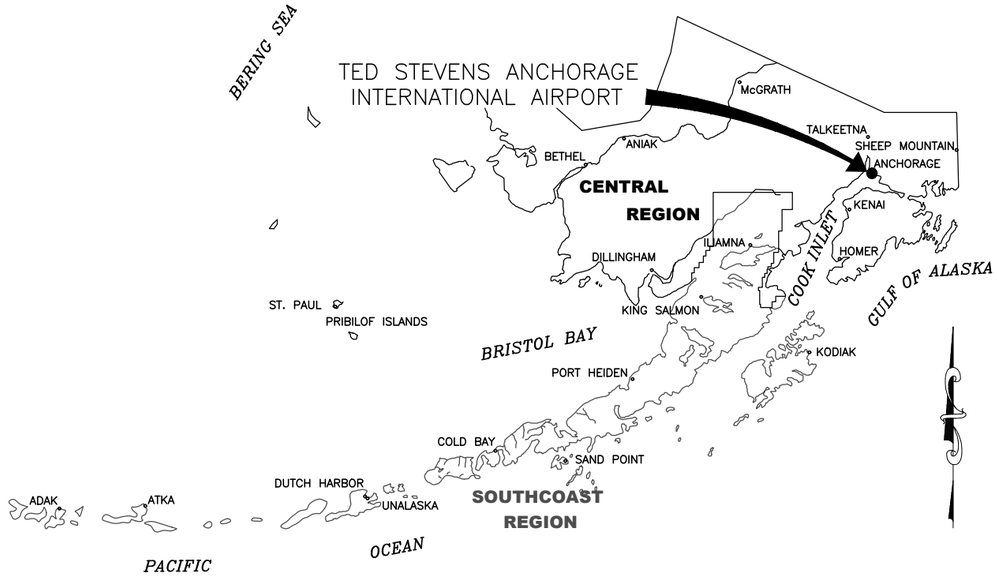
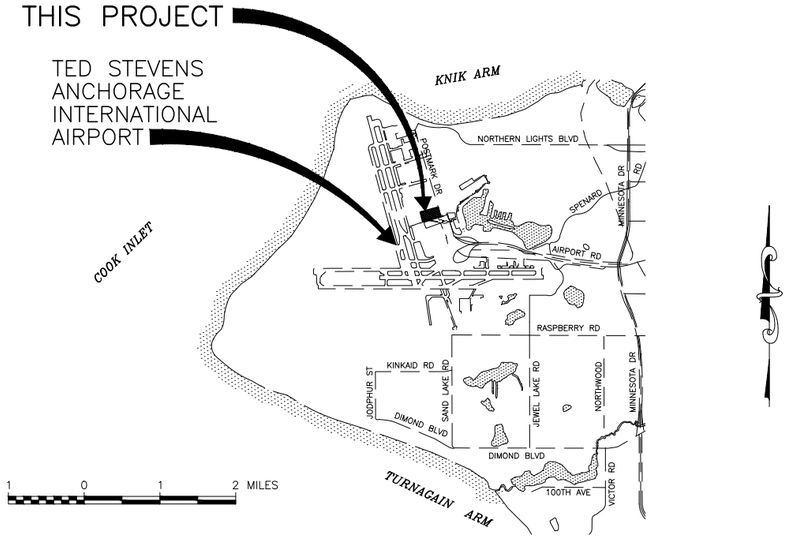


ALASKA CENTRAL REGION LOCATION MAP

NOT TO SCALE



VICINITY MAP

T 12 N, R 4 W SEC. 3, 4, 5, & 6
T 13 N, R 4 W, SEC. 20, 21, 27, 28, 29, 31, 32, 33, 34, & 35
SEWARD MERIDIAN
U.S.G.S. ANCHORAGE (A-8), ALASKA

CONSTRUCTION PLANS

TED STEVENS ANCHORAGE INTERNATIONAL AIRPORT

ANCHORAGE, ALASKA

ANC PFAS REMEDIATION

PROJECT No. CSAPT01228

PSE REVIEW

APRIL 2025

APPROVED	**DATE**
LUKE BOWLAND, P.E.	**REGIONAL PRECONSTRUCTION ENGINEER**
APPROVED	**DATE**
JENNIFER PEPIN, P.E.	**ENGINEERING & ENVIRONMENTAL MANAGER**
APPROVED	**DATE**
JENNIFER LOMBARDO, P.E.	**PROJECT MANAGER**
CONCUR	**DATE**
JOEL G. ST. AUBIN, P.E.	**REGIONAL CONSTRUCTION ENGINEER**

PLANS DEVELOPED BY:
CRW ENGINEERING GROUP, INC.
3940 ARCTIC BLVD. SUITE 300
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(907) 562-3252
#AECL882-AK

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION
4111 AVIATION AVE., ANCHORAGE ALASKA 99502
PHONE (907) 269-0590

TED STEVENS ANCHORAGE
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228
TITLE, SIGNATURES, LOCATION MAP & VICINITY MAP

DATE: APRIL 2025
SHEET: 1 OF 12

Designed By: RB
Drawn By: RB
Checked By: SB

Date Revised: 4/28/2025 12:12 PM
Layout Name: 1
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INDEX

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PIPE AND ARCH TABLES	D–04.22
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72" STORM DRAIN MANHOLE (PRECAST CONCRETE) TYPE II MANHOLE	D–36.10

ABBREVIATIONS

AIP	AIRPORT IMPROVEMENT PROGRAM	LT	LEFT
ANC	ANCHORAGE INTERNATIONAL AIRPORT	LS	LUMP SUM
AFM	AIRFIELD MAINTENANCE	ME	MATCH EXISTING
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MH	MANHOLE
		MIN	MINIMUM
BMP	BEST MANAGEMENT PRACTICES	NTS	NOT TO SCALE
℄/CL	CENTERLINE	OC	ON CENTER
CB	CATCH BASIN	PIH	PLANS IN HAND
CPE	CORRUGATED POLYETHYLENE	PFAS	PERFLUOROALKYL SUBSTANCE
CPM	CRITICAL PATH METHOD	PS&E	PLANS, SPECIFICATIONS, AND ESTIMATE
CS	CONTINGENT SUM	PU	PER UNIT
CSPP	CONSTRUCTION SAFETY & PHASING PLAN	R	RADIUS
CY	CUBIC YARD	RMC	RIGID METAL CONDUIT
DIA, ⌀	DIAMETER	RT	RIGHT
DOT	DEPARTMENT OF TRANSPORTATION	RD	ROAD
EA	EACH	REQ'D	REQUIRED
EMH	EXISTING MANHOLE	SB	SUBDRAIN
EOP	END OF PROJECT	SD	STORM DRAIN
ESCP	EROSION AND SEDIMENT CONTROL PLAN	SF	SQUARE FEET
FAA	FEDERAL AVIATION ADMINISTRATION	SY	SQUARE YARD
F	FITTING	SWPPP	STORM WATER POLLUTION PREVENTION PLAN
FI	FIELD INLET	TOFA	TAXIWAY OBJECT FREE AREA
FT	FOOT	TSA	TAXIWAY SAFETY AREA
H	HORIZONTAL	TL	TAXILANE
HDPE	HIGH DENSITY POLYETHYLENE CONDUIT	TYP	TYPICAL
ID	IDENTIFICATION	TW	TAXIWAY
LB	POUND	TYP	TYPICAL
LF	LINEAR FOOT	V	VERTICAL

LEGEND

DESCRIPTION	EXISTING	PROPOSED
AOA FENCE (WIRE STRAND)	xx xx xx	xx xx xx
BUILDING		
CONTOUR	100	100
CUT LINE		
FENCE (CHAIN POST)	x x	
FILL LINE		
GRAVEL EDGE		
GUARDRAIL		
HAUL ROUTE		
IDENTIFICATION BUBBLE / SHEET NOTE REFERENCE SYMBOL		#
PAINT STRIPE		
PAVEMENT/SHOULDER (EDGE)		
POINT NUMBER		100
STORM DRAIN FIELD INLET	FI	FI
STORM DRAIN MANHOLE	MH	MH
STORM DRAIN	SD	
SUBDRAIN/UNDERDRAIN		SB
STORM DRAIN PIPE OR STRUCTURE REFERENCE		MH–X
WETLANDS		

ESTIMATING FACTORS

No.	ITEM	FACTOR
P154.020.0000	SUBBASE COURSE	2.00 TON/CY
T901.020.0000	SEEDING	5 LB/1000 SF

ESTIMATED QUANTITIES

No.	ITEM	UNIT	TOTAL
D705.020.4012	UNDERDRAIN, CPE PIPE, TYPE SP, 12–INCH	LF	176
D751.010.0072	MANHOLE, TYPE II, 72–INCH	EACH	2
D751.010.0072	MANHOLE, TYPE II, 72–INCH WITH CANAL GATE	EACH	2
F162.010.0008	8–FEET CHAIN–LINK FENCE	LF	120
G100.010.0000	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D
G135.010.0000	CONSTRUCTION SURVEYING BY THE CONTRACTOR	LS	ALL REQ'D
G135.020.0000	EXTRA THREE PERSON SURVEY PARTY	HOUR	10
G300.010.0000	CPM SCHEDULING	LS	ALL REQ'D
G710.010.0000	HIGHWAY TRAFFIC MAINTENANCE	LS	ALL REQ'D
G710.020.0000	HIGHWAY FLAGGER	CS	ALL REQ'D
G710.030.0000	HIGHWAY TRAFFIC PRICE ADJUSTMENT	CS	ALL REQ'D
G710.040.0000	HIGHWAY TRAFFIC CONTROL	CS	ALL REQ'D
P151.020.0000	CLEARING	LS	ALL REQ'D
P152.010.0000	UNCLASSIFIED EXCAVATION	CY	2,240
P154.020.0000	SUBBASE COURSE	TON	2,160
P171.050.0000	CONTAMINATED SOIL SEPARATION LINER	SY	260
P172.020.0000	CONTAMINATED SOIL REMEDIATION	CY	590
P180.010.0000	RIPRAP, CLASS I	CY	170
P641.010.0000	EROSION, SEDIMENT, AND POLLUTION CONTROL ADMINISTRATION	LS	ALL REQ'D
P641.050.0000	TEMPORARY EROSION, SEDIMENT, AND POLLUTION CONTROL BY DIRECTIVE	CS	ALL REQ'D
P641.060.0000	WITHHOLDING	CS	ALL REQ'D
P641.070.0000	SWPPP MANAGER	LS	ALL REQ'D
P641.110.0000	SWPPPTRACK	CS	ALL REQ'D
P681.010.0000	GEOTEXTILE, SEPARATION	SY	620
P682.010.0000	GEOTEXTILE, DRAINAGE	SY	980
T901.020.0000	SEEDING	LB	82
T905.010.0020	TOPSOILING, CLASS B	SY	1,830

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ANC PFAS REMEDIATION
PROJECT No. CSAPT01228
INDEX, LEGEND, ABBREVIATIONS & ESTIMATED QUANTITIES

DATE: APRIL 2025
SHEET: 2 OF 12

Designed By: RB
Drawn By: RB
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Date Revised: 4/28/2025 12:04 PM
Layout Name: 3
File Path and Name: J:\JobsData\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\00 General\01228-ANC-Summary Tables.dwg

D705.020.4012

UNDERDRAIN, CPE PIPE, TYPE SP, 12-INCH

SHEET	PIPE ID	INLET					OUTLET					LENGTH (FT)	SLOPE (%)
		STRUCTURE / FITTING	STRUCTURE / FITTING TYPE	NORTHING	EASTING	INVERT ELEVATION (FT)	STRUCTURE / FITTING	STRUCTURE / FITTING TYPE	NORTHING	EASTING	INVERT ELEVATION (FT)		
7	P-1	F-2	TEE	328111.45	329900.27	72.75	MH-1	TYPE II MANHOLE	328115.48	329915.26	72.67	18.5	0.52%
	P-2	F-1	END CAP	328137.53	329893.28	72.90	F-2	TEE	328111.45	329900.27	72.75	27.0	0.56%
	P-3	F-3	END CAP	328095.03	329904.67	72.85	F-2	TEE	328111.45	329900.27	72.75	17.0	0.59%
	P-4	F-5	TEE	327579.65	329922.34	74.20	MH-3	TYPE II MANHOLE	327581.40	329937.73	74.12	18.5	0.52%
	P-5	F-4	END CAP	327621.38	329917.58	74.45	F-5	TEE	327579.65	329922.34	74.20	42.0	0.60%
	P-6	F-6	END CAP	327526.99	329928.33	74.50	F-5	TEE	327579.65	329922.34	74.20	53.0	0.57%
											TOTAL	**176.0**	

STORM DRAIN STRUCTURE SUMMARY

SHEET	STRUCTURE ID	NORTHING	EASTING	D751.010.0072 MANHOLE, TYPE II, 72-INCH	D751.010.0072 MANHOLE, TYPE II, 72-INCH WITH CANAL GATE	TOP OF CASTING ELEVATION (FT)	CASTING TYPE	REMARKS
7	MH-1	328116.25	329918.14	X		82.70	FIELD INLET	
	MH-2	328132.67	329951.50		X	83.10	MANHOLE	
	MH-3	327581.75	329940.72	X		78.12	FIELD INLET	
	MH-4	327527.02	330006.25		X	86.75	MANHOLE	
			TOTAL	**2**	**2**			

F162.010.0008

8-FEET CHAIN-LINK FENCE

SHEET	BEGIN		END		LENGTH (FT)
	NORTHING	EASTING	NORTHING	EASTING	
5 / 7	327529.70	329941.94	327557.17	329971.02	40
				TOTAL	**40**

STATE OF ALASKA
49TH
Robert W. Burdick
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REGISTERED PROFESSIONAL ENGINEER

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TED STEVENS ANCHORAGE
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ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

