

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF PARKS
AND
OUTDOOR RECREATION

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS

PROJECT NO.
73035-3

Vicinity Map

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Plans developed by:
STATE OF ALASKA
Department of Natural Resources
Division of Parks & Outdoor Recreation
550 W 7th Ave. Suite 1340, Anchorage, AK 99501

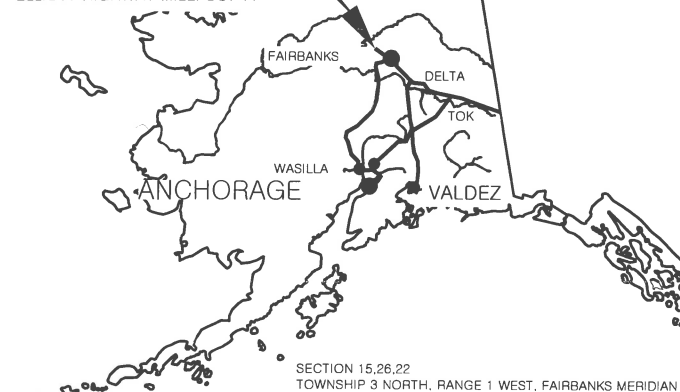
Recommended:

Rys Miranda 1/23/18
Rys Miranda, P.E. Date
Chief, Design and Construction

Approved:

Ethan Tyler 1/23/18
Ethan Tyler, P.E. Date
Director, Alaska State Parks

THIS PROJECT
ELLIOTT HIGHWAY MILEPOST 11



SECTION 15,26,22
TOWNSHIP 3 NORTH, RANGE 1 WEST, FAIRBANKS MERIDIAN

The following Division of Parks & Outdoor Rec. standard drawings apply to this project: C-1, P-6, S-9
The following D.O.T.(Highways) standard drawings apply to this project: D-01.02, D-04.21, S-00.00, S-01.01, S-05.01, S-30.0

ESTIMATE OF QUANTITIES			
ITEM	DESCRIPTION	UNIT	QUANTITY
201(3A)	CLEARING AND GRUBBING	ACRE	1
202(1)	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LUMP SUM	ALL REQ'D
202(13)	REMOVAL OF TOILET	LUMP SUM	ALL REQ'D
203(3)	UNCLASSIFIED EXCAVATION	CUBIC YARD	1,500
203(5A)	BORROW, TYPE A	CUBIC YARD	1,200
301(5)	RECYCLED ASPHALT MATERIAL	TON	7,000
303(1)	RECONDITIONING	STATION	101
603(1-24)	24 INCH CSP	LINEAR FEET	115
603(3-24)	END SECTION FOR 24 INCH CSP	EACH	6
615(1)	STANDARD SIGNS	SQUARE FEET	25
618(2)	SEEDING	POUND	35
620(1)	TOPSOIL	SQUARE YARD	3,800
640(1)	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	ALL REQ'D
641(1)	EROSION, SEDIMENT, AND POLLUTION CONTROL ADMINISTRATION	LUMP SUM	ALL REQ'D
641(2)	TEMPORARY EROSION, SEDIMENT AND POLLUTION CONTROL ADMINISTRATION	CONTINGENT SUM	ALL REQ'D
641(6)	WITHHOLDING	CONTINGENT SUM	ALL REQ'D
642(1)	CONSTRUCTION SURVEYING	LUMP SUM	ALL REQ'D
642(3)	THREE PERSON SURVEY PARTY	HOUR	10
642(5)	SET SECONDARY MONUMENT	EACH	6
642(13)	AS-BUILT SURVEY	LUMP SUM	ALL REQ'D
643(2)	TRAFFIC MAINTENANCE	LUMP SUM	ALL REQ'D
647(6)	HYDRAULIC EXCAVATOR, 1 C.Y. 100 HP MINIMUM	HOUR	10
650(1)	PICNIC TABLE	EACH	2
650(1A)	DEPARTMENT FURNISHED PICNIC TABLE	EACH	19
650(4)	ROUND FIREPIT	EACH	21
650(18)	CONCRETE PARKING BUMPER	EACH	60
650(21)	BARRIER ROCK	EACH	77
650(32)	FEE PAYMENT STATION	EACH	1
650(42)	CAMPSITE MARKER	EACH	20
654(1)	SINGLE CONCRETE VAULTED TOILET	EACH	1

ITEM NO. 202(1) REMOVAL OF STRUCTURES AND OBSTRUCTIONS SUMMARY			
DESCRIPTION	UNIT	QUANTITY	REMARKS
WOODEN PARKING BUMPERS	EACH	40	REMOVE & DISPOSE
FIRE RINGS	EACH	15	REMOVE & SALVAGE
PICNIC TABLES	EACH	19	REMOVE & SALVAGE
SINGLE VAULTED TOILET	EACH	1	REMOVE & DISPOSE

TABLE OF ESTIMATING FACTORS	
ITEM DESCRIPTION	ESTIMATING FACTOR
SELECTED MATERIAL, TYPE A	142 LB./C.F.
RECYCLED ASPHALT MATERIAL	148 LB./C.F.

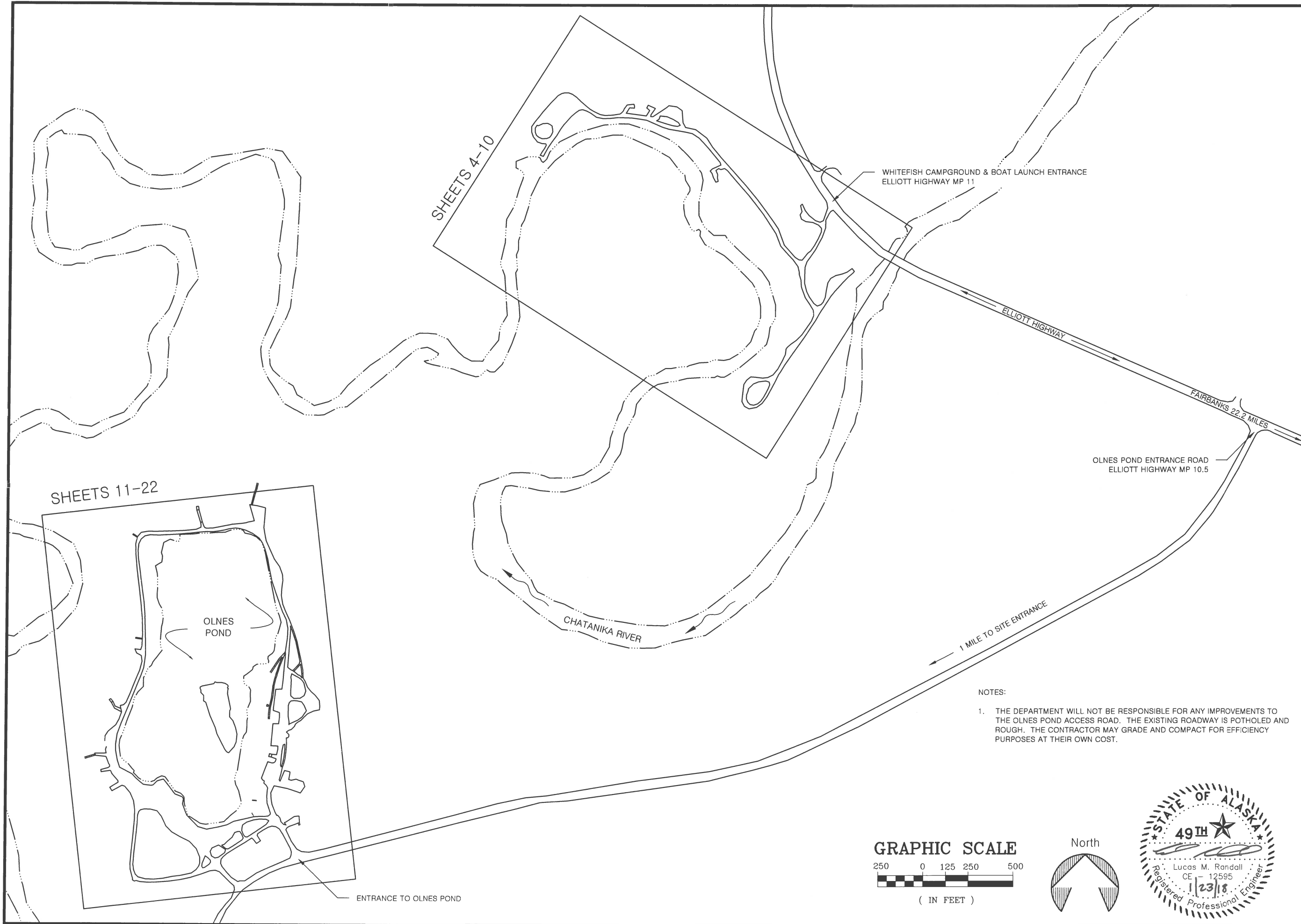
LEGEND		ABBREVIATIONS AND SYMBOLS		
EXISTING	PROPOSED			
		EDGE OF AC PAVEMENT	Ø	DIAMETER
		EDGE OF PCC PAVEMENT	ε	CENTERLINE
		EDGE OF VEGETATION	AC	ASPHALT CONCRETE
		EDGE OF WATER	ACM	ARTICULATED CONCRETE MAT
		MAJOR CONTOUR LINE	CP	CONTROL POINT
		MINOR CONTOUR LINE	CS	CONTINGENT SUM
		EDGE OF GRAVEL ROAD/PARKING	CSP	CORRUGATED STEEL PIPE
		CULVERT	C.Y.	CUBIC YARD
		SURVEY CONTROL MONUMENT	E	EAST
		WOODEN BARRIER POST	ELEV.	ELEVATION
		BARRIER ROCK	ESCP	EROSION AND SEDIMENT CONTROL PLAN
		SIGN	F.G.	FINISH GRADE
		SILT FENCE (TEMPORARY)	INV	INVERT

ITEM NO. 615(1) STANDARD SIGN										
SIGN NO.	STATION / OFFSET	FACING DIRECTION	TYPE	LEGEND	SIZE (INxIN)	AREA (S.F.)	THICKNESS (IN.)	SIGN POST DATA		
								TYPE	SIZE (IN)	NO.
S1	10+29 L / 26'	W	R1-1		30 x 30	6.25	0.125	PT	2.5 x 2.5	1
	OLNES POND									
S2	56+99 L / 10'	W	R5-1		30 x 30	6.25	0.125	PT	2.5 x 2.5	1
	OLNES POND									
S3	56+99 R / 10'	W	R5-1		30 x 30	6.25	0.125	PT	2.5 x 2.5	1
	OLNES POND									
	56+99 L / 10'	W	R1-1		30 x 30	6.25	0.125			
	OLNES POND									
				TOTALS		25				

- NOTES:
1. ALL SALVAGED MATERIALS WILL BE DELIVERED TO THE NORTHERN AREA STATE PARKS OFFICE AT 3700 AIRPORT WAY, FAIRBANKS, AK 99709.

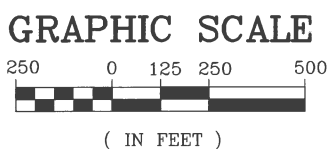


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018



NOTES:

1. THE DEPARTMENT WILL NOT BE RESPONSIBLE FOR ANY IMPROVEMENTS TO THE OLNES POND ACCESS ROAD. THE EXISTING ROADWAY IS POTHOLED AND ROUGH. THE CONTRACTOR MAY GRADE AND COMPACT FOR EFFICIENCY PURPOSES AT THEIR OWN COST.



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 550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

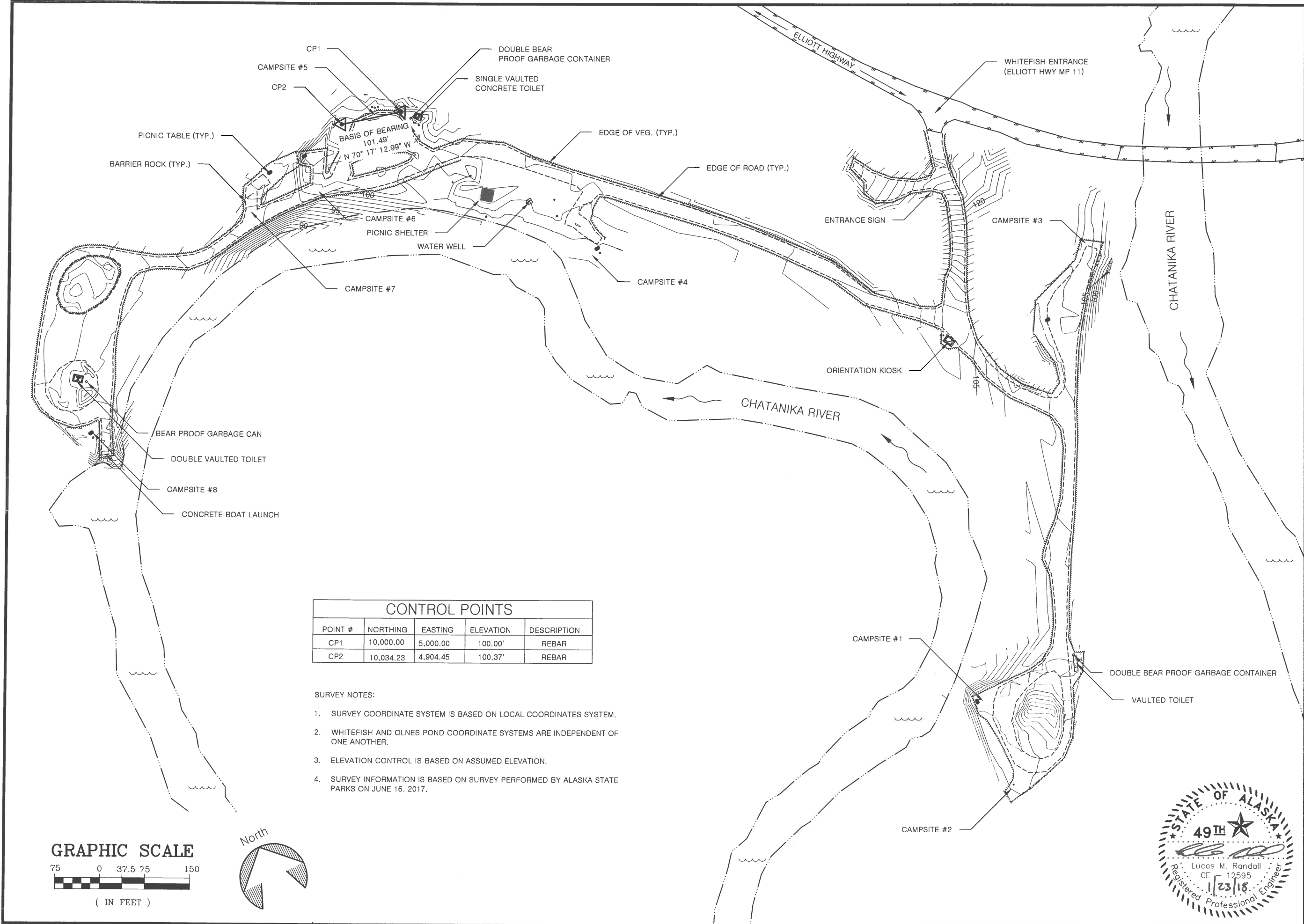
LOWER CHATANIKA RIVER SRA
 FACILITY IMPROVEMENTS
 PROJECT No. 73035-3

PROJECT LOCATION AND VICINITY MAP



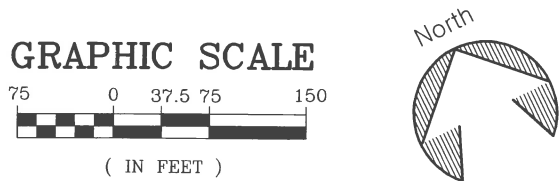
PREPARED: RCS
 DRAWN: RCS
 REVIEWED: LMR
 DATE: 01/02/2018

SHEET
3
 OF 22 SHEETS



CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	10,000.00	5,000.00	100.00'	REBAR
CP2	10,034.23	4,904.45	100.37'	REBAR

- SURVEY NOTES:
1. SURVEY COORDINATE SYSTEM IS BASED ON LOCAL COORDINATES SYSTEM.
 2. WHITEFISH AND OLNES POND COORDINATE SYSTEMS ARE INDEPENDENT OF ONE ANOTHER.
 3. ELEVATION CONTROL IS BASED ON ASSUMED ELEVATION.
 4. SURVEY INFORMATION IS BASED ON SURVEY PERFORMED BY ALASKA STATE PARKS ON JUNE 16, 2017.



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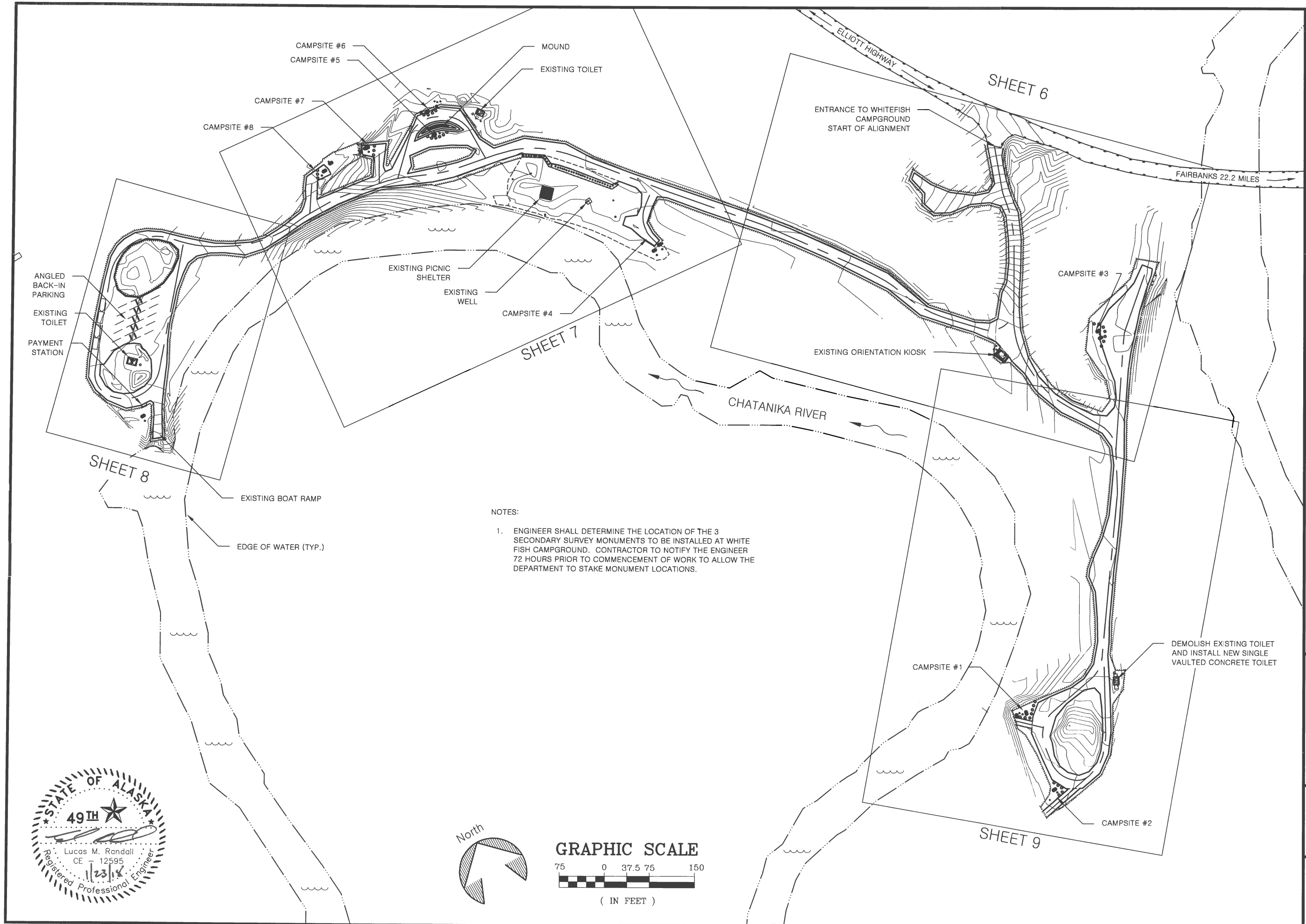
WHITEFISH CAMPGROUND
EXISTING CONDITIONS

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT No. 73035-3

PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
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SHEET
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OF 22 SHEETS





STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

WHITEFISH CAMPGROUND
SITE PLAN OVERVIEW

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT No. 73035-3

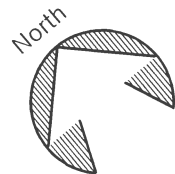
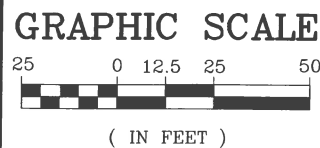


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET
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OF 22 SHEETS

NOTES:

1. ALIGNMENTS AND STATIONING SHOWN ARE FOR ESTIMATING AND REFERENCE PURPOSES ONLY.
2. THE DEPARTMENT WILL BE RESPONSIBLE FOR APPROXIMATE CAMPSITE LAYOUT. THE CONTRACTOR WILL RECORD LAYOUT AND BE RESPONSIBLE FOR FINAL LAYOUT DETAILS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
3. THE ENGINEER WILL DICTATE EXTENTS OF RECONDITIONING, LOCATIONS OF DITCHES AND EXTENTS OF MATERIAL PLACEMENT IN THE FIELD.



