

# STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

## PLAN AND PROFILE PROPOSED HIGHWAY PROJECT RS-0991 (4) / 69886 LUTAK ROAD - HAINES FROM THE FERRY TERMINAL TO LUTAK SPUR ROAD GRADING & DRAINAGE PHASE II

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTION
3	ESTIMATE OF QUANTITIES
4	SUMMARY TABLES
5-11	PLAN AND PROFILE SHEETS
11	SLIPOUT DETAIL

THE FOLLOWING STANDARD DRAWINGS APPLY TO THIS PROJECT; A-1, C-01.02, C-02.00, C-03.01, D-01.01, D-04.10, I-40.00, M-16.00, S-00.00, S-05.00, S-20.00, S-30.01, D-07.00, D-30.01

### AS-BUILT PLANS

CONTRACTOR - NORTHERN TIMBER CORPORATION  
PROJECT ENGINEER - GREG BROWNING  
CONSTRUCTION BEGIN - AUGUST 1989  
CONSTRUCTION ENDS - MAY 1990

**PHASE II  
DESIGN DESIGNATION**

ADT(1987)	=	186
ADT(2007)	=	305
DHV(15%)	=	48
D	=	45-55
T	=	3.5%
T.I.	=	5.5
V	=	35 MPH

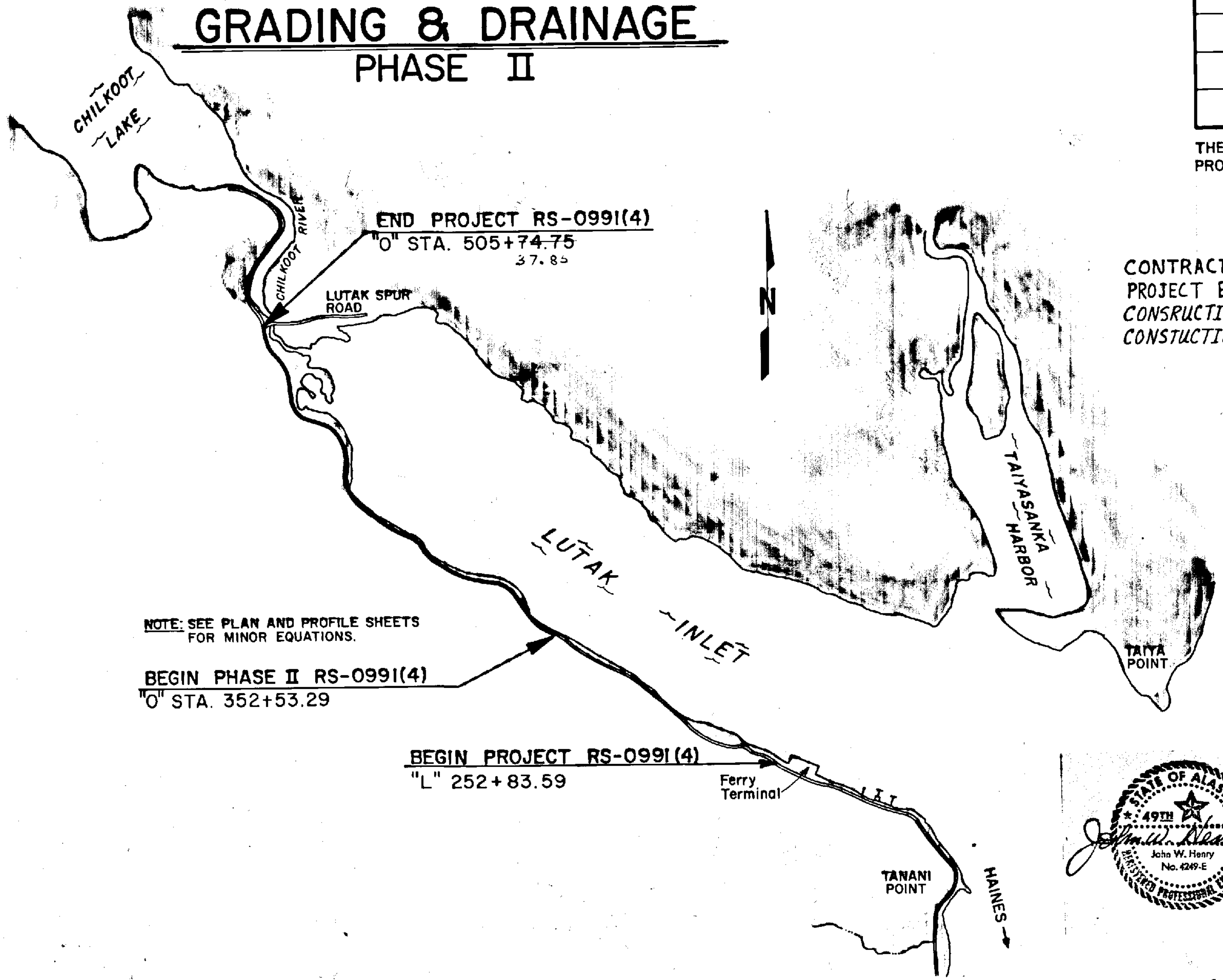
**PHASE II  
PROJECT SUMMARY**

"0" STA. 352+53.29 TO "0" STA. 505+74.75

WIDTH OF SUBGRADE = 26'

LENGTH OF GRADING = 15,230.61' = 2.885 MILES  
15,205.36' = 2.880

LENGTH OF PROJECT = 15,230.61' = 2.885 MILES  
15,205.36' = 2.880



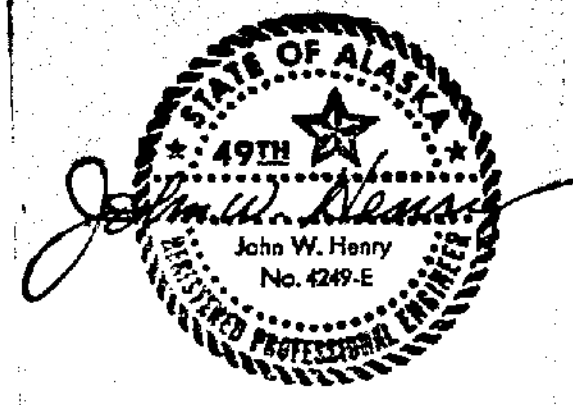
NOTE: SEE PLAN AND PROFILE SHEETS FOR MINOR EQUATIONS.

STATE OF ALASKA  
DEPARTMENT OF TRANSPORTATION  
AND  
PUBLIC FACILITIES

APPROVED BY: *Umenill* DATE: 9-21-88  
Southeast Region  
Design Chief

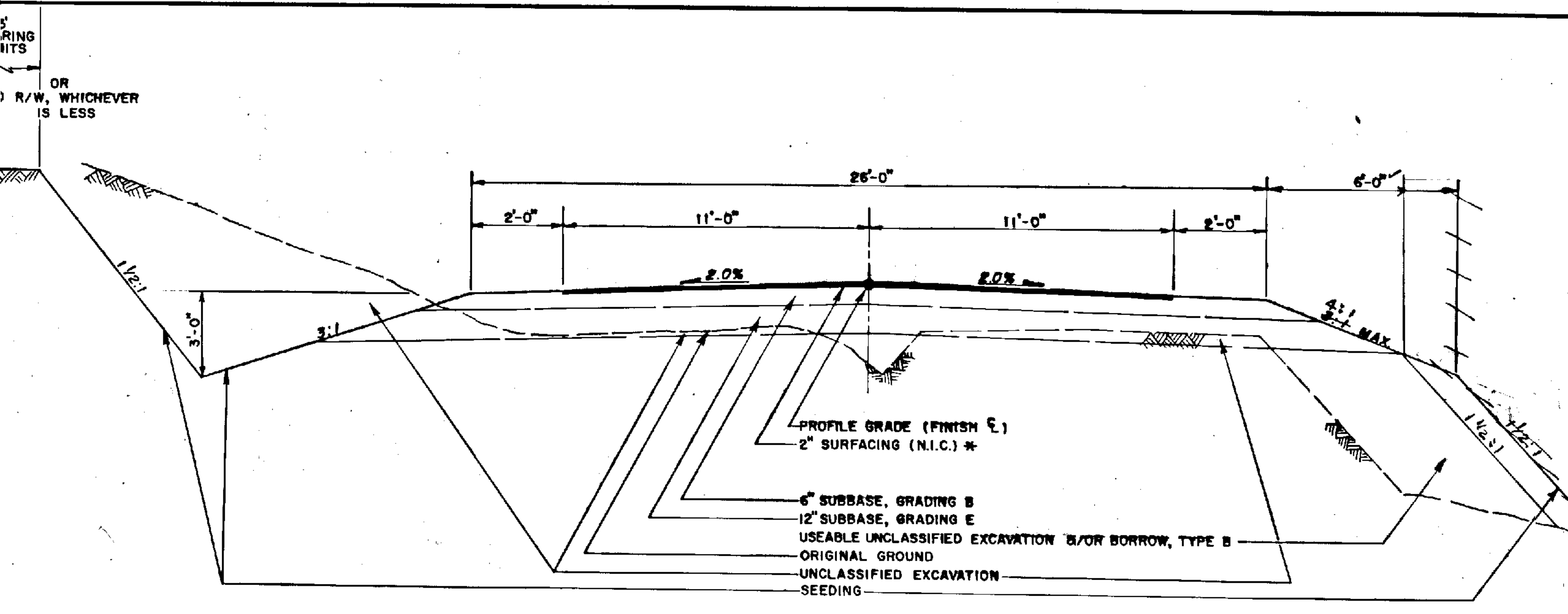
STATE OF ALASKA  
DEPARTMENT OF TRANSPORTATION  
AND  
PUBLIC FACILITIES

APPROVED BY: *J. W. Henry* DATE: 9-21-88  
DIRECTOR  
Southeast Region  
Design and Construction



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	RS-0991 (4)	1988	2	11

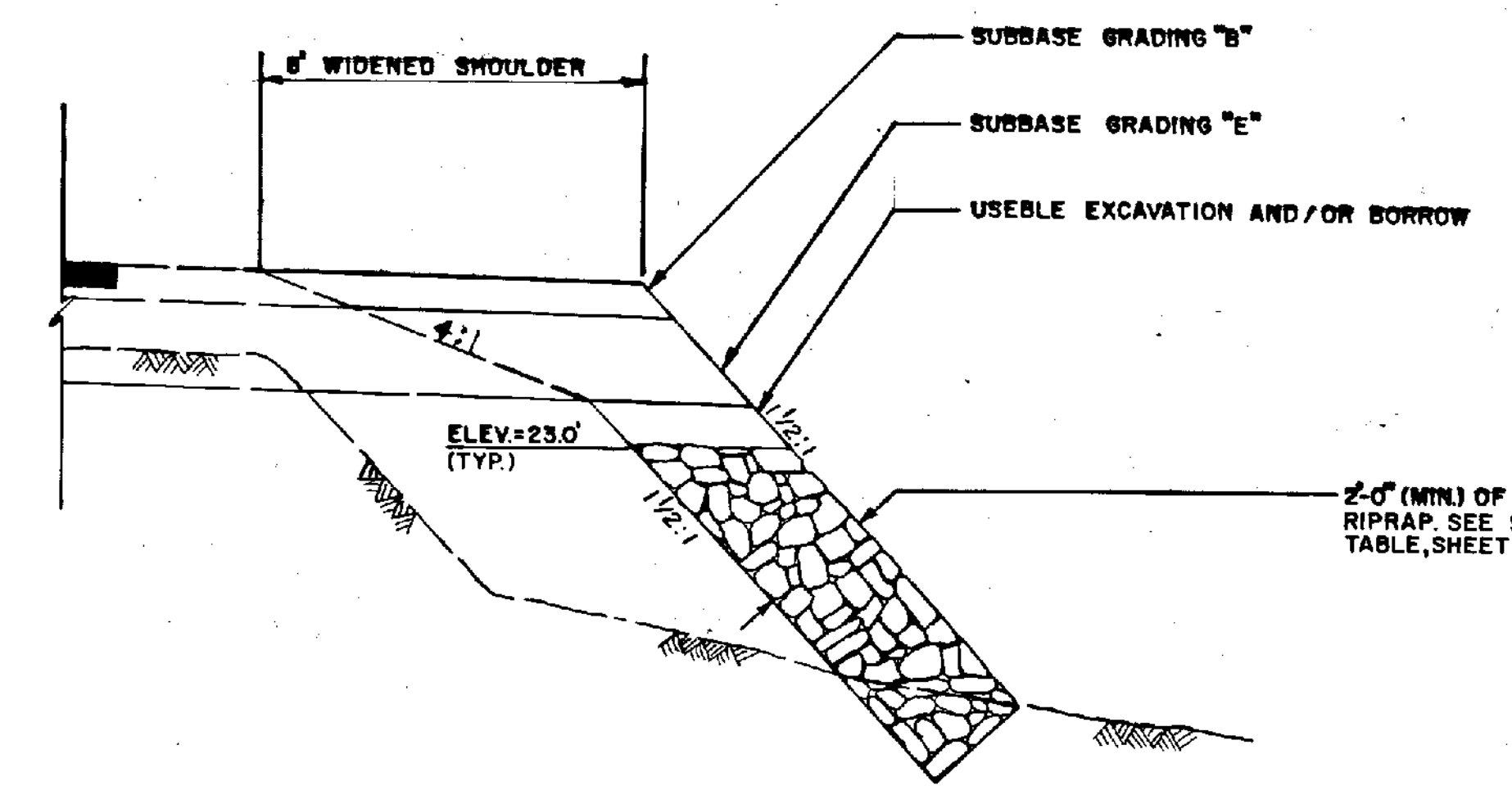
CONVERSION FACTORS	
C.Y. TO	TONS
SUBBASE, GRADING B	2.09 TONS/C.Y.
SUBBASE, GRADING E	2.09 TONS/C.Y.
BORROW, TYPE B	2.13 TONS/C.Y.



