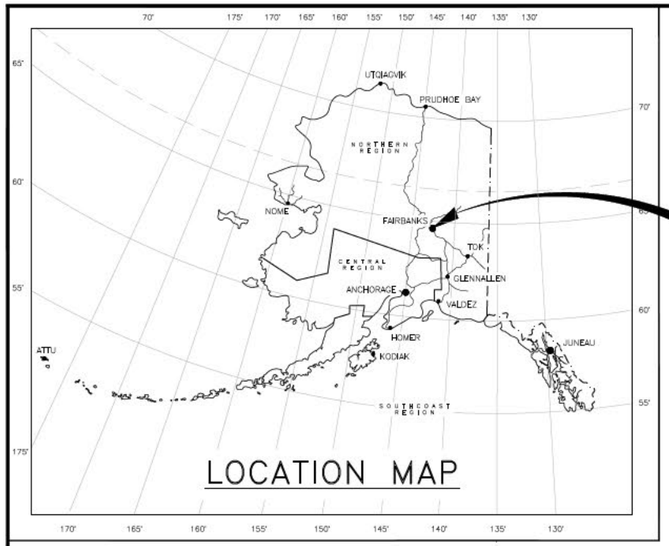
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	A1	133
CDS ROUTE: 190000	MILEPOINT: 352.15 TO 353.27			



LOCATION MAP

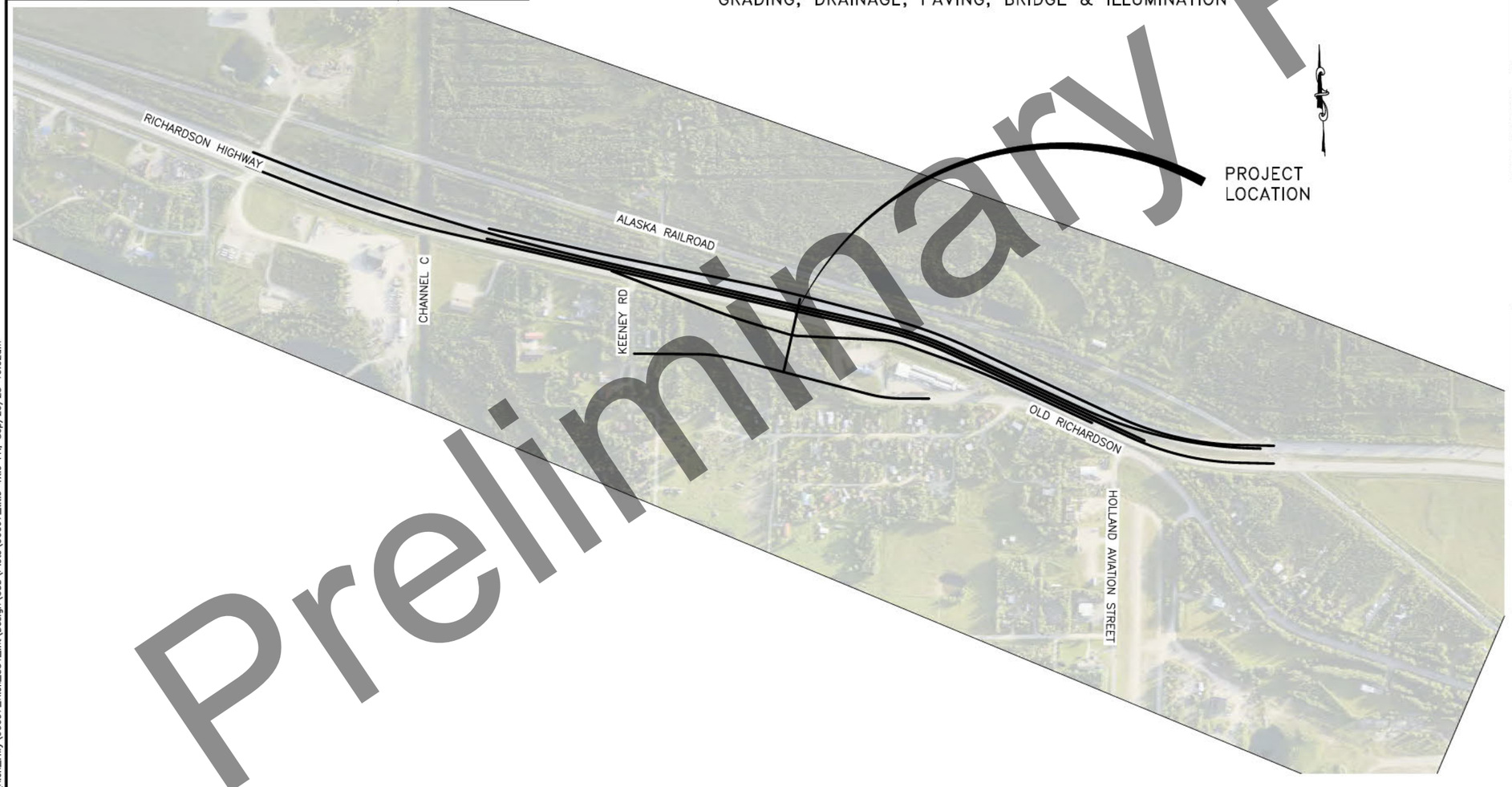
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

PROPOSED HIGHWAY PROJECT

0A24034/NFHWY00097

RICHARDSON HIGHWAY MP 351 INTERCHANGE

GRADING, DRAINAGE, PAVING, BRIDGE & ILLUMINATION



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A1	TITLE SHEET
A2	LEGEND & ABBREVIATIONS
A3	CONTROL DRAWING
A4	ALIGNMENT TABLES
B1–B2	TYPICAL SECTIONS
C1	ESTIMATE OF QUANTITIES & GENERAL NOTES
D1–D4	SUMMARIES
E1–E4	CULVERT NOTES & DETAILS
F1–F17	PLAN & PROFILE
G1	APPROACH SUMMARY & DETAILS
G2–G5	INTERSECTION LAYOUT & GRADING SHEETS
H1–H17	ILLUMINATION & TRAFFIC SIGNAL PLANS
H18–H25	SIGNING & STRIPING
M1–M5	MSE WALLS
N1–N18	BRIDGE PLANS
Q1–Q2	EROSION SEDIMENT CONTROL PLANS
T1–T9	TRAFFIC CONTROL PLANS (and/or DEVICES)
U1–U6	UTILITIES PLANS
V1–V31	STANDARD PLANS

THE FOLLOWING STANDARD PLANS APPLY TO THIS PROJECT:
C–04.12, C–06.00,
D–26.04
F–01.04
G–00.05, G–05.11S, G–09.05S, G–10.21, G–14.01, G–20.12, G–47.00
I–81.00
L–03.11, L–23.03, L–24.10
S–00.12, S–01.02, S–05.02, S–31.02
T–05.10, T–20.04, T–21.04, T–22.04

DESIGN DESIGNATIONS	
ADT (2020)	15500
ADT (2045)	21400
DHV	12%
PERCENT TRUCKS (T)	8%
DIRECTIONAL SPLIT (D)	35 / 65
DESIGN SPEED (V)	70 MPH
DESIGN ESALS (25 YEARS)	3,538,000

PROJECT SUMMARY	
WIDTH OF PAVEMENT	76' MAINLINE
LENGTH OF GRADING	5900 FT
LENGTH OF PAVING	5900 FT
LENGTH OF PROJECT	5900 FT

PROJECT MANAGER DAVE FISCHER, P.E.
DESIGNER ERIK BRUNNER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

APPROVED BY:

_____ DATE _____

Lauren Little, P.E.
Preconstruction Engineer, Northern Region

ACCEPTED FOR CONSTRUCTION:

_____ DATE _____

Joseph P. Kemp, P.E.
Acting Regional Director, Northern Region

HWYS TITLE SHEET
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_title-Title Fri, Sep/29/23 10:02am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	A2	A4

	RECOVERED	SET
BLM MONUMENT	✠	
GLO MONUMENT	✠	
USC&GS MONUMENT	▲	
PRIMARY MONUMENT	✠	✠
CENTERLINE MONUMENT IN CASING	⊕	⊕
PRIMARY R.O.W. MONUMENT	⊕	◒
BEARING OBJECT	✳	
MISCELLANEOUS MONUMENT	⊗	
LINE OF SIGHT MONUMENT		⊕
CONCRETE R.O.W. MONUMENT	■	
BENCHMARK		BM
REBAR AND CAP	⊙	⊙
REBAR	⊕	●
IRON PIPE	◉	
PK NAIL		▽
SPIKE		×
HUB AND TACK		⊡
CONSTRUCTION CENTERLINE	5+00	
MISCELLANEOUS CENTERLINE	10+00	
STATION EQUATION	"L"48+97.23 POT BK= "O"48+97.23 PC AHD	
PROJECT RIGHT-OF-WAY LINE	R/W	
EXISTING RIGHT-OF-WAY LINE		
EXISTING PROPERTY LINE		
CONTROLLED ACCESS LINE	C/A	
UTILITY EASEMENT LINE	PUE	
TEMPORARY EASEMENT LINE (TCP OR TCE)	TCP	
ACCESS OR SECTION LINE EASEMENT	ACCESS EASEMENT	
PROPOSED CUT SLOPE LIMIT		
PROPOSED FILL SLOPE LIMIT		
SECTION LINE		
1/4 SECTION LINE		
1/16 SECTION LINE		
TOWNSHIP & RANGE LINE	T. 2 N. / T. 1 N. — T. 1 E. / T. 2 E.	

	EXISTING	PROPOSED
SANITARY SEWER (FLOW DIRECTION →)	SS	SS
FUEL LINE	O	O
GAS LINE	G	G
WATER LINE	W	W
METER, VALVE, FIRE HYDRANT	W	W
EXISTING STORM DRAIN (FLOW DIRECTION →)	SD	
PROPOSED STORM DRAIN		S-10, S-11, P-11, P-10, MH
FIBER OPTIC LINE	FO	
DIRECT BURIAL TELEPHONE CABLE	T	T
DIRECT BURIAL ELECTRIC CABLE	E	E
ELECTRIC LINE (OVERHEAD)		
POWER POLE LINE		
JOINT USE POWER & TELEPHONE		
TELEPHONE POLE LINE		
POLE ANCHOR		
STUB POLE (POWER OR TELEPHONE)		
TELEPHONE DUCT	T	T
TELEPHONE PEDESTAL		
BURIED CABLE MARKER		
PIPELINE MARKER OR VALVE		
CATCH BASIN OR DROP INLET		
MANHOLE	MH	MH
SANITARY SEWER CLEAN OUT		

	EXISTING	PROPOSED
ROADWAY/PAVEMENT EDGE		
FENCE		
CURB AND GUTTER		
DETECTABLE WARNINGS		
GUARDRAIL		
CULVERT PIPE		
SIGN		
MAILBOX	MB	MB
RAILROAD TRACKS		
RAILROAD DEVICES	CROSS-BUCK, FLASHING LIGHT	CANTILEVER, SWITCH
TREE LINE		
WATER BOUNDARY		
ORDINARY HIGH WATER LINE		
FLOW CENTERLINE		
FLOW DIRECTION		
WETLANDS		
EXISTING BUILDINGS	H = HOUSE, G = GARAGE, M = MERCHANT/STORE, B = BARN, S = SHED, P = PRIVY, SS = SERVICE STATION, W = WAREHOUSE	
POST OR BOLLARD		
WELL OR MONITORING WELL	W	
SEPTIC PIPE	S	SW
FUEL TANK FILL PIPE/VENT	F	
SATELLITE DISH		SAT. DISH
TEST HOLE	TH	
CONIFER TREE		
DECIDUOUS TREE		
GRAVE		
THERMOSIPHON		
PARKING METER		
VEHICLE PLUG-IN		
DELINEATOR/GUIDE MARKER		

	EXISTING	PROPOSED
JUNCTION BOX, TYPE IA		5
JUNCTION BOX, TYPE II		6
JUNCTION BOX, TYPE III		3
SIGNAL FACE, VEHICULAR	42	42
SIGNAL FACE, BACKPLATE	42	42
SIGNAL FACE, LEFT TURN, BACKPLATE	43	43
SIGNAL FACE, PEDESTRIAN		
LOOP DETECTOR	33	73
VIDEO DETECTOR	2	2
RADAR DETECTOR	4	4A
OPTICOM DETECTOR	1	1
PEDESTRIAN PUSH BUTTON	1	1
SIGNAL POST W/O MAST ARM		1
SIGNAL POLE W/MAST ARM		4
SIGNAL CONTROLLER		
LOAD CENTER		
LUMINAIRE		22
RIGID METAL CONDUIT		

ABBREVIATIONS:

APPROX	APPROXIMATLY
ARRC	ALASKA RAILROAD COORPORATION
BOP	BEGINNING OF PROJECT
CABC	CRUSHED ASPHALT BASE COURSE
℄	CENTERLINE
CY	CUBIC YARD
E	EAST, EASTING
ELE, ELEV	ELEVATION
FT. , '	FOOT, FEET
H	HORIZONTAL
H'	ASPHALT LAYERS THICKNESS
IE	INVERT ELEVATION
EOP	END OF PROJECT
IN, "	INCH, INCHES
L	LENGTH OF CURVE
L.C.L	LEFT OF CENTERLINE
LT	LEFT
LVC	LENGTH OF VERTICAL CURVE
MAX	MAXIMUM
MIN	MINIMUM
N	NORTH, NORTHING
NO.	NUMBER
NTS	NOT TO SCALE
O.C.	ON CENTER
PC	POINT OF CURVATURE
POT	POINT ON TANGENT
PST	PERFORATED STEEL TUBE
PT	POINT OF TANGENCY
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS
R.C.L	RIGHT OF CENTERLINE
RT	RIGHT
S	SOUTH
SQ. FT.	SQUARE FOOT
STA	STATION
T	TANGENT
TCE	TEMPORARY CONSTRUCTION EASEMEI
TS	TUBE STEEL
TYP	TYPICAL
V	VERTICAL
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
W	WEST
WWR	WELDED WIRE REINFORCEMENT
Ø	DIAMETER

LEGEND & ABBREVIATIONS

[redacted]

Maps23

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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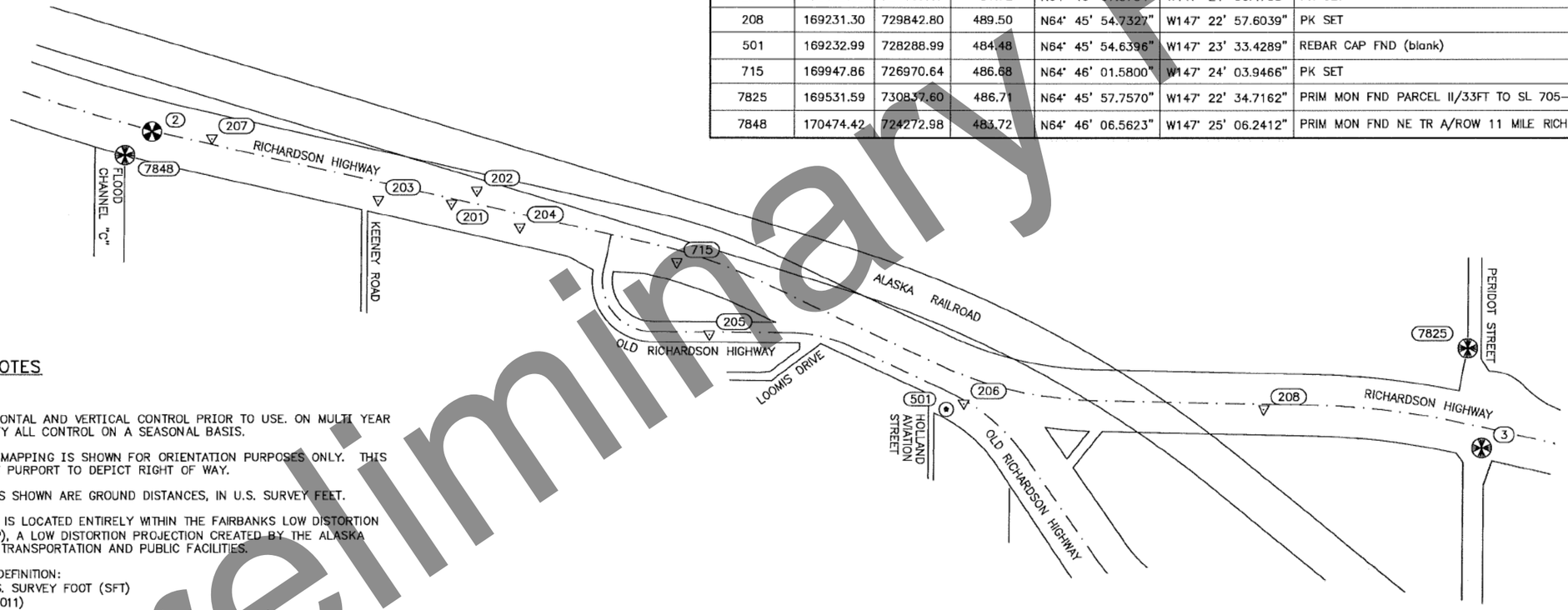
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	OA24034/NFHWY00097	2023	A3	A4

CONTROL MONUMENTS

POINT NO.	NORTHING	EASTING	ELEVATION	LATITUDE	LONGITUDE	DESCRIPTION
1	171650.81	719543.12	481.13	N64° 46' 17.7717"	W147° 26' 55.5265"	PRIM MON FND PI 6 (not shown)
2	170589.98	724403.41	483.28	N64° 46' 07.7094"	W147° 25' 03.2541"	PRIM MON SET RICH 351.5
3	169044.76	730906.45	489.64	N64° 45' 52.9706"	W147° 22' 33.0503"	PRIM MON FND BADGER 1990
201	170234.63	725869.99	484.82	N64° 46' 04.3216"	W147° 24' 29.3746"	PK SET
202	170298.49	725995.31	485.88	N64° 46' 04.9593"	W147° 24' 26.4960"	PK SET
203	170252.74	725509.73	481.42	N64° 46' 04.4731"	W147° 24' 37.6847"	PK SET
204	170120.76	726204.53	485.55	N64° 46' 03.2256"	W147° 24' 21.6411"	PK SET
205	169596.20	727130.14	488.12	N64° 45' 58.1307"	W147° 24' 00.2091"	PK SET
206	169259.94	728374.95	487.12	N64° 45' 54.9110"	W147° 23' 31.4515"	PK SET
207	170553.60	724697.17	486.72	N64° 46' 07.3734"	W147° 24' 56.4738"	PK SET
208	169231.30	729842.80	489.50	N64° 45' 54.7327"	W147° 22' 57.6039"	PK SET
501	169232.99	728288.99	484.48	N64° 45' 54.6396"	W147° 23' 33.4289"	REBAR CAP FND (blank)
715	169947.86	726970.64	486.68	N64° 46' 01.5800"	W147° 24' 03.9466"	PK SET
7825	169531.59	730837.60	486.71	N64° 45' 57.7570"	W147° 22' 34.7162"	PRIM MON FND PARCEL II/33FT TO SL 705-S 1993
7848	170474.42	724272.98	483.72	N64° 46' 06.5623"	W147° 25' 06.2412"	PRIM MON FND NE TR A/ROW 11 MILE RICH BUS. PARK 7204-S 2006



GENERAL NOTES

1. VERIFY HORIZONTAL AND VERTICAL CONTROL PRIOR TO USE. ON MULTI YEAR PROJECTS, VERIFY ALL CONTROL ON A SEASONAL BASIS.

2. BACKGROUND MAPPING IS SHOWN FOR ORIENTATION PURPOSES ONLY. THIS SHEET DOES NOT PURPORT TO DEPICT RIGHT OF WAY.

3. ALL DISTANCES SHOWN ARE GROUND DISTANCES, IN U.S. SURVEY FEET.

4. THIS PROJECT IS LOCATED ENTIRELY WITHIN THE FAIRBANKS LOW DISTORTION PROJECTION (LDP), A LOW DISTORTION PROJECTION CREATED BY THE ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES.

FAIRBANKS LDP DEFINITION:
LINEAR UNIT: U.S. SURVEY FOOT (SFT)
DATUM: NAD83(2011)
PROJECTION: LAMBERT CONFORMAL CONIC, (SINGLE PARALLEL)
STANDARD PARALLEL AND GRID ORIGIN: 64°51'00"N
CENTRAL MERIDIAN (GRID ORIGIN): 146°56'00"W
FALSE NORTHING: 200,000 SFT
FALSE EASTING: 800,000 SFT
STANDARD PARALLEL SCALE: 1.00003 (EXACT)

5. THE BASIS OF COORDINATES IS THE NAD83(2011)(EPOCH:2010.0000) OPUS AVERAGED POSITION OF RECOVERED PRIMARY MONUMENT "BADGER 1990", POINT #3.

6. BASIS OF BEARING IS FAIRBANKS LDP.

7. THE BASIS OF ELEVATIONS IS THE OPUS AVERAGED GEOID12A (NAVD88) ELEVATION OF 489.64 FT AT "BADGER 1990", POINT #3.

LEGEND

- PRIMARY MONUMENT SET
- PRIMARY MONUMENT FOUND
- REBAR AND CAP FOUND
- PK SET

GRAPHIC SCALE

0 300 600 900 1200 1500

SCALE 1"=300'

SURVEY CONTROL

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	A4	A4

RICH4LANE			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	5000+00.00	170539.3553	724584.4372
PC	5023+54.33	170023.1178	726881.4676
PT	5028+01.17	169879.6664	727303.7700
END	5040+29.99	169363.1009	728418.7431

EB RICH			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	4985+30.66	170966.5337	723182.5412
PC	4989+61.19	170810.6837	723583.8738
PT	4997+97.48	170567.1751	724383.1218
PT	5012+71.59	170243.9440	725821.3585
PC	5023+54.33	170006.5315	726877.7400
PT	5027+97.55	169864.2414	727296.6238
PT	5029+62.66	169794.8350	727446.4355
PC	5039+44.43	169382.1319	728337.2440
PT	5046+03.96	169234.3558	728975.2238
END	5048+00.00	169230.1642	729171.2158

WB RICH			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	4985+54.53	171043.8066	723223.2325
PC	4987+12.52	170985.9912	723370.2654
PT	5007+02.86	170402.4599	725271.0910
PC	5023+57.22	170039.7041	726885.1952
PT	5028+07.68	169895.0914	727310.9163
PT	5029+72.79	169825.6850	727460.7280
PC	5036+09.95	169557.8445	728038.8545
PT	5046+86.00	169317.4831	729079.8490
END	5047+00.00	169317.2033	729093.8501

NB–TURN			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	4999+97.90	170598.8149	724596.5538
PC	5006+46.34	170456.8326	725229.2562
PT	5007+28.51	170439.6651	725309.6126
PC	5015+23.02	170281.6592	726088.2551
PT	5019+41.38	170187.7852	726495.9005
PC	5022+97.88	170098.7335	726841.0978
PC	5025+83.47	170017.3394	727114.7710
PT	5028+99.55	169899.8565	727408.0314
PC	5038+29.26	169506.9130	728250.6238
END	5045+83.74	169337.4777	728980.2518

EB ON RAMP			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	30+00.00	169979.3540	726363.1692
PT	30+25.41	169973.7572	726387.9524
PC	35+21.70	169949.5163	726883.6532
PT	36+69.06	169920.8895	727027.6639
PC	39+27.61	169833.7933	727271.1016
PT	43+78.94	169662.7968	727688.6168
END	48+45.73	169486.5737	728112.1590

OFF RAMP			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	20+00.00	170352.4611	725311.1418
PC	26+47.07	170120.6111	725915.2509
PT	28+66.12	170049.6570	726122.4383
END	31+15.87	169977.4174	726361.5159

UNDERPASS			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	10+00.00	170189.7756	726410.4596
PC	10+03.69	170186.0935	726410.2993
PT	10+05.38	170184.4465	726409.9434
PT	10+09.37	170180.7454	726408.4560
END	14+37.59	169762.9475	726314.5338

SD			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	10+00.00	169691.7880	726660.8005
PC	10+16.33	169707.7865	726664.0829
PT	10+48.88	169739.5188	726660.1569
PC	10+91.69	169778.0988	726641.5895
PT	11+77.95	169861.3823	726621.8344
END	12+17.07	169900.4958	726621.1598

K TO RICH			
DESCRIPTION	START STATION	START NORTHING	START EASTING
BEGIN	10+00.00	169870.0656	725443.3311
PC	13+74.91	169866.8857	725818.2241
PT	15+71.02	169841.3220	726012.1695
PC	23+94.26	169634.7587	726809.0781
PT	25+92.65	169609.1790	727005.2999
END	29+64.42	169607.0836	727377.0632

ALIGNMENT TABLES

[redacted]
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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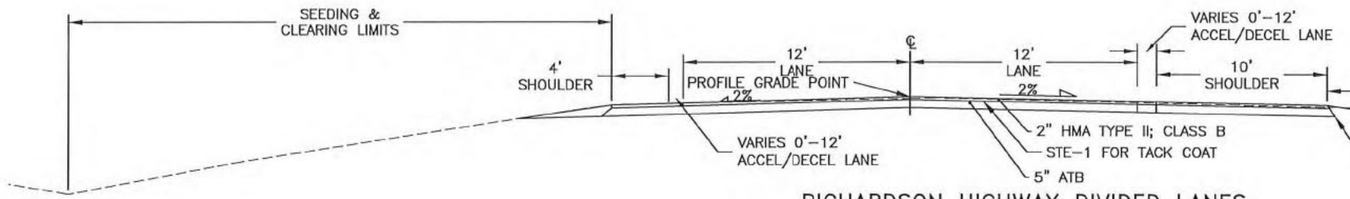
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	B1	B2



RICHARDSON HIGHWAY DIVIDED LANES

EB RICH 4987+00–5001+50
WB RICH 4987+00–5001+52.73
EB RICH 5037+96.38–5046+00
WB RICH 5038+06.70–5045+00

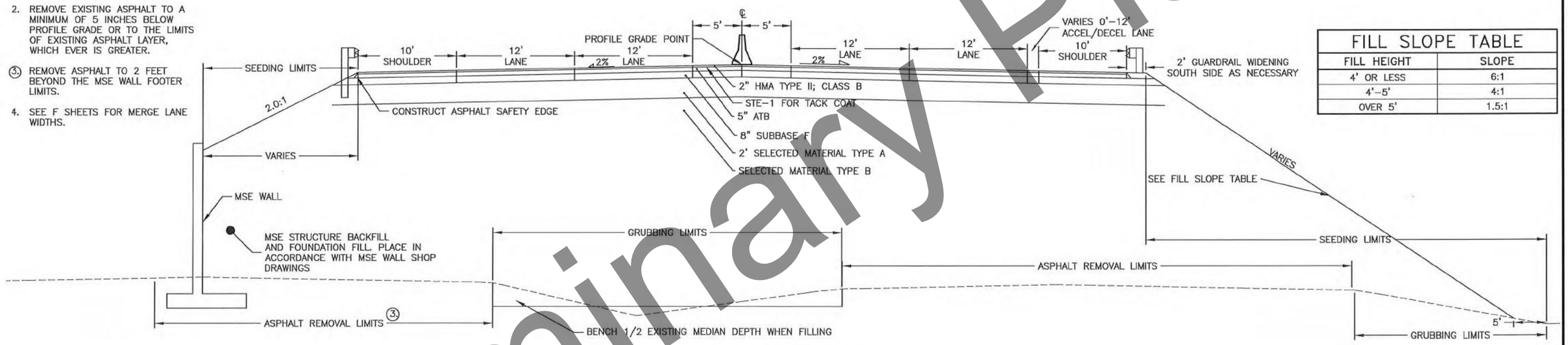
DIVIDED RICHARDSON SECTION NOTES:

1. 4:1 EMBANKMENT SLOPES ON RICHARDSON HIGHWAY DIVIDED LANES.
2. REMOVE EXISTING ASPHALT TO A MINIMUM OF 5 INCHES BELOW PROFILE GRADE OR TO THE LIMITS OF EXISTING ASPHALT LAYER, WHICH EVER IS GREATER.
3. SUBBASE F SHALL BE USED TO BUILD TO BOTTOM OF ATB PROFILE WHEN NECESSARY.
4. SEE F SHEETS FOR MERGE LANE WIDTHS.
5. CLEAR AND SEED TO EXISTING ROAD TOE.

RICHARDSON UNDIVIDED HIGHWAY SECTION NOTES:

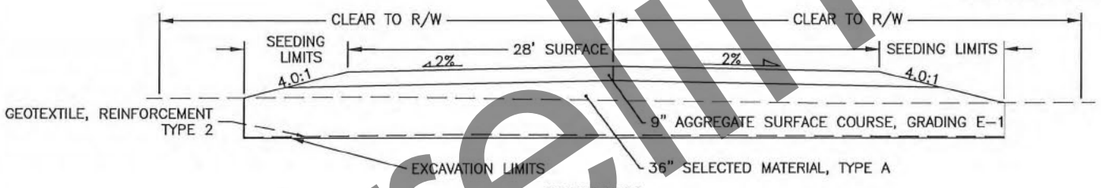
1. FILL SLOPES BEYOND THE MSE WALL LIMITS SHALL BE 2:1.
2. REMOVE EXISTING ASPHALT TO A MINIMUM OF 5 INCHES BELOW PROFILE GRADE OR TO THE LIMITS OF EXISTING ASPHALT LAYER, WHICH EVER IS GREATER.
3. REMOVE ASPHALT TO 2 FEET BEYOND THE MSE WALL FOOTER LIMITS.
4. SEE F SHEETS FOR MERGE LANE WIDTHS.

FILL SLOPE TABLE	
FILL HEIGHT	SLOPE
4' OR LESS	6:1
4'–5'	4:1
OVER 5'	1.5:1



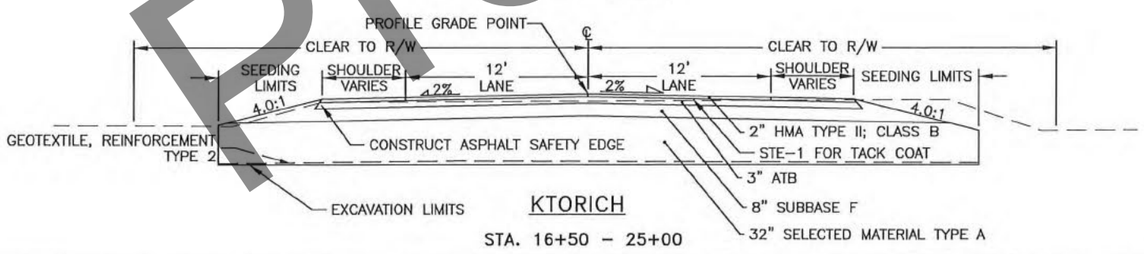
RICHARDSON 4LANE UNDIVIDED LANES

RICH4LANE 5001+50–5017+98.25
RICH4LANE 5019+18.25–5038+00



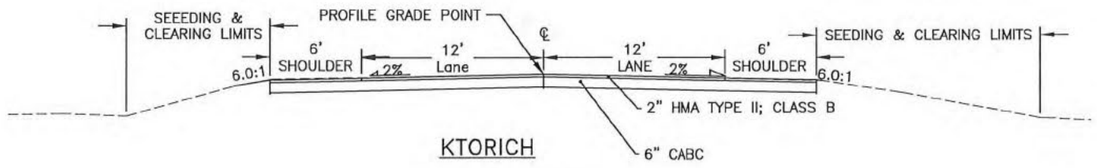
KTORICH

STA. 10+00 – 16+50



KTORICH

STA. 16+50 – 25+00



KTORICH

STA. 25+00 – 27+50

kTORICH 25+00–27+50 SECTION NOTES

1. CLEAR AND SEED TO EXISTING ROAD TOE.

TYPICAL SECTIONS 1 OF 2

7/25/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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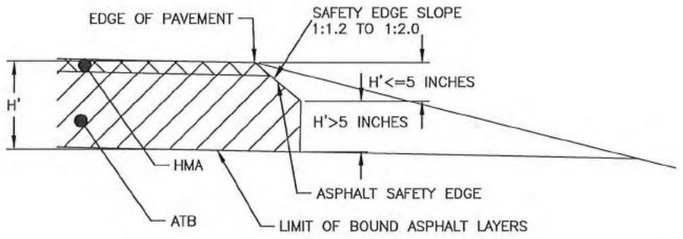
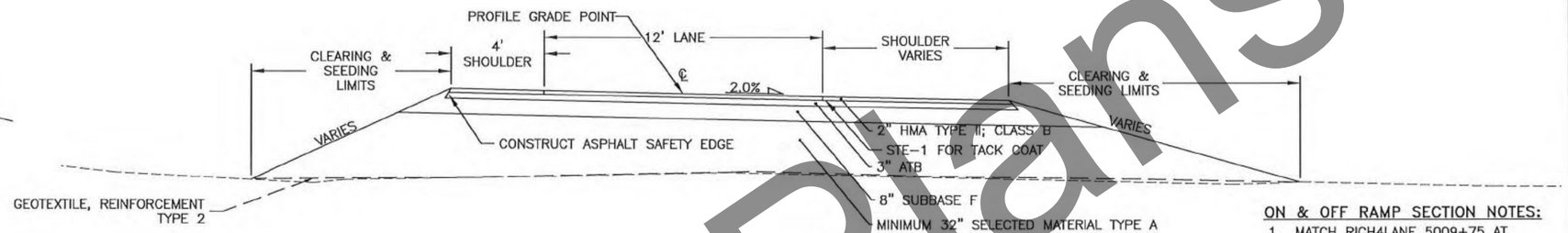
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	B2	B2



ASPHALT SAFETY EDGE DETAIL:

1. DO NOT CONSTRUCT THE SAFETY EDGE ACROSS DRIVEWAYS, BRIDGES OR BRIDGE SLABS.
2. REFER TO TYPICAL SECTIONS FOR MATERIAL TYPES AND THICKNESSES.
3. MATERIAL WILL BE MEASURED AND PAID FOR UNDER THEIR RESPECTIVE PAY ITEMS.
4. LABOR AND EQUIPMENT REQUIRED TO CONSTRUCT THE SAFETY EDGE IS SUBSIDIARY TO THE HMA AND ATB PAY ITEMS.



OFF RAMP SLOPE TABLE	
FILL HEIGHT	
3' OR LESS	12' 4:1 FORESLOPE WITH DITCH
3'–10'	3:1
OVER 10'	2:1

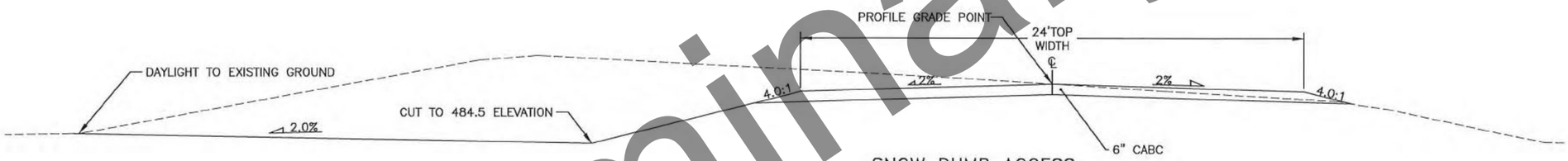
ON RAMP SLOPE TABLE	
FILL HEIGHT	
5' OR LESS	6:1
5'–10'	4:1LT 3:1RT
OVER 10'	2:1

ON AND OFF RAMPS

EB OFFRAMP STA. 22+25–30+97
EB ONRAMP STA. 30+00–38+88

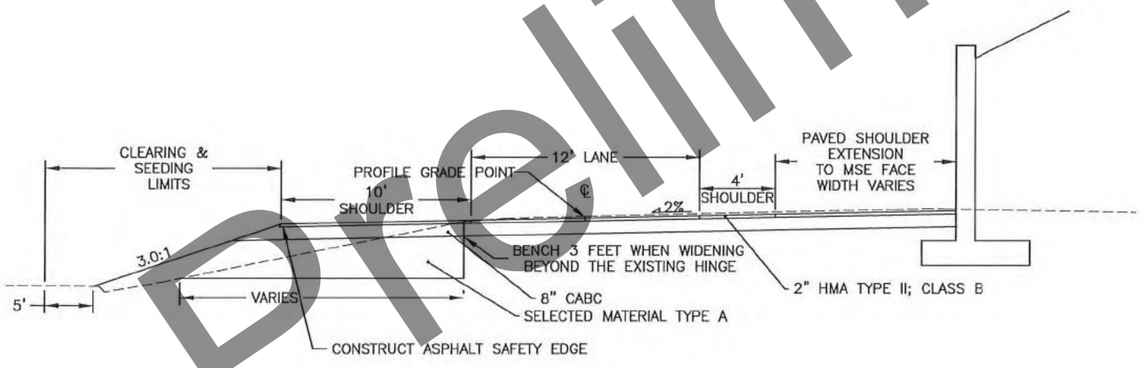
ON & OFF RAMP SECTION NOTES:

1. MATCH RICH4LANE 5009+75 AT BEGIN STATION.
2. AT EB OFF RAMP STA. 29+50 BEGIN MINIMUM 12' 4:1 FORESLOPE AND 8 FOOT DITCH.
3. SEE F SHEETS FOR SHOULDER WIDTHS.
4. ON RAMP CONSTRUCT 10' 3:1 FORESLOPE AND DITCH FROM 30+00 TO 33+25 PROJECT LEFT.
5. WHEN SUBEXCAVATION IS NECESSARY TO PLACE 32" OF SELECTED MATERIAL TYPE A, THE DESIGN TOES SHALL BE THE LATERAL LIMITS OF EXCAVATION.



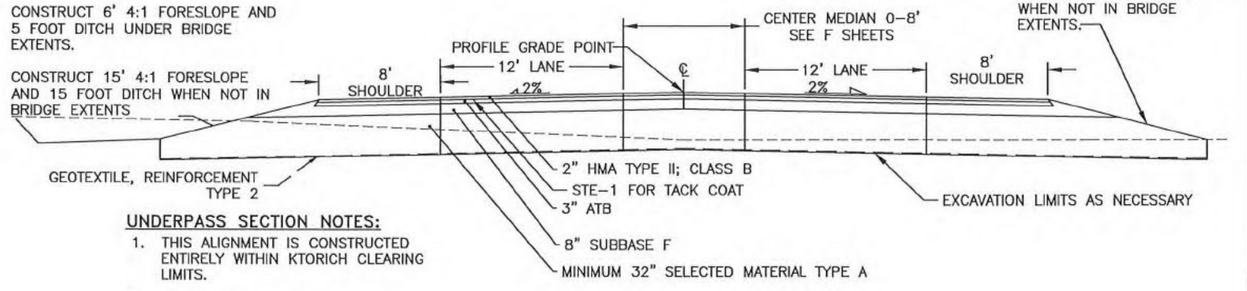
SNOW DUMP ACCESS

STA. 10+15–12+15



NB TURN

STA. 5000+00–5038+52.46



UNDERPASS SECTION NOTES:

1. THIS ALIGNMENT IS CONSTRUCTED ENTIRELY WITHIN KTORICH CLEARING LIMITS.
2. WHEN SUBEXCAVATION IS NECESSARY TO PLACE 32" OF SELECTED MATERIAL TYPE A, THE DESIGN TOES SHALL BE THE LATERAL LIMITS OF EXCAVATION.

UNDERPASS

STA. 10+19.75 – 14+00

TYPICAL SECTIONS 2 OF 2

STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\typical sections-TYPICAL SECTIONS 2 OF 2 Wed, Jul/19/23 03:09pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	OA24034/NFHWY00097	2023	C1	C1

ESTIMATE OF QUANTITIES

ITEM NUMBER	PAY ITEM	PAY UNIT	QUANTITY
201.0009.0000	CLEARING AND GRUBBING	LUMP SUM	ALL REQUIRED
202.0001.0000	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LUMP SUM	ALL REQUIRED
202.0002.0000	REMOVAL OF PAVEMENT	SQUARE YARD	115,000.00
202.0017.0000	REMOVAL OF CULVERT PIPE	EACH	5.00
203.0003.0000	UNCLASSIFIED EXCAVATION	CUBIC YARD	20,000.00
203.0006.0000	BORROW	TON	295,000.00
204.2002.0000	EMBEDMENT MATERIAL	CUBIC YARD	230.00
205.0006.0000	STRUCTURAL FILL	CUBIC YARD	2,460.00
301.0003.00E1	AGGREGATE SURFACE COURSE, GRADING E-1	TON	1,070.00
304.0001.000F	SUBBASE, GRADING F	TON	23,000.00
306.0002.5228	ASPHALT BINDER, GRADE PG 52-28	TON	721.00
306.2010.0000	ATB, NR	TON	18,025.00
308.2000.0000	CRUSHED ASPHALT BASE COURSE	STATION	50.00
401.0001.002B	HMA, TYPE II; CLASS B	TON	9,387.00
401.0004.0000	ASPHALT BINDER, GRADE PG 52E-40	TON	488.12
401.0008.002B	HMA PRICE ADJUSTMENT, TYPE II; CLASS B	CONTINGENT SUM	ALL REQUIRED
401.0013.0000	JOB MIX DESIGN	EACH	1.00
401.0015.0000	ASPHALT MATERIAL PRICE ADJUSTMENT	CONTINGENT SUM	ALL REQUIRED
402.0001.STE1	STE-1 ASPHALT FOR TACK COAT	TON	20.00
501.0001.0000	CLASS A CONCRETE	LUMP SUM	ALL REQUIRED
501.0007.0000	PRECAST CONCRETE MEMBER, 118'-0"	EACH	14.00
503.0001.0000	REINFORCING STEEL	LUMP SUM	ALL REQUIRED
503.0002.0000	EPOXY-COATED REINFORCING STEEL	LUMP SUM	ALL REQUIRED
505.0005.0000	FURNISH STRUCTURAL STEEL PIPE PILES, 2'-0" DIA. X 1/2" PIPE	LINEAR FOOT	3,220.00
505.0006.0000	DRIVE STRUCTURAL STEEL PIPE PILES, 2'-0" DIA. X 1/2" PIPE	EACH	28.00
507.0004.0000	CONCRETE BRIDGE BARRIER	LINEAR FOOT	480.00
507.0006.0000	CABLE SAFETY RAILING	LINEAR FOOT	1,876.00
508.0001.0000	WATERPROOFING MEMBRANE, SPRAY-APPLIED	LUMP SUM	ALL REQUIRED
511.0001.0000	MECHANICALLY STABILIZED EARTH WALL	SQUARE FOOT	25,262.00
511.0001.0002	MECHANICALLY STABILIZED EARTH WALL WALL CAP COPING	LINEAR FOOT	1,876.00
603.0001.0024	CSP 24 INCH	LINEAR FOOT	349.00
604.0005.000A	INLET, TYPE A	EACH	3.00
606.0001.0000	W-BEAM GUARDRAIL	LINEAR FOOT	7,162.50
606.0013.0000	PARALLEL GUARDRAIL TERMINAL	EACH	6.00
606.0016.0000	TRANSITION RAIL	EACH	4.00
606.2007.0000	CRASH CUSHION	EACH	2.00
607.0003.0000	CHAIN LINK FENCE	LINEAR FOOT	5,569.00
611.0001.0001	RIPRAP, CLASS I	CUBIC YARD	85.00
613.0002.0000	CULVERT MARKER POST	EACH	7.00
614.0001.0000	CONCRETE BARRIER F SHAPE	LINEAR FOOT	4,112.50
615.0001.0000	STANDARD SIGN	SQUARE FOOT	423.05
615.2020.0000	DELINEATION STRIPS	LUMP SUM	ALL REQUIRED
616.0002.0050	THAW PIPE 1/2 INCH DIAMETER	EACH	4.00
618.0002.0000	SEEDING	POUND	600.00
627.2012.0008	HDPE WATER CONDUIT, 8-INCH, 1	LINEAR FOOT	1,630.00
630.0003.0002	GEOTEXTILE, REINFORCEMENT - TYPE 2	SQUARE YARD	20,700.00
631.0002.0001	GEOTEXTILE, EROSION CONTROL, CLASS 1	SQUARE YARD	450.00
639.2000.0000	APPROACH	EACH	6.00
640.0001.0000	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	ALL REQUIRED
641.0001.0000	EROSION, SEDIMENT AND POLLUTION CONTROL ADMINISTRATION	LUMP SUM	ALL REQUIRED
641.0003.0000	TEMPORARY EROSION, SEDIMENT AND POLLUTION CONTROL	LUMP SUM	ALL REQUIRED
641.0004.0000	TEMPORARY EROSION, SEDIMENT AND POLLUTION CONTROL ADDITIVES	CONTINGENT SUM	ALL REQUIRED
641.0006.0000	WITHHOLDING	CONTINGENT SUM	ALL REQUIRED
641.0007.0000	SWPPP MANAGER	LUMP SUM	ALL REQUIRED
641.0008.0000	SWPPPTRACK	CONTINGENT SUM	ALL REQUIRED
642.0001.0000	CONSTRUCTION SURVEYING	LUMP SUM	ALL REQUIRED
642.0013.0000	THREE PERSON SURVEY PARTY	CONTINGENT SUM	ALL REQUIRED
643.0002.0000	TRAFFIC MAINTENANCE	LUMP SUM	ALL REQUIRED
643.0023.0000	TRAFFIC PRICE ADJUSTMENT	CONTINGENT SUM	ALL REQUIRED
643.0025.0000	TRAFFIC CONTROL	CONTINGENT SUM	ALL REQUIRED

ESTIMATE OF QUANTITIES

ITEM NUMBER	PAY ITEM	PAY UNIT	QUANTITY
643.2005.0000	PUBLIC INFORMATION PROGRAM	LUMP SUM	ALL REQUIRED
643.2011.0000	TRAFFIC MAINTENANCE SETUP STAGE 1A	LUMP SUM	ALL REQUIRED
643.2011.0000	TRAFFIC MAINTENANCE SETUP STAGE 1B	LUMP SUM	ALL REQUIRED
643.2011.0000	TRAFFIC MAINTENANCE SETUP STAGE 2A	LUMP SUM	ALL REQUIRED
644.0001.0000	FIELD OFFICE	LUMP SUM	ALL REQUIRED
644.0006.0000	VEHICLE	LUMP SUM	ALL REQUIRED
644.0015.0000	NUCLEAR TESTING EQUIPMENT STORAGE SHED	EACH	1.00
645.0001.0000	TRAINING PROGRAM, 3 TRAINEES/APPRENTICES	LABOR HOUR	1,500.00
646.0001.0000	CPM SCHEDULING	LUMP SUM	ALL REQUIRED
660.0003.0000	HIGHWAY LIGHTING SYSTEM COMPLETE, RICH 351	LUMP SUM	ALL REQUIRED
660.0012.0000	UNDERPASS LIGHTING SYSTEM COMPLETE	LUMP SUM	ALL REQUIRED
661.0001.0000	LOAD CENTER, TYPE 1	EACH	1.00
661.2002.0000	REMOVE EXISTING LOAD CENTER	EACH	1.00
670.2002.0000	MMA PAVEMENT MARKINGS, INLAID	LUMP SUM	ALL REQUIRED

TABLE OF ESTIMATING FACTORS

ITEM NO.	ITEM	FACTOR
201.0009.0000	CLEARING AND GRUBBING	15.5 ACRES
203.0006.0000	BORROW	2 TON/CY
301.0003.00E1	AGGREGATE SURFACE COURSE, GRADING E-1	2 TON/CY
304.0001.000F	SUBBASE, GRADING F	2 TON/CY
306.0002.5228	ASPHALT BINDER, GRADE PG 52-28	4.0% OF 306.0002.5228 BY WEIGHT
306.2010.0000	ATB, NR	2 TON/CY
401.0001.002B	HMA, TYPE II; CLASS B	2 TON/CY
401.0004.0000	ASPHALT BINDER, GRADE PG 52E-40	5.2% OF 306.0002.5240 BY WEIGHT
402.0001.STE1	STE-1 ASPHALT FOR TACK COAT	.0003 TON/SY
618.0002.0000	SEEDING	47.9 LB/ACRE

ESTIMATE OF QUANTITIES

STATE OF ALASKA

[redacted]

7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_C1 Sheet-Hwy-Gen Wed, Jul/19/23 12:05pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	OA24034/NFHWY00097	2023	D1	D4

GUARDRAIL SUMMARY

BEGIN STATION	END TREATMENT	END STATION	END TREATMENT	LENGTH(FT)	LEFT	RIGHT	INSTALLATION CASE	POST LENGTH	COMMENT
EB RICH 4994+25	606.0013.0000	EB RICH 4996+75	DOWNSTREAM END ANCHOR	250		X	3	8'	MATCH EXISTING RAIL OFFSET
WB RICH 4995+31	DOWNSTREAM END ANCHOR	WB RICH 4995+56	606.0013.000	325	X		3	8'	
EB OFFRAMP 20+23	606.0013.0000	EB OFFRAMP 24+60	DOWNSTREAM END ANCHOR	437.5		X	5	8'	END ANCHOR SUBSIDIARY
RICH4LANE 5010+27	606.0013.0000	RICH4LANE 5017+52	606.0016.0000	725		X	2	8'	BRIDGE RAIL TRANSITION
RICH4LANE 5019+64	606.0016.0000	RICH4LANE 5027+60	DOWNSTREAM END ANCHOR	787.5		X	2	8'	
ONRAMP 33+00	606.0013.0000	EB RICH 5040+00	DOWNSTREAM END ANCHOR	1837.5		X	3	8'	
RICH4LANE 5007+14.5	DOWNSTREAM END ANCHOR	RICH4LANE 5017+52	606.0016.0000	1037.5	X		5	8'	END ANCHOR SUBSIDIARY
RICH4LANE 5019+70	606.0016.000	RICH4LANE 5037+18	606.0013.0000	1762.5	X		5	8'	
			TOTAL	7162.5					

CONCRETE BARRIER

END TREATMENT	BEGIN STATION	END STATION	END TREATMENT	LENGTH(FT)
606.2007.0000	EB RICH 4997+80	EB RICH 5038+92.5	606.2007.000	4112.5

GUARDRAIL NOTES:

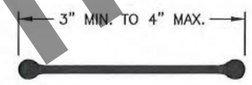
1. GUARDRAIL BEGIN AND END STATIONS DO NOT INCLUDE TRANSITION RAIL OR GUARDRAIL TERMINALS.
2. BEGIN AND END STATIONS ARE FOR NEW INSTALL REFERENCE. EXISTING GUARDRAIL TO BE REMOVED MAY BE SLIGHTLY BEFORE OR AFTER NEW INSTALL LOCATIONS.
3. INSTALL END TERMINALS PER MANUFACTURER'S INSTRUCTIONS.
4. MINIMUM W-BEAM GUARDRAIL POST LENGTH VARIES. SEE STANDARD DRAWING G-10.21.
5. FOR PARALLEL GUARDRAIL TERMINALS, CONSTRUCT THE GUARDRAIL TERMINAL WIDENING IN ACCORDANCE WITH THE "ALTERNATE GUARDRAIL TERMINAL WIDENING DETAIL" ON STANDARD DRAWING G-20.12. THE END OFFSET (X) SHALL BE 2 FEET. USE 50' PARALLEL GUARDRAIL TERMINALS.
6. INSTALL PARALLEL GUARDRAIL TERMINALS AT A HEIGHT OF 27-3/4" TO THE TOP OF RAIL. TRANSITION TO THE STANDARD 31" GUARDRAIL HEIGHT IN 25 LINEAR FEET AS NOTED ON STANDARD DRAWING G-05.11S.
7. DOWNSTREAM END ANCHORS ARE SUBSIDIARY TO 606.0001.000.

CONCRETE BARRIER NOTES:

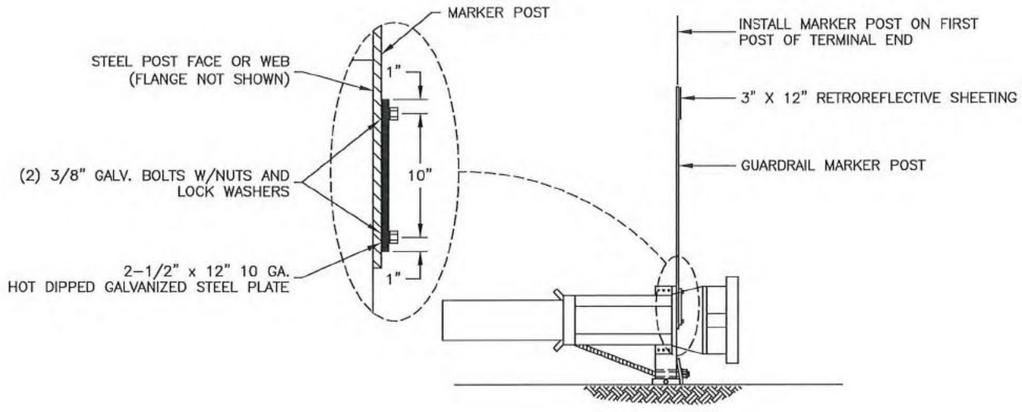
1. CONCRETE BARRIERS SHALL BE ANCHORED TO THE PAVEMENT WITH ANCHOR PINS INSTALLED ON THE SIDE FACING TRAFFIC.
2. MEDIAN CONCRETE BARRIERS SHALL BE ANCHORED TO THE PAVEMENT WITH ANCHOR PINS ON BOTH SIDES.
3. DO NOT ANCHOR MEDIAN CONCRETE BARRIER TO BRIDGE SECTIONS.

GUARDRAIL MARKER NOTES:

1. GUARDRAIL MARKER POSTS SHALL BE YELLOW AND AT LEAST 72" LONG. POSTS SHALL MEET THE REQUIREMENTS OF SECTION 730-2.05 FLEXIBLE DELINEATOR POSTS.
2. RETROREFLECTIVE SHEETING SHALL MEET ASTM D4956 REQUIREMENTS FOR TYPE VIII, IX, OR XI. COLOR OF RETROREFLECTIVE SHEETING SHALL MATCH COLOR OF ADJACENT EDGE LINE STRIPE. PLACE RETROREFLECTIVE SHEETING ON SIDE OF MARKER POST FACING TRAFFIC IN ADJACENT LANE.
3. DRILL ALL BOLT HOLES. COAT HOLES WITH ZINC RICH PAINT. FLAME CUTTING SHALL NOT BE PERMITTED.
4. ON SHORT RADIUS GUARDRAIL SECTIONS, ATTACH GUARDRAIL MARKER POST TO THE GUARDRAIL POST AT THE POINT OF TANGENCY (P.T.) SHOWN ON STANDARD DRAWING G-26.
5. ALL WORK AND MATERIAL REQUIRED TO INSTALL GUARDRAIL MARKER POSTS IS SUBSIDIARY TO 606 PAY ITEMS.



POST DETAIL
CROSS-SECTIONAL VIEW



GUARDRAIL MARKER POST ATTACHMENT DETAIL
PARALLEL GUARDRAIL TERMINAL

BARRIER SUMMARY

STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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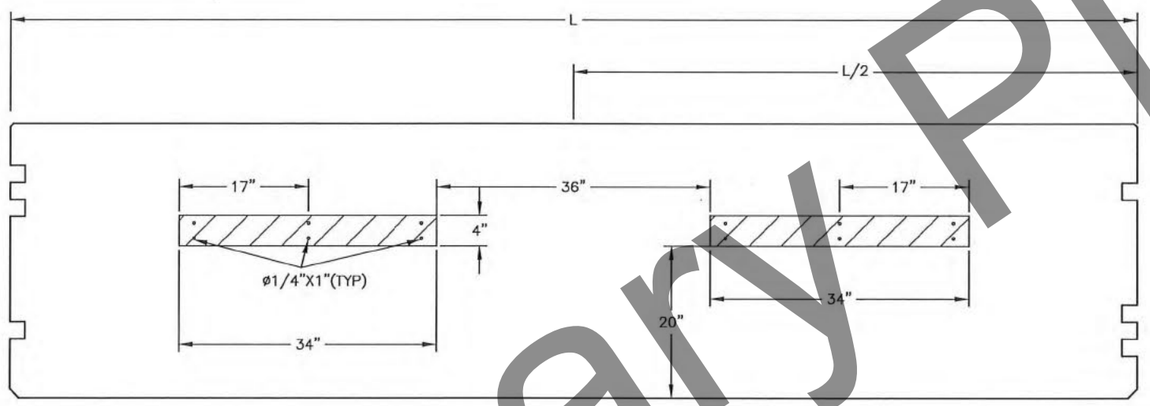
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	OA24034/NFHWY00097	2023	D2	D4

GENERAL NOTES:

1. CONCRETE BARRIERS SHALL HAVE PRECAST RECESSIONS TO A DEPTH OF 5/8" AND TO THE DIMENSIONS SHOWN TO ACCOMMODATE INLAID DELINEATION STRIPS.
2. DRILL SIX HOLES 1/4" IN DIAMETER AND 1" DEEP THROUGH THE NEW DELINEATION STRIPS AS SHOWN. ANCHOR STRIPS USING 1/4" X 1" STAINLESS STEEL IMPACT ANCHORS. USE 5/8" NYLON WASHERS BETWEEN THE ANCHOR AND THE DELINEATION STRIP.
3. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.



INLAID DELINEATION STRIPS APPLIED TO CONCRETE BARRIER

F SHAPE DELINEATOR STRIPS

[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\TSM116-F SHAPE DELINEATOR STRIPS Fri, Jul/14/23 11:01am

NO.	DATE	REVISION

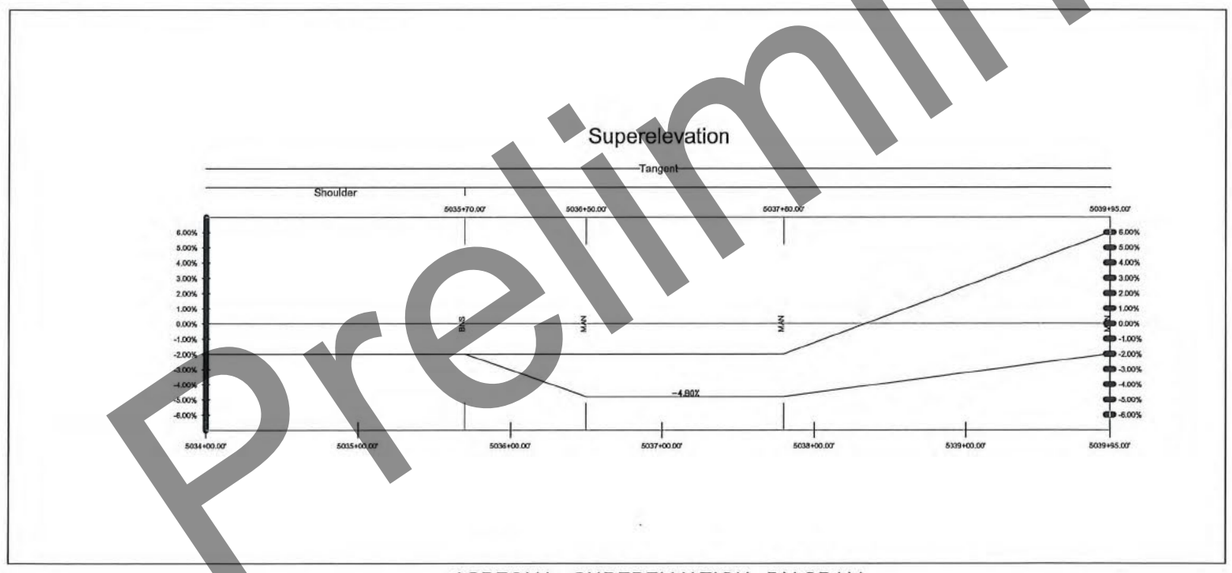
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	D3	D4

SUPERELEVATION SUMMARY

ALIGNMENT	CURVE P.I.	RADIUS (FEET)	BEGIN TRANSITION	TRANSITION LENGTH(FEET)	CURVE P.C.	BEGIN FULL SUPERELEVATION	SUPERELEVATION RATE (%)	END FULL SUPERELEVATION	CURVE P.T.	TRANSITION LENGTH(FEET)	END TRANSITION	REMARKS
EAST BOUND RICH	4993+80.11	5600	4988+05	190	4989+61.19	4985+95	2.8	4997+65	4997+97.48	195	4999+60	
WEST BOUND RICH	4997+09.65	12960	NA	NA	4987+12.52	NA	N.C.	NA	5007+28.51	NA	NA	
RICH 4 LANE	5025+78.59	2100	5021+05	325	5023+54.33	5024+30	5.8	5027+30	5028+01.17	160	5028+90	
RICH 4 LANE	NONE											SEE SPECIAL SUPER DIAGRAM*
EAST BOUND RICH	5042+78.95	1599	5037+80	215	5039+44.43	5039+95	6.0	5045+60	5046+03.96	105	5046+65	
WEST BOUND RICH	5041+55.79	2600	5034+70	180	5036+09.95	5036+50	4.8	5046+50	5046+80	NA		
NORTH BOUND TURN	5006+87.42	4000	NA	NA	5006+46.34	NA	N.C.	NA	5007+28.51	NA		NORMAL CROWN
NORTH BOUND TURN	5017+32.25	8005	NA	NA	5015+23.02		N.C.		5019+41.38			NRMAL CROWN
NORTH BOUND TURN	5024+40.74	3900	5022+30	85	5022+97.88	5023+15	2.0	5025+75				COMPOUND CURVE
NORTH BOUND TURN	5021+41.67	2856	5025+75	25	5025+83.47	5026+00	2.6	5028+85	5028+99.55	95		
NORTH BOUND TURN	5042+12.05	1812	5037+50	100	5038+29.26	5038+50	4.8	5047+50	5045+83.74	NA		
OFF RAMP	27+56.65	3000	25+70	95	26+47.07	26+65	2.6	28+50	28+66.12	100	29+50	
OFF RAMP	35+95.92	500	35+05	50	35+21.70	35+55	4	36+40	36+69.06	55	36+95	
OFF RAMP	41+53.43	5000	38+00	88	39+27.61	38+88	5.2	40+27	NA	NA	NA	
KTORICH	14+73.46	800	12+90	105	13+74.914	13+95	3.4	15+55	15+71.02	105	16+60	
KTORICH	24+93.97	800	23+10	105	23+94.26	24+15	3.4	25+75	25+92.65	105	26+80	

SUPERELEVATION NOTES:

1. THE SUPERELEVATION ROTATION POINT IS CENTERLINE AT PROFILE GRADE POINT.
2. SEE STANDARD PLAN I-81.00 FOR SUPERELEVATION TRANSITION DETAILS. THE TRANSITIONS LENGTHS GIVEN IN THE SUMMARY DO NOT INCLUDE THE $\frac{1}{2}$ VERTICAL CURVE LENGTHS SHOWN ON EACH END OF THE TRASITION.



*SPECIAL SUPERELVATION DIAGRAM

SUPERELEVATION SUMMARY

[redacted]
PROFESSIONAL
7/24/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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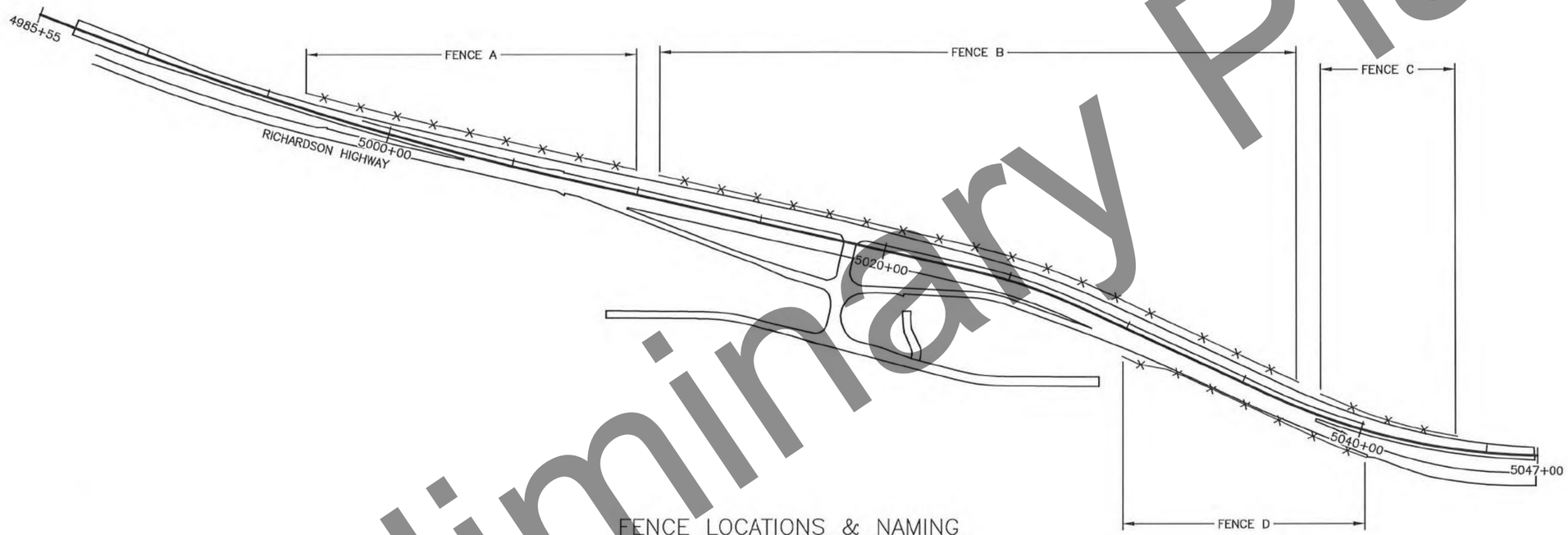
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24(034)/NFHWY00097	2023	D4	D4

FENCE NOTES:

1. INSTALL FENCE TO MATCH PROFILE OF EXISTING APPROACHES.
2. FENCE ALIGNMENTS COORDINATE WITH PAY ITEM 607.0003.0000 AND ARE FOR INSTALL PURPOSES ONLY. EXISTING FENCE TO BE REMOVED IS NOT LIMITED TO ALIGNMENT START AND END STATIONS.
3. INSTALL FENCE PER SPECIFICATION 607. TREAT ALL LOCATIONS WHERE NEW FENCING MEETS EXISTING AS INTERSECTIONS; ADJUSTING POST SPACING TO CONFORM TO REQUIREMENTS OF SPECIFICATION. .
4. EXISTING FENCE TO BE REMOVED WILL BE PAID UNDER ITEM 202.0001.0000.
5. ALL CLEARING AND/OR GRUBBING REQUIRED TO INSTALL FENCING IS SUBSIDIARY TO PAY ITEM 607.0003.0000.
6. FENCE ALIGNMENTS AND STATIONING ARE SPECIFIC TO THE FENCE RUNS AND DO NOT REFERENCE ROADWAY ALIGNMENTS.



FENCE LOCATIONS & NAMING

FENCE A			
DESCRIPTION	START STATION	START NORTHING	START EASTING
START	0+00.00	170736.5987	724263.1342
PT	7+42.34	170563.1177	724984.8112
END	13.25.00	170436.4612	725553.5340

FENCE B			
DESCRIPTION	START STATION	START NORTHING	START EASTING
START	0+00.00	170413.9028	725648.6879
PC	11+54.71	170161.1343	726775.3971
PT	19+59.42	169895.9172	727532.4502
END	26+49.57	169604.7734	728159.3925

FENCE C			
DESCRIPTION	START STATION	START NORTHING	START EASTING
START	0+00.00	169558.1614	728246.7862
PC	1+68.56	169492.1127	728401.8620
PT	4+36.46	169415.5811	728658.2804
END	5+60.03	169393.4210	728779.8503

FENCE D			
DESCRIPTION	START STATION	START NORTHING	START EASTING
START	0+00.00	169705.8366	727468.8161
PT	0+76.11	169674.2452	727538.0646
PC	1+83.01	169655.2108	727643.2490
PT	2+42.40	169633.4445	727698.4711
PC	7+71.33	169410.9764	728178.3370
END	10+35.14	169310.5836	728422.1601

FENCE LOCATION SUMMARY

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER
7/24/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_E6 Fence Details-FENCE LOCATION SUMMARY Fri, Jul/14/23 11:03am

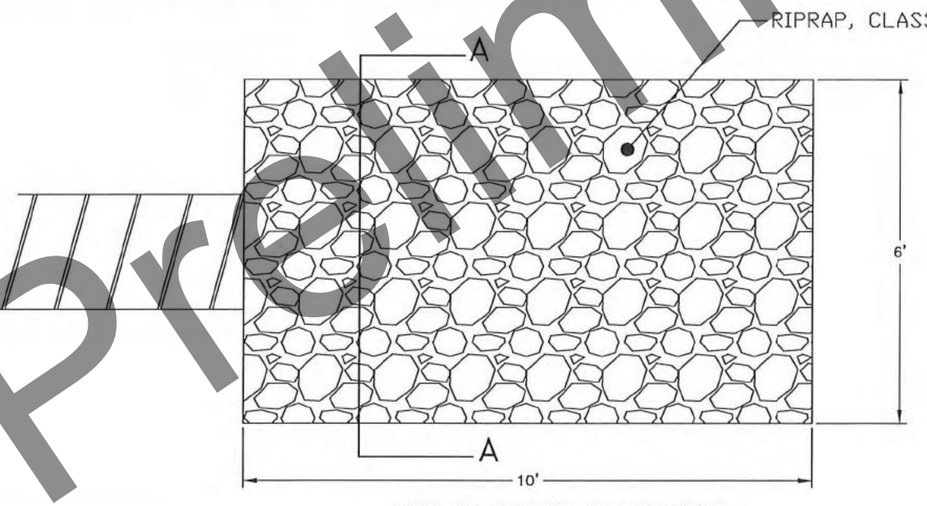
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	E1	E4

CULVERT SUMMARY

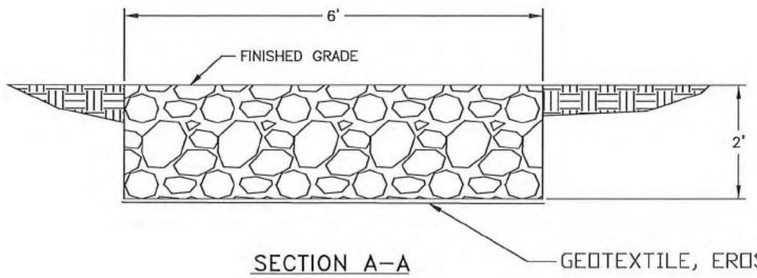
PROJECT STATION	202.0017 REMOVAL OF CULVERT PIPE (EA)	603 PAY ITEMS (FT)	613.0002.000 MARKER POSTS (EA)	616.0002.0050 1/2" DIA. THAW PIPE (EA)	REMARKS	AS-BUILT CENTERLINE LOCATION		
		24"				STATION	LATITUDE	LONGITUDE
5001+06	24"X71'							
5008+07	24"X73'							
5008+85	24"X49'							
5021+13	24"X105'							
5022+06	24"X77'							
30+84		60	2	1				
30+65		45	1	1	TYPE A DROP INLET, INSTALL OUTLET RIP RAP			
13+27		75	2	1				
30+33		60	2	1				
5008+00		45	1	1	TYPE A DROP INLET			
5037+48		64	1	1	TYPE A DROP INLET			
TOTALS:		349	7	4				

(603) CULVERT INSTALLATION SUMMARY

PIPE	INLET STATION	INLET OFFSET	INLET INVERT	OUTLET STATION	OUTLET OFFSET	OUTLET INVERT	LENGTH (FT)	SIZE	ALIGNMENT
P-1	30+84	-28.5	482.0	30+85	31.5	481.5	60	24"	EB on RAMP
P-2	38+65	-14.1	485.0	38+62	30.6	480.6	45	24"	EB on RAMP
P-3	13+27	-39.5	482.5	13+27	35.5	482.0	75	24"	Underpass
P-4	30+33	-23.0	481.6	30+34	37.0	481.0	60	24"	EB-OffRamp2
P-5	5037+48	15.5	485.0	5037+23	-43.5	483.0	64	24"	NB-TURN
P-6	5008+00	13.0	482.0	5008+00	-32.0	481.0	45	24"	NB-TURN



OUTLET RIPRAP PROTECTION



SECTION A-A

CULVERT SUMMARY NOTES:

1. DRILL ALL BOLT HOLES. COAT HOLES WITH ZINC RICH PAINT. FLAME CUTTING SHALL NOT BE PERMITTED.
2. GASKET MATERIAL SHALL BE PLACED BETWEEN DISSIMILAR METALS. GASKET MATERIAL SHALL BE APPROVED PRIOR TO INSTALLATION.
3. ALL CSP CULVERTS SHALL BE 12 GAGE MINIMUM.
4. PIPE BAND GASKETS ARE REQUIRED FOR ALL CSP CULVERTS.
5. ALL CSP CULVERTS INSTALLED SHALL HAVE ALUMINUM-COATED STEEL. SEE STD SPEC 707-2.01.

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\900097_ Culvert Summary-E1 CULVERT SUMMARY Wed, Jul/19/23 03:11 pm

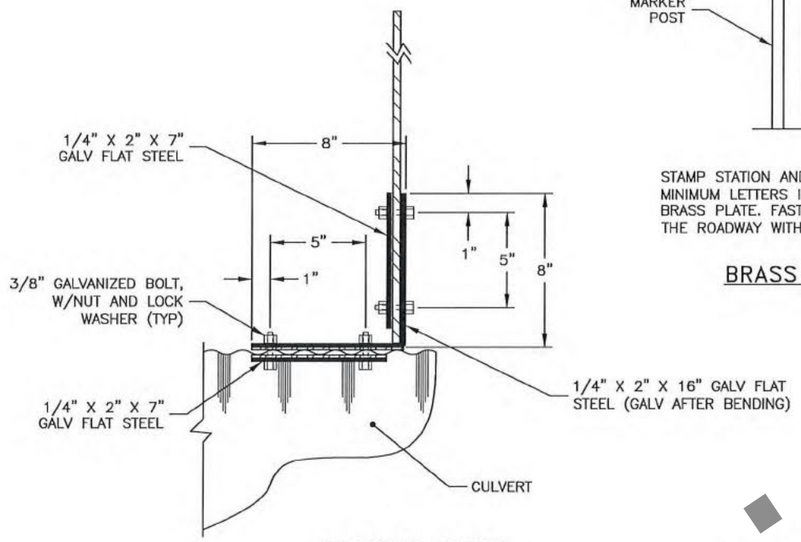
CULVERT NOTES & DETAILS 1 OF 3

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER
7/24/2023

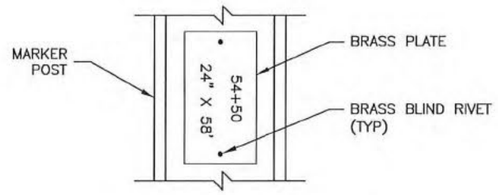
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	E2	E4

CULVERT MARKER POSTS NOTES:

1. MARKER POSTS ARE TO BE INSTALLED ON CROSS CULVERTS ONLY.
2. DRILL ALL BOLT HOLES. COAT HOLES WITH ZINC RICH PAINT. FLAME CUTTING SHALL NOT BE PERMITTED.
3. GASKET MATERIAL SHALL BE PLACED BETWEEN DISSIMILAR METALS. GASKET MATERIAL SHALL BE APPROVED PRIOR TO INSTALLATION.

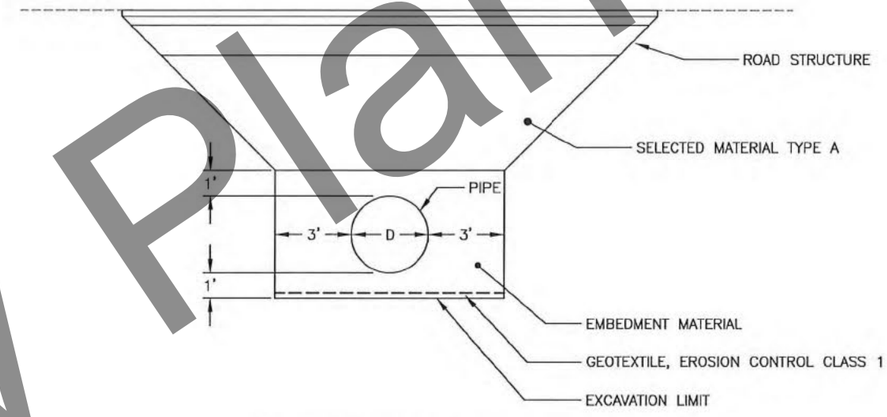


BRACKET DETAIL



STAMP STATION AND PIPE SIZE, USING 3/8" HIGH MINIMUM LETTERS INTO A 2" X 4" X 0.064" THICK BRASS PLATE. FASTEN PLATE TO THE SIDE FACING THE ROADWAY WITH TWO 1/8" BRASS BLIND RIVETS.

BRASS PLATE DETAIL

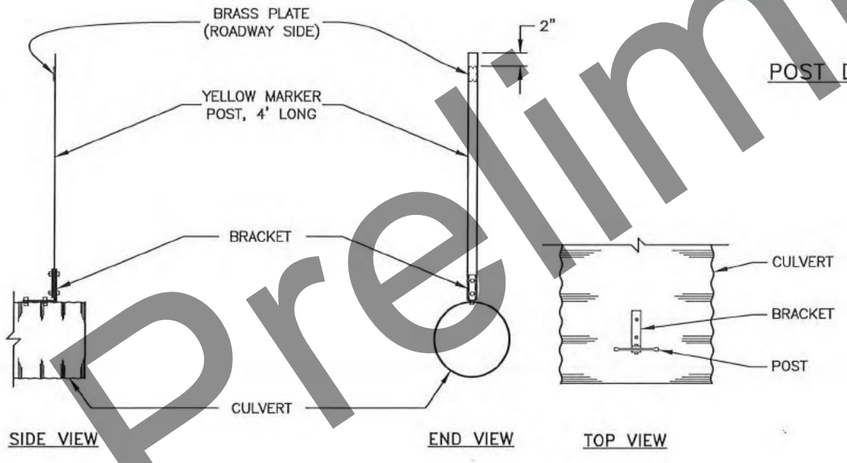


CULVERT BEDDING DETAIL
END VIEW

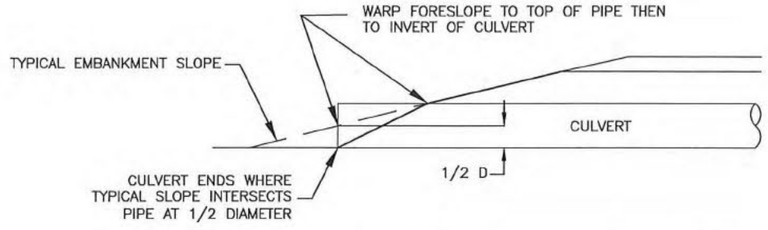
CULVERT BEDDING NOTES:

1. INSTALL ROAD STRUCTURE AS SHOWN ON TYPICAL SECTIONS.
2. EMBEDMENT QUANTITIES ARE MEASURED BY NEAT LINE CUBIC YARD.

POST DETAIL



CULVERT MARKER POST DETAIL



CULVERT SLOPE WARPING DETAIL
2:1 OR FLATTER FORESLOPES

CULVERT NOTES & DETAILS 2 OF 3

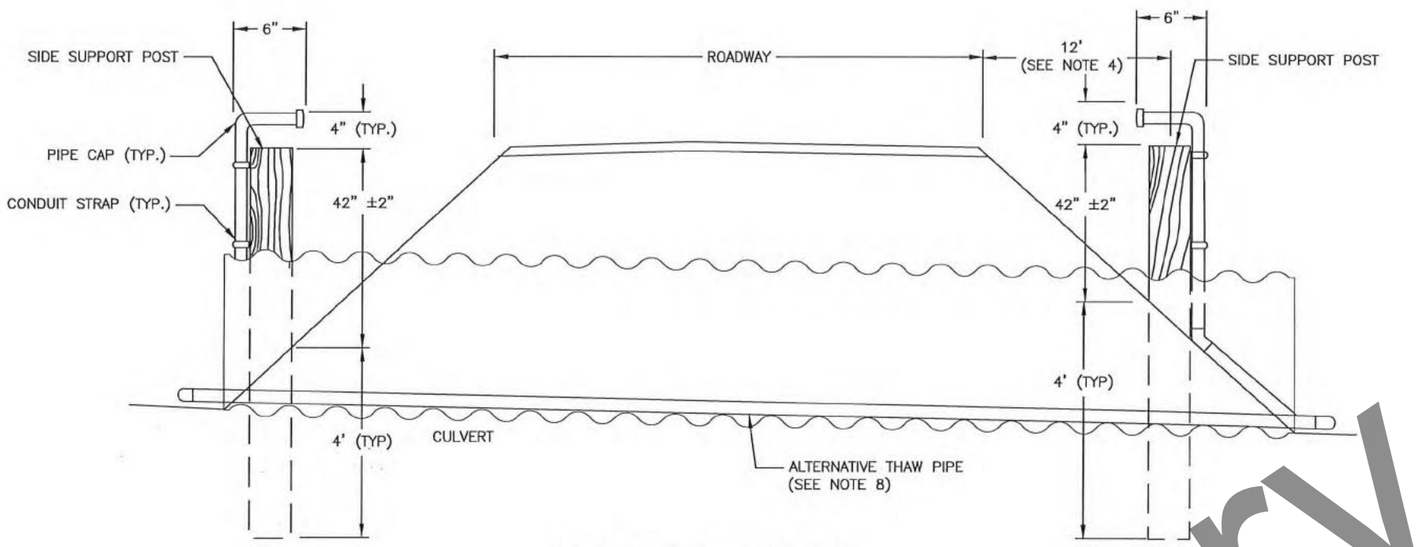
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_hwy\90097_rich_351_ink\Design\C3D\Plots\900097_ Culvert Summary-CULVERT DETAILS Wed, Jul/19/23 03:11pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0651032 / NFHWY00420	2023	E3	E4

LOW FILL CONDITION

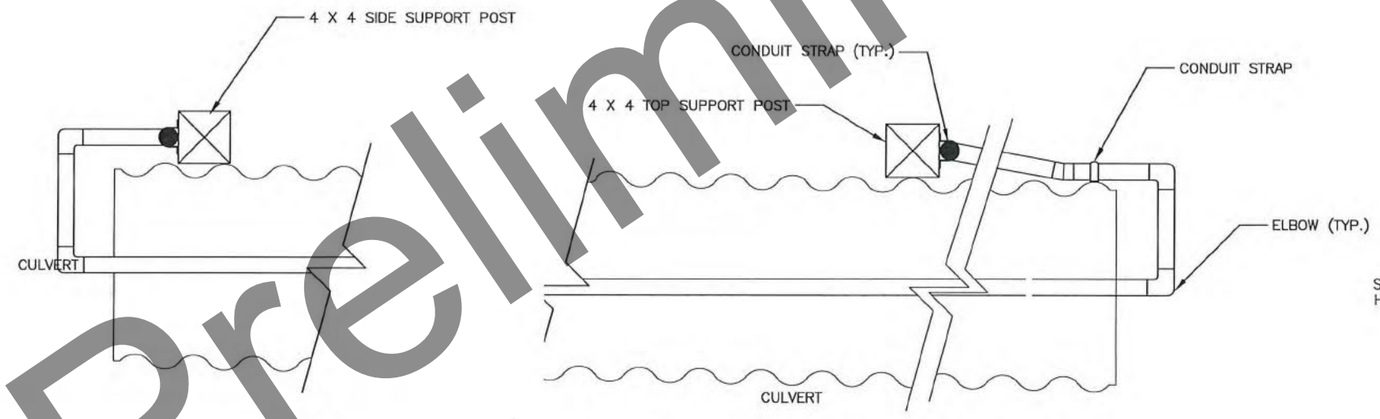
DEEP FILL CONDITION



CULVERT WITH THAW PIPE

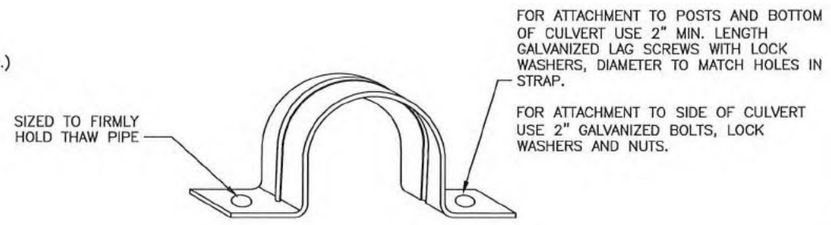
GENERAL NOTES:

1. THESE THAW PIPES ARE INTENDED FOR USE IN STEAM THAWING.
2. USE 1/2" I.D. ASTM A53 GALVANIZED PIPE AND FITTINGS TO MATCH.
3. WHEN THE HEIGHT OF FILL IS LESS THAN 5' TO TOP OF PIPE, LOCATE SUPPORT POST AT THE TOE OF SLOPE.
4. WHEN THE HEIGHT OF FILL EXCEEDS 5' TO TOP OF PIPE, LOCATE THE SUPPORT POST ON THE SIDE SLOPE 12' FROM THE SHOULDER.
5. USE PRESSURE TREATED SUPPORT POSTS OF HEM-FIR, NO. 2 OR BETTER. USE AMMONIACAL COPPER ZINC ARSENATE (ACZA) OR CHROMATED COPPER ARSENATE (CCA) PRESERVATIVES ON SUPPORT POSTS. PRESSURE TREAT IN ACCORDANCE WITH AASHTO M133.
6. FASTEN THAW PIPE TO SUPPORT POSTS WITH GALVANIZED RIGID CONDUIT STRAPS AND MINIMUM 2" LONG GALVANIZED LAG SCREWS AT MAX. 12" CENTERS, IF MORE THAN ONE IS REQUIRED.
7. FILL THAW PIPE WITH A MINUS 50° FAHRENHEIT MIX OF RV ANTIFREEZE AND WATER, THEN CAP. THIS WORK IS SUBSIDIARY TO 616.0002.0050 PAY ITEM.
8. FOR 24" AND 36" CULVERTS, PLACE THAW PIPES IN THE BOTTOM OF THE CULVERT, OR AS DIRECTED BY THE ENGINEER. ATTACH PIPES TO POSTS AS SHOWN.
9. DO NOT USE ANY COUPLINGS OR CONNECTION HARDWARE WITHIN 2' OF A CORNER.



