

A	
AB	AGGREGATE BASE
ABBC	ASBESTOS BONDED BITUMINOUS COATED
ABM	AIR-BLOWN MORTAR
ABn	ABANDON
ABS	ACRYLONITRILE-BUTADIENE-STYRENE
Abu+	ABUTMENT
AC	ASPHALT CONCRETE
AC+	UNGROUND CONDUCTOR
ACB	ASPHALT CONCRETE BASE
ACC	ARMOR-CLAD CONDUCTORS
ACP	ASBESTOS CEMENT PIPE
Adj	ADJUST, ADJUSTABLE, ADJACENT
ADL	ADDED DEAD LOAD
ADT	AVERAGE DAILY TRAFFIC
AFES	ALTERNATE FLARED END SECTION
AGT	APPROACH GUARDRAIL TRANSITION
Ahd	HEAD
AIC	AUXILIARY IRRIGATION CONTROLLER
Alt	ALTERNATE, ALTERNATIVE
AM	TIME FROM MIDNIGHT TO NOON
Amend	AMENDMENT
AP	ALTERNATIVE PIPE
APC	ALTERNATIVE PIPE CULVERT
Approx	APPROXIMATE
APS	ACCESSIBLE PEDESTRIAN SIGNAL
APU	ALTERNATIVE PIPE UNDERDRAIN
ARS	ACCELERATION RESPONSE SPECTRUM
ARV	AIR RELEASE VALVE
AS	AGGREGATE SUBBASE
ASP	ALTERNATIVE SLOTTED PIPE
ASRP	ALUMINUM SPIRAL RIB PIPE
Assy	ASSEMBLY
ATPB	ASPHALT TREATED PERMEABLE BASE
ATPM	ASPHALT TREATED PERMEABLE MATERIAL
Auto	AUTOMATIC
Aux	AUXILIARY
AVB	ATMOSPHERIC VACUUM BREAKER
Ave	AVENUE
Avg	AVERAGE
B	
B & B	BALLED AND BURLAPPED
BAGR	BRIDGE APPROACH GUARD RAILING
Ba++	BATTERY
BB	BEGINNING OF BRIDGE
B/B	BRASS/BRONZE
B/B/PI	BRASS/BRONZE/PLASTIC
B-B	BACK-TO-BACK
BBS	BATTERY BACKUP SYSTEM
BC	BEGIN HORIZONTAL CURVE, BOLT CIRCLE
BCR	BEGIN CURB RETURN
Beg	BEGIN
BFM	BONDED FIBER MATRIX
Bit Ctd	BITUMINOUS COATED
Bk	BACK
Bkf	BACKFILL
Bldg	BUILDING
Blk	BLACK
BLM	BRIDGE-LOG MILE
Blvd	BOULEVARD
BM	BENCH MARK

B continued	
BMP	BEST MANAGEMENT PRACTICE
Bo+	BOTTOM
BP	BOOSTER PUMP, BYPASS
BPA	BACKFLOW PREVENTER ASSEMBLY
BPB	BICYCLE PUSH BUTTON
BPE	BACKFLOW PREVENTER ENCLOSURE
B/PI	BRASS/PLASTIC
Br	BRIDGE
Brq	BEARING
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BVC	BEGIN VERTICAL CURVE
BW	BARBED WIRE
C	
C	CONDUIT, CHANNEL (STRUCTURAL STEEL SHAPE)
CAA	CABLE ANCHOR ASSEMBLY
CAP	CORRUGATED ALUMINUM PIPE
CAPA	CORRUGATED ALUMINUM PIPE ARCH
CARV	COMBINATION AIR RELEASE VALVE
CAS	CONSTRUCTION AREA SIGN
CB	CONCRETE BARRIER, CIRCUIT BREAKER, COUPLING BAND, COMPOST BERM
CBW	CONCRETE BLOCK WALL
C-C	CENTER TO CENTER
CCA	CAM COUPLER ASSEMBLY
CCTV	CLOSED CIRCUIT TELEVISION
CEC	CONTROLLER ENCLOSURE CABINET
CG	CENTER OF GRAVITY
CHDPE	CORRUGATED HIGH DENSITY POLYETHYLENE
Chnl	CHANNEL
CI	CAST IRON
CIDH	CAST-IN-DRILLED-HOLE
CIP	CAST-IN-PLACE, CAST IRON PIPE
CIPCP	CAST IN PLACE CONCRETE PIPE
CISS	CAST-IN-STEEL-SHELL
CJP	COMPLETE JOINT PENETRATION
CK+	CIRCUIT
CL	CHAIN LINK
CL-6	CHAIN LINK FENCE (6 FT)
CI	CLASS
Clr	CLEAR, CLEARANCE
CM	CENTER MARGIN LIGHT
CMP	CORRUGATED METAL PIPE
CMS	CHANGEABLE MESSAGE SIGN
CNC	CONTROL AND NEUTRAL CONDUCTORS
Cnt+	CONTROL
Co	COUNTY
Col	COLUMN
Comm	COMMUNICATION
Conc	CONCRETE
Conn	CONNECTOR
Const	CONSTRUCT, CONSTRUCTION
Cont	CONTINUOUS
Coord	COORDINATE
CP	CANDLEPOWER, CATCH POINT, COPPER PIPE

C continued	
Cr	CREEK
CRCP	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
CRSP	CONCRETED ROCK SLOPE PROTECTION
CS	COMPOST SOCK
CSP	CORRUGATED STEEL PIPE
CSPA	CORRUGATED STEEL PIPE ARCH
CST	CENTER STRIP
C+	COURT
CTB	CEMENT TREATED BASE
CTID	CALTRANS IDENTIFICATION
CTPB	CEMENT TREATED PERMEABLE BASE
CTPM	CEMENT TREATED PERMEABLE MATERIAL
Ctrs	CENTERS
Culv	CULVERT
CV	CHECK VALVE
D	
D	DEPTH, DIRECTION (IN PERCENT) OF HEAVIER TRAFFIC FLOW
Db+	DOUBLE
DD	DOWNDRAIN
Deg	DEGREE
Del	DELINEATOR
Det	DETAIL, DETOUR
DF	DOUGLAS FIR
DG	DECOMPOSED GRANITE
DHV	DESIGN HOURLY VOLUME
DI	DRAINAGE INLET, DROP INLET
Dia	DIAMETER
Diaph	DIAPHRAGM
DIP	DUCTILE IRON PIPE
Dist	DISTANCE, DISTRICT
DIT	DRIP IRRIGATION TUBING
DLC	LOOP DETECTOR LEAD-IN CABLE
DMBB	DOUBLE METAL BEAM BARRIER
DN	DIAMETER NOMINAL
Dr	DRIVE
DTBB	DOUBLE THRIE BEAM BARRIER
DVA	DRIP VALVE ASSEMBLY
Dwy	DRIVEWAY
E	
E	EAST
Ease	EASEMENT
EB	END OF BRIDGE, EASTBOUND
EC	END HORIZONTAL CURVE, EROSION CONTROL
ECR	END CURB RETURN
ECTC	EROSION CONTROL TECHNOLOGY COUNCIL
ED	EDGE DRAIN
EDC	EDGE DRAIN CLEANOUT
EDO	EDGE DRAIN OUTLET
EDV	EDGE DRAIN VENT
Elec	ELECTROLIER
Elec+	ELECTRIC, ELECTRICAL
Elev	ELEVATION

E continued	
EII	ELBOW
Emb	EMBANKMENT
EMS	EXTINGUISHABLE MESSAGE SIGN
Encl	ENCLOSURE
Engr	ENGINEER
EOD	EDGE OF DECK
EP	EDGE OF PAVEMENT
Eq	EQUATION
ERS	EARTH RETAINING STRUCTURE
ES	EDGE OF SHOULDER
ESA	ENVIRONMENTALLY SENSITIVE AREA
ESAL	EQUIVALENT SINGLE AXLE LOADS
EST	END STRIP
Estb	ESTABLISHMENT
ETW	EDGE OF TRAVELED WAY
EVC	END VERTICAL CURVE
EVUC	EMERGENCY VEHICLE UNIT CABLE
EVUD	EMERGENCY VEHICLE UNIT DETECTOR
EW	ENDWALL
Exc	EXCAVATION
Exist	EXISTING
Exp	EXPANSION
Exp J+	EXPANSION JOINT
Ext	EXTERIOR
Exwy	EXPRESSWAY
F	
F	FILL, FULL CIRCLE
F & C	FRAME AND COVER
F & G	FRAME AND GRATE
FB	FLOOR BEAM, FLASHING BEACON
FBE	FLASHING BEACON ENCLOSURE
FBS	FLASHING BEACON WITH SLIP BASE
FCV	FLOW CONTROL VALVE
Fdn	FOUNDATION
FEBT	FACING EASTBOUND TRAFFIC
Fert	FERTILIZER
FES	FLARED END SECTION
FF	FILTER FABRIC
FG	FINISH GRADE
FH	FIRE HYDRANT, FLEXIBLE HOSE
Fig	FIGURE
FIPT	FEMALE IRON PIPE THREAD
FIS	FERTILIZER INJECTOR SYSTEM
FL	FLOW LINE
FNBT	FACING NORTHBOUND TRAFFIC
FO	FIBER OPTIC
FOB	FREE ON BOARD
FOC	FACE OF CONCRETE
F/P	FULL/PART CIRCLE
FR	FIBER ROLL
Fr Rd	FRONTAGE ROAD
FS	FAR SIDE, FINISHED SURFACE, FLOW SENSOR
FSBT	FACING SOUTHBOUND TRAFFIC
FSC	FLOW SENSOR CABLE
Ftg	FOOTING
FV	FLUSH VALVE
FWBT	FACING WESTBOUND TRAFFIC
Fwy	FREEWAY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
Davinder Minhas REGISTERED CIVIL ENGINEER				
September 20, 2024				
PLANS APPROVAL DATE				
No. C70022				
Exp. 9-30-24				
CIVIL				
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- GENERAL RULES:**
- Words are preferred over abbreviations and acronyms.
  - Use words in notes, except where space is limited on the plan sheet.
  - Do not use abbreviations or acronyms where the meaning may be in doubt.
  - Abbreviations and acronyms may be used in callouts, dimensions, and tables.
  - Use upper and lower case letters for abbreviation of a single word.  
e.g., Misc = miscellaneous  
and Bit Ctd = bituminous coated
  - Use all upper case letters for acronyms.  
e.g., BCR = begin curb return

- UNITS OF MEASUREMENT:**
- See Tables A, B and C on Standard Plan A3C.
  - Units of measurement are not part of abbreviations and acronyms.  
The above abbreviation and acronym general rules do not apply.

- SYMBOLS:**
- See Table D on Standard Plan A3C.

- SLOPES, FLARES, AND TAPERS:**
- Slope slopes:  
X:Y = horizontal:vertical
  - Flares and tapers:  
X:Y = longitudinal:lateral

STATE OF CALIFORNIA  
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**ABBREVIATIONS  
(SHEET 1 OF 3)**

MTI	MATERIAL
MV	MERCURY VAPOR LIGHTING
MVDS	MICROWAVE VEHICLE DETECTION
MVP	MAINTENANCE VEHICLE POSITION
	N
N	NORTH, NORTHBOUND
NB	NORTHBOUND, NEUTRAL BUS
NC	NORMALLY CLOSE

PERFORATED ALUMINUM PIPE  
PULL BOX  
PUSH BUTTON ASSEMBLY  
POINT OF CURVATURE

R

R continued

Rel	RELOCATE
Repl	REPLACEMENT
Req	REQUIRED
Ret	RETAINING
Rev	REVISED, REVISION
RHMA	RUBBERIZED HOT MIX ASPHALT
RICS	REMOTE IRRIGATION CONTROL SYSTEM
Riv	RIVER
RM	ROAD-MIXED, RAMP METERING
RP	RADIUS POINT, REFERENCE POINT
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION, REVISED STANDARD PLAN
Rt	RIGHT
Rte	ROUTE
RW	REDWOOD, RETAINING WALL
R/W	RIGHT OF WAY
RWIS	ROADSIDE WEATHER INFORMATION SYSTEM RAILWAY
S	SOUTH, SLIP, SUPPLEMENT
SAE	STRUCTURE APPROACH EMBANKMENT
Salv	SALVAGE
SAPP	STRUCTURAL ALUMINUM PLATE PIPE
SB	SOUTHBOUND, SLIP BASE
SC	SAND CUSHION
S/C	SAW CUT LINE
Sch	SCHEDULE
SCSP	SLOTTED CORRUGATED STEEL PIPE
SD	STORM DRAIN
Sec	SECOND, SECTION
Sep	SEPARATION
SG	SUBGRADE
Shld	SHOULDER
Sht	SHEET
SIC	SIGNAL INTERCONNECT CABLE
Sig	SIGNAL
SIm	SIMILAR
SM	SELECTED MATERIAL
SMA	SIGNAL MAST ARM
SNS	STREET NAME SIGN
SP	STAND PIPE, SERVICE POINT
Spec	SPECIAL, SPECIFICATION(S)
SPP	SLOTTED PLASTIC PIPE

S

S continued

Sq	SQUARE
SS	SLOPE STAKE
SSBM	STRAP AND SADDLE BRACKET METHOD
SSD	STRUCTURAL SECTION DRAIN
SSPA	STRUCTURAL STEEL PLATE ARCH
SSPP	STRUCTURAL STEEL PLATE PIPE
SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH
SSRP	STEEL SPIRAL RIB PIPE
SST	SIDE STRIP
St	STREET
Sta	STATION
STBB	SINGLE THRIE BEAM BARRIER
Std	STANDARD
Str	STRUCTURE
Surf	SURFACING
SW	SIDEWALK, SOUND WALL
Swr	SEWER
Sym	SYMMETRICAL
S4S	SURFACE 4 SIDES
T	SEMI-TANGENT, THIRD CIRCLE, THREAD, TRUCK TRAFFIC VOLUME (IN PERCENT) OF DESIGN HOURLY VOLUME
Tan	TANGENT
TB	TERMINAL BOARD
TBB	THRIE BEAM BARRIER
Tbr	TIMBER
T&B	TOP AND BOTTOM
TCB	TRAFFIC CONTROL BOX
TCE	TEMPORARY CONSTRUCTION EASEMENT
TDC	TELEPHONE DEMARCATION CABINET
Temp	TEMPORARY, TEMPERATURE, TEMPERED
TG	TOP OF GRADE
TI	TRAFFIC INDEX
TLS	TRUCK LOADING STAND PIPE
TMS	TRAFFIC MONITORING STATION
TOS	TRAFFIC OPERATIONS SYSTEM
ToT	TOTAL
TP	TELEPHONE POLE
TPB	TREATED PERMEABLE BASE
TPM	TREATED PERMEABLE MATERIAL
TO	THREE-QUARTER CIRCLE
Trans	TRANSITION
TRM	TURF REINFORCEMENT MAT
TS	TRANSVERSE, TRAFFIC SIGNAL, TUBULAR STEEL
TT	TWO-THIRDS CIRCLE
TWSA	TREE WELL SPRINKLER ASSEMBLY
Typ	TYPICAL

T

U

UC	UNDERCROSSING
UD	UNDERDRAIN
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UP	UNDERPASS
UPS	UNINTERRUPTIBLE POWER SUPPLY
UPSC	UNINTERRUPTIBLE POWER SUPPLY CONTROLLER
UPSM	UPS MODE

V

V	VALVE, DESIGN SPEED
Var	VARIABLE, VARIES
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
Veh	VEHICLE
Vert	VERTICAL
Via	VIADUCT
VIVDS	VIDEO IMAGE VEHICLE DETECTION SYSTEM
Vol	VOLUME

W

W	WEST, WIDTH
W/	WITH
W/O	WITHOUT
WB	WESTBOUND
WH	WEIR HOLE
WhT	WHITE
WIM	WEIGH-IN-MOTION
WM	WIRE MESH, WATER METER
WS	WATER SURFACE, WYE STRAINER
WSA	WYE STRAINER ASSEMBLY
WSP	WELDED STEEL PIPE
Wt	WEIGHT
WV	WATER VALVE
WW	WINGWALL
WWLOL	WINGWALL LAYOUT LINE
WWW	WELDED WIRE MESH

X

Xfmr	TRANSFORMER
X Sec	CROSS SECTION
Xing	CROSSING

Y

Yr	YEAR
Yrs	YEARS

Z

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/ft <sup>3</sup> , pcf	POUNDS PER CUBIC FOOT
tsf	TONS PER SQUARE FOOT
mph, MPH *	MILES PER HOUR
oz	OUNCE
lb	POUND
kíp	1,000 POUNDS
cal	CALORIE
ft	FOOT OR FEET
gal	GALLON

\* For use on a sign panel only

Dist COUNTY ROUTE POST MILES TOTAL PROJECT SHEET TOTAL No. SHEETS

Davidson Minhas

REGISTERED CIVIL ENGINEER

September 20, 2024

PLANS APPROVAL DATE

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Some of the units used in the Electrical plans are:

TABLE C

UNIT	DEFINITION
A	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(ac)	VOLT (DIRECT CURRENT)
V(ac)	VOLT (ALTERNATING CURRENT)
W	WATT
Ω	OHM
μ *	MICRO

\* Prefix to a unit

SYMBOLS:

Commonly used symbols for U.S. customary units

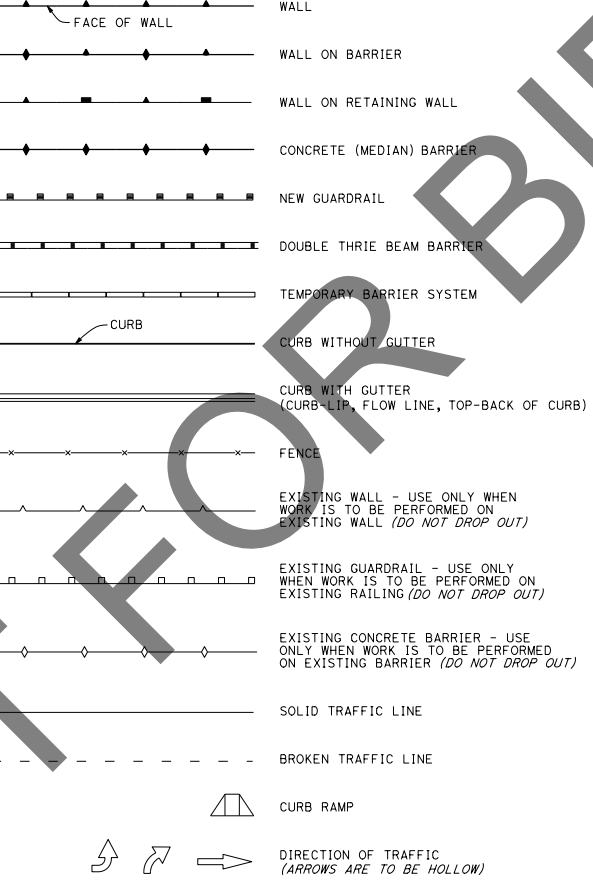
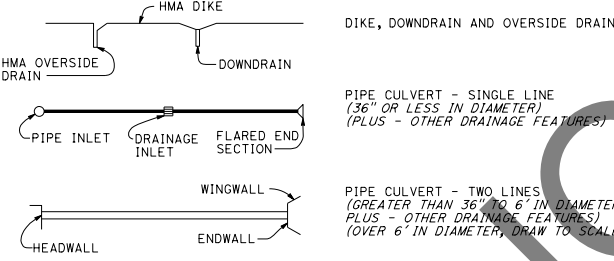
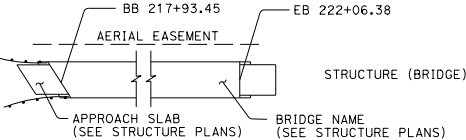
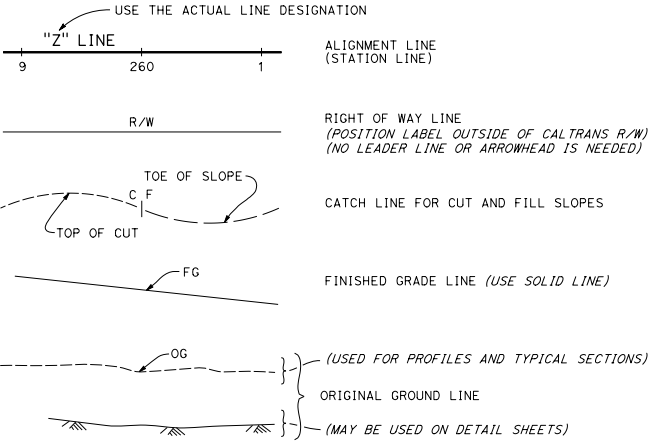
TABLE D

SYMBOL	DEFINITION
@	AT
CL	CENTERLINE
Ø	NOMINAL DIAMETER, DIAMETER, PHASE
PL	PLATE
SL	STATIONLINE

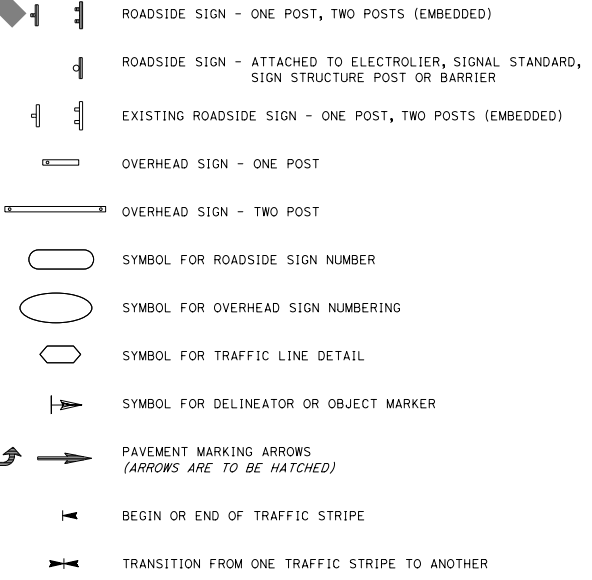
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ABBREVIATIONS  
(SHEET 3 OF 3)

SYMBOLGY FOR DESIGN FEATURES



STRIPING AND SIGNING



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

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**LEGEND**  
**Lines and Symbols**  
**(SHEET 1 OF 5)**

NO SCALE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Srinivasan S. Nijelle  
REGISTERED CIVIL ENGINEER

