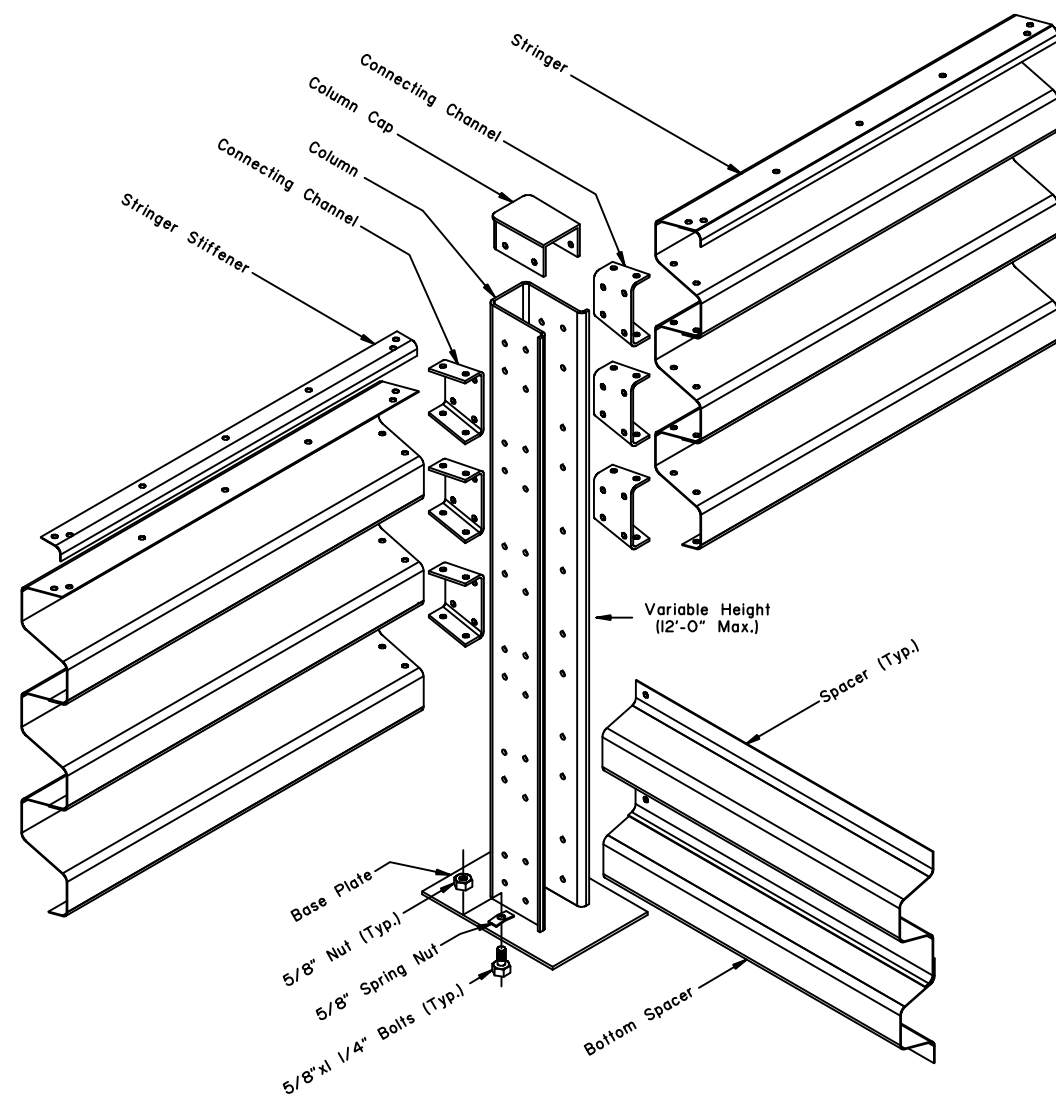
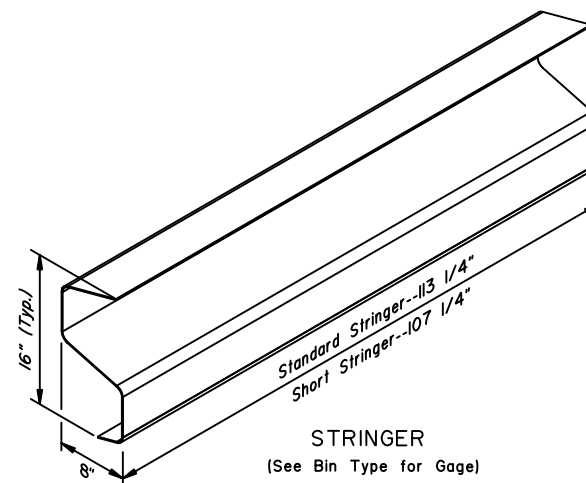


GENERAL NOTES:

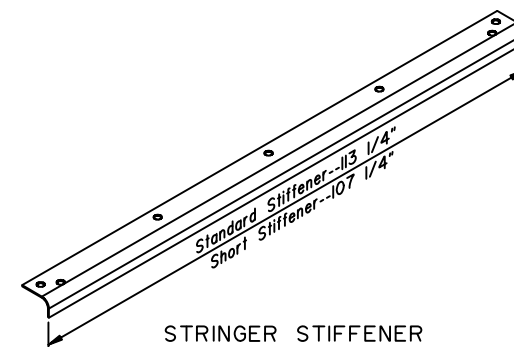
- Units shall be fabricated in accordance with AASHTO M-36 or M-218.
- Installation procedure shall follow the manufacturers' recommendation for erecting bin walls.



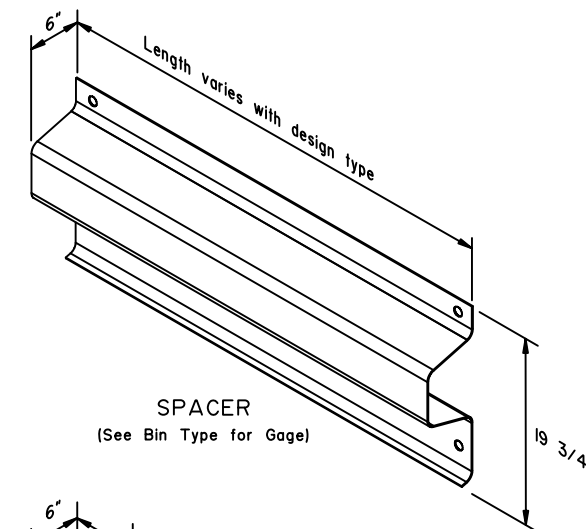
BIN WALL
ASSEMBLY DETAILS



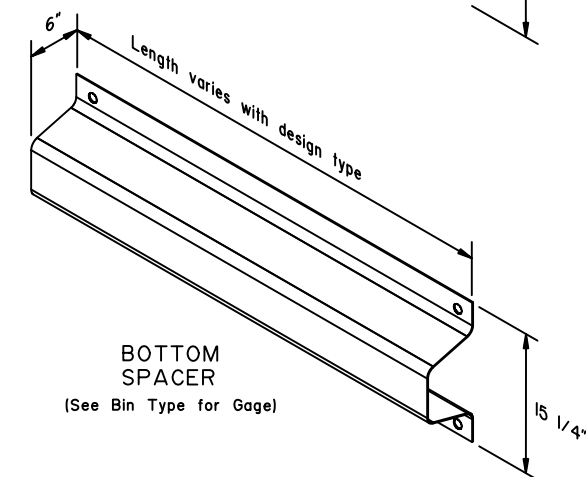
STRINGER
(See Bin Type for Gage)



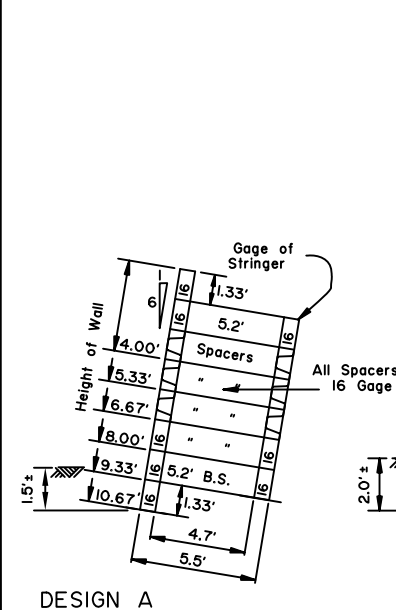
STRINGER STIFFENER
(8 Gage)



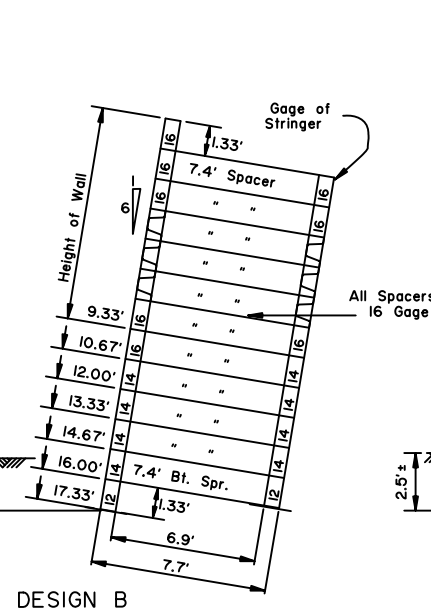
SPACER
(See Bin Type for Gage)



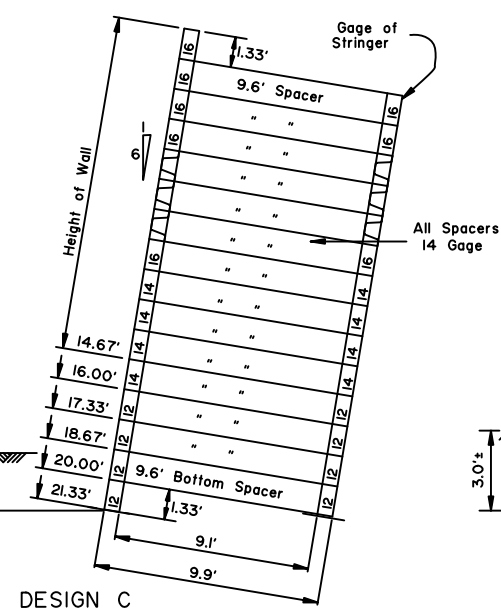
BOTTOM SPACER
(See Bin Type for Gage)



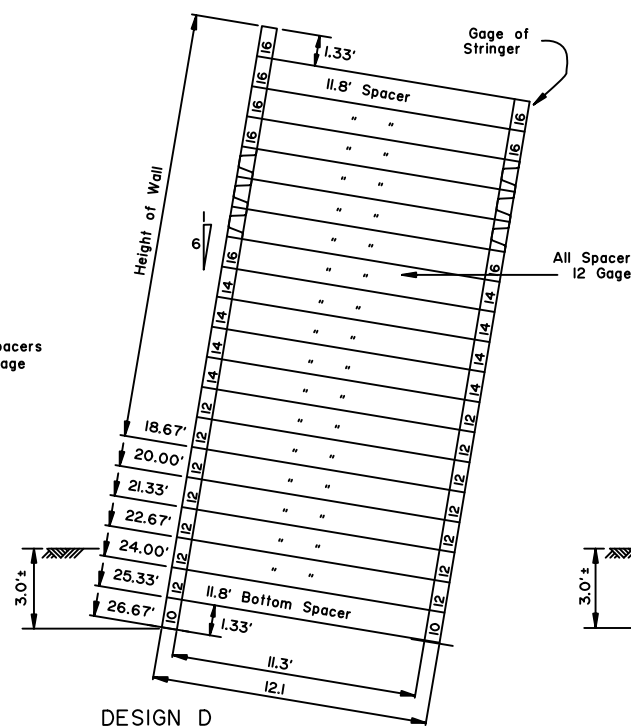
DESIGN A



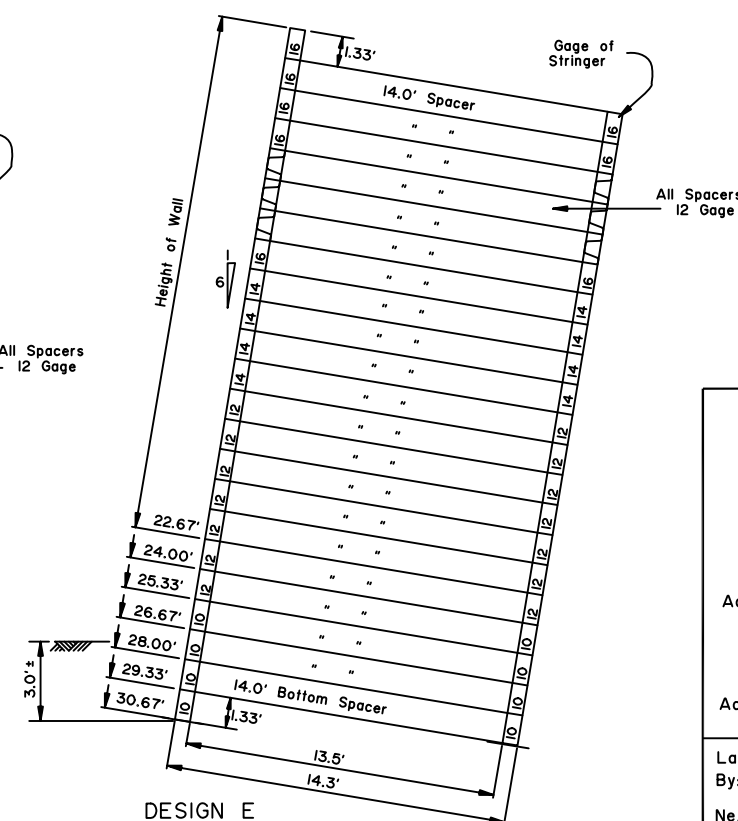
DESIGN B



DESIGN C



DESIGN D



DESIGN E

State of Alaska DOT&PF
ALASKA STANDARD PLAN

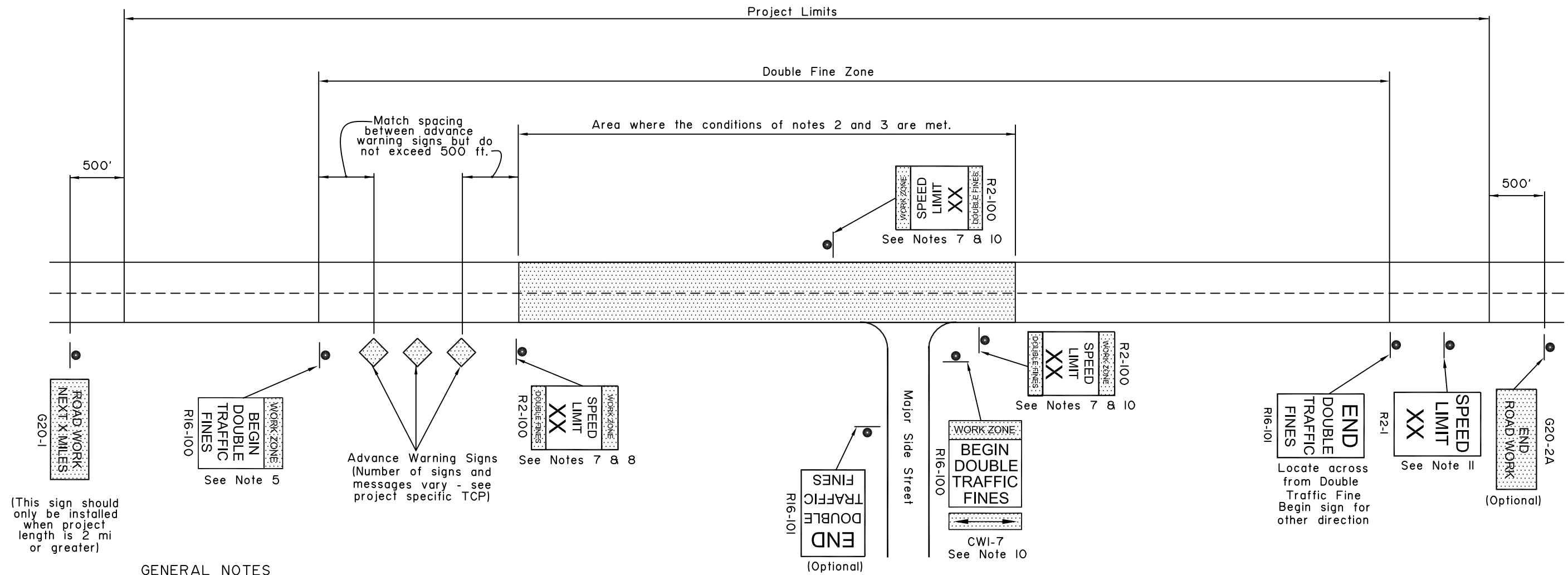
BIN WALLS

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



GENERAL NOTES

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

State of Alaska DOT&PF
ALASKA STANDARD PLAN

LOCATION OF
DOUBLE TRAFFIC
FINE SIGNS

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

1. Final pavement markings conforming to Part 3 of the Alaska Traffic Manual should be installed before paved roads are open to public travel. If that is not practical, install interim pavement markings as shown on this drawing. Maintain interim pavement markings until final pavement markings are installed.
2. No interim pavement markings are required:

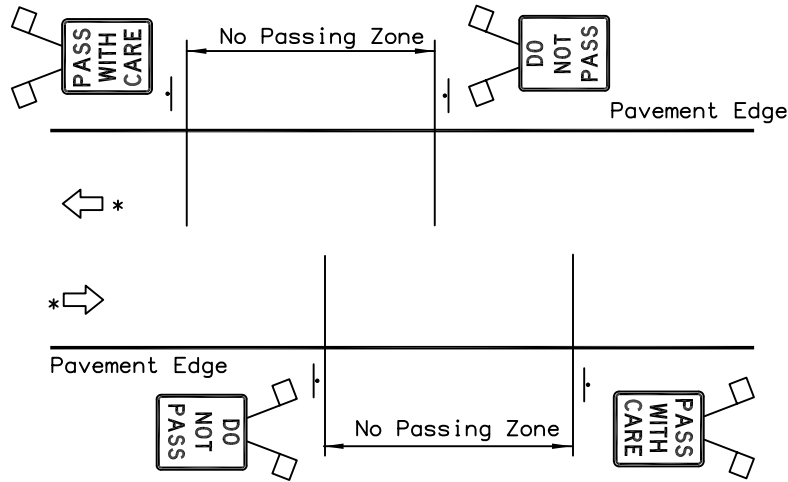
a. on projects that will not have permanent markings when finished.

b. in work zones that are open to public travel for no more than one work shift during daytime or for no more than one hour at night.

c. where DO NOT PASS and PASS WITH CARE signs are installed on two lane roads as shown in Detail C, no pavement markings are required:

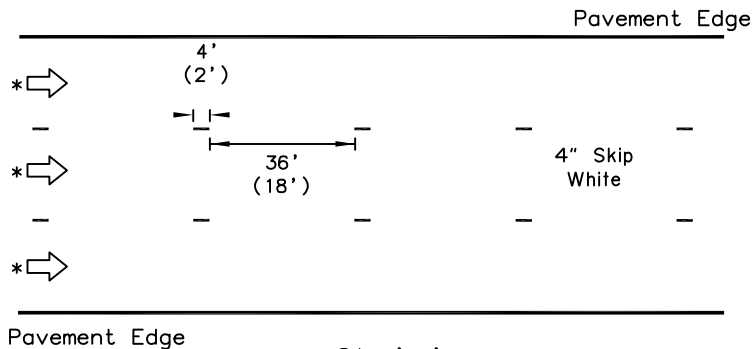
1) for 3 days if seasonal ADT is above 2000, or

2) for 1 month if seasonal ADT is below 2000.
3. Interim pavement markings should not be in place longer than 14 calendar days before being replaced with permanent markings conforming to Part 3 of the Alaska Traffic Manual unless the Engineer provides written approval.
4. Where R4-1 DO NOT PASS signs are used, install at the beginning of no passing zones and at no more than 1500' spacings within no passing zones.
5. Install high level warning devices on all DO NOT PASS and PASS WITH CARE signs.
6. Offset temporary markings 8"-12" from the future location of permanent markings if applied on the same lift of pavement.
7. Dimensions in parenthesis apply to curves with a radius of 1000 feet or less or where posted speed limit is 30 mph or less.

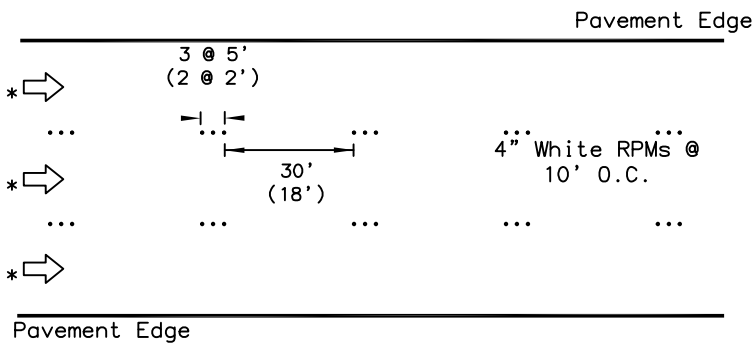


DETAIL C

Two-lane road: No Passing Zones indicated by signs only (see Note 2c).
No centerline delineation.



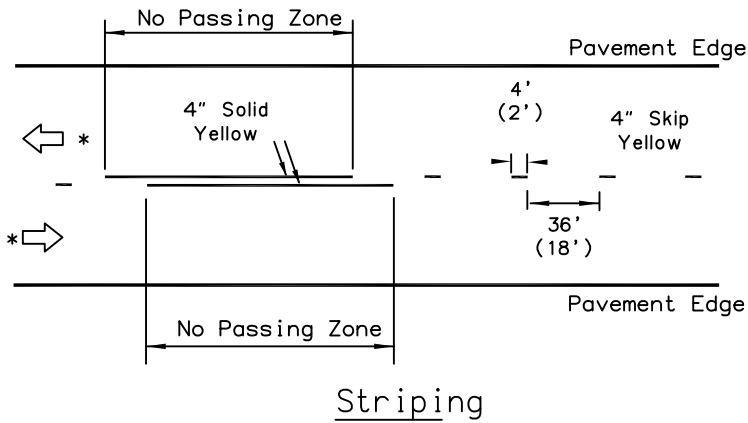
Striping



Temporary Raised Pavement Markers

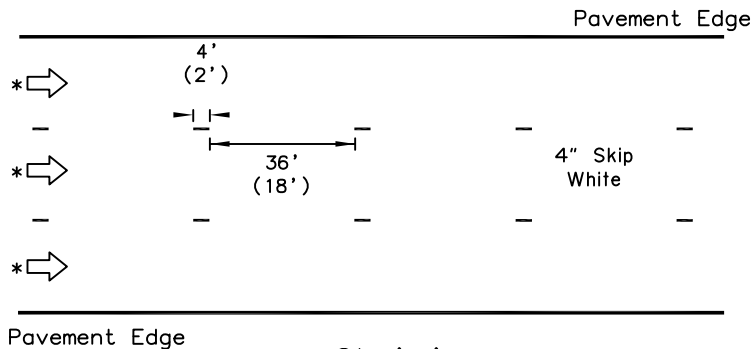
DETAIL B

Two-lane road: No Passing Zones indicated by signs only. Raised pavement markers for centerline delineation.

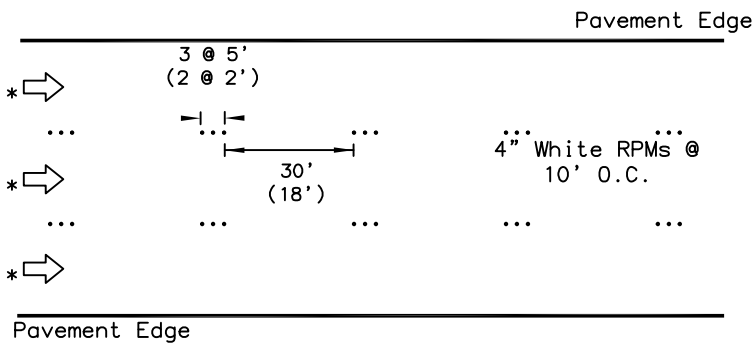


DETAIL C

Two-lane road: No Passing Zones indicated by signs only (see Note 2c).
No centerline delineation.



Striping



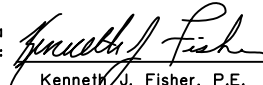
Temporary Raised Pavement Markers

DETAIL D

Multilane one-way road:
Lane dividing lines

* Direction of Travel

State of Alaska DOT&PF
ALASKA STANDARD PLAN
INTERIM
PAVEMENT MARKINGS

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

Adoption Date: 02/08/2019

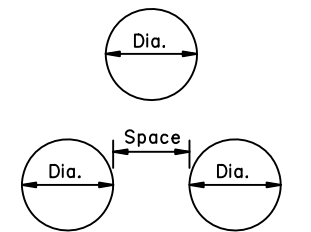
Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

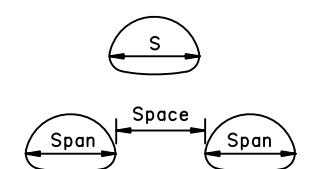
1. Sidefill shall be placed and compacted with care under haunches of pipe and shall be brought up evenly and simultaneously on both sides of pipe to 1 foot above the top of the full length of the pipe.
2. Alternate installation methods may only be used when specified or approved by the Engineer.

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



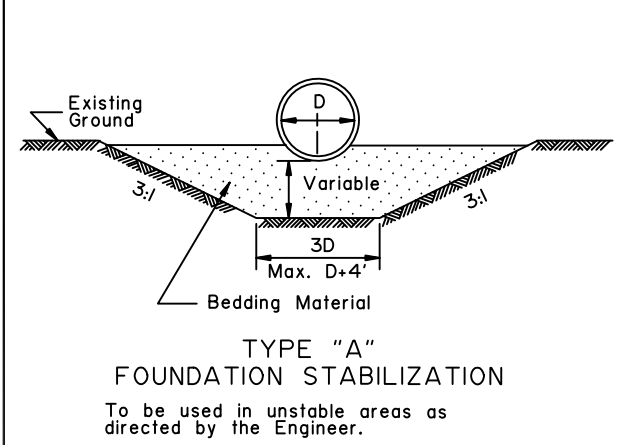
MULTIPLE INSTALLATIONS	
Dia.	Minimum Space Between Pipes
0" - 42"	24"
48" & Over	1/2 Span of pipe arch or 3', whichever is less.

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

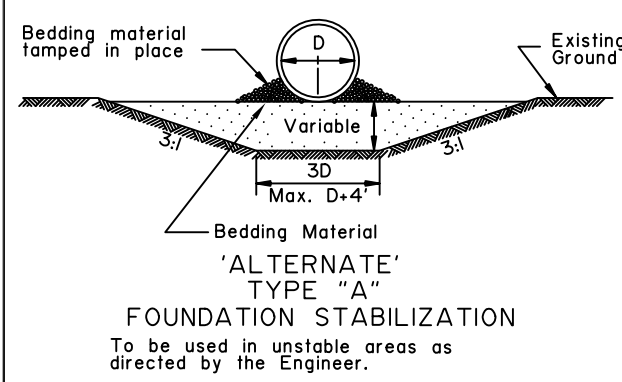
Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher*
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

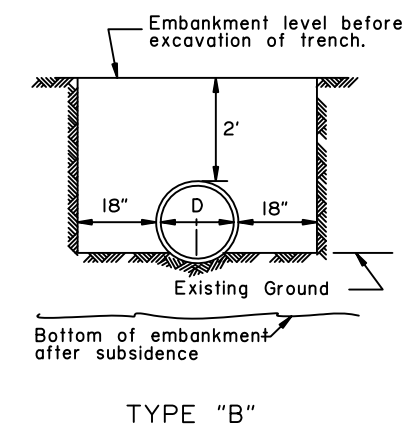
Last Code and Stds. Review
By: Date:
Next Code and Standards Review date: 02/08/2029



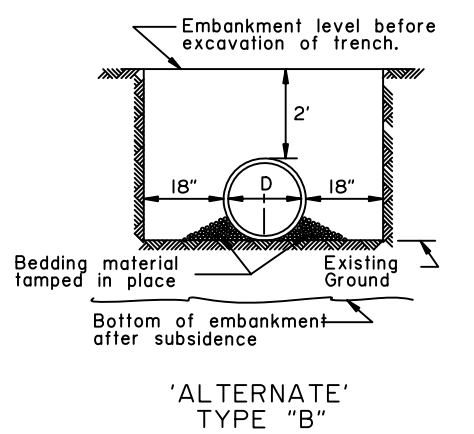
TYPE "A"
FOUNDATION STABILIZATION
To be used in unstable areas as
directed by the Engineer.



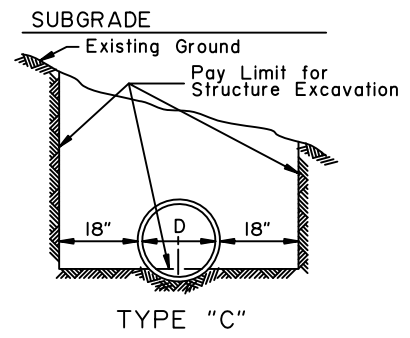
'ALTERNATE'
TYPE "A"
FOUNDATION STABILIZATION
To be used in unstable areas as
directed by the Engineer.



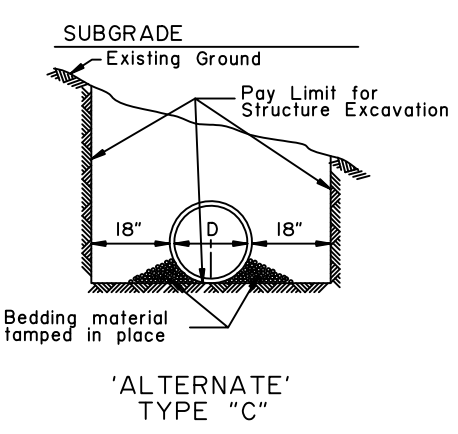
TYPE "B"



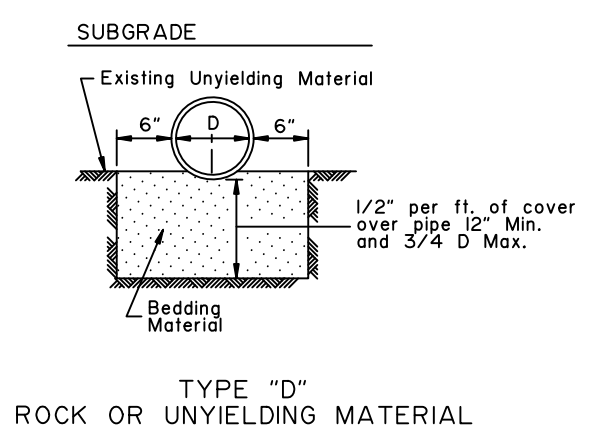
'ALTERNATE'
TYPE "B"



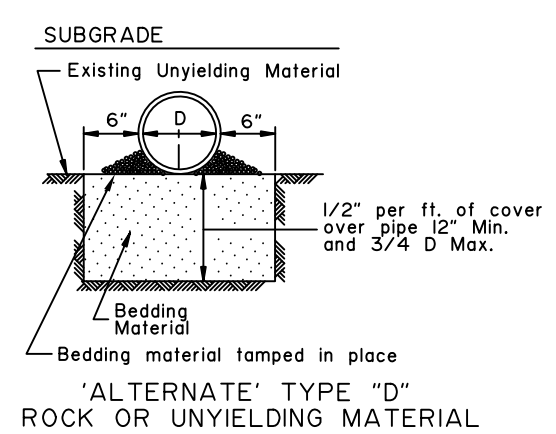
TYPE "C"



'ALTERNATE'
TYPE "C"

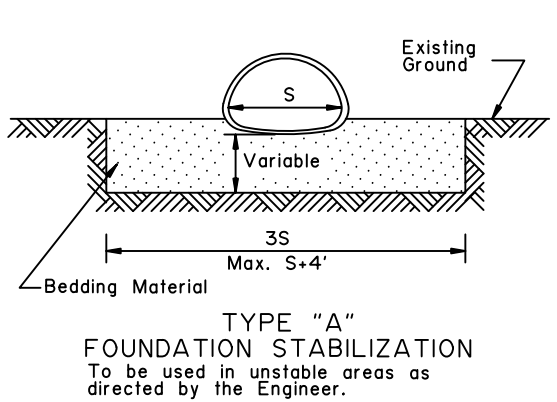


TYPE "D"
ROCK OR UNYIELDING MATERIAL

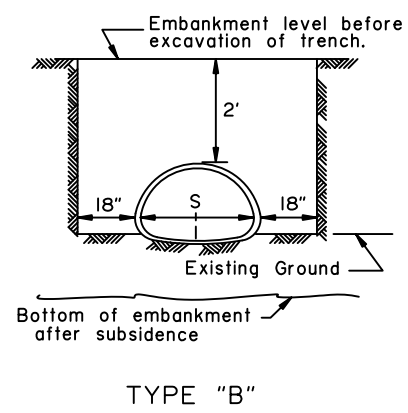


'ALTERNATE' TYPE "D"
ROCK OR UNYIELDING MATERIAL

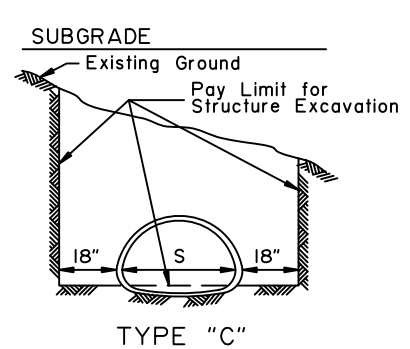
CULVERT PIPE



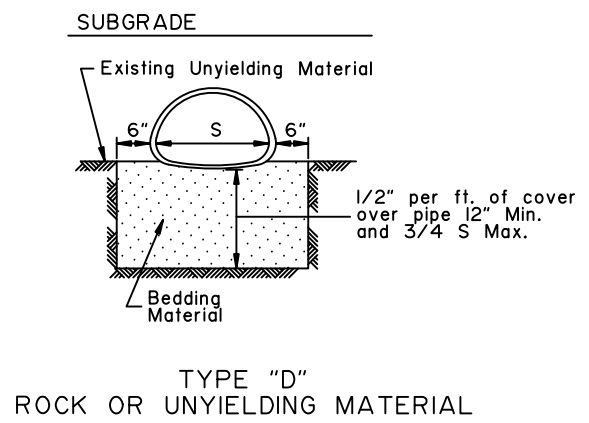
TYPE "A"
FOUNDATION STABILIZATION
To be used in unstable areas as
directed by the Engineer.



TYPE "B"



TYPE "C"



TYPE "D"
ROCK OR UNYIELDING MATERIAL

ARCH

GENERAL NOTES:

- 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 Drawing "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 top 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 H-20 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 2000 AASHTO "LRFD Bridge Design Specifications".

Minimum & Maximum Cover For 2 2/3" x 1/2" Aluminum Pipe															
GAGE	0.060"			0.075"			0.105"			0.135"			0.164"		
Dia. (In)	Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)	
12	12	100+		12	100+		12	100+		12	100+		12	100+	
15	12	94		12	100+		12	100+		12	100+		12	100+	
18	12	75		12	94		12	100+		12	100+		12	100+	
21	12	65		12	82		12	100+		12	100+		12	100+	
24	12	56		12	71		12	99		12	100+		12	100+	
27	12	48		12	63		12	89		12	100+		12	100+	
30				12	56		12	79		12	100+		12	100+	
36				12	47		12	66		12	85		12	100+	
42				12	55		12	56		12	73		12	100+	
48				12	47		12	49		12	63		12	78	
54							15	43		15	56		15	69	
60										15	50		15	62	
66										18	44		18	56	
72													18	45	

Minimum & Maximum Cover For 3" x 1" Aluminum Pipe											
GAGE	0.060"			0.075"		0.105"		0.135"		0.164"	
Dia. (In)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	
30	12	52	12	65							
36	12	43	12	54	12	100+	12	100+	12	100+	
42	12	36	12	46	12	65	12	100+	12	100+	
48	12	32	12	40	12	57	12	73	12	100+	
54	15	28	15	35	15	50	12	65	12	100+	
60	15	25	15	32	15	45	15	58	15	72	
66	18	23	18	28	18	41	18	53	18	65	
72	18	21	18	26	18	37	18	48	18	59	
78			21	24	21	34	21	44	21	55	
84					21	31	21	41	21	57	
90					24	29	24	38	24	47	
96					24	27	24	36	24	44	
102							24	33	24	41	
108							24	31	24	39	
114									24	37	
120									24	35	

Minimum & Maximum Cover For 9" x 2 1/2" Aluminum Structural Plate Pipe *																							
GAGE	0.100"			0.125"			0.150"			0.175"			0.200"			0.225"			0.250"				
Dia. (In)	Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)			
60	12	29 31		12	38 45		12	49 60		12	58 70		12	58 81		12	58 92		12	58 100+			
66	12	26 28		12	35 41		12	44 54		12	53 64		12	53 74		12	53 84		12	53 94			
72	13	24 25		12	32 37		12	41 50		12	48 58		12	48 67		12	48 77		12	48 86			
78	14	22 23		12	29 35		12	37 46		12	45 54		12	45 62		12	45 71		12	45 79			
84	15	20 22		13	27 32		12	35 42		12	41 50		12	41 58		12	41 66		12	41 73			
90	16	19 20		14	25 30		13	32 40		12	39 47		12	39 54		12	39 61		12	39 68			
96	17	18 19		15	24 28		14	30 37		13	36 44		12	36 50		12	36 57		12	36 64			
102	18	17 18		16	22 26		15	29 35		14	34 41		13	34 47		13	34 54		13	34 60			
108	19	16 17		17	21 25		16	27 33		14	32 39		14	32 45		14	32 51		14	32 57			
114	20	15 16		18	20 23		16	25 31		15	30 37		15	30 42		15	30 48		15	30 54			
120	21	14 15		19	19 22		17	24 30		16	29 35		15	29 40		15	29 46		15	29 51			
126	22	13 14		20	18 21		18	23 28		17	27 33		16	27 38		16	27 44		16	27 49			
132	23	13 14		21	17 20		19	22 27		18	26 32		17	26 37		17	26 42		17	26 47			
138	24	12 13		22	16 19		20	21 26		18	25 30		18	25 35		18	25 40		18	25 44			
144	25	12 12		22	16 18		21	20 25		19	24 29		18	24 33		18	24 38		18	24 43			
150				23	15 18		21	19 24		20	23 28		19	23 32		19	23 36		19	23 41			
156				24	14 17		22	18 23		21	22 27		20	22 31		20	22 35		20	22 39			
162							23	18 22		21	21 26		21	21 30		21	21 34		21	21 38			
168							24	17 21		22	20 25		21	20 29		21	20 33		21	20 36			
174							25	17 20		23	20 24		22	20 28		22	20 31		22	20 35			
180													24	19 23		23	19 27		23	19 30		23	19 34
180																							

*Longitudinal seams use (5 1/3) 3/4" dia. bolts per foot.

58
100+

← Upper figure for pipe with aluminum bolts.
(FOR TABLE ABOVE ONLY.)
← Lower figure for pipe with galvanized steel bolts.

———— CORRUGATED CIRCULAR ALUMINUM PIPE ————

———— CORRUGATED ALUMINUM PIPE-ARCH ————

Minimum & Maximum Cover For 2 2/3" x 1/2" Aluminum Pipe-Arch						
				Max. Cover (Ft)		
Span x Rise (In. x In.)	Corner Radius (In)	Minimum Gage (In)	Min. Cover (In)	2 Tons Corner Bearing Pressure	3 Tons Corner Bearing Pressure	Ⓢ
17 x 13	3	0.060	12	13	20	
21 x 15	3	0.060	12	12	19	
24 x 18	3	0.060	12	11	16	
28 x 20	3	0.075	12	10	16	
35 x 24	3	0.075	12	9	14	
42 x 29	3 1/2	0.105	12	7	13	
49 x 33	4	0.105	15	6	12	
57 x 38	5	0.135	15	6	12	
64 x 43	6	0.135	18	6	12	
71 x 47	7	0.164	18	6	12	

Minimum & Maximum Cover For 3" x 1" Aluminum Pipe-Arch						
				Max. Cover (Ft)		
Span x Rise (In. x In.)	Corner Radius (In)	Minimum Gage (In)	Min. Cover (In)	2 Tons Corner Bearing Pressure	3 Tons Corner Bearing Pressure	Ⓢ
40 x 31	5	0.075	30	8	12	
46 x 36	6	0.075	24	8	13	
53 x 41	7	0.075	24	8	13	
60 x 46	8	0.075	24	13	20	
66 x 51	9	0.075	18	13	20	
73 x 55	12	0.075	18	16	24	
81 x 59	14	0.105	18	14	22	
87 x 63	14	0.105	18	13	20	
95 x 67	16	0.105	18	12	18	
103 x 71	16	0.135	24	11	17	
112 x 75	18	0.164	24	10	16	
117 x 79	18	0.164	24	10	15	

Minimum & Maximum Cover For 9" x 2 1/2" Aluminum Structural Plate Pipe-Arch*						
Span x Rise (Ft-In x Ft-In)	Corner Radius (In)	Minimum Gage (In)	Min. Cover (ft)	Max. Cover in Feet For Soil Bearing Capacity of:		
				2 Tons/ft²	3 Tons/ft²	
5 - 11 x 5 - 5	31.8	0.100	2	24**	24**	
6 - 11 x 5 - 9	31.8	0.100	2	22**	22**	
7 - 3 x 5 - 11	31.8	0.100	2	20**	20**	
7 - 9 x 6 - 0	31.8	0.100	2	28**	18 **	
8 - 5 x 6 - 3	31.8	0.100	2	17 **	17 **	
9 - 3 x 6 - 5	31.8	0.100	2	15 **	15 **	
10 - 3 x 6 - 9	31.8	0.100	2	14 **	14 **	
10 - 9 x 6 - 10	31.8	0.100	2	13 **	13 **	
11 - 5 x 7 - 1	31.8	0.100	2	12 **	12 **	
12 - 7 x 7 - 5	31.8	0.125	2	14	16 **	
12 - 11 x 7 - 6	31.8	0.150	2	13	14 **	
13 - 1 x 8 - 2	31.8	0.150	2	13	18 **	
13 - 11 x 8 - 5	31.8	0.150	2	12	17 **	
14 - 8 x 9 - 8	31.8	0.175	2	12	18	
15 - 4 x 10 - 0	31.8	0.175	2	11	17	
16 - 1 x 10 - 4	31.8	0.200	2	10	16	
16 - 9 x 10 - 8	31.8	0.200	2.17	10	15	
17 - 3 x 11 - 0	31.8	0.225	2.25	10	15	
18 - 0 x 11 - 4	31.8	0.255	2.25	9	14	
18 - 8 x 11 - 8	31.8	0.250	2.33	9	14	

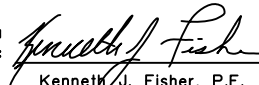
*Longitudinal seams use (5 1/3) 3/4" dia. bolts per foot.

**Fill limited by the seam strength of the bolts. 3/4" dia. bolts per foot.

METAL THICKNESSES & GAGES	
ALUMINUM	GAGE NO. (For Info Only)
0.060	16
0.075	14
0.105	12
0.135	10
0.164	8

Ⓢ This column shall not be used unless specified on the plans or approved by the Regional Geotechnical Engineer.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
PIPE AND ARCH TABLES
(ALUMINUM PIPE)

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

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 Drawing "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 top 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 H-20 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 2000 AASHTO "LRFD

Minimum & Maximum Cover For 2 2/3" x 1/2" Steel Pipe											
GAGE	0.064"		0.079"		0.109"		0.138"		0.168"		
Dia. (In)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	
12	12	100+	12	100+	12	100+	12	100+	12	100+	
15	12	100+	12	100+	12	100+	12	100+	12	100+	
18	12	100+	12	100+	12	100+	12	100+	12	100+	
21	12	100+	12	100+	12	100+	12	100+	12	100+	
24	12	100+	12	100+	12	100+	12	100+	12	100+	
27	12	100+	12	100+	12	100+	12	100+	12	100+	
30	12	99	12	100+	12	100+	12	100+	12	100+	
36	12	83	12	100+	12	100+	12	100+	12	100+	
42	12	71	12	88	12	100+	12	100+	12	100+	
48	12	62	12	77	12	100+	12	100+	12	100+	
54			12	66	12	93	12	100+	12	100+	
60					12	79	12	100+	12	100+	
66					12	68	12	88	12	100+	
72						12	75	12	93		
78									12	79	
84									12	66	

Minimum & Maximum Cover For 3" x 1" Steel Pipe												
0.064"			0.079"			0.109"			0.138"		0.168"	
Dia. (In)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)
36	12		12		12	100+	12	100+	12	100+	12	100+
42	12		12		12	100+	12	100+	12	100+	12	100+
48	12		12	76	12	100+	12	100+	12	100+	12	100+
54	12	63	12	79	12	100+	12	100+	12	100+	12	100+
60	12	56	12	71	12	99	12	100+	12	100+	12	100+
66	12	52	12	64	12	90	12	100+	12	100+	12	100+
72	12	47	12	59	12	82	12	100+	12	100+	12	100+
78	12	44	12	54	12	77	12	98	12	98	12	100+
84	12	41	12	51	12	71	12	92	12	92	12	100+
90	12	37	12	47	12	67	12	86	12	86	12	100+
96	12	35	12	44	12	62	12	80	12	80	12	98
102	18	33	18	42	18	59	18	76	18	76	18	93
108			18	40	18	55	18	71	18	71	18	87
114			18	36	18	51	18	66	18	66	18	80
120			18	34	18	46	18	61	18	61	18	75
126						18	44	18	56	18	56	70
132						18	41	18	53	18	53	64
138						18	37	18	49	18	49	60
144								18	44	18	44	55
150										18	52	18

Minimum & Maximum Cover For 5" x 1" Steel Pipe*													
GAGE	0.064"			0.079"		0.109"		0.138"		0.168"			
Dia. (In)	Min. (In)	Max. (Ft)		Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)		
36	12	81		12	90	12	100+	12	100+	12	100+		
42	12	71		12	77	12	100+	12	100+	12	100+		
48	12	62		12	68	12	100+	12	100+	12	100+		
54	12	56		12	70	12	98	12	100+	12	100+		
60	12	50		12	63	12	88	12	100+	12	100+		
66	12	46		12	57	12	80	12	100+	12	100+		
72	12	42		12	52	12	73	12	95	12	100+		
78	12	39		12	48	12	68	12	87	12	100+		
84	12	36		12	45	12	63	12	81	12	99		
90	12	33		12	42	12	59	12	76	12	93		
96	12	31		12	39	12	55	12	71	12	87		
102	18	29		18	37	18	52	18	67	18	82		
108				18	35	18	49	18	63	18	77		
114				18	32	18	45	18	58	18	71		
120				18	30	18	41	18	54	18	66		
126							18	39	18	50	18	62	
132							18	36	18	47	18	57	
138							18	33	18	43	18	53	
144										18	39	18	49
150										19	47	19	47

* Table for pipe with helical lockseams or helical welded seams ONLY.

Minimum & Maximum Cover For 6" x 2" Steel Structural Plate Pipe**									
GAGE	ALL	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)	Max. (Ft)	
60	12	46	68	90	100+	100+	100+	100+	
66	12	42	62	81	93	100+	100+	100+	
72	12	38	57	75	86	100+	100+	100+	
78	12	35	52	69	79	95	100+	100+	
84	12	33	49	64	73	88	100+	100+	
90	12	31	45	60	68	82	97	100+	
96	12	29	43	56	64	77	91	100+	
102	18	27	40	52	60	73	86	94	
108	18	25	38	50	57	69	81	88	
114	18	24	36	47	54	65	77	84	
120	18	23	34	45	51	62	73	80	
126	18	22	32	42	49	59	69	76	
132	18	21	31	40	46	56	66	72	
138	18	20	29	39	44	54	63	69	
144	18	19	28	37	43	51	61	66	
150	24	18	27	36	41	49	58	64	
156	24	17	26	34	39	47	56	61	
162	24	17	25	33	38	46	54	59	
168	24	16	24	32	36	44	52	57	
174	24	16	23	31	35	42	50	55	
180	24	15	22	30	34	41	48	53	
186	24	15	22	29	33	40	47	51	
192	24		21	28	32	38	45	50	
198	30		20	27	31	37	44	48	
204	30		20	26	30	36	43	47	
210	30		19	25	29	35	41	45	
216	30			25	28	34	40	44	
222	30			24	27	33	39	43	
228	30			23	27	32	38	42	
234	30			23	26	31	37	41	
240	30				25	31	36	40	
246	36				25	30	35	39	
252	36					29	34	38	
258	36					28	34	37	
264	36					28	33	36	
270	36					27	32	35	
276	36						31	34	
282	36						31	34	
288	42						30	33	
294	42							32	
300	42							32	
306	42							31	
312	42							30	

** Longitudinal seams use (4) 3/4" dia. bolts per foot.

CORRUGATED CIRCULAR STEEL PIPE

CORRUGATED STEEL PIPE-ARCH

Minimum & Maximum Cover For 2 2/3" x 1/2" Steel Pipe-Arch						
				Max. Cover (Ft)		
Span x Rise (In. x In.)	Corner Radius (In)	Minimum Gage (In)	Min. Cover (In)	2 Tons Corner Bearing Pressure	3 Tons Corner Bearing Pressure	Ⓢ
17 x 13	3	0.064	12	16	18	
21 x 15	3	0.064	12	15	14	
24 x 18	3	0.064	12	15	13	
28 x 20	3	0.064	12	15	11	
35 x 24	3	0.064	12	15	7	
42 x 29	3 1/2	0.064	12	15	7	
49 x 33	4	0.079	12	15	6	
57 x 38	5	0.109	12	15	8	
64 x 43	6	0.109	12	15	9	
71 x 47	7	0.138	12	15	10	
77 x 52	8	0.168	12	15	10	
83 x 57	9	0.168	12	15	10	

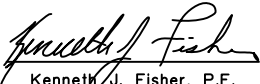
Minimum & Maximum Cover For 3" x 1" Steel Pipe-Arch						
				Max. Cover (Ft)		
Span x Rise (In. x In.)	Corner Radius (In)	Minimum Gage (In)	Min. Cover (In)	2 Tons Corner Bearing Pressure	3 Tons Corner Bearing Pressure	Ⓢ
40 x 31	5	0.079	12	25	12	
46 x 36	6	0.079	12	25	13	
53 x 41	7	0.079	12	25	13	
60 x 46	8	0.079	15	25	13	
66 x 51	9	0.079	15	25	13	
73 x 55	12	0.079	18	24	16	
81 x 59	14	0.079	18	21	17	
87 x 63	14	0.079	18	20	16	
95 x 67	16	0.079	18	20	17	
103 x 71	16	0.079	18	20	15	
112 x 75	18	0.079	21	20	16	
117 x 79	18	0.109	21	19	15	
128 x 83	18	0.138	24	19	14	
137 x 87	18	0.138	24	19	13	
142 x 91	18	0.138	24	19	12	
150 x 96	18	0.138	30	19		
157 x 96	18	0.138	30	19		
164 x 105	18	0.138	30	19		
171 x 110	18	0.138	30	19		

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 Drawing "Culvert Pipe & Arch Installation Details".
3. Pipe cover height is measured from top of the pipe to top of rigid pavement, or to the top 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 Polyethelene Pipe	
Size (in.)	Max. Cover (ft.)
12	30.0
15	30.0
18	30.0
24	30.0
30	30.0
36	30.0
40	20.0
48	20.0

State of Alaska DOT&PF
ALASKA STANDARD PLAN
PIPE AND ARCH TABLES
(PLASTIC PIPE)

Adopted as an Alaska
Standard Plan by: 

Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

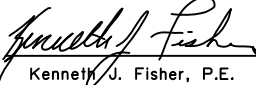
Last Code and Stds. Review
By: Date:

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

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 Drawing "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 top 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 H-20 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 2000 AASHTO "LRFD Bridge Design Specifications".

State of Alaska DOT&PF
ALASKA STANDARD PLAN
PIPE AND ARCH TABLES
(SPIRAL RIB PIPE)

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

Minimum & Maximum Cover For Aluminum Spiral Rib Circular Pipe*									
GAGE	0.060"		0.075"		0.105"		0.135"		
Dia. (In.)	Min. (In.)	Max. (Ft)	Min. (In.)	Max. (Ft)	Min. (In.)	Max. (Ft)	Min. (In.)	Max. (Ft)	
12	24	35	24	50					
18	24	34	24	49					
24	24	25	24	36	24	63	24	82	
30	24	19	24	28	24	50	24	65	
36	24	15	24	24	24	41	24	54	
42			24	19	24	35	24	46	
48			24	17	24	30	24	40	
54			24	14	24	27	24	35	
60			24	12	24	24	24	30	
*¾ x ¾ x 7½ in. or ¾ x 1 x 1½ in. Corrugations									

Minimum & Maximum Cover For Aluminum Spiral Rib Pipe-Arch*					
		Soil Corner Bearing Capacity of 2 Tons/ s.f.			
Span x Rise (In. x In.)	Min. Cover (In.)	0.060"	0.075"	0.105"	
		Max. Cover (ft.)	Max. Cover (ft.)	Max. Cover (ft.)	
20 x 16	12	13			
23 x 19	12	14			
27 x 21	12	13			
33 x 26	12	13			
40 x 31	12	13			
46 x 36	12	14			
53 x 41	18		13		
60 x 46	18		20		
66 x 51	18		21		
73 x 55	18			21	
81 x 59	18			17	
87 x 63	18			17	
95 x 67	18			17	

* $\frac{3}{4}$ x $\frac{3}{4}$ x $7\frac{1}{2}$ in. or $\frac{3}{4}$ x 1 x $11\frac{1}{2}$ in. Corrugations

ALUMINUM SPIRAL RIB PIPE

STEEL SPIRAL RIB PIPE

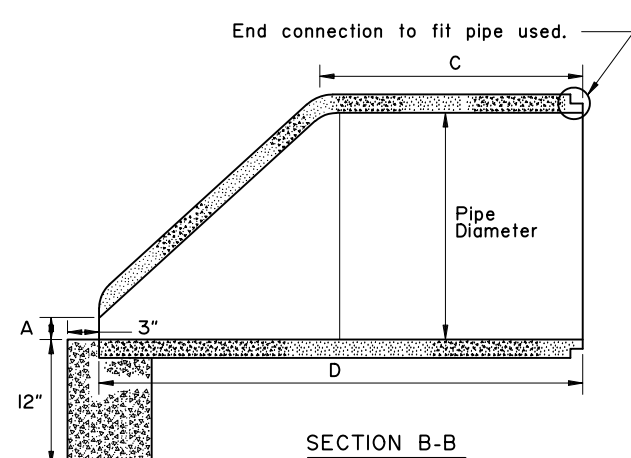
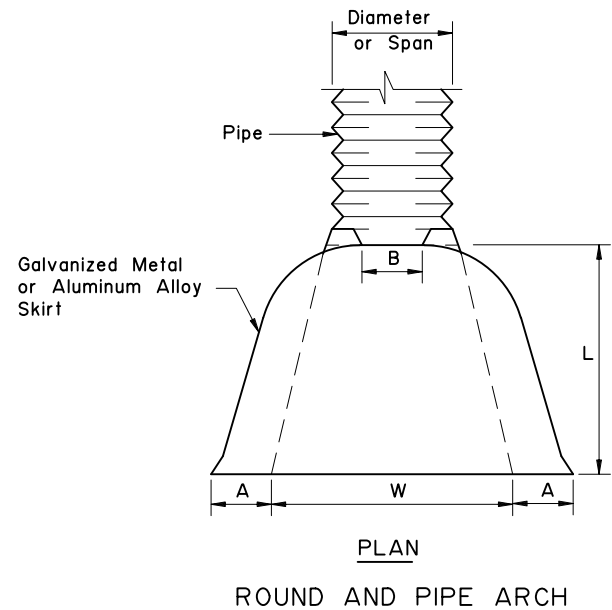
Minimum & Maximum Cover For Steel and Aluminized Steel Spiral Rib Circular Pipe*									
GAGE	0.064"		0.079"		0.109"		0.138**		
Dia. (In.)	Min. (In.)	Max. (Ft)	Min. (In.)	Max. (Ft)	Min. (In.)	Max. (Ft)	Min. (In.)	Max. (Ft)	
18	12								
24	12	51	12	72	12	121			
30	12	41	12	58	12	97			
36	12	34	12	48	12	81			
42	12	29	12	41	12	69			
48	12	26	12	36	12	61			
54	18	23	18	32	18	54			
60	18	21	18	29	18	49			
66	18	19	18	26	18	44	18	65	
72			18	24	18	40	18	59	
78			24	22	24	37	24	55	
84			24	21	24	35	24	52	
90					24	32	24	47	
96	24	30			24	44			
102	30	29			30	43			
108	30	27			30	41			

* $\frac{3}{4}$ x $\frac{3}{4}$ x $7\frac{1}{2}$ in. or $\frac{3}{4}$ x 1 x $11\frac{1}{2}$ in. Corrugations

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

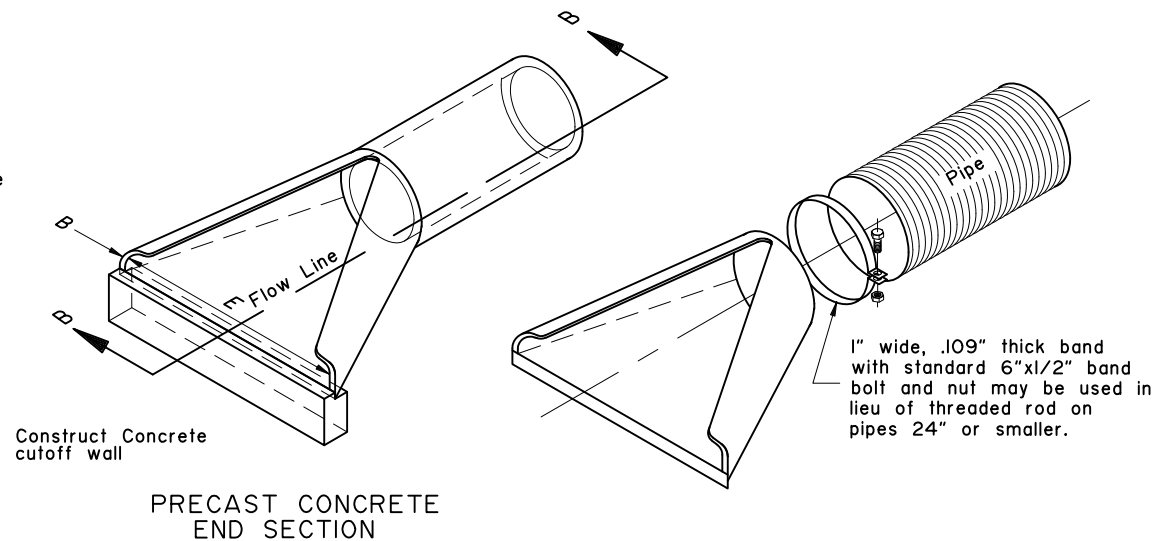
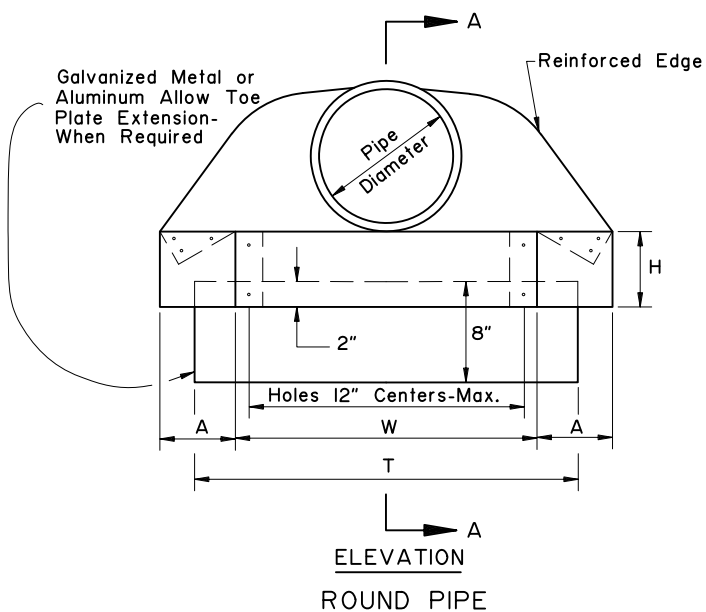
Minimum & Maximum Cover For Steel Spiral Rib Arch-Pipe*					
		Soil Corner Bearing Capacity of 2 Tons/ s.f.			
Span x Rise (In. x In.)	Min. Cover (In.)	0.064"	0.079"	0.109"	
		Max. Cover (ft.)	Max. Cover (ft.)	Max. Cover (ft.)	
20 x 16	12	13			
23 x 19	12	14			
27 x 21	12	13			
33 x 26	12	13			
40 x 31	12	13			
46 x 36	12	14			
53 x 41	18		13		
60 x 46	18		20		
66 x 51	18		21		
73 x 55	18			21	
81 x 59	18			17	
87 x 63	18			17	
95 x 67	18			17	

* $\frac{3}{4}$ x $\frac{3}{4}$ x $7\frac{1}{2}$ in. or $\frac{3}{4}$ x 1 x $11\frac{1}{2}$ in. Corrugations

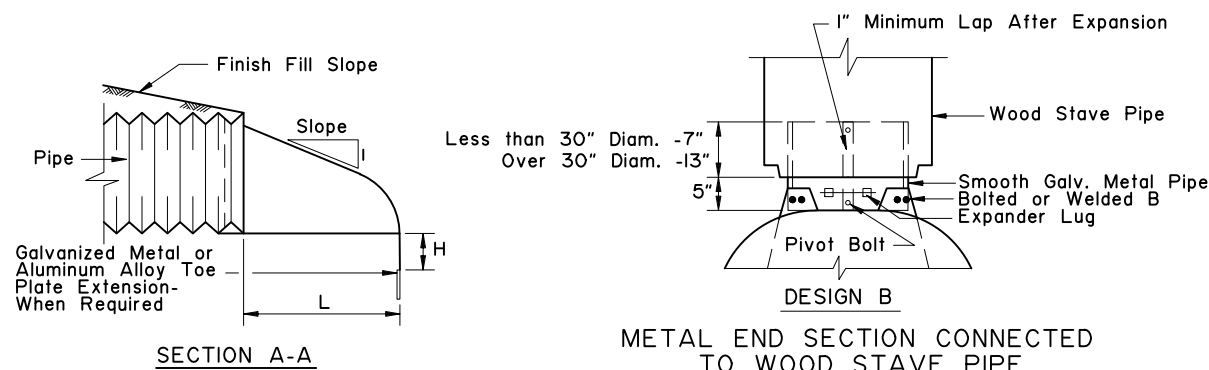
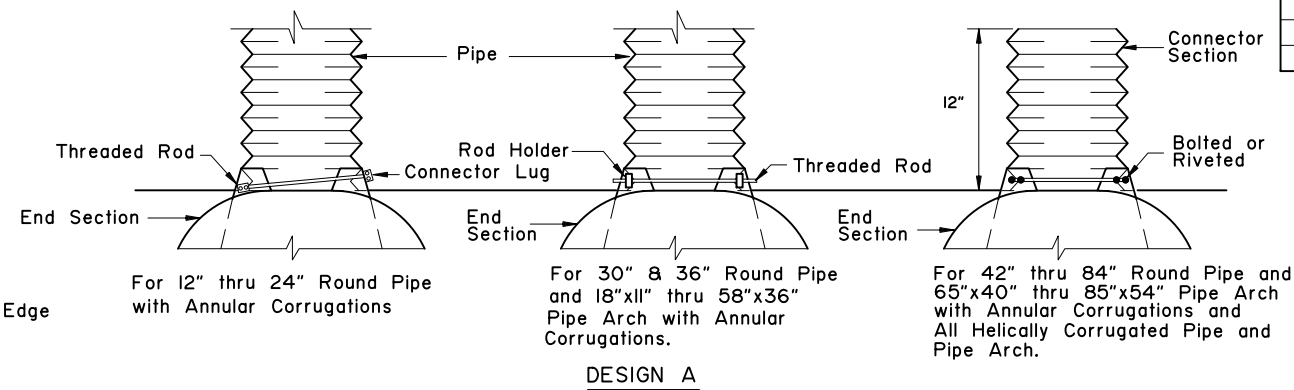
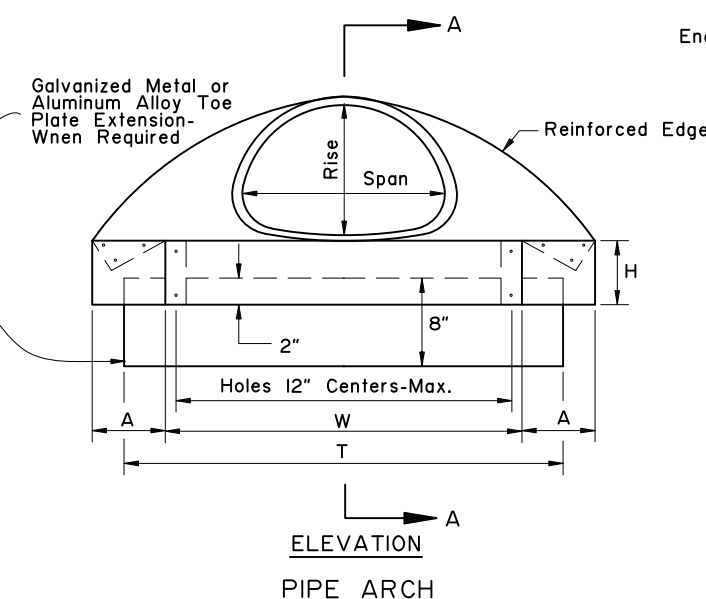


MINIMUM DIMENSIONS					
Pipe Diameter	A	B	C	D	E
12"	4"	1 3/4"	24"	46"	24"
18"	9"	2"	25"	50"	36"
24"	9 1/2"	2 1/2"	30"	72"	48"
30"	12"	3"	20"	73"	60"
36"	15"	3 3/8"	35"	97"	72"
42"	21"	3 3/4"	35"	98"	78"
48"	24"	4 1/4"	26"	98"	84"
54"	27"	4 5/8"	33"	99"	82"

ROUND PIPE										
Pipe Diam. Inches	Thickness For Aluminum	Thk. for Galv. Metal	Dimension Inches						Skirt	Approx. Slope
			1" A Tot.	B Max.	1" H Tot.	1 1/2" L Tot.	2" W Tot.	2" T Tot.		
12"	0.060	0.064	6"	6"	6"	21"	24"	34"	1 Pc.	2 1/2
15"	0.060	0.064	7"	8"	6"	26"	30"	40"	1 Pc.	2 1/2
18"	0.060	0.064	8"	10"	6"	31"	36"	46"	1 Pc.	2 1/2
21"	0.060	0.064	9"	12"	6"	36"	42"	52"	1 Pc.	2 1/2
24"	0.075	0.064	10"	13"	6"	41"	48"	58"	1 Pc.	2 1/2
30"	0.075	0.079	12"	16"	8"	51"	60"	70"	1 Pc.	2 1/2
36"	0.105	0.079	14"	19"	9"	60"	72"	94"	2 Pc.	2 1/2
42"	0.105	0.109	16"	22"	11"	69"	84"	106"	2 Pc.	2 1/2
48"	0.105	0.109	18"	27"	12"	78"	90"	112"	2 Pc.	2 1/4
54"	0.105	0.109	18"	30"	12"	84"	102"	122"	2 Pc.	2 1/4
60"	0.135	0.109	18"	33"	12"	87"	114"	134"	3 Pc.	2 1/4
66"	0.135	0.109	18"	36"	12"	87"	120"	142"	3 Pc.	2 1/4
72"	0.135	0.109	18"	39"	12"	87"	126"	146"	3 Pc.	2 1/4
78"	— —	0.109	18"	42"	12"	87"	132"	152"	3 Pc.	1 1/4
84"	— —	0.109	18"	45"	12"	87"	138"	158"	3 Pc.	1 1/6



PIPE-ARCH												
Pipe-Arch Dimension Inches		Thickness for Aluminum	Thk. for Galv. Metal	Dimension Inches						Skirt	Approx. Slope	
				A 1" Tol.	B Max.	H 1" Tol.	L 1 1/2" Tol.	W 2" Tol.	T 2" Tol.			
Span	Rise											
17"	13"	0.060	0.064	7"	9"	6"	19"	30"	40"	1 Pc.	2 1/2	
21"	15"	0.060	0.064	7"	10"	6"	23"	36"	46"	1 Pc.	2 1/2	
24"	18"	0.060	0.064	8"	12"	6"	28"	42"	52"	1 Pc.	2 1/2	
28"	20"	0.075	0.064	9"	14"	6"	32"	48"	58"	1 Pc.	2 1/2	
35"	24"	0.075	0.079	10"	16"	6"	39"	60"	70"	1 Pc.	2 1/2	
42"	29"	0.105	0.079	12"	18"	8"	46"	75"	85"	1 Pc.	2 1/2	
49"	33"	0.105	0.109	13"	21"	9"	53"	85"	103"	2 Pc.	2 1/2	
57"	38"	0.105	0.109	18"	26"	12"	63"	90"	114"	2 Pc.	2 1/2	
64"	43"	0.105	0.109	18"	30"	12"	70"	102"	130"	2 Pc.	2 1/4	
71"	47"	0.135	0.109	18"	33"	12"	77"	114"	144"	3 Pc.	2 1/4	
77"	52"	0.135	0.109	18"	36"	12"	84"	120"	158"	3 Pc.	2 1/4	
83"	57"	0.135	0.109	18"	39"	12"	90"	126"	170"	3 Pc.	2 1/4	



GENERAL NOTES:

1. Toe plate extensions will be required only when provided for on the plans. When required, the toe plate extensions shall be punched with holes to match those in lip of skirt and fastened with 3/8 inch or larger galvanized nuts and bolts and shall be the same gage as the end section.
2. Galvanized Metal or Aluminum Alloy End Sections may be used on Wood Stave and Plastic Pipe.
3. All 3 piece bodies shall have 12 gage sides and 10 gage center panels. Multiple panel bodies shall have lap seams which are to be tightly joined by 3/8" galvanized rivets or bolts.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CULVERT END SECTIONS

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

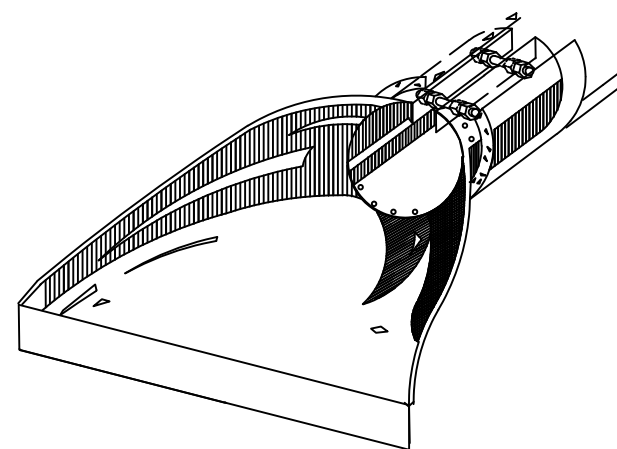
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

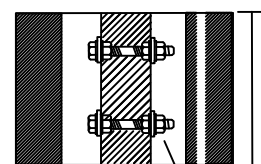
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES

1. See general notes on sheet 1 of 3.
2. See sheet 1 of 3 for metal end section dimensions.
3. Insert bolts, washers and rivets shall be galvanized. Insert thickness is the same as the end section.
4. Use culvert inserts only at inlet.

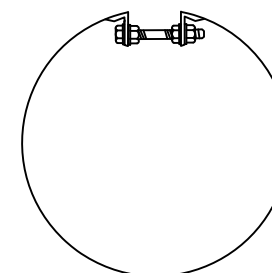


FOR CONNECTING CONCRETE PIPE OR CORRUGATED
POLYETHYLENE PIPE TO METAL END SECTION.



5/8" GALV.BOLTS

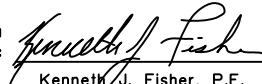
SEE NOTE 2



METAL INSERTS FOR USE WITH CORRUGATED PLASTIC
PIPE AND
METAL END SECTIONS

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CULVERT END SECTIONS

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

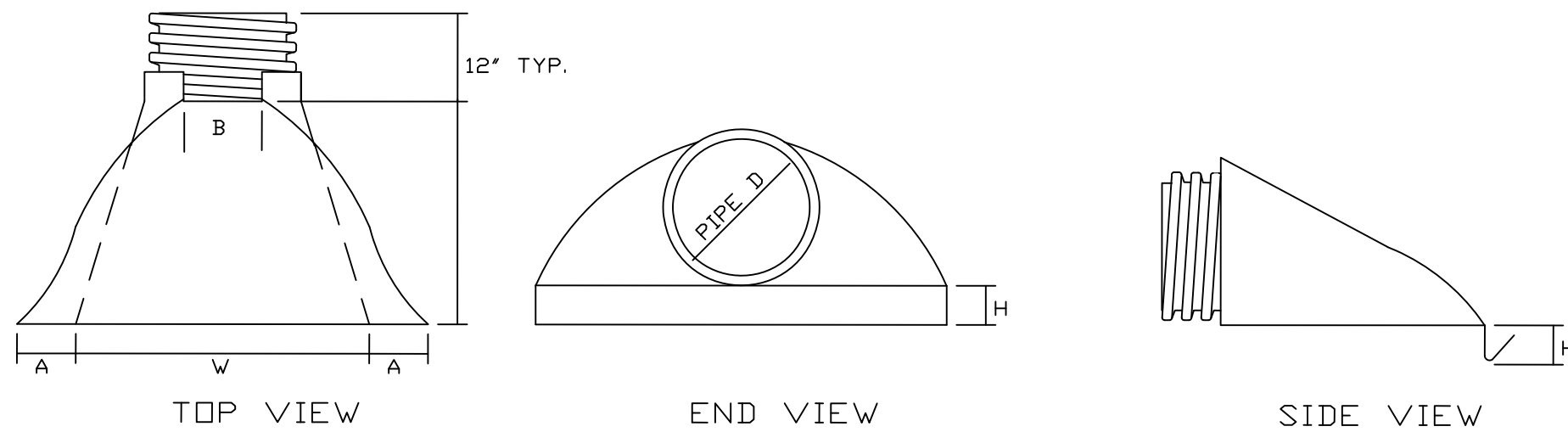
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES

1. Plastic flared end sections may be used with HDPE corrugated culvert pipes where noted in project plans or approved by project engineer.
2. Consult manufacturer's recommendations for proper sizing and coupling devices. Recommended fasteners may include connecting bands or cinch ties. Fittings across dimension B may include threaded rods with wing nuts or bolts and washers. plastic welds may be recommended.
3. Align coupling to accomodate pipe corrugations.
4. Metal components e.g. bolts or washers must be galvanized.
5. Attachment of end section should preserve culvert alignment and not impair pipe function. Use end sections only on culvert inlet.
6. Toe plate extensions will be required only when designated on the plans.
7. End sections will not be used on HDPE culvert pipes larger than 36" unless indicated by project plans or approved by the Engineer.

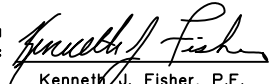


PIPE DIAMETER	DIMENSIONS IN MILLIMETERS				
	A<1"±>	B MAX	H<1"±>	L<1/2"±>	W<2"±>
12" and 15"	6 1/2"	10"	6 1/2"	25"	29"
18"	7 1/2"	15"	6 1/2"	32"	35"
24"	7 1/2"	18"	6 1/2"	36"	45"
30"	10 1/2"	N/A	7"	53"	68"
36"	10 1/2"	N/A	7"	53"	68"

PLASTIC END SECTION FOR CORRUGATED PLASTIC PIPE

State of Alaska DOT&PF
ALASKA STANDARD PLAN

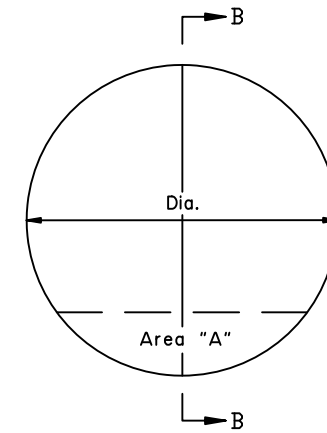
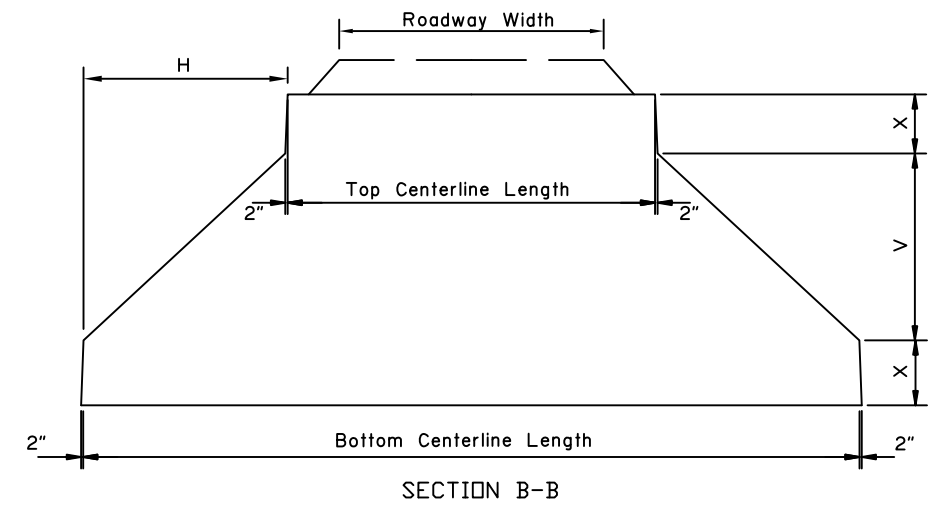
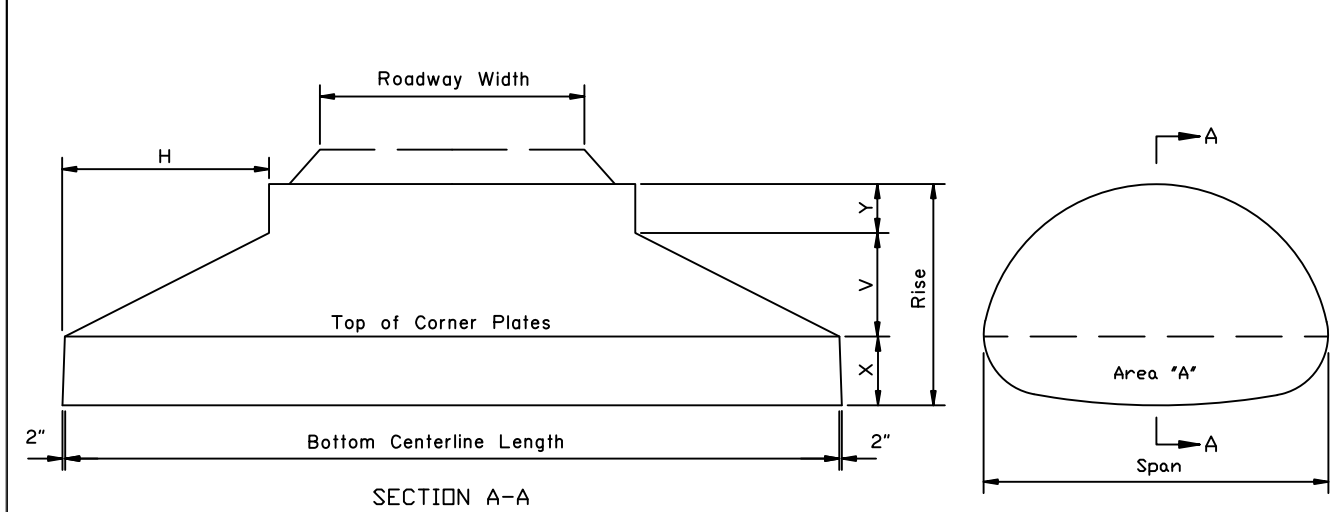
CULVERT END SECTIONS

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

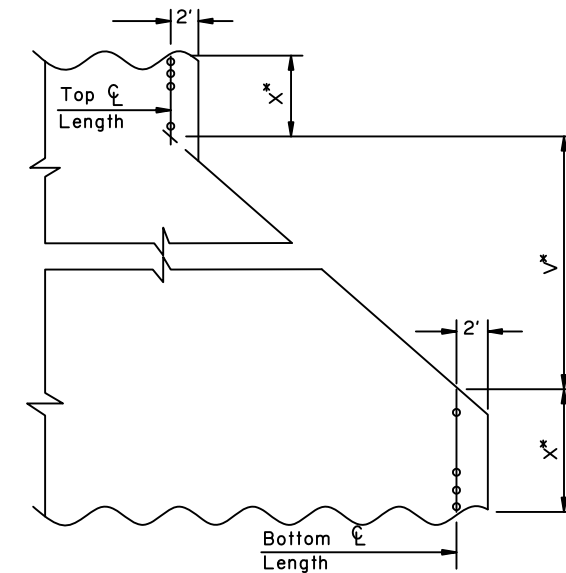


STRUCTURAL PLATE PIPE ARCH

SPAN	RISE	X in ft.	'H' in Feet For Bevels of			'Y' in Feet For Bevels of			'V' in Feet For Bevels of			AREA "A" Sq. Ft.
			1 1/2:1	2:1	3:1	1 1/2:1	2:1	3:1	1 1/2:1	2:1	3:1	
6'- 1"	4'- 7"	2.3			6.0			0.3			2.0	12
6'- 4"	4'- 9"	2.1			6.0			0.7			2.0	11
6'- 9"	4'- 11"	2.4			6.0			0.5			2.0	14
7'- 0"	5'- 1"	2.3			6.0			0.8			2.0	13
7'- 3"	5'- 3"	2.1		6.0	6.0		0.2	1.2		3.0	2.0	14
7'- 8"	5'- 5"	2.3		6.0	6.0		0.1	1.1		3.0	2.0	16
7'-11"	5'- 7"	2.2		6.0	6.0		0.4	1.4		3.0	2.0	15
8'- 2"	5'- 9"	2.0		6.0	6.0		0.8	1.8		3.0	2.0	15
8'- 7"	5'- 11"	2.3		6.0	6.0		0.6	1.6		3.0	2.0	17
8'-10"	6'- 1"	2.2		6.0	6.0		0.9	1.9		3.0	2.0	17
9'- 4"	6'- 3"	2.4		6.0	6.0		0.9	1.9		3.0	2.0	19
9'- 6"	6'- 5"	2.3	6.0	6.0	6.0	0.1	1.1	2.1	4.0	3.0	2.0	20
9'- 9"	6'- 7"	2.2	6.0	6.0	6.0	0.4	1.4	2.4	4.0	3.0	2.0	19
10'- 3"	6'- 9"	2.4	6.0	6.0	6.0	0.4	1.4	2.4	4.0	3.0	2.0	22
10'- 8"	6'- 11"	2.8	6.0	6.0	6.0	0.1	1.1	2.1	4.0	3.0	2.0	25
10'-11"	7'- 1"	2.6	6.0	6.0	6.0	0.5	1.5	2.5	4.0	3.0	2.0	24
11'- 5"	7'- 3"	2.8	6.0	6.0	6.0	0.5	1.5	2.5	4.0	3.0	2.0	27
11'- 7"	7'- 5"	2.7	6.0	6.0	8.0	0.7	1.7	2.0	4.0	3.0	2.7	26
11'-10"	7'- 7"	2.5	6.0	6.0	8.0	1.1	2.1	2.4	4.0	3.0	2.7	26
12'- 4"	7'- 9"	2.8	6.0	6.0	8.0	1.0	1.9	2.3	4.0	3.0	2.7	29
12'- 6"	7'- 11"	2.7	6.0	6.0	8.0	1.2	2.2	2.5	4.0	3.0	2.7	29
12'- 8"	8'- 1"	2.5	6.0	8.0	8.0	1.6	1.6	2.9	4.0	4.0	2.7	27
12'-10"	8'- 4"	2.3	6.0	8.0	8.0	2.0	2.0	3.3	4.0	4.0	2.7	25
13'- 5"	8'- 5"	2.6	6.0	8.0	8.0	1.8	1.8	3.1	4.0	4.0	2.7	30
13'-11"	8'- 7"	2.9	6.0	8.0	8.0	1.7	1.7	3.0	4.0	4.0	2.7	34
14'- 1"	8'- 9"	2.8	6.0	8.0	8.0	2.0	2.0	3.2	4.0	4.0	2.7	33
14'- 3"	8'- 11"	2.6	6.0	8.0	8.0	2.3	2.3	3.6	4.0	4.0	2.7	32
14'-10"	9'- 1"	2.9	6.0	8.0	8.0	2.2	2.2	3.5	4.0	4.0	2.7	37
15'- 4"	9'- 3"	3.2	6.0	8.0	8.0	2.1	2.1	3.4	4.0	4.0	2.7	40
15'- 6"	9'- 5"	3.0	6.0	8.0	12.0	2.4	2.4	2.4	4.0	4.0	4.0	39
15'- 8"	9'- 7"	2.8	6.0	8.0	12.0	2.8	2.8	2.8	4.0	4.0	4.0	38
15'-10"	9'- 10"	2.7	8.0	8.0	14.0	1.8	3.1	2.4	5.3	4.0	4.7	35
16'- 5"	9'- 11"	3.0	8.0	8.0	14.0	1.6	2.9	2.2	5.3	4.0	4.7	41
16'- 7"	10'- 1"	2.8	8.0	8.0	14.0	2.0	3.3	2.6	5.3	4.0	4.7	40

STRUCTURAL PLATE PIPE

Dia. Inches	'H' in Feet For Bevels of			'V' in Feet For Bevels of			'X' in Feet For Bevels of			Area "A" in Sq. Ft.		
	1 1/2:1	2:1	3:1	1 1/2:1	2:1	3:1	1 1/2:1	2:1	3:1	1 1/2:1	2:1	3:1
60	6.0	6.0	8.0	4.0	3.0	2.7	0.5	1.0	1.2	0.7	2.5	3.2
66	6.0	6.0	8.0	4.0	3.0	2.7	0.8	1.2	1.4	1.5	3.7	4.6
72	6.0	8.0	12.0	4.0	4.0	4.0	1.0	1.0	1.0	2.6	3.5	2.8
78	6.0	6.0	12.0	4.0	3.0	4.0	1.2	1.2	1.2	3.9	6.7	4.2
84	6.0	8.0	12.0	4.0	4.0	4.0	1.5	1.5	1.5	5.4	5.6	5.7
90	6.0	8.0	12.0	4.0	4.0	4.0	1.8	1.8	1.8	7.1	7.3	7.5
96	8.0	8.0	16.0	5.3	4.0	5.3	1.4	2.0	1.4	4.9	9.3	5.2
102	8.0	8.0	14.0	5.3	4.0	4.7	1.6	2.2	1.9	6.7	12.0	9.2
108	8.0	8.0	14.0	5.3	4.0	4.7	1.8	2.5	2.2	8.5	13.8	11.4
114	8.0	14.0	14.0	5.3	7.0	4.7	2.1	1.2	2.4	10.7	5.0	13.8
120	8.0	14.0	18.0	5.3	7.0	6.0	2.4	1.5	2.0	13.0	6.8	10.7
126	8.0	14.0	18.0	5.3	7.0	6.0	2.6	1.8	2.2	15.5	8.9	13.1
132	12.0	14.0	18.0	8.0	7.0	6.0	1.5	2.0	2.5	6.9	11.1	15.7
138	12.0	16.0	24.0	8.0	8.0	8.0	1.8	1.8	1.8	9.1	9.3	9.5
144	12.0	12.0	20.0	8.0	6.0	6.7	2.0	3.0	2.6	11.4	21.2	18.2
150	12.0	16.0	24.0	8.0	8.0	8.0	2.2	2.2	2.2	14.0	14.2	14.5
156	12.0	16.0	24.0	8.0	8.0	8.0	2.5	2.5	2.5	16.8	17.0	17.3
162	12.0	16.0	24.0	8.0	8.0	8.0	2.8	2.8	2.8	19.6	20.1	20.4
168	14.0	14.0	22.0	9.3	7.0	7.3	2.4	3.5	3.3	15.8	29.1	27.4
174	14.0	14.0	24.0	9.3	7.0	8.0	2.6	3.8	3.2	18.8	32.8	26.9
180	12.0	16.0	24.0	8.0	8.0	8.0	3.5	3.5	3.5	31.1	30.3	30.7



* For elliptical pipe, increase vertical dimensions by percent of ellipse.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CULVERT BEVELS

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

Adoption Date: 02/08/2019

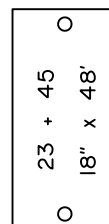
Last Code and Stds. Review
By: Date:
Next Code and Standards Review date: 02/08/2029

D-07.00

GENERAL NOTES:

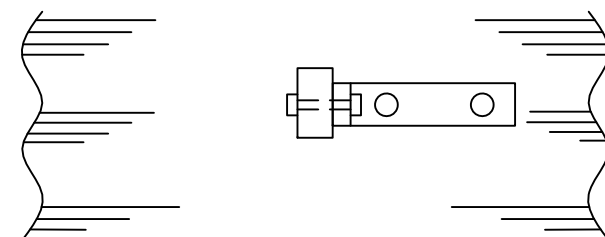
- Culvert marker post shall be installed with galvanized steel hardware meeting the following requirements: Galvanizing for nuts and washers shall meet the requirements of ASTM A-153, Class C. Galvanizing for steel mounting supports shall meet the requirements of MIL-P-26915A, or ASTM A-153, Class C.

Sta. and size of Culvert to be stamped into a 2"x4"x0.064" thick brass plate, fastened, with No. 8 round head brass screws, to the marker post as shown. Plate to be on side of post facing traffic.



DIRECTION OF TRAFFIC

Shoulder of Road

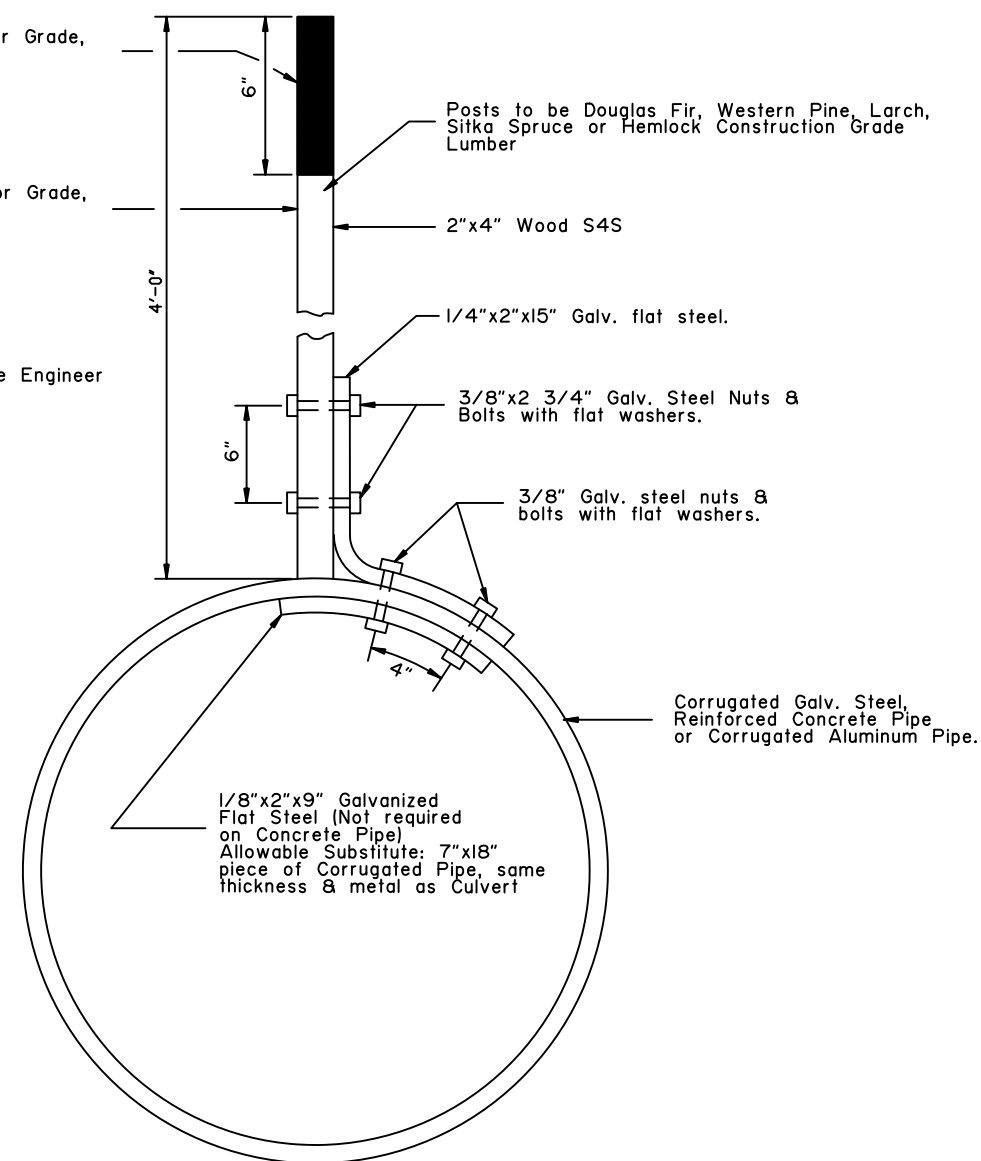


TOP VIEW

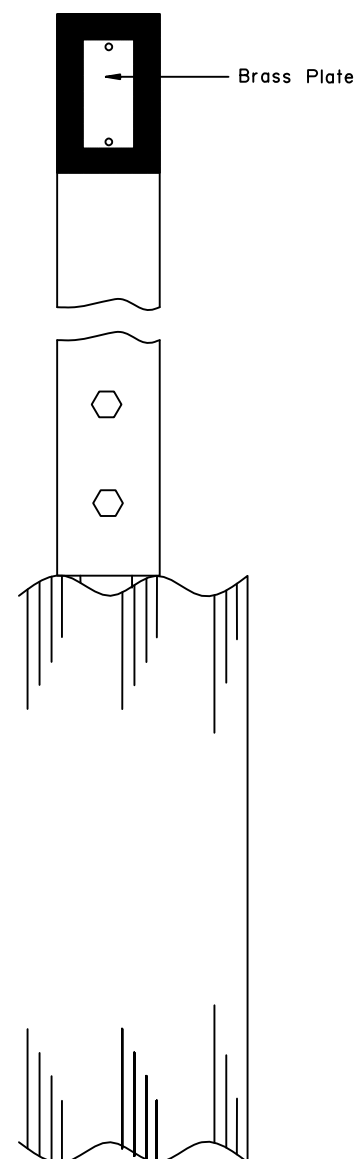
* Black Paint, Exterior Grade,
Semi Gloss Enamel.

* White Paint, Exterior Grade,
Semi Gloss Enamel

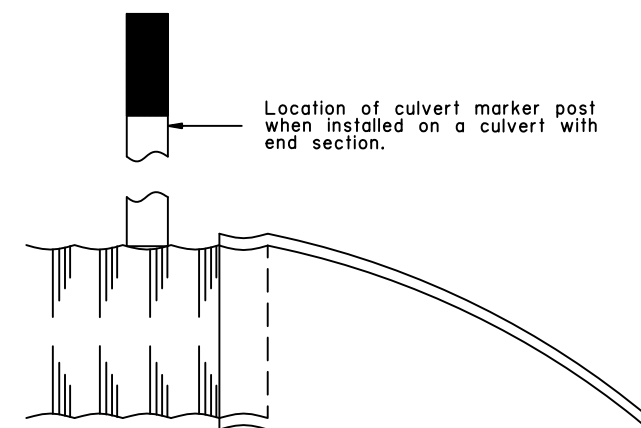
* As approved by the Engineer



END VIEW



SIDE VIEW



END SECTION SIDE VIEW

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CULVERT MARKER POST

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

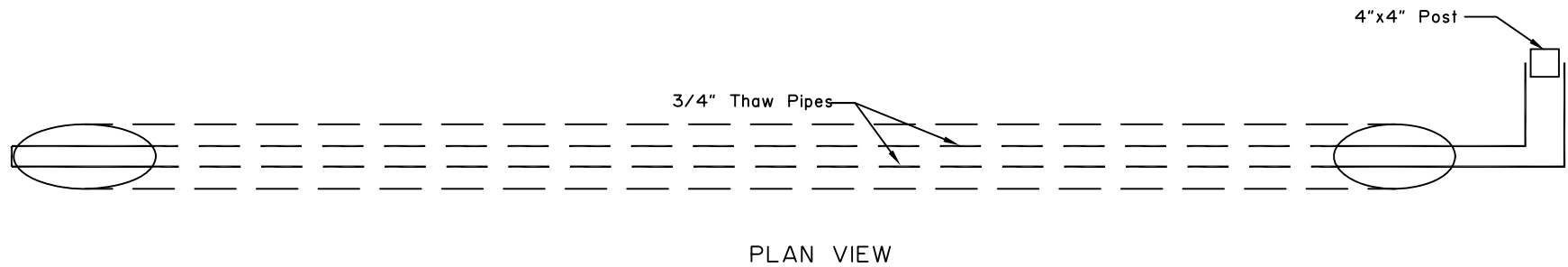
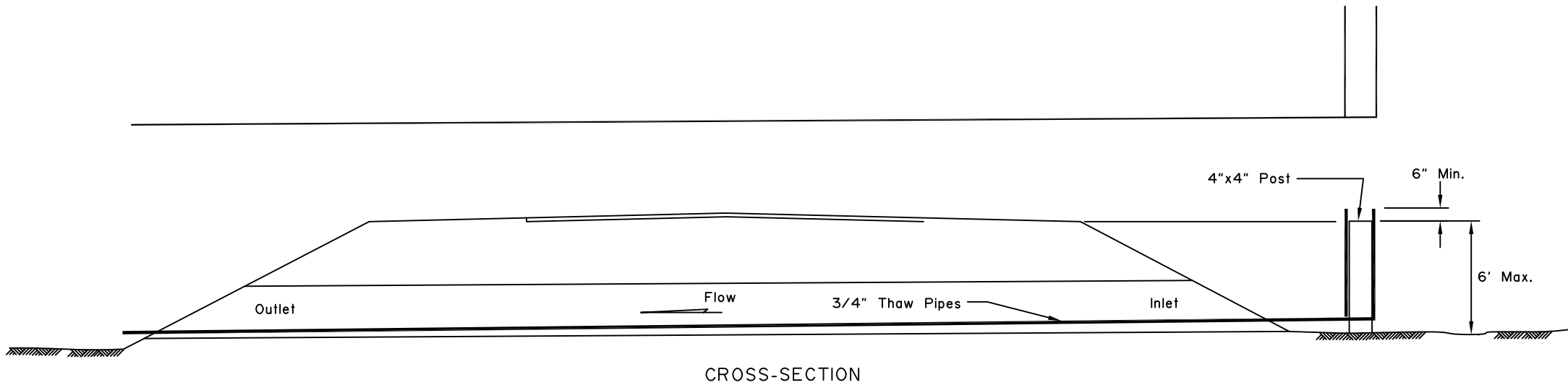
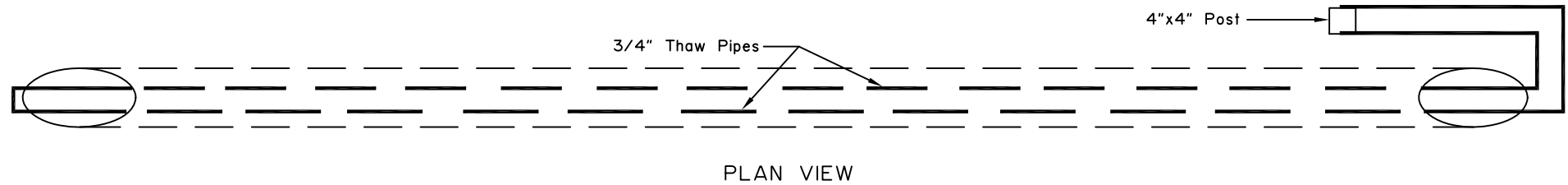
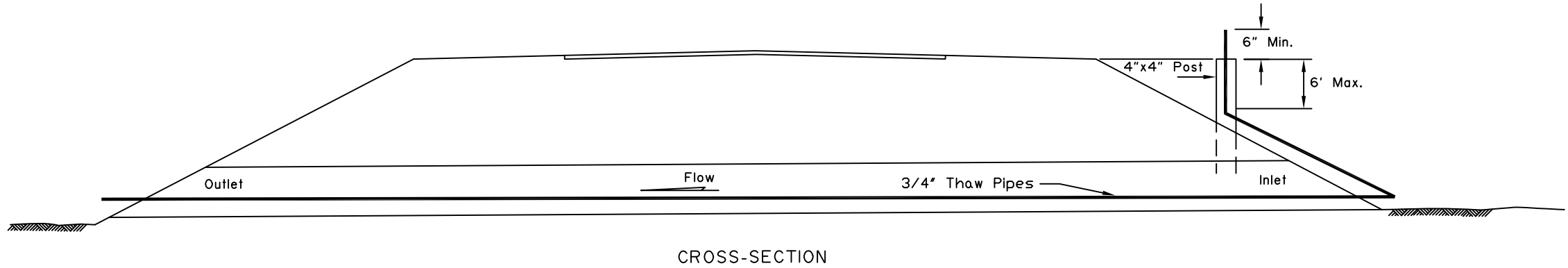
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

1. 3/4" main line and standpipes to be liquid tight and filled with 50-50 antifreeze.
2. Standpipe support posts to be installed not more than 6'-0" below shoulder.
3. Thaw pipes to be attached to culvert at inlet and outlet ends and to post.



State of Alaska DOT&PF
ALASKA STANDARD PLAN
CULVERT CIRCULATING
THAW PIPE

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

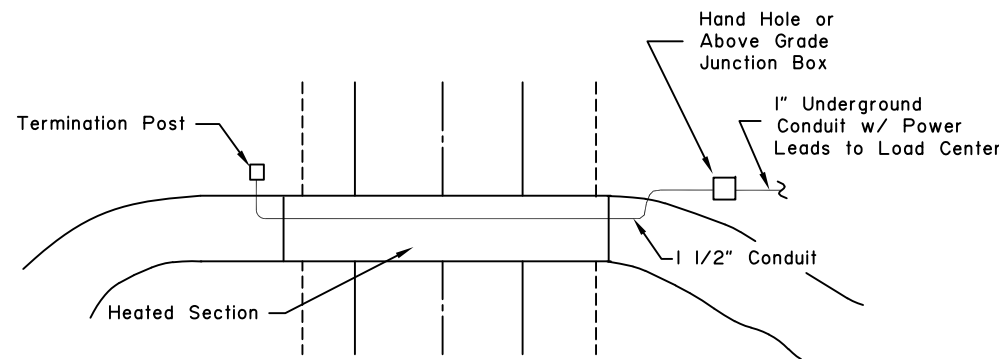
Adoption Date: 02/08/2019

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By: Date:

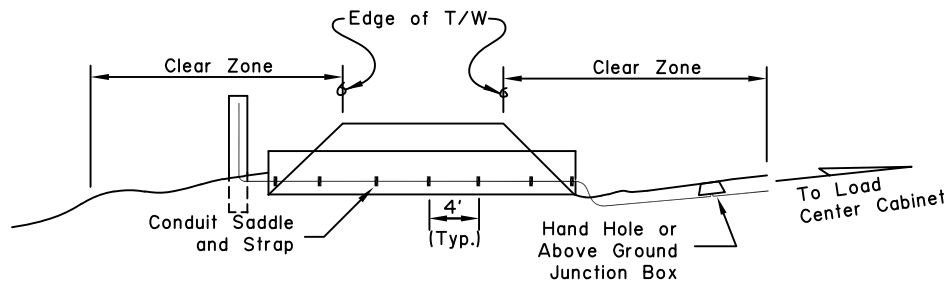
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

1. Load Center Cabinet shall be located outside of the clear zone and above high water.
2. Caution Sign shall be mounted to the side of treated posts facing highway at the culvert entry and exit and at the Loadcenter Cabinet.
3. See Alaska Highway Preconstruction Manual for 'Clear Zone' requirements.
4. Junction boxes shall be used in place of hand holes at wet locations and shall be mounted at 48" or at 24" above high water if greater than 48".

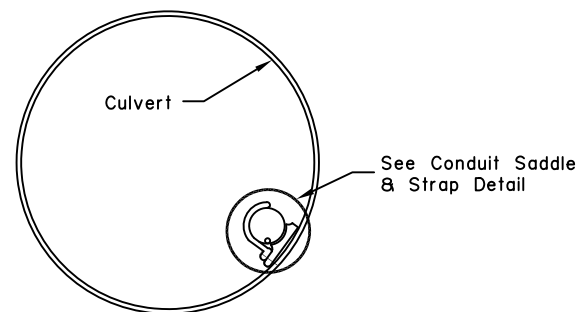


PLAN

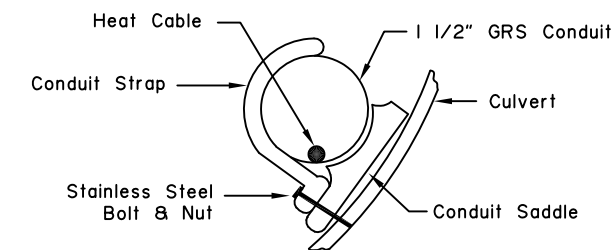


PROFILE

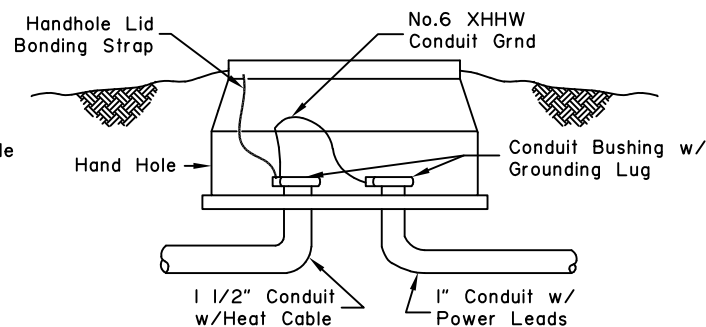
TYPICAL SITE PLAN



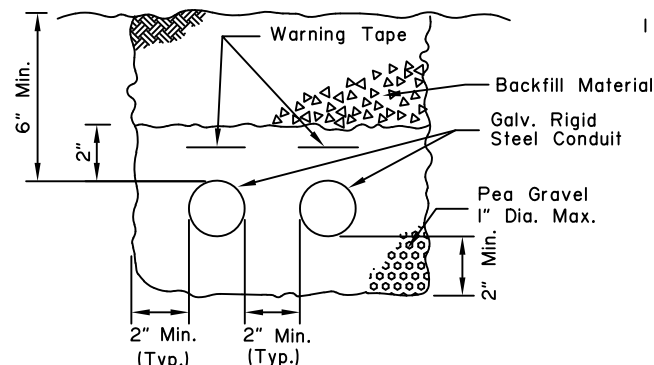
CULVERT CROSS SECTION



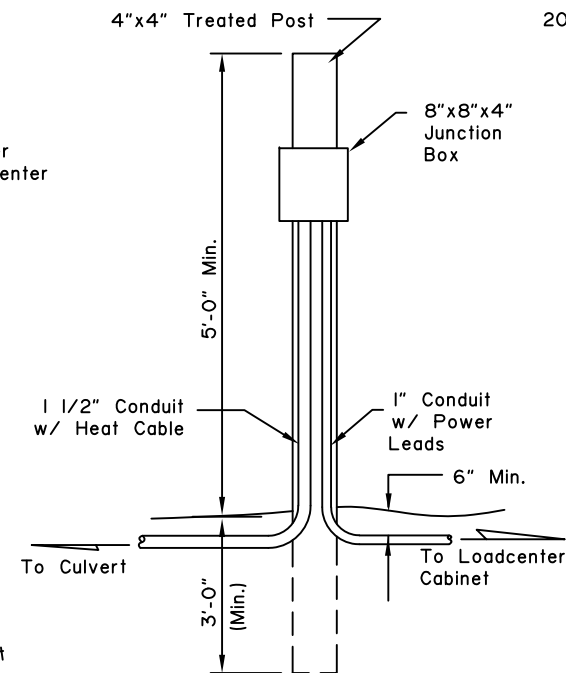
CONDUIT SADDLE & STRAP DETAIL



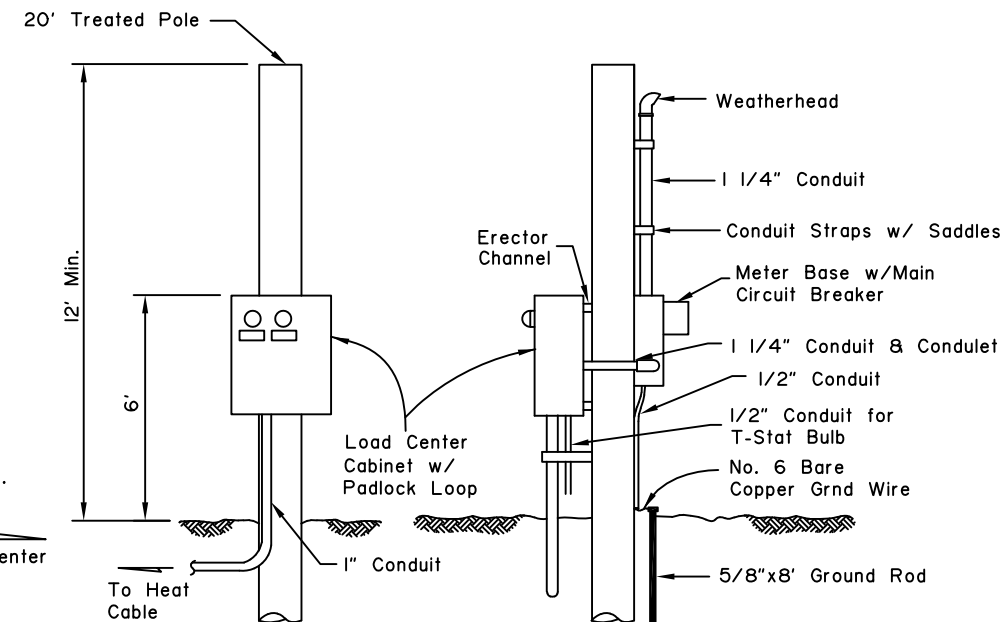
HAND HOLE DETAIL



POWER LEAD TRENCH SECTION



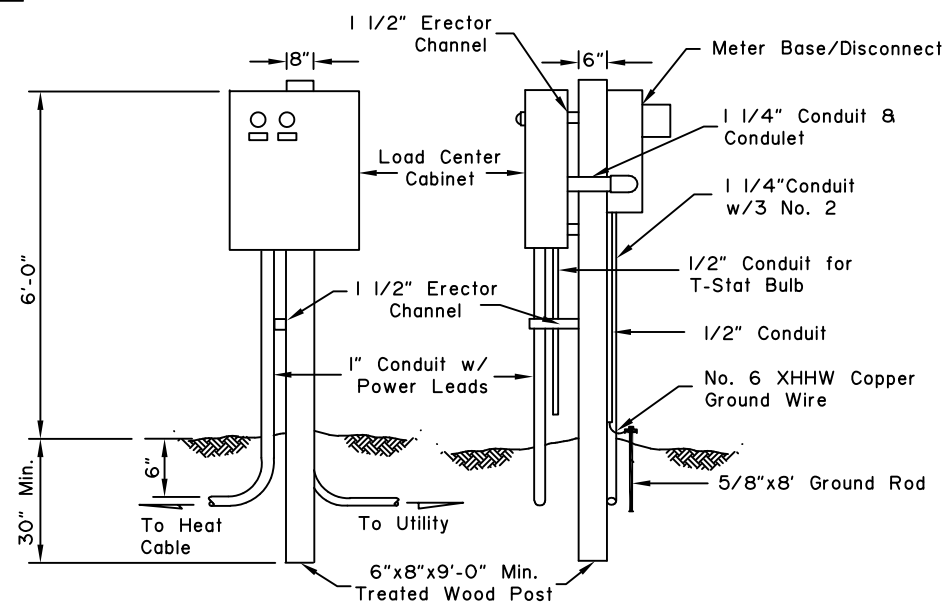
ABOVE GRADE JUNCTION BOX



FRONT VIEW

PROFILE VIEW

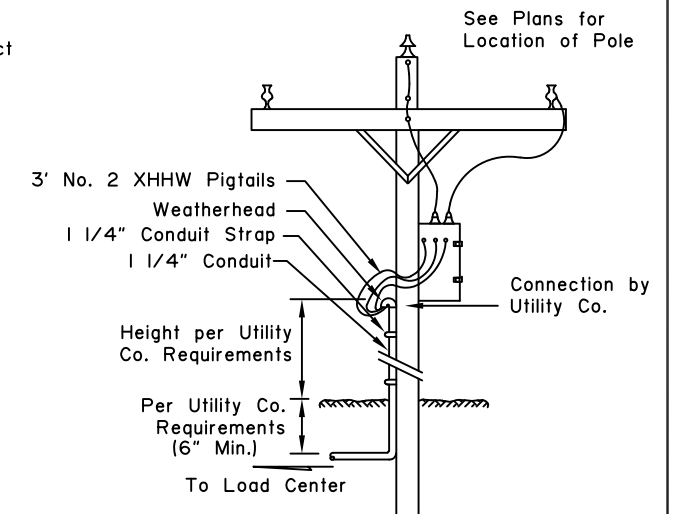
OVERHEAD SERVICE DETAIL



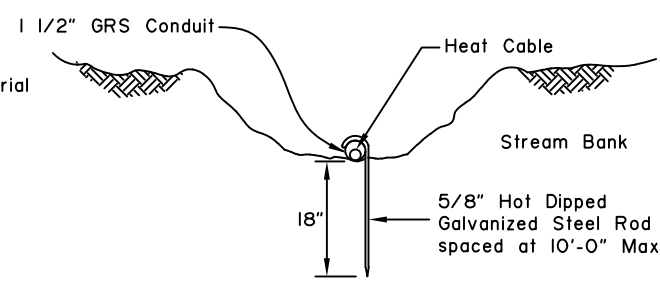
FRONT VIEW

PROFILE VIEW

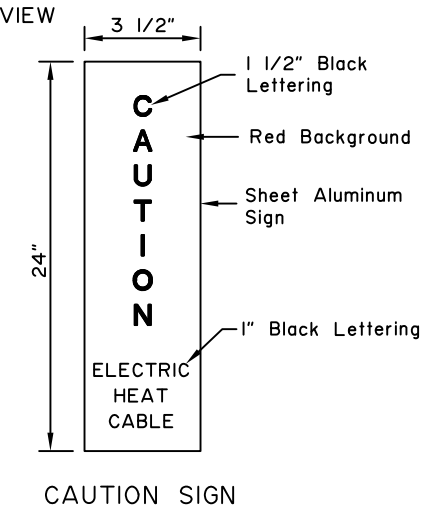
UNDERGROUND SERVICE DETAIL



UNDERGROUND SERVICE POLE RISER DETAIL



HEAT CABLE TRENCH DETAIL



CAUTION SIGN

State of Alaska DOT&PF ALASKA STANDARD PLAN

CULVERT THAW WIRE INSTALLATION

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

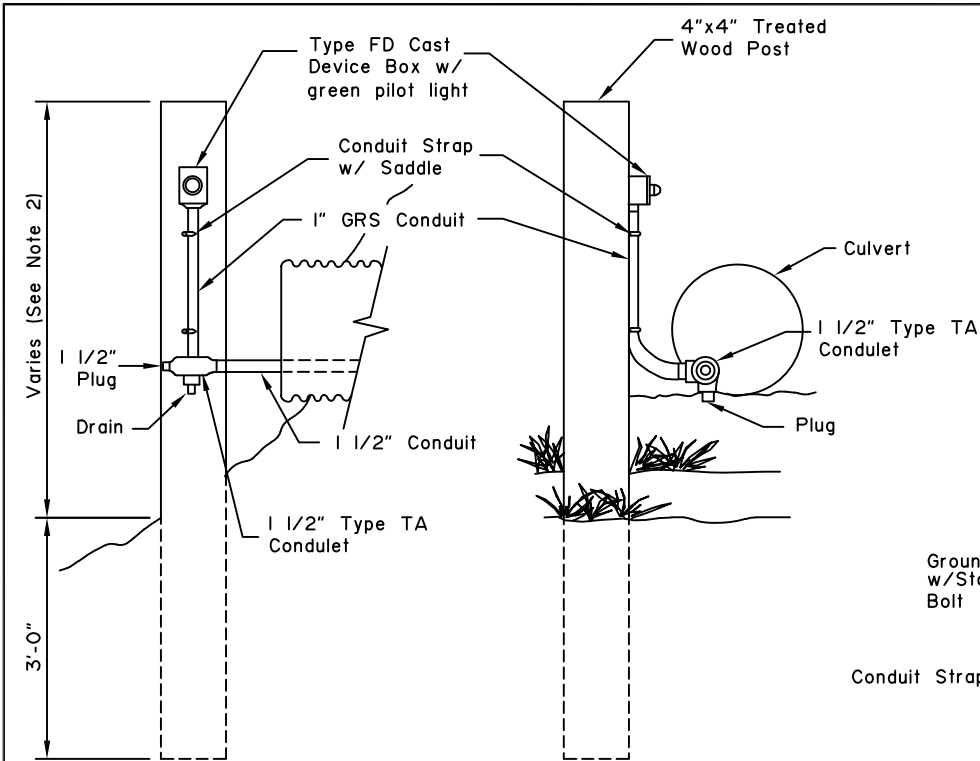
Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:

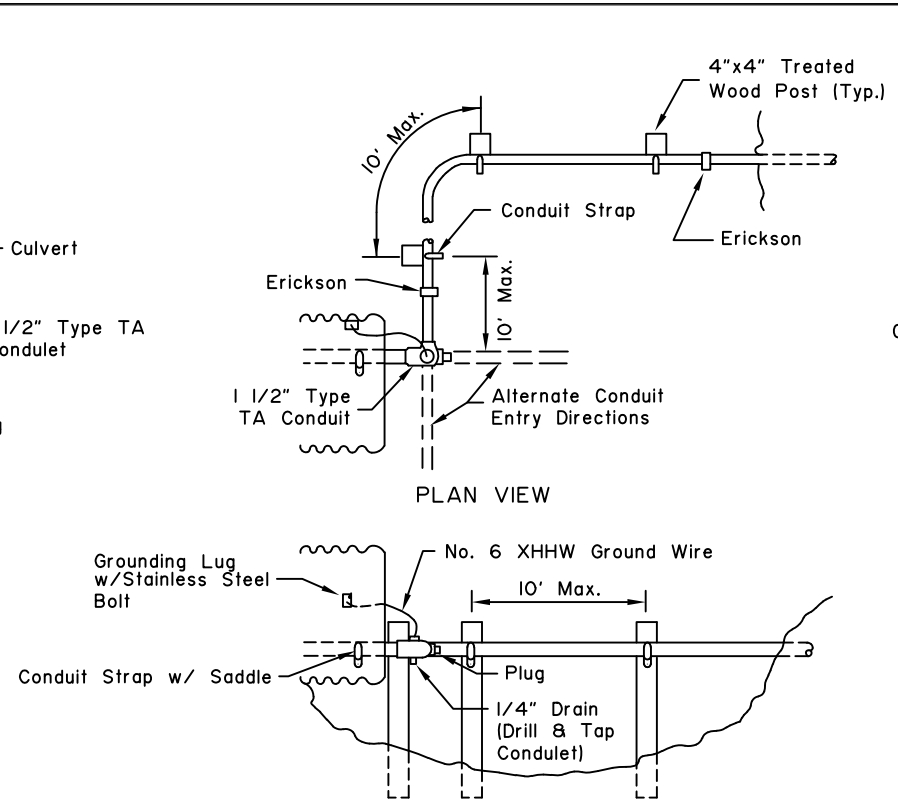
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

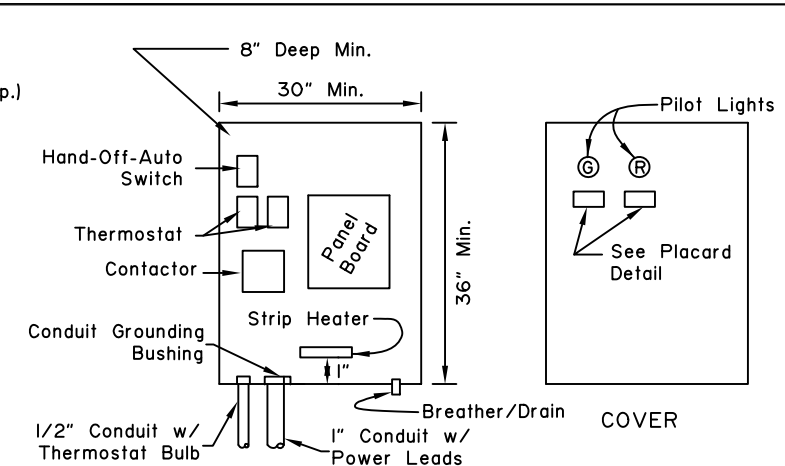
1. Loadcenter Cabinet panel face shall be placed parallel with the highway.
2. Type FD Cast Device Box w/green pilot light on the termination post shall be located a minimum of 6" above high water.