LOW FILL CONDITION
TOP VIEW

DEEP FILL CONDITION
TOP VIEW



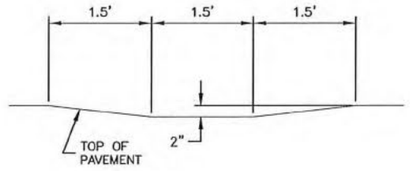
GALVANIZED RIGID CONDUIT
STRAP DETAIL

CULVERT NOTES & DETAILS 3 OF 3

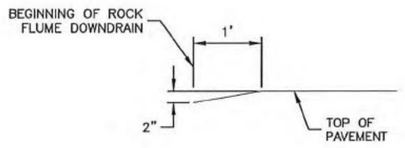
[redacted]
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\900097_ Culvert Summary-CULVERT NOTES & DETAILS 3 Wet, Jul/19/23 03:12pm

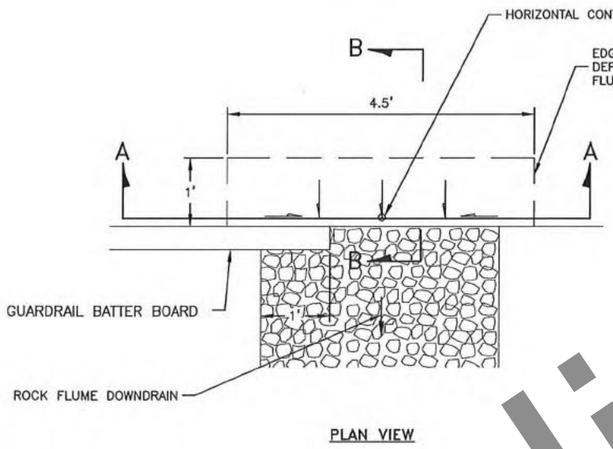
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	E4	E4



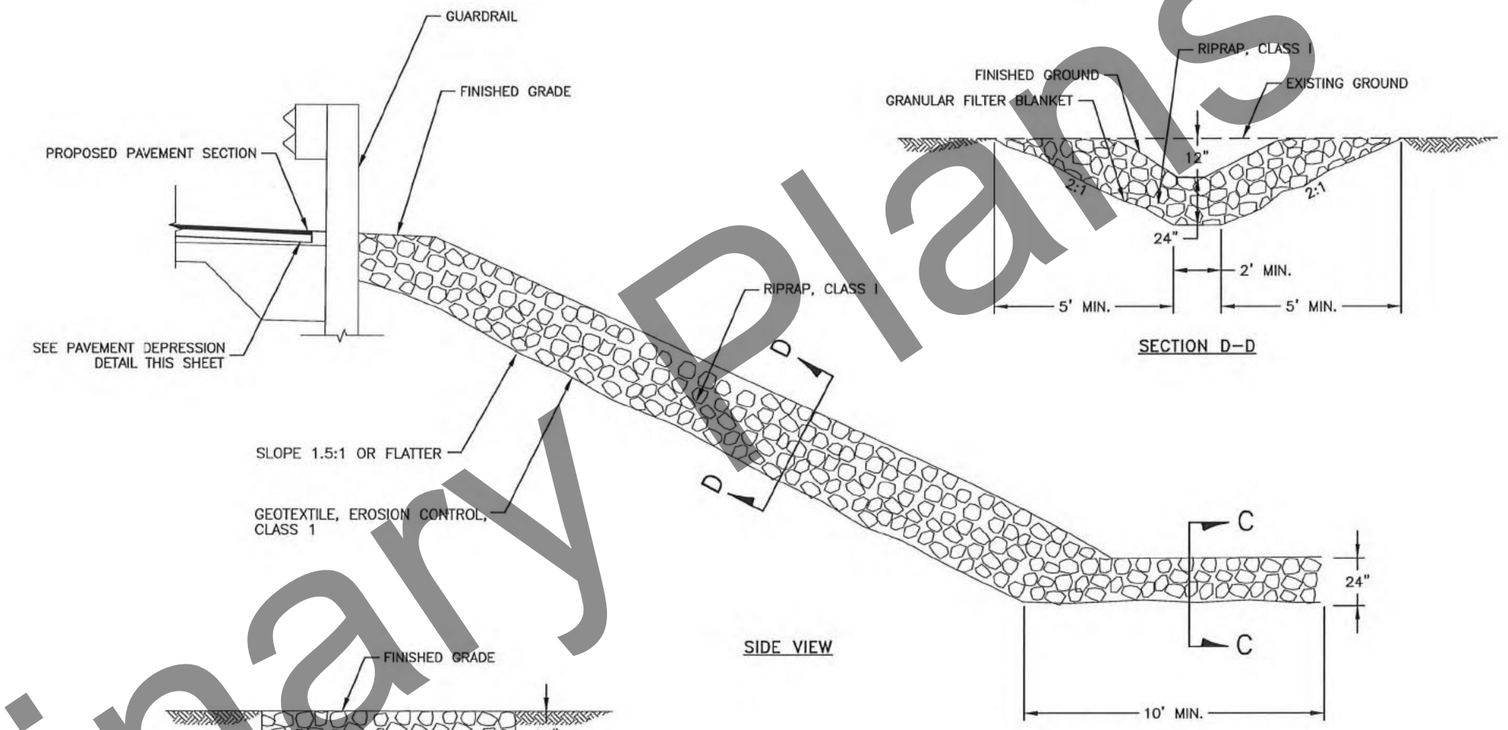
SECTION A–A



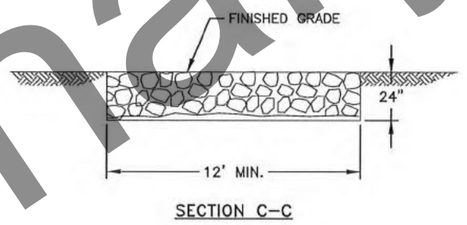
SECTION B–B



PLAN VIEW



SIDE VIEW



SECTION C–C

SECTION D–D

ROCK FLUME DOWNDRAIN

PAVEMENT DEPRESSION AT ROCK FLUME DOWNDRAIN

NOTES:

1. EXCAVATE TO PLACE ROCK SO THAT THE TOP OF THE FLUME SIDES ARE AT FINAL GRADE
2. SHAPE THE CHANNEL AS SHOWN IN THE PLANS
3. INSTALLATION OF GUARDRAIL BATTER BOARD FROM END BRIDGE CONCRETE BRIDGE BARRIER TO ROCK FLUME DOWN DRAIN IS SUBSIDIARY TO 611.0001.0001

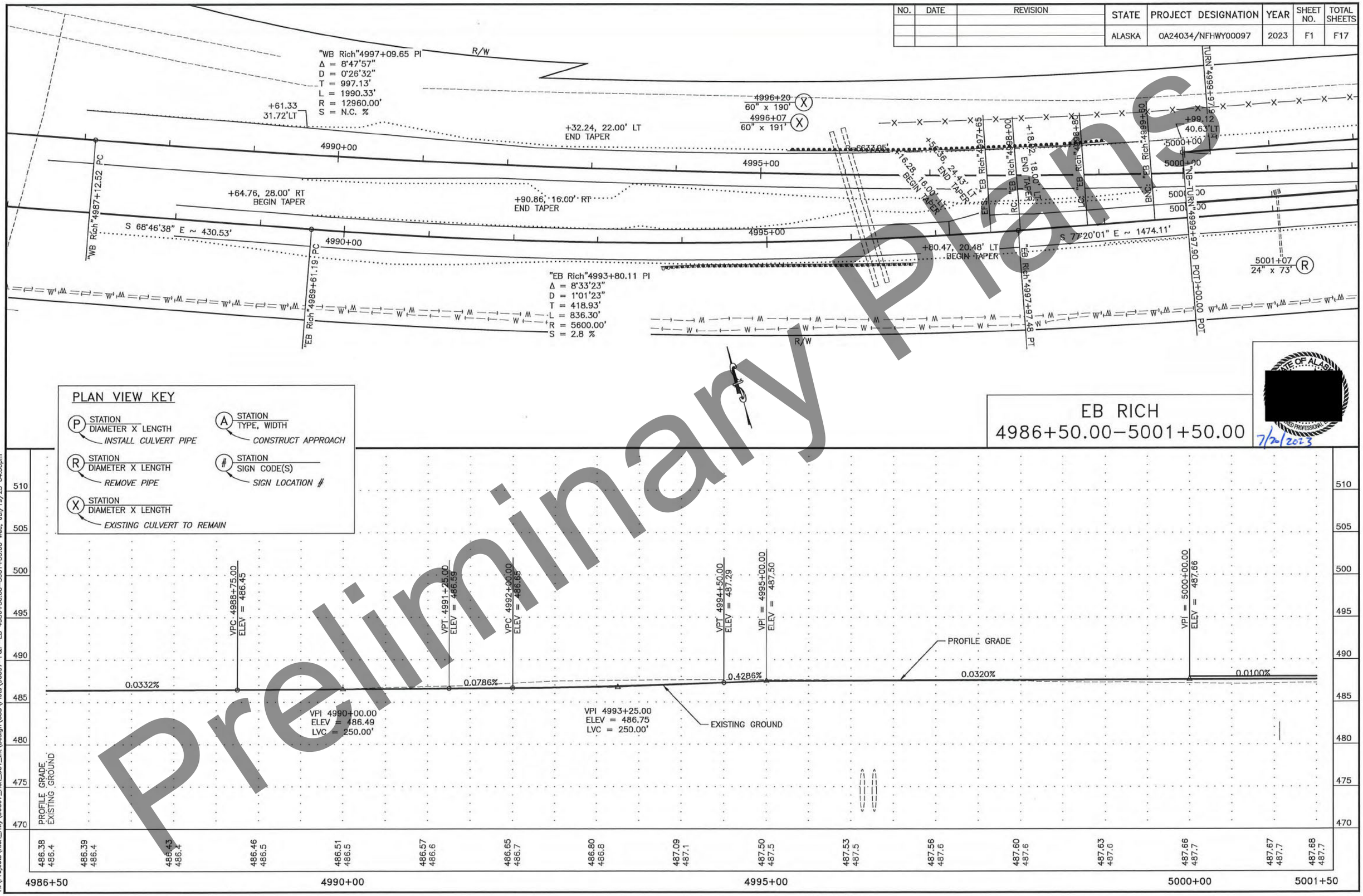
611.0001.0001 – RIPRAP, CLASS I			
BEGIN STATION	END STATION	LT/RT	VOLUME (CY)
RICH4LANE "5017+38"	RICH4LANE "5017+50"	RT	40
RICH4LANE "5019+50"	RICH4LANE "5019+62"	RT	40
EB ON RAMP "38+62"		RT	5

ROCK FLUME DOWNDRAIN DETAIL

STATE OF ALASKA
[redacted]
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\ROCK FLUME-ROCK FLUME DOWNDRAIN DETAIL Mon, Jul/17/23 12:59pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	F1	F17



PLAN VIEW KEY

- (P) STATION / DIAMETER X LENGTH — *INSTALL CULVERT PIPE*
- (A) STATION / TYPE, WIDTH — *CONSTRUCT APPROACH*
- (R) STATION / DIAMETER X LENGTH — *REMOVE PIPE*
- (#) STATION / SIGN CODE(S) — *SIGN LOCATION #*
- (X) STATION / DIAMETER X LENGTH — *EXISTING CULVERT TO REMAIN*

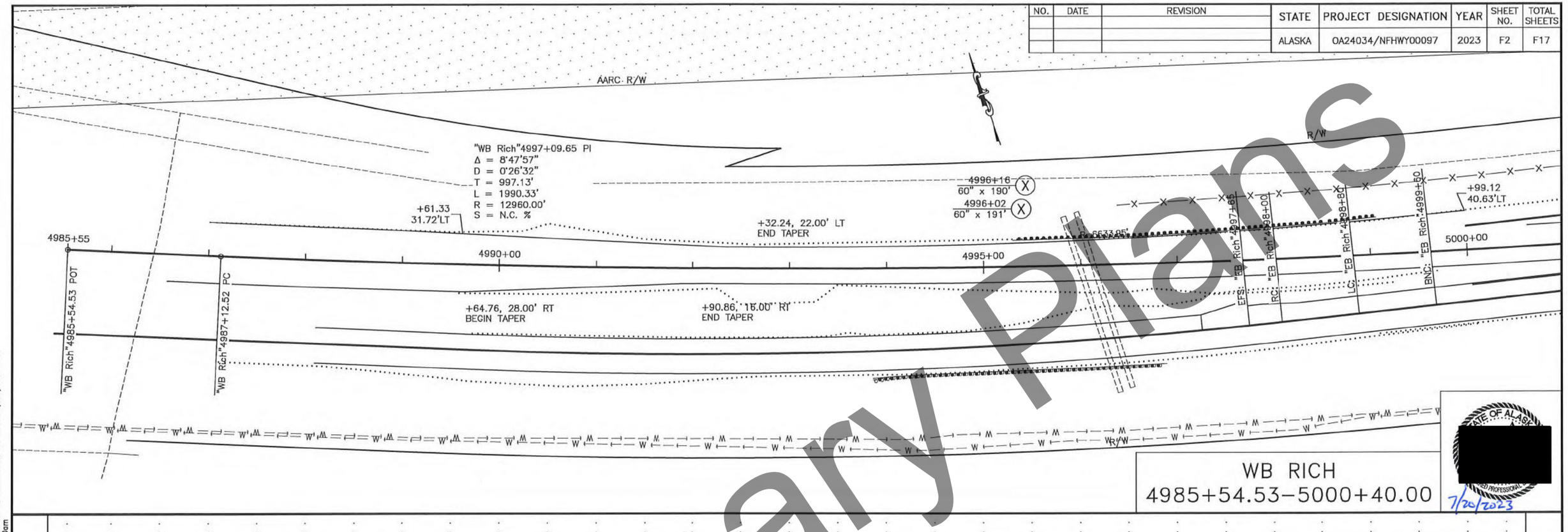
EB RICH
4986+50.00–5001+50.00

7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\90097-P&P-EB 4986+50.00-5001+50.00 Wed, Jul/19/23 04:30pm

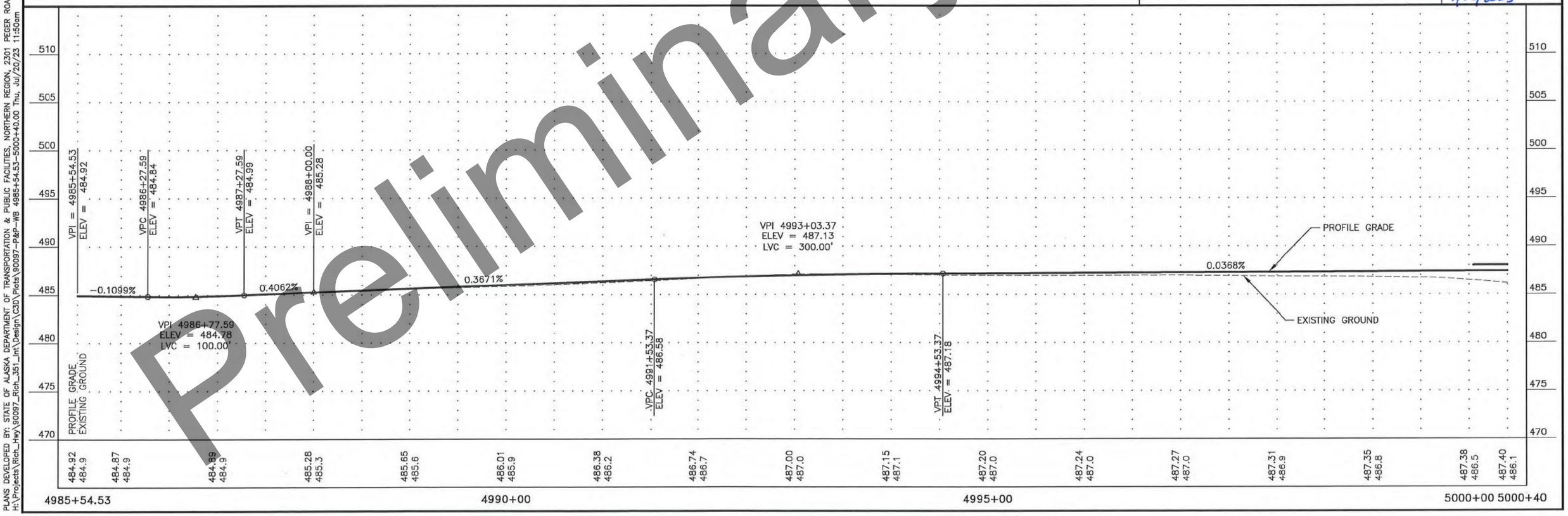
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	OA24034/NFHWY00097	2023	F2	F17



WB RICH
4985+54.53–5000+40.00

STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-WB 4985+54.53-5000+40.00 Thu, Jul/20/23 11:50am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	F3	F17

ARRC R/W

R/W

5007+99
24" x 46' (P)

5008+06
24" x 71' (R)

BNC: "EB Rich:4999+60

5000+00

+05.00
7.00'LT

+05.00
1.00'LT

5005+00

5010+00

5015

S 77°20'01" E ~ 2354.33'

S 77°20'01" E ~ 2354.33'

+77.17
39.11'RT

+55.91
39.00'RT

+55.91
43.04'RT

MATCH "Rich4Lane" 5015+00 LINE

"Rich4Lane"5000+00.00 POT

5001+05
24" x 73' (R)

5008+85
24" x 49' (R)

R/W

NEW R/W

RICH4LANE
5000+00.00–5015+00.00

STATE OF ALASKA
REGISTERED PROFESSIONAL ENGINEER
[redacted]
7/25/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-4L 5000+00.00-5015+00.00 Thu, Jul/20/23 11:26am

VPI = 5000+00.00
ELEV = 488.00

VPC 5005+25.00
ELEV = 488.06

VPT 5010+75.00
ELEV = 496.22

VPC 5012+00.00
ELEV = 499.92

0.0106%

2.9600%

PROFILE GRADE

VPI 5008+00.00
ELEV = 488.08
LVC = 550.00'

EXISTING GROUND

PROFILE GRADE
EXISTING GROUND

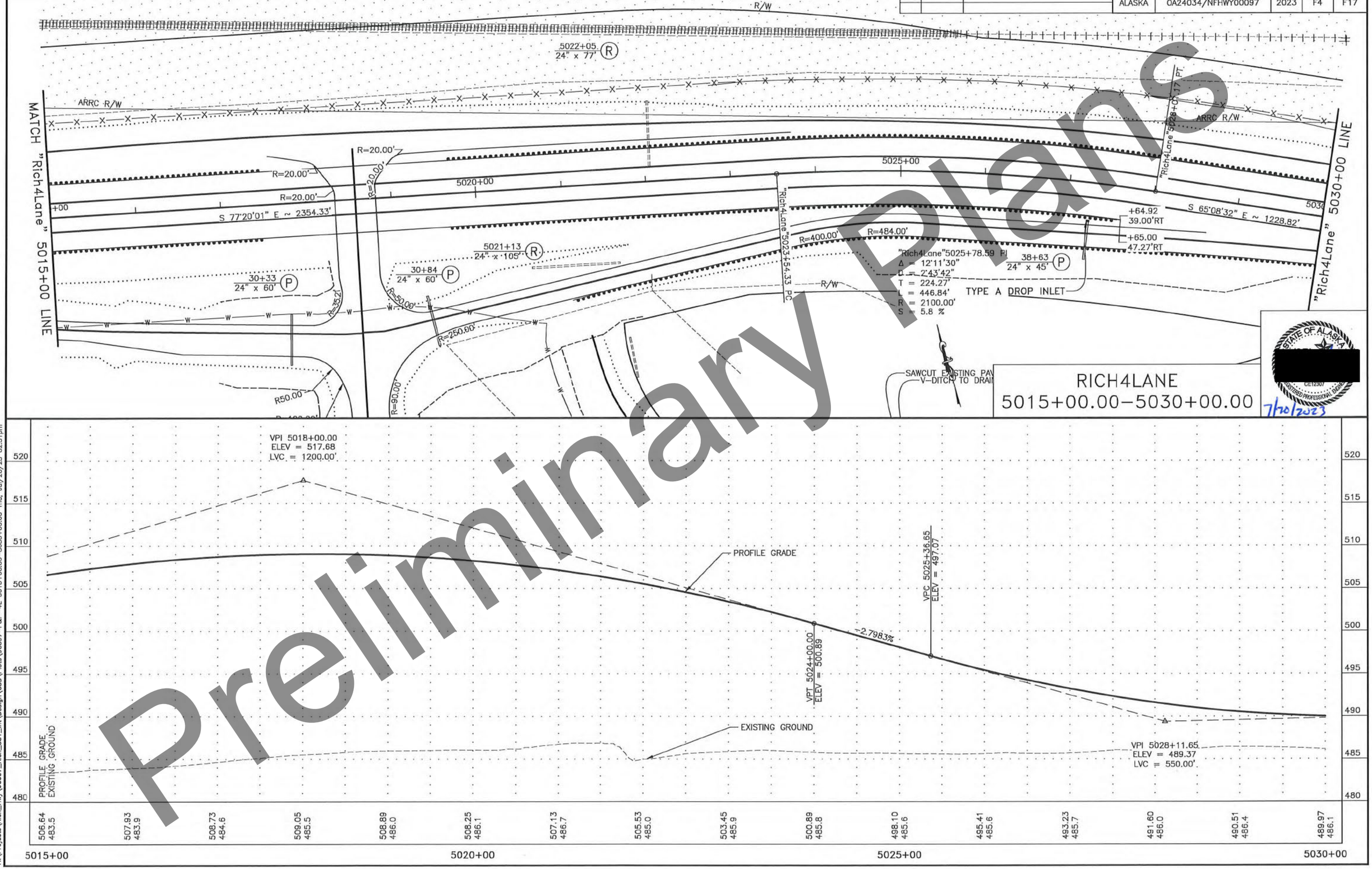
510 505 500 495 490 485 480 475 470

488.00 485.0 | 488.01 484.4 | 488.02 484.8 | 488.03 484.9 | 488.04 484.7 | 488.05 484.5 | 488.21 484.4 | 488.90 483.9 | 490.11 483.5 | 491.87 483.3 | 494.16 482.8 | 496.96 482.8 | 499.92 483.0 | 502.64 482.8 | 504.88 483.2 | 506.64 483.5

5000+00 5005+00 5010+00 5015+00

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F4	F17

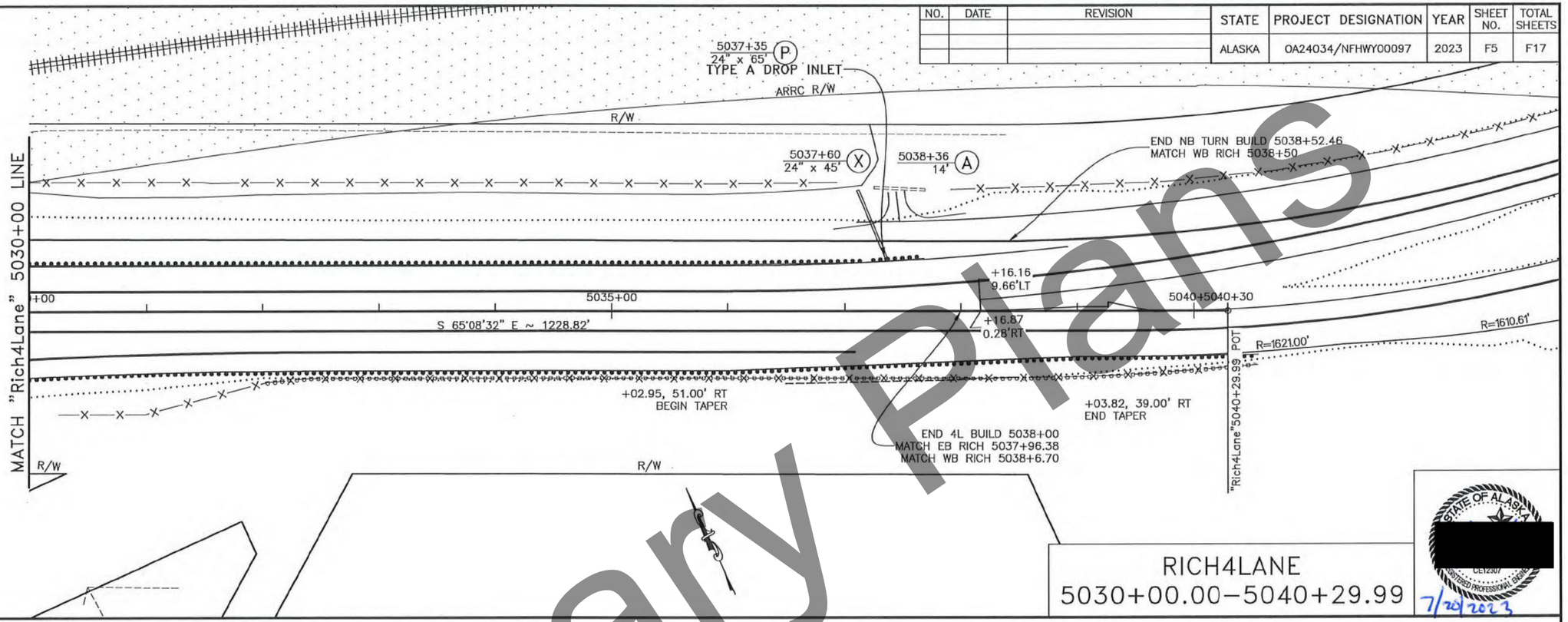


RICH4LANE
5015+00.00–5030+00.00

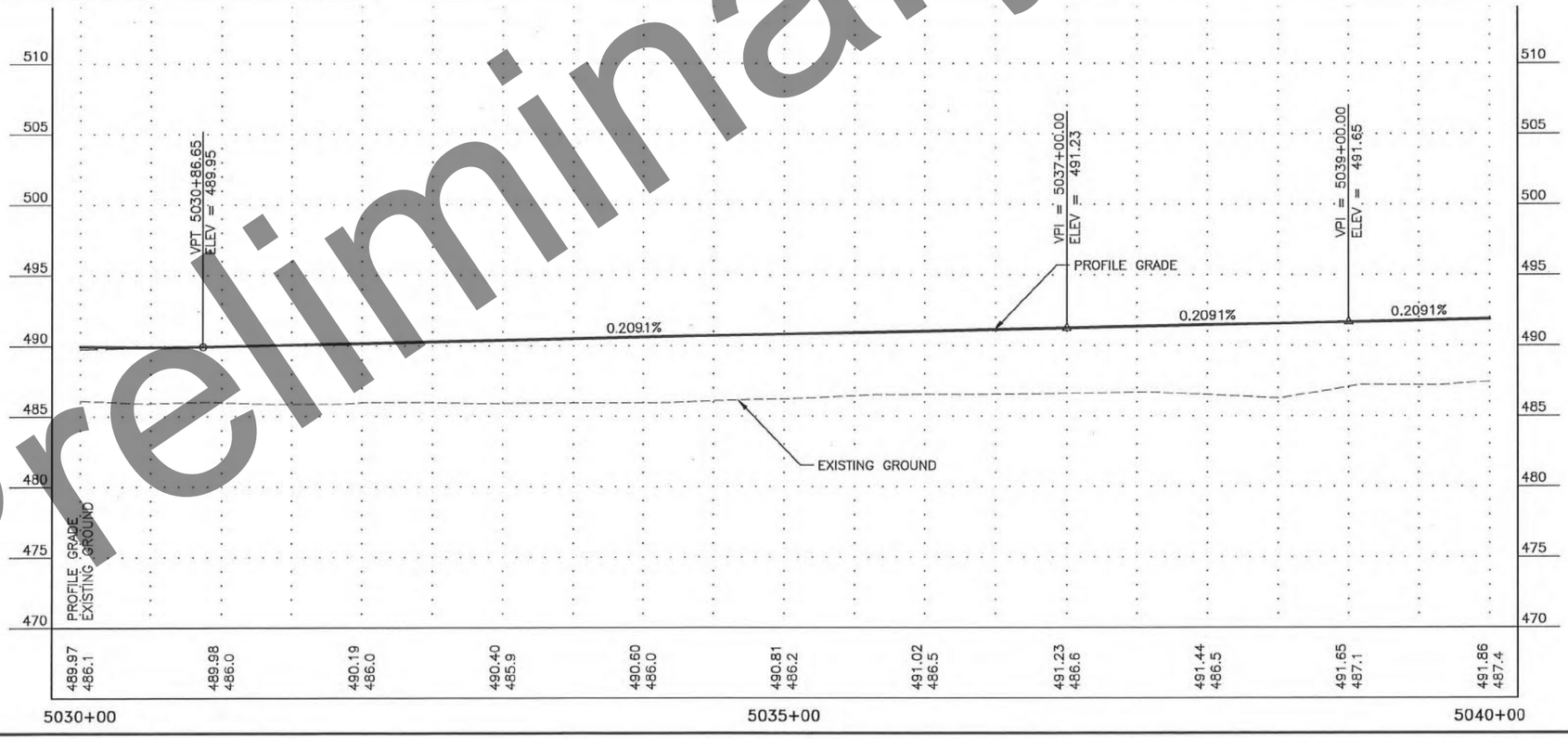
STATE OF ALASKA
[redacted]
CE12307
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-4L 5015+00.00-5030+00.00 Thu, Jul/20/23 02:31pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	F5	F17



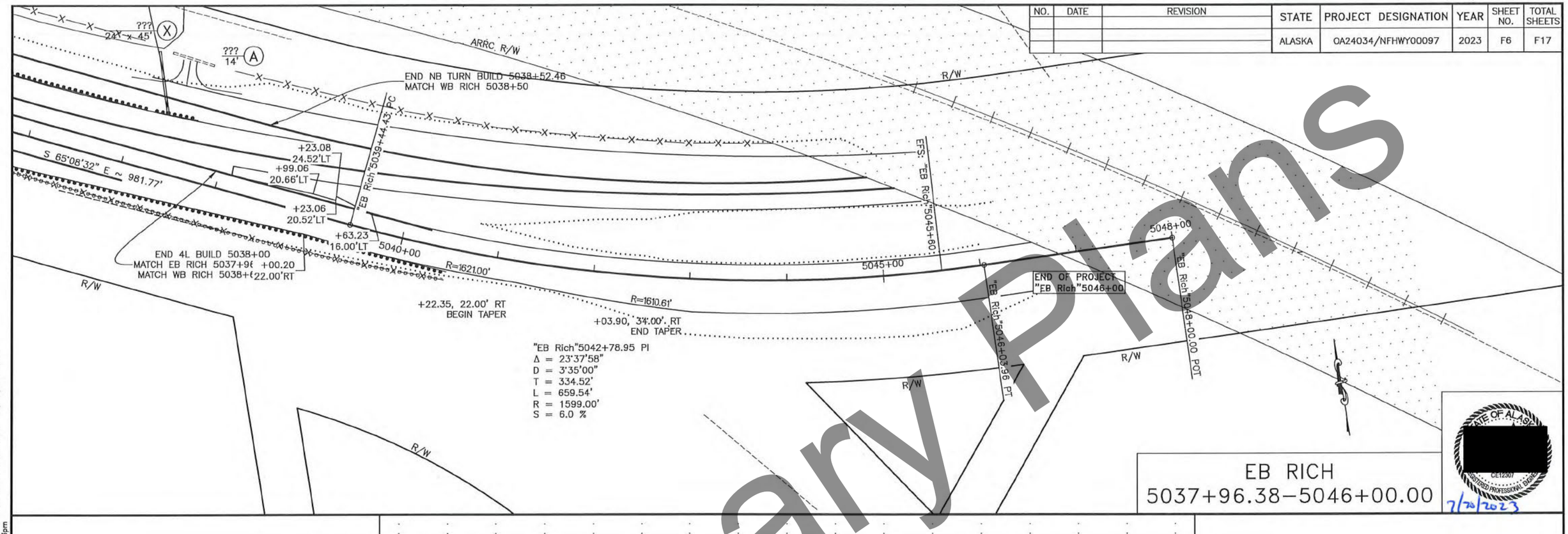
RICH4LANE
5030+00.00–5040+29.99



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_im\Design\C3D\Plots\90097-P&P-4L 5030+00.00-5040+29.99 Thu, Jul/20/23 02:24pm

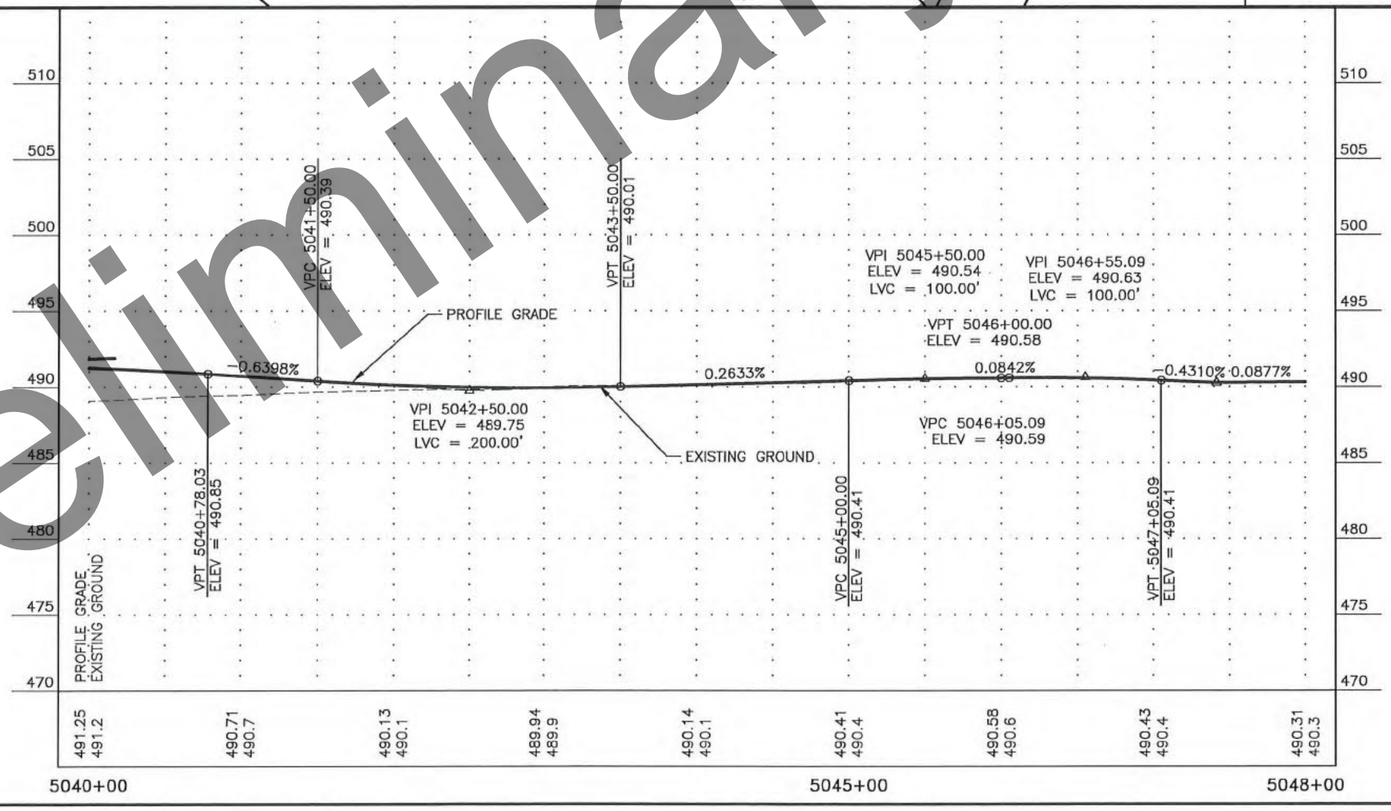
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F6	F17



EB RICH
5037+96.38–5046+00.00

STATE OF ALASKA
[redacted]
CE12307
REGISTERED PROFESSIONAL ENGINEER
7/25/2023



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Jrl\Design\C3D\Plots\90097-P&P-EB 5037+96.38-5046+00.00 Thu, Jul/20/23 01:53pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	F7	F17

5037+35
24" x 65' (P)
TYPE A DROP INLET

5037+60
24" x 45' (X)

5038+36
14' (A)

ENC: "WB Rich"5034+70
LC: "WB Rich"5035+25
RC: "WB Rich"5035+75
BFS: "WB Rich"5036+50

5035+00

S 65°08'32" E ~ 637.16'

"WB Rich"5036+09.95 PC

"WB Rich"5038+49.99 =
"NB-TURN"5038+52.46

"WB Rich"5039+06.66 =
"NB-TURN"5039+03.92

ARRC R/W

END NB TURN BUILD 5038+52.46
MATCH WB RICH 5038+50

END 4L BUILD 5038+00
MATCH EB RICH 5037+96.38
MATCH WB RICH 5038+6.70

5040+00

"WB Rich"5041+55.79 PI
Δ = 23°42'46"
D = 2°12'13"
T = 545.84'
L = 1076.05'
R = 2600.00'
S = 4.8 %

R=1621.00'

R=1610.61'

R/W

END OF PROJECT
"WB Rich"5045+00
MATCH EXISITING

END OF PROJECT
"WB Rich"5045+00

EFS: "WB Rich"5046+50

EFS: "EB Rich"5045+60

5045+00

5047+00

"WB Rich"5046+86.08 PT

"WB Rich"5047+00.00 POT

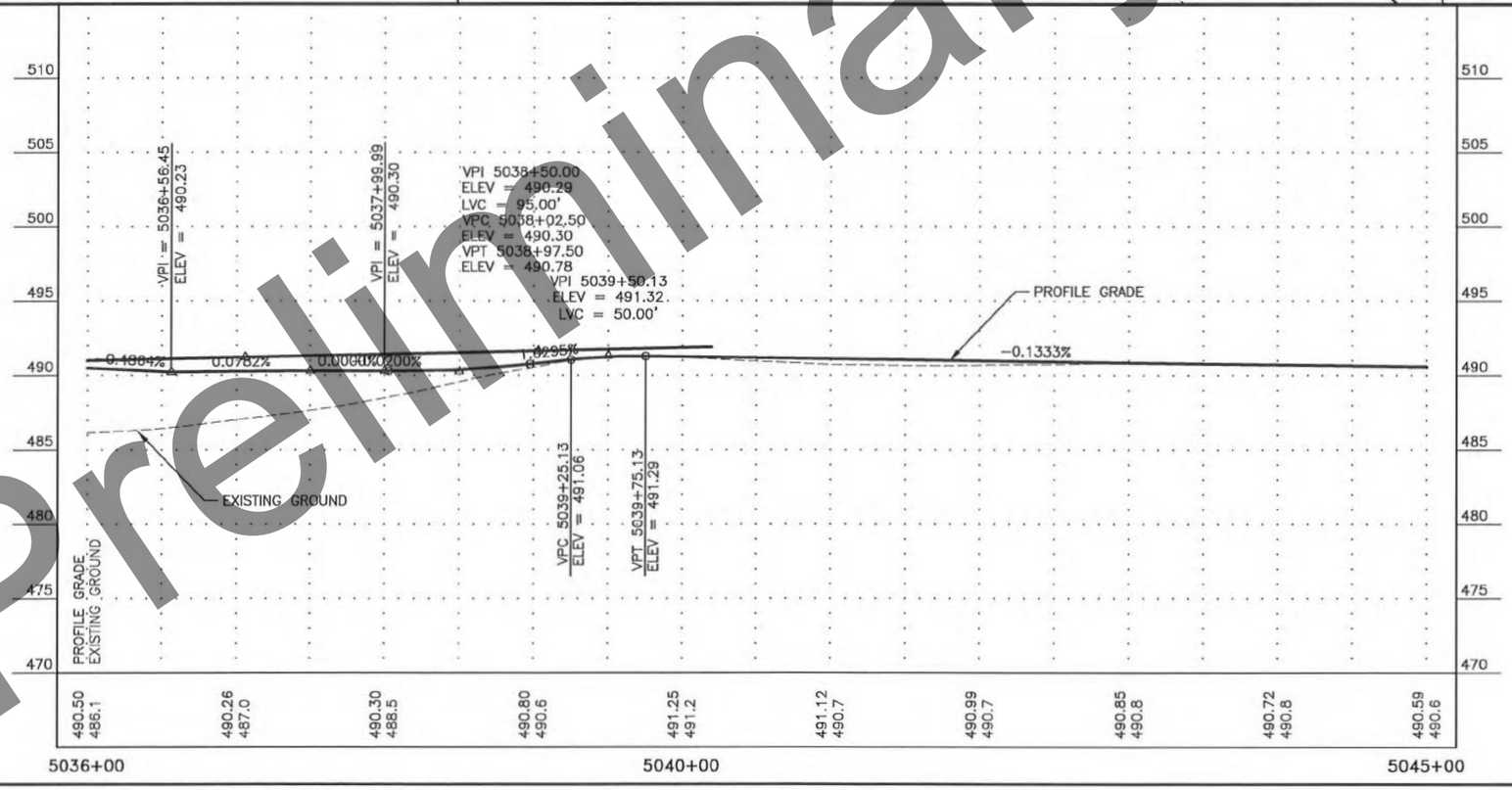
R/W

R/W

R/W

WB RICH
5036+00.000–5047+00.00

STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-WB 5036+00.00-5047+00.00 Thu, Jul/20/23 01:57pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F8	F17

R/W

5007+99 24" x 46' (P)

5008+06 24" x 71' (R)

+06.06 14.00'LT

20+00

S 69°00'14" E ~ 647.07'

25+00

ENC: "EB-OffRamp2"25+70

LC: "EB-OffRamp2"26+10

BFS: "EB-OffRamp2"26+65

EFS: "EB-OffRamp2"28+50

LC: "EB-OffRamp2"29+05

BNC: "EB-OffRamp2"29+50

R=20.00'

R=20.00'

"EB-OffRamp2"30+96.03 PC

R=20.00'

5021+13 24" x 105' (R)

30+84 24" x 60' (P)

30+33 24" x 60' (P)

59.57 10.00'LT

30+00

R=35.21'

31+17

R=50.00'

R=250.90'

S 73°11'14" E ~ 229.91' S 77°20'01" E

20.98'

"EB-OffRamp2"31+17.01 POT

R=90.00'

R=125.00'

R=70.00'

+06.64 10.00'LT

+29.21 12.00'RT

5008+85 24" x 49' (R)

"EB-OffRamp2"20+00.00 PC

"EB-OffRamp2"26+47.07 PC

+86.81, 12.00' RT BEGN TAPER

"EB-OffRamp2"27+56.65 PI
Δ = 4°11'01"
D = 1°54'35"
T = 109.57'
L = 219.05'
R = 3000.00'
S = 2.6 %

"EB-OffRamp2"28+66.12 PT

+05.49 26.00'RT

+49.05 26.96'RT

R50.00

R=100.00'

13+26 24" x 75' (P)

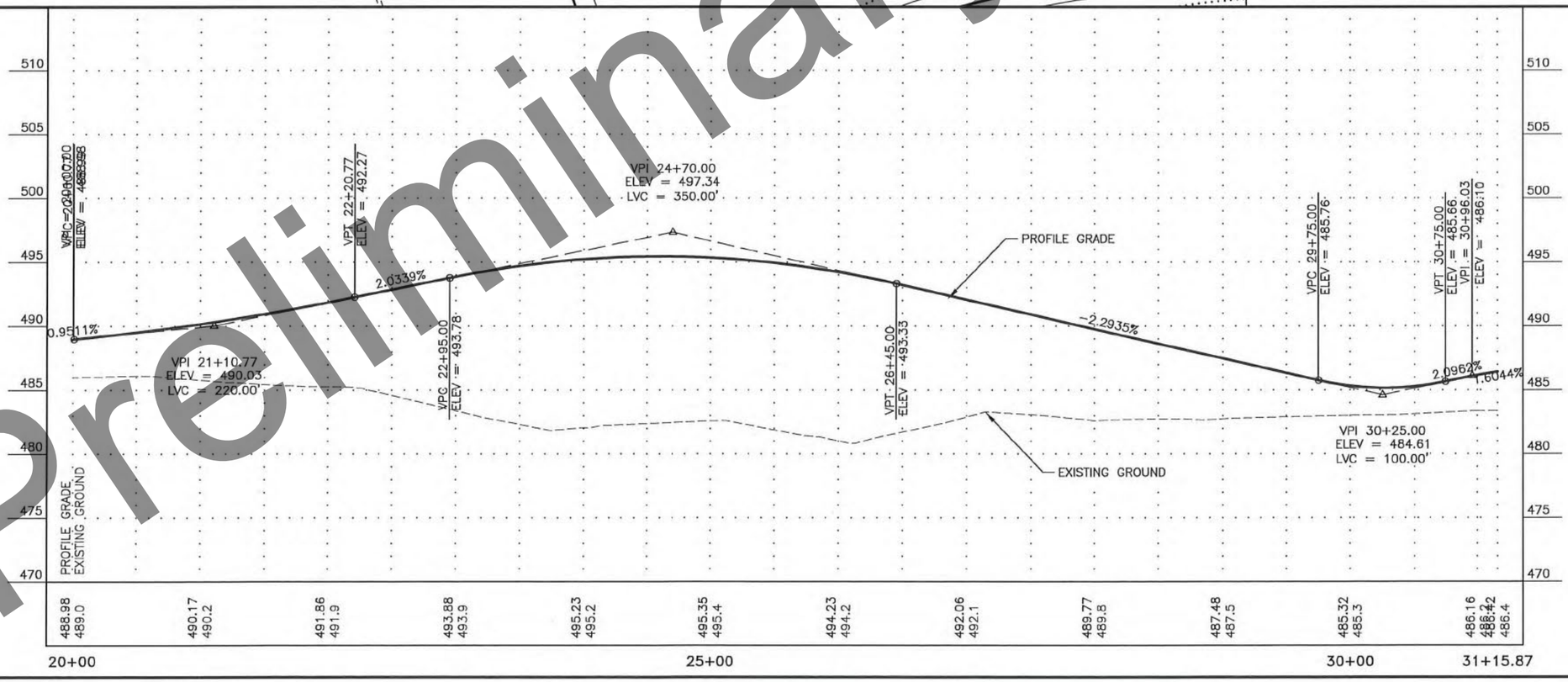
R=45.00

NEN R/W

R/W

OFF RAMP
20+00.00–31+15.87

STATE OF ALASKA
[redacted]
CE12307
REGISTERED PROFESSIONAL ENGINEER
7/24/2023

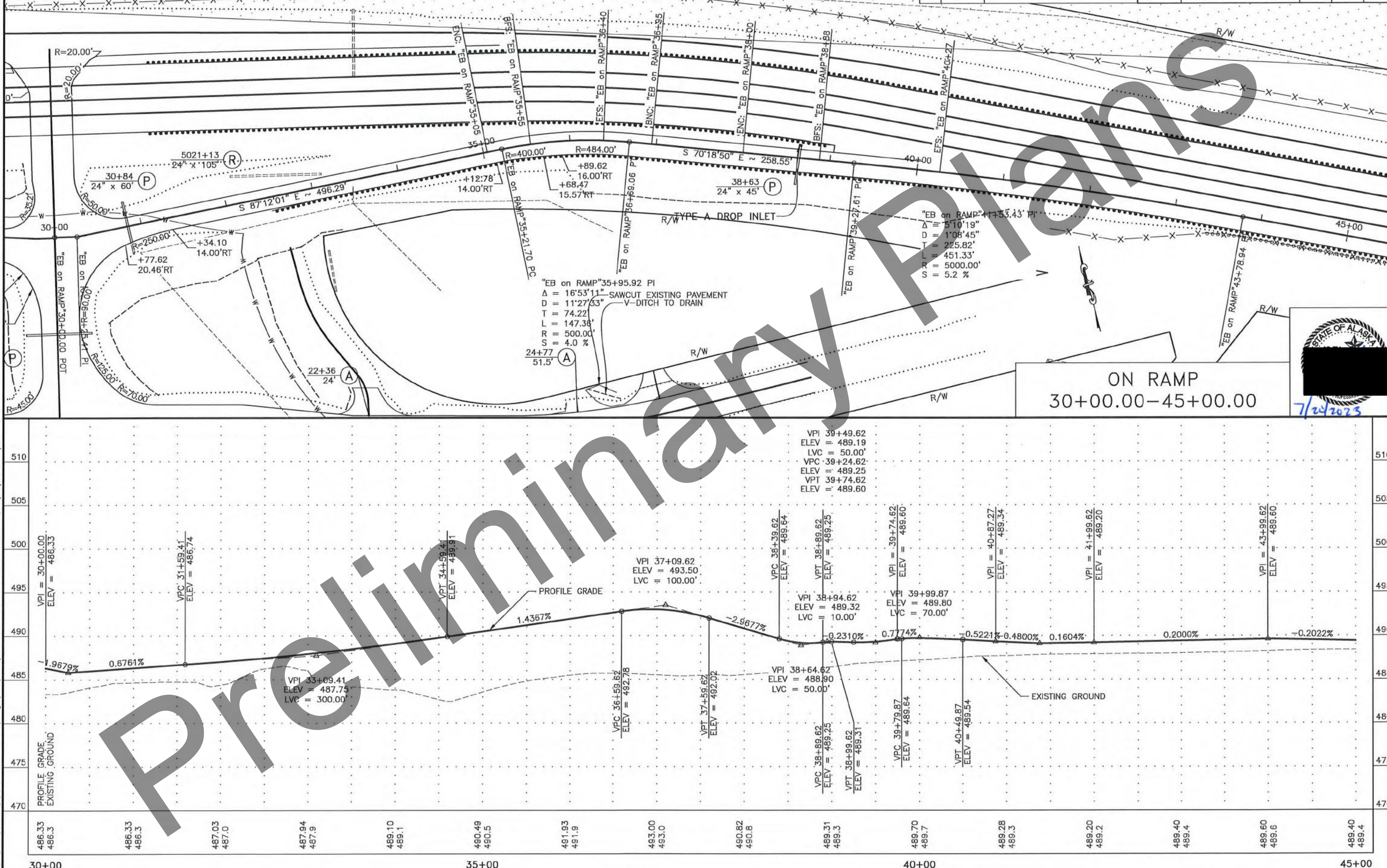


PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\60097_Rich_351_Imt\Design\C3D\Plots\60097-P&P-OFF 20+00.00-31+15.87 Thu, Jul/20/23 08:59am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F9	F17

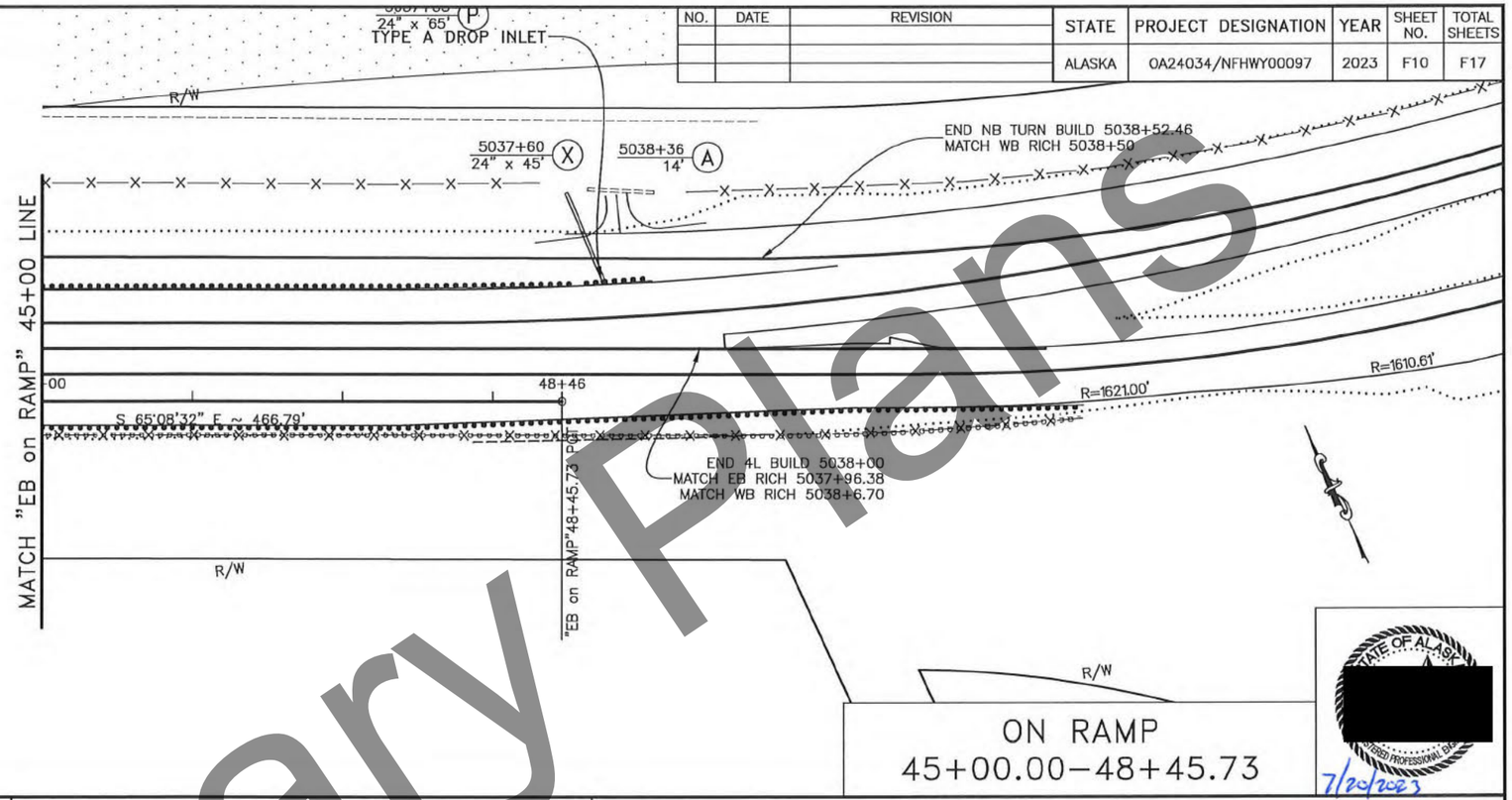
ON RAMP
30+00.00–45+00.00



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-ON 30+00.00-45+00.00 Thu, Jul/20/23 02:10pm

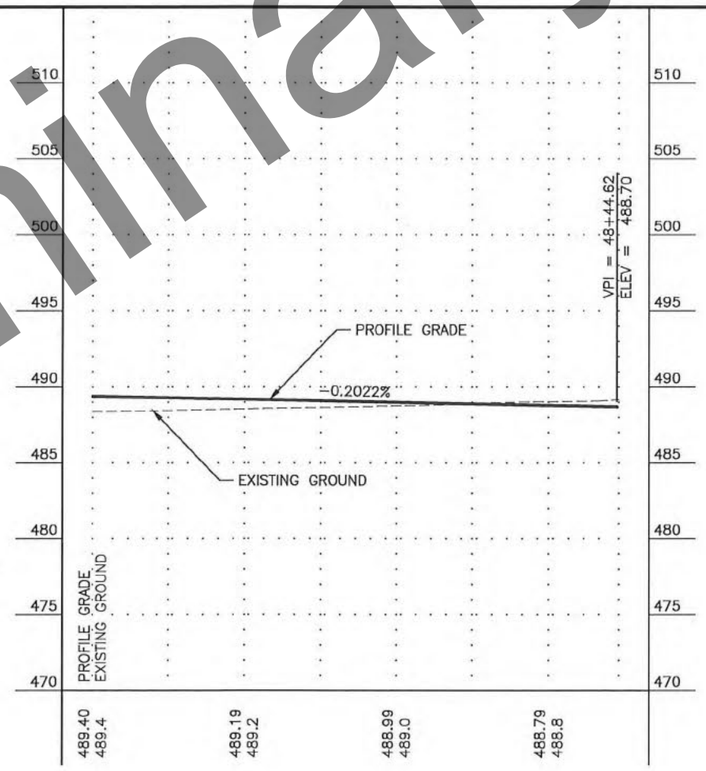
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F10	F17



ON RAMP
45+00.00–48+45.73

STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Imt\Design\C3D\Plots\90097-P&P-ON 45+00.00-48+45.73 Thu, Jul/20/23 11:10am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F11	F17

"NB-TURN"5006+87.42 PI
Δ = 1°10'37"
D = 1°25'57"
T = 41.09'
L = 82.17'
R = 4000.00'
S = N.C.

"NB-TURN"4999+97.90 POT
BNC: EB Rich 4999+60
"NB-TURN"5006+60 ENC:
EFS: "NB-TURN"5007+20
R/W
AARC R/W
5007+99 24" x 46' (P)
5008+06 24" x 71' (R)
5000+00
5005+00
5010+00
5015
S 77°21'07" E ~ 648.44'
S 78°31'44" E ~ 794.51'
"NB-TURN"5006+46.34 PC
"NB-TURN"5007+28.51 PT
5001+05 24" x 73' (R)
5008+85 24" x 49' (R)
R/W
NEW R/W

NB-TURN
5000+00.00–5010+00.00

STATE OF ALASKA
[redacted]
CERTIFIED
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PROFILE GRADE
EXISTING GROUND

VPC 5000+37.50 ELEV = 486.91
VPT 5000+62.50 ELEV = 486.91
VPC 5001+10.00 ELEV = 486.89
VPT 5001+90.00 ELEV = 486.80
VPI = 5002+50.00 ELEV = 486.75
VPC 5002+75.00 ELEV = 486.63
VPT 5004+75.00 ELEV = 486.03
VPC 5007+50.00 ELEV = 485.76
VPT 5012+50.00 ELEV = 485.55

VPI 5000+80.00
ELEV = 486.93
LVC = 25.00'

VPI 5000+50.00
ELEV = 486.90
LVC = 25.00'

VPI 5001+50.00
ELEV = 486.84
LVC = 80.00'

VPI 5003+75.00
ELEV = 486.12
LVC = 200.00'

VPI 5006+00.00
ELEV = 485.92
LVC = 200.00'

VPI 5010+00.00
ELEV = 485.49
LVC = 500.00'

VPC 5000+87.50 ELEV = 486.92
VPT 5000+92.50 ELEV = 486.91
VPC 5005+00.00 ELEV = 486.01
VPT 5007+00.00 ELEV = 485.81

−0.1139% 0.0857% 0.1296% −0.0817% −0.5028% −0.0931% −0.1052% 0.0231%

PROFILE GRADE
EXISTING GROUND

510 505 500 495 490 485 480 475 470

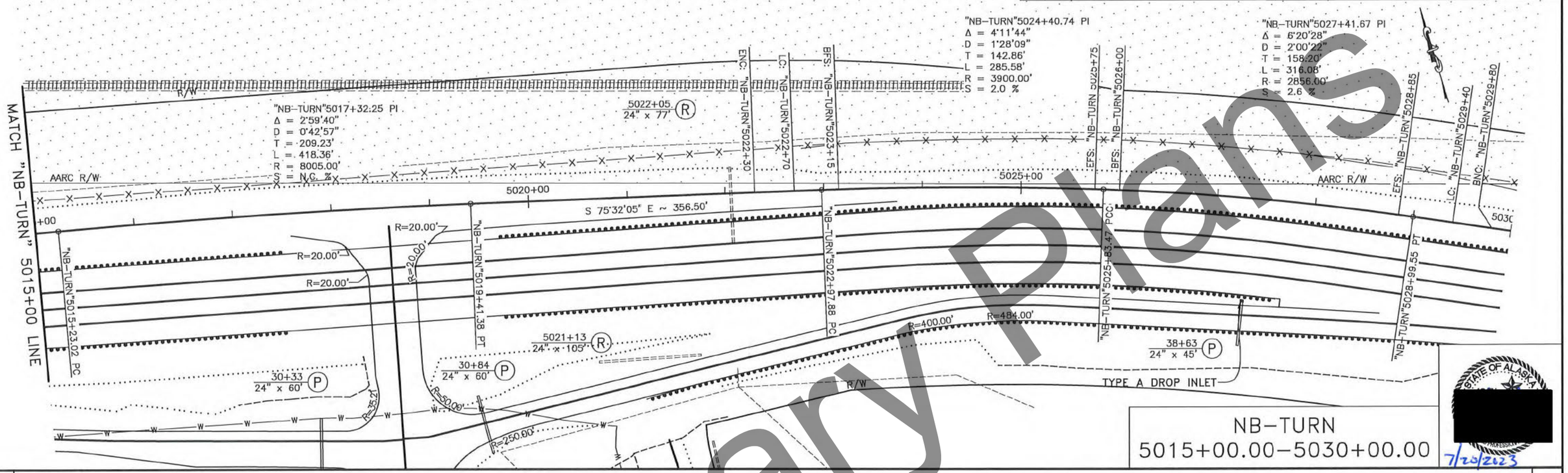
486.96 487.0 | 486.90 486.9 | 486.79 486.8 | 486.51 486.5 | 486.16 486.2 | 486.01 486.0 | 485.91 485.9 | 485.81 485.8 | 485.71 485.7 | 485.63 485.6 | 485.57 485.6 | 485.55 485.5 | 485.54 485.5 | 485.56 485.6 | 485.59 485.6 | 485.61 485.6

5000+00 5005+00 5010+00 5015+00

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-NBT 5000+00.00-5015+00.00 Thu, Jul/20/23 02:23pm

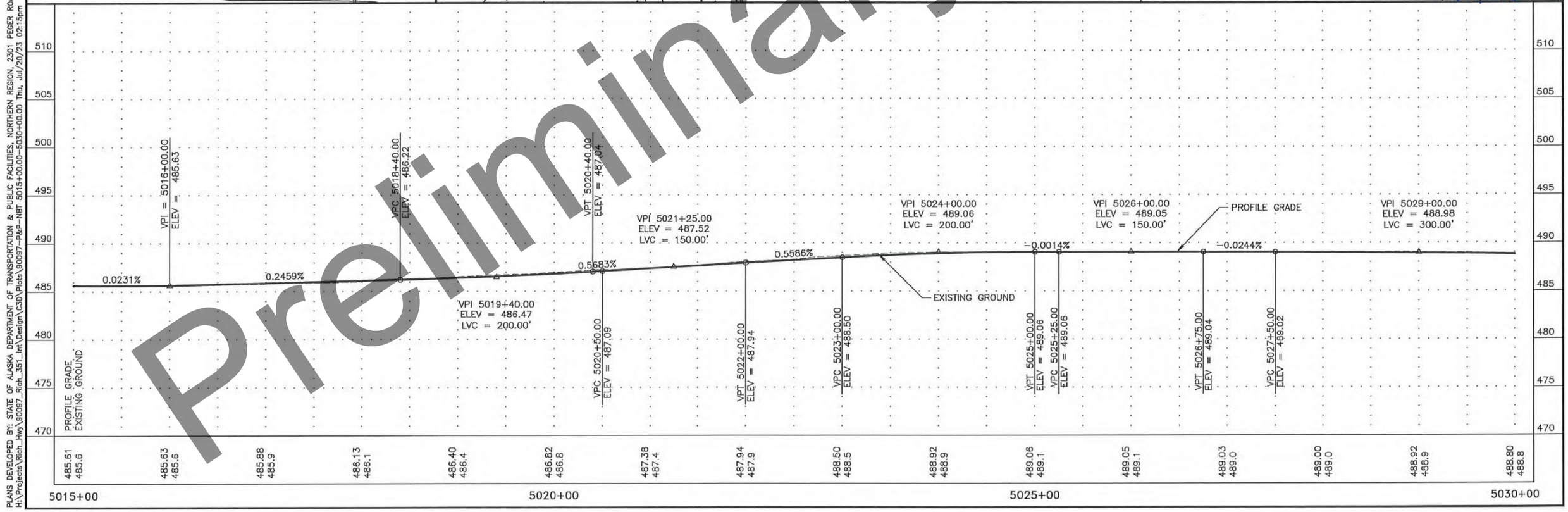
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F12	F17



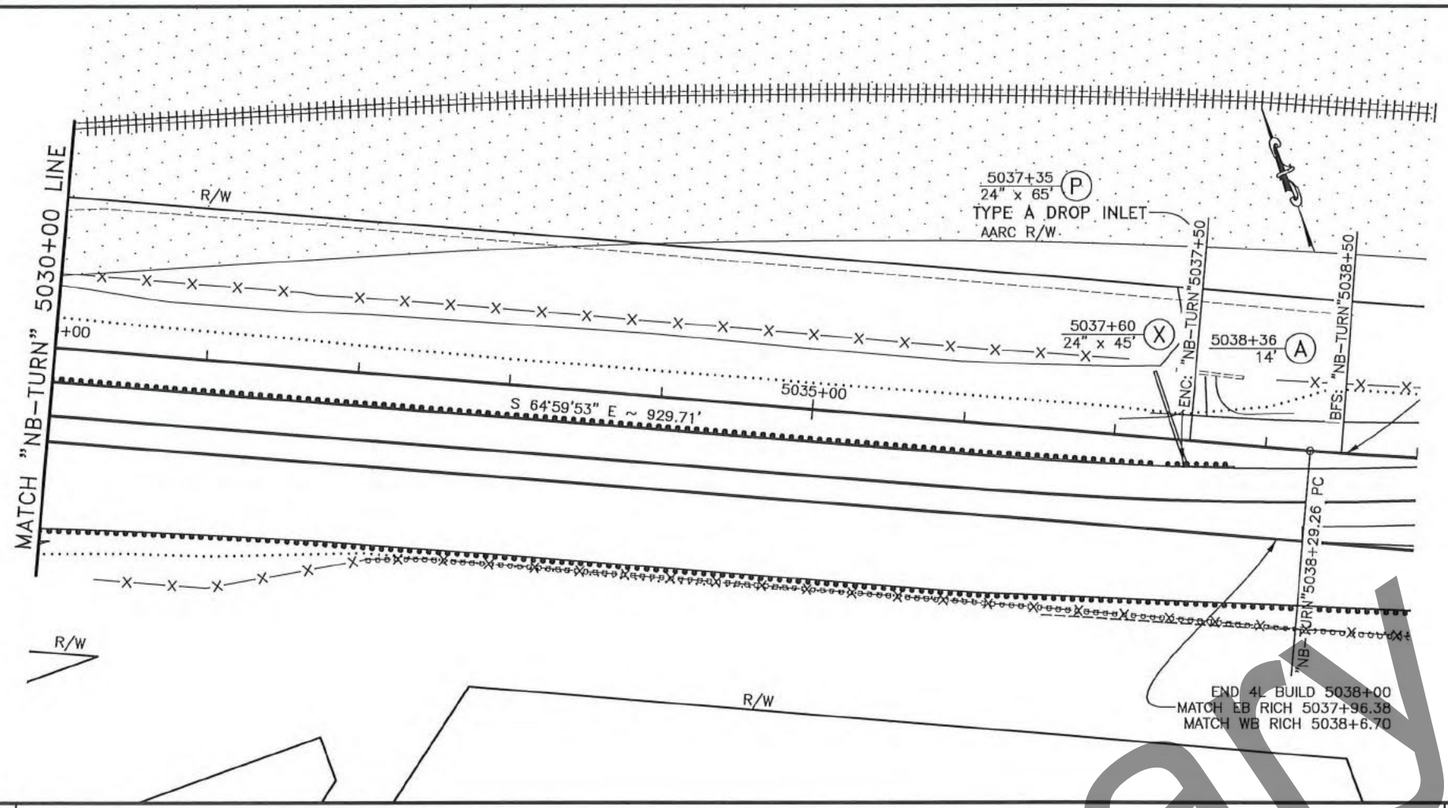
NB–TURN
5015+00.00–5030+00.00

STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023



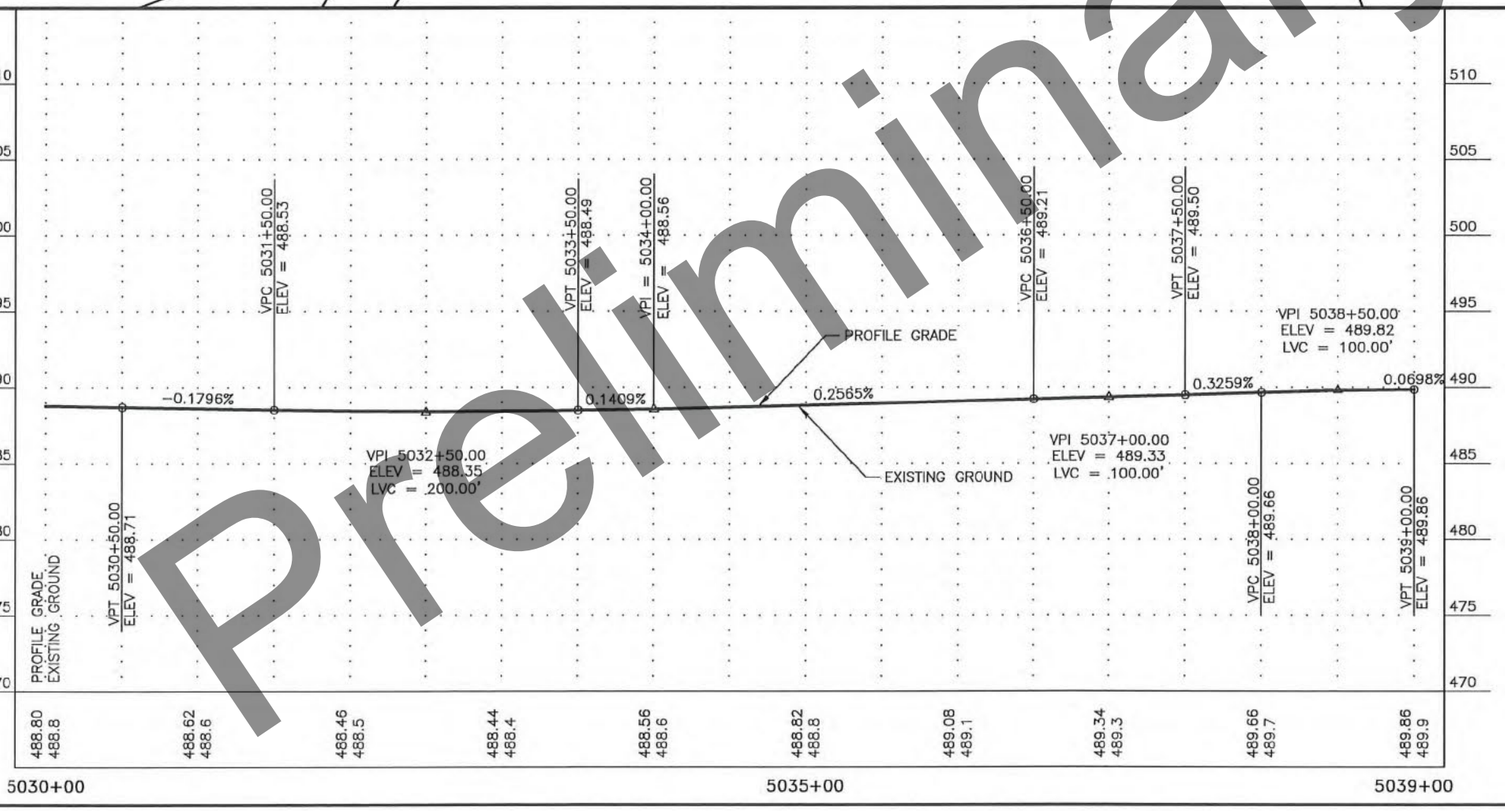
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-NBT 5015+00.00-5030+00.00 Thu, Jul/20/23 02:15pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	OA24034/NFHWY00097	2023	F13	F17



NB-TURN
5030+00.00–5038+52.46

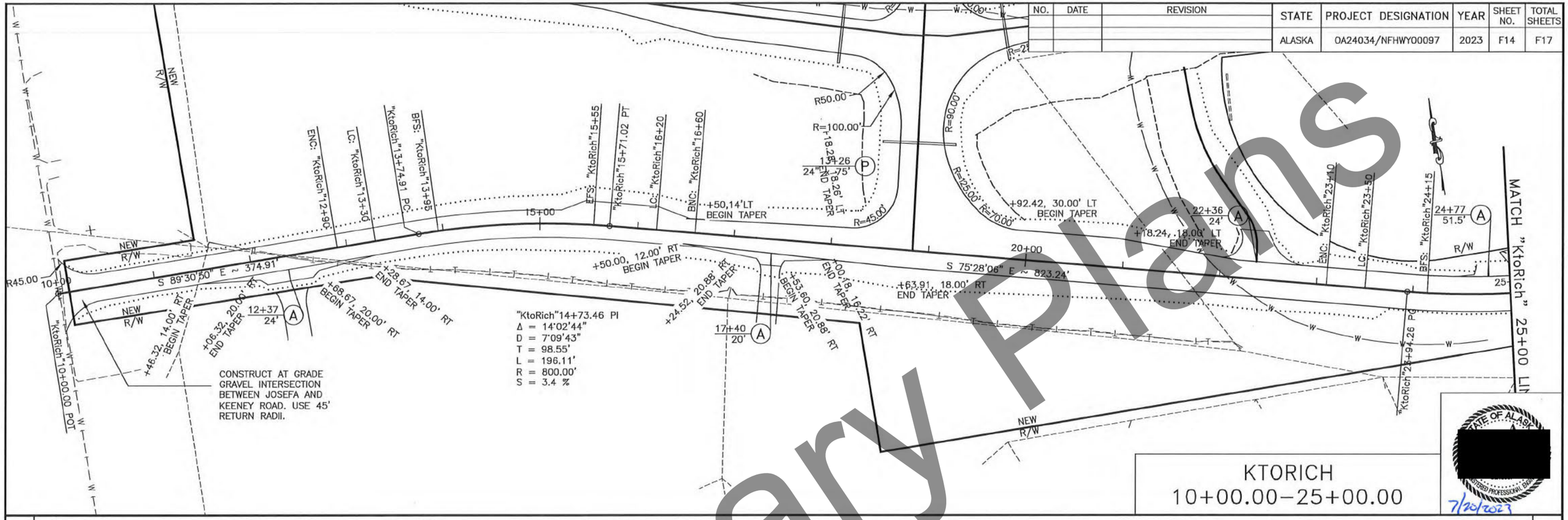
STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/24/2023



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-NBT 5030+00.00-5039+00.00 Thu, Jul/20/23 02:19pm

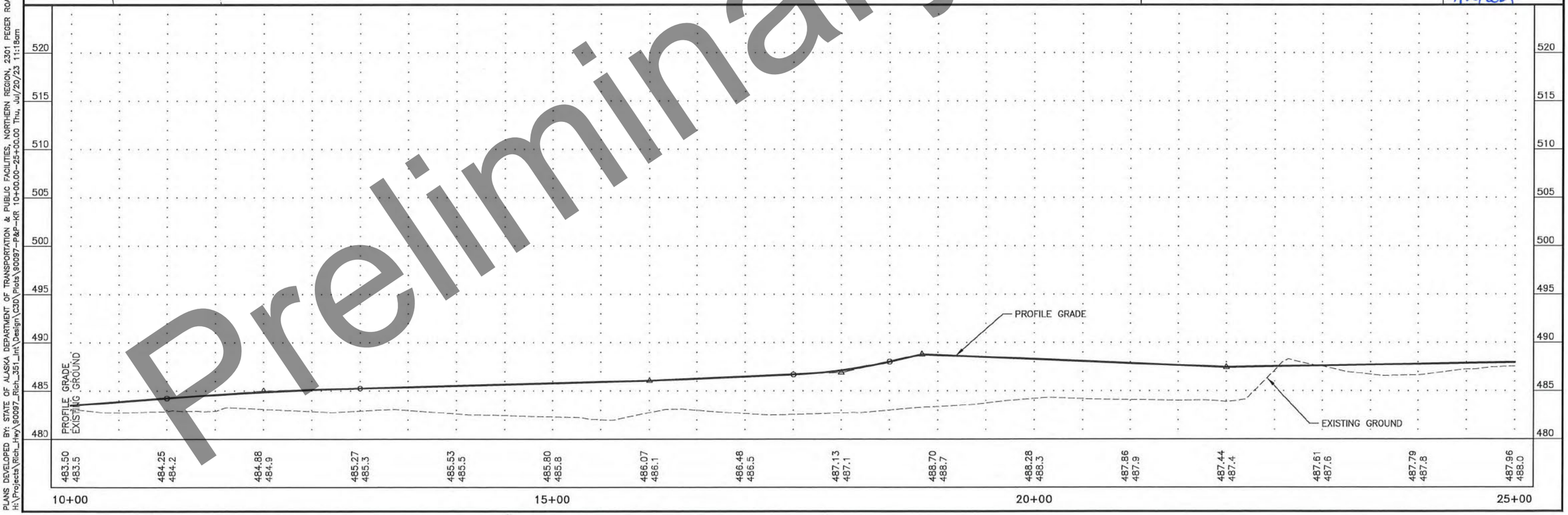
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F14	F17



KTORICH
10+00.00–25+00.00

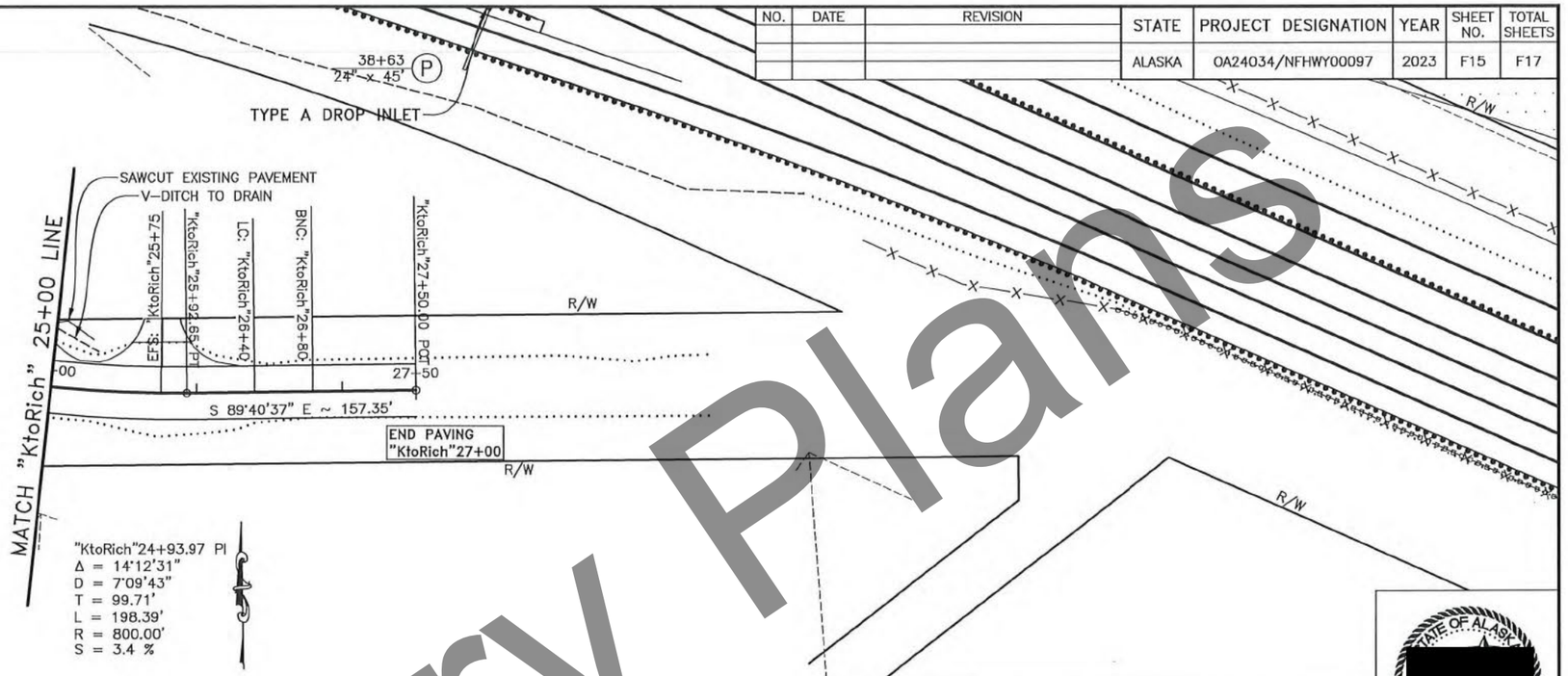
STATE OF ALASKA
[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

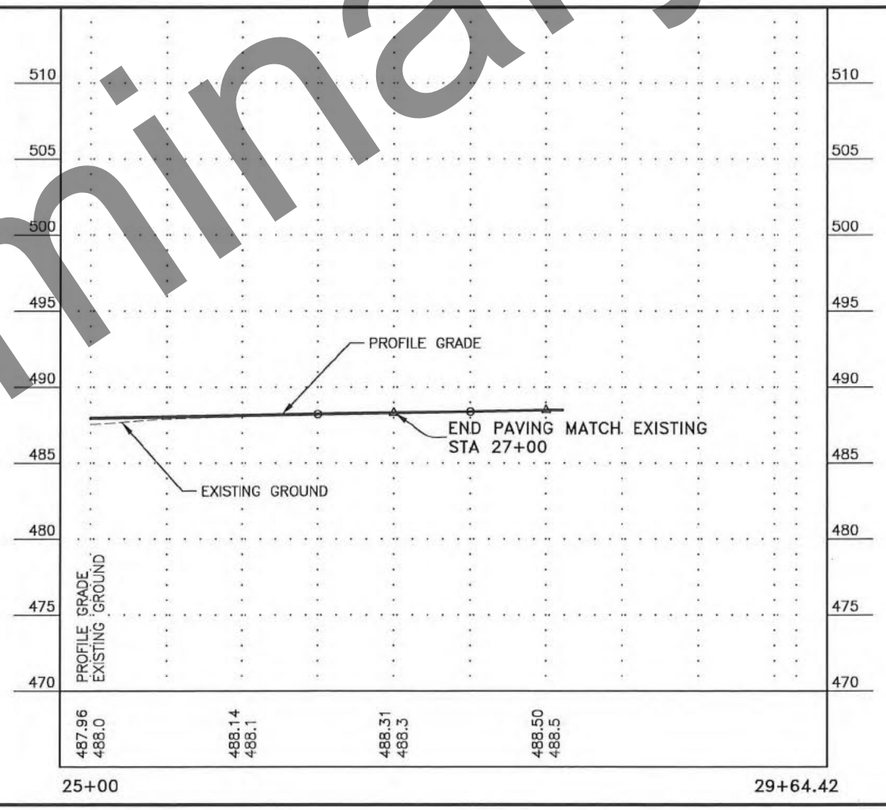


PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-KR 10+00.00-25+00.00 Thu, Jul/20/23 11:18am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F15	F17



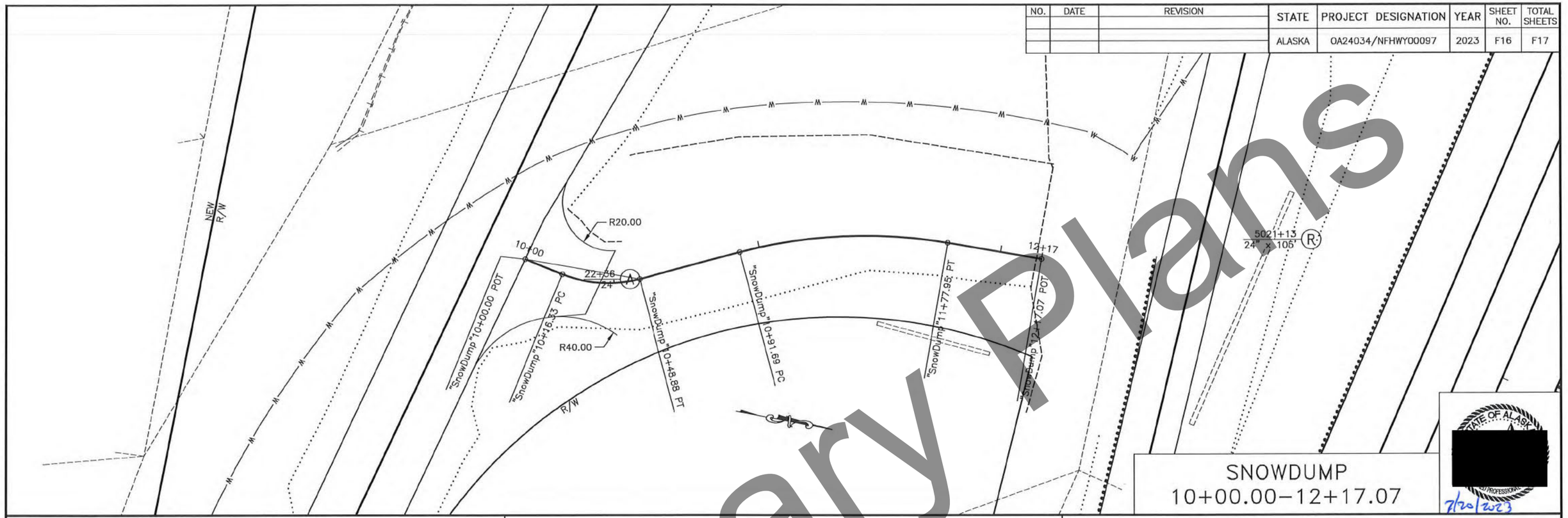


KTORICH
25+00.00–27+00.00

STATE OF ALASKA
[redacted]
PROFESSIONAL ENGINEER
7/20/2023

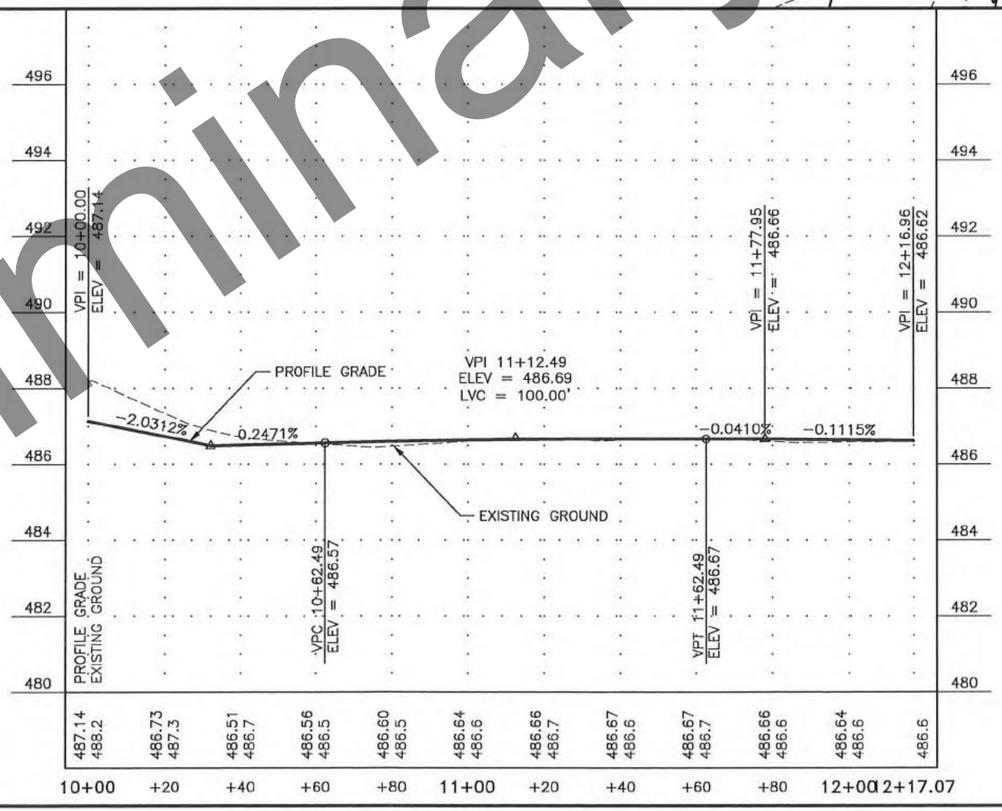
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-KR 25+00.00-27+00 Thu, Jul/20/23 11:19am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	F16	F17



SNOWDUMP
10+00.00–12+17.07

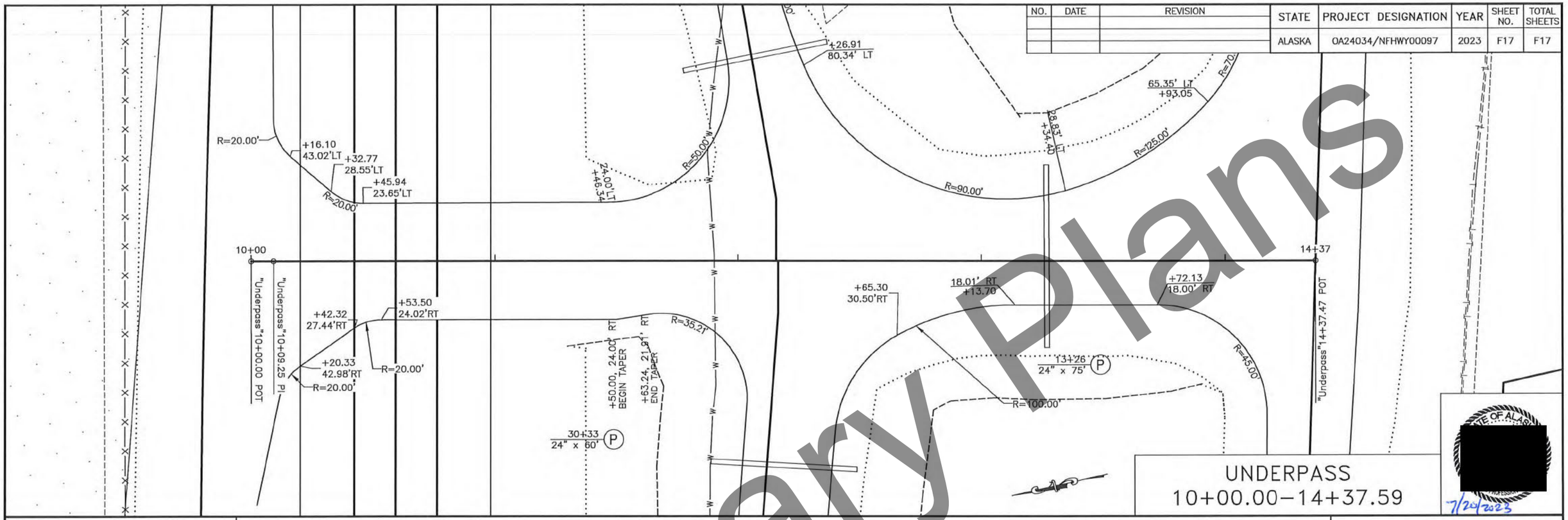
STATE OF ALASKA
[redacted]
PROFESSIONAL ENGINEER
7/20/2023



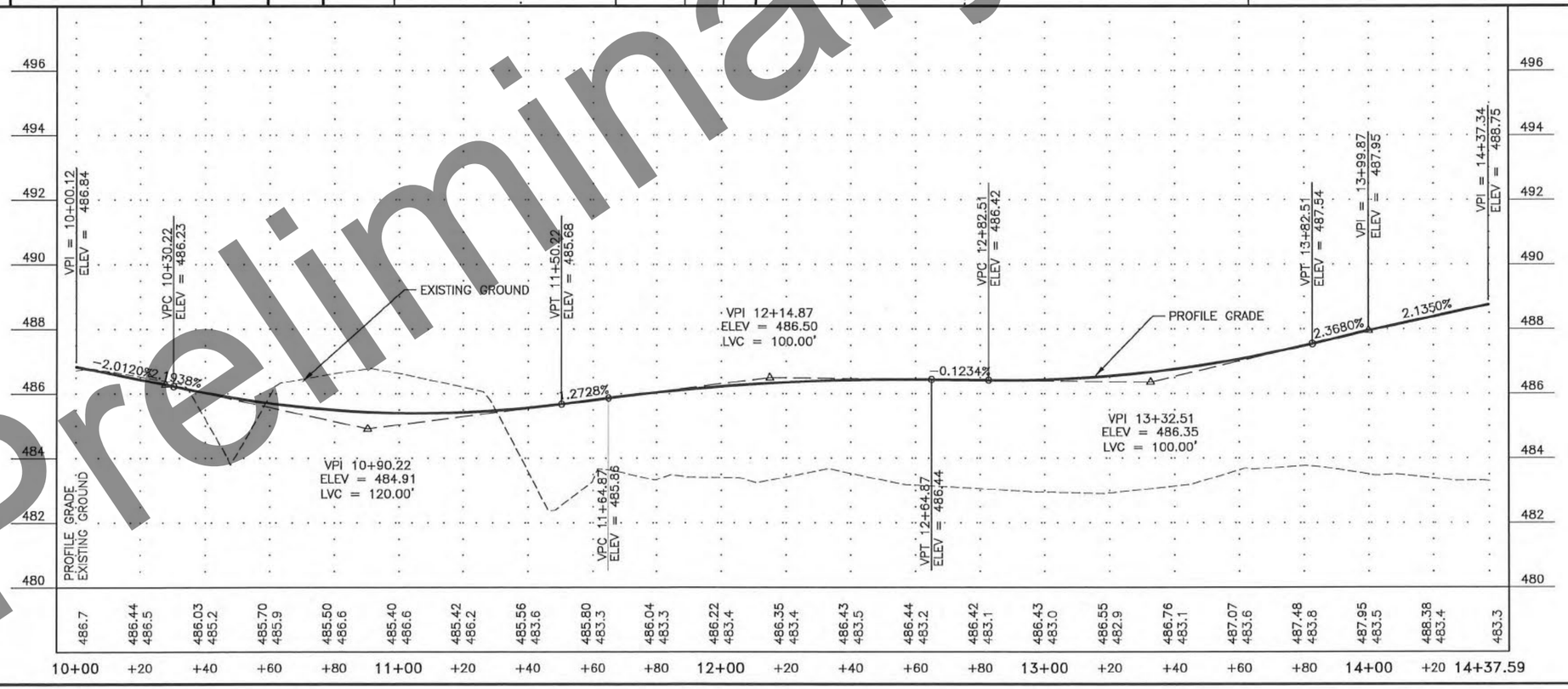
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097-P&P-SD 10+00.00-12+17.07 Thu, Jul/20/23 11:21:cm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	F17	F17



UNDERPASS
10+00.00–14+37.59



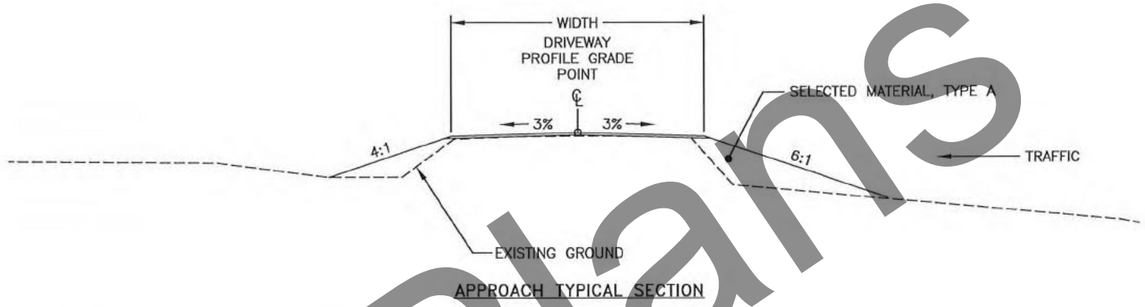
[redacted]
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Jnt\Design\C3D\Plots\90097-P&P-Under 10+00.00-14+37.59 Thu, Jul/20/23 11:25am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	G1	G5

APPROACH DETAIL NOTES:

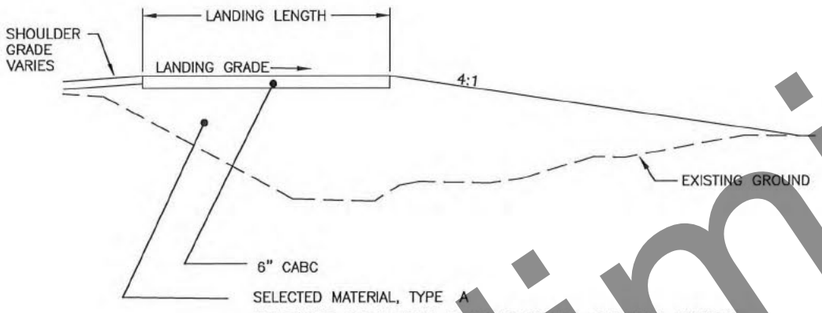
1. APPROACH TRANSITIONS, DIMENSIONS AND LOCATIONS MAY BE FIELD ADJUSTED BY THE ENGINEER.
2. UNLESS SPECIFIED OTHERWISE MATERIALS REQUIRED TO CONSTRUCT APPROACHES WILL BE PAID SEPARATELY UNDER THE RESPECTIVE PAY ITEMS LISTED IN THE BID SCHEDULE.
3. WARP CROSS-SLOPES OF EXISTING APPROACHES TO MATCH INTO THE PAVED APPROACH.
4. BLEND AND GRADE FOR A SMOOTH TRANSITION BETWEEN THE DRIVEWAY AND THE EXISTING GROUND.
5. ESTABLISH FINISH GRADE PRIOR TO PAVING.
6. ENSURE POSITIVE DRAINAGE AWAY FROM THE ROADWAY AND DRIVEWAY EMBANKMENTS.
7. DRIVEWAY AND APPROACH TERMS ARE USED INTERCHANGEABLY
8. STAKE EACH APPROACH AND PROVIDE THE ENGINEER WITH GRADING DETAILS FOR APPROACH LANDING, TRANSITION, AND SIDE SLOPES; OBTAIN ENGINEER APPROVAL PRIOR TO DEMOLITION OR CONSTRUCTION OF ANY APPROACH.
9. SAWCUTTING ASPHALT NECESSARY FOR APPROACH 6 IS SUBSIDIARY TO



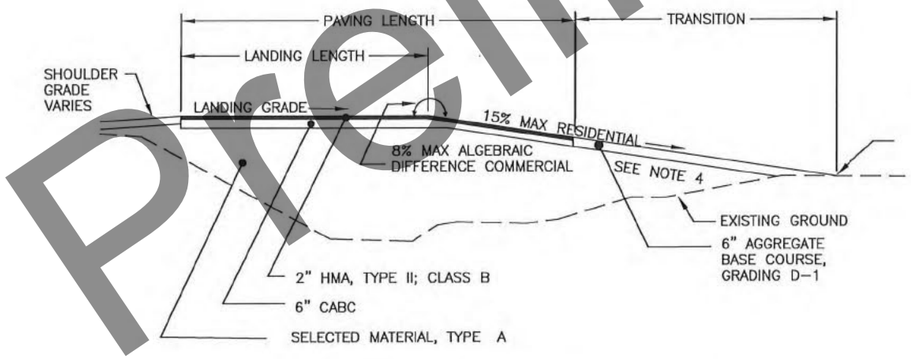
APPROACH TYPICAL SECTION

APPROACH SUMMARY

APPROACH	CENTER LINE STATION	LT/RT	ANGLE (DEG)	WIDTH (FT)	RADIUS (FT) ADH/BK	LANDING GRADE %	PAVING LENGTH (FT)	TO BE PAVED	LANDING LENGTH	REMARKS
1	NBT 5038+36	LT	90	14	20	-2	10	Y	10	
2	KTORICH 12+37	RT	90	47.5	40 / 40	-2		N	12	CONSTRUCT NEW APPROACH ONLY TO LIMITS OF LANDING
3	KTORICH 17+40	RT	90	20	20 / 20	-2	12	Y	12	CONSTRUCT NEW APPROACH ONLY TO LIMITS OF LANDING
4	KTORICH 22+36	LT	90	24	20 / 40	-2	30	Y	30	
5	KTORICH 24+77	LT	90	24	40 / 40	-2	15	Y	12	SAWCUT EXISTING ASPHALT AT MATCH LINE
6	KTORICH 25+75	LT	90	24	40 / 40	-2	17	Y	12	SAWCUT EXISTING ASPHALT AT MATCH LINE

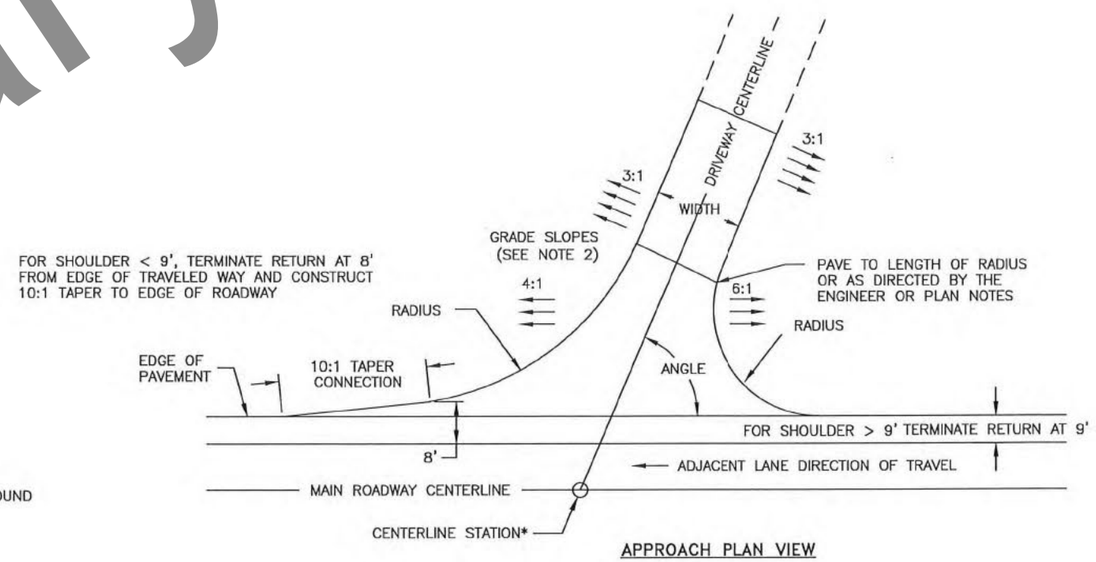


UNPAVED APPROACH PROFILE CROSS-SECTION TYPICAL



MATCH EXISTING GROUND ELEVATION.

PAVED APPROACH PROFILE CROSS-SECTION TYPICAL



APPROACH PLAN VIEW

APPROACH SUMMARY & DETAILS

[redacted]
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\90097_APPROACH DETAILS-G1 APPROACH SUMMARY AND DETAILS Wed, Jul/19/23 03:22pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	G2	G5

ALIGNMENT ELEVATION MATCH LINES

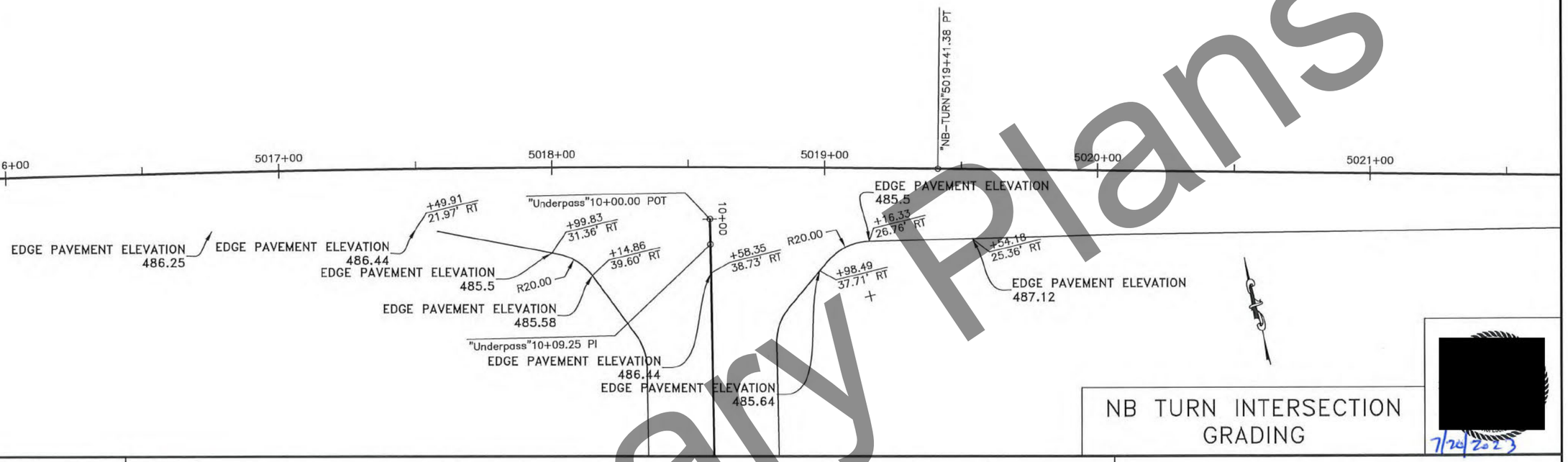
CONTROL ALIGNMENT	CONTROL STA.	CONTROL OFFSET	ELEVATION	MATCH ALIGNMENT	MATCH STA.	MATCH OFFSET	COMMENTS
RICH4LANE	5001+50	0	488.00	EB RICH	5001+50	17 LT	BEGIN RICH 4LANE
RICH4LANE	5001+50	17 RT	487.66	EB RICH	5001+50	0	
RICH4LANE	5001+50	39 RT	487.22	EB RICH	5001+50	22 RT	STOP EB RICH
RICH4LANE	5001+50	50.7 LT	487.00	WB RICH	5001+51.80	22.0 LT	STOP WB RICH
RICH4LANE	5001+50	28.68 LT	487.44	WB RICH	5001+52.73	0	
RICH4LANE	5001+50	12.66 LT	487.76	WB RICH	5001+53.24	12 RT	
RICH4LANE	5001+50	50.7 LT	487.00	NB TURN	5001+49.11	10 RT	BEGIN NB TURN
RICH4LANE		60.7 LT	46.84	NB TURN	5001+49.12	0	STOP WB RICH
RICH4LANE	5009+75	39.00 RT	492.75	EBOFFRAMP	22+24.94	16.77 LT	BEGIN OFF RAMP
RICH4LANE	5009+75	45.77 RT	492.62	EBOFFRAMP	22+25.93	10 LT	
RICH4LANE	5009+75	70.10 RT	492.13	EBOFFRAMP	22+29.45	14 RT	
RICH4LANE	5027+50	48.29 RT	489.77	EB ONRAMP	38+88.72	10 LT	END ON RAMP
RICH4LANE	5027+50	58.31 RT	489.24	EB ONRAMP	38+88.06	0	
RICH4LANE	5027+50	74.35 RT	488.39	EB ONRAMP	38+87.01	16 RT	
RICH4LANE	5038+00	0	491.44	EB RICH	5037+96.38	17 LT	END RICH 4LANE
RICH4LANE	5038+00	17 RT	491.23	EB RICH	5037+96.38	0	RESTART EB RICH
RICH4LANE	5038+00	43.14 RT	490.87	EB RICH	5037+96.38	26.14 RT	
RICH4LANE	5038+00	7.39 LT	491.11	WB RICH	5038+05.42	17 RT	END RICH 4LANE
RICH4LANE	5038+00	24.44 LT	490.33	WB RICH	5038+6.70	0	
RICH4LANE	5038+00	36.48 LT	489.79	WB RICH	5038+7.62	12 LT	
RICH4LANE	5038+00	39 LT	489.67	WB RICH	5038+7.81	14.52 LT	
WB RICH	5038+50	60.02 LT	487.53	NB TURN	5038+50.13	28 LT	END NB TURN
WB RICH	5038+50	50.02 LT	488.01	NB TURN	5038+50.97	18 LT	
WB RICH	5038+50	31.96 LT	488.80	NB TURN	5038+52.46	0	
WB RICH	5038+50	21.93 LT	489.36	NB TURN	5038+53.28	10 RT	

MATCH STATIONS

[redacted]
PROFESSIONAL
7/20/2023

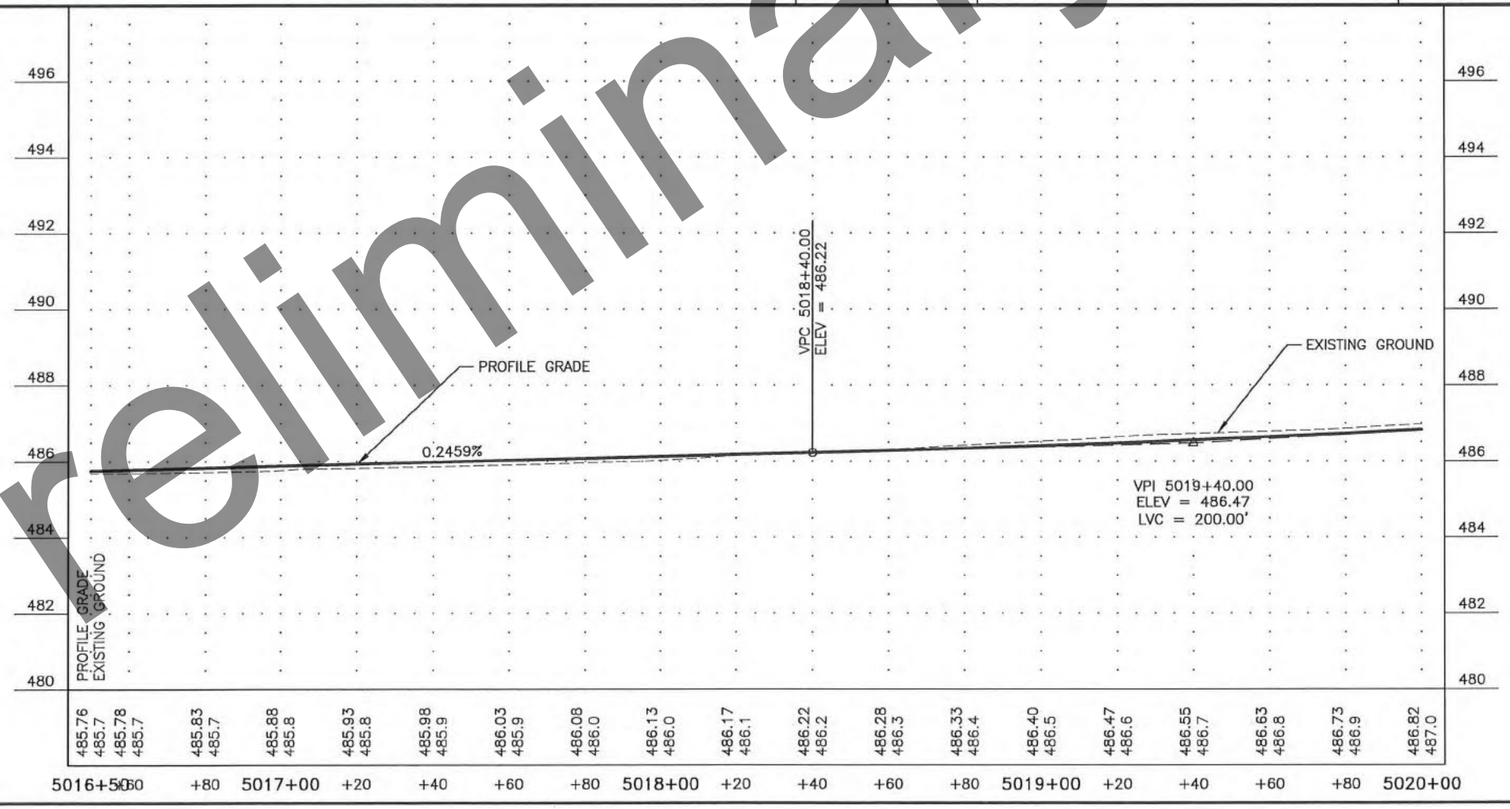
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\90097_Grading Points-MATCH STATIONS Wed, Jul/19/23 03:22pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	G3	G5



NB TURN INTERSECTION GRADING

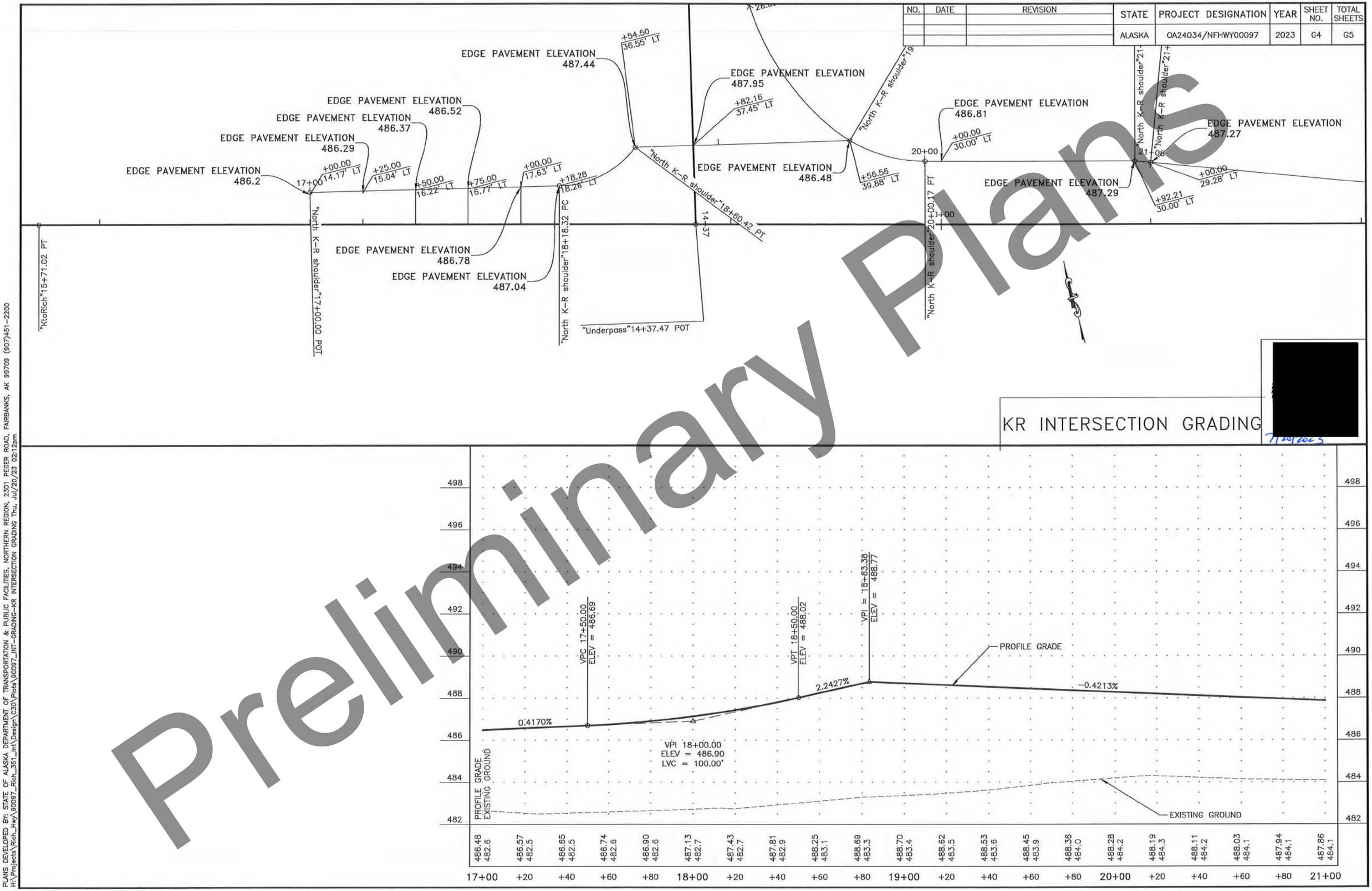
7/24/2023



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_INT-GRADING-NB TURN INTERSECTION GRADING Thu, Jul/20/23 02:33pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	OA24034/NFHWY00097	2023	G4	G5



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PESER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_INT-GRADING-KR INTERSECTION GRADING Thu, Jul/20/23 02:12pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	G5	G5

Alignment=EB-OffRamp2
Station=30+59.57
Offset=-10.000
Northing=170003.2755
Easting=726310.5112
Elevation=485.5

Alignment=EB-OffRamp2
Station=30+86.45
Offset=-25.823
Northing=170010.6467
Easting=726340.8212
Elevation=485.56

30+00

OFF RAMP

Alignment=EB-OffRamp2
Station=30+75.00
Offset=-14.848
Northing=170003.4538
Easting=726326.6837
Elevation=485.30

"EB-OffRamp2"30+96.03 PI

"EB on RAMP"30+00.00 POT

30+00

"EB-OffRamp2"31+17.01 POT

"EB on RAMP"30+25.41 PI

Alignment=Underpass
Station=11+70.00
Offset=-29.900
Northing=170017.3511
Easting=726402.3708
Elevation=485.33

Alignment=Underpass
Station=11+80.07
Offset=-37.026
Northing=170005.9598
Easting=726407.1140
Elevation=485.4

Alignment=Underpass
Station=11+90.83
Offset=-51.091
Northing=169992.3787
Easting=726418.4767
Elevation= 486.03

Alignment=Underpass
Station=11+94.90
Offset=-61.964
Northing=169986.0229
Easting=726428.1925
Elevation=486.17

ON RAMP

Alignment=EB-OffRamp2
Station=30+50.00
Offset=26.977
Northing=169970.6469
Easting=726290.6545
Elevation=484.66

Alignment=EB-OffRamp2
Station=30+90.07
Offset=49.368
Northing=169937.6231
Easting=726322.5356
Elevation=485.50

Alignment=EB-OffRamp2
Station=30+97.02
Offset=48.798
Northing=169935.3291
Easting=726332.7871
Elevation=486.00

Alignment=EB on RAMP
Station=30+77.62
Offset=20.480
Northing=169950.7713
Easting=726439.1035
Elevation=486.24

Alignment=EB on RAMP
Station=31+34.10
Offset=14.000
Northing=169954.4649
Easting=726495.8316
Elevation=486.04

Alignment=EB on RAMP
Station=31+49.60
Offset=14.000
Northing=169953.7078
Easting=726511.3131
Elevation=486.04

Alignment=Underpass
Station=12+70.97
Offset=-34.210
Northing=169917.8946
Easting=726384.4301
Elevation=484.07

Alignment=Underpass
Station=12+90.00
Offset=-27.600
Northing=169900.7777
Easting=726373.8072
Elevation=485.62

RAMP INTERSECTION GRADING

[redacted]

7/24/23

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	H1	H17

SUPPLEMENTAL LIGHTING LEGEND:

	EXISTING	PROPOSED
JUNCTION BOX, TYPE IA	☐	5
JUNCTION BOX, TYPE II	☐	6
JUNCTION BOX, TYPE III	☐	3
LOAD CENTER	☒	☒
LUMINAIRE	☼	8
RIGID METAL CONDUIT OR HDPE CONDUIT	———	———

ABBREVIATIONS:

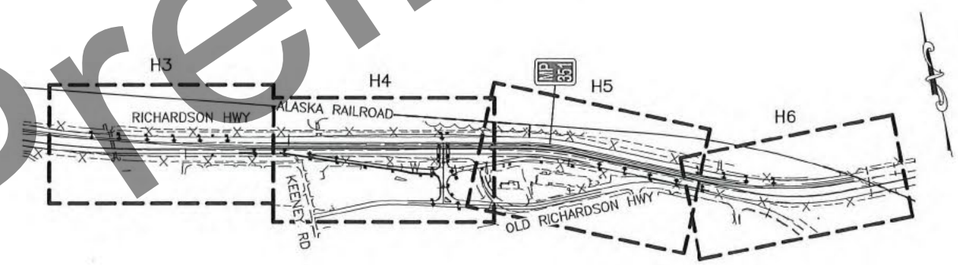
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER CONDUCTOR OR BOLT CIRCLE
CLR	CLEAR OR CLEARANCE
DIA	DIAMETER
EX	EXISTING
FT	FOOT OR FEET
HDG	HOT DIPPED GALVANIZED
HDPE	HIGH DENSITY POLYETHYLENE
HID	HIGH INTENSITY DISCHARGE
HPS	HIGH PRESSURE SODIUM
J-BOX	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LF	LINEAR FOOT
LC	LOAD CENTER
MAX	MAXIMUM
MH	METAL HALIDE OR MOUNTING HEIGHT
MIN	MINIMUM
MSE	MECHANICALLY STABILIZED EARTH
NO.	NUMBER
NTS	NOT TO SCALE
O.C.	ON CENTER
REQ'D	REQUIRED
RMC	RIGID METAL CONDUIT
R/W	RIGHT-OF-WAY
SSHC	STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION
TYP	TYPICAL
U.O.N	UNLESS OTHERWISE NOTED

GENERAL ELECTRICAL NOTES:

1. SEE ELECTROLIER SUMMARY SHOWN ON SHEET H7 FOR ELECTROLIER INFORMATION.
2. DOT&PF LIGHTING CIRCUITS SHALL BE PLACED 30" MINIMUM UNDERGROUND.
3. ALL PROPOSED INSTALLED AND EXISTING-TO-REMAIN UNDERGROUND UTILITIES SHALL BE FIELD LOCATED BEFORE AND CONDUIT TRENCHING OR FOUNDATION WORK BEGINS. SEE 'U' SHEETS FOR ALL MODIFICATIONS TO UTILITY LINES AND FOR LOCATIONS OF POWER DROPS FOR LIGHTING EQUIPMENT.
4. THE UNDERGROUND ROUTING SHOWN FOR DOT&PF LIGHTING CIRCUITS IS SCHEMATICALLY DRAWN FOR CONCEPTUAL AND MATERIAL TAKE-OFF PURPOSES ONLY. COORDINATE WITH ALL 'NEW' AND 'EXISTING-TO-REMAIN' BURIED UTILITIES AND ROUTE THE LIGHTING CIRCUITS AS NECESSARY TO AVOID CONFLICTS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES OF CONCEPT MODIFICATIONS TO THE LIGHTING CIRCUIT ROUTING. ANY CONCEPT MODIFICATIONS SHALL CONSIDER FUTURE ACCESS TO CONDUIT AND CIRCUITS FOR MAINTENANCE AND OPERATIONS.
5. HIGHWAY LIGHTING CIRCUIT CONDUIT SHALL BE

   - RMC FOR ALL SWEEP/ELBOWS.
   - RMC BETWEEN JUNCTION BOX AND ADJACENT ELECTROLIER.
   - RMC BETWEEN LOAD CENTER AND ADJACENT JUNCTION BOX.
   - HDPE EVERYWHERE ELSE.