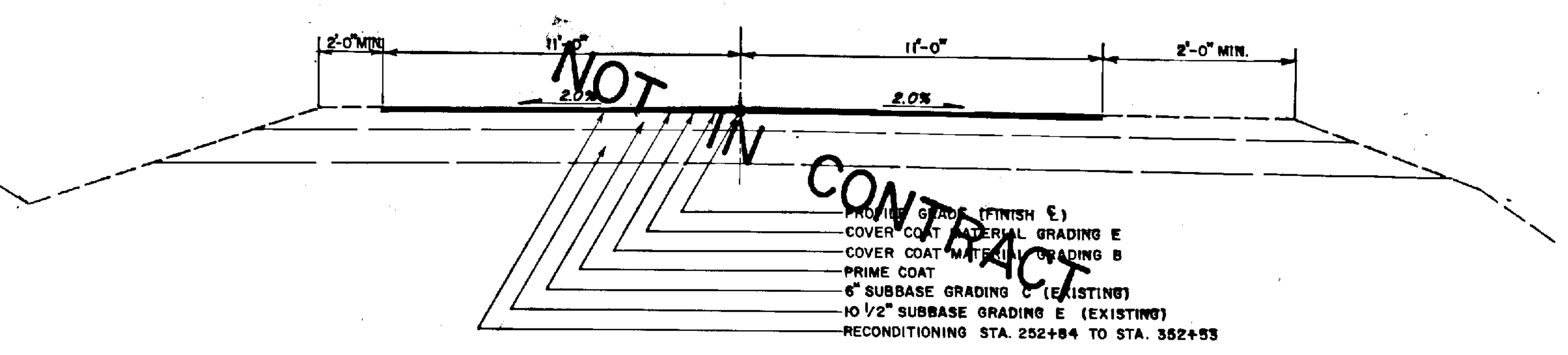
**TYPICAL ROADWAY SECTION**  
NO SCALE  
"O" STA. 352+53.29 TO "L" STA. 506+00.00

Non-riprap Areas  
8' WIDENED SHOULDER

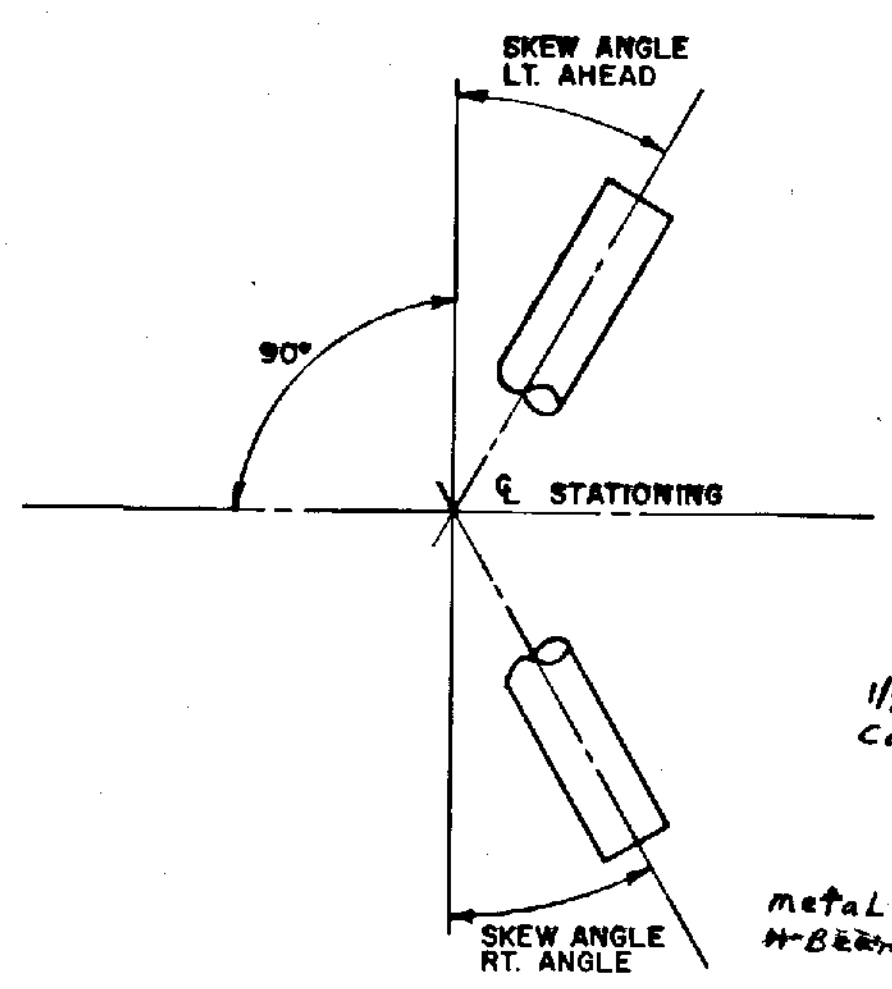
- 359+75 to 360+50
- 373+50 to 378+05
- 382+50 to 386+00
- 405+15 to 408+70
- 424+50 to 426+75
- 432+24 to 435+00



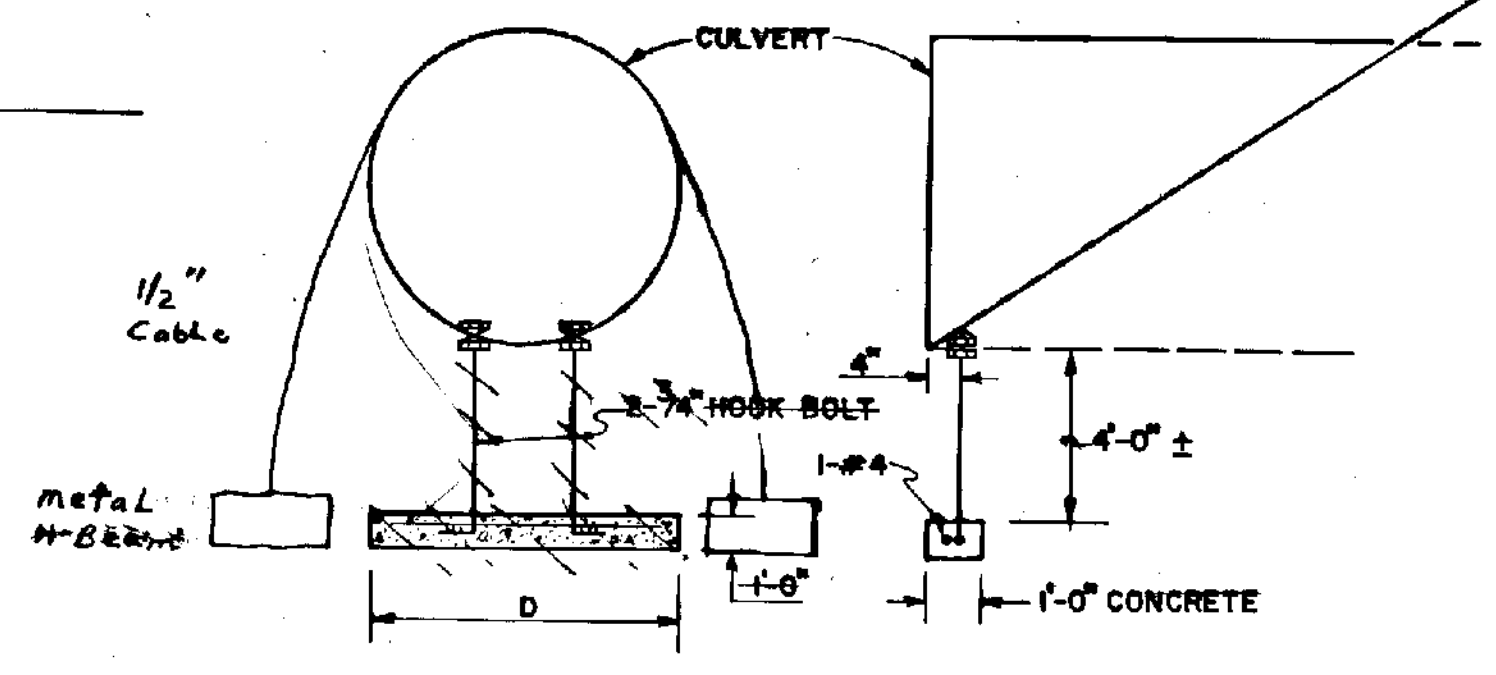
2'-0" (MIN) OF CLASS II RIPRAP. SEE SUMMARY TABLE, SHEET NO. 4



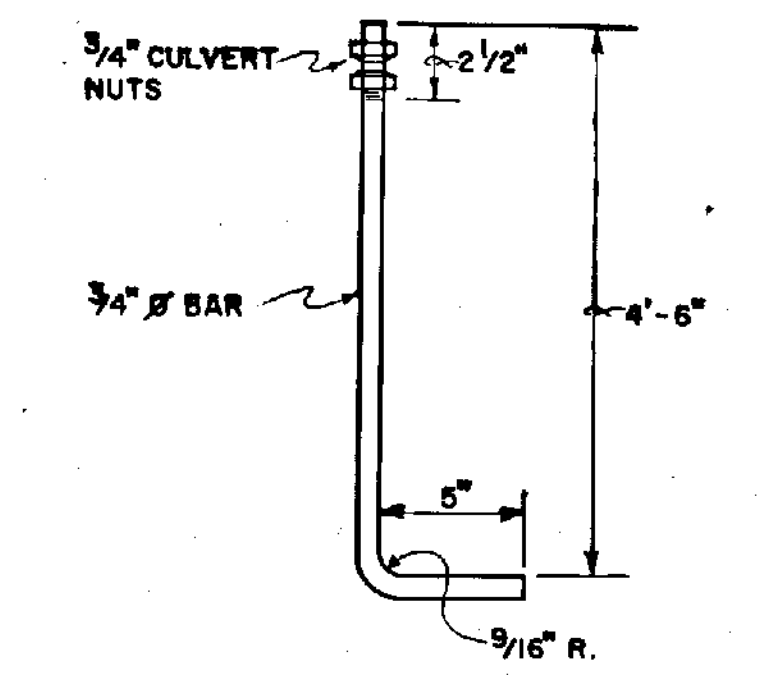
**"AsBuilt" STA. 252+84 TO "L" STA. 506+00**