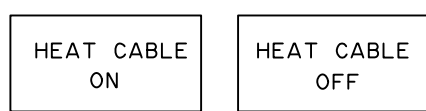
FRONT VIEW
PROFILE VIEW
TERMINATION POST DETAIL



PLAN VIEW
ELEVATION
CULVERT ENTRY DETAIL



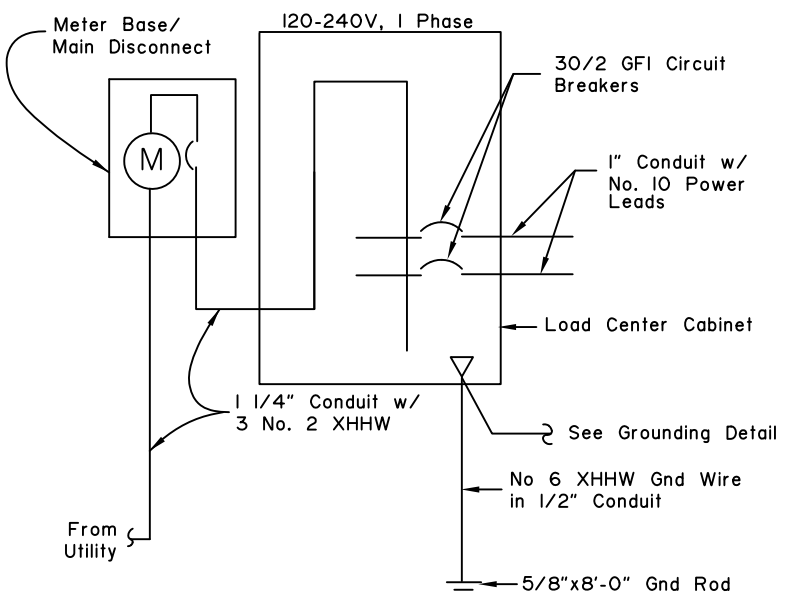
LOAD CENTER CABINET
(NEMA 4 Cabinet w/ Drip Shield)



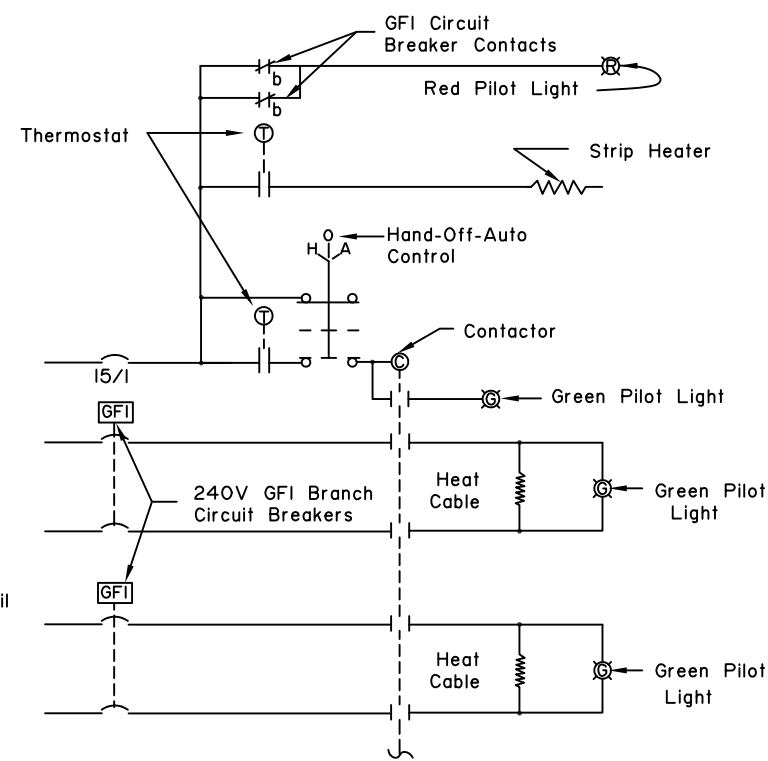
PLACARD DETAIL

SIZE	MAX. LENGTH
15/2	175 Ft.
20/2	240 Ft.
30/2	320 Ft.
40/2	415 Ft.

CIRCUIT BREAKER
SIZING TABLE

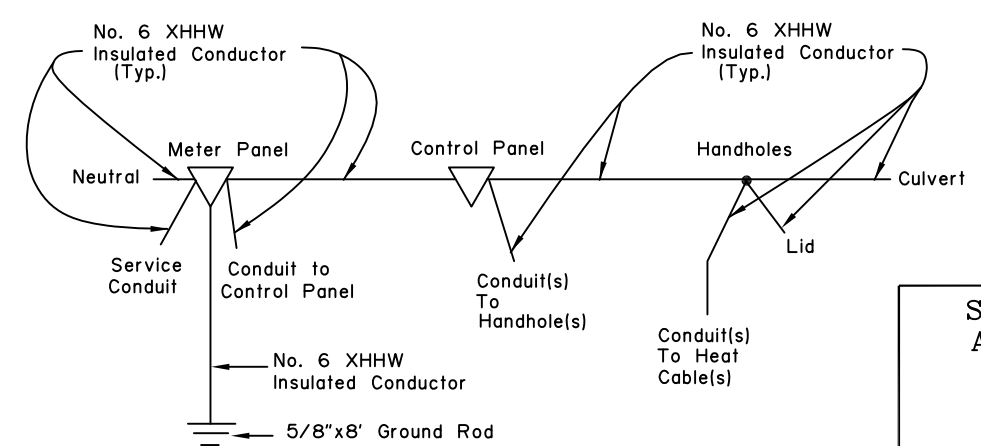


SINGLE LINE DIAGRAM



CONTROLS DIAGRAM

NOTE: May use same scheme
for other quantities of
Heat Cable Circuits.



GROUNDING DETAIL

State of Alaska DOT&PF
ALASKA STANDARD PLAN
CULVERT THAW
WIRE INSTALLATION

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

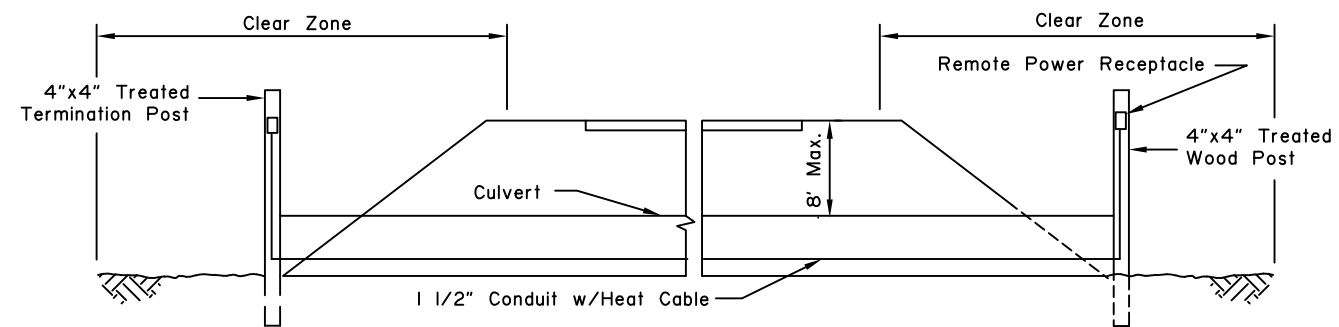
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

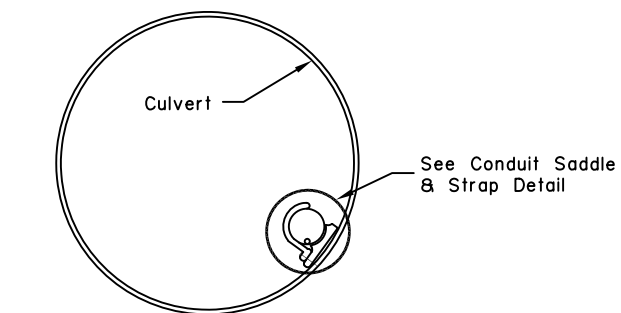
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

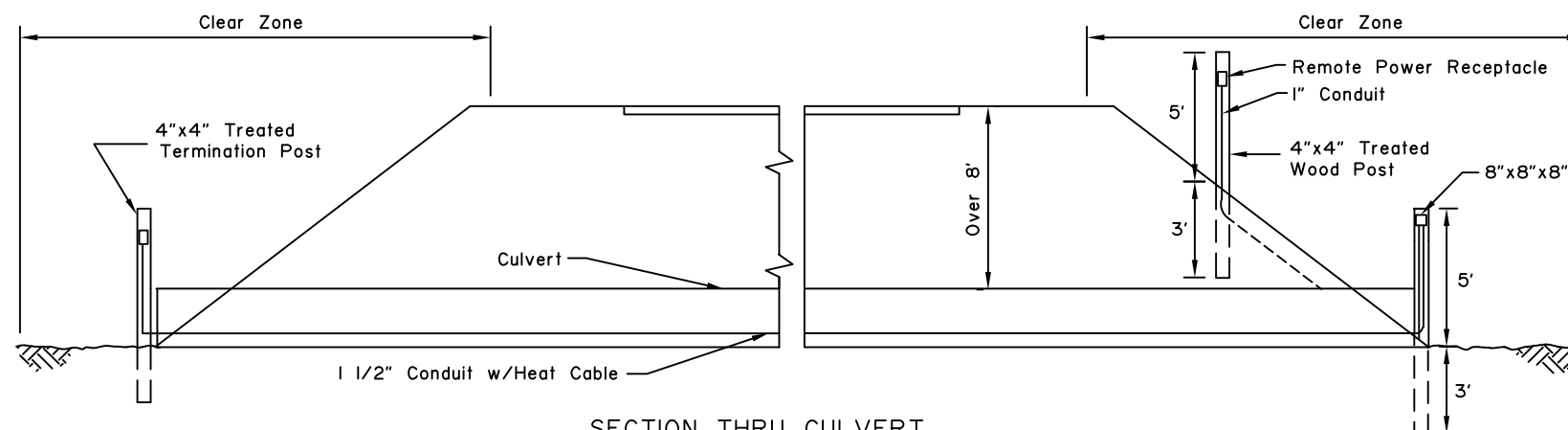
1. Type FD Cast Device Box w/green pilot light on the termination post shall be located a minimum of 6" above high water.



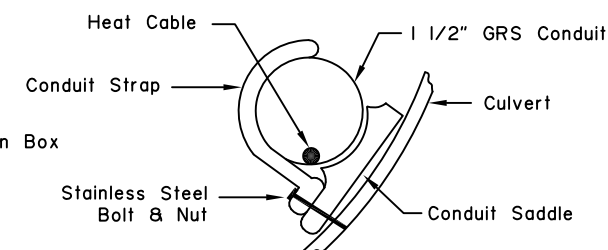
SECTION THRU CULVERT
(Low Fill)



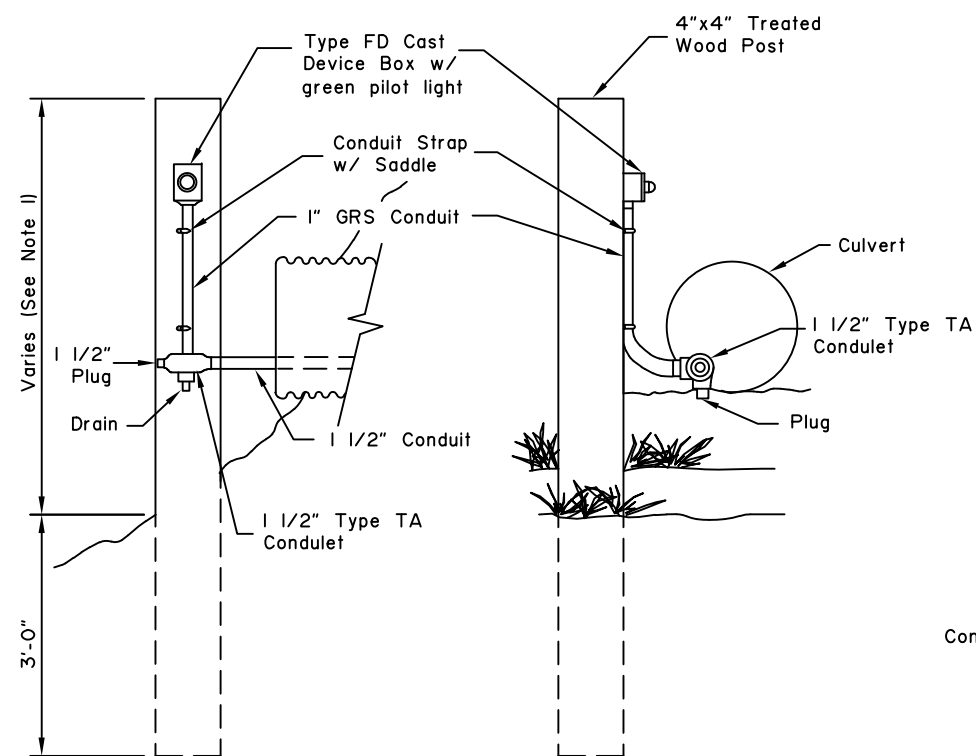
CULVERT CROSS SECTION



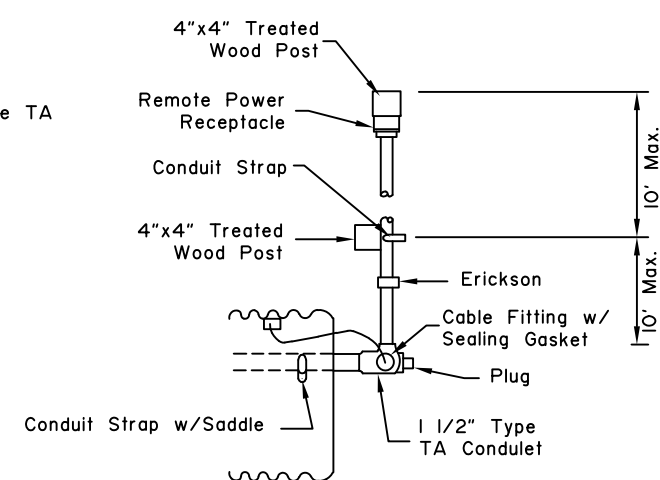
SECTION THRU CULVERT
(High Fill)



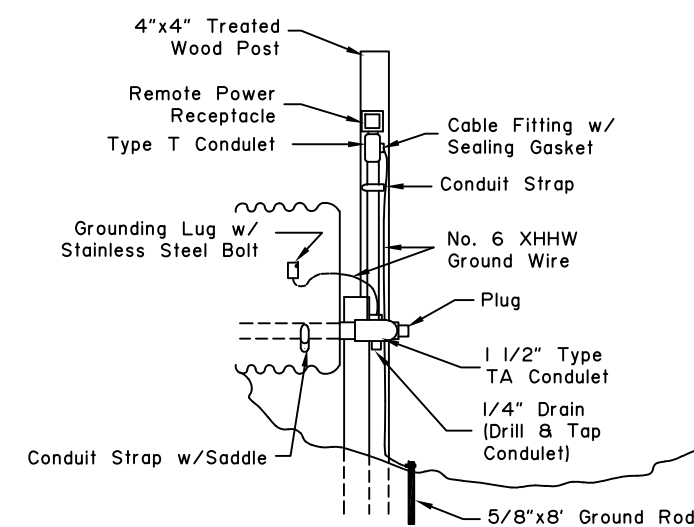
CONDUIT SADDLE &
STRAP DETAIL



FRONT VIEW
PROFILE VIEW
TERMINATION POST DETAIL



PLAN VIEW



ELEVATION

REMOTE CULVERT ENTRY DETAIL

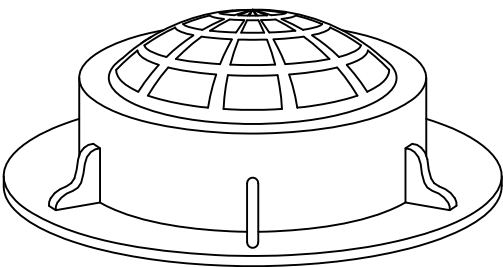
State of Alaska DOT&PF ALASKA STANDARD PLAN REMOTE THAW WIRE INSTALLATION

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

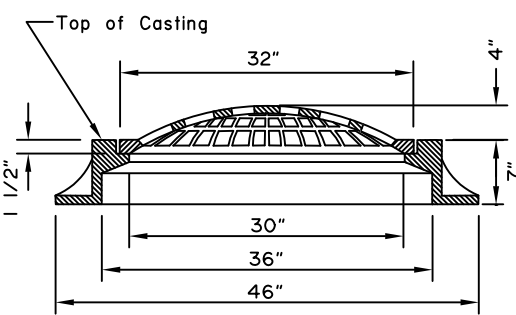
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

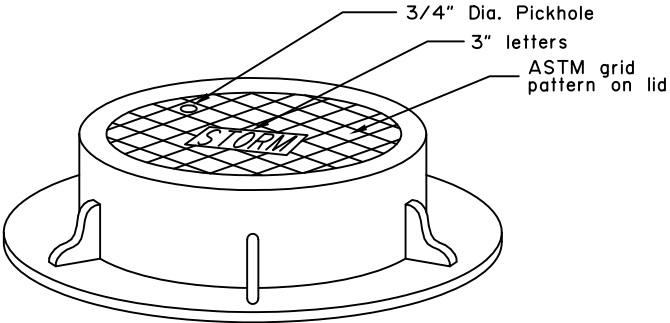


Surround field inlets with a 24" wide rock rubble collar
10" deep, 3" maximum size rock.



FIELD INLET FRAME & GRATE

To be supplied for storm drain manholes
where field inlets are specified.
Field inlet frame and grate shall have
a Minimum total weight of 525 lb.

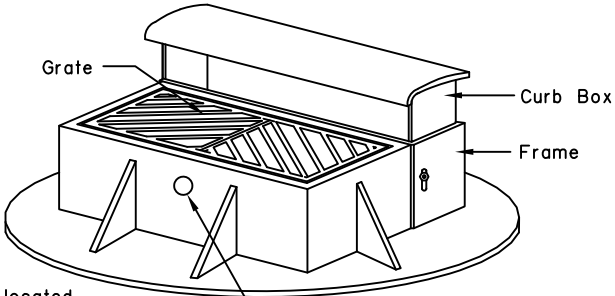


MANHOLE LID FRAME AND GRATE

NOTES:

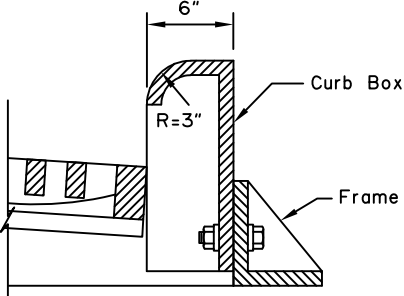
1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers, except that inlet grate shall be within ¼"± of dimensions shown on this drawing.
2. Manhole lids shall be 32" in diameter and may be used with field inlet frames.
3. Type A field inlet frame inside dimensions shall be 24" x 36". Lugs will not protrude outside the concrete surface of the inlet box.
4. Grates shall be bicycle safe. Where high capacity grates are called for on the plans, they shall conform to Std. Dwg. D-25.
5. Frame and grate casting types are identified by the following abbreviations:

C.I. = Curb Inlet
F.I. = Field Inlet
M.H. = Manhole
6. Flowline depression shall conform to Std. Dwg. D-23 for an on grade or sag point conditions.
7. These are the default frames and grates to be used unless shown otherwise on the drainage plans or drainage structure summary.

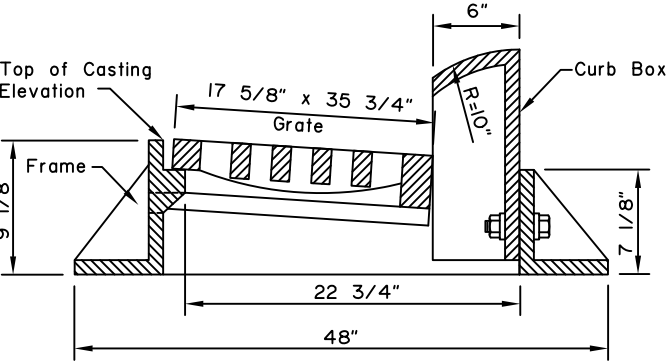


Pickhole located
3" from the top of frame

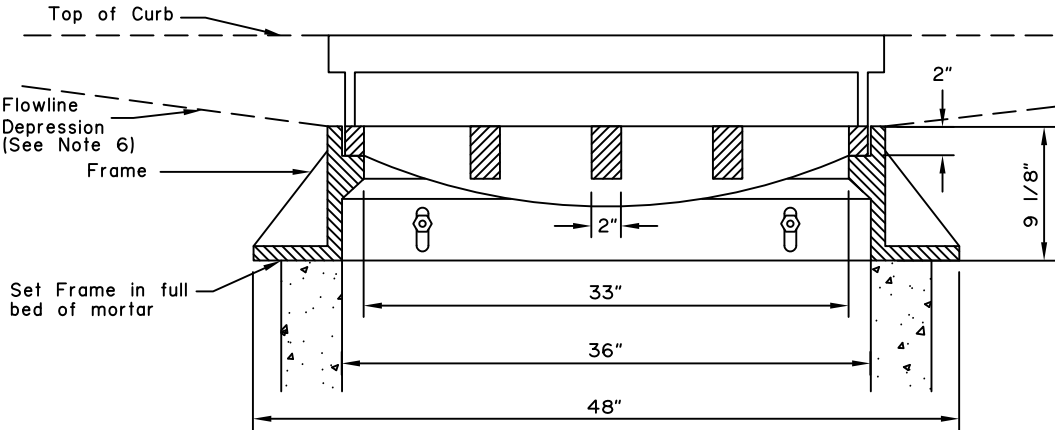
NOTE:
Curb Box, Grate and frame shall have a minimum
total weight of 725 lb.



SIDE VIEW
MOUNTABLE CURB AND GUTTER



SIDE VIEW
EXPRESSWAY CURB AND GUTTER



FRONT VIEW

CURB INLET FRAME AND GRATE

To be supplied for storm drain manholes Type I, Type II and Type III
where curb inlets are specified.

REQUIRED FRAME AND GRATES
(See Note 7)

STRUCTURE	INLET TYPE	CURB TYPE	TYPE FRAME AND GRATE
INLET BOX, TYPE A	Curb	Mountable	Standard Curb Inlet
	Curb	Expressway	Mountable Curb Inlet
	Curb	Rolled Curb	Depressed Inlet
	Field	-----	Field Inlet
STORM DRAIN MANHOLES, TYPE I, II AND III	Curb	Mountable	Mountable Curb Inlet
	Curb	Expressway	Expressway Curb Inlet
	Curb	Rolled Curb	Depressed Inlet
	Field	-----	Field Inlet
	Manhole Lids	-----	Field Inlet Frame, Solid MH. Lid

State of Alaska DOT&PF
ALASKA STANDARD PLAN
STORMDRAIN MANHOLE
FRAME AND GRATE
DETAILS

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

Adoption Date: 02/08/2019

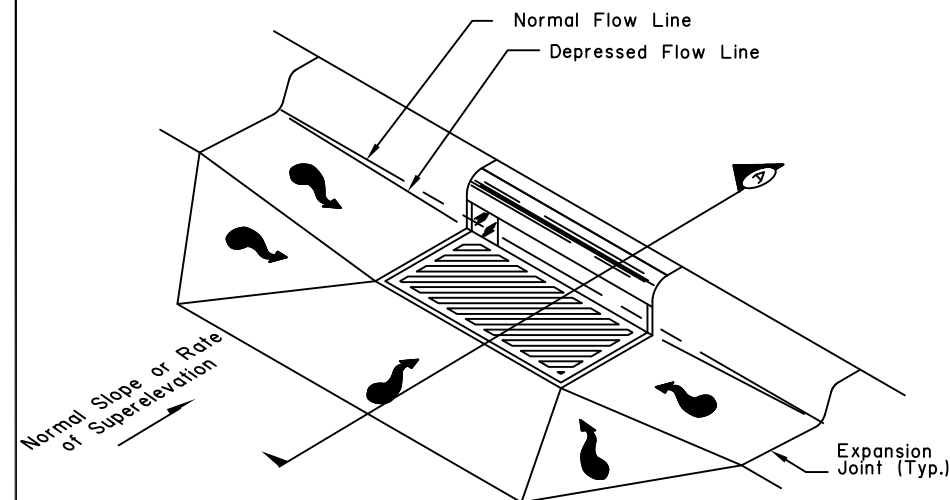
Last Code and Stds. Review
By: Date:

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

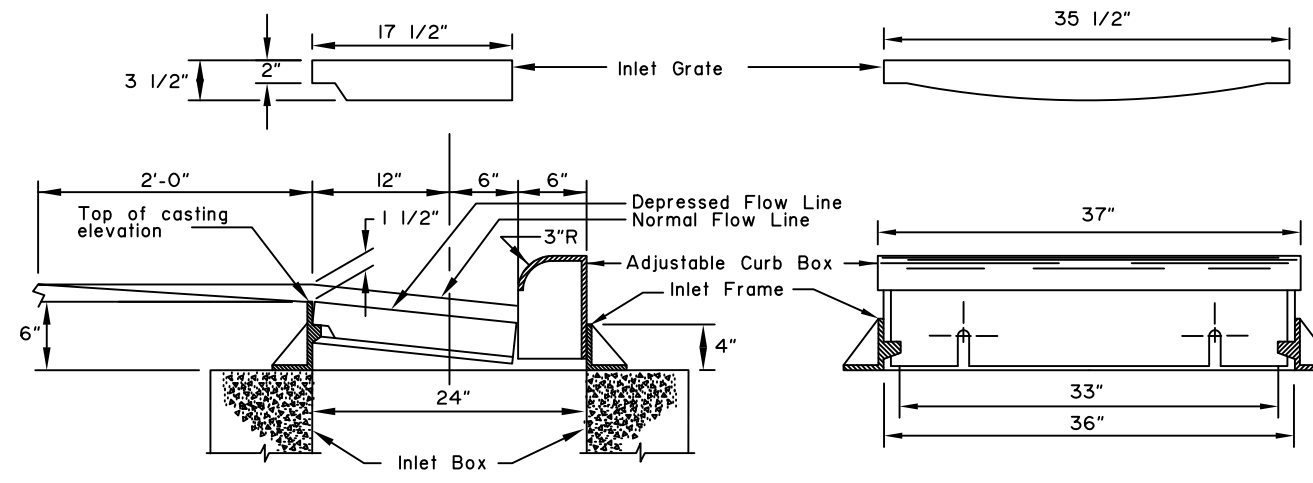
NOT TO SCALE

GENERAL NOTES:

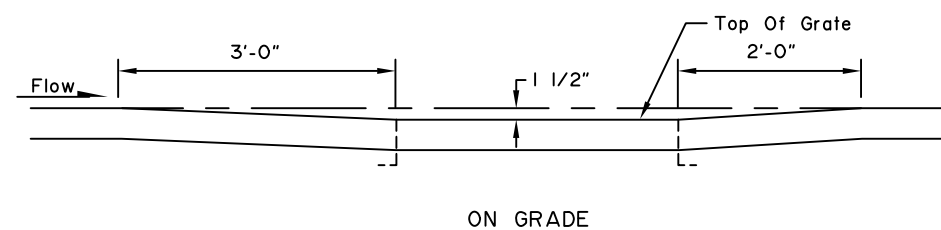
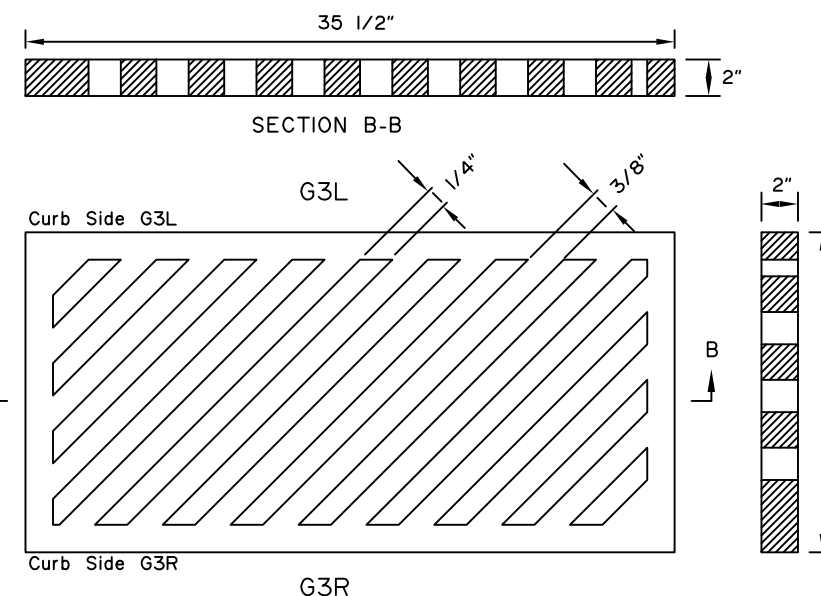
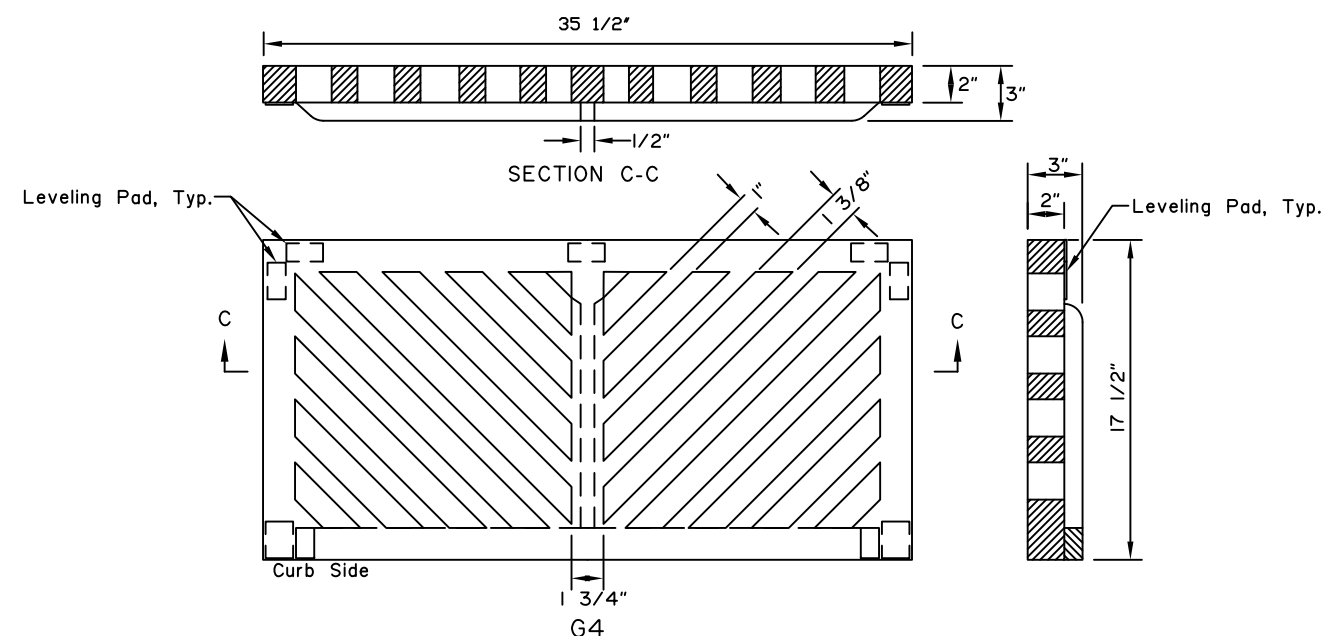
1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers.
2. Minimum casting weight shall be 330 lbs for Curb Inlet Frame with Curb Box and 200 lbs. for Inlet Grate.
3. The outside dimensions of Inlet Grate shall be 35 1/2" x 17 1/2" and all grates shall be interchangeable.
4. Minimum drainage area of Inlet Grate shall be 255 square inches.
5. Inlet Grate type G-3R or G-3L shall be used in all cases except where drainage is from both directions, in which case type G-4 shall be used.



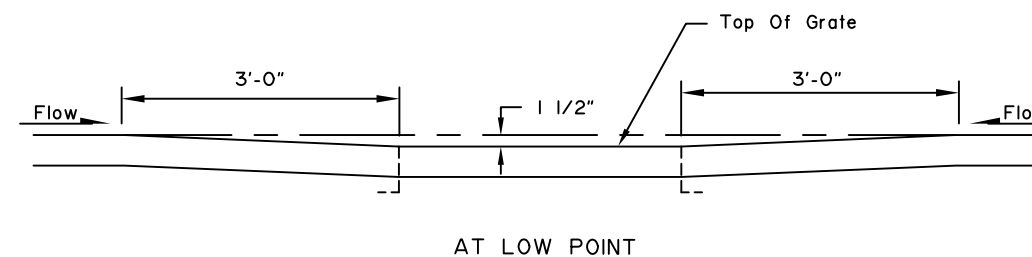
STANDARD CURB INLET INSTALLATION



SECTION A



DEPRESSION IN FLOW LINE AT INLET CONSTRUCTION DETAILS



NOT TO SCALE

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CURB INLET BOX, FRAME & GRATE

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

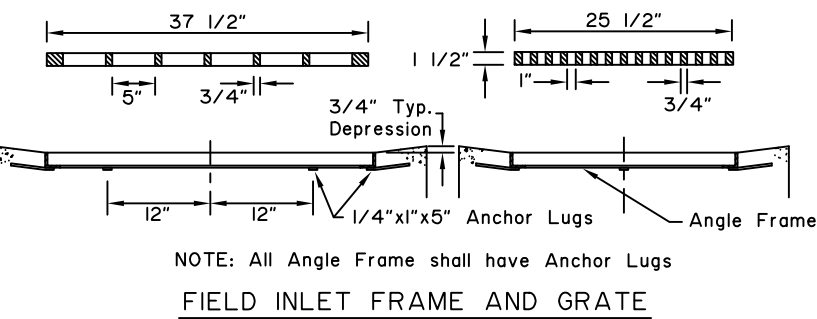
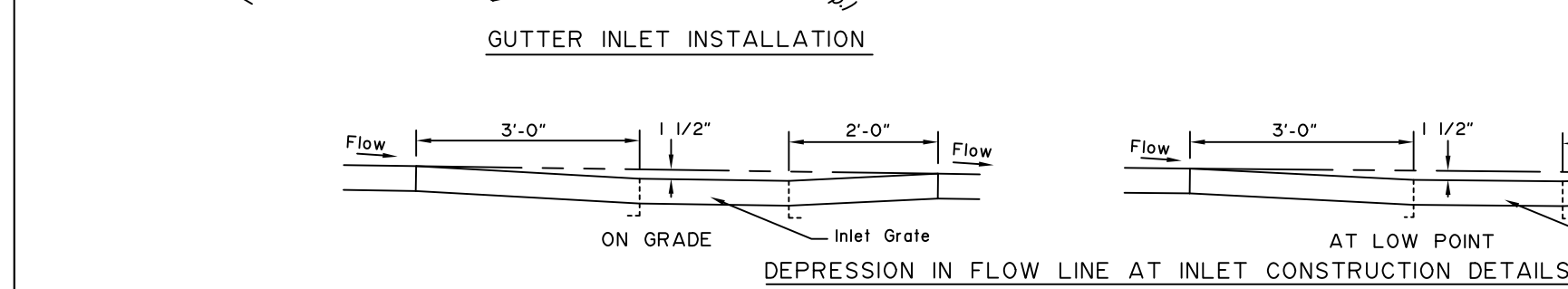
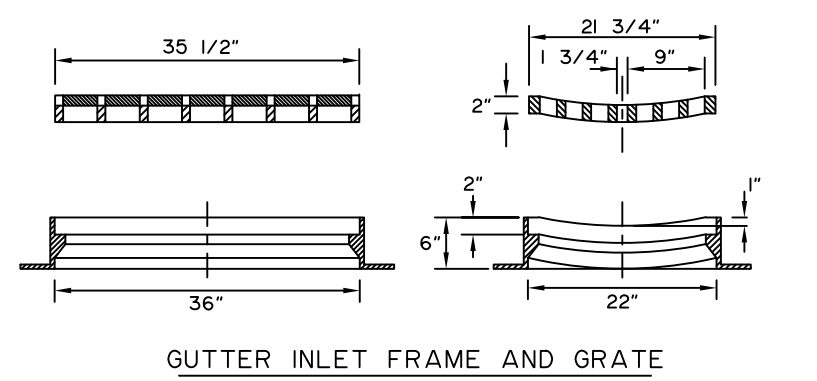
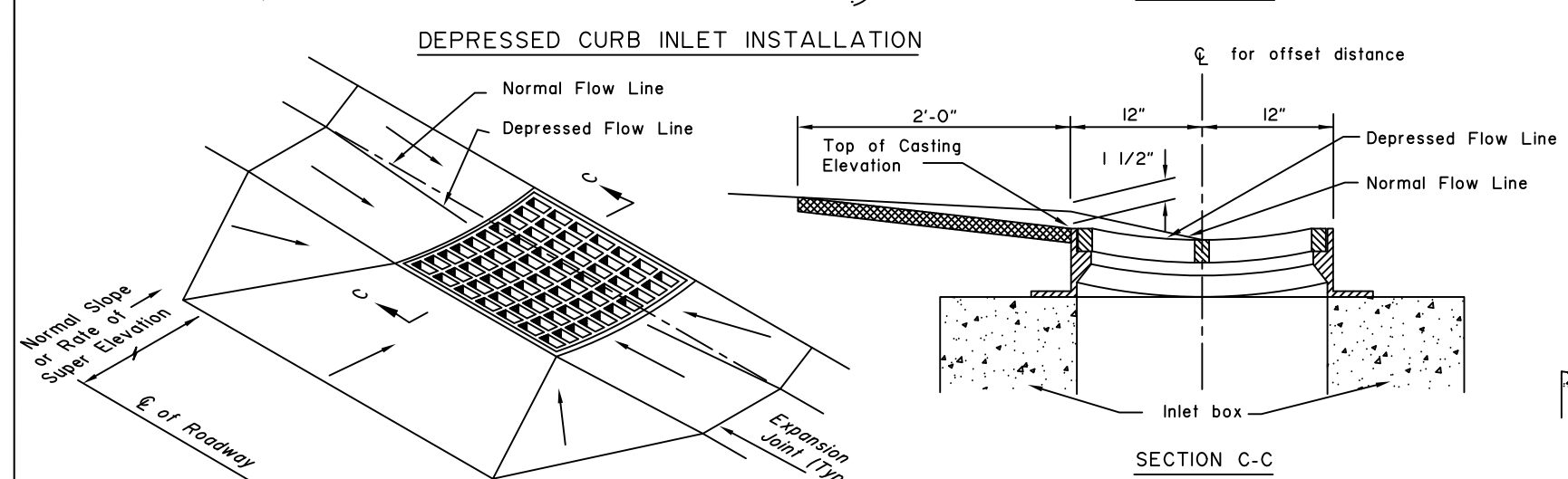
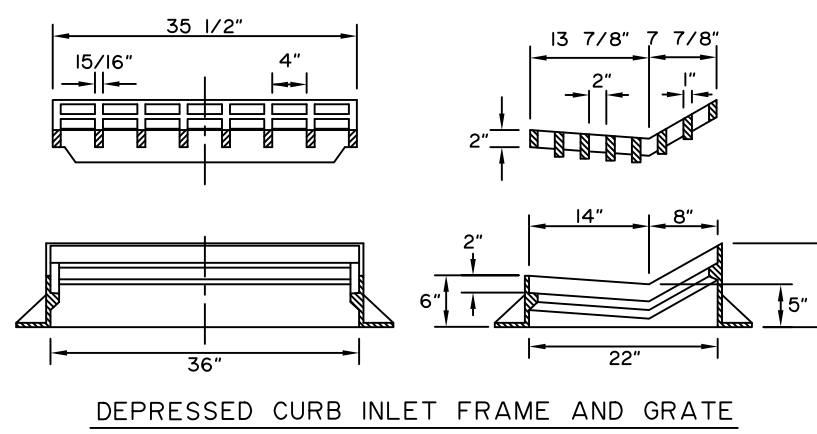
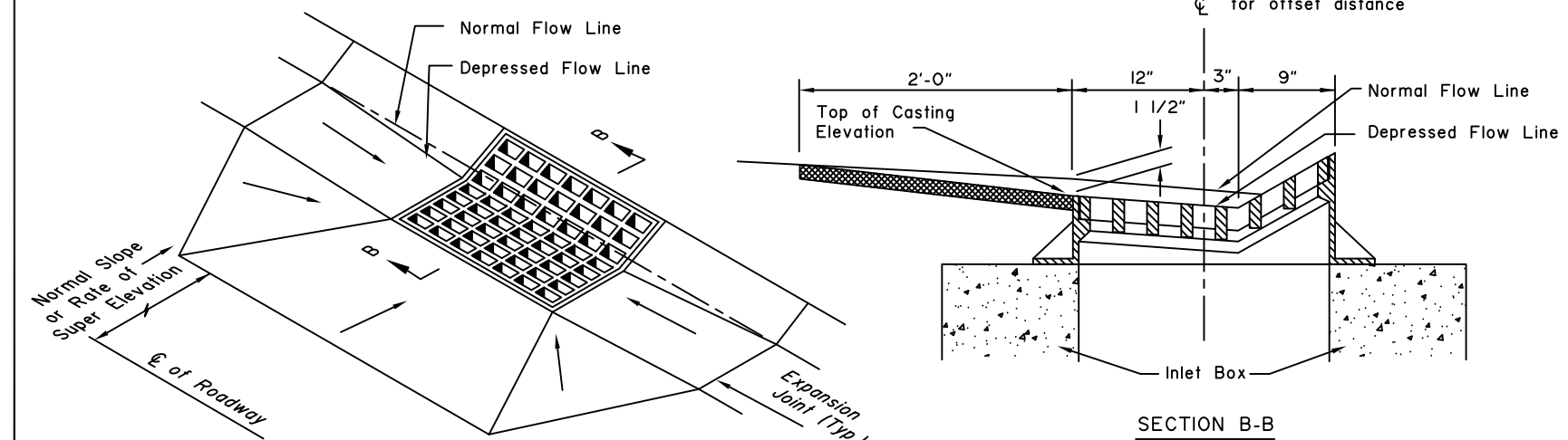
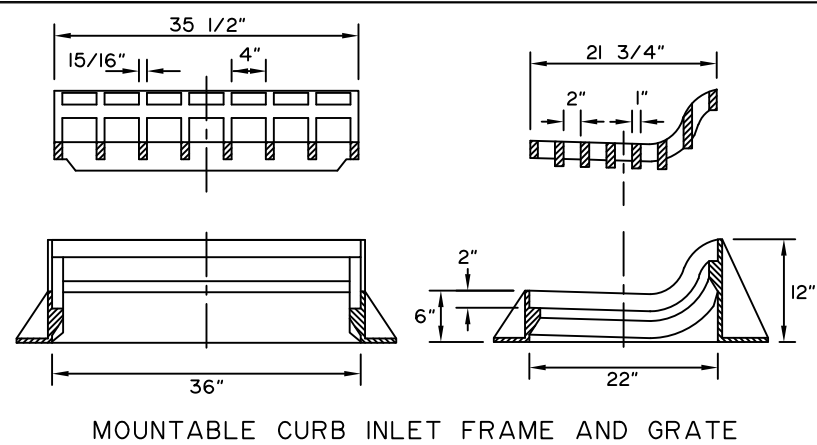
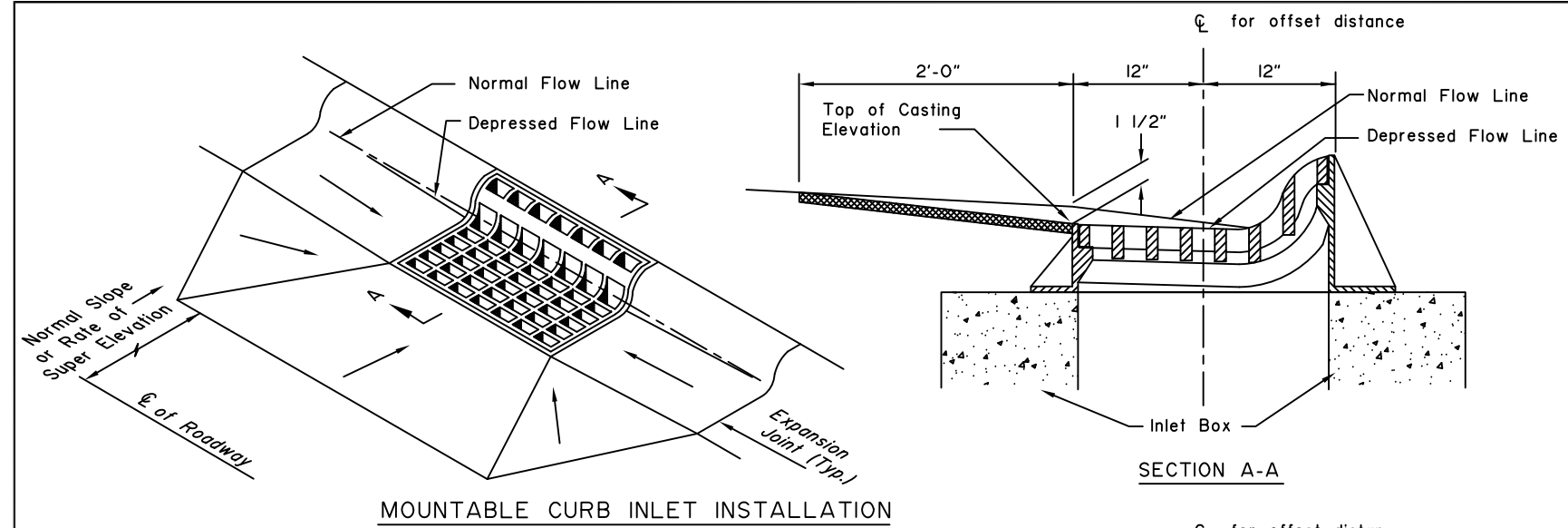
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers. Except inlet grate outside dimension shall be as shown on this drawing.
2. Minimum casting weight shall be 550lbs. for Curb Inlet Frame and Grate, 450lbs. for Gutter Inlet Frame and Grate, and 300lbs. for Field Inlet Frame and Grate.
3. Field Inlet Frame may be welded assembly of L 1 3/4"x1 3/4"x1/4" angle equivalent to ASTM A-36 steel.



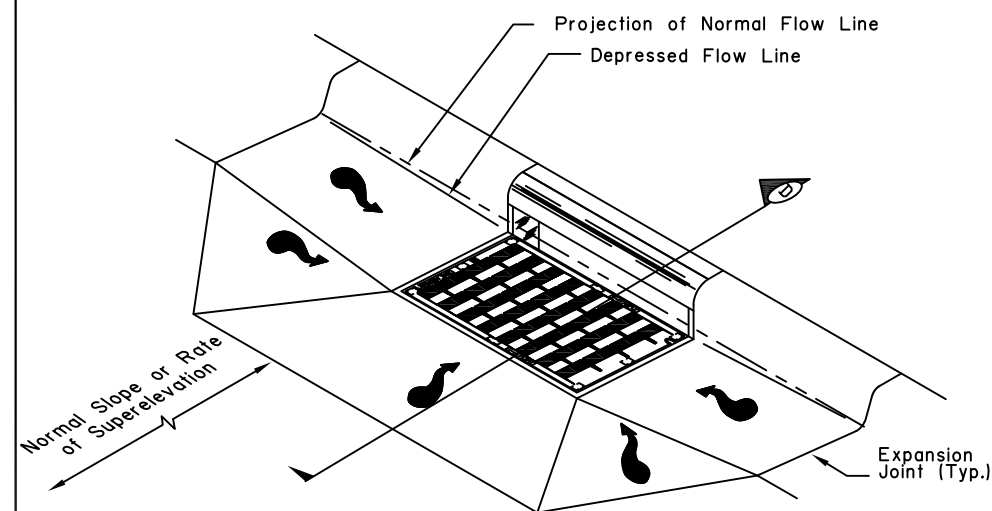
State of Alaska DOT&PF ALASKA STANDARD PLAN INLET FRAMES AND GRATES

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

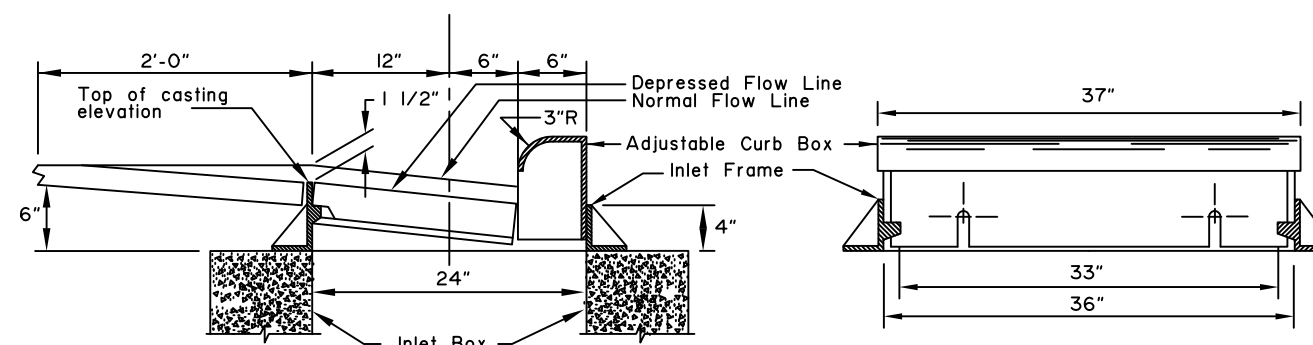
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



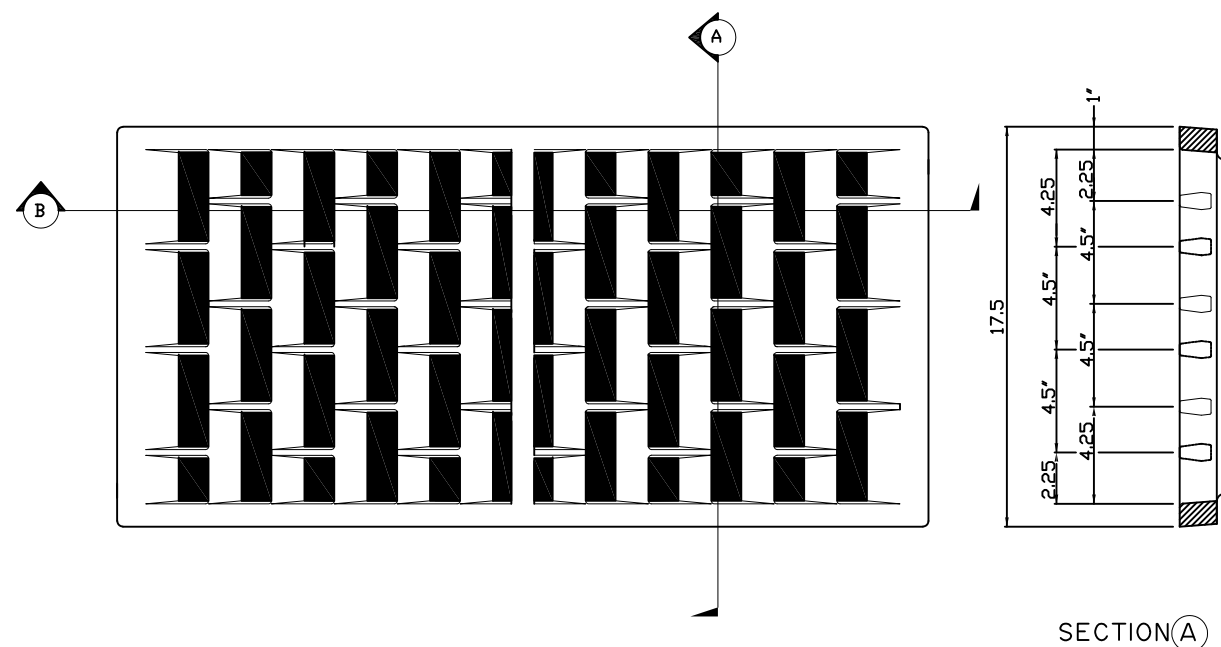
STANDARD CURB INLET INSTALLATION



SECTION D

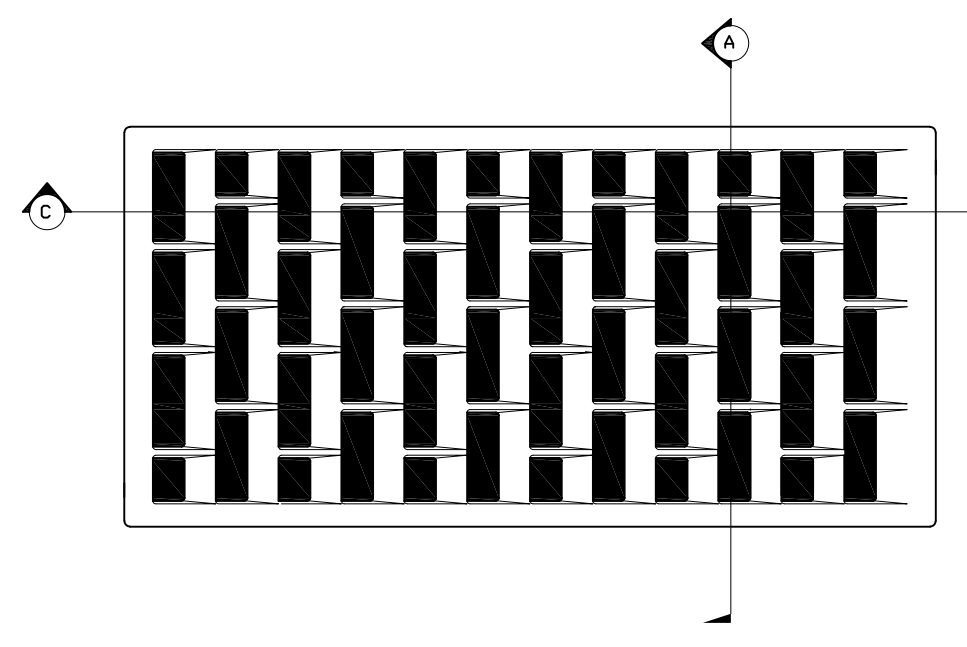
NOTES:

- Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers.
- Minimum casting weight shall be 330 lbs for Curb Inlet Frame with Curb Box and 150 lbs. for Inlet Grate.
- The outside dimensions of Inlet Grate shall be 35 1/2" x 17 1/2" and all grates shall be interchangeable.



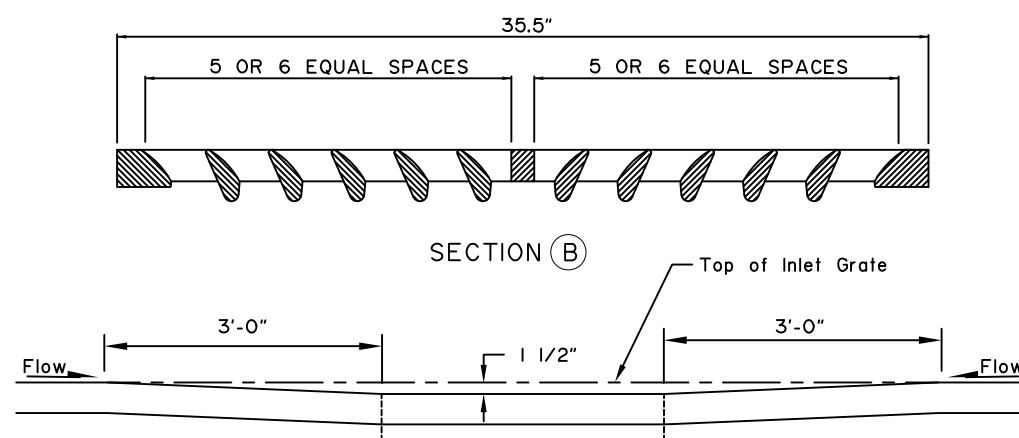
PLAN VIEW

SECTION A

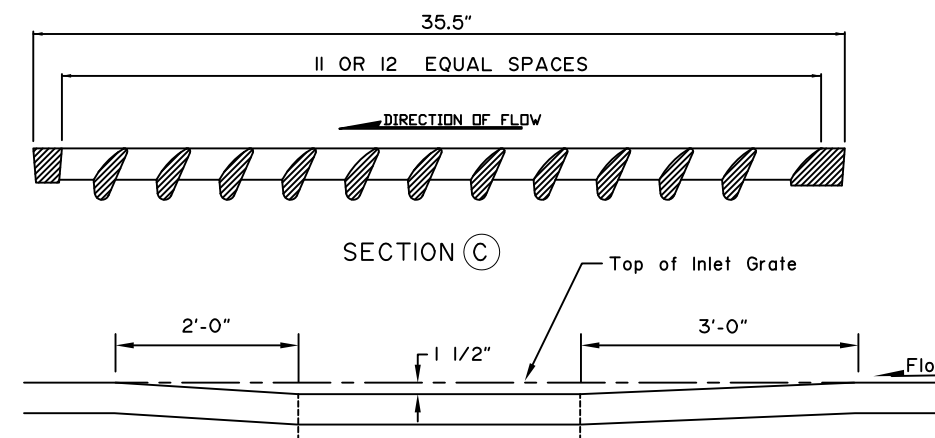


PLAN VIEW

SECTION C



AT SAG POINT



ON GRADE

DEPRESSION IN FLOW LINE AT INLET CONSTRUCTION DETAILS

State of Alaska DOT&PF
ALASKA STANDARD PLAN

HIGH CAPACITY
CURB INLET BOX
FRAME AND GRATE

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

Adoption Date: 02/08/2019

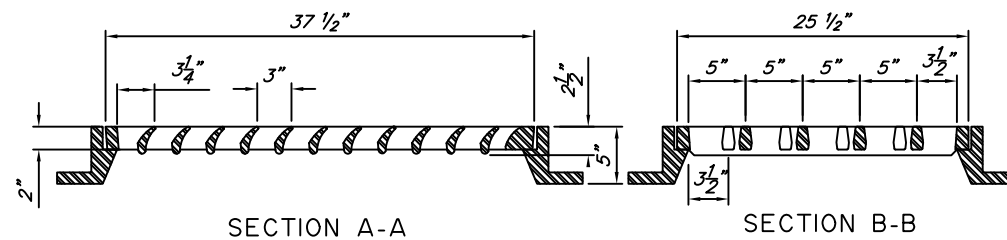
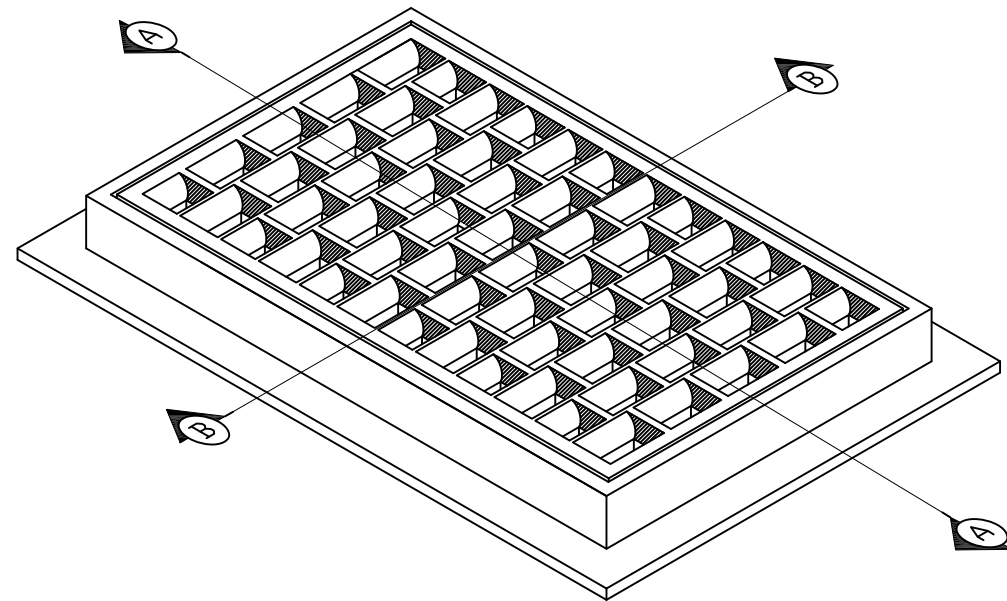
Last Code and Stds. Review
By: Date:

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

NOT TO SCALE

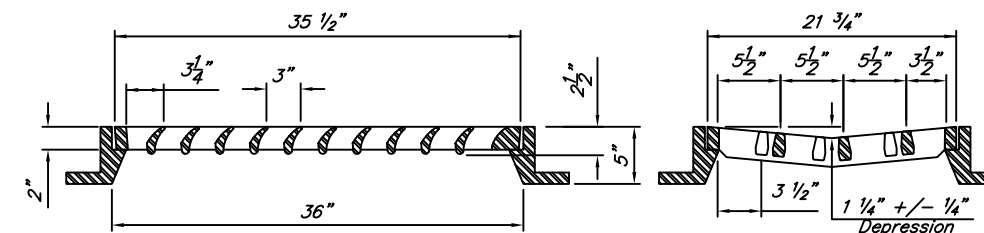
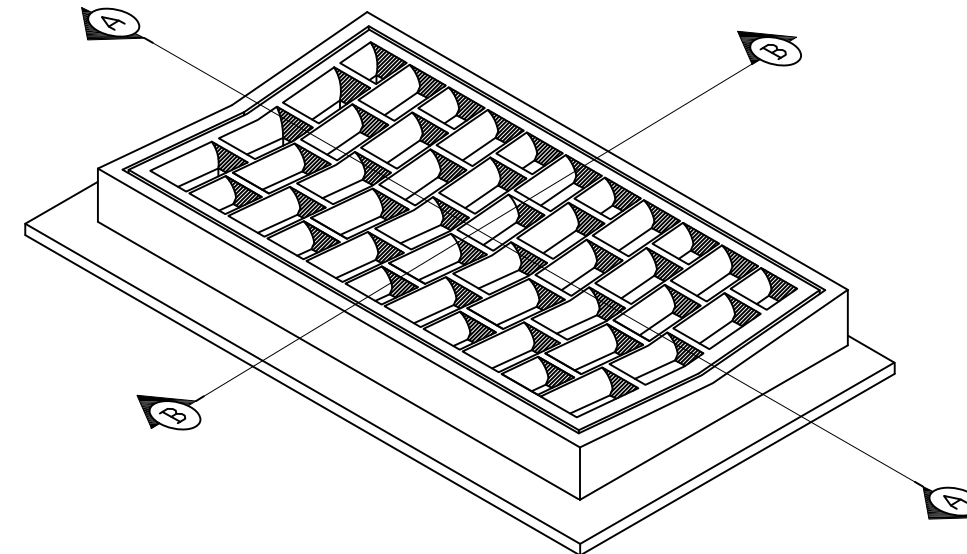
NOTES:

- I. Details shown are to indicate general design only. Dimensions may vary between manufacturers. Tolerance for grate dimension shall be $\pm 1"$, unless otherwise noted.



SECTION A-A
SECTION B-B

HIGH CAPACITY FIELD INLET FRAME AND GRATE



SECTION A-A
SECTION B-B

HIGH CAPACITY GUTTER INLET FRAME AND GRATE

State of Alaska DOT&PF
ALASKA STANDARD PLAN
HIGH CAPACITY CURB INLET
BOX FRAME AND GRATE
(FIELD AND GUTTER INLETS)

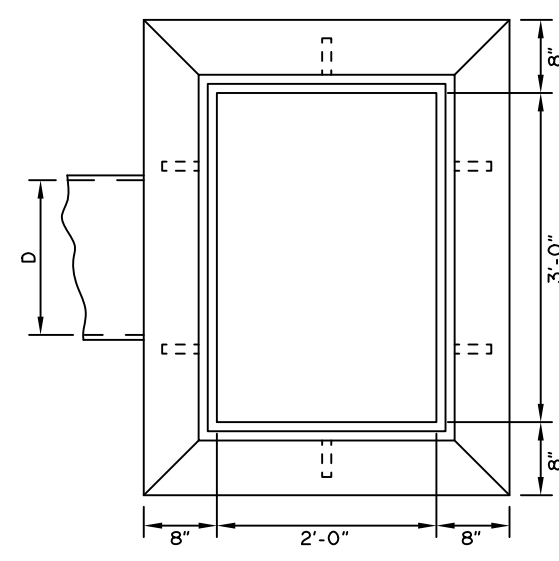
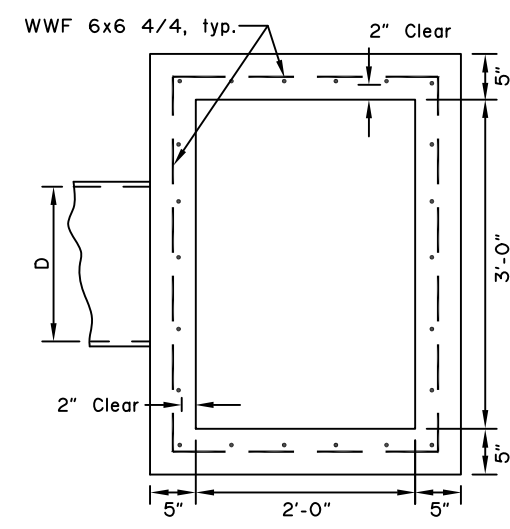
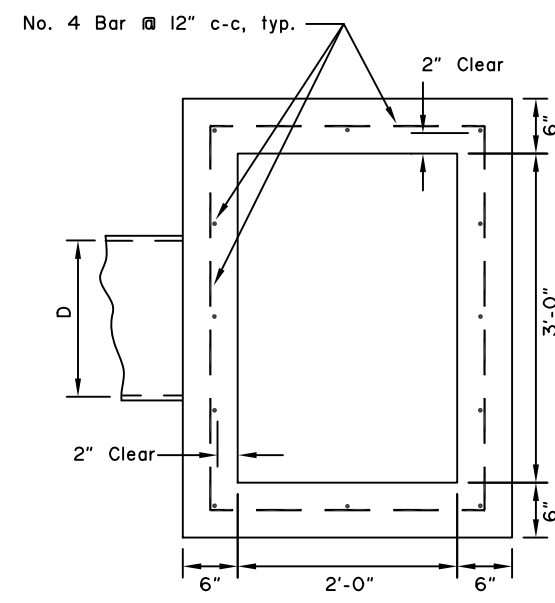
Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher*
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

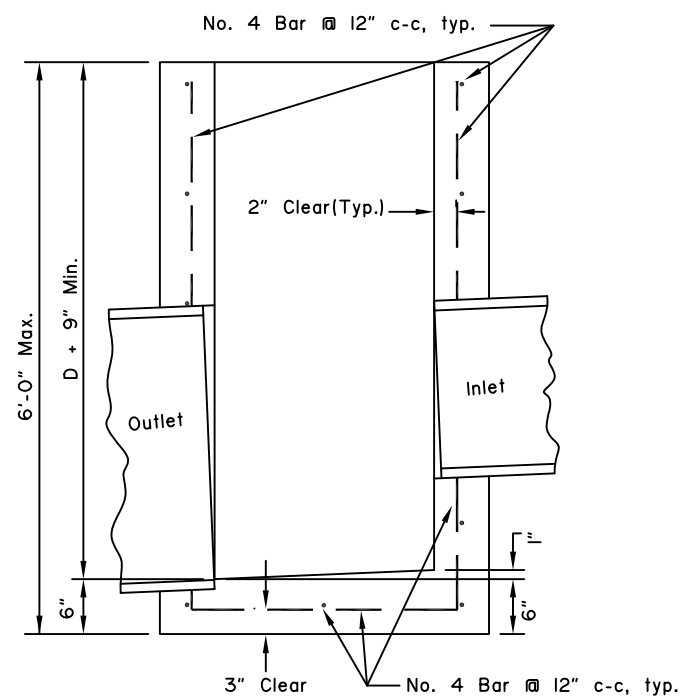
Next Code and Standards Review date: 02/08/2029

NOT TO SCALE

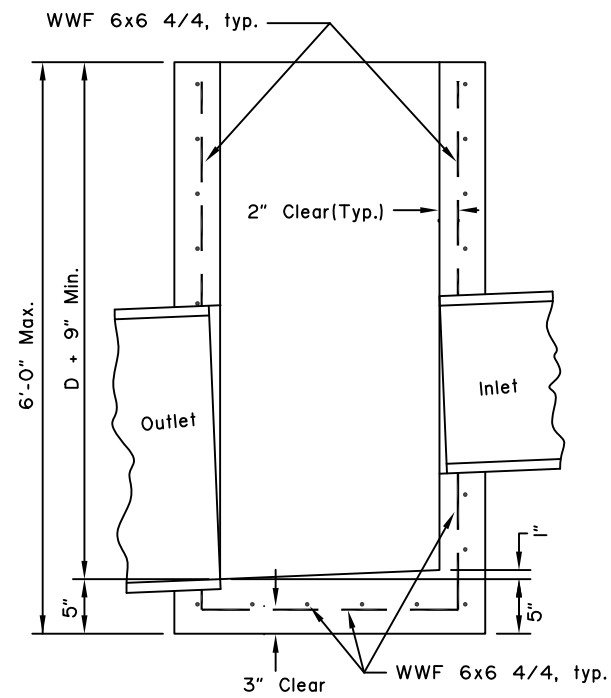


GENERAL NOTES:

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

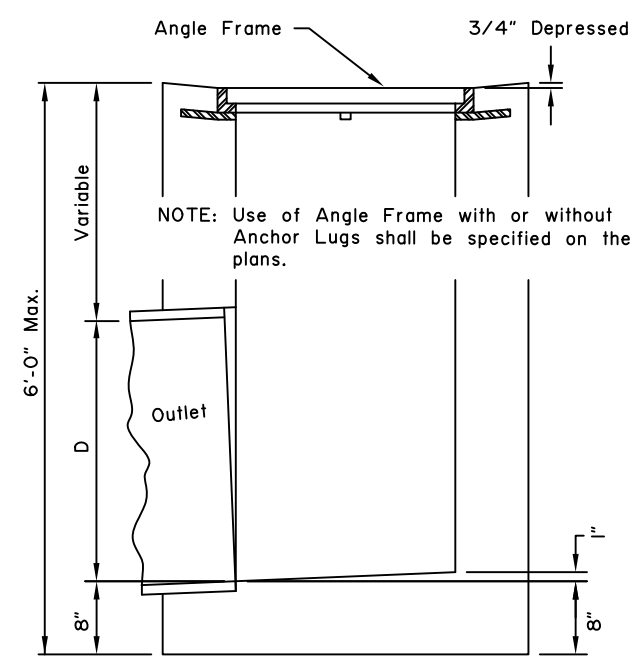


REINFORCED
CAST IN PLACE



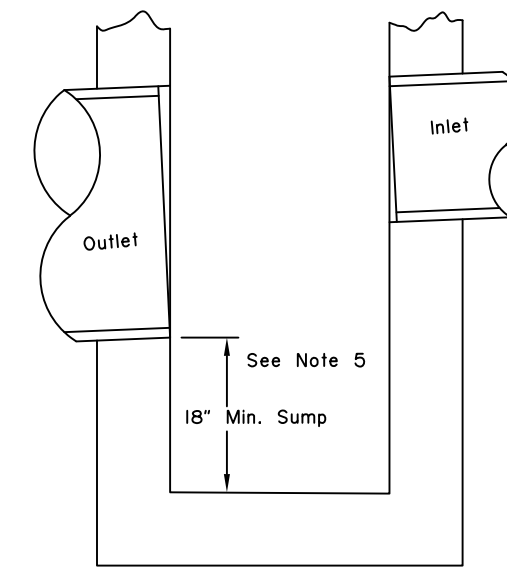
PRECAST

TYPE "A" CONCRETE INLET BOXES



FIELD INLET BOX
CAST* IN PLACE

* May be Precast or Reinforced
Cast-In-Place Box.



SUMP DETAIL

State of Alaska DOT&PF
ALASKA STANDARD PLAN
TYPE "A"
INLET BOX

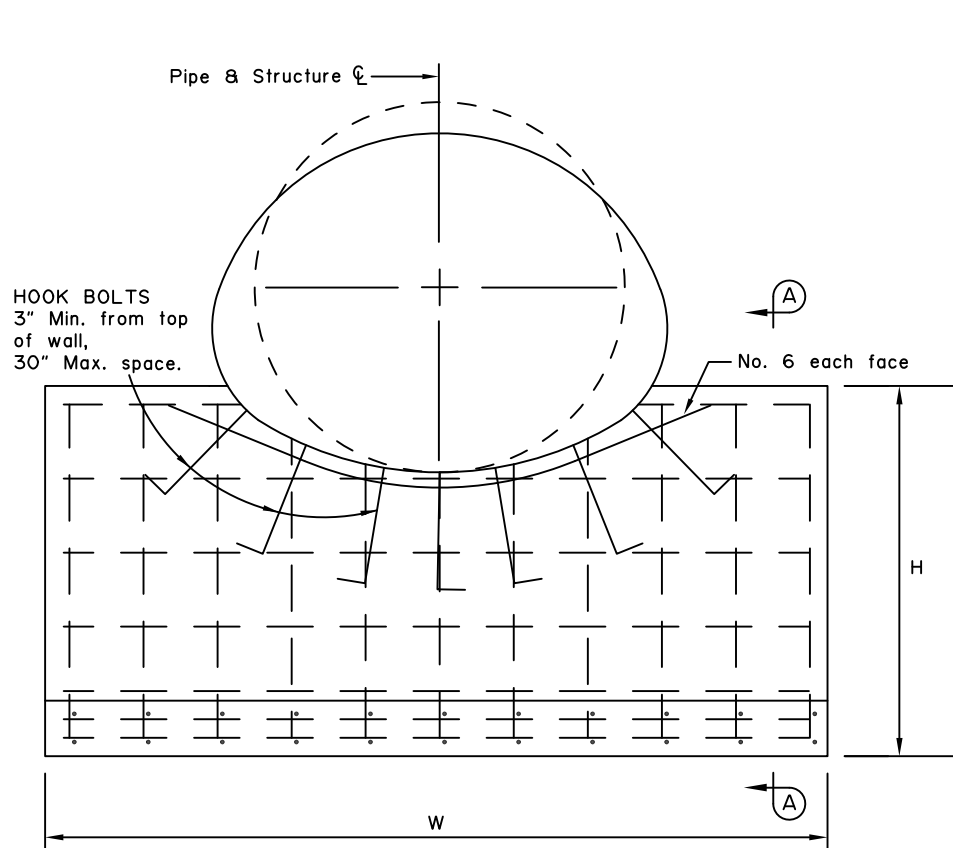
Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher*
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

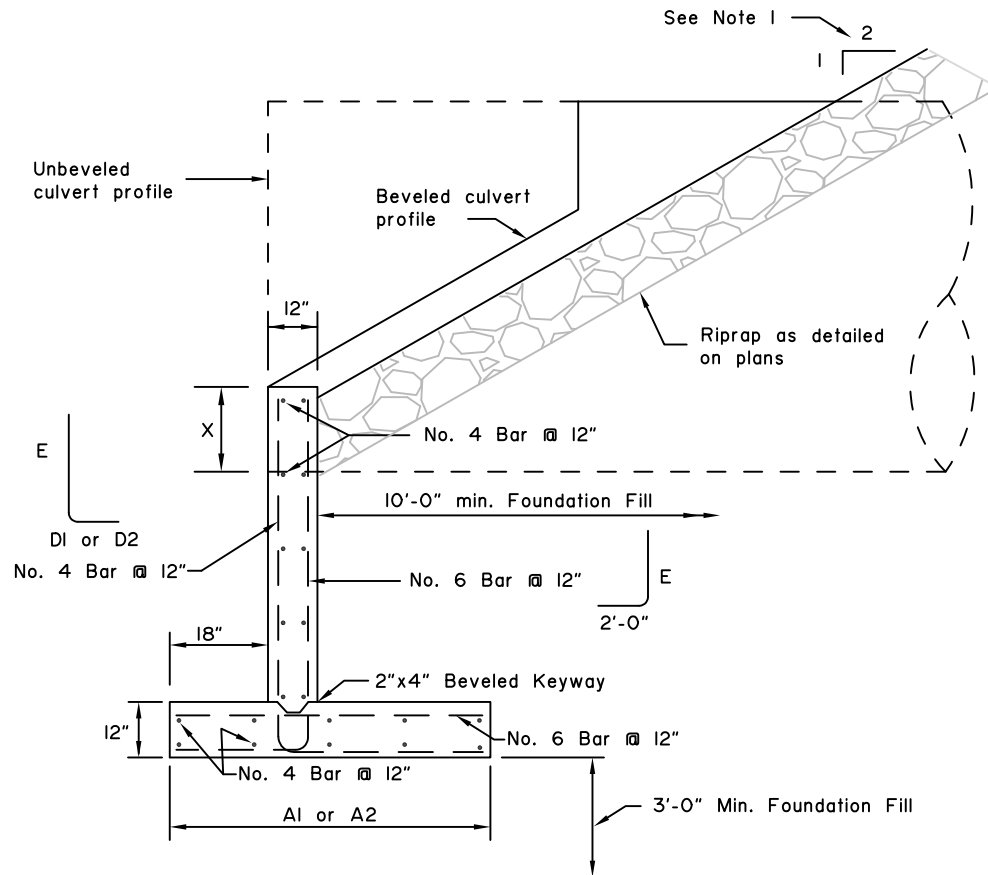
Last Code and Stds. Review
By: Date:

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

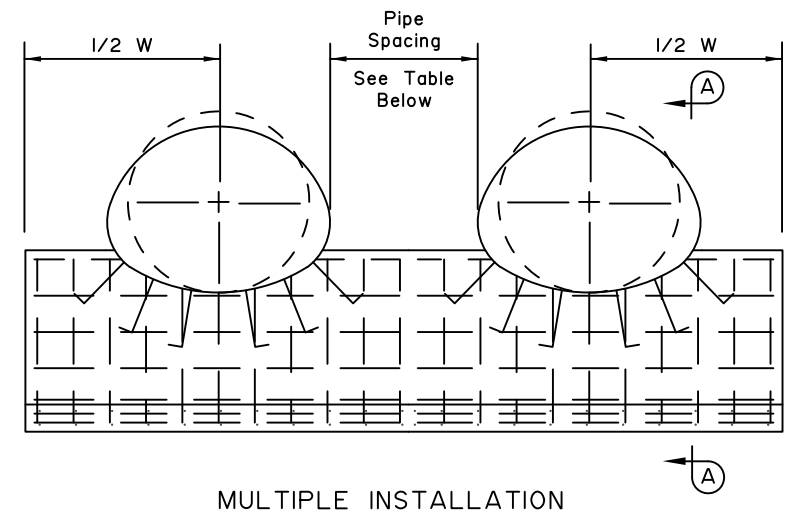
NOT TO SCALE



ELEVATION



SECTION A-A



MULTIPLE INSTALLATION

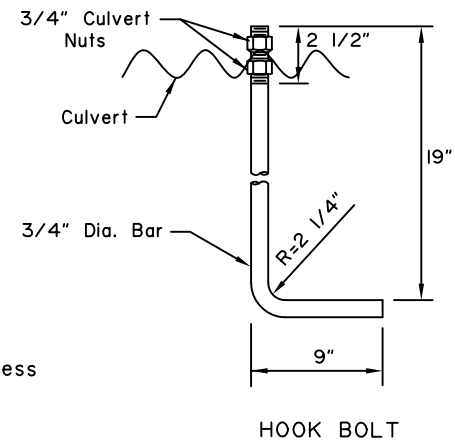
Minimum Space Between Pipes
1/2 Dia. of Pipe or 1/2 Span of Pipe Arch, 24" Min.

CORRUGATED METAL PIPE * SEE NOTE II							
Dia.	W	H	A1*	A2*	D1*	D2*	E
5'-0"	9'-0"	4'-0"	4'-0"	4'-0"	2'-0"	2'-0"	3'-6"
5'-6"	10'-0"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
6'-0"	11'-0"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
6'-6"	12'-0"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
7'-0"	12'-6"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
7'-6"	13'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
8'-0"	14'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
8'-6"	15'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
9'-0"	16'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
9'-6"	17'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
10'-0"	18'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
10'-6"	19'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
11'-0"	20'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
11'-6"	21'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
12'-0"	21'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
12'-6"	22'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
13'-0"	23'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
13'-6"	24'-6"	6'-0"	5'-6"	4'-0"	3'-6"	2'-0"	5'-6"
14'-0"	25'-6"	6'-6"	6'-0"	4'-0"	4'-0"	2'-0"	6'-0"
14'-6"	26'-0"	6'-6"	6'-0"	4'-0"	4'-0"	2'-0"	6'-0"
15'-0"	27'-0"	6'-6"	6'-0"	4'-0"	4'-0"	2'-0"	6'-0"

CORRUGATED METAL PIPE ARCH * SEE NOTE II									
SPAN	RISE	W	H	A1*	A2*	D1*	D2*	E	
6'-1"	4'-7"	14'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
6'-4"	4'-9"	14'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
6'-9"	4'-11"	15'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
7'-0"	5'-1"	15'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
7'-3"	5'-3"	16'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
7'-8"	5'-5"	16'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
7'-11"	5'-7"	17'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
8'-2"	5'-9"	17'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
8'-7"	5'-11"	18'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
8'-10"	6'-1"	18'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
9'-4"	6'-3"	19'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
9'-6"	6'-5"	19'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
9'-9"	6'-7"	20'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
10'-3"	6'-9"	20'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"	
10'-8"	6'-11"	21'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
10'-11"	7'-1"	21'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
11'-5"	7'-3"	22'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
11'-7"	7'-5"	22'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
11'-10"	7'-7"	23'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
12'-4"	7'-9"	23'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
12'-6"	7'-11"	24'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
12'-8"	8'-1"	24'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
12'-10"	8'-4"	25'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
13'-5"	8'-5"	25'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
13'-11"	8'-7"	26'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
14'-1"	8'-9"	26'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
14'-3"	8'-11"	27'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
14'-10"	9'-1"	27'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
15'-4"	9'-3"	28'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
15'-6"	9'-5"	28'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
15'-8"	9'-7"	29'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
15'-10"	9'-10"	29'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
16'-5"	9'-11"	30'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	
16'-7"	10'-1"	30'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"	

GENERAL NOTES:

- For use on 2:1 or flatter backfill slopes only.
- See plans for pipe beveling requirements. See Std. Dwg. D-07 for "X" dimension and culvert beveling geometry.
- Use Class A concrete.
- Use epoxy-coated ASTM A706, Grade 60 reinforcing steel $f_y=60,000$ psi.
- Place reinforcement 3" clear from surface of concrete unless otherwise noted.
- Chamfer all exposed concrete corners 3/4".
- If unsuitable foundation material is encountered, remove and backfill with Foundation Fill as directed by the Engineer.
- Furnishing and installing hook bolts in place is incidental to Class A concrete.
- Use galvanized ASTM A307 hook bolts and nuts. Torque culvert nuts to 140 ft-lbs.
- Headwalls for skewed culverts to be parallel to road centerline. See plans for dimensions of openings in headwalls for skewed culverts.
- For backfill soil with:
 $\phi=30^\circ, \gamma=130$ pcf
Use A1 and D1
 $\phi=34^\circ, \gamma=135$ pcf
Use A2 and D2



State of Alaska DOT&PF
ALASKA STANDARD PLAN

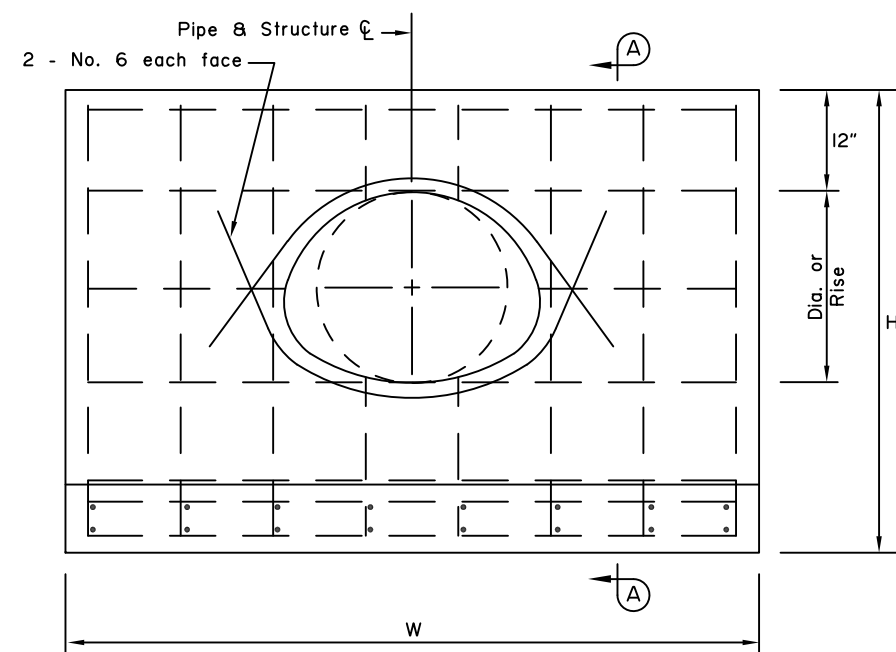
HEADWALLS
CAST-IN-PLACE
TYPE I

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

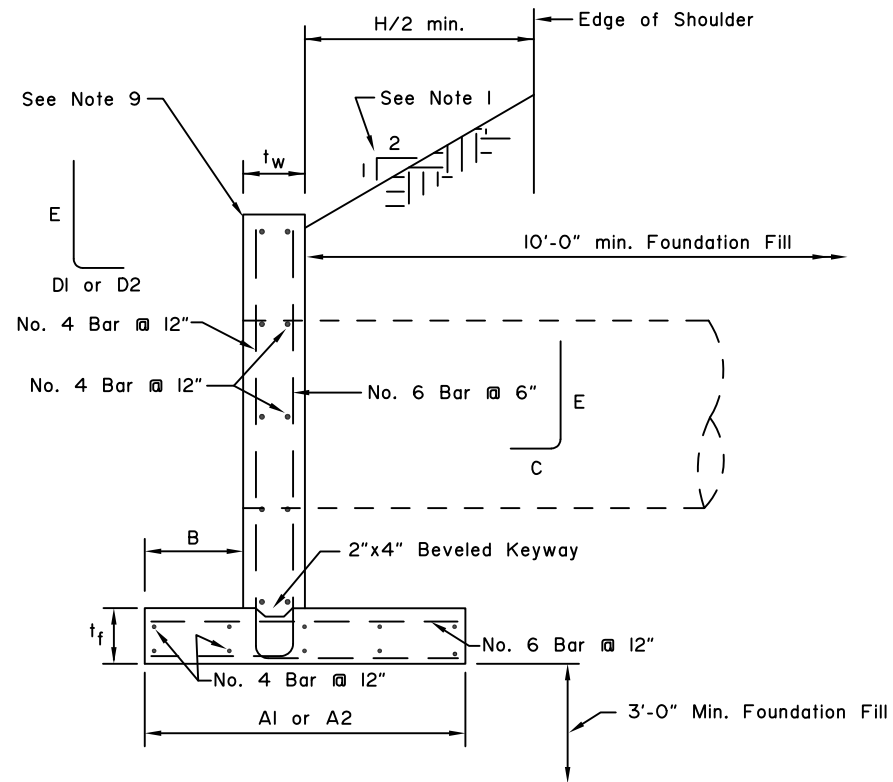
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

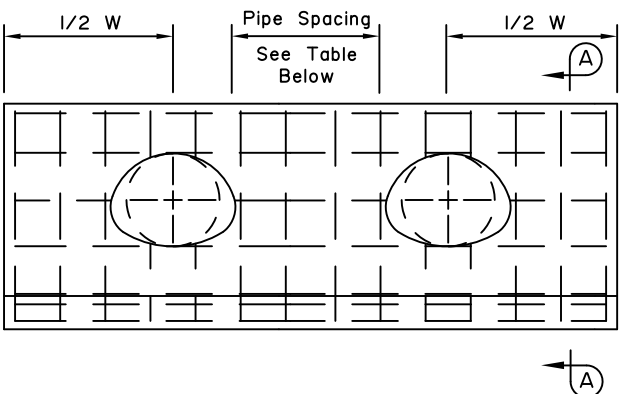
Next Code and Standards Review date: 02/08/2029



ELEVATION



SECTION A-A



MULTIPLE INSTALLATION

Minimum Space Between Pipes
1/2 Dia. of Pipe or 1/2 Span of Pipe Arch, 24" Min.

CORRUGATED METAL PIPE									* SEE NOTE 8		
Dia.	W	t _w	t _f	H	A1 *	A2 *	B	C	D1 *	D2 *	E
1'-6"	8'-0"	1'-0"	1'-0"	4'-6"	4'-0"	4'-0"	1'-6"	2'-0"	2'-0"	2'-0"	4'-0"
1'-9"	9'-0"	1'-0"	1'-0"	4'-9"	4'-6"	4'-0"	1'-6"	2'-0"	2'-6"	2'-0"	4'-3"
2'-0"	9'-6"	1'-0"	1'-0"	5'-0"	4'-6"	4'-0"	1'-6"	2'-0"	2'-6"	2'-0"	4'-6"
2'-6"	11'-6"	1'-0"	1'-0"	5'-6"	5'-0"	4'-0"	1'-6"	2'-0"	3'-0"	2'-0"	5'-0"
3'-0"	13'-0"	1'-0"	1'-0"	6'-0"	5'-6"	4'-0"	1'-6"	2'-0"	3'-6"	2'-0"	5'-6"
3'-6"	14'-6"	1'-0"	1'-0"	6'-6"	6'-0"	4'-0"	1'-6"	2'-0"	4'-0"	2'-0"	6'-0"
4'-0"	16'-0"	1'-0"	1'-0"	7'-0"	6'-6"	4'-6"	2'-0"	2'-6"	4'-0"	2'-0"	6'-6"
4'-6"	18'-0"	1'-0"	1'-0"	7'-6"	7'-0"	4'-6"	2'-0"	2'-6"	4'-6"	2'-0"	7'-0"
5'-0"	19'-6"	1'-0"	1'-0"	8'-0"	8'-0"	5'-0"	2'-6"	3'-0"	5'-0"	2'-0"	7'-6"
5'-6"	21'-0"	1'-0"	1'-0"	8'-6"	8'-6"	5'-6"	2'-6"	3'-0"	5'-6"	2'-6"	8'-0"
6'-0"	23'-0"	1'-0"	1'-0"	9'-0"	9'-6"	6'-0"	3'-0"	3'-6"	6'-0"	2'-6"	8'-6"
6'-6"	24'-6"	1'-3"	1'-3"	9'-9"	10'-0"	6'-0"	3'-0"	3'-9"	6'-6"	2'-6"	9'-3"
7'-0"	26'-0"	1'-3"	1'-3"	10'-3"	10'-0"	6'-6"	3'-0"	3'-9"	6'-6"	3'-0"	9'-9"
7'-6"	28'-0"	1'-6"	1'-6"	11'-0"	10'-6"	6'-6"	3'-0"	4'-0"	7'-0"	3'-0"	10'-6"
8'-0"	29'-6"	1'-6"	1'-6"	11'-6"	11'-0"	7'-0"	3'-0"	4'-0"	7'-6"	3'-6"	11'-0"
8'-6"	31'-0"	2'-0"	2'-0"	12'-6"	11'-6"	7'-0"	3'-0"	4'-6"	8'-0"	3'-6"	12'-0"
9'-0"	33'-0"	2'-0"	2'-0"	13'-0"	11'-6"	7'-6"	3'-0"	4'-6"	8'-0"	4'-0"	12'-6"

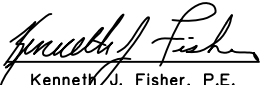
CORRUGATED METAL PIPE ARCH											* SEE NOTE 8	
SPAN	RISE	W	t _w	t _f	H	A1 *	A2 *	B	C	D1 *	D2 *	E
1'-5"	1'-1"	6'-6"	1'-0"	1'-0"	4'-1"	4'-0"	4'-0"	1'-6"	2'-0"	2'-0"	2'-0"	3'-7"
1'-9"	1'-3"	7'-0"	1'-0"	1'-0"	4'-3"	4'-0"	4'-0"	1'-6"	2'-0"	2'-0"	2'-0"	3'-9"
2'-0"	1'-6"	8'-0"	1'-0"	1'-0"	4'-6"	4'-0"	4'-0"	1'-6"	2'-0"	2'-0"	2'-0"	4'-0"
2'-4"	1'-8"	8'-6"	1'-0"	1'-0"	4'-8"	4'-0"	4'-0"	1'-6"	2'-0"	2'-0"	2'-0"	4'-2"
2'-11"	2'-0"	9'-6"	1'-0"	1'-0"	5'-0"	4'-6"	4'-0"	1'-6"	2'-0"	2'-6"	2'-0"	4'-6"
3'-6"	2'-5"	11'-0"	1'-0"	1'-0"	5'-5"	5'-0"	4'-0"	1'-6"	2'-0"	3'-0"	2'-0"	4'-11"
4'-1"	2'-9"	12'-0"	1'-0"	1'-0"	5'-9"	5'-6"	4'-0"	1'-6"	2'-0"	3'-6"	2'-0"	5'-3"
4'-9"	3'-2"	13'-6"	1'-0"	1'-0"	6'-2"	5'-6"	4'-0"	1'-6"	2'-0"	3'-6"	2'-0"	5'-8"
5'-4"	3'-7"	15'-0"	1'-0"	1'-0"	6'-7"	6'-0"	4'-0"	1'-6"	2'-0"	4'-0"	2'-0"	6'-1"
5'-11"	3'-11"	16'-0"	1'-0"	1'-0"	6'-11"	6'-6"	4'-6"	2'-0"	2'-6"	4'-0"	2'-0"	6'-5"
6'-5"	4'-4"	17'-0"	1'-0"	1'-0"	7'-4"	7'-0"	4'-6"	2'-0"	2'-6"	4'-6"	2'-0"	6'-10"
7'-1"	4'-9"	19'-0"	1'-0"	1'-0"	7'-9"	8'-0"	4'-6"	2'-0"	2'-6"	5'-6"	2'-0"	7'-3"

GENERAL NOTES:

- For use on 2:1 or flatter backfill slopes only.
- Use Class A concrete.
- Use epoxy-coated ASTM A706, Grade 60 reinforcing steel $f_y=60,000$ psi.
- Place reinforcement 3" clear from surface of concrete unless otherwise noted.
- Chamfer all exposed concrete corners 3/4".
- If unsuitable foundation material is encountered, remove and backfill with Foundation Fill as directed by the Engineer.
- Headwalls for skewed culverts to be parallel to road centerline. See plans for dimensions of openings in headwalls for skewed culverts.
- For backfill soil with:
 $\phi=30^\circ$, $\gamma=130$ pcf
Use A1 and D1
 $\phi=34^\circ$, $\gamma=135$ pcf
Use A2 and D2
- See plans for railing requirements at top of wall.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

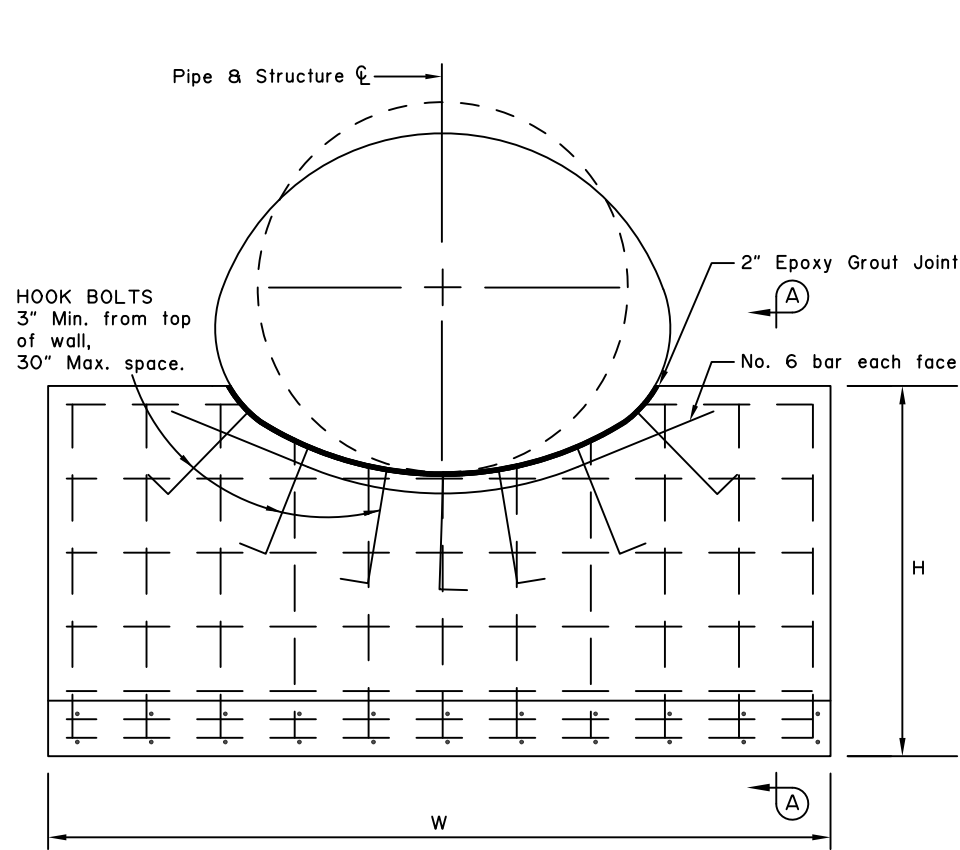
HEADWALLS
CAST-IN-PLACE
TYPE II

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

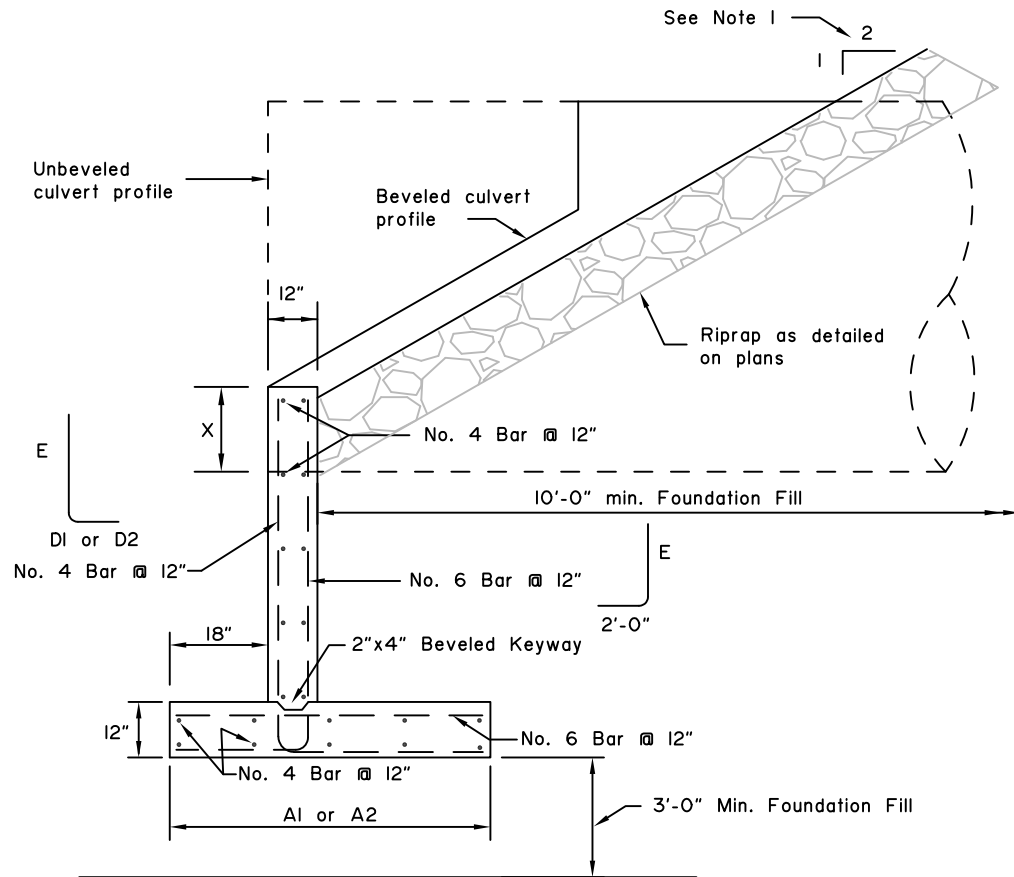
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

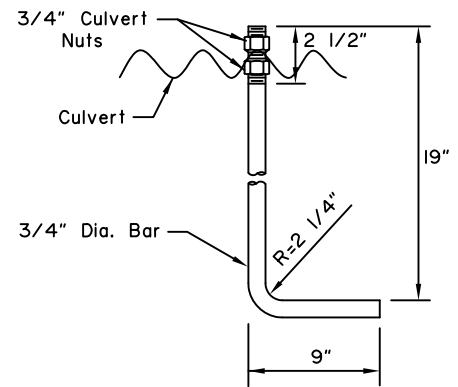
Next Code and Standards Review date: 02/08/2029



ELEVATION



SECTION A-A



HOOK BOLT

GENERAL NOTES:

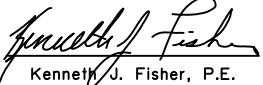
- For use on 2:1 or flatter backfill slopes only.
- See plans for pipe beveling requirements. See Std. Dwg. D-07 for "X" dimension and culvert beveling geometry.
- Use Class A concrete.
- Use epoxy-coated ASTM A706, Grade 60 reinforcing steel $f_y=60,000$ psi.
- Place reinforcement 3" clear from surface of concrete unless otherwise noted.
- Chamfer all exposed concrete corners 3/4".
- If unsuitable foundation material is encountered, remove and backfill with Foundation Fill as directed by the Engineer.
- Furnishing and installing hook bolts in place is incidental to Class A concrete.
- Use galvanized ASTM A307 hook bolts and nuts. Torque culvert nuts to 140 ft-lbs.
- Headwalls for skewed culverts to be parallel to road centerline. See plans for dimensions of openings in headwalls for skewed culverts.
- For backfill soil with:
 $\phi=30^\circ, \gamma=130$ pcf
Use A1 and D1
 $\phi=34^\circ, \gamma=135$ pcf
Use A2 and D2

CORRUGATED METAL PIPE * SEE NOTE II							
Dia.	W	H	A1 *	A2 *	D1 *	D2 *	E
5'-0"	9'-0"	4'-0"	4'-0"	4'-0"	2'-0"	2'-0"	3'-6"
5'-6"	10'-0"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
6'-0"	11'-0"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
6'-6"	12'-0"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
7'-0"	12'-6"	4'-6"	4'-0"	4'-0"	2'-0"	2'-0"	4'-0"
7'-6"	13'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
8'-0"	14'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
8'-6"	15'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
9'-0"	16'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
9'-6"	17'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
10'-0"	18'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
10'-6"	19'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
11'-0"	20'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"

CORRUGATED METAL PIPE ARCH * SEE NOTE II								
SPAN	RISE	W	H	A1 *	A2 *	D1 *	D2 *	E
6'-1"	4'-7"	14'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
6'-4"	4'-9"	14'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
6'-9"	4'-11"	15'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
7'-0"	5'-1"	15'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
7'-3"	5'-3"	16'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
7'-8"	5'-5"	16'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
7'-11"	5'-7"	17'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
8'-2"	5'-9"	17'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
8'-7"	5'-11"	18'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
8'-10"	6'-1"	18'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
9'-4"	6'-3"	19'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
9'-6"	6'-5"	19'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
9'-9"	6'-7"	20'-0"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
10'-3"	6'-9"	20'-6"	5'-0"	4'-6"	4'-0"	2'-6"	2'-0"	4'-6"
10'-8"	6'-11"	21'-0"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"
10'-11"	7'-1"	21'-6"	5'-6"	5'-0"	4'-0"	3'-0"	2'-0"	5'-0"

State of Alaska DOT&PF
ALASKA STANDARD PLAN

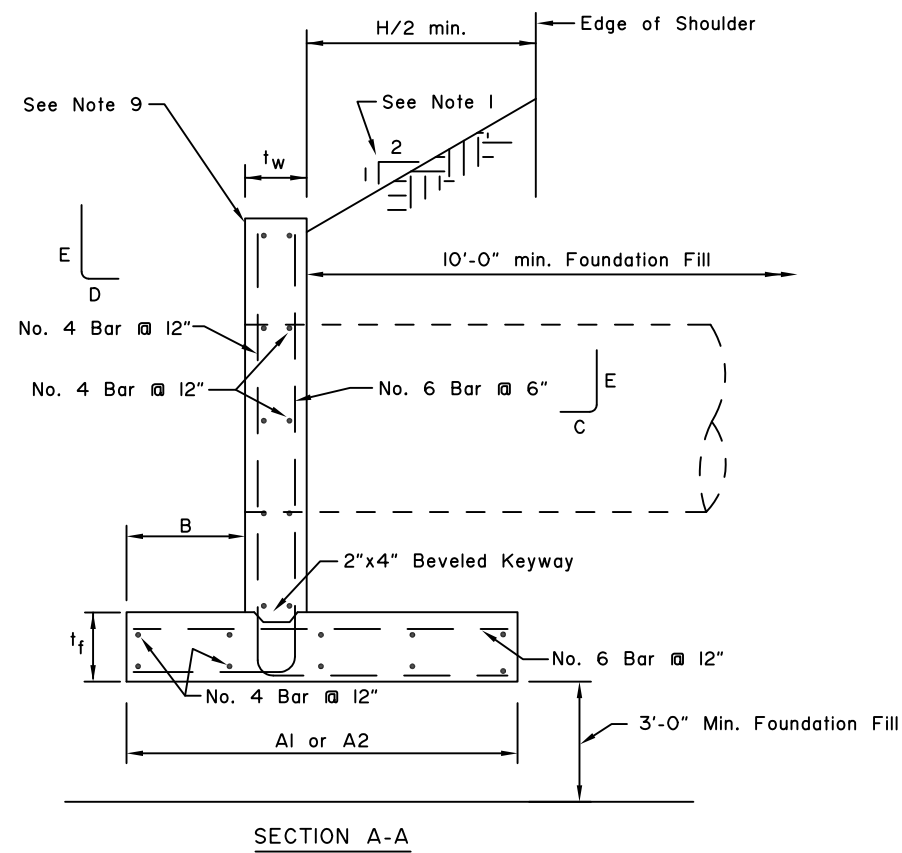
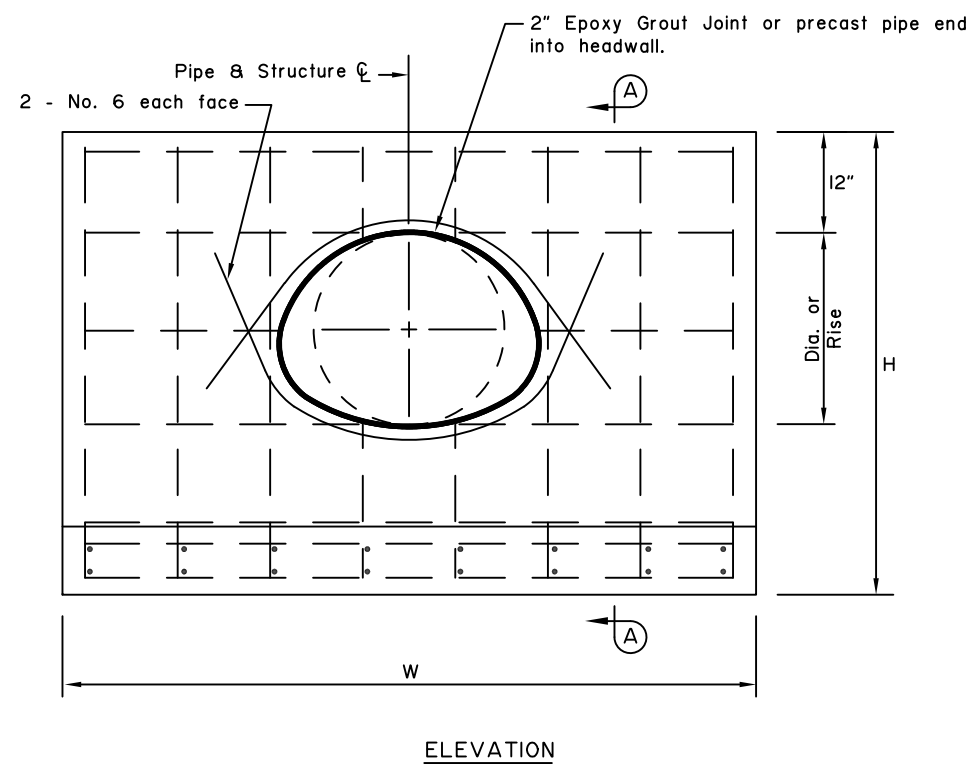
HEADWALLS
PRECAST
TYPE I

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



CORRUGATED METAL PIPE										* SEE NOTE 8	
Dia.	W	tw	tf	H	AI*	A2*	B	C	DI*	D2*	E
1'-6"	8'-0"	1'-0"	1'-0"	4'-6"	6'-0"	4'-0"	1'-6"	2'-0"	4'-0"	2'-0"	4'-0"
1'-9"	9'-0"	1'-0"	1'-0"	4'-9"	6'-6"	4'-0"	1'-6"	2'-0"	4'-6"	2'-0"	4'-3"
2'-0"	9'-6"	1'-0"	1'-0"	5'-0"	7'-0"	4'-0"	1'-6"	2'-0"	5'-0"	2'-0"	4'-6"
2'-6"	11'-6"	1'-0"	1'-0"	5'-6"	7'-6"	4'-0"	1'-6"	2'-0"	5'-6"	2'-0"	5'-0"
3'-0"	13'-0"	1'-0"	1'-0"	6'-0"	8'-6"	4'-6"	1'-6"	2'-0"	6'-6"	2'-6"	5'-6"
3'-6"	14'-6"	1'-0"	1'-0"	6'-6"	9'-0"	5'-0"	1'-6"	2'-0"	7'-0"	3'-0"	6'-0"
4'-0"	16'-0"	1'-0"	1'-0"	7'-0"	10'-0"	5'-6"	2'-0"	2'-6"	7'-6"	3'-0"	6'-6"
4'-6"	18'-0"	1'-3"	1'-3"	7'-9"	11'-0"	6'-0"	2'-0"	2'-9"	8'-6"	3'-6"	7'-3"
5'-0"	19'-6"	1'-6"	1'-6"	8'-6"	12'-0"	6'-6"	2'-6"	3'-6"	9'-0"	3'-6"	8'-0"

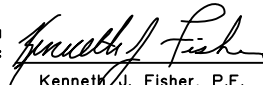
CORRUGATED METAL PIPE ARCH												* SEE NOTE 8	
SPAN	RISE	W	tw	tf	H	AI*	A2*	B	C	DI*	D2*	E	
1'-5"	1'-1"	6'-6"	1'-0"	1'-0"	4'-1"	5'-6"	4'-0"	1'-6"	2'-0"	3'-6"	2'-0"	3'-7"	
1'-9"	1'-3"	7'-0"	1'-0"	1'-0"	4'-3"	5'-6"	4'-0"	1'-6"	2'-0"	3'-6"	2'-0"	3'-9"	
2'-0"	1'-6"	8'-0"	1'-0"	1'-0"	4'-6"	6'-0"	4'-0"	1'-6"	2'-0"	4'-0"	2'-0"	4'-0"	
2'-4"	1'-8"	8'-6"	1'-0"	1'-0"	4'-8"	6'-0"	4'-0"	1'-6"	2'-0"	4'-0"	2'-0"	4'-2"	
2'-11"	2'-0"	9'-6"	1'-0"	1'-0"	5'-0"	7'-0"	4'-0"	1'-6"	2'-0"	5'-0"	2'-0"	4'-6"	
3'-6"	2'-5"	11'-0"	1'-0"	1'-0"	5'-5"	7'-6"	4'-0"	1'-6"	2'-0"	5'-6"	2'-0"	4'-11"	
4'-1"	2'-9"	12'-0"	1'-0"	1'-0"	5'-9"	8'-0"	4'-0"	1'-6"	2'-0"	6'-0"	2'-6"	5'-3"	
4'-9"	3'-2"	13'-6"	1'-0"	1'-0"	6'-2"	8'-6"	4'-0"	1'-6"	2'-0"	6'-6"	2'-6"	5'-8"	
5'-4"	3'-7"	15'-0"	1'-0"	1'-0"	6'-7"	9'-0"	5'-0"	1'-6"	2'-0"	7'-0"	3'-0"	6'-1"	
5'-11"	3'-11"	16'-0"	1'-0"	1'-0"	6'-11"	10'-0"	5'-6"	2'-0"	2'-6"	7'-6"	3'-0"	6'-5"	
6'-5"	4'-4"	17'-0"	1'-3"	1'-3"	7'-7"	10'-6"	5'-6"	2'-0"	2'-9"	8'-0"	3'-0"	7'-1"	
7'-1"	4'-9"	19'-0"	1'-6"	1'-6"	8'-3"	11'-6"	6'-6"	2'-6"	3'-6"	8'-6"	3'-6"	7'-9"	

GENERAL NOTES:

- For use on 2:1 or flatter backfill slopes only.
- Use Class A concrete.
- Use epoxy-coated ASTM A706, Grade 60 reinforcing steel $f_y=60,000$ psi.
- Place reinforcement 3" clear from surface of concrete unless otherwise noted.
- Chamfer all exposed concrete corners 3/4".
- If unsuitable foundation material is encountered, remove and backfill with Foundation Fill as directed by the Engineer.
- Headwalls for skewed culverts to be parallel to road centerline. See plans for dimensions of openings in headwalls for skewed culverts.
- For backfill soil with:
 $\phi=30^\circ$, $\gamma=130$ pcf
Use AI and DI
 $\phi=34^\circ$, $\gamma=135$ pcf
Use A2 and D2
- See plans for railing requirements.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

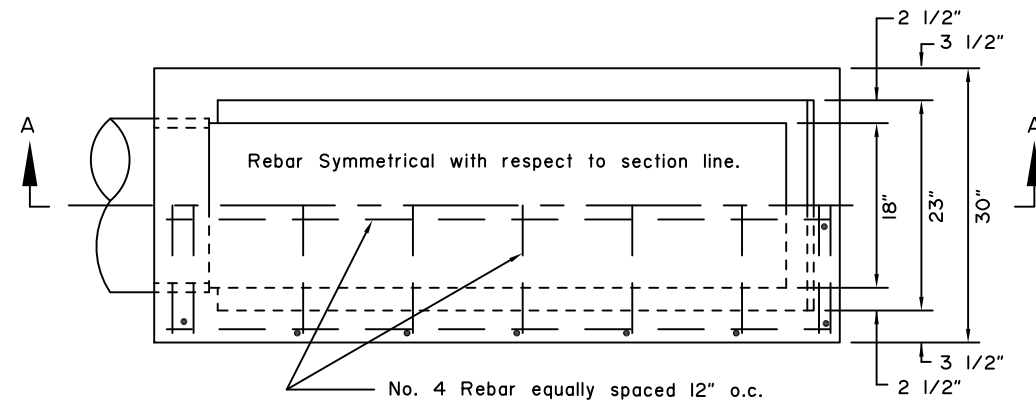
HEADWALLS
PRECAST
TYPE II

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

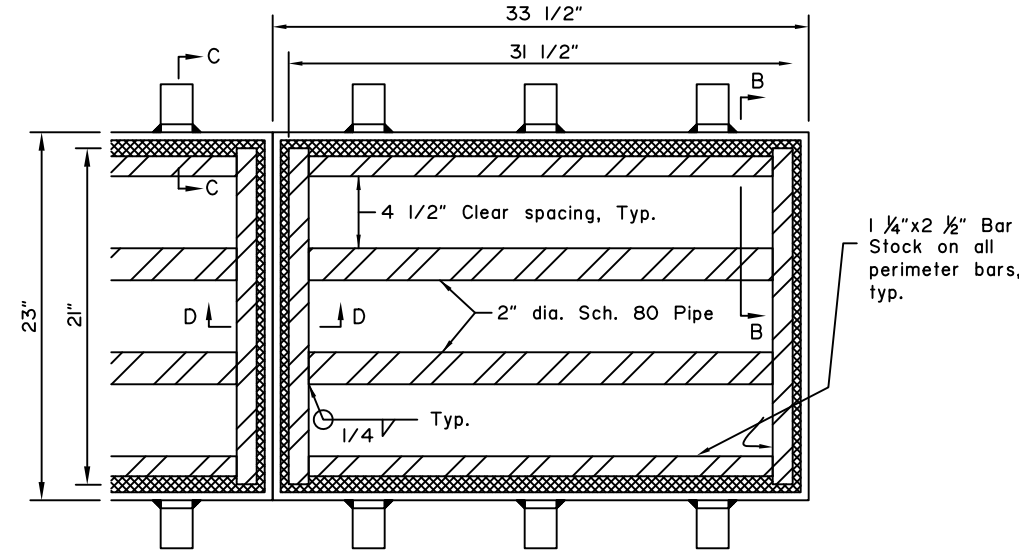
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



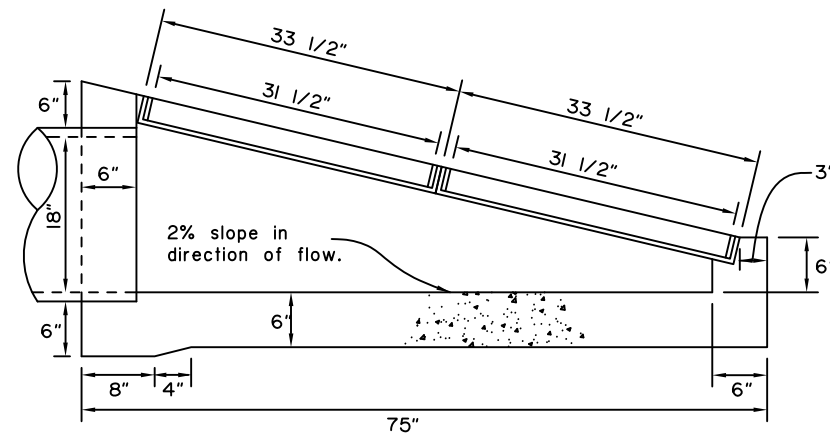
PLAN
(Frame not shown for clarity)



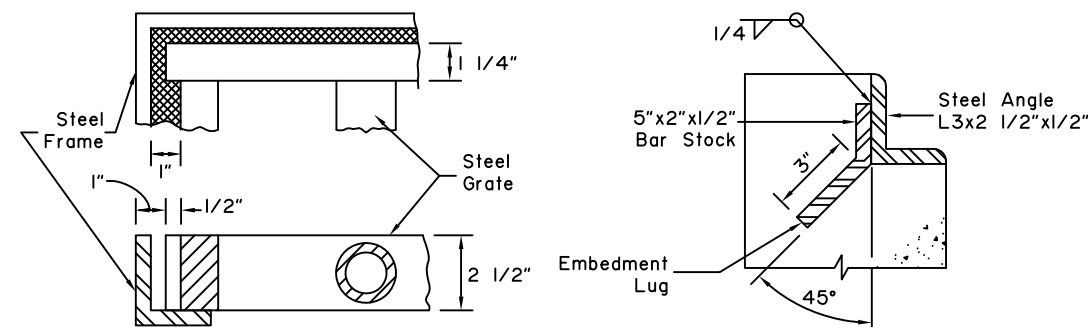
STEEL FRAME AND GRATE CONFIGURATION

GENERAL NOTES:

1. Provide either steel frames and grates or cast iron frames and grates.
2. Chamfer all exposed concrete corners 3/4".
3. Provide 2" minimum cover for all reinforcing steel.
4. Use Grade 40 minimum reinforcing steel.
5. Cast iron frame embedment lugs may differ from the configuration shown for the steel frame. Provide 6 total embedment lugs extending into concrete a minimum of 3".
6. Shop fabricate steel frames and steel grates.
7. Hot dip galvanize steel frames and grates. Provide uncoated cast iron frames and grates.



