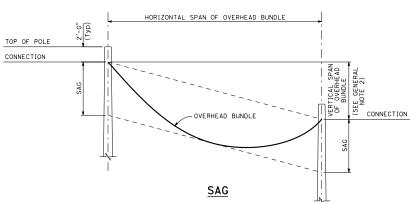
ES-16C













Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition (LTS-5).

GROUP LOAD COMBINATIONS:

I Dead Load II Dead Load + Wind Load III Dead Load + 0.5 (Wind Load) + Ice Load IV Fatigue: Not used

LOADING:

Wind Loading: 100 mph (3-second gust)
Wind Recurrence Interval: 10 years
Combined height, exposure, and elevated terrain factor = 1.05
(Exposure C, structure is not located on or over the top half
of a ridge, hill, or escarpment)

Ice Loading: 3.0 psf on surfaces, 0.60 in radial thickness of ice at a unit weight of 60 pcf on overhead bundles

BASIC DESIGN VALUES:

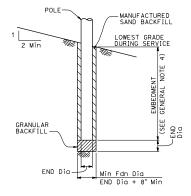
Timber Poles: Fb = 1850 psi Fv = 110 psi Fcp = 230 psi Fc = 950 psi E = 1500 \times 10³ psi

DESIGN WIRE BREAKING STRENGTHS:

ASTM A475, Utilities Grade, 7 strand modified by termination efficiency factor of 0.8

FOUNDATION DESIGN NOTES:

- Pole embedment depth design is based on Broms' approximate procedure as described in Article 13.6 of AASHTO LTS-5.
- Embedment depth is calculated based on following soil parameters, Cahesive Soil:
 Shear strength of soil c = 1500 psf. Cohesionless Soil:
 \$\textit{\gamma} = 30 \text{ deg}, \text{ y} = 120 \text{ pcf.}
 Soil assumed to be unsaturated.
- An overload factor of 2.0 and an undercapacity factor of 0.7 were used for safety factor of 2.86.
- Allowable vertical bearing pressure at the end bearing of poles is 3000 psf at 6 feet or more embedment.
- Guy wire anchor minimum allowable tension capacity, "Qa" = 8,900 lbs.



POLE FOUNDATION

GENERAL NOTES:

- The messenger wire and any combination of overhead conductors must not exceed either a self weight of 3.0 lb/ft or the maximum d in the pole selection tables.
- 2. The maximum vertical span is 10% of the horizontal span.
- For poles with adjacent unbalanced horizontal spans, the shortest horizontal span must be at least 50% of the largest horizontal span.
- 4. Add 2'-0" for slopes above 1V:4H.
- 5. For a pole supporting multiple spans, calculate $\mbox{\bf d}_{p}$ for each span and use the largest value.
- 6. Do not exceed the attachments shown.

DIAMETERS AND SELF WEIGHT OF OVERHEAD CONDUCTORS

CONDUCTOR OR CABLE TYPE	DIAMETER d (in)	WEIGHT w (pif)
3 CONDUCTOR SIGNAL CABLE (3CSC)	0.400	0.0980
5 CONDUCTOR SIGNAL CABLE (5CSC)	0.500	0.1560
9 CONDUCTOR SIGNAL CABLE (9CSC)	0.650	0.2760
12 CONDUCTOR SIGNAL CABLE (12CSC)	0.800	0.3970
28 CONDUCTOR SIGNAL CABLE (28CSC)	0.900	0.6490
1-#14	0.166	0.0235
1-#12	0.185	0.0330
1-#10	0.210	0.0476
1-#8	0.271	0.0774
1-#6	0.310	0.1130
1-#4	0.359	0.1690
1-#3	0.388	0.2080
1-#2	0.420	0.2560
1-#1	0.498	0.3340
6-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.350	0.0860
12-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.500	0.1440
DETECTOR LEAD-IN CABLE (DLC)	0.310	0.0440
12 to 48-STRAND FIBER OPTIC CABLE (48FOC)	0.424	0.0600
72-STRAND FIBER OPTIC CABLE (72FOC)	0.484	0.0770
96-STRAND FIBER OPTIC CABLE (96FOC)	0.535	0.1050
144-STRAND FIBER OPTIC CABLE (144FOC)	0.670	0.1890
3/8" Ø MESSENGER WIRE	0.375	0.2730

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES GENERAL NOTES

NO SCALE

ES-18A

.