   ALL CONNECTORS AND COUPLINGS BETWEEN RMC AND HDPE CONDUIT SHALL BE UL LISTED AND RATED FOR SUCH USE.
6. FUSIBLE DISCONNECTS SHALL BE LOCATED IN THE ELECTROLIER HANDHOLE AND BE RATED AT 10 AMPS AT 600 VOLTS.
7. WIRING BETWEEN AN ELECTROLIER AND THE JUNCTION BOX SERVING IT SHALL CONSIST OF 1-3c#8 CABLE IN AND OUT (2-3c#8) AND 1-1c#8 BARE COPPER GROUND CONDUCTOR IN A 2"RMC.
8. UNLESS OTHERWISE NOTED, PROVIDE A 1-1c#8 BARE COPPER GROUND CONDUCTOR IN EVERY LIGHTING CONDUIT.
9. THE INSTALLATION OF ALL ELECTROLIER TYPE 1A JUNCTION BOXES SHALL SATISFY THE REQUIREMENTS OF STANDARD PLAN L-23.03 AND DETAILS ON SHEETS H13 AND H15.
10. THE INSTALLATION OF ALL ELECTROLIERS SHALL SATISFY THE REQUIREMENTS OF STANDARD PLAN L-03.11.
11. THE INSTALLATION OF ALL ELECTROLIER FOUNDATIONS SHALL SATISFY THE REQUIREMENTS OF DETAILS ON SHEET H14.
12. THE INSTALLATION OF ALL DOT&PF ELECTROLIER LOAD CENTERS SHALL SATISFY THE REQUIREMENTS OF STANDARD PLAN L-24.10 AND DETAILS ON SHEET H11.
13. ELECTRIC SERVICE: SCOPE OF WORK INCLUDES RETIRING EXISTING ELECTRIC SERVICE TO EXISTING LOAD CENTER AND NEW ELECTRIC UTILITY SERVICE FOR NEW LOAD CENTER. CONTRACTOR SHALL COORDINATE RETIREMENT AND APPLY FOR NEW SERVICE WITH GVEA THROUGH THE ENGINEER, INCLUDE PAYMENT OF ALL RELATED FEES, COMPLY WITH GVEA UTILITY STANDARDS, OBTAIN NECESSARY INSPECTIONS, AND COORDINATE SERVICE HOOKUP AND DISCONNECT AS REQUIRED TO MEET THE CONSTRUCTION SCHEDULE.
14. WHERE INDICATED ON THE ELECTRICAL DEMOLITION PLAN, SALVAGE AND PROTECT ALL EXISTING LED LUMINAIRES LOAD CENTER. DELIVER SALVAGED AND ANY UNUSED LED LUMINAIRES LOAD CENTER TO FAIRBANKS DOT&PF MAINTENANCE YARD. CONTACT ERIC SLAY AT (907) 460-1757 TO ARRANGE FOR DELIVERY.
15. ALL REMOVED LIGHT POLES, MAST ARMS, LAMPS, WIRING, CONDUIT, AND JUNCTION BOXES SHALL BECOME PROPERTY OF THE CONTRACTOR. REMOVAL AND/OR DISPOSAL FROM THE JOB SITE IS SUBSIDIARY TO 660 PAY ITEMS.
16. FOR GE WIRELESS NODE INSTALLATIONS, CONTRACTOR SHALL SUBMIT A TIMELY REQUEST FOR CELLULAR TELECOM SERVICES WITH PROPOSED NEED DATES TO THE DEPARTMENT, AND SHALL THEREAFTER COORDINATE DIRECTLY WITH THE DESIGNATED SERVICE PROVIDER TO CONFIRM EACH SITE FOR PROPER INTERFACE TO THE CELLULAR NETWORK. CONTRACTOR'S SCHEDULE SHALL ALLOW 45 DAYS FOR SERVICE AVAILABILITY AFTER REQUEST IS SUBMITTED TO THE DEPARTMENT.



LIGHTING LAYOUT PLAN

LIGHTING SHEET INDEX

SHEET NO.	DESCRIPTION
H1	LIGHTING LEGEND, NOTES, SHEET INDEX, LAYOUT, AND ABBREVIATIONS
H2	LIGHTING DEMOLITION PLAN
H3-H6	LIGHTING PLAN
H7	LIGHTING SYSTEM SUMMARY
H8	LIGHTING DESIGN CRITERIA AND LUMINAIRE SCHEDULE
H9	LOAD CENTER SUMMARY
H10	LOAD CENTER WARNING AND CALCULATIONS
H11	LOAD CENTER DETAILS
H12	UTLITY POLE SECONDARY RISER DETAIL
H13	LIGHT POLE WIDENING DETAIL
H14	DRIVEN STEEL PILE LIGHT POLE FOUNDATION DETAILS
H15	JUNCTION BOX DETAILS
H16	LIGHTING & JUNCTION BOX WIRING DETAILS
H17	UNDERPASS LIGHTING DETAIL

660.0003.0000 HIGHWAY LIGHTING SYSTEM COMPLETE

BASIS OF ESTIMATE	QUANTITY	UNIT
TRENCH AND BACKFILL	6195	LF
HDPE CONDUIT 2-INCH	5760	LF
STEEL / HDPE CONDUIT 3-INCH	730	LF
STEEL CONDUIT 2-INCH	180	LF
JUNCTION BOX TYPE IA	34	EA
JUNCTION BOX TYPE II	5	EA
3C#8 AWG, 600 VOLT ILLUMINATION CABLE	6760	LF
1C#8 AWG, BARE CU GROUND WIRE	6670	LF
STEEL PIPE PILE FOUNDATION	26	EA
LIGHT POLE	26	EA
LUMINAIRE MAST ARM 12 TO 20 FT LENGTH	26	EA
LED LUMINAIRE	26	EA
DEMO EXISTING LIGHTING SYSTEM, SEE NOTE 15	4	EA
SALVAGE EXISTING LUMINAIRE, SEE NOTE 14	4	EA
STONE DRAIN ROCK POROUS BACKFILL MATERIAL BELOW JUNCTION BOXES	259	CF

660.0012.0000 UNDERPASS LIGHTING SYSTEM COMPLETE

BASIS OF ESTIMATE	QUANTITY	UNIT
STEEL CONDUIT 1-INCH	200	LF
PULL/SPLICE BOX	4	EA
2C#10 AWG, 600 VOLT ILLUMINATION CABLE	220	LF
1C#10 AWG, BARE CU GROUND WIRE	220	LF
LED LUMINAIRE	4	EA

[redacted]

LIGHTING LEGEND, NOTES, SHEET INDEX, LAYOUT, AND ABBREVIATIONS

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd. Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H1_LEGEND-NOTES-H1 Fri, Jul/14/23 10:07am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	H2	H17

DEMO EXISTING HIGHWAY LIGHTING SYSTEM.
SEE NOTE 1 FOR SALVAGE DIRECTIONS.
DEMO EXISTING FOUNDATIONS IN
ACCORDANCE WITH SSHC SECTION 660.

DEMO EXISTING HIGHWAY LIGHTING SYSTEM.
SEE NOTE 1 FOR SALVAGE DIRECTIONS.
DEMO EXISTING FOUNDATIONS IN
ACCORDANCE WITH SSHC SECTION 660.

REMOVE ALL EXISTING CONDUIT,
WIRING, AND JUNCTION BOXES

SALVAGE EXISTING TYPE 1
LOAD CENTER "LC56",

RICHARDSON HWY
MILEPOST 352

RICHARDSON HWY
MILEPOST 350

NB RICHARDSON HWY

SB RICHARDSON HWY

OLD RICHARDSON HWY

ALASKA RAILROAD

KEENEY RD

HAWKS GREENHOUSE

R/W

"NB-T"5010+00
"WB"5010+00
"R4L"5010+00
"EB"5010+00
"OFF-R2"20+00
"NB-T"5015+00
"WB"5015+00
"R4L"5015+00
"EB"5015+00
"OFF-R2"25+00
"U"10+00
"NB-T"5020+00
"WB"5020+00
"R4L"5020+00
"EB"5020+00
"OFF-R2"30+0
"OFF-R2"31+17
"ON-R"35+00
"NB-T"5025+00
"WB"5025+00
"R4L"5025+00
"EB"5025+00
"NB-T"5030+00
"WB"5030+00
"R4L"5030+00
"EB"5030+00
"ON-R"40+00
"NB-T"5035+00
"WB"5035+00
"R4L"5035+00
"EB"5035+00
"ON-R"45+00
"ON-R"48+46
"K-R"10+00
"K-R"15+00
"K-R"20+00
"K-R"25+00
"K-R"29+64
"U"14+37

DEMOLITION NOTE:

1. SEE GENERAL ELECTRICAL NOTES 14 AND 15 ON SHEET H1.
2. SALVAGE EXISTING LOAD CENTER WILL BE MEASURED AND PAID FOR UNDER THE REMOVE LOAD CENTER PAY ITEM.

LIGHTING DEMOLITION PLAN

[redacted]

7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd, Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H2_DEMO PLAN-H2 Fri, Jul/14/23 10:08am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H3	H17

STA "WB" 4994+67=
BEGIN LIGHTING IMPROVEMENTS

ALASKA RAILROAD

SEE F SHEET PLANS
FOR GUARDRAIL WORK

1-3C#8, 56-2,4
1-2" HDPE

1-3C#8, 56-2,4
1-2" HDPE

1-3C#8, 56-2,4
1-2" HDPE

1-3C#8, 56-2,4
1-2" HDPE

1-3C#8, 56-2,4
1-2" HDPE

2-3C#8, 56-2,4
1-2" HDPE

R/W

RICHARDSON HWY

NB RICHARDSON HWY

SB RICHARDSON HWY

NB ON-RAMP

MATCH LINE STA "R4L"5007+00
SEE SHEET H4

1-3C#8, 56-2,4
1-3" RMC
1-3" RMC SPARE

1-3c#8, 56-2,4
1-2" HDPE

1-3c#8, 56-2,4
1-2" HDPE

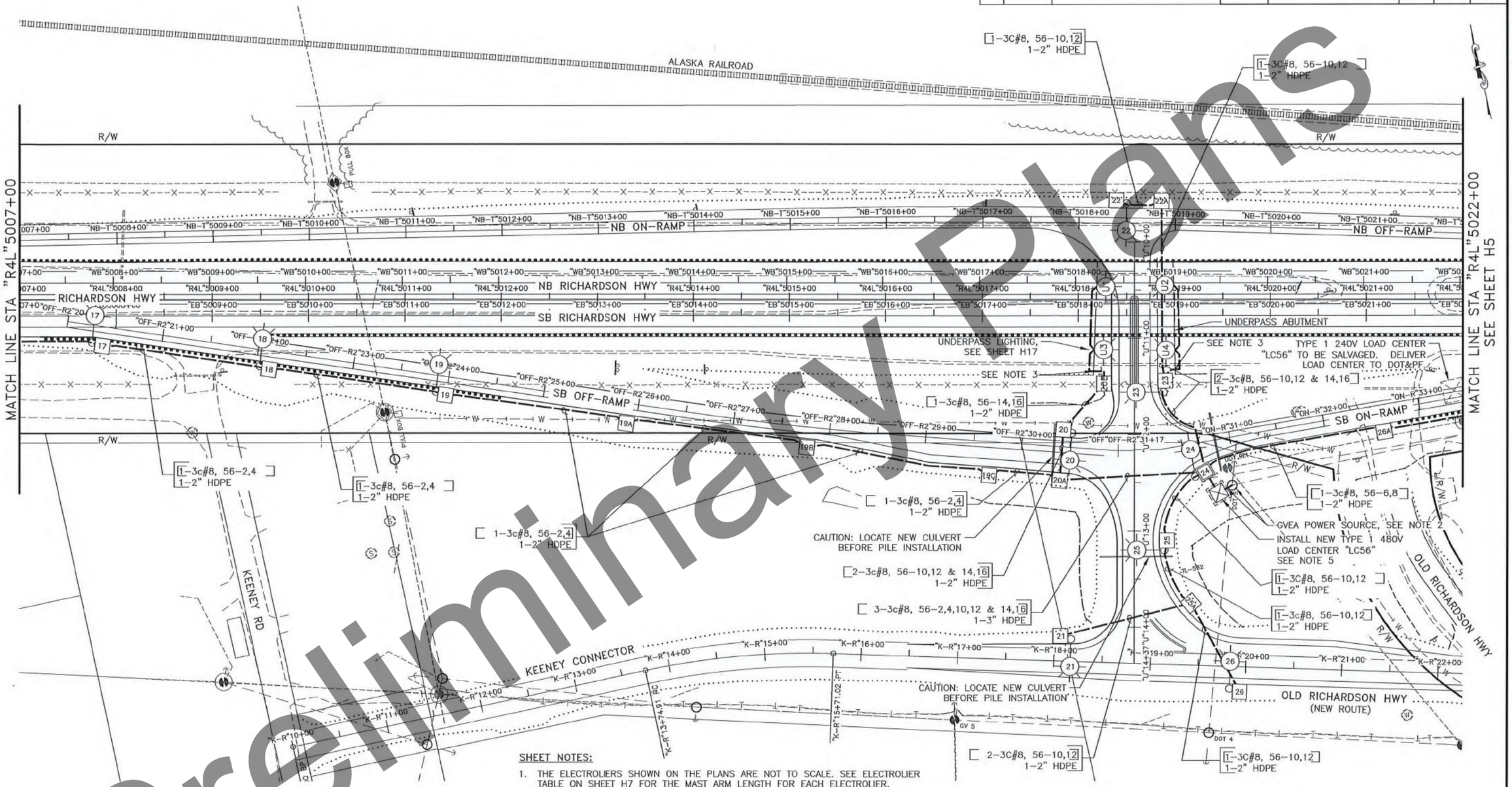
100 50 0 50 100
SCALE: 1" = 50'

LIGHTING PLAN

[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd, Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H3-H6_PLANS-H3 Fri, Jul/14/23 10:09am
(Brian Lange) PE#: 017326

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H4	H17



SHEET NOTES:

1. THE ELECTROLIERS SHOWN ON THE PLANS ARE NOT TO SCALE. SEE ELECTROLIER TABLE ON SHEET H7 FOR THE MAST ARM LENGTH FOR EACH ELECTROLIER.
2. COORDINATE WITH GVEA TO PROVIDE NEW 480V SERVICE. PROVIDE SERVICE LATERAL, IN 2" RMC, PER GVEA REQUIREMENTS AND PER LOAD CENTER NOTES ON SHEET H11. PROVIDE BARE COPPER GROUND WIRE OF GAUGE THAT IS EQUIVALENT TO THAT USED FOR SERVICE LATERAL.
3. APPROXIMATE LOCATIONS OF MSE WALL MOUNTED J-BOXES AND 1" RMC RISERS CONTAINING 1-2C#10 ON CIRCUIT 56-14,16. SEE SHEET H17 FOR UNDERPASS LIGHTING DETAIL.
4. MAINTAIN 30" MIN. COVER OVER NEW CONDUITS AT CULVERT PIPE CROSSINGS. ROUTE CONDUIT UNDER CULVERT IF REQUIRED.
5. DO NOT INSTALL LOAD CENTER IN DRAINAGE COLLECTION AREA. CONSTRUCT A BORROW MATERIAL FILL PAD UNDER AND AROUND LOAD CENTER, SUBSIDIARY TO LOAD CENTER PAY ITEM. FINAL LOCATION SHALL BE APPROVED BY THE ENGINEER.

100 50 0 50 100
SCALE: 1" = 50'

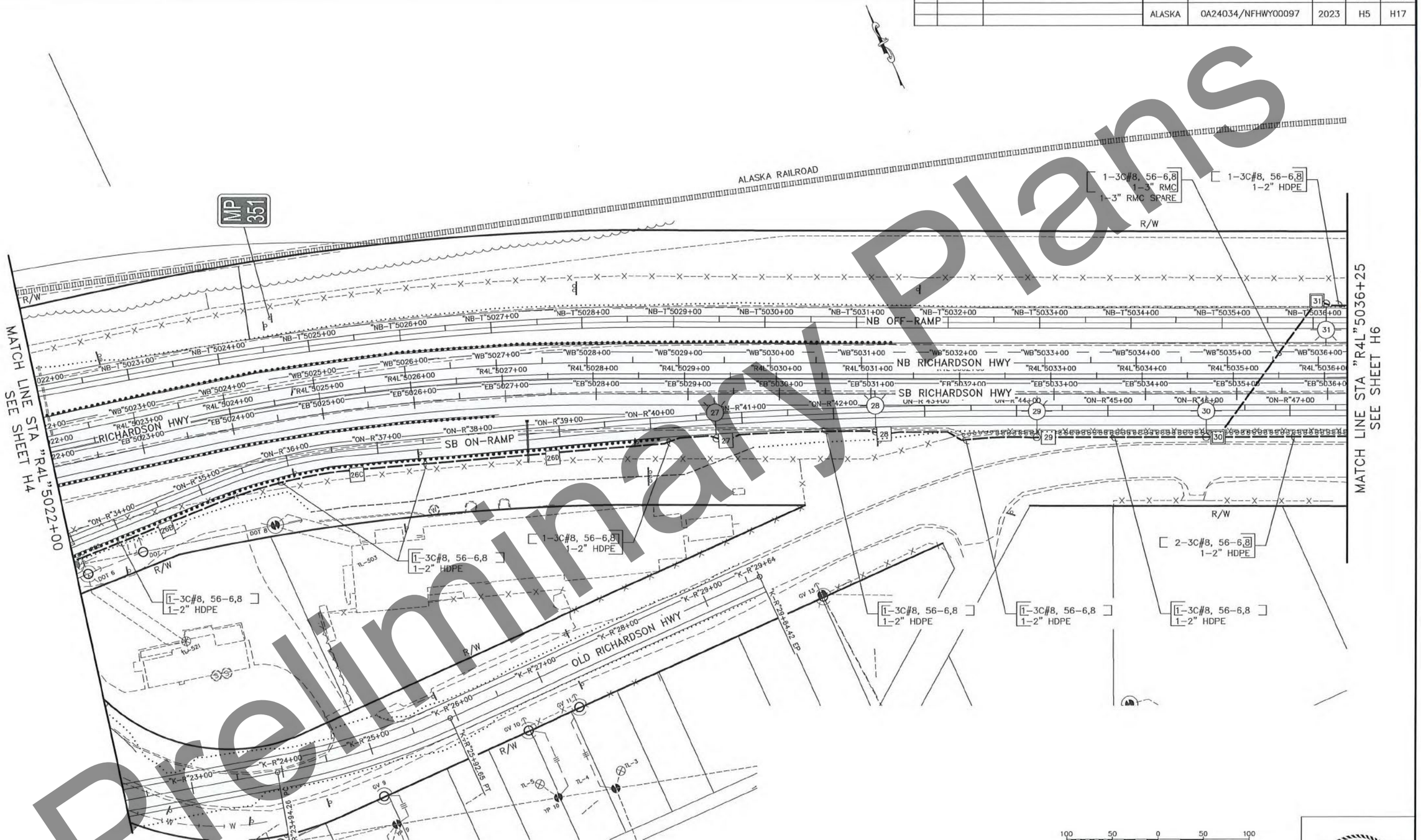
LIGHTING PLAN

STATE OF ALASKA [redacted] PROFESSIONAL ENGINEER
7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd, Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hslp rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H3-H6_PLANS-H4 Fri, Jul/14/23 10:09am
(Brian Lewis) P.E.#: [redacted]

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	H5	H17

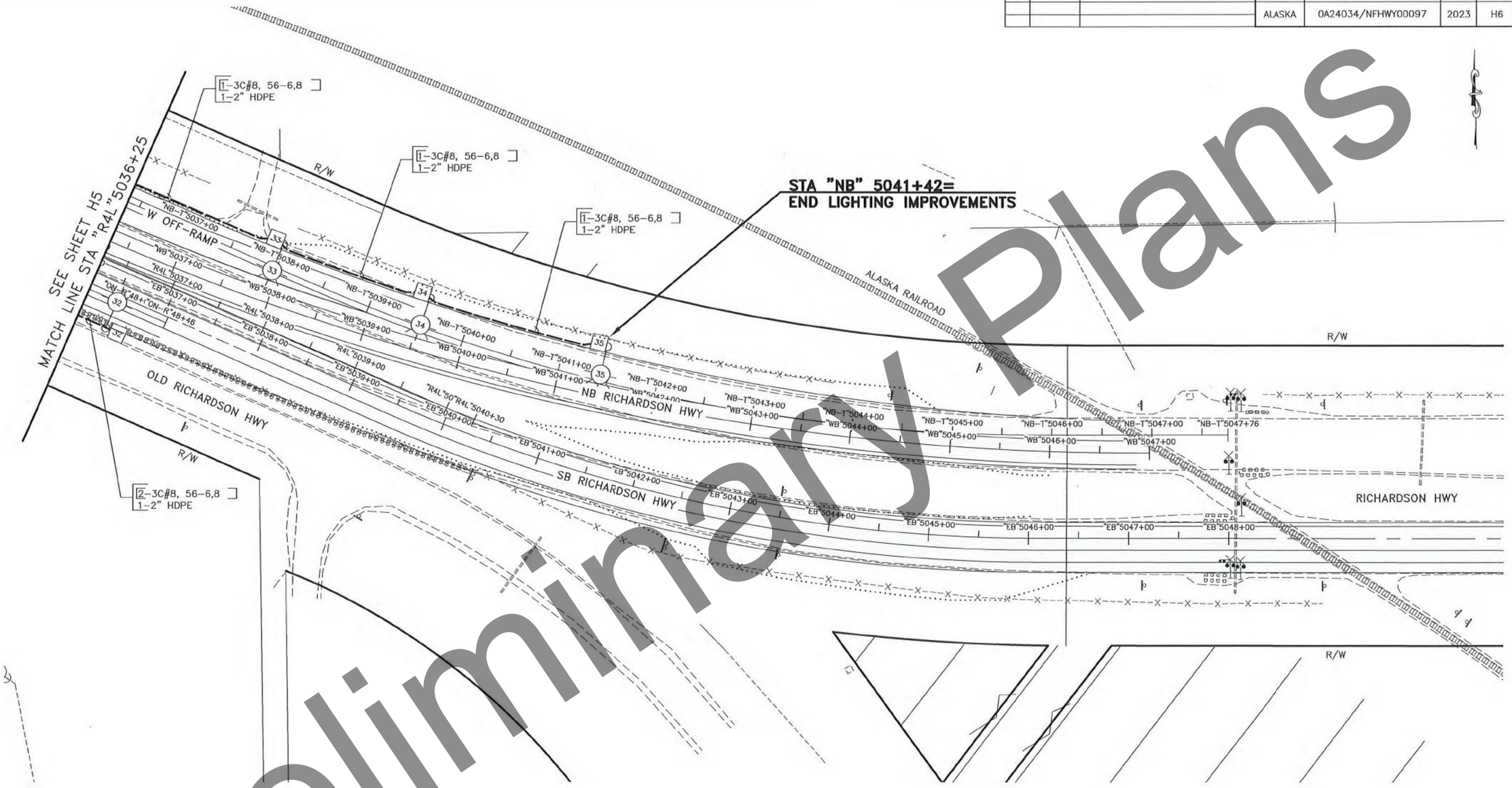


LIGHTING PLAN

7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd. Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H3-H6_PLANS-H5 Fri, Jul/14/23 10:09am
(Ryan Lewis) KEW: 00386

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H6	H17



100 50 0 50 100
SCALE: 1" = 50'

LIGHTING PLAN

[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd, Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H3-H6_PLANS-H6 Fri, Jul/14/23 10:09am
(Brian Lewis) WED, 07/26

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	H7	H17

ELECTROLIER SUMMARY

No.	ALIGNMENT	STATION	OFFSET LT	OFFSET RT	LUMINAIRE TYPE	CIRCUIT	MOUNTING HEIGHT	POLE	MAST ARM	REMARKS
10	WB	4994+67.00	29.00		TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
11	WB	4996+55.00	37.00		TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
12	WB	4998+45.00	42.00		TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
13	NB–T	5000+25.00	21.00		TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
14	NB–T	5002+03.00	21.00		TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
15	NB–T	5003+91.00	21.00		TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
16	EB	5005+71.00		27.00	TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
17	OFF–R2	20+28.00		18.00	TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
18	OFF–R2	24+04.00		17.00	TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
19	OFF–R2	23+89.00		17.00	TYPE A	56–2,4	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
20	OFF–R2	30+51.00	15.00		TYPE B	56–10,12	40'	STP	15'	INSTALL USING WIDENING DETAIL "B"
21	K–R	18+17.00	23.00		TYPE B	56–10,12	40'	STP	15'	INSTALL USING WIDENING DETAIL "B"
22	NB–T	5018+49.00	21.00		TYPE B	56–10,12	40'	STP	15'	INSTALL USING WIDENING DETAIL "B"
23	U	11+56.00	30.00		TYPE B	56–10,12	40'	STP	15'	INSTALL USING WIDENING DETAIL "B"
24	ON–R	30+58.00		34.00	TYPE B	56–10,12	40'	STP	15'	INSTALL USING WIDENING DETAIL "B"
25	U	13+20.00	31.00		TYPE B	56–10,12	40'	STP	15'	INSTALL USING WIDENING DETAIL "B"
26	K–R	19+83.00		23.00	TYPE B	56–10,12	40'	STP	15'	INSTALL USING WIDENING DETAIL "B"
27	ON–R	40+71.00		21.00	TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
28	ON–R	42+46.00		21.00	TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
29	ON–R	44+22.00		29.00	TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
30	ON–R	46+08.00		29.00	TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
31	NB–T	5036+14.00	21.00		TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
32	ON–R	47+93.00		29.00	TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "A"
33	NB–T	5037+97.00	24.00		TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
34	NB–T	5039+55.00	30.00		TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
35	NB–T	5041+42.00	35.00		TYPE A	56–6,8	40'	STP	22'	INSTALL USING WIDENING DETAIL "B"
U1	U	10+46.51		39.34	TYPE C	56–14,16	–	–	–	UNDERPASS LIGHTING,
U2	U	10+45.01	40.61		TYPE C	56–14,16	–	–	–	UNDERPASS LIGHTING,
U3	U	11+11.70		41.59	TYPE C	56–14,16	–	–	–	UNDERPASS LIGHTING, PROVIDE (2) MSE WALL–MOUNT J–BOXES UPSTREAM
U4	U	11+12.26	41.99		TYPE C	56–14,16	–	–	–	UNDERPASS LIGHTING, PROVIDE (2) MSE WALL–MOUNT J–BOXES UPSTREAM

JUNCTION BOX SUMMARY

No.	ALIGNMENT	STATION	OFFSET LT	OFFSET RT	JUNCTION BOX TYPE	CIRCUIT	REMARKS
8	NB–T	5002+88.00	19.00		TYPE 2	56–2,4	
9	EB	5002+89.00		23.00	TYPE 2	56–2,4	
10	WB	4994+67.00	26.00		TYPE 1A	56–2,4	
11	WB	4996+51.00	37.00		TYPE 1A	56–2,4	
12	WB	4998+41.00	42.00		TYPE 1A	56–2,4	
13	NB–T	5000+25.00	18.00		TYPE 1A	56–2,4	
14	NB–T	5002+03.00	18.00		TYPE 1A	56–2,4	
15	NB–T	5003+91.00	18.00		TYPE 1A	56–2,4	
16	EB	5005+71.00		24.00	TYPE 1A	56–2,4	
17	OFF–R2	20+32.00		18.00	TYPE 1A	56–2,4	
18	OFF–R2	22+08.00		17.00	TYPE 1A	56–2,4	
19	OFF–R2	23+93.00		17.00	TYPE 1A	56–2,4	
19A	OFF–R2	25+90.00		17.00	TYPE 1A	56–2,4	
19B	OFF–R2	27+78.00		17.00	TYPE 1A	56–2,4	
19C	OFF–R2	29+68.00		31.00	TYPE 1A	56–2,4	
20	OFF–R2	30+51.00	11.00		TYPE 1A	56–10,12	
20A	OFF–R2	30+51.00		32.00	TYPE 1A	56–10,12	
20B	U	11+47.00		29.00	TYPE 1A	56–14,16	
21	K–R	18+17.00	20.00		TYPE 1A	56–10,12	
22	NB–T	5018+49.00	18.00		TYPE 1A	56–10,12	
22A	NB–T	5018+85.00	21.00		TYPE 1A	56–10,12	
23	U	11+56.00	27.00		TYPE 1A	56–10,12	
24	ON–R	30+56.00		32.00	TYPE 2	56–10,12	
25	U	13+20.00	28.00		TYPE 1A	56–10,12	
25A	U	13+77.00	57.00		TYPE 1A	56–10,12	
26	K–R	19+83.00		20.00	TYPE 1A	56–10,12	
26A	ON–R	32+60.00		19.00	TYPE 1A	56–6,8	
26B	ON–R	34+50.00		20.00	TYPE 1A	56–6,8	
26C	ON–R	36+75.00		21.00	TYPE 1A	56–6,8	
26D	ON–R	38+90.00		22.00	TYPE 1A	56–6,8	
27	ON–R	40+75.00		21.00	TYPE 1A	56–6,8	
28	ON–R	42+50.00		21.00	TYPE 1A	56–6,8	
29	ON–R	44+26.00		29.00	TYPE 1A	56–6,8	
30	ON–R	46+12.00		29.00	TYPE 2	56–6,8	
31	NB–T	5036+10.00	21.00		TYPE 2	56–6,8	
32	ON–R	47+97.00		29.00	TYPE 1A	56–6,8	
33	NB–T	5037+93.00	24.00		TYPE 1A	56–6,8	
34	NB–T	5039+51.00	30.00		TYPE 1A	56–6,8	
35	NB–T	5041+38.00	35.00		TYPE 1A	56–6,8	

ILLUMINATION NOTES:

1. LUMINAIRE NUMBERS 1 THROUGH 9 ARE RESERVED FOR FUTURE USE.
2. LUMINAIRES SHALL BE SUITABLE FOR 480V SUPPLY, AND COMPLY WITH SPECIAL PROVISIONS OF SECTION 740–2.18. LUMINAIRES SHALL PROVIDE THE AVERAGE INITIAL LUMINANCE, ILLUMINANCE, AND UNIFORMITIES SPECIFIED IN THE PERFORMANCE CRITERIA SCHEDULES. PROVIDE LIGHTING CALCULATIONS USING THE MANUFACTURER'S CURRENT PUBLISHED PHOTOMETRIC DATA IN ACCORDANCE WITH SPECIAL PROVISIONS OF SECTION 740–2.18 FOR LED ROADWAY LUMINAIRES.
3. PRIOR TO INSTALLATION, CONTRACTOR SHALL REQUEST LOCATES FOR EXISTING UNDERGROUND UTILITIES, AND RECEIVE WRITTEN CONFIRMATION THAT ALL FACILITIES HAVE BEEN IDENTIFIED.
4. POLE LOCATIONS SHALL BE STAKED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ADJUST POLE LOCATIONS AS DIRECTED BY THE ENGINEER. MINOR RELOCATIONS OF FOUNDATIONS, CONDUIT, AND JUNCTION BOXES SHALL BE CONSIDERED SUBSIDIARY TO THE SECTION 660.0003.0000 PAY ITEM.
5. DESIGN MOUNTING HEIGHT AS SCHEDULED SHALL BE MEASURED FROM THE FINISHED ROAD SURFACE TO THE LUMINAIRE. ALL LUMINAIRES SHALL BE MOUNTED HORIZONTAL WITH ZERO TILT UNLESS OTHERWISE NOTED.
6. PROVIDE LIGHTING STANDARDS AND STEEL PIPE PILE FOUNDATIONS IN ACCORDANCE WITH PLAN DETAILS, NOTES, AND SPECIFICATIONS.
7. ORIENT POLE WITH LUMINAIRE MAST ARMS AS INDICATED ON THE PLANS, TYPICALLY PERPENDICULAR TO THE ROADWAY CENTERLINE, UNLESS A SPECIFIC ORIENTATION IS OTHERWISE NOTED.
8. WITH EXCEPTION TO UNDERPASS LIGHTS, ALL LUMINAIRES SHALL BE FURNISHED WITH A 7–PIN NEMA TWIST–LOCK RECEPTACLE AND WIRELESS CONTROL NODE. UNLESS OTHERWISE NOTED, LUMINAIRES SHALL BE SET WITH NO DIMMING.
9. ALL LIGHT POLES SHALL BE MOUNTED USING FRANGIBLE COUPLINGS. FHWA NCHRP REPORT 350 COMPLIANT BREAK AWAY FRANGIBLE COUPLING SUPPORT SYSTEM.

JUNCTION BOX NOTES:

1. JUNCTION BOX NUMBERS 1 THROUGH 7 ARE RESERVED FOR FUTURE USE.
2. JUNCTION BOX DETAILS, SEE SHEET H15.
3. TABLE J–BOX LOCATIONS ARE APPROXIMATE, SEE DETAILS ON SHEET H13 AND ADJUST LOCATION AS DIRECTED BY THE ENGINEER.
4. UNLESS OTHERWISE NOTED, PLACE JUNCTION BOX ADJACENT TO LIGHT POLES IN ACCORDANCE WITH THE INSTALLATION DETAILS ON SHEETS H13.
5. JUNCTION BOXES AND CONDUIT RUNS SHOWN IN PLANS FOR THE LIGHTING SYSTEM ARE CONSIDERED SUBSIDIARY TO THE 660.0003.0000 HIGHWAY LIGHTING SYSTEM PAY ITEM, AND THE 660.0012.0000 UNDERPASS LIGHTING SYSTEM PAY ITEM.

ABBREVIATIONS:

EX	EXISTING
CIDH	CAST IN DRILLED HOLE
STP	STEEL TAPERED POLE
N/A	NOT APPLICABLE

LIGHTING SYSTEM SUMMARY

[redacted]

7/14/2023

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H8	H17

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER & MODEL No.	LIGHT SOURCE	IES TYPE OPTICS	INITIAL LUMENS	COLOR TEMP (CCT)	DRIVER CURRENT	VOLTAGE & WATTS	POWER FACTOR	MOUNTING	QUANTITY (EACH)	REMARKS
A	AEL ATB2–P601–480–R2–P7	LED	TYPE II	27,200	4000K	–	480V 175W	–	TENON	19	
B	AEL ATB2–P601–480–R3–P7	LED	TYPE III	27,080	4000K	–	480V 175W	–	TENON	7	
C	LITHONIA TWPX2 LED–P2–40K–480–DNAXD	LED	–	4,250	4000K	–	480V 32W	–	WALL	4	NO PHOTOCELL, CAP AS REQ. UNDERPASS WALL MOUNT LIGHTS ARE WIRED TO LOAD CENTER PHOTOCELL

NOTES:

1. ALL TYPE A AND B LUMINAIRES SHALL BE FURNISHED WITH 7–PIN NEMA PHOTOCELL RECEPTACLE, AND WIRELESS CONTROL NODE, THAT SHALL SEAMLESSLY INTEGRATE, COMMUNICATE, AND OPERATE WITH THE EXISTING GE LIGHTGRID LIGHTING CONTROL AND MANAGEMENT SYSTEM THAT IS USED BY DOT&PF. ALL NODES SHALL COME WITH 10 YEARS OF LIGHTGRID GATEWAY SOFTWARE WEB HOSTING. ALL NODES SHALL BE GE LIGHTGRID 3.0 OR NEWER WIRELESS CONTROL NODE WITH CAT–M TECHNOLOGY CAPABLE OF PERFORMING WITHOUT AN INTERPOSING LIGHTGRID GATEWAY.

2. ALL TYPE 'A' AND 'B' LUMINAIRES SPECIFIED SHALL BE CONSIDERED FOR SUBSTITUTION WITH AN "APPROVED EQUAL". ONE SUCH PRE–APPROVED EQUAL IS THE CREE RSW LED EXTRA LARGE Q6 40K IN TYPE II/III FIXTURE.

3. LUMINAIRES SHALL BE SUITABLE FOR 480V SUPPLY, AND COMPLY WITH SPECIAL PROVISIONS OF SECTION 740–2.18. LUMINAIRES SHALL PROVIDE THE AVERAGE INITIAL LUMINANCE, ILLUMINANCE, AND UNIFORMITIES SPECIFIED IN THE LIGHTING DESIGN CRITERIA SCHEDULE. PROVIDE LIGHTING CALCULATIONS USING THE MANUFACTURER'S CURRENT PUBLISHED PHOTOMETRIC DATA IN ACCORDANCE WITH SPECIAL PROVISIONS OF SECTION 740–2.18 FOR LED ROADWAY LUMINAIRES.

LIGHTING DESIGN CRITERIA	
ROADWAY CHARACTERISTICS	
ROADWAY LIGHTING STANDARD:	IESNA RP–8–2014
CALCULATION ZONE:	ENTIRE ROADWAY
ROADWAY CLASSIFICATION:	FREEWAY CLASS A
PEDESTRIAN CLASSIFICATION:	LOW
PAVEMENT CLASSIFICATION:	R3
TRAFFIC FLOW:	2–WAY
LANE WIDTH:	12 FT.
NO. OF LANES, LEFT / RIGHT	VARIES
MEDIAN:	VARIES
LUMINAIRE DEPRECIATION CRITERIA	
TOTAL LIGHT LOSS FACTOR (LLF):	0.85
FREEWAY RAMPS CRITERIA	
AVERAGE ILLUMINANCE (Eavg):	>= 0.9 FC
Eavg/Emin RATIO:	<= 3.0
INTERSECTION & UNDERPASS CRITERIA	
FUNCTIONAL CLASSIFICATION	COLLECTOR/COLLECTOR
AVERAGE ILLUMINANCE (Eavg):	>= 1.2 FC
Eavg/Emin RATIO:	<= 4.0

LIGHTING DESIGN CRITERIA AND LUMINAIRE SCHEDULE

CE 12583 REGISTERED PROFESSIONAL ENGINEER

7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd, Suite 400 Anchorage, Alaska 99503 (907) 346–2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H8_LUM PRFRMC CRITA–H8 Fri, Jul/14/23 10:10am
(Driver Layout) PEN: DATE

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	H9	H17

NEW LOAD CENTER — LOAD CENTER SUMMARY

LOAD CENTER: "LC56" TYPE: 1
LOCATION: OLD RICHARDSON HWY & RICHARDSON HWY MP 351
REMARKS:

UTILITY SOURCE: 25 KVA POLE MOUNT XFMR GVEA METER #: NEW METER
SERVICE: 100 AMP, 480/240 VOLT, 1-PHASE, 3-WIRE
MAX. AVAILABLE FAULT CURRENT: 289 AMP

MAIN BREAKER: 100 AMP, 2-POLE, 480/240 VOLT — INTERRUPTING RATING: 14,000 AMP

AUXILIARY EQUIPMENT SUMMARY

DESCRIPTION	VOLT	POLES	AMP	REMARKS
SURGE ARRESTOR	480	2		
SELECTOR SWITCH (ON/OFF, 2-POS)	240	2	10	
LC HAS 3 SPARE CONTACTORS FOR FUTURE USE	480	10	30	

PANEL 'A' SCHEDULE — 480/240 VOLT, 1-PHASE, 3-WIRE, 100A MLO — INTERRUPTING RATING: 14,000 AMP

CKT. NO.	DESCRIPTION	CKT. BKR.	KVA	KVA / LEG A	KVA / LEG B	CKT NO.	DESCRIPTION	CKT. BKR.	KVA
1	CABINET HEATER	20A/1P	0.3	1.1		2	NEW LED LIGHTING EAST OF INTERSECTION (10 LUM)	20A/2P	0.9
3	LIGHTING CONTROL	20A/1P	0.1		1.0	4			0.9
5	SPARE	20A/2P	0.0	0.8		6	NEW LED LIGHTING WEST OF INTERSECTION (9 LUM)	20A/2P	0.8
7			0.0		0.8	8			0.8
9	SPARE	20A/2P	0.0	0.6		10	NEW LED LIGHTING INTERSECTION (7 LUM) *	20A/2P	0.6
11			0.0		0.6	12			0.6
13	SPACE		0.0	0.1		14	NEW LED LIGHTING UNDERPASS (4 LUM)	20A/2P	0.1
15	SPACE		0.0		0.1	16	ROUTE THRU CONTACTOR (CONTROLLED BY PHOTOCELL)		0.1
17	SPACE		0.0	0.0		18	SPACE		0.0
19	SPACE		0.0	0.0		20	SPACE		0.0
21	SPACE		0.0	0.0		22	SPACE		0.0
23	SPACE		0.0	0.0		24	SPACE		0.0
	SERVICE LOAD:	CONNECTED:		2.6	2.4	5.0 KVA	10.5 AMP		
		DEMAND:		3.2	3.0	6.3 KVA	13.1 AMP		

NOTES: LUM = LUMINAIRE
UNDERPASS LIGHTS ARE ON PHOTOCELL. HIGHWAY LIGHTS ARE CONTROLLED BY 7 PIN GE NODE
* BYPASS CIRCUIT AROUND LIGHTING CONTACTOR, CONTROLLED BY 7 PIN GE LIGHT GRID SYSTEM.
REMOVE EXISTING 240/120V LOAD CENTER. RETURN LOAD CENTER TO DOT&PF.

VOLTAGE DROP CALCULATION – LC "56"

1-PH, 2W CONFIGURATION, 1 COPPER CONDUCTOR PER PHASE IN RMC.
TEMPERATURE RATING 75° C.

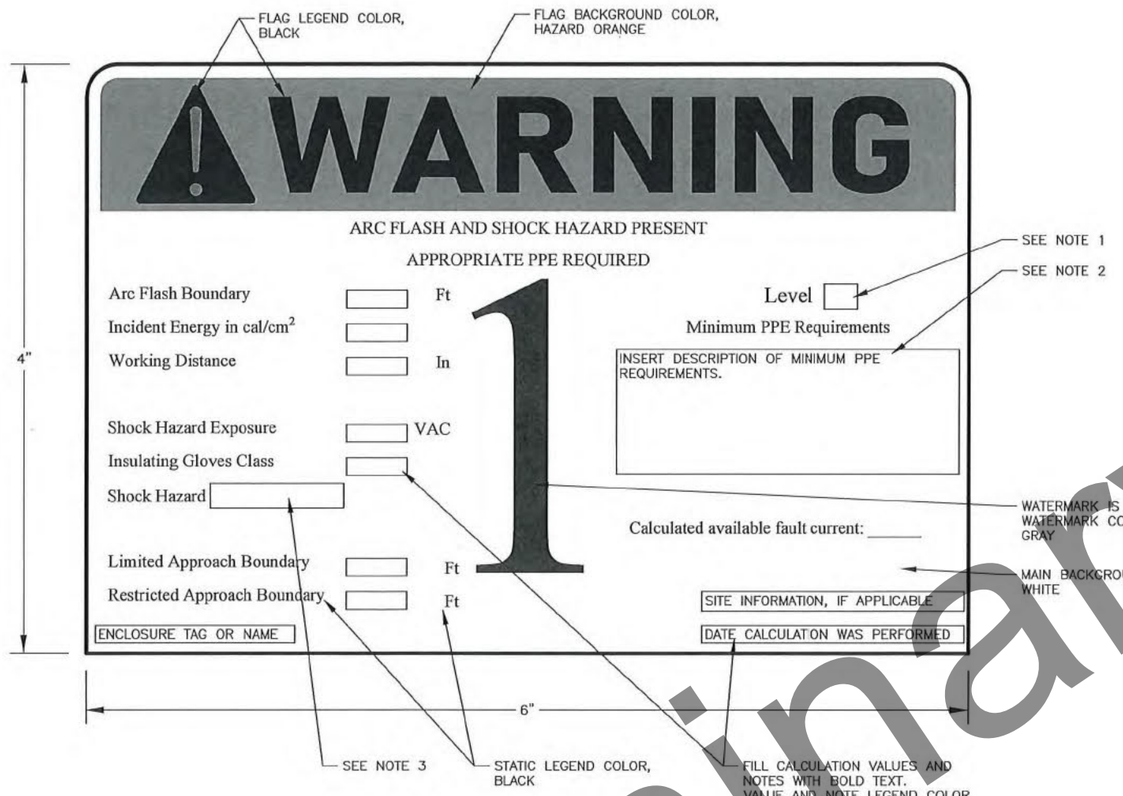
CKT #	SEGMENT SIZE (AWG)	SEGMENT LENGTH	VOLTAGE	POWER FACTOR	LOAD (KVA)	TOTAL (AMPS PER PHASE)	SEG. (%VD)
56-2,4	#8	2906 LF	480 V	0.85	1.8	3.65	3.1%
56-6,8	#8	2630 LF	480 V	0.85	1.6	3.3	2.8%
56-10,12	#8	1217 LF	480 V	0.85	1.2	3.5	1.0%
56-14,16	#8	563 LF'	480 V	0.85	0.2	0.3	0.4%

LOAD CENTER SUMMARY

[redacted]
OF ALA
PROFESSIONAL
7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd, Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H9_LOAD CENTER SUMM-H9 Fri, Jul/14/23 10:10am (Brian Lasyet)

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H10	H17



ARC-FLASH SCHEDULE

DEVICE	VOLTAGE	INCIDENT ENERGY @ MAX ARCING CURRENT (CAL/CM²)	ARC-FLASH BOUNDARY DISTANCE
LC56	480V	0.68	1'-2"

FAULT CURRENT SCHEDULE

DEVICE	FAULT	AIC RATING	L-L VOLTS	FEEDER		TRANSFORMER			MOTOR FAULT
				SIZE	LENGTH	KVA	Z%	FAULT AT PRIMARY	
UTIL 25	290A	14,000	480V			25	1.75	1,552	
LC56	289A	14,000	480V	#2	45'				

LOAD CENTER "56" ARC FLASH NOTES:

1. UTILITY TRANSFORMER IS ASSUMED TO BE 25KVA, FED BY 45' OF #2 AL CONDUCTOR. ADJUST CALCULATION IF FIELD CONDITIONS ARE OTHERWISE.
2. ARC FLASH PPE REQUIREMENTS: PPE 1.
3. PROVIDE ARC FLASH WARNING LABEL AS PER NFPA 2018 70E 130.5 ARC FLASH RISK ASSESMENT (H) (3) INDICATING EITHER 3.1 OR 3.2 BUT NOT BOTH,
   - 3.1. INCIDENT ENERGY AND CORRESPONDING WORKING DISTANCE. 0.68 CAL/CM² WITH A WORKING DISTANCE OF 18"
   - 3.2. THE REQUIRED PPE.
4. CALCULATED ON 06-08-23.

NOTES:

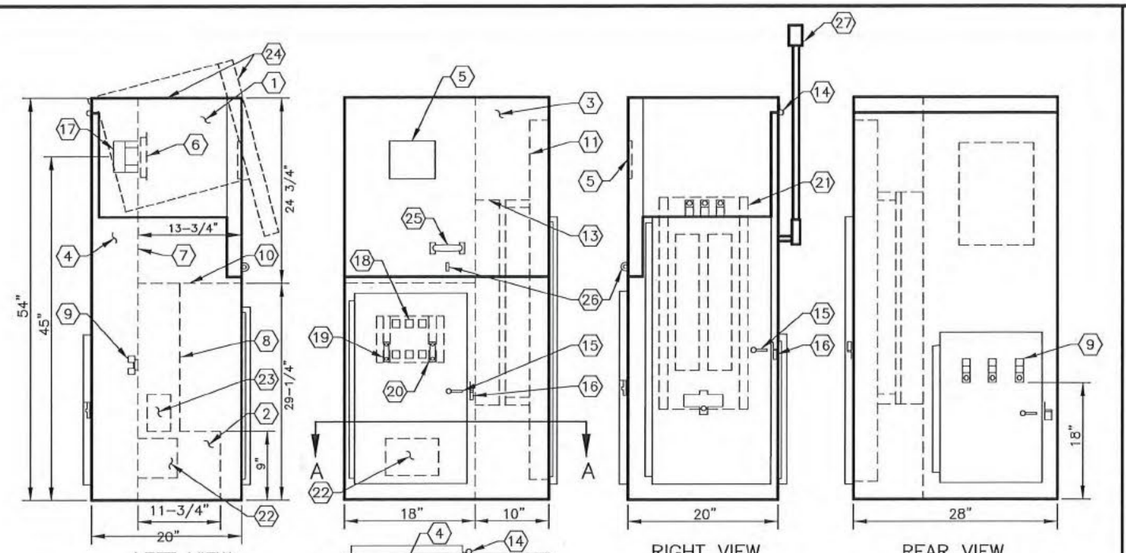
1. APPLICABLE STATE OF ALASKA DOT&PF ELECTRICAL EQUIPMENT MUST BE LABELED WITH DOT&PF-DEFINED SITE-SPECIFIC PPE LEVELS, AS DEFINED IN NFPA 70E 130.5(H)(3)(c). THE LEVELS ARE: LEVEL 1 (0 TO 4 CAL/CM²), 2 (4.1 TO 8.0 CAL/CM²), 3 (8.1 TO 25.0 CAL/CM²), 4 (25.1 TO 39.9 CAL/CM²), OR WP (WORK PROHIBITED, FOR EQUIPMENT IN WHICH THE CALCULATED ARC FLASH INCIDENT ENERGY IS ≥ 40 CAL/CM²).
2. MINIMUM PPE REQUIREMENTS FOR EACH PPE LEVEL DESCRIBED IN NOTE 1 ARE THE SAME REQUIREMENTS AS DESCRIBED IN NFPA 70E TABLE 130.7(C)(15)(c). THESE PPE REQUIREMENTS ARE TO BE USED AS THE SITE-SPECIFIC PPE LEVELS.
3. PROVIDE DESCRIPTION OF EQUIPMENT CONFIGURATIONS IN WHICH A HAZARD EXISTS. FOR EXAMPLE "WHEN COVER REMOVED."
4. THIS LABEL IS A TEMPLATE ONLY. REFER TO THE LOAD CENTER SUMMARY SHEETS FOR CALCULATED RESULTS, ARC-FLASH AND FAULT CURRENT SCHEDULE.

LOAD CENTER WARNING AND CALCULATIONS

[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd. Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H10_CONDUIT WIRE SCHD_LABEL-H10 Fri, Jul/14/23 10:10am
(Ryan Lewis) kEP, 07/26/

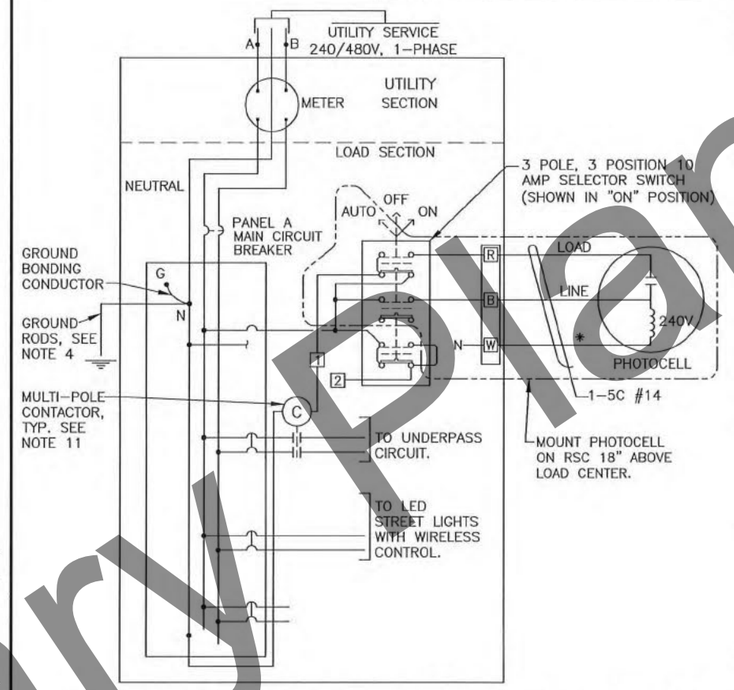
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H11	H17



EQUIPMENT LEGEND

1. METER SECTION
2. LOAD SECTION (MAIN)
3. LOAD SECTION (DISTRIBUTION)
4. SERVICE PULL SECTION
5. METER READING WINDOW
6. METER SOCKET COVER
7. TEST SECTION COVER
8. DEAD FRONT
9. UTILITY LANDING LUGS
10. METER SECTION BARRIER
11. PANEL BOARD DEADFRONT
12. EQUIPMENT CHASSIS
13. MOUNTING PAN
14. STAINLESS STEEL PIN HINGE
15. COIN LATCH
16. HASP FOR PADLOCK
17. METER SOCKET KIT ASSEMBLY
18. MAIN BREAKER(S)
19. NEUTRAL BAR
20. GROUND BAR
21. PANEL BOARD INTERIOR
22. ALTERNATE CONTACTOR LOCATION
23. CABLE OPENING
24. HINGED HOOD
25. HOOD HANDLE
26. SEALABLE PADLOCK HASP
27. PHOTOCELL

TYPE 1 LOAD CENTER CABINET SECTION / ELEVATION



LOAD CENTER AND SELECTOR SWITCH WIRING DIAGRAM

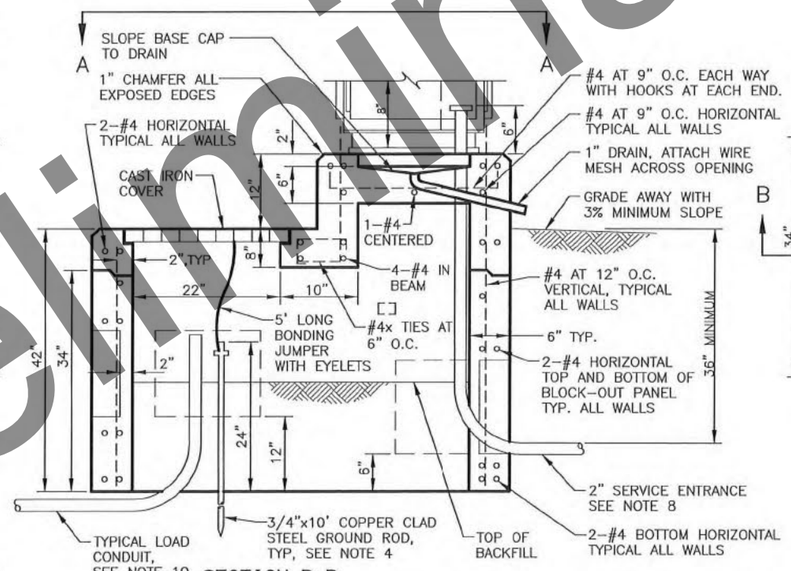
* GROUNDED NEUTRAL FOR 240/480V SINGLE–PHASE SERVICE.

NOTES:

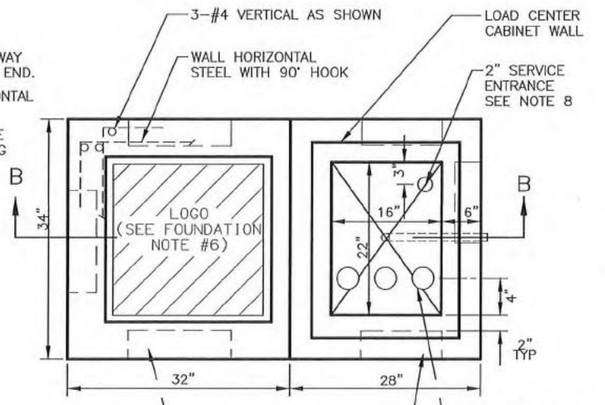
1. FURNISH ALL EQUIPMENT NOTED IN THE LOAD CENTER SUMMARY, PLUS TWO 20–AMP 2–POLE SPARE CIRCUIT BREAKERS, AND SPACE FOR A MINIMUM OF TWO ADDITIONAL 2–POLE CIRCUIT BREAKERS IN EACH LOAD PANEL. SEE THE LOAD CENTER SUMMARIES FOR LOAD PANEL VOLTAGES, CURRENT RATINGS, AND THE NAME OF THE SERVING UTILITY.
2. INSTALL GROUNDING HUBS THIRD PARTY CERTIFIED FOR WET LOCATIONS ("MYERS" TYPE), WHEN ATTACHING CONDUITS TO THE LOAD CENTER ENCLOSURE.
3. LABEL ALL CIRCUIT BREAKERS AS TO FUNCTION AND POSITION. LABEL THE SELECTOR SWITCH "LIGHTING" AND ITS POSITIONS "ON–OFF–AUTO", OR "ON–OFF" AS REQUIRED BY SWITCH TYPE.
4. PROVIDE TWO GROUND ROD ELECTRODES WITH 6'–0" MINIMUM SEPARATION. GROUNDING ELECTRODE CONDUCTOR SHALL BE #4 AWG MINIMUM.
5. METER BASES SHALL NOT BE MOUNTED ON MOVABLE PANELS OR DOORS.
6. LOCATE THE LOAD CENTER AT LEAST 30 FEET AWAY FROM ANY TRAVELED WAY, OR WHERE INSUFFICIENT RIGHT–OF–WAY EXISTS, ADJACENT TO THE RIGHT–OF–WAY LINE. LOCATE LOAD CENTER FOUNDATION ADJACENT TO EXISTING TYPE 2 J–BOX WITH SUFFICIENT CLEARANCE TO ALLOW FOR CONDUIT/WIRING EXTENSIONS.
7. STORE A SCHEMATIC DIAGRAM, A CIRCUIT DIRECTORY, AND A MATERIALS LIST THAT INCLUDES THE MANUFACTURER'S NAME AND PART/CATALOG NUMBERS, ALL LAMINATED IN PLASTIC, IN A METAL POCKET ATTACHED TO THE INSIDE OF THE LOAD CENTER. INSTALL THE POCKET ON THE LOAD CENTER DOOR, PROVIDING DRAIN HOLES TO PREVENT WATER ACCUMULATION.
8. PROVIDE SERVICE LATERAL AND SECONDARY POLE RISER INSTALLATION IN ACCORDANCE WITH UTILITY REQUIREMENTS. SEE THE PLANS AND LOAD CENTER SUMMARIES FOR LOAD CENTER LOCATION AND POWER SOURCE. PROVIDE SERVICE LATERAL BASED ON THE SPECIFIED LOAD CENTER SERVICE DISCONNECT RATING AS FOLLOWS:
   - 100 AMP: 2"RMC, 3–#2 XHHW
   - 200 AMP: 2"RMC, 3–#3/0 XHHW
9. MAXIMUM METER HEIGHT SHALL NOT EXCEED 64 INCHES FROM CAST IRON COVER TO CENTER OF THE METER SOCKET COVER.
10. ROUTE UNDERPASS LIGHTING CIRCUIT THROUGH CONTACTOR. UNDERPASS LIGHTING IS TO TURN OFF DURING DAYLIGHT HOURS.
11. CONNECT EACH LIGHTING CONTACTOR COIL WITH A HOMERUN CONNECTION TO A CORRESPONDING NUMBERED TERMINAL BLOCK. SEE LOAD CENTER SUMMARY FOR NUMBER OF CONTACTORS, POLES, AND RATINGS.
12. PROVIDE MASTERLOCK FOR ALL LOCKABLE DOORS ON LOAD CENTERS. ALL MASTERLOCKS SHALL BE KEYED ALIKE WITH "2001" KEY.
13. INSTALL THE PHOTOELECTRIC CONTROL UNIT ON A 3/4" OR LARGER CONDUIT. LOCATE THE UNIT 18"–24" ABOVE THE TOP OF THE LOAD CENTER. ORIENT THE CONTROL WINDOW FACING NORTH AND/OR AWAY FROM ARTIFICIAL LIGHT SOURCES THAT MAY INTERFERE WITH THE AMBIENT LIGHT CONTROL. INSTALL A 3c#14 CABLE FROM THE LOAD CENTER TO THE CONDUIT BODY WHERE THE CONNECTION TO THE PHOTOCELL RECEPTACLE CABLE SHALL BE MADE, IF PLANS CALL TO MOUNT PHOTOCELL AWAY FROM LOAD CENTER USE A 5c#14 CABLE FROM LOAD CENTER TO RECEPTACLE. PHOTOCELL MUST BE ENCLOSED IN A METALLIC ENCLOSURE.

FOUNDATION NOTES:

1. INSTALL THE SURFACE WITH CAST IRON COVER FLUSH WITH THE PAVEMENT, SIDEWALK, OR FINISHED GRADE. GRADE AWAY FROM THE BASE WITH A MINIMUM SLOPE OF 3%. USE A PREFORMED BITUMINOUS JOINT BETWEEN THE BASE AND CONCRETE SIDEWALK OR PAVING.
2. WHEN INSTALLING THE BASE, EXCAVATE TO 60" BELOW FINISHED GRADE AND INSTALL A DRAIN CONSISTING OF 18" OF POROUS BACKFILL MATERIAL, GRADING A. BACKFILL AROUND THE BASE IN 6" LIFTS WITH SELECTED MATERIAL TYPE "A".
3. BACKFILL INSIDE THE FOUNDATION TO WITHIN 24" OF THE LID AFTER ALL CONDUITS ARE INSTALLED, USING POROUS BACKFILL MATERIAL, GRADING A. TERMINATE THE ENDS OF ALL LOAD CONDUITS A MINIMUM OF 6" ABOVE THE COARSE CONCRETE AGGREGATE BACKFILL AND A MINIMUM OF 12" BELOW THE LID.
4. PROVIDE ANCHOR BOLTS OR EXPANSION ANCHORS IN THE BASE FOR MOUNTING THE CABINET PER THE MANUFACTURER'S SHOP DRAWINGS. ANCHOR BOLTS, NUTS, AND WASHERS SHALL CONFORM TO EITHER ASTM A307 OR A449 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
5. USE GRADE 60 REINFORCING STEEL CONFORMING TO ASTM 615 AND CLASS "A" CONCRETE CONFORMING TO SECTION 501 OF THE SPECIFICATIONS WHEN CASTING THE BASE.
6. FINISH THE BASE ACCESS OPENING WITH A 24" SQUARE IRON FRAME AND COVER, WEIGHING APPROXIMATELY 280 LBS. PROVIDE COVERS INSCRIBED WITH THE LEGEND "LIGHTING" FOR THOSE LOAD CENTERS WITH STREET LIGHTING CIRCUITS ONLY, AND "TRAFFIC" FOR THOSE LOAD CENTERS WITH A TRAFFIC SIGNAL CIRCUIT.
7. IF THE BASE IS PRECAST, INSTALL TWO 3/4" FERRULE LOOP INSERTS IN TWO SIDES OPPOSITE ONE ANOTHER FOR LIFTING.



SECTION B–B



VIEW "A–A"

(PLAN VIEW)

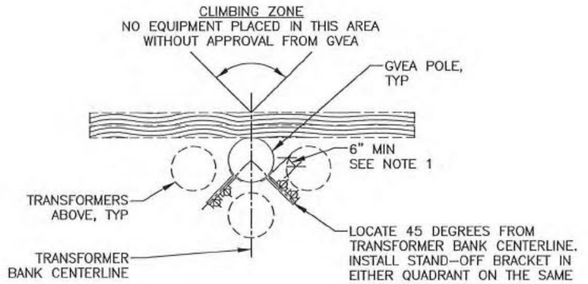
TYPE 1 LOAD CENTER BASE

NOTE: STOP HORIZONTAL AND VERTICAL STEEL AT BLOCK–OUT PANELS & OPTIONAL JOINT USING 90° HOOK. INSTALL 2 EXTRA #4 HORIZONTAL AND VERTICAL BARS ON ALL SIDES OF EACH KNOCKOUT.

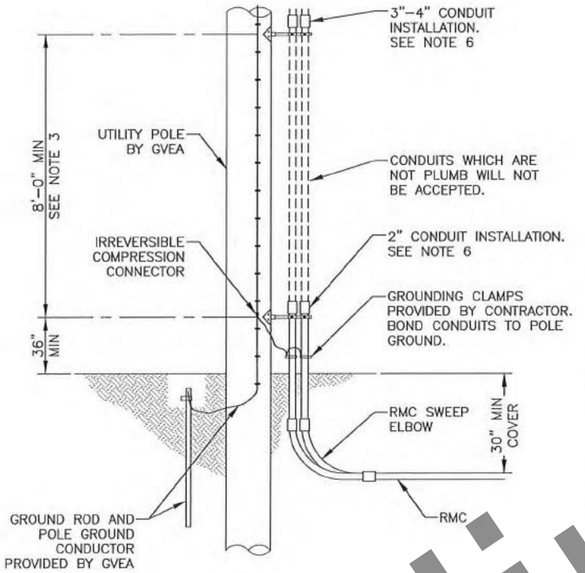
LOAD CENTER DETAILS

[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/14/2023

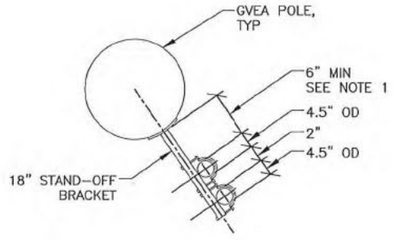
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H12	H17



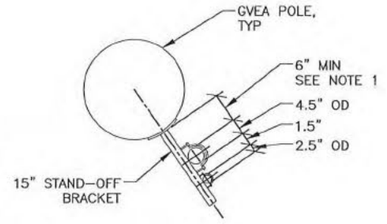
PLAN VIEW



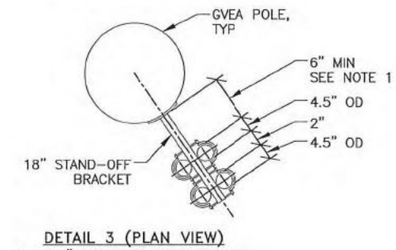
SIDE VIEW



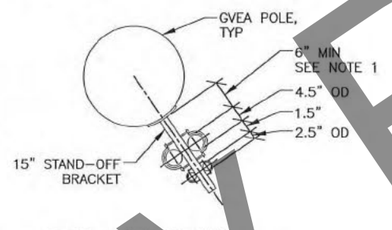
DETAIL 1 (PLAN VIEW)
2 EA 4" CONDUIT ON ONE SIDE OF THE STAND-OFF BRACKET



DETAIL 2 (PLAN VIEW)
1 EA 4" AND 1 EA 2" CONDUITS ON ONE SIDE OF THE STAND-OFF BRACKET



DETAIL 3 (PLAN VIEW)
2 EA 4" CONDUITS ON TWO SIDES OF THE STAND-OFF BRACKET



DETAIL 4 (PLAN VIEW)
1 EA 4" AND 1 EA 2" CONDUITS ON TWO SIDES OF THE STAND-OFF BRACKET

RISER NOTE:

1. SECONDARY CONDUIT RISER DETAILS SHOWN ON THIS SHEET ARE BASED ON GVEA STANDARDS WITH CLARIFICATIONS FOR THIS PROJECT. PROVIDE THE UTILITY SERVICE INSTALLATION ("BY CONTRACTOR") AS REQUIRED IN COMPLIANCE WITH THE SERVING UTILITY STANDARDS.

SECONDARY RISER BUILD PROVISIONS

#2 AWG – 3/0 AWG

- CONTRACTOR SHALL INSTALL FIRST 3 FEET OF RISER ON PRIMARY POLE FOR INSPECTION BY GVEA.
- CONTRACTOR SHALL PROVIDE SUFFICIENT AMOUNT OF CONDUIT (RMC OR IMC) TO REACH BASE OF TRANSFORMER, AS WELL AS STAND-OFF BRACKETS, PIPE CLAMPS, GROUND CLAMPS, LAG BOLTS, AND WEATHER HEAD.
- CONTRACTOR SHALL PROVIDE SERVICE CONDUCTORS AND INSTALLATION TO THE DESIGNATED GVEA POLE. LEAVE SUFFICIENT WIRE FOR TRANSFORMER CONNECTION COILED AT BASE OF POLE.
- GVEA WILL INSTALL REMAINDER OF RISER AND WIRE.

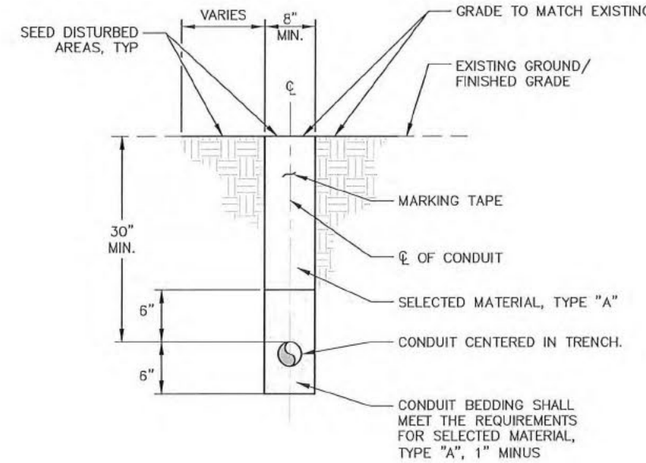
4/0 AWG AND LARGER

- GVEA WILL PULL WIRE WITH CONTRACTOR ASSISTANCE. CONTRACTOR SHALL PROVIDE SERVICE CONDUCTORS.
- GVEA WILL PROVIDE PULLING EQUIPMENT TO INCLUDE PULLING HARNESS, LARGE DIAMETER TRAVELER AND PULL ROPE.
- CONTRACTOR SHALL INSTALL FIRST 10 FEET OF RISER ON PRIMARY POLE WITH JET LINE PULLED IN.
- CONTRACTOR SHALL PROVIDE SUFFICIENT AMOUNT OF CONDUIT (RMC OR IMC) TO REACH BASE OF TRANSFORMER, AS WELL AS STAND-OFF BRACKETS, PIPE CLAMPS, GROUND CLAMPS, LAG BOLTS, RIGID SWEEPS, AND WEATHER HEAD.
- IF RUN IS MORE THAN 75 FEET CONTRACTOR SHALL PROVIDE WIRE ON INDIVIDUAL REELS AND REEL STANDS.

NOTES:

1. 6" MINIMUM DISTANCE FROM POLE IS REQUIRED. CONDUIT INSTALLATION WITH LESS THAN 6" CLEARANCE WILL NOT BE ACCEPTED. ONLY ONE SET OF STAND-OFF BRACKETS WILL BE ALLOWED ON A POLE. CONTACT GVEA'S NEW CONSTRUCTION OFFICE FOR INFORMATION ABOUT ADDING NEW SERVICES TO A POLE WITH EXISTING RISERS.
2. MINIMUM SIZED STAND-OFF BRACKET SHALL BE 15". STAND-OFF BRACKET DETAILS NUMBER 1 THROUGH 4 SHOWS THE MAXIMUM NUMBER OF CONDUITS AND CONDUIT SIZES ALLOWED ON 15" AND 18" STAND-OFF BRACKETS.
3. THE INITIAL SECTION OF CONDUIT SHALL BE ARRANGED SUCH THAT THERE IS NOT LESS THAN 8' BETWEEN THE TWO LOWEST BRACKETS, AS SPECIFIED IN NESC 217.A.2.C.
4. IF THE NUMBER OF CONDUITS NEEDED ON A POLE EXCEED THAT SHOWN IN DETAILS 1 THROUGH 4, THEN AT GVEA'S OPTION, AN EXISTING POLE MOUNTED TRANSFORMER BANK WILL BE REPLACED BY A PAD MOUNTED TRANSFORMER AND ALL EXISTING SERVICES, IF APPLICABLE, FED BY THE POLE MOUNTED TRANSFORMER BANK WILL BE RE-FED FROM THE PAD MOUNTED TRANSFORMER. THE MAXIMUM SIZE POLE MOUNTED THREE-PHASE TRANSFORMER BANK IS 225kVA.
5. ITEMS ON THIS SHEET ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
6. CONDUIT 1.25" – 2 " SHALL BE STUBBED OUT OF GROUND 3' FOR INSPECTION. CONDUIT 3" AND 4" SHALL HAVE THE FIRST 10 FOOT STICK INSTALLED FOR INSPECTION. CONDUITS WHICH ARE NOT PLUMB WILL NOT BE ACCEPTED.

UTILITY POLE SECONDARY RISER DETAIL
NTS



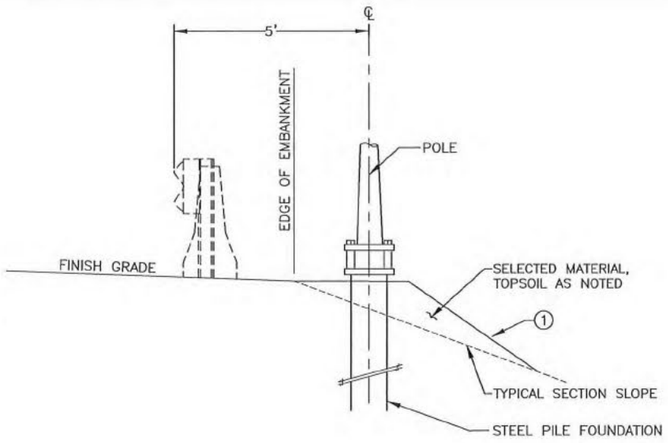
CONDUIT TRENCH SECTION
NTS

UTLITY POLE SECONDARY RISER DETAIL

[redacted]
PROFESSIONAL ENGINEER
7/14/2023

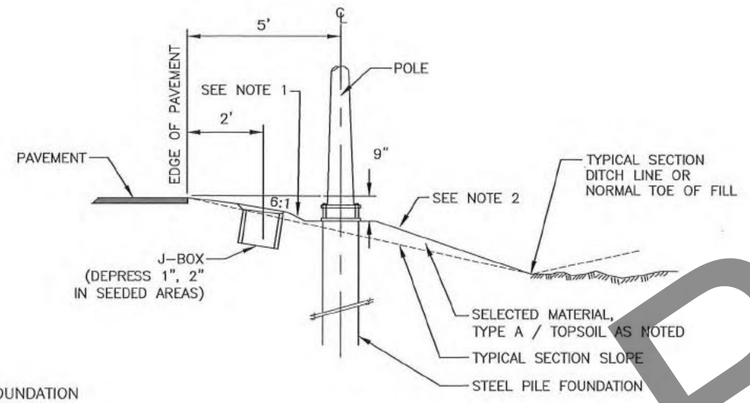
PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd, Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:_PROJECTS\00724 help rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H12_POLE RISER DETAILS-H12 Fri, Jul/14/23 10:11am
(Rylan Lewis) KEW 2023

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H13	H17

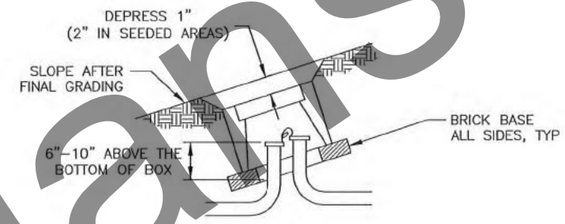


SECTION A–A

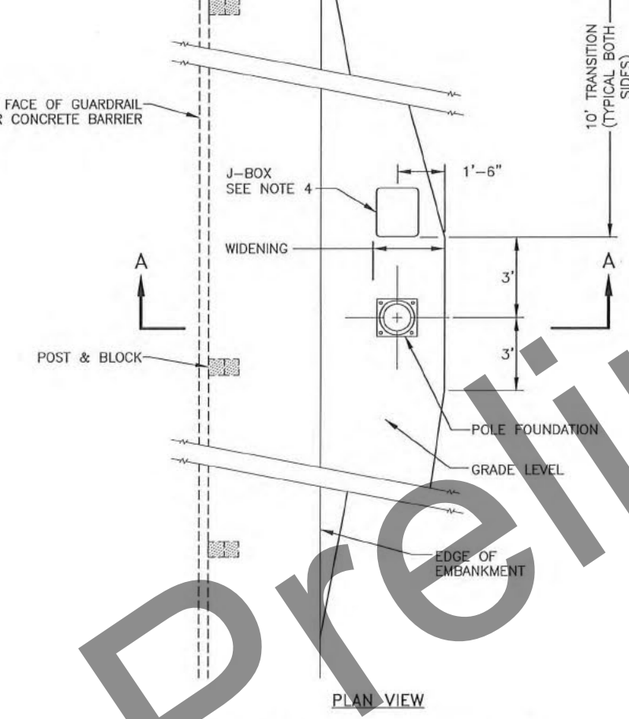
① GRADE SLOPE FROM BACK OF FOUNDATION TO TYPICAL SECTION SLOPE CATCH POINT OR DITCH LINE EXCEPT THAT THE SLOPE SHALL BE NO STEEPER THAN 1:1–1/2.



SECTION B–B

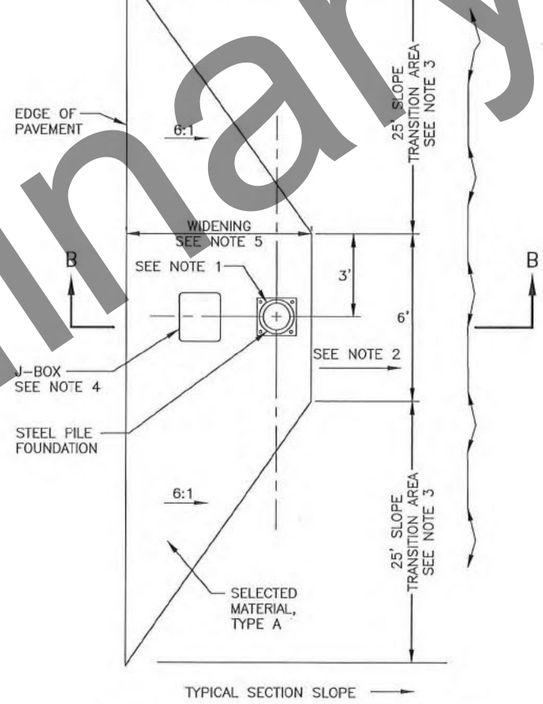


TYPE IA J–BOX INSTALLATION ON SLOPE
NTS



PLAN VIEW

LIGHT POLE WIDENING DETAIL "A"
(USE WHEN POLE IS LOCATED OFF BACK OF GUARDRAIL)



LIGHT POLE WIDENING DETAIL "B"
(USE WHEN POLE IS LOCATED OFF SHOULDER)
NTS

LIGHT POLE WIDENING NOTES:

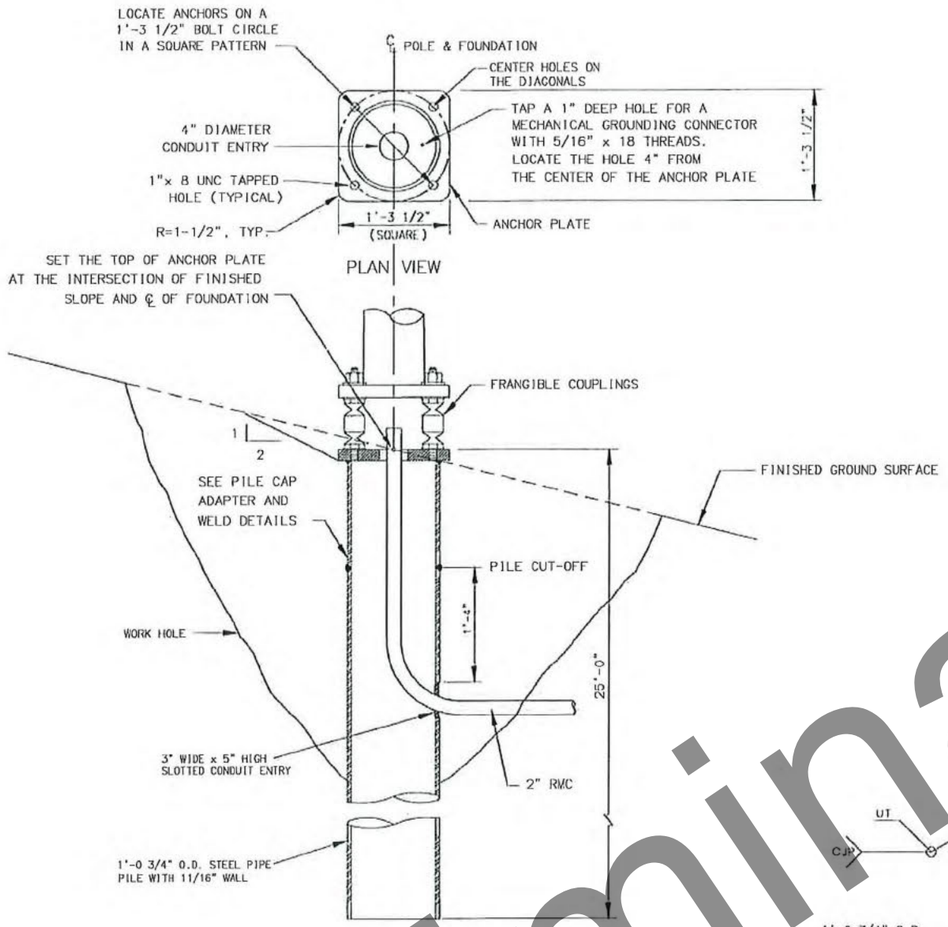
1. WARP SLOPE TO TOP CIRCUMFERENCE OF POLE FOUNDATION.
2. SLOPE FROM TOP EDGE OF POLE FOUNDATION TO TYPICAL SECTION DITCHLINE OR NORMAL TOE OF FILL. NO STEEPER THAN 2:1.
3. WHEN THE TYPICAL SECTION SLOPE IS STEEPER THAN 2:1 USE 35' FOR THE SLOPE TRANSITION AREA.
4. DEPRESS JUNCTION BOX 1" BELOW SURFACE. DEPRESS 2" IN SEEDED AREAS.
5. WIDENING SHALL BE CONSTRUCTED PRIOR TO INSTALLING FOUNDATION.

LIGHT POLE WIDENING DETAIL

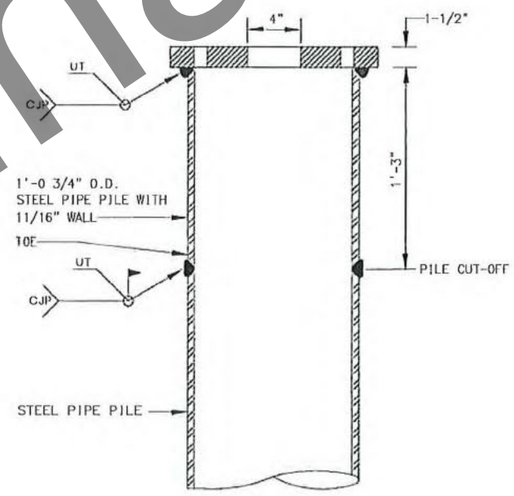
[redacted]
PROFESSIONAL
7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd. Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:_PROJECTS\00724 help rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H13_WIDENING DETAILS-H13 Fri, Jul/14/23 10:11am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H14	H17



PIPE PILE FOUNDATION



PILE CAP ADAPTER AND WELD DETAILS
NOT TO SCALE

GENERAL NOTES:

DESIGN STANDARD: LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, FIRST EDITION (2015).

SERVICE LOADS: AXIAL = 5.0 kip
SHEAR = 7.5 kip
MOMENT = 40 kip-ft

DESIGN LOADS: AXIAL = 5.0 kip

SHEAR AND MOMENT DESIGN BASED ON THE USE OF FOUR (4) FRANGIBLE COUPLINGS WITH THE FOLLOWING STRENGTH PROPERTIES PER COUPLER:

ULTIMATE TENSILE STRENGTH = 50.0 kip
ULTIMATE SHEAR STRENGTH = 5.5 kip

IF PROVIDED COUPLINGS HAVE GREATER DESIGN VALUES, SUBMIT STAMPED ENGINEERING CALCULATIONS VERIFYING THE ADEQUACY OF THE FOUNDATION DESIGN FOR INCREASED LOADS. IF THE FOUNDATION IS FOUND TO BE INADEQUATE, SUBMIT STAMPED ENGINEERING CALCULATIONS, DRAWINGS, AND OTHER NECESSARY INFORMATION FOR A NEW FOUNDATION DESIGN.

MATERIAL REQUIREMENTS		
ITEM	STANDARD	RATING
Structural Steel Plate	ASTM A709	Grade 50 T3
Steel Pipe Pile	ASTM A709 A500 (HSS SECTION ONLY)	Grade 50 T3 Grades B or C

NOTES:

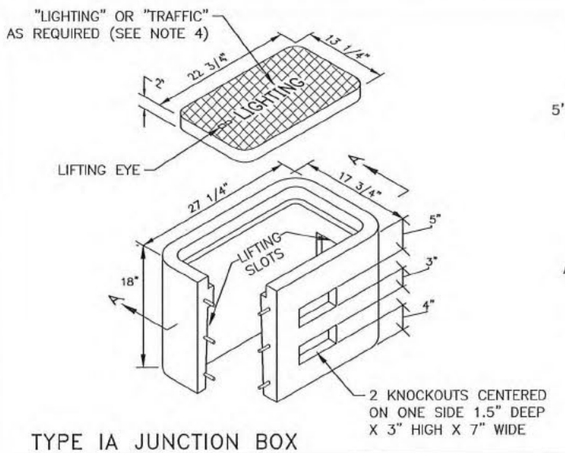
1. PROVIDE SHOP FABRICATED PILE ADAPTER(S). HOT DIP GALVANIZE PILE ADAPTER TO WITHIN 3" OF THE TOE IN ACCORDANCE WITH AASHTO M111.
2. HOT DIP GALVANIZE PILE TO WITHIN 3" OF THE TOP OF THE PILE IN ACCORDANCE WITH AASHTO M111.
3. ALL WELDS TO BE IN ACCORDANCE WITH SECTION 504.
4. NO PILE SPLICES ARE ALLOWED BELOW THE PILE CAP ADAPTER.
5. CUT CONDUIT ENTRY AFTER DRIVING PILE. ONLY MACHINE OR PLASMA CUT PENETRATIONS ARE ALLOWED IN THE PILE.
6. TERMINATE CONDUIT(S) 3" ABOVE THE TOP OF THE ANCHOR PLATE. INSTALL A GROUNDING BUSHING ON THE END OF THE RIGID METAL CONDUIT AND ESTABLISH A BOND WITH THE ANCHOR PLATE.
7. PROVIDE FOUR (4) TRANSPO POLE-SAFE 5100 FRANGIBLE COUPLINGS OR APPROVED EQUAL.
8. BACKFILL AND COMPACT SOIL PRIOR TO INSTALLING LIGHT POLE

DRIVEN STEEL PILE LIGHT POLE FOUNDATION DETAILS

[redacted]
STATE OF ALASKA DOT&PF
3132 Channel Drive
Juneau, Alaska 99801
(907) 465-2975

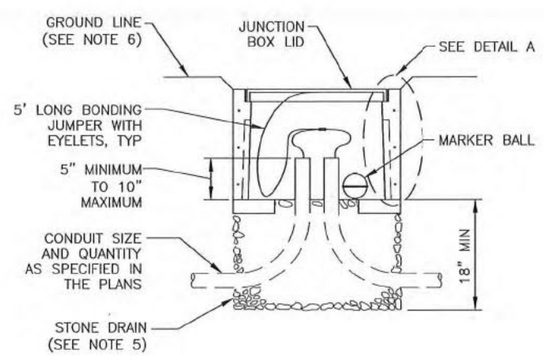
FILE: R:\CAD\MISC\FOUNDATION POLES\12 MILE INTERCHANGE.DWG | DATE/TIME: 5/11/2023 2:01 PM | LAYOUT: PP NOTN | DESIGNED: ACW | CHECKED: | DRAFTED: JAD

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H15	H17

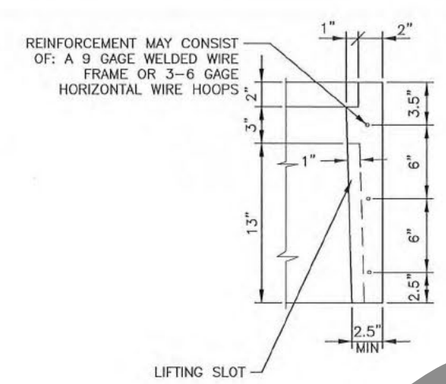


TYPE IA JUNCTION BOX

NTS



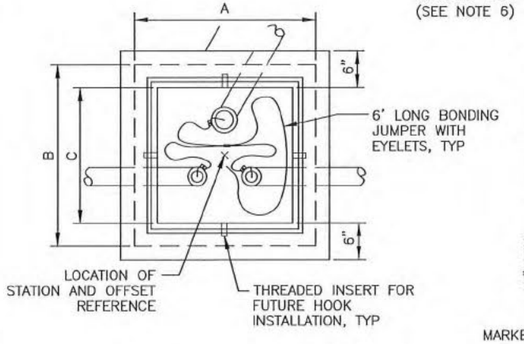
SECTION A–A



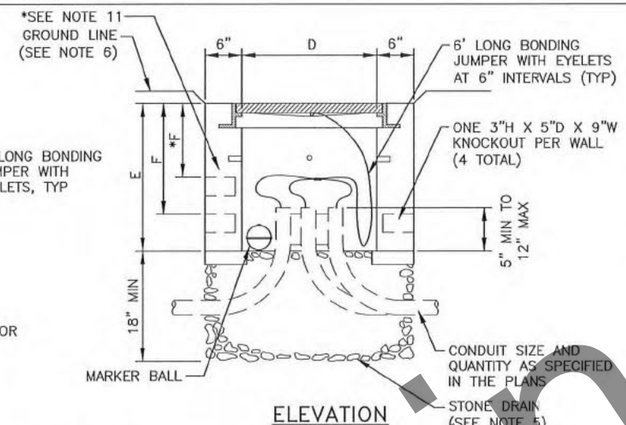
DETAIL A

NOTES:

1. AVOID INSTALLING TYPE IA JUNCTION BOXES IN DRIVEWAYS OR IN LOCATIONS SUBJECT TO USE BY HEAVY TRUCKS. INSTALL JUNCTION BOXES ONLY AT THE LATERAL LOCATIONS ALLOWED IN SUBSECTION 660–3.04.
2. FURNISH TYPE II, III AND IV JUNCTION BOXES WITH CAST IRON FRAMES AND LIDS THAT WEIGH A MINIMUM OF 210 POUNDS AND ARE RATED FOR HEAVY TRAFFIC LOADS IN COMPLIANCE WITH AASHTO M306. FURNISH TYPE IA JUNCTION BOXES WITH CAST IRON LIDS THAT WEIGH A MINIMUM OF 50 POUNDS.
3. CONSTRUCT JUNCTION BOXES ACCORDING TO SECTION 501 USING CLASS A CONCRETE. REINFORCE TYPE IA JUNCTION BOXES AS SHOWN. SYNTHETIC STRUCTURAL FIBER–REINFORCED CONCRETE THAT MEETS ASTM C 1116 AND CONTAINS FIBER IN PROPORTIONS AS RECOMMENDED BY THE FIBER MANUFACTURER MAY BE ADDED FOR STRENGTH.
4. FOR JUNCTION BOXES THAT CONTAIN ILLUMINATION CONDUCTORS EXCLUSIVELY, FURNISH LIDS WITH THE WORD LIGHTING INSCRIBED INTO THEM. FOR OTHER JUNCTION BOXES, FURNISH LIDS WITH THE WORD TRAFFIC INSCRIBED INTO THEM.
5. UNDER JUNCTION BOXES, INSTALL STONE DRAINS THAT CONSIST OF POROUS BACKFILL MATERIAL, GRADING A, CONFORMING TO SUBSECTION 703–2.10.
6. SET THE TOPS OF JUNCTION BOXES WITH THE FOLLOWING DIMENSIONS BELOW THE FINISHED SURROUNDING SURFACE:
   - 1" IN PAVED MEDIANS AND ADJACENT TO PEDESTRIAN FACILITIES
   - 3/16" IN PEDESTRIAN FACILITIES
   - 2" IN ALL OTHER AREAS
7. BOND JUNCTION BOX LIDS TO THE SYSTEM OF EQUIPMENT GROUNDING CONDUCTORS ACCORDING TO SUBSECTION 660–3.06. ATTACH BONDING JUMPERS TO THE JUNCTION BOX LIDS WITH STAINLESS STEEL HARDWARE.
8. INSTALL A 1/2" THICK PREFORMED BITUMINOUS JOINT MATERIAL AROUND JUNCTION BOXES INSTALLED IN PORTLAND CEMENT CONCRETE WALKWAYS.
9. INSTALL AN ELECTRONIC MARKER BALL IN ALL JUNCTION BOXES PER SUBSECTION 660–3.04.
10. PROVIDE CONDUIT GROUNDING BUSHINGS AND BOND TO 3/4"X10' COPPER CLAD GROUND ROD WITH #8 BARE COPPER BONDING WIRE (AS REQUIRED).
11. WHERE MODIFIED TYPE II JUNCTION BOXES ARE REQUIRED FOR DETECTOR LOOP TAIL INSTALLATIONS, ADD ONE(1) ADDITIONAL 5" DEEP X 3" HIGH X 18" WIDE KNOCKOUT 12" BELOW TOP OF JUNCTION BOX.