ENTRANCE TO WHITEFISH CAMPGROUND
START OF ALIGNMENT

START OF 150+00 ALIGNMENT

EDGE OF VEG. (TYP.)

EDGE OF RAM - MATCH EDGE OF EXISTING
ROADWAY (TYP.)

EXISTING ORIENTATION KIOSK
(PROTECT IN PLACE)
PLACE RAM 2' AROUND KIOSK

CAMPSITE #3
APPROXIMATE LAYOUT

PICNIC TABLE (TYP.)

FIRE RING (TYP.)

REMOVE AND SALVAGE ALL
EXISTING PARK AMENITIES

BARRIER ROCK (TYP.)

ELLIOTT HIGHWAY

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PROJECT No. 73035-3



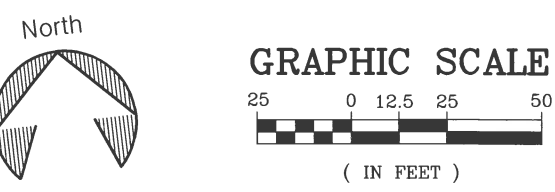
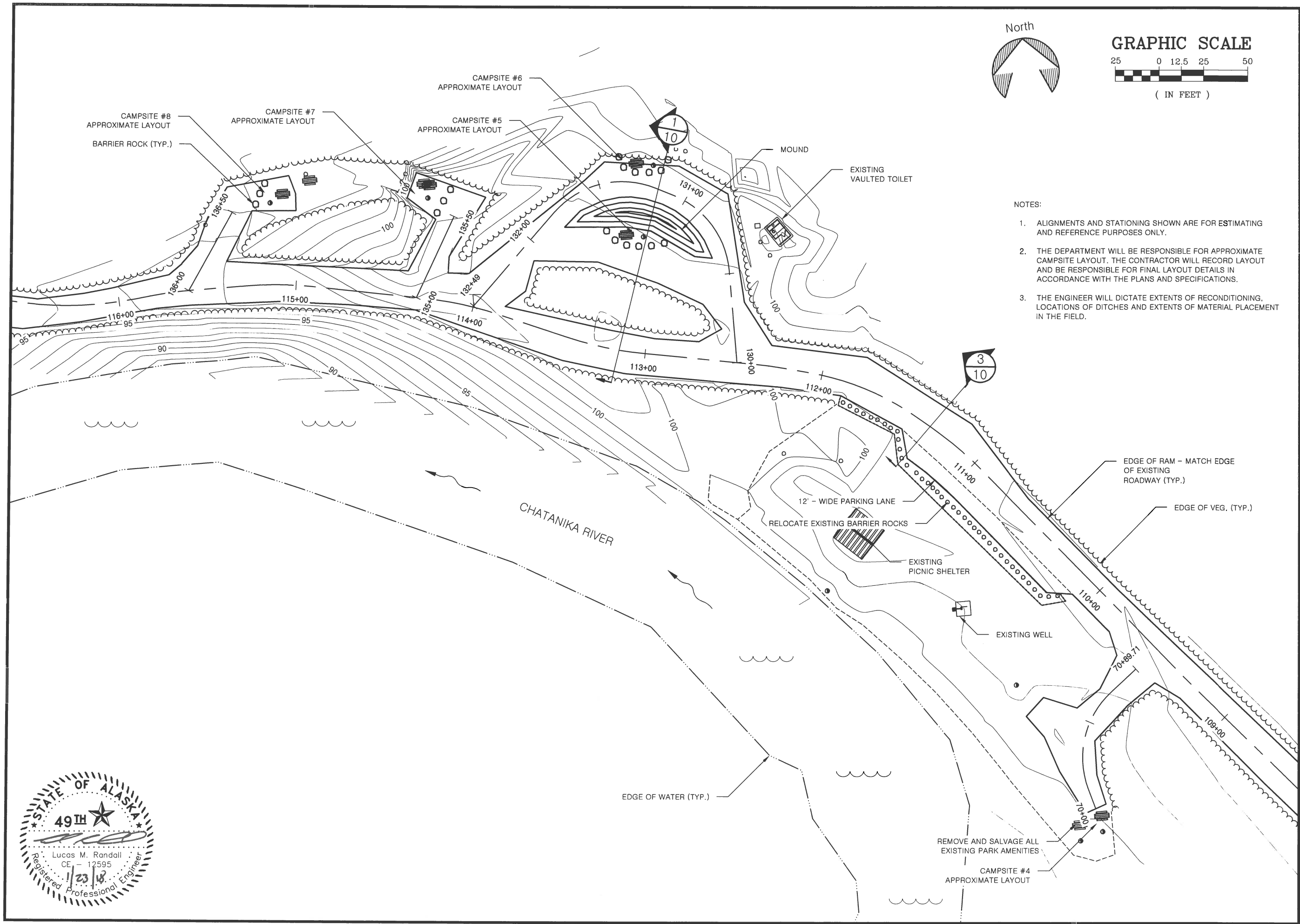
PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET

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OF 22 SHEETS

WHITEFISH CAMPGROUND
ENTRANCE AND INTERSECTIONS
STA. 100+00 TO 107+50, STA. 150+00 TO 153+00, STA.
180+00 TO 183+00



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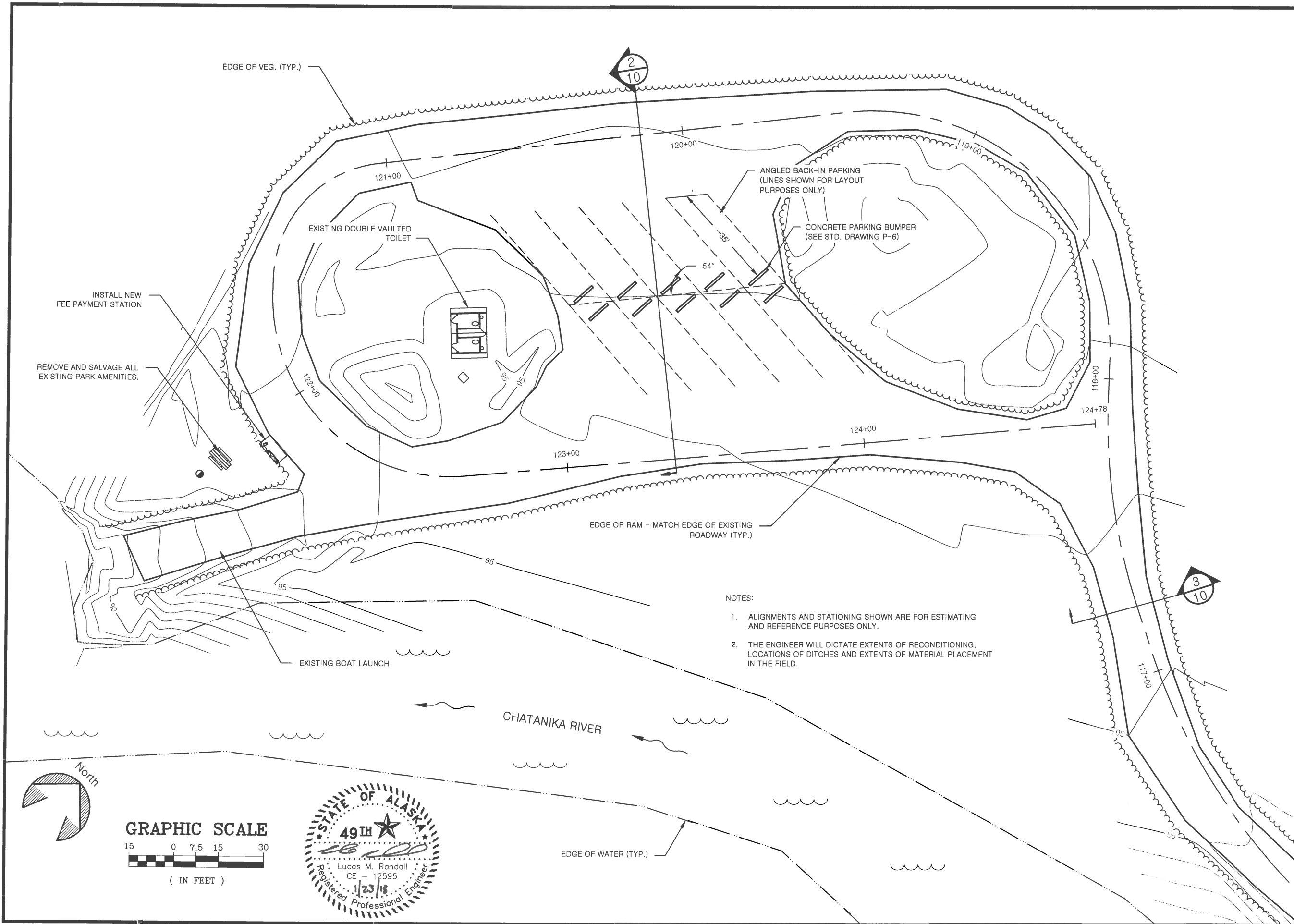
LOWER CHATANIKA RIVER SRA
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PROJECT No. 73035-3

WHITEFISH CAMPGROUND
CAMPSITES 4-8 AND DAY USE
STA. 108+50 TO 116+50



PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET
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OF 22 SHEETS



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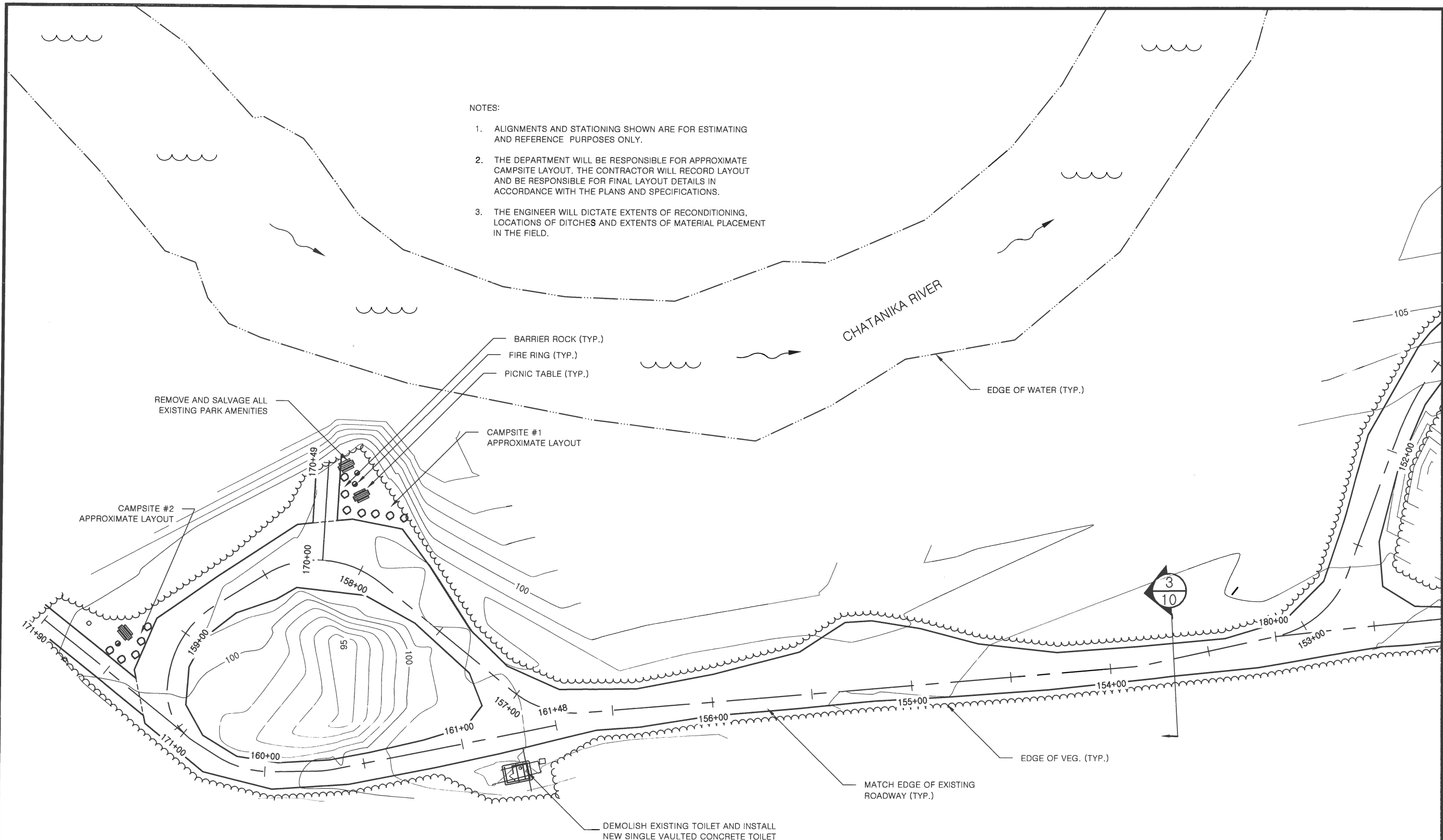
WHITEFISH CAMPGROUND
 BOAT LAUNCH AND PARKING
 STA. 116+50 TO 124+78

LOWER CHATANIKA RIVER SRA
 FACILITY IMPROVEMENTS
 PROJECT No. 73035-3



PREPARED: RCS
 DRAWN: RCS
 REVIEWED: LMR
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SHEET
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 OF 22 SHEETS



- NOTES:
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LOWER CHATANIKA RIVER SRA
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PROJECT No. 73035-3

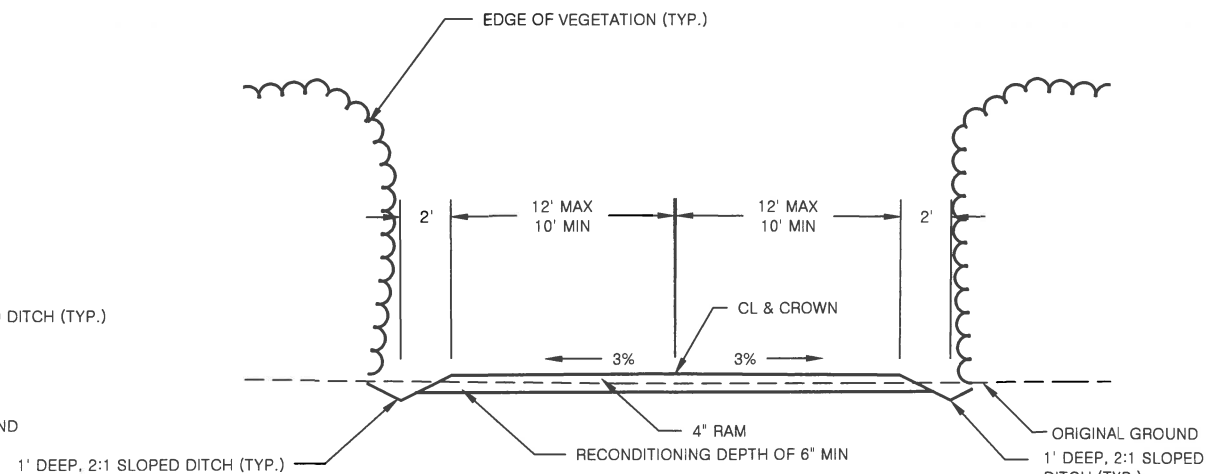
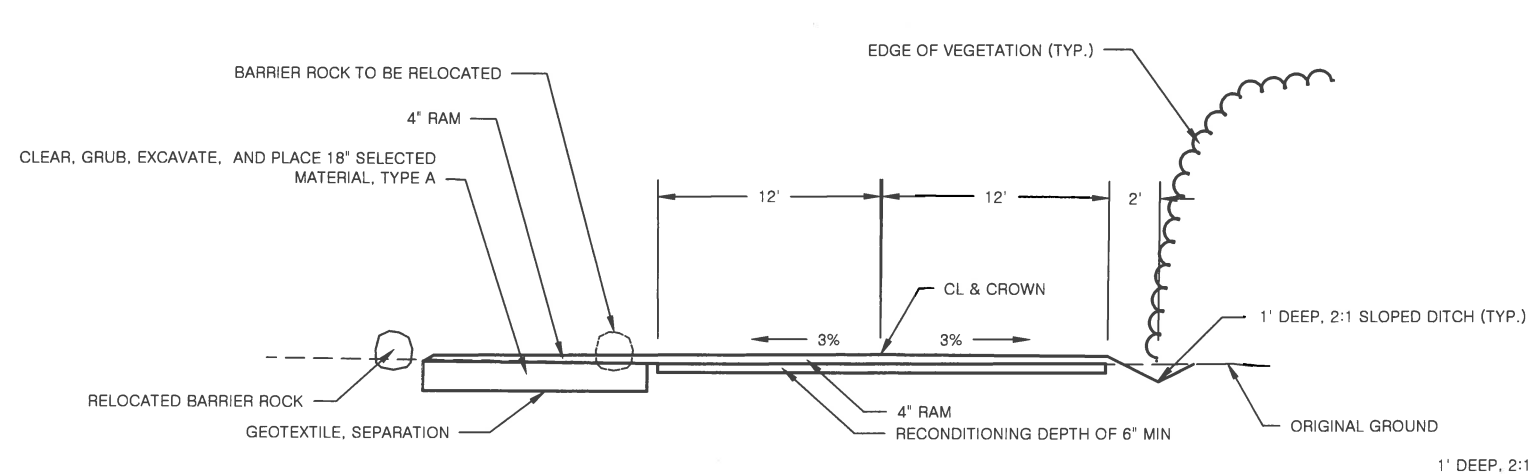
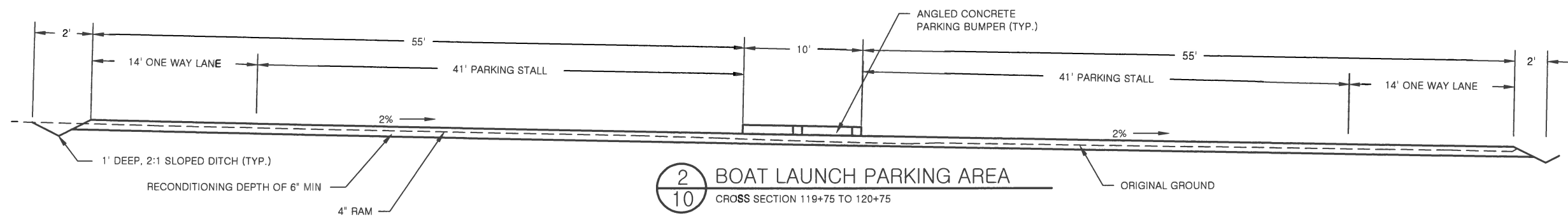
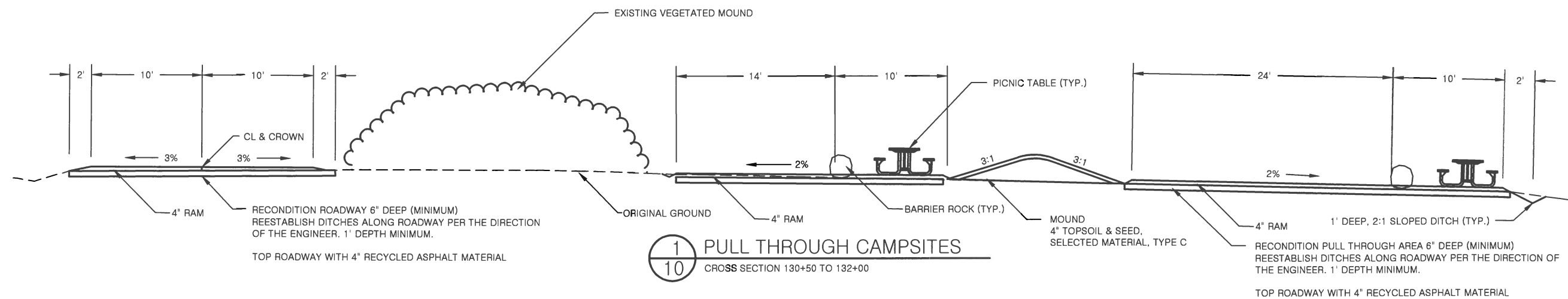
WHITEFISH CAMPGROUND
CAMPSITE 1 AND 2,
STA. 153+00 TO 161+48



PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018



SHEET
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OF 22 SHEETS



3 ROADWAY WIDENING
CROSS SECTION 23+00 TO 26+00

4 ROADWAY
TYPICAL SECTION



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LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT No. 73035-3