2023

STANDARD

PLAN

ES-18,

ROUTE POST MILES SHEET TOTAL TOTAL PROJECT No. SHEETS

C57793 xp. 3-31-24

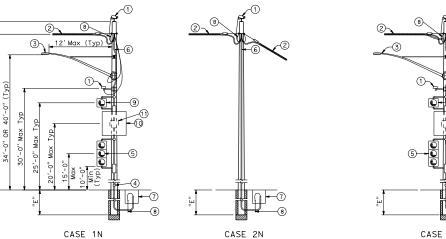
- Camera or vehicle detection system
- Overhead bundle consisting of a $3\!\!/\!\!/_8$ $\!\!/\!\!/$ messenger wire, overhead conductors, and lashing wire
- Luminaire with mast arm
- Pedestrian push button or accessible push button
- Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- Riser with weather head as required
- Pull box as required
- Grounding as required
- Single flashing beacon or single sheet sign panel (4 SQFT Max)
- Single sheet sign panel (4' \times 4' Max) or signal face with 3 indications
- Enclosure, 26"(W) \times 56"(H) \times 12"(D) Max dimensions. Max weight including batteries, 450 lbs
- 25' SQFT Max total photovoltaic panels mounted as shown as required
- 2-12" flashing beacons

- In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100'.
- Cases 1N, 3N and 4N may substitute the attachments shown in Case 5N if the photovoltaic panel is not included.

May 1, 2023

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3. For Case 1N without an overhead bundle (item (2)) use minimum pole class H-1 with E=11'.



POLE AT TANGENT

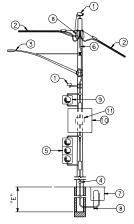
WITHOUT ATTACHMENTS

POLE AT DEAD END

WITH ATTACHMENTS

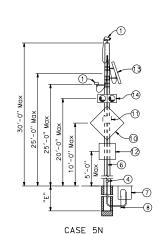
See Note 2

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CASE 3N POLE AT TANGENT OR CORNER WITH ATTACHMENTS

CASE 4N POLE AT JUNCTION WITH ATTACHMENTS See Note 2



POLE WITHOUT OVERHEAD BUNDLE WITH ATTACHMENTS

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES **NON-GUYED** NO SIGNALS ON SPANS

NO SCALE

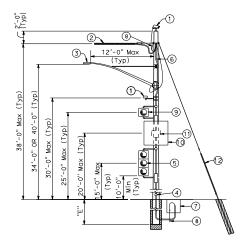
ES-18B

- Camera or vehicle detection system
- ② Overhead bundle consisting of a ¾" ø messenger wire, overhead conductors, and lashing wire
- (3) Luminaire with mast arm
- 4 Pedestrian push button or accessible push button
- (5) Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- 6 Riser with weather head as required
- 7 Pull box as required
- 8 Grounding as required
- Single flashing beacon or single sheet sign panel (4 SQFT Max)
- 10 Single sheet sign panel (4' x 4' Max) or signal face with 3 indications
- 11 Flashing beacon enclosure
- (2) $\frac{1}{2}$ ø guy wire with white guy marker and strain insulator (for anchorage see "TEMPORARY WOOD POLES-DETAILS No. 2" sheet)

Dis+	COUNTY	ROUTE	TOTAL PROJECT	No.	SHEETS
Ma	ISTERED (y 1, 20)		No.	y P. Johns 057793 3-31-24	121
OR AG	ENTS SHALL	IFORNIA OR ITS NOT BE RESPON COMPLETENESS AN SHEET.	S OFFICERS ISIBLE FOR OF SCANNED	CIVIL F CAL IFORM) * *

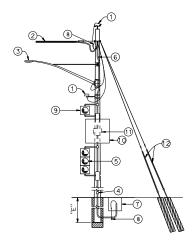
NOTES:

- 1. In addition to other restrictions on maximum horizontal span, this horizontal span must not exceed 100^{\prime} .
- 2. Guy wire in line with opposing span \pm 5°.

