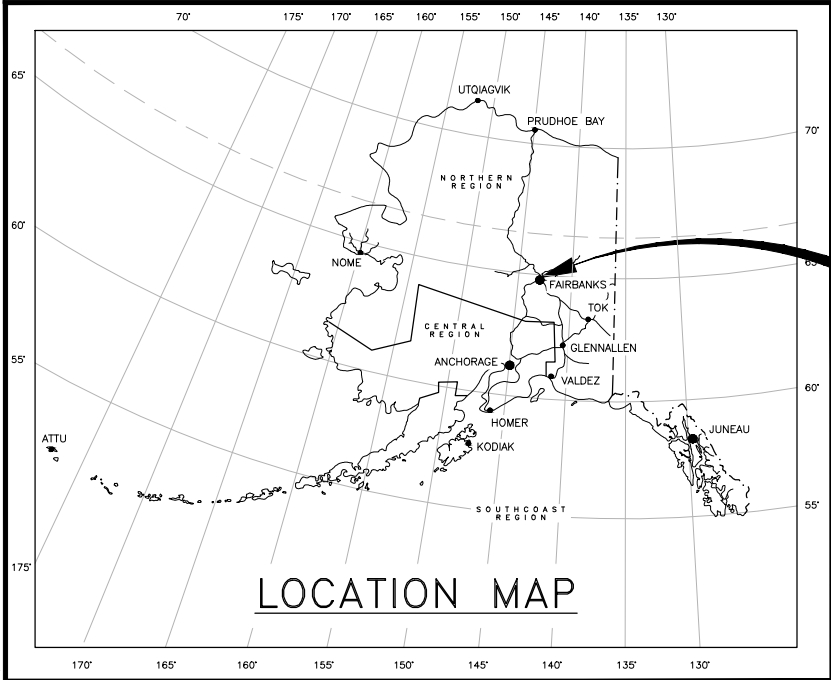


H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Friar's Way\5 Civil_3D\3 Drawings\00838_A1-Title-Title Thu, Aug/24/23 03:19pm HWYS TITLE SHEET



PROJECT
LOCATION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

PROPOSED HIGHWAY PROJECT

PENDING/NFHWY00838

CHENA RIDGE ROAD RESURFACING– KENTSHIRE DRIVE
TO FRIAR’S WAY
GRADING, DRAINAGE, & PAVING

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	A1	43
			CDS ROUTE:	175500	MILEPOINT:	0.194	TO 1.457

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
A1	TITLE SHEET
A2	LEGEND & SHEET LAYOUT INDEX
A3	SURVEY CONTROL DIAGRAM
B1	TYPICAL SECTIONS
C1	ESTIMATE OF QUANTITIES & GENERAL NOTES
D1–D2	SUMMARIES
E1	CULVERT/DRAINAGE DETAILS & SUMMARY
F1–F3	PLAN VIEW
G1	APPROACH SUMMARY & DETAILS
H1	SIGNING & STRIPING
Q1–Q4	EROSION SEDIMENT CONTROL PLANS
T1–T2	TRAFFIC CONTROL PLANS (and/or DEVICES)
V1–V?	STANDARD PLANS

THE FOLLOWING STANDARD PLANS APPLY TO THIS PROJECT:
C–06.00, D–01.02, D–04.22, G–00.05, G–05.11S, G–10.21, G–20.12
I–81.00, S–00.12, S–01.02, S–05.02, S–30.05, T–20.04, T–21.04

PROJECT SUMMARY

WIDTH OF PAVEMENT	34’–50’
LENGTH OF GRADING	6,668’
LENGTH OF PAVING	6,668’
LENGTH OF PROJECT	6,668’

JOHN NETARDUS, P.E., PROJECT MANAGER
ETHAN MAHONEY, DESIGNER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES
APPROVED BY:

Lauren Little, P.E.
Preconstruction Engineer, Northern Region
ACCEPTED FOR CONSTRUCTION:

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

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Fbks_NF\NFWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_A1-Title-HWYS Legend & Abbreviations Wed, Aug/16/23 02:06pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFWHY00838	2024	A2	A3

	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		
REBAR AND CAP		
REBAR		
IRON PIPE		
PK NAIL		
SPIKE		
HUB AND TACK		
CONSTRUCTION CENTERLINE		
MISCELLANEOUS CENTERLINE		
STATION EQUATION		
PROJECT RIGHT-OF-WAY LINE		
EXISTING RIGHT-OF-WAY LINE		
EXISTING PROPERTY LINE		
CONTROLLED ACCESS LINE		
UTILITY EASEMENT LINE		
TEMPORARY EASEMENT LINE (TCP OR TCE)		
ACCESS OR SECTION LINE EASEMENT		
PROPOSED CUT SLOPE LIMIT		
PROPOSED FILL SLOPE LIMIT		
SECTION LINE		
1/4 SECTION LINE		
1/16 SECTION LINE		
TOWNSHIP & RANGE LINE		

	EXISTING	PROPOSED
SANITARY SEWER (FLOW DIRECTION →)		
FUEL LINE		
GAS LINE		
WATER LINE		
METER, VALVE, FIRE HYDRANT		
EXISTING STORM DRAIN (FLOW DIRECTION →)		
PROPOSED STORM DRAIN		
FIBER OPTIC LINE		
DIRECT BURIAL TELEPHONE CABLE		
DIRECT BURIAL ELECTRIC CABLE		
ELECTRIC LINE (OVERHEAD)		
POWER POLE LINE		
JOINT USE POWER & TELEPHONE		
TELEPHONE POLE LINE		
POLE ANCHOR		
STUB POLE (POWER OR TELEPHONE)		
TELEPHONE DUCT		
TELEPHONE PEDESTAL		
BURIED CABLE MARKER		
PIPELINE MARKER OR VALVE		
CATCH BASIN OR DROP INLET		
MANHOLE		
SANITARY SEWER CLEAN OUT		

	EXISTING	PROPOSED
ROADWAY/PAVEMENT EDGE		
FENCE		
CURB AND GUTTER		
DETECTABLE WARNINGS		
GUARDRAIL		
CULVERT PIPE		
SIGN		
MAILBOX		
RAILROAD TRACKS		
RAILROAD DEVICES		
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		
SEPTIC PIPE		
FUEL TANK FILL PIPE/VENT		
SATELLITE DISH		SAT. DISH
TEST HOLE		
CONIFER TREE		
DECIDUOUS TREE		
GRAVE		
THERMOSIPHON		
PARKING METER		
VEHICLE PLUG-IN		
DELINEATOR/GUIDE MARKER		

	EXISTING	PROPOSED
JUNCTION BOX, TYPE IA		
JUNCTION BOX, TYPE II		
JUNCTION BOX, TYPE III		
SIGNAL FACE, VEHICULAR		
SIGNAL FACE, BACKPLATE		
SIGNAL FACE, LEFT TURN, BACKPLATE		
SIGNAL FACE, PEDESTRIAN		
LOOP DETECTOR		
VIDEO DETECTOR		
RADAR DETECTOR		
OPTICOM DETECTOR		
PEDESTRIAN PUSH BUTTON		
SIGNAL POST W/O MAST ARM		
SIGNAL POLE W/MAST ARM		
SIGNAL CONTROLLER		
LOAD CENTER		
LUMINAIRE		
RIGID METAL CONDUIT		

ABBREVIATIONS:

APPROX	APPROXIMATELY	SQ. FT.	SQUARE FOOT
C	CENTERLINE	STA	STATION
CY	CUBIC YARD	T	TANGENT
E	EAST, EASTING	TCE	TEMPORARY CONSTRUCTION EASEMENT
ELE, ELEV	ELEVATION	TS	TUBE STEEL
FT.	FOOT, FEET	TYP	TYPICAL
H	HORIZONTAL	V	VERTICAL
HW/D	HEADWATER TO DIAMETER RATIO	VPC	VERTICAL POINT OF CURVATURE
IE	INVERT ELEVATION	VPI	VERTICAL POINT OF INTERSECTION
IN, "	INCH, INCHES	VPT	VERTICAL POINT OF TANGENCY
L	LENGTH OF CURVE	W	WEST
L.C.L	LEFT OF CENTERLINE	WWR	WELDED WIRE REINFORCEMENT
LT	LEFT	Ø	DIAMETER
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		

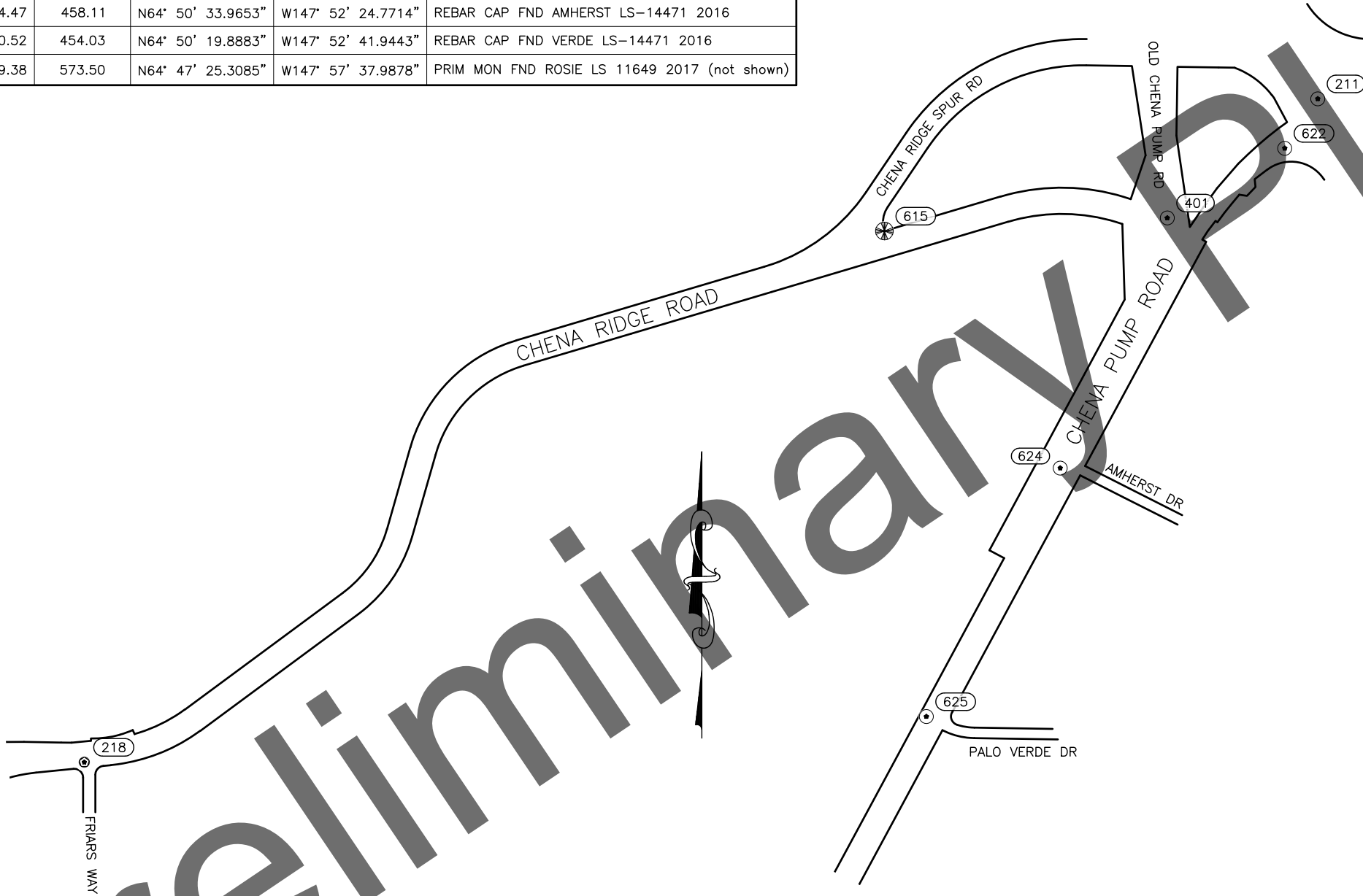
HWYS LEGEND & ABBREVIATIONS



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
K:\21_Projects\Chena Pump_Ridge Resurfacing NFHWY00570\5-CAD Drawings\2-Control\A3 Mon, Aug/07/23 09:32am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	NFWY00838	2023	A3	A3

CONTROL MONUMENTS						
POINT NO.	NORTHING	EASTING	ELEVATION	LATITUDE	LONGITUDE	DESCRIPTION
211	200550.32	655094.22	478.32	N64° 50' 54.9281"	W147° 51' 51.5070"	REBAR CAP FND 11 PLS 14471 2016
218	196762.20	648054.41	823.63	N64° 50' 16.6074"	W147° 54' 32.9541"	REBAR CAP SET FRIARS 14471-S 2021
401	199870.01	654235.37	461.41	N64° 50' 48.1088"	W147° 52' 11.1356"	REBAR CAP FND COR-2 12041-S 2015 DOWL
615	199795.24	652621.02	481.65	N64° 50' 47.1367"	W147° 52' 48.4397"	PRIM MON FND ROW RLS-4922 1996
622	200267.61	654905.96	455.56	N64° 50' 52.1188"	W147° 51' 55.7644"	REBAR CAP FND GUMP LS-14471 2016
624	198441.81	653624.47	458.11	N64° 50' 33.9653"	W147° 52' 24.7714"	REBAR CAP FND AMHERST LS-14471 2016
625	197022.67	652860.52	454.03	N64° 50' 19.8883"	W147° 52' 41.9443"	REBAR CAP FND VERDE LS-14471 2016
900	179485.70	639769.38	573.50	N64° 47' 25.3085"	W147° 57' 37.9878"	PRIM MON FND ROSIE LS 11649 2017 (not shown)



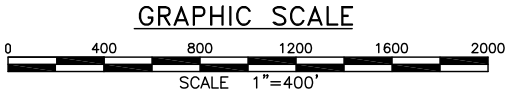
GENERAL NOTES

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.

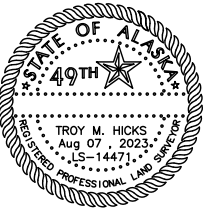
FAIRBANKS LDP DEFINITION:
LINEAR UNIT: U.S. SURVEY FOOT (SFT)
DATUM: NAD83(2011)
PROJECTION: LAMBERT CONFORMAL CONIC, (SINGLE PARALLEL)
STANDARD PARALLEL AND GRID ORIGIN: 64°51'00"N
CENTRAL MERIDIAN (GRID ORIGIN): 146°56'00"W
FALSE NORTHING: 200,000 SFT
FALSE EASTING: 800,000 SFT
STANDARD PARALLEL SCALE: 1.00003 (EXACT)
5. THE BASIS OF COORDINATES IS THE NAD83(2011)(EPOCH:2010.0000) OPUS AVERAGED POSITION OF RECOVERED CONTROL POINT 900 "ROSIE" A PRIMARY MONUMENT STAMPED "ROSIE LS 11649 2017"
6. BASIS OF BEARING IS FAIRBANKS LDP.
7. THE BASIS OF ELEVATION IS THE OPUS AVERAGED GEOID12A (NAVD88) ELEVATION OF 573.50 FT AT POINT 900 "ROSIE".

LEGEND

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

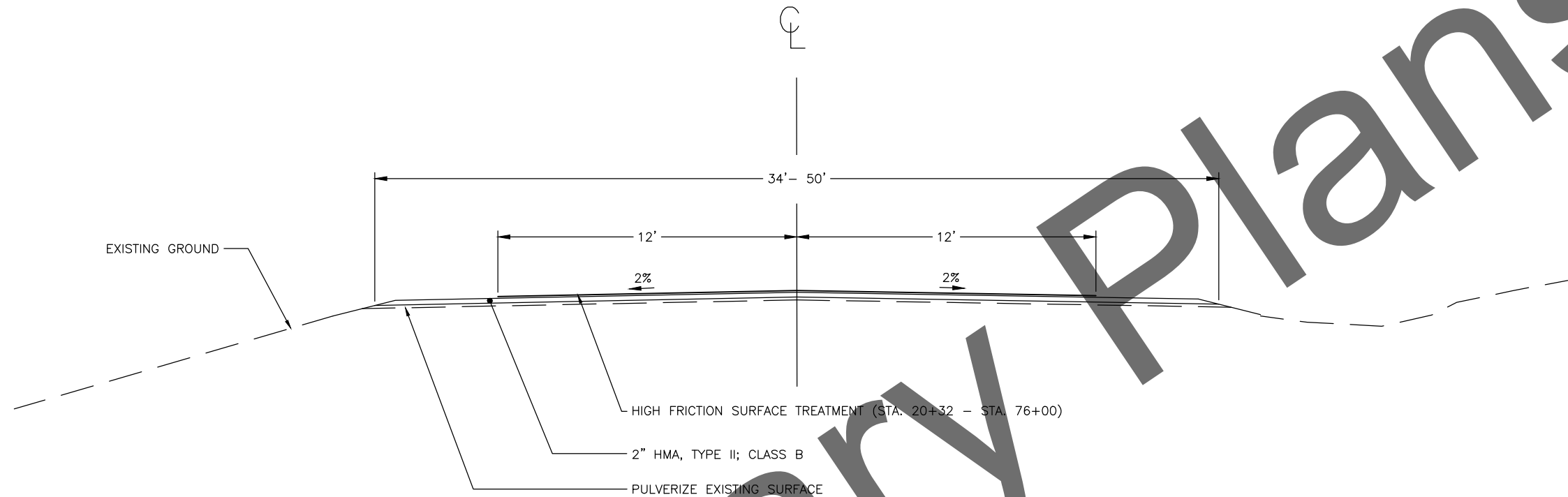


SURVEY CONTROL

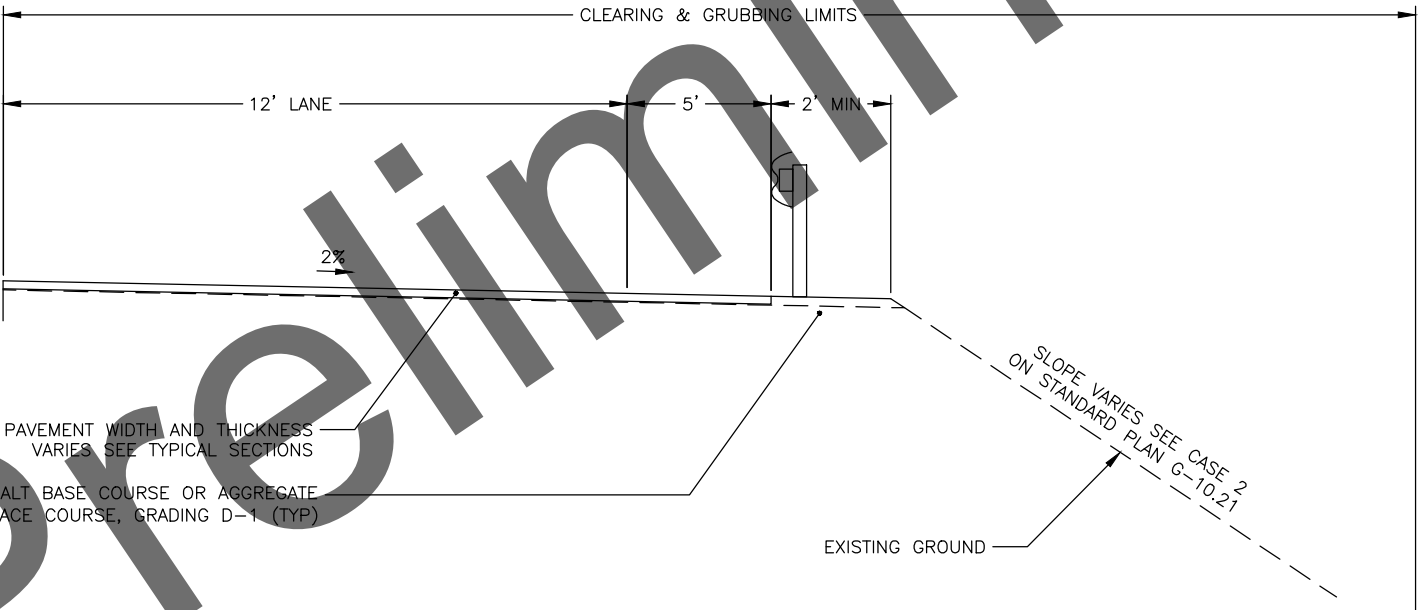


PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_B - Typ Sect-B1 TYPICAL SECTION Thu, Aug/24/23 02:12pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	B1	B1



PAVEMENT TYPICAL SECTION

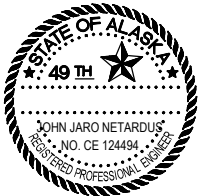


GAURDRAIL TYPICAL SECTION

NOTES:

1. PULVERIZE EXISTING ASPHALT. EXISTING ASPHALT THICKNESS MAY VARY THROUGHOUT THE PROJECT LIMITS DUE TO STATE MAINTENANCE ACTIVITIES.
2. USE EXCESS CABG MATERIAL FOR PROFILE SMOOTHING AND SHOULDERING. DO NOT PLACE AGGREGATE BASE COURSE, GRADING D-1 UNTIL AFTER ALL USABLE CRUSHED ASPHALT BASE COURSE HAS BEEN PLACED. PLACEMENT OF AGGREGATE BASE COURSE, GRADING D-1 SHALL BE APPROVED BY ENGINEER.
3. UNLESS OTHERWISE NOTED ON THE PLANS, MAINTAIN EXISTING DRAINAGE THROUGH CULVERTS AND DITCHES WITHIN THE PROJECT LIMITS.

TYPICAL SECTION



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H:\Projects\Fbks_NF\NFWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_B - Typ Sect-C1 ESTIMATE OF QUANTITIES.Fri, Aug/25/23 12:55pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFWHY00838	2024	C1	C1

ESTIMATE OF QUANTITIES			
PAY ITEM	DESCRIPTION	UNIT	QUANTITY
201.0003.0000	CLEARING AND GRUBBING	ACRE	4.6
203.0003.0000	UNCLASSIFIED EXCAVATION	CY	302
301.0001.00D1	AGGREGATE BASE COURSE, GRADING D-1	TON	1,510
308.0001.0000	CRUSHED ASPHALT BASE COURSE	SY	27,442
401.0001.002B	HMA, TYPE II, CLASS B	TON	3,109
401.0004.0000	ASPHALT BINDER, GRADE 52E-40	TON	174
401.0008.002B	HMA PRICE ADJUSTMENT, TYPE II, CLASS B	CS	ALL REQ'D
401.0013.0000	JOB MIX DESIGN	EACH	1
401.0015.0000	ASPHALT MATERIAL PRICE ADJUSTMENT	CS	ALL REQ'D
405.2000.0000	HIGH FRICTION SURFACE TREATMENT (HFST)	SY	14,848
603.0001.0018	CSP 18 INCH	LF	82
606.0001.0000	W-BEAM GUARDRAIL	LF	2,750
606.0006.0000	REMOVE AND DISPOSE OF GUARDRAIL	LF	2,900
606.0013.0000	PARALLEL GUARDRAIL TERMINAL	EACH	2
615.0001.0000	STANDARD SIGN	SF	223
618.0001.0000	SEEDING	ACRE	0.12
639.2000.0000	APPROACH	EACH	9
640.0001.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D
642.0001.0000	CONSTRUCTION SURVEYING	LS	ALL REQ'D
642.0003.0000	THREE PERSON SURVEY PARTY	HR	5
643.0002.0000	TRAFFIC MAINTENANCE	LS	ALL REQ'D
643.0003.0000	PERMANENT CONSTRUCTIONS SIGNS	LS	ALL REQ'D
643.0025.0000	TRAFFIC CONTROL	CS	ALL REQ'D
643.2005.0000	PUBLIC INFORMATION PROGRAM	LS	ALL REQ'D
658.0001.0000	EROSION, SEDIMENT, AND POLLUTION CONTROL WITHOUT GCP COVERAGE	LS	ALL REQ'D
670.0001.0000	PAINTED TRAFFIC MARKINGS	LS	ALL REQ'D
670.0005.0000	TRANSVERSE MARKINGS, WORDS, OR SYMBOLS	EACH	1

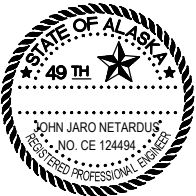
GENERAL NOTES:

1. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR WILL MAKE A RECORD OF EXISTING STRIPING AND REPLACE IN KIND AFTER REPAVING.
2. SAW CUT ALL MATCH LINES WHERE NEW CONSTRUCTION ABUTS EXISTING ASPHALT, APPLY STE-1 ASPHALT FOR TACK COAT ON THE VERTICAL FACE OF ALL SAW CUTS PRIOR TO PAVING. SAW CUTTING AND TACK COATS WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT ARE SUBSIDIARY TO OTHER HOT MIX ASPHALT PAY ITEMS.
3. MECHANIZED LAND VEGETATION CLEARING AND GRUBBING IS PROHIBITED DURING THE MIGRATORY BIRD NESTING SEASON (MAY 1 - JULY 15).
4. VERIFY UTILITY LOCATIONS PRIOR TO BEGINNING ANY GROUND DISTURBING WORK, LOCATE ALL EXISTING UTILITIES WITHIN THE PROJECT BOUNDARIES. PROTECT UTILITIES FROM CONSTRUCTION DAMAGE FOR THE DURATION OF THE PROJECT.

ESTIMATING FACTORS		
ITEM NO.	DESCRIPTION	VALUE
301.0001.00D1	AGGREGATE BASE COURSE, GRADING D-1	2 TON/CY
401.0001.002B	HMA, TYPE II, CLASS B	2 TON/CY
401.0004.0000	ASPHALT BINDER, GRADE PG 52E-40	5.6% OF TOTAL WEIGHT OF 401.0001.002B

LUMP SUM PAINTED PAVEMENT MARKING ITEMS SUMMARY		
ROAD	4" WHITE (LF)	4" DOUBLE YELLOW (LF)
CHENA RIDGE	13,336	
4" EQUIVALENT	6,713	13,426

ESTIMATE OF QUANTITIES



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H:\Projects\Fbks_NF\NFWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Friar's Way\6 Design\5 Civil 3D\3 Drawings\00838_SUMMARIES-D1_SUPERELEVATION SUMMARY Thu, Aug/24/23 02:18pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFWHY00838	2024	D1	D2

SUPERELEVATION SUMMARY											
CURVE PI	RADIUS (FT)	BEGIN TRANSITION	TRANSITION LENGTH (FT)	CURVE PC	BEGIN FULL SUPERELEVATION	SUPERELEVATION RATE (%)	END FULL SUPERELEVATION	CURVE PT	TRANSITION LENGTH (FT)	END TRANSITION	REMARKS
16+71.32	1145.91	10+10	210	11+70.67	12+30	6	20+70	21+14.69	215	22+85	BOP IS WITHIN CURVE
54+13	818.51	48+35	215	49+99.21	50+50	6	57+75	58+20.70	215	59+90	
65+58	763.94	61+45	210	63+05.66	63+55	6	67+60	68+06.86	215	69+75	
81+85	954.93	77+65	210	79+26.96	79+75	6	83+95	84+40.86	215	86+10	SEE NOTE 1

SUPERELEVATION SUMMARY



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H:\Projects\Fbks_NF\NFWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_SUMMARIES-D2_GUARDRAIL SUMMARY Thu, Aug/24/23 02:18pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFWHY00838	2024	D2	D2

606.0006 – GUARDRAIL SUMMARY						
BEGIN STATION	END STATION	LT	RT	606.0006.0000 REMOVING AND DISPOSING OF GUARDRAIL (LINEAR FOOT)	REMARKS	
56+73	85+26	X		2,900		

606.0001/606.0013 – GUARDRAIL SUMMARY								
BEGIN STATION	END STATION	LT	RT	606.0001.0000 W-BEAM GUARDRAIL (LINEAR FOOT)	606.0013.0000 PARALLEL GUARDRAIL TERMINAL (EA.)	G-10.21 CASE TYPE & G-05.11S TYPE 1 INSTALLATION	POST LENGTH (LINEAR FOOT)	REMARKS
56+73	85+19	X		2,750	2	CASE 1	8	

GUARDRAIL SUMMARY NOTES:

- GUARDRAIL LENGTHS AND LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- USE 50' PARALLEL END TREATMENT.
- FOR PARALLEL GUARDRAIL TERMINALS, CONSTRUCT THE GUARDRAIL TERMINAL WIDENING IN ACCORDANCE WITH THE "STANDARD DETAIL" ON STANDARD PLAN G-20.11. THE END OFFSET (X) SHALL BE 2 FEET.
- INSTALL PARALLEL GUARDRAIL TERMINALS AT A HEIGHT OF 31" TO TOP OF THE RAIL, POST LENGTHS ARE TO BE PER MANUFACTURER RECOMMENDATIONS.
- PER SUBSECTION 606-3.01, INSTALL SIDE-MOUNTED GUARDRAIL REFLECTORS "STARTING WITH THE FIRST STANDARD POST". DO NOT INSTALL THESE REFLECTORS WITHIN THE LIMITS OF PARALLEL GUARDRAIL TERMINALS.
- UPON REMOVAL OF THE OLD POSTS, HOLES CREATED BY THE OLD POST REMOVAL SHALL BE FILLED AND COMPACTED IN ACCORANCE WITH SECTION 606-3.07. THIS WORK AND MATERIAL IS SUBSIDIARY TO GUARDRAIL.
- IN ADDITION TO THE GUARDRAIL REFLECTORS, INSTALL GUARDRAIL FLEXIBLE DELINEATORS AS SHOWN ON STANDARD PLAN G-00.05, SHEET 5 OF 5.
- USE CRUSHED ASPHALT BASE COURSE OR AGGREGATE BASE COURSE, GRADING D-1, FROM THE FRONT FACE OF THE POST TO THE HINGE POINT BEHIND THE POST; COMPACT AND GRADE TO MATCH THE TOP SURFACE AND CROSS-SLOPE OF SHOULDER UNLESS OTHERWISE STATED BY CASE TYPE IN STANDARD PLAN G-10.20.



