



US Army Corps  
of Engineers  
Alaska District

ANCHORAGE  
Regulatory Division (1145)  
CEPOA-RD  
Post Office Box 6898  
JBER, Alaska 99506-0898

# Public Notice of Application for Permit

<b>PUBLIC NOTICE DATE:</b>	<b>July 18, 2022</b>
<b>EXPIRATION DATE:</b>	<b>August 2, 2022</b>
<b>REFERENCE NUMBER:</b>	<b>POA-2009-00725</b>
<b>WATERWAY:</b>	<b>Wetlands Near Kobuk River</b>

---

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States as described below and shown on the enclosed project drawings.

All comments regarding this Public Notice should be sent to the address noted above. If you desire to submit your comments by email, you should send it to the Project Manager's email as listed below or to [regpagemaster@usace.army.mil](mailto:regpagemaster@usace.army.mil). All comments should include the Public Notice reference number listed above.

All comments should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. Please contact Mr. Swade Hammond at (907) 753-5556, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at [swade.d.hammond@usace.army.mil](mailto:swade.d.hammond@usace.army.mil) if further information is desired concerning this notice.

**APPLICANT:** Native Village of Shungnak

**AGENT:** Kuna Engineering, Rose Walker

**LOCATION:** The project site is located within Section 4, T. 17 N., R. 8 E.,  
Latitude 66.902222° N., Longitude -157.120556° W.; Village of Shungnak, Alaska.

PURPOSE: The applicant's stated purpose is to replace the old community landfill with a new one for community expansion and to alleviate local concerns with the surrounding environment of the old landfill, that has been improperly managed, is overflowing and has a destroyed fence.

PROPOSED WORK: The current phase (Phase II) of the proposed project includes the construction of the landfill access road. All work would be performed in accordance with the enclosed plan sheets, provided with the application on June 13, 2022.

ADDITIONAL INFORMATION: The Bureau of Indian Affairs (BIA), is the lead federal agency on the project and has completed an Environmental Assessment (EA) for the proposed project. USACE has requested a copy of the EA to reference the document and avoid duplication of efforts under the National Environmental Policy Act (NEPA). Other authorizations identified on the application include Title 9 Land Use Permit, Storm Water Pollution Prevention Plan, and State Historic Preservation Office (SHPO) concurrence.

APPLICANT PROPOSED MITIGATION: The applicant indicated that the project was designed in a manner that would avoid and then minimize impacts to regulated Waters of the United States. As stated by the applicant "the proposed route is limited to a minimum impact to wetlands for construction of the Phase II road segment. The road does not cross over any rivers, streams, lakes or other larger bodies of water. The closest point on the road to the Kobuk river, the nearest larger body of water, is a distance of over 2,200 feet away and over 150 feet away from the nearest stream."

WATER QUALITY CERTIFICATION: A permit for the described work will not be issued until a certification or waiver of certification, as required under Section 401 of the Clean Water Act (Public Law 95-217), has been received from the Alaska Department of Environmental Conservation.

CULTURAL RESOURCES: The lead Federal agency, BIA, is responsible for compliance with the requirements of Section 106 of the National Historic Preservation Act. The U.S. Army Corps of Engineers (Corps) will review BIA's documentation and either concur with their documentation or continue to work with them until any issues are resolved. A permit for the described work will not be issued until the Section 106 process has been completed and the Corps concurs with BIA's cultural resource documentation.

ENDANGERED SPECIES: The lead Federal agency, BIA, is responsible for compliance with the requirements of Section 7 of the Endangered Species Act. The U.S. Army Corps of Engineers (Corps) will review BIA's documentation and either concur with their documentation or continue to work with them until any issues are resolved. A permit for the described work will not be issued until the Section 7 process has been completed and the Corps concurs with BIA's Threatened and Endangered Species documentation.

ESSENTIAL FISH HABITAT: The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH).

No EFH species are known to use the project area.

TRIBAL CONSULTATION: The Corps fully supports tribal self-governance and government-to-government relations between Federally recognized Tribes and the Federal government. Tribes with protected rights or resources that could be significantly affected by a proposed Federal action (e.g., a permit decision) have the right to consult with the Alaska District on a government-to-government basis. Views of each Tribe regarding protected rights and resources will be accorded due consideration in this process. This public notice serves as notification to the Tribes within the area potentially affected by the proposed work and invites their participation in the Federal decision-making process regarding the protected Tribal right or resource. Consultation may be initiated by the affected Tribe upon written request to the District Commander during the public comment period.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, reasons for holding a public hearing.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts, which the proposed activity may have on the public interest, requires a careful weighing of all the factors that become relevant in each particular case. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. The outcome of the general balancing process would determine whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur. The decision should reflect the national concern for both protection and utilization of important resources. All factors, which may be relevant to the proposal, must be considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Commander determines that it would be contrary to the public interest.

The Corps is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

AUTHORITY: This permit will be issued or denied under the following authorities:

(X) Discharge dredged or fill material into waters of the United States – Section 404 Clean Water Act (33 U.S.C. 1344). Therefore, our public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

Project drawings and a Notice of Application for State Water Quality Certification are enclosed with this Public Notice.

District Commander  
U.S. Army, Corps

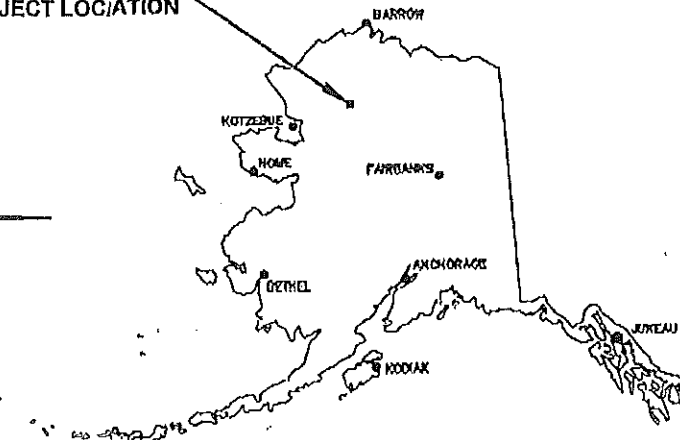
Enclosures



# NATIVE VILLAGE OF SHUNGNAK

## SHUNGNAK TRIBAL COUNCIL PROPOSED LANDFILL ROAD : BIA ROUTE 1003

SHUNGNAK  
PROJECT LOCATION



REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	DATE	DESCRIPTION	ALASKA	S24412	2011	A1	A5

INDEX	
SHEET NO.	DESCRIPTION
A1	TITLE SHEET
A2	LEGEND
A3	SHEET LAYOUT
A4-A5	SURVEY CONTROL SHEET
B1-B2	TYPICAL SECTIONS
C1	ESTIMATE OF QUANTITIES
D1	SUMMARY TABLES
E1-E2	DETAIL SHEETS
F1-F11	PLAN AND PROFILE SHEETS
Q1-Q6	ESCP SHEETS
R1-R8	RIGHT OF WAY PLANS

THE FOLLOWING ADOPTED STANDARD DRAWINGS  
APPLY TO THIS PROJECT:  
D-01.02, D-04.21, D-14.10  
S-00.10, S-05.01, S-20.10, S-30.03

PROJECT SUMMARY		
SEGMENT	LENGTH	WIDTH
SHUNGNAK	12,600 FT	15'

DESIGN DESIGNATION	
CEMETERY ROAD	
A.D.T. 2010	<400
A.D.T. 2020	<400
A.D.T. 2030	<400
DESIGN SPEED (mi/hr)	30
TRUCKS	0.0%

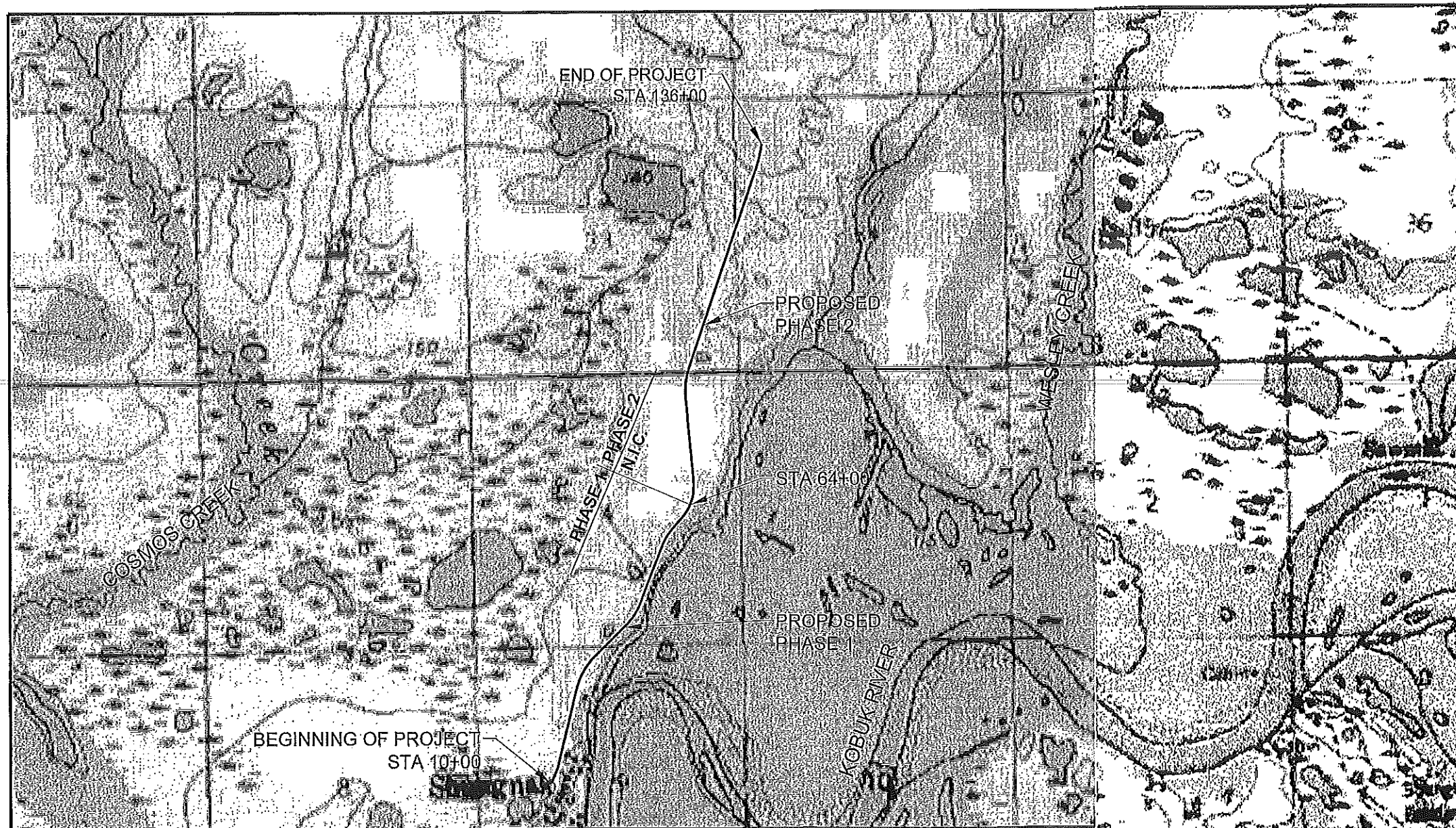
FINAL PS & E: 16 DECEMBER 2011  
PLANS DEVELOPED BY: WHPacific INC.



APPROVED:

NAME  
TRIBAL CHIEF  
SHUNGNAK TRADITIONAL COUNCIL

12/21/11  
DATE

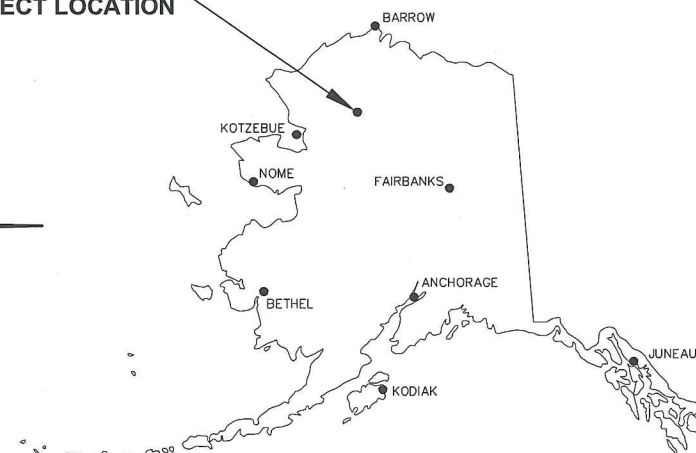


[DATE: 2/25/2014 4:11 PM] [AUTHOR: tpillips] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb] [LAYOUT: 524412-C-A1 - Title Sheet]  
[PATH: P:\Manila Association\524412 Design Drawings\Civil\524412-C-A1 Title Sheet.dwg]

# NATIVE VILLAGE OF SHUNGNAK

## SHUNGNAK TRIBAL COUNCIL PROPOSED LANDFILL ROAD : BIA ROUTE 1003

SHUNGNAK  
PROJECT LOCATION



REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
NO.	DATE	DESCRIPTION	ALASKA	524412	2011	A1	A5
1	2/19/14	REDUCED ROAD WIDTH					

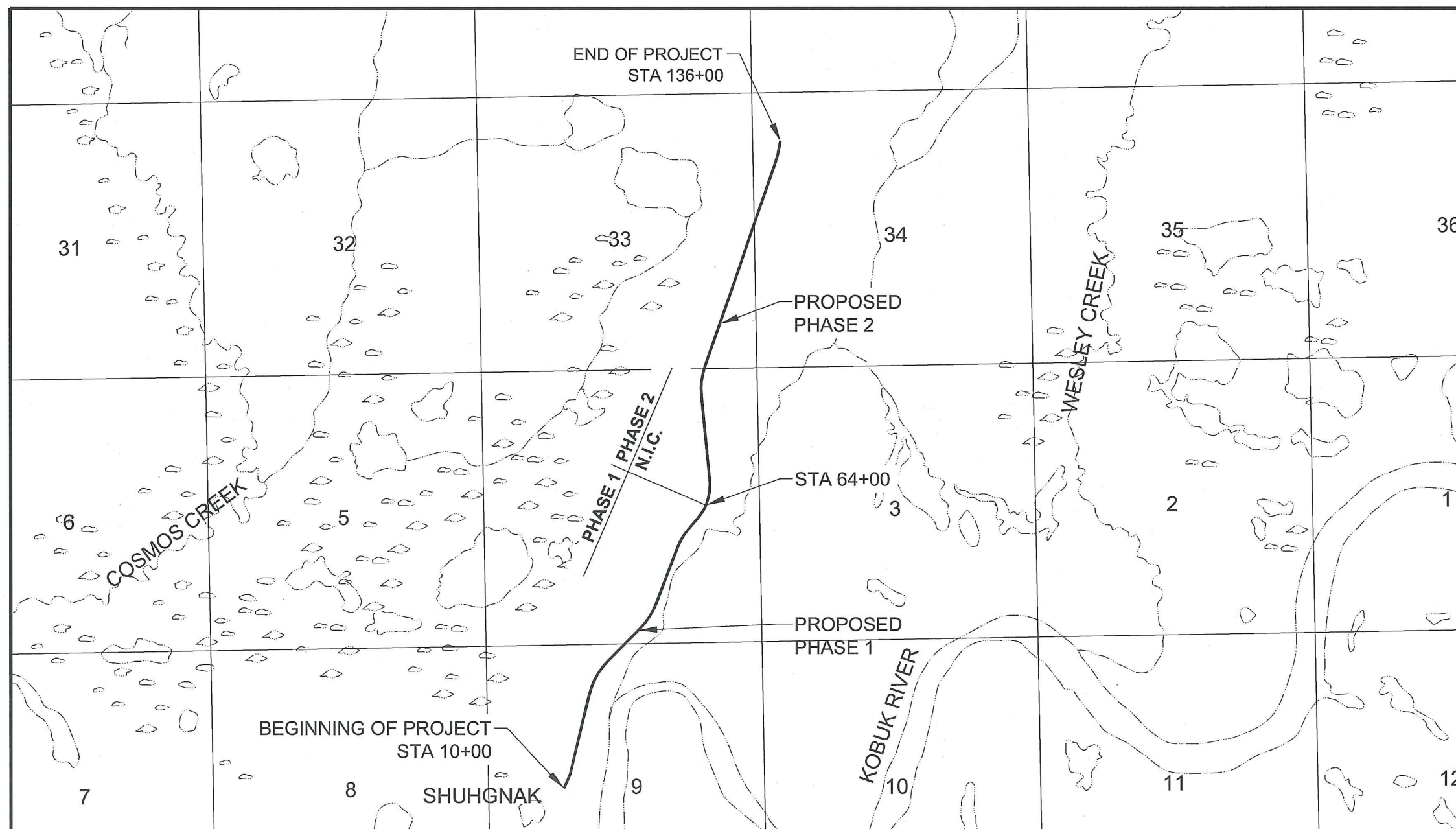
INDEX	
SHEET NO.	DESCRIPTION
A1	TITLE SHEET
A2	LEGEND
A3	SHEET LAYOUT
A4-A5	SURVEY CONTROL SHEET
B1-B2	TYPICAL SECTIONS
C1	ESTIMATE OF QUANTITIES
D1	SUMMARY TABLES
E1	DETAIL SHEET
F1-F11	PLAN AND PROFILE SHEETS
Q1-Q6	ESCP SHEETS
R1-R6	RIGHT OF WAY PLANS

THE FOLLOWING ADOT&PF STANDARD DRAWINGS  
APPLY TO THIS PROJECT:  
D-01.02, D-04.21, D-14.10  
S-00.10, S-05.01, S-20.10, S-30.03

PROJECT SUMMARY		
SEGMENT	LENGTH	WIDTH
SHUNGNAK	12,600 FT	13'

DESIGN DESIGNATION	
CEMETERY ROAD	
A.D.T. 2010	<400
A.D.T. 2020	<400
A.D.T. 2030	<400
DESIGN SPEED (mi/hr)	30
TRUCKS	0.0%

FINAL PS & E  
PLANS DEVELOPED BY: WHPacific INC.





[DATE: 12/15/2011 3:25 PM] [AUTHOR: Jhanson] [PLOTTER: \anc-001\Ricon3600] [STYLE: WHP-Standard.ctb] [PATH: P:\Manilaq Association\524412\Design\Drawings\Civil\524412-C-A2 Legend & Notes.dwg] [LAYOUT: 524412-C-A2 - Legend & Notes]

LEGEND:

GOV'T SECTION CORNER		TO BE SET THIS PROJECT
GOV'T 1/4 SECTION CORNER		
GOV'T 1/16 SECTION CORNER		
GOV'T SURVEY MONUMENT		
GOV'T CONTROL STA.		
PRIMARY MON. [BRASS/AL CAP]		
SECONDARY CORNER		
PRIMARY CENTERLINE MONUMENT		
SECONDARY CENTERLINE MONUMENT		
SURVEY CONTROL POINT		
SECONDARY SURVEY CONT. POINT		
GPS CONTROL POINT		
BENCH MARK		
TEMPORARY BENCH MARK		
ROCK MONUMENT		
WHPACIFIC FIELD MARKER		
TOWNSHIP & RANGE LINE		
SECTION LINE		
EXISTING EASEMENT LINE		
TEMPORARY CONSTRUCTION EASEMENT LINE		
EXIST. PROPERTY LINE		
PROPOSED RIGHT OF WAY LINE		
PROJECT CENTERLINE		
LIMIT OF CUT SLOPE		
LIMIT OF FILL SLOPE		
PROPOSED DITCH		
PROPOSED ROADWAY		
EXISTING ROADWAY		
CHAIN LINK FENCE		
SILT FENCE		
DRAINAGE PATH		
SIGN POST ASSEMBLY		
PIPE CULVERT w/ END SECT.		

ABBREVIATIONS:

A.D.	ALGEBRAIC DIFFERENCE	MAX	MAXIMUM
BVCE	BEGIN VERTICAL CURVE ELEVATION	MIN	MINIMUM
BVCS	BEGIN VERTICAL CURVE STATION	MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
CL, $\mathcal{C}$	CENTERLINE	N	NORTHING
$\Delta$	DEFLECTION ANGLE BETWEEN TANGENTS	NC	NORMAL CROWN
E	EASTING	NTS	NOT TO SCALE
ELEV	ELEVATION	PC	POINT OF CURVATURE
EVCE	END VERTICAL CURVE ELEVATION	PI	POINT OF INTERSECTION (HORIZONTAL CURVE)
EVCS	END VERTICAL CURVE STATION	PT	POINT OF TANGENCY
EXIST.	EXISTING	PVI	POINT OF VERTICAL INTERSECTION
FT	FEET	R	RADIUS
H	HORIZONTAL	RT	RIGHT
IN	INCHES	S	SUPERELEVATION RATE
INT	INTERSECTION	SHLD	SHOULDER
K	LENGTH OF VERTICAL CURVE PER PERCENT GRADE	STA	STATION
L	LENGTH	T, TAN	TANGENT
LT	LEFT	TYP	TYPICAL
		V	VERTICAL
		VC	VERTICAL CURVE

BUBBLE LEGEND:

	PIPE INSTALLATION SEE SUMMARY SHEETS
	SIGN SEE SUMMARY SHEETS
	TEMPORARY CONSTRUCTION EASEMENT SEE SUMMARY SHEETS

GENERAL NOTES:

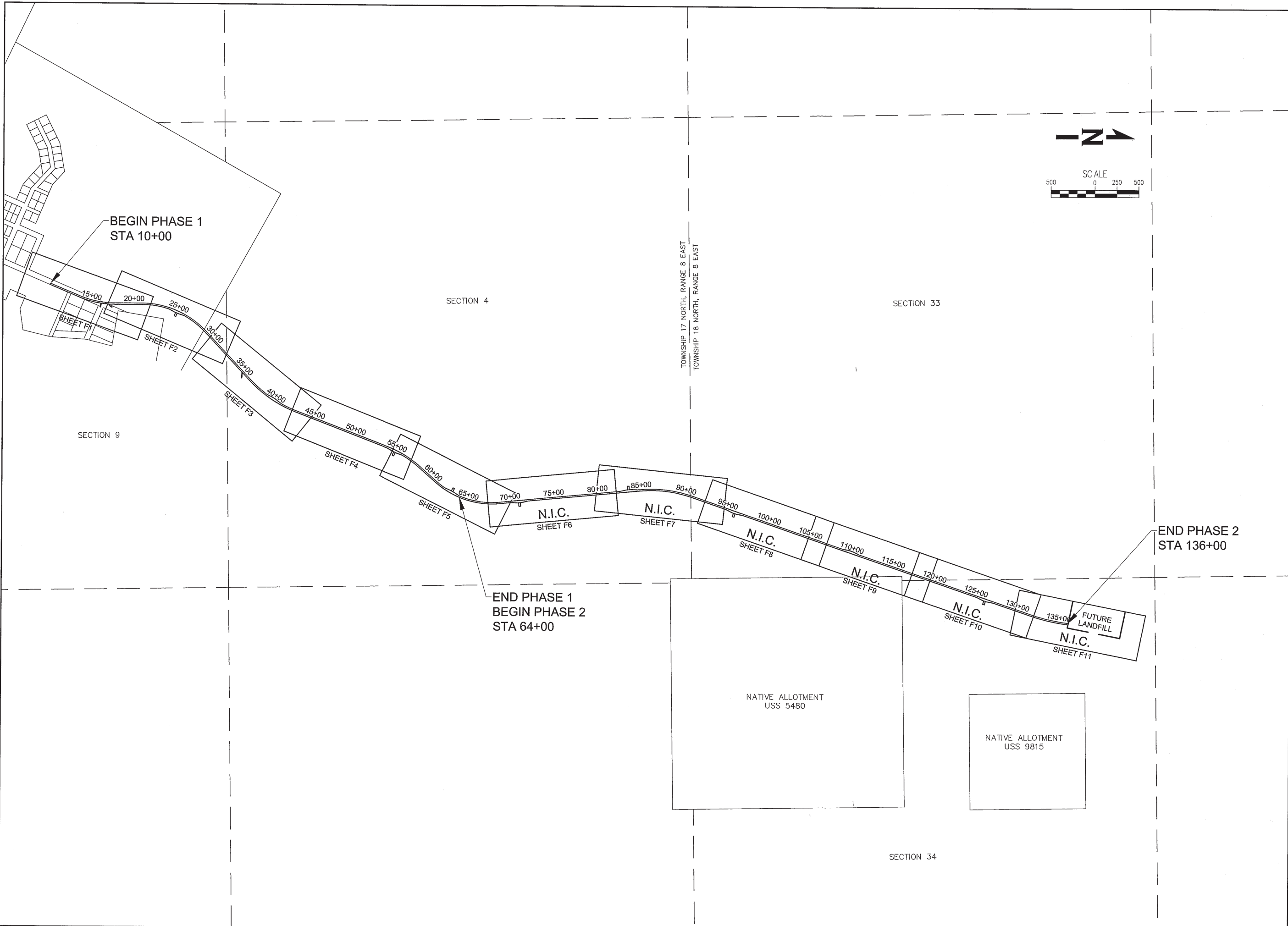
- EXCEPT WHERE SPECIFICALLY NOTED, ALL CONSTRUCTION SHALL CONFORM TO THE 2004 ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, AND THE SPECIAL CONTRACT REQUIREMENTS. ALL DIMENSIONS ARE IN ENGLISH UNITS UNLESS OTHERWISE NOTED.
- THE CONTRACTOR WILL PERFORM ALL WORK FROM WITHIN THE RIGHTS-OF-WAY SHOWN ON THE DRAWINGS. THE CONTRACTING OFFICER MAY ALLOW THE USE OF ADDITIONAL CONSTRUCTION EASEMENTS BASED ON REVIEW OF DOCUMENTATION PROVIDED BY THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROPERTY DAMAGE RESULTING FROM ACTIVITIES OUTSIDE THE RIGHTS-OF-WAY AND APPROVED EASEMENTS.
- THERE ARE NO KNOWN UTILITIES LOCATED WITHIN THE PROPOSED ROAD CORRIDOR.