WHITEFISH CAMPGROUND
TYPICAL SECTIONS



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DATE: 01/02/2018

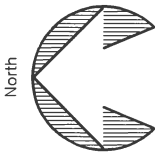
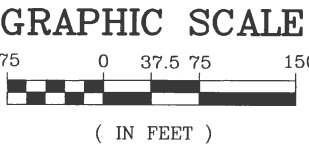
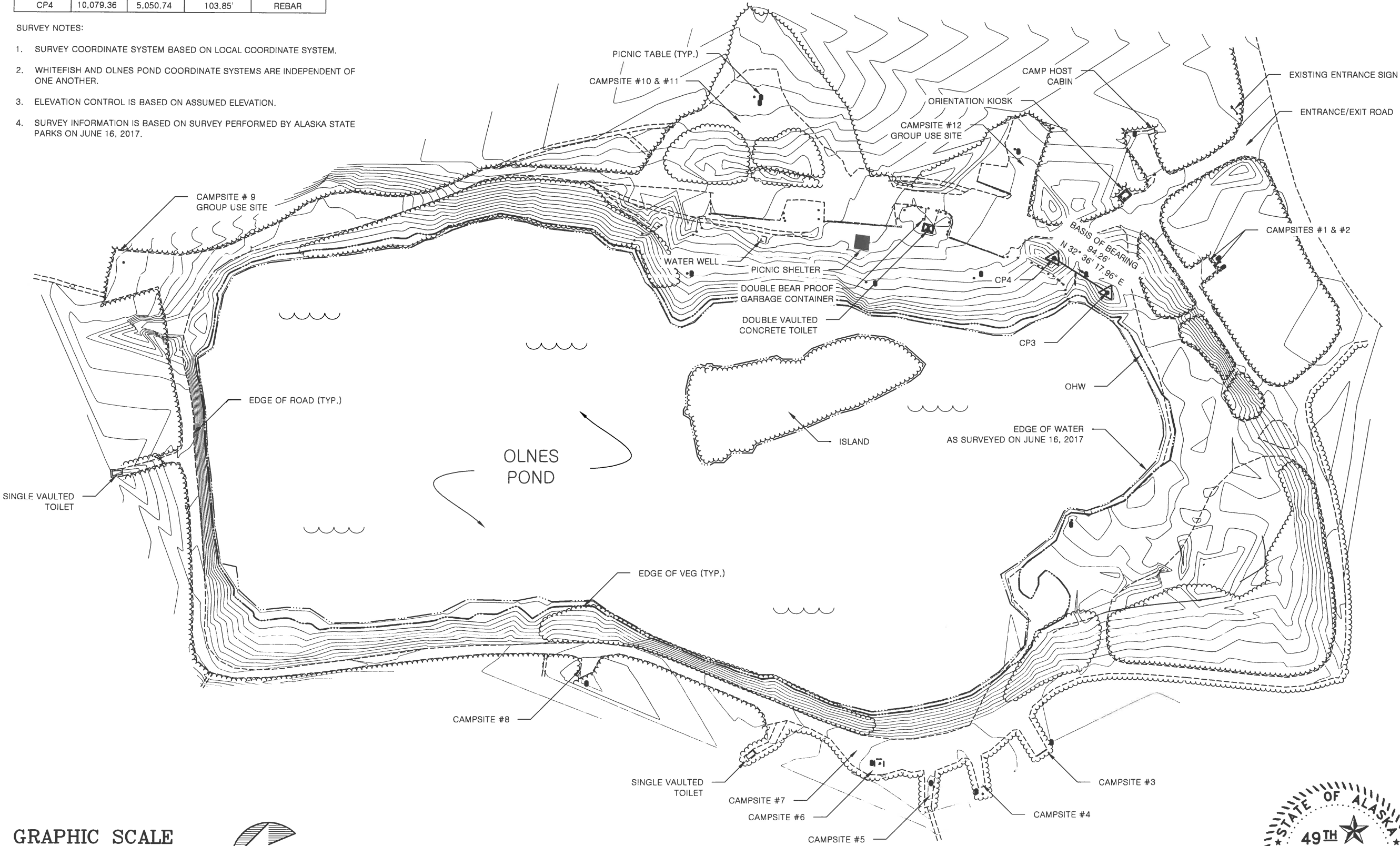
SHEET

10

OF 22 SHEETS

CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP3	10,000.00	5,000.00	100.00'	REBAR
CP4	10,079.36	5,050.74	103.85'	REBAR

- SURVEY NOTES:
1. SURVEY COORDINATE SYSTEM BASED ON LOCAL COORDINATE SYSTEM.
 2. WHITEFISH AND OLNES POND COORDINATE SYSTEMS ARE INDEPENDENT OF ONE ANOTHER.
 3. ELEVATION CONTROL IS BASED ON ASSUMED ELEVATION.
 4. SURVEY INFORMATION IS BASED ON SURVEY PERFORMED BY ALASKA STATE PARKS ON JUNE 16, 2017.



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OLNES POND
EXISTING CONDITIONS



PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET

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OF 22 SHEETS

NOTES:

- ENGINEER SHALL DETERMINE THE LOCATION OF THE 3 SECONDARY SURVEY MONUMENTS TO BE INSTALLED AT OLNES POND CAMPGROUND. CONTRACTOR TO NOTIFY THE ENGINEER 72 HOURS PRIOR TO COMMENCEMENT OF WORK TO ALLOW THE DEPARTMENT TO STAKE MONUMENT LOCATIONS.

SHEET 13

SHEET 14

SHEET 15

SHEET 17

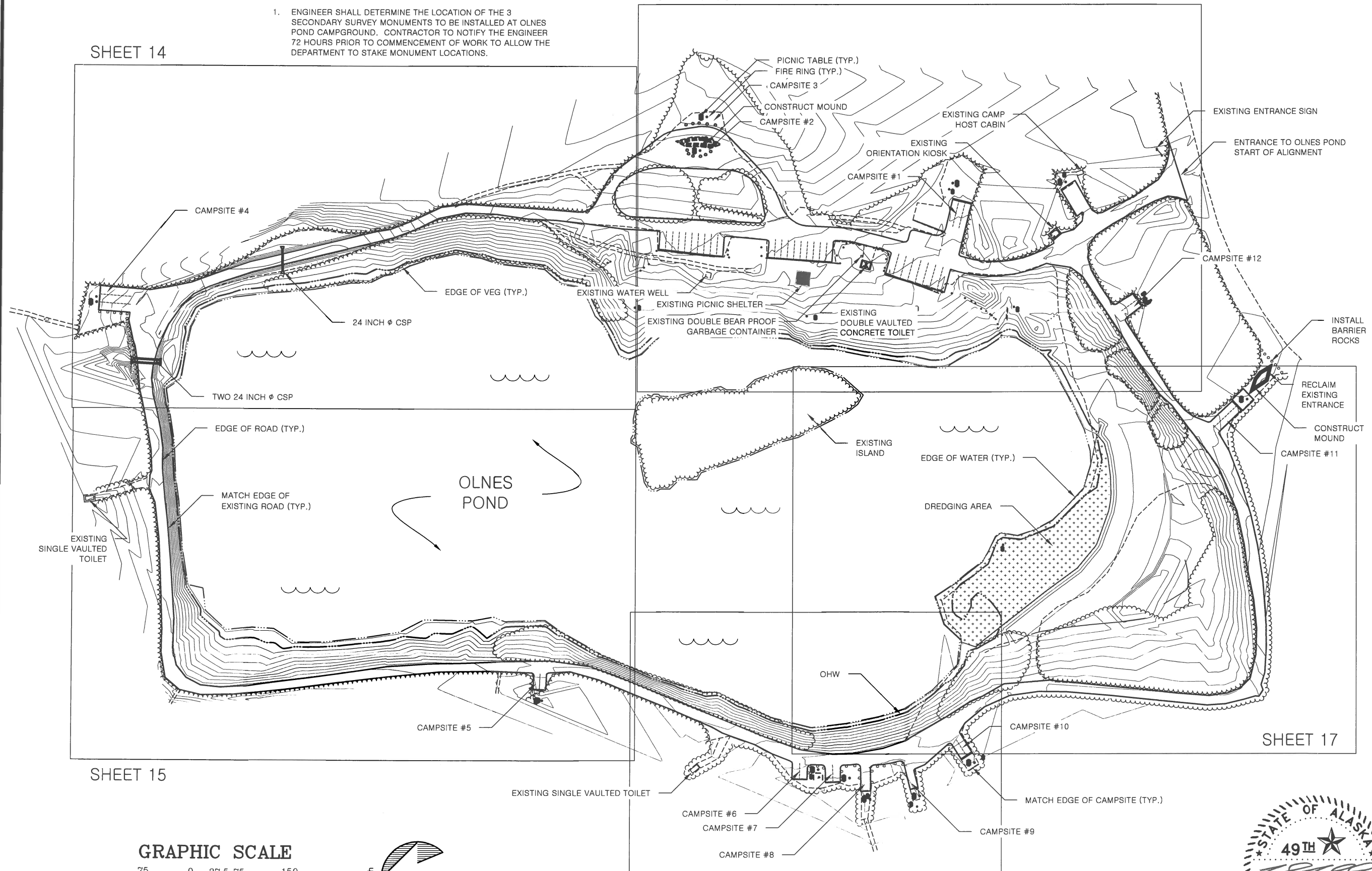
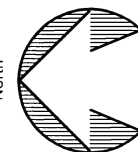
SHEET 16

GRAPHIC SCALE



(IN FEET)

North



STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
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LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLNES POND
SITE PLAN OVERVIEW

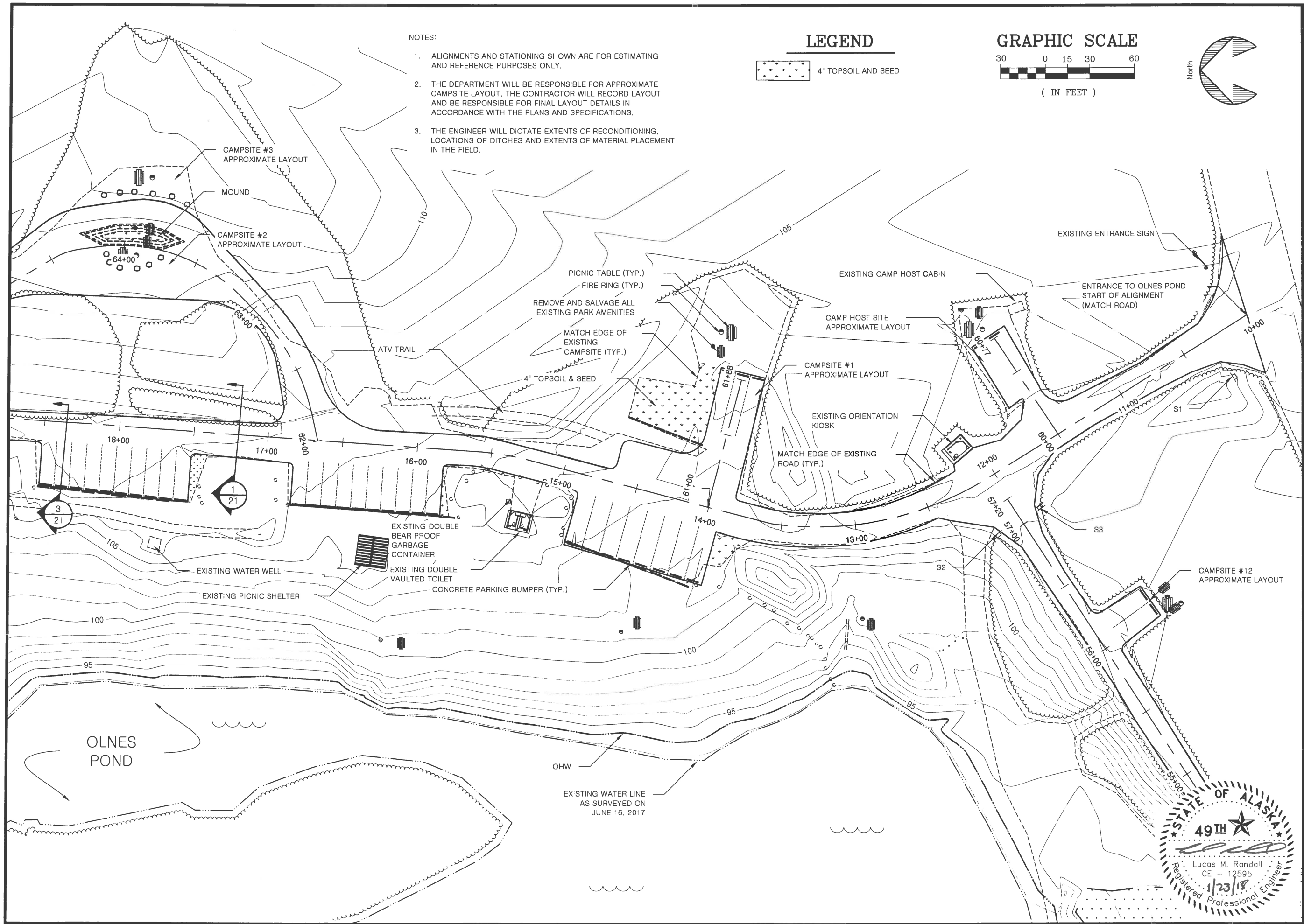


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REVIEWED: LMR
DATE: 01/02/2018

SHEET

12

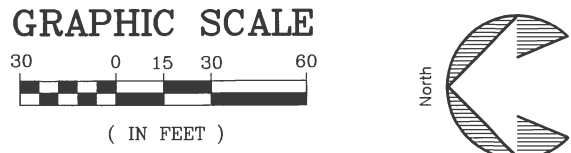
OF 22 SHEETS



- NOTES:
1. ALIGNMENTS AND STATIONING SHOWN ARE FOR ESTIMATING AND REFERENCE PURPOSES ONLY.
 2. THE DEPARTMENT WILL BE RESPONSIBLE FOR APPROXIMATE CAMPSITE LAYOUT. THE CONTRACTOR WILL RECORD LAYOUT AND BE RESPONSIBLE FOR FINAL LAYOUT DETAILS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
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LEGEND

4" TOPSOIL AND SEED



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550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

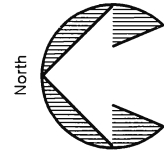
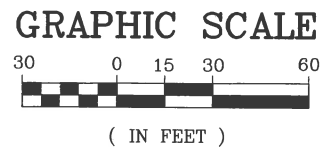
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OLNES POND
PARKING AND CAMPSITES 1-3, 12
STA. 10+00 TO 18+50, 55+00 TO 58+00



STATE OF ALASKA
49TH
Lucas M. Randall
CE - 12595
1/23/18
Registered Professional Engineer

PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018
SHEET
13
OF 22 SHEETS

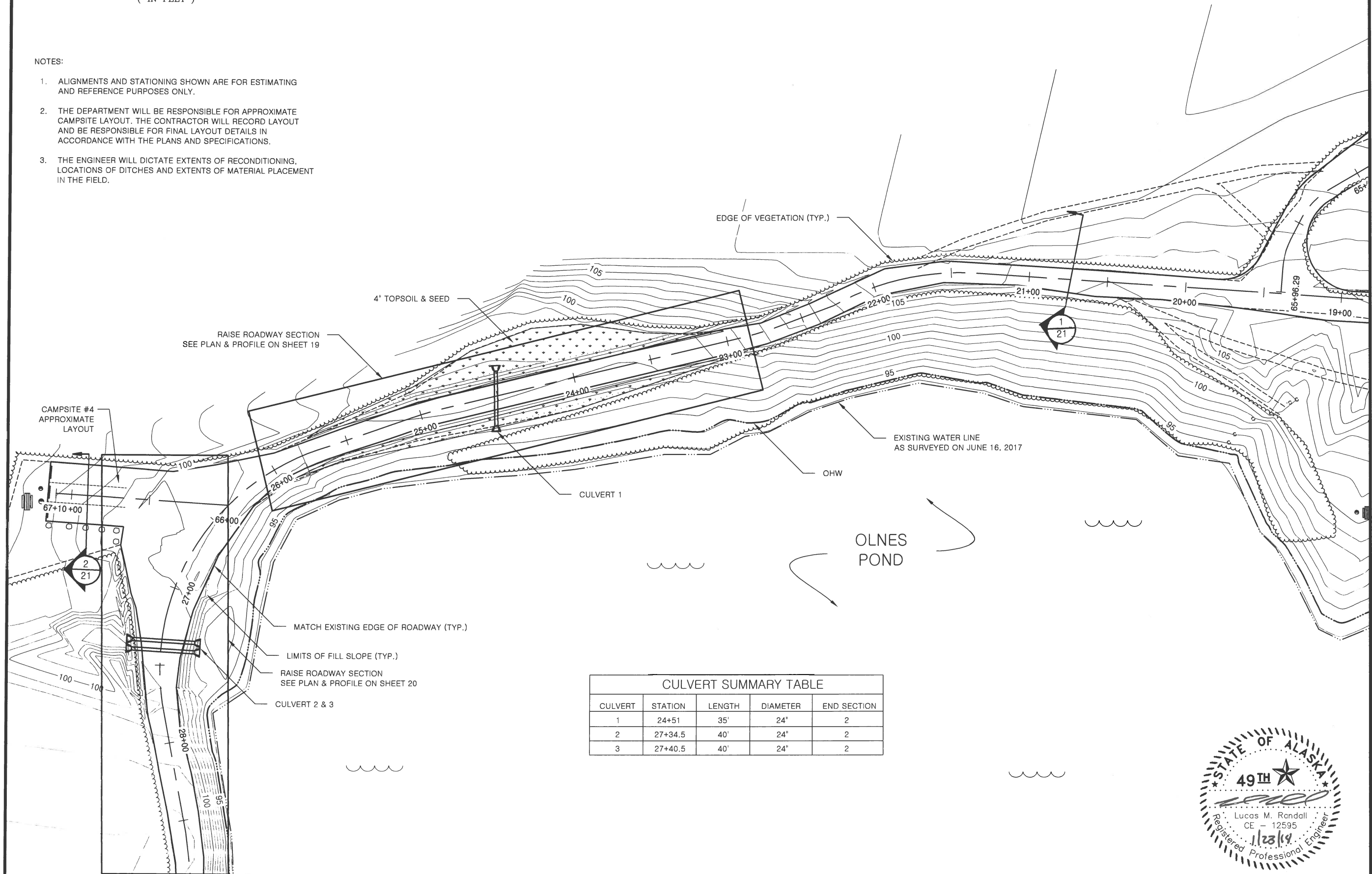


LEGEND



NOTES:

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2. THE DEPARTMENT WILL BE RESPONSIBLE FOR APPROXIMATE CAMPSITE LAYOUT. THE CONTRACTOR WILL RECORD LAYOUT AND BE RESPONSIBLE FOR FINAL LAYOUT DETAILS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
3. THE ENGINEER WILL DICTATE EXTENTS OF RECONDITIONING, LOCATIONS OF DITCHES AND EXTENTS OF MATERIAL PLACEMENT IN THE FIELD.



CULVERT SUMMARY TABLE

CULVERT	STATION	LENGTH	DIAMETER	END SECTION
1	24+51	35'	24"	2
2	27+34.5	40'	24"	2
3	27+40.5	40'	24"	2



STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLMES POND CAMPSITE 4
STA. 19+00 TO 28+00

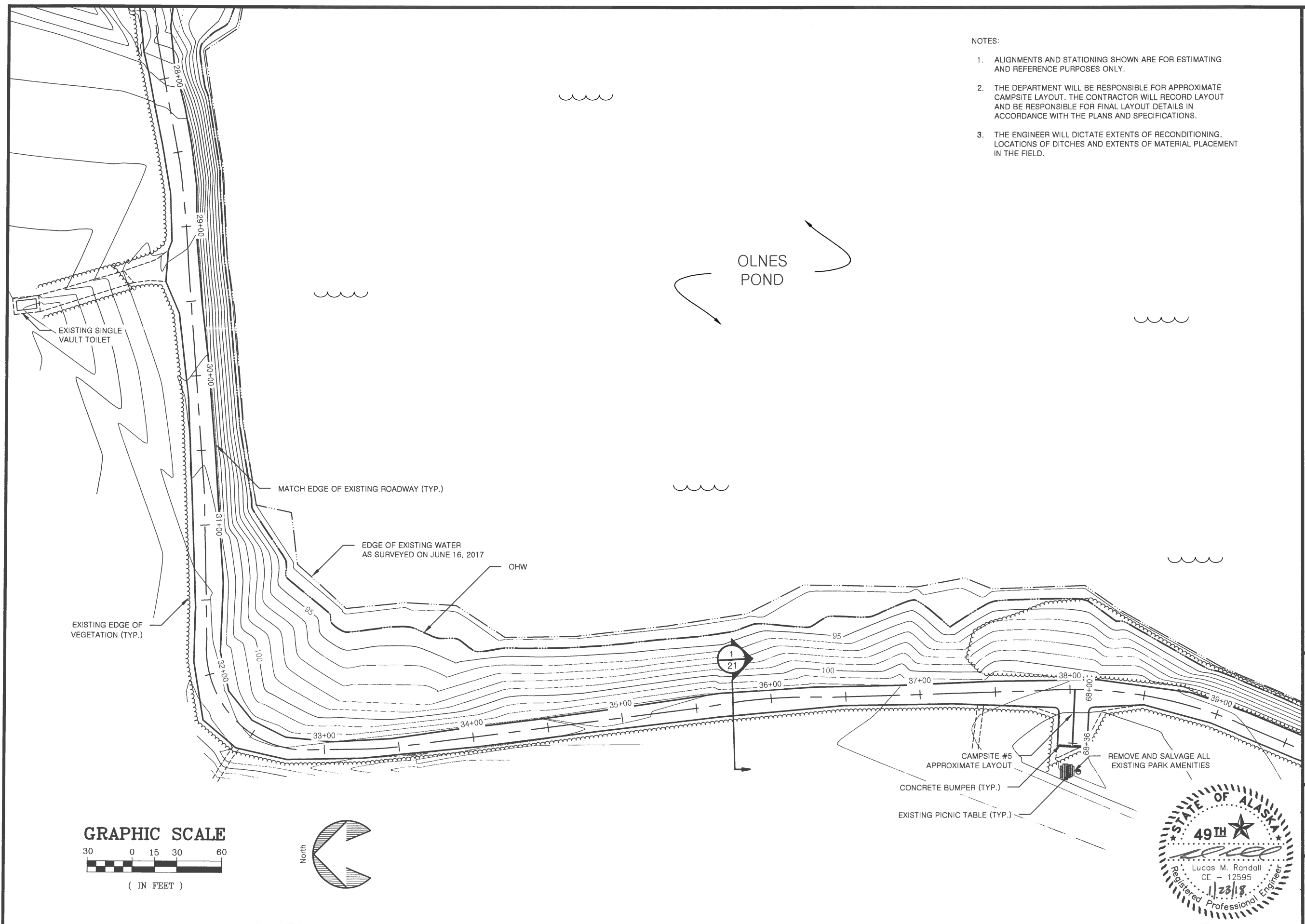


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET

14

OF 22 SHEETS



NOTES:

1. ALIGNMENTS AND STATIONING SHOWN ARE FOR ESTIMATING AND REFERENCE PURPOSES ONLY.
2. THE DEPARTMENT WILL BE RESPONSIBLE FOR APPROXIMATE CAMPSITE LAYOUT. THE CONTRACTOR WILL RECORD LAYOUT AND BE RESPONSIBLE FOR FINAL LAYOUT DETAILS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
3. THE ENGINEER WILL DICTATE EXTENTS OF RECONDITIONING, LOCATIONS OF DITCHES AND EXTENTS OF MATERIAL PLACEMENT IN THE FIELD.

STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

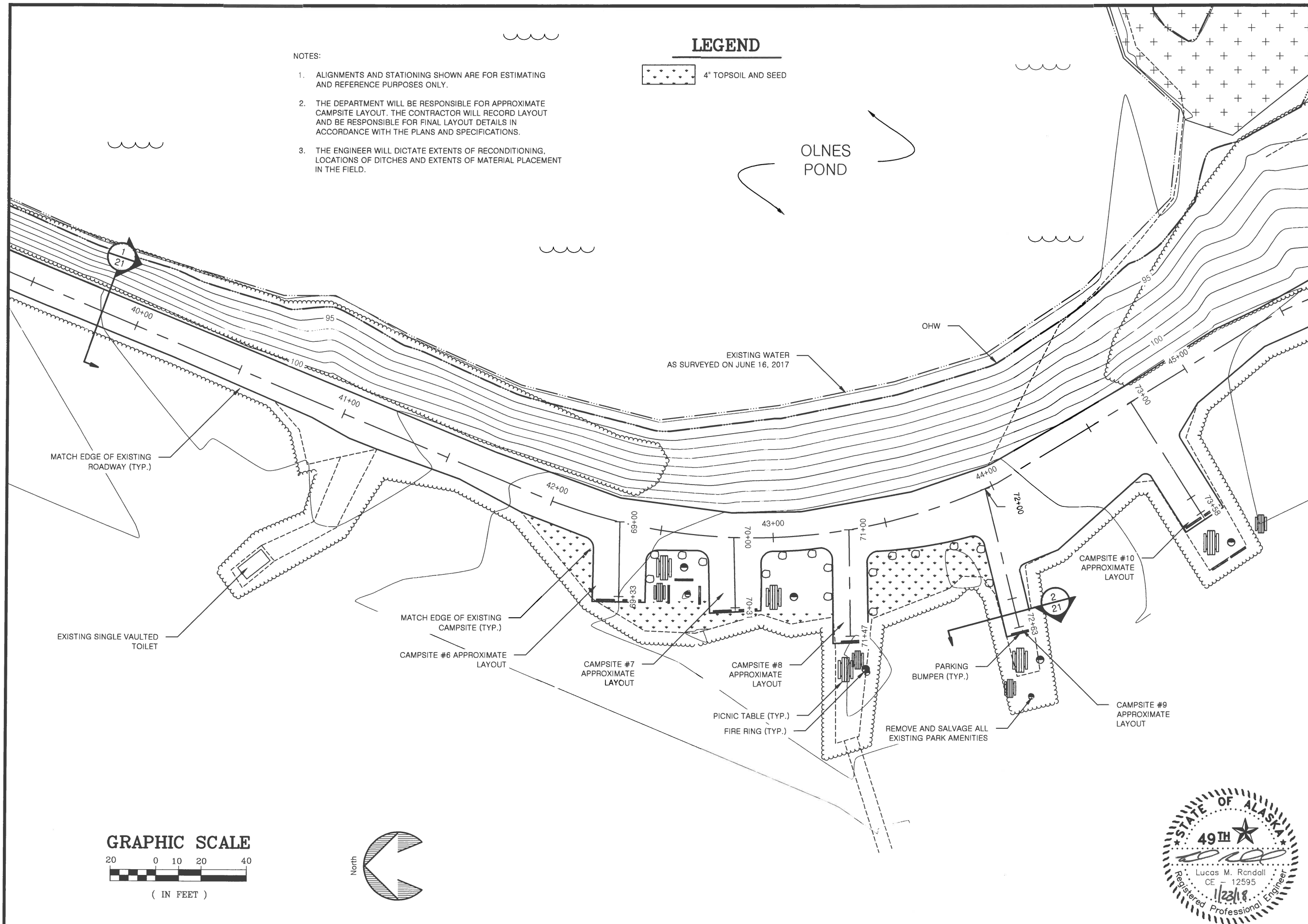
OLNES POND
CAMPSITE 5
STA. 28+00 TO 39+50



PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET
15
OF 22 SHEETS

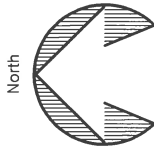
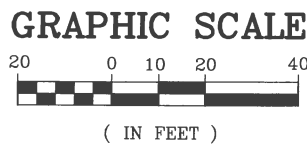




- NOTES:
- 1. ALIGNMENTS AND STATIONING SHOWN ARE FOR ESTIMATING AND REFERENCE PURPOSES ONLY.
 - 2. THE DEPARTMENT WILL BE RESPONSIBLE FOR APPROXIMATE CAMPSITE LAYOUT. THE CONTRACTOR WILL RECORD LAYOUT AND BE RESPONSIBLE FOR FINAL LAYOUT DETAILS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
 - 3. THE ENGINEER WILL DICTATE EXTENTS OF RECONDITIONING, LOCATIONS OF DITCHES AND EXTENTS OF MATERIAL PLACEMENT IN THE FIELD.

LEGEND

 4" TOPSOIL AND SEED



STATE OF ALASKA
49TH
Lucas M. Randall
CE - 12595
1/23/18
Registered Professional Engineer

STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

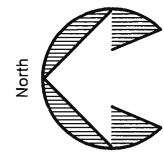
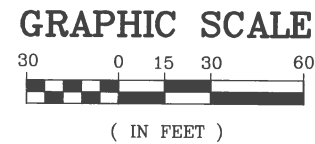
LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLNES POND
CAMPSITE 6-10
STA. 39+50 TO 45+50



PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET
16
OF 22 SHEETS



LEGEND

- 4" TOPSOIL AND SEED
- CLEARING AND GRUBBING
- DREDGING
- DREDGE FILL MATERIAL

NOTES:

- ALIGNMENTS AND STATIONING SHOWN ARE FOR ESTIMATING AND REFERENCE PURPOSES ONLY.
- THE DEPARTMENT WILL BE RESPONSIBLE FOR APPROXIMATE CAMPSITE LAYOUT. THE CONTRACTOR WILL RECORD LAYOUT AND BE RESPONSIBLE FOR FINAL LAYOUT DETAILS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
- THE ENGINEER WILL DICTATE EXTENTS OF RECONDITIONING, LOCATIONS OF DITCHES AND EXTENTS OF MATERIAL PLACEMENT IN THE FIELD.
- ENGINEER WILL DICTATE THE EXTENTS OF CLEARING AND GRUBBING. GRUBBED MATERIAL WILL BE USED FOR CONSTRUCTION OF MOUNDS.
- GRADING SHEET FOR DREDGING ON SHEET 18.

OLNES
POND

EXISTING WATER
AS SURVEYED ON JUNE 16, 2017

OHW

PLACE BARRIER ROCKS
TO CLOSE
OLD ENTRANCE

4" TOPSOIL AND SEED

MOUND

RECLAMATION AREA
(4" TOPSOIL & SEED)

CAMPSITE #11
APPROXIMATE
LAYOUT

CLEARING AND GRUBBING LIMITS

MATCH EXISTING EDGE OF
ROAD (TYP.)



STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
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LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLNES POND FILL SECTION
AND CAMPSITE 11
STA. 44+50 TO 55+50

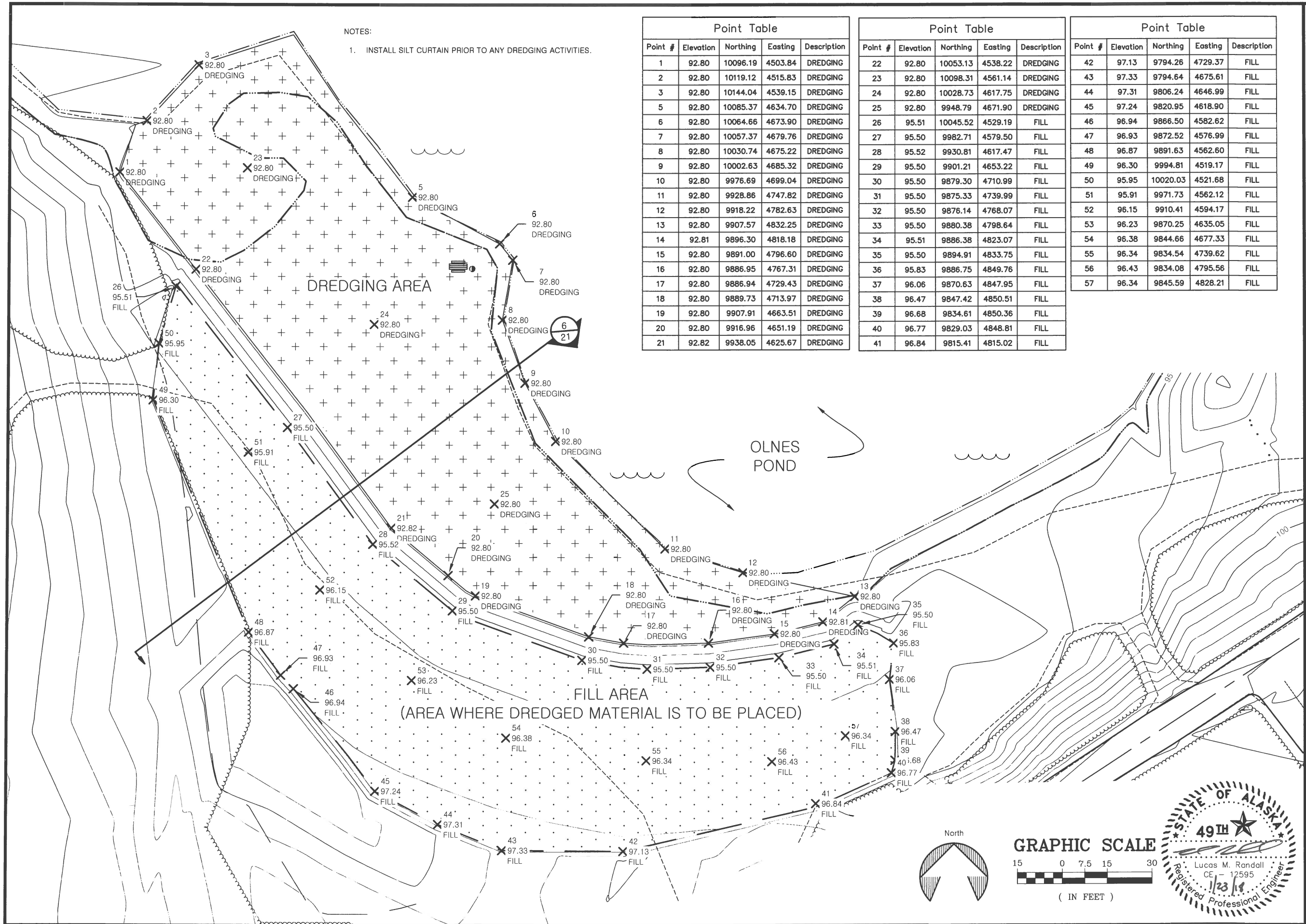


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET

17

OF 22 SHEETS



STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLNES POND DREDGING SECTION
GRADING PLAN

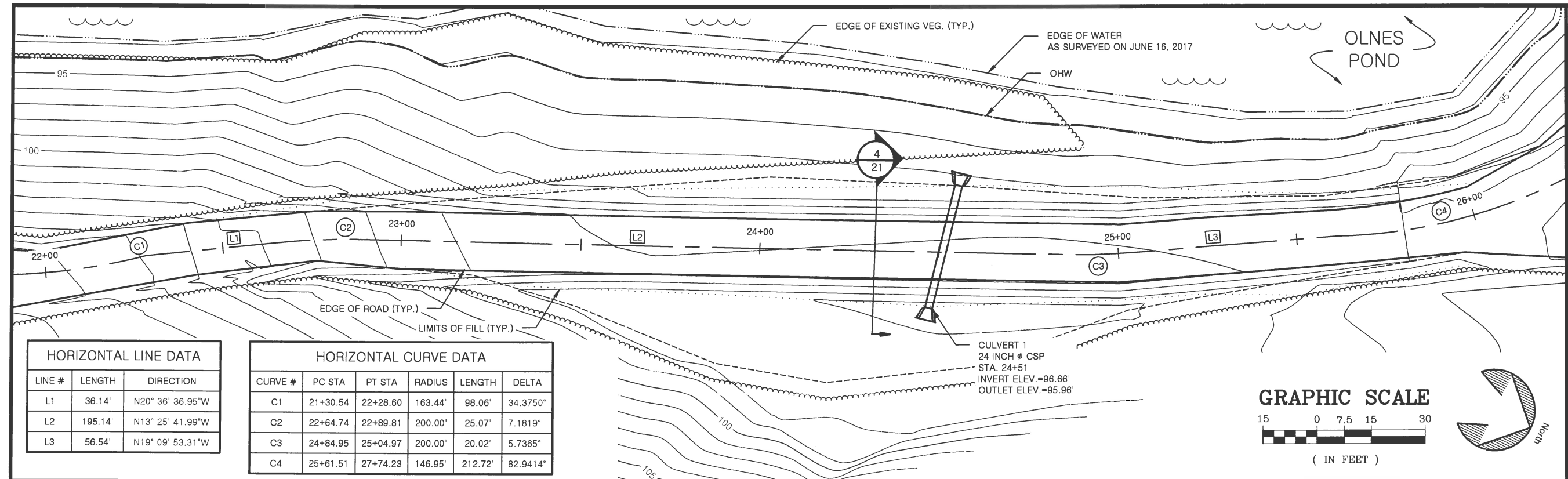


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

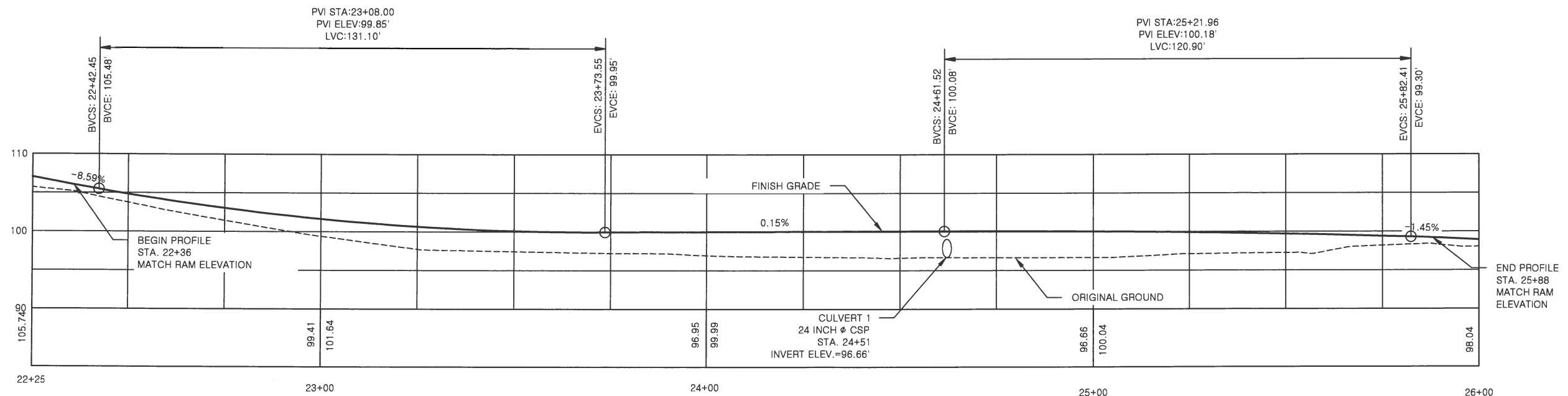
SHEET

18

OF 22 SHEETS



1
19 RAISED ROADWAY SECTION STA. 22+36 TO STA. 25+87.96
PLAN VIEW



2
19 RAISED ROADWAY SECTION STA. 22+36 TO STA. 25+87.96
PROFILE



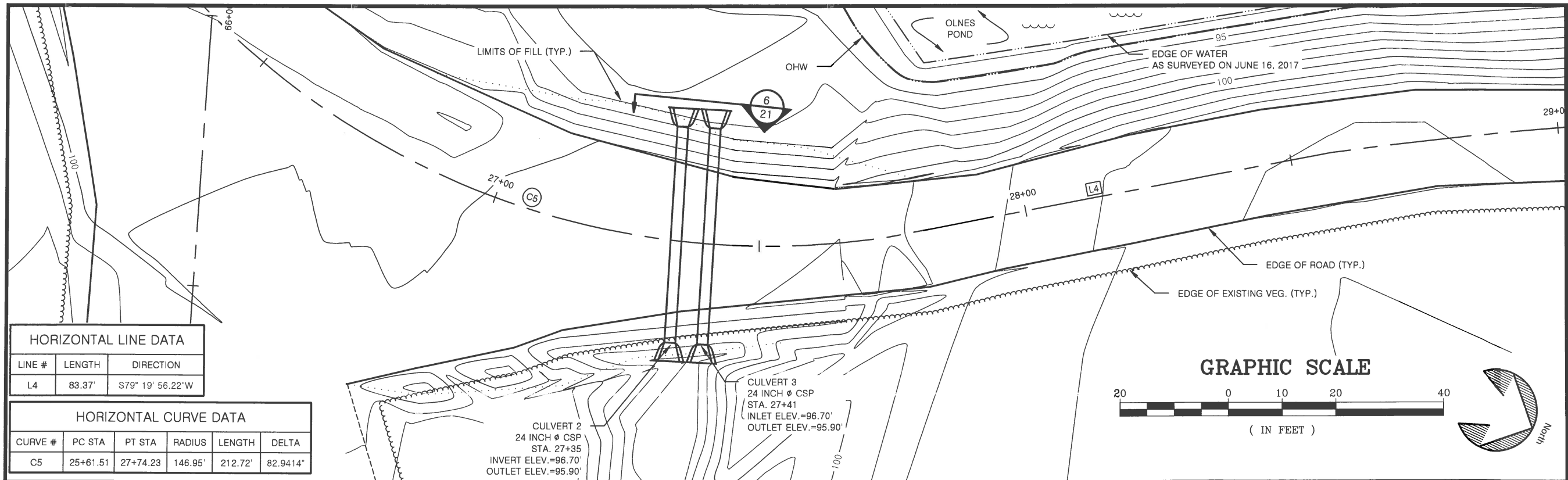
PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET
19
OF 22 SHEETS

STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

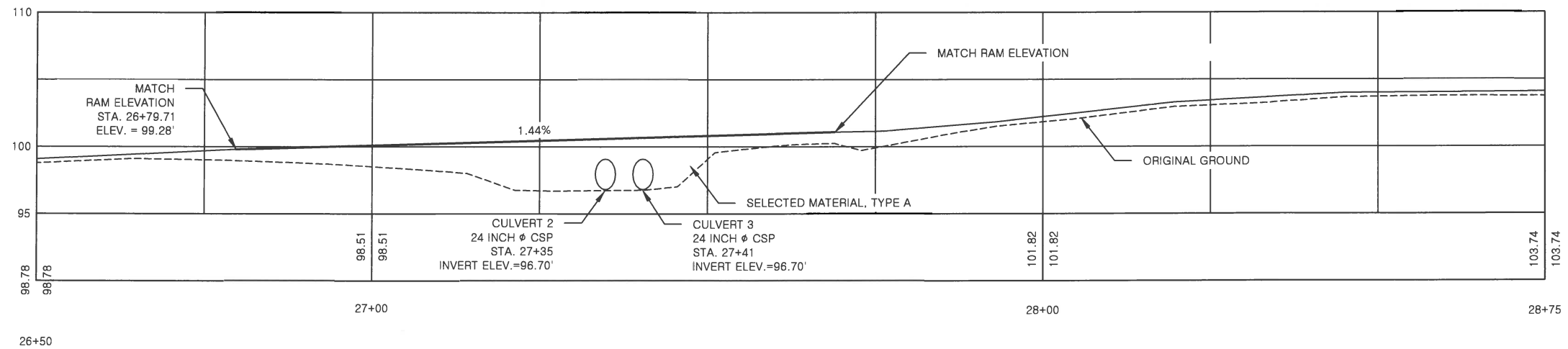
OLNESS POND RAISED ROADWAY
PLAN & PROFILE
STA. 22+36 TO 25+88



