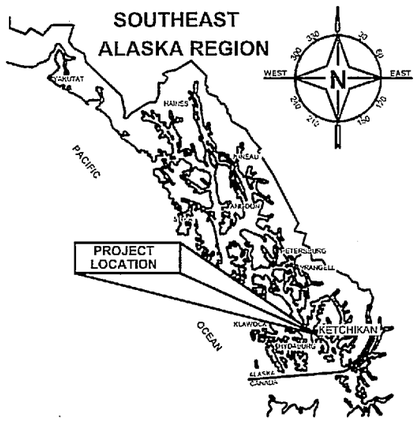
State of Alaska

Department of Transportation and Public Facilities

Construction, Maintenance & Operations

KETCHIKAN, ALASKA
GRAVINA ISLAND ACCESS
PHASE 1 - GRAVINA ISLAND HIGHWAY

GRADING, DRAINAGE, AND BRIDGES
PROJECT No. ACH PRL-0003(123)/67818



1506 West 36th Avenue
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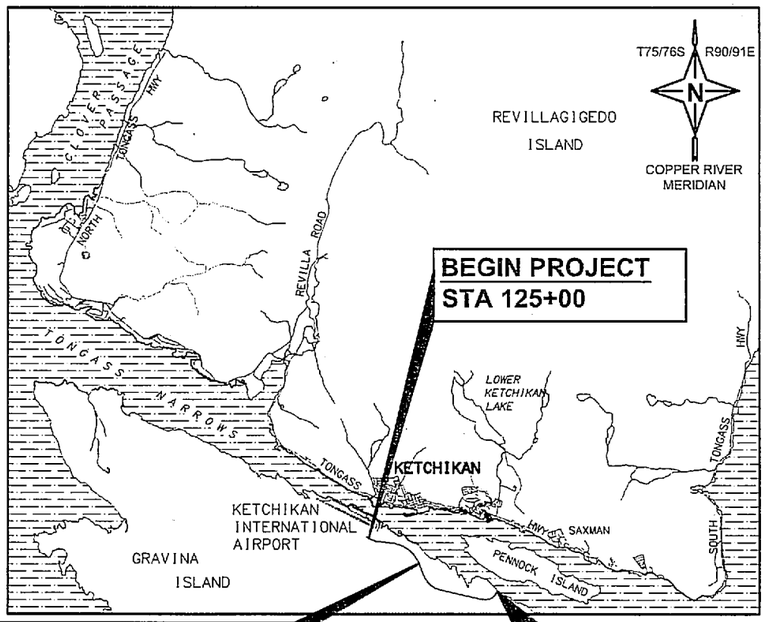
www.pndengineers.com
engineering @ pndengineers.com

P | N | D
ENGINEERS, INC.

AS-BUILT
DRAWINGS
03/23/09



VICINITY MAP

DESIGN DESIGNATION

A.D.T. 2007	=	0
A.D.T. 2030	=	8900
D.H.V. (10%) 2030	=	890
% T	=	2
V (mph)	=	50
D (%)	=	45/55

PROJECT SUMMARY

LENGTH OF PROJECT	=	3.41 MILES
WIDTH OF GRAVEL ROAD	=	36 FT
PERMANENTLY DISTURBED AREA	=	46.4 ACRES

THE FOLLOWING STANDARD DRAWINGS APPLY TO THIS PROJECT:

D-04.21	G-00.01	G-10.01	G-13.00	G-20.10	G-04.06s
G-28.00	G-31.00	M-13.01	M-16.01		

INDEX

SHEET NO.	DESCRIPTION
A1-A5	TITLE, SYMBOLS, SURVEY CONTROL
B1-B3	TYPICAL SECTIONS
D1	SUMMARY SHEET
E1-E11	DETAILS, CULVERT PLANS, GUARDRAIL
F1-F16	PLAN AND PROFILE
G1-G3	LEWIS REEF ROAD TEMP INTERSECTION
H1-H3	SIGNING
N1-N13	GOVERNMENT CREEK BRIDGE
N14-N26	GRAVINA CREEK BRIDGE

PATH: J:\2006\061131 GRAVINA ACCESS ROAD\F. CIVIL\DRAWINGS\ASBUILT\A1 - COVER-SE.DWG
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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
CONSTRUCTION MAINTENANCE & OPERATIONS

STATE OF ALASKA
49 TH
Douglas T. Kenley
CE-8176
3.23.09
REGISTERED PROFESSIONAL ENGINEER

APPROVED:

REGIONAL CONSTRUCTION ENGINEER — DATE
CHUCK CORREA, P.E.

APPROVED:

DIRECTOR, SOUTHEAST REGION — DATE
GARY L. DAVIS

CERTIFIED TRUE & CORRECT AS-BUILT OF ACTUAL FIELD CONDITION:

CONSTRUCTION PROJECT MANAGER — DATE

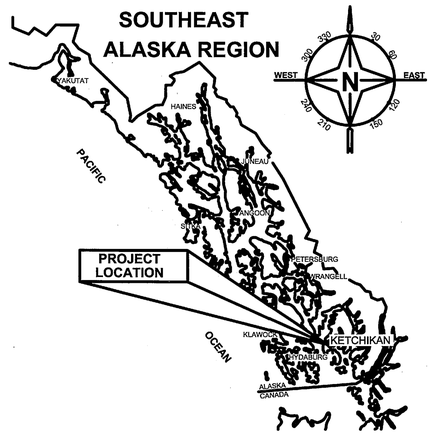
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	A1	68

State of Alaska

Department of Transportation and Public Facilities

Construction, Maintenance & Operations

6/2/08
APPROVED for Construction
Project Engineer



KETCHIKAN, ALASKA
GRAVINA ISLAND ACCESS
PHASE 1 - GRAVINA ISLAND HIGHWAY

GRADING, DRAINAGE, AND BRIDGES
PROJECT No. ACH PRL-0003(123)/67818

ISSUED FOR CONSTRUCTION
UPDATED 6/5/08

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PND ENGINEERS, INC.

VICINITY MAP

DESIGN DESIGNATION

A.D.T. 2007	=	0
A.D.T. 2030	=	8900
D.H.V. (10%) 2030	=	890
% T	=	2
V (mph)	=	50
D (%)	=	45/55

PROJECT SUMMARY

LENGTH OF PROJECT	=	3.41 MILES
WIDTH OF PAVED ROAD	=	30 FT
WIDTH OF GRAVEL ROAD	=	36 FT

THE FOLLOWING STANDARD DRAWINGS APPLY TO THIS PROJECT:

D-04.21	G-00.01	G-10.01	G-13.00	G-20.10	G-04.06s
G-28.00	G-31.00	M-13.01	M-16.01		

INDEX

SHEET NO.	DESCRIPTION
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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
CONSTRUCTION MAINTENANCE & OPERATIONS

STATE OF ALASKA 49 TH
Douglas T. Kenley
CE-8176
6.5.08
REGISTERED PROFESSIONAL ENGINEER

APPROVED:

REGIONAL CONSTRUCTION ENGINEER — DATE
CHUCK CORREA, P.E.

APPROVED:

DIRECTOR, SOUTHEAST REGION — DATE
MALCOLM A. MENZIES, P.E.

CERTIFIED TRUE & CORRECT AS-BUILT OF ACTUAL FIELD CONDITION:

CONSTRUCTION PROJECT MANAGER — DATE

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	A1	

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION					
			ALASKA	ACH PRL-0003(123)/67818	2007	A2	A5

	RECOVERED	TO BE SET THIS PROJECT
GOV'T SECTION CORNER	Sec. Cor.	
GOV'T 1/4 SECTION CORNER	1/4 Cor.	
GOV'T 1/16 SECTION CORNER	1/16 Cor.	
GOV'T SURVEY MONUMENT		
GOV'T CONTROL STA. .		
PRIMARY MON. [BRASS/AL CAP]		
SECONDARY CORNER		
PRIMARY CENTERLINE MONUMENT		
SECONDARY CENTERLINE MONUMENT		
SURVEY CONTROL POINT	CP	
SECONDARY SURVEY CONT. POINT	SCP	
GPS CONTROL POINT	GPS	
BENCH MARK	BM	
TEMPORARY BENCH MARK	TBM	
ROCK MONUMENT		

INTERNATIONAL BOUNDARY LINE — ALASKA / CANADA

TOWNSHIP & RANGE LINE — T. 13 N. / T. 12 N.; R. 3 W. / R. 2 W.

SECTION LINE

1/4 SECTION LINE

1/16 SECTION LINE

CORPORATE or CITY LIMITS

EXISTING RIGHT-OF-WAY

RIGHT-OF-WAY REQUIRED

PROJECT RIGHT-OF-WAY LINE — R/W

EXISTING PROPERTY LINE

CONTROLLED ACCESS LINE — C/A

PERMIT LINE

EXISTING EASEMENT LINE

STATION EQUATION — STA. 14+33.22 BK. = STA. 16+90.17 AHD.

PROJECT CENTERLINE — 27+00

EXISTING CENTERLINE

RAILROAD CENTERLINE

HIGHWAY MILEPOST — 6.5 / 23+12.56

RAILROAD MILEPOST — R.R. 2580+60 / HWY. 126+33 / 842

AS-BUILT

MATERIAL WASTE AREA

CLEARING LIMITS

TEMPORARY STAGING

LIMIT OF CUT SLOPE

LIMIT OF FILL SLOPE

PROPOSED ROADWAY

EXISTING ROADWAY

NOISE BARRIER

FENCE

STONE FENCE

HEAD & WINGWALLS

GUARD RAIL EXISTING

PROPOSED

RETAINING WALL

TUNNEL

INTERMITTENT DRAINAGE

INTERCEPTOR DITCH

MARSHLAND

CREEK

RIVER

LAKE

RESERVOIR

CHANNEL CHANGE

PLANTER

VENT

TANK VENT

WELL

SEPTIC

TANKS

Above Ground

Below Ground

SATELLITE DISH

PRIVATE SIGN

GAS PUMP

POST

BOULDER OR BOULDERS

LANDSCAPE LIGHT

DECIDUOUS TREE

CONIFER TREE

SHRUB OR SHRUBS

FISH STREAM

CULVERT NO. C1

	EXISTING	PROPOSED
PIPELINES: (BELLS INDICATE DIRECTION OF FLOW)		
SANITARY SEWER	SS	SS
OIL	O	O
GAS	G	G
WATER	W	W
STORM DRAIN	SD	SD
SIDEWALK		
CONCRETE CURB		
CONCRETE CURB & GUTTER		
DRIVEWAY, APPROACH, & SIDEDRAIN		
BRIDGE		
RIPRAP		

		EXISTING
TELEPHONE	(OVERHEAD)	OT
	(DIRECT BURY)	UT
ELECTRIC	(OVERHEAD)	OE
	(DIRECT BURY)	UE
FIBER OPTIC		FO
CABLE TV	(OVERHEAD) (DIRECT BURY)	
U.G. DUCT		
TELEPHONE MANHOLE		
ELECTRIC MANHOLE		
FOUNDATION		
BUILDING		

	EXISTING	PROPOSED
MANHOLE	M.H.	M.H.
FIRE HYDRANT		
METER		
VALVE		
PIPE CULVERT w/ END SECT.		
UTILITY POLE		
ELECTROLIER		
UTILITY POLE WITH LUMINAIRE		
POLE ANCHOR /w GUY		
TRANSMISSION TOWER [WOOD]		
TRANSMISSION TOWER [STEEL]		
ELECTRICAL OUTLET		
ELECTRICAL PEDESTAL		
TELEPHONE PEDESTAL		
CABLE T.V. PEDESTAL		

	EXISTING	PROPOSED
MAILBOX		MB
SIGN (FACING →)		
DELINEATOR (FACING →)		
PVC CONDUIT	PVC	PVC
RMC CONDUIT	RMC	RMC
SIGNAL FACE, VEHICULAR		
SIGNAL FACE, LEFT TURN,		
SIGNAL FACE, PEDESTRIAN		
JUNCTION BOX, TYPE IA		
JUNCTION BOX, TYPE II		
JUNCTION BOX, TYPE III		
DETECTOR, LOOP		
DETECTOR, OPTICOM		
PEDESTRIAN PUSH BUTTON (DIRECTION →)		
SIGNAL CONTROLLER		
LOAD CENTER		
SIGNAL POLE		
SIGNAL POLE w/MASTARM		

SOLID WHITE STRIPE	W
SOLID YELLOW STRIPE	Y
BROKEN WHITE or YELLOW STRIPE	W / Y
DASH YELLOW STRIPE	Y
SOLID YELLOW STRIPE with BROKEN YELLOW STRIPE	Y

X = ACTUAL NUMBER

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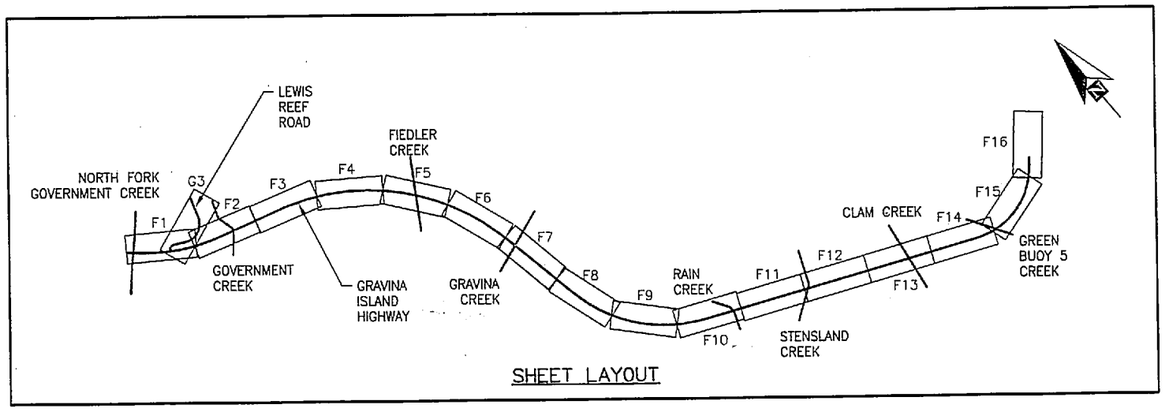
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE, AND BRIDGES

SYMBOLS

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	A3	A5



SHEET LAYOUT

ABBREVIATIONS

	DEFINITION		DEFINITION
BOP	BEGINING OF PROJECT	PGL	PROFILE GRADE LINE
CAP	CORRUGATED ALUMINUM PIPE	PI	POINT OF INTERSECTION
CFS	CUBIC FEET PER SECOND	PT	POINT OF TANGENCY
CL	CENTERLINE	PVC	POINT OF VERTICAL CURVE
CPEP	CORRUGATED POLYETHYLENE PIPE	PVI	POINT OF VERTICAL INTERSECTION
D, DIA	DIAMETER	PVT	POINT OF VERTICAL
DF	DEEP FILL	R	RADIUS
E	EASTING	R/W	RIGHT OF WAY
EL, ELEV	ELEVATION	RC	ROCK CUT
EOP	END OF PROJECT	RO	RUNOFF
FPS	FEET PER SECOND	RT	RIGHT
FT	FEET	S	SUPERELEVATION
HDPE	HIGH DENSITY POYETHYLENE	SHT	SHEET
INV	INVERT	SQ MI	SQUARE MILE
KET	KETCHIKAN	STA	STATION
L	LENGTH	STD	STANDARD
LT	LEFT	T	TANGENT
MAX	MAXIMUM	TYP	TYPICAL
MIN	MINIMUM	VC	VERTICAL CURVE
MLLW	MEAN LOWER LOW WATER		
N	NORTHING, NORTH		
NIC	NOT IN CONTRACT		
OHW	ORDINARY HIGH WATER		
PC	POINT OF CURVATURE		

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1.22.09
REGISTERED PROFESSIONAL ENGINEER

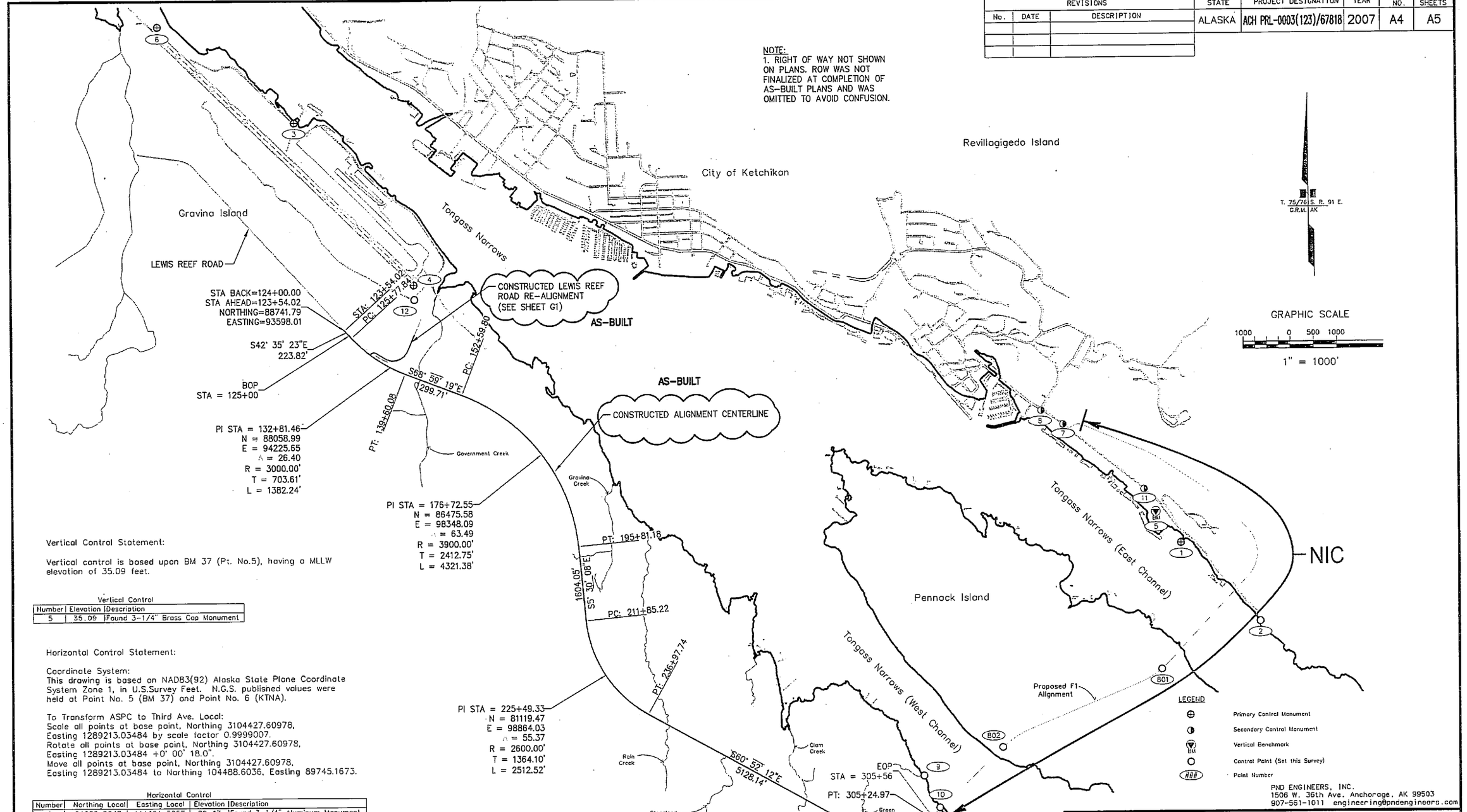
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

ABBREVIATIONS

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	A4	A5

NOTE:
1. RIGHT OF WAY NOT SHOWN ON PLANS. ROW WAS NOT FINALIZED AT COMPLETION OF AS-BUILT PLANS AND WAS OMITTED TO AVOID CONFUSION.



Vertical Control Statement:

Vertical control is based upon BM 37 (Pt. No.5), having a MLLW elevation of 35.09 feet.

Vertical Control

Number	Elevation	Description
5	35.09	Found 3-1/4" Brass Cap Monument

Horizontal Control Statement:

Coordinate System:
This drawing is based on NAD83(92) Alaska State Plane Coordinate System Zone 1, in U.S.Survey Feet. N.G.S. published values were held at Point No. 6 (KTNA).

To Transform ASPC to Third Ave. Local:
Scale all points at base point, Northing 3104427.60978, Easting 1289213.03484 by scale factor 0.9999007.
Rotate all points at base point, Northing 3104427.60978, Easting 1289213.03484 +0° 00' 18.0".
Move all points at base point, Northing 3104427.60978, Easting 1289213.03484 to Northing 104488.6036, Easting 89745.1673.

Horizontal Control

Number	Northing Local	Easting Local	Elevation	Description
1	84056.3847	111491.3257	20.47	Found 3-1/4" Aluminum Monument
2	82360.2242	113184.8243	34.10	Set 5/8" x 30" Rebar
3	93204.7519	92547.1660	27.40	Found 2-1/2" Brass Cap Monument
4	89713.4323	95077.7866	91.95	Found 3-1/4" Brass Cap Monument
5	84728.2025	110956.9596	35.09	Found 3-1/4" Brass Cap Monument
6	95270.0449	89616.6594	82.95	Found 2-1/2" Brass Cap Monument
7	86616.8416	108976.8393	28.33	Found 2" Aluminum Cap
8	86916.1747	108511.6372	29.20	Found 2" Aluminum Cap
9	79052.6216	105959.0416	13.16	Set YPC on 5/8" x 30" Rebar
10	78393.8226	106292.6900	14.63	Set YPC on 5/8" x 30" Rebar
11	85215.7730	110711.1549	48.54	Found 2" Aluminum Cap
12	89401.0058	95090.7734	89.35	Set YPC on 5/8" x 30" Rebar
801	81343.6303	111071.5593	130.65	Set 12" Spike
802	79660.0942	107648.9258	180.80	Set 12" Spike

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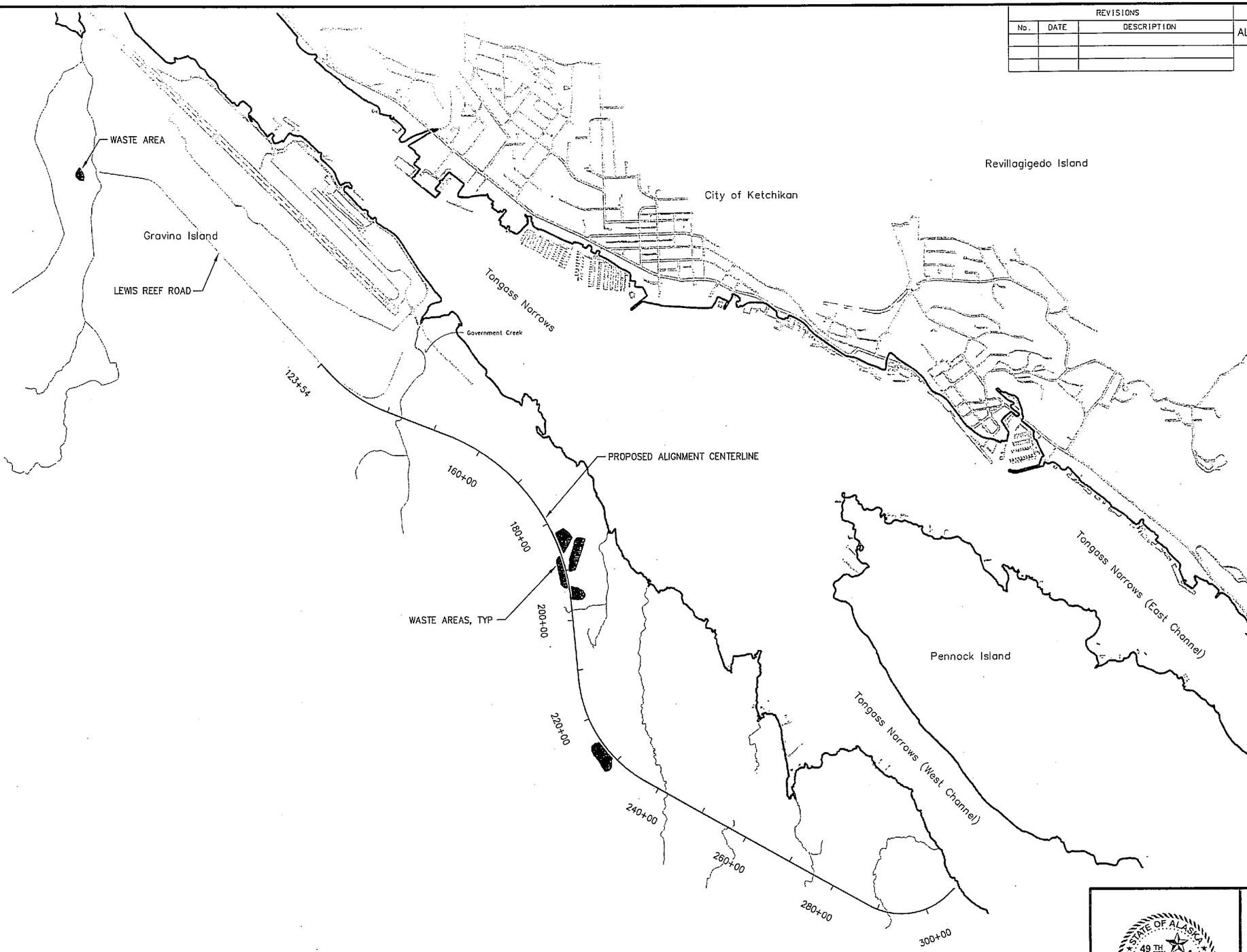
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE, AND BRIDGES

SURVEY CONTROL SHEET

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	A5	A5



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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE, AND BRIDGES

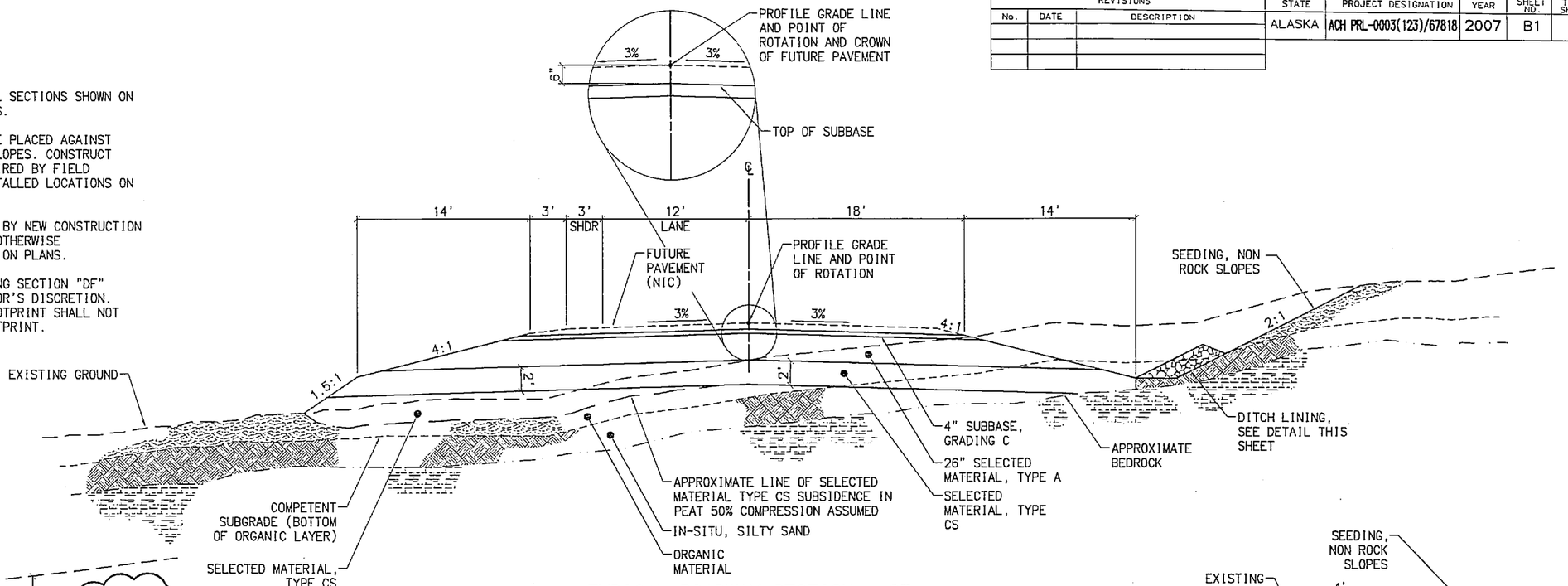
WASTE AREA LOCATION PLAN

STATE OF ALASKA
49 TH
Douglas T. Kenley
CE-8176
3.23.09
REGISTERED PROFESSIONAL ENGINEER

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	B1	B3

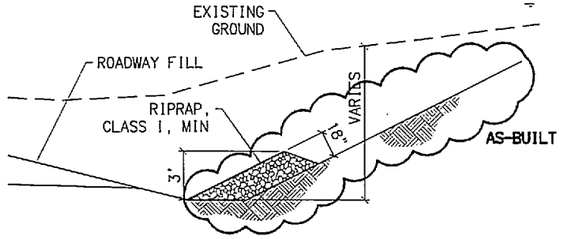
NOTES:

1. LOCATIONS FOR TYPICAL SECTIONS SHOWN ON PLAN & PROFILE SHEETS.
2. DITCH LINING SHALL BE PLACED AGAINST ERODIBLE, NON-ROCK SLOPES. CONSTRUCT DITCH LINING AS REQUIRED BY FIELD CONDITIONS. SHOW INSTALLED LOCATIONS ON ASBUILT DRAWINGS.
3. ALL GROUND DISTURBED BY NEW CONSTRUCTION SHALL BE SEEDED, OR OTHERWISE STABILIZED, AS SHOWN ON PLANS.
4. SLOPE FLATTENING ALONG SECTION "DF" SHALL BE AT CONTRACTOR'S DISCRETION. TOTAL INCREASE OF FOOTPRINT SHALL NOT EXCEED PERMITTED FOOTPRINT.



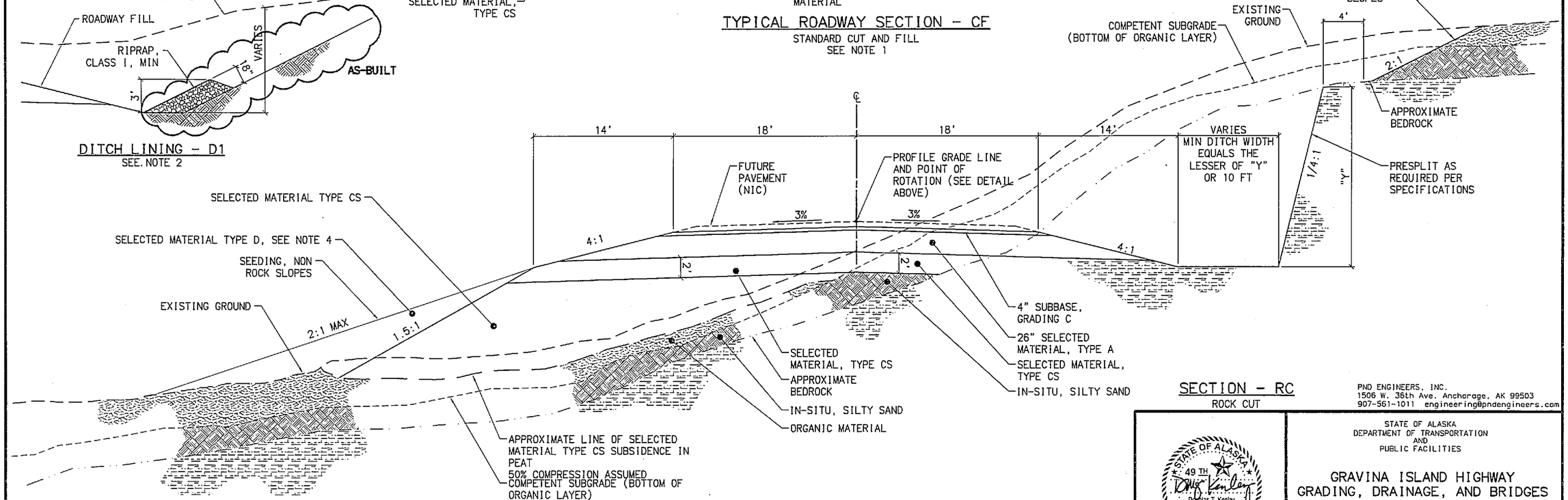
TYPICAL ROADWAY SECTION - CF

STANDARD CUT AND FILL
SEE NOTE 1



DITCH LINING - D1

SEE. NOTE 2

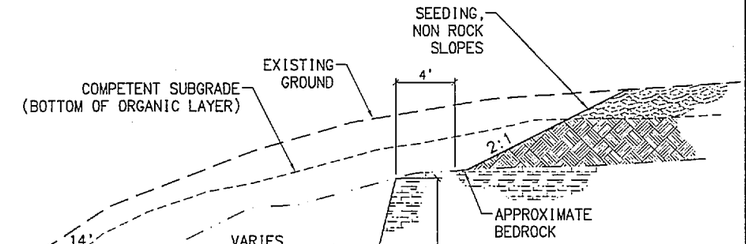


SECTION - DF

DEEP FILL

TYPICAL ROADWAY SECTION

DEEP FILLS AND ROCK CUTS
SEE NOTE 1



SECTION - RC

ROCK CUT

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DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

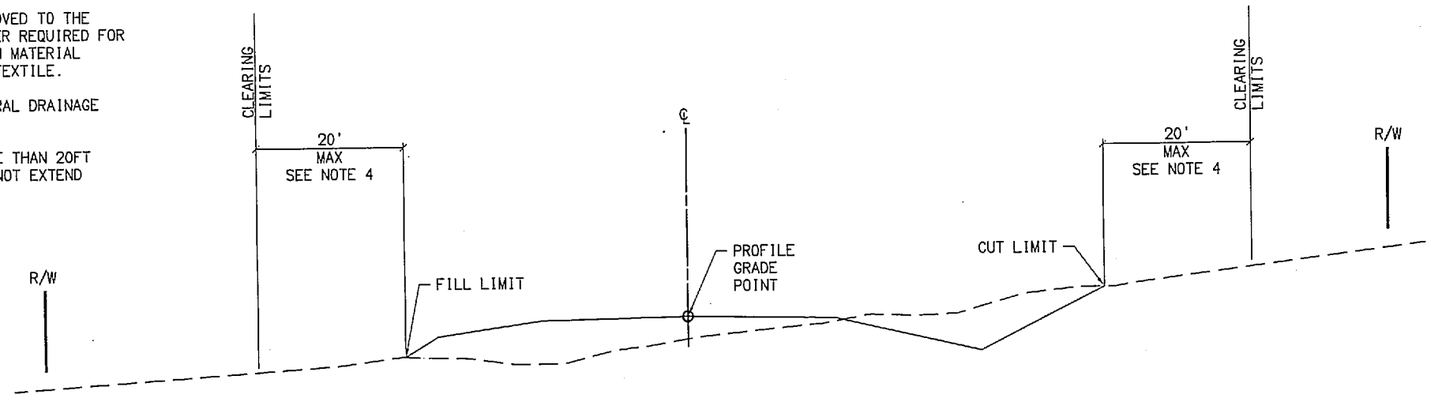
GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE, AND BRIDGES

TYPICAL SECTIONS

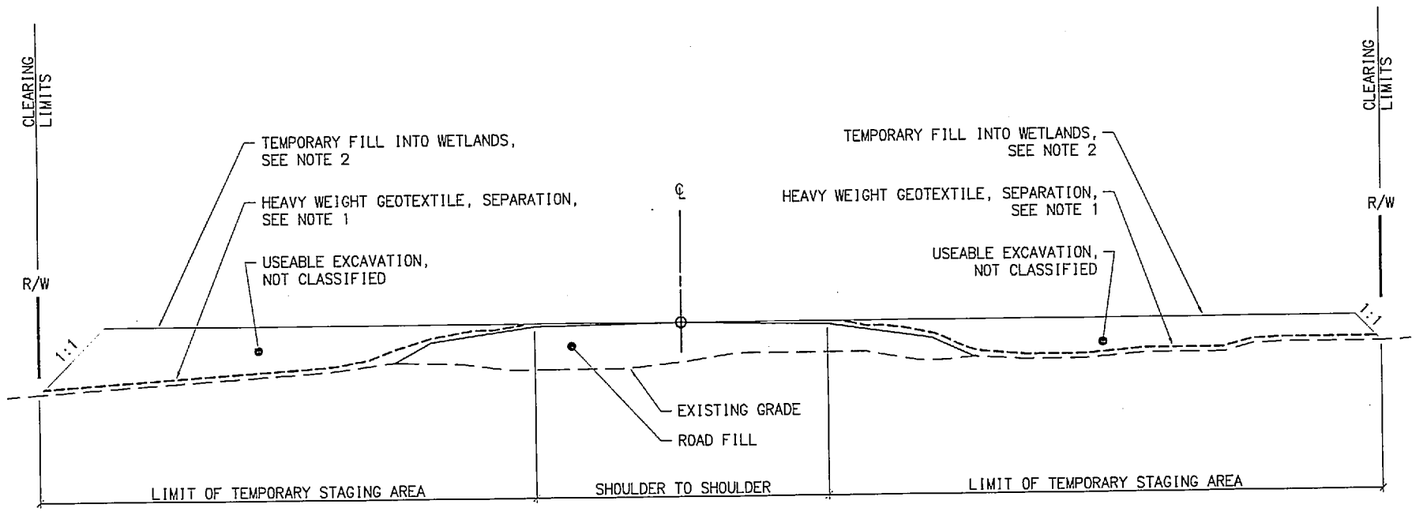
REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	B2	B3

NOTE:

1. ALL TEMPORARY FILL PLACED DURING CONSTRUCTION SHALL HAVE A LAYER OF SEPARATION GEOTEXTILE FABRIC PLACED OVER THE ORIGINAL GROUND SURFACE FOR PROTECTION.
2. ALL TEMPORARY FILL SHALL BE REMOVED TO THE EXTENT PRACTICABLE WHEN NO LONGER REQUIRED FOR CONSTRUCTION. NO NATURAL EARTHEN MATERIAL SHALL BE REMOVED FROM UNDER GEOTEXTILE.
3. MAINTAIN ROAD DRAINAGE AND NATURAL DRAINAGE THROUGH STAGING AREAS.
4. CLEARING LIMITS SHALL BE NO MORE THAN 20FT FROM CUT/FILL LIMITS AND SHALL NOT EXTEND OUTSIDE OF THE RIGHT OF WAY.



TYPICAL CLEARING LIMIT SECTION



TYPICAL ROADWAY SECTION AT TEMPORARY STAGING AREAS

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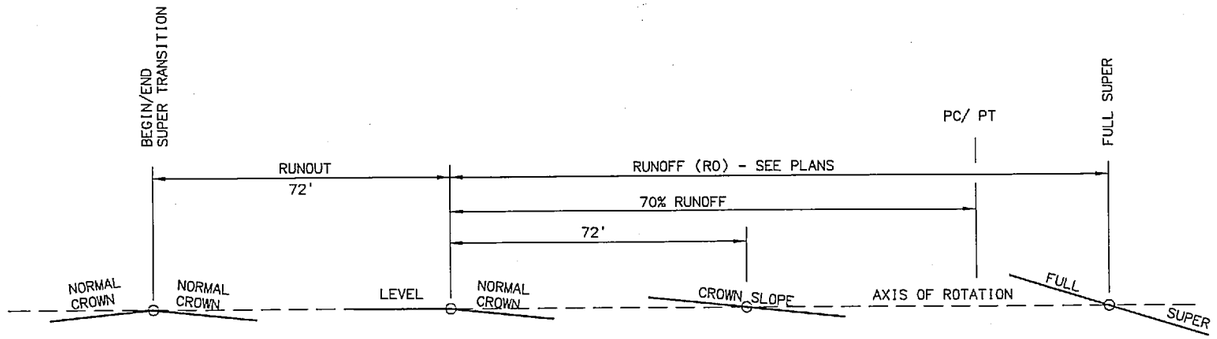
GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE, AND BRIDGES

TYPICAL SECTIONS

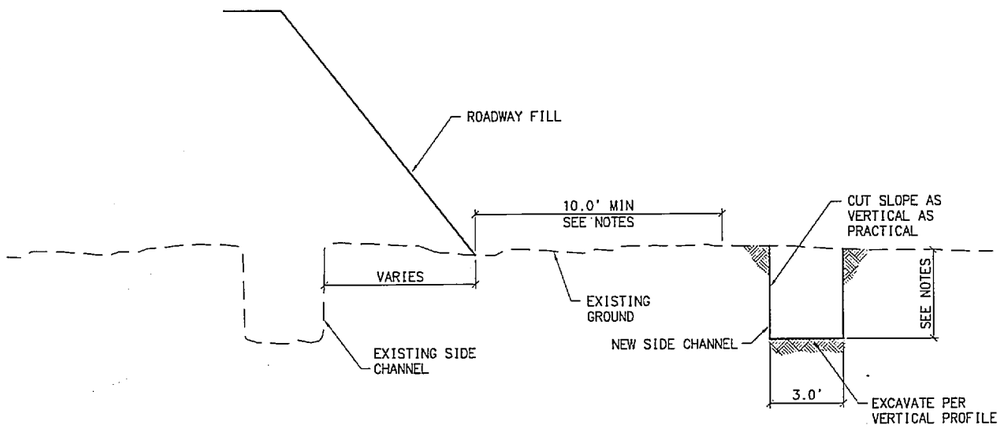
REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	B3	B3



SUPERELEVATION TRANSITION

NOTES

1. TRANSITION THE ROADWAY TO A SUPERELEVATED CROSS SLOPE BY ROTATING THE TRAVELED WAY AND SHOULDER ABOUT THE CENTERLINE OF THE ALIGNMENT.
2. BUILD SUPERELEVATION INTO SUBGRADE AND CARRY THROUGH SHOULDERS.
3. % RUNOFF = PORTION OF RUNOFF ON TANGENT
4. WIDENING FOR GUARDRAIL OR CURVATURE DOES NOT CHANGE THE LOCATION OF THE AXIS OF ROTATION.
5. SEE PLAN FOR DEGREE OF SUPERELEVATION.



STENSLAND CREEK SIDE CHANNEL

STA 251+00 TO 252+80

SIDE CHANNEL NOTES:

1. CONSTRUCT NEW SIDE CHANNEL BEFORE DISTURBING EXISTING CHANNEL.
2. WHERE PROPOSED CHANNEL IS GREATER THAN 3' DEEP OR OTHERWISE NECESSARY, SIDE SLOPES MAY BE BUILT AT 2:1 SLOPE AND STABALIZED AS DIRECTED BY THE ENGINEER.
3. SURVEY EXISTING CHANNEL LOCATION AND DEPTH PRIOR TO PLACING ROADWAY FILL.
4. MAINTAIN 10' MIN VEGETATED BUFFER BETWEEN ROADWAY FILL AND NEW CHANNEL TO REDUCE SEDIMENTATION.

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STATE OF ALASKA
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Douglas T. Kenley
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5.23.08
REGISTERED PROFESSIONAL ENGINEER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

TYPICAL SECTIONS

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	D1	D1

CULVERT INSTALLATION SUMMARY

PIPE NAME	SIZE	MATERIAL	SLOPE LENGTH	Ga.	Corrugation	START STATION	START OFFSET	START INVERT	END STATION	END OFFSET	END INVERT	SLOPE	RIPRAP INLET	RIPRAP OUTLET	FISH STREAM	REMARKS
C1	42"	CPEP	154.60'	TYPE S		155+03.30	40.70' R	94.67	156+21.32	58.48' L	84.40	6.66%	YES	REMARKS		ENERGY DISSIPATER, DTL SHT E1
C2	36"	CPEP	99.64'	TYPE S		158+28.50	38.30' R	94.83	158+48.00	58.64' L	83.44	11.52%	YES	REMARKS		ENERGY DISSIPATER, DTL SHT E2
C3	36"	CAP	89.47'	0.06	3X1	162+41.00	30.46' R	93.76	162+49.40	58.40' L	89.34	4.95%		CLASS I		CHECK DAM, SHALLOW BEDROCK
C4	36"	CPEP	127.57'	TYPE S		167+02.70	46.20' R	88.07	166+42.00	65.80' L	83.56	3.54%	YES	CLASS II		
C5	24"	CPEP	82.34'	TYPE S		169+25.70	38.50' R	89.42	169+42.10	42.08' L	88.51	1.11%	YES	CLASS I		
C6	36"	CPEP	99.79'	TYPE S		173+47.50	38.80' R	83.96	173+63.80	59.50' L	80.77	3.20%		CLASS II		
C7	78"	CAP	132.56'	0.075	3X1	177+81.50	60.27' R	70.23	177+36.40	64.23' L	66.68	2.68%	YES	CLASS I	FIEDLER	NOTE 1
C8	36"	CPEP	86.42'	TYPE S		199+82.60	36.86' R	101.20	200+16.00	42.72' L	99.34	2.16%	YES	CLASS I		SHALLOW BEDROCK
C9	42"	CPEP	104.98'	TYPE S		222+78.24	47.93' R	94.80	222+32.77	46.58' L	93.84	0.92%	YES	CLASS II		DITCH TO INLET
C10	36"	CPEP	119.67'	TYPE S		230+89.50	53.53' R	103.91	231+42.60	53.60' L	103.00	0.76%		CLASS II		SHALLOW BEDROCK
C11	36"	CPEP	99.75'	TYPE S		238+84.23	40.92' R	100.68	238+55.33	54.27' L	94.91	5.80%		CLASS II		SHALLOW BEDROCK
C12	66"	CAP	96.06'	0.06	3X1	242+22.54	43.63' R	89.18	241+90.37	46.78' L	87.47	1.76%	YES	CLASS I	RAIN	CHECK DAM, NOTE 1
C13	36"	CPEP	133.61'	TYPE S		250+43.40	58.38' L	34.31	251+03.82	60.67' R	33.34	0.73%		CLASS II		
C14	96"	CAP	142.03'	0.105	3X1	255+87.38	57.02' R	20.30	256+68.97	59.11' L	19.87	0.30%	YES	CLASS I	STENSLAND	NOTE 1
C15	36"	CPEP	114.22'	TYPE S		259+73.41	48.41' R	37.94	259+09.93	46.43' L	37.53	0.36%	YES	CLASS I		
C16	24"	CPEP	93.61'	TYPE S		267+66.78	43.48' R	69.55	267+35.10	44.50' L	68.78	0.82%	YES	CLASS I		CHECK DAM
C17	108"	CAP	139.70'	0.135		275+64.91	62.19' R	59.20	275+12.83	67.33' L	58.58	0.44%	YES	CLASS I	CLAM	NOTE 1
C17A	36"	CPEP	79.97'	0.06	3X1	272+15.38	38.10' R	77.71	272+14.35	41.74' L	75.65	2.58%	YES	CLASS I		
C18	36"	CAP	119.14'	0.06	3X1	286+93.44	37.03' R	74.80	286+01.25	38.26' L	73.46	1.13%		CLASS I		CHECK DAM, DITCH TO INLET
C19	102"	CAP	142.07'	0.135	3X1	292+50.12	52.27' R	62.79	291+54.96	53.08' L	59.44	2.36%	YES	CLASS I	GREEN BUOY	NOTE 1
C20	36"	CPEP	167.40'	TYPE S		299+51.85	50.19' L	76.70	300+74.32	65.07' R	68.25	5.07%	YES	CLASS II		
C21	24"	CAP	92.85'	0.06	2-2/3X1/2	303+25.82	34.45' L	82.66	303+58.05	51.83' R	71.61	12.00%		CLASS I		
C22A	24"	CAP	71.24'	0.06	2-2/3X1/2	141+01.60	33.47' L	108.59	141+22.37	34.57' R	108.08	0.72%		CLASS I		CHECK DAM, SHALLOW BEDROCK
C22B	24"	CAP	71.37'	0.06	2-2/3X1/2	141+07.41	33.22' L	108.53	141+28.44	34.87' R	108.03	0.70%		CLASS I		CHECK DAM, SHALLOW BEDROCK
C23	24"	CPEP	101.50'	TYPE S		217+27.34	38.43' R	102.80	216+61.78	38.92' L	101.80	0.99%		CLASS I		
C24	24"	CPEP	101.67'	TYPE S		234+91.87	37.96' R	112.01	234+25.80	39.19' L	110.35	1.63%	YES	CLASS I		
C25	24"	CPEP	96.29'	TYPE S		246+62.55	41.93' R	67.02	246+59.91	53.98' L	60.22	7.09%	YES	CLASS II		SHALLOW BEDROCK
C26	24"	CPEP	98.49'	TYPE S		273+57.27	43.01' R	76.81	273+30.81	51.60' L	71.39	5.52%	YES	CLASS I		SHALLOW BEDROCK

CPEP = CORRUGATED POLYETHYLENE PIPE
CAP = CORRUGATED ALUMINUM PIPE

AS-BUILT NOTES

1. INVERTS OF FISH STREAMS ARE BASED ON SURVEY ELEVATION OF STREAM BED AT INLET/OUTLET MINUS 40% OF PIPE DIAMETER.
2. ALL CULVERTS UPDATED PER AS-BUILT SURVEY.

GUARDRAIL INSTALLATION SUMMARY

STATION TO STATION			OFFSET LT	OFFSET RT	W BEAM	REMARKS
139+75.50	TO	142+06.73		18'	175.0'	ET-2000 END TERMINAL
141+25.50	TO	142+06.73	18'		62.5'	W-BEAM DOWNSTREAM ANCHOR
143+91.73	TO	144+73.00		18'	62.5'	W-BEAM DOWNSTREAM ANCHOR
143+91.73	TO	146+35.50	18'		187.5'	ET-2000 END TERMINAL
194+61.50	TO	197+42.73		18'	225.0'	ET-2000 END TERMINAL
196+61.50	TO	197+42.73	18'		62.5'	W-BEAM DOWNSTREAM ANCHOR
198+45.73	TO	199+27.00		18'	62.5'	W-BEAM DOWNSTREAM ANCHOR
198+45.73	TO	200+89.50	18'		187.5'	ET-2000 END TERMINAL
				TOTALS	1,025'	

1. OFFSET IS TO FACE OF W-BEAM GUARDRAIL, OFFSET AT BRIDGE TRANSITION AND END TERMINAL WILL VARY.
2. W BEAM LENGTHS DOES NOT INCLUDE GUARDRAIL TO BRIDGE TRANSITION LENGTH NOR THE ET-2000 END TERMINAL LENGTH.

NOTES:
1. FIELD VERIFY INLET ELEVATION, OUTLET ELEVATION, AND REQUIRED SLOPE PER DETAILS SHOWN ON SHEET E1.
2. WHERE NON-FISH STREAM CULVERT OUTLETS ARE SEATED ON BEDROCK, RIPRAP MAY BE OMITTED.

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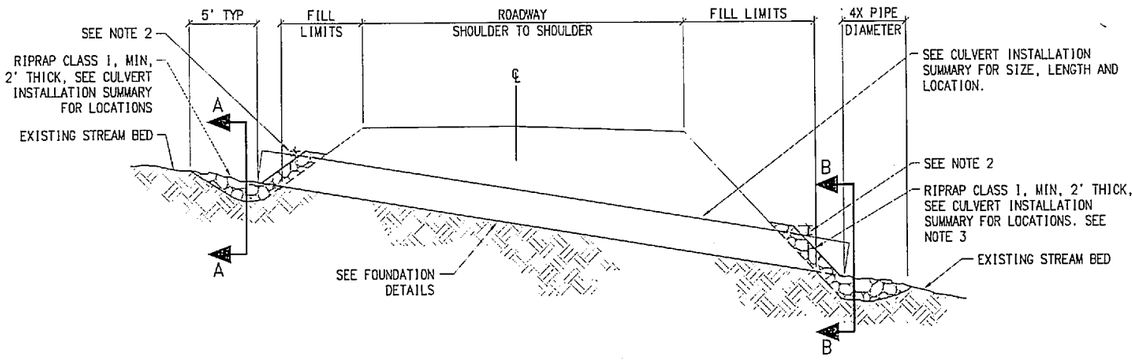
GRADING, DRAINAGE, AND BRIDGES

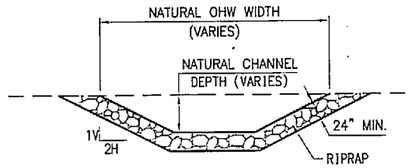
SUMMARY SHEET

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION					
			ALASKA	ACH PRL-0003(123)/67818	2007	E1	E11

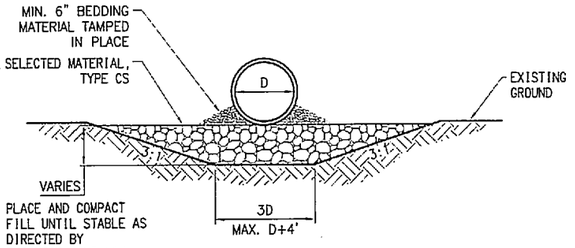


TYPICAL PIPE CULVERT INSTALLATION - NON-FISH STREAMS

NOTES:
1. SEE SHT E11 FOR DRAINAGE SWALE DETAILS AT ABUTMENTS.
2. EXTEND RIPRAP 1' ABOVE CULVERT OR TO THE Q50 FLOOD ELEVATION, WHICHEVER IS GREATER. SEE DETAIL AND PLAN SHEETS FOR Q50 ELEVATION.
3. WHERE NON-FISH STREAM CULVERT OUTLET IS SEATED ON BEDROCK, RIPRAP APRON MAY BE OMITTED

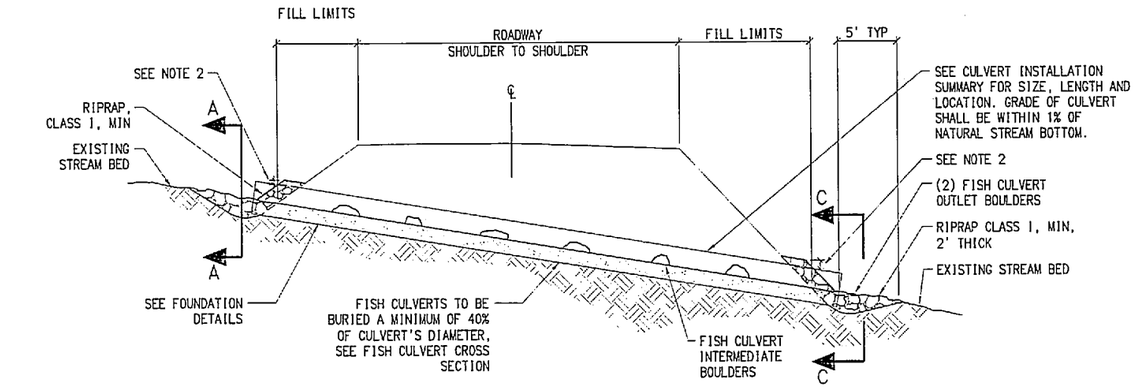


SECTION A-A



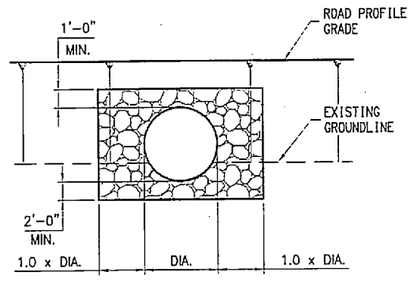
SOFT SUBGRADE

TO BE USED IN UNSTABLE AREAS AS DIRECTED BY THE ENGINEER.

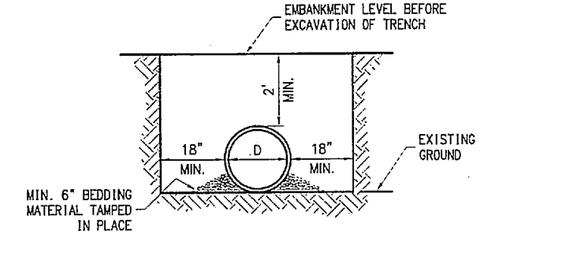


TYPICAL PIPE CULVERT INSTALLATION - FISH STREAMS

NOTE: SEE SHEETS E5-E9 FOR INDIVIDUAL FISH STREAMS PLAN AND PROFILE

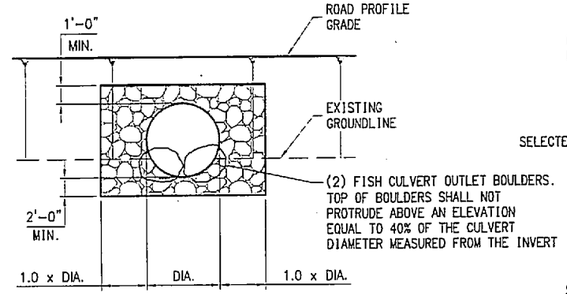


ELEVATION B-B

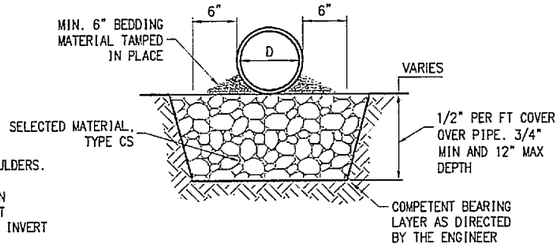


STABLE SUBGRADE

FOR USE ON EXISTING GROUND

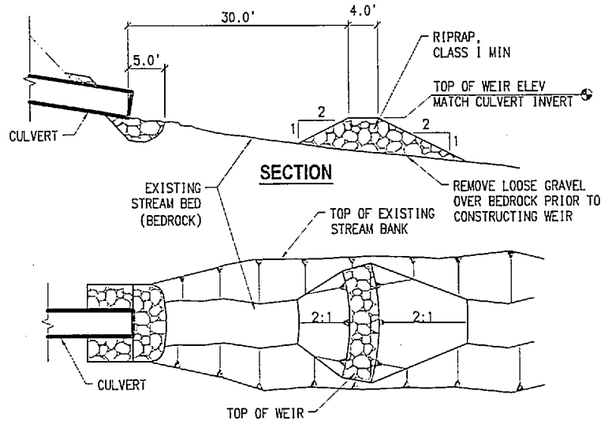


ELEVATION C-C

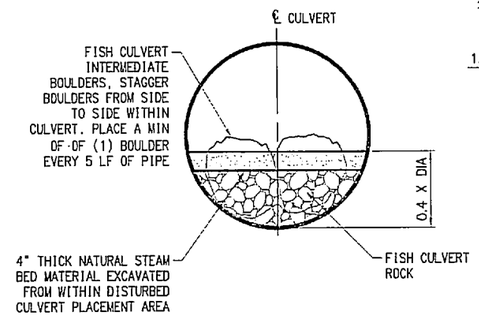


STABLE SUBGRADE (UNYIELDING MATERIAL)

SUBEXCAVATION REQUIRED



CULVERT C1 ENERGY DISSIPATER



FISH CULVERT CROSS SECTION

FOUNDATION DETAILS

(FOUNDATION TYPE TO BE DETERMINED IN THE FIELD)

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STATE OF ALASKA
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CULVERT DETAILS

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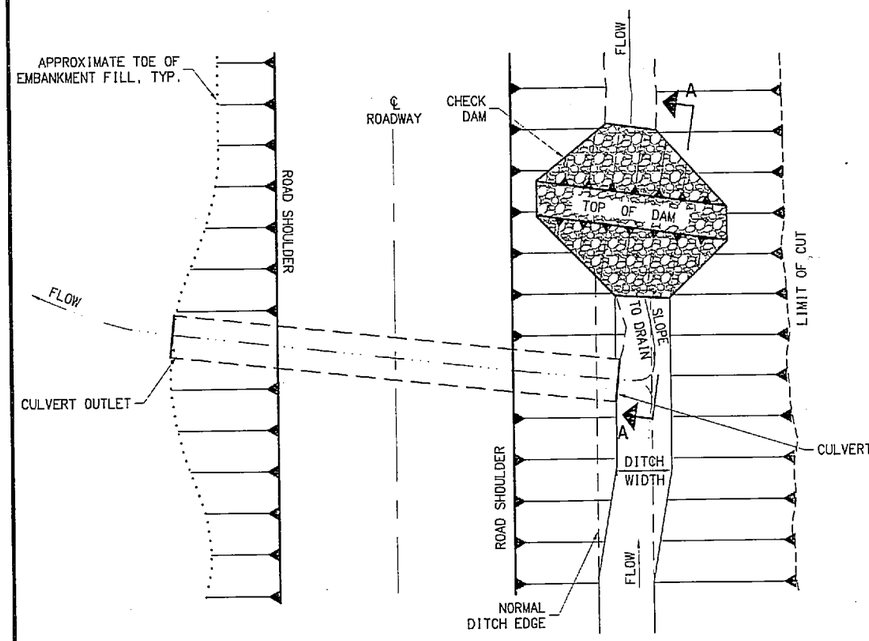
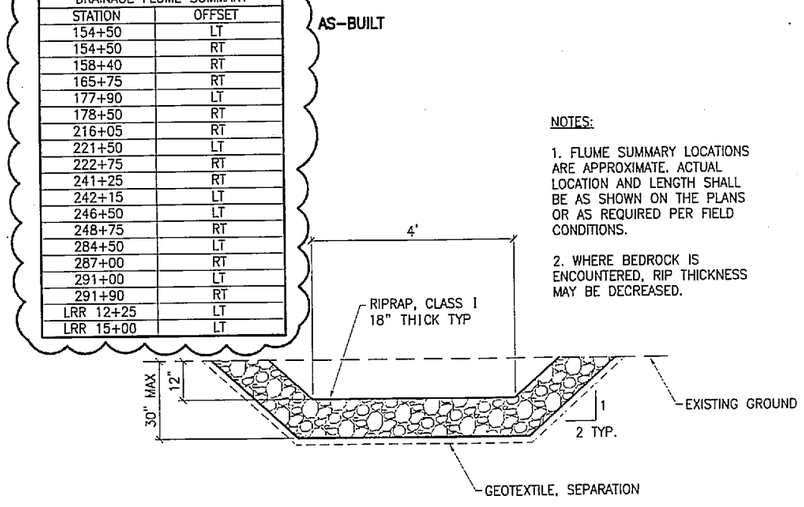
REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E2	E11



CULVERT WITH PERMANENT CHECK DAM

SEE PLANS FOR LOCATION

DRAINAGE FLUME SUMMARY	
STATION	OFFSET
154+50	LT
154+50	RT
158+40	RT
165+75	RT
177+90	LT
178+50	RT
216+05	RT
221+50	LT
222+75	RT
241+25	RT
242+15	LT
246+50	LT
248+75	RT
284+50	LT
287+00	RT
291+00	LT
291+90	RT
LRR 12+25	LT
LRR 15+00	LT

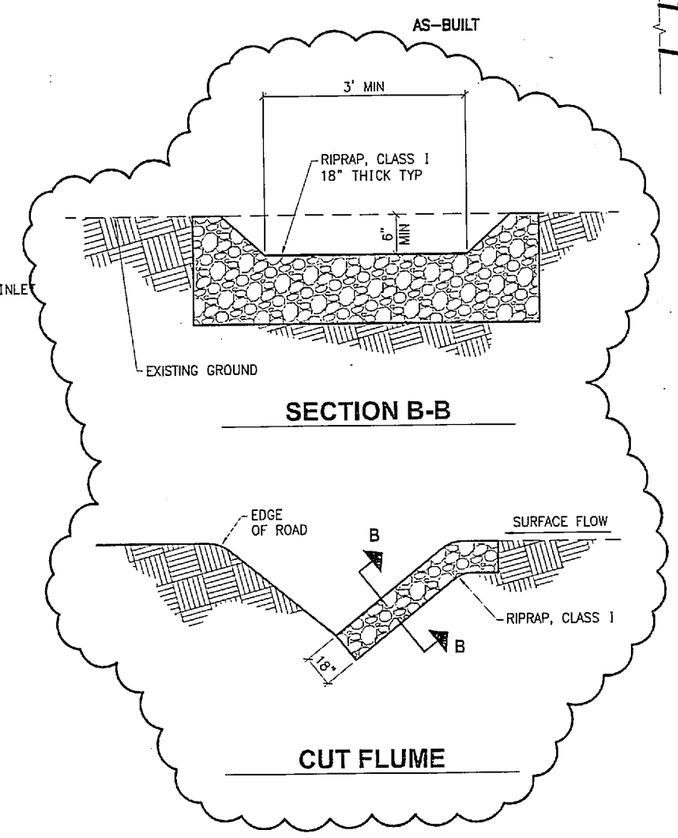


NOTES:

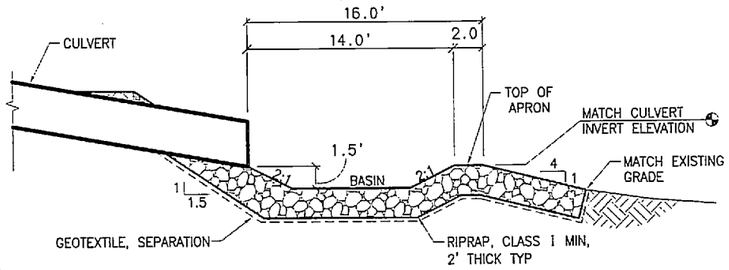
1. FLUME SUMMARY LOCATIONS ARE APPROXIMATE. ACTUAL LOCATION AND LENGTH SHALL BE AS SHOWN ON THE PLANS OR AS REQUIRED PER FIELD CONDITIONS.