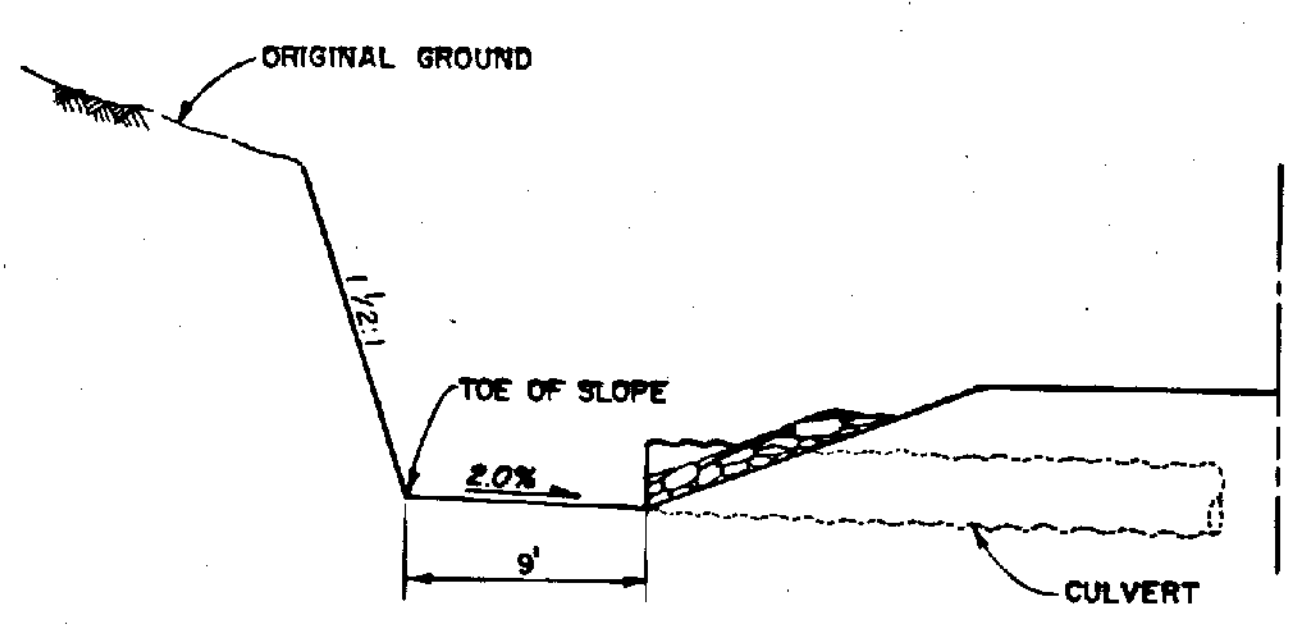
**CULVERT SKEW ANGLE**  
NO SCALE



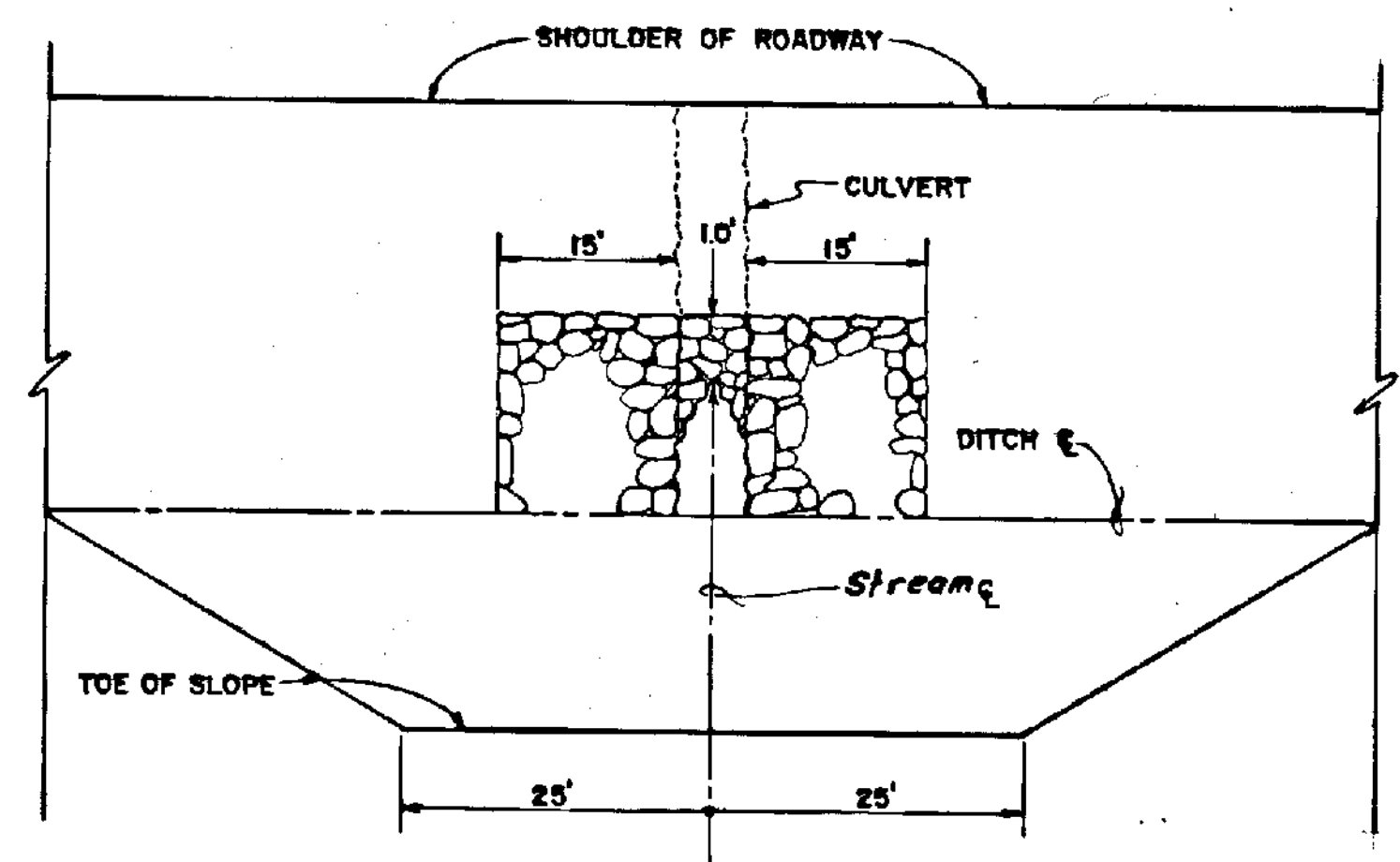
**CULVERT DEADMAN DETAIL**  
NO SCALE



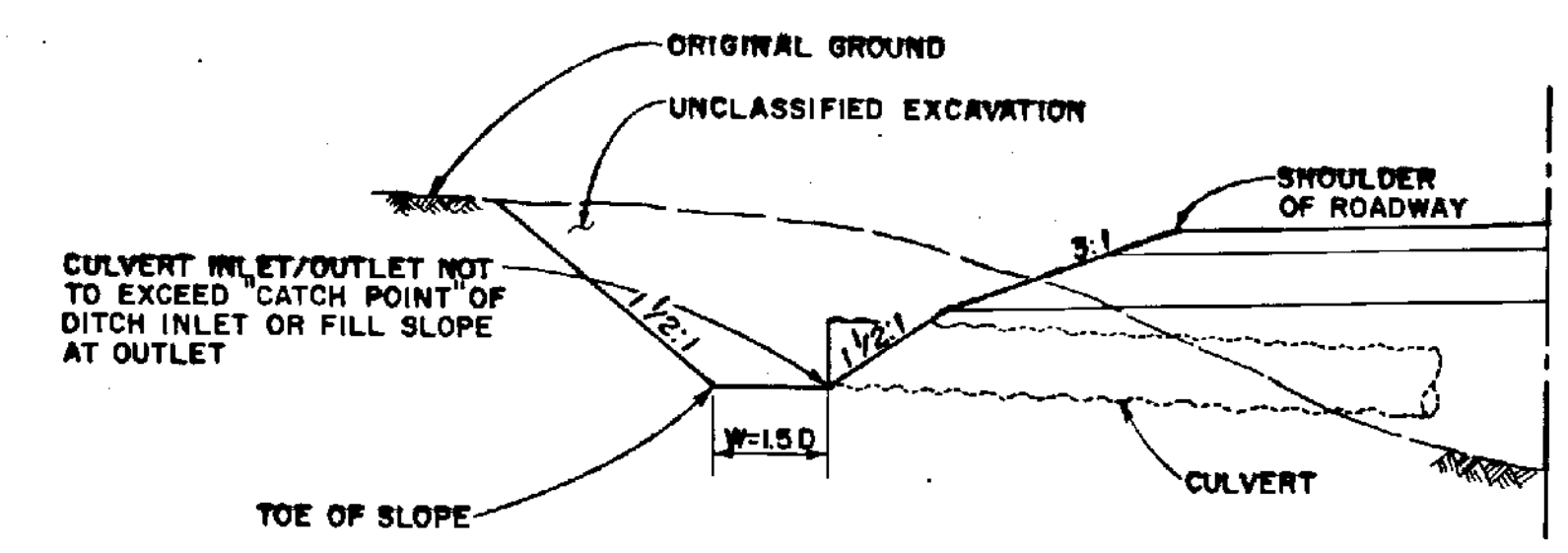
**HOOK BOLT DETAIL**  
NO SCALE



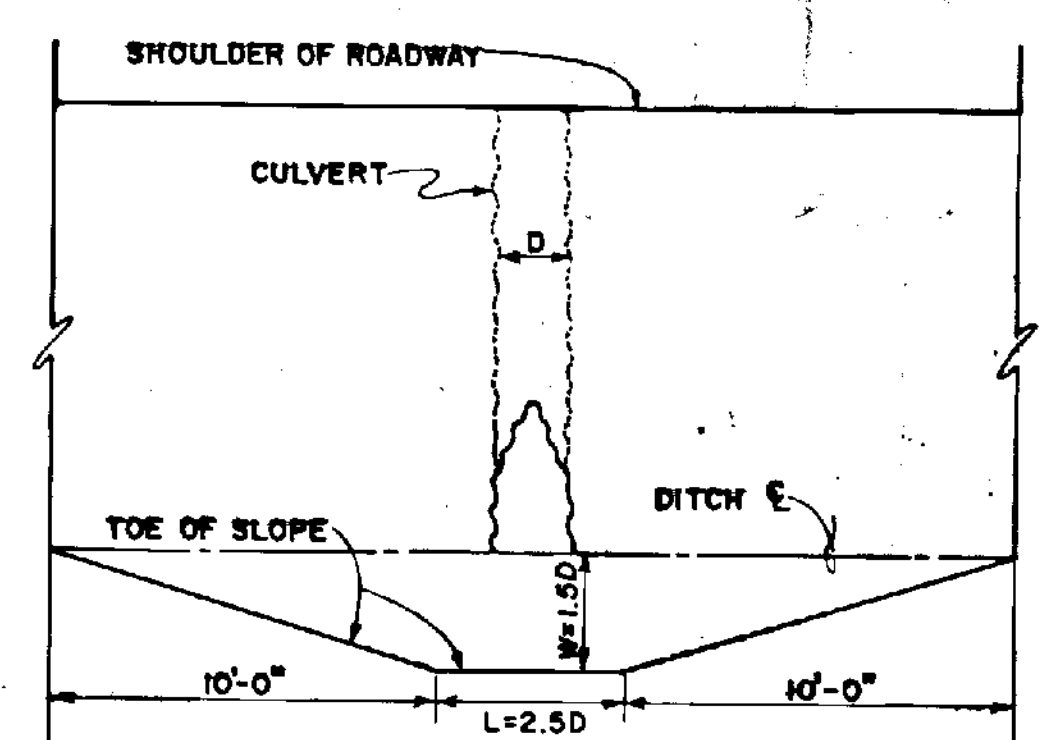
**TYPICAL SECTION**



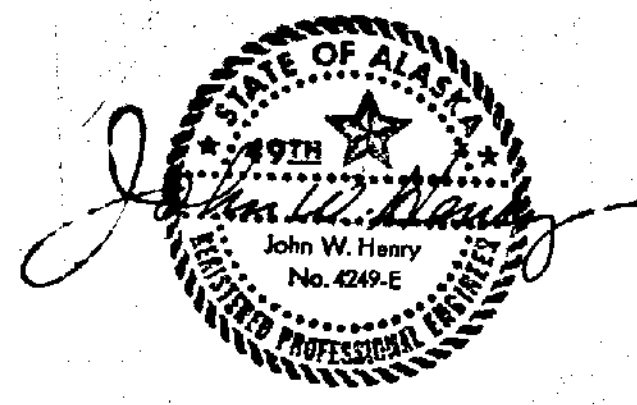
**PLAN VIEW**



**TYPICAL SECTION**



**PLAN VIEW**



**CULVERT INLET DETAIL**  
NO SCALE

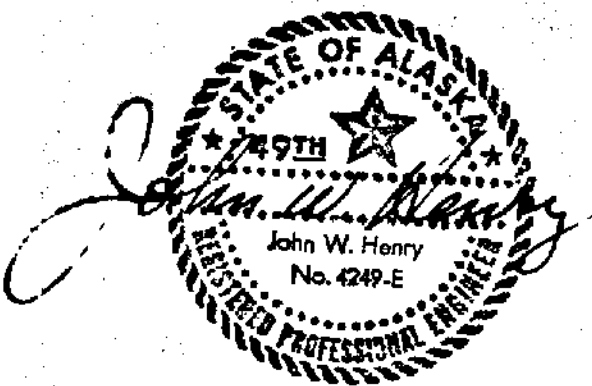
# ESTIMATE OF QUANTITIES

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	RS-0991 (4)	1988	3	11

## GENERAL NOTES

1. Grades & alignment shown on these plans are subject to minor revisions.
2. Culvert lengths & locations are approximate only & are subject to minor field revisions.
3. The clearing limits shall be a neat orderly line 15' beyond the slope limits of both cut & fill sections or to the right-of-way line, whichever is the lesser of the two.
4. Property corners/land monuments disturbed and/or destroyed by clearing and/or other construction operations shall be re-established by an Alaska Registered Land Surveyor to third order survey accuracy. A plat reflecting any such work shall be recorded within the first judicial district, Haines recording office, with a copy to the engineer.
5. Materials may be available from private land owners along the project route. If the contractor opts to use privately owned material sites, he or she should make all necessary arrangements for clearing, grubbing, stripping, royalty fees, & restoration with the respective owner(s).
6. The "L" centerline shown on the plan & profile sheets has been staked in survey work performed by State of Alaska, Department of Transportation & Public Facilities forces in 1978 & 1979. Restaking of that portion of the "L" centerline needed for construction will be required by the contractor. The "O" centerline shown on the plan & profile sheets denotes office designed route centerline. Staking of this centerline will be required by the contractor.
7. Seeding, pay item no. 618 (1), will be required on all fill slopes constructed with material other than rock, cut slopes other than rock & on all exposed surfaces of waste areas.
8. Superelevation transition length shall be 125' unless noted otherwise. Superelevation shall rotate on the inside shoulder.
9. One lane of traffic shall be maintained at all times. Detours around the work area shall be in accordance with the standard drawing C-03.01, two lane roadway - single lane closure, typical lane closure - short duration.
10. In order to reduce water quality impacts and impacts to migrating fish, fills within tidal areas will be placed at lower tidal stages, when the work area is dewatered.
11. The location of work required for Item 510 (1) slipout repair is approximate Sta. "As-built" 319+00 to Sta. "As-built" 320+25 3200 feet southeast of the B.O.P.