HORIZONTAL LINE DATA		
LINE #	LENGTH	DIRECTION
L4	83.37'	S79° 19' 56.22"W

HORIZONTAL CURVE DATA					
CURVE #	PC STA	PT STA	RADIUS	LENGTH	DELTA
C5	25+61.51	27+74.23	146.95'	212.72'	82.9414°

1
20 RAISED ROADWAY SECTION STA. 26+79.91 TO STA. 28+00
PLAN VIEW



2
20 RAISED ROADWAY SECTION STA. 26+79.71 TO STA. 28+00
PROFILE



STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLNES POND RAISED ROADWAY
PLAN & PROFILE
STA. 26+79.91 TO 28+00

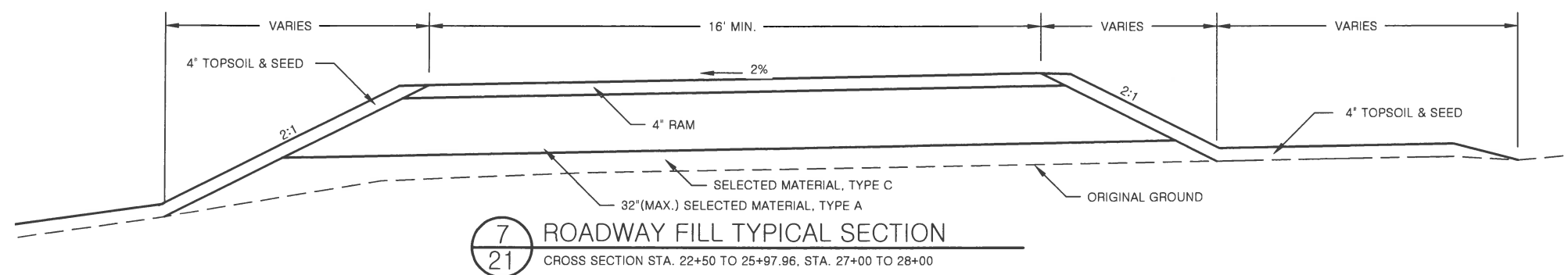
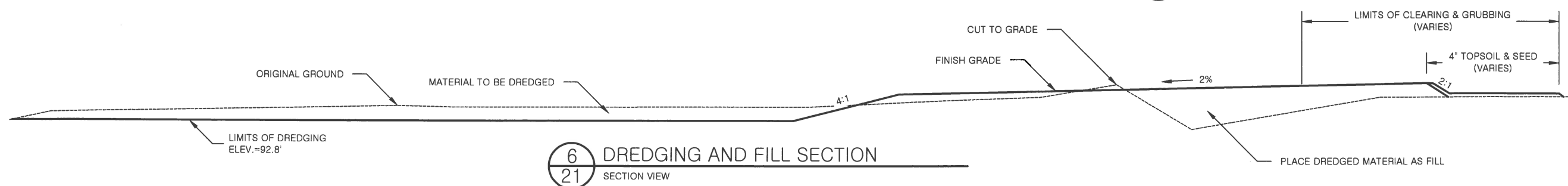
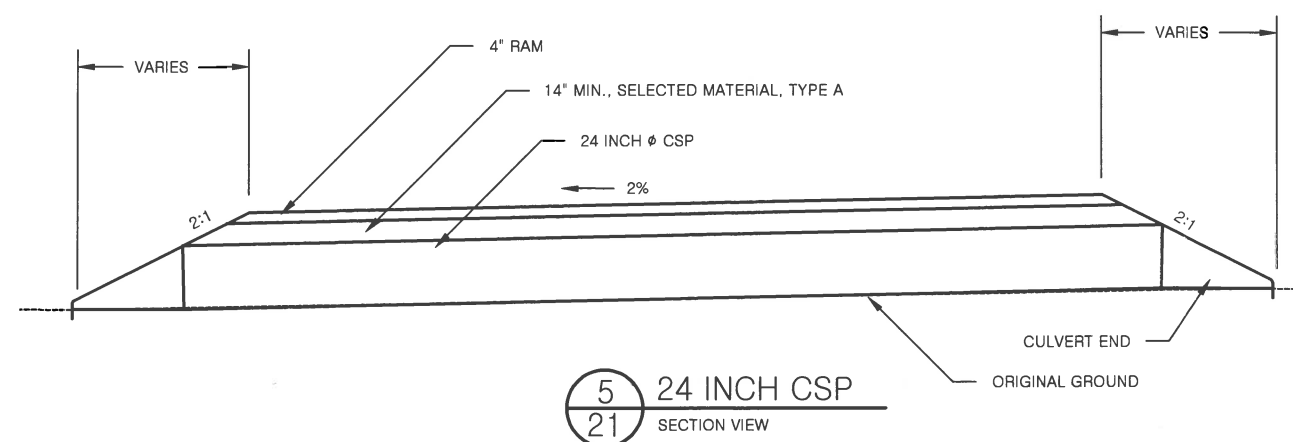
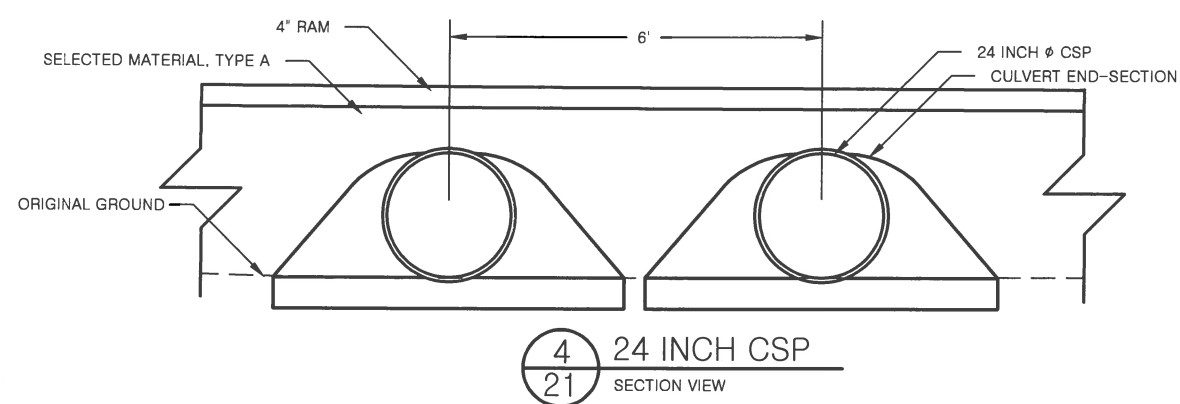
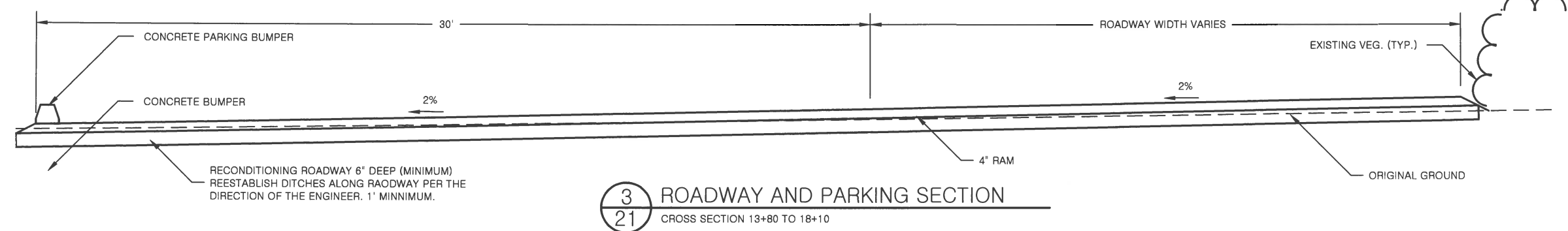
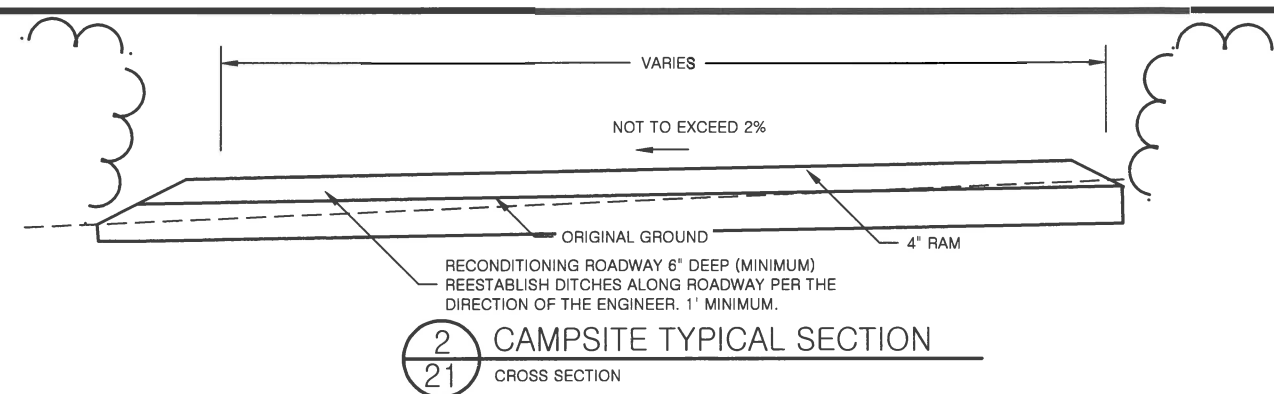
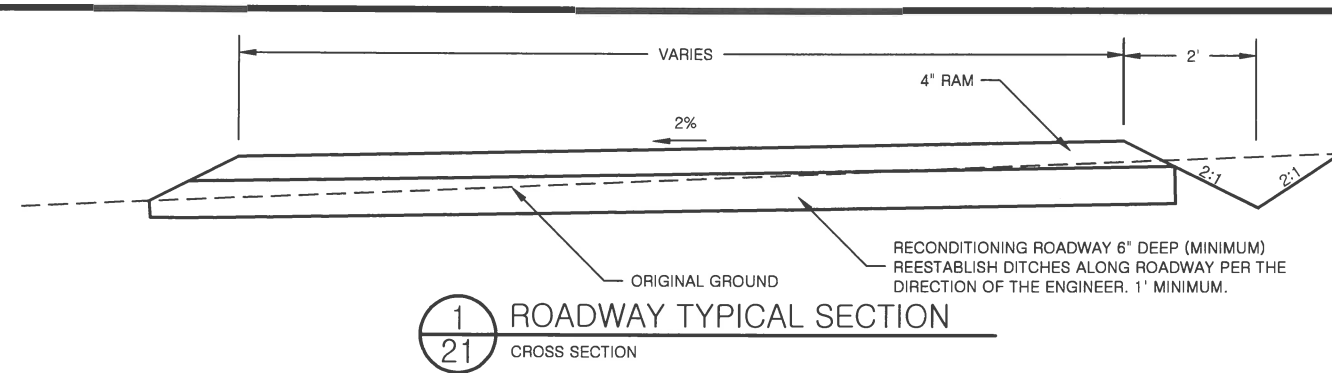


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

SHEET

20

OF 22 SHEETS



STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
PLANS DEVELOPED BY: DIVISION OF PARKS AND OUTDOOR RECREATION
550 W 7TH AVE. SUITE 1340, ANCHORAGE, AK 99501 - 907.269.8731

LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLNES POND
TYPICAL SECTIONS

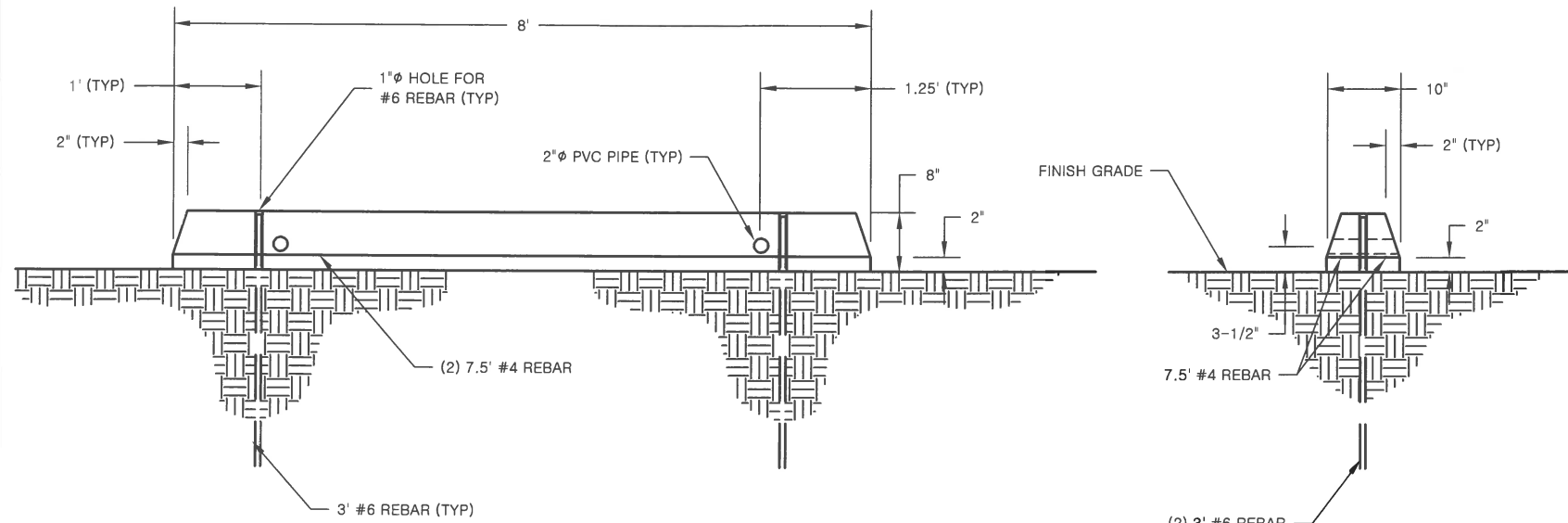


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

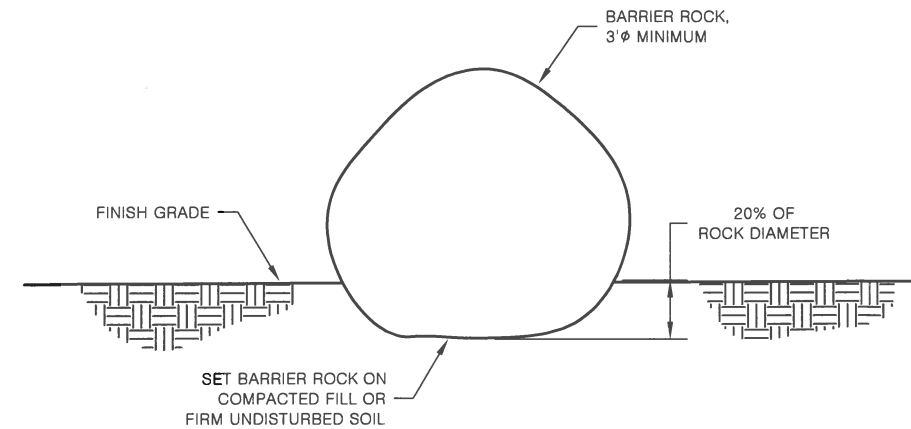
SHEET

21

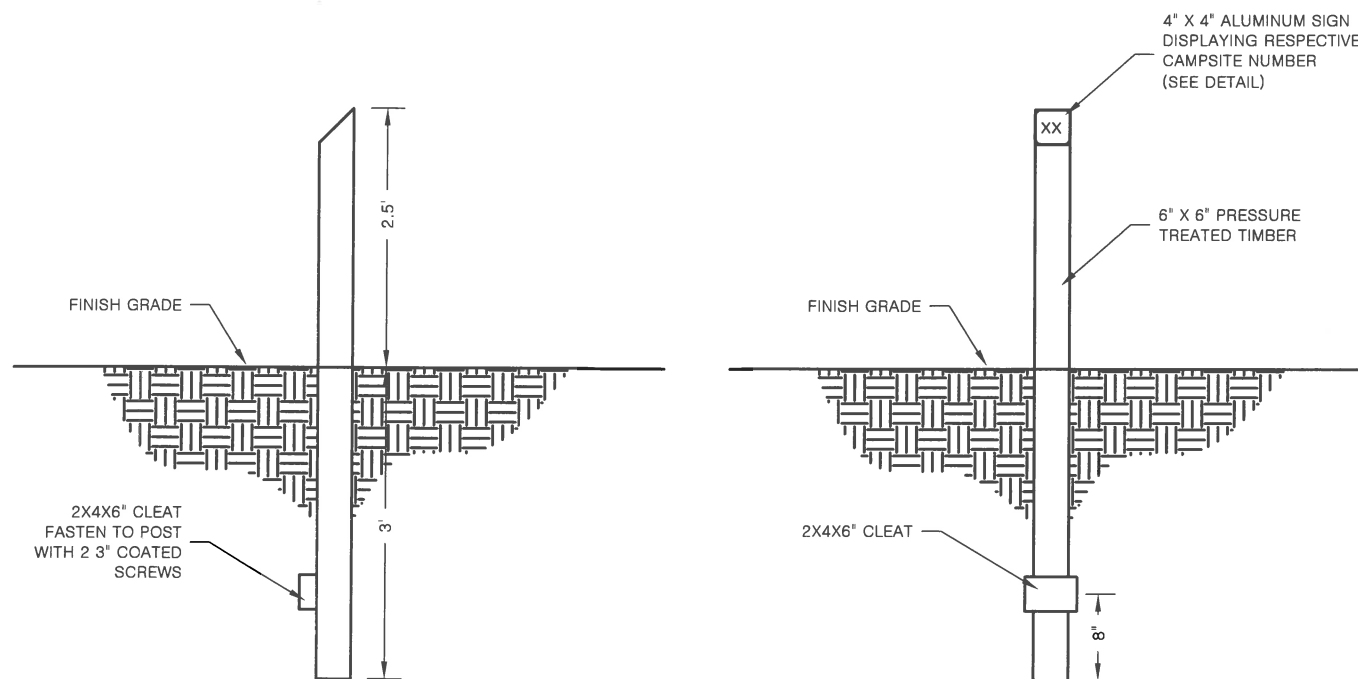
OF 22 SHEETS



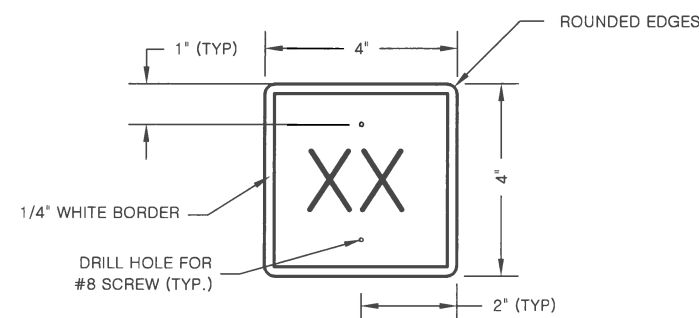
1
22 CONCRETE PARKING BUMPER
TYPICAL DETAIL



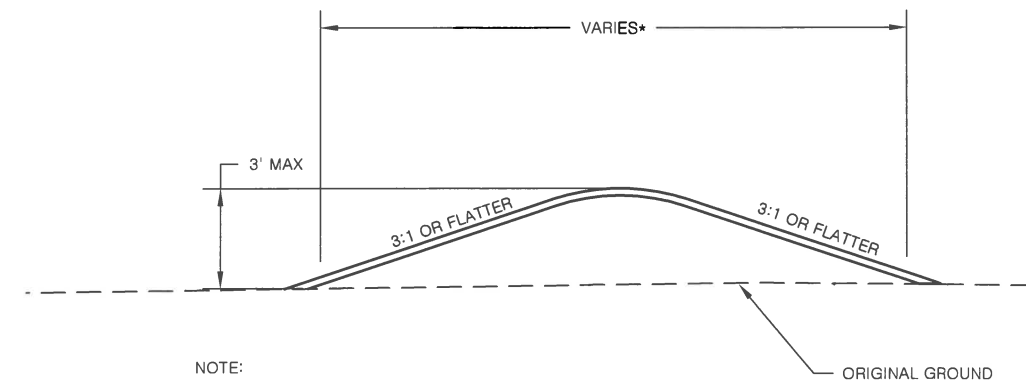
2
22 BARRIER ROCK
TYPICAL DETAIL



3
22 CAMPSITE MARKER
TYPICAL PLAN



5
22 CAMPSITE MARKER
DETAIL



NOTE:
1. * = WIDTH VARIES, TO BE FIELD DETERMINED

4
22 TYPICAL SECTION - MOUND
TYPICAL DETAIL



STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
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LOWER CHATANIKA RIVER SRA
FACILITY IMPROVEMENTS
PROJECT NO. 73035-3