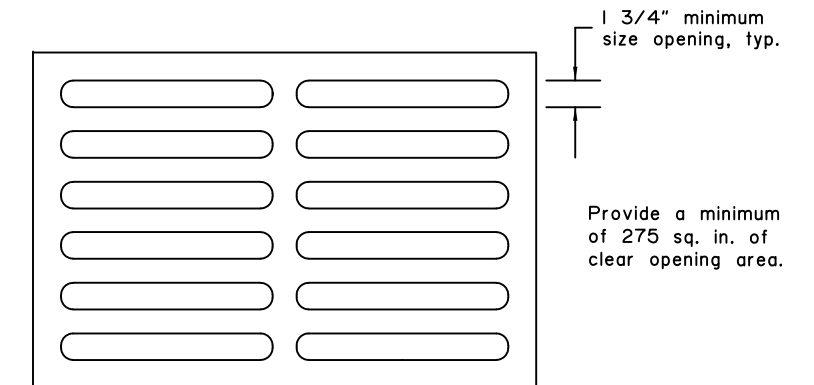
SECTION A-A



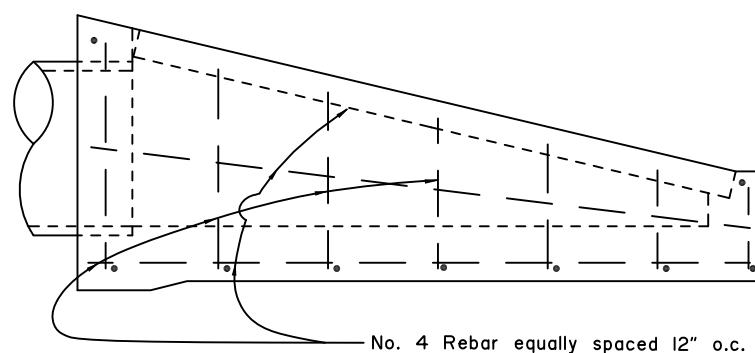
SECTION B-B

SECTION C-C

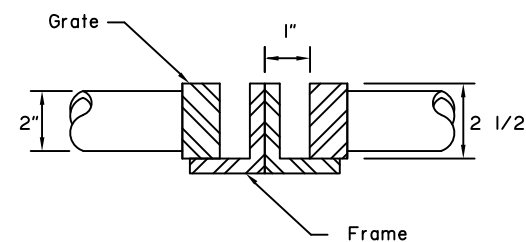
STEEL FRAME & GRATE DETAILS
Finished grate size is 21"x31 1/2"



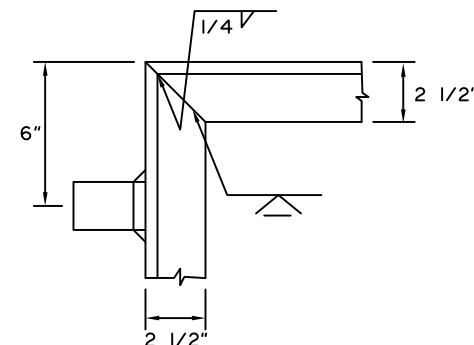
CAST IRON GRATE CONFIGURATION
Finished grate size is 21"x 31 1/2"



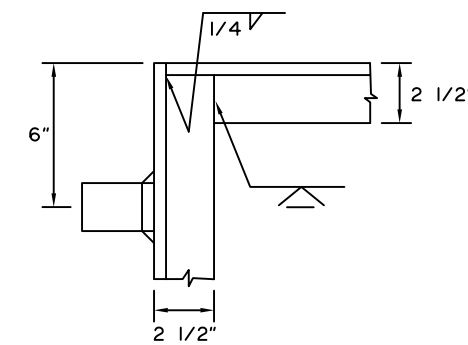
TYPICAL REINFORCEMENT STEEL DETAIL



SECTION D-D



STEEL FRAME DETAIL



ALTERNATE STEEL FRAME DETAIL

NOTE: DRAWING NOT TO SCALE

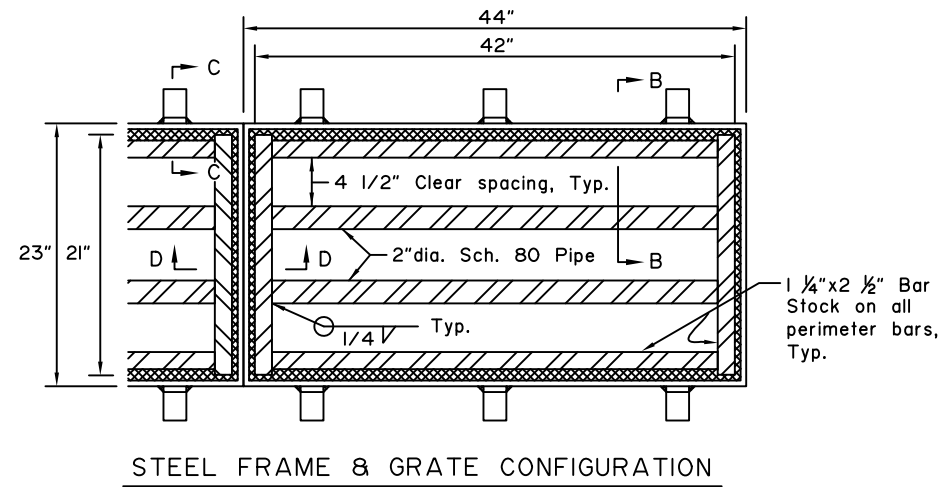
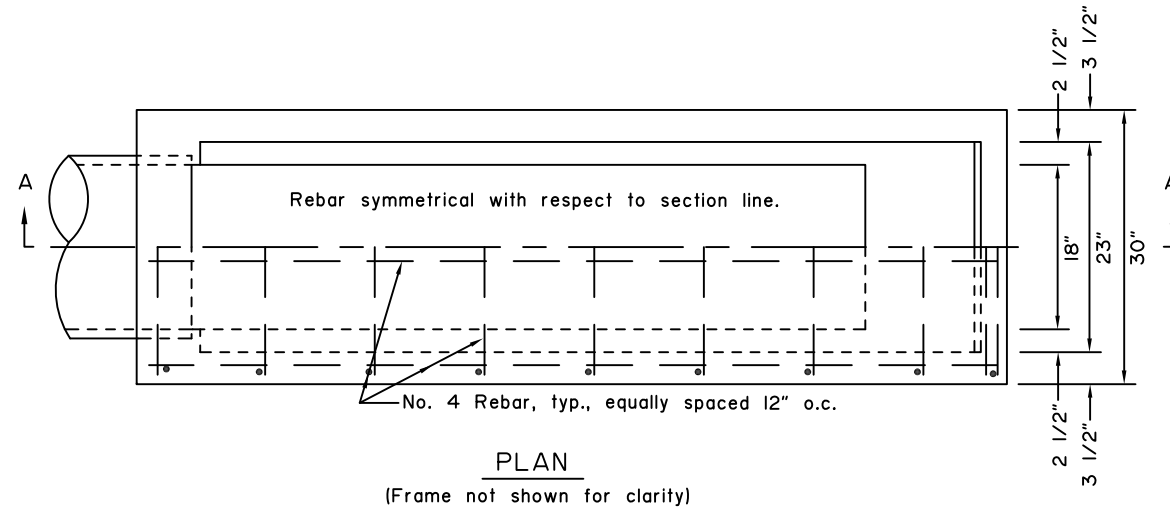
State of Alaska DOT&PF
ALASKA STANDARD PLAN
TYPE "C" INLET BOX
18 INCH PIPE
ON 4:1 SLOPE

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

Adoption Date: 02/08/2019

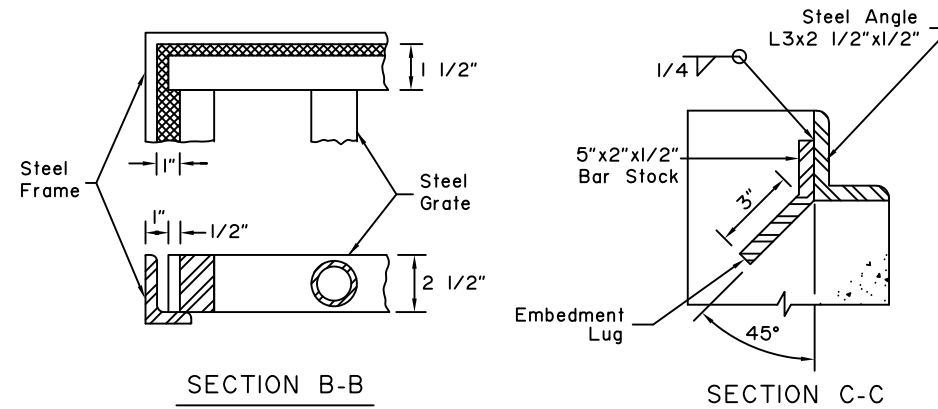
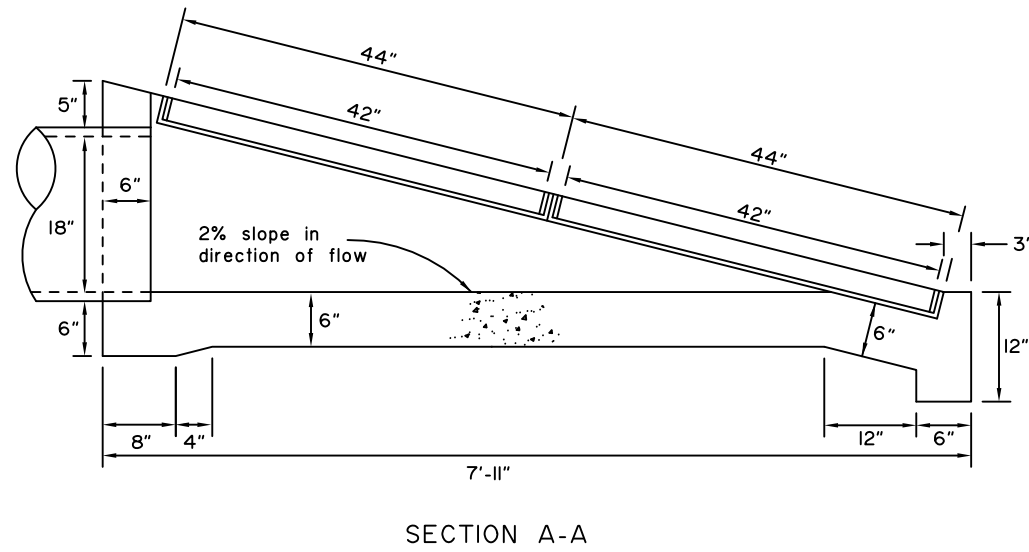
Last Code and Stds. Review
By: Date:

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

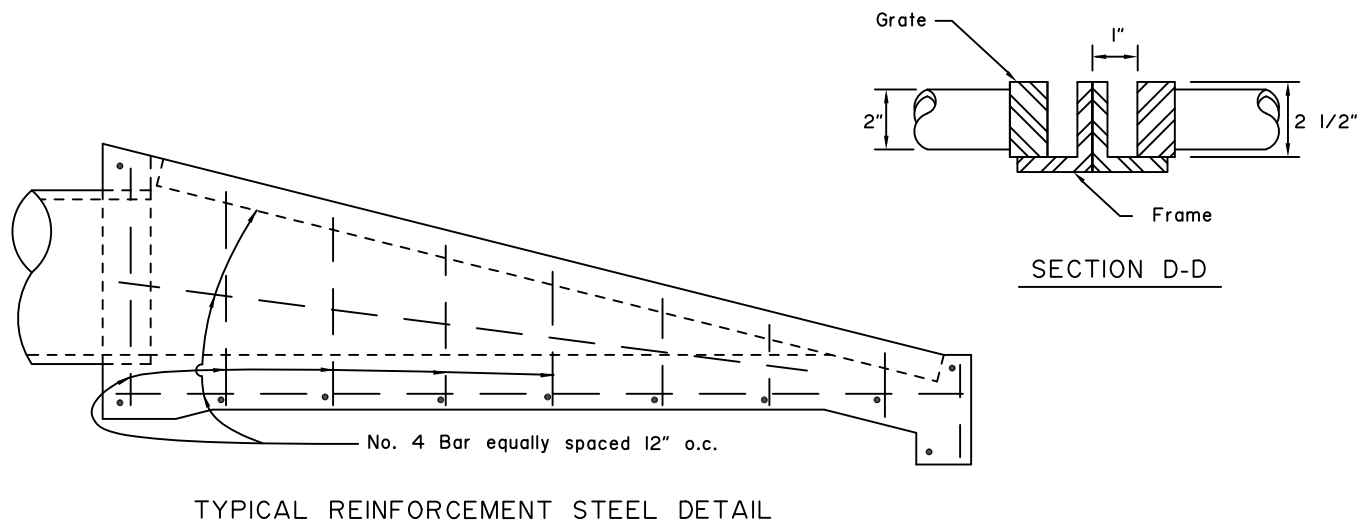
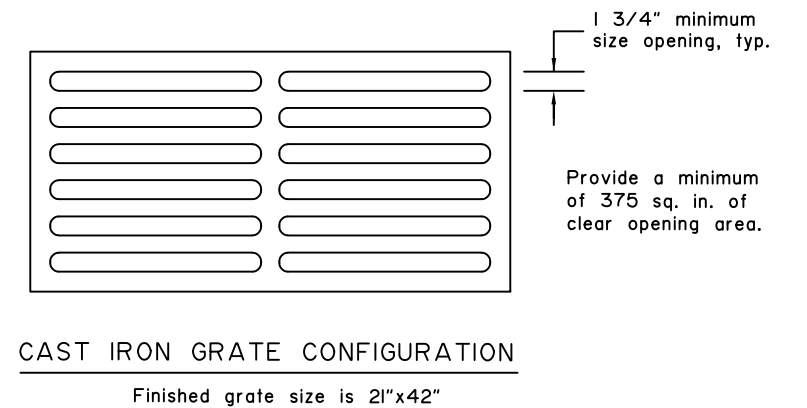


GENERAL NOTES:

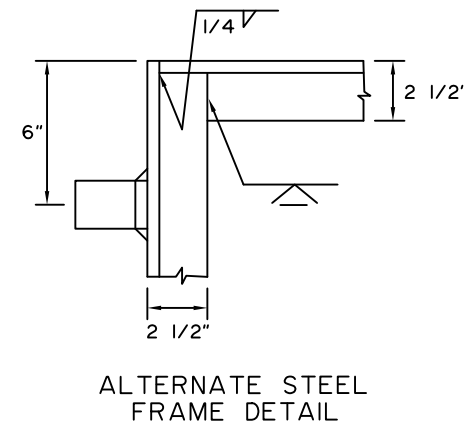
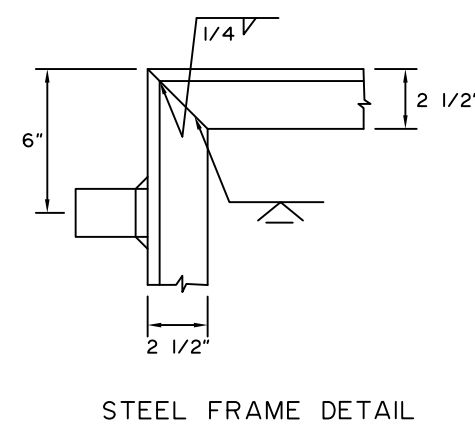
1. Provide either steel frames and grates or cast iron frames and grates.
2. Chamfer all exposed concrete corners 3/4".
3. Provide 2" minimum cover for all reinforcing steel.
4. Use Grade 40 minimum reinforcing steel.
5. Cast iron frame embedment lugs may differ from the configuration shown for steel frames. Provide 6 total embedment lugs extending into concrete a minimum of 3".
6. Shop fabricate steel frames and steel grates.
7. Hot dip galvanize steel frames and grates. Provide uncoated cast iron frames and grates.



STEEL FRAME & GRATE DETAILS
Finished grate size is 21"x42"



NOTE: DRAWING NOT TO SCALE



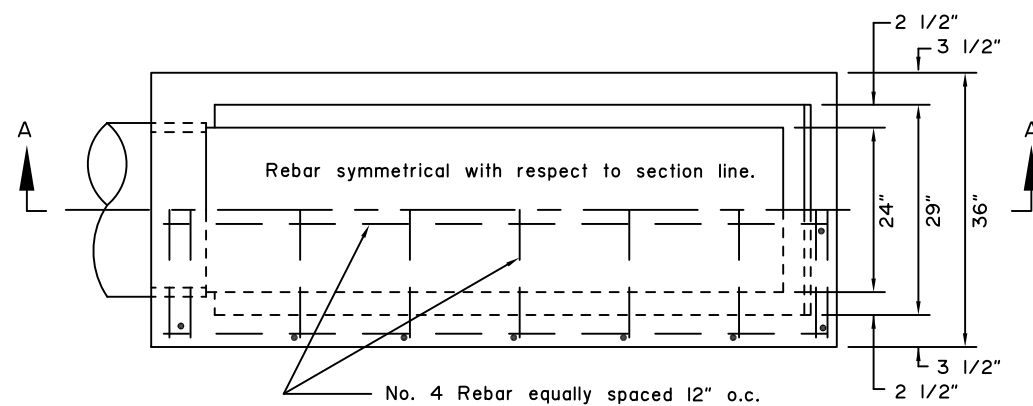
State of Alaska DOT&PF
ALASKA STANDARD PLAN
TYPE "D" OUTLET BOX
18 INCH PIPE
ON 4:1 SLOPE

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

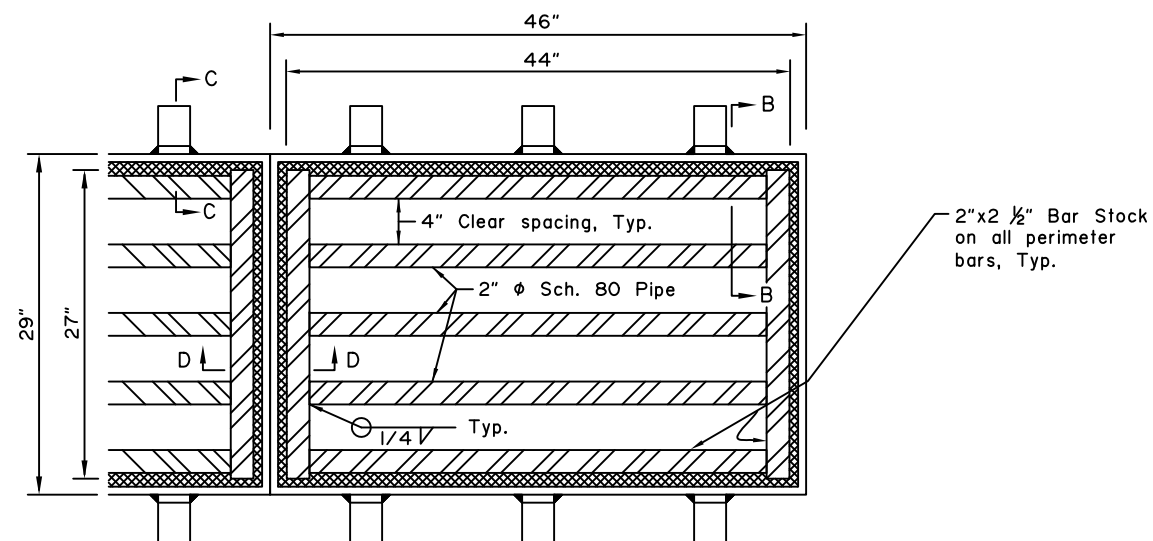
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



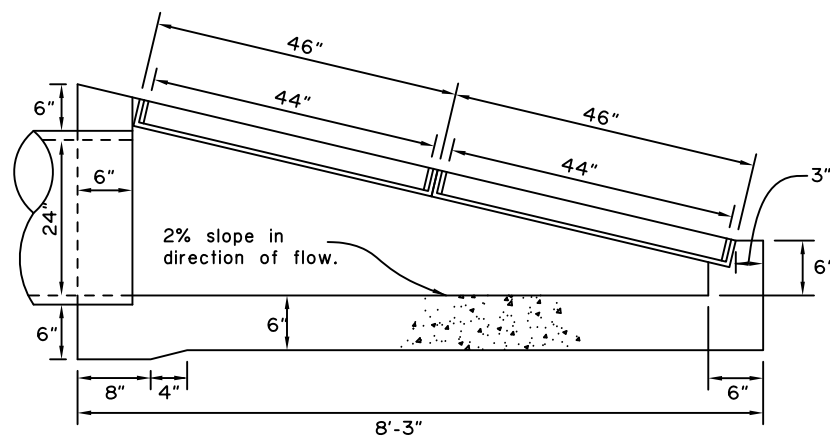
PLAN
(Grate not shown for clarity)



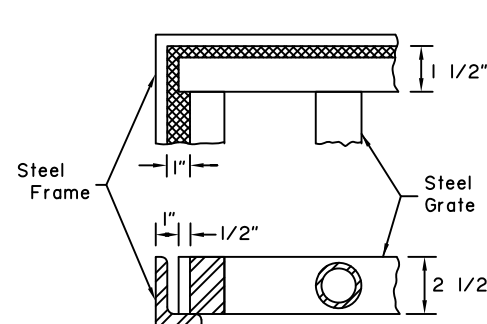
STEEL FRAME & GRATE CONFIGURATION

GENERAL NOTES:

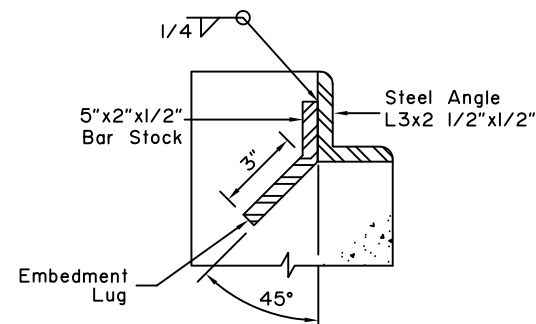
1. Provide either steel frames and grates or cast iron frames and grates.
2. Chamfer all exposed concrete corners $\frac{3}{4}$ ".
3. Provide 2" minimum cover for all reinforcing steel.
4. Use Grade 40 minimum reinforcing steel.
5. Cast iron frame embedment lugs may differ from the configuration shown for steel frames. Provide 6 total embedment lugs extending into concrete a minimum of 3".
6. Shop fabricate steel frames and steel grates.
7. Hot dip galvanize steel frames and grates. Provide uncoated cast iron frames and grates.



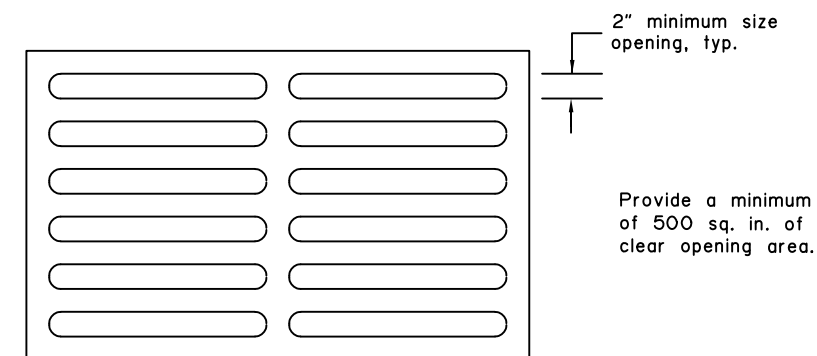
SECTION A-A



SECTION B-B

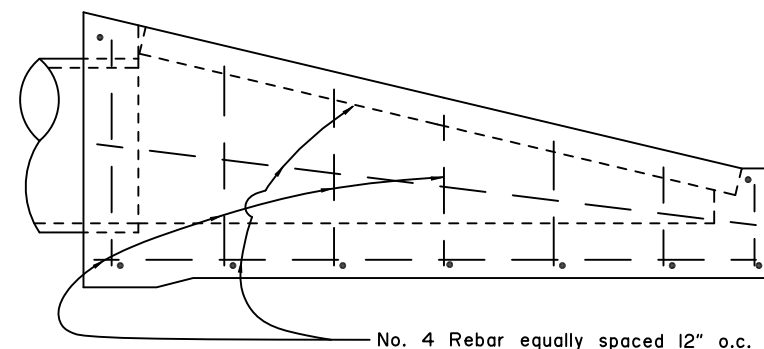


SECTION C-C

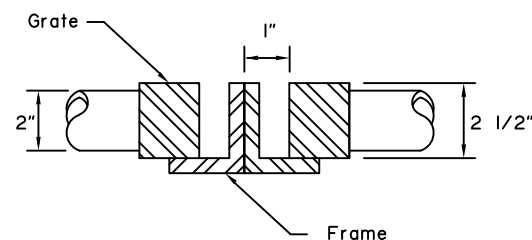


CAST IRON GRATE CONFIGURATION

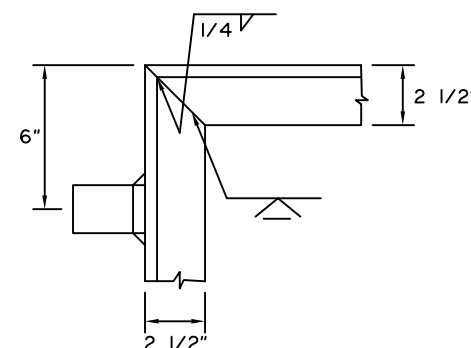
Finished grate size is 27"x44"



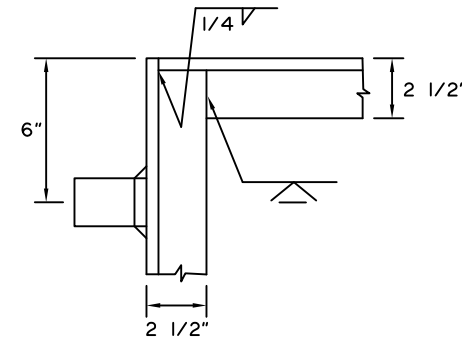
TYPICAL REINFORCEMENT STEEL DETAIL



SECTION D-D



STEEL FRAME DETAIL



ALTERNATE STEEL FRAME DETAIL

NOTE: DRAWING NOT TO SCALE

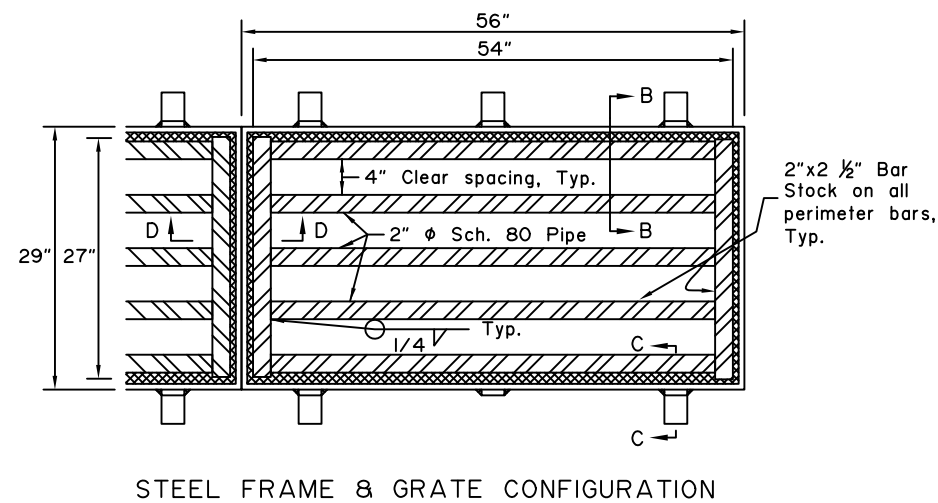
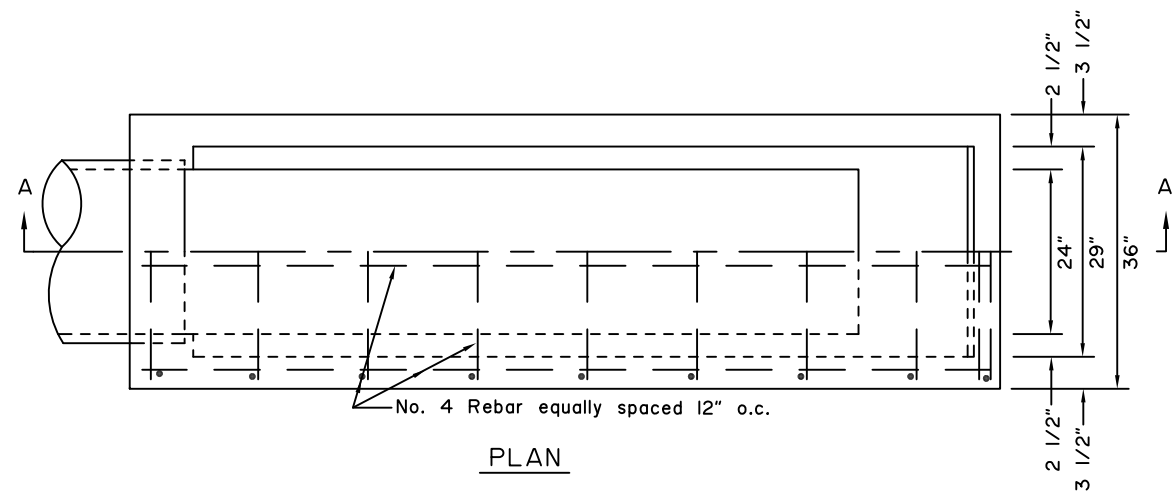
State of Alaska DOT&PF
ALASKA STANDARD PLAN
TYPE "C" INLET BOX
24 INCH PIPE
ON 4:1 SLOPE

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

Adoption Date: 02/08/2019

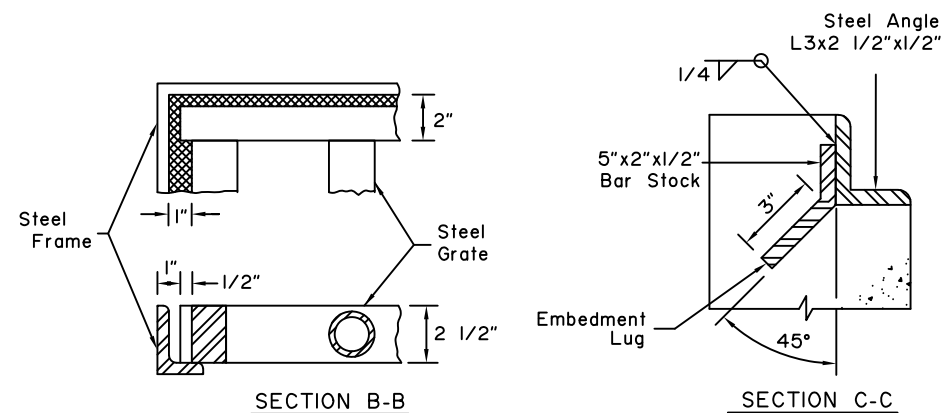
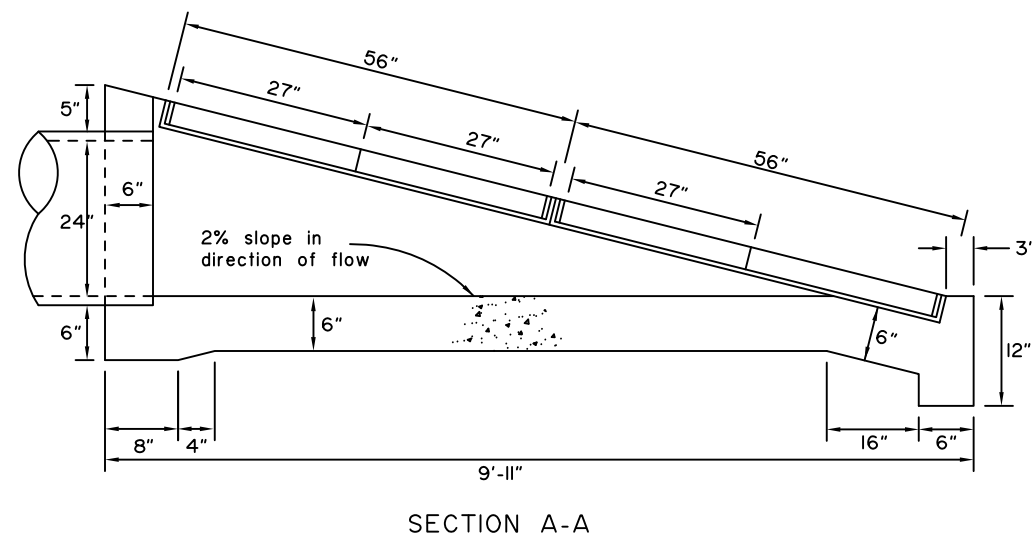
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Next Code and Standards Review date: 02/08/2029

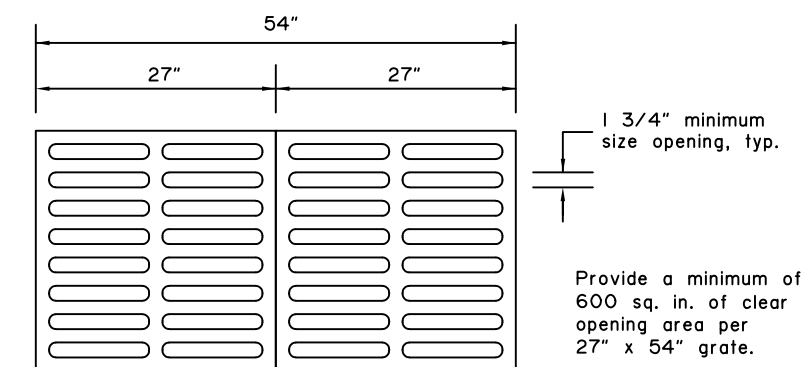


GENERAL NOTES:

1. Provide either steel frames and grates or cast iron frames and grates.
2. Chamfer all exposed concrete corners $\frac{3}{4}$ ".
3. Provide 2" minimum cover for all reinforcing steel.
4. Use Grade 40 minimum reinforcing steel.
5. Cast iron frame embedment lugs may differ from the configuration shown for steel frames. Provide 6 total embedment lugs extending into concrete a minimum of 3".
6. Shop fabricate steel frames and steel grates.
7. Hot dip galvanize steel frames and grates. Provide uncoated cast iron frames and grates.

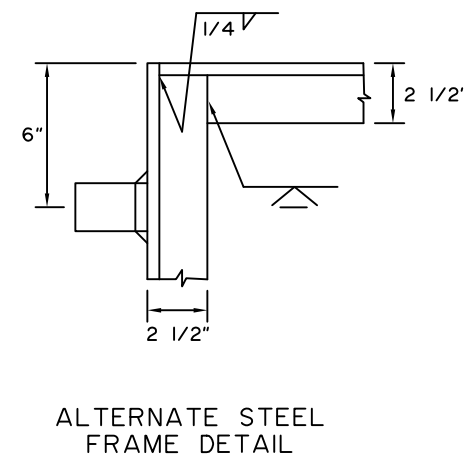
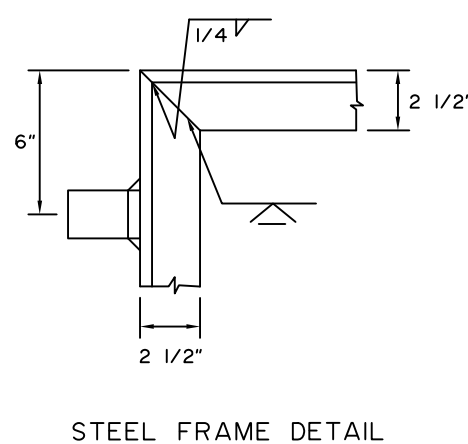
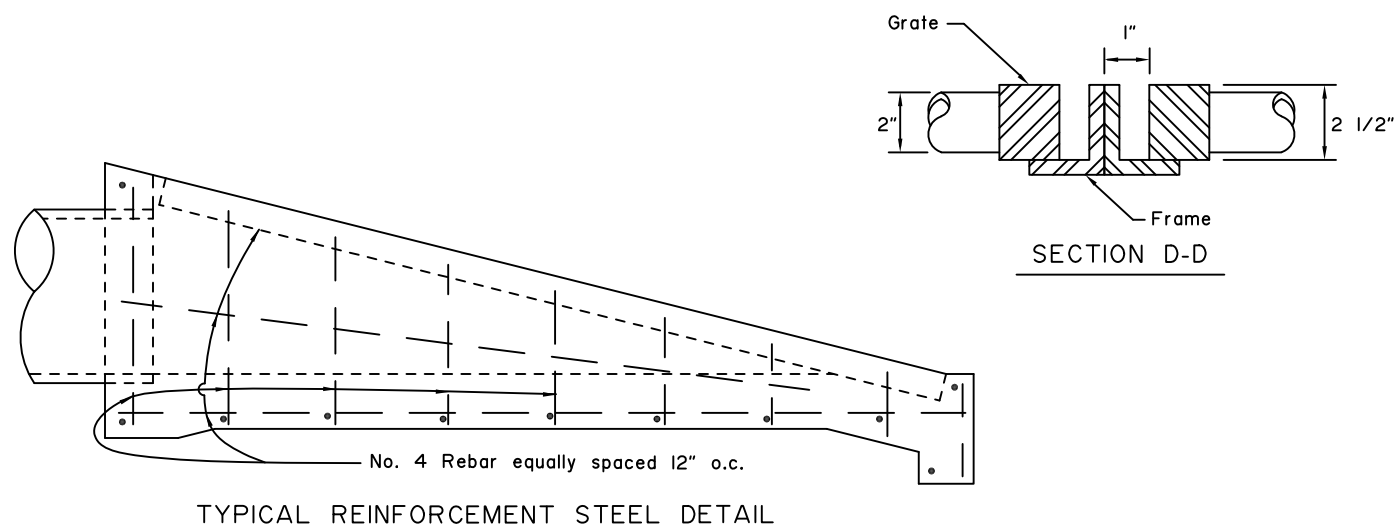


Finished grate size is 27"x54"



CAST IRON GRATE CONFIGURATION

Finished grate size is 27"x54"
Shown with 2 ea. 27"x27" grates end-to-end



NOT TO SCALE

State of Alaska DOT&PF
ALASKA STANDARD PLAN
TYPE "D" OUTLET BOX
24 INCH PIPE
ON 4:1 SLOPE

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

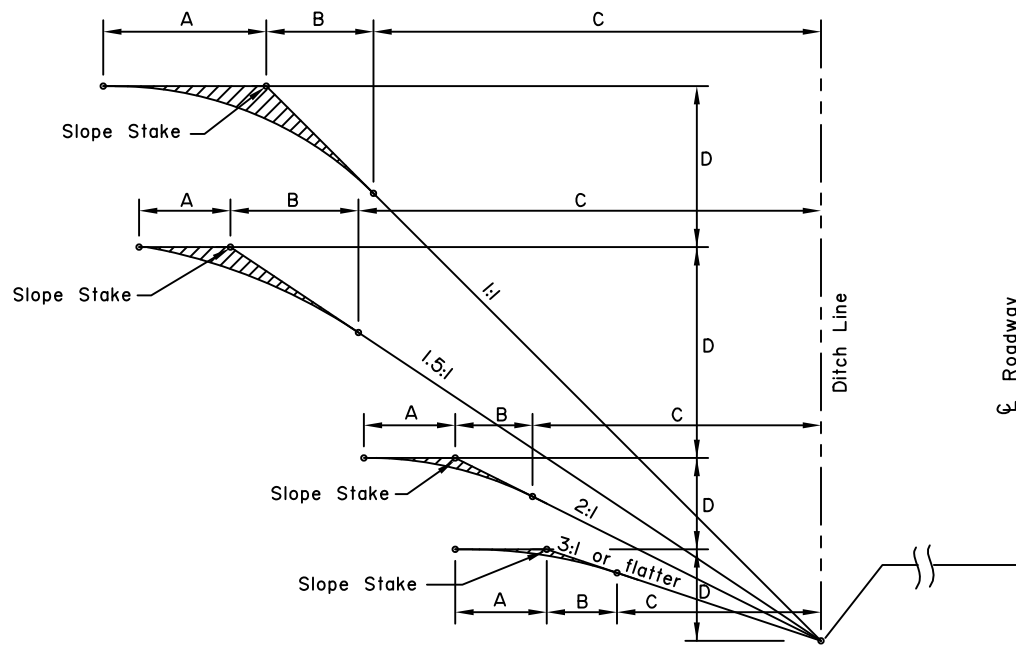


FIG. 1
TYPICAL SECTION OF ROUNDED SLOPES

Rate of Slope	A		B	
	When B's 5.0' or less	When B is more than 5.0'	When D's 15.0' or less	When D is more than 15.0'
3:1 or flatter	B	5.0'	5.0'	5.0'
2:1	B	5.0'	5.0'	D/3
1.5:1	B	5.0'	5.0'	D/3
1:1	B	$\frac{D}{3}$, Max. 10.0'		D/3

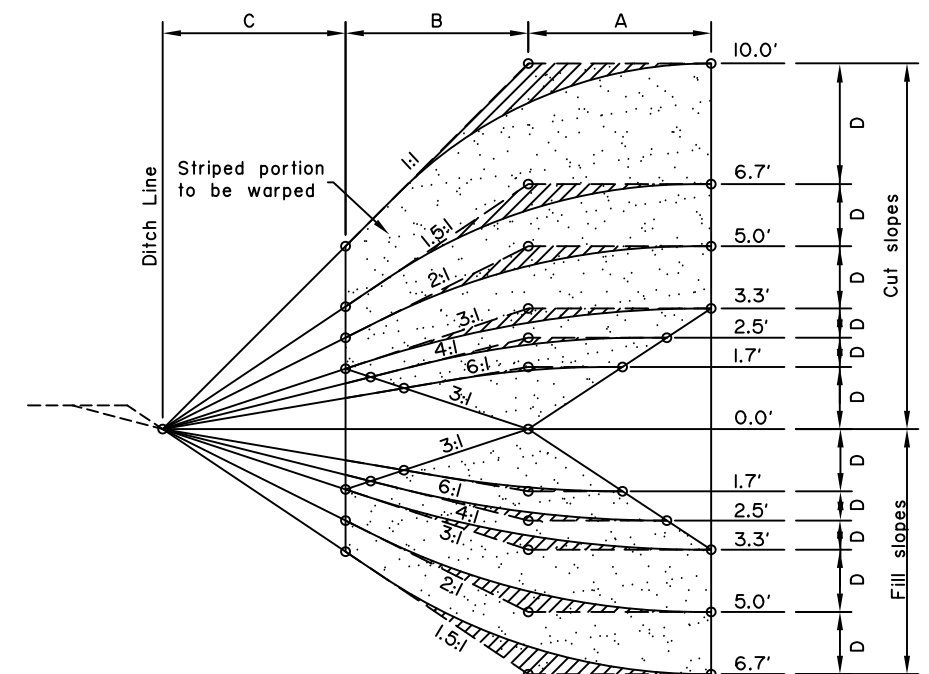


FIG. 4
TYPICAL GRADING FOR WARPING SLOPES

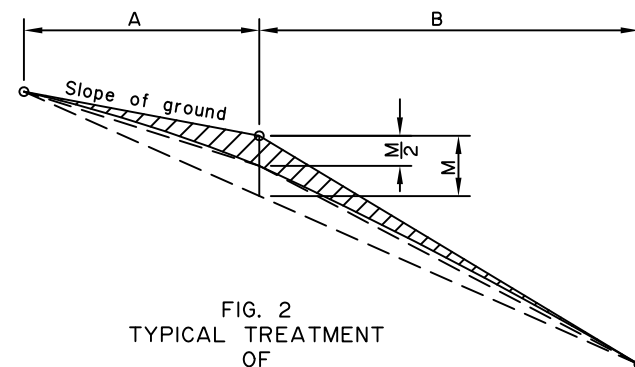


FIG. 2
TYPICAL TREATMENT
OF
POSITIVE SLOPE INTERSECTION

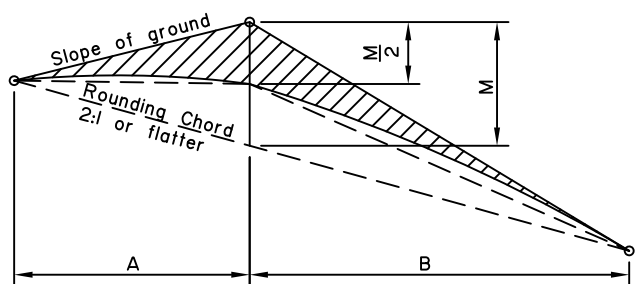


FIG. 3
TYPICAL TREATMENT
OF
NEGATIVE SLOPE INTERSECTION

TYPICAL SLOPE ROUNDING

GENERAL NOTES

1. Cut and fill slopes shall be rounded as shown in fig. 1, 2, and 3 when required by the plans or special provisions. Rounding of fill slopes shall be done in the same manner as shown for cut slopes.
2. Intersections of cut and fill slopes shall be warped as shown in fig. 4 and 5 when required by the plans or special provisions.
3. Warping of cut and fill slopes is for the purpose of attaining a more pleasing appearance and to promote the growth of natural vegetation by causing the fill slope to flow smoothly into the cut slope. The length of slope warping is relatively proportional to the character of the topography, the distance between end limits of warped surfaces being lessened as the terrain steepens and lengthened as the topography flattens out. The procedure as outlined herein is typical and shall be varied to meet special conditions and shall be as staked by the Engineer.
4. SUGGESTED PROCEDURE FOR WARPING SLOPING
 - A--Select end points for warping to fit specified slope ratios as follows:-
 - (a) The dimensions A, B, and C shall all be constant throughout the full length of warping, E.
 - (b) When the average depth of cut or fill is such that the dimension B+C exceeds 10 feet, the ends of warping shall be at points where B+C is 10 feet, provided the warping distance E does not exceed 100 feet. That is, as shown in fig. 4 and 5, warping shall begin at a cut or fill depth of 6.7 feet for 1.5:1 slopes, at 50 feet for 2:1 slopes, etc. if the dimension E exceeds 100 feet, the dimension B+C shall be reduced until the intersections of the prescribed slopes with the natural ground are 100 feet apart.
 - (c) When the average depth of cut or fill is such that the distance B+C is between 5 feet and 10 feet, the ends of warping shall be at points where C is 0 feet, but such points shall not be more than 150 feet apart.
 - (d) When the average depth of cut or fill is such that the dimension B is less than 5 feet, the ends of warping shall be 200 feet apart.
 - B--Set slope stakes at end of warping.
 - C--Set additional slope stakes at various intervals between end stakes and at the same distance from centerline.
 - D--Flatten and round warped slopes as shown in figure 4 for each section.
5. A layer of earth overlying a rock cut shall be rounded as far as possible as though the total height of slope were in earth cut.

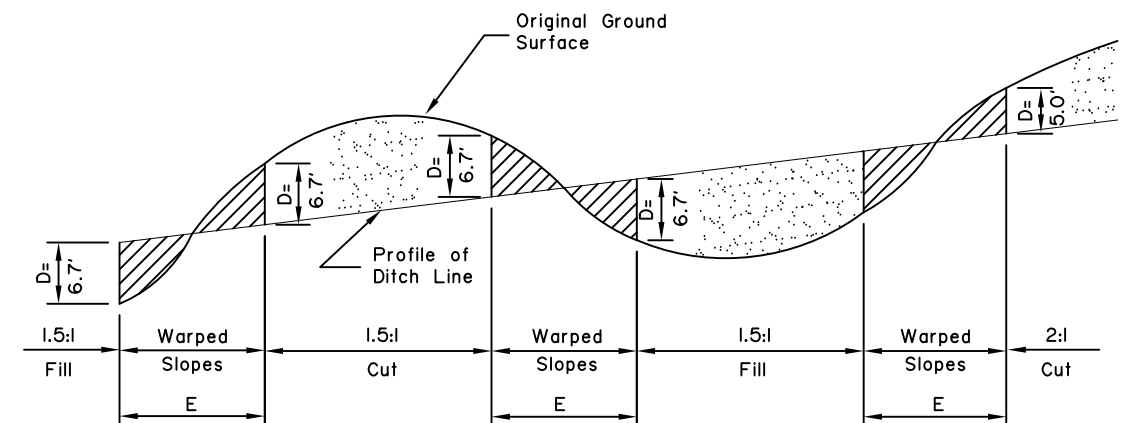


FIG. 5
TYPICAL PROFILE OF WARPED SLOPES

TYPICAL SLOPE WARPING

State of Alaska DOT&PF
ALASKA STANDARD PLAN
SLOPE
ROUNDING AND WARPING

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

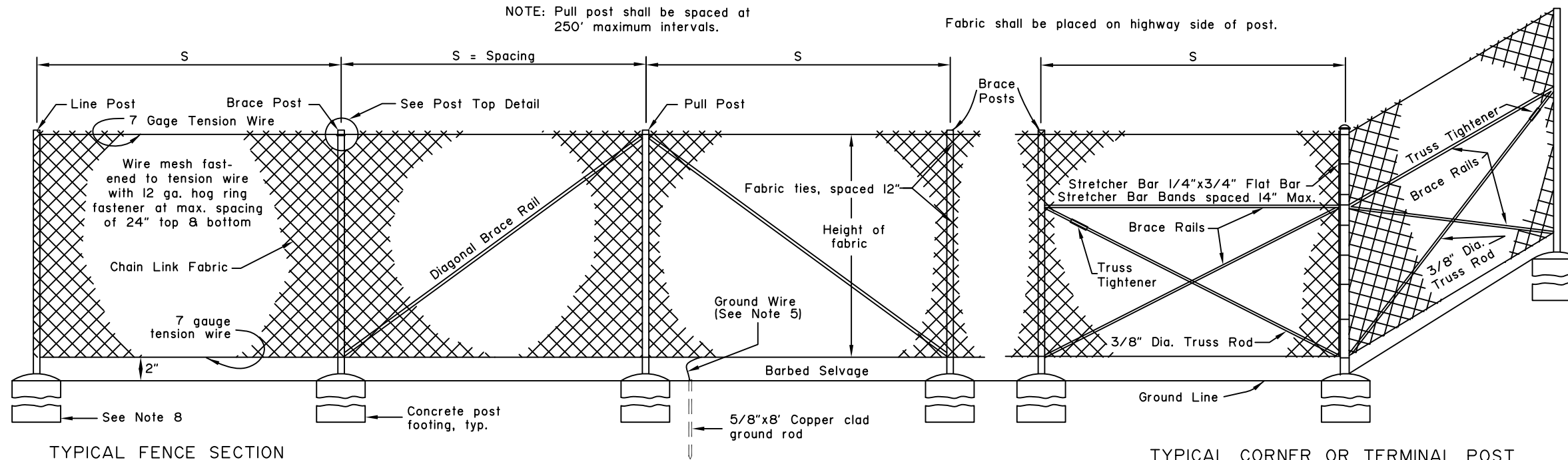
Adoption Date: 02/08/2019

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By: Date:

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

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

Fabric shall be placed on highway side of post.



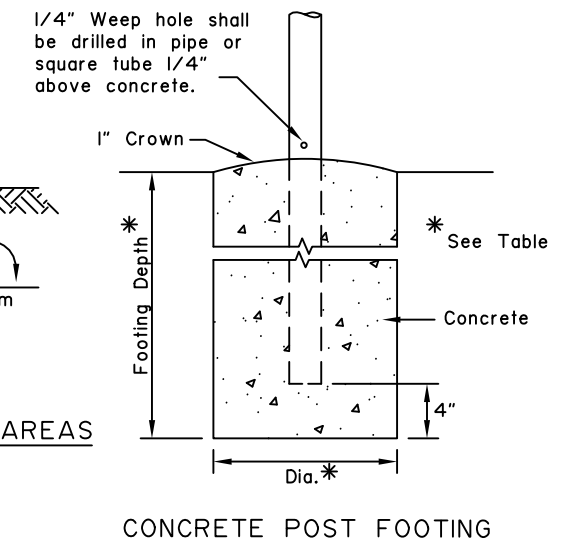
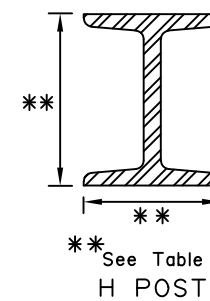
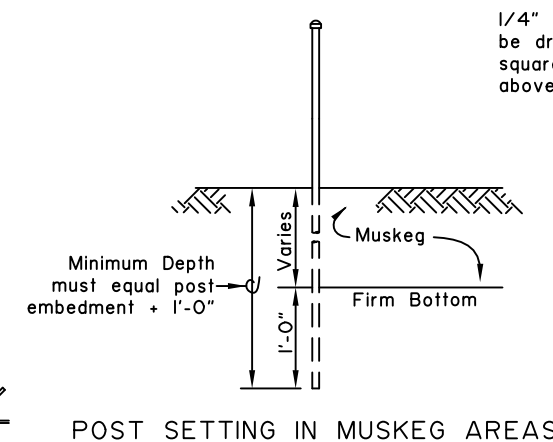
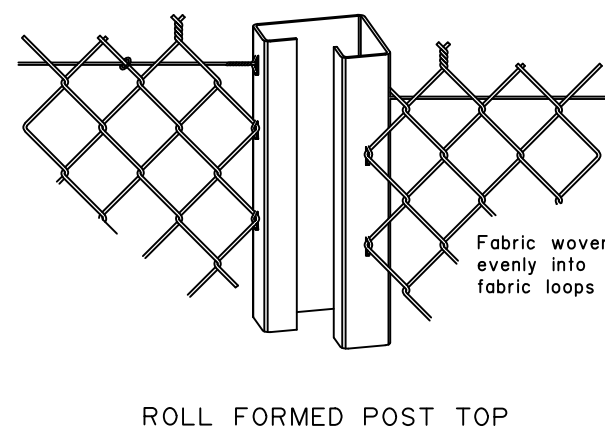
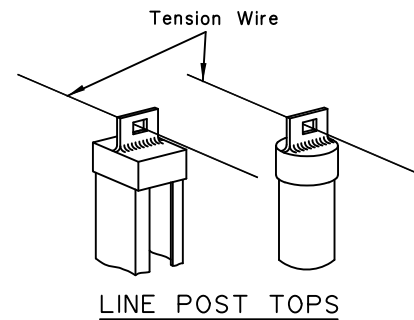
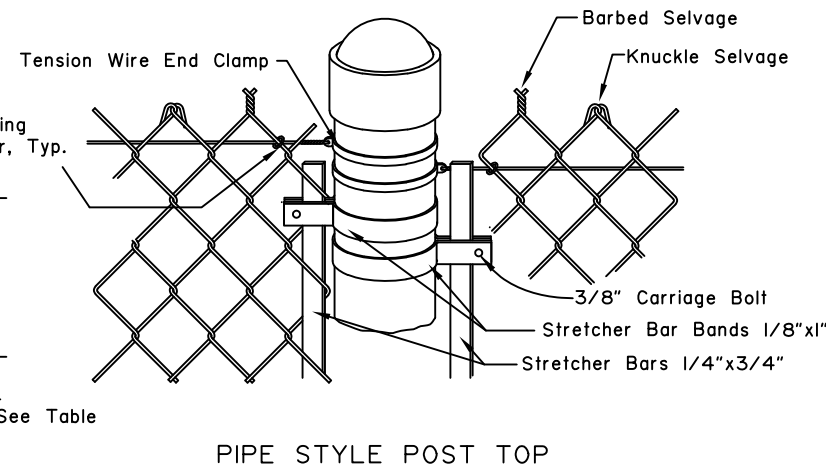
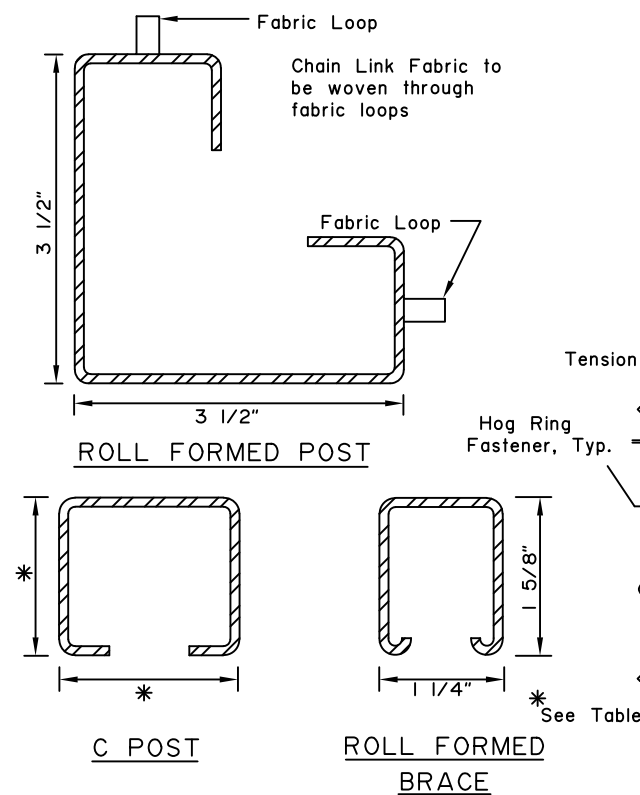
GENERAL NOTES:

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

TYPICAL FENCE SECTION

TYPICAL PULL POST

TYPICAL CORNER OR TERMINAL POST



FABRIC HEIGHT	POST														TOP OR BRACE RAIL						ALTERNATE POST	
	END-CORNER-PULL								LINE-BRACE												LINE-BRACE	
	PIPE		SQUARE TUBE		ROLL FORMED		FOOTING		PIPE		C POST		FOOTING		PIPE		ROLL FORMED		H POST		H POST	
	SIZE	WT./FT.	SIZE	WT./FT.	SIZE	WT./FT.	DEPTH	DIA.	SIZE	WT./FT.	SIZE	WT./FT.	DEPTH	DIA	SIZE	WT./FT.	SIZE	WT./FT.	SIZE	WT./FT.	SIZE	WT./FT.
3'	2"	3.65#	2" x 2"	4.31#	3 1/2"x3 1/2"	4.84#	40"	10"	1 1/2"	2.72#	1 7/8"x1 5/8"	2.28#	28"	10"	1 1/4"	2.27#	1 5/8"	1.35#	1 1/2"x 1 5/16"	2.27#	1 7/8"x1 5/8"	2.72#
4'	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
5'	2"	3.65#	2" x 2"	4.31#	3 1/2"x3 1/2"	4.84#	40"	10"	1 1/2"	2.72#	1 7/8"x1 5/8"	2.28#	28"	10"	"	"	"	"	"	"	1 7/8"x1 5/8"	2.72#
6'	2 1/2"	5.79#	2 1/2"x2 1/2"	5.59#	3 1/2"x3 1/2"	4.84#	48"	15"	2"	3.65#	2 1/4"x1 45/64"	2.64#	40"	12"	"	"	"	"	"	"	2 1/4"x2"	4.1#
7'	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
8'	2 1/2"	5.79#	2 1/2"x2 1/2"	5.59#	3 1/2"x3 1/2"	4.84#	48"	15"	2"	3.65#	2 1/4"x1 45/64"	2.64#	40"	12"	"	"	"	"	"	"	2 1/4"x2"	4.1#

State of Alaska DOT&PF
ALASKA STANDARD PLAN

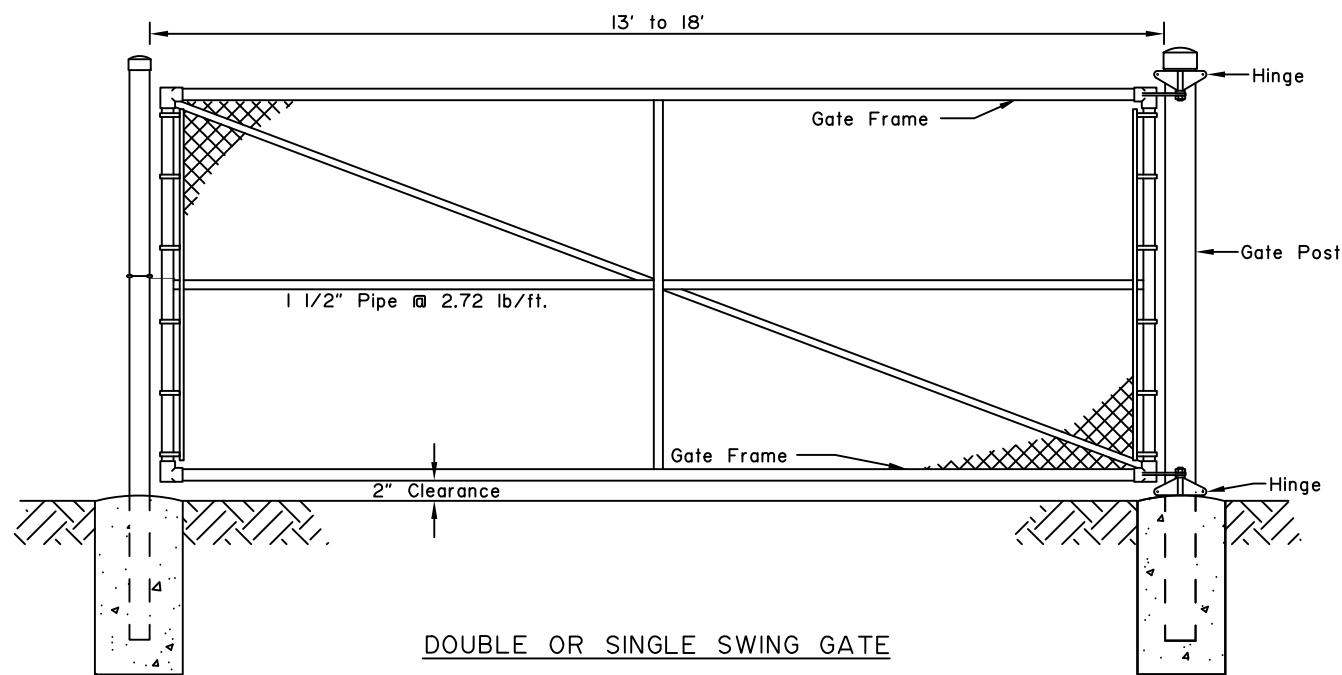
CHAIN LINK FENCE

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

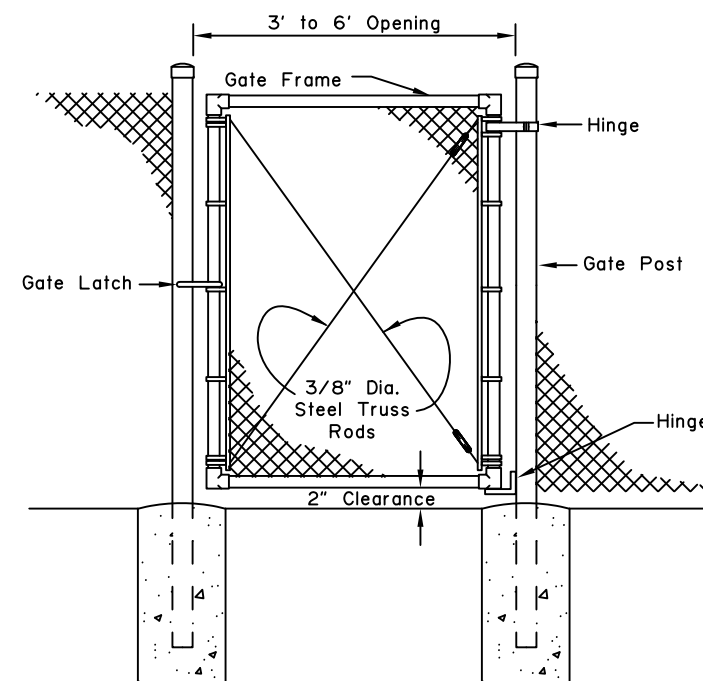
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



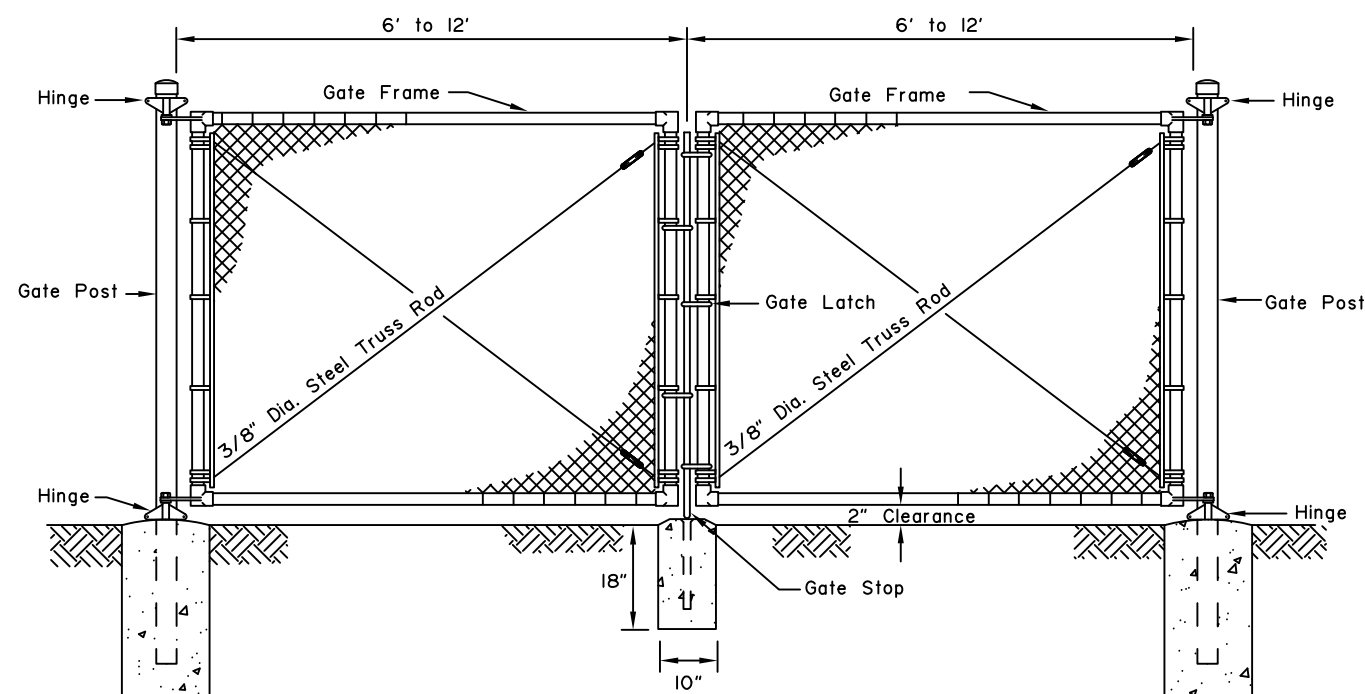
DOUBLE OR SINGLE SWING GATE



PEDESTRIAN GATE

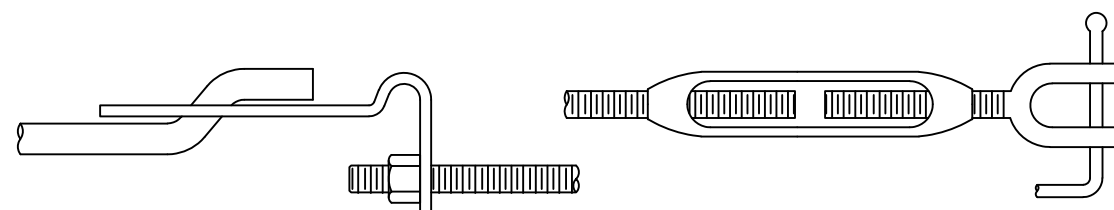
GENERAL NOTES:

1. Details shown are to indicate general design only. Dimensions may vary slightly among the manufacturers.
2. Gate fabric shall be of the same design and height of line fence fabric.
3. Gate fabric shall be furnished with knuckle selvage top and bottom.
4. Concrete footings shall be of the same depth as end posts with a diameter 1 1/2 times larger except as shown for gate stop.
5. Gate frames may be fabricated by welding or riveting and shall be braced to eliminate sagging. Hinges, latches and other gate appurtenances shall be of sufficient strength and design to assure easy trouble free operation.



DOUBLE SWING GATE

Gate Fabric Height	Gate Opening		GATE POST						GATE FRAME			
	SINGLE GATE	DOUBLE GATE	ST'D PIPE		SQUARE TUBE		ROLL FORMED		ST'D PIPE		SQUARE TUBE	
			SIZE	WT/FT.	SIZE	WT/FT.	SIZE	WT/FT.	SIZE	WT/FT.	SIZE	WT/FT.
3' to 5'	3' to 6'	6' to 12'	2"	3.65 #	2" x 2"	4.31 #	3 1/2"x3 1/2"	5.14 #	1 1/2"	2.72 #	2" x 2"	4.31 #
"	7' to 12'	13' to 24'	2 1/2"	5.79 #	2 1/2"x2 1/2"	5.59 #	" "	" "	" "	" "	" "	" "
"	13' to 18'	25' to 36'	"	"	" "	"	" "	" "	" "	" "	" "	" "
6' to 8'	3' to 6'	6' to 12'	2 1/2"	5.79 #	2 1/2"x2 1/2"	5.59 #	3 1/2"x3 1/2"	5.14 #	1 1/2"	2.72 #	" "	" "
"	7' to 12'	13' to 24'	3 1/2"	9.11 #	3 1/2"x3 1/2"	8.14 #	————	————	2"	3.65 #	" "	" "
"	13' to 18'	25' to 36'	6"	18.97 #	6" x 6"	18.82 #	————	————	" "	" "	2" x 2"	4.31 #



TYPICAL TRUSS ROD TIGHTENERS

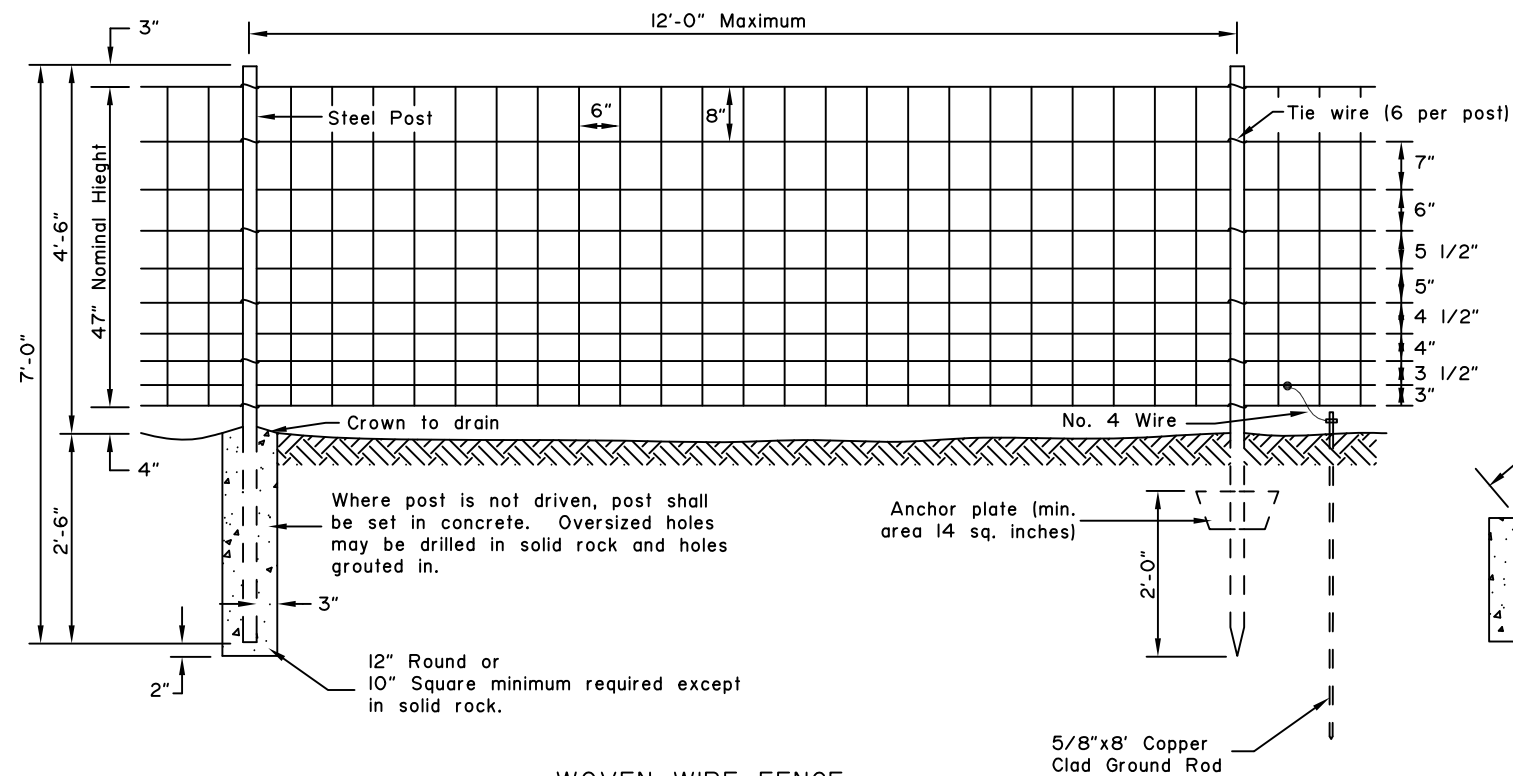
State of Alaska DOT&PF
ALASKA STANDARD PLAN
CHAIN LINK FENCE
GATE

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

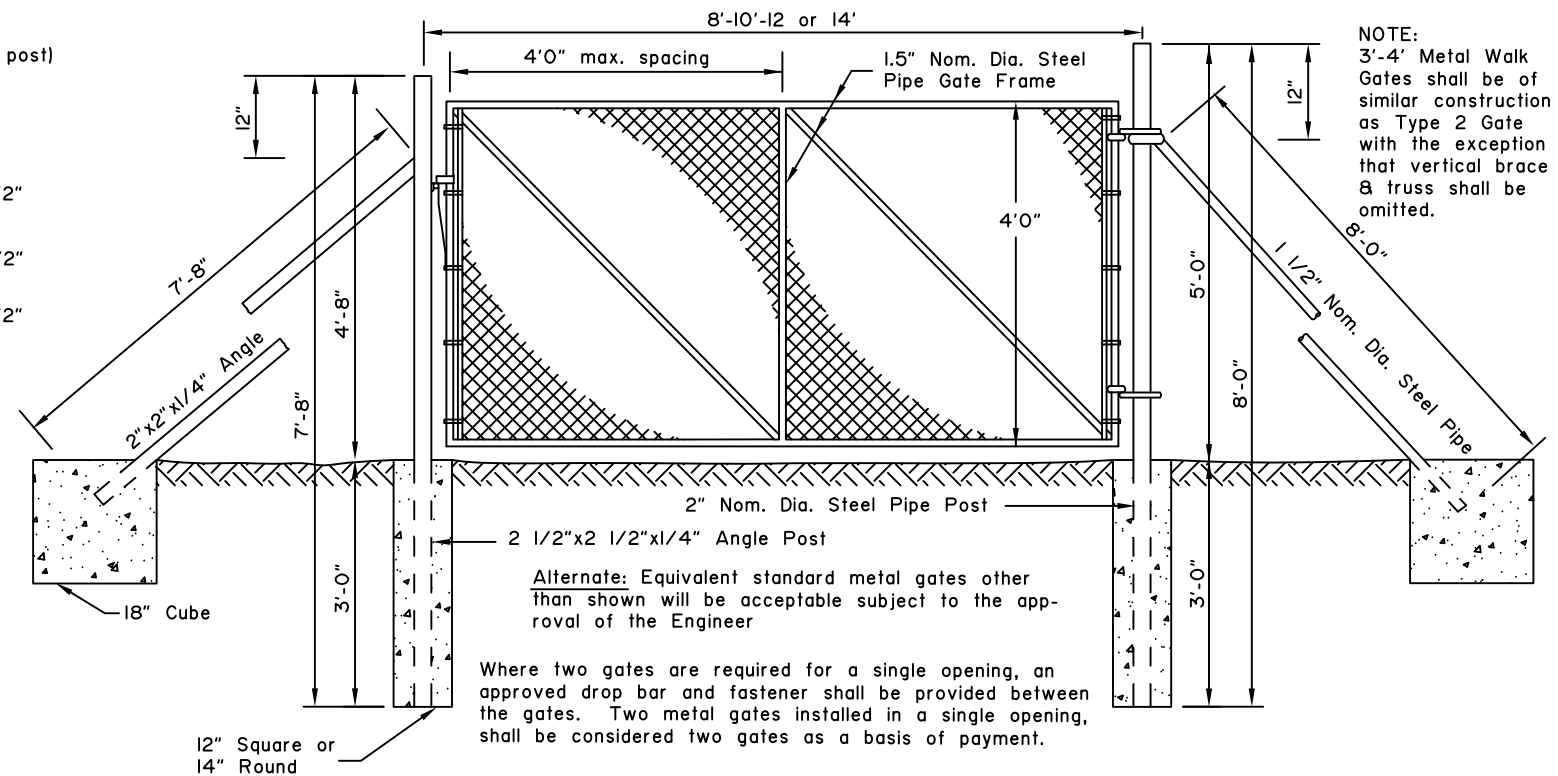
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

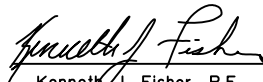


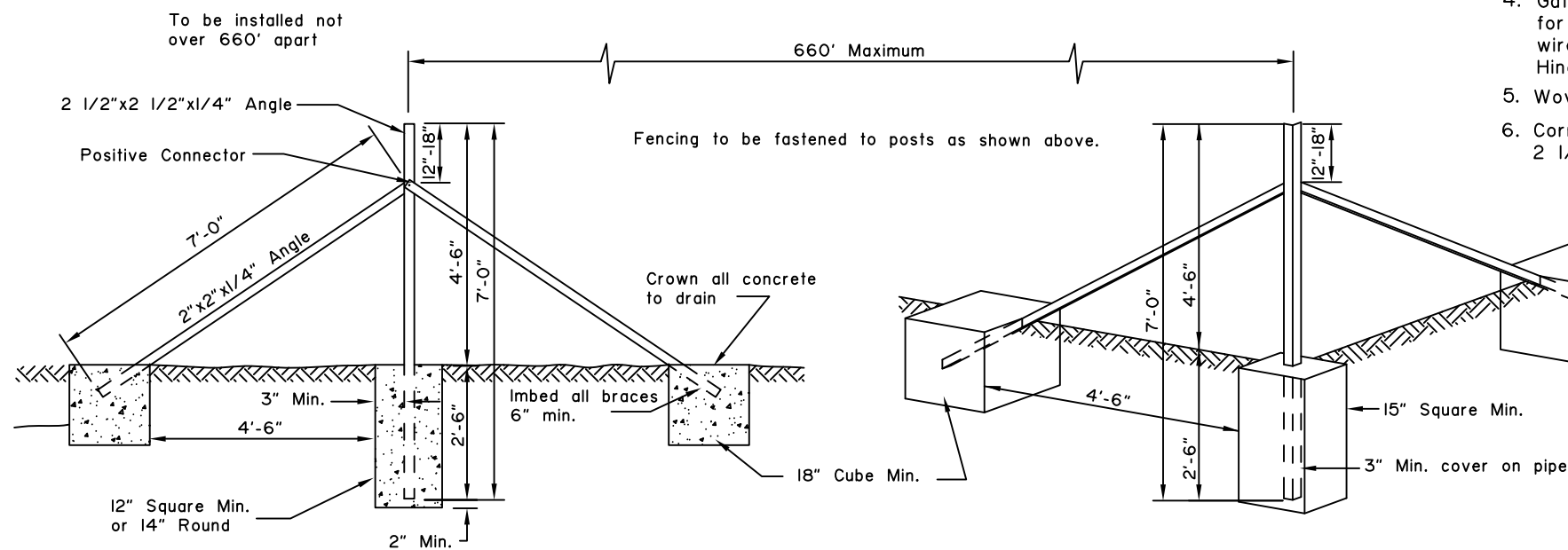
WOVEN WIRE FENCE



TYPE 2 GATE

GENERAL NOTES:

1. Gates shall be hung on standard angle or steel pipe posts.
 2. Metal posts shall be angle steel or steel pipe with dimensions as shown and with the following nominal weights per linear foot: 1 1/2" Nom. Dia.-2.72 lbs., 2" Nom. Dia.-3.65 lbs.
 3. Place fencing and gates where shown on plans.
 4. Gate shall be manufactured of steel pipe not less than 1" Nom. Dia., (Nom. wt. 1.68 lbs. per linear foot) for frame and vertical brace. Wire mesh shall be 9 gage and affixed to the frame with 9 gage G.I. wire. Each gate shall be equipped with one standard adjustable diagonal truss rod from corner to corner. Hinges and 2-way self closing latch shall be of an approved rustproof malleable iron or steel.
 5. Woven wire top and bottom strands shall be 9 gage intermediate strands and vertical fillers shall be 11 gage.
 6. Corner, end and brace posts shall be 2" Nom. Dia. pipe, (Nom. wt. 3.65 lbs per linear foot) or 2 1/2"x2 1/2"x1/4" angle (Nom. wt. 4.1 lbs per linear foot).
 7. Metal line posts (Nominal wt. 1.33 lbs. per linear foot) shall have knobs, punched web or corrugated edges to hold hold fencing.
 8. Metal braces shall be 1 1/2" Nom. Dia. pipe (Nom. wt.2.72 lbs per linear foot) or 2"x2"x1/4" angle (Nom. wt. 3.19 lbs. per linear foot.)
 9. Wire fencing shall be placed on side of post facing the highway. Special bracing or location may be required when fencing crosses or parallels streams, bodies of water or sags in the fence line.
 10. Tie wires shall be 10 gage.
 11. All wire, posts and hardware shall be galvanized. Weights and gages specified are minimums before galvanizing.
-
- Min.
- r on pipe
- ## State of Alaska DOT&PF ALASKA STANDARD PLAN
- ### WOVEN WIRE FENCE
- Adopted as an Alaska
Standard Plan by:
- 
Kenneth J. Fisher, P.E.
Chief Engineer
- Adoption Date: 02/08/2019



METAL LINE BRACE

METAL CORNER BRACE

State of Alaska DOT&PF
ALASKA STANDARD PLAN

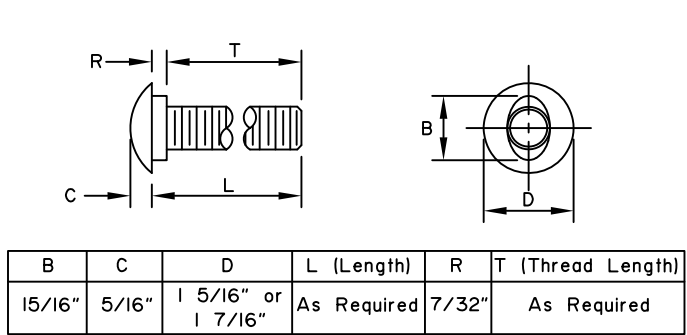
WOVEN WIRE FENCE

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

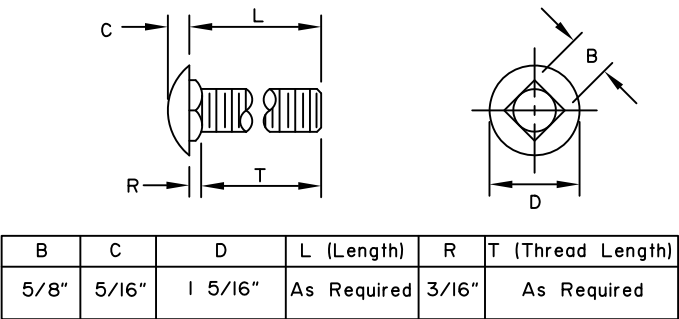
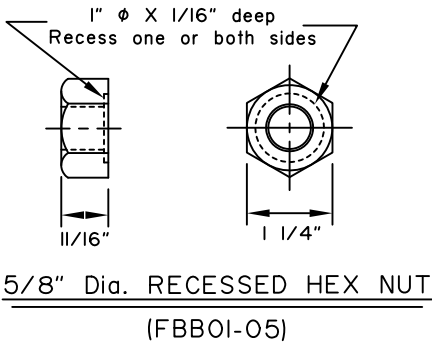
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: _____ Date: _____

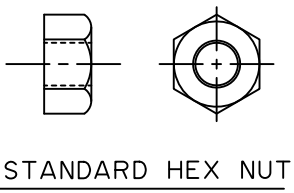
Next Code and Standards Review date: 02/08/2029



5/8" BUTTONHEAD BOLT
(FBB01-05)



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

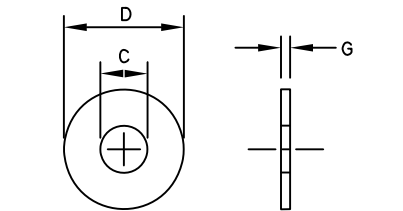


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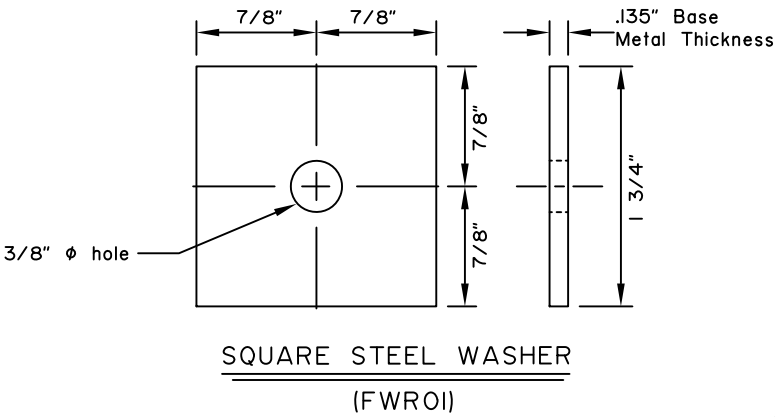
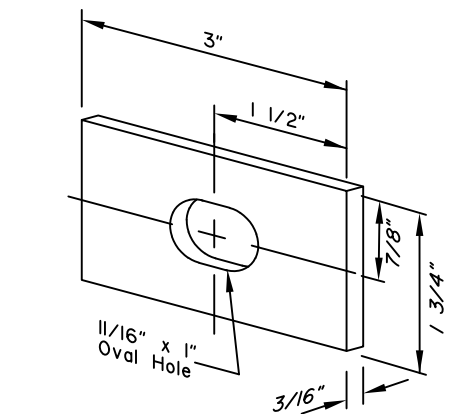
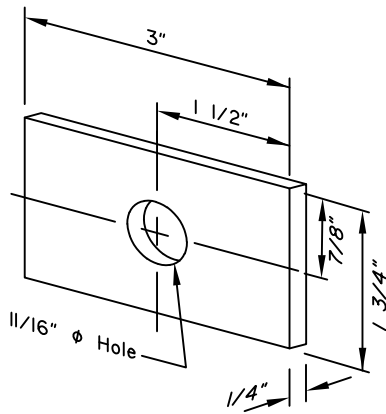
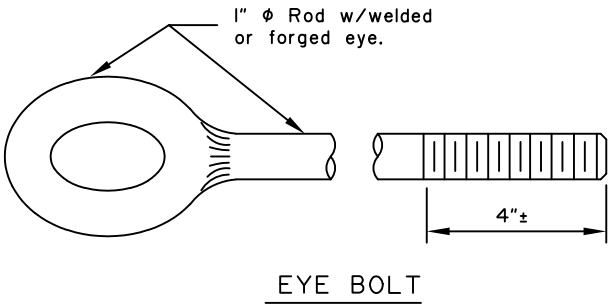
- I. All covered hardware shall comply with the Task Force I3 (TFI3) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.

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"-II	—	—	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



STANDARD STEEL WASHERS



Note: drawing not to scale

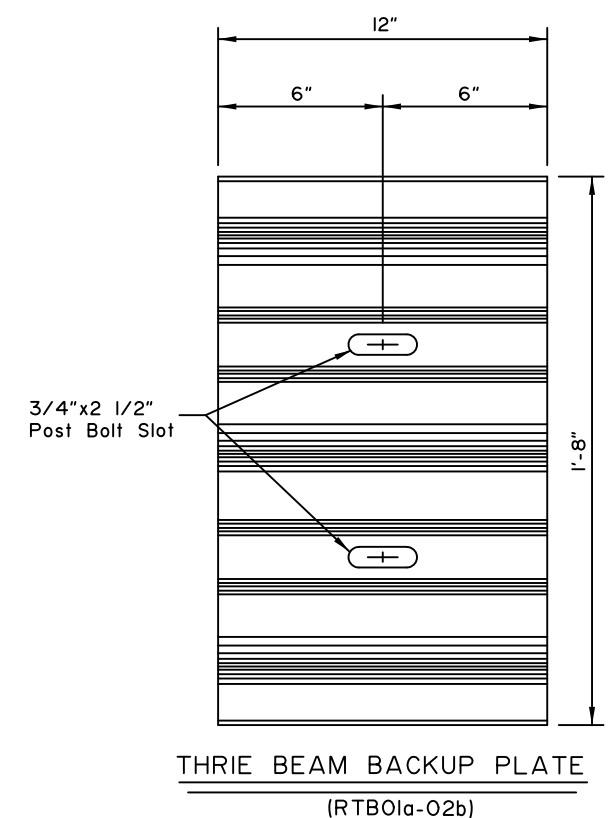
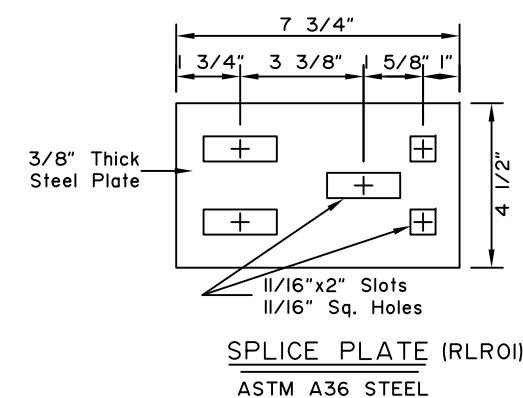
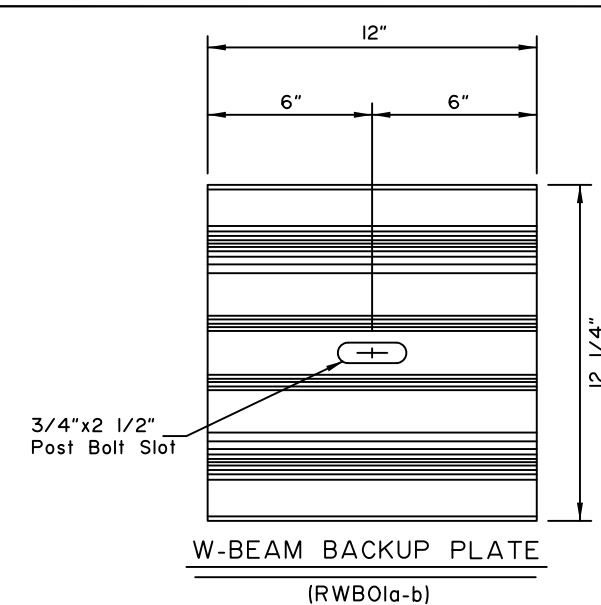
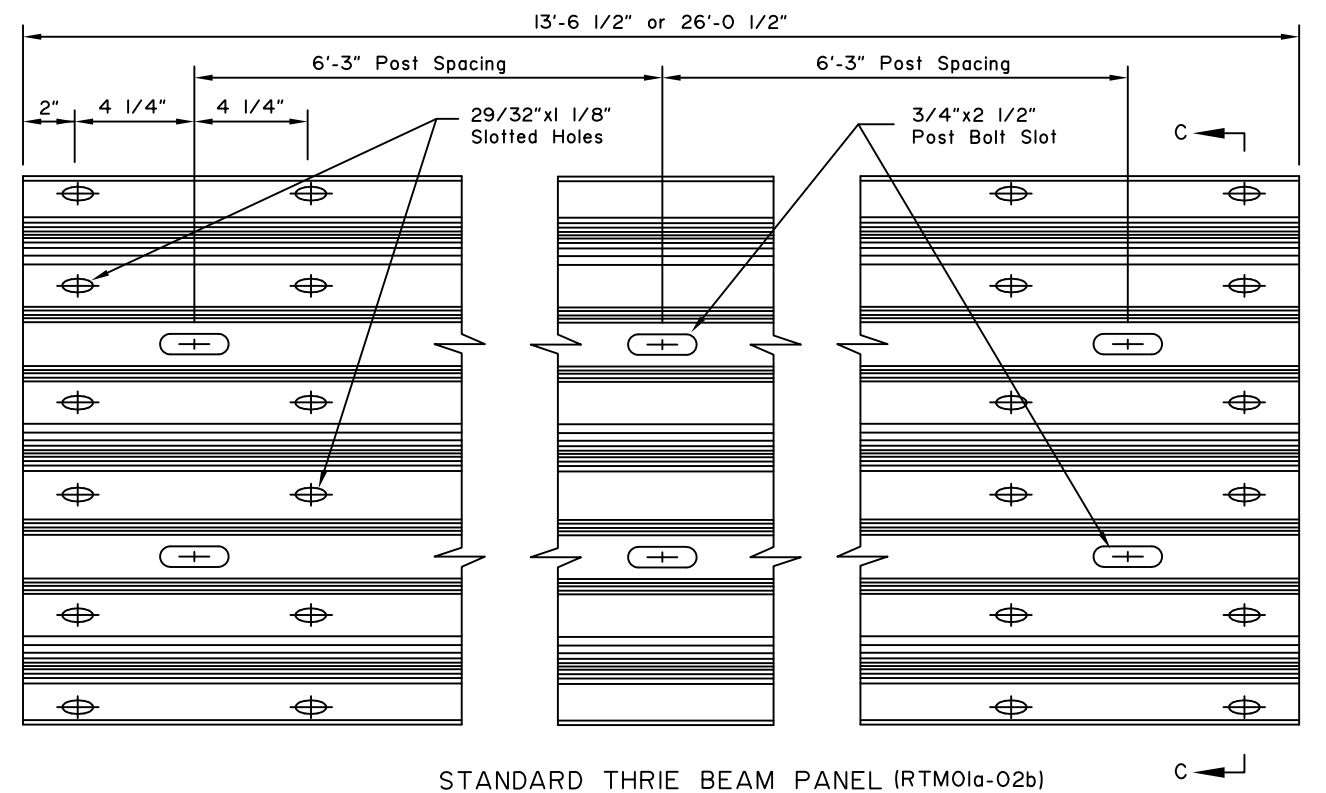
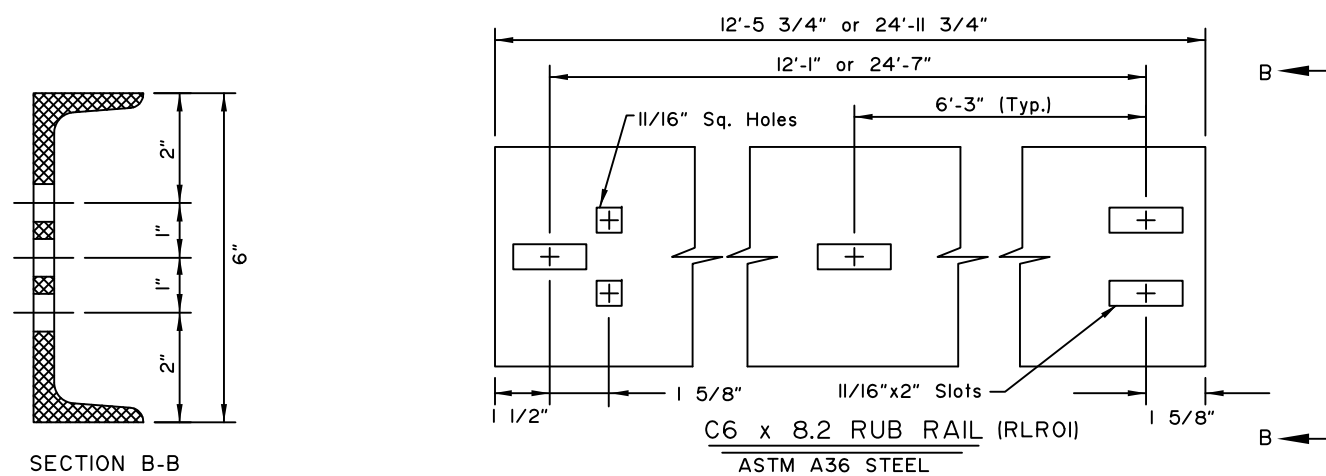
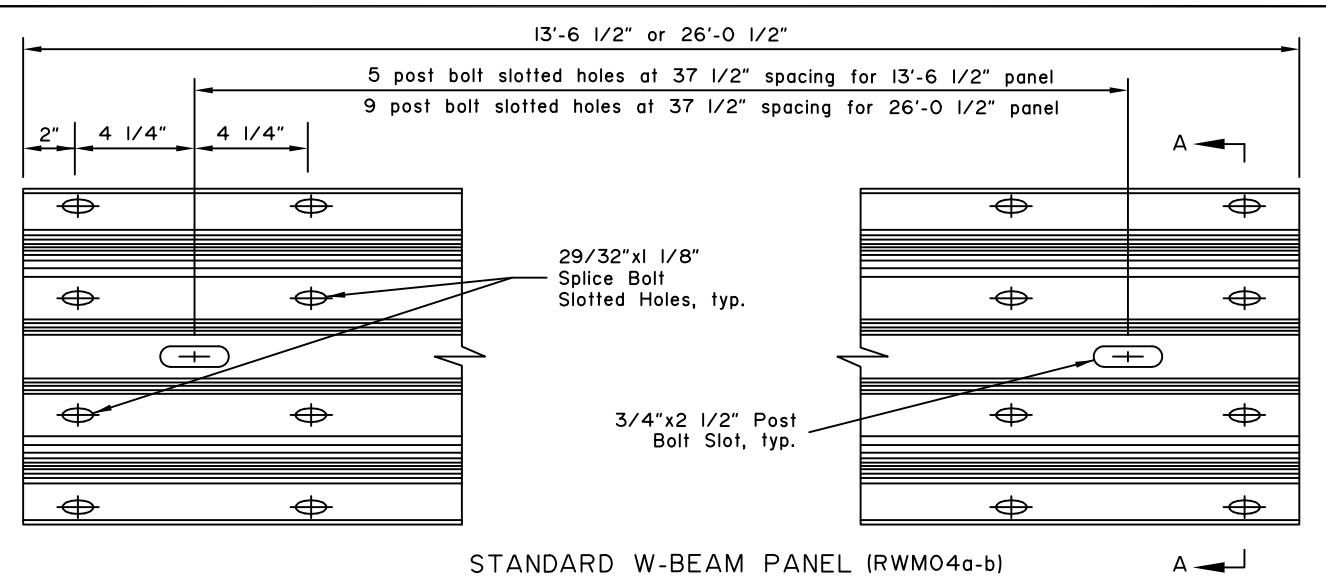
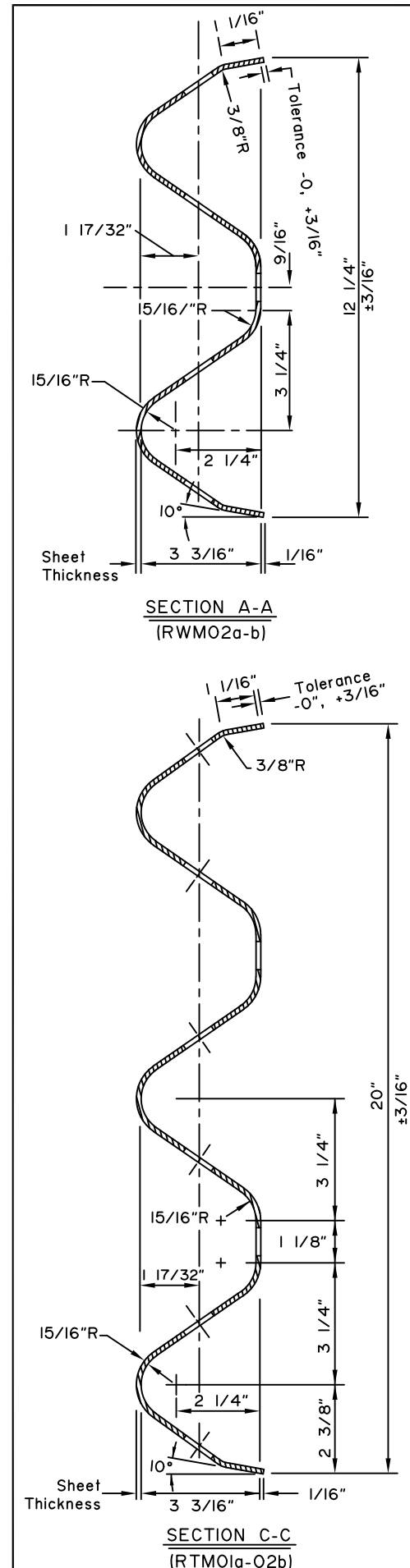
State of Alaska DOT&PF
ALASKA STANDARD PLAN
STANDARD GUARDRAIL
HARDWARE
(NUTS, BOLTS, AND WASHERS)

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:**
- 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.
 - Install back-up plates between blockouts and w-beam or thrie-beam rail at intermediate (non-splice) posts when steel blockouts are used but not with wood, rubber, plastic, or other approved blockouts.



State of Alaska DOT&PF

ALASKA STANDARD PLAN

STANDARD GUARDRAIL
HARDWARE
(RAIL AND SPLICES)

Adopted as an Alaska
Standard Plan by:

Kenneth J. Fisher
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date:

02/08/2019

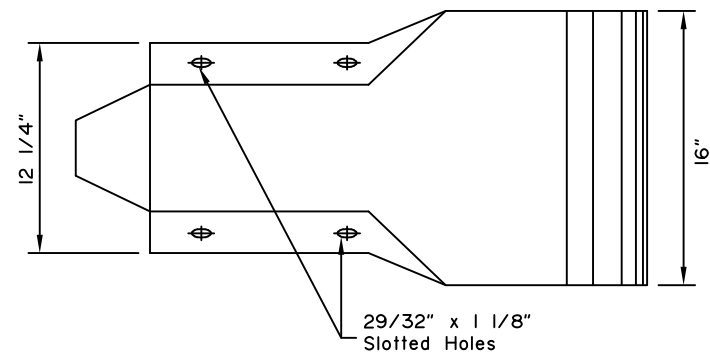
Last Code and Stds. Review
By: Date:

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

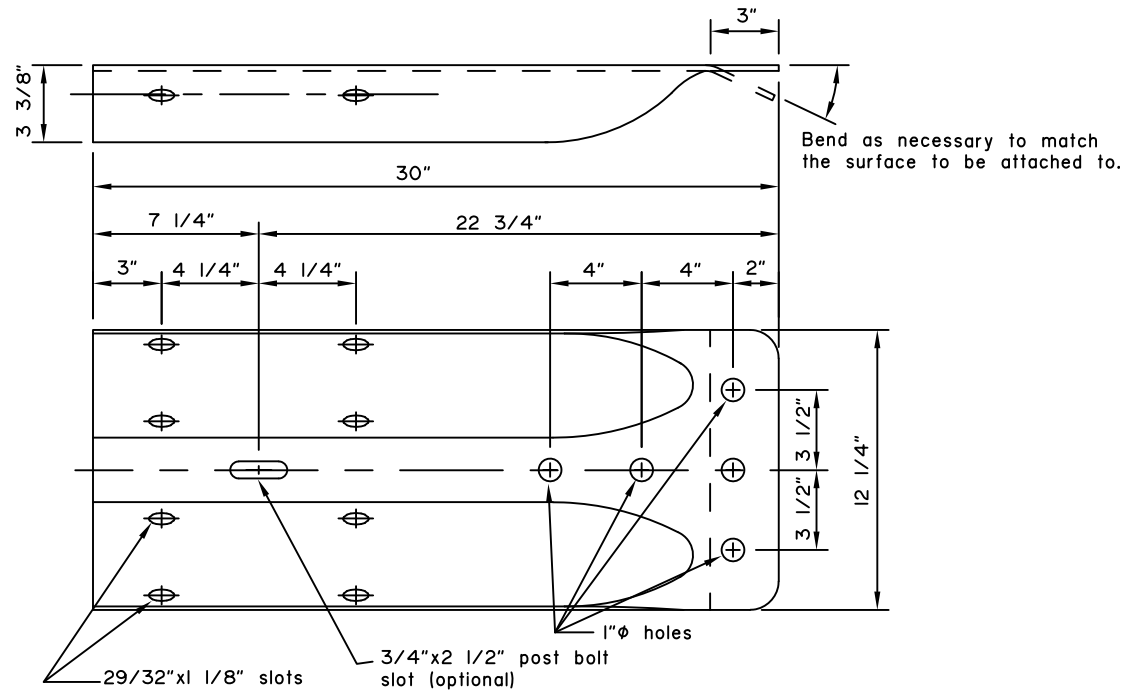
GENERAL NOTES:

1. 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.