REVISIONS	NO.	BY	DATE	REMARKS

SHEET INFO	DRAWN	JRH	CHECKED	ELM	APPROVED	ELM	LAST EDIT	12/15/2011	PLOT DATE	12/15/2011	SUBMITTAL

LEGEND AND GENERAL NOTES	MANILAQ ASSOCIATION SHUNGNAK LANDFILL ROAD	PROJECT NUMBER 524412	DRAWING FILE NAME 524412-C-A2 LEGEND & NOTES	SCALE	NTS

[DATE: 12/15/2011 3:26 PM] [AUTHOR: jhanson] [PLOTTER: \\lanc-0d1\RicoH3600] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Moniliac Association\524412\Design Drawings\Civil\524412-C-A3 Sheet Key.dwg] [LAYOUT: 524412-C-A3 - Sheet Key]

[illegible]

AREA COORDINATE SYSTEM - SHUNGNAK LANDFILL ROAD

HORIZONTAL CONTROL

THE PROJECT COORDINATE SYSTEM IS A LOCAL SURFACE GRID COORDINATE SYSTEM IN US SURVEY FEET.

THE BASIS OF COORDINATES IS A SET 3-1/4" ALUMINUM CAP ON A 2-1/2" ALUMINUM POST 0.5' BELOW GRADE STAMPED WITH THE FOLLOWING: "WHPACIFIC, SLR-1, 9235-S, 2011". THE GEODETIC POSITION OF SAID MONUMENT WAS ESTABLISHED BY AVERAGING THE OPUS VALUES OF FOUR INDEPENDENT 4 TO 9-HOUR STATIC GPS OBSERVATIONS. THE OPUS SOLUTIONS WERE BASED ON NGS CORS GPS STATIONS: KOTZEBUE WAAS CORS ARP (OTZ1), PID DK4099, BUCKLAND AK2007 CORS ARP (AC07), PID DL6684, KOTZEBUE\_AK2007 CORS ARP (AB18), PID DL6675, KOBUK VALLAK20047 (AB27), PID DL6435. SAID BASIS OF COORDINATES HAS THE FOLLOWING COORDINATES:

NAD83(2011)(EPOCH 2010.0000) GEODETIC COORDINATES (AVERAGED POSITION):  
LAT.= 66 DEGREES 53 MINUTES 36.52302 SECONDS NORTH,  
LONG.= 157 DEGREES 08 MINUTES 11.19424 SECONDS WEST,  
ELLIPSOID HEIGHT = 168.95 US FEET  
ORTHOMETRIC HEIGHT = 153.71 US FEET (NAVD88/GEOID09)

NAD83(2011)(EPOCH 2010.0000) ASPC ZONE 6 COORDINATES (PER OPUS REPORT):  
4,713,497.7690 N, 1,764,524.7901 E, US Feet

PROJECT LOCAL COORDINATES: 50,000.0000 N, 70,000.0000 E, US Feet;

CONVERSION FROM ALASKA STATE PLANE ZONE 6, NAD83(2011)(EPOCH 2010.0000) US FEET TO LOCAL US FEET:

- SCALE STATE PLANE COORDINATES USING 100000000/99990945 (Base point 0,0)
- TRANSLATE RESULTING COORDINATES USING:  
-4,663,924.61487 N, -1,694,684.58229 E

CONVERSION FROM LOCAL US FEET TO STATE PLANE, ZONE 6, NAD83(2011)(EPOCH 2010.0000) US FEET:

- TRANSLATE RESULTING COORDINATES USING:  
+4,663,924.61487 N, +1,694,684.58229 E
- SCALE RESULTING COORDINATES USING 0.99990945 (Base point 0,0)

THE BEARINGS FOR THIS PROJECT ARE ALASKA STATE PLANE ZONE 6 GRID BEARINGS BASED UPON GPS OBSERVATIONS.

VERTICAL CONTROL

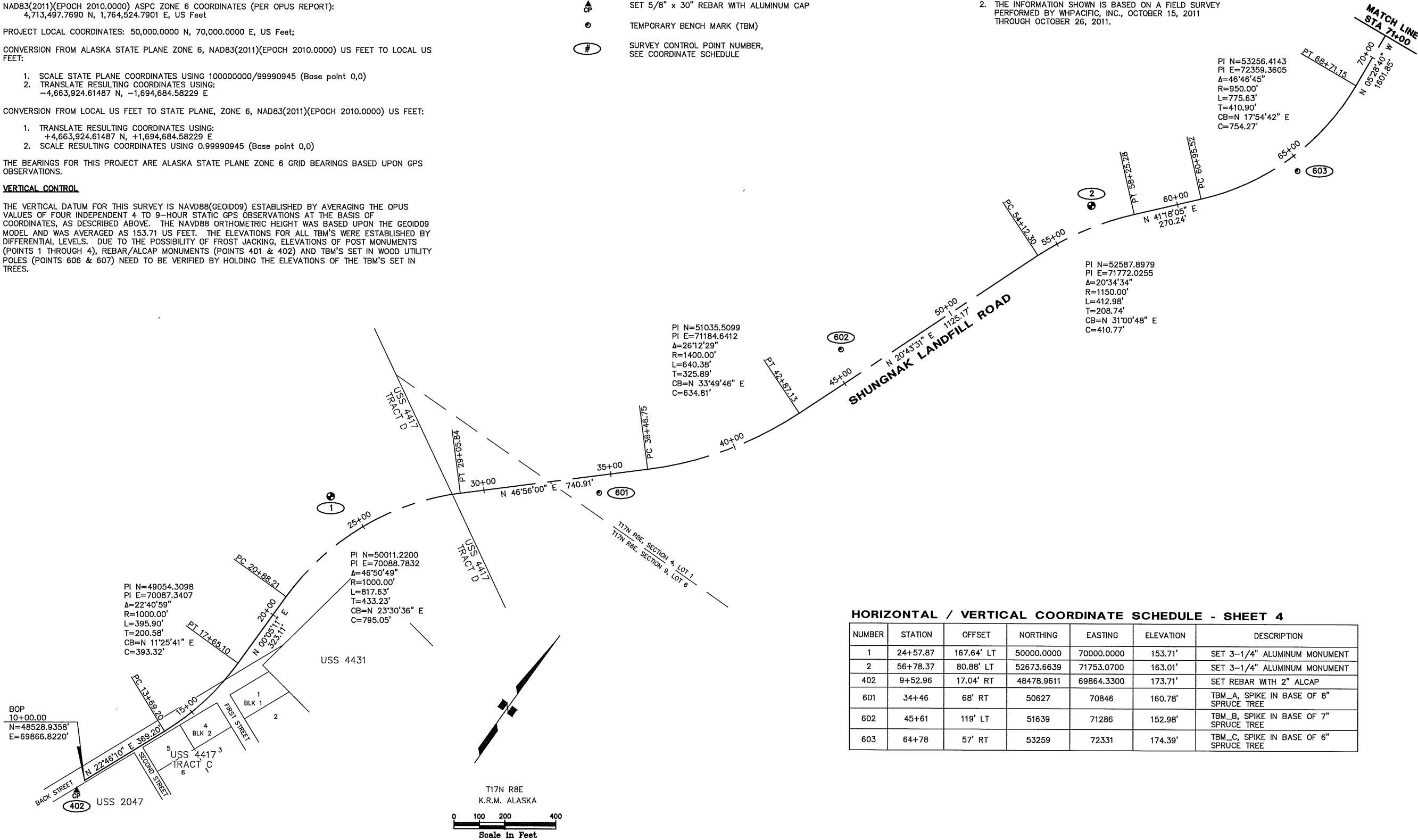
THE VERTICAL DATUM FOR THIS SURVEY IS NAVD88(GEIOD09) ESTABLISHED BY AVERAGING THE OPUS VALUES OF FOUR INDEPENDENT 4 TO 9-HOUR STATIC GPS OBSERVATIONS AT THE BASIS OF COORDINATES, AS DESCRIBED ABOVE. THE NAVD88 ORTHOMETRIC HEIGHT WAS BASED UPON THE GEIOD09 MODEL AND WAS AVERAGED AS 153.71 US FEET. THE ELEVATIONS FOR ALL TBM'S WERE ESTABLISHED BY DIFFERENTIAL LEVELS. DUE TO THE POSSIBILITY OF FROST JACKING, ELEVATIONS OF POST MONUMENTS (POINTS 1 THROUGH 4), REBAR/ALCAP MONUMENTS (POINTS 401 & 402) AND TBM'S SET IN WOOD UTILITY POLES (POINTS 606 & 607) NEED TO BE VERIFIED BY HOLDING THE ELEVATIONS OF THE TBM'S SET IN TREES.

LEGEND

- SET 3-1/4" ALUMINUM CAP MONUMENT
- SET 5/8" x 30" REBAR WITH ALUMINUM CAP
- TEMPORARY BENCH MARK (TBM)
- SURVEY CONTROL POINT NUMBER, SEE COORDINATE SCHEDULE

GENERAL NOTES

- THIS SURVEY DOES NOT CONSTITUTE A SUBDIVISION AS DEFINED BY A.S. 40.15.900(5A).
- THE INFORMATION SHOWN IS BASED ON A FIELD SURVEY PERFORMED BY WHPACIFIC, INC., OCTOBER 15, 2011 THROUGH OCTOBER 26, 2011.



HORIZONTAL / VERTICAL COORDINATE SCHEDULE - SHEET 4

NUMBER	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	24+57.87	167.64' LT	50000.0000	70000.0000	153.71'	SET 3-1/4" ALUMINUM MONUMENT
2	56+78.37	80.88' LT	52673.6639	71753.0700	163.01'	SET 3-1/4" ALUMINUM MONUMENT
402	9+52.96	17.04' RT	48478.9611	69864.3300	173.71'	SET REBAR WITH 2" ALCAP
601	34+46	68' RT	50627	70846	160.78'	TBM_A, SPIKE IN BASE OF 8" SPRUCE TREE
602	45+61	119' LT	51639	71286	152.98'	TBM_B, SPIKE IN BASE OF 7" SPRUCE TREE
603	64+78	57' RT	53259	72331	174.39'	TBM_C, SPIKE IN BASE OF 6" SPRUCE TREE

WHPacific

300 West 31st Avenue  
Anchorage, AK 99503  
907-339-5500 Fax 907-339-5327  
www.whpacific.com

STATE OF ALASKA

Professional Engineer  
No. LS-9235  
TALLAN D. WAKESTAD  
Professional Seal, License No. LS-9235

REVISIONS

NO.	BY	DATE	REMARKS

SHEET INFO

SURVEYED	WHP	DRAWN	CAW	CHECKED	TDM	APPROVED	TDM	LAST EDIT	12/21/2011	PLOT DATE	12/21/2011	SUBMITTAL

SURVEY CONTROL

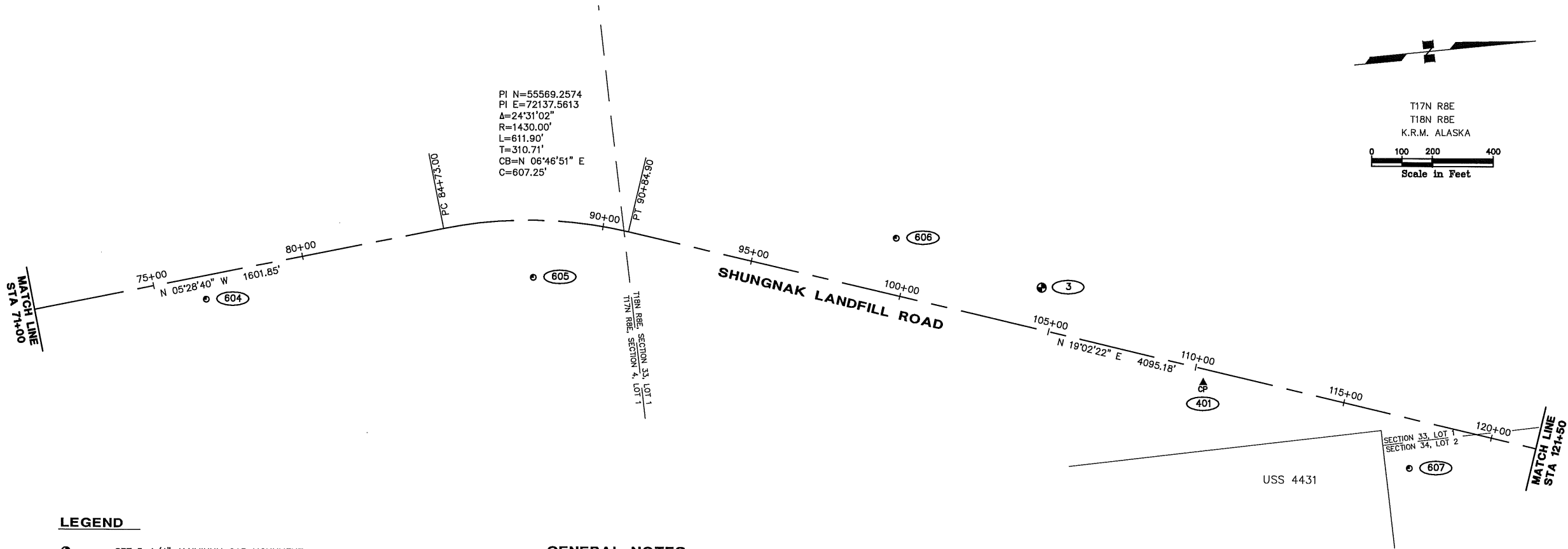
MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

PROJECT NUMBER  
524412

DRAWING FILE NAME  
524412-C-A4-SURVEY CONTROL

SCALE  
1" = 200'

SHEET NUMBER  
A4  
4 of 5



LEGEND

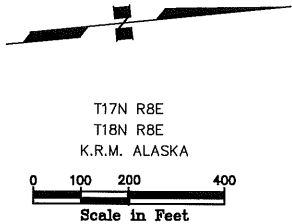
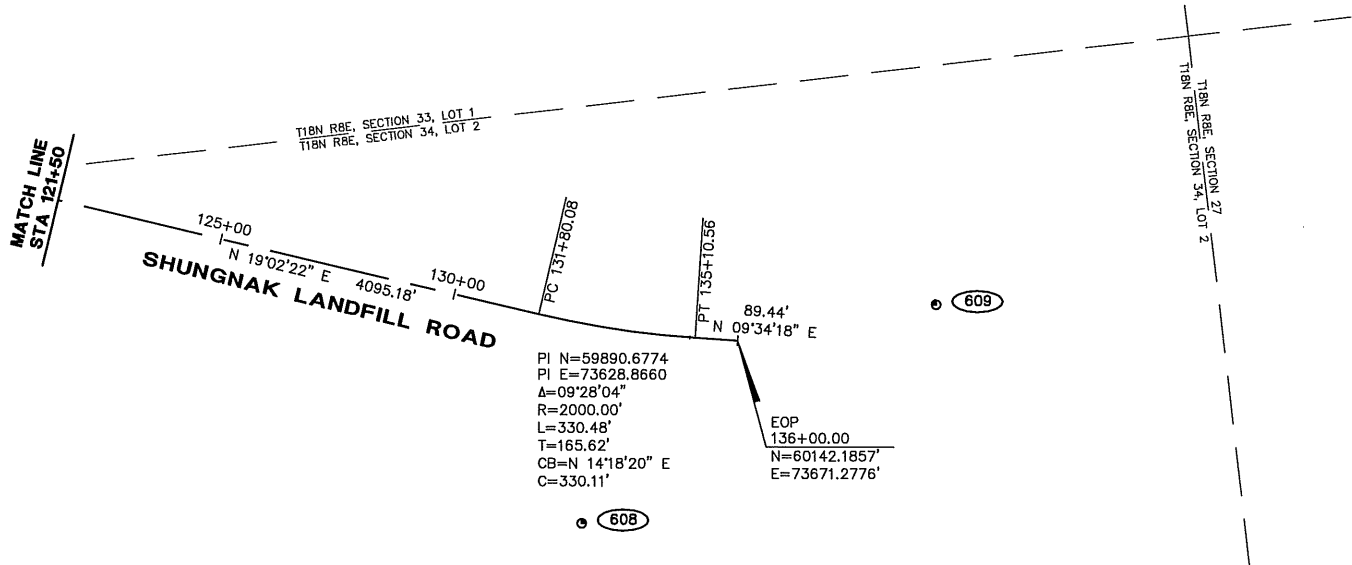
- SET 3-1/4" ALUMINUM CAP MONUMENT
- ▲ SET 5/8" x 30" REBAR WITH ALUMINUM CAP
- TEMPORARY BENCH MARK (TBM)
- # SURVEY CONTROL POINT NUMBER, SEE COORDINATE SCHEDULE

GENERAL NOTES

- THIS SURVEY DOES NOT CONSTITUTE A SUBDIVISION AS DEFINED BY A.S. 40.15.900(5A).
- THE INFORMATION SHOWN IS BASED ON A FIELD SURVEY PERFORMED BY WHPACIFIC, INC., OCTOBER 15, 2011 THROUGH OCTOBER 26, 2011.

HORIZONTAL / VERTICAL COORDINATE SCHEDULE - SHEET 5

NUMBER	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
3	104+44.81	135.56' LT	57192.7086	72554.4000	210.43'	SET 3-1/4" ALUMINUM MONUMENT
4	153+24.53	22.63' RT	61838.9439	73980.3500	219.53'	SET 3-1/4" ALUMINUM MONUMENT
401	110+34.98	43.92' RT	57692.0386	72916.5900	212.64'	SET REBAR WITH 2" ALCAP
604	76+62	77' RT	54460	72321	178.18'	TBM_D, SPIKE IN BASE OF 8" SPRUCE TREE
605	87+73	188' RT	55538	72357	183.94'	TBM_E, SPIKE IN BASE OF 7" SPRUCE TREE
606	99+46	189' LT	56738	72341	191.33'	TBM_F, SPIKE IN BASE OF WOOD UTILITY POLE
607	117+63	164' RT	58341	73267	196.15'	TBM_G, SPIKE IN BASE OF WOOD UTILITY POLE
608	133+36	412' RT	59779	74018	184.26'	TBM_H, SPIKE IN BASE OF 10" SPRUCE TREE
609	140+08	103' LT	60561	73638	218.37'	TBM_I, SPIKE IN BASE OF 5" SPRUCE TREE



REVISIONS		REMARKS	
NO.	BY	DATE	

SHEET INFO		WHP		CAW		TDM		TDM		PLOT DATE		SUBMITTAL	
SURVEYED		DRAWN		CHECKED		APPROVED		LAST EDIT		12/21/2011		12/21/2011	

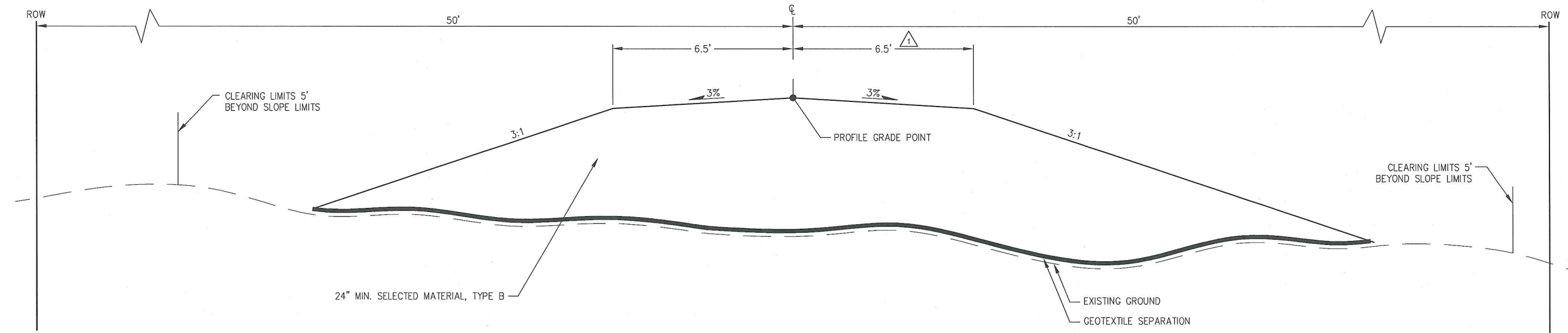
**SURVEY CONTROL**

**MANILAQ ASSOCIATION**  
**SHUNGNAK LANDFILL ROAD**

PROJECT NUMBER: 524412  
DRAWING FILE NAME: 524412-C-A4-SURVEY CONTROL

SCALE: 1" = 200'

[DATE: 2/19/2014 9:20 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb] [LAYOUT: 524412-C-B1 - Typical Sections]  
[PATH: P:\Manilaq Association\524412\Drawings\Civil\524412-C-B1 Typical Sections.dwg]

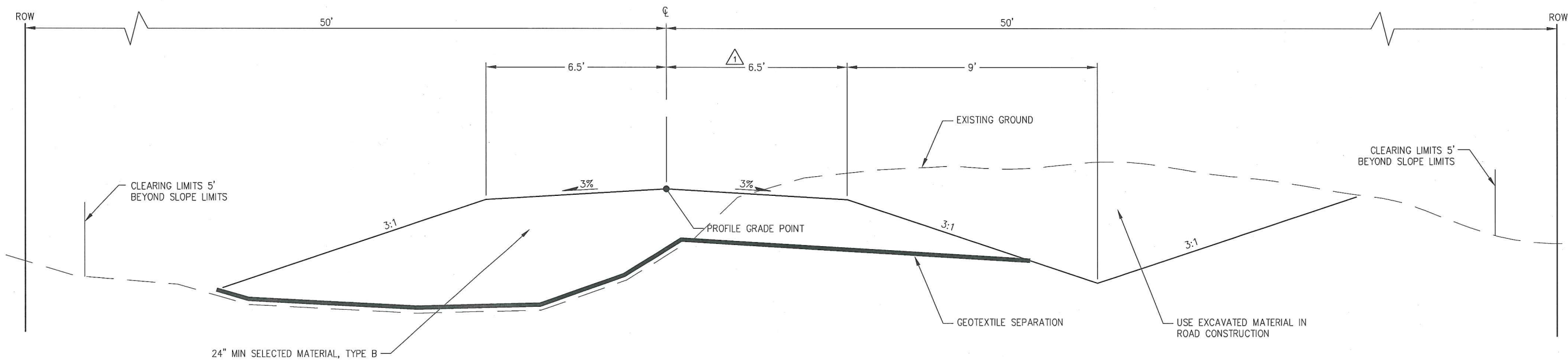


### LANDFILL ROAD FILL SECTION

STA 15+00 TO STA 64+00  
N.I.C. STA 64+00 TO STA 99+25  
N.I.C. STA 113+75 TO STA 136+00

### NOTES:

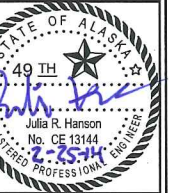
1. END DUMP AN INITIAL 18" LIFT OF LOOSE GRAVEL EVENLY OVER THE GEOTEXTILE FABRIC PRIOR TO COMPACTING.