ITEM NO.	ITEM	UNIT	SHEET NUMBERS								TOTAL
			5	6	7	8	9	10	11	PHASE I	
109 (2)	DBE & WBE Adjustments	Cont. Sum									All Req'd.
201 (3A)	Clearing & Grubbing	Acre	0.97	0.88	1.33	1.24	1.39	1.46	0.27		7.54 <sup>12.42</sup>
202 (4)	Removal of Culvert Pipe	Linear Foot	170	268	288	227	140	110	0	170	1,373 <sup>1413</sup>
203 (3)	Unclassified Excavation	Cubic Yard	3,921	5,771	4,389	3,368	2,514	4,724	1,646		26,333 <sup>24,895</sup>
203 (6B)	Borrow	Ton	3,572	1,964	11,474	7,016	0	0	0		24,026 <sup>20,118</sup>
304 (1B)	Subbase, Grading B	Ton	2,366	2,759	3,022	3,434	2,911	2,715	851		18,058
304 (1E)	Subbase, Grading E	Ton	5,192	6,061	6,642	7,476	6,548	6,094	1,951		39,934 <sup>40,035</sup>
510 (1)	Slipout Repair	Lump Sum								All Req'd.	All Req'd.
602 (1) <small>(10-103-87)</small>	Structural Plate Pipe Corrugated Aluminum Pipe Diameter 84", Gauge 10/12	Linear Foot		16'							16' 36'
602 (2) <small>(10-103-87)</small>	Structural Plate Pipe Corrugated Aluminum Pipe Span 103", Rise 71", Gauge 10	Linear Foot					74'				74'
603 (9-18)	18" Corrugated Aluminum Pipe	Linear Foot					60	66	32		158' 372'
603 (9-24)	24" Corrugated Aluminum Pipe	Linear Foot	154	300	152	252	92	234	0		1,184' 1245'
603 (9-30)	30" Corrugated Aluminum Pipe	Linear Foot	116	48	210	56	54	0	0		484' 471'
603 (9-36)	36" Corrugated Aluminum Pipe	Linear Foot	0	0	54	98	0	50	0		202' 254'
603 (9-48)	48" Corrugated Aluminum Pipe	Linear Foot	0	50	56	58	0	0	0	170	334' 376'
603 (9-60)	60" Corrugated Aluminum Pipe	Linear Foot								70	70'
606 (4)	Removal & Reconstruction of Guardrail	Linear Foot								450'	450'
606 (8)	Guardrail Relocation	Linear Foot									300'
611 (1)	Riprap, Class II	Cubic Yard	719	765	939	1,209	32	110	0		3,774 <sup>5774</sup>
614 (1)	Survey Monuments	Each	0	0	2	0	0	1	1		4 0
614 (2)	Monument Cases	Each	0	0	2	0	0	1	1		4 0
615 (1)	Standard Sign	Square Foot	0	0.75	0	0.75	0	0.75	7.5		9.75'
618 (1)	Seeding	Acre	0.06	0.69	0.81	0.75	0.70	0.76	0.20		3.97 <sup>10.94</sup>
639 (1)	Residence Driveways	Each	0	0	0	0	2	3	1		6 13 15
640 (1)	Mobilization & Demobilization	Lump Sum									All Req'd.
641 (1)	Temporary Erosion & Pollution Control	Hour									All Req'd.
642 (1)	Construction Surveying	Lump Sum									All Req'd.
642 (2)	Three Person Survey Party	Hour									10 11
643 (2)	Traffic Maintenance	Lump Sum									All Req'd.
643 (4)	Construction Sign	Each/Day									1,440 <sup>1563</sup>
643 (5)	Type II Barricade	Each/Day									2,880 <sup>1143</sup>
643 (7)	Traffic Cone	Each/Day									9,000 0
643 (15)	Flagging	Man Hours									1,600 <sup>1631</sup>
643 (18)	Watering	M. Gal.									20 0



### CULVERT SUMMARY

STATION	18" CORRUGATED ALUMINUM PIPE	24" CORRUGATED ALUMINUM PIPE	30" CORRUGATED ALUMINUM PIPE	36" CORRUGATED ALUMINUM PIPE	48" CORRUGATED ALUMINUM PIPE	60" CORRUGATED ALUMINUM PIPE	84" CORRUGATED ALUMINUM PIPE	103" x 71" STRUCTURAL PLATE PIPE - ARCH	SEE DRAINAGE NOTES	CULVERT REMOVAL & DISPOSAL
"0" 353+89			58'							24" x 40'
"0" 356+37		50' 52'								18" x 32'
"0" 358+77										18" x 37'
"0" 360+60			58'							24" x 29'
"0" 360+43									1, 2	
"0" 362+26	50' 52'									18" x 32'
"0" 363+55		50'								
"0" 369+37										18" x 32'
"L" 374+95					36' 16'				1, 3, 5	
"0" 378+33	55' 58'									18" x 40'
"0" 377+00										12" x 40'
"0" 381+42	65' 80'				68' 50'				1, 2, 3, 5	36" x 29'
"0" 384+72										30" x 30'
"0" 385+27			0 48'							24" x 35'
"0" 386+96	54'									18" x 29'
"0" 388+82										
"0" 389+50	60' 58'									18" x 31'
"0" 390+62										18" x 34'
"0" 393+48	54' 50'									24" x 28'
"0" 397+40										
"0" 397+80			54' 48'							
"0" 399+36									1, 2	
"0" 399+64			61' 48'							24" x 40'
"0" 401+00			75' 66'							18" x 36'
"0" 402+60										18" x 32'
"0" 402+70	54' 58'									30" x 28'
"0" 405+00				54'						18" x 34'
"0" 409+00										
"0" 409+70	52' 48'								1, 2	
"0" 410+57			53' 48'							24" x 40'
"0" 412+25										
"0" 418+00	30'									36" x 50'
"0" 413+00					70' 56'					
"0" 419+00	52' 46'									18" x 40'
"0" 422+63	56' 54'				60' 58'				1, 3, 5	36" x 40'
"0" 425+50										18" x 40'
"0" 427+05										
"0" 427+85	50' 46'									
"0" 430+31			52'						1, 2	
"0" 433+07			46'						1, 2	
"0" 434+40	54' 52'									18" x 31'
"0" 438+02	50'									18" x 45'
"0" 442+67			56'							18" x 31'
"0" 444+50	48' 50'									
"0" 449+26	46' 48'									
"0" 455+59	30'								4	
"0" 460+61					74'				3, 6	72" x 100'
"0" 465+80	30'								4	
"0" 469+06			56' 54'							18" x 40'
"0" 472+00			46' 74'							
"0" 476+34			69' 52'							18" x 35'
"0" 476+96										
"0" 474+65	30'								4	
"0" 478+06	0' 30'									
"0" 480+50	53' 76'									
"0" 482+88	60' 74'									24" x 31'
"0" 487+00	36' 30'								4	
"0" 488+86			0 74'							
"0" 496+65					50'					30" x 44'
"0" 497+90	50' 78'									
"0" 501+10	32' 91'								4	
"0" 473+60	42'									
"0" 486+10	30'									
"0" 487+65	18'									
"0" 496+25	41'									
"Asbuilt" 271+70					70'				3, 5, 7	30" x 100'
" " 320+96					70'				3, 5, 7	36" x 90'
" " 346+70										
"0" 505+37		47'								

### MONUMENT SUMMARY

STATION	LOCATION	POINT	* MON.
"0" 403+94.90	CL	PT.	- 1
"0" 409+52.80	CL	PC.	- 1
"0" 497+58.31	CL	PT.	- 1
"0" 503+00.56	CL	PC.	- 1

\* Monument case to be furnished at each location.

### RIPRAP, CLASS II SUMMARY

FROM	TO	OFFSET	LENGTH	REMARKS
352+53	359+24	Rt	671'	750'
360+25	364+43	Rt	331'	450'
376+25	382+50	Rt	625'	645'
386+50	391+44	Rt	494'	525'
400+37	405+27	Rt	490'	470'
407+27	412+41	Rt	564'	658'
420+07	424+09	Rt	402'	550'
427+10	432+12	Rt	502'	
426+75	432+24			599'
435+35	440+43	Rt	1108'	1050'
474+20	476+59	Rt	239'	
473+80	477+00	Rt		320'
497+10	499+00	Rt	190'	Shoulder not widened this area
351+50	352+34	Lt	84'	

### GUARDRAIL REMOVAL & RECONSTRUCTION SUMMARY

STATION TO STATION	LENGTH	REMARKS
"Asbit" 322+00 to "Asbit" 326+50	450'	As directed by Engineer
NOTE: Guardrail relocation is located Southeast of the B.O.P. along Lutak Road.		

### DRIVEWAY NOTES

1. Driveway locations are approximate only and are subject to minor field revisions.
2. Driveway entrances shall be constructed with the same materials that are used to surface the typical roadway section.

### RESIDENTIAL DRIVEWAYS

STATION	OFFSET	Δ RT.	Δ LT.	TYPE	WIDTH	CULVERT
"L" 455+59	Lt.			Residential	14'	18" x 30'
"L" 465+80	Lt.			Residential	14'	18" x 30'
"0" 478+00	Rt.			Residential	14'	18" x 30'
"0" 487+00	Rt.			Residential	20'	18" x 36'
"0" 496+18	Rt.			Residential	16'	None
"0" 501+10	Lt.			Residential	16'	18" x 32' 91"
"L" 379+25	Lt.			Residential	14'	None
"0" 418+00	Lt.			Residential	14'	18" x 30'

### GENERAL SIGN NOTES:

1. Sign locations are approximate only & are subject to revision.
2. All sign posts shall be telescoping perforated galvanized steel, the 2" size shall be used above ground & the 2 1/4" shall be used below ground.
3. Sign post length includes the one foot telescope inside the base. Lengths are for estimate only. Actual lengths may vary.

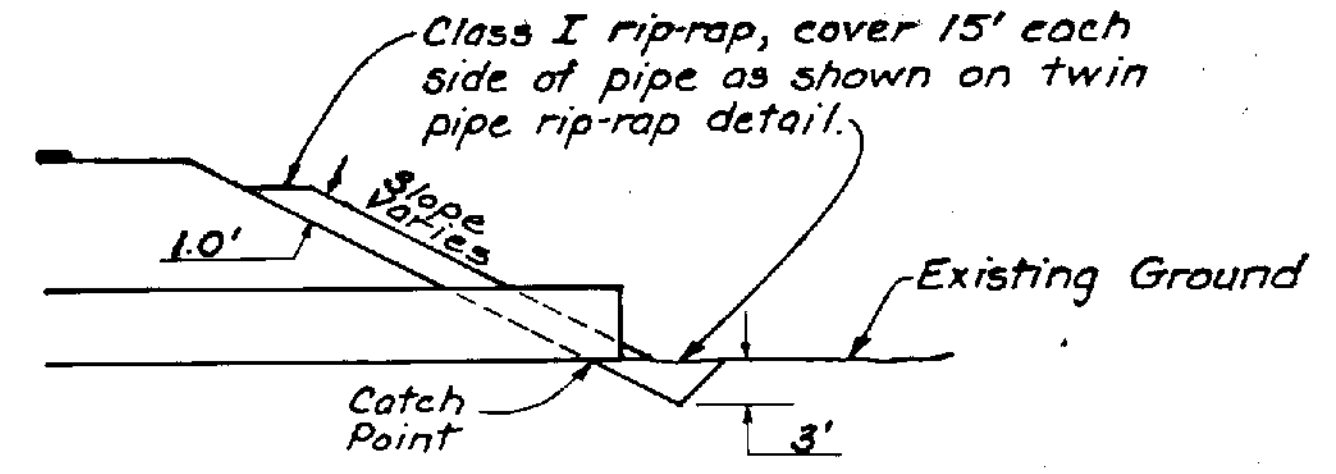
### STANDARD SIGN SUMMARY

STATION	OFFSET FROM	CODE NO.	LEGEND	AREA SQ. FT.	POST		EMBED.
					SIZE	LENGTH	
"L" 374+94	25' Rt.	M10-2	7	0.75	2"	13'	30" -
"0" 427+74	28' Rt.	M10-2	8	0.75	2"	16'	30" -
"0" 481+47	25' Rt.	M10-2	9	0.75	2"	11'	30" -
"0" 504+20	25' Lt.	R2-1	SPEED LIMIT 35 MPH	7.5	2"	12'	42" -

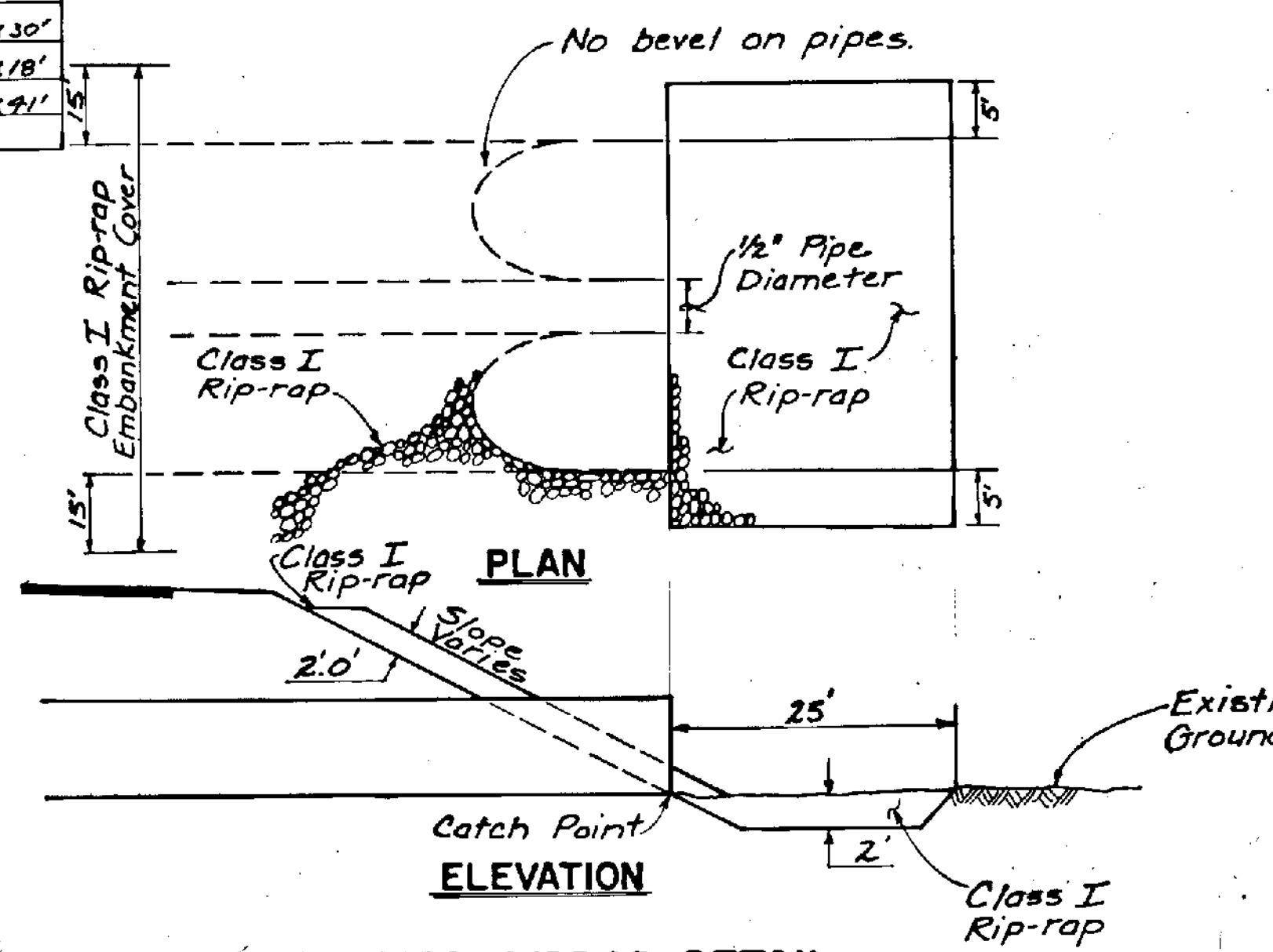
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	RS-0991 (4)	1988	4	11

### DRAINAGE NOTES

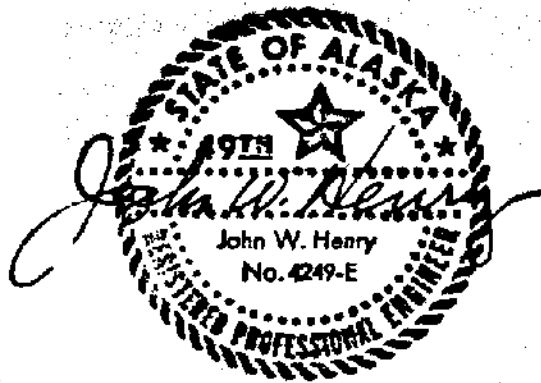
1. Where "clean inlet" is called out, the creek shall be cleared for a minimum distance of 50' upstream from the roadway centerline and a width of 10' either side of the meander line or as directed by the engineer.
2. Where "special inlet" is called out, construct a special culvert inlet as shown in the detail on sheet 2.
3. Where "riprap" is called out, a riprap type head wall shall be provided and installed as end protection. (See sheet 2 for detail).
4. Where "Driveway" is called out, the culvert shall be placed in the ditch line beneath the driveway (typ).
5. All pipes 48" and larger shall be installed with a deadman at both ends as detailed on sheet 2.
6. Installation of the 103" x 71" 6-PPA @ Sta. 460+61 shall include a Type I headwall at the inlet end and deadman at the outlet.
7. The pipes located at Sta. "As-built" 271+00, 320+96 and 346+70 are located southeast of the B.O.P. along Lutak Road.