SUMMARY TABLES

DATE: APRIL 2025

Designed By:	RB
Drawn By:	RB
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Date Revised:	4/28/2025 12:04 PM
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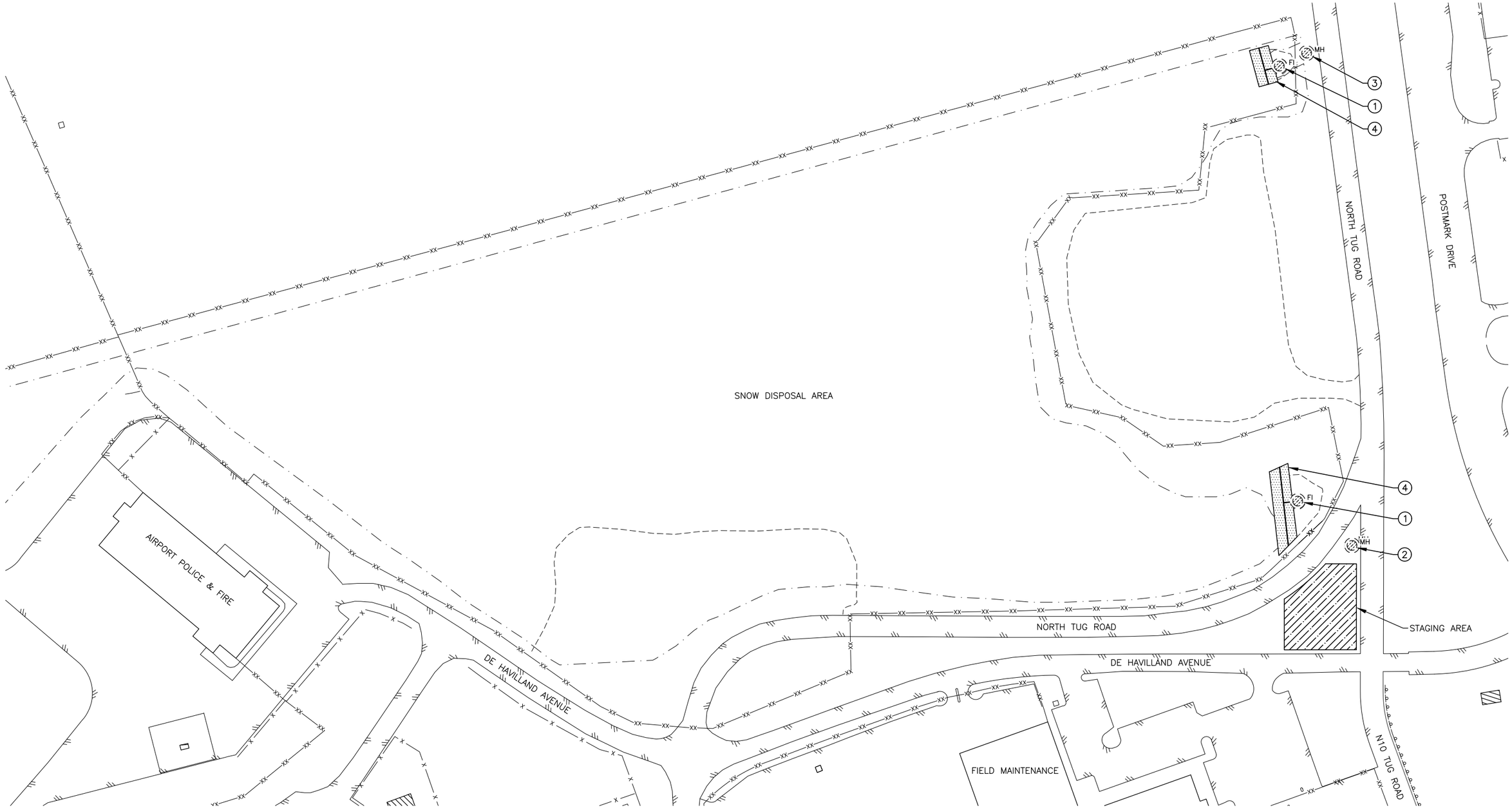

LEGEND

- PROJECT AREA
- STAGING AREA

GENERAL NOTES

1. SEE AC SHEETS FOR HAUL ROUTE INFORMATION.
2. SHARE ACCESS WITH CONTRACTORS WORKING ON OTHER AIRPORT CONSTRUCTION PROJECTS AS DIRECTED BY THE ENGINEER.

SCOPE OF THE PROJECT INCLUDE, BUT IS NOT LIMITED TO CONSTRUCTION OF THE FOLLOWING:

1. REMOVE MANHOLE & INSTALL NEW MANHOLE WITH 12" UNDERDRAIN PIPING
2. REMOVE MANHOLE & INSTALL NEW MANHOLE WITH CANAL GATE
3. INSTALL NEW MANHOLE WITH CANAL GATE
4. INSTALL ACTIVE CARBON BARRIER

STATE OF ALASKA 49TH REGISTERED PROFESSIONAL ENGINEER
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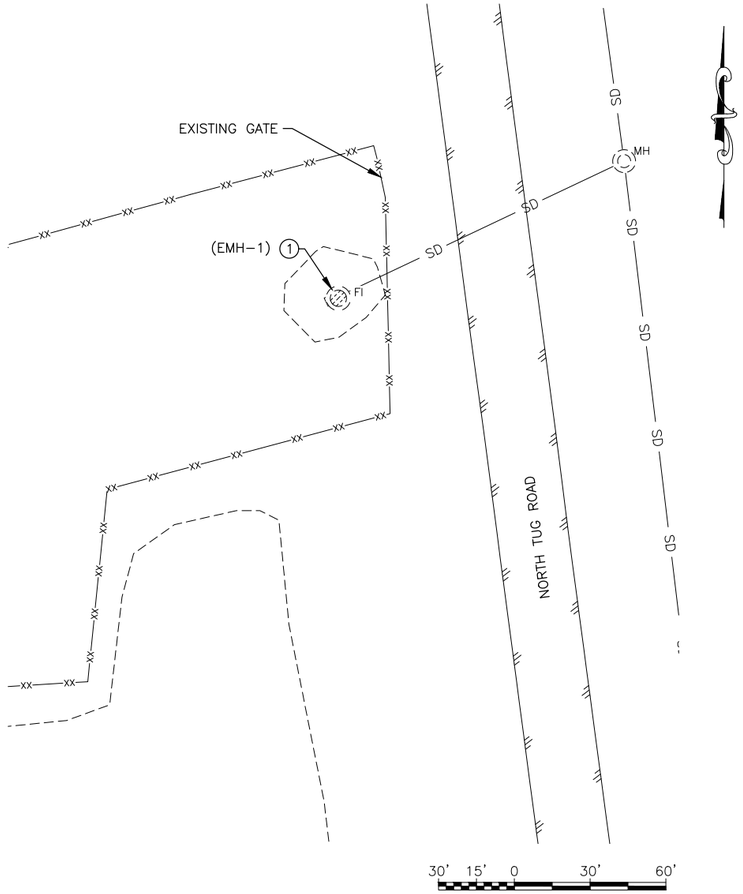
TED STEVENS ANCHORAGE
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

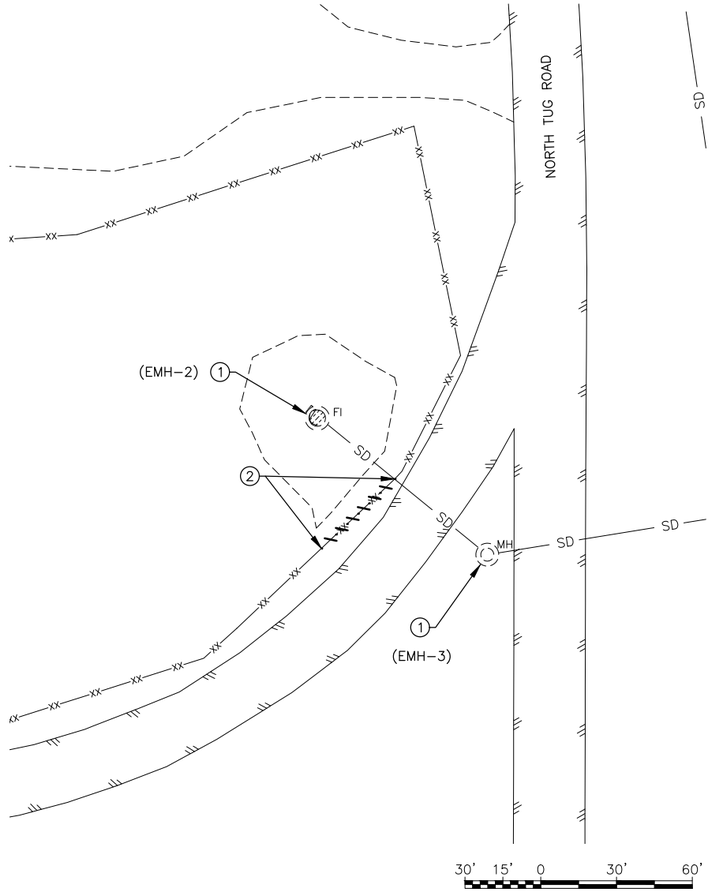
PROJECT LAYOUT PLAN

DATE: APRIL 2025

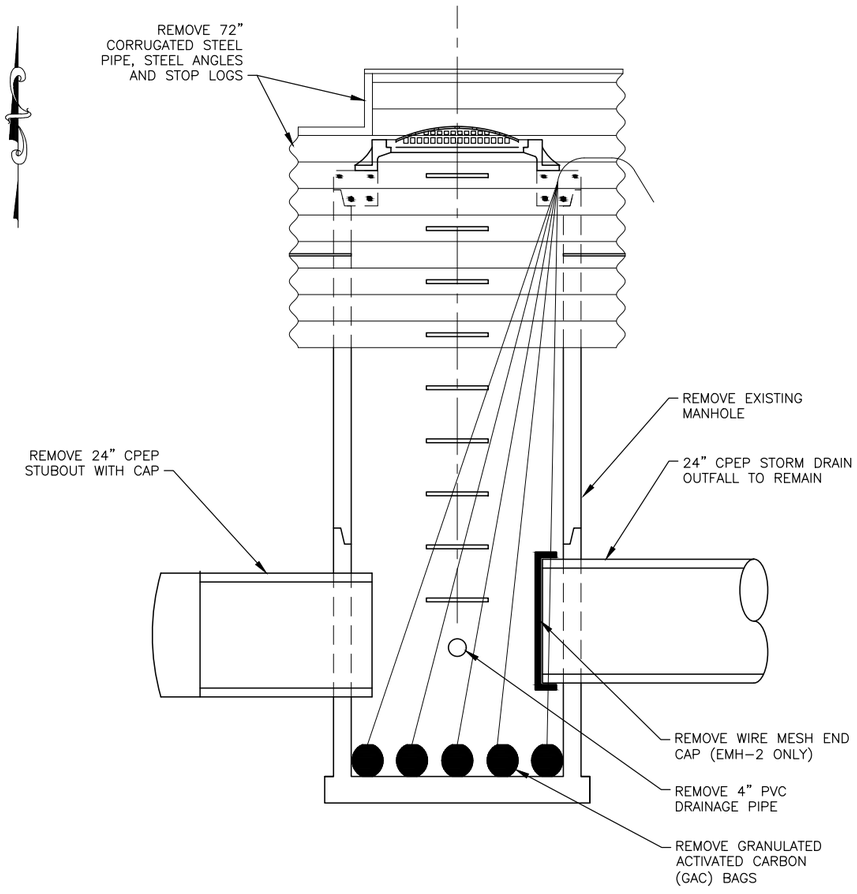
SHEET: 4 OF 12



1/5 DEMOLITION PLAN – NORTH SITE



2/5 DEMOLITION PLAN – SOUTH SITE



3/5 EXISTING MANHOLE DEMOLITION DETAIL (EMH–1 & EMH–2)

NOT TO SCALE

DEMOLITION WORK THIS SHEET:

(1) REMOVE MANHOLE

(2) REMOVE AND REPLACE FENCE

NOTES:

1. REMOVAL OF EMH–1 & EMH–2 AND ASSOCIATED APPURTENANCES SHOWN IN DETAIL 3, THIS SHEET, IS SUBSIDIARY TO PAY ITEM D751.010.0072 MANHOLE, TYPE II, 72–INCH.
2. REMOVAL OF EMH–3 IS SUBSIDIARY TO PAY ITEM D751.010.0072 MANHOLE TYPE II, 72–INCH WITH CANAL GATE
3. REMOVAL OF FENCE IS SUBSIDIARY TO PAY ITEM F162.010.0008 8–FEET CHAIN–LINK FENCE.

STATE OF ALASKA 49TH REGISTERED PROFESSIONAL ENGINEER Robert W. Burdick CE-123959

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PROJECT No. CSAPT01228

DEMOLITION PLAN

DATE: APRIL 2025

SHEET: 5 OF 12

Designed By: RB
Drawn By: RB
Checked By: SB

Date Revised: 4/25/2025 12:56 PM
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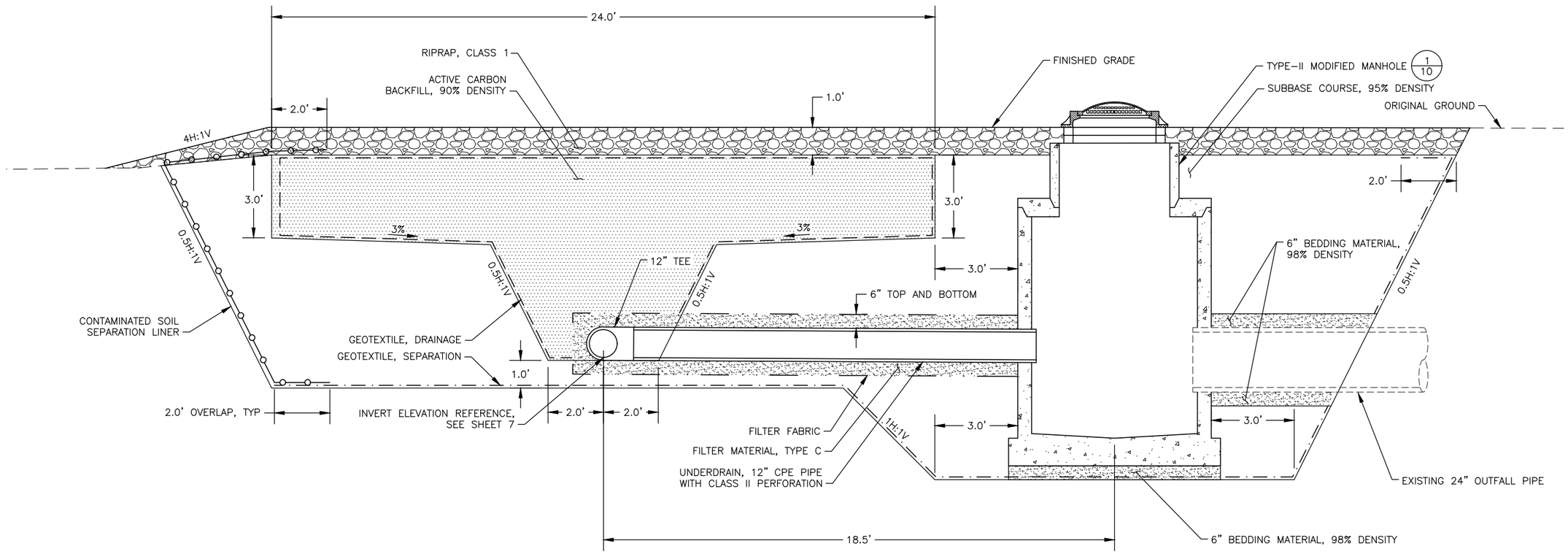

1/6 TYPICAL SECTION – MH–1 & MH–3

Designed By:	RB
Drawn By:	RB
Checked By:	SB

Date Revised:	4/28/2025 1:26 PM
Layout Name:	6
File Path and Name:	J:\JobsData\302209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-Typical Sections.dwg