### LANDFILL ROAD CUT SECTION

N.I.C. STA 99+25 TO STA 113+75

**WHPacific**  
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com



REVISIONS		NO.	BY	DATE	REMARKS
1	KLZ	2/19/14			REDUCED ROAD WIDTH

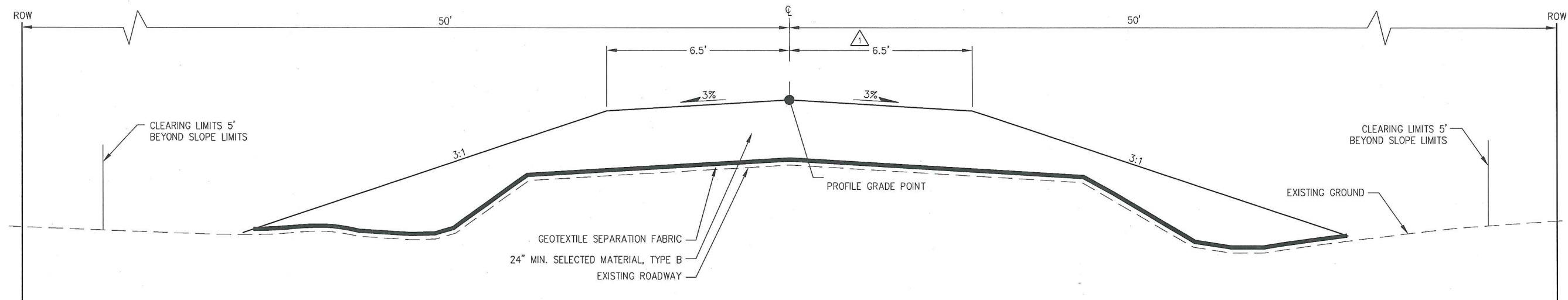
SHEET INFO		DESIGNED	DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL
JRH	JRH	JRH	ELM	ELM	2/19/2014	2/19/2014		

TYPICAL SECTIONS		SCALE	1"=2'
MANILAQ ASSOCIATION SHUNGNAK LANDFILL ROAD		DRAWING FILE NAME	
PROJECT NUMBER 524412	DRAWING FILE NAME 524412-C-B1 TYPICAL SECTIONS		

SHEET NUMBER	
<b>B1</b> 1 of 2	

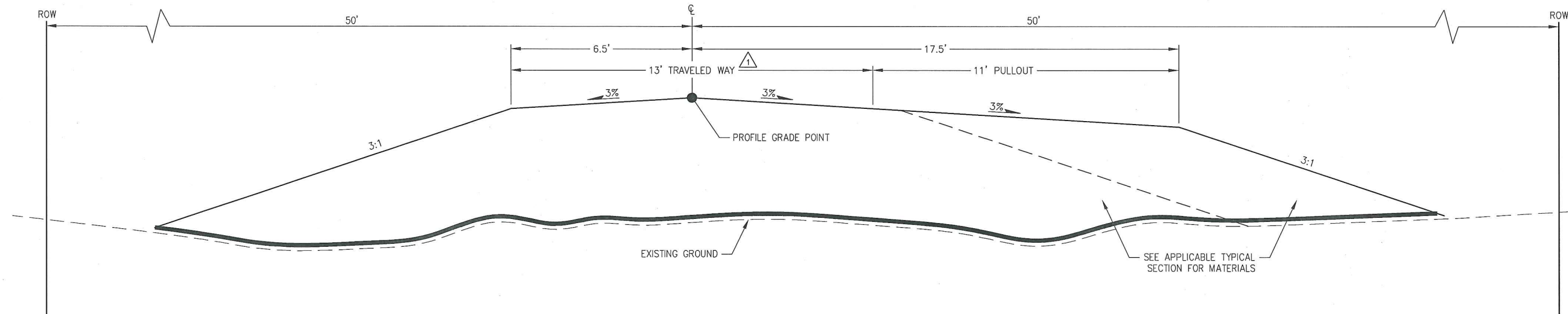


[DATE: 2/19/2014 9:20 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb] [LAYOUT: 524412-C-B2 - Typical Sections]  
[PATH: P:\Manilaq Association\524412\Design Drawings\Civil\524412-C-B1 Typical Sections.dwg]



### LANDFILL ROAD OVER EXISTING ROADWAY

STA 10+00 TO 15+00



### LANDFILL ROAD: PULLOUTS

OPPOSITE HAND FOR LEFT PULLOUT

#### LEFT PULLOUT LOCATIONS

STA 39+75.00 TO STA 40+25.00  
STA 62+75.00 TO STA 63+25.00  
N.I.C. STA 83+25.00 TO STA 83+75.00  
N.I.C. STA 109+75.00 TO STA 110+25.00

#### RIGHT PULLOUT LOCATIONS

STA 24+75.00 TO STA 25+25.00  
STA 54+75.00 TO STA 55+25.00  
N.I.C. STA 70+75.00 TO STA 71+25.00  
N.I.C. STA 95+75.00 TO STA 96+25.00  
N.I.C. STA 126+00.00 TO STA 126+50.00

**WHPacific**  
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com



REVISIONS	NO.	BY	DATE	REMARKS
	1	KLZ	2/19/14	REDUCED ROAD WIDTH

SHEET INFO	DESIGNED	DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL
	JRH	JRH	ELM	ELM	2/19/2014	2/19/2014	

TYPICAL SECTIONS	PROJECT NUMBER	DRAWING FILE NAME	SCALE
	524412	524412-C-B1 TYPICAL SECTIONS	1"=2'



DATE: 2/25/2014 3:25 PM | AUTHOR: jhanson | PLOTTER: CutePDF Writer | [STYLE: WHP-Standard.ctb]  
CPATH: P:\Manilaq Association\524412\Design\Drawings\Civil\524412-C-C1 Estimate of Quantities.dwg | LAYOUT: 524412-C-C1 - Estimate Of Quantities

ENGINEER'S ESTIMATE OF QUANTITIES <span>⚠</span>				
ITEM NO.	ITEM	UNIT	PHASE 1 ESTIMATE QUANTITY	N.I.C. PHASE 2 ESTIMATED QUANTITY
201(1A)	CLEARING	ACRE	6.6	9.8
203(3)	UNCLASSIFIED EXCAVATION	CU YD	0	14,050
203(5B)	BORROW, TYPE B	CU YD	29,200	21,400
603(17-24)	24-INCH PIPE	LIN FT	26	0
603(17-36)	36-INCH PIPE	LIN FT	100	170
603(17-48)	48-INCH PIPE	LIN FT	105	0
615(1)	STANDARD SIGN	SQ FT	5	5
616(4)	THAW WIRE INSTALLATION	EACH	4	3
618(2)	SEEDING	POUND	157	254
630(1)	GEOTEXTILE, SEPARATION	SQ YD	25,900	33,000
633(1)	SILT FENCE	LIN FT	675	0
640(1)	MOBILIZATION AND DEMOBILIZATION	L SUM	ALL REQ'D	ALL REQ'D
641(1)	EROSION AND POLLUTION CONTROL ADMINISTRATION	L SUM	ALL REQ'D	ALL REQ'D
641(2)	TEMPORARY EROSION AND POLLUTION CONTROL	C SUM	ALL REQ'D	ALL REQ'D
642(1)	CONSTRUCTION SURVEYING	L SUM	ALL REQ'D	ALL REQ'D
643(2)	TRAFFIC MAINTENANCE	L SUM	ALL REQ'D	ALL REQ'D
643(3)	PERMANENT CONSTRUCTION SIGNS	L SUM	ALL REQ'D	ALL REQ'D

TABLE OF ESTIMATING FACTORS		
ITEM NO.	DESCRIPTION	ESTIMATING FACTOR
618(2)	SEEDING	1 LB/ 1000 SF



REVISIONS		REMARKS	
NO.	BY	DATE	REMARKS
1	KLZ	2/19/14	REDUCED ROAD WIDTH

SHEET INFO		JRH	ELM	ELM	2/25/2014	2/25/2014
DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL	

ESTIMATE OF QUANTITIES

MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

PROJECT NUMBER 524412

DRAWING FILE NAME 524412-C-C1 ESTIMATE OF QUANTITIES

SCALE

[DATE: 2/25/2014 3:26 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb] [PATH: P:\Manilaq Association\524412 Design\Drawings\Civil\524412-C-D1 Summary Sheet.dwg] [LAYOUT: 524412-C-D1 - Summary Sheet]

N.I.C.  
N.I.C.  
N.I.C.

1

CULVERT SUMMARY											
SHEET	CULVERT NO.	INLET			OUTLET			LENGTH	DIAMETER	THAW	REMARKS
		STATION	OFFSET (FT)	ELEV	STATION	OFFSET (FT)	ELEV	(FT)	(IN)	WIRE	
F1	①	16+11.0	3.6' RT	158.3	16+20.4	20.6' LT	158.1	26	24	Y	CONNECT TO EXISTING PIPE
F2	①a	20+39.3	22.1' LT	154.3	20+18.2	23.3' RT	153.9	50	36	Y	
F4	②	47+44.3	20.8' LT	145.8	47+52.4	28.5' RT	143.8	50	36	Y	
F4	③	51+25.3	44.6' LT	139.9	51+73.1	48.9' RT	139.3	105	48	Y	
F8	④	95+59.7	30.1' LT	183.8	95+76.2	46.2' RT	183.0	78	36	Y	
F10	⑤	124+16.0	20.5' LT	188.1	124+16.0	21.5' RT	187.7	42	36	Y	
F10	⑥	130+25.0	23.6' LT	181.7	130+25.0	26.4' RT	180.0	50	36	Y	

N.I.C.

SIGN SUMMARY								
SHEET NO.	POST NO.	STATION	OFFSET	TYPE	LEGEND	SIZE WxH (IN)	AREA (SF)	SIGN FACES
F1	1	13+35.00	RT	R2-1	"SPEED LIMIT 20 MPH"	24 X 30	5.00	S
F11	2	134+50.00	LT	R2-1	"SPEED LIMIT 20 MPH"	24 X 30	5.00	N

- SIGN NOTES:
- FABRICATE ALL SIGNS FROM 0.125" THICK ALUMINUM SHEETING
  - USE 2-1/2" PERFORATED STEEL TUBE FOR ALL POSTS
  - USE A SOIL EMBEDMENT SLEEVE FOR ALL POST INSTALLATIONS
  - REFERENCE ADOT&PF STANDARD DRAWINGS S-00.10, S-05.01, S-20.10, & S-30.03 FOR SIGN DETAILS

SUMMARY TABLES

MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

PROJECT NUMBER 524412  
DRAWING FILE NAME 524412-C-D1 SUMMARY SHEET

SCALE

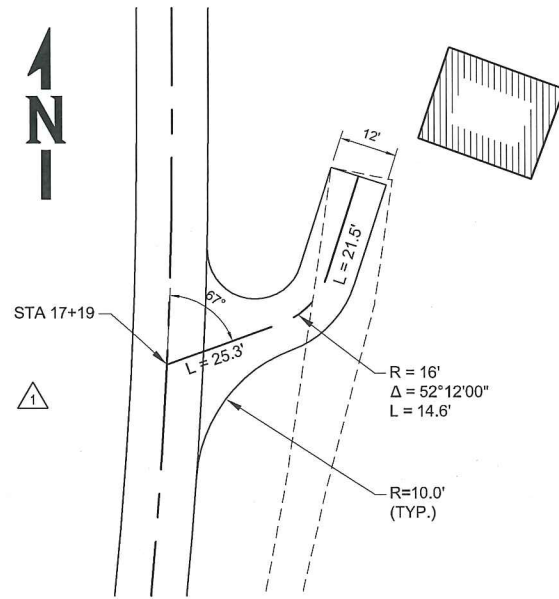


REVISIONS		DATE		REMARKS	
NO.	BY	1	KLZ	2/19/14	REDUCED ROAD WIDTH

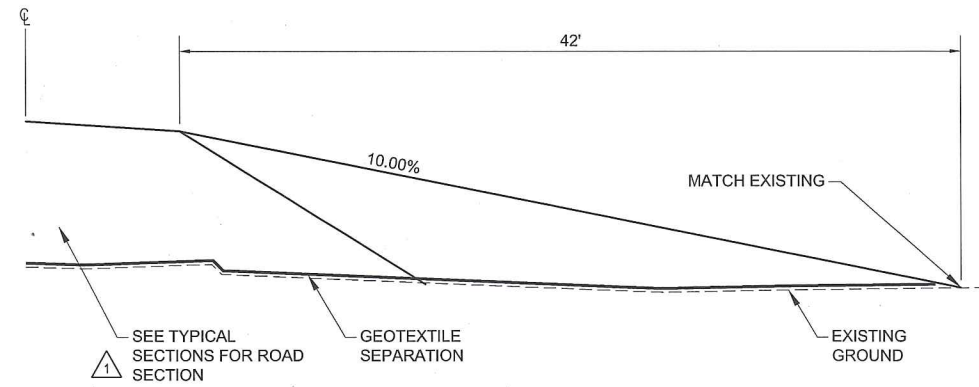
SHEET INFO		JRH		ELM		2/25/2014	
DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL		



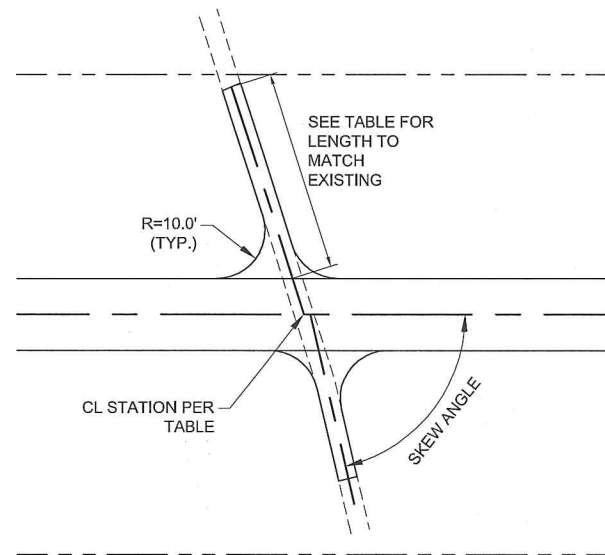
DATE: 2/19/2014 9:25 PM] [AUTHOR: jparson] [PLOTTER: C:\hp\pdf\writer] [STYLE: WHP-Standard.ctb] [PLOT: 524412-C-E1 Details.dwg] [PLOT: 524412-C-E1 Details.dwg] [PLOT: 524412-C-E1 Details.dwg]



DRIVEWAY PLAN VIEW DETAIL



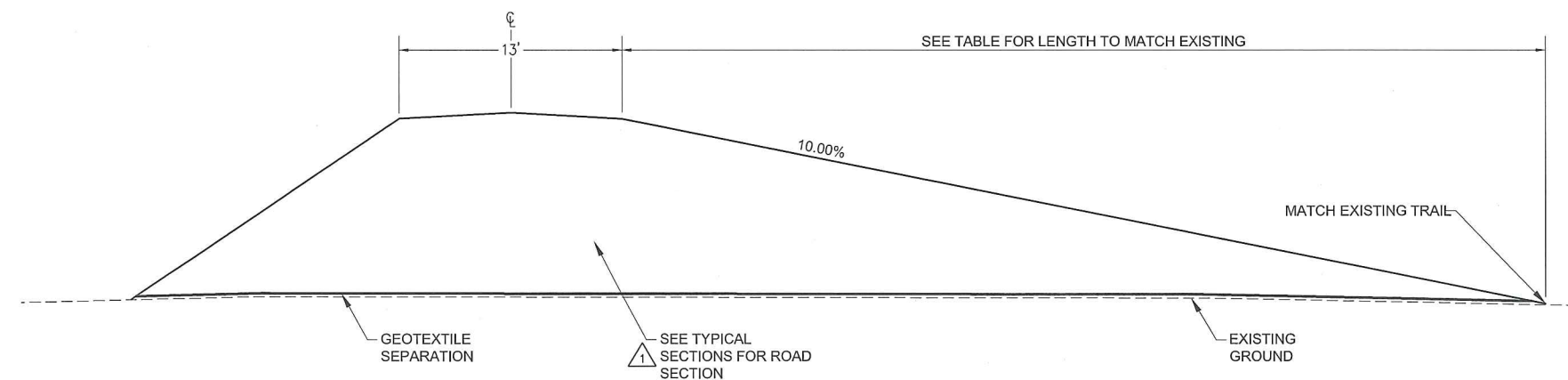
DRIVEWAY PROFILE



TRAIL CROSSING PLAN VIEW DETAIL

TRAIL CROSSINGS					
SHEET	CL STATION	SIDE	SKEW	WIDTH	LENGTH
F1	16+25	RIGHT	97°	6.5 FT	43 FT
F3	35+15	RIGHT	46°	4 FT	60 FT
F6	80+15	LEFT	26°	4 FT	85 FT

N.I.C.



TRAIL CROSSING PROFILE (REVERSE FOR LEFT SIDE)

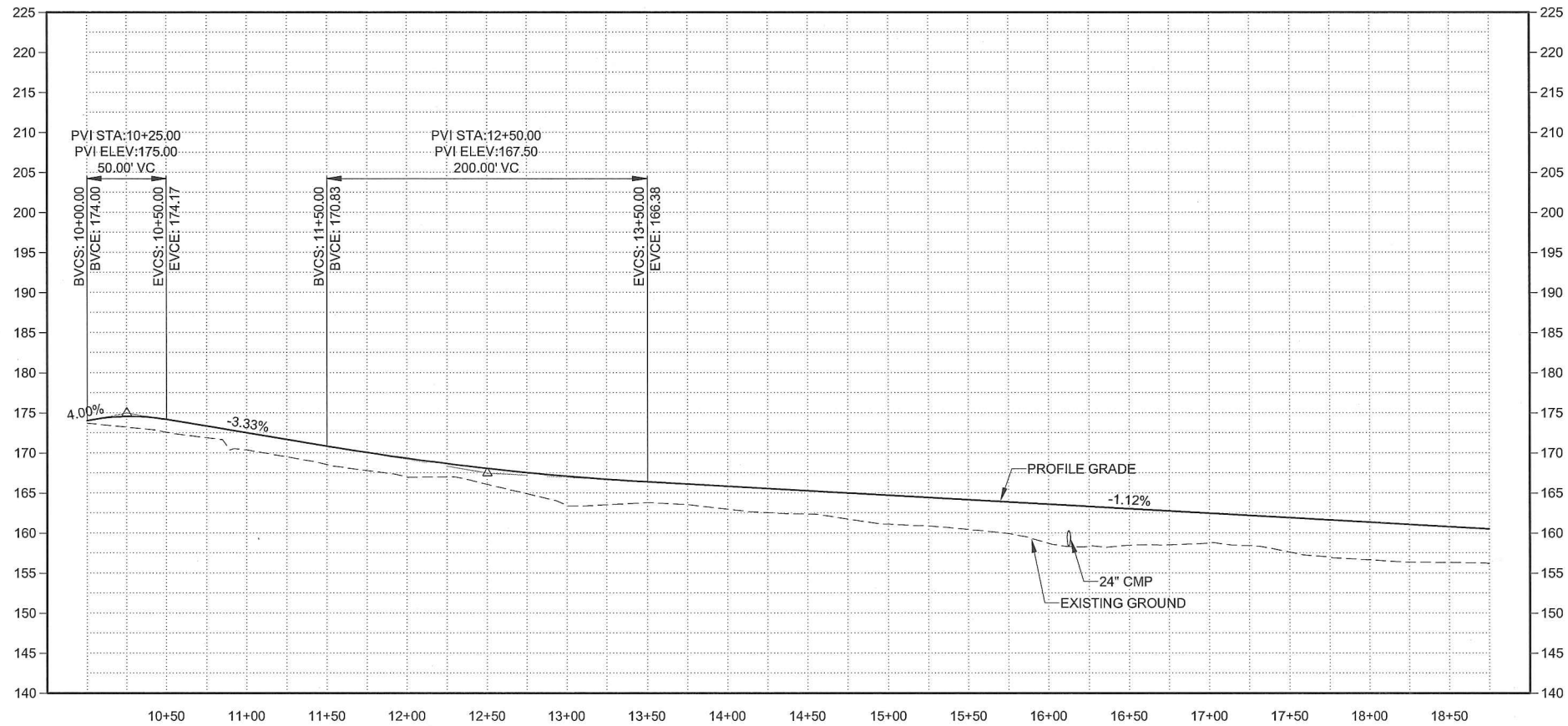
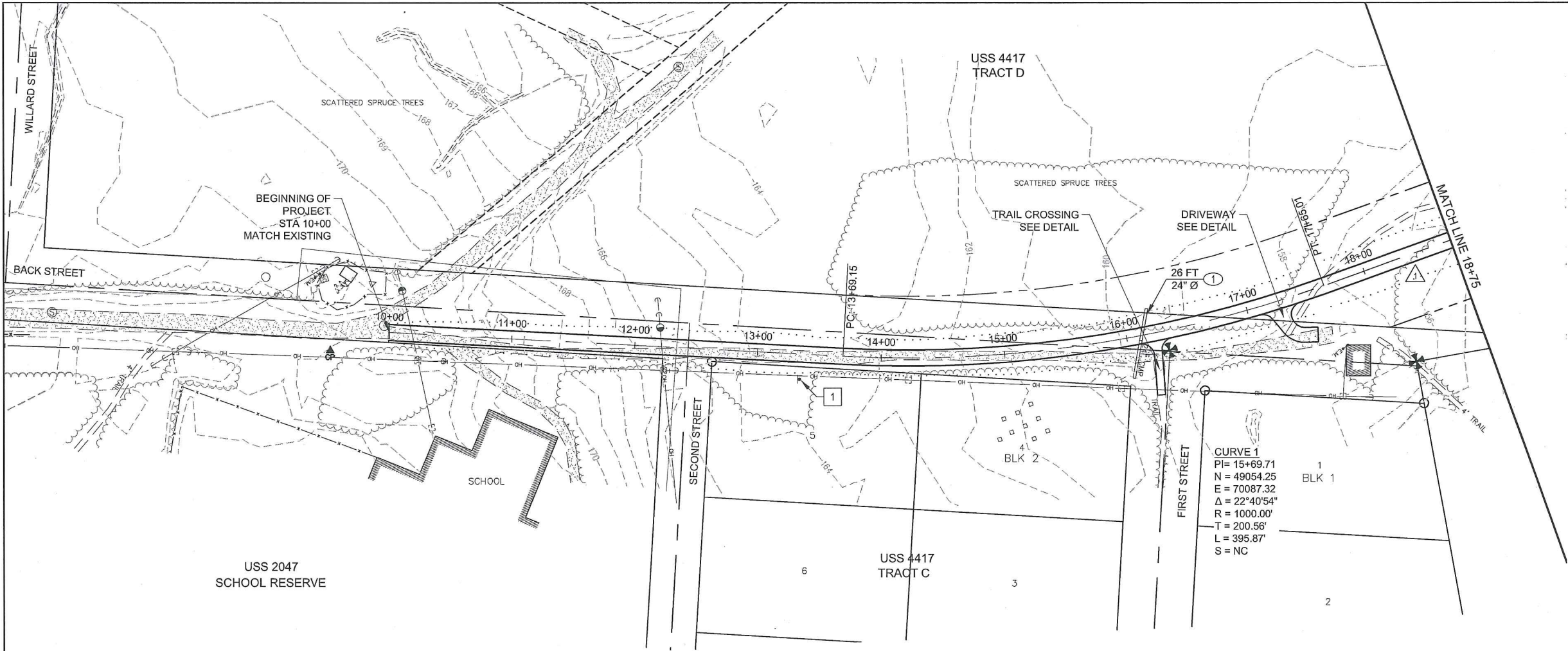
REVISIONS		NO.	BY	DATE	REMARKS
1	KLZ	2/19/14			REDUCED ROAD WIDTH

