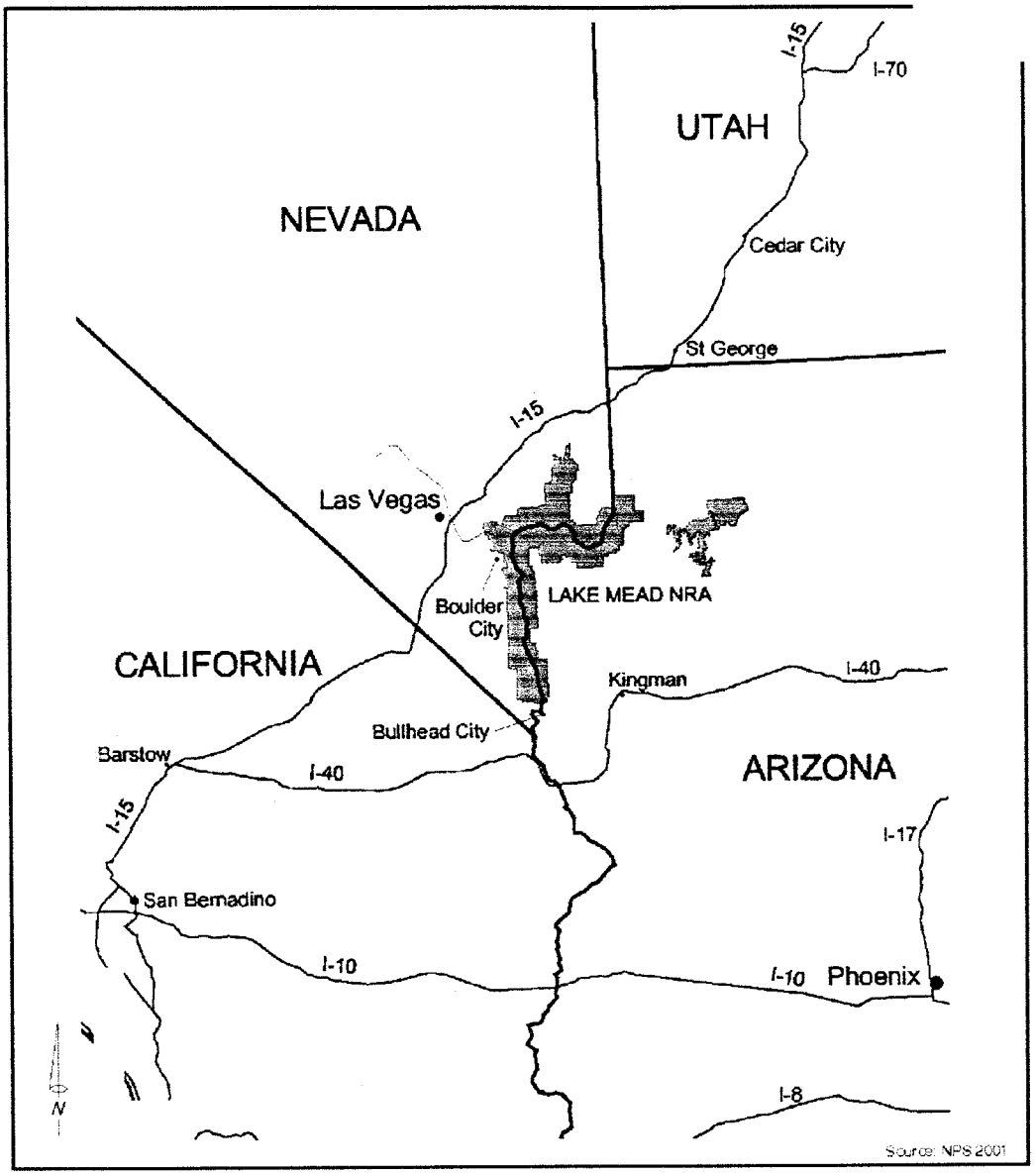
Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 1-1 Regional Map

PN 200125074



0 50
Scale: 1 inch = 50 miles
(1 centimeter = 32 kilometers)

Regional Map

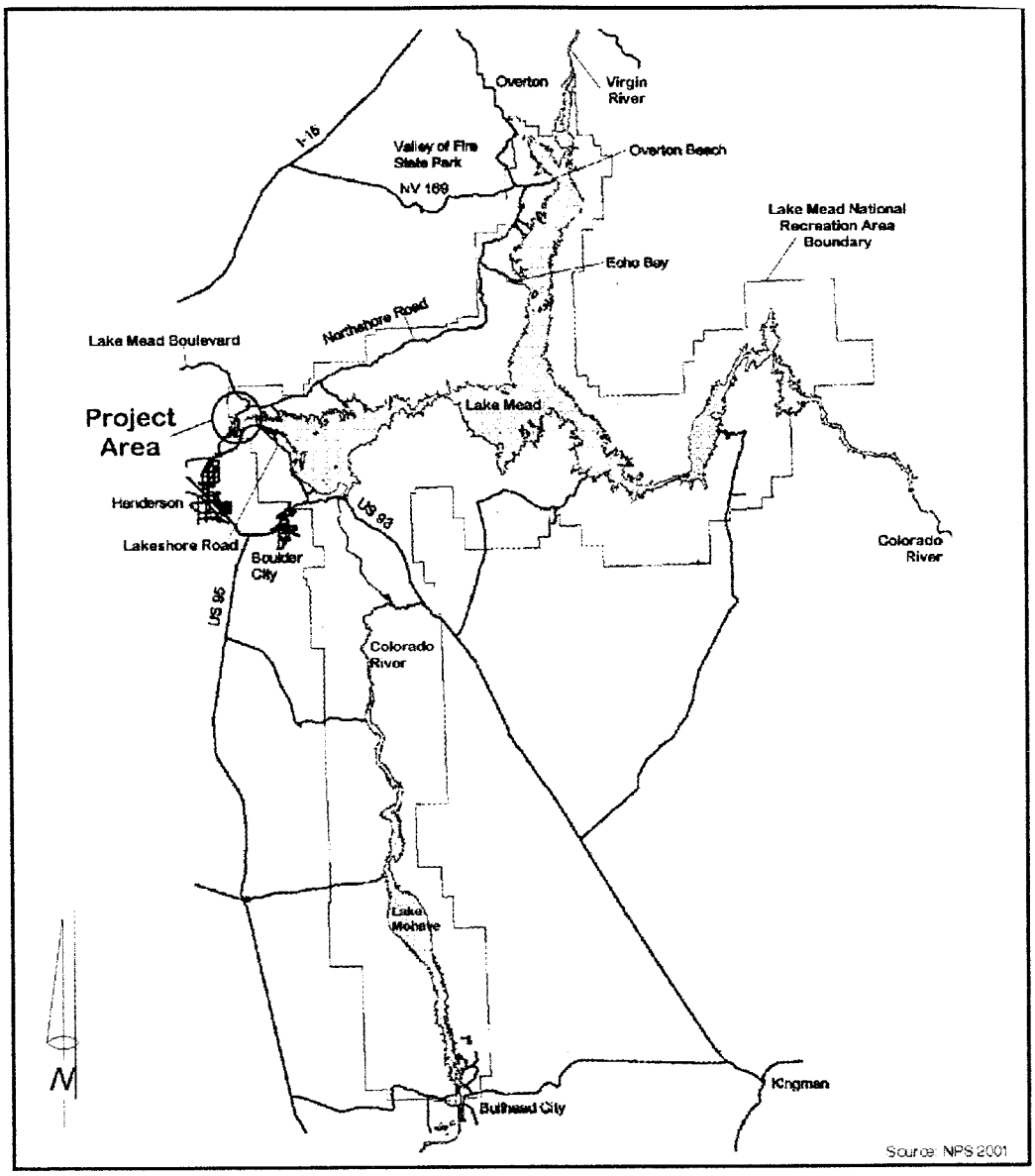
Lake Mead National Recreation Area, Nevada

Tetra Tech, Inc.