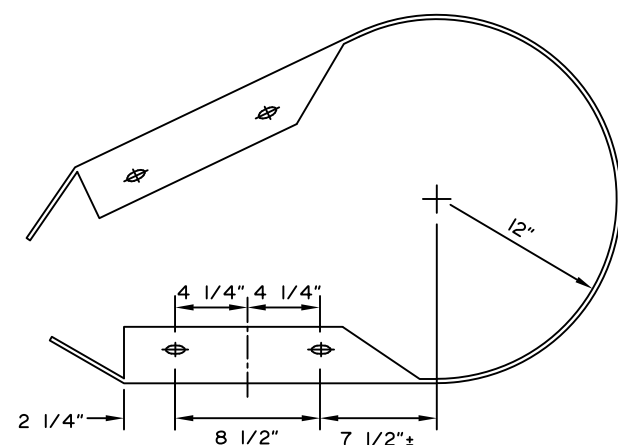
Note: Drawing not to scale



PROFILE



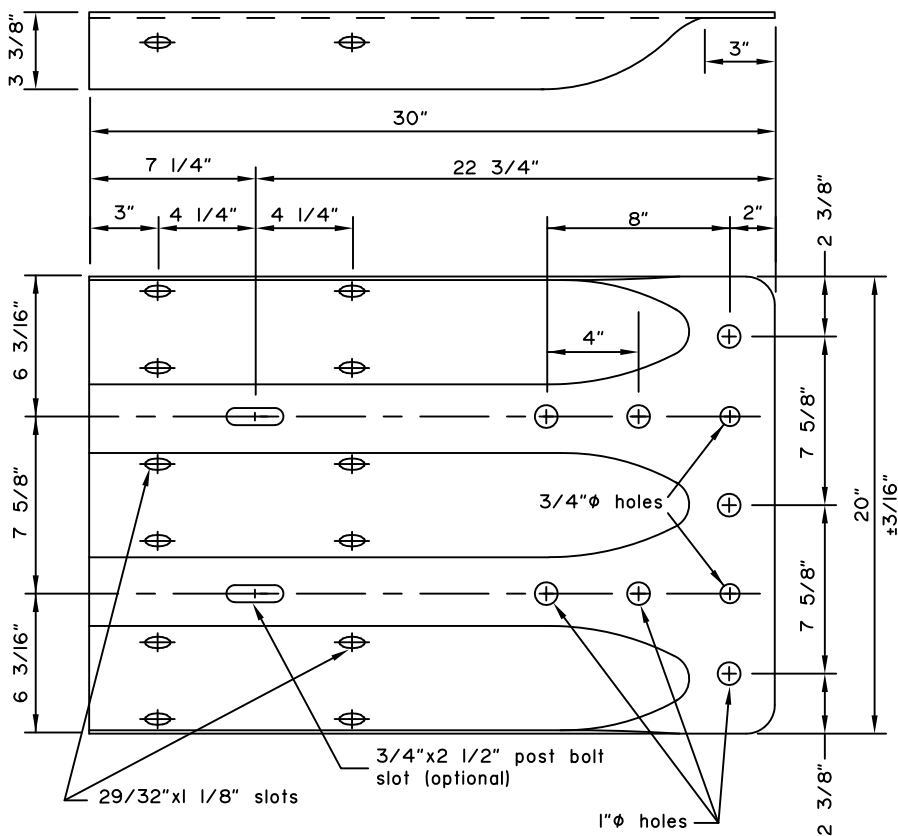
STANDARD W-BEAM TERMINAL CONNECTOR
(RWE02)



W-BEAM PLAN VIEW

*Radius to be specified on the plans

STANDARD W-BEAM END SECTION
(RWE06)



STANDARD THRIE BEAM TERMINAL CONNECTOR
(RTE01b)

State of Alaska DOT&PF
ALASKA STANDARD PLAN
STANDARD GUARDRAIL
HARDWARE
(TERMINAL CONNECTORS)

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

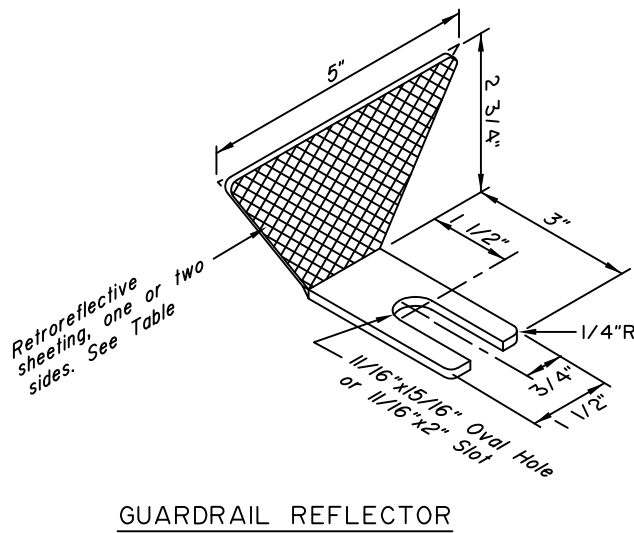
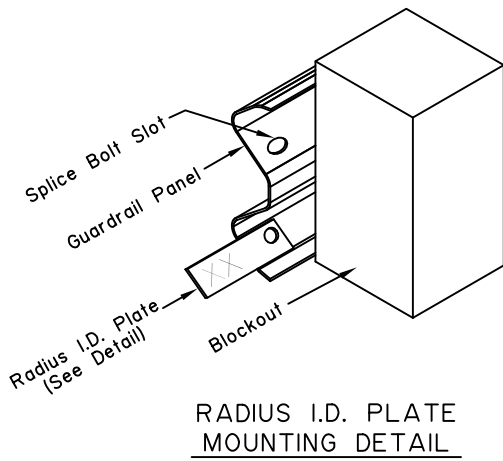
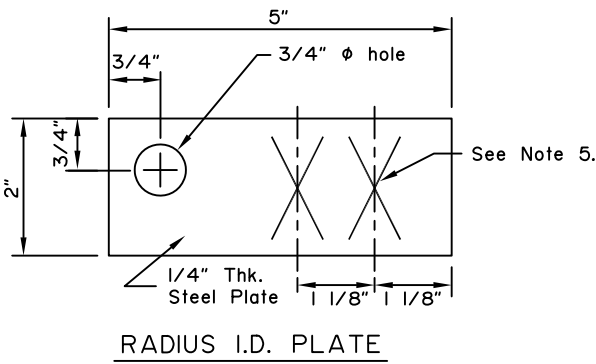
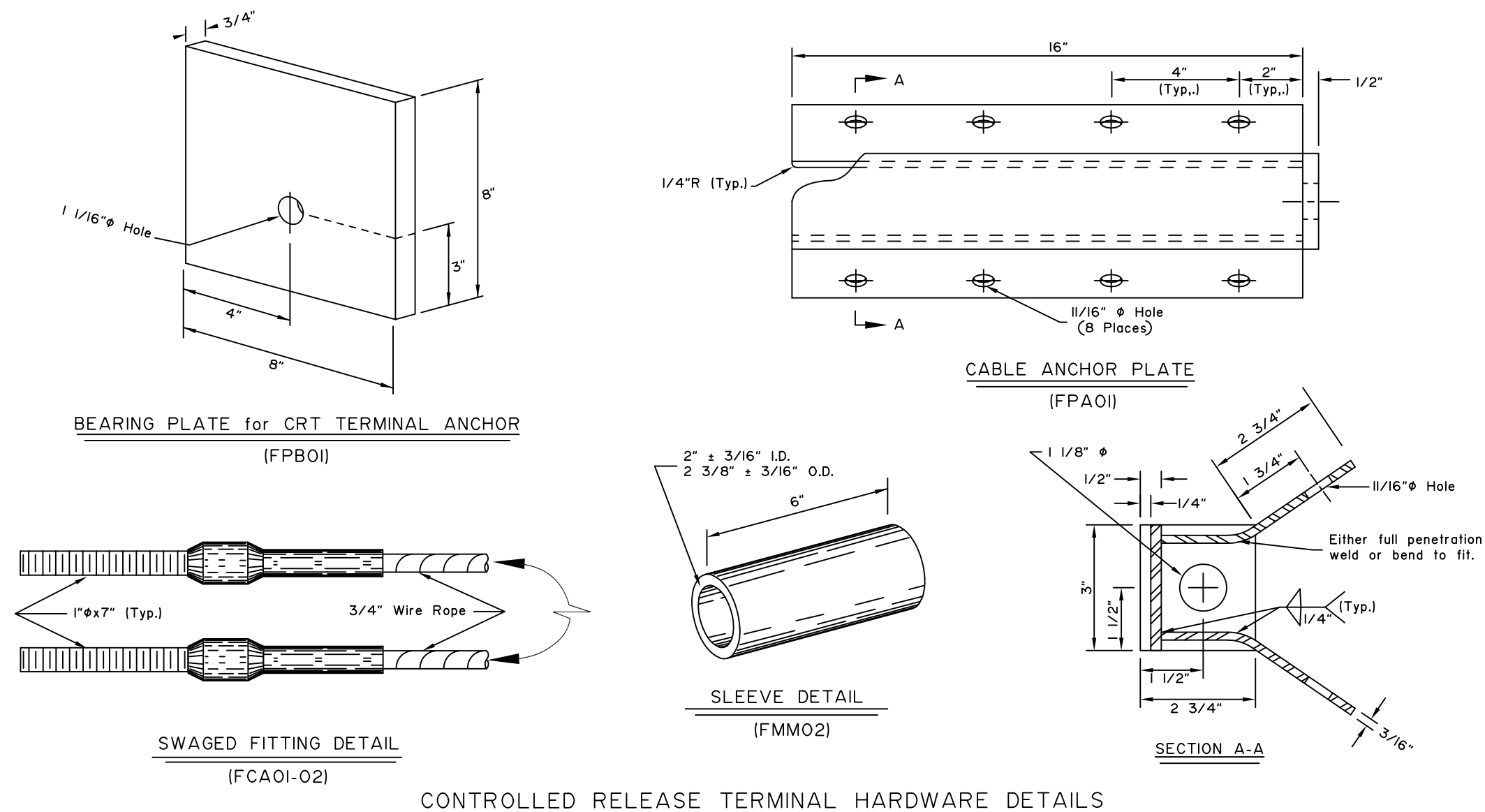
Adoption Date: 02/08/2019

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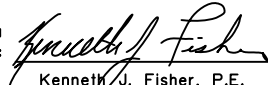
- GENERAL NOTES:
- Cable Anchor Plate may be formed in single unit or welded fabrication.
 - Anchor Cable Assembly must conform to AASHTO M 30 with Type II Wire Rope.
 - Provide Sleeve for Wood Posts meeting the requirements of ASTM A53 and made of 2-inch galvanized standard pipe. Sleeve shall be a tight, pressed fit in post.
 - 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.
 - 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.
 - All covered hardware shall comply with the Task Force I3 (TFI3) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.

Note: Drawing not to scale



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

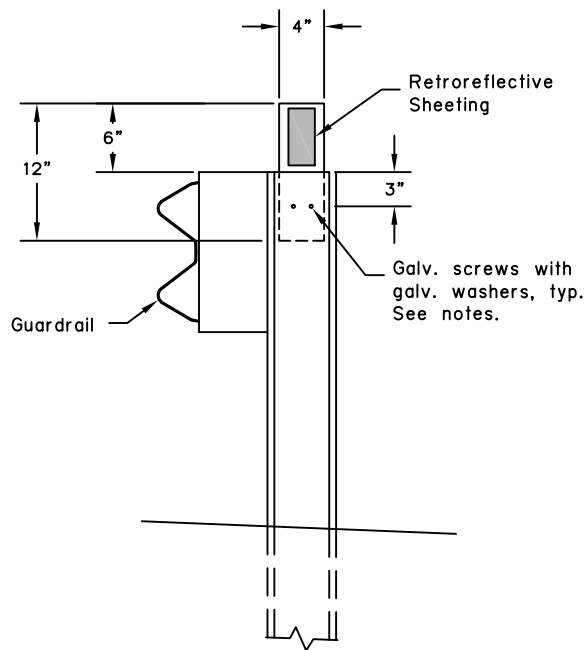
State of Alaska DOT&PF
ALASKA STANDARD PLAN
STANDARD GUARDRAIL
HARDWARE
(MISCELLANEOUS)

Adopted as an Alaska
Standard Plan by: 
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



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 Drawing 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. Predrill or preform 5/16" diameter mounting holes in steel posts by the manufacturer prior to galvanizing. Predrilling or preforming holes not required for wood posts.
6. 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.

Note: Drawing not to scale

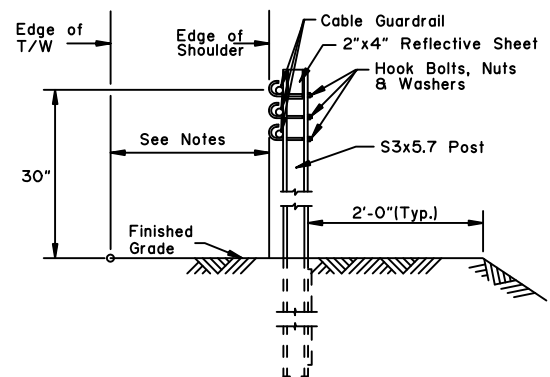
State of Alaska DOT&PF
ALASKA STANDARD PLAN
STANDARD GUARDRAIL
(FLEXIBLE DELINEATORS)

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

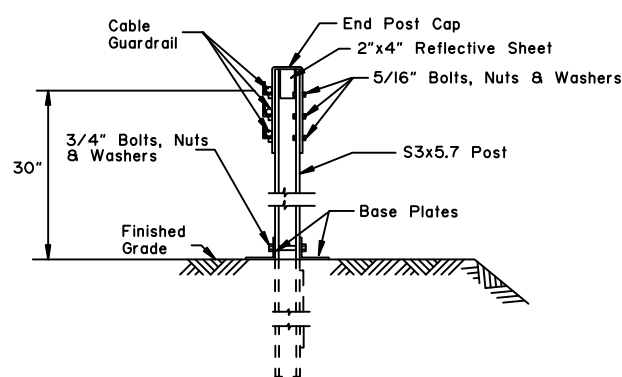
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



LINE POST INSTALLATION

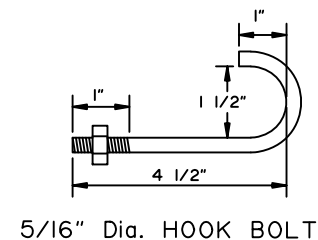


END POST INSTALLATION

REFLECTIVE SHEET REPLACEMENT

*Type	Color	Placement of Sheeting
A	White	Front & Rear
B	White	Front
C	Yellow	Front
D	Yellow	Front & Rear

* See Notes



5/16" Dia. HOOK BOLT

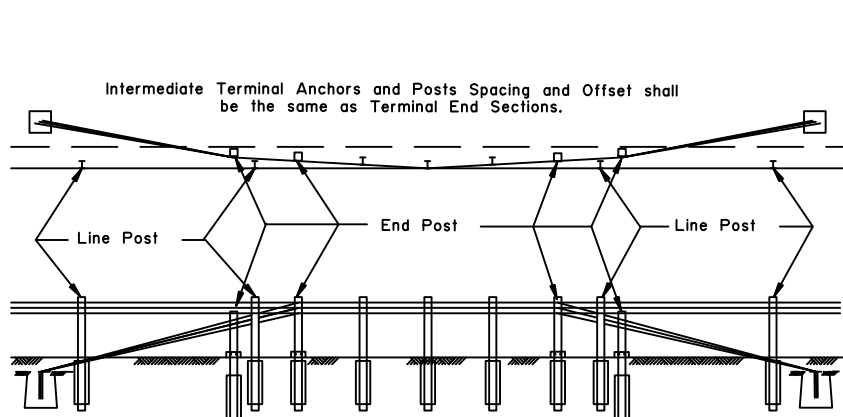
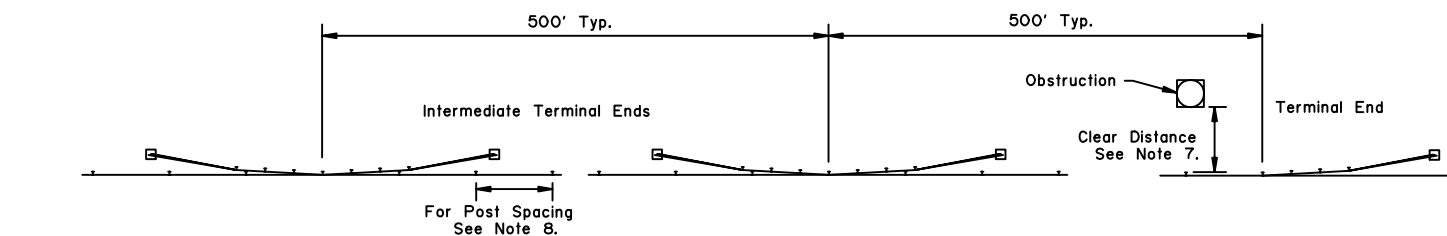
GENERAL NOTES:

- All fittings, cable splices, cable ends etc., shall be designed to develop the full strength of the cable assemblies.
- Hook Bolts, as installed shall develop an ultimate pull open strength of between 500lbs. and 1000lbs. applied in a direction normal to the longitudinal axis of the post.
- 3/4" Cable & Cable Fittings shall conform to AASHTO M30 Class A.
- Steel Posts shall conform to ASTM A36, Steel Fasteners shall conform to ASTM A307.
- Face of cable guardrail shall be on edge of shoulder and a minimum distance of 4'-0" from Traveled Way.
- All ferrous metals shall be galvanized to conform to ASTM A123 or ASTM A153. No punching, drilling, welding or cutting shall be permitted after galvanizing.
- Line Post Spacing to be used for:

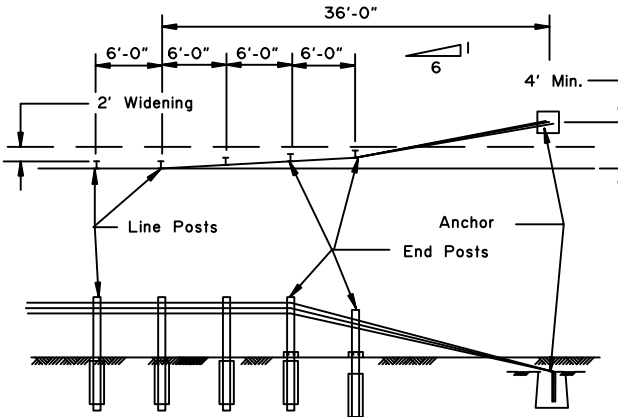
CLEAR DISTANCE	POST SPACING
7' to 8'	4'
8' to 9 1/2'	8'
9 1/2' to 11'	12'
Over 11'	16'
- Line Post Spacing to be used for:

CURVE RADIUS	POST SPACING
Over 717'	16'
220' to 717'	12'
111' to 219'	6'
76' to 110'	4'
50' to 75'	3'

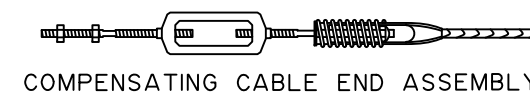
Except when clear distance dictates closer spacing.
- Guardrail Reflective Sheet shall be mounted at 48' centers beginning with first post.
- All barrier hardware as shown in ARTBA "A Guide To Standardized Highway Barrier Rail Hardware", latest edition, is acceptable.



CABLE GUARDRAIL INTERMEDIATE TERMINAL ENDS



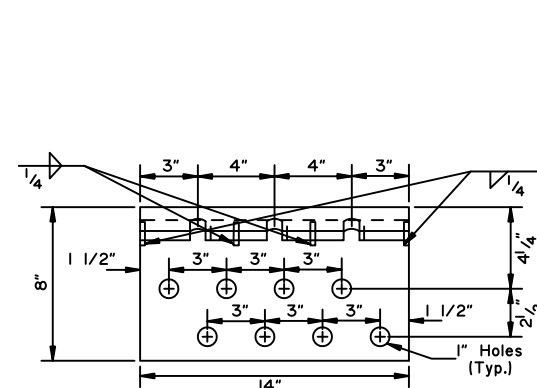
CABLE GUARDRAIL TERMINAL END



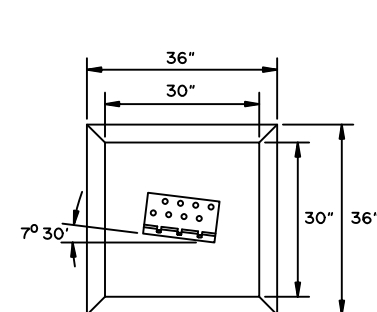
COMPENSATING CABLE END ASSEMBLY



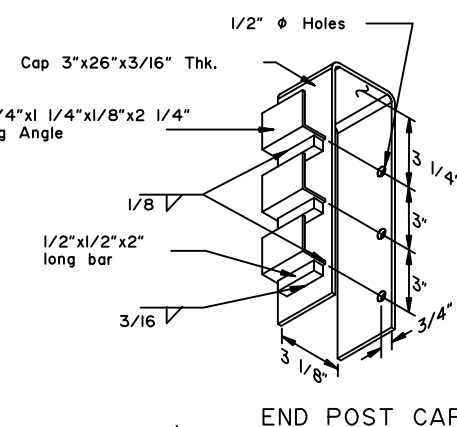
TURNBUCKLE CABLE END ASSEMBLY



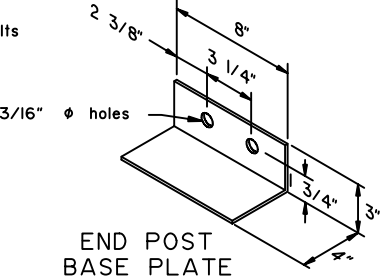
ANCHOR ANGLE



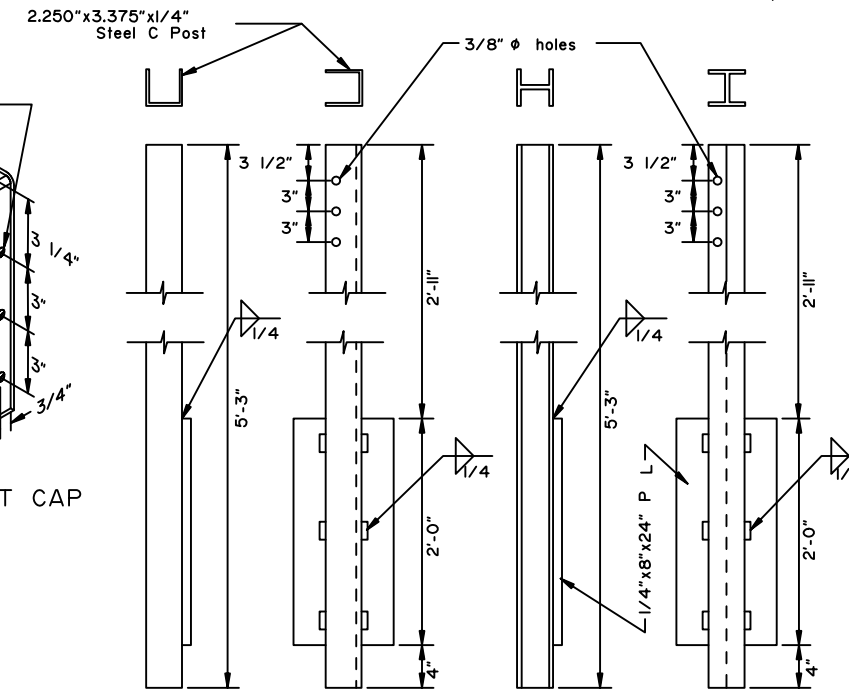
CABLE ANCHOR



END POST CAP



END POST BASE PLATE



ALTERNATE 3" "C" POST

S3x5.7 CABLE POST

11. See Standard Drawings, "Standard Guardrail Hardware" for hardware details.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

G1S
CABLE GUARDRAIL

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

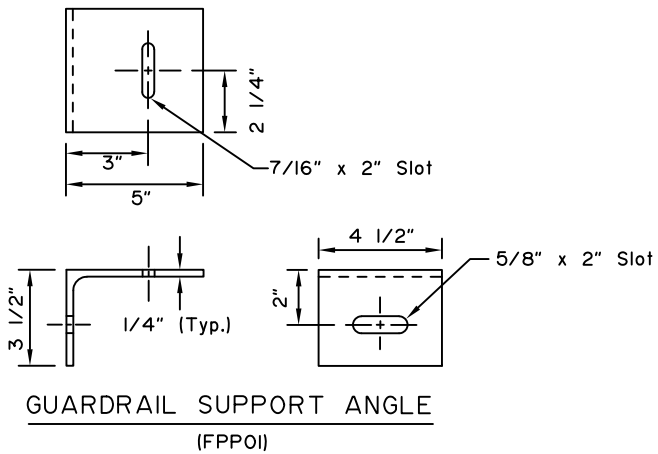
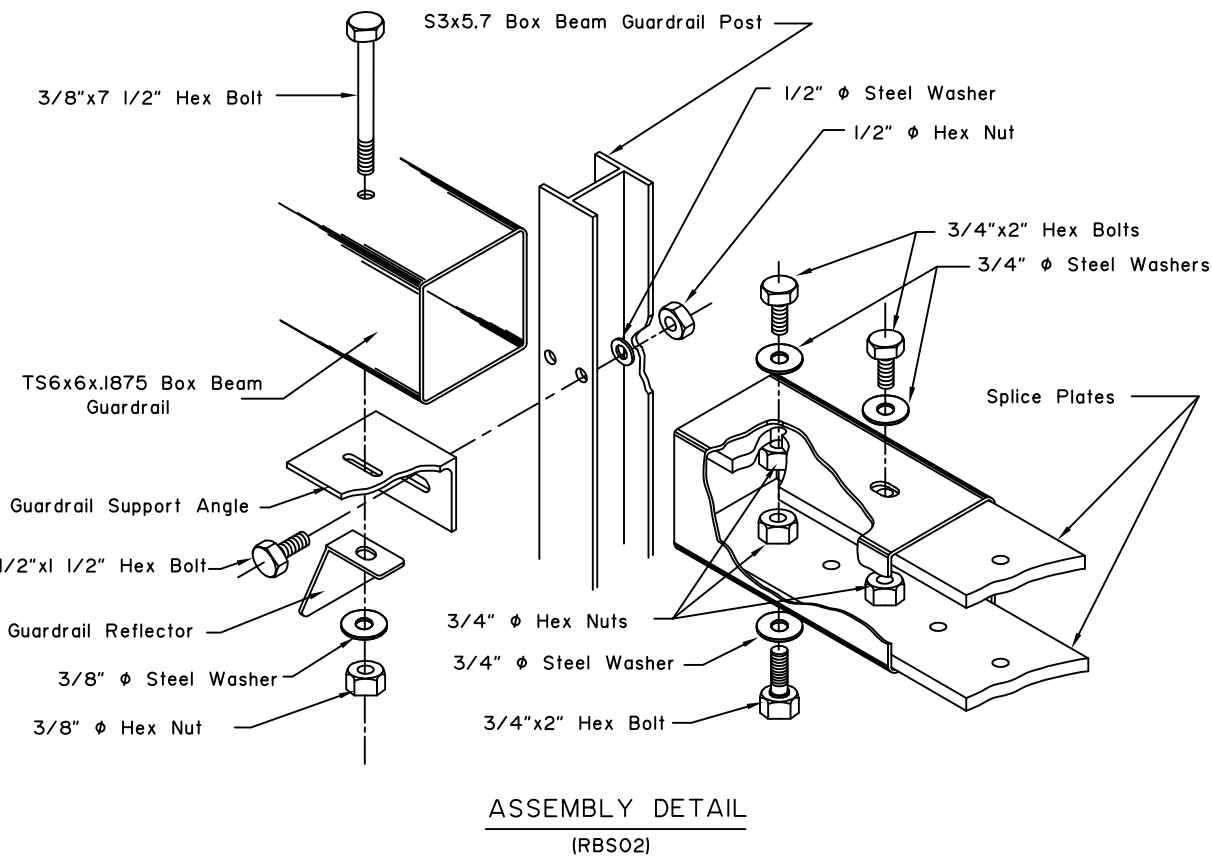
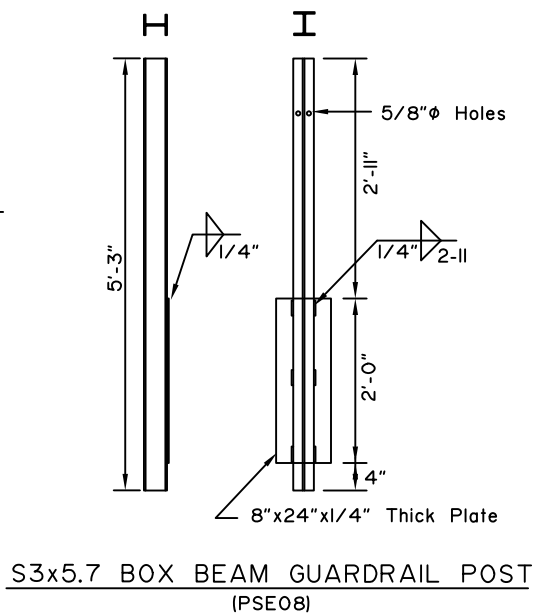
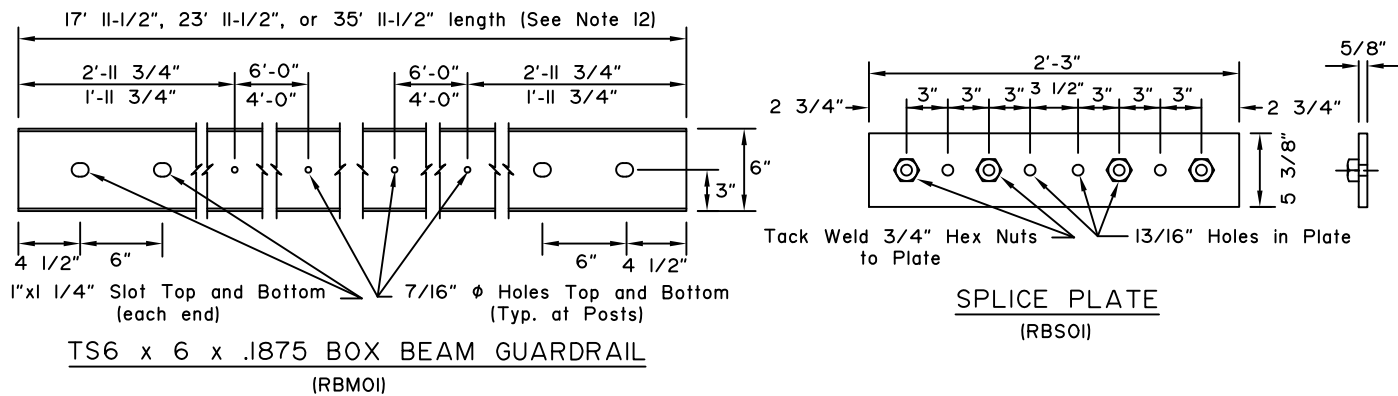
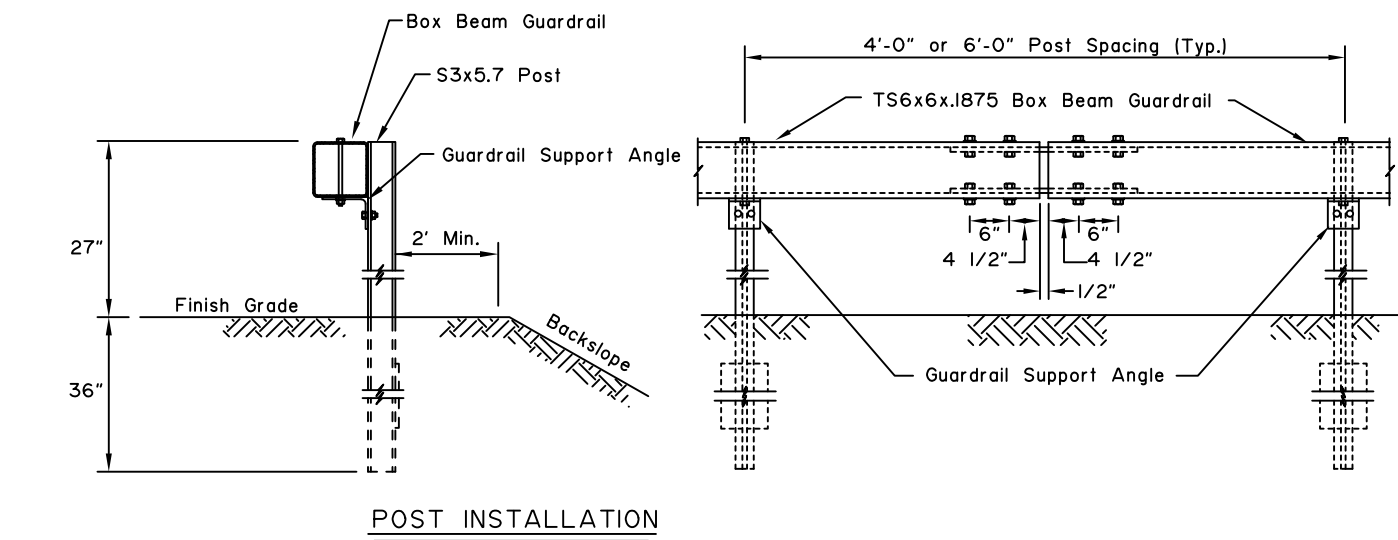
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

1. No fixed objects are allowed closer than 4' 0" from the back of the guardrail
2. Use a post spacing of 6' 0" when there are no fixed objects within 5' 0" from back of guardrail and the backslope is 3:1 or flatter.
3. Use a post spacing of 4' 0" when there are fixed objects within 4' 0" to 5' 0" from the back of guardrail or when backslopes are steeper than 3:1.
4. Shop form guardrail on curves having a radius of less than 717'.
5. Steel tube for box beam guardrail must conform to ASTM A500 Grade B or ASTM A501.
6. Steel bolts and nuts for splice plates and box beam guardrail connections must conform to ASTM A325 for bolt and ASTM A563 Grade A for nuts. All other bolts, nuts and washers shall meet AASHTO M 180.
7. No galvanizing permitted between splice plates and box beam guardrail.
8. Mount guardrail reflectors at 48' centers beginning with the first post. Use Type A Reflectors unless shown otherwise on the plans.
9. Provide reflectors meeting the requirements of Section 606 of the Standard Specifications
10. All barrier hardware as shown in ARTBA "A Guide to Standardized Highway Barrier Rail Hardware" is acceptable. Designators given when possible in parentheses.
11. See Standard Drawing G-00 for hardware details.
12. Select rail lengths compatible with the post spacings shown on the plans or as indicated in Notes 2 and 3.

DESIGN NOTES:

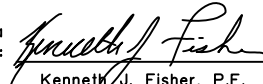
1. Box beam guardrail requires a minimum 125' development length.



Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

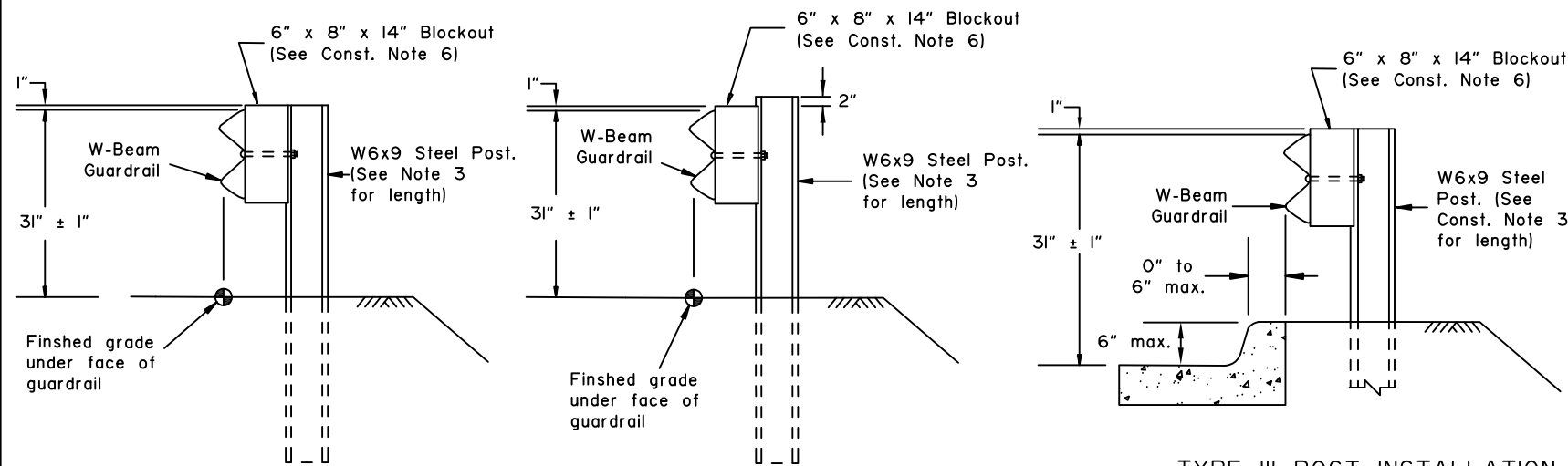
G3S
BOX BEAM GUARDRAIL

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

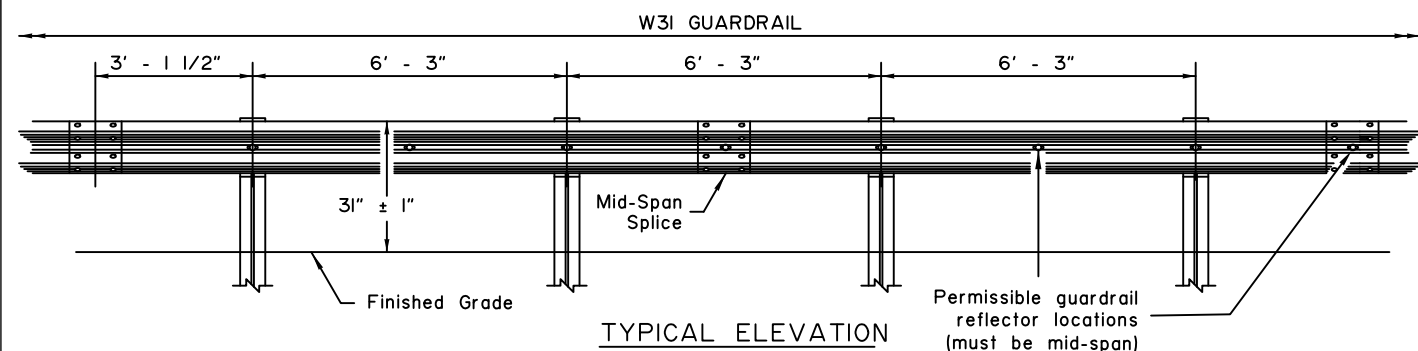
Next Code and Standards Review date: 02/08/2029



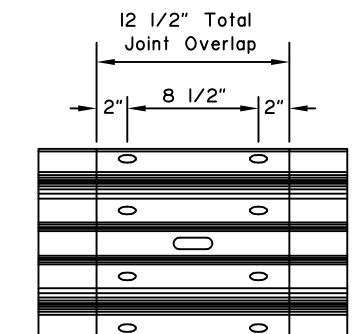
TYPE I POST INSTALLATION

TYPE II POST INSTALLATION
(Facilitates raising rail for future overlays.)

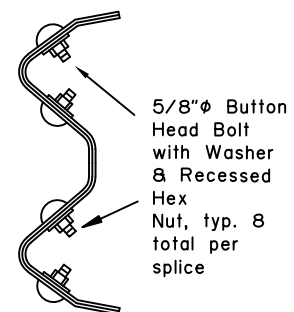
TYPE III POST INSTALLATION



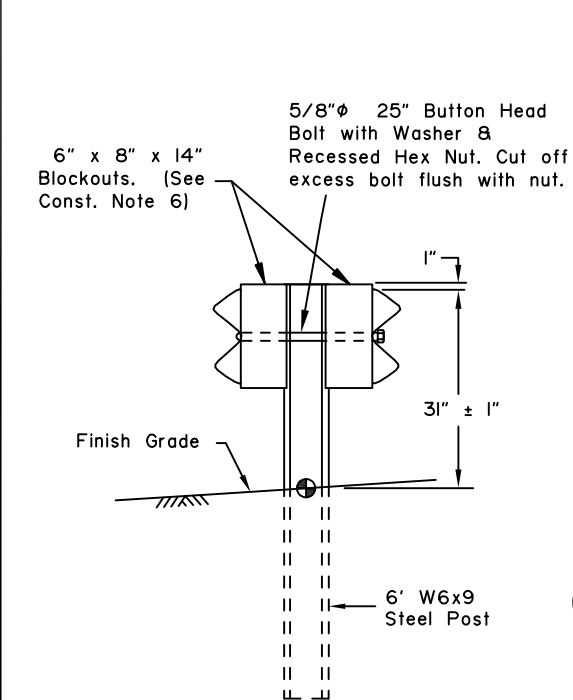
TYPICAL ELEVATION



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



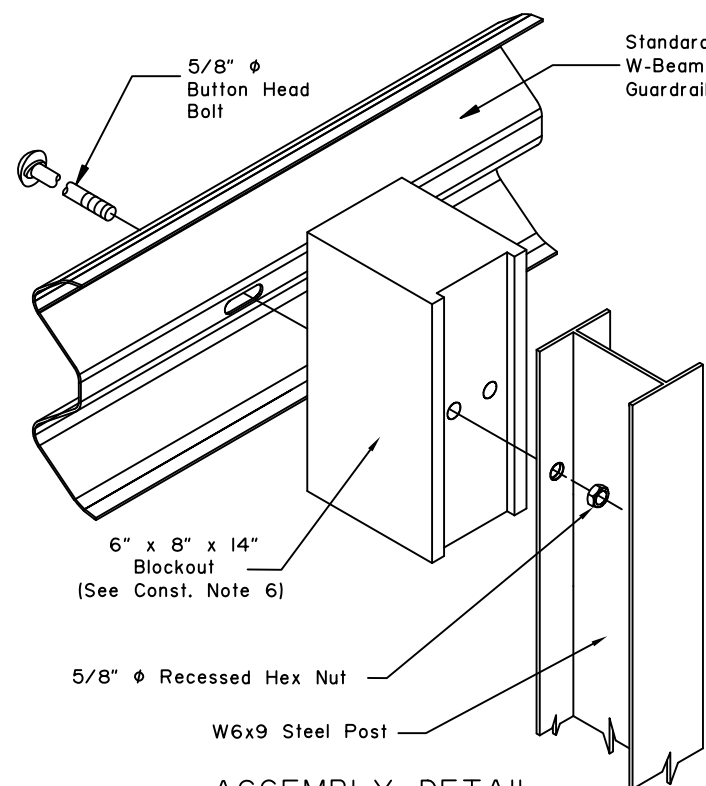
SPLICE CROSS-SECTION



TYPE IV DOUBLE SIDED INSTALLATION

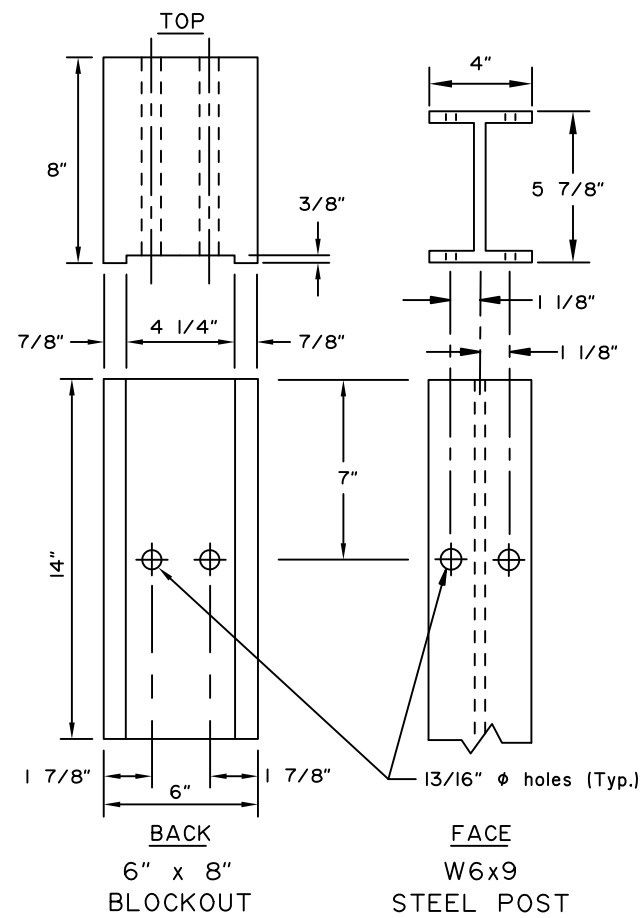


GUARDRAIL REFLECTOR
(See Const. Note 5)



ASSEMBLY DETAIL

(Type I post shown)



CONSTRUCTION NOTES:

1. Provide hardware compliant with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware.
2. See Std. Dwg. G-00 for hardware details not shown on this drawing.
3. See Standard Drawing 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 Std. Dwg. 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 Std. Dwg. G-00 for guardrail flexible delineator details.

DESIGN NOTES:

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

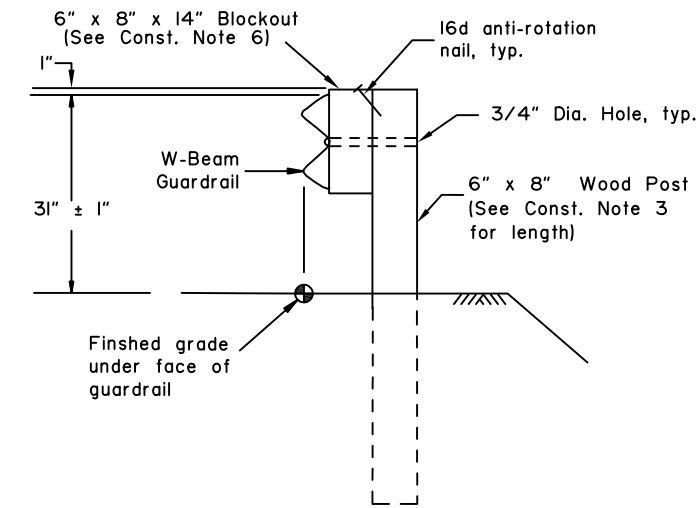
State of Alaska DOT&PF
ALASKA STANDARD PLAN
STEEL POST W31
GUARDRAIL

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

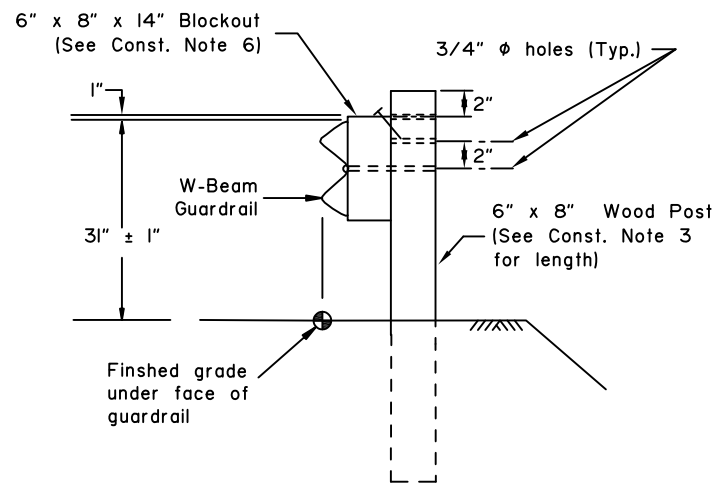
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

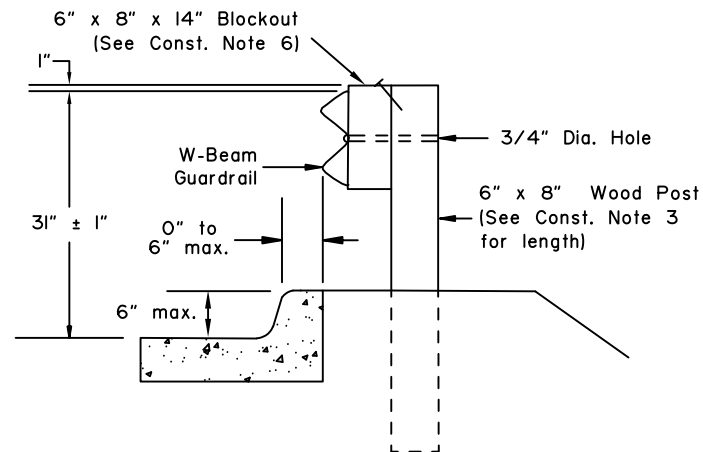


TYPE I POST INSTALLATION

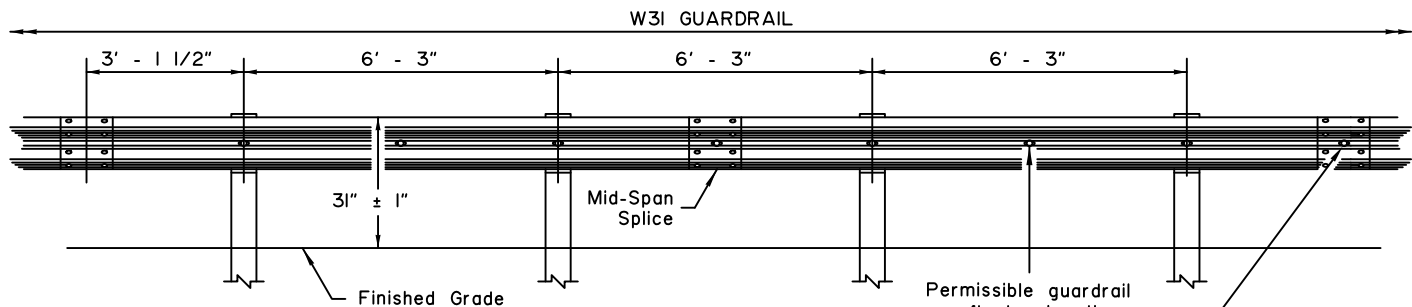


TYPE II POST INSTALLATION

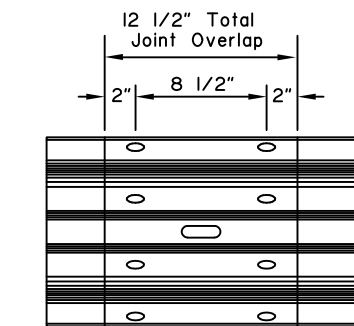
(Facilitates raising rail for future overlays.)



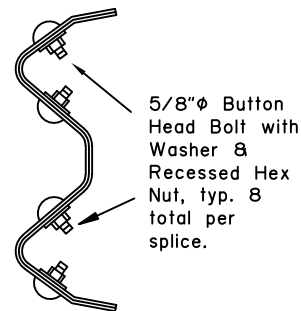
TYPE III POST INSTALLATION



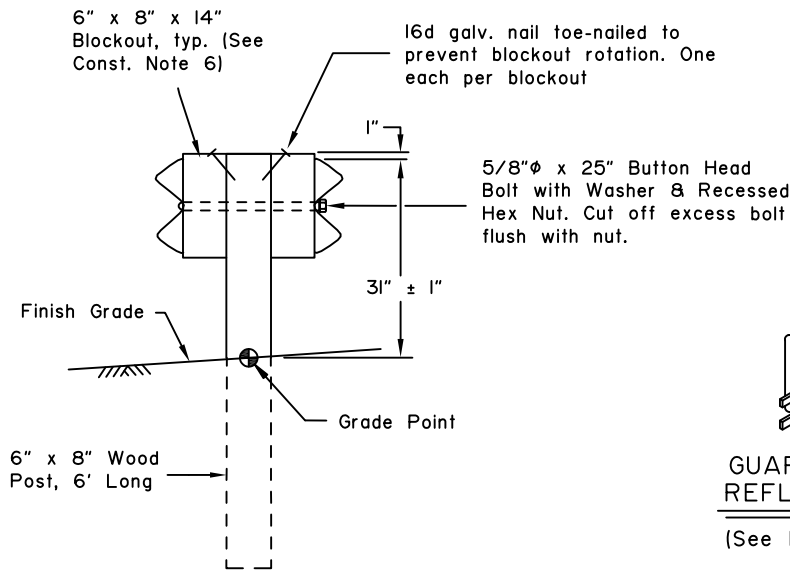
TYPICAL ELEVATION



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



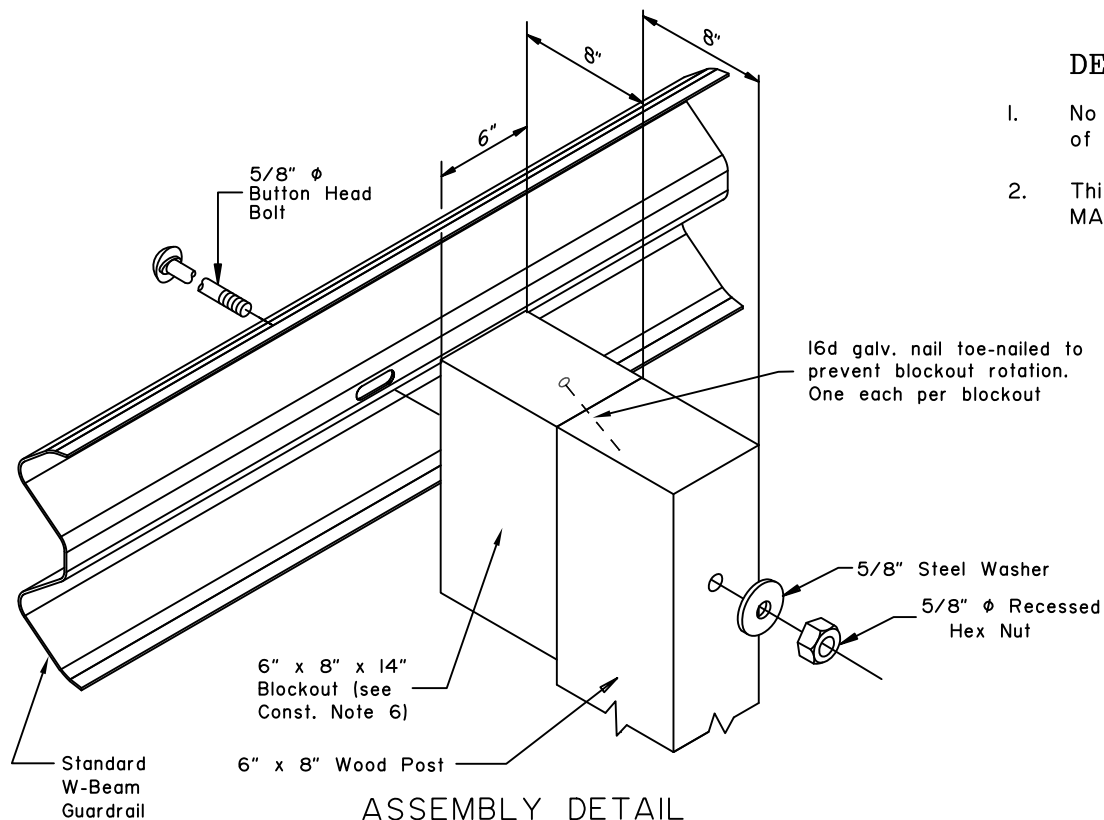
SPLICE CROSS-SECTION



TYPE IV DOUBLE SIDED INSTALLATION



GUARDRAIL REFLECTOR
(See Note 5)



ASSEMBLY DETAIL

(Type I post shown)

CONSTRUCTION NOTES:

1. Provide hardware compliant with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware.
2. See Std. Dwg. G-00 for hardware details.
3. See Std. Dwg. 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 using a 5/8" button head bolt with 5/8" recessed head hex nut and steel washer at the location shown on 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 blockouts designed, tested, and passed per MASH to be used with wood posts.
7. Use 25 linear foot transition panel to match differing height of existing or new rail elements and end treatments. See Std. Dwg. G-II.
8. Install flexible delineators on guardrail posts when called for in the contract. See Std. Dwg. G-00 for guardrail flexible delineator details.

DESIGN NOTES:

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

State of Alaska DOT&PF
ALASKA STANDARD PLAN
STEEL POST W31
GUARDRAIL

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

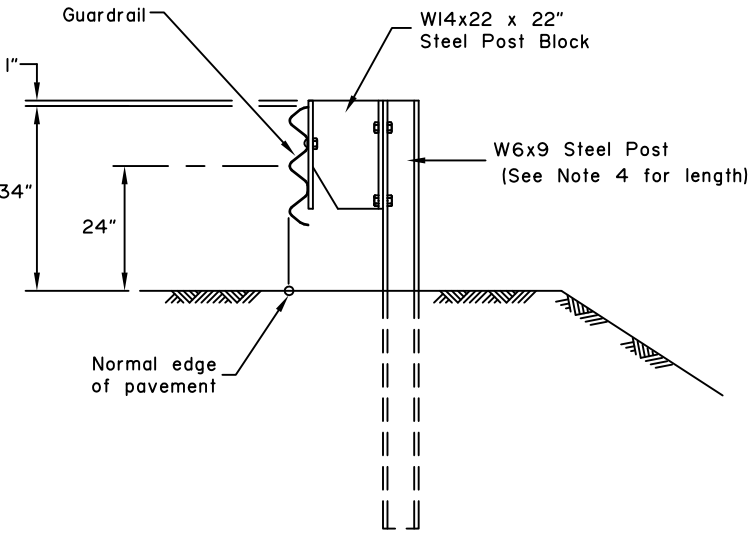
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

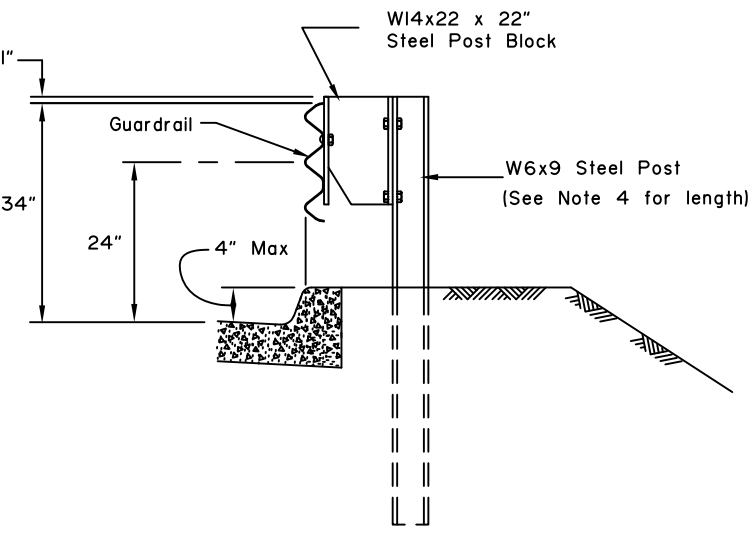
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

- Guardrail Reflectors shall be mounted at 50' centers and placed in the upper indentation of the rail panel beginning with the first guardrail post. Type A Reflectors shall be used unless specified otherwise on the plans.
- All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.
- See standard drawings G-00, "Standard Guardrail Hardware" for hardware details.
- See standard drawing G-10, "Beam Guardrail Post Installation" for post lengths corresponding to different combinations of slope and behind-post embankment width.
- Mount rail to block with a bolt on the approaching - traffic side of block web.
- Typical post spacing is 6'-3" center to center.
- This barrier is acceptable under NCHRP 350, TL3.



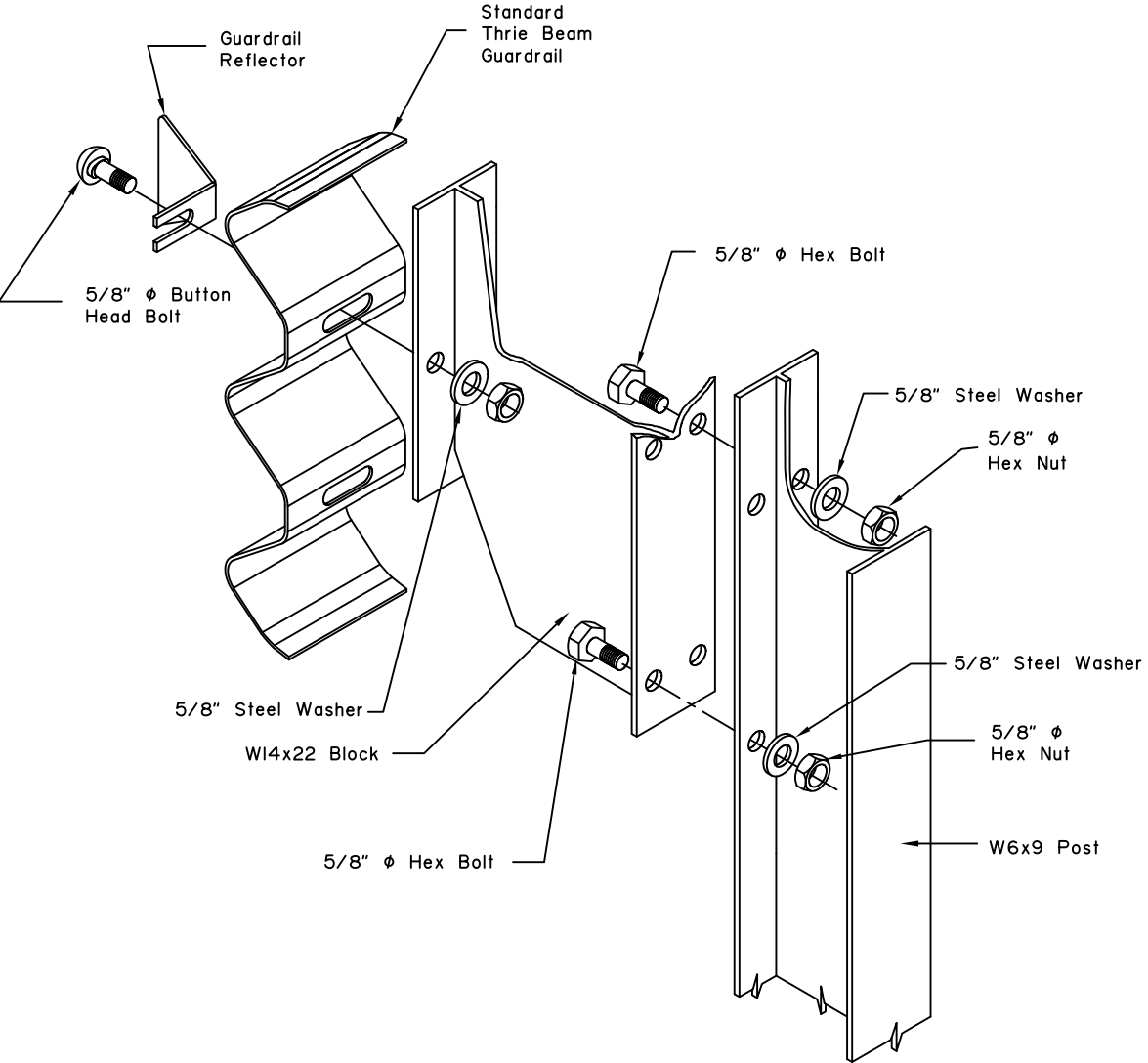
TYPE I POST INSTALLATION



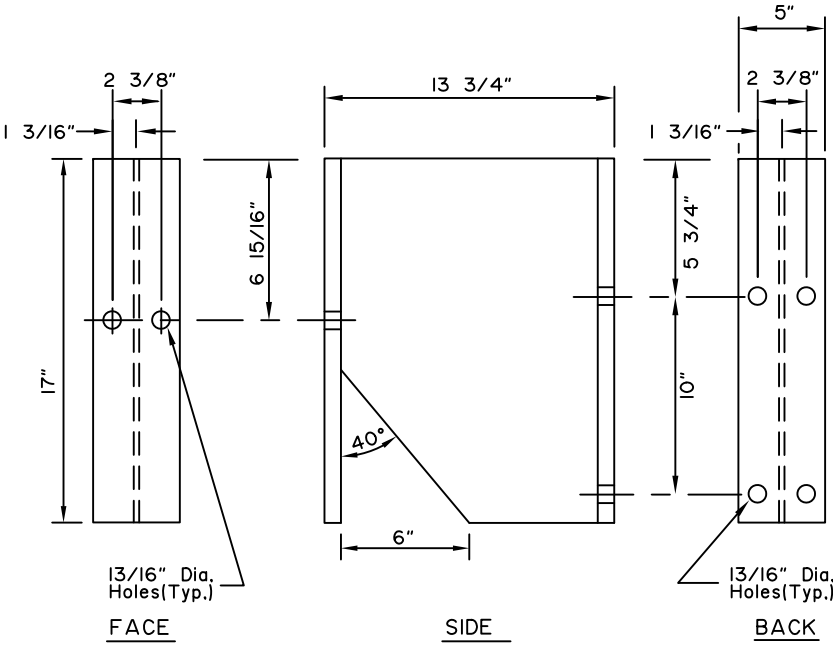
CURB DETAIL

TYPE III POST INSTALLATION

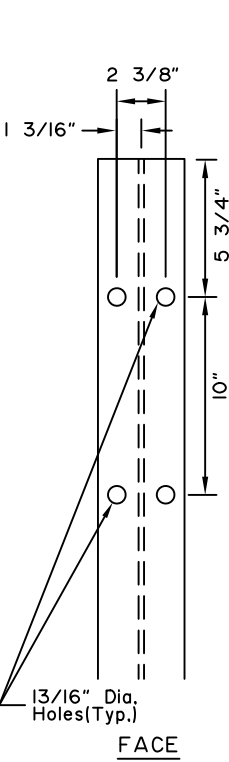
NOTE: Curb should not be installed with guardrail when the speed limit exceeds 40 mph.



ASSEMBLY DETAIL



W14x22
POST BLOCK



W6x9
STEEL POST

State of Alaska DOT&PF
ALASKA STANDARD PLAN
STEEL POST MODIFIED
THRIE-BEAM
GUARDRAIL

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

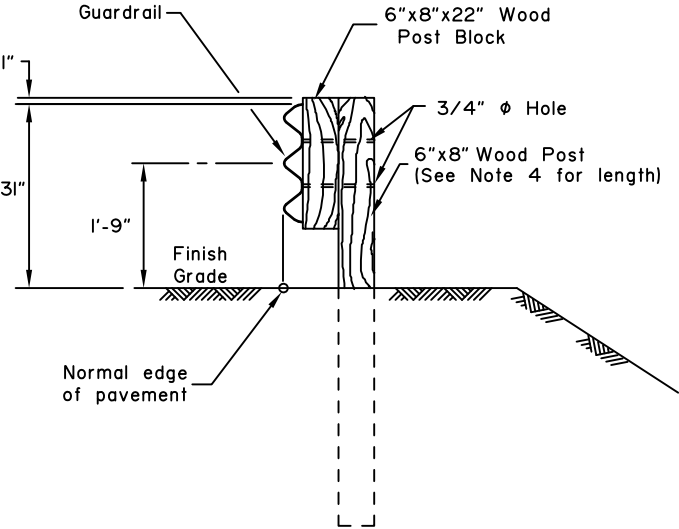
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

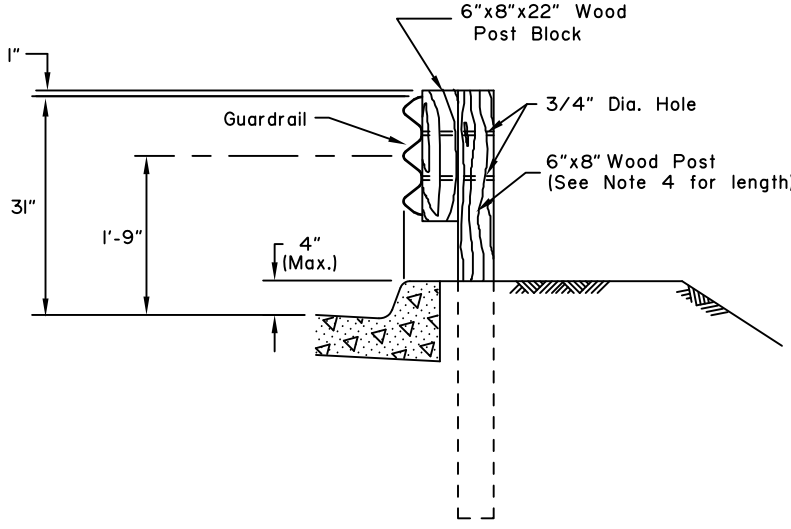
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

- Guardrail Reflectors shall be mounted at 50' centers and placed in the upper indentation of the rail panel beginning with the first guardrail post. Type A Reflectors shall be used unless specified otherwise on the plans.
- All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.
- See standard drawings G-00, "Standard Guardrail Hardware" for hardware details.
- See standard drawing G-10, "Beam Guardrail Post Installation" for post lengths corresponding to different combinations of slope and behind-post embankment width.
- Typical post spacing is 6'-3" center to center.
- This barrier is acceptable under NCHRP 350, TL3.



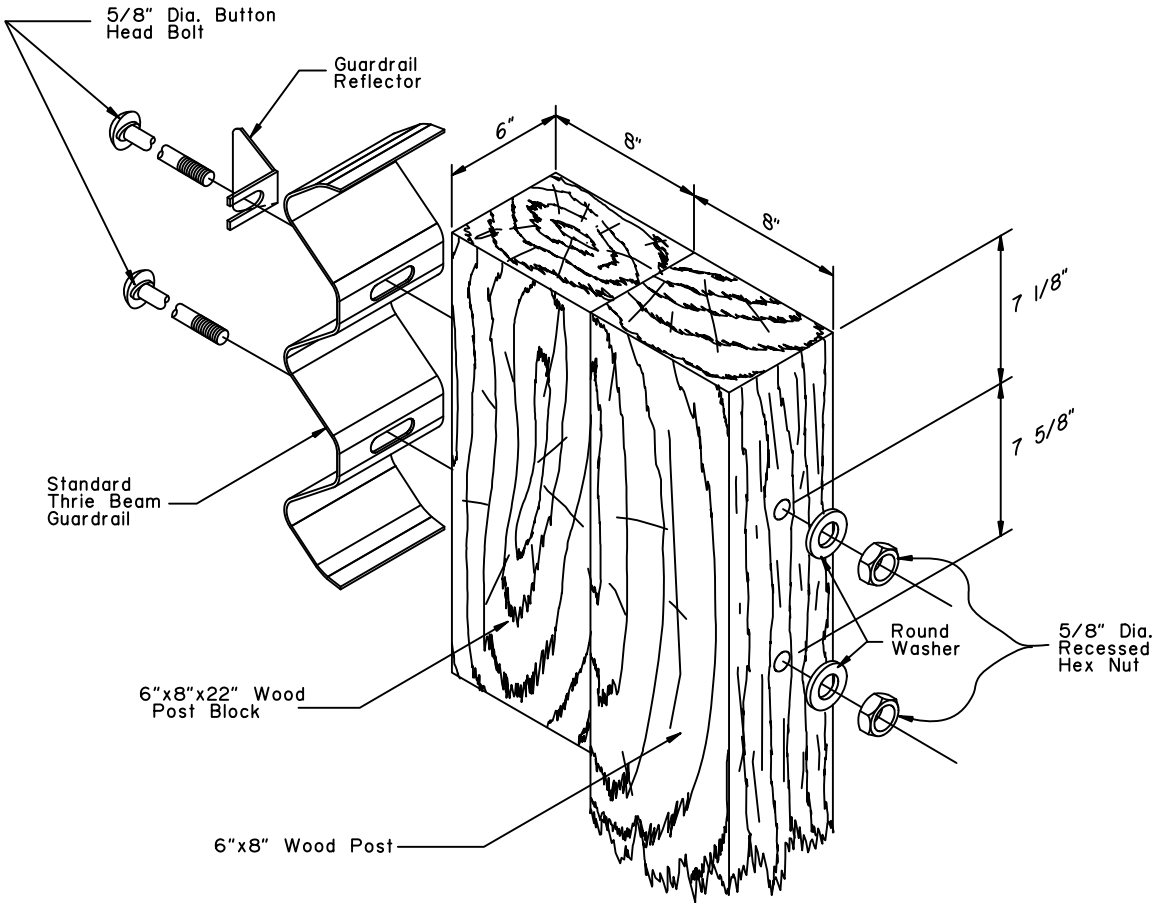
TYPE I POST INSTALLATION



CURB DETAIL

TYPE III POST INSTALLATION

NOTE: Curb should not be installed with guardrail when the speed limit exceeds 40 mph.



ASSEMBLY DETAIL

State of Alaska DOT&PF
ALASKA STANDARD PLAN

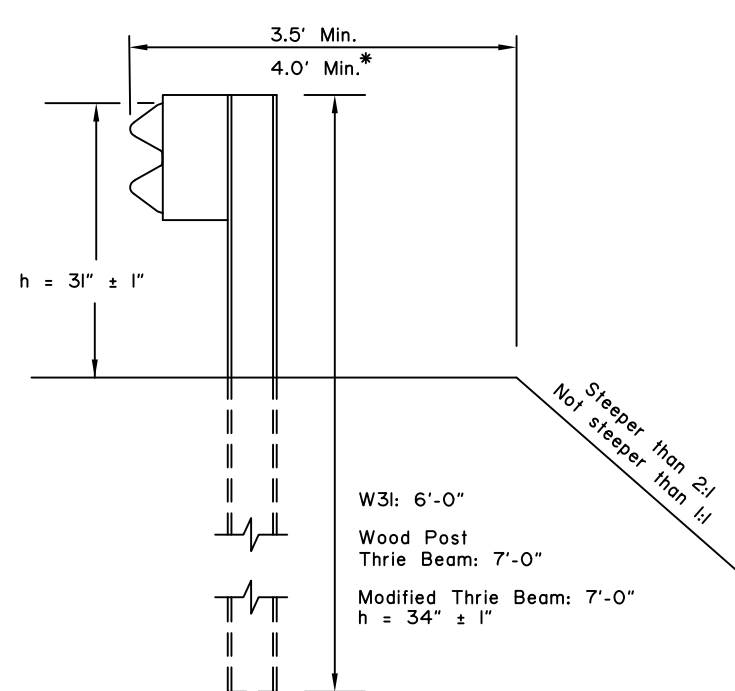
WOOD POST
THRIE-BEAM
GUARDRAIL

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

Adoption Date: 02/08/2019

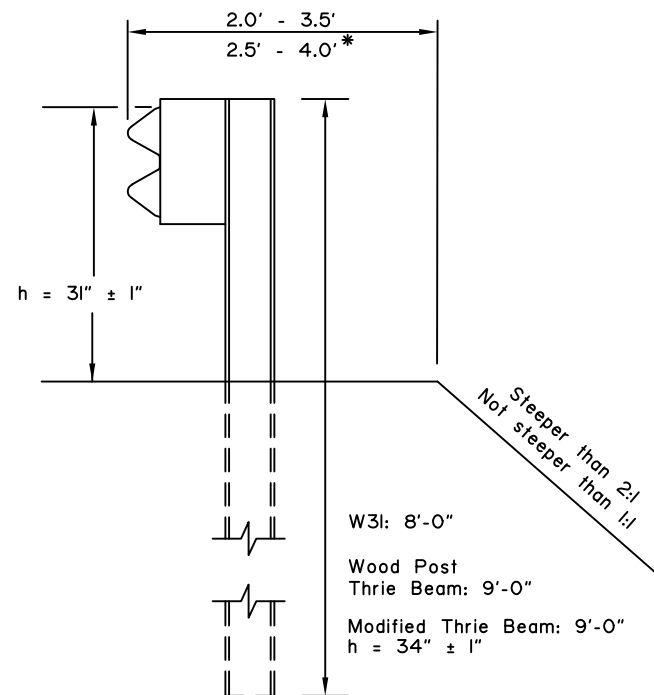
Last Code and Stds. Review
By: Date:

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



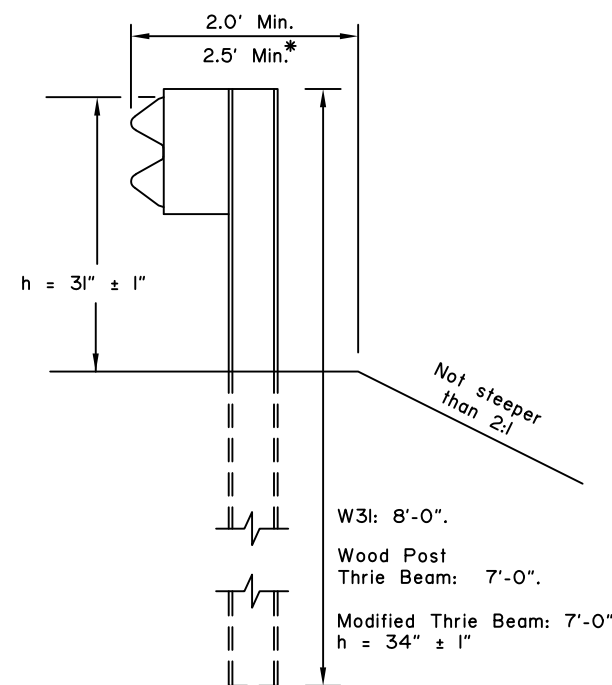
* with Modified Thrie Beam

CASE 1

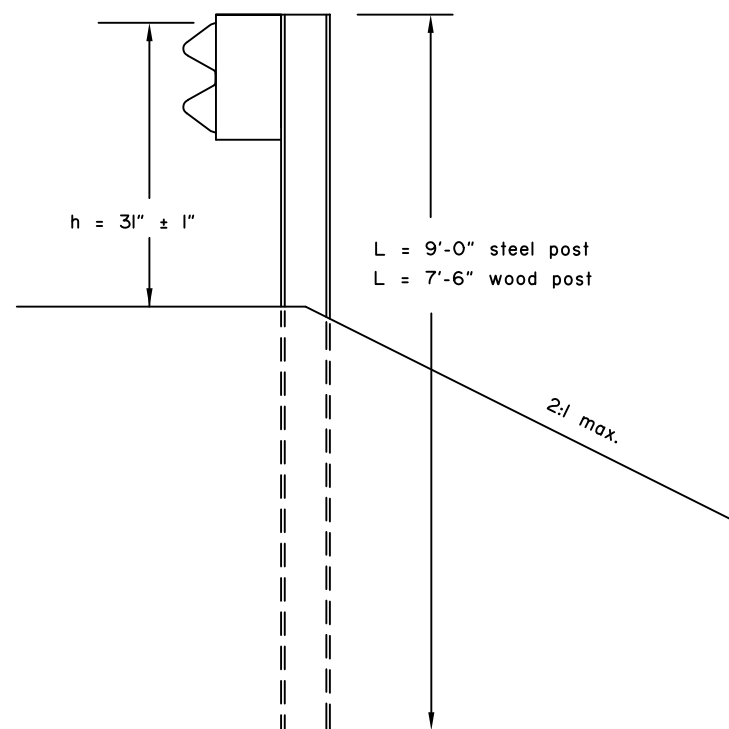


* with Modified Thrie Beam

CASE 2

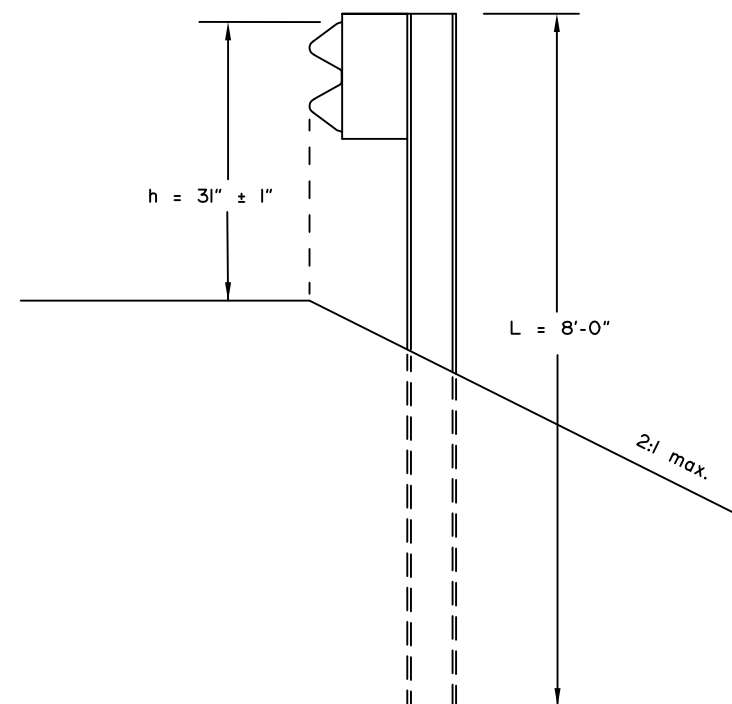


CASE 3



CASE 4

(See Note 5)



CASE 5

(See Note 5)

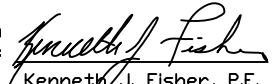
CONSTRUCTION NOTES:

1. This drawings is to be used for post length determination only. See Plans for slopes and behind-post embankment widths.
2. To determine post length, identify the case that matches site conditions and read the length corresponding to the pertinent guardrail type.
3. These dimensions apply to both curbed and uncurbed section.
4. Case 1, 2 and 3 are shown with steel posts. Wood posts may be substituted when allowed by specifications. Wood Post Thrie Beam installations must use wood posts only.
5. Case 4 and 5 apply to W3I guardrail only.

DESIGN NOTES:

1. No fixed objects allowed within 36" of the back of post for Cases 1, 2 & 3.
2. No fixed objects allowed within 48" of the back of post for Cases 4 & 5.

State of Alaska DOT&PF ALASKA STANDARD PLAN GUARDRAIL POST INSTALLATION

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

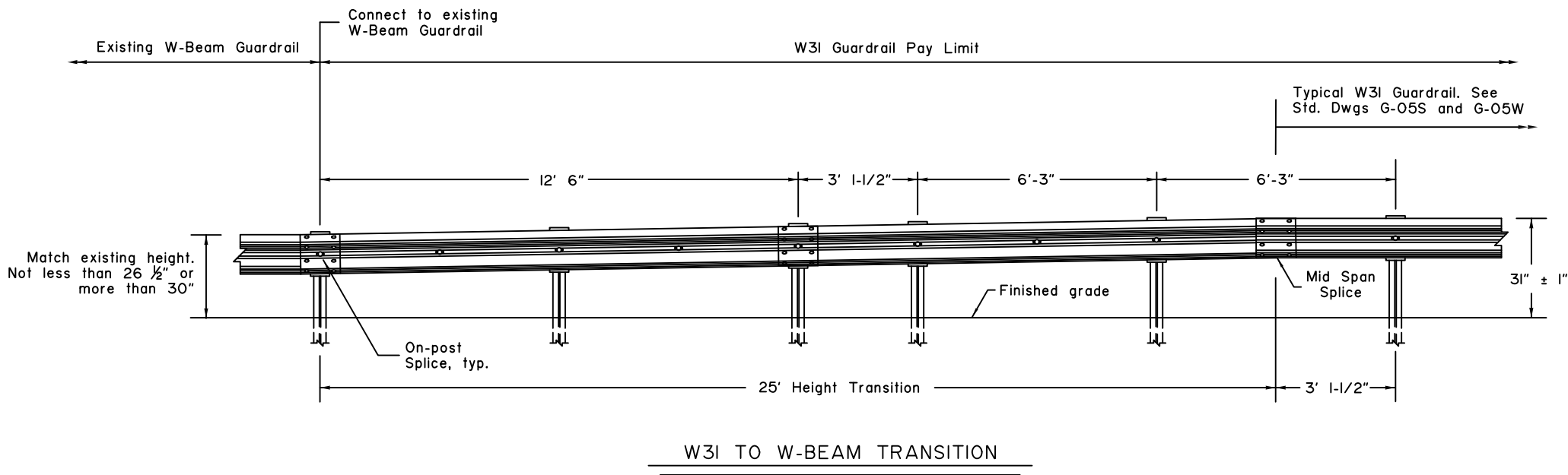
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

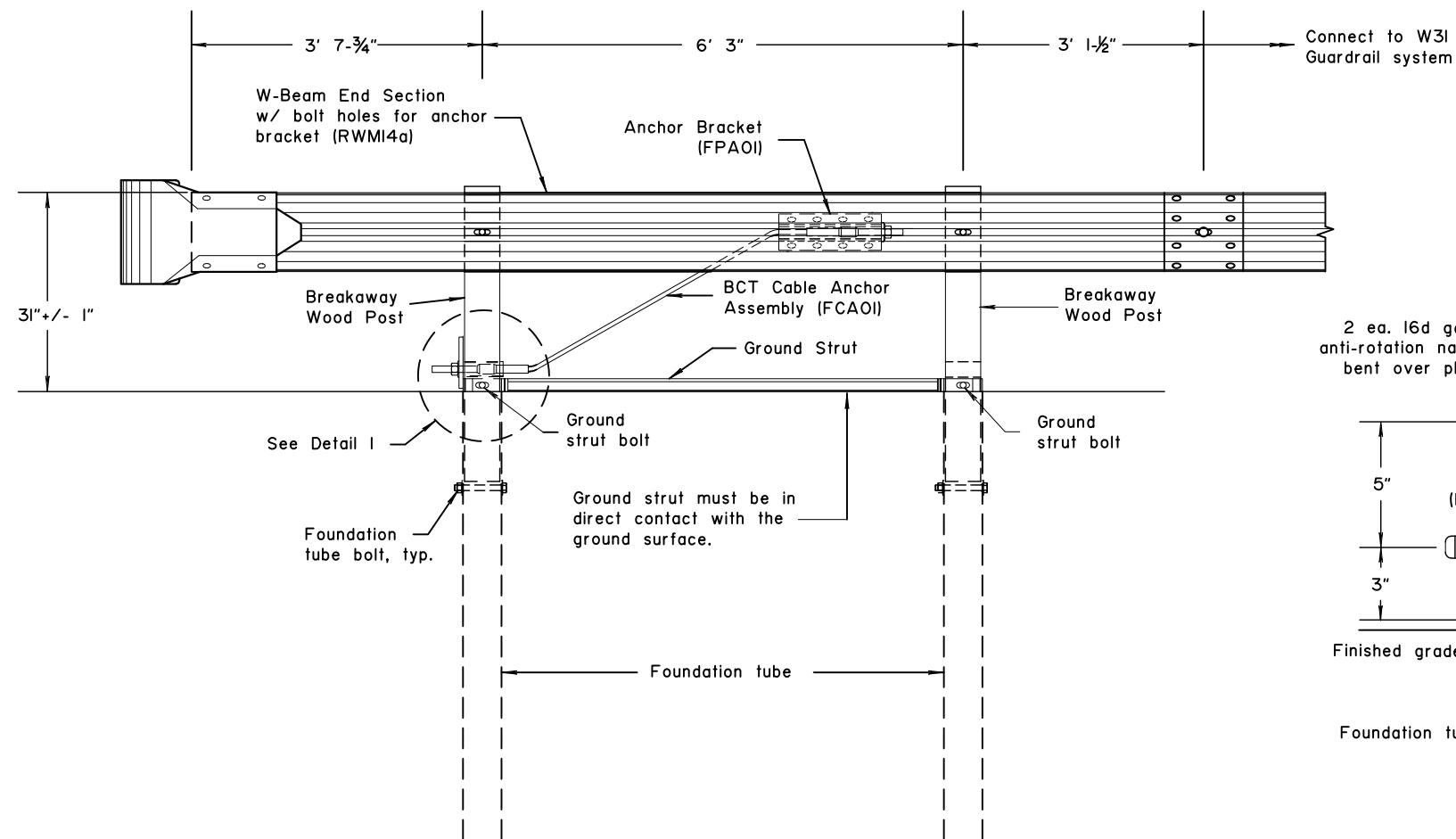
- I. This drawing illustrates steel post W31 guardrail. Wood posts may be substituted when allowed by specification.



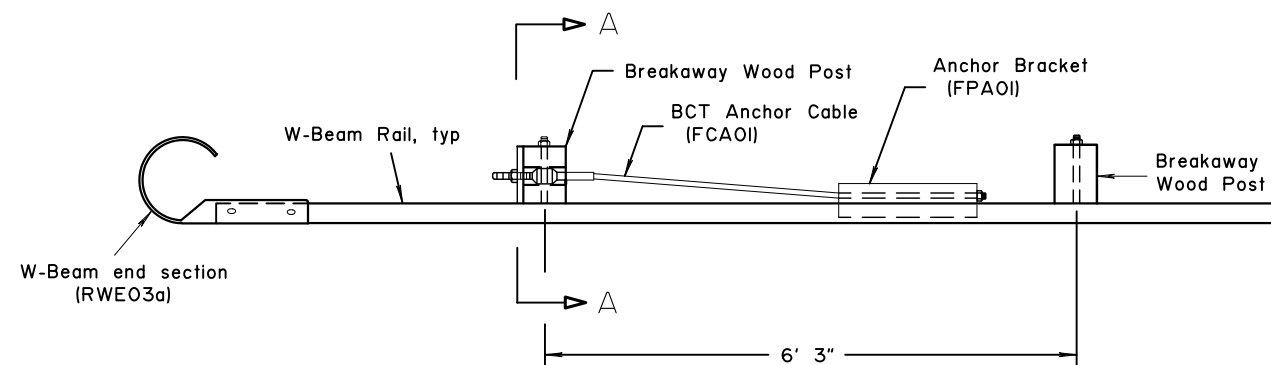
State of Alaska DOT&PF
ALASKA STANDARD PLAN
W31 GUARDRAIL
TRANSITION DETAILS

Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher*
Kenneth J. Fisher, P.E.
Chief Engineer
Adoption Date: 02/08/2019

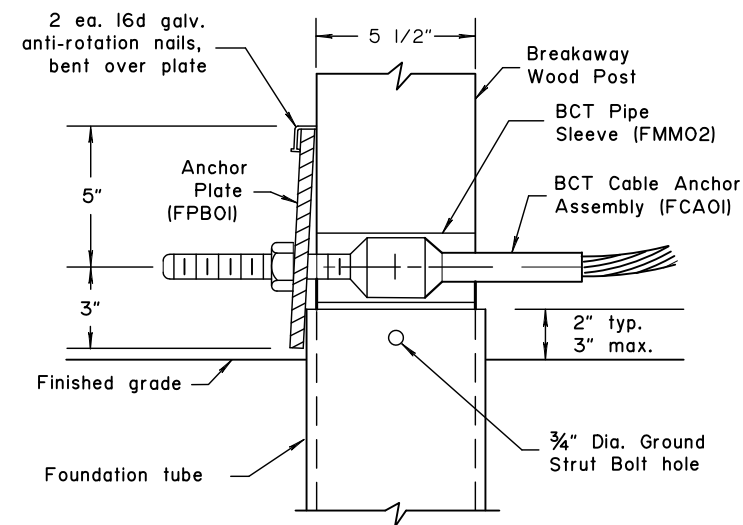
Last Code and Stds. Review
By: Date:
Next Code and Standards Review date: 02/08/2029



ELEVATION

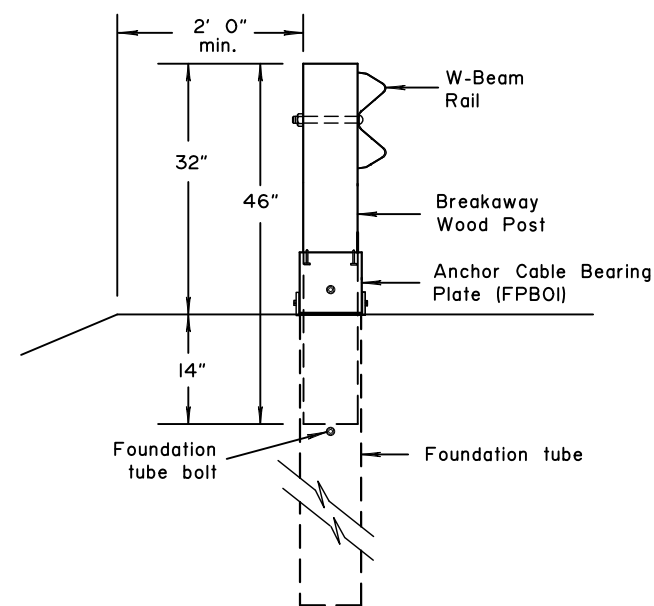


PLAN VIEW



DETAIL 1

(Ground strut not shown for clarity)



SECTION A-A

CONSTRUCTION NOTES

1. All covered hardware must comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition. Designators are given in parenthesis, when possible.
2. End section bolts and nuts have the same material requirements as splice bolts.
3. Foundation tube bolts are 7/8" diameter ASTM A307 hex head. Foundation tube bolts require an ASTM A563 A nut and two ASTM F844 7/8" diameter flat washers. Install one washer under bolt head and one under nut.
4. Anchor bracket and strut bolts are 5/8" diameter ASTM A307 hex head. Foundation tube bolts require ASTM A563 A nut and two ASTM F844 7/8" diameter flat washers. Install one washer under bolt head and one under nut.

DESIGN NOTES

1. This design is not crashworthy under MASH and is not intended for locations within the clear zone or where it is likely to be struck head-on by an errant vehicle.
2. This end anchorage is typically used on the downstream end of guardrail runs on one-way roads.

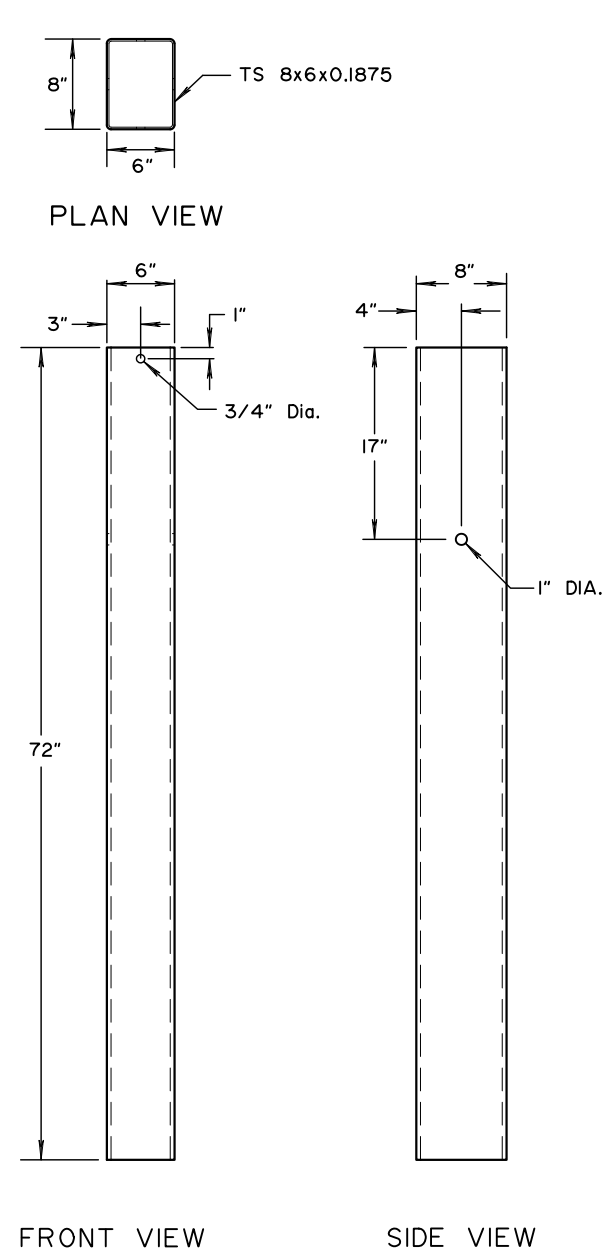
State of Alaska DOT&PF
ALASKA STANDARD PLAN
W31 DOWNSTREAM
END ANCHOR

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

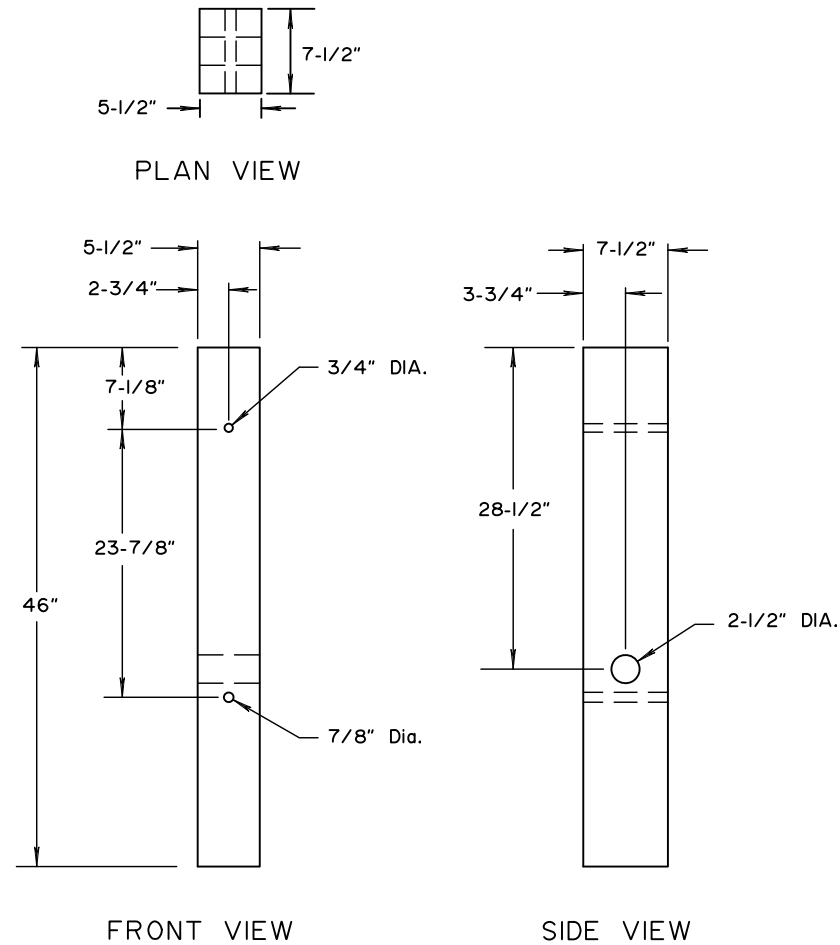
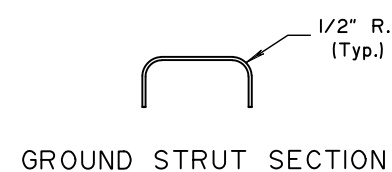
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

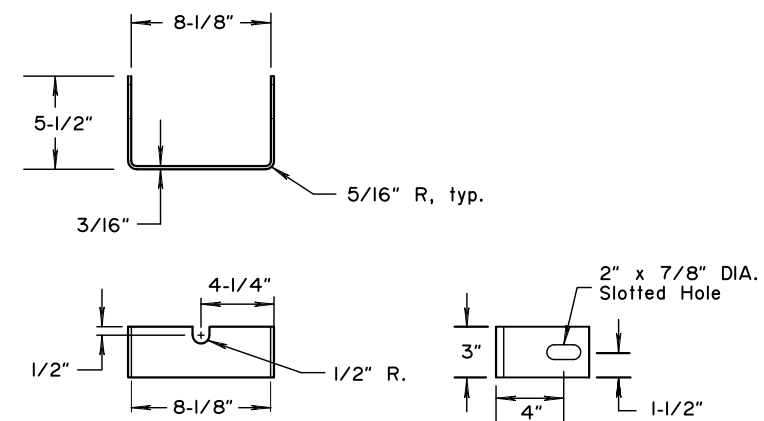
Next Code and Standards Review date: 02/08/2029



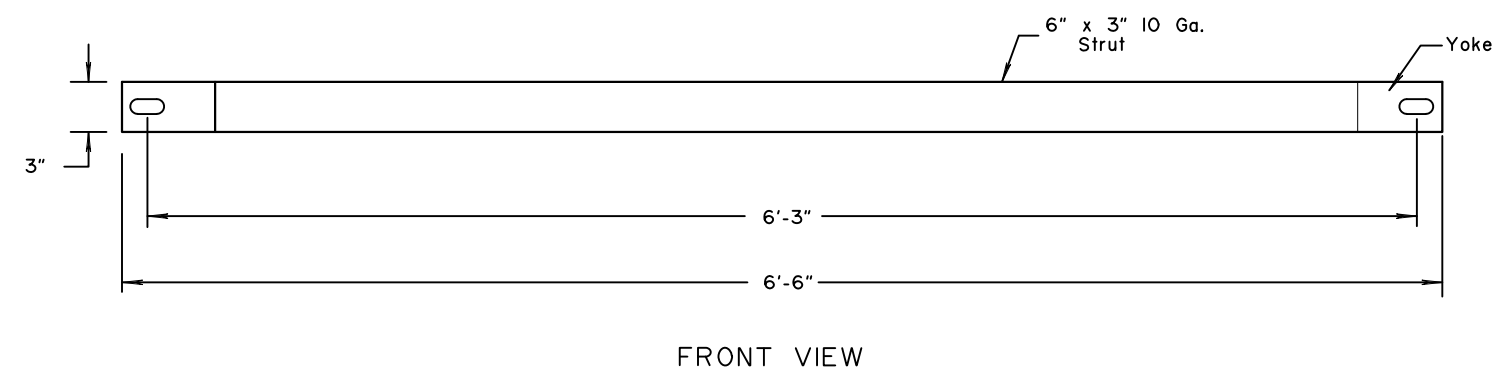
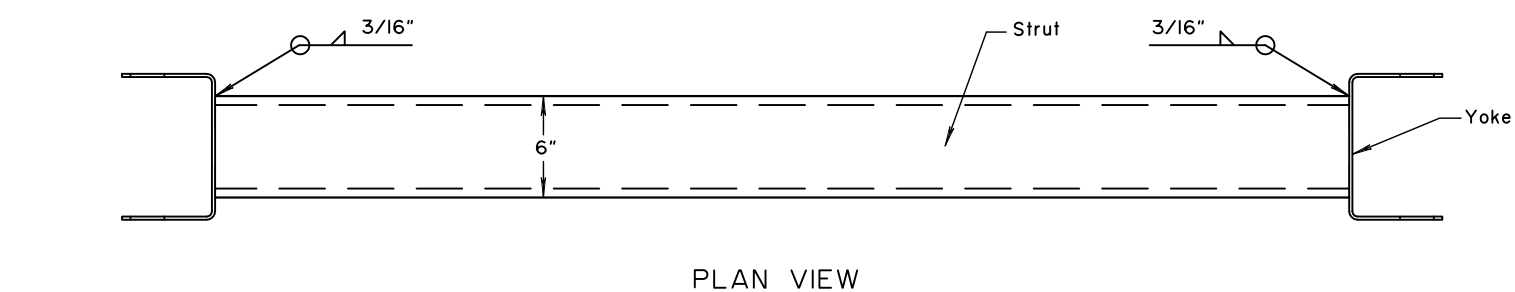
FOUNDATION TUBE



BREAKAWAY WOOD POST



YOKE DETAIL



GROUND STRUT DETAIL

CONSTRUCTION NOTES

- All covered hardware must comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition. Designators are given in parenthesis, when possible.

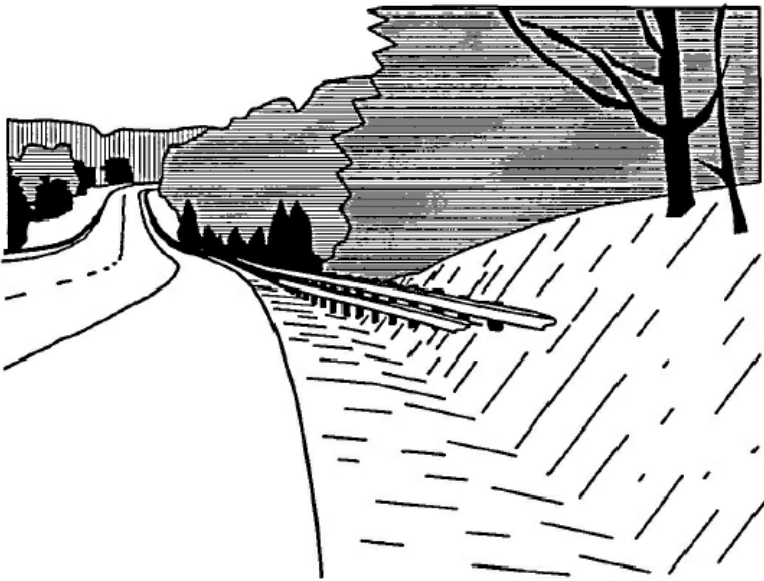
State of Alaska DOT&PF
ALASKA STANDARD PLAN
W31 DOWNSTREAM
END ANCHOR

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



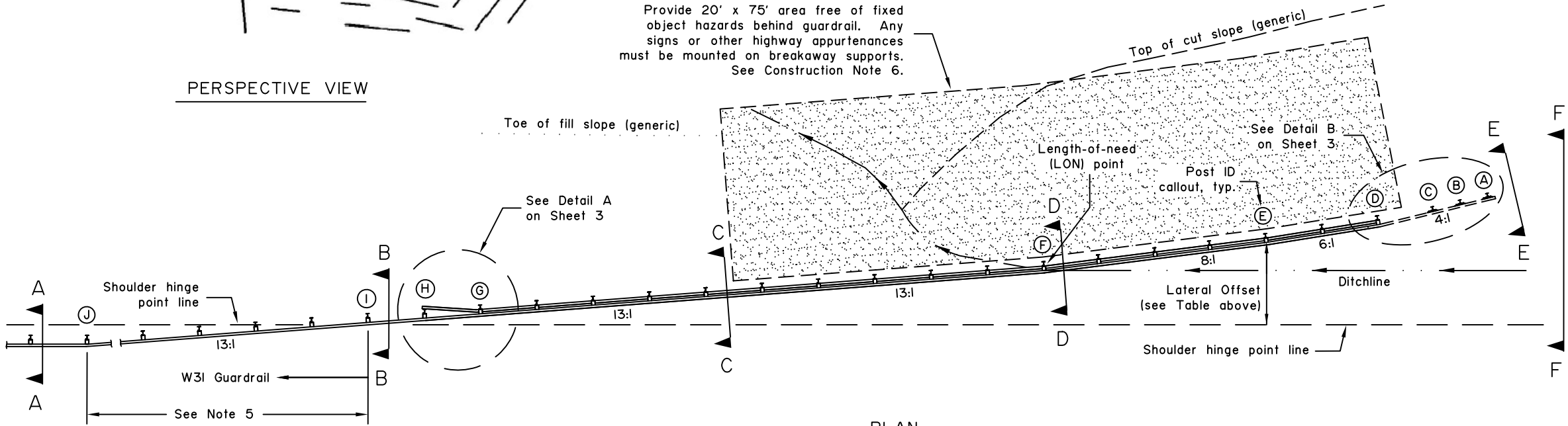
PERSPECTIVE VIEW

LATERAL OFFSET TABLE	
Post No.	Offset*
A	14' 3"
D	11' 2-1/4"
E	9' 1-1/2"
F	6' 0-1/4"
I	3'-1/4"

* Lateral offset is measured from the shoulder hinge point line to the back of guardrail. These offsets apply only for the foreslope and backslope conditions shown on the Sections on Sheet 2. For other foreslope or backslope conditions, these offsets need to be recomputed.

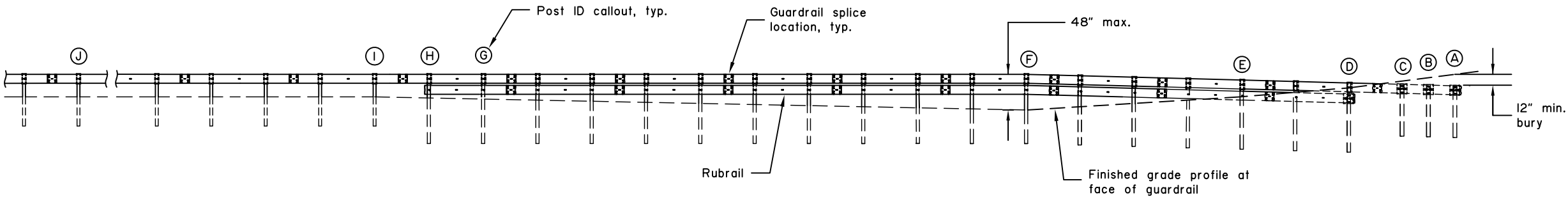
FLARE RATE TABLE	
Posts	Flare Rate
A - D	4 : 1
D - E	6 : 1
E - F	8 : 1
F - I	13 : 1
I - J	13:1 or flatter

Provide 20' x 75' area free of fixed object hazards behind guardrail. Any signs or other highway appurtenances must be mounted on breakaway supports. See Construction Note 6.



PLAN

All sections in this plan view are shown on Sheet 2



ELEVATION

CONSTRUCTION NOTES:

1. W-beam, blockout, and post details not shown here shall conform to Std Dwg G-05S.
2. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication.
3. This terminal is MASH TL-3 tested.
4. Pay limits for Buired-in-Backslope Terminal are from Post A to Post I. Payment for Buried-in-Backslope Terminal includes excavation and backfill work associated with burial from Post A to Post I.
5. Extend the W31 guardrail at a 13:1, or flatter, flare rate from Post I to Post J, where the typical guardrail run is parallel to the shoulder. Field bend w-beam rail element to transition from the 13:1 flare to parallel to the shoulder at Post J.
6. Provide a 20' x 75' object free area when backslopes are flatter than 2:1. When required, this work is subsidiary to the Buried-in-Backslope Terminal.

DESIGN NOTES:

1. The LON point shown on this sheet is for the conditions shown in the Sections on Sheet 2. For other foreslope conditions, especially those with wider foreslopes and deeper ditches, the LON point will be at a different location. In this case, the LON point is where the top of the rail height first reaches 48" with respect to the finished grade at the face of the guardrail

State of Alaska DOT&PF
ALASKA STANDARD PLAN

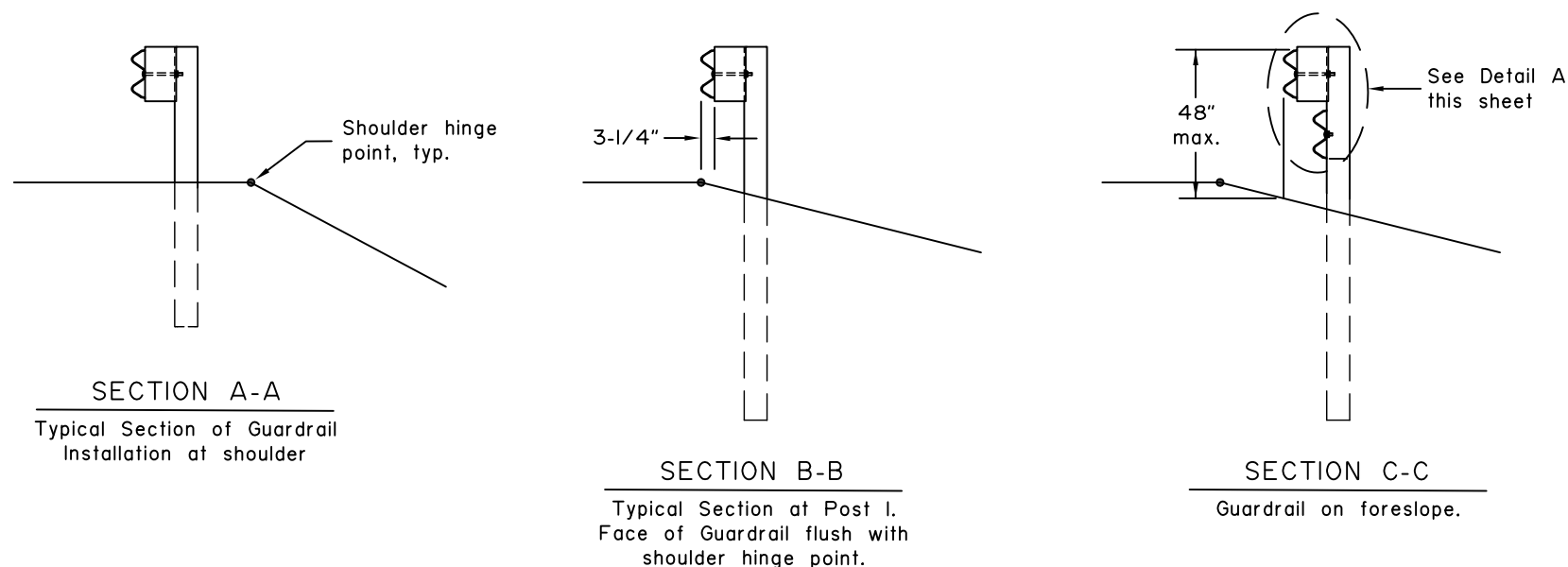
W31 GUARDRAIL
BURIED-IN-BACKSLOPE
TERMINAL

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

Adoption Date: 02/08/2019

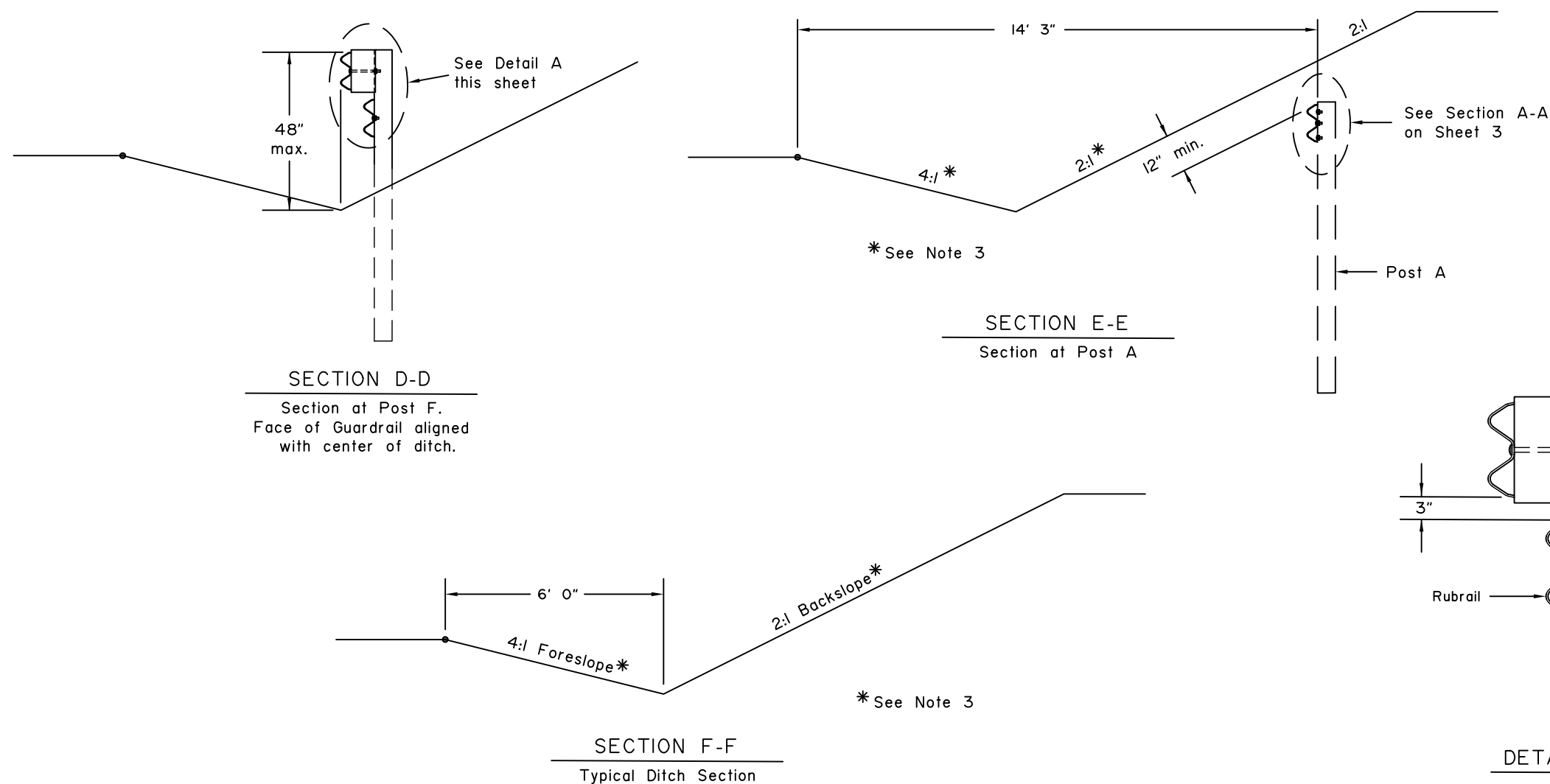
Last Code and Stds. Review
By: Date:

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



GENERAL NOTES:

1. W-beam, blackout, and post details not shown here shall conform to Std Dwg G-05S.
2. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication.
3. Foreslopes shall be 4:1 or flatter. Backslopes may be 1:1 maximum to 3:1 minimum. Lateral offsets shown on this sheet and Sheet 1 are based on the 4:1 foreslope, 2:1 backslope, and 18" ditch depth shown on this sheet. Other ditch depth, foreslope, or backslope conditions will require recomputation of lateral offsets and special grading of the top of guardrail to maintain the 48" maximum ground clearance to the top of guardrail and 12" minimum bury at Post A.