SHEET INFO		DESIGNED	DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL
JRH	JRH	JRH	ELM	ELM	2/19/2014	2/19/2014		

DETAILS		MANILAQ ASSOCIATION SHUNGNAK LANDFILL ROAD	SCALE NTS
PROJECT NUMBER 524412	DRAWING FILE NAME 524412-C-E1 DETAILS		



[DATE: 2/19/2014 9:29 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb] [PATH: P:\Montilaq Association\524412\Drawings\Civil\524412-C-F1-F3 Plan & Profile.dwg] [LAYOUT: F1]



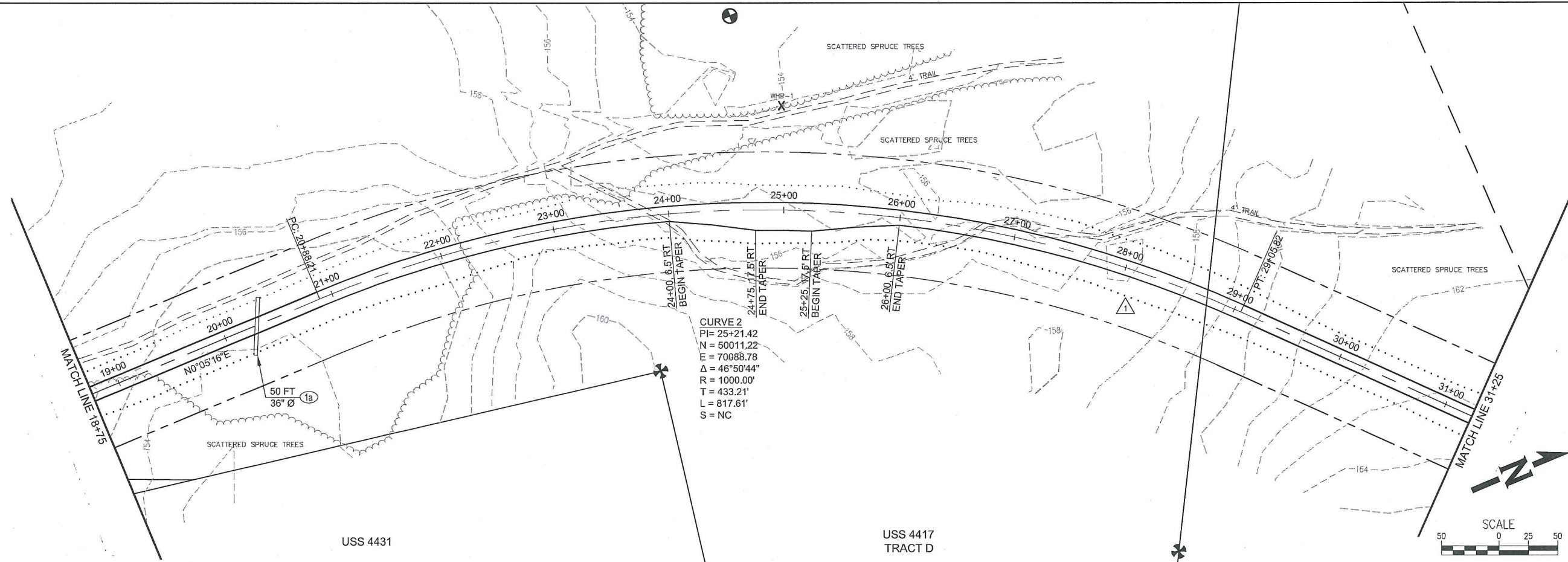
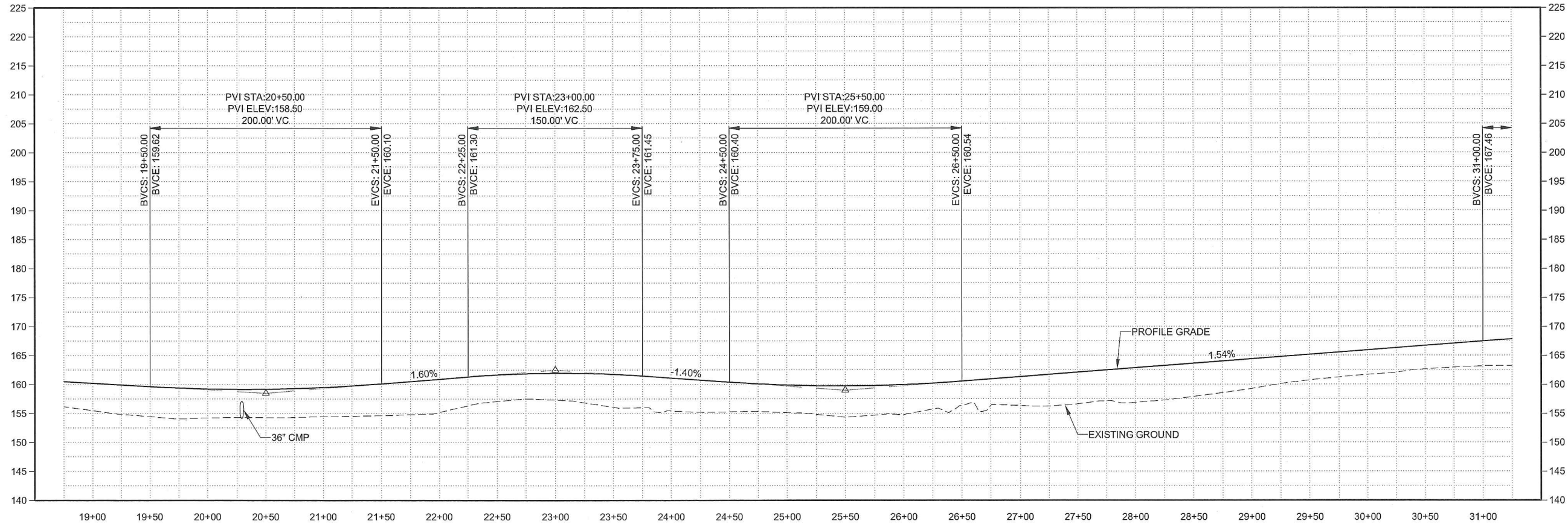
REVISIONS		NO.	BY	DATE	REMARKS
1	KLZ	2/19/14			REDUCED ROAD WIDTH

SHEET INFO		DESIGNED	JRH	DRAWN	JRH	CHECKED	ELM	APPROVED	ELM	LAST EDIT	2/19/2014	PLOT DATE	2/19/2014	SUBMITTAL
------------	--	----------	-----	-------	-----	---------	-----	----------	-----	-----------	-----------	-----------	-----------	-----------

PLAN & PROFILE		SCALE	1"=50'
BOP to STA 18+75			
MANILAQ ASSOCIATION			
SHUNGNAG LANDFILL ROAD			
PROJECT NUMBER	524412	DRAWING FILE NAME	524412-C-F1-F3 PLAN & PROFILE



[DATE: 2/25/2014 11:00 AM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Montilao Association\524412\Design\Drawings\Civil\524412-C-F1-F3 Plan & Profile.dwg] [LAYOUT: F2]



**WHPacific**  
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com

Julia R. Hanson  
No. CE 13144  
Professional Engineer

REVISIONS		SHEET INFO	
NO.	BY	DATE	REMARKS
1	KLZ	2/19/14	REDUCED ROAD WIDTH

DESIGNED	DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL
JRH	JRH	ELM	ELM	2/25/2014	2/25/2014	

**PLAN & PROFILE**  
**STA 18+75 to STA 31+25**  
MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

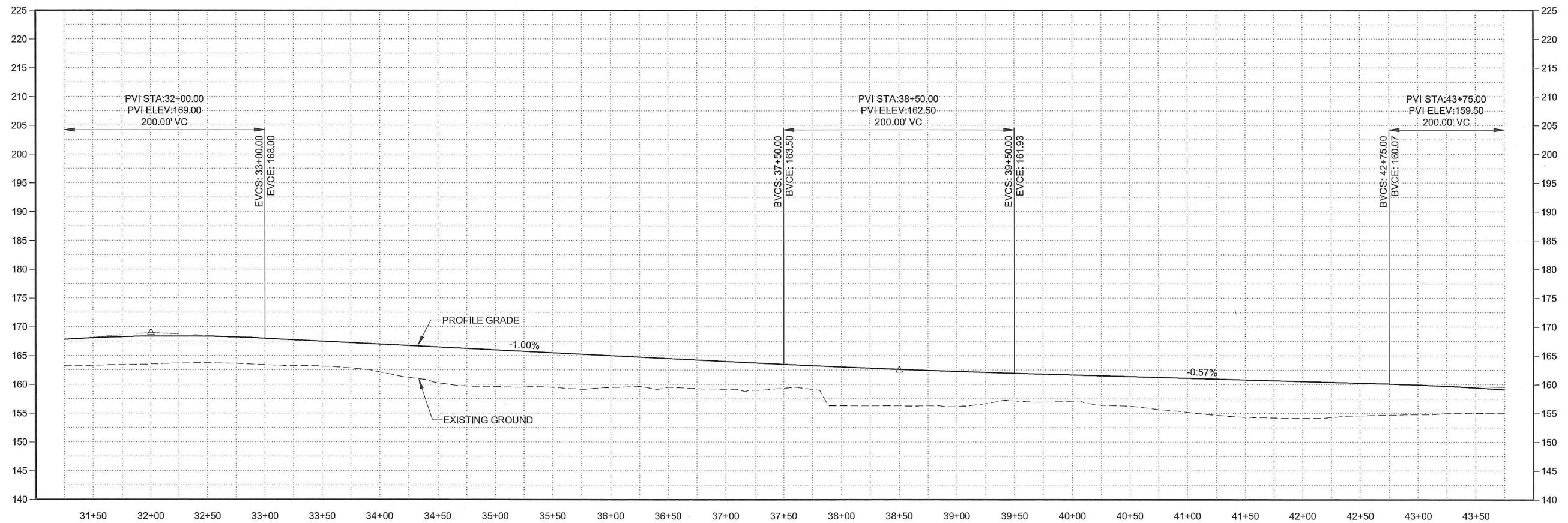
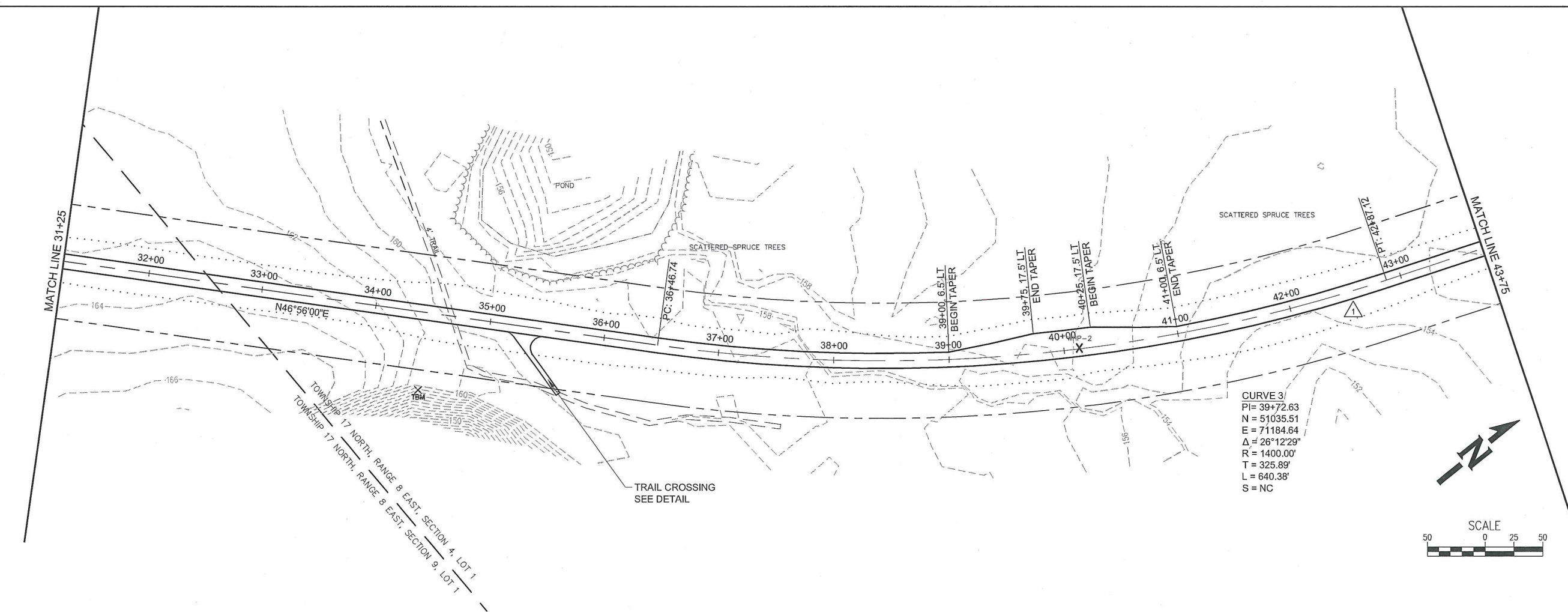
PROJECT NUMBER  
524412

DRAWING FILE NAME  
524412-C-F1-F3 PLAN & PROFILE

SCALE  
1"=50'

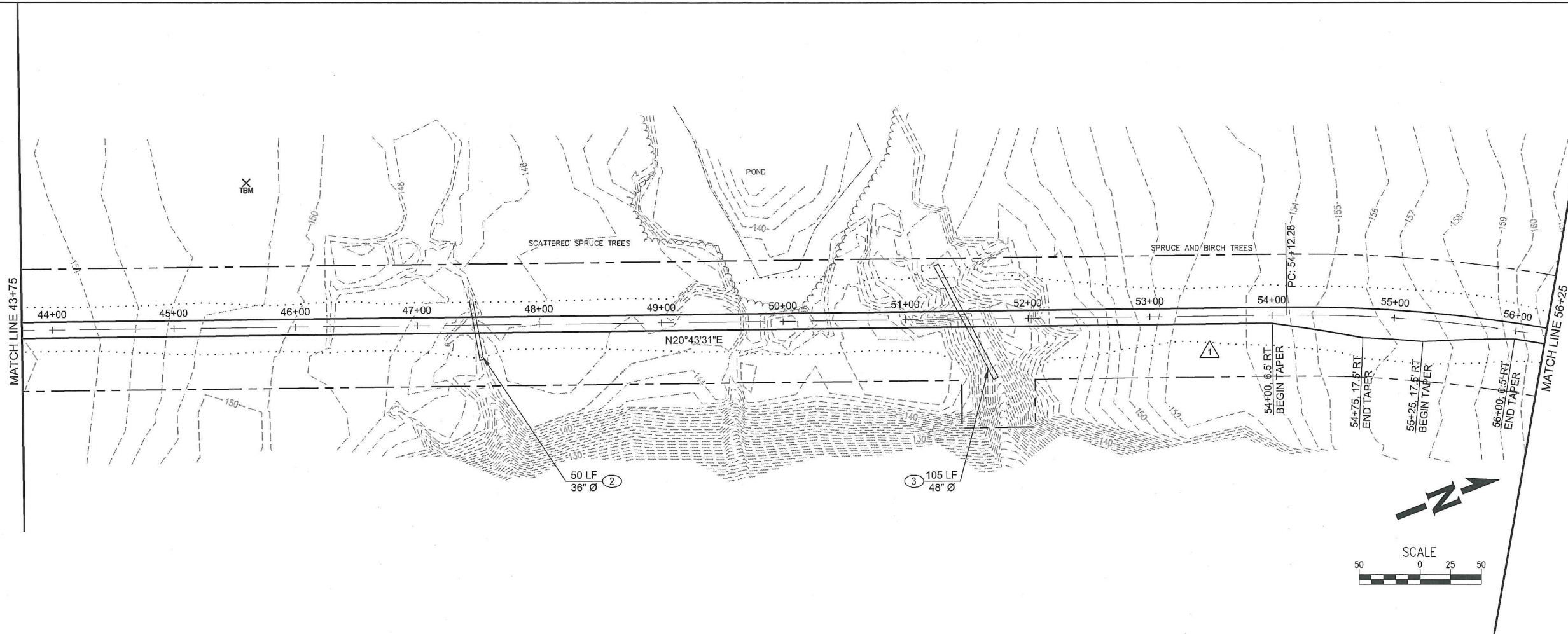
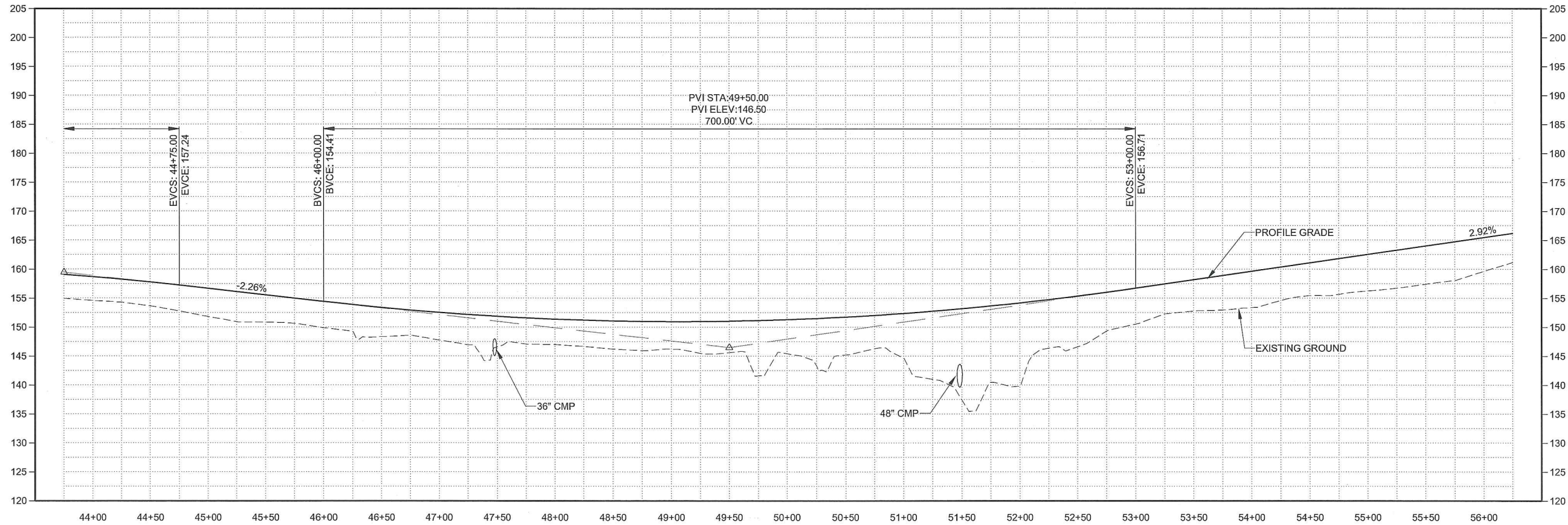
SHEET NUMBER  
**F2**  
2 of 11







[DATE: 2/25/2014 4:30 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Montilaq Association\524412\Design Drawings\Civil\524412-C-F4-F6 Plan & Profile.dwg] [LAYOUT: F4]



WHPacific

300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com

STATE OF ALASKA

49 TH

Julia R. Hanson  
No. CE 13144  
Professional Engineer

REVISIONS		SHEET INFO	
NO.	BY	DATE	REMARKS
1	KLZ	2/19/14	REDUCED ROAD WIDTH

DESIGNED		DRAWN		CHECKED		APPROVED		LAST EDIT		PLOT DATE	
JRH	JRH	JRH	ELM	ELM	ELM	ELM	ELM	ELM	ELM	ELM	ELM

PLAN & PROFILE

STA 43+75 to STA 56+25

MANILAQ ASSOCIATION

SHUNGNAK LANDFILL ROAD

PROJECT NUMBER	DRAWING FILE NAME	SCALE	1"=50'
524412	524412-C-F4-F6 PLAN & PROFILE		

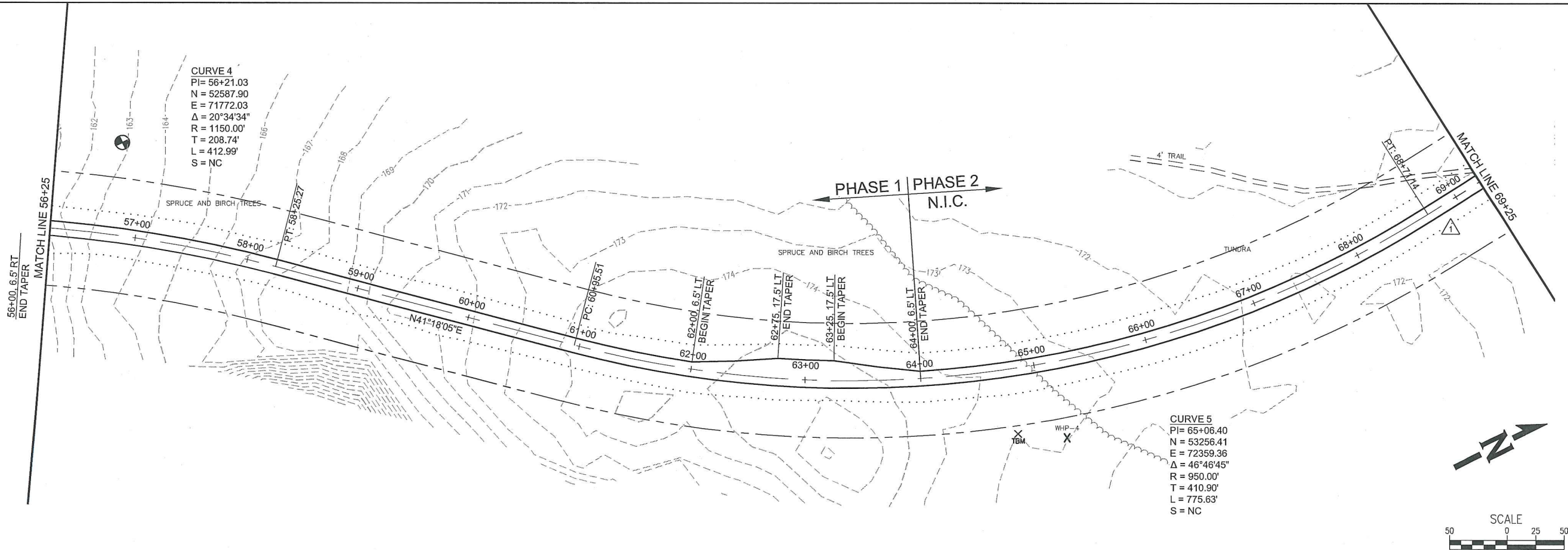
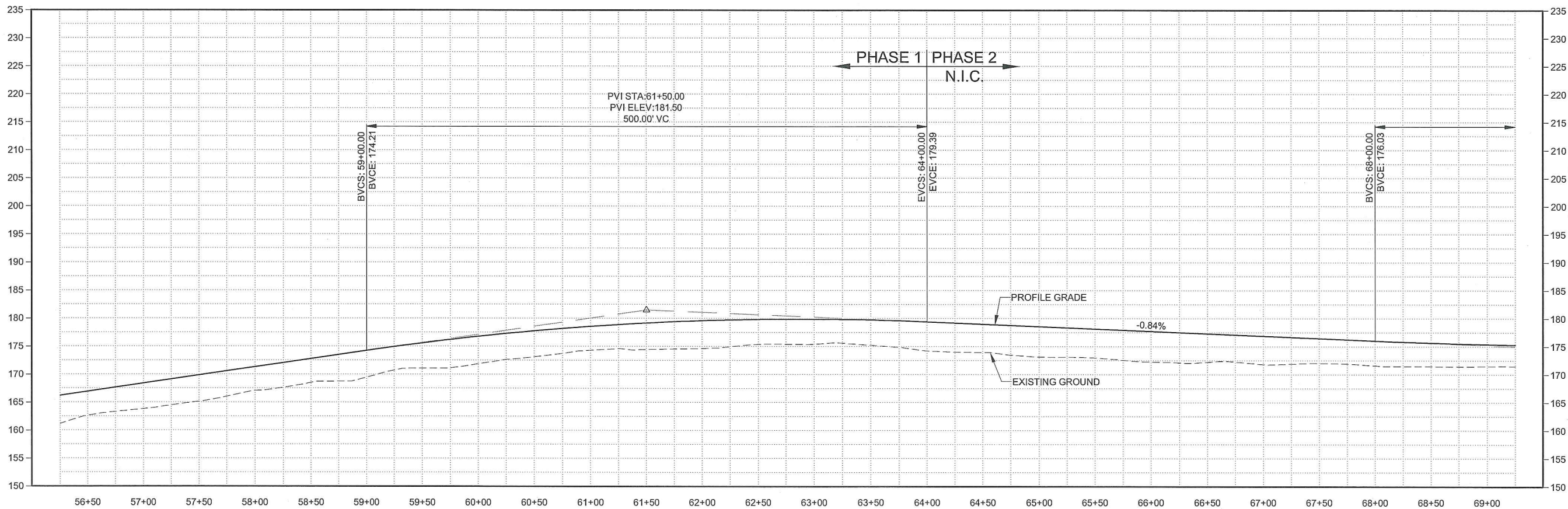
SHEET NUMBER