Figure 1-1

Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 1-2 General Project Area Map

PN 200125074



0 13
Scale: 1 inch = 13 miles
(1 centimeter = 8 kilometers)

Las Vegas Wash Stabilization Project Area

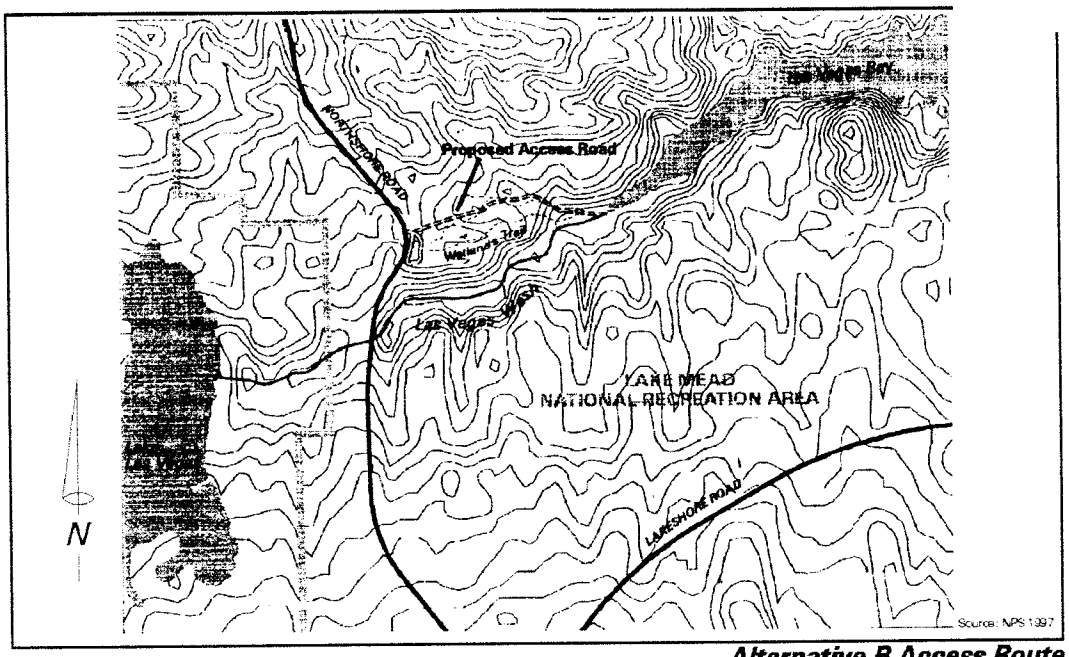
Las Vegas Wash, Nevada

Tetra Tech, Inc.

Figure 1-2

Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 1-3 – Proposed Access Route for Construction Access

PN 200125074



Alternative B Access Route

0 1,000
Scale: 1 inch = 1,000 feet
(1 centimeter = 122 meters)

Las Vegas Wash, Nevada

Tetra Tech, Inc.

Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 2-1 Detailed Vicinity Map

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
W	NV	PRA LAME-1(5) NORTHSHORE DRIVE	A.1	xx

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

LAKE MEAD NATIONAL RECREATION AREA

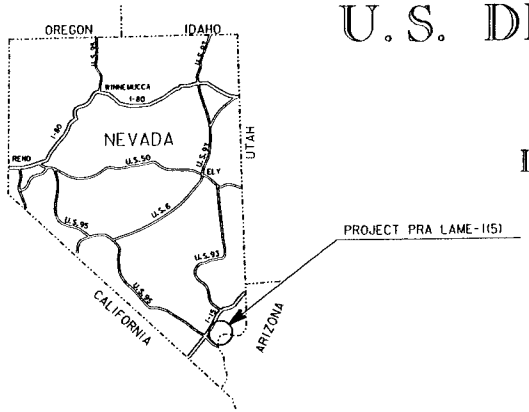
PLANS FOR PROPOSED

NEVADA PROJECT PRA LAME-1(5)

NORTHSHORE DRIVE

OVER LAS VEGAS WASH
CLARK COUNTY
NEVADA

MAINLINE PROJECT LENGTH 4.52 km



INDEX TO SHEETS

SHEET NO	DESCRIPTION
A.1	TITLE SHEET
A.2	CONVENTIONAL SYMBOLS
A.3	SURVEY INFORMATION
A.4-A.5	TABULATION OF QUANTITIES
A.6-A.7	SUMMARIES
B.1-B.3	LAS VEGAS WASH PLAN & PROFILE SHEETS
C.1-C.2	CONSTRUCTION ACCESS LOCATION PLAN
C.3-C.4	
D.1-D.2	GRADE CONTROL STRUCTURE No. 1 PLANS
D.3.-D.4	GRADE CONTROL STRUCTURE No. 2 PLANS
D.5.-D.6	GRADE CONTROL STRUCTURE No. 3 PLANS
D.7	ROLLER COMPACTED CONCRETE DETAILS
E.1	TRAFFIC CONTROL
F.1-F.5	DETAILS & STANDARDS
G.1-G.9	GRADE CONTROL STRUCTURE CROSS-SECTIONS

PN 200125074

DESCRIPTION OF PROJECT IMPROVEMENT:

BRIDGE: PIER PROTECTION, SCOUR PROTECTION, LONG TERM STREAM STABILIZATION

TYPE CODE: XXXX

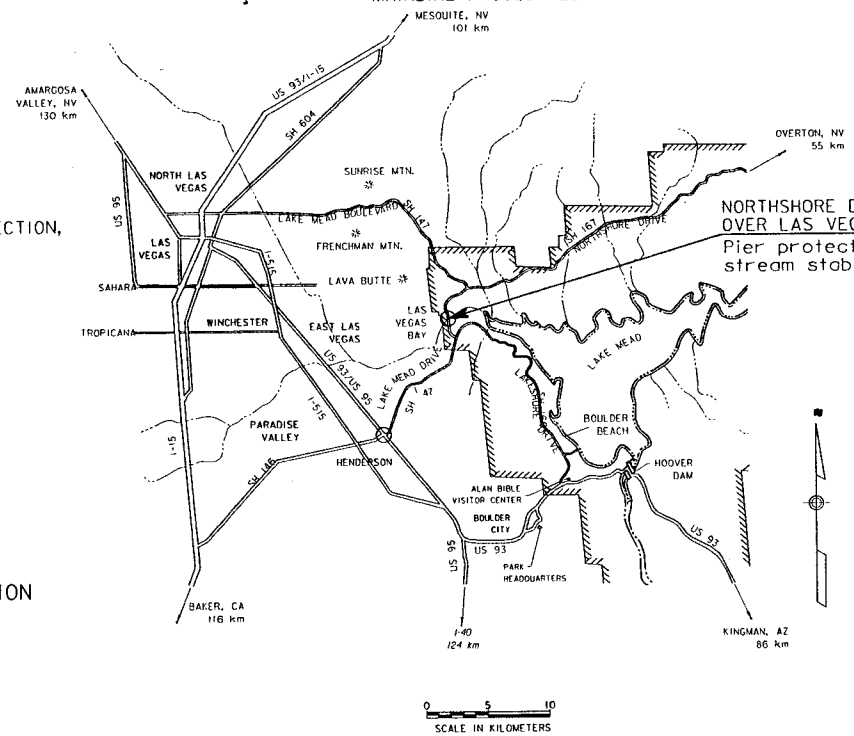
DESIGN DESIGNATION
ADT(2000) — XXXX
ADT(2021) — XXXX
DHV — XXX
D — 50%
V — 70 km/h
T — 1 %
e(max) — 8 %

SPECIFICATIONS:
"Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects", FP-96.

PLANS PREPARED BY

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

U.S. DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE
DENVER, COLORADO



NORTHSHORE DRIVE
OVER LAS VEGAS WASH, PROJ. 1(5)
Pier protection, scour protection and stream stabilization

RECOMMENDED: DATE:

DIVISION ENGINEER, CENTRAL FEDERAL LANDS HIGHWAY DIVISION
FEDERAL HIGHWAY ADMINISTRATION

PROJECT MANAGER, DENVER SERVICE CENTER, NATIONAL PARK SERVICE

ALAN O'NEILL
SUPERINTENDENT, LAKE MEAD NATIONAL RECREATION AREA

APPROVED: DATE:

JOHN J. REYNOLDS
REGIONAL DIRECTOR, PACIFIC WEST REGION, NATIONAL PARK SERVICE

PROJECT MANAGER	LEAD DESIGNER
Dave Gedron	Jeff Bellen

Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 2-2 – Conventional Plan Symbols and Abbreviations

PN 200125074

REG	STATE	PROJECT	SHEET NO.
W	NV	PRA LAME-1(5) NORTHSHORE DRIVE	A.4

Abutment	abut.
Aggregate	aggr.
Ahead	Aht
Alternate	alt.
And	&
And Others	et al
And Wife	et ux
And So Forth (et cetera)	etc.
Approach	appr.
Approximate	approx.
Asphalt	asph.
Average Daily Traffic	ADT
Back	BK
Back to Back	b. to b.
Balance Point	BP
Batter	btr.
Beam	bm.
Bearing	brg.
Beginning	beg.
Bench Mark	BM
Bridge	br.
Basic Management, Inc.	BMI
Centerline	℄
Center to Center	cc or c.to c.
Centers	ctrs.
Channel Change	ch. ch.
Clear	clr.
Column	col.
Concrete	conc.
Connection	conn.
Construction	constr.
Construction Joint	constr. jt.
Contingent Sum	CTSM
Continuous	cont.
Contracting Officer	co
Corrugated	corr.
Corrugated Metal Pipe	CMP
County	co.
Countersink	ctsk.
Creek	cr.
Cubic millimeters	cu mm(s)
Cubic Meter	CU. m.
Culvert	culv.
Curve Delta	Δ
Curve Left	CL
Curve Right	CR
Degree	°, deg.
Degree of Curve	D
Design Hour Volume	DHV
Diagonal	diag.
Diameter	dia. or D
Diaphragm	diaph.
District	Dist.
Donation Land Claim	DLC
Drawing(s)	drwg(s).
East	E
Edge of Pavement	EP
Edge of Water	EW
Edge of Road	ER
Elevation	elev.
Elevation with Number	El. 94.0
Embankment	emb.
Equation	EQ or eq.
Excavation	exc.
Expansion Joint	exp. jt.
Federal	Fed.
Finish	fin.
Flange	flg.
Footing	ftg.
For example	e.g.
Galvanized	galv.
Gauge (Gage)	ga.
Headwall	hdwl.
Hexagon	hex.
High Water	HW
Highway	hwy.
House	hse.
Homestead Entry Survey	HES
Hot Asphalt Concrete Pavement	HACP
Inclusive	incl.
Inside Diameter	ID
Joint	jt.
Kilogram	kg
Kilogram Per Square Meter	kg/m2
Kilogram Per Cubic Meter	kg/m3
Lamination	lam.
Latitude	lat.
Left	LT.