PLAN

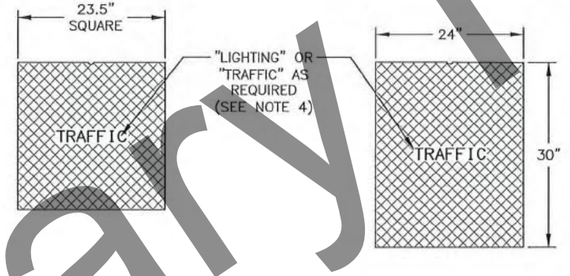


ELEVATION

TYPE II/MODIFIED TYPE II JUNCTION BOX

NTS

*=APPLICABLE TO MODIFIED TYPE II JUNCTION BOX



LID FOR TYPE II, MOD. TYPE II & TYPE III J-BOX

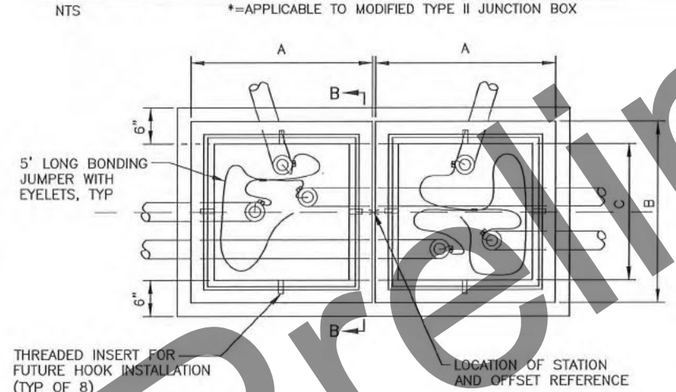
NTS

LID FOR TYPE IV J-BOX

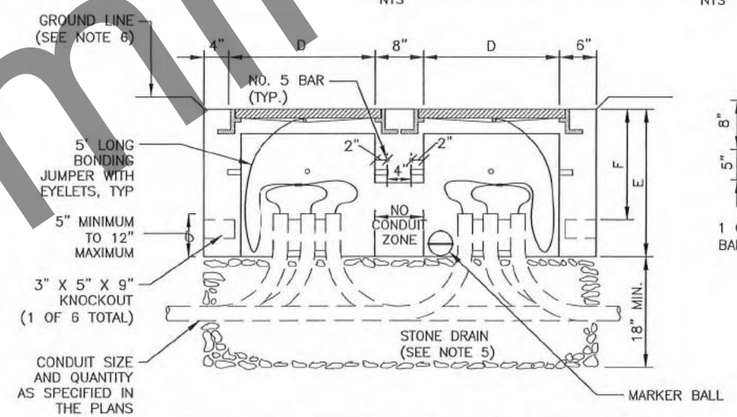
NTS

J–BOX TYPE	DIMENSIONS					
	A (MAX.)	B (MAX.)	C (MIN.)	D (MIN.)	E (MIN.)	F
II	29 1/2"	29 1/2"	22"	22"	24"	18"
MOD. II	29 1/2"	29 1/2"	22"	22"	24"	12"
III	29 1/2"	29 1/2"	22"	22"	24"	18"
IV	30"	36"	30"	24"	30"	18"

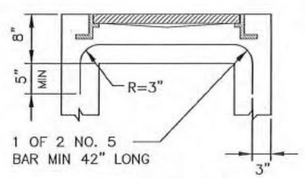
J–BOX DIMENSIONS



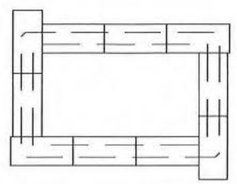
PLAN



ELEVATION (TYPE III LAYOUT DEPICTED)



SECTION B–B



BRICK BASE TYPE IA AND TYPE II ONLY

NTS

TYPE III/IV JUNCTION BOX

NTS

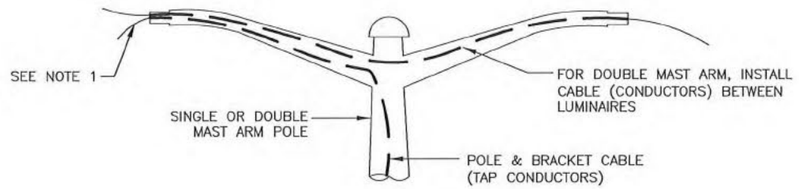
JUNCTION BOX DETAILS

[redacted]

7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd. Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:_PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H15_JB DETAILS-H15 Fri, Jul/14/23 10:11am

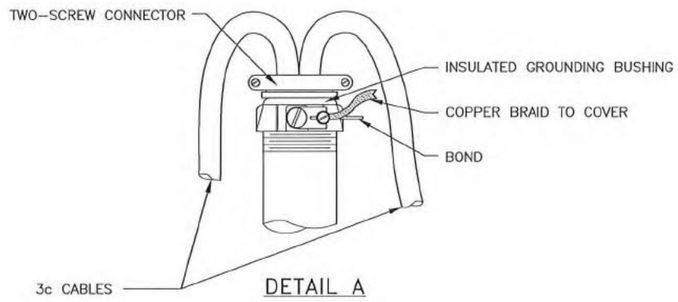
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H16	H17



LIGHT STANDARD MAST ARM WIRING DETAIL
NTS

NOTE:

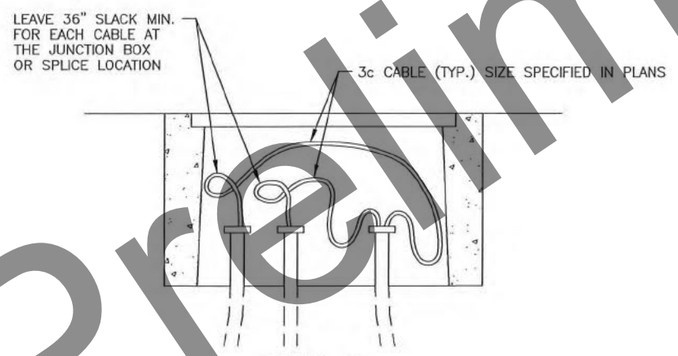
1. INSTALL 2"x1" REDUCING WASHER AND 1" CONNECTOR TO SECURE CONDUCTORS AT THE END OF THE MAST ARM.



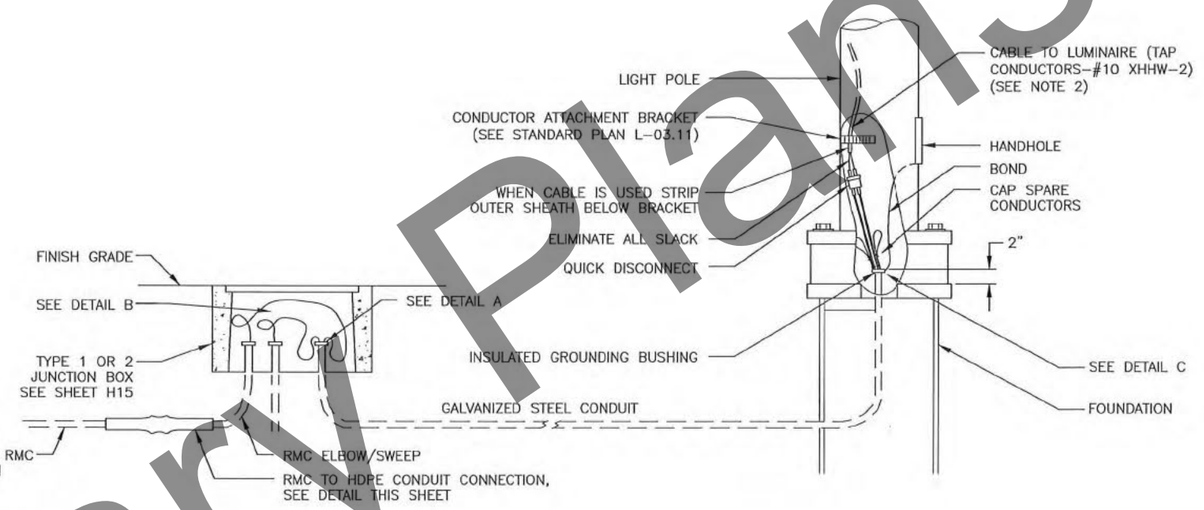
DETAIL A

NOTES:

1. THE TWO-SCREW CONNECTOR SHALL BE SIZED SUCH THAT THE THREADS FIT INSIDE THE OPENING OF THE BUSHING AND THE CONNECTOR BODY IS LARGE ENOUGH TO PREVENT IT FROM SLIPPING THROUGH THE OPENING.
2. ELIMINATE ALL SLACK BETWEEN TWO-SCREW CONNECTOR AND CONDUCTOR ATTACHMENT BRACKET IN LIGHT POLE

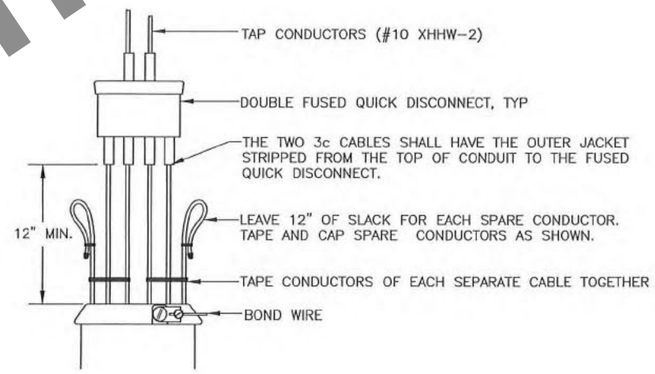


DETAIL B

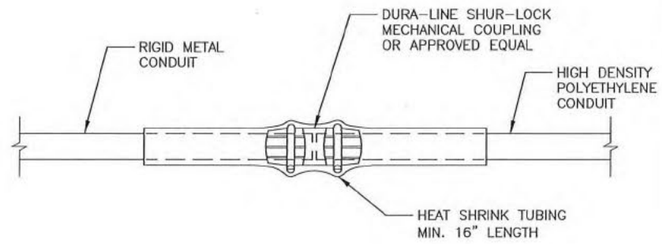


NOTES:

1. LABEL ALL CABLES AND CONDUCTORS IN POLE BASE AND J-BOX.
2. LEAVE ENOUGH SLACK ABOVE THE CONDUCTOR ATTACHMENT BRACKET TO ALLOW THE QUICK DISCONNECT TO BE PULLED 6" OUTSIDE OF HANDHOLE WITHOUT REQUIRING ACCESS TO JUNCTION BOX.
3. NOT ALL GROUNDING CONDUCTORS, AS REQUIRED BY SECTION 660-3.06, ARE SHOWN IN THESE DETAILS.



DETAIL C



RMC TO HDPE CONDUIT CONNECTION DETAIL
NTS

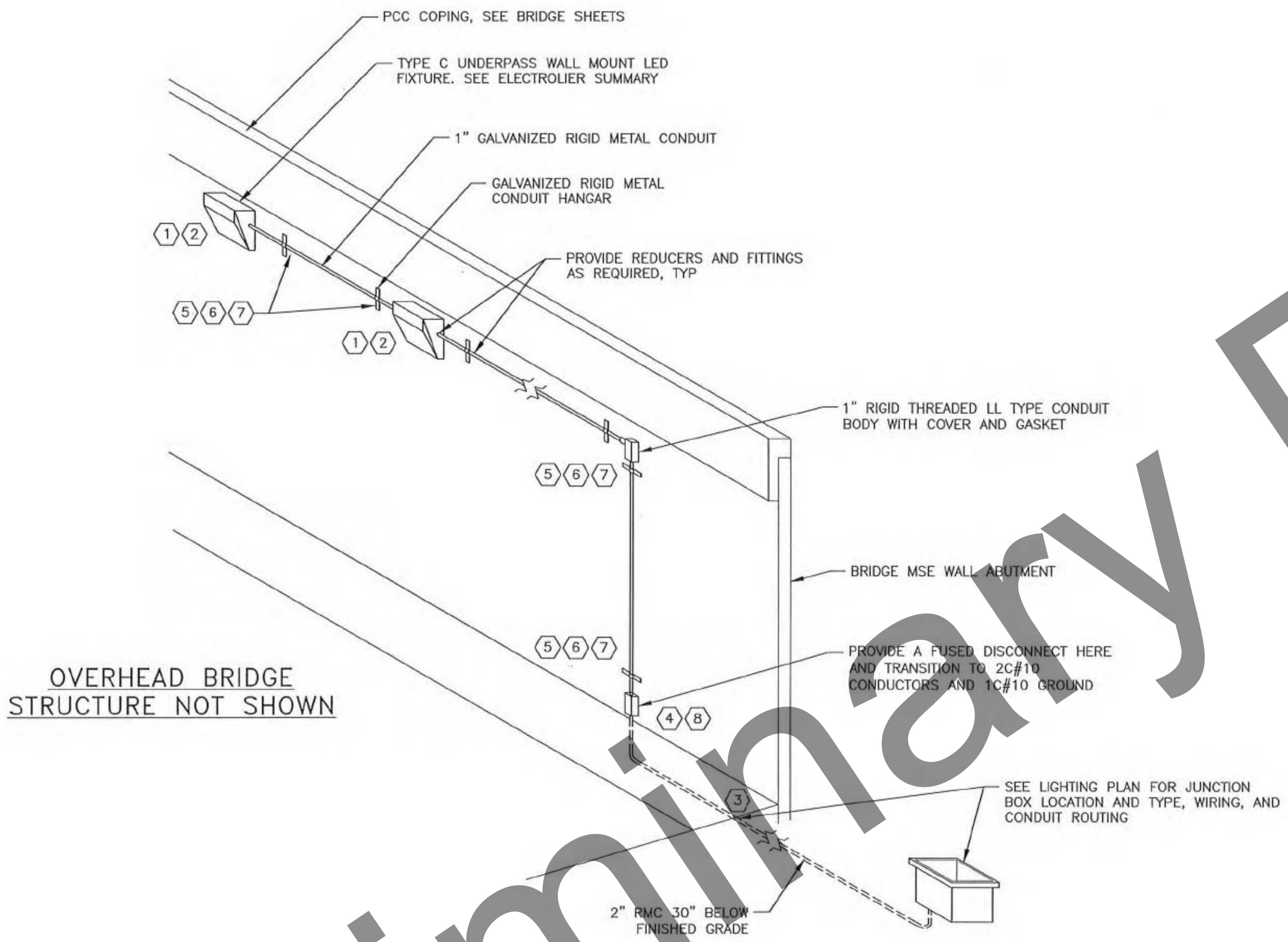
LIGHTING SYSTEM POLE AND J-BOX WIRING DETAILS
NTS

LIGHTING & JUNCTION BOX WIRING DETAILS

[redacted]
7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd. Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:_PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H16_LIGHT JBOX WIRE DTLS-H16 Fri, Jul/14/23 10:11am
(Sign Level) KEY 02324

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H17	H17



UNDERPASS LIGHTING DETAIL

NTS

NOTES:

1. MOUNT FIXTURES TO MSE WALL USING MASONRY FASTENERS, PER MANUFACTURER REQUIREMENTS.
2. MOUNT FIXTURES AS HIGH AS POSSIBLE, DIRECTLY BELOW MSE WALL CAP.
3. PLACE TRENCH TO ASSIST FUTURE MAINTENANCE BETWEEN ABUTMENT WALL AND UNDERPASS PAVING. NOTIFY THE ENGINEER IMMEDIATELY OF ANY CONFLICTS W/ PROPOSED BRIDGE WORK AND OTHER DISCPLINES.
4. PROVIDE 16Hx6WX4H NEMA-4X GALVANIZED STEEL OR STAINLESS STEEL PULL/SPLICE BOX WITH SECURE ACCESS COVER. CONTRACTOR MAY RESIZE BOX TO MEET NEC ARTICLE 314.
5. U.O.N. BY THE MSE WALL MANUFACTURER, FURNISH AND INSTALL HDG 12 GA. SLOTTED STRUT CHANNELS USING 1/2" DIA. EXPANSION ANCHORS WITH 2-1/2" MAX. EMBEDMENT IN MSE WALL. ANCHORS SHALL BE EITHER HDG OR STAINLESS STEEL. PROVIDE A MIN. 2 ANCHORS PER CHANNEL.
6. GALVANIZED STEEL CONDUIT CLAMP MUST BE CAPABLE OF RESISTING A SUSTAINED SERVICE LOAD OF 200 LBS MINIMUM IN THE VERTICAL DIRECTION AND A SEISMIC LOAD OF 300 LBS IN THE VERTICAL DIRECTION (UP) AND 110 LBS IN THE HORIZONTAL DIRECTION.
7. PROVIDE CONDUIT SUPPORTS AND SECURE AS REQUIRED BY NEC ARTICLE 344.
8. PROVIDE 2001 SERIES PADLOCK FOR EACH ACCESS COVER.

UNDERPASS LIGHTING DETAIL

[redacted]

7/14/2023

PLANS DEVELOPED BY: KINNEY ENGINEERING, LLC 3909 Arctic Blvd. Suite 400 Anchorage, Alaska 99503 (907) 346-2373CERT. OF AUTH. NO. AECL 1102
Z:\PROJECTS\00724 hsip rich hwy mp 351 lighting\DWGS\C\Sheets\00097_H17_UNDERPASS DETAILS-H17 Fri, Jul/14/23 10:12am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H18	H25

SIGNING SUMMARY

LOC. NO.	STATION	LOCATION LT.	LOCATION RT.	ASDS CODE	LEGEND	SIZE H X V (INCHES)	BRACING/FRAMING BRACED	BRACING/FRAMING FRAMED	AREA (SQ.FT.)	MTG. HGT. (FT.)	DIR.	POST TYPE	POST SIZE (INCHES)	POST NO.	REMARKS
T13	5003+38		X	W4-1R	RT MERGE (SYM)	48 X 48	X		16.00		E	PST	2.5	1	
T11	5010+16		X	R6-1R	ONE WAY	36 X 12	X		3.00		N	PST	2.5	1	
				OM1-1	OBJECT MARKER	18 X 18			2.25		N				
T1	5018+55	X		R6-1L	ONE WAY	36 X 12	X		3.00		S	PST	2.5	1	
				OM1-1	OBJECT MARKER	18 X 18			2.25		S				
T2	5019+00	X		R1-1	STOP	30 X 30	X		6.25		E	PST	2.5	1	
				W4-4APL	TRAFFIC FROM LEFT DOES NOT STOP	24 X 12			2.00		E				
T3	5019+46	X		R5-1	DO NOT ENTER	30 X 30	X		6.25		W	PST	2.5	1	
T4	5019+46		X	R5-1	DO NOT ENTER	30 X 30	X		6.25		W	PST	2.5	1	
T5	5021+87	X		R5-1A	WRONG WAY	36 X 24	X		6.00		W	PST	2.5	1	
		X		W3-1	STOP AHEAD (SYM)	30 X 30	X		6.25						
T6	5021+92		X	R5-1A	WRONG WAY	36 X 24	X		6.00		W	PST	2.5	1	
T7	5024+55	X		W3-1	STOP AHEAD (SYM)	30 X 30	X		6.25		E	PST	2.5	1	
T8	5034+30	X		W13-2	EXIT 45 MPH	24 X 30	X		5.00		E	PST	2.5	1	
T12	5037+66		X	R6-1R	ONE WAY	36 X 12	X		3.00		N	PST	2.5	1	
				OM1-1	OBJECT MARKER	18 X 18			2.25		N				
T9	5037+91		X	E5-1	EXIT	72 X 60		X	30.00		E	TS	3	2	
T10	5042+84	X		D3-200R	12Mile Village-->	108 X 24		X	18.00		E	TS	2	2	MOUNT ON SOUTHERN PST
				I-5	AIRPORT (SYM)	24 X 24			4.00						
				D9-301	(SYM)-->	24 X 6			1.00						MOUNT ON SOUTHERN PST
R1	4994+15	X		D2-3	Fairbanks 11 Fox 22 Circle 169	90 X 49		X	30.63		E	TS	3	2	
R2	4997+41	X		R2-1	SPEED LIMIT 60	36 X 48	X		12.00		E	PST	2.5	1	
R5	5012+55	X		W8-13	BRIDGE ICES BEFORE ROAD	36 X 36	X		9.00		W	PST	2.5	1	
R6	5012+58		X	W8-13	BRIDGE ICES BEFORE ROAD	36 X 36	X		9.00		W	PST	2.5	1	
R7	5023+03	X		W8-13	BRIDGE ICES BEFORE ROAD	36 X 36	X		9.00		E	PST	2.5	1	

SUBTOTAL = 204.63

SIGNING SUMMARY

LOC. NO.	STATION	LOCATION LT.	LOCATION RT.	ASDS CODE	LEGEND	SIZE H X V (INCHES)	BRACING/FRAMING BRACED	BRACING/FRAMING FRAMED	AREA (SQ.FT.)	MTG. HGT. (FT.)	DIR.	POST TYPE	POST SIZE (INCHES)	POST NO.	REMARKS
R8	5023+03		X	W8-13	BRIDGE ICES BEFORE ROAD	36 X 36	X		9.00		E	PST	2.5	1	
R9	5024+59		X	D10-103	MILE 351	10 X 36			2.50		W	PST	2.5	1	
R10	5024+60	X		D10-103	MILE 351	10 X 36			2.50		E	PST	2.5	1	
R11	5028+00		X	W4-1R	RT MERGE (SYM)	48 X 48	X		16.00		W	PST	2.5	1	
R12	5037+10		X	R2-1	SPEED LIMIT 60	36 X 48	X		12.00		W	PST	2.5	1	
K1	10+08	X		D3-100	Keeney Rd	30 X 8	X		1.67		E	PST	2.5	1	
				D3-100	Keeney Rd	30 X 8	X		1.67		W				
				D3-100	JOSEFA Rd	30 X 8	X		1.67		N				
				D3-100	JOSEFA Rd	30 X 8	X		1.67		S				
				R1-1	STOP	30 X 30	X		6.25		E				
K2	12+02		X	R2-1	SPEED LIMIT 25	30 X 36	X		7.50		W	PST	2.5	1	
K3	14+85		X	W3-1	STOP AHEAD (SYM)	30 X 30	X		6.25		W	PST	2.5	1	
K4	16+57	X		R2-1	SPEED LIMIT 25	30 X 36	X		7.50		E	PST	2.5	1	
				W8-3	PAVEMENT ENDS	36 X 36	X		9.00						
K5	18+55		X	R1-1	STOP	30 X 30	X		6.25		W	PST	2.5	1	
				W4-4bP	ONCOMING TRAFFIC DOES NOT STOP	24 X 12			2.00						
K6	27+22		X	R2-1	SPEED LIMIT 40	30 X 36	X		7.50		W	PST	2.5	1	

SUBTOTAL = 100.92

POST TYPE LEGEND:

PST = PERFORATED STEEL TUBE
TS = TUBE STEEL (SQUARE STRUCTURAL STEEL TUBING)
W_X_ = WIDE FLANGE

SIGNING & STRIPING
1 OF 8

[redacted]
PROFESSIONAL
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Imt\Design\C3D\Plots\NFHWY00097_Sign_Sum-H18 Thu, Jul/20/23 12:05pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H19	H25

SIGNING SUMMARY

LOC. NO.	STATION	LOCATION LT.	LOCATION RT.	ASDS CODE	LEGEND	SIZE H X V (INCHES)	BRACING/FRAMING BRACED	BRACING/FRAMING FRAMED	AREA (SQ.FT.)	MTG. HGT. (FT.)	DIR.	POST TYPE	POST SIZE (INCHES)	POST NO.	REMARKS
U1	10+60			R4-7	KEEP RIGHT (SYM)	24 X 30			5.00		N	PST	2.5	1	IN MEDIAN,CONCRETE
				OM1-1	OBJECT MARKER	18 X 18			2.25		N				SLEEVE TYPE FOUNDATION
U2	11+50			R4-7	KEEP RIGHT (SYM)	24 X 30			5.00		S	PST	2.5	1	IN MEDIAN, CONCRETE
				OM1-1	OBJECT MRKER	18 X 18			2.25		S				SLEEVE TYPE FOUNDATION
U3	13+15	X		D1-2	^ Fairbanks North Pole->	66 X 30		X	13.75		S	TS	2	2	
U4	14+00		X	R1-1	STOP	30 X 30	X		6.25		N	PST	2.5	1	
				W4-4APL	TRAFFIC FROM LEFT DOES NOT STOP	24 X 12			2		N				
U5	13+75	X		R1-2	YIELD	36 X 36	X		9.00		E	PST	2.5	1	
OFF1	22+14	X		E5-1	EXIT	72 X 60		X	30.00		W	TS	3	2	
OFF2	23+81		X	W13-2	EXIT 25 MPH	24 X 30	X		5.00		W	PST	2.5	1	
OFF3	27+45		X	W3-1A	STOP AHEAD (SYM)	30 X 30	X		6.25		W	PST	2.5	1	
OFF4	28+94	X		R5-1A	WRONG WAY	36 X 24	X		6.00		E	PST	2.5	1	
OFF5	28+97		X	R5-1A	WRONG WAY	36 X 24	X		6.00		E	PST	2.5	1	
OFF6	30+02	X		R5-1	DO NOT ENTER	30 X 30	X		6.25		E	PST	2.5	1	
OFF7	30+62		X	R5-1	DO NOT ENTER	30 X 30	X		6.25		E	PST	2.5	1	MOUNT SIGNS BACK TO BACK
				R1-1	STOP	30 X 30	X		6.25		W				MOUNT SIGNS BACK TO BACK
								SUBTOTAL =	117.5						
								PROJECT TOTAL =	423.05						

SIGNING NOTES:

1. REMOVE AND DISPOSE OF ALL EXISTING SIGNS AND SIGN FOUNDATIONS WITHIN THE PROJECT LIMITS, EXCEPT THOSE DESIGNATED FOR REINSTALLATION, SALVAGE OR OTHERWISE NOTED.
2. INSTALL MILEPOST SIGNS (D10 SERIES) IN ACCORDANCE WITH STANDARD PLAN S-05.02, EXCEPT WITH A 15 TO 30 FOOT OFFSET. REDUCE THE OFFSET AS NECESSARY SO THE BOTTOM OF THE SIGN IS NO MORE THAN 15 FEET ABOVE THE GROUND. THE SIGN OFFSET SHALL NOT BE LESS THAN THE OFFSETS SHOWN IN S-05.02.
3. MOUNT SIGNS THAT PROJECT OVER OR WITHIN 2 FEET OF THE SIDEWALK WITH A MOUNTING HEIGHT OF 8 FEET.
4. MOUNTING HEIGHTS ARE PER STANDARD PLAN S-05.02 UNLESS OTHERWISE NOTED.
5. DETERMINE POST LENGTHS IN THE FIELD. DO NOT EXTEND POSTS ABOVE TOP OF SIGN.
6. INSTALL PST SIGN POSTS WITH SLEEVE TYPE CONCRETE FOUNDATION OR SOIL EMBEDMENT. EMBED PST IN SLEEVE 12"-24". ATTACH THE SIGN POST TO THE SLEEVE USING GALVANIZED 3/8" BOLT, NUT, SPLIT LOCK WASHER AND TWO FLAT WASHERS.
7. 1/4" X 1 1/2" ALUMINUM ALLOY 6061-T6 BAR MAY ALSO BE USED TO FABRICATE SIGN BRACES AS SHOWN ON STANDARD PLAN S-01.02.
8. INSTALL 48" DIAMOND WARNING SIGNS ON A SINGLE POST WITH A BRACE HAVING EFFECTIVE BRACE LENGTH OF 54" OR WITH THREE WIND FRAMING MEMBERS AS SHOWN ON STANDARD PLAN S-00.12. THIS MODIFIES STANDARD PLAN S-01.02.
9. ATTACH ALL SIGNS TO THEIR SUPPORTS WITH 3/8" BOLTS, EXCEPT ATTACH UNFRAMED SIGNS TO PST POSTS WITH ALUMINUM DRIVE RIVETS. WIND WASHERS ARE NOT REQUIRED WITH DRIVE RIVETS. INCLUDE SPLIT LOCK WASHERS WHEN BOLTS ARE USED.
10. ALL FASTENER HARDWARE SHALL MEET THE REQUIREMENTS OF THE "FASTENER SPECIFICATION TABLE" UNDER SECTION 730-2.07 OF THE SSHC.
11. STOP (R1-1) AND YIELD (R1-2) SIGN LOCATIONS, ESPECIALLY THOSE AT LARGE RADIUS INTERSECTIONS, MAY NEED ADJUSTMENT IN THE FIELD. THE ENGINEER WILL APPROVE FINAL LOCATIONS.
12. INSTALL D3-100 SIGNS ABOVE THEIR RESPECTIVE STOP SIGNS. WHEN TWO D3-100 SERIES SIGNS ARE TO BE LOCATED ON THE SAME POST, INSTALL THE CROSS-STREET PANEL IN THE LOWER POSITION.
13. D3-100 SERIES SIGNS REQUIRE TWO SEPARATE SINGLE SIDED PANELS. END-BRACE PANELS PER SMALL STREET NAME SIGN BRACING DETAILS IN STANDARD PLAN S-01.01.
14. MAINTAIN EXISTING SIGNS UNTIL NEW SIGNS ARE INSTALLED. DO NOT LEAVE DUPLICATE OR CONFLICTING SIGNING UP AT ANY TIME.
15. ALL SIGNS NOTED FOR REMOVAL AND REINSTALLATION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE IF THEY ARE DAMAGED DURING THE RELOCATION EFFORT.
16. USE SERIES C LETTERS FOR D3-100 SERIES SIGNS UNLESS OTHERWISE NOTED. USE 4.5" FOR DIMENSION "E" FOR 12" D3-100 SIGNS. THE LETTERING INDICATING THE TYPE OF STREET (SUCH AS St, Ave, OR Rd) WILL BE UPPER CASE AND LOWER CASE. THIS MODIFIES THE ASDS.
17. USE A 3" HORIZONTAL SPACING BETWEEN WORDS, BETWEEN CARDINAL DIRECTIONS AND WORDS, AND BETWEEN WORDS AND NUMBERS ON D3-100 AND D3-100A SIGNS UNLESS OTHERWISE NOTED.
18. LOCATE AND PROTECT ALL NEW AND EXISTING UNDERGROUND UTILITIES, INCLUDING BUT NOT LIMITED TO: PIPELINES, INTERCONNECT CABLES, SIGNAL SYSTEMS, LIGHTING SYSTEMS, STORM AND SANITARY SEWERS, WATER SYSTEMS, AND TELEPHONE AND ELECTRICAL CABLES, PRIOR TO INSTALLING SIGN POSTS. NOT ALL EXISTING UTILITIES MAY BE SHOWN ON THE PLANS.
19. CLEARING, AS DIRECTED BY THE ENGINEER, MAY BE REQUIRED TO ENSURE ADEQUATE VISIBILITY OF SIGNS. THIS WORK IS SUBSIDIARY TO PAY ITEM 615.0001.0000.
20. INSTALL WEATHER TIGHT CAPS ON ALL TS POSTS.
21. INSTALL FRANGIBLE COUPLING SYSTEMS IN ACCORDANCE WITH STANDARD PLAN S-31.02.
22. HINGED JOINTS WITH FRANGIBLE FUSE PLATES ARE REQUIRED ON ALL MULTIPLE POST SIGNS WITH FRANGIBLE COUPLING SYSTEMS. THE HINGE LOCATION ON ALL POSTS SHALL BE THE SAME DISTANCE BELOW THE SIGN, INSTEAD OF THE 6" MINIMUM SHOWN ON STANDARD PLAN S-31.02. SEE MANUFACTURER'S SPECIFICATION FOR HINGE LOCATION BELOW SIGN.
23. THE 4" MOUNTING AREA ON MILEPOST SIGNS (D10-200 SERIES) SHALL BE BARE ALUMINUM. THIS ELIMINATES THE OPTION OF INSTALLING GREEN REFLECTIVE SHEETING IN THIS AREA AS NOTED IN THE ASDS.
24. ADHESIVE TAPE IS NOT PERMITTED. THIS MODIFIES STANDARD PLAN S-00.12.

POST TYPE LEGEND:

PST = PERFORATED STEEL TUBE
TS = TUBE STEEL (SQUARE STRUCTURAL STEEL TUBING)
W_X_ = WIDE FLANGE

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\NFHWY00097_Sign_Sum-H19 Thu, Jul/20/23

SIGNING & STRIPING
2 OF 8

[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	OA24034/NFHWY00097	2023	H20	H25

R1 4994+15 D2-3 FAIRBANKS 11 FOX 22 CIRCLE 169

Fairbanks 11
Fox 22
Circle 169

R2 4997+41 R2-1

SPEED LIMIT 60

T13 5003+38 W4-1R

0+00 4995+00 5000+00 5005+00

"EB Rich" 4997+97.48 PT

U2 11+50 R4-7, OM1-1

U1 10+60 R4-7, OM1-1

5018+55 R6-1L T1

T2 5019+00 R1-1, W4-4APL

T3 5019+46 R5-1

T4 5019+46 R5-1

T5 5021+87 R5-1A

T6 5021+92 R5-1A

T11 5010+16 R6-1R

R5 5012+55 SPECIAL

5010+00 5015+00 5020+00

"EB Rich" 5012+71.59 PI

R6 5012+58 SPECIAL

22+14 OFF 1 E5-1

OFF 2 23+81 W13-2

27+45 OFF 3 W3-1A

OFF 4 28+94 R5-1A

OFF 5 28+97 R5-1A

OFF 6 30+02 R5-1

30+62 OFF 7 R1-1,R5-1

EXIT

EXIT 25 MPH

ONE WAY

BRIDGE ICES BEFORE ROAD

DO NOT ENTER

STOP

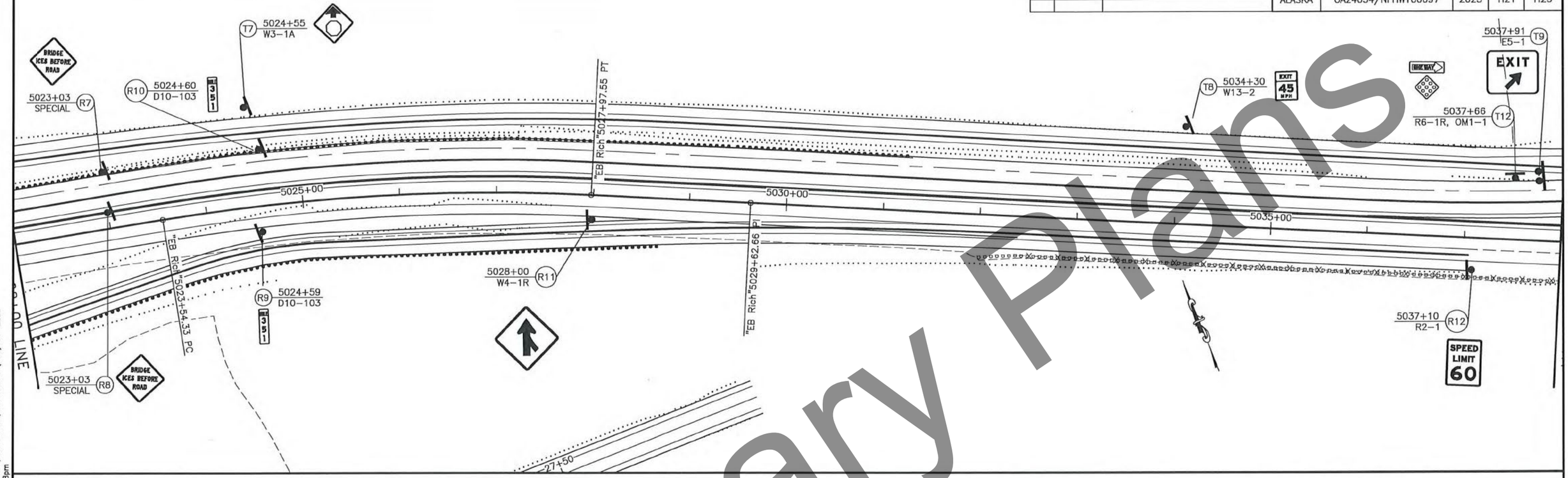
WRONG WAY

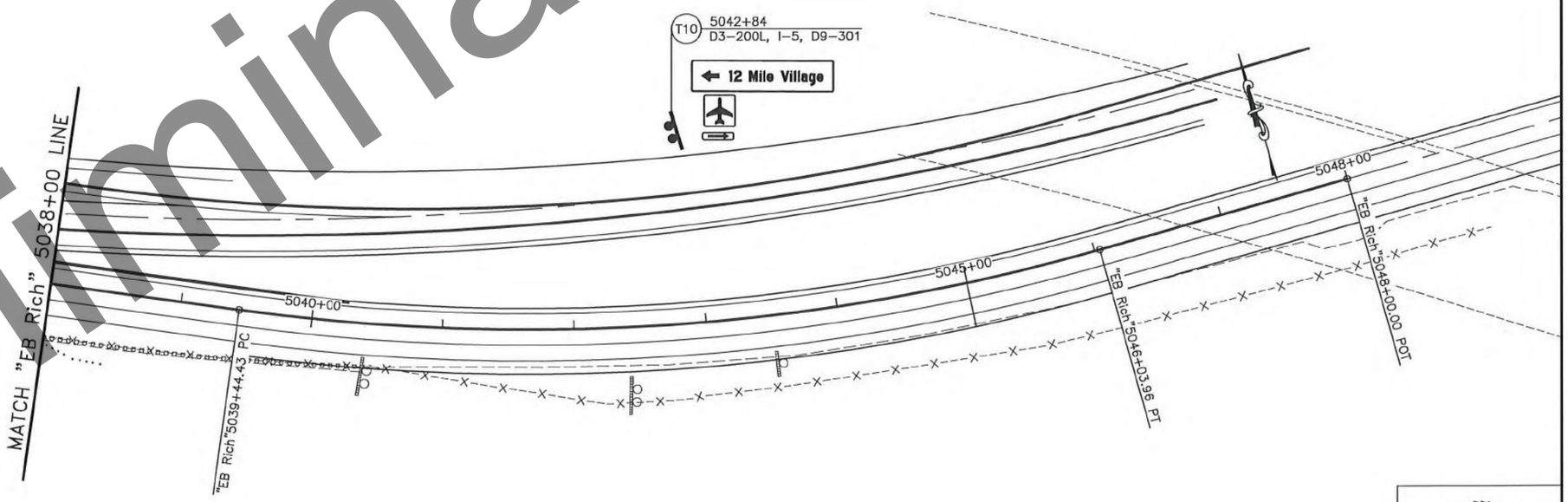
SIGNING & STRIPING
3 OF 8

STATE OF ALASKA
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Drawings21+\90097_SIGN-4990+00.00-5005+00.00 Thu, Jul/20/23 04:01pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	OA24034/NFHWY00097	2023	H21	H25





SIGNING & STRIPING
4 OF 8

[redacted]
REGISTERED PROFESSIONAL ENGINEER
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Drawings21+\90097_SIGN-5022+00.00-5038+00.00 Thu, Jul/20/23 12:18pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	H22	H25

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Drawings21+\90097_SIGN-10+00.00-26+00.00 Thu, Jul/20/23 10:35am

SIGNING & STRIPING
5 OF 8

7/20/2023

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H23	H25

670.2002.0000 LUMP SUM ESTIMATING FACTOR

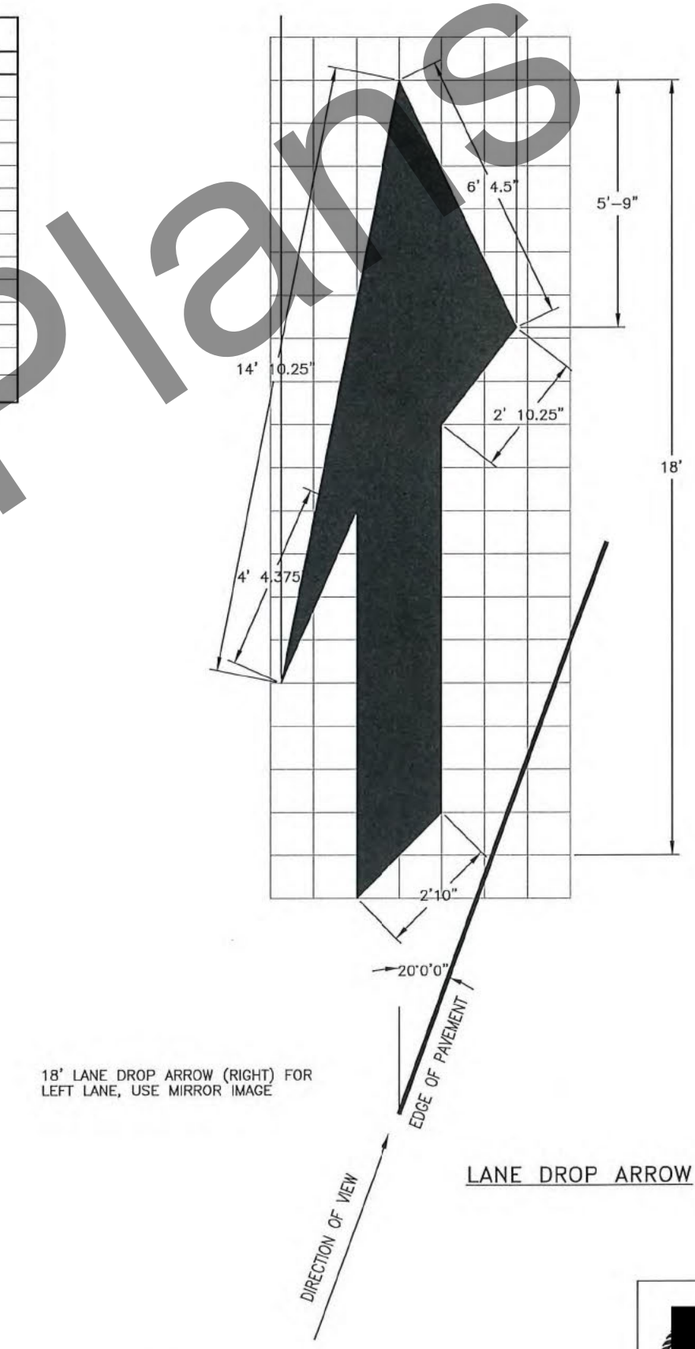
ALIGNMENT	WHITE					YELLOW		ONLY	AAROW	OTHER
	4" SOLID	4" SKIP	8" W	8"WSS	24" SOLID	4" SOLID	4" DOUBLE	EACH	EACH	
	LF	LF	LF	LF	SF	LF	LF			
EB RICH		5,604.5		330		5,996		–		APPROACH TO RAILROAD
KTORICH	2,041				24		1063	1	1	CHANNELIZING ISLAND, 50 SF
NB–TURN	8,367	285			32	–			1	2 LANE DROP ARROWS
RICH4LANE										CHANNELIZING ISLAND. 265 SF
SNOWDUMP										
UNDERPASS	1,117		44		53		224	2	2	CHANNELIZING ISLAND 116.7 SF
WB RICH	3,880	5,785				6,032		2	4	CHANNELIZING ISLAND, 975 SF
OFFRAMP	1,902		180	100	102.6			2	3	
ON RAMP	2,993	75								2 LANE DROP ARROWS

STRIPING NOTES:

1. ALL PROPOSED PAVEMENT MARKINGS SHALL BE INLAID METHYL METHACRYLATE. THE THICKNESS SHALL BE IN ACCORDANCE WITH SPECIFICATION 670.
2. ALL STRIPING REQUIRED FOR PROJECT AS LAID OUT IN THESE PLANS WILL BE PAID FOR UNDER PAY ITEM 670.2002.0000 AND IS NOT LIMITED TO TOTALS IN LUMP SUM ESTIMATING FACTORS TABLE. LENGTHS MAY VARY SLIGHTLY IN FIELD.
3. ALL DIMENSIONS REFER TO CENTER OF SINGLE STRIP, CENTER OF DOUBLE STRIPE, OR EDGE OF PAVEMENT.
4. TRANSITION NEW PAVEMENT MARKINGS TO MATCH EXISTING MARKINGS AT 100:1 TAPER ON THE NEW ASPHALT.
5. INSTALL DIRECTIONAL ARROWS, AND GUIDANCE MARKINGS IN ACCORDANCE WITH STANDARD PLANS T–21.04 AND T–22.04 OR AS SHOWN ON THE PLANS.
6. DO NOT PAINT OVER EXISTING MARKINGS. ANY REMOVAL OF EXISTING PAVEMENT MARKINGS IS SUBSIDIARY TO PAY ITEM 670.2002.0000.

TRAFFIC MARKING KEY

4"W	4" WHITE LINE
4"WS	4" WHITE SKIP LINE (10/30 SKIP PATTERN)
4"Y	4" YELLOW LINE
4"YS	4" YELLOW SKIP LINE (10/30 SKIP PATTERN)
4"DY	4" DOUBLE YELLOW LINE
8"W	8" WHITE LINE
24"W	24" WHITE LINE
STD	SEE STANDARD DRAWING
8"WSS	8" WHITE SHORT SKIP LINE (2/6 SKIP PATTERN)



18' LANE DROP ARROW (RIGHT) FOR LEFT LANE, USE MIRROR IMAGE

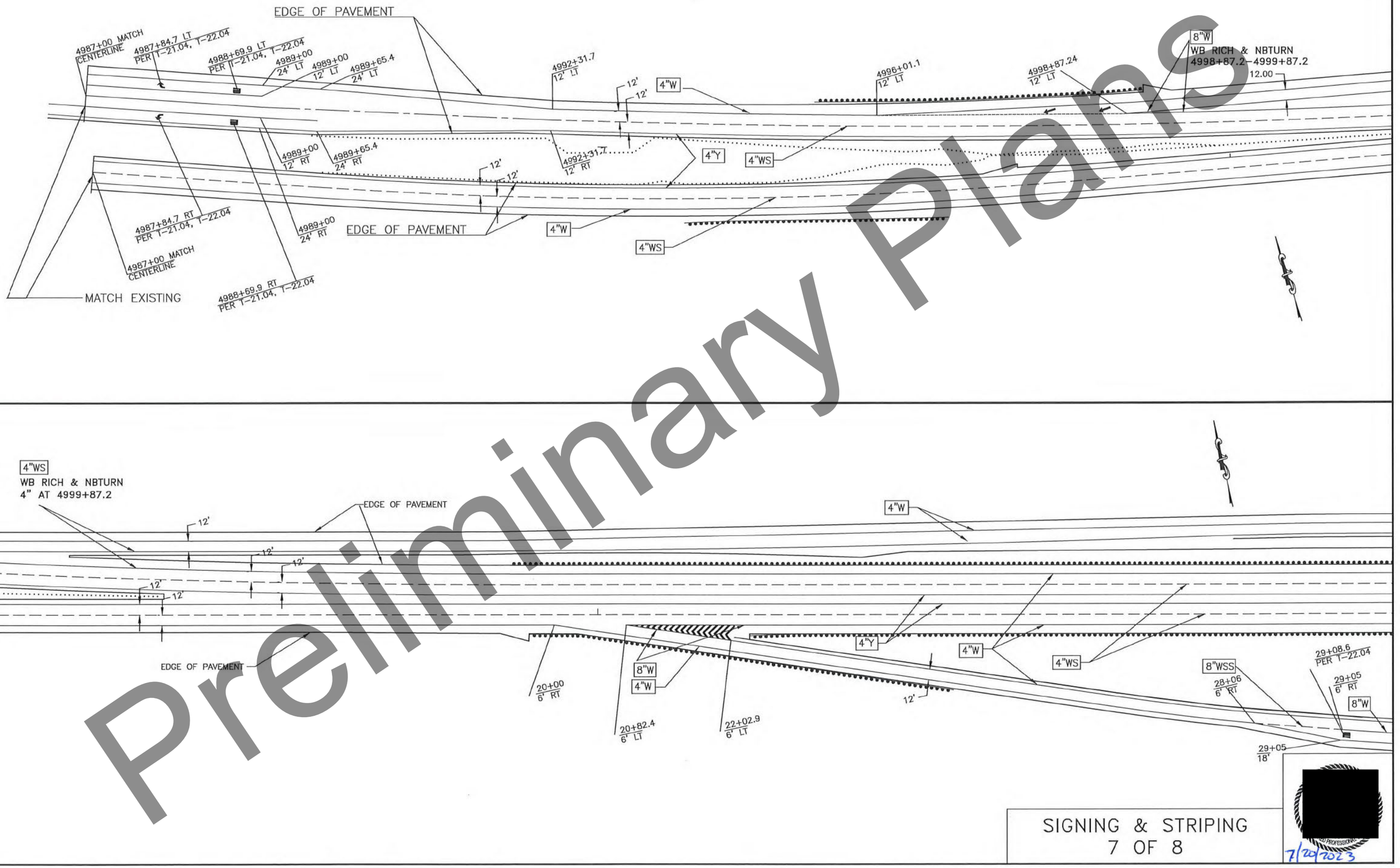
LANE DROP ARROW

SIGNING & STRIPING
6 OF 8

7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451–2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_StripingSheets–Striping 1 of 3 Thu, Jul/20/23 12:21pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	H24	H25



SIGNING & STRIPING
7 OF 8

[redacted]
PROFESSIONAL
7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_StripingSheets--4985+30.66-5001+00.00 Thu, Jul/20/23 12:24pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	H25	H25

SIGNING & STRIPING
8 OF 8

[redacted]
CERTIFIED PROFESSIONAL ENGINEER
7/24/2023

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	M1	M5

BRIDGE BASIS OF ESTIMATE

ITEM NO.	ITEM	PAY UNIT	ESTIMATING UNIT	SUBST.	SUPERST.	TOTAL QUANTITY
507.0006.0000	Cable Safety Railing	LF	LF	1,866	---	1,866
511.0001.0000	Mechanically Stabilized Earth Wall	SF	SF	28,258	---	28,258
511.0001.0002	Mechanicall Stabilized Earth Wall, Wall Cap Coping	LF	LF	1,866	---	1,866

Item numbers are for reference only. Quantities shown are not necessarily the pay quantities nor the total quantity of the particular item.

WALL DRAWING INDEX

TITLE	DWG. NO.
MSE RETAINING WALLS	1
WEST MSE WALL LAYOUT	2
EAST MSE WALL LAYOUT	3
MSE WALL DETAILS	4
CABLE SAFETY RAILING	5

GENERAL NOTES

DESIGN: ..... AASHTO LRFD Bridge Design Specifications, 2020 Edition, with latest interim specifications.

Seismic design per AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2011 with latest interim revisions.

REINFORCEMENT: ..... ASTM A706, Grade 60, Fy = 60,000 psi, Epoxy-Coated Space reinforcement evenly unless otherwise noted.

CONCRETE: ..... Class A Concrete unless otherwise noted, f'c = 4000 psi

STRUCTURAL STEEL: ..... Galvanize structural steel in accordance with AASHTO M111 unless shown otherwise.

ABBREVIATIONS:

℄	= centerline	e.w.	= each way	max.	= maximum
ℙ	= plate	Ext.	= exterior	min.	= minimum
&	= and	F	= fixed	MSE	= mechanically stabilized earth
@	= at	f.f.	= front/air face	n.f.	= rear face
ø	= diameter	f'c	= specified concrete compressive strength	No.	= number
±	= approximate	f'ci	= specified concrete compressive strength at release	o.c.	= on center
Abut.	= abutment			pcf	= pounds per cubic foot
Approx.	= approximate			psf	= pounds per square foot
b.f.	= back/dirt face			psi	= pounds per square inch
bot.	= bottom	Ft.	= feet	R	= radius
Br.	= bridge	Fy	= yield stress	R.O.W.	= right of way
btwn.	= between	Galv.	= galvanize	RT.	= right
Brg.	= bearings	H.S.	= high strength	Rd.	= road
C.G.	= center of gravity	Hwy.	= highway	spcs.	= space, spaces
C.I.P.	= cast in place	ID	= internal diameter	Sta.	= station
CJP	= complete joint penetration	Int.	= interior	SF	= square feet
Clr.	= clear, clearance	Jt.	= joint	SY	= square yard
CY	= cubic yard	K	= kips	Std.	= standard
Dia.	= diameter	ksf	= 1000 pounds per square foot	Symm.	= symmetric
Dwg.	= drawing	ksi	= 1000 pounds per square inch	Typ.	= typical
E	= expansion	LBS or lb	= pounds	UT	= ultrasonic testing
EA	= each	LF	= linear foot	VPC	= point of vertical curve
Elev.	= elevation	LS	= lump sum	VPI	= point of vertical intersection
e.f.	= each face	LT.	= left	VPT	= point of vertical tangent
				w/	= with

DESIGNED BY: Douglas Gelineau	CHECKED: Ben Still	LAYOUT BY: Douglas Gelineau	CHECKED BY: Ben Still
DRAWN BY: Javier De Leon	CHECKED: Douglas Gelineau	SPECIFICATIONS BY: Douglas Gelineau	P S & E COMPARED: Ben Still
QUANTITIES BY: Douglas Gelineau	CHECKED: Ben Still	APPROVAL RECOMMENDED BY: Leslie Daugherty	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

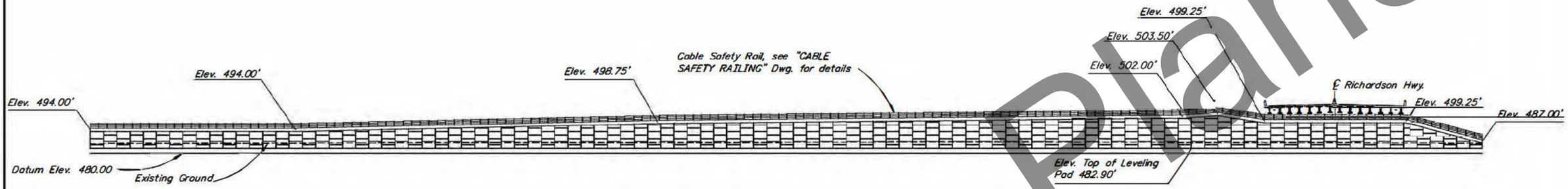
MSE RETAINING WALLS

BRIDGE NO. 1371

DWG. NO. 1

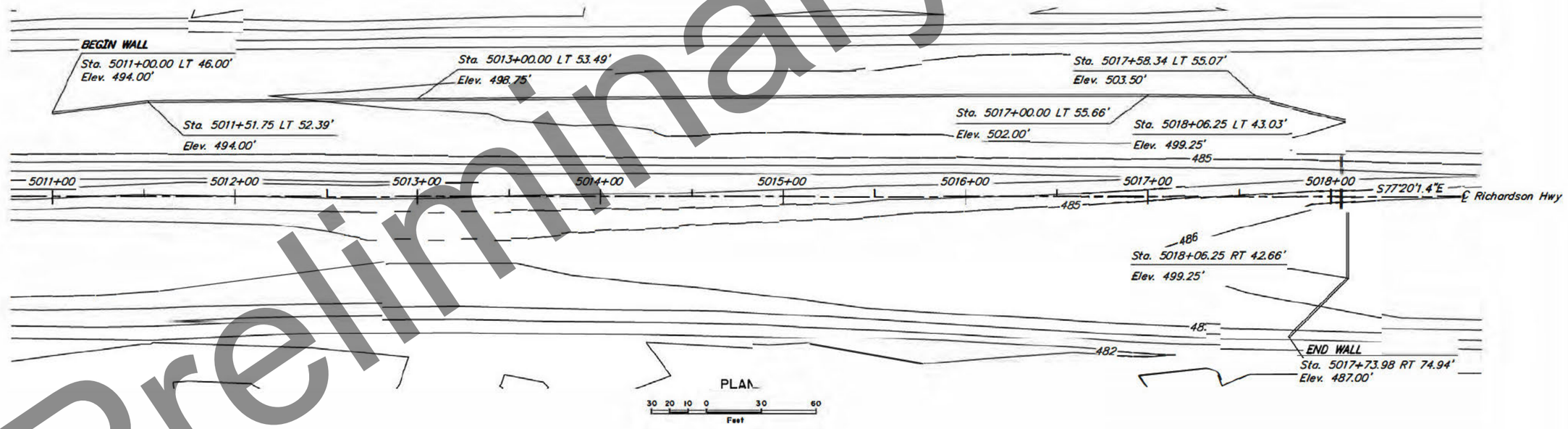
R:\CAD\1371\1371 Retaining Wall-Notes.tab, Aug/15/23 09:15am

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	M2	M5



ELEVATION

30 20 10 0 30 60
Feet



PLAN

30 20 10 0 30 60
Feet

R:\cad\1371\1371 Retaining Wall-WEST MSE Tue, Aug/15/23 09:15am

DESIGNED BY: Douglas Gelineau	CHECKED: Ben Still
DRAWN BY: Javier De Leon	CHECKED: Douglas Gelineau
QUANTITIES BY: Douglas Gelineau	CHECKED: Ben Still

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

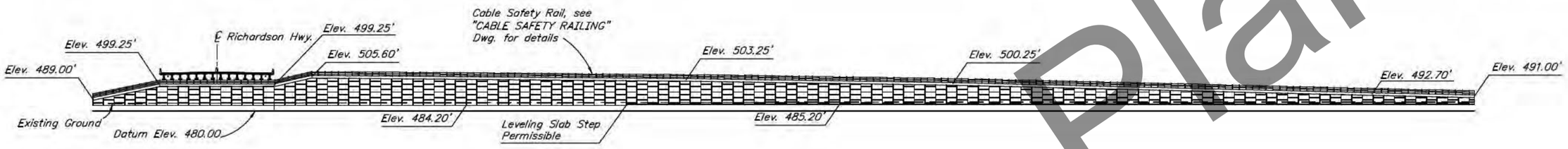
TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

WEST MSE WALL LAYOUT

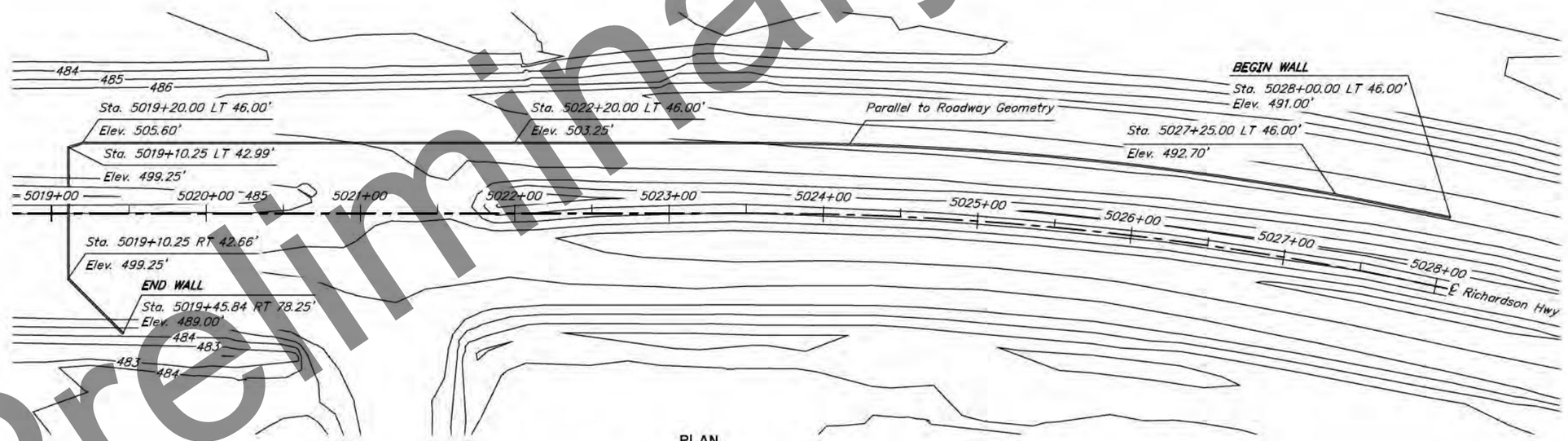
BRIDGE NO. 1371
DWG. NO. 2

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	M3	M5



ELEVATION

10 0 40 80
Feet



PLAN

10 0 40 80
Feet

DESIGNED BY: Douglas Gelineau	CHECKED: Ben Still	
DRAWN BY: Javier De Leon	CHECKED: Douglas Gelineau	
QUANTITIES BY: Douglas Gelineau	CHECKED: Benajmin Still	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

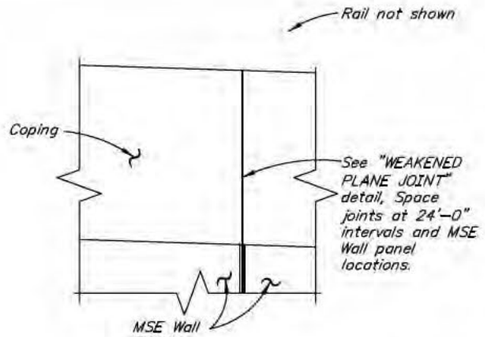
EAST MSE WALL LAYOUT

BRIDGE NO. 1371

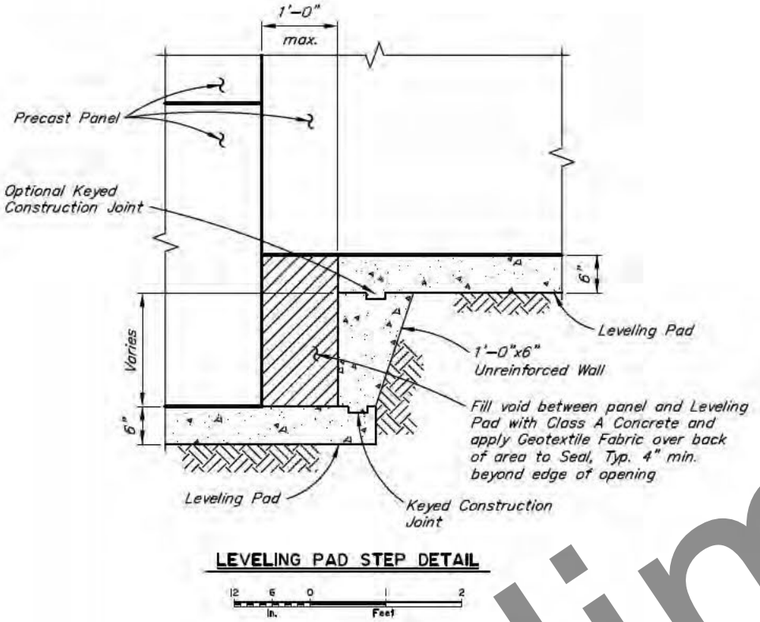
DWG. NO. 3

R:\cad\1371\1371 Retaining Wall-EAST MSE Tue, Aug/15/23 09:15am

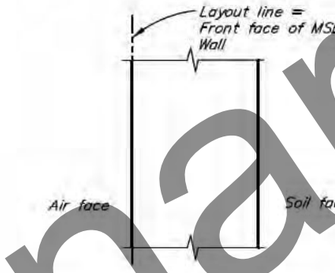
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	M4	M5



COPING CRACK CONTROL JOINT

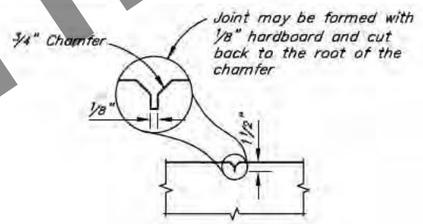


LEVELING PAD STEP DETAIL



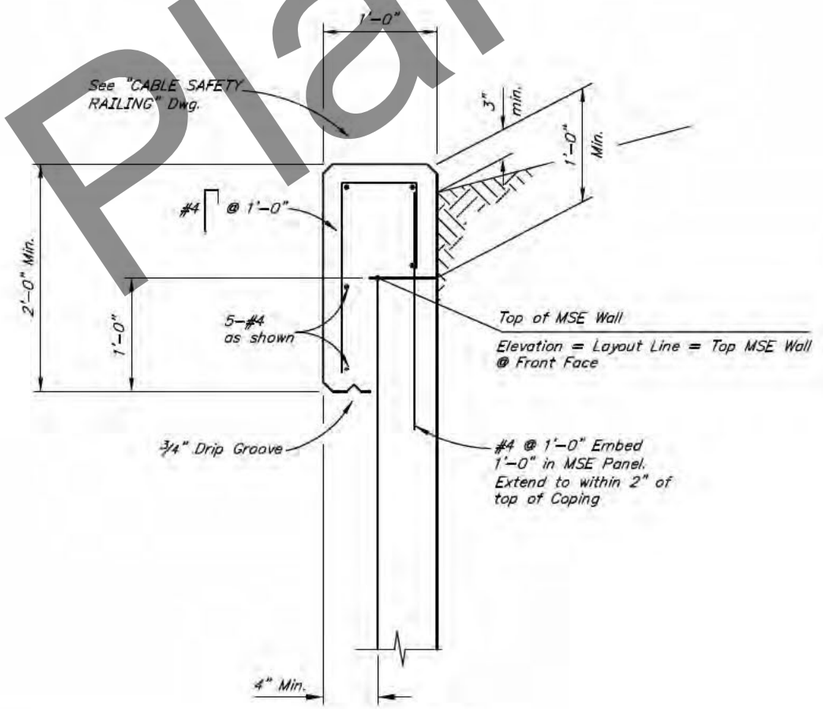
PARTIAL MSE WALL SECTION

No Scale



WEAKENED PLANE JOINT

No Scale



C.I.P. COPING DETAIL

DESIGNED BY: Douglas Gelineau	CHECKED: Ben Still	
DRAWN BY: Javier De Leon	CHECKED: Douglas Gelineau	
QUANTITIES BY: Douglas Gelineau	CHECKED: Ben Still	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

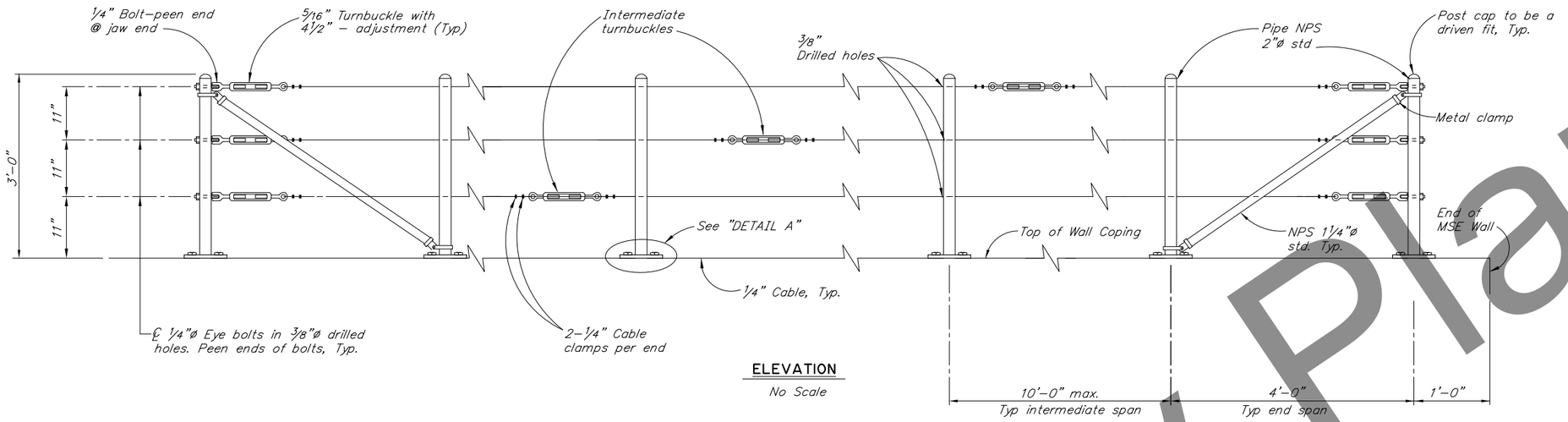
MSE WALL DETAILS

BRIDGE NO. 1371

DWG. NO. 4

R:\cad\1371\1371 Retaining Wall-MSE Tue, Aug/15/23 09:15am

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	M5	M5



ELEVATION

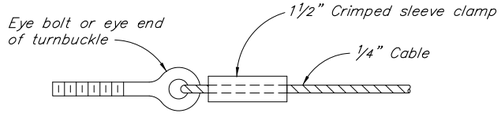
No Scale

CONSTRUCTION NOTES

1. Place intermediate turnbuckles in adjacent spans. Maximum span between turnbuckles is 200'–0".
2. Galvanize all posts, cable and hardware.
3. Install posts plumb.
4. Alignment of holes in posts may vary to conform to slope of top of wall.
5. Line posts shall be braced horizontally and trussed diagonally in both directions at intervals not to exceed 1000'–0" and at each end.
6. Typical end spans, braced in both directions, shall be constructed at changes in line where the angle of deflection is 15° or more.
7. Provide thimbles at all cable loops.

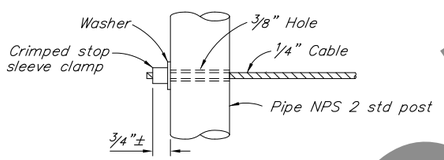
DESIGN NOTES

1. This rail is not intended for use where pedestrians or bicyclists are normally present.
2. This rail is intended for use where M&O personnel, inspectors, or engineers may be working at the top of a wall.



ALTERNATIVE CABLE CONNECTION

No Scale



ALTERNATIVE DEAD END ANCHORAGE

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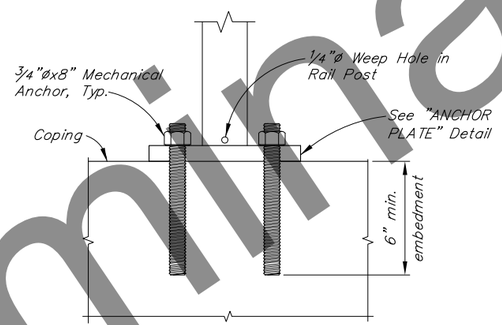
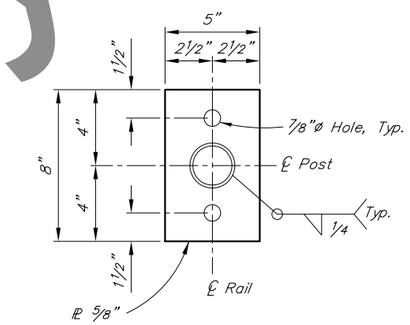


DETAIL A

No Scale



ANCHOR PLATE

No Scale

R:\cad\1371\1371 Retaining Wall–CABLE SAFETY RAIL Tue, Aug/15/23 09:15am

DESIGNED BY: Douglas Gelineau	CHECKED: Ben Still
DRAWN BY: Javier De Leon	CHECKED: Douglas Gelineau
QUANTITIES BY: Douglas Gelineau	CHECKED: Ben Still

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907–465–2975

TWELVE MILE INTERCHANGE

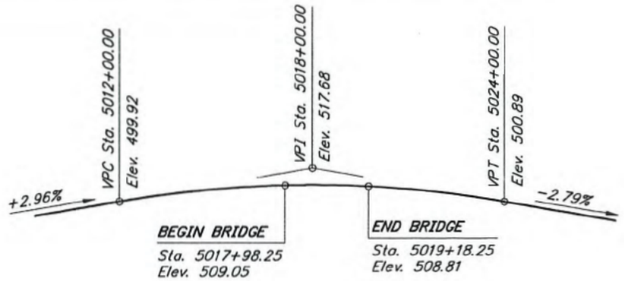
RICHARDSON HIGHWAY

CABLE SAFETY RAILING

BRIDGE NO. 1371

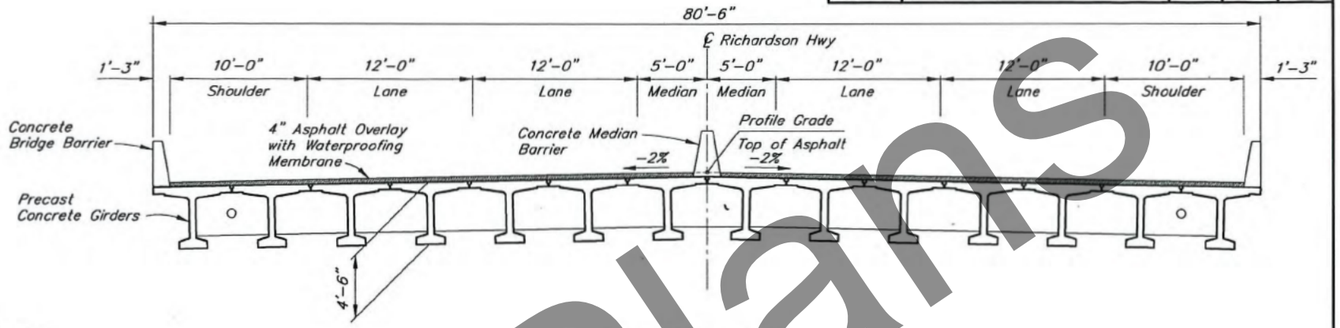
DWG. NO. 5

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	OA24(034)/NFHWY00097	2023	NI	N18

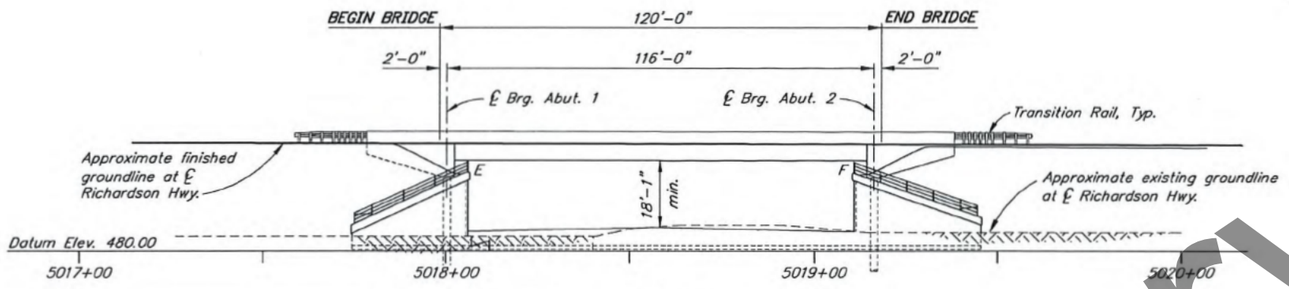


RICHARSON HIGHWAY PROFILE GRADE

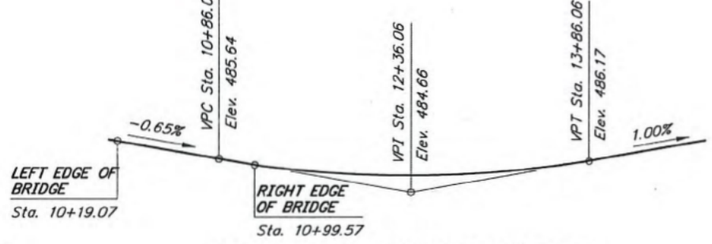
No Scale



TYPICAL SECTION

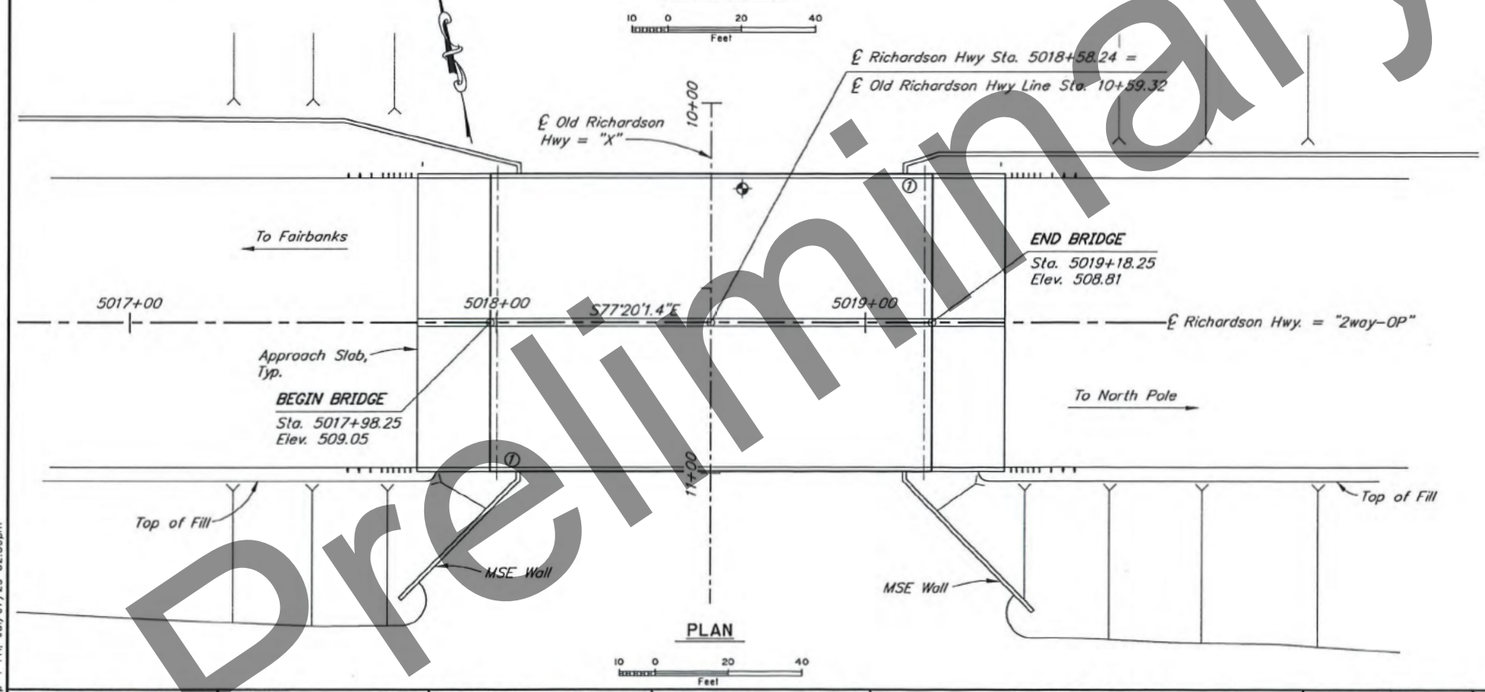


ELEVATION



OLD RICHARDSON HIGHWAY PROFILE GRADE

No Scale



PLAN

BRIDGE DRAWING INDEX

TITLE	DWG. NO.
GENERAL LAYOUT	1
SITE PLAN	2
ABUTMENT 1	3
ABUTMENT 2	4
ABUTMENT DETAILS	5
WINGWALLS	6
FRAMING PLAN AND TYPICAL SECTION	7
GIRDERS	8
GIRDER DETAILS	9
APPROACH SLABS	10
CONCRETE BRIDGE BARRIER	11
TRANSITION RAIL	12
TEST HOLES AND PENETROMETER LOCATIONS	13
TEST HOLES AND PENETROMETER LEGEND	14
TEST HOLES AND PENETROMETER LOGS	15-18

NOTES:

① *Denotes location of bridge number plate.*

⌖ *= Point of Minimum Vertical Clearance*

DESIGNED BY: David McAdoo	CHECKED: Ben Still	LAYOUT BY: David McAdoo	CHECKED BY: Ben Still
DRAWN BY: Javier De Leon	CHECKED: David McAdoo	SPECIFICATIONS BY: David McAdoo	P S & E COMPARED: Ben Still
QUANTITIES BY: David McAdoo	CHECKED: Ben Still	APPROVAL RECOMMENDED BY: Leslie Dougherty FOR	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

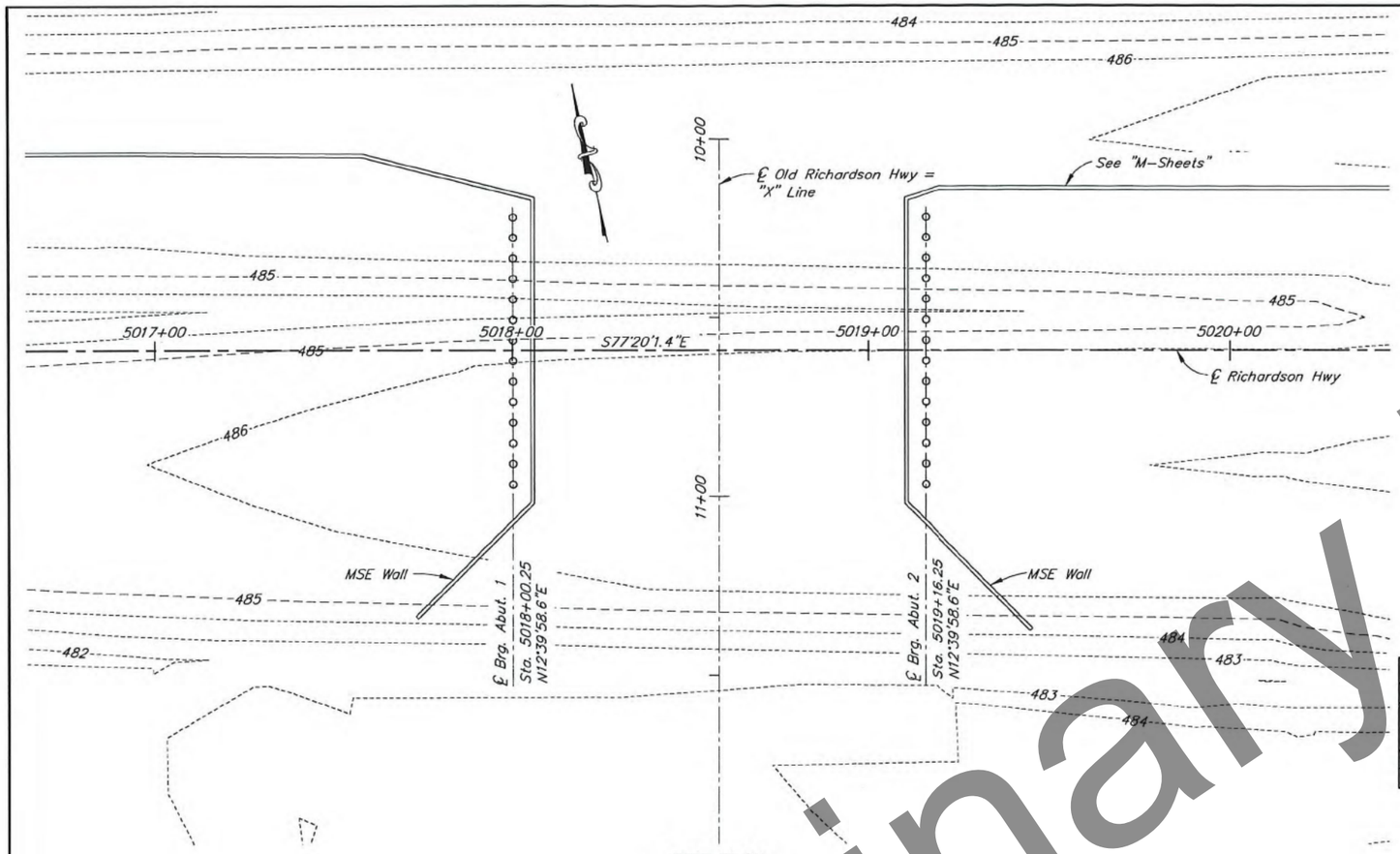
[redacted]

TWELVE MILE INTERCHANGE
RICHARDSON HIGHWAY
GENERAL LAYOUT

BRIDGE NO. 1371
DWG. NO. 1

R:\cad\1371\1371 2w-op-1 Fri, Jul/07/23 02:50pm

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N2	N18



SITE PLAN

10 0 20 40
Feet

GENERAL NOTES

DESIGN:..... AASHTO LRFD Bridge Design Specifications, 2020 Edition, with latest interim specifications.

Seismic design per AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2011 with latest interim revisions.

LIVE LOAD:..... HL-93

DEAD LOAD:..... Includes 50 psf for all wearing surfaces.

SEISMIC PARAMETERS:..... PGA = 0.27
Ss = 0.64
S1 = 0.21
Site Class = D
Liquefaction Potential = High
AASHTO 7% probability of exceedance in 75 years.

REINFORCEMENT:..... ASTM A706, Grade 60, Fy = 60,000 psi
ASTM A970 Headed bars, Class HA.
Space reinforcement evenly unless otherwise noted.

PRESTRESSED CONCRETE:..... See "GIRDERS" Dwg.

CONCRETE:..... Class A Concrete unless otherwise noted, f'c = 4000 psi

STRUCTURAL STEEL:..... ASTM A709, Grade 36T3, Fy = 36,000 psi
Galvanize structural steel in accordance with AASHTO M111 unless shown otherwise.

STRUCTURAL STEEL PILING:..... API 5L X52 PSL2, Fy = 52,000 psi. or
ASTM A709, GR50T3, Fy = 50,000 psi.
Open Pile Tip reinforcing is required.

PILE DATA TABLE

LOCATION	PILE TYPE	DRIVING CRITERIA: MINIMUM PENETRATION (ft)	DRIVING CRITERIA: ESTIMATED PILE TIP ELEVATION (ft)	DRIVING CRITERIA: DRIVING RESISTANCE (K)	DESIGN DATA: STRENGTH I FACTORED LOAD (K)	DESIGN DATA: NOMINAL RESISTANCE (K)	DESIGN DATA: RESISTANCE FACTOR, ϕ
Abutment 1	2'-0"ø x 1/2" Pipe	123	376	720	345	530	0.65
Abutment 2	2'-0"ø x 1/2" Pipe	103	392	530	345	530	0.65

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	PAY UNIT	ESTIMATING UNIT	SUBST.	SUPERST.	TOTAL QUANTITY
205.0006.0000	Structural Fill	CY	CY	2,460	---	2,460
501.0001.0000	Class A Concrete	LS	CY	409	219	628
501.0007.0000	Precast Concrete Member, 118'-0" Decked Bulb-Tee	EA	EA	---	14	14
503.0001.0000	Reinforcing Steel	LS	LBS	49,080	---	49,080
503.0002.0000	Epoxy-Coated Reinforcing Steel	LS	LBS	---	39,530	39,530
505.0005.0000	Furnish Structural Steel Pipe Piles, 2'-0" Dia. x 1/2"	LF	LF	3,220	---	3,220
505.0006.0000	Drive Structural Steel Pipe Piles, 2'-0" Dia. x 1/2"	EA	EA	28	---	28
507.0004.0000	Concrete Bridge Barrier	LF	LF	---	480	480
508.0001.0000	Waterproofing Membrane, Spray-Applied	LF	SF	---	12,160	12,160
606.0016.0000	Transition Rail	EA	EA	---	4	4

Item numbers are for reference only. Quantities shown are not necessarily the pay quantities nor the total quantity of the particular item.