OLNES POND
DETAILS

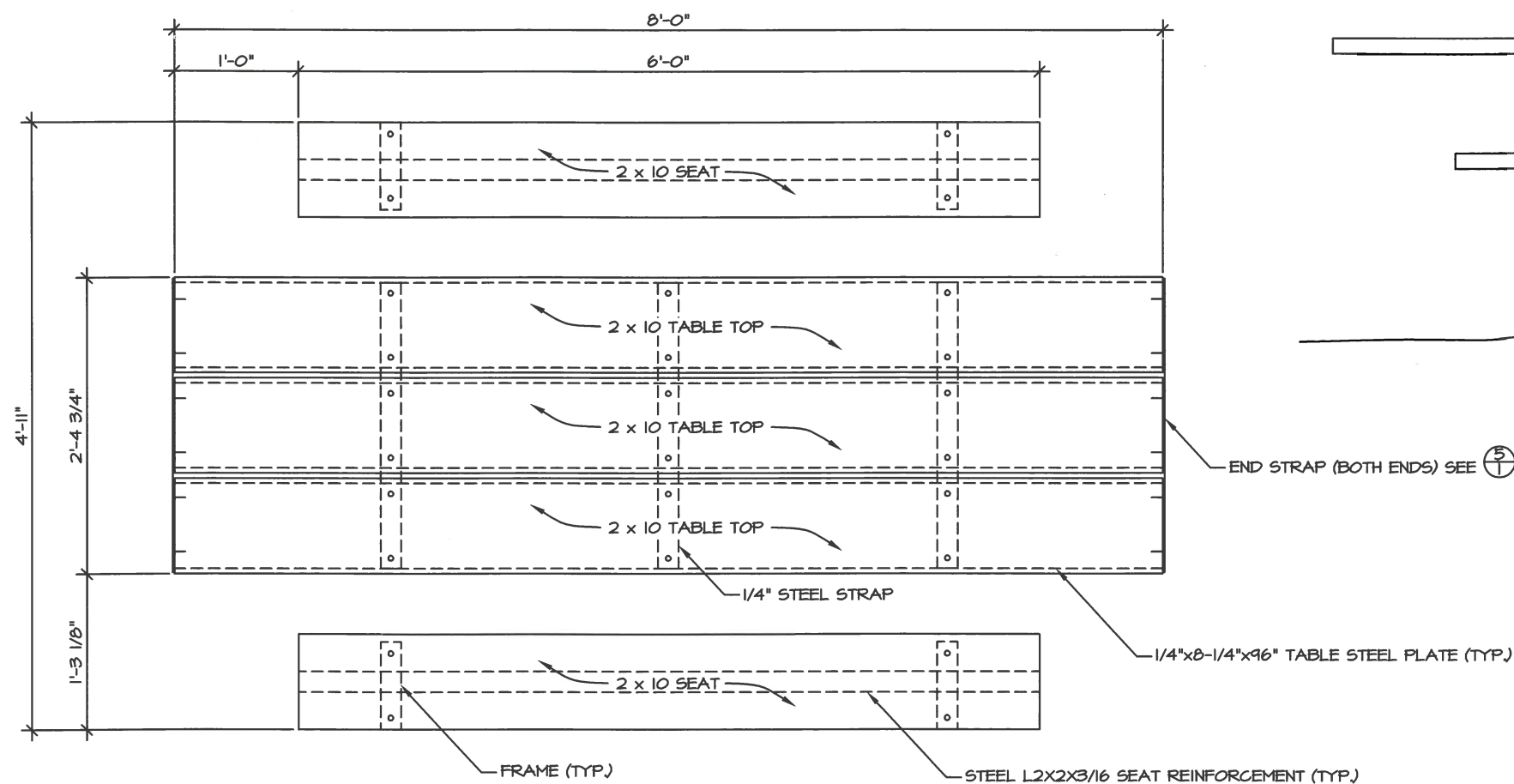


PREPARED: RCS
DRAWN: RCS
REVIEWED: LMR
DATE: 01/02/2018

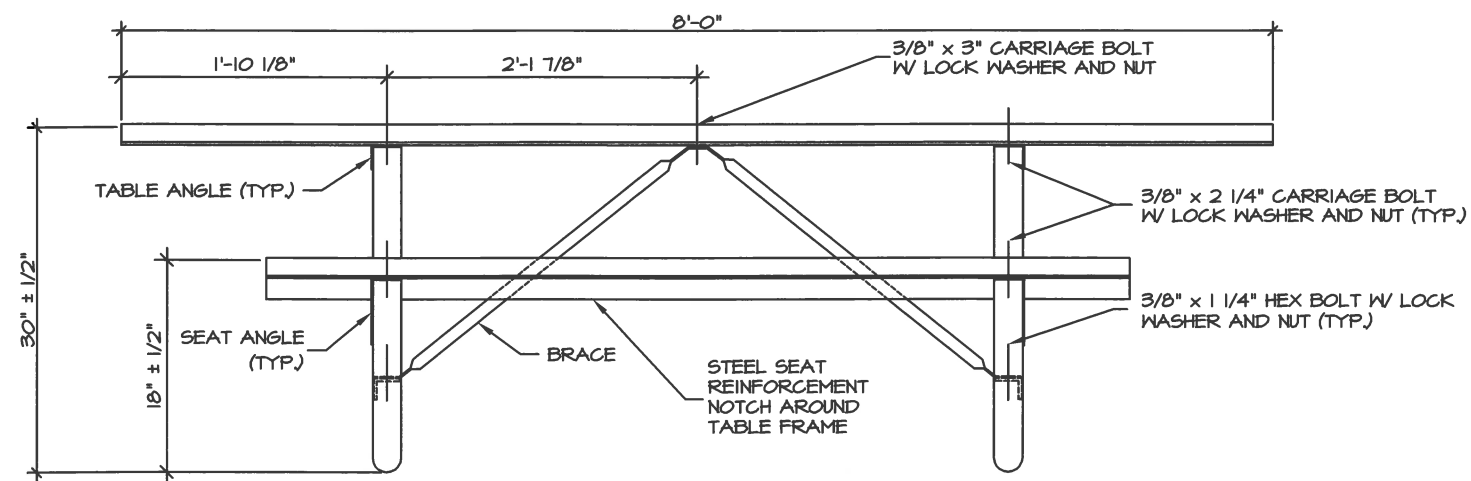
SHEET

22

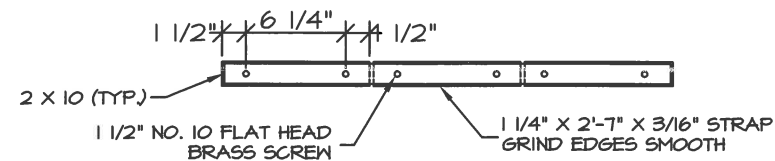
OF 22 SHEETS



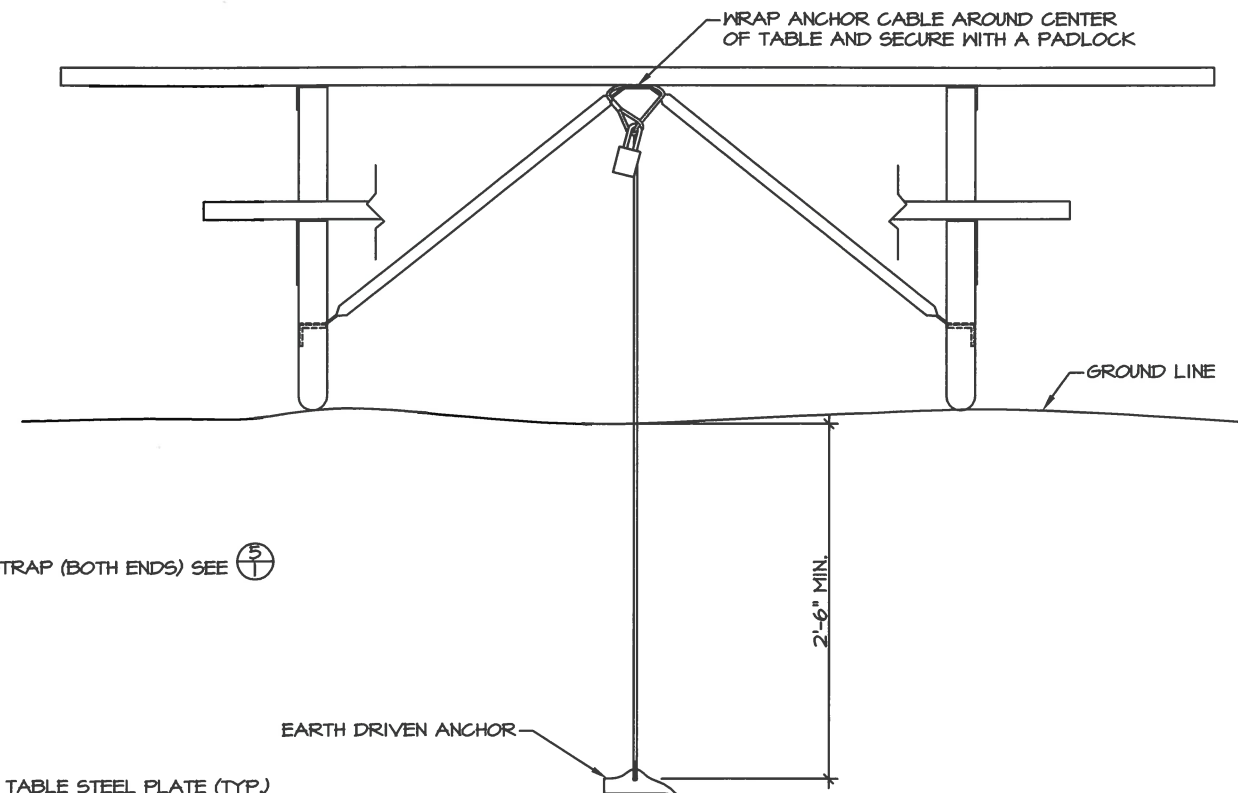
① TOP VIEW



③ SIDE VIEW



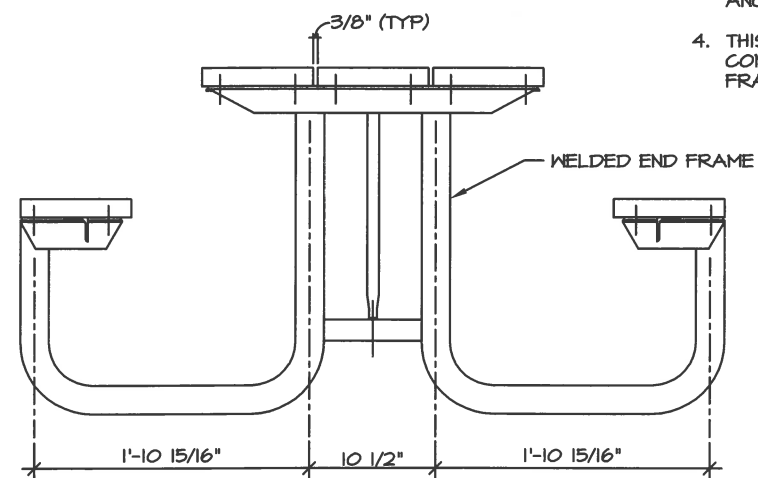
⑤ END STRAP



② ANCHOR DETAIL

NOTES:

1. SEATS & TOP SHALL RECYCLED PLASTIC LUMBER.
2. BOLT HOLES FOR TABLE TOP, SEATS, & STEEL PLATES TO BE SHOP DRILLED.
3. SWAGED SLEEVED SHALL BE USED TO FASTEN ANCHOR CABLE.
4. THIS DRAWING ILLUSTRATES SEAT & TABLE TOP CONSTRUCTION. REFER TO SPECIAL PROVISIONS FRAME STYLES & MODELS.

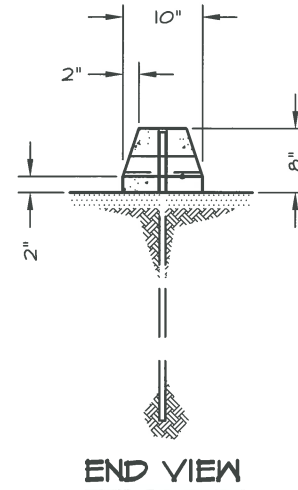
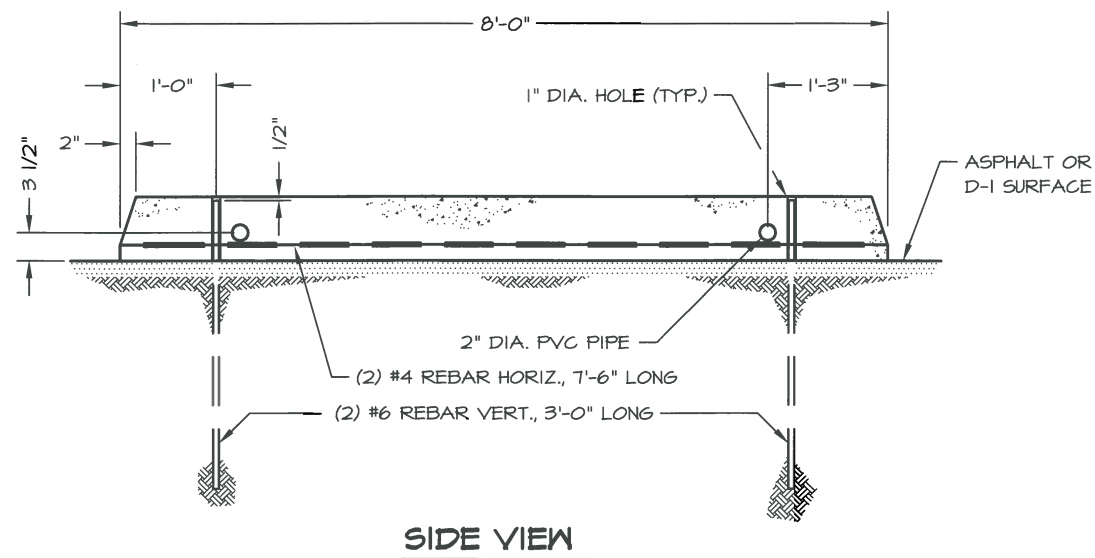


④ END VIEW



21	REPLACED STAMP	12/13	RBM
20	CHANGED "STATE PARKS" LOGO	04/10	MPS
19	CHANGED ANCHOR TO EARTH DRIVEN ANCHOR	04/10	MPS
18	ADDED EARTH ANCHOR AS AN ANCHOR OPTION	06/09	MPS
17	CHANGED TABLE TOP & SEAT MATERIAL	06/09	MPS
16	ADDED STEEL REINFORCING PLATE & ANGLE IRON	06/09	MPS
15	CHANGED TITLE BLOCK	12/07	MPS
14	CHANGED TABLE TOP AND SEAT MATERIAL	10/05	MPS
13	MODIFIED FRAME SIZE	10/05	MPS
12	REPLACED STAMP	3/04	MPS
NO.	REVISION	DATE	APPROVED



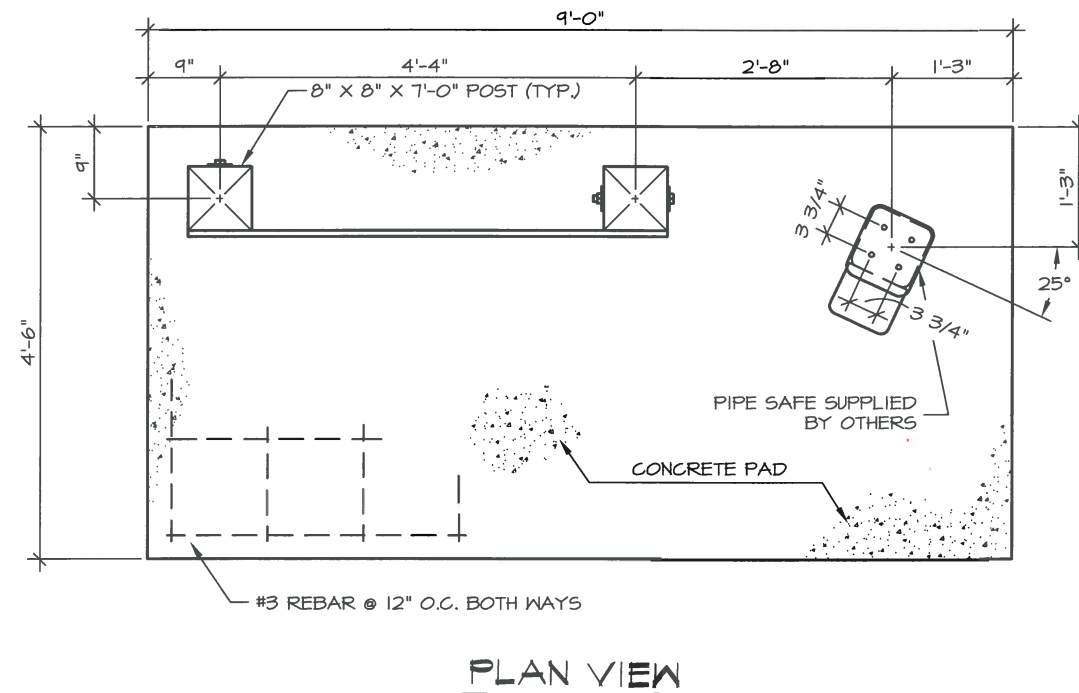
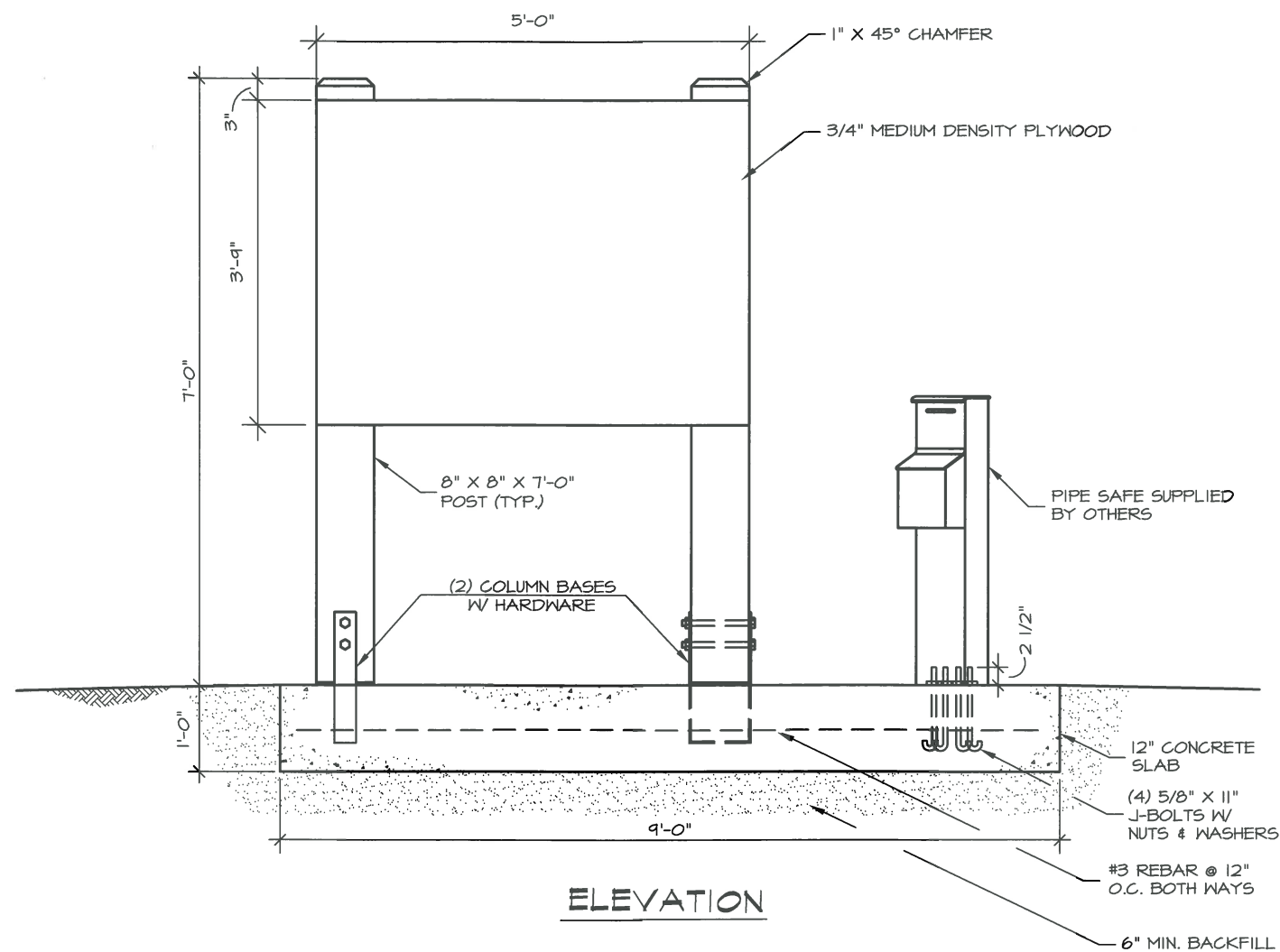


① CONCRETE PARKING BUMPER



11	REPLACED STAMP	12/13	RBM
10	CHANGED STATE PARK LOGO	04/10	MPS
9	CHANGED TITLE BLOCK	12/07	MPS
8	DELETED WOOD PARKING BUMPER & NOTES	10/05	MPS
7	UPDATED PRESSURE TREATMENT NOTE	12/04	MPS
6	UPDATED PRESSURE TREATMENT NOTE	3/04	MPS
5	REPLACED STAMP	3/04	MPS
4	REPLACED STAMP	3/02	DH
NO.	REVISION	DATE	APPROVED





General Notes

1. CONCRETE PAD TO HAVE A LIGHT BROOM FINISH AND TROWELED EDGES.
2. FINISH GROUND PROFILE TO SLOPE 5% MAX. AWAY FROM CONCRETE PAD FOR DRAINAGE.