Length of Curve	L
Linear Meter	LN. m
Liter	L
Longitudinal	long.
Low Water	LW
Lump Sum	LS
Magnetic	mag.
Maintenance	maint.
Material	matl.
Maximum	max.
Meter (measurement)	m
Millimeter	mm
Minute(s) (angular)	'
Minimum	min.
Miscellaneous	misc.
Monument	mon.
Mountain(s)	min(s).
Negative	neg.
North	N
Number	no.
Original Ground	OG
Out to Out	o. to o.
Outside Diameter	OD
Pavement	pvmt.
Percent	pct. or %
Perforate	perf.
Plate	pl.
Point of Compound Curve	PCC
Point of Curve	PC
Point on Curve	POC
Point of Intersection	PI
Point of Spiral to Curve	PSC or SC
Point of Curve to Spiral	PCS or CS
Point on Spiral	POS
Point of Spiral to Tangent	PST or ST
Point on Tangent	POT
Point of Tangent to Spiral	PS or TS
Point of Tangent	PT
Portland Cement Concrete	P.C.C.
Project	PROJ.
Quantities	quant.
Radius	R
Range	R.
Reconstruction	reconst.
Reinforcement	reinf.
Reinforced Concrete Box Culvert	RCBC
Required	reqd.
Retaining Wall	ret. wall
Right	RT.
Right-of-Way	R/W
Road	rd.
Roadway	rdwy.
Route	rte.
Section	sec.
Slope Protection	sl. prot.
Slurry Unit	slry unit
South	S
Spacing, Spaces, of Spaced	spa.
Specification	spec.
Square	sq
Square meter	sq m
Standard	std.
Station	STA.
Stiffener	stiff.
Straight	str.
Street	st.
Stringer	stgr.
Structural	struc.
Superelevation Rate	e
Symmetrical	sym.
Tangent	tan.
Tangent Length	T
Temporary Bench Mark	TBM
Thousand	M
Thousand Feet Board Measure	MFBM
That is	i.e.
Thread	thd.
Township	T.
Typical	typ.
Vehicles Per Hour	vph
Vertical Point of Intersection	VPI
Warehouse	whs.
Water Tank	WT
West	W

PROJECTED CENTERLINE
STAKED CENTERLINE
REVISED CENTERLINE
NATIONAL BOUNDARY
STATE BOUNDARY
COUNTY BOUNDARY
CITY BOUNDARY
TOWNSHIP or RANGE LINE
SECTION LINE
1/4 SECTION LINE
1/16 SECTION LINE
NATIONAL PARK or FOREST BOUNDARY
PROPERTY LINE
RIGHT-OF-WAY LINE — EXISTING / PROPOSED
RIGHT-OF-WAY LINE with MONUMENT — EXISTING / PROPOSED
PARTIAL CONTROL OF ACCESS — EXISTING / PROPOSED
FULL CONTROL OF ACCESS — EXISTING / PROPOSED
EASEMENT (Permanent - Construction)
SLOPE STAKE — TOP OF CUT / TOE OF FILL / TRANSITION
ROADWAY, EXISTING
RAILROAD — SINGLE TRACK / MULTIPLE TRACK
TRAIL
IRRIGATION OR FURROW DITCH
INTERMITTENT DRAINAGE and SMALL CREEK
LARGE CREEK
RIVER
LAKE, POND or RESERVOIR; MARSHLAND
SPRING
ROCK OUTCROP
TEMPORARY TORTOISE FENCE
TEMPORARY CONSTRUCTION FENCE
PERMANENT TORTOISE FENCE
OBLITERATION
GABION
RIPRAP WATERWAY
SPECIAL DITCH
DRAINAGE STRUCTURE REFERENCE NUMBER
DROP INLET REFERENCE NUMBER
GUARDRAIL REFERENCE NUMBER
SIGN REFERENCE NUMBER

NORTH ARROW

		EXISTING	PROPOSED
FENCE			
GATE with FENCE			
CATTLEGUARD			
GUARDRAIL			
MEDIAN & SIDE BARRIER			
SIGNS	POST MOUNTED		
	PORTABLE	No Symbol	
	COMMERCIAL		
OVERHEAD UTILITY LINE with POLE P=power, T=telephone, P&T=joint use, CATV=cable, C=conduit			
SUPPORT POLE with ANCHOR			
TELEPHONE BOOTH or PEDESTAL		TB or TP	TB or TP
STREET LIGHT		or	or
UNDERGROUND UTILITIES G=gas, O=oil, P=power, C=conduit, SS=storm sewer, T=telephone, W=water			
BRIDGE			
PIPE CULVERT			
PIPE CULVERT with END SECTION			
PIPE CULVERT with HEADWALL			
PIPE CULVERT with HEADWALL AND WINGWALL			
PIPE CULVERT with INLET			
SINGLE OR MULTIPLE BOX CULVERT			
PIPE CULVERT IN PROFILE			
BOX CULVERT IN PROFILE			
UNDERDRAIN			
BUILDING			
TRAVERSE POINT (Horizontal & Vertical)		T-45 2,645.9	Top of Triangle Points North
TRAVERSE POINT (Horizontal, Vertical)		T-3	WP-36 RT 6256.07
BRASS CAP; STEEL PIN; HUB & TACK			
SPOT ELEVATION		99.9	
COORDINATE GRID TICK			
BORING LOCATION			
RIPRAP			

NOTE:
Other symbols when used in the plans will be either labeled or shown in a legend on a plan sheet.

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

CONVENTIONAL PLAN SYMBOLS AND ABBREVIATIONS

/LAME35/TITLE.DGN

Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 2-3 – Alignment Data

REG	STATE	PROJECT	SHEET NO.
W	NV	PRA LAME-1(5) NORTHSHORE DRIVE	A.x

PN 200125074

Las Vegas Wash Alignment -LV_WASH-

Point 1006 N 3,999,278.90200 E 688,179.14400 Sta 0+000.000
Course from 1006 to 1007 N 63° 53' 50.900" E Dist 62.99579
Point 1007 N 3,999,306.61881 E 688,235.71474 Sta 0+062.996
Course from 1007 to 1008 N 73° 12' 33.159" E Dist 28.83982
Point 1008 N 3,999,314.95000 E 688,263.32500 Sta 0+091.836
Course from 1008 to PC LV_WASH-1 N 74° 15' 51.720" E Dist 10.91818

Curve LV_WASH-1
P.I. Station 0+137.642 N 3,999,325.62699 E 688,307.85809
Delta = 71° 52' 57.297" (LT)
Tangent = 34.88804
Length = 60.37439
Radius = 48.12289
P.C. Station 0+102.754 N 3,999,317.91100 E 688,273.83400
P.T. Station 0+163.128 N 3,999,360.36362 E 688,311.10497

Curve LV_WASH-2
P.I. Station 0+223.447 N 3,999,420.54389 E 688,314.99775
Delta = 63° 09' 48.412" (RT)
Tangent = 39.72006
Length = 71.22694
Radius = 64.61020
P.C. Station 0+183.727 N 3,999,380.87300 E 688,313.02200
P.T. Station 0+254.954 N 3,999,436.69022 E 688,351.28796

Course from PT LV_WASH-2 to 1009 N 66° 00' 52.671" E Dist 81.57073
Point 1009 N 3,999,469.84900 E 688,425.81500 Sta 0+336.525
Course from 1009 to 1010 N 62° 31' 08.963" E Dist 73.56116
Point 1010 N 3,999,503.79395 E 688,491.07590 Sta 0+410.086
Course from 1010 to PC LV_WASH-3 N 70° 10' 16.598" E Dist 29.29179

