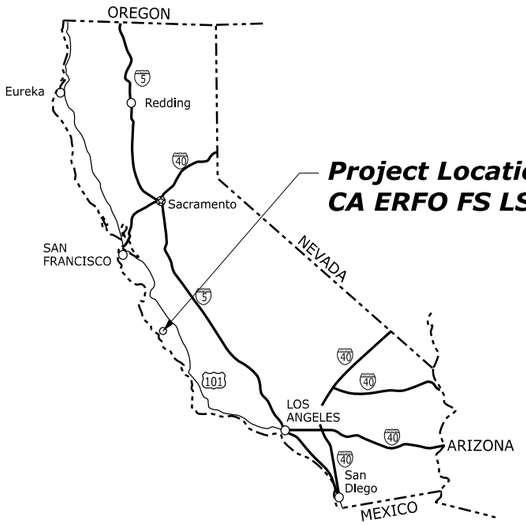
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	A1

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



Project Location
CA ERFO FS LSPDR 2021-1(1)

KEY MAP OF CALIFORNIA

PLANS FOR PROPOSED

CA ERFO FS LSPDR 2021-1(1)

NACIMIENTO-FERGUSSON RD

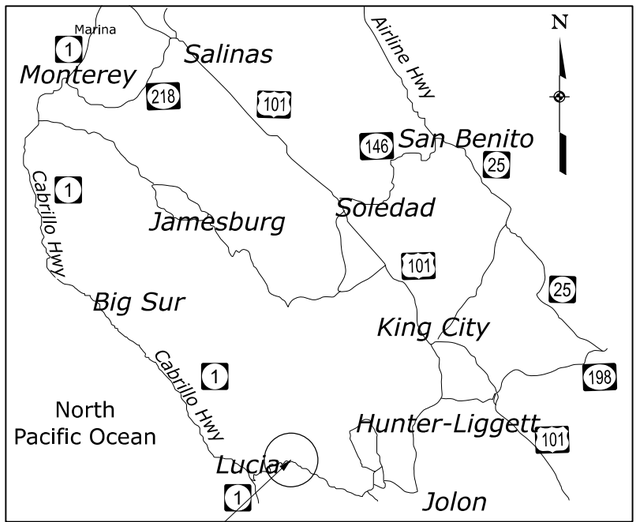
LOS PADRES NATIONAL FOREST
MONTEREY COUNTY
VARIOUS SITES
SCHEDULE A LENGTH 0.30 miles

TYPE OF CONSTRUCTION:
Emergency Relief for Federally Owned Roads (ERFO)
Road reconstruction, MSE Wall, Culvert, and Slope repair

DESIGN DESIGNATIONS:
ADT (2023) ..... <10

U.S. CUSTOMARY DIMENSIONS:
Slopes are expressed as RISE:RUN

SPECIFICATIONS:
"STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14"



CA ERFO FS LSPDR 2021-1(1)
Nacimiento-Fergusson Rd

INDEX TO SHEETS

SHEET	DESCRIPTION
A1	TITLE SHEET
A2 - A3	CONVENTIONAL PLAN SYMBOLS AND ABBREVIATIONS
A4	SURVEY CONTROL SHEET
A5	SITE MAP
A6	TYPICAL SECTIONS
B1 - B2	SUMMARY OF QUANTITIES
C1 - C19	PLAN & CULVERT CROSS SECTION SHEETS
F1	SPECIAL 204-A, EMBANKMENT BENCHING
G1	SPECIAL 251-A, PLACED RIPRAP AT CULVERT OUTLETS
G2 - G3	SPECIAL 257-A, CONTRACTOR DESIGN MECHANICALLY STABILIZED EARTH (MSE) WALL
G4	SPECIAL 257-B, MSE WALL PIPE PENETRATION DETAILS
T1	SPECIAL 601-A, CONCRETE HEADWALL/WINGWALL FOR SINGLE NORMAL 42" TO 84" PIPE CULVERT
T2	STANDARD 602-1, METAL PIPE CULVERT
T3	STANDARD 602-3, METAL AND PLASTIC CULVERT BEDDING
T4	STANDARD 602-4, METAL END SECTIONS
T5	SPECIAL 602-A, METAL COUPLING BAND
T6	SPECIAL 602-B, 24" RUN DOWN AND PIPE ANCHOR ASSEMBLY
T7	SPECIAL 602-C, 48" PIPE ANCHOR ASSEMBLY
T8	SPECIAL 604-A, CONCRETE BOX INLET
T9	SPECIAL 606-A, SPILLWAY ASSEMBLIES TAPERED INLET & CORRUGATED FLUME DOWNDRAIN
T10	DETAIL C629-50, ROLLED EROSION CONTROL PRODUCT ON SLOPES
T11	SPECIAL 633-A, OBJECT MARKERS
T12	SPECIAL 633-B, DELINEATORS
T13	STANDARD 635-1, TEMPORARY TRAFFIC CONTROL ADVANCE SIGNING
T14	STANDARD 635-7, TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT (WITH YIELD SIGN)
T15	STANDARD 635-13, TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT WITH TEMPORARY BARRIER
T16	STANDARD 635-14, TEMPORARY TRAFFIC CONTROL SIGN INSTALLATION WOOD POSTS
T17	DETOUR PLAN
X1-X126	CROSS SECTION SHEETS

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION
DENVER, CO

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

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APPROVED:

WENDY M LONGLEY Digitally signed by WENDY M LONGLEY Date: 2023.03.01 12:41:26 -07'00' DATE: _____

for: CHIEF OF ENGINEERING
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

AS PER MEMO DATED 02/16//2023 DATE: _____

FOREST SUPERVISOR
LOS PADRES NATIONAL FOREST

PROJECT MANAGER	LEAD DESIGNER
MIKE DAIGLER	THOMAS MCCRARY

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1 March 2023 9:27 AM

ABBREVIATIONS

	℄	centerline
	Δ	curve delta
	∅	diameter
A	abut.	abutment
	ADT	average daily traffic
	aggr.	aggregate
	AH	ahead
	alt.	alternate
	appr.	approach
	asph.	asphalt
B	b.f.	both faces
	beg.	beginning, begin
	BK	back
	BM	bench mark
	BP	balance point
	br.	bridge
	brg.	bearing
C	CBC	concrete box culvert
	c-c	center to center
	clr.	clear
	CMP	corrugated metal pipe
	Co.	county
	col.	column
	conc.	concrete
	constr.	construction
	constr. jt.	construction joint
	cont.	continuous
	corr.	corrugated
	cr.	creek
	CS	point of curve to spiral
	ctrs.	centers
	CTSM	contingent sum
	culv.	culvert
D	decr.	decrement
	DHV	design hour volume
	DI	drop inlet
	dia. or D	diameter
	diag.	diagonal
	diaph.	diaphragm
	dist.	distance
	Dist.	district
	DLC	donation land claim
	dwg(s).	drawing(s)
E	E	east
	e	superelevation rate
	El. 94.066	elevation with number
	elev.	elevation
	emb.	embankment
	engr(s).	Engineer(s)
	EOP	edge of pavement
	EQ or eq.	equation
	ER	edge of road
	et al	and others
	et ux	and wife
	EW	edge of water
	exc.	excavation
	exp. jt.	expansion joint
	ext.	exterior
F	f.f.	fill face
	Fed.	federal
	FES	flared end section
	fin.	finish
	ftg.	footing
G	ga.	gage (gauge)
	galv.	galvanized
	gdr.	girder
H	hdwl.	headwall
	HES	homestead entry survey
	hex.	hexagon
	horiz.	horizontal
	HW	high water
	hwy.	highway
I	ID	inside diameter
	incl.	inclusive, including
	incr.	increment
	int.	interior
J	jt.	joint
L	L	length of curve
	L.O.L.	Lay Out Line
	lam.	lamination
	lat.	latitude
	long.	longitudinal
	LPSM	lump sum
	Lt. or LT	left
	LW	low water
M	mag.	magnetic
	maint.	maintenance
	matl.	material
	max.	maximum
	min.	minimum
	mon.	monument
	mtn(s).	mountain(s)
N	N	north
	NC	normal crown
	neg.	negative
	no. or #	number
O	o.c.	on centers
	o.f.	other face
	OD	outside diameter
P	PC	point of curve
	PCC	point of compound curve
	perf.	perforate
	PI	point of intersection
	pl.	plate
	POC	point on curve
	POS	point on spiral
	POT	point on tangent
	proj.	project
	psi	pounds per square inch
	PT	point of tangent
	pvmt.	pavement
Q	quant., Qty	quantities
R	R	radius
	R.	range
	R/W	right-of-way
	rd.	road
	rdwy.	roadway
	reconst.	reconstruction
	RECP	Rolled Erosion Control Product
	reinf.	reinforcement
	reqd.	required
	res.	reservoir
	Res.	Reservation
	ret. wall	retaining wall
	RH	reference hub
	Rt. or RT	right
	rte.	route
S	S	south
	SADT	seasonal average daily traffic
	SC	point of spiral to curve
	sec.	section
	shldr.	shoulder
	spa.	spacing, Spaces or Spaced
	spec.	specification
	st.	street
	ST	point of spiral to tangent
	sta.	station
	std.	standard
	stiff.	stiffener
	str.	straight
	struc.	structural
	sym.	symmetrical
T	T	tangent length
	T.	township
	tan.	tangent
	TBM	temporary bench mark
	TCE	temporary construction easement
	transv.	transverse
	TS	point of tangent to spiral
	typ.	typical
V	V	design speed
	vert.	vertical
	vph	vehicles per hour
	VPI	vertical point of intersection
W	W	west

DRAINAGE SYMBOLS

Ditch (Existing, Proposed)

Flow Arrow

Drainage or Small Creek

Lake, Pond or Reservoir

Large Creek

Wetland

River

Spring

Bridge (Existing, Proposed)

Box Culvert (Existing, Proposed)

Pipe Culvert (Existing, Proposed)

With End Sections (Existing, Proposed)

With Headwalls (Existing, Proposed)

With Drop Inlet (Existing, Proposed)

Underdrain (Existing, Proposed)

Riprap Apron (Proposed)

EROSION & SEDIMENT CONTROL SYMBOLS

Bonded Fiber Matrix Mulching

Check Dam

Diversion Berm

Rolled Erosion Control Product

Riprap

Fiber Roll (Ditch and/or Cut Slope)

Silt Fence

Temporary Inlet Protection

Fiber Roll (Slope Protection)

FENCE & CATTLEGUARD SYMBOLS

Fence (Existing, Proposed)

Fence w/ Gate (Existing, Proposed)

Cattleguard (Existing, Proposed)

GEOLOGIC SYMBOLS

Boring Location (Existing, Proposed)

Material Source

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	A2

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

CONVENTIONAL PLAN SYMBOLS AND ABBREVIATIONS

Sheet 1 of 2

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LANDSCAPING & VEGETATION SYMBOLS

Tree

Treeline

MAPPING SYMBOLS

Building (Existing, Proposed)

Coordinate Grid Tick

North Arrow

Railroad

Single Track

Double Track

Spot Elevation

Trail

Survey Control Point

RIGHT-OF-WAY SYMBOLS

Boundaries

National

State

County

City

Township or Range Line

Section

1/4 Section

1/16 Section

Bureau of Indian Affairs

Bureau of Land Management

National Forest

National Park

National Wildlife Refuge

Easements

Permanent (Existing)

Permanent (Proposed)

Temporary (Proposed)

Monument (As described)

Parcel Number

Property Line

Right-of-Way Line (Existing)

Right-of-Way Line (Proposed)

Section Corner (Found, Projected)

¼ Section Corner (Found, Projected)

1/16 Section Corner (Found)

GUARDRAIL, BARRIER & WALL SYMBOLS

Guardrail (Existing, Proposed)

Guardwall (Existing, Proposed)

Median & Side Barrier (Existing, Proposed)

Retaining Wall (Existing, Proposed)

ROADWAY SYMBOLS

Clearing/Construction Limits

Slope Stake Limits

Top of Cut

Transition

Toe of Fill

Edge of Roadway

Existing

Proposed

Roadway Centerline (With Station ticks)

Roadway Obliteration

SIGN SYMBOLS

Signs

Commercial (Existing, Proposed)

Delineator (Existing, Proposed)

Portable (Proposed)

Post Mounted (Existing, Proposed)

UTILITY SYMBOLS

Irrigation Ditch

Underground (Existing, Proposed)

Surface (Existing, Proposed)

Support Pole (Existing, Proposed)

Support Pole Anchor (Existing, Proposed)

Street Light (Existing, Proposed)

Telephone Booth (Existing, Proposed)

Telephone Pedestal (Existing, Proposed)

Underground Utility (Existing, Proposed)

CATV

Fiber Optic

Gas

Oil

Power

Sanitary Sewer

Telephone

Water

Overhead Utility Line (Existing, Proposed)

CATV

Fiber Optic

Power

Telephone

PROJECT SPECIFIC SYMBOLS

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	A3

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OFFICE OF FEDERAL LANDS HIGHWAY

CONVENTIONAL PLAN SYMBOLS AND ABBREVIATIONS

Sheet 2 of 2

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STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	A4

Project : CA ERFO 2021-1(1), Nacimiento-Fergusson Rd. Review FP14, Section 152.02

Date Of Field Work : August 2021
Date Of Final Adjustment : August 2021

Project Units : Us Survey Foot
Datum: Nad 1983 (Conus)
Zone: California Zone 4 0404
Geoid: Geoid12A (Conus)
Opus Epoc Date : 2010.0000
Vertical Datum : Navd88 All Elevations Are Modeled using Geoid12B, holding 2002 and 2003 from OPUS

DGN file:
Alignment :

POINT NUMBER	STATE PLANE COORDINATES NORTH	EAST	ELEVATION	GEO COORDINATES LATITUDE	LONGITUDE	ELLIPSOID HEIGHT	MAPPING ANGLE	COMBINED FACTOR	STATION	OFFSET	DESCRIPTION
2001	1891243.23	5834059.22	2045.75	35°59'48.22800"N	121°27'35.49600"W	1935.47	-1°28'05"	0.99990804	off alignment	off alignment	FHWA-AC
2002	1895960.70	5835028.21	2614.27	36°00'35.10000"N	121°27'25.16400"W	2504.43	-1°27'58"	0.99987838	off alignment	off alignment	FHWA-AC
2003	1897315.02	5841044.56	2323.98	36°00'50.00400"N	121°26'12.40800"W	2214.54	-1°27'14"	0.99989148	off alignment	off alignment	FHWA-AC
2004	1897401.27	5841332.63	2302.97	36°00'50.94000"N	121°26'08.91600"W	2193.55	-1°27'11"	0.99989243	off alignment	off alignment	FHWA-AC
2005	1889753.10	5861569.52	1434.90	35°59'40.30800"N	121°22'00.37200"W	1325.61	-1°24'43"	0.99993763	off alignment	off alignment	FHWA-AC
4002	1897601.95	5846268.86	1756.25	36°00'54.14400"N	121°25'08.90400"W	1647.01	-1°26'35"	0.99991841	200+56.12	-44.702	IP
4003	1896874.75	5842486.45	2080.87	36°00'46.00800"N	121°25'54.69600"W	1971.47	-1°27'04"	0.99990331	302+19.84	15.727	IP
4004	1896513.48	5841790.58	2155.77	36°00'42.26400"N	121°26'03.08400"W	2046.33	-1°27'07"	0.99989992	401+93.63	9.713	CPS
4005	1896776.14	5841187.35	2272.05	36°00'44.71200"N	121°26'10.50000"W	2162.59	-1°27'11"	0.99989423	801+73.29	11.704	CPS
4006	1896087.92	5841428.22	2200.18	36°00'37.98000"N	121°26'07.33200"W	2090.70	-1°27'11"	0.99989802	off alignment	off alignment	CPS
4008	1896049.49	5841220.85	2228.94	36°00'37.54800"N	121°26'09.85200"W	2119.46	-1°27'11"	0.99989666	off alignment	off alignment	CPS
4009	1896962.95	5841065.78	2288.34	36°00'46.51200"N	121°26'12.01200"W	2178.88	-1°27'14"	0.99989336	off alignment	off alignment	CPS
4010	1897222.13	5840170.47	2387.14	36°00'48.85200"N	121°26'22.99200"W	2277.66	-1°27'22"	0.99988851	off alignment	off alignment	CPS
4011	1896038.03	5839050.84	2532.57	36°00'36.86400"N	121°26'36.27600"W	2422.98	-1°27'29"	0.99988218	off alignment	off alignment	CPS
4012	1896407.32	5835580.59	2695.17	36°00'39.67200"N	121°27'18.61200"W	2585.40	-1°27'54"	0.99987427	off alignment	off alignment	CPS
4013	1896120.40	5834633.06	2561.39	36°00'36.57600"N	121°27'30.02400"W	2451.54	-1°28'01"	0.99988083	1301+71.25	-168.106	CPS
4014	1895646.14	5834426.75	2515.75	36°00'31.82400"N	121°27'32.40000"W	2405.85	-1°28'01"	0.99988326	1401+78.68	16.522	CPS
4015	1893962.10	5834542.34	2351.71	36°00'15.22800"N	121°27'30.45600"W	2241.67	-1°28'01"	0.99989198	1501+59.06	-11.506	CPS
4016	1892020.15	5832887.52	1977.55	35°59'55.60800"N	121°27'50.00400"W	1867.22	-1°28'12"	0.99991091	off alignment	off alignment	CPS

PROJECT AVERAGES = 0.99989599

NOTE: TO PRECISELY CHECK DISTANCES BETWEEN POINTS AS MEASURED ON THE GROUND :
INVERSE THE STATE PLANE COORDINATES AND DIVIDE THE COMPUTED DISTANCE BY A MEAN COMBINED FACTOR OF THE TWO POINTS.

TO COMPUTE GEODETIC AZIMUTHS USE THE FOLLOWING FORMULA :
GEODETIC AZIMUTH = GRID AZIMUTH + MAPPING ANGLE

NO.	DESCRIPTION REVISIONS (OR CHANGE NOTICES)	DATE	INIT.
6			
5			
4			
3			
2			
1	*Created*	*1/30/23*	*SJS*

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OFFICE OF FEDERAL LANDS HIGHWAY

SURVEY CONTROL SHEET

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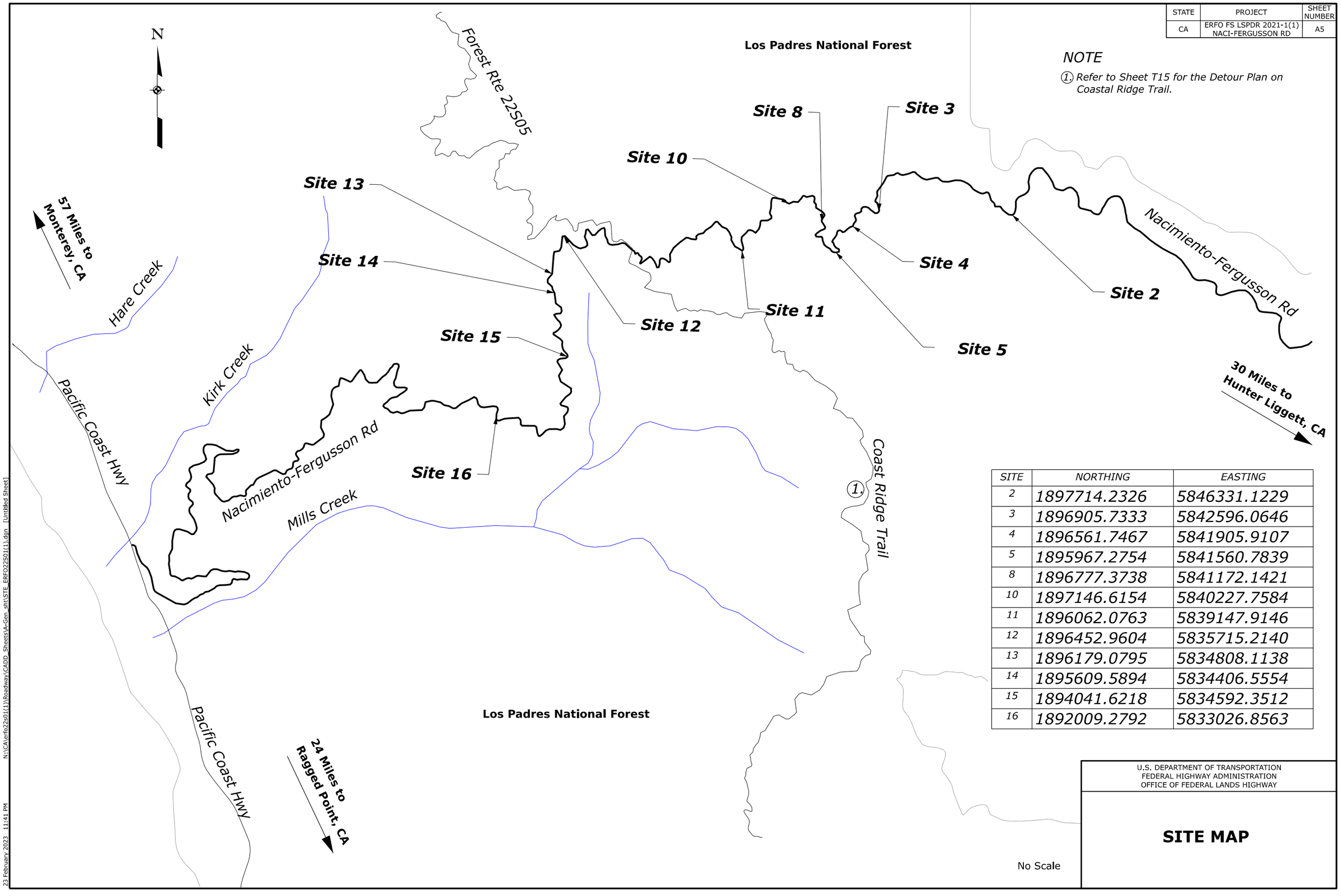
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	A5



NOTE

1. Refer to Sheet T15 for the Detour Plan on Coastal Ridge Trail.

SITE	NORTHING	EASTING
2	1897714.2326	5846331.1229
3	1896905.7333	5842596.0646
4	1896561.7467	5841905.9107
5	1895967.2754	5841560.7839
8	1896777.3738	5841172.1421
10	1897146.6154	5840227.7584
11	1896062.0763	5839147.9146
12	1896452.9604	5835715.2140
13	1896179.0795	5834808.1138
14	1895609.5894	5834406.5554
15	1894041.6218	5834592.3512
16	1892009.2792	5833026.8563

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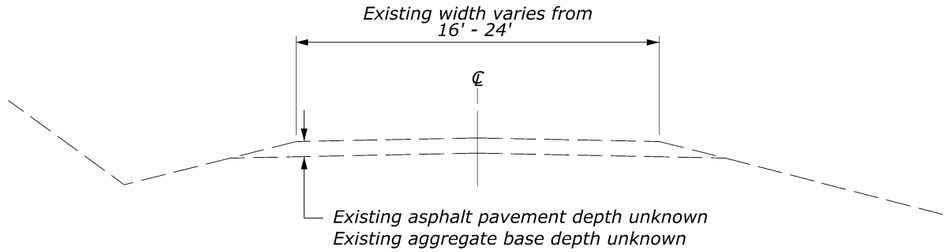
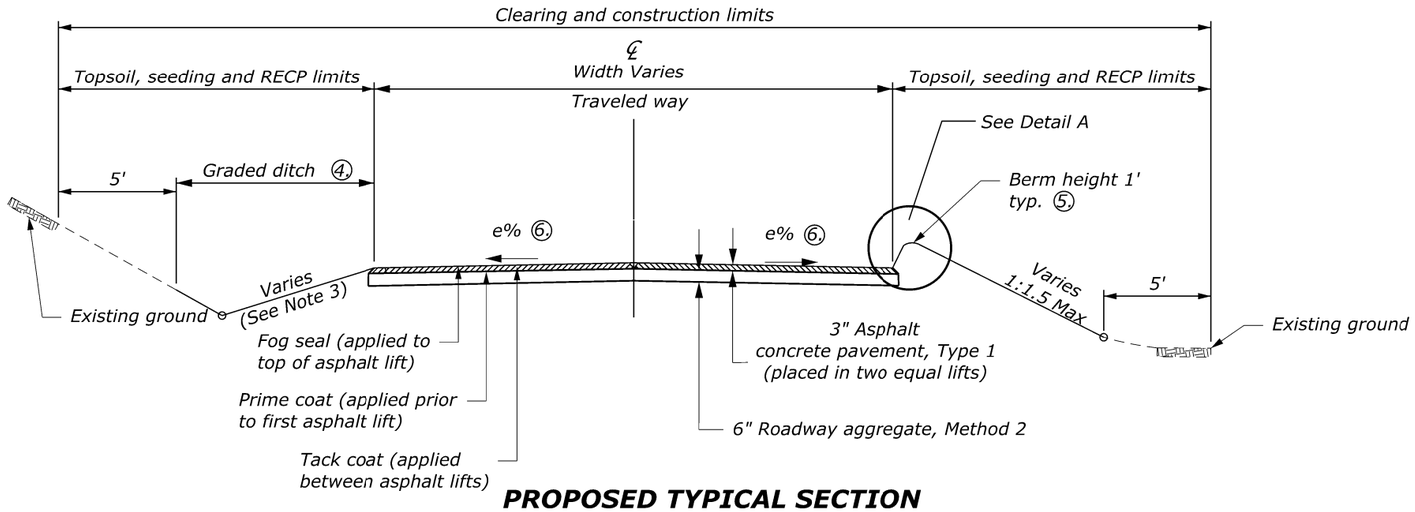
SITE MAP

No Scale

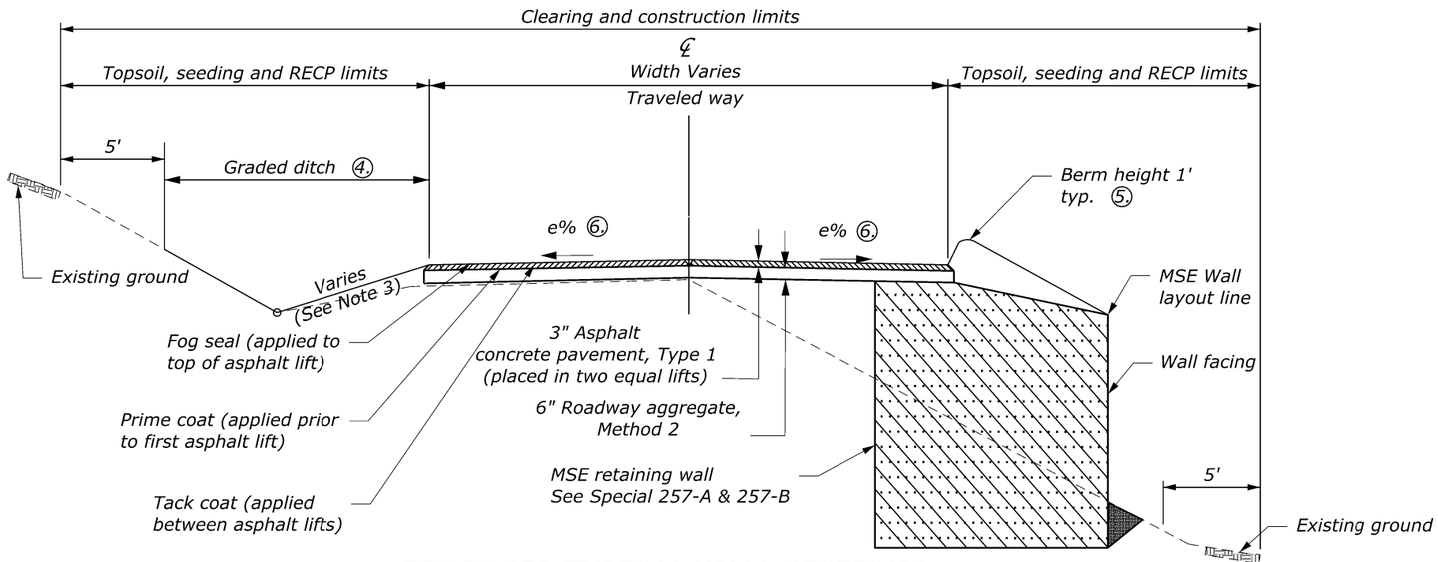
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	A6



EXISTING TYPICAL SECTION
Site 2 - Site 16



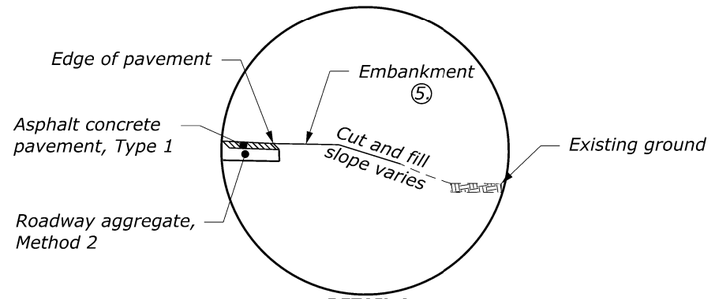
PROPOSED TYPICAL SECTION



PROPOSED TYPICAL WALL SECTIONS
Sites 4, 8, 10, 13, 14, 15, 16

Note:

1. Existing superelevated and widened sections are not shown.
2. Dimensions shown are approximate and may be varied by the CO.
3. Construct a 1:4 or flatter foreslope unless otherwisde directed by the CO. Steepen the foreslopes as necessary, but not steeper than 1:2, to stay on the existing bench.
4. The gradient and width of roadway ditches and the excavation and embankment slope ratios may be adjusted by the CO to assure adequate drainage and stability.
5. See the cross sections for berm and embankment dimensions.
6. See the cross sections for roadway cross slopes.