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H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_P&P-F1 PLAN VIEW 10+00.00-42+00.00 F1, Aug/25/23 10:47am

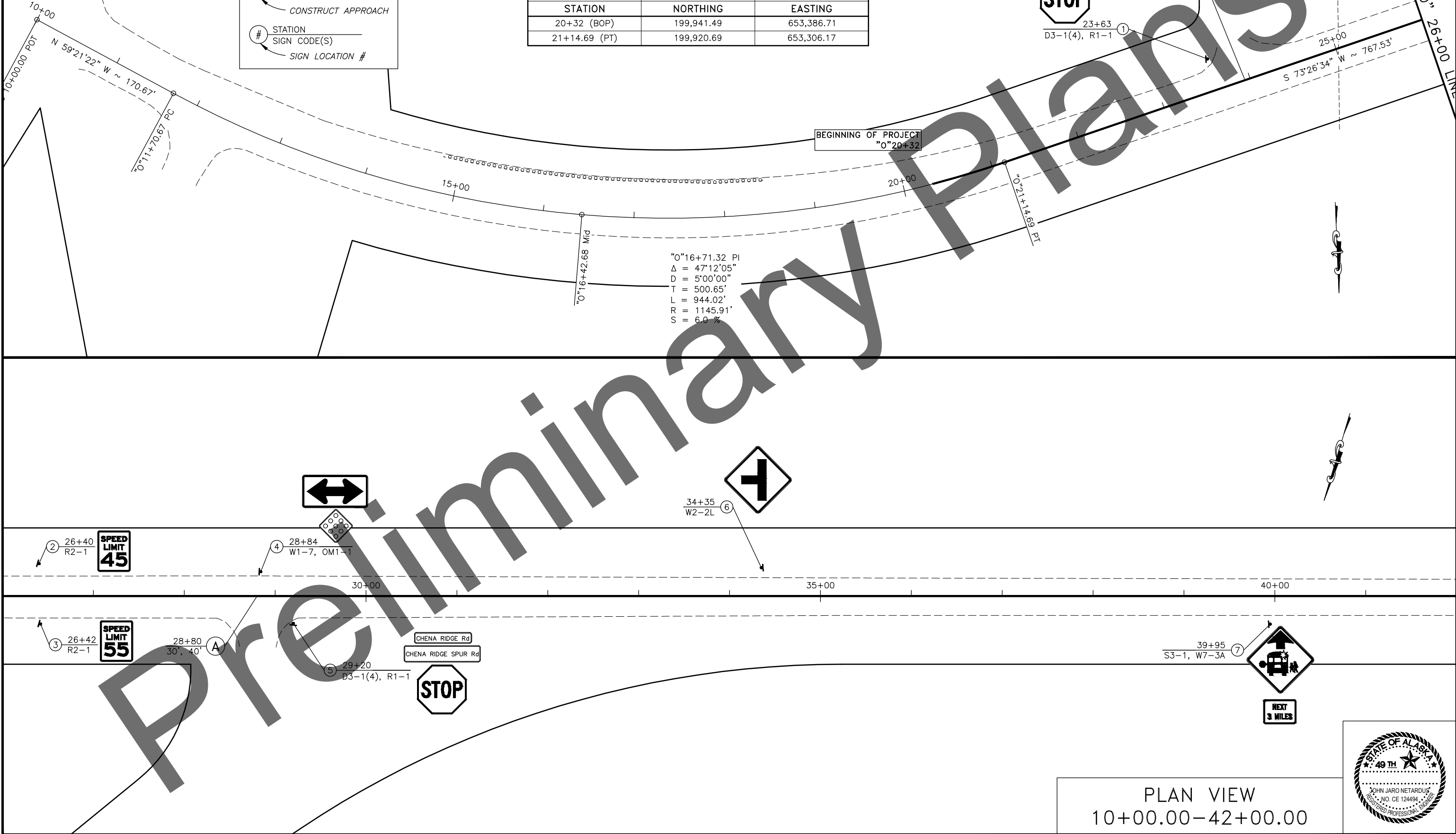
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	F1	F3

PLAN VIEW KEY

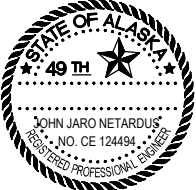
- (P)** STATION
DIAMETER X LENGTH
INSTALL CULVERT PIPE
- (A)** STATION
LENGTH, WIDTH
CONSTRUCT APPROACH
- #** STATION
SIGN CODE(S)
SIGN LOCATION #

NORTHING/EASTING

STATION	NORTHING	EASTING
20+32 (BOP)	199,941.49	653,386.71
21+14.69 (PT)	199,920.69	653,306.17

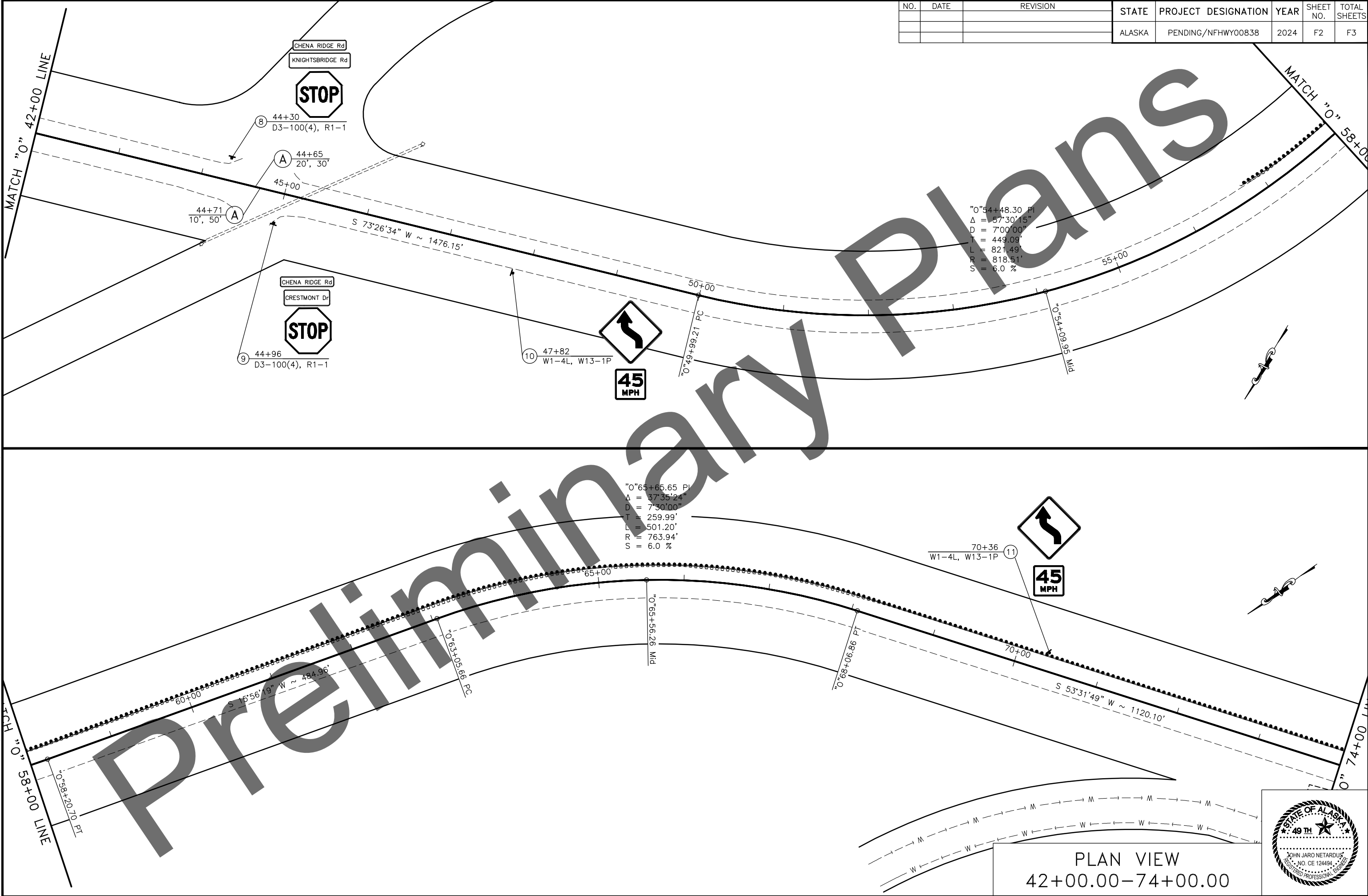


PLAN VIEW
10+00.00-42+00.00



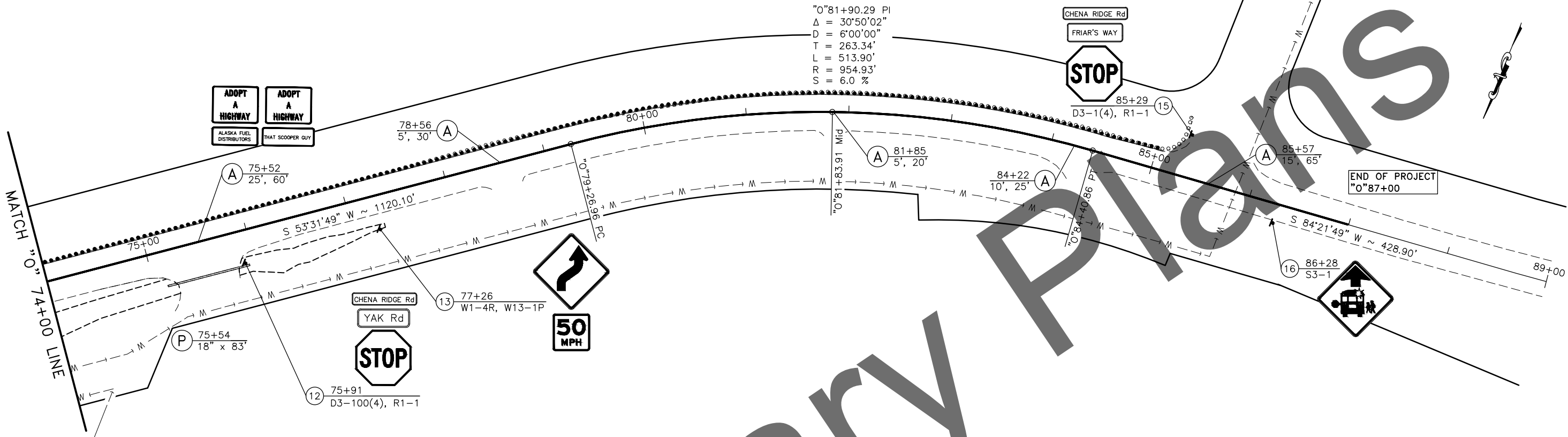
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_P&P-F2 PLAN VIEW 42+00.00-58+00.00 FRI, Aug/25/23 01:17pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	F2	F3



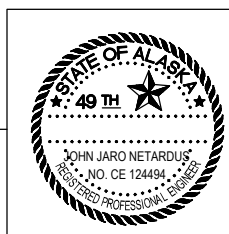
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Fbks_NP\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Friar's Way\6 Design\5 Civil 3D\3 Drawings\00838_P&P-F3 PLAN VIEW 74+00.00-89+00.00 Fri, Aug/25/23 01:21pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	F3	F3



Preliminary Plans

PLAN VIEW
74+00.00-89+00.00



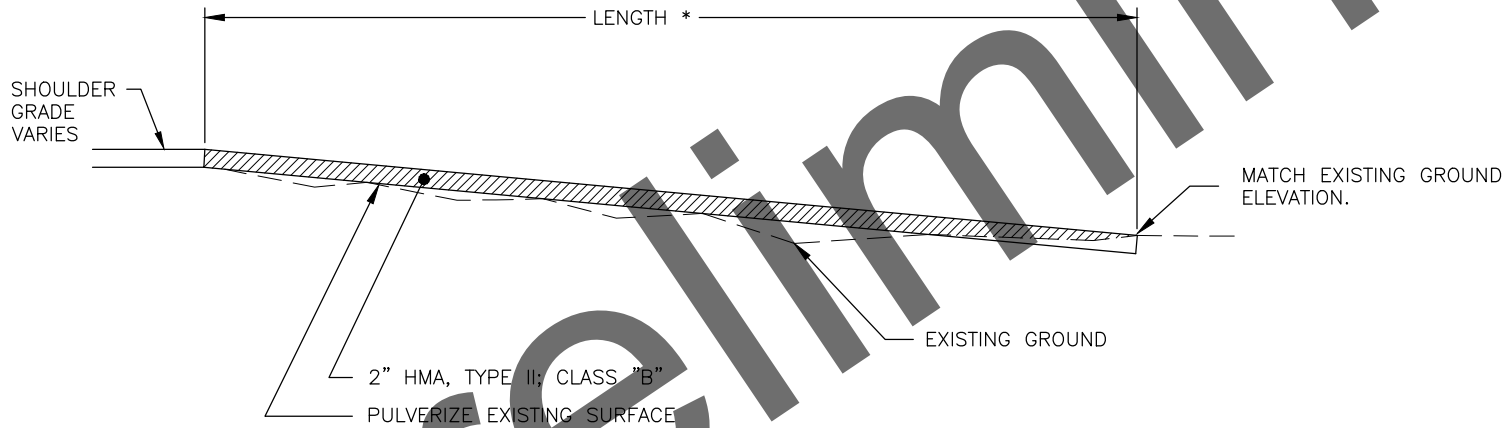
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Friar's Way\6 Design\5 Civil 3D\3 Drawings\00838_SUMMARIES-G1 APPROACH SUMMARY Fri, Aug/25/23 01:33pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	G1	G1

639.2000.0000 – APPROACH SUMMARY									
APPROACH	CENTERLINE STATION	LT	RT	ANGLE (DEG)	WIDTH (FT)	RADIUS (FT)	LANDING LENGTH (FT)	LANDING GRADE (%)	REMARKS
	23+63	X		70	24	40	35	-2.0	KENTSHIRE DR
	28+80		X	90	40	40	30	2.0	CHENA EIDGE SPUR RD
	44+65	X		75	32	30	20	-2.0	KNIGHTSBRIDGE RD
	44+71		X	85	36			2.0	CRESTMONT DR
	75+52		X	90	56	40	20	2.0	YAK RD
	78+56		X	85	16	20	10	2.0	ARCANE DR
	81+85		X	90	10	10	5	2.0	DRIVEWAY
	84+22		X	110	18	10	15	2.0	DRIVEWAY
	85+54	X		90	40	40	15	-2.0	FRIAR'S WAY

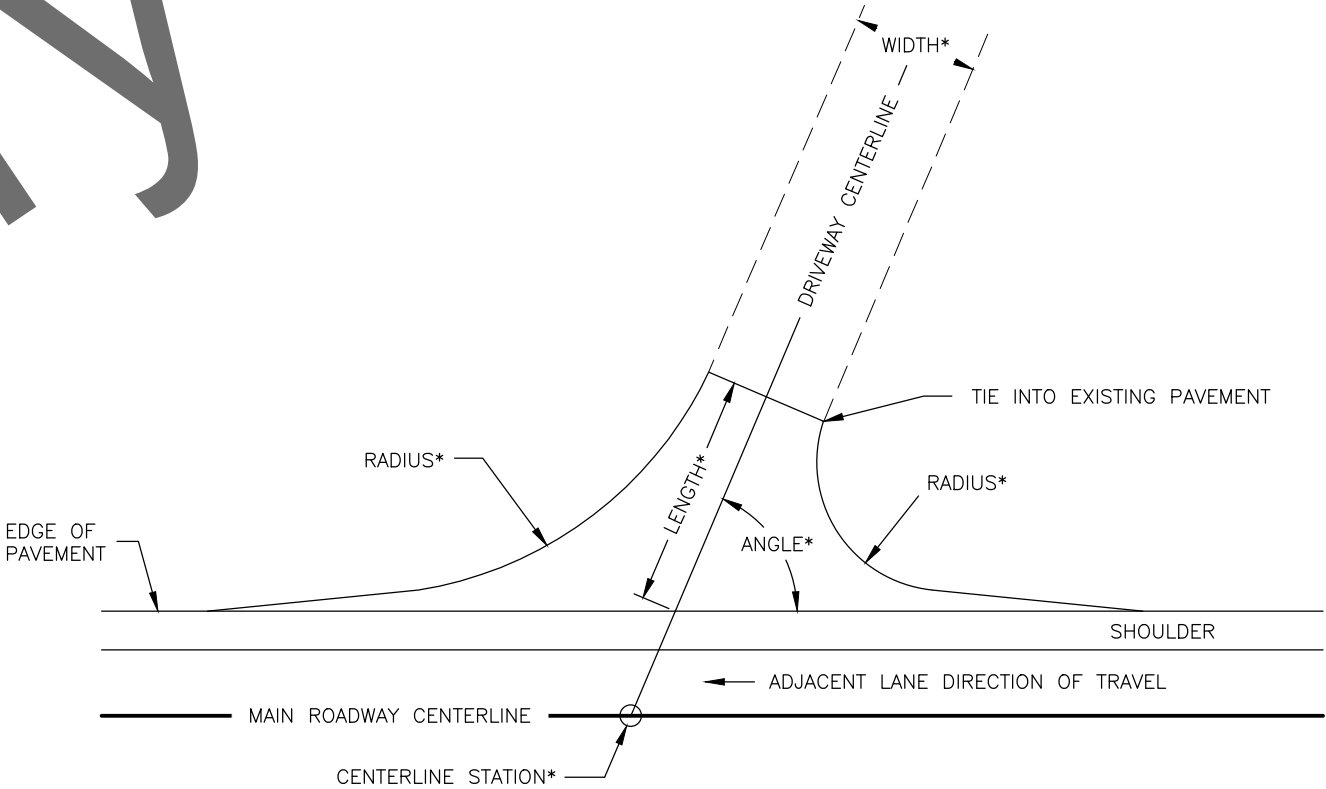
APPROACH DETAIL NOTES:

- APPROACH DIMENSIONS AND LOCATIONS MAY BE FIELD ADJUSTED BY THE ENGINEER.
- WARP CROSS-SLOPES OF EXISTING APPROACHES TO MATCH INTO THE PAVED APPROACH.
- BLEND AND GRADE FOR A SMOOTH TRANSITION BETWEEN THE DRIVEWAY AND THE EXISTING GROUND.
- APPROACH RADIUS BEGINS AT END OF TAPER.
- ENSURE POSITIVE DRAINAGE AWAY FROM THE ROADWAY AND DRIVEWAY EMBANKMENTS.
- DRIVEWAY AND APPROACH TERMS ARE USED INTERCHANGEABLY.
- 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.



APPROACH PROFILE CROSS-SECTION TYPICAL

* ACCORDING TO THE VALUES LISTED IN THE APPROACH SUMMARY



APPROACH PLAN VIEW

APPROACH SUMMARY



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H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Friar's Way\6 Design\5 Civil 3D\3 Drawings\00838_SUMMARIES-H1_SIGNING SUMMARY.Fri, Aug/25/23 01:33pm

615.0001.0000 – SIGNING SUMMARY																	
LOC. NO.	STATION	LOCATION		ASDS CODE	LEGEND	SIZE H X V (INCHES)			BRACING/ FRAMING		AREA (SQ.FT.)	MTG. HGT. (FT.)	DIR.	POST			REMARKS
		LT.	RT.						BRACED	FRAMED				TYPE	SIZE (INCHES)	NO.	
1	23+63	X		D3-1	Chena Ridge Rd	42	X	8	X		2.33		N	PST	2.5	1	USE 2.75" MARGINS
				D3-1	Chena Ridge Rd	42	X	8	X		2.33		S				
				D3-1	Kentshire Dr	36	X	12	X		3.00		E				
				D3-1	Kentshire Dr	36	X	12	X		3.00		W				
				R1-1	STOP	36	X	36	X		9.00		S				
2	26+40		X	R2-1	SPEED LIMIT 45	24	X	30	X		5.00		W				MOUNTED TO LIGHT POLE
3	26+42		X	R2-1	SPEED LIMIT 55	24	X	30	X		5.00		E	PST	2.5	1	
4	28+84	X		W1-7	LARGE ARROW (TWO DIRECTION)	48	X	24			8.00		N	PST	2.5	1	
		X		OM1-1	Reflective Marker Sign	18	X	18	X		2.25						
5	29+20		X	D3-1	Chena Ridge Rd	42	X	8	X		2.33		N	PST	2.5	1	USE 2.75" MARGINS
				D3-1	Chena Ridge Rd	42	X	8	X		2.33		S				
				D3-1	Chena Ridge Spur Rd	36	X	12	X		3.00		E				
				D3-1	Chena Ridge Spur Rd	36	X	12	X		3.00		W				
				R1-1	STOP	36	X	36	X		9.00		S				
6	34+35	X		W2-2L	T	36	X	36	X		9.00		W	PST	2.5	1	
7	39+95		X	S3-1	SCHOOL BUS STOP AHEAD	36	X	36	X		9.00		E	PST	2.5	1	
				W7-3A	NEXT 3 MILES	24	X	18	X		3.00						
8	44+30	X		D3-1	Chena Ridge Rd	42	X	8	X		2.33		N	PST	2.5	1	
				D3-1	Chena Ridge Rd	42	X	8	X		2.33		S				
				D3-1	Knightsbridge Rd	48	X	12	X		4.00		E				
				D3-1	Knightsbridge Rd	48	X	12	X		4.00		W				
				R1-1	STOP	36	X	36	X		9.00		S				
9	44+96		X	D3-1	Chena Ridge Rd	42	X	8	X		2.33		N	PST	2.5	1	
				D3-1	Chena Ridge Rd	42	X	8	X		2.33		S				
				D3-1	Crestmont Dr	36	X	12	X		3.00		E				
				D3-1	Crestmont Dr	36	X	12	X		3.00		W				
				R1-1	STOP	36	X	36	X		9.00		N				
10	47+82		X	W1-4L	Reverse Curve	36	X	36	X		9.00		E	PST	2.5	1	
				W13-1P	45 MPH	24	X	24	X		4.00						
11	70+36	X		W1-4L	Reverse Curve	36	X	36	X		9.00		W	PST	2.5	1	
				W13-1	45 MPH	24	X	24	X		4.00						
12	75+91		X	D3-1	Chena Ridge Rd	42	X	8	X		2.33		N	PST	2.5	1	
				D3-1	Chena Ridge Rd	42	X	8	X		2.33		S				
				D3-1	Yak Rd	24	X	12	X		2.00		E				
				D3-1	Yak Rd	24	X	12	X		2.00		W				
				R1-1	STOP	36	X	36	X		9.00		N				
13	77+26	X		W1-4R	Reverse Curve	36	X	36	X		9.00		E	PST	2.5	1	
				W13-1P	45 MPH	24	X	24	X		4.00		E				
14	78+29	X		D14-100	ADOPT A HIGHWAY THAT SCOOPER GUY ALASKA FUEL DISTRIBUTORS	30	X	24	X		10.00		E/W	PST	2.5	1	2 MOUNTED BACK TO BACK
						30	X	12	X		2.50		W				
						36	X	12			3.00		E				
15	85+29	X		D3-1	Chena Ridge Rd	42	X	8	X		2.33		N	PST	2.5	1	
				D3-1	Chena Ridge Rd	42	X	8	X		2.33		S				
				D3-1	Friar's Way	36	X	12	X		3.00		E				
				D3-1	Friar's Way	36	X	12	X		3.00		W				
				R1-1	STOP	36	X	36	X		9.00		S				
16	86+28		X	S3-1	SCHOOL BUS STOP AHEAD	36	X	36	X		9.00		E	PST	2.5	1	
TOTAL											223						

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	H1	H3

SIGNING NOTES:

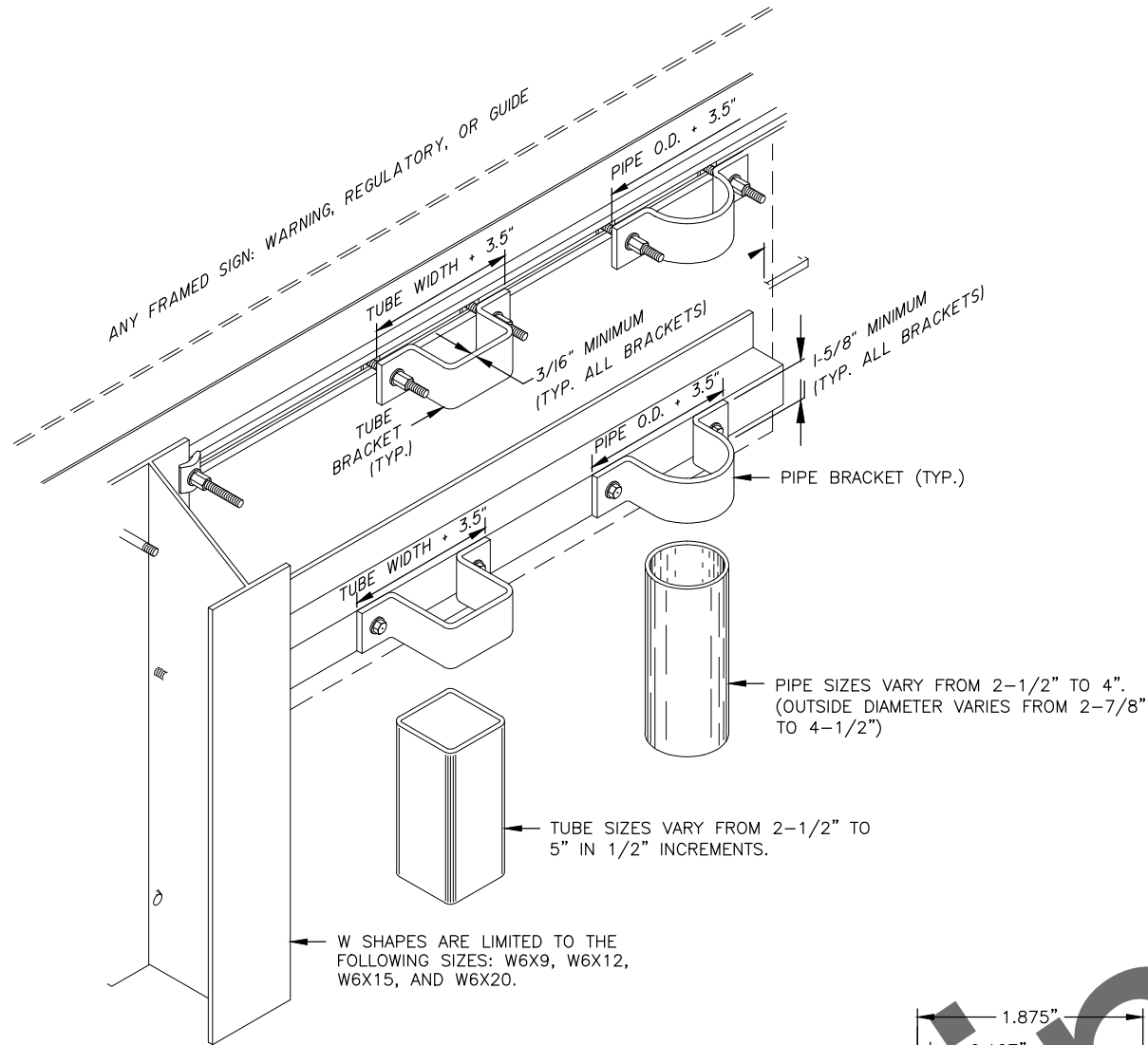
- REMOVE AND DISPOSE OF ALL EXISTING SIGNS AND SIGN FOUNDATIONS WITHIN THE PROJECT LIMITS, EXCEPT THOSE DESIGNATED FOR REINSTALLATION, SALVAGE OR OTHERWISE NOTED.
- MOUNTING HEIGHTS ARE PER STANDARD PLAN S-05.02 UNLESS OTHERWISE NOTED.
- DETERMINE POST LENGTHS IN THE FIELD. DO NOT EXTEND POSTS ABOVE TOP OF SIGN.
- INSTALL PST SIGN POSTS WITH SLEEVE TYPE CONCRETE FOUNDATION OR SOIL EMBEDMENT. EMBED PST IN SLEEVE 24". PER STANDARD PLAN S-30.05, ATTACH THE SIGN POST TO THE SLEEVE USING GALVANIZED 3/8" BOLT, NUT, SPLIT LOCK WASHER AND TWO FLAT WASHERS.
- 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.
- 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.
- 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.
- ALL FASTENER HARDWARE SHALL MEET THE REQUIREMENTS OF THE "FASTENER SPECIFICATION TABLE" UNDER SECTION 730-2.07 OF THE SSHC.
- 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.
- 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.
- 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.
- MAINTAIN EXISTING SIGNS UNTIL NEW SIGNS ARE INSTALLED. DO NOT LEAVE DUPLICATE OR CONFLICTING SIGNING UP AT ANY TIME.
- ALL SIGNS NOTED FOR REMOVAL AND REINSTALLATION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE IF THEY ARE DAMAGED DURING THE RELOCATION EFFORT.
- 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.
- 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.
- 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.
- 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.
- INSTALL WEATHER TIGHT CAPS ON ALL TS POSTS.
- INSTALL FRANGIBLE COUPLING SYSTEMS IN ACCORDANCE WITH STANDARD PLAN S-31.02.
- 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.
- INSTALL TS SIGN POST BASES AND FOUNDATIONS BEHIND BARRIER IN ACCORDANCE WITH STANDARD PLAN S-32.02. PLACE SIGNS TO MEET 3' MINIMUM TO EDGE OF SIGN AND 5' MINIMUM TO SIGN POST FROM FACE OF GUARDRAIL.
- 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.
- ADHESIVE TAPE IS NOT PERMITTED. THIS MODIFIES STANDARD PLAN S-00.12

SIGNING SUMMARY

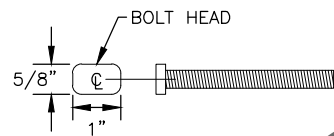


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H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_SUMMARIES-H2_SIGNING DETAILS (1 OF 2) Thu, Aug/24/23 02:20pm

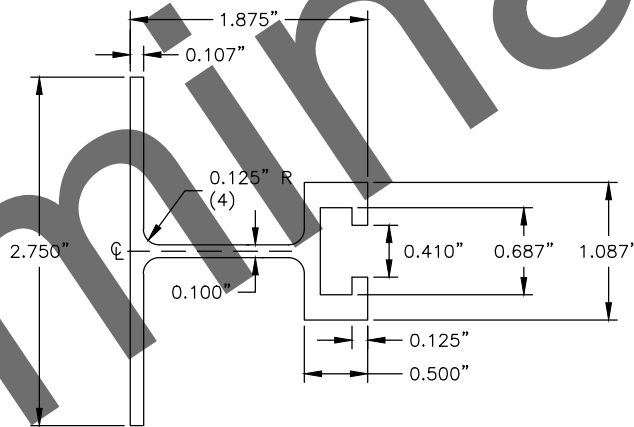
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	H2	H3



FRAMED SIGN ATTACHMENT BRACKETS

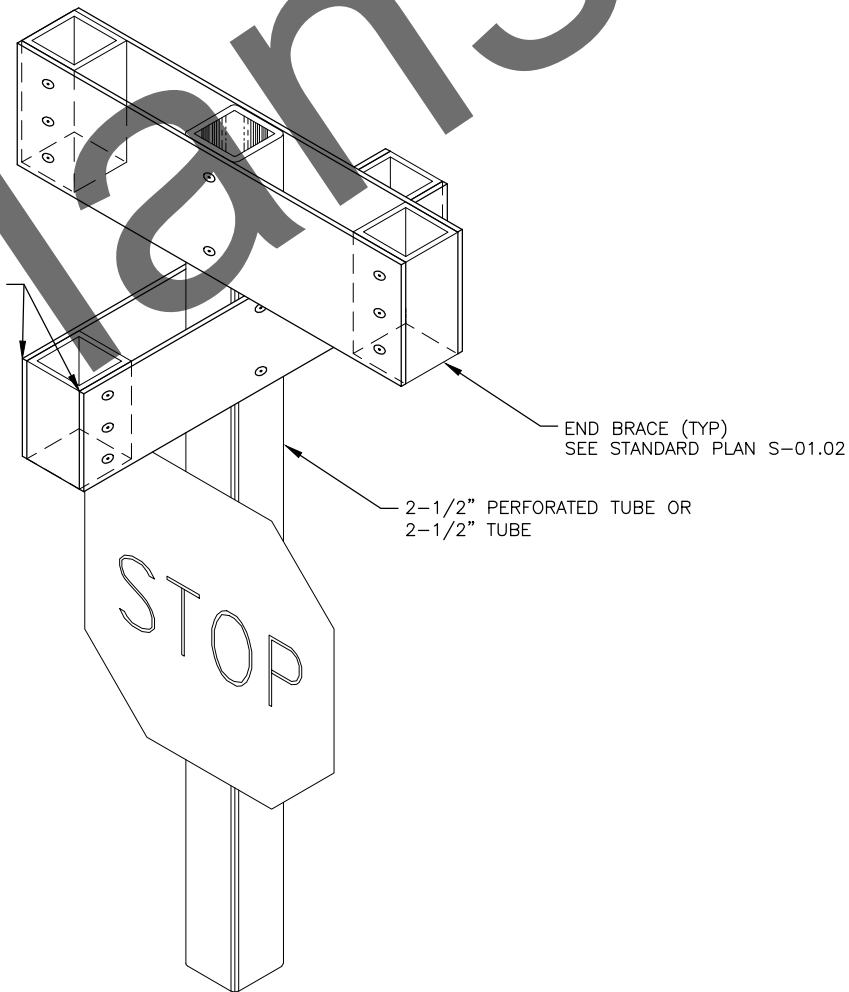


3/8" WINDBEAM BOLT



EXTRUDED ALUMINUM WINDBEAM

INSTALL TWO D3-100 SERIES CROSS STREET NAME SIGNS BACK TO BACK ON THE POST



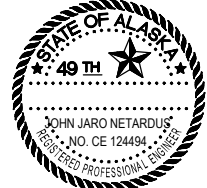
STREET NAME SIGN MOUNTING DETAIL

NOTES:

1. VERTICALLY SEPARATE R1-1 (STOP) SIGN AND ALL OTHER SIGN ASSEMBLIES MOUNTED ON THE SAME POST BY 2-1/2 INCHES.

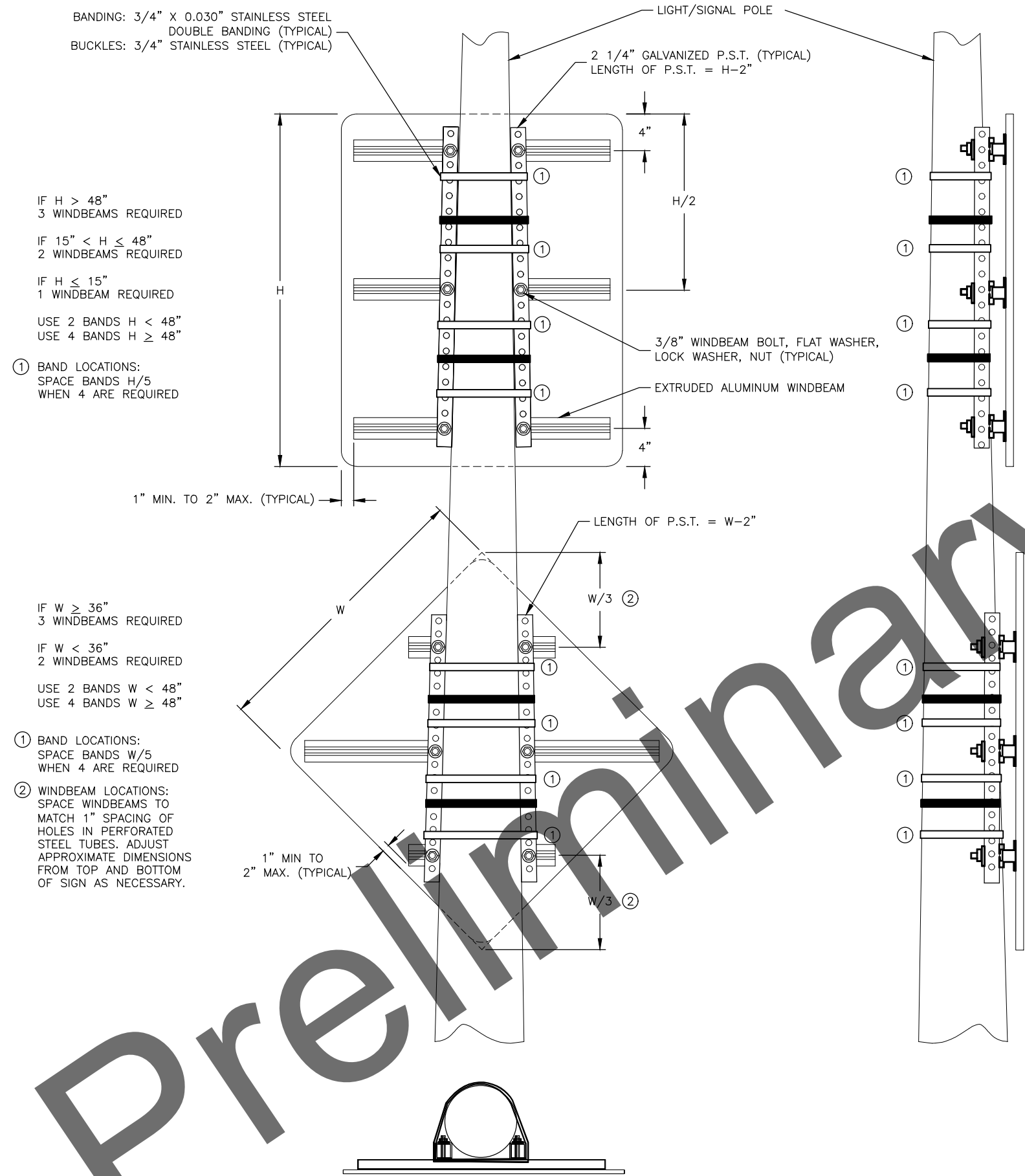
NOTES:

1. ATTACH FRAMED SIGNS TO POSTS WHEREVER THE FRAMES CROSS THE POSTS. AT EACH CROSSING, ATTACH THE SIGN USING TWO POST CLIPS ON W-SHAPE POSTS, A U-SHAPED BRACKET ON PIPES OR A BRACKET WITH SQUARE CORNERS ON TUBES.
2. THE TUBE BRACKETS USED ON EVEN INCH SIZE TUBES MAY ALSO BE USED ON TUBES 1/2" SMALLER IN SIZE.
3. THE BRACKET DETAILS SHOWN INDICATE GENERAL DESIGNS ONLY. DESIGNS MAY VARY BY MANUFACTURER.
4. ALUMINUM ALLOY 6061-T6 SHALL BE USED FOR ZEE SHAPE FRAMING, EXTRUDED WINDBEAM, AND RIVETS.
5. ATTACH SIGNS TO WINDBEAM WITH 3/16" RIVETS AT 4" STAGGERED SPACING.
6. EACH FRAMING MEMBER SHALL BE ONE CONTINUOUS PIECE.



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H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_SUMMARIES-H3 SIGNING DETAILS (2 OF 2) Thu, Aug/24/23 02:20pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	H3	H3

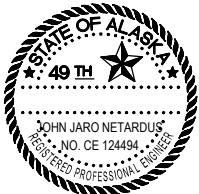


NOTES:

1. ATTACH SIGN TO WINDBEAMS WITH 3/16" RIVETS AT 4" STAGGERED SPACING.

LIGHT/SIGNAL POLE SIGN FRAMING & MOUNTING DETAILS

SIGNING DETAILS (2 OF 2)



NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	Q1	Q4

ESCP GENERAL NOTES:

- 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.
- CONSTRUCTION ENTRANCE/EXIT MUST BE ESTABLISHED TO MINIMIZE OFF-SITE IMPACTS.
- INSTALL PERIMETER CONTROL BMP WHEN WORKING WITHIN 25 FEET OF SURFACE WATERS AND ALONG WETLANDS WHERE A 25 FOOT VEGETATIVE BUFFER IS NOT RETAINED.
- 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.
- ALL IN-WATER WORK MUST BE ISOLATED FROM WATERS OF THE U.S. USING APPROPRIATE BMPS. ISOLATION METHODS MAY INCLUDE:
 - SILT CURTAINS
 - COFFERDAMS
 - DIVERSIONS
 - OTHER METHODS APPROVED BY THE ENGINEER
- INLET / OUTLET PROTECTION REQUIRED FOR ALL CULVERTS, CROSSING CULVERT PROTECTION IS SHOWN ON THE ESCP SHEETS, DRIVEWAY CULVERTS ARE NOT SHOWN FOR VISUAL CLARIFICATION.
- AREAS OF DISTURBANCE, TEMPORARY AND PERMANENT STABILIZATION, WILL BE MARKED AS WORK PROCEEDS AND ADDED TO THE LEGEND.
- REFER TO APPENDIX A OF THE CONTRACT FOR ENVIRONMENTAL PERMIT INFORMATION.
- REFER TO APPENDIX C OF THE CONTRACT FOR THE ESCP TEMPLATE.

ENVIRONMENTAL COMMITMENTS:

- MECHANIZED LAND/VEGETATION CLEARING ACTIVITIES WILL BE AVOIDED DURING THE MIGRATORY BIRD NESTING SEASON OF MAY 1-JULY 15.

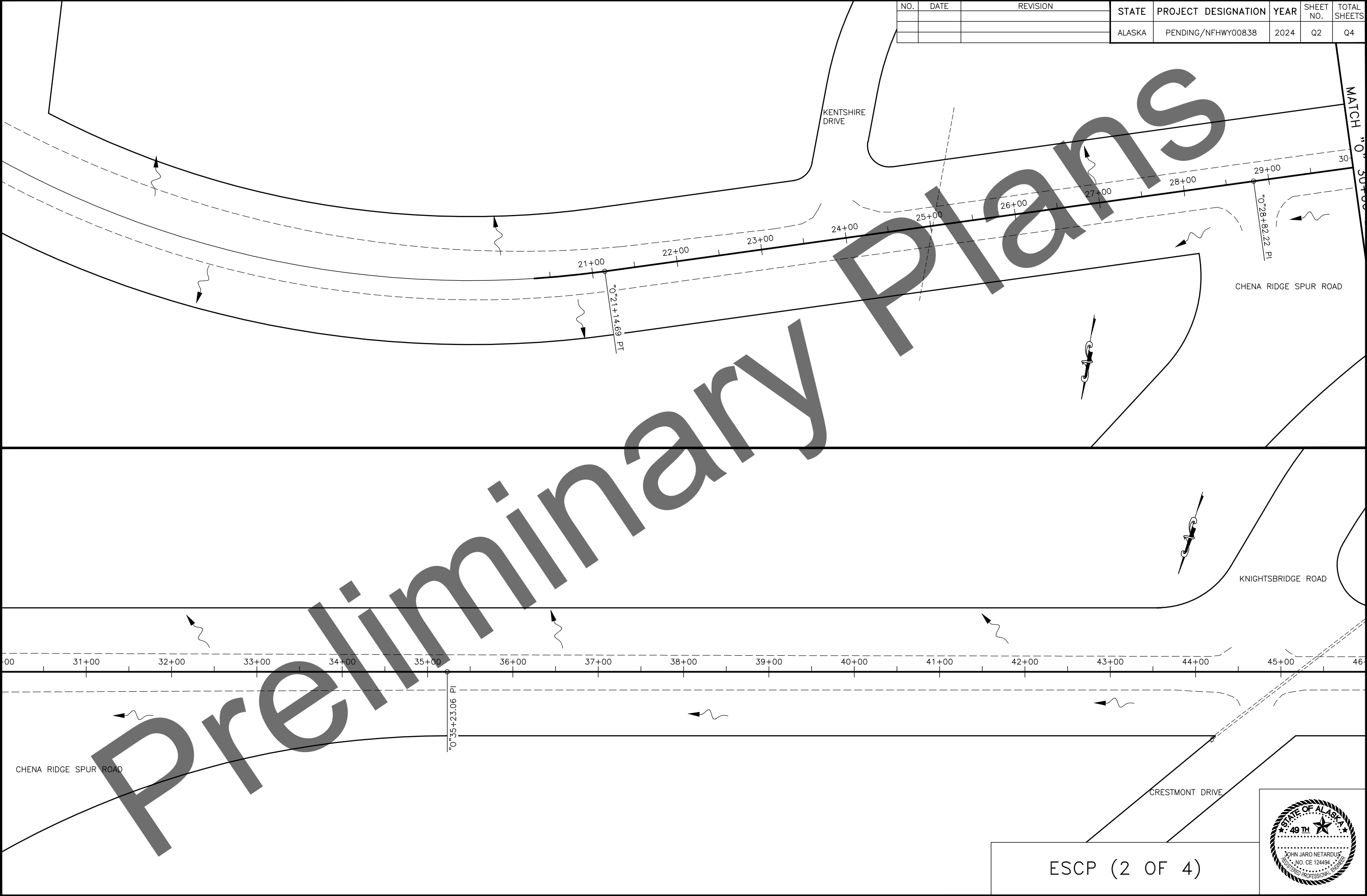


LEGEND:

WETLANDS	
APPROACH	
CULVERT	
RIPRAP	
REVEGETATIVE EFFORT	
PERIMETER CONTROL	
INLET PROTECTION	
OUTLET PROTECTION	
EXISTING SURFACE FLOW DIRECTION	
CHECK DAMS OR OTHER VELOCITY CONTROL BMPS	
CONSTRUCTION ENTRANCE AND EXIT	

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NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	Q2	Q4

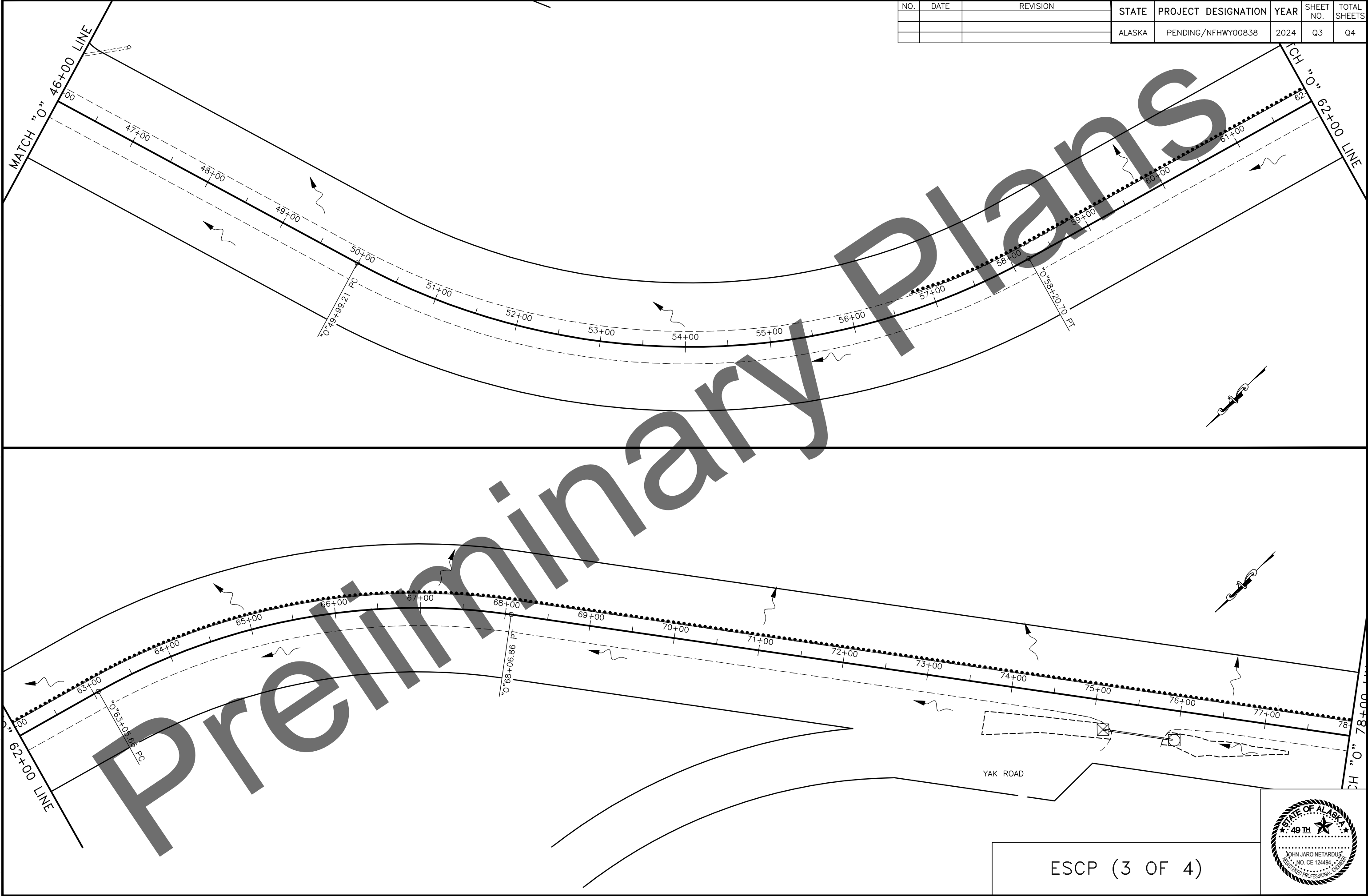


ESCP (2 OF 4)

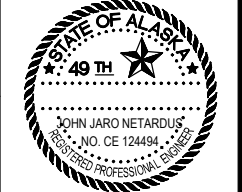


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H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_ESCP-Q3 ESCP (3 OF 4). Thu, Aug/24/23 01:21pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	Q3	Q4

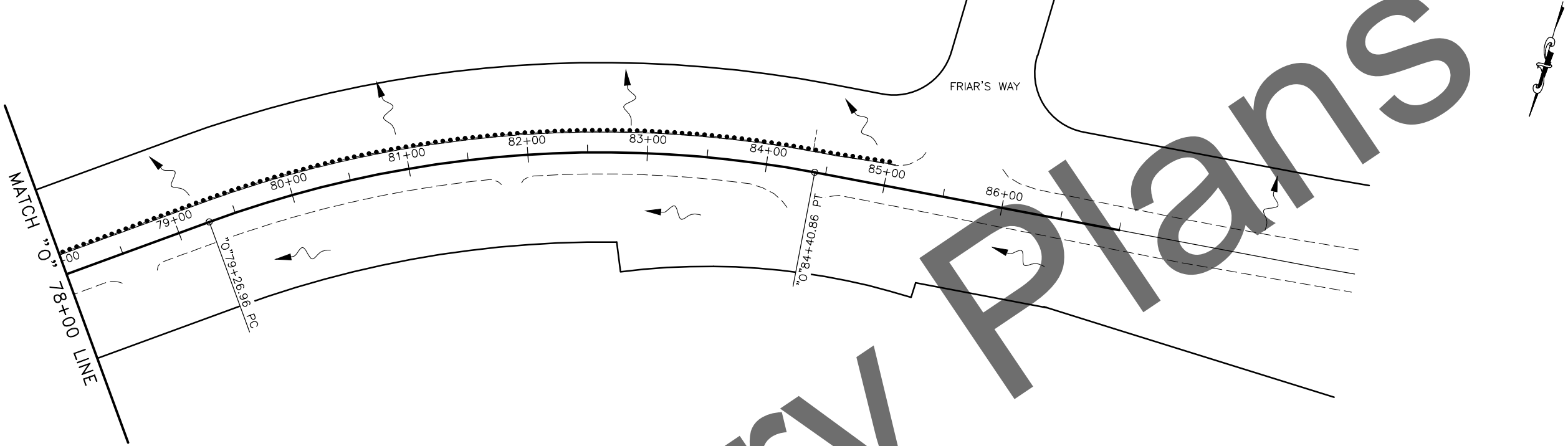


ESCP (3 OF 4)



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Friar's Way\6 Design\5 Civil 3D\3 Drawings\00838_ESCP-Q4_ESCP (4 OF 4).Thu, Aug/24/23 01:28pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	Q4	Q4



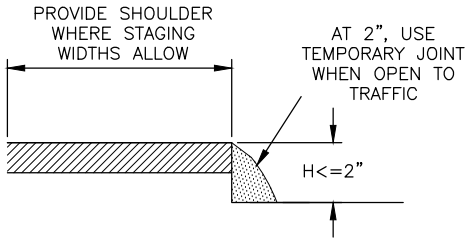
ESCP (4 OF 4)



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
H:\Projects\Fbks_NF\NFHWY00838 Chena Ridge Road Resurfacing - Kentshire Drive to Frier's Way\6 Design\5 Civil 3D\3 Drawings\00838_TRAFFIC (1 OF 1).Thu, Aug/24/23 01:30pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFHWY00838	2024	T1	T1

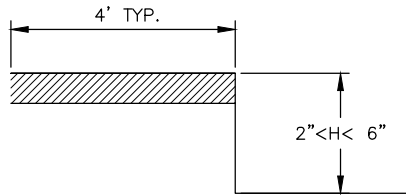
FILL SLOPES



CASE A

DROP-OFFS ≤ 2 INCHES
(PAVED SURFACES ONLY)

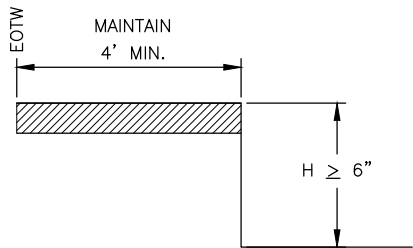
- USE "UNEVEN LANES" (W8-11) SIGNS FOR ALL DROP-OFFS IN BETWEEN TRAFFIC LANES
- LEAVE NO DROP-OFFS $> 1.5"$ IN THE TRAFFIC LANE OR ACTIVE WHEEL TRACK



CASE B

$2" < \text{DROP-OFFS} < 6"$
(ALL ROADWAY SURFACES)

- PLACE CONES OR CANDLES FOR DROP-OFFS ≥ 4 FEET AND ≤ 30 FEET FROM EOTW.
- USE DRUMS OR TYPE II BARRICADES FOR DROP-OFFS < 4 FEET FROM THE EOTW.