Curve LV_WASH-3
P.I. Station 0+453.325 N 3,999,514.15656 E 688,532.57237
Delta = 10° 18' 09.501" (LT)
Tangent = 13.94790
Length = 27.82059
Radius = 154.71788
P.C. Station 0+439.378 N 3,999,513.73000 E 688,518.63100
P.T. Station 0+467.198 N 3,999,517.06963 E 688,546.21268

Curve LV_WASH-4
P.I. Station 0+497.591 N 3,999,523.41734 E 688,575.93560
Delta = 25° 38' 20.635" (LT)
Tangent = 30.39319
Length = 59.76863
Radius = 133.56533
P.C. Station 0+467.198 N 3,999,517.06963 E 688,546.21268
P.T. Station 0+526.967 N 3,999,542.00117 E 688,599.98528

Grade Control Structure No.1 Alignment -GCS_1-

Point 101 N 3,999,563.066 E 688,563.251 Sta 10+000.000
Course from 101 to 102 S 21° 46' 09.021" E Dist 67.328
Point 102 N 3,999,500.539 E 688,588.221 Sta 10+067.328

Grade Control Structure No.2 Alignment -GCS_2-

Point 201 N 3,999,678.771 E 688,717.752 Sta 20+000.000
Course from 201 to 202 S 18° 41' 52.423" W Dist 5.375
Point 202 N 3,999,673.680 E 688,716.029 Sta 20+005.375
Course from 202 to 203 S 32° 22' 02.682" E Dist 63.430
Point 203 N 3,999,620.105 E 688,749.986 Sta 20+068.805

Curve LV_WASH-5
P.I. Station 0+598.533 N 3,999,585.75987 E 688,656.61421
Delta = 10° 38' 35.245" (RT)
Tangent = 71.56577
Length = 142.71973
Radius = 768.31184
P.C. Station 0+526.967 N 3,999,542.00117 E 688,599.98528
P.T. Station 0+669.687 N 3,999,618.30690 E 688,720.35077

Curve LV_WASH-6
P.I. Station 0+735.261 N 3,999,654.71257 E 688,774.89118
Delta = 22° 34' 17.922" (RT)
Tangent = 38.10654
Length = 75.22485
Radius = 190.95048
P.C. Station 0+697.155 N 3,999,633.55658 E 688,743.19682
P.T. Station 0+772.379 N 3,999,662.08249 E 688,812.27824

Curve LV_WASH-7
P.I. Station 0+812.571 N 3,999,669.85573 E 688,851.71126
Delta = 50° 47' 44.414" (RT)
Tangent = 40.19186
Length = 75.04848
Radius = 84.65212
P.C. Station 0+772.379 N 3,999,662.08249 E 688,812.27824
P.T. Station 0+847.428 N 3,999,644.21259 E 688,882.65984

Curve LV_WASH-8
P.I. Station 0+883.226 N 3,999,621.37276 E 688,910.22511
Delta = 71° 36' 57.996" (LT)
Tangent = 35.79807
Length = 62.02254
Radius = 49.62054
P.C. Station 0+847.428 N 3,999,644.21259 E 688,882.65984
P.T. Station 0+909.450 N 3,999,640.32796 E 688,940.59289

Course from PT LV_WASH-8 to 1011 N 58° 01' 41.158" E Dist 25.23827
Point 1011
N 3,999,653.69170 E 688,962.00271 Sta 0+934.689
Course from 1011 to 1012 N 41° 32' 32.893" E Dist 24.14251
Point 1012 N 3,999,671.76151 E 688,978.01342 Sta 0+958.831
Course from 1012 to 1013 N 49° 25' 59.305" E Dist 61.00932
Point 1013 N 3,999,711.43800 E 9,024.35900 Sta 1+019.841
Course from 1013 to 1014 N 55° 23' 12.832" E Dist 35.26018
Point 1014 N 3,999,731.46691 E 689,053.37836 Sta 1+055.101
Course from 1014 to 1015 N 56° 18' 07.532" E Dist 34.42972
Point 1015 N 3,999,750.56900 E 689,082.02300 Sta 1+089.530
Course from 1015 to 1016 N 56° 50' 35.900" E Dist 6.76320
Point 1016 N 3,999,754.26800 E 689,087.68500 Sta 1+096.294
Course from 1016 to 1017 N 56° 21' 35.438" E Dist 82.77988
Point 1017 N 3,999,800.12600 E 689,156.60200 Sta 1+179.074
Course from 1017 to 1018 N 50° 00' 23.613" E Dist 59.19715
Point 1018 N 3,999,838.17200 E 689,201.95400 Sta 1+238.271
Course from 1018 to 1019 N 40° 39' 57.777" E Dist 43.37918
Point 1019 N 9,999,871.07600 E 689,230.22200 Sta 1+281.650

Grade Control Structure No.3 Alignment -GCS_3-

Point 301 N 3,999,701.228 E 688,949.822 Sta 30+000.000
Course from 301 to 302 S 36° 38' 12.198" E Dist 66.000
Point 302 N 3,999,648.267 E 688,989.207 Sta 30+066.000