September 20, 2024  
PLANS APPROVAL DATE

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WATER POLLUTION CONTROL

- xx-xx-THVF-xx-xx-xx-

Temp HIGH-VISIBILITY FENCE
- xx-xx-TSF-xx-xx-xx-

Temp SILT FENCE
- xx-xx-TRSF-xx-xx-xx-

Temp Reinf SILT FENCE
- //////////TFR//////////

Temp FIBER ROLL
- Temp GRAVEL BAG BERM
- Temp STRAW BALE BARRIER
- ▷//////////▽

Temp SLOPE DRAIN FLEX PIPE
- ~~~~~

Temp EARTH BERM
- ←-~-~-~-~-~-~-~-~-~-~-~→

Temp DITCH/SWALE
- WASH

Temp CONCRETE WASHOUT
- Temp DRAINAGE INLET PROTECTION
- ▷

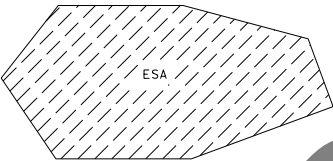
Temp DRAINAGE OUTLET PROTECTION
- ▷▷▷▷▷

Temp CHECK DAM
- ▨

Temp CONSTRUCTION ENTRANCE
- △  
SP

Temp STOCKPILE

ENVIRONMENTALLY SENSITIVE AREA (ESA)



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

A10B

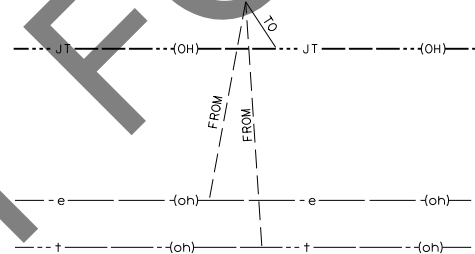
SUBSURFACE FACILITIES

— W ———— W ———— W ————	NEW WATER
— W ———— W ———— W ————	Exist WATER
— -G ———— -G ———— -G ————	NEW NATURAL GAS
— -g ———— -g ———— -g ————	Exist NATURAL GAS
— --S ———— --S ———— --S ————	NEW SEWER
— --s ———— --s ———— --s ————	Exist SEWER
— -E ———— -E ———— -E ————	NEW ELECTRICAL
— -e ———— -e ———— -e ————	Exist ELECTRICAL
— --T ———— --T ———— --T ————	NEW TELEPHONE
— --t ———— --t ———— --t ————	Exist TELEPHONE
— ---GS ———— ---GS ———— ---GS ————	NEW GASOLINE
— ---gs ———— ---gs ———— ---gs ————	Exist GASOLINE
— ---O ———— ---O ———— ---O ————	NEW OIL
— ---o ———— ---o ———— ---o ————	Exist OIL
— ---TV ———— ---TV ———— ---TV ————	NEW TELEVISION
— ---tv ———— ---tv ———— ---tv ————	Exist TELEVISION
— -ST ———— -ST ———— -ST ————	NEW STEAM
— -st ———— -st ———— -st ————	Exist STEAM
— --TC ———— --TC ———— --TC ————	NEW TELEMETER CABLE
— --tc ———— --tc ———— --tc ————	Exist TELEMETER CABLE
— ---SD ———— ---SD ———— ---SD ————	NEW STORM DRAIN
— ---sd ———— ---sd ———— ---sd ————	Exist STORM DRAIN
— FO ———— FO ———— FO ————	NEW FIBER OPTIC
— fo ———— fo ———— fo ————	Exist FIBER OPTIC
— ---JT ———— ---JT ———— ---JT ————	NEW JOINT TRENCH
— ---jt ———— ---jt ———— ---jt ————	Exist JOINT TRENCH
— RCW ———— RCW ———— RCW ————	NEW RECYCLED WATER
— rcw ———— rcw ———— rcw ————	Exist RECYCLED WATER
— Irr-c ———— Irr-c ———— Irr-c ————	Exist IRRIGATION CONDUIT
— es-c ———— es-c ———— es-c ————	Exist ELECTRICAL SYSTEMS CONDUIT

OVERHEAD FACILITIES

— -E ———— -(OH) ———— -E ————	NEW ELECTRICAL
— -e ———— -(oh) ———— -e ————	Exist ELECTRICAL
— --TC ———— ---(OH) ———— --TC ————	NEW TELEMETER CABLE
— --tc ———— ---(oh) ———— --tc ————	Exist TELEMETER CABLE
— --T ———— ---(OH) ———— --T ————	NEW TELEPHONE
— --t ———— ---(oh) ———— --t ————	Exist TELEPHONE
— ---TV ———— ----(OH) ———— ---TV ————	NEW TELEVISION
— ---tv ———— ----(oh) ———— ---tv ————	Exist TELEVISION
— FO ———— -(OH) ———— FO ————	NEW FIBER OPTIC
— fo ———— -(oh) ———— fo ————	Exist FIBER OPTIC
— ---JT ———— ----(OH) ———— ---JT ————	NEW JOINT OVERHEAD
— ---jt ———— ----(oh) ———— ---jt ————	Exist JOINT OVERHEAD

SHOWING THE RELOCATION OF EXISTING FACILITIES TO THE NEW LOCATION



ABANDONED FACILITY



// ABANDON SYMBOL IS THE CELL "ABANDN"

THERE ARE LINE STYLES FOR ABANDONED UNDERGROUND UTILITIES IN THE CALTRANS LINE STYLE RESOURCE FILE (c:\style-ss3.rsc)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
Srinivasan S. Nijelle REGISTERED CIVIL ENGINEER					
September 20, 2024 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.					
REGISTERED PROFESSIONAL ENGINEER No. C68518 Exp. 9-30-25 CIVIL STATE OF CALIFORNIA					

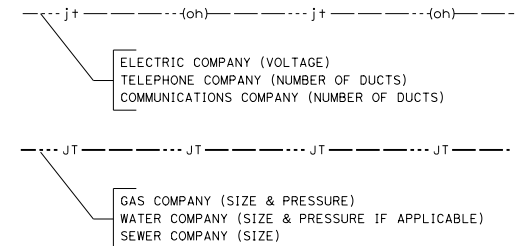
NOTE:

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).

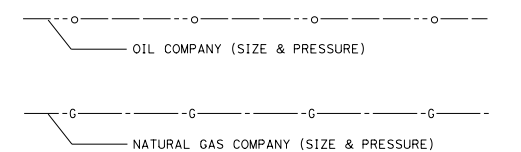
THE TYPE OF FACILITY IS IDENTIFIED BY THE SYMBOLOGY OF THE LINE STYLE CHOSEN (SEE LINE STYLES ON THIS STANDARD PLAN SHEET).

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



SOLO FACILITY



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**LEGEND  
LINES AND SYMBOLS  
(SHEET 3 OF 5)**

NO SCALE

A10C

2024 STANDARD PLAN A10C


[Return to Table of Contents](#)


EXISTING UTILITY POINT FEATURES


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 (e.g., UT-MH-SEWER, UT-MH-GAS). MULTIPLE VERSIONS OF A PARTICULAR SYMBOL REPRESENTING AN EXISTING UTILITY POINT FEATURE IS USED WHEN EACH IS ASSOCIATED WITH A DIFFERENT FACILITY (e.g., POWER POLE FOR OVERHEAD-ELECTRICAL, TELEPHONE, FIBER OPTIC, JOINT, ETC.). THIS DIFFERENTIATION FACILITATES ASSET MANAGEMENT OF EXISTING UTILITY FEATURES WITHIN THE CALTRANS RIGHT OF WAY.


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 INCLUDE NEW FACILITIES TO BE CONSTRUCTED.


- 


CABINET:  
ELECTRICAL, FIBER OPTIC, TELECOMMUNICATION,  
TELEPHONE, TELEVISION
- 


DRAINAGE INLET:  
SEWER, STORM DRAIN
- 


FIRE HYDRANT:  
WATER
- 


LAMP POST:  
ELECTRICAL
- 


METER:  
ELECTRICAL, NATURAL GAS, WATER
- 


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

PULL BOX:  
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
- 

VALVE:  
WATER, NATURAL GAS
- 

VENT:  
GAS, NATURAL GAS, SEWER, STEAM
- 

VAULT:  
ELECTRICAL, JOINT FACILITY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Srinivasan S. Nijelle  
REGISTERED CIVIL ENGINEER

September 20, 2024  
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER

Srinivasan S. Nijelle


No. C68518


EXP. 9-30-25

CIVIL

STATE OF CALIFORNIA

POSITIVE LOCATION

- 

POSITIVE LOCATION SYMBOL  
IDENTIFYING THE POTHOLING NUMBER
- 

POTHOLING SYMBOL MARKING THE EXACT LOCATION

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**LEGEND**  
**LINE AND SYMBOLS**  
**(SHEET 4 OF 5)**  
NO SCALE

A10D

2024 STANDARD PLAN A10D

TOPOGRAPHIC MAPPING LINES AND SYMBOLS  
TOPOGRAPHIC MAPPING IS DROPPED OUT ON FINAL CONTRACT PLANS

	CURB
	LANE STRIPE
	EDGE OF TRAVELED WAY (STATE HIGHWAY)
	EDGE OF TRAVELED WAY (OTHER)
	EDGE OF ASPHALT (SHOULDER)
	CONCRETE
	GUARDRAIL
	MEDIAN BARRIER
	FENCE
	MASONRY WALL
	MASONRY WALL AND FENCE
	RETAINING WALL
	RETAINING WALL AND FENCE
	RETAINING WALL AND MASONRY WALL
	FLOWLINE (NATURAL AND MANMADE)
	EDGE OF BODY OF WATER, SURFACE HATCHED AND SPOT ELEVATION ON SURFACE
	DECK
	BUILDING
	COVERED PORCH OR PARKING
	DIRT PILE, ROCK
	DIRT PILE, ROCK
	POOL, SPA
	POOL, SPA
	TREES, BRUSH, OR VEGETATION OVER 1/2 CONTOUR INTERVAL IN HEIGHT
	VINEYARD ROW
	CATTLE GUARD
	OVERHEAD SIGN - SINGLE POST
	OVERHEAD SIGN - TWO POST
	TRAIL
	DIRT ROAD

SYMBOLS  
ENLARGED FOR CLARITY

	LEFT TURN LANE ARROW
	HOV LANE (HIGH OCCUPANCY VEHICLE)
	DROP INLET, ROUND DROP INLET
	MANHOLE
	FIRE HYDRANT
	VALVE COVER, STAND PIPE, WELL, UTILITY BOX, RAILROAD CROSSING STANDARD
	WELL
	UB
	RS
	UTILITY POLE, POLE AND WIRES, POLE WITH WIRES AND ANCHOR
	TRANSMISSION TOWER
	ELECTROLIER, ELECTROLIER ON POLE
	TRAFFIC SIGNAL, RAILROAD SIGNAL
	CALL BOX
	SIGNS - SINGLE POST, TWO POSTS
	SINGLE TREE, PALM
	MARSH OR SWAMP
	CRASH CUSHION
	TANK

VOID - OBSTRUCTED AREA, UNABLE TO OBTAIN GROUND INFORMATION PHOTOGRAMMETRICALLY

RAILROAD

	SCALE: 1" = 100'
	SCALE: 1" = 50', 1" = 20'

CONTROL POINTS

	HORIZONTAL AND VERTICAL CONTROL POINT
	HORIZONTAL CONTROL POINT
	VERTICAL CONTROL POINT

TOPOGRAPHY

	INDEX CONTOUR
	INTERMEDIATE CONTOURS
	INDEX CONTOUR (SCALE: 1" = 50')
	GNV CONTOUR (GROUND NOT VISIBLE)
	DEPRESSION CONTOUR
	GNV DEPRESSION CONTOUR
657.2	SPOT ELEVATION (AT DECIMAL POINT)

WATER WAYS

	RIVERS, STREAMS AND CREEKS - SMALL (ONE LINE)
	RIVERS, STREAMS AND CREEKS - LARGE (TWO LINES) (WHICH DEFINES THE WATER EDGE)
	OCEAN - (GRADUATED LINE WEIGHTS)
	WATER EDGE, LAKE, POND, SWAMP

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**LEGEND**  
**LINES AND SYMBOLS**  
**(SHEET 5 OF 5)**  
NO SCALE

A10E













Return to Table of Contents

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
CERTIFIED ENGINEERING GEOLOGIST				
September 20, 2024				
PLANS APPROVAL DATE				
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REGISTERED GEOLOGIST Chris A. Rader No. 254 Exp. 12-31-25 STATE OF CALIFORNIA				

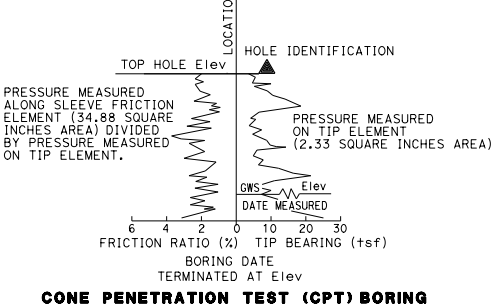
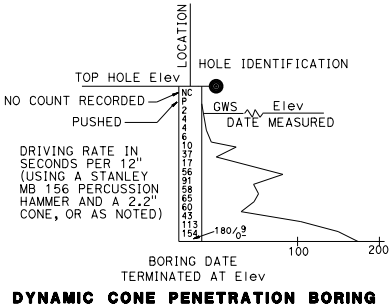
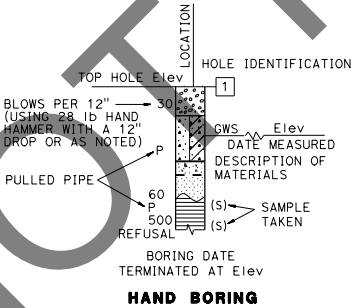
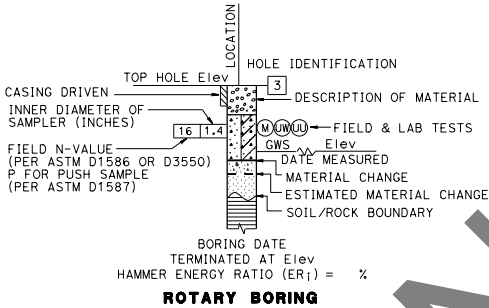
CEMENTATION	
DESCRIPTION	CRITERIA
WEAK	CRUMBLES OR BREAKS WITH HANDLING OR LITTLE FINGER PRESSURE.
MODERATE	CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE.
STRONG	WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE.

ABBREVIATION:  
GWS - GROUND WATER SURFACE

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

NOTE: SIZE IN INCHES.

CONSISTENCY OF COHESIVE SOILS				
DESCRIPTION	SHEAR STRENGTH (tsf)	POCKET PENETROMETER MEASUREMENT, PP, (tsf)	TORVANE MEASUREMENT, TV, (tsf)	VANE SHEAR MEASUREMENT, VS, (tsf)
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

A10F

[Return to Table of Contents](#)

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

GROUP SYMBOLS AND NAMES							
GRAPHIC/SYMBOL		GROUP NAMES		GRAPHIC/SYMBOL		GROUP NAMES	
	GW	WELL-GRADED GRAVEL			CL	LEAN CLAY	
		WELL-GRADED GRAVEL WITH SAND				LEAN CLAY WITH SAND	
	GP	POORLY-GRADED GRAVEL				SANDY LEAN CLAY	
		POORLY-GRADED GRAVEL WITH SAND				SANDY LEAN CLAY WITH GRAVEL	
	GW-GM	WELL-GRADED GRAVEL WITH SILT				GRAVELLY LEAN CLAY	
		WELL-GRADED GRAVEL WITH SILT AND SAND				GRAVELLY LEAN CLAY WITH SAND	
	GW-GC	WELL-GRADED GRAVEL WITH CLAY (OR SILTY CLAY)			CL-ML	SILTY CLAY	
		WELL-GRADED GRAVEL WITH CLAY AND SAND (OR SILTY CLAY AND SAND)				SILTY CLAY WITH SAND	
	GP-GM	POORLY-GRADED GRAVEL WITH SILT				SILTY CLAY WITH GRAVEL	
		POORLY-GRADED GRAVEL WITH SILT AND SAND				SANDY SILTY CLAY	
	GP-GC	POORLY-GRADED GRAVEL WITH CLAY (OR SILTY CLAY)				SANDY SILTY CLAY WITH GRAVEL	
		POORLY-GRADED GRAVEL WITH CLAY AND SAND (OR SILTY CLAY AND SAND)				GRAVELLY SILTY CLAY	
	GM	SILTY GRAVEL				GRAVELLY SILTY CLAY WITH SAND	
		SILTY GRAVEL WITH SAND			ML	SILT	
	GC	CLAYEY GRAVEL				SILT WITH SAND	
		CLAYEY GRAVEL WITH SAND				SILT WITH GRAVEL	
	GC-GM	SILTY, CLAYEY GRAVEL				SANDY SILT	