2. WHERE BEDROCK IS ENCOUNTERED, RIP THICKNESS MAY BE DECREASED.

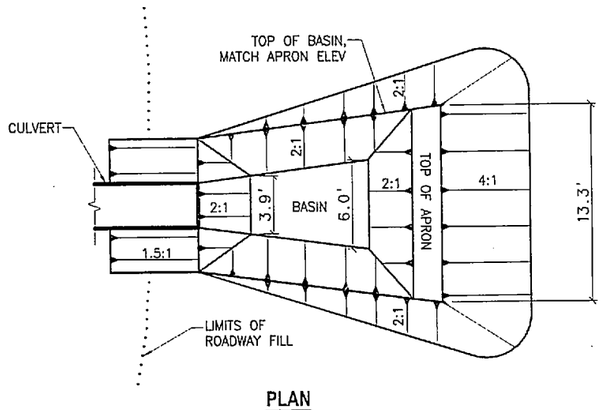
DRAINAGE FLUME AT CUT/FILL TRANSITIONS



CUT FLUME

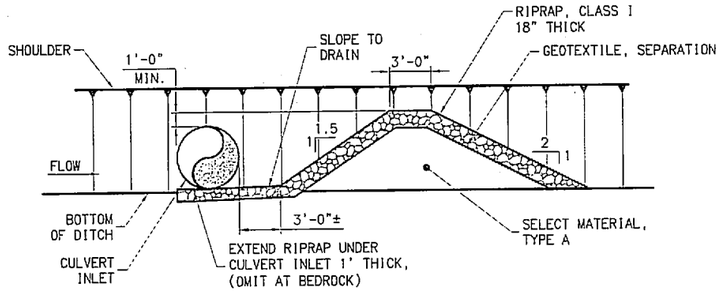


SECTION



PLAN

CULVERT C2 ENERGY DISSIPATOR



SECTION A-A

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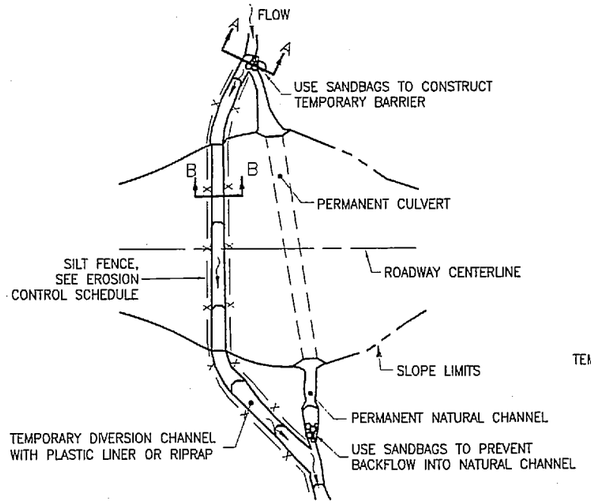
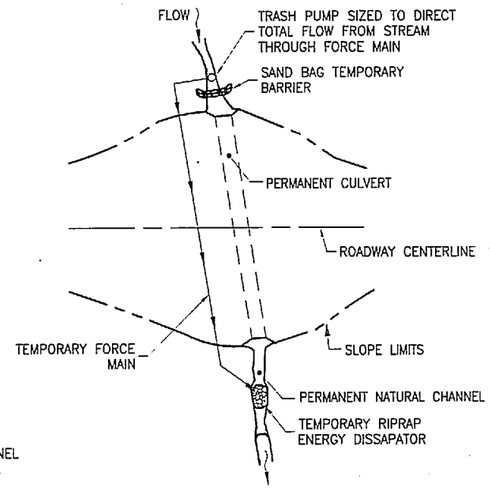
DETAILS

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E3	E11

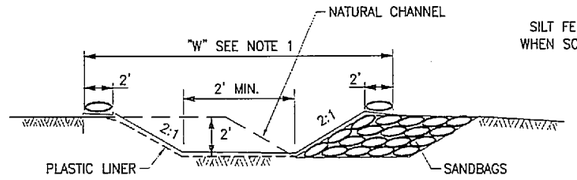


DIVERSION CHANNEL

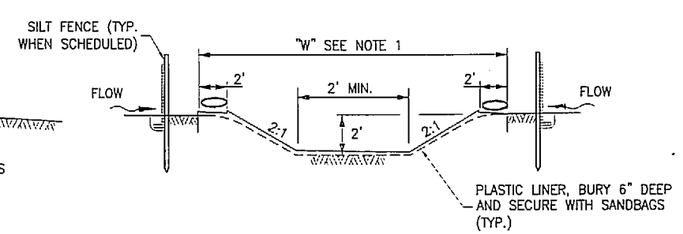


DIVERSION PUMP

SEE NOTE 5

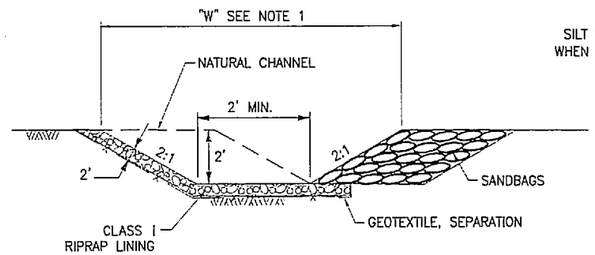


SECTION A–A

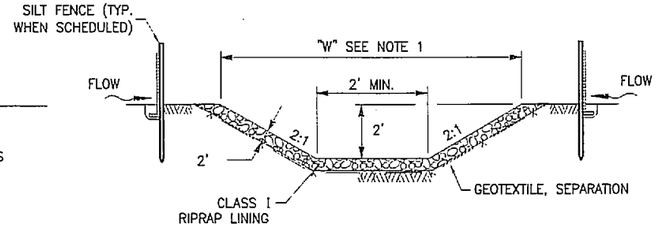


SECTION B–B

PLASTIC LINED DIVERSION CHANNEL

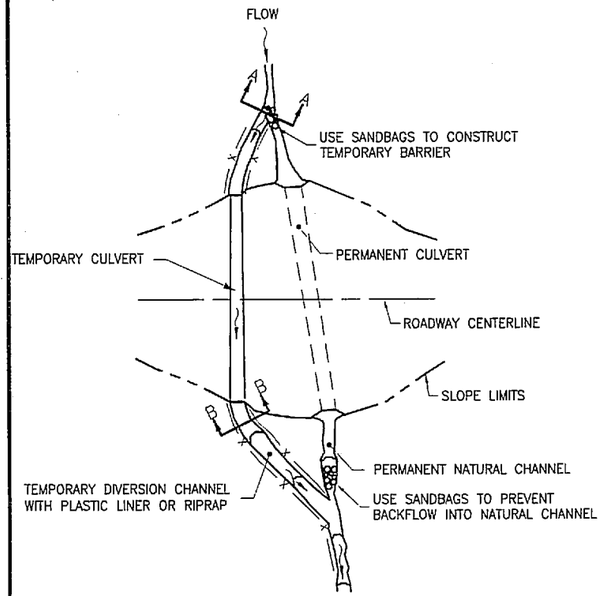


SECTION A–A



SECTION B–B

RIPRAP LINED DIVERSION CHANNEL



TEMPORARY CULVERT DIVERSION

NOTES:

1. "W" – MATCH CHANNEL WIDTH TO EXISTING STREAM WIDTH.
2. USE PLASTIC LINER OR RIPRAP ALONG THE ENTIRE LENGTH AND WIDTH OF THE TEMPORARY DIVERSION CHANNEL.
3. CONSTRUCT CHANNEL TO MAINTAIN POSITIVE DRAINAGE. PROVIDE A MINIMUM GRADE OF 0.5 PERCENT WHERE POSSIBLE.
4. DO NOT CONSTRUCT WITH LONGITUDINAL JOINTS IF USING A PLASTIC LINER. BURY THE UPSTREAM EDGE OF THE LINER A MINIMUM OF 6" DEEP AND SECURE WITH RIPRAP OR SANDBAGS.
5. IF A TRASH PUMP IS USED DURING CONSTRUCTION THE INTAKE MUST BE OPERATED, AND MAINTAINED TO PREVENT FISH ENTRAPMENT, ENTRAINMENT, OR INJURY WITH THE USE OF PERFORATED PLATE AND WOVEN WIRE HAVING A MESH SIZE NOT GREATER THAN 3/32 INCHES OR PROFILE BAR AND WEDGEWIRE HAVING OPENINGS NOT GREATER THAN 1/16 INCHES. APPROACH VELOCITIES SHALL NOT EXCEED A PASSIVE VELOCITY OF 0.2 FEET PER SECOND (FPS) OR AN ACTIVE VELOCITY OF 0.4 FPS

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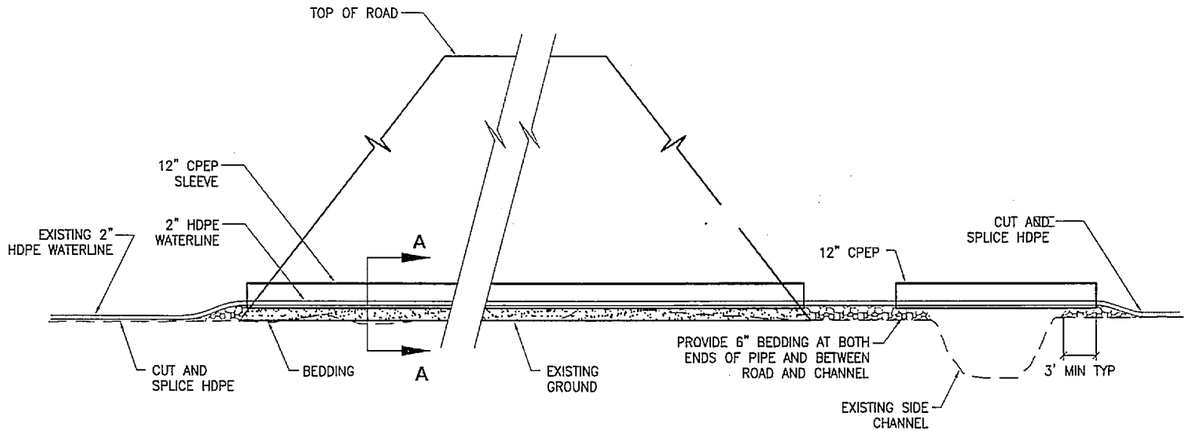
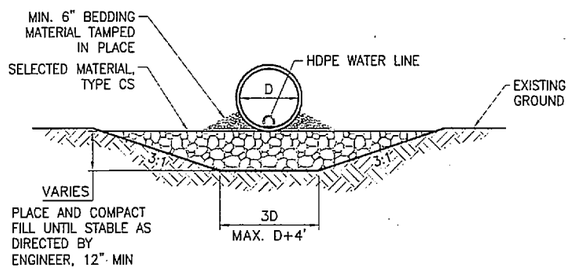
DETAILS

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E4	E11

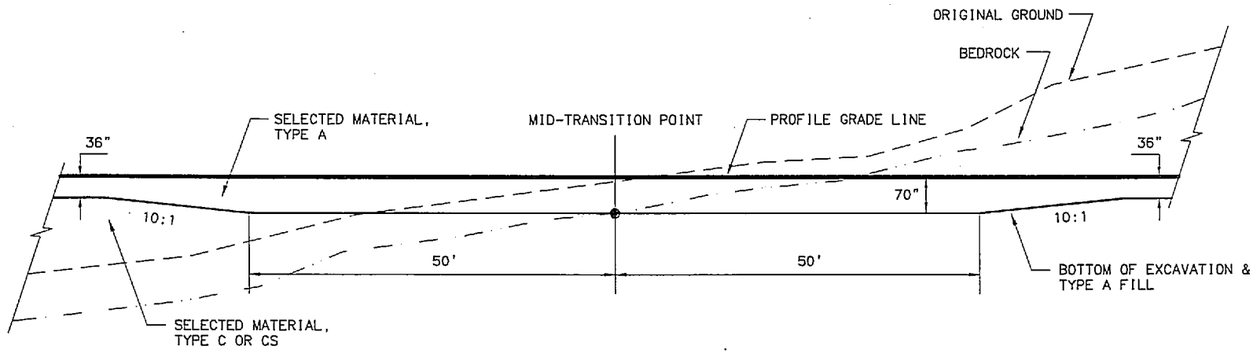


WATERLINE SLEEVE

STA 254+50

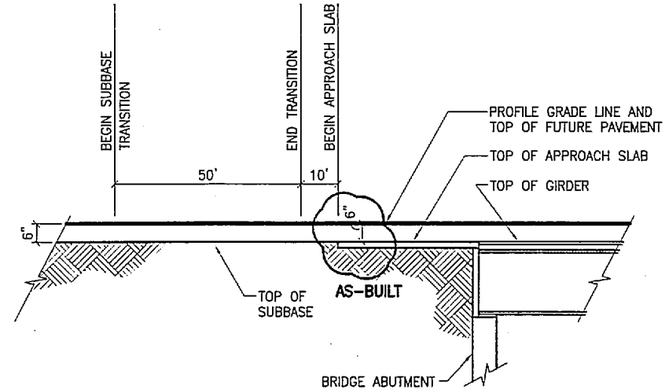


SECTION A-A

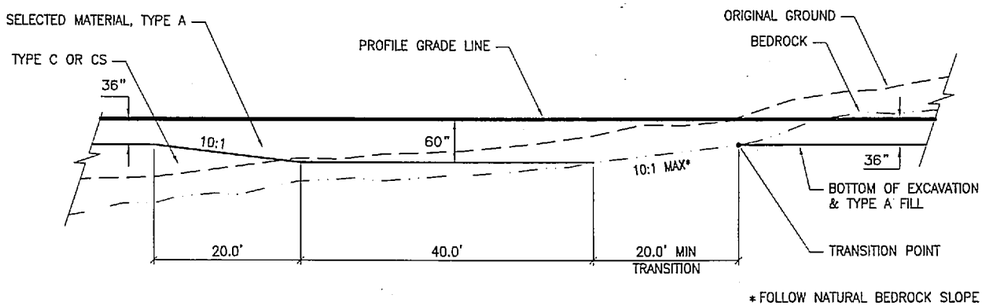


CUT-FILL LONGITUDINAL TRANSITION - CASE 2

TO BE USED WHERE DIFFERENCE BETWEEN BEDROCK SLOPE AND PROPOSED GRADE IS GREATER THAN 10%.



SUBBASE PROFILE TRANSITION AT BRIDGES



CUT-FILL LONGITUDINAL TRANSITION DETAIL - CASE 1

TO BE USED WHERE DIFFERENCE BETWEEN BEDROCK SLOPE AND PROPOSED GRADE IS LESS THAN 10%

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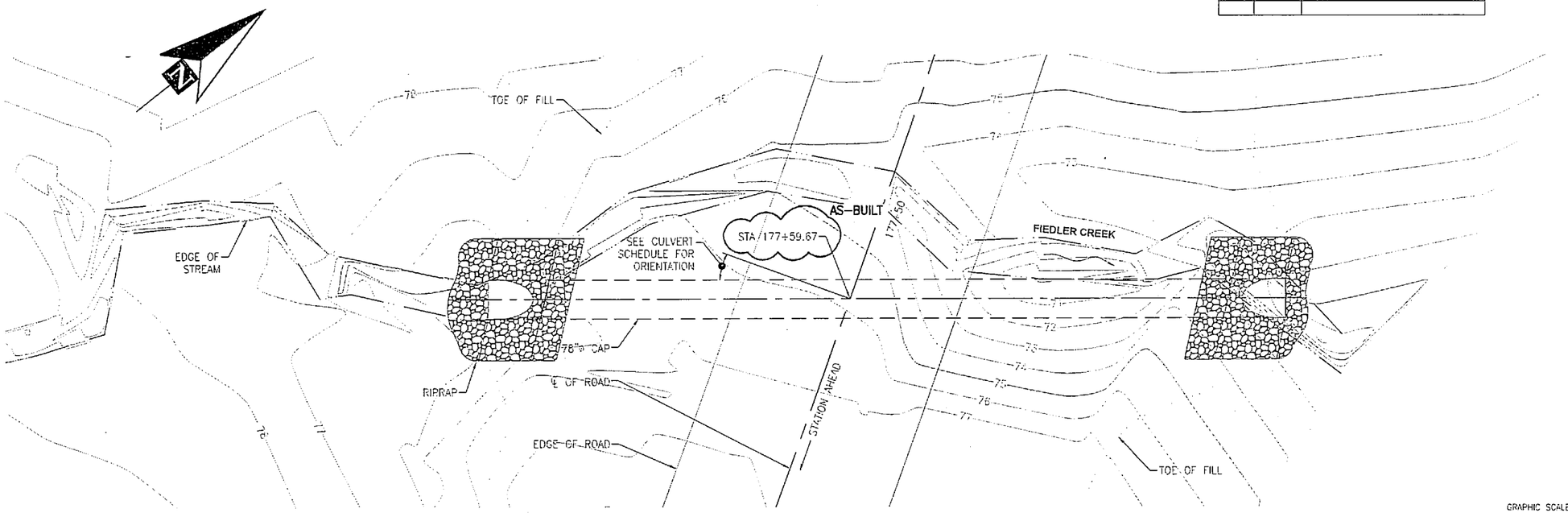
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE, AND BRIDGES

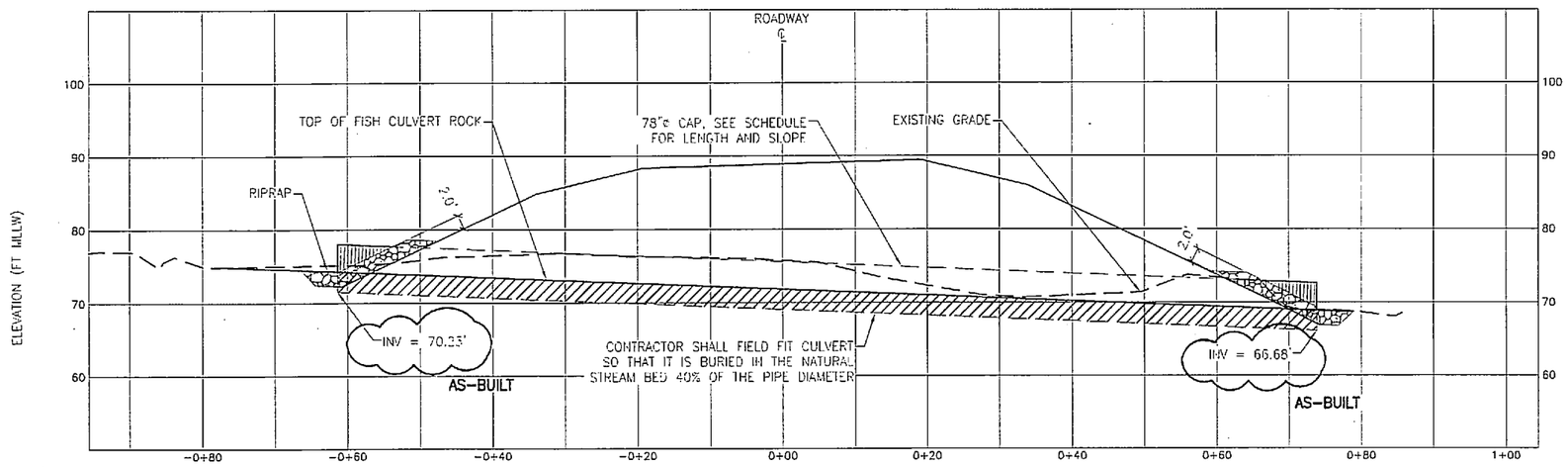
DETAILS

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E5	E11



GRAPHIC SCALE
0 10 20 30 40

PLAN (SEE C7 ON CULVERT SCHEDULE)



NOTES:

1. SENSITIVE FISH STREAM !!! DO NOT BEGIN CONSTRUCTION UNTIL TITLE 41 PERMIT IS RECEIVED. THE CULVERT IS CURRENTLY DESIGNED TO TIER 1 REQUIREMENTS FOR FISH PASSAGE. ANY ADDITIONAL REQUIREMENTS IN THE TITLE 41 PERMIT SHALL BE MET AND DOCUMENTED IN THE PROJECT ASBUILTS.

2. FIELD VERIFY INLET ELEVATIONS, OUTLET ELEVATIONS, AND SLOPE.

DRAINAGE AREA	= 0.116 SQ. MI	Q50 FLOOD ELEVATION	= 77.58 FT MLLW
DESIGN EXCEEDANCE	= 2 %	Q50 TAILWATER ELEVATION	= 70.85 FT MLLW
Q2	= 47 CFS	OVERTOPPING FLOOD	= >Q500 (126 CFS)
Q50	= 96 CFS	OVERTOPPING PROBABILITY	= <0.2%
Q_{FISH}	= 19 CFS	OVERTOPPING ELEVATION	= 84.5 FT

FIEDLER CREEK CROSS SECTION AT ℄ OF INSTALLATION

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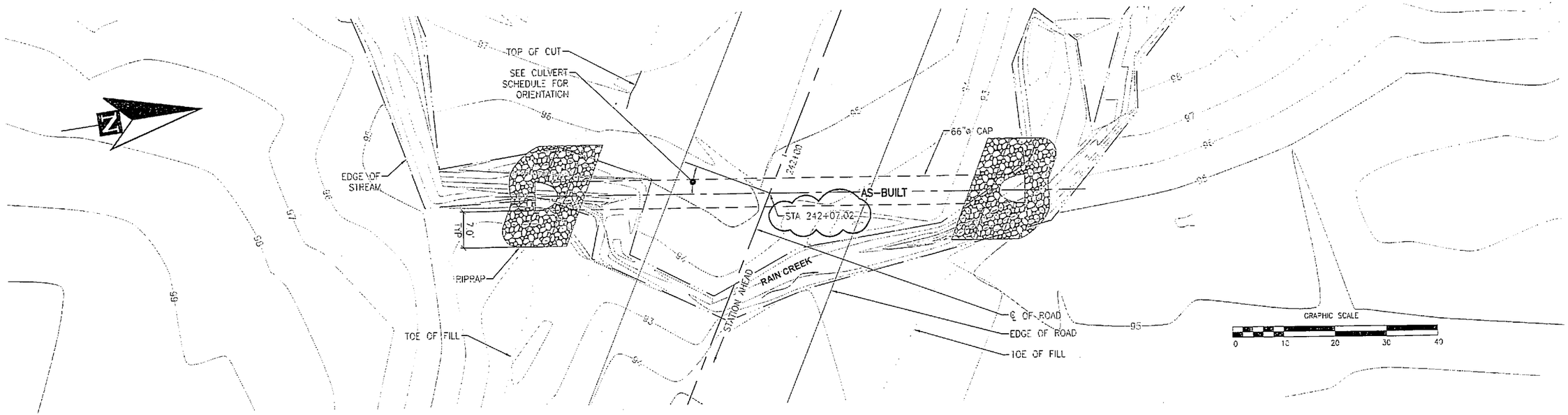
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

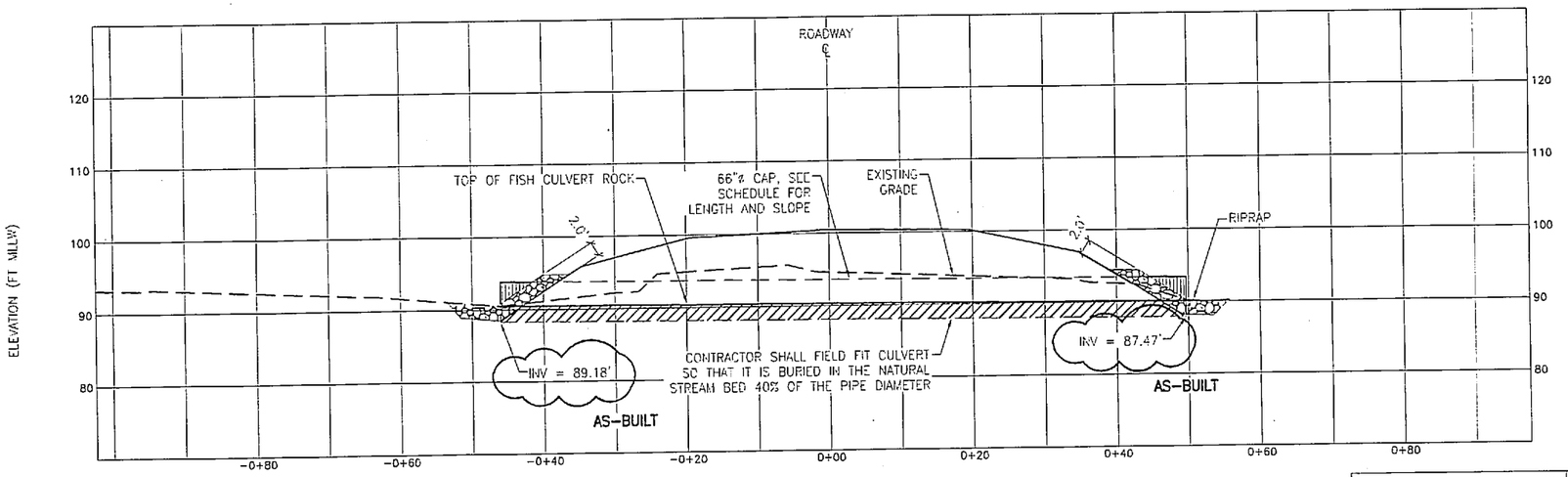
FIEDLER CREEK
CULVERT PLAN & PROFILES

STATE OF ALASKA
49 TH
Douglas T. Kenley
CE-6176
3.22.03
REGISTERED PROFESSIONAL ENGINEER

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION					
			ALASKA	ACH PRL-0003(123)/67818	2007	E6	E11



PLAN (SEE C12 ON CULVERT SCHEDULE)



RAIN CREEK CROSS SECTION AT ℄ OF INSTALLATION

NOTES:

1. SENSITIVE FISH STREAM !!! DO NOT BEGIN CONSTRUCTION UNTIL TITLE 41 PERMIT IS RECEIVED. THE CULVERT IS CURRENTLY DESIGNED TO TIER 1 REQUIREMENTS FOR FISH PASSAGE. ANY ADDITIONAL REQUIREMENTS IN THE TITLE 41 PERMIT SHALL BE MET AND DOCUMENTED IN THE PROJECT ASBUILTS.
2. FIELD VERIFY INLET ELEVATIONS, OUTLET ELEVATIONS, AND SLOPE.

DRAINAGE AREA	= 0.181 SQ. MI	Q50 FLOOD ELEVATION	= 93.96 FT MLLW
DESIGN EXCEEDANCE	= 2 %	Q50 TAILWATER ELEVATION	= 92.22 FT MLLW
Q2	= 32 CFS	OVERTOPPING FLOOD	= >Q500 (85 CFS)
Q50	= 64 CFS	OVERTOPPING PROBABILITY	= <0.2%
Q_{FISH}	= 13 CFS	OVERTOPPING ELEVATION	= 100.5 FT

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GRADING, DRAINAGE, AND BRIDGES

RAIN CREEK
CULVERT PLAN & PROFILES

STATE OF ALASKA 49 TH
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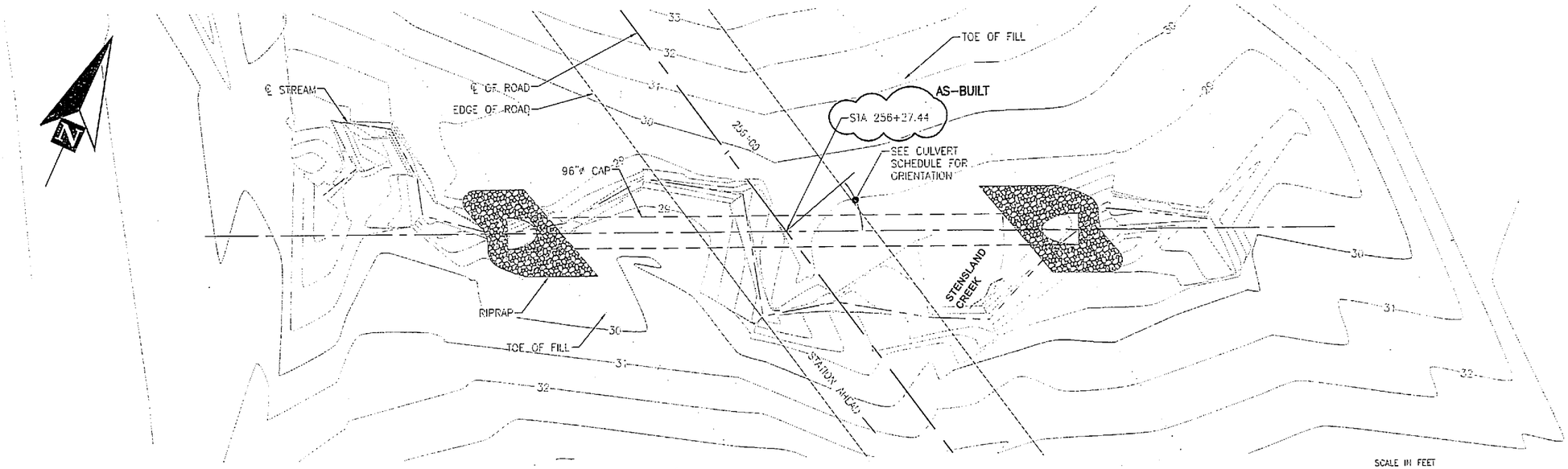
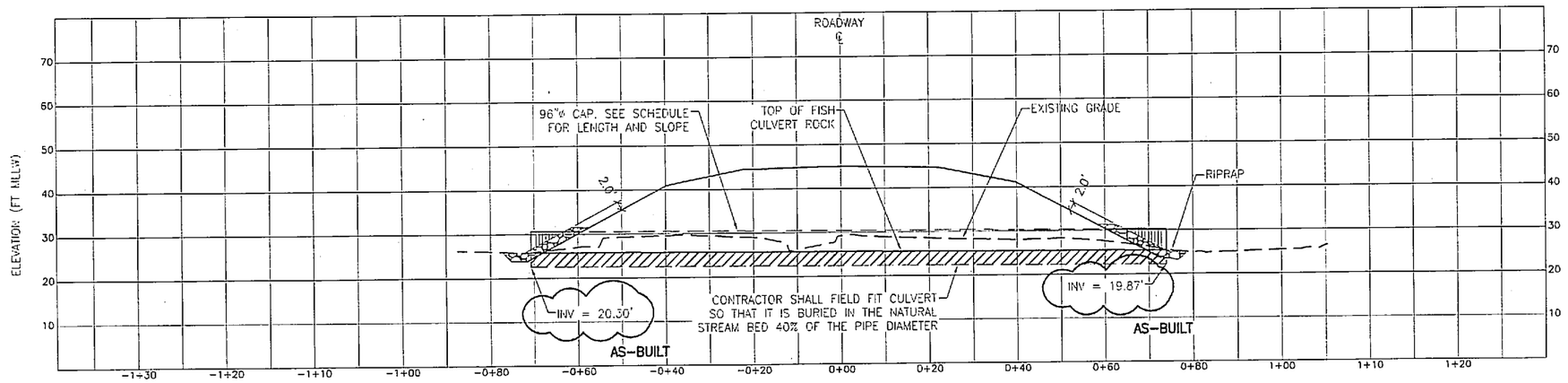
REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E7	E11



PLAN (SEE C14 ON CULVERT SCHEDULE)



STENSLAND CREEK CROSS SECTION AT ℄ OF INSTALLATION

NOTES:

1. SENSITIVE FISH STREAM !!! DO NOT BEGIN CONSTRUCTION UNTIL TITLE 41 PERMIT IS RECEIVED. THE CULVERT IS CURRENTLY DESIGNED TO TIER 1 REQUIREMENTS FOR FISH PASSAGE. ANY ADDITIONAL REQUIREMENTS IN THE TITLE 41 PERMIT SHALL BE MET AND DOCUMENTED IN THE PROJECT ASBUILTS.
2. FIELD VERIFY INLET ELEVATIONS, OUTLET ELEVATIONS, AND SLOPE.

DRAINAGE AREA	= 0.206 SQ. MI	Q50 FLOOD ELEVATION	= 31.17 FT MLLW
DESIGN EXCEEDANCE	= 2 %	Q50 TAILWATER ELEVATION	= 28.92 FT MLLW
Q2	= 87 CFS	OVERTOPPING FLOOD	= >Q500 (232 CFS)
Q50	= 178 CFS	OVERTOPPING PROBABILITY	= <0.2%
Q_{FISH}	= 35 CFS	OVERTOPPING ELEVATION	= 45.0 FT

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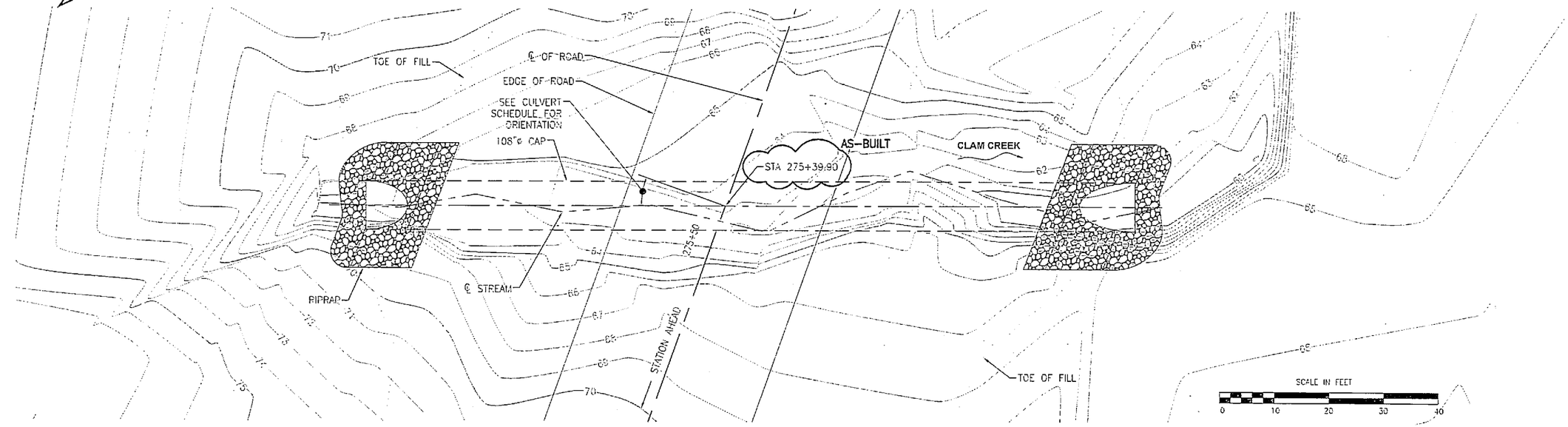
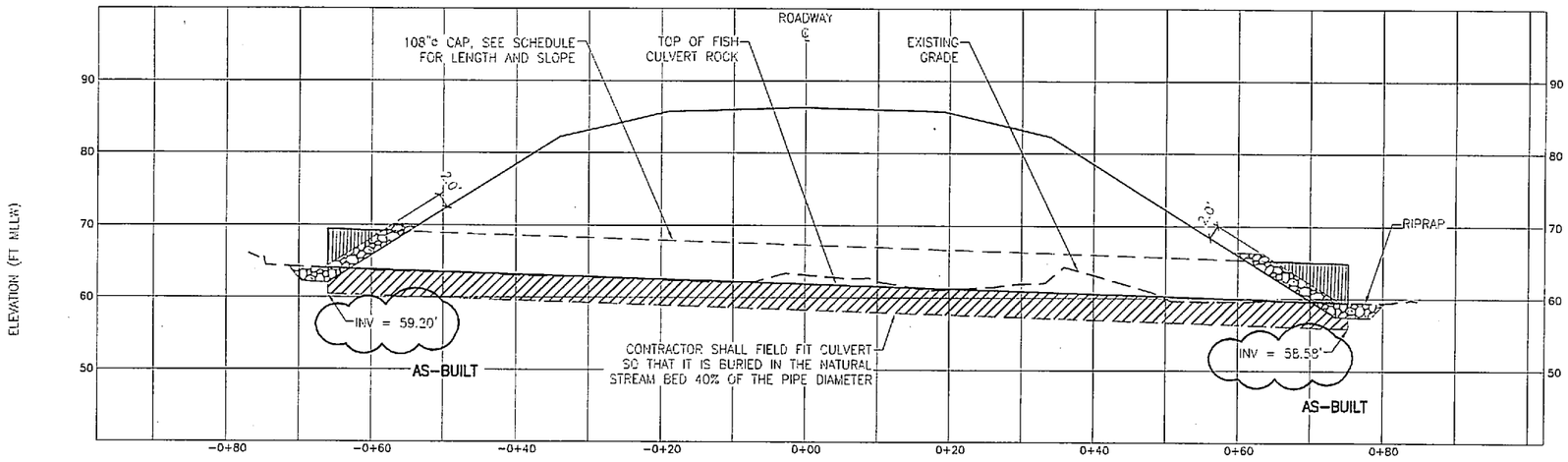
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

STENSLAND CREEK
CULVERT PLAN & PROFILES

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E8	E11



PLAN (SEE C17 ON CULVERT SCHEDULE)



CLAM CREEK CROSS SECTION AT ℄ OF INSTALLATION

NOTES:

1. SENSITIVE FISH STREAM !!! DO NOT BEGIN CONSTRUCTION UNTIL TITLE 41 PERMIT IS RECEIVED. THE CULVERT IS CURRENTLY DESIGNED TO TIER 1 REQUIREMENTS FOR FISH PASSAGE. ANY ADDITIONAL REQUIREMENTS IN THE TITLE 41 PERMIT SHALL BE MET AND DOCUMENTED IN THE PROJECT ASBUILTS.
2. FIELD VERIFY INLET ELEVATIONS, OUTLET ELEVATIONS, AND SLOPE.

DRAINAGE AREA	= 0.386 SQ. MI	Q50 FLOOD ELEVATION	= 68.82 FT MLLW
DESIGN EXCEEDANCE	= 2 %	Q50 TAILWATER ELEVATION	= 61.78 FT MLLW
Q2	= 98 CFS	OVERTOPPING FLOOD	= >Q500 (258 CFS)
Q50	= 197 CFS	OVERTOPPING PROBABILITY	= <0.2%
Q_{FISH}	= 39 CFS	OVERTOPPING ELEVATION	= 88.3 FT

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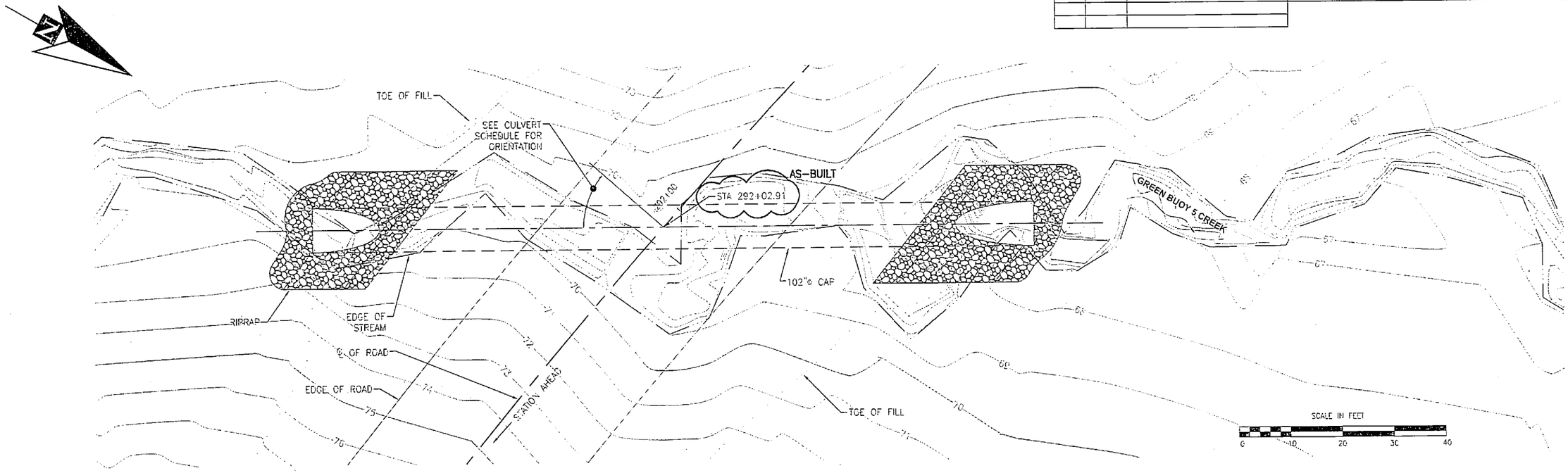
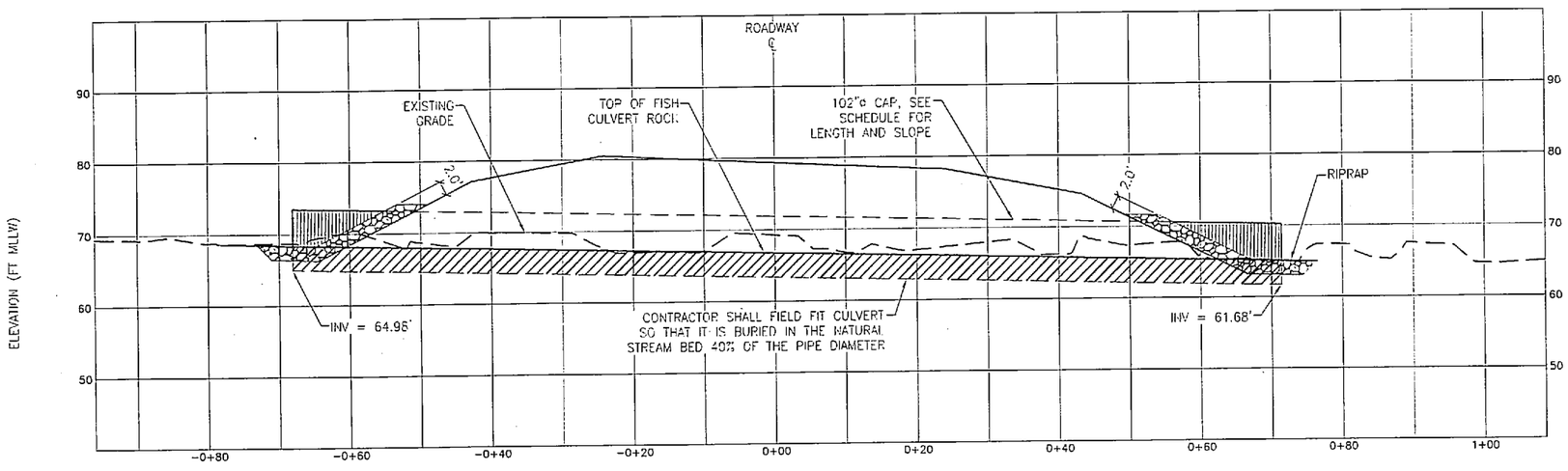
GRADING, DRAINAGE, AND BRIDGES

CLAM CREEK
CULVERT PLAN & PROFILES

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E9	E11



PLAN (SEE C19 ON CULVERT SCHEDULE)



GREEN BUOY 5 CREEK CROSS SECTION AT ℄ OF INSTALLATION

NOTES:

1. SENSITIVE FISH STREAM !!! DO NOT BEGIN CONSTRUCTION UNTIL TITLE 41 PERMIT IS RECEIVED. THE CULVERT IS CURRENTLY DESIGNED TO TIER 1 REQUIREMENTS FOR FISH PASSAGE. ANY ADDITIONAL REQUIREMETNS IN THE TITLE 41 PERMIT SHALL BE MET AND DOCUMENTED IN THE PROJECT ASBUILTS.
2. FIELD VERIFY INLET ELEVATIONS, OUTLET ELEVATIONS, AND SLOPE.

DRAINAGE AREA	= 0.253 SQ. MI	Q50 FLOOD ELEVATION	= 73.50 FT MLLW
DESIGN EXCEEDANCE	= 2 %	Q50 TAILWATER ELEVATION	= 68.07 FT MLLW
Q_D	= 100 CFS	OVERTOPPING FLOOD	= >Q500 (287 CFS)
Q50	= 205 CFS	OVERTOPPING PROBABILITY	= <0.2%
Q_{FISH}	= 40 CFS	OVERTOPPING ELEVATION	= 80.5 FT

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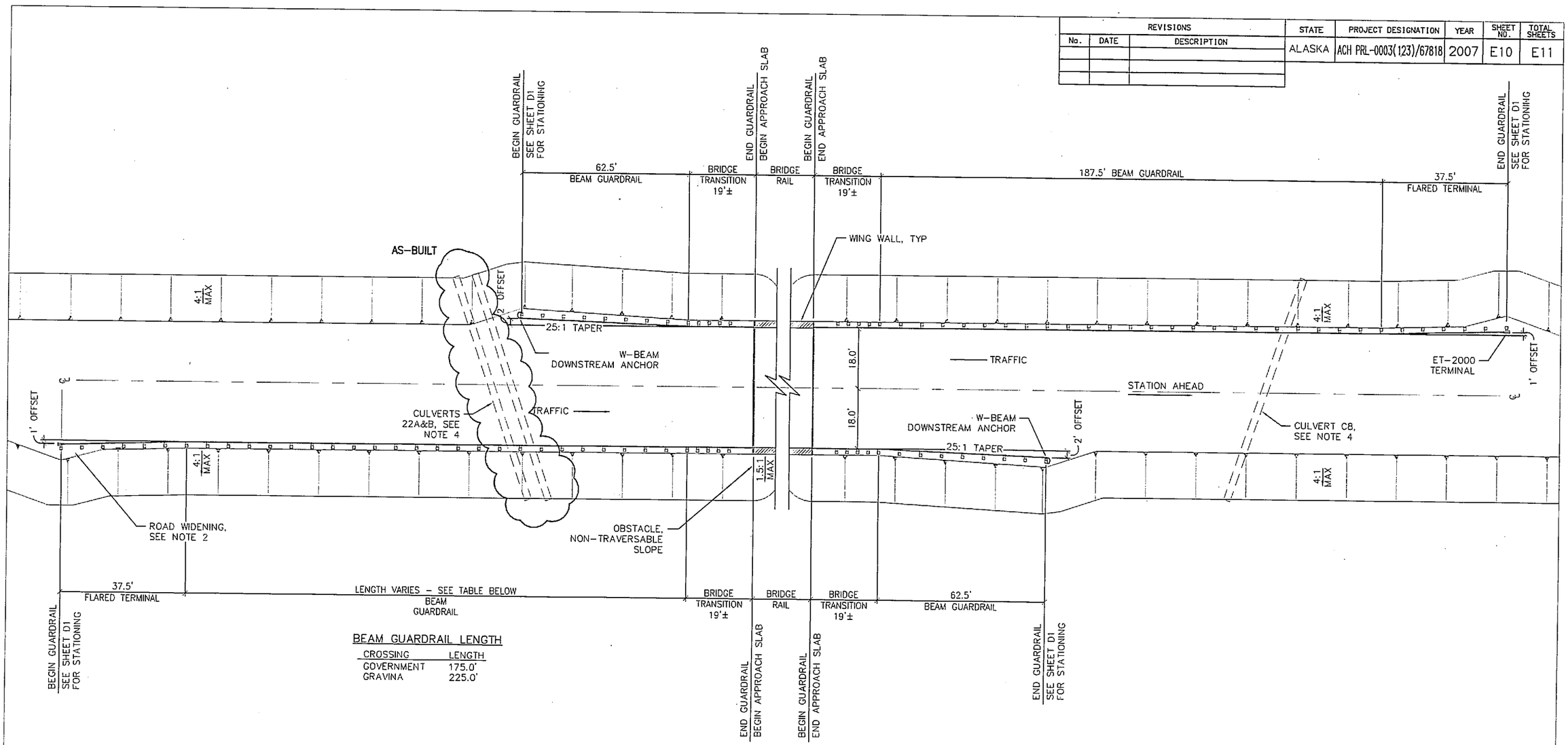
GREEN BUOY 5 CREEK CULVERT PLAN & PROFILES

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E10	E11



BEAM GUARDRAIL LENGTH

CROSSING	LENGTH
GOVERNMENT	175.0'
GRAVINA	225.0'

GUARDRAIL LAYOUTS FOR GOVERNMENT CREEK AND GRAVINA CREEK

NOTES:
1. SEE STD DETAIL G31.00 FOR BRIDGE TRANSITION DETAIL
2. SEE STD DETAIL G20.10 FOR GRADING REQUIREMENTS.
3. SEE STD DETAIL G13.00 FOR W-BEAM DOWNSTREAM ANCHOR.
4. AVOID CONLFLICTS BETWEEN THE GUARDRAIL POST AND CULVERTS AT GOVERNMENT CREEK & GRAVINA CREEK. SEE STD DETAIL G28.00 IN CASE OF CONFLICT.