DETAIL A
SITE 2 STATIONS 200+05 TO 201+55
SITE 11 STATIONS 1101+25 TO 1101+30
SITE 16 STATIONS 1601+68 TO 1602+20

LENGTH OF PROJECT

Site	Station to Station		Roadway (ft)
Site 2	200+05	201+55	150
Site 3	300+35	301+80	145
Site 4	400+30	401+35	105
Site 5	500+20	501+90	170
Site 8	800+20	801+65	145
Site 10	1000+60	1001+85	125
Site 11	1100+16	1102+05	189
Site 12	1200+05	1201+45	140
Site 13	1300+70	1301+60	90
Site 14	1400+40	1401+45	105
Site 15	1500+40	1501+20	80
Site 16	1600+35	1602+20	185
TOTALS (ft)			1601
TOTAL (mi)			0.30

No Scale

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TYPICAL SECTIONS

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SUMMARY OF QUANTITIES - Schedule A

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	B1

AMEND	Line Item No.	Pay Item Number	Pay Item Description	Unit	Sheet and Description													Estimated Quantities	Remarks and/or Determination of Estimated Quantity
					C1	C3	C5	C7	C9	C10	C12	C13	C15	C16	C17	C18			
					SITE 2	SITE 3	SITE 4	SITE 5	SITE 8	SITE 10	SITE 11	SITE 12	SITE 13	SITE 14	SITE 15	SITE 16	ALLOWANCE	Bid Schedule	
	A1000	15101-0000	MOBILIZATION	LPSM														ALL	
	A1020	15201-0000	CONSTRUCTION SURVEY AND STAKING	LPSM														ALL	
	A1040	15301-0000	CONTRACTOR QUALITY CONTROL	LPSM														ALL	
	A1060	15401-0000	CONTRACTOR TESTING	LPSM														ALL	
	A1080	15501-0000	CONSTRUCTION SCHEDULE	LPSM														ALL	
	A1100	15701-0000	SOIL EROSION CONTROL	LPSM														ALL	
	A1120	15720-0000	STORM WATER POLLUTION PREVENTION PLAN	LPSM														ALL	
	A1140	15802-0000	WATERING FOR DUST CONTROL	LPSM														ALL	
	A1160	20102-0000	CLEARING AND GRUBBING	LPSM														ALL	
	A1180	20304-1000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LPSM														ALL	
	A1200	20401-0000	ROADWAY EXCAVATION	CUYD	266		416	466	716	398		174	242	417	200	574	711	4,580	
	A1220	20420-0000	EMBANKMENT CONSTRUCTION	CUYD		276					40						64	380	
	A1240	20441-0000	WASTE	CUYD	41		374	233	644	358		128	217	373	179	512	491	3,550	
	A1260	25101-0300	PLACED RIPRAP, METHOD A, CLASS 3	CUYD		10.7	1.8					4.0					5.5	22.0	
	A1280	25101-0500	PLACED RIPRAP, METHOD A, CLASS 5	CUYD	64.0			64.0			17.8						24.2	170.0	
	A1300	25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT			511		789	414			297	617	233	581	688	4,130	
	A1320	25701-0200	CONTRACTOR FURNISHED MECHANICALLY STABILIZED EARTH WALL DESIGN	LPSM														ALL	
	A1340	30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	93	98	67	124	106	84	107	117	67	86	59	128	64	1,200	
	A1360	40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	47	51	32	64	54	43	55	62	34	44	30	66	28	610	
	A1380	40601-0000	FOG SEAL	TON	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.5	2.0	
	A1400	41102-1000	PRIME COAT, METHOD 1	SQYD	302	314	215	401	340	270	187	371	215	279	192	353	161	3,600	
	A1420	41105-0000	BLOTTER	TON	0.4	0.5	0.3	0.6	0.5	0.4	0.3	0.5	0.3	0.4	0.3	0.5	1.0	6.0	
	A1440	41201-0000	TACK COAT	TON	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.4	2.0	
	A1460	60103-0000	CONCRETE, HEADWALL (AND WINGWALLS)	EACH	1			2										3	
	A1480	60201-0800	24-INCH PIPE CULVERT	LNFT			26			48						58	12	144	
	A1500	60201-1000	36-INCH PIPE CULVERT	LNFT								70					5	75	
	A1520	60201-1200	48-INCH PIPE CULVERT	LNFT		68					109						13	190	
	A1540	60201-1600	72-INCH PIPE CULVERT	LNFT	48			56									6	110	
	A1560	60210-0800	END SECTION FOR 24-INCH PIPE CULVERT	EACH			1			1						1		3	
	A1580	60210-1000	END SECTION FOR 36-INCH PIPE CULVERT	EACH								1						1	
	A1600	60210-1200	END SECTION FOR 48-INCH PIPE CULVERT	EACH		2					2							4	
	A1620	60210-1600	END SECTION FOR 72-INCH PIPE CULVERT	EACH	1													1	
	A1640	60403-0000	INLET (CONCRETE BOX)	EACH			1			1		1				1		4	
	A1660	60601-0000	SPILLWAY ASSEMBLY	EACH							1							1	
	A1680	60602-0700	PIPE ANCHOR ASSEMBLY, 24-INCH	EACH						4						4	4	12	
	A1700	60602-1100	PIPE ANCHOR ASSEMBLY, 48-INCH	EACH		5											1	6	
	A1720	62201-0150	DUMP TRUCK, 7 CUBIC YARD MINIMUM CAPACITY	HOUR														60	

MileStone: 100%
Date Completed: 02/23/23
Report Date: 02/23/23

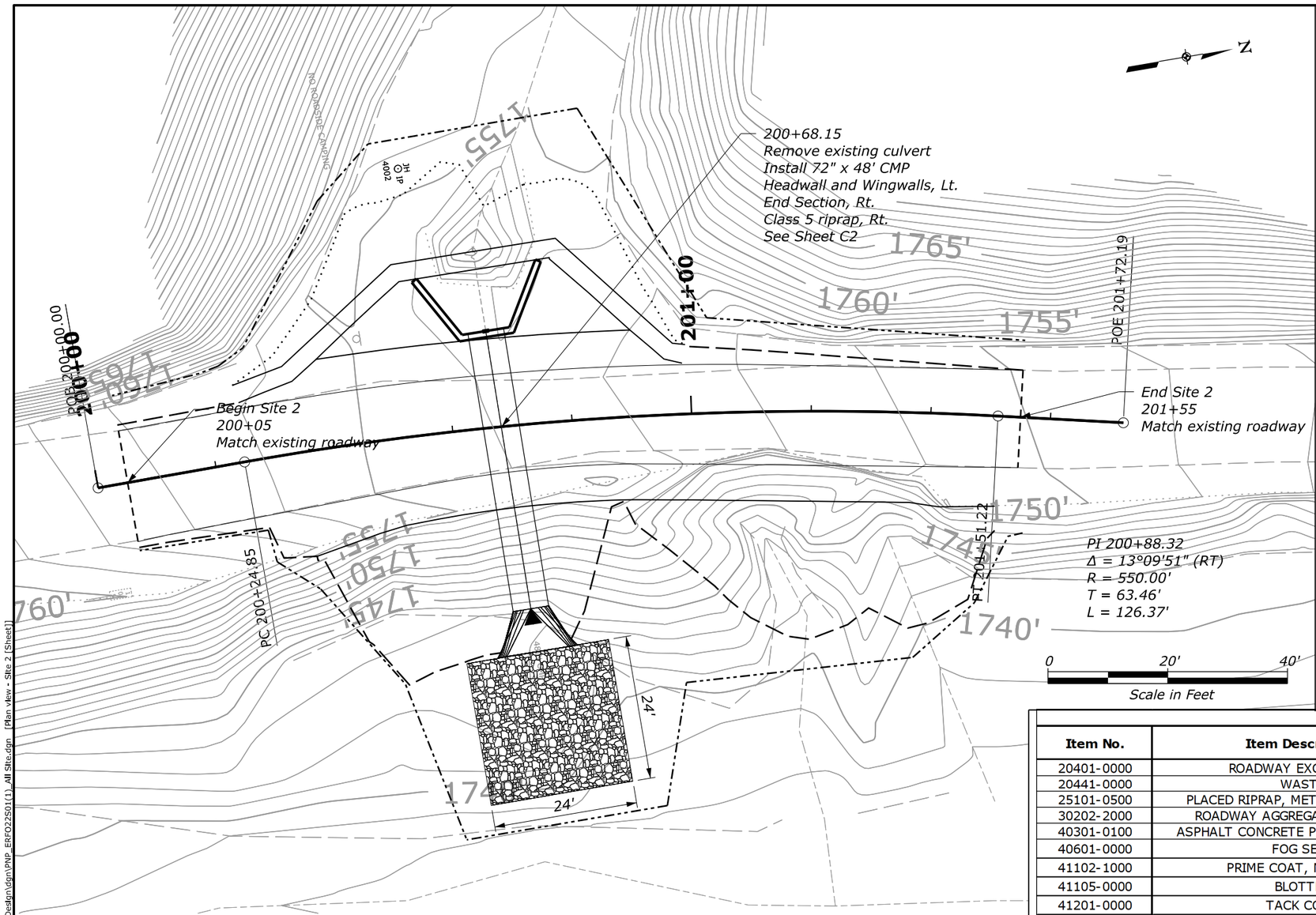
SUMMARY OF QUANTITIES - Schedule A

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	B2

AMEND	Line Item No.	Pay Item Number	Pay Item Description	Unit	Sheet and Description													Estimated Quantities	Remarks and/or Determination of Estimated Quantity
					C1	C3	C5	C7	C9	C10	C12	C13	C15	C16	C17	C18			
					SITE 2	SITE 3	SITE 4	SITE 5	SITE 8	SITE 10	SITE 11	SITE 12	SITE 13	SITE 14	SITE 15	SITE 16	ALLOWANCE	Bid Schedule	
	A1740	62201-0900	WHEEL LOADER, 2 CUBIC YARD MINIMUM RATED CAPACITY	HOUR														60	
	A1760	62201-2750	MOTOR GRADER	HOUR														60	
	A1780	62201-3350	HYDRAULIC EXCAVATOR, 1 CUBIC YARD MINIMUM CAPACITY	HOUR														60	
	A1800	62301-0000	GENERAL LABOR	HOUR														120	
	A1820	62302-1000	SPECIAL LABOR, HIRED TECHNICAL SERVICES (BIOLOGIST)	HOUR														40	
	A1840	62302-1000	SPECIAL LABOR, HIRED TECHNICAL SERVICES	HOUR														60	
	A1860	62302-1100	SPECIAL LABOR, HIRED SURVEY SERVICES	HOUR														60	
	A1880	62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	463	310	99	632	119	114	263	393	74	89	56	151	217	2,980	
	A1900	62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	463	310	99	632	119	114	263	393	74	89	56	151	217	2,980	
	A1920	62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	463	310	99	632	119	114	263	393	74	89	56	151	217	2,980	
	A1940	62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	463	310	99	632	119	114	263	393	74	89	56	151	217	2,980	
	A1960	63308-0000	OBJECT MARKER (L-1)	EACH	2	2	2	2		2	2	2				2		16	
	A1980	63308-3000	OBJECT MARKER, TYPE 3	EACH			2		2	2			2	2	2	2		14	
	A2000	63309-0000	DELINEATOR	EACH	10	10	10	10	10	10	10	10	10	10	10	10		120	
	A2020	63501-0000	TEMPORARY TRAFFIC CONTROL	LPSM														ALL	
	A2040	63701-0000	FIELD OFFICE	EACH														1	

MileStone: 100%
Date Completed: 02/23/23
Report Date: 02/23/23

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C1



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

2. *Headwall/Wingwall dimensions:*
   Headwall height (B) = 8'-5½"
   Wingwall length (G) = 12'-1¼" (both)
   Wingwall angle = 30° (both)
   Wingwall end height = 6'-5½"

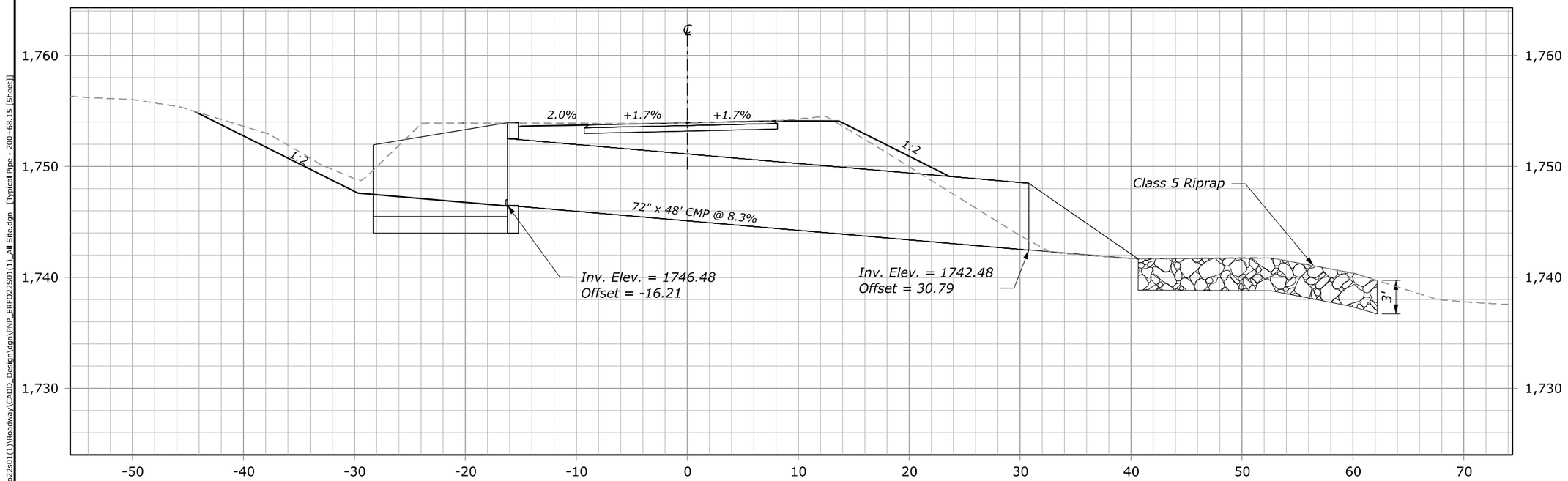
Site 2

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	266	
20441-0000	WASTE	CUYD	41	
25101-0500	PLACED RIPRAP, METHOD A, CLASS 5	CUYD	64.0	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	93	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	47	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	302	
41105-0000	BLOTTER	TON	0.4	
41201-0000	TACK COAT	TON	0.2	
60103-0000	CONCRETE, HEADWALL (AND WINGWALLS)	EACH	1	
60201-1600	72 INCH PIPE CULVERT	LNFT	48	
60210-1600	END SECTION FOR 72-INCH CULVERT	EACH	1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	463	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	463	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	463	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	463	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 2
200+05 - 201+55

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C2



200+68.15
Des Grade = 1,753.93
Subgrade = 1,753.18
Original Grnd = 1,753.93

FHWA, Office of Federal Lands Highway
Central Federal Lands Highway Division

CULVERT X-SECTIONS - SITE 2
NACI-FERGUSSON RD

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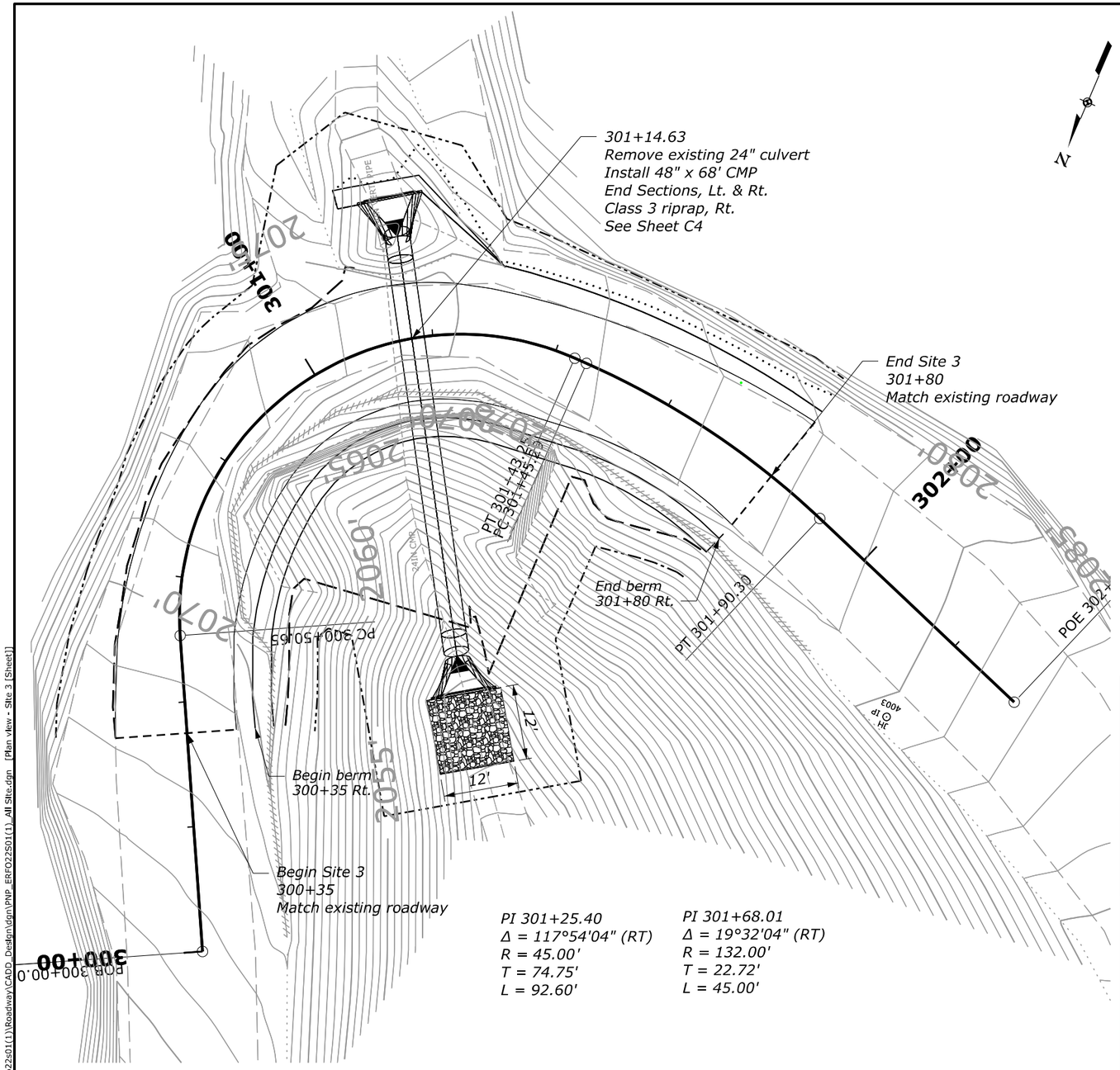
27 February 2023 12:31 PM

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C3



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

Site 3

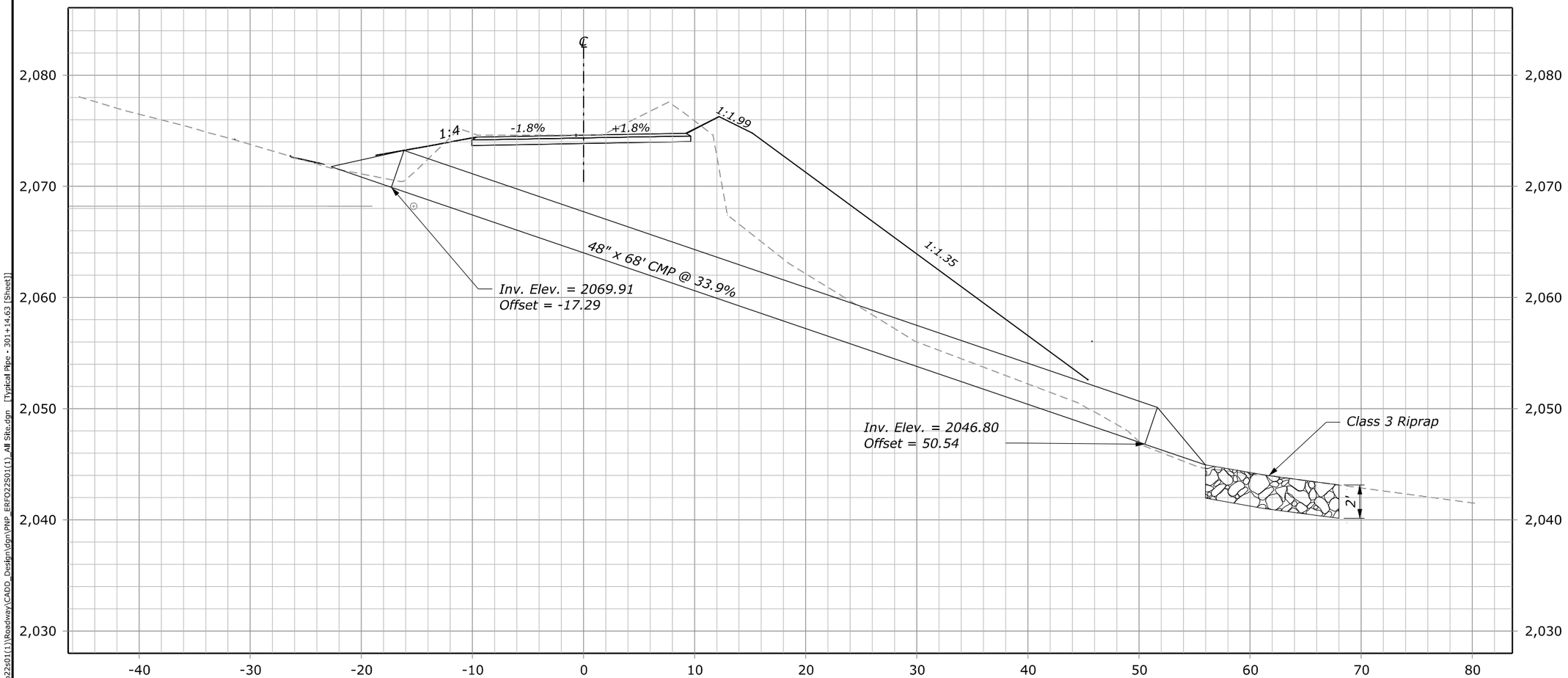
Item No.	Item Description	Unit	Estimated Quantities	Remarks
20420-0000	EMBANKMENT CONSTRUCTION	CUYD	276	
25101-0300	PLACED RIPRAP, METHOD A, CLASS 3	CUYD	10.7	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	98	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	51	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	314	
41105-0000	BLOTTER	TON	0.5	
41201-0000	TACK COAT	TON	0.1	
60201-1200	48 INCH PIPE CULVERT	LNFT	68	
60210-1200	END SECTION FOR 48-INCH PIPE	EACH	2	
60602-1100	PIPE ANCHOR ASSEMBLY, 48-INCH	EACH	5	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	310	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	310	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	310	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	310	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)

Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 3
300+35 - 301+80

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C4



301+14.63
Des Grade = 2,074.59
Subgrade = 2,073.84
Original Grnd = 2,074.59

FHWA, Office of Federal Lands Highway
Central Federal Lands Highway Division

CULVERT X-SECTIONS - SITE 3
NACI-FERGUSSON RD

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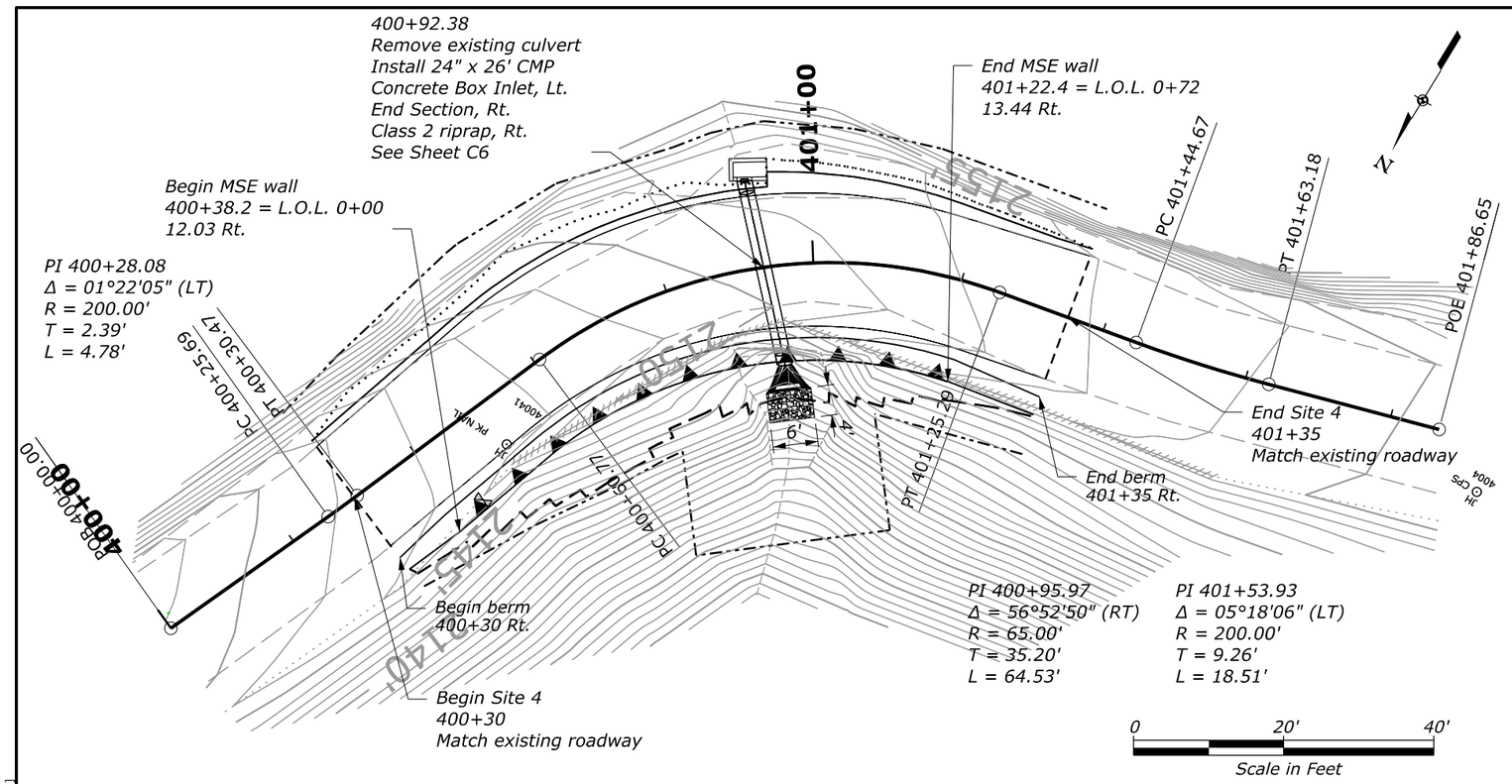
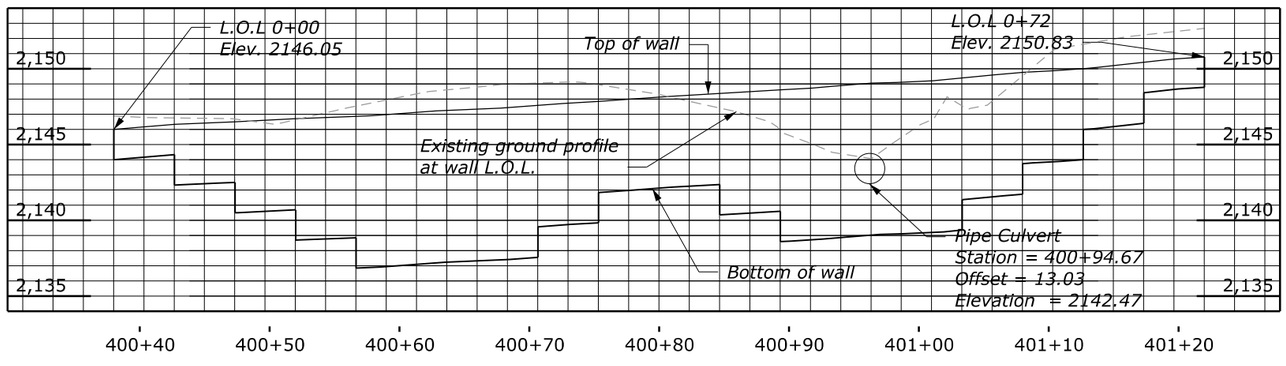
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C5



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

MSE WALL LAYOUT



Site 4

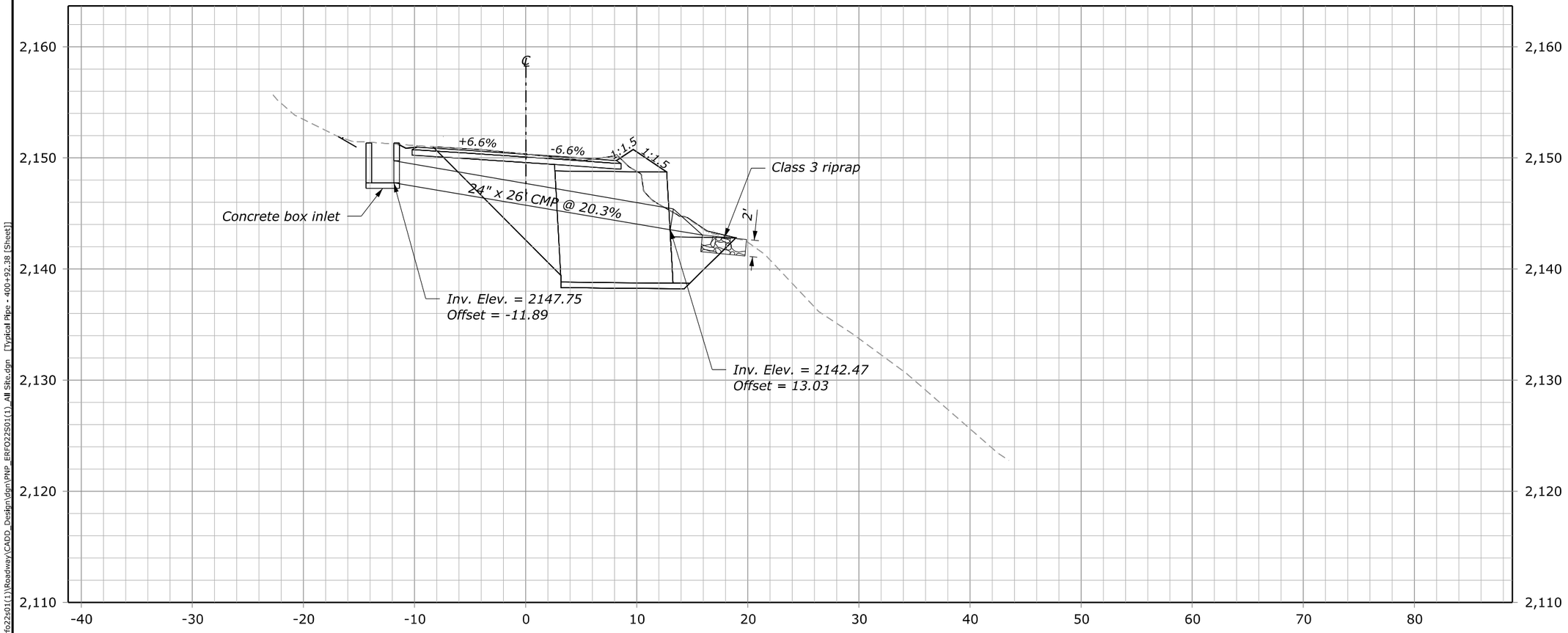
Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	416	
20441-0000	WASTE	CUYD	374	
25101-0300	PLACED RIPRAP, METHOD A, CLASS 3	CUYD	1.8	
25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT	511	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	67	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	32	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	215	
41105-0000	BLOTTER	TON	0.3	
41201-0000	TACK COAT	TON	0.1	
60201-0800	24 INCH PIPE CULVERT	LNFT	26	
60210-0800	END SECTION FOR 24 INCH PIPE CULVERT	EACH	1	
60403-0000	INLET (CONCRETE BOX)	EACH	1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	99	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	99	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	99	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	99	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63308-3000	OBJECT MARKER, TYPE 3	EACH	2	Install at MSE wall ends as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)

Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 4
400+30 - 401+35

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C6



400+92.38
Des Grade = 2,150.32
Subgrade = 2,149.57
Original Grnd = 2,150.32

FHWA, Office of Federal Lands Highway
Central Federal Lands Highway Division

CULVERT X-SECTIONS - SITE 4
NACI-FERGUSSON RD

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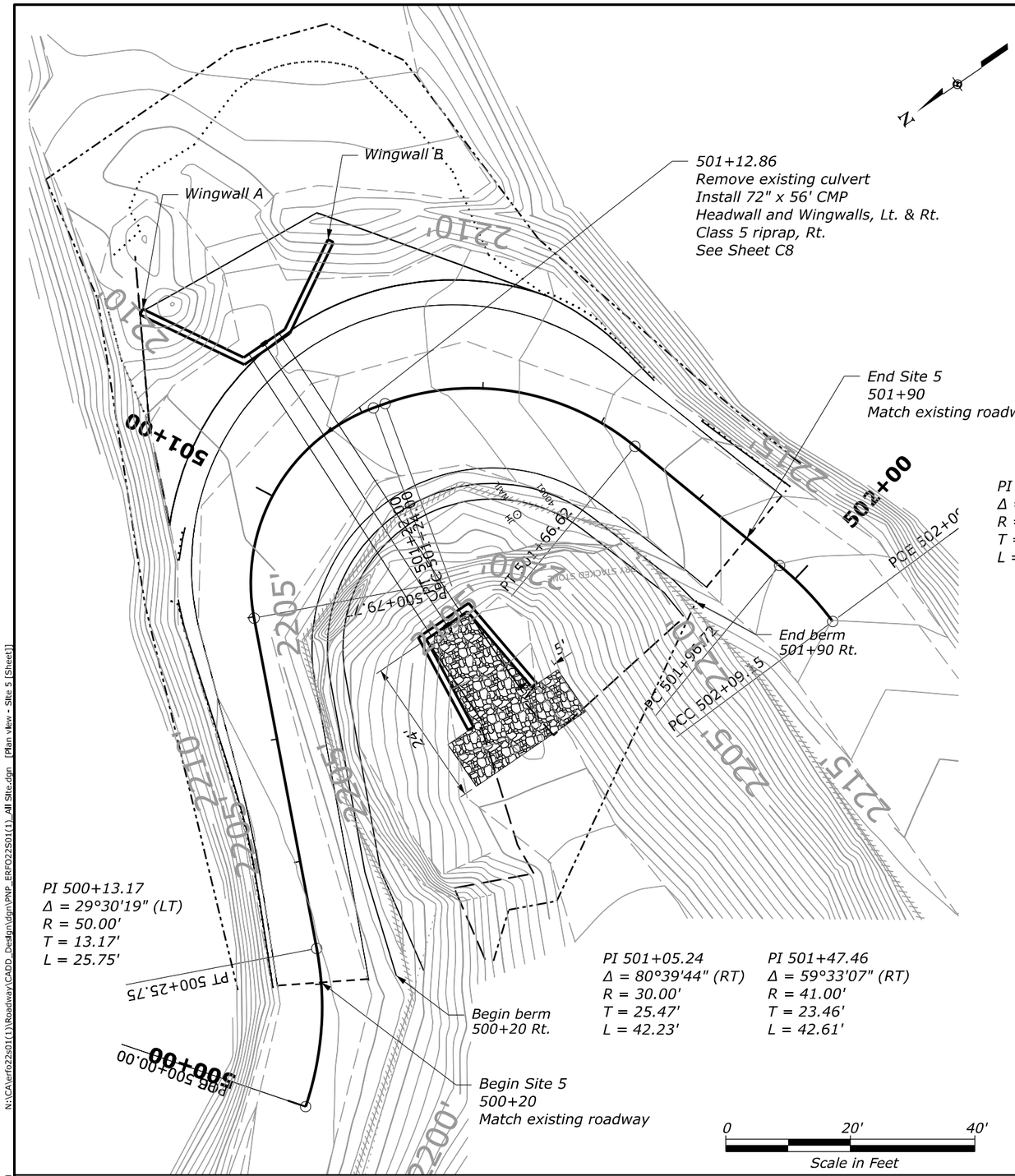
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C7