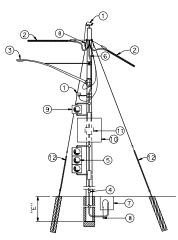


395

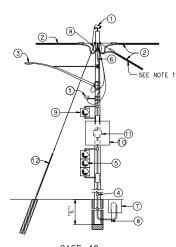
POLE AT DEAD END
WITH ATTACHMENTS



POLE AT DEAD END
WITH ATTACHMENTS



POLE AT CORNER
WITH ATTACHMENTS



POLE AT JUNCTION
WITH ATTACHMENTS

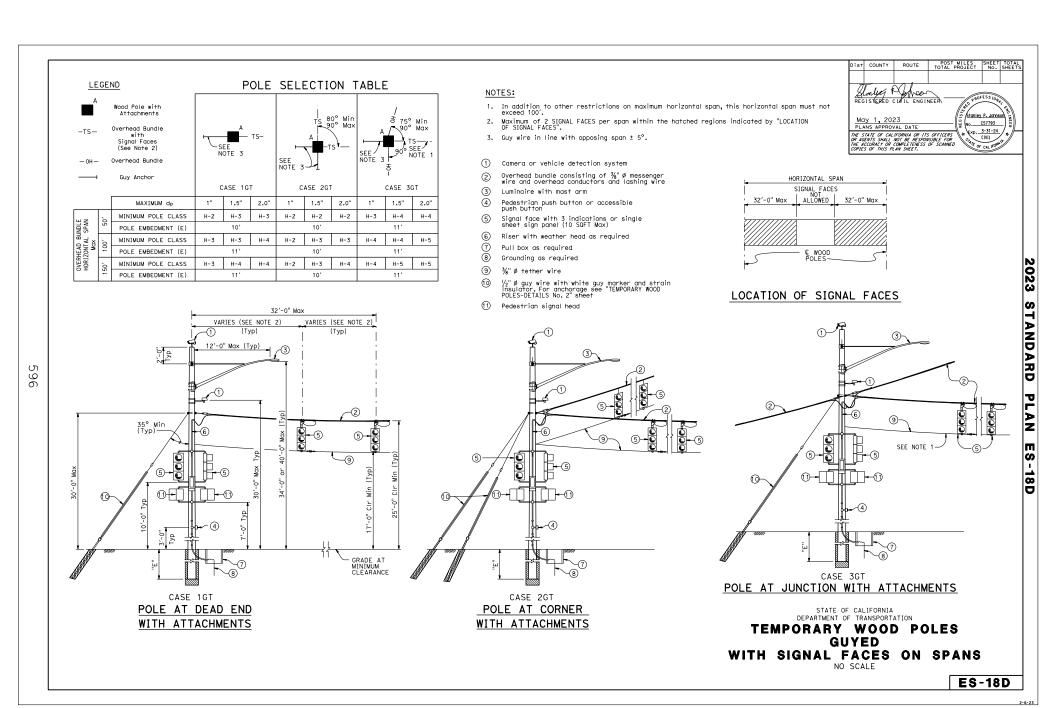
STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES
GUYED
NO SIGNALS ON SPANS

NO SCALE

ES-18C

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Dist COUNTY

Stanley P. Johns Mdy 1, 2023 PLANS APPROVAL DATE C57793 Exp. 3-31-24 CIVIL THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