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

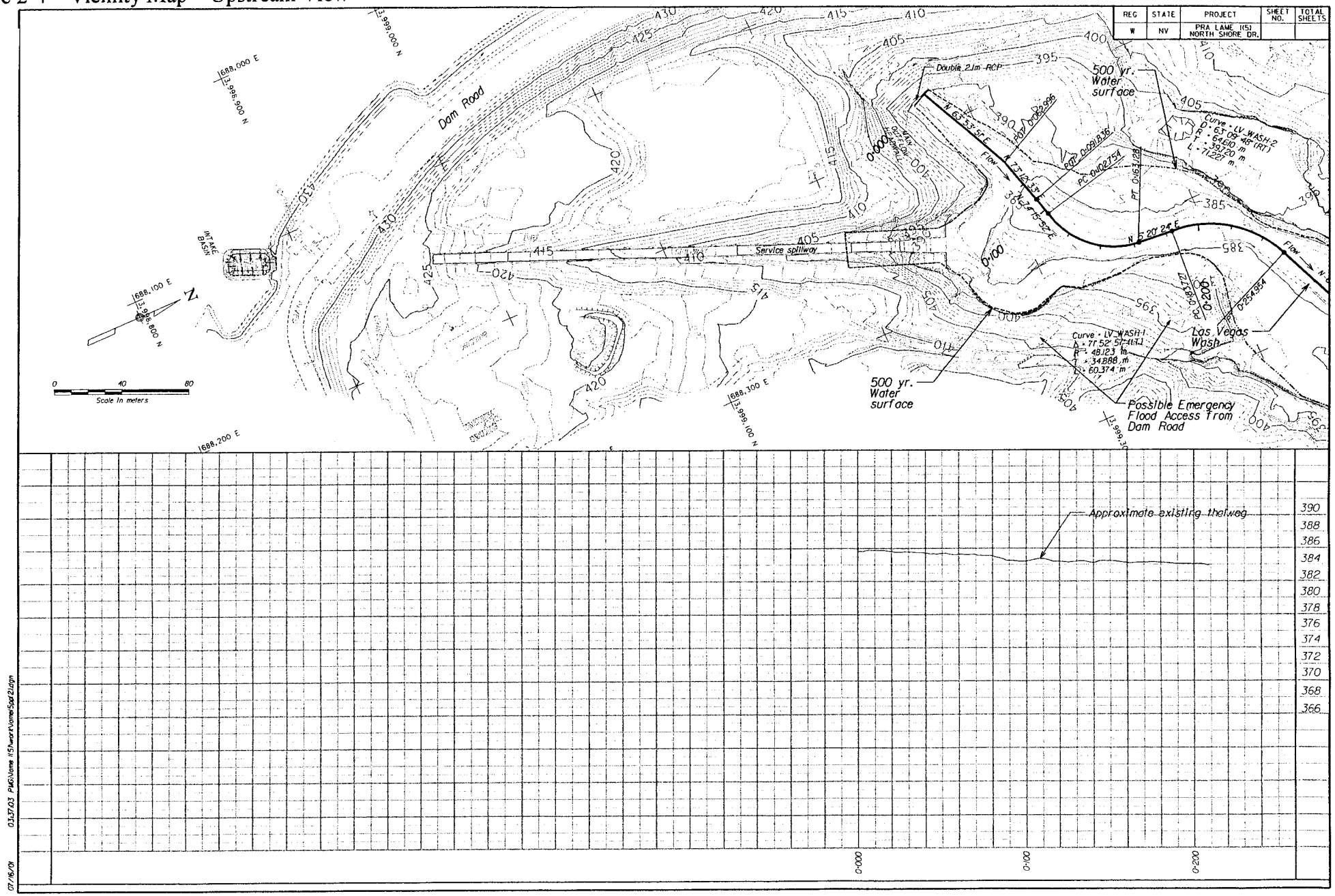
ALIGNMENT DATA

LAME35/TITLE.DGN

Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area

Figure 2-4 – Vicinity Map – Upstream View

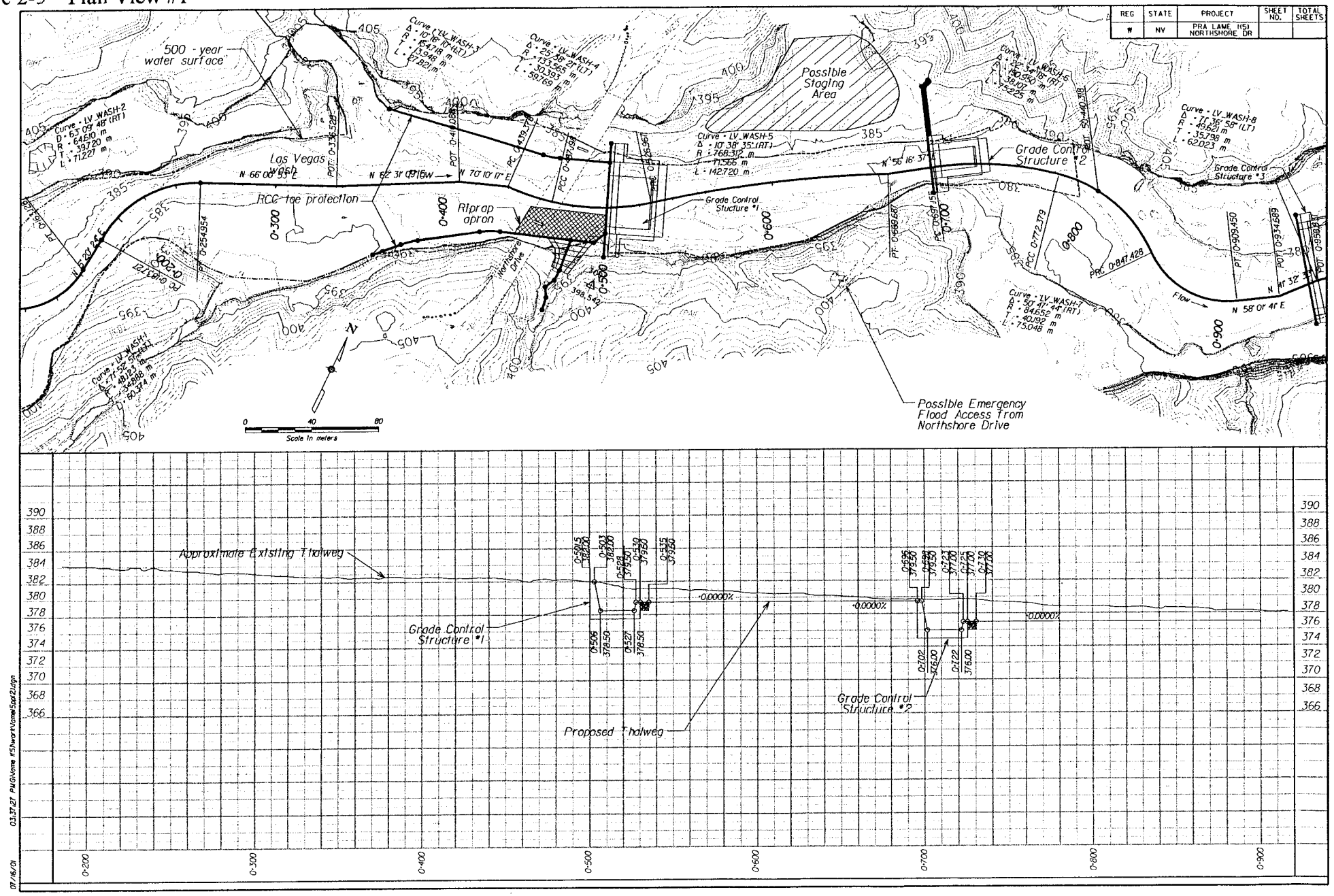
PN 200125074



Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area

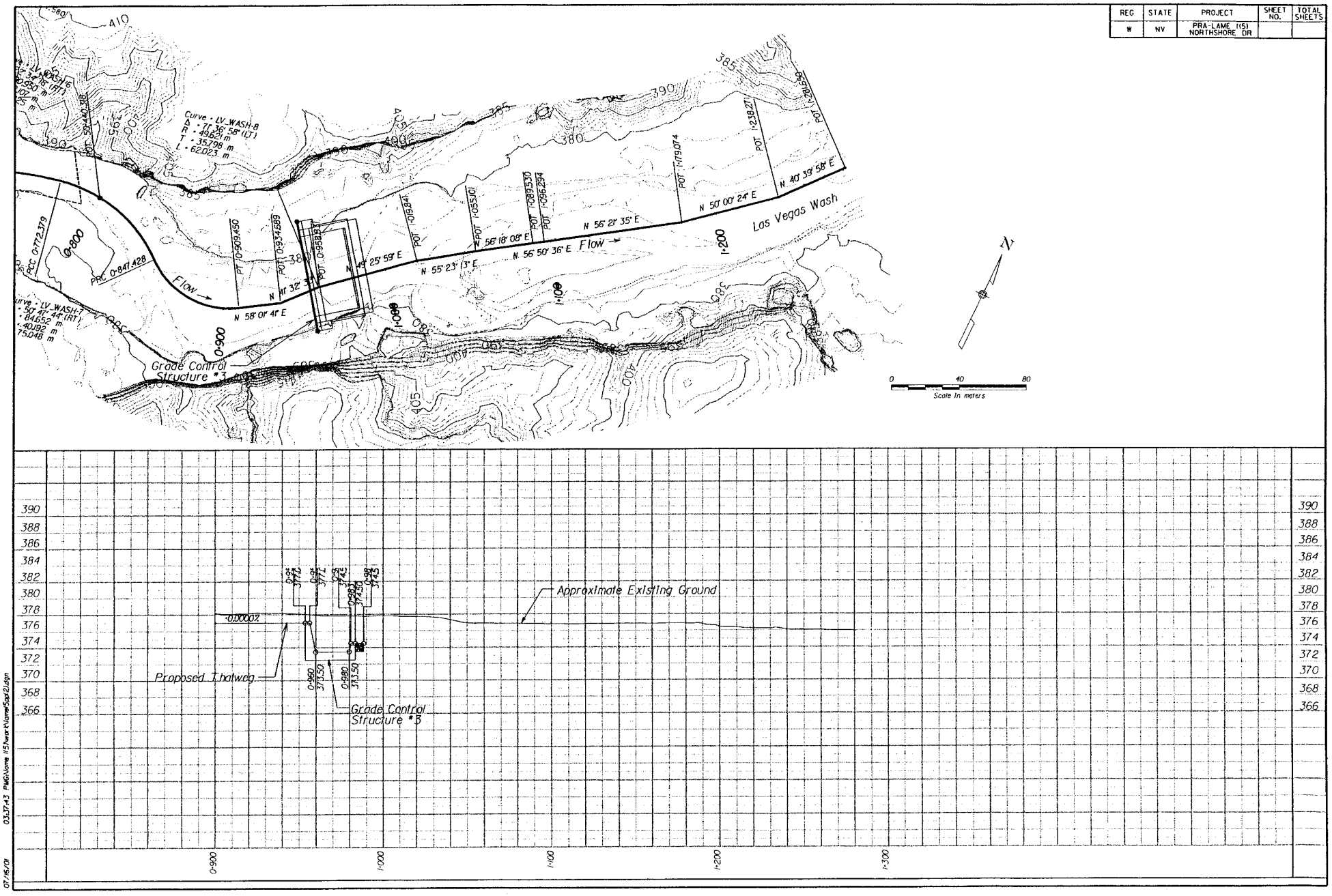
Figure 2-5 – Plan View #1