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

2. *Headwall/Wingwall dimensions:*
   Inlet:
   Headwall height (B) = 8'-5½"
   Wingwall length (G) = 18'-0" (A), 16'-0" (B)
   Wingwall angle = 30° (A), 60° (B)
   Wingwall end height = 6'-5½" (both)

   Outlet:
   Headwall height (B) = 8'-5½"
   Wingwall length (G) = 16'-0" (both)
   Wingwall angle = 6° (both)
   Wingwall end height = 3'-6" (both)

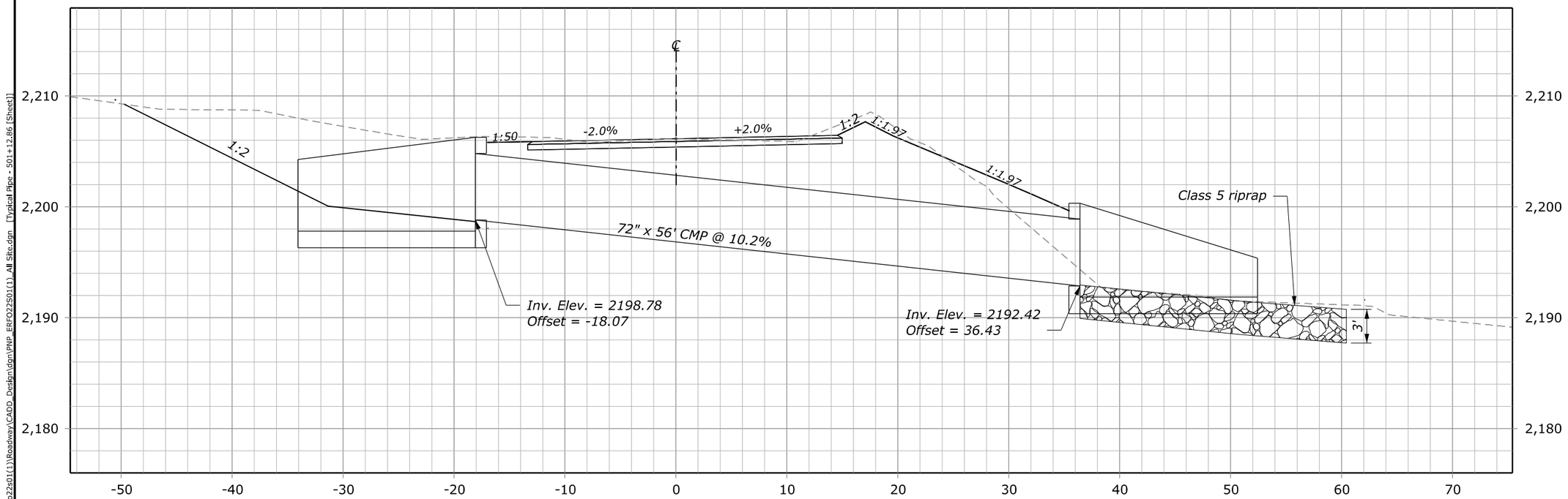
Site 5

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	466	
20441-0000	WASTE	CUYD	233	
25101-0500	PLACED RIPRAP, METHOD A, CLASS 5	CUYD	64.0	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	124	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	64	
40601-0000	FOG SEAL	TON	0.2	
41102-1000	PRIME COAT, METHOD 1	SQYD	401	
41105-0000	BLOTTER	TON	0.6	
41201-0000	TACK COAT	TON	0.2	
60103-0000	CONCRETE, HEADWALL (AND WINGWALLS)	EACH	2	
60201-1600	72 INCH PIPE CULVERT	LNFT	56	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	632	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	632	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	632	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	632	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 5
500+20 - 501+90

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C8



501+12.86
Des Grade = 2,206.14
Subgrade = 2,205.39
Original Grnd = 2,206.15

FHWA, Office of Federal Lands Highway
Central Federal Lands Highway Division

CULVERT X-SECTIONS - SITE 5
NACI-FERGUSSON RD

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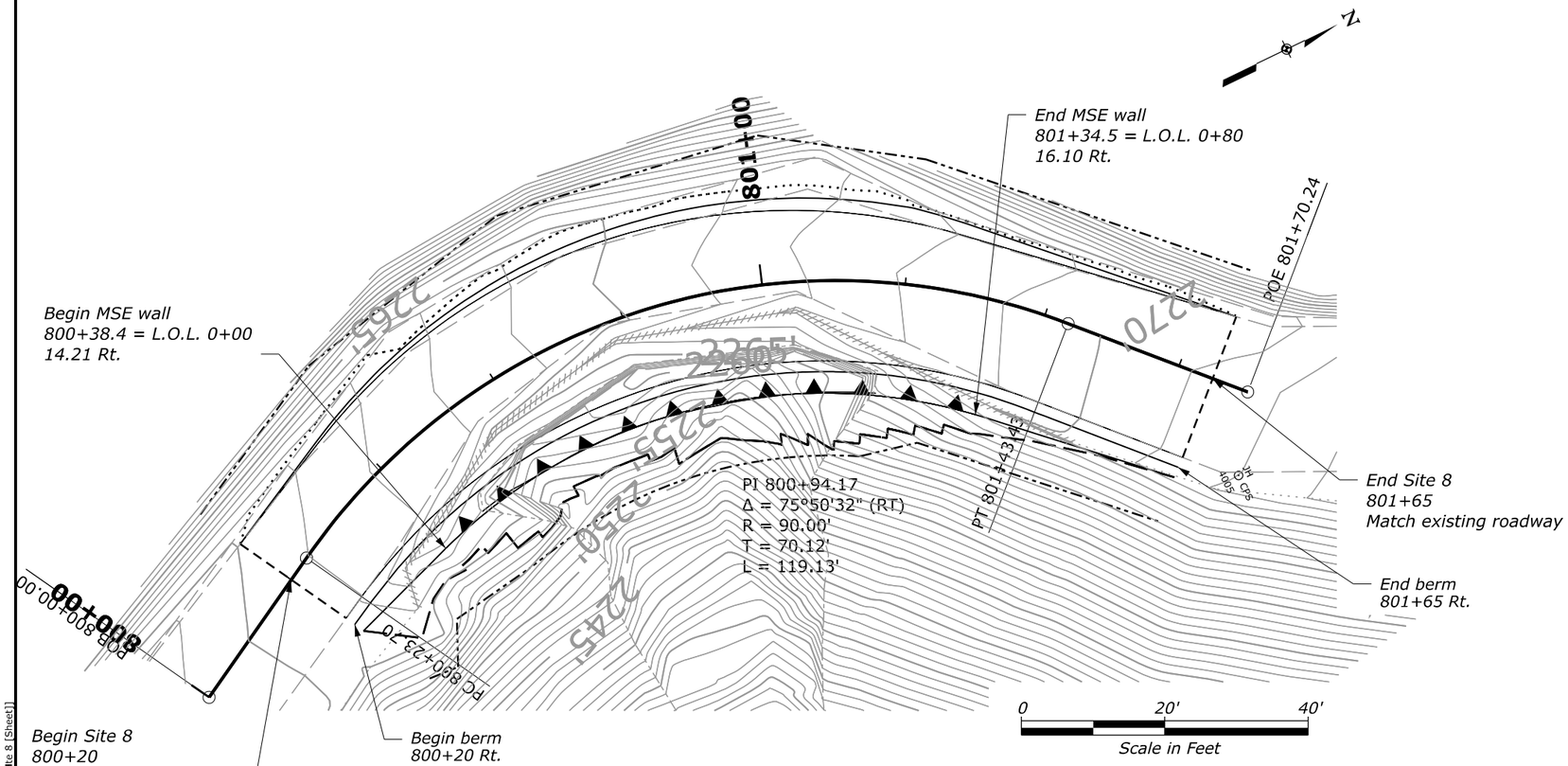
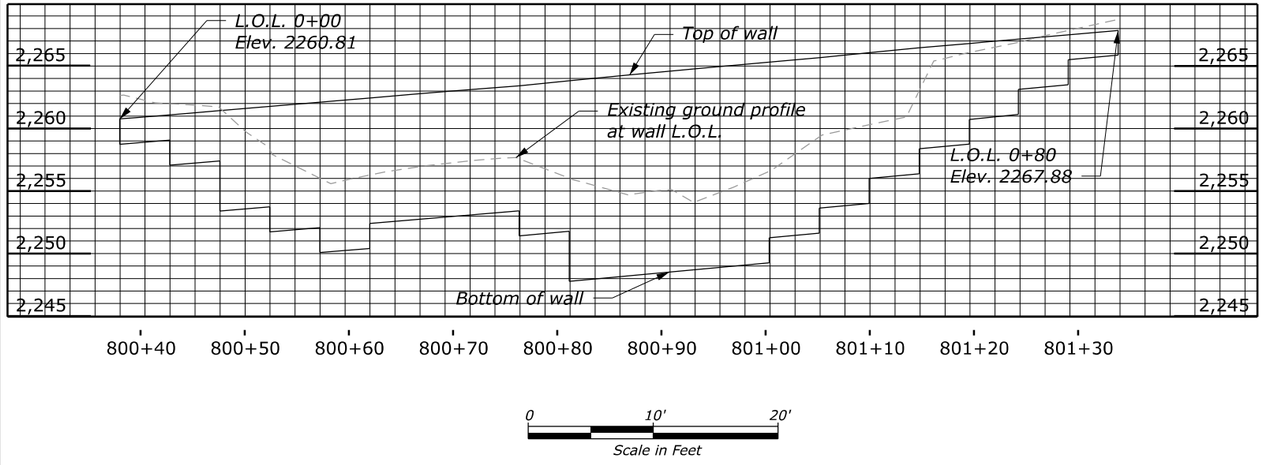
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C9



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

MSE WALL LAYOUT



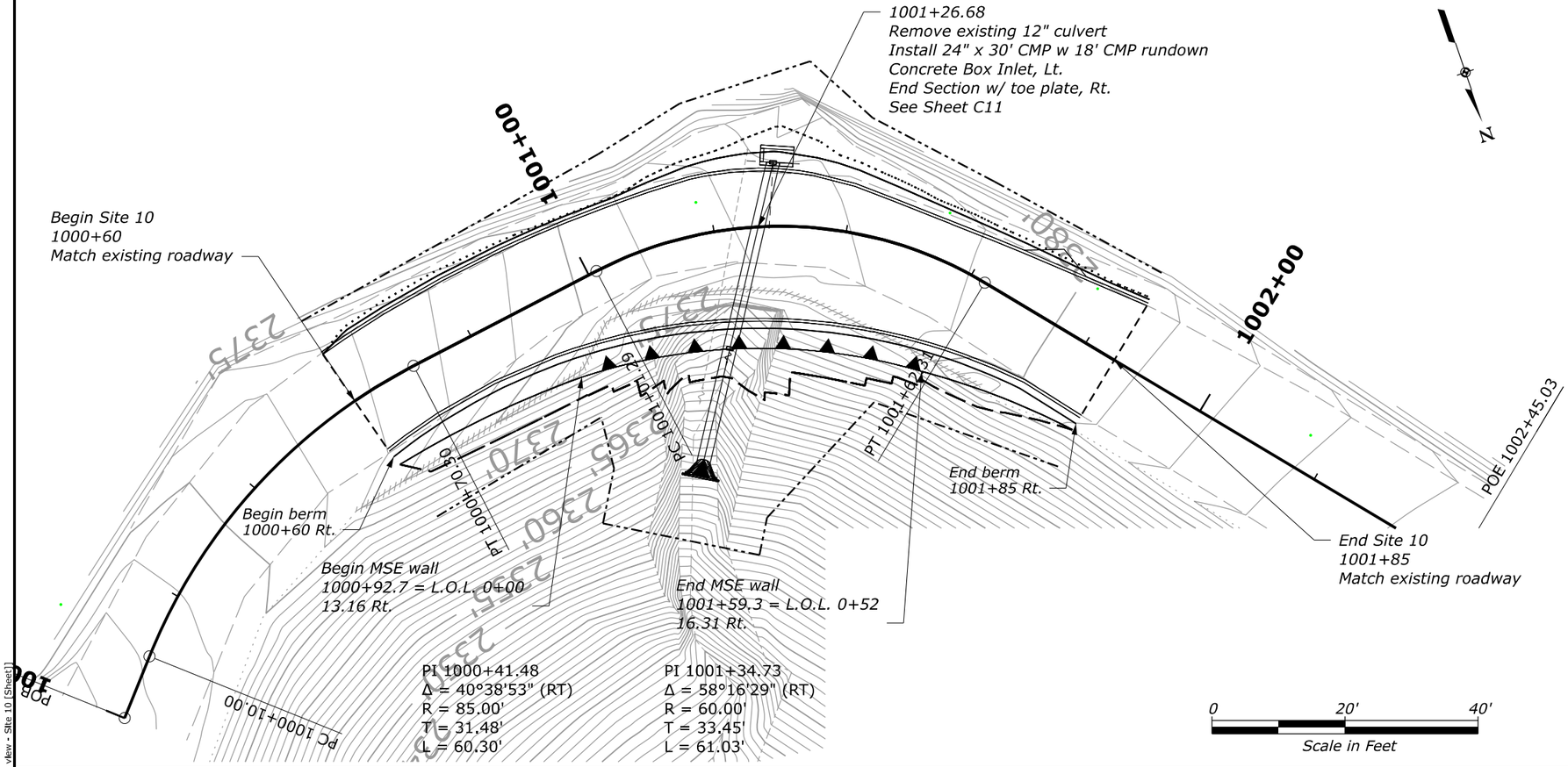
Site 8

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	716	
20441-0000	WASTE	CUYD	644	
25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT	789	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	106	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	54	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	340	
41105-0000	BLOTTER	TON	0.5	
41201-0000	TACK COAT	TON	0.1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	119	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	119	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	119	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	119	
63308-3000	OBJECT MARKER, TYPE 3	EACH	2	Install at MSE wall ends as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 8
800+20 - 801+65

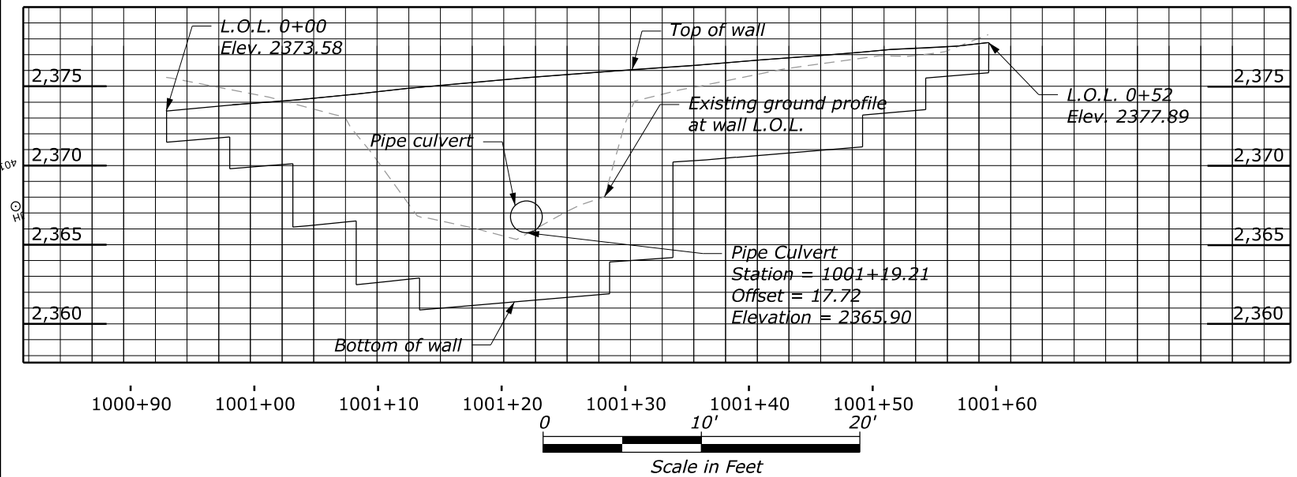
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C10



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

MSE WALL LAYOUT



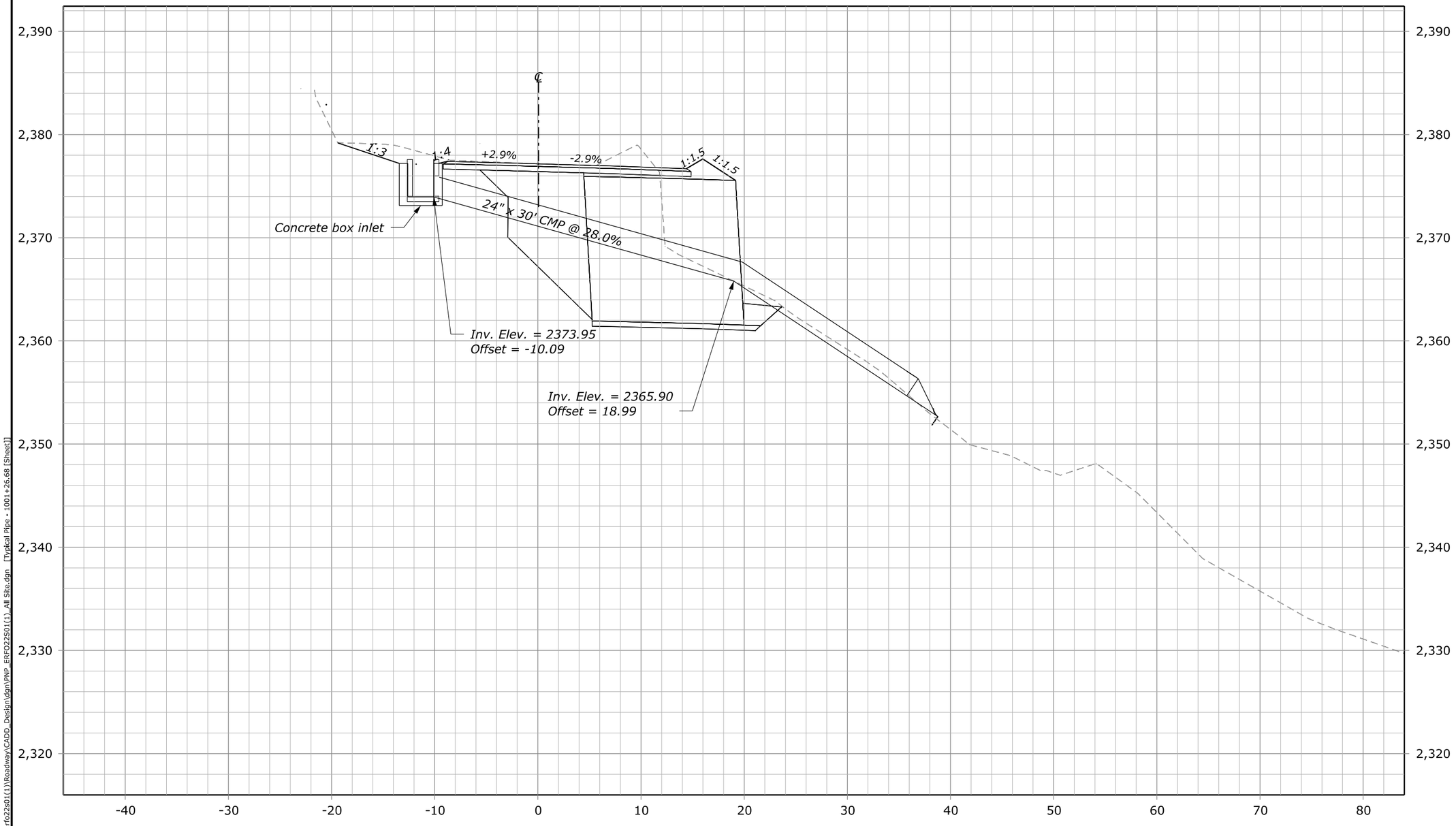
Site 10

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	398	
20441-0000	WASTE	CUYD	358	
25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT	414	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	84	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	43	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	270	
41105-0000	BLOTTER	TON	0.4	
41201-0000	TACK COAT	TON	0.1	
60201-0800	24 INCH PIPE CULVERT	LNFT	48	
60210-0800	END SECTION FOR 24 INCH PIPE CULVERT	EACH	1	
60403-0000	INLET (CONCRETE BOX)	EACH	1	
60602-0700	PIPE ANCHOR ASSEMBLY, 24-INCH	EACH	4	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	114	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	114	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	114	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	114	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63308-3000	OBJECT MARKER, TYPE 3	EACH	2	Install at MSE wall ends as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 10
1000+60 - 1001+85

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C11

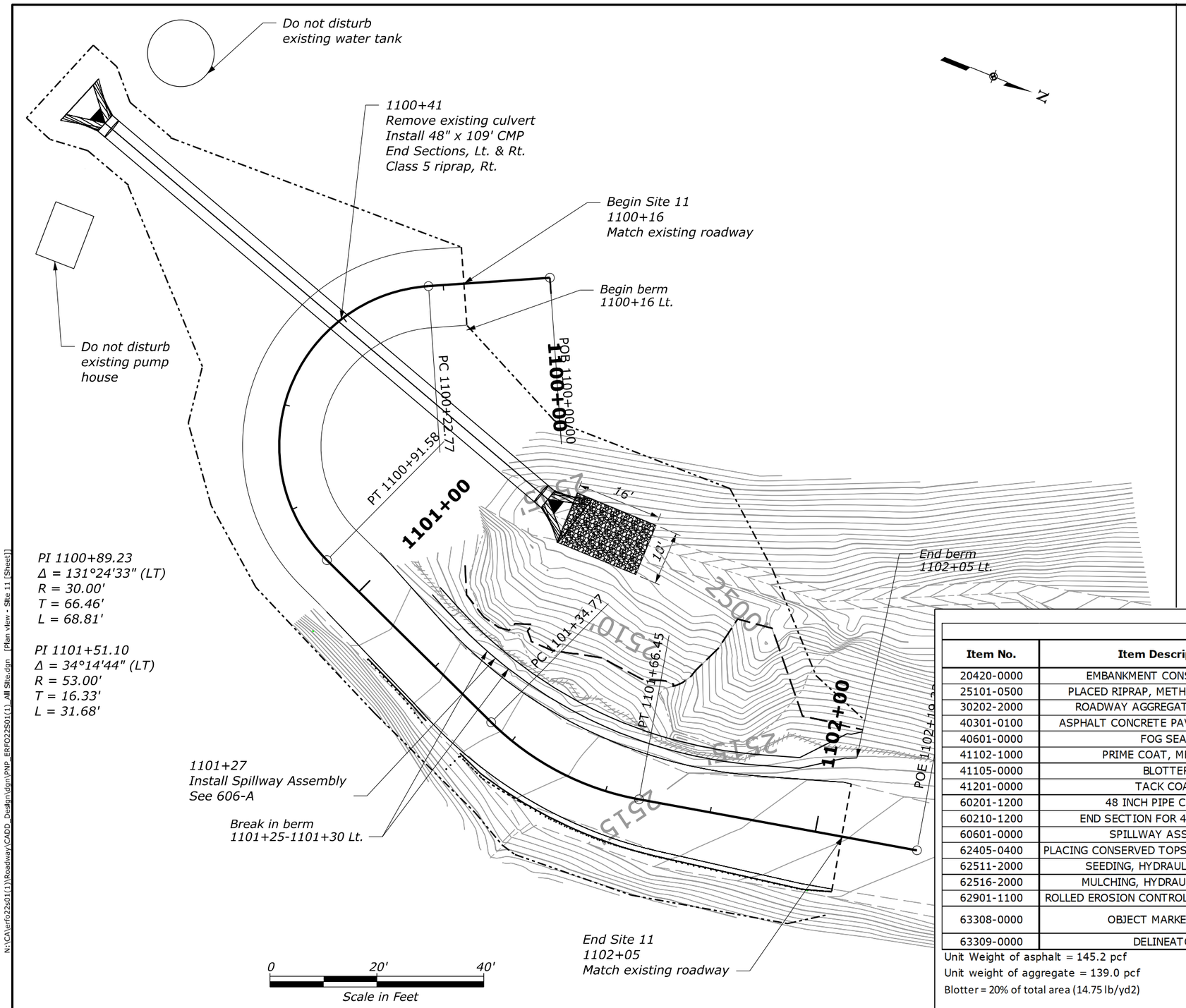


1001+26.68
Des Grade = 2,377.17
Subgrade = 2,376.42
Original Grnd = 2,377.17

FHWA, Office of Federal Lands Highway
Central Federal Lands Highway Division

CULVERT X-SECTIONS - SITE 10
NACI-FERGUSSON RD

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C12



NOTE:

1. All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.

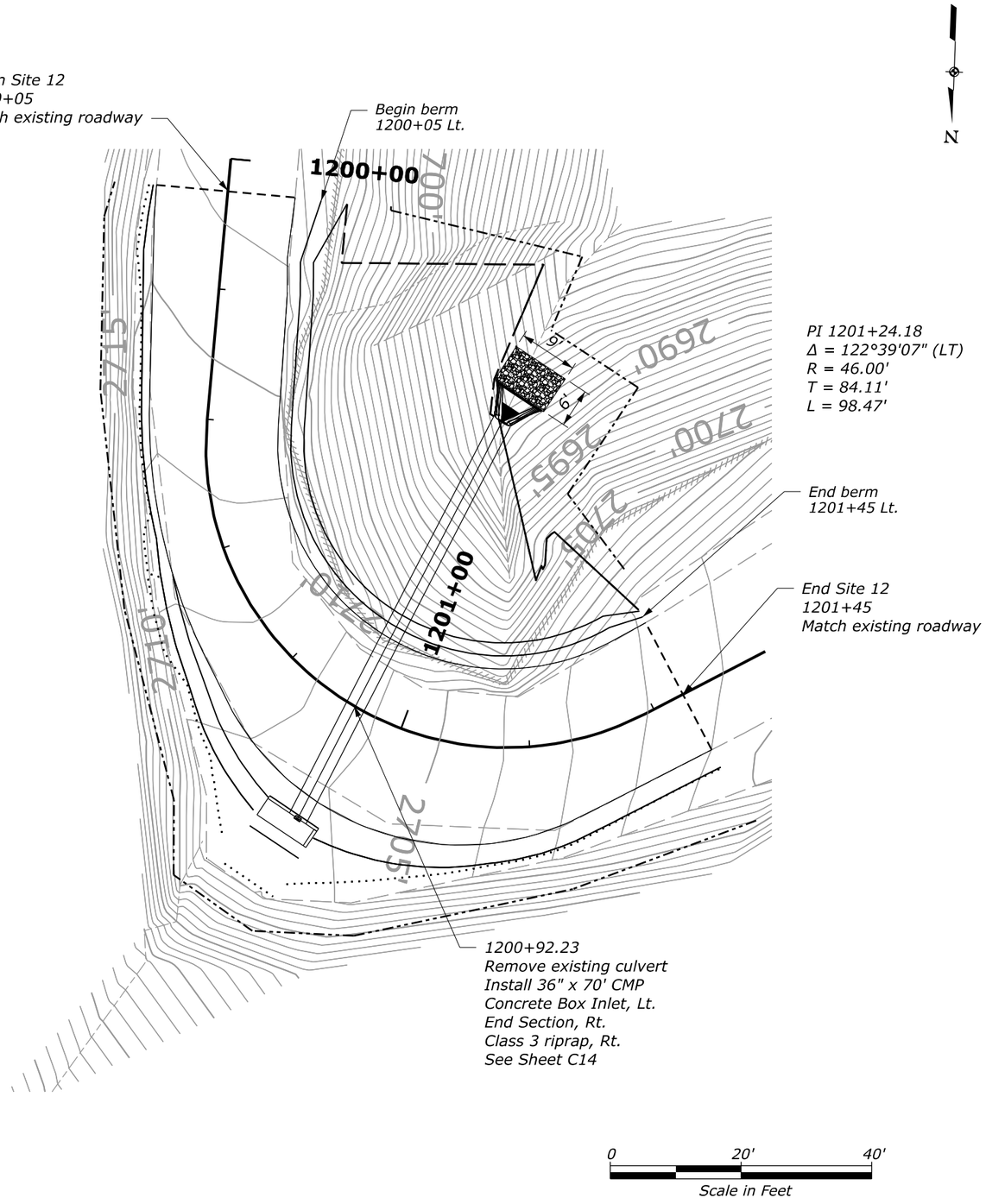
Site 11

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20420-0000	EMBANKMENT CONSTRUCTION	CUYD	40	
25101-0500	PLACED RIPRAP, METHOD A, CLASS 5	CUYD	17.8	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	107	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	55	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	187	
41105-0000	BLOTTER	TON	0.3	
41201-0000	TACK COAT	TON	0.1	
60201-1200	48 INCH PIPE CULVERT	LNFT	109	
60210-1200	END SECTION FOR 48-INCH PIPE	EACH	2	
60601-0000	SPILLWAY ASSEMBLY	EACH	1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	263	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	263	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	263	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	263	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 11
1100+16 TO 1102+05

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C13



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

2. *Flag or stake the Environmentally Sensitive Area. See SCR 107.10(e)(2). Location is N:1896277.8630, E:5835742.9715.*