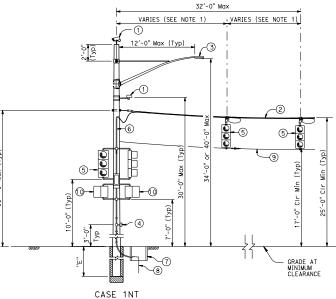
POLE SELECTION LEGEND TABLE

A Wood Pole with Attachments — TS — Overhead Bundle With Signal Faces (See Note 1)			A — TS-		
			C.	ASE 1NT	
OVERHEAD BUNDLE HORIZONTAL SPAN (Max)		MAXIMUM d _P	1"	1.5"	2.0"
HEAD E ZONTAL (Max)	75′	MINIMUM POLE CLASS	H-5	H-6	H-6
OVER HORI		POLE EMBEDMENT (E)		13′	

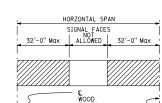
597

- Camera or vehicle detection system
- Overhead bundle consisting of a $^{3}\!\!/_{\!8}"$ ø messenger wire and overhead conductors and lashing wire
- Luminaire with mast arm
- Pedestrian push button or accessible push button
- Signal face with 3 indications or single sheet sign panel (10 SQFT Max)
- 6 Riser with weather head as required
- Pull box as required
- 8 Grounding as required
- ¾" Ø tether wire
- Pedestrian signal head





POLE AT DEAD END WITH ATTACHMENTS



Maximum of 2 SIGNAL FACES per span within the hatched regions indicated by "LOCATION OF SIGNAL FACES".

NOTE:

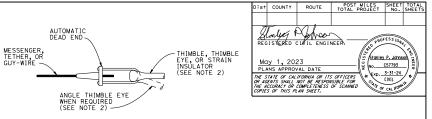
LOCATION OF SIGNAL FACES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES **NON-GUYED** WITH SIGNAL FACES ON SPAN

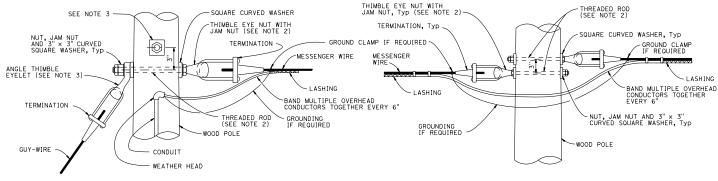
NO SCALE

ES-18E

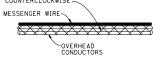


ALTERNATIVE TERMINATION OF MESSENGER WIRES USING GUY CLAMPS

TERMINATION OF WIRES USING AUTOMATIC DEAD END

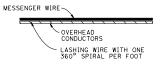


LASHING WIRE WITH ONE 360° SPIRAL PER FOOT CLOCKWISE AND ONE 360° SPIRAL PER FOOT COUNTERCLOCKWISE —



DOUBLE LASHING DETAIL

USE IF d. IS GREATER THAN 11/2"



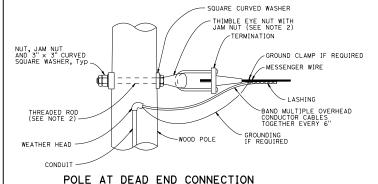
POLE AT DEAD END WITH GUY-WIRE CONNECTION

()

98

POLE AT TANGENT OR CORNER CONNECTION

TYPICAL LASHING DETAIL USE IF d. IS 11/2" OR LESS



THIMBLE EYE NUT WITH
JAM NUT, TYP (SEE NOTE 2)

TERMINATION, TYP

GROUND CLAMP IF REQUIRED

GROUND CLAMP IF REQUIRED

LASHING

GROUNDING
IF REQUIRED

LASHING

GROUNDING
IF REQUIRED

NUT, JAM NUT AND 3" x 3"

CURVED SQUARE CURVED WASHER, TYP

WOOD POLE

NOTES:

- 1. For guy wires use 3 clamps.
- 2. Use $\frac{5}{8}$ " ø except $\frac{3}{4}$ " ø at guyed wires
- Install additional angle thimble eyelet at poles with two guy wires.