PN 200125074



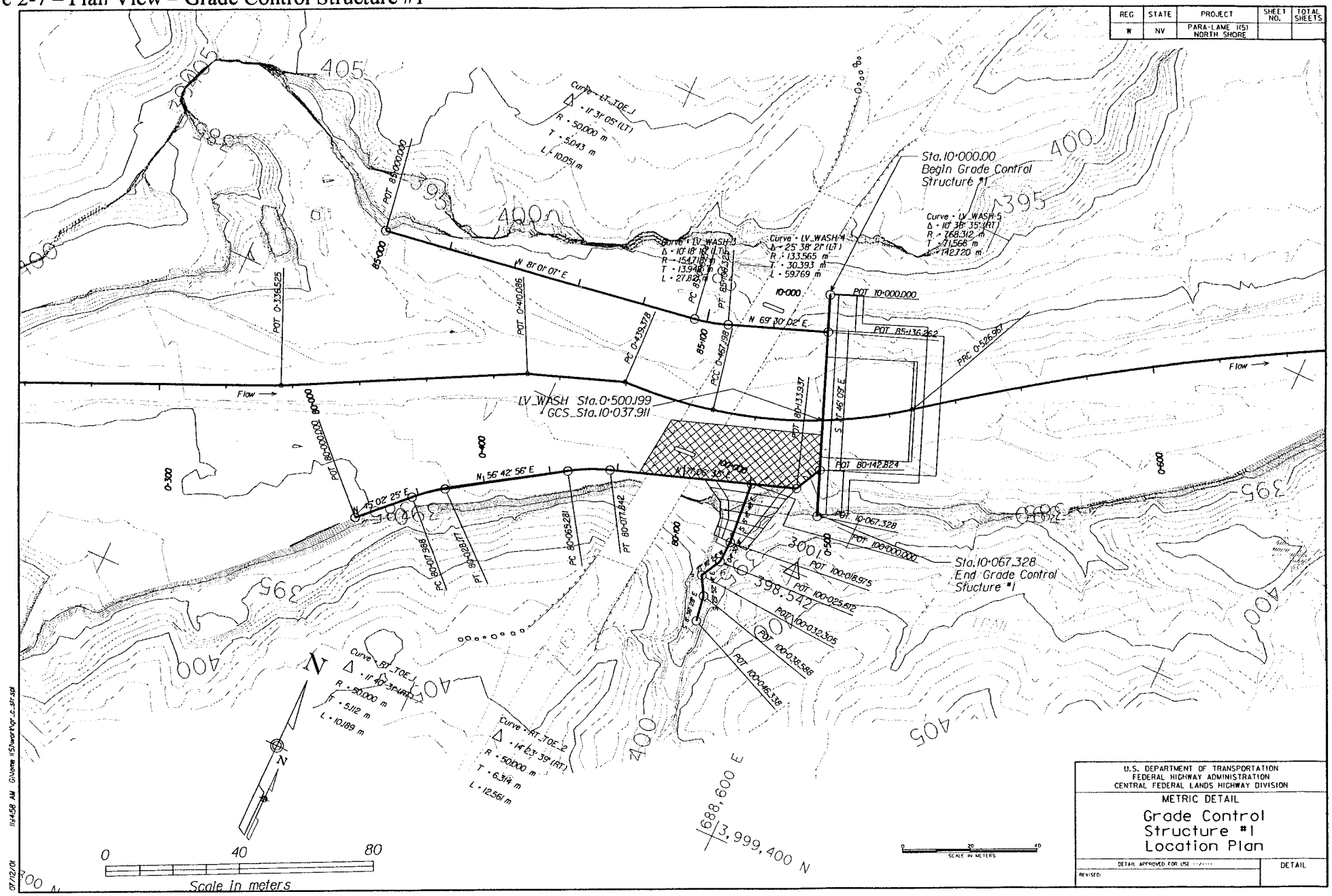
Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 2-6 – Plan View #2

PN 200125074



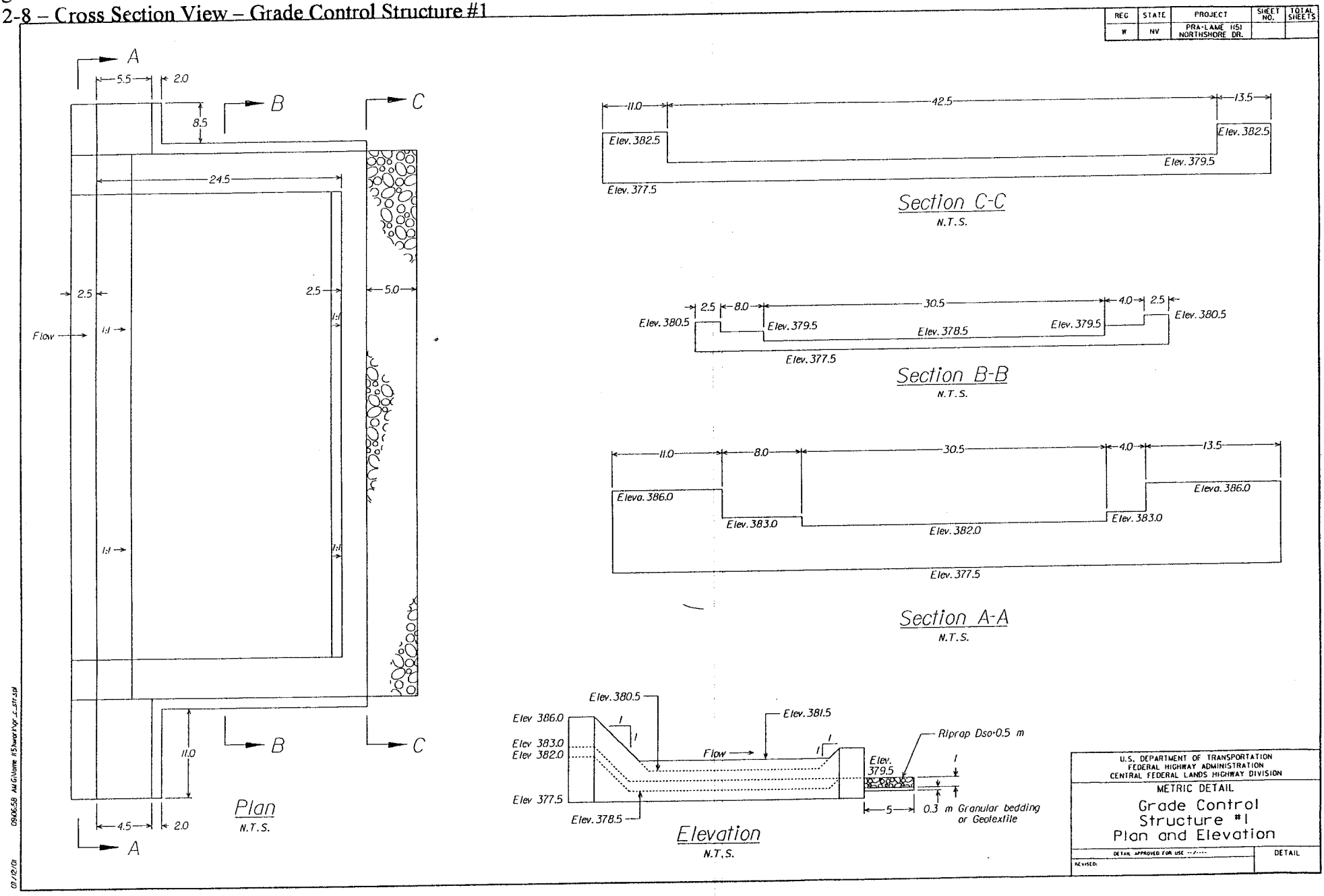
Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 2-7 – Plan View – Grade Control Structure #1

PN 200125074



Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 2-8 – Cross Section View – Grade Control Structure #1