Site 12

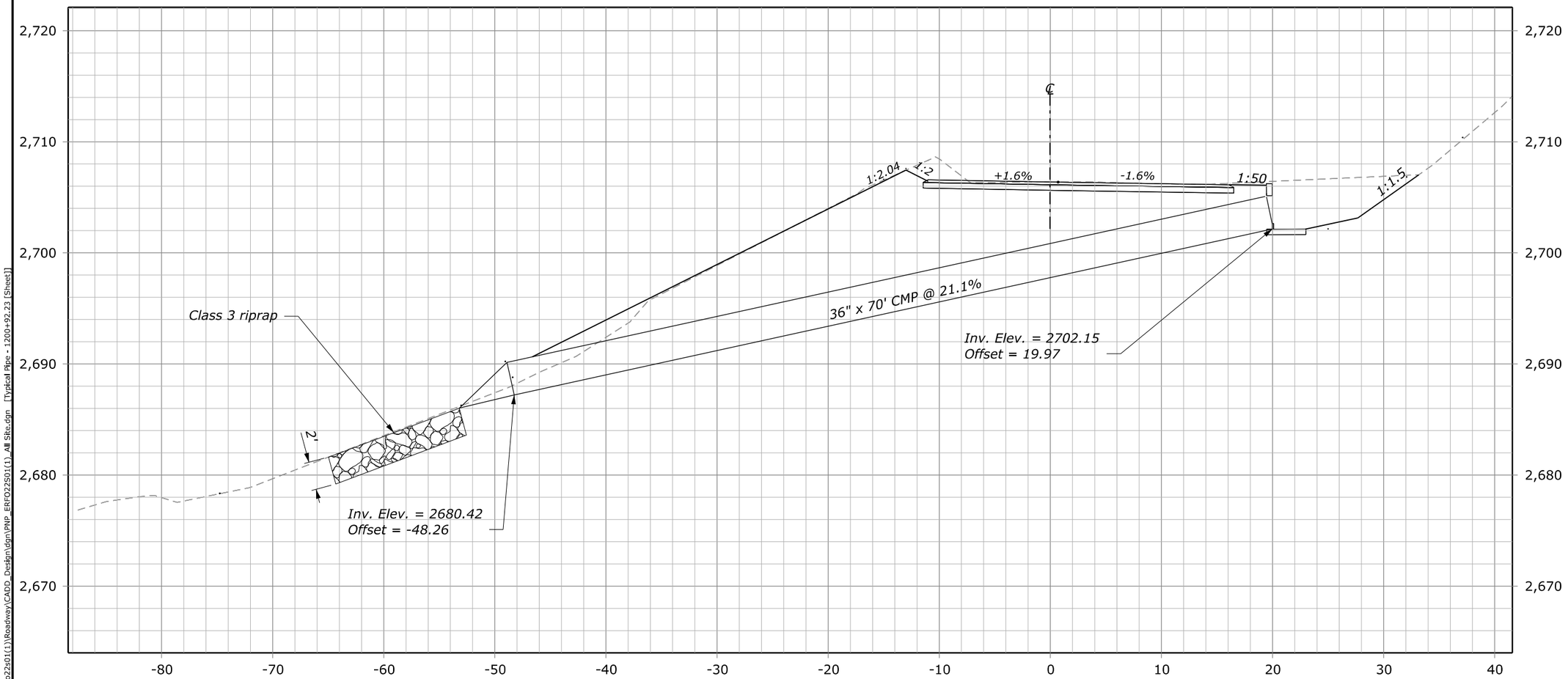
Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	174	
20441-0000	WASTE	CUYD	128	
25101-0300	PLACED RIPRAP, METHOD A, CLASS 3	CUYD	4.0	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	117	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	62	
40601-0000	FOG SEAL	TON	0.2	
41102-1000	PRIME COAT, METHOD 1	SQYD	371	
41105-0000	BLOTTER	TON	0.5	
41201-0000	TACK COAT	TON	0.2	
60201-1000	36 INCH PIPE CULVERT	LNFT	70	
60210-1000	END SECTION FOR 36 INCH PIPE CULVERT	EACH	1	
60403-0000	INLET (CONCRETE BOX)	EACH	1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	393	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	393	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	393	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	393	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)

Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 12
1200+05 - 1201+45

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C14



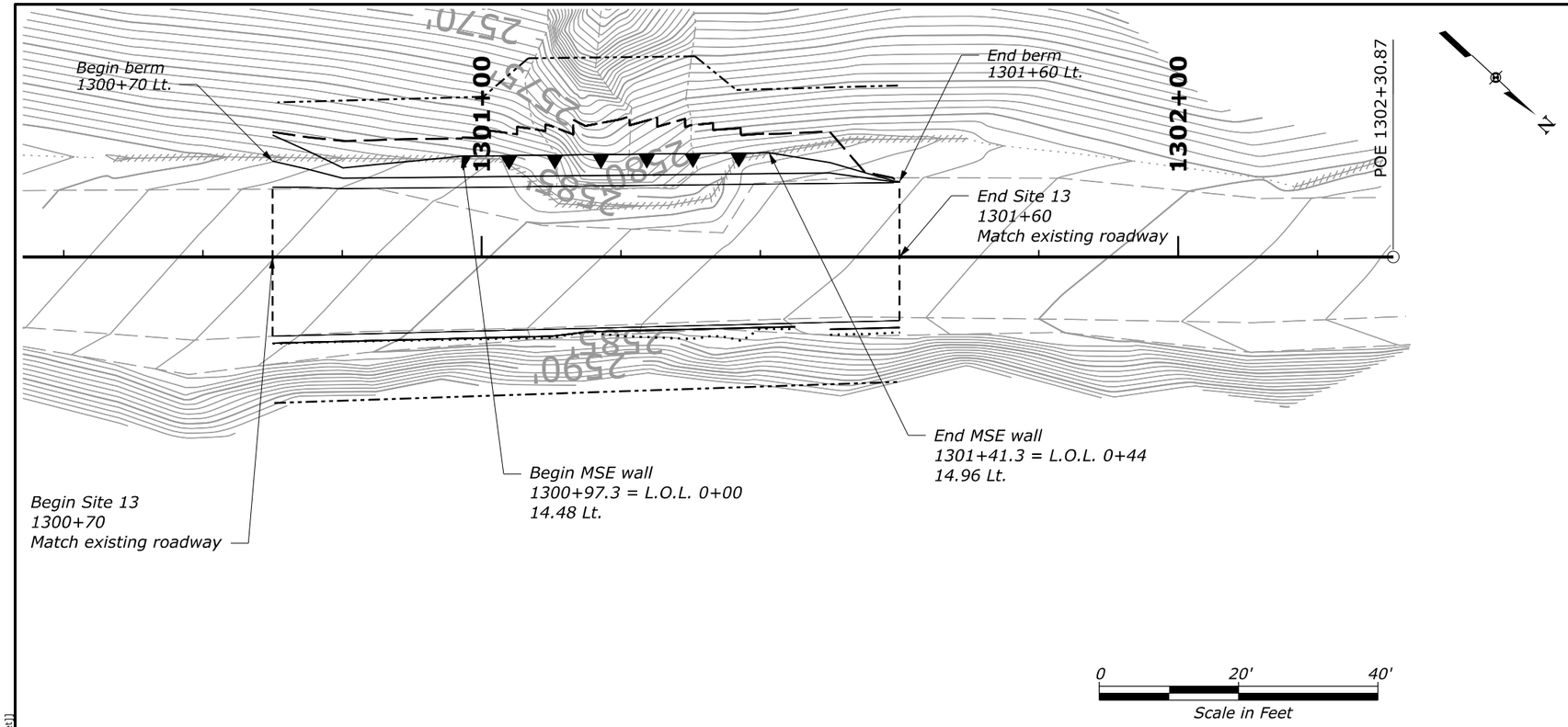
1200+92.23
Des Grade = 2,706.36
Subgrade = 2,705.61
Original Grnd = 2,706.36

FHWA, Office of Federal Lands Highway
Central Federal Lands Highway Division

CULVERT X-SECTIONS - SITE 12
NACI-FERGUSSON RD

N:\CA\erfo22s011(1)\Roadway\CADD_Design\dgn\PNP_ERFO22S011(1)_All Site.dgn [Typical Pipe - 1200+92.23 [Sheet]]
28 February 2023 10:11 AM

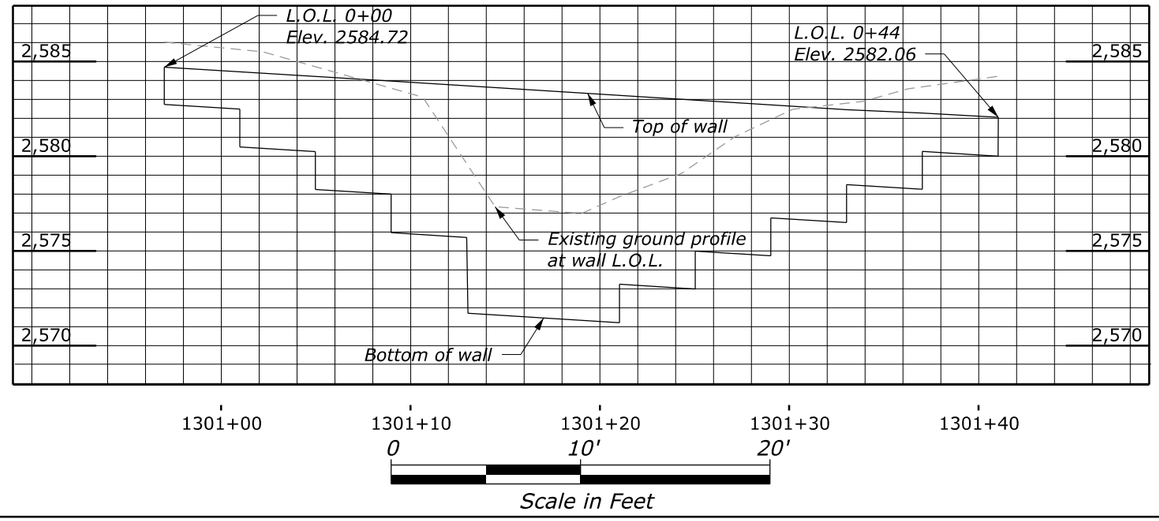
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C15



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

MSE WALL LAYOUT



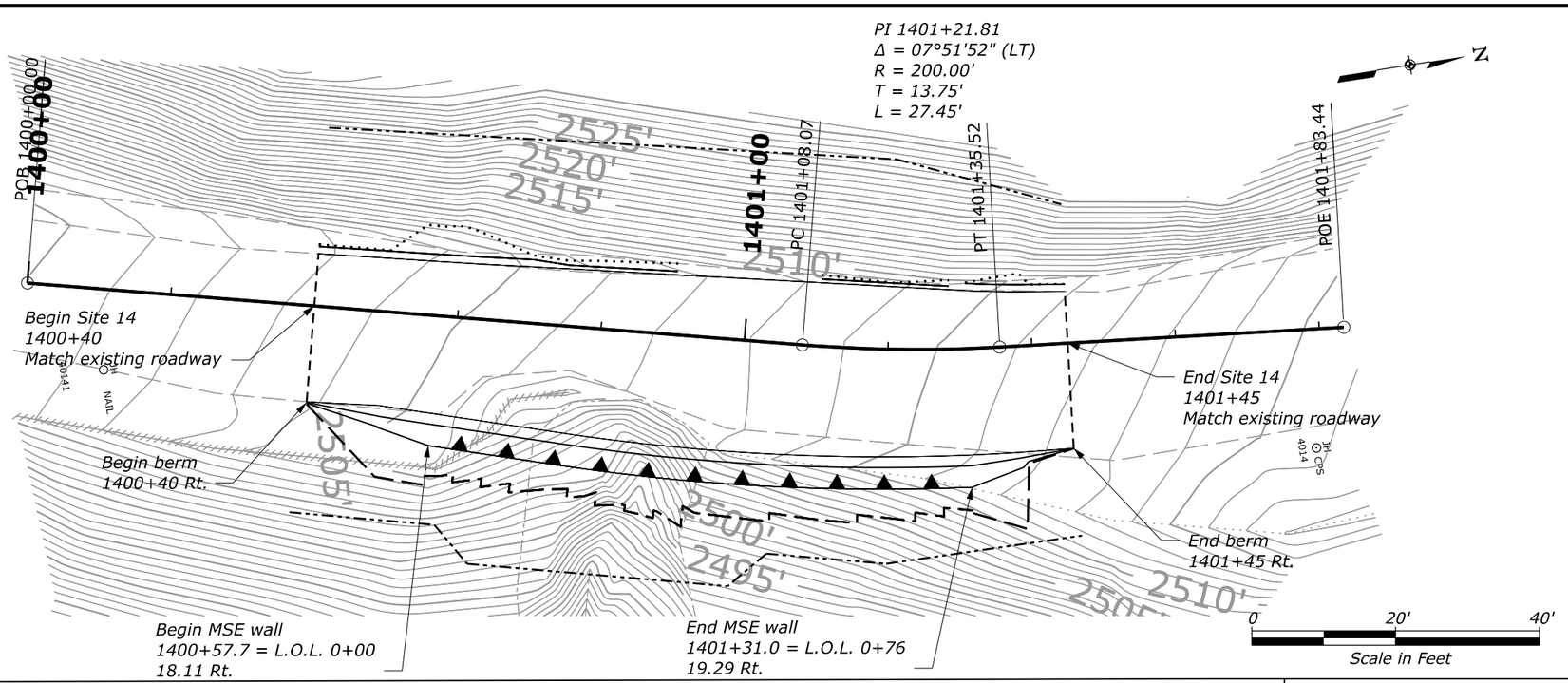
Site 13

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	242	
20441-0000	WASTE	CUYD	217	
25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT	297	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	67	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	34	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	215	
41105-0000	BLOTTER	TON	0.3	
41201-0000	TACK COAT	TON	0.1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	74	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	74	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	74	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	74	
63308-3000	OBJECT MARKER, TYPE 3	EACH	2	Install at MSE wall ends as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 13
1300+70 - 1301+60

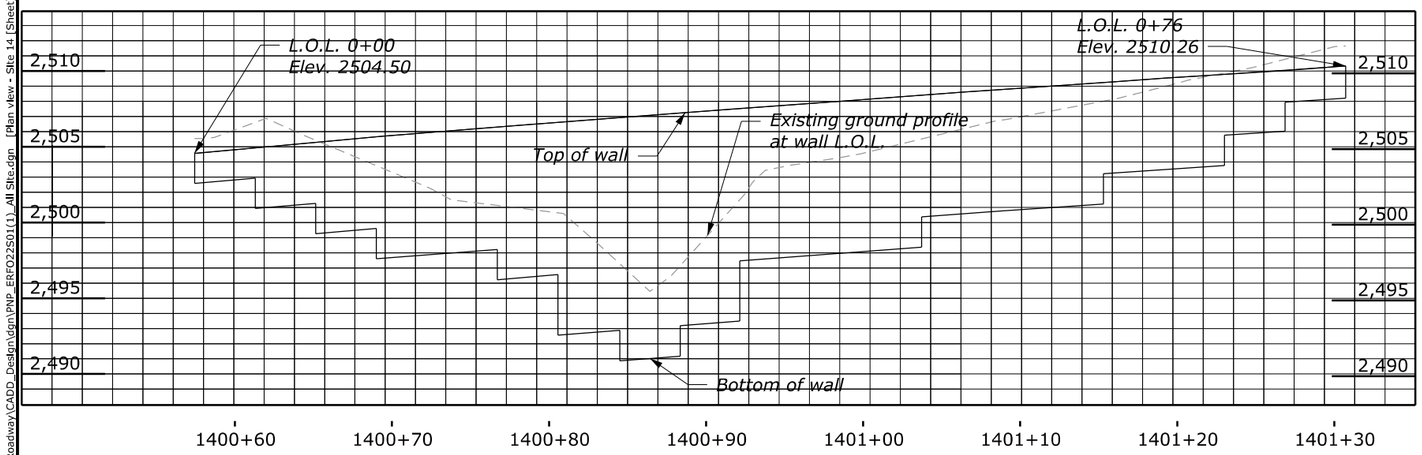
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C16



NOTE:

1. All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.

MSE WALL LAYOUT



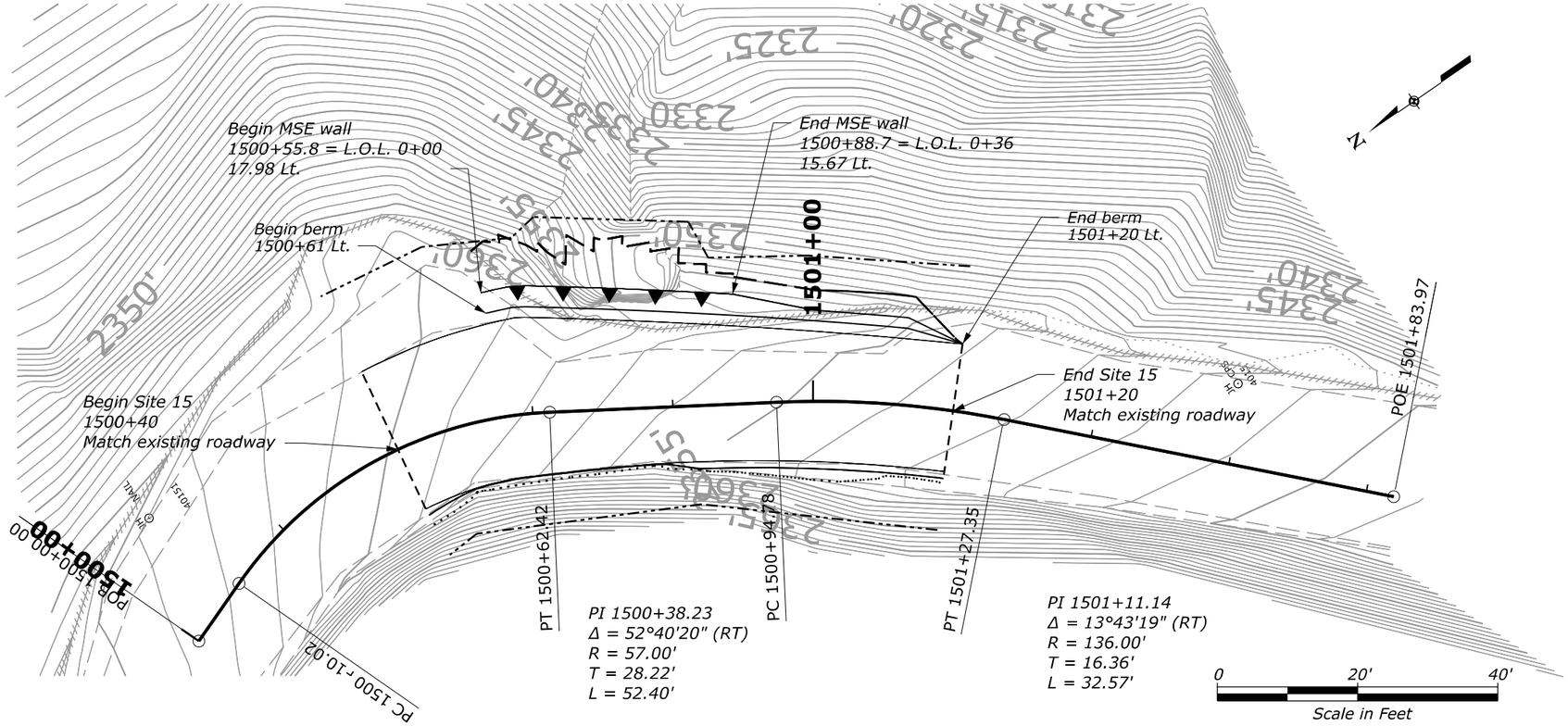
Site 14

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	417	
20441-0000	WASTE	CUYD	373	
25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT	617	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	86	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	44	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	279	
41105-0000	BLOTTER	TON	0.4	
41201-0000	TACK COAT	TON	0.1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	89	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	89	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	89	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	89	
63308-3000	OBJECT MARKER, TYPE 3	EACH	2	Install at MSE wall ends as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 14
1400+40 - 1401+45

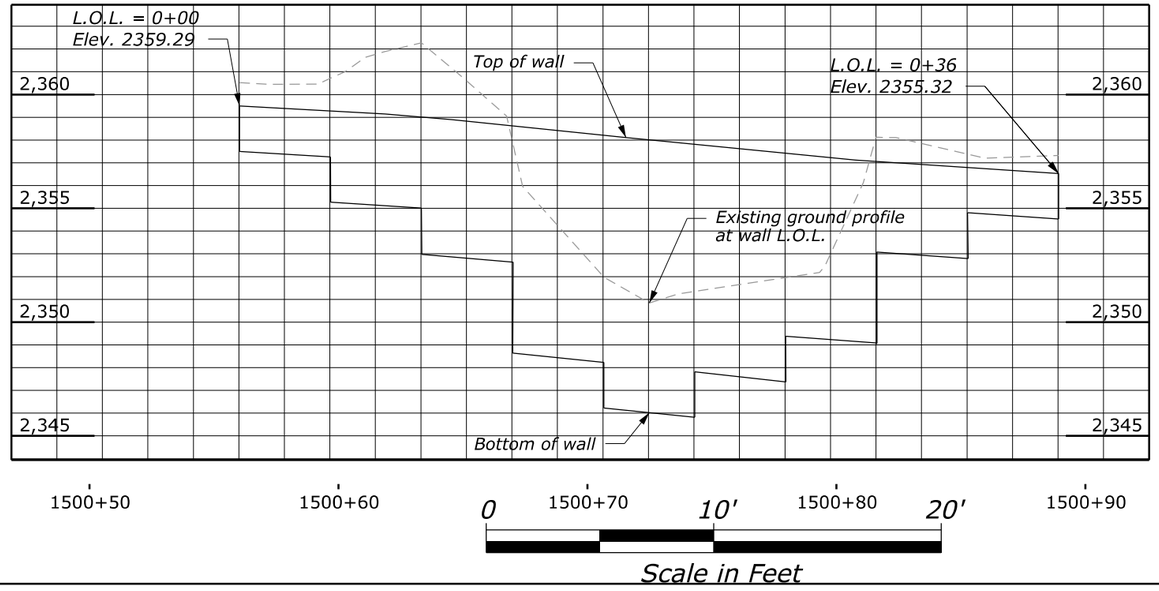
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C17



NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

MSE WALL LAYOUT



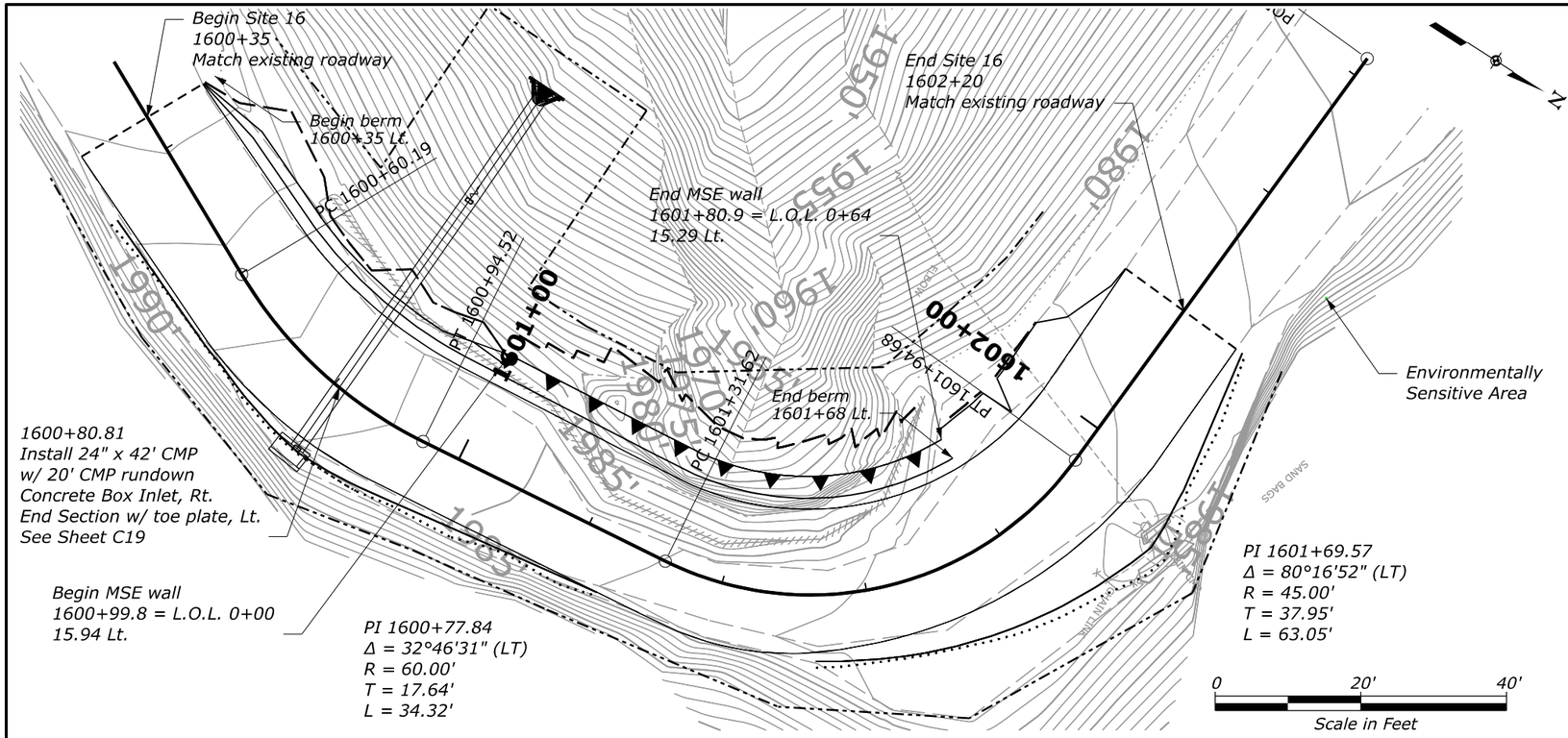
Site 15

Item No.	Item Description	Unit	Estimated Quantities	Remarks
20401-0000	ROADWAY EXCAVATION	CUYD	200	
20441-0000	WASTE	CUYD	179	
25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT	233	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	59	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	30	
40601-0000	FOG SEAL	TON	0.1	
41102-1000	PRIME COAT, METHOD 1	SQYD	192	
41105-0000	BLOTTER	TON	0.3	
41201-0000	TACK COAT	TON	0.1	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	56	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	56	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	56	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	56	
63308-3000	OBJECT MARKER, TYPE 3	EACH	2	Install at MSE wall ends as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 15
1500+40 - 1501+20

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C18

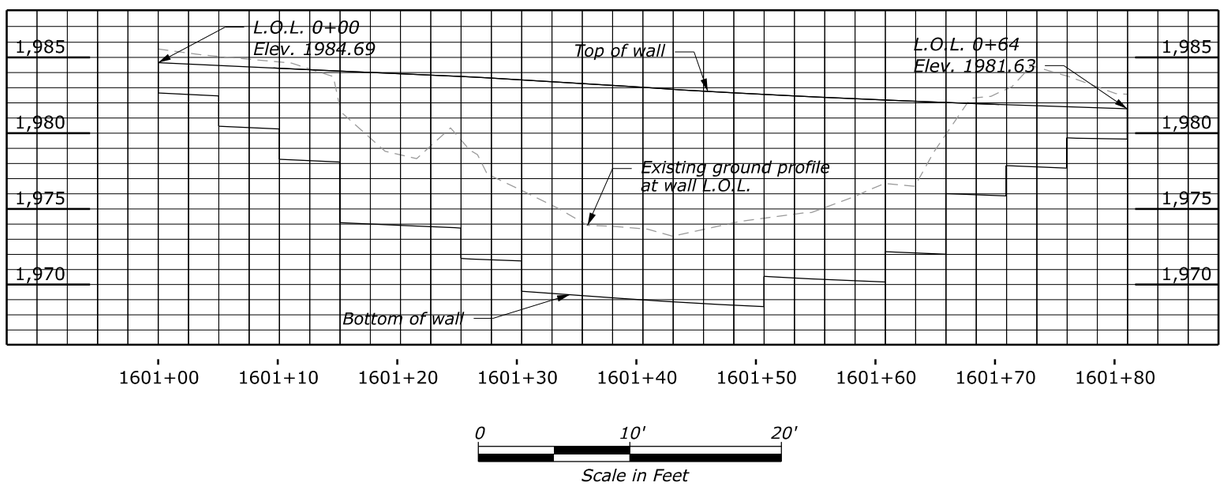


NOTE:

1. *All dimensions shown are approximate. Remove material unsuitable for use in repair. Limits of repair to be verified by the CO. When possible, construct repair slopes to match the existing slopes. Finish slopes to a maximum of 1V:1.5H.*

2. *Flag or stake Environmentally Sensitive Area. See SCR 107.10(e)(2).*

MSE WALL LAYOUT

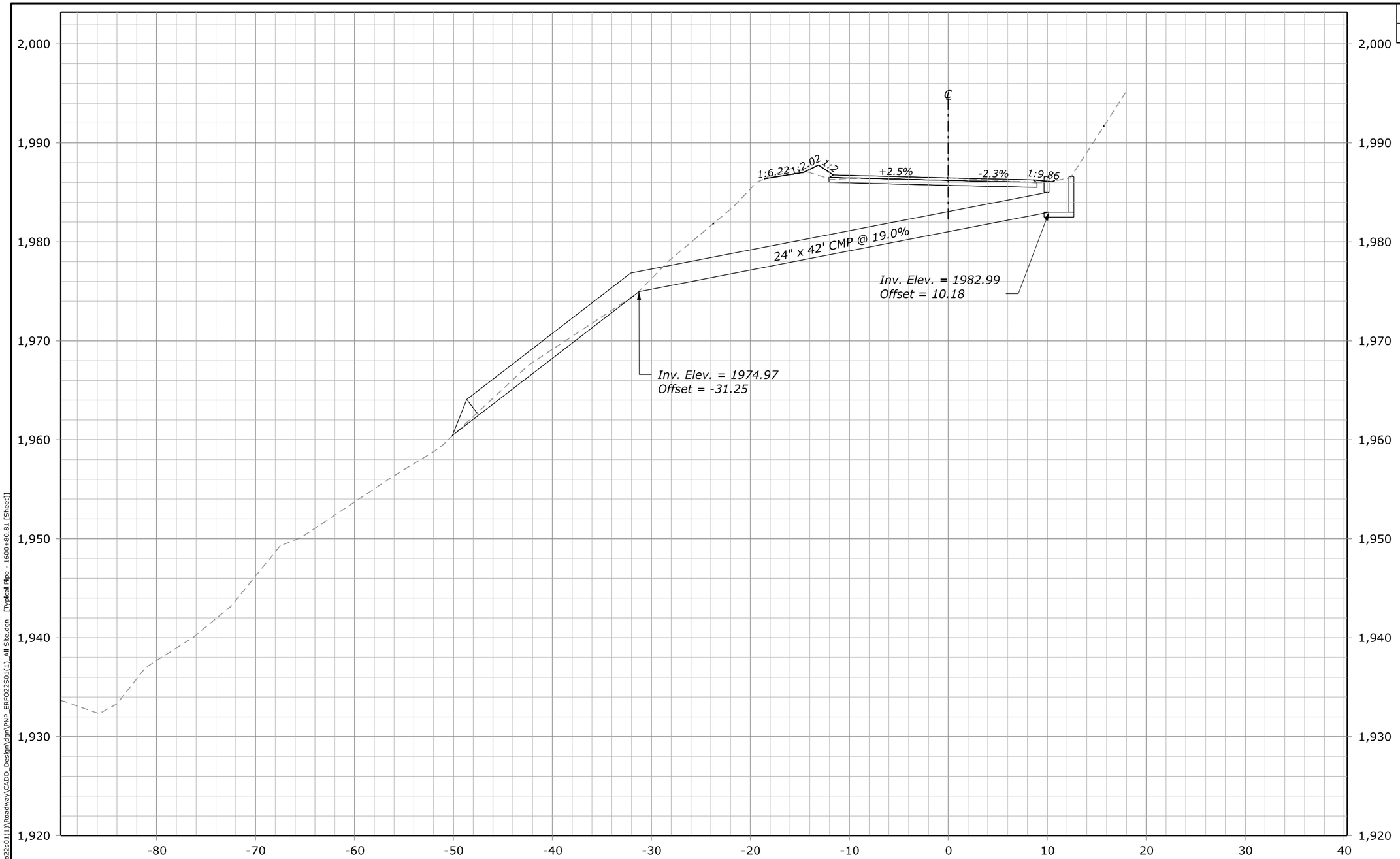


Site 16				
Item No.	**Item Description**	**Unit**	**Estimated Quantities**	**Remarks**
20401-0000	ROADWAY EXCAVATION	CUYD	574	
20441-0000	WASTE	CUYD	512	
25501-0000	MECHANICALLY STABILIZED EARTH WALL	SQFT	581	
30202-2000	ROADWAY AGGREGATE, METHOD 2	TON	128	
40301-0100	ASPHALT CONCRETE PAVEMENT, TYPE 1	TON	66	
40601-0000	FOG SEAL	TON	0.2	
41102-1000	PRIME COAT, METHOD 1	SQYD	353	
41105-0000	BLOTTER	TON	0.5	
41201-0000	TACK COAT	TON	0.2	
60201-0800	24 INCH PIPE CULVERT	LNFT	58	
60210-0800	END SECTION FOR 24 INCH PIPE CULVERT	EACH	1	
60403-0000	INLET (CONCRETE BOX)	EACH	1	
60602-0700	PIPE ANCHOR ASSEMBLY, 24-INCH	EACH	4	
62405-0400	PLACING CONSERVED TOPSOIL, 6-INCH DEPTH	SQYD	151	
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	151	
62516-2000	MULCHING, HYDRAULIC METHOD	SQYD	151	
62901-1100	ROLLED EROSION CONTROL PRODUCT, TYPE 4	SQYD	151	
63308-0000	OBJECT MARKER (L-1)	EACH	2	Install at pipe culvert inlet and outlet as directed by CO.
63308-3000	OBJECT MARKER, TYPE 3	EACH	2	Install at MSE wall ends as directed by CO.
63309-0000	DELINEATOR	EACH	10	Space according to Special 633-B.