POLE AT JUNCTION CONNECTION

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 1

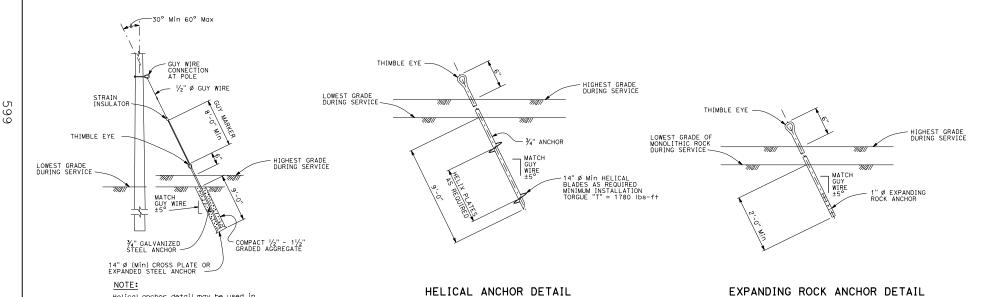
NO SCALE

ES-19A

2-6-23

NOTE:

For minimum allowable tension capacity of anchors see "Temporary Wood Poles - General Notes" sheet.



Helical anchor detail may be used in place of expanded steel anchors.

EXPANDED STEEL ANCHOR DETAIL

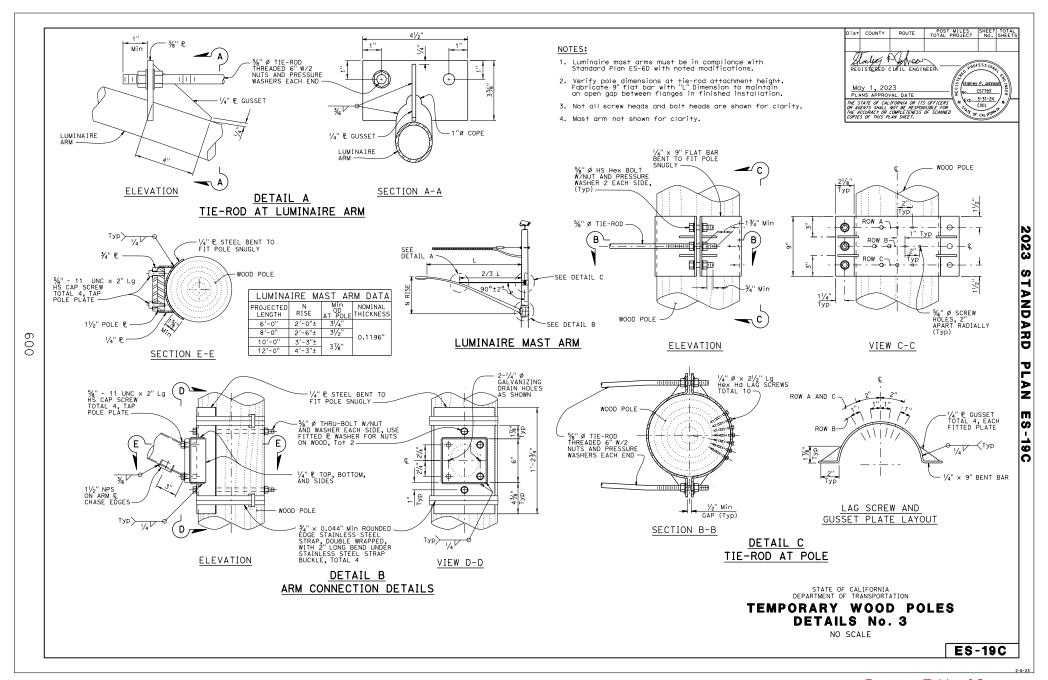