STATE OF ALASKA – 49TH – Robert W. Burdick CE-123959 – REGISTERED PROFESSIONAL ENGINEER

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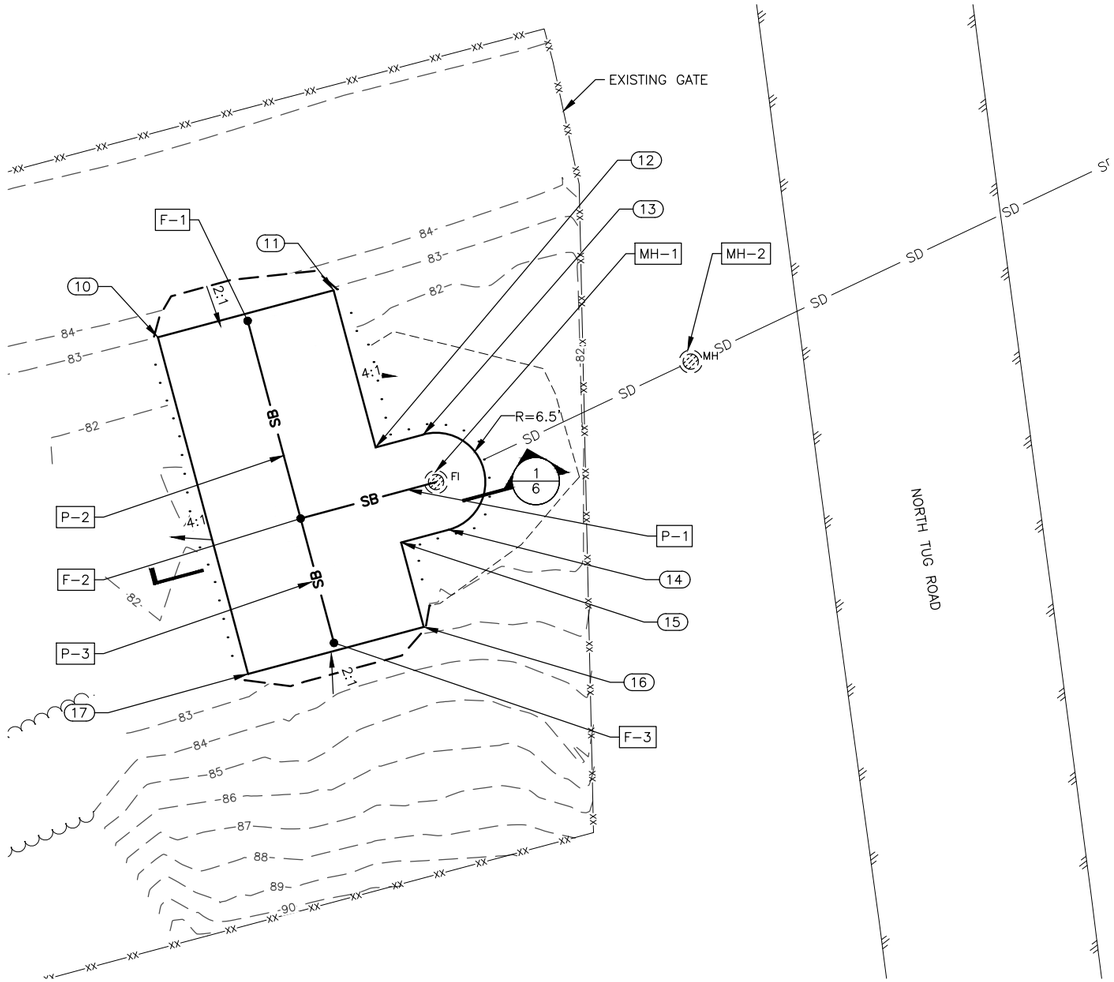
PROJECT No. CSAPT01228
TYPICAL SECTIONS

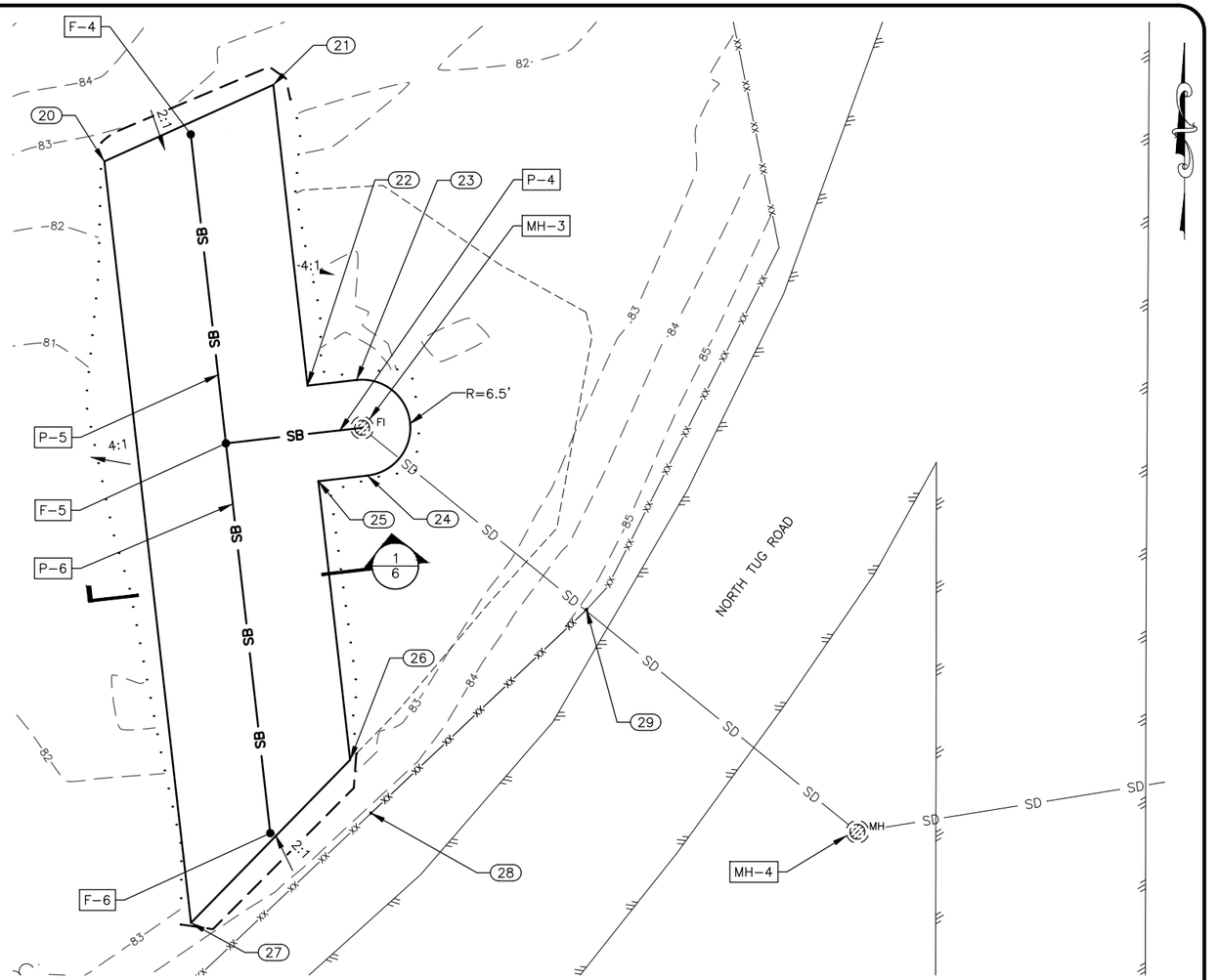
DATE: APRIL 2025

SHEET: 6 OF 12



1/7 NORTH SITE PLAN

POINT SUMMARY			
POINT	NORTHING	EASTING	ELEVATION (FT)
10	328135.37	329881.44	82.00
11	328141.58	329904.62	82.00
12	328120.85	329910.17	82.00
13	328122.53	329916.45	82.00
14	328109.97	329919.82	82.00
15	328108.29	329913.54	82.00
16	328097.15	329916.53	82.00
17	328090.93	329893.34	82.00



2/7 SOUTH SITE PLAN

POINT SUMMARY			
POINT	NORTHING	EASTING	ELEVATION (FT)
20	327617.72	329905.93	82.40
21	327628.07	329928.74	82.40
22	327587.45	329933.36	82.40
23	327588.20	329939.98	82.40
24	327575.29	329941.45	82.40
25	327574.53	329934.83	82.40
26	327536.89	329939.11	82.40
27	327514.87	329917.63	82.40
28	327529.70	329941.94	N/A
29	327557.17	329971.02	N/A

NOTES:

1. SEE SHEET 3 FOR SUMMARY TABLES.
2. SEE SHEET 6 FOR TYPICAL SECTIONS.
3. SEE SHEET 8–9 FOR FENCE DETAILS.
4. SEE SHEET 10–11 FOR STORM DRAIN DETAILS.

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SITE PLAN

DATE: APRIL 2025
SHEET: 7 OF 12

Designed By: RB
Drawn By: RB
Checked By: SB
Date Revised:
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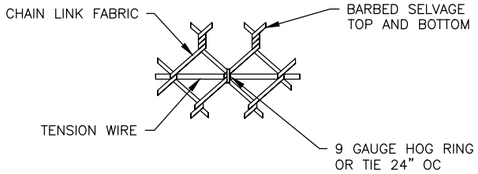
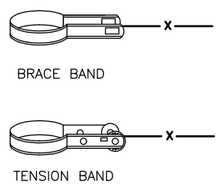


1/8 FABRIC TO TENSION WIRE FASTENERS
SCALE: NTS



2/8 TENSIONERS FOR STRANDED WIRE
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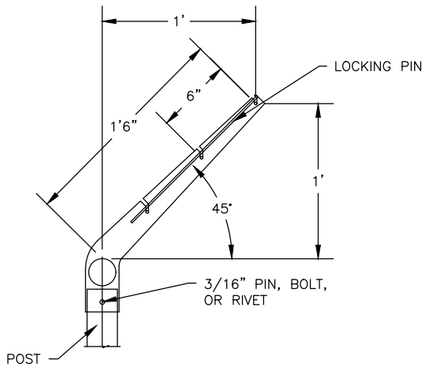

3/8 LINE POST BARBED WIRE ARM
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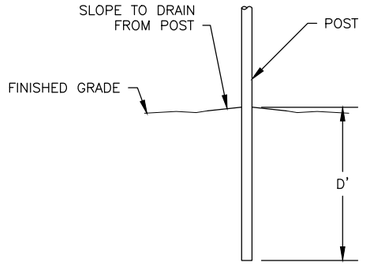
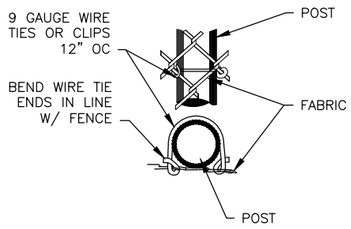
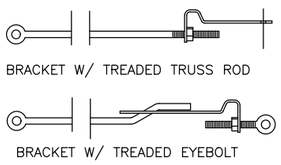


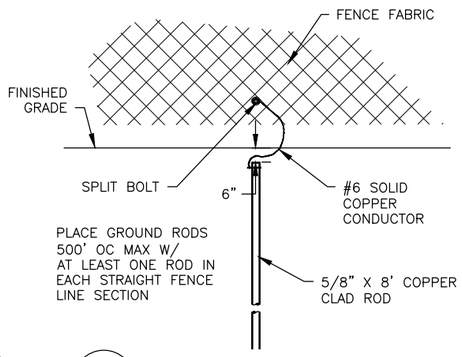
4/8 FENCE POST FOUNDATION
SCALE: NTS



5/8 FABRIC TO TUBULAR POST FASTENERS
SCALE: NTS



6/8 TRUSS ROD W/ TIGHTENER
SCALE: NTS



7/8 GROUND ROD
SCALE: NTS

PLANS DEVELOPED BY:
CRW ENGINEERING GROUP, INC.
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3252
#AECL882-AK

STATE OF ALASKA 49 TH
Robert W. Burdick
CE-123959
REGISTERED PROFESSIONAL ENGINEER

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION
4111 AVIATION AVE., ANCHORAGE ALASKA 99502
PHONE (907) 269-0590

TED STEVENS ANCHORAGE
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

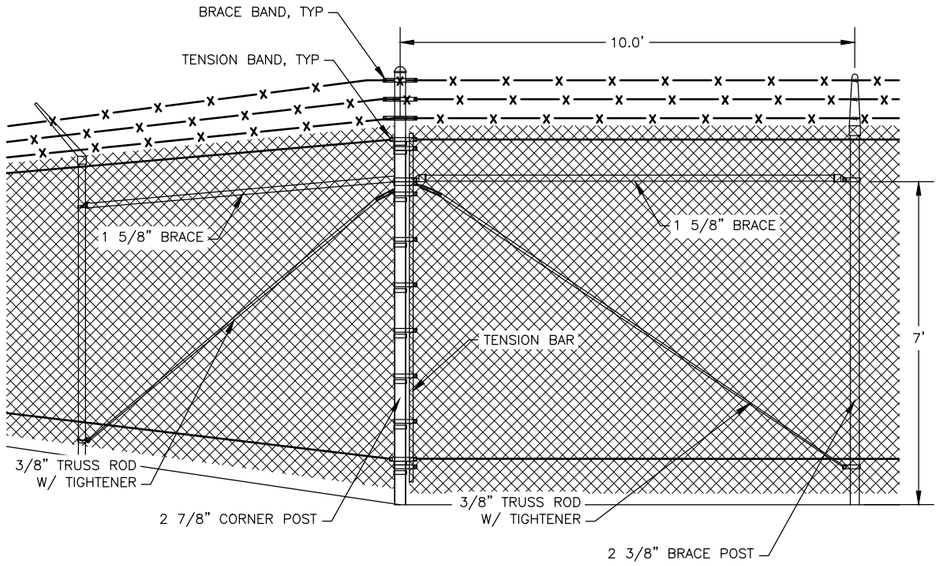
FENCE DETAILS

DATE: APRIL 2025

SHEET: 8 OF 12

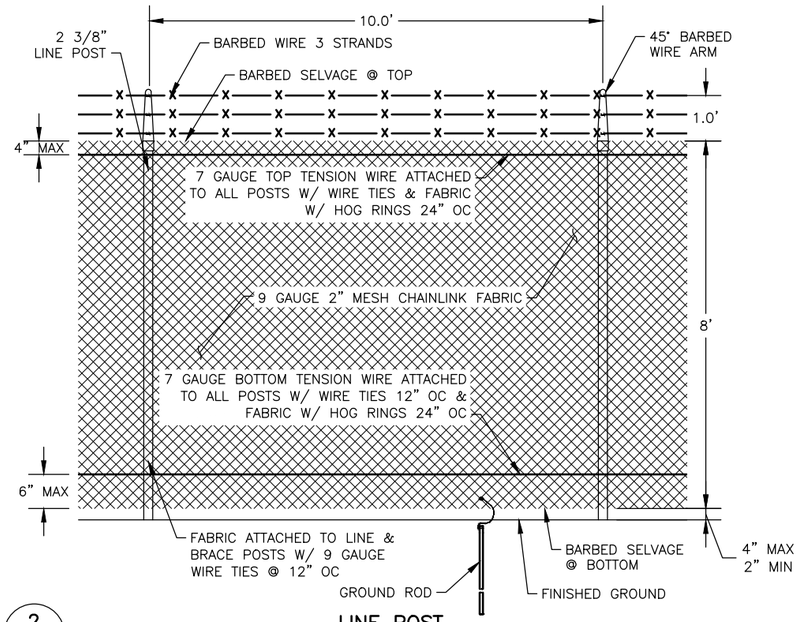
Designed By: RB
Drawn By: RB
Checked By: SB