		SILTY, CLAYEY GRAVEL WITH SAND				SANDY SILT WITH GRAVEL	
	SW	WELL-GRADED SAND				GRAVELLY SILT	
		WELL-GRADED SAND WITH GRAVEL				GRAVELLY SILT WITH SAND	
	SP	POORLY-GRADED SAND			OL	ORGANIC LEAN CLAY	
		POORLY-GRADED SAND WITH GRAVEL				ORGANIC LEAN CLAY WITH SAND	
	SW-SM	WELL-GRADED SAND WITH SILT				ORGANIC LEAN CLAY WITH GRAVEL	
		WELL-GRADED SAND WITH SILT AND GRAVEL				SANDY ORGANIC LEAN CLAY	
	SW-SC	WELL-GRADED SAND WITH CLAY (OR SILTY CLAY)				SANDY ORGANIC LEAN CLAY WITH GRAVEL	
		WELL-GRADED SAND WITH CLAY AND GRAVEL (OR SILTY CLAY AND GRAVEL)				GRAVELLY ORGANIC LEAN CLAY	
	SP-SM	POORLY-GRADED SAND WITH SILT				GRAVELLY ORGANIC LEAN CLAY WITH SAND	
		POORLY-GRADED SAND WITH SILT AND GRAVEL			OH	ORGANIC SILT	
	SP-SC	POORLY-GRADED SAND WITH CLAY (OR SILTY CLAY)				ORGANIC SILT WITH SAND	
		POORLY-GRADED SAND WITH CLAY AND GRAVEL (OR SILTY CLAY AND GRAVEL)				ORGANIC SILT WITH GRAVEL	
	SM	SILTY SAND				SANDY ORGANIC SILT	
		SILTY SAND WITH GRAVEL				SANDY ORGANIC SILT WITH GRAVEL	
	SC	CLAYEY SAND				GRAVELLY ORGANIC SILT	
		CLAYEY SAND WITH GRAVEL				GRAVELLY ORGANIC SILT WITH SAND	
	SC-SM	SILTY, CLAYEY SAND				GRAVELLY ORGANIC SILT WITH GRAVEL	
		SILTY, CLAYEY SAND WITH GRAVEL				GRAVELLY ORGANIC ELASTIC SILT	
	PT	PEAT				GRAVELLY ORGANIC ELASTIC SILT WITH SAND	
		COBBLES				GRAVELLY ORGANIC ELASTIC SILT WITH GRAVEL	
		COBBLES AND BOULDERS			OL/OH	ORGANIC SOIL	
		BOULDERS				ORGANIC SOIL WITH SAND	
						ORGANIC SOIL WITH GRAVEL	
						SANDY ORGANIC SOIL	
						SANDY ORGANIC SOIL WITH GRAVEL	
						GRAVELLY ORGANIC SOIL	
						GRAVELLY ORGANIC SOIL WITH SAND	

### FIELD AND LABORATORY TESTING

- (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
- (UU) UNCONFINED COMPRESSION - ROCK
- (W) 200 SIEVE TEST

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
CERTIFIED ENGINEERING GEOLOGIST				
September 20, 2024				
PLANS APPROVAL DATE				
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REGISTERED GEOLOGIST				
Chris A. Reader				
No. 254				
Exp. 12-31-2025				
STATE OF CALIFORNIA				

### APPARENT DENSITY OF COHESIONLESS SOILS

DESCRIPTION	SPT N <sub>60</sub> (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

DESCRIPTION	SIZE
BOULDER	GREATER THAN 12"
COBBLE	3" - 12"
GRAVEL	COARSE 3/4" - 3"
	FINE 1/5" - 3/4"
SAND	COARSE 1/6" - 1/5"
	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

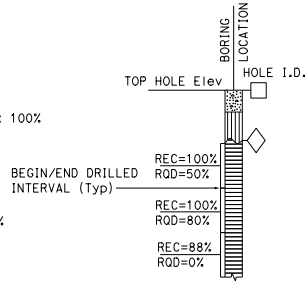
REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (2022)

PERCENT CORE RECOVERY (REC) & ROCK QUALITY DESIGNATION (RQD)

$$REC = \frac{\sum \text{LENGTH OF THE RECOVERED CORE PIECES (INCHES)}}{\text{TOTAL LENGTH OF CORE RUN (INCHES)}} \times 100\%$$

$$RQD = \frac{\sum \text{LENGTH OF INTACT CORE PIECES} \geq 4 \text{ INCHES}}{\text{TOTAL LENGTH OF CORE RUN (INCHES)}} \times 100\%$$

RQD\* INDICATES SOUNDNESS CRITERIA NOT MET.



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 1/16" 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.

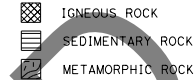
FRACTURE DENSITY

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"

LEGEND OF ROCK MATERIALS



WEATHERING DESCRIPTORS FOR INTACT ROCK

DESCRIPTION	DIAGNOSTIC FEATURES					GENERAL CHARACTERISTICS
	CHEMICAL WEATHERING-DISCOLORATION AND/OR OXIDATION		MECHANICAL WEATHERING-GRAIN BOUNDARY CONDITIONS (DISAGGREGATION) PRIMARILY FOR GRANITICS AND SOME COARSE-GRAINED SEDIMENTS	TEXTURE AND LEACHING		
	BODY OF ROCK	FRACTURE SURFACES		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 "RUSTY," FELDSPAR CRYSTALS 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 Fe-Mg MINERALS ARE ALTERED TO CLAY TO SOME EXTENT; OR CHEMICAL ALTERATION PRODUCES IN-SITU DISAGGREGATION, 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 REFERENCE TO PLANES OF WEAKNESS SUCH AS INCIPIENT OR HAIRLINE FRACTURES, OR VEINLETS. ROCK IS SIGNIFICANTLY WEAKENED.
DECOMPOSED	DISCOLORED OR OXIDIZED THROUGHOUT, BUT RESISTANT MINERALS SUCH AS QUARTZ MAY BE UNALTERED; ALL FELDSPARS AND Fe-Mg MINERALS ARE COMPLETELY ALTERED TO CLAY.		COMPLETE SEPARATION OF GRAIN BOUNDARIES (DISAGGREGATED).	RESEMBLES A SOIL, PARTIAL OR COMPLETE REMNANT ROCK STRUCTURE MAY BE PRESERVED; LEACHING OF SOLUBLE MINERALS USUALLY COMPLETE.		CAN BE GRANULATED BY HAND. RESISTANT MINERALS SUCH AS QUARTZ MAY BE PRESENT AS "STRINGERS" OR "DIKES."

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

LEGEND - ROCK

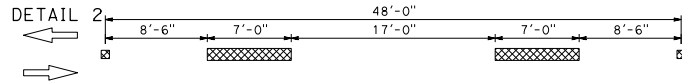
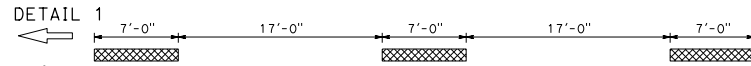
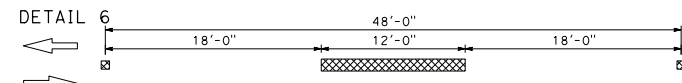
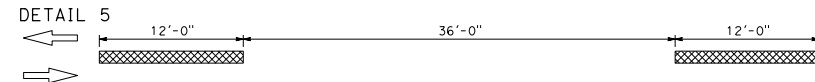
NO SCALE

A10H

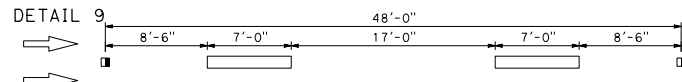
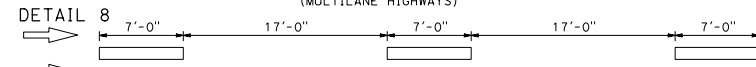
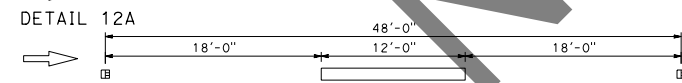
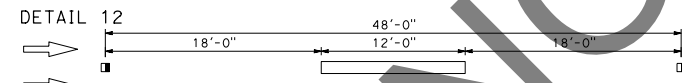
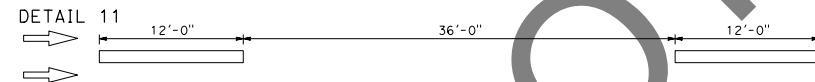
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<div> CERTIFIED ENGINEERING GEOLOGIST</div> <div>September 20, 2024 PLANS APPROVAL DATE</div> <div>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</div> <div> REGISTERED GEOLOGIST Chris A. Reader CERTIFIED ENGINEERING GEOLOGIST No. 254 Exp. 12-30-25 STATE OF CALIFORNIA</div>					

**CENTERLINES**

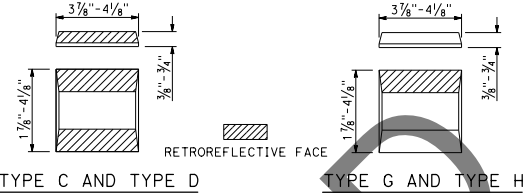
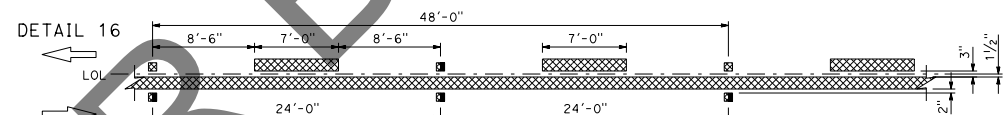
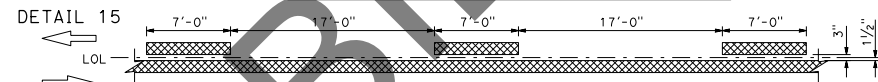
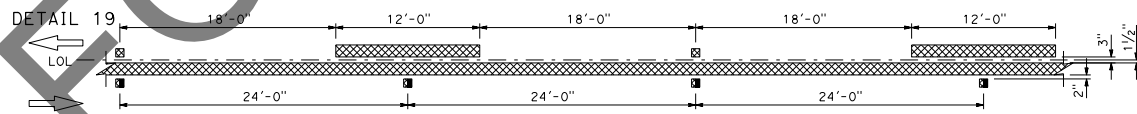
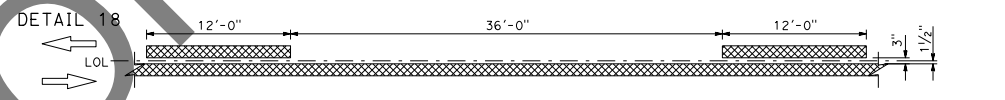
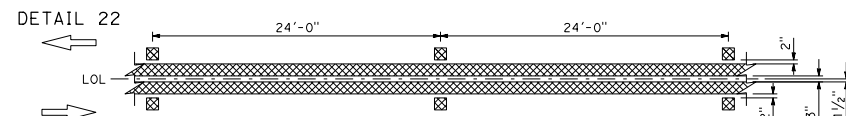
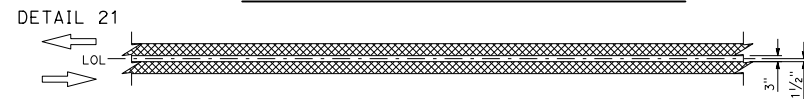
(2 LANE HIGHWAYS)

~~DETAIL 3~~ DETAIL 3 DELETED~~DETAIL 4~~ DETAIL 4 DELETED~~DETAIL 7~~ DETAIL 7 DELETED**LANE LINES**

(MULTILANE HIGHWAYS)

~~DETAIL 10~~ DETAIL 10 DELETED~~DETAIL 13~~ DETAIL 13 DELETED~~DETAIL 14~~ DETAIL 14 DELETED~~DETAIL 14A~~ DETAIL 14A DELETED**LEGEND:**

- TYPE C RED-CLEAR RETROREFLECTIVE MARKER
- TYPE D TWO-WAY YELLOW RETROREFLECTIVE MARKER
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE MARKER
- TYPE H ONE-WAY YELLOW RETROREFLECTIVE MARKER
- 6" WHITE LINE
- 6" YELLOW LINE

**MARKER DETAILS****NO PASSING ZONES - ONE DIRECTION**~~DETAIL 17~~ DETAIL 17 DELETED~~DETAIL 20~~ DETAIL 20 DELETED**NO PASSING ZONES - TWO DIRECTION**~~DETAIL 23~~ DETAIL 23 DELETED

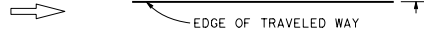
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKERS AND TRAFFIC LINES**  
**TYPICAL DETAILS**

NO SCALE

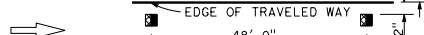
**A20A**

**LEFT EDGE LINES**(DIVIDED HIGHWAYS)  
See Note

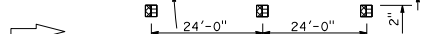
DETAIL 24



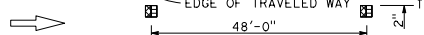
DETAIL 25



DETAIL 25A



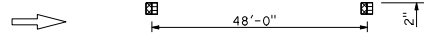
DETAIL 25B



DETAIL 26



DETAIL 26A



DETAIL 26B



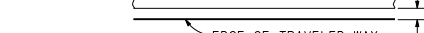
DETAIL 27

**RIGHT EDGE LINES**

DETAIL 27A

DETAIL 27A DELETED

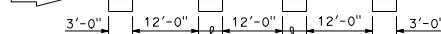
DETAIL 27B



LEFT EDGE LINES NOTE:  
On freeways use traffic stripe details with Type RY markers.

**RIGHT EDGE LINE EXTENSION THROUGH INTERSECTIONS**

DETAIL 27C

**MEDIAN ISLANDS**

DETAIL 28



DETAIL 29

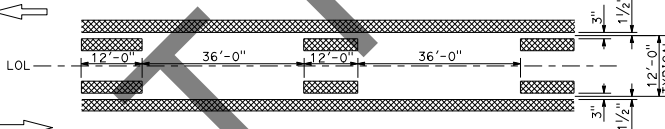


DETAIL 30

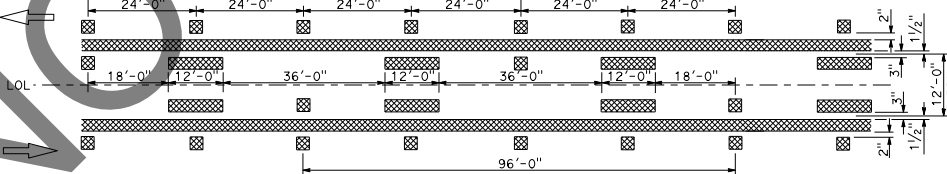
DETAIL 30 DELETED

**TWO-WAY LEFT TURN LANES**

DETAIL 31



DETAIL 32



DETAIL 33

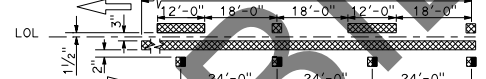
DETAIL 33 DELETED

**LEGEND:**

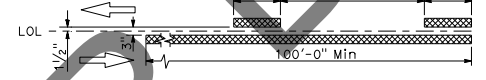
- TYPE D TWO-WAY YELLOW RETROREFLECTIVE MARKER
- TYPE H ONE-WAY YELLOW RETROREFLECTIVE MARKER
- TYPE RY RED-YELLOW RETROREFLECTIVE MARKER
- 6" WHITE LINE
- 6" YELLOW LINE

**INTERSECTION TREATMENTS**

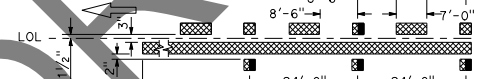
DETAIL 34



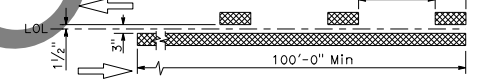
DETAIL 34A



DETAIL 35



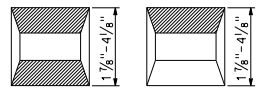
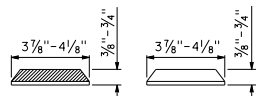
DETAIL 35A



Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS

September 20, 2024  
 PLANS APPROVAL DATE  
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REGISTERED CIVIL ENGINEER  
 No. C81705  
 Exp. 3-31-26  
 CIVIL  
 STATE OF CALIFORNIA

**MARKER DETAILS**TYPE RY  
AND TYPE D

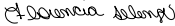
TYPE H

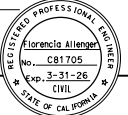
RETROREFLECTIVE FACE

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT MARKERS AND TRAFFIC LINES**  
**TYPICAL DETAILS**  
NO SCALE

**A20B**

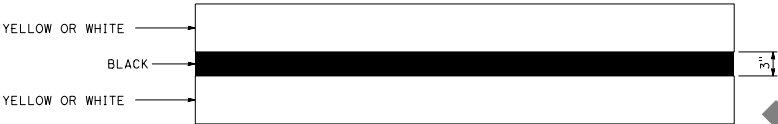
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

  
REGISTERED CIVIL ENGINEER



September 20, 2024  
PLANS APPROVAL DATE

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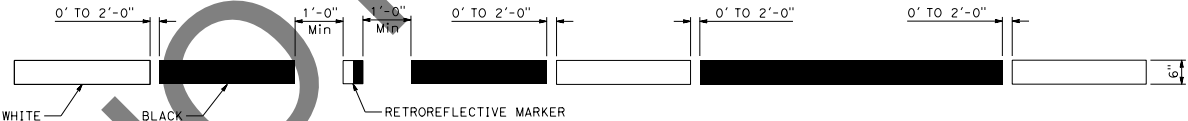


TYPICAL DOUBLE STRIPE CONTRAST DETAIL

- NOTES:**
- 1. See Standard Plans A20A, A20B, A20C, A20D and A20F for traffic lines typical details.
  - 2. Detail 9 Traffic stripe shown. See project plans for traffic stripe details.



OPTION 1  
TYPICAL LANE LINE OR RIGHT EDGE LINE CONTRAST DETAIL

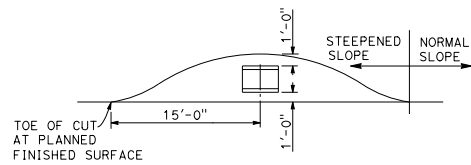


OPTION 2  
TYPICAL LANE LINE CONTRAST DETAIL  
See Note 2

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TRAFFIC LINES  
TYPICAL DETAILS  
FOR CONTRAST STRIPING**  
NO SCALE

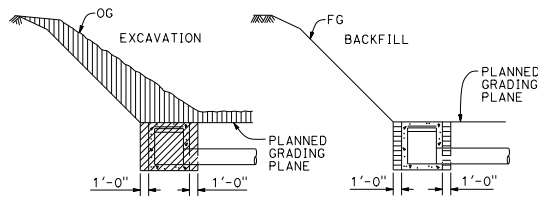
**A20E**

2024 STANDARD PLAN A20E



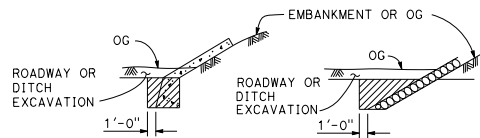
PLAN

See Note 2



SECTION

## RECESSES AT DRAINAGE INLETS

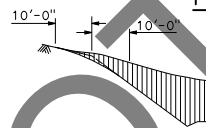


## SLOPE PROTECTION

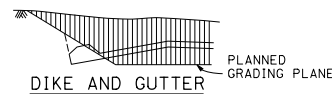
See Note 3



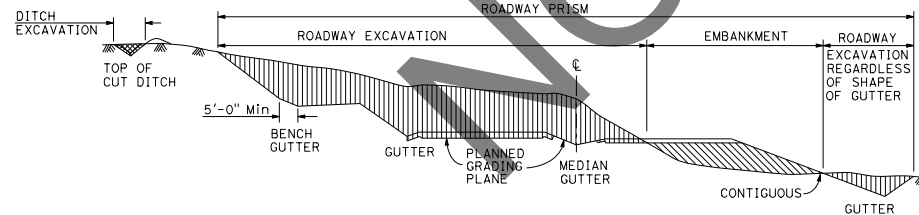
PAVED OR LINED DITCH



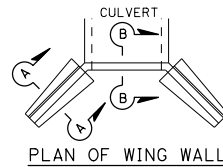
SLOPE ROUNDING



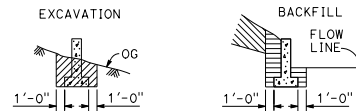
DIKE AND GUTTER



## ROADWAY EXCAVATION - DITCH EXCAVATION



PLAN OF WING WALL

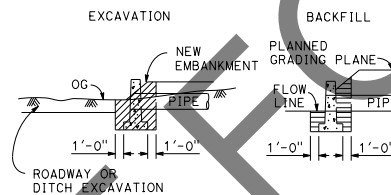


SECTION A-A

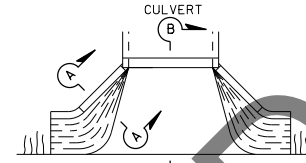


SECTION B-B

## WING WALLS



## PIPE HEADWALLS



PLAN OF WARPED WING WALL



SECTION A-A



SECTION B-B

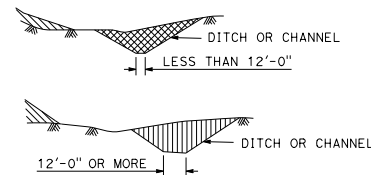