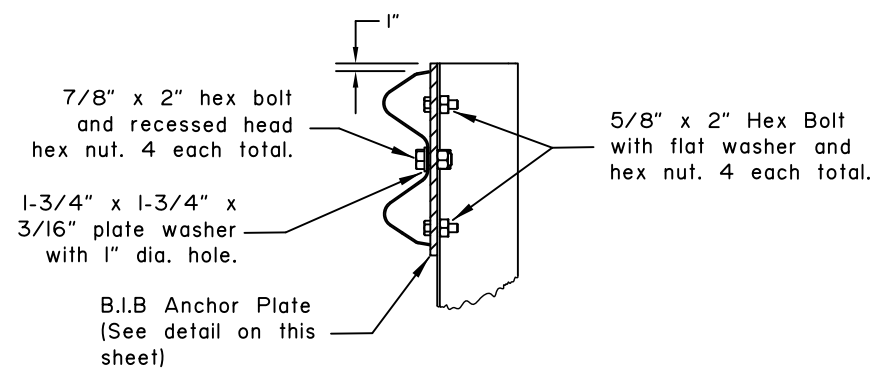
State of Alaska DOT&PF
ALASKA STANDARD PLAN
W31 GUARDRAIL
BURIED-IN-BACKSLOPE
TERMINAL

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

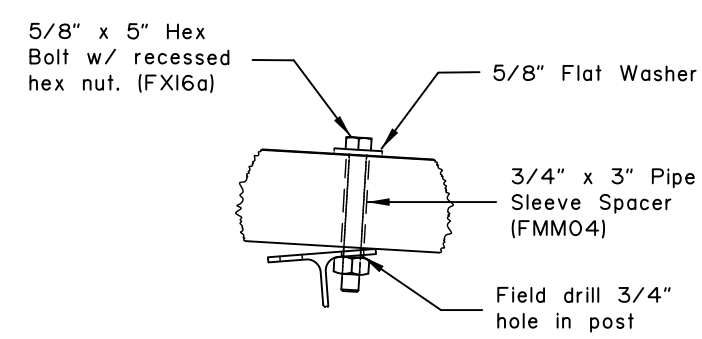
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

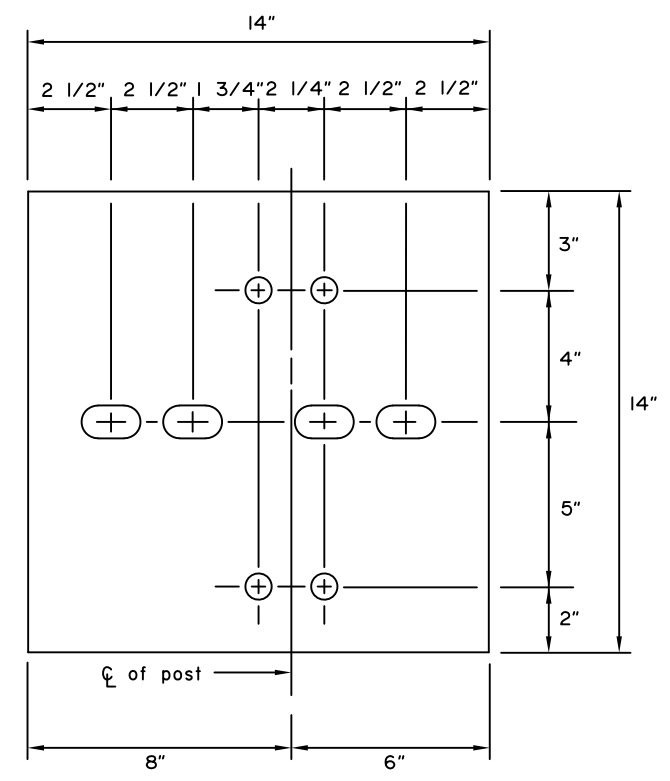
Next Code and Standards Review date: 02/08/2029



SECTION A-A
Typical for Posts A-C

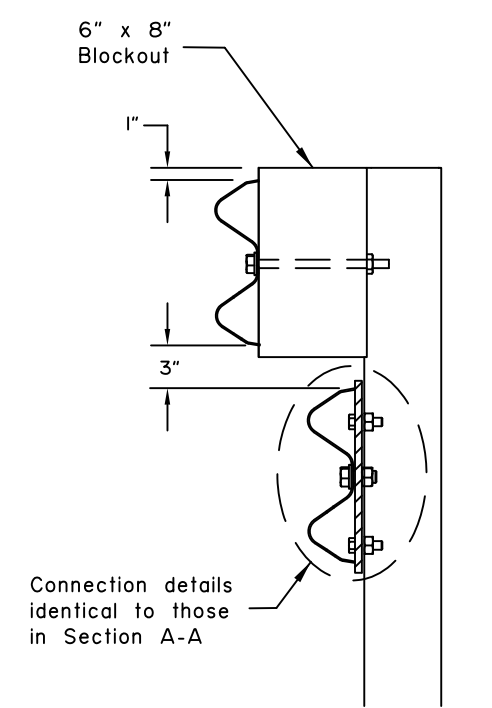


DETAIL C



B.I.B. ANCHOR PLATE

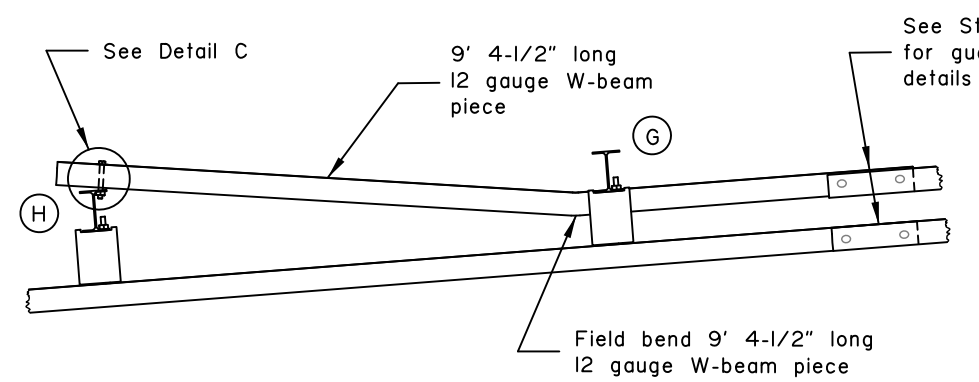
- Plate Notes:
1. Plate is 1/2" galvanized ASTM A36 steel
 2. All circular holes are 3/4" diameter
 3. All slotted holes are 1" x 1-3/4"



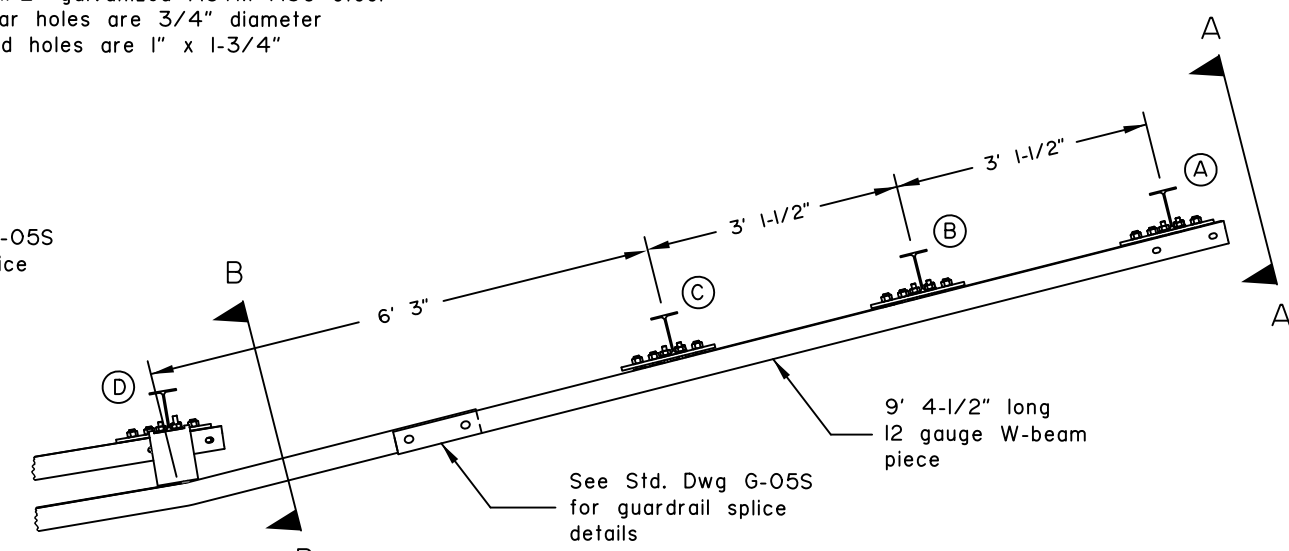
SECTION B-B
Post D only

GENERAL NOTES:

1. W-beam, blockout, and post details not shown here shall conform to Std Dwg G-05S.
2. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication.
3. Field drill 1" diameter holes in w-beam rail elements to make connections to the B.I.B. Anchor Plate.



DETAIL A



DETAIL B

State of Alaska DOT&PF
ALASKA STANDARD PLAN

W31 GUARDRAIL
BURIED-IN-BACKSLOPE
TERMINAL

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

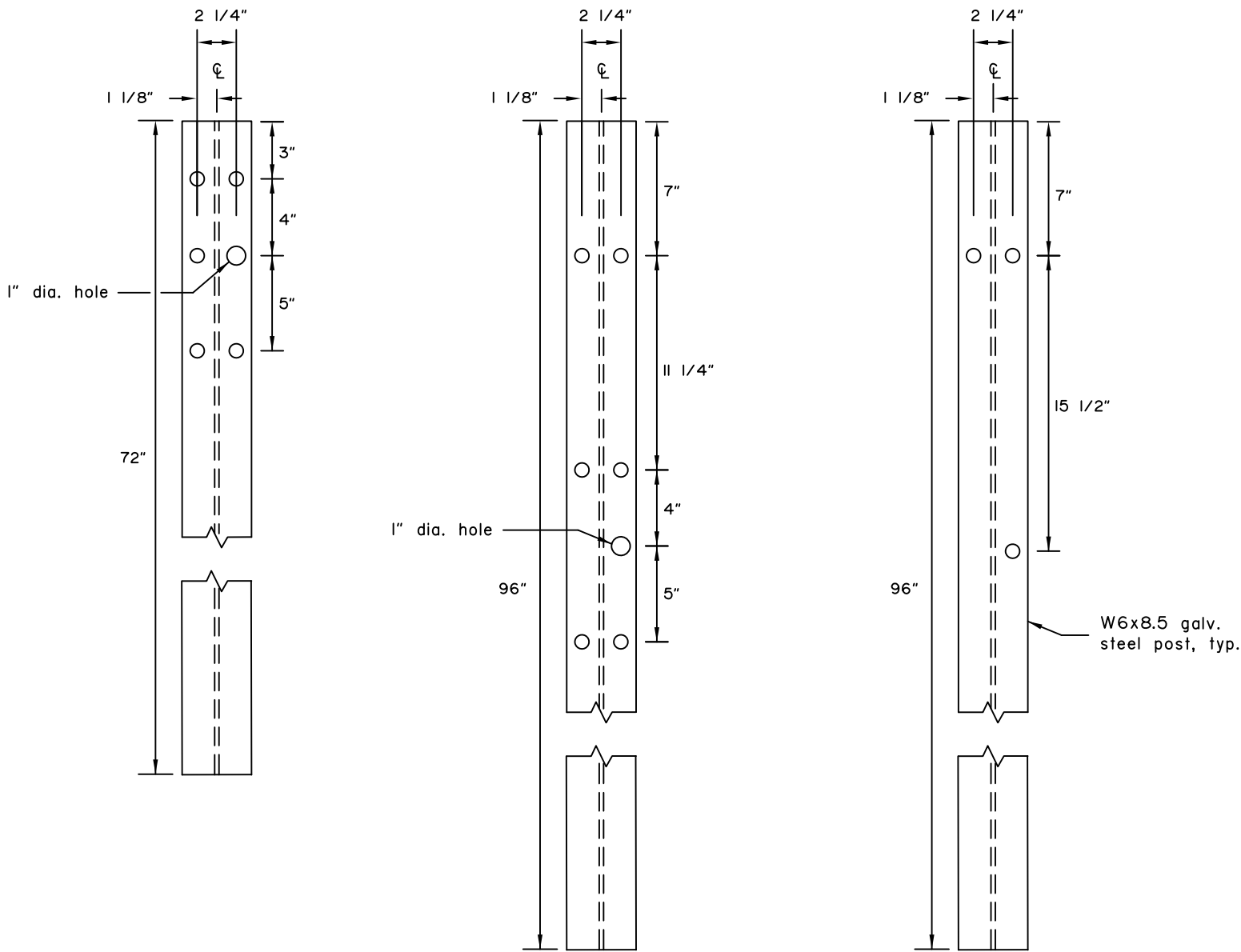
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

- 1. W-beam, blockout, and post details not shown here shall conform to Std Dwg G-05S.
- 2. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication.
- 3. All post holes are 3/4" diameter, except those shown as 1" diameter.



POSTS A-C

POST D

FIRST POST AFTER D
TO POST H

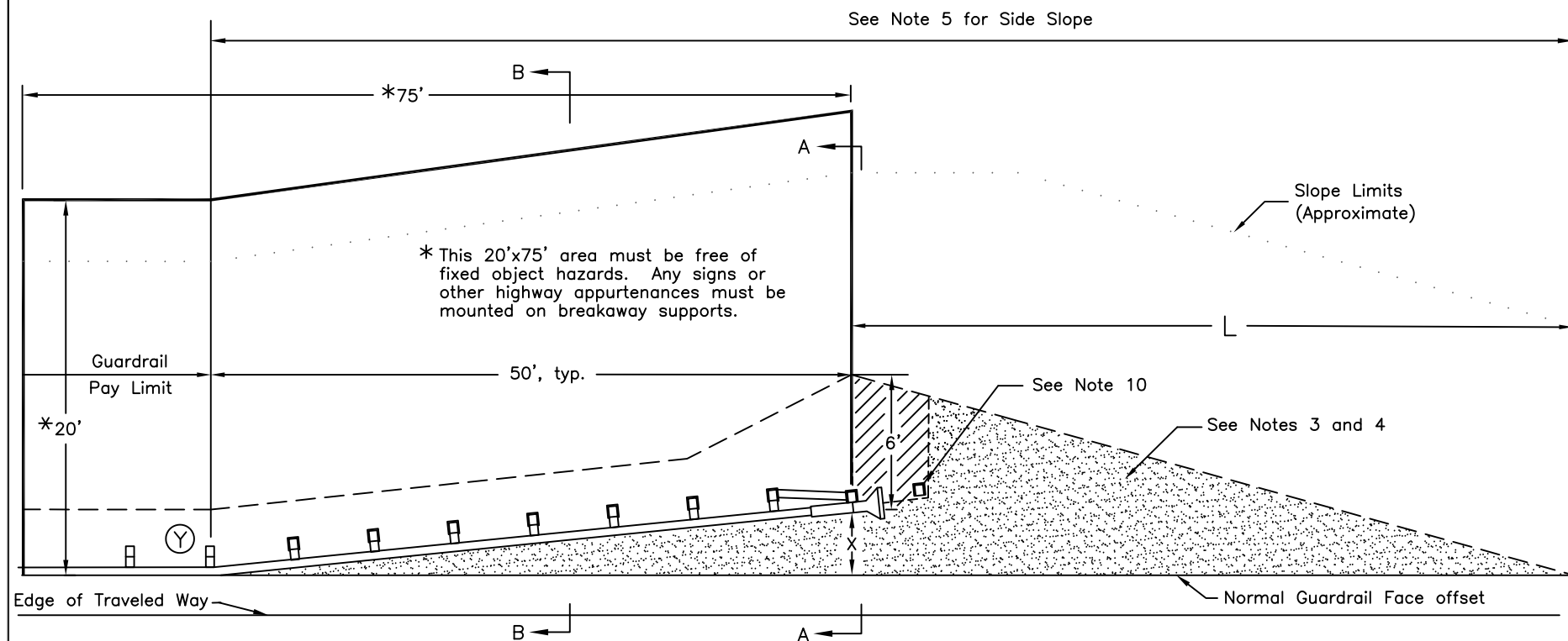
State of Alaska DOT&PF
ALASKA STANDARD PLAN
W31 GUARDRAIL
BURIED-IN-BACKSLOPE
TERMINAL

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

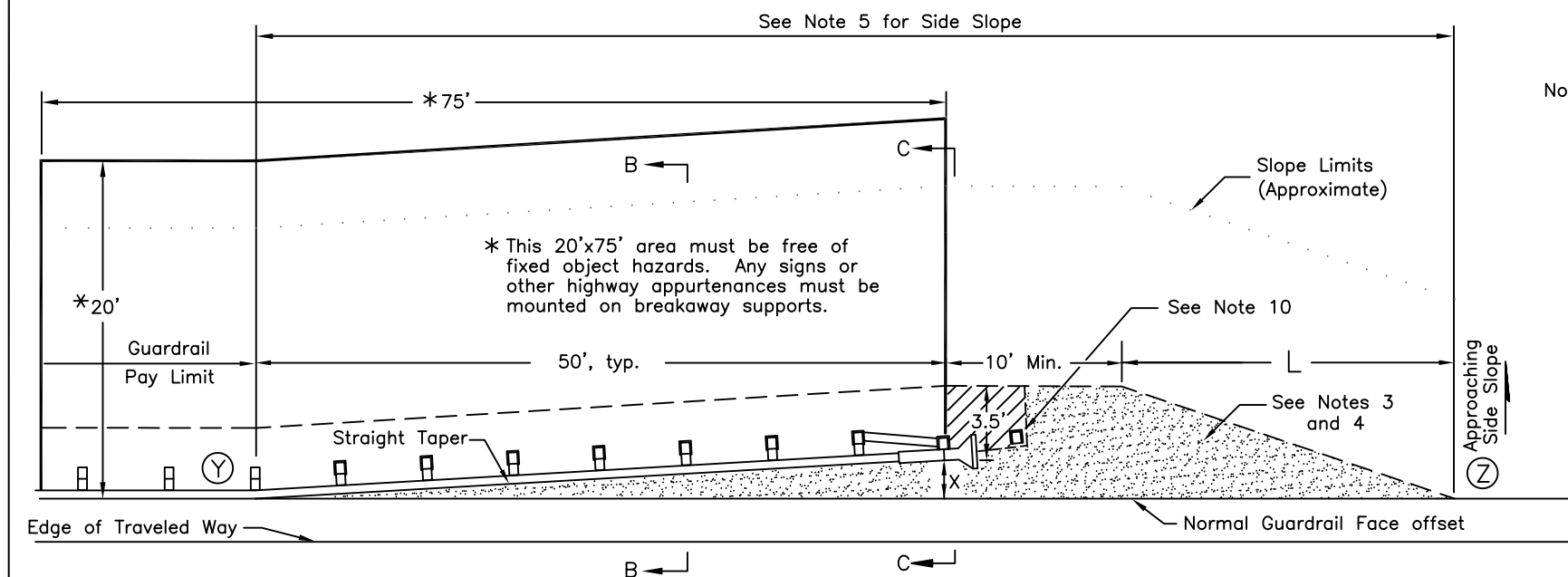
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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



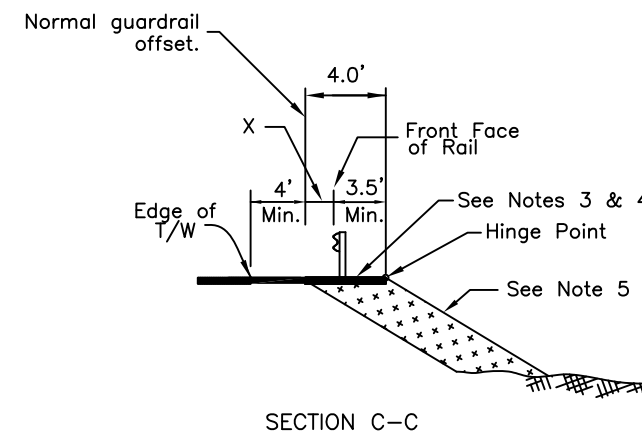
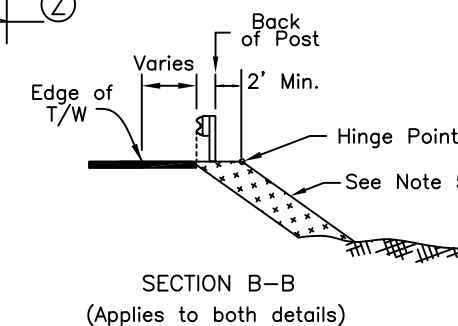
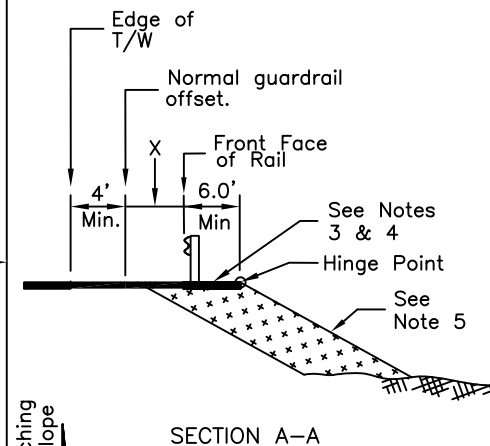
STANDARD GUARDRAIL TERMINAL WIDENING DETAIL



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		

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.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

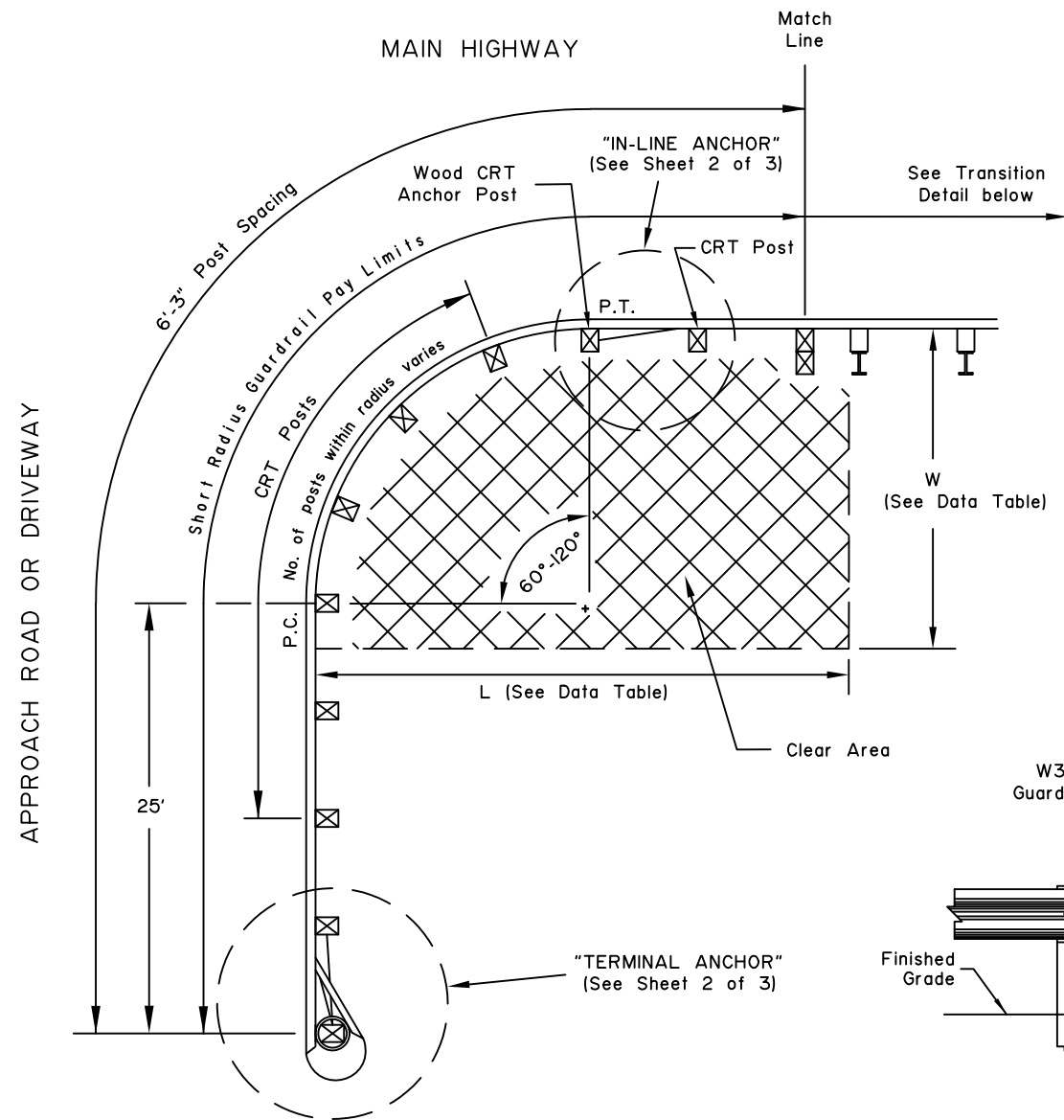
WIDENING FOR
GUARDRAIL END TERMINALS

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

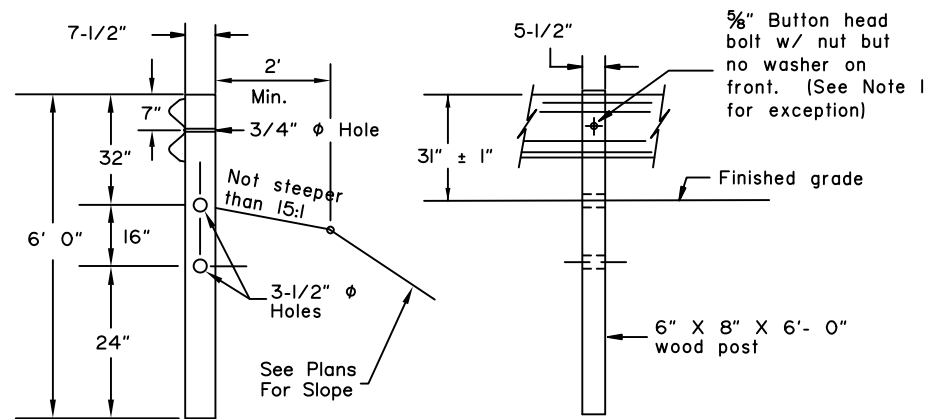
Next Code and Standards Review date:02/08/2029



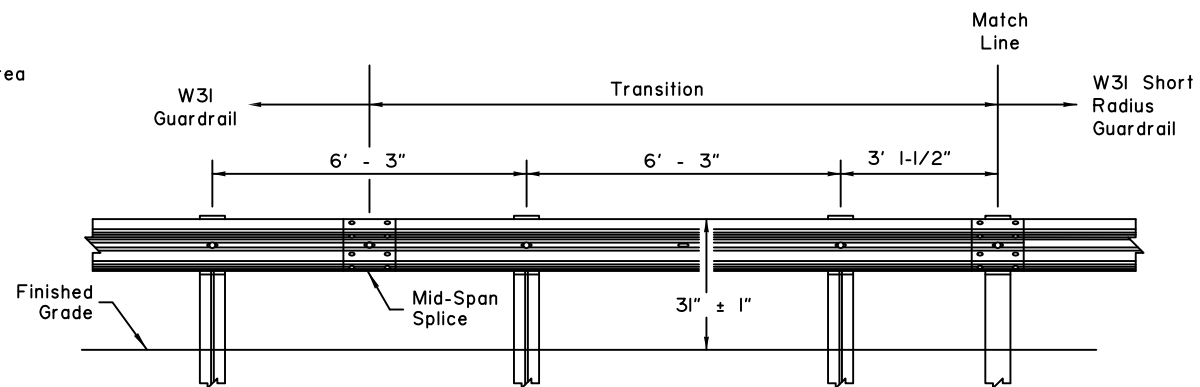
SHORT RADIUS GUARDRAIL PLAN

DATA TABLE *					
Curve Radius, Ft. (Rounded)	Curve Length	Number of Rail Sections	Clear Area		** No. of Posts
			Length (L)	Width (W)	
8'	12.50'	1.0	25	15	5
12'	18.75'	1.5	25	15	6
16'	25.00'	2.0	30	15	7
20'	31.25'	2.5	33	15	8
24'	37.50'	3.0	37	20	9
28'	43.75'	3.5	40	20	10
32'	50.00'	4.0	45	20	11
36'	56.25'	4.5	50	20	12

- * The table applies only to 90° approaches or driveways.
* 36 feet is the maximum allowable radius for this system.
** Number of CRT posts includes one for the In-Line Anchor.

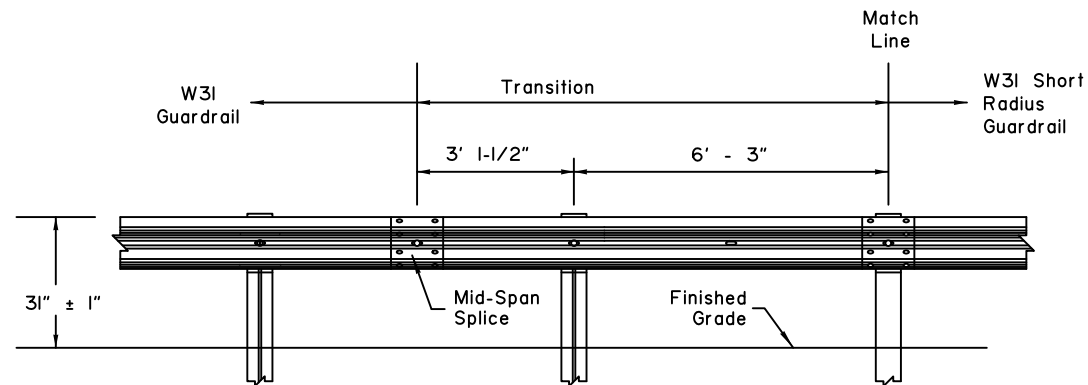


CONTROLLED RELEASE TERMINAL (CRT) POST



TRANSITION TO W31 GUARDRAIL - TYPE I

(As viewed from Main Highway)
(See Construction Note 2)



TRANSITION TO W31 GUARDRAIL TYPE II

(As viewed from Main Highway)
(See Construction Note 2)

CONSTRUCTION NOTES:

- Do not bolt rail to central post on 8' radius CRT.
- Steel posts are shown in the transition. Wood post may be substituted when allowed by the Specifications.

DESIGN NOTES:

- Use the W31 short radius guardrail system to shield hazards at the intersection of a main highway with a minor road or driveway. Typical application include interruptions in guardrail runs caused by intersecting roadways
- The short radius guardrail Terminal Anchor shown is for use on low speed (<45 mph) approach roads or driveways where motorists are required to stop or yield. Do not use this Terminal Anchor for high speed approach roads or driveways when a MASH approved end treatment is required.
- The Clear Area shall be free of fixed object hazards. Any signs or other highway appurtenances in the clear area must be mounted on MASH compliant breakaway supports.
- Connections to other guardrail systems (e.g. bridge rails and end treatments) and not provided on this drawing. Other details may be needed for this.
- Short Radius Guardrail on 60 to 90 degree approaches are allowed provided they are constructed with posts at the P.C. and P.T. and the posts are placed on a uniform 6'-3" spacing.
- When Short Radius Guardrail transitions to guardrail not at 31" ± 1" top-of-rail height, transition height over a 25 foot length.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

W31 SHORT
RADIUS GUARDRAIL

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

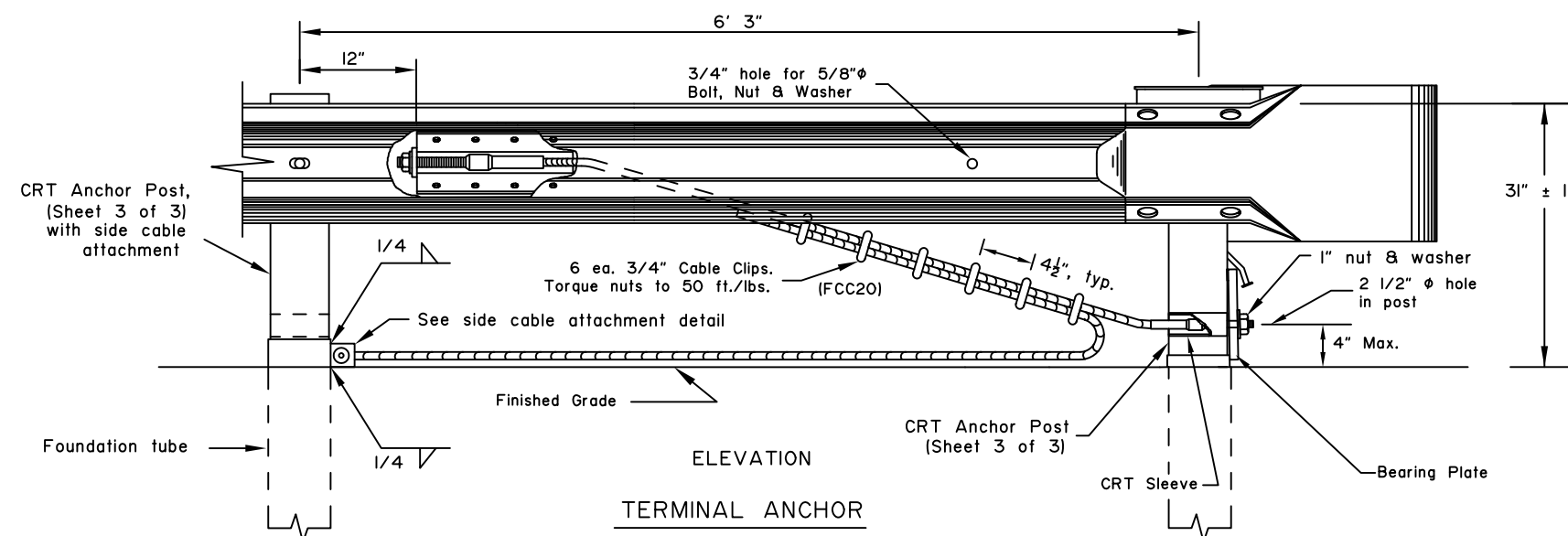
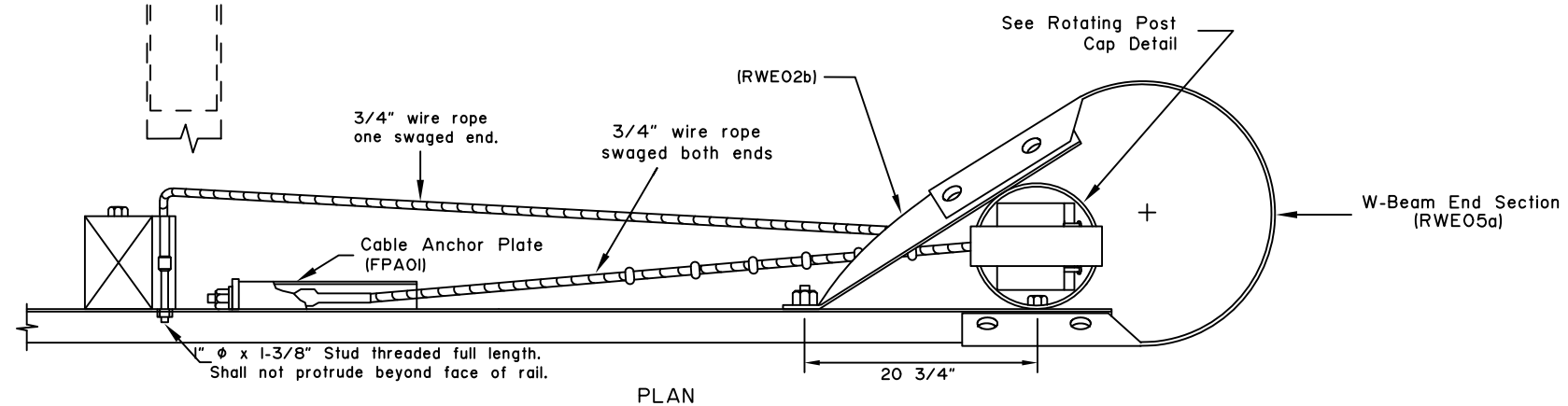
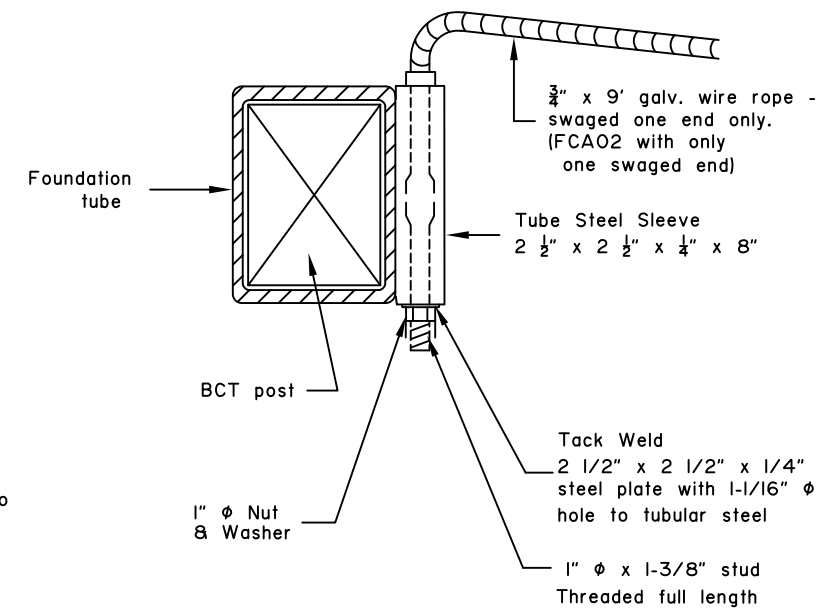
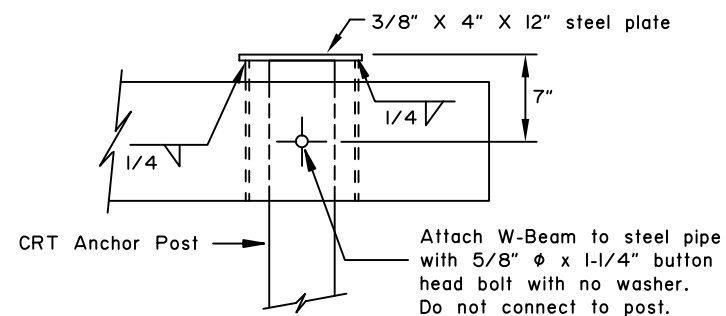
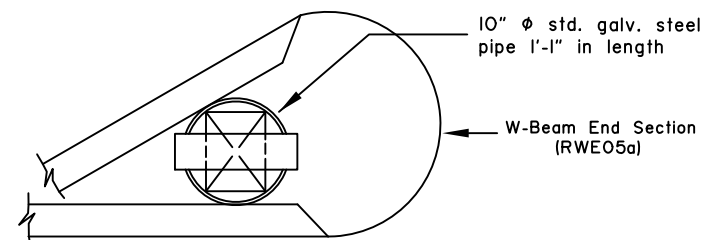
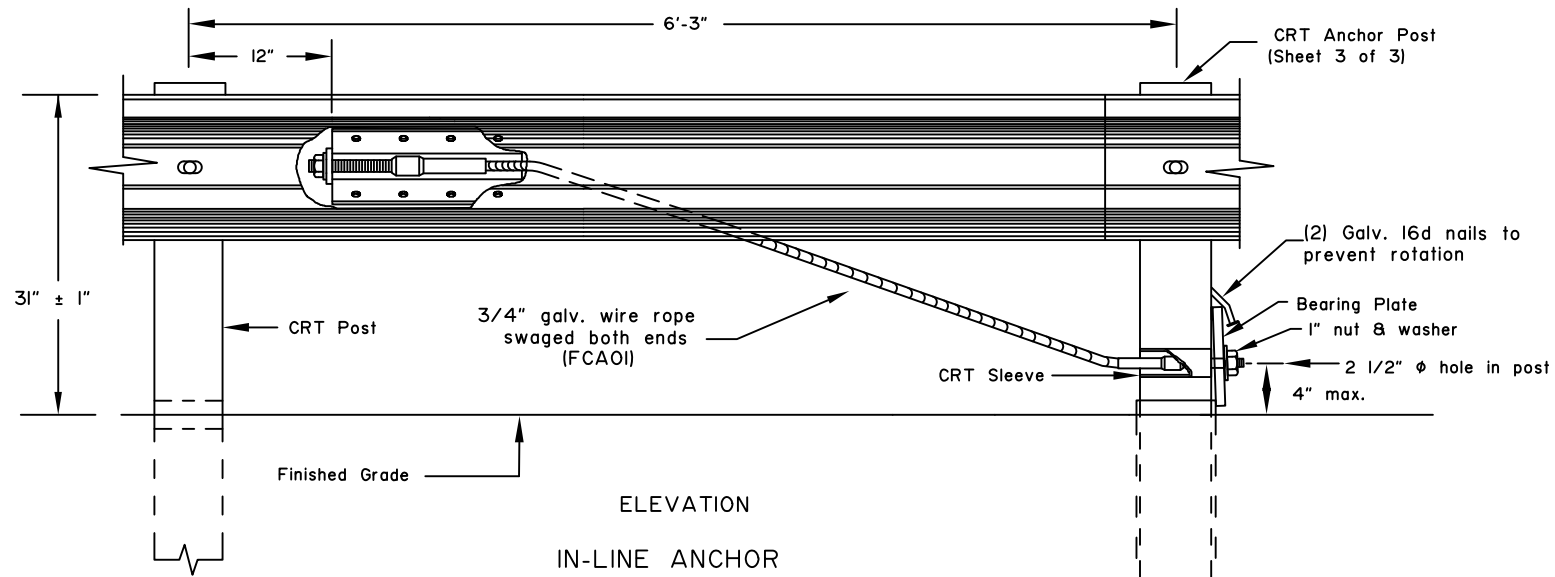
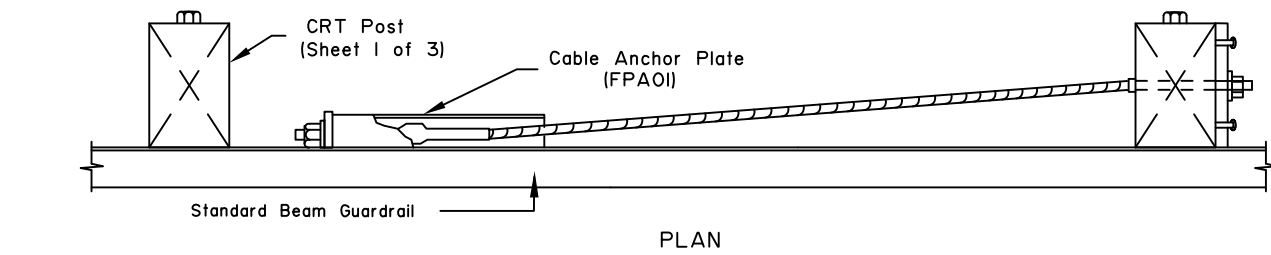
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

CONSTRUCTION NOTES

1. See Standard Drawings G-00 and G-05 for details not shown here.
2. All covered hardware must comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition. Designators are given in parenthesis, when possible.



State of Alaska DOT&PF
ALASKA STANDARD PLAN

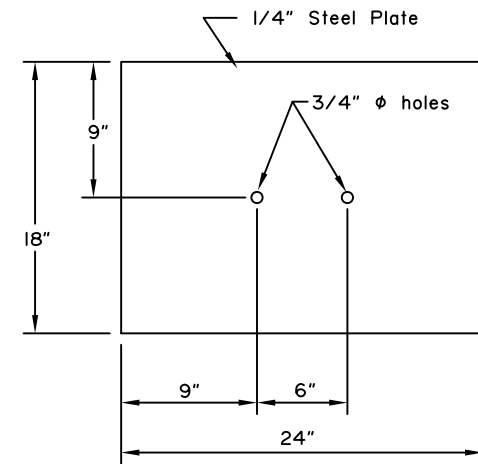
W31 SHORT
RADIUS GUARDRAIL

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

Adoption Date: 02/08/2019

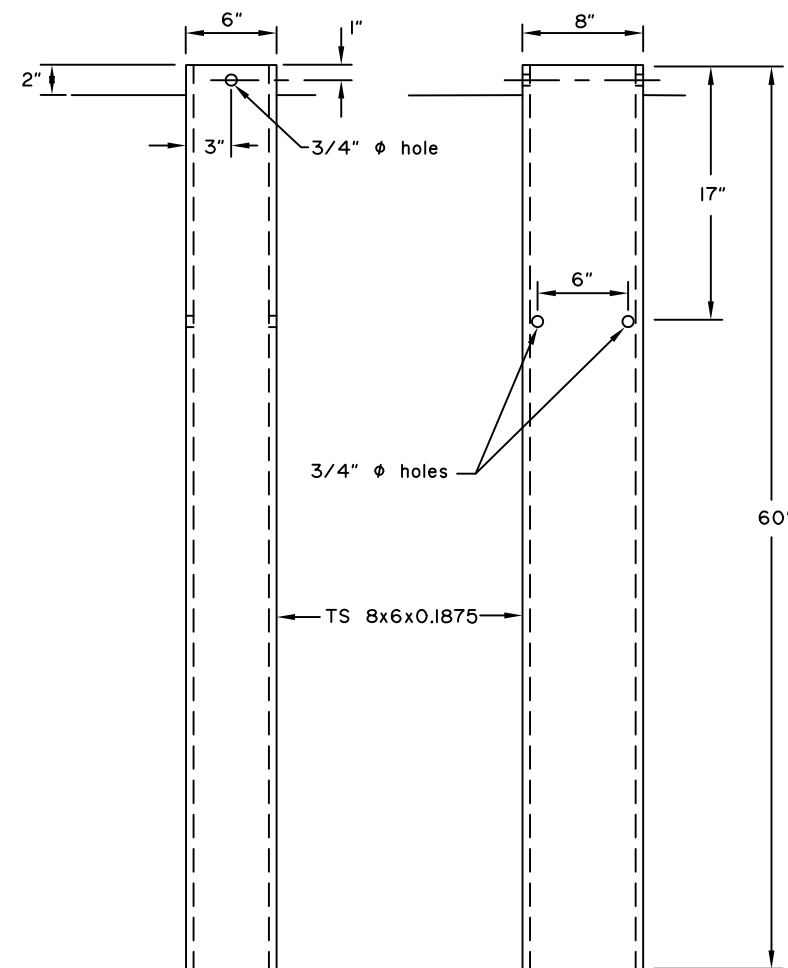
Last Code and Stds. Review
By: Date:

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



FOUNDATION TUBE SOIL PLATE

(PLS03)

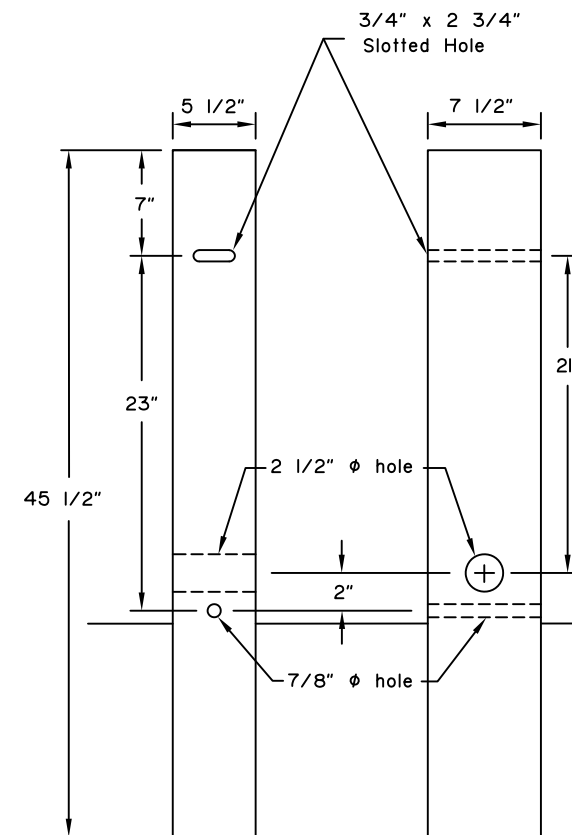


FRONT

SIDE

FOUNDATION TUBE

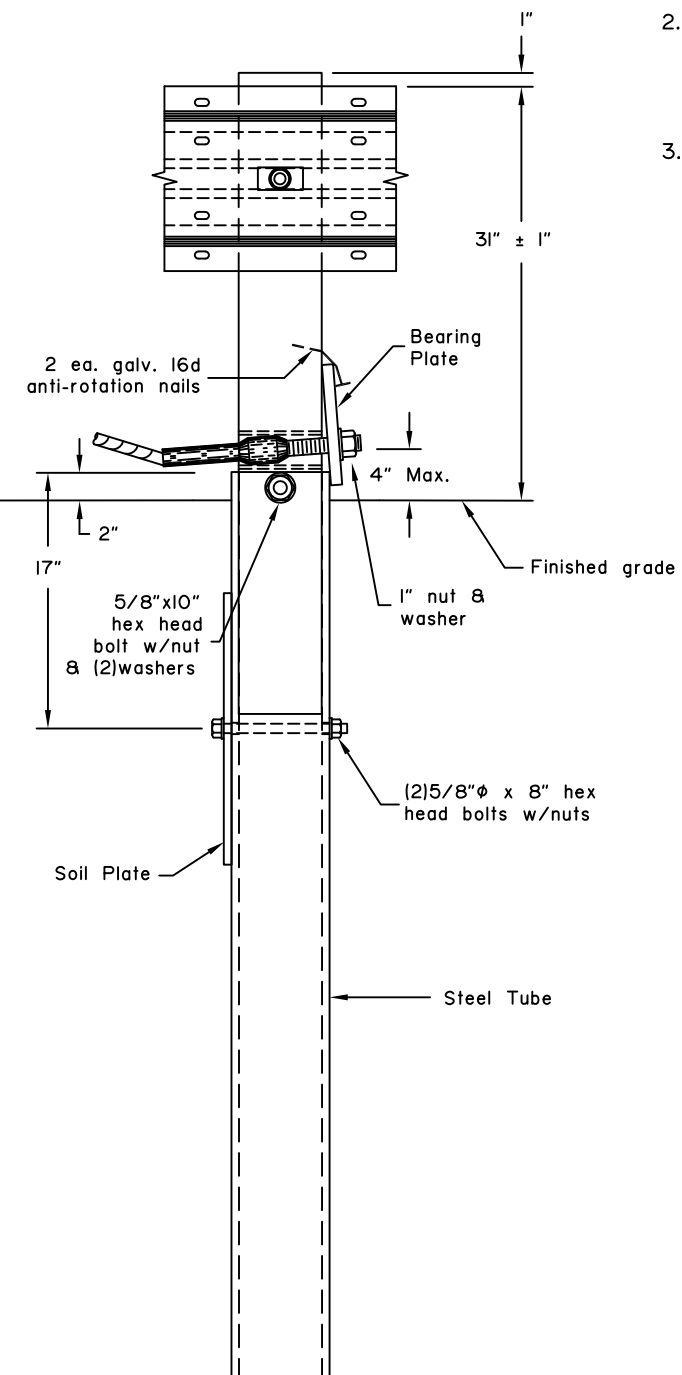
(PTE05)



FRONT

SIDE

WOOD POST



ASSEMBLY

GENERAL NOTES:

1. Hardware details not shown here shall conform to drawings G-05W and G-00.
2. Comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition, for all covered guardrail hardware.
3. Not all bolt and nuts are shown for clarity purposes.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

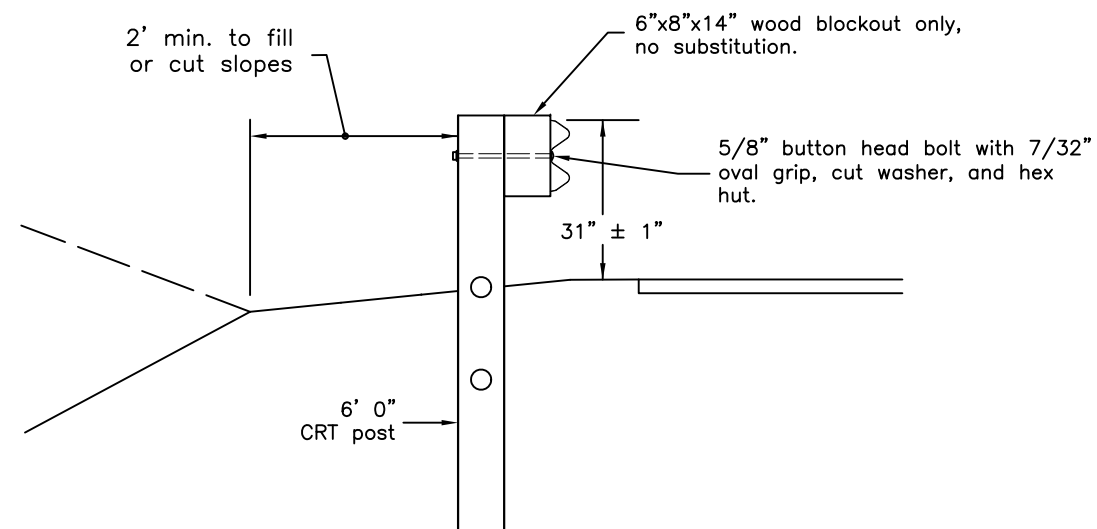
W31 SHORT
RADIUS GUARDRAIL

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



SECTION A-A

Typical for all CRT post
locations shown in the plan view

CONSTRUCTION NOTES

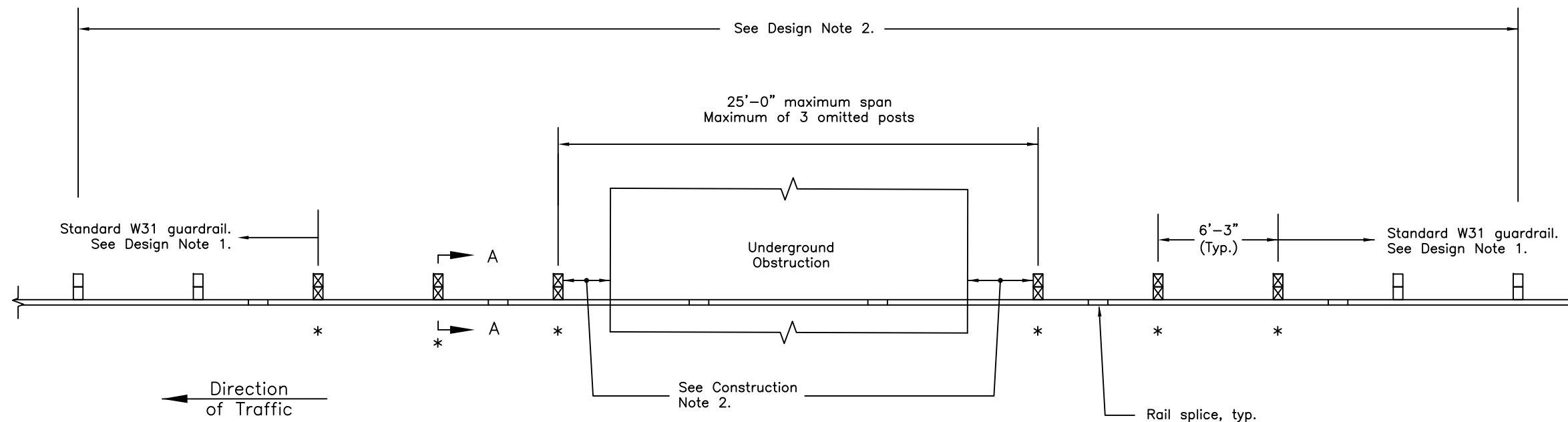
1. See Standard Drawings G-00 and G-05 for additional guardrail and guardrail hardware details. See G-26 Sheet 1 of 3 for CRT post details.

2. Provide 1' minimum lateral clearance between posts and underground obstruction.

3. Nesting of rail elements in the long span area is not allowed.

DESIGN NOTES

1. Total installed length of guardrail and end anchorage (including end terminals, downstream anchors, etc.) shall not be less than 62.5' measured from the outermost CRT post on both the upstream and downstream ends.
2. No fixed objects allowed within 9'-0" from the back of posts where post are omitted. This is the crash-tested lateral deflection of the long span section.
3. Do not install curb in the long span area - this includes the area of CRT posts.



*-Designates CRT
post location

LONG SPAN GUARDRAIL PLAN

State of Alaska DOT&PF
ALASKA STANDARD PLAN
LONG SPAN
W31 GUARDRAIL

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

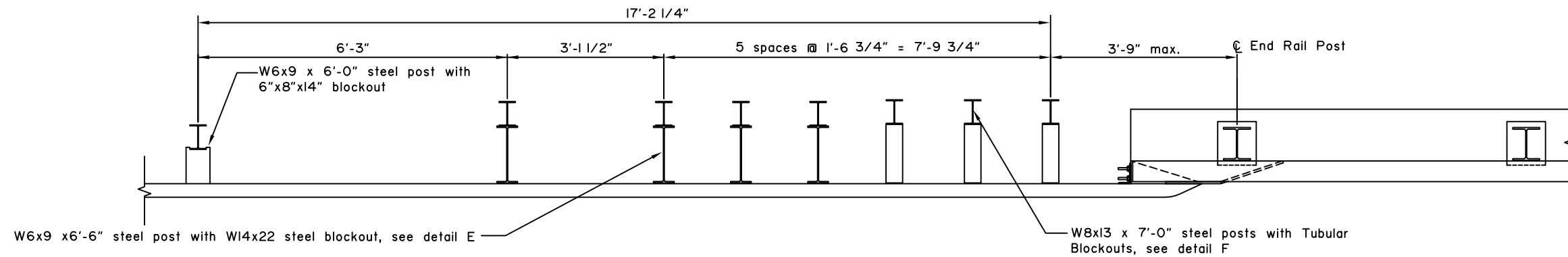
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

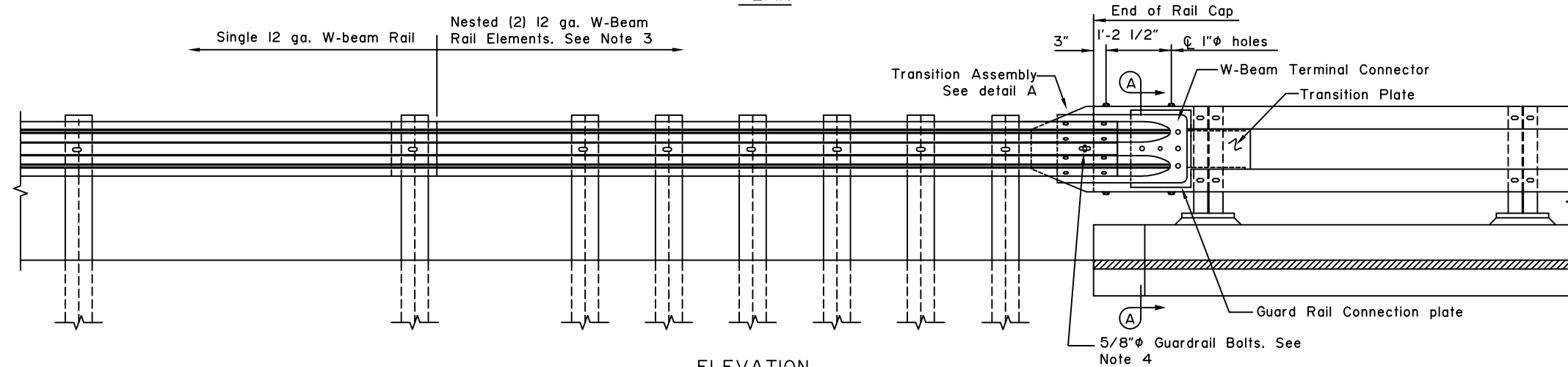
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES

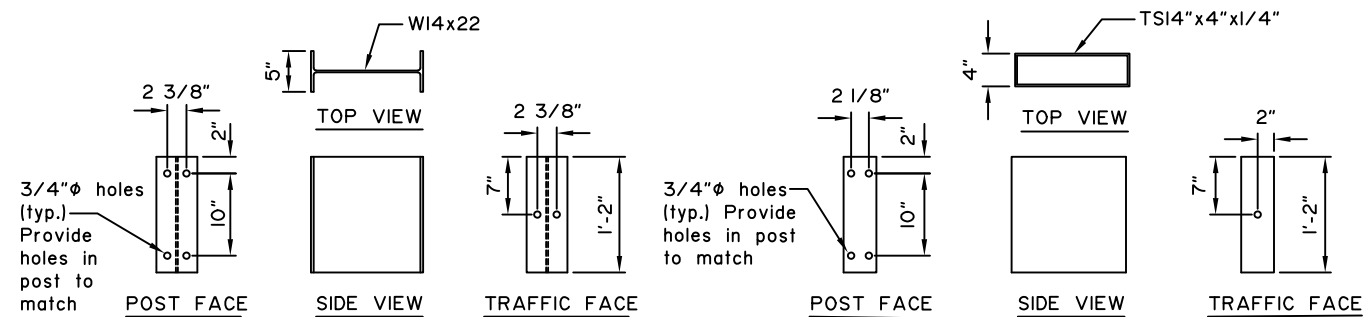
1. All guardrail and guardrail connection hardware to conform to AASHTO M-180. All High Strength Bolts conform to ASTM A325. All other steel to conform to ASTM A709 Grade 36.
2. Conform to G-00 and G-05S for all guardrail details not shown. No Back-up Plates required.
3. Lap approach guardrail to prevent snags from oncoming traffic.
4. Provide 4 1/2" horizontal slot in approach guardrail. Adjust guardrail bolts for sliding fit.
5. This design is approved for NCHRP 350, TL 3.



PLAN

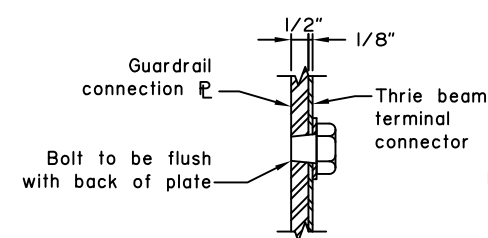


ELEVATION

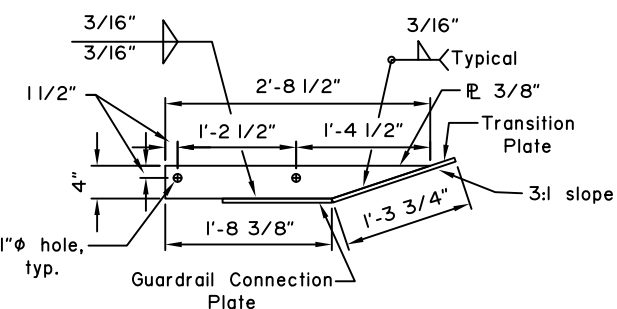


DETAIL E - STEEL BLOCK OUT

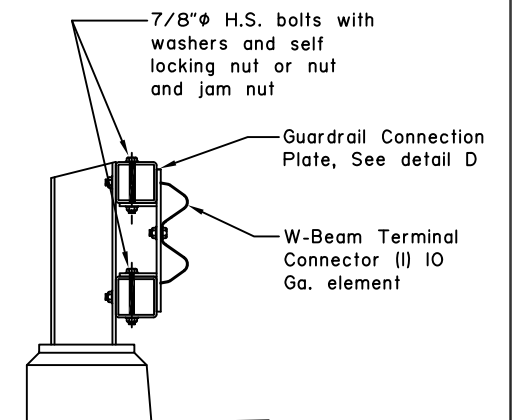
DETAIL F - TUBULAR BLOCKOUTS



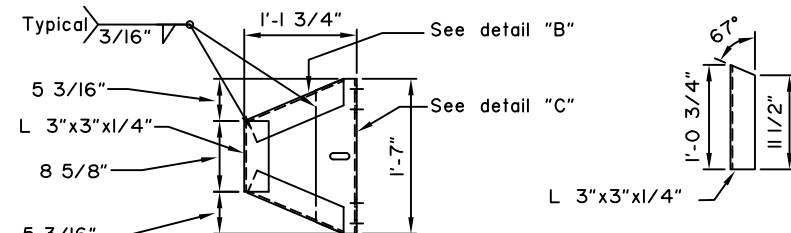
DETAIL G



VIEW H-H

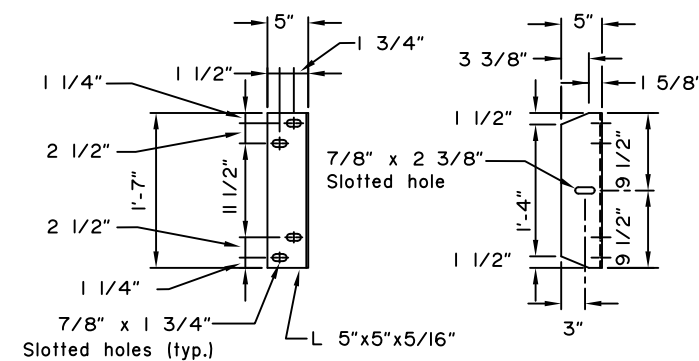


SECTION A-A

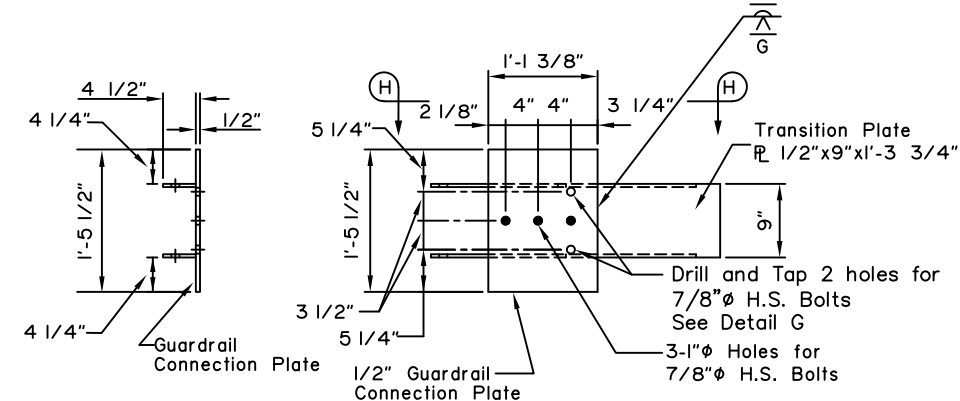


DETAIL A - TRANSITION ASSEMBLY

DETAIL B



DETAIL C



DETAIL D - GUARDRAIL CONNECTION PLATE

State of Alaska DOT&PF
ALASKA STANDARD PLANBRIDGE RAIL
W-BEAM TRANSITIONAdopted as an Alaska
Standard Plan by: *Kenneth J. Fisher, P.E.*
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review

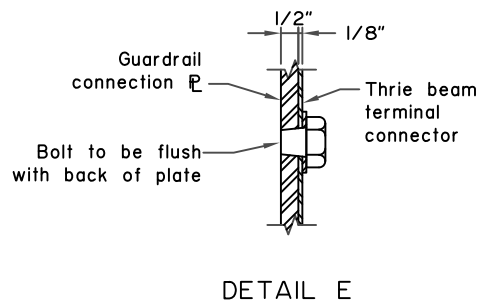
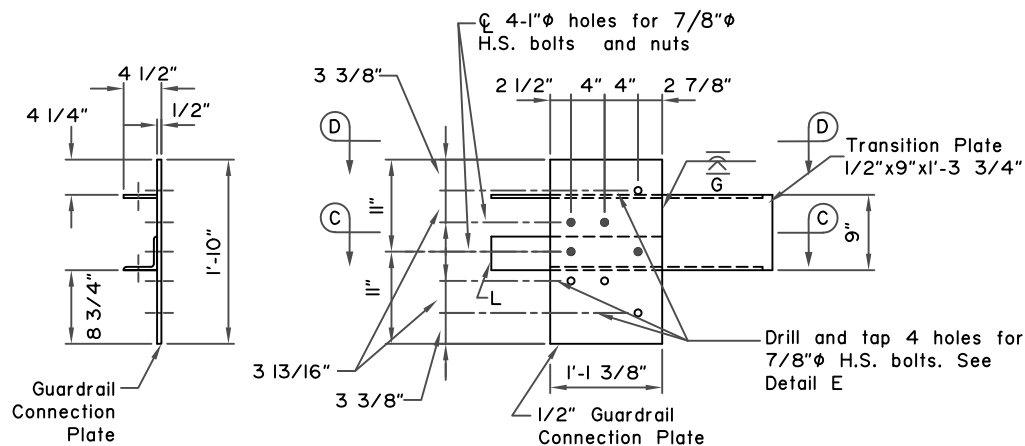
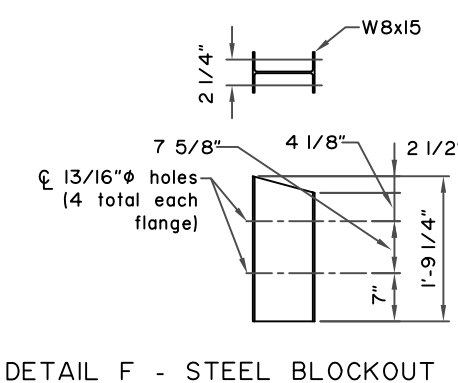
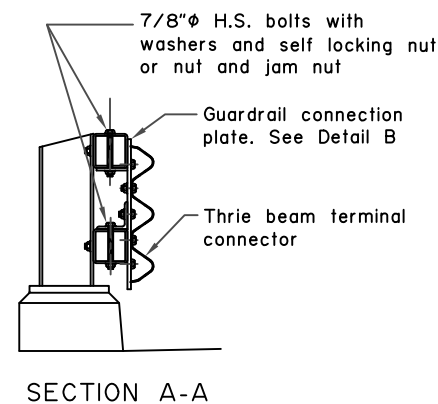
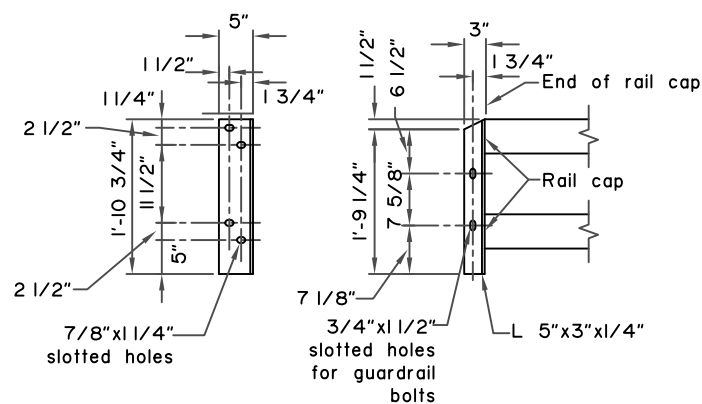
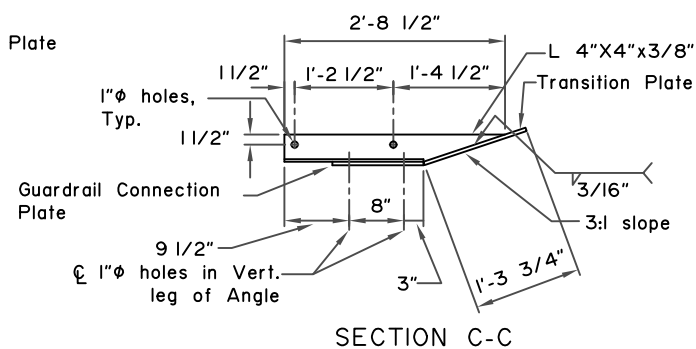
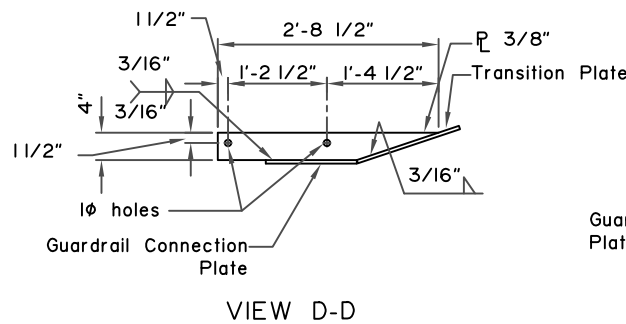
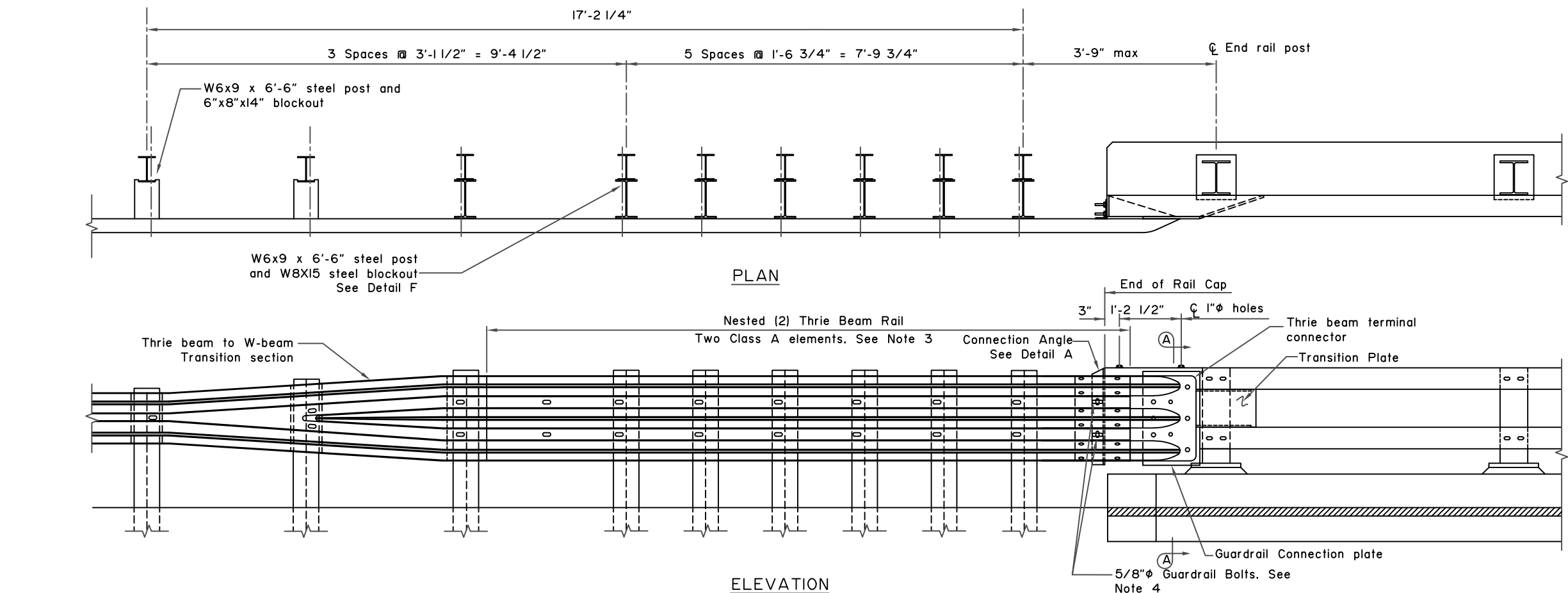
By: Date:

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

No Scale

GENERAL NOTES

1. All guardrail and guardrail connection hardware to conform to AASHTO M-180. All H.S. Bolts conform to ASTM A325. All other steel to conform to ASTM A709 Grade 36.
2. Conform to G-00, G-04S, G-10 for all guardrail details not shown. No Back-up Plates required.
3. Lap approach guardrail to prevent snags from oncoming traffic.
4. Provide 4 1/2" horizontal slot in approach guardrail. Adjust guardrail bolts for sliding fit.
5. This design is approved for NCHRP 350, TL 4.



DETAIL B - GUARDRAIL CONNECTION PLATE

DETAIL E

State of Alaska DOT&PF
ALASKA STANDARD PLAN
BRIDGE RAIL THRIE
BEAM TRANSITION

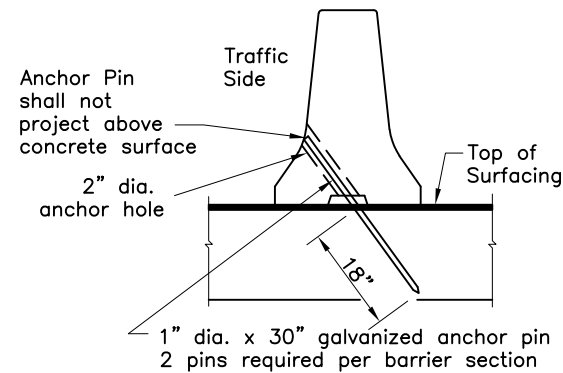
Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher, P.E.*
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

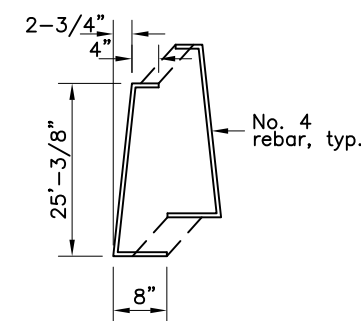
Next Code and Standards Review date: 02/08/2029

No Scale

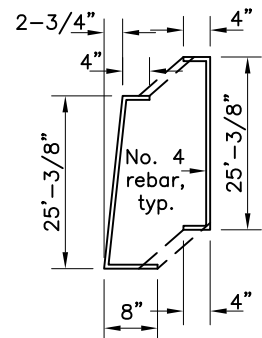


ANCHORING DETAIL

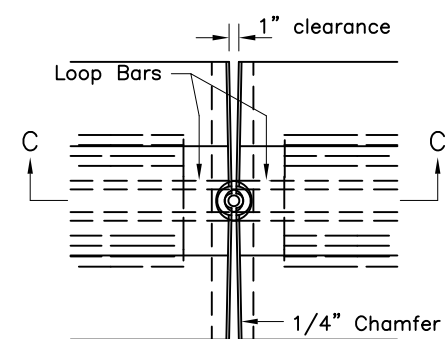
(Anchor when required by plans or as directed)



MEDIAN BARRIER STIRRUP

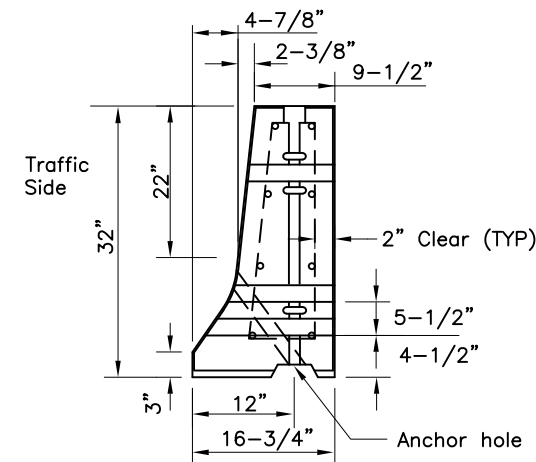


SHOULDER BARRIER STIRRUP



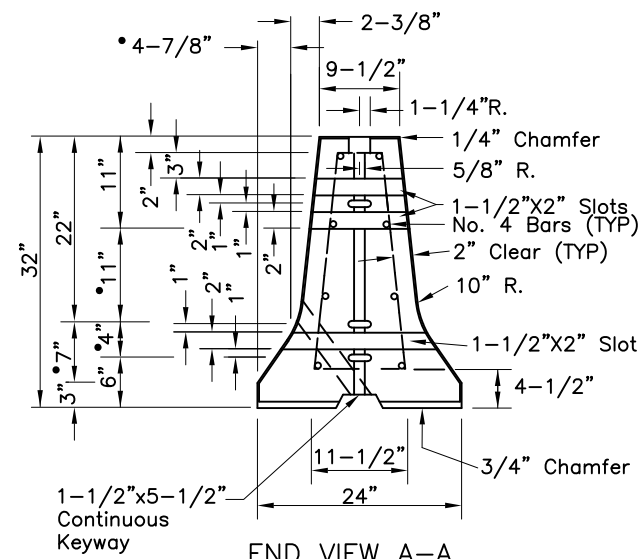
CONNECTING PIN AND LOOP CONNECTION

For details not shown see End Views A-A and B-B

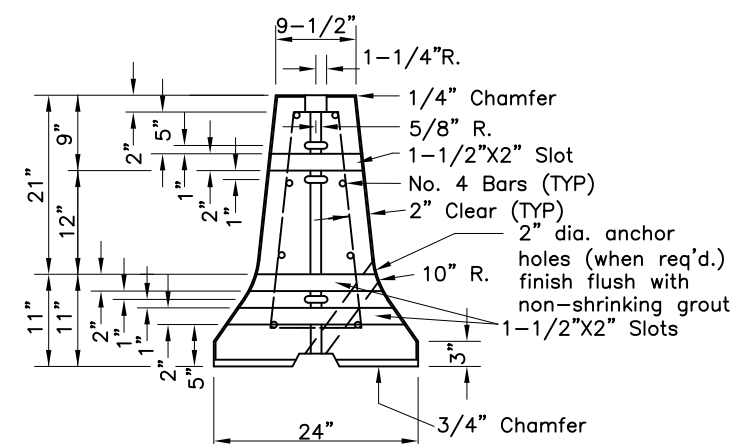


SHOULDER BARRIER

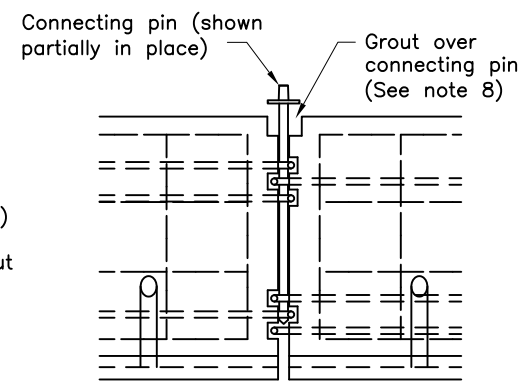
Note:
Dimensions marked with a dot • are to the intersection point of the barrier slopes.



END VIEW A-A

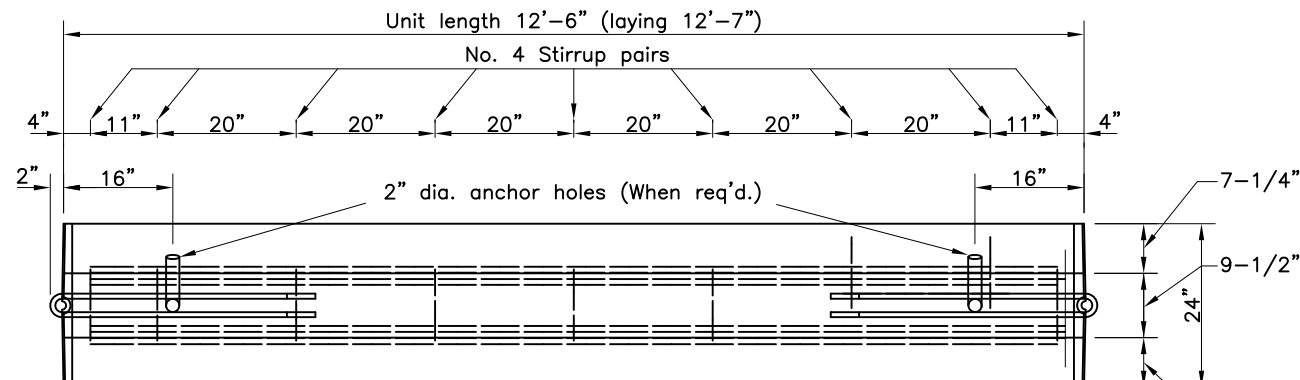


END VIEW B-B

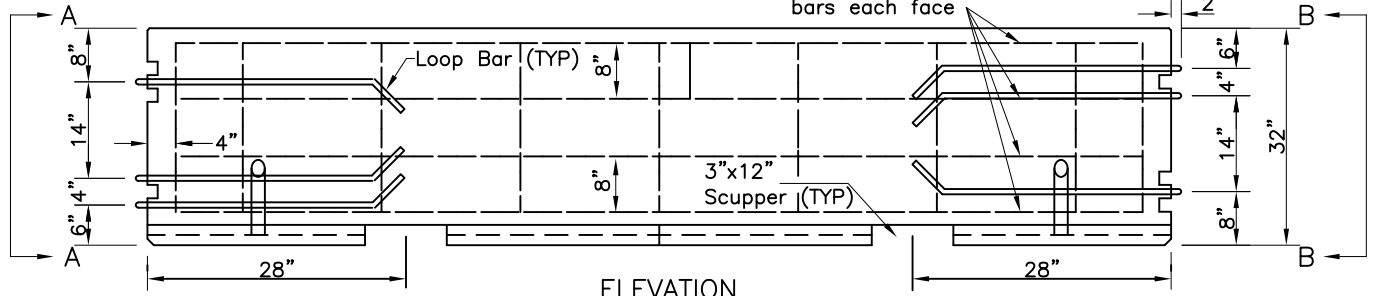


SECTION C-C

For details not shown see End Views A-A and B-B

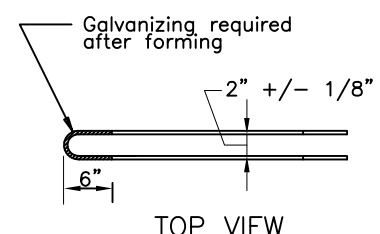


PLAN

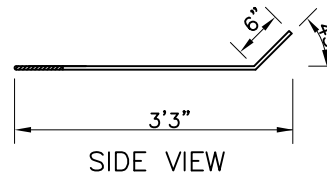


ELEVATION

MEDIAN BARRIER

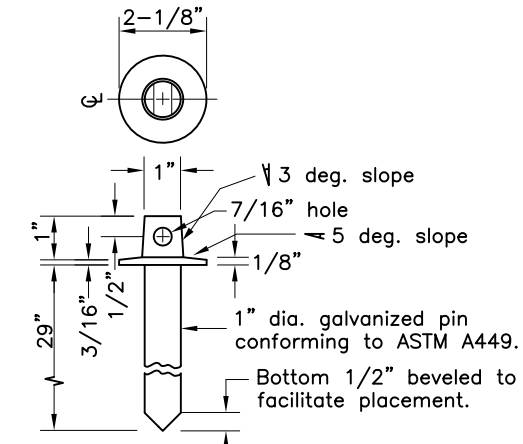


TOP VIEW



SIDE VIEW

LOOP BAR DETAIL
(3/4" dia. - A36 Steel)



CONNECTING PIN DETAIL

GENERAL NOTES

- Barriers may be used for temporary and permanent applications.
- Provide 36" unobstructed smooth deflection area behind barrier for unanchored applications. Provide 12" unobstructed smooth deflection area behind barrier for anchored applications.
- When anchored, install anchor pins on the side facing traffic. Precast barrier used as permanent median barrier in medians less than 8' in width shall be anchored to the roadway. When anchored in medians, install anchor pins on both sides of the barrier.
- Provide 2" clearance between all metal reinforcement and the nearest face of concrete unless otherwise shown.
- Normal use of precast barrier units is restricted to curvatures with radii greater than 770'.
- Use narrow base shoulder barrier only at locations with full height backfill or equivalent structural support placed behind barrier.
- When scuppers are not required plug them with a minimum 2" of grout.
- Concrete grout for grouting over pins, pinning holes or grouting of scuppers shall be a non-shrinking grout, weak in strength and of thick consistency.
- This precast concrete barrier is NCHRP 350 TL-3 approved.

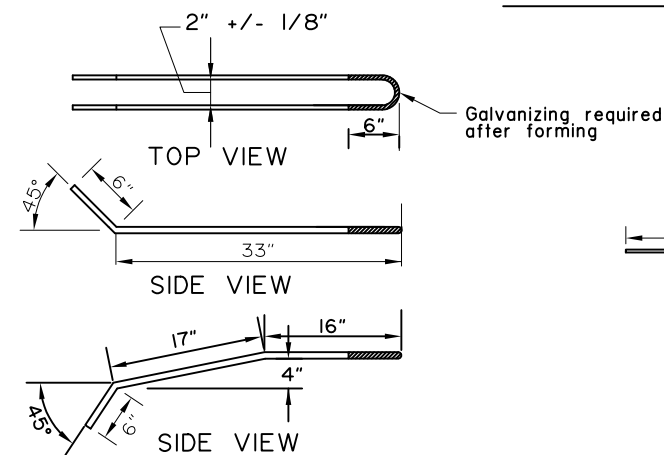
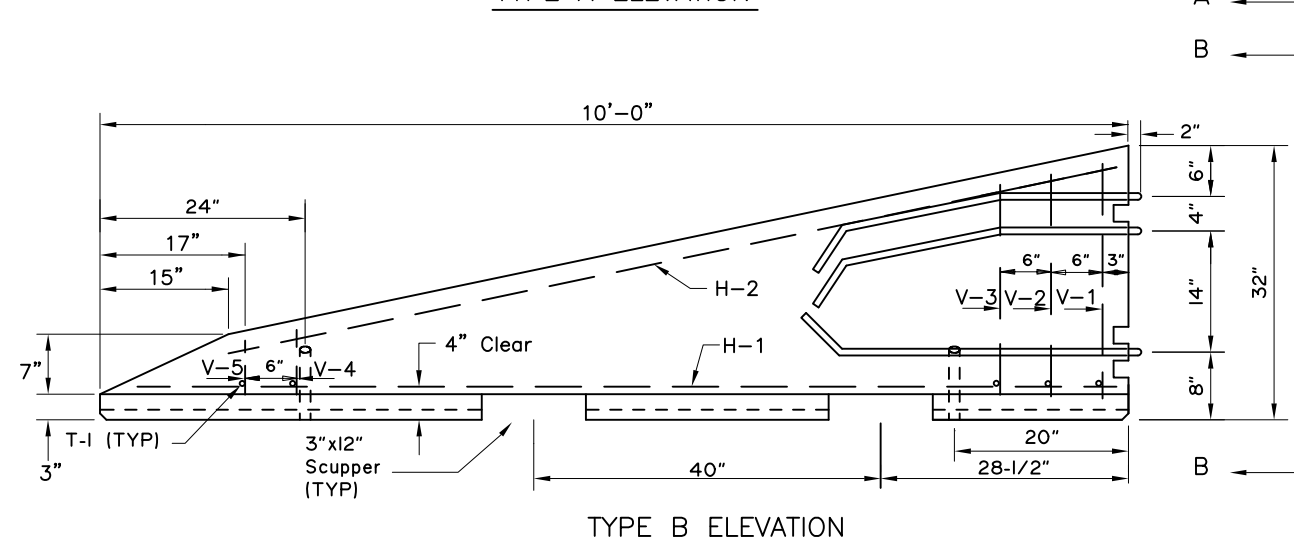
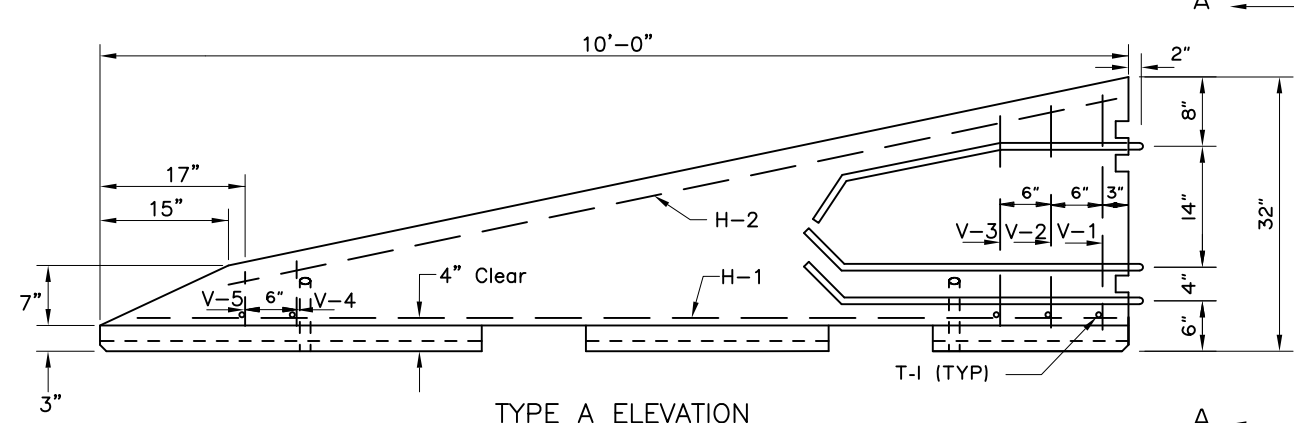
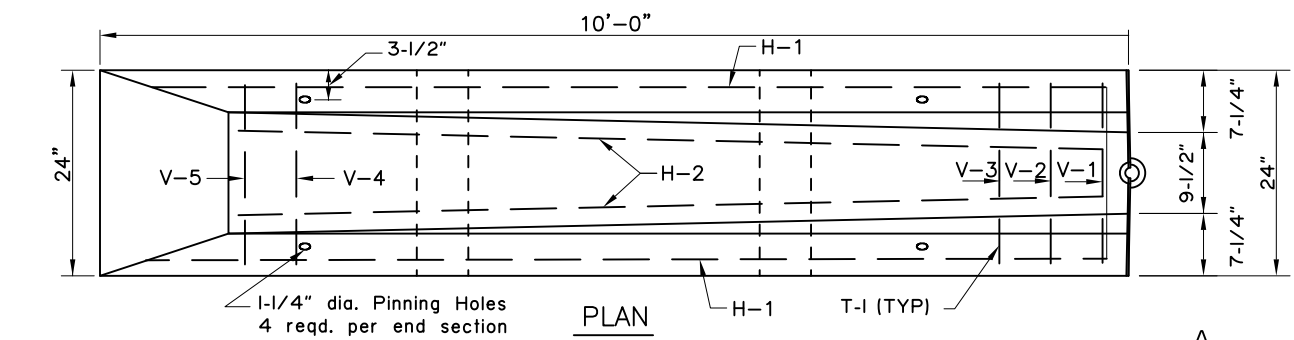
State of Alaska DOT&PF ALASKA STANDARD PLAN PRECAST CONCRETE "F" SHAPED BARRIER

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

Adoption Date: 02/08/2019

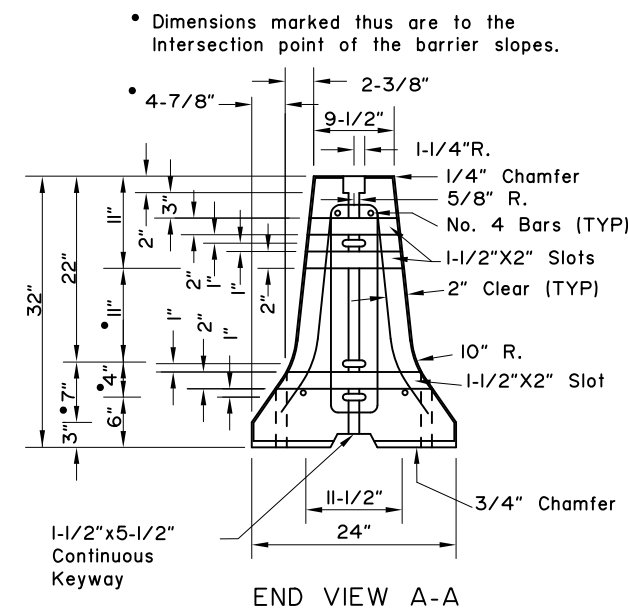
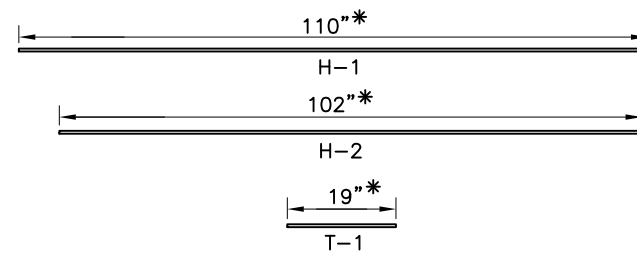
Last Code and Stds. Review
By: Date:

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



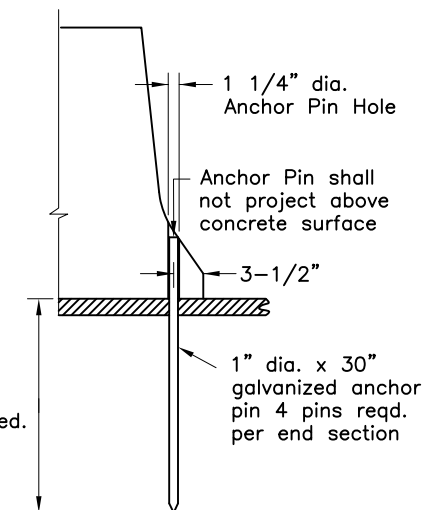
LOOP BARS
(3/4" dia. A36)

REINFORCEMENT DETAILS

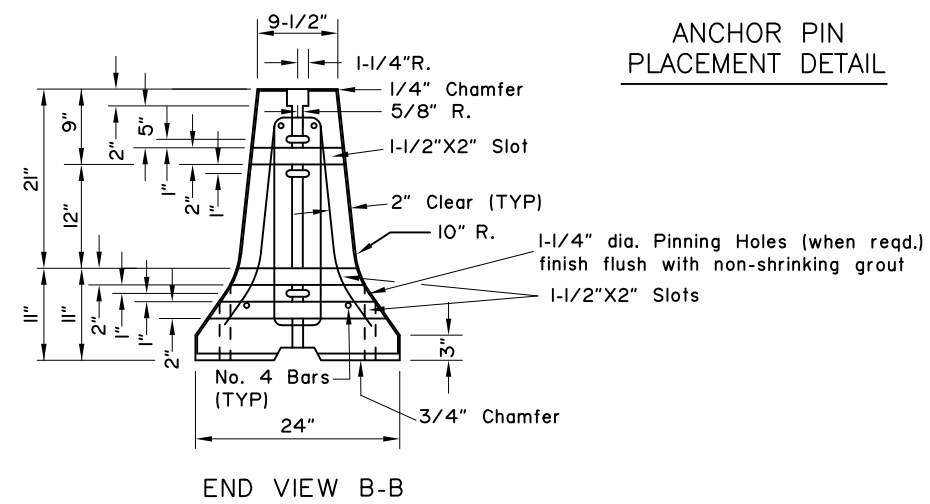


END VIEW A-A

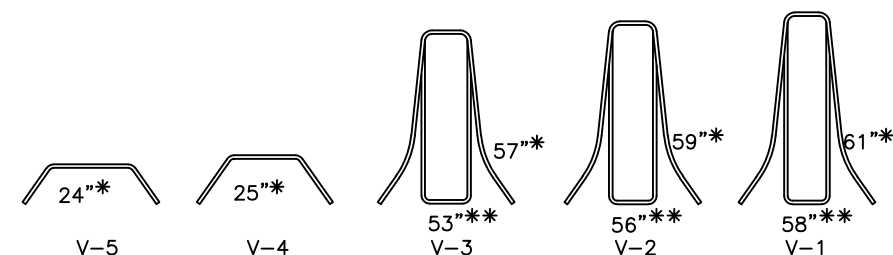
23" Embed.
Depth



ANCHOR PIN
PLACEMENT DETAIL



END VIEW B-B



*Length of No. 4 Rebar **Length of No. 4 Rebar (Inner Core)

REINFORCING STEEL

GENERAL NOTES

1. Use tapered end sections only where:
 - a. Barriers terminate outside the clear zone, or
 - b. The regulatory speed limit is 25 MPH or below, or 30 MPH if the Engineer determines NCHRP 350 or MASH compliant end treatments are unfeasible.
2. Provide a minimum of two inches clear cover for reinforcing steel bars except as shown otherwise.
3. Galvanize all exposed hardware in accordance with AASHTO M 232.
4. Provide reinforcing steel bars conforming to AASHTO M 31, grade 60.
5. Provide anchor pins and anchor pins conforming to ASTM A36 steel.
6. Provide four anchor pins per unit.

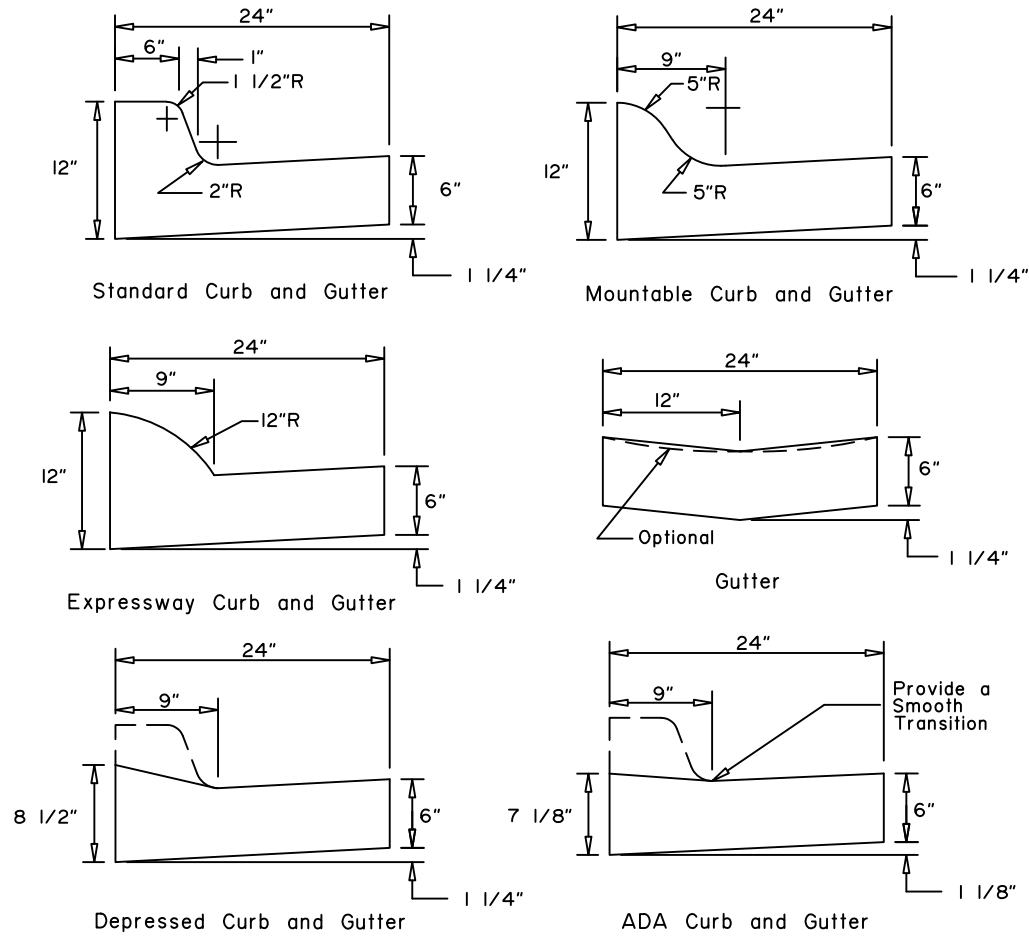
State of Alaska DOT&PF ALASKA STANDARD PLAN PRECAST CONCRETE "F" SHAPED BARRIER TAPERED END SECTION

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

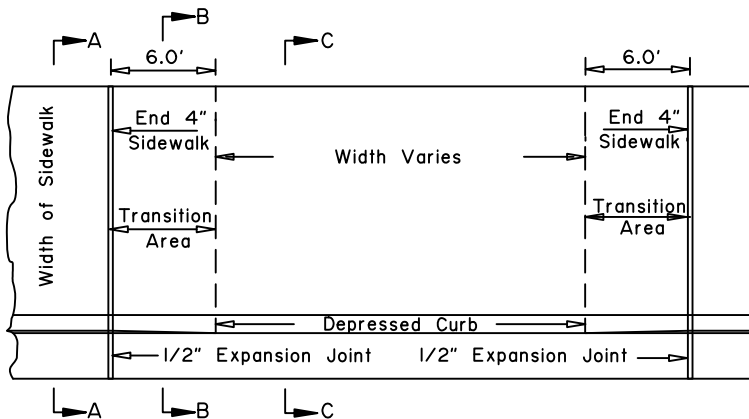
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

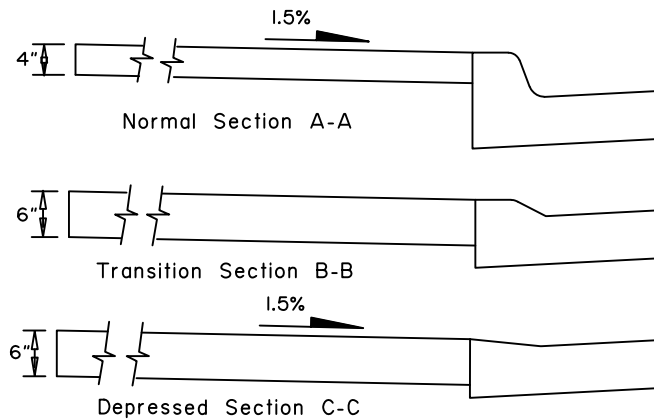
Next Code and Standards Review date: 02/08/2029



CURB and GUTTER DETAILS



DRIVEWAY CURB CUT DETAILS

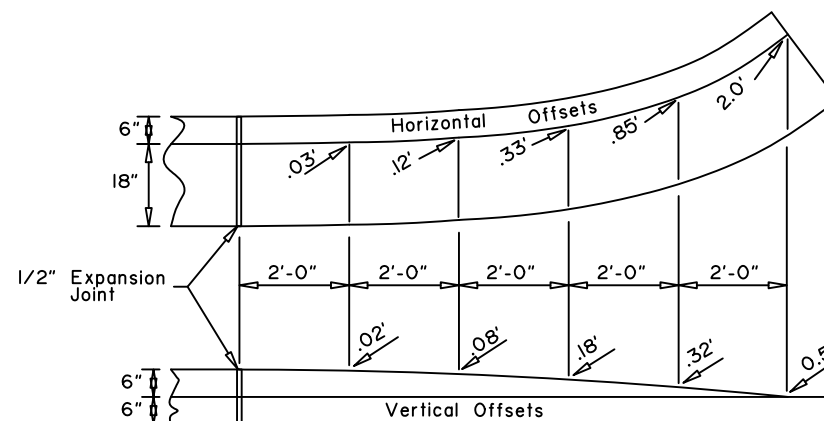
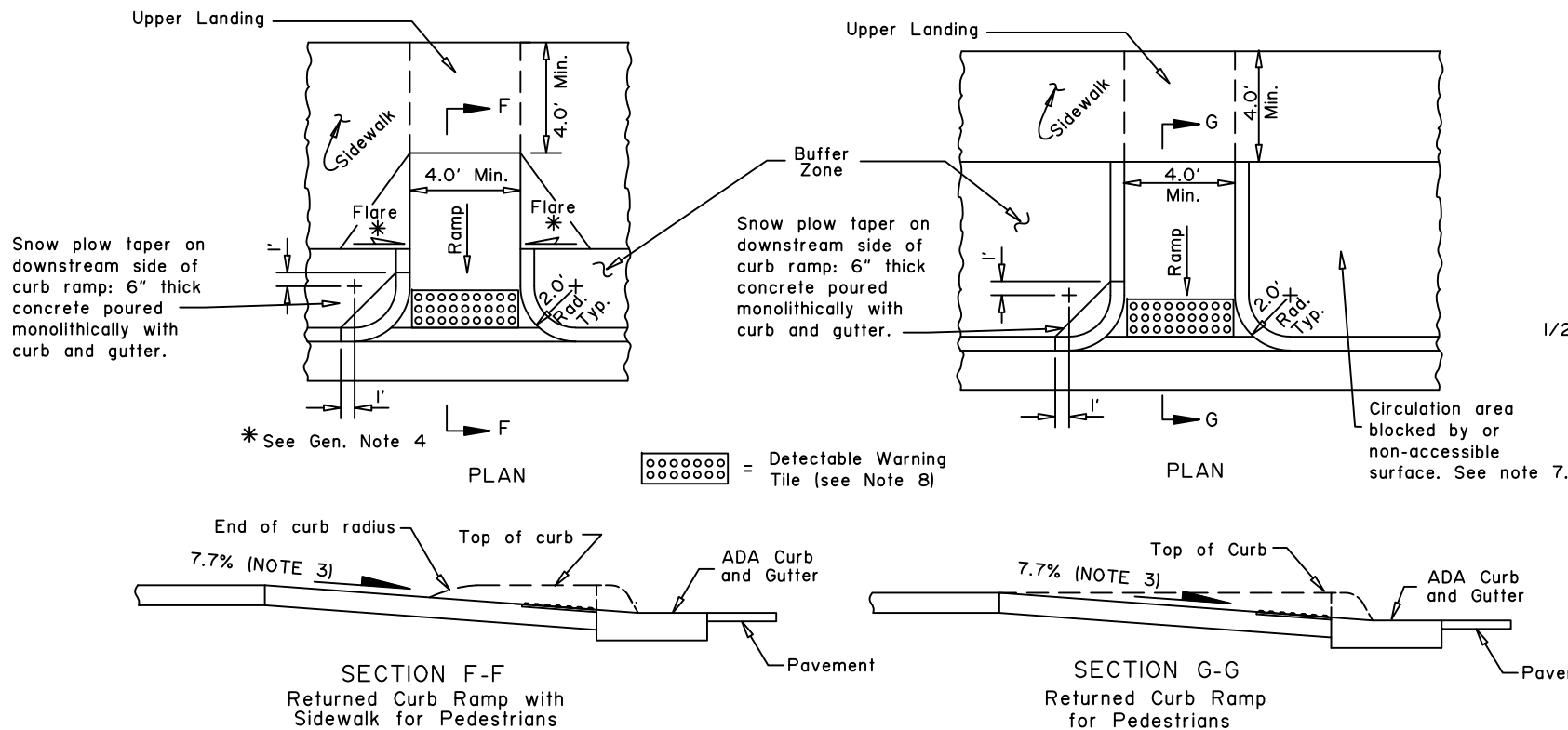


CONSTRUCTION NOTES:

1. Use the type of curb and gutter shown on the plans.
2. Construct ramp runs and landings of concrete, regardless of whether the sidewalk is asphalt or concrete.
3. Construct ramp slopes at a 7.7% nominal grade, or flatter. Ramp slopes may be increased to a maximum of 8.3% when site conditions warrant it. Ramp lengths should be increased to keep grades under the 8.3% maximum, but are not required to exceed 15.0 feet. The resulting ramp grade at a 15.0 foot ramp length is acceptable even if it exceeds 8.3%.
4. Construct flare slopes at 8.3% (measured parallel to the curb line) or flatter, sidewalk cross slopes at 1.5% nominal (1.0% min. and 2.0% max), and ADA Curb and Gutter gutter pan slopes at 4.7% nominal. Construct grade breaks perpendicular to ramp runs.
5. Do not construct flare slopes steeper than 10.0%, sidewalk cross slopes steeper than 2.0% and ADA Curb and Gutter gutter pan slopes steeper than 5.0%. These are the steepest slopes allowed under the 2006 ADA Standards for Transportation Facilities.
6. Provide a coarse broomed finish on ramp runs perpendicular to the ramp slope.
7. When approved by the Engineer, curb returns may be replaced with flares at locations where access to the side of a ramp run is free of poles, utility boxes, other obstructions, or non-accessible surfaces such as a dirt planter strips. See Standard Drawing I-22 for flare details.
8. Install 24" wide detectable warning tiles for the full width of the ramp. Provide tiles with truncated domes meeting Section 705.1 of the 2006 ADA Standards for Transportation Facilities. Align truncated dome pattern in the predominant direction of wheelchair travel to permit wheels to roll between domes.
9. Maximum cross slope on upper landings, measured in any direction, is 2.0%. Maximum cross slope on ramps is 2.0% measured perpendicular to the ramp run.

DESIGN NOTES:

1. Use Mountable or Expressway curbs on medians and traffic islands.
2. These details are compliant with the 2006 ADA Standards for Transportation Facilities.



