

HEALY CENTER PIT ROAD

PROJECT NO. 52959-8

SECTIONS 11&14, T12S, R6W, FAIRBANKS MERIDIAN,
ALASKA

PREPARED FOR:

ALASKA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING LAND AND WATER, AML PROGRAM
550 W 7TH AVE. SUITE 920
ANCHORAGE, AK 99501

PREPARED BY:

RECON LLC
565 W. RECON CIR.
PALMER, AK 99645

SHEET INDEX:

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PLANS DEVELOPED FOR:
STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
ABANDONED MINE LANDS SECTION
550 W 7TH AVE. SUITE 920, ANCHORAGE, AK 99501
RECOMMENDED:
Charles J. Irevs 3/18/26
CHARLES J. IREVS
AML PROGRAM MANAGER
DATE
APPROVED:
Christy Colles 3/18/26
CHRISTY COLLES
DIRECTOR, DIVISION MINING, LAND & WATER
DATE

PROJECT: HEALY CENTER PIT

PROJECT ENGINEER: ISAAC J. ROWLAND, PE

PREPARED BY: RECON LLC 565W, RECON CIR, PALMER, AK 99645

NO.	DESIGN/CONSTRUCTION/RECORD	DWN BY/DATE	CHKD BY/DATE
1	ISSUED FOR CONSTRUCTION	ZLI02-09-26	LR02-09-26



PREPARED FOR: DEPARTMENT OF NATURAL RESOURCES, AML PROGRAM

550 W. 7TH AVE. SUITE 920
ANCHORAGE, AK 99501-3577

HEALY CENTER PIT

TITLE SHEET

SCALE

NA SHEET SIZE

22" X 34"

SHEET 1 of 10



GENERAL NOTES

GENERAL DESIGN PARAMETERS

1. ROAD GRADE 10% MAXIMUM
2. VERTICAL CURVE LENGTH MIN. OF 100 FEET PER EACH PERCENT (1%) GRADE
3. DESIGN SPEED 20 MPH

IN THE EVENT THAT THERE IS A CONFLICT BETWEEN THE ABOVE REFERENCES AND THESE GENERAL NOTES, THE OWNER IS TO BE NOTIFIED OF ALL CONFLICTS AND THE FOLLOWING GENERAL PRIORITY SHALL BE FOLLOWED:

1. ALL PROJECT PERMIT REQUIREMENTS
2. THE GENERAL NOTES
3. THE DESIGN DRAWINGS

PERMITS

1. THE OWNER WILL PROVIDE THE CONTRACTOR COPIES OF ALL PERMITS AND APPROVALS THAT ARE OBTAINED BY THE OWNER.
2. THE OWNER WILL TRANSMIT TO THE CONTRACTOR WRITTEN APPROVAL FOR THE COMMENCEMENT OF CONSTRUCTION.

INSTALLATION

GRAVEL PLACEMENT

1. GRAVEL FILL MATERIAL SHALL NOT BE PLACED OUTSIDE OF THE GRAVEL FILL FOOTPRINT SPECIFIED IN THE DESIGN DRAWINGS. GRAVEL FILL MATERIAL PLACED OUTSIDE OF THOSE LIMITS, INTENTIONALLY OR OTHERWISE, SHALL BE RECOVERED.
2. NO EQUIPMENT MAY TRAVEL OUTSIDE OF THE DESIGNATED ROUTES OR THE PROJECT FOOTPRINT SPECIFIED IN THE DESIGN DRAWINGS.
3. TRUCK TRAVEL ROUTES TO THE PROJECT SITE ARE AS SPECIFIED BY OWNER.

PLACEMENT GRADES AND TOLERANCES

1. GRAVEL FILL SHALL CONFORM TO THE ALIGNMENTS AND GRADES SHOWN ON THE DESIGN DRAWINGS. GRAVEL FILL SHALL BE FINISHED TO WITHIN A TOLERANCE OF MINUS 0.07 PLUS 0.25 FT.

PLACEMENT ACTIVITIES

1. AN OWNER'S REPRESENTATIVE SHALL BE PRESENT FOR ALL PLACEMENT ACTIVITIES AND SHALL BE PROVIDED SAFE AND TIMELY ACCESS TO ALL PLACEMENT PROCESSES.

REQUIRED GRAVEL FILL MATERIALS TESTING

1. MATERIAL TESTING WILL BE A MEANS AND METHODS APPLICATION FROM THE CONTRACTOR BUT REQUIRES A MINIMUM OF 3 PASSES WITH A VIBRATORY COMPACTOR.

DELETERIOUS MATERIALS

1. DELETERIOUS AND WASTE MATERIALS SUCH AS SANDSTONE AND COAL SHALL BE DISPOSED OF IN THE DESIGNATED DISPOSAL AREAS.

CULVERTS

1. CULVERTS TO BE INSTALLED IN ACCORDANCE WITH AADOT STANDARD DRAWINGS D-01.02 AND D-04.22.

CULVERT TABLE

CULVERT NO.	TYPE	INLET INVERT ELEV. (FT)	OUTLET INVERT ELEV. (FT)	INLET NORTHING	INLET EASTING	OUTLET NORTHING	OUTLET EASTING	LENGTH (FT)	DIA. (INCH)
1	CMP	FIELD FIT	FIELD FIT	3612940.41	1854121.29	3612967.49	1854106.82	30	18
2	CMP	FIELD FIT	FIELD FIT	3613072.63	1854679.61	3613100.47	1854688.51	30	18
3	CMP	FIELD FIT	FIELD FIT	3613419.05	1855183.94	3613438.19	1855140.83	30	18
4	CMP	FIELD FIT	FIELD FIT	3613622.95	1855508.12	3613662.89	1855505.07	30	18
5	CMP	FIELD FIT	FIELD FIT	3613519.53	1855868.29	3613541.46	1855873.63	30	18
6	CMP	FIELD FIT	FIELD FIT	3613116.05	1856280.52	3613140.59	1856282.89	40	18
7	CMP	FIELD FIT	FIELD FIT	3612388.77	1856383.71	3612429.46	1856389.49	40	18

*ALL CULVERTS TO BE INSTALLED AT A MINIMUM 2% GRADE.

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
201.0003.0000	CLEARING & GRUBBING	ACRES	1.8
203.0003.0000	UNCLASSIFIED EXCAVATION	CY	57,000
302.0003.0000	PROCESSING FOR SUBGRADE MODIFICATION	STATION	10
304.0002.0000	SUBBASE GRADING	CY	5250
506.0005.0000	TREATED TIMBER BUILT RAIL REPLACEMENT	ALL REQUIRED	LS
603.0001.0018	CSP 18 INCH	LF	230
611.0001.0001	RIPPRAP CLASS 1	CY	20
640.0001.0000	MOBILIZATION AND DEMOBILIZATION	ALL REQUIRED	LS
641.0001.0000	EROSION, SEDIMENT AND POLLUTION CONTROL ADMINISTRATION	ALL REQUIRED	LS
641.0002.0000	TEMPORARY EROSION, SEDIMENT AND POLLUTION CONTROL	ALL REQUIRED	CS
641.0006.0000	SWPPP PRICE ADJUSTMENT AND WITHHOLDING	ALL REQUIRED	CS
641.0007.0000	SWPPP MANAGER	ALL REQUIRED	LS
642.0001.0000	CONSTRUCTION SURVEYING	ALL REQUIRED	LS
647.0002.0000	WIDE PAD DOZER 65HP MINIMUM	HR	20
647.0006.0000	HYDRAULIC EXCAVATOR, 1 CY, 100 HP MINIMUM	HR	20
647.0007.0000	MOTOR GRADER 220HP MINIMUM	HR	20

MATERIAL SPECIFICATIONS

SUBBASE
SUBBASE MATERIAL SHALL CONSIST OF NON-COHESIVE NATIVE GRAVELS CONTAINING NO FLICK, FROZEN MATERIAL, ROOTS, SOD OR OTHER DELETERIOUS MATTER AND CONTAINING NO MORE THAN 6% PASSING THE NO. 200 MESH AS TESTED BY ASTM C136.

RIPPRAP
EVENLY GRADED STONES THAT ARE HARD, ANGULAR, AND HAVE NO MORE THAN 50 PERCENT WEAR AT 500 REVOLUTIONS AS DETERMINED BY AASHTO T 96. USE STONES WITH BREADTH AND THICKNESS AT LEAST 1/2 OF ITS LENGTH. PERCENTAGES ARE BY TOTAL WEIGHT.

CLASS 1 0-50% WEIGHING UP TO 25 POUNDS
0-10% WEIGHING MORE THAN 80 POUNDS.