## WARPED WING WALLS

## NOTES:

1. This drawing indicates the work to be done and limits of payment for:  
Roadway Excavation  
Ditch Excavation  
Structure Excavation for Slope Protection
2. Slopes and dimensions may vary to fit field conditions.
3. Top limit of structure excavation is original ground if ditch is not excavated.

## LEGEND

	STRUCTURE EXCAVATION
	STRUCTURE BACKFILL
	DITCH EXCAVATION
	SLOPE PROTECTION
	ROADWAY EXCAVATION
	ROADWAY EMBANKMENT



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**EXCAVATION AND BACKFILL  
MISCELLANEOUS DETAILS**

NO SCALE

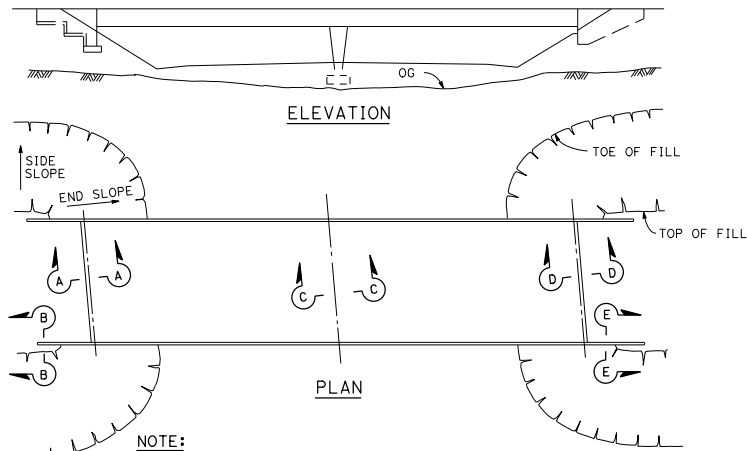
A62A

Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS

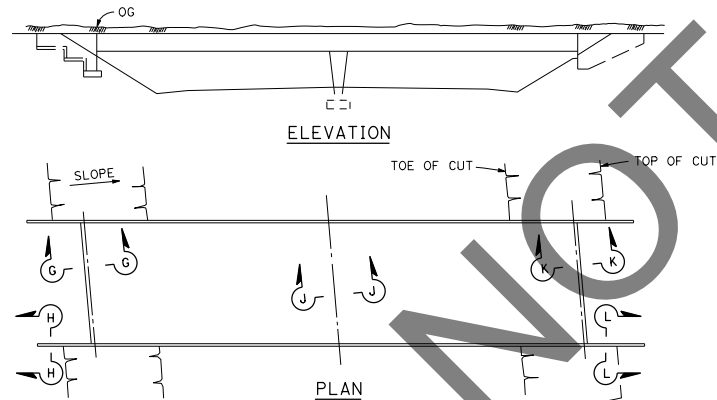
September 20, 2024  
PLANS APPROVAL DATE

REGISTERED CIVIL ENGINEER  
Carl M. Dunn  
No. C59876  
Exp. 6-30-26  
CIVIL  
STATE OF CALIFORNIA

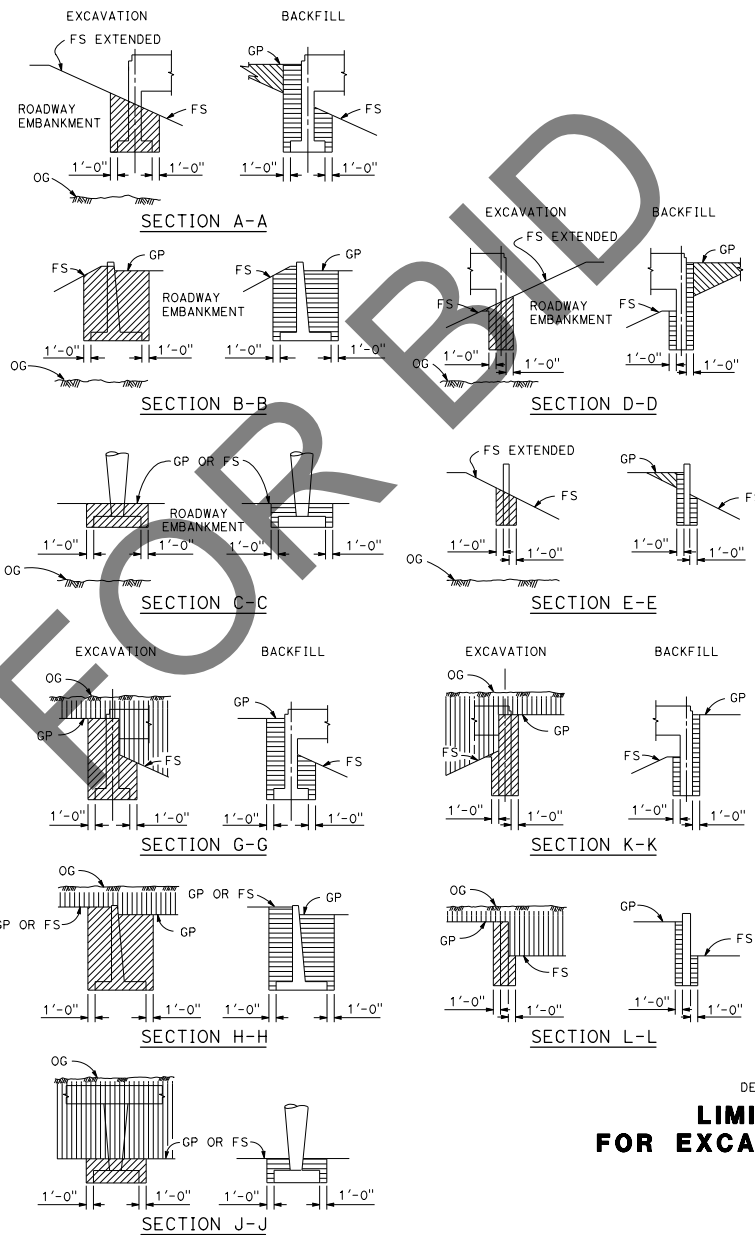
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**NOTE:**

Roadway embankment is not delineated on excavation drawings for clarity. Embankment must be in place before structure excavation is made.

**IN FILL****NOTE:**

If no roadway excavation is involved at bridge, structure excavation is measured from original ground.

**IN CUT**

Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS
Gary Wong REGISTERED CIVIL ENGINEER September 20, 2024 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.				
Gary Wong No. C58298 Exp. 6-30-26 CIVIL STATE OF CALIFORNIA				

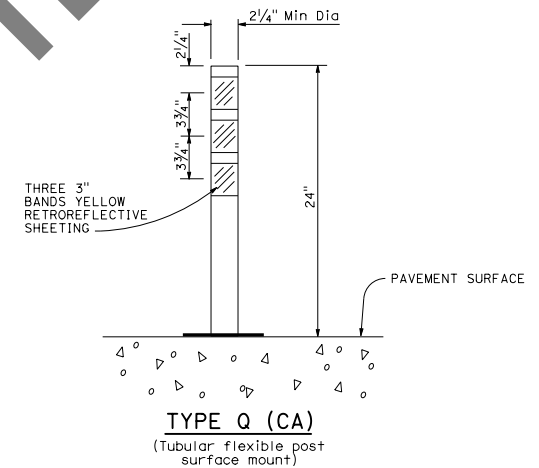
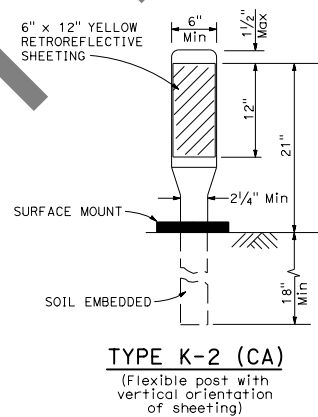
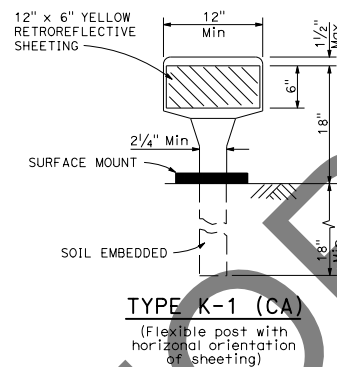
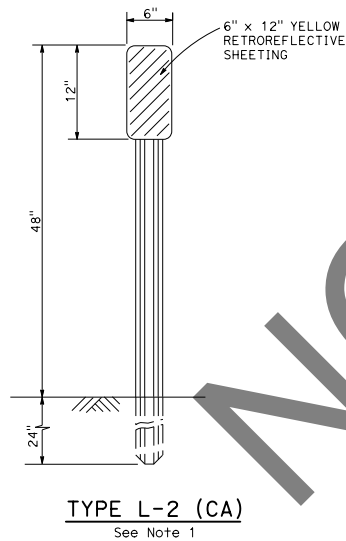
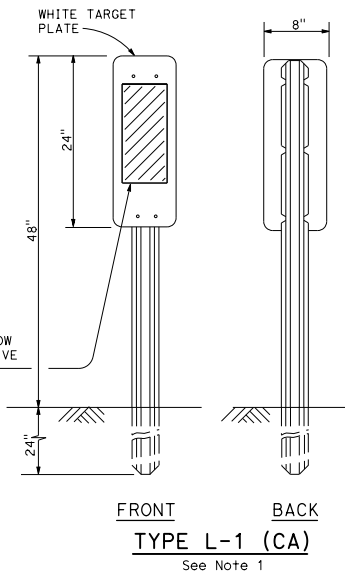
**LEGEND**

- STRUCTURE EXCAVATION
- STRUCTURE BACKFILL
- ROADWAY EXCAVATION
- ROADWAY EMBANKMENT

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**LIMITS OF PAYMENT  
FOR EXCAVATION AND BACKFILL  
BRIDGE**

NO SCALE

**A62C**

**NOTE:**

1. See Standard Plan A73B for metal post details and additional markers.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**OBJECT MARKERS**

NO SCALE

**A73A**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

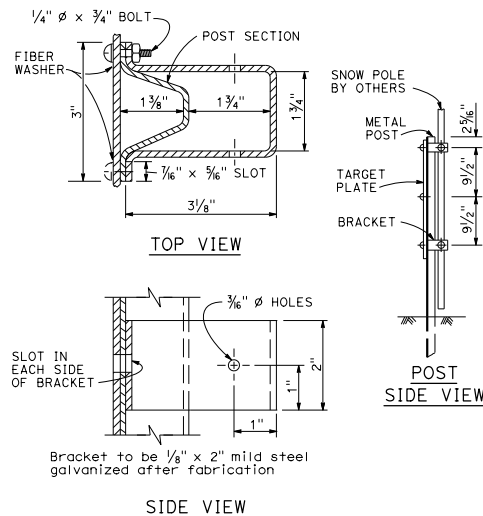
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September 20, 2024

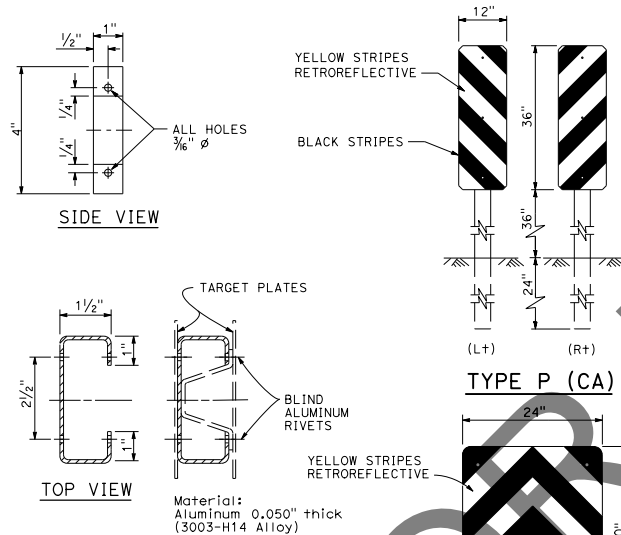
PLANS APPROVAL DATE

Shangjia Horn  
No. C51846  
Exp. 6-30-26  
CIVIL  
STATE OF CALIFORNIA

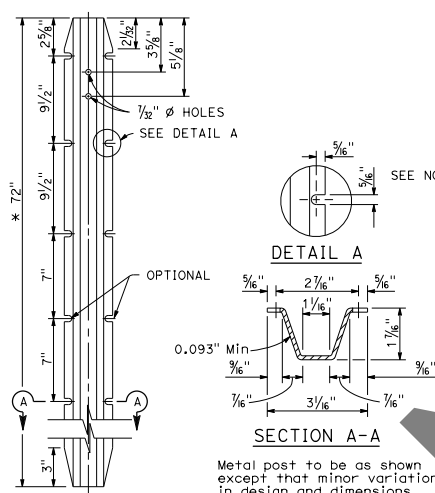
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SNOW POLE BRACKET



TWO PLATE POST MOUNT



\* 8'-0" for Type P object marker

METAL POST DETAIL

## MILEPOST MARKER NOTES:

1. The marker shall be white (non-reflective) target plate with black Series D numerals and letters.
2. A post mile prefix, such as "R", shall apply only when directed by the Engineer.
3. "BK" (Back), "AH" (Ahead), or a blank space shall apply as directed by the Engineer.
4. All information shall be in U.S. Customary units (miles).

MILEPOST MARKER

## TYPE N-1 (CA), N-2 (CA), N-3 (CA)

N-1(CA). Yellow retroreflective.  
N-2(CA). Red retroreflective.  
N-3(CA). Orange retroreflective.

OBJECT MARKERS

## NOTES:

- A. See Standard Plan A73A for additional object markers.
- B. Type P(CA) and R(CA) markers shall have orange and white retroreflective stripes in work zones.
- C. Diagonal stripes on Type P(CA) markers shall be sloped down in the direction of travel.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

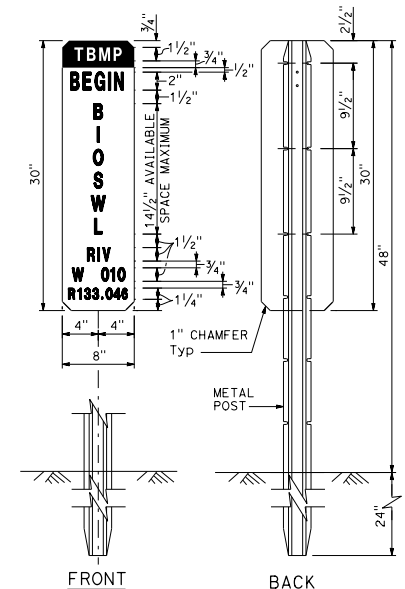
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September 20, 2024

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Shangjia Horn  
No. CS1846  
EXP. 6-30-26  
CIVIL  
STATE OF CALIFORNIA



TBMP MARKER

## TREATMENT BEST MANAGEMENT PRACTICE (TBMP) MARKER

## NOTES:

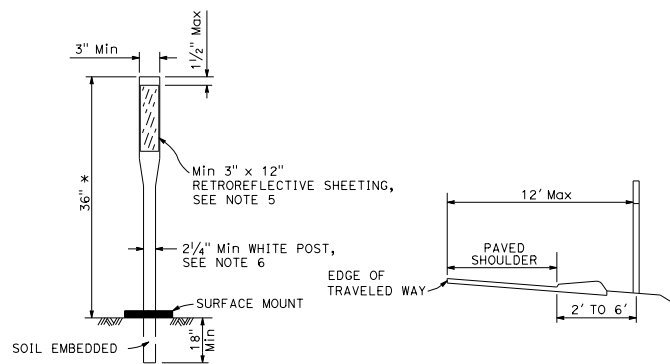
1. The marker header shall be green (non-reflective) background with white (non-reflective) Series C letters.
2. The marker body shall be white (non-reflective) target plate with black Series C numbers and letters.
3. "BEGIN" or "END" shall apply as directed by the Engineer.
4. TBMP abbreviations shall be Series D letters up to a maximum of 2" tall, to fit within the available maximum space of 14.5".
5. See Project Plans for TBMP abbreviations.

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## MARKERS

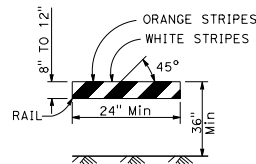
NO SCALE

A73B



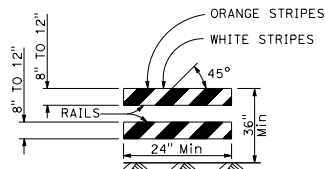
\* 36" Min where speeds are 40 miles/h or less.

### CHANNELIZERS



**TYPE I BARRICADE**

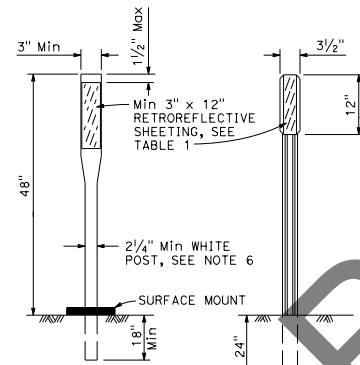
See Note A



**TYPE II BARRICADE**

### BARRICADES (See Note 3)

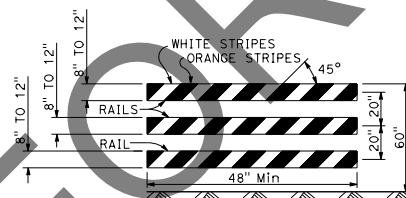
Only face of rails shown. Barricade construction materials and supports as specified in the specifications.



**CLASS 1  
FLEXIBLE POST**

**CLASS 2  
METAL POST**  
See Note 4

### DELINEATORS



**TYPE III BARRICADE**

**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.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

September 20, 2024

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER  
Floresencia Allaguer  
No. C81705  
EXP. 3-31-26  
CIVIL  
STATE OF CALIFORNIA

TYPE	RETROREFLECTIVE SHEETING	
	FRONT	BACK
E	WHITE	WHITE (SEE NOTE 1)
F	WHITE	NONE
G	YELLOW	NONE
J	RED	NONE

#### NOTES:

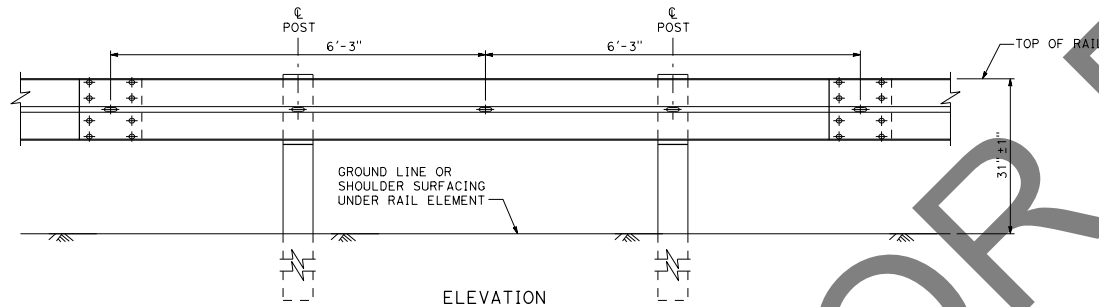
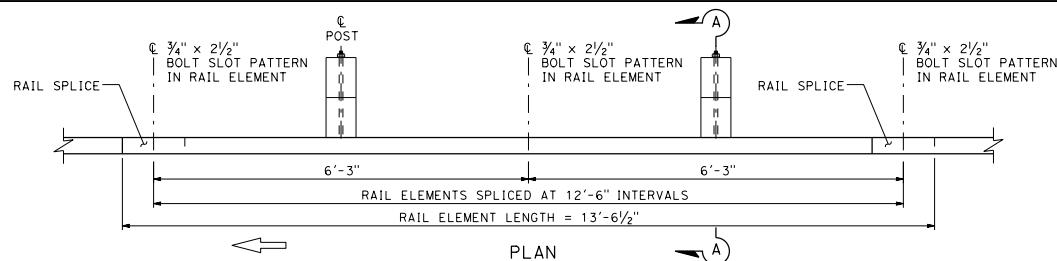
- The retroreflective sheeting used on the back of delineator shall be a minimum size of 3" x 3".
- The type of delineator to be installed will be designated on the plans.
- All barricade stripes shall be retroreflective and sloped downward in the direction of the opened traffic lane.
- See Standard Plan A73B for Metal Post Details.
- 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.
- Except, Class 1 (Flexible Post) temporary delineators and temporary channelizers in work zones shall be orange post with white retroreflective sheeting.

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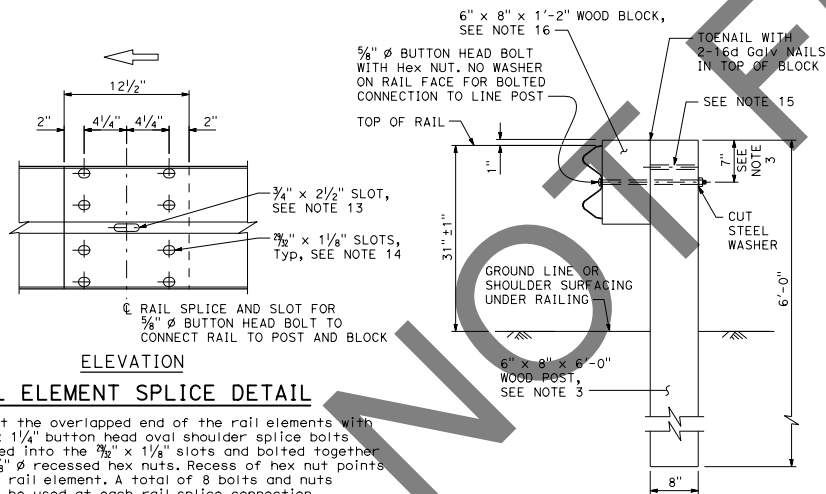
## DELINEATORS, CHANNELIZERS AND BARRICADES

NO SCALE

**A73C**



**MIDWEST GUARDRAIL SYSTEM WITH WOOD POST AND BLOCKS**

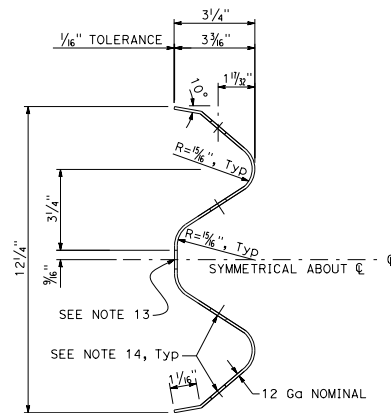


**RAIL ELEMENT SPLICE DETAIL**

- Connect the overlapped end of the rail elements with  $\frac{5}{8}$ "  $\phi$  x  $1\frac{1}{4}$ " button head oval shoulder splice bolts inserted into the  $\frac{3}{4}$ " x  $1\frac{1}{4}$ " slots and bolted together with  $\frac{5}{8}$ "  $\phi$  recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic, see details.
- 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.

**SECTION A-A  
TYPICAL WOOD LINE  
POST INSTALLATION**

See Note 4



**SECTION THRU  
RAIL ELEMENT**

**NOTES:**

- 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.
- 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.
- For MGS end anchor details, see Standard Plans A77S1 and A77T2.
- For details of MGS transition to Approach Guardrail Transition (Type AGT), see Standard Plan A79A1.
- For details of MGS connection to bridge railing, see Standard Plans A79B1 and A79B2.
- For MGS connection details to abutments and walls, see Standard Plans A79C1 and A79C2.
- For typical MGS delineation and dike positioning details, see Standard Plan A77N4.
- Slotted hole for bolted connection of rail element to block and post.
- 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.
- 6" x 12" x 1'-2" block must be used with 6" Type A dike.
- Install posts in soil.

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DEPARTMENT OF TRANSPORTATION

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

NO SCALE

**A77L1**

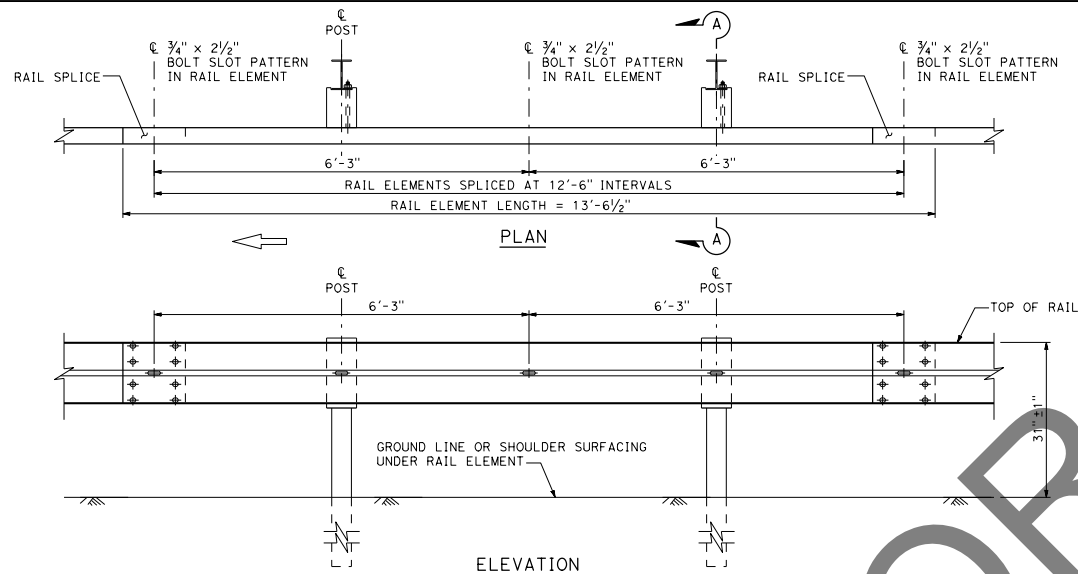
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

*Mark Ballentine*  
REGISTERED CIVIL ENGINEER

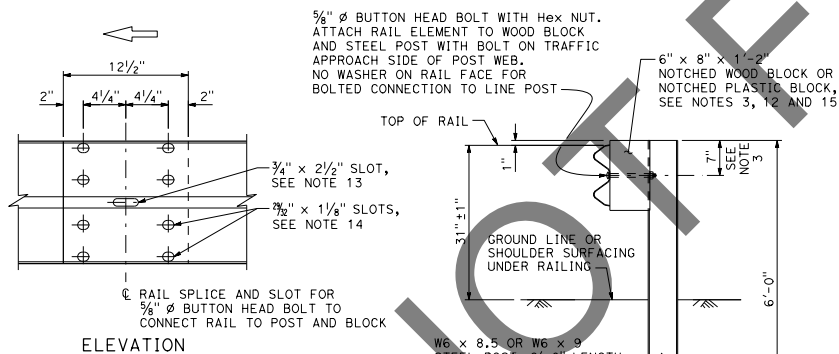
September 20, 2024  
PLANS APPROVAL DATE

No. C64101  
EXP. 9-30-24  
CIVIL  
STATE OF CALIFORNIA

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

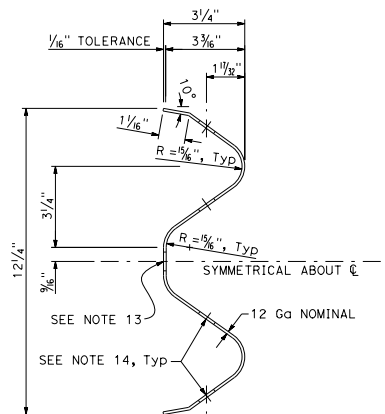


#### RAIL ELEMENT SPLICE DETAIL

- Connect the overlapped end of the rail elements with  $\frac{5}{8}$ "  $\phi$  x  $\frac{1}{4}$ " button head shoulder splice bolts inserted into the  $\frac{3}{4}$ " x  $\frac{1}{8}$ " slots and bolted together with  $\frac{5}{8}$ "  $\phi$  recessed hex nuts. Recess of hex nut points toward rail element. A total of 8 bolts and nuts are to be used at each rail splice connection.
- The ends of the rail elements are to be overlapped in the direction of traffic, see details.
- 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.

#### SECTION A-A TYPICAL STEEL LINE POST INSTALLATION

See Note 4



#### SECTION THRU RAIL ELEMENT

#### NOTES:

- For details of wood post installations, see Standard Plan A77L1.
- 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.
- 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.
- For MGS end anchor details, see Standard Plans A77S1 and A77T2.
- For details of MGS transition to Approach Guardrail Transition (Type AGT), see Standard Plan A79A1.
- For details of MGS connection to bridge railings, see Standard Plans A79B1 and A79B2.
- For dike positioning and MGS delineation details, see Standard Plan A77N4.
- Notched face of block faces steel post.
- Slotted hole for bolted connection of rail element to block and post.
- Slotted holes for splice bolts to overlap ends of rail element.
- 6" x 12" x 1'-2" block must be used with 6" Type A dike.
- Install posts in soil.

### MIDWEST GUARDRAIL SYSTEM STANDARD RAILING SECTION (STEEL POST WITH NOTCHED WOOD OR NOTCHED RECYCLED PLASTIC BLOCK) NO SCALE

A77L2

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

Mark Ballentine  
REGISTERED CIVIL ENGINEER

September 20, 2024  
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

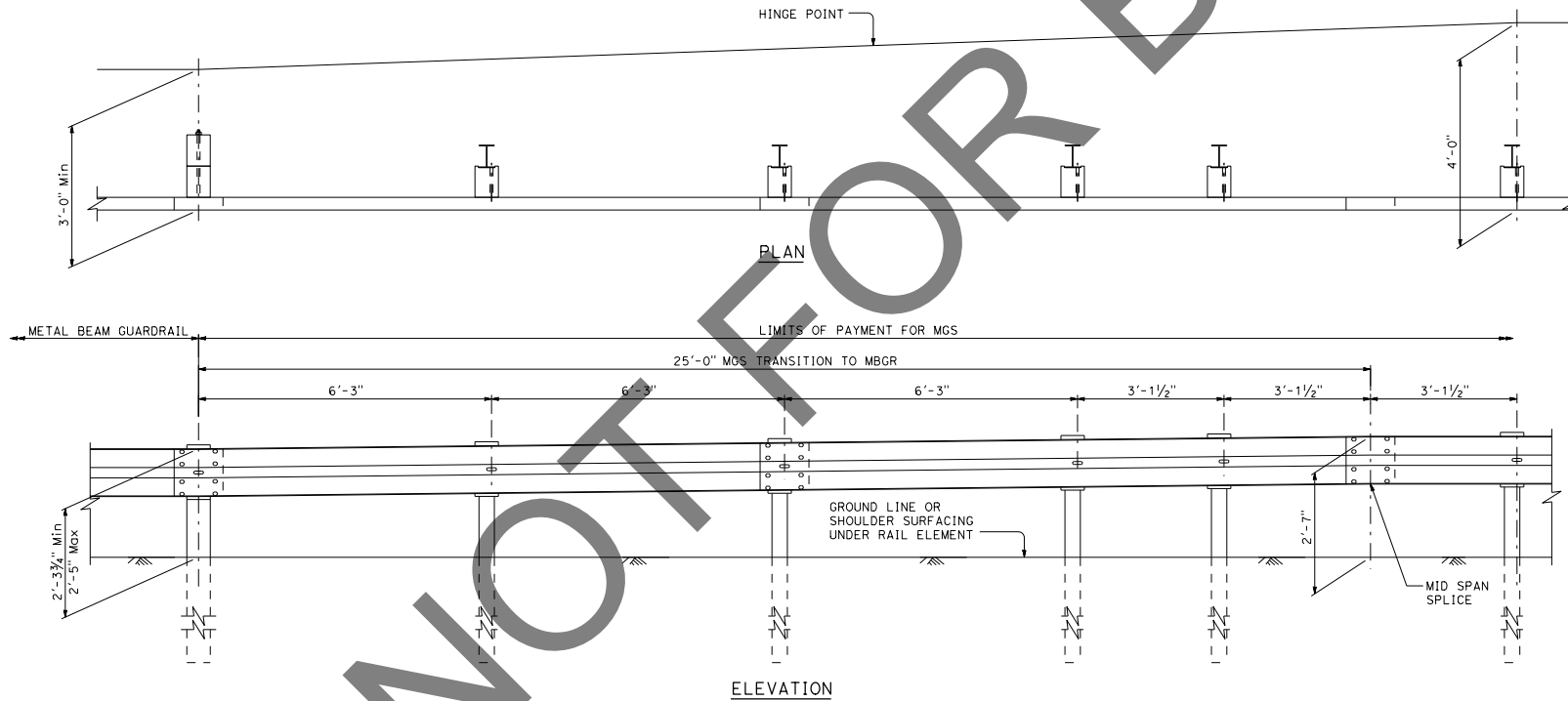