ABBREVIATIONS:

℄	= centerline	e.w.	= each way	max.	= maximum
℗	= plate	Ext.	= exterior	min.	= minimum
&	= and	F	= fixed	MSE	= mechanically stabilized earth
@	= at	f.f.	= front/air face	n.f.	= near face
ø	= diameter	f'c	= specified concrete compressive strength	No.	= number
±	= approximate			o.c.	= on center
Abut.	= abutment	f'ci	= specified concrete compressive strength at release	pcf	= pounds per cubic foot
Approx.	= approximate			psf	= pounds per square foot
b.f.	= back/dirt face			psi	= pounds per square inch
bot.	= bottom	Ft.	= feet	R	= radius
Br.	= bridge	Fy	= yield stress	R.O.W.	= right of way
btwn.	= between	Galv.	= galvanize	RT.	= right
Brg.	= bearings	H.S.	= high strength	Rd.	= road
C.G.	= center of gravity	Hwy.	= highway	spcs.	= space, spaces
C.I.P.	= cast in place	ID	= internal diameter	Sta.	= station
CJP	= complete joint penetration	Int.	= interior	SF	= square feet
Clr.	= clear, clearance	Jt.	= joint	SY	= square yard
CY	= cubic yard	K	= kips	Std.	= standard
Dia.	= diameter	ksf	= 1000 pounds per square foot	Symm.	= symmetric
Dwg.	= drawing	ksi	= 1000 pounds per square inch	Typ.	= typical
E	= expansion	LBS or lb	= pounds	UT	= ultrasonic testing
EA	= each	LF	= linear foot	VPC	= point of vertical curve
Elev.	= elevation	LS	= lump sum	VPI	= point of vertical intersection
e.f.	= each face	LT.	= left	VPT	= point of vertical tangent
				w/	= with

DESIGNED BY: David McAdoo	CHECKED: Ben Still	FOUNDATIONS REVIEWED BY: D. Hemstreet
DRAWN BY: Javier De Leon	CHECKED: David McAdoo	
QUANTITIES BY: David McAdoo	CHECKED: Ben Still	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

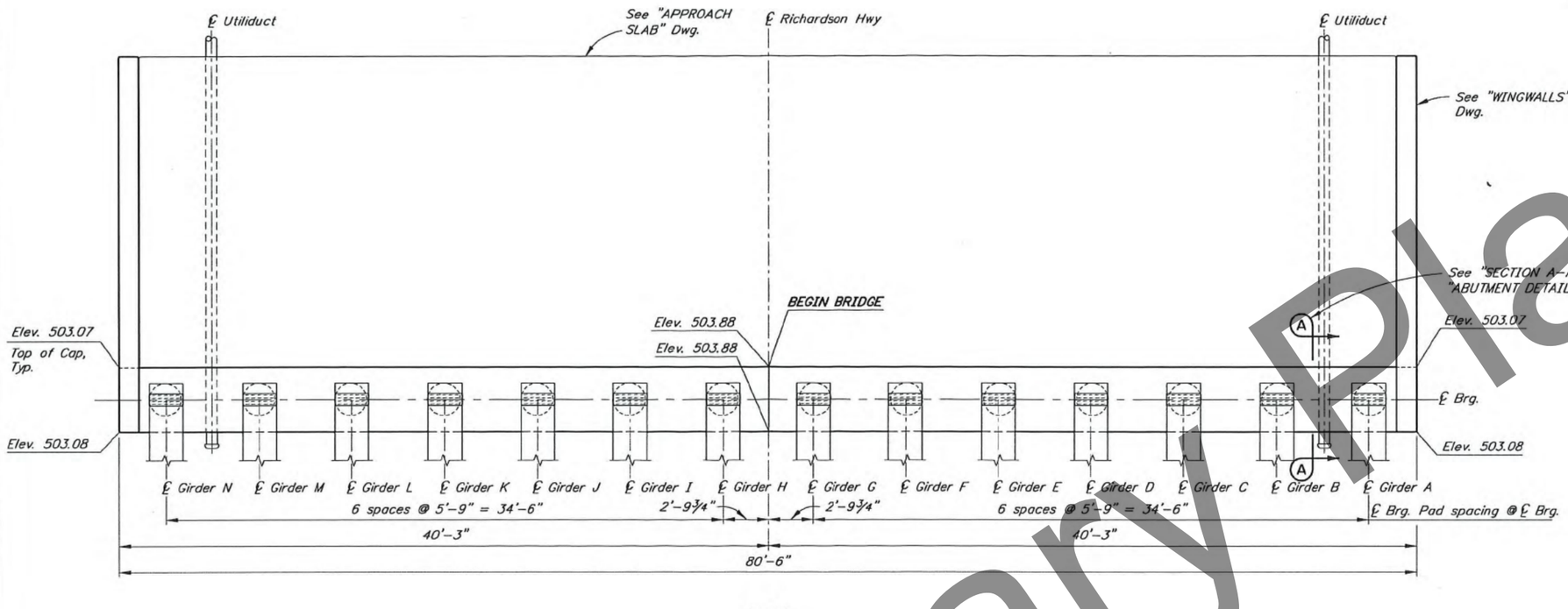
STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL

TWELVE MILE INTERCHANGE
RICHARDSON HIGHWAY
SITE PLAN

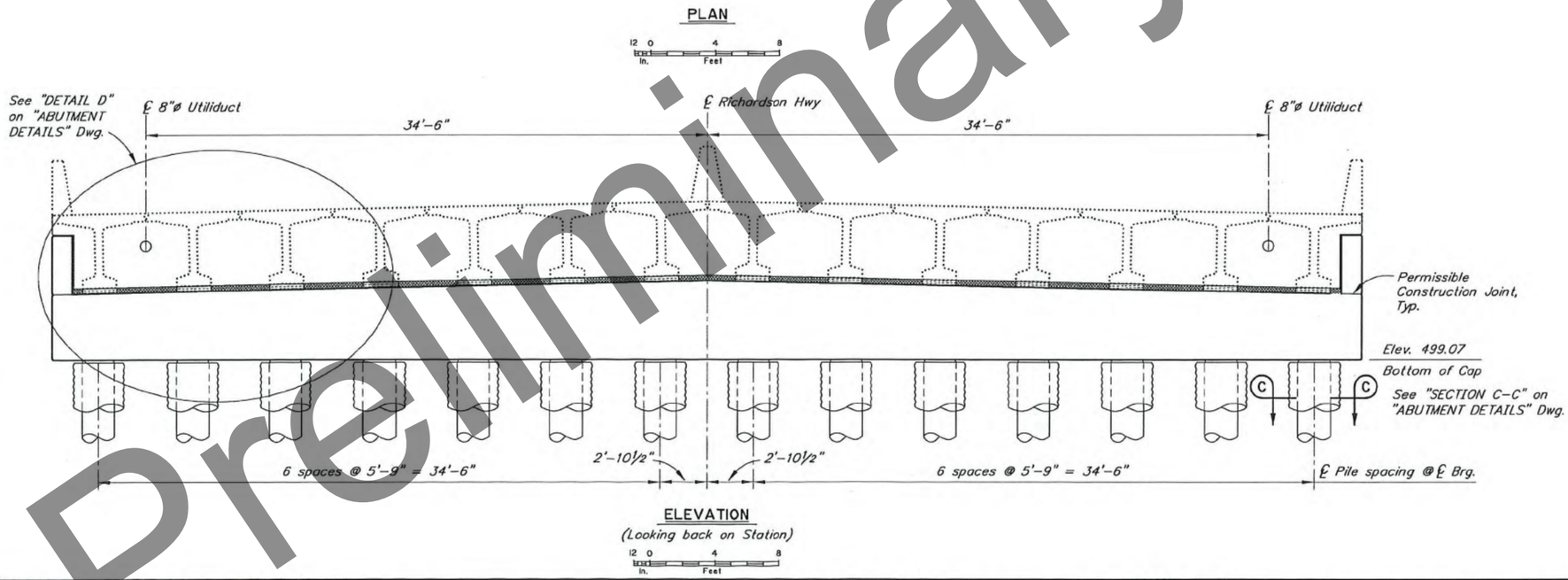
BRIDGE NO. 1371
DWG. NO. 2

R:\cad\1371\1371 2w-op-2 Fri, Jul/07/23 02:50pm

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N3	N18



PLAN

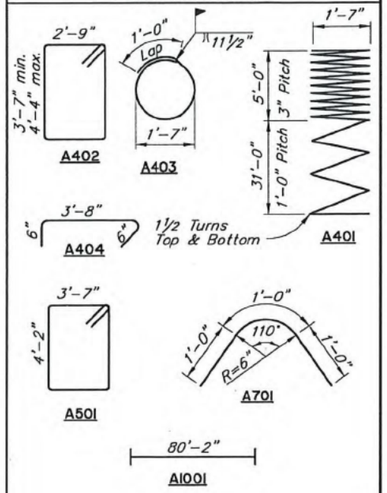


ELEVATION
(Looking back on Station)

REINFORCING STEEL - ABUTMENT I

MARK	NOTE	SIZE	NO.	LENGTH	TYPE
A401	S	4	14	271'-10"	SPIRAL
A402		4	198	VARIES	STIRRUP
A403		4	98	6'-0"	HOOP
A404		4	140	4'-8"	TIE
A501	E	5	80	16'-5"	STIRRUP
A601	S	6	10	80'-2"	---
A602	E,S	6	7	77'-8"	---
A603	E,S	6	7	80'-2"	---
A604	E	6	13	3'-4"	---
A701	E	7	8	3'-0"	BENT
A801	S	8	112	40'-0"	---
A1001	H,M,S	10	10	80'-2"	HEADED

BENDING DIAGRAM



E – Epoxy-Coated
H – Headed reinforcing steel
M – Field adjust to match cross slope
S – Splices not included

DESIGNED BY: David McAdoo	CHECKED: Ben Still
DRAWN BY: Javier De Leon	CHECKED: David McAdoo
QUANTITIES BY: David McAdoo	CHECKED: Ben Still

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER

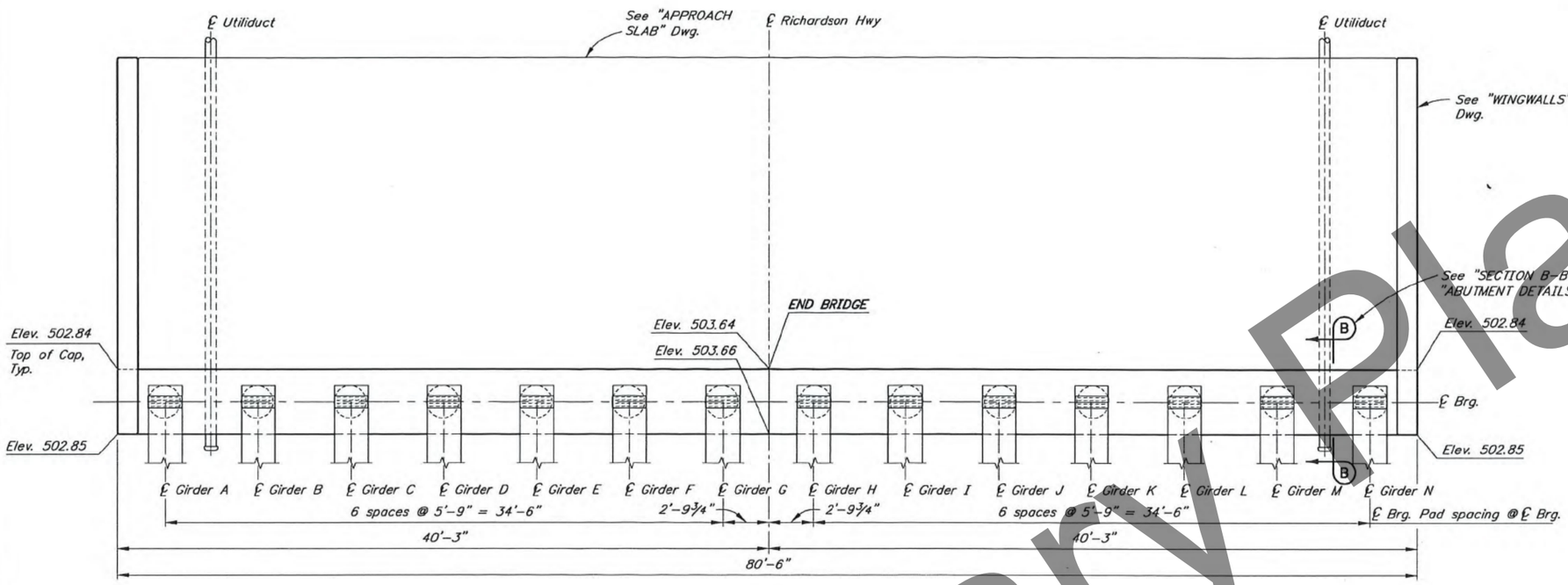
TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

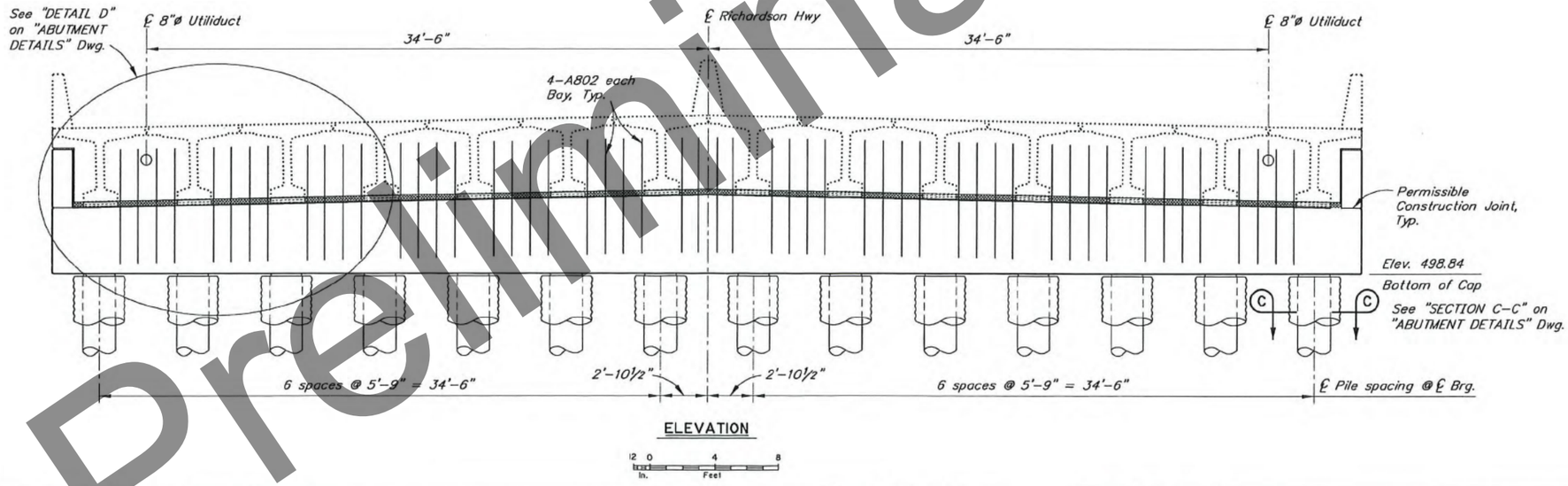
ABUTMENT 1

BRIDGE NO. 1371
DWG. NO. 3

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N4	N18



PLAN

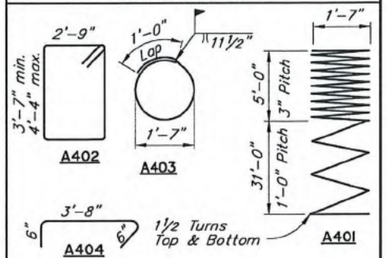


ELEVATION

REINFORCING STEEL - ABUTMENT 2

MARK	NOTE	SIZE	NO.	LENGTH	TYPE
A401	S	4	14	271'-10"	SPIRAL
A402		4	198	VARIES	STIRRUP
A403		4	98	6'-0"	HOOP
A404		4	140	4'-8"	TIE
A501	E	5	80	16'-5"	STIRRUP
A601	S	6	10	80'-2"	---
A602	E,S	6	7	77'-8"	---
A603	E,S	6	7	80'-2"	---
A604	E	6	13	3'-4"	---
A701	E	7	8	3'-0"	BENT
A801	S	8	112	40'-0"	---
A802	E	8	52	7'-0"	---
A1001	H,M,S	10	10	80'-2"	HEADED

BENDING DIAGRAM



E – Epoxy-Coated
H – Headed reinforcing steel
M – Field adjust to match cross slope
S – Splices not included

DESIGNED BY: David McAdoo	CHECKED: Ben Still	
DRAWN BY: Javier De Leon	CHECKED: David McAdoo	
QUANTITIES BY: David McAdoo	CHECKED: Ben Still	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
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Juneau, Alaska 99801
907-465-2975

[redacted]

TWELVE MILE INTERCHANGE

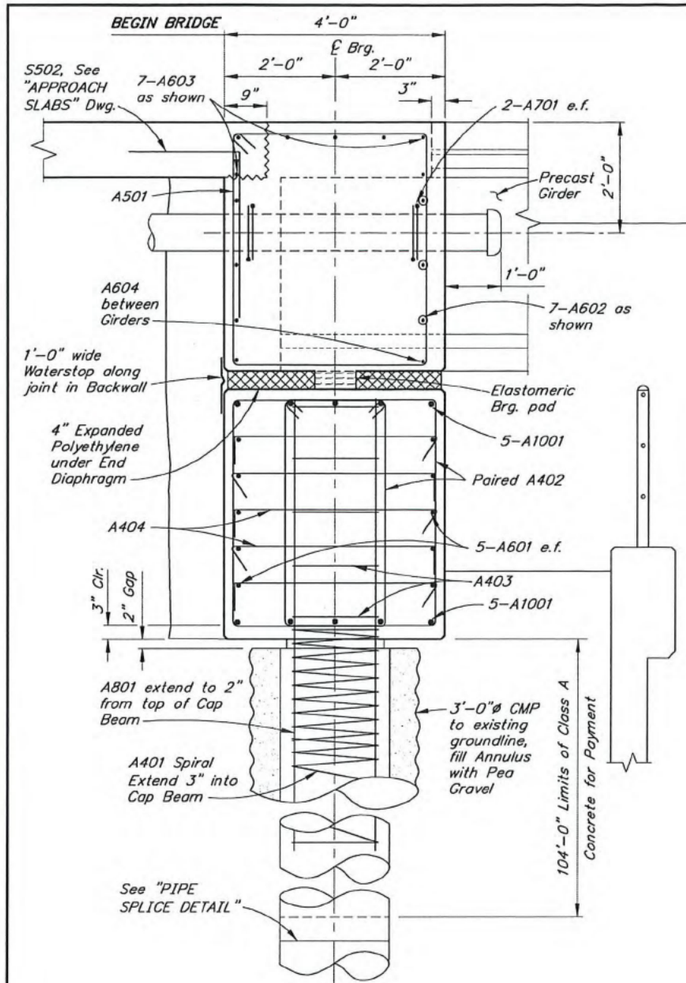
RICHARDSON HIGHWAY

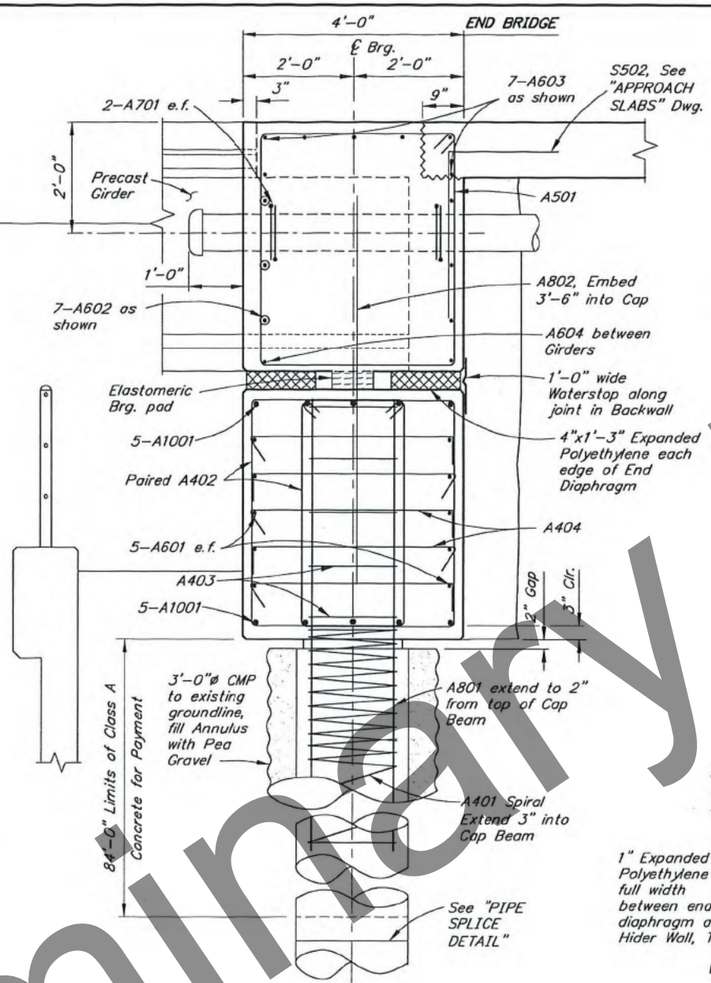
ABUTMENT 2

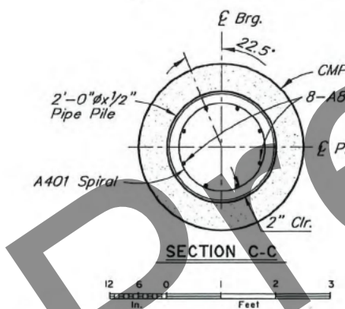
BRIDGE NO. 1371
DWG. NO. 4

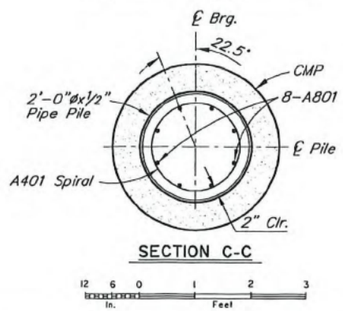
R:\ced\1371\1371-1-4 Fri, Jul/07/23 02:50pm

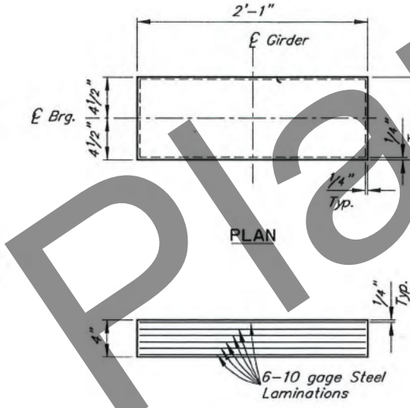
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N5	N18









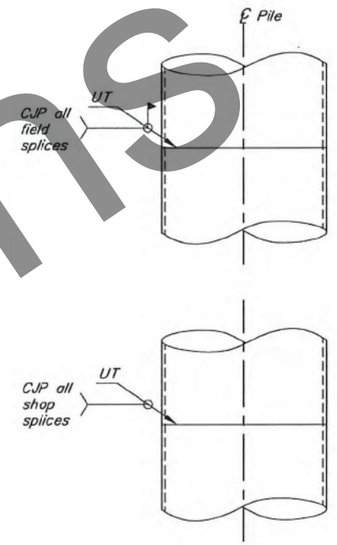


ELEVATION

ELASTOMERIC BEARING PAD

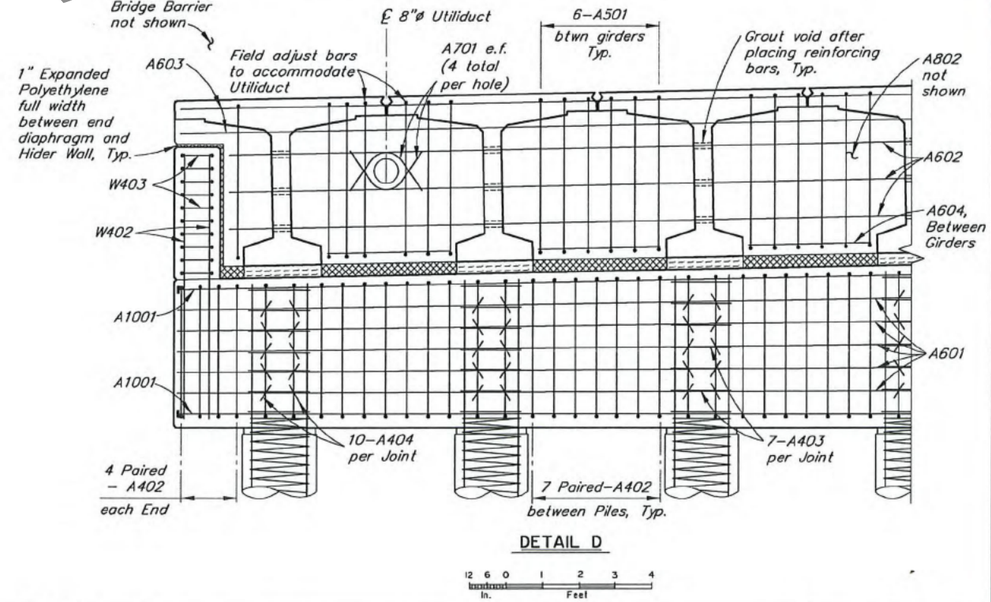
Grade 5
Max. Dead Load = 97 k
Max. Live Load = 72 k
Shear Modulus = 115 psi

12 6 0 1
In. Feet



PIPE SPLICE DETAIL

No Scale



DETAIL D

12 6 0 1 2 3 4
In. Feet

DESIGNED BY: David McAdoo	CHECKED: Ben Still
DRAWN BY: Javier De Leon	CHECKED: David McAdoo
QUANTITIES BY: David McAdoo	CHECKED: Ben Still

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

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TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

ABUTMENT DETAILS

BRIDGE NO. 1371

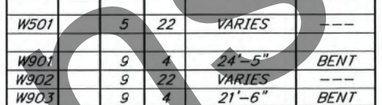
DWG. NO. 5

R:\cad\1371\1371-1-5 Fri, Jul/07/23 02:50pm

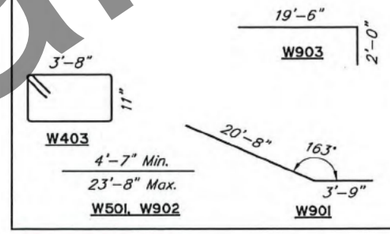
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N6	N18

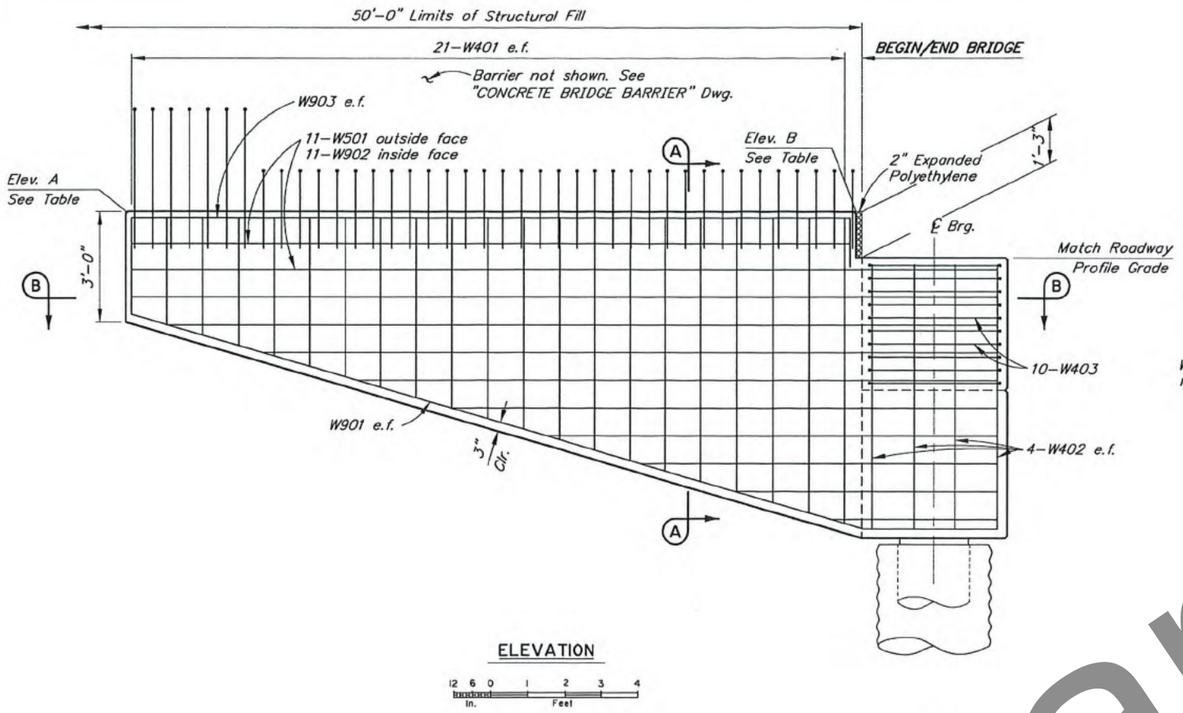
REINFORCING STEEL - ONE ABUTMENT

MARK	NOTE	SIZE	NO.	LENGTH	TYPE	BENDING DIAGRAM
W401		4	84	VARIES	---	
W402		4	16	7'-2"	---	
W403		4	22	9'-11"	STIRRUP	
W501		5	22	VARIES	---	
W901		9	4	24'-5"	BENT	
W902		9	22	VARIES	---	
W903		9	4	21'-6"	BENT	



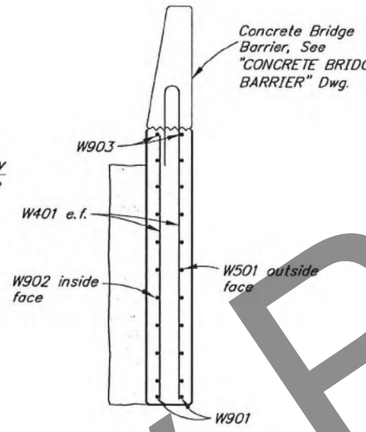
W401





ELEVATION

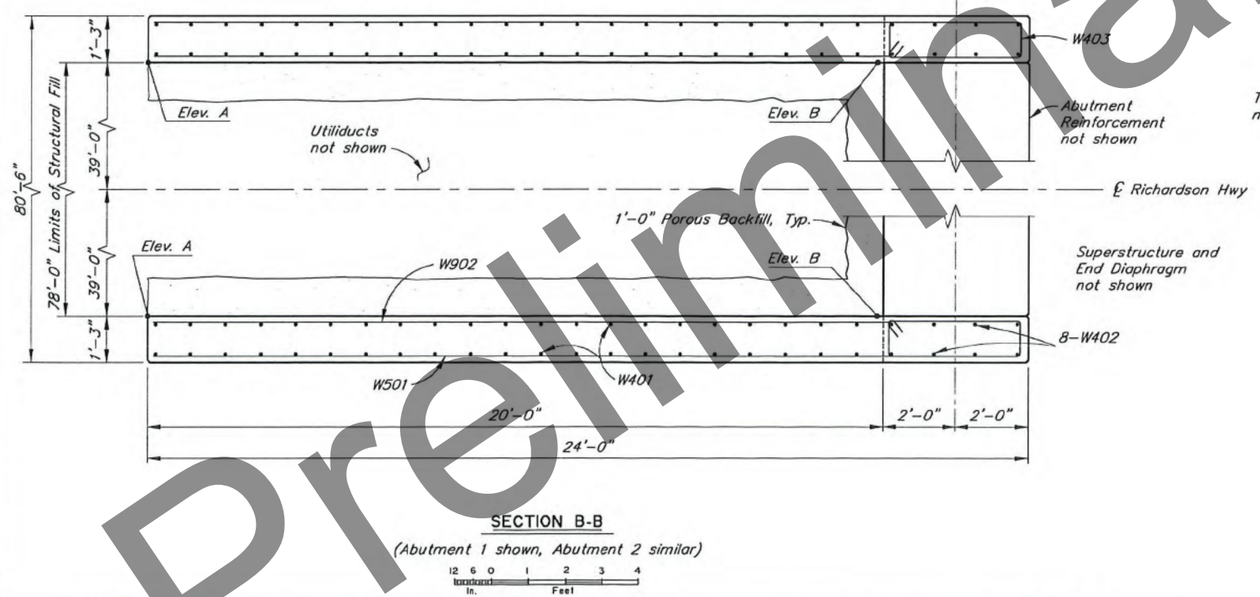
12 6 0 1 2 3 4
In. Feet



SECTION A-A

12 6 0 1 2 3 4
In. Feet

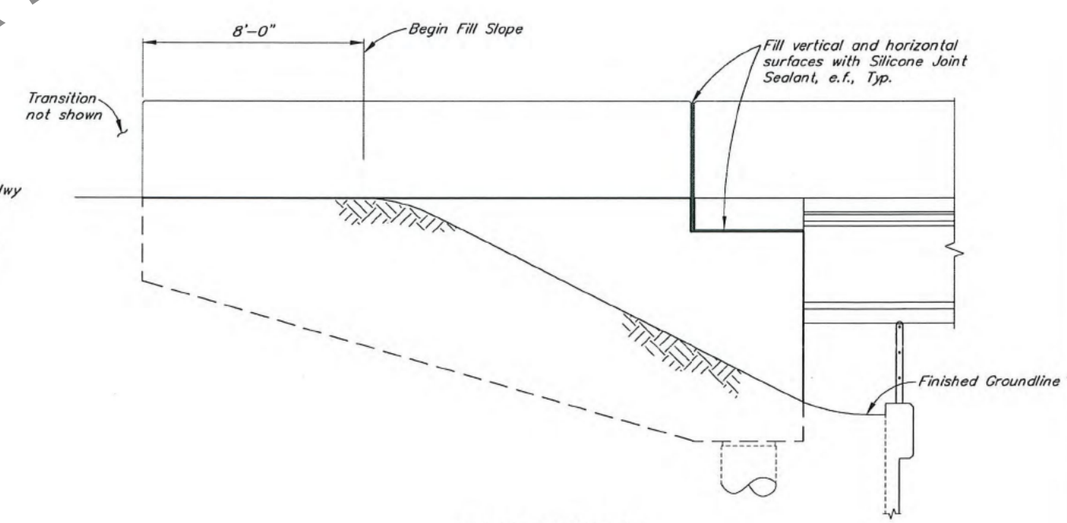
TOP OF WINGWALL ELEVATION TABLE (FT)		
LOCATION	A	B
ABUTMENT 1	507.90	507.93
ABUTMENT 2	507.59	507.69



SECTION B-B

(Abutment 1 shown, Abutment 2 similar)

12 6 0 1 2 3 4
In. Feet



FINISHED ELEVATION

12 0 1 2 3 4
In. Feet

DESIGNED BY: David McAdoo	CHECKED: Ben Still	
DRAWN BY: Javier De Leon	CHECKED: David McAdoo	
QUANTITIES BY: David McAdoo	CHECKED: Ben Still	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
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TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

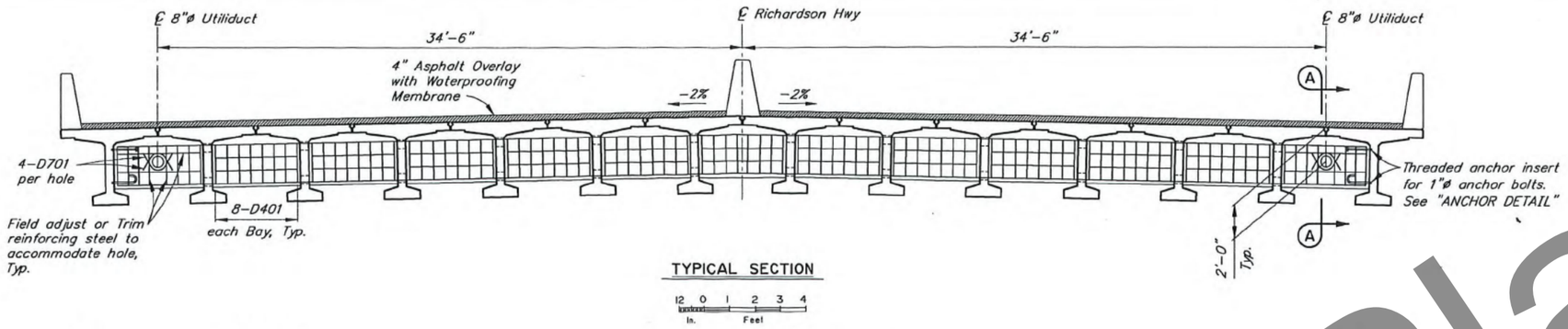
WINGWALLS

BRIDGE NO. 1371

DWG. NO. 6

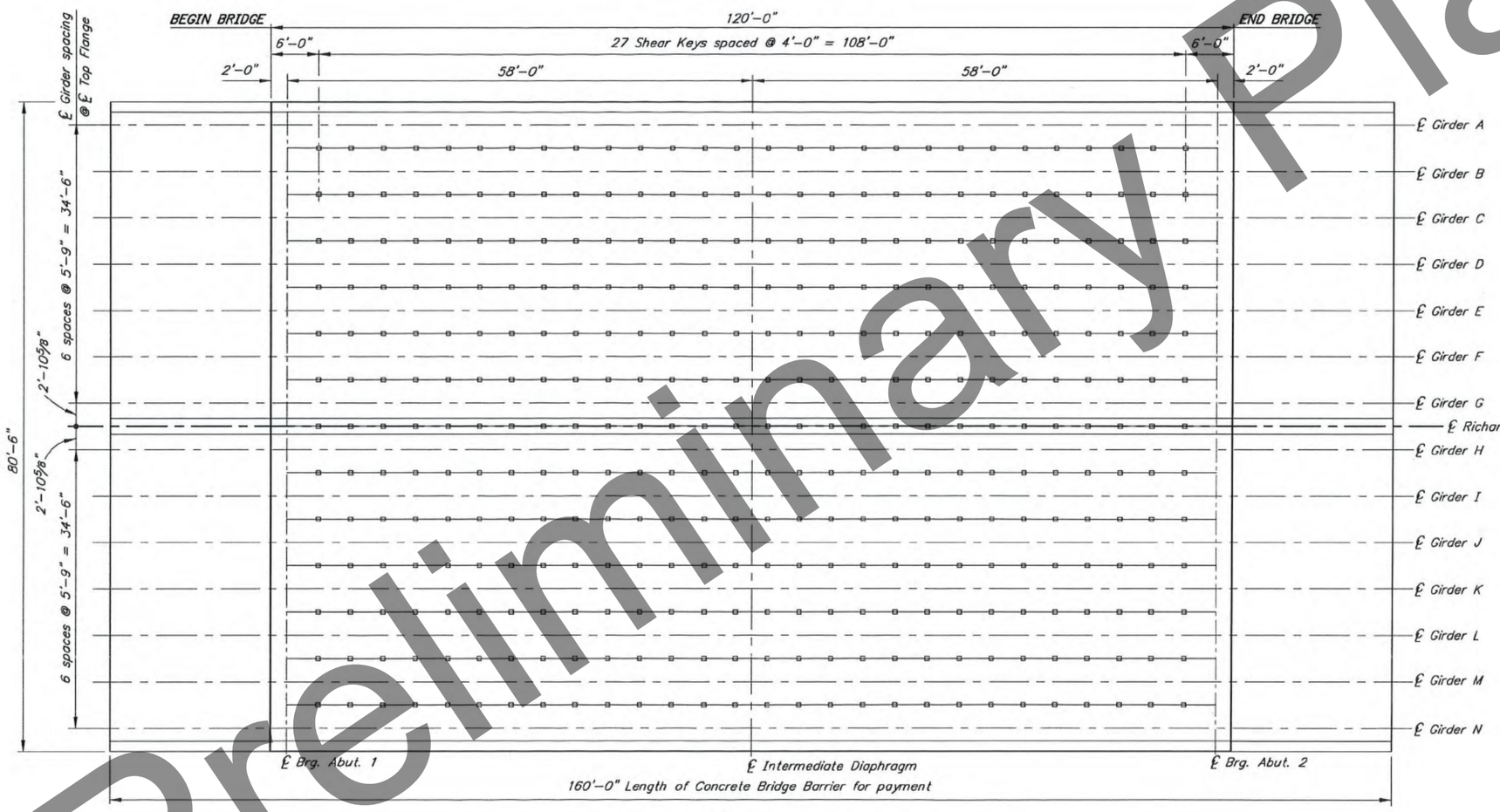
R:\cad\1371\1371-1-6 Fri, Jul/07/23 02:50pm

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N7	N18



TYPICAL SECTION

12 0 1 2 3 4
In. Feet



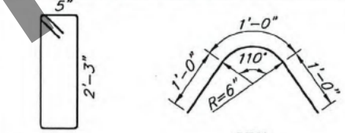
FRAMING PLAN

12 0 4 8 12
In. Feet

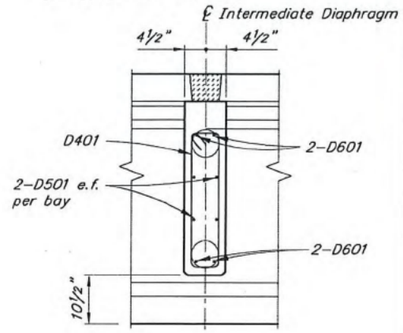
REINFORCING STEEL

MARK	NOTE	SIZE	NO.	LENGTH	TYPE
D401	E	4	104	6'-1"	STIRRUP
D501	E	5	52	4'-10"	---
D601	E,M,S	6	4	73'-10"	---
D701	E	7	8	3'-0"	BENT

BENDING DIAGRAM

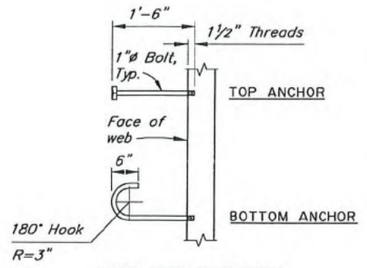


E – Epoxy-Coated
M – Field adjust to match cross slope
S – Splices not included



SECTION A-A

12 6 0 1 2 3
In. Feet



ASTM A307 GALVANIZED

ANCHOR DETAIL

12 6 0 1 2 3
In. Feet

DESIGNED BY: David McAdoo	CHECKED: Ben Still
DRAWN BY: Javier De Leon	CHECKED: David McAdoo
QUANTITIES BY: David McAdoo	CHECKED: Ben Still

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

TWELVE MILE INTERCHANGE

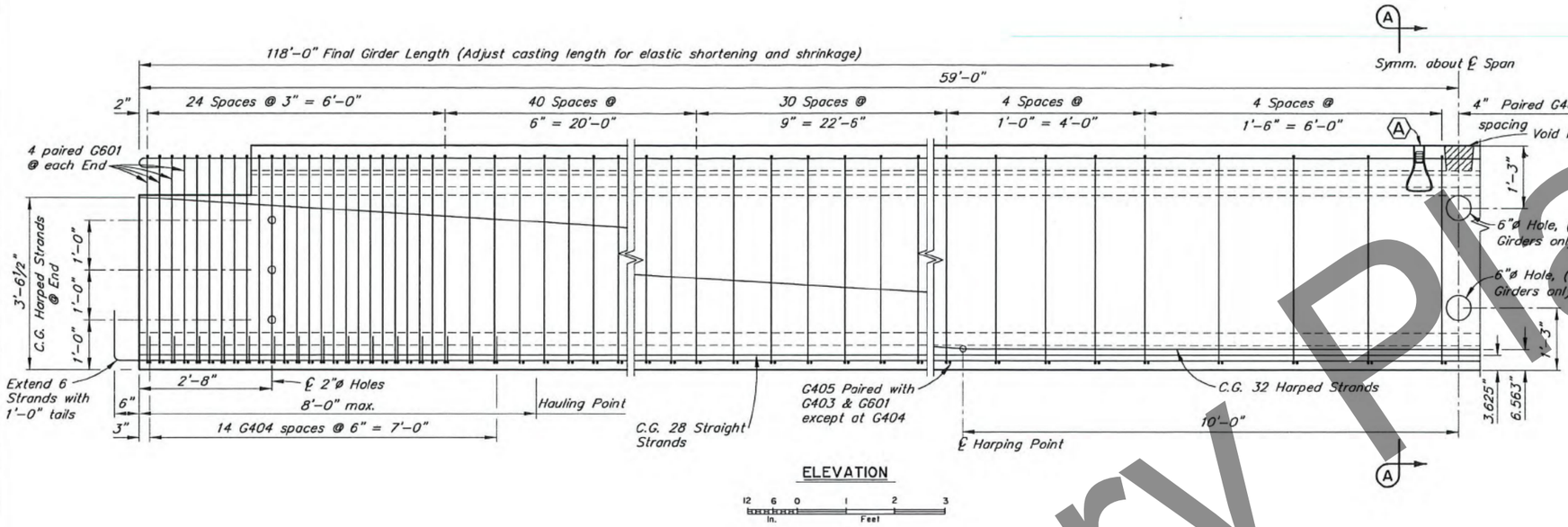
RICHARDSON HIGHWAY

FRAMING PLAN AND TYPICAL SECTION

BRIDGE NO. 1371
DWG. NO. 7

R:\eag\1371\1371-1-7 Fri, Jul/07/23 02:50pm

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N8	N18



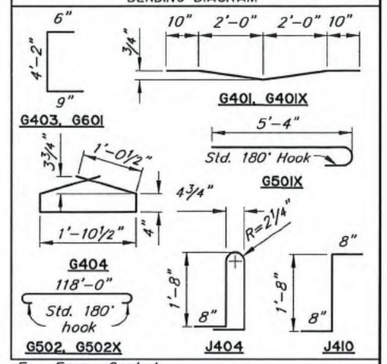
ELEVATION

12 6 0 1 2 3 In. Feet

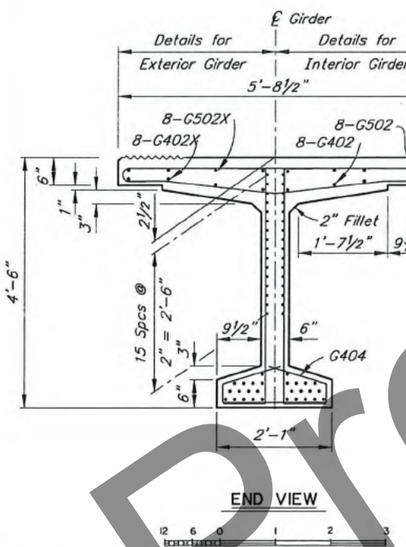
REINFORCING STEEL-ONE GIRDER

MARK	NOTE	SIZE	NO.	LENGTH	TYPE
G401	E	4	169	5'-5"	BENT
G401X	E	4	193	5'-5"	BENT
G402	E,S	4	8	112'-4"	---
G402X	E,S	4	8	112'-4"	---
G403	E	4	396	5'-5"	BENT
G404	E	4	30	4'-7½"	BENT
G405	E	4	148	1'-10"	---
G501	E	5	169	5'-3"	---
G501X	E	5	193	5'-11"	BENT
G502	E,S	5	8	119'-2"	BENT
G502X	E,S	5	8	119'-2"	BENT
G601	E	6	16	5'-5"	BENT
J404	E,L	4	242	4'-11"	BENT
J410	E,L	4	242	3'-0"	BENT

BENDING DIAGRAM

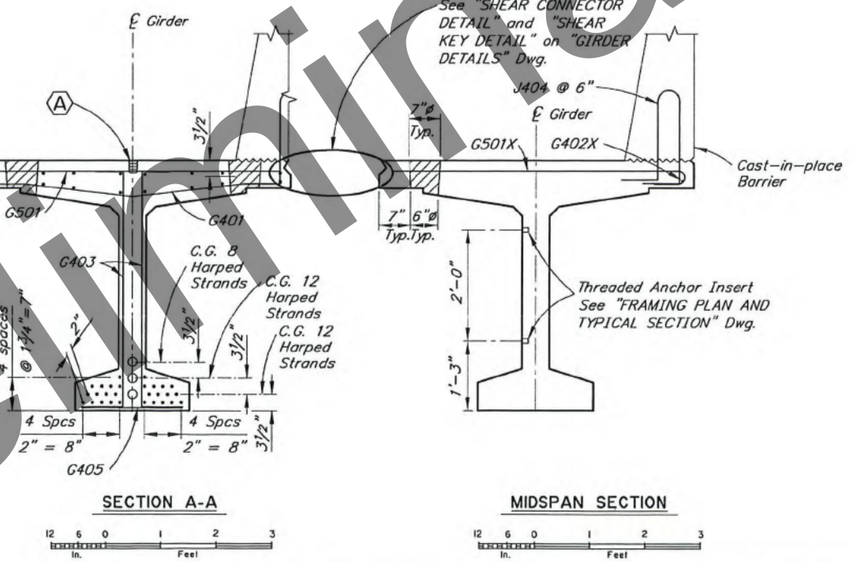


E – Epoxy-Coated
L – Ship 16 J404 loose for diaphragms
Ship 16 J410 loose for diaphragms
S – Splices permitted. Length does not include splices. Minimum lap splice length for splices shall be 2'-0" for #4 bars and 2'-6" for #5 bars
X – Exterior Girders only



END VIEW

12 6 0 1 2 3 In. Feet



SECTION A-A

12 6 0 1 2 3 In. Feet

MIDSPAN SECTION

12 6 0 1 2 3 In. Feet

GIRDER NOTES:

Class P Concrete: at Stress Transfer.....f'ci = 6,500 psi
at 28 Days.....f'c = 8,000 psi

½"ø low-relaxation prestressing strands with an ultimate strength of 270 ksi and a cross sectional area of 0.153 in².

Steel stresses: Pretensioning – Jacking Stress 189 ksi
After initial losses 170 ksi
After all losses 140 ksi

One inch clear cover on reinforcing steel unless otherwise noted.

See "FRAMING PLAN AND TYPICAL SECTION" Dwg. for Shear Connector spacing.

Deflect forms to compensate for camber and roadway profile grade.

Galvanize structural steel embedded in girders except for shear connectors.

(A) 1"X1'-0" Coil Anchor Insert for vertical adjustment of girders. Recess 2". Prevent concrete from filling hole.

Omit Shear Key, Shear Key Connector and Deck Void in exterior face of exterior girders.

Cast ends of girders plumb with respect to roadway grade. Install web holes and web anchor inserts parallel to ℄ bearing.

Finish top flange with heavy broom finish. Roughen the surface under the Curb.

See "CONCRETE BRIDGE BARRIER" Dwg. for concrete barrier, reinforcing, and embedments.

DESIGNED BY: David McAdoo	CHECKED: Ben Still		
DRAWN BY: Javier De Leon	CHECKED: David McAdoo		
QUANTITIES BY: David McAdoo	CHECKED: Ben Still		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

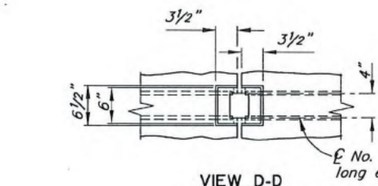
GIRDERS

BRIDGE NO. 1371

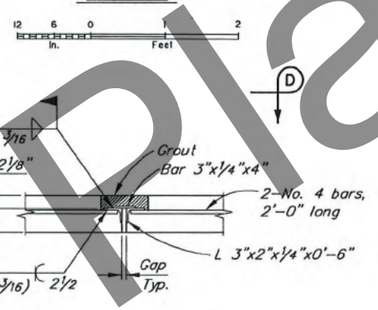
DWG. NO. 8

R:\cad\1371\1371-1-8 Fri, Jul/07/23 02:50pm

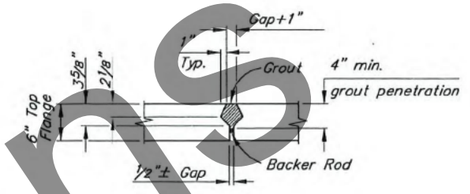
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N9	N18



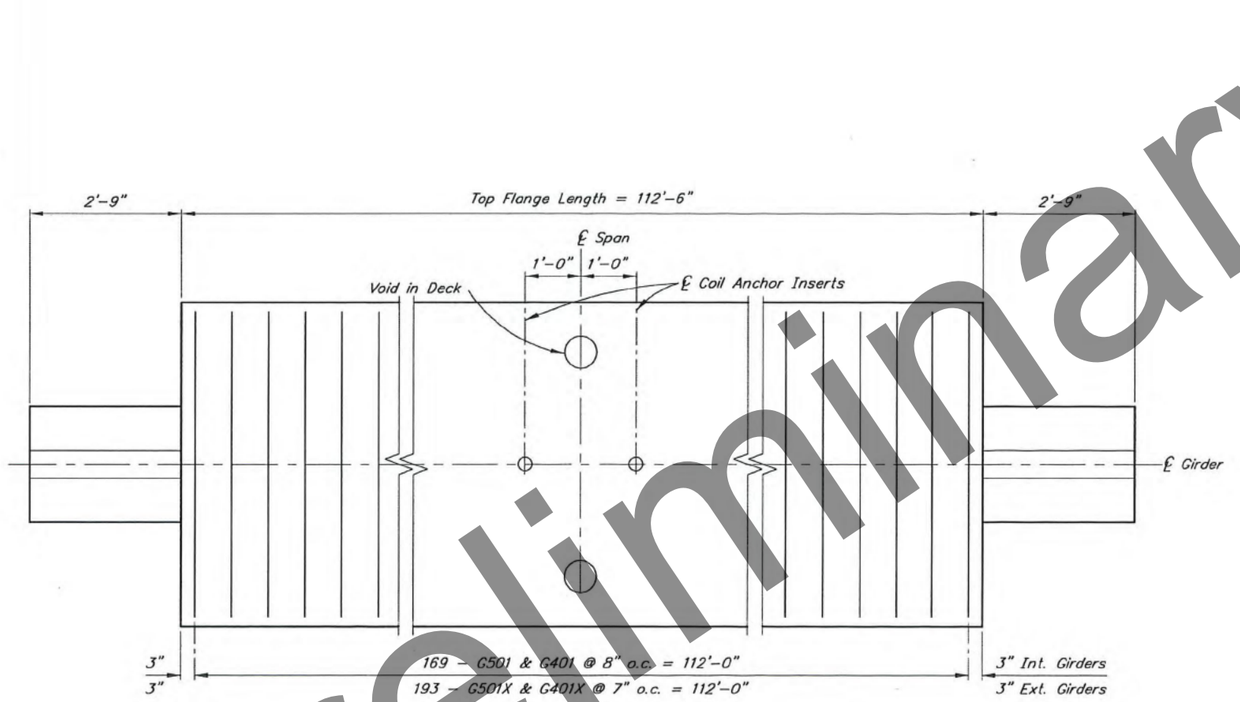
VIEW D-D



SHEAR CONNECTOR DETAIL



SHEAR KEY DETAIL



PLAN

DESIGNED BY: David McAdoo	CHECKED: Ben Still	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION 3132 Channel Drive Juneau, Alaska 99801 907-465-2975	TWELVE MILE INTERCHANGE RICHARDSON HIGHWAY GIRDER DETAILS
DRAWN BY: Javier De Leon	CHECKED: David McAdoo		BRIDGE NO. 1371 DWG. NO. 9
QUANTITIES BY: David McAdoo	CHECKED: Ben Still		

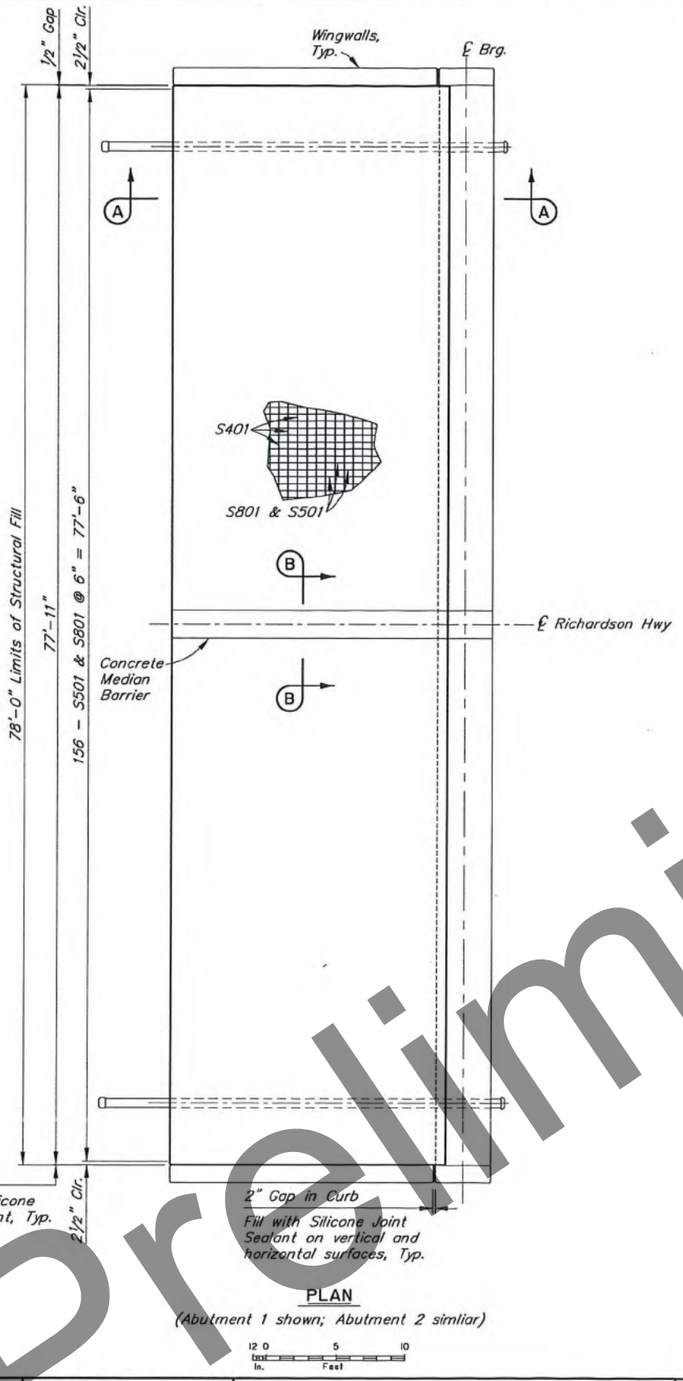
R:\eod\1371\1371-1-9 Fri, Jul/07/23 02:50pm

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2023	N10	N18

REINFORCING STEEL - ONE APPROACH SLAB

MARK	NOTE	SIZE	NO.	LENGTH	TYPE	BENDING DIAGRAM
S401	E	4	64	77'-6"	---	
S501	E	5	156	20'-5"	---	
S502	E	5	78	5'-0"	BENT	2'-0", 3'-0" — S502
S801	E	8	156	20'-5"	---	
J408	E	4	40	5'-4"	BENT	R=2", 1'-11", 8", 8" — J408

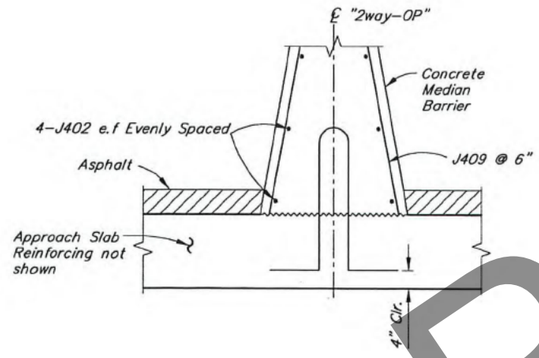
E – Epoxy-Coated



PLAN

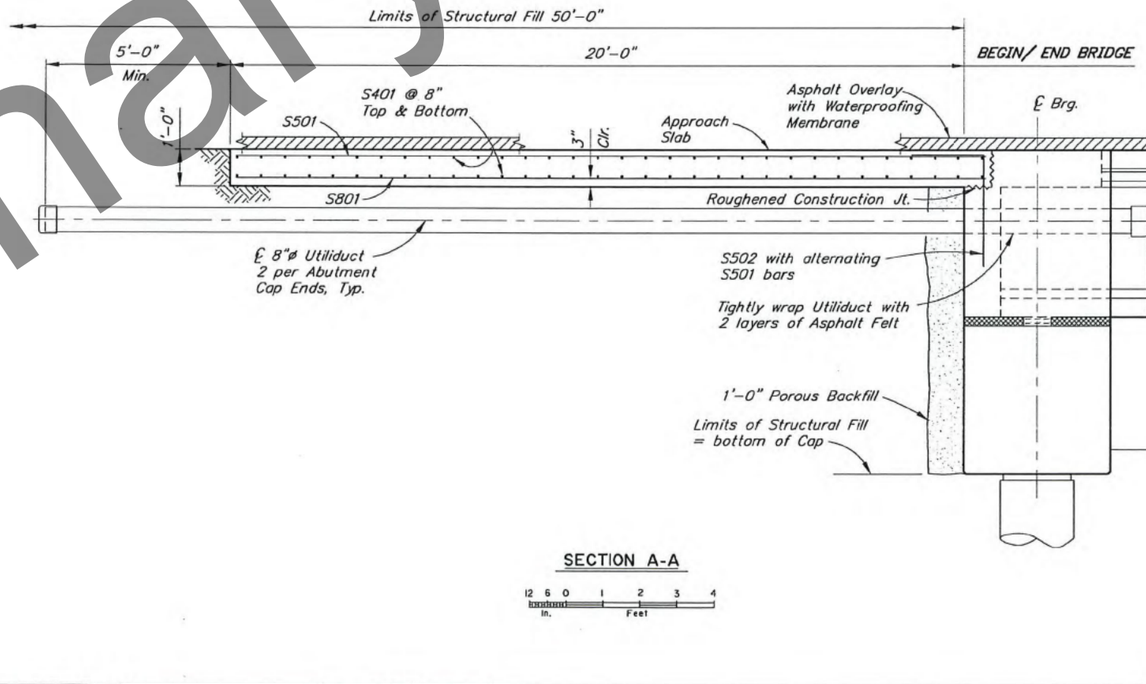
(Abutment 1 shown; Abutment 2 simliar)

12 0 5 10
In. Feet



SECTION B-B

12 6 0 1 2
In. Feet



SECTION A-A

12 6 0 1 2 3 4
In. Feet

DESIGNED BY: David McAdoo	CHECKED: Ben Still	
DRAWN BY: Javier De Leon	CHECKED: David McAdoo	
QUANTITIES BY: David McAdoo	CHECKED: Ben Still	

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

TWELVE MILE INTERCHANGE

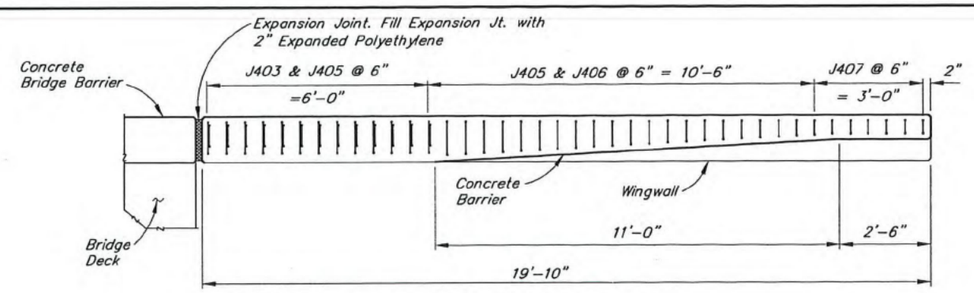
RICHARDSON HIGHWAY

APPROACH SLABS

BRIDGE NO. 1371

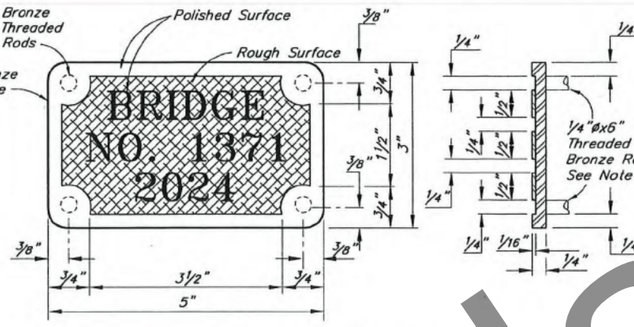
DWG. NO. 10

R:\cad\1371\1371-1-10 Fri, Jul/07/23 02:30pm



CONCRETE BRIDGE BARRIER TRANSITION - PLAN

12 6 0 1 2 3 4 Inches Feet



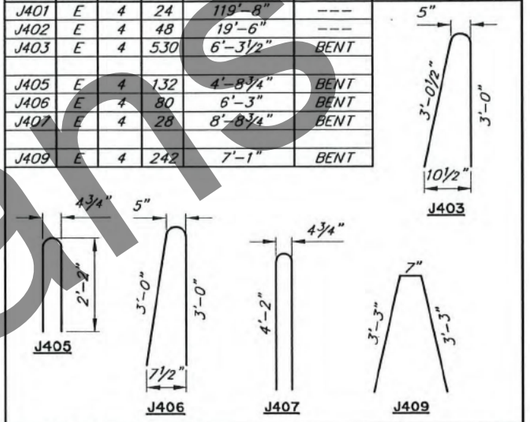
BRONZE BRIDGE NO. PLATE

No Scale

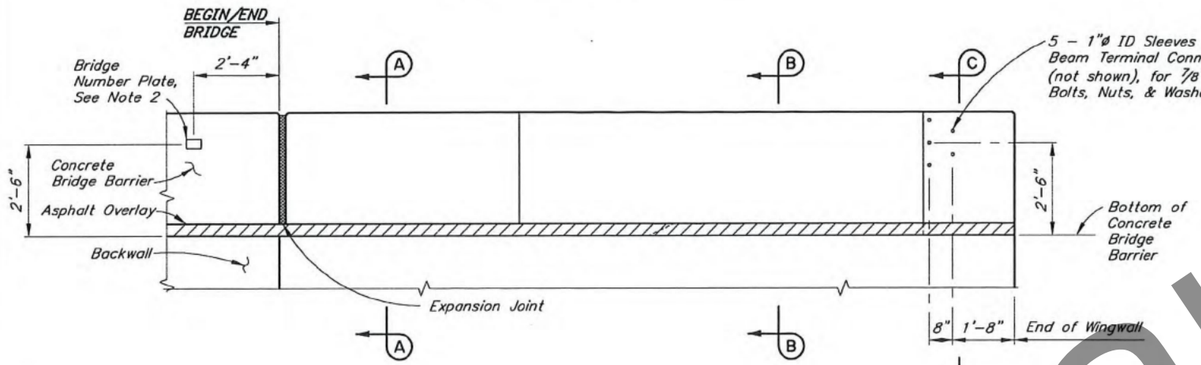
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	OA24(034)/NFHWY00097	2023	N11	N18

REINFORCING STEEL - ALL BARRIERS

MARK	NOTE	SIZE	NO.	LENGTH	TYPE	BENDING DIAGRAM
J401	E	4	24	119'-8"	---	
J402	E	4	48	19'-6"	---	
J403	E	4	530	6'-3 1/2"	BENT	
J405	E	4	132	4'-8 3/4"	BENT	
J406	E	4	80	6'-3"	BENT	
J407	E	4	28	8'-8 3/4"	BENT	
J409	E	4	242	7'-1"	BENT	

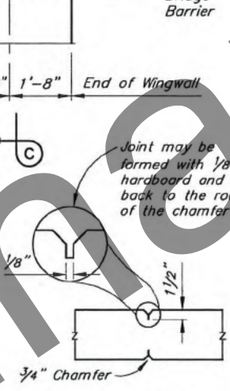


E – Epoxy Coated Rebar



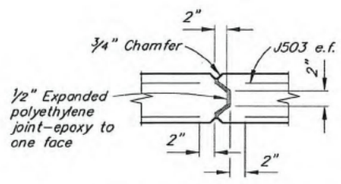
CONCRETE BRIDGE BARRIER TRANSITION - ELEVATION

12 6 0 1 2 3 4 Inches Feet



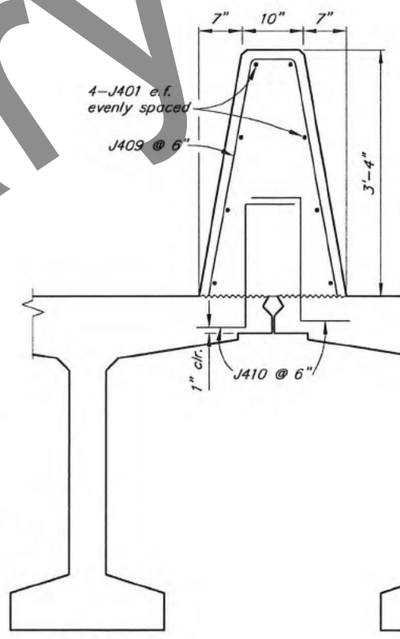
WEAKENED PLANE JOINT

Locate at 1/4 Span
No Scale



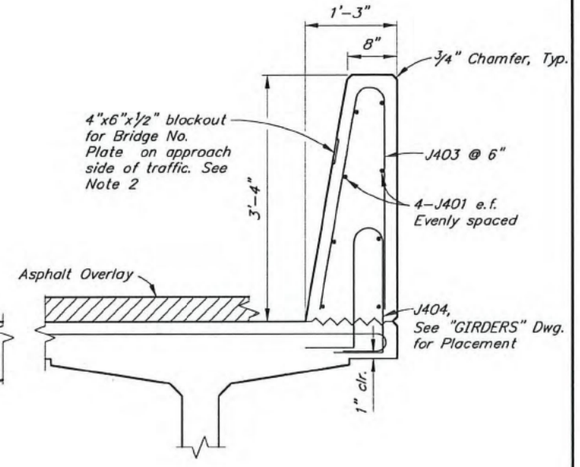
MIDSPAN EXPANSION JOINT

Locate at Midspan
No Scale



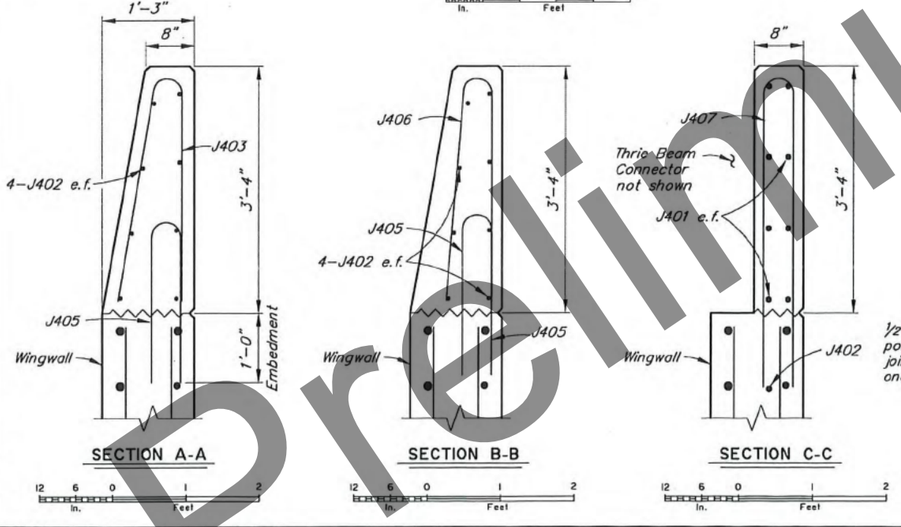
MEDIAN BARRIER

12 6 0 1 2 Inches Feet



CONCRETE BRIDGE BARRIER

12 6 0 1 2 Inches Feet



12 6 0 1 2 Inches Feet

NOTES:

1. Construct concrete bridge barrier plumb.
2. Furnish and install two bronze bridge number plates. Use "CENTURY" type style. Studs to be 1/4"ø bronze threaded rods brazed to back of plate. Epoxy bond rods into 3/8"ø holes in concrete bridge barrier blockout. Use epoxy suitable for exterior application and compatible with materials to be bonded. Follow epoxy manufacturer's instructions.

DESIGNED BY: David McAdoo	CHECKED: Ben Still
DRAWN BY: Javier De Leon	CHECKED: David McAdoo
QUANTITIES BY: David McAdoo	CHECKED: Ben Still

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

[redacted]

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

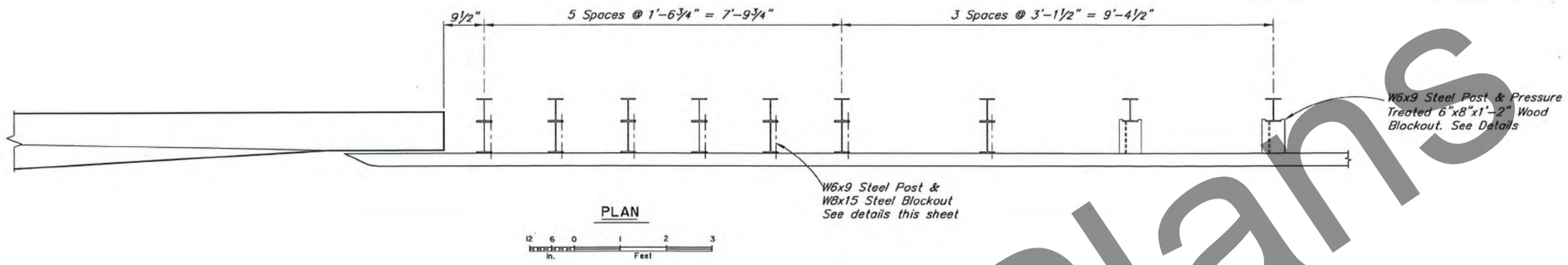
CONCRETE BRIDGE BARRIER

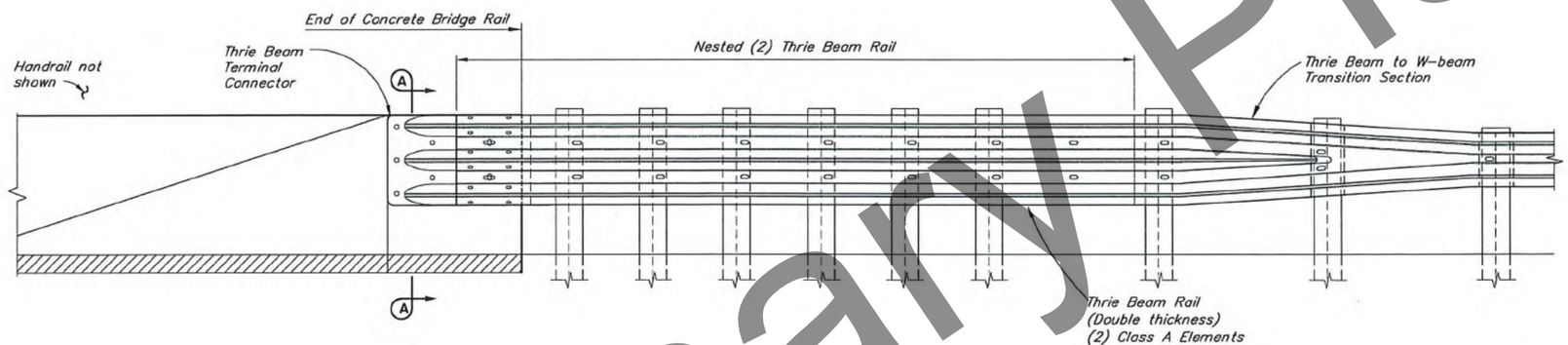
BRIDGE NO. 1371

DWG. NO. 11

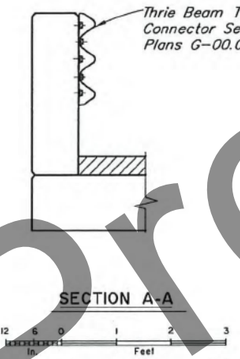
R:\ced\1371\1371-1-11 Fri, Jul/07/23 02:50pm

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24(034)/NFHWY00097	2024	N12	N18

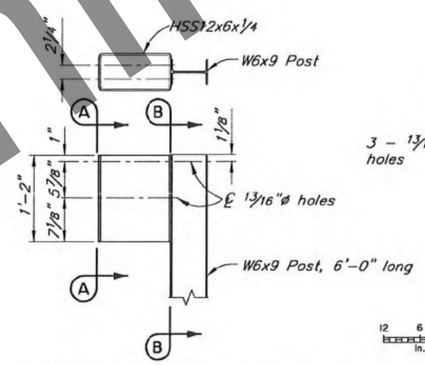




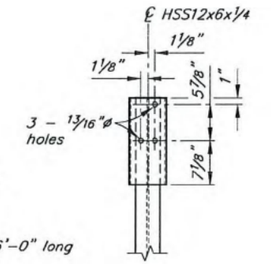
THRIE BEAM TRANSITION - ELEVATION



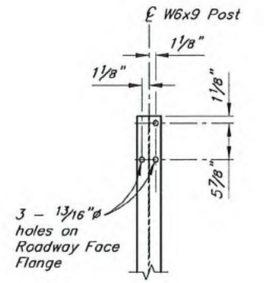
SECTION A-A



THRIE BEAM STEEL BLOCKOUT - SHORT



VIEW A-A



SECTION B-B

NOTES:

Conform to G-00, G-05, G-09, and G-10 for all guardrail details not shown.

Lap approach guardrail to prevent snags from oncoming traffic.

Provide 4" horizontal slot in approach guardrail. Adjust guardrail bolts for sliding fit.

R:\cad\1371\1371-1-12 Fri, Jul/07/23 02:30pm

DESIGNED BY: David McAdoo	CHECKED: Ben Still
DRAWN BY: Javier De Leon	CHECKED: David McAdoo
QUANTITIES BY: David McAdoo	CHECKED: Ben Still

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER

TWELVE MILE INTERCHANGE

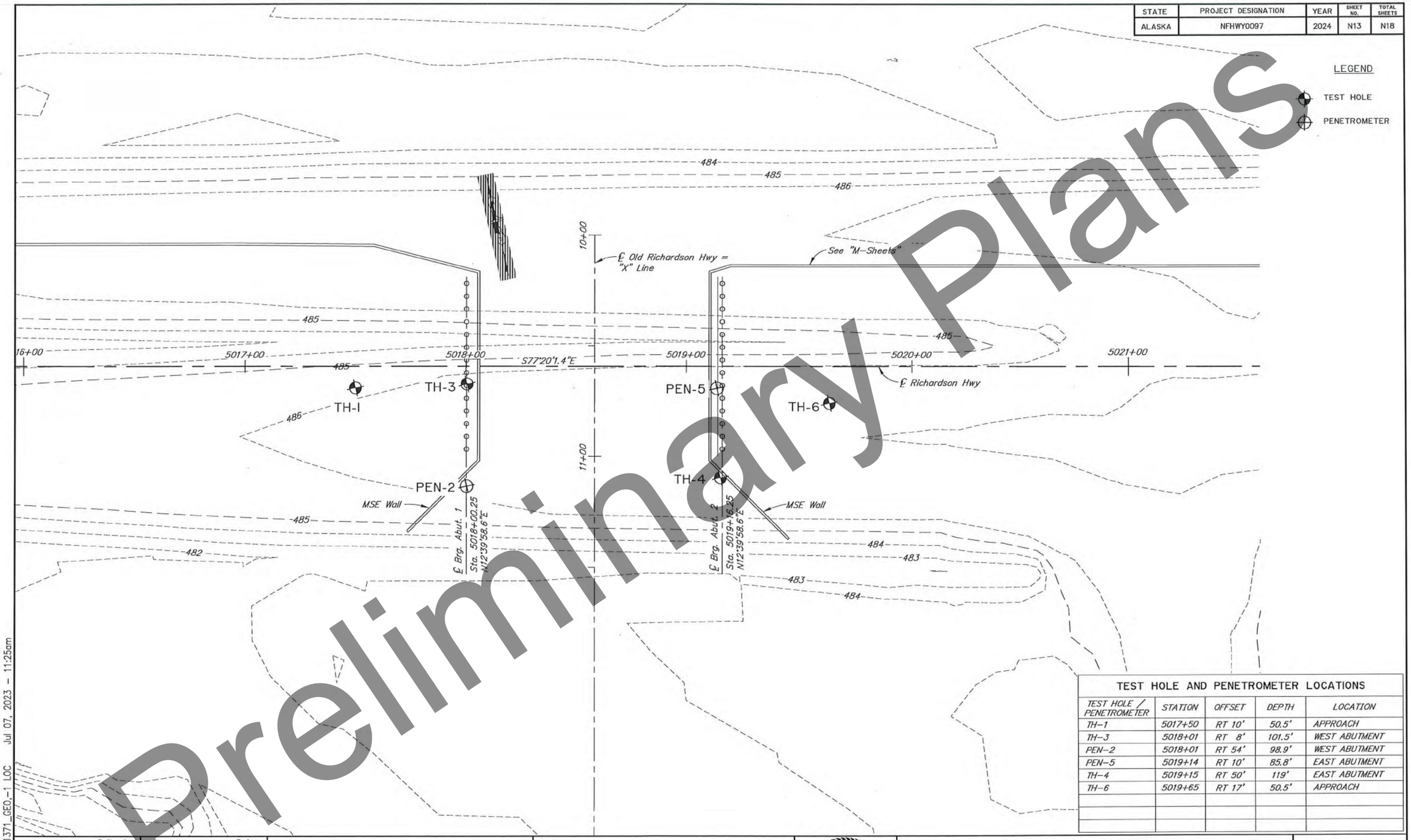
RICHARDSON HIGHWAY

TRANSITION RAIL

BRIDGE NO. 1371

DWG. NO. 12

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	NFHWY0097	2024	N13	N18



TEST HOLE AND PENETROMETER LOCATIONS

TEST HOLE / PENETROMETER	STATION	OFFSET	DEPTH	LOCATION
TH-1	5017+50	RT 10'	50.5'	APPROACH
TH-3	5018+01	RT 8'	101.5'	WEST ABUTMENT
PEN-2	5018+01	RT 54'	98.9'	WEST ABUTMENT
PEN-5	5019+14	RT 10'	85.8'	EAST ABUTMENT
TH-4	5019+15	RT 50'	119'	EAST ABUTMENT
TH-6	5019+65	RT 17'	50.5'	APPROACH

R:\cad\1371\dwgs\1371_GEO_-1 LOC Jul 07, 2023 - 11:25am

DESIGNED BY: D. Hemstreet	CHECKED: Engineer		
DRAWN BY: R Angell	CHECKED: D. Hemstreet		
QUANTITIES BY: Engineer	CHECKED: Engineer		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
STATEWIDE MATERIALS

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER 17123

TWELVE MILE INTERCHANGE

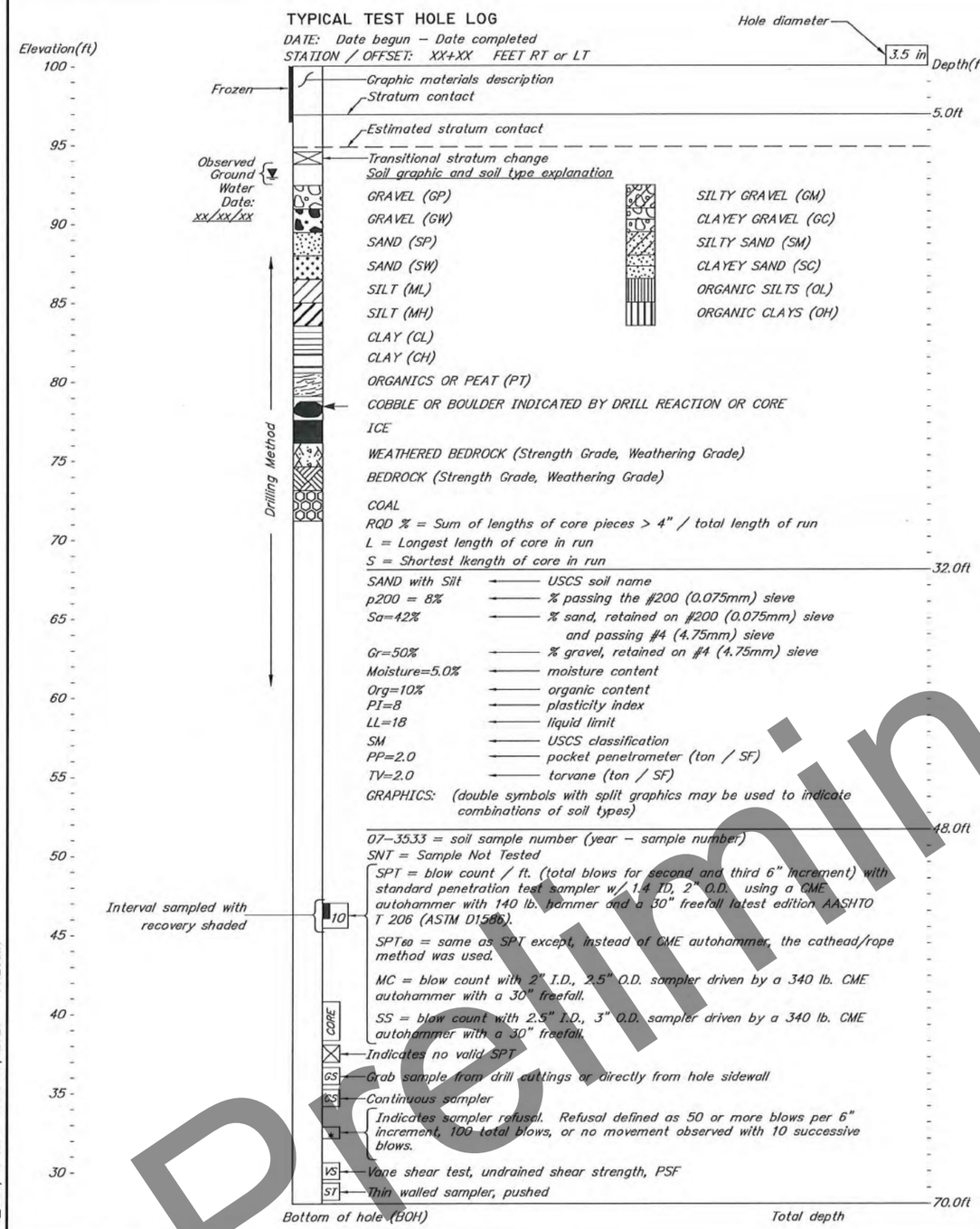
RICHARDSON HIGHWAY

TEST HOLE & PENETROMETER LOCATION

BRIDGE NO. 1371
DWG. NO. 13

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	NFHWY0097	2024	N14	N18

TYPICAL TEST HOLE LOG

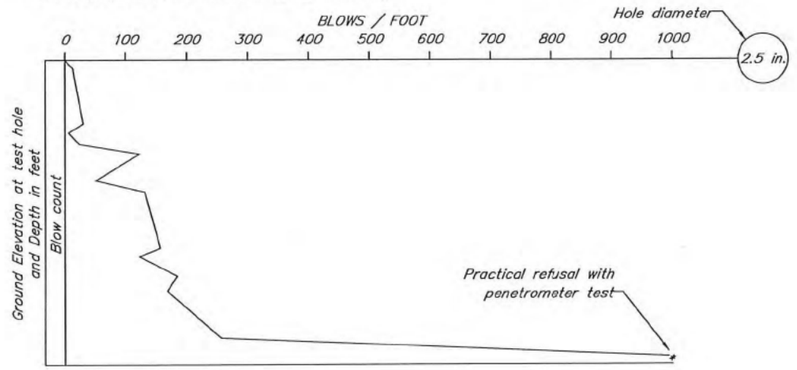


NOTES:

1) The test hole logs depicted graphically in these drawings are distillations of the original field logs, based on post–field investigation review and analysis. These drafted logs include changes made to field descriptions based upon laboratory test data, review and analysis. Detailed field observations of rock and soil sampled during the drilling program are not reproduced in the drafted logs.
2) Description of soils follows Alaska Geotechnical Procedures manual. Classification of soils follows Unified Soil Classification System (ASTM D2487).
3) The test hole logs from these sheets are an integral part of the Foundation Geology Report. See Construction Contract Bid Documents – invitation to bid/notice to bidders. Important information about the test hole logs and the foundation investigation is contained in the report. The test hole logs are not severable from and cannot be completely and correctly interpreted without reference to the Foundation Geology Report.

TYPICAL PENETROMETER TEST LOG

DATE: Date begun – Date completed
STATION / OFFSET: XX+XX / RT or LT (feet)



Bottom of hole (BOH)

NOTES:
Penetrometer W/2.5" O.D., with a CME AUTOMATIC Hammer using a 340 lb. weight and a 30" freefall

DESIGNED BY: D. Hemstreet	CHECKED: Engineer		
DRAWN BY: R Angell	CHECKED: D. Hemstreet		
QUANTITIES BY: Engineer	CHECKED: Engineer		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
STATEWIDE MATERIALS

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER 7/17/23

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

TEST HOLE & PENETROMETER LEGEND

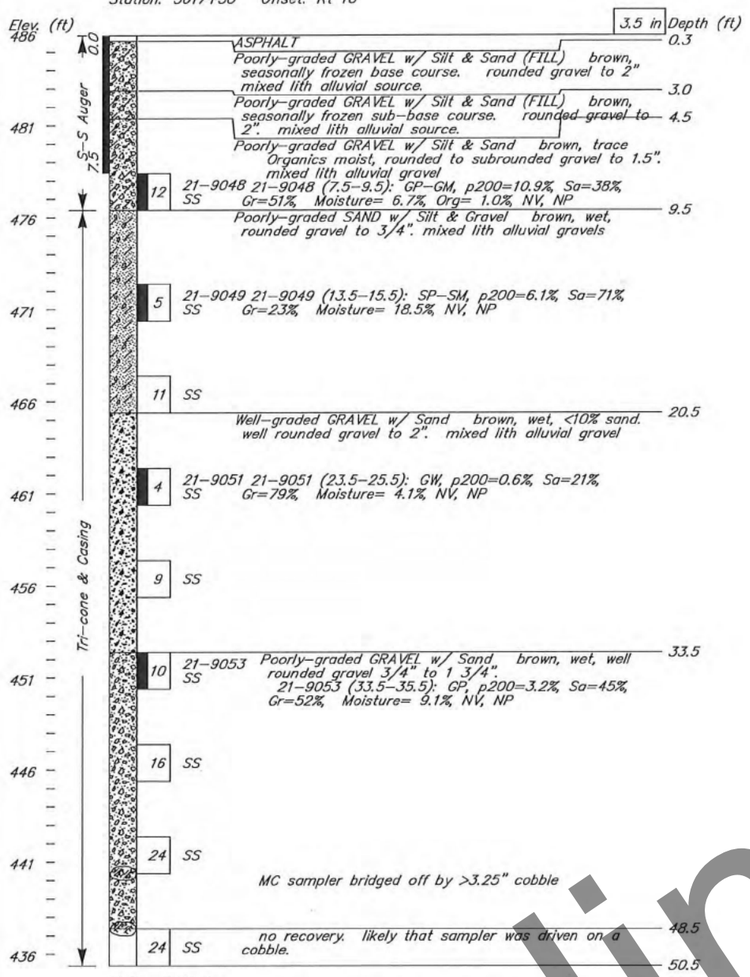
BRIDGE NO. 1371
DWG. NO. 14

R:\cad\1371\dwgs\1371_GEO_-2 TYP Jul 07, 2023 - 11:25am

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	NFHWY0097	2024	N15	N18

21-6012(TH-1)

Date: 1/19/21 – 1/20/21
Station: 5017+50 Offset: Rt 10'



BOH: 50.5 ft.
Notes: GWL not measured since WBR drilling started above water table.
TH20-3602 has GWL @7' bgs in 8/20. Sample type SS is a 2.5" OD split spoon sampler driven by a 340# autohammer.
Hammer: CME Auto Hammer 340 lb hammer
Equipment: CME 55 Truck
Drilling Method: Tricone
Geologist: T. TANNENBAUM
Field Crew: M. SOUSA, P. LANIGAN, T. HARTFORD, G. NELSON
Latitude: 64.767634 Longitude: -147.405467

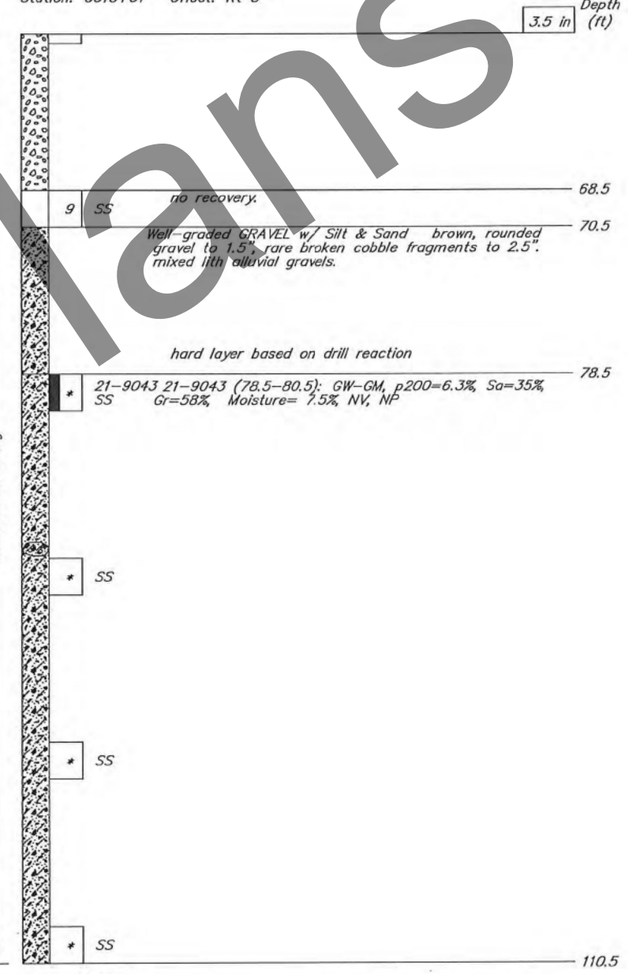
21-6011(TH-3)

Date: 1/14/21 – 1/18/21
Station: 5018+01 Offset: Rt 8'

BOH: 48.5 ft.
Notes: GWL not measured since WBR drilling started above water table.
TH20-3602 has GWL @7' bgs in 8/20. Sample type SS is a 2.5" OD split spoon sampler driven by a 340# autohammer.
Hammer: CME Auto Hammer 340 lb hammer
Equipment: CME 55 Truck
Drilling Method: Tricone
Geologist: T. TANNENBAUM
Field Crew: M. SOUSA, P. LANIGAN, T. HARTFORD, G. NELSON
Latitude: 64.767634 Longitude: -147.405467

21-6011(TH-3) (cont.)

Date: 1/14/21 – 1/18/21
Station: 5018+01 Offset: Rt 8'



BOH: 110.5 ft.
Notes: GWL not measured since WBR drilling started above water table.
TH20-3602 has GWL @7' bgs in 8/20. Sample type SS is a 2.5" OD split spoon sampler driven by a 340# autohammer.
Hammer: CME Auto Hammer both 140 & 340 lb hammer
Equipment: CME 55 Truck
Drilling Method: Tricone
Geologist: T. TANNENBAUM
Field Crew: P. LANIGAN, S. PARKER, T. HARTFORD
Latitude: 64.767609 Longitude: -147.405148

R:\cad\1371\dwgs\1371_GEO_3 TH1&3 Jul 07, 2023 - 11:25am

DESIGNED BY: D. Hemstreet	CHECKED: Engineer		
DRAWN BY: R Angell	CHECKED: D. Hemstreet		
QUANTITIES BY: Engineer	CHECKED: Engineer		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
STATEWIDE MATERIALS

STATE OF ALASKA [redacted] PROFESSIONAL 7/17/23

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

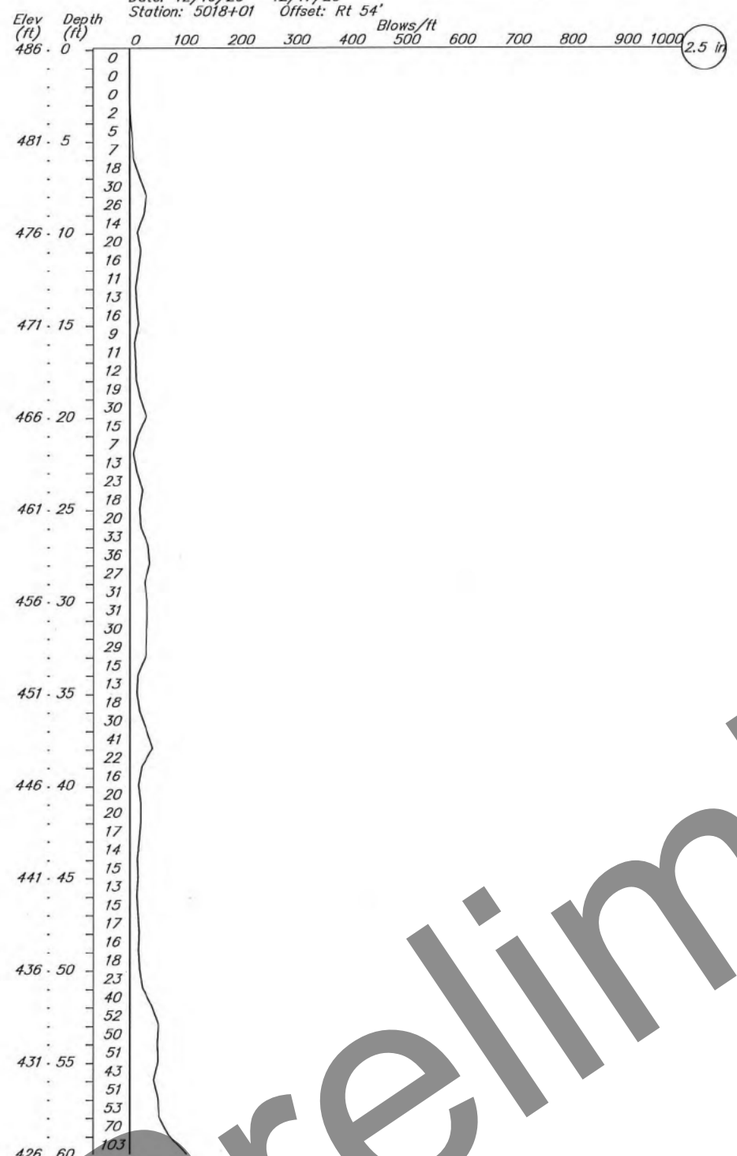
TEST HOLE & PENETROMETER LOGS

BRIDGE NO. 1371
DWG. NO. 15

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	NFHWY0097	2024	N16	N18

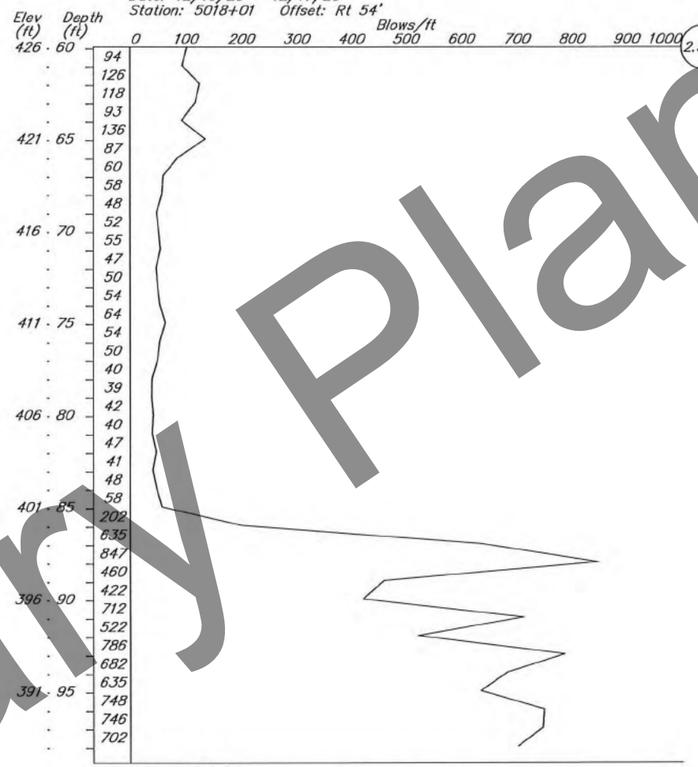
21-6015(PEN-2)

Date: 12/16/20 – 12/17/20
Station: 5018+01 Offset: Rt 54'



21-6015(PEN-2) (cont.)

Date: 12/16/20 – 12/17/20
Station: 5018+01 Offset: Rt 54'



BOH: 98.9 ft.
Hammer: CME Auto Hammer 340 lb hammer
Equipment: CME 55 Truck
Drilling Method: Penetrometer
Geologist: T. TANNENBAUM
Field Crew: M.SOUSA, S. PARKER, G. NELSON
Latitude: 64.767486 Longitude: -147.405207

R:\cad\1371\dwgs\1371_GEO_-4 PEN2 Jul 07, 2023 - 11:25am

DESIGNED BY: D. Hernstreet	CHECKED: Engineer		
DRAWN BY: R Angell	CHECKED: D. Hernstreet		
QUANTITIES BY: Engineer	CHECKED: Engineer		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
STATEWIDE MATERIALS

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER 7/11/23

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

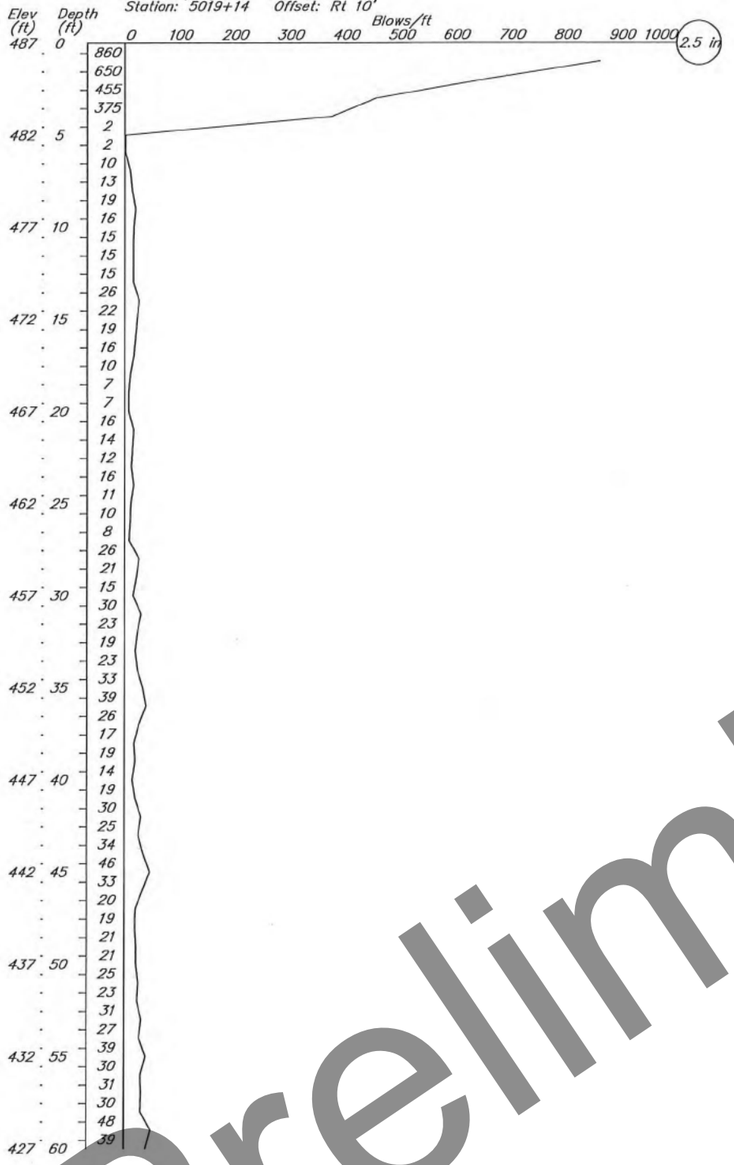
TEST HOLE & PENETROMETER LOGS

BRIDGE NO. 1371
DWG. NO. 16

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	NFHWY0097	2024	N17	N18

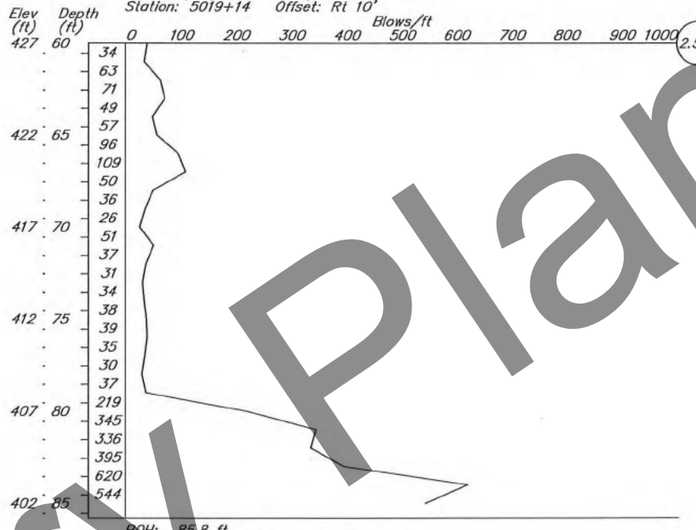
2I-6016(PEN-5)

Date: 12/14/20 – 12/15/20
Station: 5019+14 Offset: Rt 10'



2I-6016(PEN-5) (cont.)

Date: 12/14/20 – 12/15/20
Station: 5019+14 Offset: Rt 10'



BOH: 85.8 ft.
Hammer: CME Auto Hammer 340 lb hammer
Equipment: CME 55 Truck
Drilling Method: Penetrometer
Geologist: T. TANNENBAUM
Field Crew: M.SOUSA, S. PARKER, G. NELSON
Latitude: 64.767538 Longitude: -147.404442

R:\cad\1371\dwgs\1371_GEO_-5 PEN5 Jul 07, 2023 - 11:25am

DESIGNED BY: D. Hemstreet	CHECKED: Engineer		
DRAWN BY: R Angell	CHECKED: D. Hemstreet		
QUANTITIES BY: Engineer	CHECKED: Engineer		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
STATEWIDE MATERIALS

STATE OF ALASKA [redacted] REGISTERED PROFESSIONAL ENGINEER 7/7/23

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

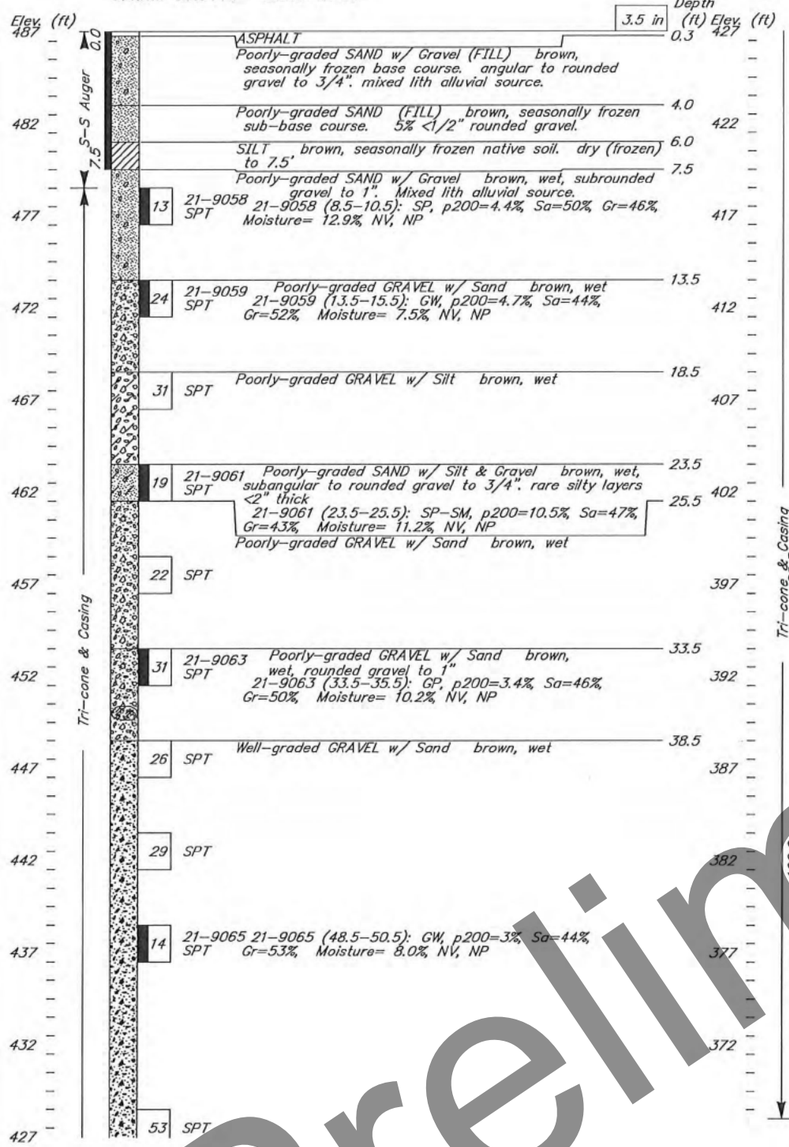
TEST HOLE & PENETROMETER LOGS

BRIDGE NO. 1371
DWG. NO. 17

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	NFHWY0097	2024	N18	N18

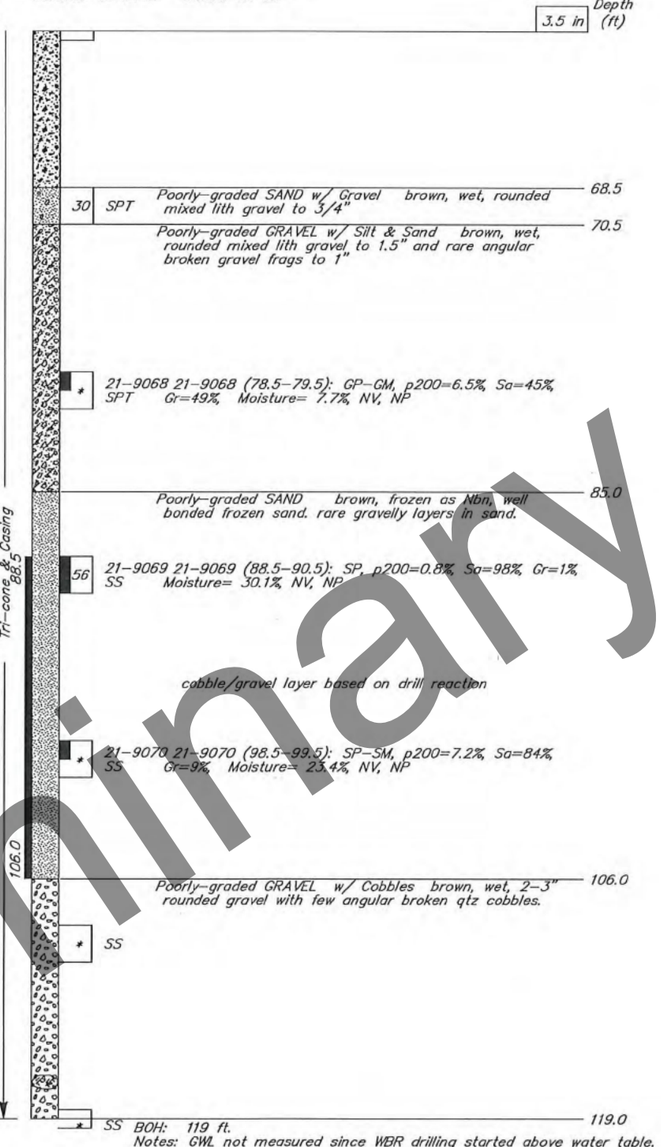
21-6013(TH-4)

Date: 1/21/21 – 1/23/21
Station: 5019+15 Offset: Rt 50'



21-6013(TH-4) (cont.)