Unit Weight of asphalt = 145.2 pcf
Unit weight of aggregate = 139.0 pcf
Blotter = 20% of total area (14.75 lb/yd2)
Fog seal = 0.1 gal/yd2 (233 gal/ton)
Prime coat = 0.27 gal/yd2 (233 gal/ton)
Tack coat = 0.1 gal/yd2 (233 gal/ton)

SITE 16
1600+35 - 1602+20

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	C19



1600+80.81
Des Grade = 1,986.46
Subgrade = 1,985.71
Original Grnd = 1,986.46

FHWA, Office of Federal Lands Highway
Central Federal Lands Highway Division

CULVERT X-SECTIONS - SITE 16
NACI-FERGUSSON RD

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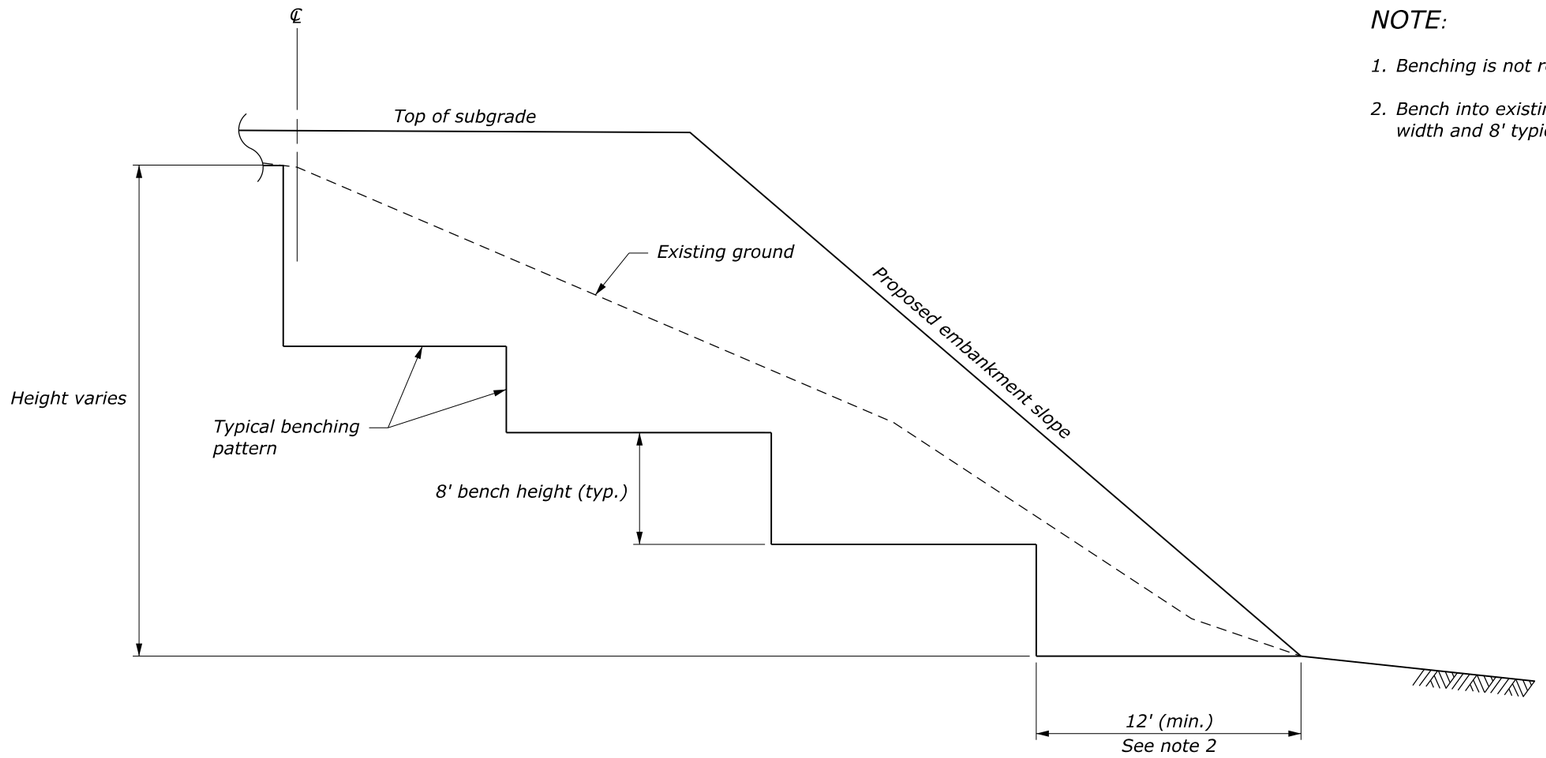
28 February 2023 12:13 PM

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	F1



NOTE:

1. *Benching is not required for ground sloped at 1V:3H or flatter.*
2. *Bench into existing slope as necessary to meet 12' minimum bench width and 8' typical bench height.*

EMBANKMENT BENCHING

NO SCALE

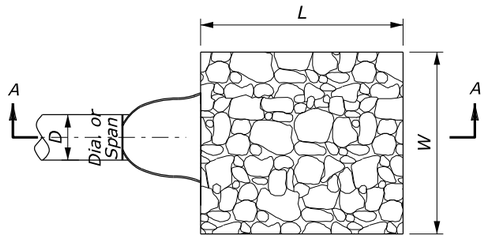
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

CFLHD SPECIAL

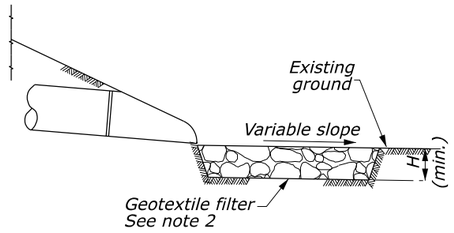
EMBANKMENT BENCHING

SPECIAL
204-A

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	G1



PLAN VIEW



SECTION A-A

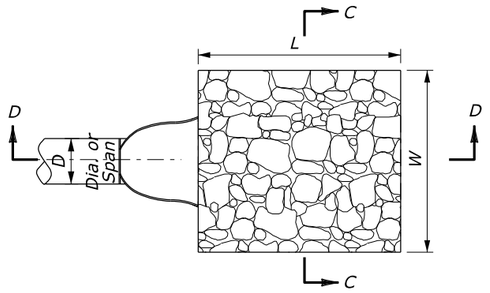
CULVERT WITH STANDARD
END SECTION

NOTE:

1. Furnish geotextile filter Class 1, Type C, conforming to subsection 714.01(a).

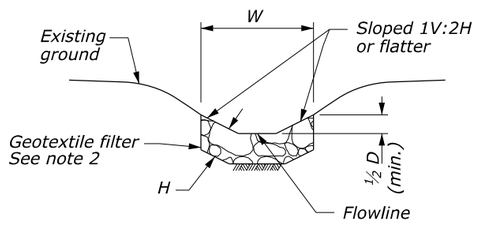
2. Excavation for placement of riprap will not be measured for payment.

PROTECTIVE APRON AT CULVERT OUTLET WITHOUT CHANNEL

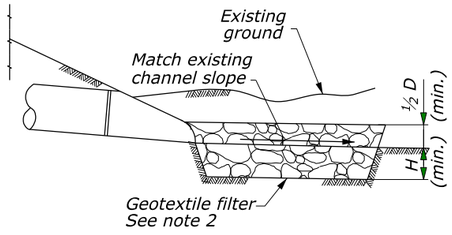


PLAN VIEW

CULVERT WITH STANDARD
END SECTION



SECTION C-C



SECTION D-D

PROTECTIVE APRON AT CULVERT OUTLET WITH CHANNEL

OUTLET WITHOUT DITCH
PROTECTIVE APRON DIMENSIONS AND ESTIMATED QUANTITIES

	SITE	CULVERT SIZE D (inches)	RIPRAP CLASS	LENGTH OF APRON L (feet)	WIDTH OF APRON W (feet)	DEPTH OF APRON H (feet)	ESTIMATED RIPRAP QUANTITY (CY)	ESTIMATED GEOTEXTILE QUANTITY (SY)
WITH END SECTION	Site 2	72	5	24	24	3	64.0	64
	Site 3	48	3	12	12	2	10.7	16
	Site 4	24	3	4	6	2	1.8	3
	Site 5	72	5	24	24	3	64.0	64
	Site 10	24	No riprap is recommended at this location.					
	Site 11	48	5	16	10	3	17.8	18
	Site 12	36	3	6	9	2	4.0	6
	Site 16	24	No riprap is recommended at this location.					

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

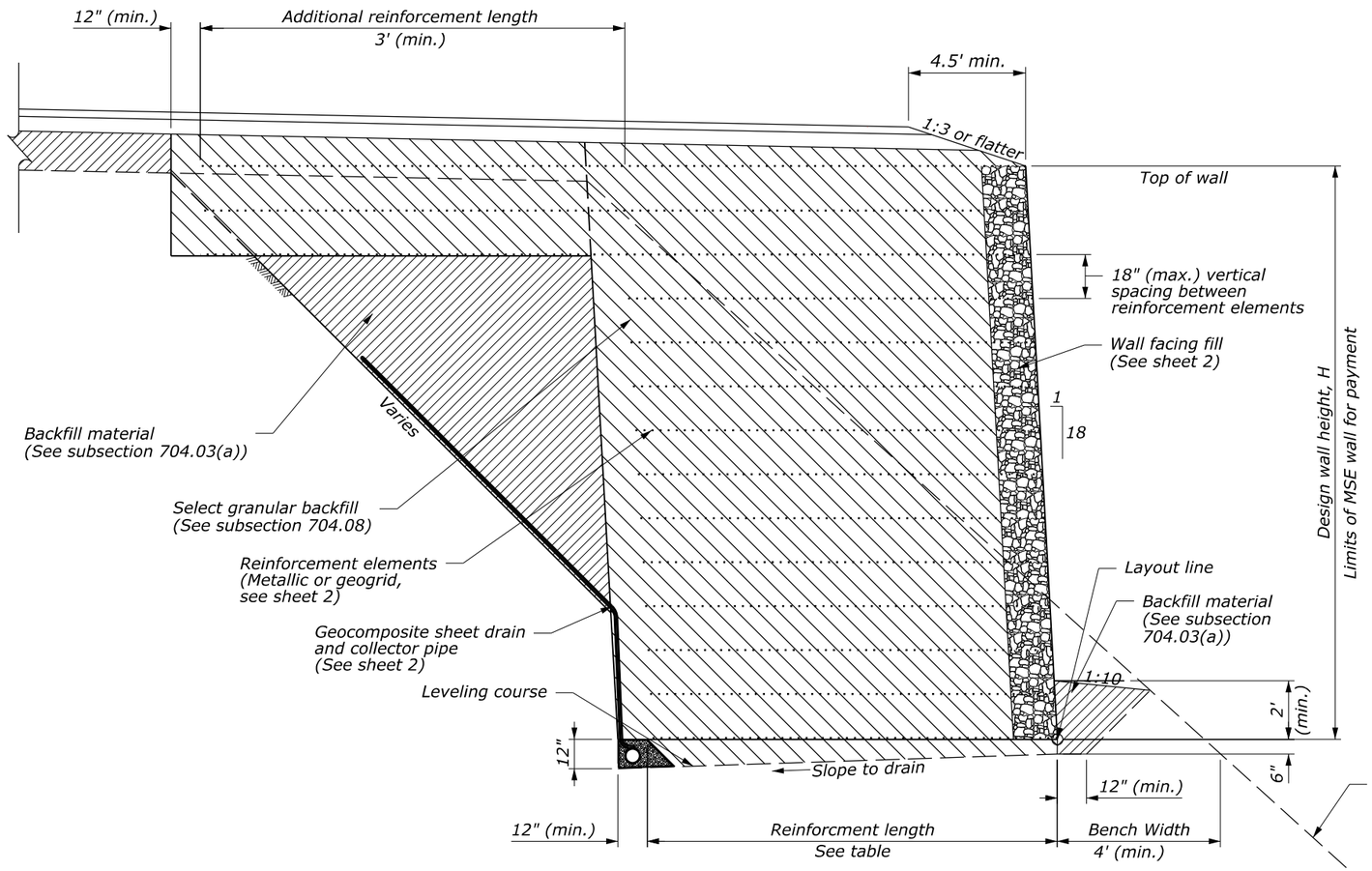
CFLHD SPECIAL

PLACED RIPRAP AT CULVERT OUTLETS

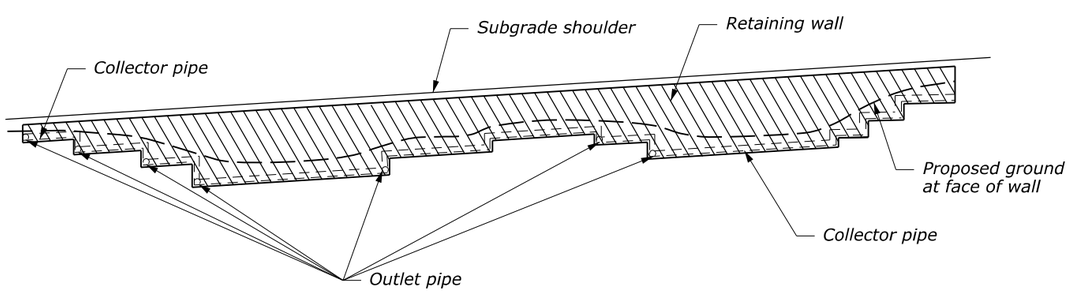
SPECIAL
251-A

N:\CA\erfo22s001(1)\Roadway\CADD_Sheets\G-250\C251-A.dgn [C251-50]
22 February 2023 9:30 PM

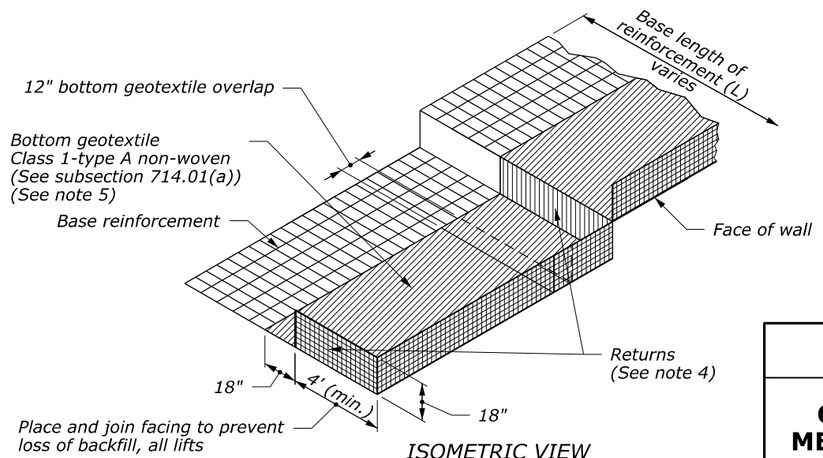
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	G2



TYPICAL SECTION



TYPICAL ELEVATION



ISOMETRIC VIEW

MSE WELDED WIRE FACED RETURN MAT

NOTE:

1. *Design welded wire face MSE walls according to Section 257 and AASHTO LRFD Bridge Design Specifications.*
2. *Top of wall will be as shown on wall layout drawings. No steps will be allowed.*
3. *Terminate wire-face wall at the beginning and end of each lift with a return of the wall facing material a minimum of 4' into the backfill. Returns will not be measured for payment.*
4. *Bottom geotextile to cover the base reinforcement and extend 18" up the wall face on all walls.*
5. *Sample and test materials or products according to the SCR table 255-2.*
6. *Slope or shore excavation according to Section 208.*

Site	Wall Height, max.	Reinforcement Length, min.
	(ft)	(ft)
4	10	11
	8	9.5
	6	8
8	16	16
	14	14
	12	12.5
	10	11
	8	9.5
	6	8
10	14	14
	14	14
	12	12.5
	10	11
	8	9.5
	6	8
13	12	12
	12	12.5
	10	11
	8	9.5
	6	8
14	16	16
	16	16
	14	14
	12	12.5
	10	11
	8	9.5
	6	8
15	12	12.5
	8	9.5
	6	8
16	14	14
	14	14
	12	12.5
	10	11
	8	9.5
	6	8

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

CFLHD SPECIAL

CONTRACTOR DESIGNED MECHANICALLY STABILIZED EARTH (MSE) WALL

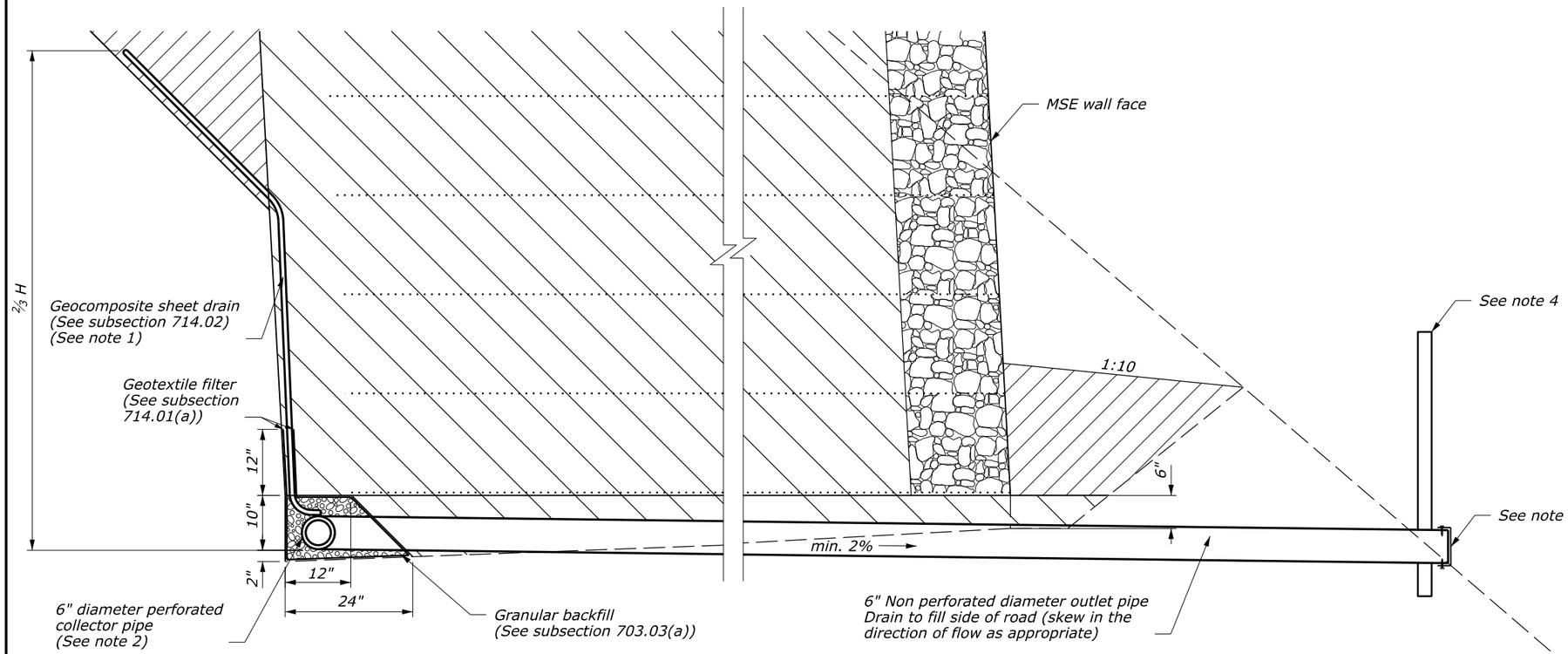
Sheet 1 of 2

NO SCALE

SPECIAL
257-A

N:\CA\erfo22s01(1)\Roadway\C4DD_Sheets\G-250\257-A.dgn [C257-50 Sheet 1]
22 February, 2023 9:38 PM

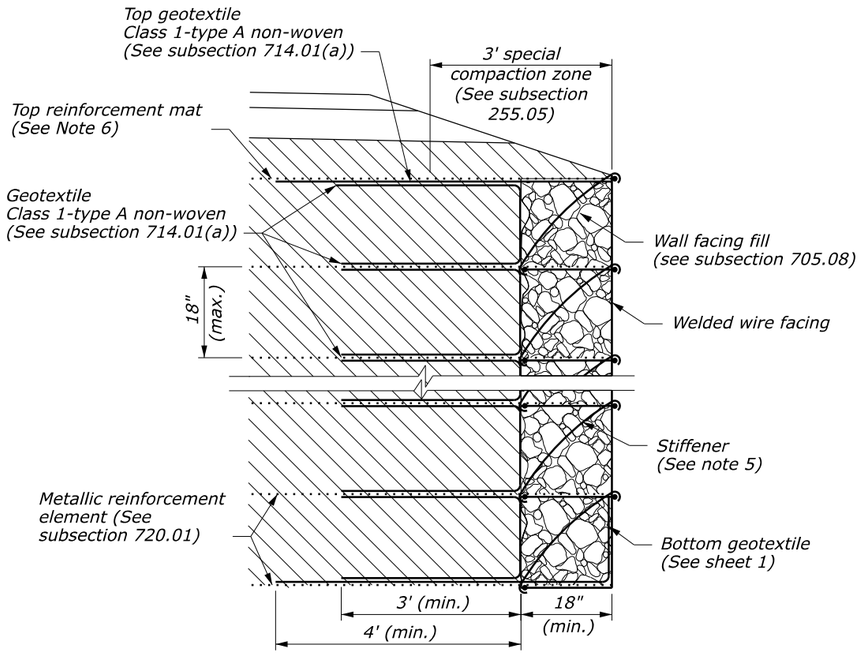
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	G3



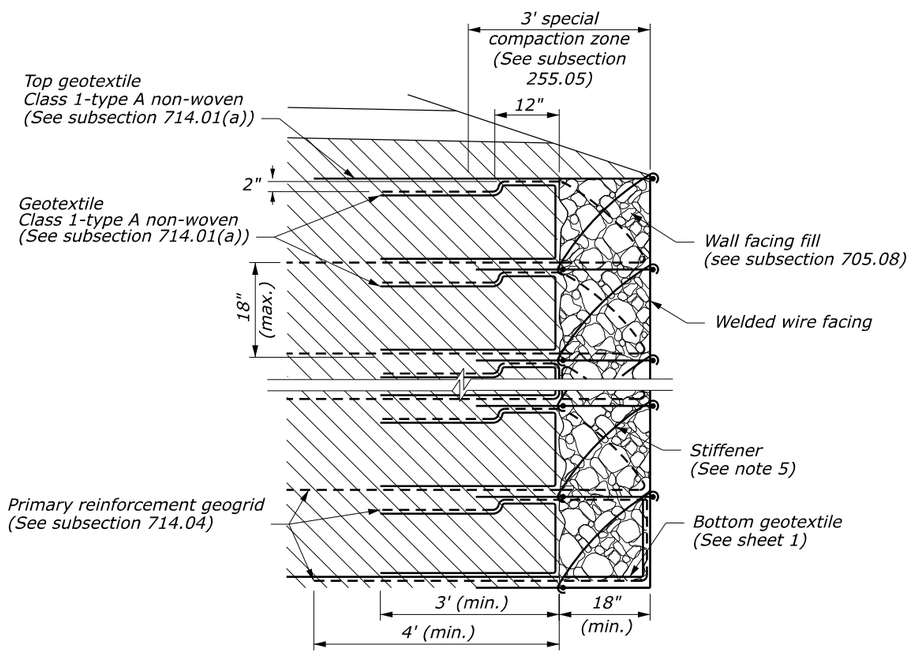
MSE WALL DRAINAGE DETAIL

NOTE:

1. Place geocomposite sheet drains in 3' (min.) wide strips with a spacing to achieve 30% ±5% coverage area on excavation backslope to ⅔H.
2. Connect collector pipes to outlet pipes using a t-connector and outlet at low points of wall and at 50' (max.) spacing. Furnish collector pipe, outlet pipe, and fittings meeting the requirements of subsection 708.04.
3. Cover the end of the outlet pipe with screen according to subsection 605.03. Hold the screen securely in place with standard coupling bands or by other approved means with securing screws.
4. Mark the outlet of the outlet pipe with a 4' long post or other suitable marker. Place post within 12" of the end of the pipe.
5. Spacing and use of stiffener to be determined by the manufacturer.
6. Welded wire reinforcement systems require a top reinforcement mat unless the wall facing uses stiffeners to adequately reinforce the wall face.



METALLIC REINFORCED MSE WALL DETAIL



GEOGRID REINFORCED MSE WALL DETAIL

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

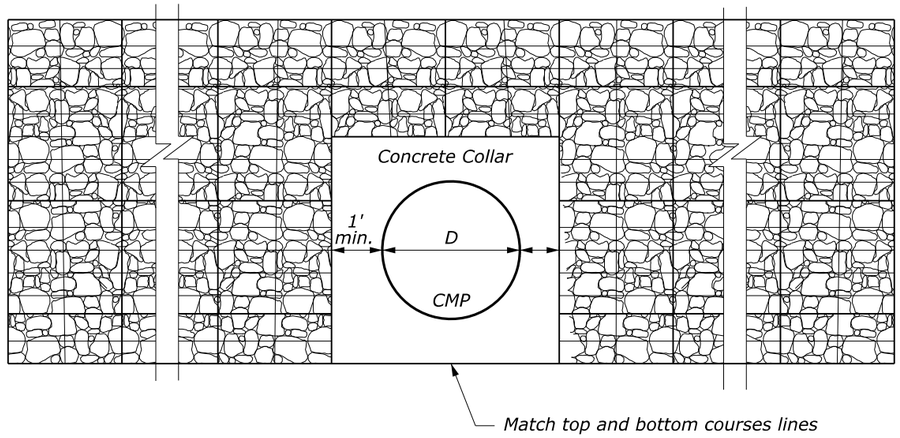
CFLHD SPECIAL

CONTRACTOR DESIGNED MECHANICALLY STABILIZED EARTH (MSE) WALL

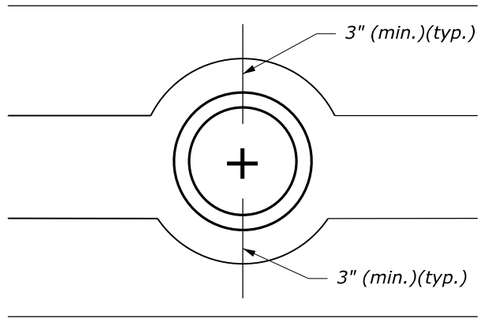
Sheet 2 of 2

SPECIAL
257-A

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	G4



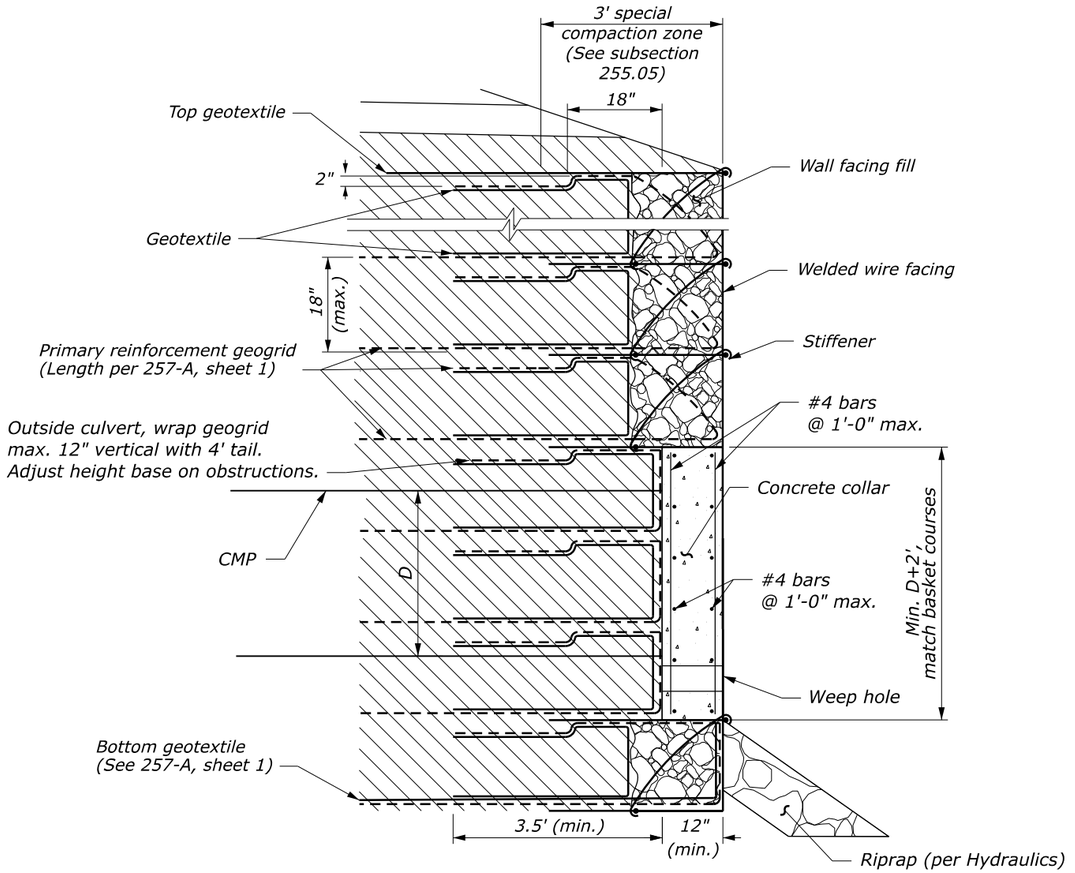
WELDED WIRE FACING - CONCRETE COLLAR DETAIL



SOIL REINFORCEMENT AT PIPE

NOTE:

1. *Wire face, geogrid, etc., per 257-A. Shown schematically only.*
2. *Reinforcing steel clearance is 2 inches.*
3. *Concrete collar is subsidiary to pay item 25501-0000 Mechanically Stabilized Earth Wall.*



GEOGRID REINFORCED MSE WALL - CONCRETE COLLAR DETAIL

NO SCALE

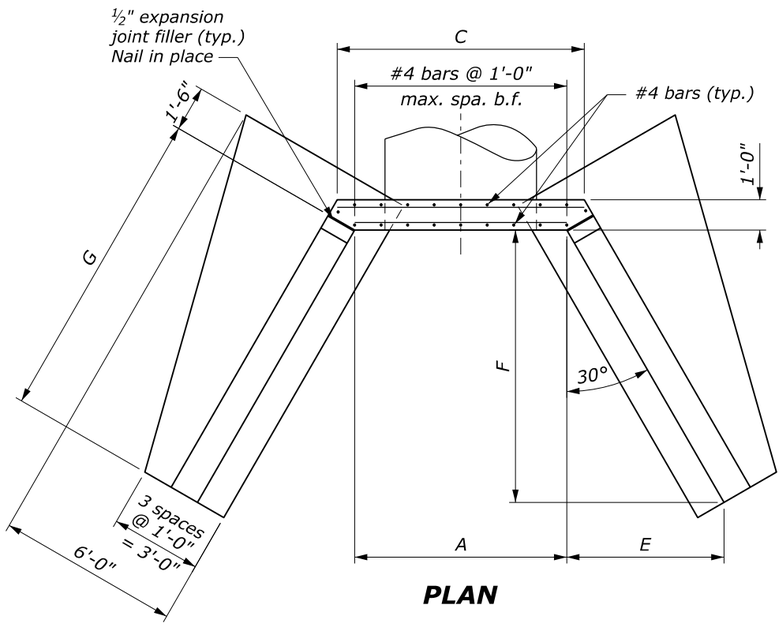
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