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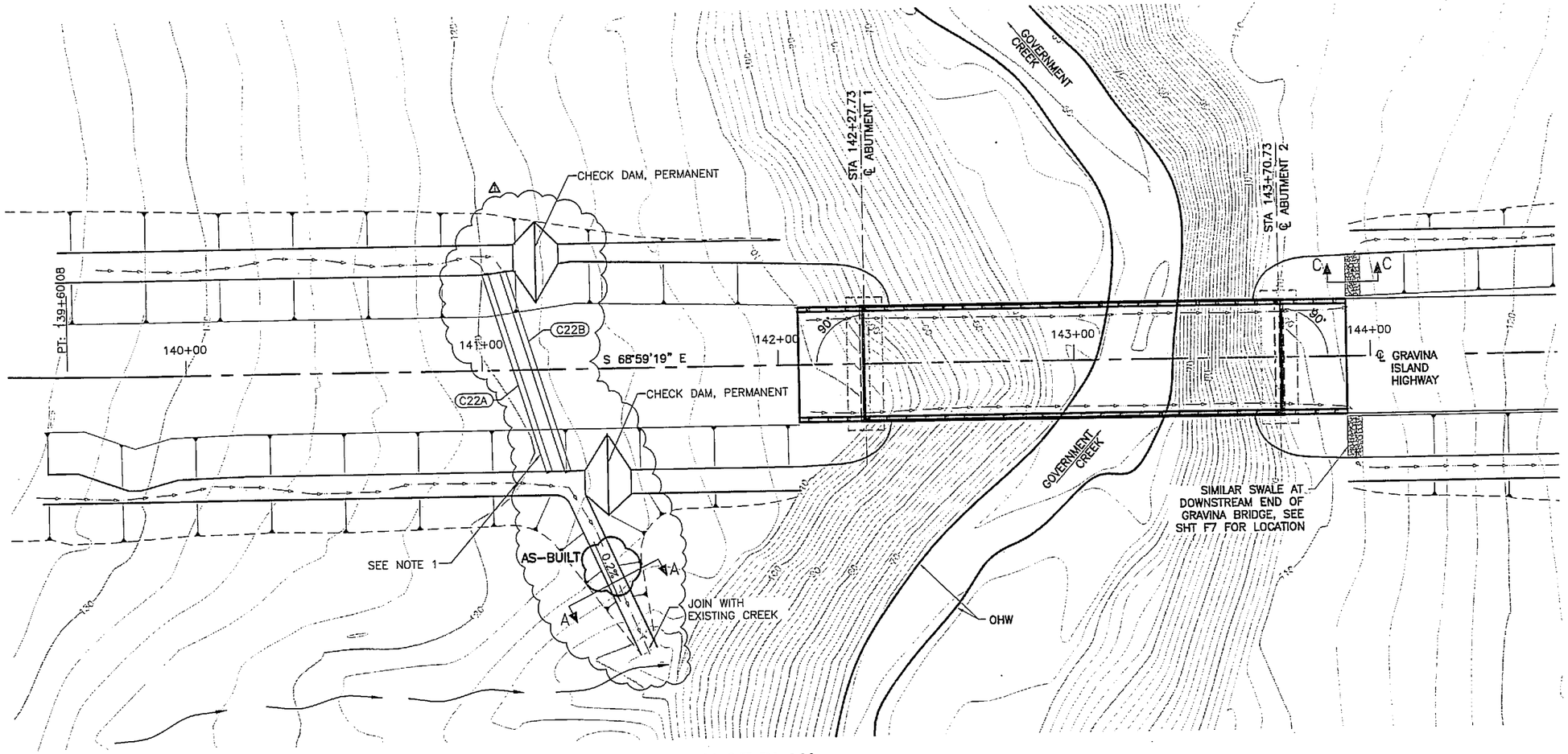
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

GUARDRAIL LAYOUT

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	E11	E11
1	5/30/08	RPLCD DSSPTR W/ CHNNL					

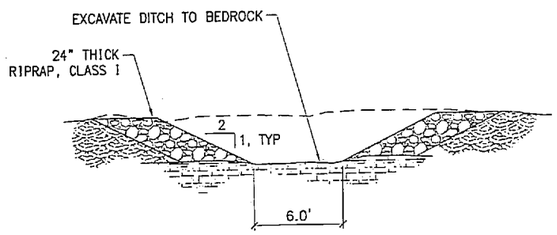


ENLARGED DRAINAGE PLAN

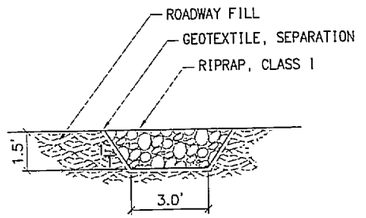
SCALE IN FEET
20 0 20 40 60

NOTES:

1. FIELD ADJUST CULVERT AS NECESSARY TO AVOID CONFLICT WITH GUARDRAIL POST.



DRAINAGE SWALE - SECTION A-A



DRAINAGE SWALE - SECTION C-C

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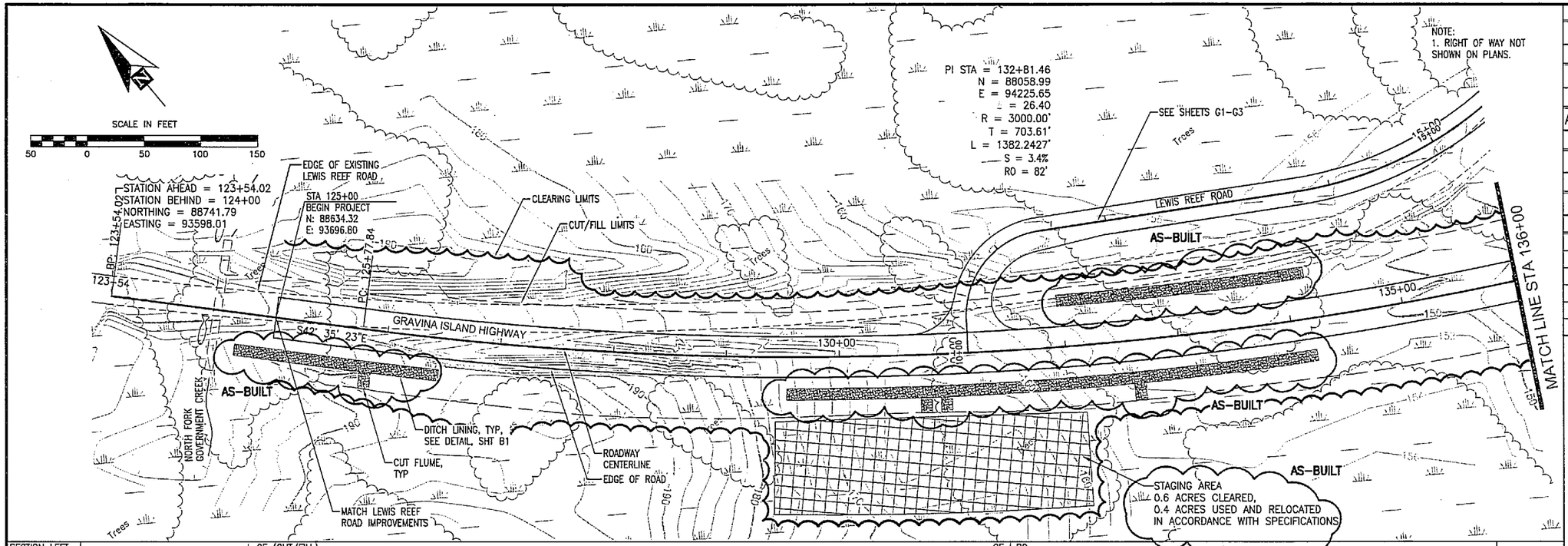
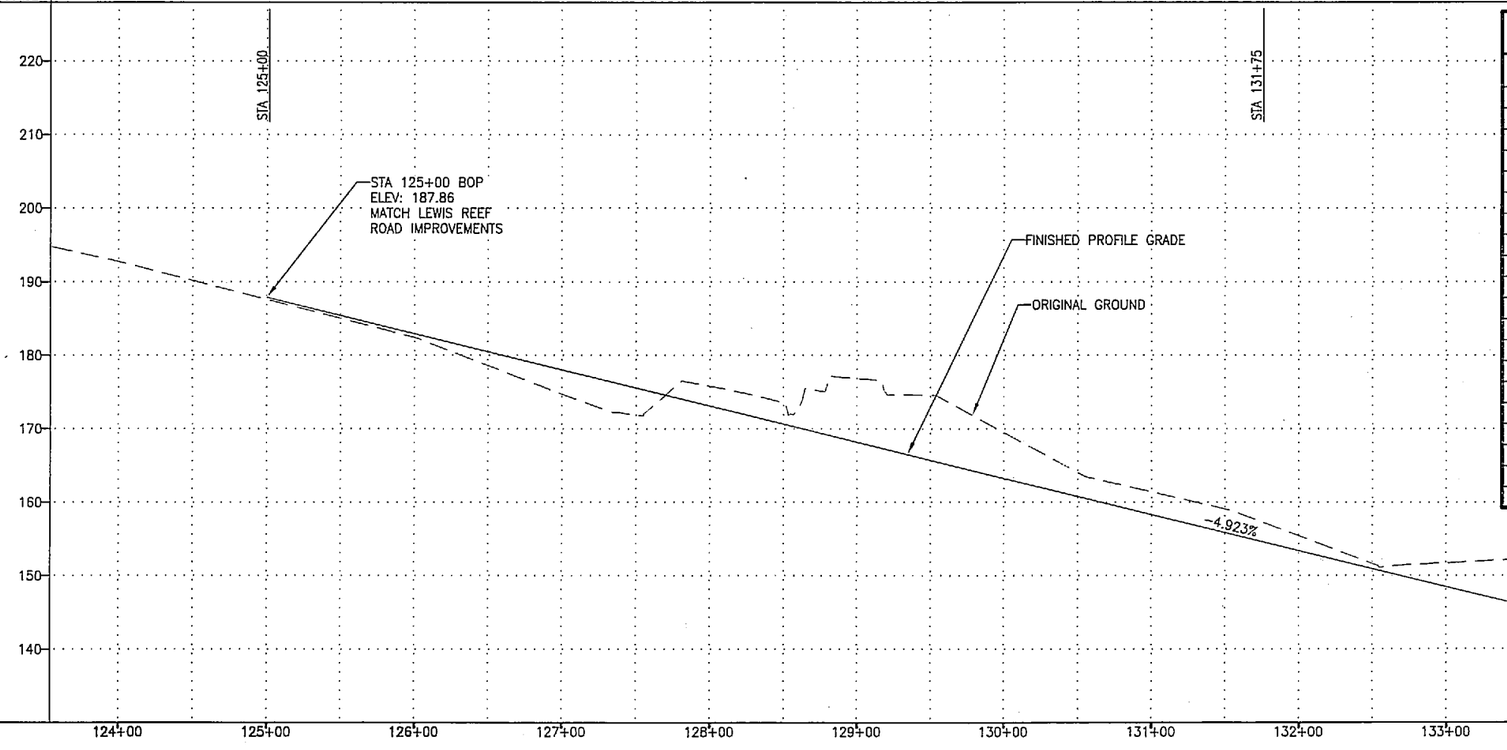
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

ENLARGED DRAINAGE PLAN
AND DETAIL



SECTION LEFT	CF (CUT/FILL)	CF	RC
SECTION RIGHT	RC (ROCK CUT)	RC	RC
FISH PASSAGE			

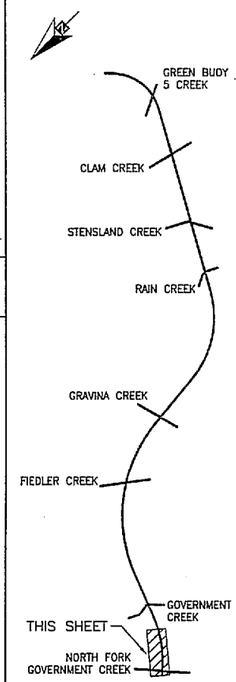


ROCK LINED DITCH

LEFT		RIGHT	
BEGIN	END	BEGIN	END
		124+76	126+46
		129+63	134+16
131+74	134+21		
139+81	141+25		
		140+06	141+19
		151+75	154+50
151+83	154+50		
192+34	197+36		
		193+33	197+41
205+19	210+39		
		225+00	229+00
		278+60	279+25
278+80	282+07		
		284+08	289+12
289+82	290+97		
		290+80	291+90
		292+82	293+86
		296+35	298+80
296+70	298+22		

SHEET NO.	TOTAL SHEETS
F1	F16
STATE	YEAR
ALASKA	2007
PROJECT DESIGNATION	
ACH PRL-0003(123)/67818	
ADDENDUM NO.	
ATTACHMENT NO.	
REVISIONS	

NO.	DATE	DESCRIPTION



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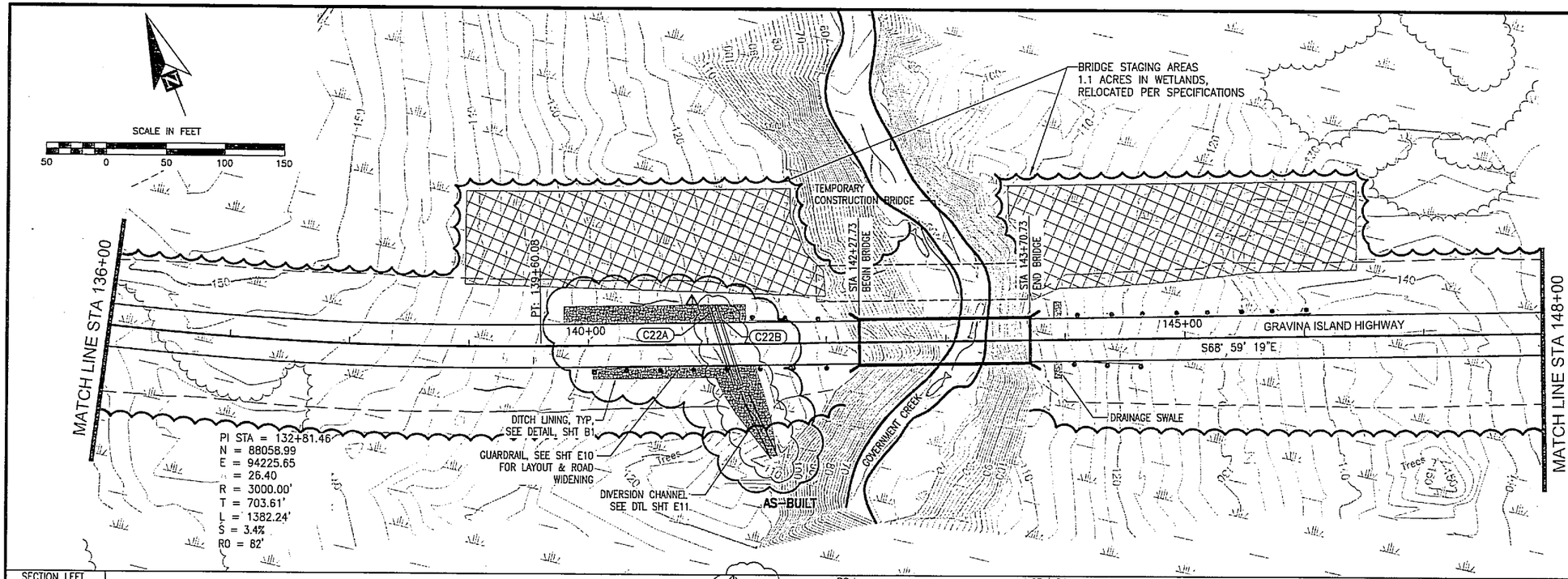
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY
PLAN & PROFILE



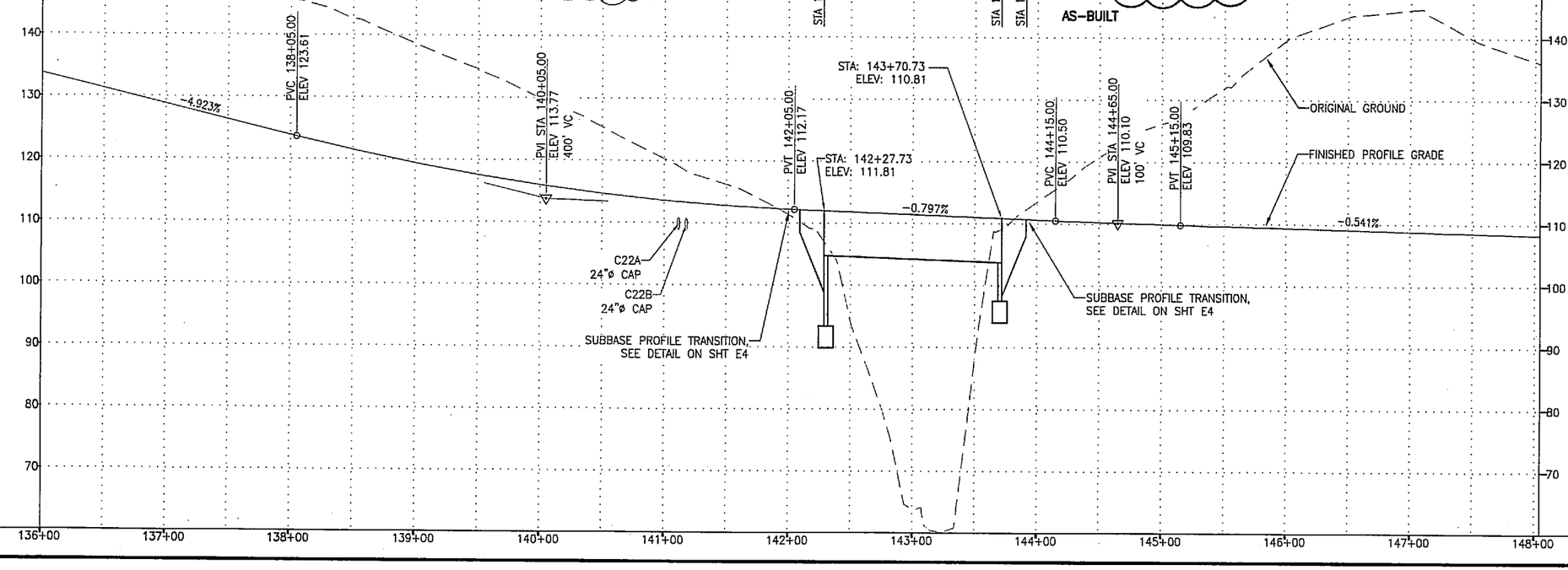
SECTION LEFT		RC	CF RC**
SECTION RIGHT		RC	CF RC
FISH PASSAGE		143 FT BRIDGE	

CHECK DAMS, PERMANENT
SEE DTL SHT E2 & E11

**STA 143+80 TO 152+25
LEFT DITCH WAS WIDENED
TO 12FT AND THE ROCK
CUT AT A 0.33:1 SLOPE

AS-BUILT

STA 142+27.73
STA 143+70.73
STA 143+80



SHEET NO.	TOTAL SHEETS
F2	F16
STATE	YEAR
ALASKA	2007

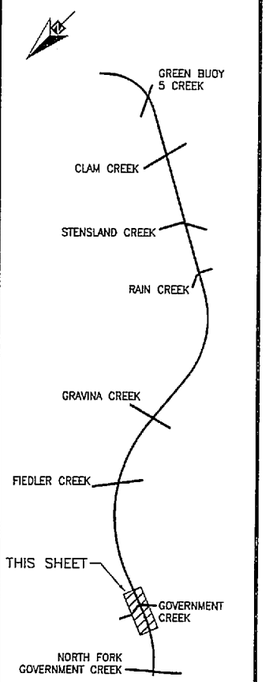
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION
1	5/30/08	RPLCD DSSPTR W/ CHNNL



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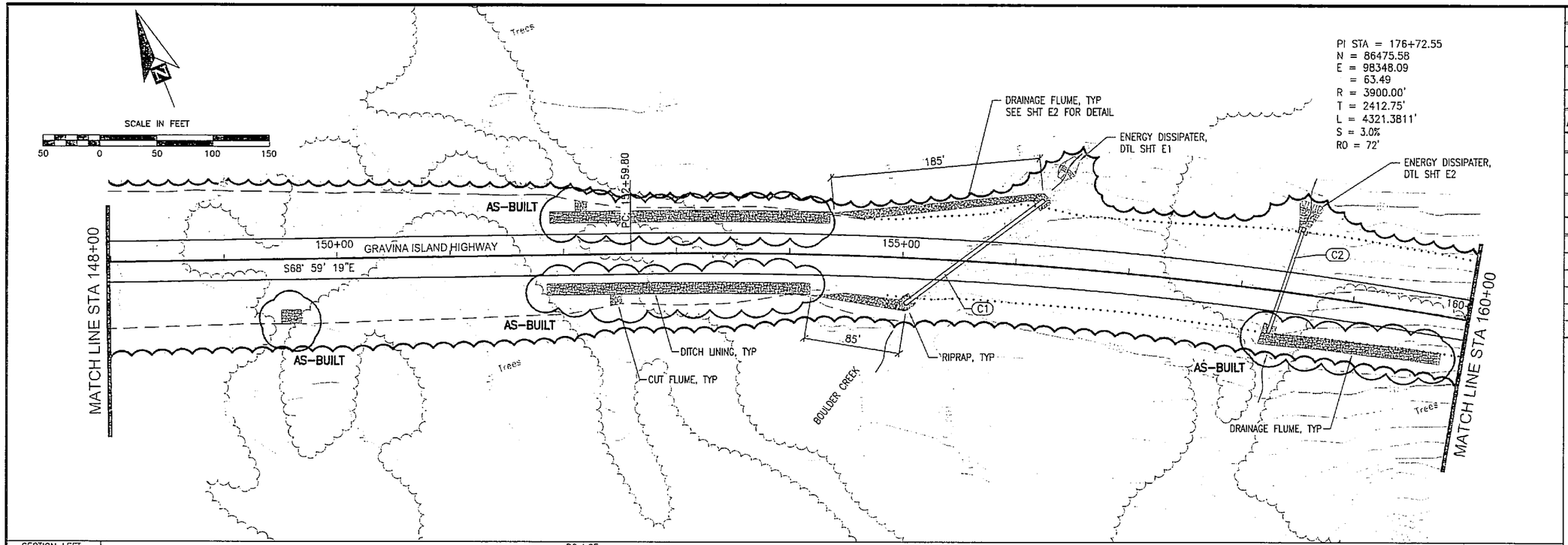
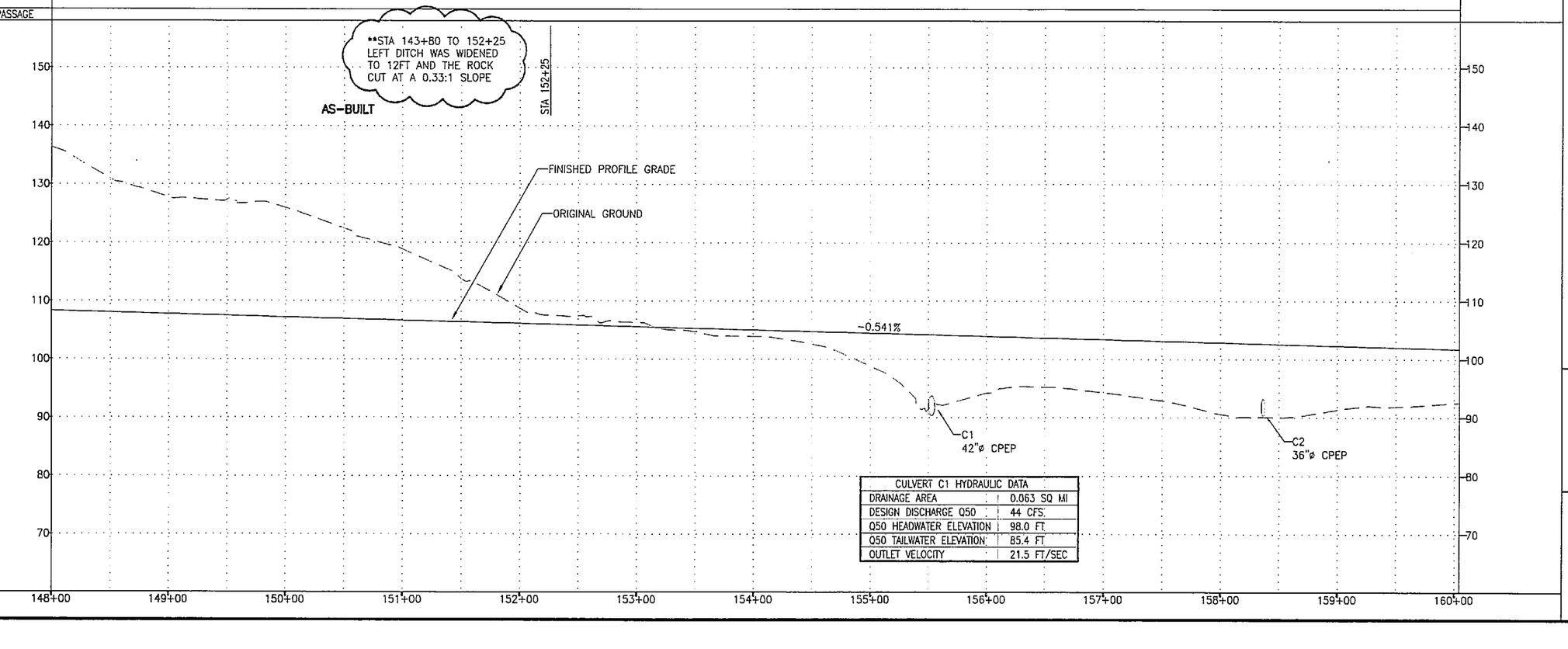
GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE



SECTION LEFT	RC | CF
SECTION RIGHT	**RC | CF
FISH PASSAGE	



CULVERT C1 HYDRAULIC DATA	
DRAINAGE AREA	0.063 SQ MI
DESIGN DISCHARGE Q50	44 CFS
Q50 HEADWATER ELEVATION	98.0 FT
Q50 TAILWATER ELEVATION	85.4 FT
OUTLET VELOCITY	21.5 FT/SEC

SHEET NO.	TOTAL SHEETS
F3	F16
STATE	YEAR
ALASKA	2007

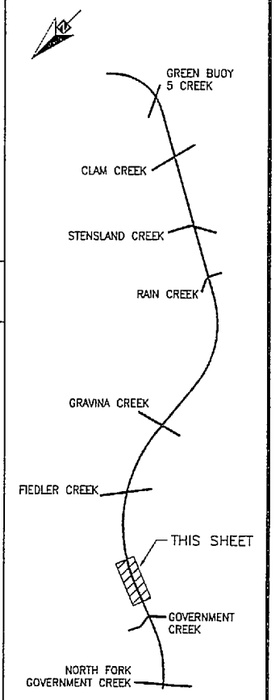
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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AND PUBLIC FACILITIES

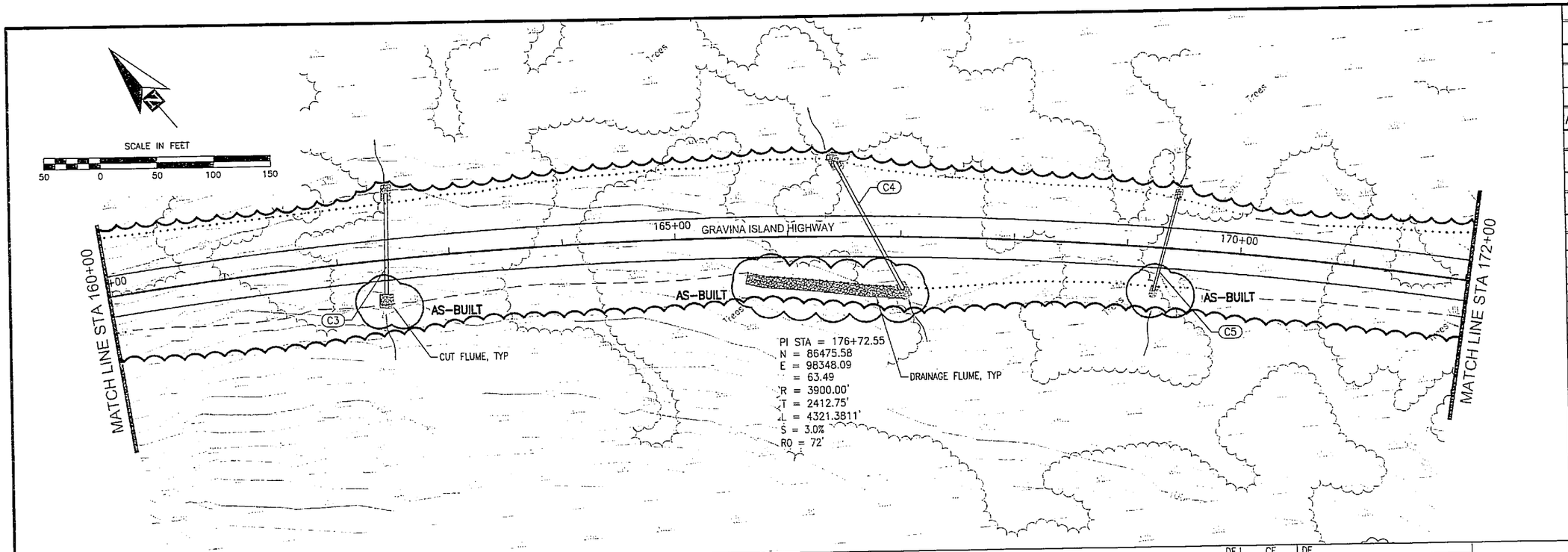
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE AND
BRIDGES

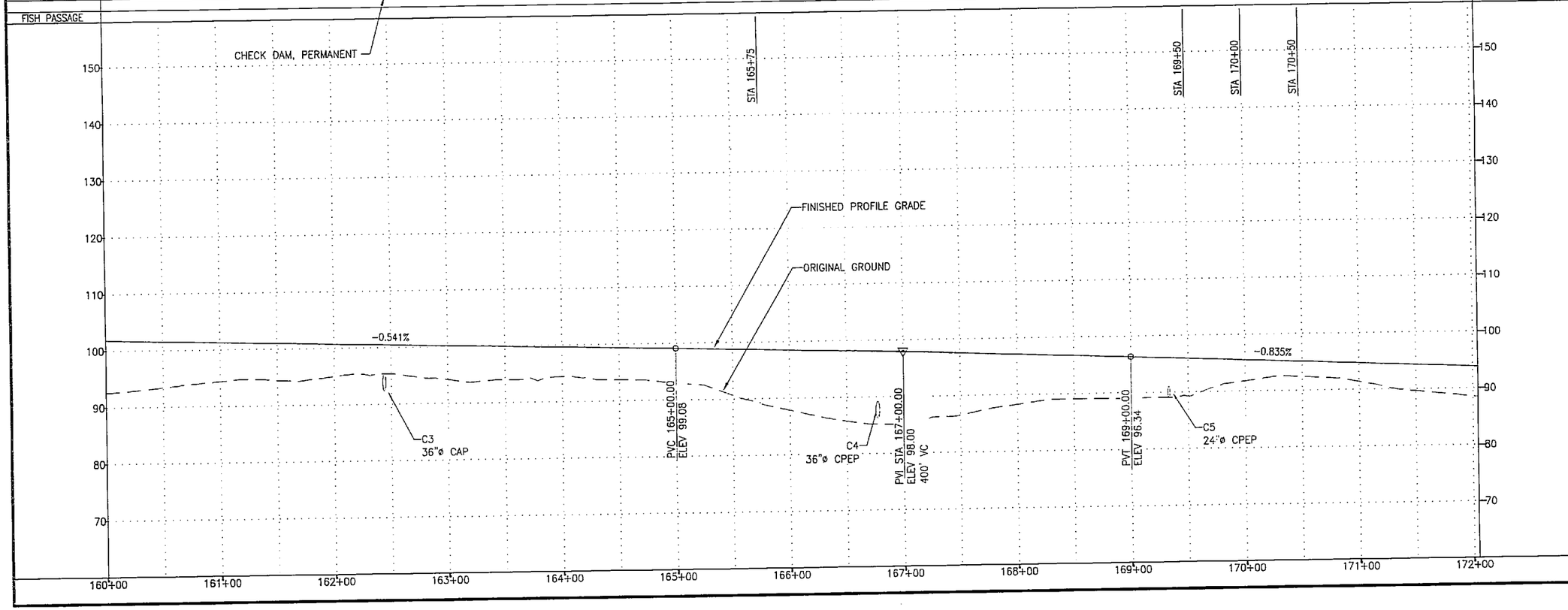
GRAVINA ISLAND HIGHWAY PLAN & PROFILE

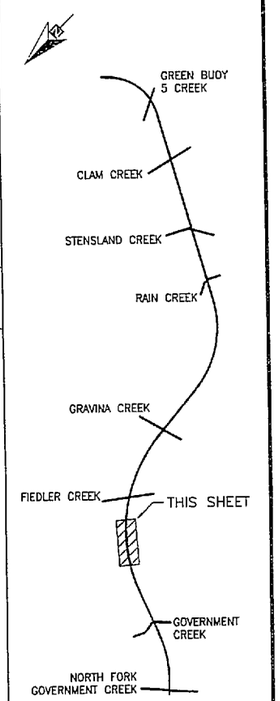
SHEET NO.	TOTAL SHEETS
F4	F16
STATE	YEAR
ALASKA	2007
PROJECT DESIGNATION	
ACH PRL-0003(123)/67818	
ADDENDUM NO.	
ATTACHMENT NO.	

REVISIONS

NO.	DATE	DESCRIPTION







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STATE OF ALASKA
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Douglas T. Kenley
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3.23.09
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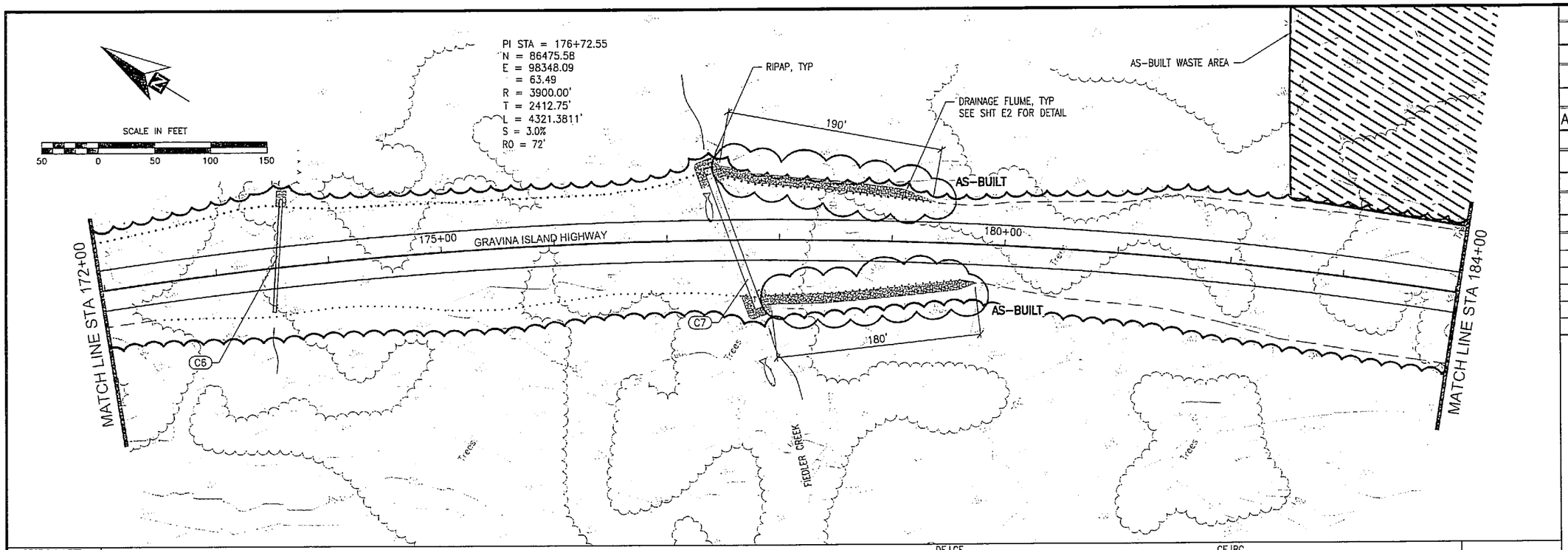
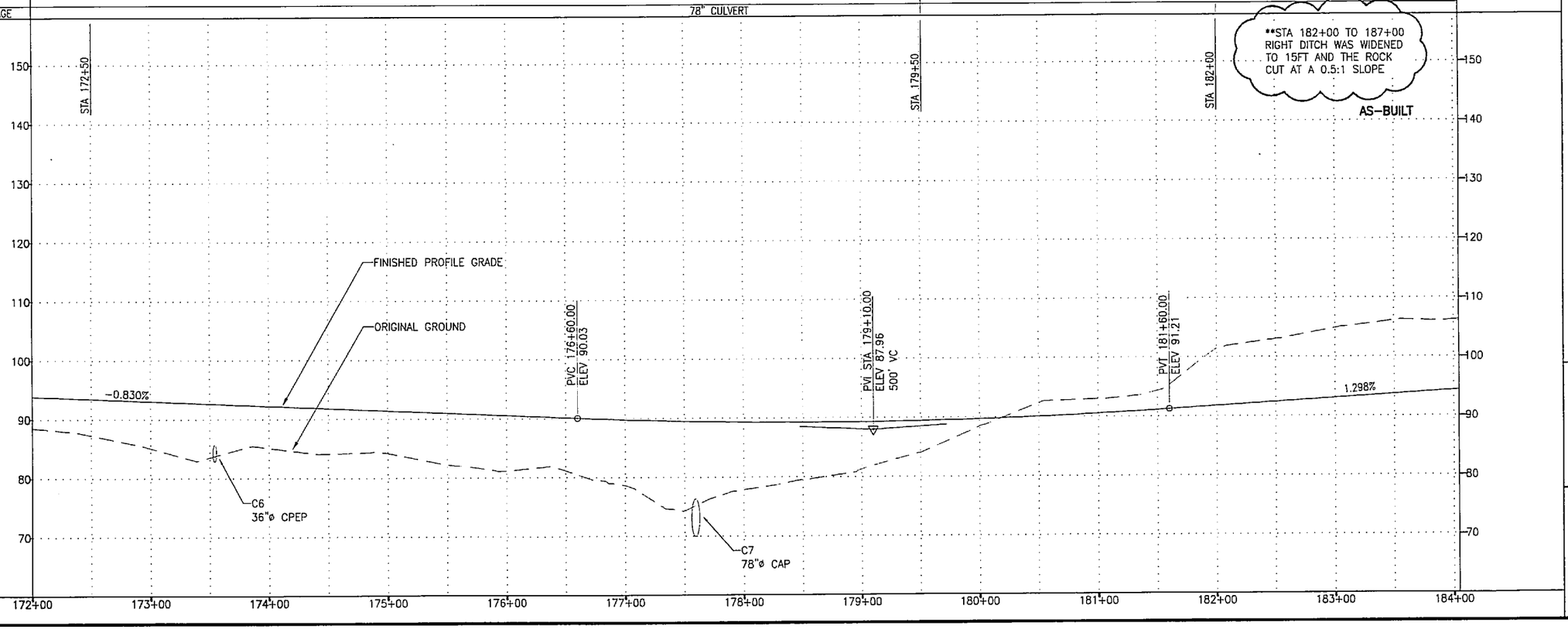
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE



SECTION LEFT		DF | CF	CF | RC
SECTION RIGHT	CF | DF	DF | CF	CF | RC**
FISH PASSAGE	78" CULVERT		



SHEET NO.	TOTAL SHEETS
F5	F16
STATE	YEAR
ALASKA	2007

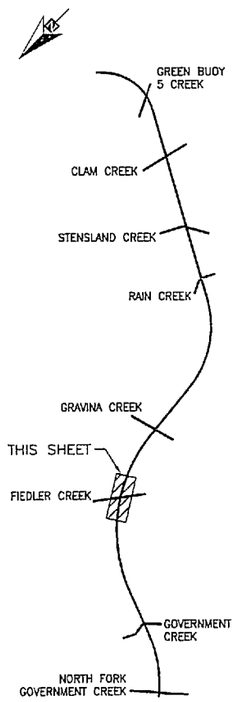
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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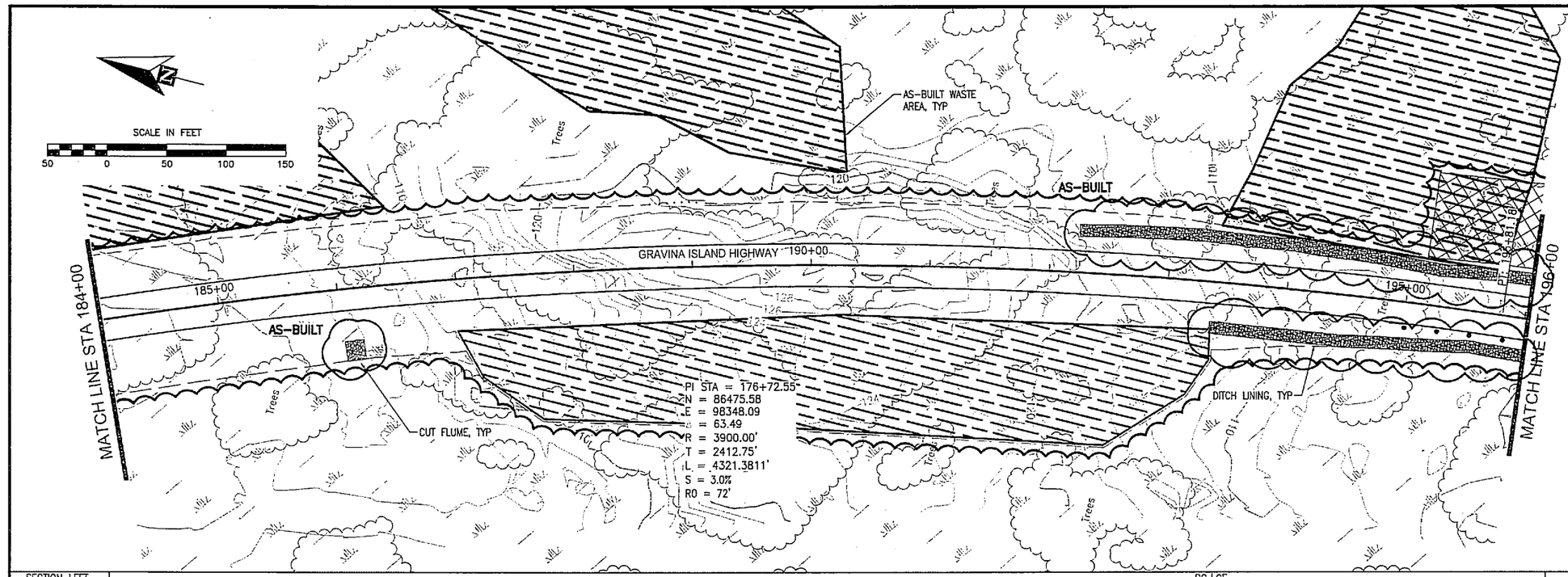
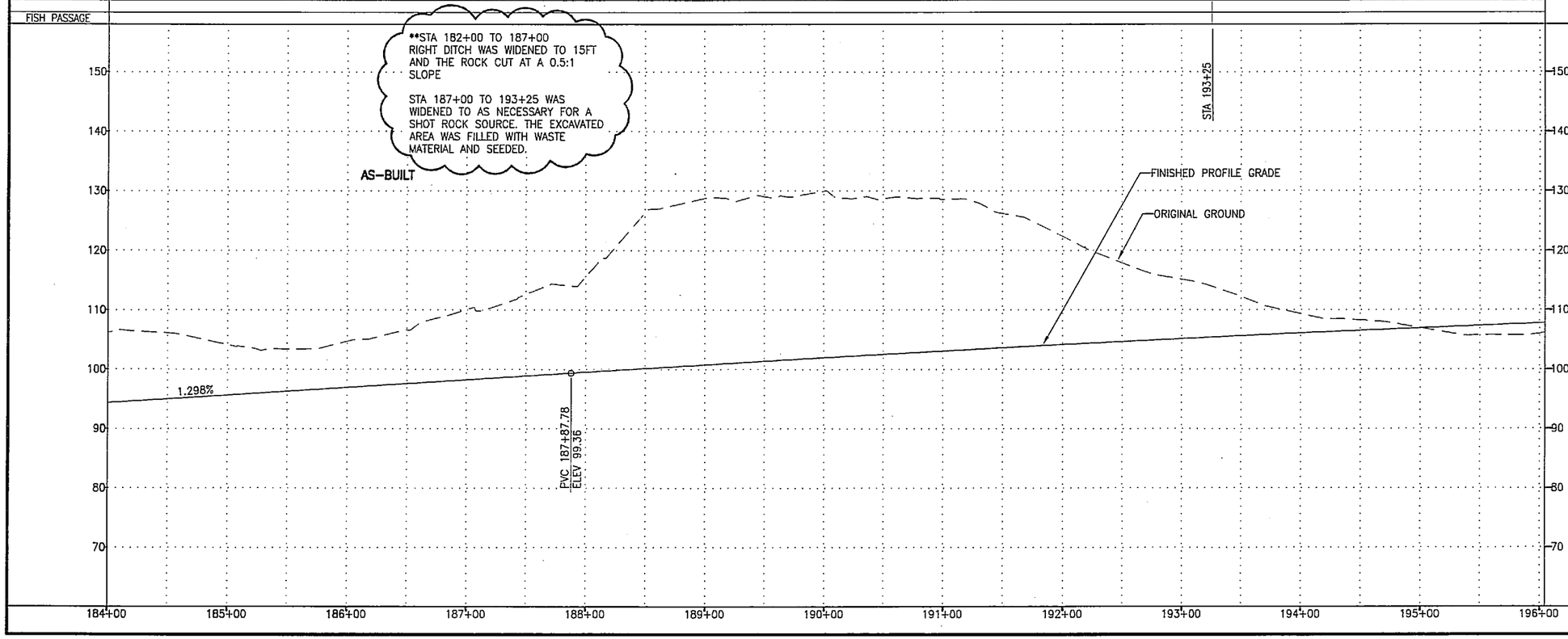
GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE





SHEET NO.	TOTAL SHEETS
F6	F16
STATE	YEAR
ALASKA	2007

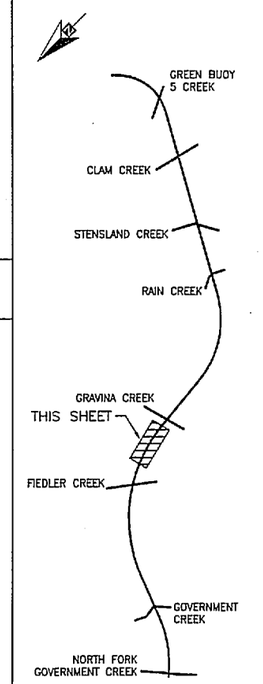
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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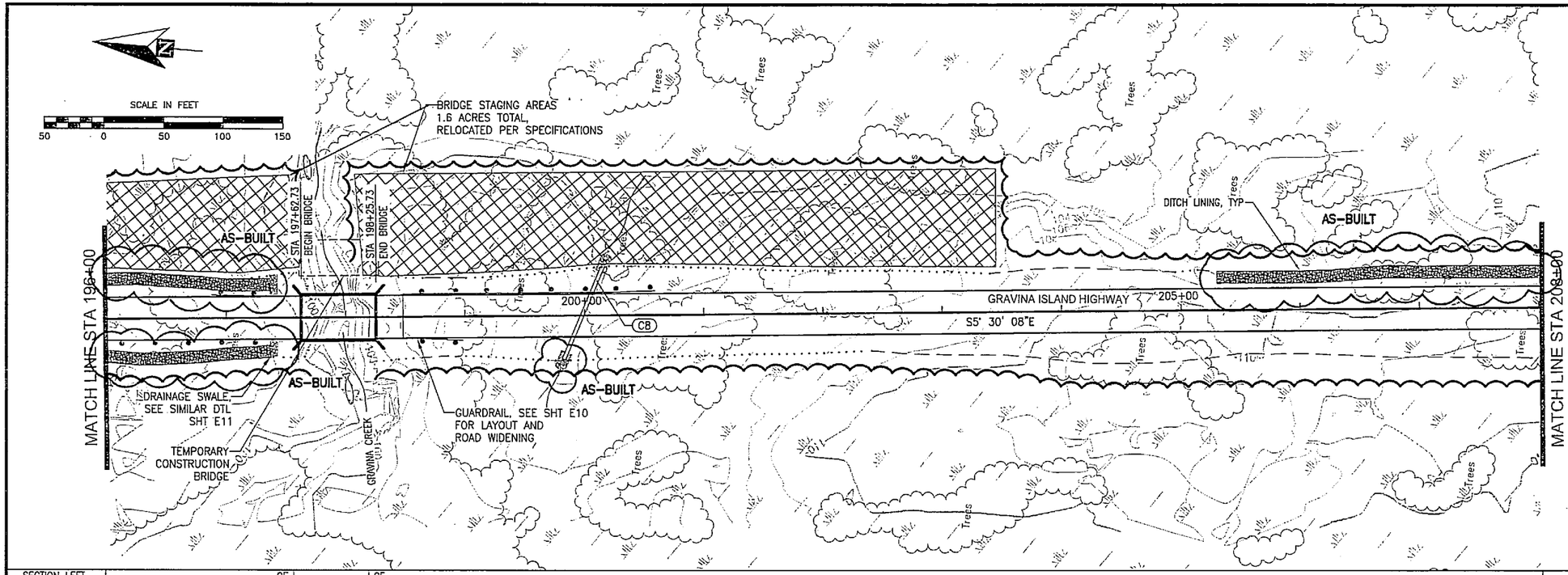
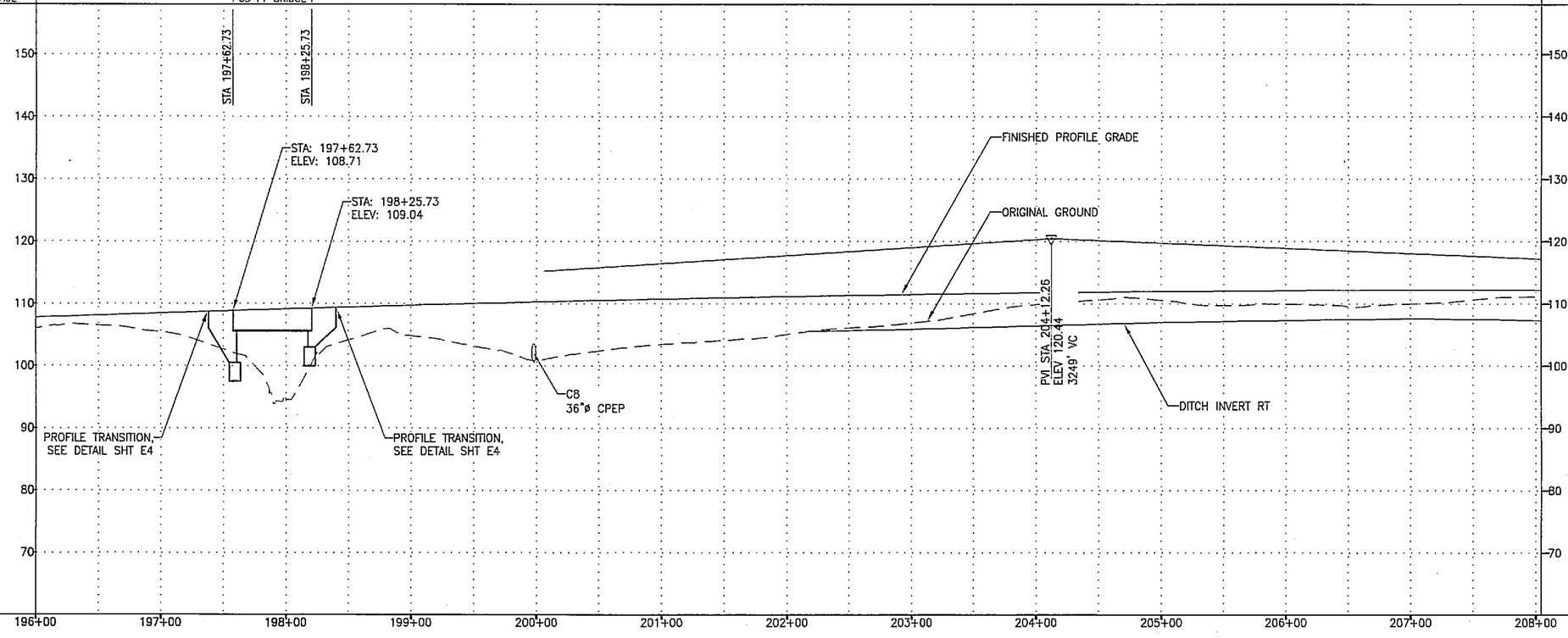
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY
PLAN & PROFILE



SECTION LEFT	CF		CF
SECTION RIGHT	CF		CF
FISH PASSAGE		63 FT BRIDGE	



SHEET NO.	TOTAL SHEETS
F7	F16
STATE	YEAR
ALASKA	2007

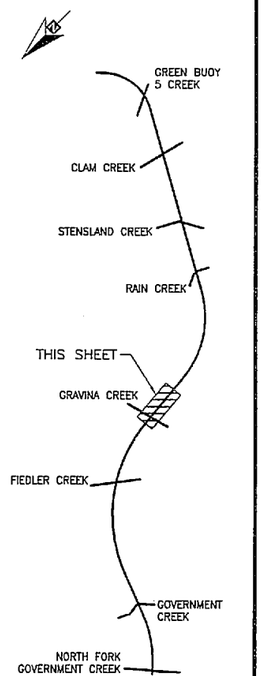
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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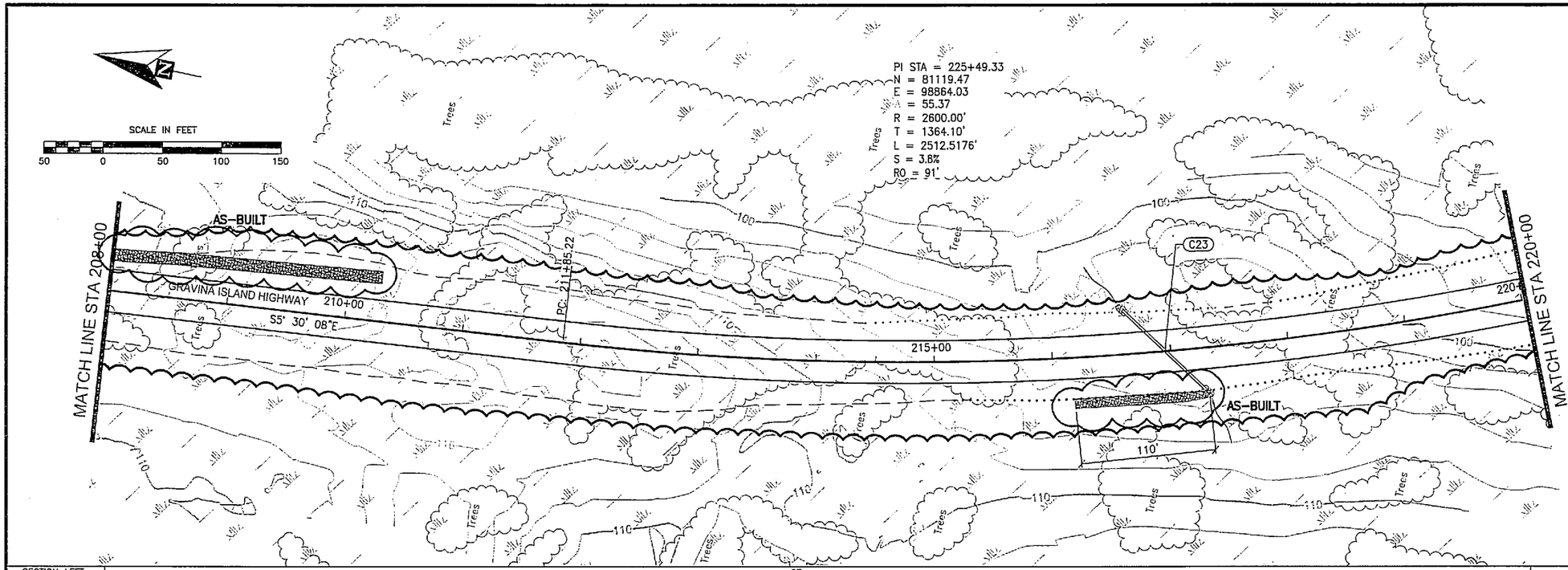
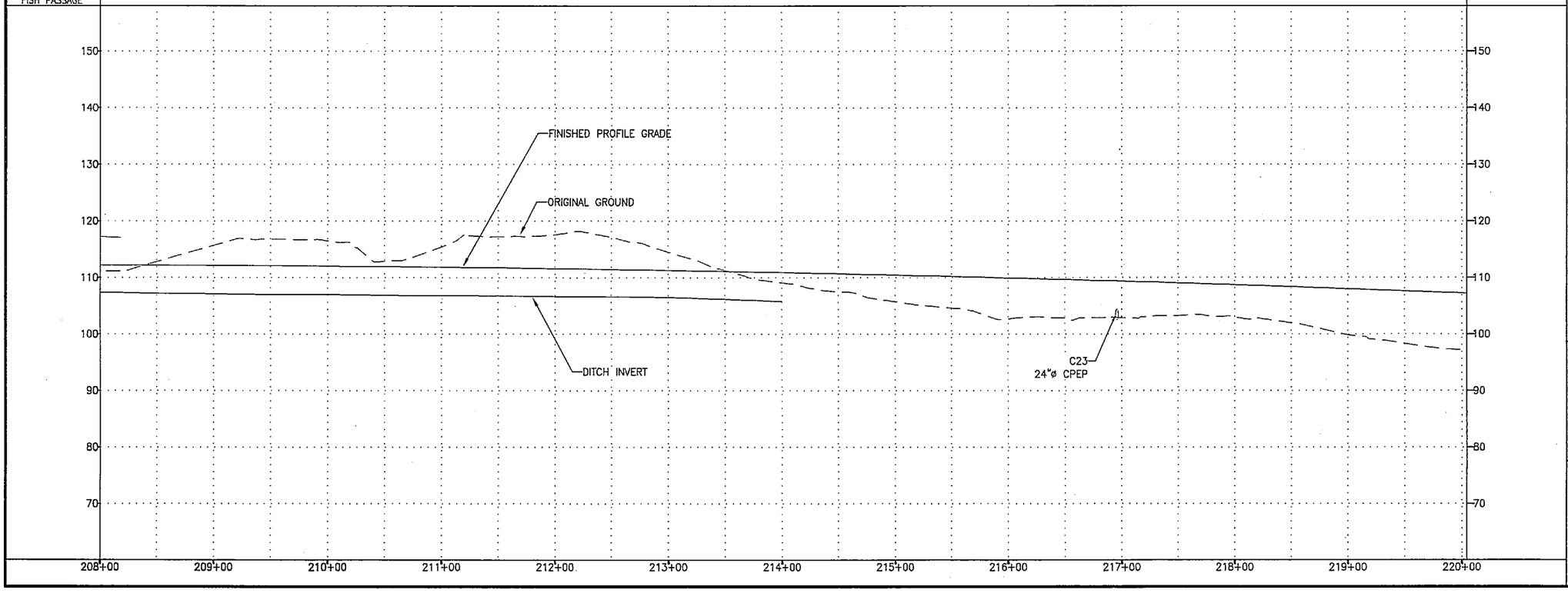
AND PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE AND
BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE





SHEET NO.	TOTAL SHEETS
F8	F16
STATE	YEAR
ALASKA	2007

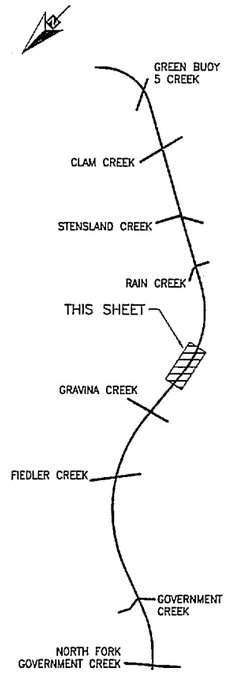
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE

SHEET NO.	TOTAL SHEETS
F9	F16
STATE	YEAR
ALASKA	2007

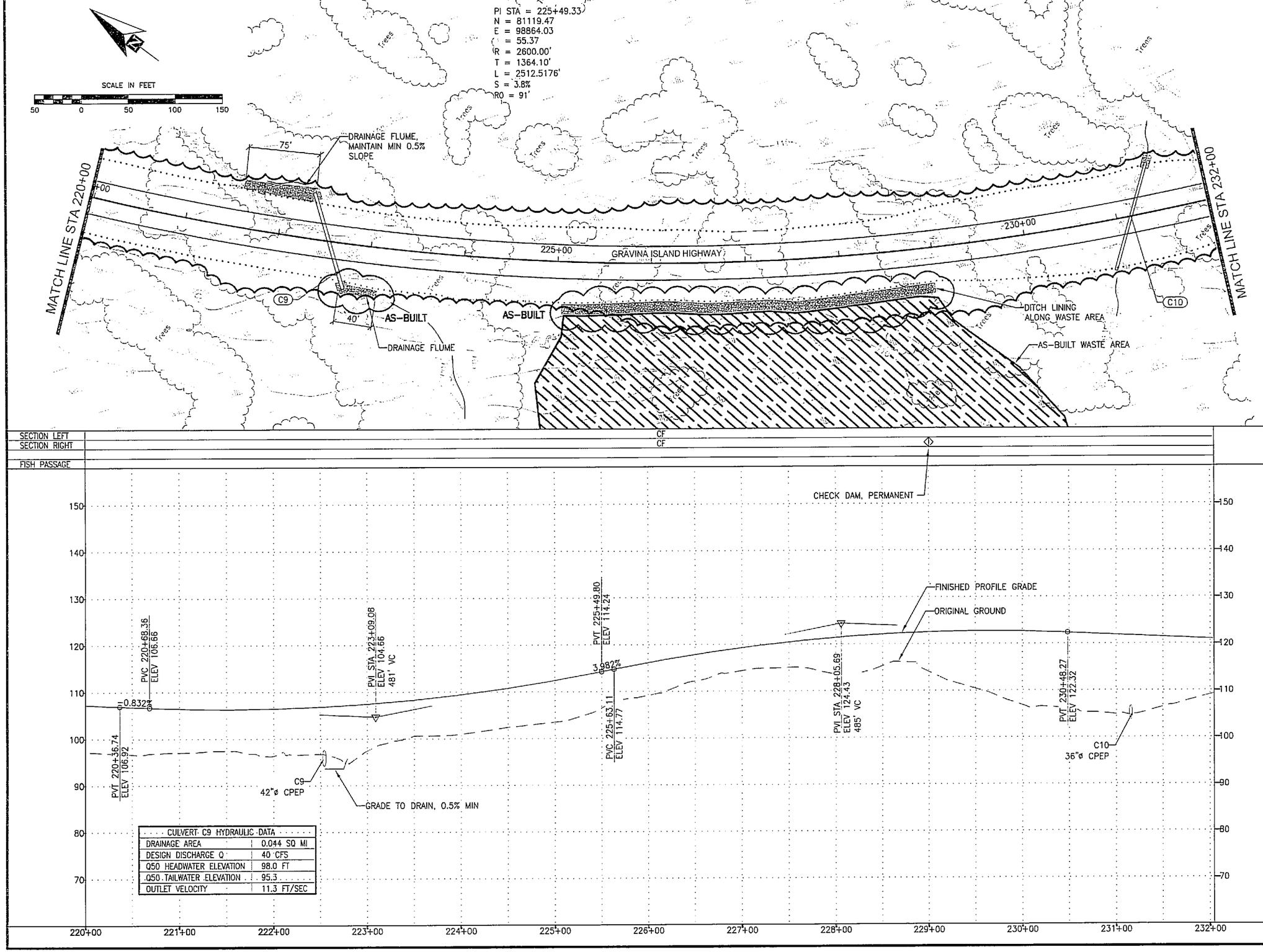
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

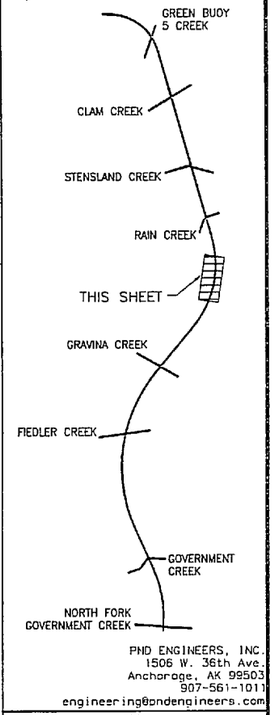
ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



CULVERT C9 HYDRAULIC DATA	
DRAINAGE AREA	0.044 SQ MI
DESIGN DISCHARGE Q	40 CFS
Q50 HEADWATER ELEVATION	98.0 FT
Q50 TAILWATER ELEVATION	95.3
OUTLET VELOCITY	11.3 FT/SEC



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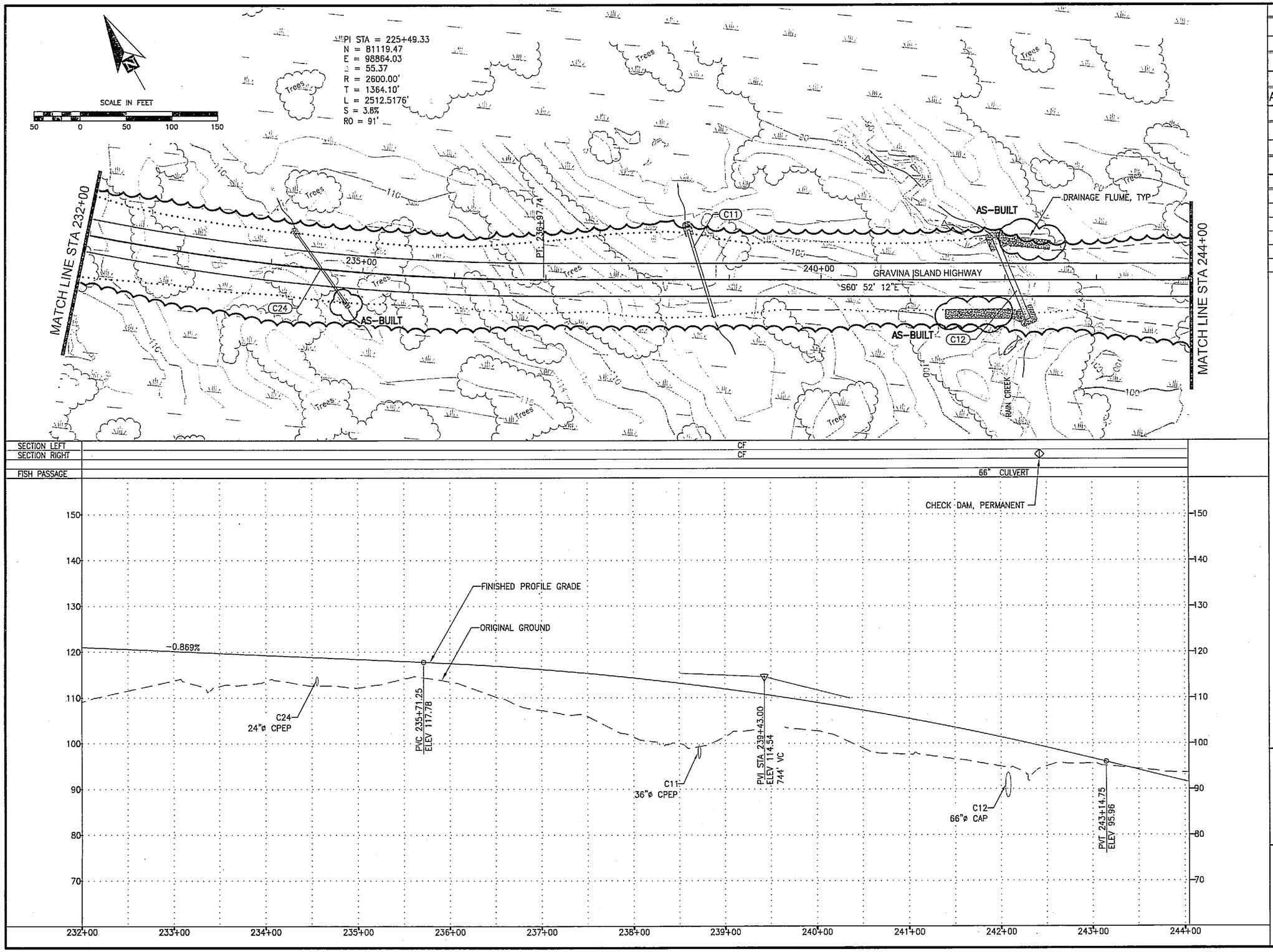
GRAVINA ISLAND HIGHWAY
PLAN & PROFILE