SINGLE PIPE RIPRAP DETAIL  
NO SCALE



TWIN PIPE RIPRAP DETAIL  
NO SCALE



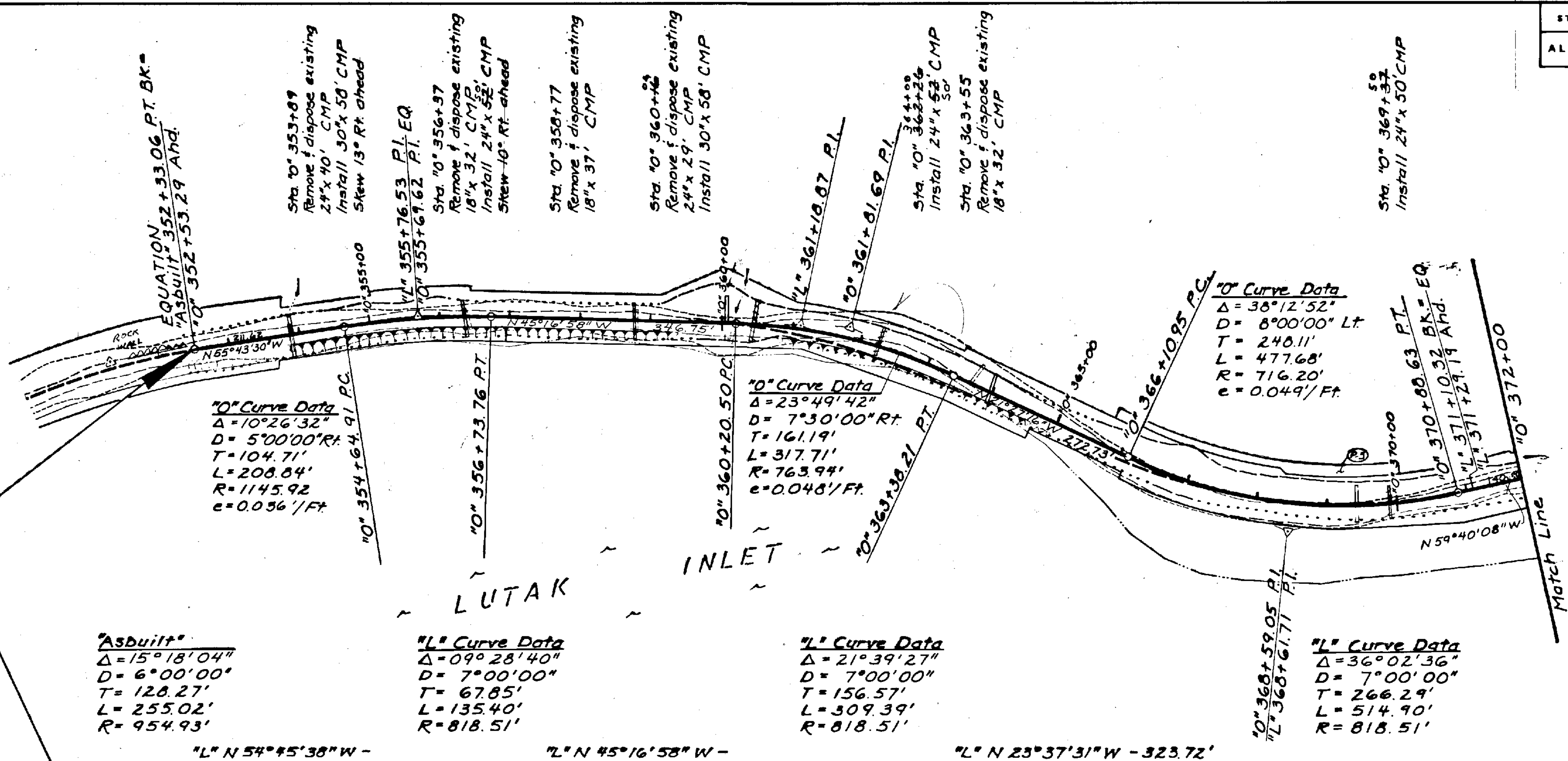
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOT. SHEETS
ALASKA	RS-0991 (4)	1988	5	11

**HORIZONTAL CONTROL**

THE BASIS OF BEARING WAS DETERMINED FROM THE LINE OF SIGHT BETWEEN U.S.G.S. (1943) MONUMENTS "ZIS" TO "LUT" WITH A BEARING OF S. 44° 23' 11" E. THE SURVEY COURSE FROM "LUT" TO THE B.O.P. WAS MEASURED AS S. 46° 36' 29" W. ~ 4,972.9777.

**ADDITIONAL SYMBOLS**

- MEAN HIGH WATER
- EXISTING SLOPE LIMITS
- PROPOSED LIMIT OF FILL SLOPE
- PROPOSED LIMIT OF CUT SLOPE
- EXISTING ROADWAY



**BEGIN PROJECT**  
"O" STA. 352+53.29

**"Asbuilt" Curve Data**  
 $\Delta = 15^\circ 18' 04''$   
 $D = 6^\circ 00' 00''$   
 $T = 128.27'$   
 $L = 255.02'$   
 $R = 954.93'$

**"L" Curve Data**  
 $\Delta = 09^\circ 28' 40''$   
 $D = 7^\circ 00' 00''$   
 $T = 67.85'$   
 $L = 135.40'$   
 $R = 818.51'$

**"L" Curve Data**  
 $\Delta = 21^\circ 39' 27''$   
 $D = 7^\circ 00' 00''$   
 $T = 156.57'$   
 $L = 309.39'$   
 $R = 818.51'$

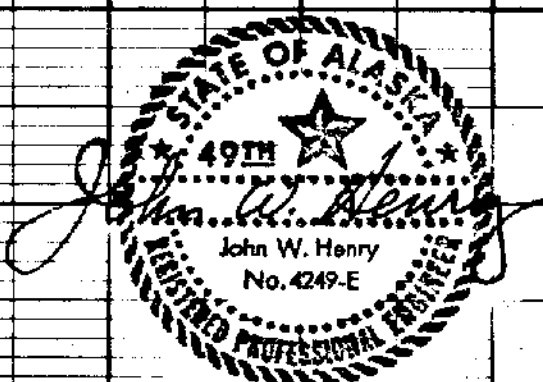
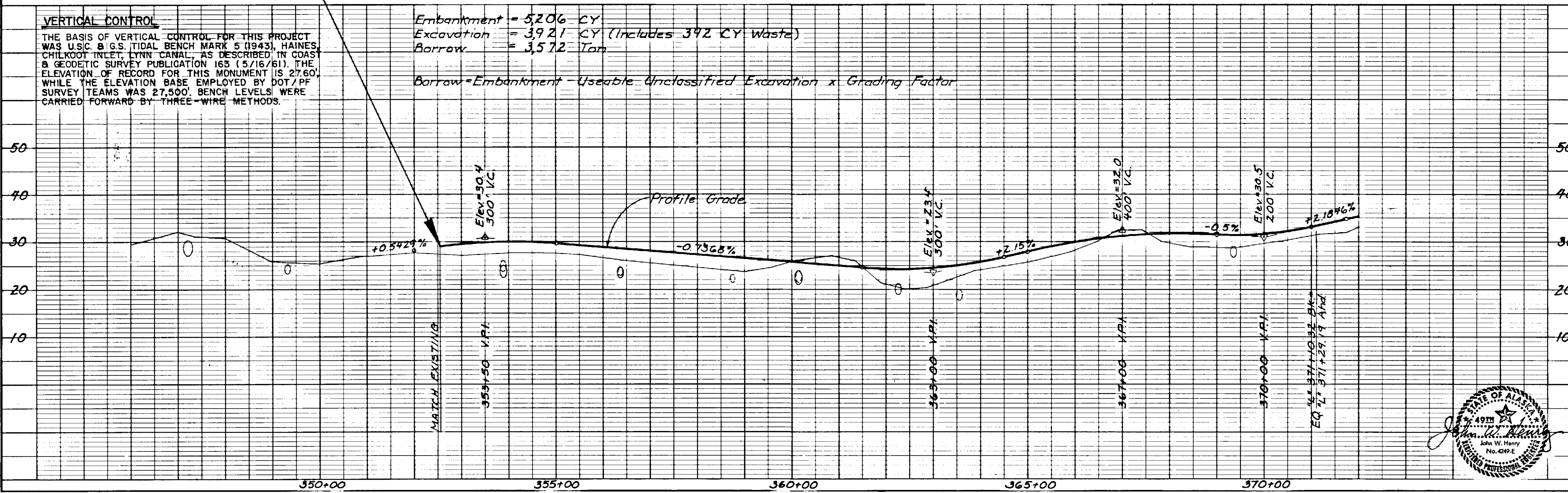
**"L" Curve Data**  
 $\Delta = 36^\circ 02' 36''$   
 $D = 7^\circ 00' 00''$   
 $T = 266.29'$   
 $L = 514.90'$   
 $R = 818.51'$

**VERTICAL CONTROL**

THE BASIS OF VERTICAL CONTROL FOR THIS PROJECT WAS U.S.C. & G.S. TIDAL BENCH MARK 5 (1943), HAINES, CHILKOOT INLET, LYNN CANAL, AS DESCRIBED IN COAST & GEODETIC SURVEY PUBLICATION 163 (5/16/61). THE ELEVATION OF RECORD FOR THIS MONUMENT IS 27.60', WHILE THE ELEVATION BASE EMPLOYED BY DOT/PF SURVEY TEAMS WAS 27.500'. BENCH LEVELS WERE CARRIED FORWARD BY THREE-WIRE METHODS.

Embankment = 5206 CY  
 Excavation = 3921 CY (Includes 392 CY Waste)  
 Borrow = 3,572 Ton

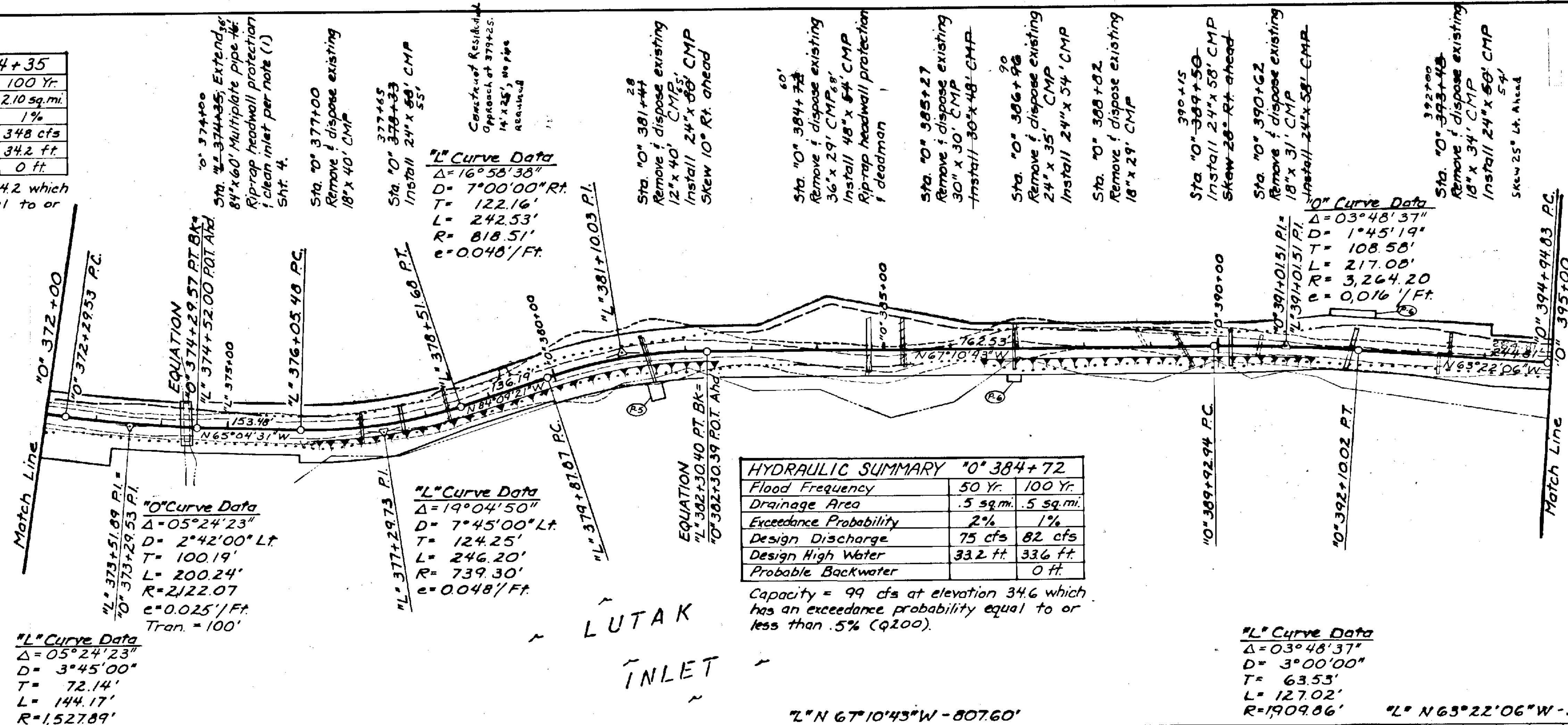
Borrow = Embankment - Usable Unclassified Excavation x Grading Factor