*Mark Ballentine*  
REGISTERED CIVIL ENGINEER

September 20, 2024  
PLANS APPROVAL DATE

Mark Ballentine  
No. C64101  
Exp. 9-30-24  
CIVIL  
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NOTE:  
1. Refer to Standard Plans A77L1 and A77L2 for  
component details for MGS not shown on this plan.



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
TRANSITION TO METAL BEAM GUARDRAIL**  
NO SCALE

**A77L4**

2024 STANDARD PLAN A77L4

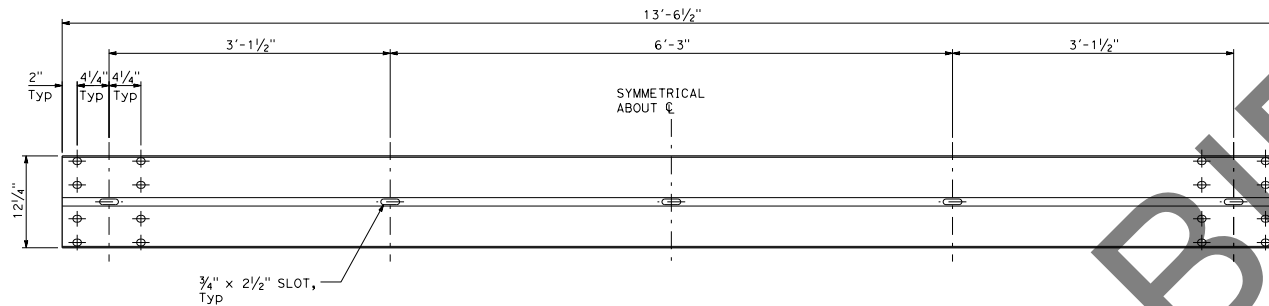
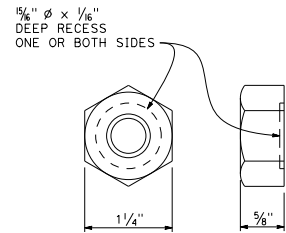
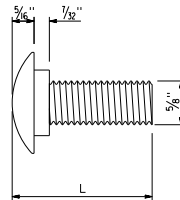
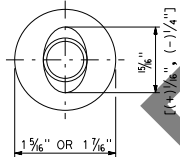
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

**Mark Ballentine**  
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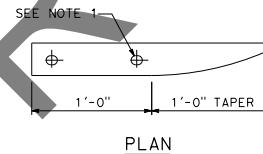
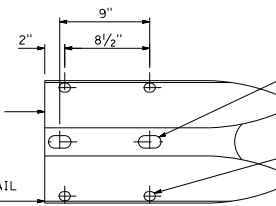
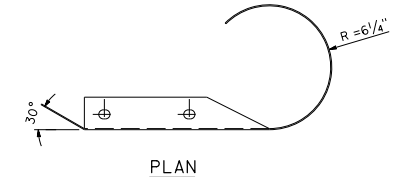
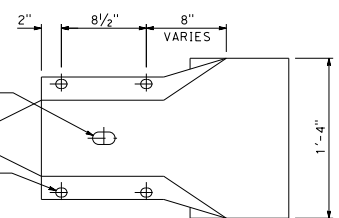
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**NOTE:**

1. Slotted holes for splice bolts to overlap ends of rail element.

**TYPICAL RAIL ELEMENT****5/8"  $\phi$  RECESS NUT****5/8"  $\phi$  BUTTON HEAD BOLT****NOMINAL GAUGE THICKNESS**

12 Ga Is 0.108"  
10 Ga Is 0.138"

**PLAN****ELEVATION  
END CAP (TYPE A)****PLAN****ELEVATION  
END CAP (TYPE B)**

BUTTON HEAD BOLT	
L	THREAD LENGTH
1 1/4"	FULL THREAD LENGTH
2"	FULL THREAD LENGTH
10"	4" Min THREAD LENGTH
18"	4" Min THREAD LENGTH
20"	4" Min THREAD LENGTH
22"	4" Min THREAD LENGTH
26"	4" Min THREAD LENGTH
36"	4" Min THREAD LENGTH
** 2 3/4"	2" Min THREAD LENGTH
** 19"	4" Min THREAD LENGTH

\*\* For nested rail applications

STATE OF CALIFORNIA  
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**MIDWEST GUARDRAIL SYSTEM  
 STANDARD HARDWARE**  
 NO SCALE

**A77M1**

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

*Mark Ballentine*  
REGISTERED CIVIL ENGINEER

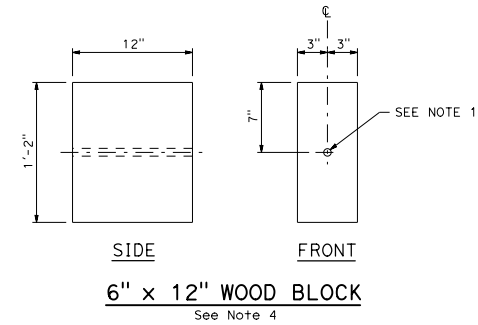
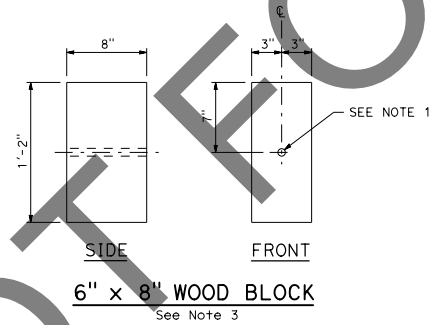
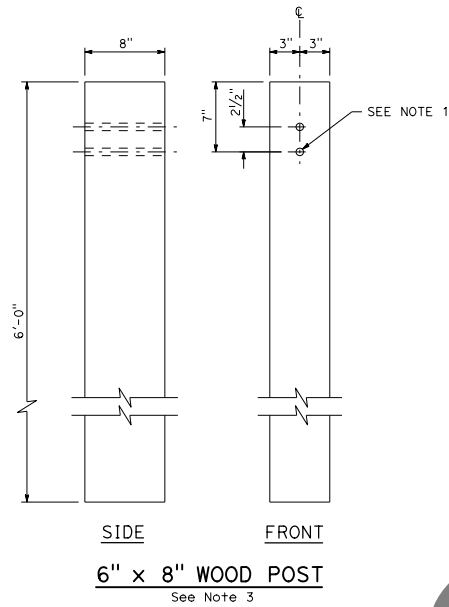
September 20, 2024  
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No. C64101  
EXP. 9-30-24  
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## NOTES:

1. All holes in wood posts and blocks shall be  $\frac{3}{4}$ " Dia  $\pm \frac{1}{16}$ ".
2. Dimensions shown for wood post are nominal.
3. This post and block combination used for standard line post sections of MGS.
4. Must be used with 6" height Type A dike.



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**MIDWEST GUARDRAIL SYSTEM  
WOOD POST AND  
WOOD BLOCK DETAILS**  
NO SCALE

A77N1

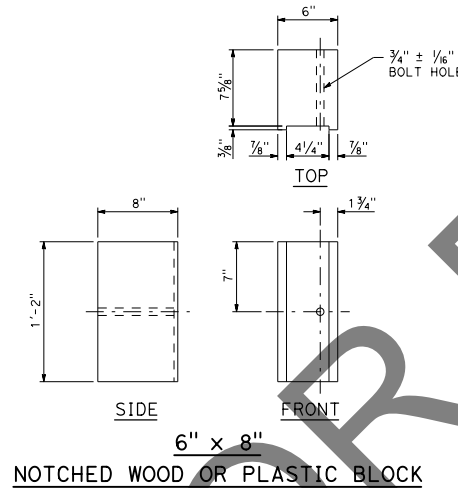
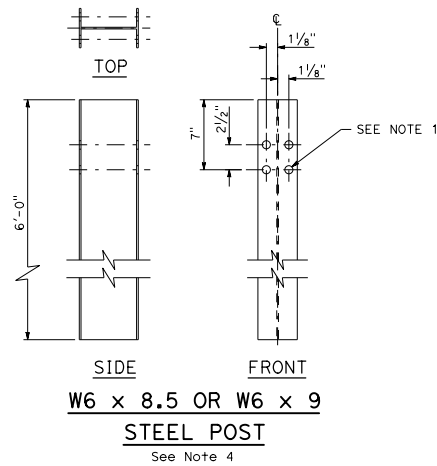
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

*Mark Ballentine*  
REGISTERED CIVIL ENGINEER

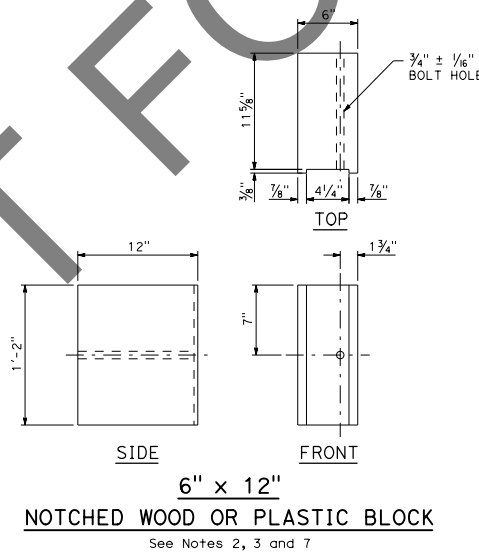
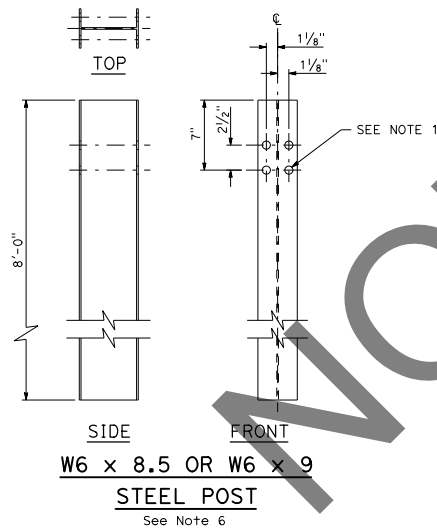
September 20, 2024  
PLANS APPROVAL DATE

Mark Ballentine  
No. C64101  
Exp. 9-30-24  
CIVIL  
STATE OF CALIFORNIA

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**NOTES:**

1. All holes in steel post shall be 1/8"  $\phi$  maximum.
2. Dimensions shown for wood block are nominal.
3. Notched face of block faces steel post.
4. 6'-0" length posts to be used for typical roadway installation. See Standard Plan A77N3.
5. The standard block on W8 x 6.5 or W6 x 9 steel post separates the metal beam guardrail element 8" from the post. The 12" block is an option to the 8" block.
6. This post to be used for line post sections of MGS on narrow roadways. Post longer than 6' must be labeled on post web with 2" letters using black acrylic paint.
7. 6" x 12" block must be used with 6" Type A dike.



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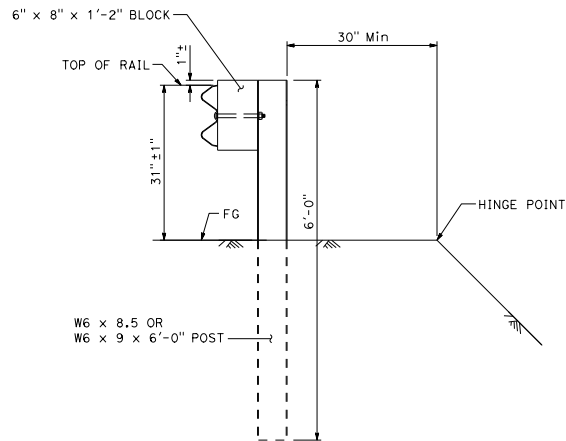
**MIDWEST GUARDRAIL SYSTEM**  
**STEEL POST AND BLOCK DETAILS**  
NO SCALE

**A77N2****2024 STANDARD PLAN A77N2**

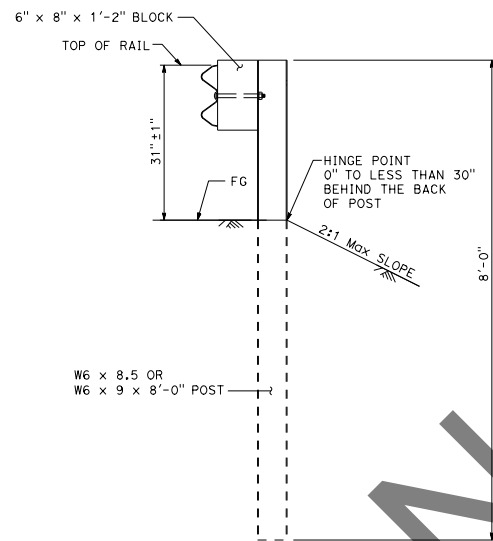
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

<b>Mark Ballentine</b> REGISTERED CIVIL ENGINEER		
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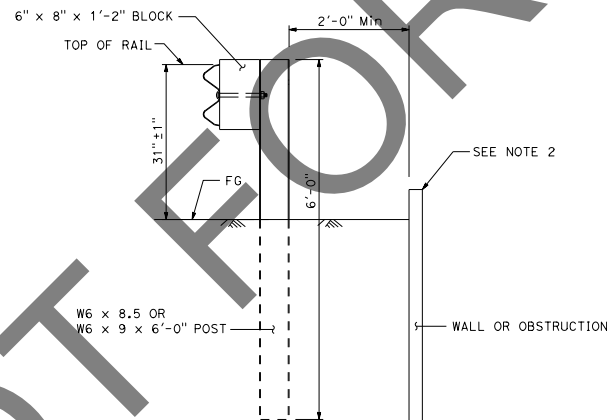


**DETAIL A**  
**TYPICAL ROADWAY INSTALLATION**  
See Note 1



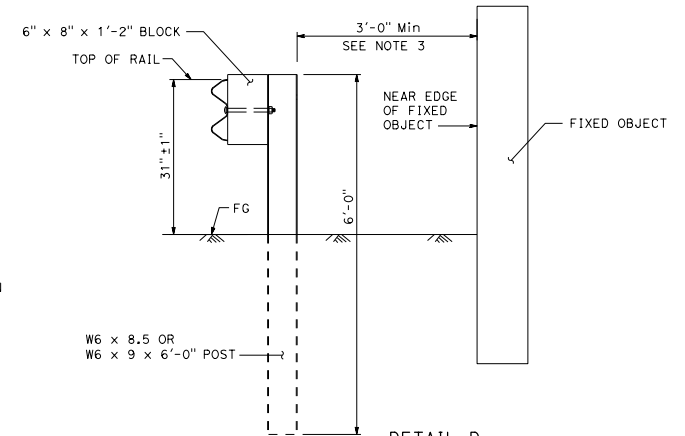
**DETAIL B**  
**NARROW ROADWAY INSTALLATION**  
See Note 1

**POST EMBEDMENT**



**DETAIL C**  
At or below grade

**INSTALLATION AT  
WALLS OR OBSTRUCTIONS**



**DETAIL D**  
Above grade

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**MIDWEST GUARDRAIL SYSTEM  
TYPICAL LINE POST EMBEDMENT  
AND HINGE POINT OFFSET DETAILS**  
NO SCALE

**A77N3**

**2024 STANDARD PLAN A77N3**

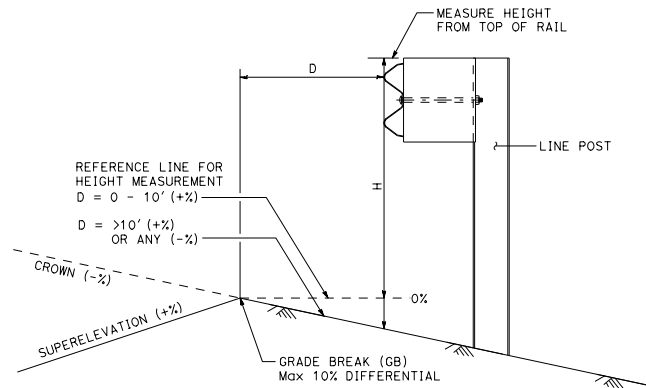
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

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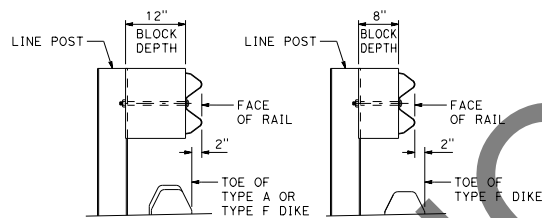
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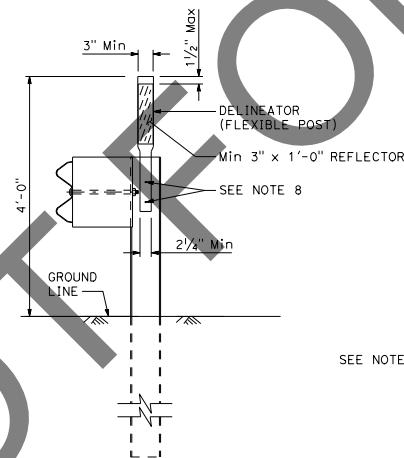
D = DISTANCE, GB TO FACE OF RAIL  
H = HEIGHT AT FACE OF RAIL FROM EXTENDED LINE, BASED ON D  
H = 31" ±1" FOR MGS  
H = 34" ±1" FOR THRIE BEAM (NOT SHOWN)

### MEASURE HEIGHT DETAIL AT GRADE BREAK (GB)

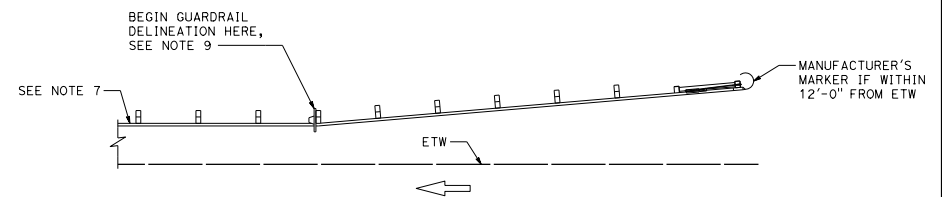


### GUARDRAIL DIKE POSITIONING

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



### GUARDRAIL DELINEATION



### MARKER PLACEMENT GUARDRAIL DELINEATION

## MIDWEST GUARDRAIL SYSTEM TYPICAL RAILING DELINEATION AND DIKE POSITIONING DETAILS

NO SCALE

A77N4

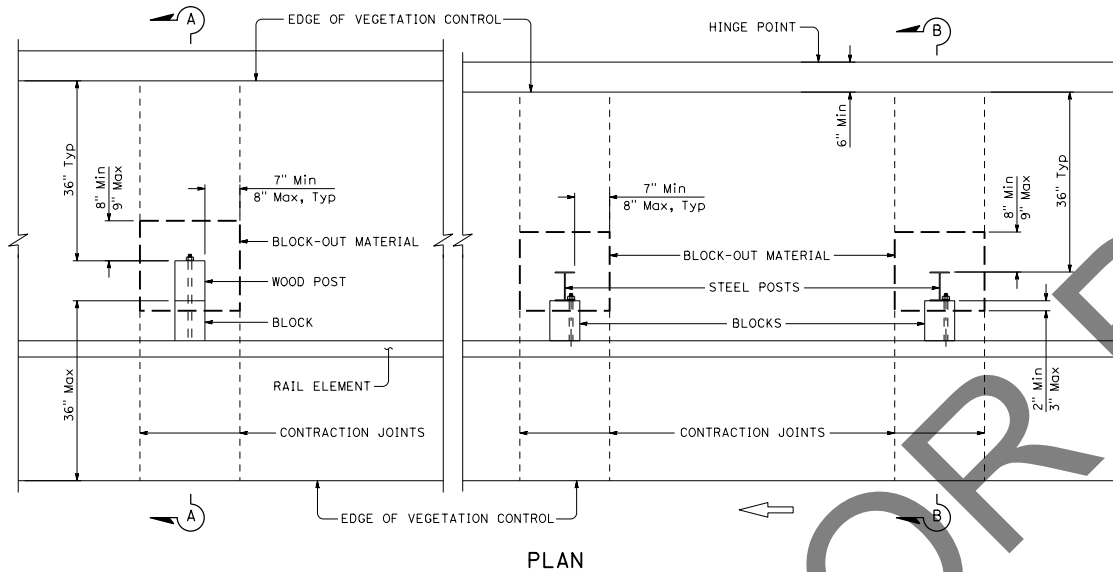
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

Chi H. Wong  
REGISTERED CIVIL ENGINEER

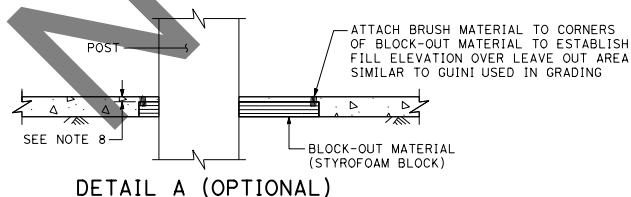
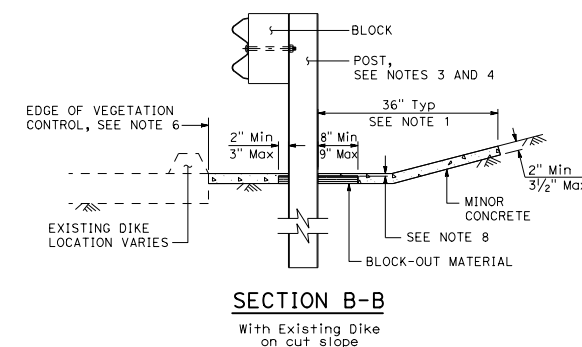
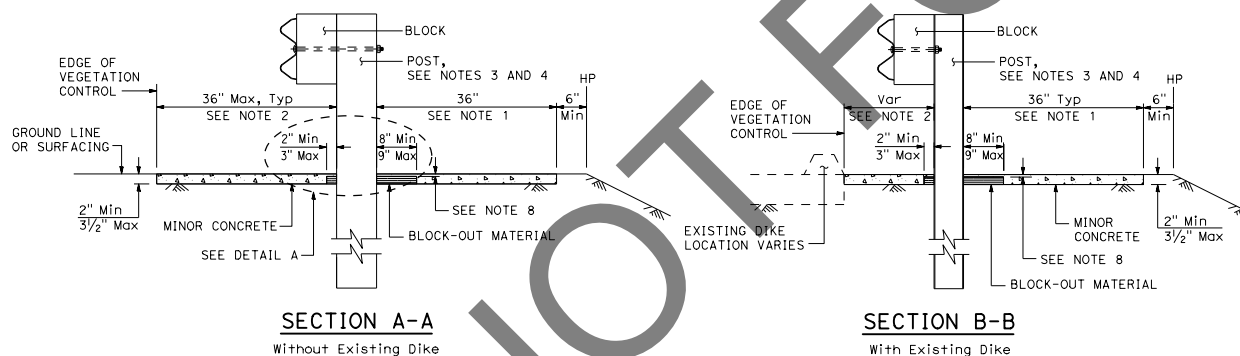
September 20, 2024  
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**NOTES:**

- 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 block-out or back of post.
- Where paved shoulder is constructed within 36" in front of the post, construct vegetation control to the edge of paved shoulder.
- For wood post sizes, see Standard Plan A77N1.
- For steel post sizes, see Standard Plan A77N2.
- For details not shown, see Standard Plans A77L1 and A77L2.
- Where vegetation control is adjacent to a dike on a cut slope, and for typical line post application only, vegetation control may be flush with the top edge of dike, see Note 10.
- Vegetation control must slope to drain water.
- Concrete over block-out material depth, construct  $\frac{3}{8}$ " Min to  $\frac{5}{8}$ " Max.
- This plan for vegetation control installation only.
- Do not place fill material or weed abatement to top of dike as shown in Section B-B within 25'-0" of terminals as shown on Standard Plans A77Q and A77R series.
- Vegetation control must not cover any bolts, bearing plates, struts, holes in post, or hardware at ground level.

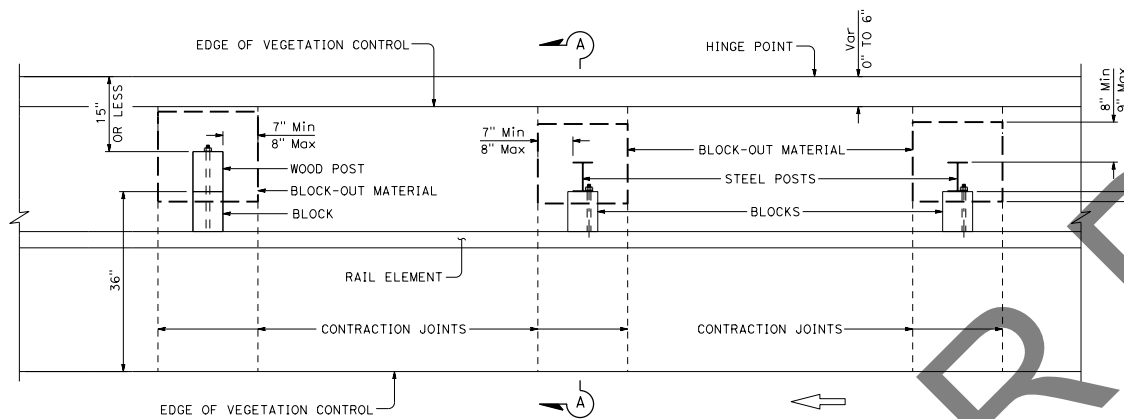


STATE OF CALIFORNIA  
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**MINOR CONCRETE VEGETATION CONTROL  
GUARDRAIL SYSTEM**

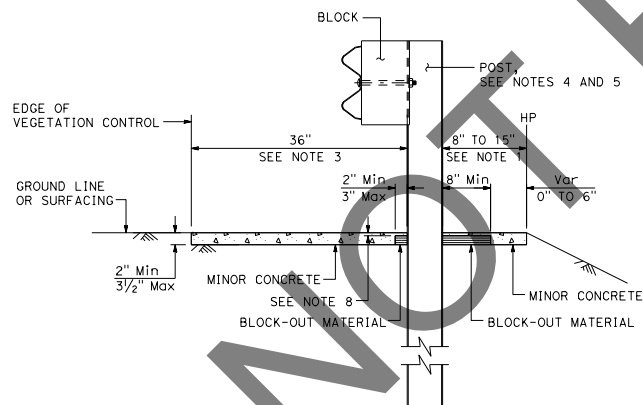
NO SCALE

**A77N5**



**PLAN**

See Note 1



**SECTION A-A**

Without Existing Dike

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

Chi H. Wong  
REGISTERED CIVIL ENGINEER

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**NOTES:**

1. Use the details on this sheet when the distance from the back of post to the hinge point is 15" or less. Use the details on Standard Plan A77N5 when the distance from the back of the post to the hinge point is greater than 15".
2. Construct vegetation control flush with the back edge of post, when distance from back of post to hinge point is less than 6".
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 away from post to drain water.
8. Concrete over block-out material depth, construct  $\frac{3}{8}$ " Min to  $\frac{5}{8}$ " Max.
9. This plan for vegetation control installation only.

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

NO SCALE

**A77N5A**

2024 STANDARD PLAN A77N5A

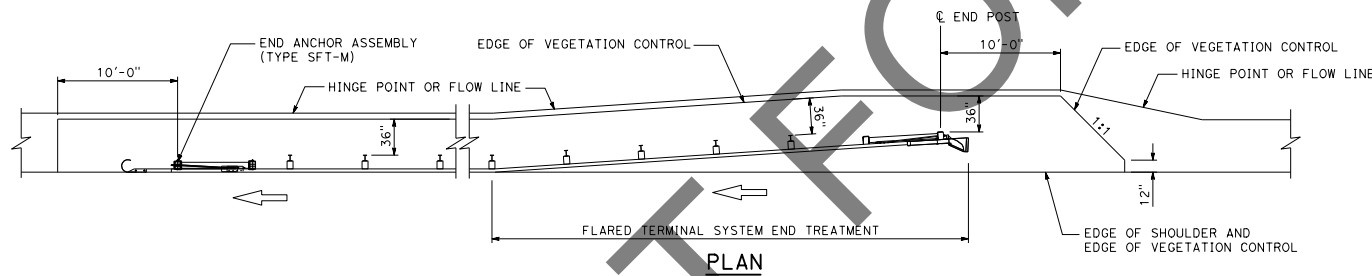
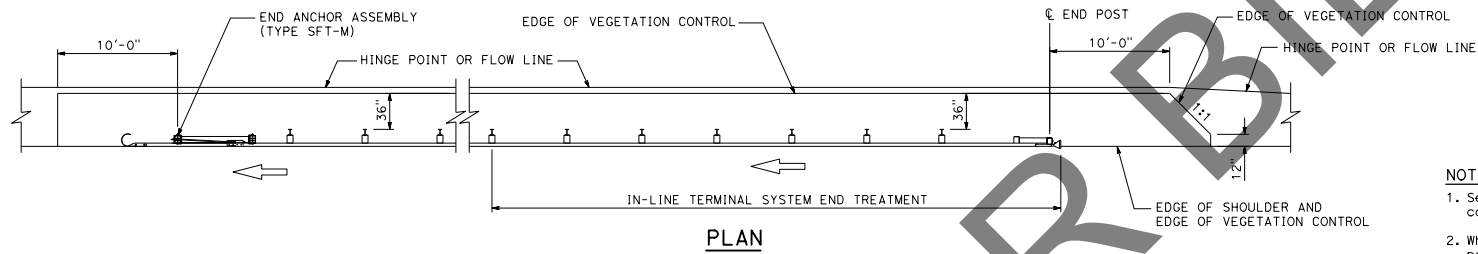
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

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September 20, 2024  
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**NOTES:**

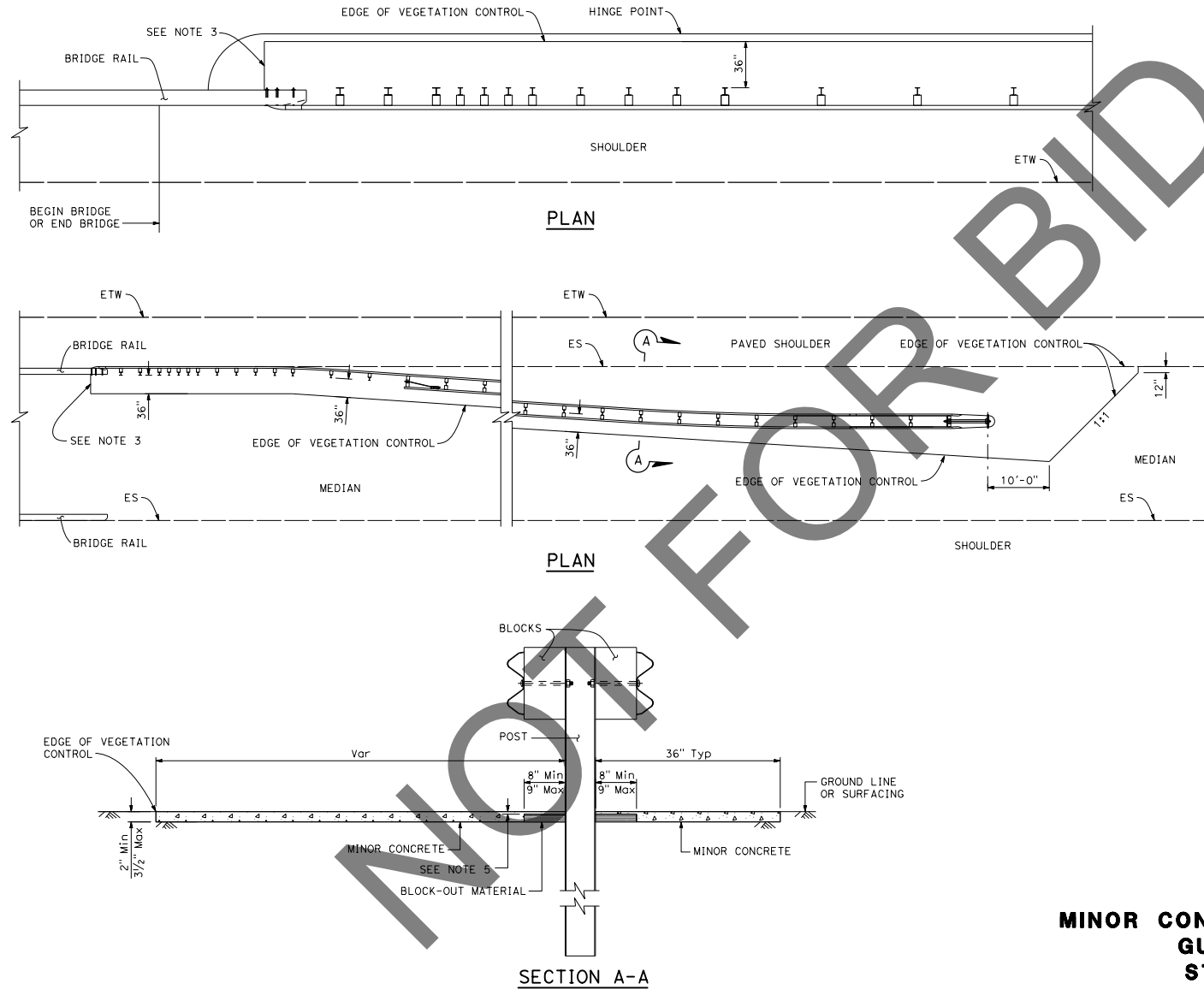
1. See Standard Plan A77N5 for additional vegetation control details.
2. Where the distance between back of post and hinge point is less than 42", construct vegetation control to 6" from hinge point while maintaining the 8" block-out at back of post.
3. Vegetation control must slope to drain water.
4.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

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MINOR CONCRETE VEGETATION CONTROL  
GUARDRAIL SYSTEM  
FOR TERMINAL SYSTEM END TREATMENTS**

NO SCALE

**A77N6**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Chi H. Wong  
REGISTERED CIVIL ENGINEER

September 20, 2024  
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CIVIL  
STATE OF CALIFORNIA

**NOTES:**

1. 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. End vegetation control at end of rail element.
4. Vegetation control must slope to drain water.
5. Concrete over block-out material depth, construct  $\frac{3}{8}$ " Min to  $\frac{5}{8}$ " Max.
6. This plan for vegetation control installation only.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MINOR CONCRETE VEGETATION CONTROL  
GUARDRAIL SYSTEM AT  
STRUCTURE APPROACH**

NO SCALE

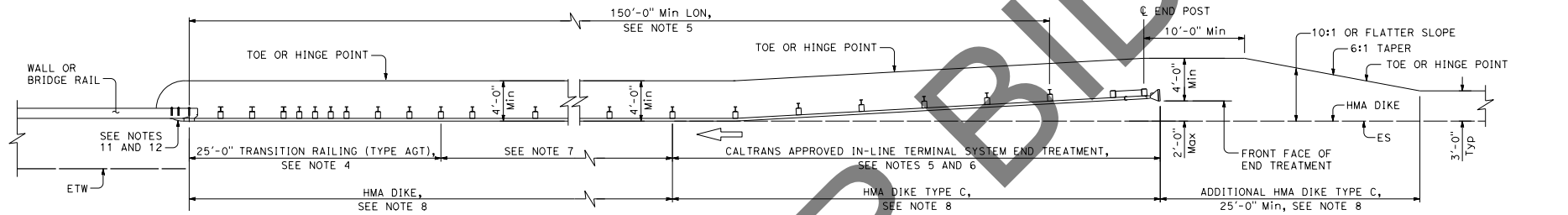
**A77N7**

2024 STANDARD PLAN A77N7

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

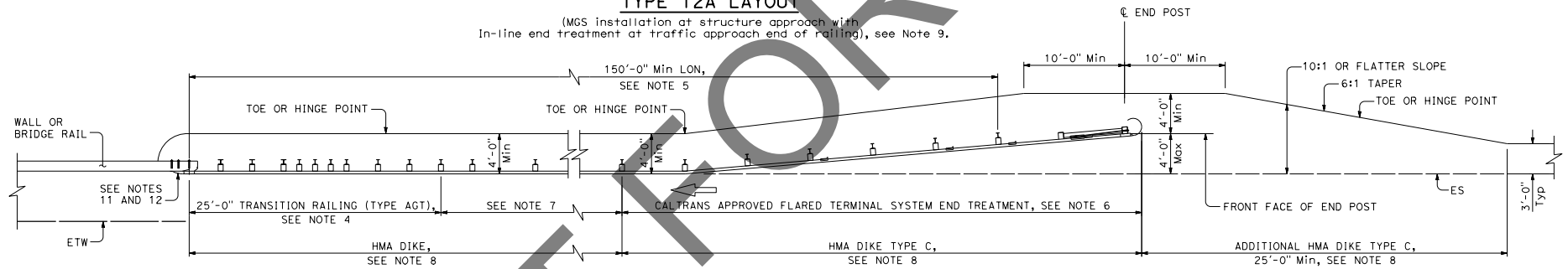
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September 20, 2024  
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### TYPE 12A LAYOUT