DELETERIOUS MATTER

DELETERIOUS MATTER INCLUDES:

- ICE AND SNOW OF SIGNIFICANT QUANTITY TO CAUSE SUBSTANTIAL SUBSIDENCE OF FILL UPON THAWING.
- COAL
- ORGANIC MATERIAL, INCLUDING ROOTS, TREE STUMPS, ETC.
- CLAY OR SILT
- FRIABLE SANDSTONE

NATIVE GRAVELS:

SEE GEOTECHNICAL REPORT DATED NOVEMBER 3, 2025 BY RECON LLC, FOR DISCUSSION OF SUITABLE NATIVE GRAVELS.*

PROJECT DATUM

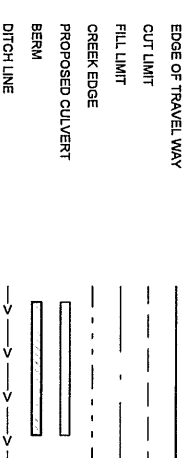
1. NAD83(2011)(2011.0.0000) ALASKA STATE PLANE ZONE 4, NAD83 (G128) COORDINATES LISTED IN U.S. SURVEY FEET.
2. NGS STATION HRR A (PID DP9889) WAS USED TO DERIVE THE COORDINATES AT POINT HCP-100. THE REMAINING POINTS WERE ESTABLISHED BY RTK GPS SURVEY METHODS.

CONTROL TABLE

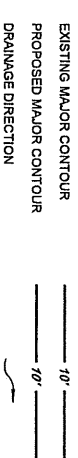
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP-100	3612805.24	1856155.75	2137.49	SET 2 1/2" AL CAP ON 1/2" REBAR
CP-101	3613386.65	1859214.04	2008.06	SET 2 1/2" AL CAP ON 1/2" REBAR

SYMBOLS & ABBREVIATIONS

CIVIL



TOPOGRAPHY



ABBREVIATIONS

AADOT: ALASKA DEPARTMENT OF TRANSPORTATION
 BOP: BEGINNING OF PROJECT
 CMP: CORRUGATED METAL PIPE
 CP: CONTROL POINT
 CSP: CORRUGATED STEEL PIPE
 CY: CUBIC YARDS
 DIA: DIAMETER
 EOP: END OF PROJECT
 FT: FEET


HDPE: HIGH DENSITY POLYETHYLENE
 HR: HOUR
 L.F: LINEAR FEET
 L.S: LUMP SUM
 MIN: MINIMUM
 MPH: MILES PER HOUR
 TYP: TYPICAL
 VARY: VARIES

HEALY CENTER PIT

GENERAL NOTES & MATERIAL QUANTITIES

SCALE: NA SHEET SIZE: 22" X 34"
 SHEET 2 OF 10

PREPARED FOR: DEPARTMENT OF NATURAL RESOURCES, ANIL PROGRAM
 550 W. 7TH AVE, SUITE 920
 ANCHORAGE, AK 99501-3577



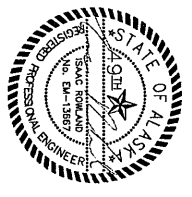
PROJECT: HEALY CENTER PIT
 PROJECT ENGINEER: ISAAC J. ROWLAND, PE
 PREPARED BY: RECON LLC 566 W. RECON CIR, PALMER, AK 99645

NO.	DESIGN/CONSTRUCTION/RECORD	DRAWN BY/DATE	CHECKED BY/DATE
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2	ERRATA	ZLJ/03-16-26	LR/03-16-26



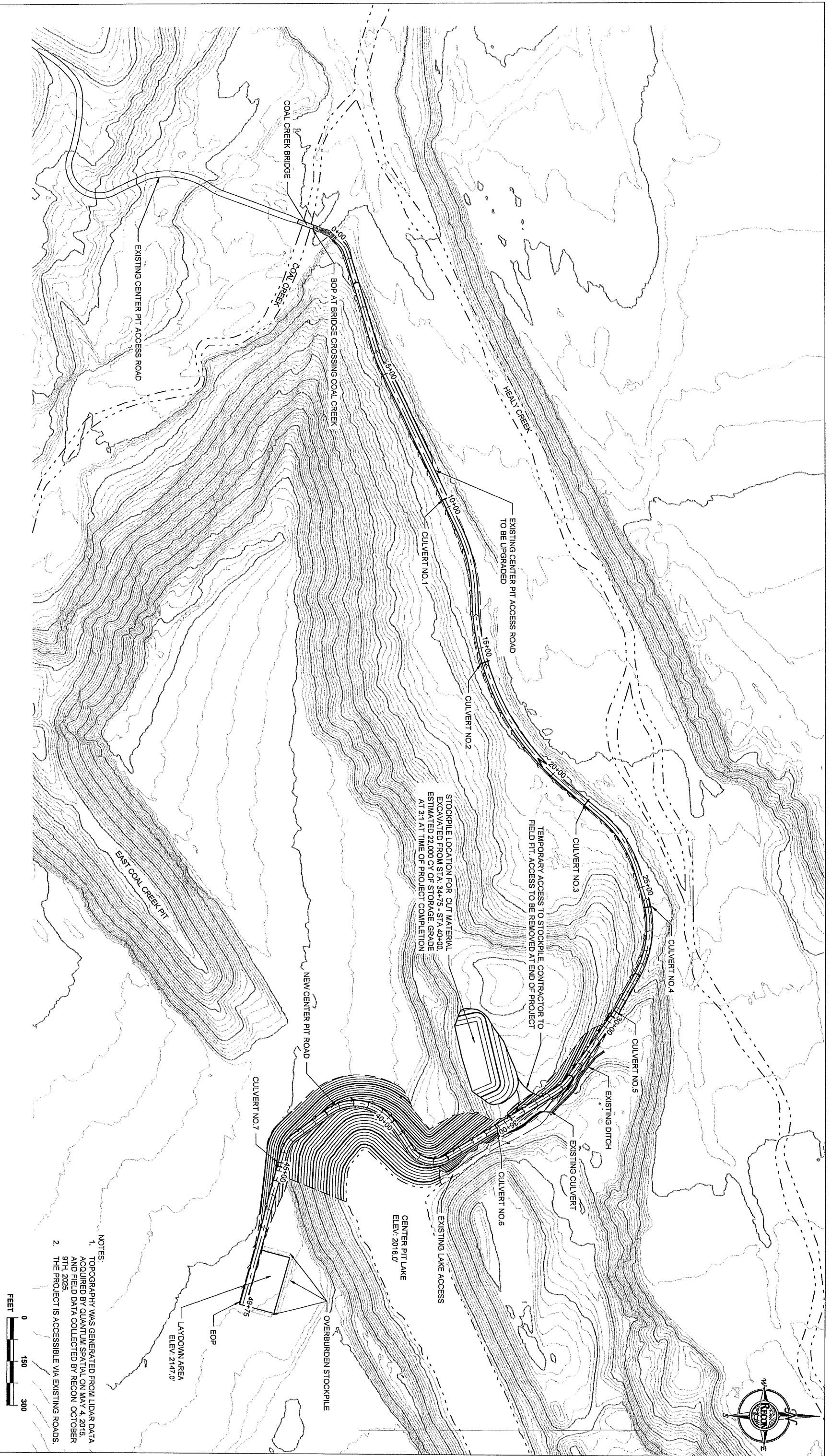


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PREPARED BY: RECON LLC 565 W. RECON CIR. PALMER, AK 99645			
NO.	DESIGN/CONSTRUCTION/RECORD	DWN BY/DATE	CHKED BY/DATE
1	ISSUED FOR CONSTRUCTION	ZJL/02-09-26	LPR/02-09-26