F4

4 of 11



[DATE: 2/19/2014 9:45 PM] [AUTHOR: kzojoc] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb] [PATH: P:\Manilaq Association\524412\Design Drawings\Civil\524412-C-F4-F6 Plan & Profile.dwg] [LAYOUT: F5]



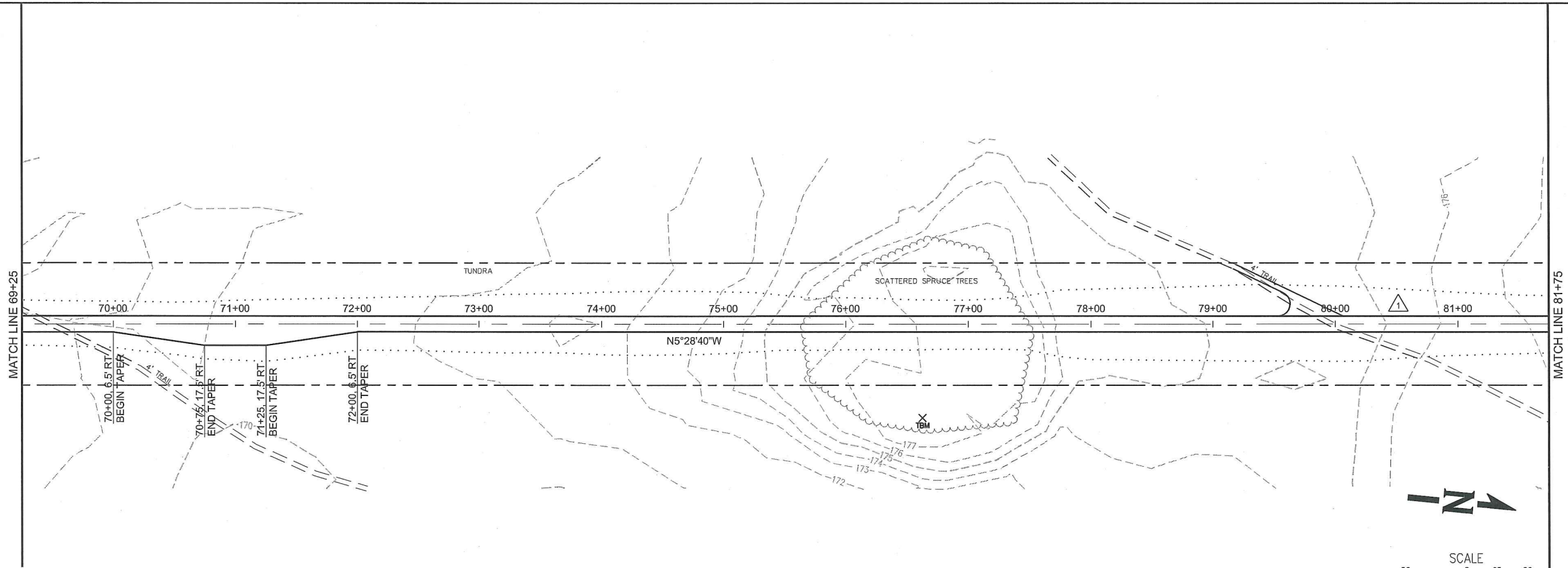
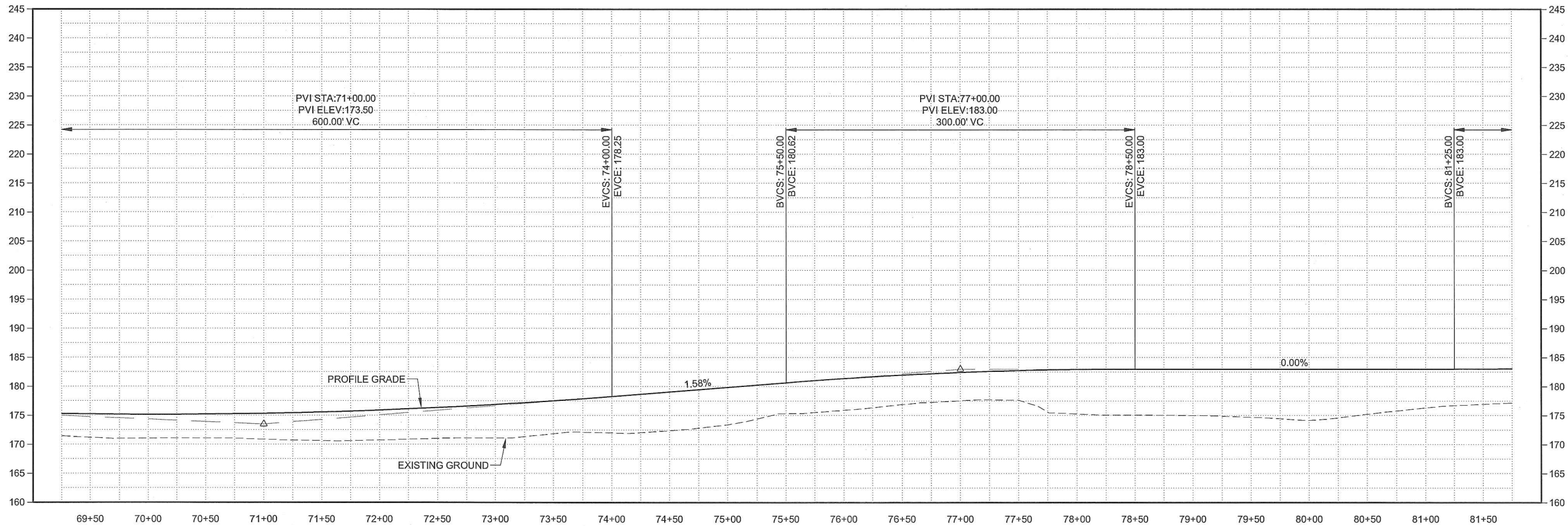
REVISIONS		NO.	BY	DATE	REMARKS
1	KLZ	2/19/14			REDUCED ROAD WIDTH

SHEET INFO		DESIGNED	DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL
JRH	JRH	JRH	ELM	ELM	ELM	1/3/2014	2/19/2014	

PLAN & PROFILE		DRAWING FILE NAME	524412-C-F4-F6 PLAN & PROFILE	SCALE	1"=50'				
STA 56+25 to STA 69+25									
MANILAQ ASSOCIATION SHUNGNAK LANDFILL ROAD									
PROJECT NUMBER		524412							



[DATE: 2/19/2014 9:47 PM] [AUTHOR: kzojcc] [PLOTTER: CUTEPDF Writer] [STYLE: WHP-Standard.ctb] [PATH: P:\Manilaq Association\524412\Design Drawings\Civil\524412-C-F4-F6 Plan & Profile.dwg] [LAYOUT: F6]



SHEET NUMBER  
**F6**  
6 of 11

PLAN & PROFILE  
STA 69+25 to STA 81+75  
MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD  
PROJECT NUMBER 524412  
DRAWING FILE NAME 524412-C-F4-F6 PLAN & PROFILE  
SCALE 1"=50'

SHEET INFO		DESIGNED		DRAWN		CHECKED		APPROVED		LAST EDIT		PLOT DATE		SUBMITTAL	
DESIGNED	JRH	DRAWN	JRH	CHECKED	ELM	APPROVED	ELM	LAST EDIT	1/3/2014	PLOT DATE	2/19/2014	SUBMITTAL			

REVISIONS		NO.		BY		DATE		REMARKS	
1	KLZ	2/19/14					REDUCED ROAD WIDTH		

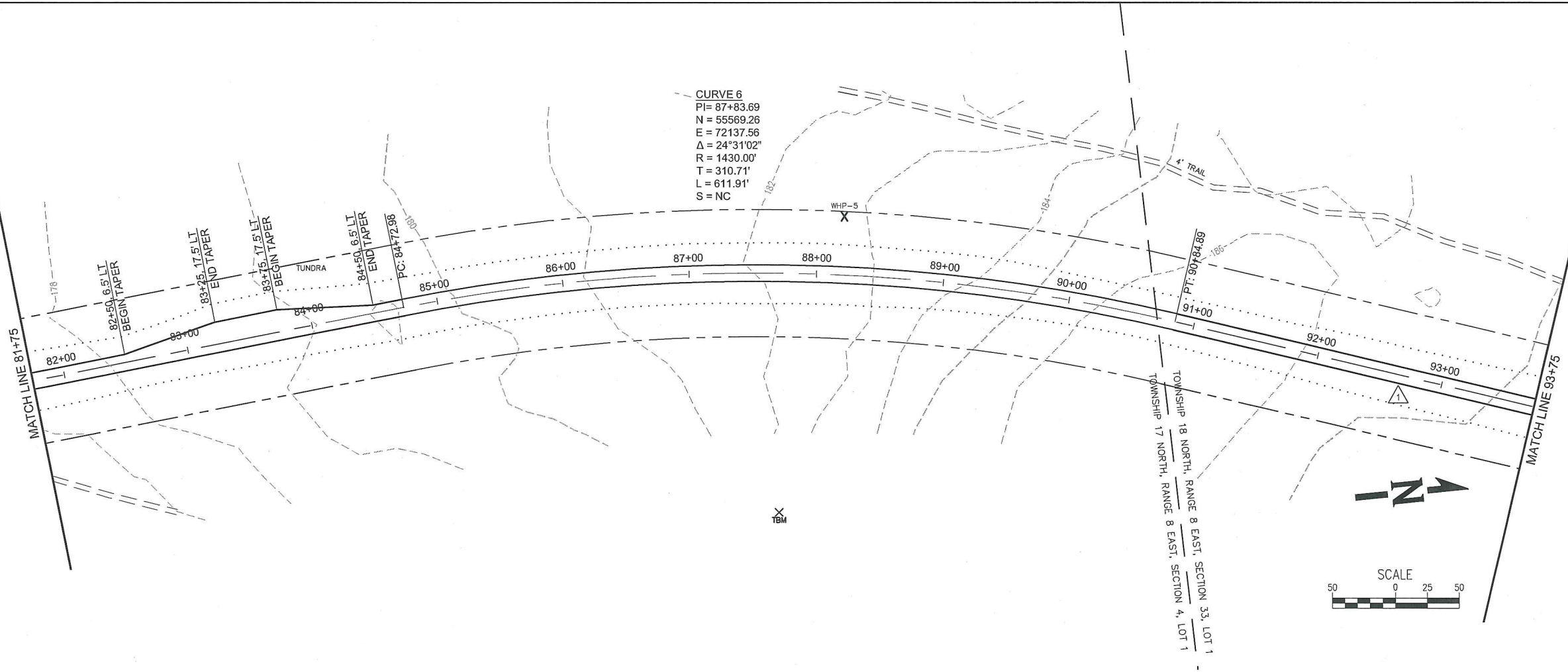
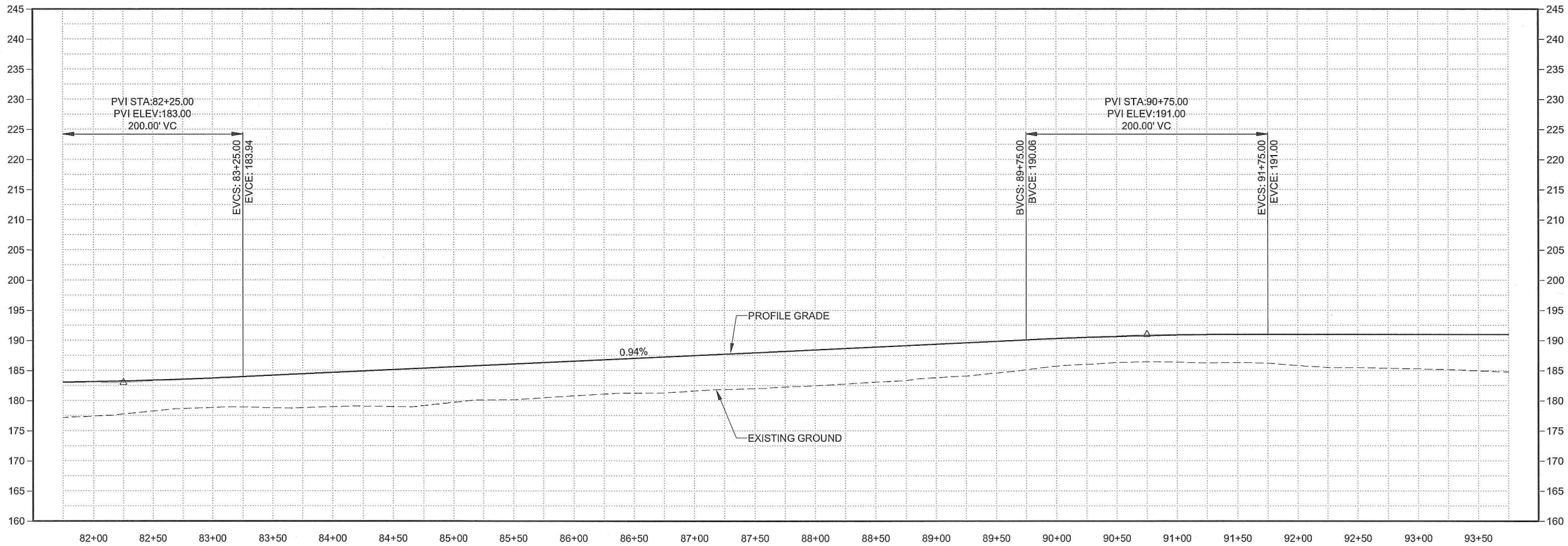


**WHPacific**  
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com



[DATE: 2/19/2014 10:10 PM] [AUTHOR: kzojoc] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]

[PATH: P:\Montilaq Association\524412\Design\Drawings\Civil\524412-C-F7-F9 Plan & Profile.dwg] [LAYOUT: F7]



CURVE 6  
PI= 87+83.69  
N= 55569.26  
E= 72137.56  
 $\Delta = 24^{\circ}31'02''$   
R= 1430.00'  
T= 310.71'  
L= 611.91'  
S= NC

WHP-5

TOWNSHIP 18 NORTH, RANGE 8 EAST, SECTION 33, LOT 1  
TOWNSHIP 17 NORTH, RANGE 8 EAST, SECTION 4, LOT 1



SHEET NUMBER

F7

7 of 11

PLAN & PROFILE  
STA 81+75 to STA 93+75  
MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

PROJECT NUMBER  
524412

DRAWING FILE NAME

524412-C-F7-F9 PLAN & PROFILE

SCALE

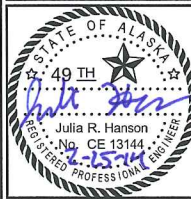
1"=50'

SHEET INFO

DESIGNED	JRH
DRAWN	JRH
CHECKED	ELM
APPROVED	ELM
LAST EDIT	1/3/2014
PLOT DATE	2/19/2014
SUBMITTAL	

REVISIONS

NO.	BY	DATE	REMARKS
1	KLZ	2/19/14	REDUCED ROAD WIDTH

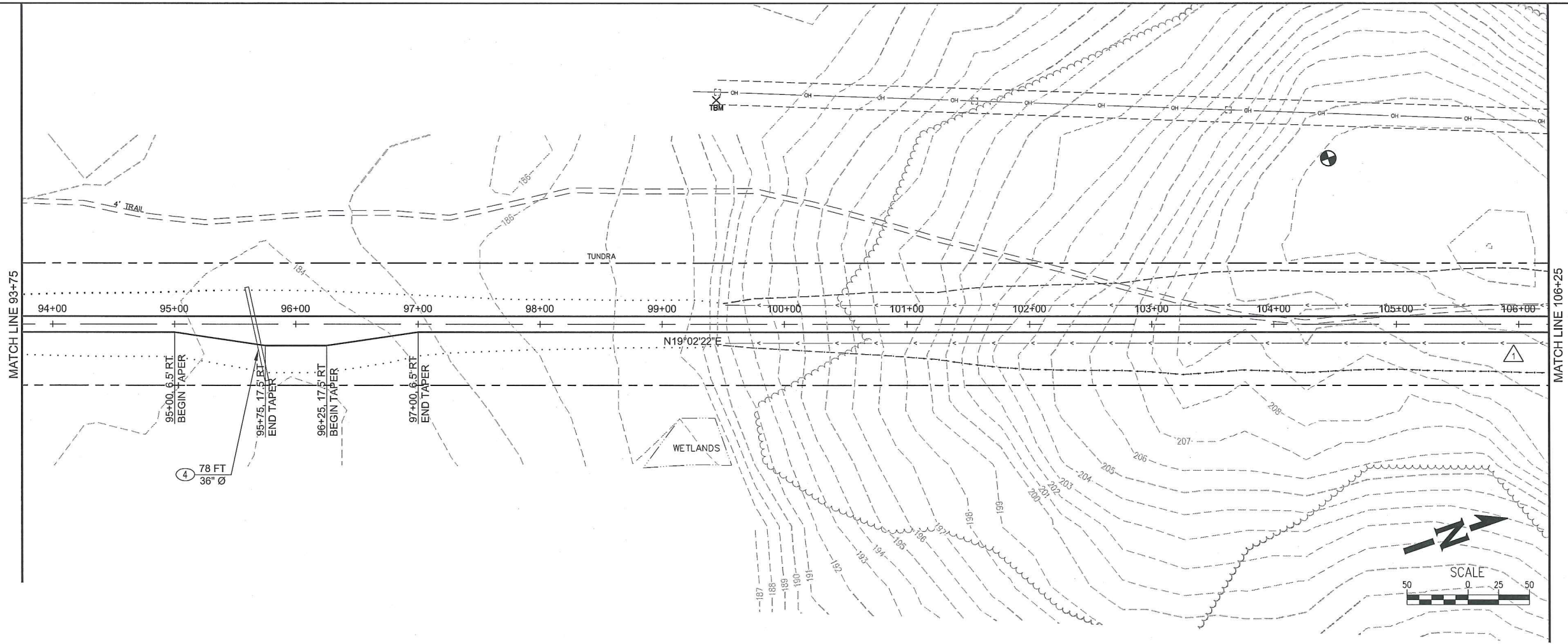
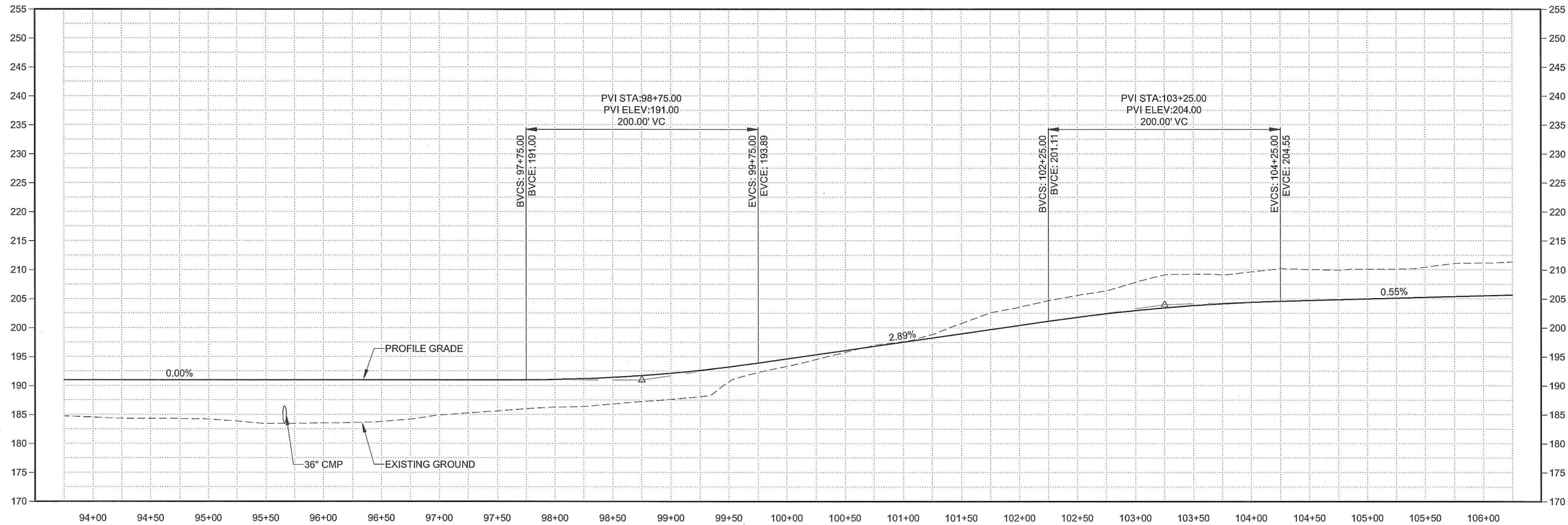


**WHPacific**

300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com



[DATE: 2/19/2014 10:12 PM] [AUTHOR: kzojoc] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Manilaq Association\524412\Design Drawings\Civil\524412-C-F7-F9 Plan & Profile.dwg] [LAYOUT: F8]