(MGS installation at structure approach with  
In-line end treatment at traffic approach end of railing), see Note 9.



### TYPE 12B LAYOUT

(MGS installation at structure approach with  
Flared end treatment at traffic approach end of railing), see Note 9.

#### NOTES:

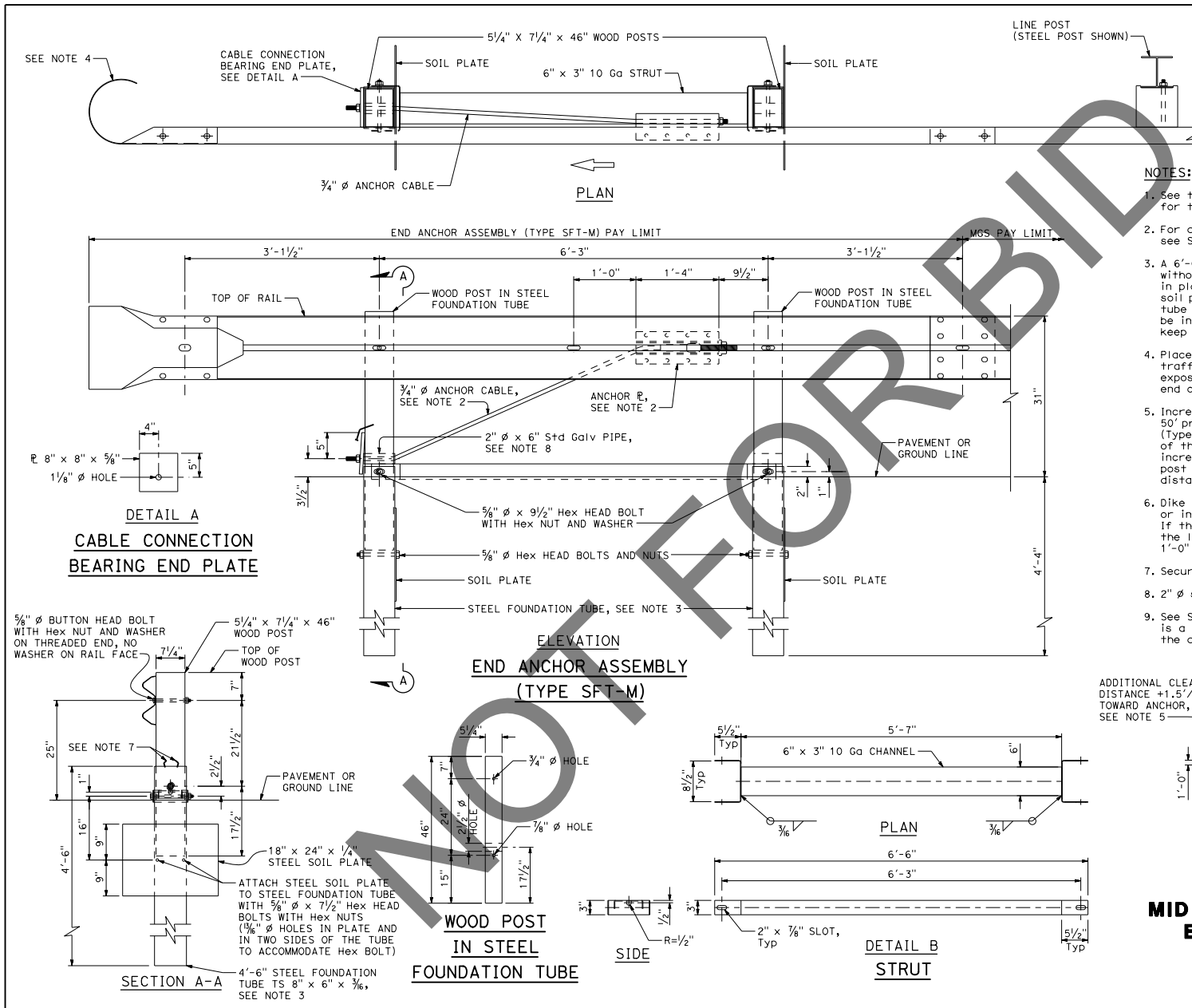
- Line post, blocks and hardware to be used are shown on Standard Plans A77L1, A77L2, A77M1, A77N1 and A77N2.
- MGS post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6'-0" long Steel W6 x 9 or W6 x 8.5 with blocks, or 6" x 8" x 6'-0" wood with blocks.
- For Transition Railing (Type AGT) details for Types 12A and 12B Layouts, see Standard Plans A79 Series.
- A minimum of 150'-0" of MGS is needed to develop Length of Need (LON).
- The type of terminal system end treatment to be used will be shown on the Project Plans.
- 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.
- Where placement of dike is required with guard railing installations, see Standard Plan A77N4 for dike positioning details.
- Type 12A or Type 12B Layouts are typically used at the approach end 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.
- 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.
- For additional details of typical connections to bridge rail, see Standard Plans A79 series.
- For additional details of a typical connection to walls or abutments, see Standard Plans A79B1 and A79B2.

STATE OF CALIFORNIA  
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## MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS FOR STRUCTURE APPROACH

NO SCALE

**A77Q1**



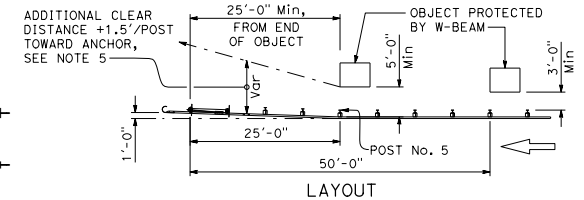
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

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## NOTES:

- See the Standard Plans A77P, A77Q and A77R series for typical use of End Anchor Assembly (Type SFT-M).
- For details of the anchor plate and  $\frac{3}{4}$ " cable, see Standard Plan A77S3.
- A 6'-0" length steel foundation tube, TS 8" x 6" x  $\frac{3}{8}$ ", 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  $\frac{3}{8}$ "  $\phi$  Hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.
- Place End Cap Type B when pedestrians, bicycles or traffic is within contact of the trailing end of the exposed element. Rail element may be cut 1" past the end of the post. Clean, treat and remove sharp edges.
- Increased clear distance behind the rail is required from 50' prior to the last post of the End Anchor Assembly (Type SFT-M). Beginning at 50' upstream of the last post of the End Anchor Assembly, the required clear distance increases to 5' at post No. 5. From post No. 5 to the last post of the End Anchor Assembly, the required clear distance increases at a rate of 1.5' for each post.
- Dike with a maximum height of 4" may be placed under or in front of the End Anchor Assembly (Type SFT-M). If the anchor posts are in conflict with the 4" high dike, the last 25' of rail may be tapered back a maximum of 1'-0" to allow the dike to maintain alignment.
- Secure End Plate with two 16D nails to maintain orientation.
- 2"  $\phi$  standard galvanized pipe or 2 $\frac{3}{8}$ "  $\phi$  galvanized pipe.
- See Standard Plan A77R1 for placing SFT-M when there is a fixed object within 50'-0" of the end anchor and the distance behind the post is less than 3'-0".

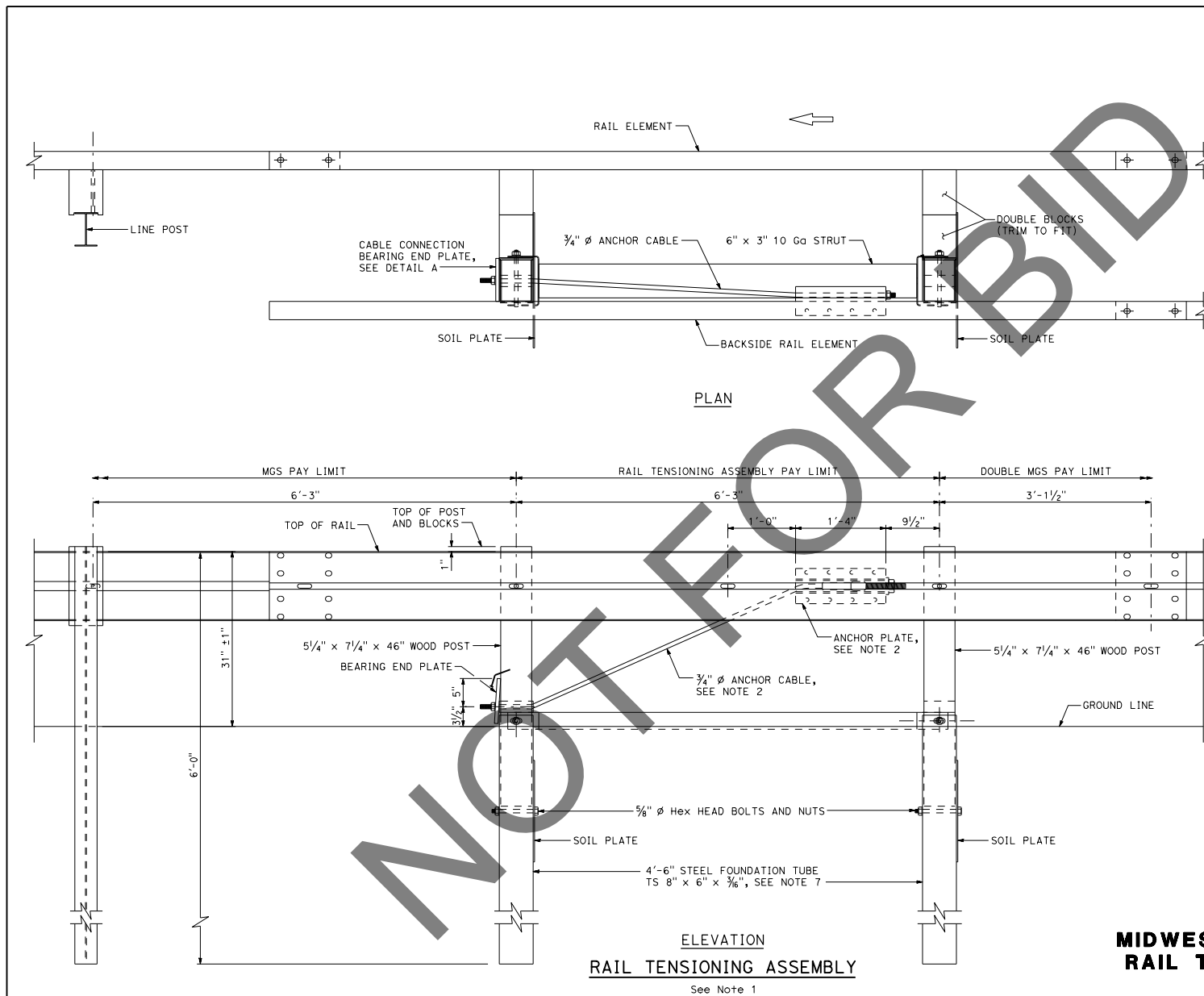


STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**MIDWEST GUARDRAIL SYSTEM  
END ANCHOR ASSEMBLY  
(TYPE SFT-M)**

NO SCALE

A77S1



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

*Mark Ballentine*  
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September 20, 2024  
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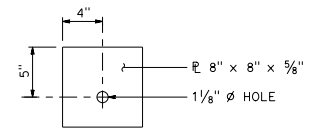
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EXP. 9-30-24  
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**NOTES:**

1. See Standard Plans A7703 and A77R1 for typical use of rail tensioning assembly.
2. For cable, strut, soil tube, wood post in soil tubes, and hardware or details not shown, see Standard Plans A77S1 and A77S3.
3. Nail double blocks together with 2-16D nails to resist block rotation.
4. Cable connection end plate must not be encased in HMA, concrete, or any other material that could restrict the bearing end plate from releasing.
5. Place double blocks on side that rail continues.
6. When steel line posts are used, trim double blocks to fit at rail tensioning assembly.
7. A 6'-0" length steel foundation tube, TS 8" x 6" x  $\frac{3}{8}$ ", 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  $\frac{3}{8}$ "  $\phi$  Hex head bolt and nut shall be installed in the hole in the 6'-0" length tube to keep the wood post from dropping into the tube.

**DETAIL A****CABLE CONNECTION  
BEARING END PLATE**STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION**MIDWEST GUARDRAIL SYSTEM  
RAIL TENSIONING ASSEMBLY**

NO SCALE

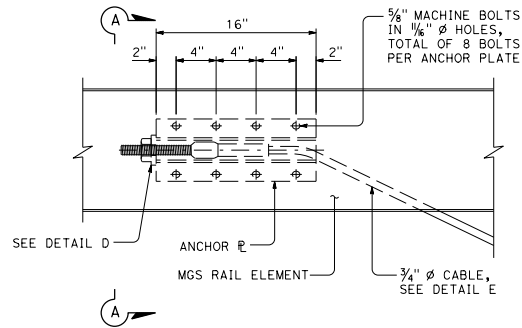
**A77S2**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
<b>Mark Ballentine</b> REGISTERED CIVIL ENGINEER September 20, 2024 PLANS APPROVAL DATE No. C64101 Exp. 9-30-24 CIVIL STATE OF CALIFORNIA				

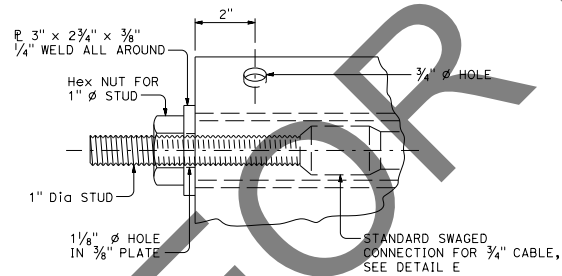
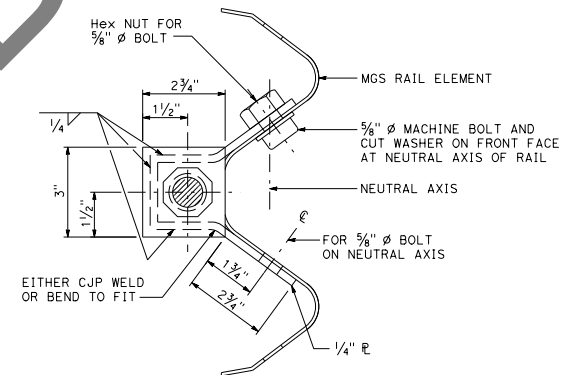
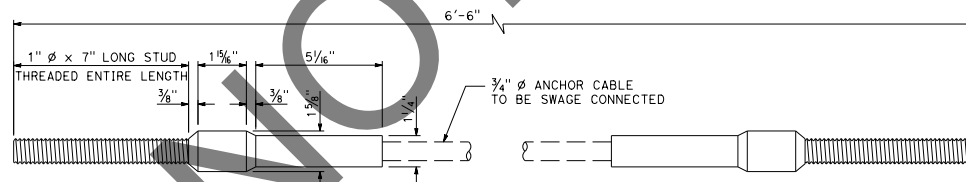
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**NOTE:**

See Standard Plans A77S1, A77S2 and A77T1 for typical use of anchor cable and anchor plate.

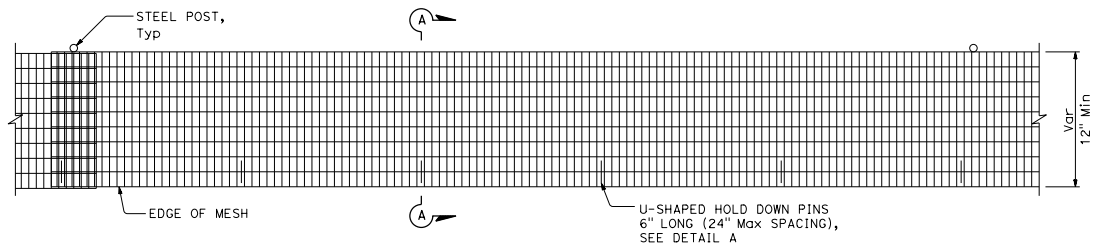
**ANCHOR PLATE DETAIL**

(MGS shown, TBB similar)

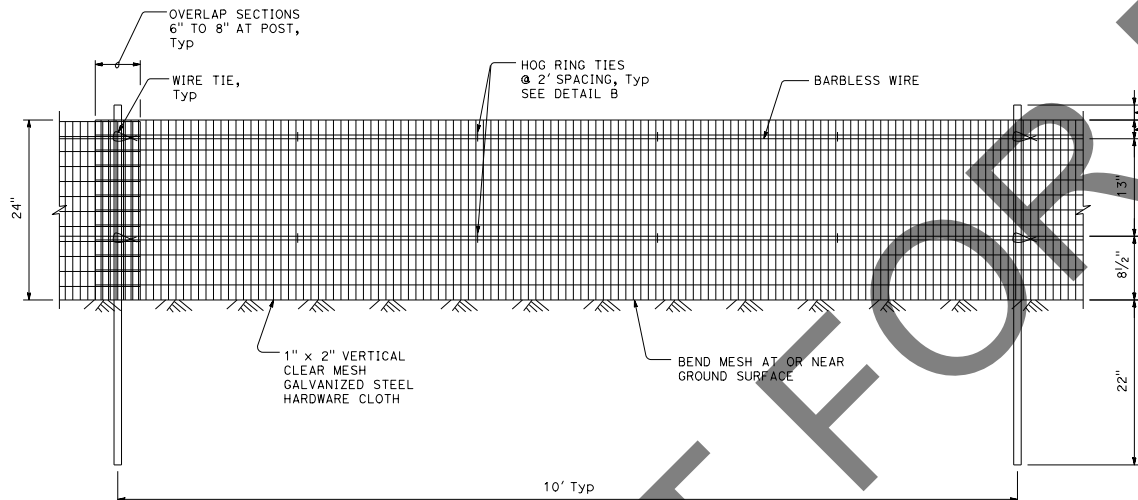
**DETAIL D****SECTION A-A****DETAIL E****ANCHOR CABLE WITH SWAGED FITTING AND STUD**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**METAL RAILING  
 ANCHOR CABLE AND  
 ANCHOR PLATE DETAILS**  
 NO SCALE

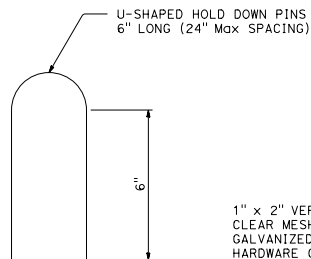
**A77S3**



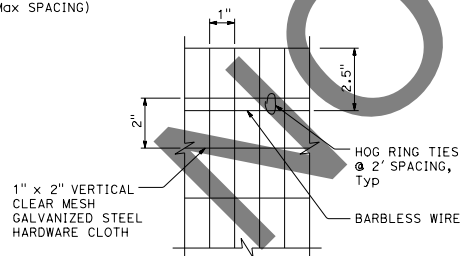
PLAN VIEW



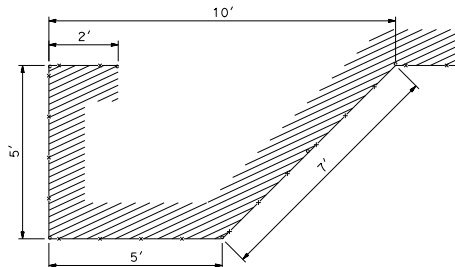
FRONT VIEW



DETAIL A



DETAIL B

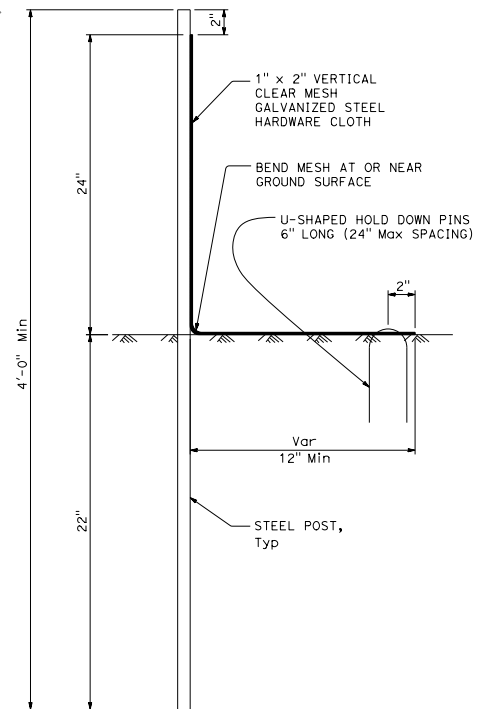


REDIRECTIONAL CONFIGURATION PLAN VIEW

## NOTES:

1. Exact locations for temporary desert tortoise fence are shown on the plans.
2. Horizontal portion of hardware cloth must be on habitat side of posts.

## LEGEND:



SECTION A-A

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY DESERT  
TORTOISE FENCE**  
NO SCALE

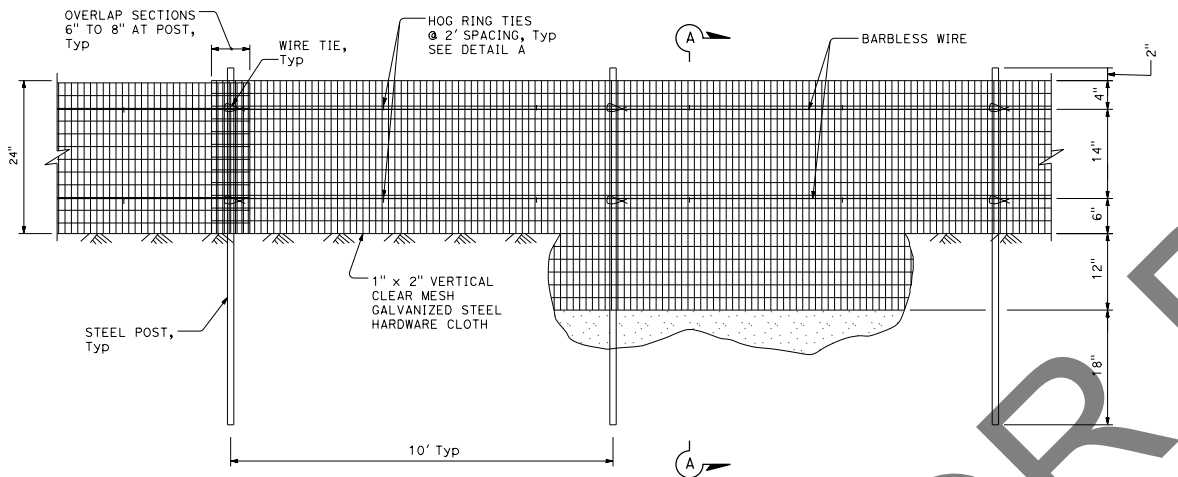
**A84A**

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

*M. Reza Valizadeh*  
REGISTERED CIVIL ENGINEER  
No. CS1902  
Exp. 6-30-26  
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STATE OF CALIFORNIA

September 20, 2024  
PLANS APPROVAL DATE

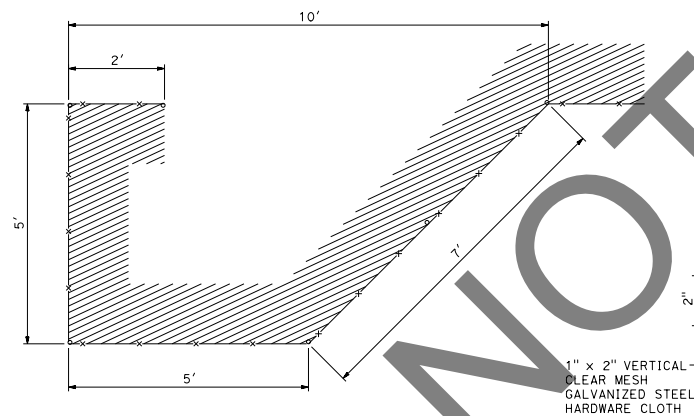
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



FRONT VIEW

**NOTE:**  
1. Exact locations for desert tortoise fence are shown on the plans.

**LEGEND:**  
DESERT TORTOISE HABITAT



REDIRECTIONAL CONFIGURATION PLAN VIEW

U-SHAPED HOLD DOWN PINS  
6" LONG (24" Max SPACING)

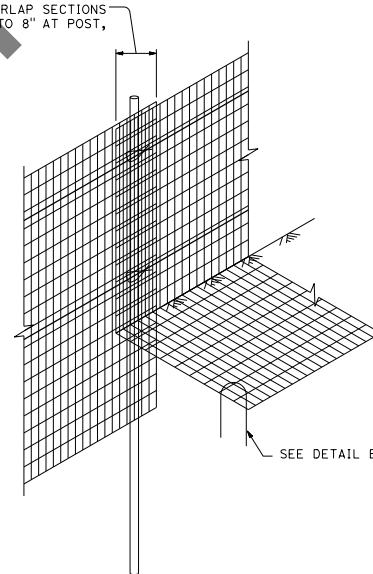
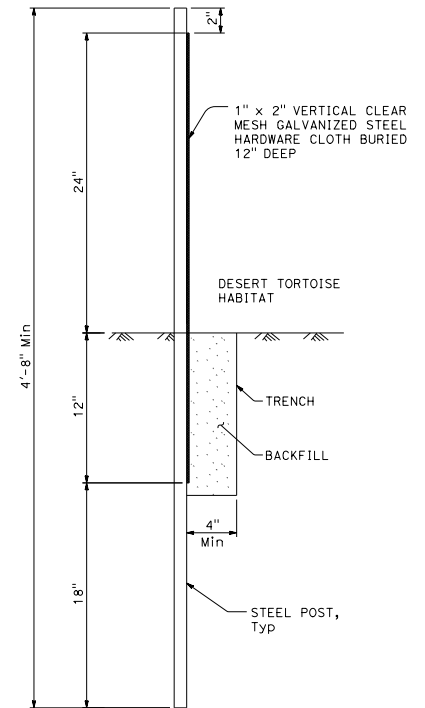
DETAIL B

1" x 2" VERTICAL  
CLEAR MESH  
GALVANIZED STEEL  
HARDWARE CLOTH

DETAIL A

HOG RING TIES  
@ 2' SPACING,  
Typ

BARBLESS WIRE

FENCE TRANSITION FOR  
BEDROCK OR CALICHE SUBSTRATE

SECTION A-A

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**DESERT TORTOISE FENCE**  
NO SCALE

A84B

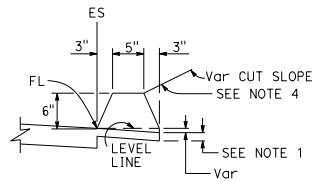
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER  
M. Reza Valizadeh  
No. CS1902  
Exp. 6-30-26  
CIVIL  
STATE OF CALIFORNIA

PLANS APPROVAL DATE  
September 20, 2024

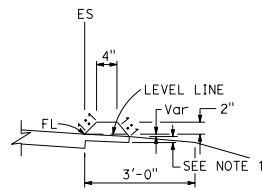
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Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS
<b>Pyo Hong</b> REGISTERED CIVIL ENGINEER September 20, 2024 PLANS APPROVAL DATE No. C75797 EXP. 6-30-26 CIVIL STATE OF CALIFORNIA				
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.				

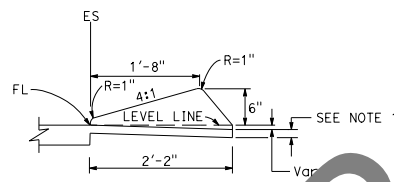


TYPE A

See Notes 3 and 5

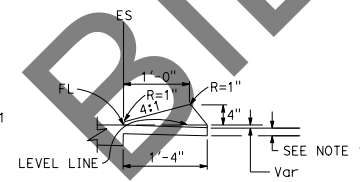


TYPE C

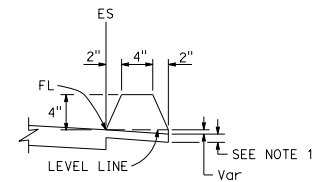


TYPE D

## DIKES

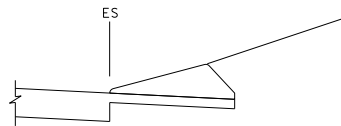


TYPE E



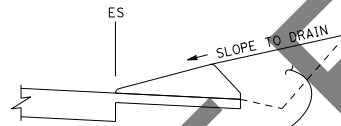
TYPE F

See Note 5



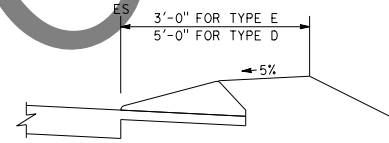
CASE C-1

Cut Slope

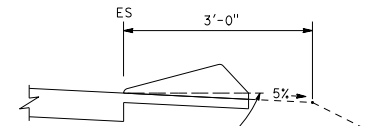


CASE C-2

Cut Slope



CASE F



CASE R

See Note 2

## TYPE D AND E BACKFILL DETAILS

## NOTES:

- 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.
- Case R applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
- Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
- Fill and compact with excavated material to top of dike.
- Use Type A or Type F dike, where dike is required with guardrail installations. See Standard Plan A77N4 for dike positioning details. See Standard Plan A77N3 for hinge point offsets with guardrail.

## DIKE QUANTITIES

TYPE	PER LINEAR FOOT
A	0.0135
C	0.0038
D	0.0293
E	0.0130
F	0.0066

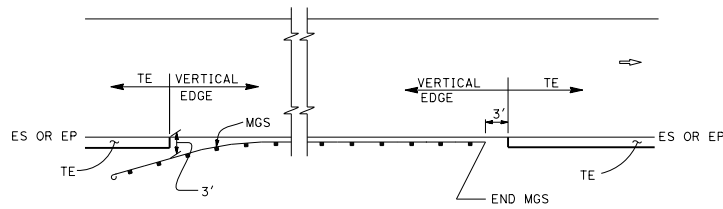
Quantities based on 5% cross slope.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

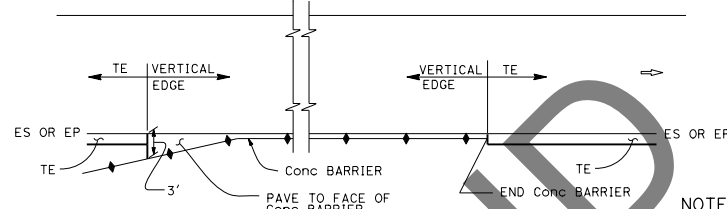
## HOT MIX ASPHALT DIKES

NO SCALE

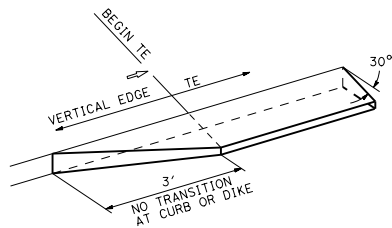
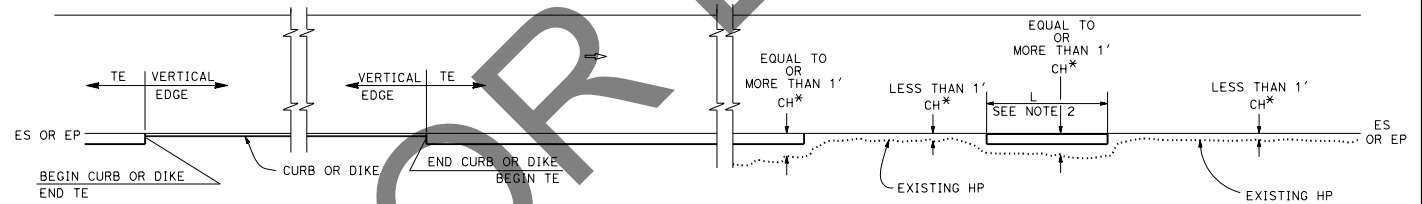
A87B



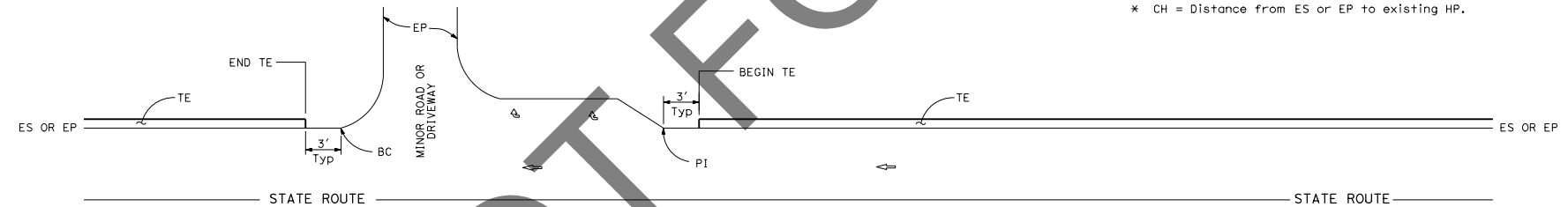
MGS



CONCRETE BARRIER

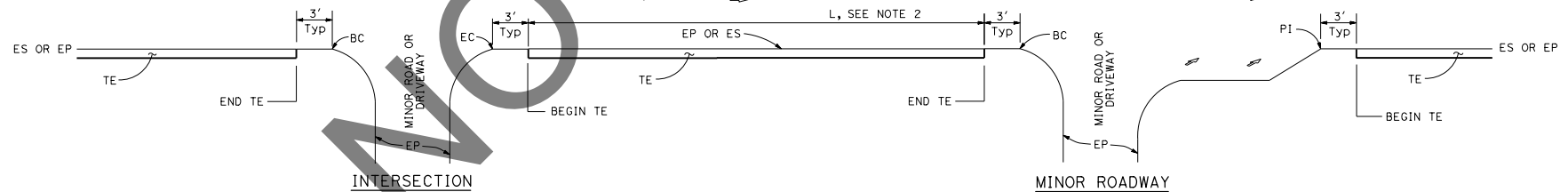
TRANSITION DETAIL  
FOR CONCRETE ONLY

CURB OR DIKE



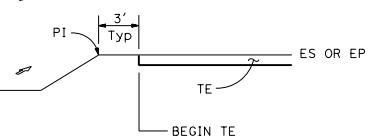
STATE ROUTE

STATE ROUTE



INTERSECTION

DRIVEWAY AND INTERSECTION

MINOR ROADWAY  
OR DRIVEWAYMINOR ROADWAY  
OR DRIVEWAYSTATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

## PAVEMENT EDGE TREATMENTS

NO SCALE

P74

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Cathrina Barros Dmytro  
REGISTERED CIVIL ENGINEER