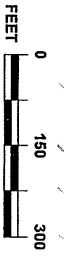


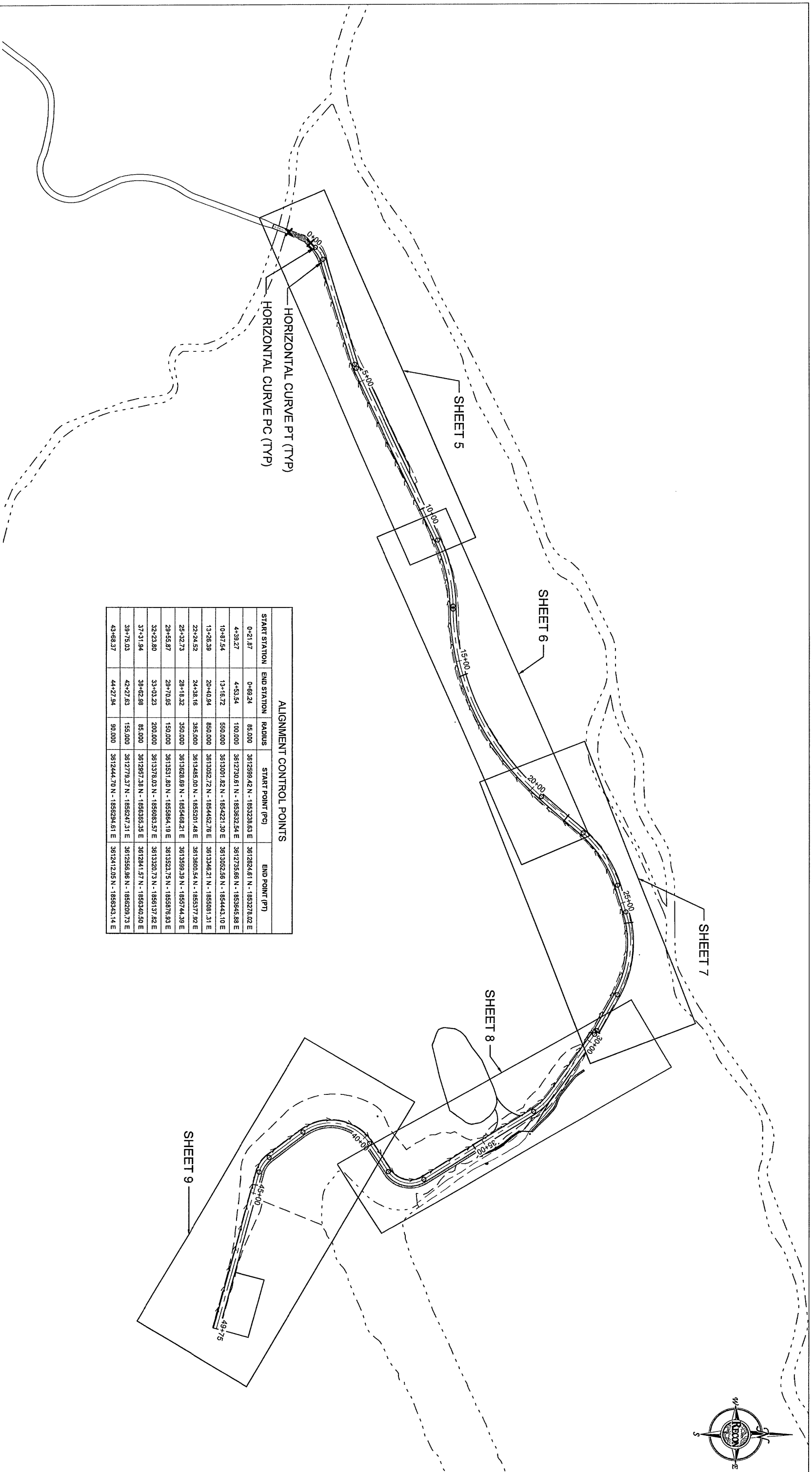
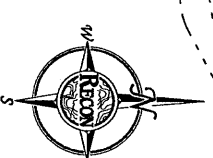
PREPARED FOR:	DEPARTMENT OF NATURAL RESOURCES, AML PROGRAM
	550 W. 7TH AVE, SUITE 920
	ANCHORAGE, AK 99501-3577

HEALY CENTER PIT	
OVERVIEW	
SCALE	1"=150'
SHEET SIZE	22" X 34"
SHEET	3 OF 10




- NOTES:
1. TOPOGRAPHY WAS GENERATED FROM LIDAR DATA ACQUIRED BY QUANTUM SPATIAL ON MAY 4, 2015, AND FIELD DATA COLLECTED BY RECON OCTOBER 9TH, 2025.
 2. THE PROJECT IS ACCESSIBLE VIA EXISTING ROADS.



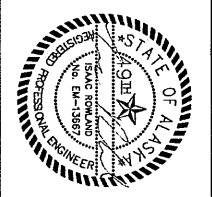


ALIGNMENT CONTROL POINTS					
START STATION	END STATION	RADIUS	START POINT (PC)	END POINT (PT)	
0+21.87	0+89.24	85,000	3612899.42 N - 1853238.63 E	3612824.61 N - 1853278.02 E	
4+39.27	4+53.54	100,000	3612730.61 N - 1853632.54 E	3612735.66 N - 1853645.88 E	
10+87.54	13+16.72	550,000	3613001.82 N - 1854221.30 E	3613052.58 N - 1854443.10 E	
13+26.39	20+40.94	850,000	3613052.72 N - 1854452.76 E	3613348.21 N - 1855081.31 E	
22+24.52	24+38.16	385,000	3613465.00 N - 1855201.48 E	3613600.54 N - 1855377.82 E	
25+32.73	28+18.32	350,000	3613628.69 N - 1855468.21 E	3613599.39 N - 1855744.39 E	
29+55.87	29+70.95	150,000	3613531.80 N - 1855884.19 E	3613523.75 N - 1855876.93 E	
32+23.80	33+03.23	200,000	3613378.03 N - 1856083.57 E	3613320.73 N - 1856137.82 E	
37+31.94	38+62.98	85,000	3612857.38 N - 1856385.35 E	3612841.57 N - 1856340.50 E	
39+75.03	42+27.63	155,000	3612779.37 N - 1856247.31 E	3612556.98 N - 1856209.73 E	
43+68.37	44+27.94	90,000	3612444.70 N - 1856294.61 E	3612412.05 N - 1856343.14 E	



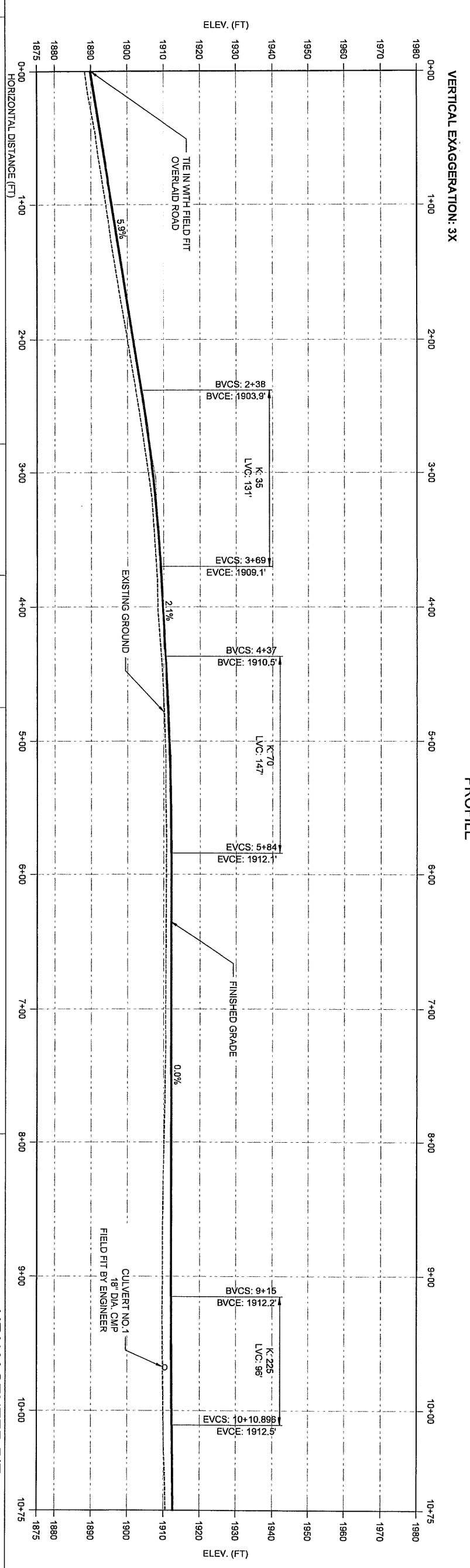
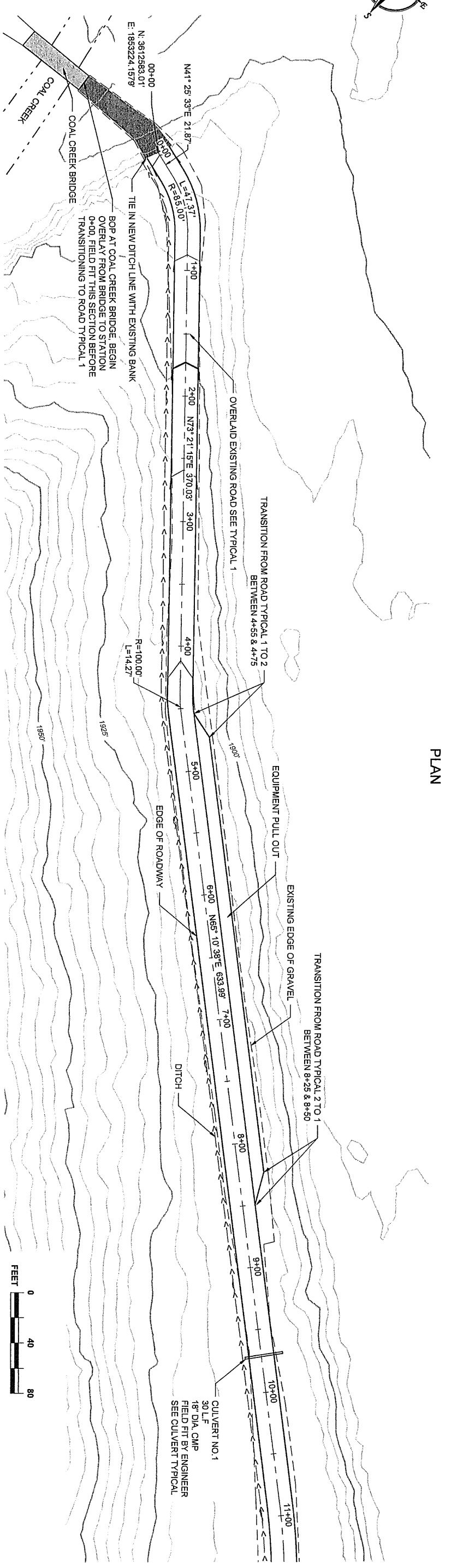
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NO.	DESIGN/CONSTRUCTION/RECORD	DATE	CHKD BY/DATE
1	ISSUED FOR CONSTRUCTION	ZLJ02-09-26	LJR02-09-26