CASE C

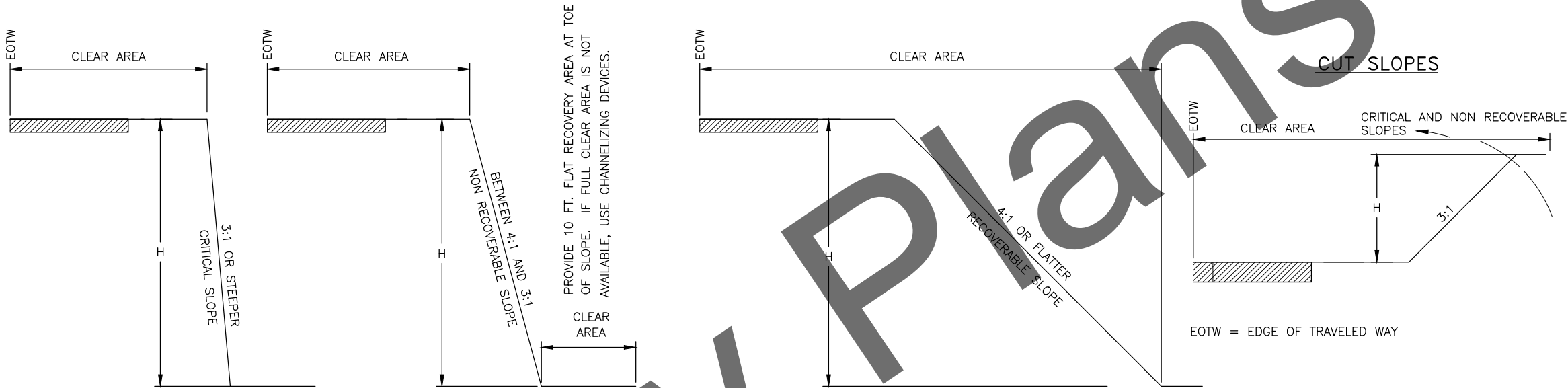
DROP-OFFS $\geq 6"$
(ALL ROADWAY SURFACES
AND ROADSIDE SLOPES)

- PLACE DRUMS OR TYPE II BARRICADES FOR DROP-OFFS $\leq 24"$ WITHIN THE CLEAR AREA.
- PROVIDE PORTABLE CONCRETE BARRIERS FOR DROP-OFFS $> 24"$ WITHIN 15 FEET OF THE EOTW. USE DRUMS OR TYPE II BARRICADES IF BEYOND 15 FEET.

STEEPER THAN OR EQUAL TO 3:1

BETWEEN 4:1 AND 3:1

FLATTER THAN OR EQUAL TO 4:1



CLEAR AREA REQUIREMENTS

	LOW SPEED ≤ 35 MPH	INTERMEDIATE SPEED 40 MPH TO 45 MPH	HIGH SPEED ≥ 50 MPH
RURAL	15'	24'	30'
URBAN	10' DITCH SECTIONS, OR 2' BEHIND CURB	15' DITCH CONDITIONS, OR 2' BEHIND CURB	15' DITCH CONDITIONS, OR 2' BEHIND CURB

CHANNELIZING DEVICE REQUIREMENTS FOR SLOPES
3:1 OR STEEPER WITHIN THE CLEAR AREA

	H $\leq 15'$	H $> 15'$
< 2000 VPD LOW VOLUME	CANDLES OR CONES	TYPE II BARRICADES OR DRUMS
> 2000 VPD	TYPE II BARRICADE OR DRUMS	PORTABLE CONCRETE BARRIER OR TEMPORARY GUARDRAIL

TRAFFIC CONTROL NOTES:

- USE THE EXISTING CROSS-SECTION (PRIOR TO CONSTRUCTION) AS A BASIS FOR DETERMINING WHEN CHANNELIZING DEVICES ARE NEEDED.
- INSTALL CHANNELIZING DEVICES WHEN THE HORIZONTAL OR VERTICAL CURVATURE IS MADE MORE SEVERE.
- INSTALL FLEXIBLE DELINEATORS WHEN ALL VEGETATION OVER 4 FEET HIGH IS CLEARED FROM FILL SLOPES THAT ARE 3:1 OR STEEPER IN THE CLEAR AREA.
- USE PORTABLE CONCRETE BARRIER FOR WARRANTING CONDITIONS WHICH LAST LONGER THAN 3 DAYS. FOR CONDITIONS LASTING LESS THAN 3 DAYS, OTHER CHANNELIZING DEVICES MAY BE INSTALLED.
- TERMINATE RUNS OF PORTABLE CONCRETE BARRIER USING THE FOLLOWING METHODS:
 - CONNECT TO A PORTABLE CRASH CUSHION, OR
 - PROVIDE A CONCRETE BARRIER WITH THRIE BEAM TRANSITION TO W-BEAM GUARDRAIL, TREATED WITH A PARALLEL TERMINAL (SEE SECTION 710).
 - FLARE THE ENDS OF THE PORTABLE CONCRETE BARRIER AWAY FROM THE ROADWAY AT A RATE OF 7:1 ON A COMPACTED SLOPE OF 6:1 OR FLATTER, OUTSIDE OF THE CLEAR AREA. INSTALL A SLOPING PORTABLE CONCRETE BARRIER END TREATMENT, OR
 - BURY IN THE BACKSLOPE.

- TERMINATE THE RUNS OF TEMPORARY W-BEAM GUARDRAIL USING THE FOLLOWING METHODS:
 - PROVIDE A PARALLEL TERMINAL (SEE SECTION 710)
 - FLARE THE ENDS OF THE TEMPORARY GUARDRAIL AWAY FROM THE ROADWAY AT A RATE OF 6:1 ON A COMPACTED SLOPE OF 6:1 OR FLATTER OUTSIDE OF THE CLEAR AREA, TERMINATE WITH A STANDARD W-BEAM END SECTION, OR
 - BURY IN THE BACKSLOPE.

EQUIPMENT NOTES:

- WHEN THERE IS ACTIVE, NONMOBILE CONSTRUCTION EQUIPMENT WITHIN THE CLEAR AREA, DELINEATE THE ROADSIDE WITH TRAFFIC CONES.
- SEPARATE PROCEDURES ARE REQUIRED FOR MOBILE WORK ZONE OPERATIONS AND SHORT DURATION WORK OF LESS THAN 12 HOURS.

WINTER SHUTDOWN NOTES:

- WHEN REQUIRED, USE CHANNELIZING DEVICES WHICH CAN BE MAINTAINED OVER WINTER.
- NO CHANNELIZING DEVICES ARE REQUIRED IF:
 - CONSTRUCTION SLOPES ARE RECOVERABLE, AND
 - SLOPES ARE SMOOTH AND COMPACTED, AND
 - REQUIRED CLEAR AREA IS PROVIDED



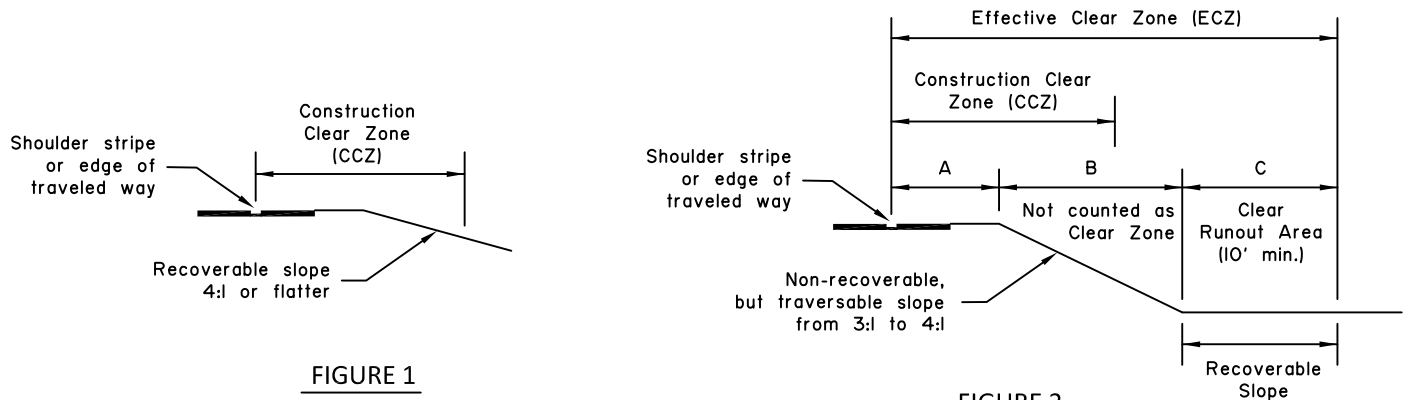


FIGURE 1

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:

- The "Construction Clear Zone" (CCZ) may be called "Work Zone Clear Zone" or "Clear Zone in Work Zones" in other publications.
- In the case of conflicts, this Standard Plan has lesser precedence than Section 643 (Traffic Maintenance) of the Standard Specifications for Highway Construction (SSHC).
- During seasonal shutdown or if construction activity 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.
- These guidelines are not comprehensive and are not intended to limit the use of safety measures.
- 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 is within 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:

- Measure CCZ from the shoulder stripe. If there is no shoulder stripe, measure from the edge of the traveled way. See Figure 1.
- 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 provide 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.
- 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.
- The term "fixed objects" is defined in Section 643-1.02 of the SSHC.
- 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:

- 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 shown in this table when elimination is not practicable.
- 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.
- 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 A. 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

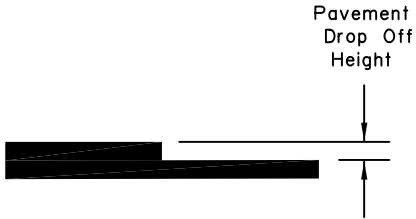


FIGURE 3
Pavement Drop-off Detail

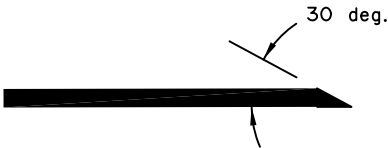


FIGURE 4
Safety Edge Detail

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

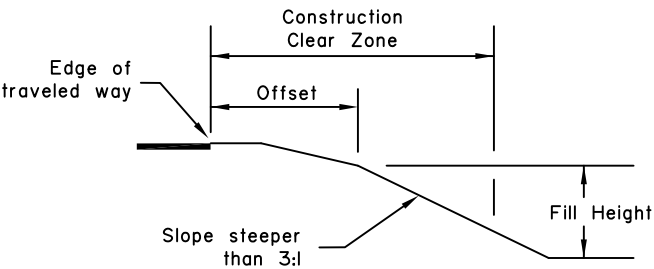


FIGURE 5

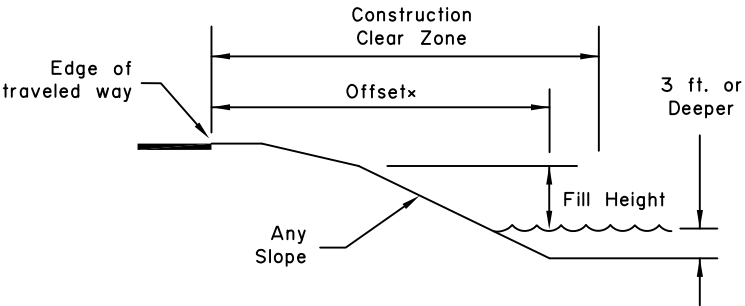


FIGURE 6

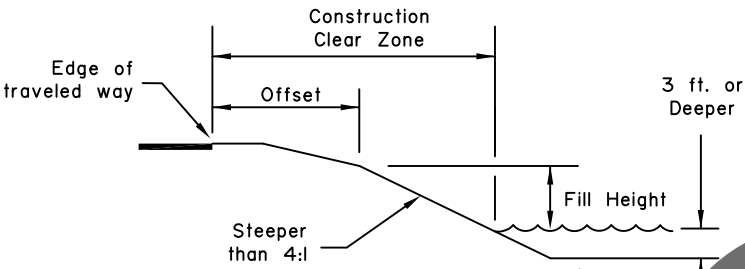


FIGURE 7

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, find 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.

			Table 5 - Minimum Fill Height at which Temporary Barrier Is Waranted															
			Seasonal Traffic Volume - ADT															
			0-750	751-1500			1501-6000				6001-15000				15001+			
Posted WZ Speed Limit	Duration (# days)	Offset (ft)	All Slopes/ Water Condition	slope		Water	slope			Water	slope			Water	slope			Water
				2.9:1 to 1.1:1	1:1 to Vert.		2.9:1 to 2.1:1	2:1- 1.1:1	1:1- Vert.		2.9:1 to 2.1:1	2:1- 1.1:1	1:1- Vert.		2.9:1 to 2.1:1	2:1- 1.1:1	1:1- Vert.	
30 MPH and lower	4-30	5-10																
		3-5																
		0-3																
	31-100	5-10																
		3-5																
		0-3																
	101+	5-10																
		3-5																
		0-3																
35 to 45 MPH	4-30	6-12																
		3-6																
		0-3																
	31-100	6-12																
		3-6																
		0-3																
	101+	6-12																
		3-6																
		0-3																
45 to 55 MPH	4-30	9-18																
		3-9																
		0-3																
	31-100	9-18																
		3-9																
		0-3																
	101+	9-18																
		3-9																
		0-3																
60 MPH and above	4-30	13-26																
		3-13																
		0-3																
	31-100	13-26																
		3-13																
		0-3																
	101+	13-26																
		3-13																
		0-3																

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

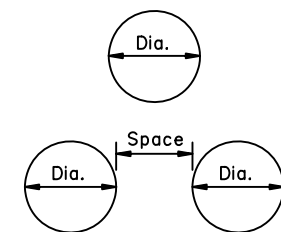
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By: LRG Date: 09/15/2022

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

GENERAL NOTES:

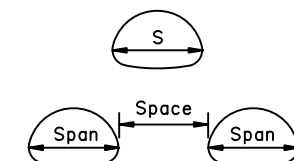
- Sidefill shall be placed and compacted with care under haunches of pipe and shall be brought up evenly and simultaneously on both sides of pipe to 1 foot above the top of the full length of the pipe.
- Alternate installation methods may only be used when specified or approved by the Engineer.

D = Nominal Pipe Diameter



MULTIPLE INSTALLATIONS	
Dia.	Minimum Space Between Pipes
0" - 42"	24"
48" & Over	1/2 Dia. of pipe or 3', whichever is less.

S = Nominal Pipe Arch Span



MULTIPLE INSTALLATIONS	
Dia.	Minimum Space Between Pipes
0" - 42"	24"
48" & Over	1/2 Span of pipe arch or 3', whichever is less.

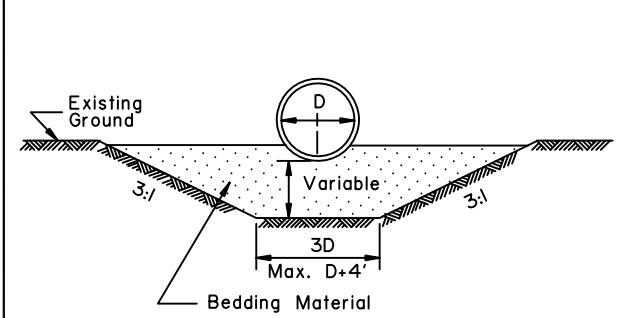
State of Alaska DOT&PF
ALASKA STANDARD PLAN
CULVERT PIPE & ARCH
INSTALLATION DETAILS

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

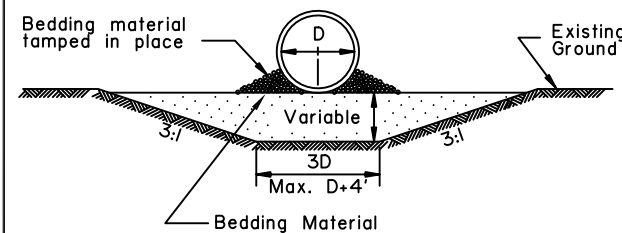
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Last Code and Stds. Review
By: Date:

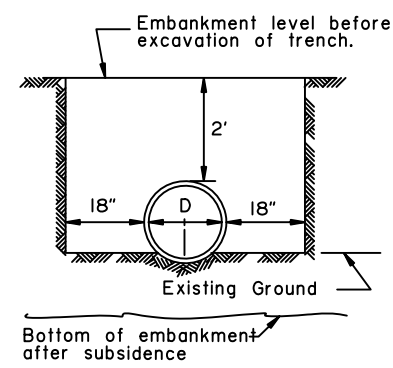
Next Code and Standards Review date: 02/08/2029



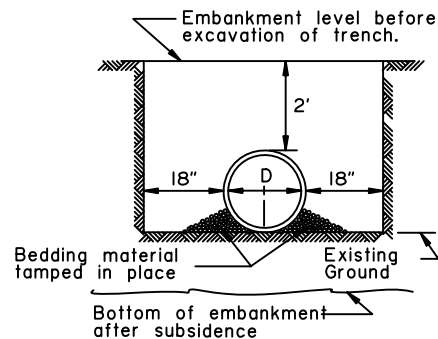
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FOUNDATION STABILIZATION
To be used in unstable areas as
directed by the Engineer.



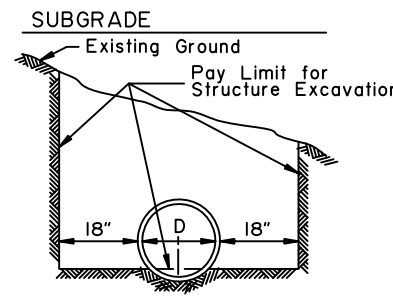
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TYPE "A"
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To be used in unstable areas as
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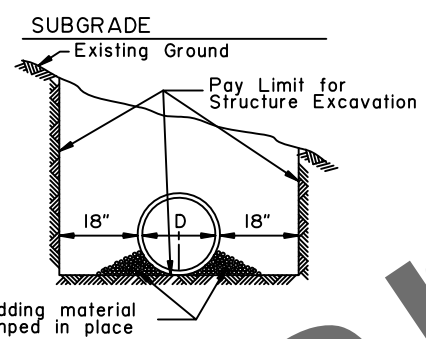
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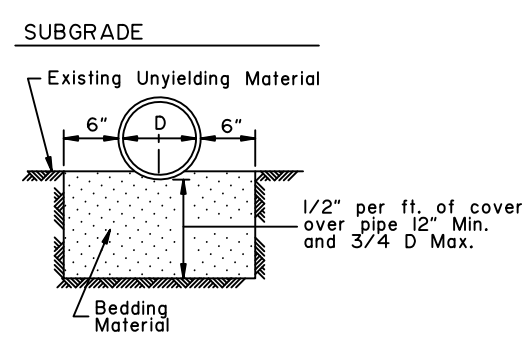
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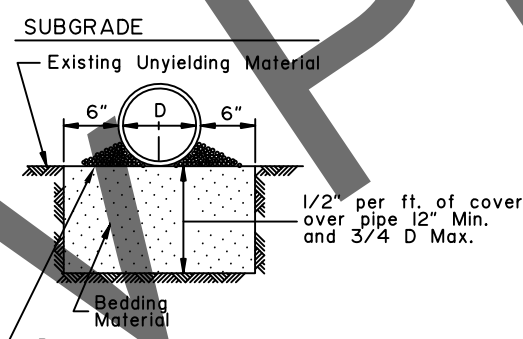
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TYPE "C"

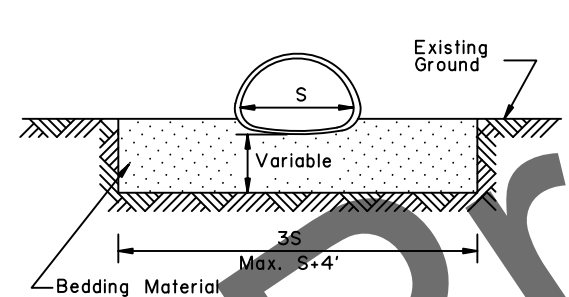


TYPE "D"
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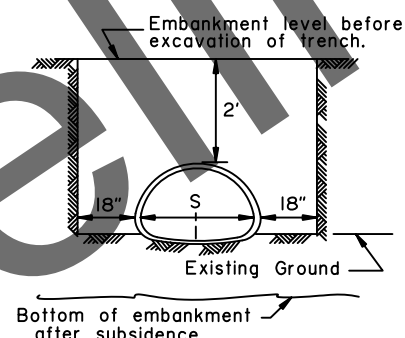


'ALTERNATE' TYPE "D"
ROCK OR UNYIELDING MATERIAL

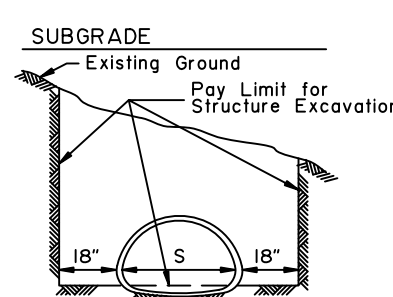
CULVERT PIPE



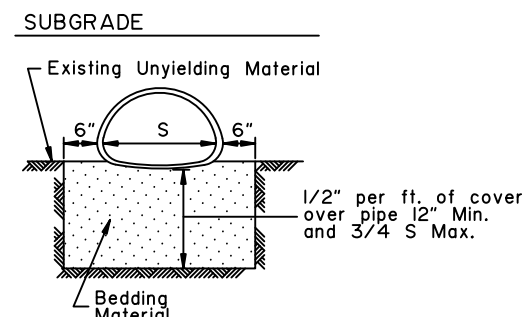
TYPE "A"
FOUNDATION STABILIZATION
To be used in unstable areas as
directed by the Engineer.



TYPE "B"



TYPE "C"



TYPE "D"
ROCK OR UNYIELDING MATERIAL

ARCH

GENERAL NOTES:

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
5. See Standard Plan D-01 "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
7. These tables have been developed for an HL-93 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2017 AASHTO "LRFD Bridge Design Specifications".

Minimum & Maximum Cover for 2 2/3" X 1/2" Aluminum Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
12	12	100+	100+	100+	100+	100+
15	12	100	100+	100+	100+	100+
18	12	83	100+	100+	100+	100+
21	12	71	89	100+	100+	100+
24	12	62	78	100+	100+	100+
27	12		69	97	100+	100+
30	12		62	87	100+	100+
36	12		51	73	94	100+
42	12			62	80	100+
48	12			54	70	85
54	15			48	62	76
60	15				52	64
66	18					52
72	18					43

Minimum & Maximum Cover for 3" x 1" Aluminum Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
30	12	57	72	100+	100+	100+
36	12	47	60	84	100+	100+
42	12	40	51	72	96	100+
48	12	35	44	62	84	99
54	15	31	39	55	74	88
60	15	28	35	50	67	79
66	18	25	32	45	61	72
72	18	23	29	41	56	66
78	21		27	38	51	61
84	21			35	48	56
90	24			33	44	52
96	24			31	41	49
102	24				39	46
108	24				37	43
114	24					39
120	24					36

Minimum & Maximum Cover for 9" X 2 1/2" Aluminum Structural Plate Pipe*			
Thickness		0.125	0.150
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)
84	18	31	
90	18	27	
96	18	27	
102	18	24	
108	18	24	
114	18	21	
120	24	21	
126	24	19	
132	30	19	
138	30	18	
144	30	18	
150	30		22
156	30		22
162	36		20
168	36		20

*5.33 - 3/4" dia. steel bolts per foot.

CORRUGATED CIRCULAR ALUMINUM PIPE

CORRUGATED ALUMINUM PIPE-ARCH

Minimum & Maximum Cover for 2 2/3" X 1/2" Aluminum Pipe-Arch					
				2 Tons/Sf Corner Bearing Pressure	
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)
17	13	3 4/8	16 (0.060)	12	13
21	15	4 1/8	16 (0.060)	12	12
24	18	4 7/8	16 (0.060)	12	12
28	20	5 4/8	14 (0.075)	12	12
35	24	6 7/8	14 (0.075)	12	12
42	29	8 2/8	12 (0.105)	12	12
49	33	9 5/8	12 (0.105)	15	12
57	38	11	10 (0.135)	15	12
64	43	12 3/8	10 (0.135)	18	12
71	47	13 6/8	8 (0.164)	18	12

Minimum & Maximum Cover for 3" x 1" Aluminum Pipe-Arch					
				2 Tons/Sf Corner Bearing Pressure	
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)
60	46	18 6/8	14 (0.075)	15	20
66	51	20 6/8	14 (0.075)	18	20
73	55	22 7/8	14 (0.075)	21	20
81	59	20 7/8	12 (0.105)	21	16
87	63	22 7/8	12 (0.105)	24	16
95	67	24 3/8	12 (0.105)	24	16
103	71	26 1/8	10 (0.135)	24	16
112	75	27 6/8	8 (0.164)	24	16

Minimum & Maximum Cover for 9" x 2 1/2" Aluminum Multiplate Pipe-Arch*					
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	2 Tons/Sf Corner Bearing Pressure Max. Cover (Ft)
6-7	5-8	31.75	0.125	24	24
6-11	5-9	31.75	0.125	24	24
7-3	5-11	31.75	0.125	24	18
7-9	6-0	31.75	0.125	24	18
8-5	6-3	31.75	0.125	24	16
9-3	6-5	31.75	0.125	24	15
10-3	6-9	31.75	0.125	30	13
10-9	6-10	31.75	0.125	30	13
11-5	7-1	31.75	0.125	30	13
12-7	7-5	31.75	0.125	30	11
12-11	7-6	31.75	0.125	30	11
13-1	8-2	31.75	0.125	30	11
13-11	8-5	31.75	0.125	36	10
14-8	9-8	31.75	0.125	36	9
15-4	10-0	31.75	0.150	36	8
16-1	10-4	31.75	0.150	36	8
16-9	10-8	31.75	0.150	42	7
17-3	11-0	31.75	0.150	42	7
18-0	11-4	31.75	0.175	42	7
18-8	11-8	31.75	0.175	42	7

*5.33 - 3/4" dia. steel bolts per foot.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

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

Adoption Date: 7/17/2020

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

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

GENERAL NOTES

- All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
- The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
- No more than one type of pipe may be used on any single installation or installation grouping.
- All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
- See Standard Plan D-01 "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
- Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
- These tables have been developed for an HL-93 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2017 AASHTO "LRFD Bridge Design Specifications".

Minimum & Maximum Cover for 2 2/3" x 1/2" Steel Pipe						
Gage	I6	I4	I2	I0	8	
Thickness	0.060	0.075	0.105	0.135	0.164	
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	
12	I2	100+	100+	100+	100+	
15	I2	100+	100+	100+	100+	
18	I2	100+	100+	100+	100+	
21	I2	100+	100+	100+	100+	
24	I2	100+	100+	100+	100+	
30	I2	83	100+	100+	100+	
36	I2	69	86	100+	100+	
42	I2	59	74	100+	100+	
48	I2	51	64	91	100+	
54	I2		57	80	100+	
60	I2			72	93	
66	I2			66	85	
72	I2				78	
78	I2					
84	I2					

Minimum & Maximum Cover to 3" x 1" Steel Pipe						
Gage	I6	I4	I2	I0	8	
Thickness	0.060	0.075	0.105	0.135	0.164	
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	
36	I2			100+	100+	
42	I2			100+	100+	
48	I2		74	100+	100+	
54	I2	53	66	93	100+	
60	I2	47	59	83	100+	
66	I2	43	54	76	98	
72	I2	39	49	69	89	
78	I2	36	45	64	82	
84	I2	33	42	59	77	
90	I2	31	39	55	71	
96	I2	29	37	52	67	
102	I8	27	34	49	63	
108	I8		32	46	59	
114	I8		31	43	56	
120	I8		29	41	53	
126	I8			39	51	
132	I8			37	48	
138	I8			36	46	
144	I8				44	

Minimum & Maximum Cover for 5" x 1" Steel Pipe						
Gage	I6	I4	I2	I0	8	
Thickness	0.060	0.075	0.105	0.135	0.164	
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	
36	I2	71	88	100+	100+	
42	I2	60	76	100+	100+	
48	I2	53	66	93	100+	
54	I2	47	59	82	100+	
60	I2	42	53	74	96	
66	I2	38	48	67	87	
72	I2	35	44	62	79	
78	I2	32	40	57	73	
84	I2	30	37	53	68	
90	I2	28	35	49	63	
96	I2	26	33	46	59	
102	I8	24	31	43	56	
108	I8		29	41	53	
114	I8		27	39	50	
120	I8		26	37	47	
126	I8			35	45	
132	I8			33	43	
138	I8			32	41	
144	I8				39	

Minimum & Maximum Cover for 6" x 2" Steel Multiplate Pipe*							
Gage	I2	I0	8	7	5	3	1
Thickness	0.111	0.140	0.170	0.188	0.218	0.249	0.280
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
60	I2	46	67	87	100	100+	100+
66	I2	42	60	79	91	100+	100+
72	I2	38	55	73	83	100+	100+
78	I2	35	51	67	77	93	100+
84	I2	32	47	62	71	86	100+
90	I2	30	44	58	67	80	95
96	I2	28	41	54	62	75	89
102	I8	27	39	51	59	71	84
108	I8	25	37	48	55	67	79
114	I8	24	35	45	52	63	75
120	I8	22	33	43	50	60	71
126	I8	21	31	41	47	57	68
132	I8	20	30	39	45	54	64
138	I8	19	28	37	43	52	62
144	I8	18	27	36	41	50	59

*4 - 3/4" dia. steel bolts per foot.