September 20, 2024  
PLANS APPROVAL DATE

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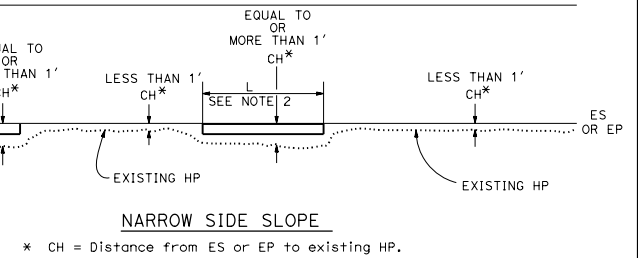
Cathrina Barros Dmytro  
No. C47048  
Exp. 12-31-25  
CIVIL  
STATE OF CALIFORNIA

## NOTES:

1. For details not shown, see Standard Plans P75 and P76.
2. Tapered edge is optional when L is less than 30'.

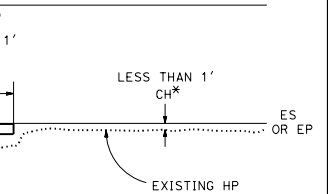
## ABBREVIATION:

TE - TAPERED EDGE

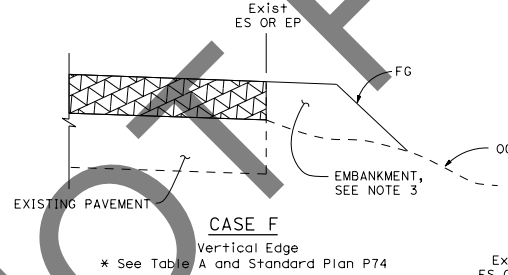
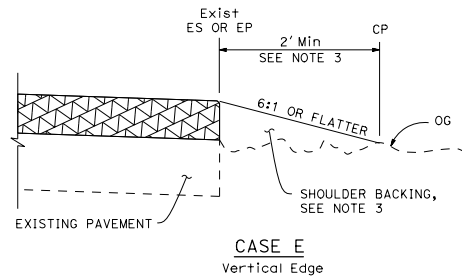
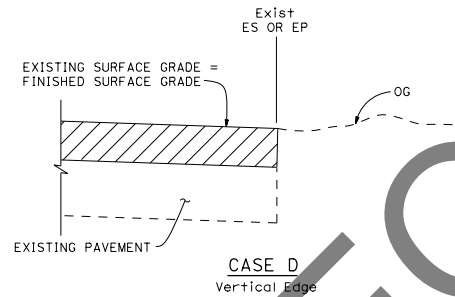
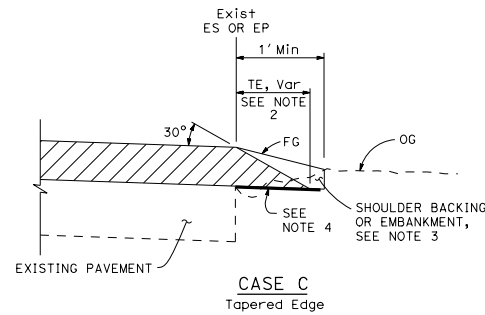
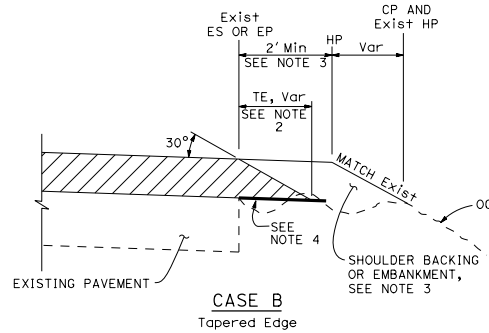
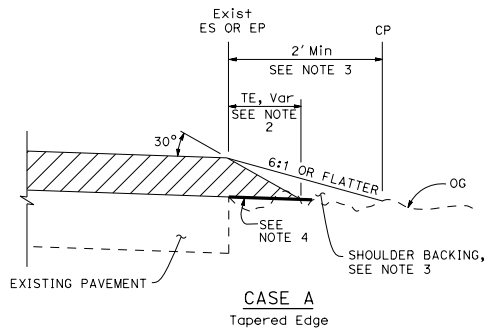
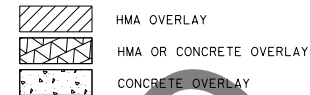


NARROW SIDE SLOPE

\* CH = Distance from ES or EP to existing HP.



EXISTING HP

**LEGEND:****ABBREVIATIONS:**

TE - TAPERED EDGE  
TT - TOTAL THICKNESS OF TE

**TABLE A**  
EDGE TREATMENT FOR VARIOUS OVERLAY THICKNESS AND CONDITIONS

FIELD CONDITION	OVERLAY THICKNESS	
	LESS THAN 0.15'	0.15' OR MORE
EXIST SLOPE 6:1 OR FLATTER	CASE E	CASE A
EXIST SLOPE 3:1 TO 6:1	CASE E	CASE B
EXIST SLOPE STEEPER THAN 3:1	CASE F	CASE F
CUT SECTION (REPLACE, COLD PLANE, MILL PAVEMENT)	CASE D	CASE C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS

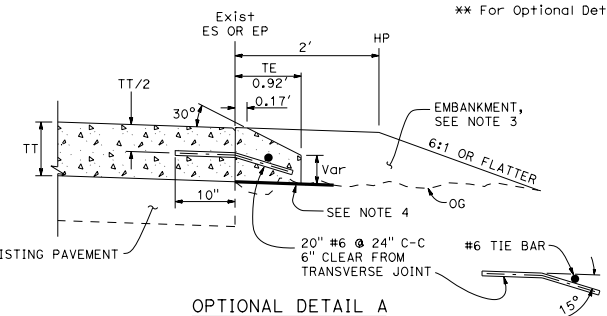
*Cathrina Barros Dmytro*  
REGISTERED CIVIL ENGINEER  
No. C47048  
EXP. 12-31-25  
CIVIL  
STATE OF CALIFORNIA

September 20, 2024  
PLANS APPROVAL DATE  
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**ADDITIONAL HMA OR CONCRETE QUANTITIES FOR TE/SIDE/MILE**

TYPICAL CROSS SECTION	TT	TOTAL ADDITIONAL MATERIAL FOR TE/SIDE/MILE		
		HMA (TON)	CONCRETE (CY)*	CONCRETE (CY)**
	0.15'	7.7	NA	NA
	0.20'	13.7	NA	NA
	0.30'	30.9	NA	NA
	0.40'	54.9	NA	NA
	0.45'	69.4	NA	NA
	0.50'	84.2	NA	NA
	0.60'	113.9	NA	NA
	0.70'	143.6	70.9	94.2
	0.80'	173.3	85.6	112.2
	0.90'	203.0	100.3	130.2
	1.00'	232.7	114.9	148.2
	1.10'	262.4	129.6	166.2
	1.20'	292.1	144.3	184.2

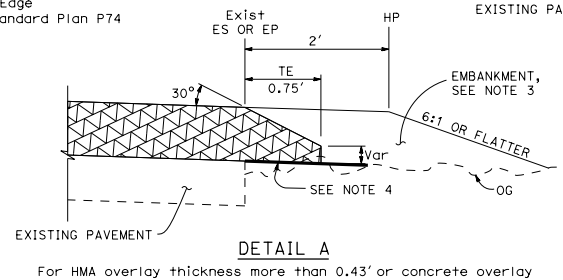
\* For Detail A  
\*\* For Optional Detail A



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**PAVEMENT EDGE TREATMENTS OVERLAYS**  
NO SCALE

**NOTES:**

- For limits of tapered edge and vertical edge treatments, see Standard Plan P74.
- Details shown for HMA overlay thickness less than 0.43'. See Detail A for HMA overlay thickness more than 0.43' or concrete overlay.
- For locations and limits of shoulder backing or embankment see project plans.
- Grade existing ground to place tapered edge, 1' minimum width.
- Tapered edge transverse joint must match overlay transverse joint. End of #6 tie bar must be 2' ± 1/2" clear from transverse joint.
- Tapered edge is not needed in the area of MGS, barrier, right turn lane and acceleration lane. See Standard Plan P74.



**LEGEND:**

	HMA PAVEMENT
	HMA OR CONCRETE PAVEMENT
	CONCRETE PAVEMENT

**ABBREVIATIONS:**

TE - TAPERED EDGE  
 TT - TOTAL THICKNESS OF TE  
 HW - HINGE WIDTH, DISTANCE FROM ES OR EP TO HP

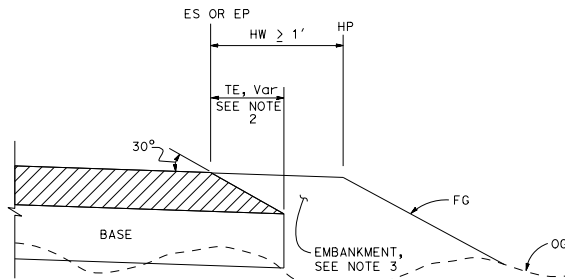
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS

*Cathrina Barros Dmytro*  
 REGISTERED CIVIL ENGINEER

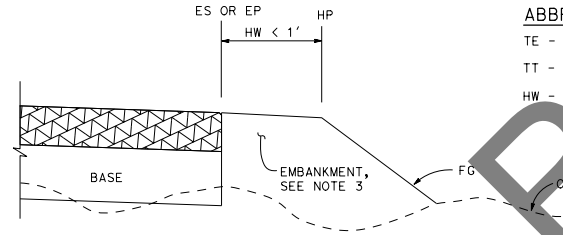
September 20, 2024  
 PLANS APPROVAL DATE

Cathrina Barros Dmytro  
 No. C47048  
 Exp. 12-31-25  
 CIVIL  
 STATE OF CALIFORNIA

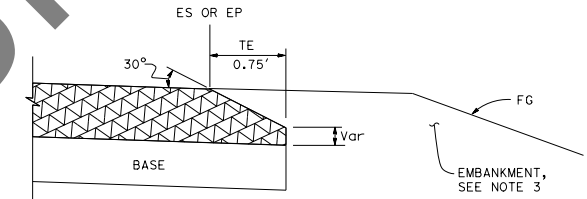
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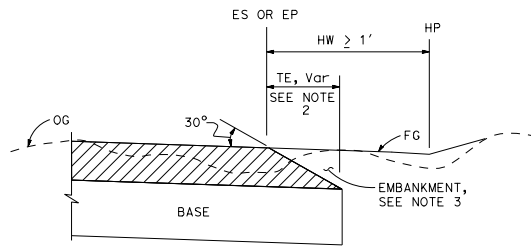
**CASE K**  
 Tapered Edge - Fill Section, HW  $\geq 1'$



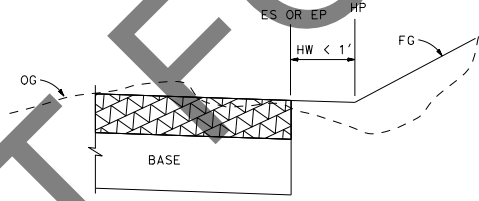
**CASE L**  
 Vertical Edge - Fill Section, HW  $< 1'$



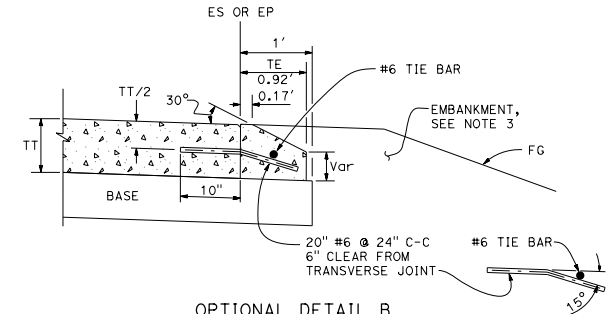
**DETAIL B**  
 For HMA pavement thickness more than 0.43' or concrete pavement



**CASE M**  
 Tapered Edge - Cut Section, HW  $\geq 1'$



**CASE N**  
 Vertical Edge - Cut Section, HW  $< 1'$



**OPTIONAL DETAIL B**  
 For concrete pavement, see Note 4

**NOTES:**

1. For limits of tapered edge and vertical edge treatments, see Standard Plan P74.
2. Details shown for HMA pavement thickness less than 0.43'. See Detail B for HMA pavement thickness more than 0.43' or concrete pavement.
3. For locations and limits of embankment, see project plans.
4. Tapered edge transverse joint must match pavement transverse joint. End of #6 tie bar must be 2"  $\pm$  1/2" clear from transverse joint.
5. Tapered edge is not needed in the area of MGS, barrier, right turn lane and acceleration lane. See Standard Plan P74.

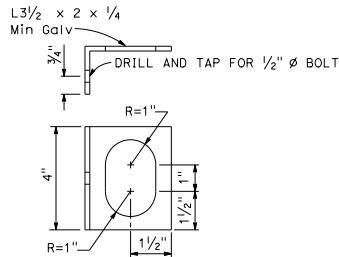
**CUT SECTION****FILL SECTION**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

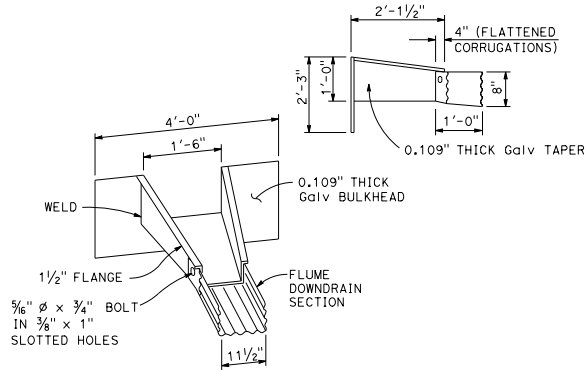
**PAVEMENT EDGE TREATMENTS  
 NEW CONSTRUCTION**

NO SCALE

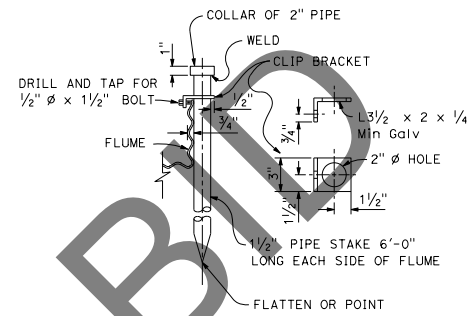
**P76**



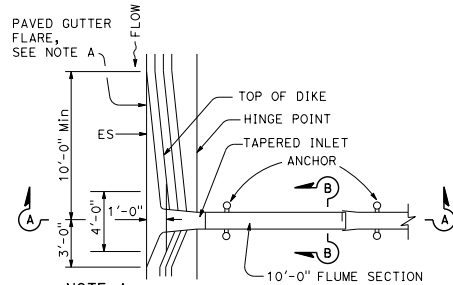
**ALTERNATIVE CLIP  
BRACKET DETAIL**



**TAPERED INLET**



**PIPE STAKE ANCHOR DETAIL**

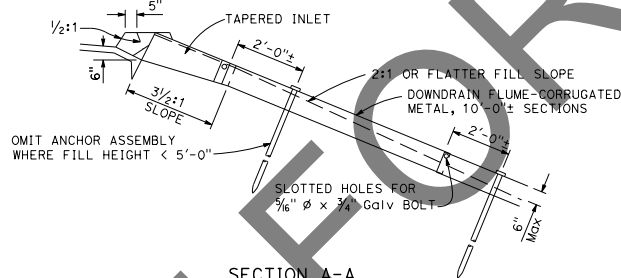


**NOTE A**

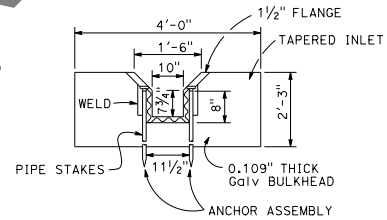
In sag location, use 10'-0" length of paved gutter flare on both sides of inlet.

**PLAN**

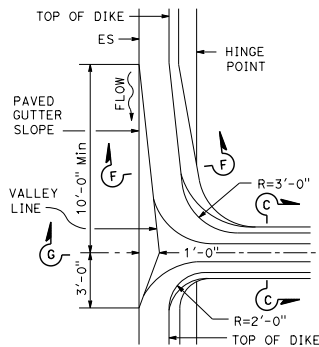
**TAPERED INLET AND FLUME DOWN DRAIN**



**SECTION A-A**



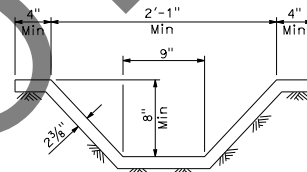
**SECTION B-B**



**PLAN**

**MOUNTABLE DIKE**

**HOT MIX ASPHALT OVERSIDE DRAINS**

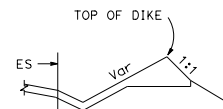


**SECTION C-C**

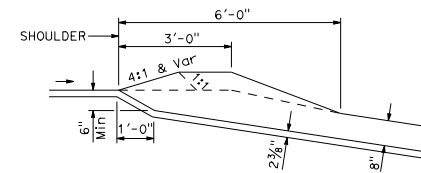
See Note 1

**NOTE:**

1. Cross section of slope ditch may be semicircular, vee or trapezoidal.



**SECTION F-F**



**SECTION G-G**

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**OVERSIDE DRAINS**  
NO SCALE

**D87D**

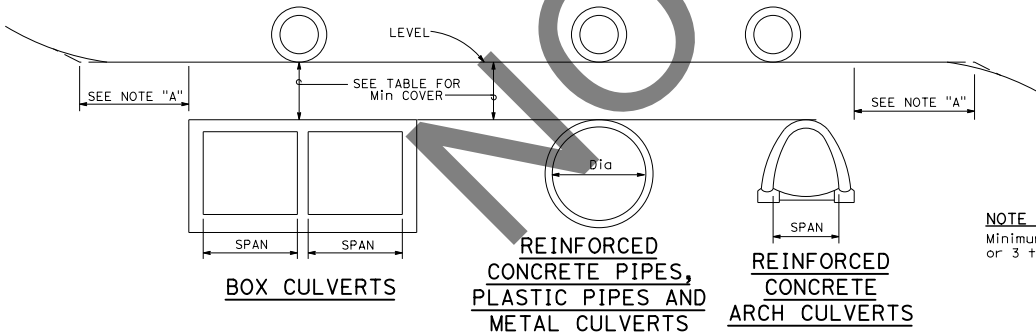
TABLE OF MINIMUM COVER AND STRUTTING REQUIREMENTS FOR CONSTRUCTION LOADS

	TYPE				18-50 k AXLE		50-75 k AXLE		75-110 k AXLE		110-150 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
BOX CULVERTS	10'-0" AND 20'-0"	4'-0" TO 8'-0"	SINGLE AND MULTIPLE	5'-0"	—	—	—	—	—	—	—	—
	10'-0"	10'-0" TO 14'-0"	SINGLE AND MULTIPLE	5'-0"	—	—	1/3 Points	STRUTS 6" x 6" @ 3'-6" SILLS 6" x 8"	1/3 Points	STRUTS 6" x 8" @ 3'-6" SILLS 6" x 8"	1/3 Points	STRUTS 6" x 8" @ 3'-6" SILLS 6" x 8"
	20'-0"	10'-0" TO 14'-0"	SINGLE AND MULTIPLE	5'-0"	—	—	—	—	—	—	—	—

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
REINFORCED CONCRETE CULVERTS	PIPES	Dia 12" TO 39"	2'-0"	3'-0"	3'-0"	3'-0"
		Dia 42" TO 108"	$\frac{Dia}{1.75}$ OR 3'-0"	$\frac{Dia}{1.75}$ OR 3'-0"	$\frac{Dia}{1.75}$ OR 3'-0"	$\frac{Dia}{1.75}$ OR 3'-0"
	ARCHES	SPANS TO 14'-0"	$\frac{SPAN}{2.5}$ OR 4'-0"	$\frac{SPAN}{2.5}$ OR 4'-0"	$\frac{SPAN}{2.5}$ OR 4'-0"	$\frac{SPAN}{2.5}$ OR 4'-0"
		SPANS 15'-0" TO 22'-0"	$\frac{SPAN}{3.5}$ OR 6'-0"	$\frac{SPAN}{3.5}$ OR 6'-0"	$\frac{SPAN}{3.5}$ OR 6'-0"	$\frac{SPAN}{3.5}$ OR 6'-0"
METAL CULVERTS	PIPES	Dia TO 120"	$\frac{Dia}{1.75}$ OR 4'-0"	$\frac{Dia}{1.75}$ OR 4'-0"	$\frac{Dia}{1.75}$ OR 4'-0"	$\frac{Dia}{1.75}$ OR 4'-0"
		Dia OVER 120"	$\frac{Dia}{3}$ OR 6'-0"	$\frac{Dia}{3}$ OR 6'-0"	$\frac{Dia}{3}$ OR 6'-0"	$\frac{Dia}{3}$ OR 6'-0"
	PIPE ARCHES	All Spans	$\frac{SPAN}{3}$ OR 4'-0"	$\frac{SPAN}{3}$ OR 4'-0"	$\frac{SPAN}{3}$ OR 4'-0"	$\frac{SPAN}{3}$ OR 4'-0"
	STRUCTURAL PLATE PIPE, ARCHES AND VEHICULAR UNDERCROSSINGS	ALL SPANS	$\frac{SPAN}{3}$ OR 5'-0"	$\frac{SPAN}{3}$ OR 5'-0"	$\frac{SPAN}{3}$ OR 5'-0"	$\frac{SPAN}{3}$ OR 5'-0"
PLASTIC PIPE		Dia 12" TO 60"	$\frac{Dia}{1.75}$ OR 4'-0"	$\frac{Dia}{1.75}$ OR 4'-0"	$\frac{Dia}{1.75}$ OR 4'-0"	$\frac{Dia}{1.75}$ OR 4'-0"

**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:  $\frac{Dia}{1.75}$ ) is the diameter or span of the facility expressed in number of feet.

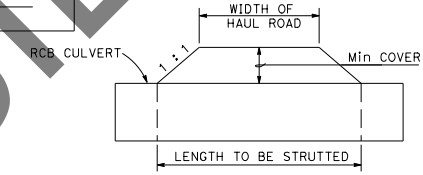


**NOTE "A":**  
Minimum distance equals 3 times the span or 3 times the diameter.

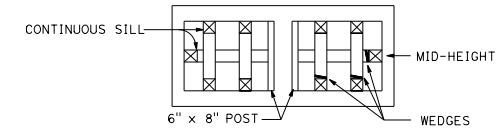
Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS

REGISTERED CIVIL ENGINEER  
 September 20, 2024  
 PLANS APPROVAL DATE  
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Carl M. Dunn  
 No. C59976  
 Exp. 6-30-26  
 CIVIL  
 STATE OF CALIFORNIA



MINIMUM LENGTH OF STRUTTING



RCB STRUTTING DETAILS

**NOTES:**

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%

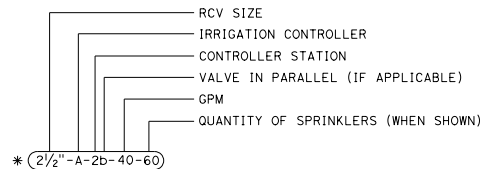
Sills to be glue-laminated or solid timber.

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 ON CULVERTS**  
 NO SCALE

**D88**

EXISTING	NEW	ITEM DESCRIPTION	EXISTING	NEW	ITEM DESCRIPTION
		WATER METER (WM)			GATE VALVE (GV)
		BACKFLOW PREVENTER ASSEMBLY (BPA)			BALL VALVE (BV)
		BACKFLOW PREVENTER ENCLOSURE (BPE)			QUICK COUPLING VALVE (QCV)
		BOOSTER PUMP (BP)			CAM COUPLER ASSEMBLY (CCA)
		TRUCK LOADING STANDPIPE (TLS)			GARDEN VALVE ASSEMBLY (GARVA)
		FLOW SENSOR (FS)			PRESSURE REGULATING VALVE (PRV)
		MASTER IRRIGATION CONTROLLER (MIC)			PRESSURE-RELIEF VALVE (PRLV)
		AUXILIARY IRRIGATION CONTROLLER (AIC)			FLOW CONTROL VALVE (FCV)
		IRRIGATION CONTROLLER (IC)			COMBINATION AIR RELEASE VALVE (CARV)
		IRRIGATION CONTROLLER (IC) (BATTERY)			CHECK VALVE (CV)
		IRRIGATION CONTROLLER (IC) (SOLAR)			FLUSH VALVE (FV)
		IRRIGATION CONTROLLER (IC) (TWO WIRE)			EXISTING NOZZLE LINE W/TURNING UNION
		IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)			EXISTING IRRIGATION SYSTEM
		ARMOR-CLAD CONDUCTORS (ACC)			EXISTING IRRIGATION SYSTEM TO BE REMOVED
		CONTROL AND NEUTRAL CONDUCTORS (CNC)			CHAIN LINK GATE
		IRRIGATION CONDUIT			QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
		IRRIGATION SLEEVE			SPRINKLER W/SPRINKLER PROTECTOR
		DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)			CONNECT TO EXISTING SYSTEM
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)			CAP
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)			CAP EXISTING
		PLASTIC PIPE (SUPPLY LINE) (MAIN)			FIBER ROLL
		PLASTIC PIPE (SUPPLY LINE) (LATERAL)			COMPOST SOCK