Date Revised: 4/28/2025 12:07 PM
Layout Name: 8
File Path and Name: J:\JobsData\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-Fence Details.dwg



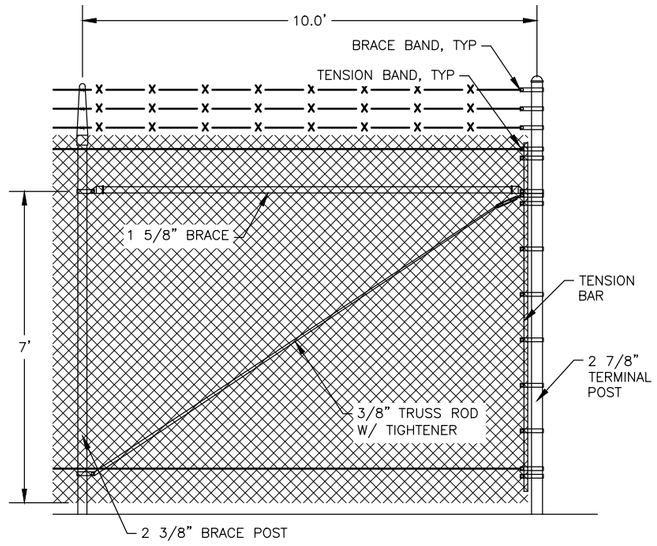
1/9 **CORNER POST**

SCALE: NTS



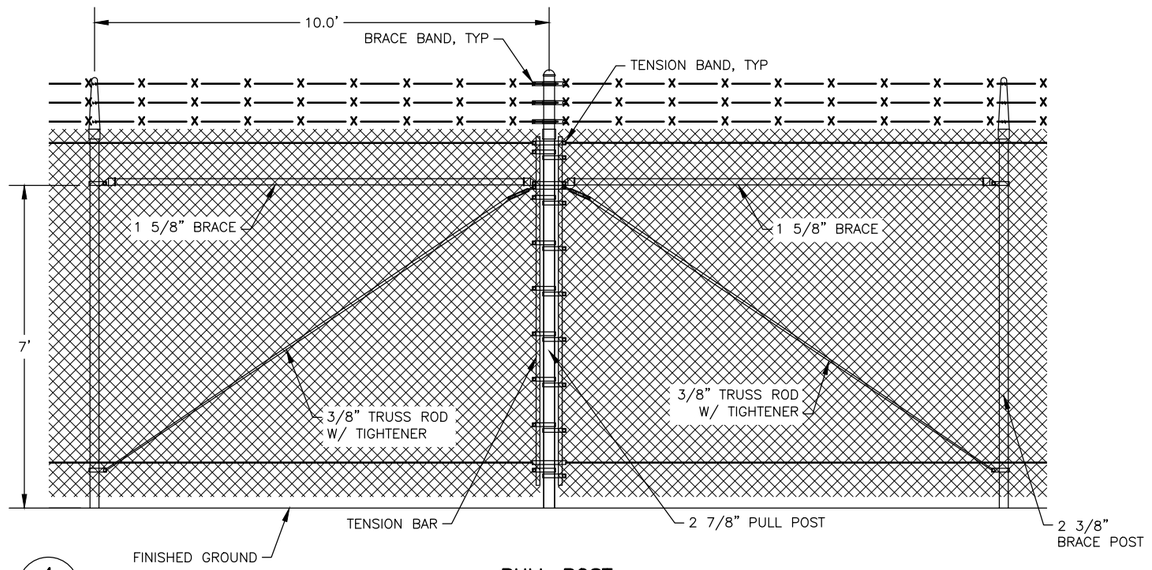
2/9 **LINE POST**

SCALE: NTS



3/9 **TERMINAL POST**

SCALE: NTS



4/9 **PULL POST**

SCALE: NTS

GENERAL FENCE NOTES:

1. ALL FABRIC TERMINATIONS SHALL BE MADE WITH TENSION BARS AND BANDS.
2. ALL FENCE COMPONENTS SHALL BE ASSEMBLED WITH CORRECTLY SIZED BANDS, CAPS, AND FIXTURES.
3. WELDED COMPONENTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
4. ALL HARDWARE SHALL BE MALLEABLE AND HOT DIPPED GALVANIZED.
5. INSTALL POST CAPS ON ALL POSTS AND UPRIGHTS WITHOUT BARBED WIRE ARMS.
6. CONTRACTOR MUST NOTIFY THE ENGINEER FOR APPROVAL PRIOR TO OPENING FENCE. CONTRACTOR MUST REINSTALL ANY REMOVED FENCING FABRIC AND BARBED WIRE PRIOR TO ENDING DAILY WORK. CONTRACTOR MUST NOTIFY THE ENGINEER FOR APPROVAL PRIOR TO LEAVING AT THE END OF DAILY WORK. A SECURED AOA MUST BE MAINTAINED AT ALL TIMES.

STATE OF ALASKA
49 TH
Robert W. Burdick
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REGISTERED PROFESSIONAL ENGINEER

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ANCHORAGE, ALASKA 99503
(907) 562-3252
#AECL882-AK

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
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ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

FENCE DETAILS

DATE: APRIL 2025

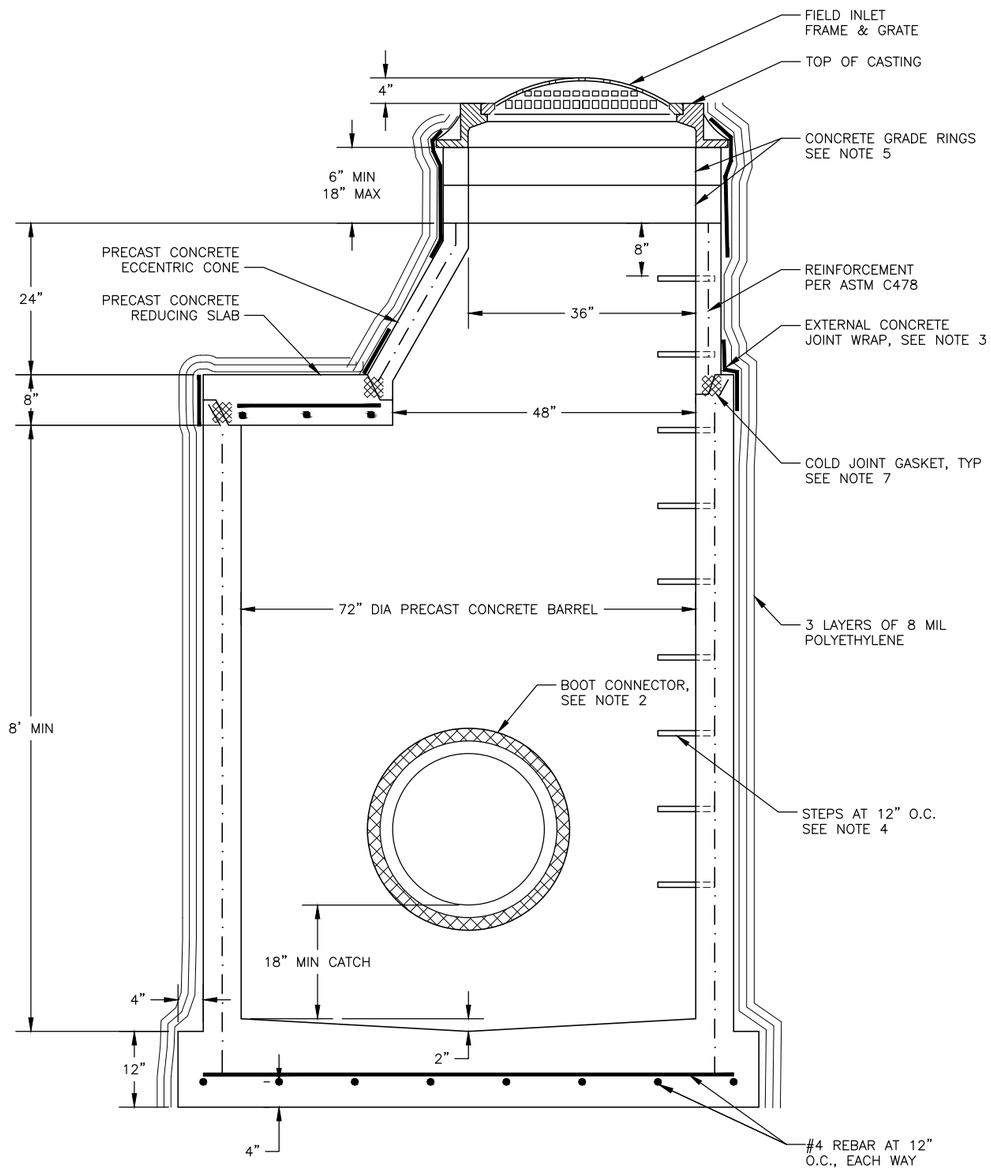
SHEET: 9 OF 12

Designed By: RB
Drawn By: RB
Checked By: SB

Date Revised: 4/28/2025 12:07 PM
Layout Name: 9
File Path and Name: J:\JobsData\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-Fence Details.dwg

NOTES

1. MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. C-478.
2. EXTEND PIPE 2" INTO MANHOLE. PIPE CONNECTIONS SHALL BE A FLEXIBLE WATERTIGHT SEAL BETWEEN THE PIPE AND THE CONCRETE STRUCTURE. THE CONNECTOR SHALL BE SIZED PER THE OUTSIDE DIAMETER OF THE CONNECTING PIPE AND CASTED INTEGRALLY WITHIN THE STRUCTURE DURING THE MANUFACTURING PROCESS. THE CONNECTOR SHALL BE MADE WITH MATERIALS AND AN OVERALL DESIGN THAT MEET OR EXCEED ASTM C-923 AND ASTM C-1478.
3. EXTERNAL CONCRETE JOINT WRAP SHALL BE INSTALLED PER MANUFACTUERES RECOMMENDATIONS AND PROVIDE A WATERTIGHT SEAL.
4. PLACE RUNGS 12" ON-CENTER ON UNOBSTRUCTED SIDE OF MANHOLE 18" MAX. FROM BOTTOM OF MANHOLE & 6" MAX. FROM TOP OF CONE.
5. MANHOLE SHALL HAVE MINIMUM OF ONE 6" GRADE RING.
6. STEEL REQUIRED FOR BARREL SHALL CONFORM TO A.S.T.M. C-478. EMBED STEEL IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.
7. INSTALL COLD JOINT GASKET AND PRIME BARREL JOINTS. HEAT COLD JOINT GASKET AND SEAL SURFACES BEFORE FINAL ASSEMBLY.
8. MH-1 & MH-3 SHALL BE PAID FOR UNDER D751.010.0072 MANHOLE, TYPE II, 72-INCH.



1/10 MODIFIED TYPE II STORM DRIAN MANHOLE (MH-1 & MH-3)

Designed By:	RB
Drawn By:	RB
Checked By:	SB
Date Revised:	4/28/2025 12:09 PM
Layout Name:	10
File Path and Name:	J:\JobsData\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-Storm Details.dwg

STATE OF ALASKA 49TH — Rich C. Bailey CE-130017 — REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY:
STEPHL ENGINEERING, LLC
3900 ARCTIC BLVD. SUITE 204
ANCHORAGE, ALASKA 99503
(907) 562-1468
#AECL1308-AK

BY	DATE	REVISION

STATE OF ALASKA
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CENTRAL REGION
4111 AVIATION AVE., ANCHORAGE ALASKA 99502
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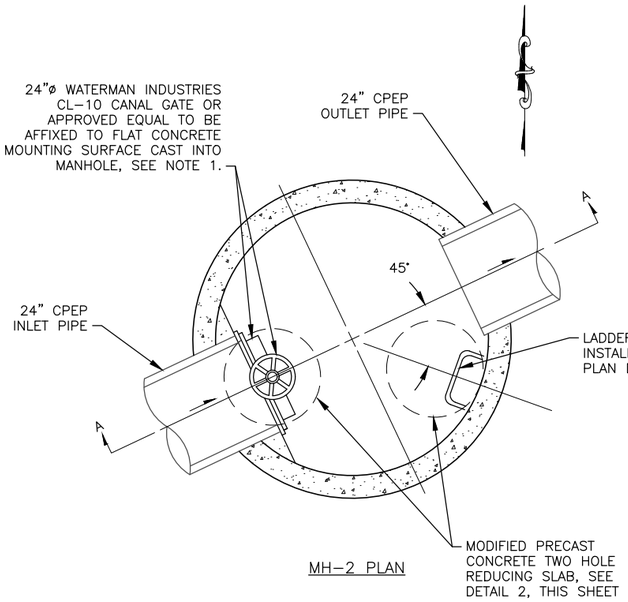
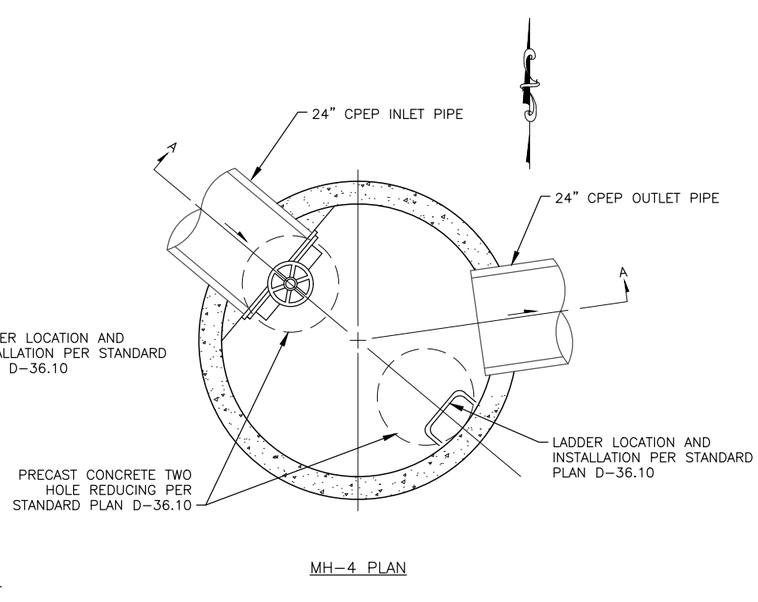
TED STEVENS ANCHORAGE
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228
STORM DRAIN DETAILS