CORRUGATED CIRCULAR STEEL PIPE

CORRUGATED STEEL PIPE-ARCH

Minimum & Maximum Cover for 2 2/3" X 1/2" Steel Pipe-Arch						
2 Tons/Sf Corner Bearing Pressure						
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)	
17	13	3 4/8	16 (0.060)	12	11	
21	15	4 1/8	16 (0.060)	12	11	
24	18	4 7/8	16 (0.060)	12	11	
28	20	5 4/8	16 (0.060)	12	11	
35	24	6 7/8	16 (0.060)	12	11	
42	29	8 2/8	16 (0.060)	12	11	
49	33	9 5/8	14 (0.075)	12	11	
57	38	11	12 (0.109)	12	11	
64	43	12 3/8	12 (0.109)	12	11	
71	47	13 6/8	10 (0.138)	12	11	
77	52	15 1/8	10 (0.138)	12	11	
83	57	16 4/8	8 (0.168)	12	11	

Minimum & Maximum Cover for 3" X 1" Steel Pipe-Arch						
2 Tons/Sf Corner Bearing Pressure						
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)	
53	41	10 2/8	14 (0.079)	12	10	
60	46	18 6/8	14 (0.079)	15	29	
66	51	20 6/8	14 (0.079)	15	29	
73	55	22 7/8	14 (0.079)	18	18	
81	59	20 7/8	14 (0.079)	18	15	
87	63	22 7/8	14 (0.079)	18	15	
95	67	24 3/8	14 (0.079)	18	15	
103	71	26 1/8	14 (0.079)	18	14	
112	75	27 6/8	14 (0.079)	21	14	
117	79	29 4/8	12 (0.109)	21	14	
128	83	31 2/8	10 (0.138)	24	14	
137	87	33	10 (0.138)	24	14	
142	91	34 6/8	10 (0.138)	24	13	
150	96	36	10 (0.138)	30	13	
157	96	38	10 (0.138)	30	13	
164	105	40	10 (0.138)	30	14	
171	110	41	10 (0.138)	30	13	

Minimum & Maximum Cover for 5" X 1" Steel Pipe-Arch						
2 Tons/Sf Corner Bearing Pressure						
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	Max. Cover (Ft)	
53	41	10 2/8	14 (0.079)	12	10	
60	46	18 6/8	14 (0.079)	15	29	
66	51	20 6/8	14 (0.079)	15	29	
73	55	22 7/8	14 (0.079)	18	18	
81	59	20 7/8	14 (0.079)	18	15	
87	63	22 7/8	14 (0.079)	18	15	
95	67	24 3/8	14 (0.079)	18	15	
103	71	26 1/8	14 (0.079)	18	14	
112	75	27 6/8	14 (0.079)	21	14	
117	79	29 4/8	12 (0.109)	21	14	
128	83	31 2/8	10 (0.138)	24	14	
137	87	33	10 (0.138)	24	14	
142	91	34 6/8	10 (0.138)	24	13	
150	96	36	10 (0.138)	30	13	
157	96	38	10 (0.138)	30	13	
164	105	40	10 (0.138)	30	14	
171	110	41	10 (0.138)	30	13	

Minimum & Maximum Cover for Steel Multiplate Pipe-Arch 6" x 2" *						
2 Tons/Sf Corner Bearing Pressure						
Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Gage (In)	Min. Cover (In)	Max. Cover (Ft)	
6-1	4-7	18	12 (0.111)	12	14	
7-0	5-1	18	12 (0.111)	12	12	
7-11	5-7	18	12 (0.111)	12	10	
8-10	6-1	18	12 (0.111)	18	9	
9-9	6-7	18	12 (0.111)	18	8	
10-11	7-1	18	12 (0.111)	18	6	
11-10	7-7	18	12 (0.111)	18	5	
12-10	8-4	18	12 (0.111)	24	5	
13-3	9-4	31	10 (0.140)	24	11	
14-2	9-10	31	10 (0.140)	24	10	
15-4	10-4	31	10 (0.140)	24	9	
16-3	10-10	31	10 (0.140)	30	8	
17-2	11-4	31	10 (0.140)	30	8	
18-1	11-10	31	10 (0.140)	30	7	
19-3	12-4	31	10 (0.140)	30	7	
19-11	12-10	31	10 (0.140)	30	6	
20-7	13-2	31	10 (0.140)	36	6	

*4 - 3/4" dia. steel bolts per foot.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

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

GENERAL NOTES

1. All materials and workmanship shall be in accordance with the State of Alaska Standard Specifications for Highway Construction.
2. For foundation and structural backfill details see Standard Plan D-01 "Culvert Pipe & Arch Installation Details".
3. Pipe cover height is measured from top of the pipe to top of rigid pavement, or to the bottom of subgrade for flexible pavement. In all cases the minimum cover shall be no less than 2 ft. Where loads traverse the culvert during construction minimum cover shall be no less than 4 ft.

Maximum Cover for Type S Corrugated Polyethylene Pipe	
Size (in)	Max. Cover (ft)
12	24
15	25
18	24
24	20
30	20
36	18
42	16
48	17

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5. See Standard Plan D-01 "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflecton.
7. These tables have been developed for an HL-93 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2017 AASHTO "LRFD Bridge Design Specifications".

Minimum & Maximum Cover for Aluminum Spiral Rib Circular Pipe*					
Gage		I6	I4	I2	I0
Thickness		0.064	0.079	0.109	0.138
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
18	12	43	61		
21	12	38	52	84	
24	12	33	45	73	
30	15	26	36	58	
36	18	21	30	49	69
42	21		25	41	59
48	24			36	51
54	24			32	46
60	24			29	41
66	24				37
72	30				34

* $\frac{3}{4}$ x $\frac{3}{4}$ x $7\frac{1}{2}$ in. Corrugations

Minimum & Maximum Cover for Aluminum Spiral Rib Pipe-Arch*					
Gage		I6	I4	I2	I0
Thickness		0.060	0.075	0.105	0.135
Span (Ft.-In.)	Rise (Ft.-In.)	Min. Cover (In)	Max. Cover (Ft)		
20	16	12	16		
23	19	12	15		
27	21	15	13	13	
33	26	18	13	13	13
40	31	21		13	13
46	36	24		13	13
53	41	24		13	13
60	46	24		13	13
66	51	24			13

* $\frac{3}{4}$ x $\frac{3}{4}$ x $7\frac{1}{2}$ in. Corrugations

ALUMINUM SPIRAL RIB PIPE

STEEL SPIRAL RIB PIPE

Minimum & Maximum Cover for Steel and Aluminized Steel Spiral Rib Circular Pipe*					
Gage		I6	I4	I2	I0
Thickness		0.064	0.079	0.109	0.138
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
18	12	91			
24	12	68	95	100+	
30	12	54	76	100+	
36	12	45	63	100+	
42	12	38	54	90	
48	12	33	47	79	
54	18	30	42	70	
60	18	27	38	63	92
66	18	24	34	57	83
72	18		31	52	76
78	24		29	48	70
84	24		27	45	65
90	24			42	61
96	24			39	56
102	30			36	50
108	30			32	45

* $\frac{3}{4}$ x $\frac{3}{4}$ x $7\frac{1}{2}$ in. Corrugations.

Minimum & Maximum Cover for Steel Spiral Rib Pipe-Arch*					
2 Tons/Sf Corner Bearing Pressure					
Thickness		0.064	0.079	0.109	
Span (Ft.-In.)	Rise (Ft.-In.)	Min. Cover (In)	Max. Cover (Ft)		
20	16	12	13		
23	19	12	13		
27	21	12	11		
33	26	12	11		
40	31	12	11		
46	36	12	11		
53	41	18		11	
60	46	18		19	
66	51	18		19	
73	55	18			18
81	59	18			15
87	63	18			15
95	67	18			15

* $\frac{3}{4}$ x $\frac{3}{4}$ x $7\frac{1}{2}$ in. Corrugations

State of Alaska DOT&PF
ALASKA STANDARD PLAN

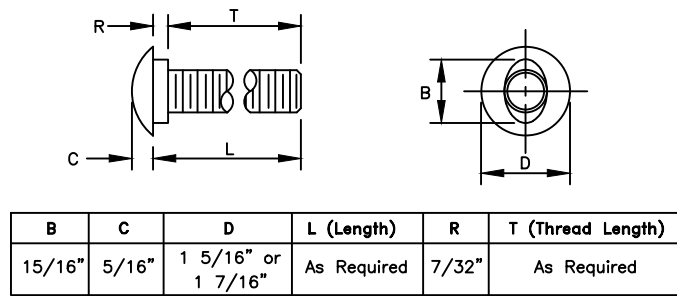
PIPE AND ARCH TABLES

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

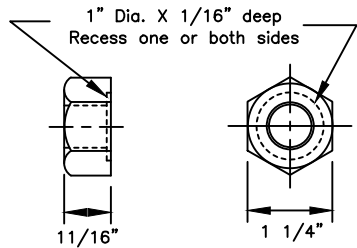
Adoption Date: 7/17/2020

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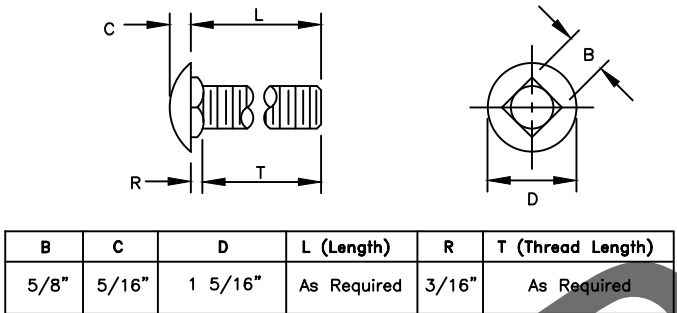
Next Code and Standards Review date: 7/8/2030



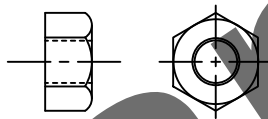
5/8" BUTTONHEAD BOLT
(FBB01-05)



5/8" Dia. RECESSED HEX NUT
(FBB01-05)



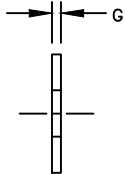
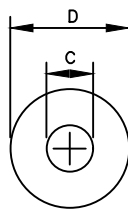
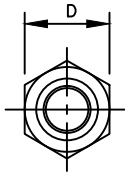
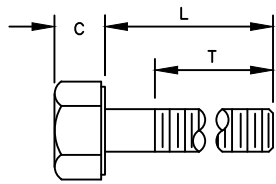
5/8" Dia. CARRIAGE BOLT
(FBC10-20)



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.

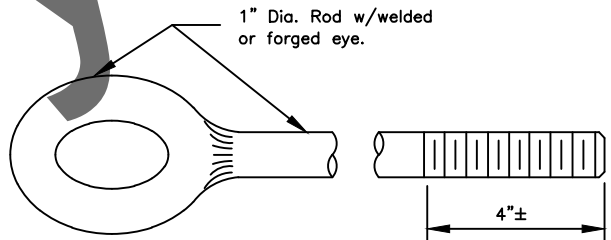


Bolt Size	C	D	L (Length)	T (Thread Length)
5/16"	—	—	1 1/2"	7/8"
5/16"	—	—	1"	1"
3/8"	—	—	7 1/2"	1 1/2"
1/2"	—	—	1 1/2"	1 1/2"
1/2"	—	—	1 1/4"	1 1/4"
5/8" H.S.	5/16"	7/8"	8"	1 1/2"
5/8"-11	—	—	1 1/2"	1 1/2"
3/4"	—	—	1 1/2"	1 1/2"
3/4"	—	—	As Required	2"
3/4" H.S.	15/32"	1 1/4"	2"	1 1/2"

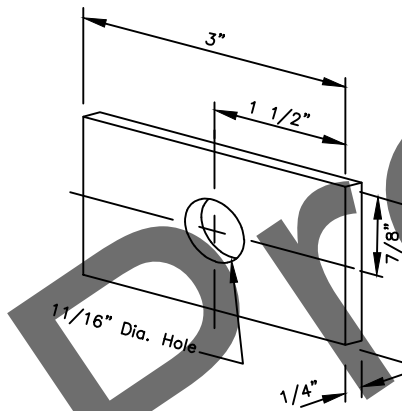
STANDARD HEX BOLTS

For Bolt #	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"

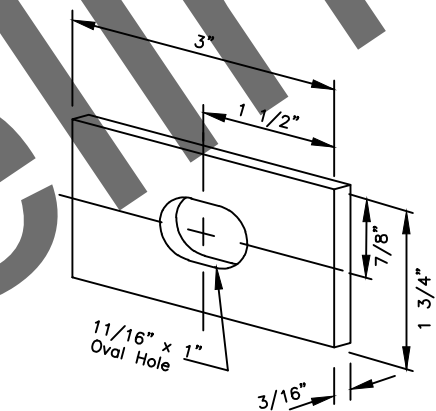
STANDARD STEEL WASHERS



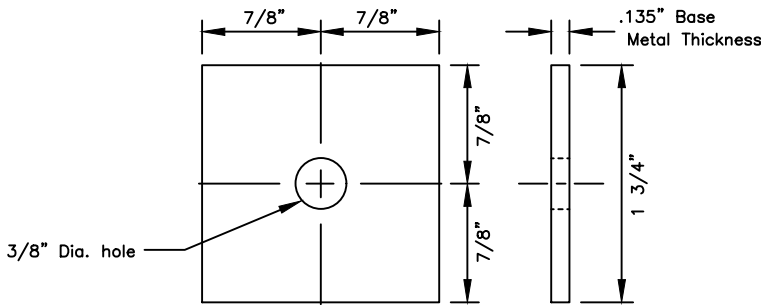
EYE BOLT



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

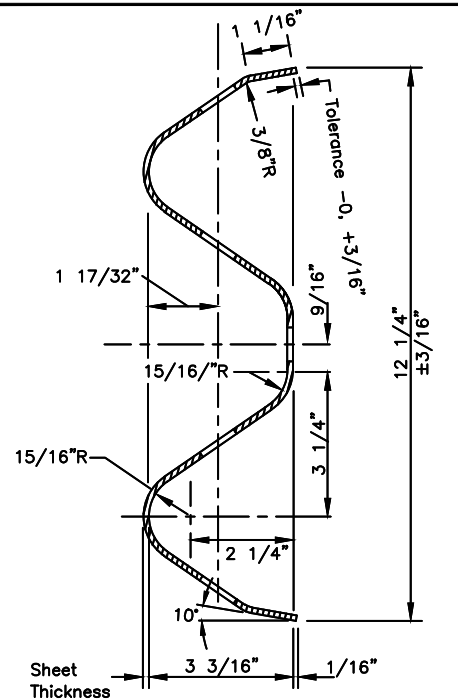
Adoption Date: 7/17/2020

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

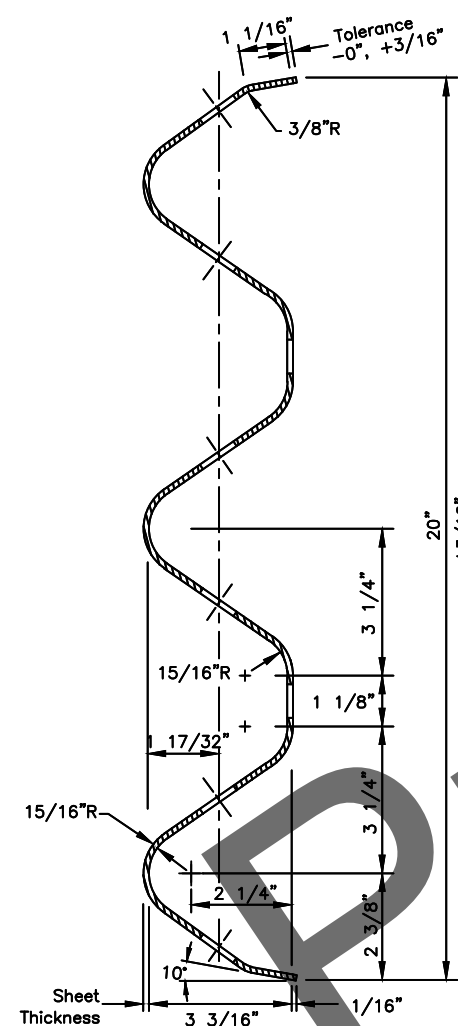
Next Code and Standards Review Date: 7/8/2030

GENERAL NOTES:

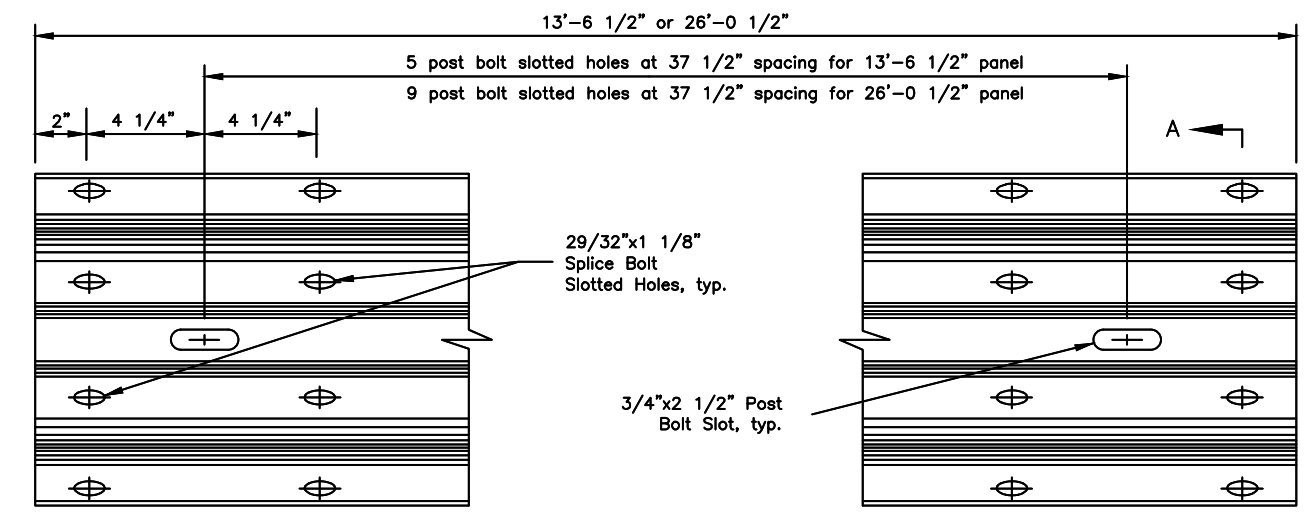
1. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.
2. Install back-up plates between blockouts and w-beam or thrie-beam rail at intermediate (non-splice) posts when steel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



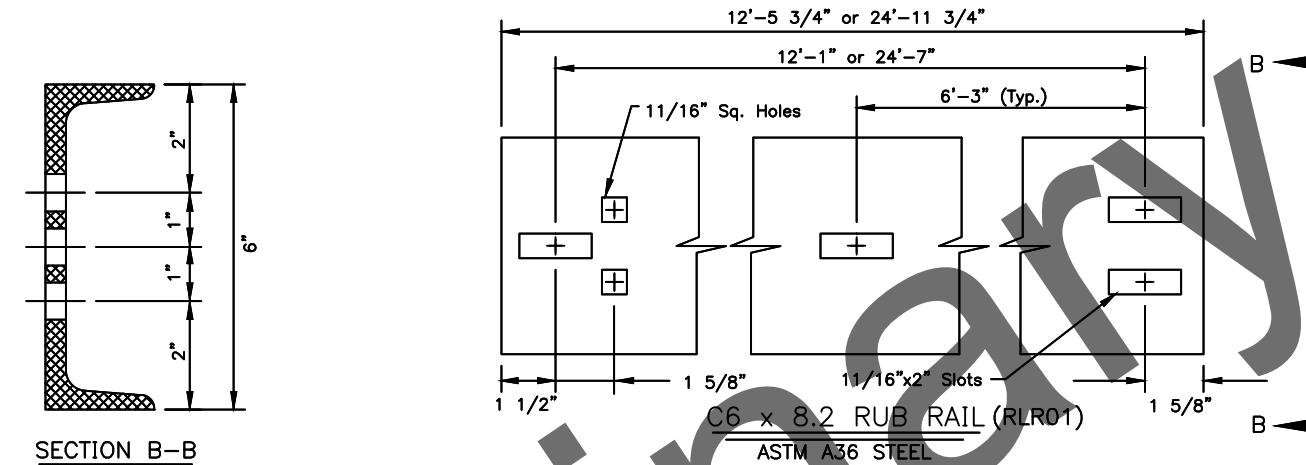
SECTION A-A
(cross section same as RWM02a-b)



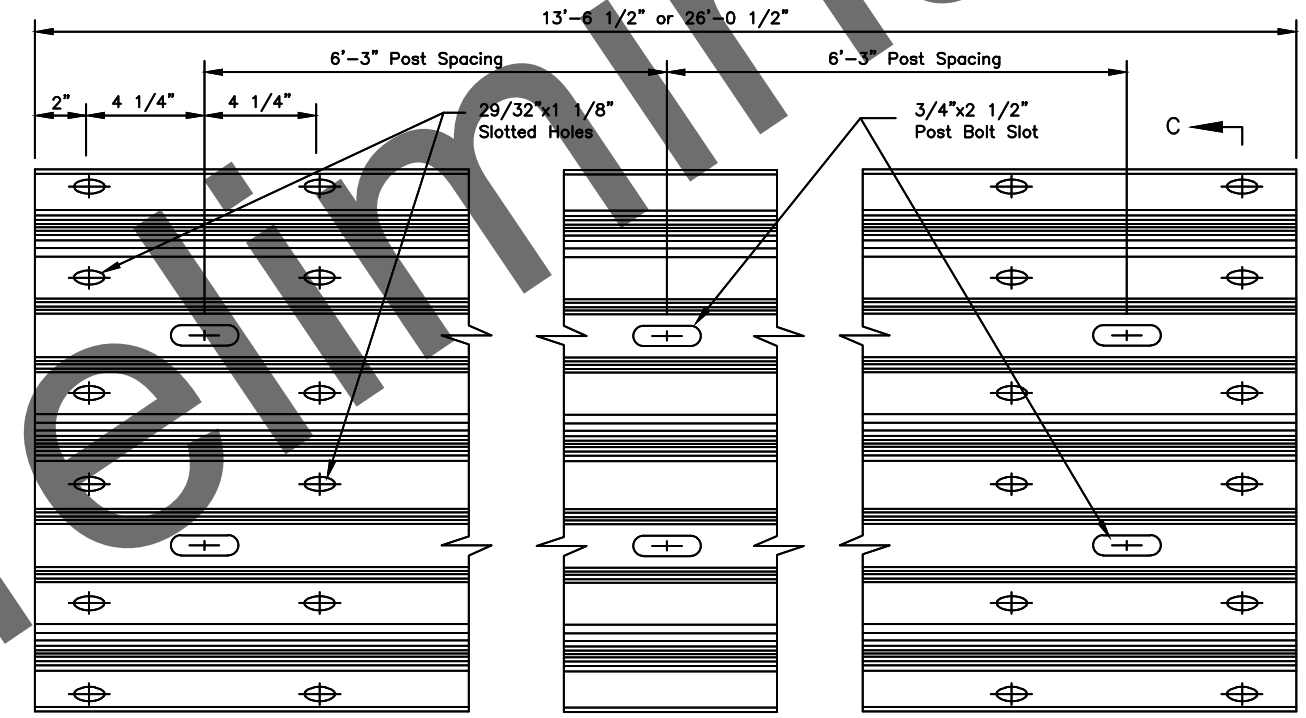
SECTION C-C
(RTM01a-02b)



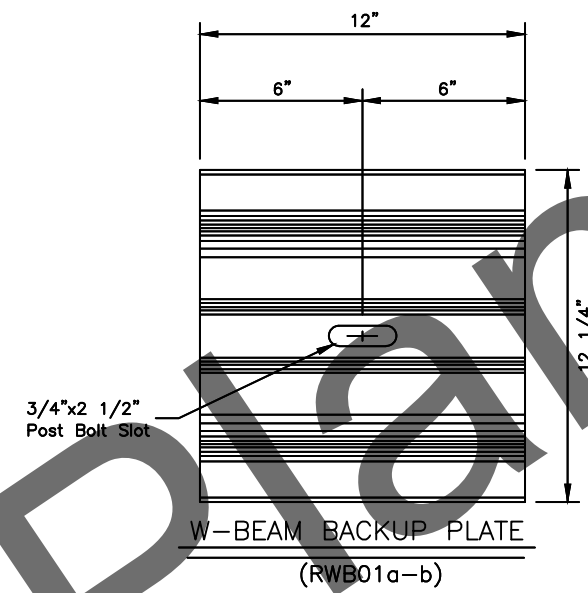
STANDARD W-BEAM PANEL (RWM04a-b)



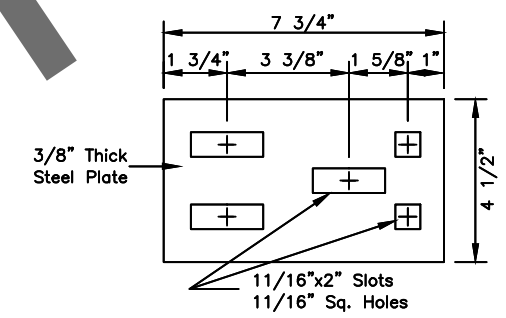
SECTION B-B



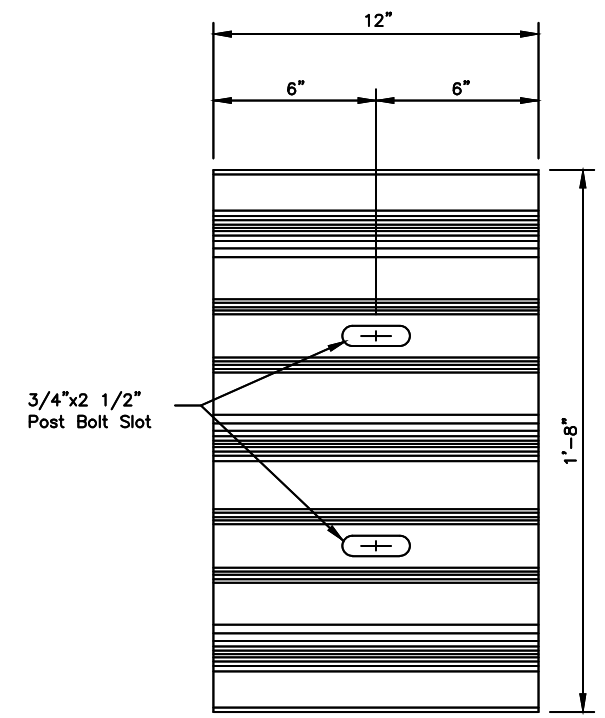
STANDARD THRIE BEAM PANEL (RTM01a-02b)



W-BEAM BACKUP PLATE
(RWB01a-b)



SPlice PLATE (RLR01)
ASTM A36 STEEL



THRIE BEAM BACKUP PLATE
(RTB01a-02b)

State of Alaska DOT&PF ALASKA STANDARD PLAN STANDARD GUARDRAIL HARDWARE (RAILS AND SPLICES)

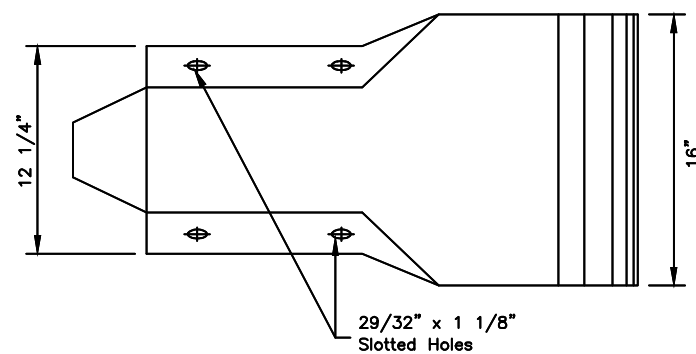
Adopted as an Alaska
Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

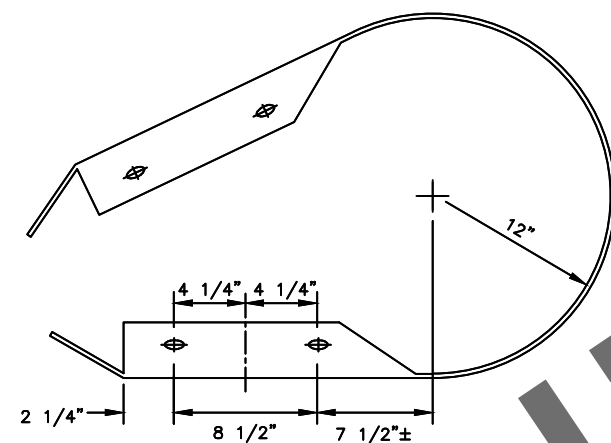
Last Code and Stds. Review
By: KLK Date: 7/8/2020
Next Code and Standards Review Date: 7/8/2030

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.