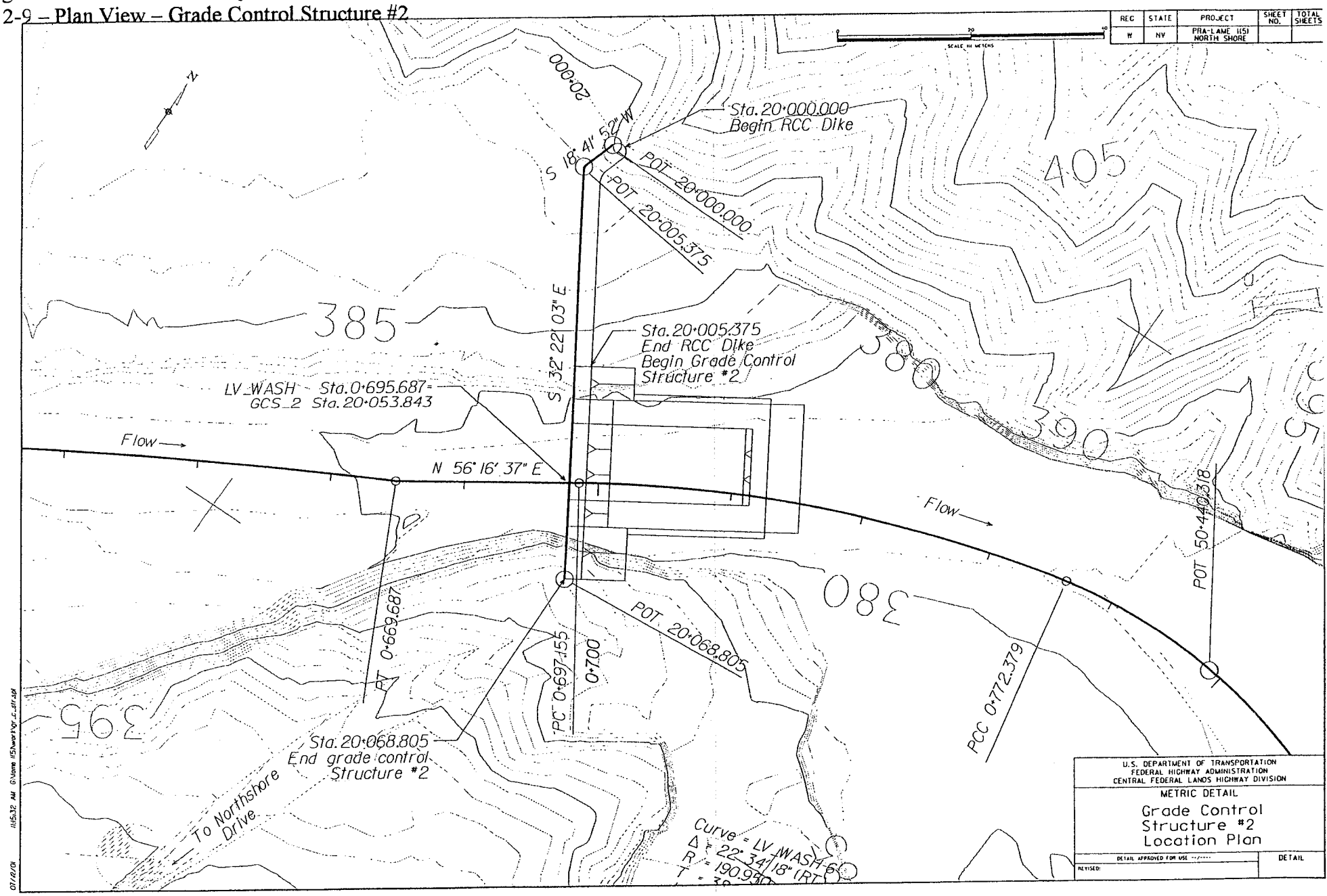
PN 200125074



Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area

Figure 2-9 – Plan View – Grade Control Structure #2

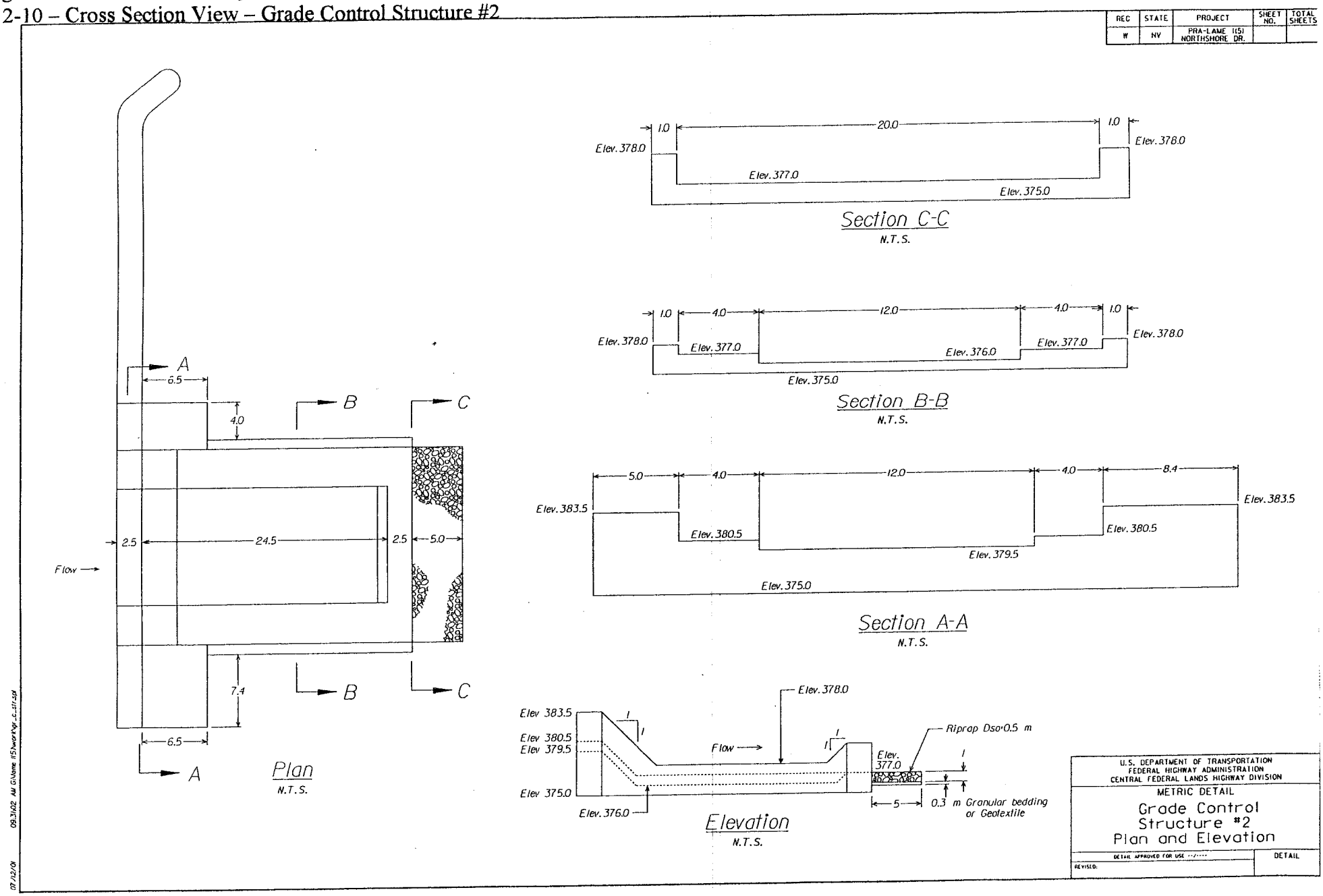
PN 200125074



Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area

Figure 2-10 – Cross Section View – Grade Control Structure #2

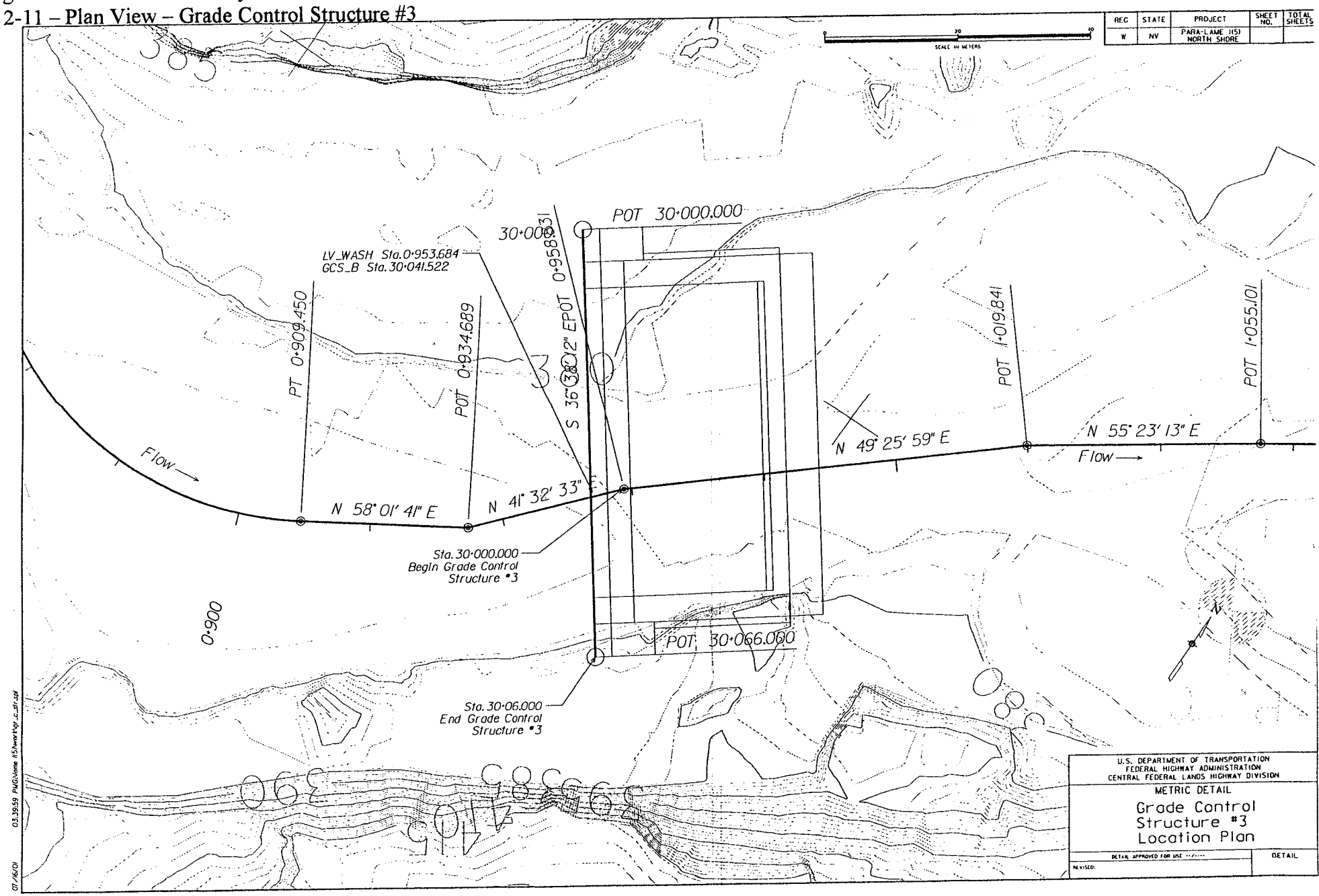
PN 200125074



Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area