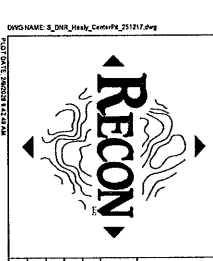
PREPARED FOR: DEPARTMENT OF NATURAL RESOURCES, AML PROGRAM
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 ANCHORAGE, AK 99501-3677

HEALY CENTER PIT
 SHEET DIRECTORY
 SCALE: 1"=150'
 SHEET SIZE: 22" X 34"
 SHEET 4 OF 10



PROFILE

VERTICAL EXAGGERATION: 3X



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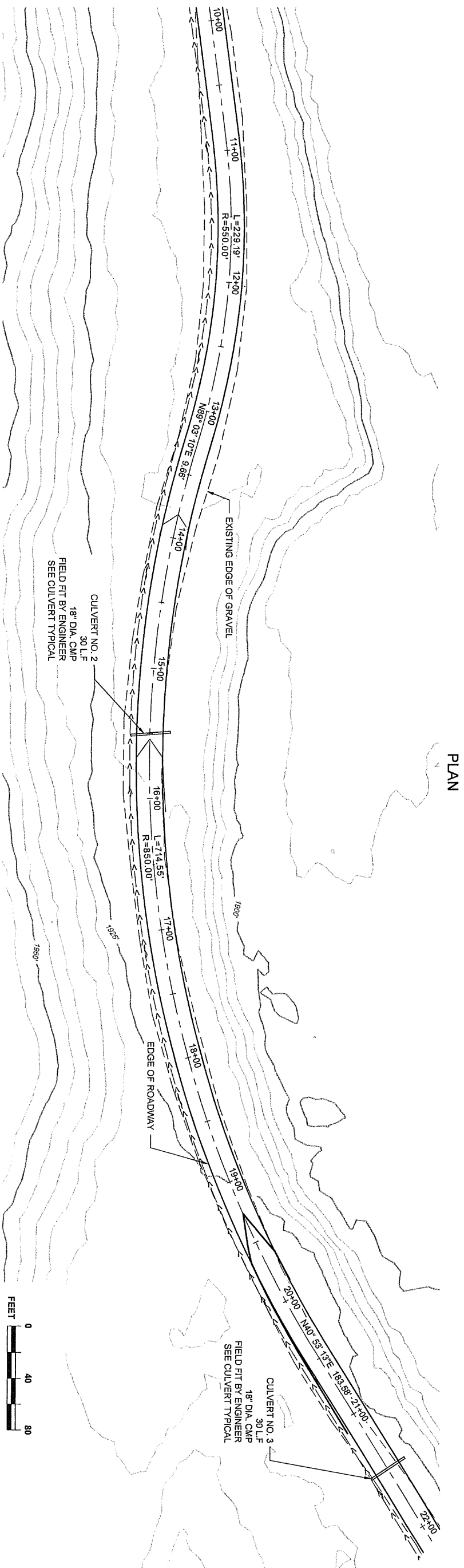
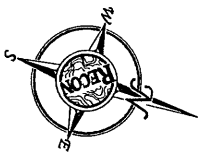
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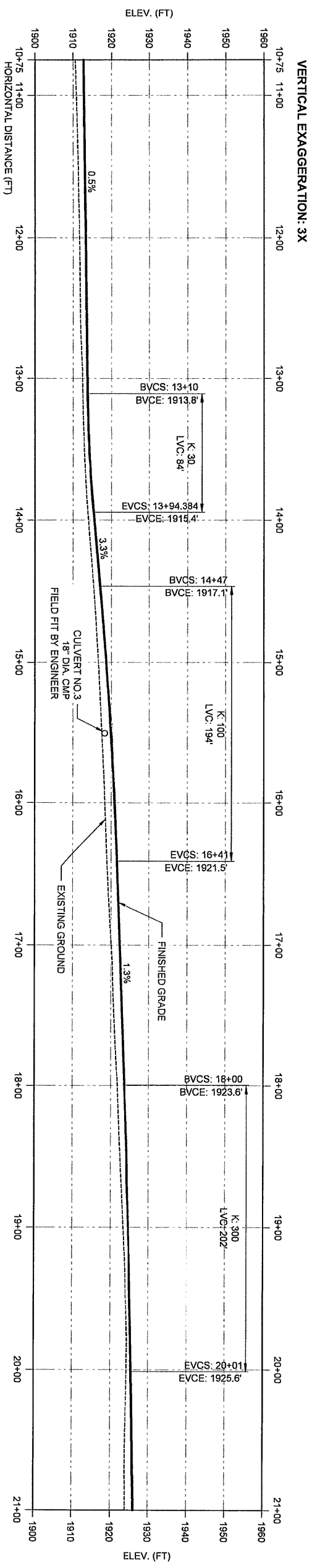
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HEALY CENTER PIT
 BOP 0+00 - STA: 10+75


SCALE: 1"=40'
 SHEET SIZE: 22" X 34"
 SHEET 5 OF 10



PLAN



PROFILE



PROJECT: HEALY CENTER PIT
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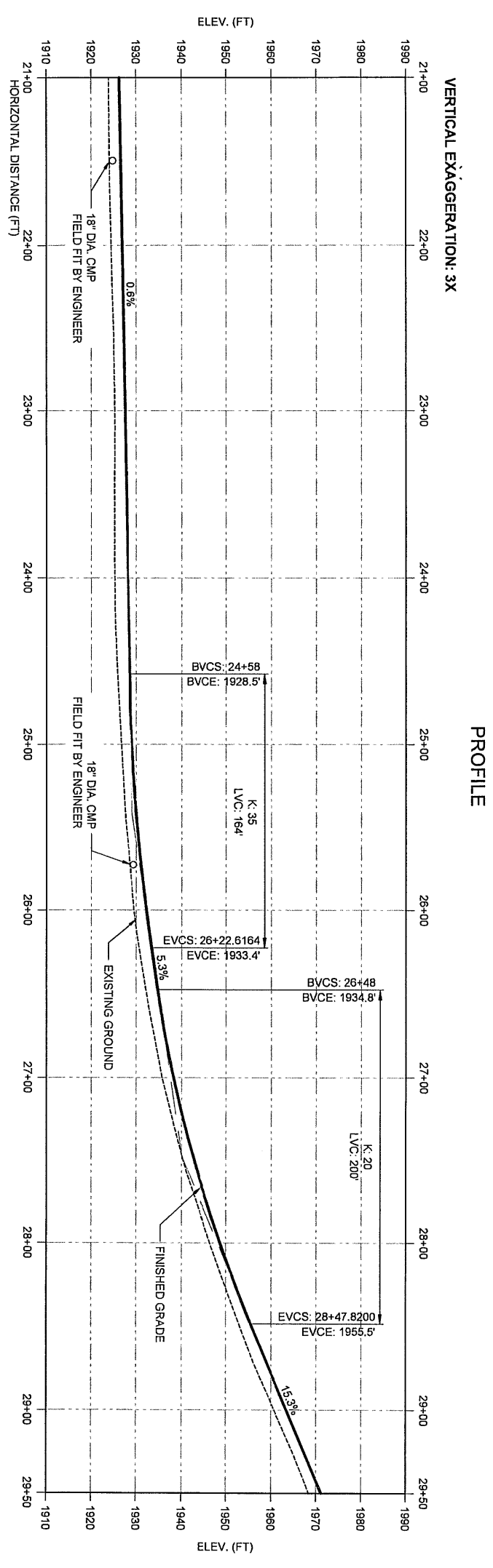
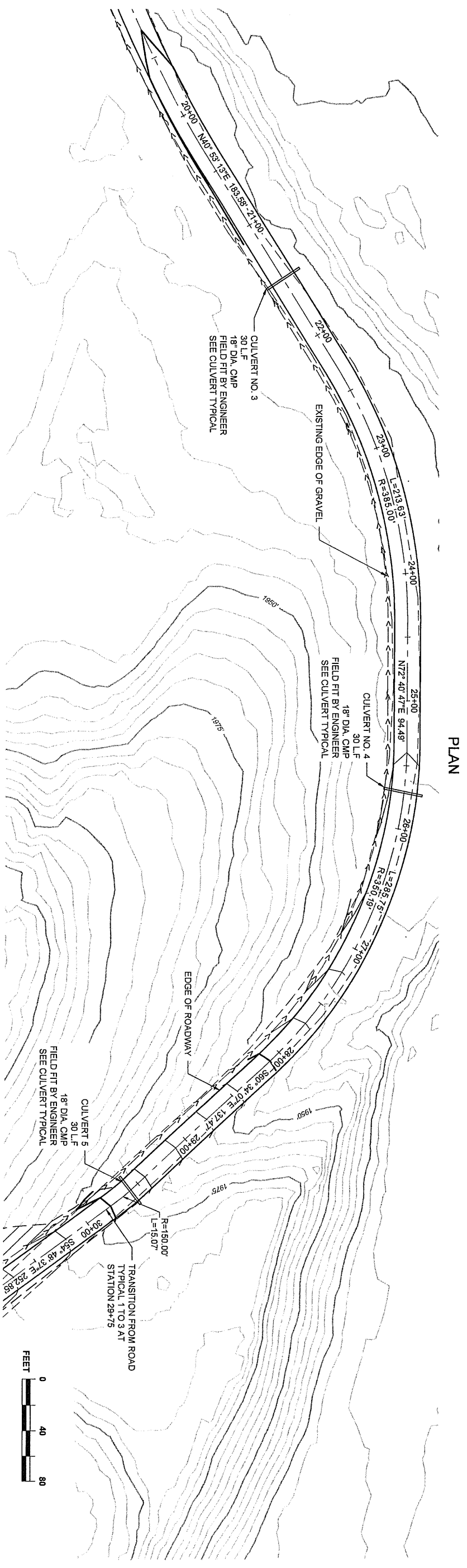
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HEALY CENTER PIT
 STA 10+75 - STA 21+00