SHEET NO.	TOTAL SHEETS
F10	F16
STATE	YEAR
ALASKA	2007

PROJECT DESIGNATION

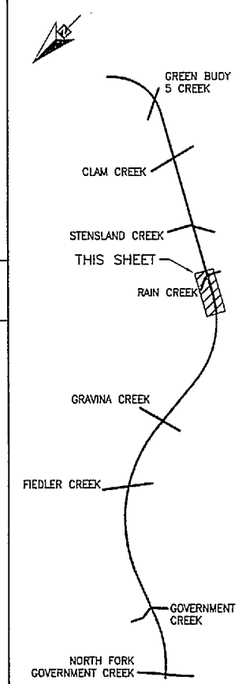
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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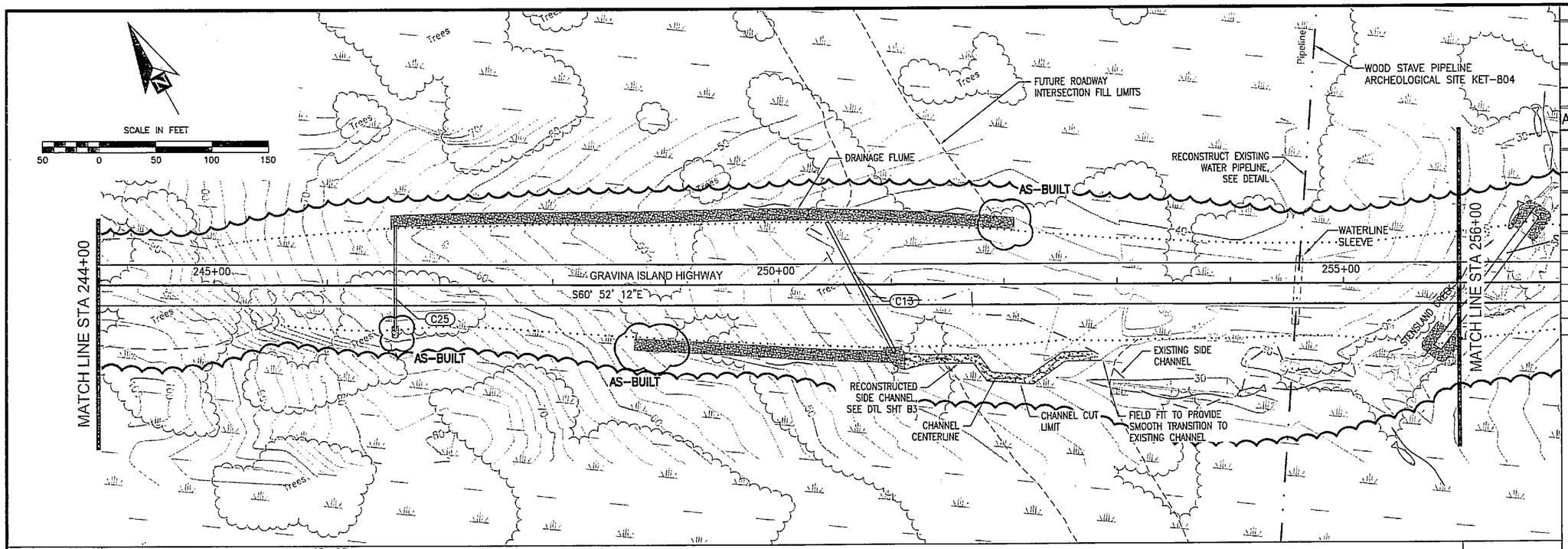
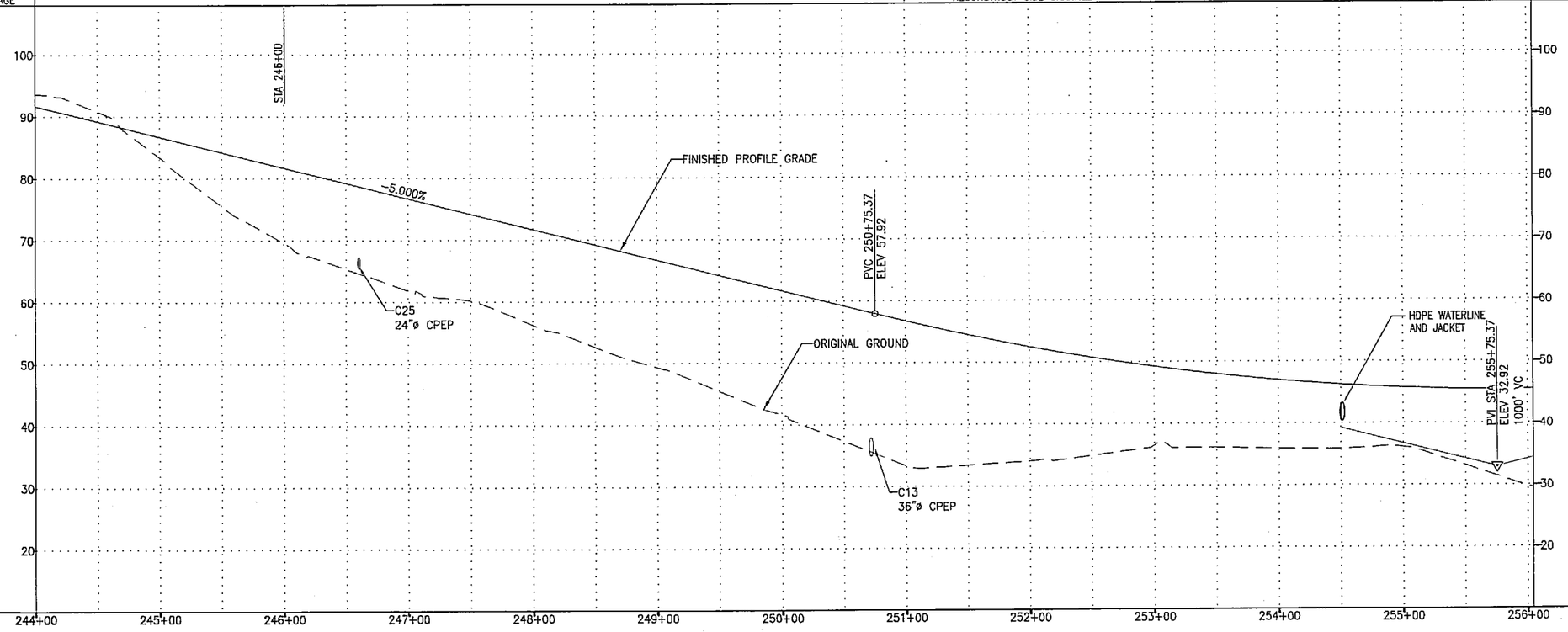
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE AND
BRIDGES

GRAVINA ISLAND HIGHWAY
PLAN & PROFILE



SECTION LEFT	CF DF		
SECTION RIGHT	CF DF		
FISH PASSAGE		RECONSTRUCT SIDE CHANNEL	96" CULVERT



SHEET NO.	TOTAL SHEETS
F11	F16
STATE	YEAR
ALASKA	2007

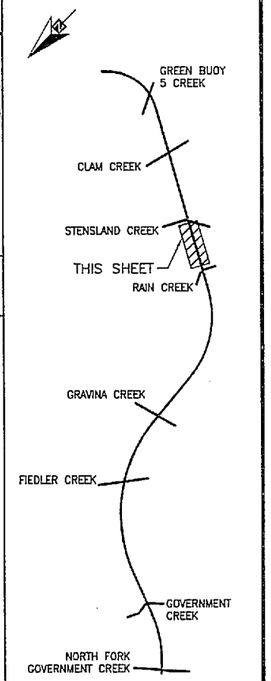
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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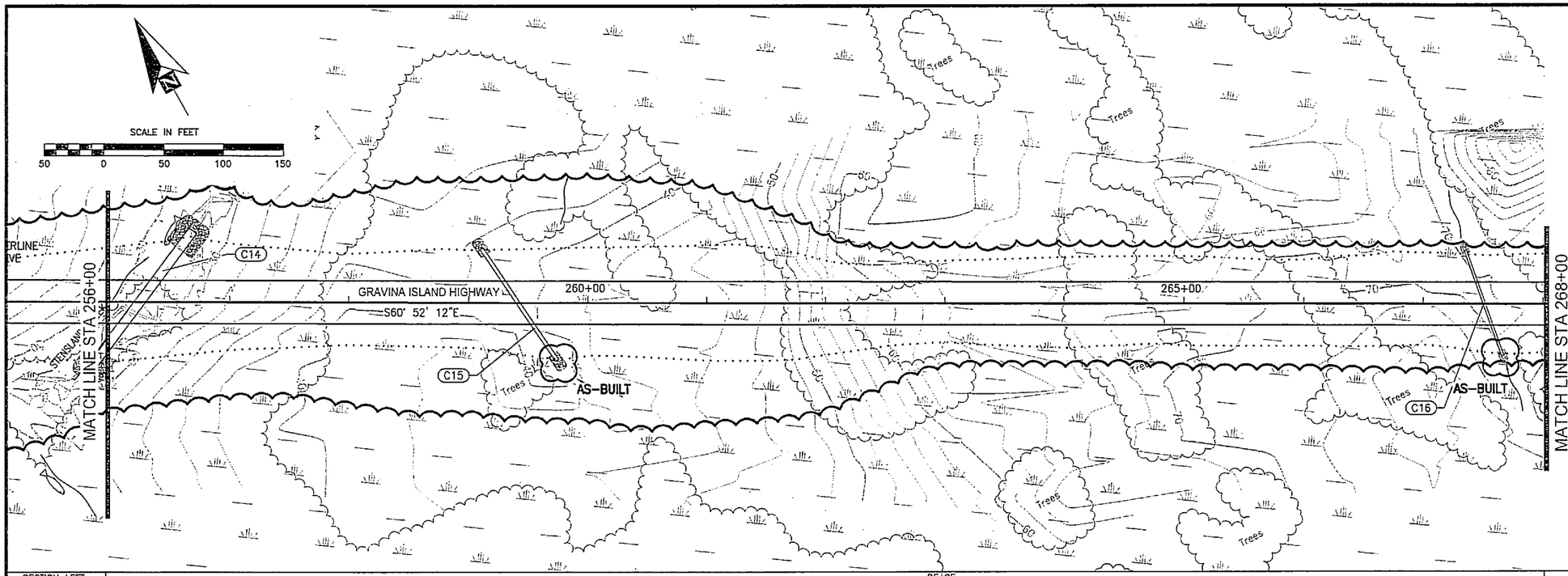
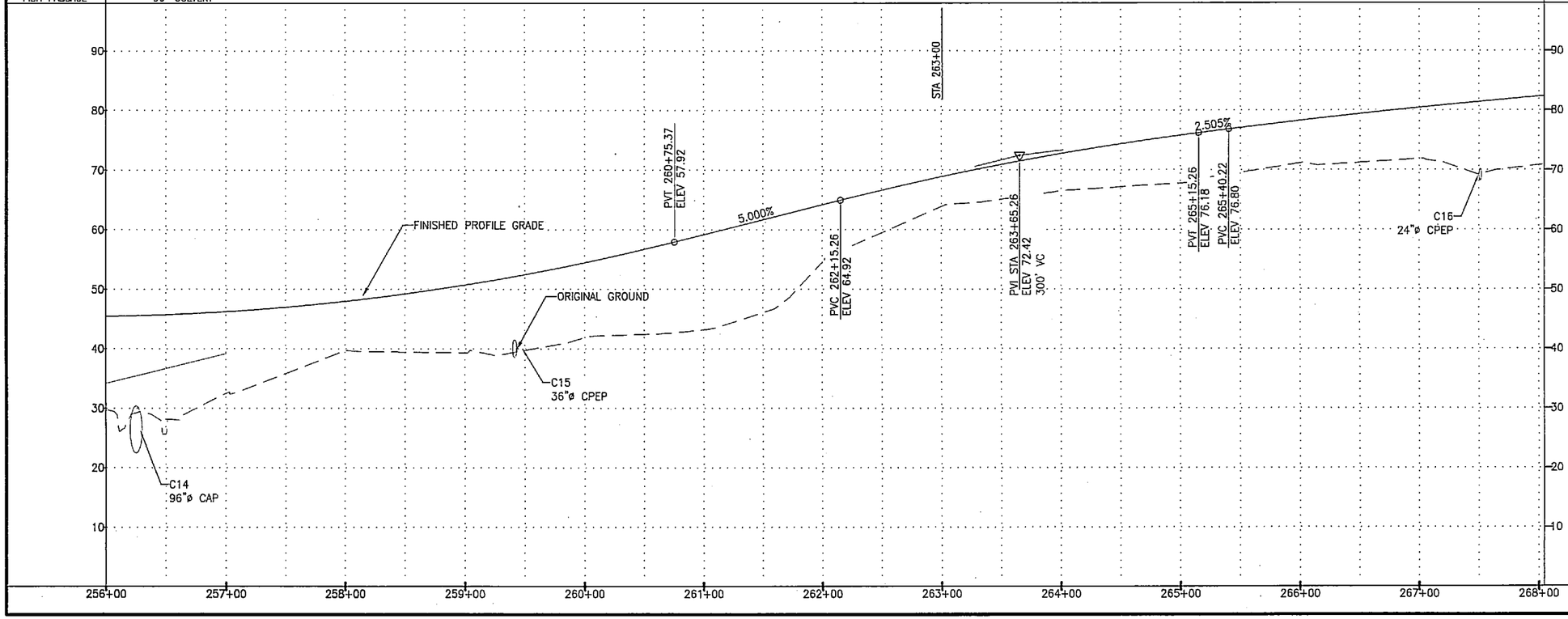
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE



SECTION LEFT	DF\CF
SECTION RIGHT	DF\CF
FISH PASSAGE	96" CULVERT



SHEET NO.	TOTAL SHEETS
F12	F16
STATE	YEAR
ALASKA	2007

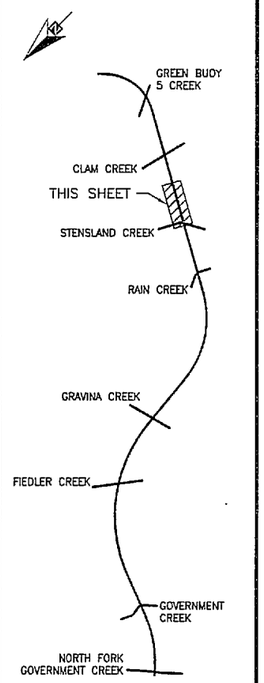
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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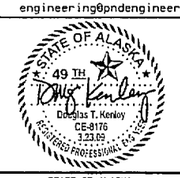

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
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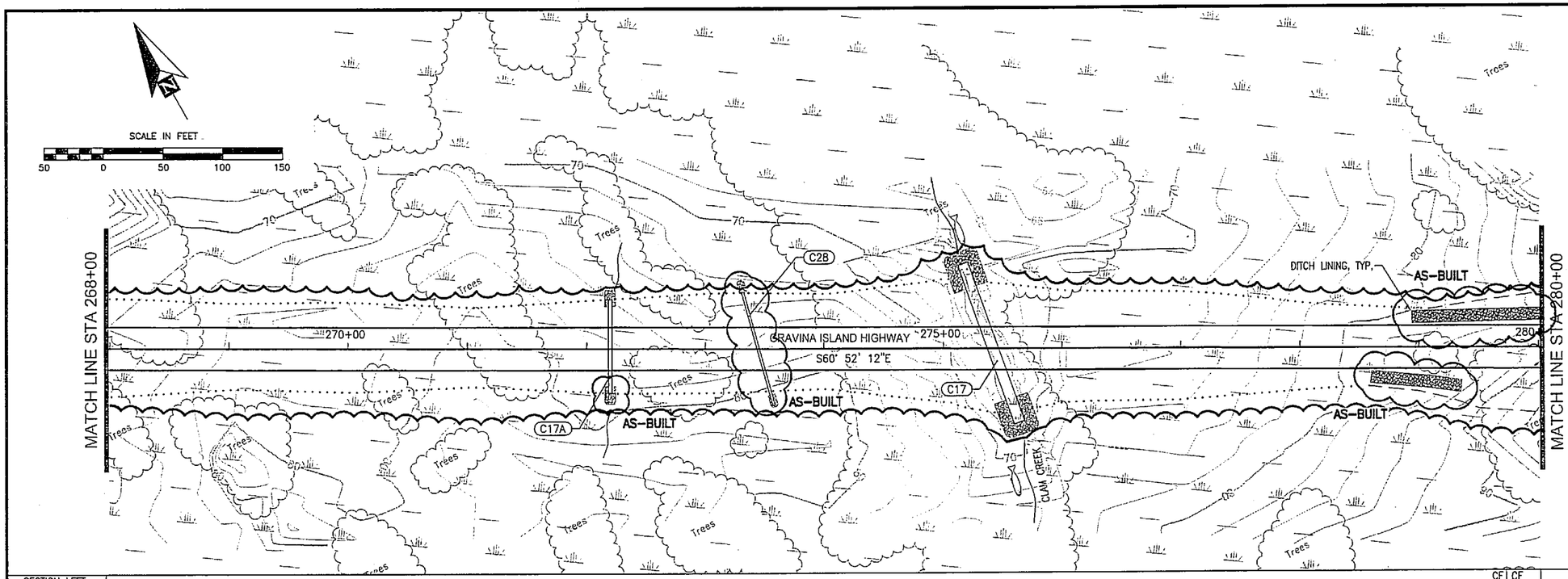
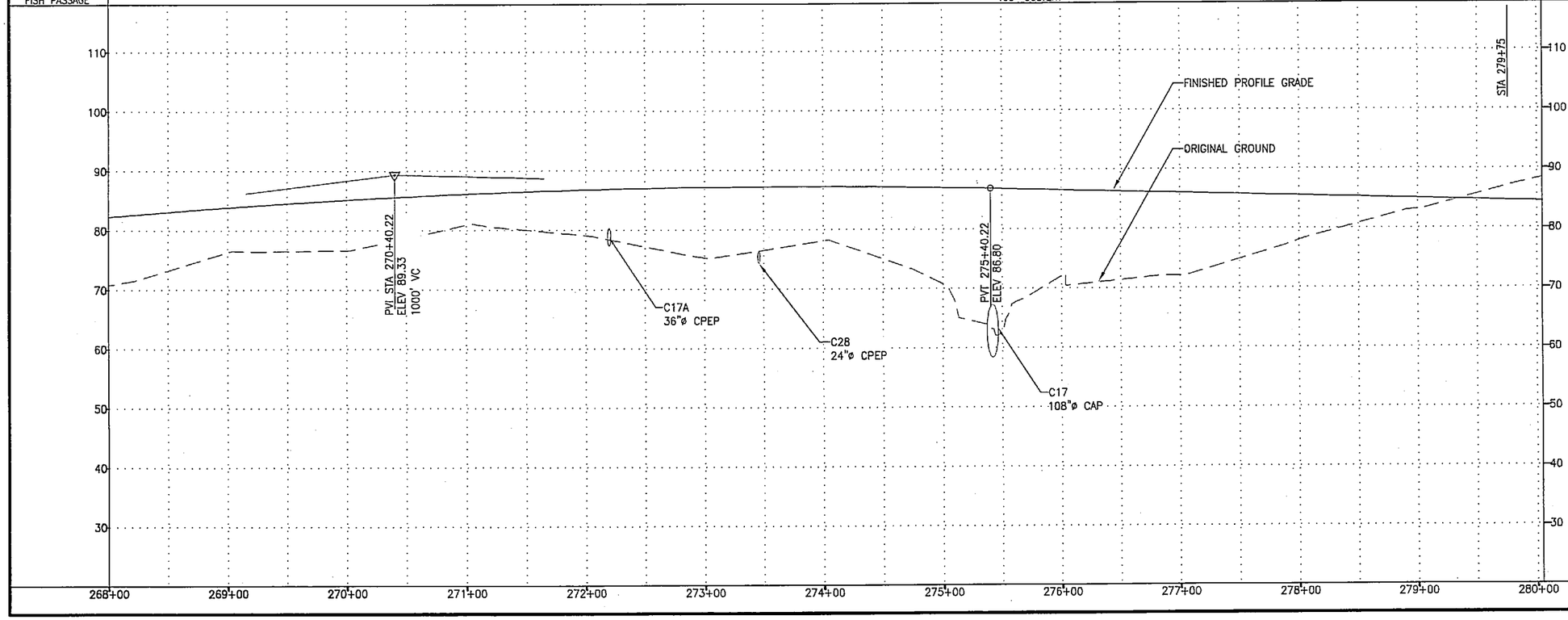
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE AND
BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE



SECTION LEFT		CF	CF
SECTION RIGHT		CF	RC
FISH PASSAGE	108" CULVERT		



SHEET NO.	TOTAL SHEETS
F13	F16
STATE	YEAR
ALASKA	2007

PROJECT DESIGNATION

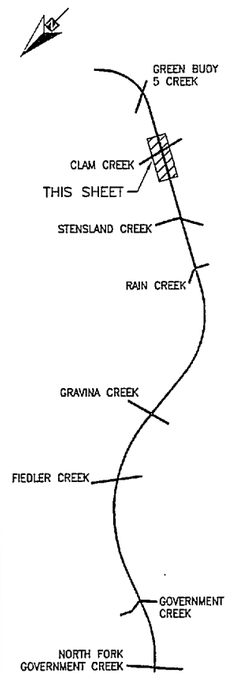
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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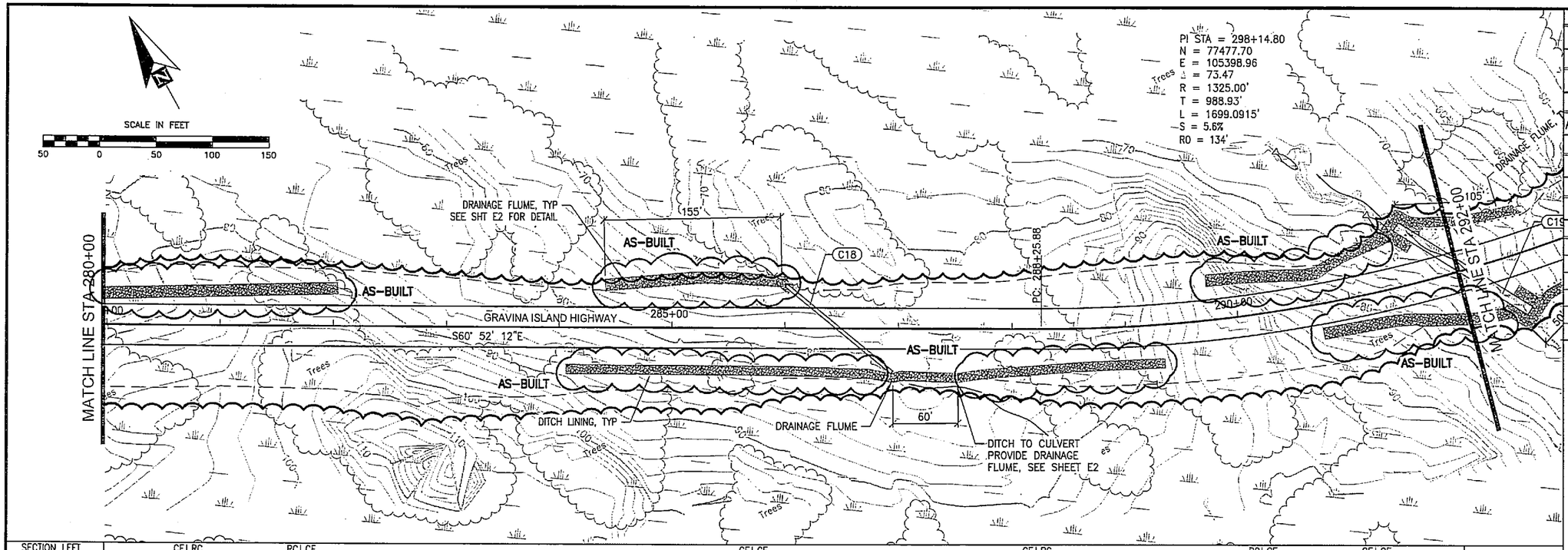
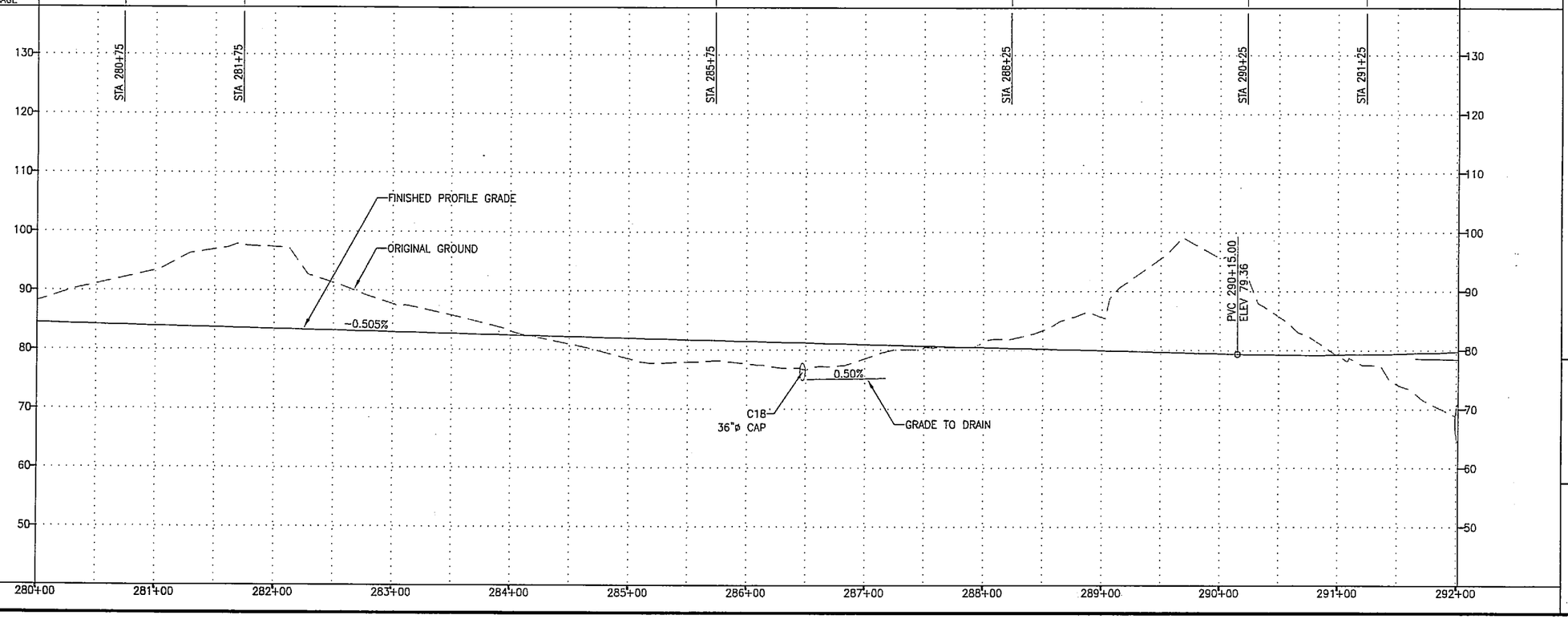
GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE

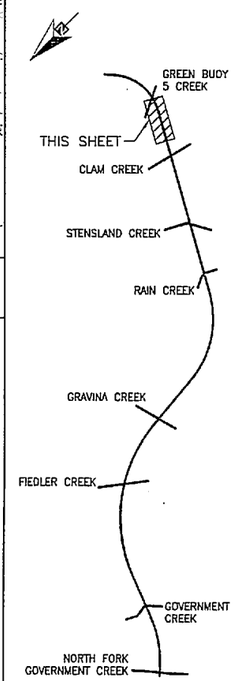


SECTION LEFT	CF RC	RC CF	CF CF	CF RC	RC CF	CF CF
SECTION RIGHT	RC RC	RC RC	RC CF	CF RC	RC RC	RC CF
FISH PASSAGE						



SHEET NO.	TOTAL SHEETS
F14	F16
STATE	YEAR
ALASKA	2007
PROJECT DESIGNATION	
ACH PRL-0003(123)/67818	
ADDENDUM NO.	
ATTACHMENT NO.	
REVISIONS	

NO.	DATE	DESCRIPTION



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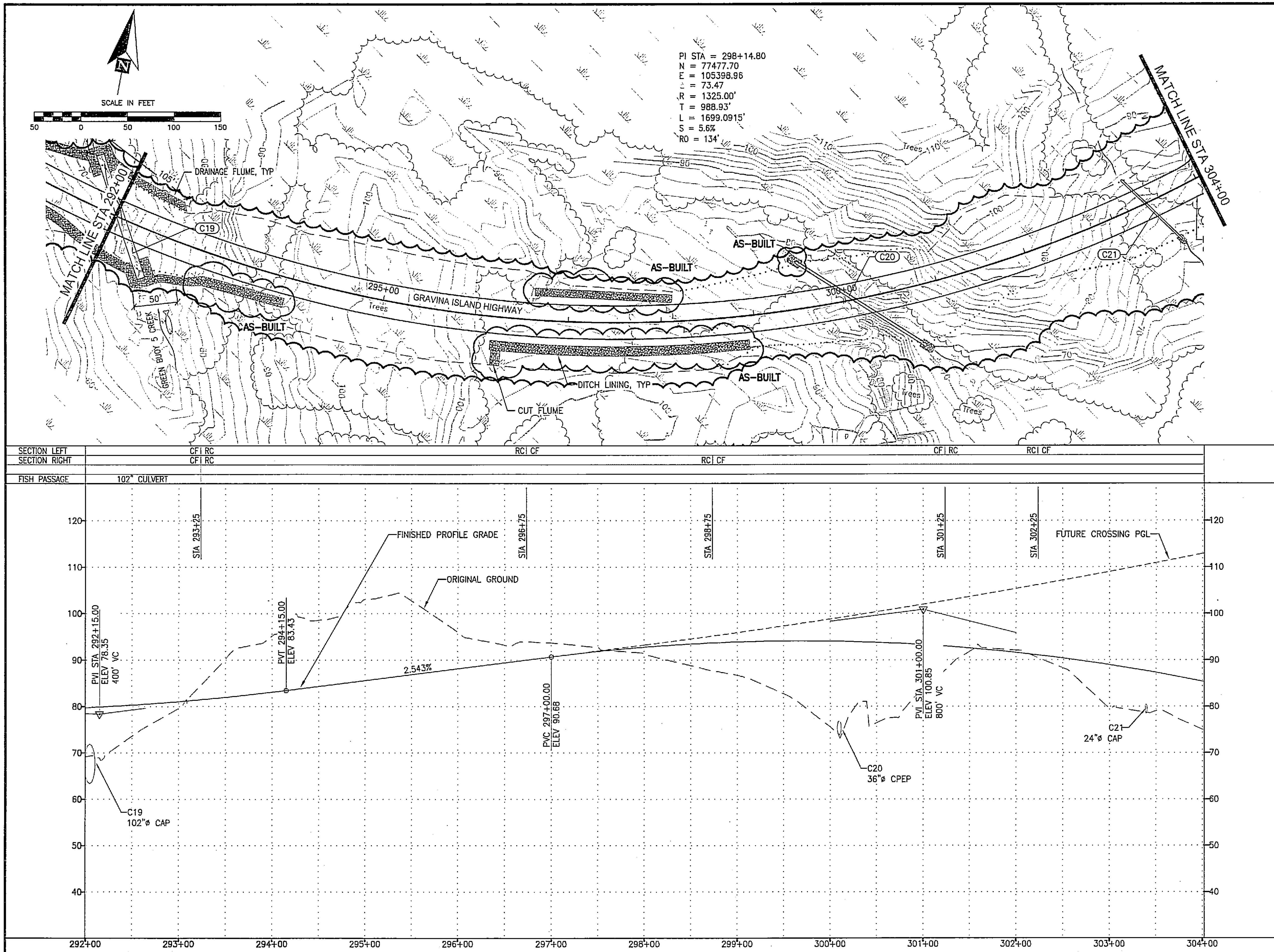
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE AND
BRIDGES

GRAVINA ISLAND HIGHWAY. PLAN & PROFILE

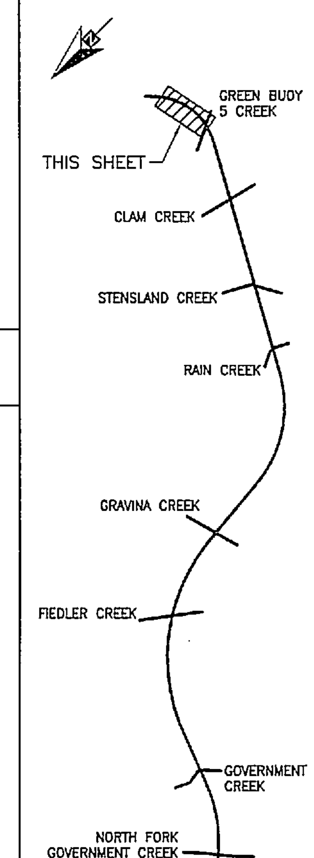


SHEET NO.	TOTAL SHEETS
F15	F16
STATE	YEAR
ALASKA	2007

PROJECT DESIGNATION
ACH PRL-0003(123)/67818
ADDENDUM NO.
ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION
-		



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STATE OF ALASKA 49TH Douglas T. Kenley CE-8176 3.23.09 REGISTERED PROFESSIONAL ENGINEER

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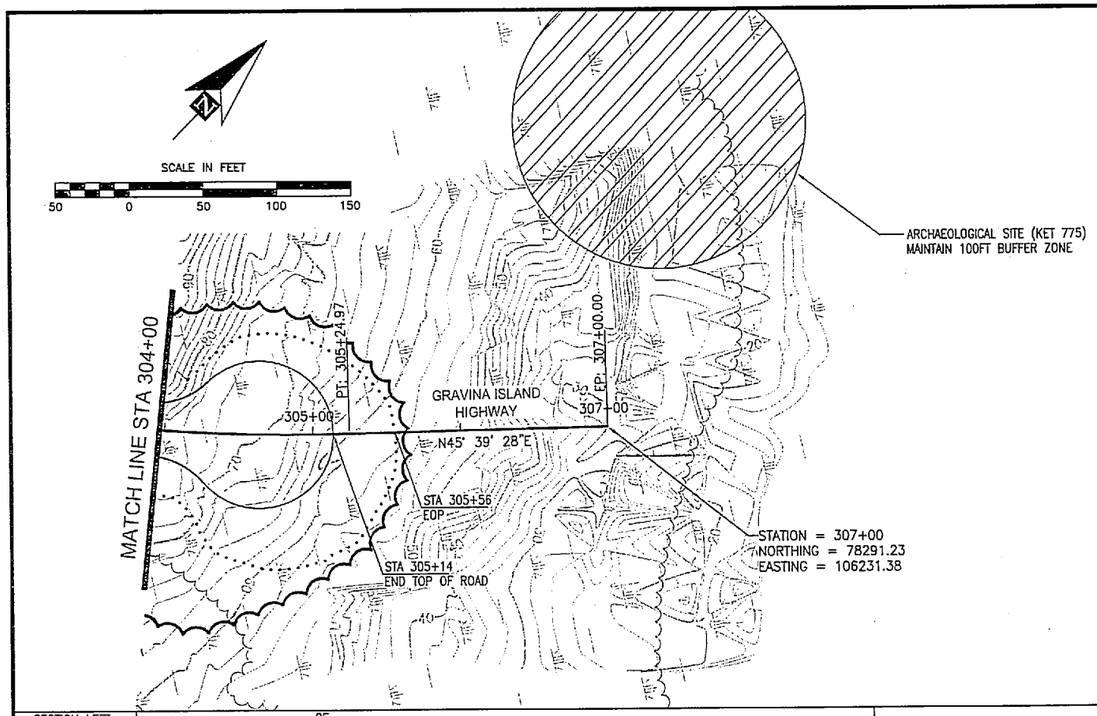
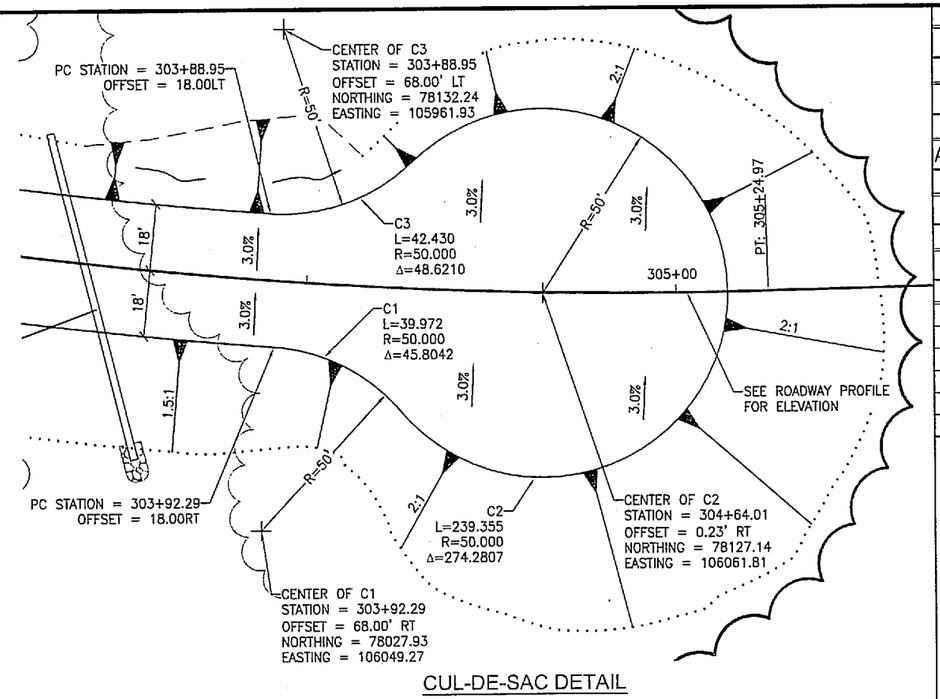
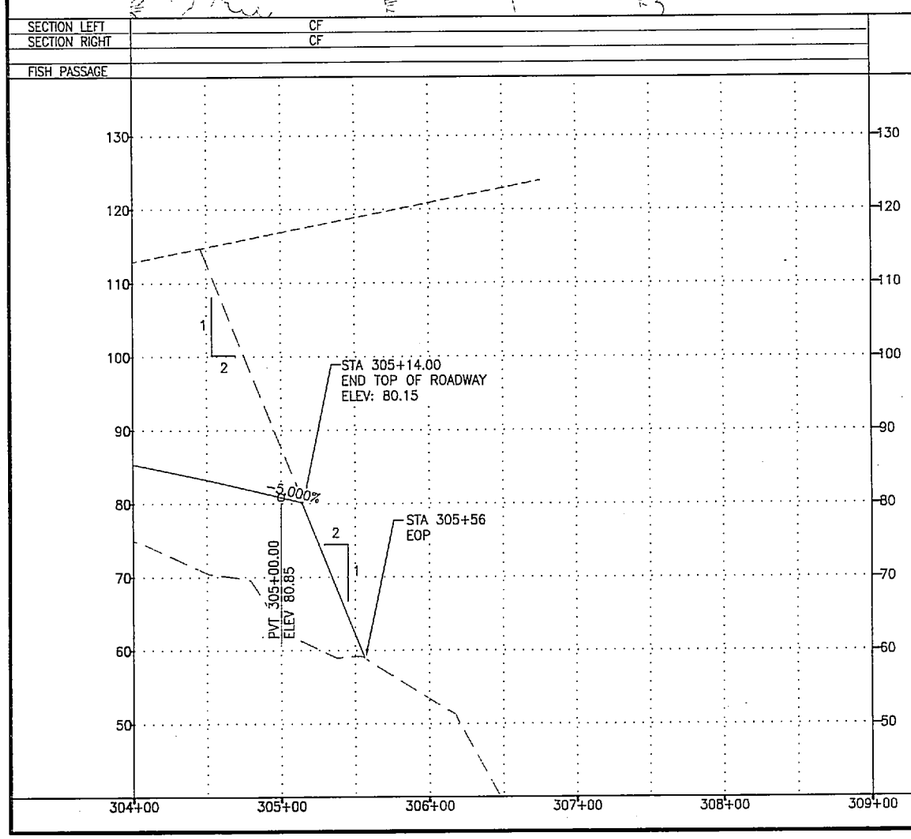
GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY
PLAN & PROFILE





CUL-DE-SAC DETAIL



SHEET NO.	TOTAL SHEETS
F16	F16
STATE	YEAR
ALASKA	2007

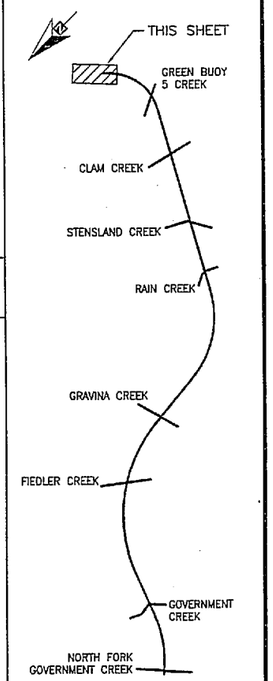
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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engineering@pndengineers.com

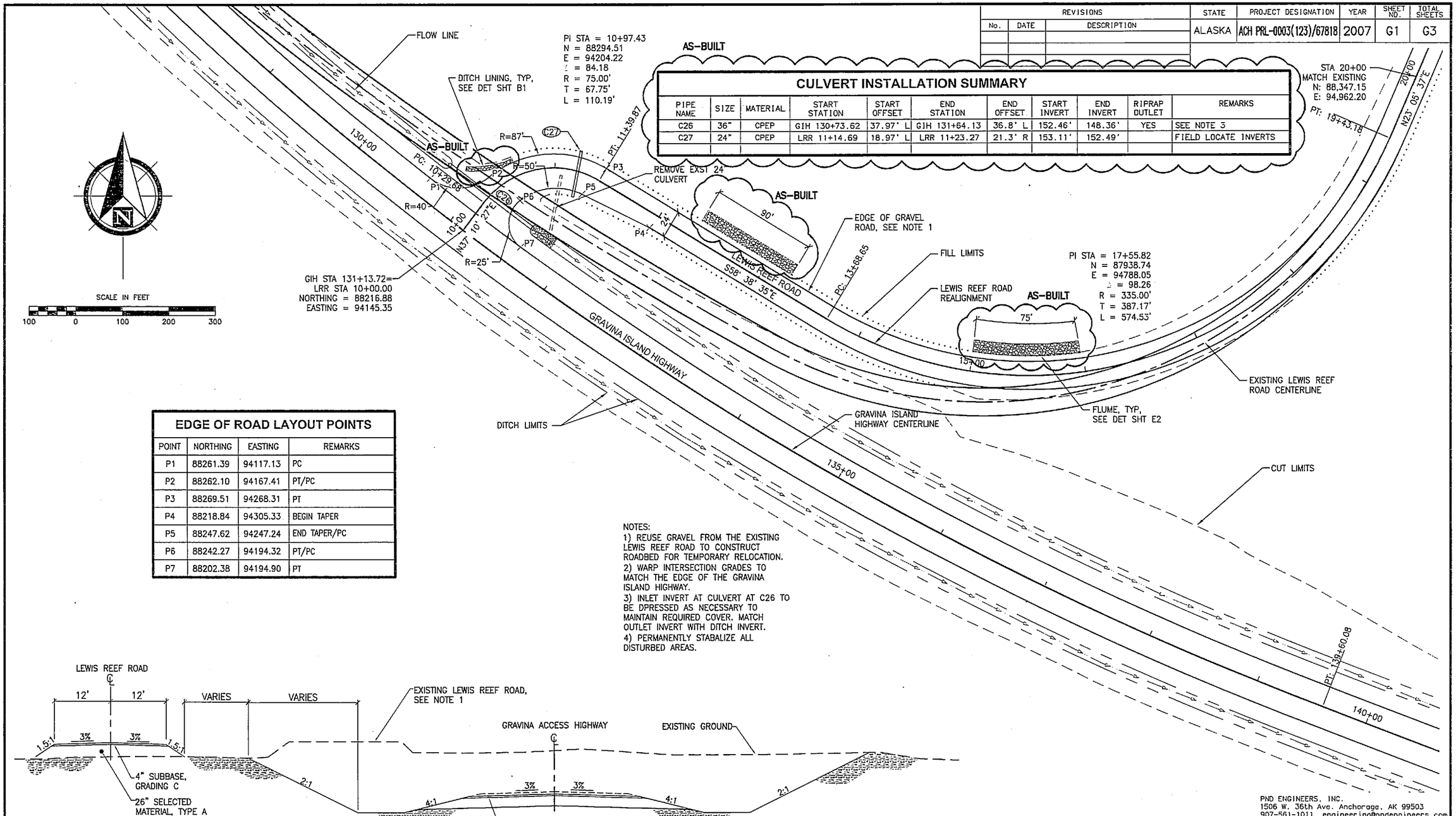
STATE OF ALASKA
49 TH
Douglas T. Kenley
CE-8176
3.23.09
REGISTERED PROFESSIONAL ENGINEER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

GRAVINA ISLAND HIGHWAY PLAN & PROFILE

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	G1	G3



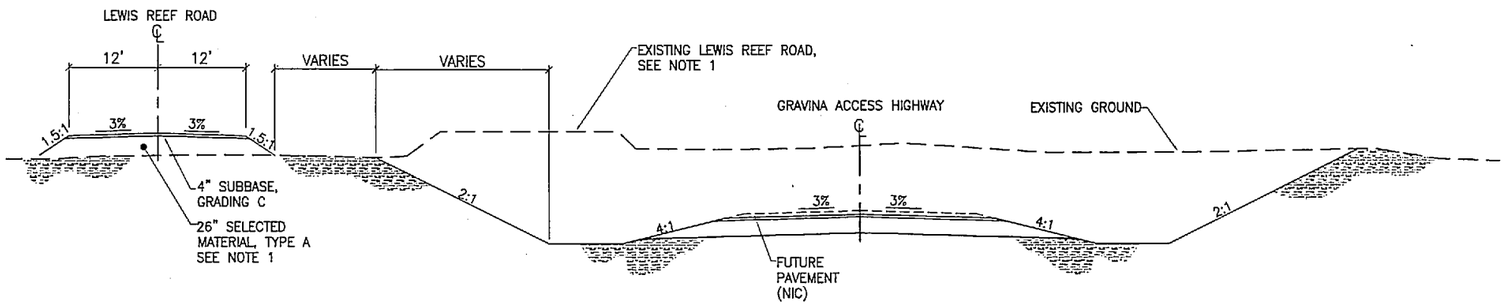
CULVERT INSTALLATION SUMMARY

PIPE NAME	SIZE	MATERIAL	START STATION	START OFFSET	END STATION	END OFFSET	START INVERT	END INVERT	RIPRAP OUTLET	REMARKS
C26	36"	CPEP	GIH 130+73.62	37.97' L	GIH 131+64.13	36.8' L	152.46'	148.36'	YES	SEE NOTE 3
C27	24"	CPEP	LRR 11+14.69	18.97' L	LRR 11+23.27	21.3' R	153.11'	152.49'		FIELD LOCATE INVERTS

EDGE OF ROAD LAYOUT POINTS

POINT	NORTHING	EASTING	REMARKS
P1	88261.39	94117.13	PC
P2	88262.10	94167.41	PT/PC
P3	88269.51	94268.31	PT
P4	88218.84	94305.33	BEGIN TAPER
P5	88247.62	94247.24	END TAPER/PC
P6	88242.27	94194.32	PT/PC
P7	88202.38	94194.90	PT

NOTES:
1) REUSE GRAVEL FROM THE EXISTING LEWIS REEF ROAD TO CONSTRUCT ROADBED FOR TEMPORARY RELOCATION.
2) WARP INTERSECTION GRADES TO MATCH THE EDGE OF THE GRAVINA ISLAND HIGHWAY.
3) INLET INVERT AT CULVERT AT C26 TO BE DPRESSED AS NECESSARY TO MAINTAIN REQUIRED COVER. MATCH OUTLET INVERT WITH DITCH INVERT.
4) PERMANENTLY STABALIZE ALL DISTURBED AREAS.



TEMPORARY ROADWAY SECTION

TEMP LRR STA. 11+97.84 TO 15+00
STA 15+00 TO 20+00 SIMILAR
STA 10+00 TO 11+97.84 SEE PLAN VIEW FOR LAYOUT

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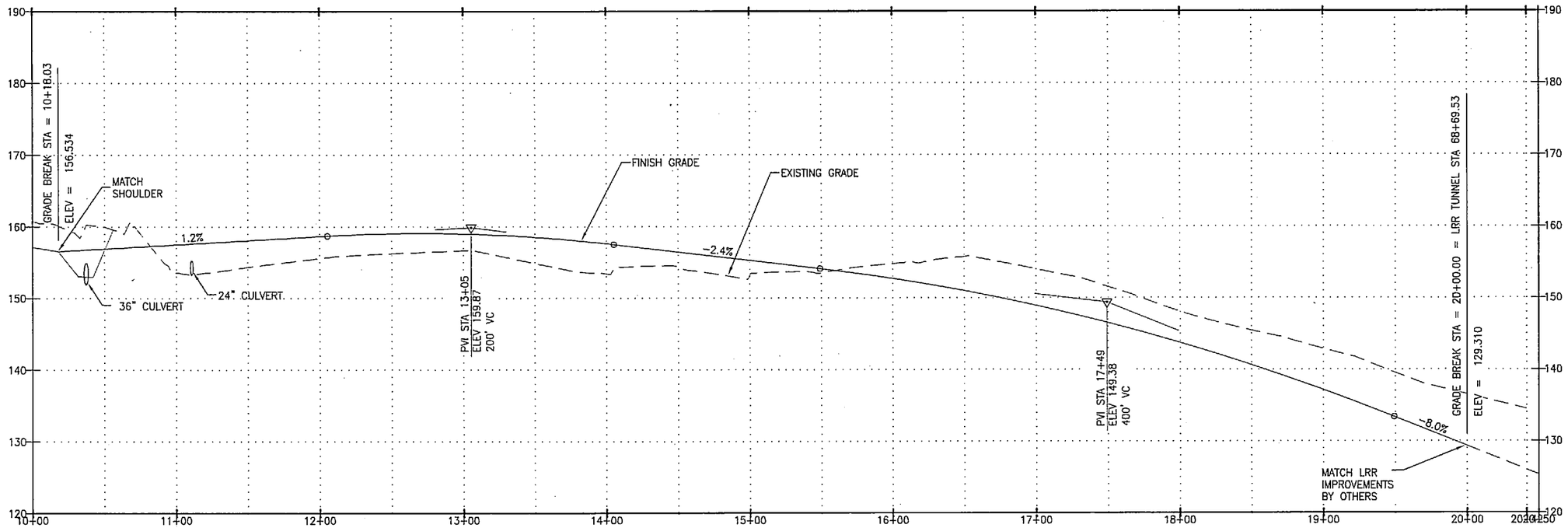
GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE, AND BRIDGES

LEWIS REEF ROAD REALIGNMENT & TEMPORARY INTERSECTION PLAN

STATE OF ALASKA
49 TH
Douglas T. Kenley
CE-8176
3.23.09
REGISTERED PROFESSIONAL ENGINEER

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	G2	G3



LEWIS REEF ROAD PROFILE

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STATE OF ALASKA
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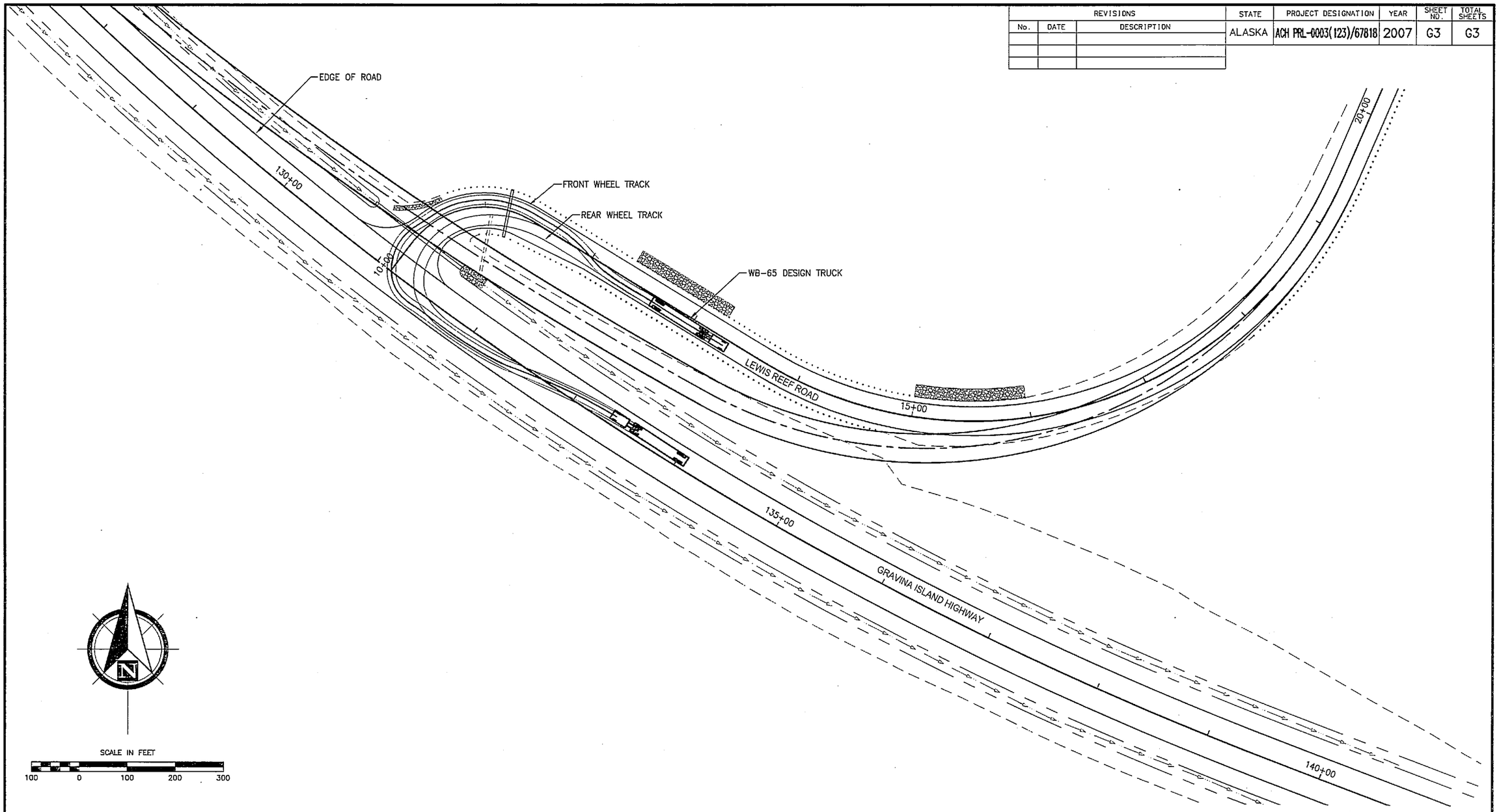
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

LEWIS REEF ROAD
REALIGNMENT & TEMPORARY
INTERSECTION - PROFILE

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	G3	G3



SCALE IN FEET

100 0 100 200 300

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STATE OF ALASKA
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GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES
LEWIS REEF ROAD
REALIGNMENT & TEMPORARY
INTERSECTION - TURNING
ANALYSIS

STATE OF ALASKA
49 TH
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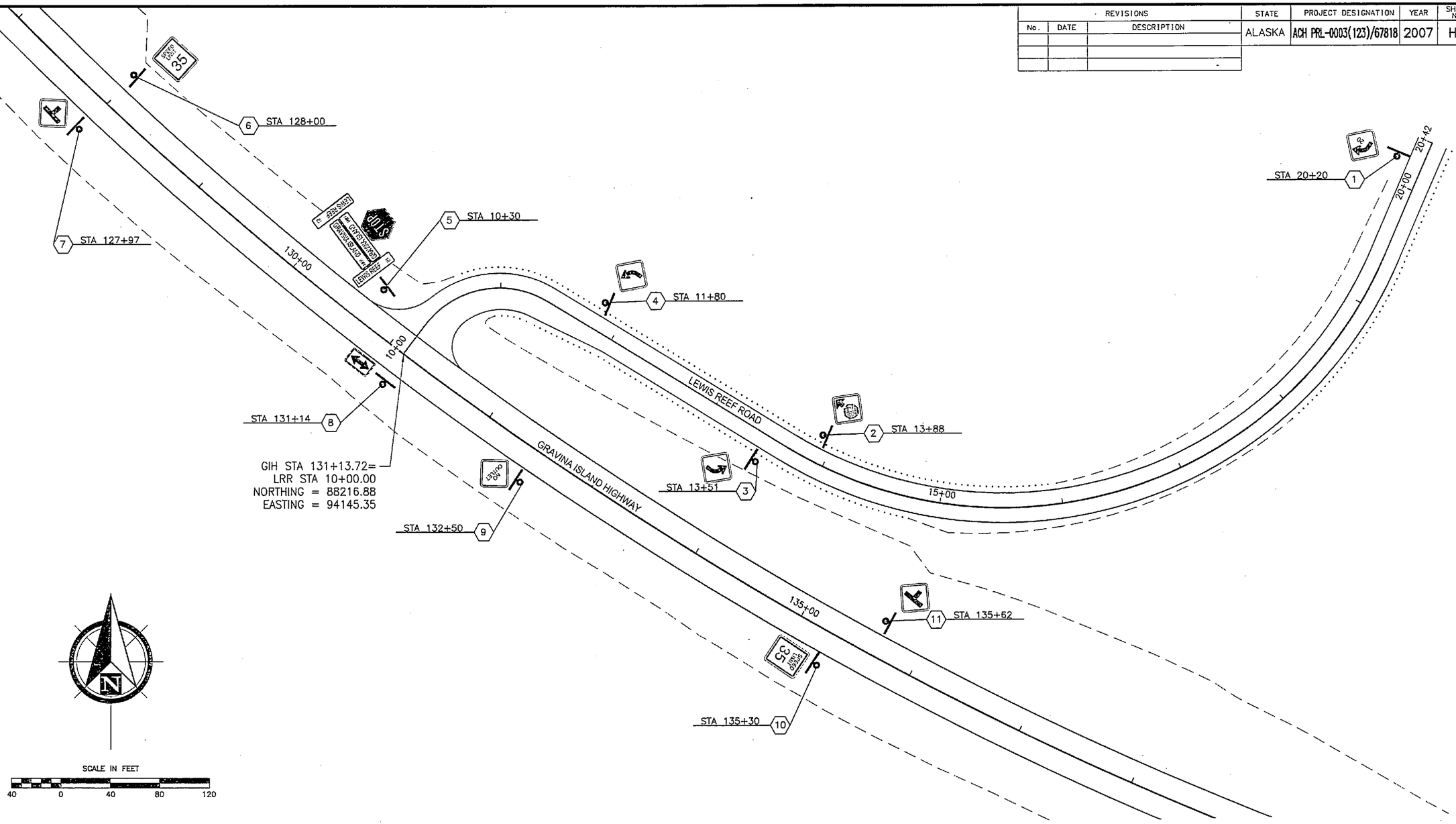
REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	H1	H3



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STATE OF ALASKA
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GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

TEMPORARY INTERSECTION SIGNING PLAN

STATE OF ALASKA
49 TH
Douglas T. Kenley
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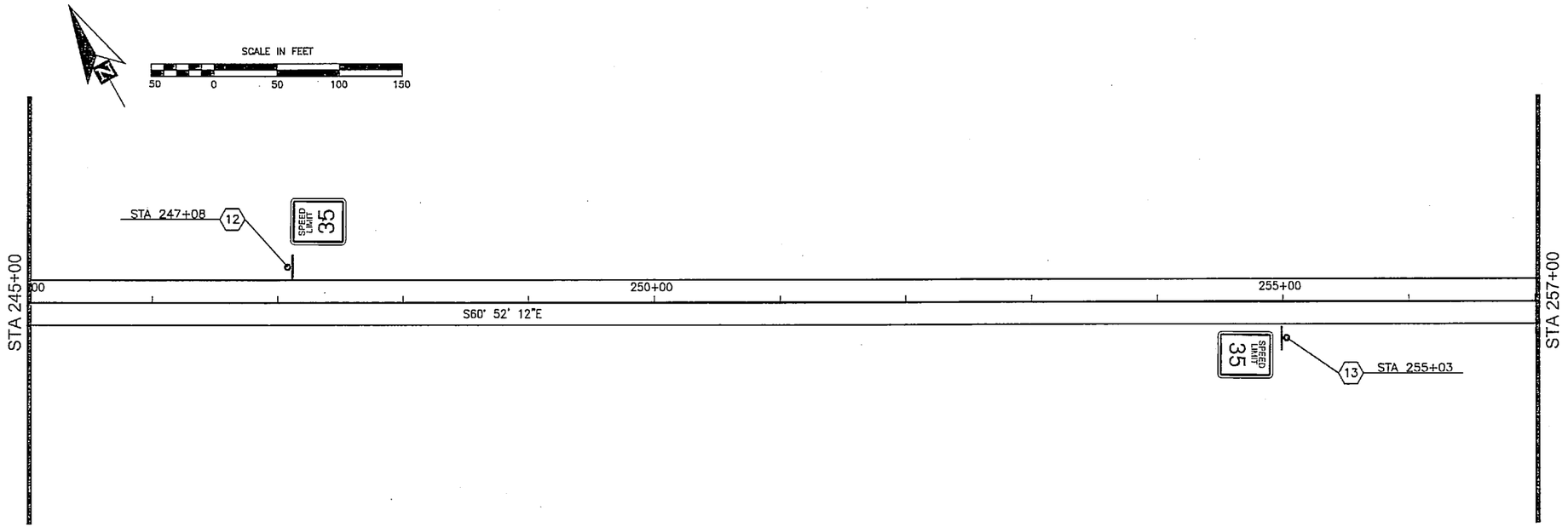
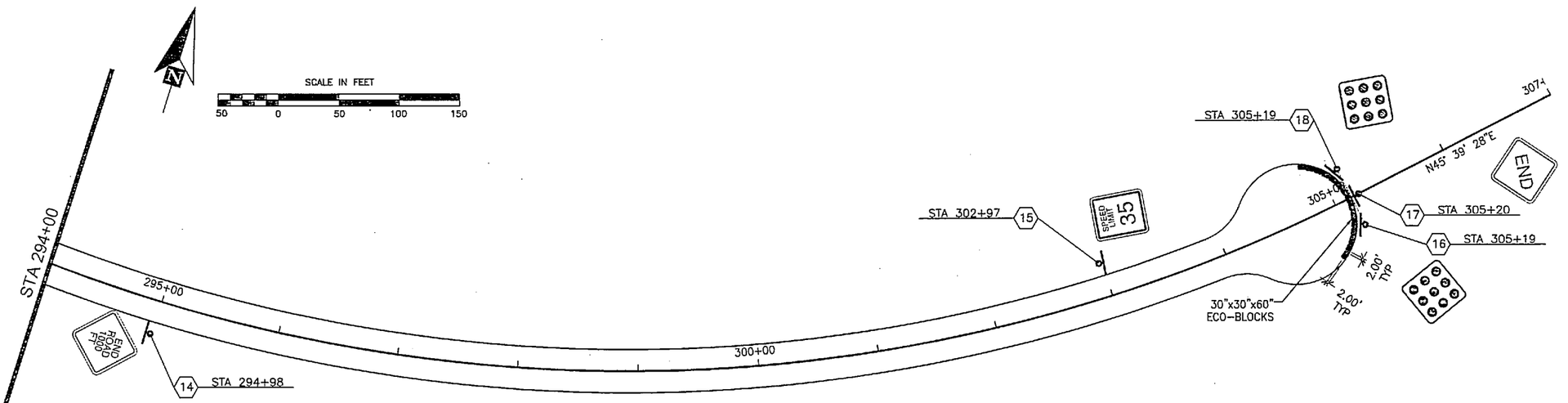
REGISTERED PROFESSIONAL ENGINEER





SHEET NO.	TOTAL SHEETS
H2	H3
STATE	YEAR
ALASKA	2007

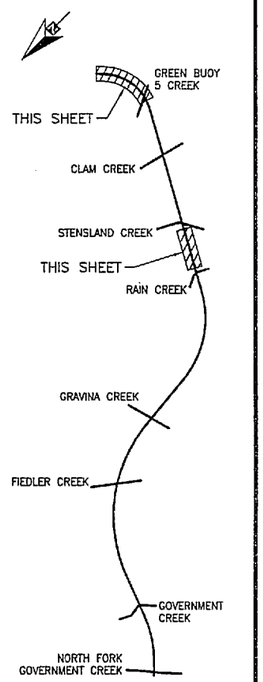
PROJECT DESIGNATION
ACH PRL-0003(123)/67818

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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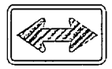
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

GRAVINA ISLAND HIGHWAY GRADING, DRAINAGE AND BRIDGES

SIGNING PLAN

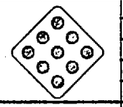
REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	ACH PRL-0003(123)/67818	2007	H3	H3

STANDARD SIGN SUMMARY

SHEET	POST NO.	STATION	OFFSET LT	OFFSET RT	TYPE	LEGEND	SIZE (in) W	SIZE (in) H	AREA SQ. FT.	POST SIZE	POST TYPE	SIGN FACES	TOTAL QUANTITY	REMARKS
H1	1	* 20+20	25.5'		W1-2AR		30	30	6.25	1-2.5"	PST-S	N	1	SEE NOTE 1
H1	2	* 13+88	25.0'		W3-1A		36	36	9	1-2.5"	PST-S	E	1	SEE NOTE 1
H1	3	* 13+51		25.5'	W1-2L		30	30	6.25	1-2.5"	PST-S	W	1	SEE NOTE 1
H1	4	* 11+80	23.5'		W1-2L		30	30	6.25	1-2.5"	PST-S	E	1	SEE NOTE 1
H1	5	* 10+30	31.0'		R1-1	GRAVINA ISLAND HWY	30	30	5.25	1-2.5"	PST-S	NE	1	SEE NOTE 1
					D3-1	LEWIS REEF RD	VAR.	12	VARIES			NE/SW	2	SIGN FOR GIH
					D3-1	STOP	VAR.	12	VARIES			NW/SE	2	SIGN FOR LRR
H1	6	128+00	31.5'		R2-1	SPEED LIMIT 35	30	36	7.5	1-2.5"	PST-S	E	1	SEE NOTE 1
H1	7	127+97		31.5'	W2-2L		36	36	9	1-2.5"	PST-S	W	1	SEE NOTE 1
H1	8	131+14		31.5'	W1-7		48	24	8	1-2.5"	PST-S	W	1	SEE NOTE 1
H1	9	132+50		31.5'	W14-2	NO OUTLET	36	36	9	1-2.5"	PST-S	W	1	SEE NOTE 1
H1	10	135+30		31.5'	R2-1	SPEED LIMIT 35	30	36	7.5	1-2.5"	PST-S	W	1	SEE NOTE 1

* - INDICATES STATIONING ON LEWIS REEF ROAD

STANDARD SIGN SUMMARY

SHEET	POST NO.	STATION	OFFSET LT	OFFSET RT	TYPE	LEGEND	SIZE (in) W	SIZE (in) H	AREA SQ. FT.	POST SIZE	POST TYPE	SIGN FACES	TOTAL QUANTITY	REMARKS
H1	11	135+62	31.5'		W2-2R		36	36	9	1-2.5"	PST-S	E	1	SEE NOTE 1
H2	12	247+08	31.5'		R2-1	SPEED LIMIT 35	30	36	7.5	1-2.5"	PST-S	E	1	SEE NOTE 1
H2	13	255+03		31.5'	R2-1	SPEED LIMIT 35	30	36	7.5	1-2.5"	PST-S	W	1	SEE NOTE 1
H2	14	294+98		31.5'	W14-2	END ROAD 1000 FT	36	36	9	1-2.5"	PST-S	W	1	SEE NOTE 1
H2	15	302+98	31.5'		R2-1	SPEED LIMIT 35	30	36	7.5	1-2.5"	PST-S	E	1	
H2	16	305+19		8'	OM4-1		18	18	2.25	1-2.5"	PST-S	W	1	SEE NOTE 1
														RED BACKGROUND
														RED BORDER
														RED REFLECTORS
H2	17	305+20		0'	W14-100	END	30	30	6.25	1-2.5"	PST-S	W	1	SEE NOTE 1
H2	18	305+19	8'		OM4-1		18	18	2.25	1-2.5"	PST-S	W	1	SEE NOTE 1
														RED BACKGROUND
														RED BORDER
														RED REFLECTORS

NOTES

1. ALL SIGN MOUNTINGS, BRACING AND POST EMBEDMENT ARE SUBJECT TO AKDOT&PF STANDARD DETAILS AND SPECIFICATIONS. CONTRACTOR MAY USE EITHER POST EMBEDMENT METHOD SHOWN IN STANDARD DETAILS S-30.03 AS PRACTICABLE.
2. THE POST TYPES INDICATED IN THIS SUMMARY ARE ABBREVIATED.
   PST-S = PERFORATED SQUARE STEEL TUBE
3. OFFSET IS TO APPROXIMATE CENTER OF SIGN POST, INSTALL SIGN WITH CLEARANCES AS SHOWN IN STANDARD DETAIL S-05.01.