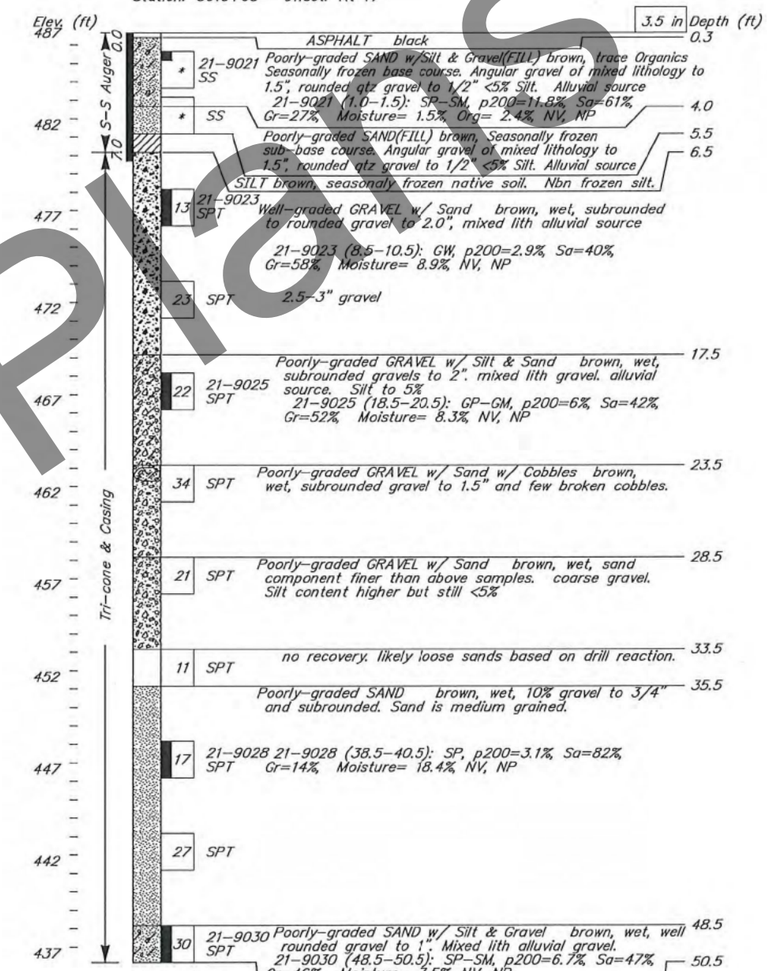
Date: 1/21/21 – 1/23/21
Station: 5019+15 Offset: Rt 50'



BOH: 119 ft.
Notes: GWL not measured since WBR drilling started above water table.
TH20-3602 has GWL @7' bgs in 8/20.Sample type SS is a 2.5" OD split spoon sampler driven by a 340# autohammer.
Hammer: CME Auto Hammer both 140 & 340 lb hammer
Equipment: CME 55 Truck
Drilling Method: Tricone
Geologist: T. TANNENBAUM
Field Crew: M. SOUSA, P. LANIGAN, T. HARTFORD, G. NELSON
Latitude: 64.767429 Longitude: -147.404487

21-6010(TH-6)

Date: 1/13/21 – 1/14/21
Station: 5019+65 Offset: Rt 17'



BOH: 50.5 ft.
Notes: GWL not measured since WBR drilling started above water table.
TH20-3602 has GWL @7' bgs in 8/20, sample type SS is a 2.5" OD split spoon sampler driven by a 340# autohammer.
Hammer: CME Auto Hammer both 140 & 340 lb hammer
Equipment: CME 55 Truck
Drilling Method: Tricone
Geologist: T. TANNENBAUM
Field Crew: P. LANIGAN, S. PARKER,
Latitude: 64.767491 Longitude: -147.40413

DESIGNED BY: D. Hemstreet	CHECKED: Engineer		
DRAWN BY: R Angell	CHECKED: D. Hemstreet		
QUANTITIES BY: Engineer	CHECKED: Engineer		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
STATEWIDE MATERIALS

STATE OF ALASKA [redacted] PROFESSIONAL 7/17/23

TWELVE MILE INTERCHANGE

RICHARDSON HIGHWAY

TEST HOLE & PENETROMETER LOGS

BRIDGE NO. 1371
DWG. NO. 18

R:\cad\1371\dwgs\1371_GEO_-6 TH4&6 Jul 07, 2023 - 11:25am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	Q1	Q2

ESCP GENERAL NOTES:

1. THIS ESCP IS A GENERAL PLAN FOR GUIDING THE DEVELOPMENT OF THE CONTRACTOR'S SWPPP. THE CONTRACTOR IS EXPECTED TO PROVIDE ADDITIONAL DETAILS AND BMPS BASED ON THE CONTRACTORS ACTUAL SCHEDULE AND CONSTRUCTION METHODS, AS REQUIRED TO COMPLY WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 641 OF THE PROJECT SPECIFICATIONS.
2. CONSTRUCTION ENTRANCE/EXIT MUST BE ESTABLISHED TO MINIMIZE OFF-SITE IMPACTS.
3. INSTALL PERIMETER CONTROL BMP WHEN WORKING WITHIN 25 FEET OF SURFACE WATERS AND ALONG WETLANDS WHERE A 25 FOOT VEGETATIVE BUFFER IS NOT RETAINED.
4. IF EXCAVATION DE-WATERING WILL OCCUR WITHIN 1,500FT OF AN ADEC IDENTIFIED CONTAMINATED SITE, THEN THE PROJECT MUST COMPLY WITH THE ADEC EXCAVATION DE-WATERING GENERAL PERMIT.
5. ALL IN-WATER WORK MUST BE ISOLATED FROM WATERS OF THE U.S. USING APPROPRIATE BMPS. ISOLATION METHODS MAY INCLUDE:
   - 5.1. SILT CURTAINS
   - 5.2. COFFERDAMS
   - 5.3. DIVERSIONS
   - 5.4. OTHER METHODS APPROVED BY THE ENGINEER
6. INLET / OUTLET PROTECTION REQUIRED FOR ALL CULVERTS, CROSSING CULVERT PROTECTION IS SHOWN ON THE ESCP SHEETS, DRIVEWAY CULVERTS ARE NOT SHOWN FOR VISUAL CLARIFICATION.
7. AREAS OF DISTURBANCE, TEMPORARY AND PERMANENT STABILIZATION, WILL BE MARKED AS WORK PROCEEDS AND ADDED TO THE LEGEND.
8. REFER TO APPENDIX A OF THE CONTRACT FOR ENVIRONMENTAL PERMIT INFORMATION.
9. REFER TO APPENDIX C OF THE CONTRACT FOR THE ESCP TEMPLATE.
10. VEGETATIVE BUFFER IS THE PREFERRED METHOD OF PERIMETER CONTROL FOR THIS PROJECT AND REFERENCES OF THE CORPS PERMIT.
11. IF THERE IS STANDING WATER OR EMERGENT WETLANDS IN THE 10 FT WORK AREA OF 25 FT VEGETATIVE BUFFER CONTRACTOR SHALL INSTALL AN ALTERNATIVE PERIMETER CONTROL BPM.

12.. ISOLATE IN-WATER WORK FROM WATERS OF THE U.S. USING DIVERSIONS, COFFER DAMS, OR OTHER BMPS APPROVED BY THE ENGINEER.

13 PERIMETER CONTROL IS NOT RECOMMENDED FOR CULVERTS WITH CONCENTRATED FLOWS. AS APPROVED BY THE ENGINEER USE FIBER ROLLS OR SILT FENCE RUNNING OVER THE TOP OF THE CULVERT FOLLOWING THE TOE OF SLOPE/DISTURBANCE LIMIT.

10. AS DIRECTED BY THE ENGINEER, FOR STEEPER GRADE AREAS CHECK DAMS MAY BE REQUIRED.

ENVIRONMENTAL COMMITTMENTS:

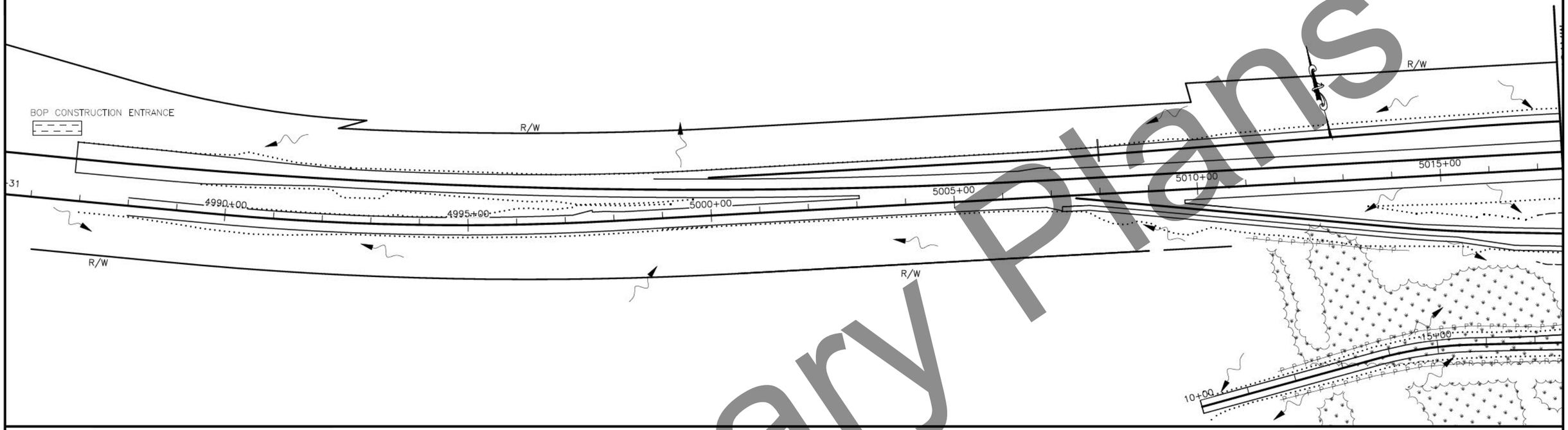
LEGEND:

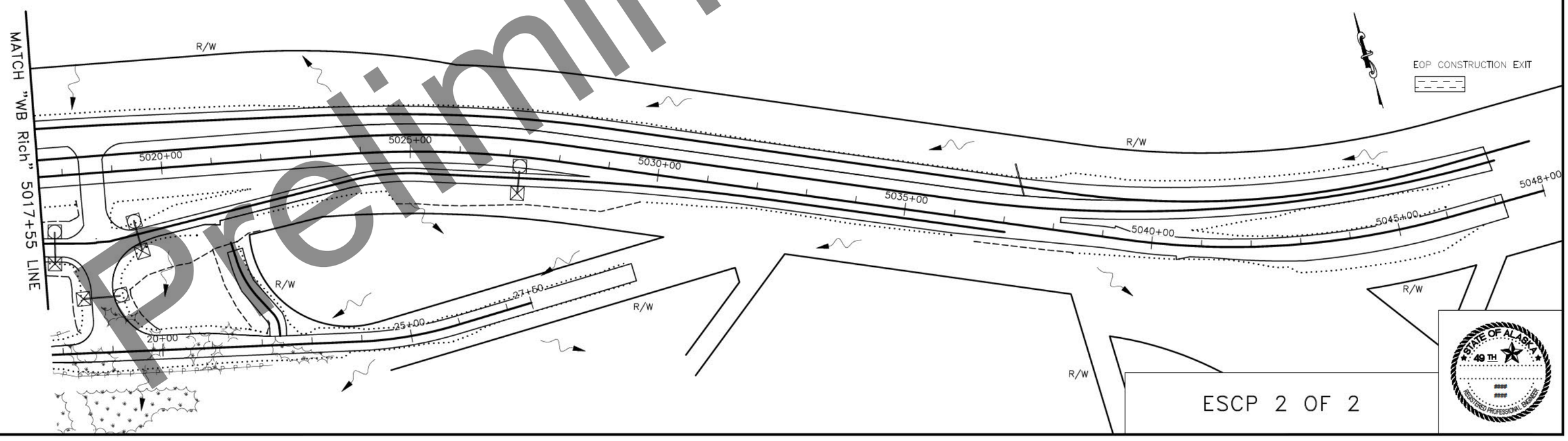
- WETLANDS
- CULVERT
- RIPRAP
- PERIMETER CONTROL
- INLET PROTECTION
- OUTLET PROTECTION
- EXISTING SURFACE FLOW DIRECTION
- CONSTRUCTION ENTRANCE AND EXIT

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\90097_ESCP-ESCP Wed, Jul/19/23 03:17pm

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	Q2	Q2





ESCP 2 OF 2

STATE OF ALASKA
49 TH
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\90097_ESCP-ESCP 2 of 2 Wed, Jul/19/23 03:18pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	T1	T9

STAGING AND TRAFFIC NOTES:

1. NO WORK AFFECTING MAINLINE RICHARDSON HIGHWAY WILL BE ALLOWED IN 2023 CONSTRUCTION YEAR.
2. CONSTRUCT THE KTORICH CONNECTOR ROAD AND PROVIDE A TEMPORARY ACCESS CONFIGURATION TO THE RICHARDSON HIGHWAY PRIOR TO REMOVING EXISTING RICHARDSON HIGHWAY ACCESS AT KEENEY ROAD.
3. MAINTAIN RICHARDSON HIGHWAY EASTBOUND ACCESS TO OLD RICH BUSINESSES. WESTBOUND RICHARDSON HIGHWAY TRAFFIC WILL ACCESS THE OLD RICH VIA OUT OF DIRECTION TRAVEL AND UTILIZATION OF ANY OF THE MULTIPLE OFF PROJECT U TURN OPPORTUNITIES WHICH EXIST ON THE RICHARDSON HIGHWAY BETWEEN THE PROJECT AND FAIRBANKS.
4. THE ON AND OFF RAMP DESIGN FOOT PRINTS WILL BE USED TO CONSTRUCT A DIVERSION AROUND THE MAJORITY OF THE SOUTHERN MAINLINE WORK.
5. NO LEFT TURNS WILL BE ALLOWED FOR RICHARDSON HIGHWAY ACCESS WITH IN THE PROJECT.
6. SINGLE LANE TRAFFIC WILL BE ALLOWED ON THE RICHARDSON HIGHWAY DURING CONSTRUCTION.
7. NO MORE THAT 20 VEHICLES MAY BE QUEUED DURING A TRAFFIC STOP CONDITION AND THE ENTIRE QUEUE MUST BE CLEARED WHEN A QUEUE IS RELEASED.
8. PRIOR TO ANY WINTER SHUTDOWN PAVING AND STRIPING MUST IN PLACE.
9. DIVERSIONS OF THE RICHARDSON HIGHWAY WILL BE PAVED WITH ATB.

STAGE 1A

1. CONNECT KEENEY RD. TO THE OLD RICH BY CONSTRUCTING KTORICH. CONSTRUCT THE UNDERPASS FROM THE KTORICH INTERSECTION THRU THE DIVERSION INTERSECTION. MATCH INTERSECTION UNDERPAS GRADE AT INTERSECTION WITH DIVERSION TO DIVERSION PROFILE. MAINTAIN ACCESS TO THE RICHARDSON HIGHWAY FROM THE OLD RICH AND KTORICH AS DIRECTED BY THE ENGINEER.

2. CROSS OVER EASTBOUND RICHARDSON HIGHWAY TRAFFIC ONTO SHARED WESTBOUND LANES. ONE LANE IN EACH DIRECTION..

3. CONSTRUCT EASTBOUND MAINLINE GRADE TO TOP ATB AND DIVERSION MATCH POINT. CONSTRUCT DIVERSION ALIGNMENT IN THE ON AND OFF RAMP LOCATIONS TO DESIGN ATB FINAL GRADE WITH A 28' WIDE TOP WIDTH. MAINTAIN THE DESIGN ON AND OFF RAMP SOUTH EDGE OF ASPHALT AND BUILD NORTH TO REACH 28' WIDTH. EXCESS ATB AND FILL WILL BE REMOVED FROM NORTH SIDE ONCE TRAFFIC DIVERSION IS NO LONGER NEEDED. REMOVAL OF FILL AND PAVEMENT WILL BE PAID UNDER CORRESPONDING PAY ITEMS.

STAGE 1B

1. CROSS OVER EAST AND WEST BOUND TRAFFIC ON THE RICHARDSON HIGHWAY TO THE DIVERSION ALIGNMENT.

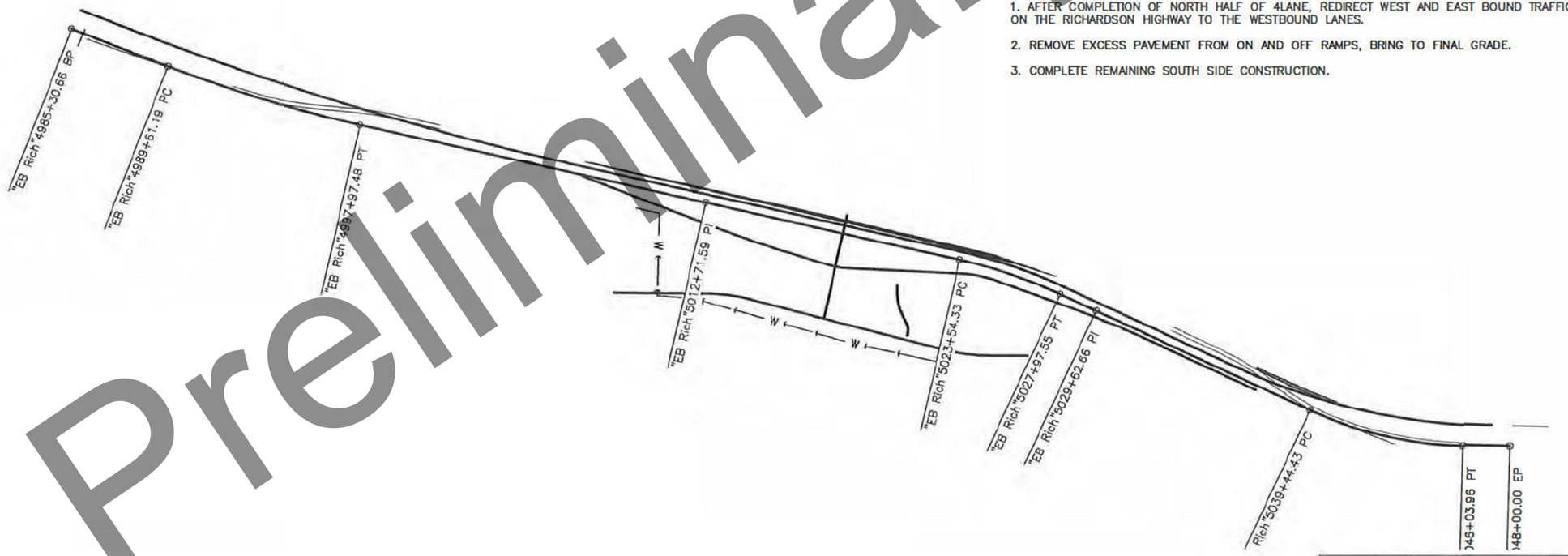
2. CONSTRUCT NORTH HALF OF PROJECT.

STAGE 2A

1. AFTER COMPLETION OF NORTH HALF OF 4LANE, REDIRECT WEST AND EAST BOUND TRAFFIC ON THE RICHARDSON HIGHWAY TO THE WESTBOUND LANES.

2. REMOVE EXCESS PAVEMENT FROM ON AND OFF RAMPS, BRING TO FINAL GRADE.

3. COMPLETE REMAINING SOUTH SIDE CONSTRUCTION.

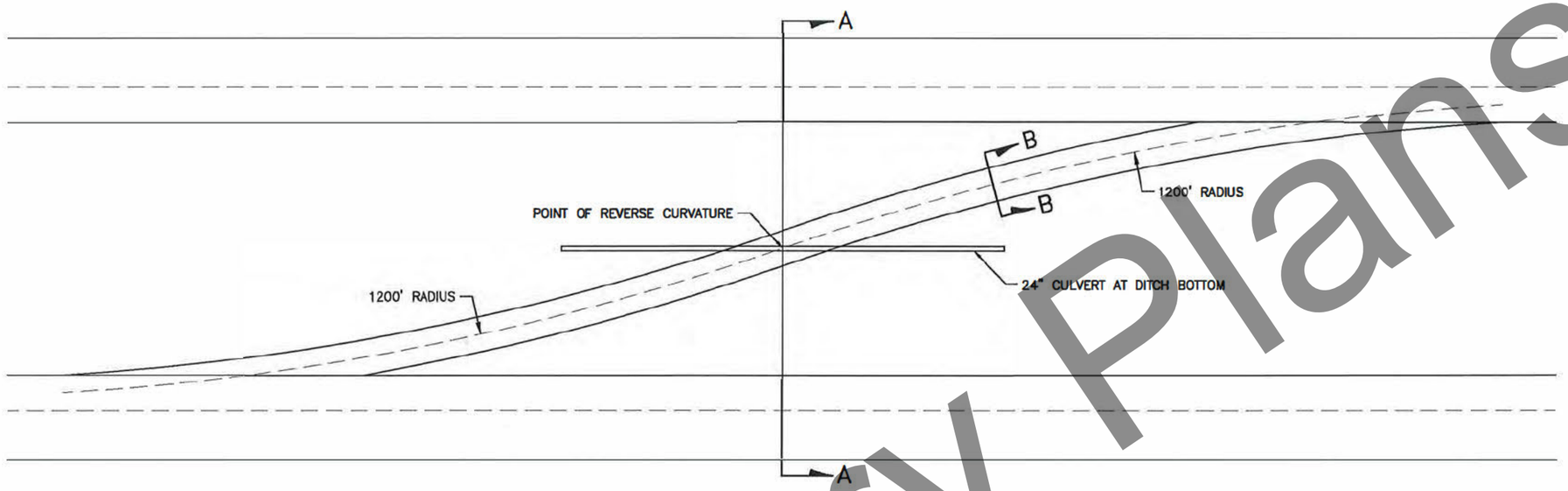


STAGING AND TRAFFIC NOTES

STATE OF ALASKA
[redacted]
PROFESSIONAL ENGINEER
7/20/2023

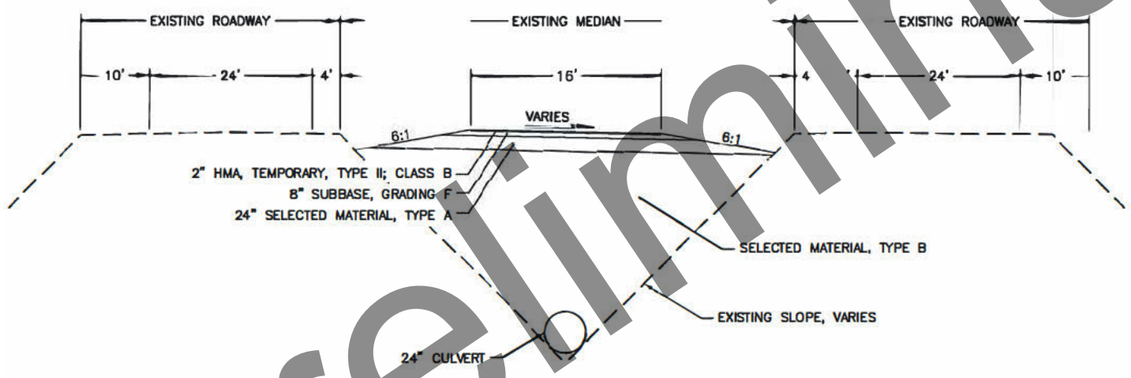
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_rich_351_int\Design\C3D\Plots\90097-STAGINGATRAFFIC-STAGING AND TRAFFIC NOTES Wed, Jul/19/23 04:34pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	T2	T9



MEDIAN CROSSOVER PLAN VIEW

USE REVERSE OF THIS DETAIL FOR WORK ON THE NORTH ROADWAY PRISM



SECTION A–A

MEDIAN CROSSOVER DIVERSION DETAIL

DESIGN SPEED: 45 MPH

CROSSOVER DETAIL

[redacted]

7/24/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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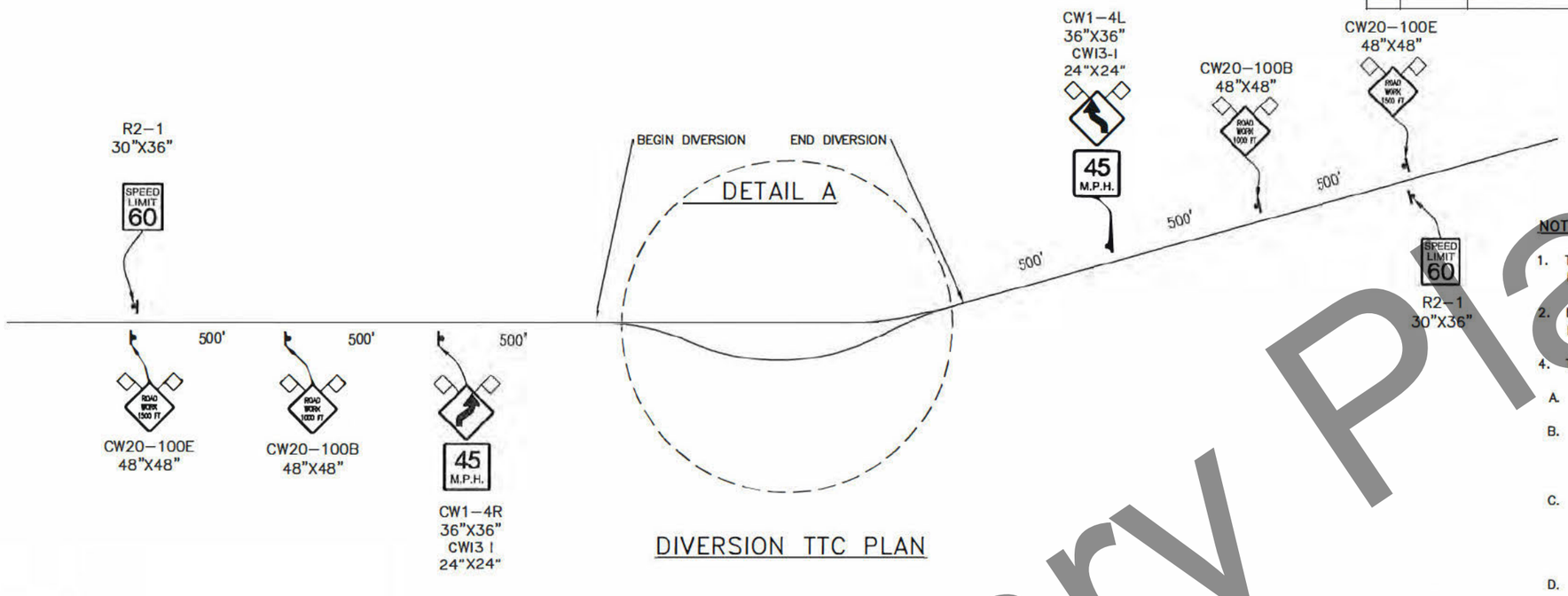
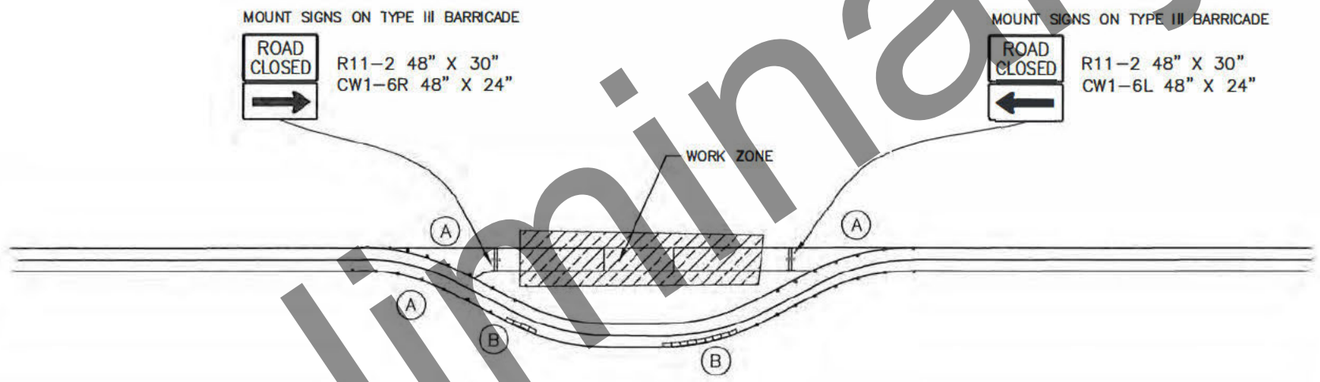
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	T3	T9



DIVERSION TTC PLAN



DETAIL A

NOTES:

1. THIS TTC PLAN IS A SCHEMATIC DIAGRAM, NOT TO SCALE, AND MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS.
2. MOUNT ALL SIGNS TO A HEIGHT OF 5' FROM BOTTOM OF SIGN PANEL TO TOP OF PAVEMENT.
4. TERMINATE CONCRETE BARRIER AS FOLLOWS:
   - A. CONNECT TO A PORTABLE CRASH CUSHION, OR
   - B. PROVIDE A CONCRETE BARRIER WITH THRIE BEAM TRANSITION TO W-BEAM GUARDRAIL, TREATED WITH A PARALLEL TERMINAL (SEE SECTION 710), OR
   - C. FLARE THE ENDS OF THE CONCRETE BARRIER AWAY FROM THE ROADWAY AT A RATE OF 7:1 ON A COMPACTED SLOPE OF 6:1 OR FLATTER UNTIL IT IS OUTSIDE THE CLEAR AREA. INSTALL A SLOPING CONCRETE BARRIER END SECTION, OR
   - D. BURY IN THE BACKSLOPE.
6. INSTALL TEMPORARY END TERMINALS PER MANUFACTURER'S RECOMMENDATIONS AND AS DIRECTED BY THE ENGINEER.
7. TEMPORARY END TERMINALS MUST BE RATED NCHRP 350 OR MASH TEST LEVEL 3.
8. INTERCONNECT AND PIN ALL CONCRETE BARRIERS.
9. CONCRETE BARRIERS MUST BE "F" SHAPE PER STANDARD DRAWING G–47.00 UNLESS OTHERWISE APPROVED BY THE ENGINEER.

= CONCRETE BARRIERS

= TYPE III BARRICADE

= CONSTRUCTION SIGN

= FLEXIBLE DELINEATOR

(A) PLACE DELINEATORS EVERY 45' ALONG DETOUR EXCEPT AT CONCRETE BARRIERS .

(B) PLACE CONCRETE BARRIER WITH END TREATMENTS PER THE "DETOUR BARRIER SUMMARY".

TRAFFIC MAINTENANCE SETUP

OF AL

PROFESSIONAL

7/20/2023

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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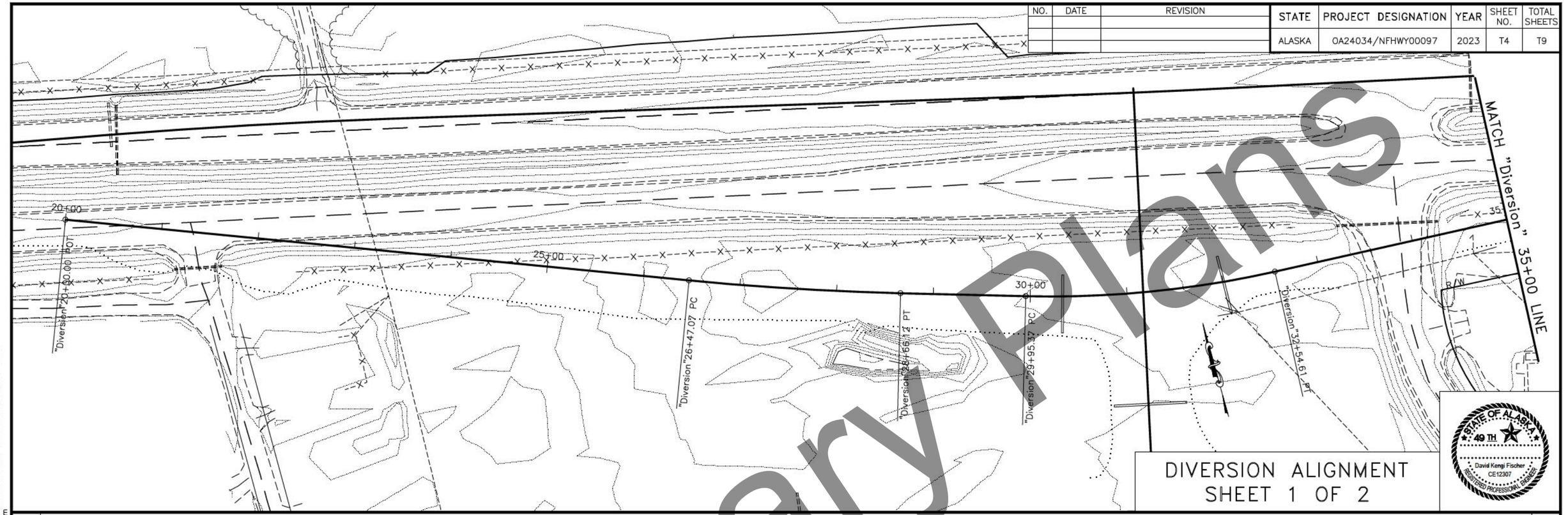
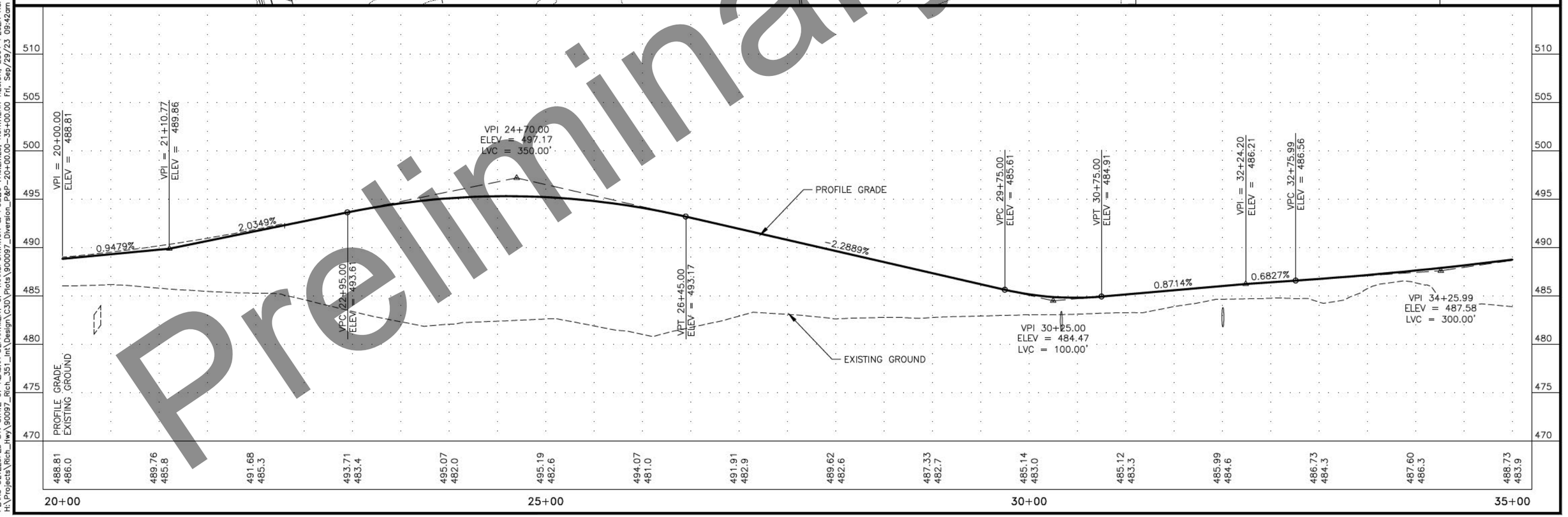
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	T4	T9



DIVERSION ALIGNMENT
SHEET 1 OF 2



STATE OF ALASKA
49 TH
David Kengi Fischer
CE12307
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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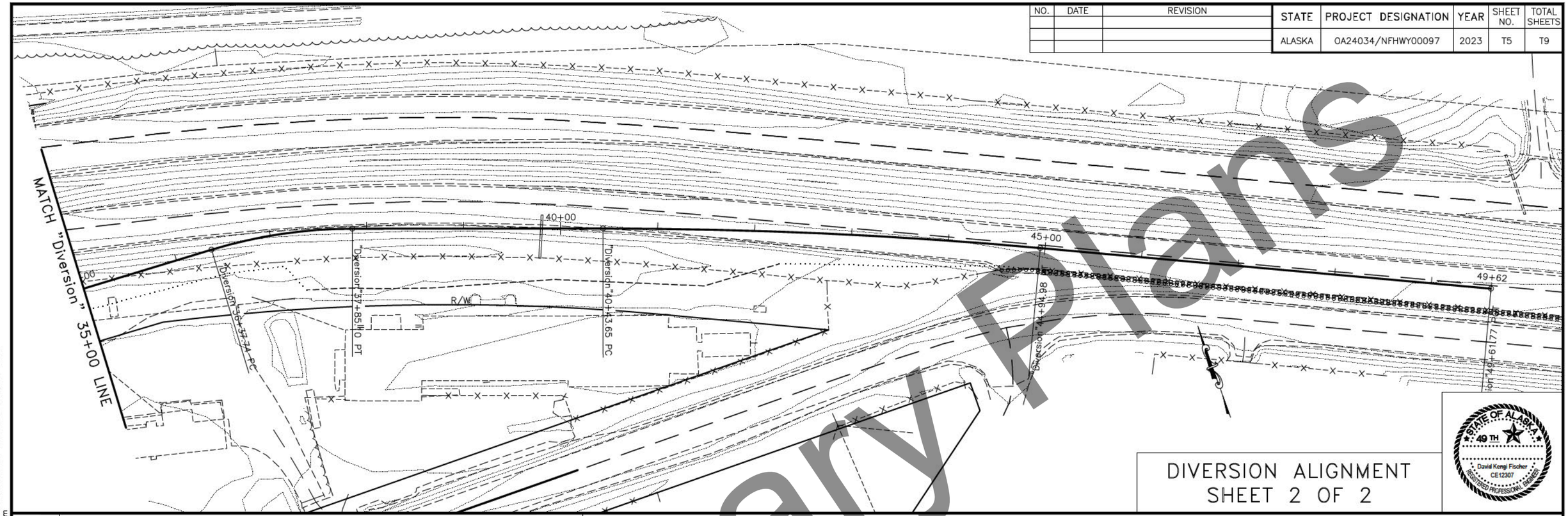
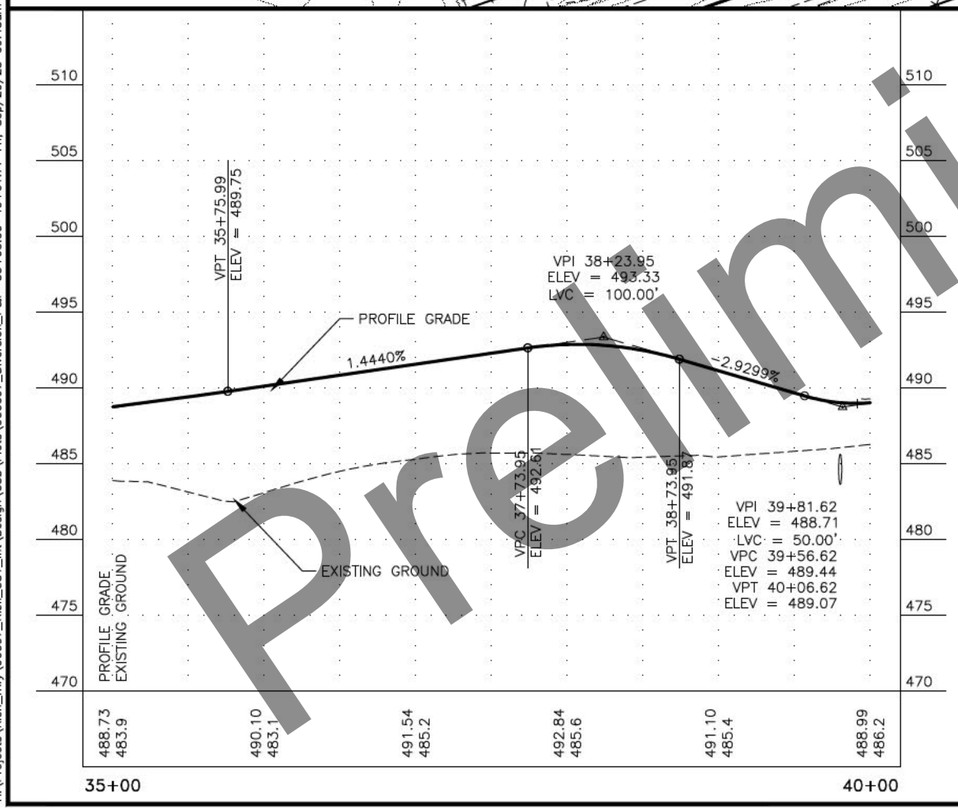
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	T5	T9



DIVERSION ALIGNMENT
SHEET 2 OF 2



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy_90097_Rich_351_Int\Design\C3D\Plots\900097_Diversion_P&P-35+00.00-49+61.77 Fri, Sep/29/23 09:43am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	T6	T9

4974+34.07–4989+94.07

STATE OF ALASKA
49 TH
###
###
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_TrafficControl-4974+34.07-4989+94.07 Fri, Sep/29/23 09:44am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	T7	T9

MATCH "Rich North Phase 1A" 5005+54 LINE

MATCH "Rich North Phase 1A" 5021+14 LINE

5010+00

5015+00

5020+00

5025+00

5030+00

5035+00

"Rich North Phase 1A" 5023+23.25 PC

"Rich North Phase 1A" 5028+57.25 PT

Rich North Phase 1A" 5036+74 LINE

5005+54.07–5021+14.07

STATE OF ALASKA 49TH REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Rich_Hwy\90097_Rich_351_Int\Design\C3D\Plots\90097_TrafficControl-5005+54.07-5021+14.07 Fri, Sep/29/23 09:45am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	T8	T9

"Rich North Phase 1A" 5036+74 LINE

R1208.00

5040+00

"Rich North Phase 1A"5038+42.30 PC

5045+00

"Rich North Phase 1A"5046+27.94 PT

"Rich [East_TCP]"5050+00

5050+00

5055+00

"Rich North Phase 1A" 5052+34 LINE

5055+00

5060+00

"Rich [East_TCP]"5056+86.9

"Rich North Phase 1A"5056+89.17 PC

"Rich [East_TCP]"5060+66.23 PC

5060+00

5065+00

"Rich North Phase 1A"5064+20.13 PT

"Rich [East_TCP]"5068+42.57 PT

5065+00

5070+00

"Rich North Phase 1A" 5052+34 LINE

5036+74.07–5052+34.07

STATE OF ALASKA 49TH

REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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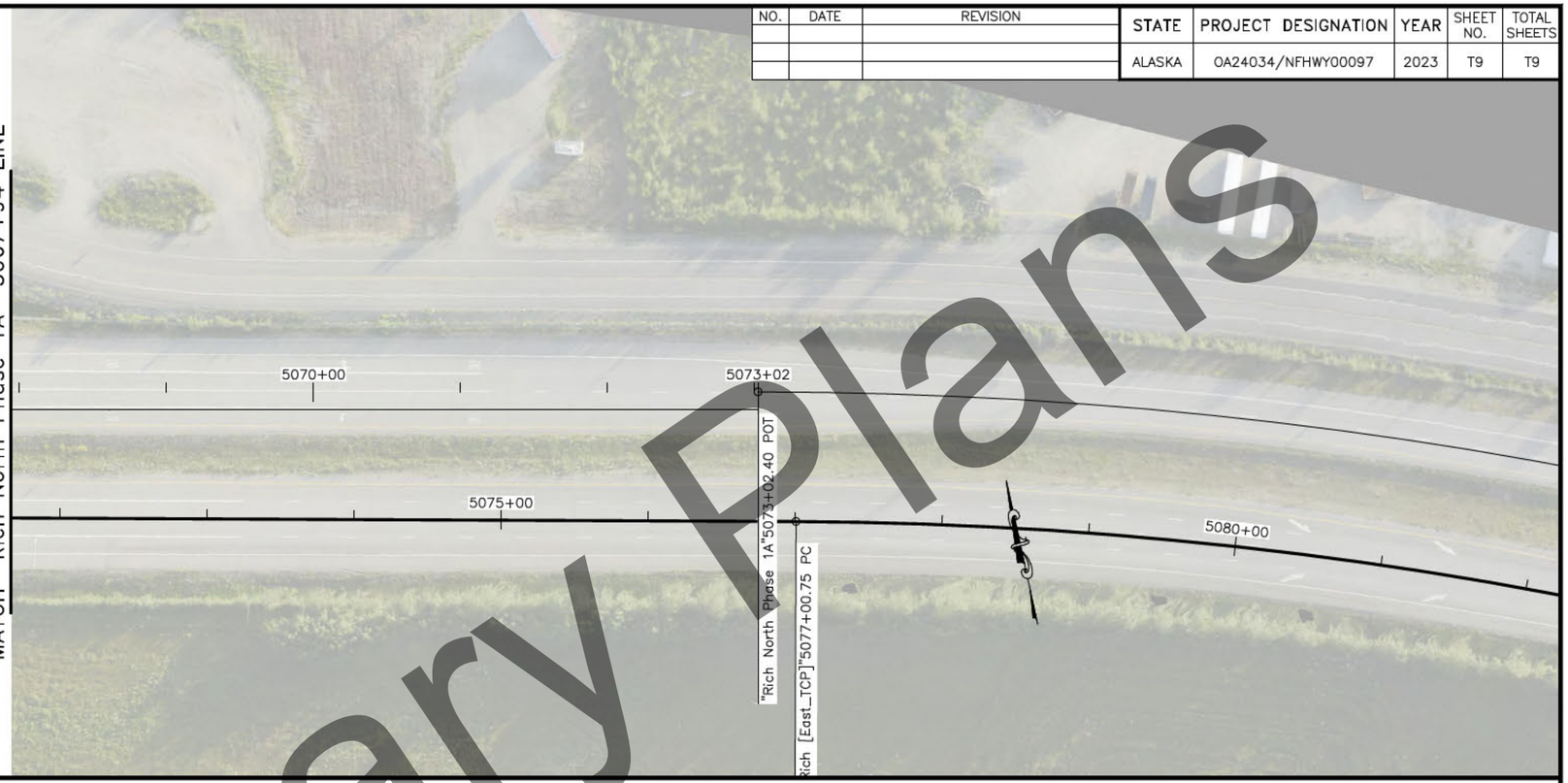
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	T9	T9



5067+94.07–5073+02.40

STATE OF ALASKA
49 TH
###
###
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
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NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	U1	U6

SHEET INDEX

WATER CONSTRUCTION NOTES

1. CITY OF NORTH POLE, FIRE DEPARTMENT, AND CUSTOMERS SHALL BE NOTIFIED SEVENTY–TWO (72) HOURS IN ADVANCE OF WATER SERVICE INTERRUPTION. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY WATER SERVICE TO THE EXISTING CUSTOMERS IF THE OUTAGE EXCEEDS 6–HOURS OR IF DEEMED NECESSARY BY THE CITY OF NORTH POLE. THE CONTRACTOR SHALL HAVE A TEMPORARY WATER SERVICE PLAN REVIEWED AND APPROVED BY ADEC AND THE ENGINEER.
2. CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH A WORK PLAN AND SCHEDULE PREPARED BY THE CONTRACTOR AND ACCEPTED BY THE OWNER, CONSISTENT WITH THE LIMITATIONS AND TIME OF PERFORMANCE SPECIFIED IN THE SPECIAL PROVISIONS.
3. IN CASE OF CONFLICT BETWEEN STATIONING LOCATION OF PIPE OR FITTINGS, THE DIMENSIONED LOCATIONS SHALL GOVERN, RELATIVE TO THE CENTERLINE AND PROPERTY LINE.
4. ALL VALVES, BENDS, TEES, FIRE HYDRANTS, JOINTS, AND DEAD–ENDS SHALL HAVE RESTRAINED FITTINGS.
5. THRUST RESTRAINT SHALL BE PROVIDED BY USE OF FUSED HDPE JOINTS, FLANGES, FIELD–LOK GASKETS (OR EQUAL) OR MEG–A–LUG FITTINGS (OR EQUAL) ON ALL MECHANICAL JOINTS, THE USE OF THRUST BLOCKS WILL NOT BE ALLOWED UNLESS SHOWN.
6. TOP OF WATERMAIN TO BE MINIMUM OF 5 FEET BELOW FINISHED GRADE, UNLESS NOTED OTHERWISE
7. ALL WATER PIPE SPRAY ON INSULATION (AT JOINTS ONLY) SHALL BE POLYURETHANE FOAM WITH A COMPRESSIVE STRENGTH OF 45 PSI FOR UNDERGROUND INSTALLATIONS AND A THICKNESS OF AT LEAST 3 INCHES.
8. THE CONTRACTOR SHALL OPEN BORE FLUSH THE NEWLY INSTALLED WATER MAIN PRIOR TO INSTALLATION OF WATER SERVICES. PROVIDE A MINIMUM OF 48 HOURS ADVANCE NOTICE TO CITY OF NORTH POLE AND ENGINEER.
9. DISINFECT WATER MAINS AND SERVICES PER AWWA C651, AND ADEC REGULATIONS. THE CONTRACTOR SHALL DE–CHLORINATE ALL DISCHARGED DISINFECTION SOLUTION IN ACCORDANCE WITH AWWA C655.
10. ALL MATERIALS IN DIRECT CONTACT WITH WATER MUST BE CERTIFIED BY AN ANSI ACCREDITED ORGANIZATION TO CONFORM TO ANSI/NSF STANDARD 61. MATERIALS SHALL ALSO BE "LEAD FREE" AND NOT CONTAIN MORE THAN 0.2 PERCENT LEAD WHEN USED WITH RESPECT TO SOLDER AND FLUX AND NO MORE THAN 0.25 PERCENT LEAD BY WEIGHTED AVERAGE WITH RESPECT TO SURFACES IN CONTACT WITH WATER.
11. ALL ADDITIVES TO THE WATER (E.G. DISINFECTANTS) SHALL BE CERTIFIED BY AN ASNI ACCREDITED ORGANIZATION TO CONFORM TO ANSI/NSF STANDARD 60 FOR USE IN A POTABLE WATER SYSTEM.

GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE CITY OF NORTH POLE STANDARD SPECIFICATIONS AND DETAILS FOR UTILITY CONSTRUCTION, THE PROJECT SPECIFICATIONS, ADEC REGULATIONS AND THE GENERAL AND SPECIAL PROVISIONS OF THE CONSTRUCTION CONTRACT. IN THE EVENT OF CONFLICT, THE PROJECT SPECIFICATIONS AND SPECIAL PROVISIONS SHALL PREVAIL.
2. LOCATIONS AND DEPTHS OF EXISTING UTILITIES TO BE CONFIRMED BY CONTRACTOR IN THE FIELD. ANY CONFLICTS WITH PROPOSED UTILITIES ARE TO BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVISION AND COSTS FOR ALL UTILITY CROSSINGS AND COORDINATION WITH AFFECTED UTILITY COMPANIES. UTILITY MAPPING ON PLANS IS BASED ON SYSTEM MAPS PROVIDED BY UTILITIES AND DOES NOT REPRESENT EXACT LOCATIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL BURIED UTILITIES PRIOR TO BEGINNING CONSTRUCTION. BE AWARE THAT NOT ALL UTILITIES INCLUDING GVEA PARTICIPATE IN THE ALASKA DIGLINE.
4. LIGHT POLES AND ASSOCIATED CIRCUITS ARE PRESENT ALONG SOME PIPELINES. CONTACT ADOT FOR LOCATES OF LIGHTING CIRCUITS. THESE LOCATES ARE NOT COVERED BY THE ALASKA DIGLINE.
5. CONTRACTOR SHALL VERIFY AND RECORD THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED IN THE FIELD AND RECORD ANY CHANGES ON THE CONTRACTOR'S RECORD PLANS.
6. MAINTAIN A MINIMUM OF TEN (10) FEET HORIZONTAL SEPARATION BETWEEN WATER AND SANITARY SEWER MAINS AND SERVICES. A MINIMUM VERTICAL SEPARATION OF EIGHTEEN (18) INCHES SHALL BE MAINTAINED AT ALL WATER/SEWER CROSSINGS.
7. CONTRACTOR SHALL PERFORM ASBUILT SURVEY OF ROAD, DRIVEWAY, AND DRAINAGE ALIGNMENT AND ELEVATIONS PRIOR TO EXCAVATION AND RETAIN DATA FOR USE IN RESTORATION OF THESE FEATURES.
8. THE CONTRACTOR SHALL RECORD SURVEY NOTES FOR SUBMITTAL WITH RECORD DRAWING PLANS PRIOR TO CONTRACT FINAL PAYMENT.
9. CONTRACTOR SHALL MAINTAIN "REDLINE" RECORD PLANS ON A CLEAN SET OF CONSTRUCTION PLANS. THE "REDLINES" SHALL BE KEPT CURRENT ON A DAILY BASIS AND SHALL BE AVAILABLE FOR INSPECTION ON THE JOB SITE.

PLANS DEVELOPED BY: STANTEC CONSULTING SERVICES, 725 E FIREWEED LANE, SUITE 200, ANCHORAGE, AK 99503 AUTHORIZATION TO PRACTICE # AECC1277
U:\2073017000\drawing\sheets\U1–GENERAL–NOTES–U1 Mon, Jul/10/23 11:54am

SHEET INDEX & GENERAL NOTES

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	U2	U6

EXISTING HYDRANT ASSEMBLY, VALVE, AND (2) BOLLARDS

EXISTING 8" HDPE WATER LINE TO REMAIN

START IN PLACE PIPE ABANDONMENT
N: 170174.3021
E: 725623.4649

EXISTING 8" HDPE WATER LINE

SALVAGE WATER VALVE

ABANDON EXISTING 8" HDPE WATER LINE IN PLACE, FILL WITH CEMENT GROUT AND CAP ALL ENDS

EXISTING WATER SERVICE AND CASING TO REMAIN

END IN PLACE PIPE ABANDONMENT
N: 169571.7154
E: 726881.5174

EXISTING 8" HDPE WATER LINE AND VALVE TO REMAIN

0 25 50 100 150 200
SCALE: 1"=50'

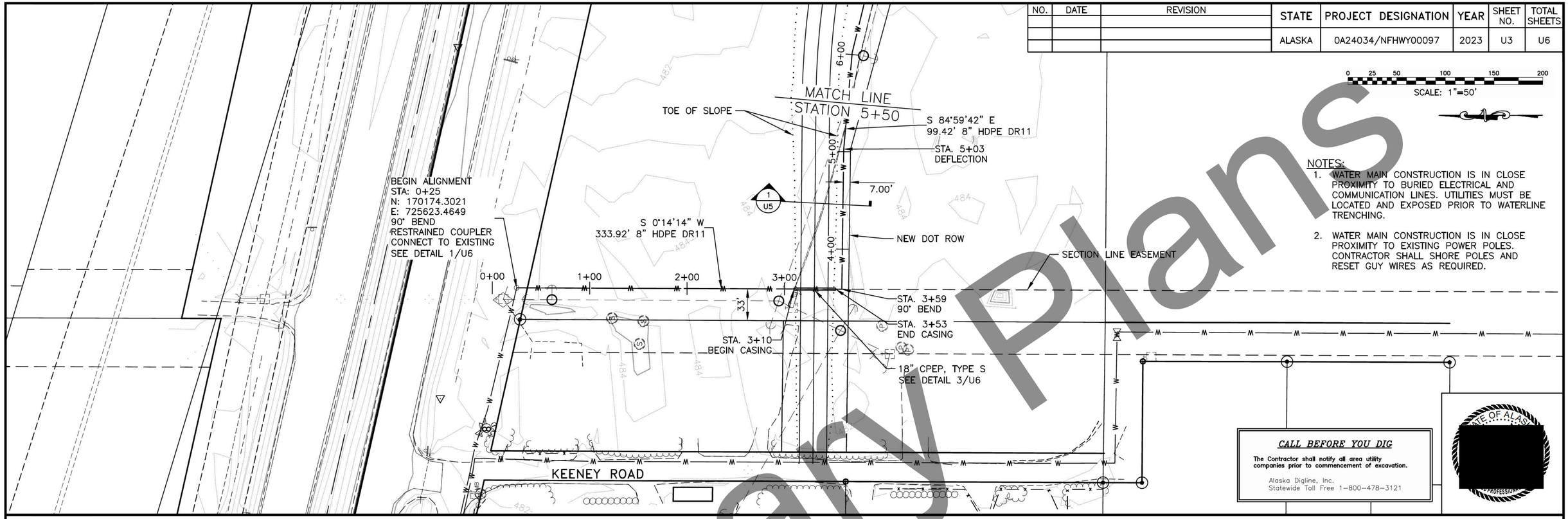
DEMOLITION SITE PLAN

STATE OF ALASKA

PLANS DEVELOPED BY: STANTEC CONSULTING SERVICES, 725 E FIREWEED LANE, SUITE 200, ANCHORAGE, AK 99503 AUTHORIZATION TO PRACTICE # AECC1277
U:\207301700O\drawing\sheets\U2-DEMO-SITE-U2 Mon, Jul/10/23 11:54am

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0A24034/NFHWY00097	2023	U3	U6



NOTES:

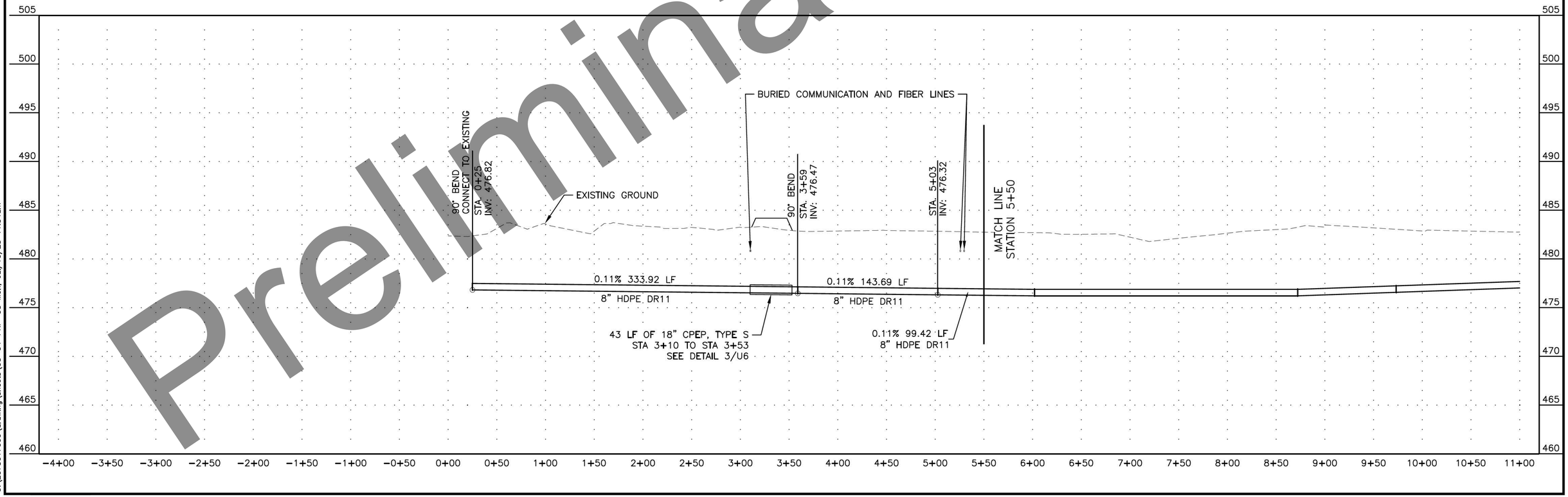
1. WATER MAIN CONSTRUCTION IS IN CLOSE PROXIMITY TO BURIED ELECTRICAL AND COMMUNICATION LINES. UTILITIES MUST BE LOCATED AND EXPOSED PRIOR TO WATERLINE TRENCHING.
2. WATER MAIN CONSTRUCTION IS IN CLOSE PROXIMITY TO EXISTING POWER POLES. CONTRACTOR SHALL SHORE POLES AND RESET GUY WIRES AS REQUIRED.

CALL BEFORE YOU DIG

The Contractor shall notify all area utility companies prior to commencement of excavation.

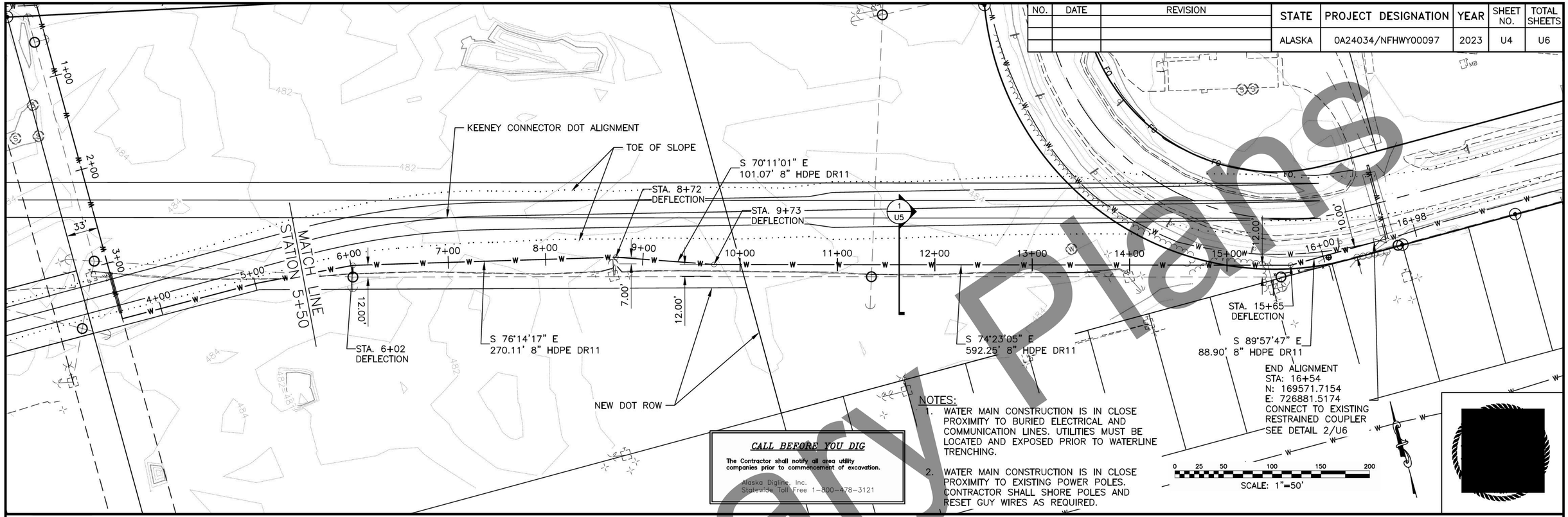
Alaska Digline, Inc.
Statewide Toll Free 1-800-478-3121

STATE OF ALASKA
[redacted]
PROFESSIONAL



PLANS DEVELOPED BY: STANTEC CONSULTING SERVICES, 725 E FIREWEED LANE, SUITE 200, ANCHORAGE, AK 99503 AUTHORIZATION TO PRACTICE # AECC1277
U:\207301700\drawing\sheets\U3-U4-PNP-U3 Mon, Jul/10/23 11:54am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	U4	U6



CALL BEFORE YOU DIG

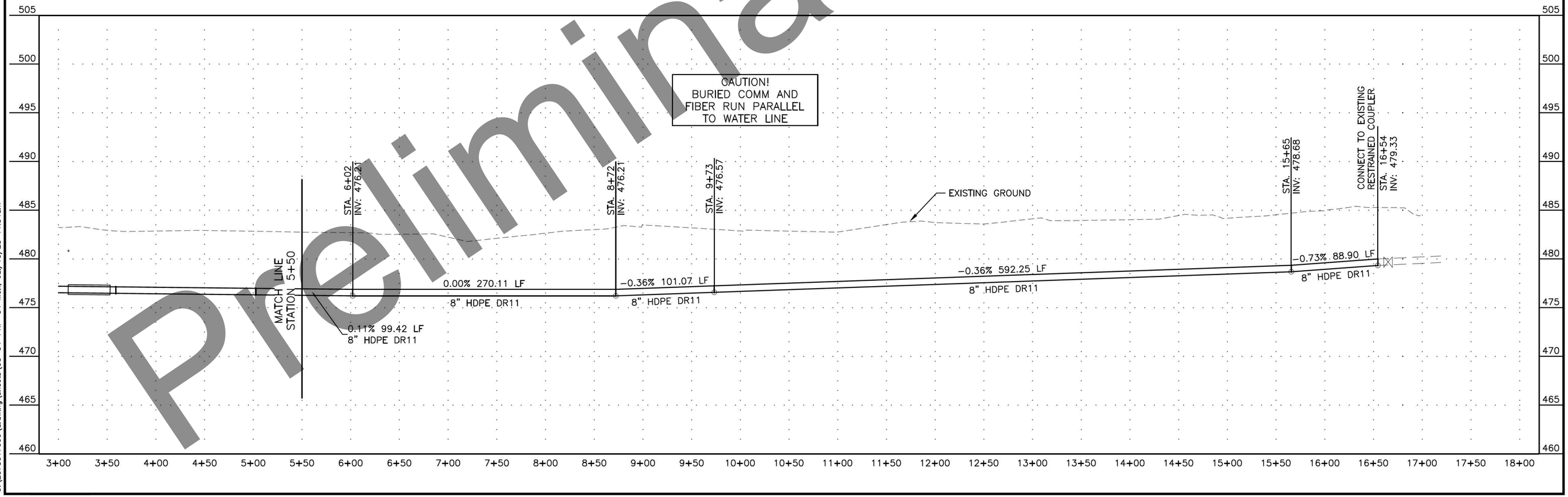
The Contractor shall notify all area utility companies prior to commencement of excavation.

Alaska Digline, Inc.
Statewide Toll Free 1-800-478-3121

NOTES:

1. WATER MAIN CONSTRUCTION IS IN CLOSE PROXIMITY TO BURIED ELECTRICAL AND COMMUNICATION LINES. UTILITIES MUST BE LOCATED AND EXPOSED PRIOR TO WATERLINE TRENCHING.
2. WATER MAIN CONSTRUCTION IS IN CLOSE PROXIMITY TO EXISTING POWER POLES. CONTRACTOR SHALL SHORE POLES AND RESET GUY WIRES AS REQUIRED.

0 25 50 100 150 200
SCALE: 1"=50'



NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
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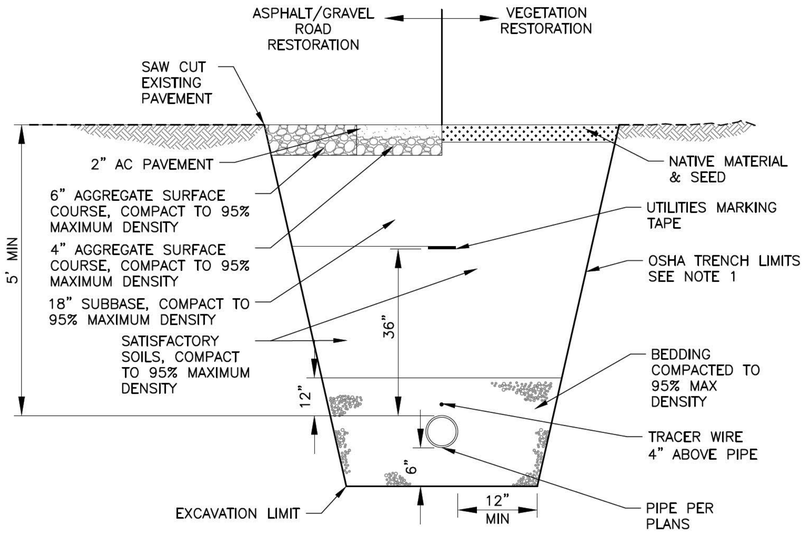
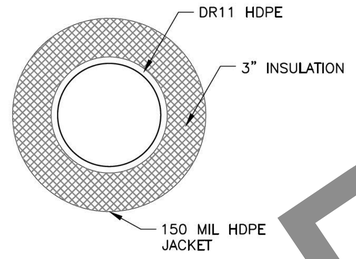


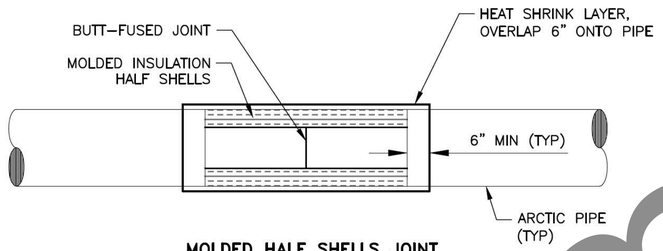
1 / U5 TRENCH SECTION
SCALE: NONE

UTILITY TRENCH NOTES:

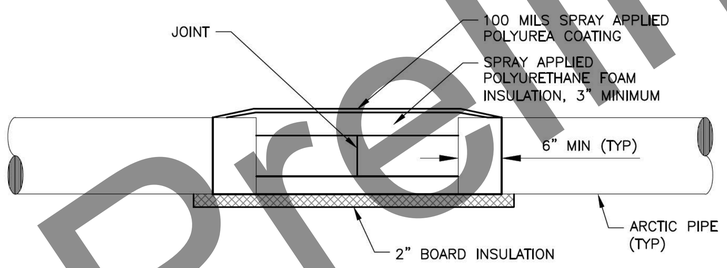
1. TRENCH WALL SLOPES WILL VARY WITH SOIL STRENGTH AND CHARACTER. SLOPES SHALL CONFIRM TO OSHA SAFETY STANDARDS.
2. SEED ALL DISTURBED AREAS.
3. TRENCH EXCAVATION MEETING MATERIAL SPECIFICATION MAY BE USED AS BACKFILL.
4. PROVIDE TRACER WIRE ON ALL UTILITY LINES.
5. SEE ROAD PLANS FOR SURFACING OF NEW ROADWAYS.



2 / U5 ARCTIC PIPE
SCALE: NONE



MOLDED HALF SHELLS JOINT



SPRAY APPLIED JOINT

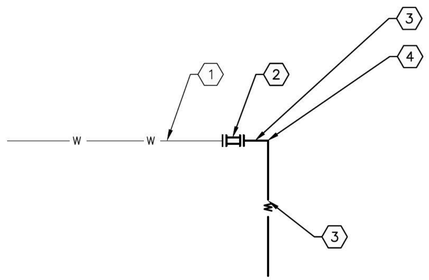
NOTES:

1. CONTRACTOR MAY CHOOSE PREFERRED INSULATED JOINT DETAIL.

3 / U5 FIELD INSULATED JOINT
SCALE: NONE

DETAILS – 1

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24034/NFHWY00097	2023	U6	U6

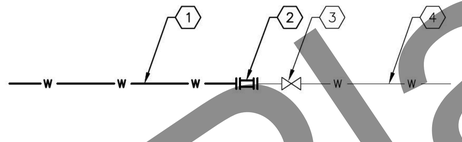


KEY NOTES (#)

1. EXISTING 8" HDPE WATER LINE
2. CONNECT TO EXISTING W/ RESTRAINED COUPLER, ROMAC ALPHA OR EQUAL
3. 8" HDPE WATER LINE
4. 90° HDPE BEND

1 / U6 CONNECTION TO EXISTING: STA 0+25

SCALE: NONE

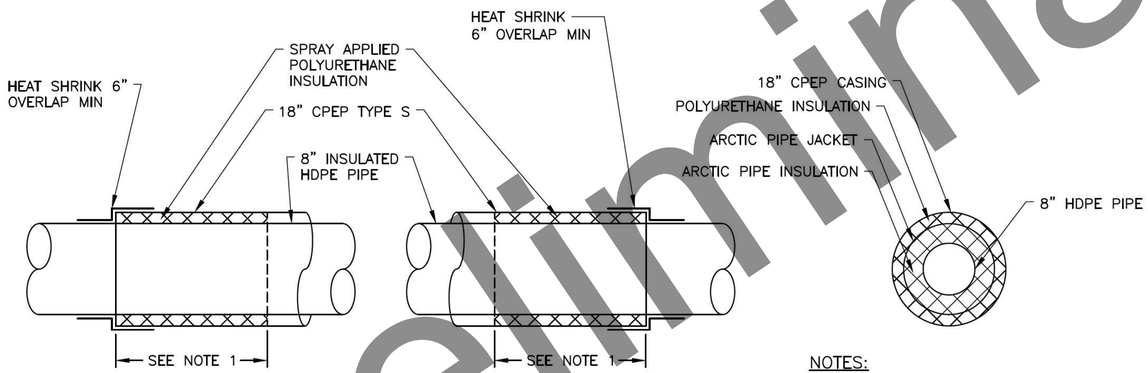


KEY NOTES (#)

1. 8" HDPE WATER LINE
2. CONNECT TO EXISTING W/ RESTRAINED COUPLER, ROMAC ALPHA OR EQUAL
3. EXISTING 8" GATE VALVE
4. EXISTING 8" HDPE WATER LINE

2 / U6 CONNECTION TO EXISTING: STA 16+54

SCALE: NONE



NOTES:

1. APPLY SPRAY FOAM INSULATION TO MAXIMUM DEPTH ABLE, UP TO 3 FT.

3 / U6 18" CPEP, TYPE S, CASING

SCALE: NONE

DETAILS – II

PLANS DEVELOPED BY: STANTEC CONSULTING SERVICES, 725 E FIREWEED LANE, SUITE 200, ANCHORAGE, AK 99503 AUTHORIZATION TO PRACTICE # AECC1277
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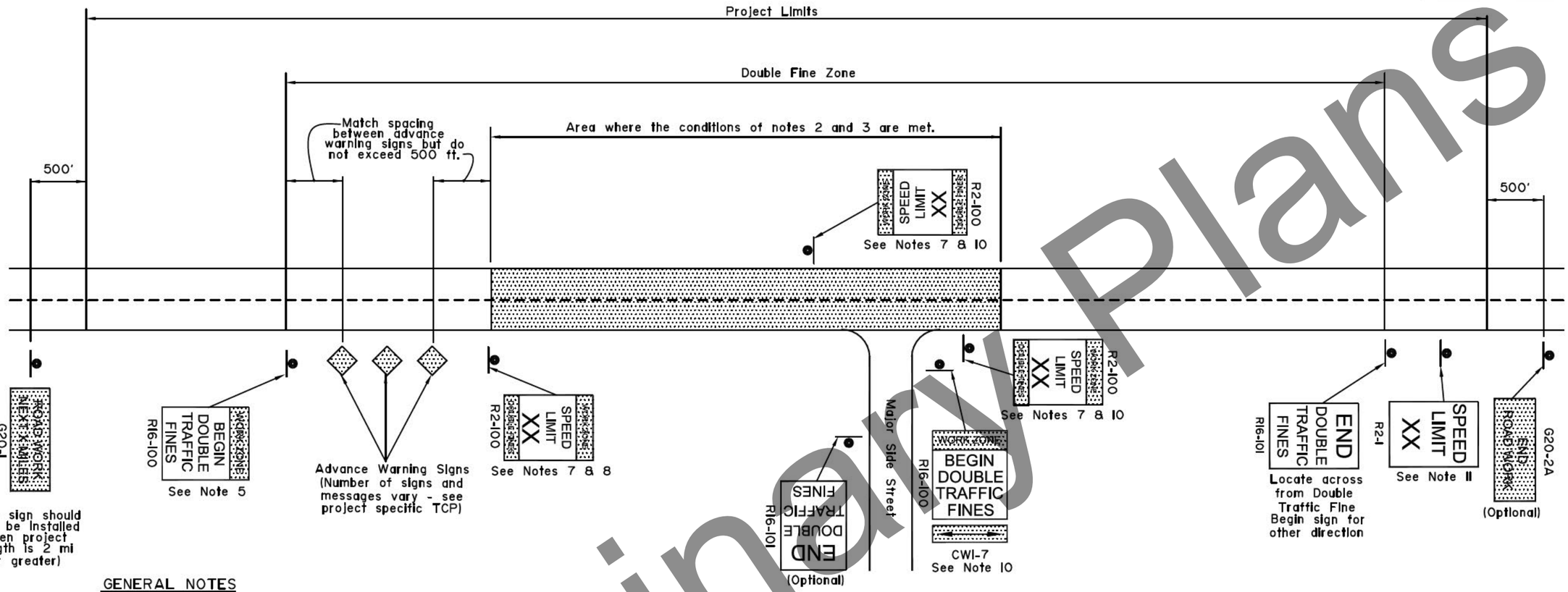
C-04.12 | SHEET 1 of 1



GENERAL NOTES

1. Signs are shown for one direction only (with one exception). Signs for the other direction mirror those shown.
2. Double fine signs shall be used only where one or more of the following conditions exist:
   a. Active work areas (where road workers and/or machines are presently working on or adjacent to a road)
   b. Detours on new temporary roads built for that purpose (this does not include detours on existing streets)
   c. Sections of paved roads where pavement has been removed.
   d. Roads being paved where unmatched asphalt lifts result in a vertical lip between lanes.
3. Double fine signs shall be confined to the areas where the above conditions exist, with the following exceptions:
   a. If the project is 2 miles or shorter in length, the entire project may be posted for double fines when the above conditions exist on any part of the project.
   b. When the above conditions exist at multiple locations separated by less than 2 miles, the locations and the intervening segments may be posted as a single double fine zone.
4. Double fine signs shall be removed or covered when work activity ceases for more than two days and conditions b, c, or d of note 2 are not met.
5. The R16-100 "BEGIN" sign may be used in place of the first advance warning sign. However, when this is done, the appropriate advance warning sign must be reinstalled when the double fine sign is taken down or covered.
6. When a double fine zone is longer than 2 miles, work zone speed limit signs shall be posted at spacings not greater than 2 miles within the double fine zone.
7. "Work zone speed limit signs", as used here, refer either to 1) R2-100 signs or 2) standard R2-1 regulatory speed limit signs with CW20-102 "DOUBLE FINES" plates mounted below.
8. The limit shown on work zone speed limit signs shall be either the existing limit before construction or, if a work zone speed limit order has been approved in accordance with ADOT&PF Procedure 05.05.020 PDR, a reduced limit.
9. All existing regulatory speed limit signs within double fine zones shall either be replaced with R2-100 signs or supplemented with CW20-102 plates.
10. Signs shall be installed at major intersections within the double fine zone to warn entering drivers of double fines. This may be done with a R16-100 sign with a CWI-7 arrow panel on the side street or with two work zone speed limit signs on the main street on either side of the intersection. Use of R16-100 signs on side streets eliminates the need for "Road Work Ahead" signs on those streets. If the speed limit has been reduced, the two work zone speed limit signs are mandatory.
11. At the end of each double fine zone, install an R2-1 sign showing the speed limit for the road beyond the double fine zone.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

LOCATION OF DOUBLE TRAFFIC FINE SIGNS

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

Next Code and Standards Review date: 02/08/2029

C-04.12

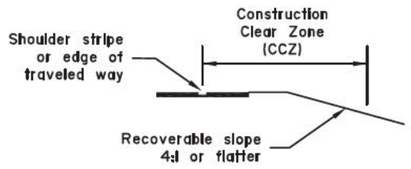


FIGURE 1

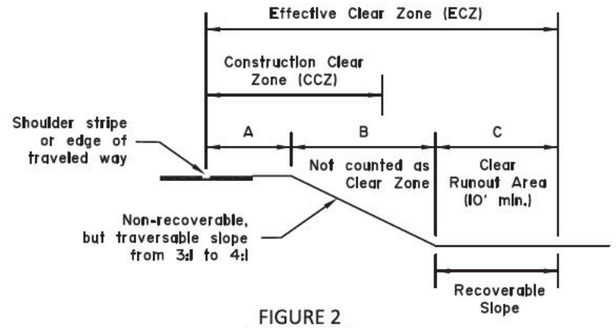


FIGURE 2

Table 1 - Width of Construction Clear Zone (feet)

Hazard	AADT	Posted Speed Limit (MPH)							
		<=30 MPH		35 to 40 MPH		45 to 55 MPH		>=60 MPH	
		6:1 or flatter	5:1 to 4:1	6:1 or flatter	5:1 to 4:1	6:1 or flatter	5:1 to 4:1	6:1 or flatter	5:1 to 4:1
Fill (Fore) & Cut (Back) Slopes	Under 750	5'	5'	6'	8'	8'	12'	12'	16'
	750 - 6,000	6'	10'	8'	12'	14'	18'	20'	26'
	Over 6,000	10'	10'	12'	14'	16'	20'	22'	28'
Fixed Objects	All	15'		30'					

Table 2 - Treatment for Hazards Within Construction Clear Zone

Roadside Condition to be Treated	Category	Treatment
Fill (Fore) Slopes, including trenches	Steeper than 3:1 or water 3 ft. or deeper	Use Table 5 to select from the following two options: 1. Install rigid barrier or guardrail if the condition warrants barrier, or 2. Use drums or Type II barricades if the condition does not warrant barrier.
	3 : 1 to 4 : 1	1. Use drums or Type II barricades if 10 ft. of runout at the bottom of the slope is not clear of obstructions. 2. No traffic control devices are required if 10 ft. of runout at the bottom of the slope is clear of obstructions. 3. If water 3 ft. or deeper is at bottom of slope, use Table 5.
	Flatter than 4 : 1	No traffic control devices are required, except when water 3 ft. or deeper is in construction clear zone use Table 5.
Fixed Objects	All	Install rigid barrier or guardrail if called for by the plans or specifications. Otherwise use SSHC Section 643-3.04.3 - Fixed Objects.

GENERAL NOTES:

1. The "Construction Clear Zone" (CCZ) may be called "Work Zone Clear Zone" or "Clear Zone in Work Zones" in other publications.
2. In the case of conflicts, this Standard Plan has lesser precedence than Section 643 (Traffic Maintenance) of the Standard Specifications for Highway Construction (SSHC).
3. During seasonal shutdown or if construction activiy is scheduled for suspension for 45 days or more, treat hazards within a 30 foot CCZ width or within the permanent design clear zone (CZ) width.
4. These guidelines are not comprehensive and are not intended to limit the use of safety measures.
5. During pilot car operations, keep fixed objects and other hazards, 2 feet or farther, away from the edge of traveled way and delineate with channelizing devices as required by the Engineer.

INSTRUCTIONS FOR USING TABLES 1 THROUGH 5:

Use The following tables to determine how to treat roadside fixed object or slopes (including trenches, berms and material stockpiles) in construction clear zones.

TABLE 1: Use to determine whether the hazard in withing the CCZ

TABLE 2: Use to determine the appropriate treatment for hazards within the CCZ. No treatment is required for fixed objects or slopes outside the CCZ.

TABLES 3a and 3b: Use to determine appropriate treatment for pavement edge dropoffs.

TABLE 4: Use to determine barrier flare rates.

TABLE 5: Use to determine whether drums or Type II barricades, or temporary barrier or guardrail, are required on fill slopes or for water hazards.

TABLE 1 NOTES:

1. Measure CCZ from the shoulder stripe. If there is no shoulder stripe, measure from the edge of the traveled way. See Figure 1.
2. If CCZ include or ends on a slope of 3:1 to 4:1, use the Effective Clear Zone (ECZ) that extends beyond the bottom of the slope to proved a clear runout area of 10 foot minimum width. The ECZ width must equal or greater than the CCZ width from Table 1. See Figure 2 and verify that A+C ≥ CCA and C ≥ 10 feet.
3. If a CCZ includes or ends on a slope steeper than 3:1, the top of slope must be delineated by channelizing devices or protected by barrier.
4. The term "fixed objects" is defined in Section 643-1.02 of the SSHC.
5. AADT stands for Average Annual Daily Traffic. Use the higher of the as listed in the plans or the average of June/July/August ADT's, unless otherwise specified by the Engineer.

TABLE 2 NOTES:

1. Eliminate non-traversable slopes (those steeper than 3:1) and fixed objects (as defined in Section 643-1.02 of the SSHC) within the CCZ when practicable. They should only be left in place and treated as treated as shown in this table when elimination is not practicable.
2. Maintain a 2-foot minimum wide lateral buffer space between the edge of traveled way and work areas. This provides an area to install barriers or other delineation by channelizing devices.
3. If necessary to treat multiple hazards on the same road segment (slopes and fixed objects), choose treatments from Table 2 that satisfy the requirements for the most significant of the multiple hazards.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

ROADSIDE SAFETY TREATMENT FOR WORK ZONES

Adopted as an Alaska Standard Plan by: Carolyn H Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 09/15/2022

Last Code and Stds. Review
By: LRG Date: 09/15/2022

Next Code and Standards Review date: 09/15/2032

C-06.00

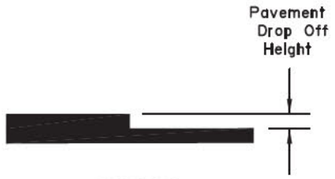


FIGURE 3
Pavement Drop-off Detail

FIGURE 4
Safety Edge Detail

Table 3a - Treatment for Pavement Edge Drop-offs for Posted Speeds > 30 MPH

Nominal Lift Thickness / Height of Pavement Edge Drop-off	Between Active Lanes of traffic moving in same direction	Between Active Lanes of traffic moving in opposing directions	Outside Pavement Edge (if within 3' of traveled way)	Outside Pavement Edge if more than 3' from traveled way and within the CCZ	Across Active Lane, and Entrance and Exit Ramps
0 to 1.0"	No Edge Treatment or Signage Required				
More than 1.0" to 2.0"	**UNEVEN LANE** Signs		**LOW SHOULDER** Signs		Taper Drop-off at slope of 15H:1V or flatter Use BUMP Sign
More than 2.0" to 3.0"	**UNEVEN LANES** Signs - Use Channelizing Devices or Safety Edge	**UNEVEN LANES** Signs - Use Channelizing Devices	**LOW SHOULDER** Signs - Use Channelizing Devices - Consider Safety Edge	**LOW SHOULDER** Signs	
More than 3.0" to 6.0"	**UNEVEN LANES** Signs - Use Channelizing Devices and Use Safety Edge	**UNEVEN LANES** Signs - Use Channelizing Devices	**SHOULDER DROP OFF** Signs - Use Channelizing Devices and Safety Edge; or Use Barrier	**SHOULDER DROP OFF** Signs - Use Channelizing Devices or Barrier	
More than 6"	**Prohibited**		**Barrier** - Installed on traffic side of drop-off	**Channelizing Devices** or **Barrier** according to Table 5	

Table 3b - Sign Numbers

Legend	Number	ATM * Ref.
UNEVEN LANES	W8-11	6F.45
LOW SHOULDER	W8-9	6F.44
SHOULDER DROP OFF (Symbol)	W8-17	6F.44
SHOULDER DROP OFF (Plaque)	W8-17P	6F.44
BUMP	W8-1	2C.28

* ATM = Alaska Traffic Manual

Table 4 - Barrier Flare Rates

Speed (mph)	Flare Rate	
	Rigid	Semi-Rigid
70	20:1	15:1
60	18:1	14:1
55	16:1	12:1
50	14:1	11:1
45	12:1	10:1
40	10:1	8:1
30	8:1	7:1

TABLE 3 NOTES:

1. This table applies to pavement edge drop-offs that are adjacent to traffic and left after the pavement shift ends and for posted speeds > 30 mph. Use engineering judgment for edge treatment for posted speeds ≤30 mph.
2. Use interim pavement markings and signs as required according to Standard Plan C-05 (for all conditions).
3. A Safety Edge is a formed pavement edge taper sloped at approximately 30°, but not more than 35° from horizontal.
4. Use a Safety Edge for longitudinal or diagonal pavement edge drop-offs more than 2 inches within a traveled lane. See Figure 3. Use a Safety Edge on longitudinal joints between lanes as required by Table 3a.
5. The "Across Active Lane, and Entrance and Exit Ramps" column applies to any location where motorists will cross pavement drop-offs (includes transverse construction joints) at an acute angle (45° or more). Taper may be reduced to 6:1 at posted speeds of 30 mph or less.
6. Signage applies to all posted speed for edge drop-offs as shown in Table 3a. For information on signs and locations, see SSHC Section 643-3.04 and the Alaska Traffic Manual (ATM). Signs should be place at the beginning and end points of each paved segment, and in locations between as specified. Also, see Table 3b.
7. "Channelizing Devices" means drums with steady-burn lights, candle, or cones.
8. Treatment for pavement edge drop-offs are in addition to Treatment for Hazards within Construction Clear Zones (CCZs) (i.e. fixed obstacle or slope protection may also be required).

BARRIER TERMINATION AND TABLE 4 NOTES:

1. Terminate portable rigid barrier (concrete or metal) with one of the following methods:
   a) An NCHRP 350 or MASH TL-3 approved end treatment or crash cushion.
   b) An NCHRP 350 or MASH TL-3 approved buried-in-backslope treatment
   c) A Thrie-Beam transition according to Std. Plan G-32 (except attached to a rigid barrier instead of a bridge rail) and terminated with a MASH TL-3 end treatment.
   d) Terminate outside the CCZ by flaring barriers away from the roadway at the rate shown in Table 4 for rigid barriers (maximum 10:1 cross slope in front of the barrier).
   e) Sloped ends may be used to terminate barriers within the CZ when the regulatory (black on white sign) speed limit is 30 mph or below. For speeds more than 30 mph, the Engineer may approve sloped ends if they determine NCHRP 350 or MASH compliant end treatments are impracticable. See Std. Plan G-46 for concrete barrier sloped ends.
2. Terminate temporary W-Beam guardrail with one of the following methods:
   a. With a MASH TL-3 approved end treatment
   b. By burying it in a backslope according to Std. Plan G-16
   c. By flaring the guardrail away from the road at the rate shown in Table 4 for semi-rigid barriers (maximum 10:1 cross slope in from of the guardrail).
   d. Terminate outside the CZ.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

ROADSIDE SAFETY TREATMENT FOR WORK ZONES

Adopted as an Alaska Standard Plan by: Carolyn H Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 09/15/2022

Last Code and Stds. Review
By: LRG Date: 09/15/2022

Next Code and Standards Review date: 09/15/2032

C-06.00

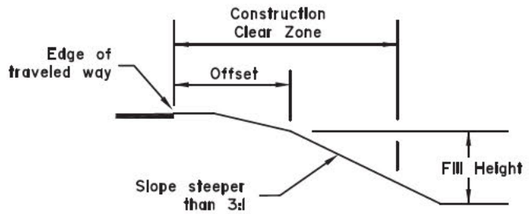


FIGURE 5

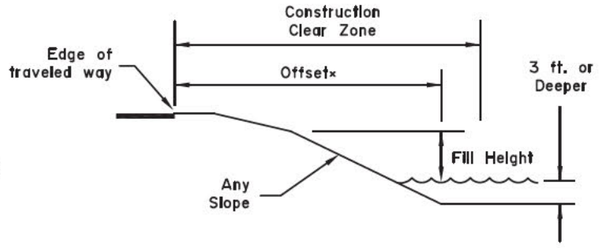


FIGURE 6

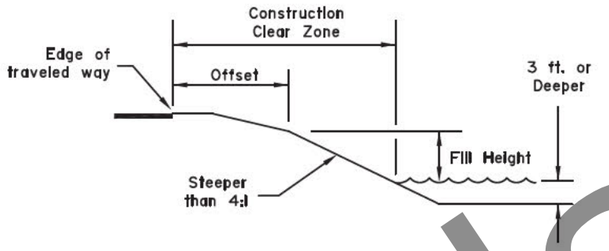


FIGURE 7

Table 5 - Minimum Fill Height at which Temporary Barrier Is Waranted

Seasonal Traffic Volume - ADT

Posted WZ Speed Limit	Duration (# days)	Offset (ft)	0-750 All Slopes/ Water Condition	751-1500 slope 2.9:1 to 1.1:1	751-1500 slope 1:1 to Vert.	751-1500 Water	1501-6000 slope 2.9:1 to 2.1:1	1501-6000 slope 2:1-1.1:1	1501-6000 slope 1:1-Vert.	1501-6000 Water	6001-15000 slope 2.9:1 to 2.1:1	6001-15000 slope 2:1-1.1:1	6001-15000 slope 1:1-Vert.	6001-15000 Water	15001+ slope 2.9:1 to 2.1:1	15001+ slope 2:1-1.1:1	15001+ slope 1:1-Vert.	15001+ Water
30 MPH and lower	4-30	5-10											11'	11'			11'	11'
		3-5																
		0-3																
	31-100	5-10											11'	11'		35'	11'	11'
		3-5							11'	11'								
		0-3									35'	11'	11'			31'		
	101+	5-10														35'		
		3-5							11'	11'						29'	11'	11'
		0-3			11'	11'					35'	11'	11'			17'	8'	8'
35 to 45 MPH	4-30	6-12																
		3-6											10'	10'			10'	10'
		0-3														29'		
	31-100	6-12																
		3-6							10'	10'			10'	10'		29'	10'	10'
		0-3									29'					19'	9'	9'
	101+	6-12									29'					27'		
		3-6							10'	10'	28'	10'	10'			12'	10'	10'
		0-3			10'	10'		29'			18'	9'	9'			7'	7'	7'
																	6'	6'
45 to 55 MPH	4-30	9-18																
		3-9											8'	8'		13'	8'	8'
		0-3																
	31-100	9-18															8'	8'
		3-9							8'	8'	13'	8'	8'			13'	7'	7'
		0-3						13'								7'	6'	6'
	101+	9-18									13'	8'	8'			13'	7'	7'
		3-9							8'	8'	12'	7'	7'	37'		6'	5'	5'
		0-3			8'	8'		13'			7'	6'	6'	23'		5'	3'	3'
60 MPH and above	4-30	13-26																
		3-13											6'	6'		10'	6'	6'
		0-3									10'							
	31-100	13-26																
		3-13							6'	6'			6'	6'		10'	6'	6'
		0-3						10'			10'	6'			40'	6'	5'	5'
	101+	13-26														10'	6'	6'
		3-13							6'	6'	10'	6'	6'	30'		6'	4'	4'
		0-3			6'	6'		10'			6'	5'	5'	10'		3'	1'	1'

TABLE 5 NOTES:

1. Use this table for fill slopes steeper than 3:1 or water hazards that start within the Construction Clear Zone (CCZ). See Figures 5, 6, and 7.
2. Near Lane AADT, as used in this table, means the higher of the AADT listed in the plans or the seasonal Average Daily Traffic (ADT) for June, July, and August in the lane nearest the slope or water hazard during the planned construction period. Assume an even distribution of traffic across lanes - i.e. if there is 6000 one-way AADT on three lanes, use 2000 AADT in each lane.
3. Duration is the estimated number of days traffic will be exposed to the fill (fore) slope or water hazard.
4. To use Table 5, fine the cell that corresponds to the speed limit, duration, offset, traffic volume, and the presence of a slope or water hazard.
   a. If the cell is unshaded, a Temporary Barrier is required when the fill height equals or exceeds the height (in feet) shown in the cell.
   b. If the cell is shaded or fill height is less than the height shown in the cell, use drums or Type II barricades.
5. A water hazard is defined as:
   a. Water 3 feet or deeper within the CCZ, or
   b. Where a slope steeper than 4:1 starts within the CCZ and leads to water 3 feet or deeper.
6. Consider water depth to be the highest level anticipated during the duration period.
7. If both a water hazard and a slope steeper than 3:1 are present, install Temporary Barrier if warranted for either condition.
8. Temporary Barrier is rigid barrier (concrete or metal) or guardrail meeting NCHRP or MASH TL-3, or higher.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

ROADSIDE SAFETY TREATMENT FOR WORK ZONES

Adopted as an Alaska Standard Plan by: Carolyn H Morehouse

Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 09/15/2022

Last Code and Stds. Review By: LRG Date: 09/15/2022

Next Code and Standards Review date: 09/15/2032

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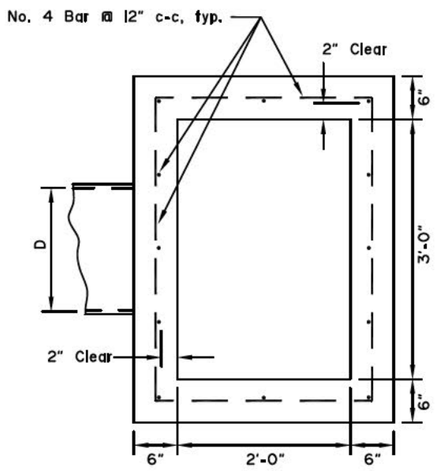
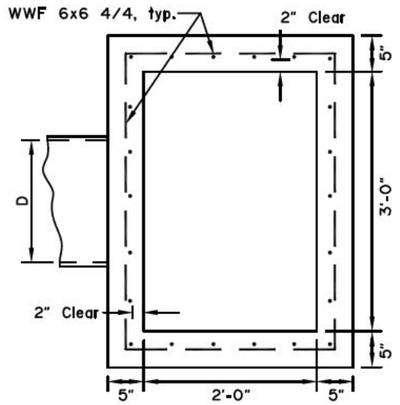
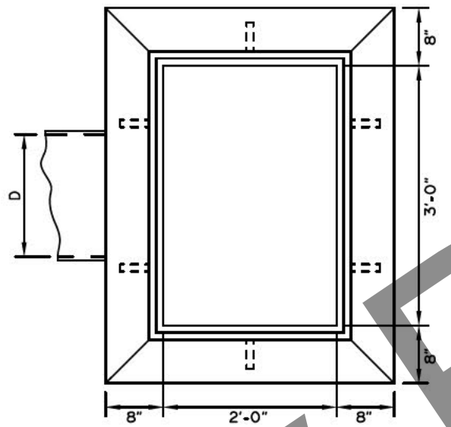
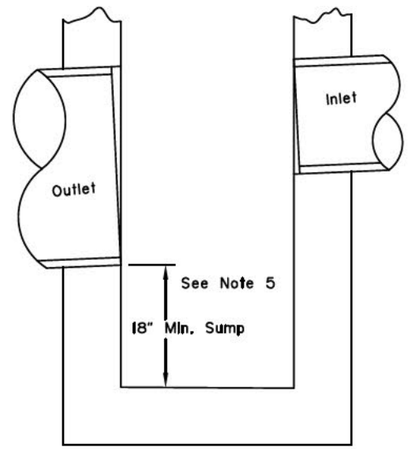




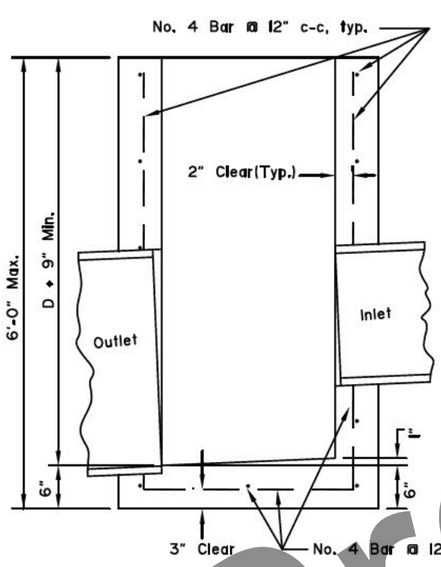


GENERAL NOTES:

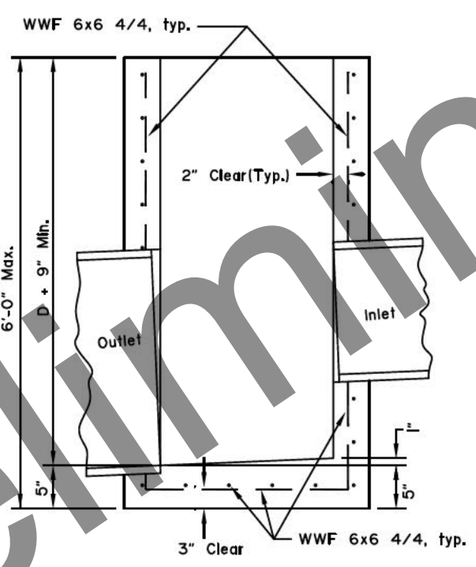
1. Install inlet boxes parallel to the curb line.
2. The plans will indicate which inlet boxes require a sump.
3. Shape floors to drain.
4. Use Grade 40 minimum reinforcing steel.
5. The plans will indicate which inlet boxes require sumps.