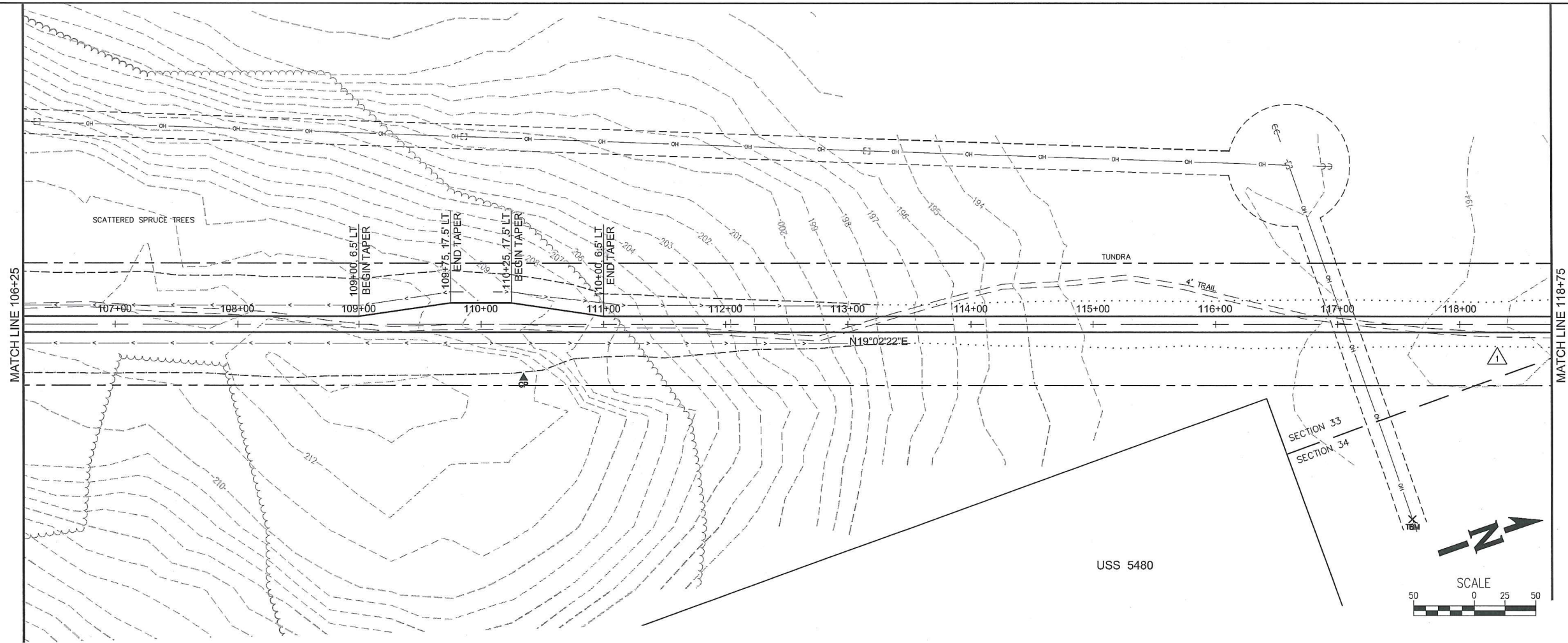
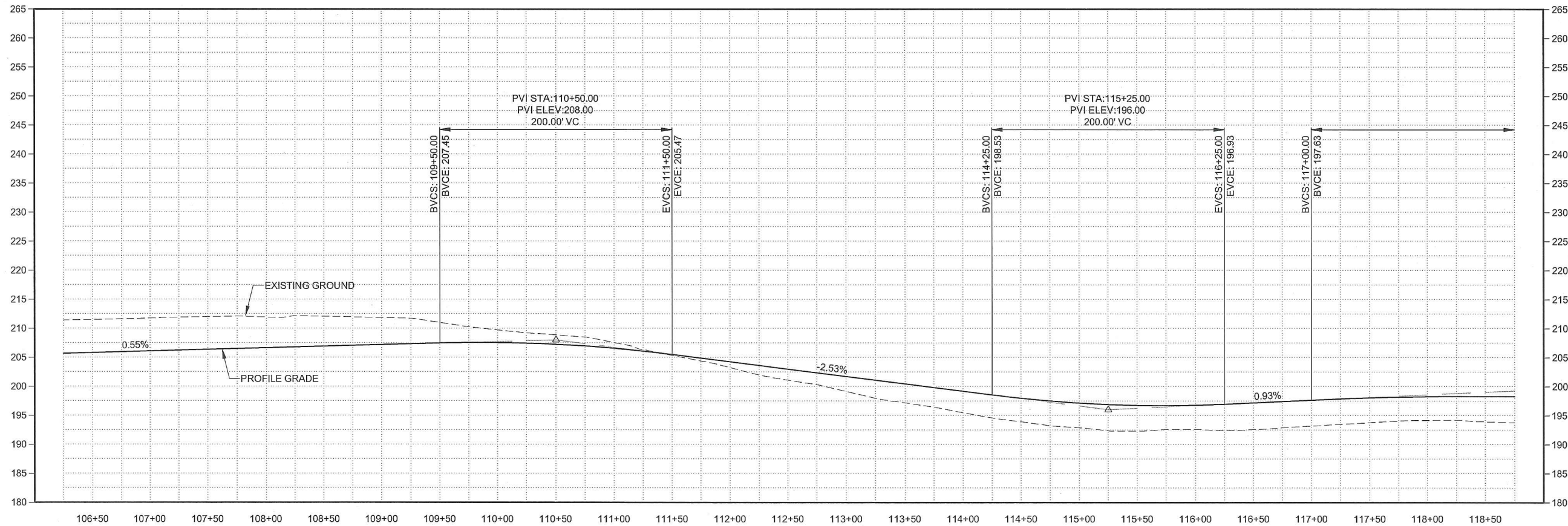
SHEET INFO		DESIGNED		DRAWN		CHECKED		APPROVED		LAST EDIT		PLOT DATE		SUBMITTAL	
JRH	JRH	JRH	JRH	ELM	ELM	ELM	ELM	1/3/2014	2/19/2014						

REVISIONS		NO.		BY		DATE		REMARKS	
1	KLZ	2/19/14						REDUCED ROAD WIDTH	





[DATE: 2/19/2014 10:14 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Manilaq Association\524412\Design\Drawings\Civil\524412-C-F7-F9 Plan & Profile.dwg] [LAYOUT: F9]



WHPacific

300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com

STATE OF ALASKA

49<sup>TH</sup>

Julia R. Hanson  
No. CE 13144  
REGISTERED PROFESSIONAL ENGINEER

REVISIONS	
NO.	BY DATE
1	KLZ 2/19/14

SHEET INFO	
DESIGNED	JRH
DRAWN	JRH
CHECKED	ELM
APPROVED	ELM
LAST EDIT	2/19/2014
PLOT DATE	2/19/2014
SUBMITTAL	

PLAN & PROFILE

STA 106+25 to 118+75

MANILAQ ASSOCIATION

SHUNGNAL LANDFILL ROAD

PROJECT NUMBER 524412

DRAWING FILE NAME 524412-C-F7-F9 PLAN & PROFILE

SCALE 1"=50'

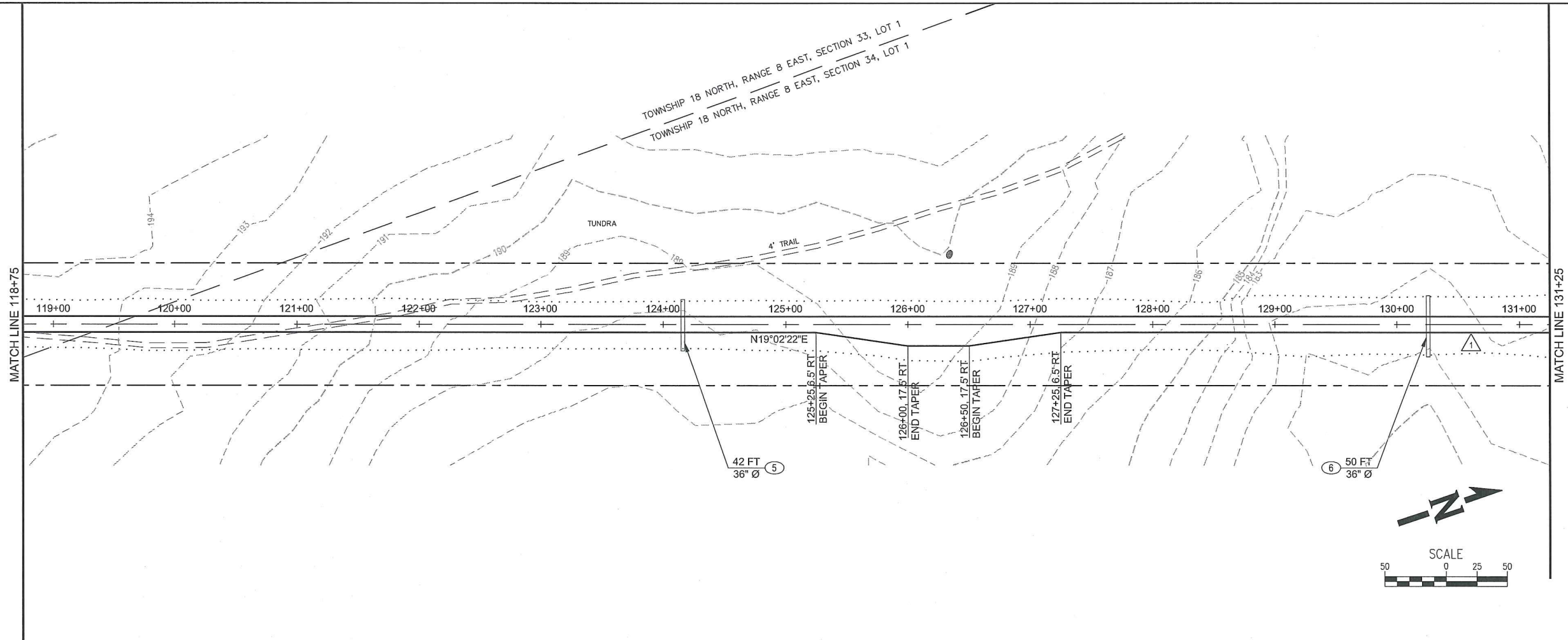
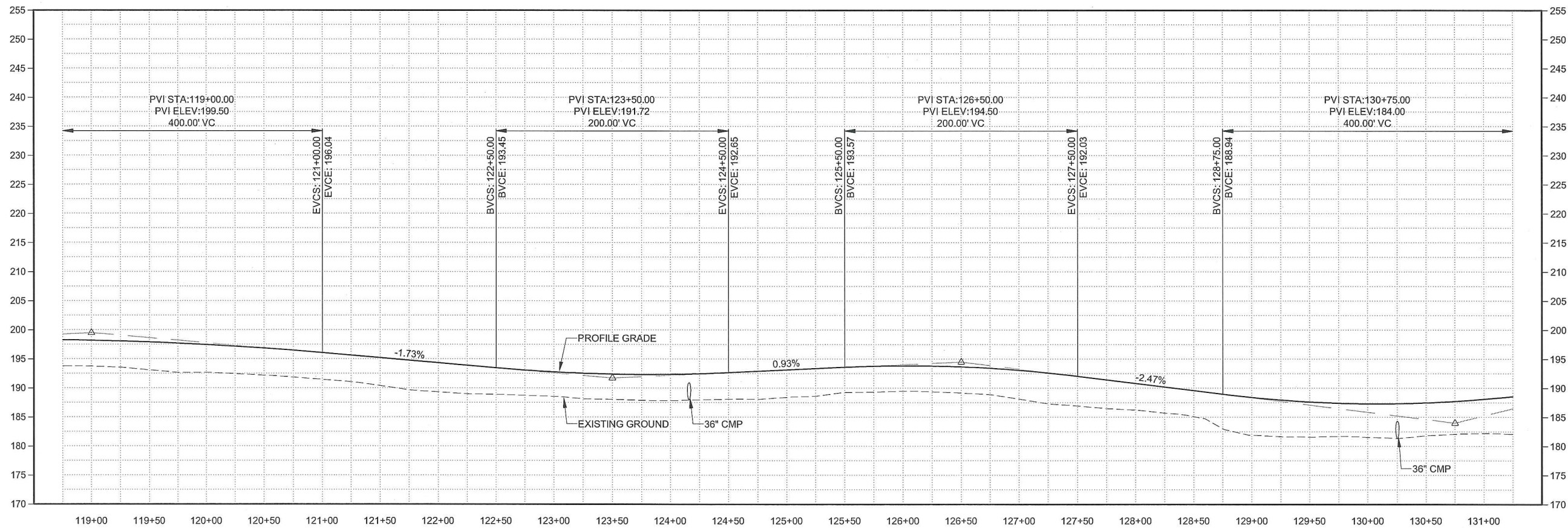
SHEET NUMBER

F9

9 of 11



[DATE: 2/19/2014 10:25 PM] [AUTHOR: kzaia] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Montilq Association\524412\Design Drawings\Civil\524412-C-F10-F12 Plan & Profile.dwg] [LAYOUT: F10]



WHPacific

300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com

STATE OF ALASKA

49 TH

Julia R. Hanson

No. CE 13144

REGISTERED PROFESSIONAL ENGINEER

REVISIONS		SHEET INFO	
NO.	BY	DATE	REMARKS
1	KLZ	2/19/14	REDUCED ROAD WIDTH

DESIGNED	JRH	DRAWN	JRH	CHECKED	ELM	APPROVED	ELM	LAST EDIT	1/3/2014	PLOT DATE	2/19/2014	SUBMITTAL

PLAN & PROFILE

STA 118+75 to STA 131+25

MANILAQ ASSOCIATION

SHUNGNAK LANDFILL ROAD

PROJECT NUMBER

524412

DRAWING FILE NAME

524412-C-F10-F12 PLAN & PROFILE

SCALE

1"=50'

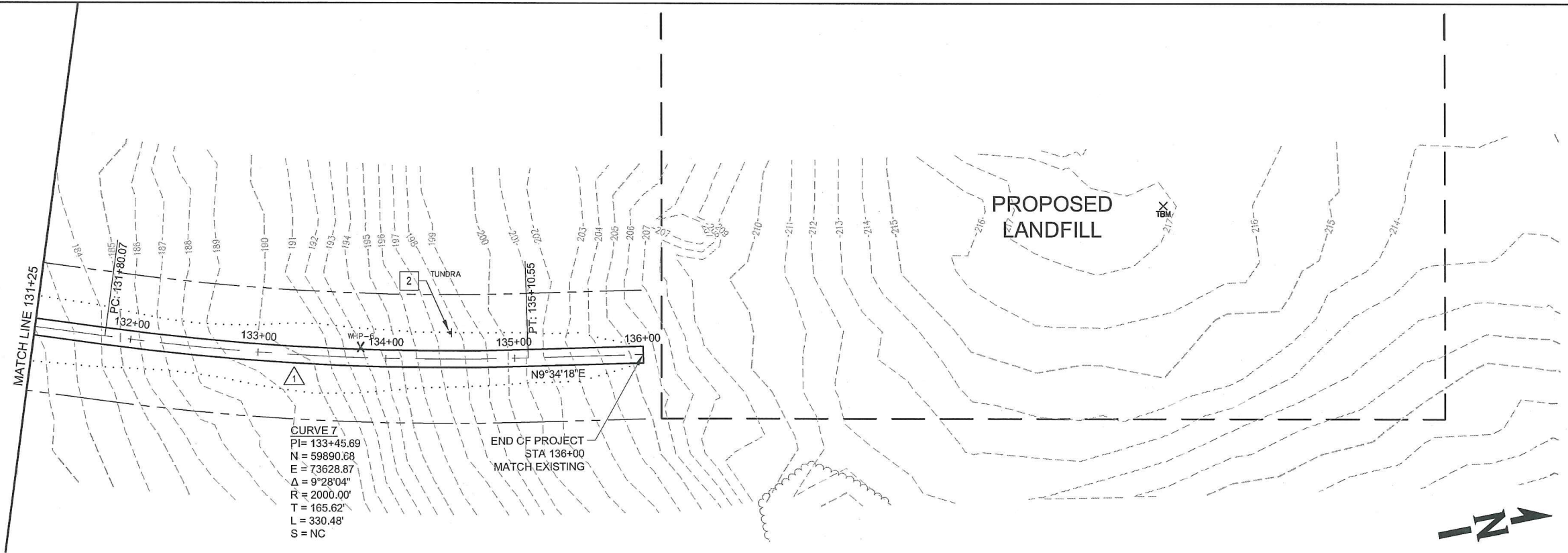
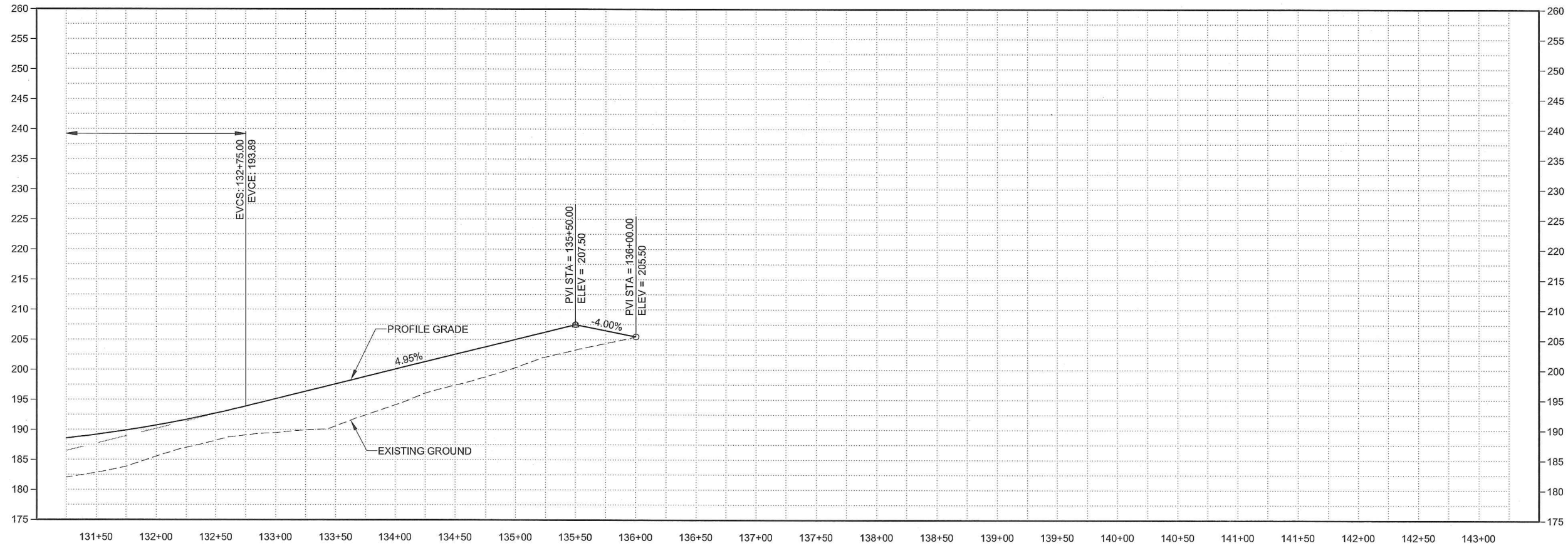
SHEET NUMBER

F10

10 of 11



[DATE: 2/19/2014 10:27 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Wentiloq Association\524412\Design Drawings\Civil\524412-C-F10-F12 Plan & Profile.dwg] [LAYOUT: F11]



SHEET NUMBER  
**F11**  
11 of 11

**PLAN & PROFILE**  
**STA 131+25 to EOP**  
**MANILAQ ASSOCIATION**  
**SHUNGNAK LANDFILL ROAD**  
PROJECT NUMBER 524412  
DRAWING FILE NAME 524412-C-F10-F12 PLAN & PROFILE  
SCALE 1"=50'

SHEET INFO		DESIGNED		DRAWN		CHECKED		APPROVED		LAST EDIT		PLOT DATE		SUBMITTAL	
JRH	JRH	JRH	ELM	JRH	ELM	JRH	ELM	JRH	ELM	JRH	ELM	JRH	ELM	JRH	ELM

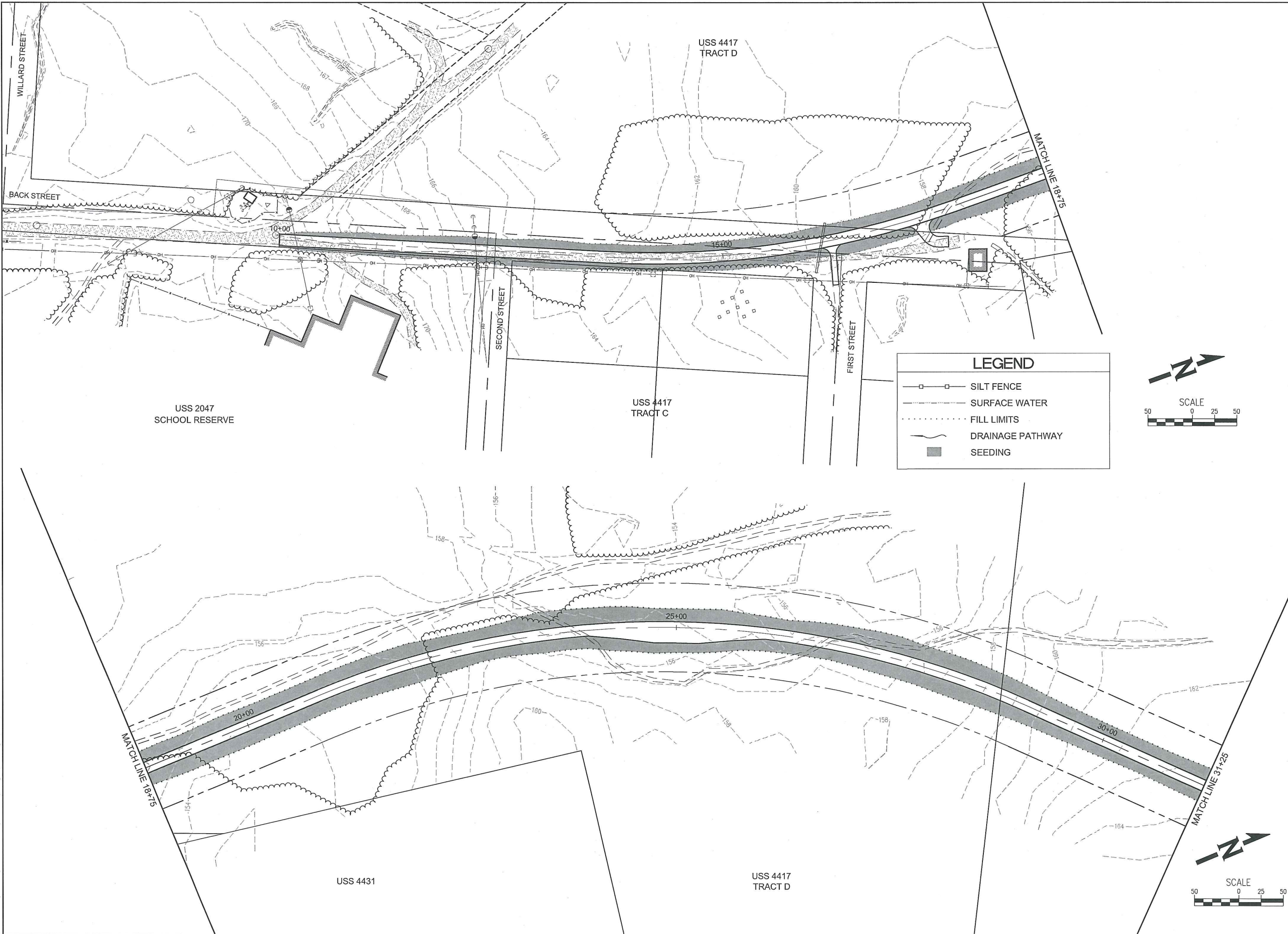
REVISIONS		NO. BY		DATE		REMARKS	
1	KLZ	2/19/14				REDUCED ROAD WIDTH	



**WHPacific**  
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-8500 Fax 907-339-5327  
www.whpacific.com



[DATE: 2/20/2014 2:22 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Monticq Association\524412\Design Drawings\Civil\524412-C-Q1-Q3 ESCP.dwg] [LAYOUT: 524412-C-Q1 - ESCP]



**WHPacific**  
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6600 Fax 907-339-5327  
www.whpacific.com

Julia R. Hanson  
No. CE 13144  
REGISTERED PROFESSIONAL ENGINEER

REVISIONS		SHEET INFO	
NO.	BY	DATE	REMARKS
1	JRH	2/19/14	REDUCED ROAD WIDTH

DESIGNED	DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL
JRH	JRH	ELM	ELM	2/20/2014	2/20/2014	