SCALE 1"=40'

SHEET SIZE 22" X 34"

SHEET 8 OF 10



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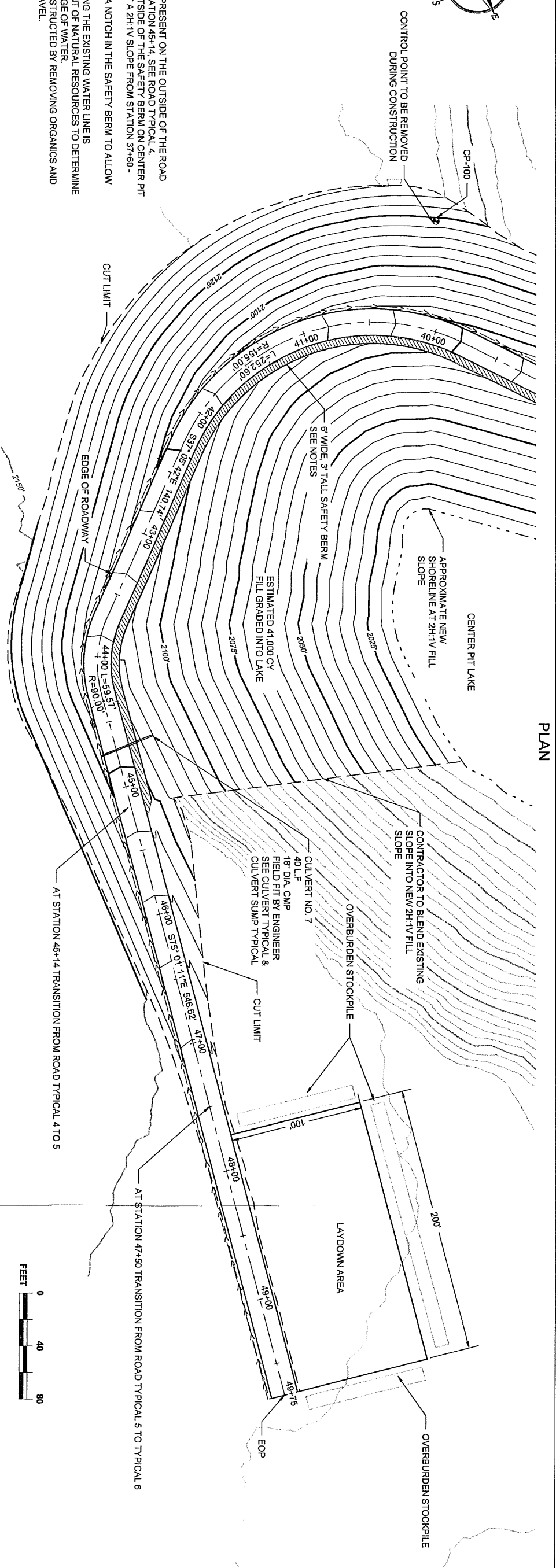
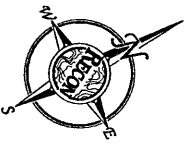
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1	ISSUED FOR CONSTRUCTION	ZLJ/02-09-26	LJR/02-09-26



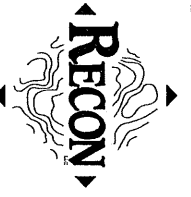
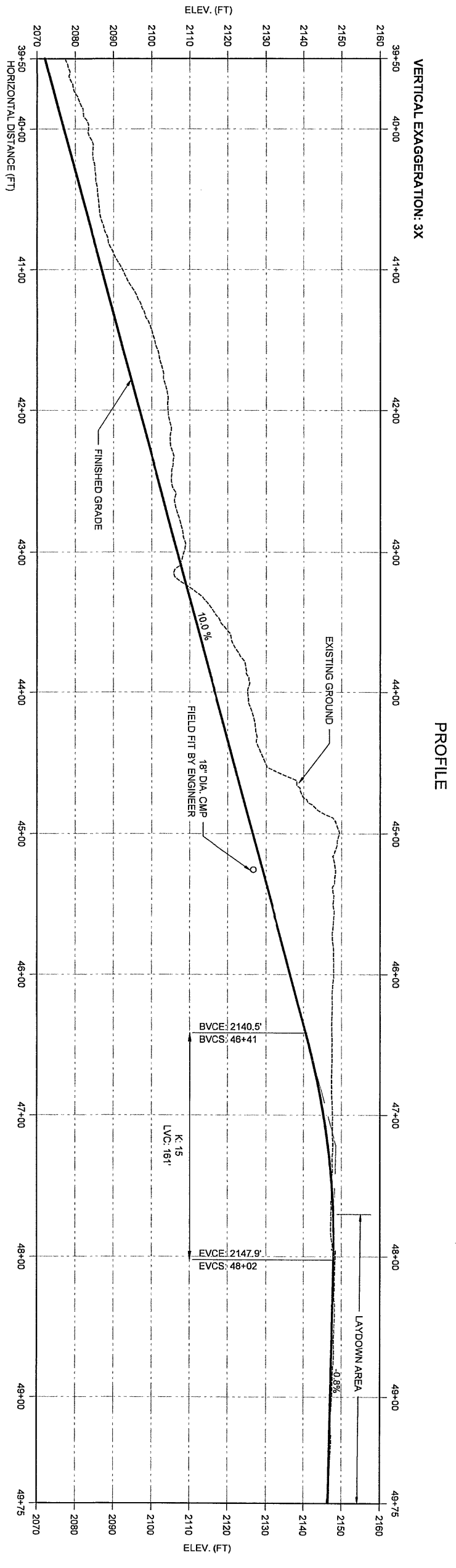
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HEALY CENTER PIT
 STA 21+00 - STA 29+50

SCALE: 1"=40'
 SHEET SIZE: 22" X 34"
 SHEET: 7 OF 10



- NOTES:
1. A 3' SAFETY BERM WILL BE PRESENT ON THE OUTSIDE OF THE ROAD FROM STATION 34+75 TO STATION 45+14. SEE ROAD TYPICAL 4.
 2. THE FILL SLOPE ON THE OUTSIDE OF THE SAFETY BERM ON CENTER PIT ROAD SHALL BE GRADED AT A 2H:1V SLOPE FROM STATION 37+60 - STATION 45+14.
 3. EVERY 100' THERE WILL BE A NOTCH IN THE SAFETY BERM TO ALLOW FOR DRAINAGE.
 4. TOE OF SLOPE ENCRORCHING THE EXISTING WATER LINE IS REPRESENTATIVE FINAL EDGE OF WATER.
 5. LAYDOWN AREA TO BE CONSTRUCTED BY REMOVING ORGANICS AND LEVELING UNDERLYING GRAVEL.