CFLHD SPECIAL

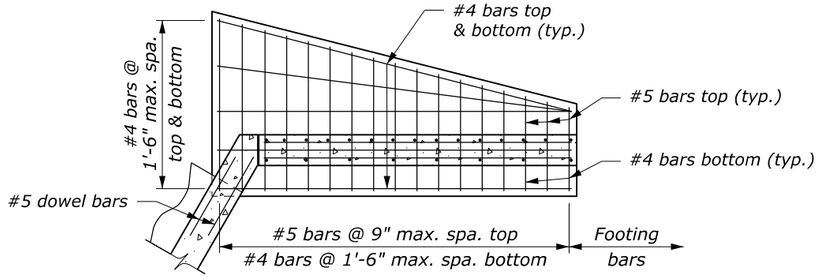
MSE WALL PIPE PENETRATION DETAILS

SPECIAL 257-B

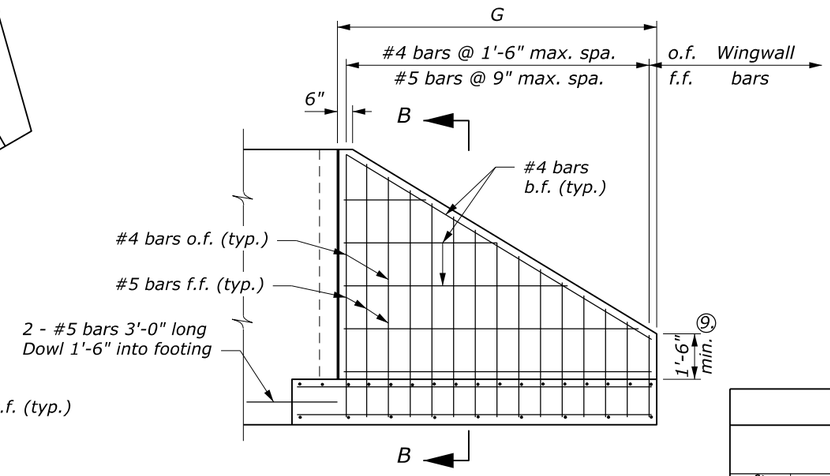
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T1



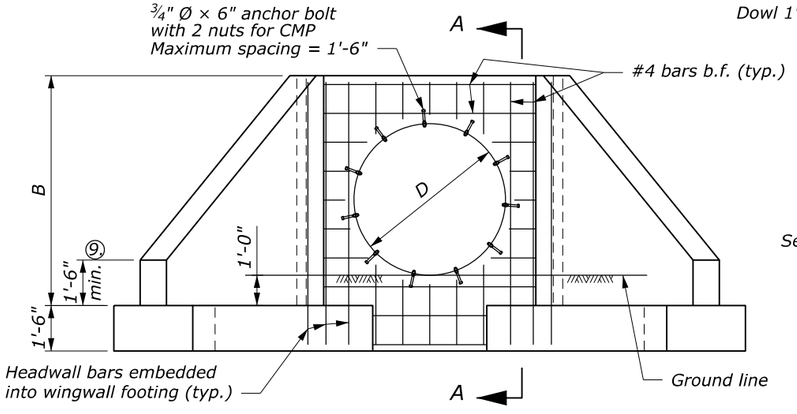
PLAN



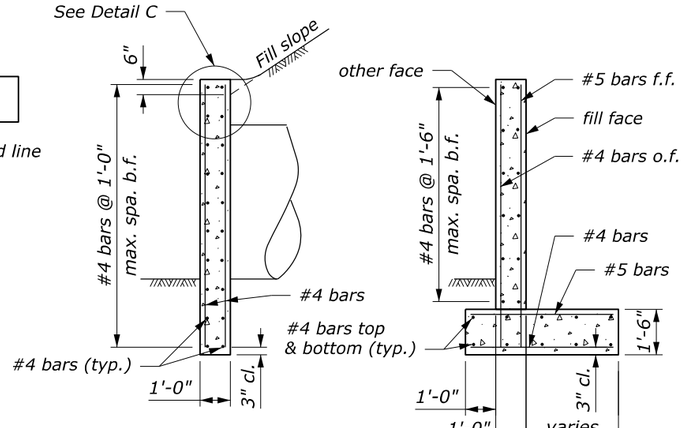
WINGWALL PLAN



WINGWALL ELEVATION

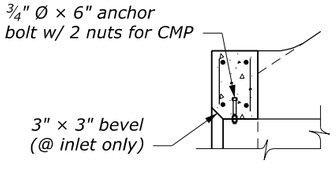


FRONT ELEVATION
(Showing headwall reinforcement)



SECTION A-A

SECTION B-B



DETAIL C
(For Metal Pipes)

NOTE:

1. *This detail applies for normal crossings and skews up to 15°.*
2. *On shallow fill where headwall is 2-feet or less below shoulder line, construct the headwall parallel to line and grade of the shoulder.*
3. *Do not allow top of wingwall to project above fill slope, ditch slope or shoulder.*
4. *Concrete shall conform to Section 601. Chamfer all exposed edges ¾" and finish all exposed surfaces with a Class 1 ordinary surface finish. Joint filler shall conform to AASHTO M213 and shall be subsidary to concrete quantity.*
5. *Bell end of concrete pipe may replace bevel at inlet headwall.*
6. *Quantities shown in table are for one headwall and two wingwalls and are based on CMP. Concrete and steel quantities shown will be used as basis for final payment for headwall/ wingwalls constructed according to this standard.*
7. *Reinforcing steel clearance is 2 inches unless shown otherwise.*
8. *Anchor bolts shall conform to ASTM A307. Galvanize bolts and nuts to conform to ASTM A153. Anchor bolts shall be subsidary to reinforcing steel quantity.*

⑨ *See layout sheets for wingwall ending heights and lengths.*

DIMENSIONS AND QUANTITIES

		D (Diameter of pipe culvert)							
		42"	48"	54"	60"	66"	72"	78"	84"
1V:1.5H fill slope	A	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"
	B	5'-11½"	6'-5½"	6'-11½"	7'-5½"	7'-11½"	8'-5½"	8'-11½"	9'-5½"
	C	6'-7¾"	7'-1¾"	7'-7¾"	8'-1¾"	8'-7¾"	9'-1¾"	9'-7¾"	10'-1¾"
	E	3'-10½"	4'-3¾"	4'-9"	5'-2¼"	5'-7¼"	6'-0¾"	6'-5¾"	6'-11"
	F	6'8¾"	7'-5¾"	8'-2½"	8'-11¾"	9'-8½"	10'-5¾"	11'-2¾"	12'-0"
	G	7'-9"	8'-7½"	9'-6"	10'-4½"	11'-2¾"	12'-1¼"	12'-11½"	13'-10¼"
Conc. (CUYD)		8.0	9.0	10.1	11.1	12.2	13.4	14.5	15.8
Steel (LB)		651	738	818	878	977	1040	1152	1249
1V:2H fill slope	A	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"
	B	5'-11½"	6'-5½"	6'-11½"	7'-5½"	7'-11½"	8'-5½"	8'-11½"	9'-5½"
	C	6'-7¾"	7'-1¾"	7'-7¾"	8'-1¾"	8'-7¾"	9'-1¾"	9'-7¾"	10'-1¾"
	E	5'-2"	5'-9"	6'-3¾"	6'-11"	7'-5¾"	8'-0¾"	8'-7¾"	9'-2¾"
	F	8'-11½"	9'-11¾"	10'-11½"	11'-11¾"	12'-11½"	13'-11¾"	14'-11½"	15'-11¾"
	G	10'-4"	11'-6¼"	12'-7¾"	13'-10"	14'-11½"	16'-1¾"	17'-3¼"	18'-5½"
Conc. (CUYD)		10.0	11.3	12.6	14.0	15.4	16.9	18.3	19.9
Steel (LB)		798	911	1001	1104	1206	1315	1417	1554

Abbreviations:
f.f. = Fill face
o.f. = Other face
b.f. = Both faces

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

CFLHD SPECIAL

CONCRETE HEADWALL/WINGWALL FOR SINGLE NORMAL 42" TO 84" PIPE CULVERT

SPECIAL
601-A

N:\CA\erfo22s01(1)\Roadway\CADD_Sheets\T-600\T1-SP601-A.dgn [Std 601-5]
3 February 2023 4:30 PM

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T2

METAL ROUND PIPE CULVERT

FILL HEIGHT AND METAL THICKNESS TABLE FOR HELICAL LOCKSEAM AND WELDED SEAM PIPE CULVERT

STEEL

PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	2⅔" x ½" CORRUGATIONS					3" x 1" CORRUGATIONS					5" x 1" CORRUGATIONS				
		METAL THICKNESS (INCH/GAGE)														
		0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)														
12	12	100	100	100	100	100										
15	12	100	100	100	100	100										
18	12	100	100	100	100	100										
21	12	100	100	100	100	100										
24	12	100	100	100	100	100										
30	12	85	100	100	100	100										
36	12	71	89	100	100	100	81	100	100	100	100					
42	12	61	76	100	100	100	70	87	100	100	100					
48	12	53	66	93	100	100	61	76	100	100	100	54	68	95	100	100
54	12		59	83	100	100	54	68	95	100	100	48	60	85	100	100
60	12			74	97	100	49	61	86	100	100	43	54	76	98	100
66	12				87	100	44	55	78	100	100	39	49	69	89	100
72	12				80	97	40	51	71	92	100	36	45	63	82	100
78	12					87	37	47	66	85	100	33	42	58	75	92
84	12					75	35	43	61	78	96	31	39	54	70	86
90	12						32	40	57	73	90	29	36	51	65	80
96	12							38	53	69	84		34	48	61	75
102	18							36	50	65	79		32	45	57	71
108	18								47	61	75			42	54	67
114	18								45	58	71			40	52	63
120	18								43	55	67			38	49	60
126	18									52	64				47	57
132	18									50	61				44	54
138	18									48	58				42	52
144	18										56					50

ALUMINUM

PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	2⅔" x ½" CORRUGATIONS					3" x 1" CORRUGATIONS				
		METAL THICKNESS (INCH/GAGE)									
		0.060/16	0.075/14	0.105/12	0.135/10	0.164/8	0.060/16	0.075/14	0.105/12	0.135/10	0.164/8
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)									
12	12	100	100	100	100	100					
15	12	100	100	100	100	100					
18	12	100	100	100	100	100					
21	12	88	100	100	100	100					
24	12	77	97	100	100	100					
30	12	62	77	100	100	100	71	89	100	100	100
36	12	52	64	90	100	100	59	74	100	100	100
42	12	44	55	77	99	100	51	64	89	100	100
48	12			67	87	100	44	56	78	100	100
54	18			54	71	88	39	50	69	93	100
60	18				57	72	35	45	62	83	98
66	18					58	32	40	56	76	89
72	18					45	30	37	55	70	82
78	24							34	48	64	75
84	24								44	59	70
90	24								41	62	65
96	24								38	51	61
102	24									46	55
108	24									42	50
114	24										45
120	24										40

NOTE:

1. *When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.*
2. *Fill heights exceeding 100 feet require special analysis by the CO.*
3. *The fill heights in the table are for helical lockseam and welded seam pipe only. Fill heights for culvert pipe with annular corrugations are more restrictive than those of helical lockseam and welded seam pipe. Obtain approval before furnishing annular corrugation pipe.*
4. *Measure minimum cover from the top of the pipe culvert to the subgrade for flexible pavements, and to the top of the pavement for rigid pavements. Measure maximum fill height from the top of the pipe to the top of the pavement for both flexible and rigid pavement.*

METAL PIPE ARCH CULVERT

FILL HEIGHT AND METAL THICKNESS TABLE FOR HELICAL LOCKSEAM AND WELDED SEAM PIPE CULVERT

STEEL

PIPE ARCH SIZE SPAN x RISE INCHES	EQUI-VALENT DIAMETER INCHES	MINIMUM CORNER RADIUS INCHES	MINIMUM COVER INCHES	2⅔" x ½" CORRUGATIONS					3" x 1" CORRUGATIONS				5" x 1" CORRUGATIONS			
				METAL THICKNESS (INCH/GAGE)												
				0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10	0.168/8
				MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)												
17 x 13	15	3	12	13												
21 x 15	18	3	12	12												
24 x 18	21	3	12	13												
28 x 20	24	3	12	13												
35 x 24	30	3	12	12												
42 x 29	36	3.5	12	12												
49 x 33	42	4	12		12											
57 x 38	48	5	12			12										
60 x 46	54	8	15							21				21		
64 x 43	54	6	12			12										
66 x 51	60	9	15							21				21		
71 x 47	60	7	12				12									
73 x 55	66	12	18							20				20		
77 x 52	66	8	12					12								
81 x 59	72	14	18						17				17			
83 x 57	72	9	12					12								
87 x 63	78	14	18						17				17			
95 x 67	84	16	18						17				17			
103 x 71	90	16	18							17			17			
112 x 75	96	18	21							16				16		
117 x 79	102	18	21							16				16		
128 x 83	108	18	24								16				16	
137 x 87	114	18	24								16				16	
142 x 91	120	18	24									16				16

ALUMINUM

PIPE ARCH SIZE SPAN x RISE INCHES	EQUI-VALENT DIAMETER INCHES	MINIMUM CORNER RADIUS INCHES	MINIMUM COVER INCHES	2⅔" x ½" CORRUGATIONS				3" x 1" CORRUGATIONS			
				METAL THICKNESS (INCH/GAGE)							
				0.060/16	0.075/14	0.105/12	0.135/10	0.060/16	0.075/14	0.105/12	0.135/10
				MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)							
17 x 13	15	3	12	13							
21 x 15	18	3	12	12							
24 x 18	21	3	12	13							
28 x 20	24	3	12		13						
35 x 24	30	3	12		12						
42 x 29	36	3.5	15			12					
49 x 33	42	4	15			12					
57 x 38	48	5	15				12				
60 x 46	54	8	15					21			
64 x 43	54	6	18				12				
66 x 51	60	9	18					21			
73 x 55	66	12	18						20		
81 x 59	72	14	21							17	
87 x 63	78	14	21							17	
95 x 67	84	16	24							17	
103 x 71	90	16	24								17

NO SCALE

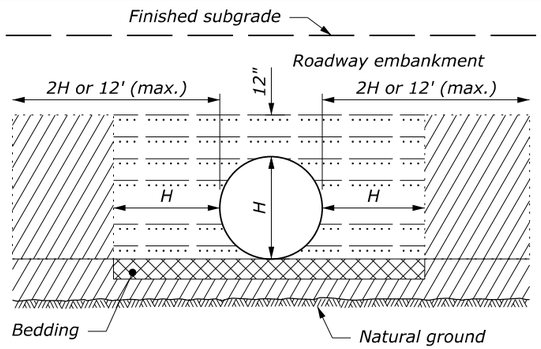
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

FLH STANDARD

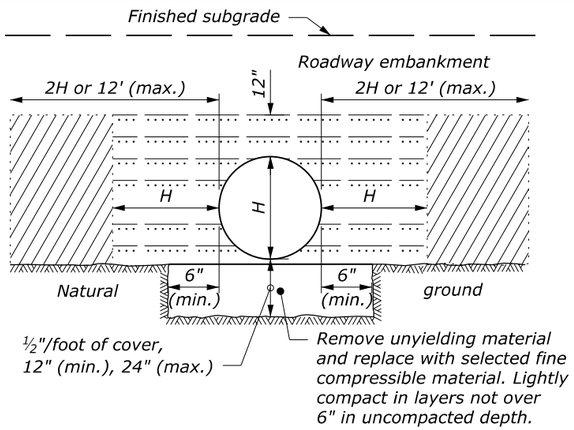
METAL PIPE CULVERT

STANDARD APPROVED FOR USE 12/1993	STANDARD
REVISED: 4/1994 6/2005	602-1

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T3

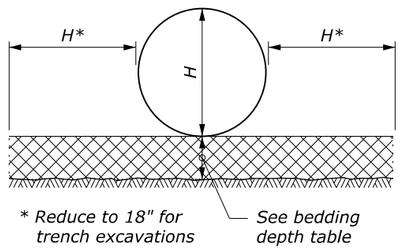


ABOVE NATURAL GROUND



ON UNYIELDING MATERIAL

BEDDING DEPTH	
PIPE SIZE (H)	DEPTH
12" to 54"	4"
> 54"	6"

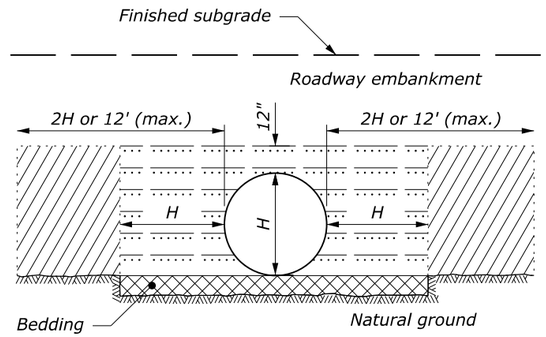


PIPE BEDDING

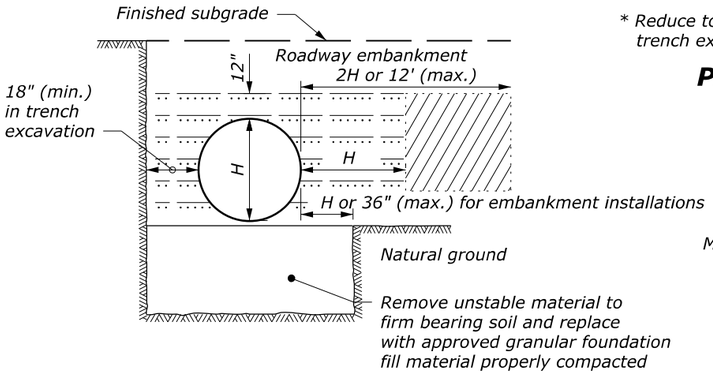
NOTE:

1. When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
2. H equals the diameter of all round pipe culverts or the rise dimension of all pipe arch culverts.
3. See Section 704 for bedding and backfill requirements.

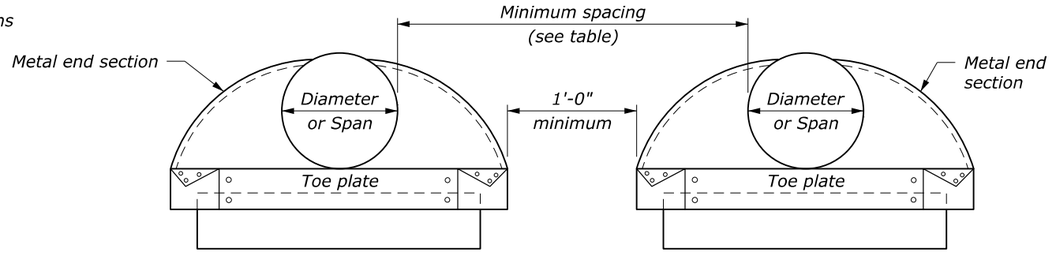
MINIMUM SPACING	
DIAMETER or SPAN	SPACING
UP to 48"	24"
48" and UP	Half diameter or span or 36", whichever is less



ON NATURAL GROUND

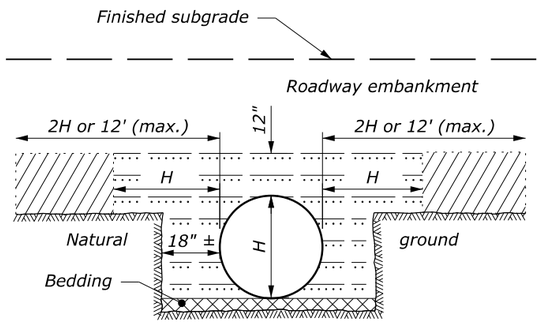


ON UNSTABLE MATERIAL

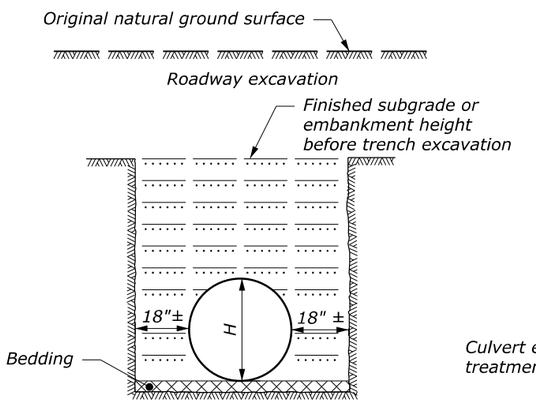


ELEVATION

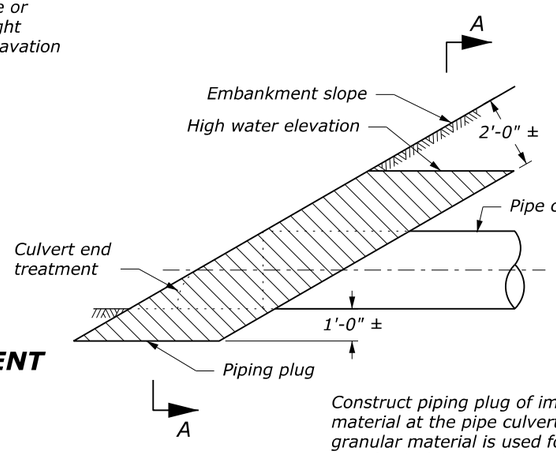
MULTIPLE PIPE INSTALLATION



ABOVE AND BELOW NATURAL GROUND

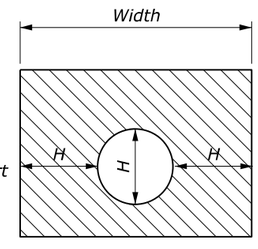


BELOW NATURAL GROUND OR TRENCH EXCAVATION IN EMBANKMENT



Construct piping plug of impermeable backfill material at the pipe culvert inlet where granular material is used for backfill. Width may be adjusted to tie into impervious material.

PIPING PLUG



SECTION A-A

NO SCALE

LEGEND:

- Bedding material (uncompacted)
- Embankment material placed in layers not exceeding 6" compacted depth.
- Compacted backfill material placed in layers not exceeding 6" compacted depth; or lean concrete backfill in accordance with Section 614.
- Impermeable backfill material.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

FLH STANDARD

METAL AND PLASTIC PIPE CULVERT BEDDING

STANDARD APPROVED FOR USE 12/1993	STANDARD
REVISED: 4/1994 6/2005 DRAFT: 10/2017	602-3

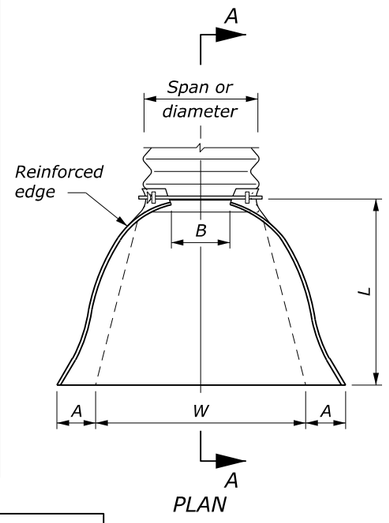
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T4

END SECTIONS FOR ROUND PIPE CULVERT

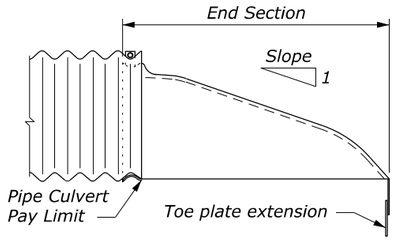
PIPE SIZE DIAMETER INCHES	METAL THICKNESS STEEL INCHES	STEEL GAGE	ALUMINUM INCHES	ALUMINUM GAGE	DIMENSIONS INCHES A (min)	B (max)	H (min)	L (±2")	W (max)	SLOPE Approx.
12	0.064	16	0.060	16	5	7	6	21	44	2¼
15	0.064	16	0.060	16	6	8	6	26	52	2¼
18	0.064	16	0.060	16	7	10	6	31	58	2⅛
21	0.064	16	0.060	16	8	12	6	36	66	2⅛
24	0.064	16	0.060	16	9	13	6	41	72	2⅛
30	0.079	14	0.075	14	11	16	8	51	88	2⅛
36	0.079	14	0.075	14	13	19	9	60	105	2
42	0.109	12	0.105	12	15	25	10	69	122	2⅛
48	0.109	12	0.105	12	17	29	12	78	131	2
54	0.109	12	0.105	12	17	33	12	84	143	2
60	0.109	12	0.105	12	17	36	12	87	157	1⅞
66	0.109	12	0.105	12	17	39	12	87	162	1⅝
72	0.109	12	0.105	12	17	44	12	87	169	1½
78	0.109	12	0.105	12	17	48	12	87	178	1⅜
84	0.109	12	0.105	12	17	52	12	87	184	1⅓
90	0.109	12	0.105	12	17	58	12	87	188	1¼
96	0.109	12	0.105	12	17	58	12	87	197	1⅛

END SECTIONS FOR PIPE ARCH CULVERT

PIPE SIZE SPAN × RISE INCHES	EQUI-VALENT DIAM. (INCHES)	METAL THICKNESS STEEL INCHES	STEEL GAGE	ALUMINUM INCHES	ALUMINUM GAGE	DIMENSIONS INCHES A (min)	B (max)	H (min)	L (±2")	W (max)	SLOPE Approx.
17 × 13	15	0.064	16	0.060	16	7	9	6	19	30	2½
21 × 15	18	0.064	16	0.060	16	7	10	6	23	36	2½
24 × 18	21	0.064	16	0.060	16	8	12	6	28	42	2½
28 × 20	24	0.064	16	0.060	16	9	14	6	32	48	2½
35 × 24	30	0.079	14	0.075	14	10	16	8	39	60	2½
42 × 29	36	0.079	14	0.075	14	12	18	9	46	75	2½
49 × 33	42	0.109	12	0.105	12	13	21	12	53	85	2½
57 × 38	48	0.109	12	0.105	12	18	26	12	63	90	2½
60 × 46	54	0.109	12	0.105	12	18	34	12	70	102	2
64 × 43	54	0.109	12	0.105	12	18	30	12	70	102	2
66 × 51	60	0.109	12	0.105	12	18	33	12	77	116	1½
71 × 47	60	0.109	12	0.105	12	18	33	12	77	114	1½
73 × 55	66	0.109	12	0.105	12	18	36	12	77	126	1½
77 × 52	66	0.109	12	0.105	12	18	36	12	77	126	1½
81 × 59	72	0.109	12	0.105	12	18	39	12	77	138	1½
83 × 57	72	0.109	12	0.105	12	18	39	12	77	138	1½
87 × 63	78	0.109	12	0.105	12	20	38	12	77	148	1½
95 × 67	84	0.109	12	0.105	12	20	34	12	87	162	1½
103 × 71	90	0.109	12	0.105	12	20	38	12	87	174	1½
112 × 75	96	0.109	12	0.105	12	20	40	12	87	174	1½



PLAN

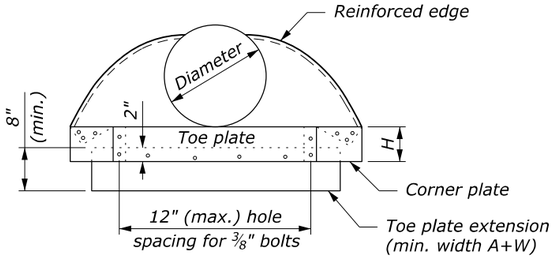


SECTION A-A

ROUND OR PIPE ARCH CULVERT

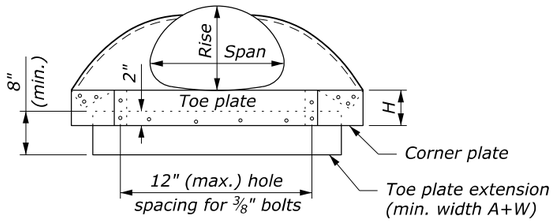
NOTE:

1. Variations in design and dimensions are permitted to allow for manufacturer's standards.
2. Fabricate the diameter of the end section of Design B to match the inside diameter of the concrete pipe culvert.
3. Design C may be used in lieu of design A for all metal pipe culvert sizes. Coupling bands may be any acceptable type for the pipe culvert specified.
4. Fabricate multiple piece bodies with lap seams tightly joined by ⅜" rivets or bolts. Fabricate end section center panels for 60" and larger diameter pipe and equivalent pipe arch from 0.138 inch steel or 0.135 inch aluminum.
5. On end section center panels for 66" and larger equivalent pipe arch provide 2½" × 2½" × ¼" angle reinforcement bolted or riveted under the center panel seam.
6. Supplement the reinforced edges of end sections for 60" and larger diameter pipe and 66" and larger equivalent pipe arch with 2½" × 2½" × ¼" stiffener angles attached with bolts or rivets.
7. Fabricate connector section, corner plate and toe plate extensions from the same metal thickness as the panel body. Use toe plate extension where shown on the plans.
8. Warp embankment slopes to match the slope of the flared end sections.



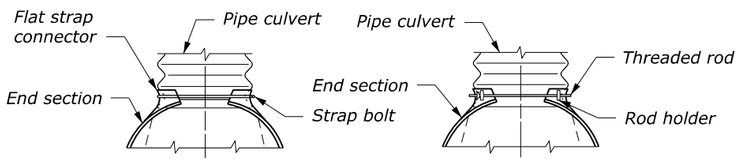
ELEVATION

ROUND PIPE CULVERT



ELEVATION

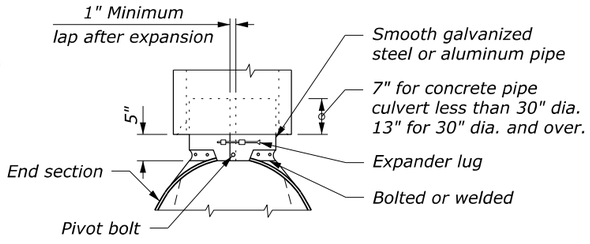
PIPE ARCH CULVERT



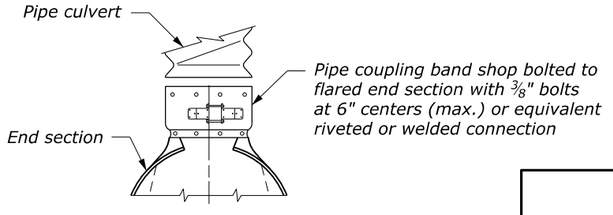
For 12" thru 24" round pipe and 17" × 13" thru 28" × 20" pipe arch

For 30" thru 60" round pipe and 35" × 24" thru 66" × 51" pipe arch

DESIGN A
CONNECTION TO ANNULAR CORRUGATED METAL PIPE



DESIGN B
CONNECTION TO CONCRETE PIPE INLET END



For all sizes of round pipe and pipe arch

DESIGN C
CONNECTION TO METAL PIPE OR OUTLET END OF CONCRETE PIPE

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

FLH STANDARD

METAL END SECTIONS

STANDARD APPROVED FOR USE 12/1993	STANDARD
REVISED: 4/1994 6/2005 DRAFT: 10/2007	602-4

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T5

COUPLING BANDS FOR METAL PIPE CULVERT [1]

CORRUGATION SIZE [2] INCHES	ROUND PIPE DIAMETER INCHES	PIPE ARCH SPAN × RISE INCHES	MINIMUM BAND WIDTH (INCHES)		
			ANNULAR CORRUGATED BANDS [3]	HELICALLY CORRUGATED BANDS [4]	SEMI-CORRUGATED BANDS [5]
1½ × ¼	underdrain [6]	-	10.5	7	10.5
2⅔ × ½	12 to 36	17 × 13 to 42 × 29	7	12	
	42 to 72	49 × 33 to 83 × 57	10.5	12	
	78 to 84	-	10.5	12	10.5
3 × 1	36 to 72	60 × 46 to 81 × 59	12	14	10.5
	78 to 144	87 × 64 to 142 × 91	12	14	10.5
5 × 1	36 to 72	60 × 46 to 81 × 59	20	22	
	78 to 144	87 × 64 to 142 × 91	20	22	

[1] Fabricate annular, helical and semi-corrugated type coupling bands from the same metal as the connecting pipe. Provide coupling bands not more than 3 nominal sheet thicknesses thinner than the thickness of the pipe to be connected, and no thinner than 0.052 inch for steel or 0.048 inch for aluminum. Fasten coupling bands with the following diameter of bolt:
⅜" for 18" round culvert (21" × 15" pipe arch) or less
½" for 21" round culvert (24" × 18" pipe arch) or more

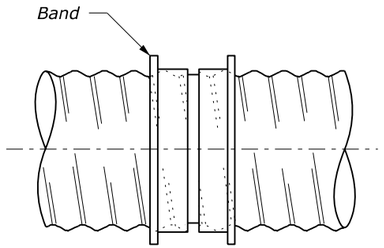
[2] For helically corrugated pipe with rerolled ends, the nominal corrugations size refers to the dimension of the end corrugation in the pipe.