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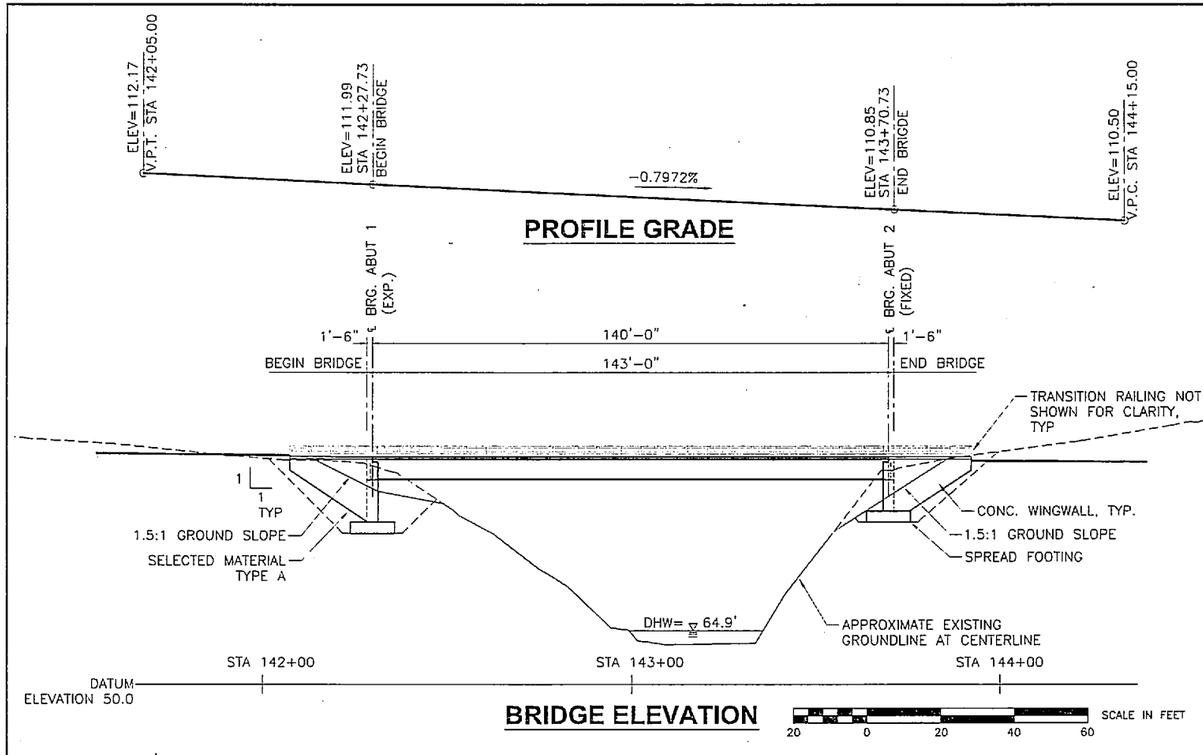
REGISTERED PROFESSIONAL ENGINEER

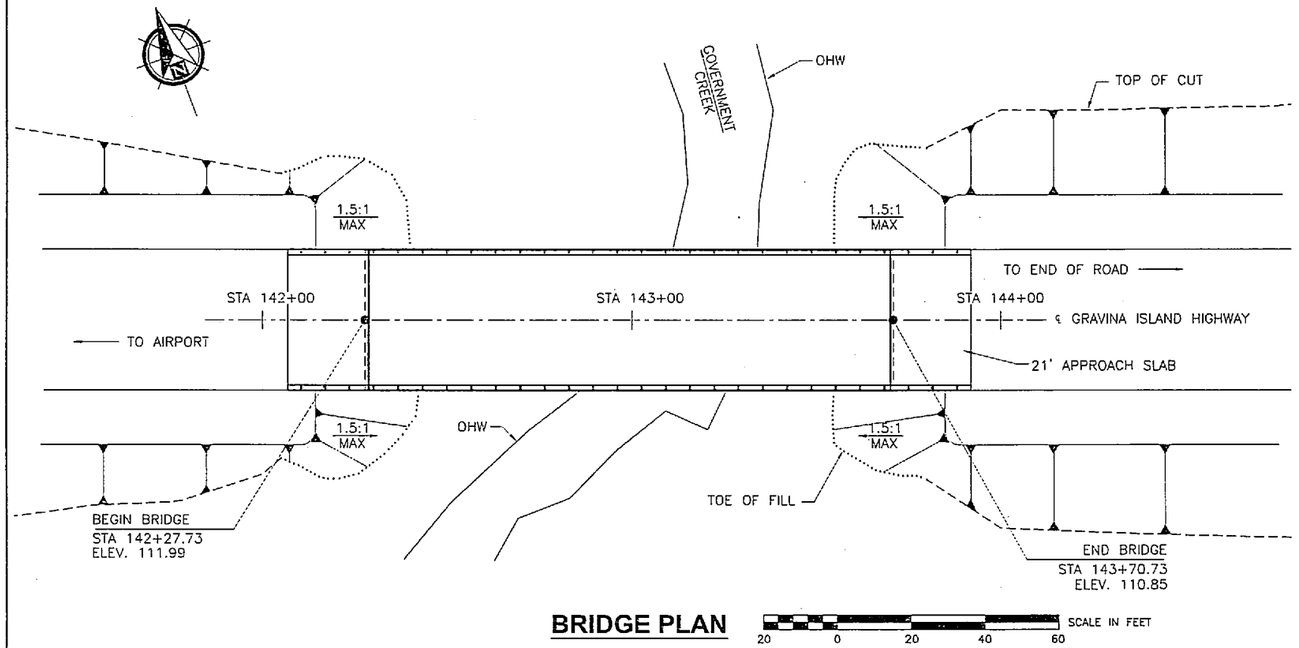
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

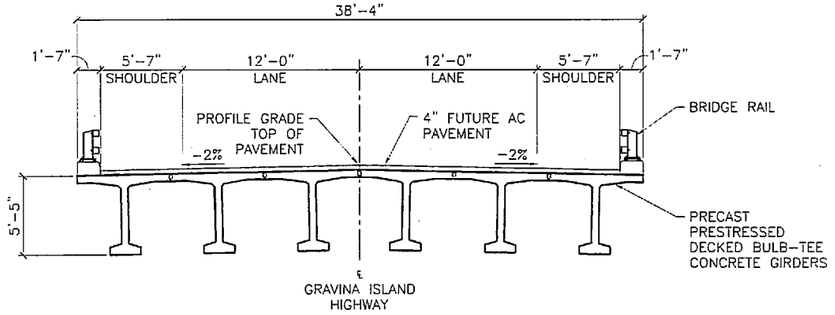
GRAVINA ISLAND HIGHWAY
GRADING, DRAINAGE, AND BRIDGES

SIGN SUMMARY

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N1	N26







TYPICAL BRIDGE SECTION

SCALE IN FEET
5 0 5 10 15

BRIDGE DRAWING INDEX

TITLE	DWG. NO
GENERAL LAYOUT	1
SITE PLAN	2
ABUTMENT #2 ROCK BOLTING	3
ABUTMENT 1	4
ABUTMENT 2	5
ABUTMENT DETAILS	6
WINGWALL AT ABUTMENT 1	7
WINGWALL AT ABUTMENT 2	8
TYPICAL SECTION	9
GIRDERS	10
GIRDER DETAILS	11
APPROACH SLAB	12
BRIDGE RAILING	13

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	LAYOUT BY: P KENDALL	CHECKED BY: D KENLEY		
DRAWN BY: J HELTON	CHECKED: J GOBELI	SPECIFICATIONS BY: C KENLEY	P S & E COMPARED:		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI	APPROVAL RECOMMENDED BY:			

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-625
3.23.06
REGISTERED PROFESSIONAL ENGINEER

GOVERNMENT CREEK BRIDGE

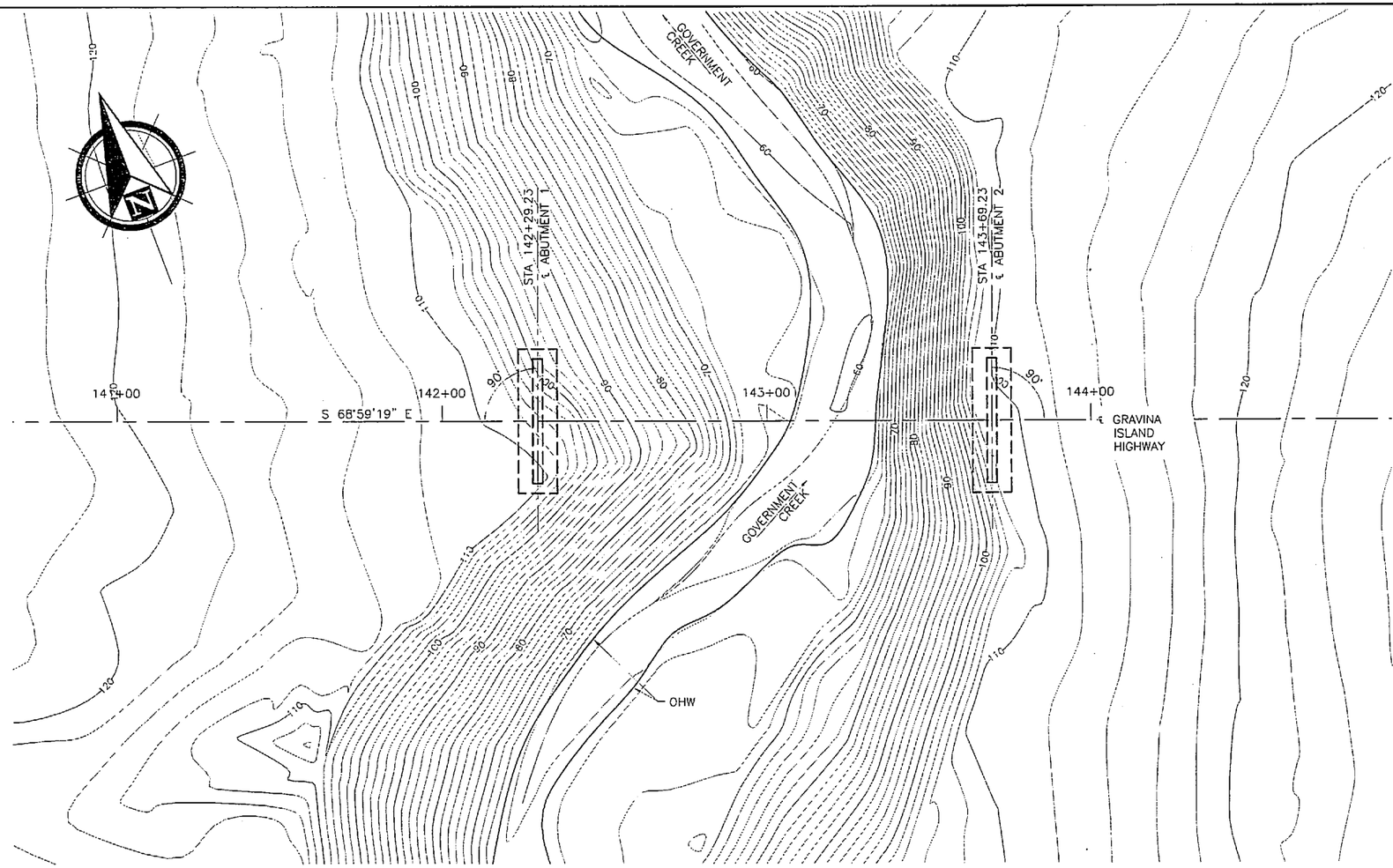
GRAVINA ISLAND HIGHWAY

GENERAL LAYOUT

BRIDGE NO. 2159

DWG. NO. 1

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N2	N26



SITE PLAN

SCALE IN FEET
20 0 20 40 60

GENERAL NOTES

DESIGN:	AASHTO LRFD BRIDGE DESIGN SPECIFICATION, THIRD EDITION, WITH 2006 INTERIM SPECIFICATIONS.
LIVE LOAD:	HL-93
SEISMIC PARAMETERS	ACCELERATION COEFFICIENT, a = 0.10g SITE COEFFICIENT, S = 1.2 IMPORTANCE CLASSIFICATION OTHER LIQUEFACTION POTENTIAL = LOW AASHTO 90% PROBABILITY OF NOT BEING EXCEEDED IN 50 YEARS.
DEAD LOAD:	INCLUDES 50 PSF FOR ALL WEARING SURFACING, 500 PLF FOR UTILITIES
PRECAST CONCRETE:	SEE "GIRDERS" DWG.
CONCRETE:	USE CLASS A CONCRETE FOR ALL CONCRETE UNLESS OTHERWISE NOTED. f'c = 4000 PSI USE CLASS A-A CONCRETE FOR APPROACH SLABS. f'c = 5000 PSI
REINFORCING STEEL:	USE ASTM A706 REINFORCING STEEL. Fy = 60,000 PSI SPACE BARS EVENLY UNLESS OTHERWISE NOTED.
STRUCTURAL STEEL:	USE ASTM A709, GRADE 36, Fy = 36,000 PSI GALVANIZE ALL STRUCTURAL STEEL UNLESS OTHERWISE NOTED.

FOOTING INFORMATION

LOCATION	CONTROLLING LIMIT STATE	RES. FACTOR	FACTORED BEARING RESISTANCE	DESIGN BEARING PRESSURE
ABUTMENT 1	SERVICE LIMIT STATE 1 GLOBAL STABILITY	0.65	7,500 PSF	7,300 PSF
ABUTMENT 2	SERVICE LIMIT STATE 1 GLOBAL STABILITY	0.65	6,000 PSF	5,900 PSF

HYDRAULIC AND HYDROLOGIC SUMMARY

FLOOD FREQUENCY (Yr.)	50 YR.	100 YR.	500 YR.
EXCEEDANCE PROBABILITY (%)	2	1	0.2
DESIGN DISCHARGE (FT³/SEC)	1000	1090	1304
WATER ELEV.	64.8	64.9	65.3
ANTICIPATED ADD'L BACKWATER	0	0	0
CONTRACTION SCOUR (FT.)	0	0	0
ABUTMENT SCOUR (FT.)	0	0	0

DRAINAGE AREA FOR THIS CROSSING: 1.95 SQUARE MILES

HYDRAULIC CAPACITY >>1304 CFS AT LOW SUPERSTRUCTURE ELEVATION OF 105.0 FEET WHICH HAS AN EXCEEDANCE PROBABILITY OF 0.2 PERCENT (Q500)

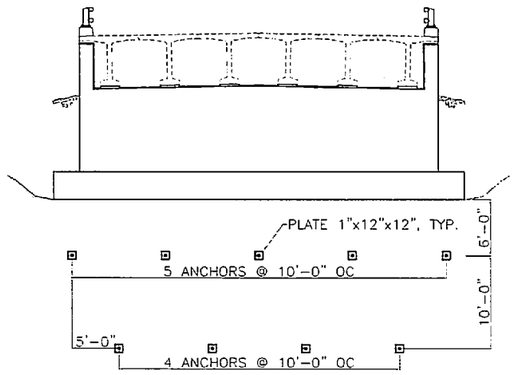
TOTAL SCOUR EQUALS CONTRACTION SCOUR + LOCAL SCOUR

DESIGN HIGH WATER (DHW) = 64.9 FT AT BRIDGE ℄
ORDINARY HIGH WATER (OHW) = 63.4 FT AT BRIDGE ℄

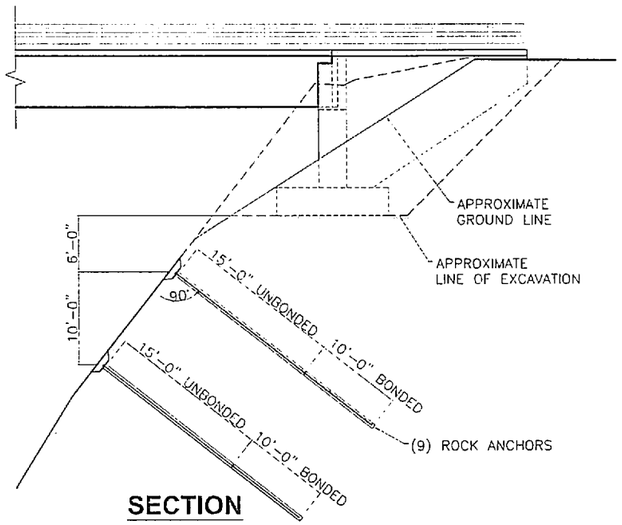
DESIGNED BY: C KENLEY	CHECKED: J GOBELI	HYDRAULICS BY: J CAMPBELL	CHECKED BY: B ADAMS	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GOVERNMENT CREEK BRIDGE GRAVINA ISLAND HIGHWAY SITE PLAN
DRAWN BY: J HELTON	CHECKED: J GOBELI	FOUNDATIONS REVIEWED BY: C WRIGHT			BRIDGE NO. 2159 DWG. NO. 2
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI				

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6529
3.23.09
REGISTERED PROFESSIONAL ENGINEER

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N3	N26



ELEVATION



SECTION

ANCHORS

MATERIALS
ANCHOR ROD SHALL BE 1-1/4" DIAMETER A722 GRADE 150 KSI THREADBAR OR APPROVED EQUAL. ANCHOR SHALL BE GALVANIZED AND MEET THE REQUIREMENTS FOR CLASS 1 CORROSION PROTECTION AS RECOMMEND BY THE POST TENSIONING INSTITUTE.

ALL COUPLERS (STOP-TYPE) AND CONNECTORS SHALL BE CAPABLE OF DEVELOPING 100% OF THE ULTIMATE BAR STRENGTH. PROVIDE PVC CENTRALIZERS AT 8 FEET ON CENTER.

PROVIDE NEAT CEMENT GROUT USING EXPANSIVE HYDRAULIC CEMENT CONFORMING TO ASTM C845, WILLIAMS S5Z OR APPROVED EQUAL, WITH A WATER/CEMENT RATIO OF 0.40, PROVIDING 7 DAY CURE STRENGTH OF 4000 PSI. PROVIDE ADMIXTURES AS REQUIRED TO MINIMIZE BLEED WATER.

CONSTRUCTION
SUBMIT INFORMATION ON EQUIPMENT, INSTALLATION PROCEDURES, WELDING PROCEDURES, CONCRETE & GROUT MIXES WITH MANUFACTURERS INFORMATION TO THE ENGINEER FOR REVIEW.

THE CONTRACTOR SHALL PROVIDE A QUALIFIED INSPECTOR TO PERIODICALLY MONITOR ANCHOR INSTALLATION, MONITOR SOIL CLASSIFICATION, AND WITNESS ALL TESTS.

ANCHORS
EXCAVATE THROUGH OVERBURDEN AND WEATHERED ROCK INTO COMPETENT ROCK TO PROVIDE A BASE FOR BEARING PLATE.

ANCHORS SHALL BE PRESSURE GROUTED WITH PUMPING AIDS/FLUIDIZERS AS REQUIRED FROM THE BOTTOM OF HOLE UP WITH A MINIMUM PRESSURE OF 30 PSI.

TEST ANCHORS AS NOTED. SUBSEQUENT TO TESTING AND CAP PLACEMENT, TENSION ANCHORS AND LOCK OFF TO P=46 KIPS, GROUT HOLE UP TO CAP BEARING PLATE AFTER LOCK-OFF.

ANCHOR TESTS
PERFORMANCE TEST FIRST. PROOF TEST ALL OTHER ANCHORS UNLESS DIRECTED OTHERWISE.

THE PERFORMANCE TEST SHALL BE PERFORMED IN INCREMENTAL LOADING AND UNLOADING. THE MOVEMENT OF THE TENDON SHALL BE RECORDED TO THE NEAREST 0.001 INCHES WITH RESPECT TO AN INDEPENDENT FIXED REFERENCE POINT. JACK AND GAUGE SHALL BE CALIBRATED PRIOR TO USE.

LOADING SEQUENCE P= LOCK OFF LOAD = 46 KPS

ALIGNMENT LOAD 0.10*P
0
0.25*P
0.50*P
0.75*P
1.00*P
1.25*P MONITOR AT 1 MINUTE AND 10 MINUTES*
1.00*P
0.75*P
0.50*P
0.25*P
0

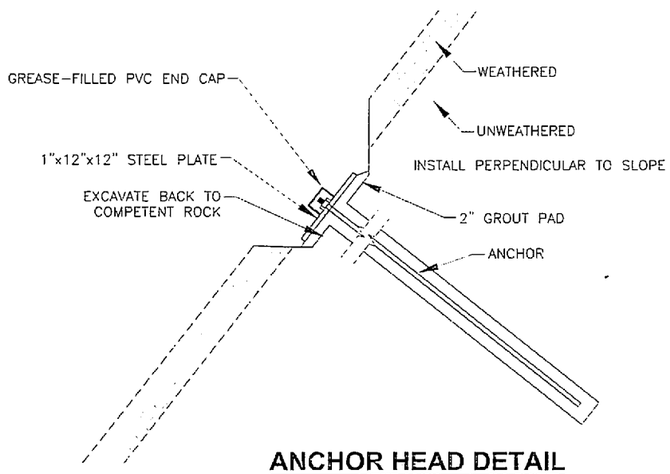
* IF THE TOTAL CREEP MOVEMENT BETWEEN 1 MINUTE AND 10 MINUTES EXCEED 0.04 INCHES THE TEST SHALL BE HELD FOR AN ADDITIONAL 50 MINUTES, MONITORING EVERY 10 MINUTE INTERVALS.

PROOF TEST ALL ANCHORS TO 1.25*P. VARIATIONS BETWEEN PROOF TEST AND PERFORMANCE TEST RESULTS WARRANTS MAKING A PERFORMANCE TEST ON NEXT ANCHOR.

ANCHOR SHALL BE ACCEPTABLE IF:
1. TENDON ELONGATION > 0.33" (80% ELASTIC ELONGATION FOR THE FREE STRESSING LENGTH) AND < 1.25" (ELASTIC ELONGATION FOR (FREE STRESSING LENGTH AND 50% OF BONDED LENGTH)
2. CREEP MOVEMENT DOES NOT EXCEED 0.080 INCHES.

ABUTMENT #2 ROCK ANCHORS

NTS



ANCHOR HEAD DETAIL

NTS

DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: J HELTON	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

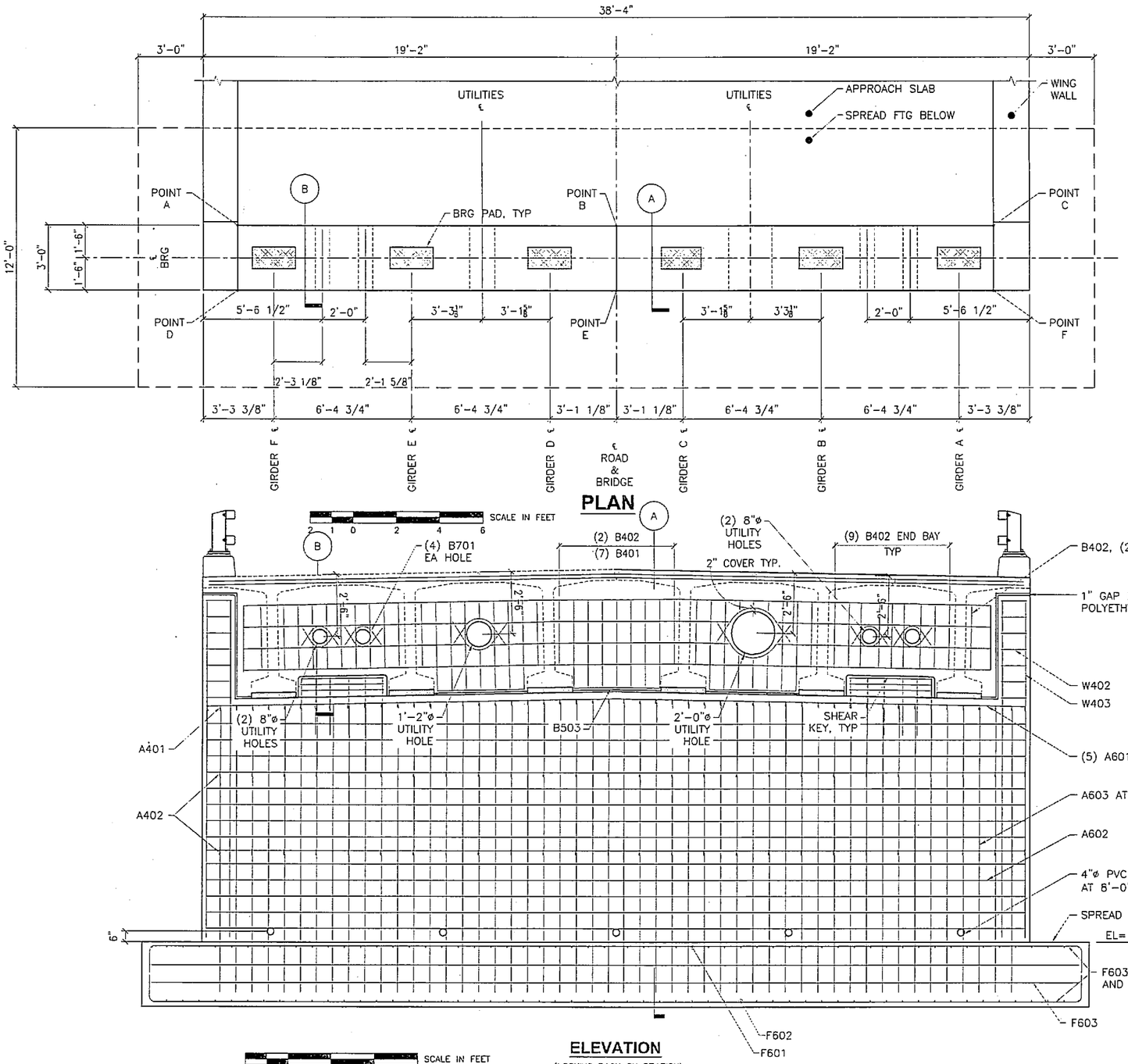
STATE OF ALASKA 49TH
F. Charles Kenley
CE-625
3.23.05
REGISTERED PROFESSIONAL ENGINEER

GOVERNMENT CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

ABUTMENT #2 ROCK BOLTING

BRIDGE NO. 2159
DWG. NO. 3

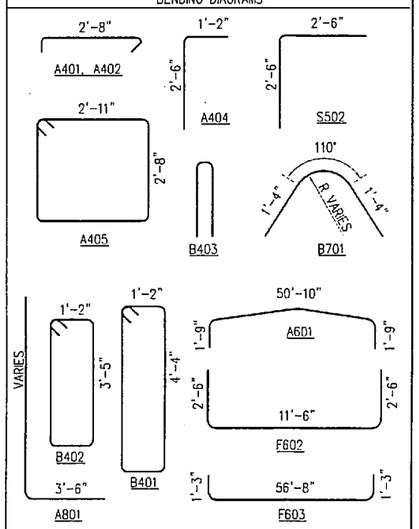


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N4	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
A401	4	58	3'-5"	BENT	
A402	4	58	3'-5"	BENT	
A404	4	30	3'-8"	BENT	
A405	4	4	12'-2"	BENT	
A601	6	5	41'-6"	BENT	b
A602	6	28	38'-0"	–	b
A603	6	56	VARIES	–	
A801	8	56	VARIES	BENT	
B401	4	21	14'-0"	BENT	a
B402	4	28	12'-2"	BENT	a
B403	4	49	5'-4"	BENT	a
B501	5	5	34'-10"	–	a
B502	5	2	38'-0"	–	a, b
B503	5	3	4'-0"	–	a
B601	6	4	34'-10"	–	a, b
B701	7	24	VARIES	BENT	a
F601	6	67	11'-6"	–	
F602	6	89	16'-6"	BENT	
F603	6	36	46'-4"	BENT	b

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL
b – LENGTH DOES NOT INCLUDE SPLICES
c – FIELD BEND BARS TO MATCH CROWN.

TOP OF ABUTMENT WALL ELEVATIONS

POINT	ABUTMENT 1
A	~~105.64~~ 105.55
B	~~105.99~~ 105.82
C	~~105.64~~ 105.49
D	~~105.62~~ 105.53
E	~~105.97~~ 105.80
F	~~105.62~~ 105.47

DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: J HELTON	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

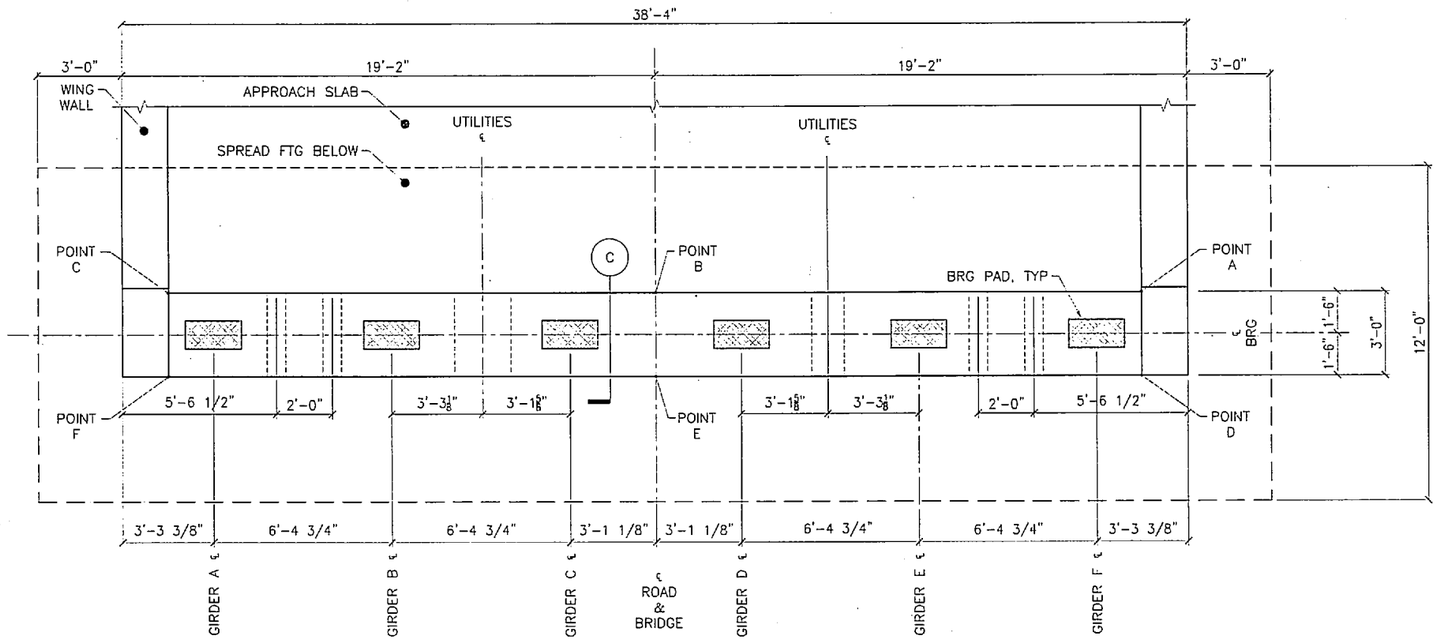
STATE OF ALASKA 49 TH
F. Charles Kenley
CE-629
3.22.07
REGISTERED PROFESSIONAL ENGINEER

GOVERNMENT CREEK BRIDGE

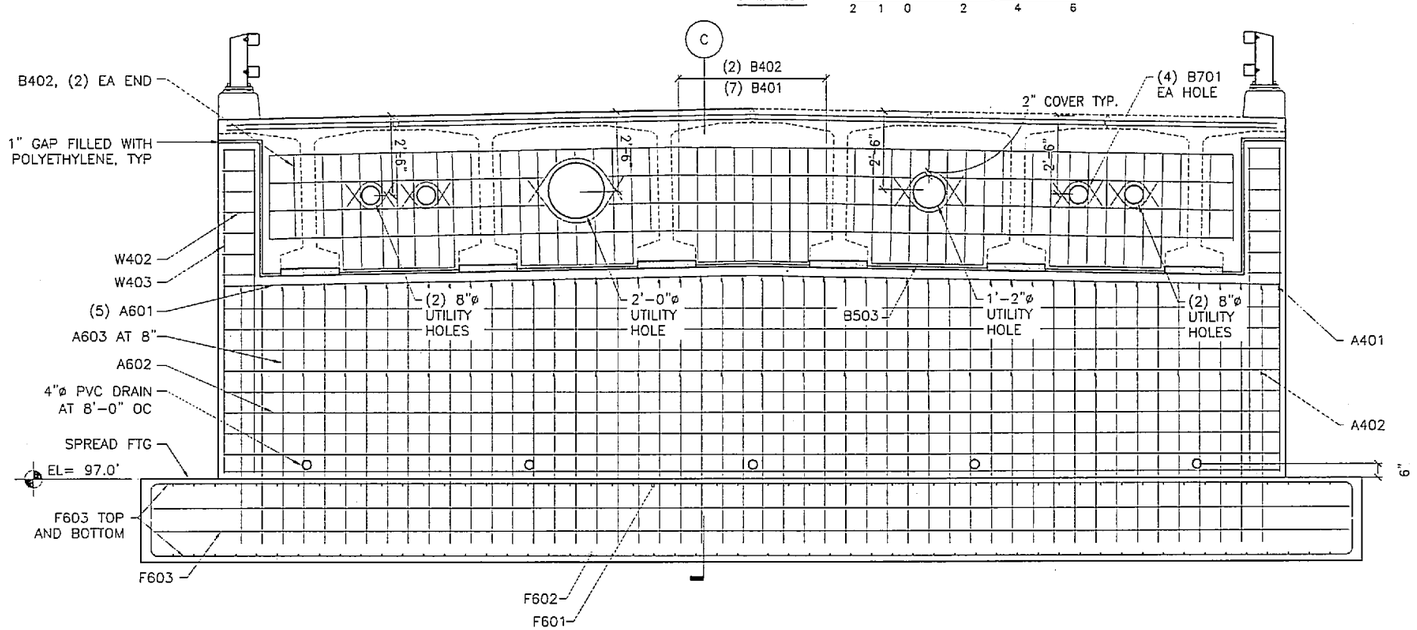
GRAVINA ISLAND HIGHWAY

ABUTMENT 1

BRIDGE NO. 2159
DWG. NO. 4



PLAN SCALE IN FEET 2 1 0 2 4 6



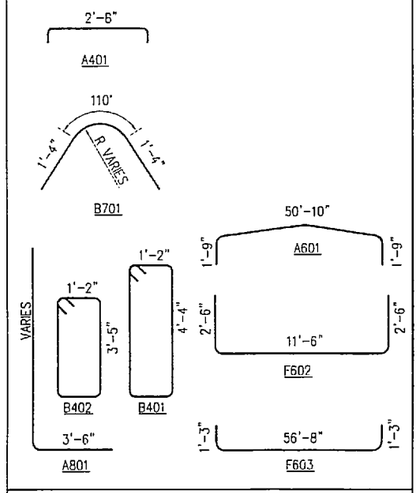
ELEVATION SCALE IN FEET 2 1 0 2 4 6

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N5	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
A401	4	58	3'-5"	BENT	
A402	4	29	3'-5"	BENT	
A501	5	29	5'-0"	–	
A601	5	5	41'-6"	BENT	b
A602	6	28	38'-0"	–	b
A603	6	56	VARIES	–	
A801	6	56	VARIES	BENT	
B401	4	35	14'-0"	BENT	a
B402	4	14	12'-2"	BENT	a
B501	5	5	34'-10"	–	a
B502	5	2	38'-0"	–	a,b
B503	5	5	4'-0"	–	a
B601	6	4	34'-10"	–	a
B701	7	24	VARIES	BENT	a
F601	6	67	11'-6"	–	
F602	6	89	16'-6"	BENT	
F603	6	36	46'-4"	BENT	b

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL
b – LENGTH DOES NOT INCLUDE SPLICES
c – FIELD BEND BARS TO MATCH CROWN.

TOP OF ABUTMENT WALL ELEVATIONS

AS-BUILT

POINT	ABUTMENT 2
A	~~104.50~~ 104.43
B	~~104.85~~ 104.79
C	104.50
D	~~104.52~~ 104.45
E	~~104.87~~ 104.81
F	104.52

DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: J HELTON	CHECKED: J GOBELI		
QUANTITIES BY: D BENTZ	CHECKED: J GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH F. Charles Kenley CE-6251 3.23.07 REGISTERED PROFESSIONAL ENGINEER

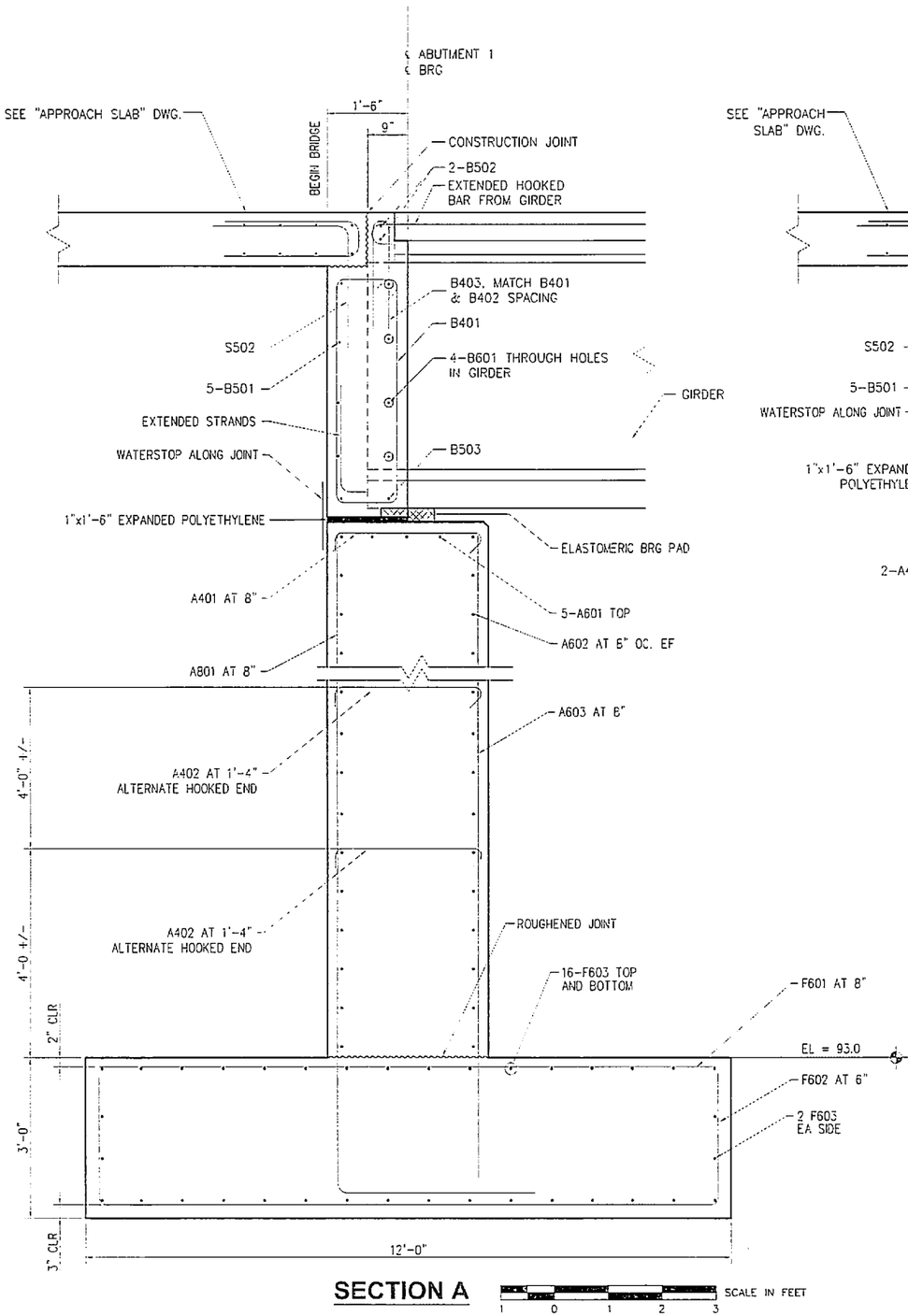
GOVERNMENT CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

ABUTMENT 2

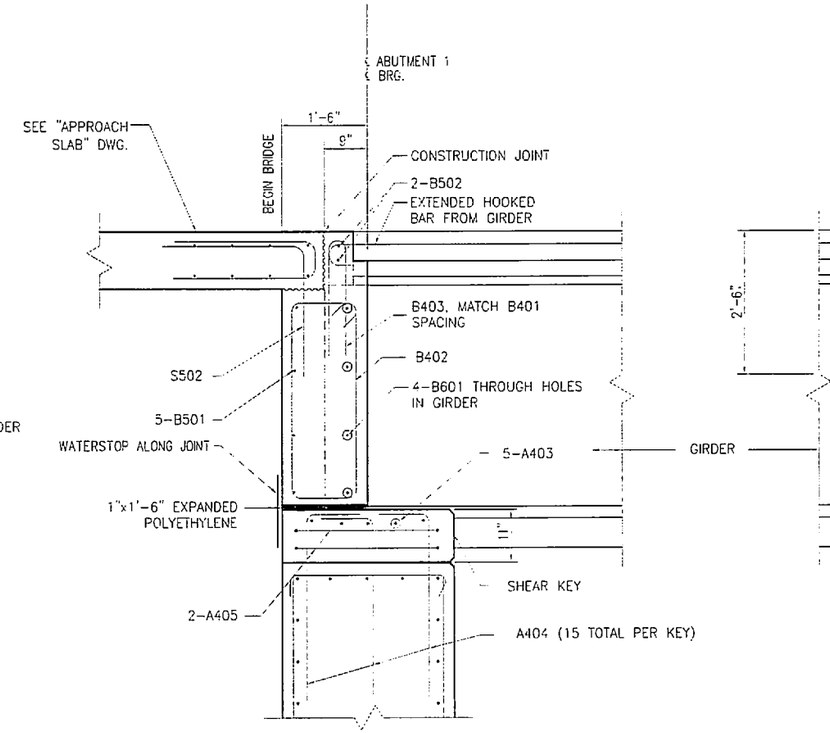
BRIDGE NO. 2159
DWG. NO. 5

STATE	PROJECT DESIGNATION	YEAR	SHEET NO	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N6	N26



SECTION A

SCALE IN FEET 1 0 1 2 3

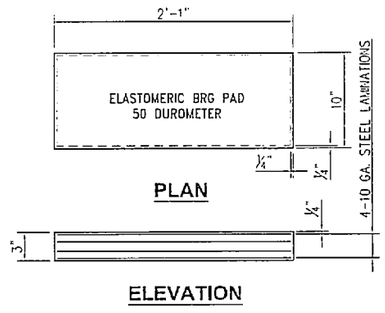


SECTION B

SCALE IN FEET 1 0 1 2 3

BEARING PAD REACTIONS

LOCATION	D.L. PER BRG.	L.L. PER BRG.
ABUTMENTS	112.6 kips	77.4 kips

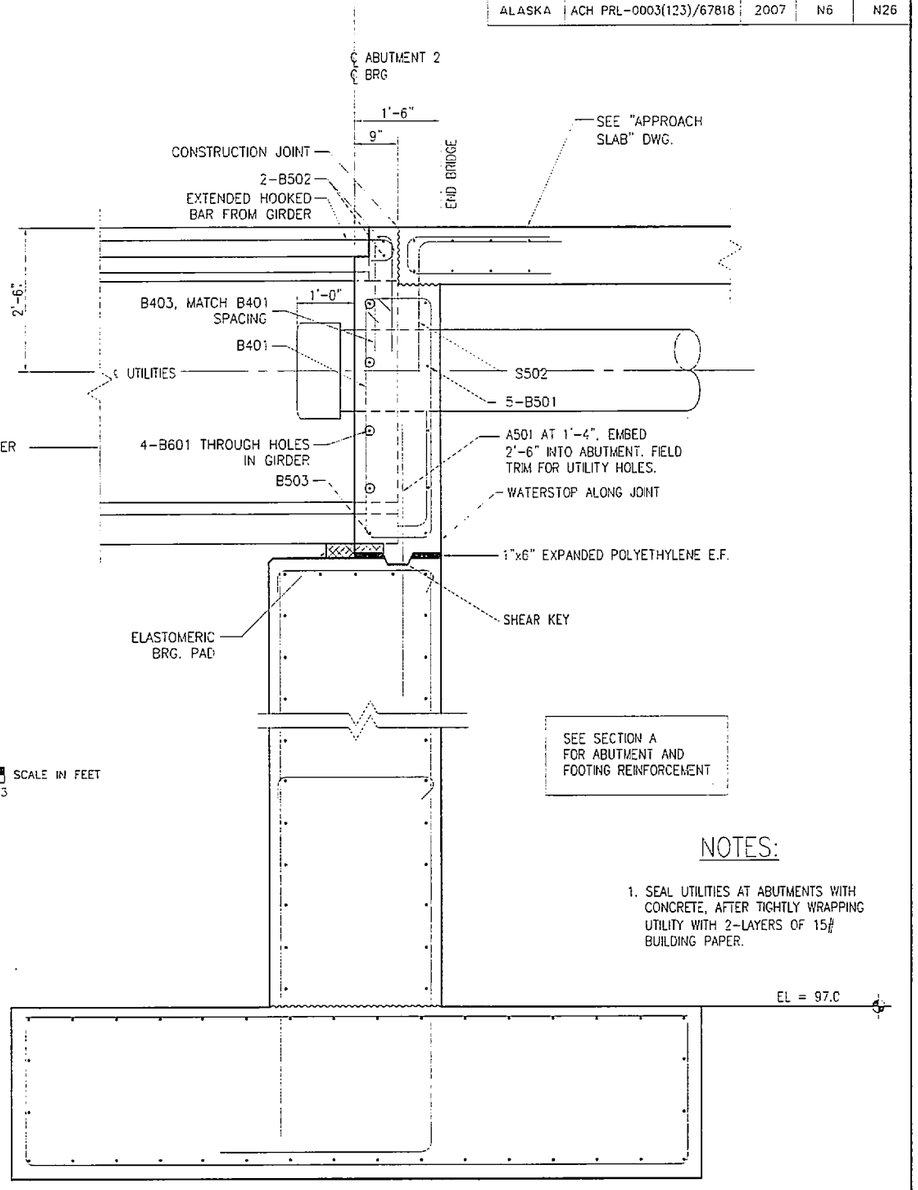


PLAN

ELEVATION

BEARING PAD

SCALE IN INCHES 6 0 6 12 18



SECTION C

SCALE IN FEET 1 0 1 2 3

NOTES:

1. SEAL UTILITIES AT ABUTMENTS WITH CONCRETE, AFTER TIGHTLY WRAPPING UTILITY WITH 2-LAYERS OF 15# BUILDING PAPER.

DESIGNED BY: C. KENLEY	CHECKED: J. GOBELI		
DRAWN BY: J. HELTON	CHECKED: J. GOBELI		
QUANTITIES BY: D. BENTTI	CHECKED: J. GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH F. Charles Kenley CE-6251 3.22.09 REGISTERED PROFESSIONAL ENGINEER

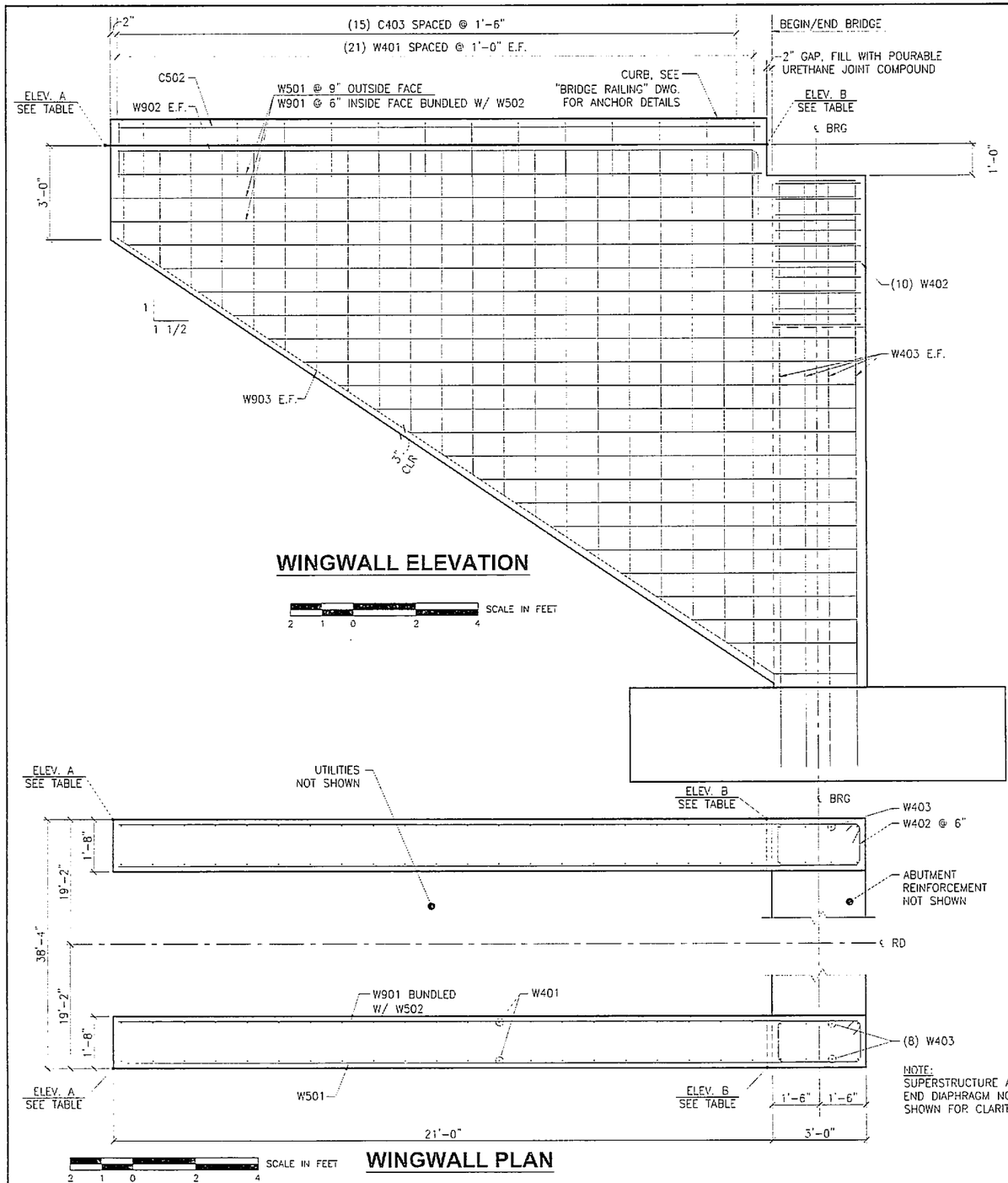
GOVERMENT CREEK BRIDGE

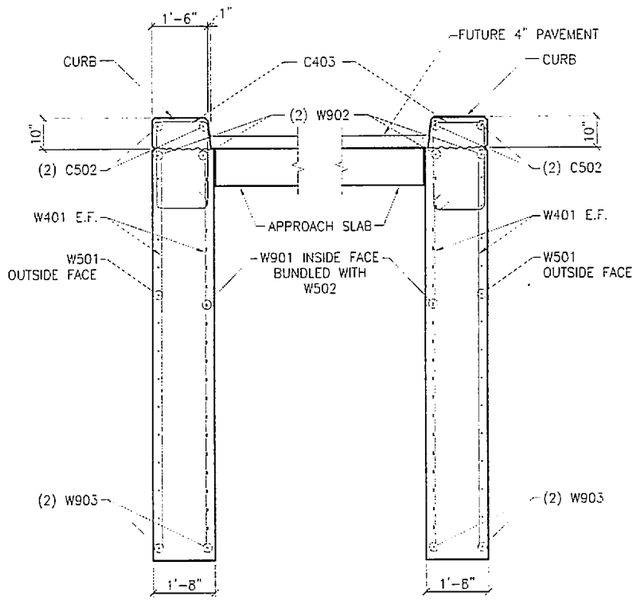
GRAVINA ISLAND HIGHWAY

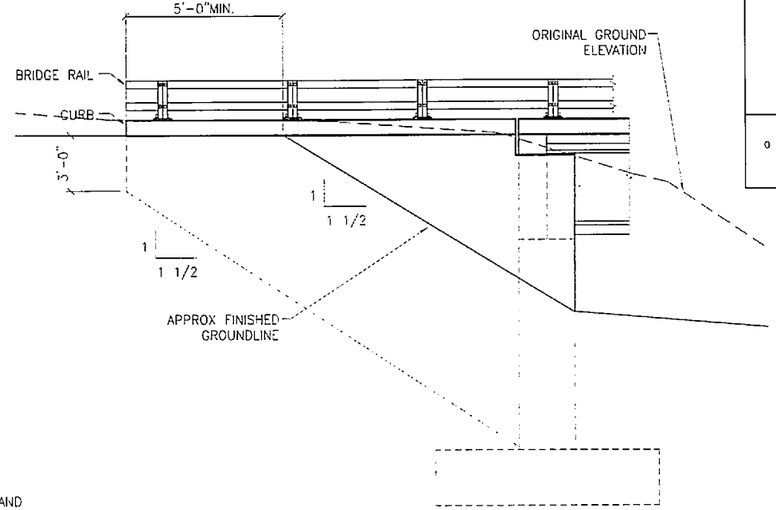
ABUTMENT DETAILS

BRIDGE NO. 2159

DWG. NO. 6





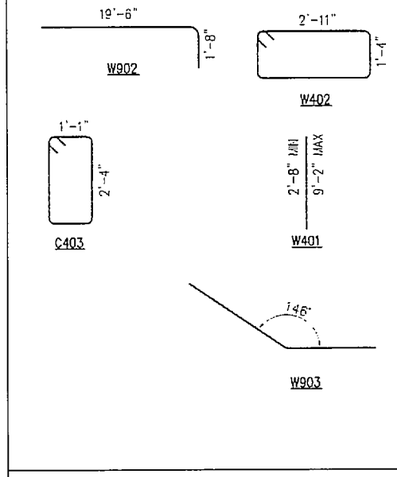


STATE	PROJECT DESIGNATION	YEAR	SHEET NO	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N7	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
W401	4	84	VARIES	-	
W402	4	20	9'-0"	BENT	
W403	4	16	18'-7"	-	
W501	5	40	VARIES	-	
W502	5	60	VARIES	-	
W901	9	60	VARIES	-	
W902	9	4	21'-2"	BENT	
W903	9	4	23'-6"	BENT	
C403	4	30	7'-8"	BENT	a
C502	5	4	19'-6"	-	a

BENDING DIAGRAMS



a - EPOXY COATED REINFORCING STEEL

TOP OF WALL ELEVATIONS

	TOP OF WALL	
LOCATION	A	B
TOP OF CURB	112.28	112.10
TOP OF WALL	111.44	111.27

DESIGNED BY:	C KENLEY	CHECKED:	J GOBELI
DRAWN BY:	J HELTON	CHECKED:	J GOBELI
QUANTITIES BY:	D BENTTI	CHECKED:	J GOBELI

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH F. Charles Kenley CE-6251 3.23.09 REGISTERED PROFESSIONAL ENGINEER