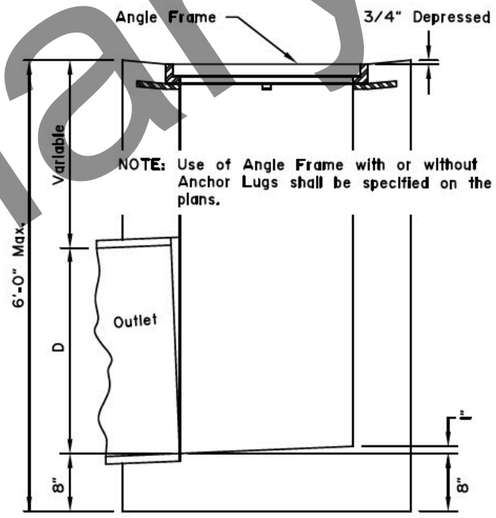
SUMP DETAIL



REINFORCED CAST IN PLACE



PRECAST



FIELD INLET BOX CAST◆ IN PLACE

TYPE "A" CONCRETE INLET BOXES

◆ May be Precast or Reinforced Cast-in-Place Box.

NOT TO SCALE

State of Alaska DOT&PF
ALASKA STANDARD PLAN

TYPE "A"
INLET BOX

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

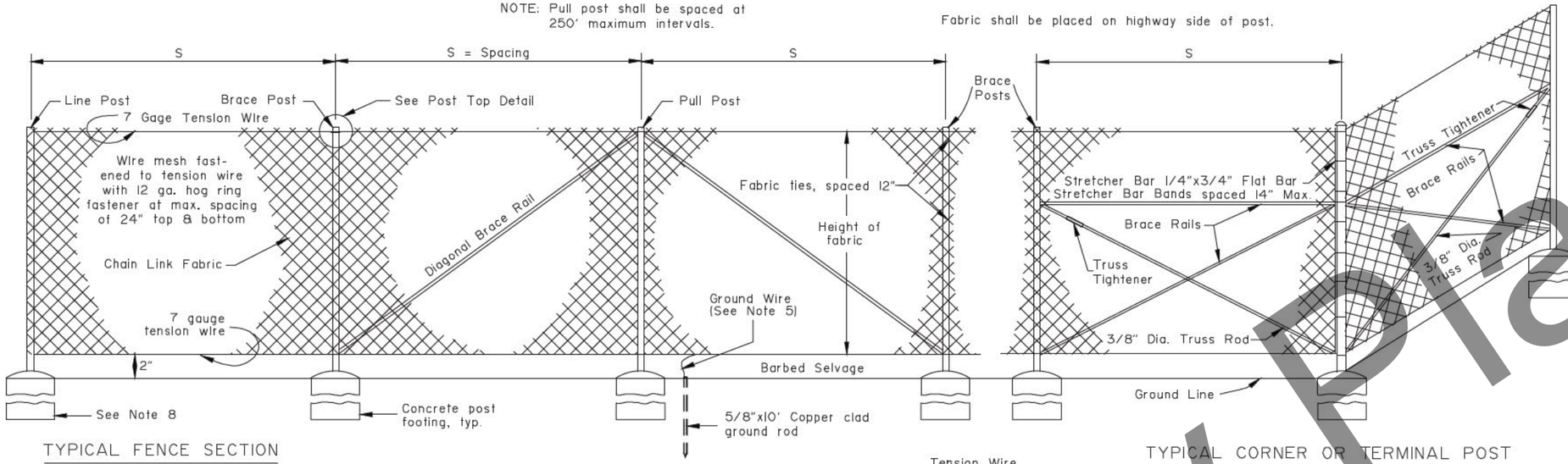
Next Code and Standards Review date: 02/08/2029

D-26.04

F-01.04 SHEET | of |

NOTE: Pull post shall be spaced at 250' maximum intervals.

Fabric shall be placed on highway side of post.



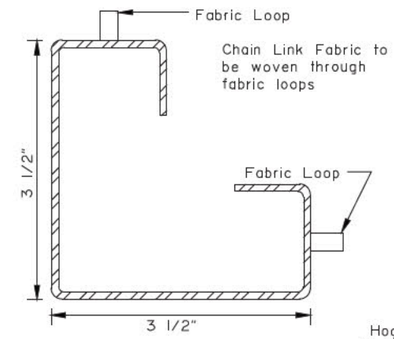
TYPICAL FENCE SECTION

TYPICAL PULL POST

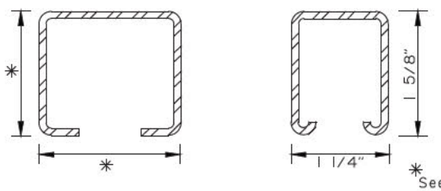
TYPICAL CORNER OR TERMINAL POST

GENERAL NOTES:

1. Use equal pole spacing (S). Maximum pole spacing is 10 feet unless directed otherwise by the Engineer.
2. Securely fasten post tops to post.
3. Securely fasten brace rails and truss rods to post with brace bands.
4. Provide truss rods with a tensioning adjusting mechanism.
5. Attach ground wire to fence fabric with a split bolt.
6. Stretch fabric to a smooth uniform appearance.
7. Details shown indicate general design and dimensions may vary among manufacturers.
8. Set line, pull, corner, and terminal posts in concrete footings unless in muskeg or shown otherwise in the plans.

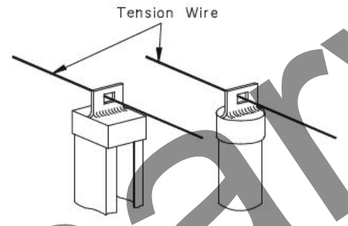


ROLL FORMED POST

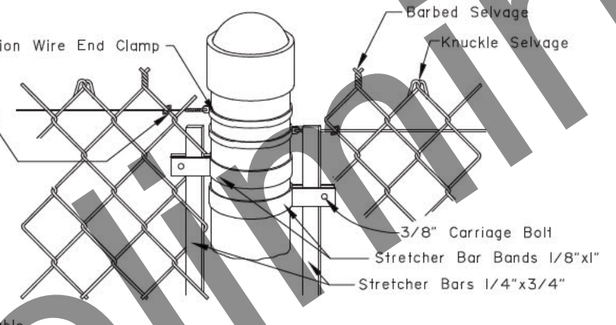


C POST

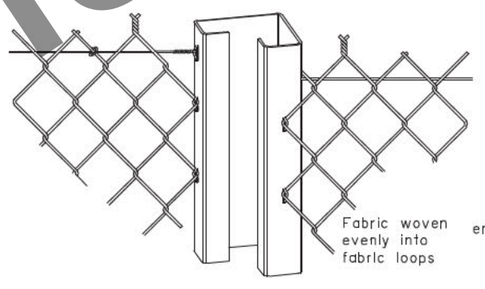
ROLL FORMED BRACE



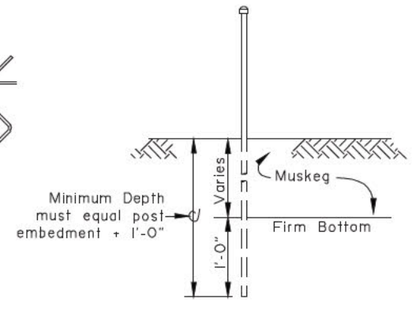
LINE POST TOPS



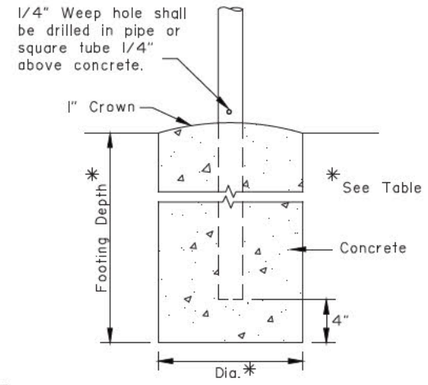
PIPE STYLE POST TOP



ROLL FORMED POST TOP



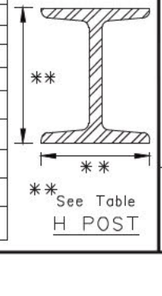
POST SETTING IN MUSKEG AREAS



CONCRETE POST FOOTING

FABRIC HEIGHT	POST								ALTERNATE POST	
	END-CORNER-PULL								LINE-BRACE	
	PIPE		SQUARE TUBE		ROLL FORMED		FOOTING		H POST	
	SIZE	WT/FT.	SIZE	WT/FT.	SIZE	WT/FT.	DEPTH	DIA.	SIZE	WT/FT.
3'	2"	3.65 #	2" x 2"	4.31 #	3 1/2"x3 1/2"	4.84 #	40"	10"	1 7/8"x1 5/8"	2.72 #
4'	"	"	"	"	"	"	"	"	"	"
5'	2"	3.65 #	2" x 2"	4.31 #	3 1/2"x3 1/2"	4.84 #	40"	10"	1 7/8"x1 5/8"	2.72 #
6'	2 1/2"	5.79 #	2 1/2"x2 1/2"	5.59 #	3 1/2"x3 1/2"	4.84 #	48"	15"	2 1/4"x2"	4.1 #
7'	"	"	"	"	"	"	"	"	"	"
8'	2 1/2"	5.79 #	2 1/2"x2 1/2"	5.59 #	3 1/2"x3 1/2"	4.84 #	48"	15"	2 1/4"x2"	4.1 #

FABRIC HEIGHT	POST								TOP OR BRACE RAIL					
	LINE-BRACE								PIPE		ROLL FORMED		H POST	
	PIPE		C POST		FOOTING				SIZE	WT/FT.	SIZE	WT/FT.	SIZE	WT/FT.
	SIZE	WT/FT.	SIZE	WT/FT.	DEPTH	DIA.								
3'	1 1/2"	2.72 #	1 7/8"x1 5/8"	2.28 #	28"	10"			1 1/4"	2.27 #	1 5/8"	1.35 #	1 1/2"x 1 5/16"	2.27 #
4'	"	"	"	"	"	"			"	"	"	"	"	"
5'	1 1/2"	2.72 #	1 7/8"x1 5/8"	2.28 #	28"	10"			"	"	"	"	"	"
6'	2"	3.65 #	2 1/4"x1 45/64"	2.64 #	40"	12"			"	"	"	"	"	"
7'	"	"	"	"	"	"			"	"	"	"	"	"
8'	2"	3.65 #	2 1/4"x1 45/64"	2.64 #	40"	12"			"	"	"	"	"	"



State of Alaska DOT&PF
ALASKA STANDARD PLAN

CHAIN LINK FENCE

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

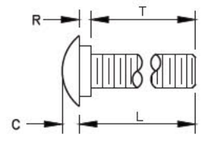
Adoption Date: 7/17/2020

Last Code and Stds. Review By: KLH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

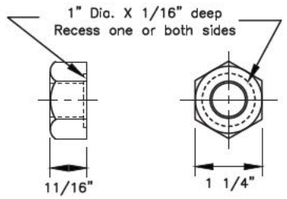
F-01.04

G-00.05 SHEET 1 of 5

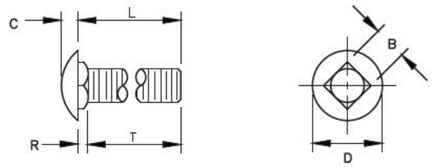


B	C	D	L (Length)	R	T (Thread Length)
15/16"	5/16"	1 5/16" or 1 7/16"	As Required	7/32"	As Required

5/8" BUTTONHEAD BOLT
(FBB01–05)

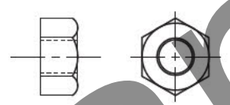


5/8" Dia. RECESSED HEX NUT
(FBB01–05)



B	C	D	L (Length)	R	T (Thread Length)
5/8"	5/16"	1 5/16"	As Required	3/16"	As Required

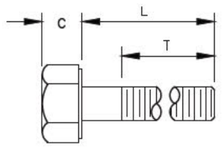
5/8" Dia. CARRIAGE BOLT
(FBC10–20)

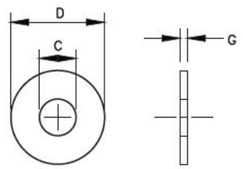


STANDARD HEX NUT

GENERAL NOTES:

1. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.



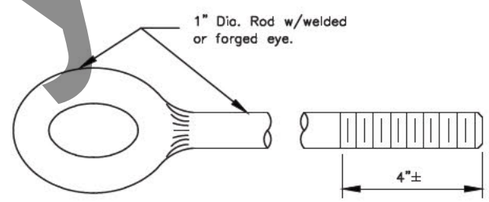


Bolt Size	C	D	L (Length)	T (Thread Length)
5/16"	——	——	1 1/2"	7/8"
5/16"	——	——	1"	1"
3/8"	——	——	7 1/2"	1 1/2"
1/2"	——	——	1 1/2"	1 1/2"
1/2"	——	——	1 1/4"	1 1/4"
5/8" H.S.	5/16"	7/8"	8"	1 1/2"
5/8"–11	——	——	1 1/2"	1 1/2"
3/4"	——	——	1 1/2"	1 1/2"
3/4"	——	——	As Required	2"
3/4" H.S.	15/32"	1 1/4"	2"	1 1/2"

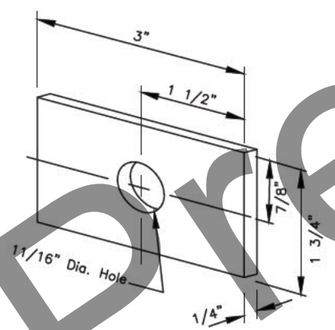
STANDARD HEX BOLTS

For Bolt ø	C	D	G
3/8"	7/16"	1"	5/64"
1/2"	17/32"	1 1/16"	3/32"
1/2" H.S.	17/32"	1 1/16"	3/32"
5/8"	11/16"	1 3/4"	9/64"
3/4"	13/16"	1 15/32"	9/64"
3/4" H.S.	13/16"	2"	5/32"
1"	1 1/16"	2"	9/64"

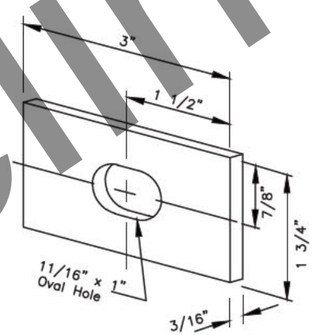
STANDARD STEEL WASHERS



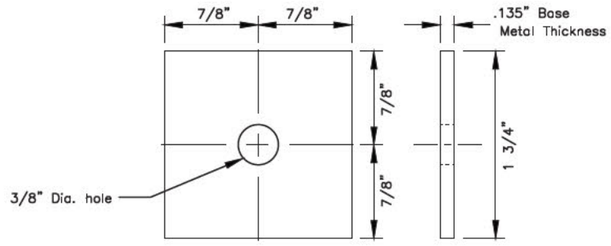
EYE BOLT



FLAT PLATE WASHER



RECTANGULAR POST BOLT WASHER
(FWR03)



SQUARE STEEL WASHER
(FWR01)

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE
(NUTS, BOLTS & WASHERS)

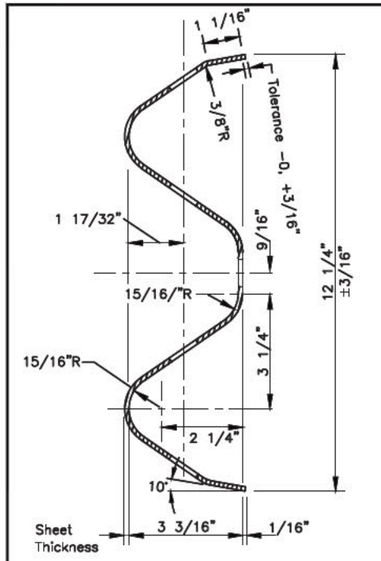
Adopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

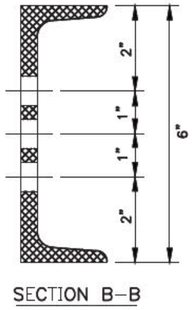
Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

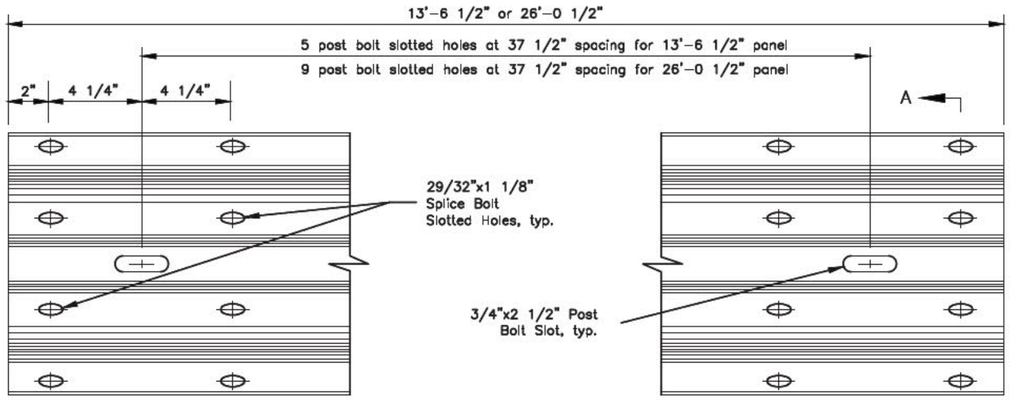
G–00.05



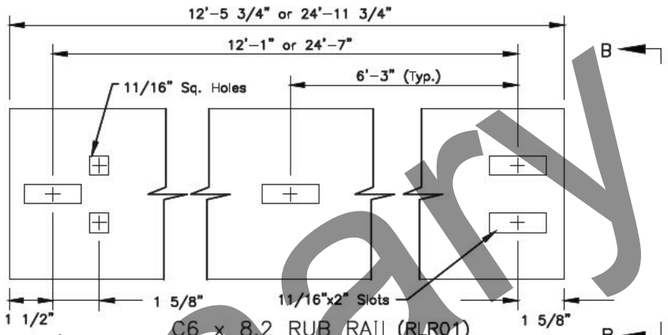
SECTION A–A
(cross section same as RWM02a–b)



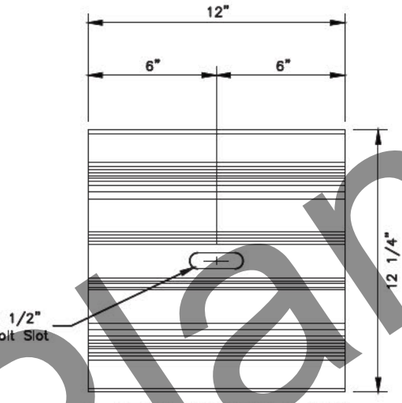
SECTION B–B



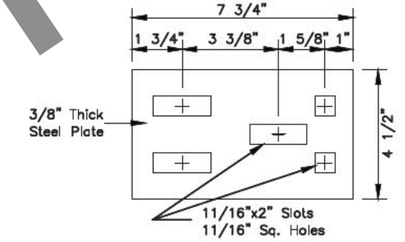
STANDARD W–BEAM PANEL (RWM04a–b)



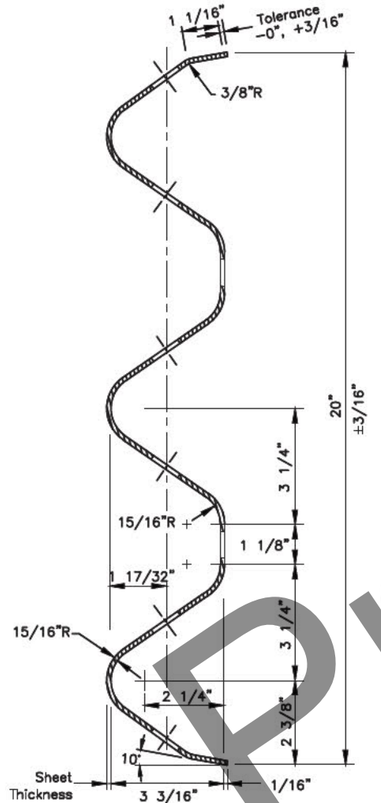
C6 x 8.2 RUB RAIL (RLR01)
ASTM A36 STEEL



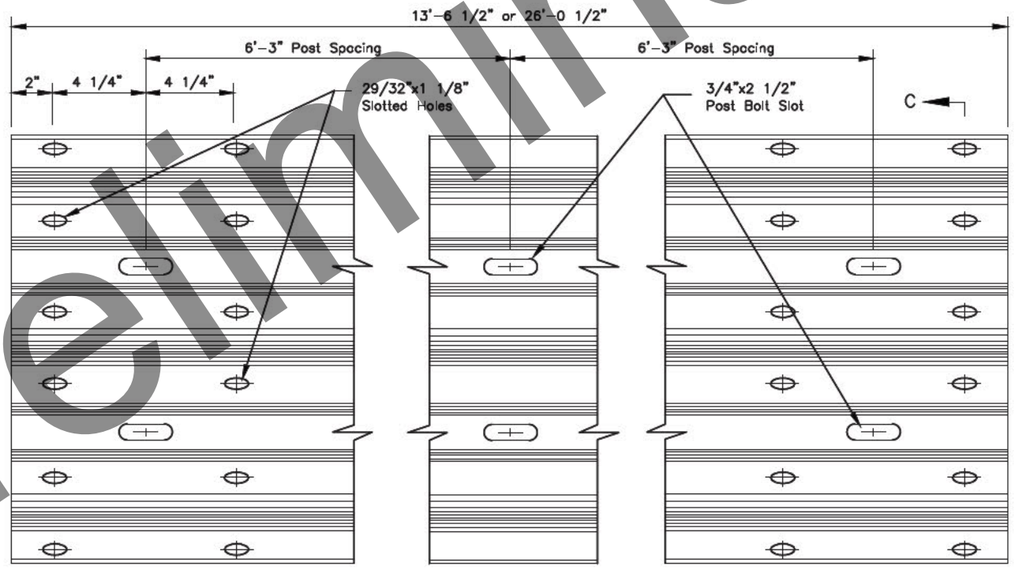
W–BEAM BACKUP PLATE
(RWB01a–b)



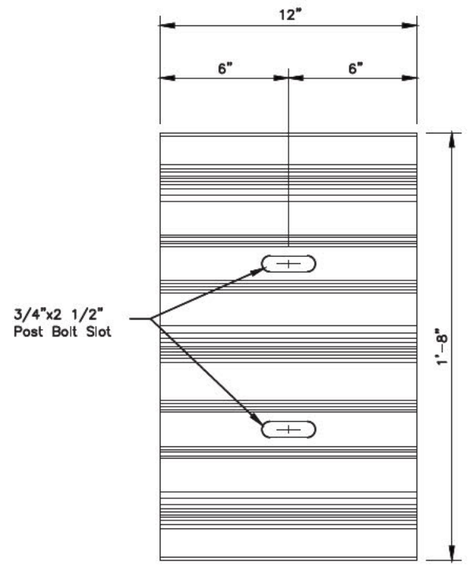
SPLICE PLATE (RLR01)
ASTM A36 STEEL



SECTION C–C
(RTM01a–02b)



STANDARD THRIE BEAM PANEL (RTM01a–02b)



THRIE BEAM BACKUP PLATE
(RTB01a–02b)

GENERAL NOTES:

1. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.
2. Install back–up plates between blockouts and w–beam or thrie–beam rail at intermediate (non–splice) posts when steel blockouts are used but not with wood, rubber, plastic, or other approved blockouts.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (RAILS AND SPLICES)

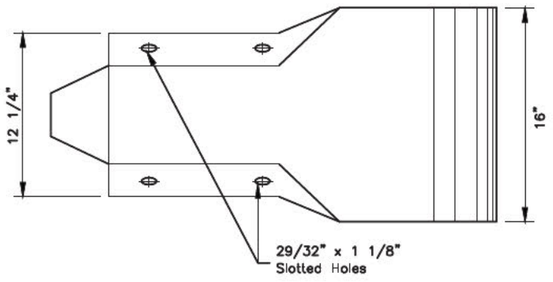
Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

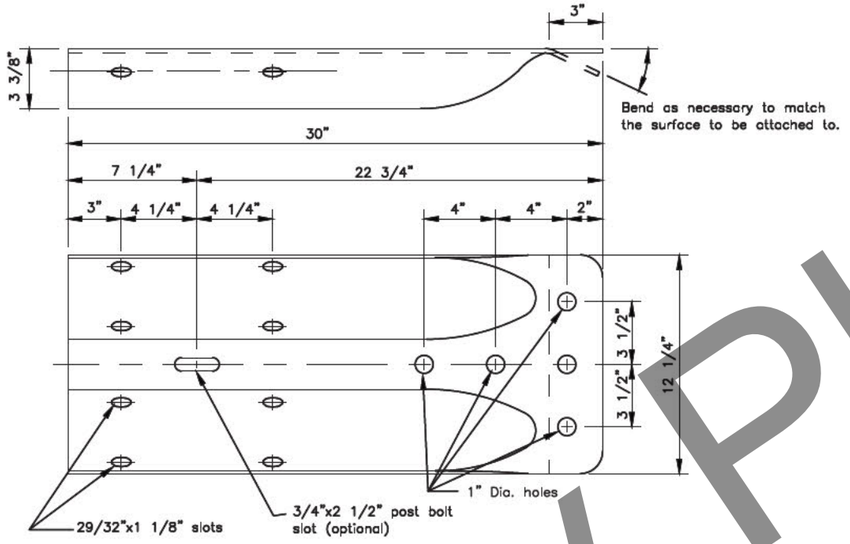
Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

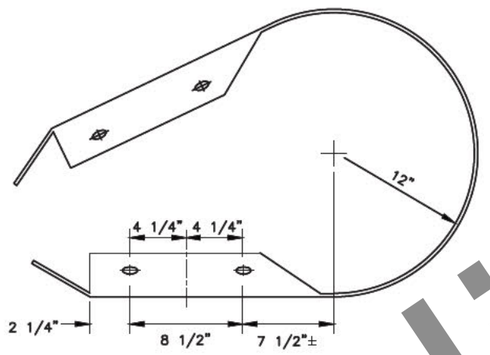
G–00.05



PROFILE

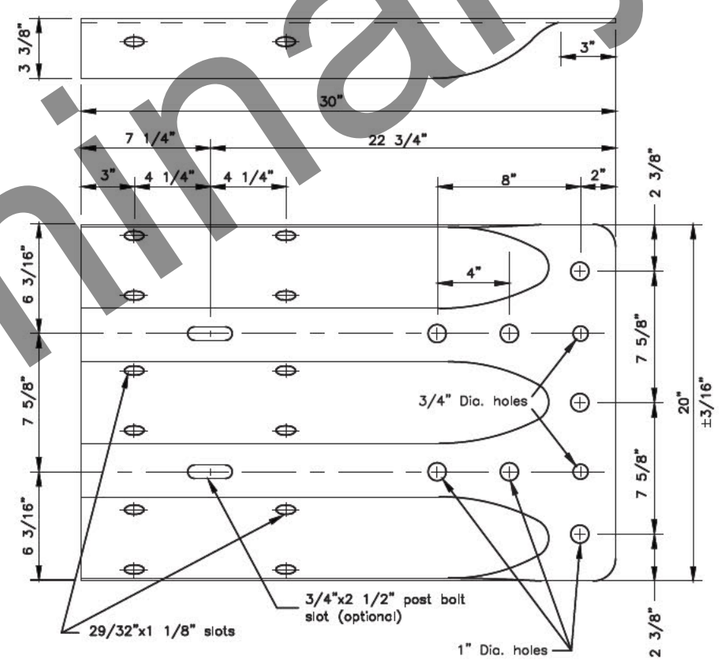


STANDARD W-BEAM TERMINAL CONNECTOR
(RWE02)



W-BEAM PLAN VIEW
*Radius to be specified on the plans

STANDARD W-BEAM END SECTION
(RWE06)



STANDARD THRIE BEAM TERMINAL CONNECTOR
(RTE01b)

GENERAL NOTES:

1. W-Beam and Thrie Beam Terminal Connectors shall conform to AASHTO M 180, Class B, Type II.
2. W-Beam end sections shall conform to AASHTO M 180, Class A, Type II.
3. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (TERMINAL CONNECTORS)

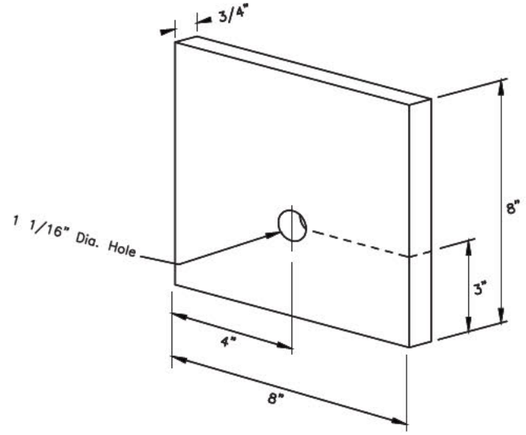
Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

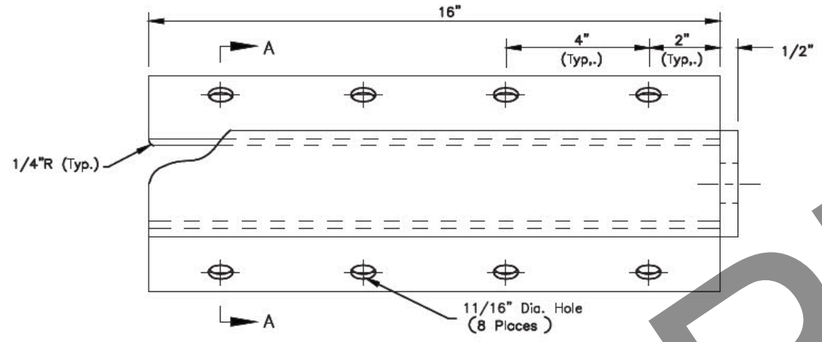
Next Code and Standards Review Date: 7/8/2030

G-00.05

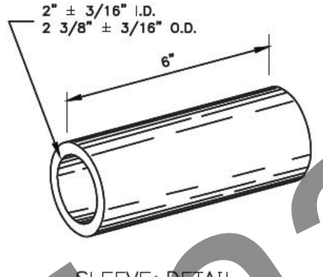


BEARING PLATE for CRT TERMINAL ANCHOR
(FPB01)

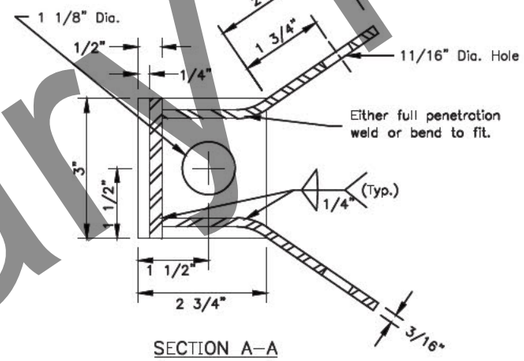
SWAGED FITTING DETAIL
(FCA01–02)



CABLE ANCHOR PLATE
(FPA01)



SLEEVE DETAIL
(FMM02)

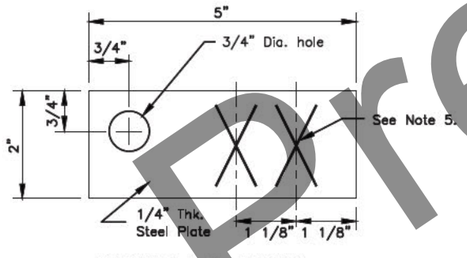


SECTION A–A

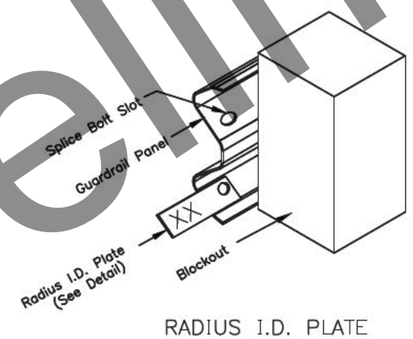
CONTROLLED RELEASE TERMINAL HARDWARE DETAILS

GENERAL NOTES:

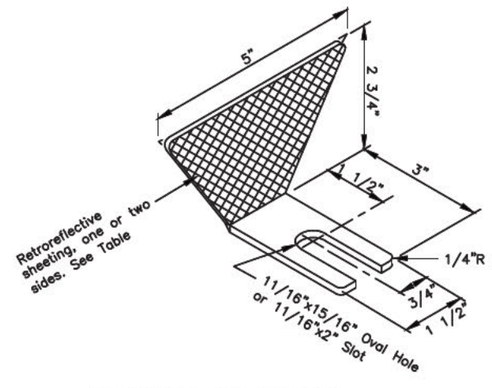
1. Cable Anchor Plate may be formed in single unit or welded fabrication.
2. Anchor Cable Assembly must conform to AASHTO M 30 with Type II Wire Rope.
3. Provide Sleeve for Wood Posts meeting the requirements of ASTM A53 and made of 2–inch galvanized standard pipe. Sleeve shall be a tight, pressed fit in post.
4. Attach radius ID plates to all shop–bent guardrail sections. Bolt the ID plates to the back side of the guardrail panel with the lower splice bolt nearest the P.C. of the radius.
5. Show the Rail bend radius, in feet, as "XX" on the radius ID plate. Digits shall be etched or stamped and have a min. height of 1 1/2" and a max. width of 3/4". Galvanize the plate after the digits are marked.
6. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.



RADIUS I.D. PLATE



RADIUS I.D. PLATE MOUNTING DETAIL



GUARDRAIL REFLECTOR

Guardrail Reflector Table

Type	Color	Reflectorized
A	White	Front & Rear
B	White	Front
C	Yellow	Front
D	Yellow	Front & Rear

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (MISCELLANEOUS)

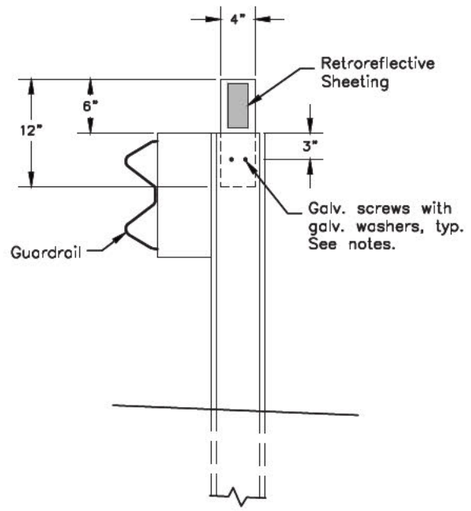
Adopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

G–00.05



GUARDRAIL FLEXIBLE DELINEATOR DETAIL

(Steel post shown – similar for wood post)

CONSTRUCTION NOTES

1. Install guardrail flexible delineators where shown on the plans.
2. Install guardrail flexible delineators at 50 foot spacing, unless otherwise noted on the plans. Install not less than 2 delineators per guardrail run.
3. Use 3" x 5" white/yellow/red retroreflective sheeting as required per Standard Plan T–05. Install retroreflective sheeting on both sides of delineator on two–way roads.
4. Attach 4" x 12" flexible delineators to the top of new guardrail posts, on the trailing side of the posts relative to the adjacent lane's direction of travel.
5. Use 2 each 1/4" dia. x 1–1/2" long galvanized lag screws for attaching to wood posts and 2 each 1/4" dia. x 3/4" long galvanized self–drilling fasteners for steel posts. Install a galvanized washer between the fastener head and the flexible delineator.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STANDARD GUARDRAIL HARDWARE (FLEXIBLE DELINEATORS)

Adopted as an Alaska Standard Plan by: Carolyn Morehouse

Carolyn Morehouse, P.E.
Chief Engineer

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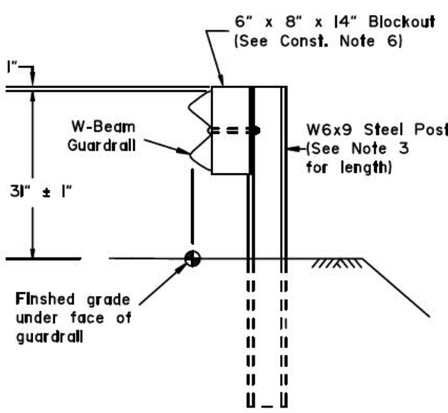
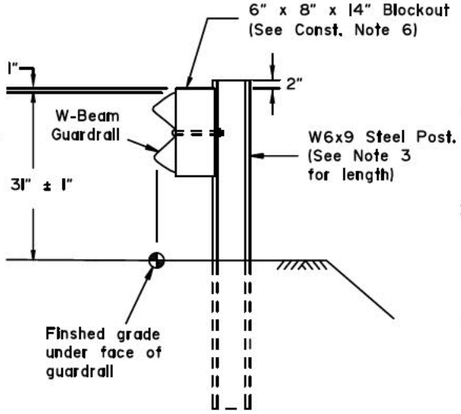
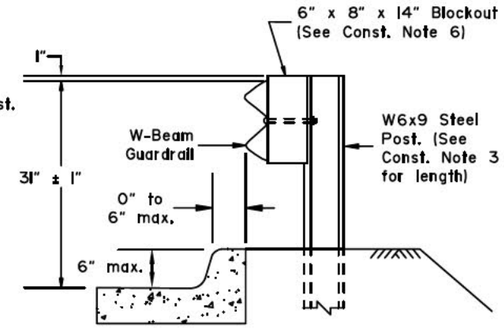


TYPE I POST INSTALLATION

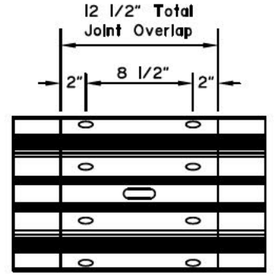


TYPE II POST INSTALLATION

(Facilitates raising rail for future overlays.)

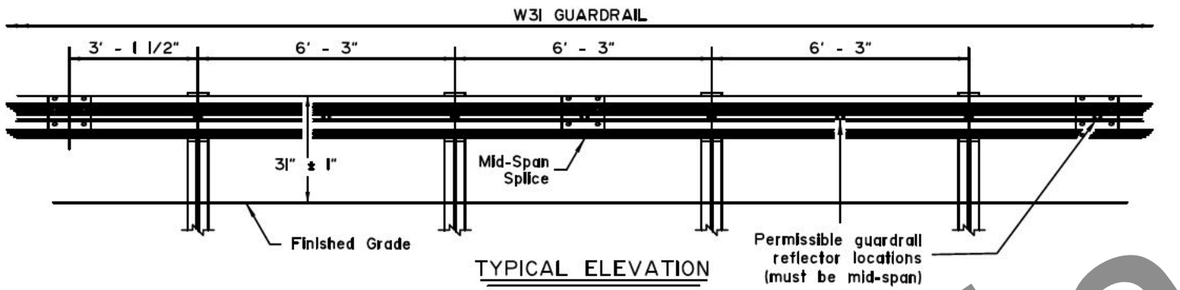


TYPE III POST INSTALLATION

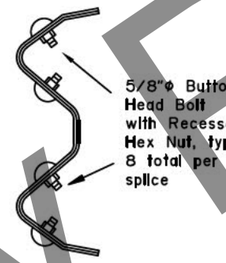


SPLICE DETAIL

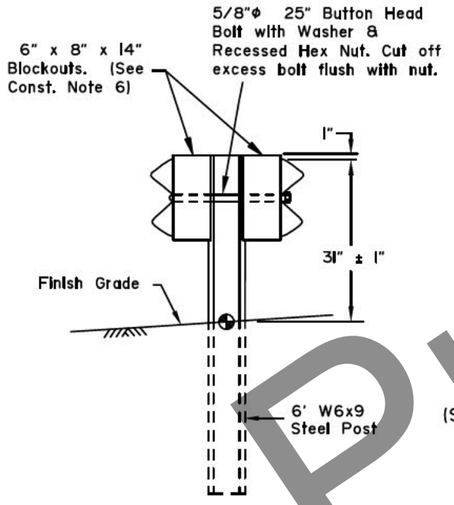
(At mid span between posts only. Bolts not shown for clarity)



TYPICAL ELEVATION



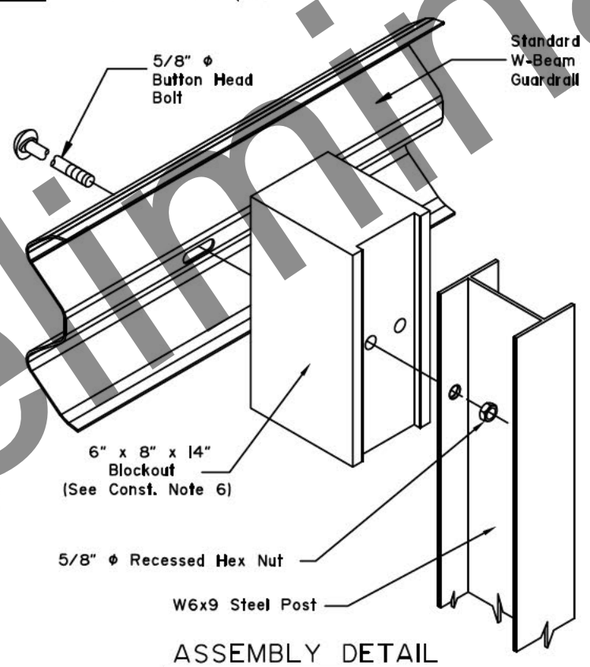
SPLICE
CROSS-SECTION



TYPE IV DOUBLE SIDED INSTALLATION

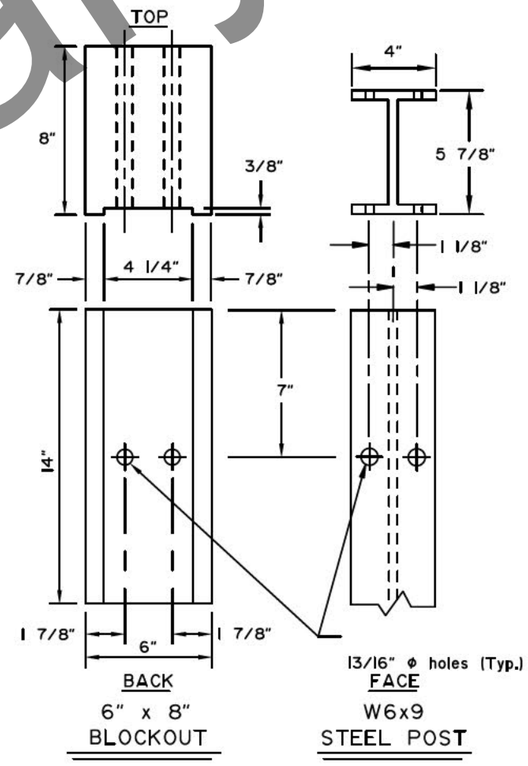
GUARDRAIL
REFLECTOR

(See Const. Note 5)



ASSEMBLY DETAIL

(Type I post shown)



CONSTRUCTION NOTES:

1. Provide hardware compliant with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware.
2. See Standard Plan G-00 for hardware details not shown on this drawing.
3. See Standard Plan G-10 for post lengths corresponding to different combinations of slope and behind-post embankment width.
4. Typical post spacing is 6'-3" center to center.
5. Attach guardrail reflector to guardrail using a 5/8" button head bolt with 5/8" recessed head hex nut and steel washer at location shown in the Typical Elevation. Install reflectors every 25' on tangents and every 12.5' on curves starting 100' before the P.C. and ending 100' after the P.T.
6. Use wood or synthetic blockouts designed, tested, and passed per MASH for use with steel posts. Either bolt hole on the blockout may be used for attachment.
7. Use a 25 linear foot transition to match differing height of existing or new rail elements and end treatments - see Standard Plan G-11.
8. W6x8.5 steel post may be substituted for W6x9 steel post.
9. Install flexible delineators on guardrail posts when called for in the contract. See Standard Plan G-00 for guardrail flexible delineator details.

DESIGN NOTES:

1. No fixed objects allowed within 36" of the back side of guardrail post.
2. This barrier is acceptable under MASH Tests 3-10 and 3-11.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STEEL POST W31 GUARDRAIL

Adopted as an Alaska Standard Plan by: Carolyn Morehouse

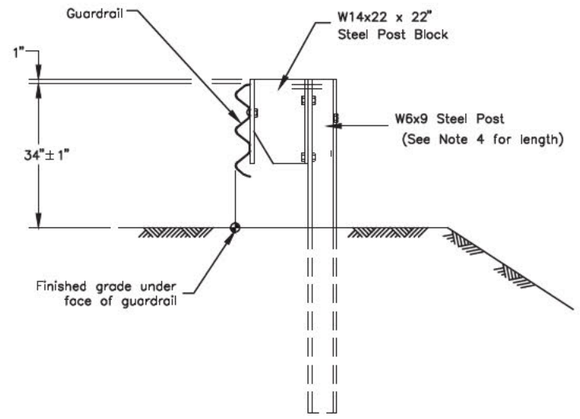
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 05/15/2019

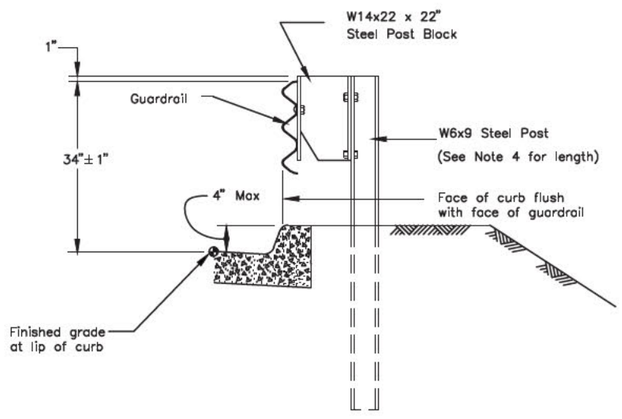
Last Code and Stds. Review
By: LRG Date: 5/15/2019

Next Code and Standards Review date: 5/15/2029

G-05.11S



TYPE I POST INSTALLATION

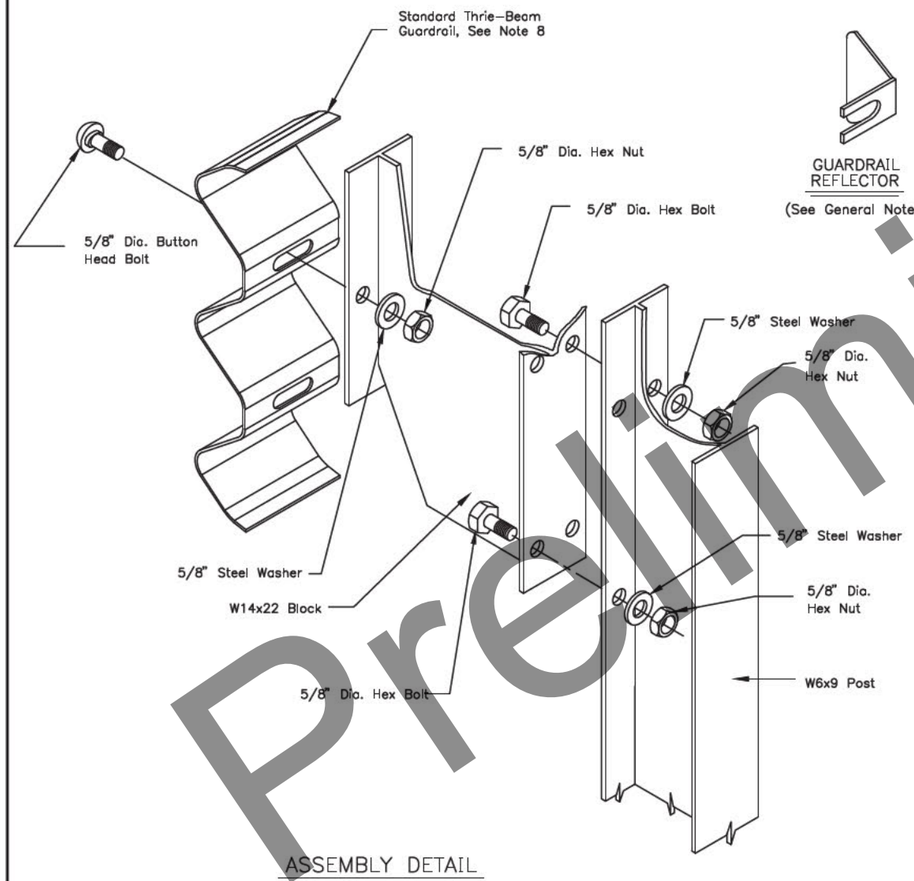


CURB DETAIL

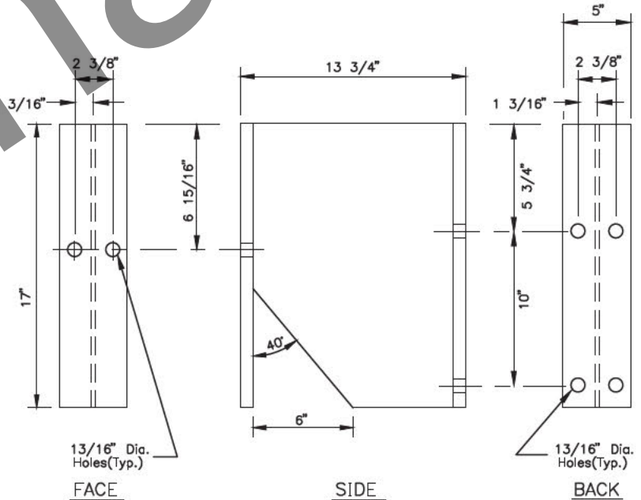
TYPE III POST INSTALLATION

GUARDRAIL REFLECTOR

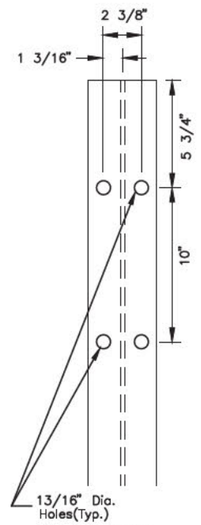
(See General Note 1)



ASSEMBLY DETAIL



W14x22 POST BLOCK



W6x9 STEEL POST

GENERAL NOTES:

1. Attach guardrail reflector to rail panel using a 5/8" button head bolt with 5/8" recessed head hex nut and steel washer in a mid-span bolt slot in the upper indentation of the rail panel. Begin 37-1/2" from the first applicable guardrail post. Install reflectors every 25' on tangents and every 12.5' on curves starting 100' before the P.C. and ending 100' after the P.T. Type A reflectors shall be used unless specified otherwise on the plans.
2. All covered hardware shall comply with the Task Force 13 (TF 13) Guide to Standardized Roadside Safety Hardware online publication.
3. See Standard Plan G-00, "Standard Guardrail Hardware" for hardware details.
4. See Standard Plan G-10, "Beam Guardrail Post Installation" for post lengths corresponding to different combinations of slope and behind-post embankment width.
5. Mount rail to block with a bolt on the approaching-traffic side of block web.
6. Typical post spacing is 6'-3" center to center.
7. This barrier is acceptable under NCHRP 350, TL3 and TL4.
8. Furnish RTM04a-04b thrie-beam rail panels.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STEEL POST MODIFIED THRIE-BEAM GUARDRAIL

Adopted as an Alaska Standard Plan by: Carolyn Morehouse

Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

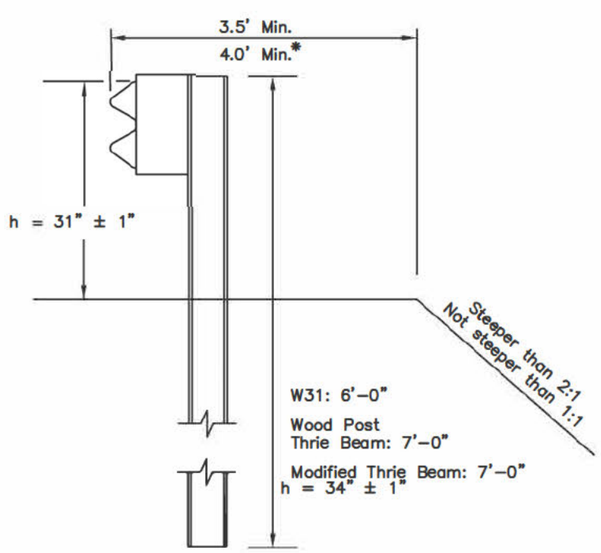
Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

S90.60-G

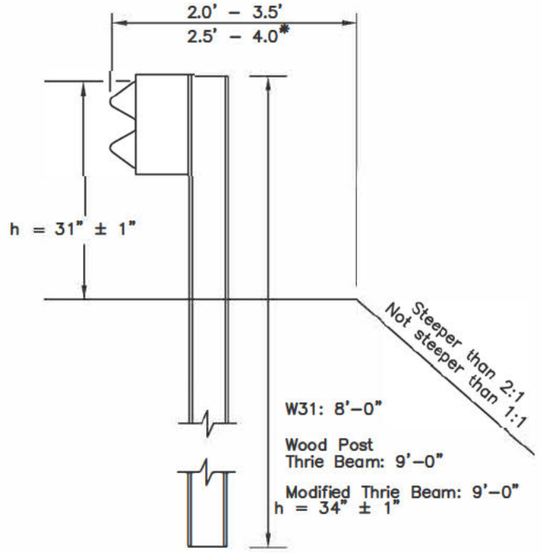
G-10.21

SHEET 1 of 1



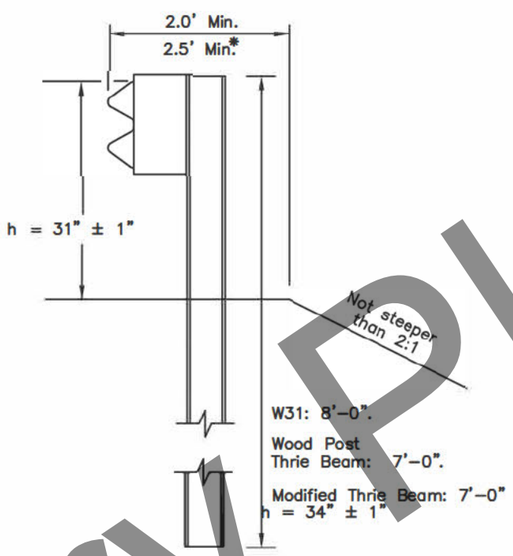
* with Modified Thrie Beam

CASE 1

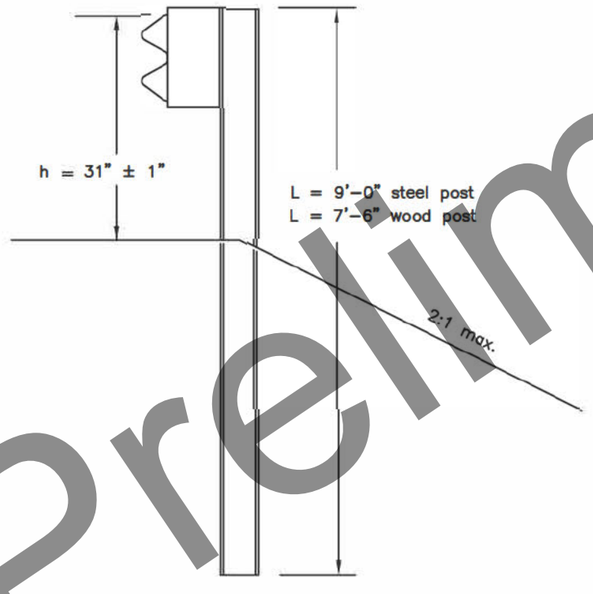


* with Modified Thrie Beam

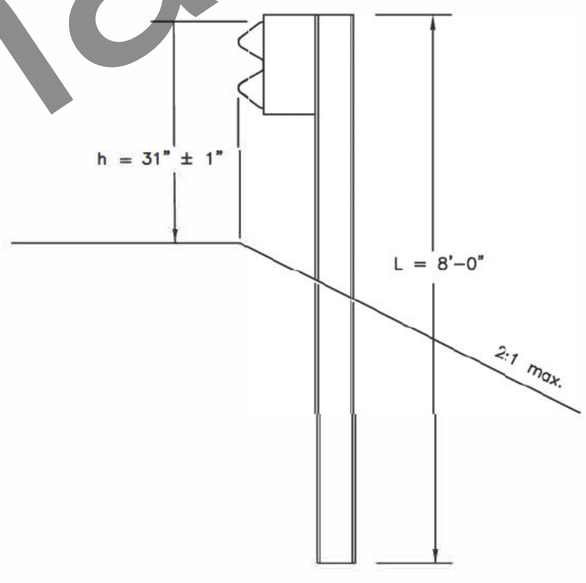
CASE 2



CASE 3



CASE 4
(See Note 5)



CASE 5
(See Note 5)

CONSTRUCTION NOTES:

1. This drawings is to be used for post length determination only. See Plans for slopes and behind–post embankment widths.
2. To determine post length, identify the case that matches site conditions and read the length corresponding to the pertinent guardrail type.
3. These dimensions apply to both curbed and uncurbed section.
4. Case 1, 2 and 3 are shown with steel posts. Wood posts may be substituted when allowed by specifications. Wood Post Thrie Beam installations must use wood posts only.
5. Case 4 and 5 apply to W31 guardrail only.

DESIGN NOTES:

1. No fixed objects allowed within 48" of the back of post for Cases 1, 2, 3, 4, and 5.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

GUARDRAIL POST INSTALLATION

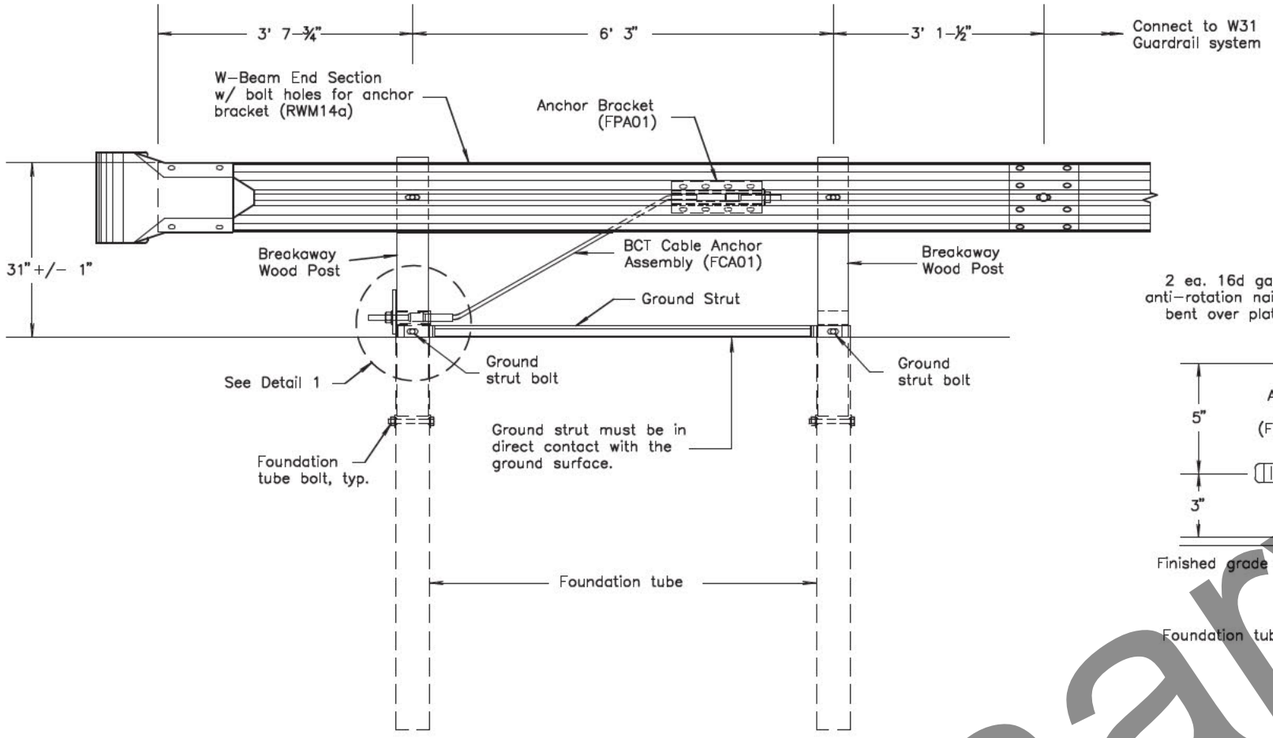
Adopted as an Alaska Standard Plan by: Carolyn H Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 09/15/2022

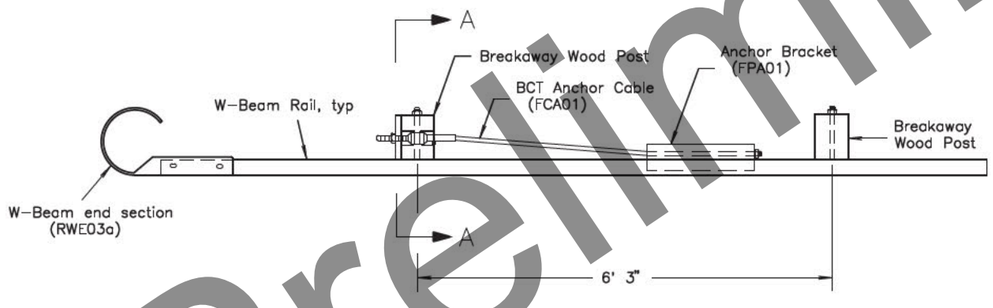
Last Code and Stds. Review
By: LRG Date: 09/15/2022

Next Code and Standards Review date:09/15/2032

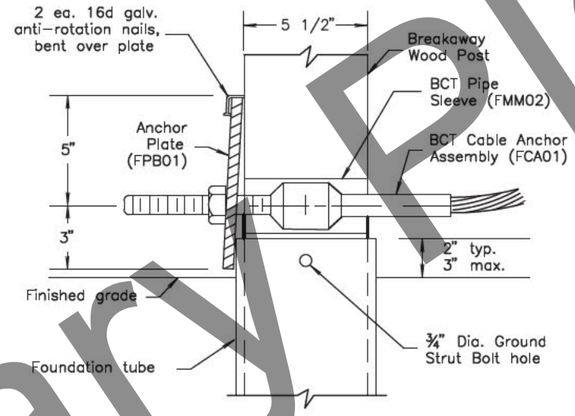
G-10.21



ELEVATION

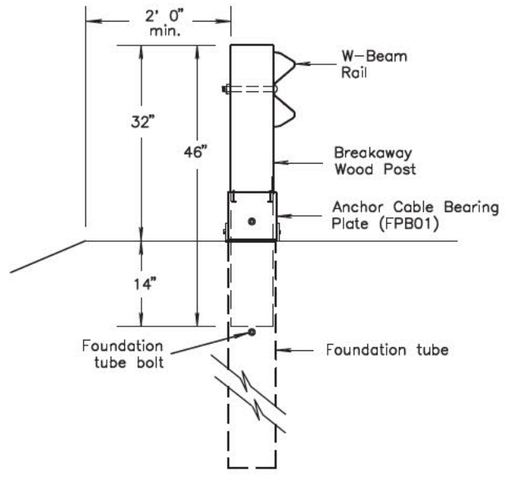


PLAN VIEW



DETAIL 1

(Ground strut not shown for clarity)



SECTION A-A

CONSTRUCTION NOTES

1. All covered hardware must comply with Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators are given in parenthesis, when possible.
2. End section bolts and nuts have the same material requirements as splice bolts.
3. Foundation tube bolts are are 7/8" diameter ASTM A307 hex head. Foundation tube bolts require an ASTM A563 A nut and two ASTM F844 7/8" diameter flat washers. Install one washer under bolt head and one under nut.
4. Anchor bracket and strut bolts are are 5/8" diameter ASTM A307 hex head. Foundation tube bolts require ASTM A563 A nut and two ASTM F844 7/8" diameter flat washers. Install one washer under bolt head and one under nut.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

W31 DOWNSTREAM END ANCHOR

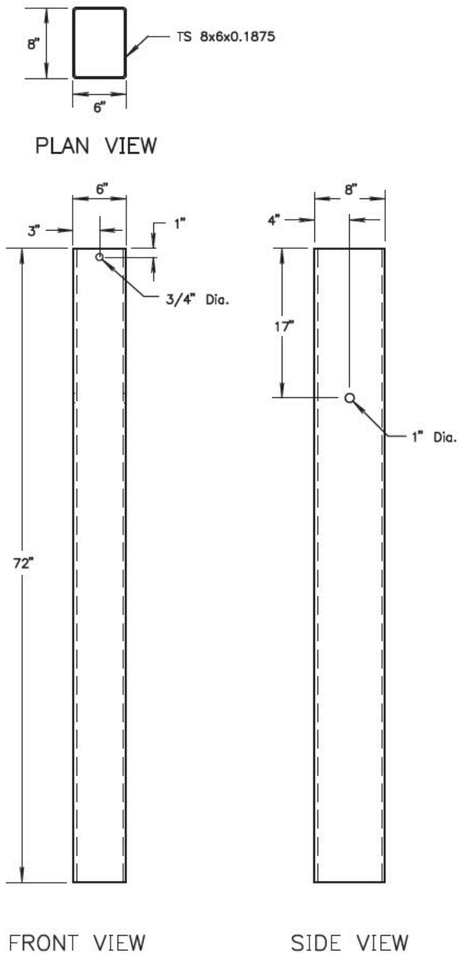
Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

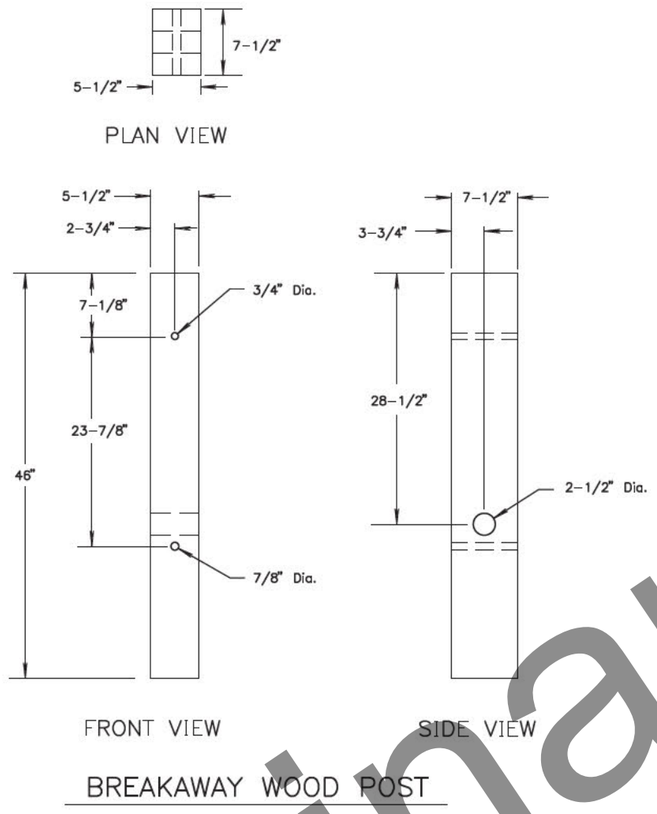
Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

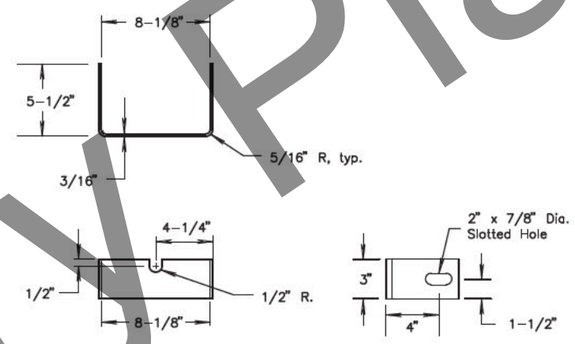
G-14.01



FOUNDATION TUBE



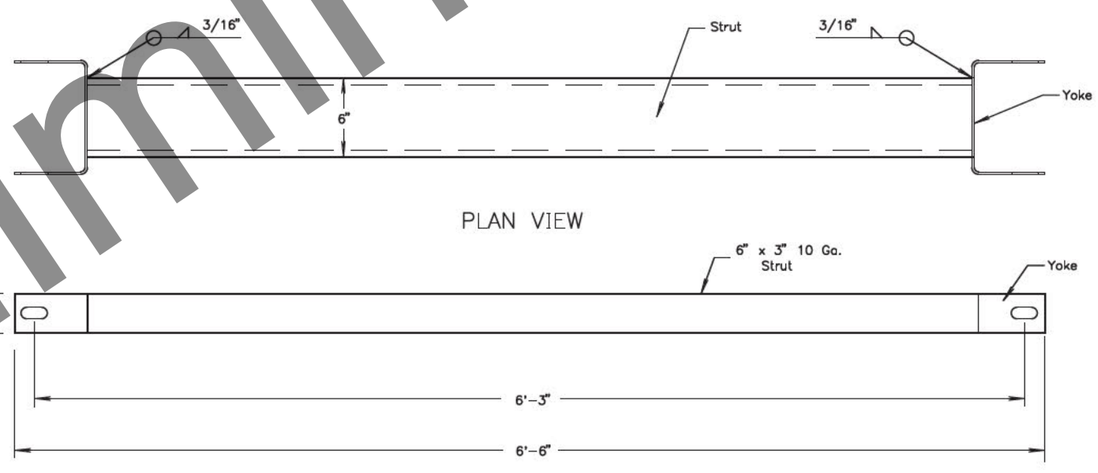
BREAKAWAY WOOD POST



YOKE DETAIL

CONSTRUCTION NOTES

1. All covered hardware must comply with Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators are given in parenthesis, when possible.



GROUND STRUT DETAIL

State of Alaska DOT&PF
ALASKA STANDARD PLAN

W31 DOWNSTREAM
END ANCHOR

Adopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

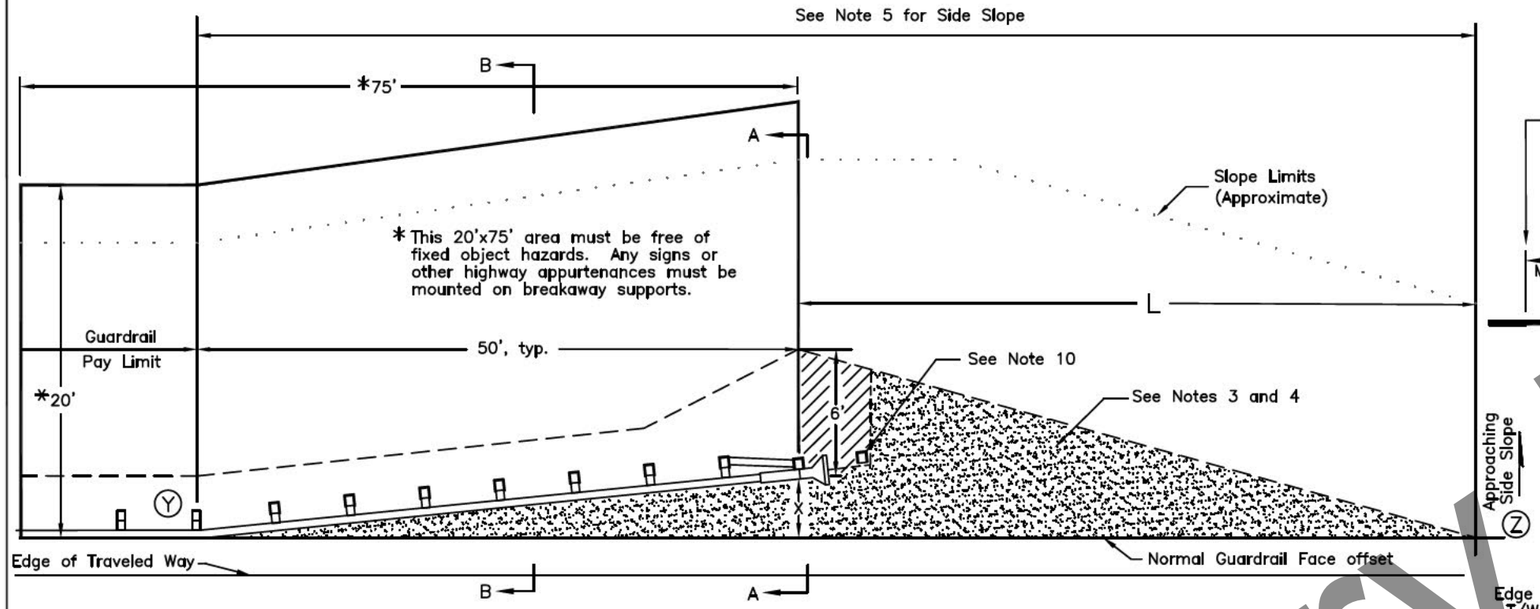
Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

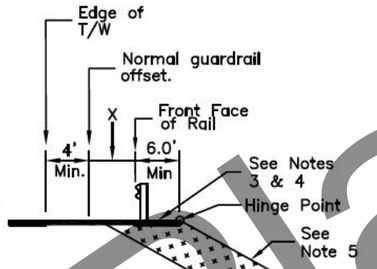
G-14.01

G-20.12

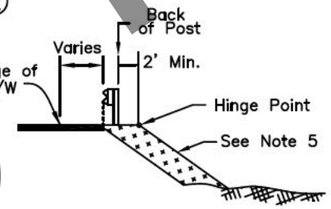
SHEET 1 of 1



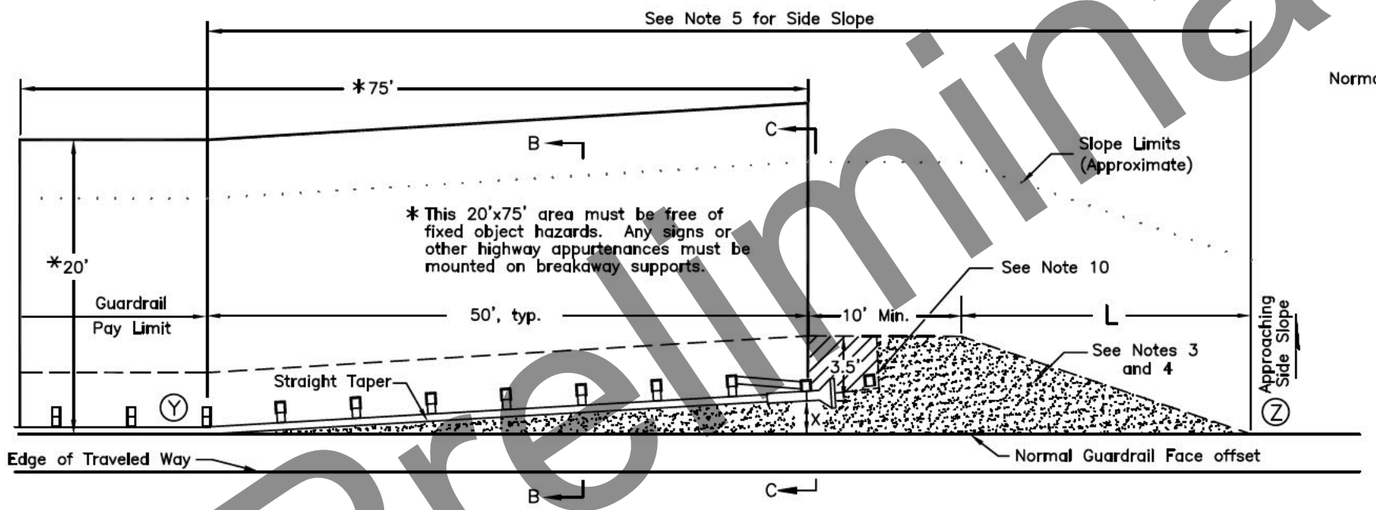
STANDARD GUARDRAIL TERMINAL WIDENING DETAIL



SECTION A–A

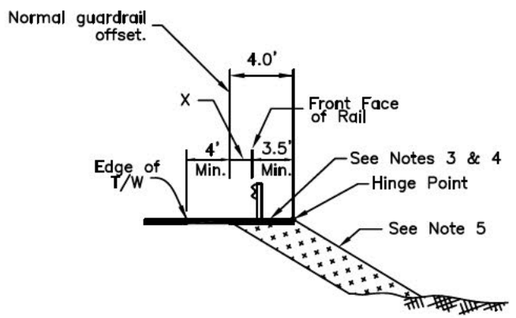


SECTION B–B
(Applies to both details)



ALTERNATE GUARDRAIL TERMINAL WIDENING DETAIL

(USE ONLY WHEN LIMITED RIGHT–OF–WAY OR LIMITING SITE CONDITIONS MAKE THE STANDARD DETAIL INFEASIBLE)



SECTION C–C

X= End offset. See manufacturer's information for the range of acceptable end offsets for each MASH compliant terminal.

Taper Lengths (L) for Common End Offsets (X)		
End Offset	Standard Detail	Alternate Detail
0'	24.0'	13.0'
1'	26.0'	17.0'
1.5'	28.0'	19.0'
2'	30.0'	21.0'
2.5'	32.0'	22.0'
4'	37.0'	28.0'
Interpolate if the end offset falls between table values		

GENERAL NOTES

1. This Std. Dwg. applies to all MASH approved guardrail end terminals (GETs). The alternate detail may only be used with parallel or tangent GETs. The terminal details shown are for illustration only – see manufacturer's drawings for actual post, rail, strut, etc. configuration and layout.
2. Use this Std. Widening Detail for all GETs except when limited right–of–way or limiting site conditions make the use of the Std. Widening Detail infeasible. In that case, the alternate detail is permissable.
3. Construct the shaded areas to match the slope of the adjacent shoulder. The slope may be increased to 10:1 if identified in the plans or when approved by the engineer. Match the slope when the shoulder slopes toward the road as well as away from the road.
4. On paved roads, the shaded areas shall be paved. On gravel roads, surface the shaded areas with the same materials used to surface the travel lanes.
5. From point Ⓨ to point Ⓩ make the side slope match the approaching side slope except where it is flatter than 4:1. In that case, the slope may be steepened to 4:1.
6. Attach a flexible marker at the beginning of each GET.
7. The max. allowable height for foundation tubes or other steel components of terminal post breakaway systems is 4" above the surrounding grade.
8. The details on this sheet do not apply to W31 Downstream End Anchors (Std Dwg G–14).
9. The details on this sheet apply to GETs on both the approach and downstream ends on two–way undivided roads and to any downstream MASH compliant GETs.
10. Some MASH GET systems have an additional post/anchor at the approximate location shown. If this post/anchor is present do not pave the diagonally hatched area. If not present, pave the diagonally hatched area also.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

WIDENING FOR GUARDRAIL END TERMINALS

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E. Chief Engineer

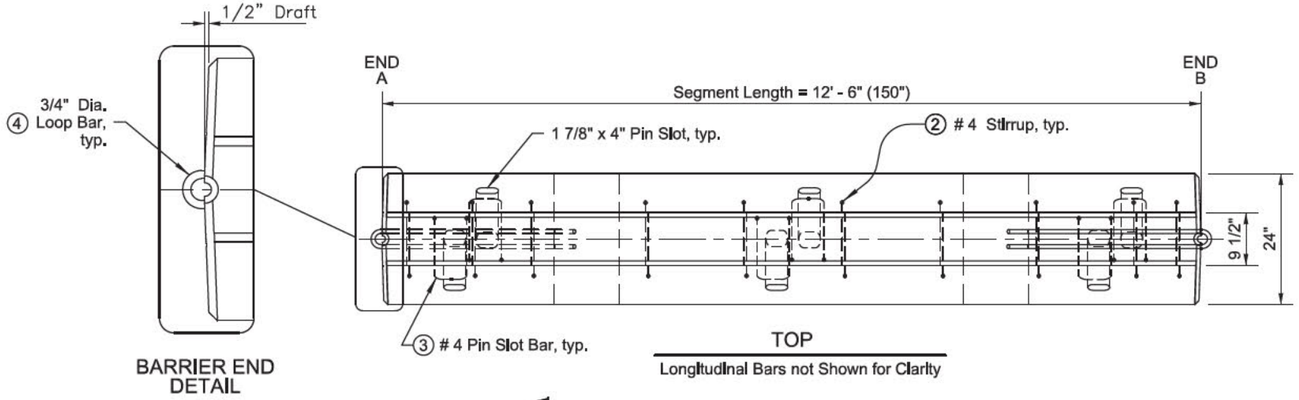
Adoption Date: 02/08/2019

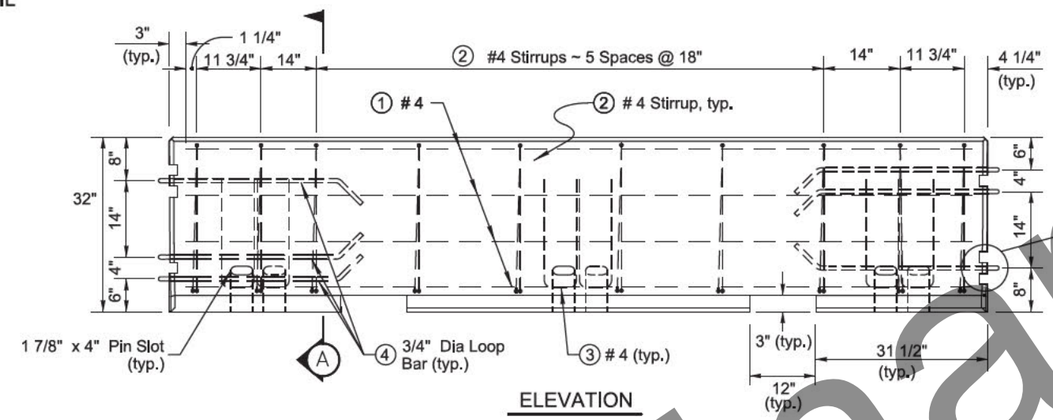
Last Code and Stds. Review By: Date:

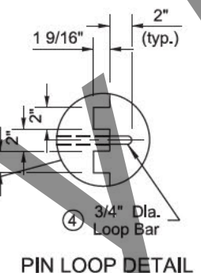
Next Code and Standards Review date:02/08/2029

G–20.12

G-47.00 SHEET 1 of 2





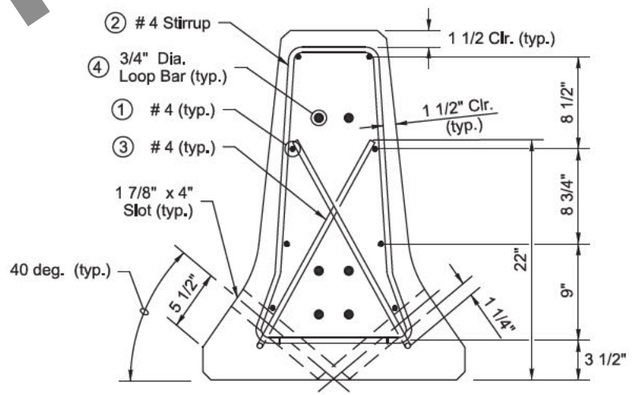


CONSTRUCTION NOTES

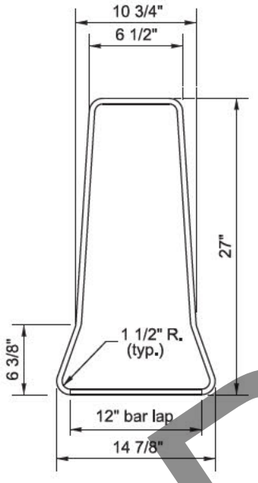
1. This concrete barrier meets MASH TL–3 and may be used for temporary and permanent applications.
2. Use Class B–B concrete (5,000 psi) meeting the requirements of Section 550 of the Standard Specifications.
3. Provide the following unobstructed smooth deflection area behind barrier:

   18" when anchored to concrete
   22" when anchored to asphalt pavement
   64" when unanchored

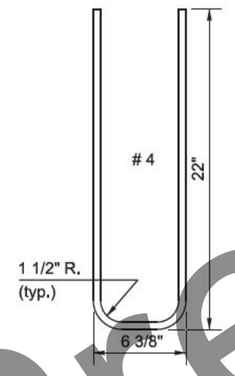
4. When anchored, install anchor pins on the side facing traffic. Concrete barrier used as permanent median barrier in medians less than 8' in width shall be anchored to the roadway with anchor pins on both sides of the barrier.



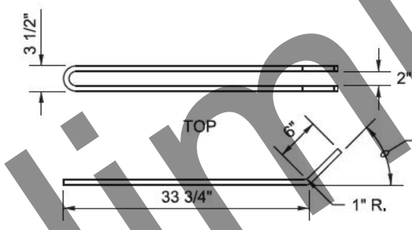
SECTION A



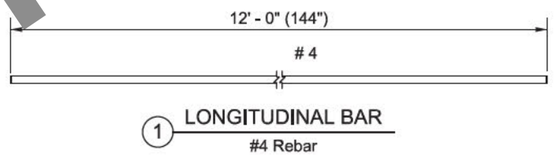
② STIRRUP BAR
#4 Rebar



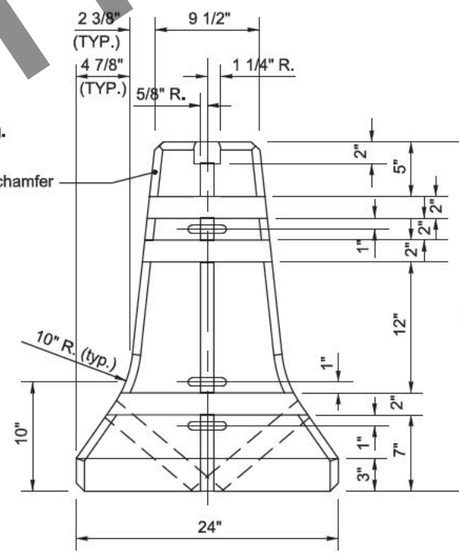
③ PIN SLOT BAR
#4 Rebar



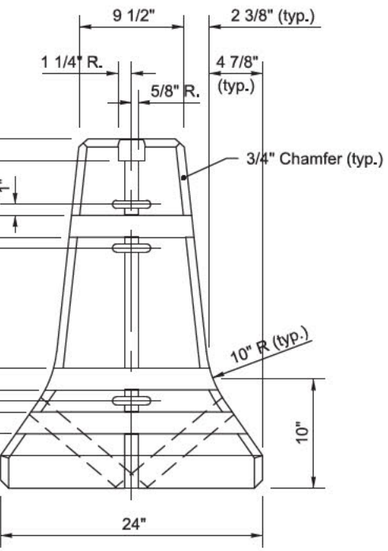
④ LOOP BAR DETAIL
3/4" Dia. Bar (ASTM A36)
Hot Dip Galvanize after Fabrication
(ASTM A123 OR AASHTO M 111)



① LONGITUDINAL BAR
#4 Rebar



END A



END B

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

MASH "F" SHAPE CONCRETE BARRIER

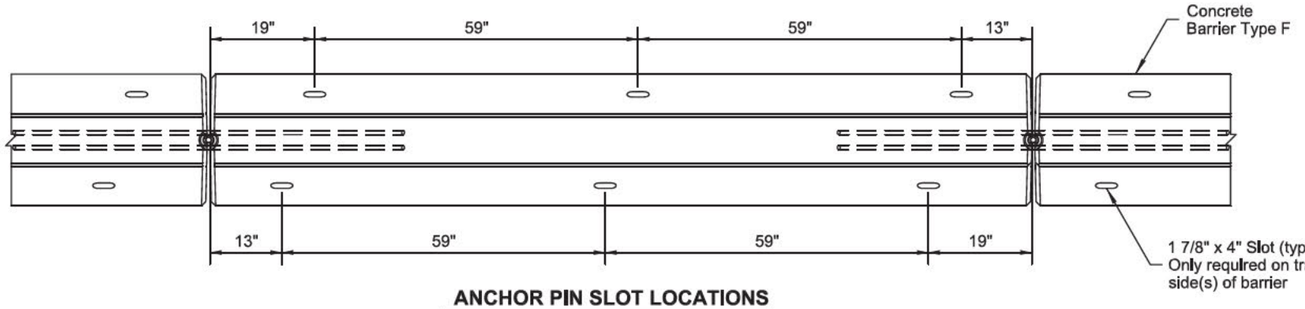
Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 07/17/2020

Last Code and Stds. Review
By: LRG Date: 07/17/2020

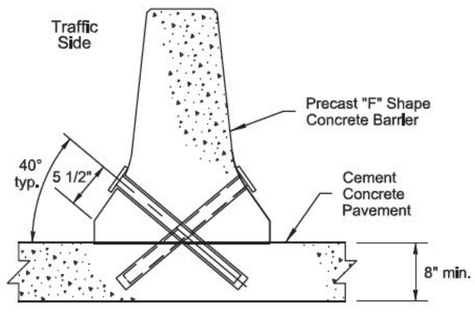
Next Code and Standards Review date:07/17/2030

G-47.00 Sheet 1 of 2

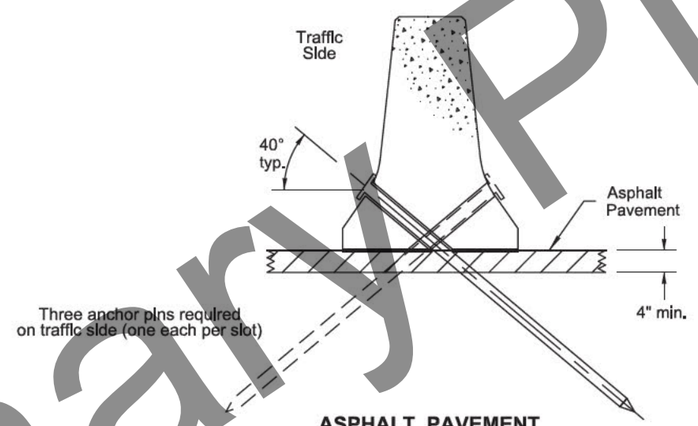


ANCHOR PIN SLOT LOCATIONS

Reinforcing steel not shown for clarity



CONCRETE ANCHOR PIN DETAILS



ASPHALT PAVEMENT ANCHOR PIN LOCATIONS

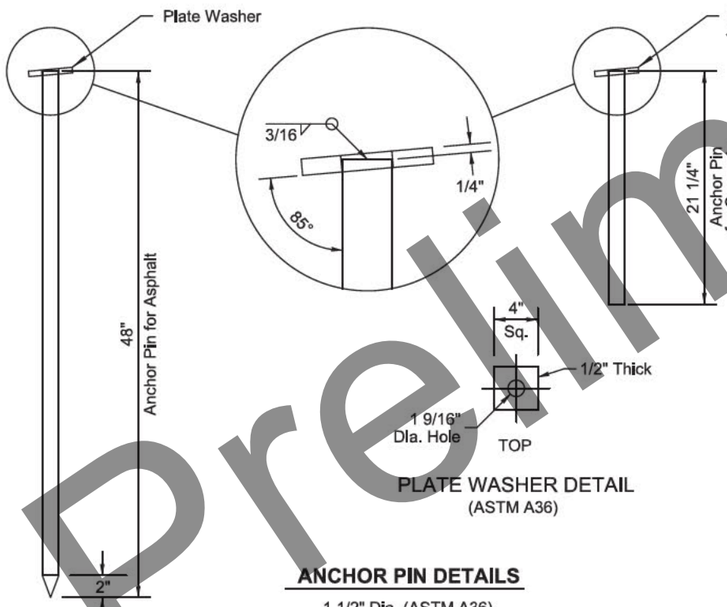
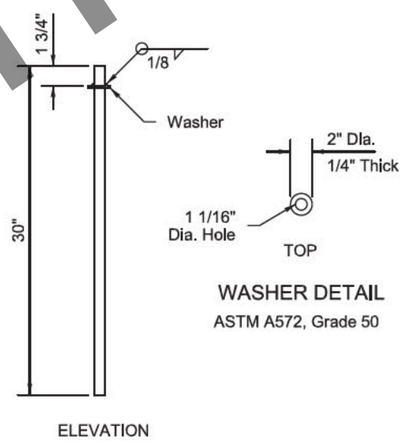


PLATE WASHER DETAIL
(ASTM A36)

ANCHOR PIN DETAILS

1 1/2" Dia. (ASTM A36)
Hot Dip Galvanize (ASTM A123 OR AASHTO M 111)

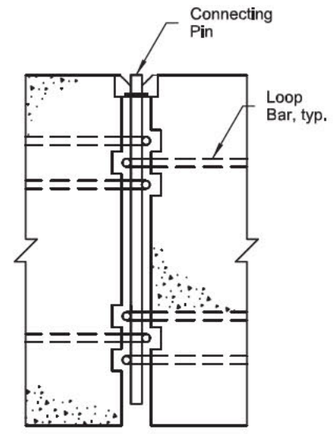


WASHER DETAIL
ASTM A572, Grade 50

ELEVATION

CONNECTING PIN DETAILS

1" Dia. - ASTM A449
Hot Dip Galvanize



BARRIER CONNECTION DETAIL

CONSTRUCTION NOTES

1. When this barrier is used as a temporary traffic control device, provide retroflective tabs or stripes meeting the requirements of Section 643 of the Standard Specifications.
2. When this barrier is used in a permanent application, provide reflector assemblies meeting the requirements of Section 614 of the Standard Specifications.