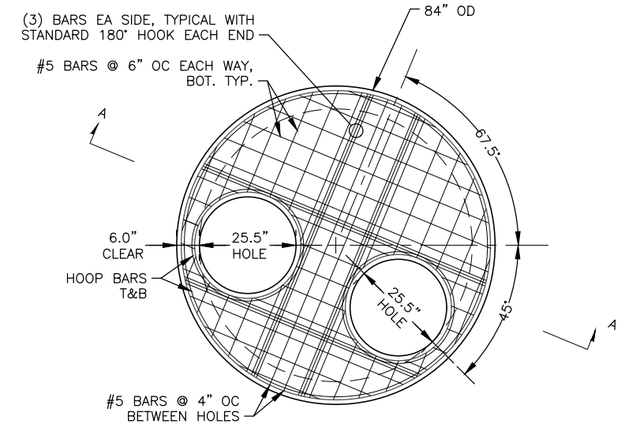
DATE: APRIL 2025
SHEET: 10 OF 12



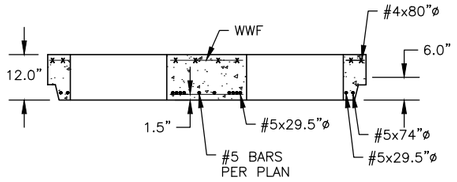
MH-2 PLAN



MH-4 PLAN



PLAN



SECTION A-A

REDUCING SLAB NOTES

1. CONCRETE MINIMUM DESIGN STRENGTH OF 4,000 PSI.

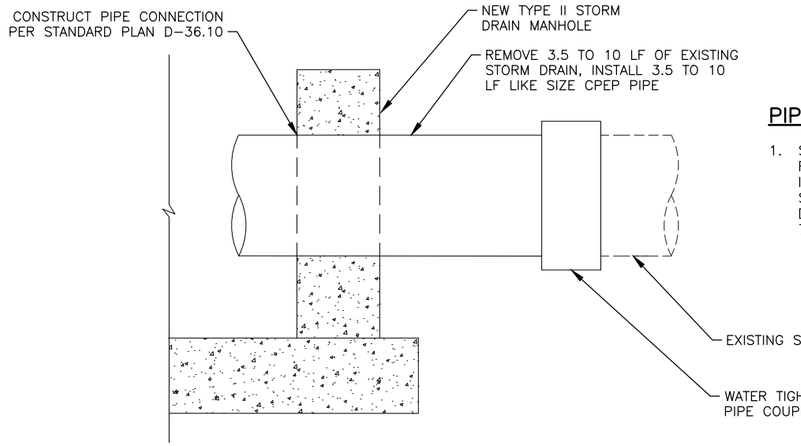
2/11 MODIFIED PRECAST CONCRETE TWO HOLE REDUCING SLAB DETAIL

SECTION A-A

1/11 TYPE II STORM DRAIN MANHOLE WITH CANAL GATE (MH-2 & MH-4)

TYPE II STORM DRAIN MANHOLE NOTES

1. CAST CONCRETE MOUNTING SURFACE INTO MANHOLE SUCH THAT BYPASS GATE HANDWHEEL IS CENTERED IN ACCESS OPENING.
2. BYPASS GATE STEM SHALL BE NON-RISING TO POSITION HANDWHEEL AT CONVENIENT STATIC OPERATING ELEVATION FROM MANHOLE OPENING ABOVE.
3. MH-2 & MH-4 SHALL BE PAID FOR UNDER D751.010.0072 MANHOLE, TYPE II, 72-INCH WITH CANAL GATE.



PIPE CONNECTION NOTES

1. STORM PIPE REMOVED AND REPLACED FOR NEW MANHOLE INSTALLATION SHALL BE SUBSIDIARY TO PAY ITEM D751.010.0072 MANHOLE, TYPE II, 72-INCH WITH CANAL GATE

3/11 STORM MANHOLE PIPE CONNECTION DETAIL

SCALE: NTS

STATE OF ALASKA 49TH — Robert W. Burdick CE-123959 — REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY:
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3940 ARCTIC BLVD. SUITE 300
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(907) 562-3252
#AECL882-AK

BY	DATE	REVISION

STATE OF ALASKA
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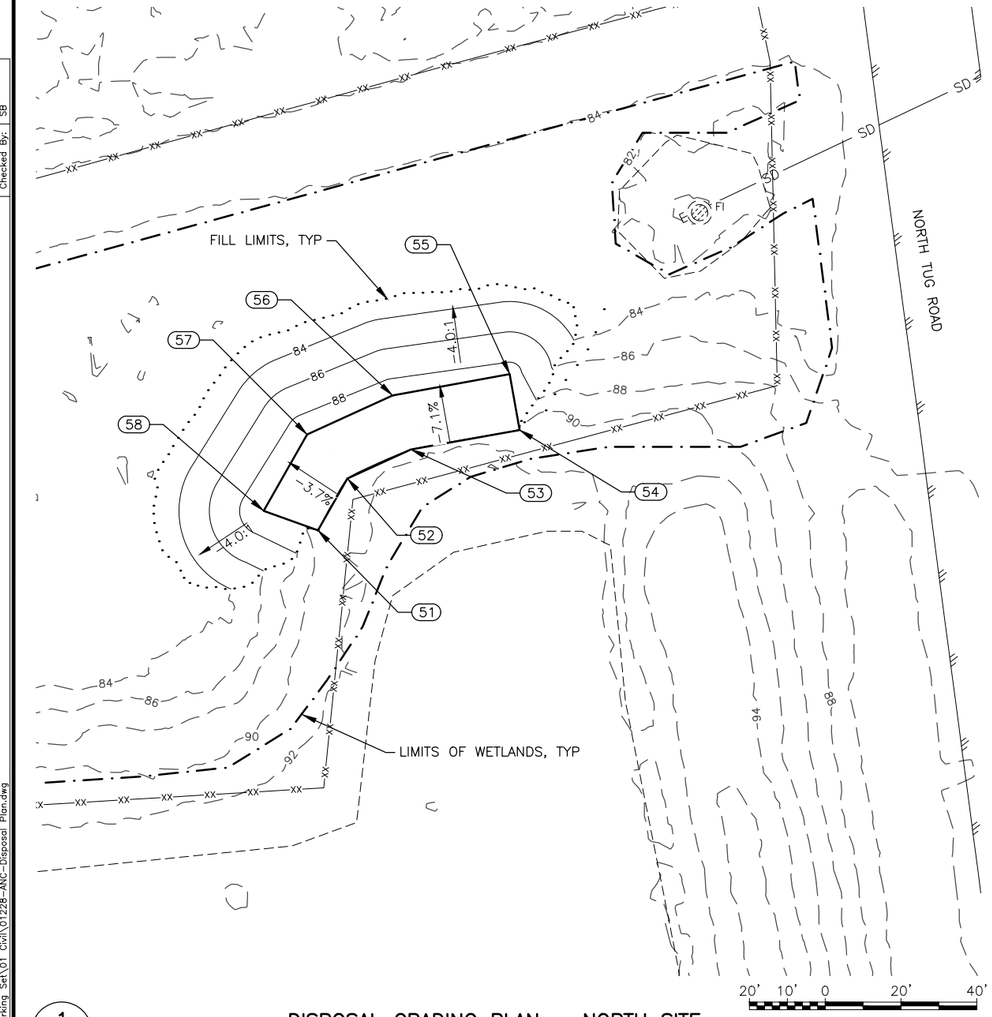
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228
STORM DRAIN DETAILS

DATE: APRIL 2025
SHEET: 11 OF 12

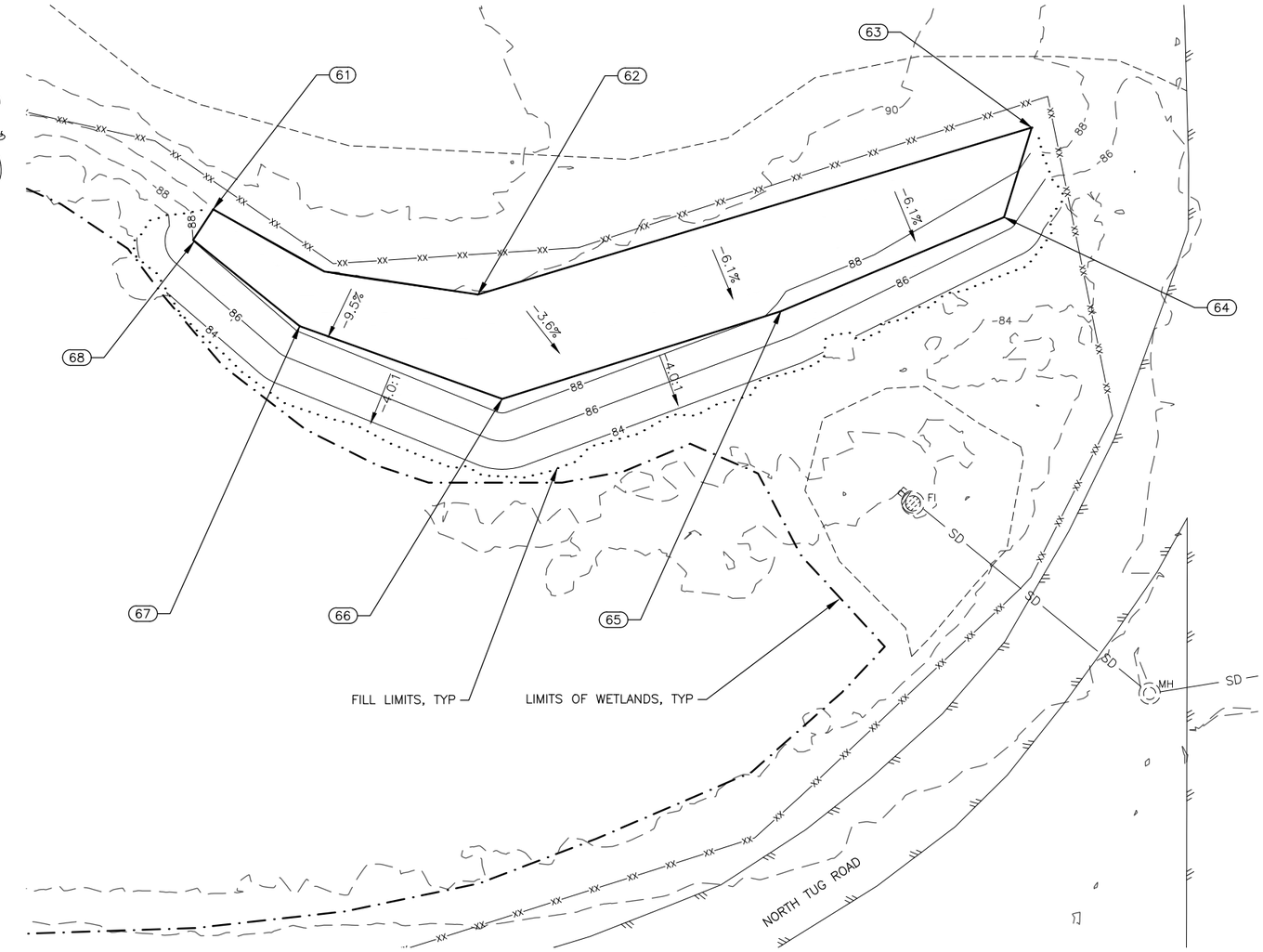
Designed By: RB
Drawn By: RB
Checked By: SB
Date Revised: 4/28/2025 12:09 PM
Layout Name: 11
File Path and Name: J:\JobsData\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-Storm Details.dwg



1
12

DISPOSAL GRADING PLAN – NORTH SITE

POINT SUMMARY			
POINT	NORTHING	EASTING	ELEVATION (FT)
51	328031.81	329817.70	90.00
52	328045.50	329825.48	90.00
53	328053.15	329842.24	90.00
54	328058.28	329870.91	90.00
55	328073.04	329868.31	88.79
56	328067.42	329837.38	89.11
57	328057.12	329814.83	89.36
58	328036.94	329803.37	89.59



2
12

DISPOSAL GRADING PLAN – SOUTH SITE

POINT SUMMARY			
POINT	NORTHING	EASTING	ELEVATION (FT)
61	327664.79	329741.42	90.00
62	327640.57	329816.66	90.00
63	327688.00	329974.06	89.00
64	327662.54	329966.20	86.92
65	327635.80	329902.78	87.94
66	327610.93	329823.56	89.00
67	327631.58	329765.99	88.39
68	327655.58	329735.95	88.00

NOTES:

1. RE-USE EXISTING ORGANICS PRIOR TO IMPORTING SOIL.
2. SEED ALL DISTURBED AREAS.
3. ALL EXCAVATED SOIL WITHIN THE SITE MUST REMAIN. NO SOIL OR WATER SHALL BE REMOVED FROM THE PROJECT AREA.