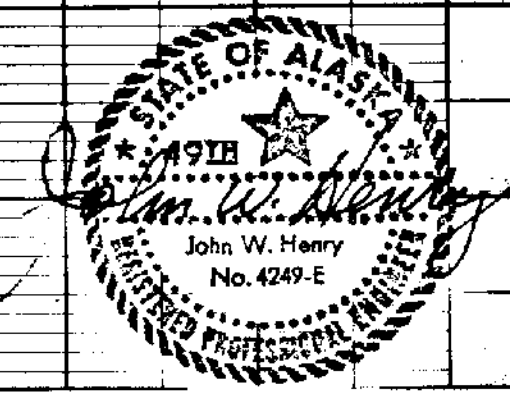
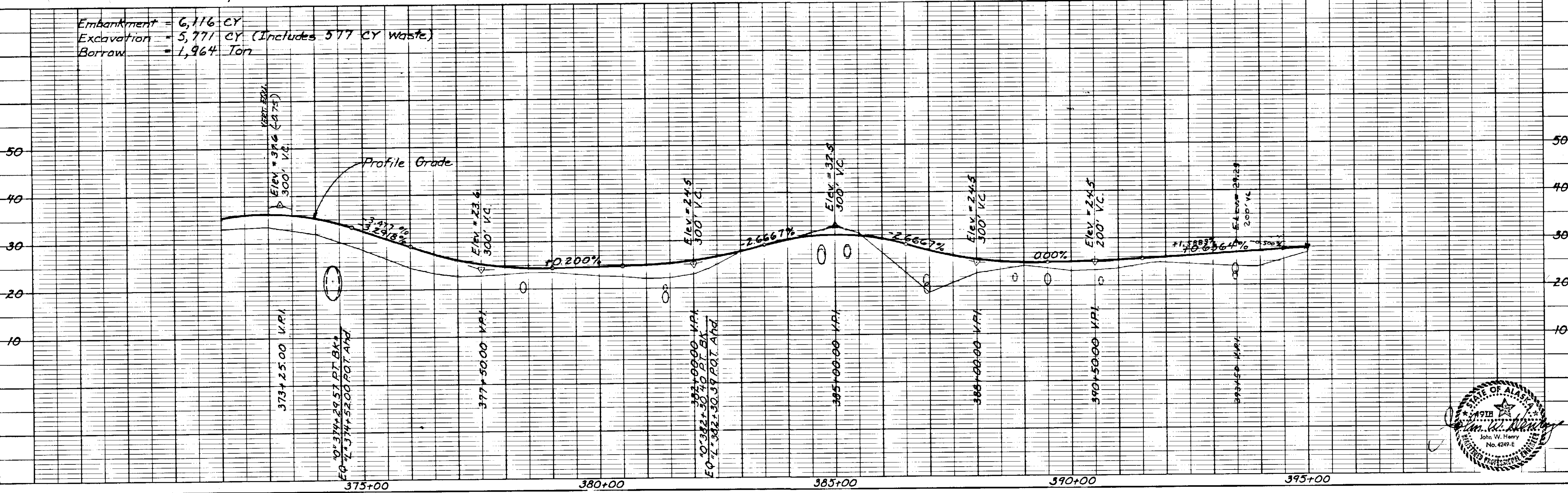
**HYDRAULIC SUMMARY 10" 374+35**

Flood Frequency	50 Yr.	100 Yr.
Drainage Area	2.10 sq.mi.	2.10 sq.mi.
Exceedance Probability	2%	1%
Design Discharge	316 cfs	348 cfs
Design High Water	33.5 ft	34.2 ft
Probable Backwater		0 ft.

Capacity = 350 cfs at elevation 34.2 which has an exceedance probability equal to or less than 1% (Q100).



Embankment = 6,116 CY  
 Excavation = 5,771 CY (Includes 577 CY Waste)  
 Borrow = 1,964 Ton



Superelevation Transition Note:

Sta. 0+397+74.11	Begin Transition
Sta. 0+398+95.72	Begin Full Super
Sta. 0+400+15.94	End Full Super
Sta. 0+401+40.94	End Transition, R Lane
Sta. 0+401+24.65	.01% Crown
Sta. 0+401+08.35	Begin Transition, L Lane
Sta. 0+402+33.35	Begin Full Super
Sta. 0+403+53.28	End Full Super
Sta. 0+404+78.28	End Transition
Sta. 0+408+69.43	Begin Transition
Sta. 0+409+94.43	Begin Full Super
Sta. 0+411+66.47	End Full Super
Sta. 0+412+91.47	End Transition, L Lane

Sta. 0+397+40  
Install 30"x 50" CMP

Sta. 0+397+80  
Remove & dispose existing 24"x 28" CMP

Sta. 0+399+36  
Install 30"x 50" CMP & Construct special culvert Inlet "Ahead"

Sta. 0+399+64  
Remove & dispose existing 24"x 40" CMP

Sta. 0+400+00  
Remove & dispose existing 18"x 36" CMP. Install 24"x 56" CMP Skew 15° Rt. ahead

Sta. 0+402+70  
Remove & dispose existing 18"x 32" CMP. Install 24"x 56" CMP

Sta. 0+405+00  
Remove & dispose existing 30"x 28" CMP. Install 36"x 52" CMP Skew 25° Lt. ahead

Install centerline survey monuments Sta. 0+403+00 to Sta. 0+408+52.80 P.C. This contract

Sta. 0+409+00  
Remove & dispose existing 18"x 34" CMP

Sta. 0+409+47  
Install 24"x 40" CMP

Sta. 0+410+57  
Install 30"x 50" CMP & construct special culvert inlet "Ahead"

Sta. 0+412+25  
Remove & dispose existing 24"x 40" CMP

Sta. 0+413+90  
Remove & dispose existing 36"x 50" CMP. Install 48"x 56" CMP Skew 15° Lt. ahead Rip-rap headwall Protection & deadman

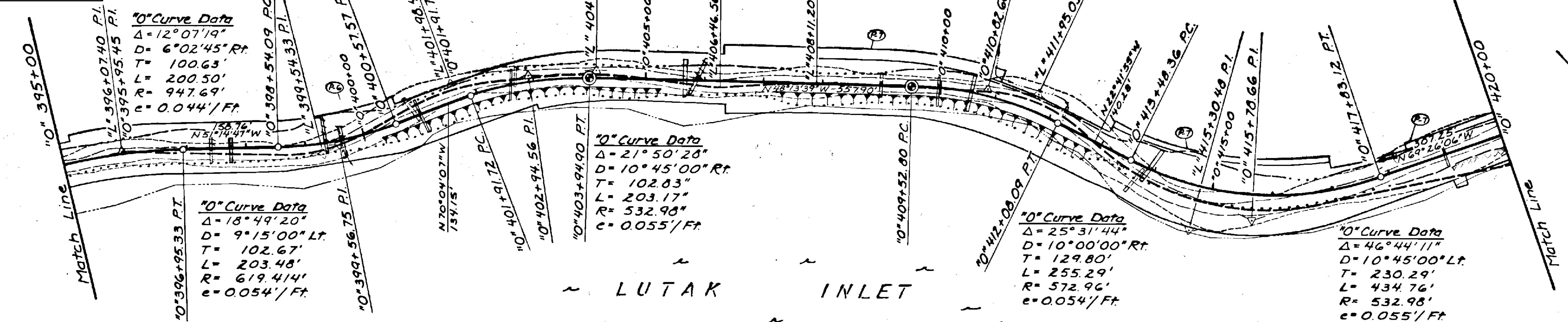
Sta. 0+414+35 to Sta. 0+415+00 ± Lt.  
Construct 7'± Backslope 1:1

Sta. 0+419+00  
Install 24"x 46" CMP

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	RS-0991 (4)	1988	7	11

Superelevation Transition Cont.:

Sta. 0+412+78.23	.01% Crown
Sta. 0+412+64.99	Begin Transition, R Lane
Sta. 0+413+89.99	Begin Full Super
Sta. 0+417+41.50	End Full Super
Sta. 0+418+66.50	End Transition



<b>12° Curve Data</b> $\Delta = 14^\circ 08' 50''$ $D = 8^\circ 30' 00''$ $T = 83.64'$ $L = 166.44'$ $R = 674.07'$	<b>12° Curve Data</b> $\Delta = 29^\circ 22' 03''$ $D = 21^\circ 30' 00''$ $T = 69.83'$ $L = 136.59'$ $R = 266.49'$	<b>12° Curve Data</b> $\Delta = 23^\circ 34' 50''$ $D = 18^\circ 30' 00''$ $T = 64.65'$ $L = 127.46'$ $R = 309.71'$	<b>12° Curve Data</b> $\Delta = 12^\circ 19' 30''$ $D = 11^\circ 30' 00''$ $T = 53.80'$ $L = 107.18'$ $R = 498.22'$	No Curve	No Curve	<b>12° Curve Data</b> $\Delta = 39^\circ 31' 06''$ $D = 20^\circ 30' 00''$ $T = 100.40'$ $L = 192.77'$ $R = 279.49'$	<b>12° Curve Data</b> $\Delta = 53^\circ 48' 54''$ $D = 13^\circ 40' 00''$ $T = 212.76'$ $L = 393.77'$ $R = 419.24'$
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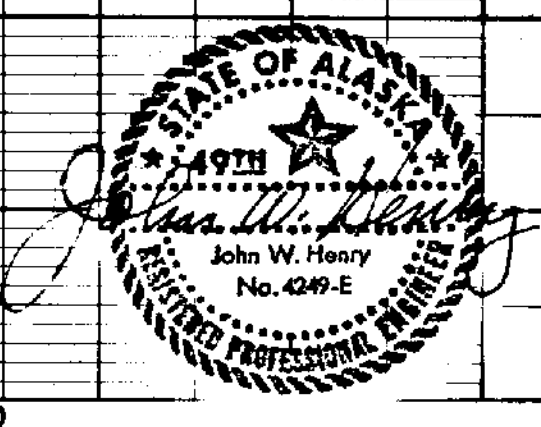
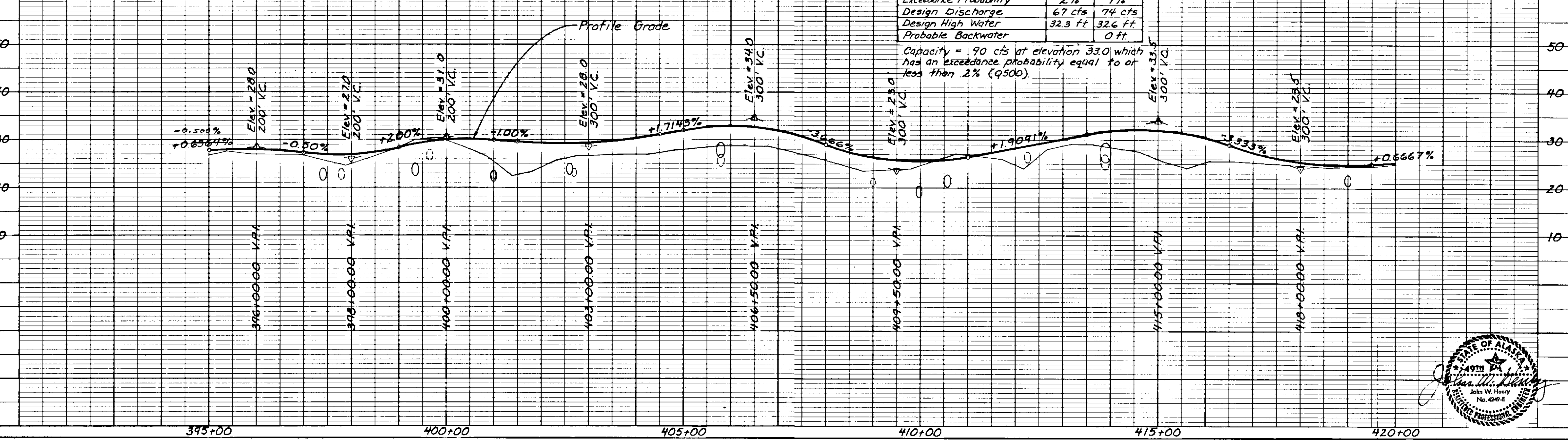
"L" N 49° 13' 16" W - 194.30'    "L" N 78° 35' 19" W - 112.73'    "L" N 55° 00' 29" W - 124.49'    "L" N 42° 40' 59" W - 153.61'    "L" N 53° 08' 17" W - 164.64'    "L" N 47° 00' 47" W - 283.43'    "L" N 07° 29' 41" W - 30.30'    "L" N 61° 18' 35" W - 1,448.50'

Embankment = 9,337 CY  
 Excavation = 4,389 CY (Includes 439 CY Waste)  
 Borrow = 11,474 Tan

HYDRAULIC SUMMARY "0" 413+90

Flood Frequency	50 Yr.	100 Yr.
Drainage Area	.45 sq. mi.	.45 sq. mi.
Exceedance Probability	2%	1%
Design Discharge	67 cfs	74 cfs
Design High Water	32.3 ft	32.6 ft
Probable Backwater		0 ft.