CURB and GUTTER TERMINATION TRANSITIONS

Note: Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

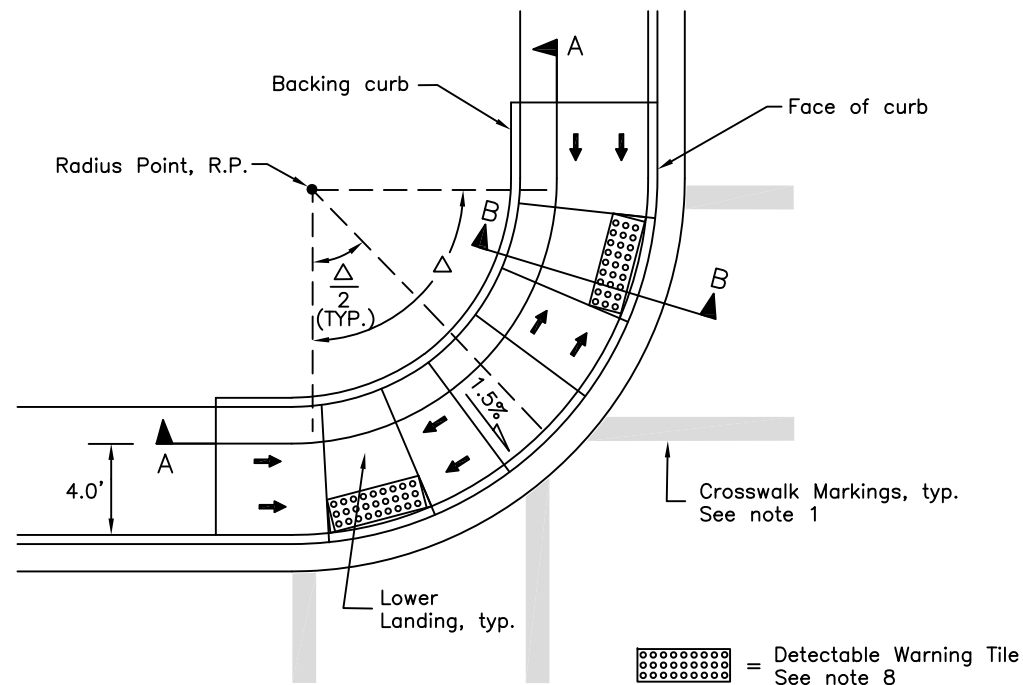
CURB CUT,
CURB & GUTTER
AND CURB RAMP DETAILS

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

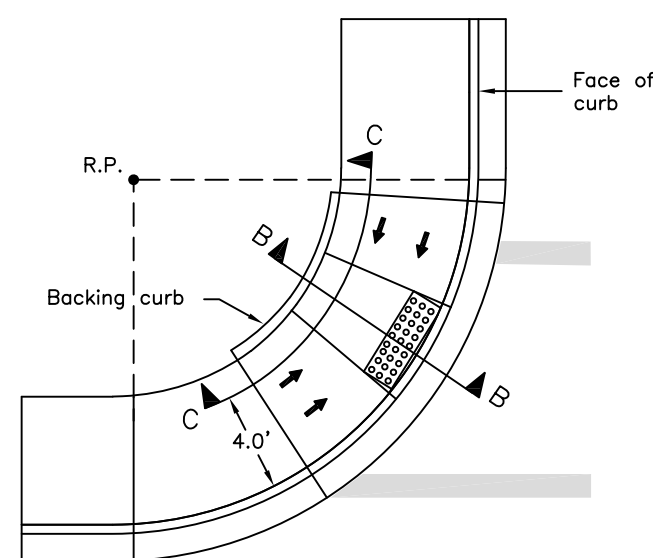
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

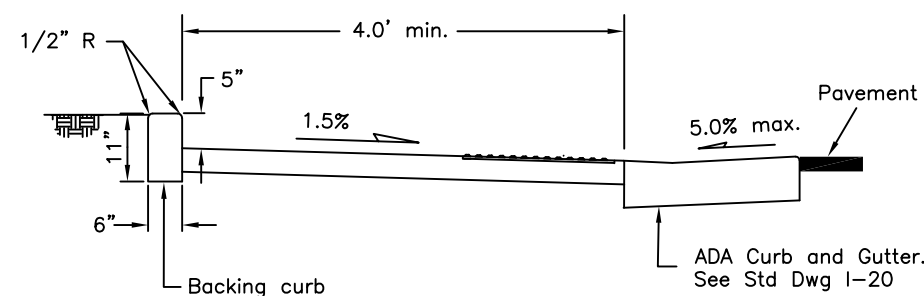
Next Code and Standards Review date: 02/08/2029



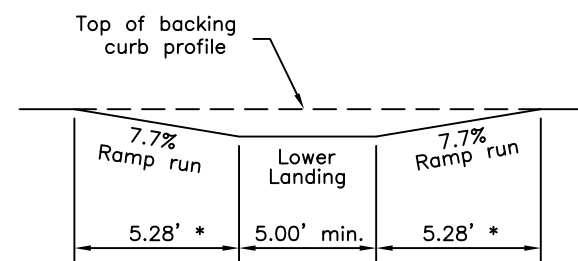
TWO CROSSING DIRECTIONS
At corner



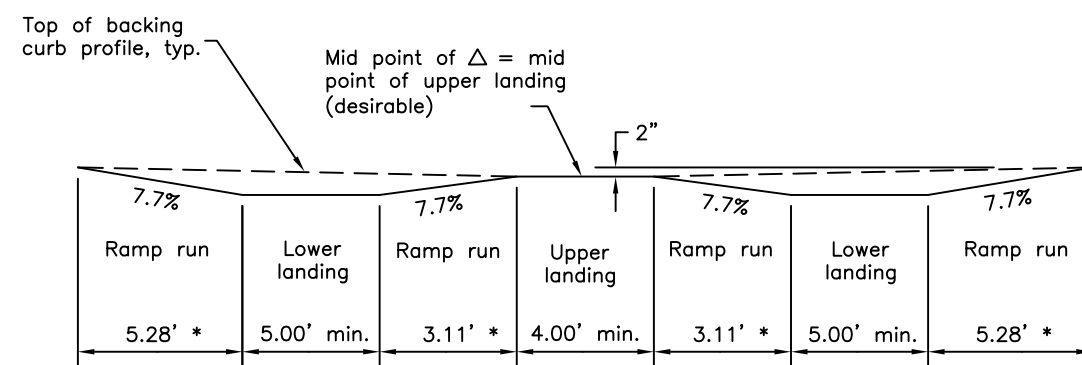
ONE CROSSING DIRECTION
At corner – generic location shown



SECTION B-B

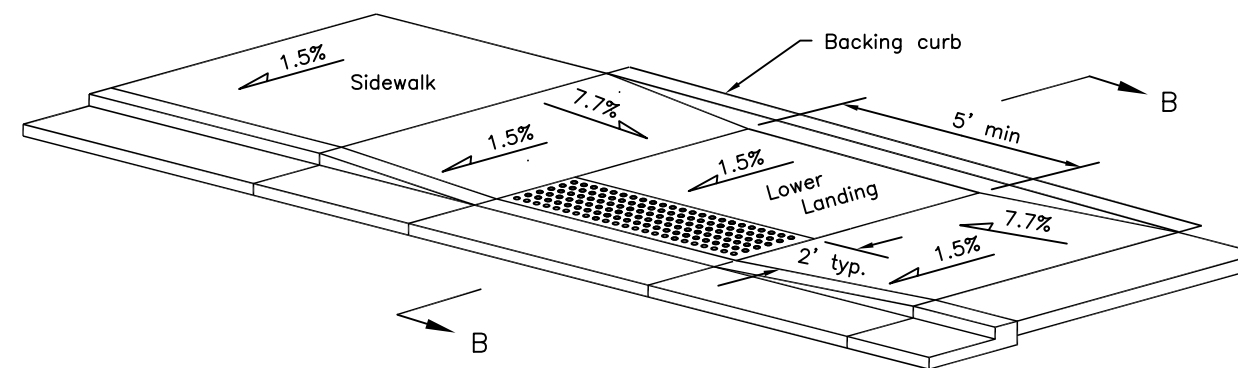


PROFILE C-C



* See Const.
Note 5

PROFILE A-A



MID-BLOCK

CONSTRUCTION NOTES:


1. See plans for ramp type at specific locations. See striping plans for crosswalk layouts.
2. Construct ramp runs and landings of concrete, regardless of whether the sidewalk is asphalt or concrete.
3. When one parallel curb ramp will serve two directions, use the One Crossing Direction detail and refer to the striping plans for crosswalk layouts.
4. Ramp run lengths are shown for a flat sidewalk grade. For other sidewalk grades, increase or decrease ramp and flare lengths to maintain the slopes shown.
5. Construct ramp slopes at a nominal 7.7% grade, or flatter. Ramp slopes may be increased to a maximum of 8.3% when site conditions warrant it. Ramp lengths should be increased to keep grades under the 8.3% maximum, but are not required to exceed 15.0 feet. The resulting ramp grade at a 15.0 foot ramp length is acceptable even if it exceeds 8.3%.
6. Construct sidewalk cross slopes at 1.5% nominal (1.0% min. and 2.0% max).
7. Provide a coarse broomed finish running perpendicular to the curb on ramp runs and upper landings and parallel to the curb on lower landings.
8. Install 24" detectable warning tiles meeting Section 705.1 of the 2006 ADA Standards for Transportation Facilities for the full width of the ramp.
9. Maximum cross slope on lower landings is 2.0% as measured in any direction. Maximum cross slope on ramps is 2.0% measured perpendicular to the ramp run.
10. Provide 4" minimum thick concrete on ramps and landings.

DESIGN NOTES

1. Parallel curb ramps are typically used when the sidewalk is at least 4' wide but can not be constructed wide enough for perpendicular ramps.
2. When one curb ramp is installed in a curb radius to serve both directions of pedestrian traffic, construct it in accordance with the One Crossing Direction detail.
3. Locate lower landings within the inner edges of marked crosswalks or, if crosswalks are not marked, within the area a standard marked crosswalk would enclose. See Standard Drawing T-23 for standard crosswalk layout.
4. Avoid drainage grates within marked crosswalks or, if crosswalks aren't marked, within the area a standard marked crosswalk would enclose. If a drainage grate is located directly in the pedestrian accessible route (e.g. a wheel chair must pass over it), install a grate meeting the requirements of Section 302.3 of the 2006 ADA Standards.
5. These details are compliant with the 2006 ADA Standards for Transportation Facilities, except for the 15' maximum ramp length noted in Construction Note 5, which is from the Draft 2011 PROWAG.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PARALLEL CURB RAMP

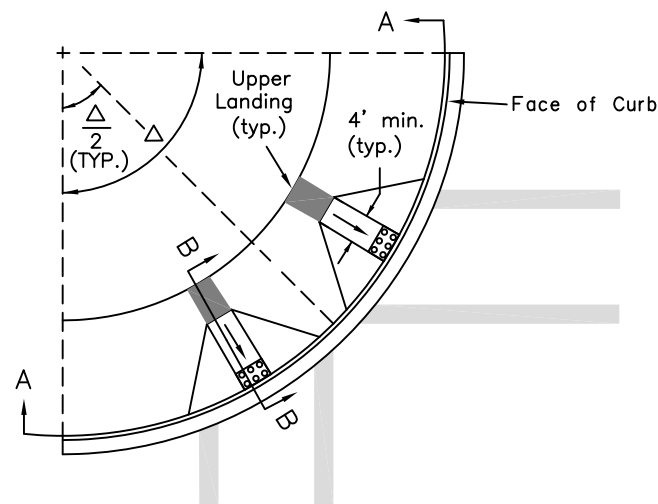
Adopted as an Alaska
Standard Plan by: 
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

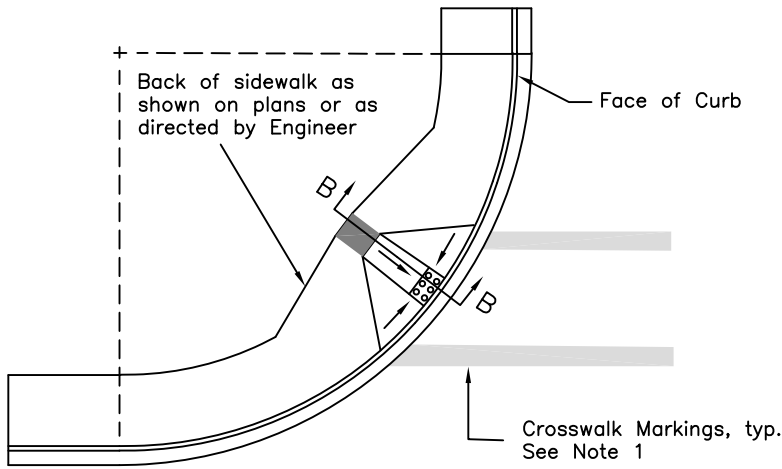
Last Code and Stds. Review
By: _____ Date: _____

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


Note: Drawing not to scale

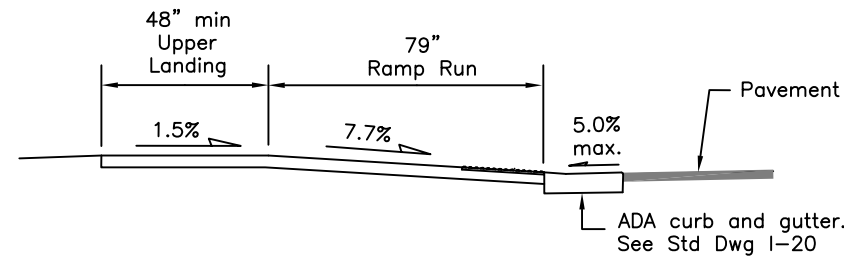


TWO CROSSING DIRECTIONS
At corner

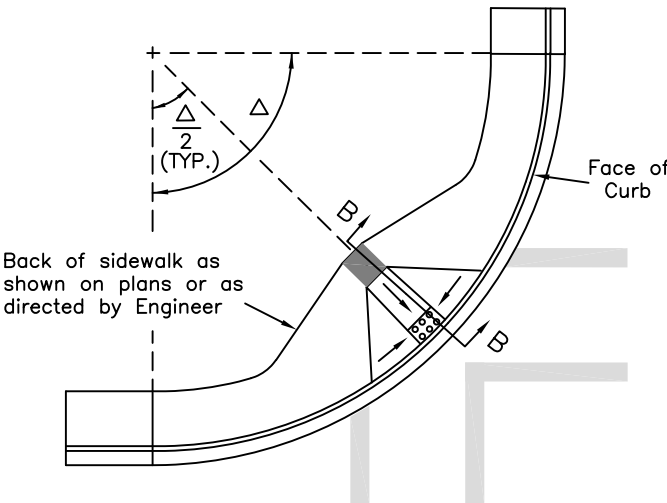


ONE CROSSING DIRECTION
At corner

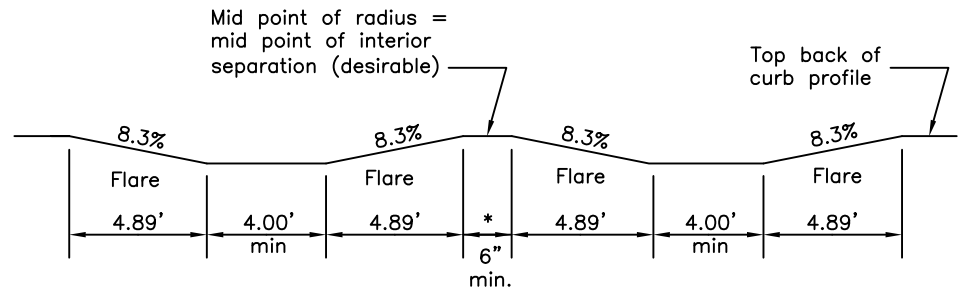
 = Detectable Warning Tile
See Note 9



SECTION B-B



ONE RAMP - TWO DIRECTIONS
At corner



PROFILE A-A

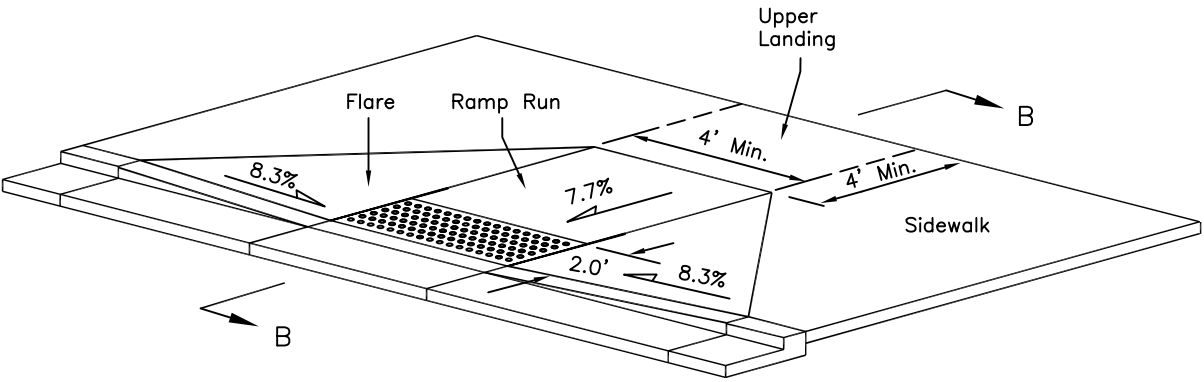
* This dimension is adjustable depending on the curb radius and location of ramps

CONSTRUCTION NOTES

1. See plans for ramp type at specific locations. See striping plans for crosswalk layouts.
2. Construct ramp runs perpendicular to the curb face.
3. Construct ramp runs, flares, and upper landings of concrete, regardless of whether the sidewalk is asphalt or concrete.
4. Ramp run and flare lengths are shown for a flat sidewalk grade. For other sidewalk grades, increase or decrease ramp and flare lengths to maintain the slopes shown.
5. Construct ramp slopes at a nominal 7.7% grade, or flatter. Ramps slopes may be increased to a maximum of 8.3% when site conditions warrant it. Ramp lengths should be increased to keep grades under the 8.3% maximum, but are not required to exceed 15.0 feet. The resulting ramp grade at a 15.0 foot ramp length is acceptable even if it exceeds 8.3%.
6. Construct flare slopes at 8.3% (measured parallel to the curb line adjacent to the top back of curb) or flatter, and sidewalk cross slopes at a nominal 1.5% (1.0% min., 2.0% max). Do not construct flare slopes steeper than 10.0%, or sidewalk cross slopes steeper than 2.0%.
7. Provide a coarse broomed finish running parallel to the curb on ramp runs and flares.
8. When approved by the Engineer, flares may be replaced with a curb at locations where access to the side of a ramp run is blocked by poles, utility boxes, other obstructions, or by a non-accessible surface such as a dirt planter strip. See Standard Drawing I-20 for details.
9. Install 24" detectable warning tiles for the full width of the ramp. Provide tiles with truncated domes meeting Section 705.1 of the 2006 ADA Standards for Transportation Facilities.
10. Maximum cross slope on upper landings, measured in any direction, is 2.0%. Maximum cross slope on ramps is 2.0% measured perpendicular to the ramp run.
11. Provide 4" minimum thick concrete on ramps, flares and landings

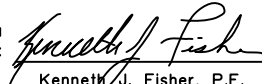
DESIGN NOTES

1. When marked crosswalks are used, a 4'x4' landing area at the bottom of ramps must fall within the inner edges of the crosswalk markings. See Section 406.6 of the 2006 ADA Standards.
2. Avoid drainage grates within marked crosswalks, or if crosswalks are not marked, within the area a standard marked crosswalk would enclose. If a drainage grate is located directly in the pedestrian accessible route (e.g. a wheelchair use must necessarily pass over it), install a grate meeting the requirements of Section 302.3 of the 2006 ADA Standards.
3. These details are compliant with the 2006 ADA Standards for Transportation Facilities, except for the 15' maximum ramp slope noted in Construction Note 5, which is from the Draft 2011 PROWAG.



MID-BLOCK

State of Alaska DOT&PF
ALASKA STANDARD PLAN
PERPENDICULAR
CURB RAMP

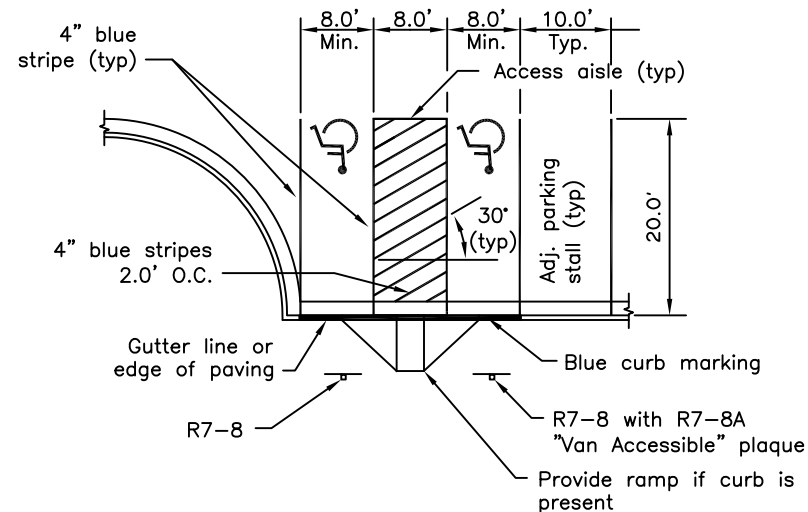
Adopted as an Alaska
Standard Plan by: 
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

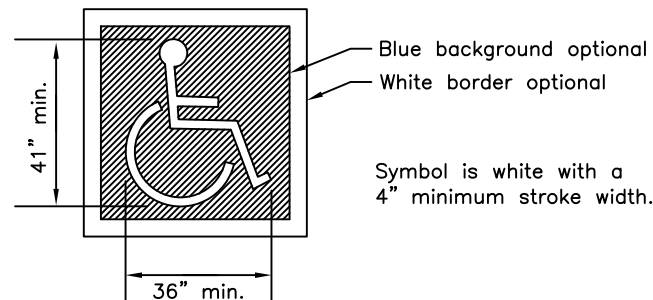
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By: Date:

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

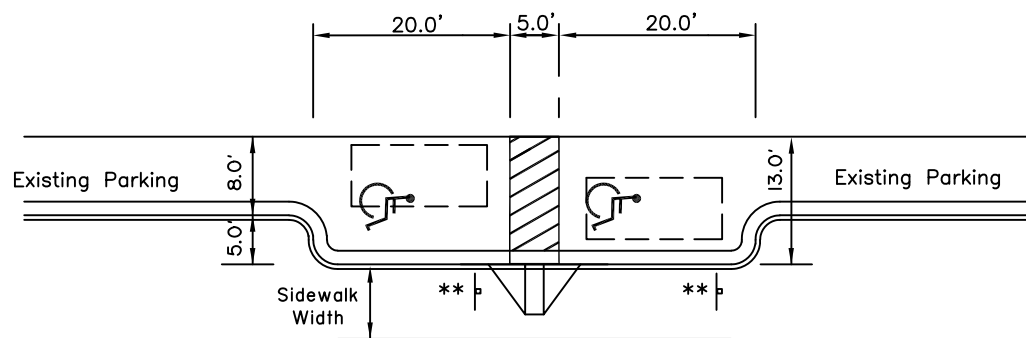
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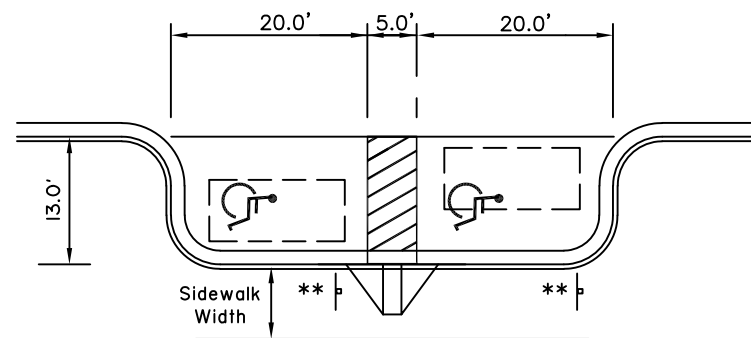
PARKING LOT ACCESSIBLE PERPENDICULAR PARKING



PAVEMENT MARKING SYMBOL DETAIL



ACCESSIBLE ON-STREET PARALLEL PARKING PARTIAL INSET



ACCESSIBLE ON-STREET PARALLEL PARKING FULL INSET

ON-STREET PARALLEL PARKING NOTES

1. The 13' width provides for 8' wide parking with a 5' wide access aisle on either side of a car.
2. Add a new curb ramp and 5' aisle between parking places for each additional two accessible parking spaces.
3. Parking spaces may be made van accessible by providing an unobstructed 8' sidewalk width next to each parking space. Ensure curb ramps, parking meters, sign posts, etc. do not encroach on the area where a van's lift would operate.
4. In some cases, ADAAG may allow normal-width parking spaces at the beginning and end of blocks to be designated as accessible. See the latest ADAAG.

** R7-8 "Reserved Parking" and, where appropriate (see note 3), R7-8A, "Van Accessible".

GENERAL NOTES:

1. Accessible aisles and accessible routes and those pathways leading from the accessible parking space to the sidewalk shall be free of any obstructions, fixtures or loose surfaces.
2. See standard drawing I-20, I-21, I-22 for curb and curb ramp details.
3. All curb ramps shall be constructed of concrete.
4. The slope for all accessible parking spaces, van accessible parking spaces and access aisles shall not exceed 50:1 in any direction.
5. Although only perpendicular ramps are shown, either parallel or perpendicular ramps are allowable, space permitting.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

ACCESSIBLE PARKING

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

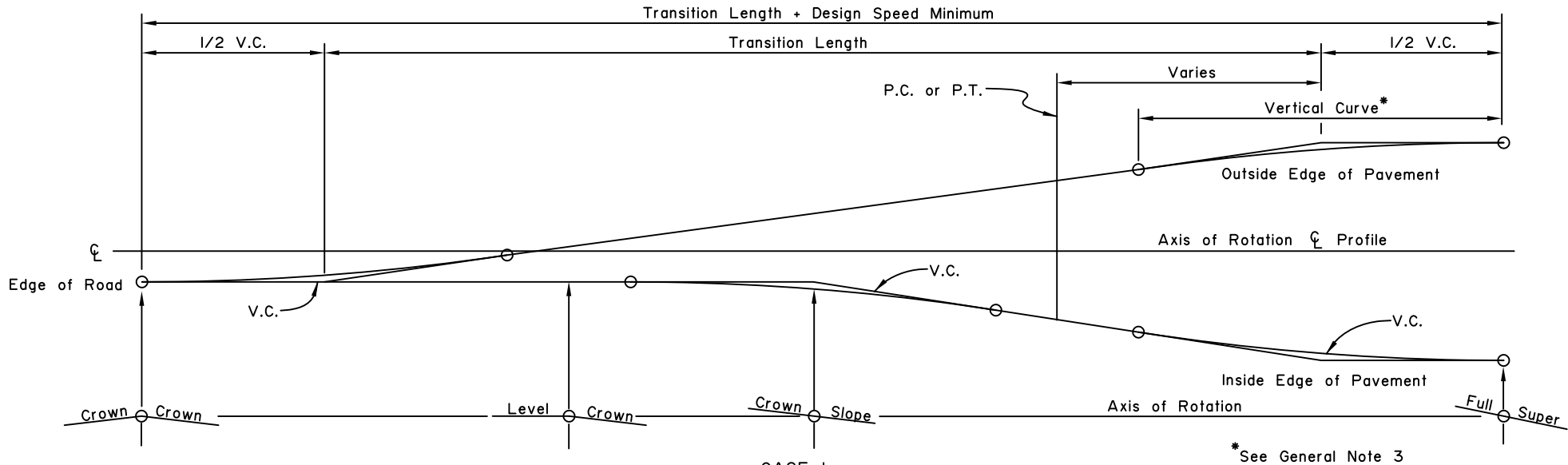
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

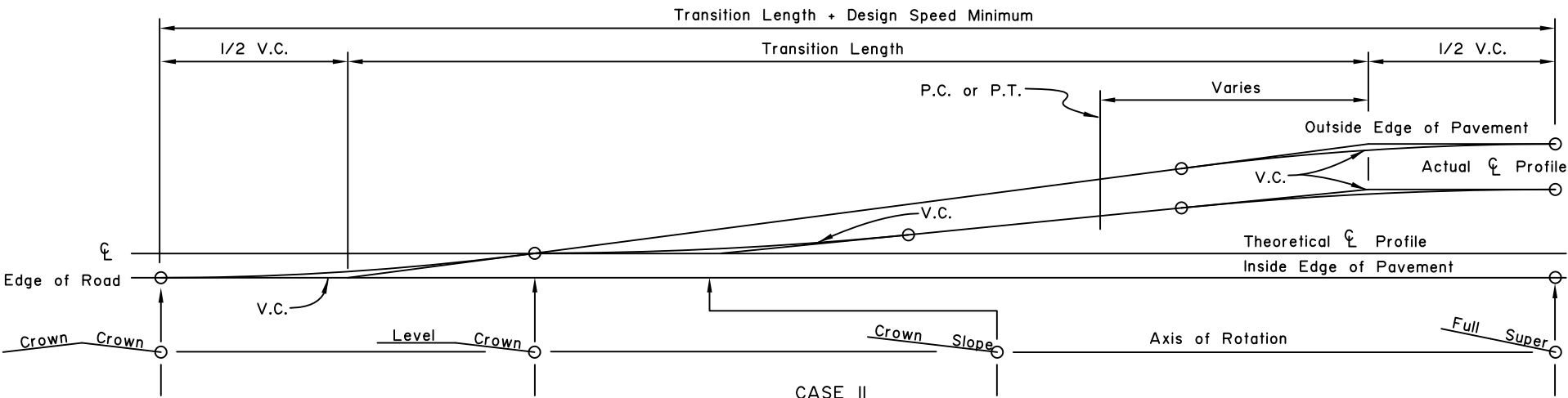
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

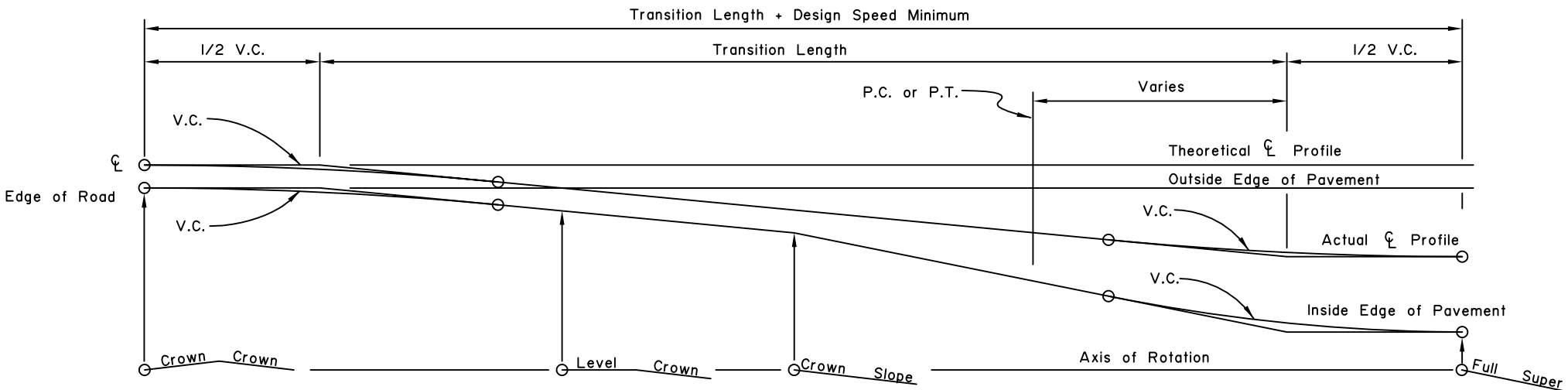
1. Location of transition length relative to horizontal curves will be shown on the plans or as directed by the Engineer.
2. Widening for guardrail or curvature will not change the location of the axis of rotation.
3. Minimum vertical curve length in feet shall be the numerical value of the design speed 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

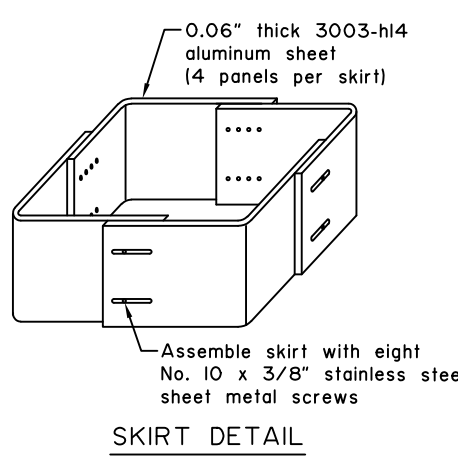
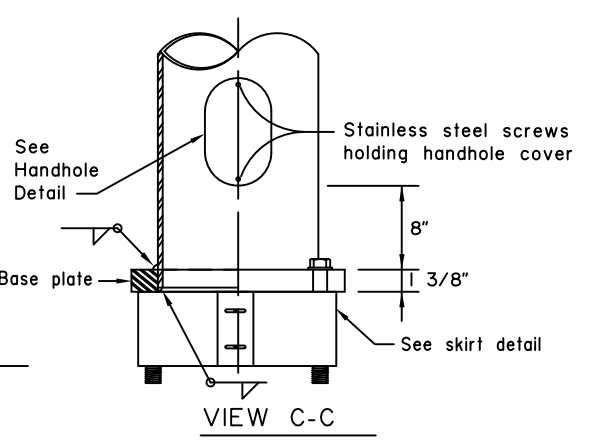
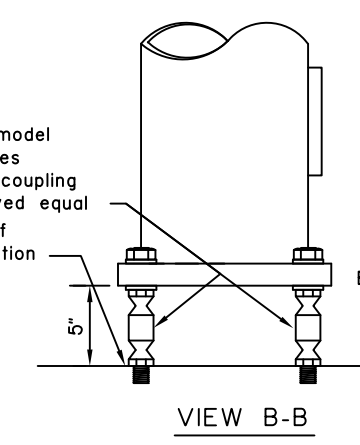
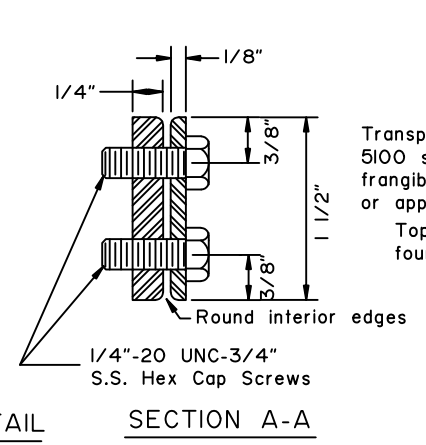
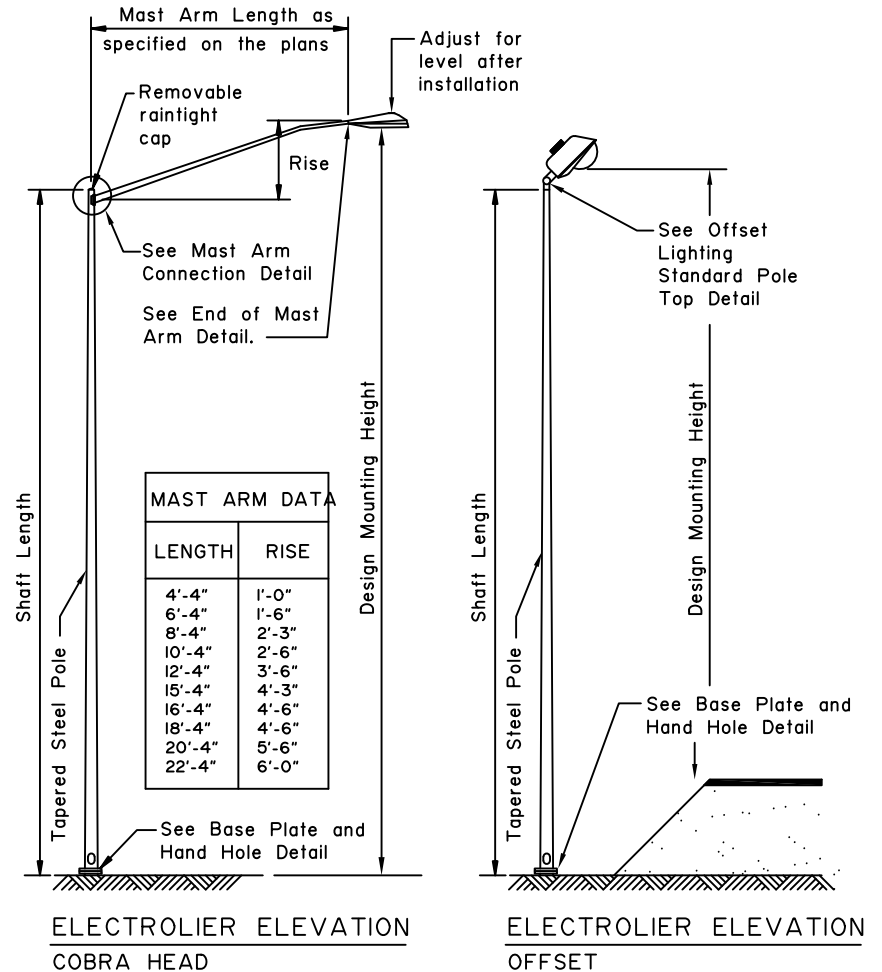
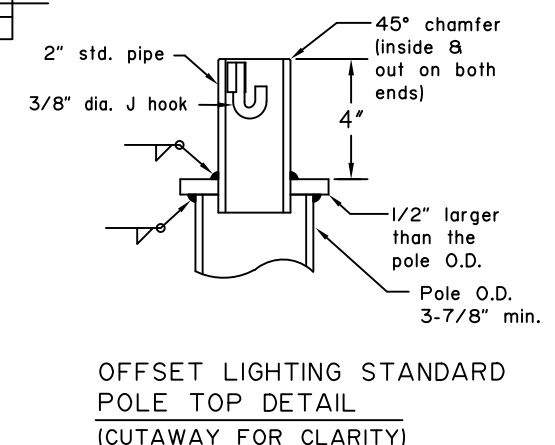
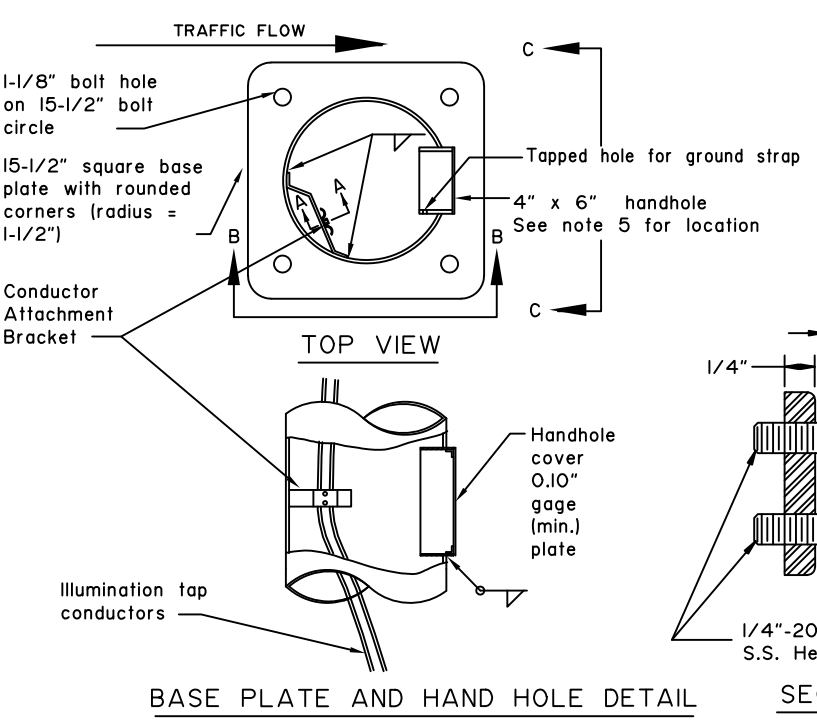
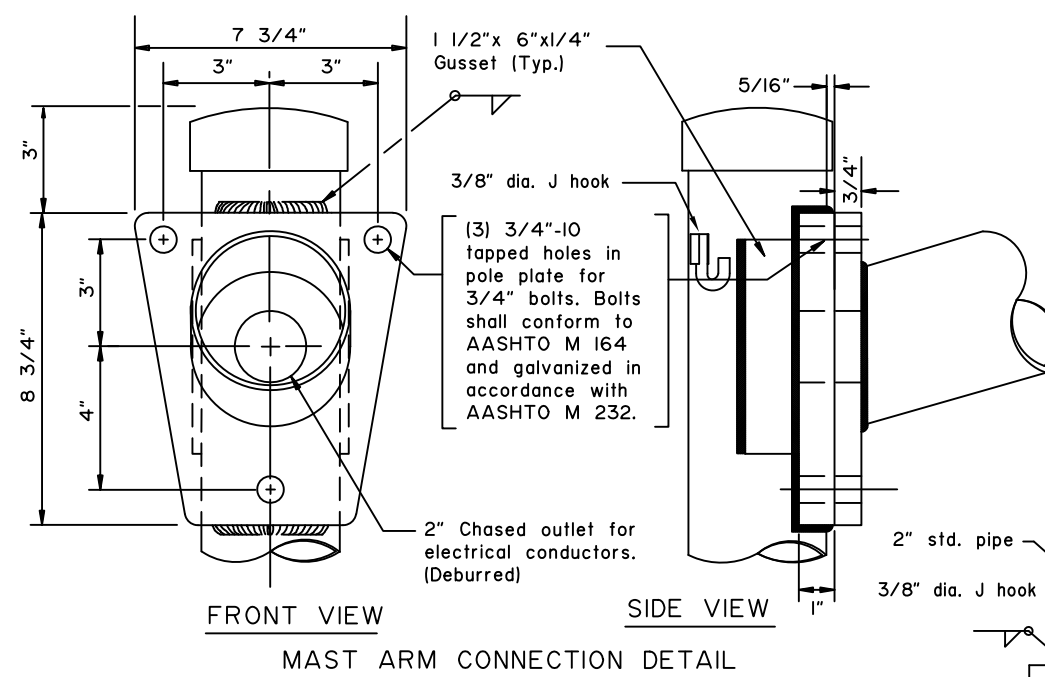
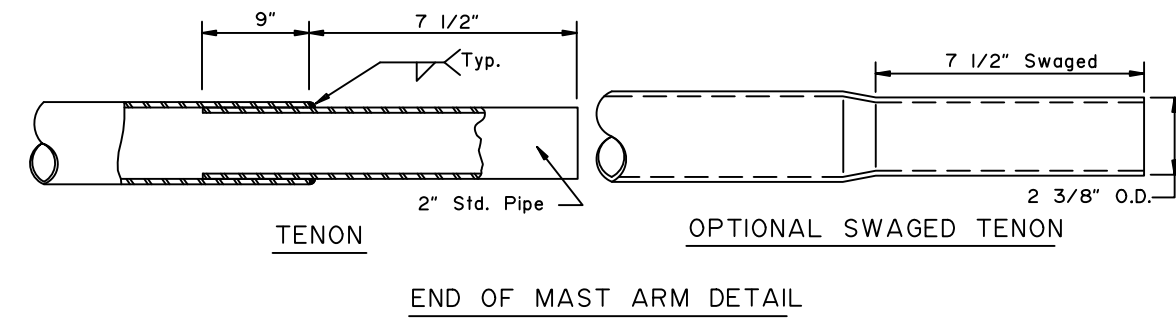
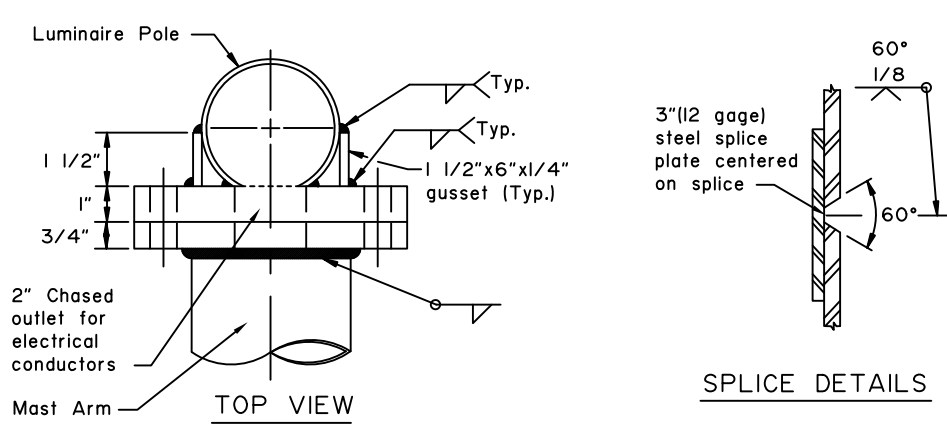
SUPERELEVATION TRANSITION

Adopted as an Alaska
Standard Plan by: *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

- Design and fabricate all shafts to support a mast arm 22' long with luminaire. Assume each offset fixture weighs 60 lbs. and has an effective projected area of 2.8 SF. Assume each Cobra head weighs 55 lbs. and has an effective projected area of 1.2 square feet. With this dead load, limit the angular rotation of the pole top to 1° 40' maximum.
- Weld size to be determined by manufacturer.
- Mounting height, if specified in the plans, refers to the height of luminaire above the roadway. Adjust each pole's shaft length to maintain this difference in elevation whenever slope and/or offset varies.
- Minimum outside diameter at the top of pole equals 3-7/8". Pole diameter shall taper uniformly from the top of pole to the base plate, with a maximum taper rate of 0.15" per foot.
- Mast arm rise may vary ± 0.5 ft from the values listed in the table.
- Locate the handhole at 90 degrees to the mast arm on the side of pole downstream from traffic flow.
- Furnish all poles with a j-hook to support the illumination tap conductors. Furnish all mast arm poles with a removable raintight cap.
- Frangible couplings shall be NCHRP 350, Test Level 3 compliant and have no measured torque requirement.
- Frangible couplings shall be installed into flush mounted female anchors so that no fixed hardware extends above the foundation top.
- Install all components of the breakaway support system in accordance with the manufacturer's written instructions.
- Fabricate the skirt from four pieces of 0.06" thick 3003 h-14 aluminum sheet. Bend each plate to provide corners with a 3/4" radius. Assemble the skirt with $\#10 \times 3/8$ " self tapping stainless screws or pop rivets. The assembled skirt measures about 12-7/8" square.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

LIGHTING STANDARDS

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

Adoption Date: 02/08/2019

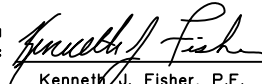
Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

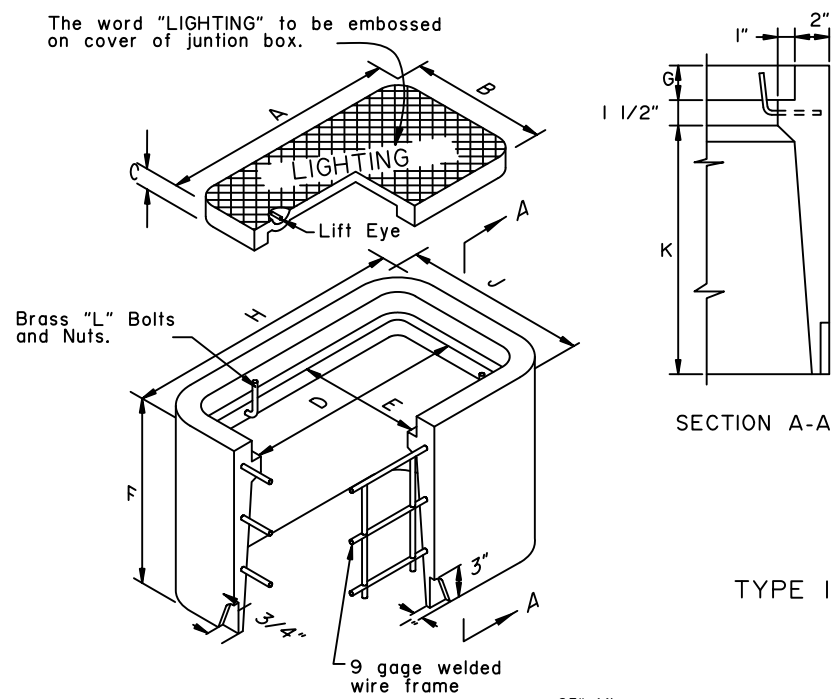
- Each frame and cover for Type II and Type III junction boxes shall be of cast iron for light duty use with a minimum weight of 210 pounds. Covers for type I & IA junction boxes shall be either aluminum or cast iron.
- Junction boxes located in a sidewalk shall be installed with a 1/2" preformed bituminous joint material around its perimeter.
- All conduits shall be bonded to form a continuous electrically secure system with the ground at the load center junction box.
- All junction box covers shall be bonded to ground with copper braid of #8 AWG cross section. For types I & IA, the length shall be 3 feet, and 5 feet for types II & III.
- All conduits shall be grouted in knockout sections in accordance with the Alaska Specifications for Highway Construction, latest edition.
- Junction boxes shall be set flush with the surrounding surface except in an unpaved shoulder, when they shall be located 2" below grade.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
JUNCTION BOXES
FOR ELECTROLIER

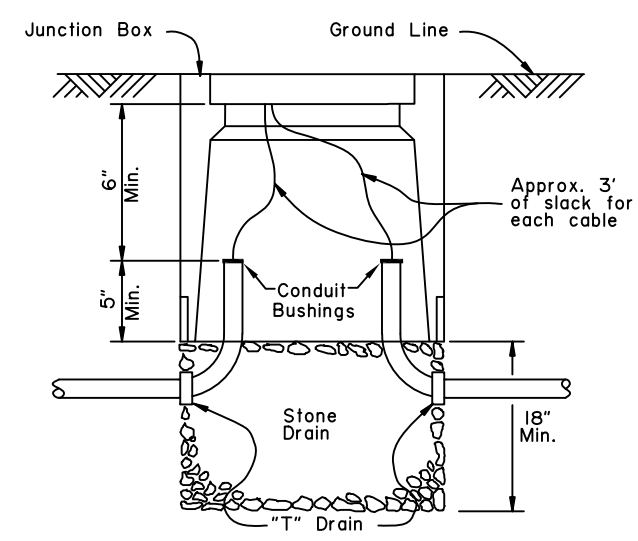
Adopted as an Alaska
Standard Plan by: 
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

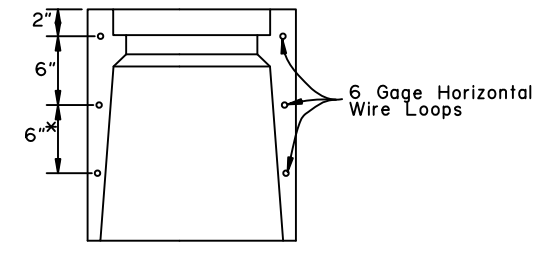
Last Code and Stds. Review
By: Date:
Next Code and Standards Review date: 02/08/2029



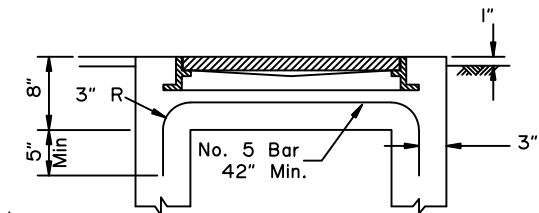
TYPE I & I-A JUNCTION BOX



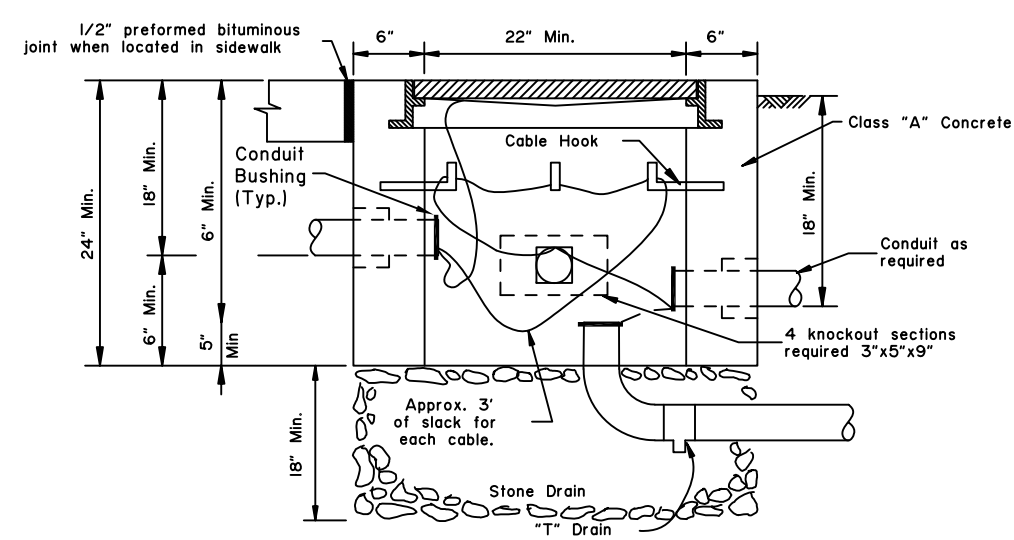
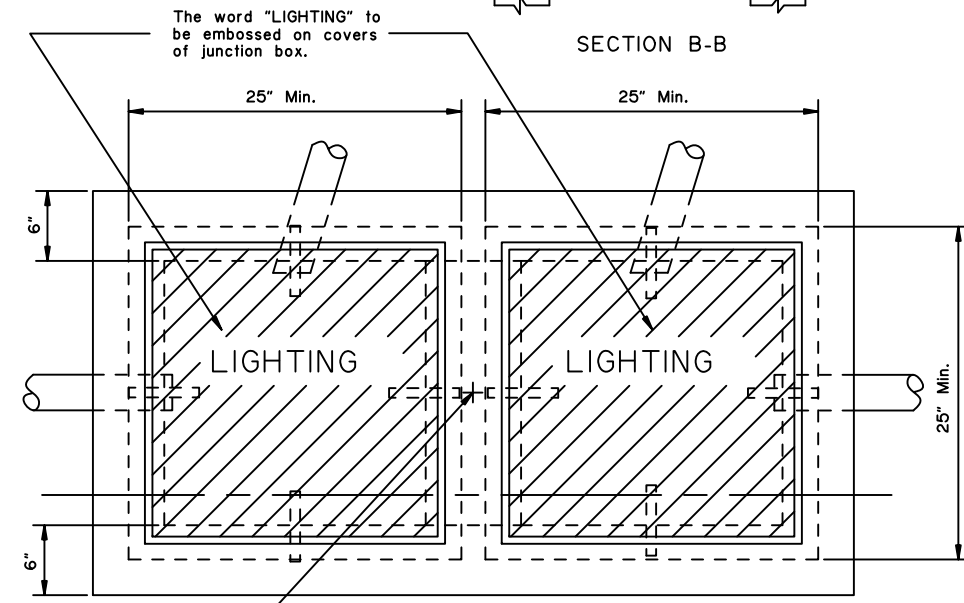
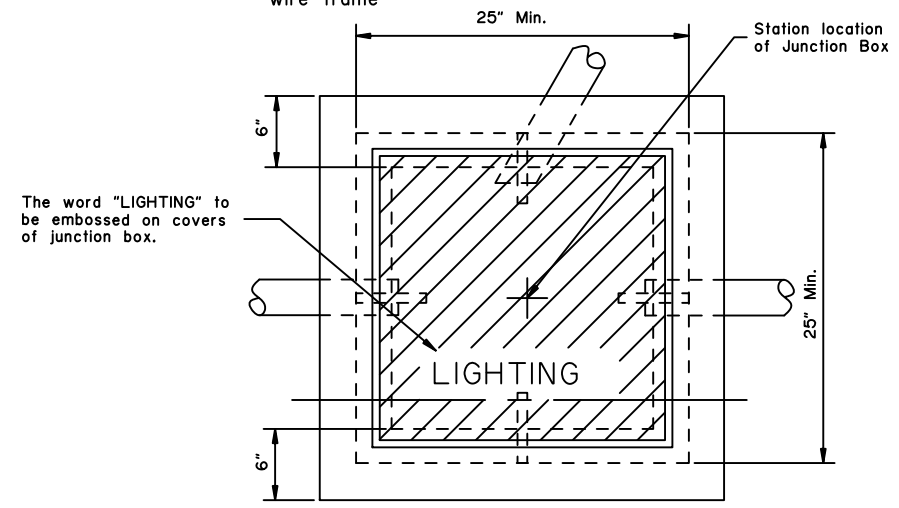
DIMENSIONS (IN.)		
	TYPE I	TYPE I-A
A	15	22 3/4
B	10	13 1/4
C	1 3/4	2
D	13 1/2	21 1/4
E	8 1/2	11 3/4
F	12	18
G	1 3/4	2
H	19 1/2	27 1/4
J	14 1/2	17 3/4
K	8 3/4	14 1/2



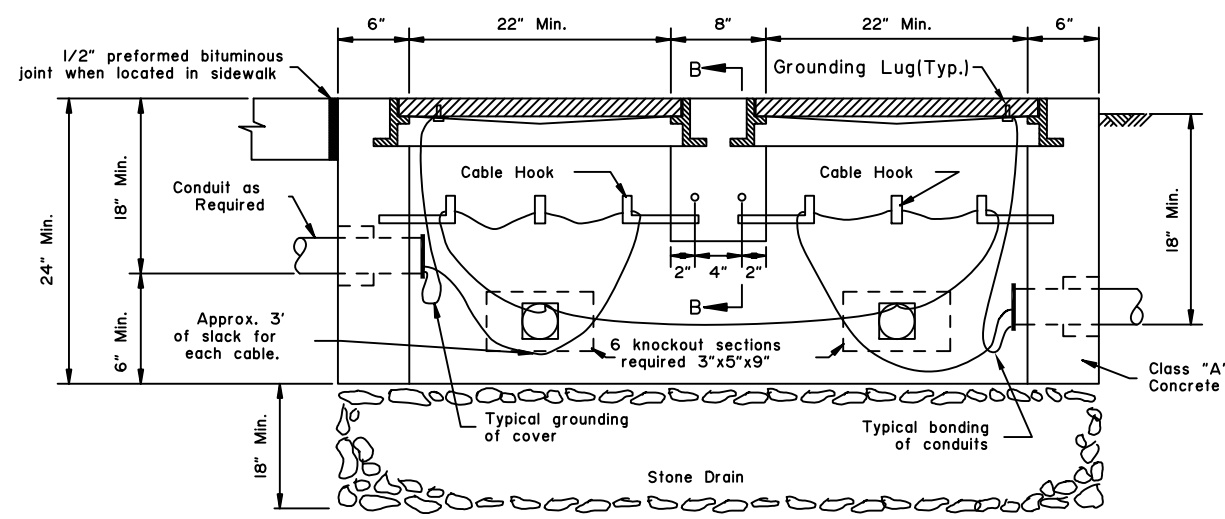
ALTERNATE REINFORCING
*Type I-A Only



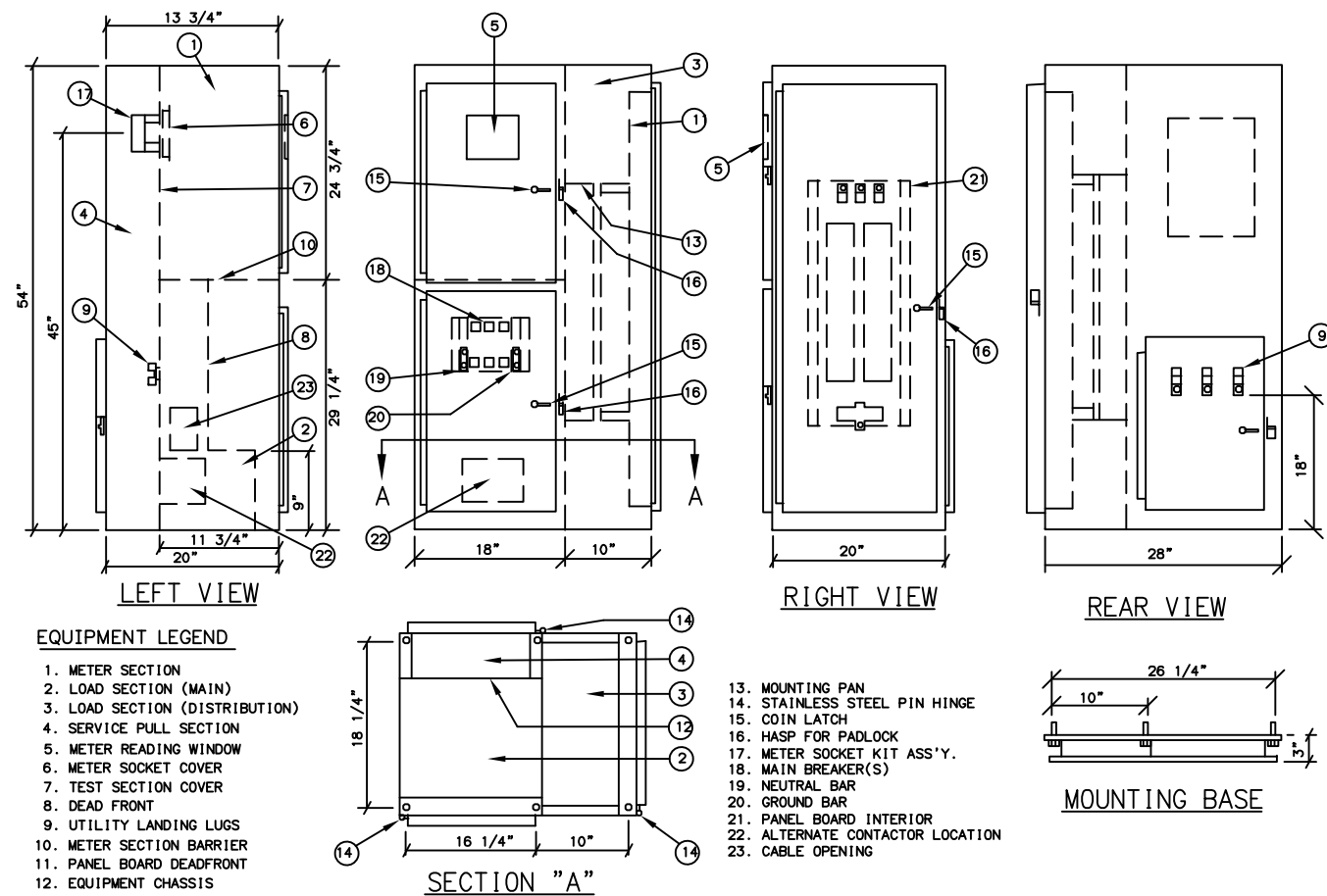
SECTION B-B



TYPE II JUNCTION BOX



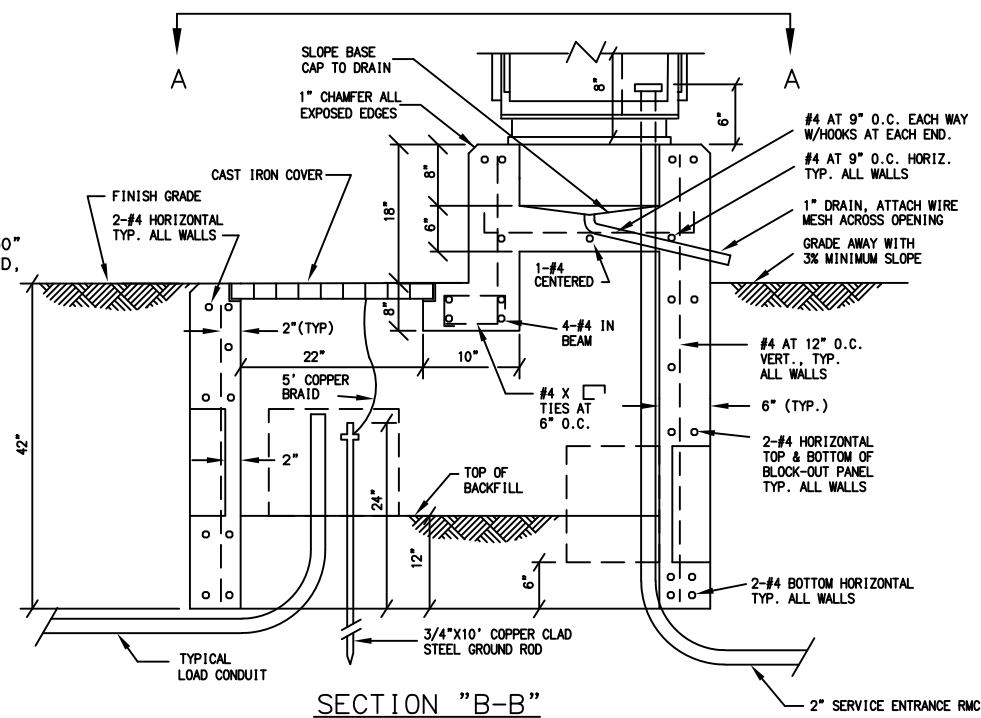
TYPE III JUNCTION BOX



TYPE 1 LOAD CENTER CABINET SECTION / ELEVATION

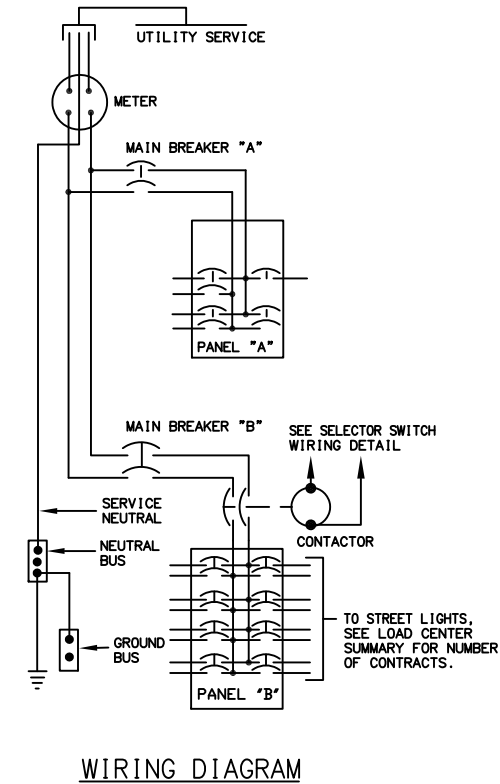
FOUNDATION NOTES:

1. INSTALL THE SURFACE WITH CAST IRON COVER FLUSH WITH THE PAVEMENT, SIDEWALK, OR FINISHED GRADE. GRADE AWAY FROM THE BASE WITH A MINIMUM SLOPE OF 3%. USE A PRE-MOULDED BITUMINOUS JOINT BETWEEN THE BASE AND CONCRETE SIDEWALK OR PAVING.
2. WHEN INSTALLING THE BASE, EXCAVATE TO 60" BELOW FINISHED GRADE AND INSTALL A DRAIN CONSISTING OF 18" OF COARSE CONCRETE AGGREGATE APPROVED BY THE ENGINEER. BACKFILL AROUND THE BASE IN 6" LIFTS WITH SELECTED MATERIAL TYPE "A".
3. BACKFILL INSIDE THE FOUNDATION TO WITHIN 30" OF THE LID AFTER ALL CONDUITS ARE INSTALLED, USING COARSE AGGREGATE. TERMINATE THE ENDS OF ALL LOAD CONDUITS A MINIMUM OF 6" ABOVE THE COARSE CONCRETE AGGREGATE BACKFILL AND A MINIMUM OF 12" BELOW THE LID.
4. PROVIDE ANCHOR BOLTS OR EXPANSION ANCHORS IN THE BASE FOR MOUNTING THE CABINET PER THE MANUFACTURER'S SHOP DRAWINGS. ANCHOR BOLTS, NUTS, AND WASHERS SHALL CONFORM TO EITHER ASTM A307 OR A449 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
5. USE GRADE 60 REINFORCING STEEL CONFORMING TO ASTM 615 AND CLASS "A" CONCRETE CONFORMING TO SECTION 501 OF THE SPECIFICATIONS WHEN CASTING THE BASE.
6. FINISH THE BASE ACCESS OPENING WITH A 24" SQUARE IRON FRAME AND COVER, WEIGHING APPROXIMATELY 280 LBS. PROVIDE COVERS INSCRIBED WITH THE LEGEND "LIGHTING" FOR THOSE LOAD CENTERS WITH STREET LIGHTING CIRCUITS ONLY, AND "TRAFFIC" FOR THOSE LOAD CENTERS WITH A TRAFFIC SIGNAL CIRCUIT.
7. IF THE BASE IS PRECAST, INSTALL TWO 3/4" FERRULE LOOP INSERTS IN TWO SIDES OPPOSITE ONE ANOTHER FOR LIFTING.



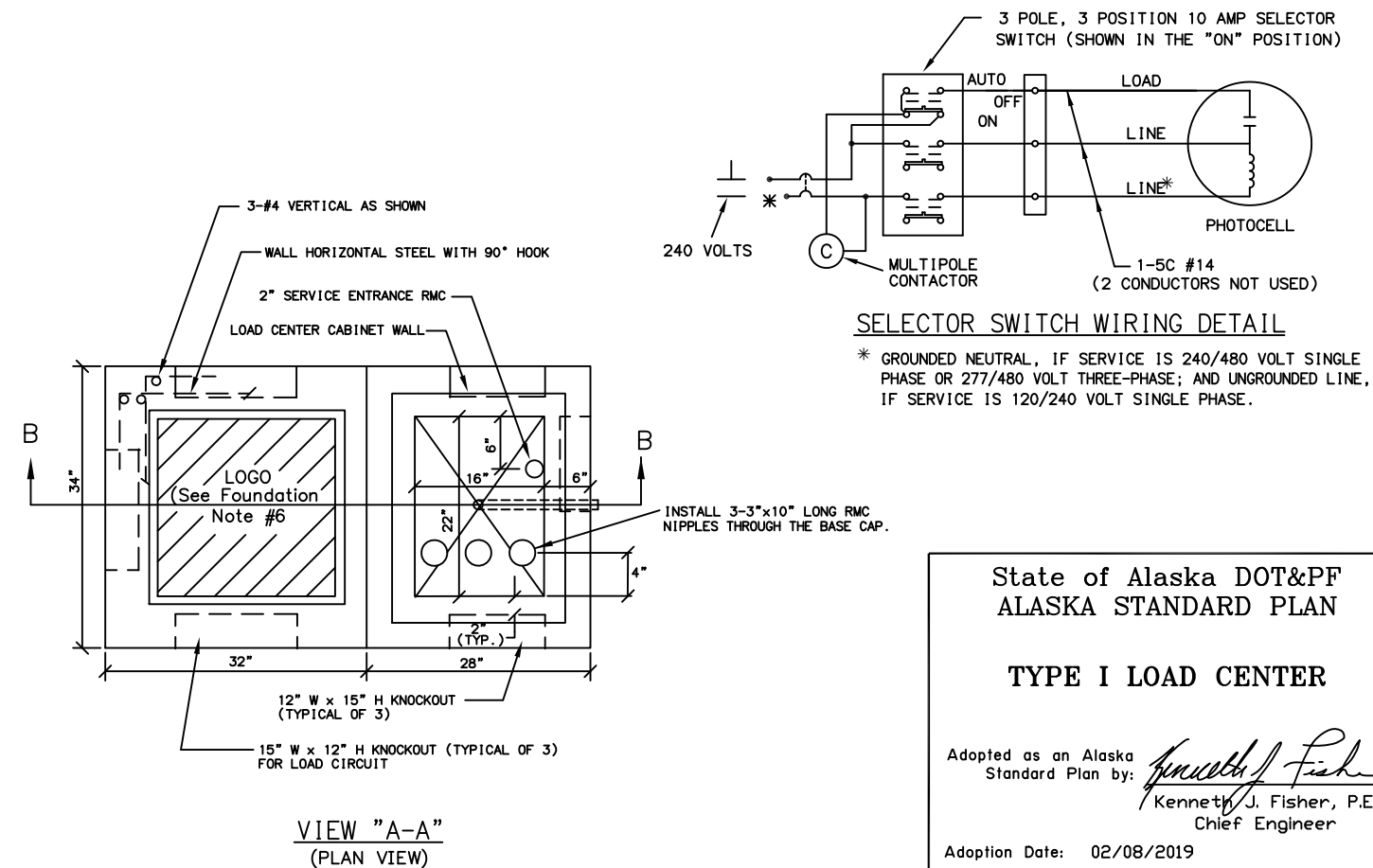
TYPE 1 LOAD CENTER BASE

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



WIRING NOTES:

1. FURNISH ALL EQUIPMENT NOTED IN THE LOAD CENTER SUMMARY, PLUS TWO 20-AMP 2-POLE SPARE CIRCUIT BREAKERS, AND SPACE FOR A MINIMUM OF TWO ADDITIONAL 2-POLE CIRCUIT BREAKERS IN EACH LOAD PANEL. SEE THE LOAD CENTER SUMMARIES FOR LOAD PANEL VOLTAGES, CURRENT RATINGS, AND THE NAME OF THE SERVING UTILITY.
2. INSTALL GROUNDING HUBS THIRD PARTY CERTIFIED FOR WET LOCATIONS (MYERS TYPE), WHEN ATTACHING CONDUITS TO THE LOAD CENTER ENCLOSURE.
3. LABEL ALL CIRCUIT BREAKERS AS TO FUNCTION AND POSITION. LABEL THE SELECTOR SWITCH "LIGHTING" AND ITS POSITIONS "ON-OFF-AUTO".
4. METER BASES SHALL NOT BE MOUNTED ON MOVABLE PANELS OR DOORS.
5. THE LENGTH AND TYPE OF SERVICE ENTRANCE CONDUIT INSTALLED BY THE CONTRACTOR VARIES BY UTILITY. REGARDLESS OF ITS LENGTH, INSTALL A PULL ROPE IN THE SERVICE CONDUIT AND A CAP ON THE BURIED END: MARK THE BURIED END WITH A 2"X 6" STAKE. SEE THE LOAD CENTER SUMMARIES FOR THE FOLLOWING INFORMATION.
 - A. STATION AND OFFSET OF THE LOAD CENTER AND POWER SOURCE.
 - B. WHERE THE CONTRACTOR TERMINATES THE SERVICE ENTRANCE CONDUIT.
 - C. THE TYPE OF SERVICE ENTRANCE CONDUIT (SUCH AS RIGID METAL CONDUIT OR LIQUID-TIGHT FLEXIBLE METAL CONDUIT).
6. STORE A SCHEMATIC DIAGRAM, A CIRCUIT DIRECTORY, AND A MATERIALS LIST THAT INCLUDES THE MANUFACTURER'S NAME AND PART/CATALOG NUMBERS, ALL LAMINATED IN PLASTIC, IN A METAL POCKET ATTACHED TO THE INSIDE OF THE LOAD CENTER. INSTALL THE POCKET ON THE LOAD CENTER DOOR, PROVIDING DRAIN HOLES TO PREVENT WATER ACCUMULATION.
7. WHEN METAL HALIDE OR MERCURY VAPOR LAMPED FIXTURES ARE USED, PROVIDE A REMOTE BULB THERMOSTAT, SO THAT THE CONTACT CLOSING AND THE LIGHTS TURN ON WHEN THE TEMPERATURE DROPS TO 15° FAHRENHEIT. WIRE THERMOSTAT SO THAT ITS CONTACT IS PARALLEL THE CONTACT IN THE PHOTOELECTRIC CELL.



State of Alaska DOT&PF
ALASKA STANDARD PLAN

TYPE I LOAD CENTER

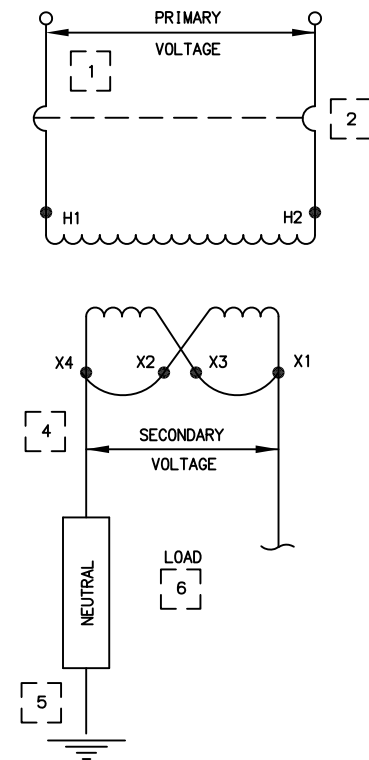
Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher, P.E.*
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

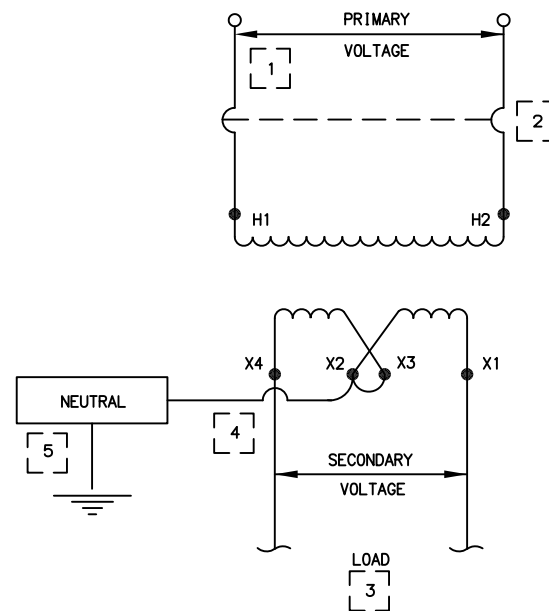
Last Code and Stds. Review

By: Date:

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



TRANSFORMER WIRING DIAGRAM
2-WIRE SINGLE-PHASE SECONDARY



TRANSFORMER WIRING DIAGRAM
3-WIRE SINGLE-PHASE SECONDARY

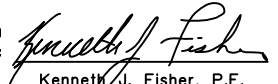
NOTES: TRANSFORMER WIRING DIAGRAMS FOR LOAD CENTERS:

1. PRIMARY VOLTAGE SHALL BE LINE-TO-LINE VOLTAGE.
2. WIRING DIAGRAM SHOWS "PRIMARY ONLY" OVER CURRENT PROTECTION PER NEC 450-3(b). PRIMARY/SECONDARY OVER CURRENT PROTECTION (NOT SHOWN) MAY BE USED WHERE A MAIN CIRCUIT BREAKER IS DESIRED FOR THE LOAD. THE TRIP RATINGS OF PRIMARY AND SECONDARY MAIN CIRCUIT BREAKERS SHALL CONFORM TO NEC TABLE 450-3(b).
3. LOAD MAY BE A "LOAD PANEL" IN THE LOAD CENTER, OR A LOAD OUTSIDE THE LOAD CENTER. 3-WIRE SINGLE-PHASE LOADS ARE 120/240-VOLT OR 240/480-VOLT, SECONDARY OVER CURRENT PROTECTION (NOT SHOWN) NOT PROVIDED EXCEPT AS AN OPTION, SEE NOTE #2.
4. GROUNDED AND UNGROUNDED CONDUCTORS TO BE THE SAME SIZE, PER NEC TABLE 310-16, 60°C COLUMN, BASED ON TRANSFORMER FULL LOAD AMPS, OR OVER CURRENT TRIP RATING WHICHEVER IS GREATER.
5. CONNECT TRANSFORMER NEUTRAL TO LOAD CENTER NEUTRAL EXCEPT WHERE LOAD IS OUTSIDE THE LOAD CENTER IN WHICH CASE PROVIDE CONNECTION TO LOAD NEUTRAL. GROUNDING CONDUCTOR TO NEUTRAL TO BE COPPER SIZED PER NEC TABLE 250-66, 6-AWG MINIMUM.
6. 2-WIRE SINGLE PHASE LOAD [120-VOLT] FOR LOADS SUCH AS TRAFFIC SIGNAL SYSTEMS. SECONDARY OVER CURRENT PROTECTION (NOT SHOWN) NOT PROVIDED EXCEPT AS AN OPTION. SEE NOTE #2.

* NFPA-70, 1999 NATIONAL ELECTRICAL CODE.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

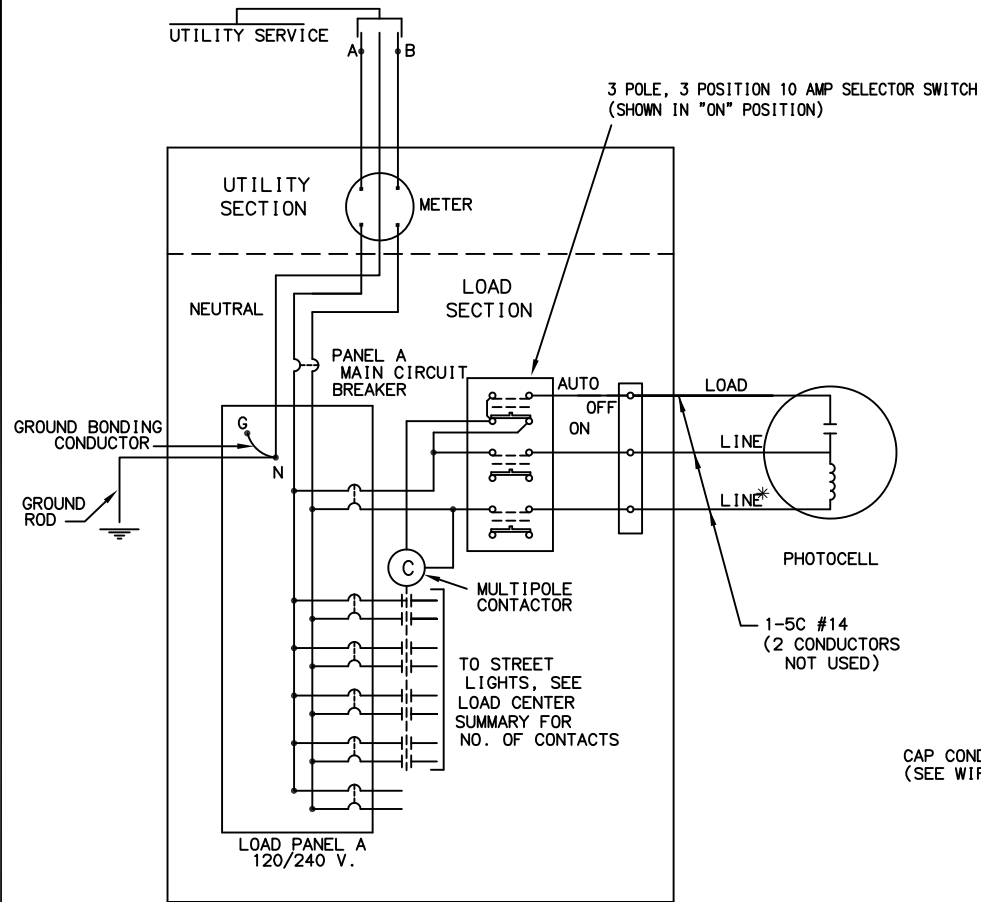
TYPE I LOAD CENTER

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

Adoption Date: 02/08/2019

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By: Date:

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LOAD CENTER ONE LINE DIAGRAM AND SELECTOR SWITCH WIRING

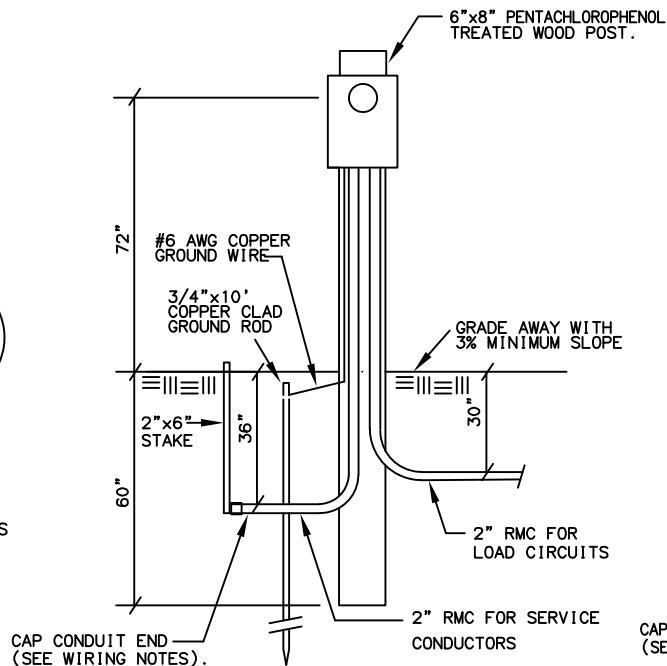
TYPE 2 & 3 LOAD CENTERS - USED FOR LIGHTING
WITH PHOTOELECTRIC AND THERMOSTATIC CONTROLS

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

INSTALLATION NOTES:

- INSTALL TYPE 3 LOAD CENTER POLES OF SUFFICIENT LENGTH TO PROVIDE THE FOLLOWING MINIMUM GROUND TO SERVICE CONDUCTOR CLEARANCE:
 - 21 FEET, IF THE SERVICE CONDUCTORS ARE LOCATED ABOVE ROADWAYS OR PARKING AREAS.
 - 28 FEET, IF THE SERVICE CONDUCTORS ARE LOCATED WITHIN 20 FEET OF A RAILROAD TRACK.
 - 18 FEET IN ALL OTHER CIRCUMSTANCES.
- SET THE BUTT END OF TYPE 3 LOAD CENTER POLES TO THE FOLLOWING MINIMUM DEPTH:
 - 10 PERCENT OF ITS LENGTH PLUS 2 FEET, OR 5 FEET, WHICHEVER IS GREATER, IF IT IS INSTALLED IN EARTH OTHER THAN SOLID ROCK OR MUSKEG.
 - 10 PERCENT OF ITS LENGTH, OR 4 FEET, WHICHEVER IS GREATER, IF IT IS INSTALLED IN SOLID ROCK.
 - CONSIDER MUSKEG TO BE AIR, AND SET THE BUTT ENDS TO THE DEPTH GIVEN IN A OR B, WHICHEVER APPLIES, IN THE UNDERLYING EARTH OR ROCK.

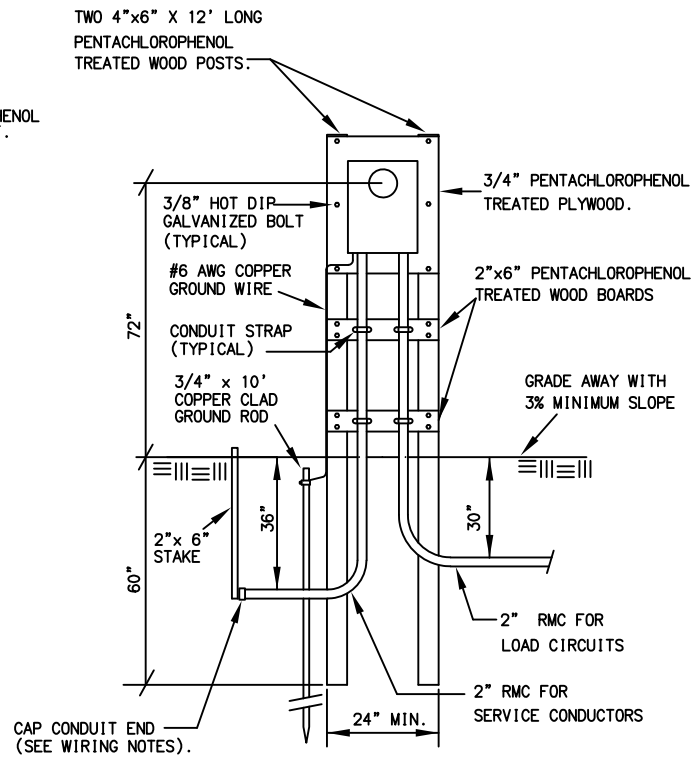
WHENEVER MORE THAN TWO FEET OF EARTH OVERLAYS ROCK, OR THE DIAMETER OF THE DRILLED HOLE IN ROCK EXCEEDS TWICE THE DIAMETER OF THE POLE AT THE GROUND LINE, CONSIDER THE INSTALLATION AS EARTH.
- ATTACH ALL CONDUITS TO THE POSTS AND POLES USING TWO HOLE RIGID METAL CONDUIT STRAPS LOCATED ON 24 INCH MAXIMUM CENTERS.
- ATTACH ALL GROUND CONDUCTORS TO THE POSTS AND POLES USING CABLE STAPLES LOCATED ON 12 INCH CENTERS.



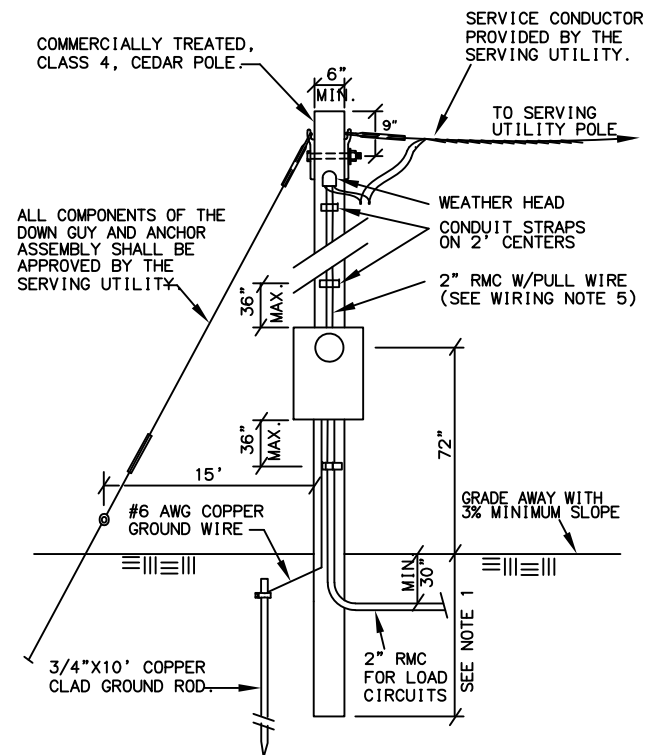
TYPE 2 LOAD CENTER
SINGLE POST - STANDARD

WIRING NOTES:

- FURNISH ALL EQUIPMENT NOTED IN THE LOAD CENTER SUMMARY, PLUS TWO 20-AMP 2-POLE SPARE CIRCUIT BREAKERS, AND SPACE FOR A MINIMUM OF TWO ADDITIONAL TWO-POLE CIRCUIT BREAKERS, IN EACH LOAD PANEL. SEE SUMMARIES FOR LOAD PANEL VOLTAGES, CURRENT RATINGS, SHORT CIRCUIT INTERRUPTING RATINGS, AND THE NAME OF THE SERVING UTILITY.
- SIZE THE TYPE 2 AND 3 LOAD CENTER CABINETS TO HOLD THE EQUIPMENT SHOWN IN THE WIRING DIAGRAM AND DETAILED IN EACH LOAD CENTER SUMMARY, ALLOWING SPACE FOR WIRING PER THE NATIONAL ELECTRICAL CODE. INSTALLING A METER BASE AND MAIN BREAKER IN A SEPARATE ENCLOSURE IS ALLOWABLE. HOWEVER IN THIS CASE, FURNISH A BREAKER PANEL WITH A MAIN BREAKER.
- LABEL ALL CIRCUIT BREAKERS AS TO FUNCTION AND POSITION. LABEL THE SELECTOR SWITCH "LIGHTING" AND ITS POSITIONS "ON-OFF-AUTO".
- THE VOLTAGE FOR THE PHOTOELECTRIC CONTROL EQUIPMENT SHALL BE 240-VOLT, DERIVED FROM THE SERVICE VOLTAGE, OR FROM A CONTROL TRANSFORMER.
- LABEL ALL CIRCUIT BREAKERS AS TO FUNCTION AND POSITION.
- STORE A SCHEMATIC DIAGRAM, A CIRCUIT DIRECTORY, AND A MATERIALS LIST THAT INCLUDES THE MANUFACTURER'S NAME AND PART/CATALOG NUMBERS, ALL LAMINATED IN PLASTIC, IN A METAL POCKET ATTACHED TO THE INSIDE OF THE LOAD CENTER. INSTALL THE POCKET ON THE LOAD CENTER DOOR, PROVIDING DRAIN HOLES TO PREVENT WATER ACCUMULATION.
- WHEN METAL HALIDE OR MERCURY VAPOR LAMPED FIXTURES ARE USED, PROVIDE A REMOTE BULB THERMOSTAT, SO THAT THE CONTACT CLOSURES AND THE LIGHTS TURN ON WHEN THE TEMPERATURE DROPS TO 15° FAHRENHEIT. WIRE THERMOSTAT SO THAT ITS CONTACT IS PARALLEL THE CONTACT IN THE PHOTOELECTRIC CELL.
- USE THE SINGLE-POST TYPE 2 "STANDARD" LOAD CENTER IN ALL LOCATIONS EXCEPT WHERE THE SERVING UTILITY REQUIRES THE TWO-POST TYPE 2 "ALTERNATIVE" LOAD CENTER. REFER TO THE LOAD CENTER SUMMARY FOR WHICH TO INSTALL.
- THE LENGTH AND TYPE OF SERVICE ENTRANCE CONDUIT INSTALLED BY THE CONTRACTOR VARIES BY UTILITY. REGARDLESS OF ITS LENGTH, INSTALL A PULL ROPE IN THE SERVICE CONDUIT AND A CAP ON THE BURIED END: MARK THE BURIED END WITH A 2"x 6" STAKE. SEE THE LOAD CENTER SUMMARIES FOR THE FOLLOWING INFORMATION.
 - STATION AND OFFSET OF THE LOAD CENTER AND POWER SOURCE.
 - WHERE THE CONTRACTOR TERMINATES THE SERVICE ENTRANCE CONDUIT.
 - THE TYPE OF SERVICE ENTRANCE CONDUIT (SUCH AS RIGID METAL CONDUIT OR LIQUID-TIGHT FLEXIBLE METAL CONDUIT).
 - THE MAXIMUM AND MINIMUM DISTANCES ALLOWED BETWEEN THE TYPE-3 LOAD CENTER POLE AND UTILITY POLE TO WHICH THE AERIAL DROP IS CONNECTED.



TYPE 2 LOAD CENTER
DUAL POST - ALTERNATE



TYPE 3 LOAD CENTER

State of Alaska DOT&PF
ALASKA STANDARD PLAN

TYPE 2 AND 3 LOAD CENTERS

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

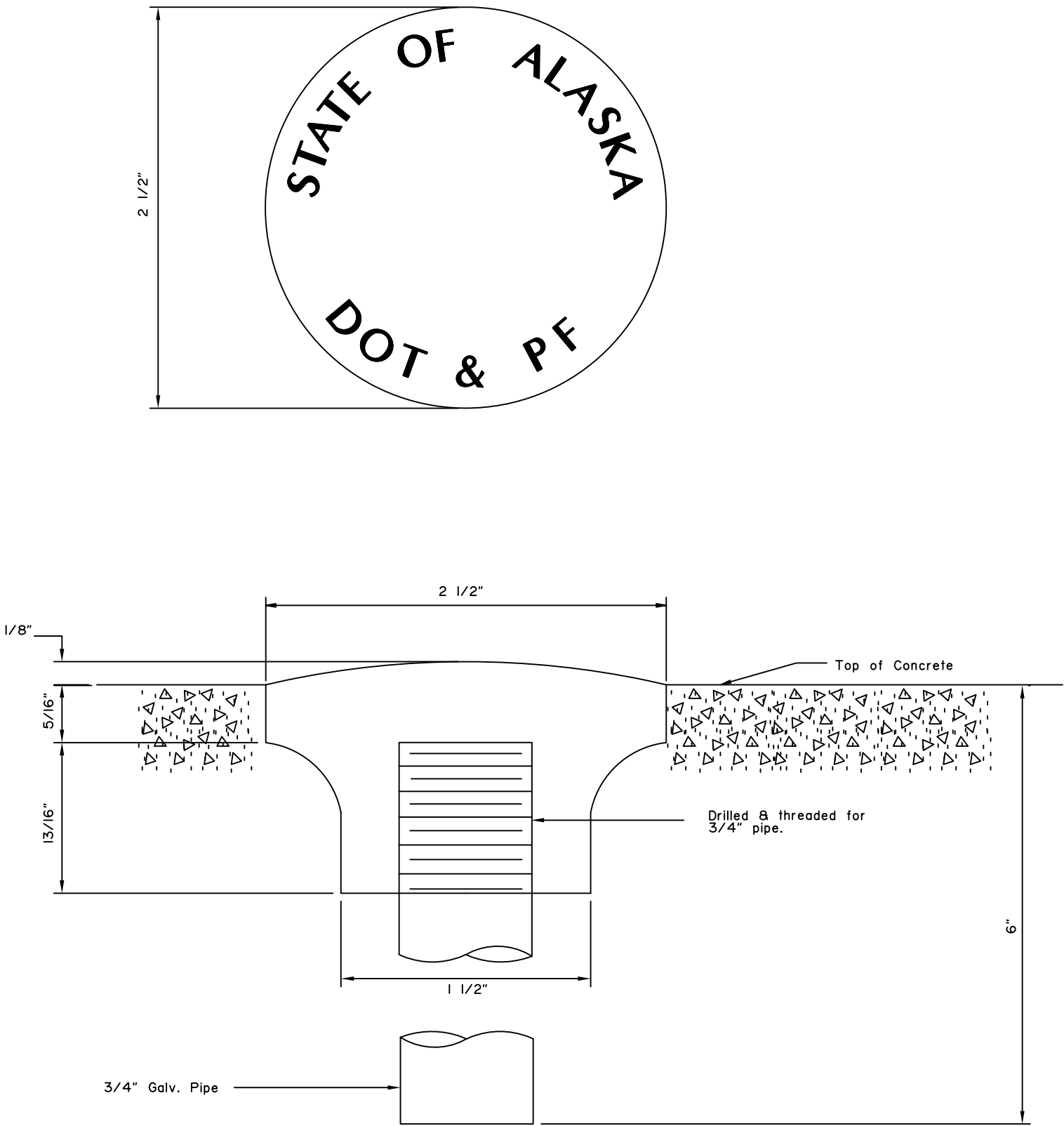
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

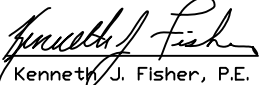
1. For Structures under 200' total length: provide 1 monument.
2. For Structures 200' or over: provide 2 Monuments.
3. Monuments shall be located as directed by the Engineer.



SURVEY MONUMENT

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SURVEY MONUMENT

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

Adoption Date: 02/08/2019

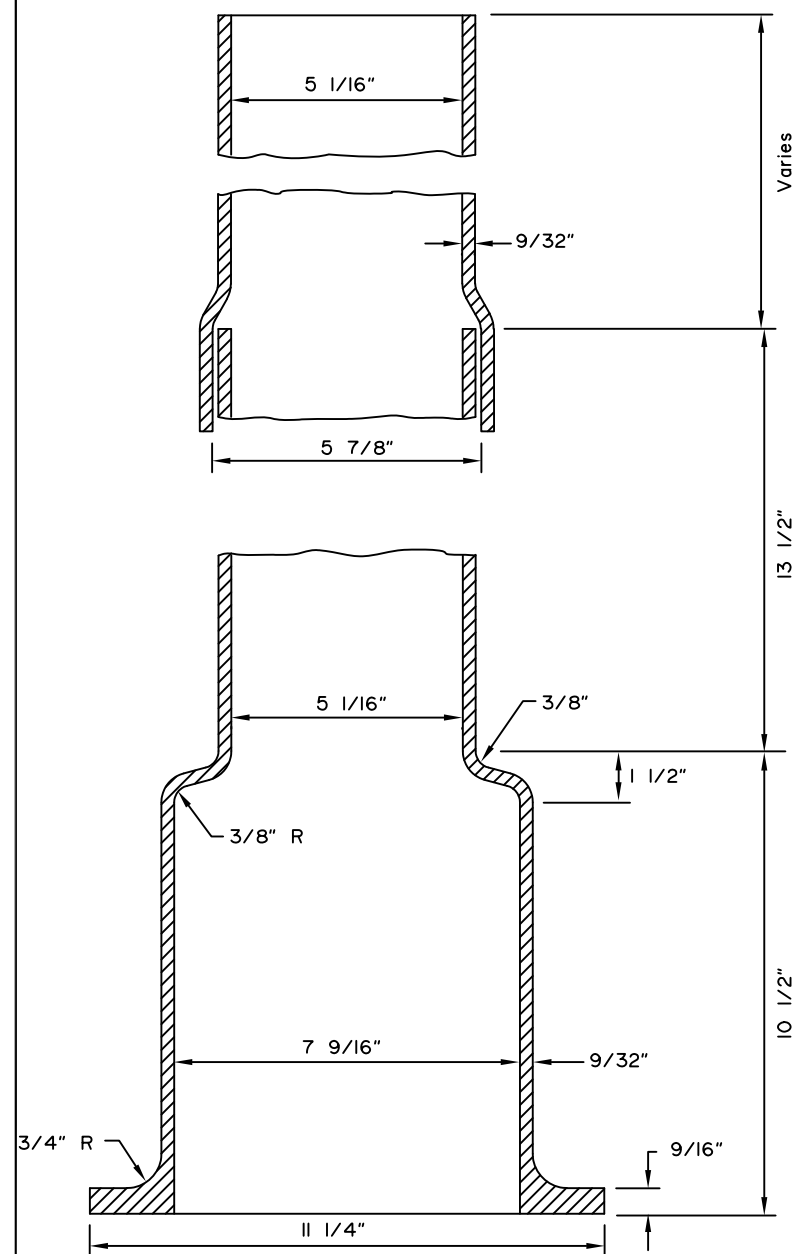
Last Code and Stds. Review
By: Date:

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

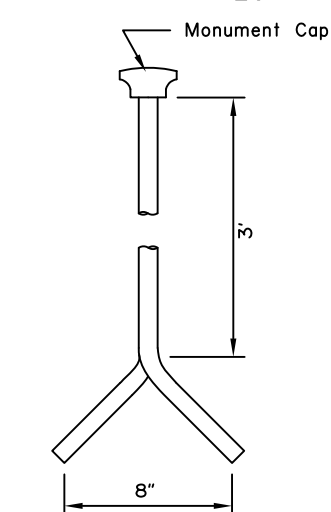
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GENERAL NOTES:

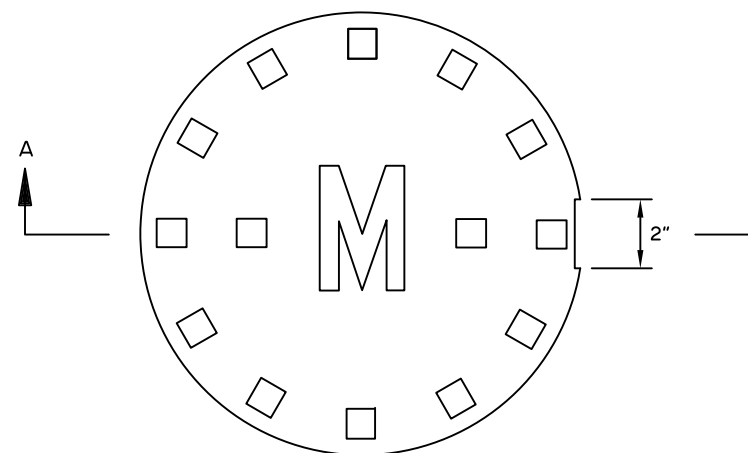
1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers.
2. Where monument cases are to be placed in paved area of a roadway or sidewalk, the top of the case and/or cover shall be the same elevation as the top of the finish surface with bolting type access cover.
3. Where monument cases are to be placed in a gravel surfaced roadway, the top of the case shall be placed 1'-0" below the top of the surface of the roadway.
4. In solid rock, drill a 2" Dia. hole a minimum of 1'-0" deep, fill with mortar and set cap. 3/4"x9" galvanized pipe, designated length when set in mortar.
5. The top of the monument cap shall be placed 1' above the bottom of the monument case.



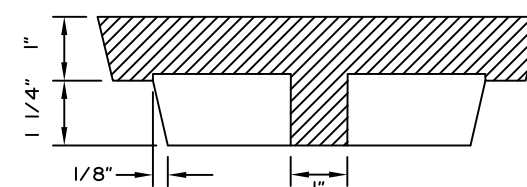
EXTENSION PIPES



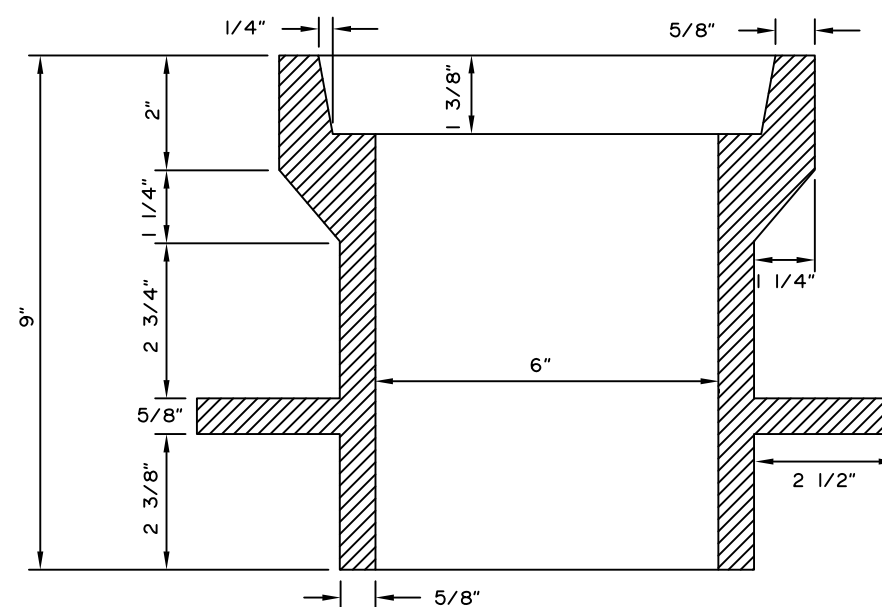
MONUMENT DETAIL



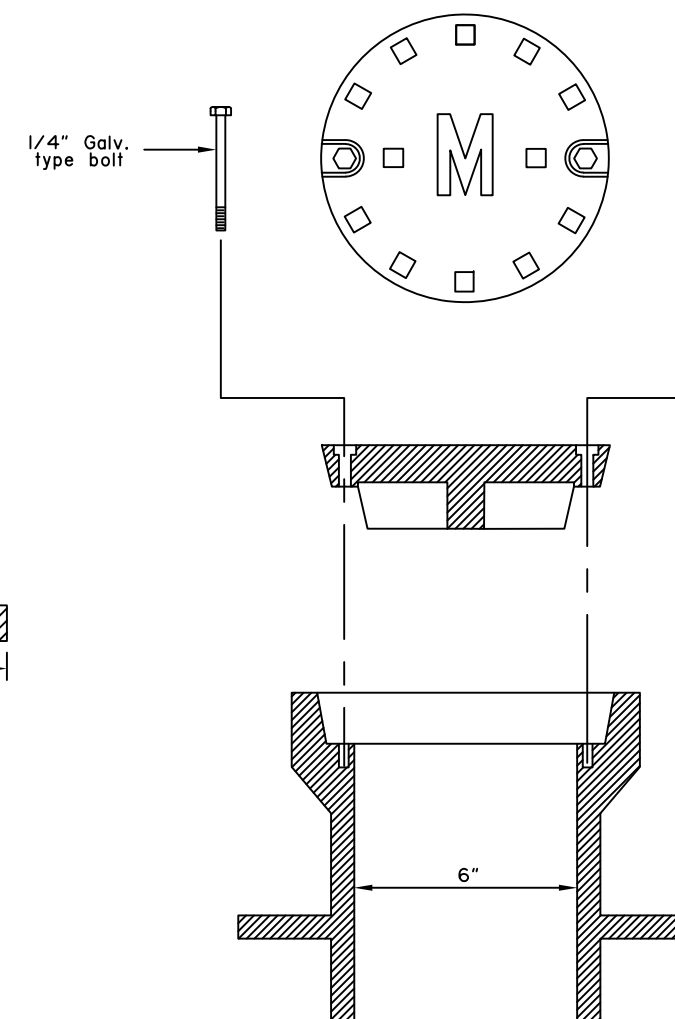
PLAN VIEW ACCESS COVER



SECTION A-A



MONUMENT CASE



BOLTING MONUMENT CASE ASSEMBLY
(See Note 2)

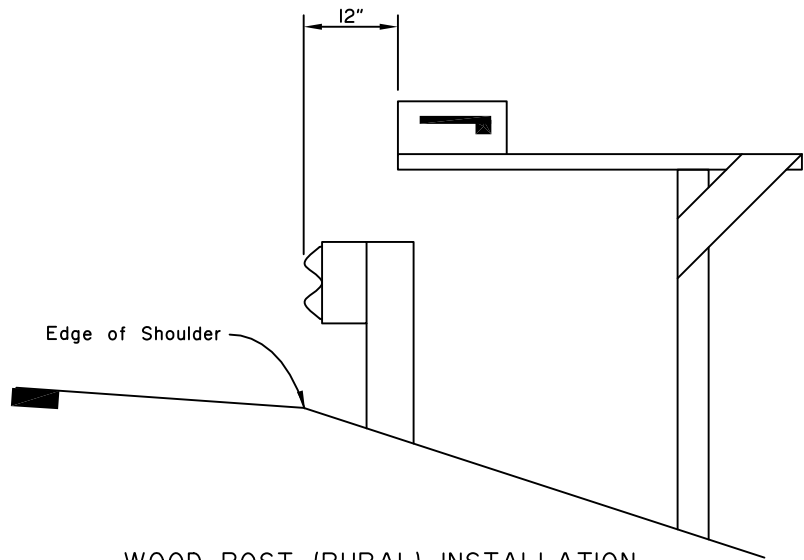
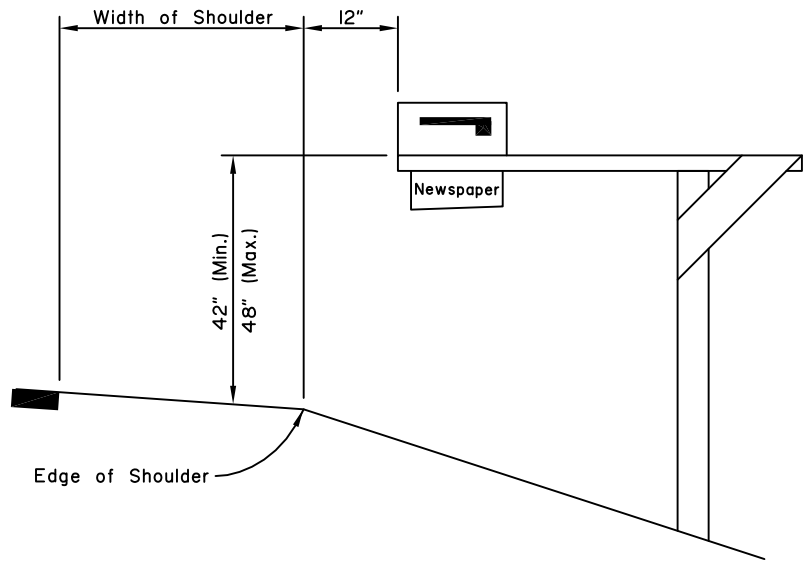
State of Alaska DOT&PF
ALASKA STANDARD PLAN
BRASS CAP MONUMENT
AND MONUMENT CASE

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

Adoption Date: 02/08/2019

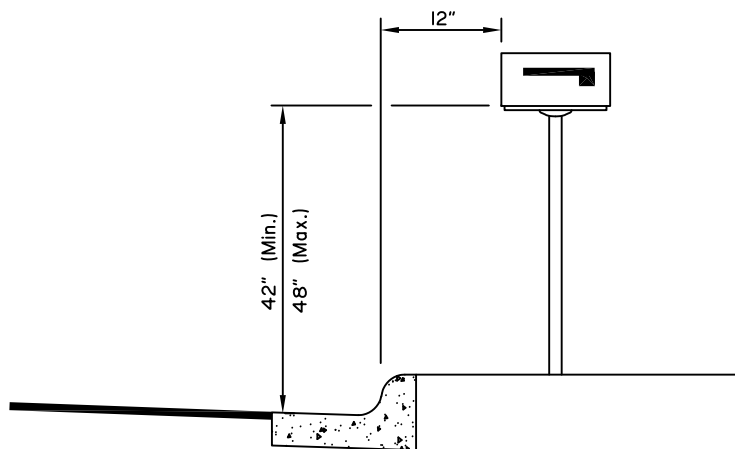
Last Code and Stds. Review
By: Date:

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WOOD POST (RURAL) INSTALLATION

Single or Double Box



METAL POST (URBAN) INSTALLATION

Single or Double Box

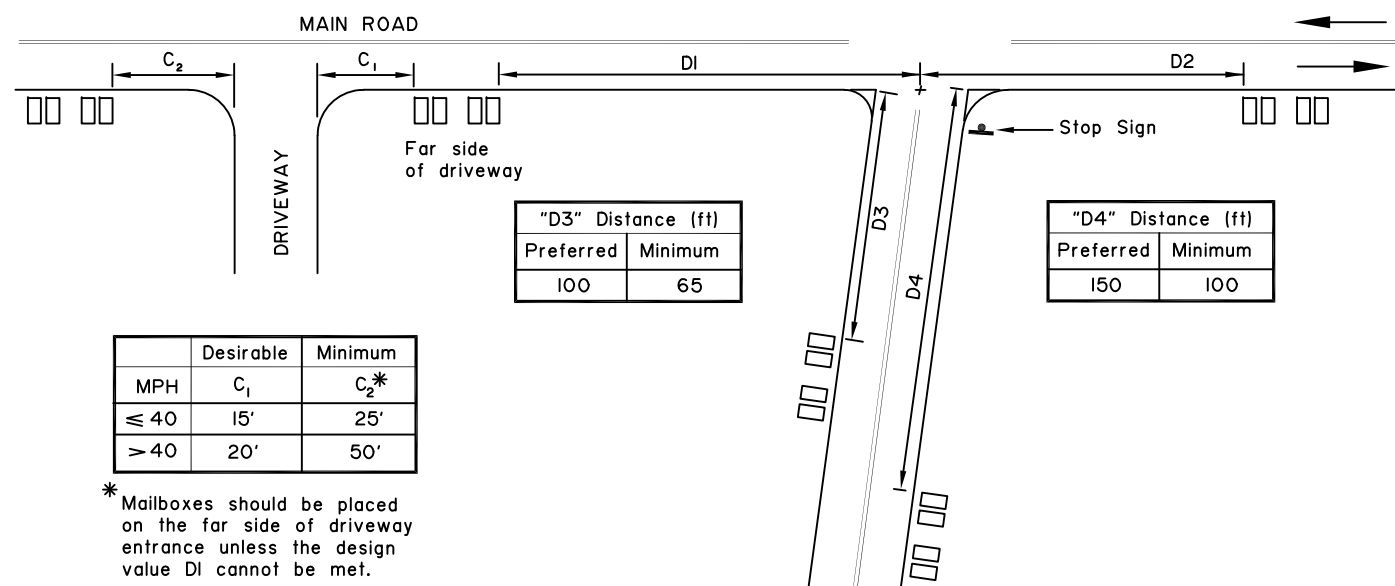
V_c = Average Daily Traffic on Cross Road (vehicles per day)

V_m = Average Daily Traffic on Main Road (vehicles per day)

n = Number of Mailboxes at Mail Stop

Posted Main Road Speed Limit	"D1" Distance (ft)	
	$n \times V_c \times V_m$	
	≤ 4000	> 4000
≤ 40	65	200
> 40	65	295

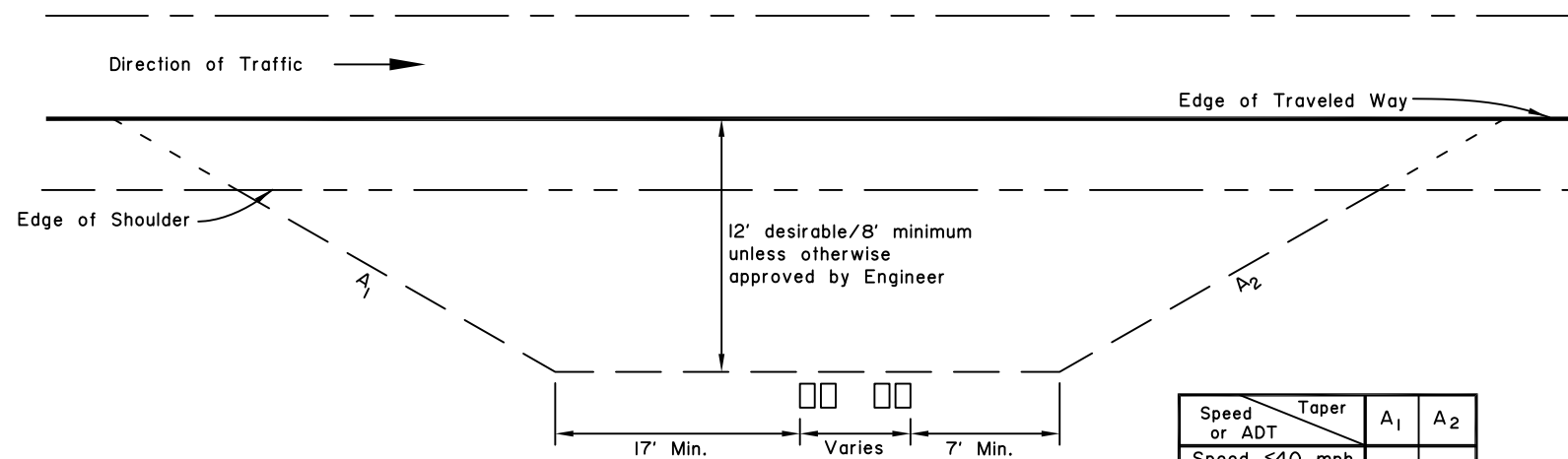
Posted Main Road Speed Limit	"D2" Distance (ft)	
	Cross Road ADT	
	≤ 4000	> 4000
≤ 40	100	100
> 40	150	200



	Desirable	Minimum
MPH	C_1	C_2^*
≤ 40	15'	25'
> 40	20'	50'

* Mailboxes should be placed on the far side of driveway entrance unless the design value $D1$ cannot be met.