[3] Use annular corrugated bands with pipes having annular corrugations or with helical pipe having rerolled end to form annular corrugations. A 10.5 inch band is acceptable on pipe ends rerolled with 2⅔" × ½" corrugations. A 12 inch band is acceptable on pipe ends rerolled with 3" × 1" pipe corrugations.

[4] Use helical corrugated bands with pipes having helically corrugated ends.

[5] The minimum band widths shown for 3" × 1" and 5" × 1" corrugated sizes apply to 2⅔" × ½" corrugations on rerolled pipe ends.

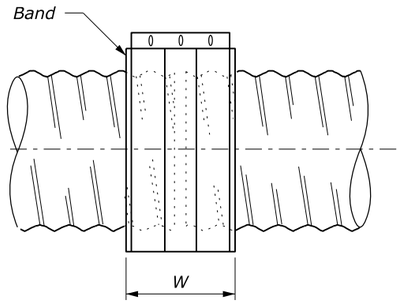
[6] Smooth sleeve-type couplers and flat bands may be used for pipe diameters of 12" or less. Use a matching metal having a nominal thickness of not less than 0.040 inch for steel, or 0.036 inch for aluminum, or a plastic with an equivalent strength to metal.



SLEEVE JOINT

Smoother sleeve with center stop.
Stab type joint

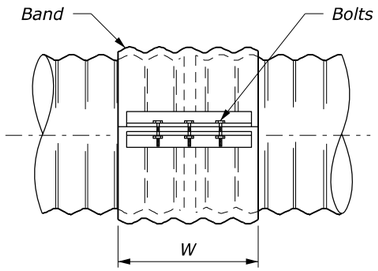
SMOOTH SLEEVE BAND



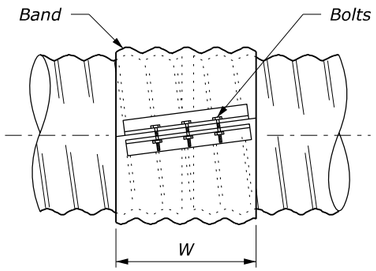
FLAT BAND

NOTE:

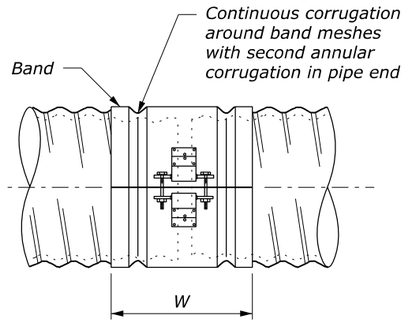
1. Furnish joints conforming to Subsection 602.05
2. Other types of coupling bands or fastening devices that comply with the joint performance criteria of AASHTO Standard specifications for Highway Bridges, Division II Section 26 may be used.



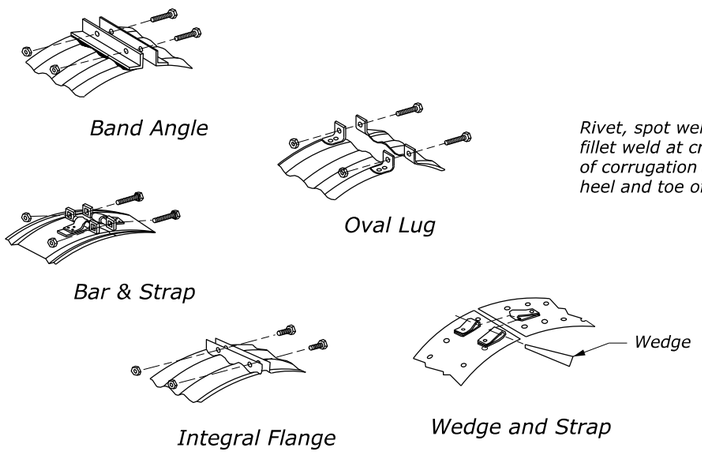
SIDE VIEW



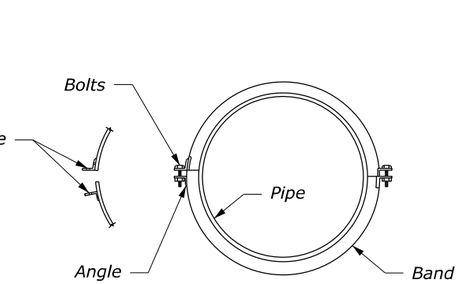
SIDE VIEW



SIDE VIEW



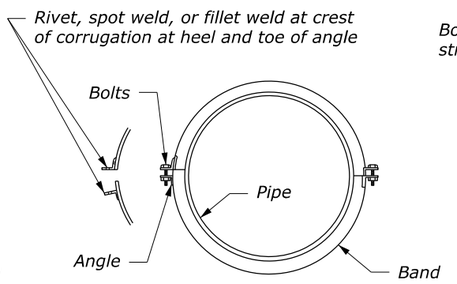
STANDARD BAND CONNECTIONS



END VIEW

Second angle connection optional to 42" diameter, required above 42" diameter

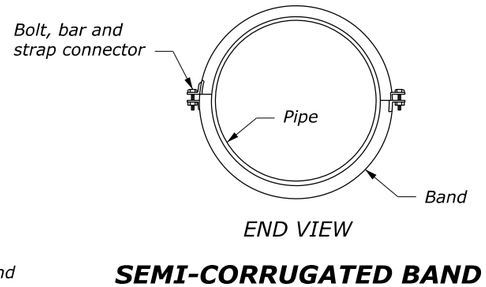
ANNULAR BAND



END VIEW

Second angle connection optional to 42" diameter, required above 42" diameter

HELICAL BAND



END VIEW

SEMI-CORRUGATED BAND

NO SCALE

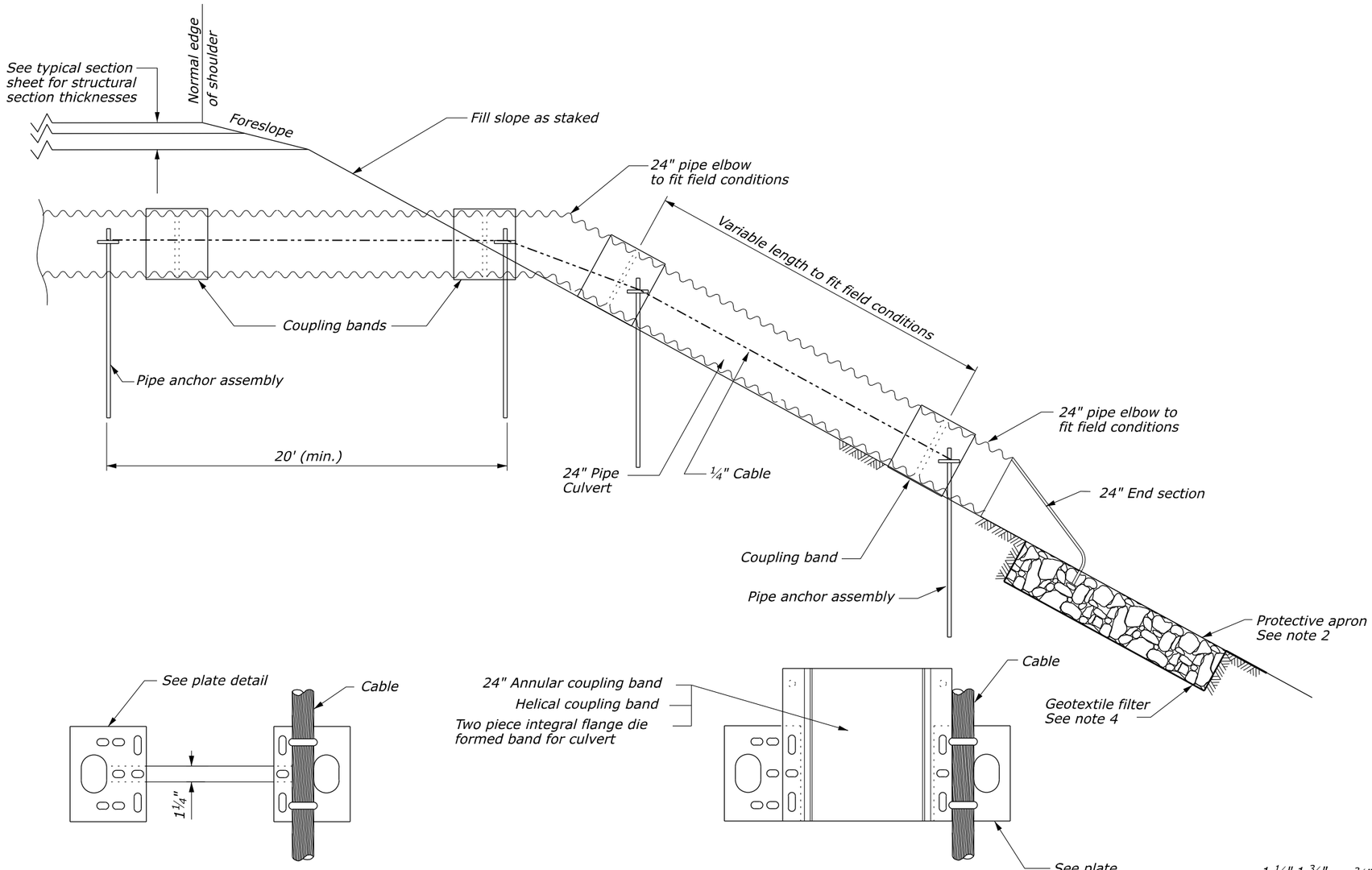
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

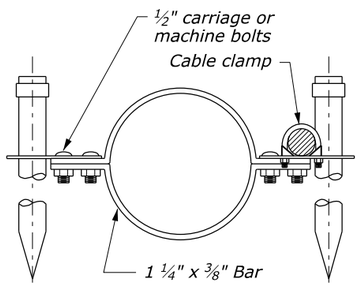
CFLHD SPECIAL

METAL PIPE CULVERT COUPLING BAND

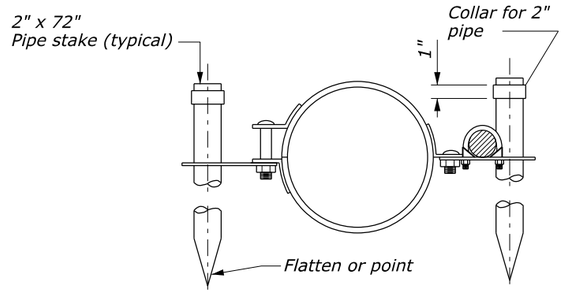
SPECIAL
602-A

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T6

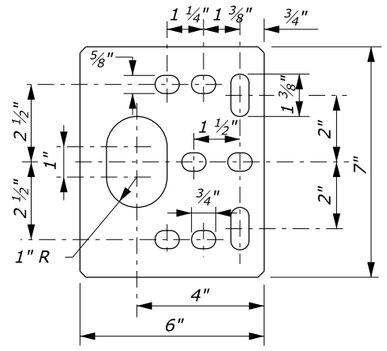




ALTERNATE A



ALTERNATE B



Material to be 1/4" plate galvanized after fabrication

PLATE DETAIL

NO SCALE

NOTE:

1. Furnish metal pipe culvert, elbows, and coupling bands according to Section 602. Do no measure elbows for payment, they are subsidiary to the 60201 pay items.
2. Furnish riprap for protective apron according to Section 251 & Special 251-A. Refer to Culvert X-Sections Sheets for riprap placement.
3. Furnish hardware galvanized according to AASHTO M111M.
4. Furnish geotextile filter type conforming to subsection 714.01(a). See summary tables for class and type.
5. Place pipe anchor assemblies at approximately 20' intervals along rundown portion of drain pipe.
6. Other suitable pipe anchor assemblies may be used upon approval in writing by the CO.
7. The use of the hugger band is restricted to welded spiral pipe with annular end corrugations or riveted annularly corrugated pipe.
8. Metal pipe shown is typical. Steel, aluminum, and concrete pipes as indicated on the drainage summary sheet, may be used.
9. Join concrete pipe according to Section 602 or other methods approved by the CO.
10. Use alternate A anchor assembly only with annular corrugations. May be placed on annular or preformed end coupling band if securely fastened on downstream side of joint. Alternate B anchor assembly to be fastened to pipe sections and not to band coupler used to join sections.
11. Use gaskets on all joints along the rundown portion of drain pipe.
12. Pipe anchor assemblies will be paid for under Section 606.

PIPE ANCHOR ASSEMBLY DETAILS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

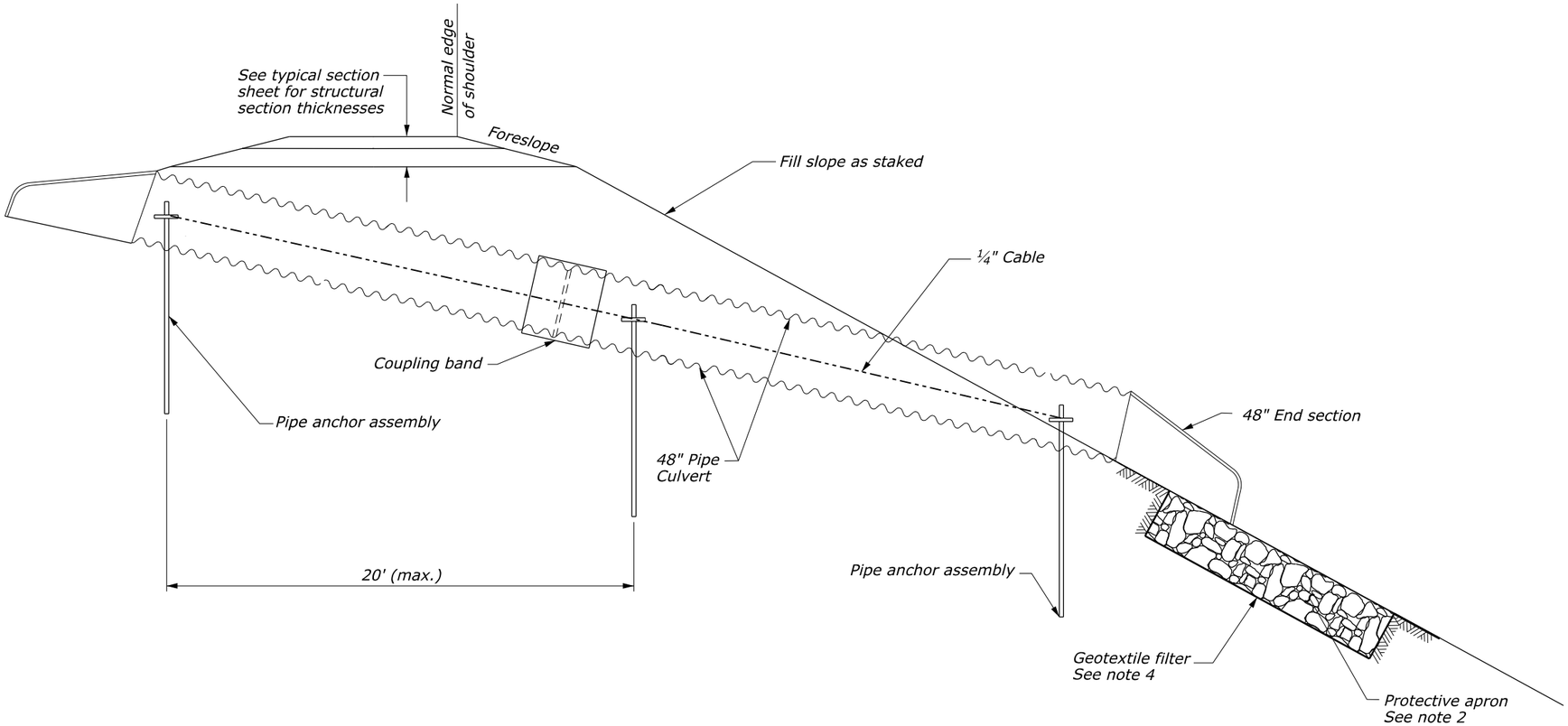
CFLHD SPECIAL

24" RUN DOWN AND PIPE ANCHOR ASSEMBLY

SPECIAL
602-B

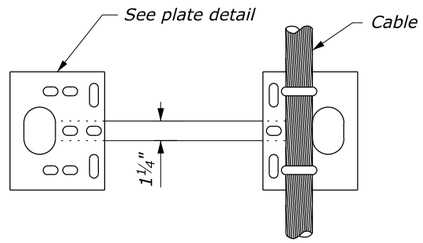
N:\CA\erfo22s01(1)\Roadway\CADD Sheets\T-600\T6-Sp602-B.dgn [C602-50]
14 February 2023 10:45 PM

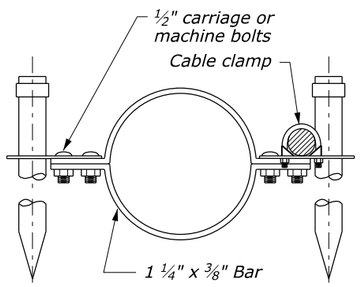
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T7



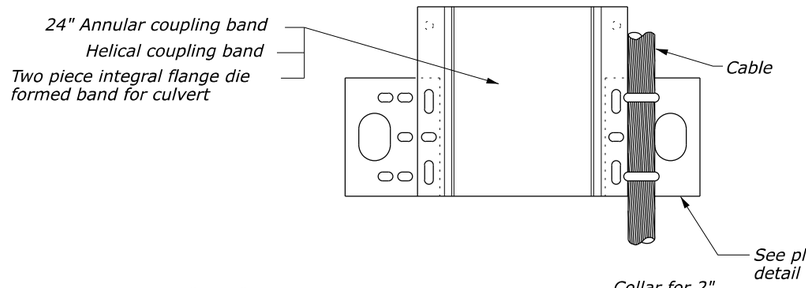
NOTE:

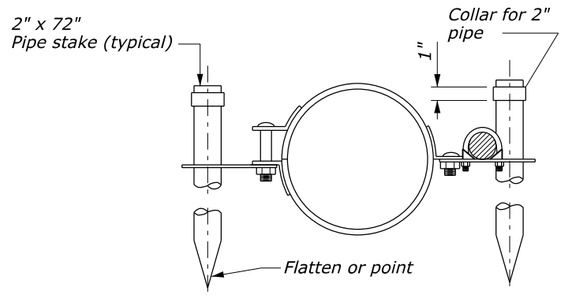
1. Furnish metal pipe culvert and coupling bands according to Section 602.
2. Furnish riprap for protective apron according to Section 251 & Special 251-A. Refer to Culvert X-Sections Sheets for riprap placement.
3. Furnish hardware galvanized according to AASHTO M111M.
4. Furnish geotextile filter type conforming to subsection 714.01(a). See summary tables for class and type.
5. Place pipe anchor assemblies at approximately 20' intervals along pipe culvert.
6. Other suitable pipe anchor assemblies may be used upon approval in writing by the CO.
7. The use of the hugger band is restricted to welded spiral pipe with annular end corrugations or riveted annularly corrugated pipe.
8. Metal pipe shown is typical. Steel, aluminum, and concrete pipes as indicated on the drainage summary sheet, may be used.
9. Join concrete pipe according to Section 602 or other methods approved by the CO.
10. Use alternate A anchor assembly only with annular corrugations. May be placed on annular or preformed end coupling band if securely fastened on downstream side of joint. Alternate B anchor assembly to be fastened to pipe sections and not to band coupler used to join sections.
11. Use gaskets on all joints along the rundown portion of drain pipe.
12. Pipe anchor assemblies will be paid for under Section 606.



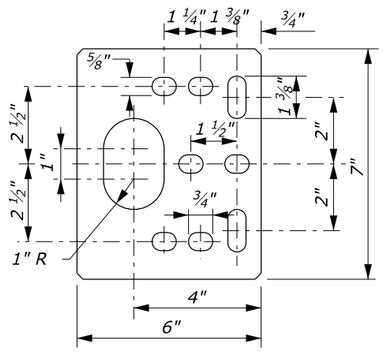


ALTERNATE A





ALTERNATE B



Material to be 1/4" plate galvanized after fabrication

PLATE DETAIL

NO SCALE

PIPE ANCHOR ASSEMBLY DETAILS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

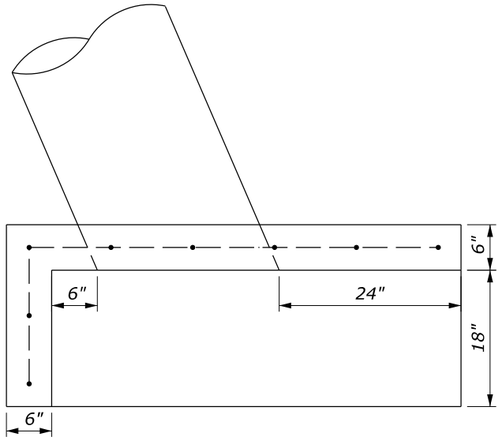
CFLHD SPECIAL

48" PIPE ANCHOR ASSEMBLY

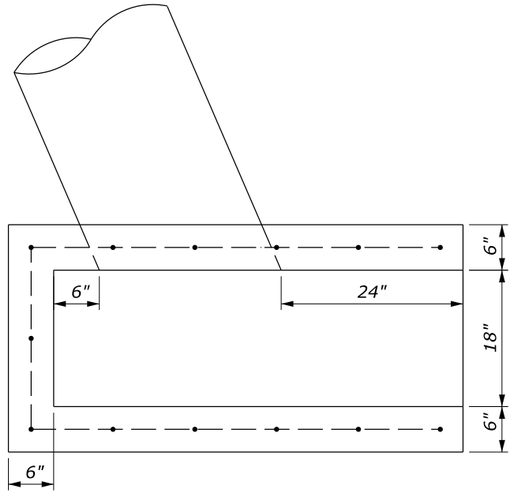
SPECIAL
602-C

N:\CA\erfo22s01(1)\Roadway\C4DD_Sheets\T-600\T7-Sp602-C.dgn [C602-50]
28 February 2023 3:27 PM

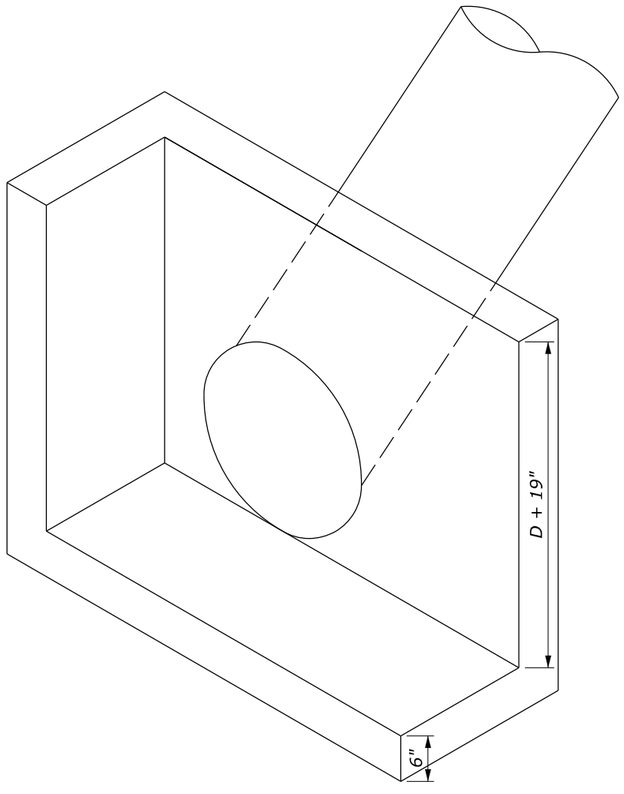
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T8



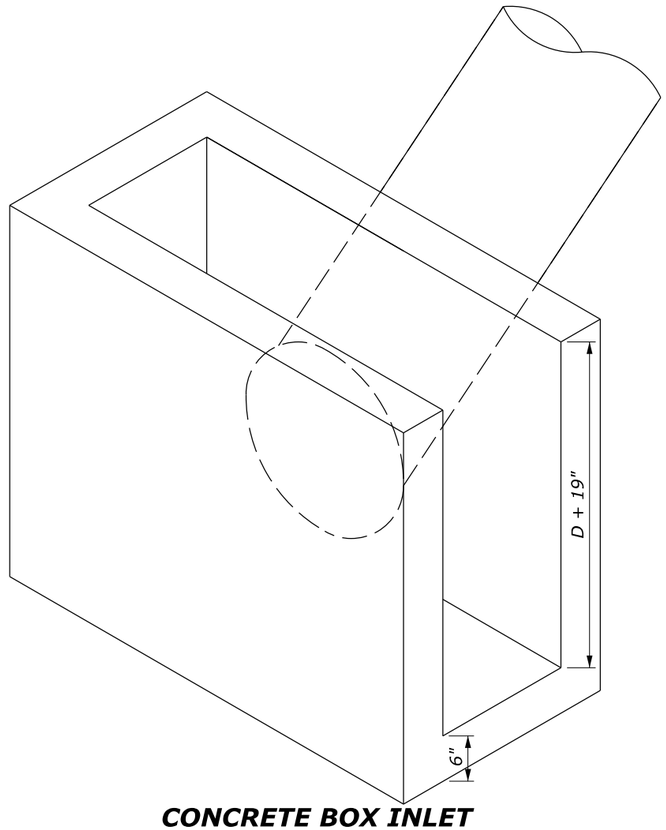
L-SHAPED CONCRETE BOX INLET
PLAN VIEW



CONCRETE BOX INLET
PLAN VIEW



L-SHAPED CONCRETE BOX INLET
ISOMETRIC VIEW



CONCRETE BOX INLET
ISOMETRIC VIEW

NO SCALE

NOTE:

1. *All reinforcing bars are #4 placed a minimum 1½" clear from face of concrete. Place bars on 12 inch centers each way.*
2. *Construct inlets parallel to roadway centerline and grade.*
3. *Submit Concrete Box Inlet design for CO approval.*

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

CFLHD SPECIAL

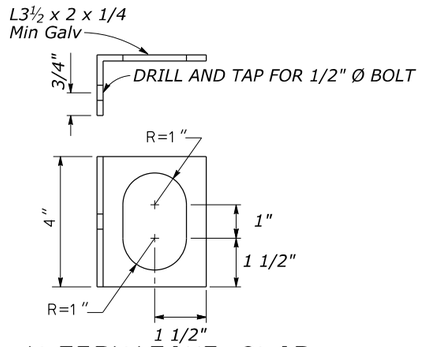
CONCRETE BOX INLET

SPECIAL
604-A

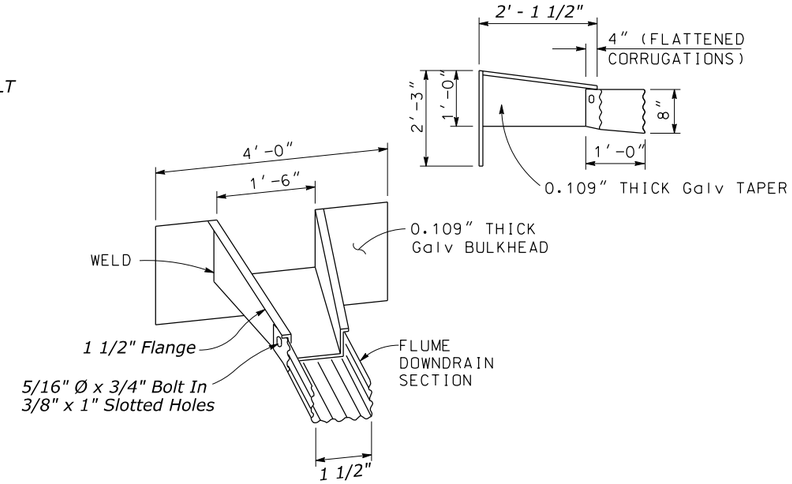
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T9

NOTE:

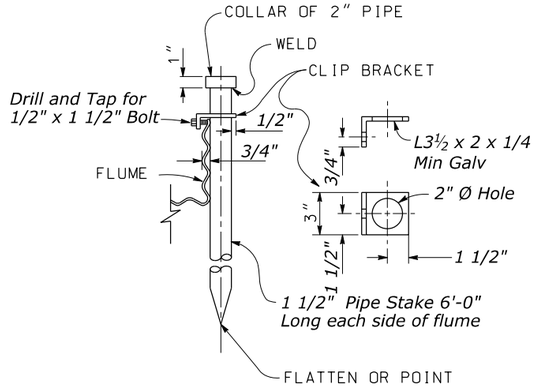
1. *This Special was adapted from the CALTRANS D87D, 2010 Standard Plan.*
2. *Use Pipe Stake Anchors on all Flume Downdrains > 5 ft in height. Anchors are subsidiary to the Spillway Assembly (60601-0000, per EACH) pay item.*
3. *Alternate designs may be used with approval of the CO.*



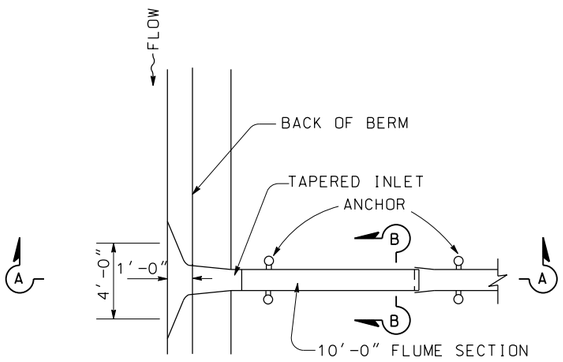
ALTERNATIVE CLIP BRACKET DETAIL



TAPERED INLET

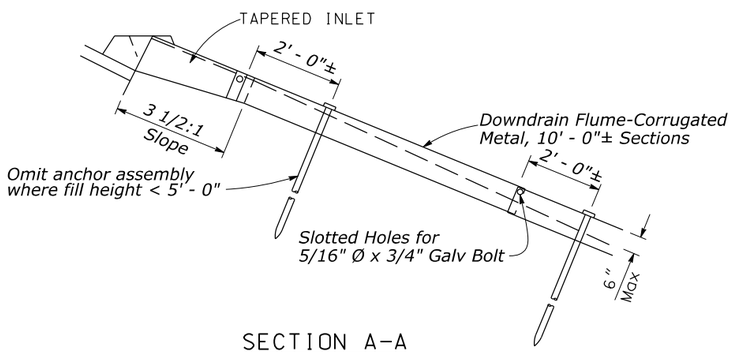


PIPE STAKE ANCHOR DETAIL

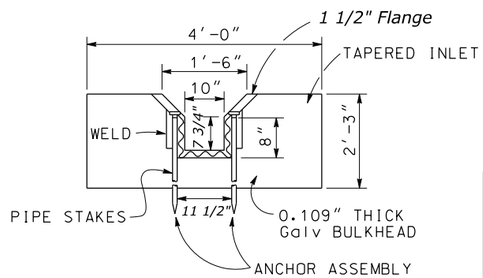


PLAN

TAPERED INLET AND FLUME DOWNDRAIN



SECTION A-A



SECTION B-B

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

CFLHD SPECIAL

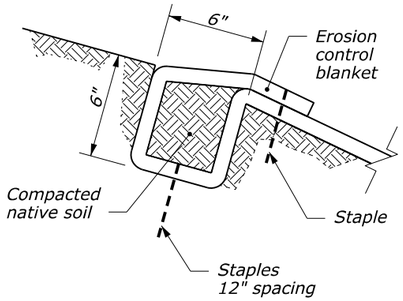
SPILLWAY ASSEMBLIES TAPERED INLET & CORRUGATED FLUME DOWNDRAIN

SPECIAL
606-A

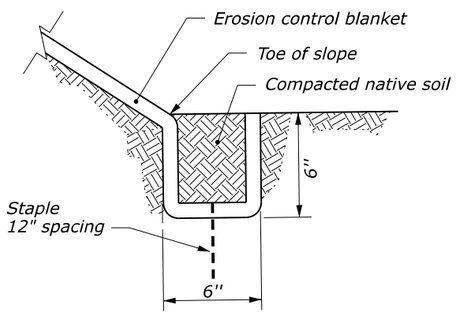
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T10

NOTE:

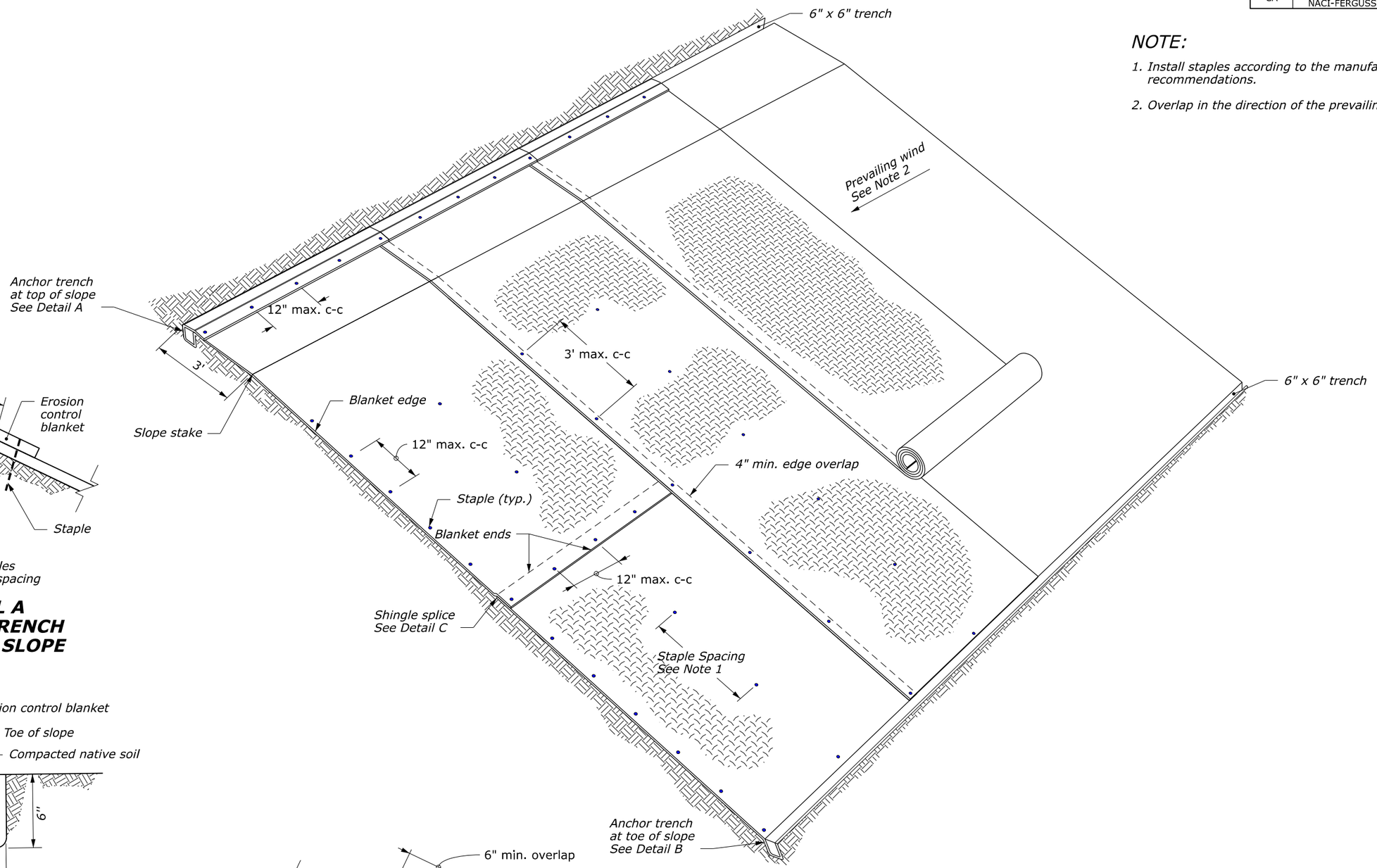
1. Install staples according to the manufacturer's recommendations.
2. Overlap in the direction of the prevailing wind.