Capacity = 90 cfs at elevation 33.0 which has an exceedance probability equal to or less than 2% (Q500).



Sta. "O" 422+63  
Remove & dispose existing  
18" x 40' CMP  
Install 24" x 54' CMP

Sta. "O" 425+50  
Remove & dispose existing  
36" x 40' CMP  
Install 48" x 54' CMP  
Rip-rap headwall  
Protection & clean inlet  
per note (1) Sheet 4  
Provide special ditch  
at outlet & install deadman

Sta. "O" 427+05  
Remove & dispose existing  
18" x 40' CMP  
Install 24" x 54' CMP

Sta. "O" 430+34  
Install 36" x 54' CMP  
55'

432+90  
433+07  
Install 36" x 48' CMP  
& construct special  
culvert inlet "Back"

435+50  
Sta. "O" 434+48  
Remove & dispose existing  
18" x 31' CMP  
Install 24" x 54' CMP  
54'

Sta. "O" 438+02  
Remove & dispose existing  
18" x 45' CMP  
Install 24" x 50' CMP

Sta. "O" 442+67  
Remove & dispose existing  
18" x 31' CMP  
Install 30" x 56' CMP

Sta. "O" 444+50  
Install 24" x 54' CMP  
48'

"O" Curve Data  
 $\Delta = 12^\circ 08' 25"$   
 $D = 6^\circ 03' 00" \text{ Rt.}$   
 $T = 100.71'$   
 $L = 200.67'$   
 $R = 947.04'$   
 $e = 0.044'/\text{ft.}$

"O" Curve Data  
 $\Delta = 16^\circ 57' 24"$   
 $D = 8^\circ 26' 00" \text{ Rt.}$   
 $T = 101.27'$   
 $L = 201.07'$   
 $R = 679.40'$   
 $e = 0.051'/\text{ft.}$

"O" Curve Data  
 $\Delta = 08^\circ 31' 35"$   
 $D = 4^\circ 15' 00" \text{ Lt.}$   
 $T = 100.50'$   
 $L = 200.62'$   
 $R = 1,348.14'$   
 $e = 0.037'/\text{ft.}$

"O" Curve Data  
 $\Delta = 56^\circ 42' 08"$   
 $D = 8^\circ 00' 00" \text{ Rt.}$   
 $T = 386.46'$   
 $L = 708.78'$   
 $R = 716.20'$   
 $e = 0.050'/\text{ft.}$

	50 Yr.	100 Yr.
Flood Frequency	50 Yr.	100 Yr.
Drainage Area	45 sq.mi.	45 sq.mi.
Exceedance Probability	2%	1%
Design Discharge	67 cfs	74 cfs
Design High Water	29.7 ft.	30 ft.
Probable Backwater		0 ft.

Capacity = 95 cfs at elevation 31.2 which has an exceedance probability equal to or less than .2% (Q500).

"L" Curve Data  
 $\Delta = 22^\circ 39' 25"$   
 $D = 39^\circ 15' 00"$   
 $T = 29.25'$   
 $L = 57.73'$   
 $R = 145.98'$

"L" Curve Data  
 $\Delta = 10^\circ 12' 42"$   
 $D = 12^\circ 40' 00"$   
 $T = 40.42'$   
 $L = 80.62'$   
 $R = 452.34'$

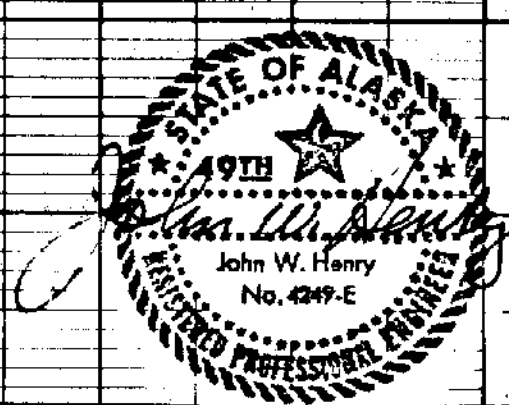
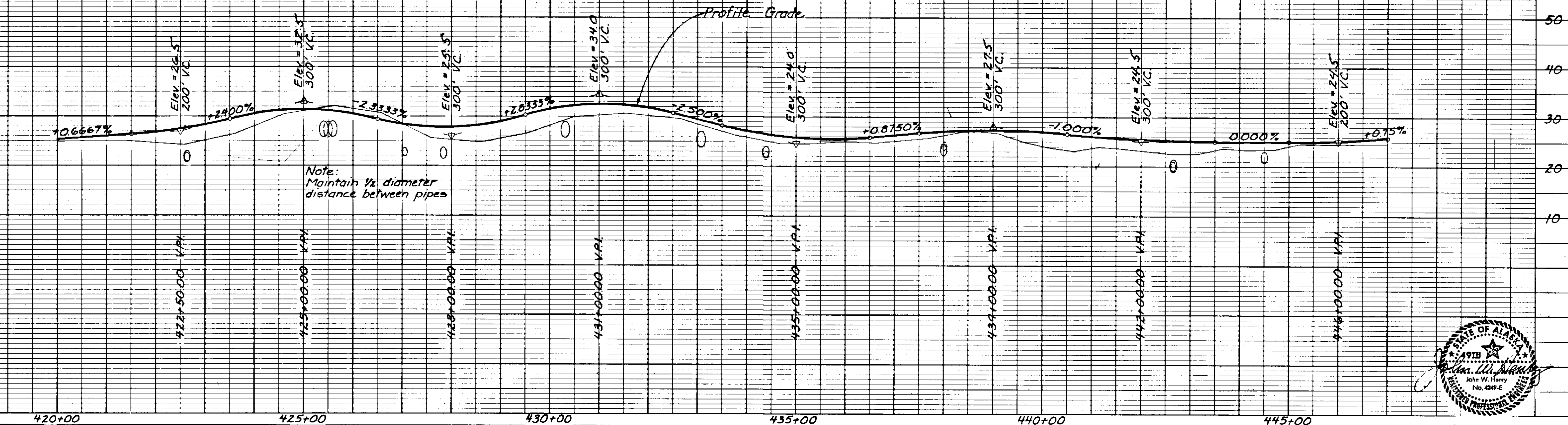
"L" Curve Data  
 $\Delta = 60^\circ 29' 16"$   
 $D = 6^\circ 30' 00"$   
 $T = 513.93'$   
 $L = 930.58'$   
 $R = 881.47'$

"L" N 61°18'35"W - 1,448.50'

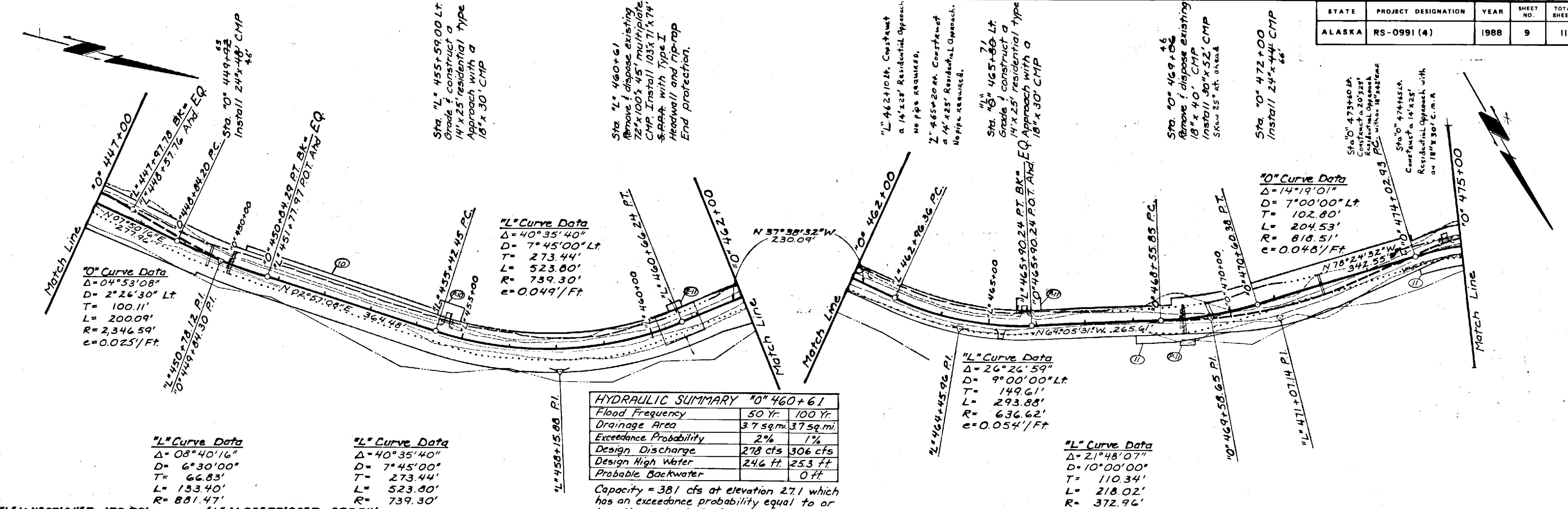
"L" N 58°39'10"W - 258.03'

"L" N 48°51'52"W - 310.80'

Embankment = 7,842 CY  
Excavation = 3,368 CY (Includes 337 CY Waste)  
Barrow = 7,016 Ton  
Note: 1,517 CY Useable Unclassified Excavation from Sheet 10



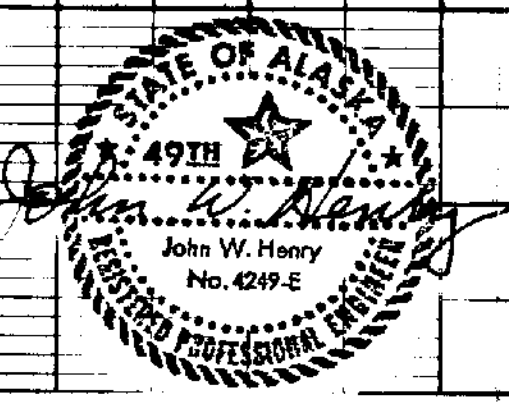
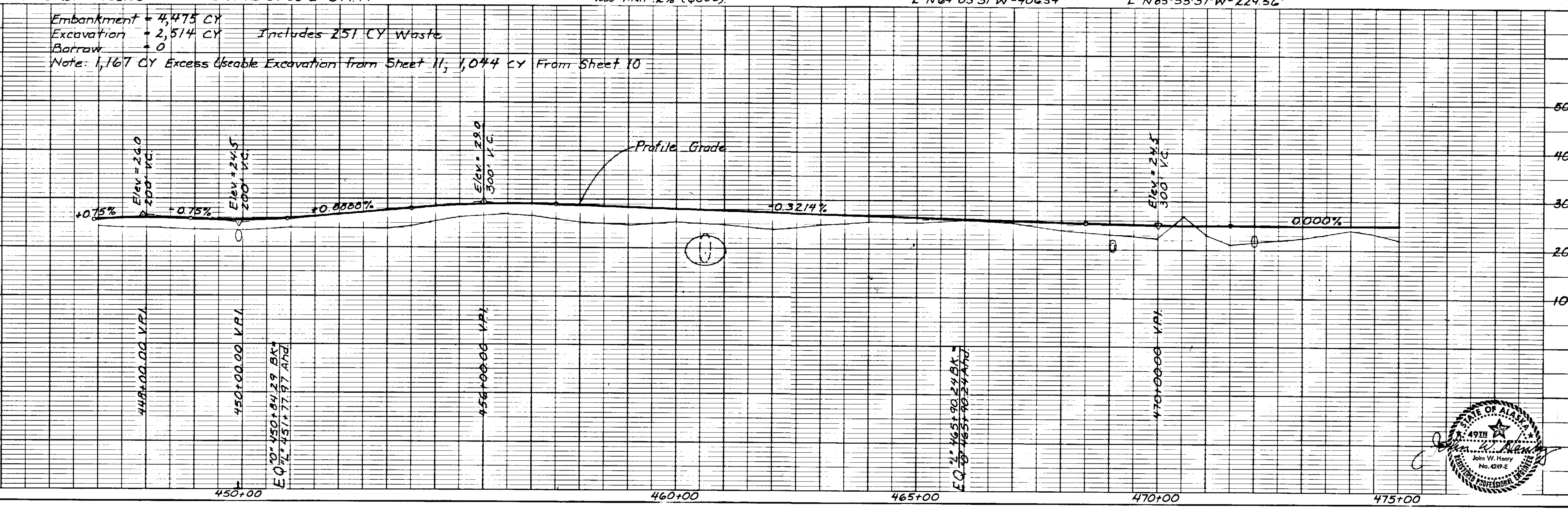