HELICAL ANCHOR DETAIL

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES DETAILS No. 2

NO SCALE

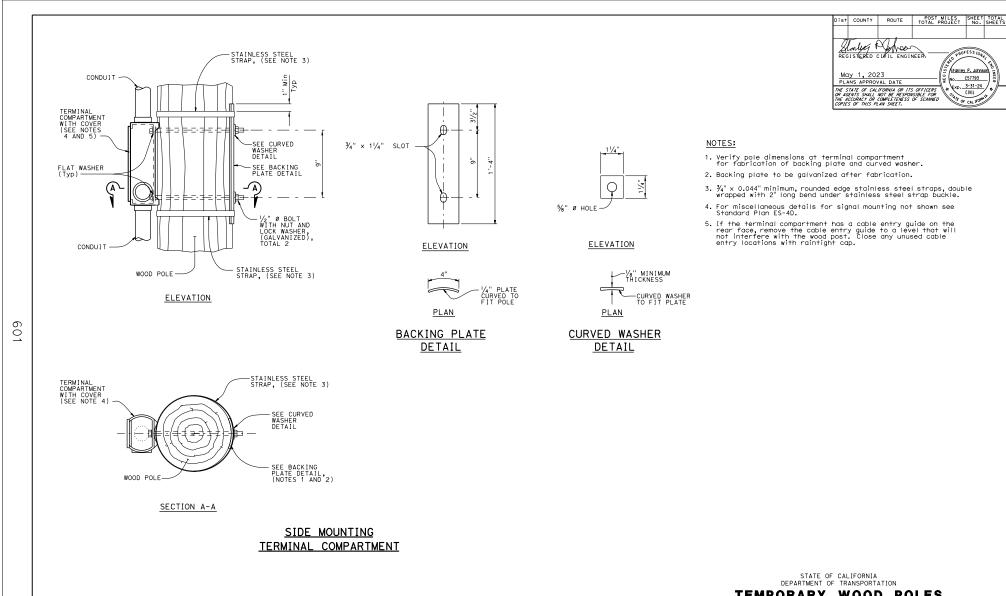
ES-19B



Stanley P. Johns

C57793 Exp. 3-31-24

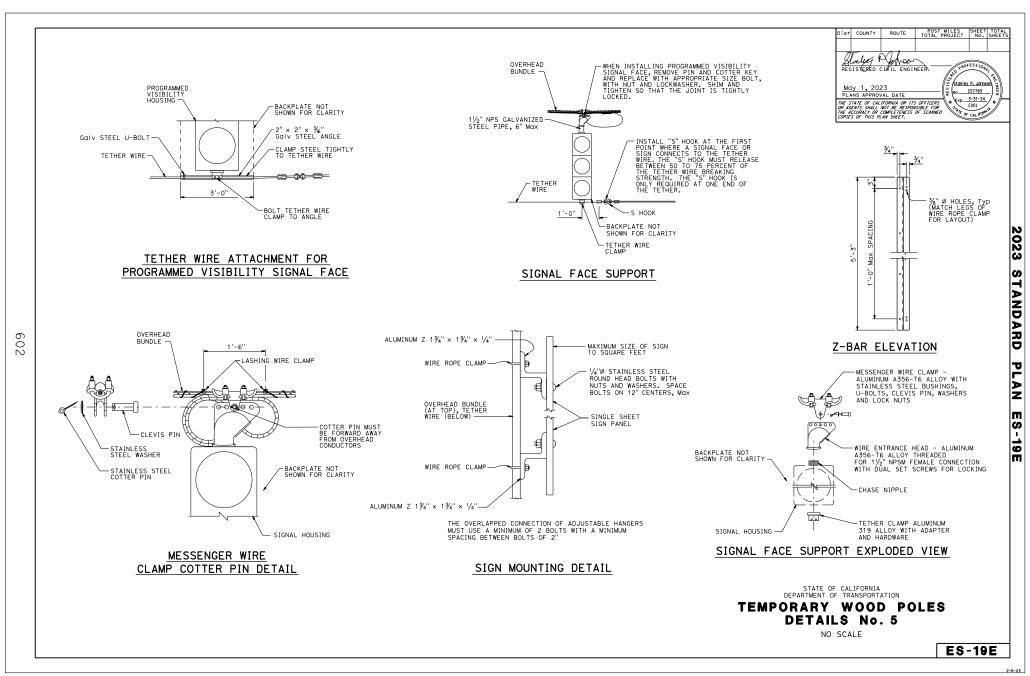
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TEMPORARY WOOD POLES **DETAILS No. 4**

NO SCALE

ES-19D



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