STATE OF ALASKA 49TH
Robert W. Burdick
CE-123959
REGISTERED PROFESSIONAL ENGINEER

PLANS DEVELOPED BY:
CRW ENGINEERING GROUP, INC.
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3252
#AECL882-AK

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION
4111 AVIATION AVE., ANCHORAGE ALASKA 99502
PHONE (907) 269-0590

TED STEVENS ANCHORAGE
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

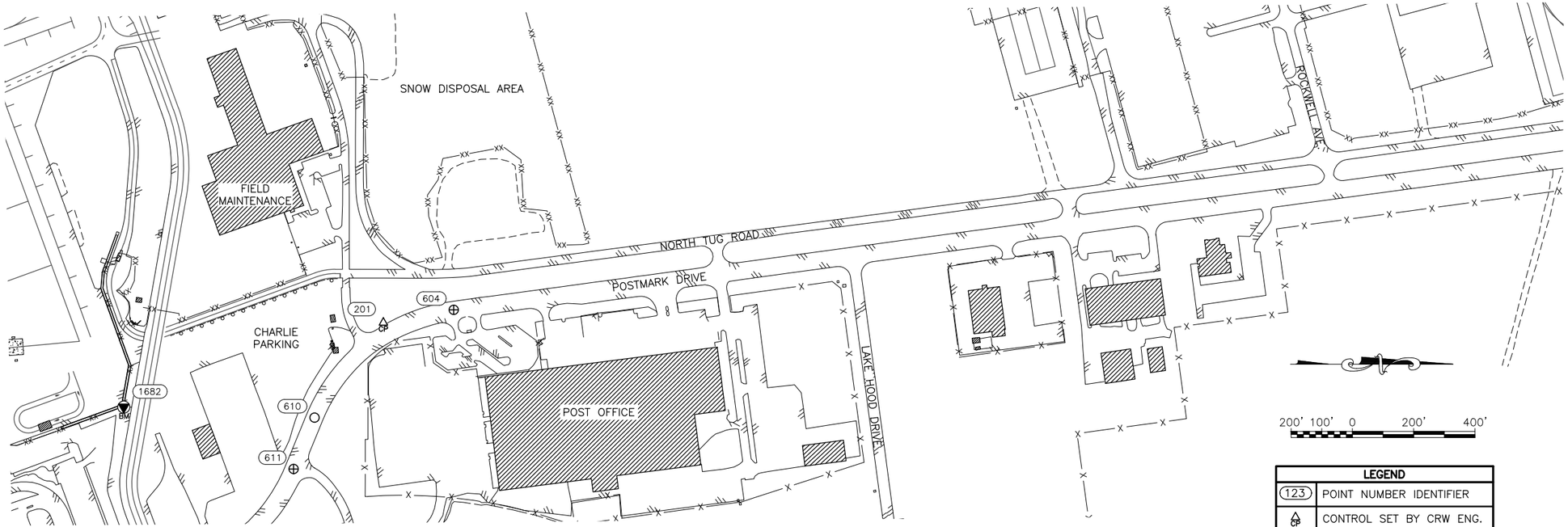
DISPOSAL AREA GRADING PLAN

DATE: APRIL 2025

SHEET: 12 OF 12

Designed By: RB
Drawn By: RB
Checked By: SB

Date Revised:
Layout Name: 12
File Path and Name: J:\Jobs\Data\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-Disposal Plan.dwg 4/28/2025 12:11 PM



LEGEND	
(123)	POINT NUMBER IDENTIFIER
CP	CONTROL SET BY CRW ENG.
○	RECOVERED ALUMINUM CAP
⊕	RECOVERED BRASS CAP
BM	RECOVERED BENCHMARK

HORIZONTAL CONTROL

POINT	NORTHING	EASTING	DESCRIPTION	STATION	OFFSET
201	327505.0974	330192.6334	SET 5/8" REBAR W/2" ALUMINUM CAP 0.2' B.G.	21+35.66	35.44L
610	327280.8116	330502.1125	FOUND 5/8" REBAR W/2" ALUMINUM CAP IN MON CASE	17+59.64	0.00R
611	327212.2718	330669.7841	FOUND 2-1/2" BRASS CAP IN MON CASE	N/A	N/A
*701	325911.4427	332026.0005	FOUND 1/2" SS DRIVE ROD PACS "ANC-A"	N/A	N/A
604	327734.9978	330150.2264	FOUND 2-1/2" BRASS CAP IN MON CASE	23+61.37	0.00L

* NOT SHOWN, OUTSIDE OF VIEWPORT

VERTICAL CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION	STATION	OFFSET
1682	326658	330468	84.84	FOUND 2-1/2" BRASS DISK ON 1/2" S.S. DRIVE ROD "NE-1"	N/A	N/A
*701	325911	332026	81.54	FOUND 1/2" SS DRIVE ROD PACS "ANC-A"	N/A	N/A

* NOT SHOWN, OUTSIDE OF VIEWPORT

NGS CORS

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION	STATION	OFFSET
*549	324878.7762	331006.0645	161.42	FOUND NGS CORS "ANC-2"	N/A	N/A

* NOT SHOWN, OUTSIDE OF VIEWPORT

-701-

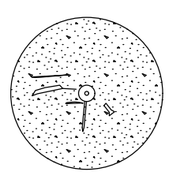
FOUND 1/2" STAINLESS STEEL DRIVE ROD IN 4" PVC PIPE, PACS "ANC-A".

-1682-

FOUND 2-1/2" BRASS DISC ON 1/2" STAINLESS STEEL DRIVE ROD IN 4-1/2" WELL CASING, ADOT&PF BENCH MARK "NE-1".

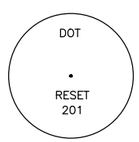
-201-

SET 5/8" REBAR WITH 2" ALUMINUM CAP 0.2' BELOW GRADE.



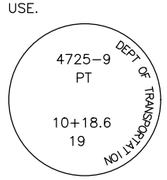
-604-

FOUND ILLEGIBLE 2-1/2" BRASS CAP IN MONUMENT CASE ALONG THE CENTERLINE OF POSTMARK DRIVE.



-610-

FOUND 5/8" REBAR WITH 2" ALUMINUM CAP IN MONUMENT CASE ALONG THE CENTERLINE OF POSTMARK DRIVE, CAP IS LOOSE.



-611-

FOUND 2-1/2" BRASS CAP IN MONUMENT CASE ALONG THE CENTERLINE OF POSTMARK DRIVE.

NOTES

1. ALL COORDINATES AND DIMENSIONS SHOWN IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
2. THE FIELD SURVEY WAS CONDUCTED JULY 29, 2024 – AUGUST 1, 2024.
3. HORIZONTAL CONTROL POINTS SHOWN WERE ESTABLISHED VIA NETWORK STATIC GNSS USING LEICA GS14 & GS18 RECEIVERS AND POST PROCESSED USING LEICA INFINITY OFFICE SOFTWARE.
4. WHETHER LISTED OR NOT, ALL MONUMENTS OR PROPERTY MARKERS, CORNERS, OR ACCESSORIES, WHICH WILL BE DISTURBED OR BURIED, SHALL BE REFERENCED OR RE-ESTABLISHED IN THEIR ORIGINAL POSITION (A.S. 19.10.260) AND RECORDED (A.S. 34.65.040).
5. BACKGROUND INFORMATION SHOWN IS FOR ORIENTATION PURPOSES ONLY.
6. CONTROL POINTS CAN BE AFFECTED BY SEASONAL DISTURBANCE, POSITIONS SHOULD BE VERIFIED PRIOR TO USE.

HORIZONTAL CONTROL STATEMENT

COORDINATE SYSTEM:
THIS PROJECT IS LOCATED ENTIRELY WITHIN THE ANCHORAGE BOWL 2000 ADJUSTMENT, A LOCAL SURFACE GRID COORDINATE SYSTEM EXPRESSED IN U.S. SURVEY FEET, DEVELOPED BY THE ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES.

BASIS OF COORDINATES:
THE BASIS OF COORDINATES IS NGS STATION O'MALLEY, LOCATED NEAR THE INTERSECTION OF THE NEW SEWARD HIGHWAY AND O'MALLEY ROAD. SAID STATION HAS ANCHORAGE BOWL 2000 COORDINATES OF 303939.2310 N, 353362.5446 E.

BASIS OF BEARINGS:
THE BASIS OF BEARINGS IS A LOCAL PLANE BEARING BETWEEN NGS STATION O'MALLEY AND NGS STATION LOOP 2 USE RM 3 1964. NGS STATION LOOP 2 USE RM 3 1964 BEARS N 01°43'26.4"E A DISTANCE OF 49488.4476 FEET FROM NGS STATION O'MALLEY. NGS STATION LOOP 2 USE RM 3 1964 HAS ANCHORAGE BOWL 2000 COORDINATES OF 353405.2778 N, 354851.3982 E.

TRANSLATION PARAMETERS:
TO CONVERT THE LOCAL COORDINATES TO NAD83 (92) STATE PLANE COORDINATES EXPRESSED IN U.S. SURVEY FEET, TRANSLATE USING +2,296,868.6878 N USF, +1,312,517.4904 E USF, AND SCALE USING 0.9998910192.

VERTICAL CONTROL STATEMENT

THE PROJECT VERTICAL DATUM IS MOA 1972 ADJUSTMENT HOLDING THE ELEVATION OF BENCH MARK NE-1 (1682) FIXED AT 84.84'.

PLANS DEVELOPED BY:
CRW ENGINEERING GROUP, INC.
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3252
#AECL882-AK

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
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4111 AVIATION AVE., ANCHORAGE ALASKA 99502
PHONE (907) 269-0590

TED STEVENS ANCHORAGE
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

SURVEY CONTROL

DATE: APRIL 2025

SHEET: AB1 OF AB1

Designed By: RB
Drawn By: RB
Checked By: SB

Date Revised: 4/28/2025 12:12 PM
Layout Name: AB1
File Path and Name: J:\Jobs\Data\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\02 Survey\03 Survey Control\01228-ANC-Survey Control.dwg

GENERAL SAFETY REQUIREMENTS

1. ALL CONSTRUCTION VEHICLES AND EQUIPMENT SHALL OPERATE A FLASHING AMBER BEACON WHEN WORKING ON THE AIRPORT.
2. PROVIDE AIRPORT FLAGGERS IF CONSTRUCTION ACTIVITY IS CONDUCTED IN CLOSE PROXIMITY TO OPERATING AIRCRAFT AND THE ENGINEER OR AIRPORT OPERATIONS DETERMINES A FLAGGER IS NECESSARY. IT IS ASSUMED THE CONTRACTORS FLAGGING EFFORT WILL BE NEEDED AT THE ACCESS GATE ONLY.
3. THE CONTRACTOR MUST REPORT SAFETY ISSUES TO THE ENGINEER AND AIRPORT OPERATIONS UPON DISCOVERY. THE CONTRACTOR MUST TAKE IMMEDIATE ACTION TO RESOLVE SAFETY ISSUES AS DIRECTED.
4. OTHER CONTRACTORS OR UTILITY COMPANIES MAY BE WORKING IN THE SAME PROJECT AREA OR IN THE VICINITY DURING THE PROGRESS OF THIS CONTRACT'S WORK. CONTRACTOR SHALL COORDINATE THEIR WORK WITH ALL OTHER CONTRACTORS OR UTILITY COMPANIES WORKING AT OR NEAR THE AIRPORT.
5. 14 DAYS PRIOR TO BEGINNING WORK, NOTIFY AIRPORT OPERATIONS THROUGH THE ENGINEER.

HAUL ROUTE NOTES:

1. SUBMIT A TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL FROM ANC AIRPORT OPERATIONS AND ANC ENGINEERING PRIOR TO BEGINNING HAULING OPERATIONS.
2. THE HAUL ROUTE IS TO BE USED BY THE CONTRACTOR TO ACCESS THE PROJECT AND STAGING AREA ON ANC PROPERTY. ALTERNATE HAUL ROUTES MAY NOT BE USED WITHOUT APPROVAL FROM THE ENGINEER. FOLLOWING CONSTRUCTION COMPLETION, THE CONTRACTOR IS REQUIRED TO RESTORE THE HAUL ROUTE TO ITS ORIGINAL CONDITION. TEMPORARY ACCESS ROUTES MUST BE REMOVED AND THE GROUND RESTORED TO ITS ORIGINAL CONDITION.
3. HAUL ROUTES SHALL BE SWEPT AND KEPT CLEAR OF DEBRIS AT ALL TIMES AND AS DIRECTED BY THE ENGINEER.
4. UNCOVERED STOCKPILED MATERIAL WILL NOT BE PERMITTED WITHIN THE PROJECT LIMITS.
5. ALL EXCAVATED OR IMPORTED MATERIAL WITHIN THE SITE MUST REMAIN. NO SOIL OR WATER SHALL BE REMOVED FROM THE PROJECT AREA

LEGEND

- PROJECT AREA
- STAGING AREA
- PROPOSED HAUL ROUTE

100' 50' 0 100' 200'

Designed By:	RB
Drawn By:	RB
Checked By:	SB
Date Revised:	4/28/2025 12:02 PM
Layout Name:	AC1
File Path and Name:	J:\Jobs\Data\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-CSPP Haul Route.dwg

PLANS DEVELOPED BY:
CRW ENGINEERING GROUP, INC.
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
(907) 562-3252
#AECL882-AK

BY	DATE	REVISION

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION
4111 AVIATION AVE., ANCHORAGE ALASKA 99502
PHONE (907) 269-0590

TED STEVENS ANCHORAGE
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

CSPP HAUL ROUTE

DATE: APRIL 2025

SHEET: AC1 OF AC2

COMPLETE THE FOLLOWING PRIOR TO PHASE 1 CONSTRUCTION

- INSTALL TRAFFIC CONTROL DEVICES
- INSTALL BMP'S PER CONTRACTOR'S APPROVED SWPPP

COMPLETE THE FOLLOWING DURING PHASE 1 CONSTRUCTION

- REMOVE EMH-1
- REMOVE EMH-2
- INSTALL MH-1
- INSTALL MH-3
- INSTALL ACTIVE CARBON BARRIERS

COMPLETE THE FOLLOWING AFTER PHASE 1 CONSTRUCTION

- REMOVE TRAFFIC CONTROL DEVICES

COMPLETE THE FOLLOWING PRIOR TO PHASE 2 CONSTRUCTION

- INSTALL TRAFFIC CONTROL DEVICES

COMPLETE THE FOLLOWING DURING PHASE 2 CONSTRUCTION

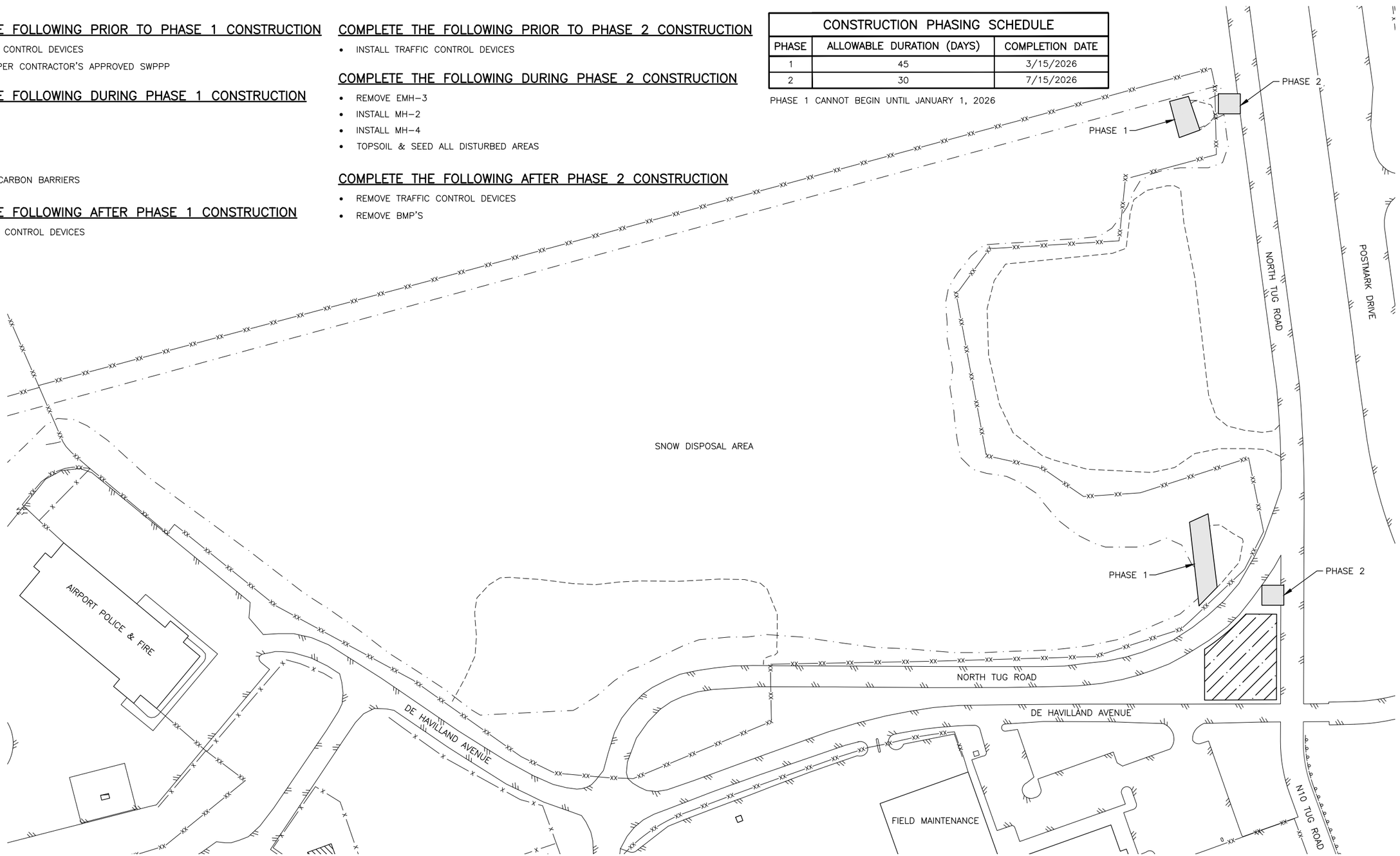
- REMOVE EMH-3
- INSTALL MH-2
- INSTALL MH-4
- TOPSOIL & SEED ALL DISTURBED AREAS

COMPLETE THE FOLLOWING AFTER PHASE 2 CONSTRUCTION

- REMOVE TRAFFIC CONTROL DEVICES
- REMOVE BMP'S

CONSTRUCTION PHASING SCHEDULE		
PHASE	ALLOWABLE DURATION (DAYS)	COMPLETION DATE
1	45	3/15/2026
2	30	7/15/2026

PHASE 1 CANNOT BEGIN UNTIL JANUARY 1, 2026



SHEET NOTES:

1. 14 DAYS PRIOR TO BEGINNING WORK, NOTIFY AIRPORT OPERATIONS THROUGH THE ENGINEER.