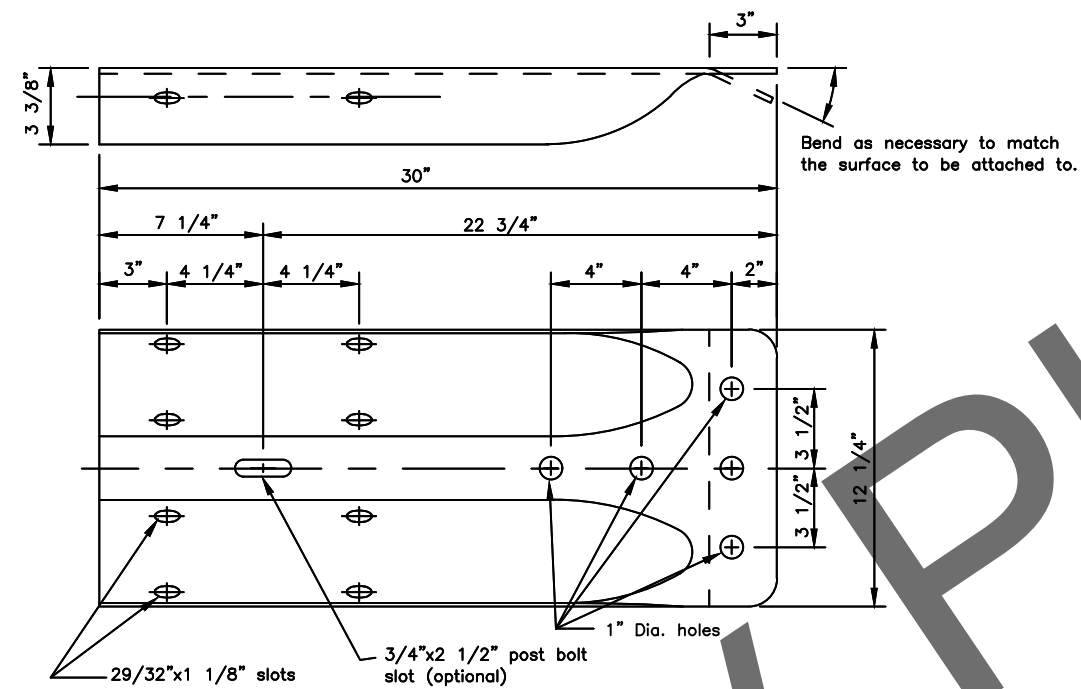
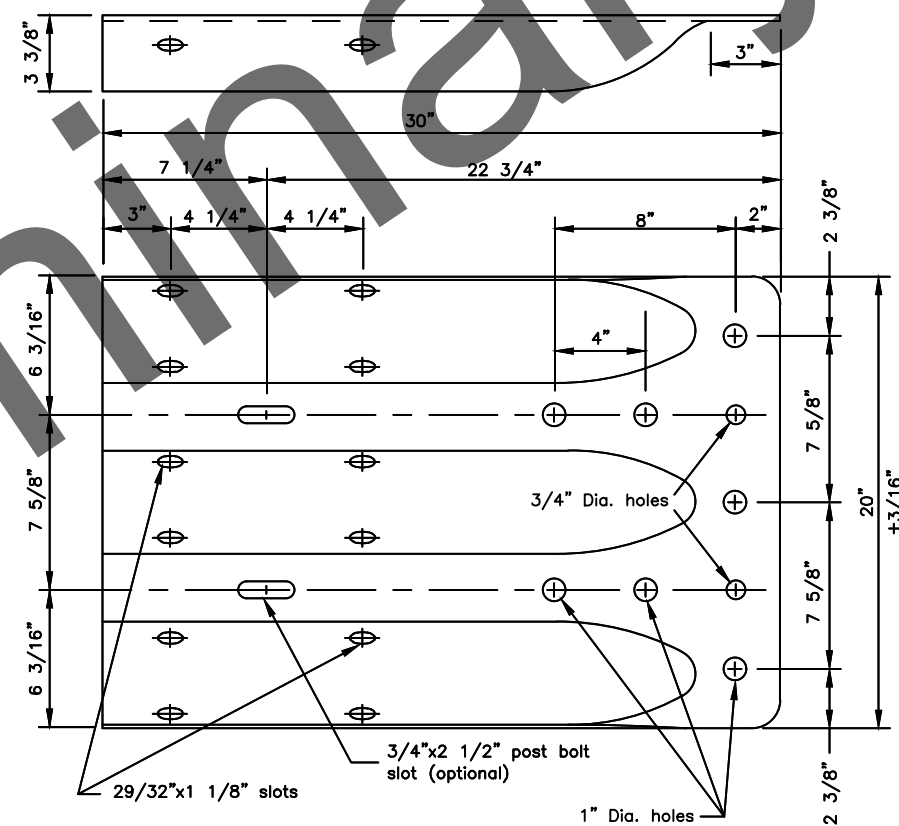


PROFILE



W-BEAM PLAN VIEW

*Radius to be specified on the plans

STANDARD W-BEAM END SECTION
(RWE06)STANDARD W-BEAM TERMINAL CONNECTOR
(RWE02)STANDARD THRIE BEAM TERMINAL CONNECTOR
(RTE01b)State of Alaska DOT&PF
ALASKA STANDARD PLANSTANDARD GUARDRAIL
HARDWARE
(TERMINAL CONNECTORS)Adopted as an Alaska
Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

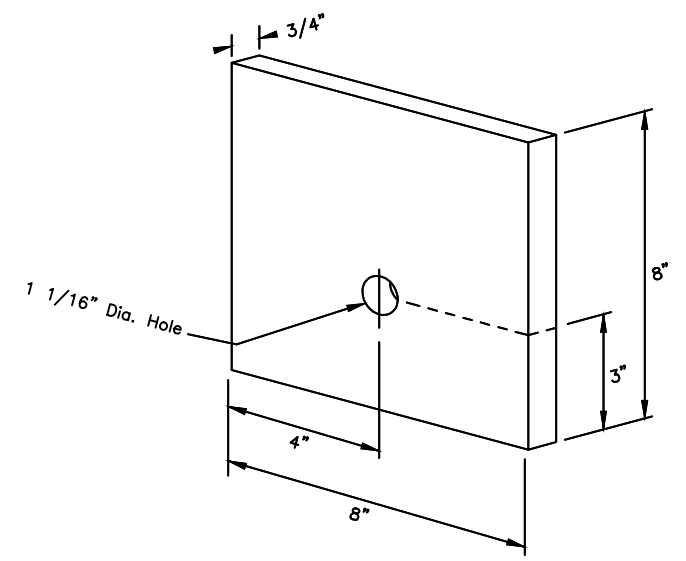
Adoption Date: 7/17/2020

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

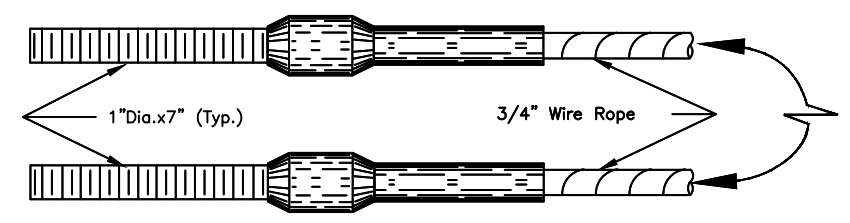
Next Code and Standards Review Date: 7/8/2030

GENERAL NOTES:

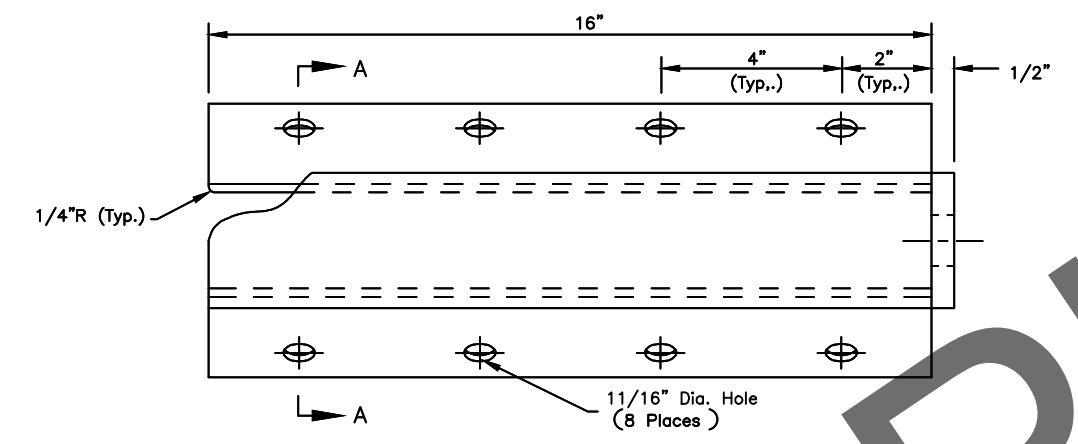
1. Cable Anchor Plate may be formed in single unit or welded fabrication.
2. Anchor Cable Assembly must conform to AASHTO M 30 with Type II Wire Rope.
3. Provide Sleeve for Wood Posts meeting the requirements of ASTM A53 and made of 2-inch galvanized standard pipe. Sleeve shall be a tight, pressed fit 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.



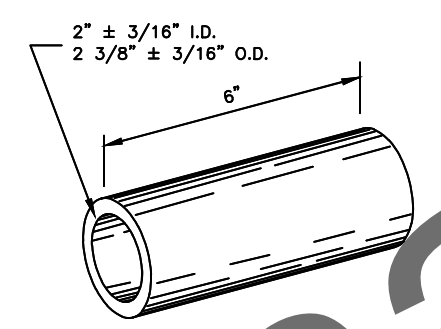
BEARING PLATE for CRT TERMINAL ANCHOR
(FPB01)



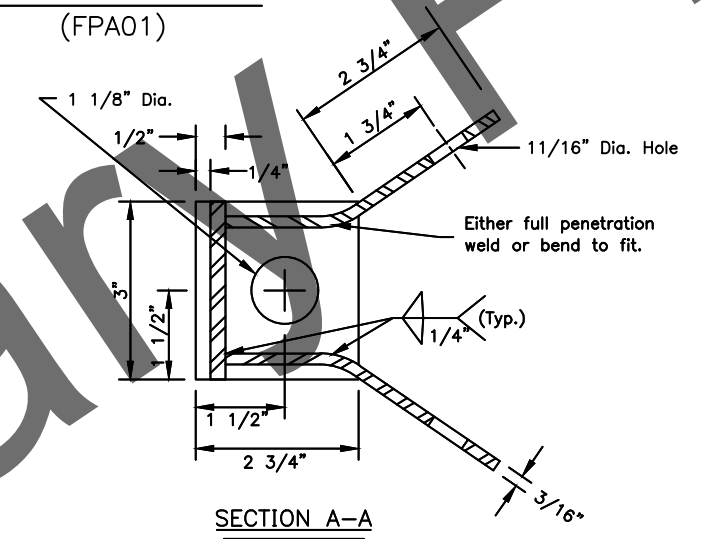
SWAGED FITTING DETAIL
(FCA01-02)



CABLE ANCHOR PLATE
(FPA01)

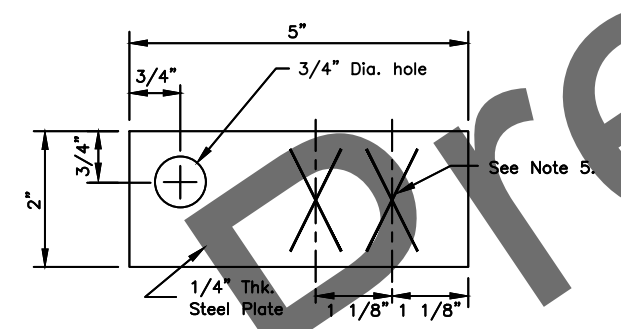


SLEEVE DETAIL
(FMM02)

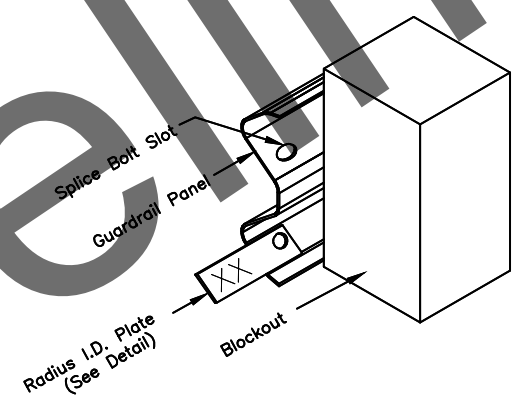


SECTION A-A

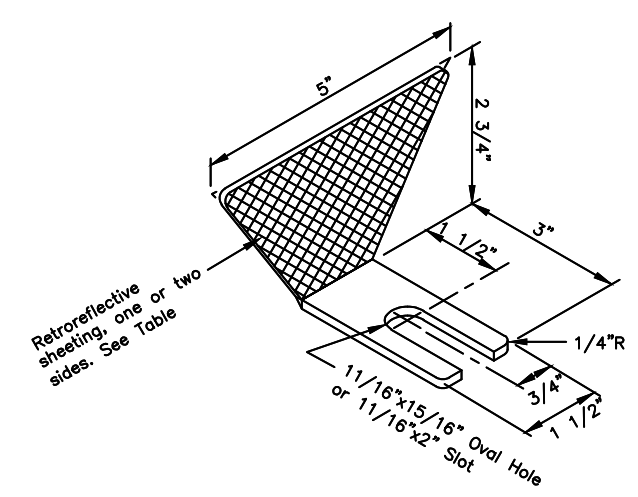
CONTROLLED RELEASE TERMINAL HARDWARE DETAILS



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

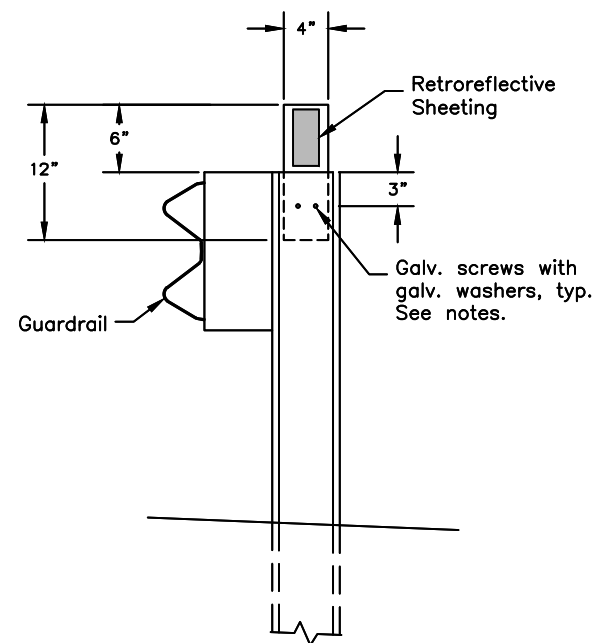
STANDARD GUARDRAIL
HARDWARE
(MISCELLANEOUS)

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



GUARDRAIL FLEXIBLE DELINEATOR DETAIL

(Steel post shown - similar for wood post)

CONSTRUCTION NOTES

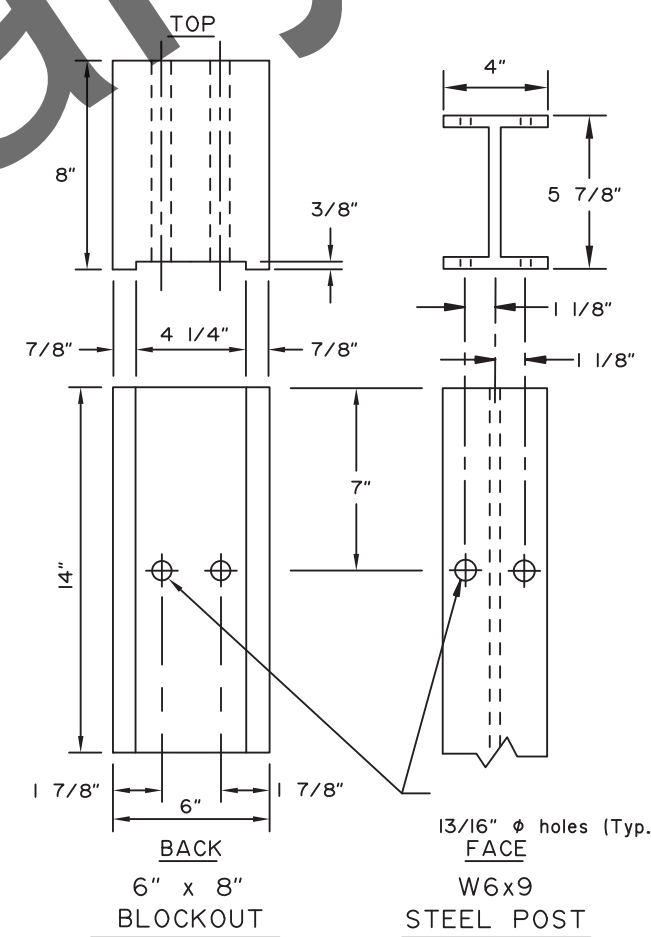
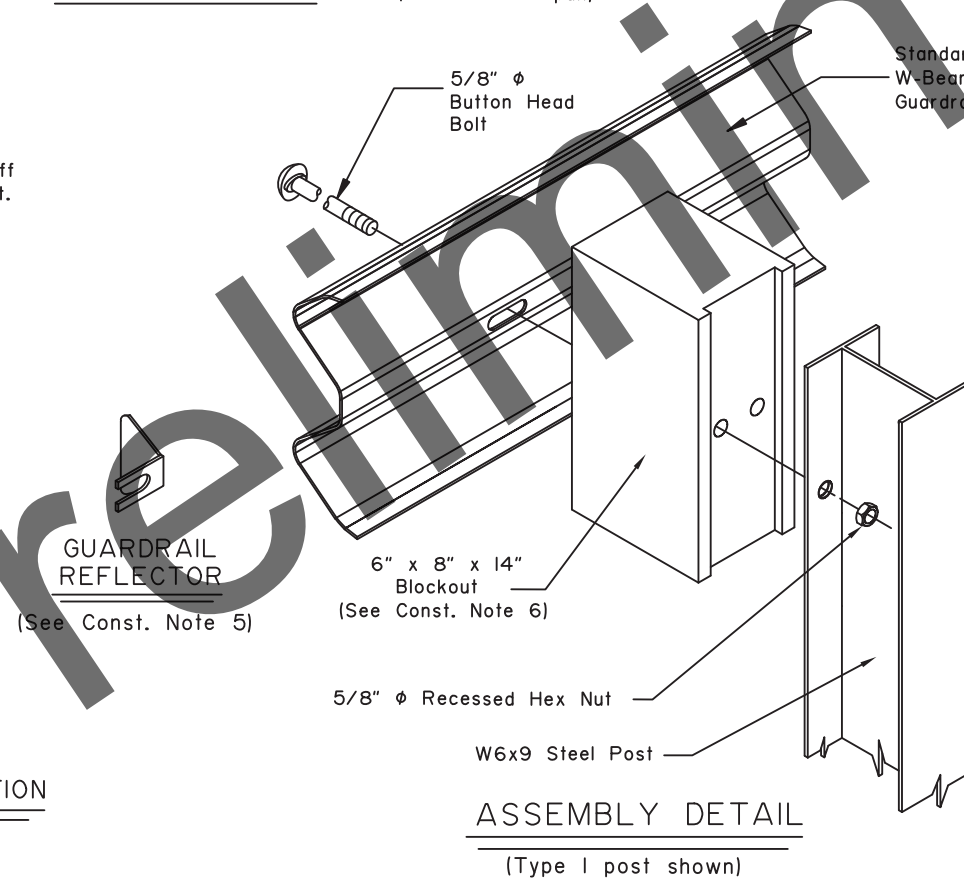
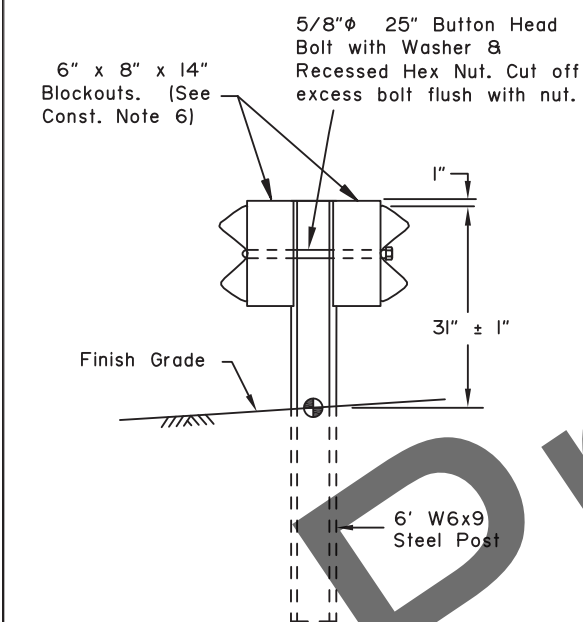
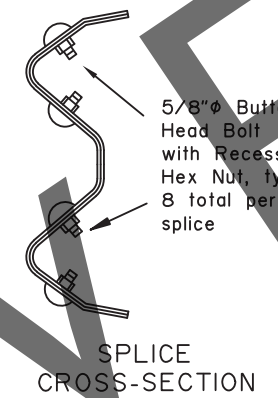
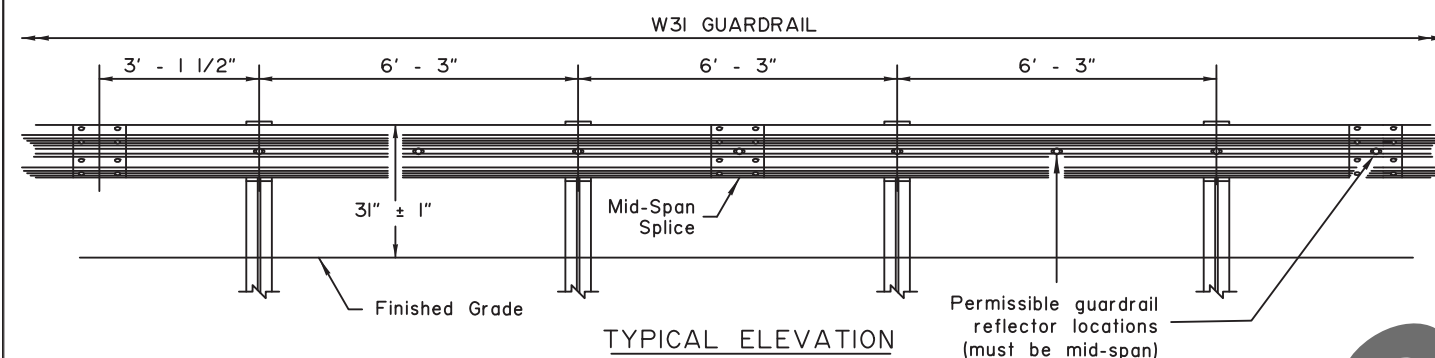
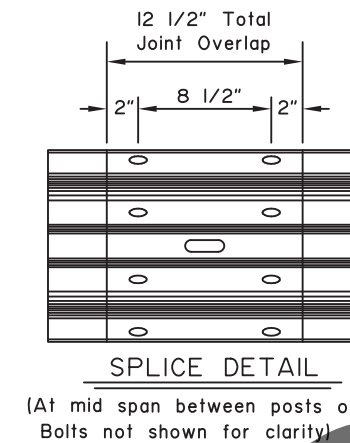
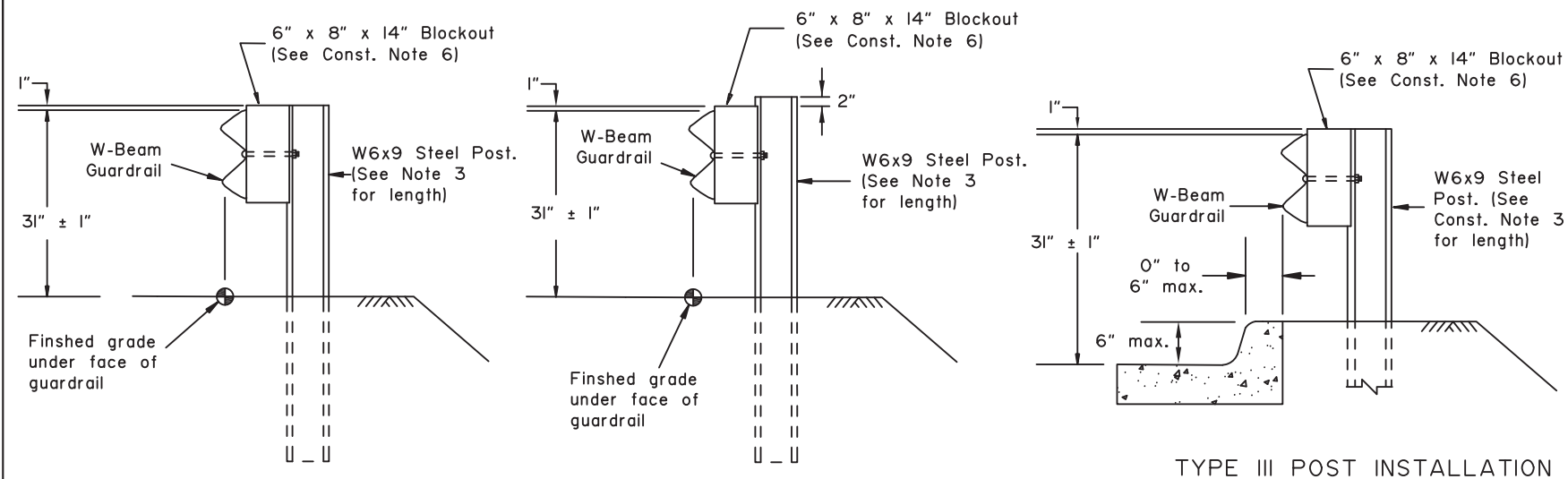
1. Install guardrail flexible delineators where shown on the plans.
2. Install guardrail flexible delineators at 50 foot spacing, unless otherwise noted on the plans. Install not less than 2 delineators per guardrail run.
3. Use 3" x 5" white/yellow/red retroreflective sheeting as required per Standard 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 PLANSTANDARD GUARDRAIL
HARDWARE
(FLEXIBLE DELINEATORS)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



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:

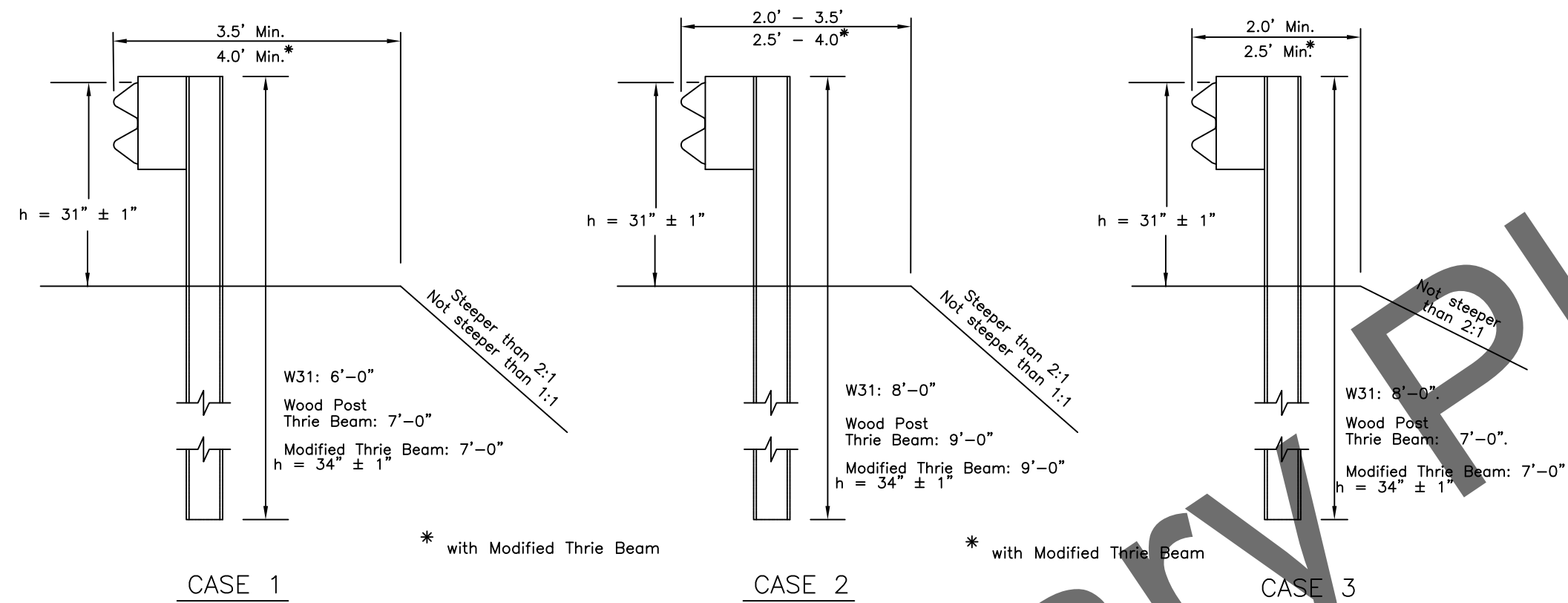
1. No fixed objects allowed within 36" of the back side of guardrail post.
2. This barrier is acceptable under MASH Tests 3-10 and 3-11.