MAILBOX LOCATION AT INTERSECTIONS AND DRIVEWAYS



Speed or ADT	Taper	A ₁	A ₂
Speed ≤ 40 mph and ADT ≤ 400		4:1	2.5:1
Speed > 40 mph or ADT > 400		20:1	12:1

TURNOUT TAPERS

GENERAL NOTES:

1. Install mailboxes conforming to U.S. Postal Service requirements.
2. Mailbox supports shall not present a rigid, unyielding impact resistant hazard to road traffic, but shall be flexible and yielding to vehicular impact. Install crashworthy supports in accordance with Standard Drawing M-23.
3. Installation shall be on the right side of roadway in the direction of mail carrier travel with the exception of one-way streets where they may be placed on either side.
4. Locate mailboxes to minimize dangers to road traffic, carriers and postal recipients.
5. Provide a minimum shoulder width of 8' unless otherwise approved by Engineer. Install single and double mailbox supports separated by at least 3', and desirably 4', from each other. More than two boxes on a single support is allowable only as shown on M-23.
6. Newspaper receptacles shall conform to the same setback and support regulations as mailboxes. Where newspaper receptacles and mailboxes are to be mounted together, the newspaper receptacle may be mounted beneath the mailbox or on the side of the mailbox support opposite the reflecting marker.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

MAILBOX LOCATION

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

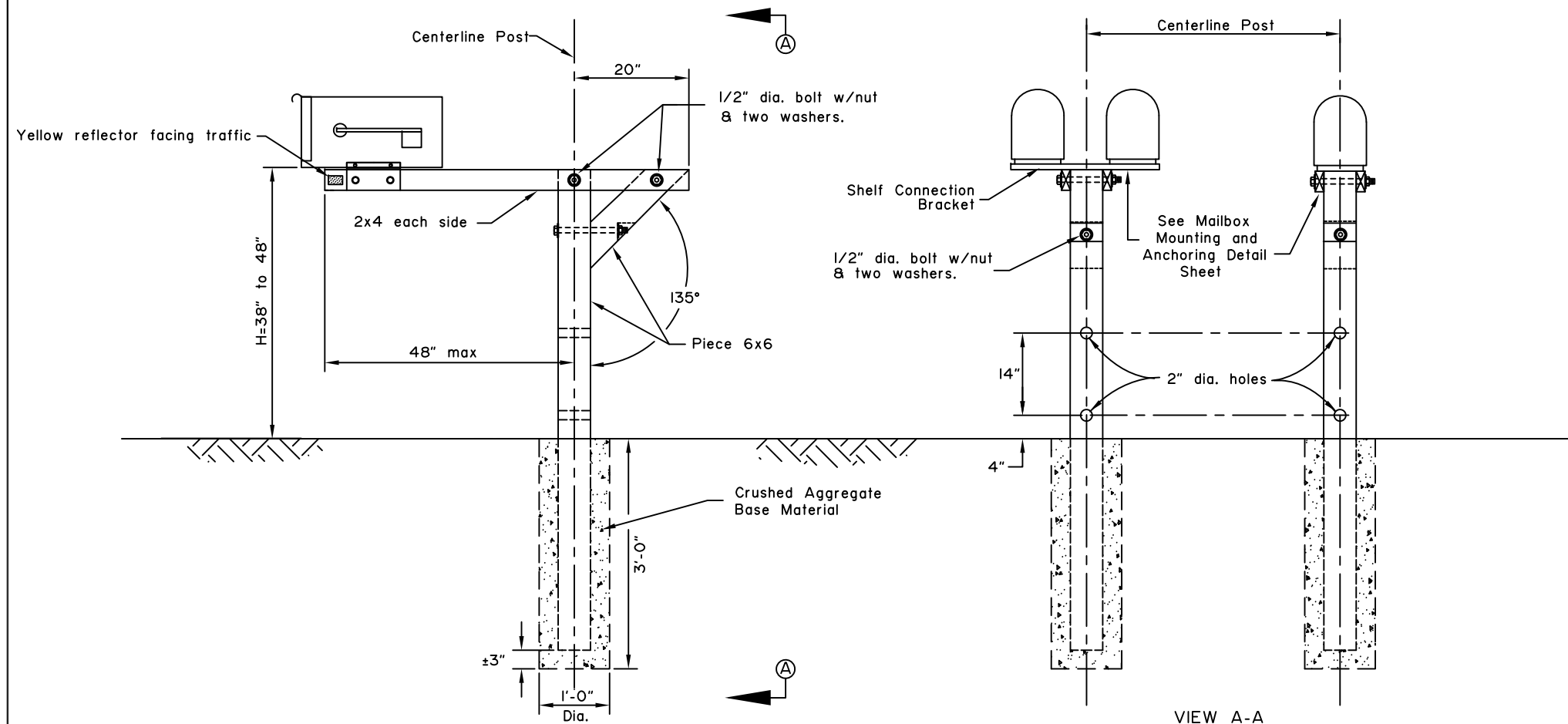
Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:

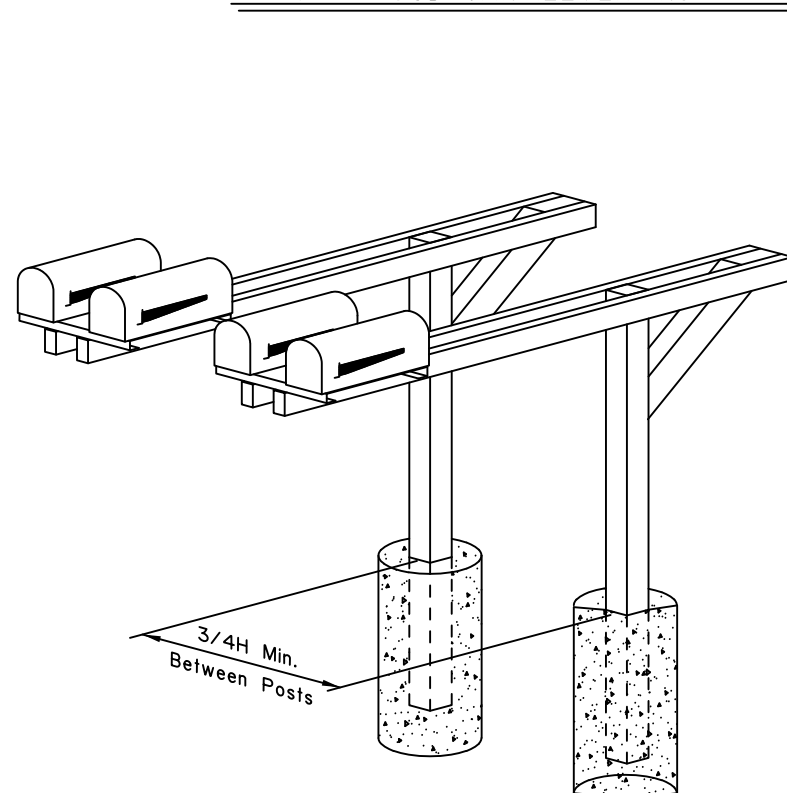
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

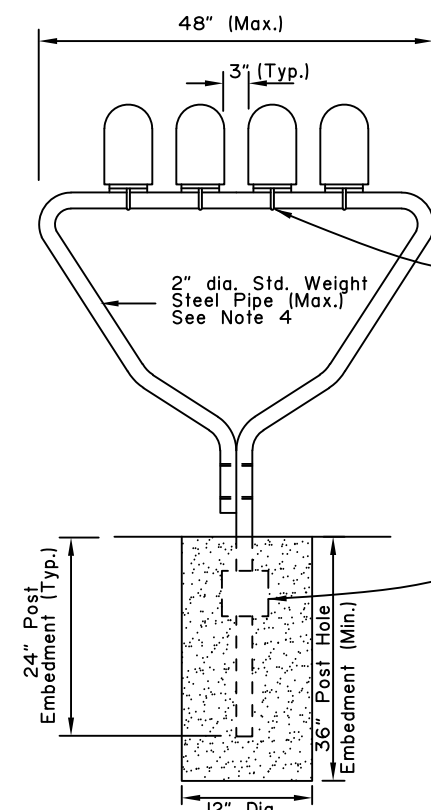
1. See Standard Drawing, 'Mailbox Location', for locating posts and boxes along roadway.
2. Posts shall be 6"x6" Treated Wood Post S4S or 2" (Max.) Standard Weight Steel Pipe.
3. Each support structure shall not accommodate more than two mailboxes unless the support structure conforms to the requirements of the U.S. Postal Service and is approved by the Engineer.
4. Other steel or aluminum structural sections may be used except, the stiffness properties equivalent to the 2" dia. standard weight steel pipe shall not be exceeded.
5. Reflectors shall have a minimum area of 4.5 sq. in.



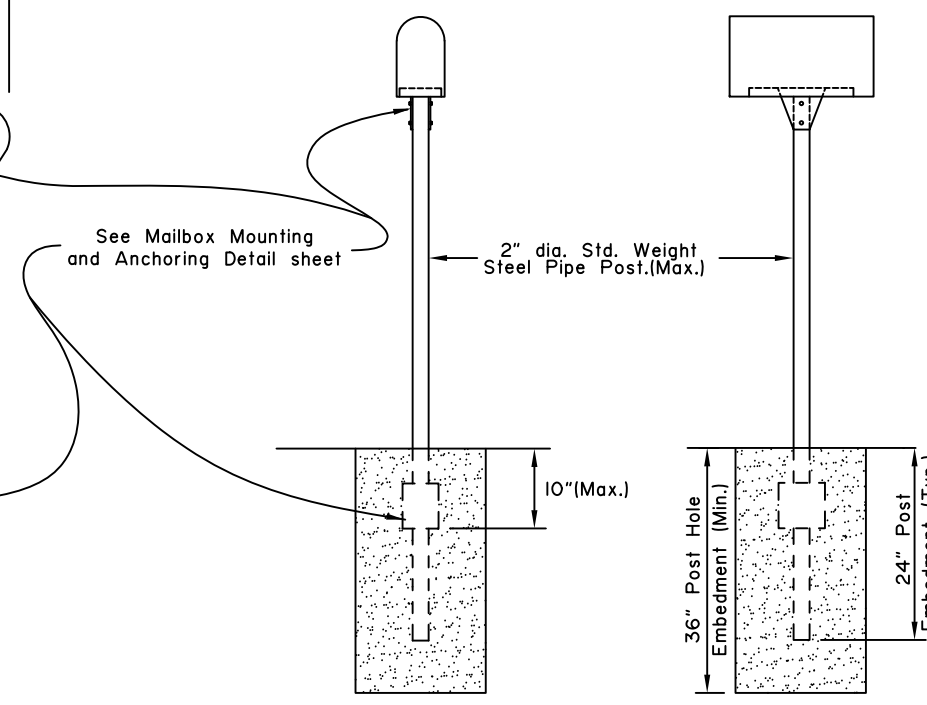
TYPICAL WOOD CANTILEVER INSTALLATION



TYPICAL GANG BOX INSTALLATION



MULTIPLE BOX INSTALLATION
(U.S.P.S. Approved)



METAL POST SUPPORTS (URBAN ONLY)

State of Alaska DOT&PF
ALASKA STANDARD PLAN

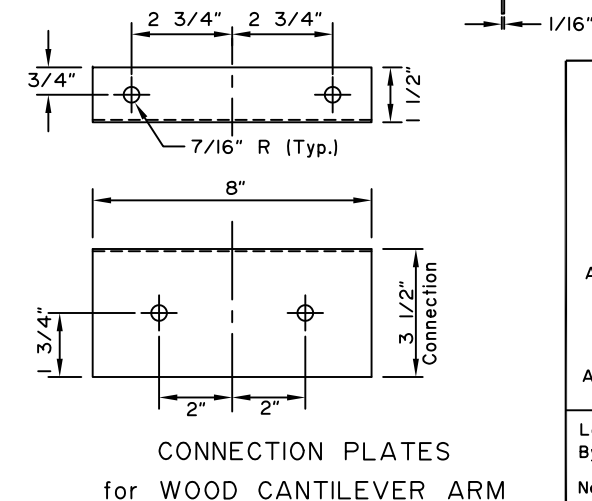
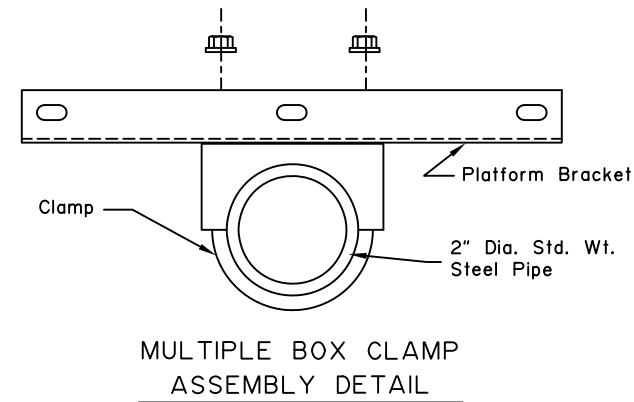
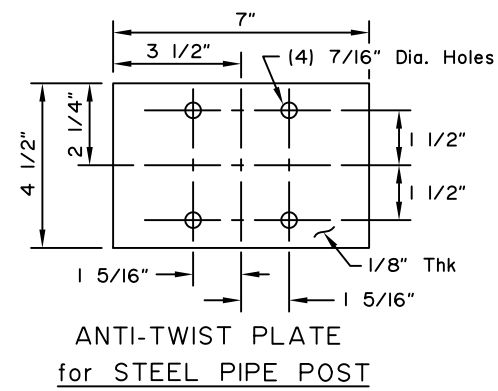
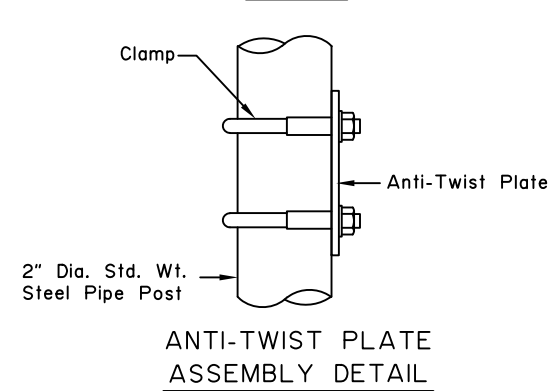
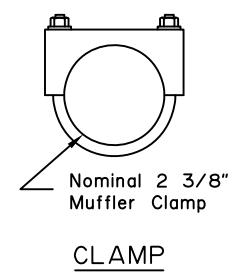
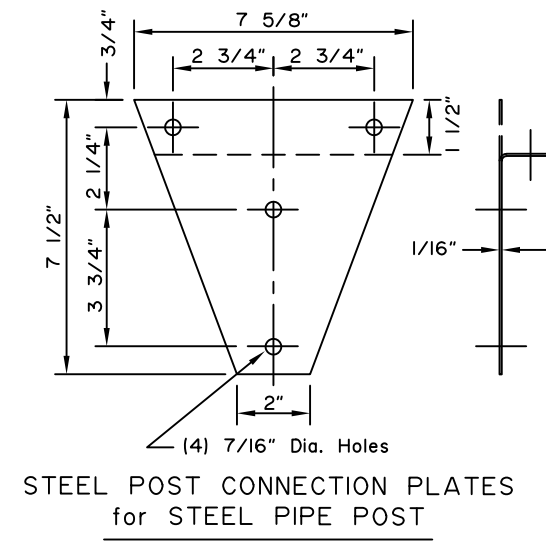
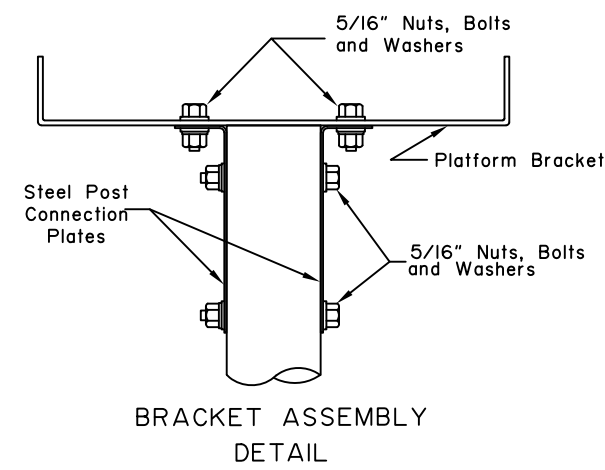
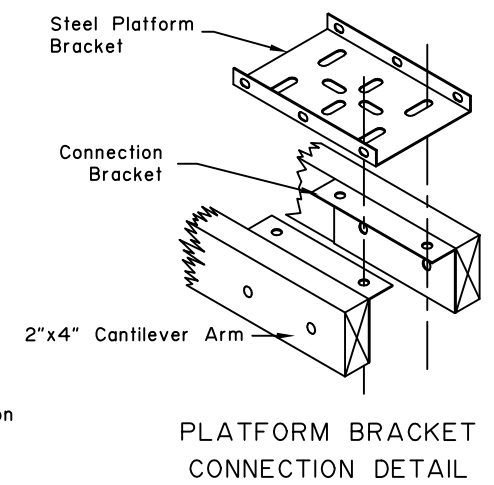
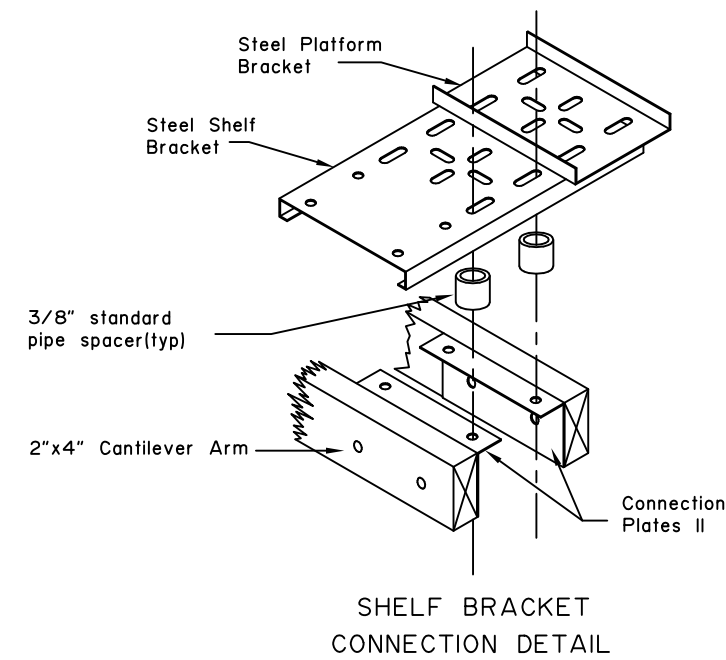
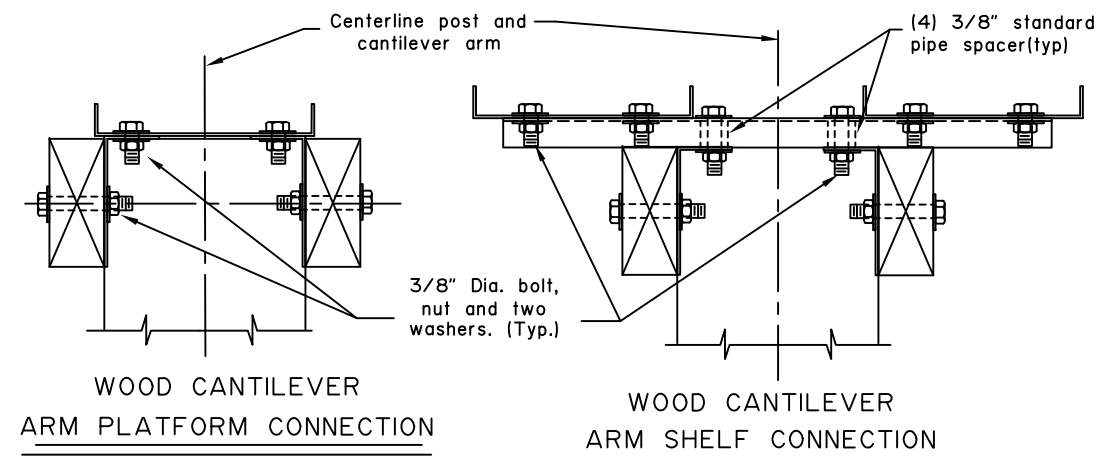
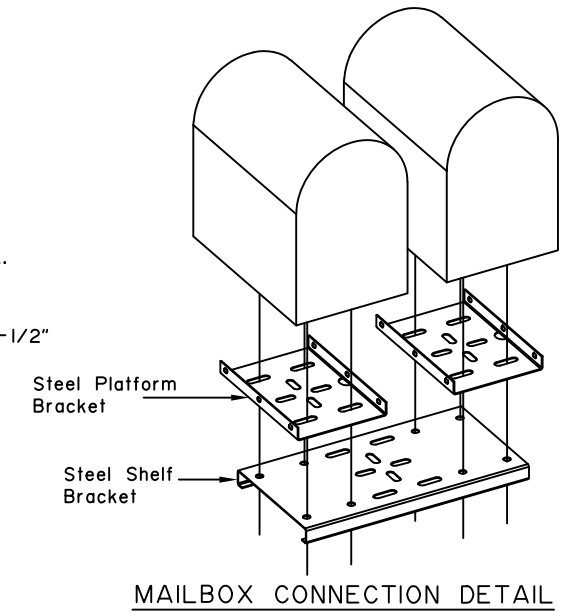
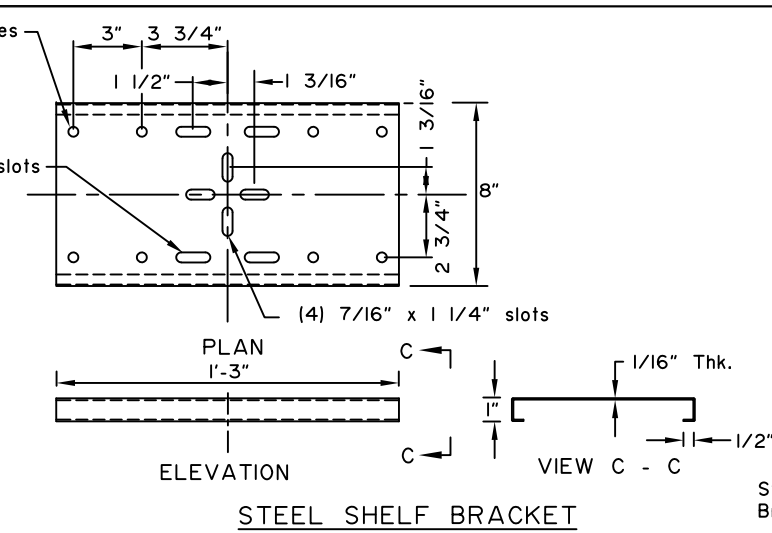
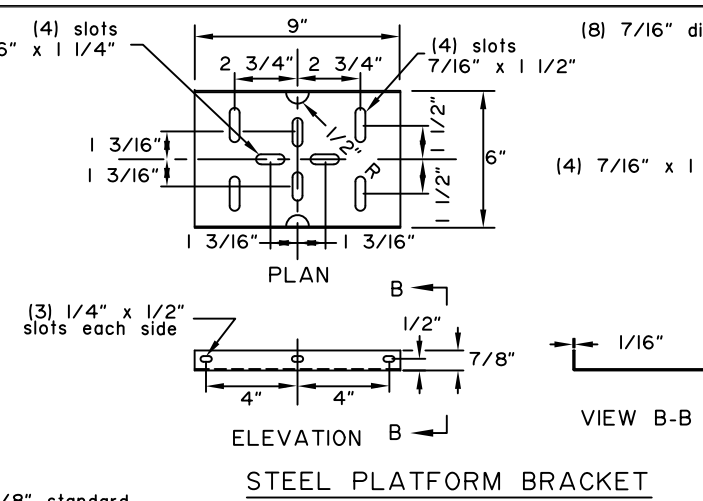
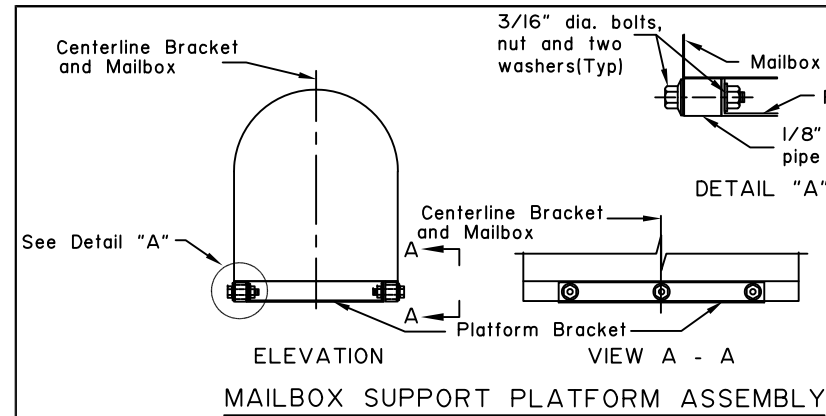
MAILBOX INSTALLATION

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



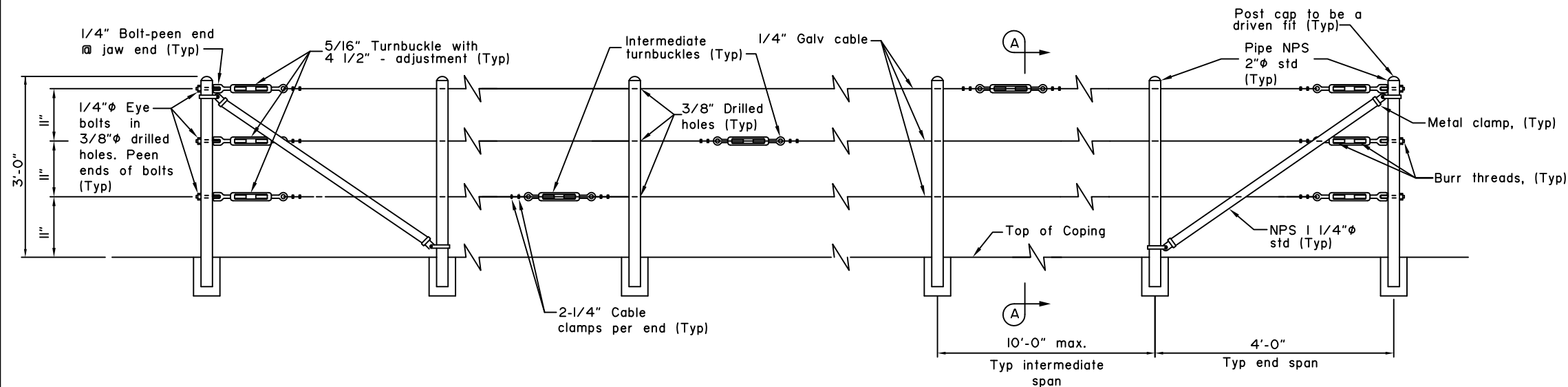
State of Alaska DOT&PF
ALASKA STANDARD PLAN
MAILBOX MOUNTING
AND ANCHORING DETAILS

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

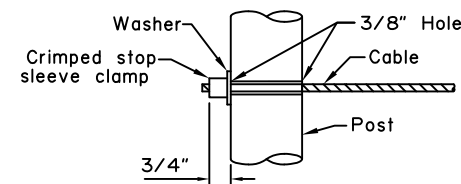
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

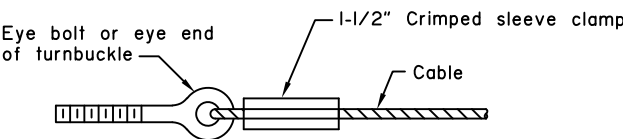
Next Code and Standards Review date: 02/08/2029



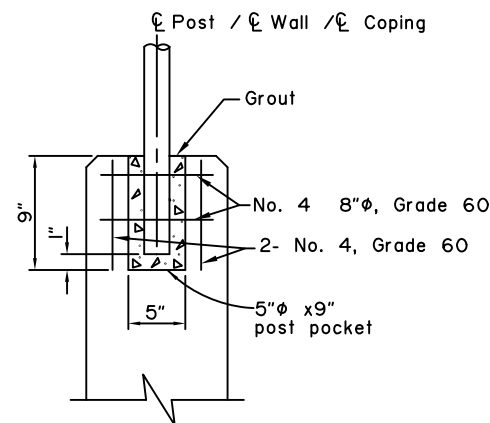
ELEVATION



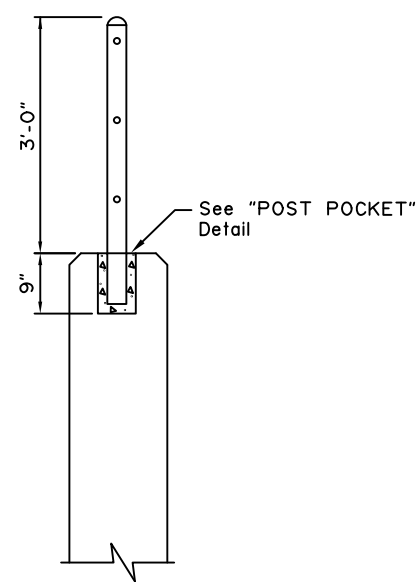
ALTERNATIVE DEAD END ANCHORAGE



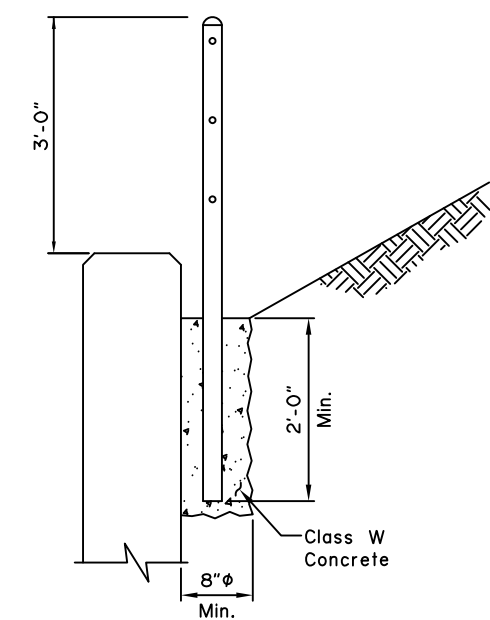
ALTERNATIVE CABLE CONNECTION



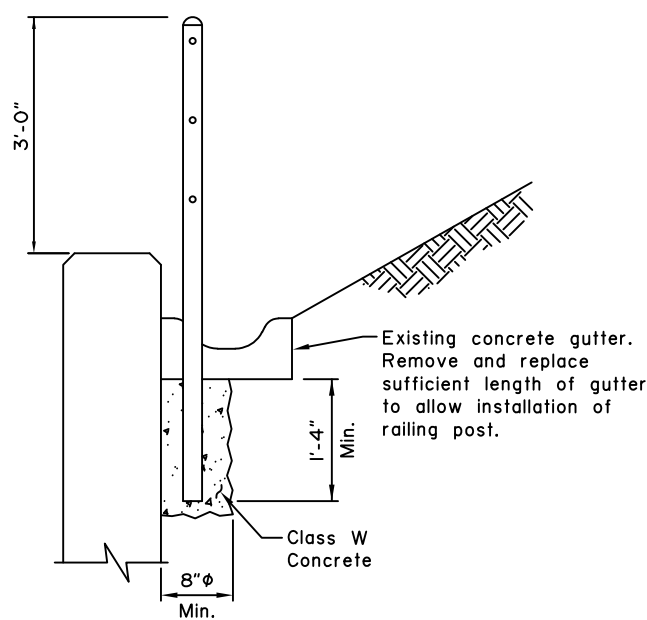
POST POCKET



SECTION A-A
CAST IN WALL OR COPING



SECTION A-A
BEHIND WALL WITHOUT GUTTER



SECTION A-A
BEHIND WALL WITH GUTTER

CONSTRUCTION NOTES:

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

DESIGN NOTES:

1. This rail is not intended for use where pedestrians or bicyclists are normally present.
2. This rail is intended for use where M80 personnel, inspectors, or engineers may be working at the top of a wall.

No Scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CABLE SAFETY RAIL

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

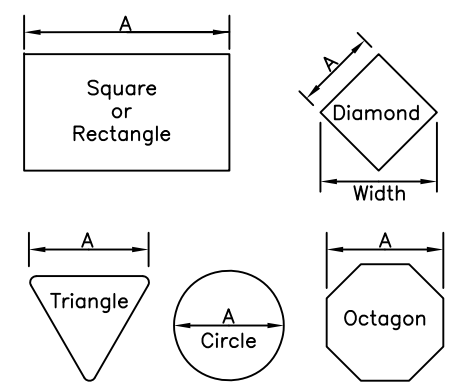
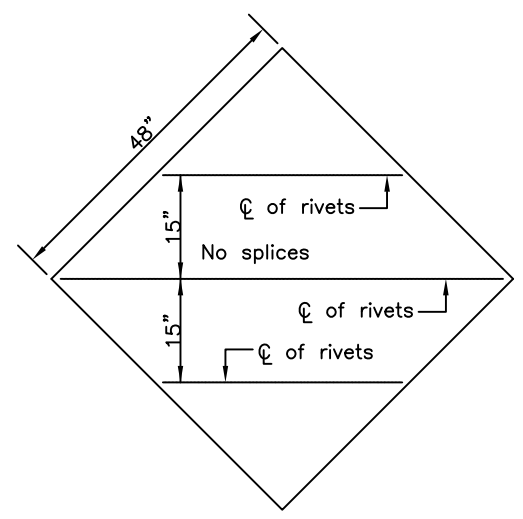
GENERAL NOTES

- See the standard specifications for the aluminum alloys that you may use for sign sheeting and wind framing members.
- Fabricate all signs from 0.125" thick aluminum sheeting.
- 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.
- 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.
- 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.
- Use 3/16" diameter rivets conforming to aluminum alloy 6061-T6 for cold driven rivets, or aluminum alloy 6061-T43 for hot driven rivets.
- 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.
- 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.
- Do not use round pipes for sign supports.

TUBE SIGN POST SPACING								
Sign Width (feet)	No. of Posts	Distance Between Posts	Sign Overhang	Post Type				Notes
				P.S.T.	Wood	Steel Tube	W-Shape	
0.5 to 4.0	1	—	0.5W	X	X	X		See Note 2.
4.5 to 10.0	2	0.6W	0.2W	X	X	X		See Note 3.
10.5 to 11.0	2	6	Varies	X	X	X		See Note 3.
11.5 to 13.0	2	8	Varies				X	
13.5 to 20.0	2	0.6W	0.2W				X	
20.5 to 22.5	3	8	Varies				X	
23.0 to 29.5	3	0.35W	0.15W				X	
30.0 to 31.5	4	8	Varies				X	
32.0 to 40.0	4	0.25W	0.125W				X	

SIGN POST SPACING NOTES:

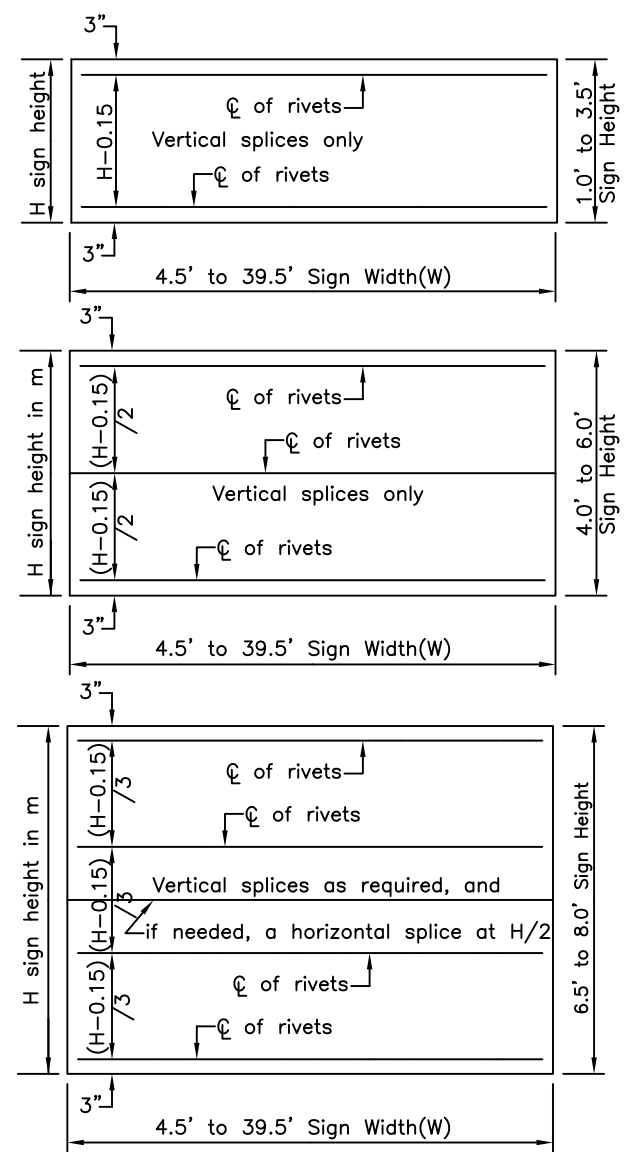
- Install sign support in accordance with the table above, unless otherwise required by plans or specifications.
- Exceptions:
 - Use one post for all E5-1 gore signs, regardless of width.
 - Use one 2.5" P.S.T. for all STOP signs, with or without street name signs.
- Supports placed within 7' of each other must be acceptable for that use. See Standard Drawing S-30 for the sizes of wood posts and P.S.T.s that may be used within 7'. See Manufacturer's documentation for breakaway couplings and tubes that may be used within 7'.
- See Standard Drawing S-31 for frangible couplings, hinges, and foundations for tube and W-shape sign supports.



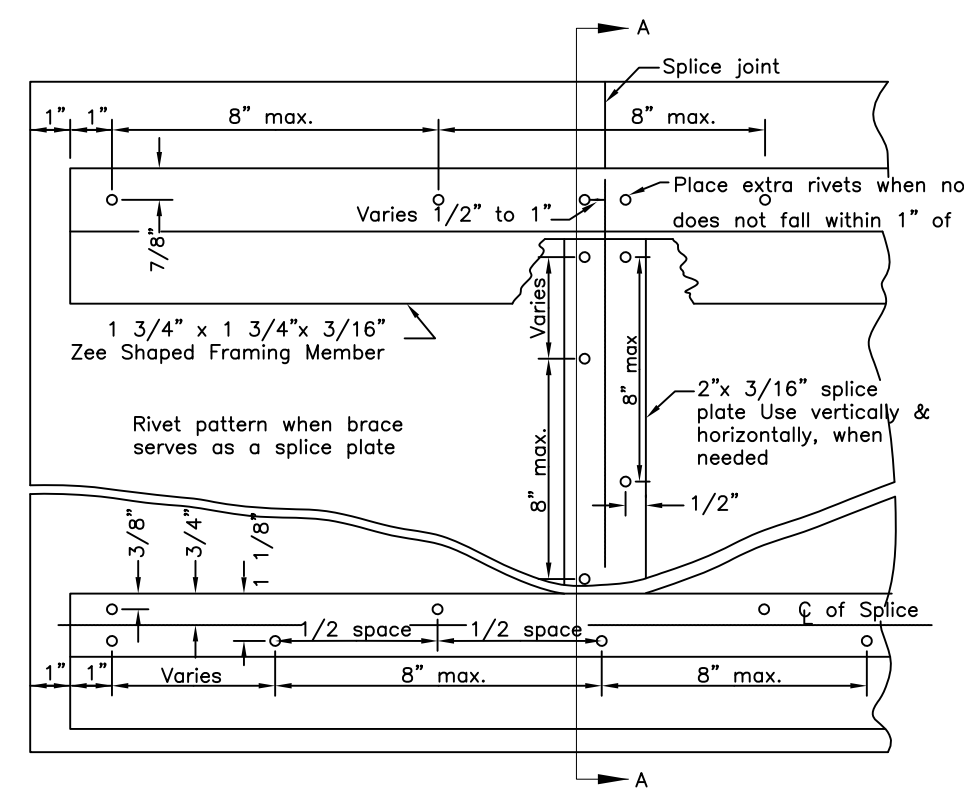
Maximum size unframed signs using 0.125" thick aluminum sheeting.	
Sign Shape	A
Squares, Shields, and Route Markers	48"
Rectangles	48"
Diamonds	48"
Triangles	48"
Rounds and Octagons	48"

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

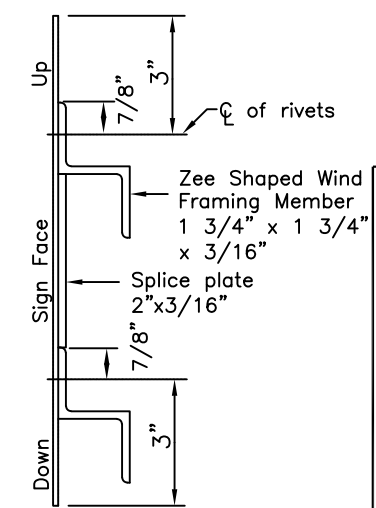
LIGHT SIGNS



WIND FRAMING LOCATIONS



RIVET DETAIL FOR ZEE SHAPED WIND FRAMING & SPLICE PLATE



SECTION A-A

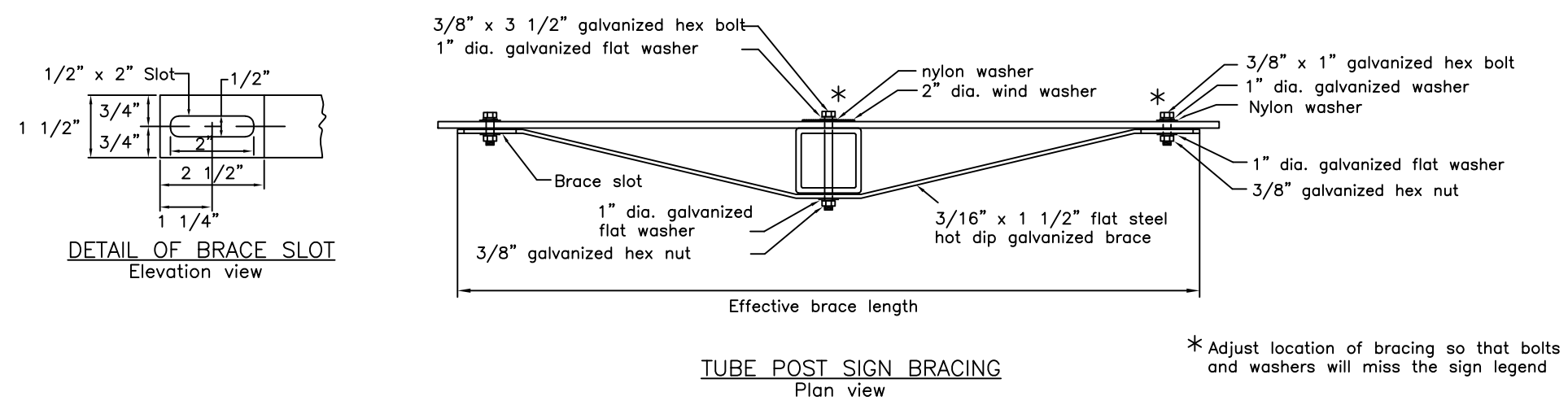
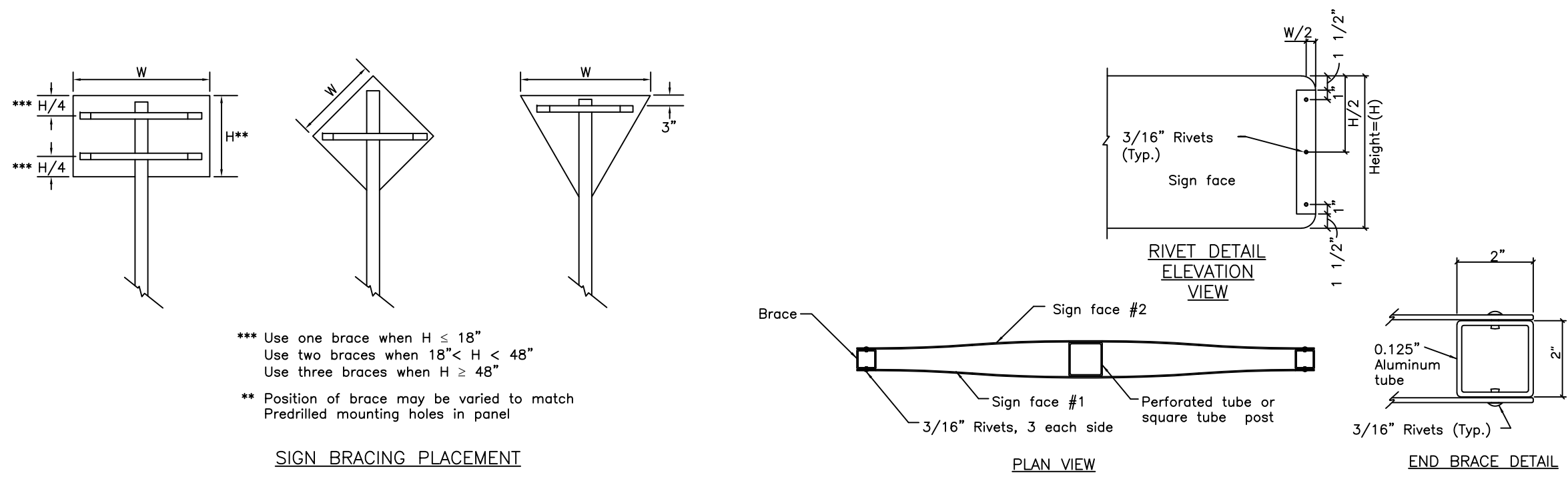
State of Alaska DOT&PF
ALASKA STANDARD PLAN
SIGN FRAMING AND
POST SPACING

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



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

State of Alaska DOT&PF
ALASKA STANDARD PLAN
BRACING FOR SIGNS
MOUNTED ON SINGLE POST

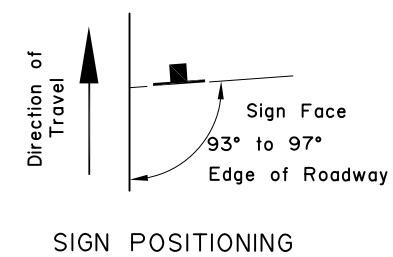
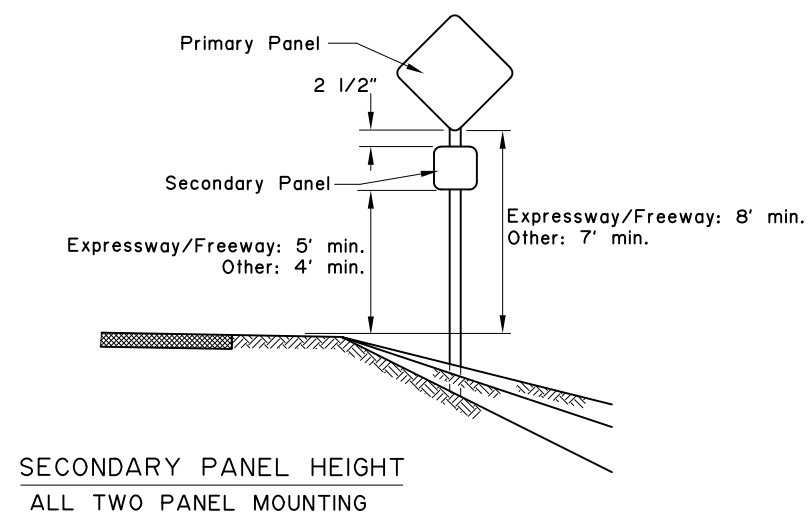
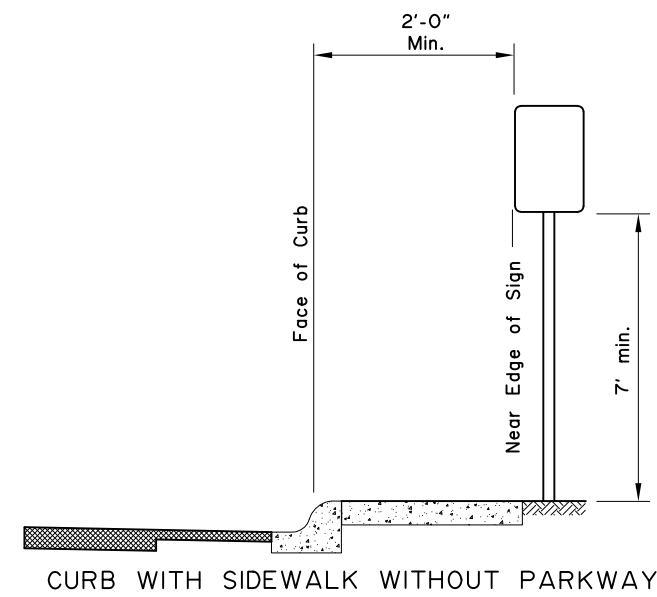
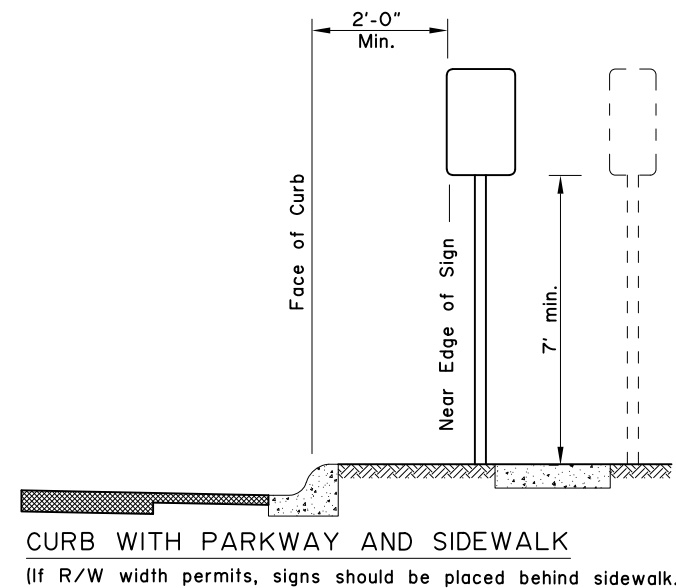
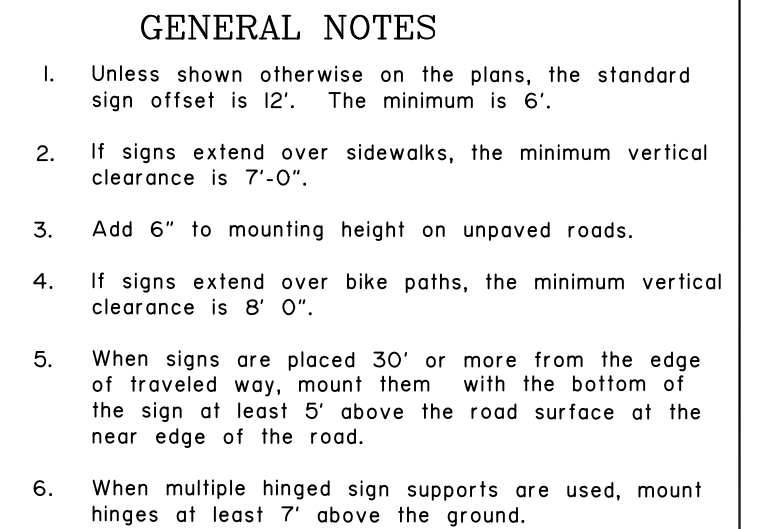
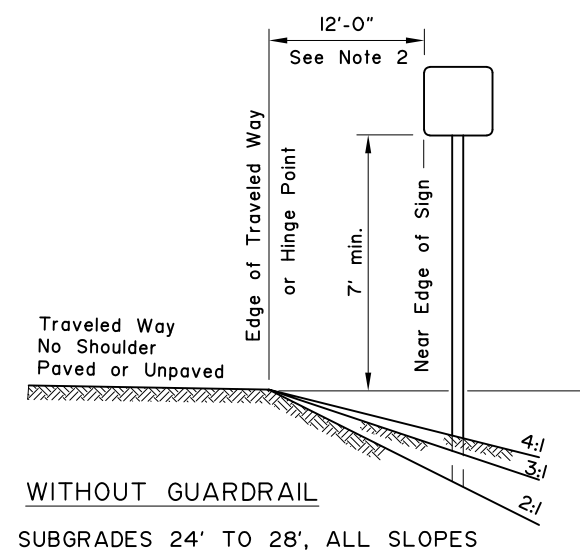
Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher*
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

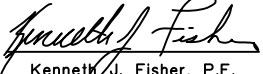
Last Code and Stds. Review
By: Date:
Next Code and Standards Review date: 02/08/2029

DRAWING NOT TO SCALE

S-01.01



State of Alaska DOT&PF
ALASKA STANDARD PLAN
POST MOUNTED SIGN
OFFSET AND HEIGHT

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

Adoption Date: 02/08/2019

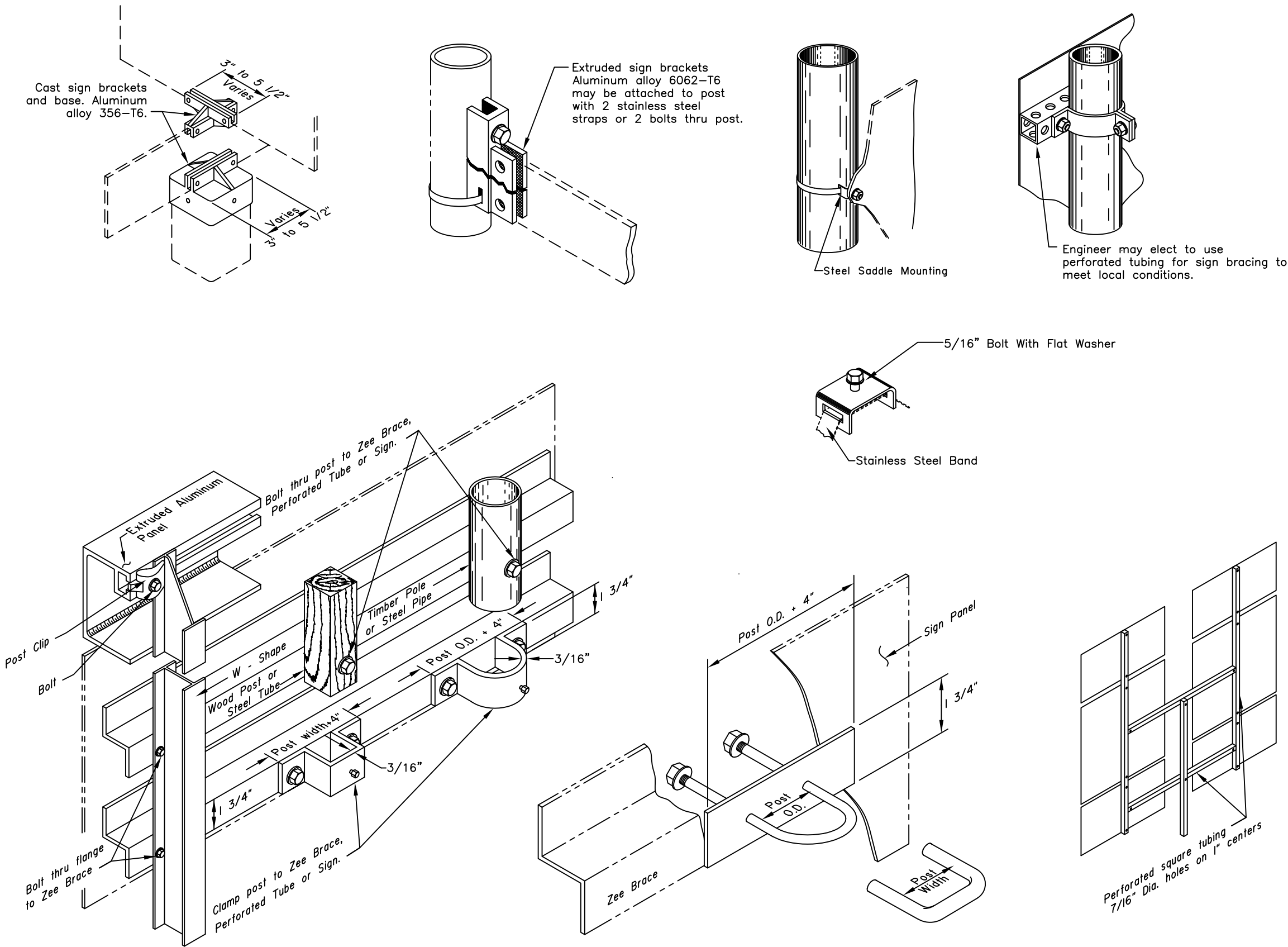
Last Code and Stds. Review
By: _____ Date: _____

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

GENERAL NOTES

1. Details shown indicate general design only. Dimensions and design may vary among the manufacturers.
2. Install weather tight caps on all pipe and tube post (except perforated tubing).
3. Protect sign posts installed using driving methods with drive caps during installation.
4. Bolt braces to posts at each point where they cross posts.
5. Install signs with top of post, mounting brackets, etc. with a minimum of 3" below top of sign.
6. Paint all sign mounting fasteners on sign face a color closely matching the sign face.
7. Attach all signs, zeos and braces mounted to the posts with 5/16" bolts.
8. Furnish all aluminum nuts, bolts and washers with anodized finish.

FASTENER SPECIFICATION TABLE				
FASTENERS		ALUMINUM	STEEL	STAINLESS STEEL
BOLTS	MACHINE CARRIAGE "U"	2024-T4	A-307	A-276
NUTS	REGULAR LOCK	6061-T6 2017-T4	A-307	A-276
WASHERS		2024-T4	A-36	A-276
POST CLIP		356-T6		



State of Alaska DOT&PF
ALASKA STANDARD PLAN
SIGN TO SIGN POST
CONNECTION

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

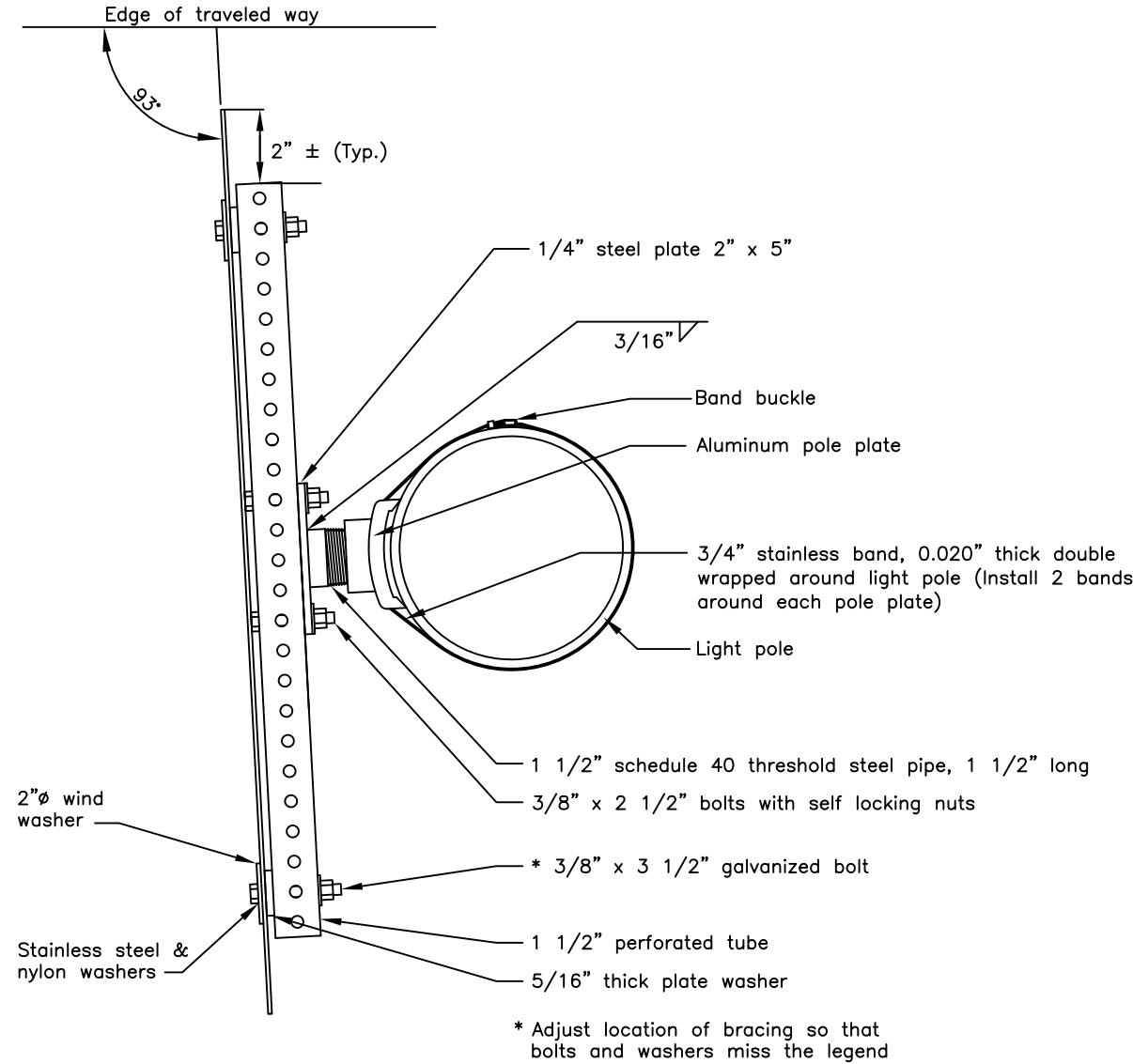
Adoption Date: 02/08/2019

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

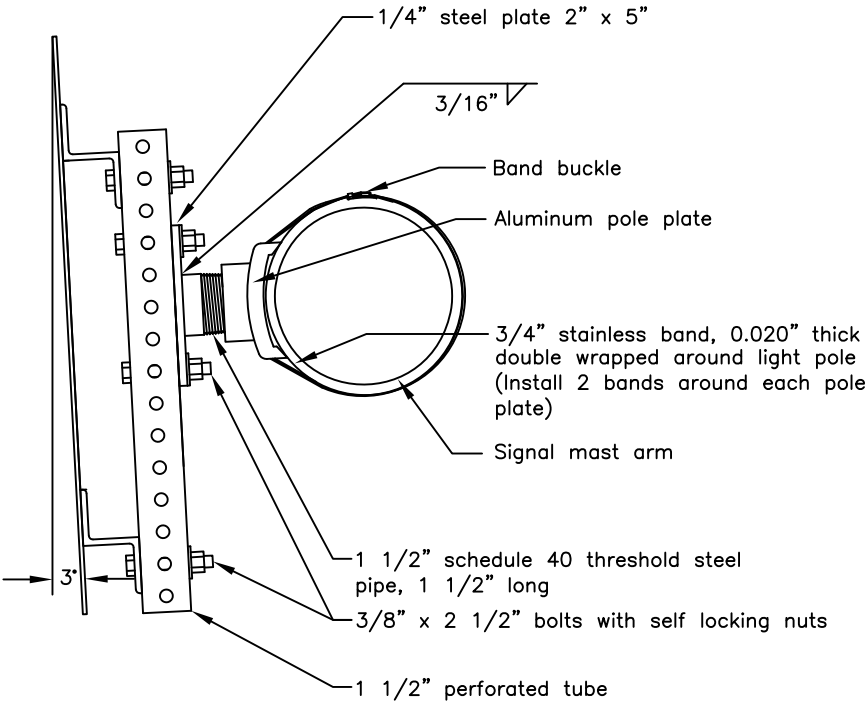
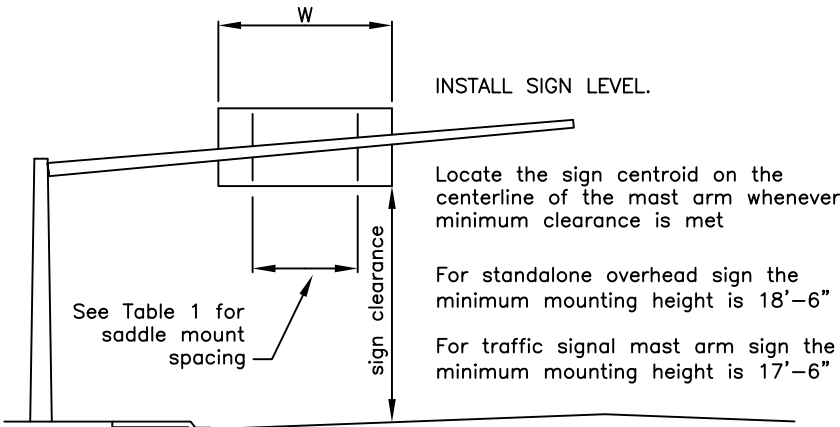
GENERAL NOTES

1. Use pole plate assemblies shown here to install signs on tapered mast arms and light poles. Install one pole plate per 10 square feet of sign panel. Use at least two plates for each installation.
2. Fabricate each pole plate-to-perforated tube adapter (steel plate welded to pipe) using steel plate conforming to ASTM A36 and steel pipe conforming to ASTM A53. Paint these adapters in conformance with section 504 of the Standard Specifications for Highway Construction, latest edition.
3. Paint the assemblies in accordance with AASHTO standard specification M69.
4. Attach each pole plate with two bands of 3/4" wide by 0.020" thick stainless steel banding material. Double wrap each band and tighten it until the band stops moving through the buckle.
5. Install bolts, nuts and washers conforming to ASTM A325.

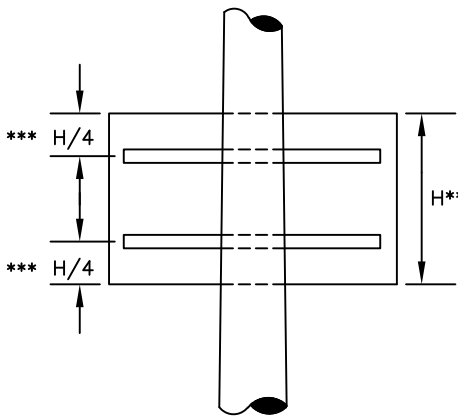
TABLE 1				
POLE PLATE SPACING				
NO. OF POLE PLATES	OVERHANG	BETWEEN POLE PLATES	OVERHANG	
2	0.2W	1 SPACE AT 0.6W	2	0.2W
3	0.15W	SPACES AT 0.35W	3	0.15W
4	0.125W	SPACES AT 0.25W	1	0.125W
5	0.2W	SPACE AT 0.6W		0.2W



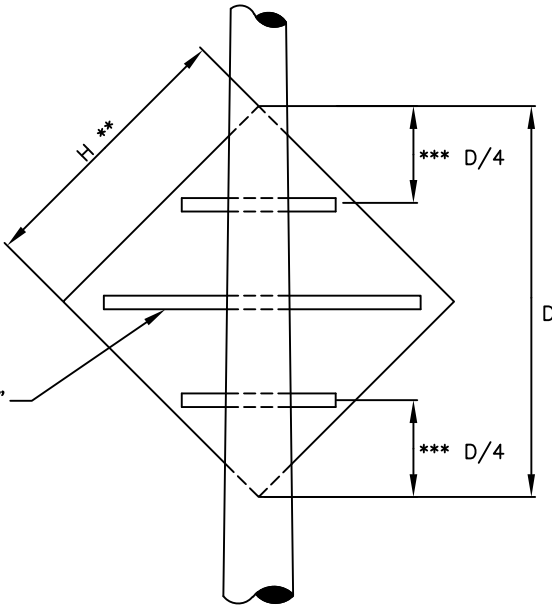
ELECTROLIER SIGN MOUNTING
(PLAN VIEW)



SIGNAL POLE MAST ARM SIGN MOUNTING
(ELEVATION VIEW)



- ** Use two pole plates when $H \leq 48"$
use three pole plates when $H > 48"$
- *** When sign panels features predrilled mountings holes, use them to attach the perforated tubes



State of Alaska DOT&PF
ALASKA STANDARD PLAN
POLE AND MASTARM
SIGN MOUNTING

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

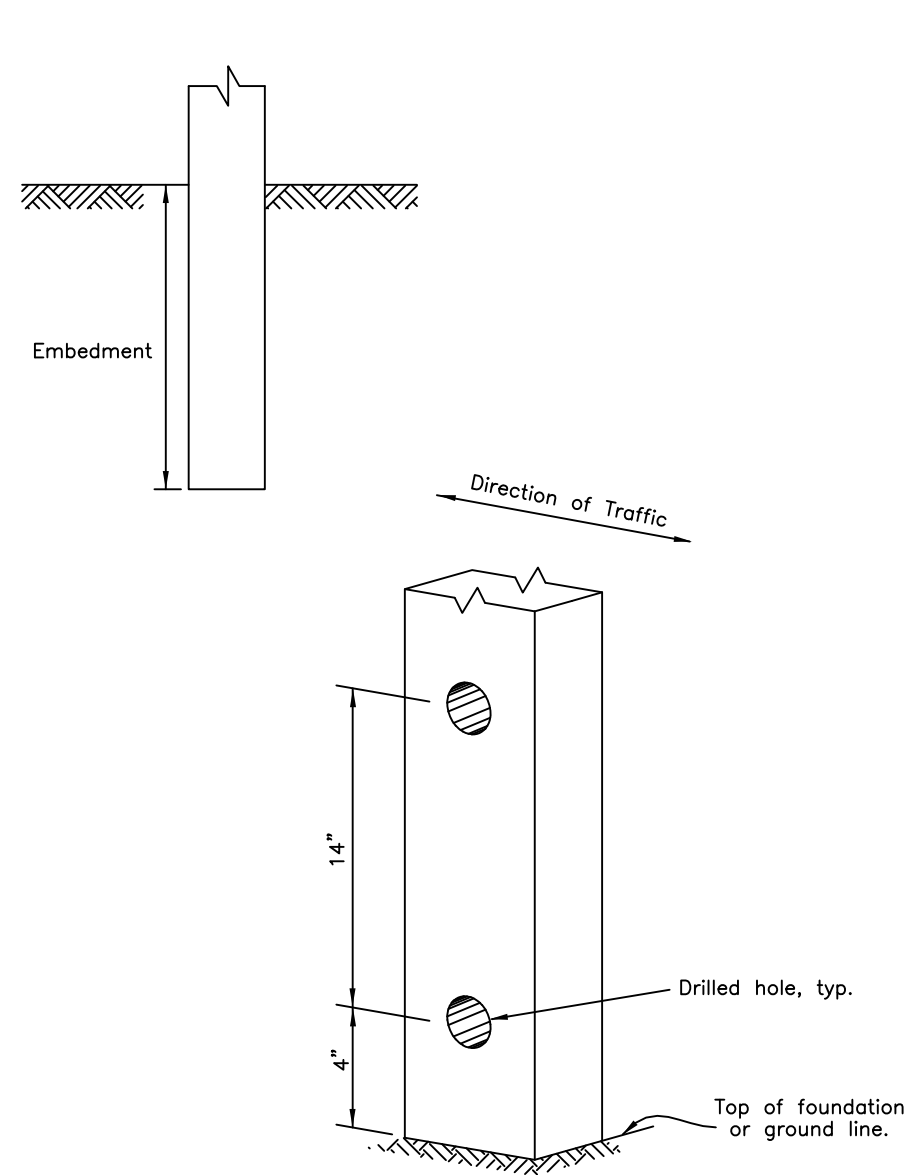
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES:

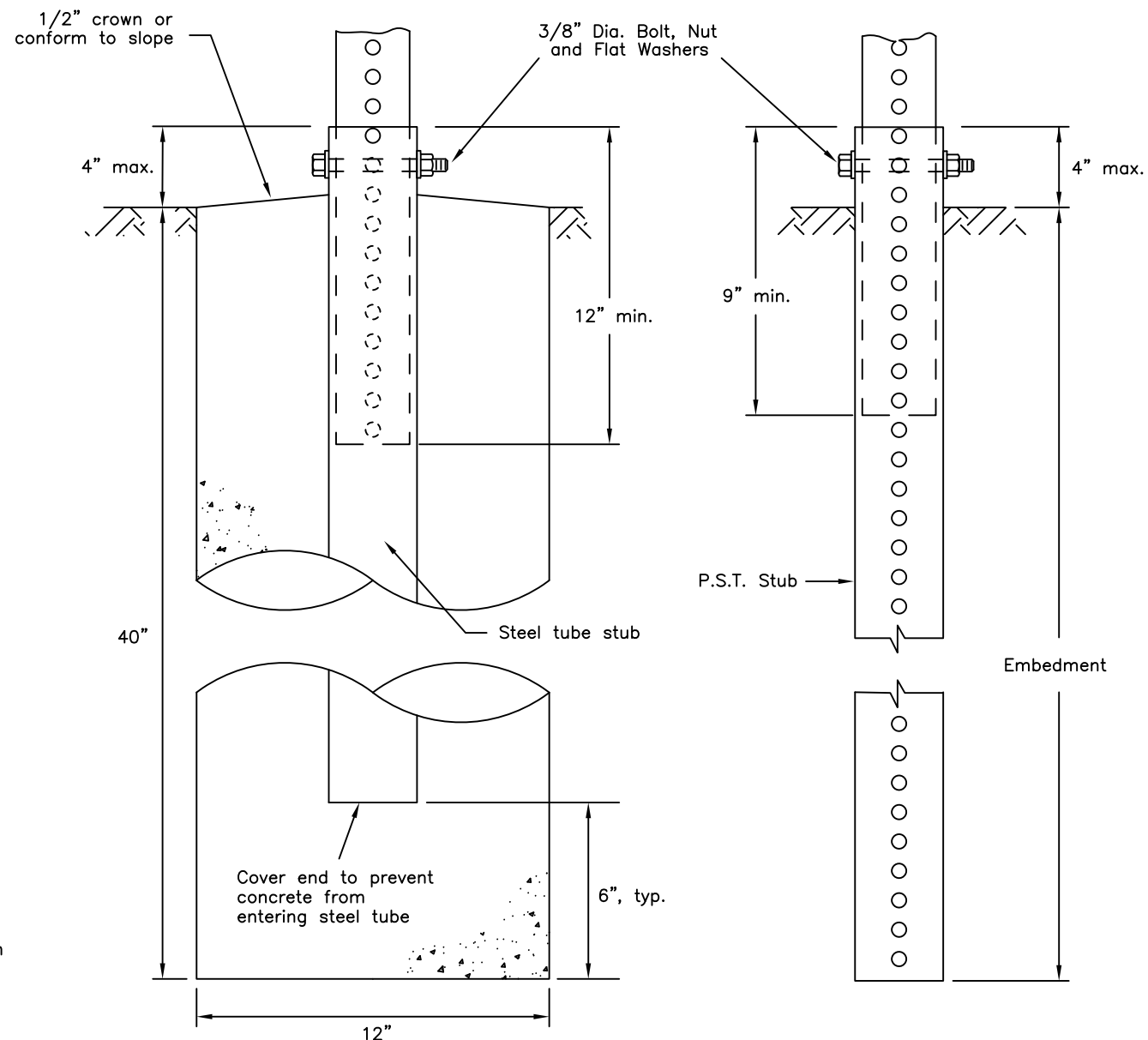
1. Refer to Std Dwg S-00 for sign framing details.
2. See plans for type of post, size and embedment type.
3. To maintain crashworthiness, install no more than the number of P.S.T.s or wood posts specified in the tables within 7' of each other.
4. Do not install wood posts larger than 6"x8".
5. Do not use the supports on this drawing for multiple support signs if supports are separated by more than 7 feet.
6. Treat all field cuts and field drilled holes in wood posts in accordance with Section 730-2.04 of the Standard Specifications.



WOOD SIGN POSTS			
SIZE	HOLE DIA.	EMBEDMENT*	NO. OF POSTS WITHIN 7 Ft. PATH
4"x4"	NONE	36"	2
4"x6"	1 1/2"	36"	2
6"x6"	1 1/2"	40"	1
6"x8"	3"	48"	1

* Embedment depth applies in both strong and weak soil.

WOOD POSTS



SLEEVE TYPE
CONCRETE FOUNDATION

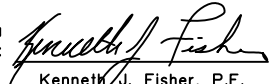
SLEEVE TYPE *
SOIL EMBEDMENT

PERFORATED STEEL TUBES (P.S.T.)		
POST SIZE	Embedment Depth	No. of P.S.T.s permitted within 7 ft path
1 1/2" x 1 1/2"	3'-0"	2
1 3/4" x 1 3/4"	3'-0"	2
2" x 2"	3'-6"	2
2 1/4" x 2 1/4"	4'-0"	1
2 1/2" x 2 1/2"	4'-6"	1

* Use 3"x3"x3/16" Stub for 2 1/2"x2 1/2" PST Applications.

PERFORATED STEEL TUBE (PST) POSTS

State of Alaska DOT&PF
ALASKA STANDARD PLAN
LIGHT SIGN STRUCTURE
POST EMBEDMENT

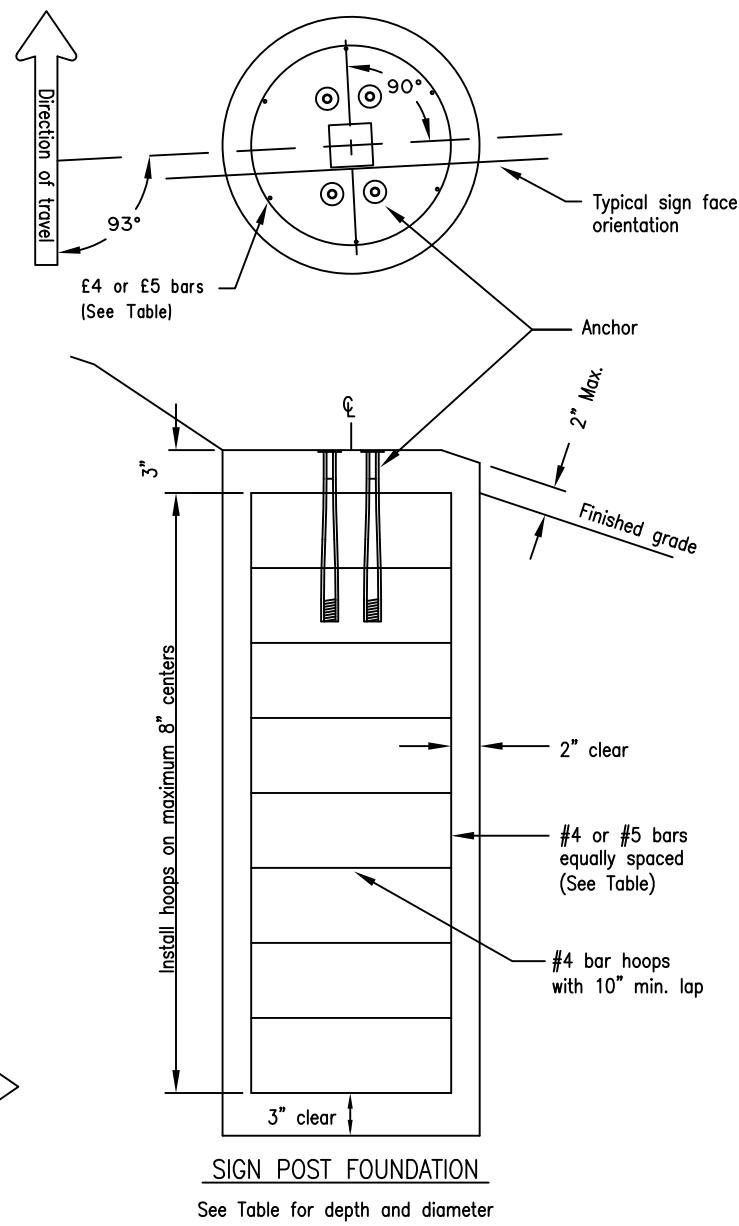
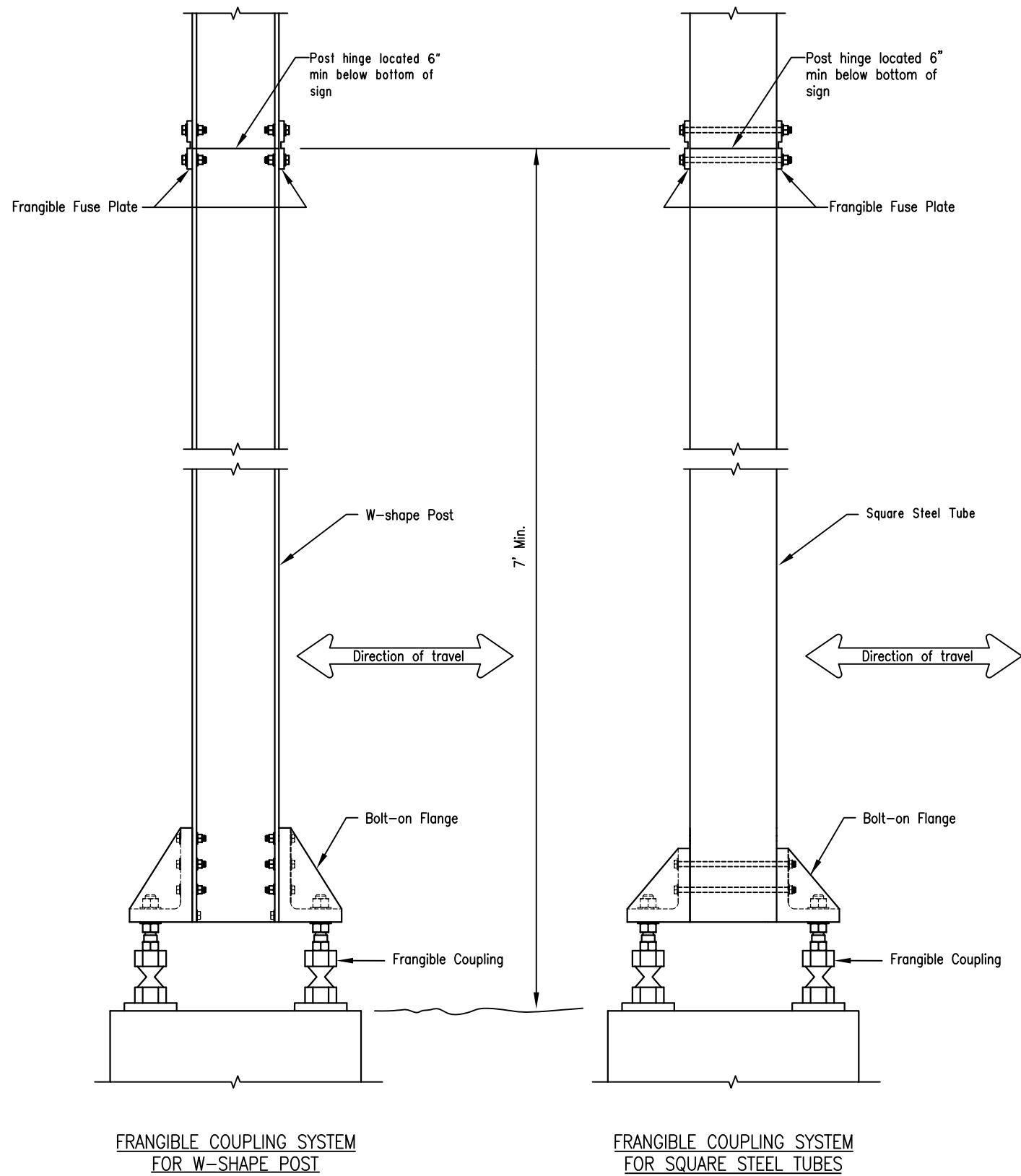
Adopted as an Alaska
Standard Plan by: 
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

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



GENERAL NOTES

- Furnish sign posts with NCHRP 350 or MASH compliant FHWA-approved frangible couplings designed to break away safely when struck from any direction. The frangible couplings shall not have specific installation torque requirements.
- Furnish frangible coupling systems with bolt-on flanges.
- Details on this sheet illustrate only the general components of a frangible coupling system, and are not intended to specify a particular product.
- Install frangible fuse plates as specified by the manufacturer and hinged joints when multiple posts are used to support a sign. Do not use round pipes.
- Install the components of the breakaway system, including hinges, in accordance with the written instructions of the system manufacturer.
- Use Class A concrete conforming to section 501 of the Standard Specifications. Furnish ASTM A615 grade 60 steel bars for concrete reinforcement conforming to AASHTO M31.
- Spiral reinforcing steel may be substituted for hoops in concrete foundation. Spiral option shall consist of #3 plain spiral with 6" pitch with three flat turns at the top and one flat turn at the bottom.
- Install the concrete anchors using a rigid template. Locate the anchors on centers and within tolerances specified by the manufacturer.
- Install the anchors in fresh concrete as recommended by the manufacturer. Adjust the template's final position until it is level. Remove and replace all foundations that need more than 2 shims under any 1 coupling or more than a total of 3 shims under any pair of couplings to plumb the post.
- Drill the holes for attaching brackets before the sign posts are hot dip galvanized. Test fit templates in the holes to ensure the brackets can be installed square to the posts.

POST SIZE & TYPE	FOUNDATION *			REINFORCEMENT				
	DIA.	MIN. DEPTH	CY ³ CONC.	VERTICAL BARS	HOOPS			
2 1/2" TUBE	1'-6"	4'-0"	0.26	6 #4	3'-6"	7 #4	1'-2"	
3" TUBE	1'-6"	4'-0"	0.26	6 #4	3'-6"	7 #4	1'-2"	
3 1/2" TUBE	1'-6"	4'-6"	0.30	6 #4	4'-0"	8 #4	1'-2"	
4" TUBE	2'-6"	4'-0"	0.72	7 #5	3'-6"	7 #4	2'-2"	
4 1/2" TUBE	2'-6"	4'-6"	0.81	7 #5	4'-0"	8 #4	2'-2"	
5" TUBE	2'-6"	5'-6"	1.00	7 #5	5'-0"	9 #4	2'-2"	
W6 x 9	2'-6"	4'-0"	0.95	8 #5	3'-6"	7 #4	2'-2"	
W6 x 12	2'-6"	4'-6"	1.07	8 #5	4'-0"	8 #4	2'-2"	
W6 x 15	3'-0"	6'-6"	1.69	8 #5	6'-0"	11 #4	2'-8"	
W6 x 30	3'-0"	7'-6"	1.95	8 #5	7'-0"	12 #4	2'-8"	

FOUNDATION TABLE

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

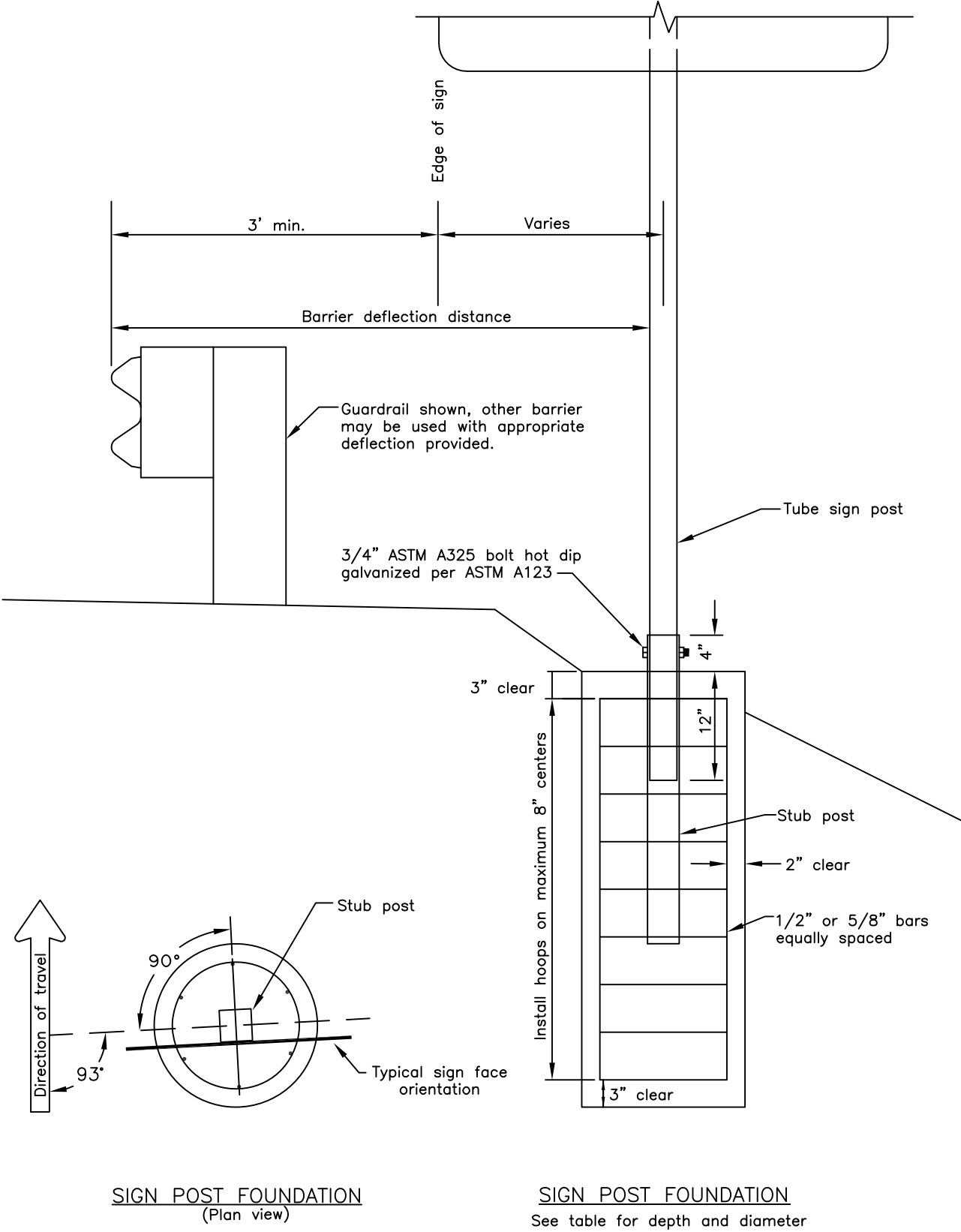
State of Alaska DOT&PF ALASKA STANDARD PLAN SIGN POST BASE AND FOUNDATION

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



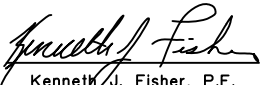
GENERAL NOTES

1. This is a non-crashworthy sign support. It may only be used at locations shielded by a guardrail, barrier, or wall. It may not be used if the sign post is within 20' of the rail and is closer than 75' from the guardrail end post (measured along the rail). For this case use a breakaway sign support. See Standard Drawing G-20.
2. Furnish steel tube sign post and stub post that conform to ASTM A500, grade B, and meet ASTM A123 for hot dip galvanizing.
3. Install tubes and stub post with a 0.1875" wall thickness.
4. For Perforated Tubes use Standard Drawing S-30.
5. Spiral reinforcing steel may be substituted for hoops in concrete foundation. Spiral option shall consist of No. 3 plain spiral with 6" pitch with three flat turns at the top and one flat turn at the bottom.

POST SIZE & TYPE	FOUNDATION *			REINFORCEMENT					STUB POST	
	DIA.	MIN. DEPTH	C.Y. CONC.	VERTICAL BARS		HOOPS			SLEEVE	
				QTY.	SIZE	LGTH.	SIZE	DIA.	SIZE	LGTH.
2 1/2" TUBE	1'-0"	4'-6"	0.13	6	1/2"	4'-0"	1/2"	8"	3"	3'
3" TUBE	1'-6"	4'-0"	0.25	6	1/2"	3'-6"	1/2"	1'-2"	3 1/2"	3'
3 1/2" TUBE	1'-6"	4'-6"	0.27	6	1/2"	4'-0"	1/2"	1'-2"	4"	3'
4" TUBE	2'-6"	4'-0"	0.69	7	5/8"	3'-6"	1/2"	2'-2"	4 1/2"	3'
4 1/2" TUBE	2'-6"	4'-6"	0.78	7	5/8"	4'-0"	1/2"	2'-2"	5"	3'

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

State of Alaska DOT&PF
ALASKA STANDARD PLAN
SIGN POST BASE AND
FOUNDATION BEHIND
BARRIER

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

Adoption Date: 02/08/2019

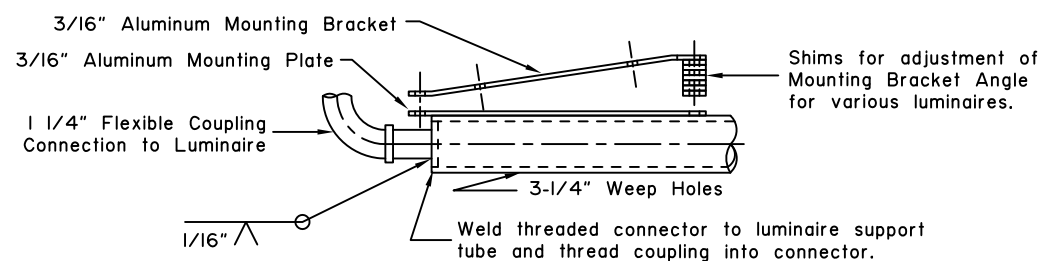
Last Code and Stds. Review
By: Date:
Next Code and Standards Review date: 02/08/2029

l. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers.

2. Luminaires shall use 250 watt color improved mercury vapor lamps.
3. Minimum clearance of luminaire and/or sign from travel way shall be 17'6" except where existing structure is lower, in which case it shall be no lower than the existing structure. Height, location and number of luminaires and/or signs shall be specified on the plans.
4. Structural angles, plates, brackets, bends, clamps and fasteners shall be Aluminum Alloy 6061-T6, High Strength Low Alloy Structural Steel ASTM A242, or Steel ASTM A36. Bolts, nuts and washers shall be Aluminum Alloy 2024-T4 or High Strength Steel ASTM A325.
5. All angles, plates, tubing, brackets and fasteners requiring fabrication, welding, bending or riveting shall be shop fabricated to AASHTO Specifications with ASCE Specifications for Design and Construction of Structural Supports for Highway Signs by AASHTO.
6. Assemblies of aluminum in contact with dissimilar metals to be avoided where possible. Aluminum placed in contact with dissimilar metal shall be painted to ASCE Specification 6061 Part II, Section I-6. All ferrous metals shall be galvanized in accordance with ASTM A123 and ASTM A153. Painting of metal surfaces shall conform to Section 708 of the State of Alaska, Standard Specifications for Highway Construction, latest edition.



All connections shall be
of water tight construction.



MOUNTING PLATE AND BRACKET DETAILS



OVERHEAD SIGN MOUNTING

Adopted as an Alaska
Standard Plan by:

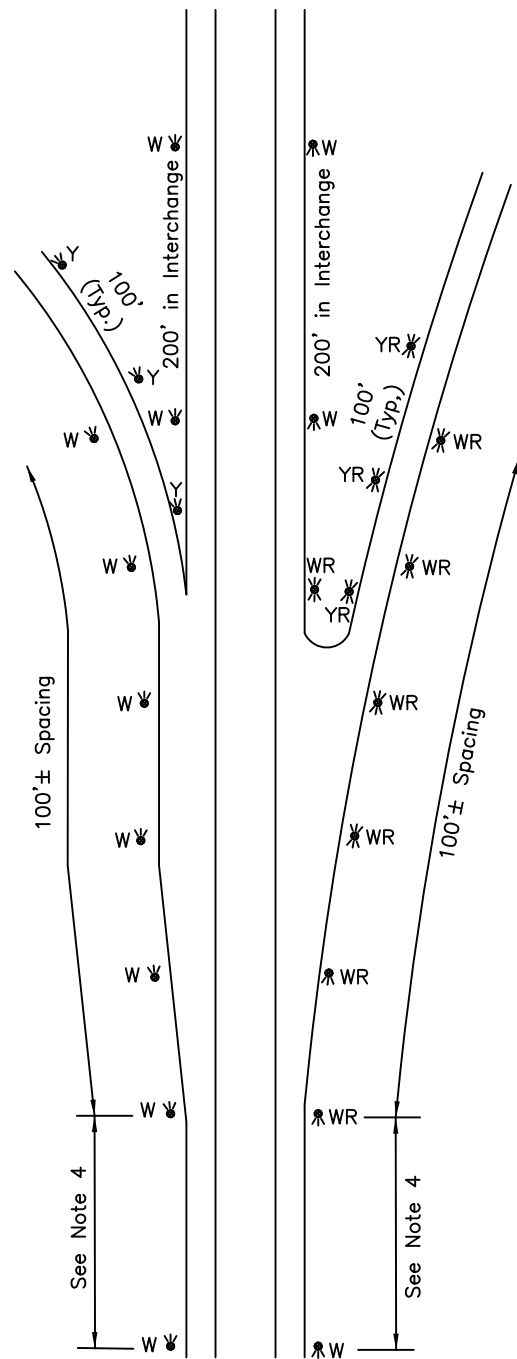
Adoption Date: 02/08/2019

Last Code and Stds. Review By: Date:

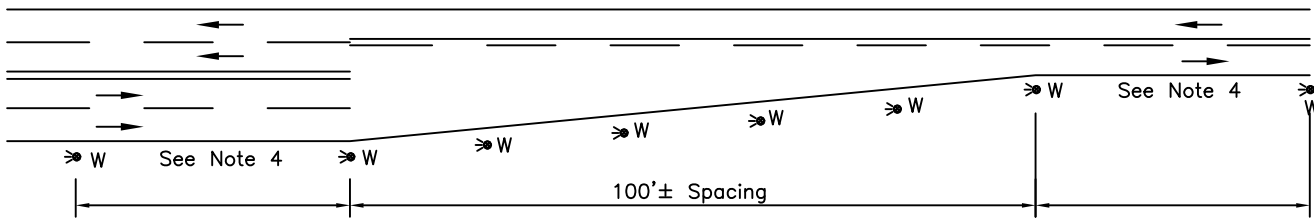
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES

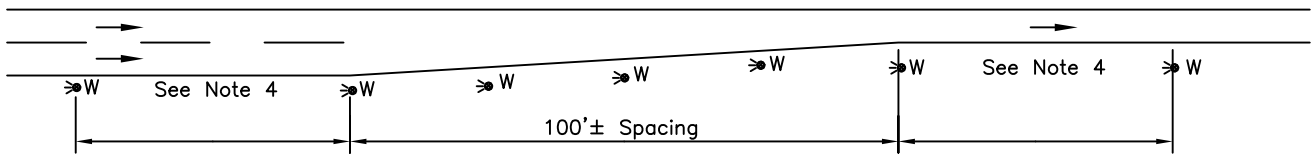
- Maximum spacing on tapers, speed change lanes, pavement transitions, and ramps should be 100'±.
- On roads with continuous delineation, adjust existing guide marker locations to tie into these configurations.
- Marker spacing in table has been rounded for ease of calculation and field layout.
- Spacing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



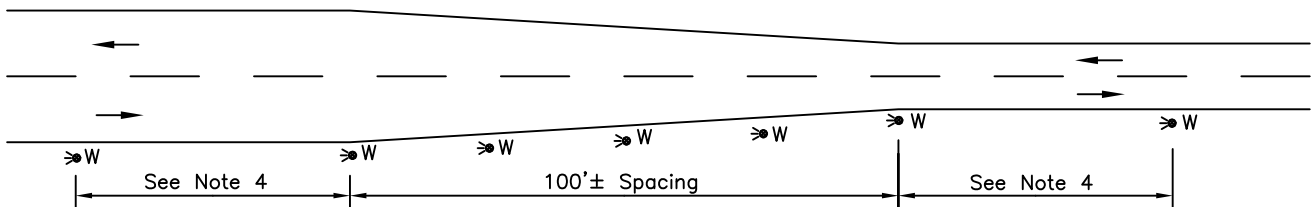
FREEWAY RAMPS



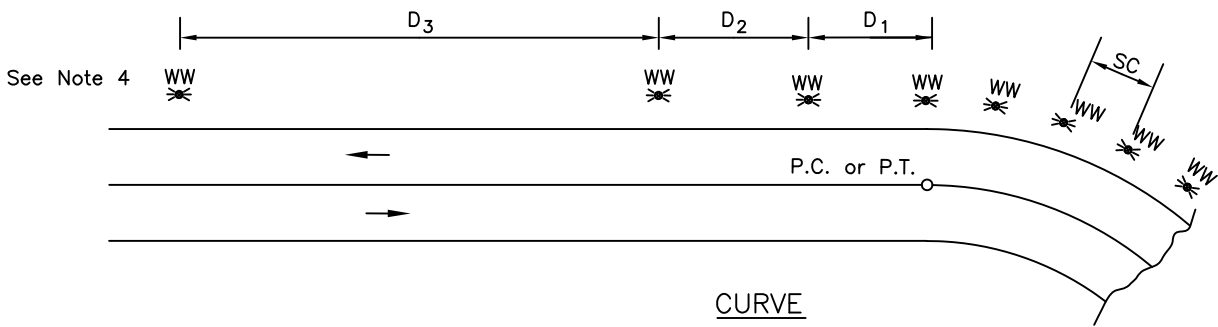
TWO WAY ROAD – LANE REDUCTION
CONDITION



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



TWO WAY ROAD – NARROWING CONDITION



CURVE

SPACING ON CURVES				
RADIUS FT	SPACING ON CURVE	SPACING IN ADVANCE AND BEYOND CURVE		
		FIRST	SECOND	THIRD
R	SC	D ₁	D ₂	D ₃
1,000'	90'	160'	270'	300'
900'	85'	155'	250'	300'
800'	80'	145'	240'	300'
700'	75'	135'	225'	300'
600'	70'	125'	210'	300'
500'	65'	115'	195'	300'
400'	55'	100'	165'	300'
300'	50'	90'	150'	300'
250'	40'	70'	120'	240'
180'	35'	65'	105'	210'
115'	25'	55'	90'	180'
50'	20'	35'	60'	120'

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

State of Alaska DOT&PF
ALASKA STANDARD PLAN

GUIDE MARKER PLACEMENT

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

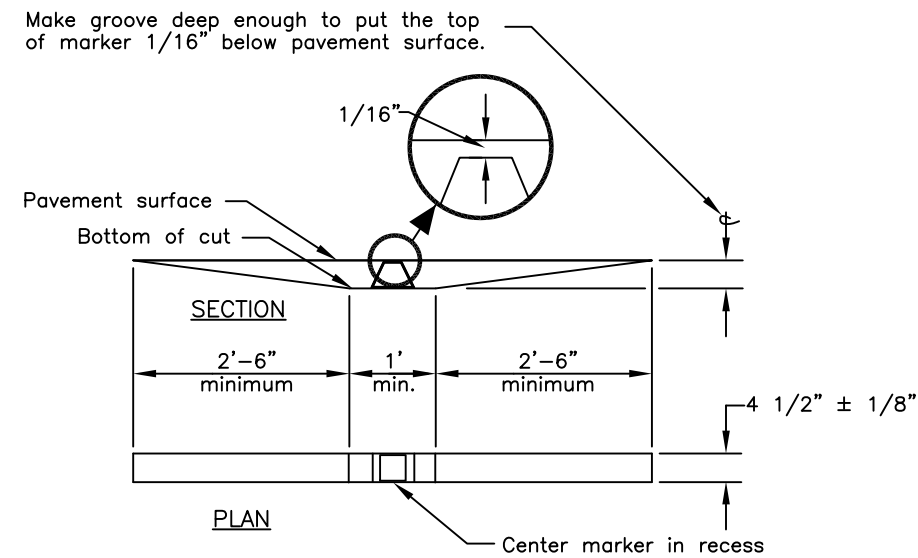
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

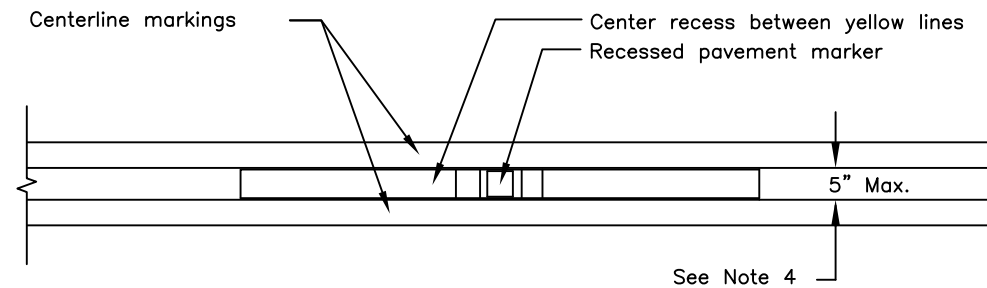
Next Code and Standards Review date:02/08/2029

GENERAL NOTES

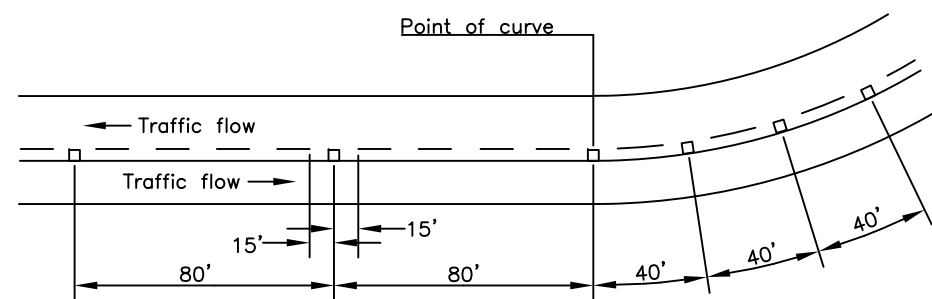
1. Install recessed pavement markers spaced at 80' on tangent sections of roadway and on curves with a radius greater than 1,600'.
2. Install recessed pavement markers spaced at 40' on curves with a radius 1,600' or less.
3. Install recessed pavement markers between the lines on sections with double lines (either broken or solid.)
4. Increase the distance between yellow painted lines from the standard 3" up to a maximum of 5" to minimize paint overspray onto the marker.
5. Install recessed pavement markers on the centerline of the line, midpoint between stripe segments on sections with single broken lines.
6. Install reflectors of the same color as the pavement markings they supplement, except when red reflectors are specified on the departure side of markers on one-way roads to warn motorists they are going the wrong way.
7. Unless otherwise specified on one-way roads, reflectors are required only on the approaching traffic side of markers. In these cases, the 2'-6" taper may be omitted on the departure side.



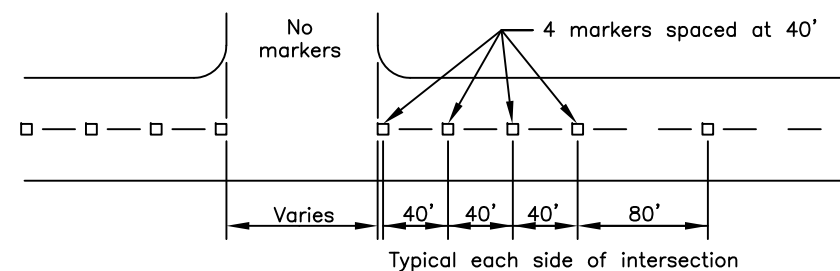
RECESSED PAVEMENT MARKER SLOT



RECESSED PAVEMENT MARKERS WITH DOUBLE CENTERLINE INSTALLATION



RECESSED PAVEMENT MARKERS ON CURVES WITH A RADIUS LESS THAN 1,600'



RECESSED PAVEMENT MARKERS AT INTERSECTION APPROACHES

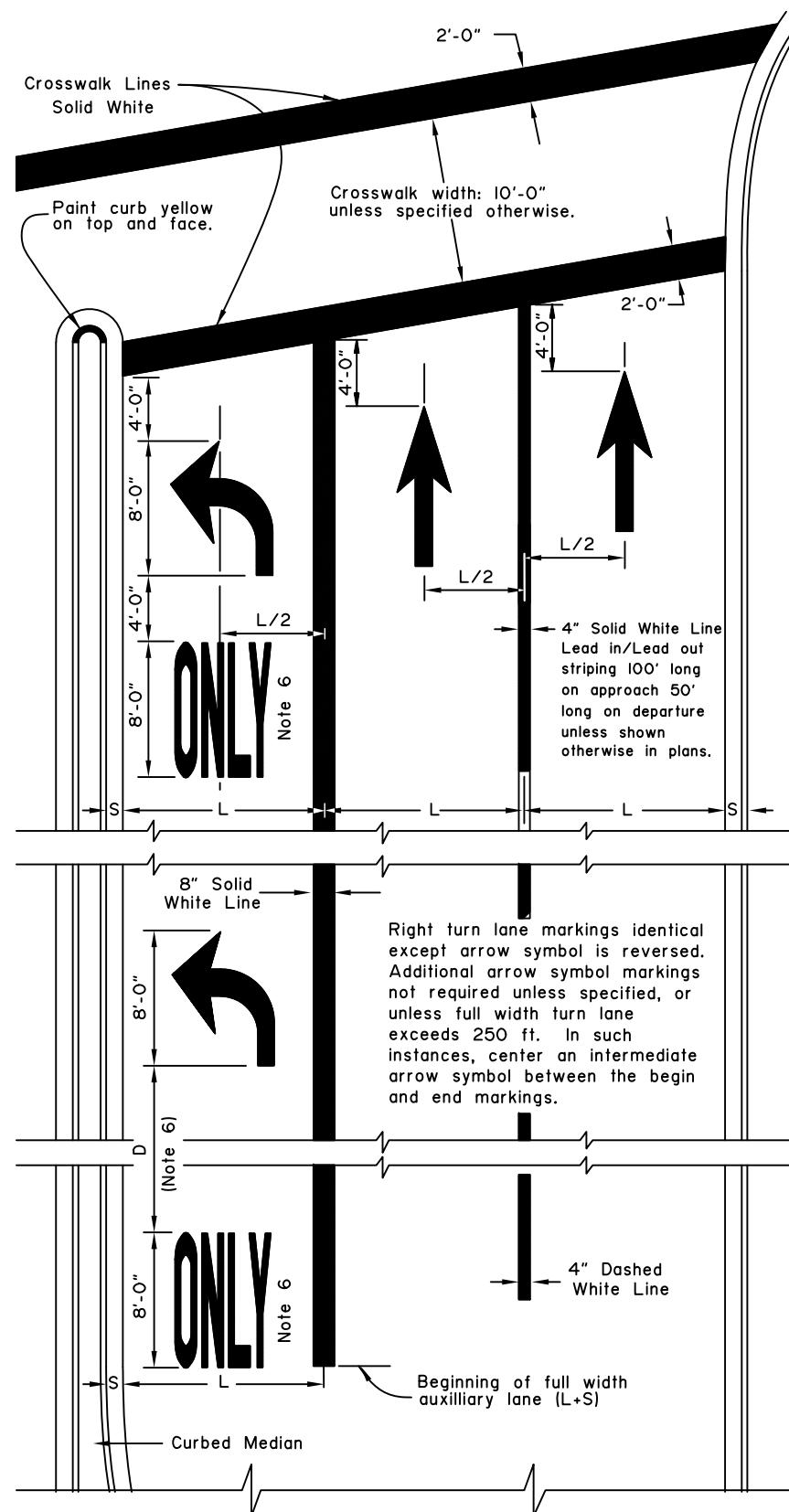
State of Alaska DOT&PF
ALASKA STANDARD PLAN
RECESSED PAVEMENT
MARKERS

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

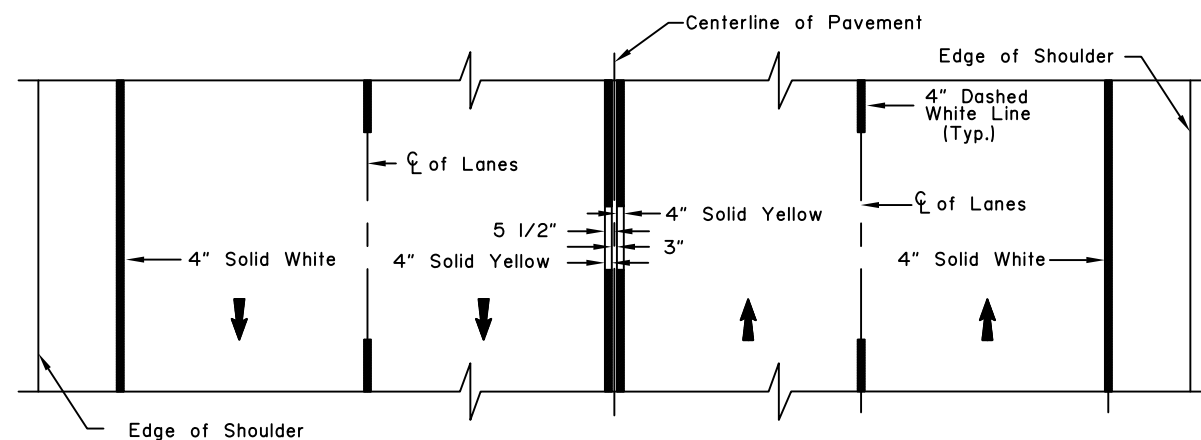
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: _____ Date: _____

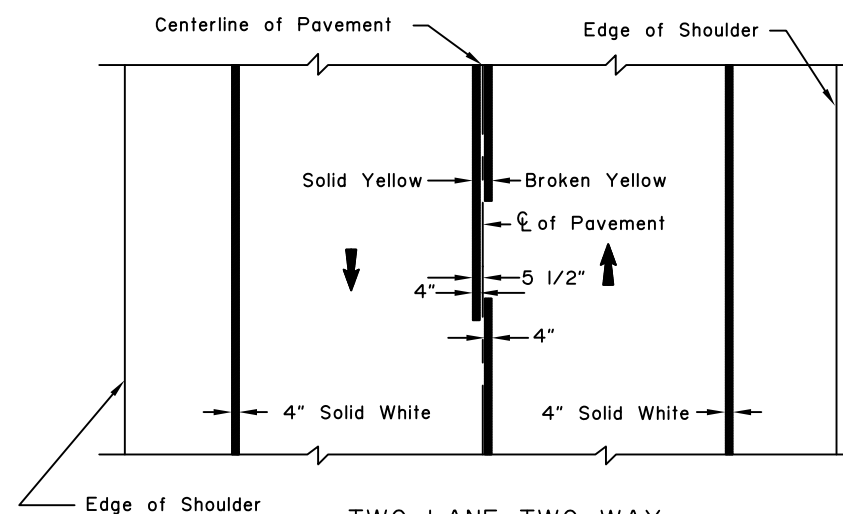
Next Code and Standards Review date:02/08/2029



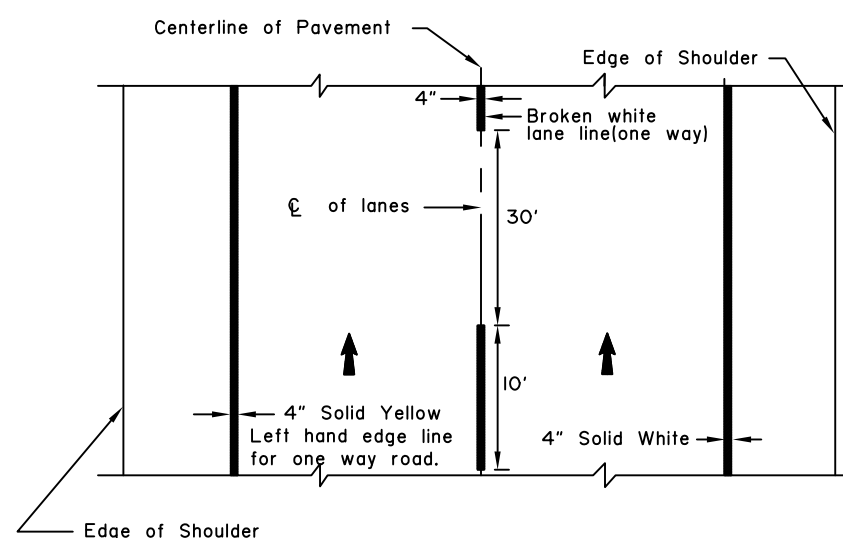
APPROACH TO INTERSECTION



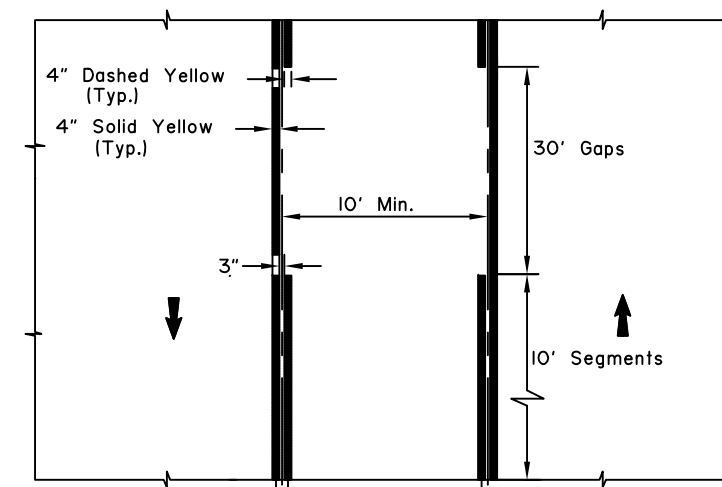
FOUR LANE TWO WAY



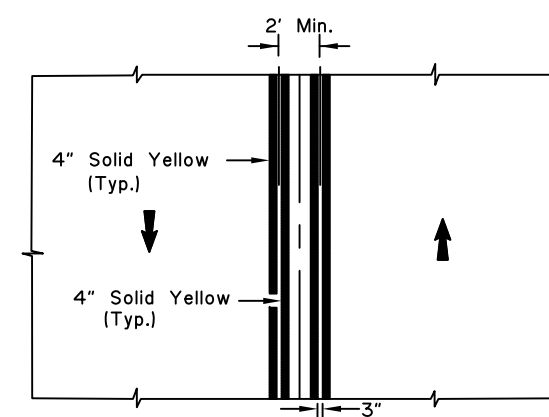
TWO LANE TWO WAY



TWO LANE ONE WAY



TWO-WAY LEFT TURN LANE



STRIPED MEDIAN

SPEED	D
25 or less	3
30	4
35	5
40	6
45	6
50	7
55 or more	8

GENERAL NOTES:

1. All markings white unless indicated otherwise.
2. Lengths of stripe and gap for lane and center lines identical.
3. Lane lines for auxiliary lanes are unbroken solid lines.
4. "L" = driving lane width.
5. "S" = shy distance as shown on plans, otherwise 1 to 2 feet.
6. ONLY markings are required where through lanes change to turn lanes. In other cases, apply ONLY markings as indicated on plans.
7. See ALASKA TRAFFIC MANUAL for additional instruction on the use of TRAFFIC CONTROL DEVICES.
8. 6. Adjust distance D between ONLY and Turn Arrow based on SPEED vs. D table.