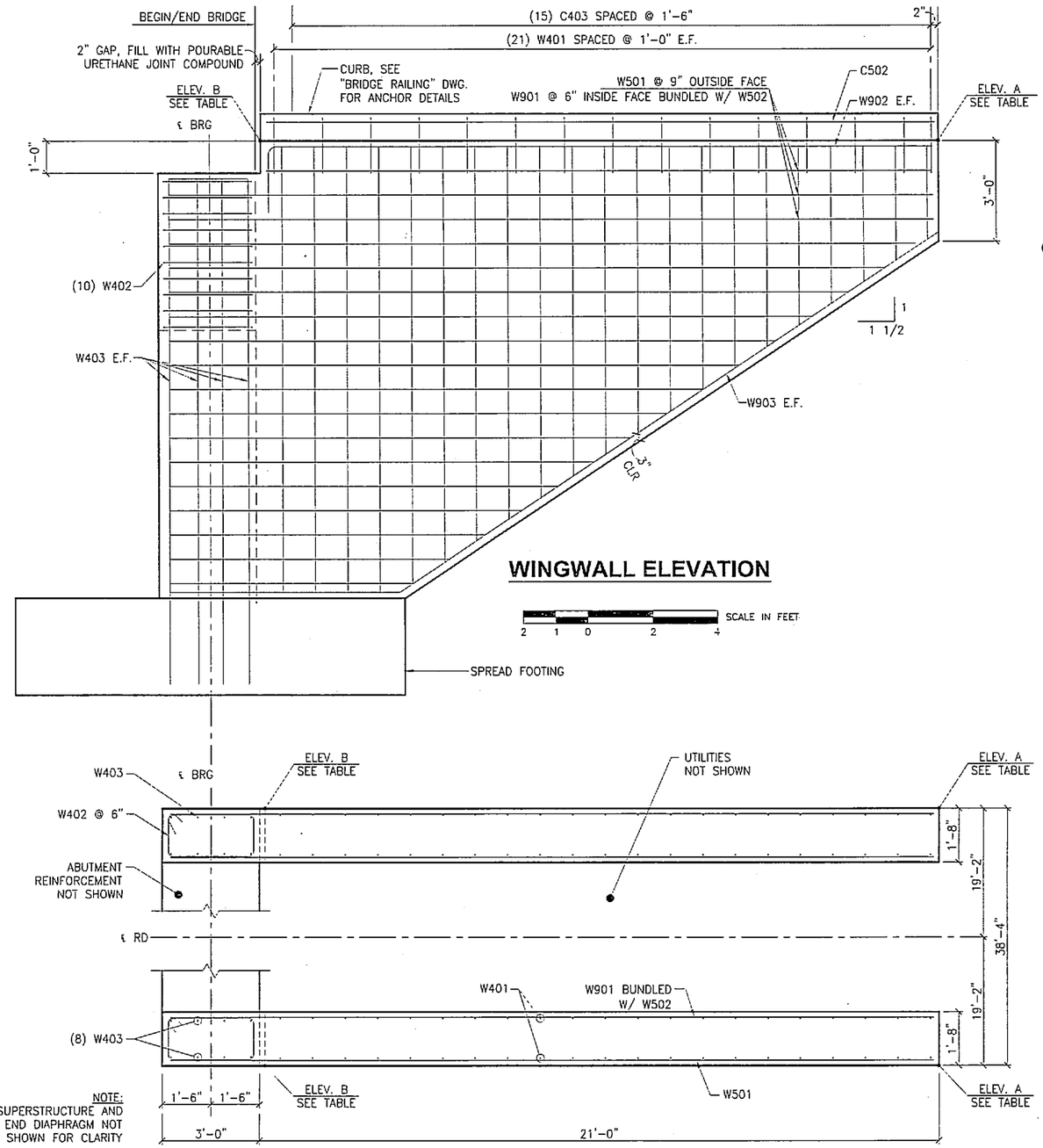
GOVERNMENT CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

WINGWALL AT ABUTMENT 1

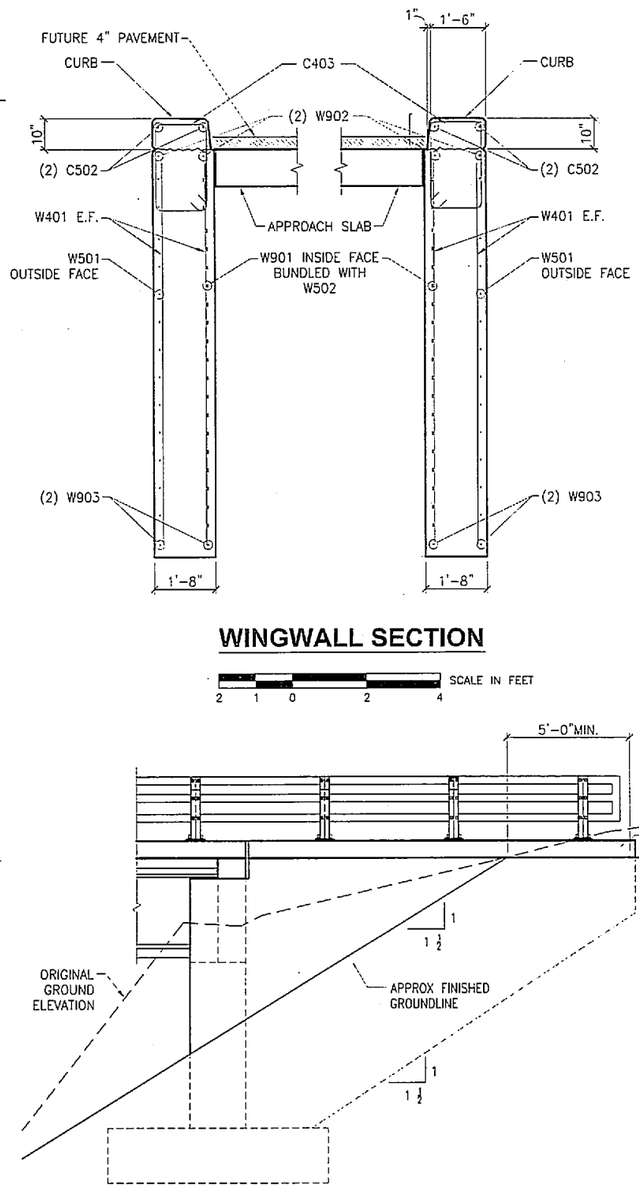
BRIDGE NO. 2159

DWG. NO. 7



WINGWALL ELEVATION

SCALE IN FEET 2 1 0 2 4



WINGWALL SECTION

SCALE IN FEET 2 1 0 2 4

WINGWALL PLAN

SCALE IN FEET 2 1 0 2 4

FINISHED ELEVATION

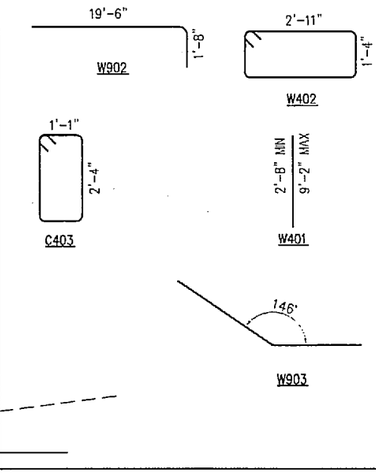
SCALE IN FEET 4 2 0 4 8

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N8	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
W401	4	84	VARIES	–	
W402	4	20	9'-0"	BENT	
W403	4	16	15'-6"	–	
W501	5	36	VARIES	–	
W502	5	54	VARIES	–	
W901	9	54	VARIES	–	
W902	9	4	21'-2"	BENT	
W903	9	4	23'-6"	BENT	
C403	4	30	7'-8"	BENT	a
C502	5	4	19'-8"	–	a

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL

TOP OF WALL ELEVATIONS

LOCATION	A	B
TOP OF CURB	110.60	110.79
TOP OF WALL	109.96	110.13

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GOVERNMENT CREEK BRIDGE GRAVINA ISLAND HIGHWAY WINGWALL AT ABUTMENT 2
DRAWN BY: J HELTON	CHECKED: J GOBELI		BRIDGE NO. 2159 DWG. NO. 8
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

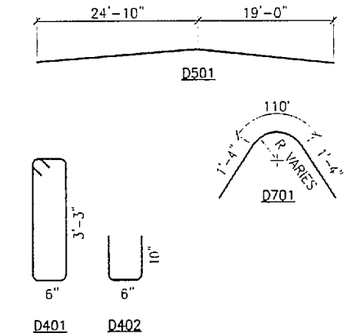
STATE OF ALASKA 49 TH F. Charles Kenley CE-6228 3.23.09 REGISTERED PROFESSIONAL ENGINEER

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N9	N26

REINFORCING STEEL ONE DIAPHRAGM

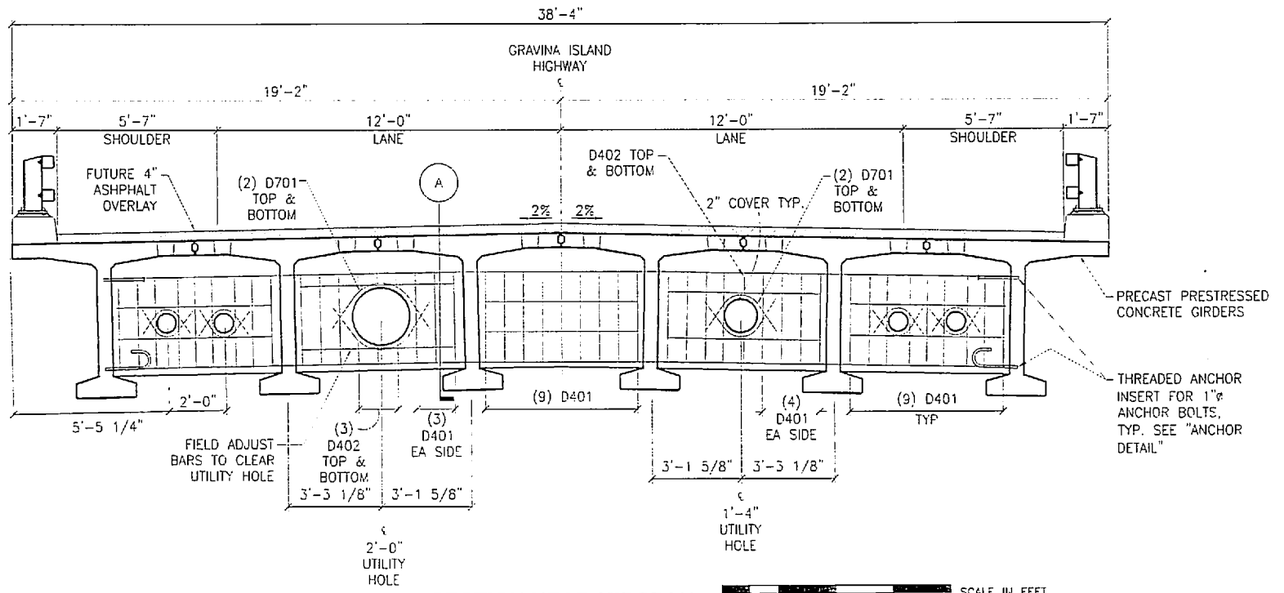
MARK	SIZE	No.	LENGTH	TYPE	NOTES
D401	4	59	8'-6"	BENT	a
D402	4	8	2'-2"	BENT	a
D403	4	28	5'-7"	-	a
D501	5	4	43'-10"	BENT	a,b
D701	7	4	4'-3"	BENT	a
D702	7	4	6'-3"	BENT	a

BENDING DIAGRAMS



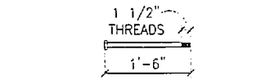
a - EPOXY COATED REINFORCING STEEL

b - LENGTH DOES NOT INCLUDE SPLICES



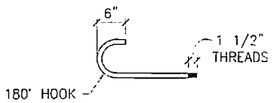
SECTION NEAR MIDSPAN

SCALE IN FEET
2 1 0 2 4 6



ASTM A307 GALVANIZED

1"Ø TOP ANCHOR



ASTM A307 GALVANIZED

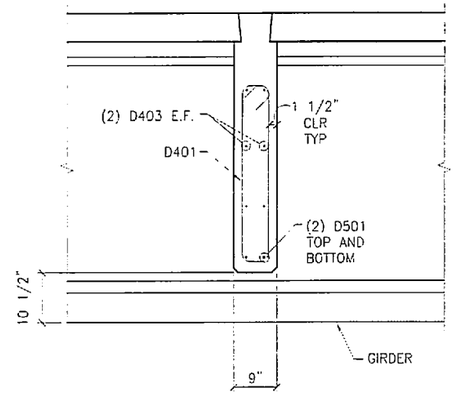
1"Ø BOTTOM ANCHOR

ANCHOR DETAILS

SCALE IN FEET
1 0 1 2 3

FRAMING PLAN

SCALE IN FEET
10 0 10 20 30

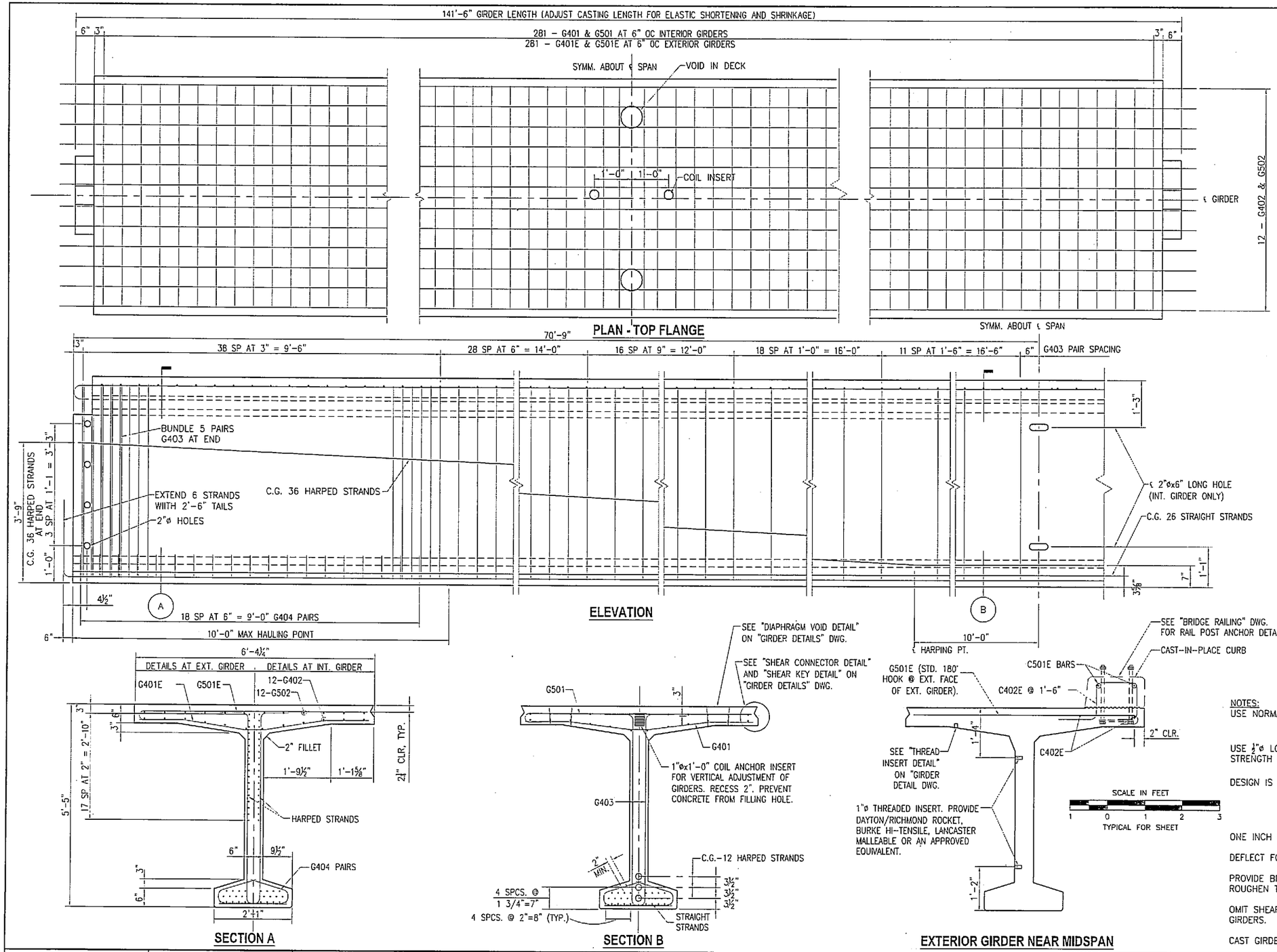


DIAPHRAGM SECTION A

SCALE IN FEET
1 0 1 2 3

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GOVERNMENT CREEK BRIDGE GRAVINA ISLAND HIGHWAY TYPICAL SECTION
DRAWN BY: J HELTON	CHECKED: J GOBELI		BRIDGE NO. 2159
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		DWG. NO. 9

STATE OF ALASKA 49 TH
F. Charles Kenley CE-625 3.23.09
REGISTERED PROFESSIONAL ENGINEER

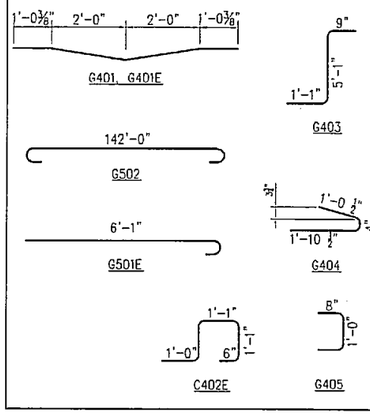


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N10	N26

REINFORCING STEEL ONE GIRDER

MARK	SIZE	No.	LENGTH	TYPE	NOTES
G401	4	281	6'-1"	BENT	a
G401E	4	281	6'-1"	BENT	a, d
G402	4	12	140'-2"	–	a
G403	4	464	6'-11"	BENT	a
G404	4	76	3'-3"	BENT	a
G405	4	95	2'-4"	BENT	a, g
G501	5	281	6'-1"	–	a
G501E	5	281	6'-8"	BENT	a, d
G502	5	12	143'-2"	BENT	a, b
C401E	4	95	4'-10"	BENT	a, c, e
C402E	4	95	4'-6"	BENT	a, c, f
C501E	5	2	142'-8"	–	a, b, d

BENDING DIAGRAMS



a - EPOXY COATED REINFORCING STEEL
b - LENGTH DOES NOT INCLUDE SPLICES
c - SHIP FOUR LOOSE
d - GIRDERS A, H ONLY
e - GIRDER A ONLY
f - GIRDER H ONLY
g - GIRDER B ONLY

NOTES:

USE NORMAL WEIGHT CONCRETE WITH THE FOLLOWING STRENGTHS:
AT STRESS TRANSFER f'ci = 6750 PSI
AT 28 DAYS F'C = 8000 PSI

USE ½"ø LOW-RELAXATION PRESTRESSING STRANDS WITH AN ULTIMATE STRENGTH OF 270 KSI AND A CROSS SECTION AREA OF 0.153 IN².

DESIGN IS BASED ON THE FOLLOWING STEEL STRESSES:
PRETENSIONING - JACKING STRESS 189 KSI
AFTER ALL LOSSES 162 KSI

ONE INCH CLEAR ON ALL REINFORCING EXCEPT AS NOTED.

DEFLECT FORMS TO COMPENSATE FOR CAMBER AND ROADWAY GRADE.

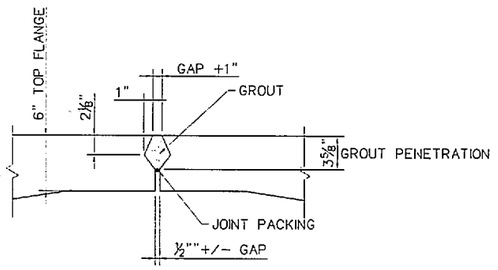
PROVIDE BROOM FINISH ON THE ROADWAY SURFACE OF THE PRECAST MEMBER. ROUGHEN THE SURFACE UNDER THE RAILING CURBS.

OMIT SHEAR KEY AND SHEAR KEY CONNECTORS OUTSIDE THE EXTERIOR GIRDERS.

CAST GIRDER ENDS PLUMB WITH RESPECT TO ROADWAY GRADE.

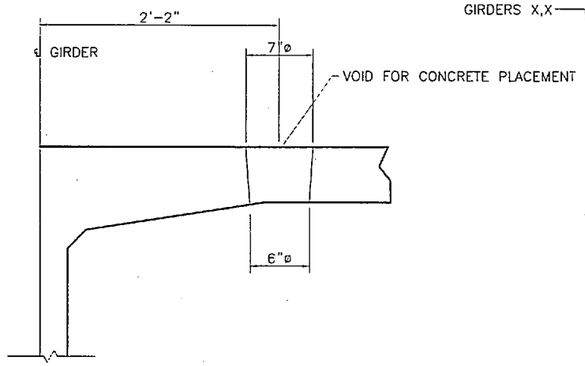
DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GOVERNMENT CREEK BRIDGE GRAVINA ISLAND HIGHWAY GIRDERS
DRAWN BY: J HELTON	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		BRIDGE NO. 2159 DWG. NO. 10

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6251
3.23.09
REGISTERED PROFESSIONAL ENGINEER



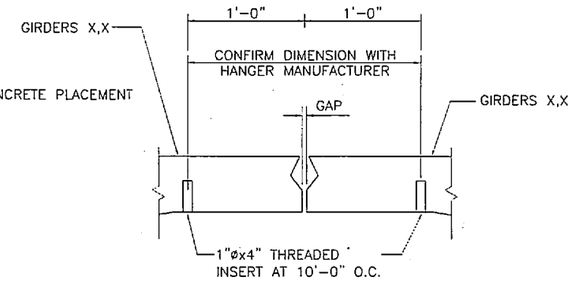
SHEAR KEY DETAIL

SCALE IN INCHES
6 0 6 12 18



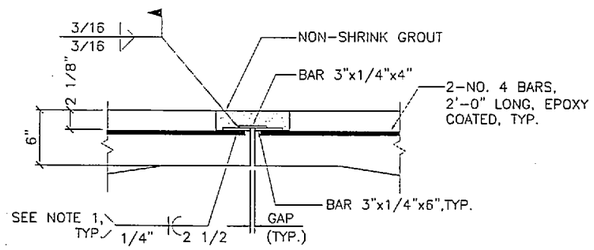
DIAPHRAGM VOID DETAIL

SCALE IN INCHES
6 0 6 12 18



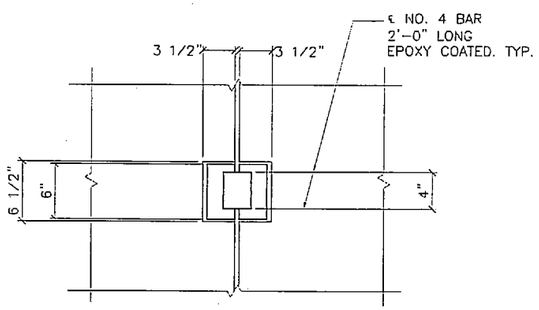
THREADED INSERT DETAIL

SCALE IN INCHES
6 0 6 12 18



SHEAR CONNECTOR DETAIL

SCALE IN INCHES
6 0 6 12 18



PLAN VIEW - SHEAR CONNECTOR

SCALE IN INCHES
6 0 6 12 18

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N11	N26

REINFORCING STEEL ONE SIDEWALK

MARK	SIZE	No.	LENGTH	TYPE	NOTES
R401	4	103	8'-2"	BENT	a
R402	4	14	152'-8"	BENT	a, b

BENDING DIAGRAMS

7'-8"

R401

a - EPOXY COATED REINFORCING STEEL
b - LEGNTH DOES NOT INCLUDE SPLICES

NOTES:
1. REMOVE EPOXY COATING FROM AREAS TO BE WELDED BEFORE WELDING.
2. ANCHORAGE FOR THREADED ROD MUST PROVIDE A SAFE WORKING LOAD OF 3500 LBS.
3. SECURE ALL NUTS AND THREADED ROD CONNECTIONS WITH A THREAD LOCKING SYSTEM.

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	
DRAWN BY: J HELTON	CHECKED: J GOBELI	
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-625
3.23.09
REGISTERED PROFESSIONAL ENGINEER

GOVERNMENT CREEK BRIDGE
GRAVINA ISLAND HIGHWAY
GIRDER DETAILS

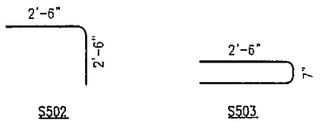
BRIDGE NO. 2159
DWG. NO. 11

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N12	N26

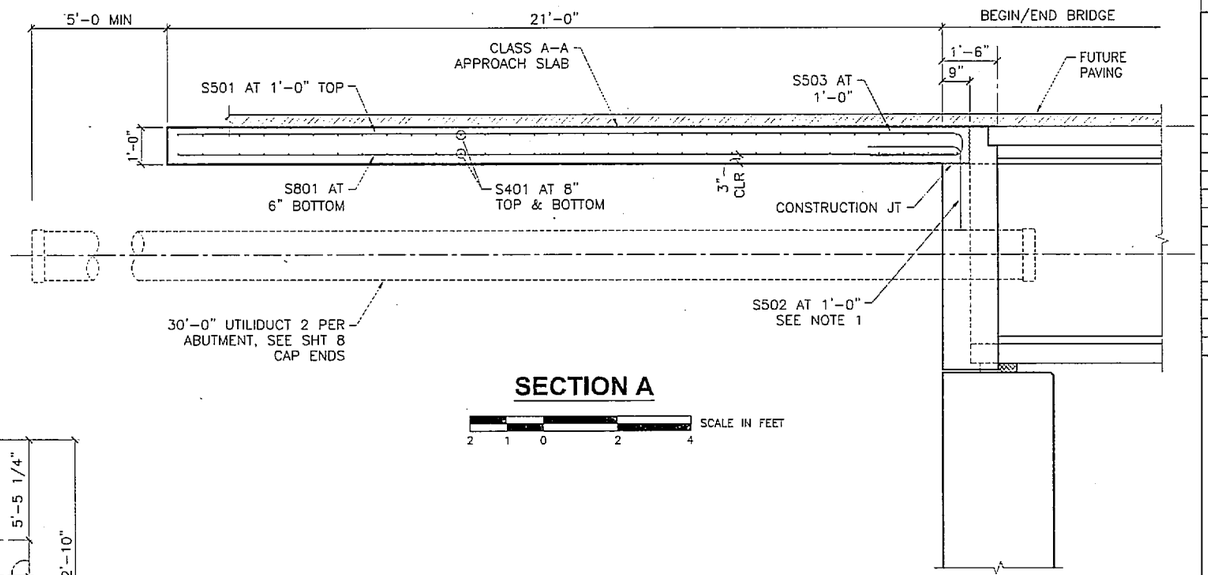
REINFORCING STEEL ONE SLAB

MARK	SIZE	No.	LENGTH	TYPE	NOTES
S401	4	60	34'-9"	–	a, b
S501	5	39	20'-5"	–	a
S502	5	39	5'-0"	BENT	a
S503	5	39	5'-7"	BENT	a
S801	8	77	20'-5"	–	a

BENDING DIAGRAMS

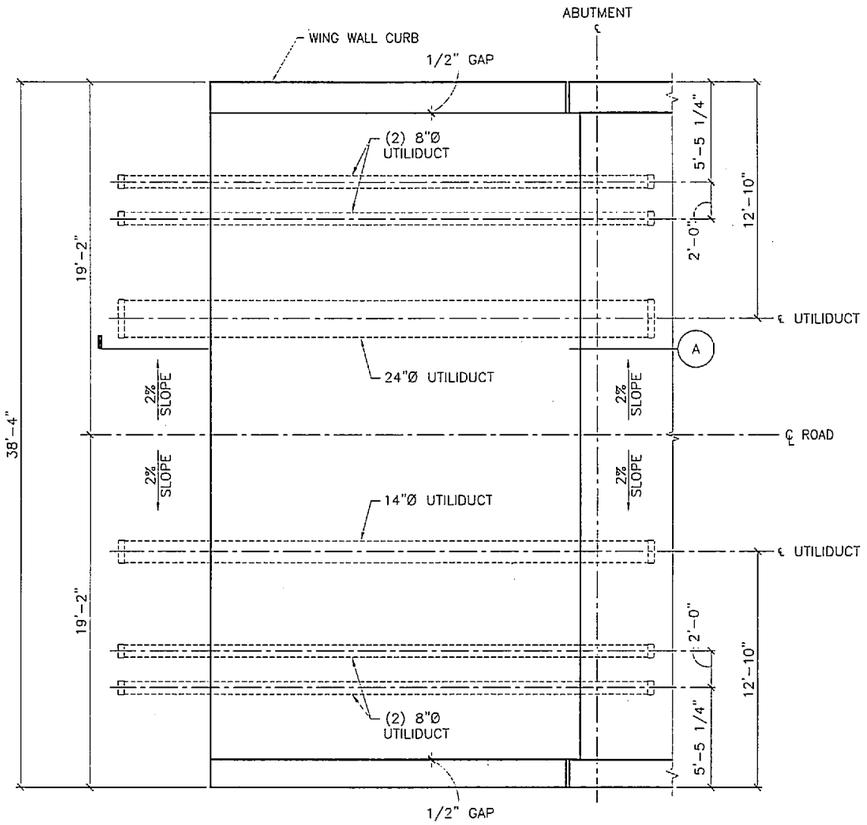


a – EPOXY COATED REINFORCING STEEL
b – LEGNTH DOES NOT INCLUDE SPLICES



SECTION A

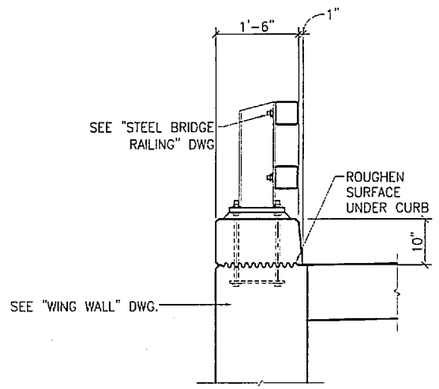
SCALE IN FEET
2 1 0 2 4



PLAN

(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)

SCALE IN FEET
4 2 0 4 8



BRIDGE RAIL DETAIL

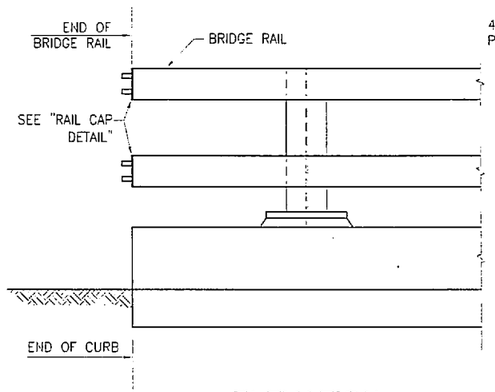
SCALE IN FEET
1 0 1 2 3

NOTES:
1. FIELD ADJUST S502 TO MSS UTILITIES.
2. CAP ALL UNUSED UTILITIES CONDUITS.

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GOVERNMENT CREEK BRIDGE GRAVINA ISLAND HIGHWAY APPROACH SLAB
DRAWN BY: J HELTON	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		BRIDGE NO. 2159 DWG. NO. 12

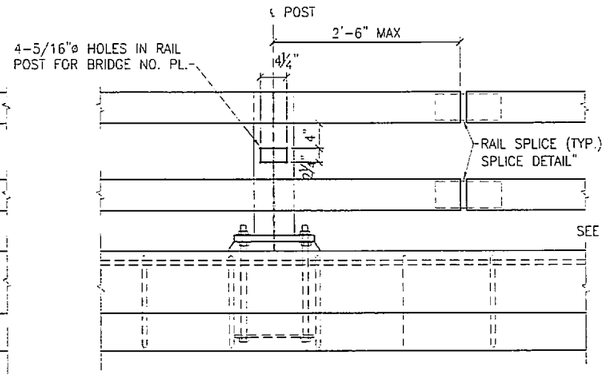
STATE OF ALASKA 49TH — F. Charles Kenley, CE-6004, 3.25.09, REGISTERED PROFESSIONAL ENGINEER

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N13	N26



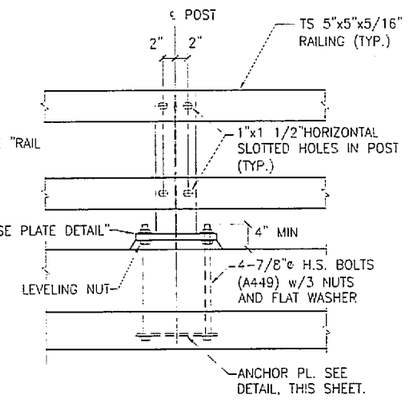
ELEVATION

SCALE IN INCHES
12 6 0 12 24



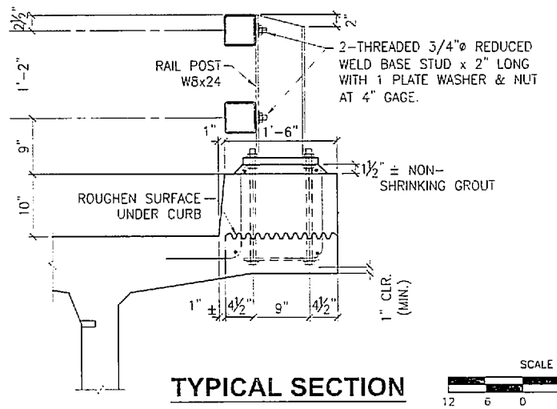
EXPANSION JOINT

SCALE IN INCHES
12 6 0 12 24



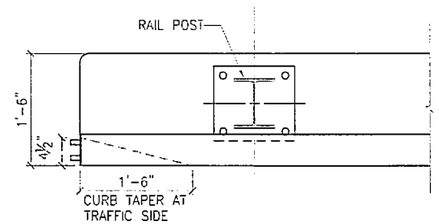
TYPICAL POST ELEVATION

SCALE IN INCHES
12 6 0 12 24



TYPICAL SECTION

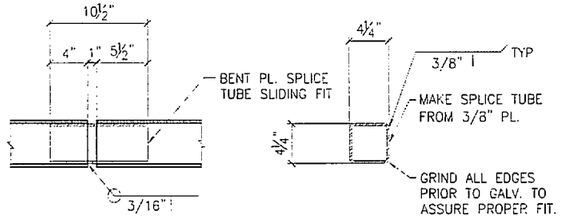
SCALE IN INCHES
12 6 0 12 24



PLAN

END POST DETAIL

SCALE IN INCHES
12 6 0 12 24



RAIL SPLICE DETAIL

SCALE IN INCHES
6 0 6 12 18

SPLICE TUBE

SCALE IN INCHES
6 0 6 12 18

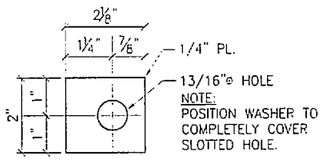
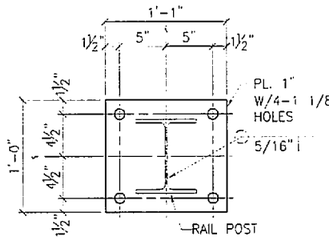


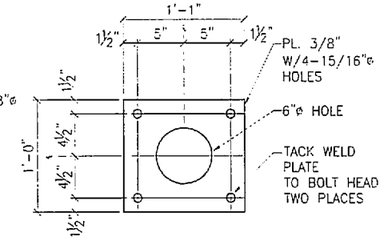
PLATE WASHER

SCALE IN INCHES
2 1 0 2 4



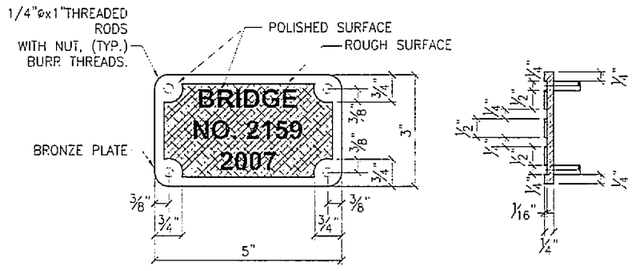
BASE PLATE DETAIL

SCALE IN INCHES
6 0 6 12 18



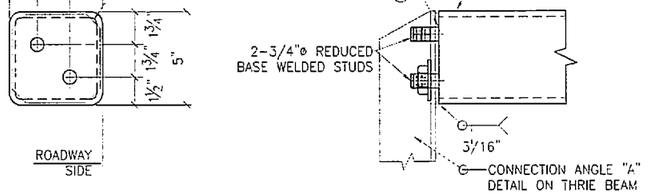
ANCHOR PLATE DETAIL

SCALE IN INCHES
6 0 6 12 18



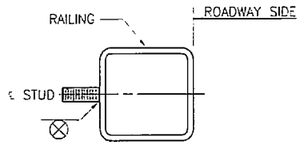
BRONZE BRIDGE NO. PLATE

SCALE IN INCHES
2 1 0 2 4



RAIL CAP DETAIL

SCALE IN INCHES
6 0 6 12 18



RAILING STUD DETAIL

SCALE IN INCHES
6 0 6 12 18

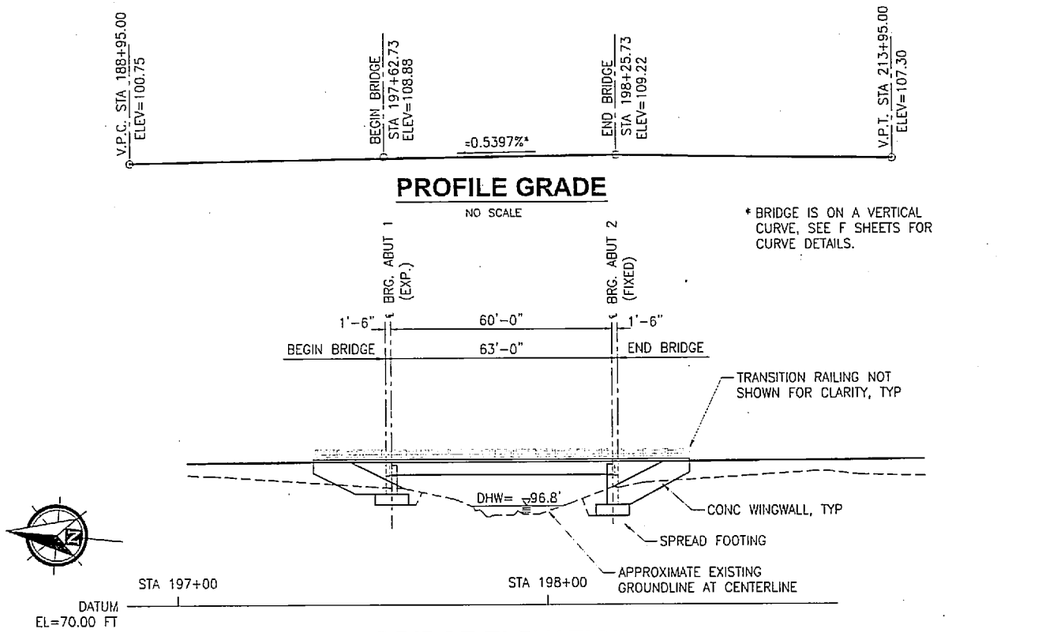
NOTES

1. LOCATE BRIDGE NUMBER PLATES ON RIGHT HAND SIDE OF APPROACHING TRAFFIC NEAR EACH END AS SHOWN (1 TOTAL).
2. FURNISH BRIDGE NUMBER PLATES. USE BRONZE THAT CONFORMS TO A.S.T.M. B98-90, ALLOY "A" OR "B". USE "CENTURY" TYPE STYLE LETTERING. USE STUDS AND NUTS THAT CONFORMS TO UNS C65100 OR C65500. BRAZE 1/4"ø THREADED ROD TO BACK OF PLATE WITH NUT-4 REQUIRED. USE LOCKING NUTS OR LOCK WASHERS ON ALL MACHINE BOLTS.
3. PROVIDE RAILING EXPANSION JOINTS AT 50'-0" MAXIMUM INTERVALS. RAILING SHALL BE CONTINUOUS OVER 4 POSTS MAXIMUM.
4. USE GROUT WITH A MINIMUM 24 HOUR F'C OF 3000 PSI.
5. SEE "TYPICAL SECTION" DWG. FOR RAIL POST SPACING.
6. BRIDGE RAIL AND THRIE BEAM TRANSITION MEET THE REQUIREMENTS FOR TL-4 CRASH RATING.
7. INSTALL RAIL POSTS PLUMB.
8. SEE STD. DWG G31.00 FOR THRIE BEAM TRANSITION.

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GOVERNMENT CREEK BRIDGE GRAVINA ISLAND HIGHWAY BRIDGE RAILING
DRAWN BY: J HELTON	CHECKED: J GOBELI		BRIDGE NO. 2159 DWG. NO. 13
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA 49TH F. Charles Kenley CE-6251 3.23.09 REGISTERED PROFESSIONAL ENGINEER

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N14	N26

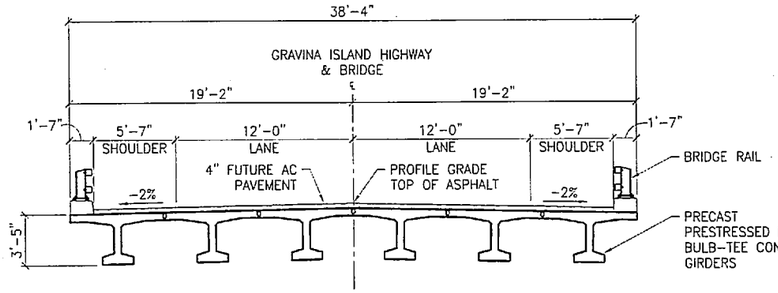


PROFILE GRADE

NO SCALE

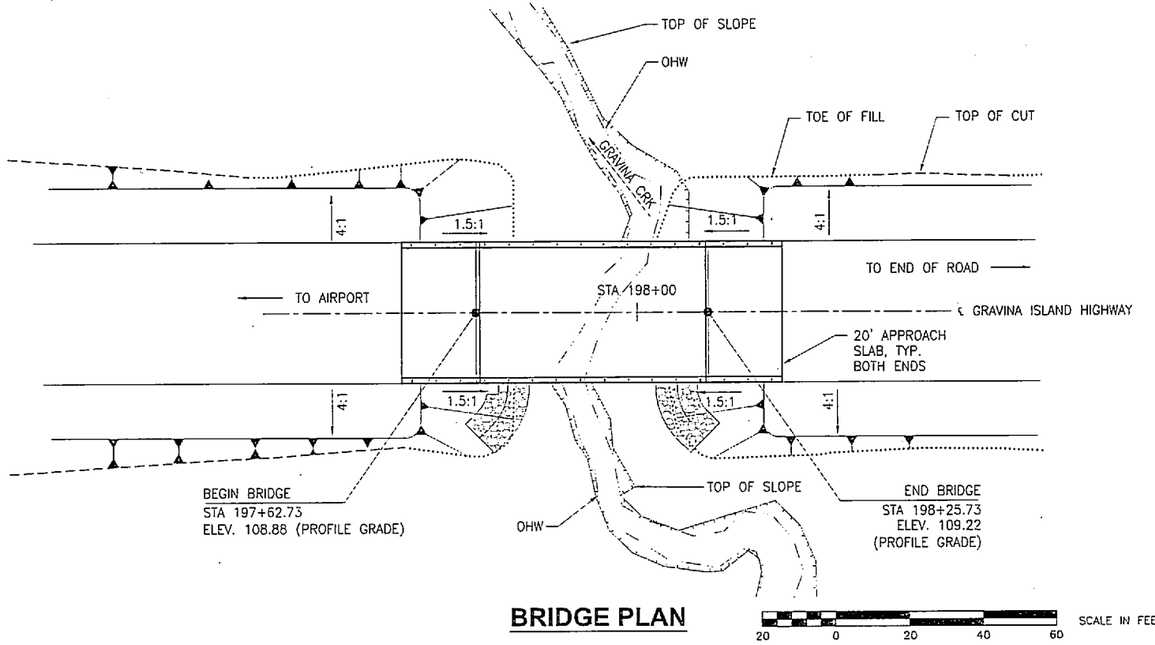
* BRIDGE IS ON A VERTICAL CURVE, SEE F SHEETS FOR CURVE DETAILS.

BRIDGE ELEVATION



TYPICAL BRIDGE SECTION

5 0 5 10 15
SCALE IN FEET



BRIDGE PLAN

BRIDGE DRAWING INDEX

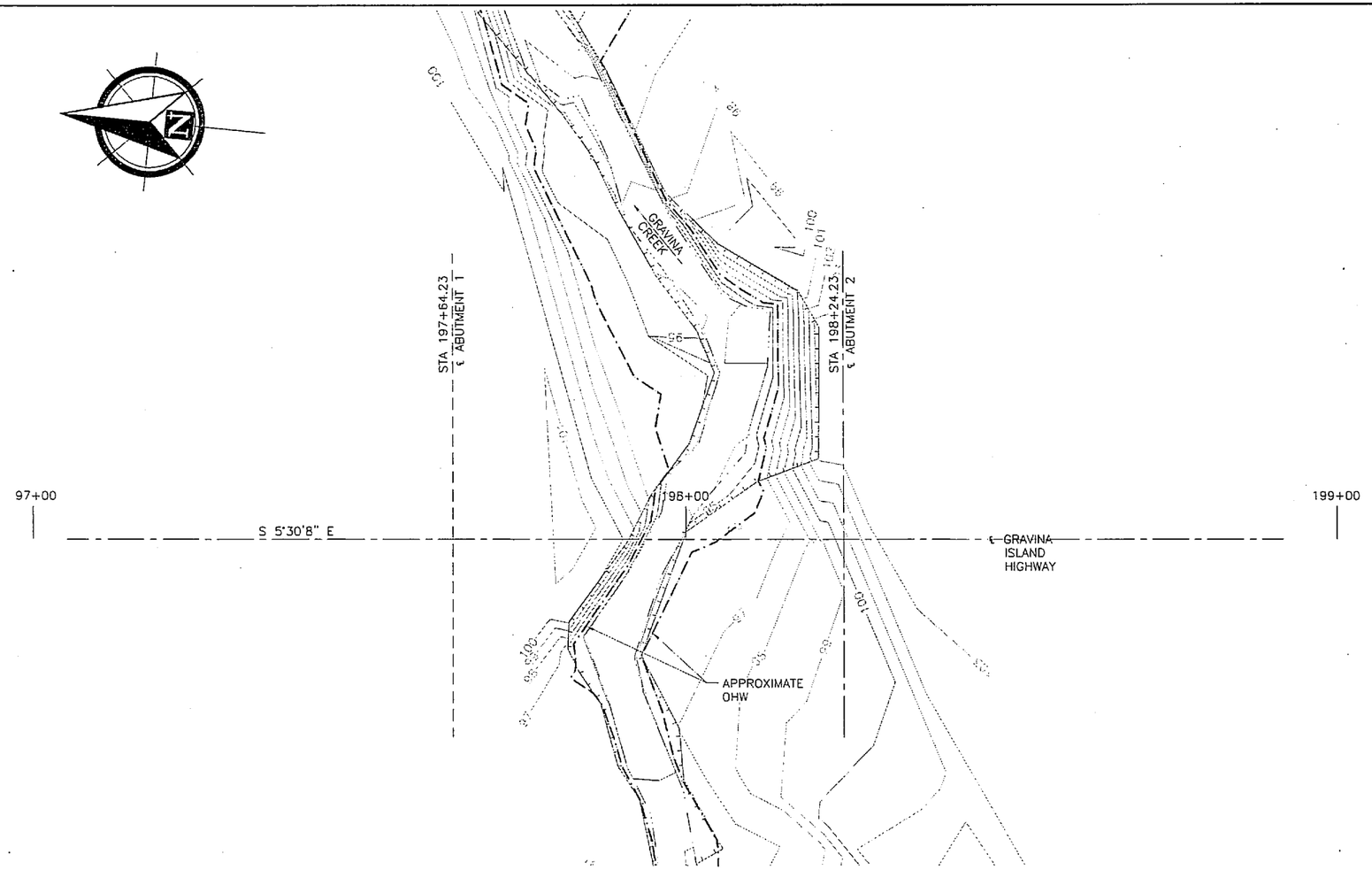
TITLE	DWG. NO
GENERAL LAYOUT	1
SITE PLAN	2
RIPRAP LAYOUT	3
ABUTMENT 1	4
ABUTMENT 2	5
ABUTMENT DETAILS	6
WINGWALL AT ABUTMENT 1	7
WINGWALL AT ABUTMENT 2	8
TYPICAL SECTION	9
GIRDERS	10
GIRDER DETAILS	11
APPROACH SLAB	12
BRIDGE RAILING	13

DESIGNED BY: C. KENLEY	CHECKED: J. GOBELI	LAYOUT BY: P. KENDALL	CHECKED BY: D. KENLEY	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GRAVINA CREEK BRIDGE GRAVINA ISLAND HIGHWAY GENERAL LAYOUT
DRAWN BY: S. ABBETT	CHECKED: J. GOBELI	SPECIFICATIONS BY: C. KENLEY	P S & E COMPARED:		
QUANTITIES BY: D. BENTTI	CHECKED: J. GOBELI	APPROVAL RECOMMENDED BY:			

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6251
9.23.09
REGISTERED PROFESSIONAL ENGINEER

BRIDGE NO. 2222
DWG. NO. 1

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N15	N26



SITE PLAN

SCALE IN FEET
10 0 10 20 30

GENERAL NOTES

DESIGN:	AASHTO LRFD BRIDGE DESIGN SPECIFICATION, THIRD EDITION, WITH 2006 INTERIM SPECIFICATIONS.
LIVE LOAD:	HL-93
SEISMIC PARAMETERS	ACCELERATION COEFFICIENT, a = 0.10g SITE COEFFICIENT, S = 1.2 IMPORTANCE CLASSIFICATION OTHER LIQUEFACTION POTENTIAL = LOW AASHTO 90% PROBABILITY OF NOT BEING EXCEEDED IN 50 YEARS.
DEAD LOAD:	INCLUDES 50 PSF FOR ALL WEARING SURFACING, 500 PLF FOR UTILITIES
PRECAST CONCRETE:	SEE "GIRDERS" DWG.
CONCRETE:	USE CLASS A CONCRETE FOR ALL CONCRETE UNLESS OTHERWISE NOTED. f'c = 4000 PSI USE CLASS A-A CONCRETE FOR APPROACH SLABS. f'c = 5000 PSI
REINFORCING STEEL:	USE ASTM A706 REINFORCING STEEL. Fy = 60,000 PSI SPACE BARS EVENLY UNLESS OTHERWISE NOTED.
STRUCTURAL STEEL:	USE ASTM A709, GRADE 36, Fy = 36,000 PSI GALVANIZE ALL STRUCTURAL STEEL UNLESS OTHERWISE NOTED.

FOOTING INFORMATION

LOCATION	LIMIT STATE	RES. FACTOR	FACTORED BEARING RESISTANCE	FACTORED BEARING PRESSURE
ABUTMENT 1&2	STRENGTH EXTREME 1	0.45	64,800 PSF	8,300 PSF

HYDRAULIC AND HYDROLOGIC SUMMARY

FLOOD FREQUENCY (Yr.)	50 YR.	100 YR.	500 YR.
EXCEEDANCE PROBABILITY (%)	2	1	0.2
DESIGN DISCHARGE (FT³/SEC)	119	130	157
WATER ELEV.	96.7	96.8	97.0
ANTICIPATED ADD'L BACKWATER	0	0	0
CONTRACTION SCOUR (FT.)	0	0	0
ABUTMENT SCOUR (FT.)	0	0	0

DRAINAGE AREA FOR THIS CROSSING: 0.375 SQUARE MILES

HYDRAULIC CAPACITY >>157 CFS AT LOW SUPERSTRUCTURE ELEVATION OF 105.0 FEET WHICH HAS AN EXCEEDANCE PROBABILITY OF 0.2 PERCENT

TOTAL SCOUR EQUALS CONTRACTION SCOUR + LOCAL SCOUR

DESIGN HIGH WATER (DHW) = 96.8 FT AT BRIDGE ℄
ORDINARY HIGH WATER (OHW) = 96.1 FT AT BRIDGE ℄

DESIGNED BY: C. KENLEY	CHECKED: J. GOBELI	HYDRAULICS BY: J. CAMPBELL	CHECKED BY: B. ADAMS	
DRAWN BY: S. ABBETT	CHECKED: J. GOBELI	FOUNDATIONS REVIEWED BY: C. WRIGHT		
QUANTITIES BY: D. BENTTI	CHECKED: J. GOBELI			

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6235
3.23.09
REGISTERED PROFESSIONAL ENGINEER

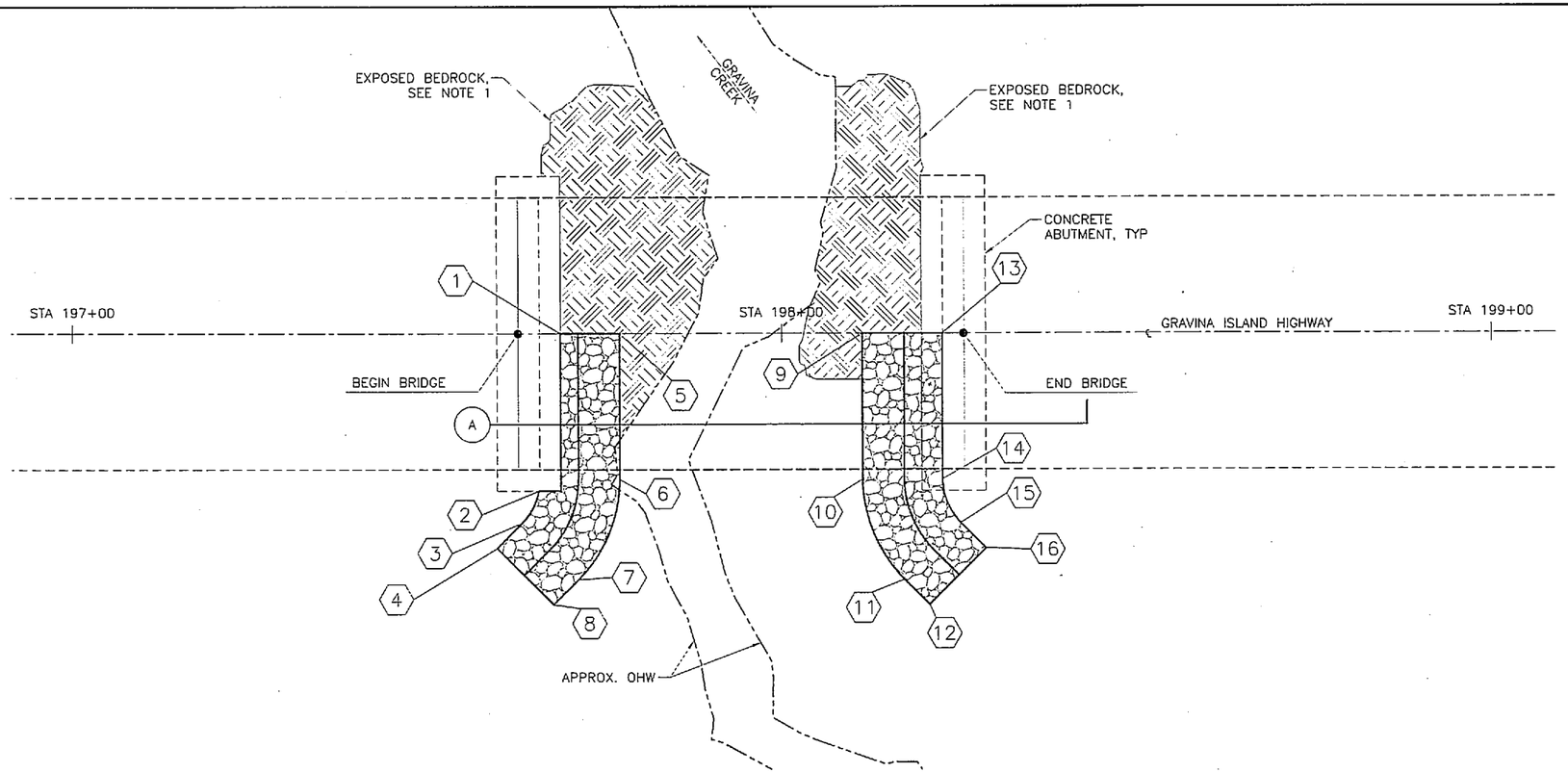
GRAVINA CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

SITE PLAN

BRIDGE NO. 2222
DWG. NO. 2

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N16	N26

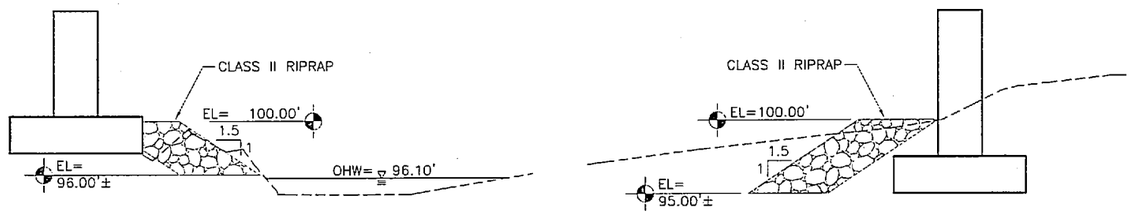


RIPRAP LAYOUT

SCALE IN FEET
10 0 10 20 30

NOTE:
1. CONTRACTOR SHALL FIELD FIT RIPRAP AGAINST EXISTING EXPOSED BEDROCK. RIP RAP IS NOT REQUIRED WHERE BEDROCK IS EXPOSED.