		COPPER PIPE (SUPPLY LINE)			
		DRIP IRRIGATION TUBING			
		REMOTE CONTROL VALVE (RCV)			
		REMOTE CONTROL VALVE (MASTER) (RCVM)			
		REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)			
		REMOTE CONTROL VALVE W/PRESSURE REGULATOR (RCVP)			
		EXISTING MANUAL CONTROL VALVE (MCV)			
		DRIP VALVE ASSEMBLY (DVA)			
		WYE STRAINER ASSEMBLY (WSA)			



## VALVE CODE

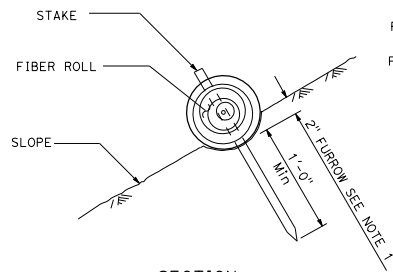
\* VALVE CODES FOR EXISTING VALVES ARE SHOWN IN A DASHED ENCLOSURE.

DIS+	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
LICENSED LANDSCAPE ARCHITECT					
September 20, 2024					
PLANS APPROVAL DATE					
<small>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.</small>					

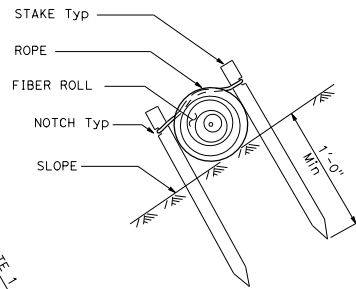
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**LANDSCAPE AND EROSION  
CONTROL SYMBOLS**

NO SCALE

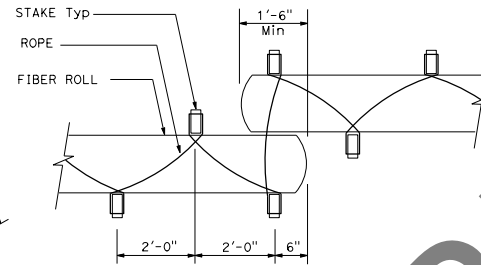
H1



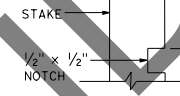
SECTION  
FIBER ROLL (TYPE 1)



SECTION  
FIBER ROLL (TYPE 2)



PLAN



ELEVATION

STAKE NOTCH DETAIL

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

LICENSED LANDSCAPE ARCHITECT

September 20, 2024

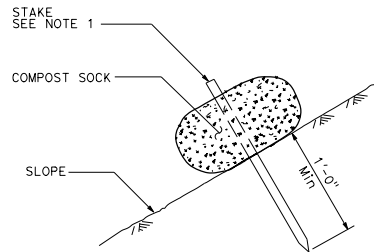
PLANS APPROVAL DATE:

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.

LICENSED LANDSCAPE ARCHITECT  
LORIAN R. BARNER  
0019-0001-015  
0014  
STATE OF CALIFORNIA

**NOTE:**

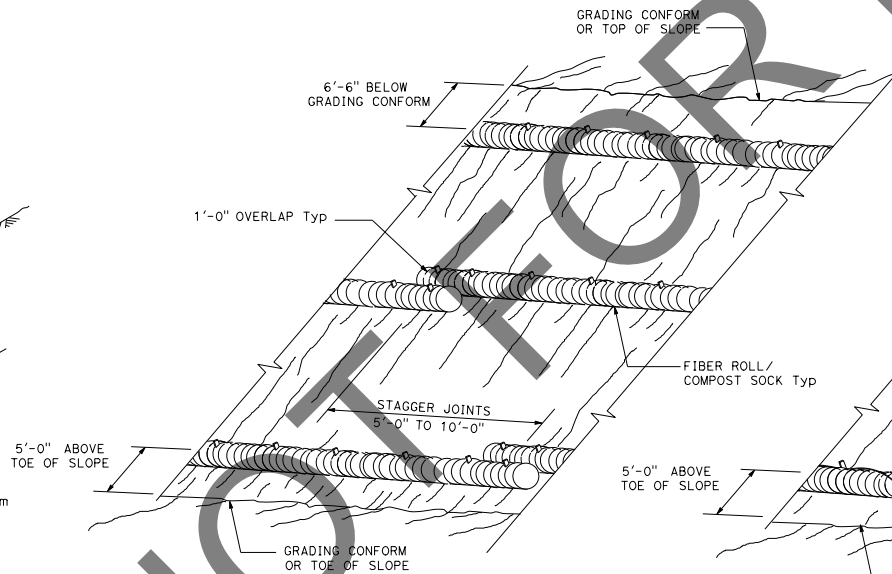
1. Installations shown in the perspectives are for slope inclination of 10:1 (Horiz:Vert) and steeper.



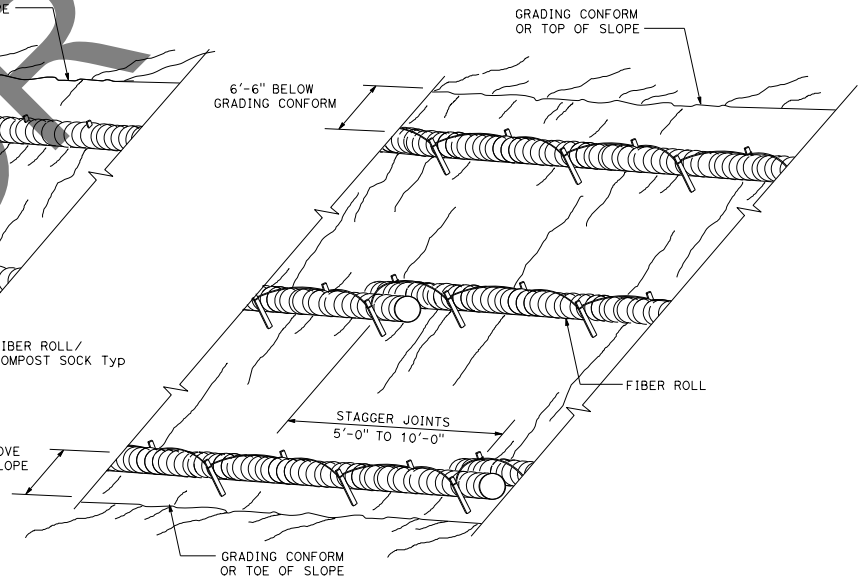
SECTION  
COMPOST SOCK

**NOTE:**

1. May install stake adjacent to bottom edge of compost sock.



PERSPECTIVE  
FIBER ROLL (TYPE 1)  
COMPOST SOCK

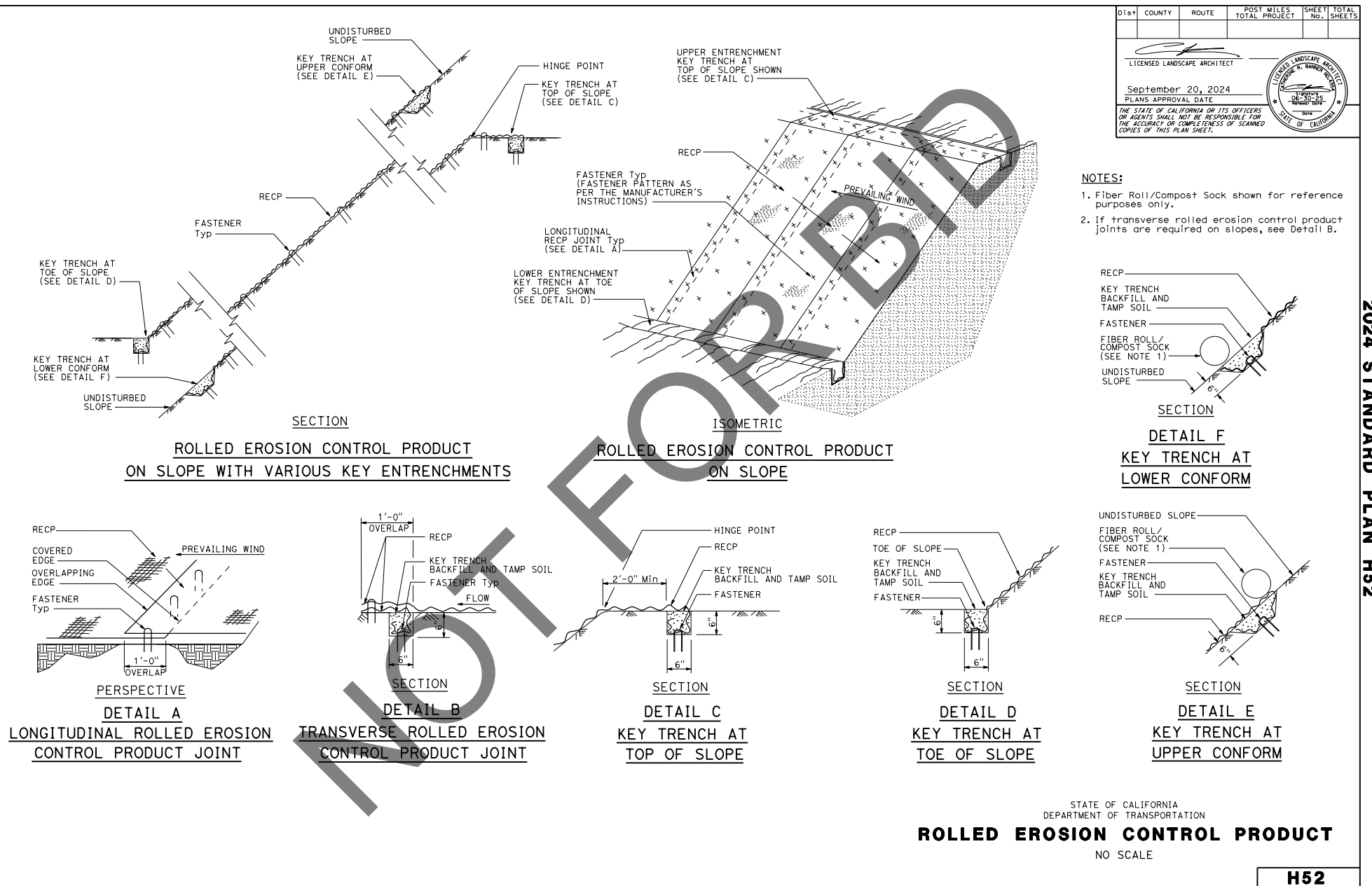


PERSPECTIVE  
FIBER ROLL (TYPE 2)

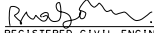
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**EROSION CONTROL DETAILS  
FIBER ROLL AND COMPOST SOCK**

NO SCALE

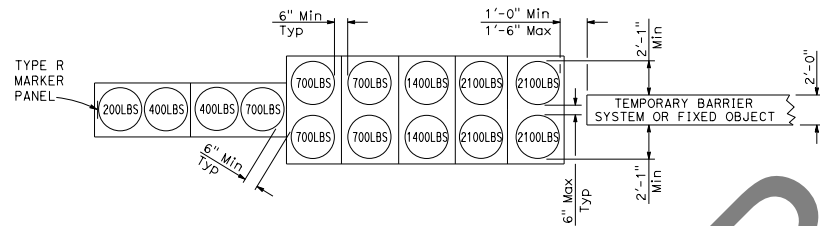
**H51**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

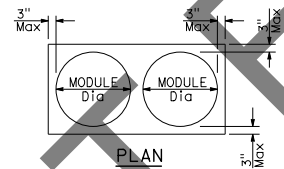
  
 REGISTERED CIVIL ENGINEER  
 September 20, 2024  
 PLANS APPROVAL DATE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS  
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REGISTERED PROFESSIONAL ENGINEER  
 Mohan V. Bhangia  
 No. C63046  
 Exp. 6-30-26  
 CIVIL  
 STATE OF CALIFORNIA

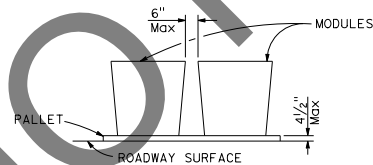


### ARRAY 'TU14M'

Approach speed 45 mph or more



### PLAN



### ELEVATION

### 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 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.

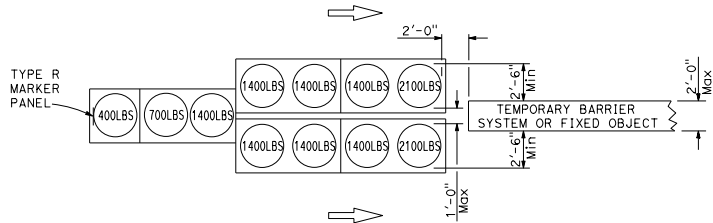
STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
 SAND FILLED  
 (UNIDIRECTIONAL)**  
 NO SCALE

**T1A**

2024 STANDARD PLAN T1A

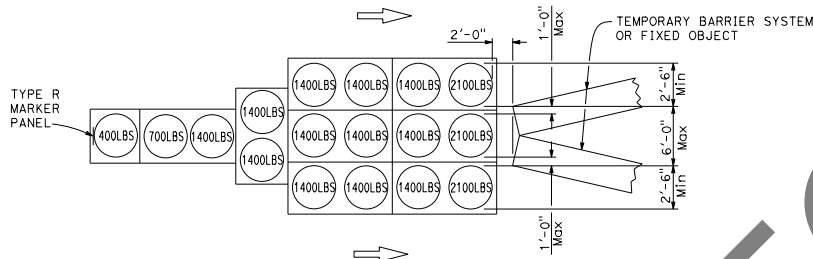
7-1-24

[Return to Table of Contents](#)



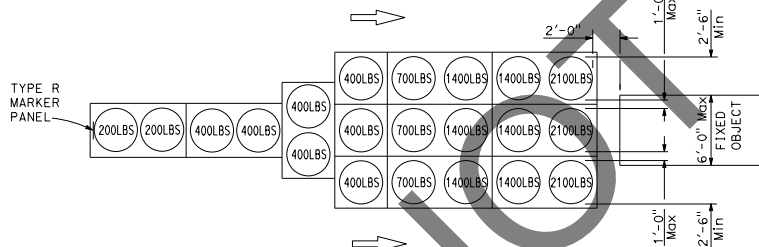
**ARRAY 'TU11'**

Approach speed less than 45 mph



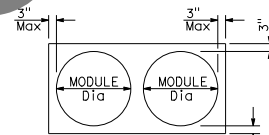
**ARRAY 'TU17'**

Approach speed less than 45 mph

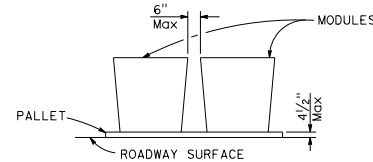


**ARRAY 'TU21'**

Approach speed 45 mph or more



**PLAN**



**ELEVATION**

**CRASH CUSHION PALLET DETAIL**

Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
			TOTAL PROJECT	NO. SHEETS

REGISTERED CIVIL ENGINEER

September 20, 2024

PLANS APPROVAL DATE

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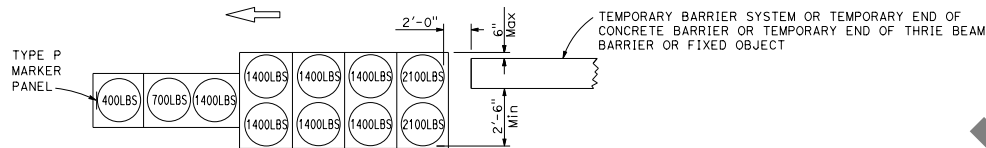
Moham V. Baniag  
No. 63046  
EXP. 6-30-26  
CIVIL  
STATE OF CALIFORNIA

**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 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.

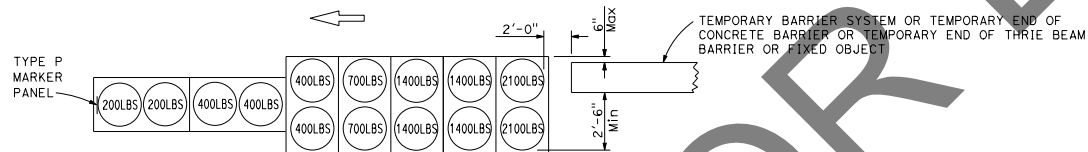
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(UNIDIRECTIONAL)**  
NO SCALE

**T1A1**



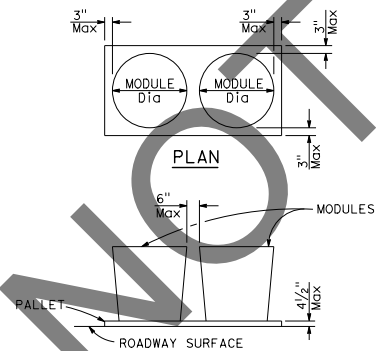
ARRAY 'TB11'

Approach speed less than 45 mph



ARRAY 'TB14'

Approach speed 45 mph or more



ELEVATION

CRASH CUSHION PALLET DETAIL

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Registered Civil Engineer  
 September 20, 2024  
 PLANS APPROVAL DATE  
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Mohan V. Bannig  
 No. C63046  
 Exp. 6-30-26  
 CIVIL  
 STATE OF CALIFORNIA

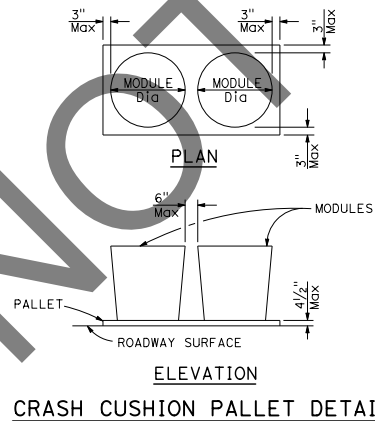
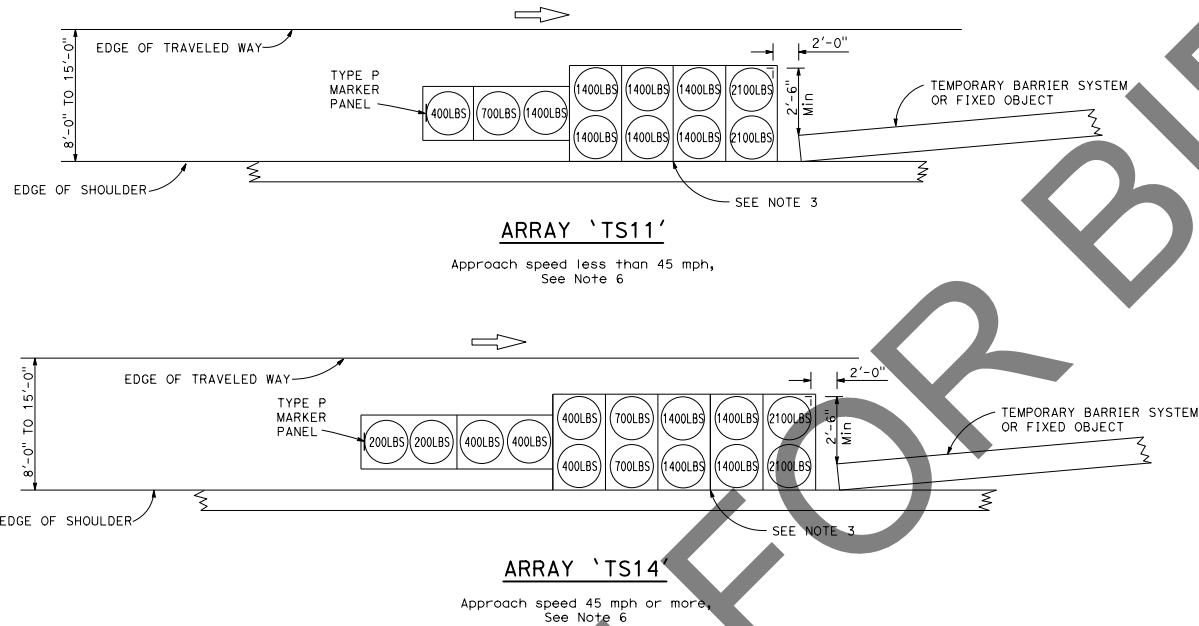
## NOTES:

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



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
<p>REGISTERED CIVIL ENGINEER</p> <p>September 20, 2024</p> <p>PLANS APPROVAL DATE</p> <p>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.</p>					

Moham V. Bannig  
No. C63046  
EXP. 6-30-26  
CIVIL  
STATE OF CALIFORNIA

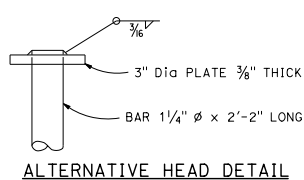
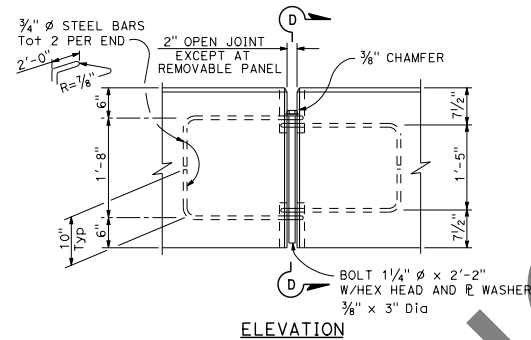
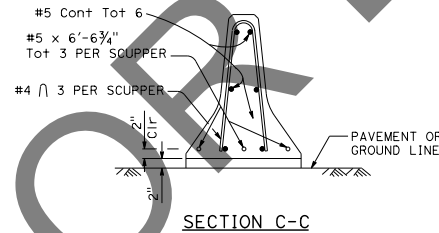
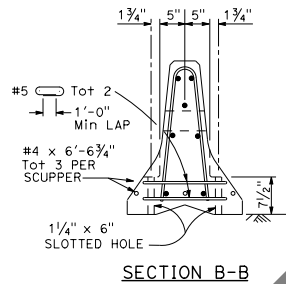
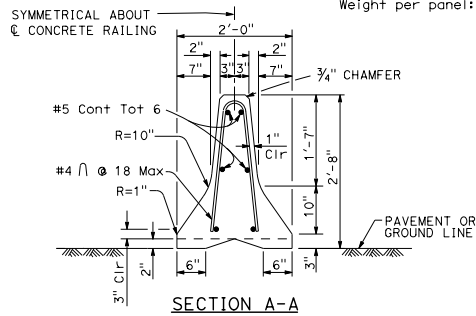
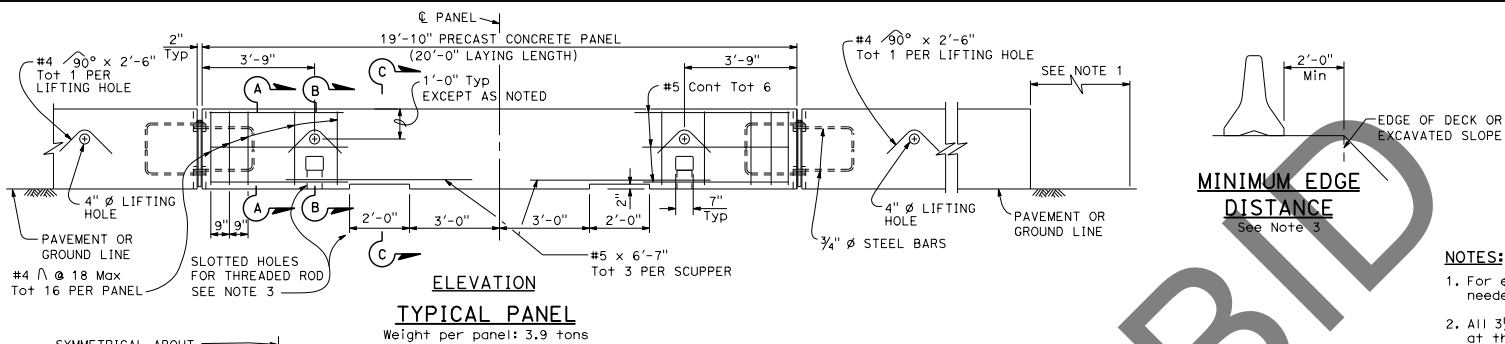
## NOTES:

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 module.
2. All sand weights are nominal. Sand must contain no more than 7 percent water.
3. The temporary crash cushion arrays shown on this plan shall be used only in locations where there will be traffic on one side of the temporary crash cushion array.
4. Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
5. Refer to Standard Plan A73B for marker details.
6. For shoulder widths less than 8'-0", appropriate approved crash cushion protection, other than sand filled modules, shall be provided at fixed objects and at approach ends of temporary railing. The specific type of crash cushion shall be as shown on the project plans or as specified in the Special Provisions, or if not shown on the project plans or specified in the Special Provisions, shall be as approved by the Engineer.
7. Approach speeds indicated conform to NCHRP Report 350 criteria.

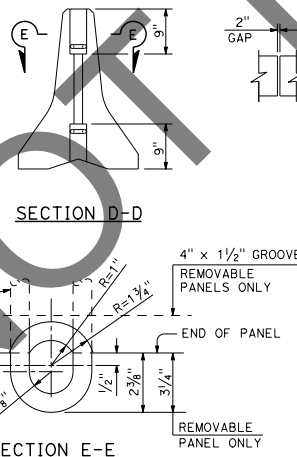
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(SHOULDER INSTALLATIONS)**

NO SCALE

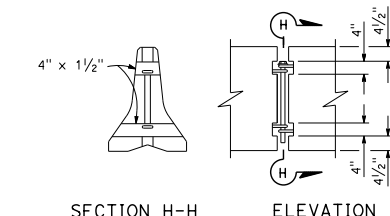
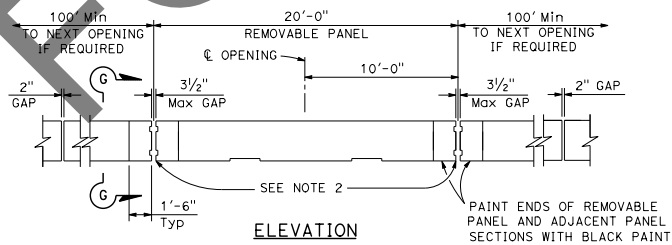
T2



BOLT CONNECTION DETAIL



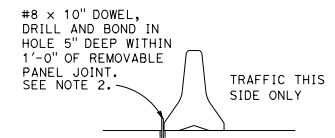
SECTION E-E



REMOVABLE PANEL GROOVE DETAILS

## NOTES:

- For end treatment, layout and crash cushions, where needed, see Project Plans or Special Provisions.
- All 3 1/2" gaps at removable panels are to be backed at the base with #8 x 10" dowel or 1"  $\phi$  pin each side of joint, see Section G-G.
- Where the offset distance from the exposed edge of deck to the closest edge of the temporary railing is less than 2'-0", attach each panel to deck slab with 1" diameter threaded rods (total four per panel) inserted through the slotted holes of the panel and bond in drilled holes 6" deep in the deck slabs. See "Bridge Memo to Designers" manual.



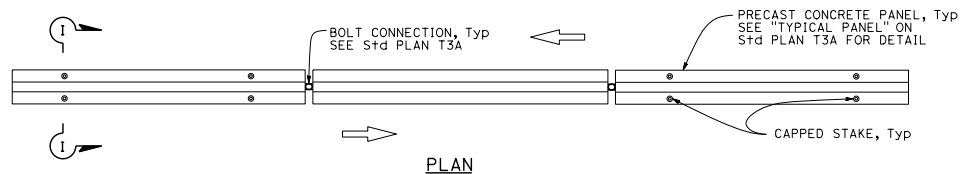
- \* Section G-G is for concrete pavement. Alternative detail, 1"  $\phi$  pins 2'-0" long driven in existing AC or HMA.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**TEMPORARY RAILING  
(TYPE K)**

NO SCALE

T3A

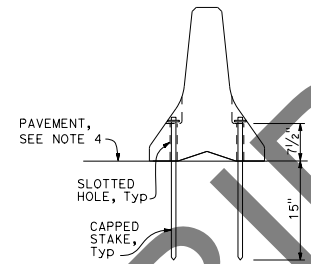
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
Registered Civil Engineer September 20, 2024 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					
Mohan V. Baniya No. C63046 Exp. 6-30-26 CIVIL STATE OF CALIFORNIA					



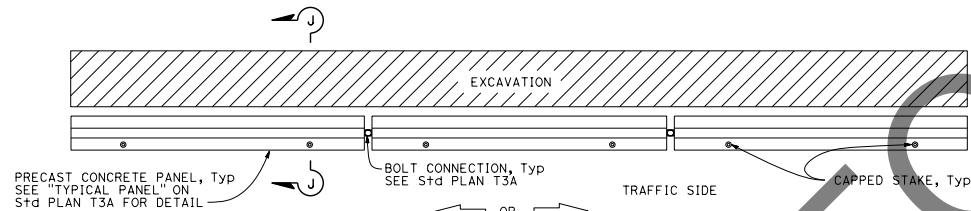
PLAN

**RAILING STAKING CONFIGURATION FOR TWO-WAY TRAFFIC**

See Note 2



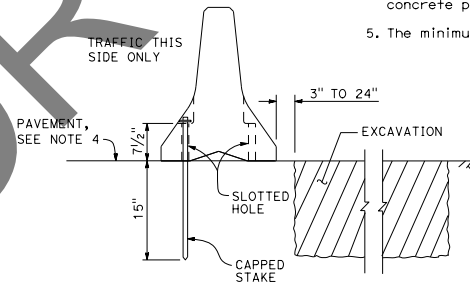
SECTION I-I



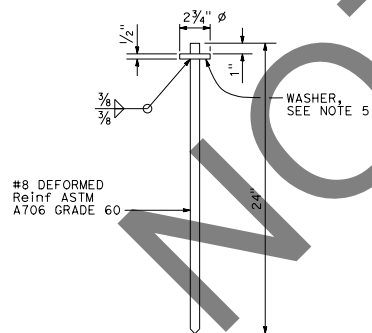
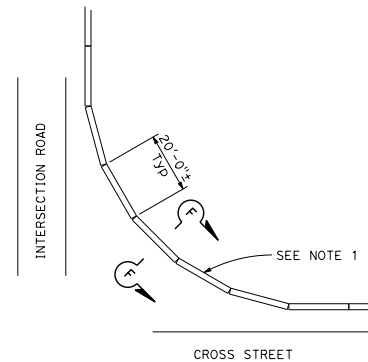
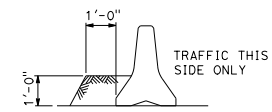
PLAN

**RAILING STAKING CONFIGURATION ADJACENT TO AN EXCAVATION**

See Note 3



SECTION J-J

**CAPPED STAKE DETAIL****CURVED LAYOUT**SECTION F-F  
See Note 1**TEMPORARY RAILING (TYPE K)**

NO SCALE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL No. SHEETS

REGISTERED CIVIL ENGINEER

September 20, 2024

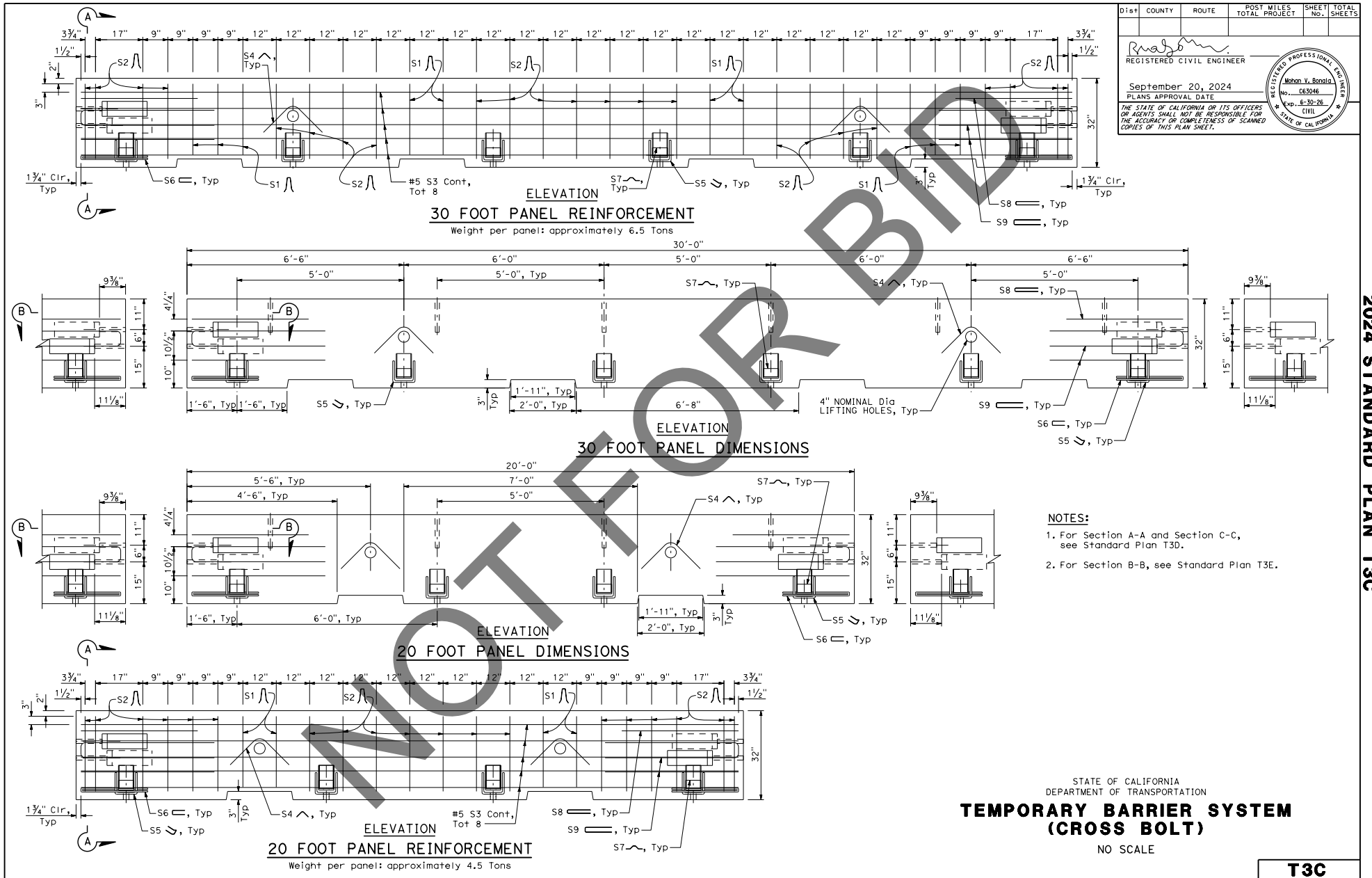
PLANS APPROVAL DATE

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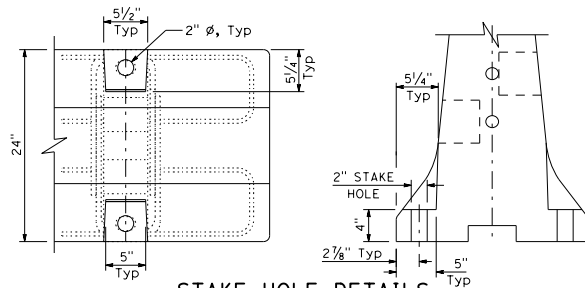
Mohan V. Baniya  
No. C63046  
EXP. 6-30-26  
CIVIL  
STATE OF CALIFORNIA

**NOTES:**

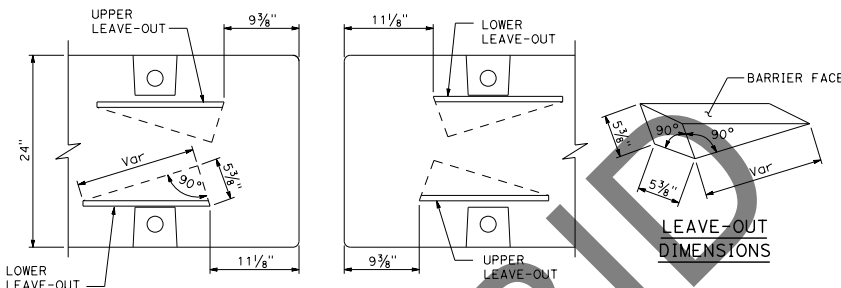
- Where Type K temporary railing is placed on curves and radii that are too severe to connect panels with bolted joints, the railing must be backed continuously with earth fill. See Section F-F.
- Where Type K temporary railing is placed as a temporary or long term barrier in two-way traffic on highways with less than 24" from the edge of traveled way, use four capped stakes per every other panel with end panels staked.
- Where Type K temporary railing is placed 3" to 24" from the edge of an excavation on highways, use two capped stakes per panel along the traffic side.
- Staked Type K temporary railing must be supported by at least 4" thick concrete, hot mix asphalt or existing asphalt concrete pavement.
- The minimum yield strength for the washer must be 60,000 psi.







STAKE HOLE DETAILS

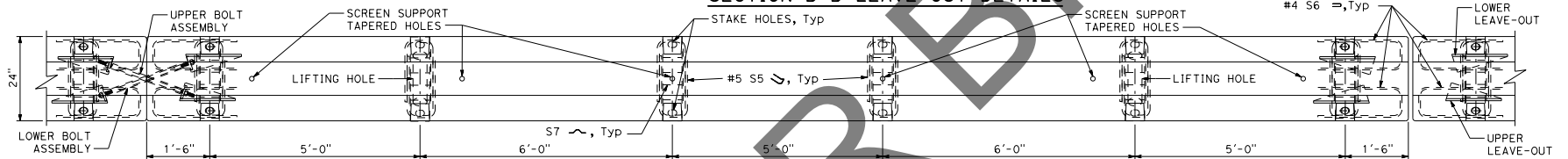
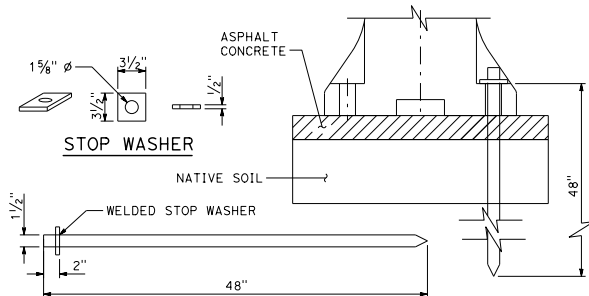


SECTION B-B LEAVE-OUT DETAILS

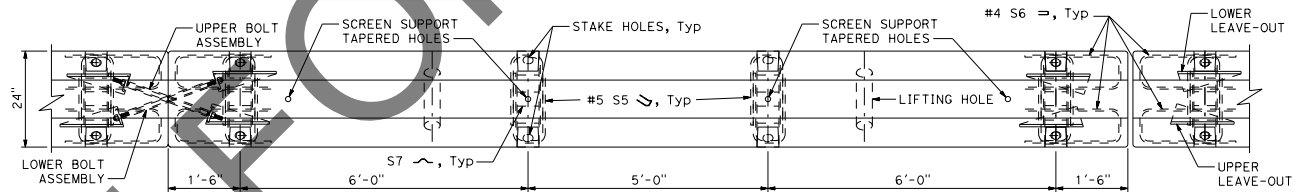
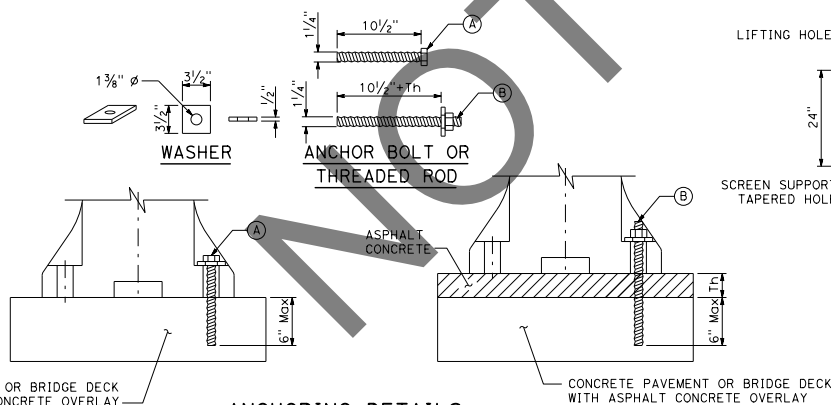
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
September 20, 2024 PLANS APPROVAL DATE THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.				
REGISTERED CIVIL ENGINEER Mohan V. Bhatia No. C63046 EXP. 6-30-26 CIVIL STATE OF CALIFORNIA				

## NOTE:

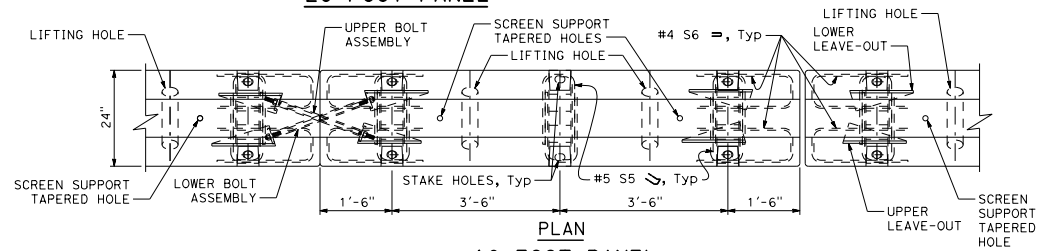
1. For Section B-B, see Standard Plan T3C.

PLAN  
30 FOOT PANEL

STOP WASHER

PLAN  
20 FOOT PANEL

ANCHORING DETAILS

PLAN  
10 FOOT PANEL
 STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**TEMPORARY BARRIER SYSTEM  
 (CROSS BOLT)**

NO SCALE

T3E