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.
Chief Engineer

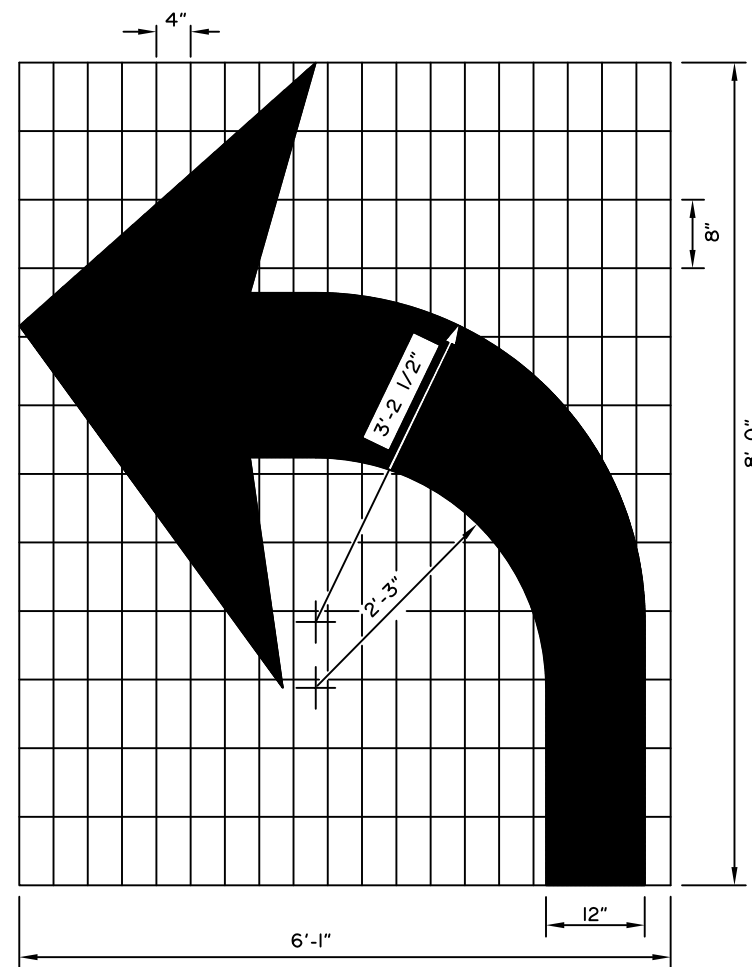
Adoption Date: 02/08/2019

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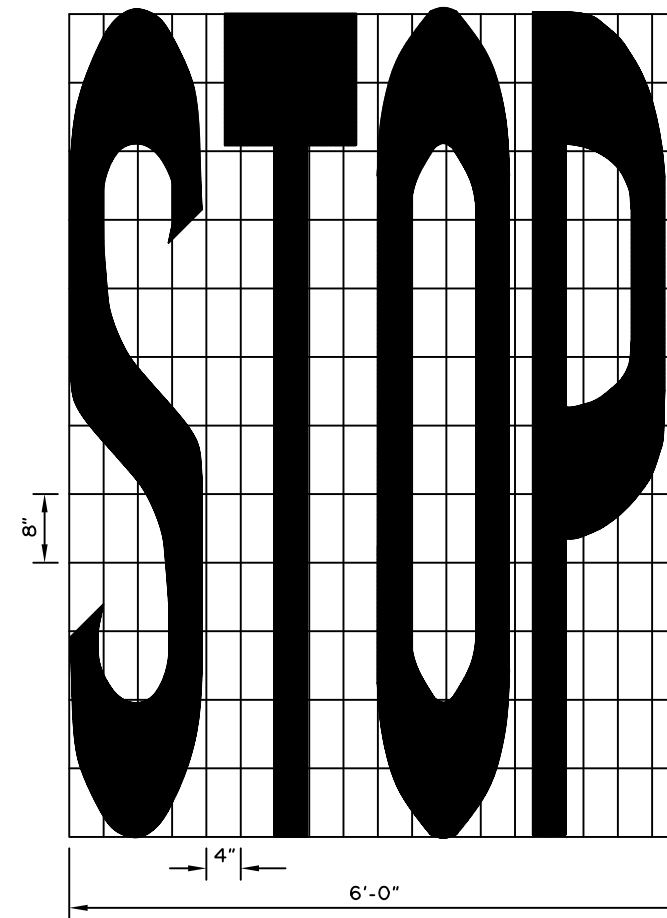
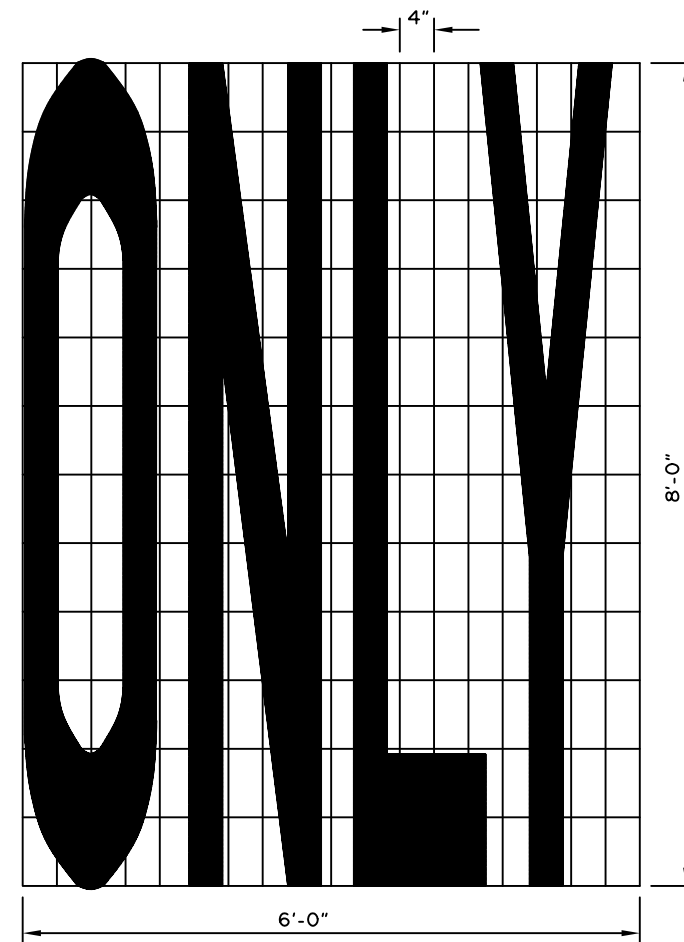
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES:

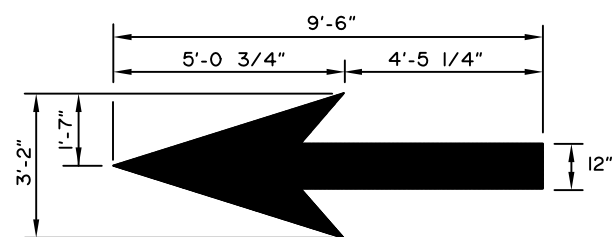
1. All symbols shown shall be white and reflectorized in accordance with the Special Provisions.
2. See the Alaska Sign Design Specifications (ASDS) for lettering and symbols for pavement marking details not provided on this drawing.



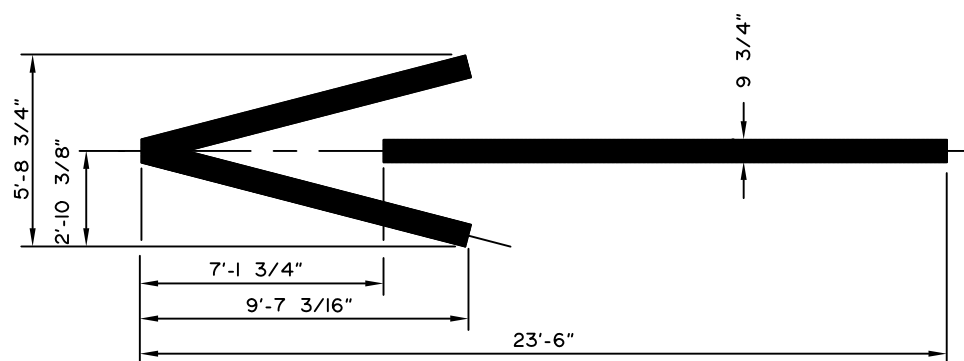
Right turn auxiliary lane usage markings identical except arrow symbol is reversed.



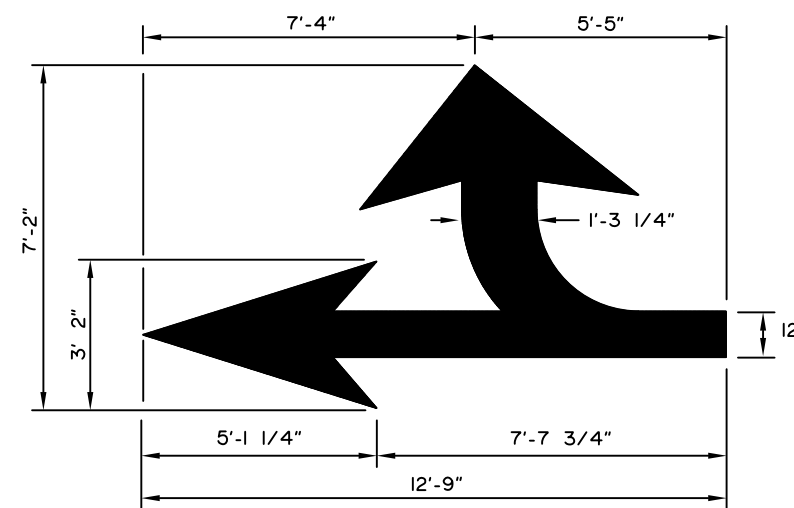
LAYOUT TEMPLATES FOR STENCILS



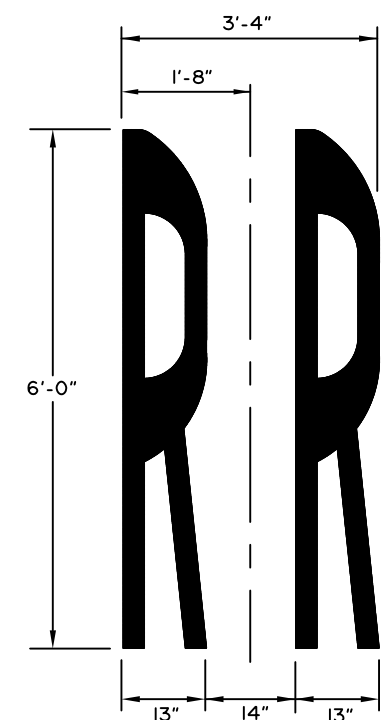
STRAIGHT AHEAD ARROW



WRONG WAY ARROW



COMBINATION ARROW



RAILROAD SYMBOL

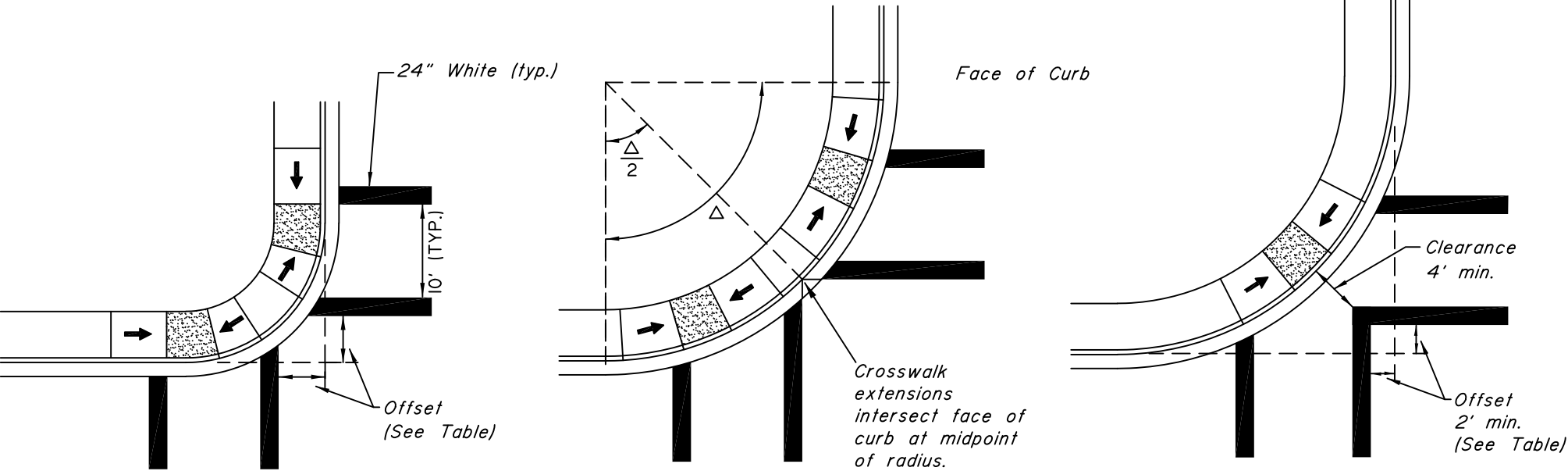
State of Alaska DOT&PF
ALASKA STANDARD PLAN
PAVEMENT MARKING
SYMBOL DIMENSIONS

Adopted as an Alaska
Standard Plan by: *Kenneth J. Fisher*
Kenneth J. Fisher, P.E.
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CASE 1
Dual Curb Ramps
Radius $\leq 25'$

CASE 2
Dual Curb Ramps
 $25' < \text{Radius} \leq 50'$

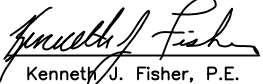
CASE 3
Single Central Curb Ramp
 $25' \leq \text{Radius} \leq 50'$
(Not Recommended)

CASE 1	
Crosswalk Offset From Face of Curb	
Radius (ft.)	Offset (ft.)
5	5
10	6
15	7
20	8
25	9

CASE 3	
Crosswalk Offset From Face of Curb	
Radius (ft)	Offset (ft)
25	2
30	3
35	5
40	6
45	8
50	9

- NOTES.
- The crosswalk locations shown assume a 90-degree intersection - adjust as necessary on skewed intersections to ensure that crosswalk landings (for parallel curb ramps) or ramp runs (for perpendicular curb ramps) fall within the inner edges of crosswalk stripes. If Case 3 (not recommended) is used, the layout should also be adjusted to provide at least the minimum clearance while maximizing the offset.
 - Although border crosswalks are shown, these details apply to ladder crosswalks also. When used, the outside of 10' wide ladder crosswalks should coincide with the inside of border crosswalks as shown here.
 - Border crosswalks should be used at traffic signals or on approaches controlled by stop signs. At other locations, ladder crosswalks should be used.
 - If only one crosswalk connects with a curb radius, it should be located as if there were two connecting crosswalks.
 - These details apply to parallel (shown) as well as perpendicular curb ramps.
 - Case 3, the layout for a single central curb ramp, should be used only when installing two ramps is not feasible. It should not be used for radii under 25 feet. See plans for ramp layout at particular locations.
 - Radius is measured to the face of curb.

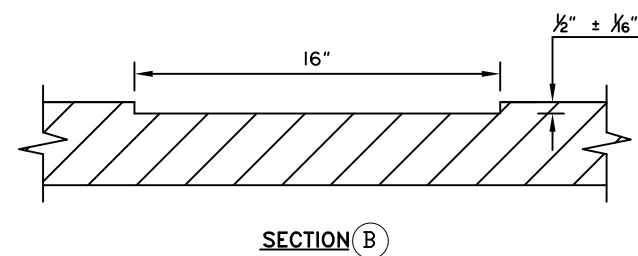
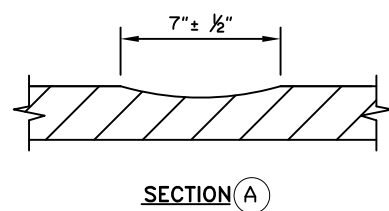
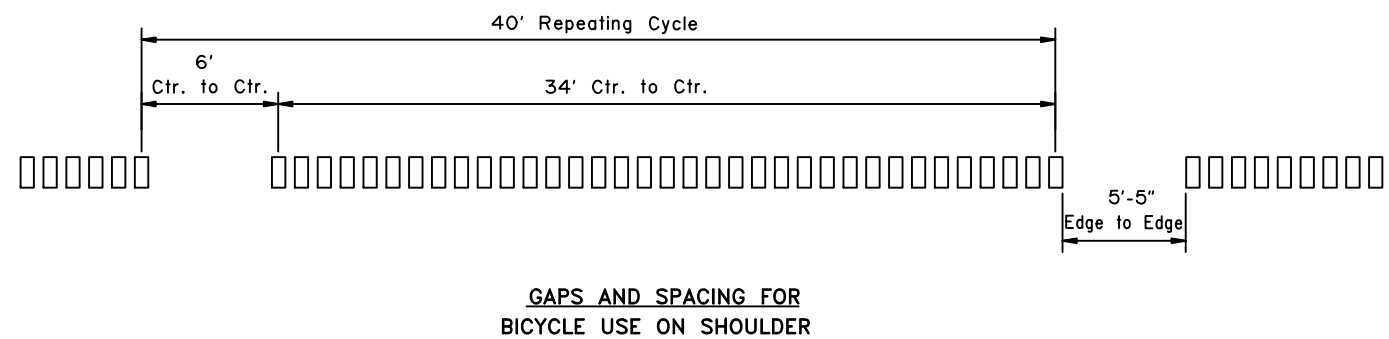
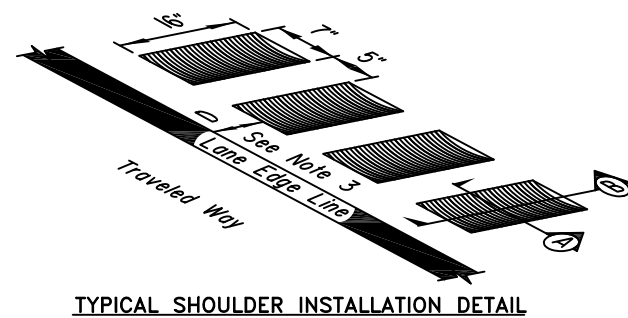
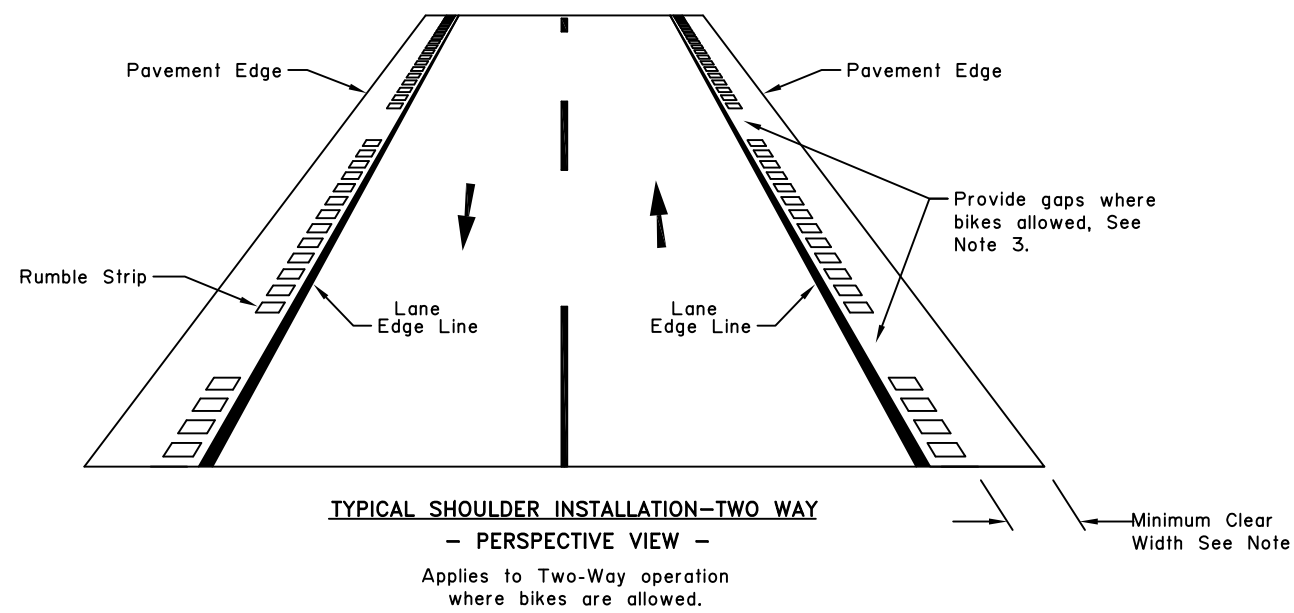
State of Alaska DOT&PF
ALASKA STANDARD PLAN
CROSSWALK LOCATION
AT INTERSECTIONS

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

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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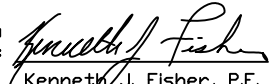


Notes:

1. Use centerline or lane dividing lines, rather than lane edge lines, for rumble strip alignment control whenever possible.
2. The Offset Distance, D, Shall be:
2" for 6' or narrower shoulders
6" for wider than 6' shoulders
3. Where bicycles are allowed on the facility, gaps should be continuous.
4. On divided highways, provide a continuous rumble strip on the inside (left) shoulder.
5. Minimum required clear widths are as follows:
 - a. At least 4' where no guardrail is present
 - b. At least 5' (to the face of guardrail) where guardrail is present.
 - c. No minimum where bicycles are prohibited.
6. Do not install rumble strips in the following instances:
 - a. Bridge decks
 - b. Bridge approach slabs
 - c. Pavement less than 2" thick
 - d. Pavement that has alligating, fatigue cracking, or in poor condition.
 - e. Pavement joints
 - f. Into lane edge line striping.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

MILLED RUMBLE STRIPS

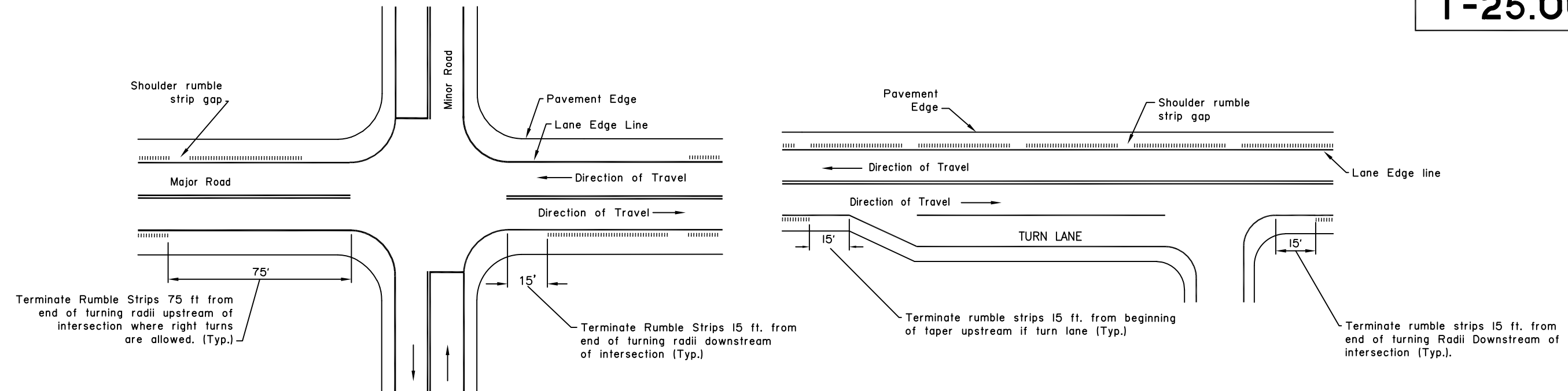
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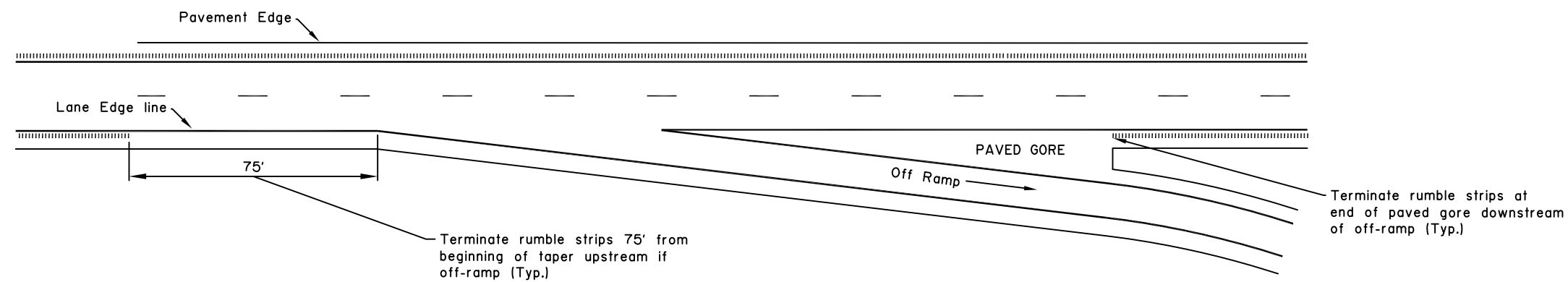
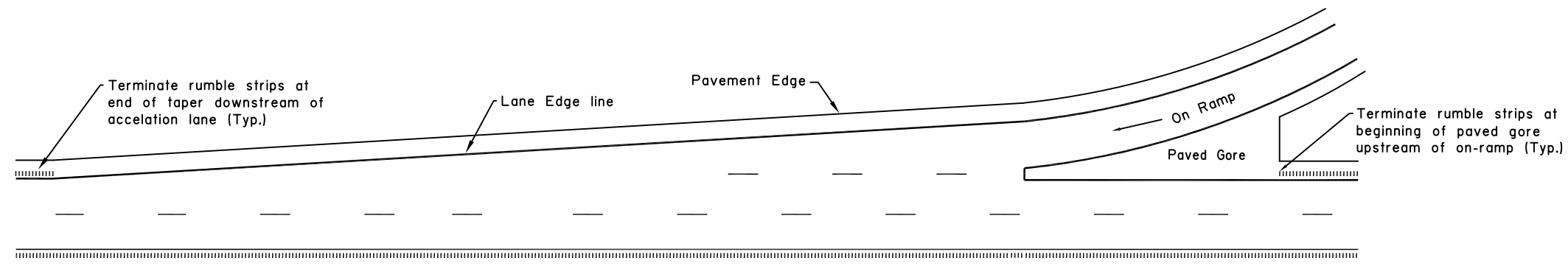
Next Code and Standards Review date: 02/08/2029

NOT TO SCALE



RUMBLE STRIP LAYOUT AT INTERSECTIONS
APPLIES TO ALL INTERSECTIONS, PUBLIC TURNOUTS, APPROACHES, AND GANG MAILBOX TURNOUTS
(WHERE BIKES ALLOWED)

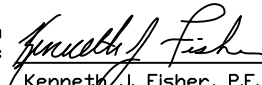
RUMBLE STRIP LAYOUT AT TURN LANES
(WHERE BIKES ALLOWED)



RUMBLE STRIP LAYOUT AT ON AND OFF RAMP ON FREEWAYS
NOTE: THIS DRAWING APPLIES TO BOTH PARALLEL AND TAPERED LANES
(WHERE BIKES PROHIBITED)

State of Alaska DOT&PF
ALASKA STANDARD PLAN

MILLED RUMBLE STRIPS

Adopted as an Alaska
Standard Plan by: 
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Chief Engineer

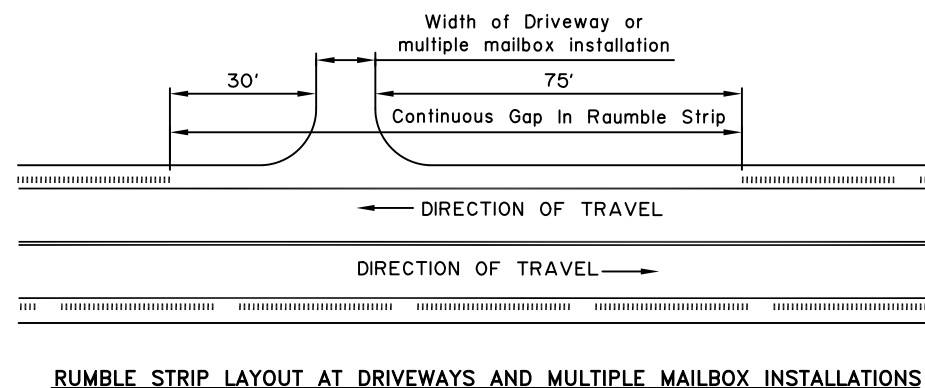
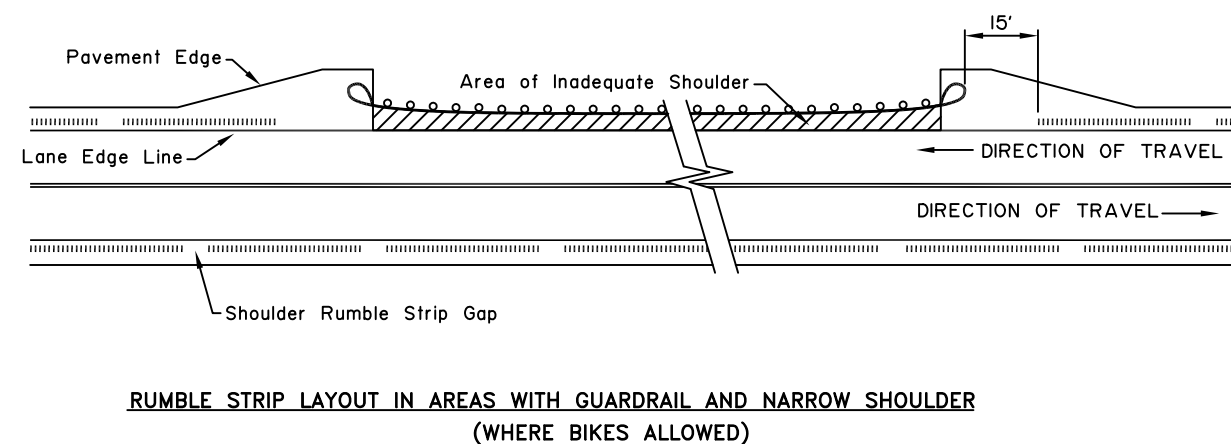
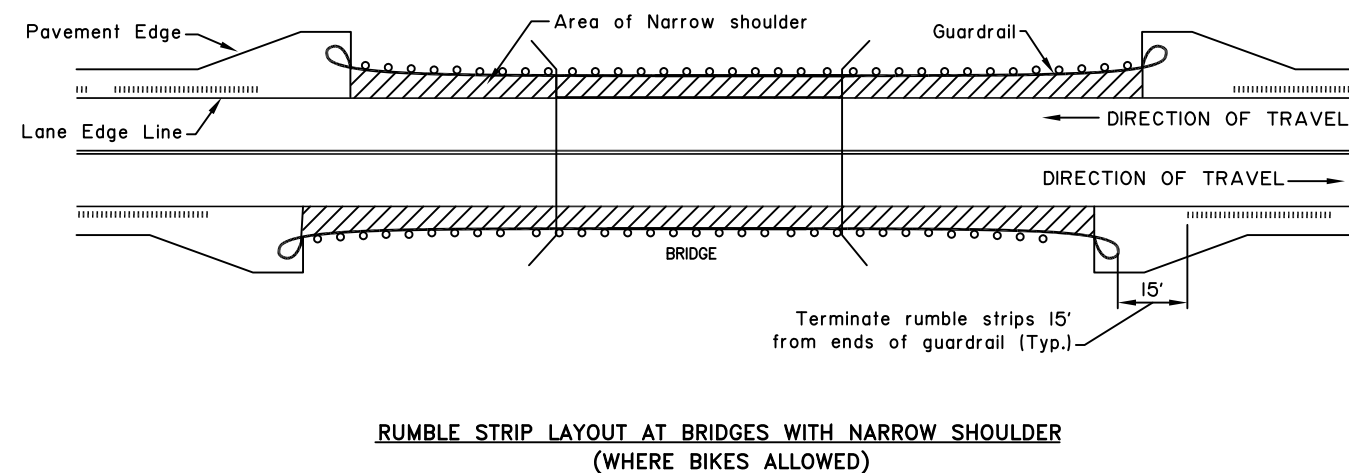
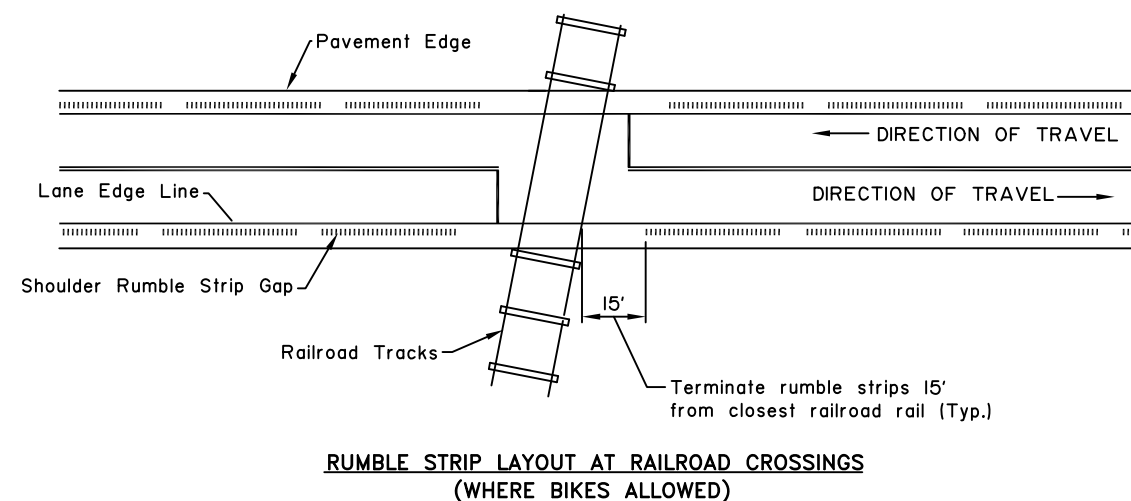
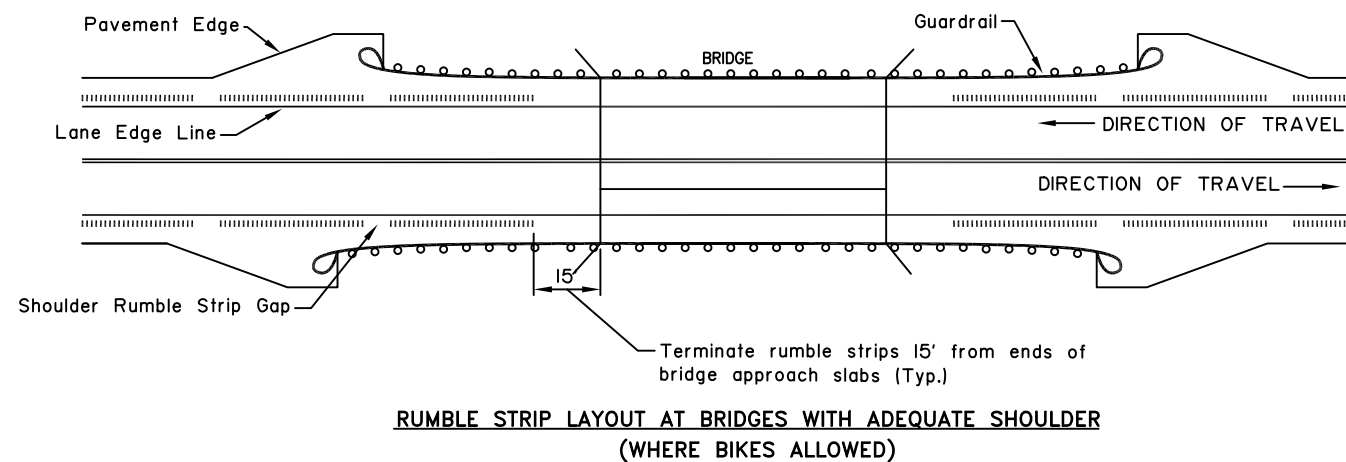
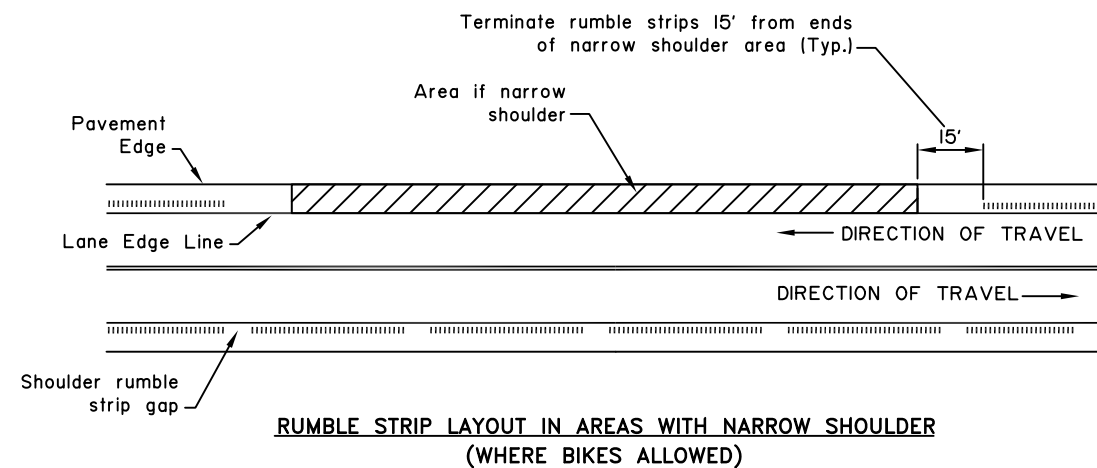
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

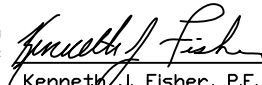
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State of Alaska DOT&PF
ALASKA STANDARD PLAN

MILLED RUMBLE STRIPS

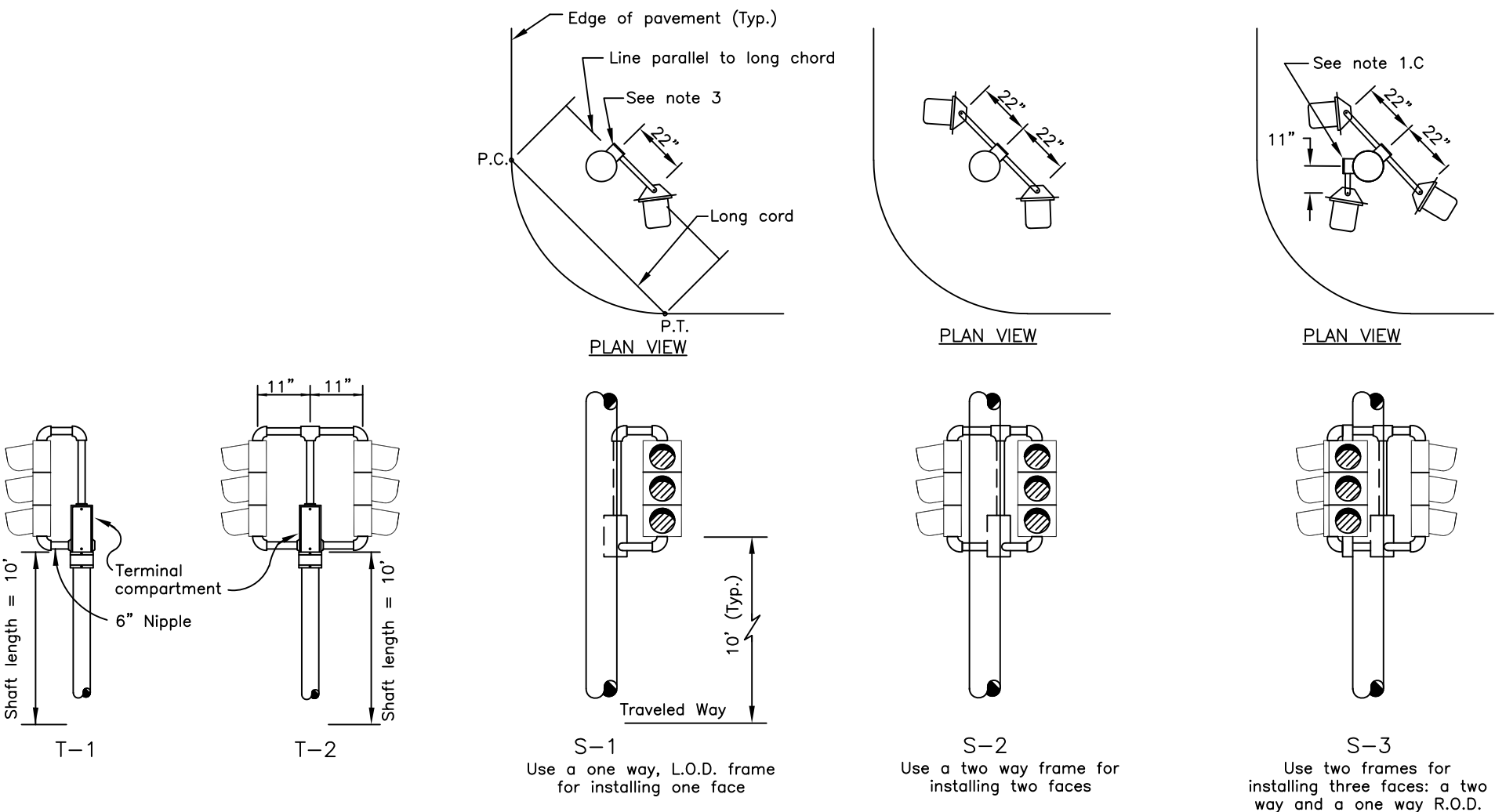
Adopted as an Alaska
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Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

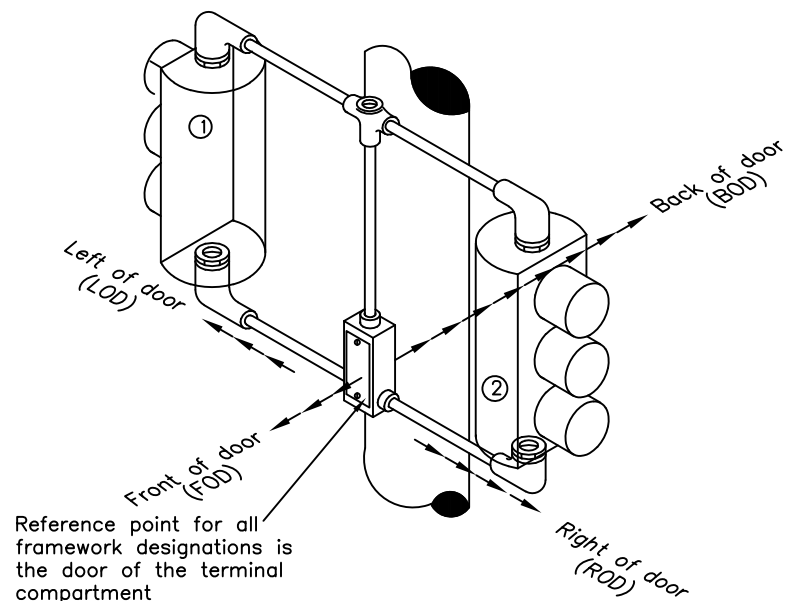
Next Code and Standards Review date: 02/08/2029

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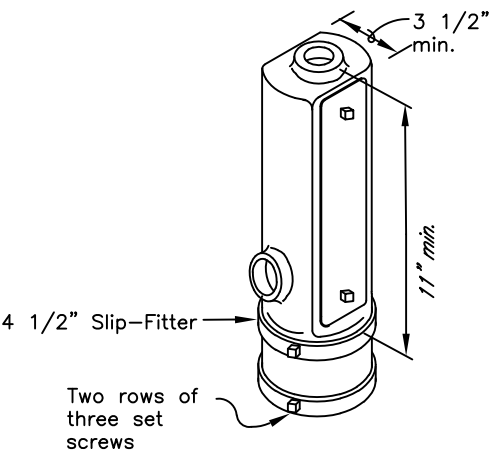


POST MOUNTED SIGNALS
(Shown without backplate)

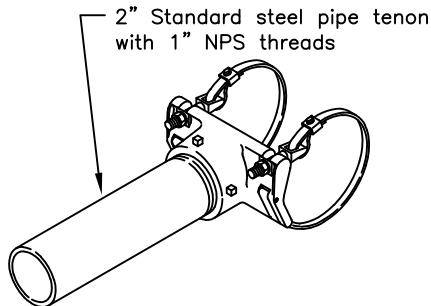
SIDE MOUNTED SIGNAL FRAMES WITH VEHICULAR SIGNALS
(Shown without backplates)



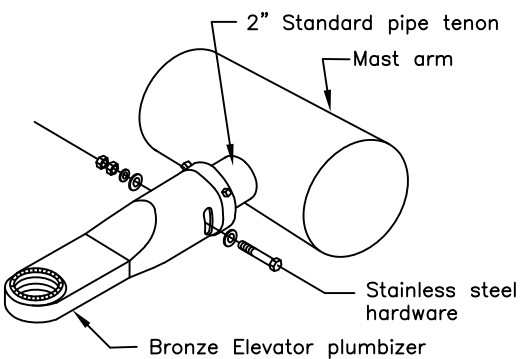
FRAMEWORK DESCRIPTION
Head no. ① offset L.O.D.
Head no. ② offset R.O.D.



TERMINAL COMPARTMENT
WITH SLIP FITTER
(See notes 1.C. and 2)



CLAMP ASSEMBLY FOR FIELD
INSTALLED PLUMBIZER MOUNT
(See notes 4 and 8)



ELEVATOR PLUMBIZER
(See note 1.A.)

GENERAL NOTES

1. Install the signal faces in the plans as detailed on this sheet.
 - A. Use elevator plumbizers to install faces on mast arms and whenever 2" pipe tenons are specified. Install the plumbizer between the red and yellow signal indications.
 - B. Use signal frames to install signal faces on the sides of poles and on the tops of posts.
 - C. Use a second signal frame to install the third face when three side mounted signal faces are shown.
2. Furnish all signal frames with terminal compartments.
3. Install one terminal compartment on the side of the pole opposite the midpoint of the radius. Position the terminal compartment at the location where a line parallel to the long cord (P.C. to P.T.) of the radius is tangent to the pole.
4. Field drill the holes needed for attaching all signal hardware. Remove burrs after drilling. Treat the bare steel surfaces in accordance with AASHTO M36.
5. Provide back plates sized for the number of signal sections and mounting type, so that no light is visible between the back plate and the signal face.

Attach all back plates using stainless steel rivets with large flange button heads. Install 3/16" diameter by 9/16" long stainless steel rivets that provide at least 535 lb. and 675 lb. shear and tensile strengths, respectively. Bore out the mounting hole in the back plates and signal heads to the diameter recommended by the rivet manufacturer.
6. Before installing the machine screws that secure the visors, coat the threads with an anti-seizing compound.
7. Furnish clamp assemblies for field-installed plumbizer mounts with stainless steel hardware, AB-3007-L as manufactured by Pelco Products, Inc., or approved equivalent. The tenon shall be a 6" length of 2" rigid metal conduit with 1" tapered threads on one end. Drill the tenon to accept the plumbizer through bolt and debur all openings. Coat the tenon threads with Z.R.C. Galviline, Crown-Gold Calvanizing Compound, or approved equivalent.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

TRAFFIC SIGNAL HARDWARE

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

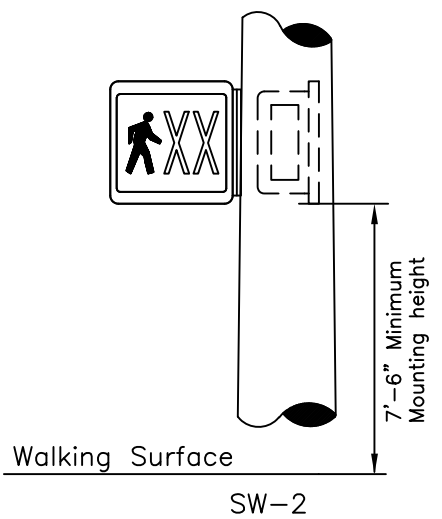
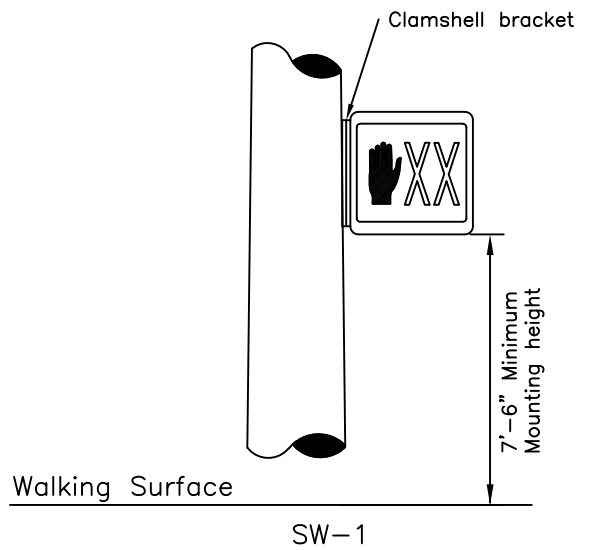
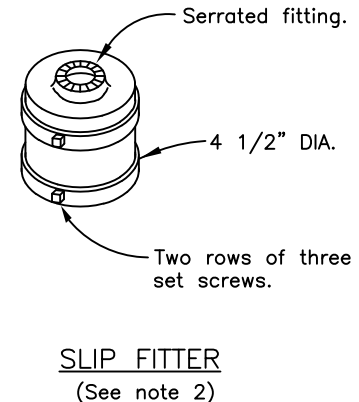
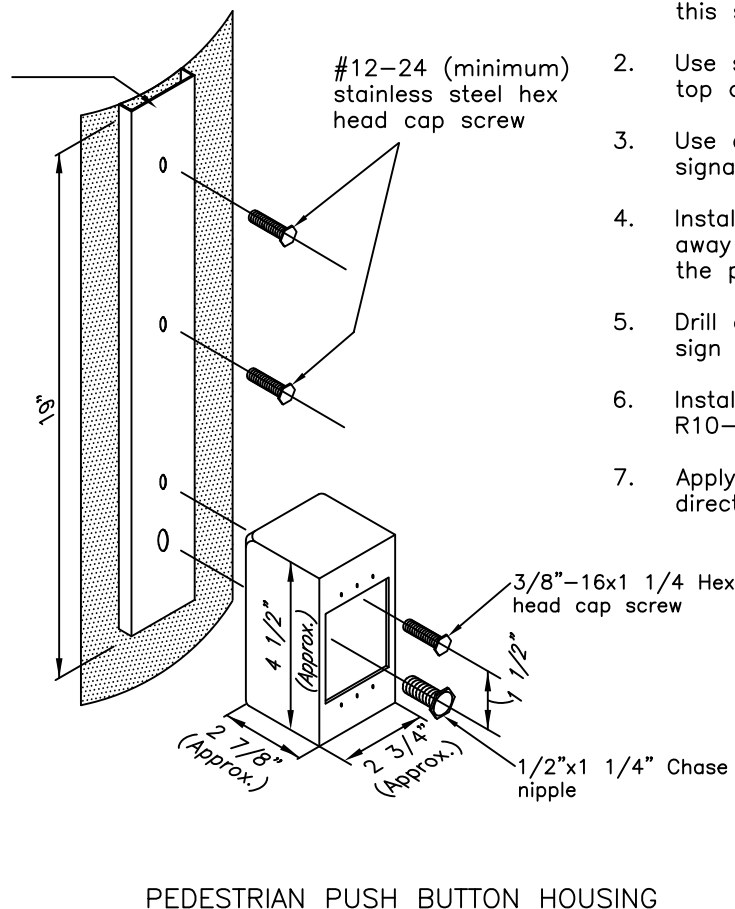
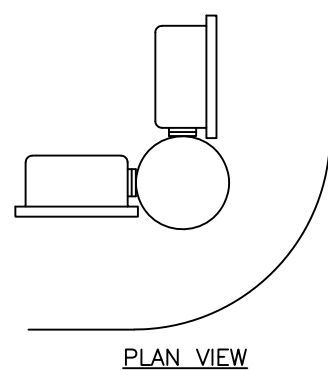
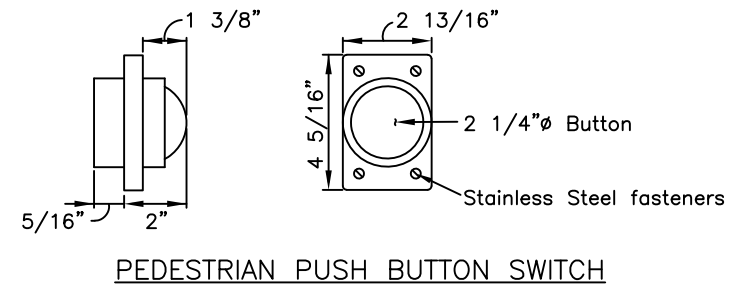
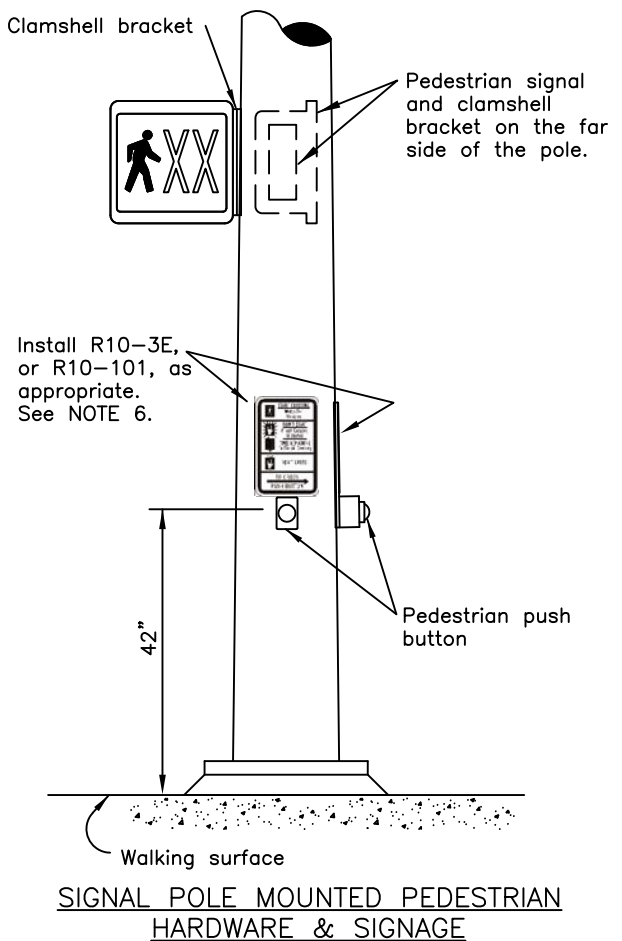
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By: Date:

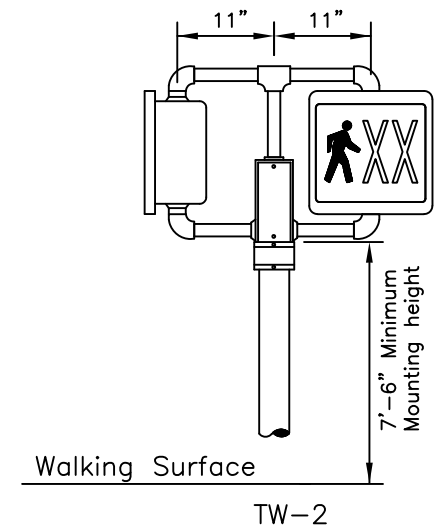
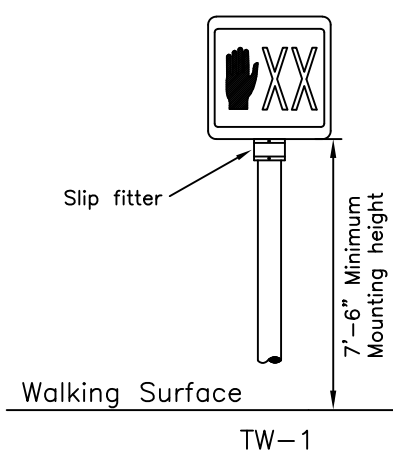
Next Code and Standards Review date:02/08/2029

GENERAL NOTES

1. Install the signal faces in the plans as detailed on this sheet.
2. Use slip fitters to install pedestrian signals on the top of posts.
3. Use clamshell brackets to install all pedestrian signals except those that are post-top mounted.
4. Install pedestrian signals on the side of poles away from traffic, unless indicated otherwise in the plans.
5. Drill and tap the pole for all mounting holes for sign and pedestrian push button housing.
6. Install R10-3E if a push button is installed. Install R10-101 if no push button is installed.
7. Apply caint-seize compound to cap screws tapped directly into pole.



SIDE MOUNTED SIGNALS



POST MOUNTED SIGNALS

State of Alaska DOT&PF
ALASKA STANDARD PLAN

TRAFFIC SIGNAL HARDWARE

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

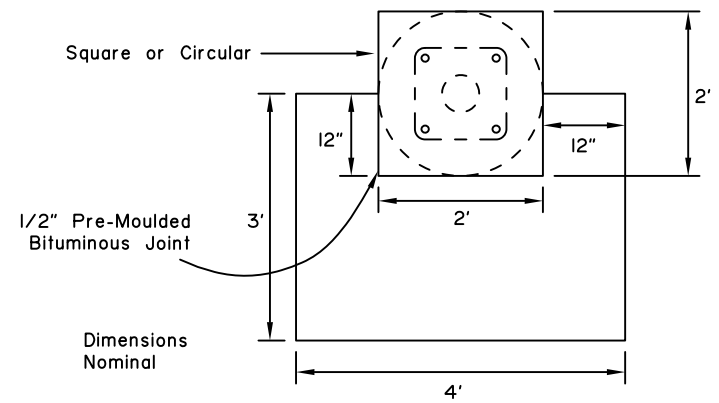
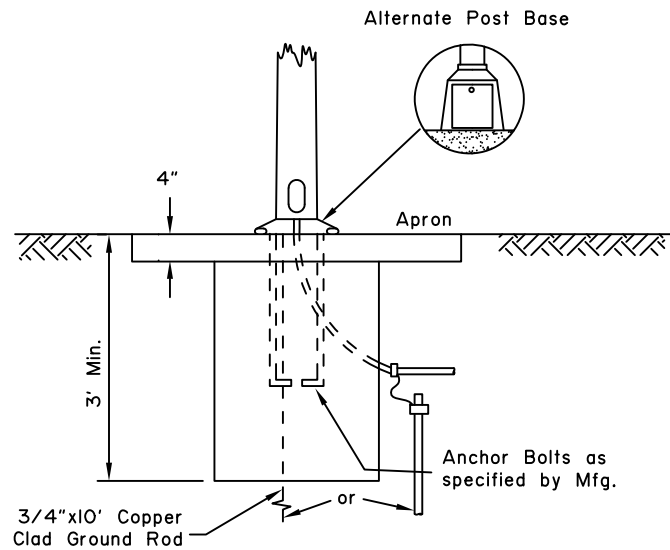
Adoption Date: 02/08/2019

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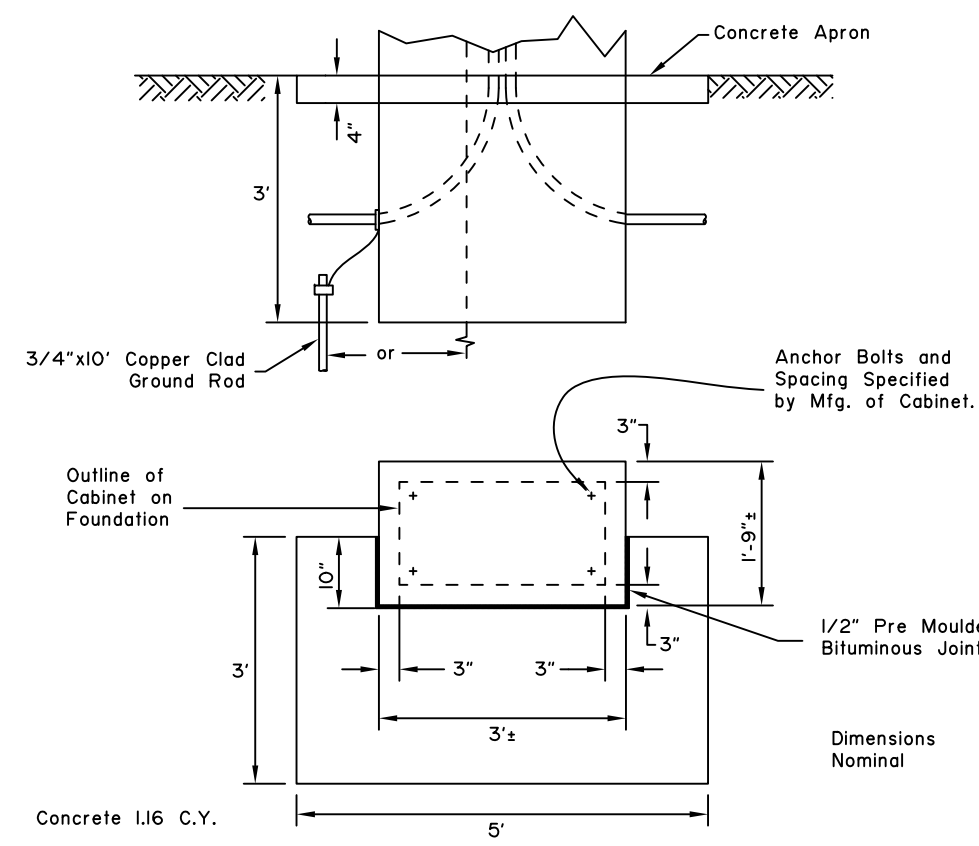
Next Code and Standards Review date:02/08/2029

GENERAL NOTES:

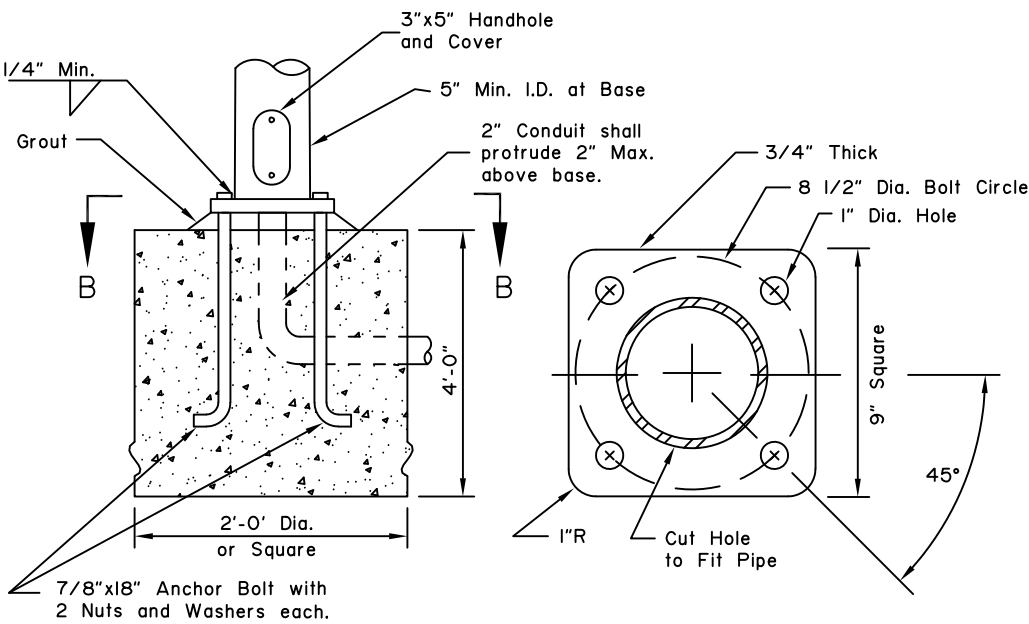
1. Install ground rod when continuous electrically secure system is not provided between controller and service ground.
2. Meter base shall not be installed in door of control cabinet.
3. Anchor bolts, nuts and washers shall be high strength steel and shall conform to A.S.T.M. A-325. Galvanizing of same shall conform to A.S.T.M. A-153.
4. Anchor bolts may be field cut and bent.
5. Damage to galvanized surfaces as a result of field drilling and or cutting shall be repaired in accordance with Federal Specifications TT-P-641.



CONTROLLER BASE POST TYPE "C"

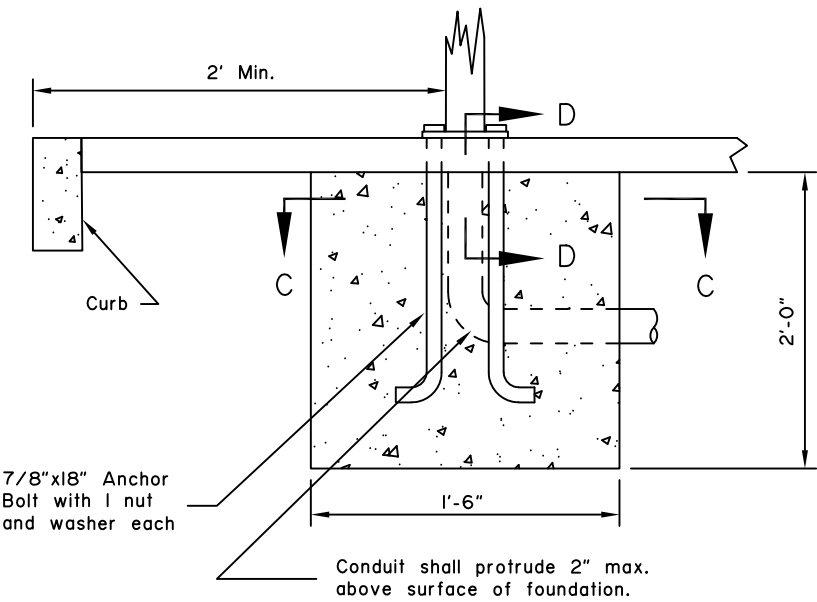


CONTROLLER BASE APRON TYPE "D"

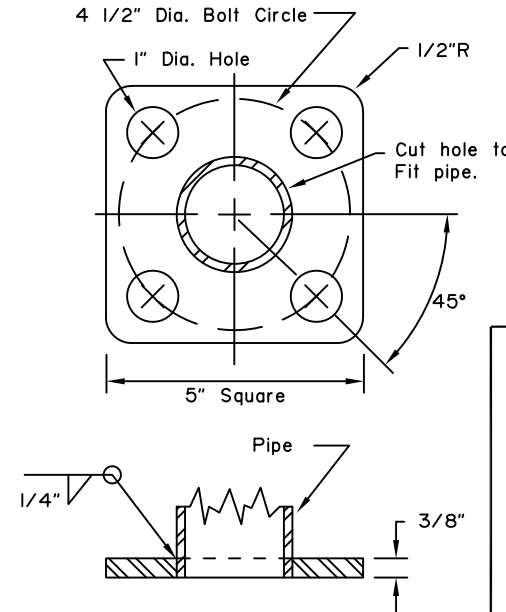


SIGNAL BASE POST TYPE "A"

Use Class 'A' Concrete



PUSH BUTTON BASE POST TYPE "B"



State of Alaska DOT&PF
ALASKA STANDARD PLAN

TRAFFIC SIGNAL &
ACCESSORIES FOUNDATION

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

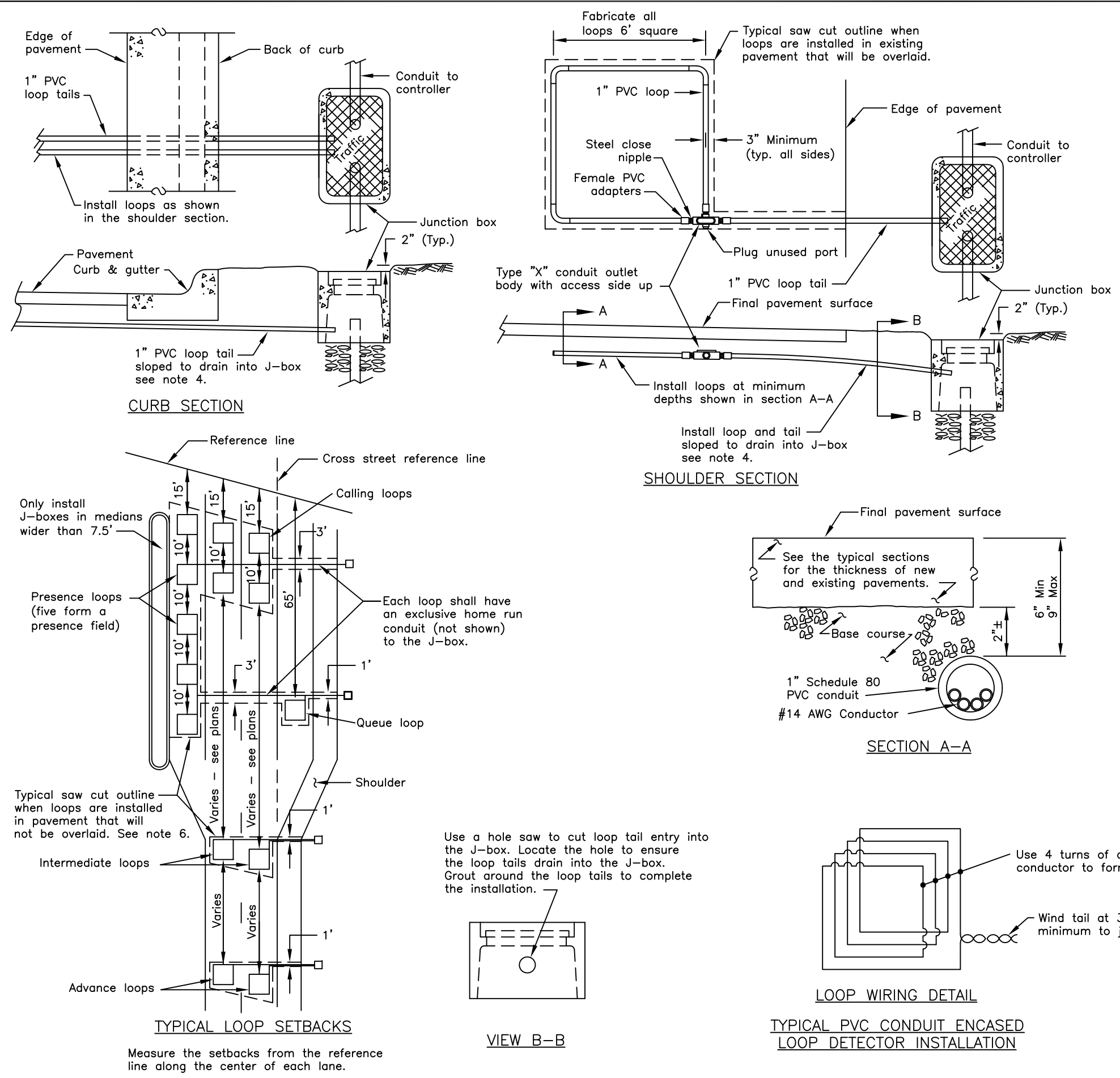
Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

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

GENERAL NOTES

- Solvent weld all PVC to PVC joints. Use hot dip galvanized steel type X outlet bodies to join the loops and tails.
- Use tube loop wire per IMSA specification 51-5 with the optional polyethylene tubing.
- Install and test all loop detectors before overlaying the existing pavement or paving the new roadway.
- Drill five 1/4" weep holes on 12" centers in the underside of the conduit at the low spot when the loop and tail cannot be installed to drain into the J-box. If the Engineer allows 90 degree elbows to be used, drill a 1/4" hole in the low point.
- When installing loop detectors in existing pavement, cut the asphalt with a saw and remove all asphalt within the saw cut.
- Where existing pavement will not be overlaid, cut the pavement with a saw as follows:
 - Remove all pavement from the length of the five loop presence fields.
 - Enclose all loops that enter a common junction box within one saw cut area.
 - Cut to within 12" of lane and edge lines to preserve them.
 - Remove asphalt to gutter where there are no edge lines.
 - Cut across lane lines when loops are side by side.
 - Cut trenches crossing a lane a minimum of 3' wide.
 - Cut trenches crossing a shoulder a minimum 12" wide.
- Heat and tack coat the edges of existing pavement before paving cutouts. Compact the asphalt mixture with a self-propelled steel wheeled roller. Furnish asphalt mix that conforms to section 401 of the Specifications, and is approved by the Engineer. Maintain the replacement asphalt temperature at the mixing temperature specified in the approved mix design until compaction has begun.
- To establish the reference lines, extend the right edges of the outermost through lanes across the intersection.



State of Alaska DOT&PF
ALASKA STANDARD PLAN
LOOP DETECTOR
INSTALLATION

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

Adoption Date: 02/08/2019

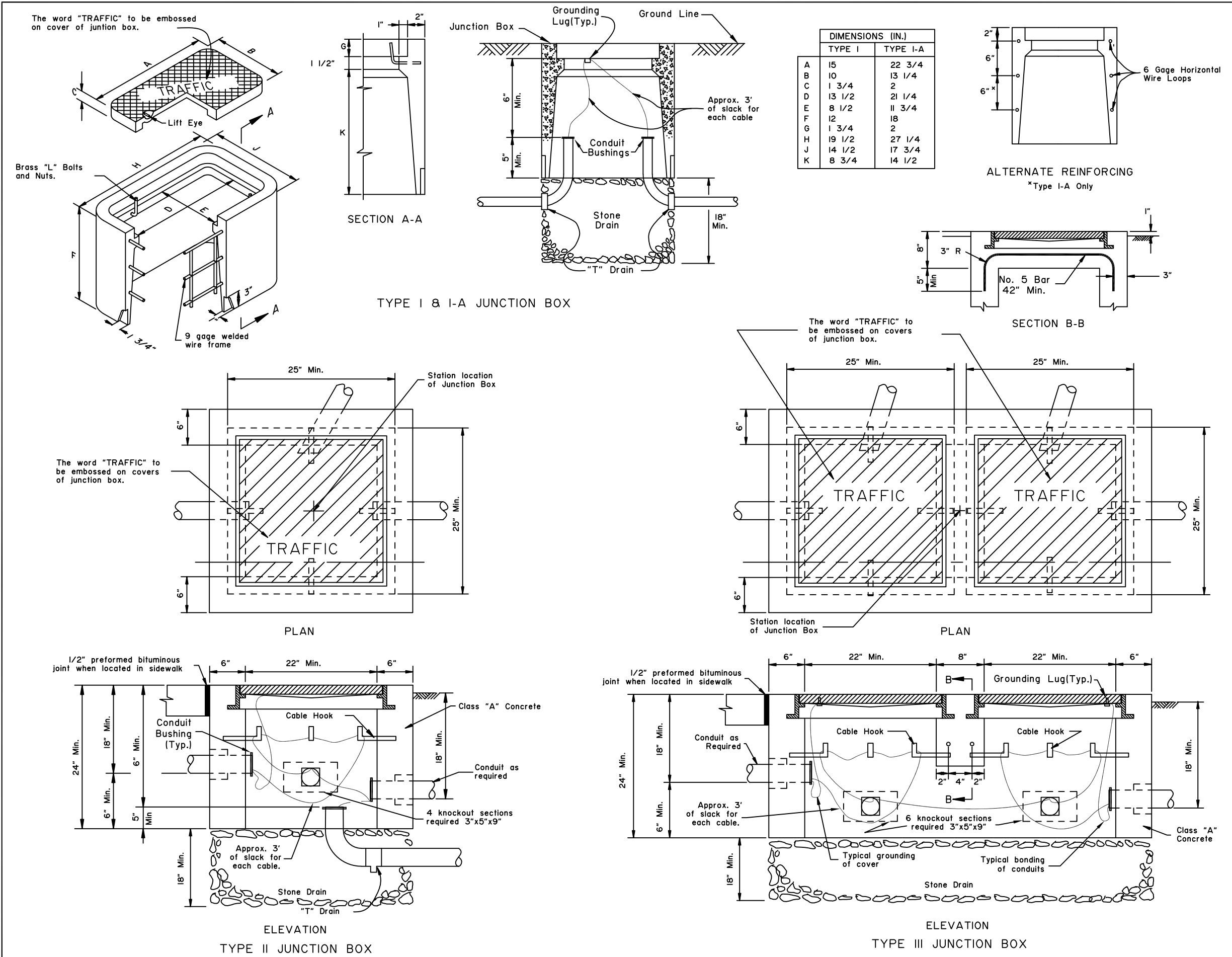
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Next Code and Standards Review date:02/08/2029

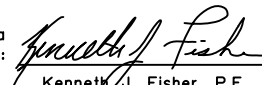
T-32.10

GENERAL NOTES:

- Each frame and cover for Type II and Type III junction boxes shall be of cast iron for light duty use with a minimum weight of 210 pounds. Covers for type I & IA junction boxes shall be either aluminum or cast iron.
- Junction boxes located in a sidewalk shall be installed with a 1/2" preformed bituminous joint material around its perimeter.
- All conduits shall be bonded to form a continuous electrically secure system with the ground at the load center junction box.
- All junction box covers shall be bonded to ground with copper braid of E8 AWG cross section. For types I & IA, the length shall be 3 feet, and 5 feet for types II & III.
- All conduits shall be grouted in knockout sections in accordance with the Alaska Specifications for Highway Construction, latest edition.
- Junction boxes shall be set flush with the surrounding surface except in an unpaved shoulder, when they shall be located 2" below grade.



State of Alaska DOT&PF
ALASKA STANDARD PLAN
JUNCTION BOXES FOR
TRAFFIC SIGNALS

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

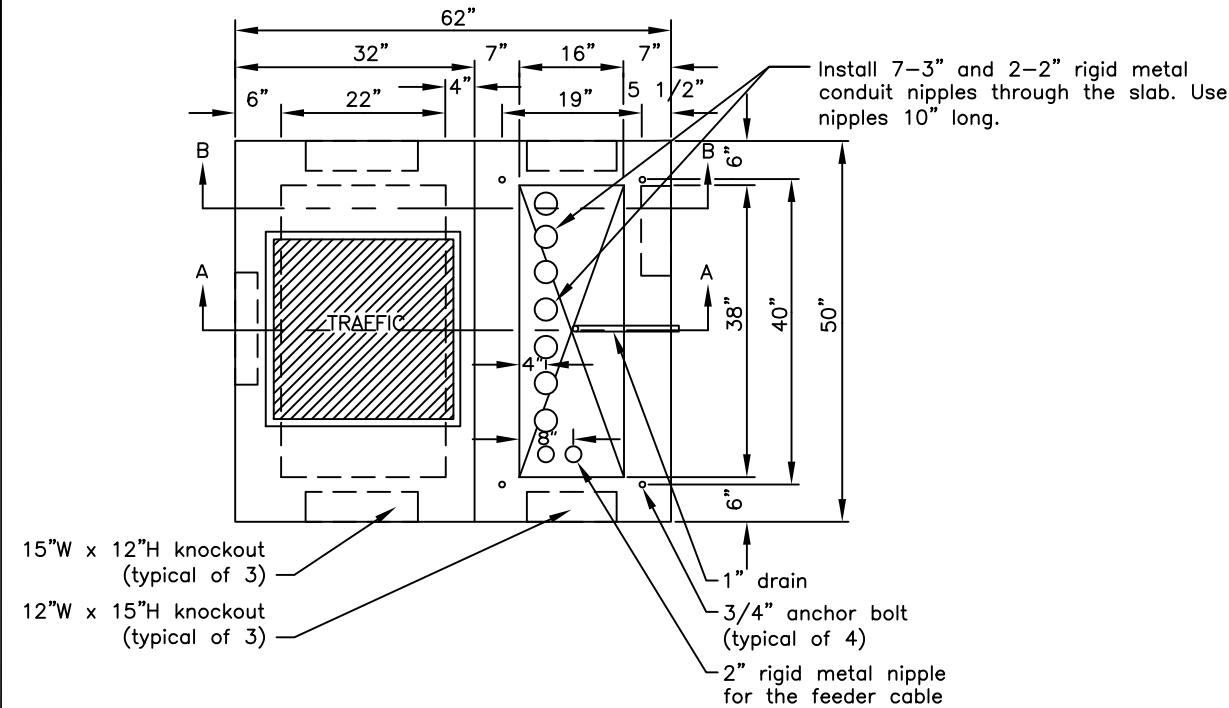
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Last Code and Stds. Review
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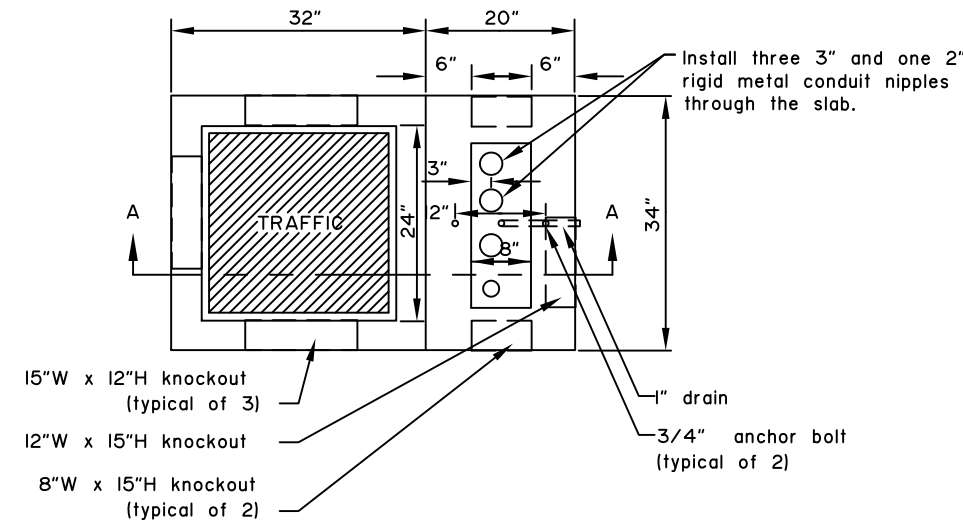
Next Code and Standards Review date: 02/08/2029

GENERAL NOTES

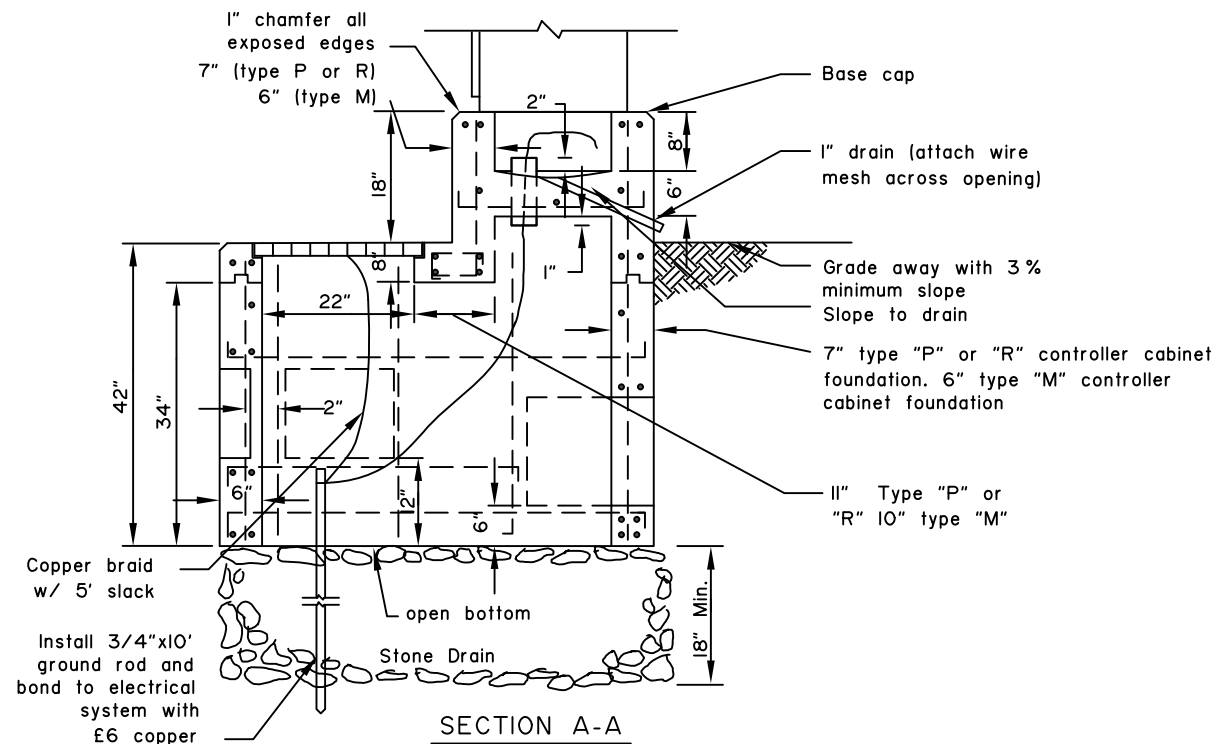
1. Install anchor bolts so they do not protrude more than 1 1/2" above the top of the foundation. Anchor bolt dimensions shall be as specified by the cabinet manufacturer.
2. Provide all conduit ends with grounding bushings. Seal unused conduit stubs with watertight caps. Provide a one pound package of duct seal compound to be installed in conductor carrying conduit stubs by signal technicians during final inspection.
3. Route the #6 copper grounding jumper from the ground rod through the 2" pipe nipple and attach it to the grounding bushing on the feeder cable conduit.
4. Bond the braided copper grounding conductor to the #6 copper grounding jumper using an irreversible compression connector. Provide sufficient slack such that there will be a minimum of 3' conductor to extend past the lid opening.
5. Stop horizontal and vertical steel at the block-out panels and the joint using 90° hooks. Place 2 extra #5 horizontal and vertical bars all sides as shown.



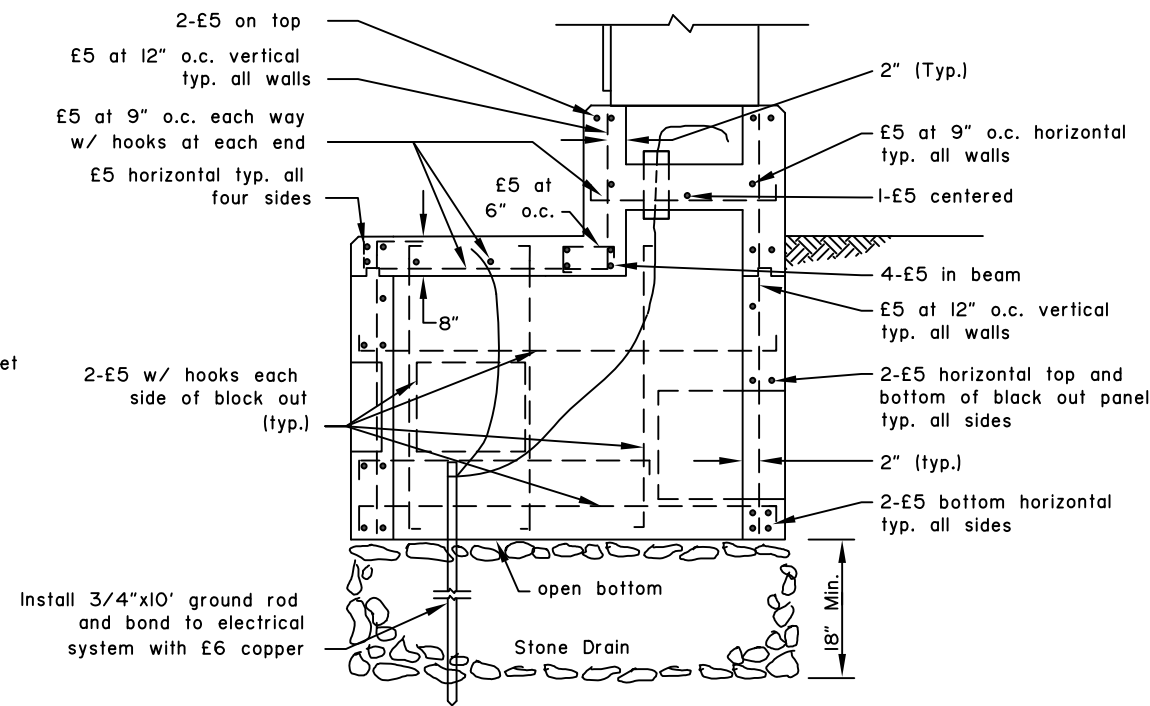
TYPE "P" or "R" CONTROLLER CABINET FOUNDATION



TYPE "M" CONTROLLER CABINET FOUNDATION



NOTE: see section "B-B" for rebar details.



NOTES: see section "A-A" for dimensional details & notes.

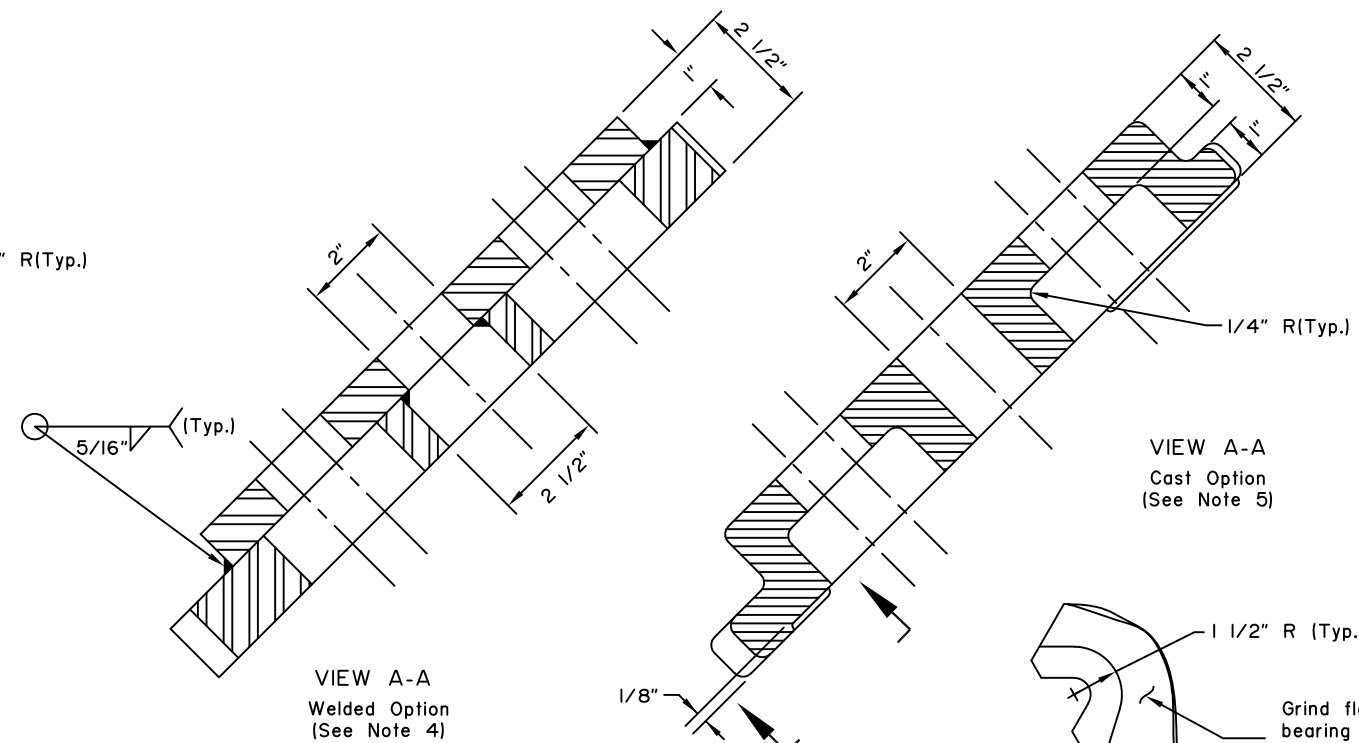
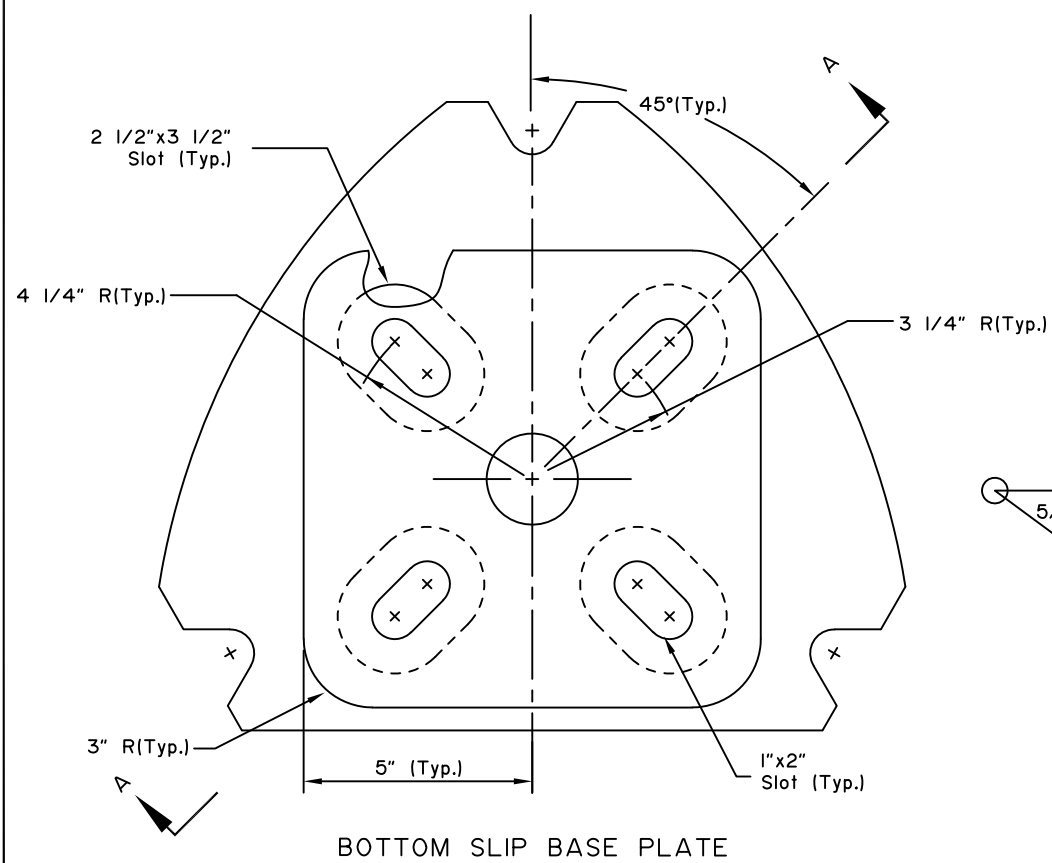
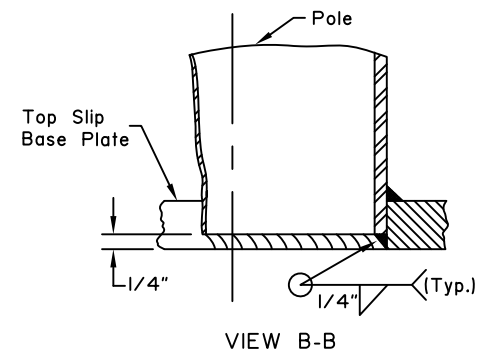
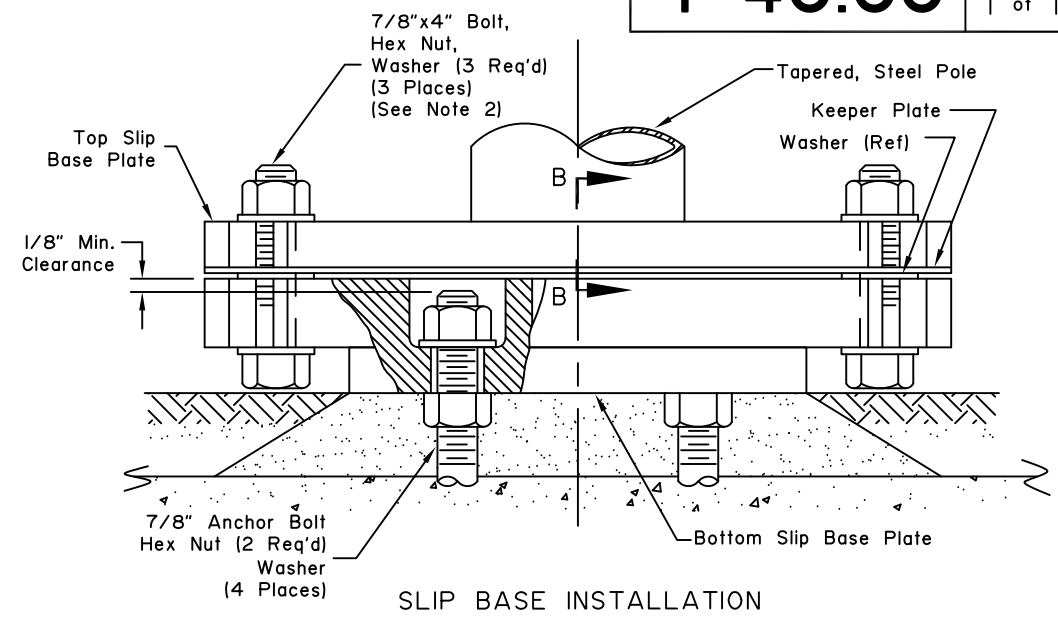
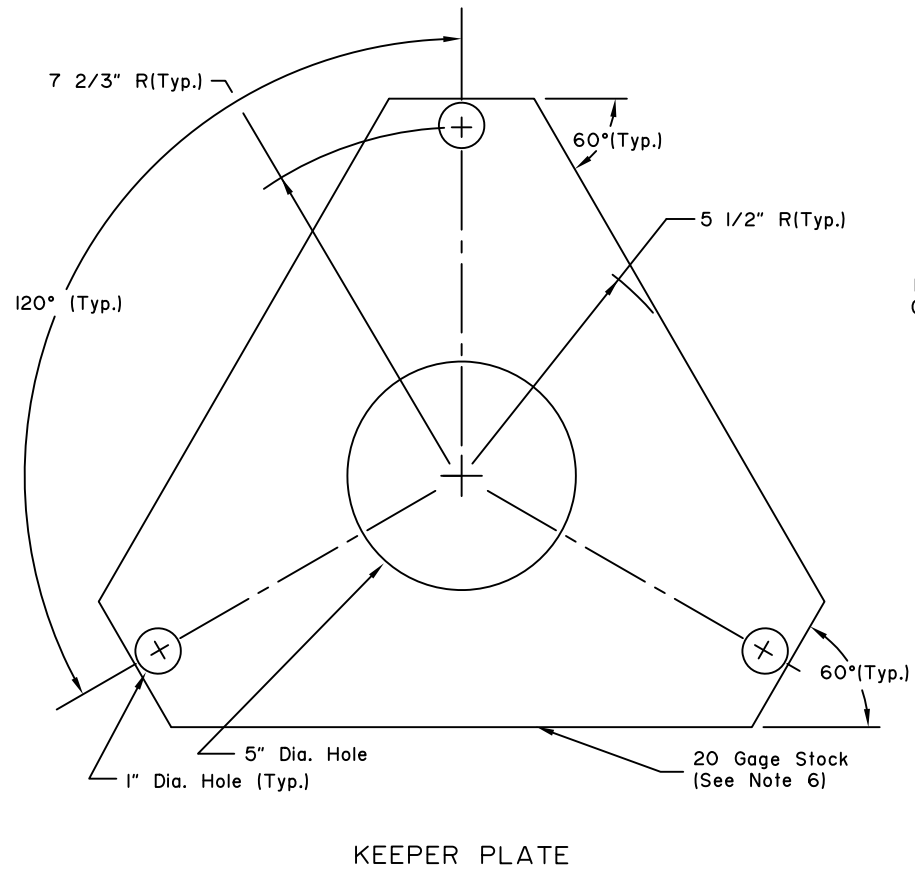
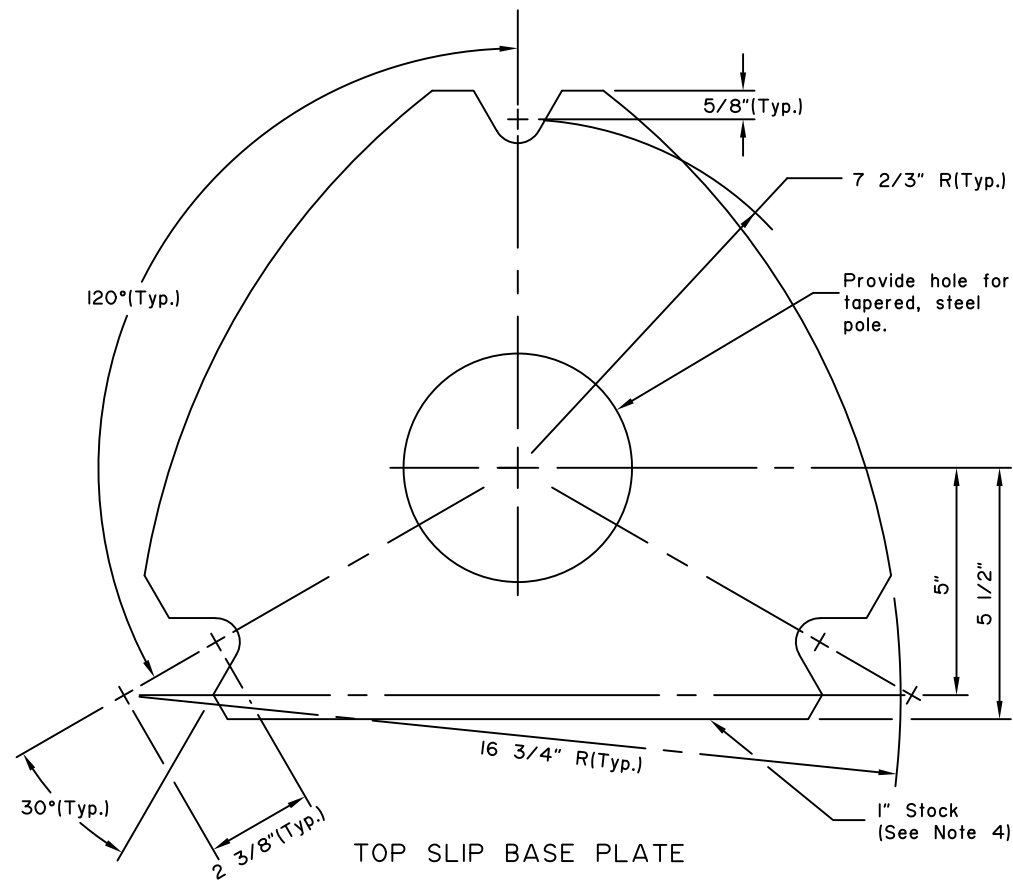
State of Alaska DOT&PF
ALASKA STANDARD PLAN
CONTROLLER CABINET
FOUNDATION

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. All new material to be galvanized after fabrication.
 2. Torque 7/8" H.S. Slip Base Plate bolts to 800 inch lbs.
 3. All slots to be filled with mastic.
 4. Plates shall conform to ASTM A36.
 5. Cast option shall conform to ASTM A486, Class 90.
 6. Keeper Plate shall conform to ASTM A446, Grade A.
 7. All welds shall conform to American Welding Society Specifications.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SLIP BASE FOR
POST MOUNTED
TRAFFIC SIGNALS

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

Adoption Date: 02/08/2019

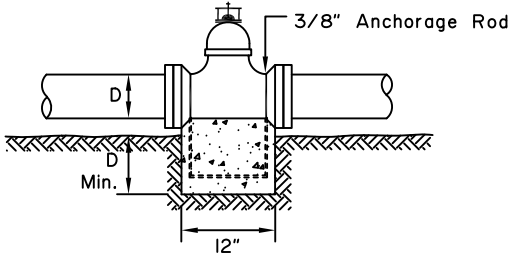
Last Code and Stds. Review
By: Date:

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

THRUST BLOCK MINIMUM SIZE TABLE						
For Bends Greater Than 45°, Tee Branches & Crosses						
Pipe Diam. (In.)	Water Pressure in Pipe (P.S.I.)					
	50		150		250	
	Bearing Area (Sq. Ft.)	Concrete Volume (Cu. Ft.)	Bearing Area (Sq. Ft.)	Concrete Volume (Cu. Ft.)	Bearing Area (Sq. Ft.)	Concrete Volume (Cu. Ft.)
2	0.5	0.5	0.8	1.0	1.0	1.3
3	0.6	0.8	1.0	1.3	1.1	1.5
4	0.8	1.0	1.6	3.1	1.5	3.0
6	1.0	1.3	1.9	4.0	3.2	7.0
8	1.1	1.5	3.2	7.0	5.4	11.0
10	1.7	3.2	4.9	10.0	8.3	19.0
12	2.4	5.2	7.1	17.0	11.8	24.3
14	3.2	7.0	9.8	21.0	16.1	32.0
16	4.1	8.0	12.3	25.0	20.5	40.0
18	5.4	11.0	16.2	32.0	27.1	50.0
20	6.8	15.0	20.6	40.0	34.4	70.0
24	8.2	19.0	25.3	50.0	42.0	80.0

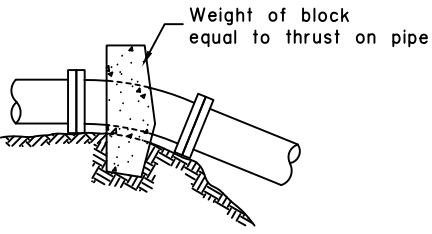
For Bends 45° or Less						
2	0.5	0.5	0.5	0.5	0.6	0.8
3	0.5	0.5	0.7	0.9	0.8	1.0
4	0.5	0.5	0.9	1.1	1.0	1.5
6	0.6	0.8	1.2	2.0	1.7	3.2
8	0.8	1.0	1.8	3.6	2.9	6.0
10	1.0	1.3	2.7	5.8	4.5	9.0
12	1.3	2.5	3.8	7.5	6.4	14.0
14	1.7	3.2	5.2	11.0	8.6	19.0
16	2.2	4.5	6.7	15.0	11.2	24.0
18	2.8	5.9	8.5	19.0	14.1	30.0
20	3.5	7.0	10.5	22.2	17.5	35.0
24	4.2	8.0	12.8	26.0	21.5	40.0

VALVES REQUIRING ANCHORAGE	
WORKING PRESSURE (P.S.I.)	VALVES REQUIRING ANCHORAGE
50 - 100	12 Inch and up
101 - 150	8 Inch and up
151 - 200	All Sizes



ANCHORAGE OF VALVES

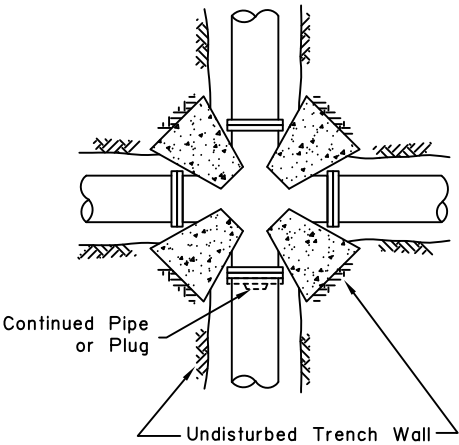
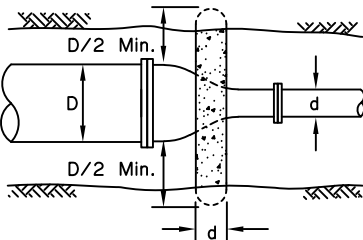
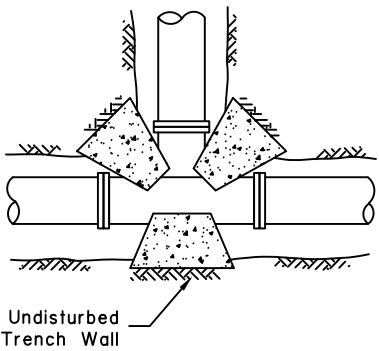
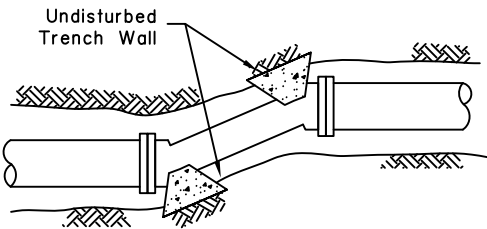
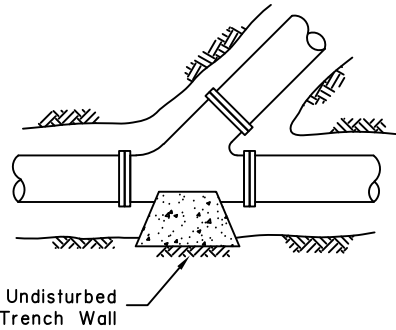
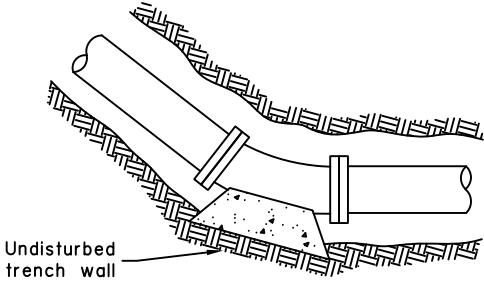
THRUST AT VERTICAL BEND PER DEGREE DEFLECTION AT 100 P.S.I. WATER PRESSURE			
PIPE SIZE	THRUST (LB.)	PIPE SIZE	THRUST (LB.)
4"	35	10"	197
6"	72	12"	278
8"	122	14"	377
		16"	486



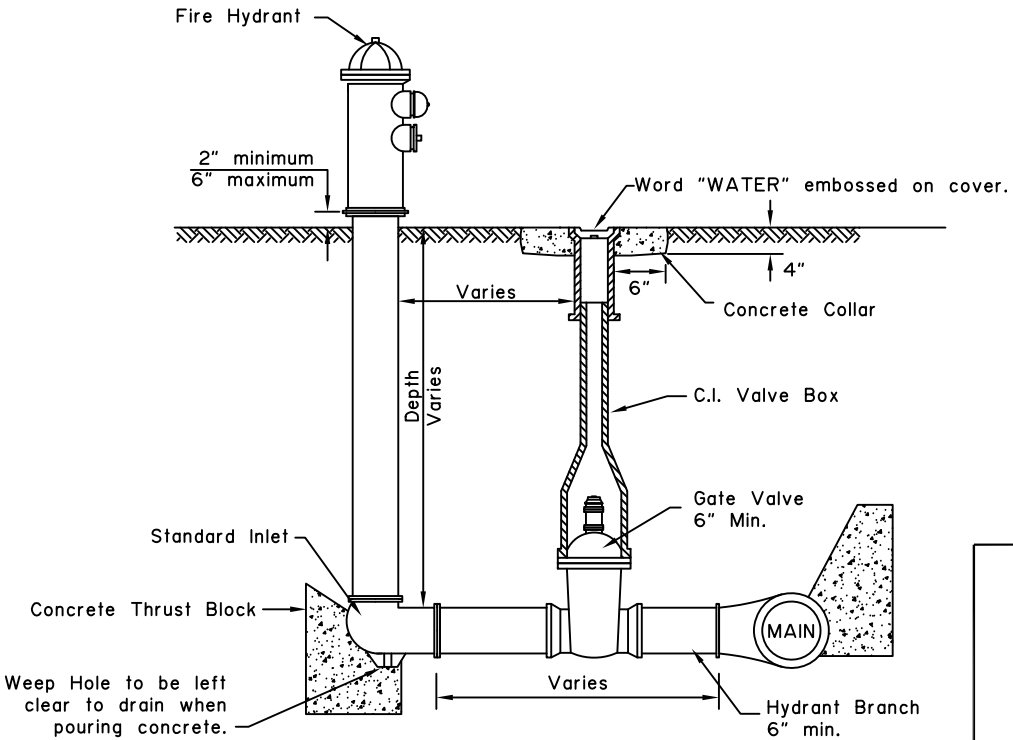
VERTICAL BENDS

GENERAL NOTES:

1. Thrust blocks are to be concrete poured in place between the fitting and undisturbed trench wall.
2. Concrete shall be kept centered behind bell of fitting and not obstructing pipe joints.
3. Thrust blocks are required whenever pipe-line changes direction, changes size, dead ends, or develops thrust at valves.
4. Material, behind the thrust blocks, deemed unsuitable by the engineer shall be removed and replaced as directed by the engineer.
5. In impervious soils, a hole shall be dug beneath the hydrant thrust block to a minimum volume of 7 cubic feet. The hole shall be filled with porous backfill material.
6. Refer to AWWA C600-64 Section II for placement of hydrant
7. Orient hydrant with nozzles facing street.



PLACEMENT OF THRUST BLOCKS



No bends shall exceed 11 1/4" between the hydrant and the main.

STANDARD HYDRANT

State of Alaska DOT&PF
ALASKA STANDARD PLAN

THRUST BLOCKS

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

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