State of Alaska DOT&PF
ALASKA STANDARD PLANSTEEL POST W31
GUARDRAILAdopted 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

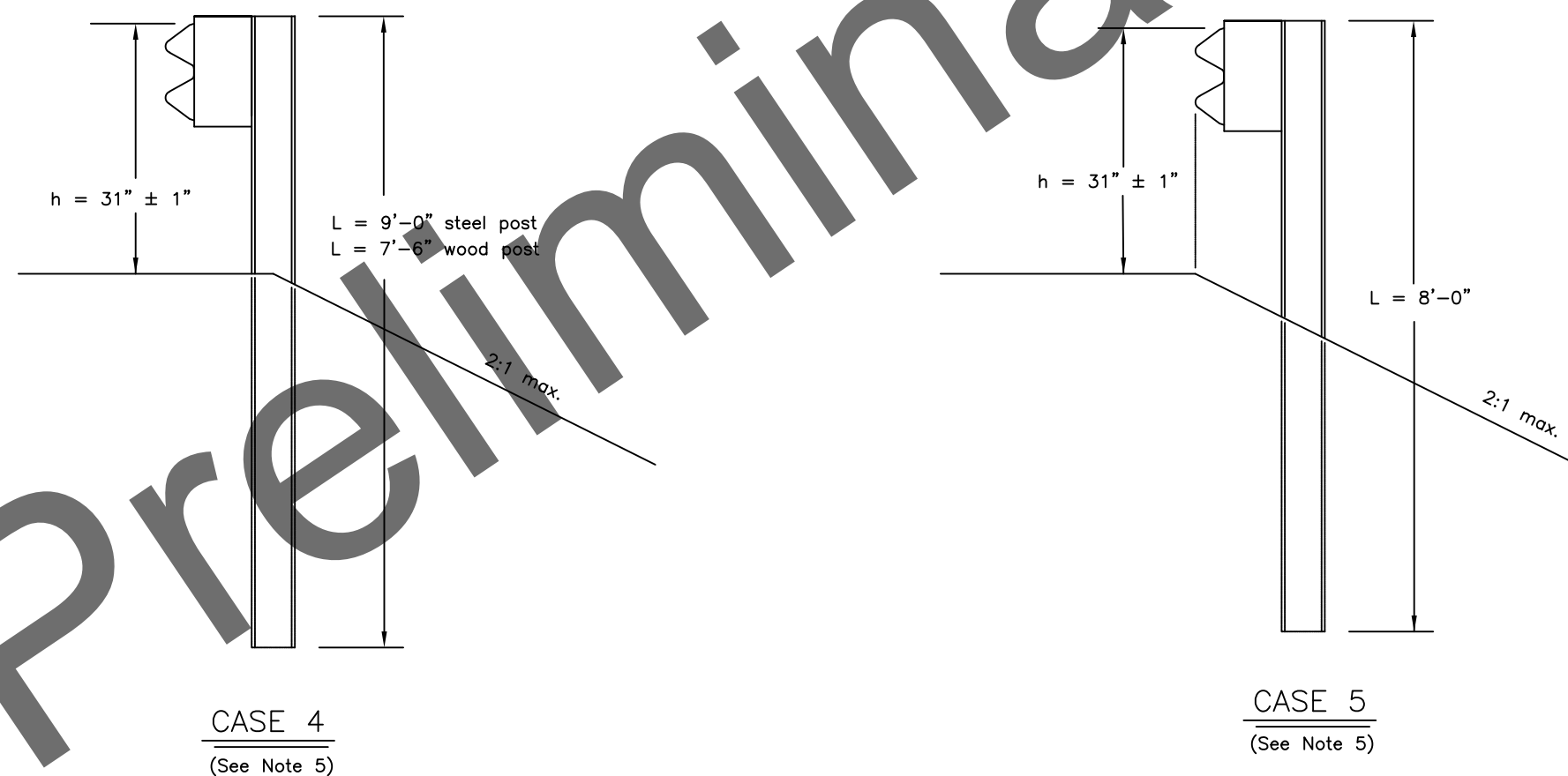


CONSTRUCTION NOTES:

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

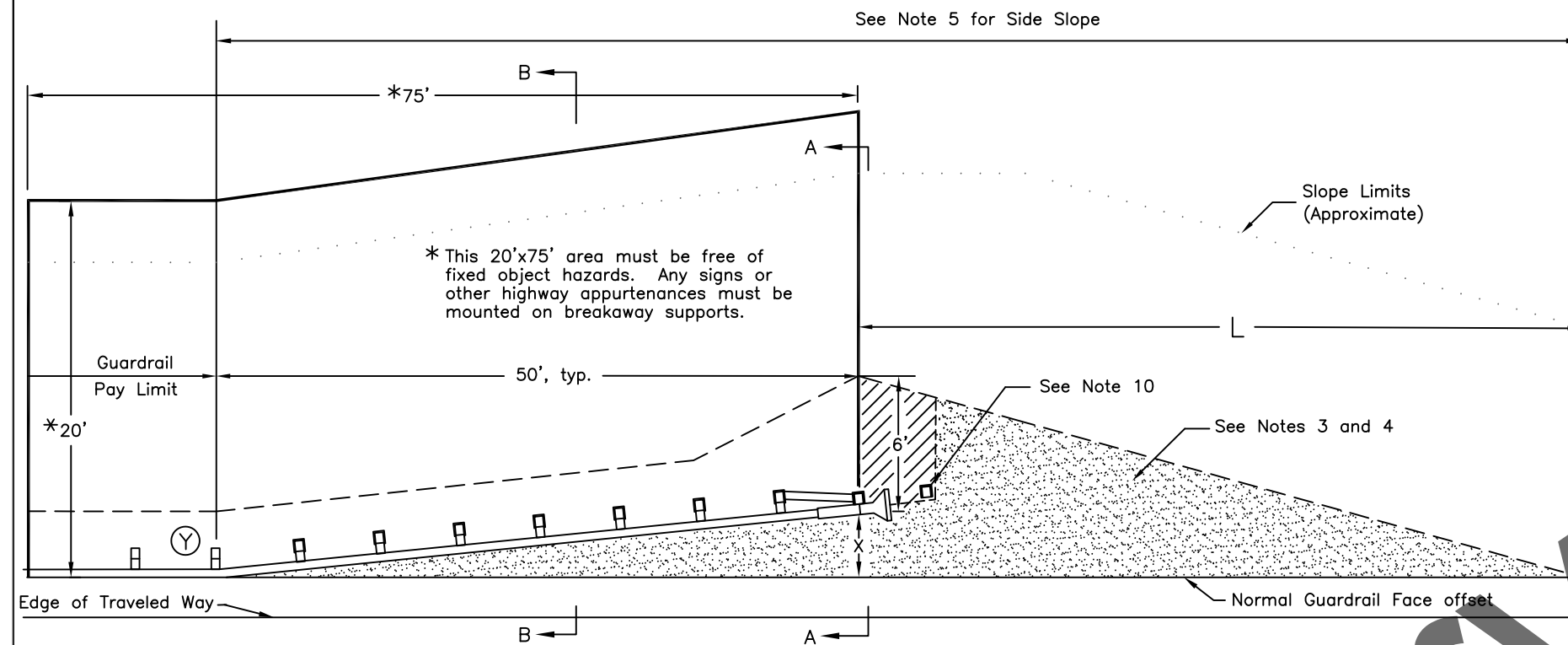
Adoption Date: 09/15/2022

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

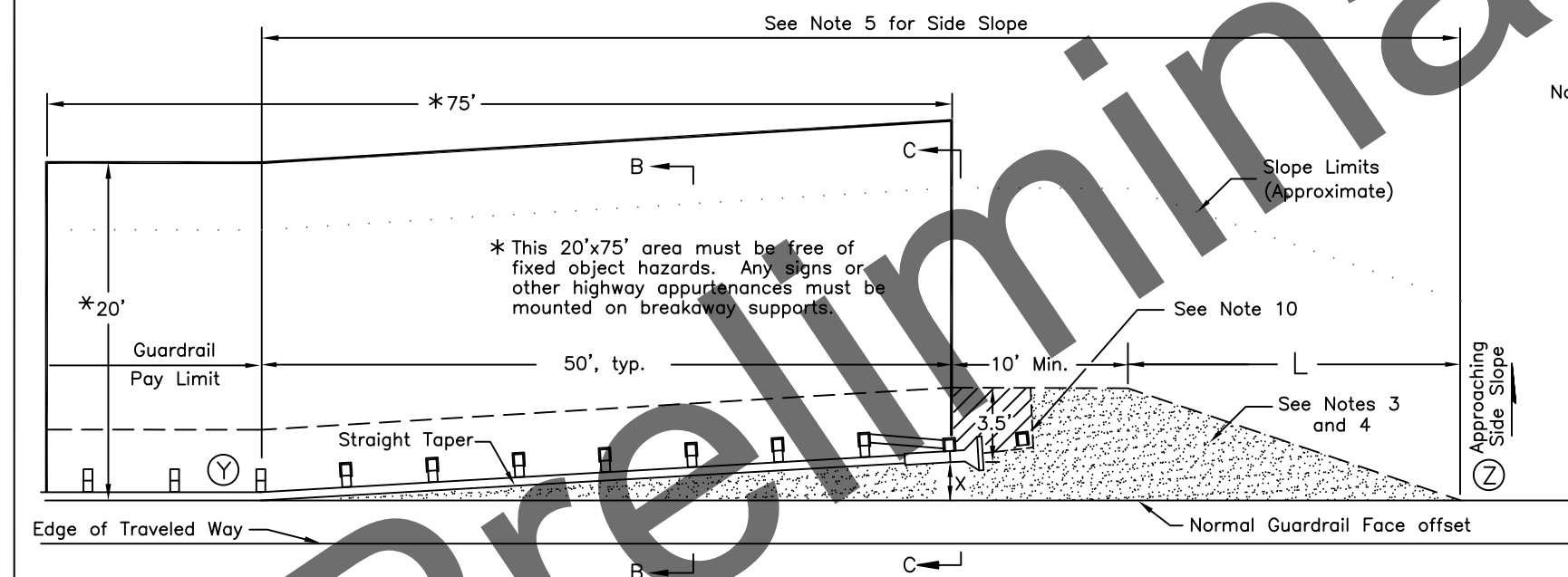
Next Code and Standards Review date: 09/15/2032

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 permissible.
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 (Y) to point (Z) 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.



STANDARD GUARDRAIL TERMINAL WIDENING DETAIL



ALTERNATE GUARDRAIL TERMINAL WIDENING DETAIL

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

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		

State of Alaska DOT&PF
ALASKA STANDARD PLAN
WIDENING FOR
GUARDRAIL END TERMINALS

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

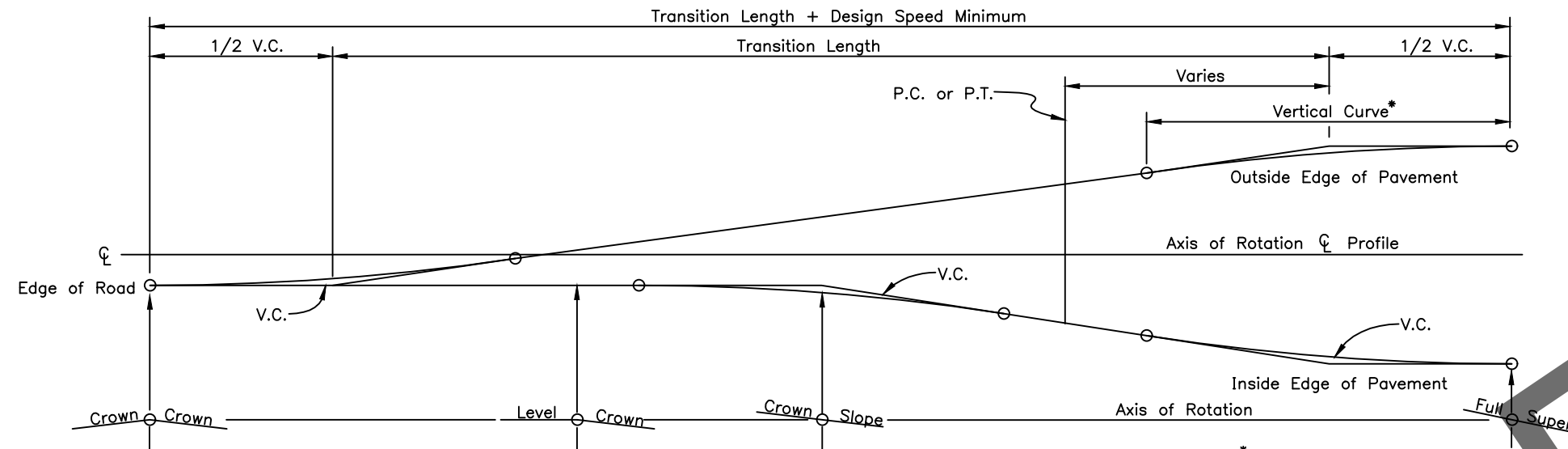
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

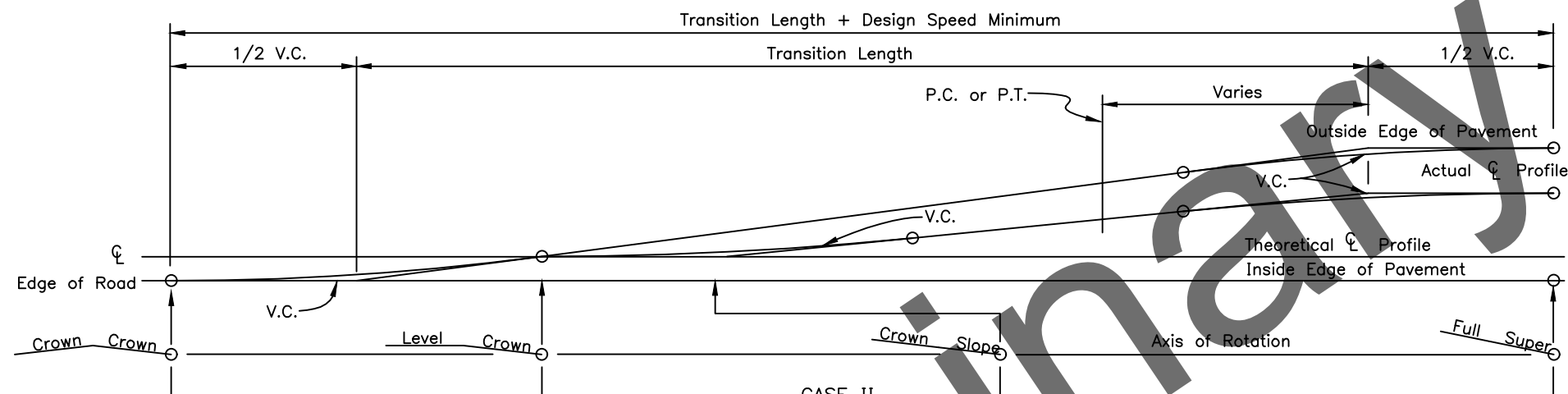
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

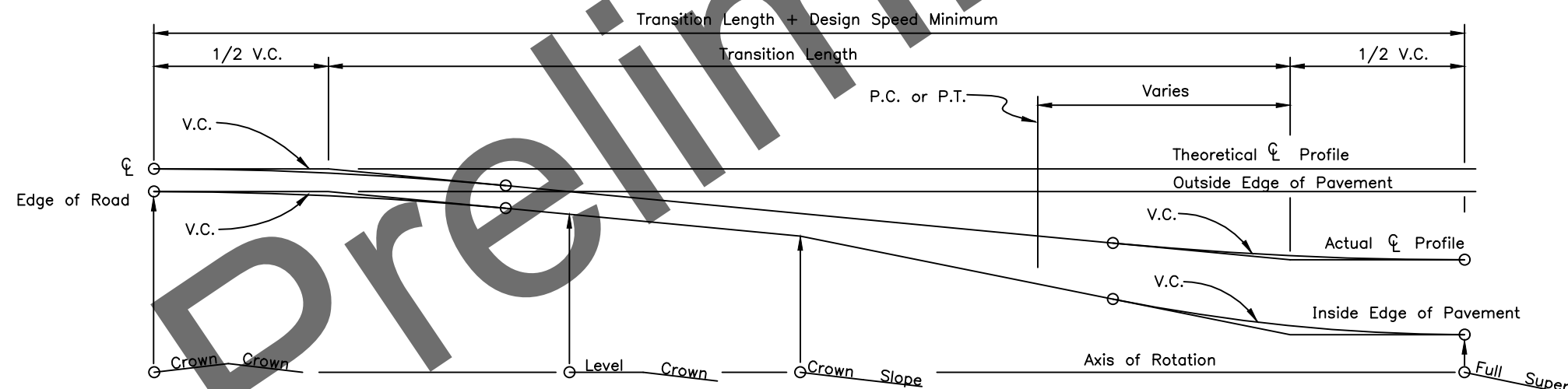
1. Location of transition length relative to horizontal curves will be shown on the plans or as directed by the Engineer.
2. Widening for guardrail or curvature will not change the location of the axis of rotation.
3. Minimum vertical curve length in feet shall be the numerical value of the design speed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



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

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SUPERELEVATION
TRANSITION

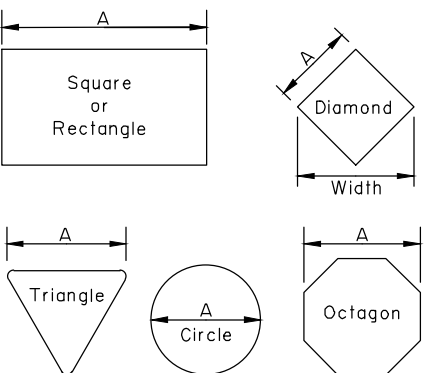
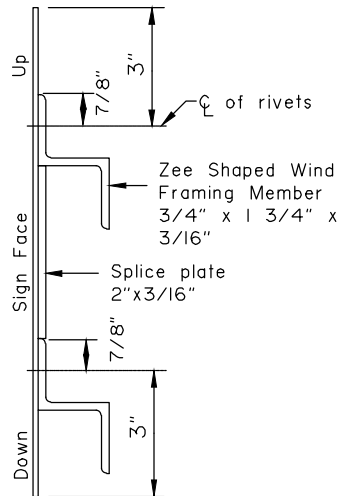
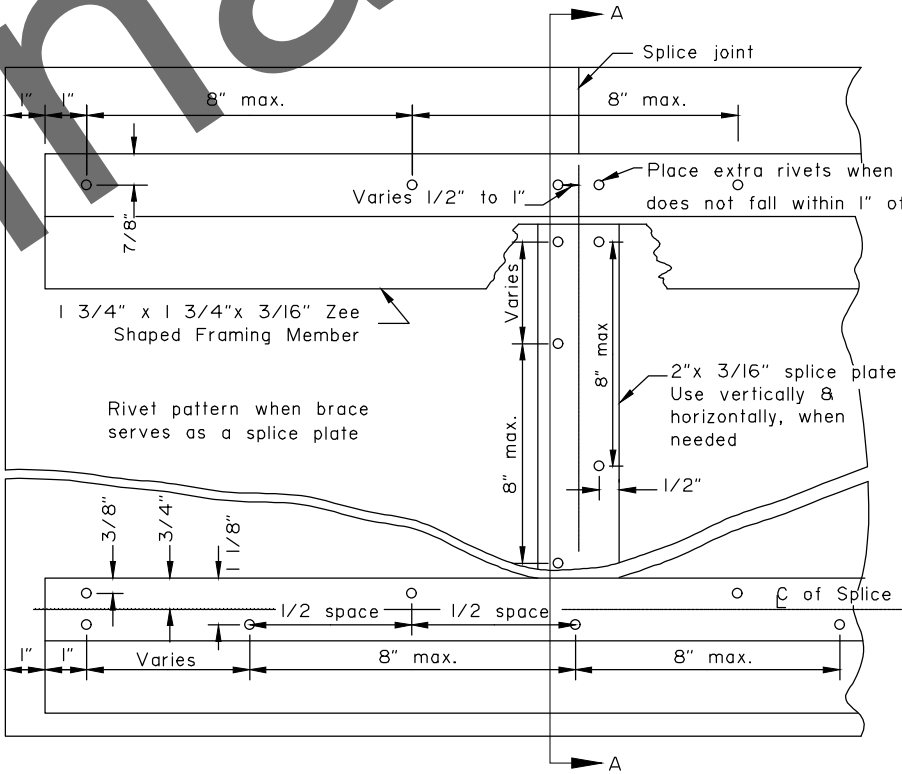
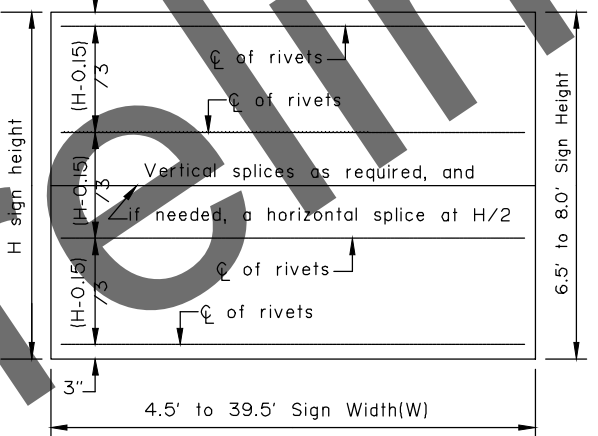
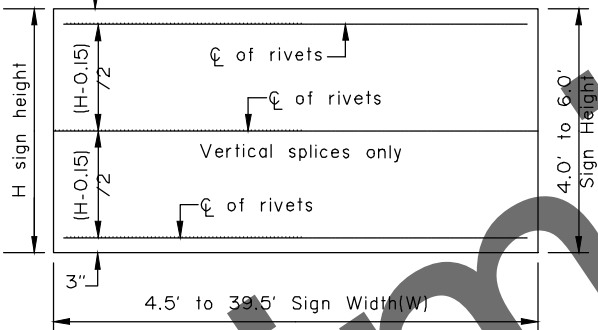
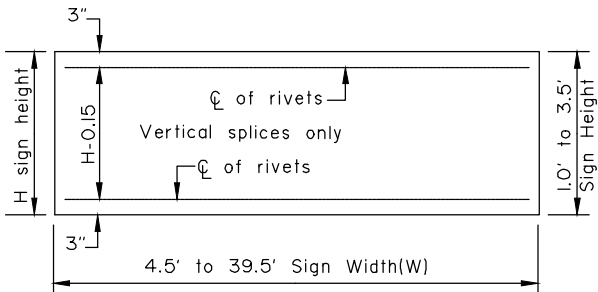
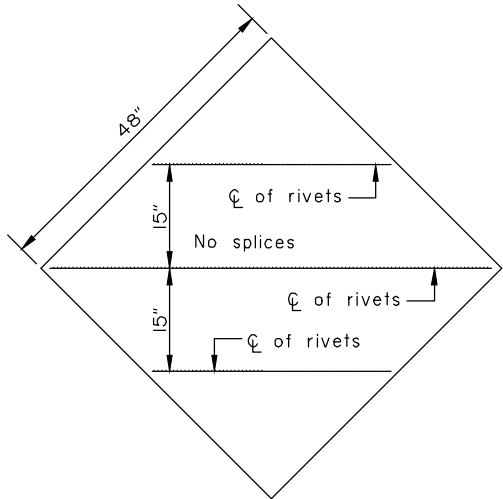
Adopted as an Alaska
Standard Plan by: *Carolyn Morehouse*
Carolyn Morehouse, P.E.
Chief Engineer

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

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.