RIPRAP TABLE ABUTMENT 1			
POINT	STATION	OFFSET	ELEVATION
1	197+68.73	0.00	100
2	197+65.66	22.17 RT	100
3	197+63.25	26.73 RT	100
4	197+59.73	30.25 RT	100
5	197+77.07	0.00	96
6	197+77.07	20.55 RT	96
7	197+71.21	34.69 RT	96
8	197+67.69	38.21 RT	96



SECTION A-A

SCALE IN FEET
5 0 5 10 15

RIPRAP TABLE ABUTMENT 2			
POINT	STATION	OFFSET	ELEVATION
9	198+11.39	0.00	95
10	198+11.39	20.55 RT	95
11	198+17.25	34.69 RT	95
12	198+20.77	38.21 RT	95
13	198+22.65	0.00	100
14	198+22.65	20.55 RT	100
15	198+25.21	26.73 RT	100
16	198+28.73	30.25 RT	100

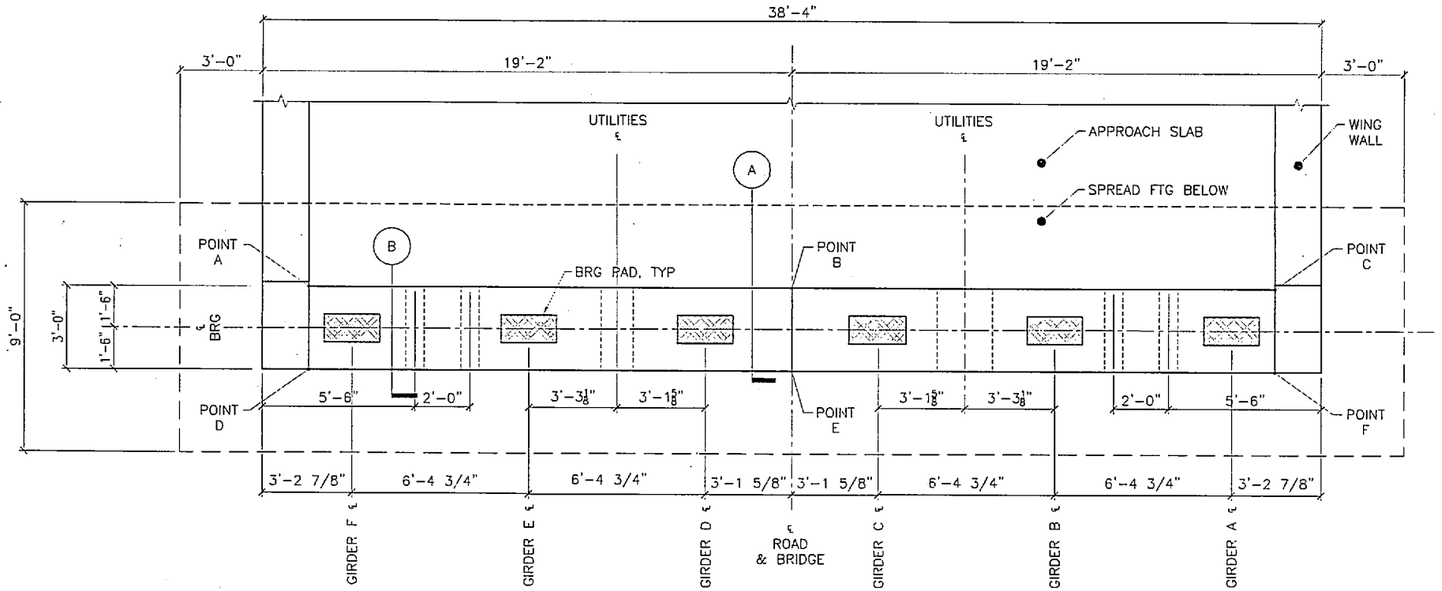
DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: S ABBETT	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

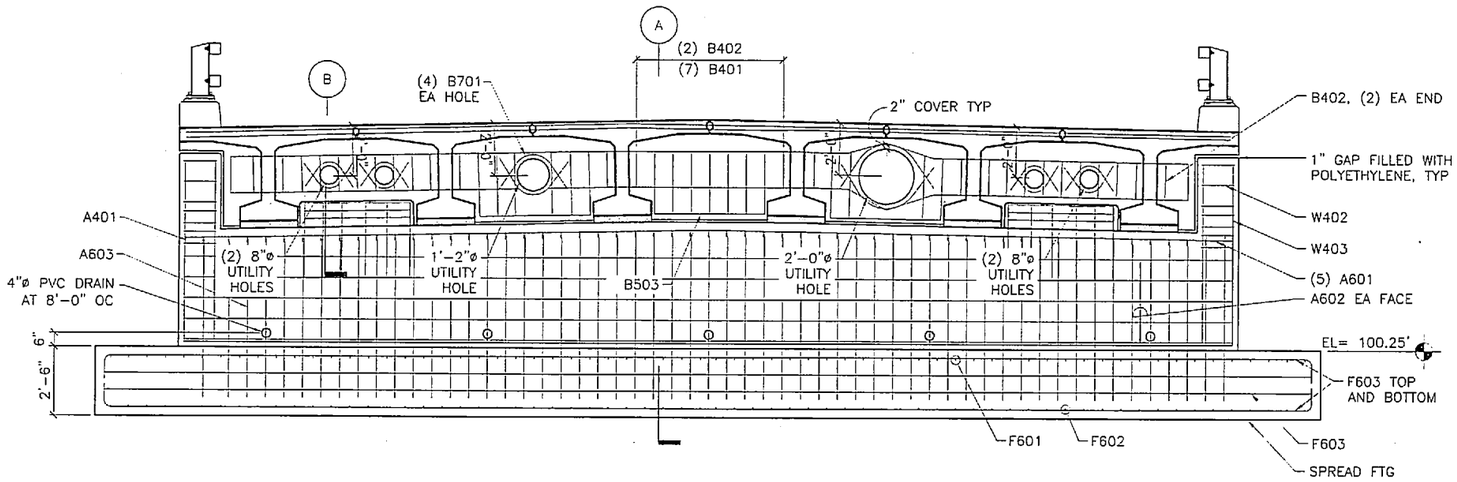
STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6251
3.23.07
REGISTERED PROFESSIONAL ENGINEER

GRAVINA CREEK BRIDGE
GRAVINA ISLAND HIGHWAY
RIPRAP LAYOUT

BRIDGE NO. 2222
DWG. NO. 3



PLAN SCALE IN FEET 2 1 0 2 4 6



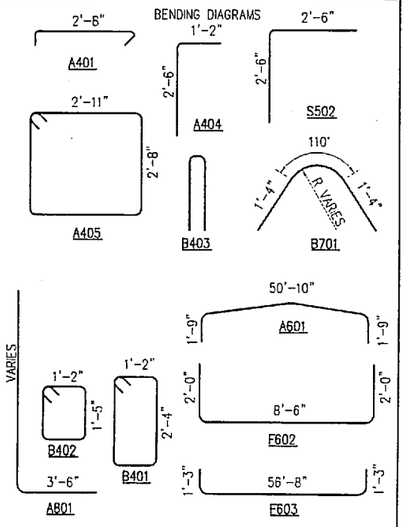
ELEVATION (LOOKING BACK ON STATION) SCALE IN FEET 2 1 0 2 4 6

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N17	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
A401	4	58	3'-5"	BENT	
A404	4	30	3'-8"	BENT	
A405	4	4	12'-2"	BENT	
A601	6	5	41'-6"	BENT	b
A602	6	10	38'-0"	–	b
A603	6	56	VARIES	–	
A801	8	56	VARIES	BENT	
B401	4	17	18'-0"	BENT	a
B402	4	28	8'-2"	BENT	a
B403	4	45	5'-4"	BENT	a
B501	5	3	34'-10"	–	a
B502	5	2	38'-0"	–	a, b
B503	5	3	4'-0"	–	a
B601	6	2	34'-10"	–	a, b
B701	7	24	VARIES	BENT	a
F601	6	67	8'-6"	–	
F602	6	89	12'-6"	BENT	
F603	6	28	46'-4"	BENT	b

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL
b – LENGTH DOES NOT INCLUDE SPLICES
c – FIELD BEND BARS TO MATCH CROWN.

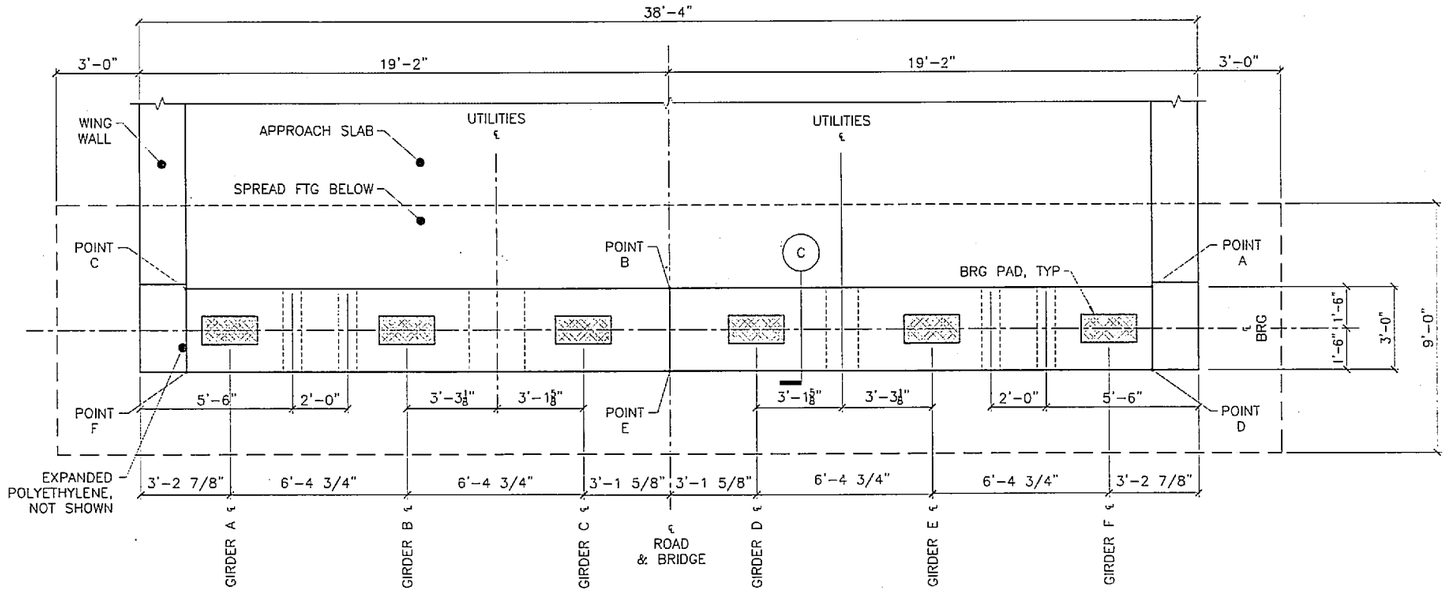
TOP OF ABUTMENT WALL ELEVATIONS

AS-BUILT

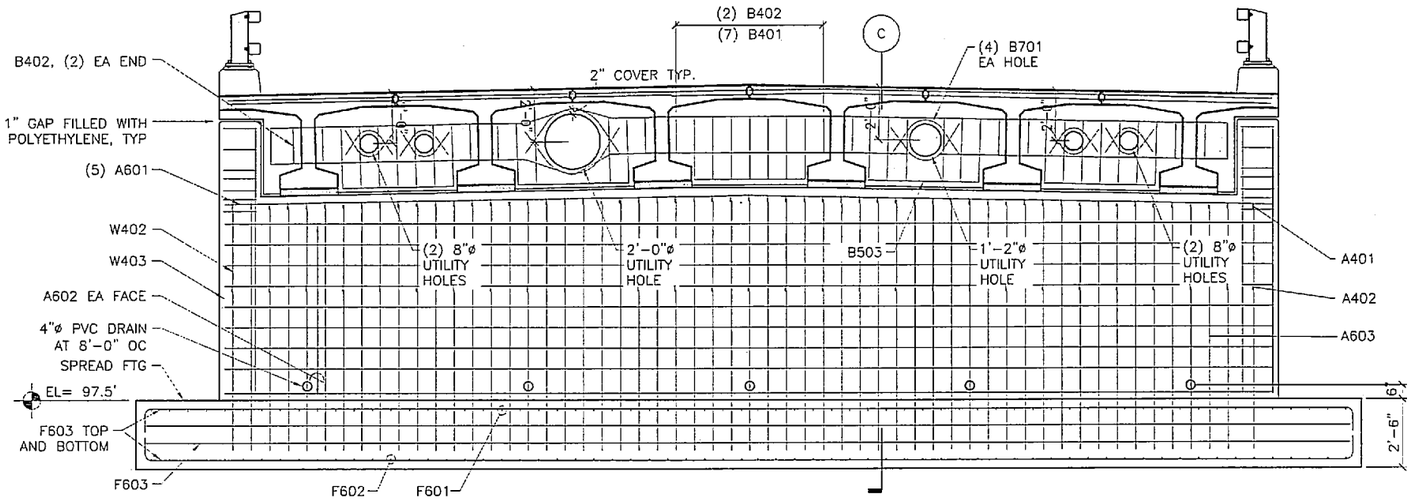
POINT	ABUTMENT 1
A	~~104.53~~ 104.34
B	~~104.88~~ 104.70
C	~~104.53~~ 104.44
D	~~104.55~~ 104.36
E	~~104.90~~ 104.72
F	~~104.55~~ 104.46

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GRAVINA CREEK BRIDGE GRAVINA ISLAND HIGHWAY ABUTMENT 1
DRAWN BY: S ABBETT	CHECKED: J GOBELI		BRIDGE NO. 2222 DWG. NO. 4
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA 49TH F. Charles Kenley CE-625 3.23.09 REGISTERED PROFESSIONAL ENGINEER



PLAN SCALE IN FEET 2 1 0 2 4 6



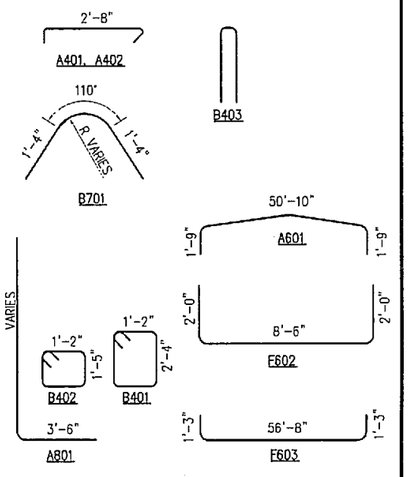
ELEVATION SCALE IN FEET 2 1 0 2 4 6

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N18	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
A401	4	58	3'-5"	BENT	
A402	4	29	3'-5"	BENT	
A501	5	29	5'-0"	–	
A601	5	5	41'-6"	BENT	b
A602	6	18	38'-0"	–	b
A603	6	56	VARIES	–	
A801	8	56	VARIES	BENT	
B401	4	31	10'-0"	BENT	a
B402	4	14	8'-2"	BENT	a
B403	4	45	5'-4"	BENT	a
B501	5	3	34'-10"	–	a
B502	5	2	36'-0"	–	a,b
B503	5	5	4'-0"	–	a
B601	6	2	34'-10"	–	a
B701	7	24	VARIES	BENT	a
F601	6	67	8'-6"	–	
F602	6	89	12'-6"	BENT	
F603	6	28	46'-4"	BENT	b

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL
b – LENGTH DOES NOT INCLUDE SPLICES
c – FIELD BEND BARS TO MATCH CROWN.

TOP OF ABUTMENT WALL ELEVATIONS

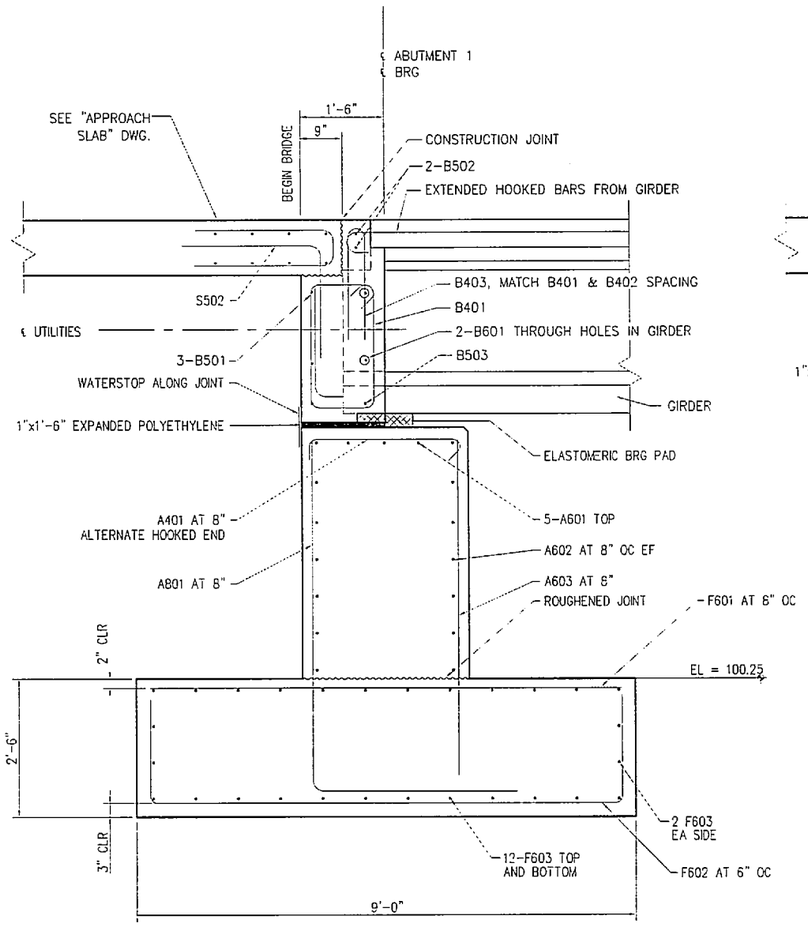
AS-BUILT

POINT	ABUTMENT 2
A	~~104.81~~ 104.66
B	~~105.22~~ 105.06
C	~~104.87~~ 104.70
D	~~104.85~~ 104.67
E	~~105.20~~ 105.04
F	~~104.85~~ 104.68

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GRAVINA CREEK BRIDGE GRAVINA ISLAND HIGHWAY ABUTMENT 2
DRAWN BY: S ABBETT	CHECKED: J GOBELI		BRIDGE NO. 2222
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		DWG. NO. 5

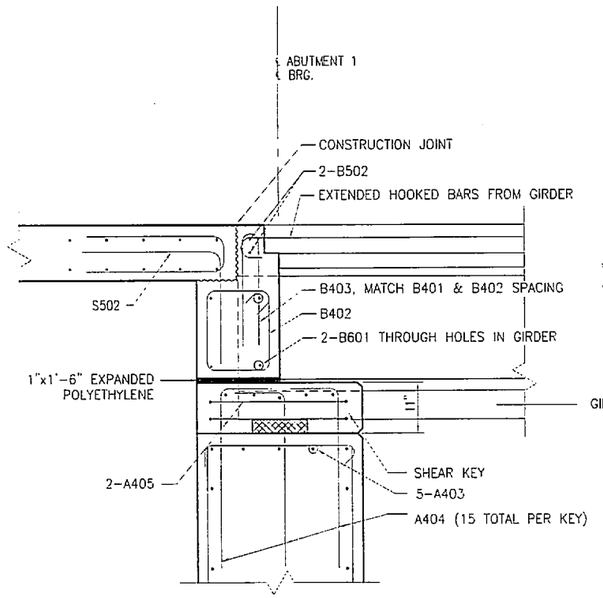
STATE OF ALASKA 49 TH — F. Charles Kenley — CE-6258 — 3.23.09 — REGISTERED PROFESSIONAL ENGINEER

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N19	N26



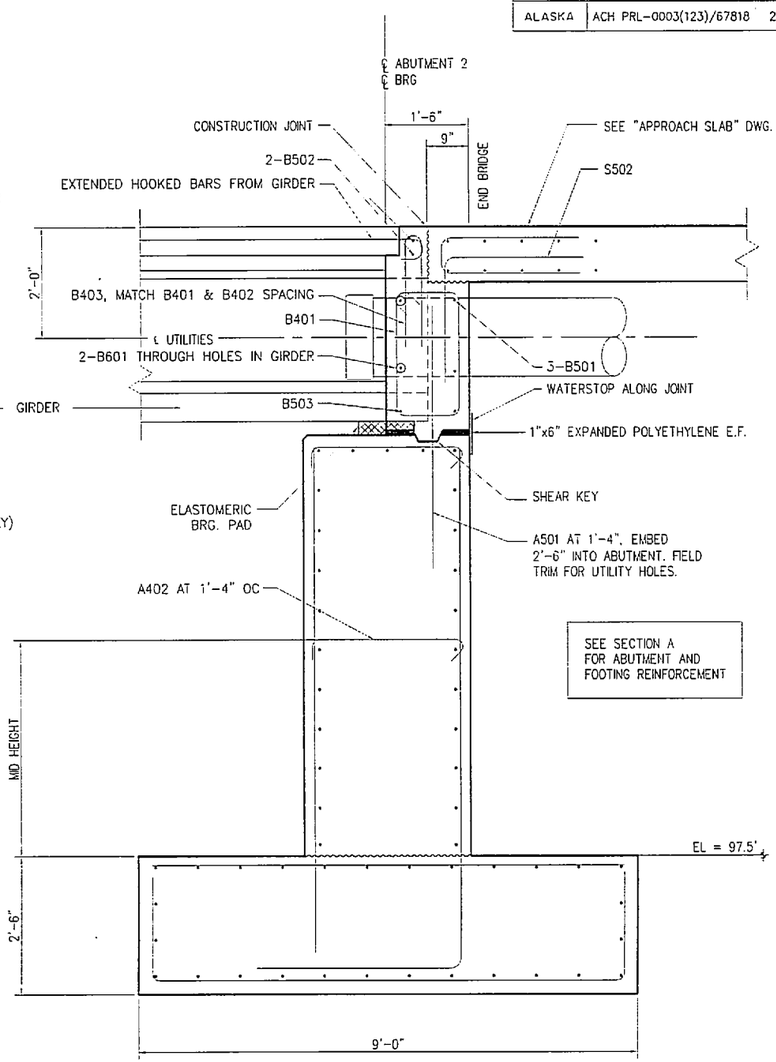
SECTION A

SCALE IN FEET
1 0 1 2 3



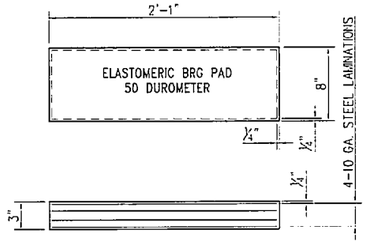
SECTION B

SCALE IN FEET
1 0 1 2 3



SECTION C

SCALE IN FEET
1 0 1 2 3



BEARING PAD

SCALE IN INCHES
6 0 6 12 18

NOTES:

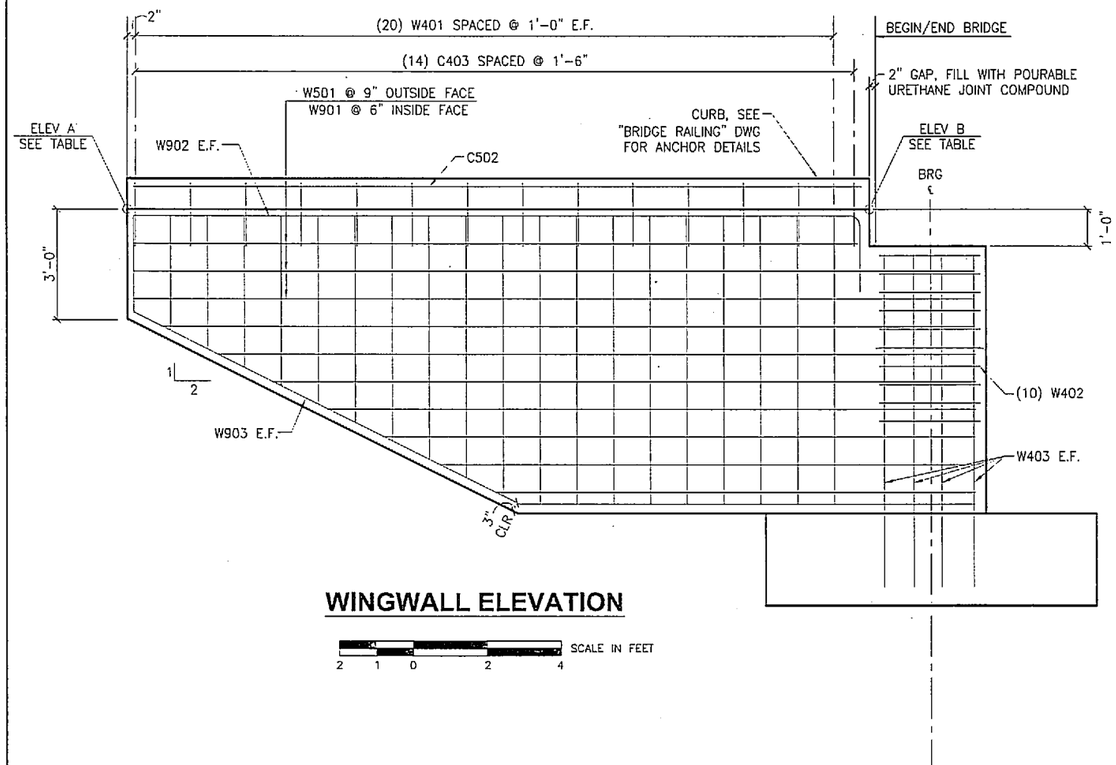
1. SEAL UTILITIES AT ABUTMENTS WITH CONCRETE, AFTER TIGHTLY WRAPPING UTILITY WITH 2-LAYERS OF 15# BUILDING PAPER.

BEARING PAD REACTIONS

LOCATION	D.L. PER BRG.	L.L. PER BRG.
ABUTMENTS	48.7 kips	53.9 kips

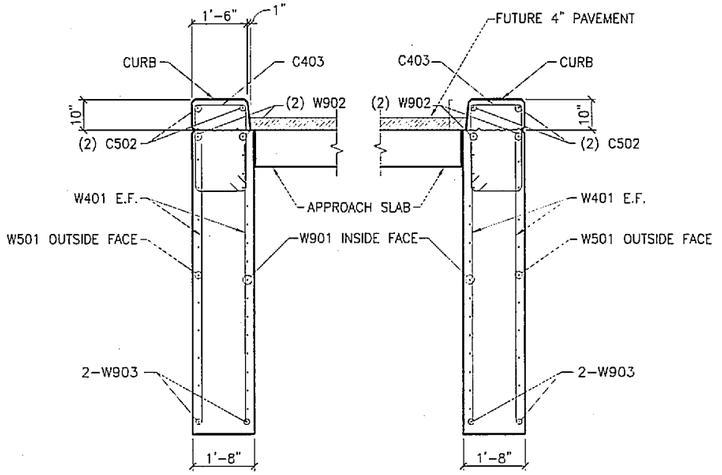
DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GRAVINA CREEK BRIDGE GRAVINA ISLAND HIGHWAY ABUTMENT DETAILS
DRAWN BY: S ABBETT	CHECKED: J GOBELI		BRIDGE NO. 2222
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		DWG. NO. 6

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6526
3.23.09
REGISTERED PROFESSIONAL ENGINEER



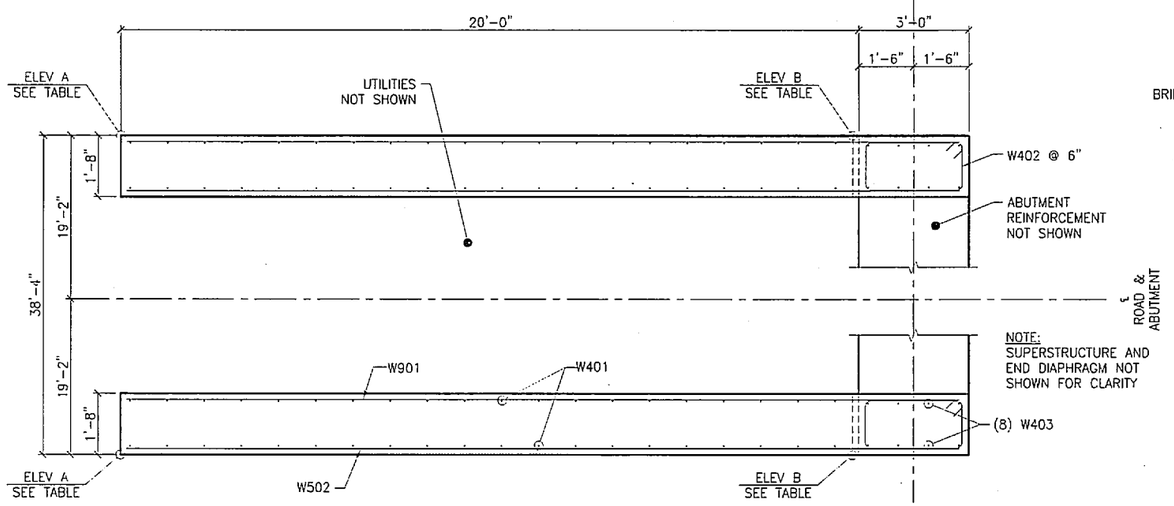
WINGWALL ELEVATION

SCALE IN FEET
2 1 0 2 4



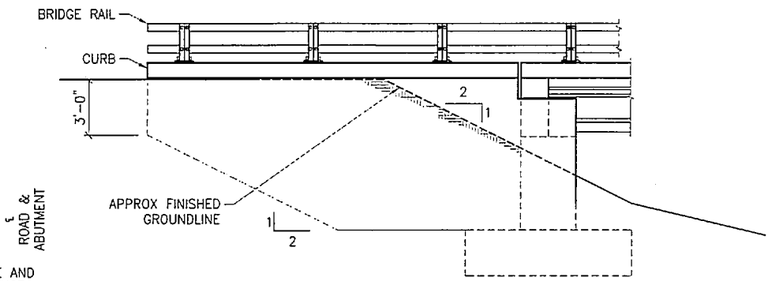
WINGWALL SECTION

SCALE IN FEET
2 1 0 2 4



WINGWALL PLAN

SCALE IN FEET
2 1 0 2 4



FINISHED ELEVATION

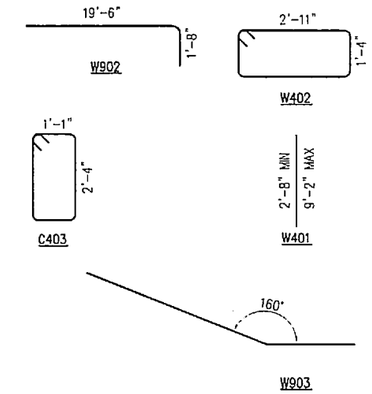
SCALE IN FEET
4 2 0 4 8

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N20	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
W401	4	80	VARIES	–	
W402	4	20	9'-0"	BENT	
W403	4	16	8'-4"	–	
W501	5	18	VARIES	–	
W901	9	30	VARIES	–	
W902	9	4	21'-2"	BENT	
W903	9	4	23'-8"	BENT	
C403	4	28	7'-8"	BENT	o
C502	5	4	19'-8"	–	o

BENDING DIAGRAMS



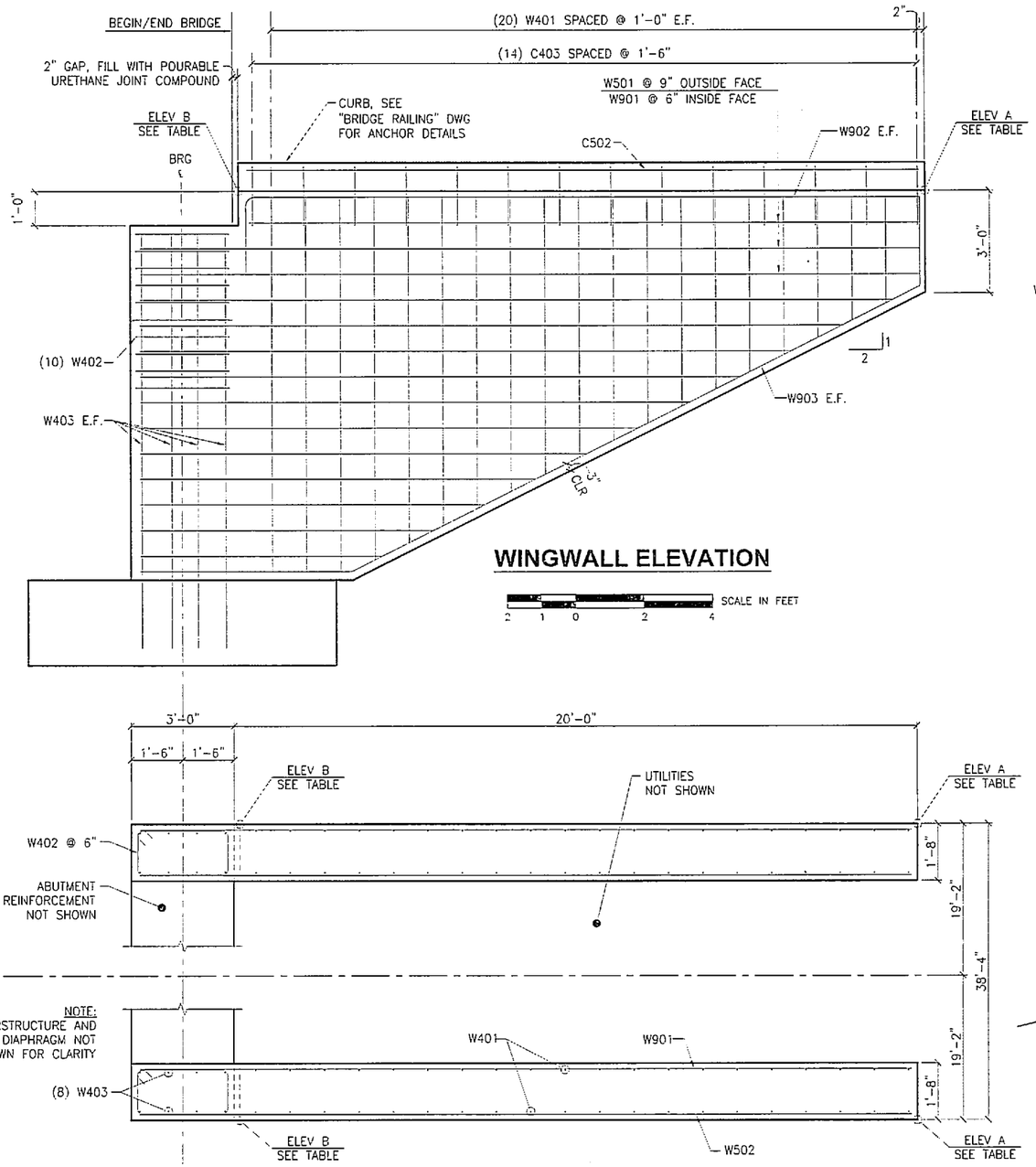
o – EPOXY COATED REINFORCING STEEL

TOP OF WALL ELEVATIONS

	TOP OF WALL		TOP OF CURB	
LOCATION	A	B	A	B
ABUTMENT 1	107.98	108.17	108.81	109.00
ABUTMENT 2	108.50	108.52	109.33	109.35

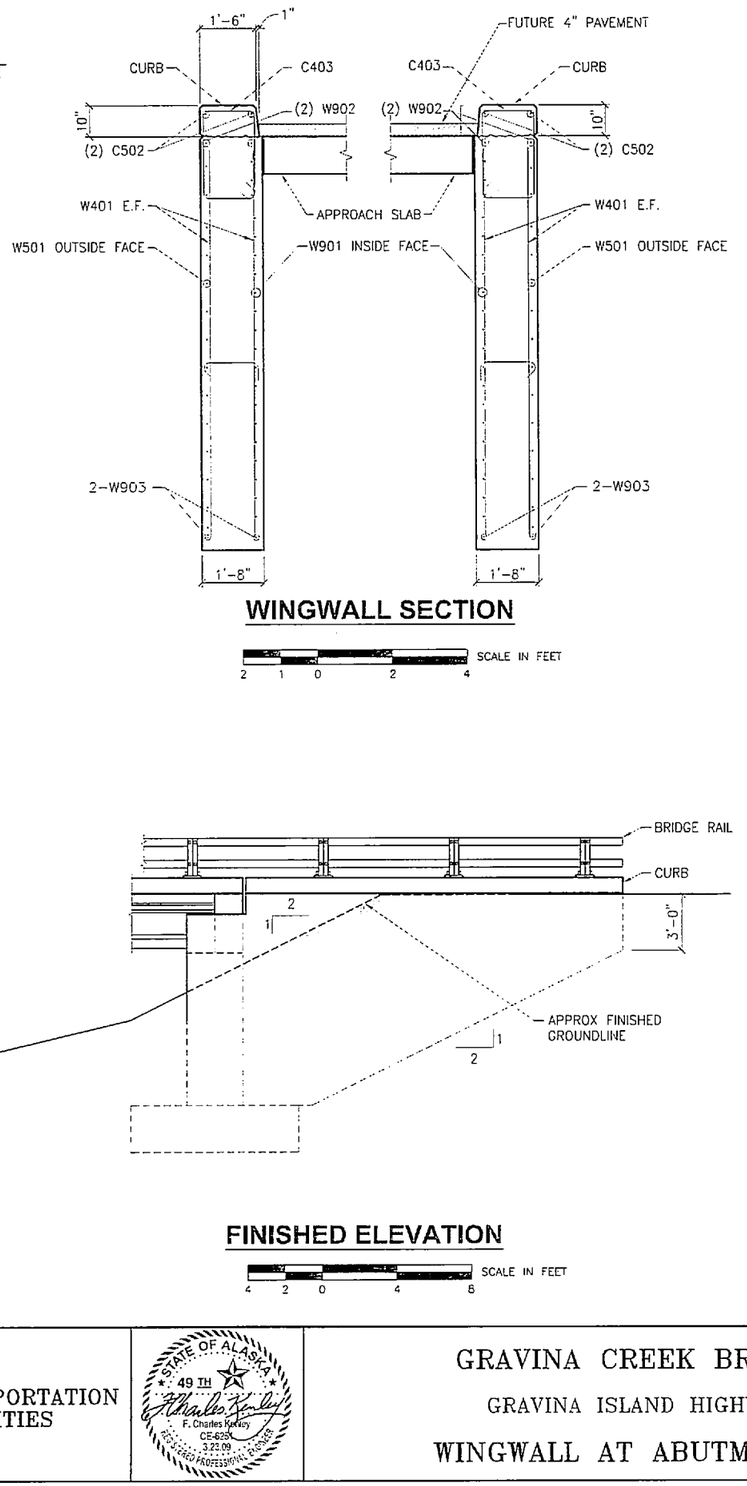
DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GRAVINA CREEK BRIDGE GRAVINA ISLAND HIGHWAY WINGWALL AT ABUTMENT 1
DRAWN BY: S ABBETT	CHECKED: J GOBELI		BRIDGE NO. 2222 DWG. NO. 7
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA 49 TH F. Charles Kenley CE-6226 3.23.09 REGISTERED PROFESSIONAL ENGINEER



WINGWALL ELEVATION

SCALE IN FEET
2 1 0 2 4



WINGWALL SECTION

SCALE IN FEET
2 1 0 2 4

FINISHED ELEVATION

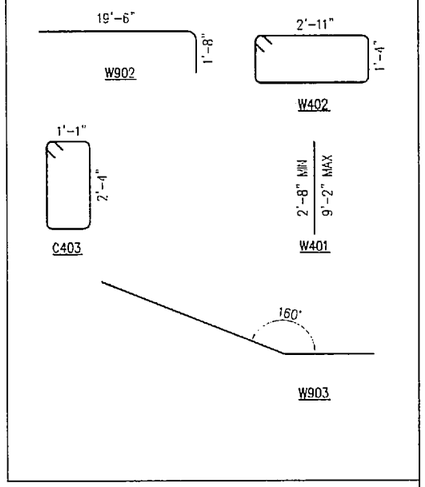
SCALE IN FEET
4 2 0 4 8

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N21	N26

REINFORCING STEEL ONE ABUTMENT

MARK	SIZE	No.	LENGTH	TYPE	NOTES
W401	4	80	VARIES	–	
W402	4	20	9'-0"	BENT	
W403	4	16	8'-4"	–	
W501	5	28	VARIES	–	
W901	9	40	VARIES	–	
W902	9	4	21'-2"	BENT	
W903	9	4	23'-8"	BENT	
C403	4	28	7'-6"	BENT	a
C502	5	4	19'-8"	–	a

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL

TOP OF WALL ELEVATIONS

	TOP OF WALL		TOP OF CURB	
LOCATION	A	B	A	B
ABUTMENT 1	107.98	108.17	108.81	109.00
ABUTMENT 2	108.50	108.52	109.33	109.35

DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: S ABBETT	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6258
3.23.09
REGISTERED PROFESSIONAL ENGINEER

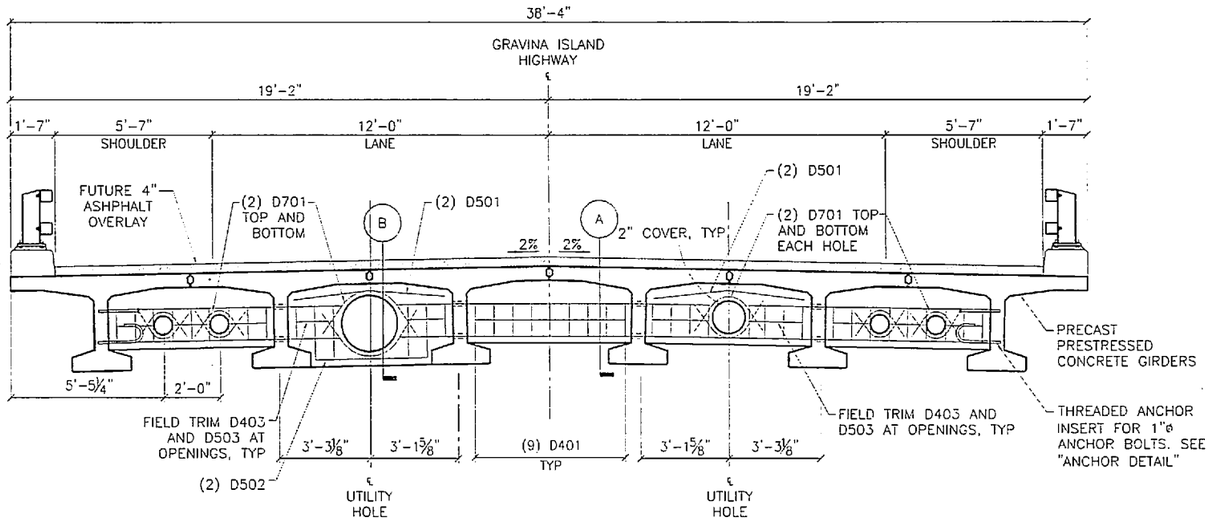
GRAVINA CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

WINGWALL AT ABUTMENT 2

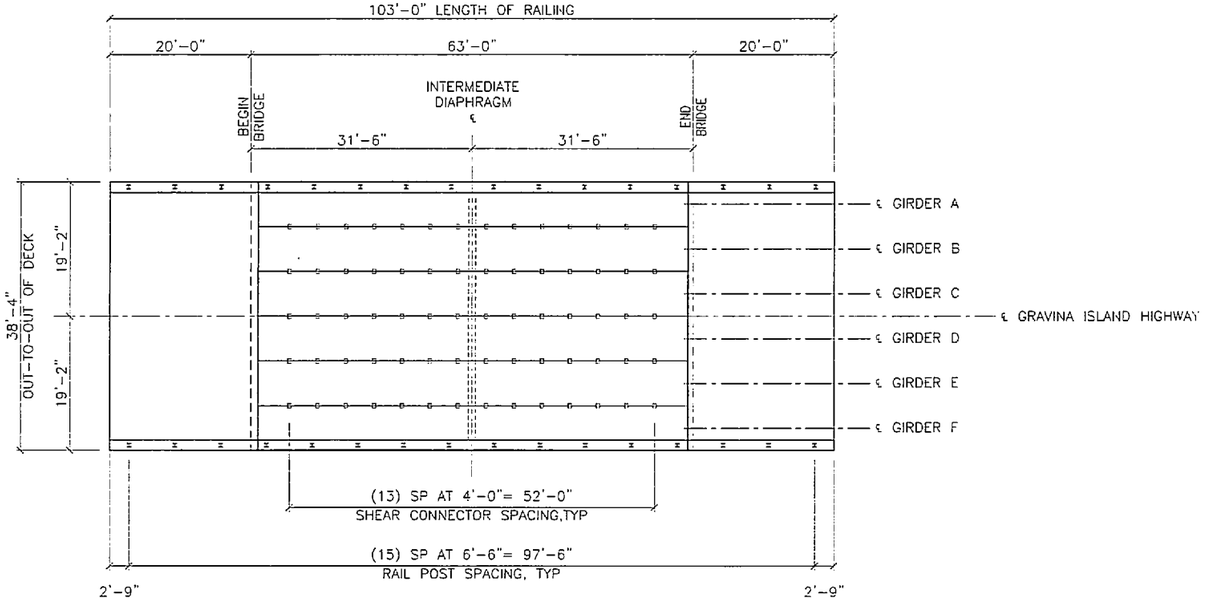
BRIDGE NO. 2222

DWG. NO. 8



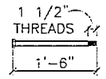
SECTION NEAR MIDSPAN

SCALE IN FEET
2 1 0 2 4 6

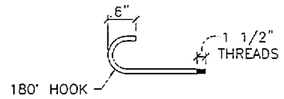


FRAMING PLAN

SCALE IN FEET
10 0 10 20 30



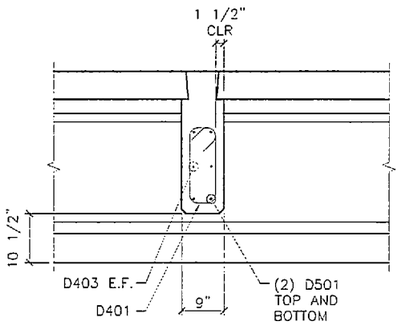
ASTM A307 GALVANIZED
1"Ø TOP ANCHOR



ASTM A307 GALVANIZED
1"Ø BOTTOM ANCHOR

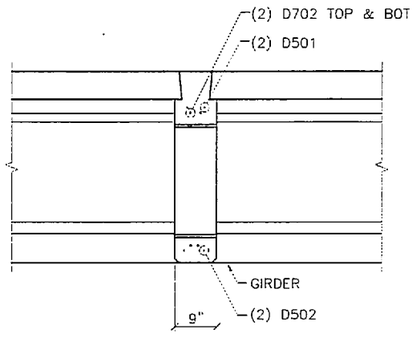
ANCHOR DETAILS

SCALE IN FEET
1 0 1 2 3



DIAPHRAGM SECTION A

SCALE IN FEET
1 0 1 2 3



DIAPHRAGM SECTION B

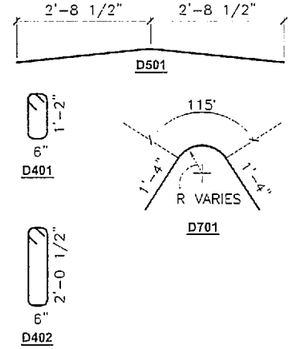
SCALE IN FEET
1 0 1 2 3

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N22	N26

REINFORCING STEEL ONE DIAPHRAGM

MARK	SIZE	No.	LENGTH	TYPE	NOTES
D401	4	55	4'-2"	BENT	a
D403	4	14	5'-7"	–	a
D501	5	4	43'-10"	BENT	a, b
D502	5	2	4'-0"	–	a
D503	5	4	5'-5"	–	a
D701	7	24	VARIES	BENT	a

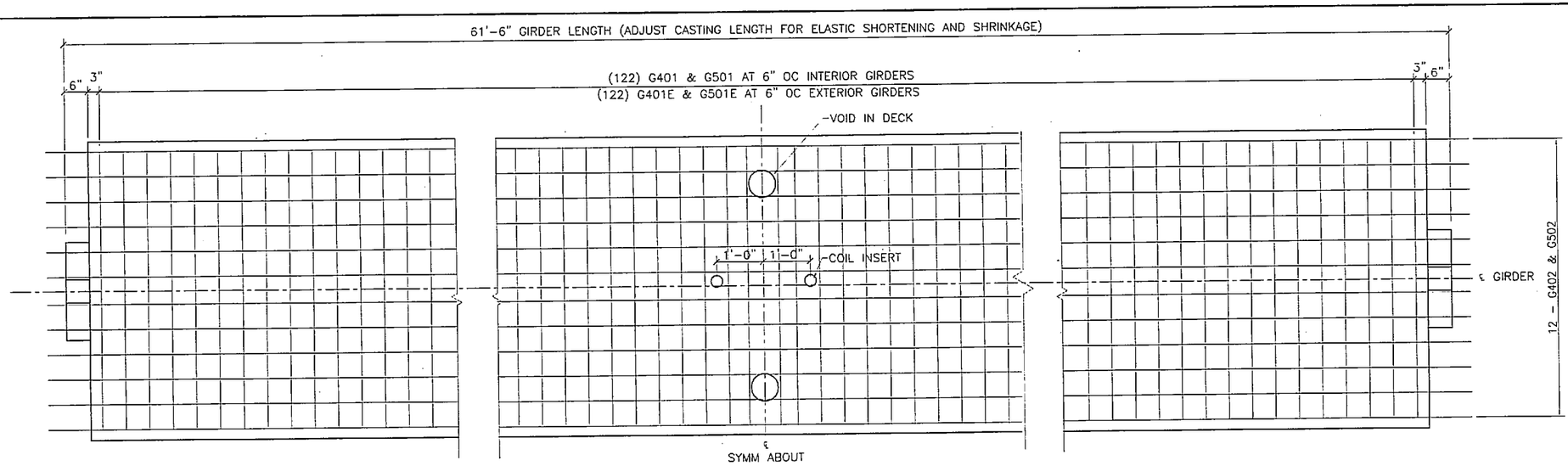
BENDING DIAGRAMS



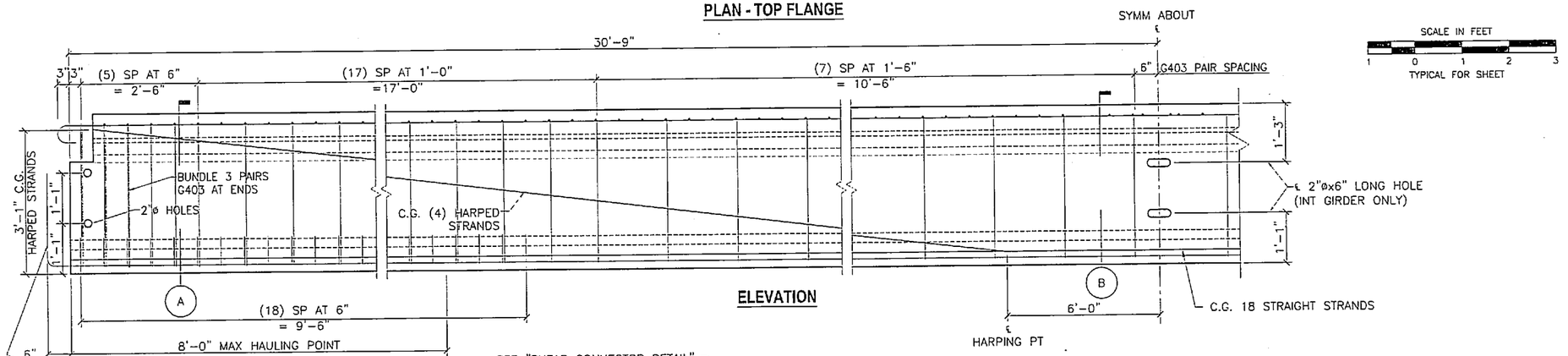
a – EPOXY COATED REINFORCING STEEL
b – LENGTH DOES NOT INCLUDE SPLICES

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	GRAVINA CREEK BRIDGE GRAVINA ISLAND HIGHWAY TYPICAL SECTION
DRAWN BY: S ABBETT	CHECKED: J GOBELI		BRIDGE NO. 2222 DWG. NO. 9
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA 49TH — F. Charles Kenley CE-623 3.23.09 — REGISTERED PROFESSIONAL ENGINEER

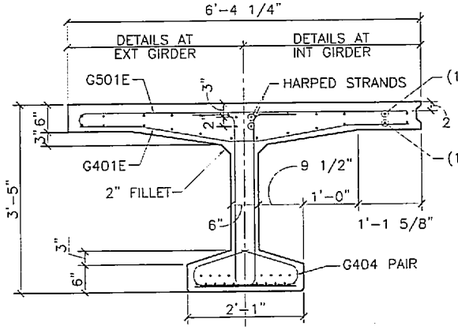


PLAN - TOP FLANGE

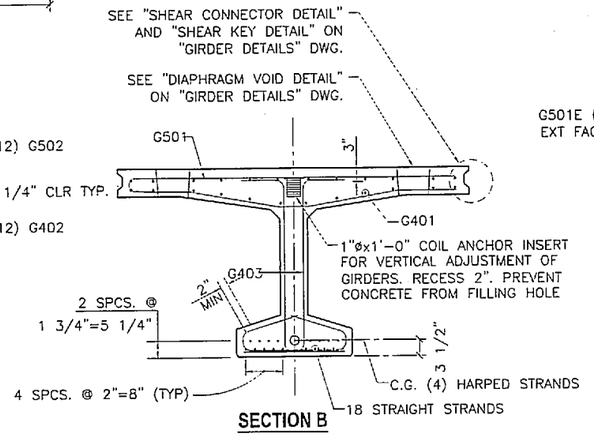


ELEVATION

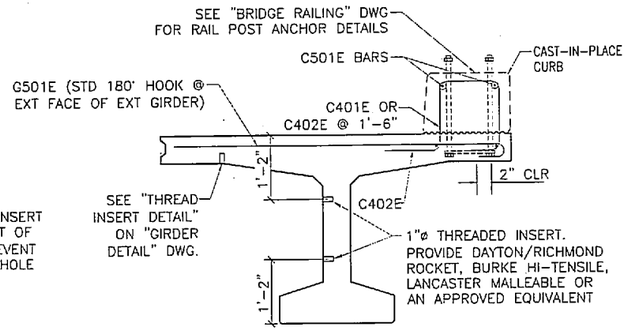
SCALE IN FEET
1 0 1 2 3
TYPICAL FOR SHEET



SECTION A



SECTION B



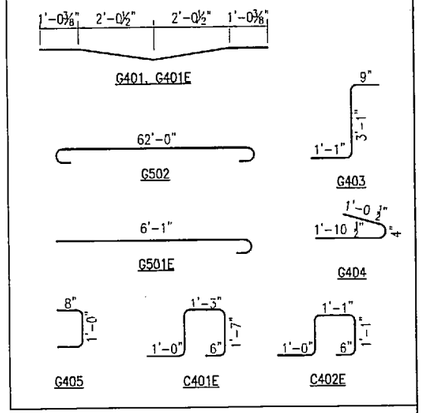
EXTERIOR GIRDER NEAR MIDSPAN

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N23	N26

REINFORCING STEEL ONE GIRDER

MARK	SIZE	No.	LENGTH	TYPE	NOTES
G401	4	122	6'-1"	BENT	a
G401E	4	122	6'-1"	BENT	a,d
G402	4	12	70'-2"	–	a
G403	4	120	4'-11"	BENT	a
G404	4	76	3'-3"	BENT	a
G405	4	41	2'-4"	BENT	a,g
G501	5	122	6'-1"	–	a
G501E	5	122	6'-8"	BENT	a,d
G502	5	12	73'-2"	BENT	a,b
C401E	4	41	4'-10"	BENT	a,c,e
C402E	4	41	4'-6"	BENT	a,c,f
C501E	5	2	72'-8"	–	a,b,d

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL
b – LEGNTH DOES NOT INCLUDE SPLICES
c – SHIP FOUR LOOSE
d – GIRDERS A, H ONLY
e – GIRDER A ONLY
f – GIRDER H ONLY
g – GIRDER B ONLY

NOTES:

USE NORMAL WEIGHT CONCRETE WITH THE FOLLOWING STRENGTHS:
AT STRESS TRANSFER f'ci = 6750 PSI
AT 28 DAYS F'C = 8000 PSI

USE ½"ø LOW-RELAXATION PRESTRESSING STRANDS WITH AN ULTIMATE STRENGTH OF 270 KSI AND A CROSS SECTION AREA OF 0.153 IN².

DESIGN IS BASED ON THE FOLLOWING STEEL STRESSES:
PRETENSIONING – JACKING STRESS 189 KSI
AFTER ALL LOSSES 166 KSI

ONE INCH CLEAR ON ALL REINFORCING EXCEPT AS NOTED.

DEFLECT FORMS TO COMPENSTATE FOR CAMBER AND ROADWAY GRADE.

PROVIDE BROOM FINISH ON THE ROADWAY SURFACE OF THE PRECAST MEMBER. ROUGHEN THE SURFACE UNDER THE RAILING CURBS.

OMIT SHEAR KEY AND SHEAR KEY CONNECTORS OUTSIDE THE EXTERIOR GIRDERS.

CAST GIRDER AND ENDS PLUMB WITH RESPECT TO ROADWAY GRADE.

DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: S ABBETT	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-625
3.23.09
REGISTERED PROFESSIONAL ENGINEER

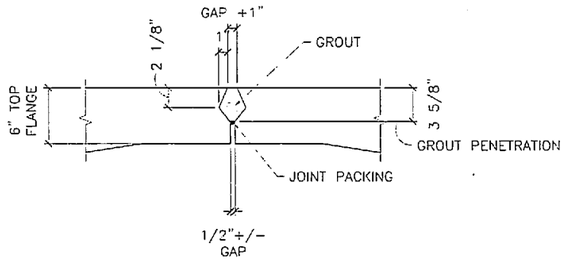
GRAVINA CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

GIRDERS

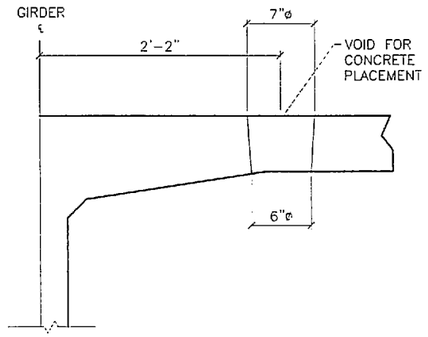
BRIDGE NO. 2222
DWG. NO. 10

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N24	N26



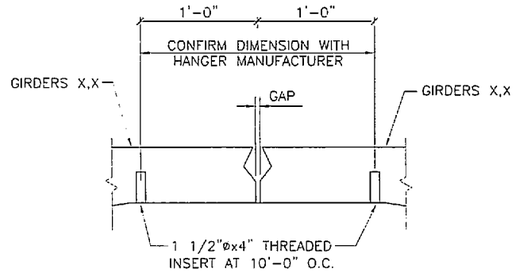
SHEAR KEY DETAIL

SCALE IN INCHES
6 0 6 12 18



DIAPHRAGM VOID DETAIL

SCALE IN INCHES
6 0 6 12 18



THREADED INSERT DETAIL

SCALE IN INCHES
6 0 6 12 18

REINFORCING STEEL
ONE SIDEWALK

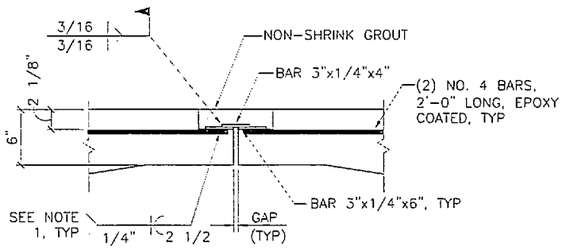
MARK	SIZE	No.	LENGTH	TYPE	NOTES
R401	4	103	8'-2"	BENT	a
R402	4	14	152'-8"	BENT	a, b

BENDING DIAGRAMS

7'-8"

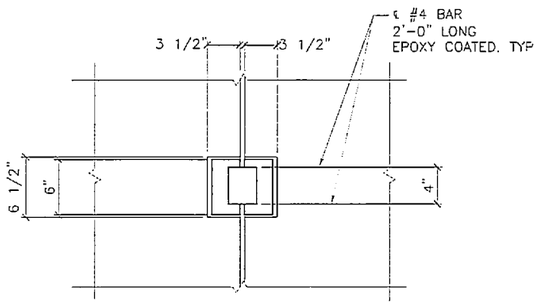
R401

a - EPOXY COATED REINFORCING STEEL
b - LEGNTH DOES NOT INCLUDE SPLICES



SHEAR CONNECTOR DETAIL

SCALE IN INCHES
6 0 6 12 18



PLAN VIEW - SHEAR CONNECTOR

SCALE IN INCHES
6 0 6 12 18

NOTES:

1. REMOVE EPOXY COATING FROM AREAS TO BE WELDED BEFORE WELDING.
2. ANCHORAGE FOR THREADED ROD MUST PROVIDE A SAFE WORKING LOAD OF 3500 LBS.
3. SECURE ALL NUTS AND THREADED ROD CONNECTIONS WITH A THREAD LOCKING SYSTEM.

DESIGNED BY: C KENLEY	CHECKED: J GOBELI	
DRAWN BY: S ABBETT	CHECKED: J GOBELI	
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-6258
3.29.07
REGISTERED PROFESSIONAL ENGINEER

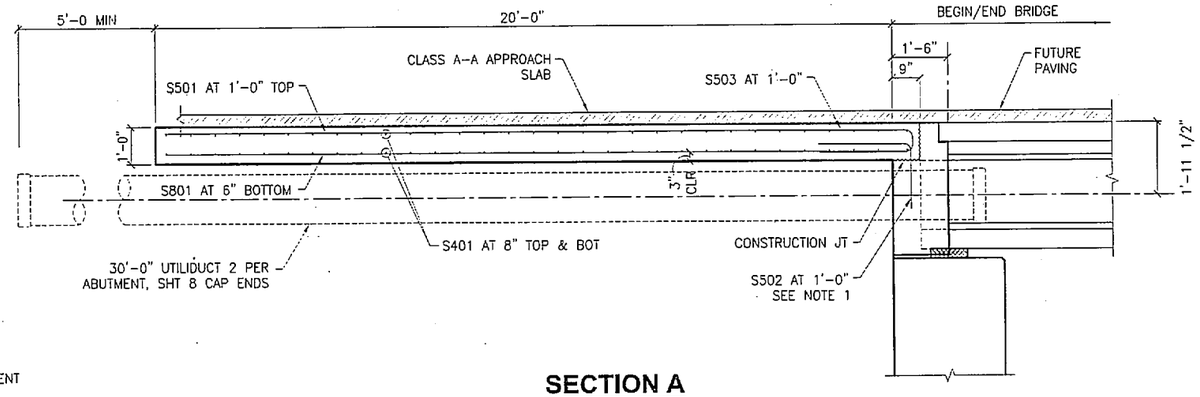
GRAVINA CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

GIRDER DETAILS

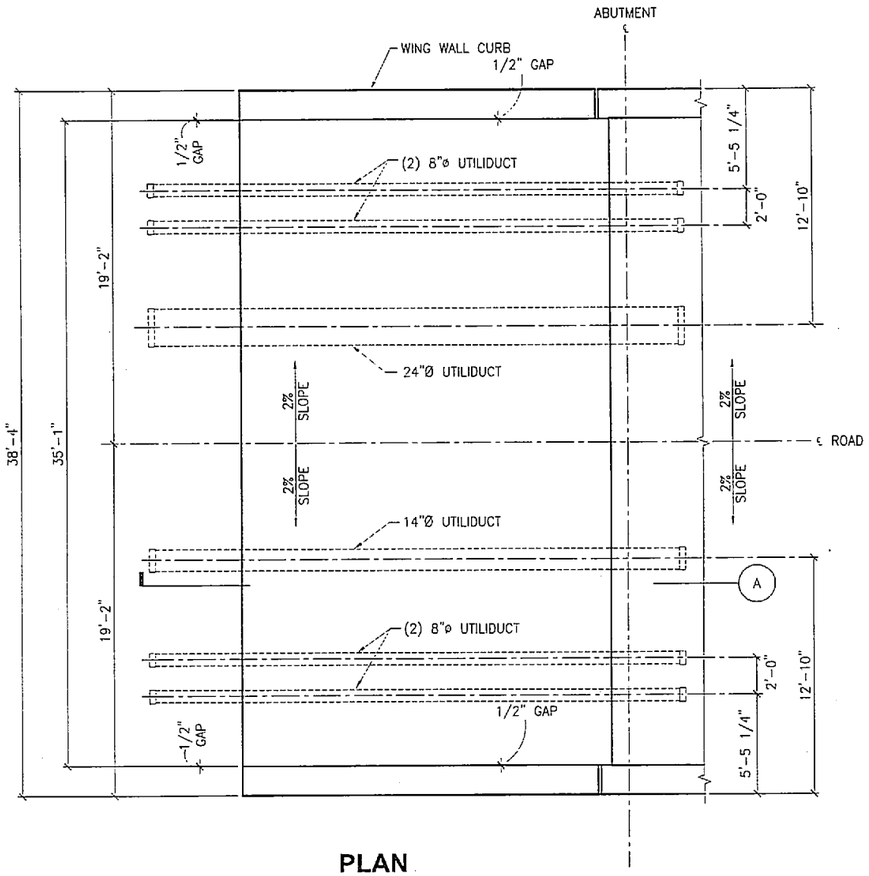
BRIDGE NO. 2222

DWG. NO. 11



SECTION A

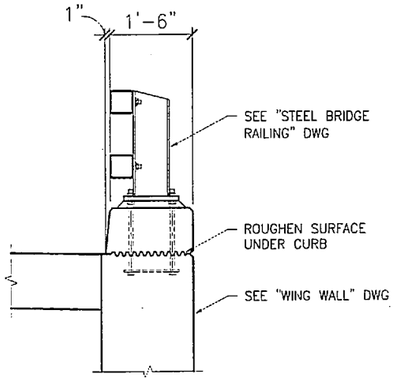
SCALE IN FEET
2 1 0 2 4



PLAN

(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)

SCALE IN FEET
4 2 0 4 8



BRIDGE RAIL

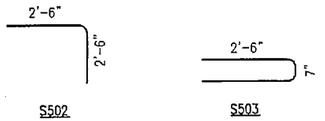
SCALE IN FEET
1 0 1 2 3

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N25	N26

REINFORCING STEEL ONE SLAB

MARK	SIZE	No.	LENGTH	TYPE	NOTES
S401	4	60	34'-9"	–	a, b
S501	5	39	20'-5"	–	a
S502	5	39	5'-0"	BENT	a
S503	5	39	5'-7"	BENT	a
S801	8	77	20'-5"	–	a

BENDING DIAGRAMS



a – EPOXY COATED REINFORCING STEEL
b – LEGNTH DOES NOT INCLUDE SPLICES

NOTES:
1. FIELD ADJUST S502 TO MSS UTILITIES.
2. CAP ALL UNUSED UTILITIES CONDUITS.

DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: S ABBETT	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

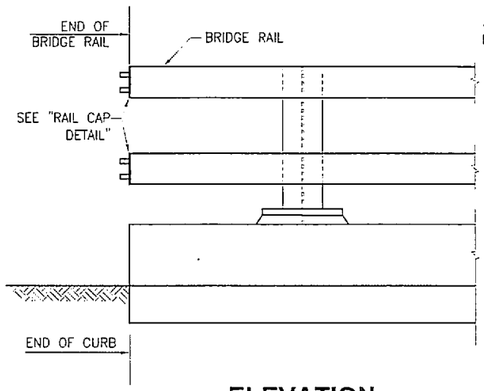
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-625
3.23.09
REGISTERED PROFESSIONAL ENGINEER

GRAVINA CREEK BRIDGE
GRAVINA ISLAND HIGHWAY
APPROACH SLAB

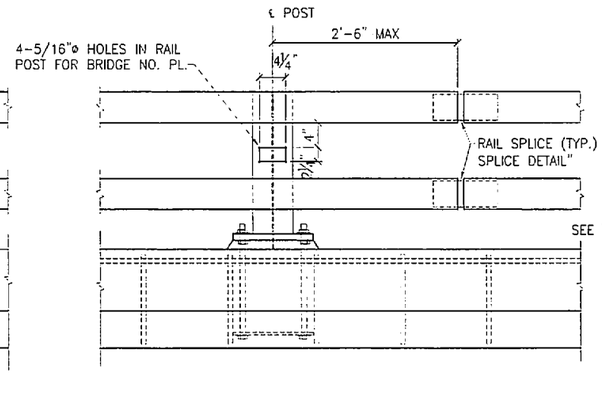
BRIDGE NO. 2222
DWG. NO. 12

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	ACH PRL-0003(123)/67818	2007	N26	N26



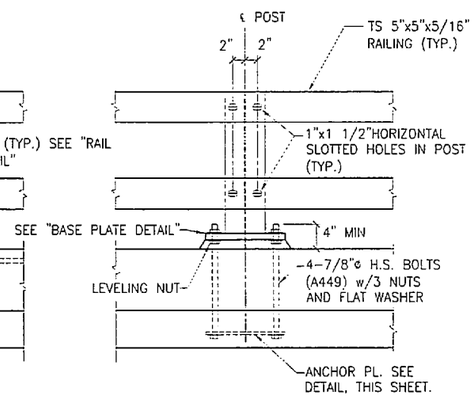
ELEVATION

SCALE IN INCHES
12 6 0 12 24



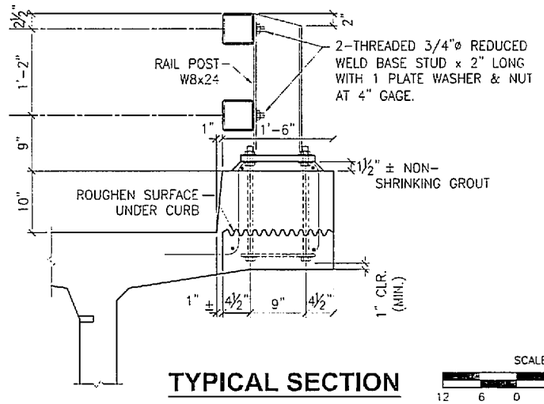
EXPANSION JOINT

SCALE IN INCHES
12 6 0 12 24



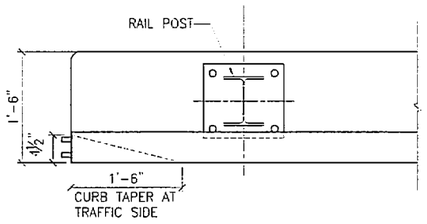
TYPICAL POST ELEVATION

SCALE IN INCHES
12 6 0 12 24



TYPICAL SECTION

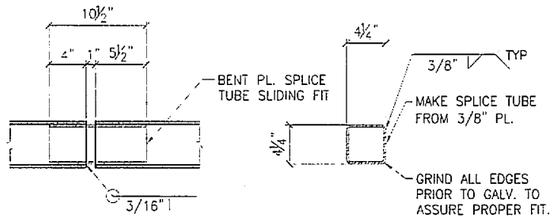
SCALE IN INCHES
12 6 0 12 24



PLAN

END POST DETAIL

SCALE IN INCHES
12 6 0 12 24



RAIL SPLICE DETAIL

SCALE IN INCHES
6 0 6 12 18

SPLICE TUBE

SCALE IN INCHES
6 0 6 12 18

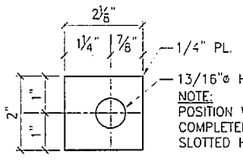
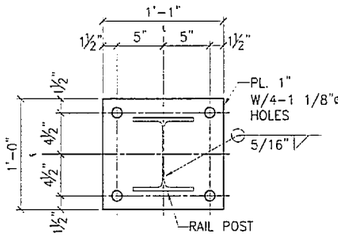


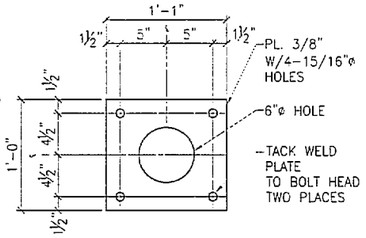
PLATE WASHER

SCALE IN INCHES
2 1 0 2 4



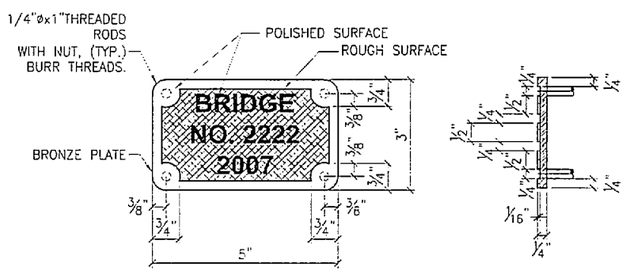
BASE PLATE DETAIL

SCALE IN INCHES
6 0 6 12 18



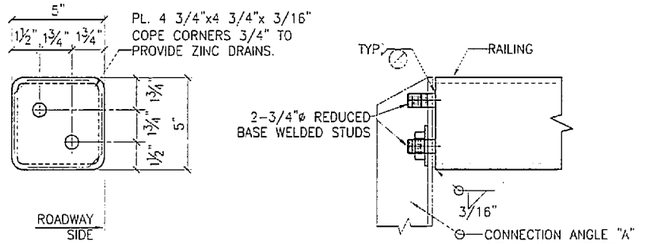
ANCHOR PLATE DETAIL

SCALE IN INCHES
6 0 6 12 18



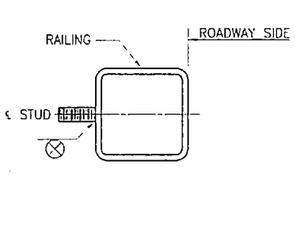
BRONZE BRIDGE NO. PLATE

SCALE IN INCHES
2 1 0 2 4



RAIL CAP DETAIL

SCALE IN INCHES
6 0 6 12 18



RAILING STUD DETAIL

SCALE IN INCHES
6 0 6 12 18

NOTES

1. LOCATE BRIDGE NUMBER PLATES ON RIGHT HAND SIDE OF APPROACHING TRAFFIC NEAR EACH END AS SHOWN (1 TOTAL).
2. FURNISH BRIDGE NUMBER PLATES. USE BRONZE THAT CONFORMS TO A.S.T.M. B98-90, ALLOY "A" OR "B". USE "CENTURY" TYPE STYLE LETTERING. USE STUDS AND NUTS THAT CONFORMS TO UNS C65100 OR C65500. BRAZE 1/4"ø THREADED ROD TO BACK OF PLATE WITH NUT-4 REQUIRED. USE LOCKING NUTS OR LOCK WASHERS ON ALL MACHINE BOLTS.
3. PROVIDE RAILING EXPANSION JOINTS AT 50'-0" MAXIMUM INTERVALS. RAILING SHALL BE CONTINUOUS OVER 4 POSTS MAXIMUM.
4. USE GROUT WITH A MINIMUM 24 HOUR F'C OF 3000 PSI.
5. SEE "TYPICAL SECTION" DWG. FOR RAIL POST SPACING.
6. BRIDGE RAIL AND THRIE BEAM TRANSITION ARE TL-4 CRASH TEST RATED.
7. INSTALL RAIL POSTS PLUMB.
8. SEE STD. DWG. G31.0D FOR THRIE BEAM TRANSITION.

DESIGNED BY: C KENLEY	CHECKED: J GOBELI		
DRAWN BY: S ABBETT	CHECKED: J GOBELI		
QUANTITIES BY: D BENTTI	CHECKED: J GOBELI		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION

STATE OF ALASKA 49 TH
F. Charles Kenley
CE-925
3.23.09
REGISTERED PROFESSIONAL ENGINEER

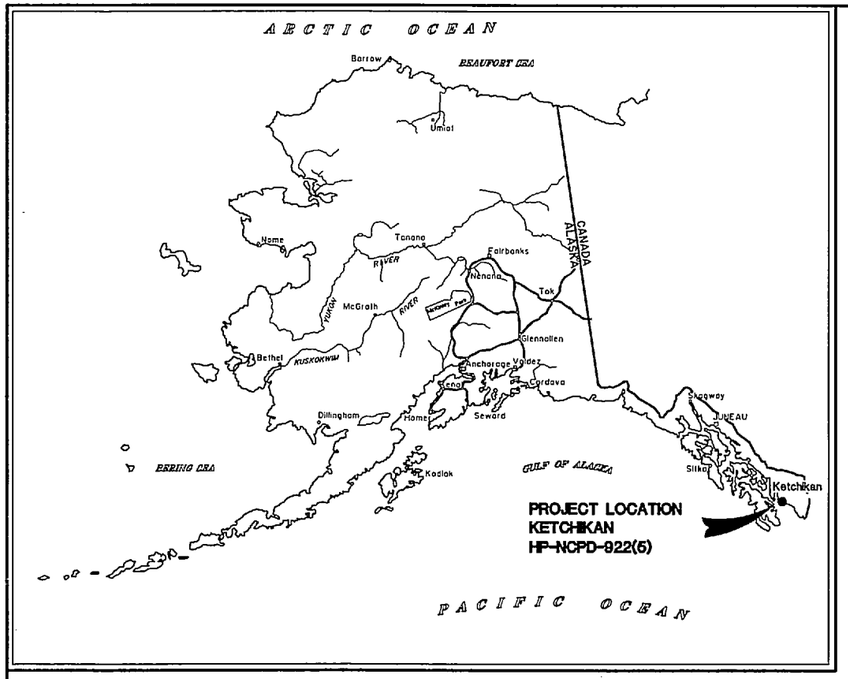
GRAVINA CREEK BRIDGE

GRAVINA ISLAND HIGHWAY

BRIDGE RAILING

BRIDGE NO. 2222
DWG. NO. 13

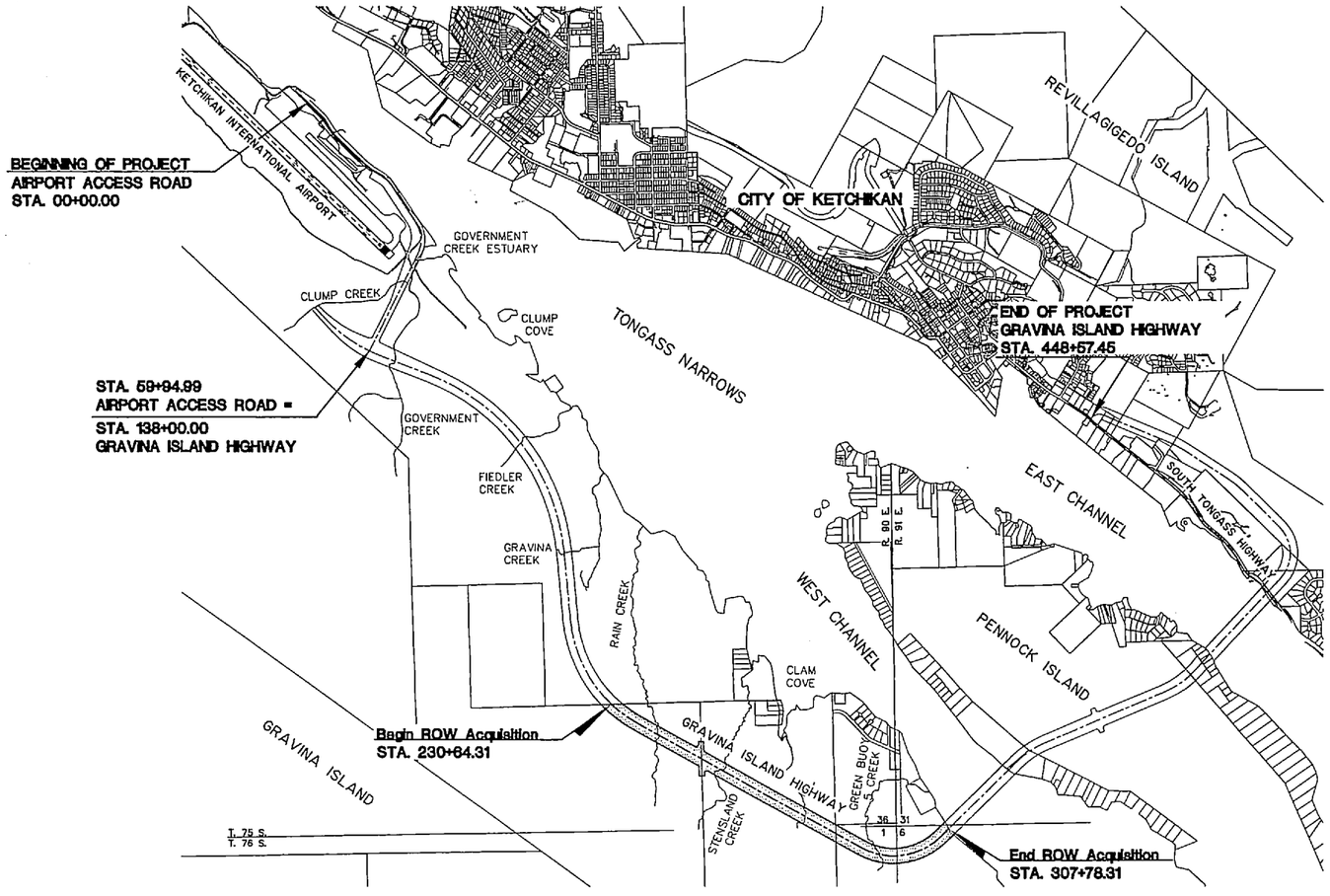
PROJECT DESIGNATION	SHEET NO	TOTAL SHEETS
HP-NCPD-0922(5)	1	7



STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

RIGHT-OF-WAY MAP
ALASKA PROJECT

KETCHIKAN GRAVINA ISLAND ACCESS
HP-NCPD-0922(5) / 67698



T. 75/76 S. R. 90/91 E.
Copper River Meridian
Alaska

PROJECT LENGTH 7.0 MI.
SCALE IN FEET
0 1500 3000
1 inch = 1500 feet

ALASKA DEPARTMENT OF
TRANSPORTATION & PUBLIC FACILITIES

APPROVAL DATE:_____, 20___

_____
REGIONAL CHIEF R/W AGENT

Department Locations Surveyor's Certificate

I hereby certify that I am a Professional Land Surveyor registered in the State of Alaska and that all Right-of-Way centerline monument locations have been established as indicated on the Right-of-Way Plans, all existing found subdivision monuments, property corners and section line monumentation as indicated on the Right-of-Way plans have been referenced to project survey control by me or under my supervision.

Date: _____ Registration No. _____

_____
Name of Surveyor

Surveyor's Certificate

I hereby certify that I am properly Registered and Licensed to practice Land Surveying in the State of Alaska, and that this drawing represents a survey made by me or under my direct supervision, and that the monuments shown hereon actually exist as described, and that all dimensions and other details are correct to the extent shown hereon.

_____
Kenneth W. Ayers, PLS-8535 Date:

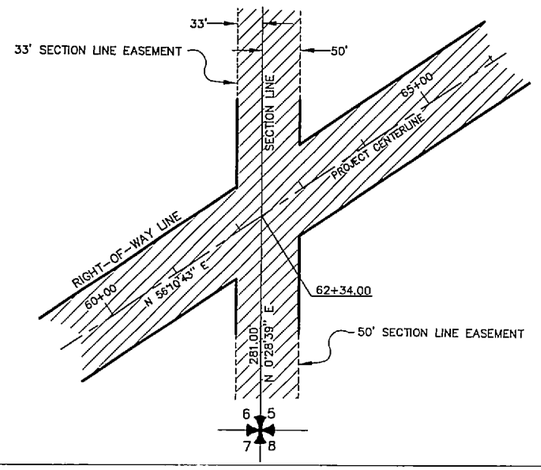
STATE OF ALASKA
49TH
Kenneth W. Ayers
LS-8535
REGISTERED PROFESSIONAL LAND SURVEYOR

KETCHIKAN RECORDING DISTRICT
STATE BUSINESS - NO FEE

PREPARED BY:
LOUNSBURY & ASSOCIATES, INC.

	RECOVERED	TO BE SET THIS PROJECT
FED. GOV'T SECTION CORNER	6 5 7 8 Sec. Cor.	
FED. GOV'T 1/4 SECTION CORNER	5 6 1/4 Cor.	
FED. GOV'T 1/16 SECTION CORNER	1/16 Cor.	
FED. GOV'T SURVEY MONUMENT		
FED. GOV'T SURVEY CORNER	or	
GOV'T CONTROL STA.		
PRIMARY MONUMENT [BRASS/AL CAP]		
MISC. SECONDARY CORNER		
PRIMARY CENTERLINE MONUMENT		
PRIMARY RIGHT-OF-WAY MONUMENT		
CONTROL POINT	CP	
INTERNATIONAL BOUNDARY LINE	ALASKA / CANADA	
TOWNSHIP & RANGE LINE	T. 13 N. / T. 12 N. — R. 2 W. / R. 3 W.	
RECORD DATA	(S 56°07'00" E)	
RECORD ROTATED DATA	[S 57°54'22" E]	
SECTION LINE		
1/4 SECTION LINE		
1/16 SECTION LINE		
CORPORATE or CITY LIMITS		

SECTION LINE EASEMENT AND
SECTION LINE–CENTERLINE INTERSECTION



HIGHWAY MILEPOST — 45 / 15+25.00

RAILROAD MILEPOST — R.R. 2580+60 / HWY. 126+33 — 842

PARCEL NUMBER TAG — XX

EDGE OF WATER
EXISTING RIGHT-OF-WAY
RIGHT-OF-WAY REQUIRED
AREA REMAINING

STATION EQUATION — STA. 14+33.22 BK. = STA. 16+90.17 AHD.

27+00

PROJECT CENTERLINE
EXISTING CENTERLINE
RAILROAD CENTERLINE
PROJECT RIGHT-OF-WAY LINE
EXISTING RECORD PROPERTY LINE
RETRACED PROPERTY LINE
PERMIT LINE
EXISTING EASEMENT LINE
LIMIT OF CUT SLOPE
LIMIT OF FILL SLOPE
PROPOSED ROADWAY
EXISTING ROADWAY
NOISE BARRIER
FENCE
STONE FENCE
HEAD & WING WALL
GUARD RAIL
RETAINING WALL
TUNNEL
INTERMITTENT DRAINAGE
INTERCEPTOR DITCH
MARSHLAND
CREEK
RIVER
LAKE
RESERVOIR
CHANNEL CHANGE

	EXISTING	PROPOSED
PIPELINES:		
SANITARY SEWER	SS	SS
OIL	O	O
GAS	G	G
WATER	W	W
STORM DRAIN	SD	SD
SIDEWALK		
CONCRETE CURB		
CONCRETE CURB & GUTTER		
DRIVEWAY, APPROACH, & SIDE DRAIN		
BRIDGE		
RIPRAP		

	EXISTING
U.G. TELEPHONE (DIRECT BURY)	U.G. TELE
U.G. ELECTRIC (DIRECT BURY)	U.G. ELECT
U.G. DUCT	
TELEPHONE MANHOLE	T
ELECTRIC MANHOLE	E
FOUNDATION	
BUILDING	

	EXISTING	PROPOSED
MANHOLE	M.H.	M.H.
FIRE HYDRANT		
ELECTRIC METER		
PIPE CULVERT		
UTILITY POLE		
ELECTROLIER		
UTILITY POLE WITH LUMINAIRE		
POLE ANCHOR		
TRANSMISSION TOWER [WOOD]		
TRANSMISSION TOWER [STEEL]		
ELECTRICAL PEDESTAL	E	E
TELEPHONE PEDESTAL	T	T
CABLE T.V. PEDESTAL	V	V

PROJECT DESIGNATION	SHEET NO.	TOTAL SHEETS
HP-NCPD-0922(5)	2	7

	EXISTING
PLANTER	P
VENT	
TANK VENT	
WELL	W
SEPTIC	S
TANKS	
Above Ground	
Below Ground	
SATELLITE DISH	
ELECTRICAL OUTLET	
PRIVATE SIGN	
GAS PUMP	GP
POST	
BOULDER OR BOULDERS	
LANDSCAPE LIGHT	
DECIDUOUS TREE	
CONIFEROUS TREE	
SHRUB OR SHRUBS	

KETCHIKAN RECORDING DISTRICT

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES
RIGHT-OF-WAY MAP LEGEND SHEET
ALASKA PROJECT

KETCHIKAN
GRAVINA ISLAND ACCESS
HP-NCPD-0922(5)
67698

PREPARED BY:
LOUNSBURY & ASSOCIATES, INC.

DRAWN	PS	DATE Feb. 1, 2007	SCALE 1"=100'
CHECKED	KWA	DATE Feb. 1, 2007	SHEET 2 OF 7

PROJECT DESIGNATION	SHEET NO.	TOTAL SHEETS
HP-NCPD-0922(5)	3	7

BEGINNING OF PROJECT
AIRPORT ACCESS ROAD
STA. 00+00.00

AIRPORT ACCESS ROAD

TRACT V
KETCHIKAN AIRPORT PARCEL
ILMT 39415

USS 1600

END AIRPORT ACCESS ROAD
STA. 59+94.99
BEGIN GRAVINA ISLAND HIGHWAY
STA. 138+00.00

AIRPORT

USS 1081

LOT 2C
ASLS 84-54

PROPERTY

USS 2924

USS 1357

USS 1685

TONGASS NARROWS

REVILLAGIGEDO ISLAND

CITY OF KETCHIKAN

END OF PROJECT
GRAVINA ISLAND HIGHWAY
STA. 448+57.45

EAST CHANNEL

PENNOCK ISLAND

WEST CHANNEL

BEGIN ROW ACQUISITION
STA. 230+64.31

USS 2357

Gravina Island Highway

22

LOT 2D
ASLS 84-54

KETCHIKAN GATEWAY BOROUGH

18

END ROW ACQUISITION
STA. 307+78.31

21

USS 1334

STENSLAND TRUST

LOT 2F
ASLS 84-54

KETCHIKAN GATEWAY BOROUGH

GRAVINA ISLAND

TONGASS NATIONAL FOREST BOUNDARY

SHEET 4

SHEET 5

SHEET 6

LOT 2E
ASLS 84-54

GRAVINA ISLAND HIGHWAY
INDEX SHEET MAP
RIGHT-OF-WAY ACQUISITION
STA. 230+64.31 to 307+78.31

T. 75/76 S., R. 90/91 E.
Copper River Meridian
Alaska

GRAPHIC SCALE
1000 0 500 1000 2000
1 inch = 1000 feet

STATE OF ALASKA
49TH
Kenneth W. Ayers
LS-8535
REGISTERED PROFESSIONAL LAND SURVEYOR

CONSULTANT LOCATIONS SURVEYOR'S CERTIFICATE

CONSULTANT RIGHT-OF-WAY SURVEYOR'S CERTIFICATE

PREPARED BY:
LOUNSBURY & ASSOCIATES, INC.

KETCHIKAN RECORDING DISTRICT

DATE	REVISIONS	BY

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES
RIGHT-OF-WAY MAP INDEX SHEET
ALASKA PROJECT
KETCHIKAN
GRAVINA ISLAND ACCESS
HP-NCPD-0922(5)
67698

DRAWN	PS	DATE	Feb. 1, 2007	SCALE	1"=1000'
CHECKED	KWA	DATE	Feb. 1, 2007	SHEET	3 OF 7

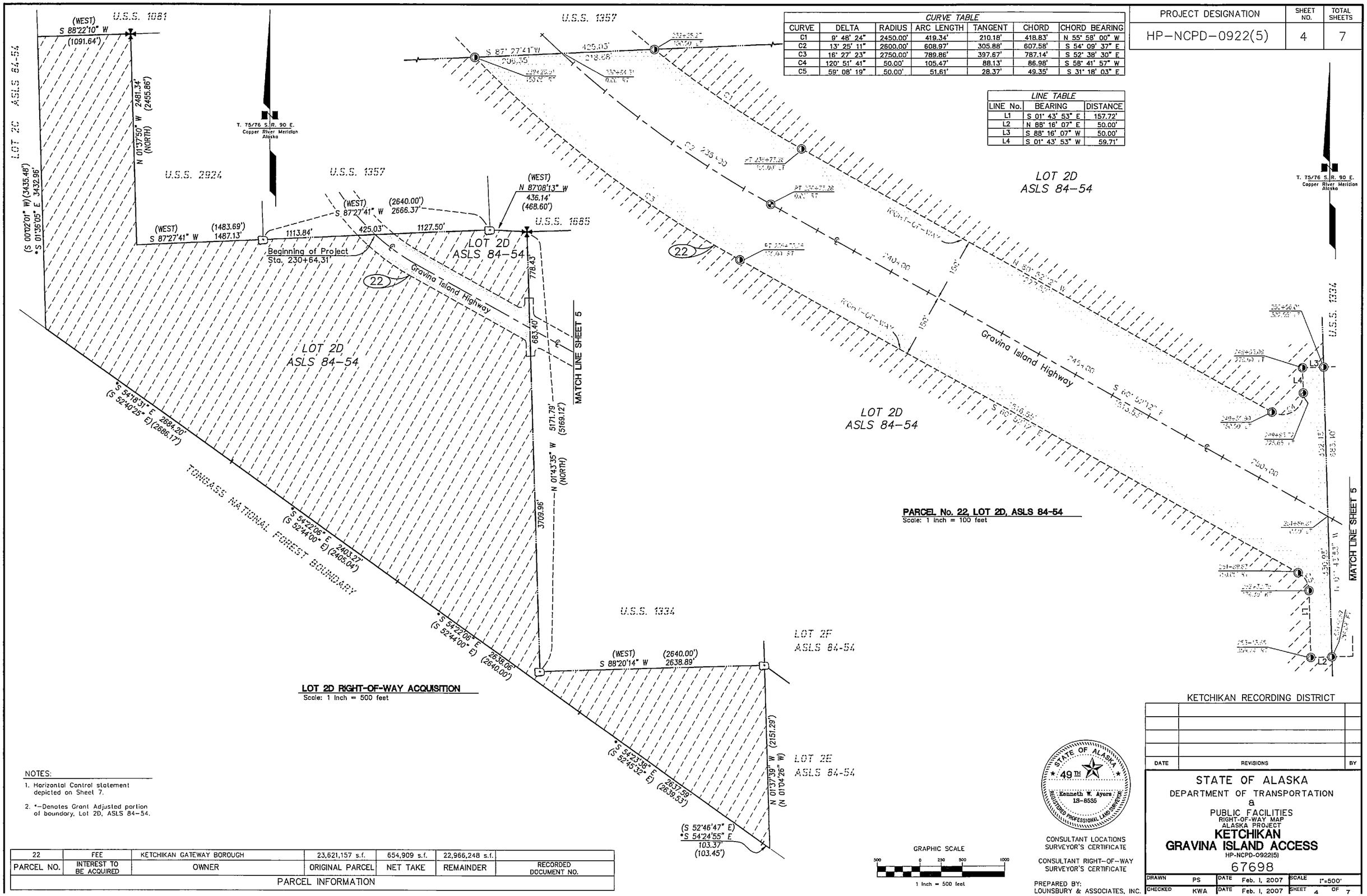
PROJECT DESIGNATION	SHEET NO.	TOTAL SHEETS
HP-NCPD-0922(5)	4	7

CURVE TABLE

CURVE	DELTA	RADIUS	ARC LENGTH	TANGENT	CHORD	CHORD BEARING
C1	9° 48' 24"	2450.00'	419.34'	210.18'	418.83'	N 55° 58' 00" W
C2	13° 25' 11"	2600.00'	608.97'	305.88'	607.58'	S 54° 09' 37" E
C3	16° 27' 23"	2750.00'	789.86'	397.67'	787.14'	S 52° 38' 30" E
C4	120° 51' 41"	50.00'	105.47'	88.13'	86.98'	S 58° 41' 57" W
C5	59° 08' 19"	50.00'	51.61'	28.37'	49.35'	S 31° 18' 03" E

LINE TABLE

LINE No.	BEARING	DISTANCE
L1	S 01° 43' 53" E	157.72'
L2	N 88° 16' 07" E	50.00'
L3	S 88° 16' 07" W	50.00'
L4	S 01° 43' 53" W	59.71'



LOT 2D RIGHT-OF-WAY ACQUISITION
Scale: 1 inch = 500 feet

PARCEL No. 22, LOT 2D, ASLS 84-54
Scale: 1 inch = 100 feet

NOTES:

1. Horizontal Control statement depicted on Sheet 7.
2. *—Denotes Grant Adjusted portion of boundary, Lot 2D, ASLS 84-54.

22	FEE	KETCHIKAN GATEWAY BOROUGH	23,621,157 s.f.	654,909 s.f.	22,966,248 s.f.	
PARCEL NO.	INTEREST TO BE ACQUIRED	OWNER	ORIGINAL PARCEL	NET TAKE	REMAINDER	RECORDED DOCUMENT NO.
PARCEL INFORMATION						

GRAPHIC SCALE
500 0 250 500 1000
1 Inch = 500 feet

STATE OF ALASKA 49TH
Kenneth W. Ayers
LS-8535
REGISTERED PROFESSIONAL LAND SURVEYOR

CONSULTANT LOCATIONS SURVEYOR'S CERTIFICATE

CONSULTANT RIGHT-OF-WAY SURVEYOR'S CERTIFICATE

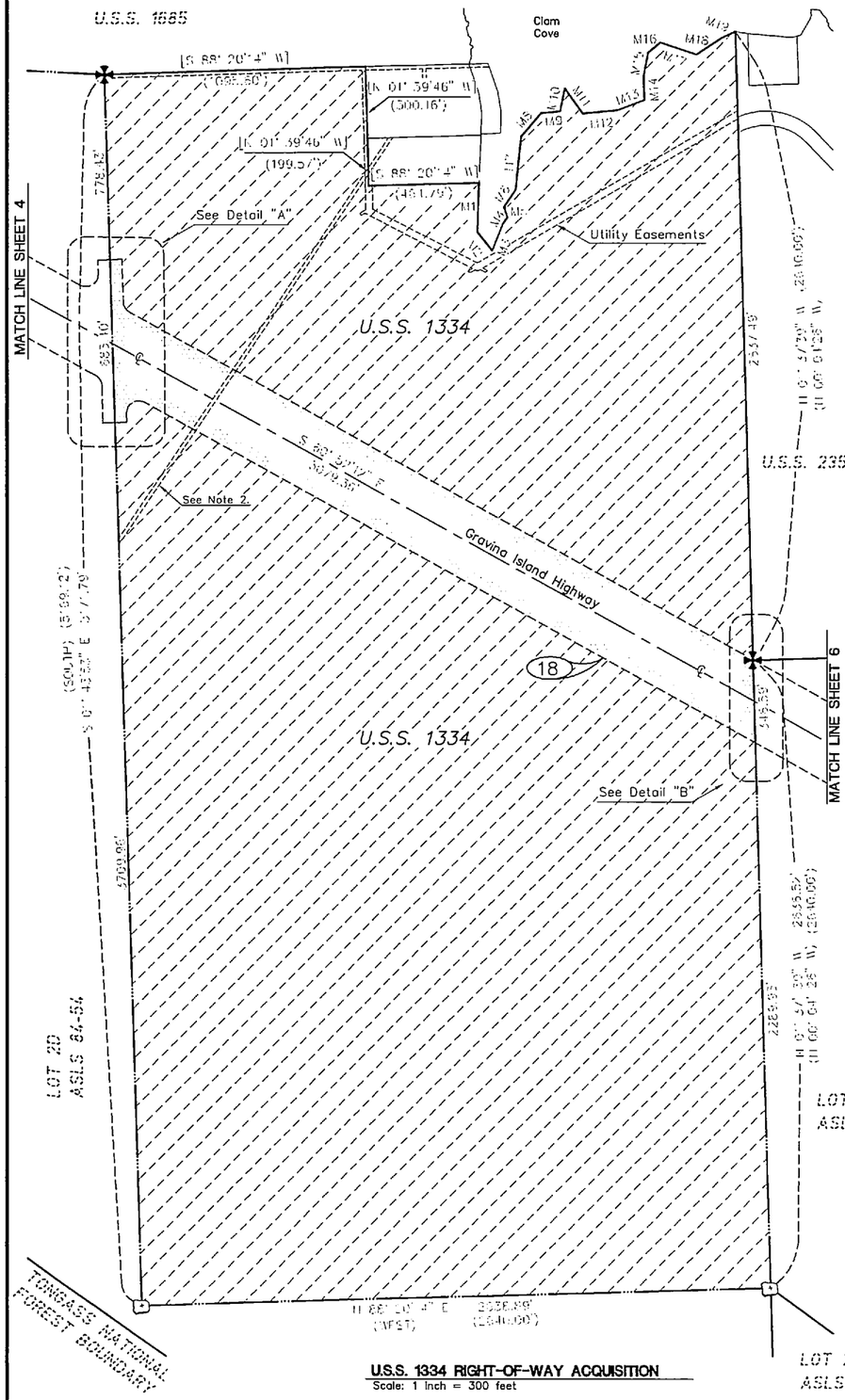
PREPARED BY:
LOUNSBURY & ASSOCIATES, INC.

KETCHIKAN RECORDING DISTRICT

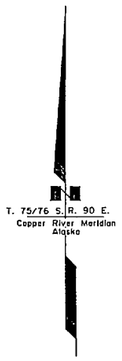
DATE	REVISIONS	BY

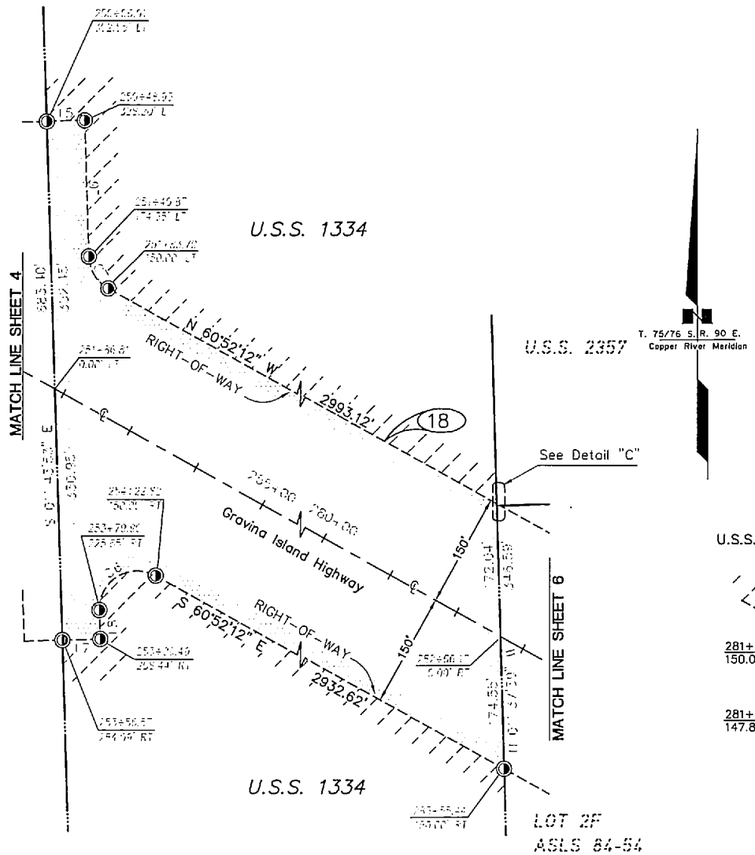
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES
RIGHT-OF-WAY MAP
ALASKA PROJECT
KETCHIKAN
GRAVINA ISLAND ACCESS
HP-NCPD-0922(5)
67698

DRAWN	PS	DATE	Feb. 1, 2007	SCALE	1"=500'
CHECKED	KWA	DATE	Feb. 1, 2007	SHEET	4 OF 7



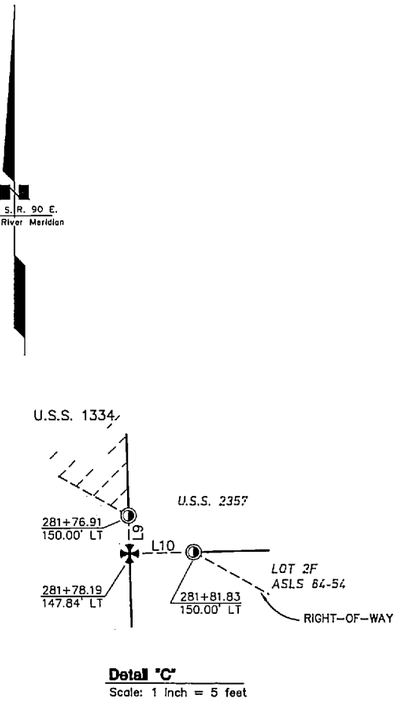
U.S.S. 1334 RIGHT-OF-WAY ACQUISITION
Scale: 1 inch = 300 feet





Detail "A" **Detail "B"**

PARCEL 18, U.S.S. 1334
Scale: 1 inch = 100 feet



Detail "C"
Scale: 1 inch = 5 feet

18	FEE	George E. Stensland	13,233,355 s.f.	942,403 s.f.	12,290,952 s.f.	
PARCEL NO.	INTEREST TO BE ACQUIRED	OWNER	ORIGINAL PARCEL	NET TAKE	REMAINDER	RECORDED DOCUMENT NO.
PARCEL INFORMATION						

GRAPHIC SCALE
300 0 150 300 600
1 inch = 300 feet

CURVE TABLE

CURVE	DELTA	RADIUS	ARC LENGTH	TANGENT	CHORD	CHORD BEARING
C6	120° 51' 41"	50.00'	105.47'	88.13'	86.98'	N 58° 41' 57" E
C7	59° 08' 19"	50.00'	51.61'	28.37'	49.35'	N 31° 18' 03" W

LINE TABLE

LINE No.	BEARING	DISTANCE
L5	S 88° 16' 07" W	50.00'
L6	N 01° 43' 53" W	179.22'
L7	N 88° 16' 07" E	50.00'
L8	N 01° 43' 53" W	38.20'
L9	N 01° 37' 39" W	2.51'
L10	N 88° 26' 47" E	4.23'

MEANDER LINES

Meander	Bearing	Distance
M1	[N 02° 05' 14" E]	(206.60')
M2	[N 38° 24' 46" W]	(99.66')
M3	[N 21° 35' 14" E]	(121.44')
M4	[S 35° 20' 14" W]	(33.00')
M5	[S 17° 39' 46" E]	(46.20')
M6	[S 33° 35' 14" W]	(86.46')
M7	[S 05° 50' 14" W]	(225.06')
M8	[S 40° 05' 14" W]	(128.70')
M9	[S 84° 35' 14" W]	(79.20')
M10	[S 11° 50' 14" W]	(97.68')
M11	[N 35° 24' 46" W]	(128.70')
M12	[S 84° 20' 14" W]	(146.52')
M13	[S 69° 05' 14" W]	(120.78')
M14	[S 02° 09' 46" E]	(99.00')
M15	[S 11° 05' 14" W]	(100.98')
M16	[S 49° 35' 14" W]	(66.66')
M17	[N 71° 24' 46" W]	(159.06')
M18	[S 56° 35' 14" W]	(126.06')
*M19	S 65° 26' 12" W	63.44'

*The meanders shown hereon are record data from the official field notes for U.S. Survey 1334, as rotated to the basis of bearing for this survey. The error of closure for the meander data was placed Meander 19, to maintain the highest degree of conformity to the record data.

NOTES:

1. Horizontal Control statement depicted on Sheet 7.
2. Approximate location of 15ft. waterline right-of-way, see Ketchikan Recording District, Page 146, Volume "P" of Deeds, dated October 1, 1933.
3. Meanders subject to a 50ft. Public Access Easement measured upland from the line of mean or ordinary high water, pursuant to AS 38.05.127 and 11 AAC 53.330.
4. Only property lines where the alignment crosses said property line were surveyed and retraced in the field. The recovered monumentation was tied to local control. All other property lines use record calls (bearing and distance), that have been rotated to the Ketchikan Third Avenue Transformation coordinate system. These bearings are represented by [ ] brackets.

STATE OF ALASKA
49TH
Kenneth W. Ayers
LS-8535
REGISTERED PROFESSIONAL LAND SURVEYOR

CONSULTANT LOCATIONS SURVEYOR'S CERTIFICATE

CONSULTANT RIGHT-OF-WAY SURVEYOR'S CERTIFICATE

PREPARED BY:
LOUNSBURY & ASSOCIATES, INC.

PROJECT DESIGNATION	SHEET NO.	TOTAL SHEETS
HP-NCPD-0922(5)	5	7

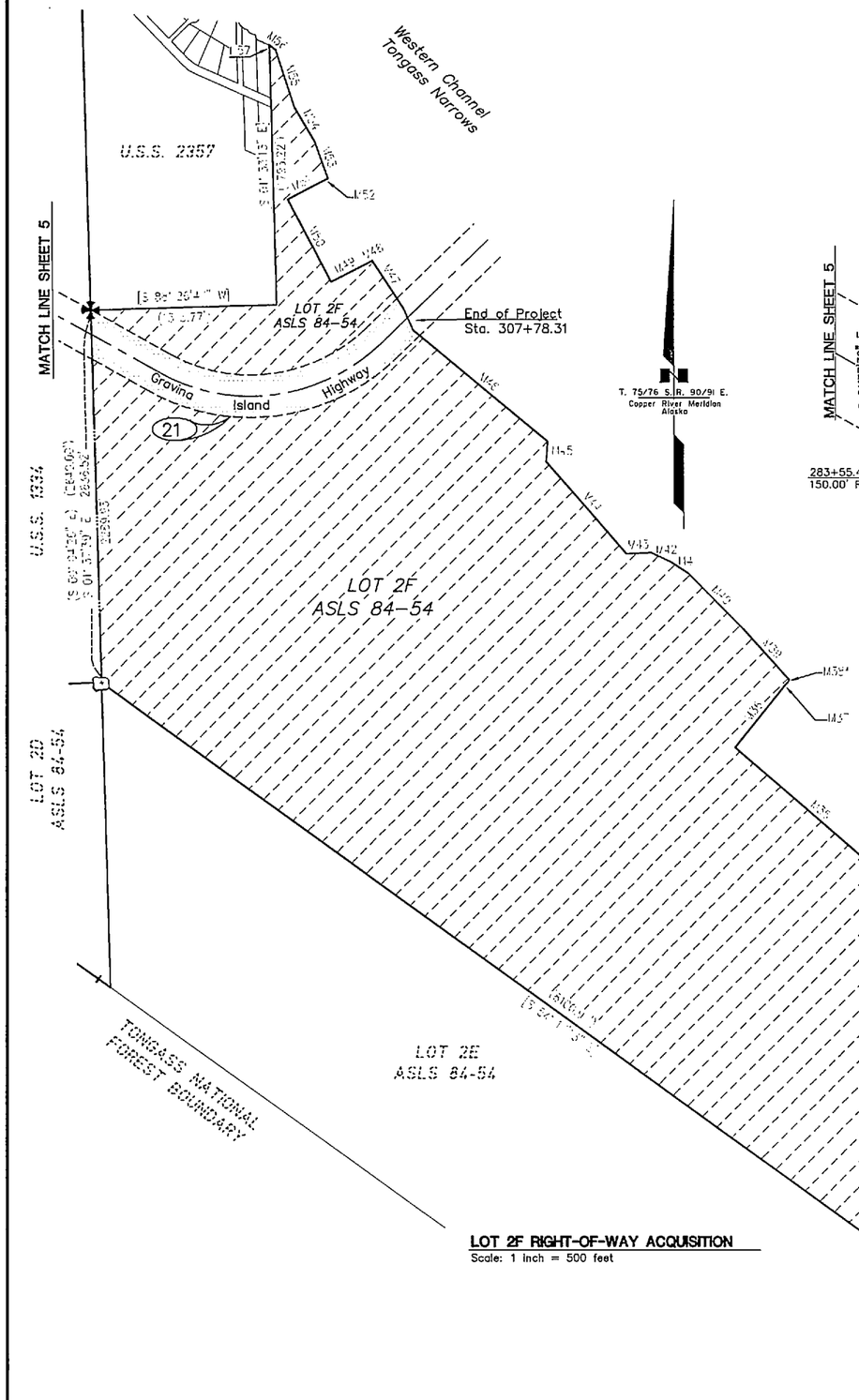
KETCHIKAN RECORDING DISTRICT

DATE	REVISIONS	BY

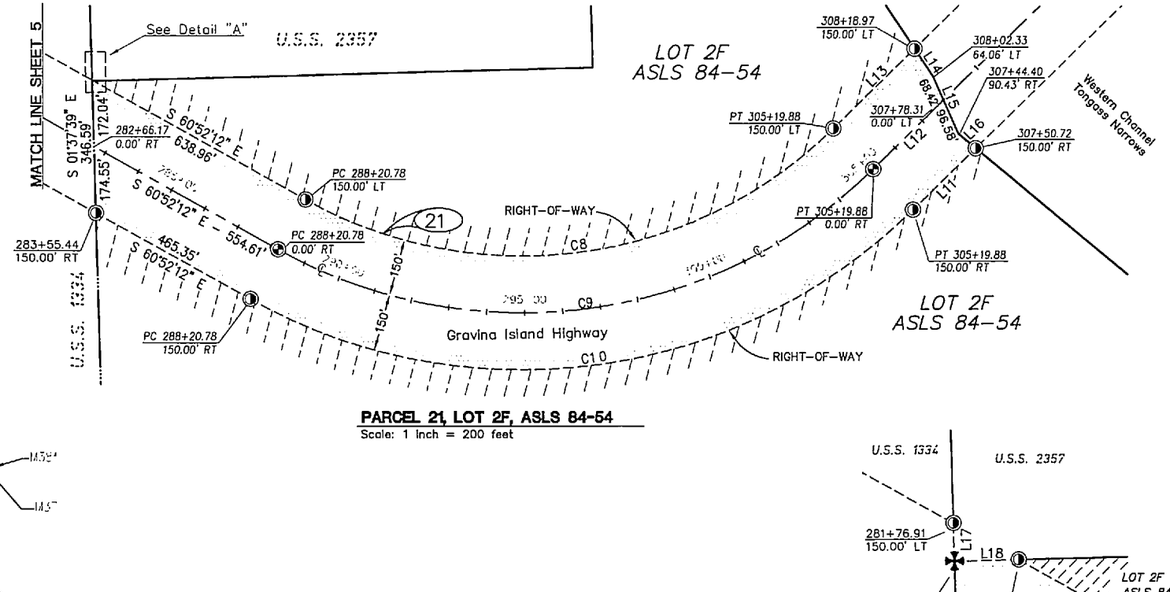
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES
RIGHT-OF-WAY MAP
ALASKA PROJECT
KETCHIKAN
GRAVINA ISLAND ACCESS
HP-NCPD-0922(5)
67698

DRAWN	PS	DATE	Feb. 1, 2007	SCALE	1"=300'
CHECKED	KWA	DATE	Feb. 1, 2007	SHEET	5 OF 7

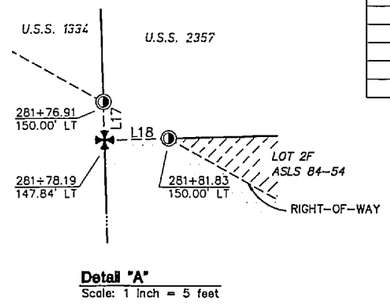
PROJECT DESIGNATION	SHEET NO.	TOTAL SHEETS
HP-NCPD-0922(5)	6	7



LOT 2F RIGHT-OF-WAY ACQUISITION
Scale: 1 inch = 500 feet



PARCEL 21, LOT 2F, ASLS 84-54
Scale: 1 inch = 200 feet



Detail "A"
Scale: 1 inch = 5 feet

LINE TABLE

LINE No.	BEARING	DISTANCE
L11	N 45° 39' 27" E	230.85'
L12	N 45° 39' 27" E	258.43'
L13	S 45° 39' 27" W	299.09'
L14	N 33° 23' 13" W	87.53'
L15	N 23° 47' 13" W	165.00'
L16	N 50° 24' 13" W	59.90'
L17	N 01° 37' 39" W	2.51'
L18	S 88° 26' 47" W	4.23'

CURVE TABLE

CURVE	DELTA	RADIUS	ARC LENGTH	TANGENT	CHORD	CHORD BEARING
C8	73° 28' 20"	1175.00'	1506.74'	876.97'	1405.61'	S 82° 23' 38" W
C9	73° 28' 20"	1325.00'	1699.09'	988.93'	1585.05'	N 82° 23' 38" E
C10	73° 28' 20"	1475.00'	1891.44'	1100.88'	1764.49'	N 82° 23' 38" E

MEANDER LINES

Meander	Bearing	Distance
M52	[S 88° 26' 47" W]	(30.48')
M53	[S 88° 26' 47" W]	(497.34')
M54	[N 01° 33' 13" W]	(1089.00')
M55	[N 88° 26' 47" E]	(171.14')
M56	[N 88° 26' 47" E]	(44.75')
M57	[N 01° 25' 47" E]	(48.14')
M58	[N 38° 44' 13" W]	(162.78')
M59	[N 51° 05' 13" W]	(264.15')
M60	[N 11° 40' 47" E]	(132.54')
M61	[S 38° 33' 47" W]	(51.48')
M62	[S 38° 33' 47" W]	(340.00')
M63	[N 73° 41' 13" W]	(814.14')
M64	[N 47° 43' 13" W]	(382.88')
M65	[N 49° 22' 13" W]	(1489.16')
M66	[S 38° 33' 47" W]	(248.82')
M67	[N 38° 33' 47" E]	(66.22')
M68	N 17° 24' 17" E	14.13'
M69	[N 71° 58' 13" W]	(480.06')
M70	[N 41° 36' 13" W]	(304.40')
M71	[N 88° 26' 13" W]	(147.71')
M72	[N 85° 19' 13" W]	(152.46')
M73	[S 87° 57' 47" W]	(179.52')
M74	[N 71° 13' 13" W]	(865.71')
M75	[N 54° 19' 47" E]	(142.23')
M76	[N 59° 24' 13" W]	(1176.86')
M77	[N 33° 23' 13" W]	(317.91')
M78	[S 62° 26' 47" W]	(41.58')
M79	[S 62° 26' 47" W]	(285.12')
M80	[N 27° 33' 13" W]	(660.00')
M81	[N 62° 26' 47" E]	(277.88')
M82	[N 62° 26' 47" E]	(42.24')
M83	[N 19° 46' 13" W]	(277.07')
M84	[N 30° 17' 13" W]	(285.31')
M85	[N 15° 11' 13" W]	(425.04')
M86	[N 52° 21' 13" W]	(76.36')
M87	[S 01° 33' 13" E]	(46.88')

*The meanders shown hereon are record data from ASLS 84-54, Plat No. 95-26 Ketchikan Recording District, as related to the basis of bearing for this survey. The error of closure for the meander data was placed in Meander 35, the shortest meander, to maintain the highest degree of conformity to the record data.

21	FEE	KETCHIKAN GATEWAY BOROUGH	23,647,590 s.f.	753,820 s.f.	22,893,770 s.f.	
PARCEL NO.	INTEREST TO BE ACQUIRED	OWNER	ORIGINAL PARCEL	NET TAKE	REMAINDER	RECORDED DOCUMENT NO.
PARCEL INFORMATION						

GRAPHIC SCALE
500 0 250 500 1000
1 inch = 500 feet

NOTES:

1. Horizontal Control statement depicted on Sheet 7.
2. Meanders subject to a 50ft. Public Access Easement measured upland from the line of mean or ordinary high water, pursuant to AS 38.05.127 and 11 AAC 53.330.
3. Only property lines where the alignment crosses said property line were surveyed and retraced in the field. The recovered monumentation was tied to local control. All other property lines use record calls (bearing and distance), that have been rotated to the Ketchikan Third Avenue Transformation coordinate system. These bearings are represented by [ ] brackets

STATE OF ALASKA 49TH
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LS-8535
RECORDED PROFESSIONAL LAND SURVEYOR

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CONSULTANT RIGHT-OF-WAY SURVEYOR'S CERTIFICATE

PREPARED BY:
LOUNSBURY & ASSOCIATES, INC.

KETCHIKAN RECORDING DISTRICT

DATE	REVISIONS	BY

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES
RIGHT-OF-WAY MAP
ALASKA PROJECT
KETCHIKAN
GRAVINA ISLAND ACCESS
HP-NCPD-0922(5)
67698

DRAWN	PS	DATE	Feb. 1, 2007	SCALE	1"=500'
CHECKED	KWA	DATE	Feb. 1, 2007	SHEET	6 OF 7

PROJECT DESIGNATION	SHEET NO.	TOTAL SHEETS
HP-NCPD-0922(5)	7	7

MONUMENT SUMMARY SHEET
GRAVINA ISLAND ACCESS RIGHT-OF-WAY
STATION 230+64.31 TO STATION 307+78.31

SET and RECOVERED CORNERS - SHEETS 4 - 6						
LOCATION	DESCRIPTION	NORTHING	EASTING	STATION	OFFSET	WORK ITEM
CORNER 7, U.S.S. 2924	RECOVERED BRASS CAP	83172.9643	96667.2346	202+77.94	1969.78 RT	
CORNER 5, U.S.S. 2924	RECOVERED ROCK	80758.4964	98223.5078	223+94.01	1055.78 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80807.8319	99336.2593	229+26.51	150.00 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80826.6580	99760.8771	232+28.27	150.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80330.1963	99961.9262	236+73.28	150.00 RT	
CENTERLINE MONUMENT	SET ALUM. MON	80461.2240	100034.9450	236+73.28	0.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80592.2516	100107.9638	236+73.28	150.00 LT	
CORNER 7, U.S.S. 1357	RECOVERED ROCK	80876.5985	100887.2750	242+15.60	777.75 LT	
CORNER 4, U.S.S. 1334	Reestablished from BT's	80854.8145	101322.8726	246+06.71	970.76 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79970.3641	101223.9020	249+50.80	150.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80015.5507	101298.2188	249+93.72	225.65 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80075.2297	101296.4148	249+63.09	276.90 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80076.7404	101346.3920	250+06.01	302.55 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79591.9515	101286.6602	251+89.83	150.00 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79549.7863	101312.2978	252+32.75	174.35 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79392.1399	101317.0631	253+13.65	309.74 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79393.6506	101367.0403	253+56.57	284.09 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	80078.2511	101396.3692	250+48.94	328.20 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79899.1123	101401.7841	251+40.87	174.35 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79856.9471	101427.4217	251+83.79	150.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79395.1613	101417.0174	253+99.49	258.44 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79433.3479	101415.8632	253+79.90	225.65 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	79478.5345	101490.1799	254+22.82	150.00 RT	
CORNER 3, U.S.S. 1334	RECOVERED ROCK	75685.3857	101479.1328	272+59.64	3468.76 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78399.9213	104041.9634	281+76.91	150.00 LT	
CORNER 2, U.S.S. 2357	RECOVERED BRASS CAP	78397.4118	104042.0347	281+78.19	147.84 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78050.9573	104051.8778	283+55.44	150.00 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78397.5264	104046.2608	281+81.83	150.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	77824.4310	104458.3652	288+20.78	150.00 RT	
CENTERLINE MONUMENT	SET ALUM. MON	77955.4586	104531.3840	288+20.78	0.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78086.4863	104604.4028	288+20.78	150.00 LT	
CORNER 2, U.S.S. 1334	RECOVERED ROCK	75761.9531	104116.9107	290+88.68	2189.42 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78057.9852	106207.3265	305+19.88	150.00 RT	
CENTERLINE MONUMENT	SET ALUM. MON	78165.2616	106102.4848	305+19.88	0.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78272.5380	105997.6431	305+19.88	150.00 LT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78219.3338	106372.4220	307+50.72	150.00 RT	
RIGHT-OF-WAY MONUMENT	SET ALUM. CAP	78481.5855	106211.5454	308+18.97	150.00 LT	

WORK ITEM	WORK REQUIRED	PAY ITEM NO.
1	Construction surveying	642(1)
2	Office engineering	642(2)
3	Three person survey party	642(3)
4	Set primary monument	642(4)
5	Set secondary monument	642(5)
6	Replace existing with primary monument	642(6)
7	Replace existing with secondary monument	642(7)
8	Adjust existing monument	642(8)
9	Reference existing monument	642(9)
10	Monument case	642(10)
11	Adjust existing monument case	642(11)
12	Final traverse	642(12)

HORIZONTAL CONTROL STATEMENT:

Gravina Island Access Right-of-Way Maps are based on the Ketchikan Third Avenue Transformation, a local Coordinate System. The Ketchikan Third Avenue Transformation was developed by the Alaska Department of Transportation and Public Facilities.

Location of recovered monumentation was obtained with GPS methodology and used Alaska State Plane Zone 1, a transverse mercator, NAD83(92) coordinates. Coordinates are in U.S. Survey feet, and are based on N.G.S. published values (as current in December, 2004) at BM 37, N.G.S. PID No. AI4914 and KTN A, N.G.S. PID No. AA1894.

To transform Alaska State Plane Zone 1 coordinates, U.S. Survey feet, to the Ketchikan Third Avenue Local coordinate system: scale all points at base point 1289213.0350 North, 3104427.6100 East by a factor of 0.9999007, then rotate all points at said base point +00° 00' 18", and finally move all points from said base point to new Ketchikan Third Avenue Transformation base point having a value of 89745.1675 North, 104488.6038 East.

NOTES:

1. Whether listed or not, all monuments or property markers, corners or accessories which will be disturbed or buried shall be referenced and reestablished in their original position (A.S. 19.10.260) and recorded (A.S. 34.65.040).
2. This set of Right-of-Way maps based on previous recorded surveys. They are: U.S.S. 1334, U.S.S. 2357, U.S.S. 2924 and ASLS 84-54.
3. Field surveys performed in 2004 and 2005 to recover corners of Lots 2D & 2F, ASLS 84-54 and U.S.S. 1334. Tripod mounted Leica GPS receivers were used to obtain satellite data. Leica GeoOffice v2.1 software was used to reduce and calculate the horizontal positions of the recovered corners.
4. Reference "Survey Control Plan" for ADOT&PF project "Ketchikan Airport Runway Safety Area", Project 68305, AIP No. 3-02-0144-1606, for additional information regarding the Ketchikan Third Avenue Transformation.

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MONUMENT SUMMARY SHEET
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HP-NCPD-0922(5)
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DRAWN	PS	DATE Feb. 1, 2007	SCALE	N/A	
CHECKED	KWA	DATE Feb. 1, 2007	SHEET	7	OF 7