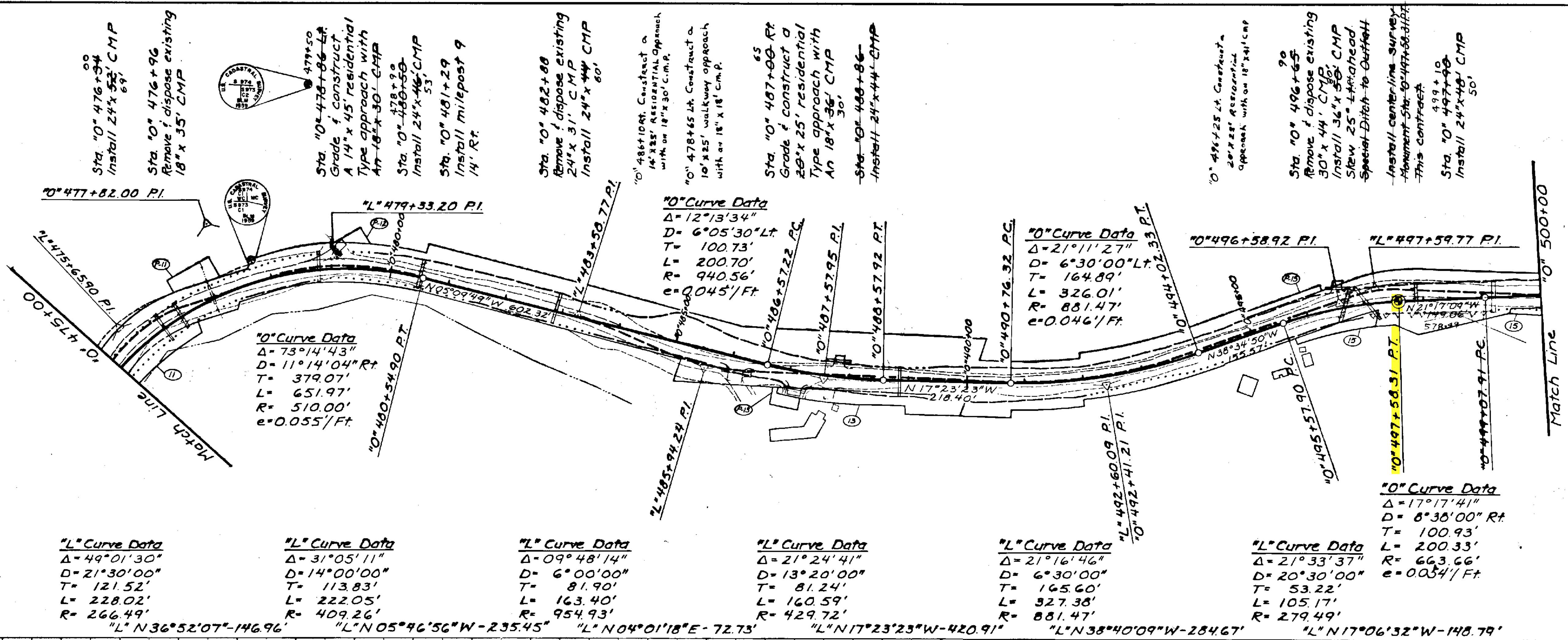


**HYDRAULIC SUMMARY 10' 460+61**

Flood Frequency	50 Yr.	100 Yr.
Drainage Area	3.7 sq. mi.	3.7 sq. mi.
Exceedance Probability	2%	1%
Design Discharge	278 cfs	306 cfs
Design High Water	24.6 ft.	25.3 ft.
Probable Backwater		0 ft.

Capacity = 381 cfs at elevation 27.1 which has an exceedance probability equal to or less than .2% (Q500).

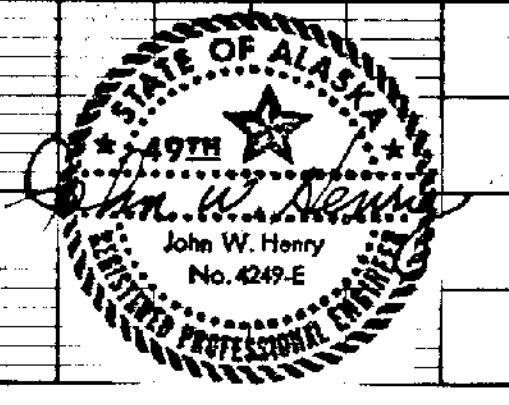
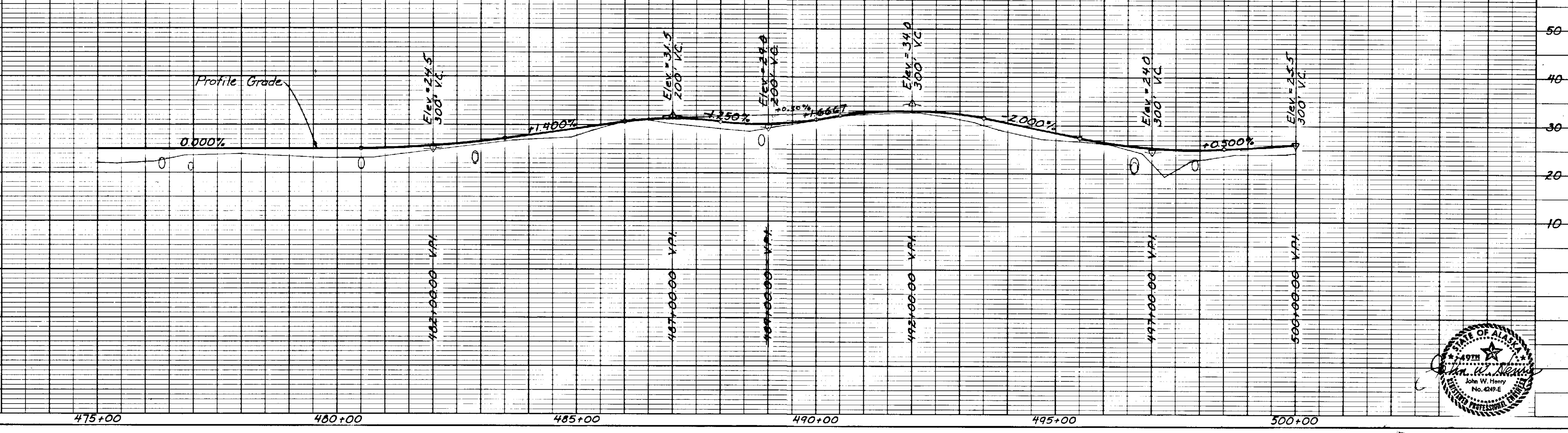




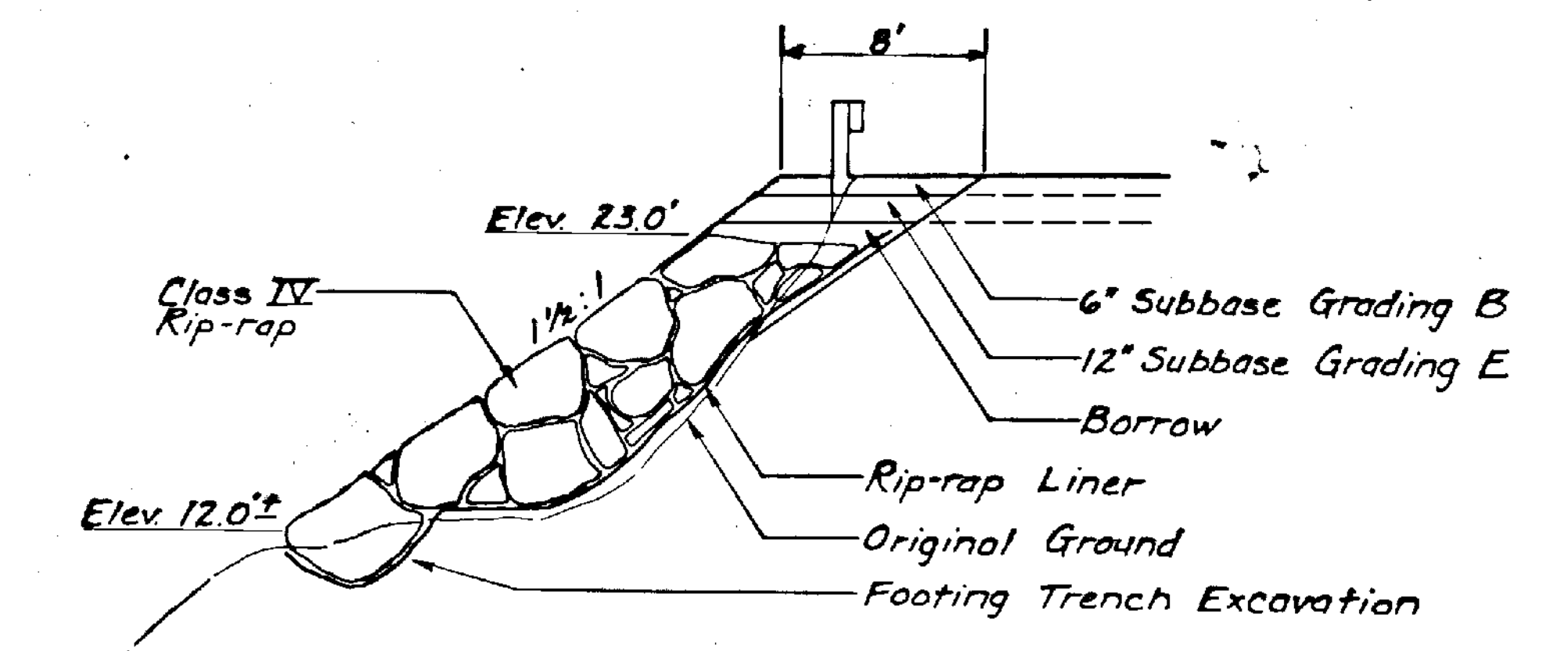
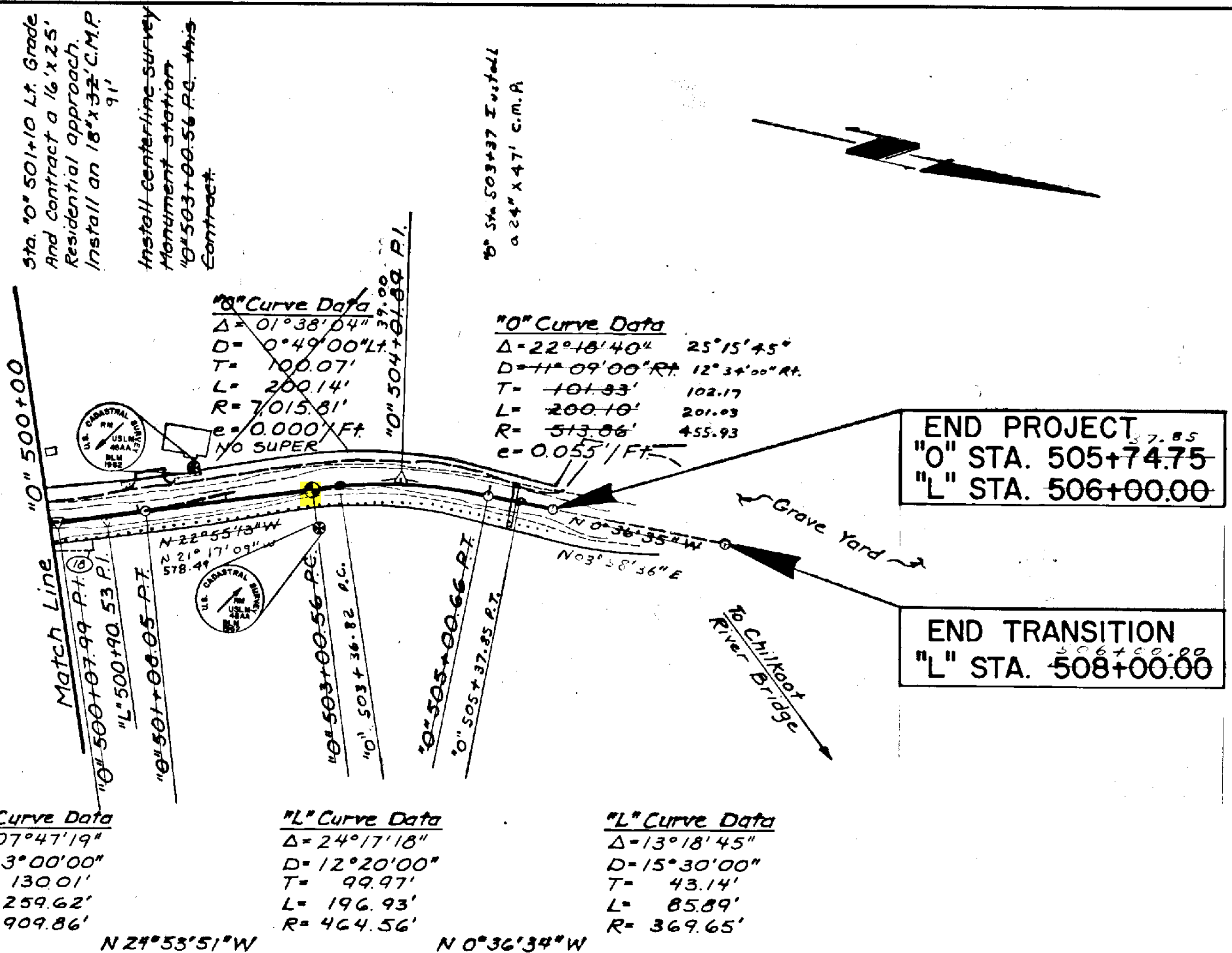
**Superelevation Transition Note:**

Sta. 0+489+92.95	Begin Transition
Sta. 0+491+17.95	Begin Full Super
Sta. 0+493+60.71	End Full Super
Sta. 0+494+85.71	End Transition, R Lane
Sta. 0+494+74.53	Begin Transition, L Lane
Sta. 0+495+99.53	Begin Full Super
Sta. 0+497+16.69	End Full Super
Sta. 0+498+41.69	End Transition

Embankment = 1,690 CY  
 Excavation = 4,724 CY Includes 472 CY Waste  
 Borrow = 0  
 Note: 1,044 CY Excess Usable Excavation to Sheet 9; 1,517 CY to Sheet 8



STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	RS-0991 (4)	1988	11	11



**SLIPOUT REPAIR DETAIL**  
 "As-built" 319+00 to "As-built" 320+25

- ESTIMATED QUANTITIES**
- 125' Guard Rail Removal and Replacement
  - 500 CY Type IV Rip-rap
  - 280 SY Rip-rap Liner

Embankment + 314 CY  
 Excavation - 1,646 CY (Includes 165 CY Waste)  
 Borrow + 0  
 Note: 1,167 CY Excess Useable Excavation to Sheet 9