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

WIND FRAMING LOCATIONS

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

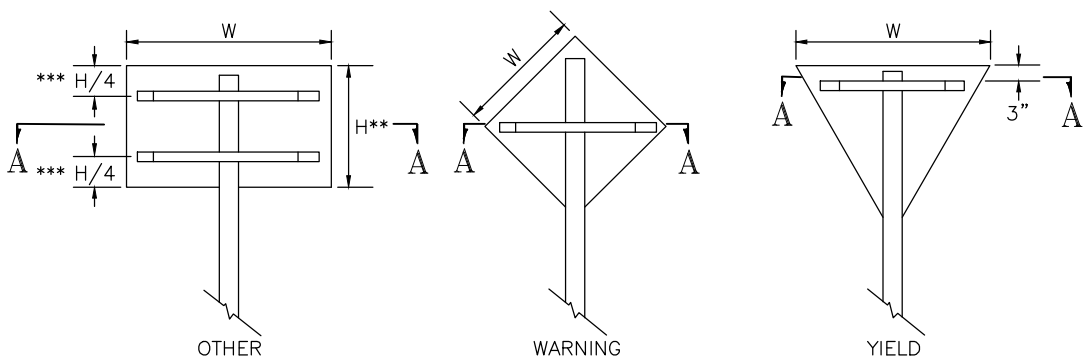
SIGN FRAMING

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

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By: WTH Date: 7/8/2020

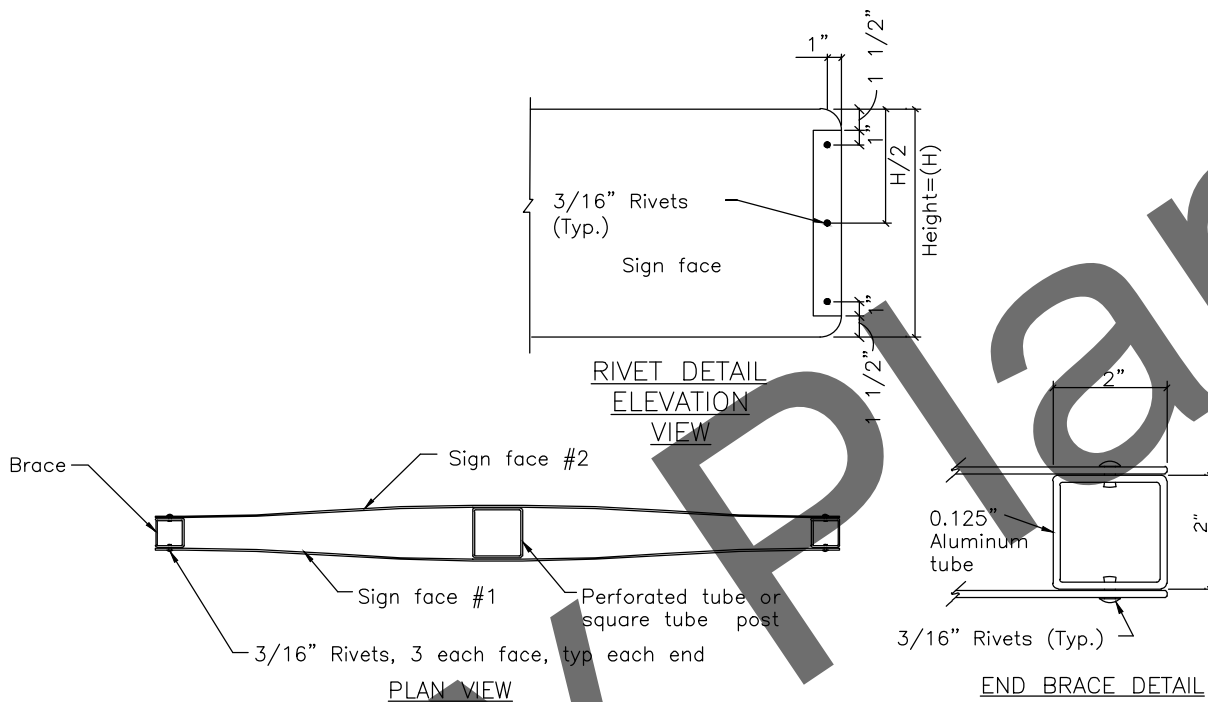
Next Code and Standards Review date: 7/8/2030



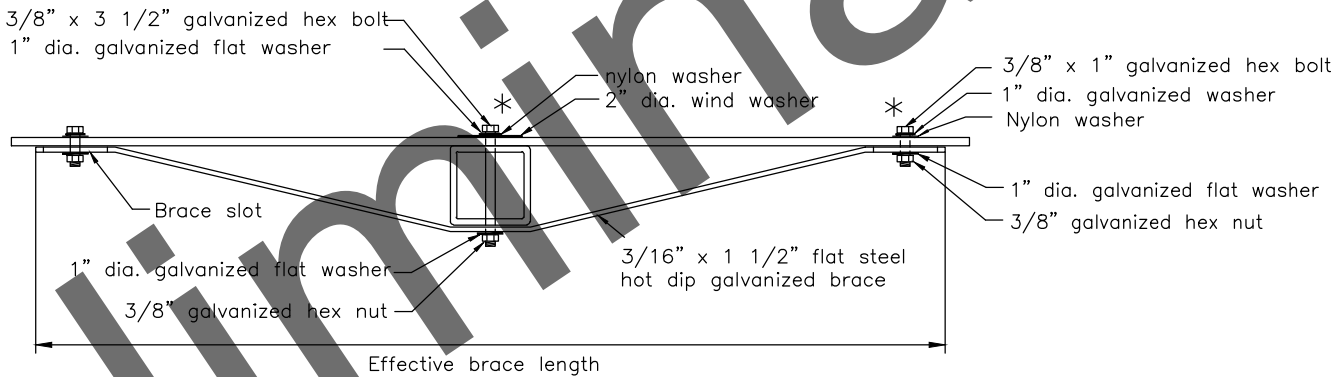
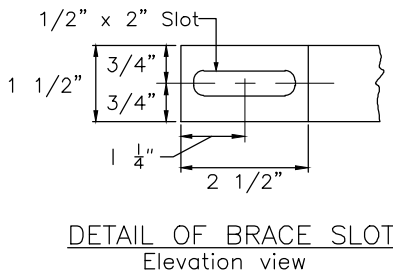
*** Use one brace when $H \leq 18"$
Use two braces when $18" < H < 48"$
Use three braces when $H \geq 48"$

** 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



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

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ALASKA STANDARD PLAN

BRACING FOR SIGNS
MOUNTED ON SINGLE POST

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Carolyn Morehouse, P.E.
Chief Engineer

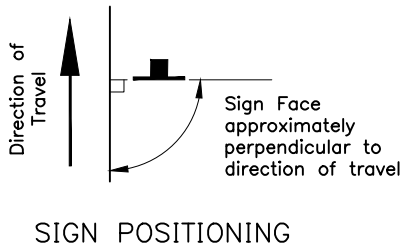
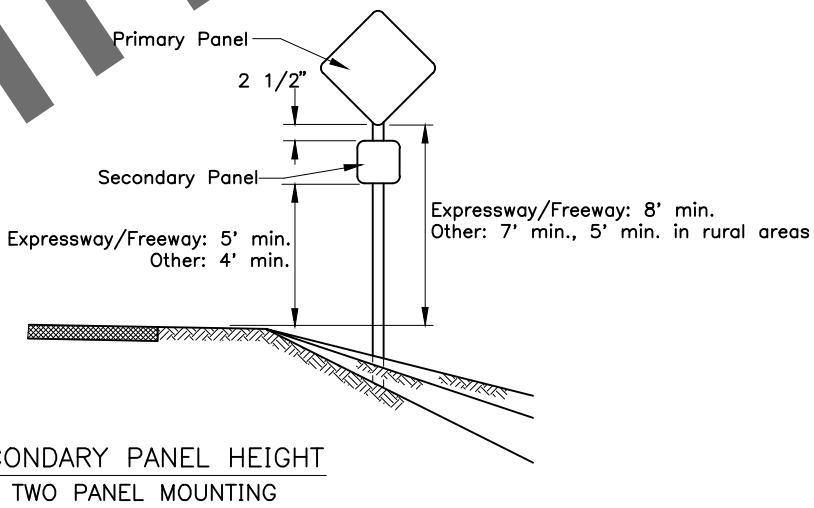
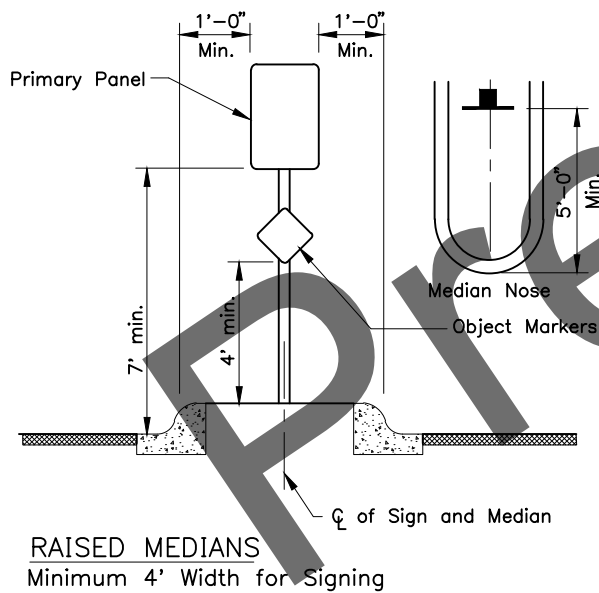
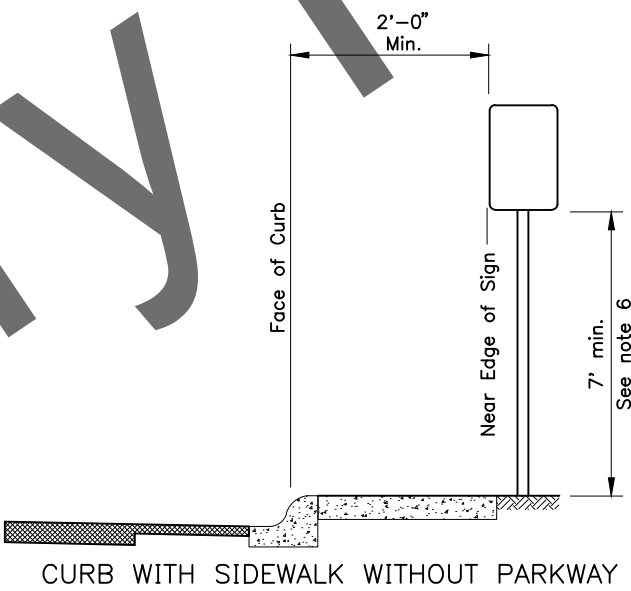
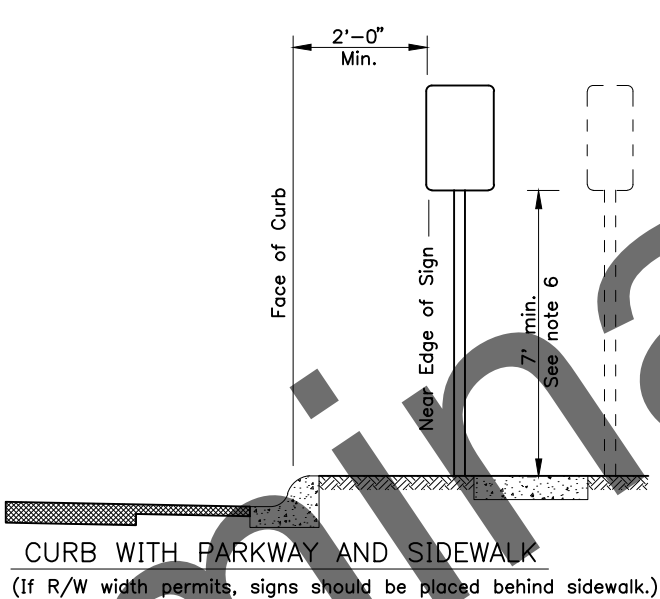
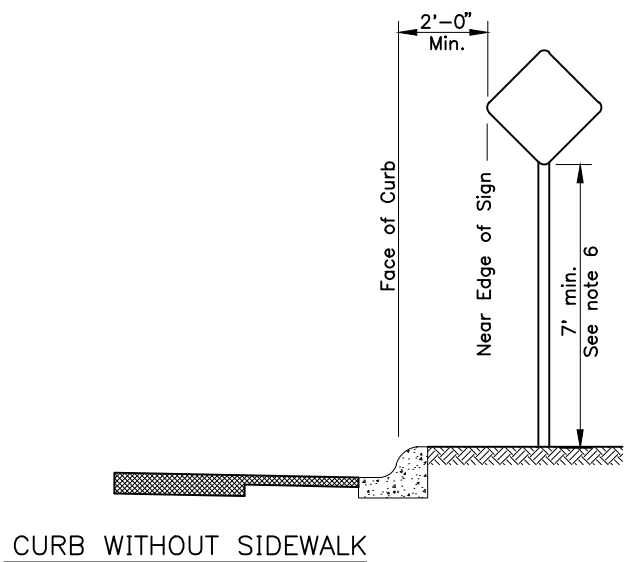
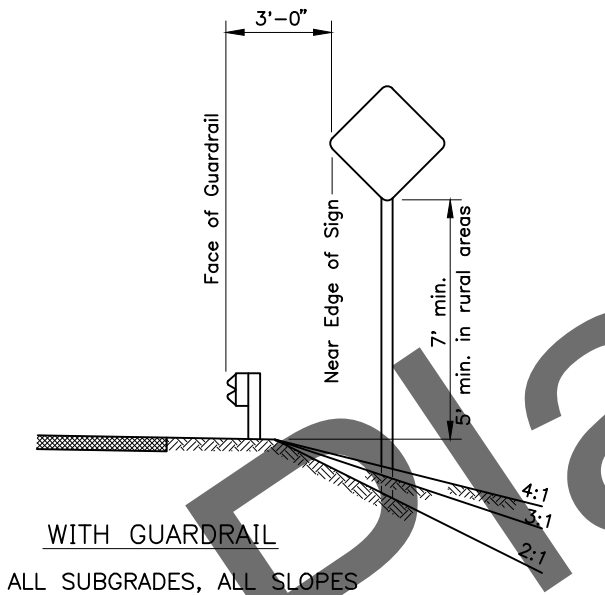
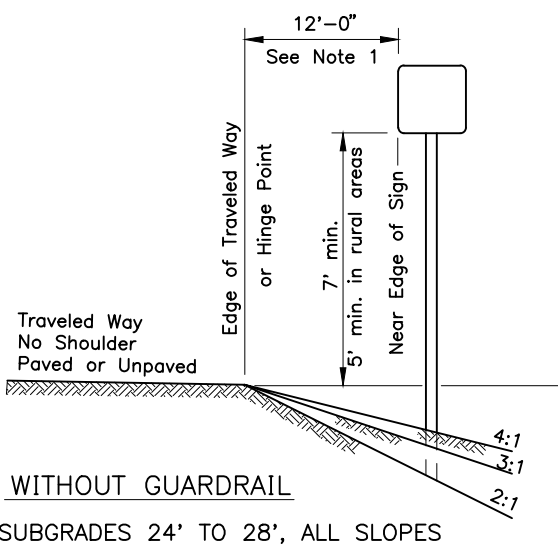
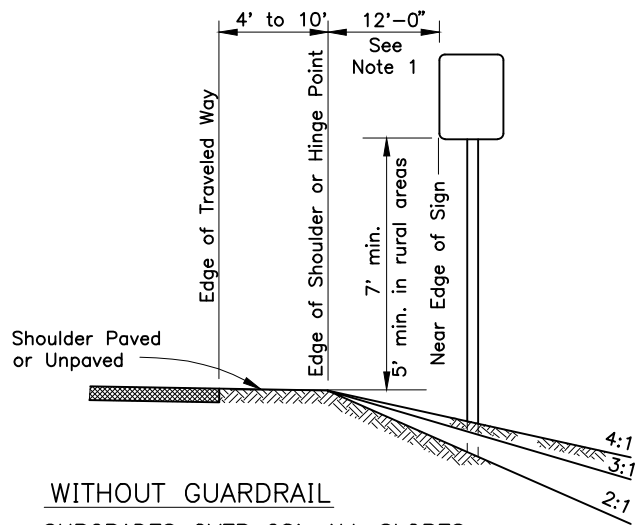
Adoption Date: 7/17/2020

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By: WTH Date: 7/8/2020

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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 signs extend over sidewalks.
7. For construction signs in rural areas, mounting height shall be 7' minimum.



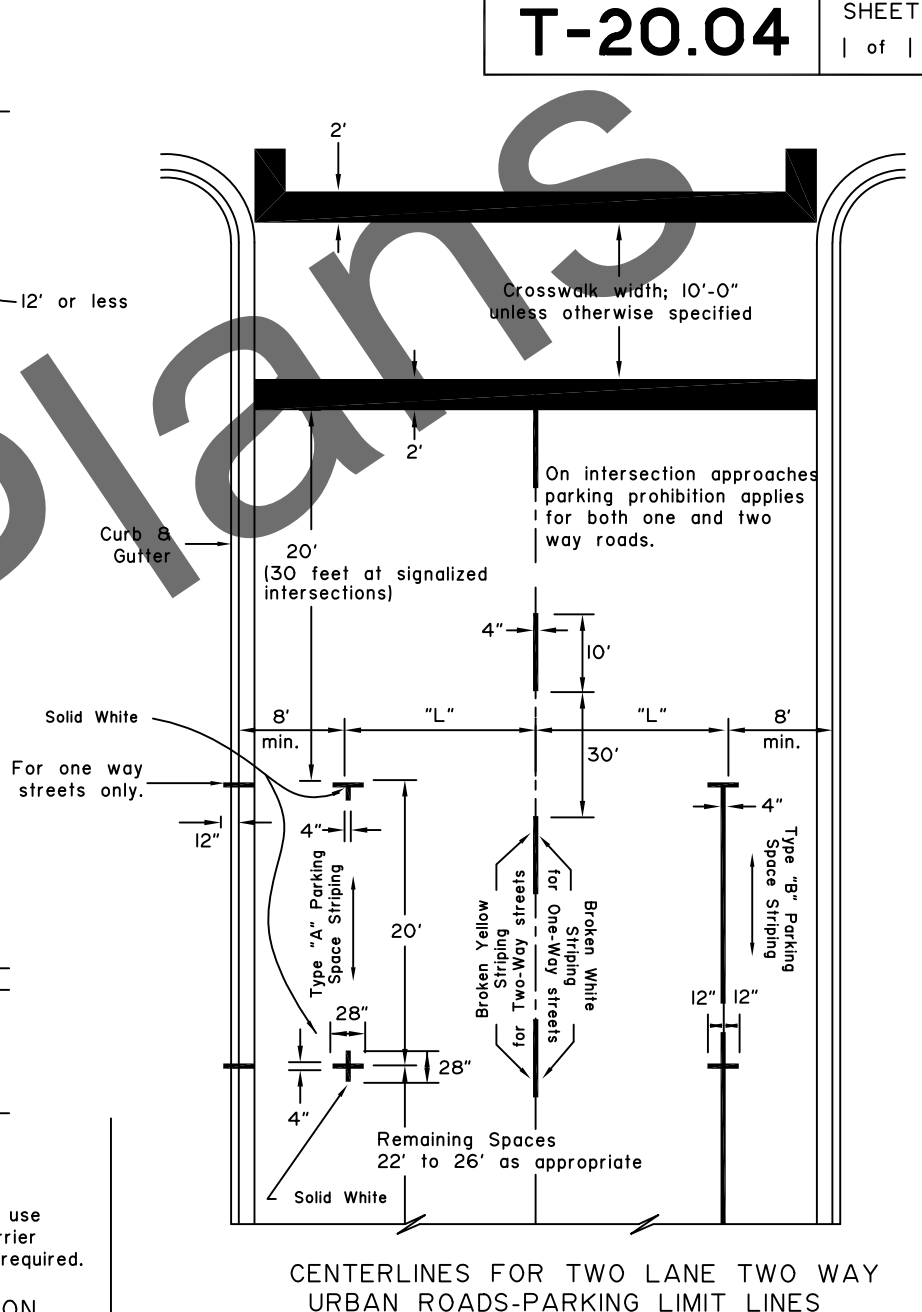
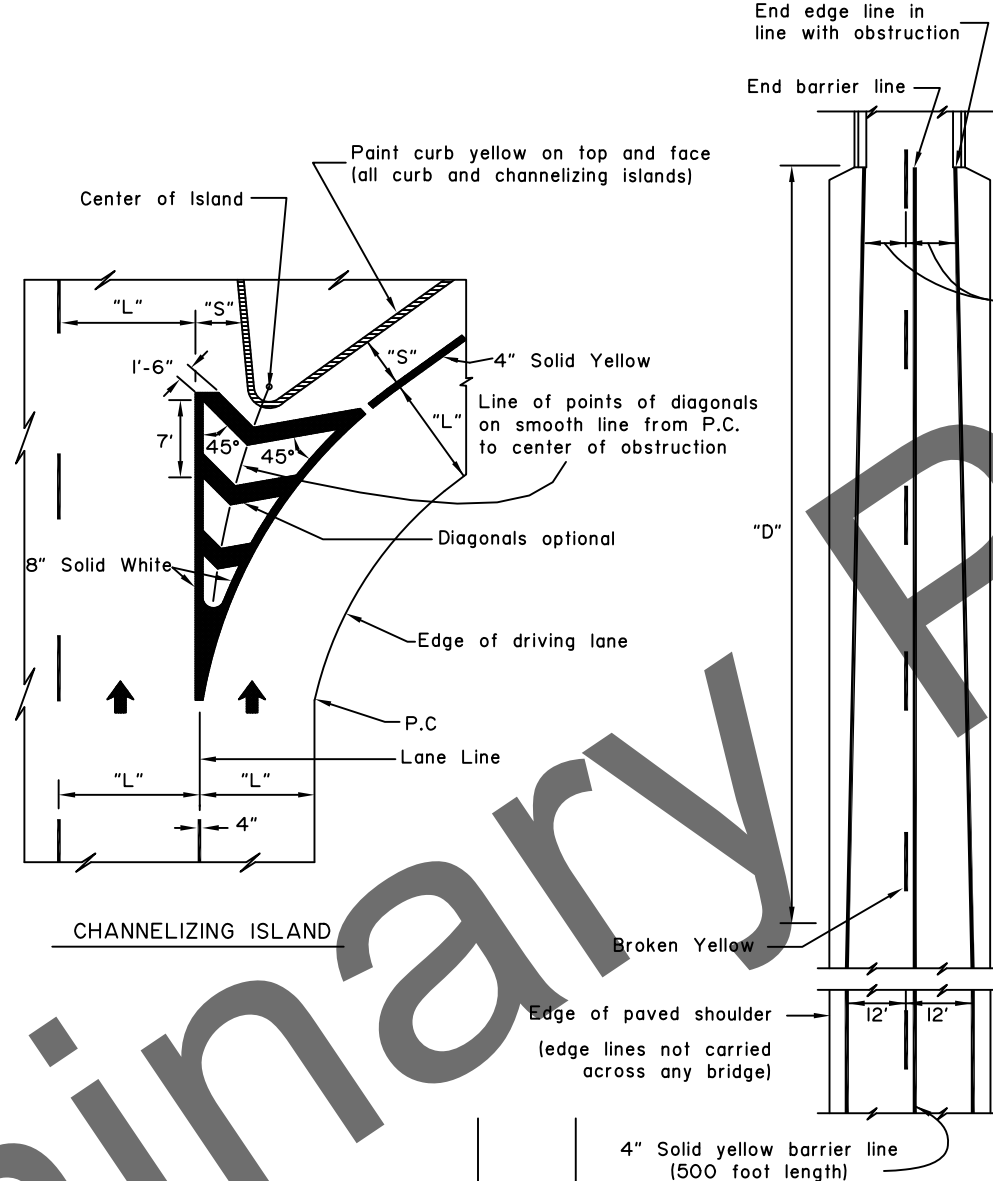
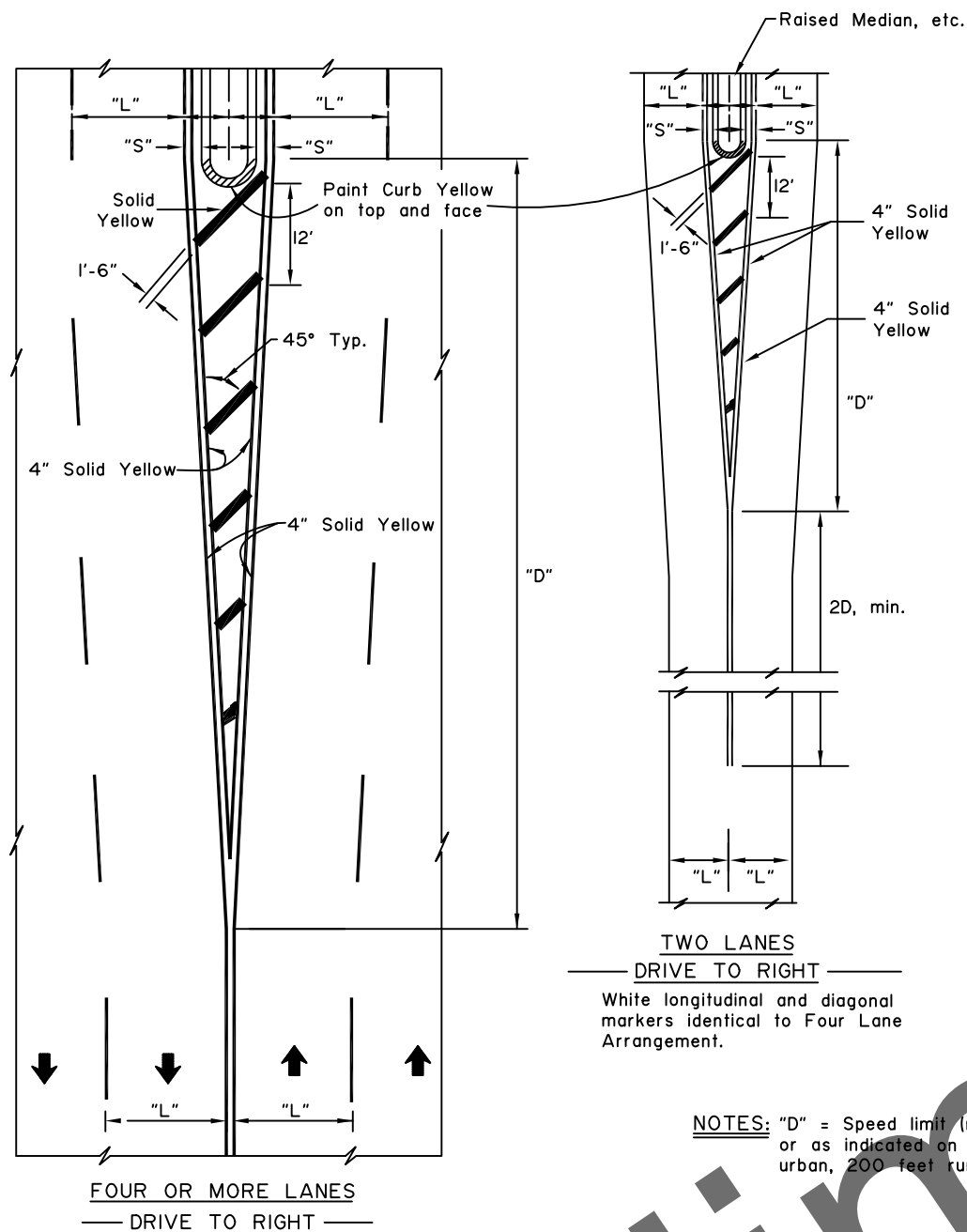
State of Alaska DOT&PF
ALASKA STANDARD PLAN

POST MOUNTED SIGN
OFFSET AND HEIGHT

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

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By:KLK Date: 7/8/2020
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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.

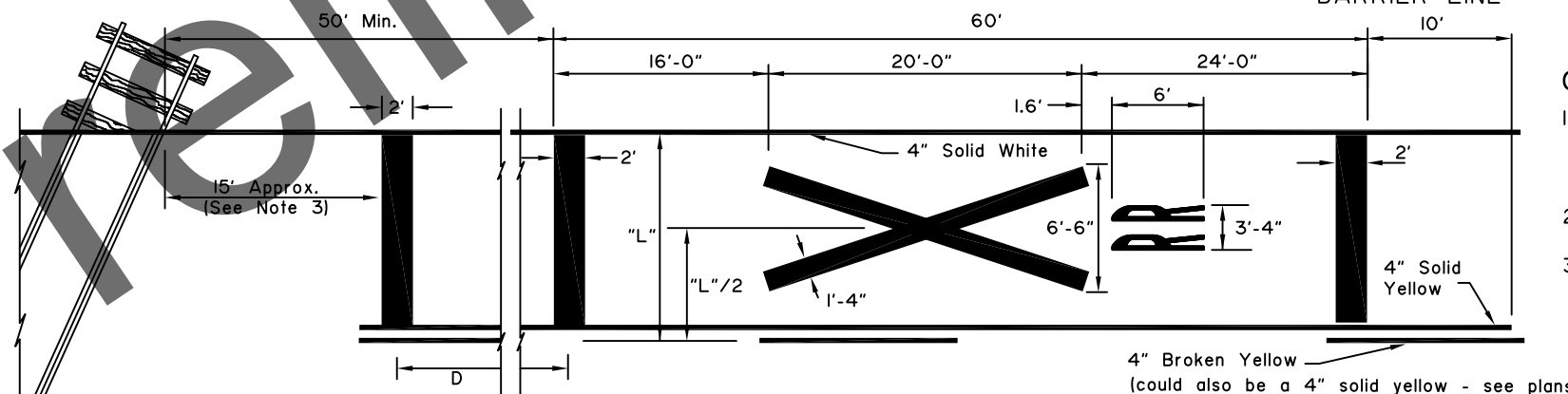
Note: On bridges over 24' wide use standard pavement markings. Barrier lines not used unless otherwise required.

EDGE LINE TRANSITION TO NARROW BRIDGE AND APPROACH BARRIER LINE

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 and 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'



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
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:
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Next Code and Standards Review date: 02/08/2029