NO.	REVISION	DATE	APPROVED
9	REPLACED STAMP	12/13	RBM
8	INCREASED J-BOLT SIZE	12/10	MPS
7	CHANGED STATE PARK LOGO	04/10	MPS
6	CHANGED TITLE BLOCK	12/07	MPS
5	DELETED SIGN DETAIL	12/04	MPS
4	REPLACED STAMP	3/04	MPS
3	CHANGED SIGN	3/01	

STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES

DESIGN & CONSTRUCTION SECTION

PAYMENT STATION



PREPARED: PN
DRAWN: P. Nuech.
REVIEWED: DH
DATE: May 94

SHEET 1

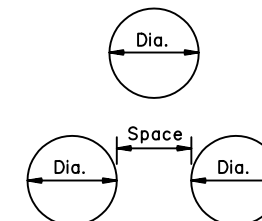
S-9

OF 1 SHEETS

GENERAL NOTES:

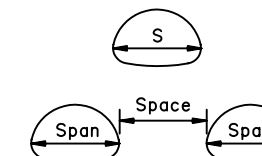
1. Sidefill shall be placed and compacted with care under haunches of pipe and shall be brought up evenly and simultaneously on both sides of pipe to 1 foot above the top of the full length of the pipe.
2. Alternate installation methods may only be used when specified or approved by the Engineer.

D = Nominal Pipe Diameter



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

S = Nominal Pipe Arch Span

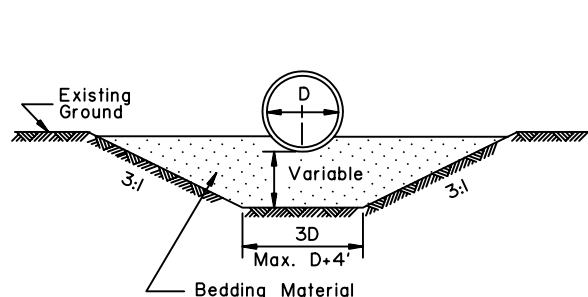


MULTIPLE INSTALLATIONS	
Dia.	Minimum Space Between Pipes
0" - 42"	24"
48" & Over	1/2 Span of pipe arch or 3', whichever is less.

REVISIONS		
Date	Description	By
12/1/87	Delete ref. to Specs.	Gdo
4/1/93	Delete All. Arch	Gdo

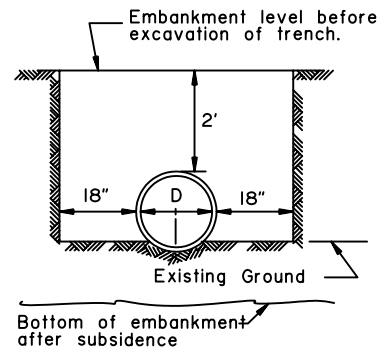
State of Alaska
Department of Transportation
& Public Facilities
**CULVERT PIPE & ARCH
INSTALLATION DETAILS**

APPROVED
Date 7/15/82
Loren L. Rasmussen
CE-2095

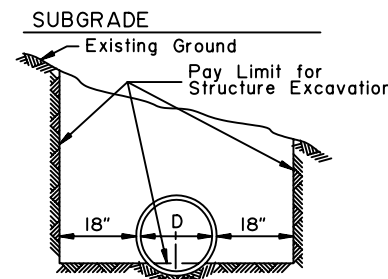


TYPE "A"
FOUNDATION STABILIZATION

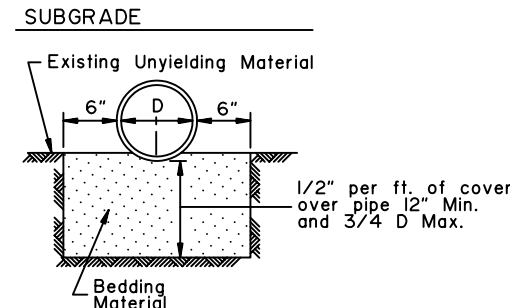
To be used in unstable areas as directed by the Engineer.



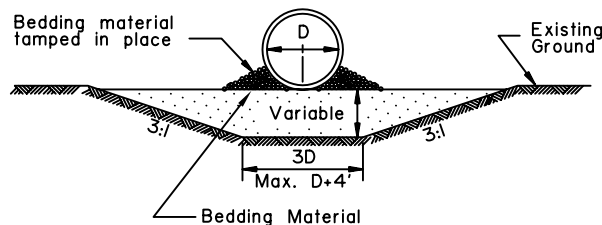
TYPE "B"



TYPE "C"

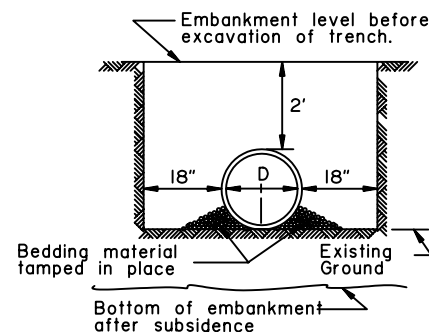


TYPE "D"
ROCK OR UNYIELDING MATERIAL

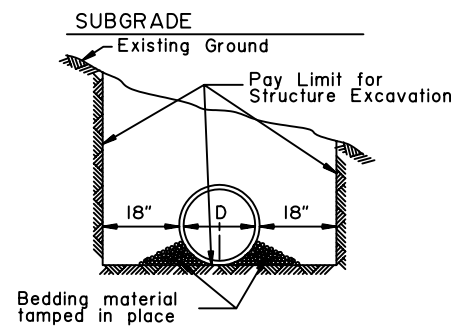


'ALTERNATE' TYPE "A"
FOUNDATION STABILIZATION

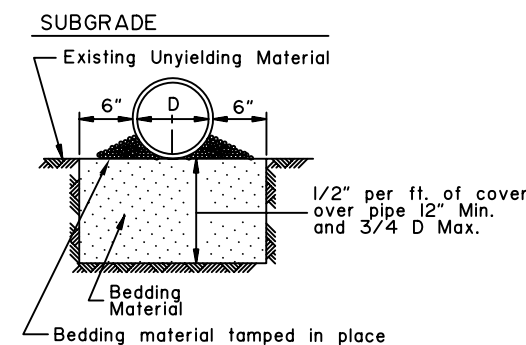
To be used in unstable areas as directed by the Engineer.



'ALTERNATE' TYPE "B"

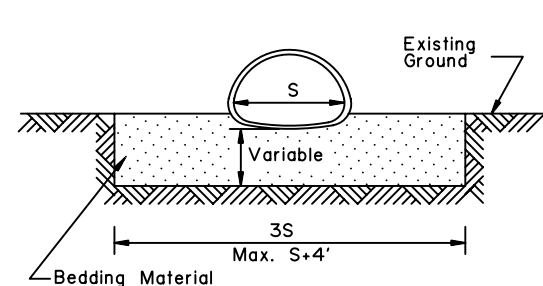


'ALTERNATE' TYPE "C"



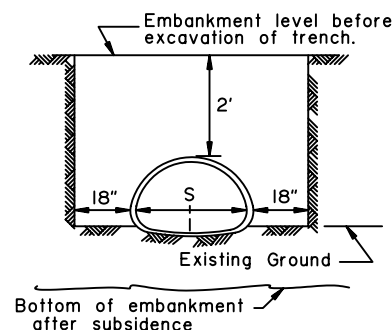
'ALTERNATE' TYPE "D"
ROCK OR UNYIELDING MATERIAL

CULVERT PIPE

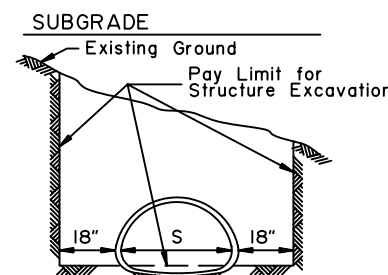


TYPE "A"
FOUNDATION STABILIZATION

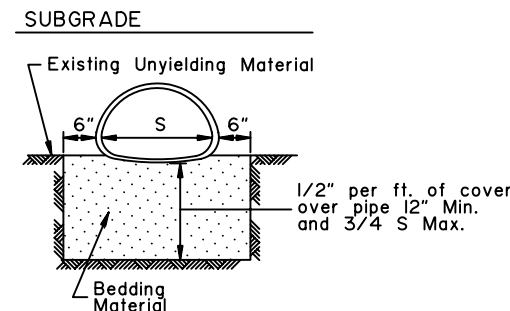
To be used in unstable areas as directed by the Engineer.



TYPE "B"



TYPE "C"



TYPE "D"
ROCK OR UNYIELDING MATERIAL

ARCH

GENERAL NOTES:

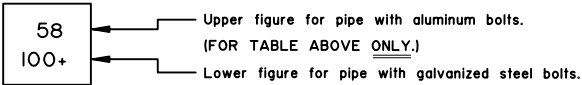
- All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
- The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
- No more than one type of pipe may be used on any single installation or installation grouping.
- All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
- See Standard Drawing "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
- Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the top of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
- These tables have been developed for an H-20 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2000 AASHTO "LRFD Bridge Design Specifications".

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

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

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

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



CORRUGATED CIRCULAR ALUMINUM PIPE

CORRUGATED ALUMINUM PIPE-ARCH

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

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

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

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

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

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

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

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

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

REVISIONS		
Date	Description	By
8/10/00	Pipe Tables & G. Notes.	DFD
10/31/03	Pipe Table Updates & New Sheet 4	LRG

Sheet 1 of 4

State of Alaska
Department of Transportation
& Public Facilities

PIPE AND ARCH TABLES



Date 10/31/03

GENERAL NOTES

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
5. See Standard Drawing "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the top of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
7. These tables have been developed for an H-20 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2000 AASHTO "LRFD Bridge Design Specifications".

CORRUGATED CIRCULAR STEEL PIPE

CORRUGATED STEEL PIPE-ARCH

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

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

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

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

Minimum & Maximum Cover For 6" x 2" Steel Structural Plate Pipe**									
GAGE	ALL	0.111"	0.140"	0.170"	0.188"	0.218"	0.249"	0.280"	
Dia. (In)	Min. (In)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	Max. (Ft)	
60	12	46	68	90	100+	100+	100+	100+	
66	12	42	62	81	93	100+	100+	100+	
72	12	38	57	75	86	100+	100+	100+	
78	12	35	52	69	79	95	100+	100+	
84	12	33	49	64	73	88	100+	100+	
90	12	31	45	60	68	82	97	100+	
96	12	29	43	56	64	77	91	100+	
102	18	27	40	52	60	73	86	94	
108	18	25	38	50	57	69	81	88	
114	18	24	36	47	54	65	77	84	
120	18	23	34	45	51	62	73	80	
126	18	22	32	42	49	59	69	76	
132	18	21	31	40	46	56	66	72	
138	18	20	29	39	44	54	63	69	
144	18	19	28	37	43	51	61	66	
150	24	18	27	36	41	49	58	64	
156	24	17	26	34	39	47	56	61	
162	24	17	25	33	38	46	54	59	
168	24	16	24	32	36	44	52	57	
174	24	16	23	31	35	42	50	55	
180	24	15	22	30	34	41	48	53	
186	24	15	22	29	33	40	47	51	
192	24			21	28	32	38	45	50
198	30			20	27	31	37	44	48
204	30			20	26	30	36	43	47
210	30			19	25	29	35	41	45
216	30					25	28	34	40 44
222	30					24	27	33	39 43
228	30					23	27	32	38 42
234	30					23	26	31	37 41
240	30					25	31	36	40
246	36					25	30	35	39
252	36							29	34 38
258	36							28	34 37
264	36							28	33 36
270	36							27	32 35
276	36								
282	36							31	34
288	42							30	33
294	42								
300	42								
306	42								
312	42								

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

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

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

GENERAL NOTES

1.

All materials and workmanship shall be in accordance with the State of Alaska Standard Specifications for Highway Construction.
2.

For foundation and structural backfill details see Standard Drawing "Culvert Pipe & Arch Installation Details".
3.

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

Maximum Cover for Type S Corrugated Polyethelene Pipe	
Size (in.)	Max. Cover (ft.)
12	30.0
15	30.0
18	30.0
24	30.0
30	30.0
36	30.0
40	20.0
48	20.0

REVISIONS		
Date	Description	By
10/31/03	New Sheet 4.	LRG

Sheet 3 of 4

State of Alaska
Department of Transportation
& Public Facilities

PIPE AND ARCH TABLES

APPROVED

10/31/03

49TH

Lars R. Gregovich
CE-9065

Date 10/31/03

GENERAL NOTES

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
5. See Standard Drawing "Culvert Pipe & Arch Installation Details" for foundation and structural backfill details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the top of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
7. These tables have been developed for an H-20 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section 12 of the 2000 AASHTO "LRFD Bridge Design Specifications".

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

*3/4 x 3/4 x 7 1/2 in. or 3/4 x 1 x 1 1/2 in. Corrugations

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

*3/4 x 3/4 x 7 1/2 in. or 3/4 x 1 x 1 1/2 in. Corrugations

ALUMINUM SPIRAL RIB PIPE

STEEL SPIRAL RIB PIPE

Minimum & Maximum Cover For Steel and Aluminized Steel Spiral Rib Circular Pipe*									
GAGE		0.064"		0.079"		0.109"		0.138" **	
Dia. (In.)	Min. (In.)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	Min. (In)	Max. (Ft)	
18	12								
24	12	51	12	72	12	121			
30	12	41	12	58	12	97			
36	12	34	12	48	12	81			
42	12	29	12	41	12	69			
48	12	26	12	36	12	61			
54	18	23	18	32	18	54			
60	18	21	18	29	18	49	18	73	
66	18	19	18	26	18	44	18	65	
72			18	24	18	40	18	59	
78			24	22	24	37	24	55	
84			24	21	24	35	24	52	
90					24	32	24	47	
96					24	30	24	44	
102					30	29	30	43	
108					30	27	30	41	

*3/4 x 3/4 x 7 1/2 in. or 3/4 x 1 x 1 1/2 in. Corrugations

***3/4 x 3/4 x 7 1/2 in. Corrugations Only.

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

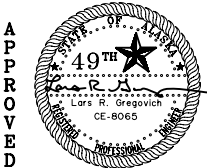
*3/4 x 3/4 x 7 1/2 in. or 3/4 x 1 x 1 1/2 in. Corrugations

REVISIONS		
Date	Description	By
8/10/00	Pipe Tables & G. Notes.	DFD
10/31/03	New Sheet 4.	LRG

Sheet 4 of 4

State of Alaska
Department of Transportation
& Public Facilities

PIPE AND ARCH TABLES



APPROVED

Date 10/31/03

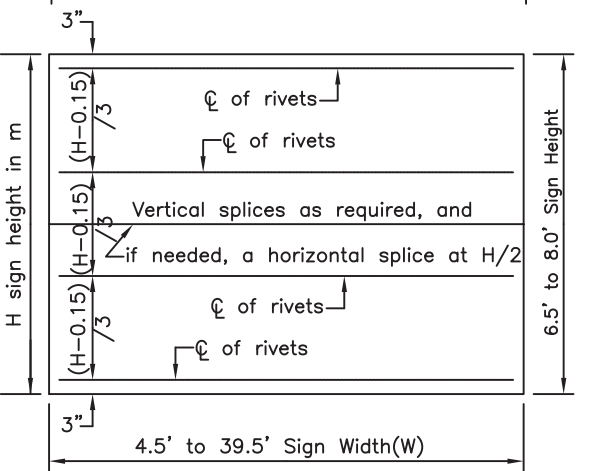
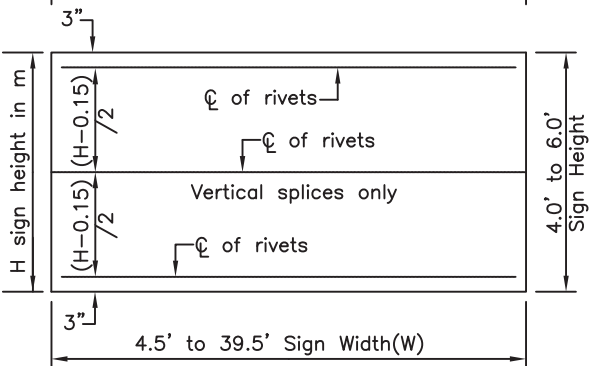
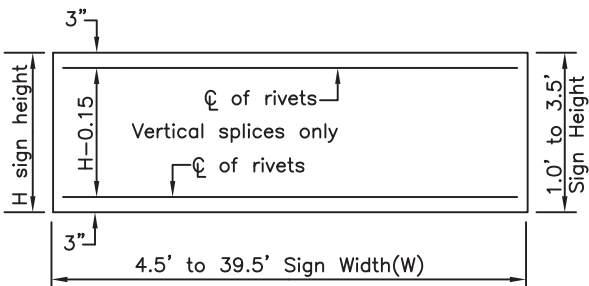
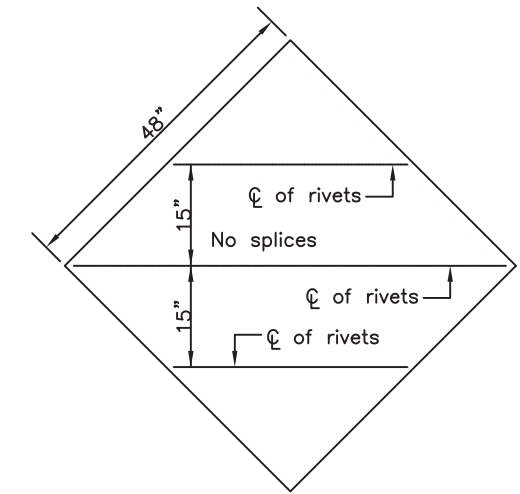
GENERAL NOTES

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

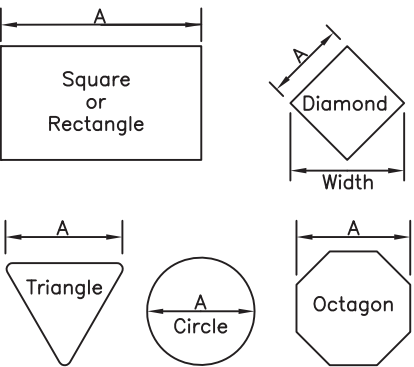
TUBE SIGN POST SPACING								
Sign Width (feet)	No. of Posts	Distance Between Posts	Sign Overhang	Post Type				Notes
				P.S.T.	Wood	Steel Tube	W-Shape	
0.5 to 4.0	1	—	0.5W	X	X	X		See Note 2.
4.5 to 10.0	2	0.6W	0.2W	X	X	X		See Note 3.
10.5 to 11.0	2	6	Varies	X	X	X		See Note 3.
11.5 to 13.0	2	8	Varies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

SIGN POST SPACING NOTES:

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



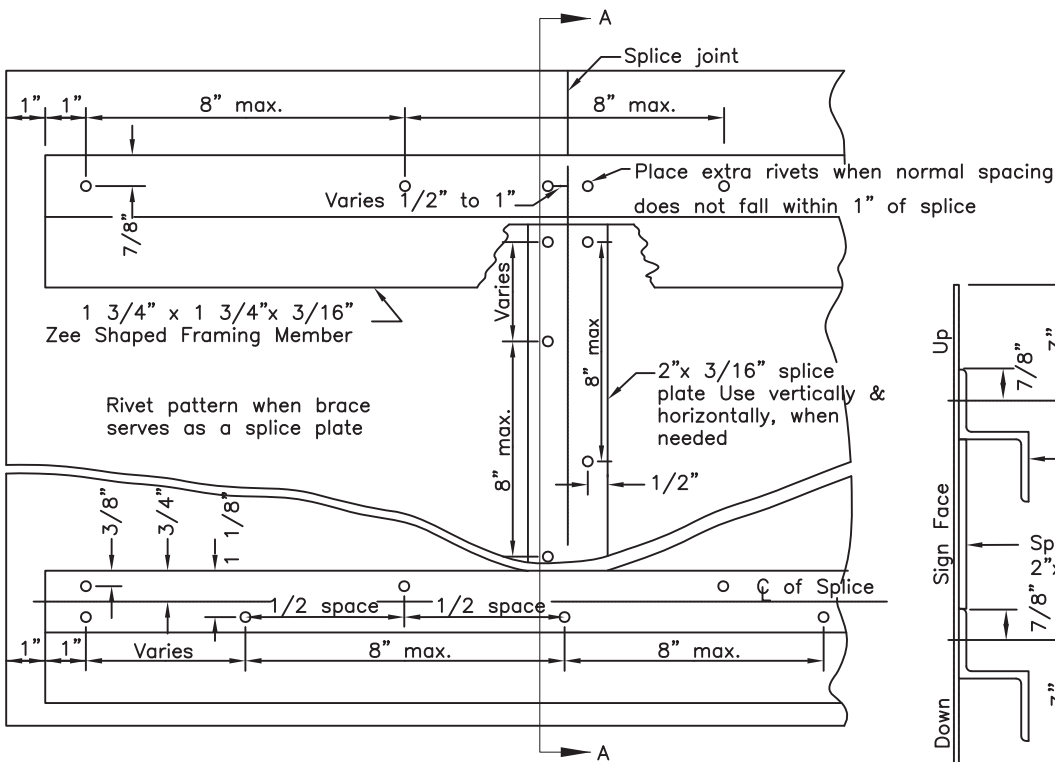
WIND FRAMING LOCATIONS



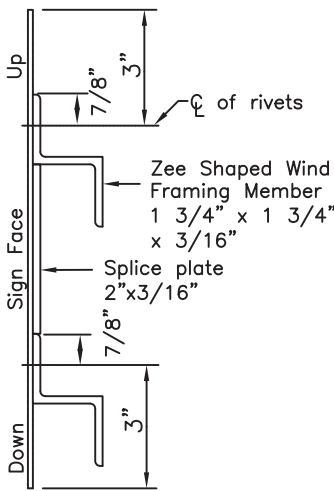
Maximum size unframed signs using 0.125" thick aluminum sheeting.	
Sign Shape	A
Squares, Shields, and Route Markers	48"
Rectangles	48"
Diamonds	48"
Triangles	48"
Rounds and Octagons	48"