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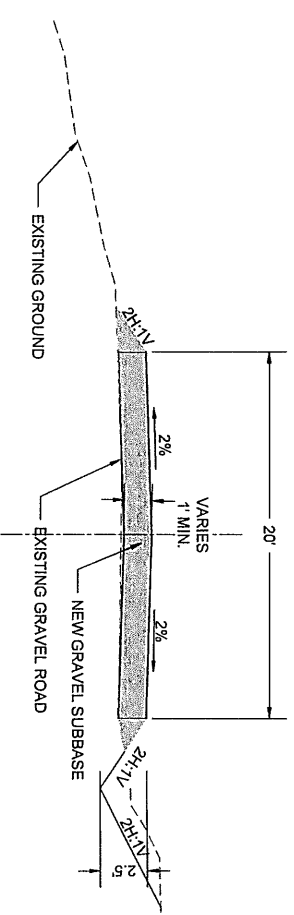
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HEALY CENTER PIT

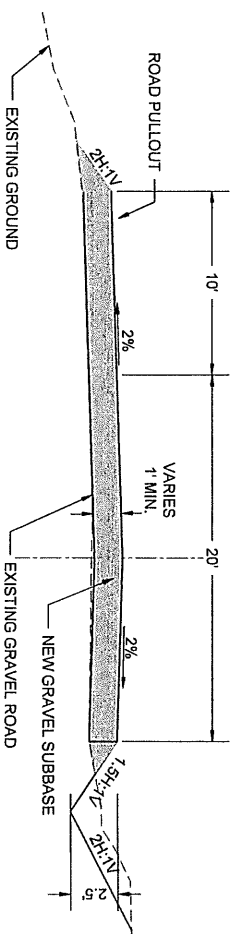
STA: 39+50 - STA 49+75 (EOP)

SCALE 1"=40' SHEET SIZE 22" X 34"

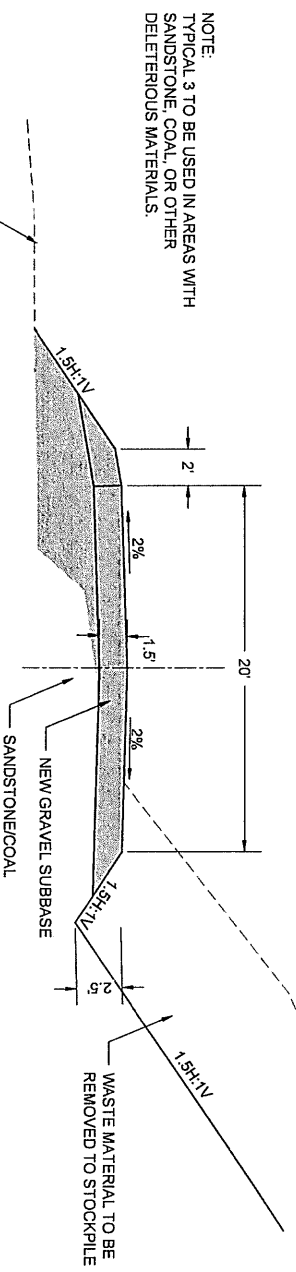
**ROAD TYPICAL 1
OVERLAY ON EXISTING ROAD
STA 0+00 - STA 4+55 AND
STA 8+50 - STA 29+75**



**ROAD TYPICAL 2
ROAD PULLOUT
STA 4+55 - STA 8+50**

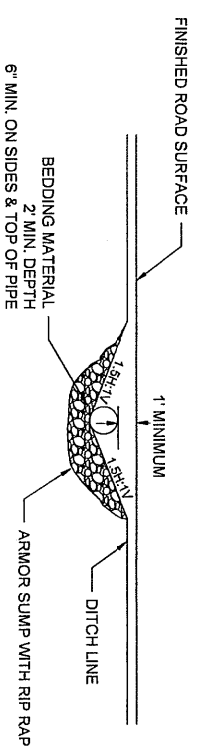


**ROAD TYPICAL 3
CONSTRUCTION IN SANDSTONE/COAL
APPROX STA 29+75 - STA 34+75**

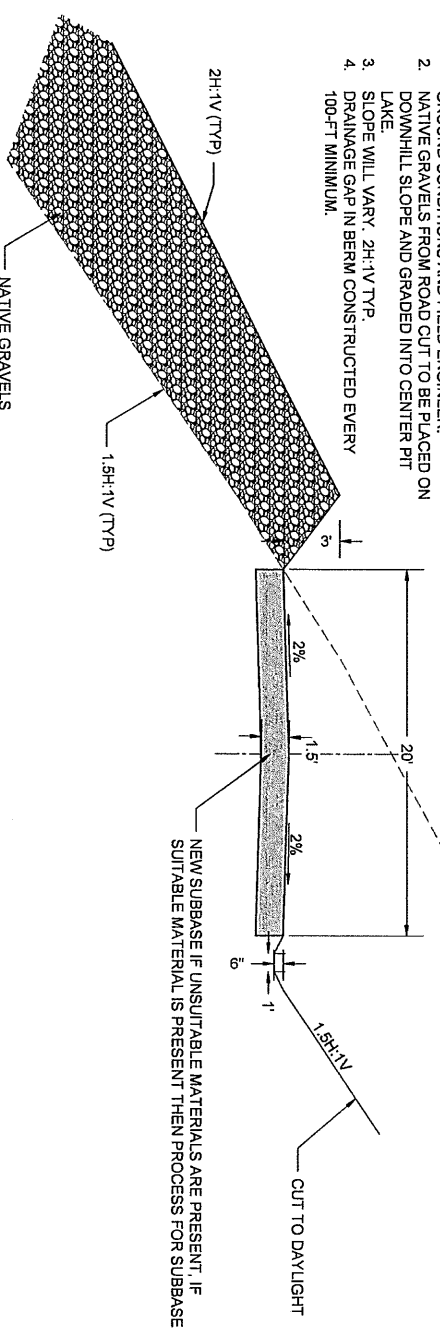


NOTE:
TYPICAL 3 TO BE USED IN AREAS WITH
SANDSTONE, COAL, OR OTHER
DELETERIOUS MATERIALS.

**CULVERT SUMP TYPICAL
CULVERTS 6 & 7**

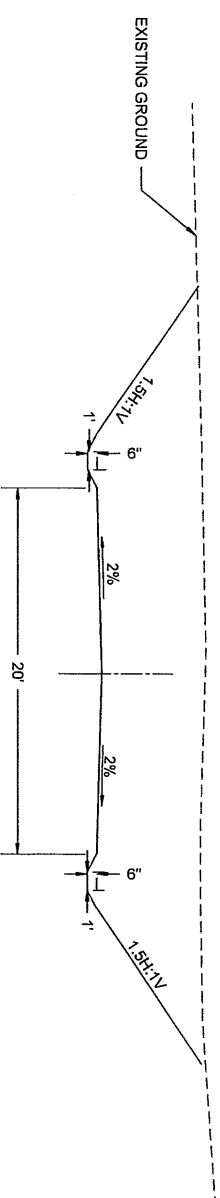


**ROAD TYPICAL 4
SIDE CUT CONSTRUCTION
CLEAN GRAVEL
APPROX STA 34+75 - STA 45+14**

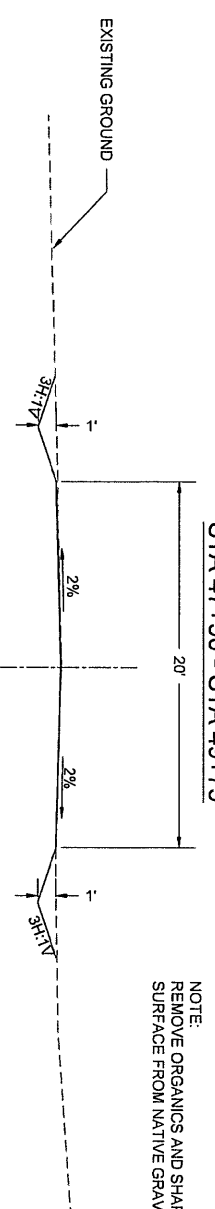


- NOTES:
1. BERM AND DITCH ASSEMBLY IS REQUIRED PAST STATION 34+75. SUBGRADE TO BE DETERMINED BY GROUND CONDITIONS AND FIELD ENGINEER.
 2. NATIVE GRAVELS FROM ROAD CUT TO BE PLACED ON DOWNHILL SLOPE AND GRADED INTO CENTER PIT LAKE.
 3. SLOPE WILL VARY. 2H:1V TYP.
 4. DRAINAGE GAP IN BERM CONSTRUCTED EVERY 100-FT MINIMUM.