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

MASH "F" SHAPE CONCRETE BARRIER

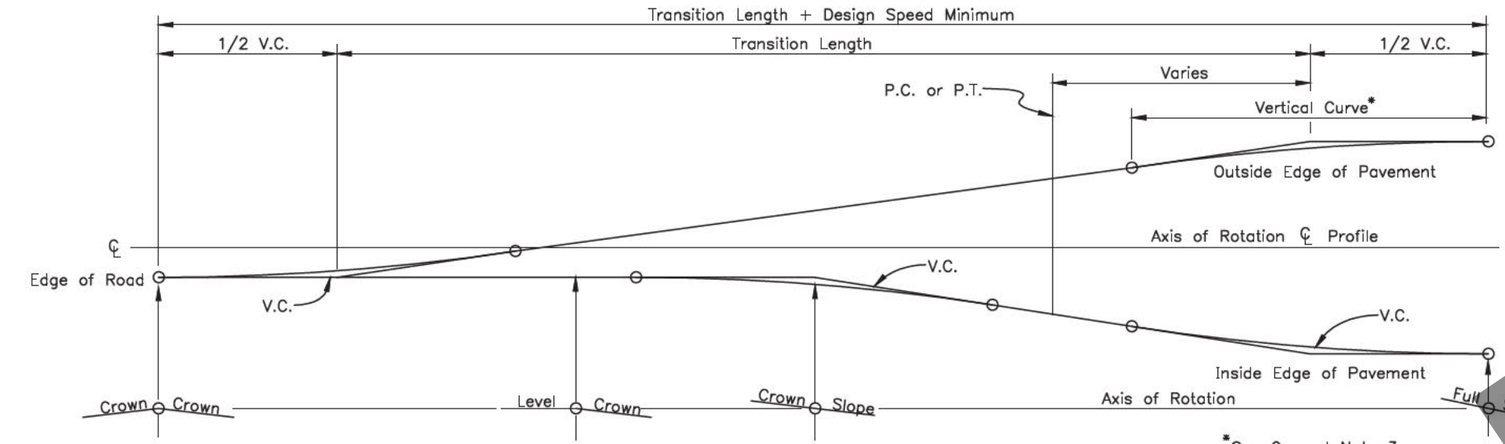
Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 07/17/2020

Last Code and Stds. Review
By: LRG Date: 07/17/2020

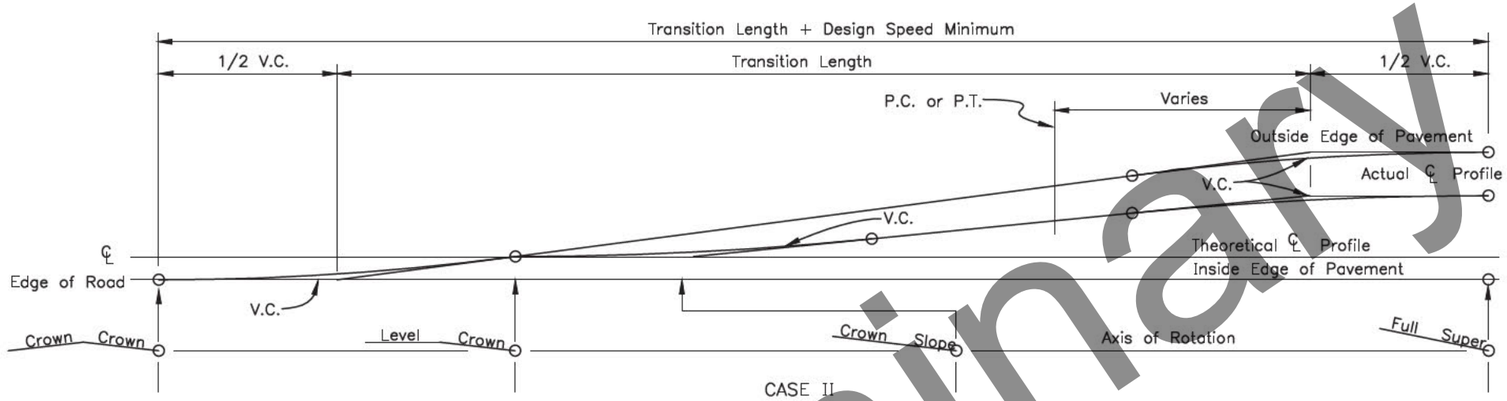
Next Code and Standards Review date:07/17/2030

G-47.00 Sheet 2 of 2

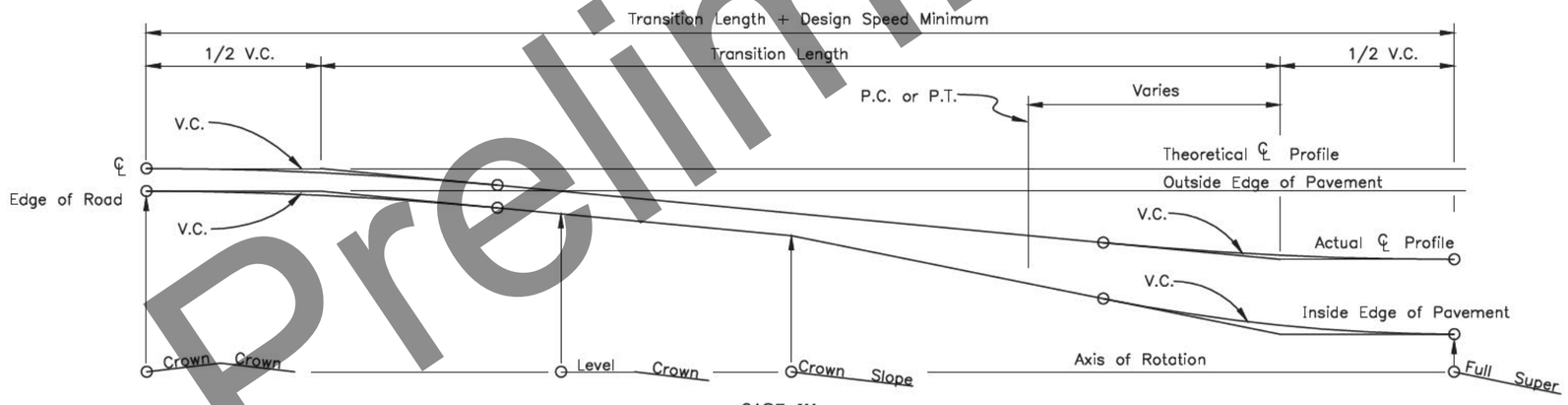


*See General Note 3

CASE I
PAVEMENT REVOLVED ABOUT CENTERLINE



CASE II
PAVEMENT REVOLVED ABOUT INSIDE EDGE
TO BE USED WHERE DRAINAGE IS THE GOVERNING CONSIDERATION



CASE III
PAVEMENT REVOLVED ABOUT OUTSIDE EDGE TO BE
USED WHERE OVERALL APPEARANCE IS THE MAIN CONTROL

GENERAL NOTES:

1. Location of transition length relative to horizontal curves will be shown on the plans or as directed by the Engineer.
2. Widening for guardrail or curvature will not change the location of the axis of rotation.
3. Minimum vertical curve length in feet shall be the numerical value of the design speed in M.P.H.
4. Superelevation shall be built into the subgrade and carried through the shoulders.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SUPERELEVATION
TRANSITION

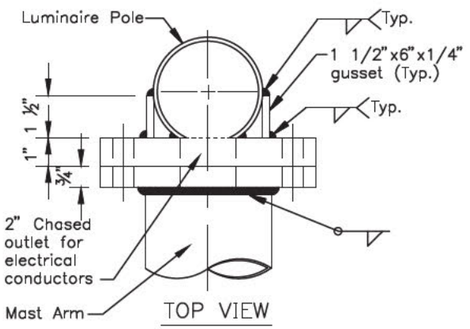
Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

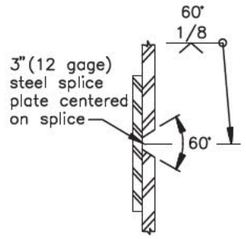
Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

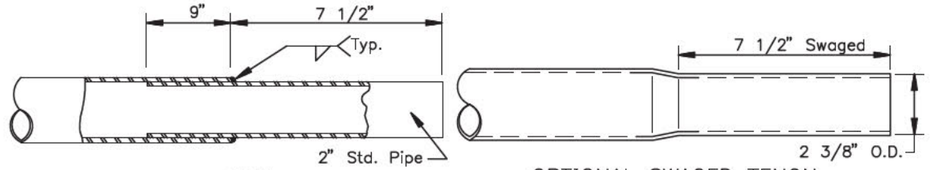
I-81.00



TOP VIEW



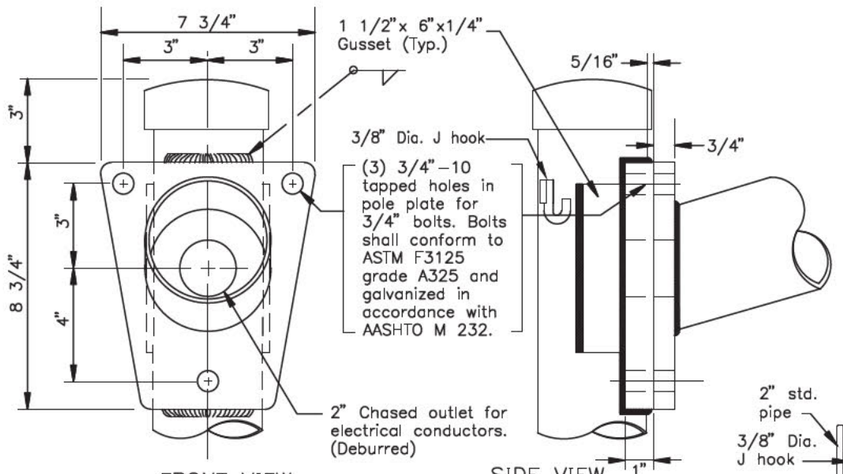
SPLICE DETAILS



TENON

OPTIONAL SWAGED TENON

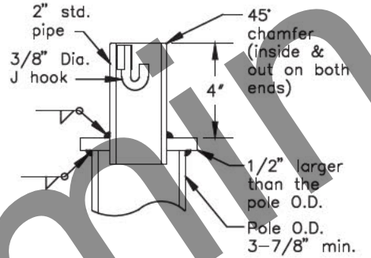
END OF MAST ARM DETAIL



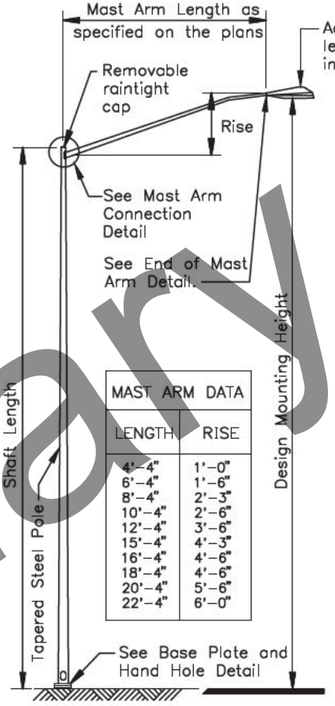
FRONT VIEW

SIDE VIEW

MAST ARM CONNECTION DETAIL

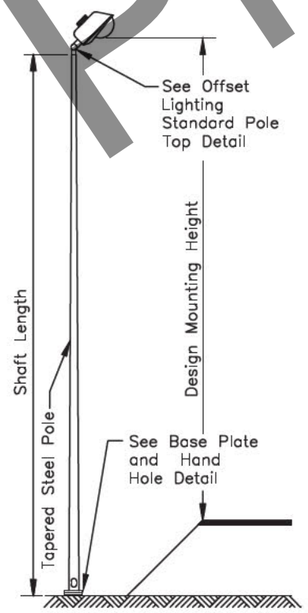


OFFSET LIGHTING STANDARD POLE TOP DETAIL
(CUTAWAY FOR CLARITY)

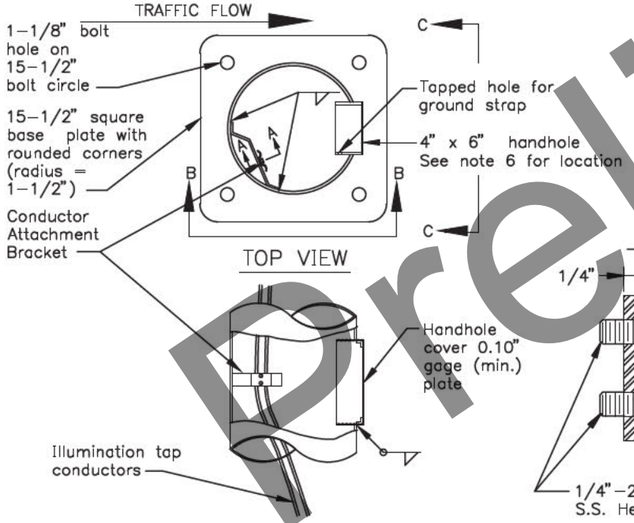


MAST ARM DATA	
LENGTH	RISE
4'–4"	1'–0"
6'–4"	1'–6"
8'–4"	2'–3"
10'–4"	2'–6"
12'–4"	3'–6"
15'–4"	4'–3"
16'–4"	4'–6"
18'–4"	4'–6"
20'–4"	5'–6"
22'–4"	6'–0"

ELECTROLIER ELEVATION
COBRA HEAD

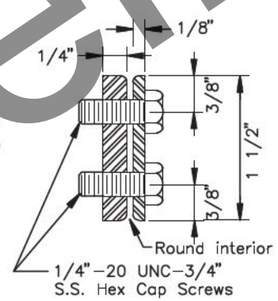


ELECTROLIER ELEVATION
OFFSET

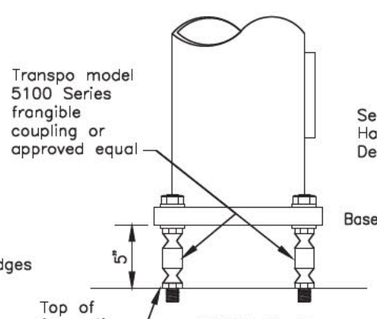


TOP VIEW

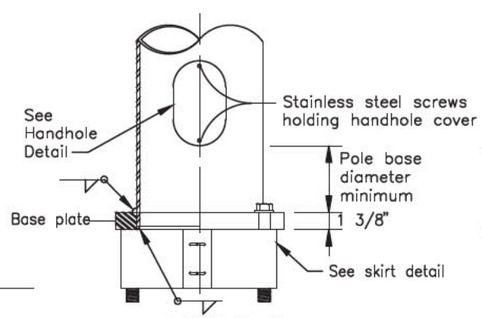
BASE PLATE AND HAND HOLE DETAIL



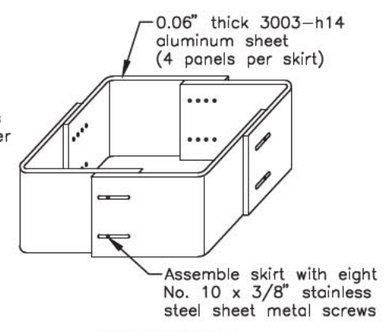
SECTION A–A



VIEW B–B



VIEW C–C



SKIRT DETAIL

GENERAL NOTES

1. Design and fabricate all shafts to support a mast arm 22' long with luminaire. Assume each offset fixture weighs 60 lbs. and has an effective projected area of 2.8 SF. Assume each Cobra head weighs 55 lbs. and has an effective projected area of 1.2 square feet. With this dead load, limit the angular rotation of the pole top to 1° 40' maximum.
2. Weld size to be determined by manufacturer.
3. Mounting height, if specified in the plans, refers to the height of luminaire above the finished roadway surface. Adjust each pole's shaft length to maintain this difference in elevation whenever slope and/or offset varies.
4. Minimum outside diameter at the top of pole equals 3–7/8". Pole diameter shall taper uniformly from the top of pole to the base plate, with a maximum taper rate of 0.15" per foot.
5. Mast arm rise may vary ±0.5ft from the values listed in the table.
6. Locate the handhole at 90 degrees to the mast arm on the side of pole downstream from traffic flow.
7. Furnish all poles with a j–hook to support the illumination tap conductors. Furnish all mast arm poles with a removable raintight cap.
8. Frangible couplings shall be NCHRP 350, Test Level 3 compliant and installed in accordance with the manufacturers written instructions. A MASH compliant device does not exist at this time. See SPDR for more info.
9. Frangible couplings shall be installed into flush mounted female anchors so that no fixed hardware extends above the foundation top.
10. Install all components of the breakaway support system in accordance with the manufacturer's written instructions.
11. Fabricate the skirt from four pieces of 0.06" thick 3003 h–14 aluminum sheet. Bend each plate to provide corners with a 3/4" radius. Assemble the skirt with #10 x 3/8" self tapping stainless screws or pop rivets. The assembled skirt measures about 12–7/8" square.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

LIGHTING STANDARDS

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK,MJM Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

L–03.11

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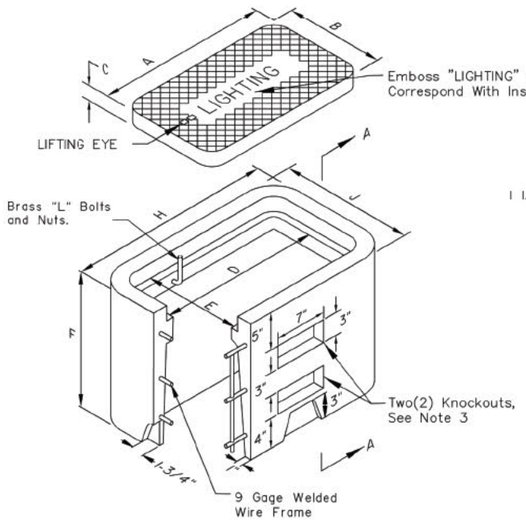
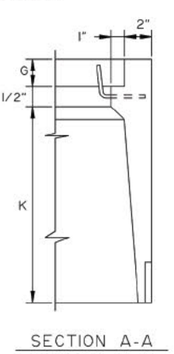
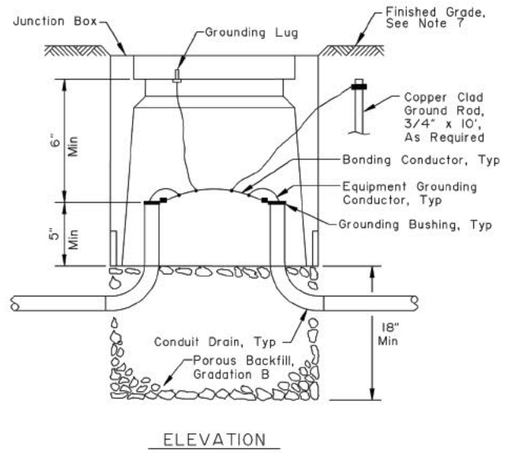
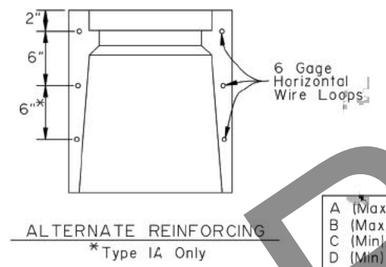








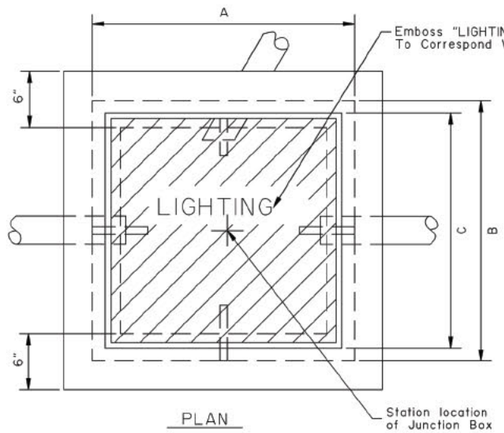
TYPE I & IA JUNCTION BOX

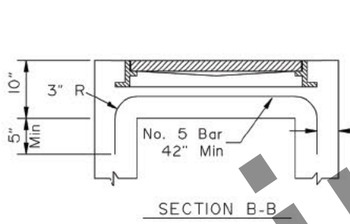
	DIMENSIONS (IN)	
	TYPE I	TYPE IA
A	15	22 3/4
B	10	13 1/4
C	1 3/4	2
D	13 1/2	21 1/4
E	8 1/2	11 3/4
F	12	18
G	1 3/4	2
H	19 1/2	27 1/4
J	14 1/2	17 3/4
K	8 3/4	14 1/2

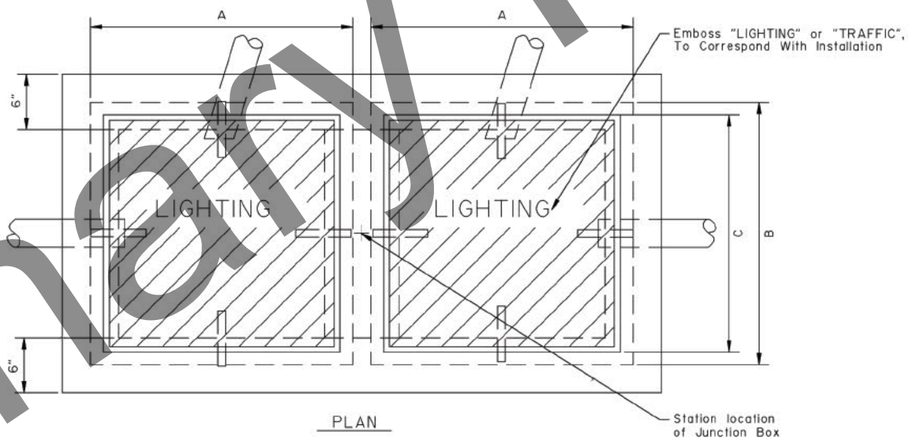
	DIMENSIONS (IN)		
	TYPE II	TYPE III	TYPE IV
A (Max)	30	30	30
B (Max)	30	30	36
C (Min)	22	22	30
D (Min)	22	22	24
E (Min)	24	24	30

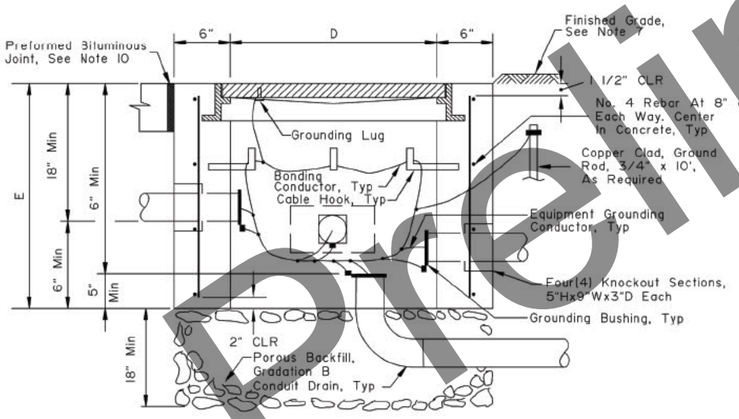
GENERAL NOTES:

1. See the Standard Specifications for Highway Construction (SSHC) for additional requirements.
2. See Section 660-2.01 of the SSHC for concrete and reinforcing steel requirements.
3. Provide knockouts indicated in Type IA junction box when installed for loop detection. Conduit for loop detectors to enter junction box through knockouts.
4. Covers for junction boxes shall be cast iron. Type I and IA shall be secured to junction box with a minimum of two bolts and be rated ANSI/SCTE 77, Tier 8, minimum. Type II, Type III and Type IV cover shall weigh over 100 pounds and be ANSI/SCTE77, AASHTO H-20 traffic rated.
5. The minimum required bearing capacity for Type I shall be 6,800psf, for Type IA shall be 5,100psf, for Type II shall be 3,500psf, for Type III shall be 2,300psf, and for Type IV shall be 2,000psf.
6. See section 703-2.10 of the SSHC for Porous Backfill material requirements.
7. See section 660-3.04 of the SSHC for top of junction box placement to finished grade requirements.
8. Provide conduits as required, size and quantity indicated in plans.
9. Provide grout around conduits in knockouts and for unused knockouts.
10. Provide a 1/2" thick preformed bituminous joint material around junction boxes installed in concrete walkways.
11. Metal conduits and junction box covers shall be bonded together to be electrically continuous using No. 8 AWG minimum copper bonding conductor. Cover shall be bonded using a tinned copper braided bonding jumper.

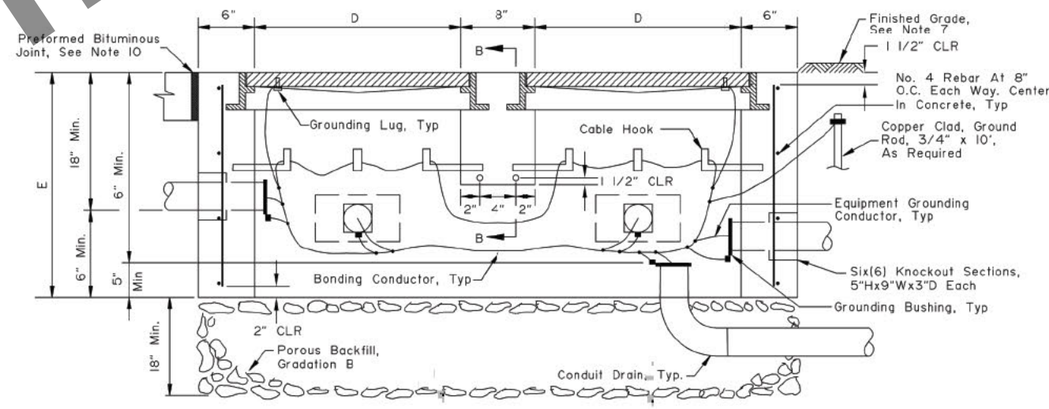








TYPE II JUNCTION BOX



TYPE III & IV JUNCTION BOX

NOT TO SCALE

State of Alaska DOT&PF
ALASKA STANDARD PLAN

JUNCTION BOXES FOR ELECTROLIER & TRAFFIC SIGNALS

Adopted as an Alaska Standard Plan by: Carolyn H Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 09/15/2022

Last Code and Stds. Review
By: CNH Date: 7/15/2020

Next Code and Standards Review date: 7/15/2030

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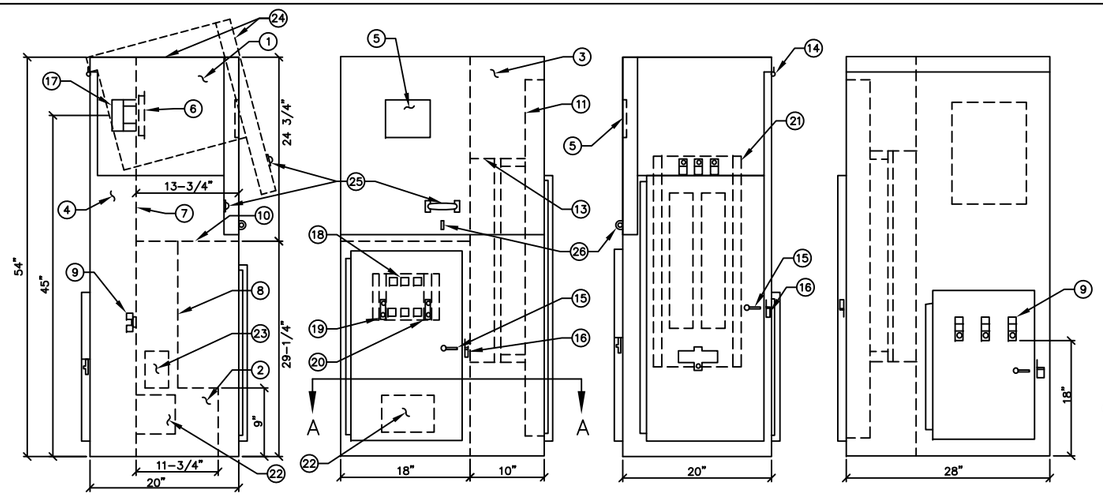
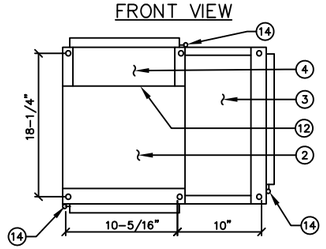


LEFT VIEW | FRONT VIEW | RIGHT VIEW | REAR VIEW

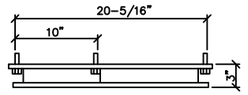
EQUIPMENT LEGEND

1. METER SECTION
2. LOAD SECTION (MAIN)
3. LOAD SECTION (DISTRIBUTION)
4. SERVICE PULL SECTION
5. METER READING WINDOW
6. METER SOCKET COVER
7. TEST SECTION COVER
8. DEAD FRONT
9. UTILITY LANDING LUGS
10. METER SECTION BARRIER
11. PANEL BOARD DEADFRONT
12. EQUIPMENT CHASSIS
13. MOUNTING PAN
14. STAINLESS STEEL PIN HINGE
15. COIN LATCH
16. HASP FOR PADLOCK
17. METER SOCKET KIT ASSEMBLY
18. MAIN BREAKER(S)
19. NEUTRAL BAR
20. GROUND BAR
21. PANEL BOARD INTERIOR
22. ALTERNATE CONTACTOR LOCATION
23. CABLE OPENING
24. HINGED HOOD
25. HOOD HANDLE
26. SEALABLE PADLOCK HASP



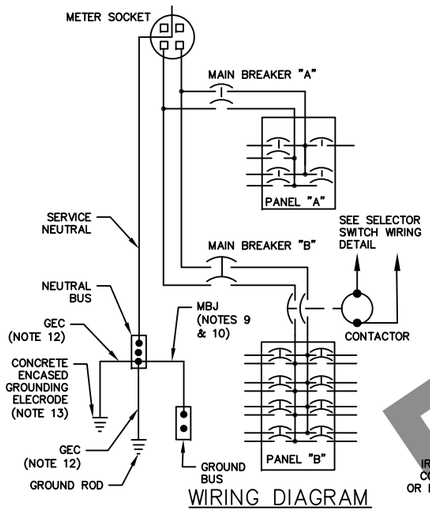
SECTION A–A

TYPE 1 LOAD CENTER CABINET SECTION / ELEVATION

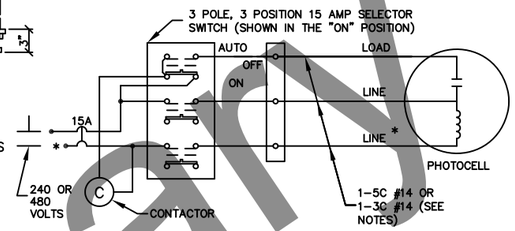


MOUNTING BASE

NOTE: DIMS. ARE APPROXIMATE AND MAY VARY. ENSURE 2" MIN CLEARANCE BETWEEN EDGES OF ANCHOR BOLTS AND CHAMFER EDGES.

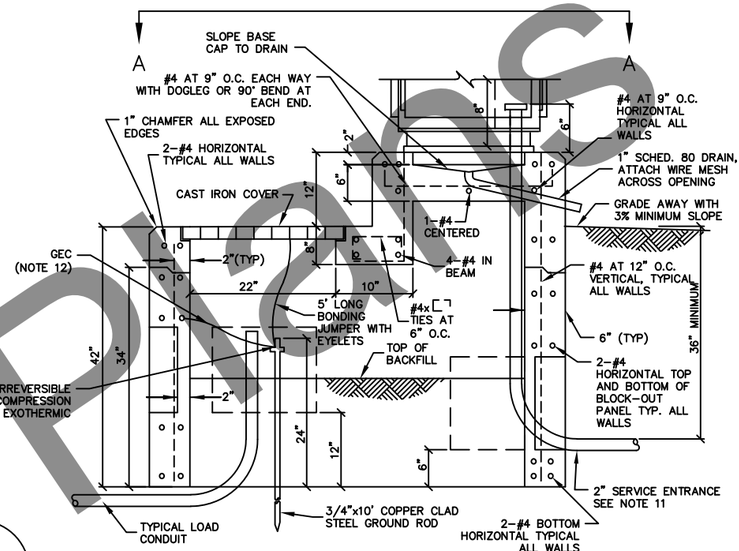


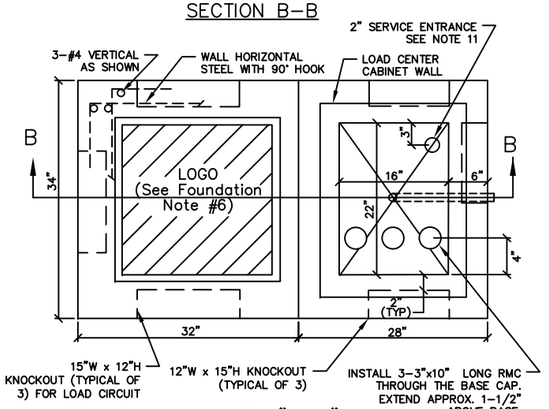
WIRING DIAGRAM



SELECTOR SWITCH WIRING DETAIL

* GROUNDED NEUTRAL, IF SERVICE IS 240/480 VOLT SINGLE PHASE OR 277/480 VOLT THREE–PHASE; AND UNGROUNDED LINE, IF SERVICE IS 120/240 VOLT SINGLE PHASE.





VIEW "A–A"
(PLAN VIEW)

TYPE 1 LOAD CENTER BASE

NOTE: STOP HORIZONTAL AND VERTICAL STEEL AT BLOCK–OUT PANELS & OPTIONAL JOINT USING 90° BEND. INSTALL 2 EXTRA #4 HORIZONTAL AND VERTICAL BARS ON ALL SIDES OF EACH KNOCKOUT.

FOUNDATION NOTES:

1. INSTALL THE SURFACE WITH CAST IRON COVER FLUSH WITH THE PAVEMENT, SIDEWALK, OR FINISHED GRADE. GRADE AWAY FROM THE BASE WITH A MINIMUM SLOPE OF 3%. USE A PRE–MOULDED BITUMINOUS JOINT BETWEEN THE BASE AND CONCRETE SIDEWALK OR PAVING.
2. WHEN INSTALLING THE BASE, EXCAVATE TO 60" BELOW FINISHED GRADE AND INSTALL A DRAIN CONSISTING OF 18" OF COARSE CONCRETE AGGREGATE APPROVED BY THE ENGINEER. BACKFILL AROUND THE BASE IN 6" LIFTS WITH SELECTED MATERIAL TYPE "A".
3. BACKFILL INSIDE THE FOUNDATION TO WITHIN 24" OF THE LID AFTER ALL CONDUITS ARE INSTALLED, USING COARSE AGGREGATE. TERMINATE THE ENDS OF ALL LOAD CONDUITS A MINIMUM OF 6" ABOVE THE COARSE CONCRETE AGGREGATE BACKFILL AND A MINIMUM OF 12" BELOW THE LID.
4. PROVIDE ANCHOR BOLTS OR EXPANSION ANCHORS IN THE BASE FOR MOUNTING THE CABINET PER THE MANUFACTURER'S SHOP DRAWINGS. ANCHOR BOLTS, NUTS, AND WASHERS SHALL CONFORM TO EITHER ASTM A307 OR A449 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
5. USE GRADE 60 REINFORCING STEEL CONFORMING TO ASTM 615 AND CLASS "A" CONCRETE CONFORMING TO SECTION 501 OF THE SPECIFICATIONS WHEN CASTING THE BASE.
6. FINISH THE BASE ACCESS OPENING WITH A 24" SQUARE IRON FRAME AND COVER WITH PICK HOLE FOR REMOVAL, WEIGHING APPROXIMATELY 280 LBS. PROVIDE COVERS INSCRIBED WITH THE LEGEND "LIGHTING" FOR THOSE LOAD CENTERS WITH STREET LIGHTING CIRCUITS ONLY, AND "TRAFFIC" FOR THOSE LOAD CENTERS WITH A TRAFFIC SIGNAL CIRCUIT.
7. IF THE BASE IS PRECAST, INSTALL TWO 3/4" FERRULE LOOP INSERTS IN TWO SIDES OPPOSITE ONE ANOTHER FOR LIFTING.

NOTES:

1. FURNISH ALL EQUIPMENT NOTED IN THE LOAD CENTER SUMMARY(IES) IN THE PLANS, PLUS TWO 20–AMP 2–POLE SPARE CIRCUIT BREAKERS, AND SPACE FOR A MINIMUM OF TWO ADDITIONAL 2–POLE CIRCUIT BREAKERS IN EACH LOAD PANEL. SEE THE LOAD CENTER SUMMARIES FOR LOAD PANEL VOLTAGES, CURRENT RATINGS, SHORT CIRCUIT INTERRUPTING RATINGS, AND THE NAME OF THE SERVING UTILITY.
2. INSTALL GROUNDING HUBS THIRD PARTY CERTIFIED FOR WET LOCATIONS, WHEN ATTACHING CONDUITS TO THE LOAD CENTER ENCLOSURE.
3. LABEL ALL CIRCUIT BREAKERS AS TO FUNCTION AND POSITION. LABEL THE SELECTOR SWITCH "LIGHTING" AND ITS POSITIONS "ON–OFF–AUTO".
4. INSTALL THE PHOTOELECTRIC CONTROL UNIT ON A 3/4", OR LARGER, CONDUIT. LOCATE THE UNIT 18"–24" ABOVE THE TOP OF THE LOAD CENTER. ORIENT THE CONTROL WINDOW FACING NORTH AND/OR AWAY FROM ARTIFICIAL LIGHT SOURCES THAT MAY INTERFERE WITH AMBIENT LIGHT CONTROL. INSTALL A 3C#14 CABLE FROM THE LOAD CENTER TO THE CONDUIT BODY WHERE THE CONNECTION TO THE PHOTOCELL RECEPTACLE CABLE SHALL BE MADE. IF PLANS CALL TO MOUNT PHOTOCELL AWAY FROM LOAD CENTER USE A 5C#14 CABLE FROM LOAD CENTER TO RECEPTACLE. PHOTOCELL MUST BE ENCLOSED IN A METALLIC ENCLOSURE.
5. METER BASES SHALL NOT BE MOUNTED ON MOVABLE PANELS OR DOORS.
6. LOCATE THE LOAD CENTER AS SHOWN ON THE PLANS.
7. STORE A SCHEMATIC DIAGRAM, A CIRCUIT DIRECTORY, AND A MATERIALS LIST THAT INCLUDES THE MANUFACTURER'S NAME AND PART/CATALOG NUMBERS, ALL LAMINATED IN PLASTIC, IN A METAL POCKET ATTACHED TO THE INSIDE OF THE LOAD CENTER. INSTALL THE POCKET ON THE LOAD CENTER DOOR, PROVIDING DRAIN HOLES TO PREVENT WATER ACCUMULATION.
8. MAXIMUM METER HEIGHT SHALL NOT EXCEED 64" FROM CAST IRON COVER TO CENTER OF THE METER SOCKET COVER.
9. INSTALL #6 AWG COPPER MAIN BONDING JUMPER, OR SIZE PER NEC TABLE 250.102 (C)(1), WHICHEVER IS LARGER.
10. INSTALLATION MUST COMPLY WITH THE NEC 250.24 (C) AND 250.24 (C) EXCEPTION WHEN MORE THAN ONE PANELBOARD IS PRESENT.

NOTES (CONTINUED):

11. THE LENGTH AND TYPE OF SERVICE ENTRANCE CONDUIT INSTALLED BY THE CONTRACTOR VARIES BY UTILITY. REGARDLESS OF ITS LENGTH, INSTALL A PULL ROPE IN THE SERVICE CONDUIT AND A CAP ON THE BURIED END: MARK THE BURIED END WITH A 2"X 6" WOOD STAKE. SEE THE LOAD CENTER SUMMARIES FOR THE FOLLOWING INFORMATION.
    A. STATION AND OFFSET OF THE LOAD CENTER AND POWER SOURCE.
    B. WHERE THE CONTRACTOR TERMINATES THE SERVICE ENTRANCE CONDUIT.
    C. THE TYPE OF SERVICE ENTRANCE CONDUIT (SUCH AS RIGID METAL CONDUIT OR LIQUID–TIGHT FLEXIBLE METAL CONDUIT).
12. INSTALL #6 AWG COPPER GROUNDING ELECTRODE CONDUCTOR (GEC), OR SIZE PER NEC TABLE 250.66, WHICHEVER IS LARGER.
13. THE REINFORCING BARS WITHIN THE CONCRETE PAD MUST BE CONNECTED TOGETHER BY EFFECTIVE MEANS AND WILL BECOME PART OF THE GROUNDING ELECTRODE SYSTEM PER NEC 250.50 AND 250.52(A)(3). INSTALL AN IRREVERSIBLE COMPRESSION GROUNDING CONNECTOR, NRTL–LISTED FOR DIRECT BURIAL IN EARTH AND CONCRETE, TO CONNECT THE REINFORCING BARS TO THE GEC. INSTALL A BARE COPPER GEC, SIZED PER NEC 250.66 BUT NOT SMALLER THAN #6 AWG, BETWEEN THE COMPRESSION CONNECTOR AND THE LOAD CENTER NEUTRAL.
14. INSTALL LABEL(S) ON ENCLOSURE EXTERIOR PER ARC FLASH AND SHOCK HAZARD LABELING DETAIL:
    A. TO WARN OF THE POTENTIAL ARC FLASH HAZARD [PER NEC 110.16 AND NFPA 70E], AND
    B. TO IDENTIFY THE AVAILABLE FAULT CURRENT [PER NEC 110.24(A)].
15. WHEN SHOWN IN THE PLANS, INSTALL ENCLOSURE HEATER WITH INTEGRAL THERMOSTAT, SET TO ENERGIZE THE HEATER AT TEMPERATURES AT OR BELOW 32–DEG F. SCHNEIDER ELECTRIC CAT. NO. NSYCRP1W230VTVC, NVENT–HOFFMAN CAT. NO. DAH4002B, OR APPROVED EQUAL.
16. BOND SERVICE CONDUIT GROUNDING BUSHING TO SUPPLY–SIDE BONDING JUMPER. BOND LOAD CONDUIT GROUNDING BUSHINGS TO ASSOCIATED EQUIPMENT GROUNDING CONDUCTORS (EGC'S).

State of Alaska DOT&PF
ALASKA STANDARD PLAN

TYPE 1 LOAD CENTER

Adopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

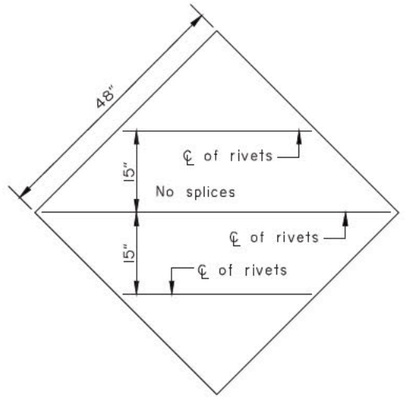
Adoption Date: 07/17/2020

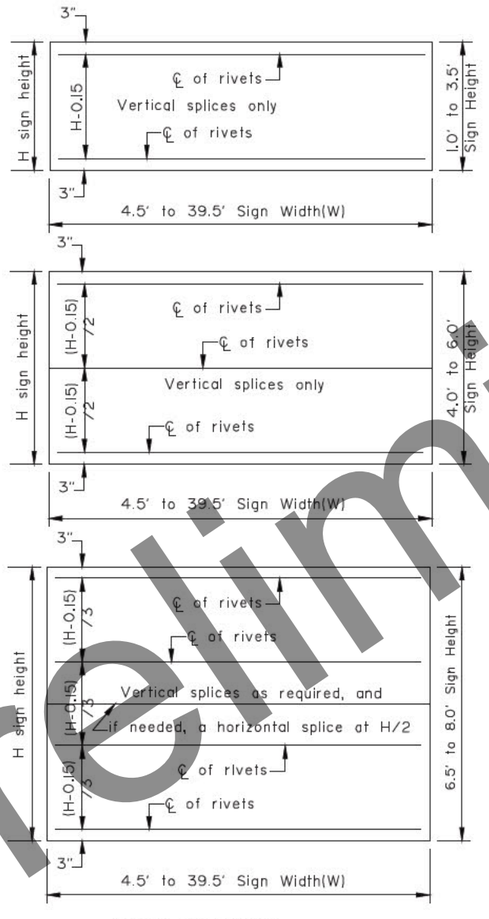
Last Code and Stds. Review
By: JC Date: 07/17/2020

Next Code and Standards Review date: 07/17/2030

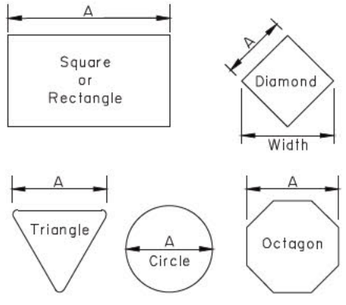
L-24.10

S-00.12 | SHEET | of |





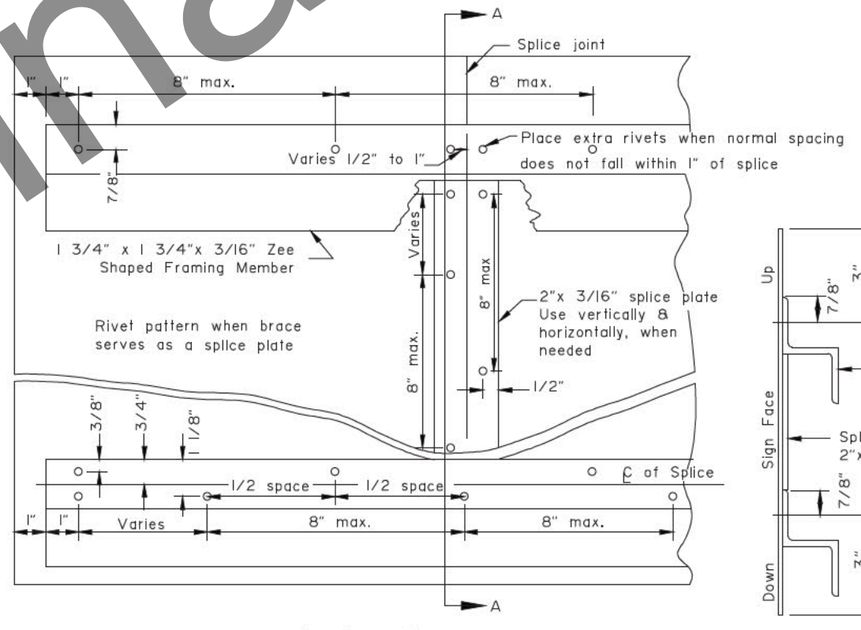
WIND FRAMING LOCATIONS



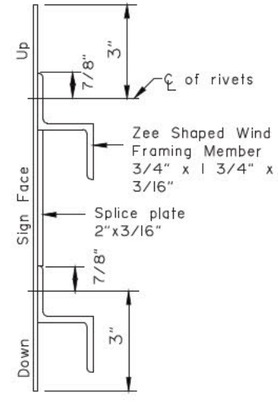
Maximum size unframed signs using 0.125" thick aluminum sheeting.	
Sign Shape	A
Squares, Shields, and Route Markers	48"
Rectangles	48"
Diamonds	48"
Triangles	48"
Rounds and Octagons	48"

Install wind framing on all signs that exceed the dimensions listed.

LIGHT SIGNS



RIVET DETAIL FOR ZEE SHAPED WIND FRAMING & SPLICE PLATE



SECTION A-A

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SIGN FRAMING

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review By: WTH Date: 7/8/2020

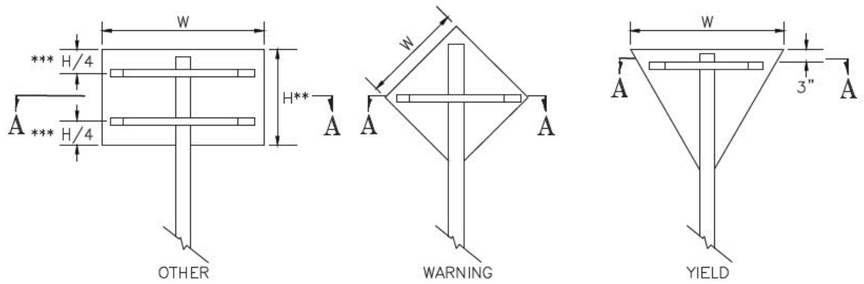
Next Code and Standards Review date: 7/8/2030

S-00.12

GENERAL NOTES

1. See the standard specifications for the aluminum alloys that you may use for sign sheeting and wind framing members.
2. Fabricate all signs from 0.125" thick aluminum sheeting.
3. Sign fabricators may use alternates to the zee shaped framing member with approval of the engineer, if the frame manufacturer certifies their design equals or exceeds the strength of the zee shaped design.
4. Install one piece wind framing members on all signs up to 23.5' wide. Use one splice in each wind frame on all signs wider than 23.5'. Locate splices at least 18" from all posts and panel edges. Stagger splices in adjacent framing members at least 8.0' apart.
5. Attach wind framing members with rivets or with an engineer approved, double sided, high strength, adhesive tape. Clean and handle sheeting and framing members and apply tape in accordance with the tape manufacturer's written instructions. Install two rivets in both ends of each framing member.
6. Use 3/16" diameter rivets conforming to aluminum alloy 6061-T6 for cold driven rivets, or aluminum alloy 6061-T43 for hot driven rivets.
7. Sign fabricators may use sign panels extruded with integral framing with approval of the engineer, if the manufacturer certifies their design equals or exceeds the strength of the 0.125" thick panel with framing attached to it.
8. Frame all signs taller than 8.0' with five wind framing members located (H-0.15)/4 spaces. If needed, make a horizontal splice at the middle wind frame.
9. Do not use round pipes for sign supports.

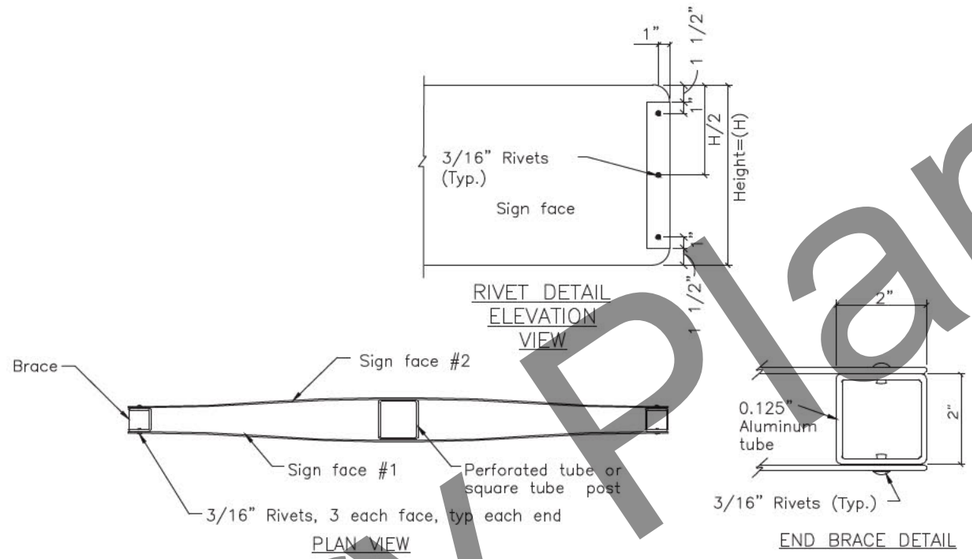
S-01.02 | SHEET | of |



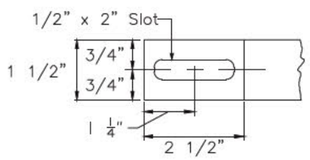
*** Use one brace when H ≤ 18"
Use two braces when 18"< H < 48"
Use three braces when H ≥ 48"

** Position of brace may be varied to match Predrilled mounting holes in panel

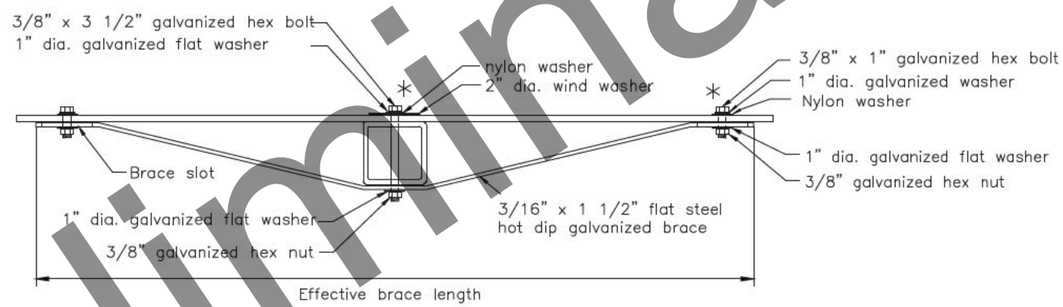
SIGN BRACING PLACEMENT



SMALL STREET NAME SIGN (D3-1, D3-1A, D3-1D) BRACING DETAILS



DETAIL OF BRACE SLOT
Elevation view



TUBE POST SIGN BRACING SECTION A-A
Plan view

* Adjust location of bracing so that bolts and washers will miss the sign legend

Sign Width(W)	Effective Brace Length		
	Warning	Yield	Other
30"	36"	24"	24"
36"	42"	30"	30"
42"	48"	–	36"
48"	Two posts	36"	42"

< 30" No bracing required and use square tube

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

BRACING FOR SIGNS MOUNTED ON SINGLE POST

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

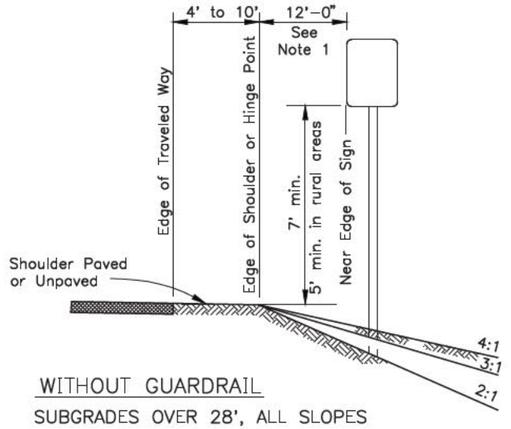
Adoption Date: 7/17/2020

Last Code and Stds. Review
By: WTH Date: 7/8/2020

Next Code and Standards Review date: 7/8/2030

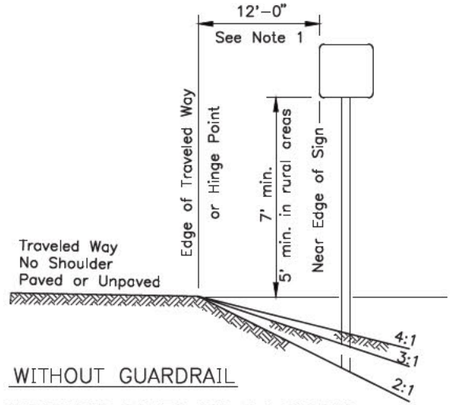
S-01.02

S-05.02 | SHEET 1 of 1



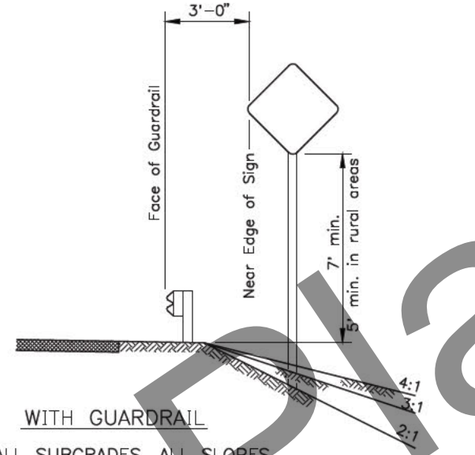
WITHOUT GUARDRAIL

SUBGRADES OVER 28', ALL SLOPES



WITHOUT GUARDRAIL

SUBGRADES 24' TO 28', ALL SLOPES

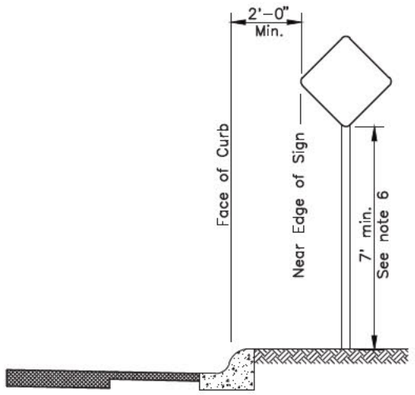


WITH GUARDRAIL

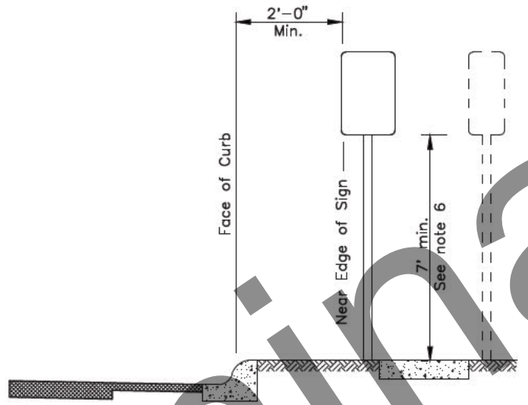
ALL SUBGRADES, ALL SLOPES

GENERAL NOTES

1. Unless shown otherwise on the plans, the standard sign offset is 12'. The minimum is 6' where shoulder width is 6' or greater.
2. Add 6" to mounting height on unpaved roads.
3. If signs extend over bike paths, the minimum vertical clearance is 8' 0".
4. When signs are placed 30' or more from the edge of traveled way, mount them with the bottom of the sign at least 5' above the road surface at the near edge of the road.
5. When multiple hinged sign supports are used, mount hinges at least 7' above the ground.
6. Minimum mounting height is 7'-0" where parking or pedestrian movements are likely to occur, or where sings extend over sidewalks.
7. For construction signs in rural areas, mounting height shall be 7' minimum.

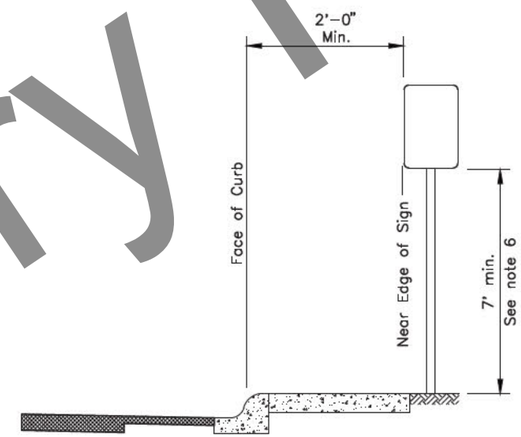


CURB WITHOUT SIDEWALK

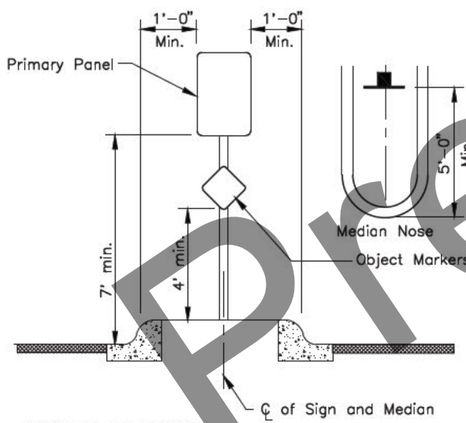


CURB WITH PARKWAY AND SIDEWALK

(If R/W width permits, signs should be placed behind sidewalk.)

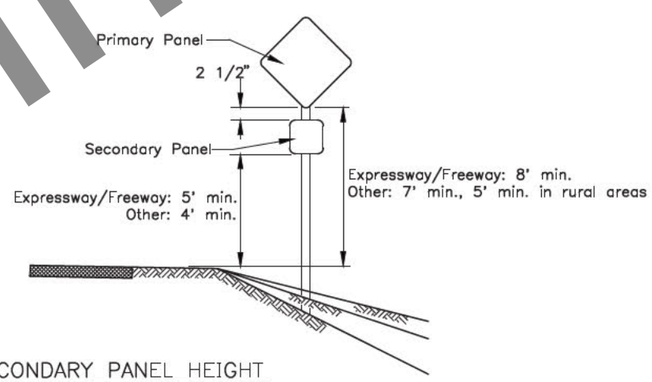


CURB WITH SIDEWALK WITHOUT PARKWAY



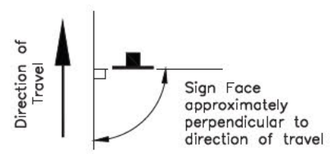
RAISED MEDIANS

Minimum 4' Width for Signing



SECONDARY PANEL HEIGHT

ALL TWO PANEL MOUNTING



SIGN POSITIONING

State of Alaska DOT&PF
ALASKA STANDARD PLAN

POST MOUNTED SIGN
OFFSET AND HEIGHT

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

S-05.02

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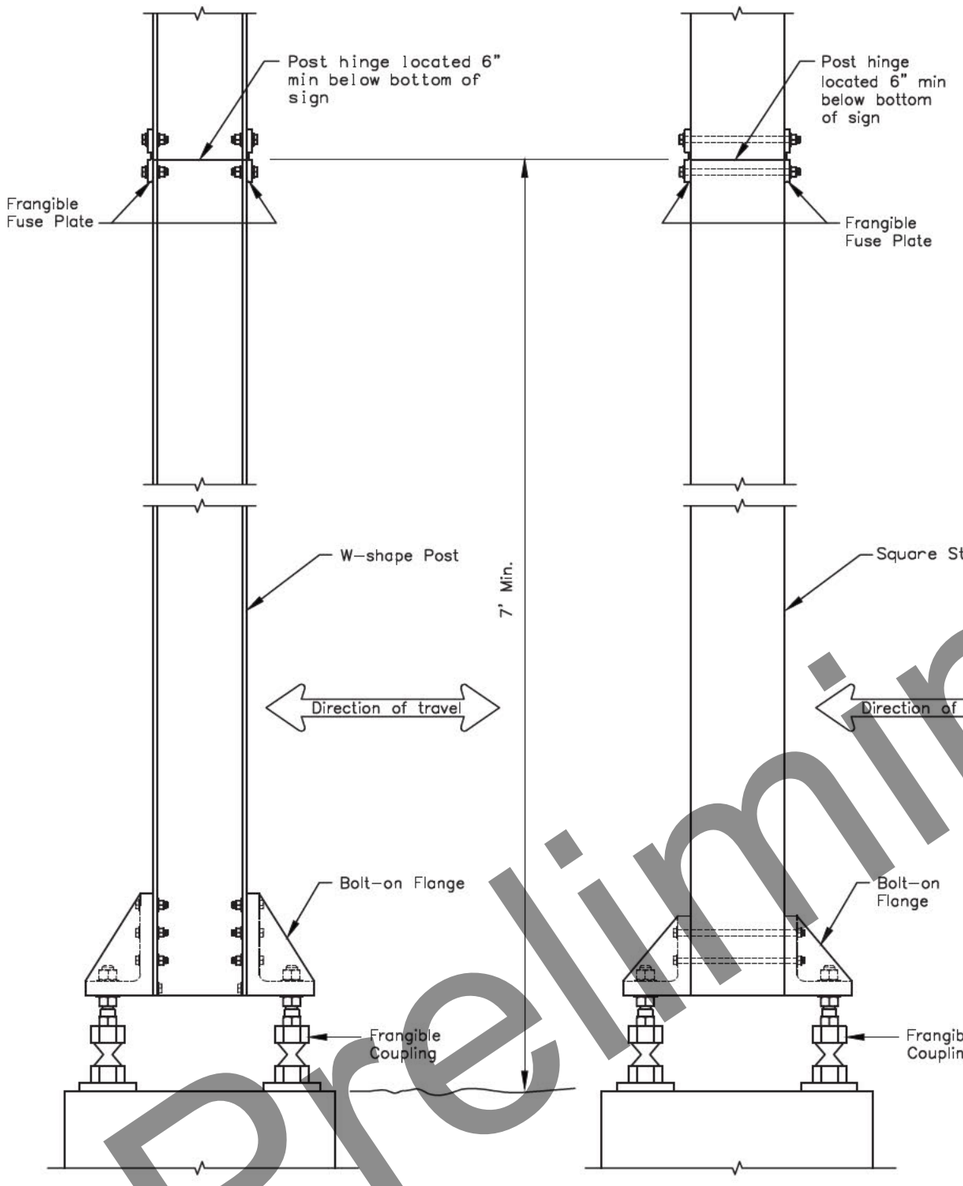
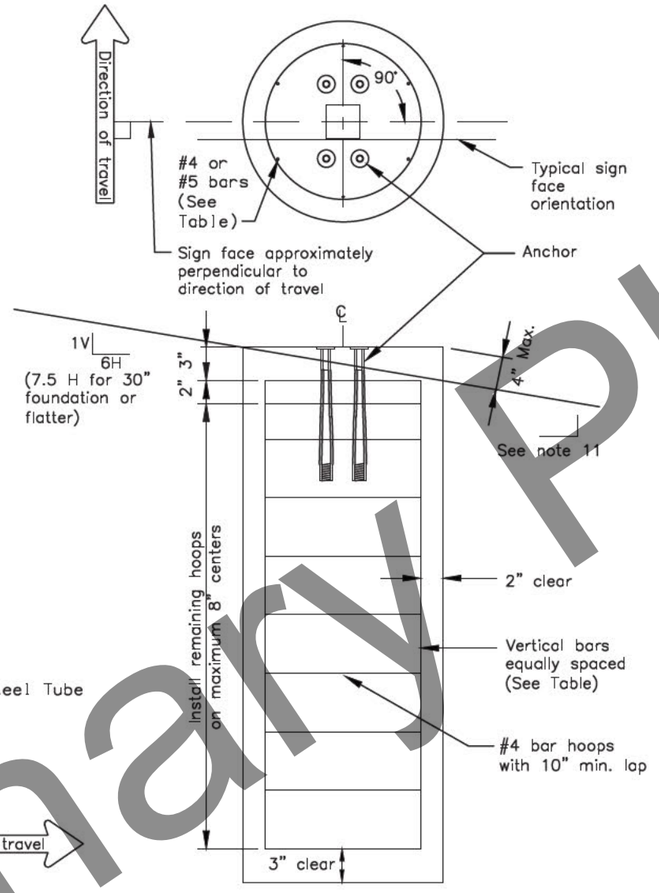
NOTE:
Install hinges when more than one post is used to support a sign. Do not install hinges on single post installations.



FRANGIBLE COUPLING SYSTEM FOR W–SHAPE POST

FRANGIBLE COUPLING SYSTEM FOR SQUARE STEEL TUBES



SIGN POST FOUNDATION
See Table for depth and diameter

POST SIZE & TYPE	FOUNDATION *			REINFORCEMENT					
	DIA.	MIN. DEPTH	CY^3 CONC.	VERTICAL BARS QTY.	SIZE	LGTH.	HOOPS QTY.	SIZE	DIA.
2 1/2" TUBE	1'–6"	6'–0"	0.39	7	#5	5'–6"	10	#4	1'–2"
3" TUBE	1'–6"	6'–0"	0.39	7	#5	5'–6"	10	#4	1'–2"
3 1/2" TUBE	1'–6"	6'–0"	0.39	7	#5	5'–6"	10	#4	1'–2"
4" TUBE	2'–6"	6'–0"	1.09	8	#8	5'–6"	10	#4	2'–2"
4 1/2" TUBE	2'–6"	6'–0"	1.09	8	#8	5'–6"	10	#4	2'–2"
5" TUBE	2'–6"	6'–0"	1.09	8	#8	5'–6"	10	#4	2'–2"
W6 x 9	2'–6"	6'–0"	1.09	8	#8	5'–6"	10	#4	2'–2"
W6 x 12	2'–6"	6'–0"	1.09	8	#8	5'–6"	10	#4	2'–2"
W6 x 15	3'–0"	6'–6"	1.70	8	#11	6'–0"	12	#4	2'–8"
W6 x 30	3'–0"	7'–6"	1.96	8	#11	7'–0"	13	#4	2'–8"

FOUNDATION TABLE

* Foundations sized for use where there are no loose, high moisture, or fine grained soils.

GENERAL NOTES

1. Furnish sign posts with NCHRP 350 compliant frangible couplings designed to break away safely when struck from any direction. There is no MASH compliant device at this time. See SPDR report for more info.
2. Furnish frangible coupling systems with bolt–on flanges.
3. Details on this sheet illustrate only the general components of a frangible coupling system, and are not intended to specify a particular product.
4. Install frangible fuse plates as specified by the manufacturer and hinged joints when multiple posts are used to support a sign. Do not use round pipes.
5. Install the components of the breakaway system, including hinges, in accordance with the written instructions of the system manufacturer.
6. Use Class A, B or W concrete conforming to Sections 501 or 550 of the Standard Specifications. Furnish ASTM A615 grade 60 steel bars for concrete reinforcement conforming to AASHTO M31.
7. Spiral reinforcing steel may be substituted for hoops in concrete foundation. Spiral option shall consist of #3 plain spiral with 6" pitch with three flat turns at the top and one flat turn at the bottom.
8. Install the concrete anchors using a rigid template. Locate the anchors on centers and within tolerances specified by the manufacturer.
9. Install the anchors in fresh concrete as recommended by the manufacturer. Adjust the template's final position until it is level. Remove and replace all foundations that need more than 2 shims under any 1 coupling or more than a total of 3 shims under any pair of couplings to plumb the post.
10. Drill the holes for attaching brackets before the sign posts are hot dip galvanized. Test fit templates in the holes to ensure the brackets can be installed square to the posts.
11. Special grading detail and/or shielding may be required to maintain 4" maximum clear distance.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SIGN POST BASE AND FOUNDATION

Adopted as an Alaska Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK, MJM Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

S–31.02

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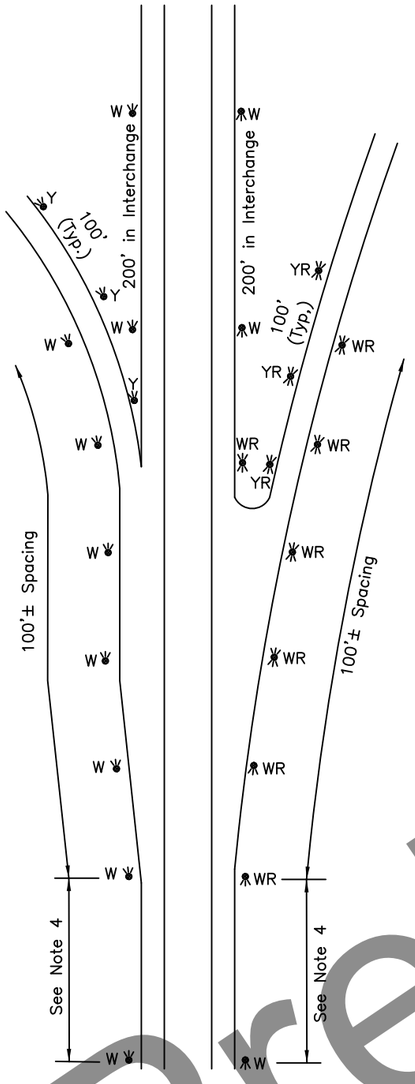
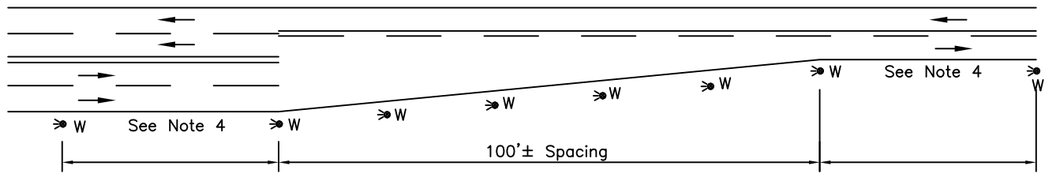
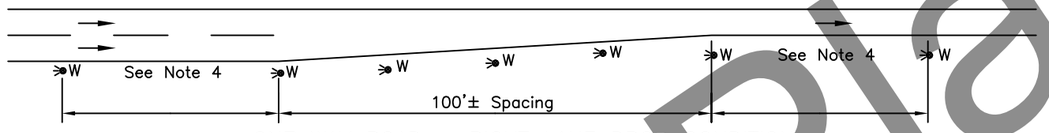
SHEET 1 of 1



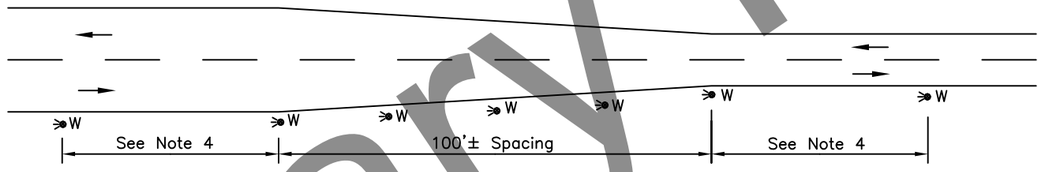
FREEWAY RAMPS



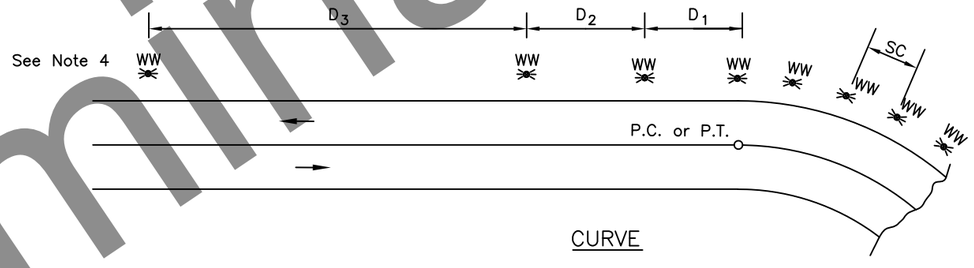
TWO WAY ROAD – LANE REDUCTION CONDITION



ONE WAY ROAD – RIGHT LANE DROP CONDITION
(FOR LEFT LANE DROP CONDITION USE TYPE Y MARKERS)



TWO WAY ROAD – NARROWING CONDITION



CURVE

SPACING ON CURVES				
RADIUS FT	SPACING ON CURVE	SPACING IN ADVANCE AND BEYOND CURVE		
		FIRST	SECOND	THIRD
R	SC	D_1	D_2	D_3
1,000'	90'	160'	270'	300'
900'	85'	155'	250'	300'
800'	80'	145'	240'	300'
700'	75'	135'	225'	300'
600'	70'	125'	210'	300'
500'	65'	115'	195'	300'
400'	55'	100'	165'	300'
300'	50'	90'	150'	300'
250'	40'	70'	120'	240'
180'	35'	65'	105'	210'
115'	25'	55'	90'	180'
50'	20'	35'	60'	120'

GUIDE MARKER REFLECTORS		
TYPE	FRONT COLOR	BACK COLOR
WW	WHITE	WHITE
W	WHITE	--
Y	YELLOW	--
YY	YELLOW	YELLOW
WR	WHITE	RED
YR	YELLOW	RED

GENERAL NOTES

1. Maximum spacing on tapers, speed change lanes, pavement transitions, and ramps should be 100'±.
2. On roads with continuous delineation, adjust existing guide marker locations to tie into these configurations.
3. Marker spacing in table has been rounded for ease of calculation and field layout.
4. Spacing on tangents should be approximately 500', 530' maximum. See table for spacing on curves.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

GUIDE MARKER PLACEMENT

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

Next Code and Standards Review date:02/08/2029

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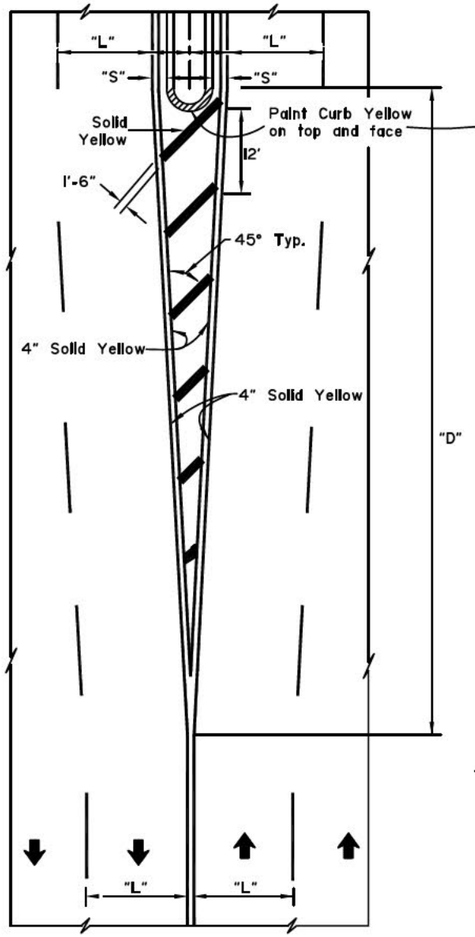
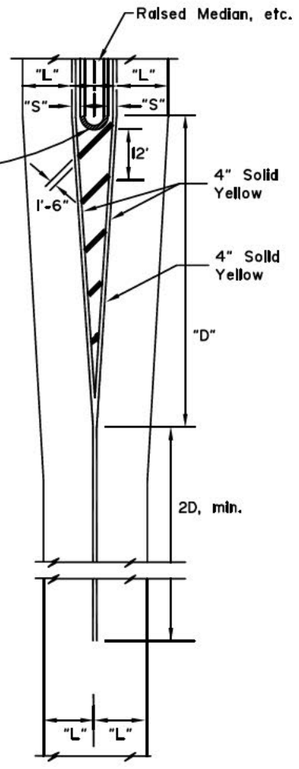


FOUR OR MORE LANES
DRIVE TO RIGHT

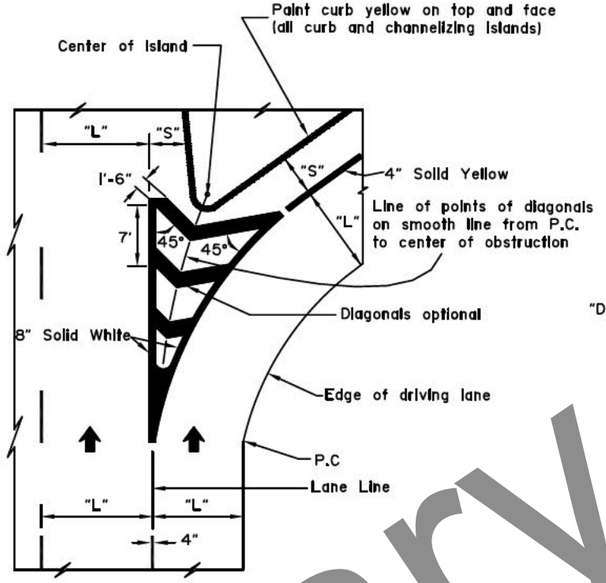


TWO LANES
DRIVE TO RIGHT

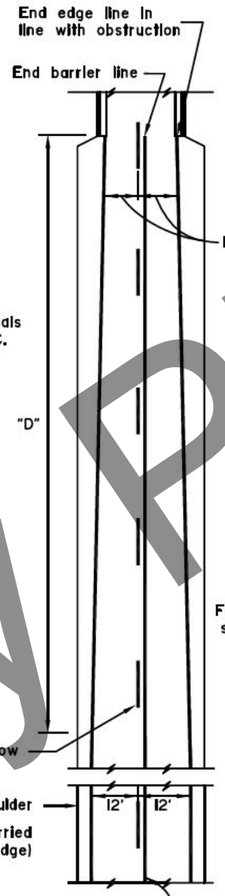
White longitudinal and diagonal markers identical to Four Lane Arrangement.

NOTES: "D" = Speed limit (mph) X "S" (offset width in feet) or as indicated on the plans. Minimum "D" = 100 feet urban, 200 feet rural.

APPROACH TO OBSTRUCTIONS

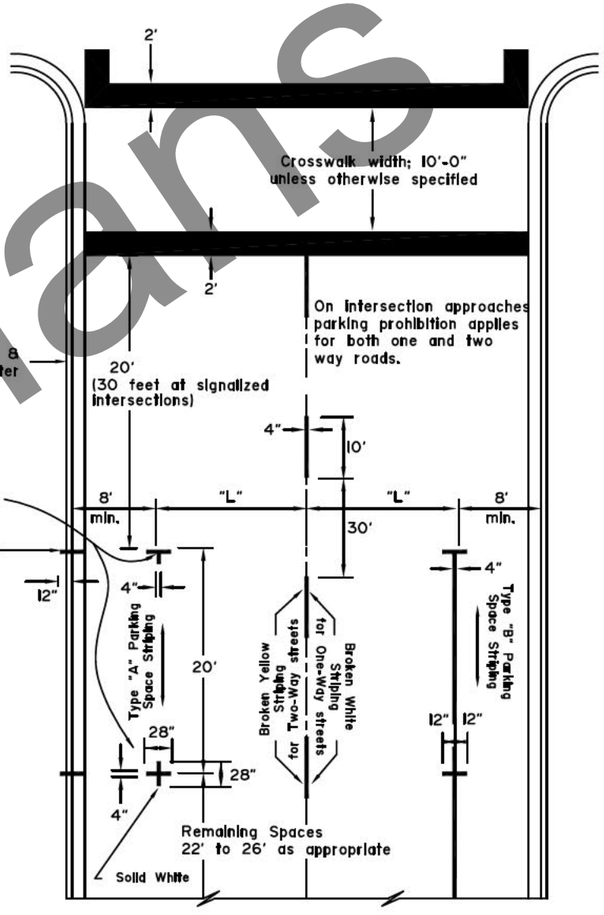


CHANNELIZING ISLAND



Note: On bridges over 24' wide use standard pavement markings. Barrier lines not used unless otherwise required.

EDGE LINE TRANSITION TO NARROW BRIDGE AND APPROACH BARRIER LINE

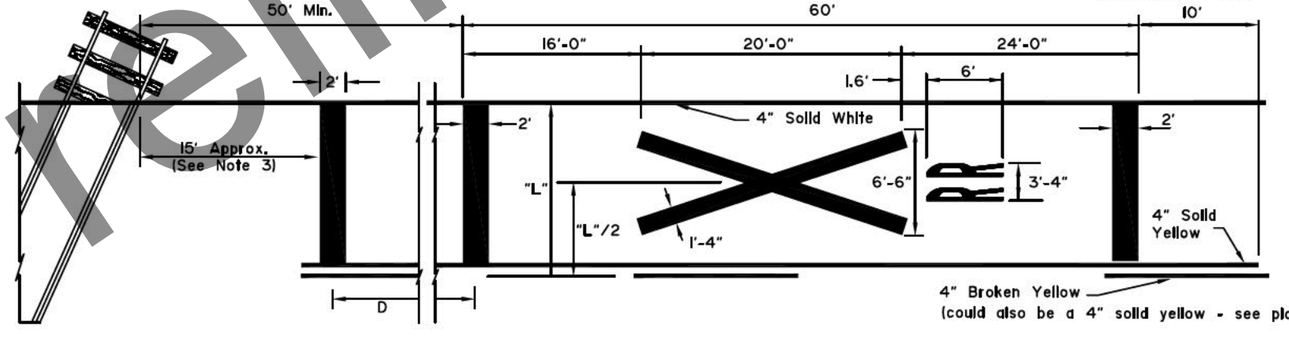


CENTERLINES FOR TWO LANE TWO WAY URBAN ROADS-PARKING LIMIT LINES

RAILROAD CROSSING NOTES:

1. All markings solid white unless indicated otherwise.
2. On 4-lane roadways place railroad crossing approach markings in each lane of the approach.
3. Locate Stop Bar 15' from railroad track or 8' from gate, if present.
4. Place edge lines and lane lines on a uni-directional approach in a normal manner except that the lane line(s) shall be solid 4" white in lieu of broken for a distance of (D+60') in advance of the stop bands.

POSTED LIMIT	D
30 M.P.H.	225'
40	350'
50	475'
60	625'



APPROACH TO RAILROAD CROSSING ON 2 LANE 2 WAY HIGHWAY

GENERAL NOTES:

1. "S"= offset distance as shown on the plans, otherwise 1 to 2 feet.
2. "L"= driving lane width.
3. See the Alaska Traffic Manual for additional guidance and/or restrictions on the use of traffic control devices.

NOT TO SCALE

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PAVEMENT MAKING APPLICATIONS

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E. Chief Engineer

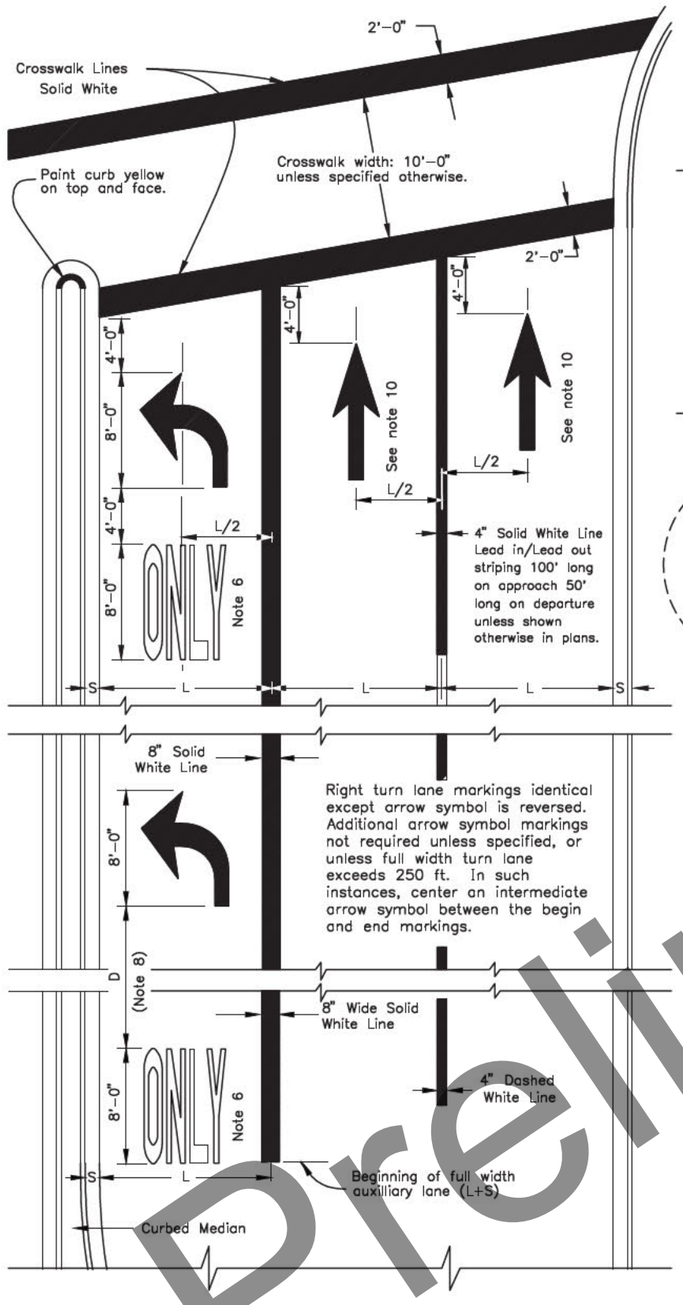
Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:

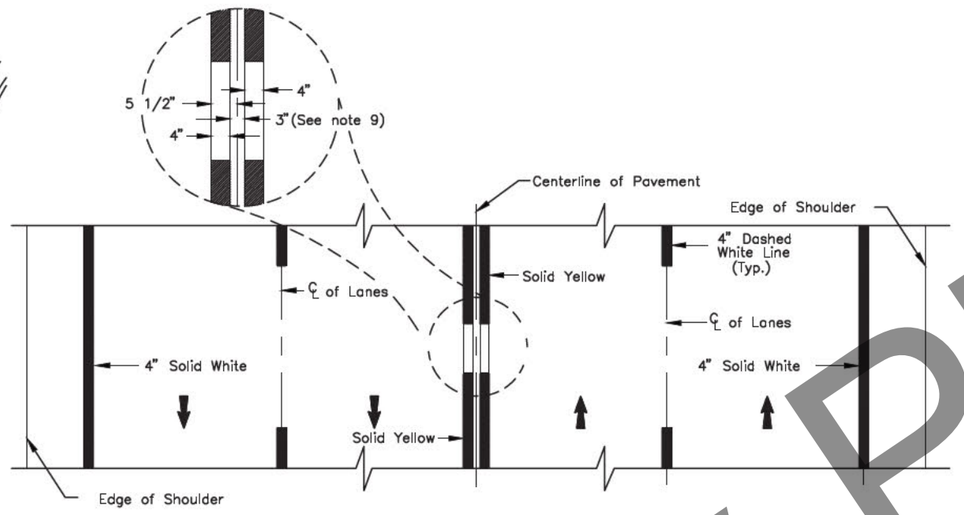
Next Code and Standards Review date: 02/08/2029

T-20.04

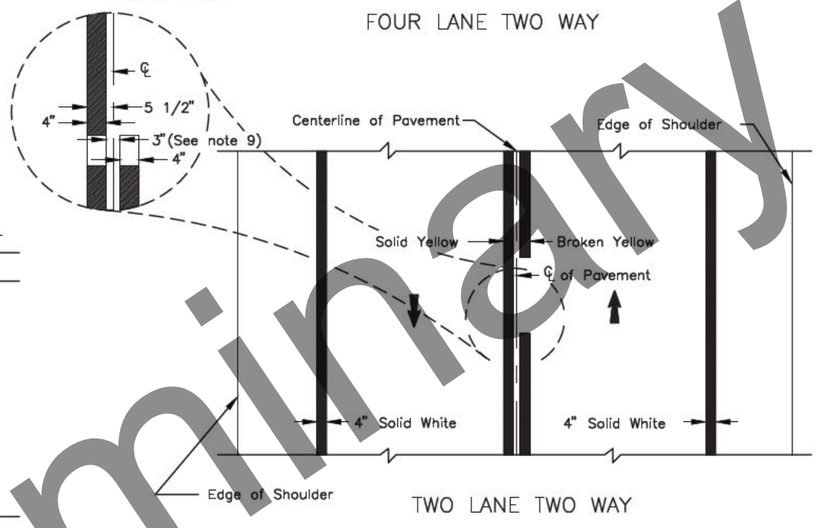
T-21.04 SHEET 1 of 1



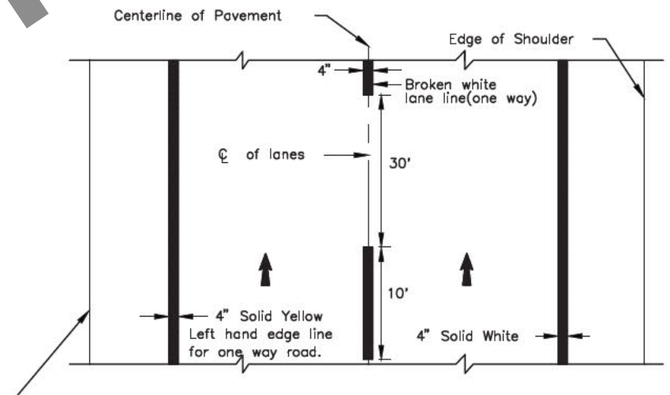
APPROACH TO INTERSECTION



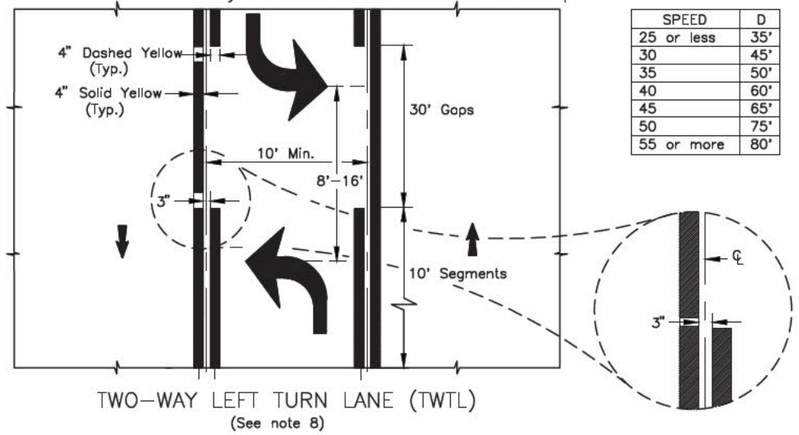
FOUR LANE TWO WAY



TWO LANE TWO WAY

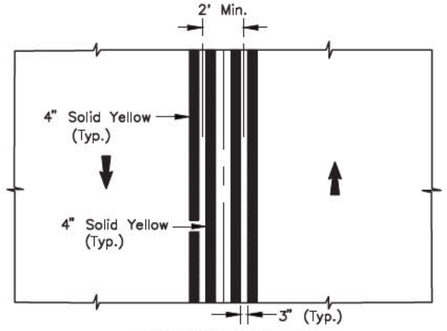


TWO LANE ONE WAY



TWO-WAY LEFT TURN LANE (TWTL)
(See note 8)

SPEED	D
25 or less	35'
30	45'
35	50'
40	60'
45	65'
50	75'
55 or more	80'



STRIPED MEDIAN

GENERAL NOTES:

1. All markings white unless indicated otherwise.
2. Lengths of stripe and gap for lane and center lines identical.
3. Lane lines for auxiliary lanes are unbroken solid lines.
4. "L" = driving lane width.
5. "S" = shy distance as shown on plans, otherwise 1 to 2 feet.
6. ONLY markings are required where through lanes change to turn lanes. In other cases, apply ONLY markings as indicated on plans.
7. See ALASKA TRAFFIC MANUAL for additional instruction on the use of TRAFFIC CONTROL DEVICES.
8. Adjust distance D between ONLY and Turn Arrow based on SPEED vs. D table. Table may be used for spacing between pairs of TWLT markings.
9. Adjust centerline spacing from 3" up to 5" where recessed pavement markers are required.
10. Arrows and symbols are used for through lanes only when the lane layout deviates from the normal intersection rules, and shall only be used where indicated in the plans.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PAVEMENT MARKING APPLICATIONS

Adopted as an Alaska Standard Plan by: Carolyn Morehouse
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

Last Code and Stds. Review
By: KLK Date: 7/8/2020

Next Code and Standards Review Date: 7/8/2030

T-21.04

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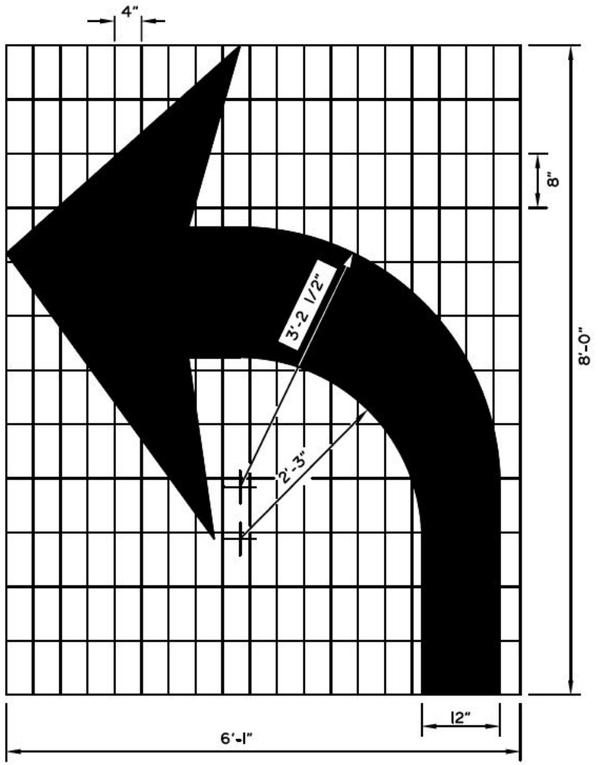
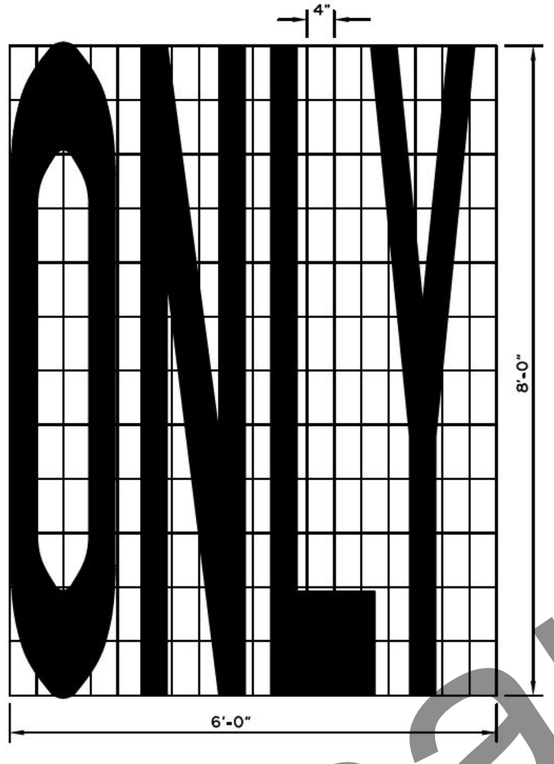
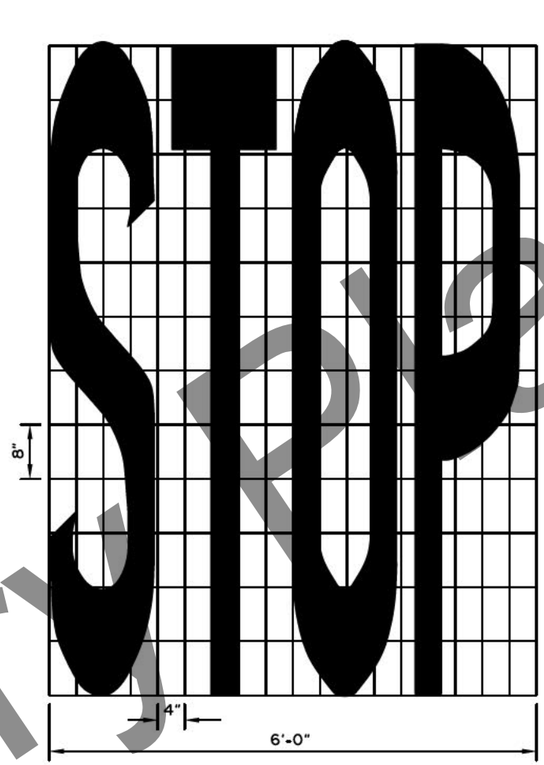
GENERAL NOTES:

1. All symbols shown shall be white and reflectorized in accordance with the Special Provisions.
2. See the Alaska Sign Design Specifications (ASDS) for lettering and symbols for pavement marking details not provided on this drawing.

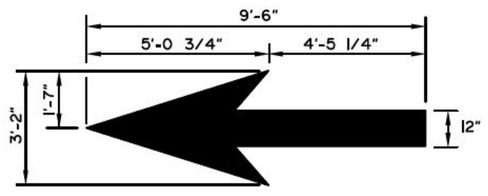


Right turn auxilliary lane usage markings identical except arrow symbol is reversed.

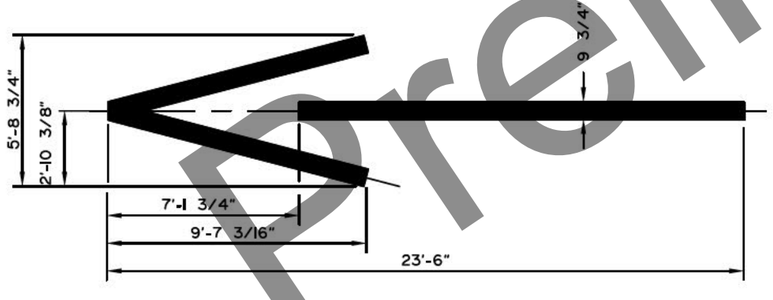




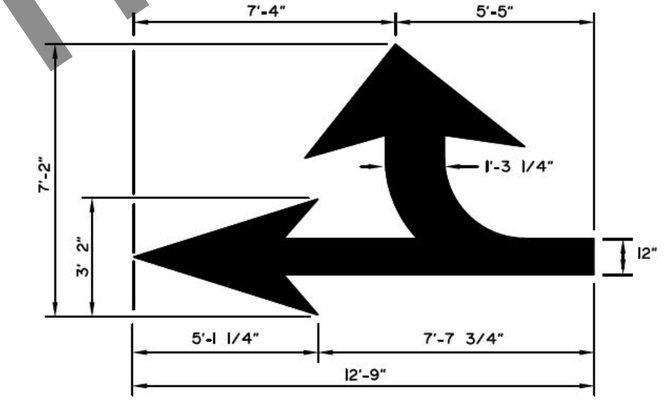
LAYOUT TEMPLATES FOR STENCILS



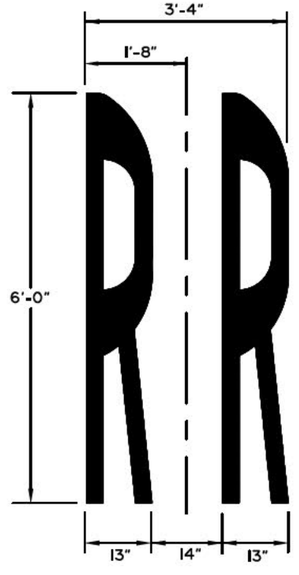
STRAIGHT AHEAD ARROW



WRONG WAY ARROW



COMBINATION ARROW



RAILROAD SYMBOL

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PAVEMENT MARKING SYMBOL DIMENSIONS

Adopted as an Alaska Standard Plan by: Kenneth J. Fisher, P.E. Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:

Next Code and Standards Review date: 02/08/2029

T-22.04