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

LIGHT SIGNS



RIVET DETAIL FOR ZEE SHAPED WIND FRAMING & SPLICE PLATE



SECTION A-A

REVISIONS		
Date	Description	By
4/28/10	Delete pipe, rev notes	KJS

Sheet 1 of 1

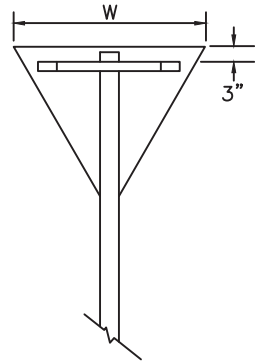
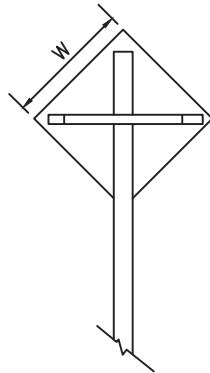
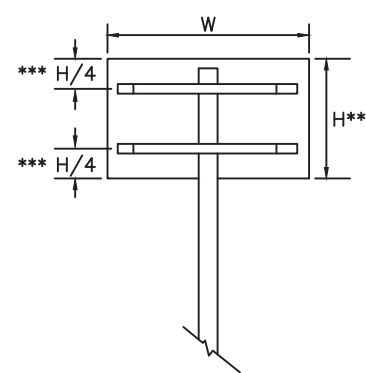
State of Alaska
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SIGN FRAMING AND
POST SPACING

APPROVED

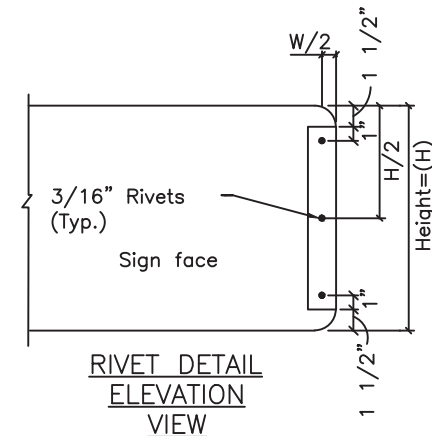


Date 5/31/12

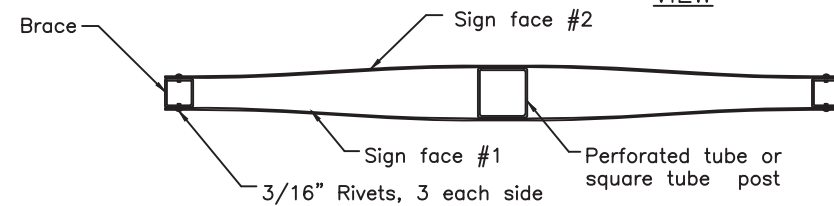


*** Use one brace when $H \leq 18"$
Use two braces when $18" < H < 48"$
Use three braces when $H \geq 48"$
** Position of brace may be varied to match
Predrilled mounting holes in panel

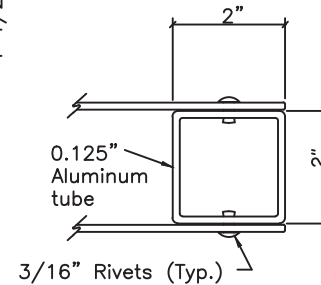
SIGN BRACING PLACEMENT



RIVET DETAIL
ELEVATION
VIEW

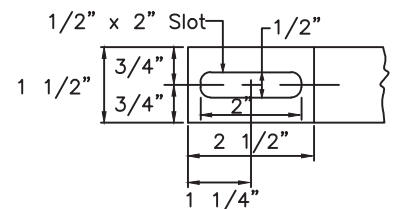


PLAN VIEW

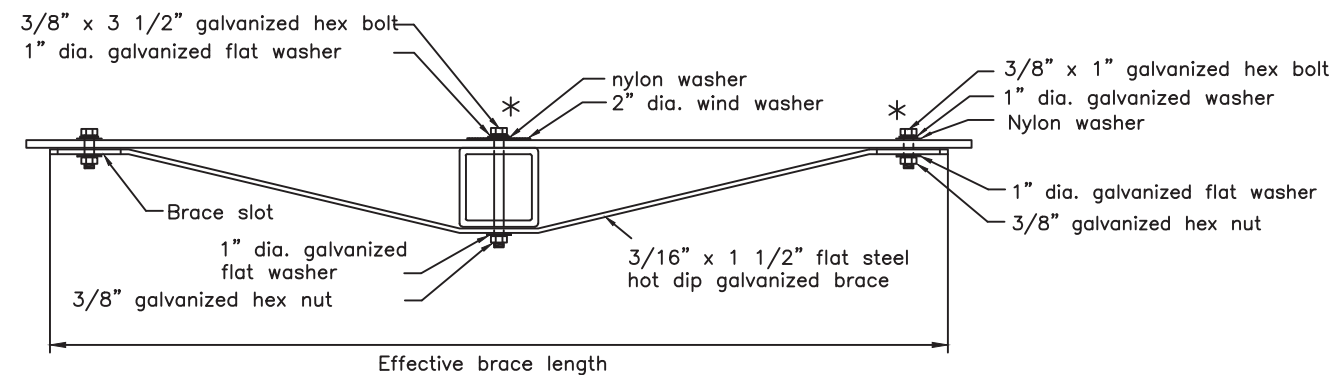


END BRACE DETAIL

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



DETAIL OF BRACE SLOT
Elevation view



TUBE POST SIGN BRACING
Plan view

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

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

< 30" No bracing required and use square tube

REVISIONS		
Date	Description	By
1/16/17	Bolt size & type	LRG

State of Alaska DOT&PF
3132 Channel Dr., Juneau, AK
Phone: (907) 465-2960
**BRACING FOR SIGNS
MOUNTED ON SINGLE POST**

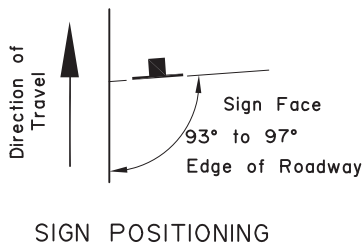
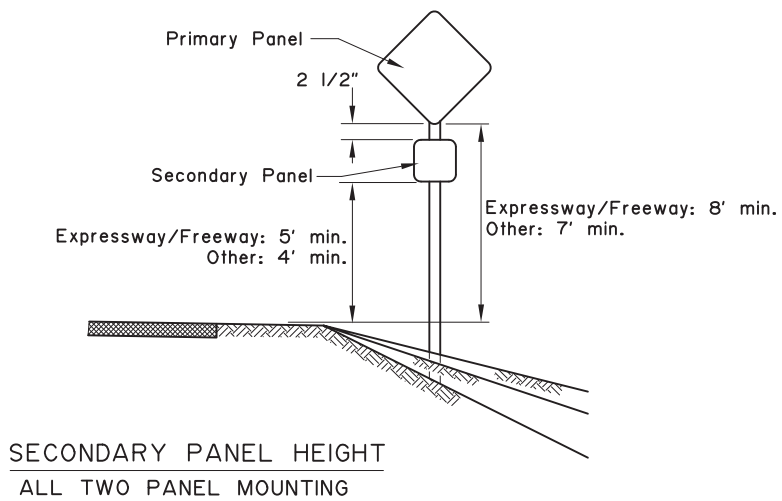
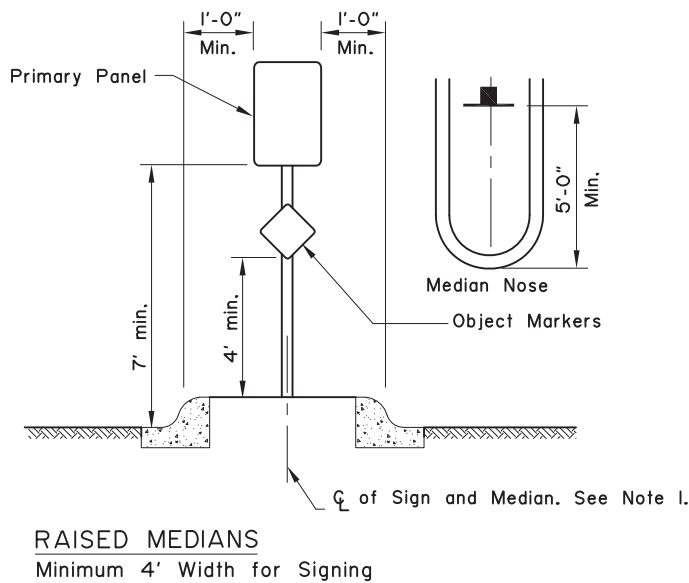
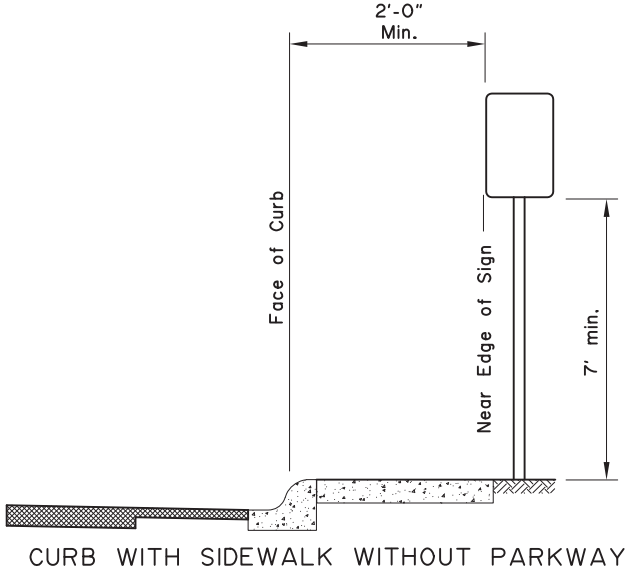
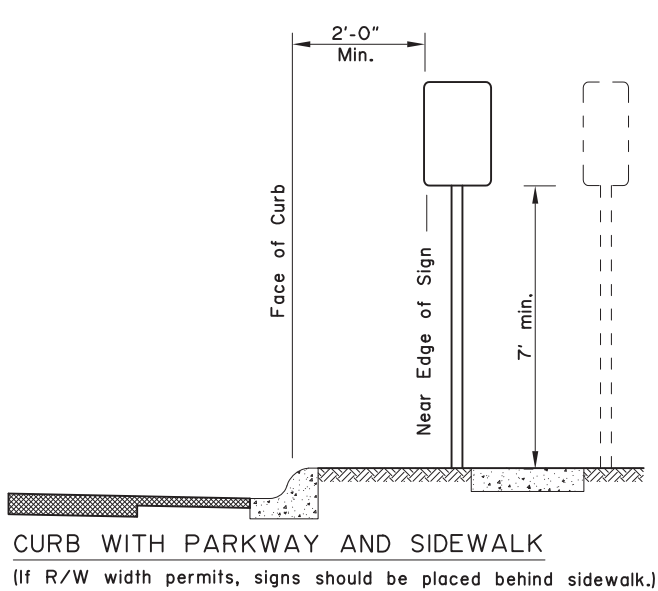
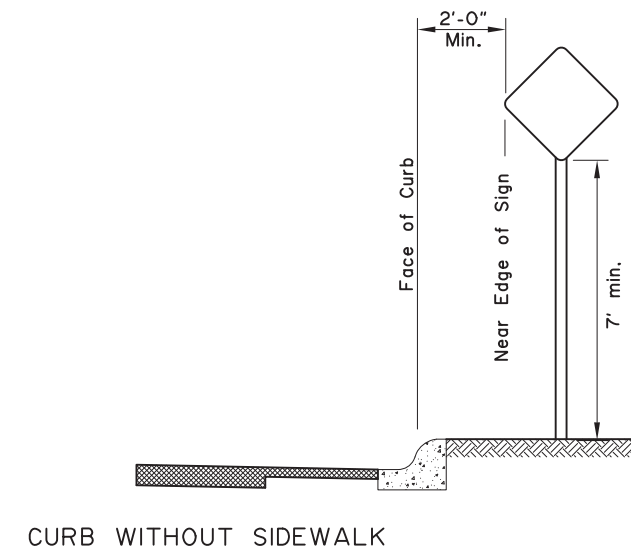
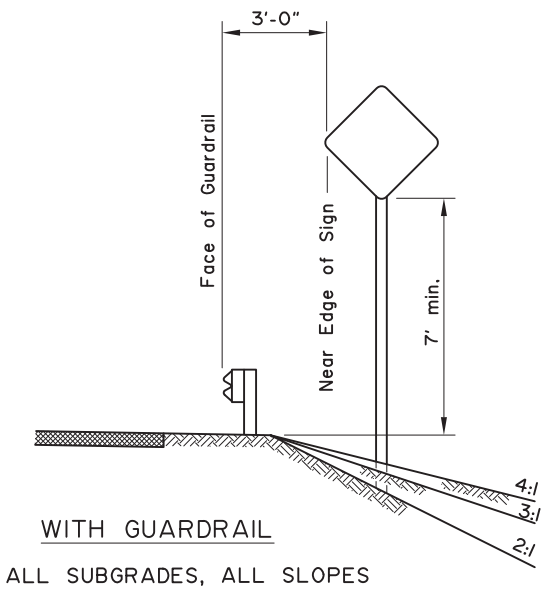
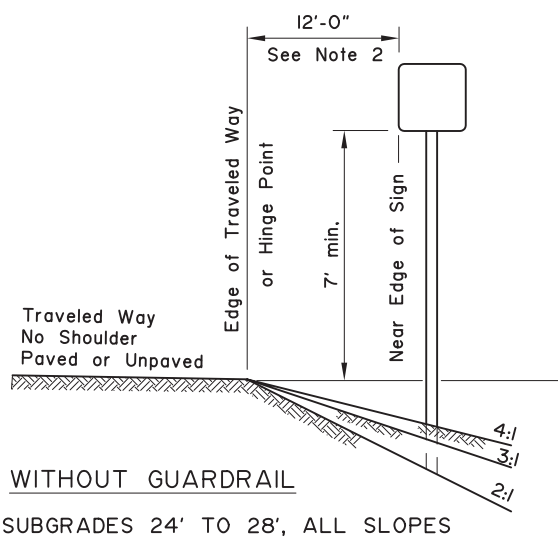
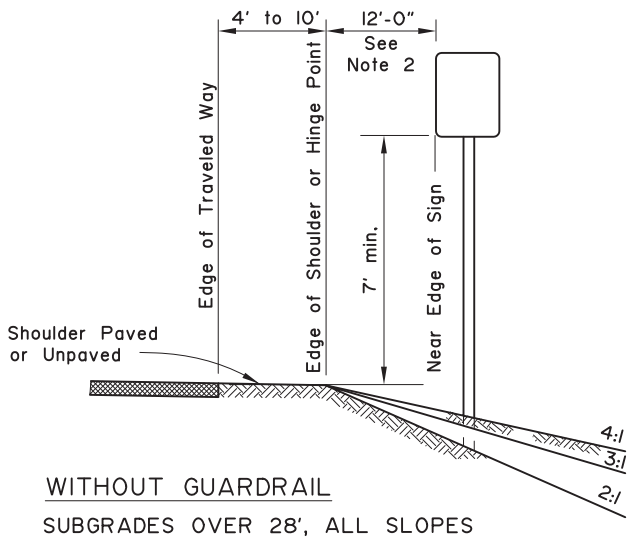


Eff. Date:
1/16/17

DRAWING NOT TO SCALE

GENERAL NOTES

1. Unless shown otherwise on the plans, the standard sign offset is 12'. The minimum is 6'.
2. If signs extend over sidewalks, the minimum vertical clearance is 7'-0".
3. Add 6" to mounting height on unpaved roads.
4. If signs extend over bike paths, the minimum vertical clearance is 8' 0".
5. When signs are placed 30' or more from the edge of traveled way, mount them with the bottom of the sign at least 5' above the road surface at the near edge of the road.
6. When multiple hinged sign supports are used, mount hinges at least 7' above the ground.



REVISIONS		
Date	Description	By
4/3/01	Revised Sign Heights	KJS

Sheet 1 of 1

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Department of Transportation
& Public Facilities

POST MOUNTED SIGN
OFFSET AND HEIGHT

APPROVED

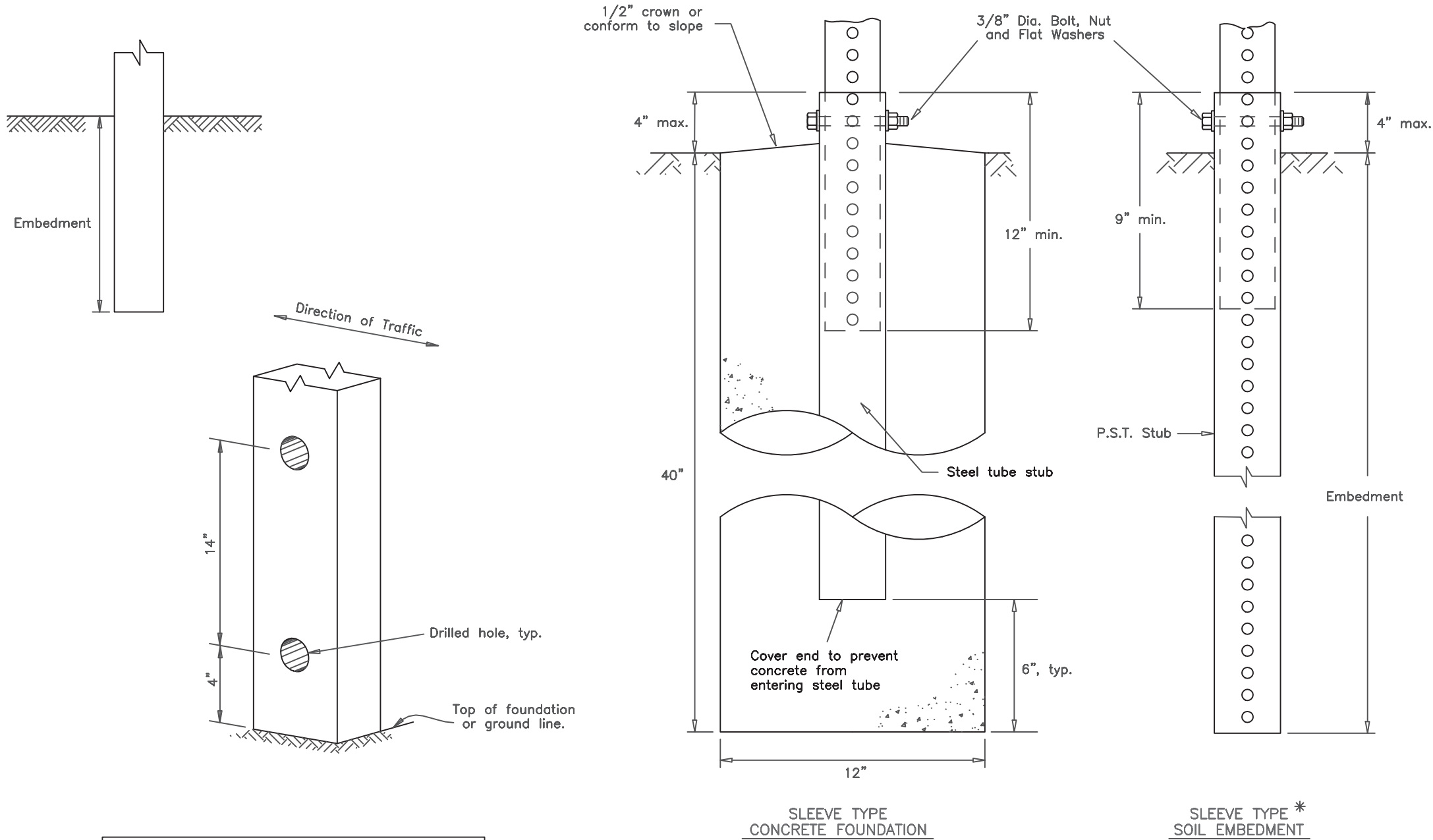
49TH

7/15/82

Date

GENERAL NOTES:

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



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

* Embedment depth applies in both strong and weak soil.

WOOD POSTS

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

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

PERFORATED STEEL TUBE (PST) POSTS

REVISIONS		
Date	Description	By
4/2/01	Revised PST table Added Note 3	KJS
2/12/02	Revised wood posts	KJS
1/16/17	Rev. note 1, et. al.	LRG

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3132 Channel Dr., Juneau, AK
Phone: (907) 465-2960

LIGHT SIGN STRUCTURE
POST EMBEDMENT



Eff. Date:
1/16/17