**ROAD TYPICAL 5
STA 45+14 - STA 47+50**

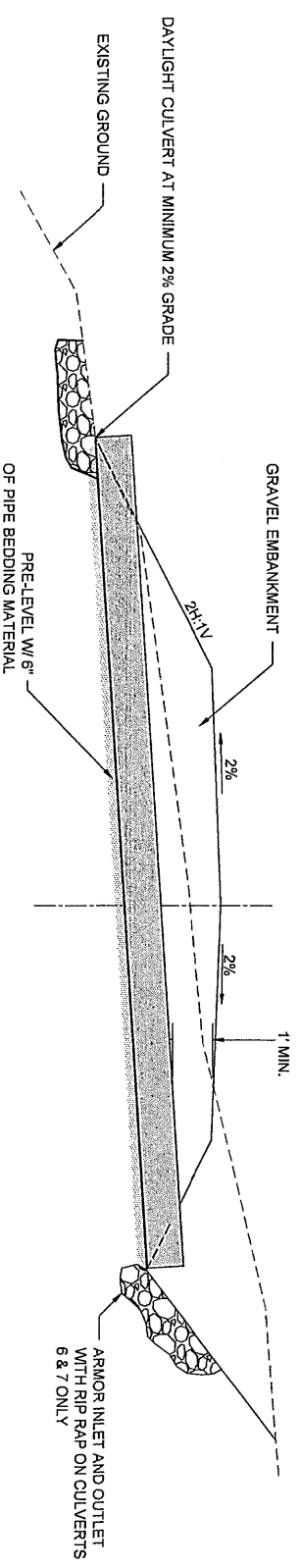


**ROAD TYPICAL 6
STA 47+50 - STA 49+75**



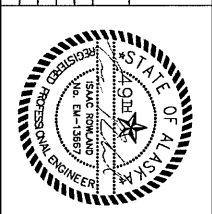
NOTE:
REMOVE ORGANICS AND SHAPE ROAD
SURFACE FROM NATIVE GRAVELS

CULVERT TYPICAL (REFERENCE STANDARD AKDOT DRAWING D-01.02 AND D-04.22)



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PROJECT ENGINEER: ISAAC J. ROWLAND, PE
PREPARED BY: RECON LLC 585 W. RECON CIR. PALMER, AK 99645

NO.	DESIGN/CONSTRUCTION/RECORD	DRAWN BY/DATE	CHECKED BY/DATE
1	ISSUED FOR CONSTRUCTION	ZLJ02-09-26	LR02-09-26



PREPARED FOR: DEPARTMENT OF NATURAL RESOURCES, AML PROGRAM
550 W. 7TH AVE, SUITE 920
ANCHORAGE, AK 99501-3877

HEALY CENTER PIT
TYPICAL SECTIONS

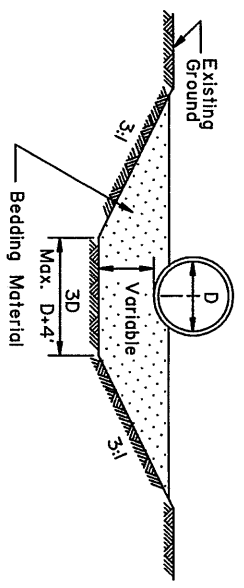
SCALE	SHEET SIZE	22' X 34'
NA		

SHEET 10 OF 10

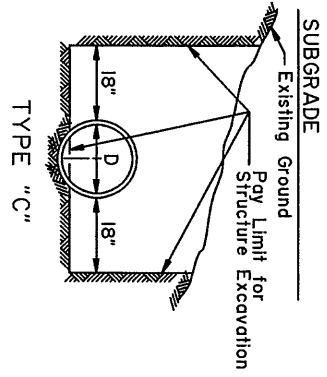
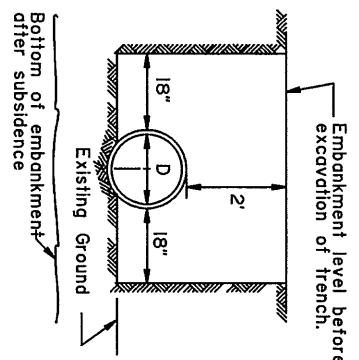
GENERAL NOTES:

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.

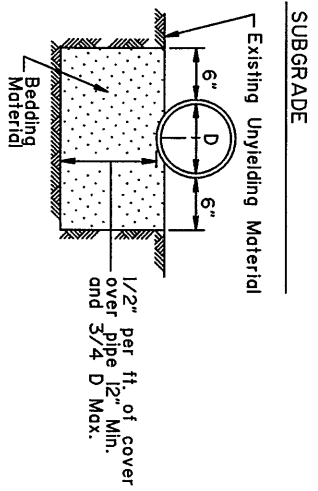
FOUNDATION STABILIZATION
TYPE "A"
To be used in unstable areas as directed by the Engineer.



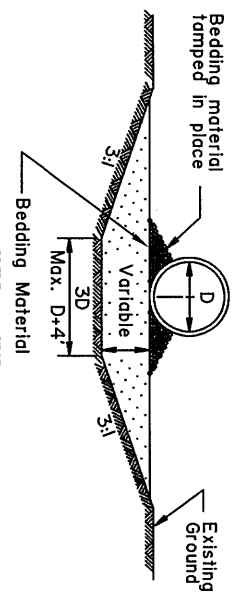
TYPE "B"



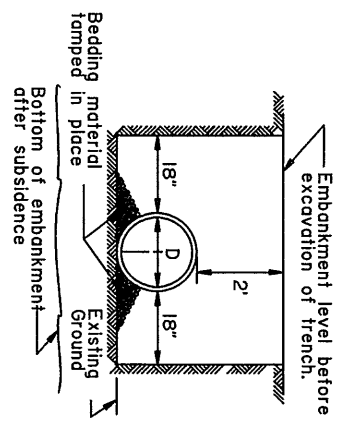
TYPE "D"
ROCK OR UNYIELDING MATERIAL



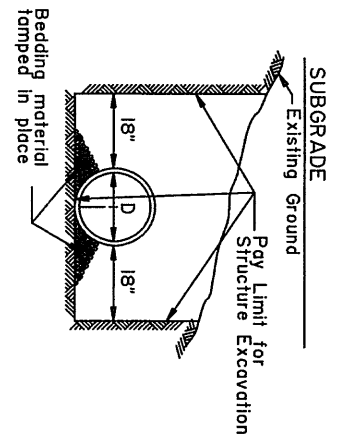
FOUNDATION STABILIZATION
'ALTERNATE' TYPE "A"
To be used in unstable areas as directed by the Engineer.



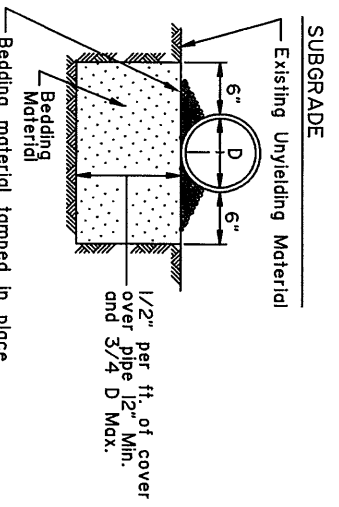
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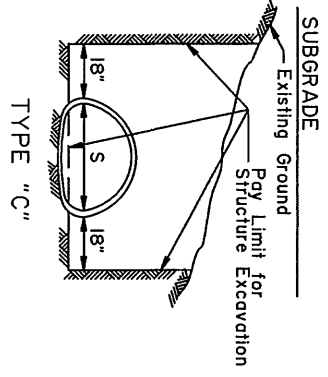
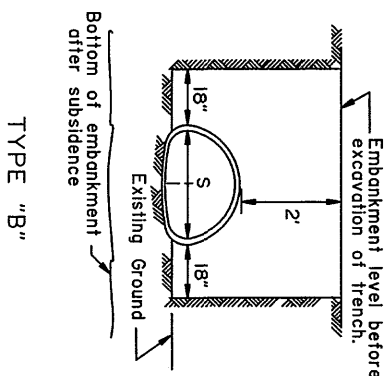
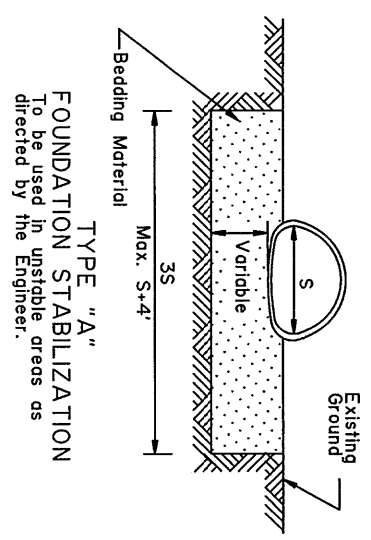
'ALTERNATE' TYPE "C"



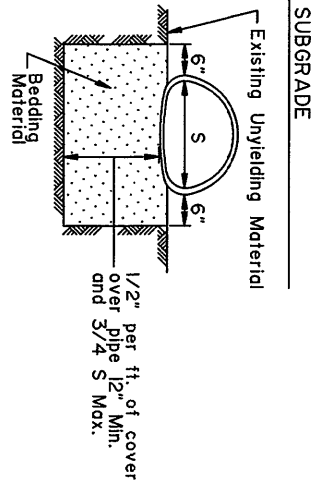
'ALTERNATE' TYPE "D"
ROCK OR UNYIELDING MATERIAL



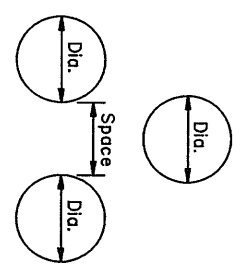
CULVERT PIPE



TYPE "D"
ROCK OR UNYIELDING MATERIAL

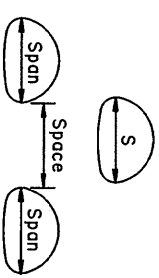


D = Nominal Pipe Diameter



MULTIPLE INSTALLATIONS	
Dia.	Minimum Spce 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 Spce 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
Lost Code and Stds. Review
By: _____
Date: _____
Next Code and Standards Review date: 02/08/2029

ARCH

GENERAL NOTES:

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
5. See Standard Plan D-01 "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.