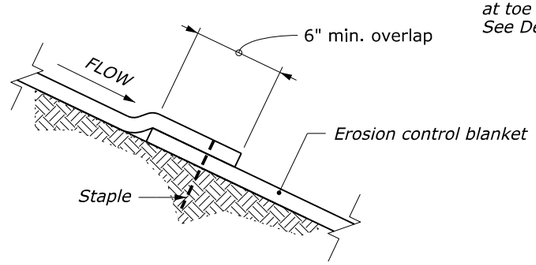
DETAIL A
ANCHOR TRENCH AT TOP OF SLOPE



DETAIL B
ANCHOR TRENCH AT TOE OF SLOPE



PERSPECTIVE VIEW



DETAIL C
SHINGLE SPLICE

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

CFLHD DETAIL

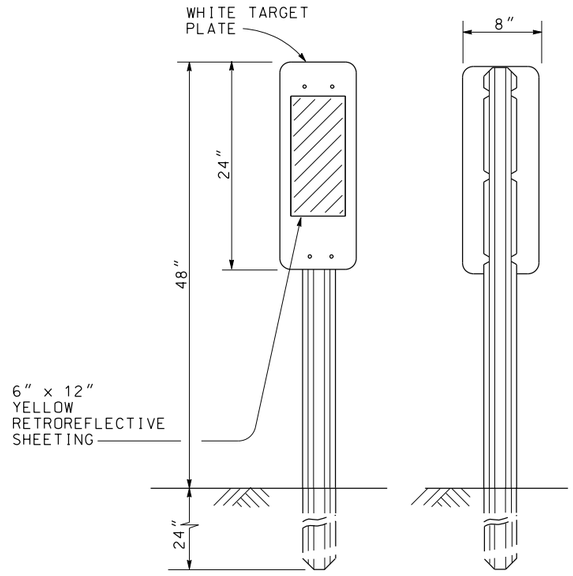
ROLLED EROSION CONTROL PRODUCT ON SLOPES

DETAIL APPROVED FOR USE 01/2011

REVISED: 08/2014 10/2021

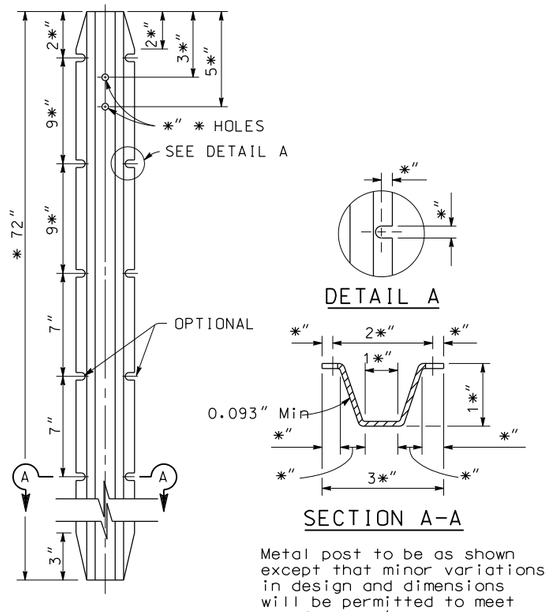
DETAIL C629-50

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T11



FRONT BACK

TYPE L-1 (CA)



DETAIL A

SECTION A-A

Metal post to be as shown except that minor variations in design and dimensions will be permitted to meet manufacturer's standards.

* 8′-0″ for Type P object marker

METAL POST DETAIL

Adapted from CALTRANS Standard Plan A73 A-B.

NO SCALE

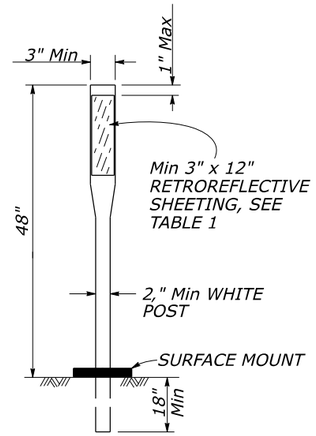
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

CFLHD SPECIAL

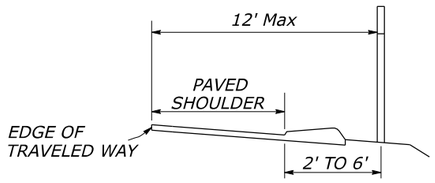
OBJECT MARKERS

SPECIAL
633-A

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T12



CLASS 1
FLEXIBLE POST



DELINEATOR POSITIONING

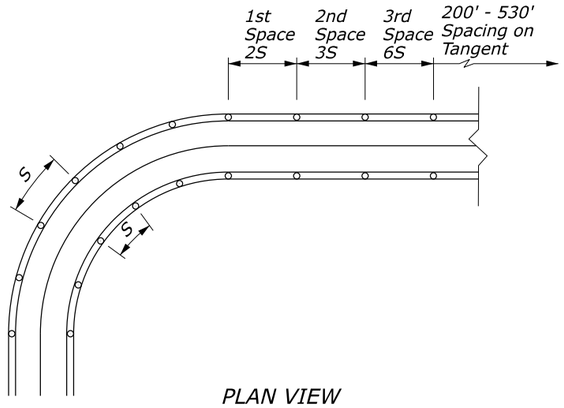
TABLE 1 - DELINEATORS

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

NOTE:

1. Install reflective elements according to the manufacturer's recommendations.
2. Place delineators at a constant distance from the edge of the pavement.
3. See Subsection 718.05 for rigid post requirements.
4. The retroreflective sheeting used on the back of delineator shall be a minimum size of 3" x 3".
5. See Spacial 633-A for metal post details.
6. Unless shown otherwise on the plans, or as directed by the CO, the color of the retroreflective sheeting for permanent channelizers shall conform to the color of the pavement markings it supplements.

DELINEATOR



PLAN VIEW

DELINEATOR SPACING

DELINEATOR SPACING ON CURVES

RADIUS OF CURVE (R)	SPACING ON CURVE (S)	SPACING ON TANGENTS AT CURVE ENDS		
		1st Space (2 S)	2nd Space (3 S)	3rd Space (6 S)
(feet)	(feet)	(feet)	(feet)	(feet)
50	20	40	60	120
115	25	50	75	150
180	35	70	105	210
250	40	80	120	240
300	50	100	150	300
400	55	110	165	300
500	65	130	195	300
600	70	140	210	300
700	75	150	225	300
800	80	160	240	300
900	85	170	255	300
1,000	90	180	270	300

DELINEATOR SPACING NOTES

1. Spacing for specific radii may be interpolated from the table.
2. Values shown for S in the table are computed from the formula $S = 3\sqrt{R-50}$, where S = delineator spacing and R = horizontal curve radius. Values are rounded to the nearest 5 feet.

NO SCALE

Adapted from CALTRANS Standard Plan A73 C.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

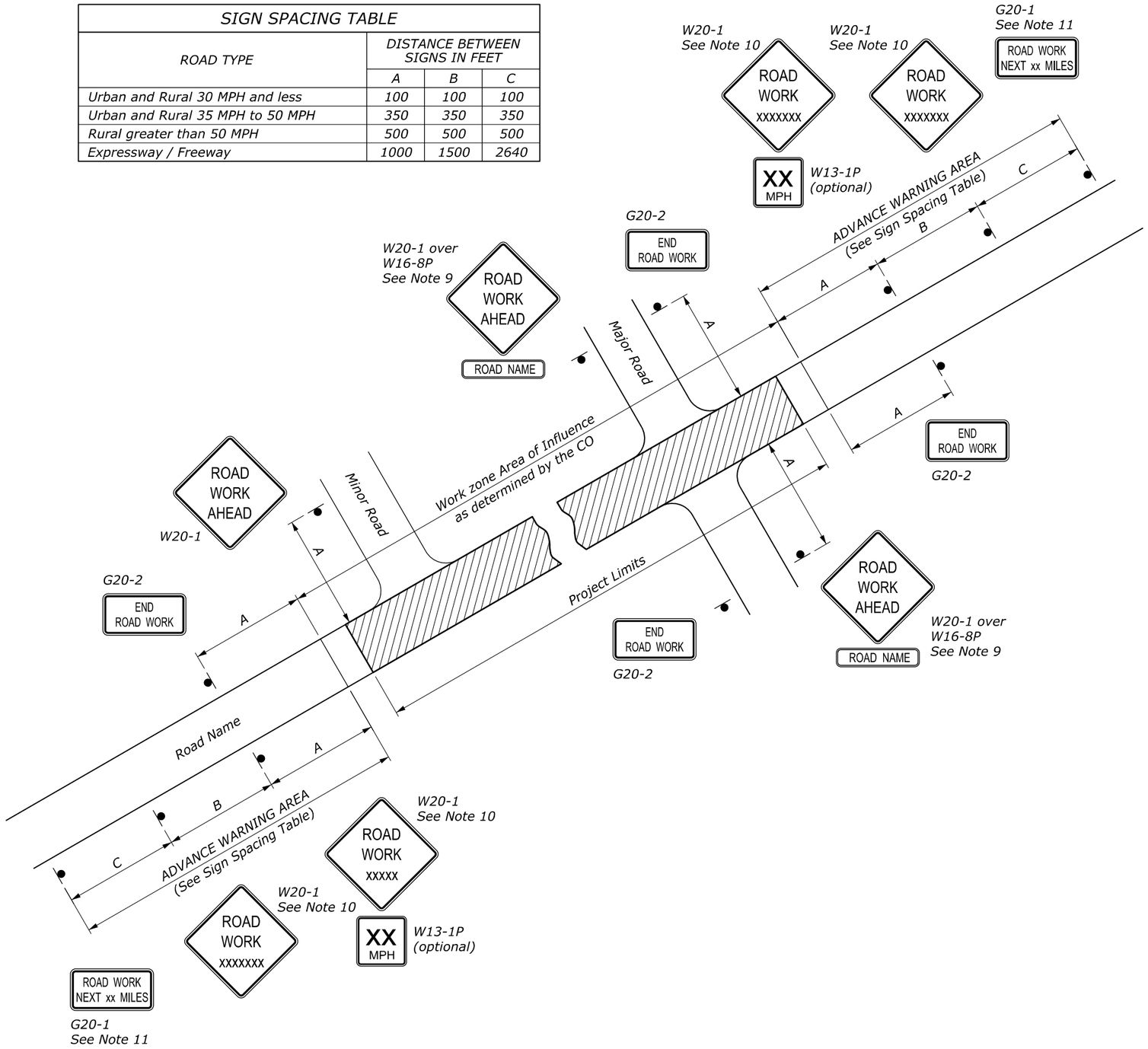
CFLHD SPECIAL

DELINEATORS

SPECIAL
633-B

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T13

SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban and Rural 30 MPH and less	100	100	100
Urban and Rural 35 MPH to 50 MPH	350	350	350
Rural greater than 50 MPH	500	500	500
Expressway / Freeway	1000	1500	2640



NOTE:

1. Erect all project advance warning signs before starting construction work.
2. Not all details shown on the temporary traffic control sheets may be applicable to this project. The Contractor may add or delete information and details in this traffic control plan as necessary to accommodate actual operations.
3. Where advance warning signs, placed as shown, interfere with permanent signs, locate the warning signs as determined by the CO for best results. Vary messages as required.
4. Additional or different message signs may be required to fit the actual construction conditions.
5. Install advisory speed plates under the W20 series warning signs as needed to indicate a maximum recommended speed through the construction area.
6. Ensure all sign supports exposed to impact by traffic meet the requirements of NCHRP-350 or MASH for crashworthiness.
7. Maintain two-way traffic during all non-work hours except as approved by the CO.
8. Do not store traffic control devices along the roadway when not in use. Cover post-mounted signs when not applicable.
9. If W20-1 is placed on a roadway other than that on which the actual construction work occurs, include a supplementary plaque indicating the name of the road on which the construction does occur (applies to major roads only).
10. The message on the W20-1 signs may be "ROAD WORK AHEAD" or may specify the distance to the work area in feet or in miles. Install an additional W20-1 sign when approach speeds exceed 50 MPH. When used place the two W20-1 signs "B" feet apart according to the Sign Spacing Table.
11. For work zones that are 2 miles or more in length, install G20-1 signs at each end of the project. Show the distance on the G20-1 sign to the nearest whole mile.
12. If signing on a roadway under a jurisdiction other than the client agency, verify that an encroachment permit has been obtained.
13. State standards may be used as an alternative if approved by the CO.
14. Refer to the Section 635 of the Special Contract Requirements for allowable retroreflective sheeting types.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

TEMPORARY TRAFFIC CONTROL ADVANCE SIGNING

STANDARD APPROVED FOR USE 6/2005
REVISED:
DRAFT: 6/2014

STANDARD 635-1

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STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T14

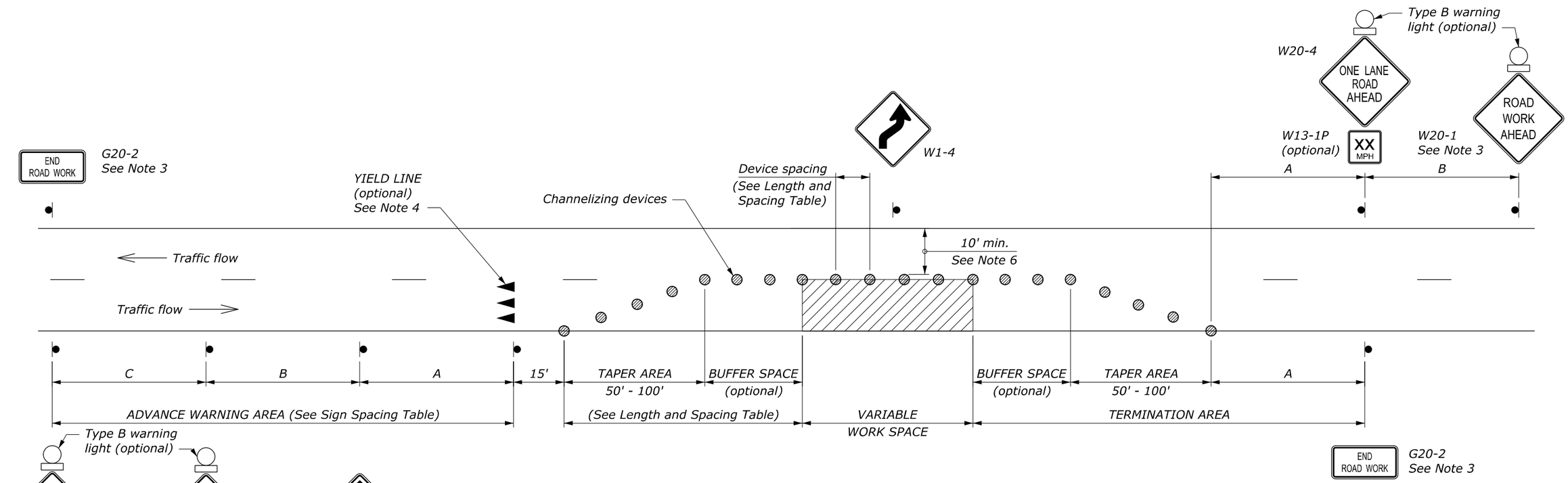
LENGTH AND SPACING TABLE				
APPROACH SPEED*	BUFFER SPACE LENGTH	CHANNELIZING DEVICE		
		TAPER AREA	BUFFER SPACE	WORK SPACE
MPH	FEET	SPACING IN FEET		
20	115	20	40	40
25	155	20	50	50
30	200	20	60	60
35	250	20	70	70
40	305	20	80	80
45	360	20	90	90
50	425	20	100	100
55	495	20	110	110
60	570	20	120	120
65	645	20	130	130
70	730	20	140	140

* Approach speed based on the regulatory posted speed, not the advisory speed.

SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban and Rural 30 MPH and less	100	100	100
Urban and Rural 35 MPH to 50 MPH	350	350	350
Rural greater than 50 MPH	500	500	500
Expressway / Freeway	1000	1500	2640

NOTE:

1. Use this layout only if sufficient gaps in oncoming traffic exist for traffic that must yield, and if drivers from both directions are able to see approaching traffic through and beyond the work site.
2. Final location and spacing of devices may be changed to fit field conditions as approved by the CO.
3. If closure is completely within the project limits, eliminate the ROAD WORK AHEAD (W20-1) and END ROAD WORK (G20-2) signs.
4. If the surface is paved, install yield lines that comply with Section 3B.16 of the MUTCD.
5. Use the YIELD AHEAD (W3-2) sign when approach speeds exceed 50 MPH.
6. For project specific minimum width, refer to Special Contract Requirements, Section 156.
7. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

FLH STANDARD

TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT (WITH YIELD SIGN)

STANDARD APPROVED FOR USE 6/2005
REVISED: 7/2022

STANDARD 635-7

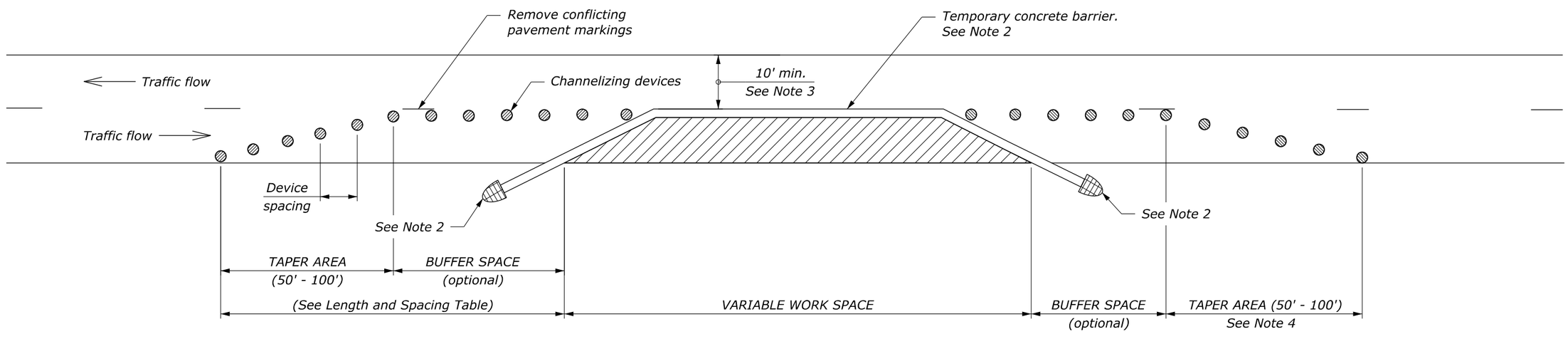
STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T15

LENGTH AND SPACING TABLE						
APPROACH SPEED*	BUFFER SPACE LENGTH	CHANNELIZING DEVICE			CONCRETE BARRIER FLARE RATE	WORK ZONE CLEAR ZONE WIDTH
		TAPER AREA	BUFFER SPACE	WORK SPACE		
MPH	FEET	SPACING IN FEET				FEET
20	115	20	40	40	1:8	10
25	155	20	50	50	1:8	10
30	200	20	60	60	1:8	10
35	250	20	70	70	1:9	10
40	305	20	80	80	1:10	15
45	360	20	90	90	1:12	20
50	425	20	100	100	1:14	20
55	495	20	110	110	1:16	20
60	570	20	120	120	1:16	30
65	645	20	130	130	1:16	30
70	730	20	140	140	1:16	30

* Approach speed based on the regulatory posted speed, not the advisory speed.

NOTE:

1. Install signs and other devices for single lane closure according to Standard 635-6, 7, 8, or 9. Final location and spacing of devices may be changed to fit field conditions as approved by the CO.
2. Place barrier according to the AASHTO Roadside Design Guide. Terminate barrier ends outside the work zone clear zone or protect the barrier ends with a crash cushion. Include reflectors on barrier at 25' intervals.
3. For project specific minimum width, refer to Special Contract Requirements, Section 156.
4. Place channelizing devices at downstream taper during non-work hours or when access is not needed.
5. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
6. Reduce or eliminate drums and barrier in downstream taper if necessary to provide access to work space.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

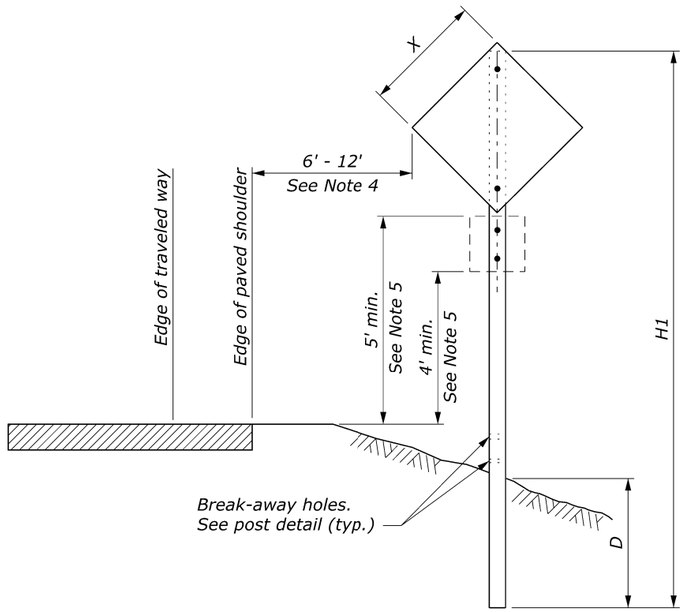
FLH STANDARD

TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT WITH TEMPORARY BARRIER

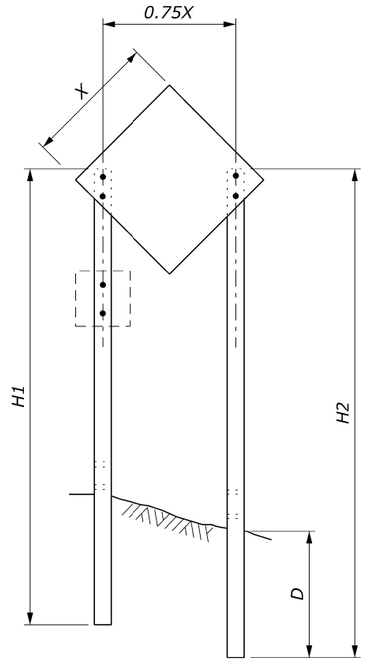
STANDARD APPROVED FOR USE 6/2005
REVISED: 7/2022

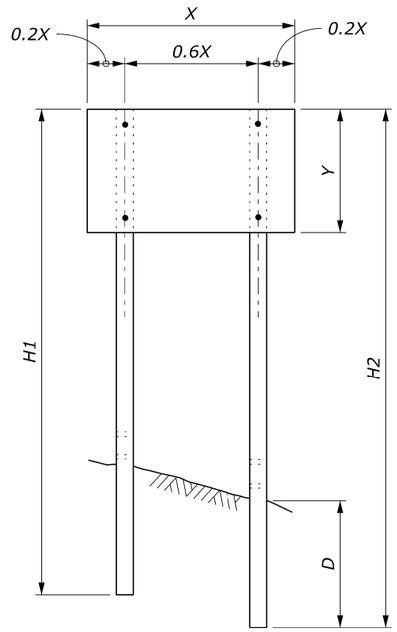
STANDARD 635-13

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T16



SINGLE POST SIGN





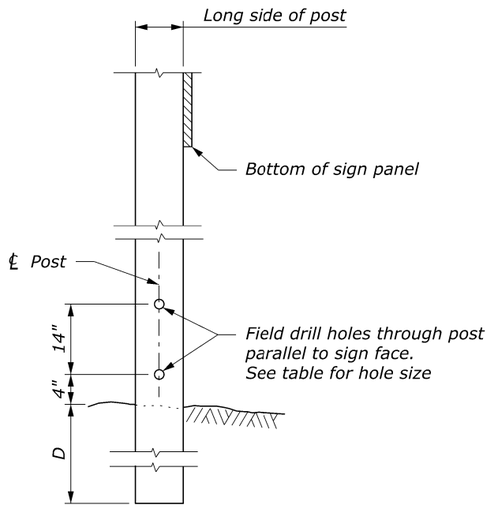
TWO POST SIGN

NOTE:

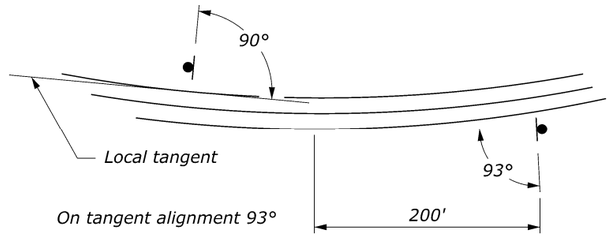
1. *Attach sign panels with a minimum of 2 - ¼" dia. bolts per post.*
2. *H1 and H2 = Overall post length. Select post lengths to fit field conditions.*
3. *D = Post embedment depth for average soil conditions.*
4. *In areas where lateral distance is limited, a minimum lateral offset of 2' may be used. In areas with curbs, a minimum lateral distance of 1' behind the face of the curb may be used.*
5. *In pedestrian locations, or in areas with obstructed views, use 7' minimum mounting height for main sign and 6' minimum mounting height for secondary sign.*
6. *Use 7' minimum spacing between posts for sign posts 6" x 6" or larger.*
7. *State standards may be used as an alternative if approved by the CO.*

WOOD POST SELECTION TABLE

WIDTH "X"	AREA (SQFT)	NUMBER OF POSTS	POST SIZE (INCH)	D (INCH)	HOLE SIZE (INCH)
Diamond ≤ 36" Other Shapes ≤ 48"	< 10	1	4 x 4	36	0
		1	4 x 6	48	1.5
Diamond ≤ 48"	10 - 20	1	6 x 6	48	2
Diamond ≤ 48" Other Shapes ≤ 12'	10 - 20	2	4 x 4	36	0
	20 - 50	2	4 x 6	48	1.5
> 13'	50 - 65	2	6 x 6	48	2
12' - 16'	50 - 65	3	4 x 6	48	1.5
> 17'	65 - 95	4	4 x 6	48	1.5
> 30'	65 - 95	3	6 x 6	48	2



POST DETAIL



SIGN INSTALLATION ANGLE

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD

TEMPORARY TRAFFIC CONTROL SIGN INSTALLATION WOOD POSTS

STANDARD APPROVED FOR USE 6/2005

REVISED:
DRAFT: 10/2017

STANDARD 635-14

STATE	PROJECT	SHEET NUMBER
CA	ERFO FS LSPDR 2021-1(1) NACI-FERGUSSON RD	T17

N

Forest Rte 22S05

Install R11-2 and M4-9L,R signs at West Side closure interection, Lt & Rt.

East Side

West Side

57 Miles to Monterey, CA

Hare Creek

Kirk Creek

Pacific Coast Hwy

Nacimiento-Fergusson Rd

Mills Creek

Coast Ridge Trail

ROAD CLOSED

DETOUR

ROAD CLOSED

DETOUR

Nacimiento-Fergusson Rd

30 Miles to Hunter Liggett, CA

Los Padres National Forest

Pacific Coast Hwy

Los Padres National Forest

Install M4-8 and M6-3 at interection, Lt.

DETOUR

Coast Ridge Trail

Prewitt Creek

Plasket Ridge Rd

Forest Rte 23S14

Pacific Coast Hwy

Install M4-8 and M6-3 signs at interection, Rt.

DETOUR

Coast Ridge Trail

Install M4-9L, R sign at interection, Lt & Rt.

DETOUR

DETOUR

Los Burros Rd

Willow Creek

Willow Creek Trail

DETOUR

Will Creek Rd

12.5 Miles to Ragged Point, CA

Will Creek Rd

DETOUR

Los Burros Rd

Install M4-9L, R sign at interection, Lt & Rt.

No Scale

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
OFFICE OF FEDERAL LANDS HIGHWAY

DETOUR PLAN

1 March 2023 9:02 AM N:\CA\erfo22s01(1)\Roadway\CADD_Sheets\T-600\T17-Detour Plan.dgn [Untitled Sheet]