LEGEND

PHASE WORK AREA

STAGING AREA

60' 30' 0 60' 120'

Designed By: RB
Drawn By: RB
Checked By: SB

Date Revised: 4/28/2025 12:02 PM
Layout Name: AC2
File Path and Name: J:\Jobs\Data\30209.11 ANC PFAS Remediation\00 CADD\01 Working Set\01 Civil\01228-ANC-CSPP Haul Route.dwg

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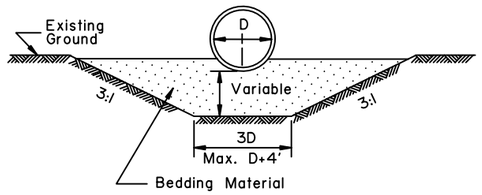
ANCHORAGE, ALASKA
ANC PFAS REMEDIATION
PROJECT No. CSAPT01228

CSPP OVERVIEW

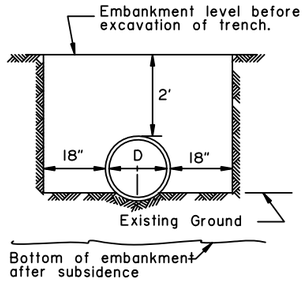
DATE: APRIL 2025

SHEET: AC2 OF AC2

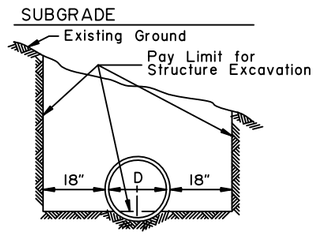


TYPE "A"
FOUNDATION STABILIZATION

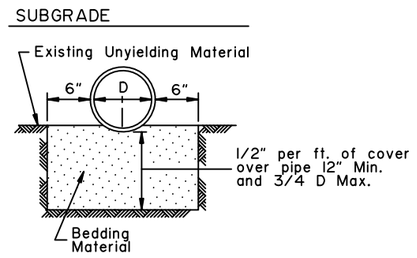
To be used in unstable areas as directed by the Engineer.



TYPE "B"



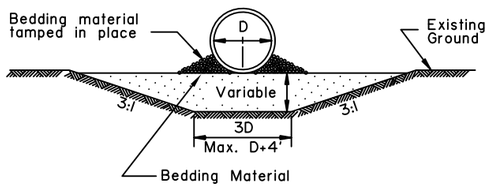
TYPE "C"



TYPE "D"
ROCK OR UNYIELDING MATERIAL

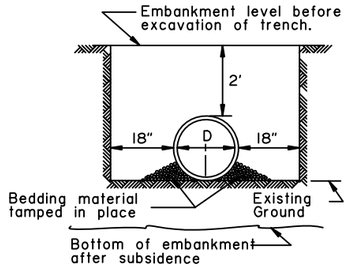
GENERAL NOTES:

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.



'ALTERNATE'
TYPE "A"
FOUNDATION STABILIZATION

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



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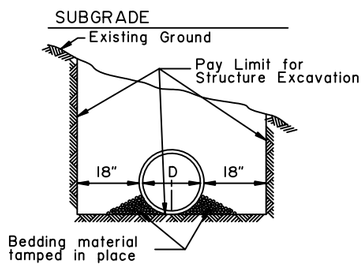
TYPE "B"



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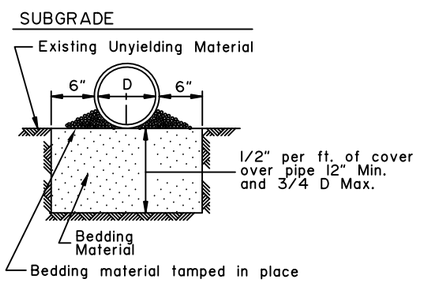
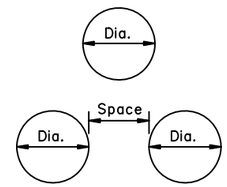
TYPE "C"



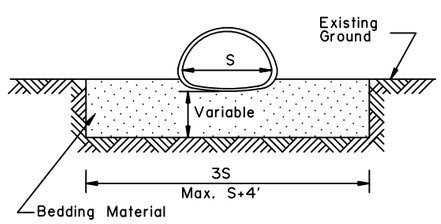
'ALTERNATE' TYPE "D"
ROCK OR UNYIELDING MATERIAL

D = Nominal Pipe Diameter



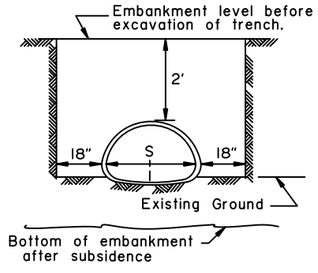
MULTIPLE INSTALLATIONS	
Dia.	Minimum Space Between Pipes
0" - 42"	24"
48" & Over	1/2 Dia. of pipe or 3', whichever is less.

CULVERT PIPE

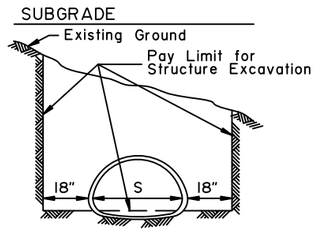


TYPE "A"
FOUNDATION STABILIZATION

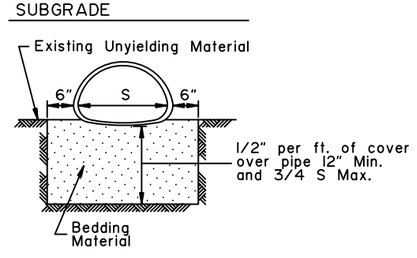
To be used in unstable areas as directed by the Engineer.



TYPE "B"

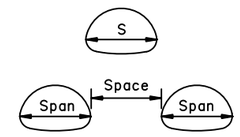


TYPE "C"



TYPE "D"
ROCK OR UNYIELDING MATERIAL

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.

ARCH

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CULVERT PIPE & ARCH INSTALLATION DETAILS

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 CIRCULAR ALUMINUM PIPE

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

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

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

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

CORRUGATED ALUMINUM PIPE-ARCH

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

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

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

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

GENERAL NOTES:

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

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

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

Adoption Date: 7/17/2020

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

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

Minimum & Maximum Cover for 2 2/3" x 1/2" Steel Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
12	12	100+	100+	100+	100+	100+
15	12	100+	100+	100+	100+	100+
18	12	100+	100+	100+	100+	100+
21	12	100+	100+	100+	100+	100+
24	12	100+	100+	100+	100+	100+
30	12	83	100+	100+	100+	100+
36	12	69	86	100+	100+	100+
42	12	59	74	100+	100+	100+
48	12	51	64	91	100+	100+
54	12		57	80	100+	100+
60	12			72	93	100+
66	12			66	85	100+
72	12				78	95
78	12					84
84	12					73

Minimum & Maximum Cover fo 3" x 1" Steel Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
36	12			100+	100+	100+
42	12			100+	100+	100+
48	12		74	100+	100+	100+
54	12	53	66	93	100+	100+
60	12	47	59	83	100+	100+
66	12	43	54	76	98	100+
72	12	39	49	69	89	100+
78	12	36	45	64	82	100+
84	12	33	42	59	77	94
90	12	31	39	55	71	87
96	12	29	37	52	67	82
102	18	27	34	49	63	77
108	18		32	46	59	73
114	18		31	43	56	69
120	18		29	41	53	65
126	18			39	51	62
132	18			37	48	59
138	18			36	46	57
144	18				44	54

Minimum & Maximum Cover for 5" x 1" Steel Pipe						
Gage		16	14	12	10	8
Thickness		0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
36	12	71	88	100+	100+	100+
42	12	60	76	100+	100+	100+
48	12	53	66	93	100+	100+
54	12	47	59	82	100+	100+
60	12	42	53	74	96	100+
66	12	38	48	67	87	100+
72	12	35	44	62	79	97
78	12	32	40	57	73	90
84	12	30	37	53	68	83
90	12	28	35	49	63	78
96	12	26	33	46	59	73
102	18	24	31	43	56	69
108	18		29	41	53	65
114	18		27	39	50	61
120	18		26	37	47	58
126	18			35	45	55
132	18			33	43	53
138	18			32	41	50
144	18				39	48

Minimum & Maximum Cover for 6" x 2" Steel Multiplate Pipe*								
Gage		12	10	8	7	5	3	1
Thickness		0.111	0.140	0.170	0.188	0.218	0.249	0.280
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
60	12	46	67	87	100	100+	100+	100+
66	12	42	60	79	91	100+	100+	100+
72	12	38	55	73	83	100+	100+	100+
78	12	35	51	67	77	93	100+	100+
84	12	32	47	62	71	86	100+	100+
90	12	30	44	58	67	80	95	100+
96	12	28	41	54	62	75	89	97
102	18	27	39	51	59	71	84	91
108	18	25	37	48	55	67	79	86
114	18	24	35	45	52	63	75	82
120	18	22	33	43	50	60	71	77
126	18	21	31	41	47	57	68	74
132	18	20	30	39	45	54	64	70
138	18	19	28	37	43	52	62	67
144	18	18	27	36	41	50	59	64

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

GENERAL NOTES

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

CORRUGATED CIRCULAR STEEL PIPE

CORRUGATED STEEL PIPE-ARCH

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

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

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

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

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

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

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

Adoption Date: 7/17/2020

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

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

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

GENERAL NOTES

1. All materials and workmanship shall be in accordance with the State of Alaska Standard Specifications for Highway Construction.

2. For foundation and structural backfill details see Standard Plan D-01 "Culvert Pipe & Arch Installation Details".

3. Pipe cover height is measured from top of the pipe to top of rigid pavement, or to the bottom of subgrade for flexible pavement. In all cases the minimum cover shall be no less than 2 ft. Where loads traverse the culvert during construction minimum cover shall be no less than 4 ft.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

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

Adoption Date: 7/17/2020

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By: KLH Date: 7/8/2020

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D-04.22

ALUMINUM SPIRAL RIB PIPE

Minimum & Maximum Cover for Aluminum Spiral Rib Circular Pipe*					
Gage		16	14	12	10
Thickness		0.064	0.079	0.109	0.138
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
18	12	43	61		
21	12	38	52	84	
24	12	33	45	73	
30	15	26	36	58	
36	18	21	30	49	69
42	21		25	41	59
48	24			36	51
54	24			32	46
60	24			29	41
66	24				37
72	30				34

*¾ x ¾ x 7½ in. Corrugations

Minimum & Maximum Cover for Aluminum Spiral Rib Pipe-Arch*						
Gage			16	14	12	10
Thickness			0.060	0.075	0.105	0.135
Span (Ft.-In.)	Rise (Ft.-In.)	Min. Cover (In)	Max. Cover (Ft)			
20	16	12	16			
23	19	12	15			
27	21	15	13	13		
33	26	18	13	13	13	
40	31	21		13	13	
46	36	24			13	13
53	41	24			13	13
60	46	24			13	13
66	51	24				13

*¾ x ¾ x 7½ in. Corrugations

STEEL SPIRAL RIB PIPE

Minimum & Maximum Cover for Steel and Aluminized Steel Spiral Rib Circular Pipe*					
Gage		16	14	12	10
Thickness		0.064	0.079	0.109	0.138
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
18	12	91			
24	12	68	95	100+	
30	12	54	76	100+	
36	12	45	63	100+	
42	12	38	54	90	
48	12	33	47	79	
54	18	30	42	70	
60	18	27	38	63	92
66	18	24	34	57	83
72	18		31	52	76
78	24		29	48	70
84	24		27	45	65
90	24			42	61
96	24			39	56
102	30			36	50
108	30			32	45

*¾ x ¾ x 7½ in. Corrugations.

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

*¾ x ¾ x 7½ in. Corrugations

GENERAL NOTES

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

State of Alaska DOT&PF
ALASKA STANDARD PLAN

PIPE AND ARCH TABLES

Adopted as an Alaska Standard Plan by: Carolyn Morehouse

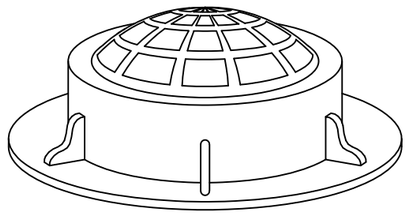
Carolyn Morehouse, P.E.
Chief Engineer

Adoption Date: 7/17/2020

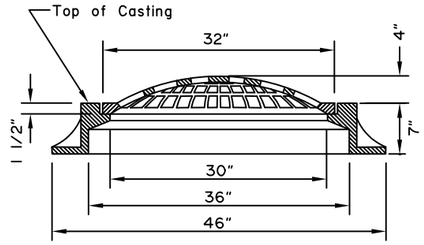
Last Code and Stds. Review
By: KLH Date: 7/8/2020

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

D-04.22

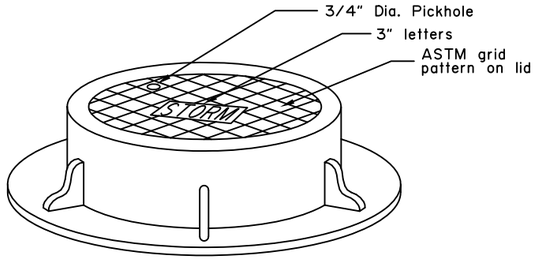


Surround field inlets with a 24" wide rock rubble collar 10" deep, 3" maximum size rock.