Figure 2-11 – Plan View – Grade Control Structure #3

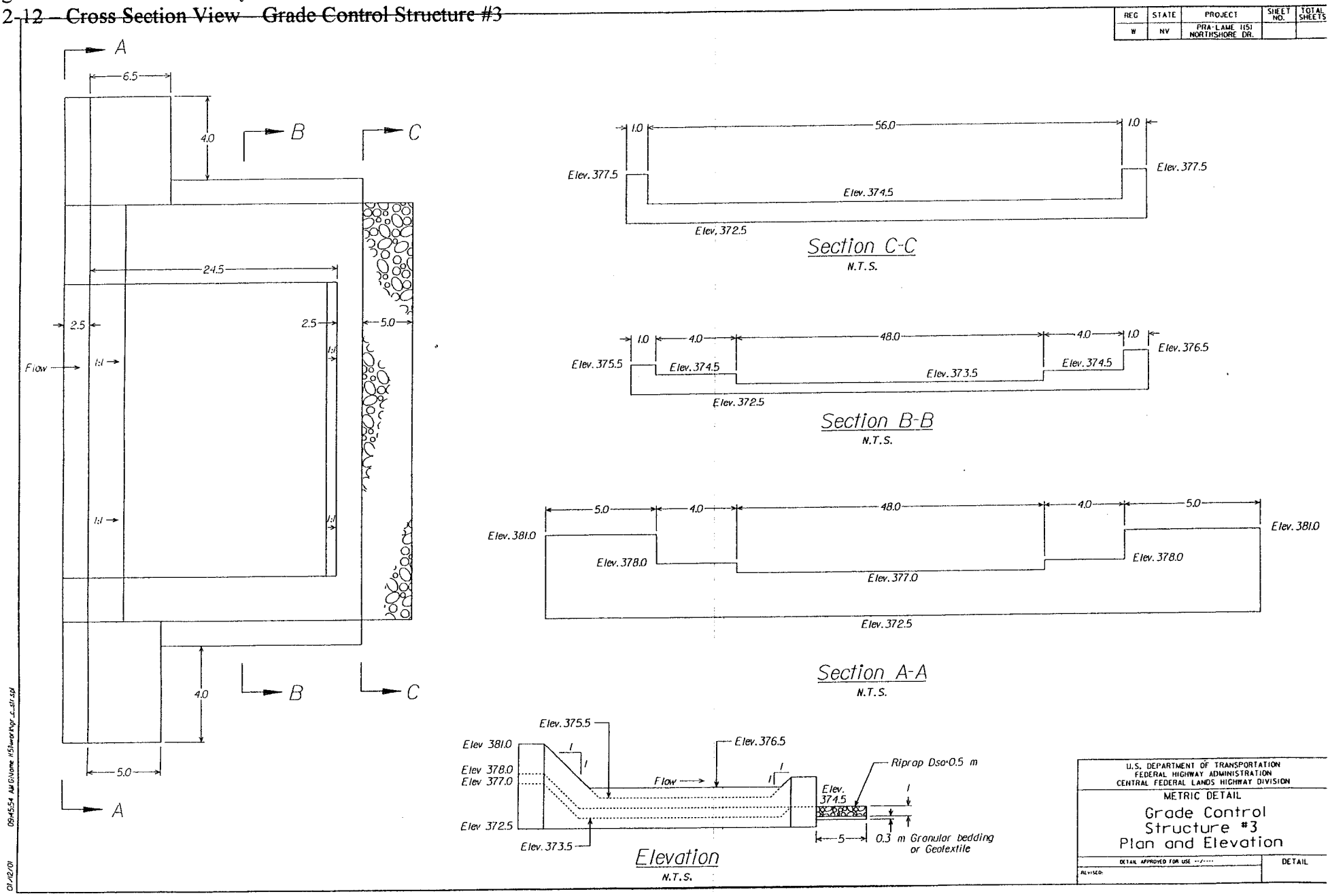
PN 200125074

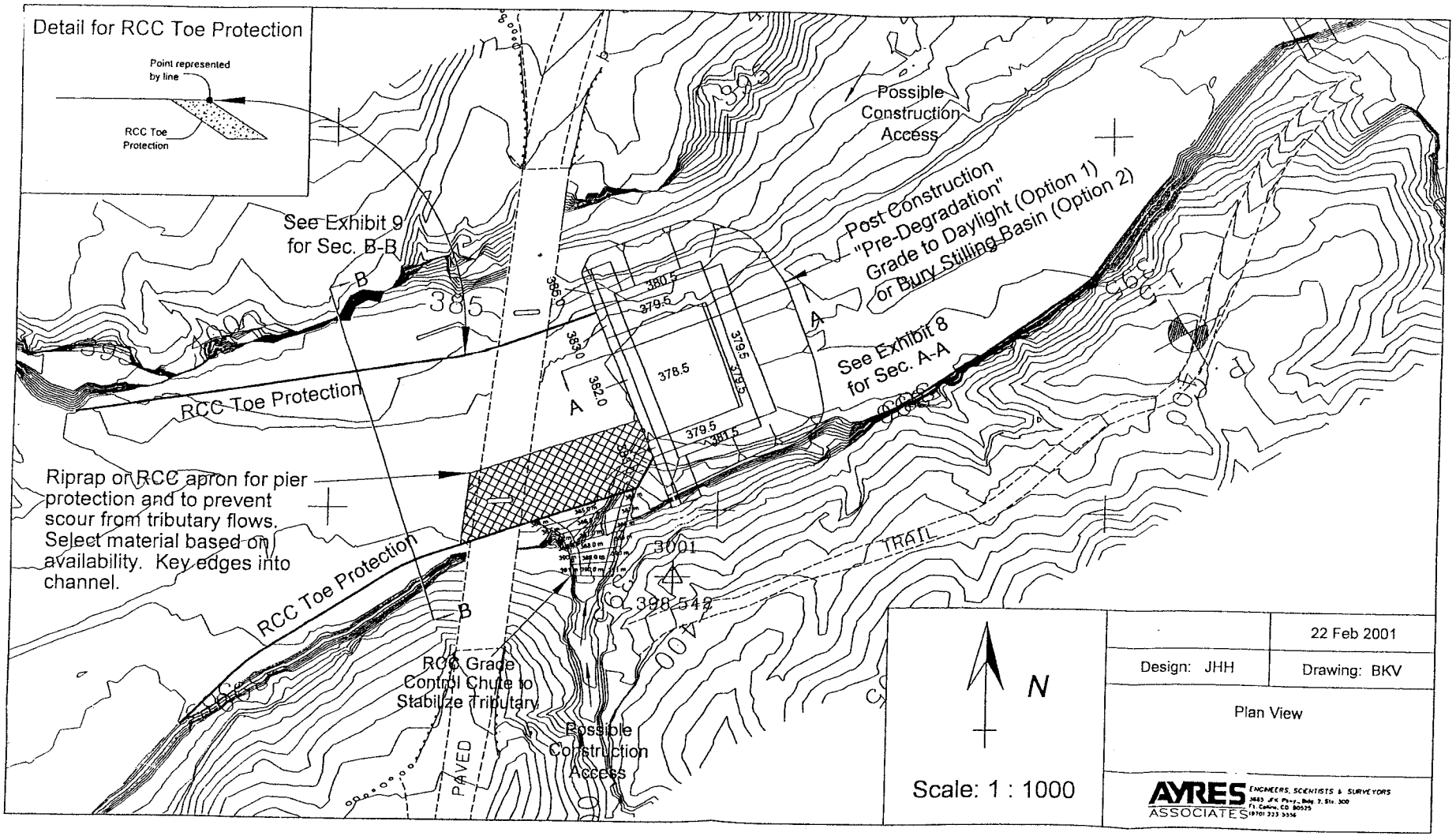


Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area

Figure 2-12 – Cross Section View – Grade Control Structure #3

PN 200125074



Las Vegas Wash Stabilization Project – Lake Mead National Recreation Area
Figure 2-13 – Plan View – Toe Protection

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