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. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
12	12	100+	100+	100+	100+
15	12	100	100+	100+	100+
18	12	83	100+	100+	100+
21	12	71	89	100+	100+
24	12	62	78	100+	100+
27	12		69	97	100+
30	12		62	87	100+
36	12		51	73	94
42	12			62	80
48	12			54	70
54	15			48	62
60	15				52
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. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
30	12	57	72	100+	100+
36	12	47	60	84	100+
42	12	40	51	72	96
48	12	35	44	62	84
54	15	31	39	55	74
60	15	28	35	50	67
66	18	25	32	45	61
72	18	23	29	41	56
78	21		27	38	51
84	21			35	48
90	24			33	44
96	24			31	41
102	24				39
108	24				37
114	24				39
120	24				36

Minimum & Maximum Cover for
9" X 2 1/2" Aluminum Structural Plate Pipe*

Thickness (In)	Min. (Ft)	Max. (Ft)	Max. (Ft)
0.125		0.125	0.150
84	18	18	31
90	18		27
96	18		27
102	18		24
108	18		24
114	18		21
120	24		21
126	24		19
132	30		19
138	30		18
144	30		18
150	30		22
156	30		22
162	36		20
168	36		20

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

CORRUGATED CIRCULAR ALUMINUM PIPE
CORRUGATED ALUMINUM PIPE-ARCH

Minimum & Maximum Cover for
2 2/3" X 1/2" Aluminum Pipe-Arch

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

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 Multiple Pipe-Arch*

Span (Ft.-In.)	Rise (Ft.-In.)	Corner Radius (In)	Min. Thickness (In)	Min. Cover (In)	2 Tons/St Corner Bearing Pressure Max. Cover (Ft)
6-7	5-8	31.75	0.125	24	24
6-11	5-9	31.75	0.125	24	24
7-3	5-11	31.75	0.125	24	18
7-9	6-0	31.75	0.125	24	18
8-5	6-3	31.75	0.125	24	16
9-3	6-5	31.75	0.125	24	15
10-3	6-9	31.75	0.125	30	13
10-9	6-10	31.75	0.125	30	13
11-5	7-1	31.75	0.125	30	13
12-7	7-5	31.75	0.125	30	11
12-11	7-6	31.75	0.125	30	11
13-1	8-2	31.75	0.125	30	11
13-11	8-5	31.75	0.125	36	10
14-8	9-8	31.75	0.125	36	9
15-4	10-0	31.75	0.150	36	8
16-1	10-4	31.75	0.150	36	8
16-9	10-8	31.75	0.150	42	7
17-3	11-0	31.75	0.150	42	7
18-0	11-4	31.75	0.175	42	7
18-8	11-8	31.75	0.175	42	7

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

**State of Alaska DOT&PF
ALASKA STANDARD PLAN
PIPE AND ARCH TABLES**

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

Adoption Date: 7/17/2020

Last Code and Stds. Review

By: KLH Date: 7/8/2020
Next Code and Standards Review date: 7/8/2030

GENERAL NOTES

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

Gage	16	14	12	10	8
Thickness	0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. 10.0+	Max. 10.0+	Min. 10.0+	Max. 10.0+	Min. 10.0+
12	10.0+	10.0+	10.0+	10.0+	10.0+
15	10.0+	10.0+	10.0+	10.0+	10.0+
18	10.0+	10.0+	10.0+	10.0+	10.0+
21	10.0+	10.0+	10.0+	10.0+	10.0+
24	10.0+	10.0+	10.0+	10.0+	10.0+
30	12	83	100+	100+	100+
36	12	69	86	100+	100+
42	12	59	74	100+	100+
48	12	51	64	91	100+
54	12	43	57	80	100+
60	12	35	49	72	93
66	12	27	41	66	85
72	12	19	33	59	78
78	12	11	25	51	84
84	12	3	17	43	73

Gage	16	14	12	10	8
Thickness	0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. 10.0+	Max. 10.0+	Min. 10.0+	Max. 10.0+	Min. 10.0+
36	12	100+	100+	100+	100+
42	12	100+	100+	100+	100+
48	12	74	100+	100+	100+
54	12	53	66	93	100+
60	12	47	59	100+	100+
66	12	43	54	76	98
72	12	39	49	69	89
78	12	36	45	64	82
84	12	33	42	59	77
90	12	31	39	55	71
96	12	29	37	52	67
102	18	27	34	49	63
108	18	25	32	46	59
114	18	23	31	43	56
120	18	21	29	41	53
126	18	19	27	39	51
132	18	17	25	37	48
138	18	15	23	35	46
144	18	13	21	33	44

Gage	16	14	12	10	8
Thickness	0.060	0.075	0.105	0.135	0.164
Dia. (In)	Min. 10.0+	Max. 10.0+	Min. 10.0+	Max. 10.0+	Min. 10.0+
36	12	71	88	100+	100+
42	12	60	76	100+	100+
48	12	53	66	93	100+
54	12	47	59	82	100+
60	12	42	53	74	96
66	12	38	48	67	87
72	12	35	44	62	79
78	12	32	40	57	73
84	12	30	37	53	68
90	12	28	35	49	63
96	12	26	33	46	59
102	18	24	31	43	56
108	18	22	29	41	53
114	18	20	27	39	50
120	18	18	25	37	47
126	18	16	23	35	45
132	18	14	21	33	43
138	18	12	19	31	41
144	18	10	17	29	39

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. 10.0+	Max. 10.0+	Min. 10.0+	Max. 10.0+	Min. 10.0+	Max. 10.0+	Min. 10.0+
60	12	46	67	87	100+	100+	100+
66	12	42	60	79	91	100+	100+
72	12	38	55	73	83	100+	100+
78	12	35	51	67	77	93	100+
84	12	32	47	62	71	86	100+
90	12	30	44	58	67	80	95
96	12	28	41	54	62	75	89
102	18	27	39	51	59	71	84
108	18	25	37	48	55	67	79
114	18	24	35	45	52	63	75
120	18	22	33	43	50	60	72
126	18	21	31	41	47	57	68
132	18	20	30	39	45	54	64
138	18	19	28	37	43	52	62
144	18	18	27	36	41	50	59

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

CORRUGATED CIRCULAR STEEL PIPE

CORRUGATED STEEL PIPE-ARCH

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

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
126	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

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
126	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

Span (ft.-in.)	Rise (ft.-in.)	Corner Radius (In)	Min. Gage (In)	Min. Cover (In)	Max. Cover (ft.)
6-1	4-7	18	12 (0.111)	12	14
7-0	5-1	18	12 (0.111)	12	12
7-11	5-7	18	12 (0.111)	12	10
8-10	6-1	18	12 (0.111)	18	9
9-9	6-7	18	12 (0.111)	18	8
10-11	7-1	18	12 (0.111)	18	6
11-10	7-7	18	12 (0.111)	18	5
12-10	8-4	18	12 (0.111)	24	5
13-3	9-4	31	10 (0.140)	24	11
14-2	9-10	31	10 (0.140)	24	10
15-4	10-4	31	10 (0.140)	24	9
16-3	10-10	31	10 (0.140)	30	8
17-2	11-4	31	10 (0.140)	30	8
18-1	11-10	31	10 (0.140)	30	7
19-3	12-4	31	10 (0.140)	30	7
19-11	12-10	31	10 (0.140)	30	6
20-7	13-2	31	10 (0.140)	36	6

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

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

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

Adoption Date: 7/17/2020

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

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

GENERAL NOTES

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

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

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

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By: KLH Date: 7/8/2020

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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.

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. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)
18	12	43	61	84
21	12	38	52	73
24	12	33	45	73
30	15	26	36	58
36	18	21	30	49
42	21	25	41	59
48	24		36	51
54	24		32	46
60	24		29	41
66	24			37
72	30			34

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.)	Min. Cover (In)	Max. Cover (Ft)		
20	16	12		
23	19	12		
27	21	13		
33	26	13		
40	31	13		
46	36	24		
53	41	24		
60	46	24		
66	51	24		

Minimum & Maximum Cover for Steel and Aluminum Steel Spiral Rib Circular Pipe*

Gage	16	14	12	10
Thickness	0.064	0.079	0.109	0.138
Dia. (In)	Min. (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
66	18	24	34	57
72	18		31	52
78	24		29	48
84	24		27	45
90	24			42
96	24			39
102	30			36
108	30			32

Minimum & Maximum Cover for 2 Trans/S1 Corner Bearing Pressure Steel Spiral Rib Pipe-Arch*

Thickness	0.064	0.079	0.109
Span (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	56	18	19
81	59	18	15
87	63	18	15
95	67	18	15

* $\frac{3}{8}$ x $\frac{3}{8}$ x $\frac{7}{8}$ in. Corrugations.

* $\frac{3}{8}$ x $\frac{3}{8}$ x $\frac{7}{8}$ in. Corrugations.

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 Murehouse*
Carolyn Murehouse, P.E.
Chief Engineer

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