FIELD INLET FRAME & GRATE

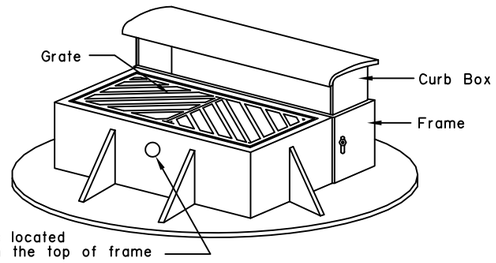
To be supplied for storm drain manholes where field inlets are specified. Field inlet frame and grate shall have a Minimum total weight of 525 lb.



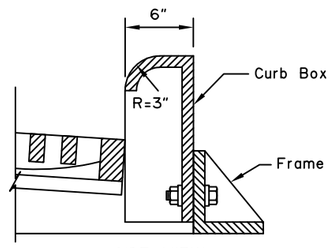
MANHOLE LID FRAME AND GRATE

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.

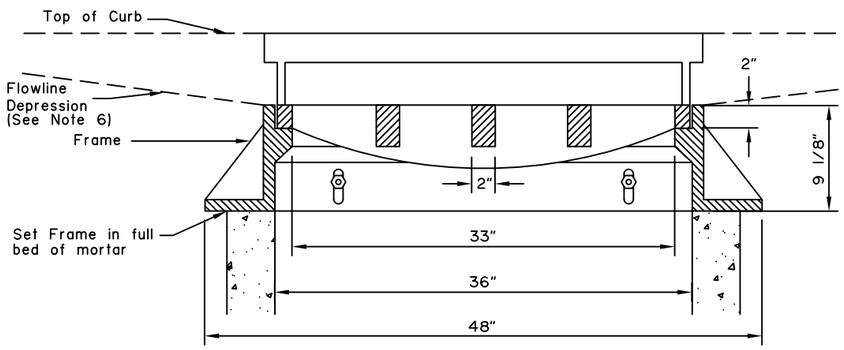


NOTE:
Curb Box, Grate and frame shall have a minimum total weight of 725 lb.

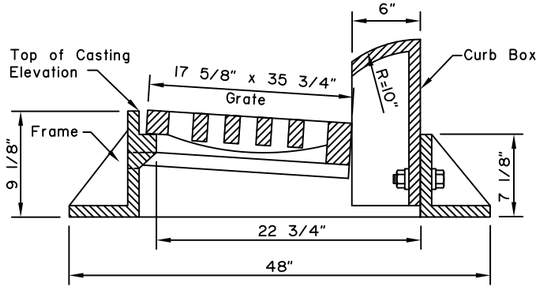


SIDE VIEW
MOUNTABLE CURB AND GUTTER

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



FRONT VIEW



SIDE VIEW
EXPRESSWAY CURB AND GUTTER

CURB INLET FRAME AND GRATE

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

NOT TO SCALE

State of Alaska DOT&PF
ALASKA STANDARD PLAN

STORMDRAIN MANHOLE FRAME AND GRATE DETAILS

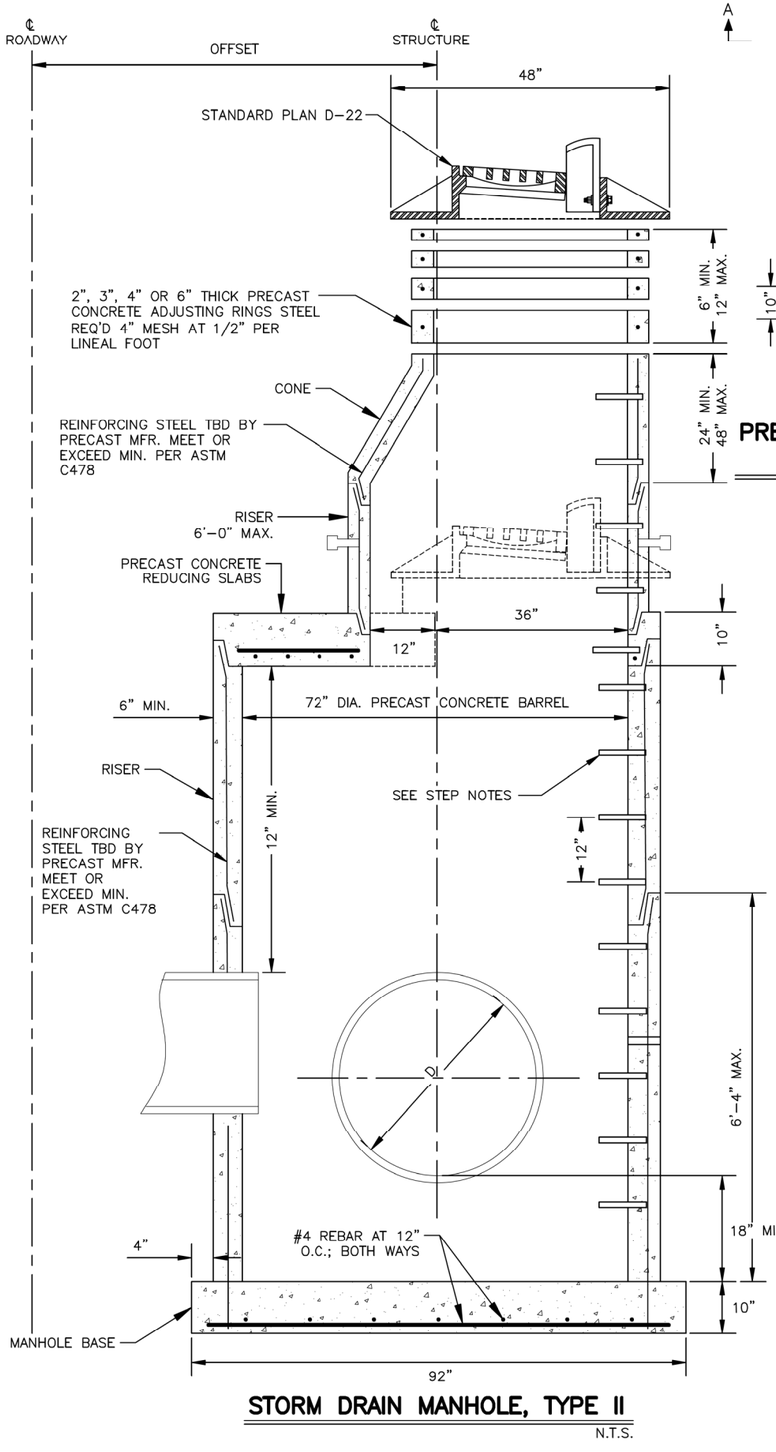
Adopted as an Alaska Standard Plan by:
Kenneth J. Fisher, P.E.
Chief Engineer

Adoption Date: 02/08/2019

Last Code and Stds. Review
By: Date:

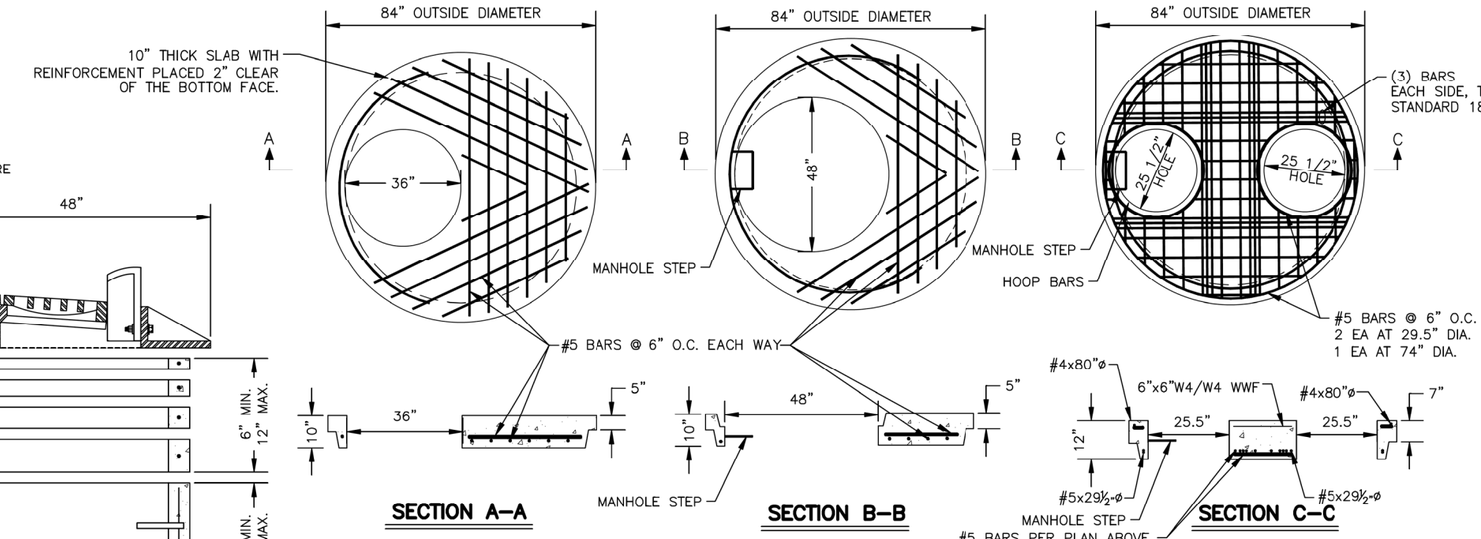
Next Code and Standards Review date: 02/08/2029

D-22.01



STORM DRAIN MANHOLE, TYPE II

N.T.S.



PRECAST CONCRETE REDUCING SLAB (72" TO 36")

N.T.S.

PRECAST CONCRETE REDUCING SLAB (72" TO 48")

N.T.S.

PRECAST CONCRETE REDUCING SLAB (72" TO 25"/25")

N.T.S.

GENERAL NOTES:

1. THESE DRAWINGS ARE FOR PRECAST REINFORCED CONCRETE FOR HIGHWAY USE. CAST IN PLACE STRUCTURES MAY BE USED AS APPROVED BY THE ENGINEER.
2. MEET THE REQUIREMENTS OF ASTM C-478 FOR ALL DRAINAGE STRUCTURES AND APPURTENANCES.
3. MINIMUM STEEL REQUIRED FOR BARREL AS PER ASTM C-478 SHALL BE IMBEDDED IN BASE SO THAT THE FIRST BARREL SECTION IS CONNECTED TO THE BASE BY CONTINUOUS STEEL. PROVIDE REINFORCING STEEL TYPE AND GRADE PER DOT&PF STANDARD SPECIFICATIONS.
4. CONCRETE TO HAVE 1 1/2" MINIMUM COVER.
5. USE CLASS A OR CLASS B CONCRETE PER DOT&PF STANDARD SPECIFICATIONS.
6. SEAL RISER JOINTS WITH FLEXIBLE PLASTIC JOINT SEALERS.
7. PROVIDE NON-SHRINK GROUT. PROTECT GROUT DURING CURE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED METHOD.
8. FORM ALL BLOCK-OUTS.
9. MANHOLE SHALL HAVE A MINIMUM OF ONE 6" GRADE RING.
10. ALL STORM DRAIN MANHOLES AND INLETS SHALL HAVE 18" MINIMUM SUMPS. MANHOLES WITH PETROLEUM SEPARATORS SHALL HAVE 24" MINIMUM SUMPS.
11. OFFSET IS MEASURED TO CENTERLINE OF STRUCTURE.
12. EXTEND PIPE 2" INTO MANHOLE. SEAL PIPE PENETRATIONS WITH NON-SHRINKABLE GROUT MIXED WITH POTABLE WATER PER MANUFACTURER'S RECOMMENDATIONS.
13. CATCH BASIN LEADS SHALL ENTER THE MANHOLE AT LEAST ONE PRIMARY LEAD DIAMETER ABOVE THE TOP OF THE PRIMARY LEAD UNLESS MINIMUM PIPE SLOPES CANNOT BE ACHIEVED.
14. MAXIMUM PIPE DIAMETER IS NOT TO EXCEED HALF OF THE STRUCTURE DIAMETER. PRIMARY LEADS MUST BE A MINIMUM OF 135 DEGREES APART.
15. LIVE LOAD FOR DESIGN OF THE MANHOLE BARRELS, RISERS, AND REDUCING SLABS IS AASHTO HL-93 (HS20 AND DESIGN TANDEM AXLE/WHEEL LOADS).
16. A FLAT LID WITH A SMALLER OPENING MAY ALSO BE USED IF CALLED FOR IN THE PLANS.

REDUCING SLAB NOTES:

1. USE NO. 5 FOR ALL REBAR EXCEPT STIRRUPS AND HOOPS.
2. SPACE ALL REBAR AT 6" CENTERS UNLESS OTHERWISE NOTED.
3. MAINTAIN A MINIMUM OF 1 1/2" OF CONCRETE COVER OVER ALL REBAR.
4. REINFORCING STEEL SHOWN IS A MINIMUM PER ASTM C478. PRECAST MFR TO COMPLETE AND SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR ENGINEER'S REVIEW.

MANHOLE STEP NOTES:

1. MEET CURRENT OSHA STANDARDS FOR STEPS AND ACCESS OPENINGS.
2. PLACE STEPS 12" O.C. ON AN UNOBSTRUCTED SIDE OF THE STRUCTURE, 18" MAXIMUM FROM MANHOLE BASE. IF UNOBSTRUCTED SIDE NOT AVAILABLE, PLACE STEP 6" OVER SMALLEST PIPE. WHEN USING A CONE, FIRST LADDER RUNG IS 8" MAXIMUM FROM TOP OF CONE. WHEN USING A FLAT LID, FIRST LADDER RUNG IS 4" MAXIMUM FROM TOP OF RISER.
3. PROVIDE INJECTION MOLDED POLYPROPYLENE COVERED GRADE 60 STEEL STEPS TIGHTLY IMBEDDED AT LEAST 3" INTO CONCRETE.
4. INSTALL STEPS TO RESIST A PULLOUT FORCE OF 1500 LB.
5. THE MINIMUM DIAMETER OF CLEAR ACCESS TO STEP IS 24".
6. THE CONTRACTOR SHALL TAKE SPECIAL CARE FOR ANY MANHOLE THAT FALLS IN A CURB LINE TO SEE THAT WHEN MANHOLE IS OFFSET DURING INSTALLATION THAT THE STEPS FALL UNDER THE CURB INLET.

State of Alaska DOT&PF
ALASKA STANDARD PLAN

72" STORM DRAIN MANHOLE (PRECAST CONCRETE)

TYPE II MANHOLE

Adopted as an Alaska Standard Plan by:

Lauren Little, P.E.
Interim Chief Engineer

Adoption Date: 01/29/2024

Last Code and Stds. Review
By: BMM Date: 12/13/2023

Next Code and Standards Review Date: 12/13/2033

D-36.10