**EROSION & SEDIMENT CONTROL PLAN**

MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

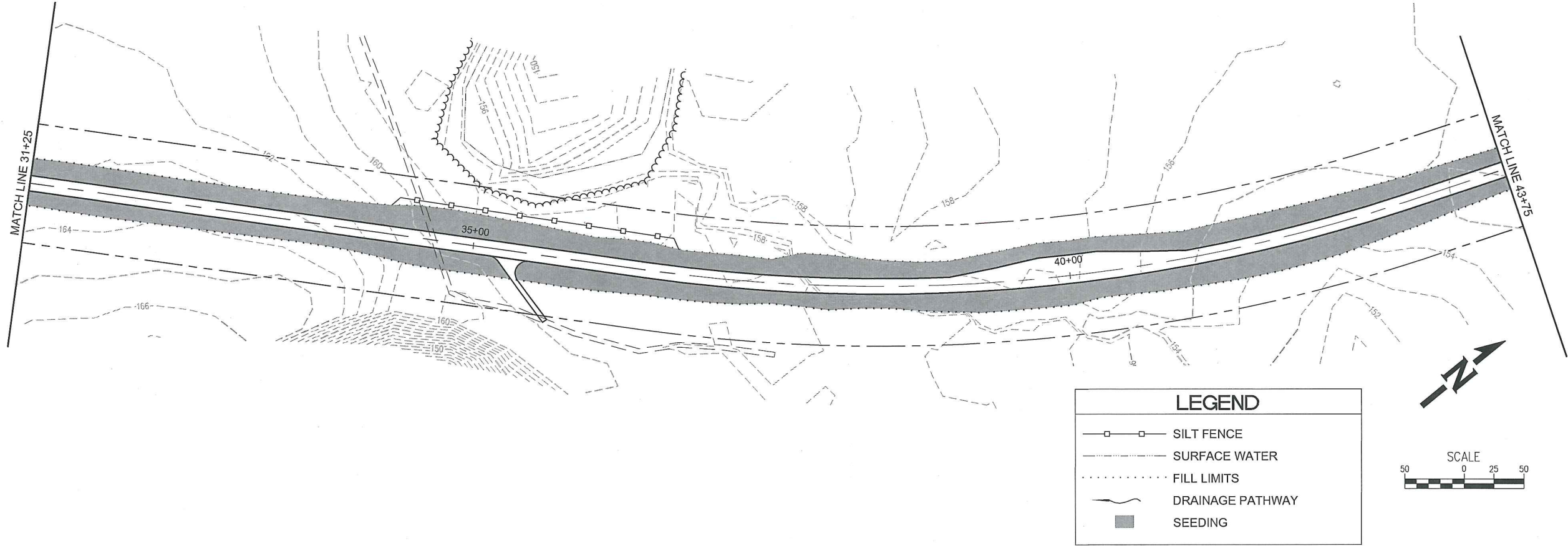
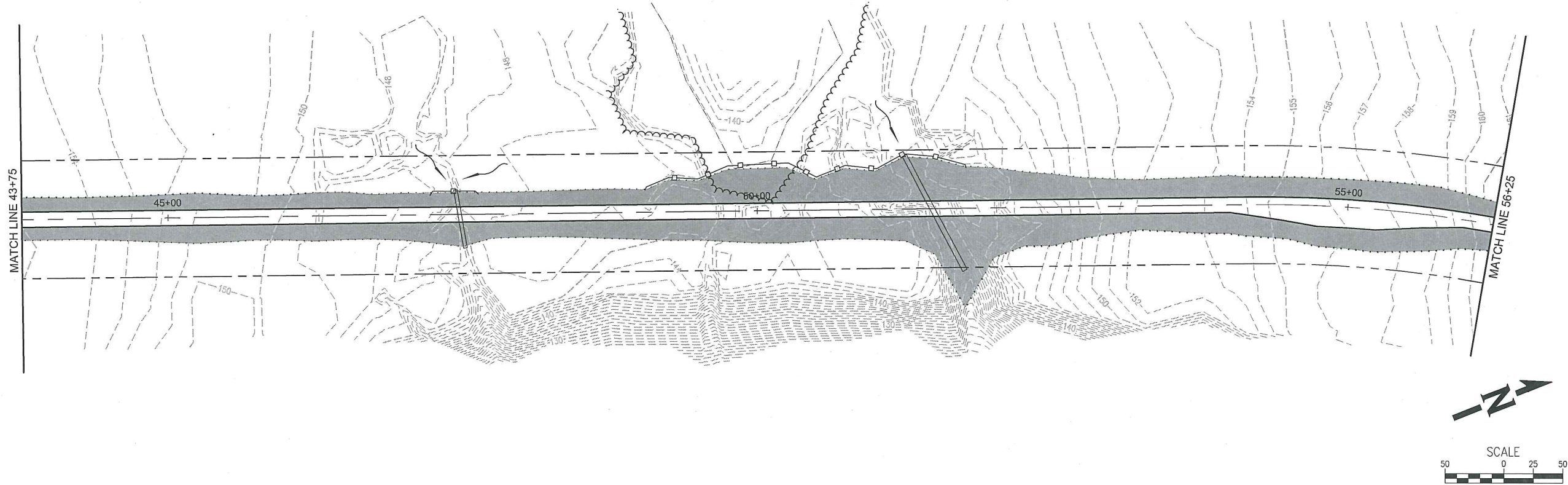
PROJECT NUMBER 524412  
DRAWING FILE NAME 524412-C-Q1-Q3 ESCP  
SCALE 1"=50'

**Q1**  
1 of 6

SHEET NUMBER



[DATE: 2/20/2014 2:31 PM] [AUTHOR: jhanson] [PLOTTER: C:\hp\pdf\writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Manilaq Association\524412\Design Drawings\Civil\524412-C-Q1-Q3 ESCP.dwg] [LAYOUT: 524412-C-Q2 - ESCP]



LEGEND	
	SILT FENCE
	SURFACE WATER
	FILL LIMITS
	DRAINAGE PATHWAY
	SEEDING

SHEET NUMBER  
**Q2**  
2 of 6

EROSION & SEDIMENT CONTROL PLAN

MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

PROJECT NUMBER  
524412

DRAWING FILE NAME  
524412-C-Q1-Q3 ESCP

SCALE  
1"=50'

SHEET INFO	
DESIGNED	JRH
DRAWN	JRH
CHECKED	ELM
APPROVED	ELM
LAST EDIT	2/20/2014
PLOT DATE	2/20/2014
SUBMITTAL	

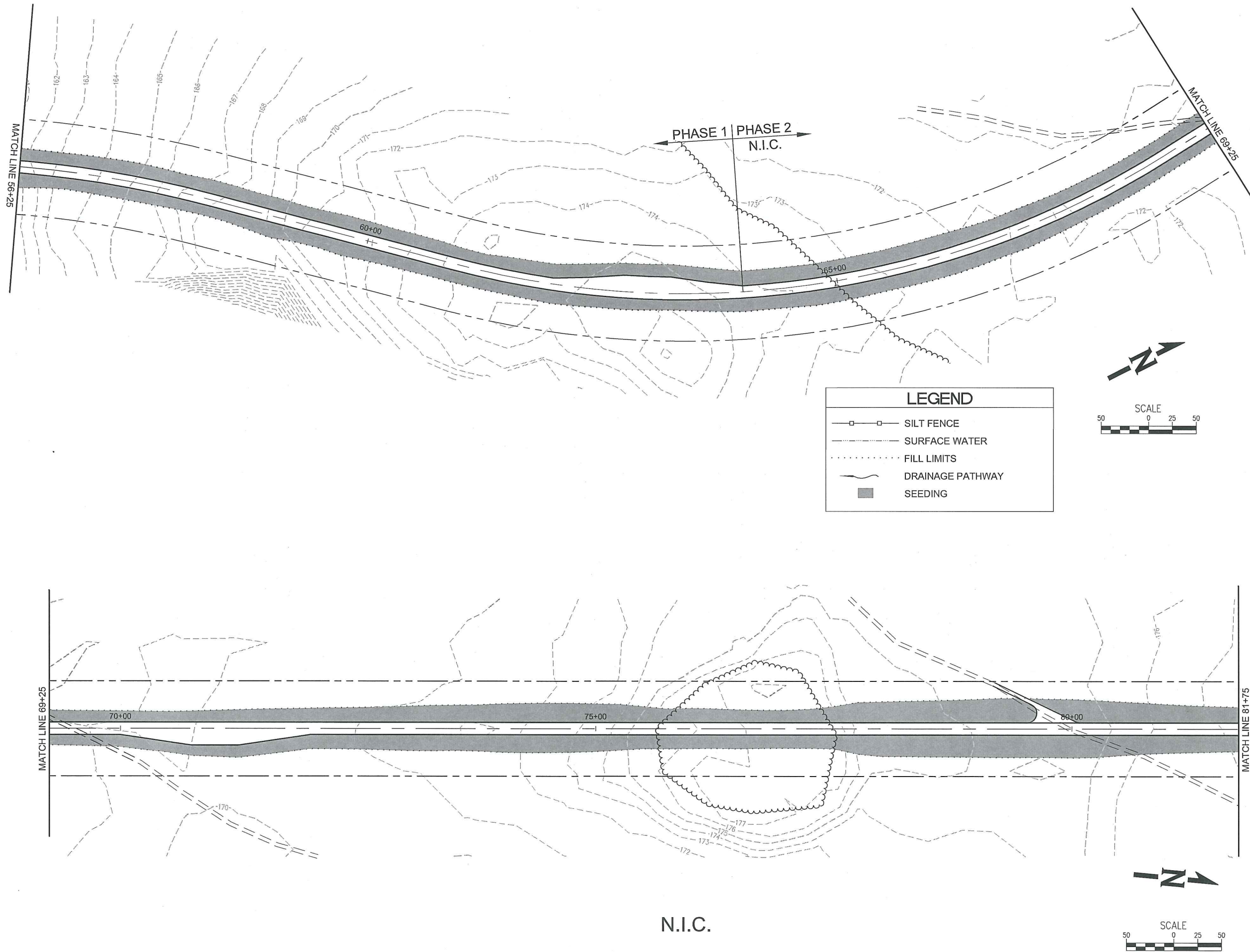
REVISIONS	
NO.	BY
1	JRH
REMARKS	
REDUCED ROAD WIDTH	



**WHPacific**  
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com



[DATE: 2/20/2014 2:34 PM] [AUTHOR: jjonson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Manilaq Association\524412\Design Drawings\Civil\524412-C-Q1-Q3 ESCP.dwg] [LAYOUT: 524412-C-Q3 - ESCP]



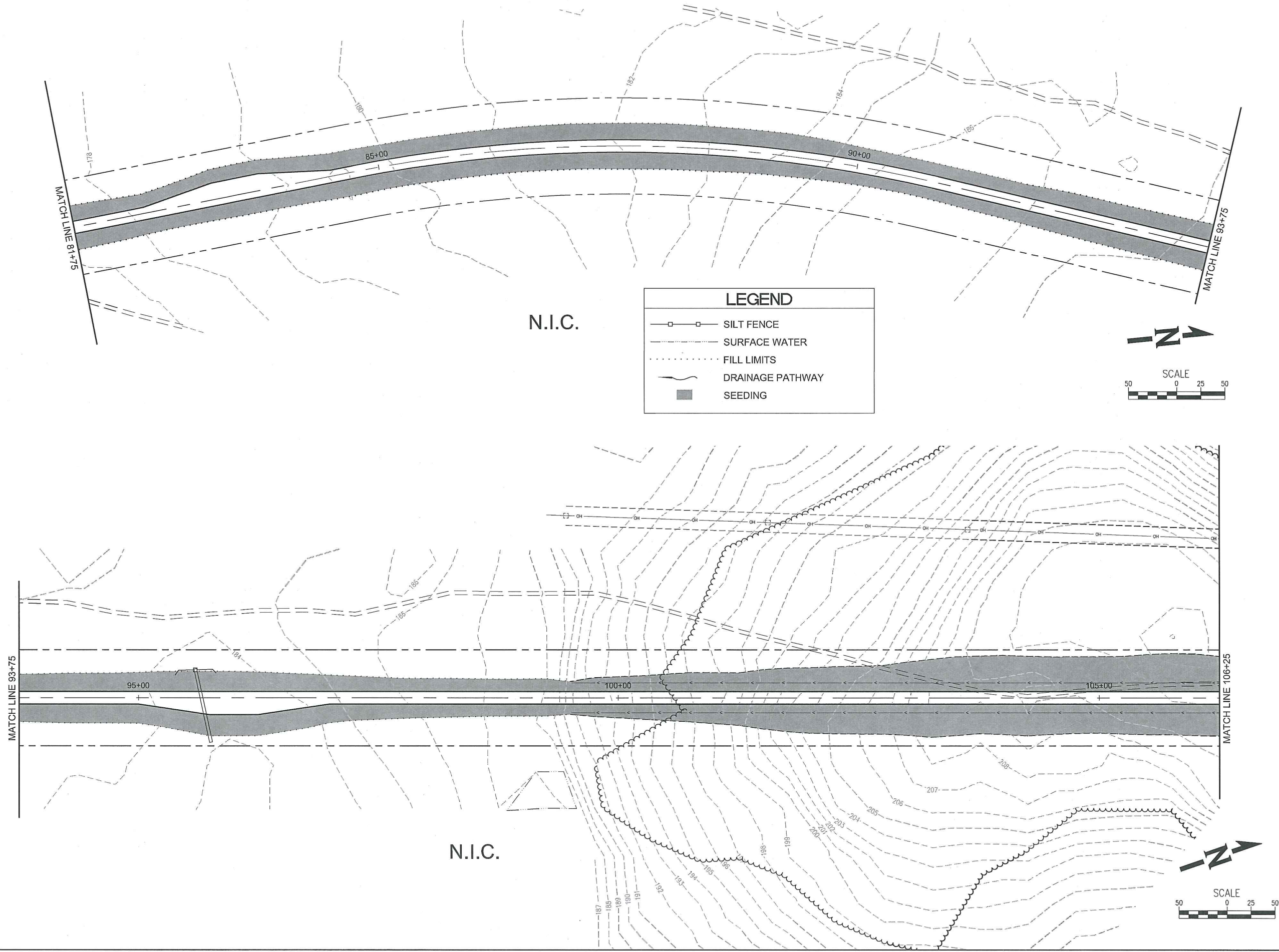
REVISIONS		NO.	BY	DATE	REMARKS
1		JRH	2/19/14	REDUCED ROAD WIDTH	

SHEET INFO		JRH	JRH	ELM	ELM
DESIGNED					
DRAWN					
CHECKED					
APPROVED					
LAST EDIT					
PLOT DATE					
SUBMITTAL					

EROSION & SEDIMENT CONTROL PLAN			SCALE	1"=50'
MANILAQ ASSOCIATION SHUNGNAL LANDFILL ROAD				
PROJECT NUMBER 524412	DRAWING FILE NAME 524412-C-Q1-Q3 ESCP			



[DATE: 2/20/2014 2:38 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Manilaq Association\524412\Design Drawings\Civil\524412-C-Q4-Q6 ESCP.dwg] [LAYOUT: 524412-C-Q4 - ESCP]



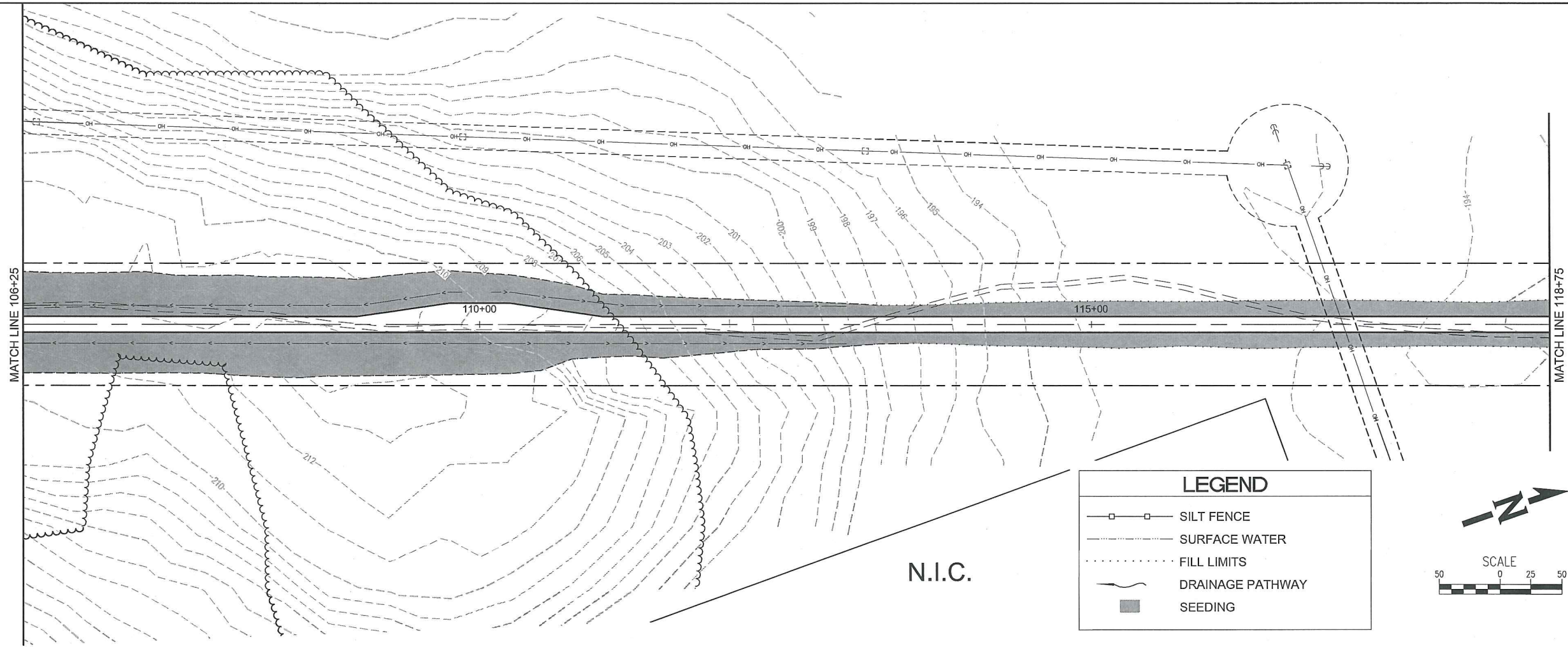
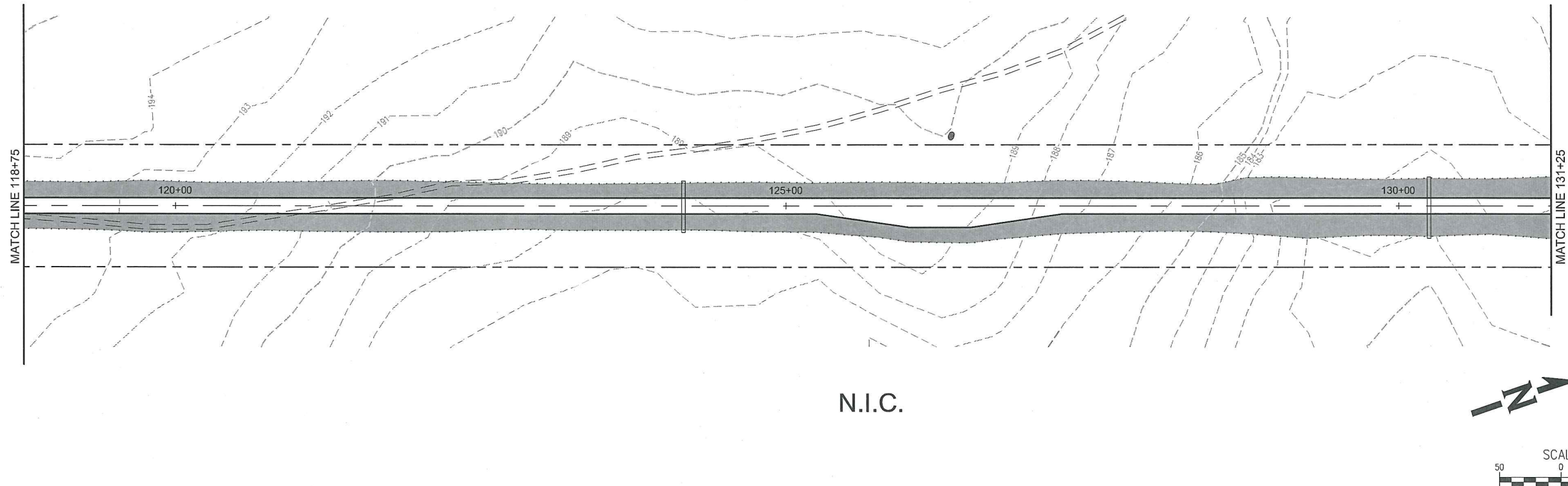
SHEET INFO		DESIGNED		DRAWN		CHECKED		APPROVED		LAST EDIT		PLOT DATE		SUBMITTAL	
NO.	BY	JRH	JRH	JRH	ELM	JRH	ELM	JRH	ELM	2/20/2014	2/20/2014	2/20/2014	2/20/2014	2/20/2014	2/20/2014

REVISIONS		NO.		BY		DATE		REMARKS	
1	JRH	2/19/14	JRH	2/19/14	JRH	2/19/14	JRH	2/19/14	REDUCED ROAD WIDTH





[DATE: 2/20/2014 2:39 PM] [AUTHOR: jhanson] [PLOTTER: CutePDF Writer] [STYLE: WHP-Standard.ctb]  
[PATH: P:\Montilq Association\524412\Design Drawings\Civil\524412-C-Q4-Q6 ESCP.dwg] [LAYOUT: 524412-C-Q5 - ESCP]



**LEGEND**

- SILT FENCE
- SURFACE WATER
- FILL LIMITS
- DRAINAGE PATHWAY
- SEEDING

**EROSION & SEDIMENT CONTROL PLAN**

MANILAQ ASSOCIATION  
SHUNGNAK LANDFILL ROAD

PROJECT NUMBER 524412  
DRAWING FILE NAME 524412-C-Q4-Q6 ESCP

SHEET NUMBER  
**Q5**  
5 of 6

SCALE 1"=50'

SHEET INFO		DESIGNED	DRAWN	CHECKED	APPROVED	LAST EDIT	PLOT DATE	SUBMITTAL
	JRH	JRH	JRH	ELM	ELM	2/20/2014	2/20/2014	

REVISIONS		NO.	BY	DATE	REMARKS
1	JRH	2/19/14			REDUCED ROAD WIDTH



**WHPacific**

300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com



N.I.C.

LEGEND	
	SILT FENCE
	SURFACE WATER
	FILL LIMITS
	DRAINAGE PATHWAY
	SEEDING



Q6  
6 of 6

EROSION & SEDIMENT CONTROL PLAN

MANILAQ ASSOCIATION  
SHUNGNAL LANDFILL ROAD

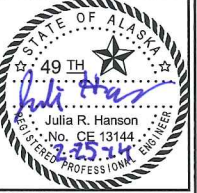
PROJECT NUMBER  
524412

DRAWING FILE NAME  
524412-C-Q4-Q6 ESCP

SCALE  
1"=50'

SHEET INFO	
DESIGNED	JRH
DRAWN	JRH
CHECKED	ELM
APPROVED	ELM
LAST EDIT	2/20/2014
PLOT DATE	2/20/2014
SUBMITTAL	

REVISIONS	
NO.	BY
1	JRH
DATE	
2/19/14	
REMARKS	
REDUCED ROAD WIDTH	



WHPacific

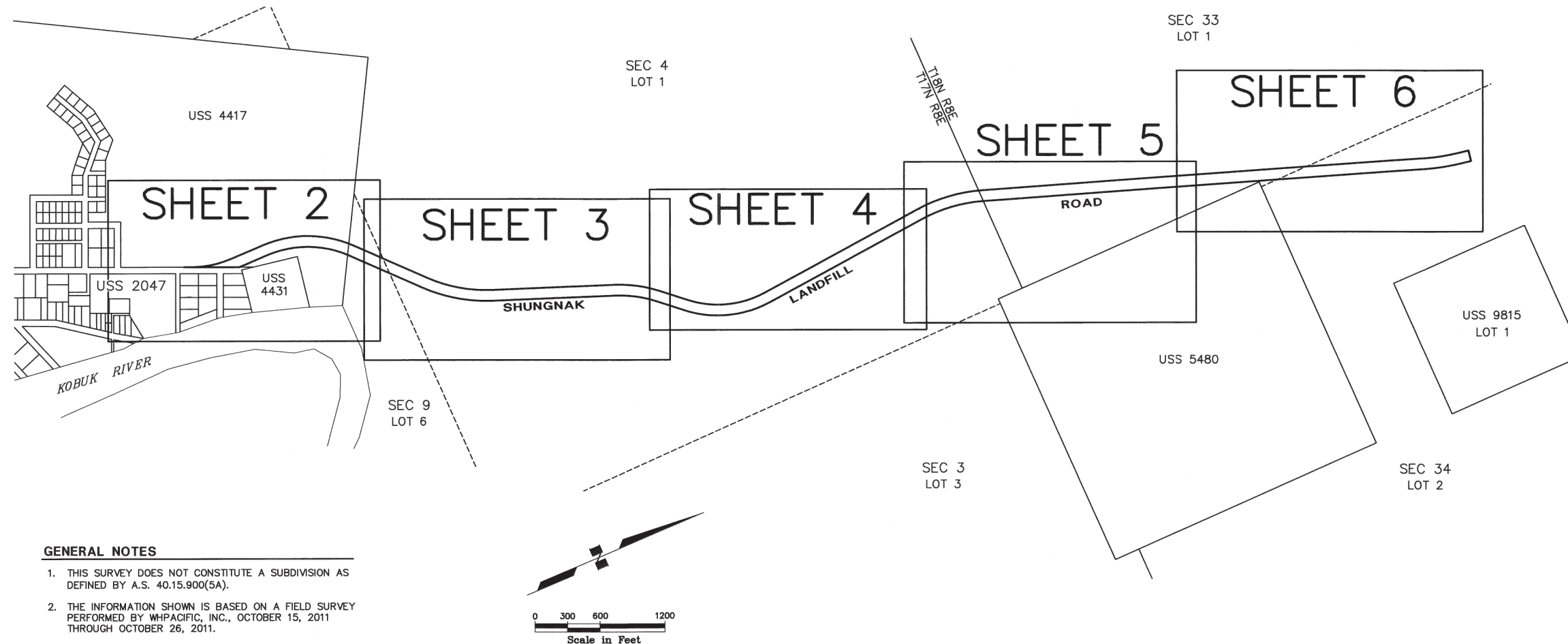
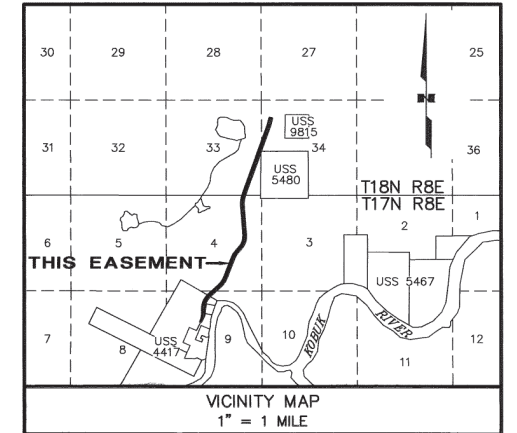
300 West 31st Avenue  
Anchorage, AK 99503  
907-339-6500 Fax 907-339-5327  
www.whpacific.com



# NATIVE VILLAGE OF SHUNGNAK

## RIGHT OF WAY EASEMENT SHUNGNAK LANDFILL ROAD : BIA ROUTE 1003

PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
BIA ROUTE 1003	2011	R1	R7



### GENERAL NOTES

1. THIS SURVEY DOES NOT CONSTITUTE A SUBDIVISION AS DEFINED BY A.S. 40.15.900(5A).
2. THE INFORMATION SHOWN IS BASED ON A FIELD SURVEY PERFORMED BY WHPACIFIC, INC., OCTOBER 15, 2011 THROUGH OCTOBER 26, 2011.

### SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR, AND THAT THIS PLAT REPRESENTS THE SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THE MONUMENTS SHOWN THEREON ACTUALLY EXIST AS LOCATED, AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT.

TALLAK D. MAAKESTAD, LS-9235  
WHPACIFIC INC.  
300 W. 31st AVE.  
ANCHORAGE, AK 99503

2/13/2012  
DATE

### BOROUGH APPROVAL CERTIFICATE

THE NORTHWEST ARCTIC BOROUGH HERBY APPROVES THE EASEMENT SHOWN HEREON.

NAME: Thomas Okleasik  
TITLE: Planning Director

4/26/2012  
DATE

BY APPROVAL OF THE PLAT, THE NORTHWEST ARCTIC BOROUGH HERBY ACCEPTS FOR PUBLIC USES AND FOR PUBLIC PURPOSES THE RIGHT-OF-WAY EASEMENT SHOWN HEREON. THE ACCEPTANCE OF LANDS FOR PUBLIC USE OR PUBLIC PURPOSE DOES NOT OBLIGATE THE PUBLIC OR GOVERNING BODY TO CONSTRUCT, OPERATE OR MAINTAIN IMPROVEMENTS.

### CERTIFICATE OF OWNERSHIP AND DEDICATION

I THE UNDERSIGNED, HEREBY CERTIFY THAT NANA REGIONAL CORPORATION IS THE OWNER OF A PORTION OF THE PROPERTY SHOWN HEREON AS RIGHT-OF-WAY EASEMENT. SAID PORTION OF LAND FALLS WITHIN U.S. PATENT NUMBERS 50-2011-0041 & 50-2011-0042, RECORDED ON DECEMBER 15, 2010, KOTZEBUE RECORDING DISTRICT, ALSO WITH U.S. PATENT NUMBER 50-2000-0260 THAT WAS RECORDED ON NOVEMBER 2, 2000, KOTZEBUE RECORDING DISTRICT. ON BEHALF OF NANA REGIONAL CORPORATION I APPROVE AND ADOPT THIS RIGHT-OF-WAY EASEMENT FOR PUBLIC USE AS SHOWN AND DESCRIBED ON THIS SURVEY.

NAME: Walter Sampson  
TITLE: V.P. Lands & Regional Affairs  
DATE: 2-14-12

NANA REGIONAL CORPORATION INC.  
P.O. BOX 49  
KOTZEBUE, ALASKA 99752

### NOTARY'S ACKNOWLEDGMENT

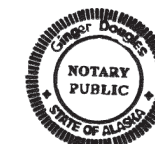
SUBSCRIBED AND SWORN TO BEFORE ME THIS

DAY OF February 14, 2012

Jeff J. Nelson  
FOR NANA REGIONAL CORPORATION INC.

NOTARY PUBLIC FOR ALASKA

MY COMMISSION EXPIRES



### CERTIFICATE OF OWNERSHIP AND DEDICATION

I THE UNDERSIGNED, HEREBY CERTIFY THAT THE CITY OF SHUNGNAK IS THE OWNER OF A PORTION OF THE PROPERTY SHOWN HEREON AS RIGHT-OF-WAY EASEMENT. SAID PORTION FALLS WITHIN LOT 4, TRACT D OF U.S. SURVEY 4417. ON BEHALF OF THE CITY OF SHUNGNAK, I APPROVE AND ADOPT THIS RIGHT-OF-WAY EASEMENT FOR PUBLIC USE AS SHOWN AND DESCRIBED ON THIS SURVEY.

NAME: Melvin Lee  
TITLE: Vice-Mayor  
DATE: Feb. 22, 2012

CITY OF SHUNGNAK  
P.O. BOX 59  
SHUNGNAK, ALASKA 99773

### NOTARY'S ACKNOWLEDGMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS

DAY OF February 22nd, 2012

Melvin Lee  
FOR CITY OF SHUNGNAK

NOTARY PUBLIC FOR ALASKA

July 15, 2014  
MY COMMISSION EXPIRES



### RIGHT-OF-WAY EASEMENT SHUNGNAK LANDFILL ROAD

LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042, &  
50-2000-0260,  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4 AND LOT 6, SEC. 9, T. 17 N., R. 8 E., &  
LOT 1, SEC. 33 AND LOT 2, SEC. 34, T. 18 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
ALSO WITHIN  
A PORTION OF LOT 4, TRACT D, U.S. SURVEY 4417  
LYING WITHIN  
T. 17 N., R. 8 E., KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
27.406 ACRES MORE OR LESS

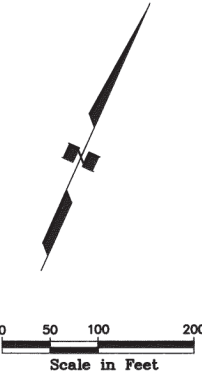
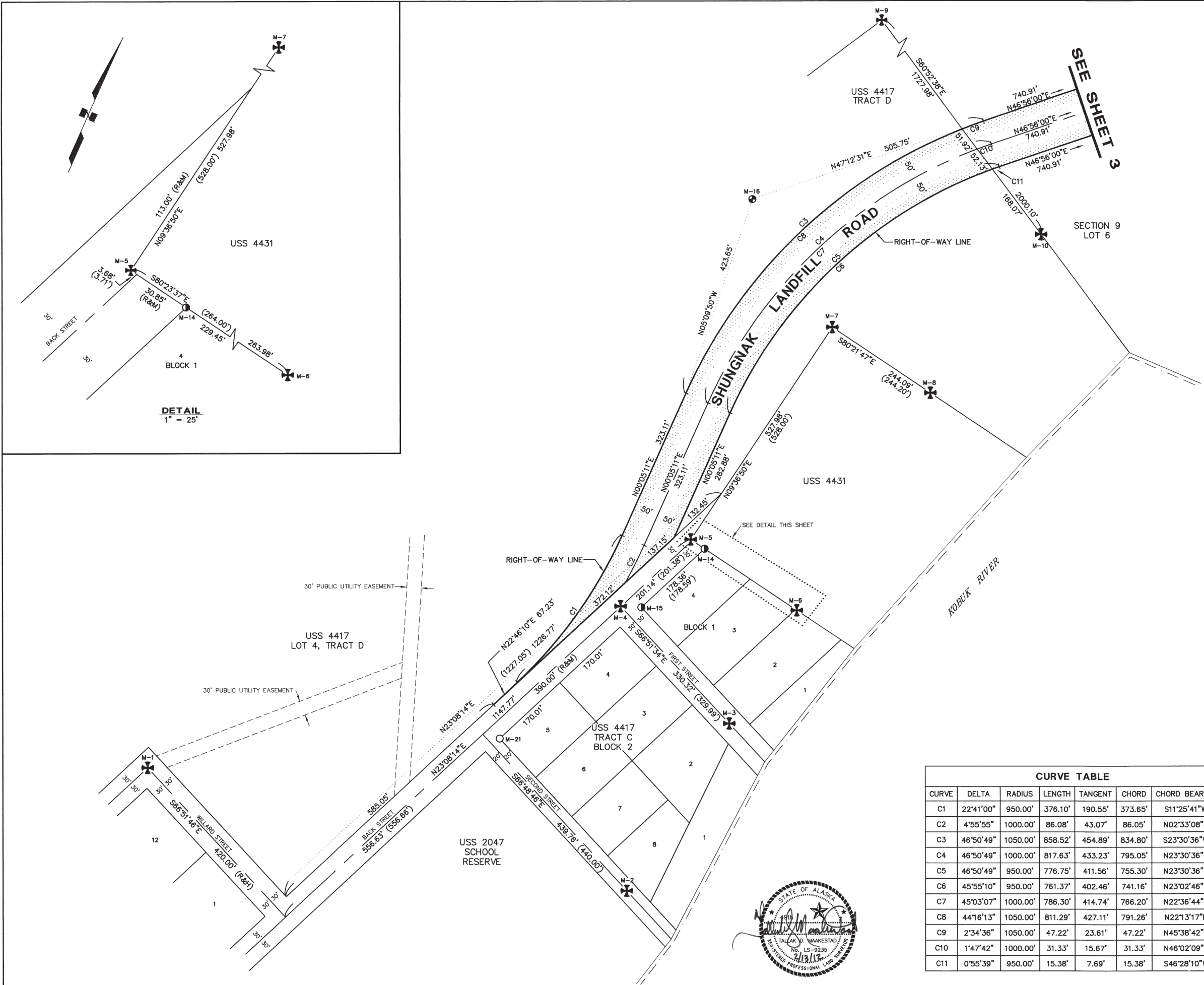
WHPACIFIC INCORPORATED  
SURVEYING & MAPPING  
300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

DATE: FEBRUARY 13, 2012  
DRAWN: CAW  
CHECKED: TDM  
SCALE: 1" = 600'  
SHEET 1 of 7  
F.D. BK.: 524412

Tax Certification: this plat is not subject to taxation at the time of filing.

Kotzebue 2012-3

PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
BIA ROUTE 1003	2011	R2	R7



**LEGEND**

- FOUND 3-1/4" BLM MONUMENT
- FOUND 5/8" REBAR
- FOUND COPPERWELD MONUMENT
- SET 3-1/4"x30" ALUMINUM CAPPED POST MONUMENT
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- LIMIT OF FILL SLOPE
- LIMIT OF CUT SLOPE
- RIGHT-OF-WAY EASEMENT
- M-# MONUMENT REFERENCE NUMBER TO DESCRIPTION DETAILS, SEE SHEET 7 OF 7
- ( ) RECORD MEASUREMENT PER BLM RECTANGULAR SURVEY PLAT OR U.S. SURVEY PLAT
- (R&H) RECORD & HELD
- (R&M) RECORD & MEASURED
- K.R.D. KOTZEBUE RECORDING DISTRICT



CURVE TABLE						
CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CHORD BEARING
C1	22°41'00"	950.00'	376.10'	190.55'	373.65'	S11°25'41"W
C2	4°55'55"	1000.00'	86.08'	43.07'	86.05'	N02°33'08"E
C3	46°50'49"	1050.00'	858.52'	454.89'	834.80'	S23°30'36"W
C4	46°50'49"	1000.00'	817.63'	433.23'	795.05'	N23°30'36"E
C5	46°50'49"	950.00'	776.75'	411.56'	755.30'	N23°30'36"E
C6	45°55'10"	950.00'	761.37'	402.46'	741.16'	N23°02'46"E
C7	45°03'07"	1000.00'	786.30'	414.74'	766.20'	N22°36'44"E
C8	44°16'13"	1050.00'	811.29'	427.11'	791.26'	N22°13'17"E
C9	2°34'36"	1050.00'	47.22'	23.61'	47.22'	N45°38'42"E
C10	1°47'42"	1000.00'	31.33'	15.67'	31.33'	N46°02'09"E
C11	0°55'39"	950.00'	15.38'	7.69'	15.38'	S46°28'10"W

RIGHT-OF-WAY EASEMENT  
**SHUNGNAK LANDFILL ROAD**  
LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042, &  
50-2000-0260,  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4 AND LOT 6, SEC. 9, T. 17 N., R. 8 E., &  
LOT 1, SEC. 33 AND LOT 2, SEC. 34, T. 18 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
ALSO WITHIN  
A PORTION OF LOT 4, TRACT D, U.S. SURVEY 4417  
LYING WITHIN  
T. 17 N., R. 8 E., KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
27.406 ACRES MORE OR LESS

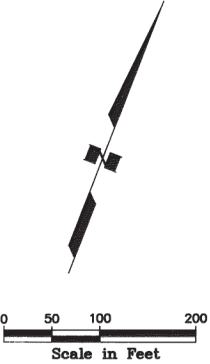
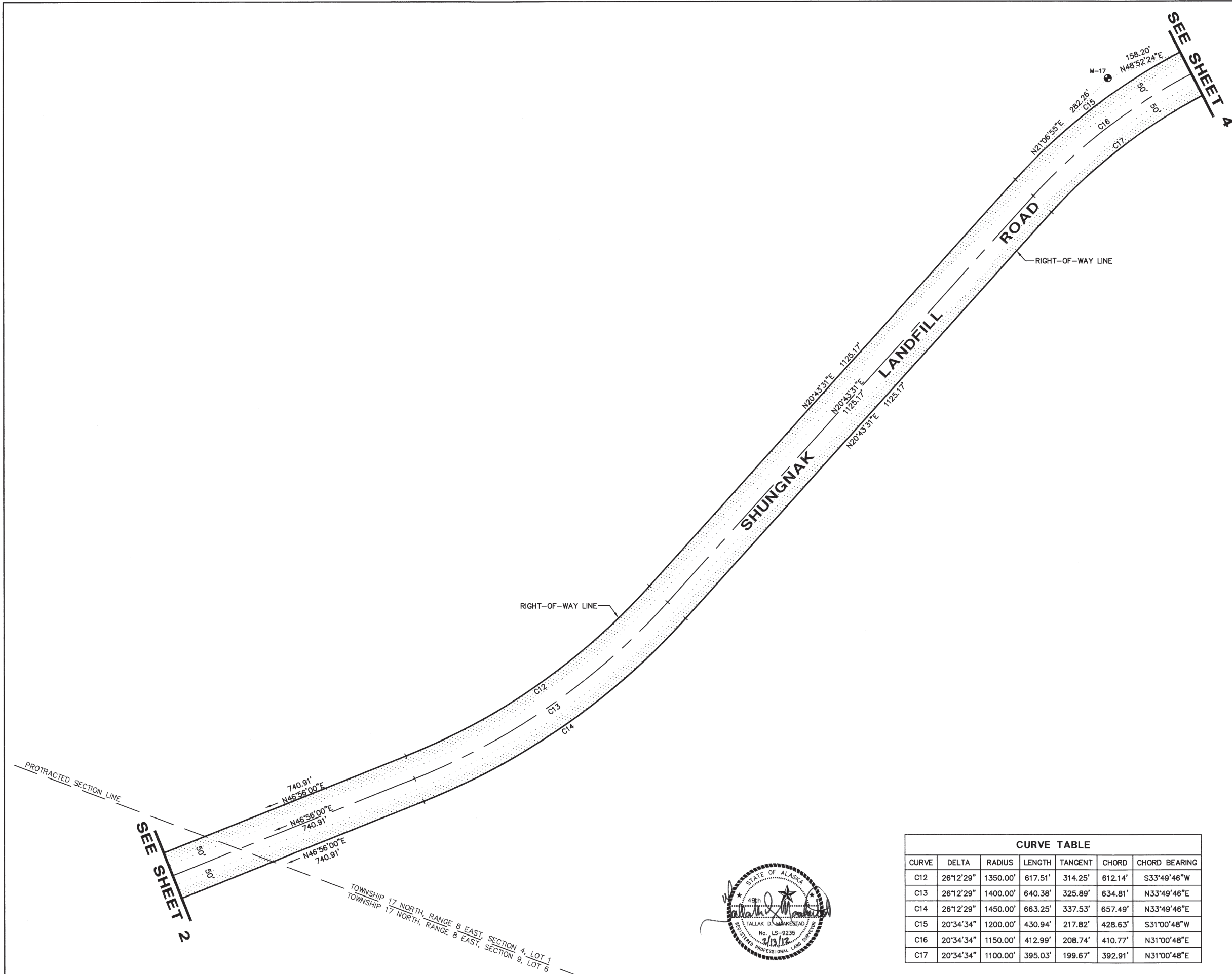
**WHPACIFIC**  
INCORPORATED  
SURVEYING & MAPPING

300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

DATE: FEBRUARY 13, 2012	SCALE: 1" = 100'
DRAWN: CAW	SHEET 2 of 7
CHECKED: TDM	F.D. BK.: 524412

Kotzebue 2012-3

PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
BIA ROUTE 1003	2011	R3	R7



**LEGEND**

- FOUND 3-1/4" BLM MONUMENT
- FOUND 5/8" REBAR
- FOUND COPPERWELD MONUMENT
- SET 3-1/4"x30" ALUMINUM CAPPED POST MONUMENT
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- LIMIT OF FILL SLOPE
- LIMIT OF CUT SLOPE
- RIGHT-OF-WAY EASEMENT
- M-# MONUMENT REFERENCE NUMBER TO DESCRIPTION DETAILS, SEE SHEET 7 OF 7
- ( ) RECORD MEASUREMENT PER BLM RECTANGULAR SURVEY PLAT OR U.S. SURVEY PLAT
- (R&H) RECORD & HELD
- (R&M) RECORD & MEASURED
- K.R.D. KOTZEBUE RECORDING DISTRICT

TYPICAL

CURVE TABLE						
CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CHORD BEARING
C12	26°12'29"	1350.00'	617.51'	314.25'	612.14'	S33°49'46"W
C13	26°12'29"	1400.00'	640.38'	325.89'	634.81'	N33°49'46"E
C14	26°12'29"	1450.00'	663.25'	337.53'	657.49'	N33°49'46"E
C15	20°34'34"	1200.00'	430.94'	217.82'	428.63'	S31°00'48"W
C16	20°34'34"	1150.00'	412.99'	208.74'	410.77'	N31°00'48"E
C17	20°34'34"	1100.00'	395.03'	199.67'	392.91'	N31°00'48"E

RIGHT-OF-WAY EASEMENT  
**SHUNGNAK LANDFILL ROAD**  
LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042, &  
50-2000-0260,  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4 AND LOT 6, SEC. 9, T. 17 N., R. 8 E., &  
LOT 1, SEC. 33 AND LOT 2, SEC. 34, T. 18 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
ALSO WITHIN  
A PORTION OF LOT 4, TRACT D, U.S. SURVEY 4417  
LYING WITHIN  
T. 17 N., R. 8 E., KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
27.406 ACRES MORE OR LESS

**WHPACIFIC INCORPORATED**  
SURVEYING & MAPPING

300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

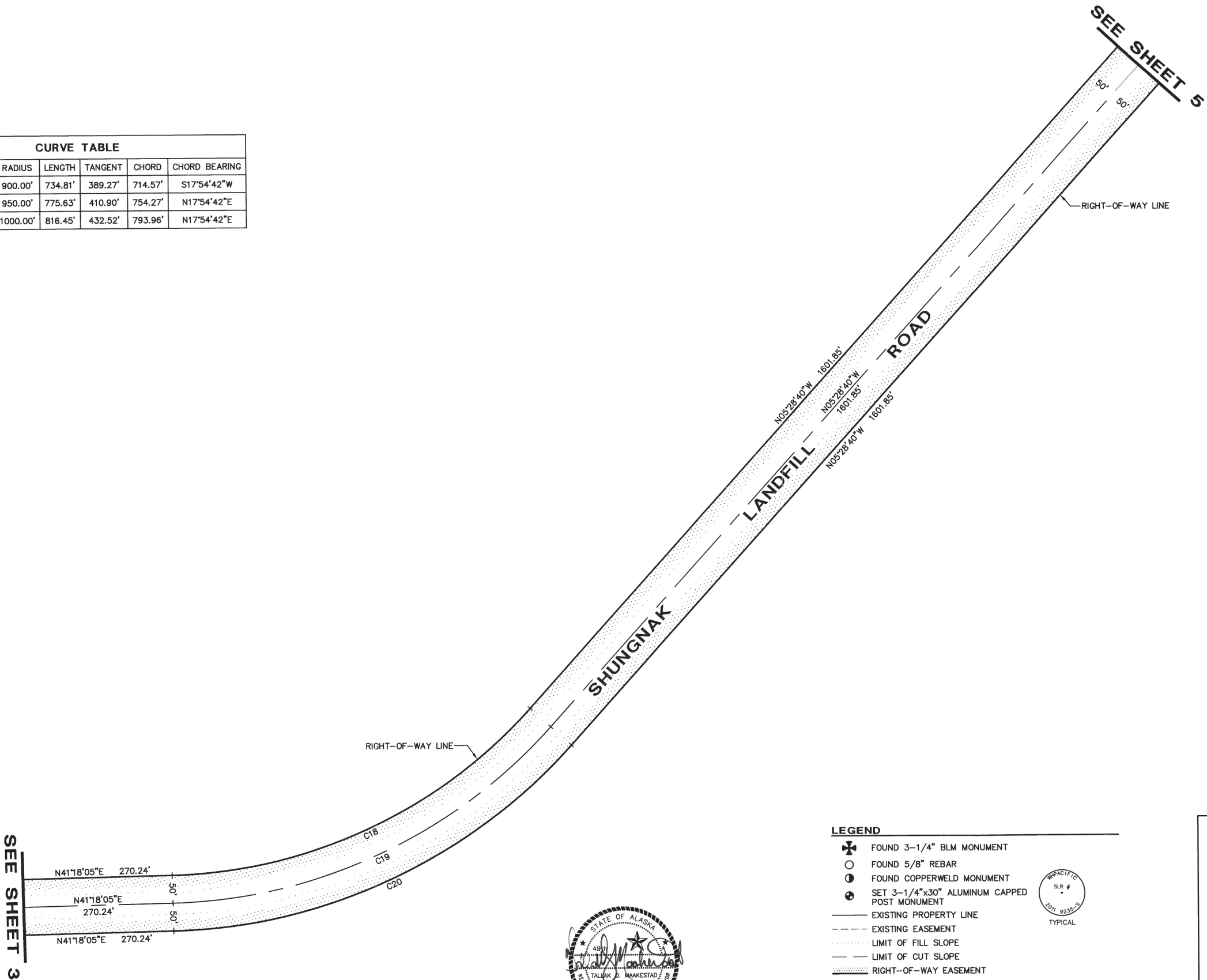
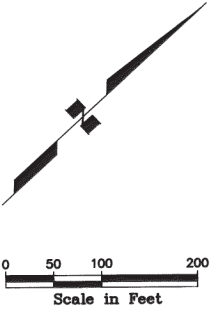
DATE: FEBRUARY 13, 2012	SCALE: 1" = 100'
DRAWN: CAW	SHEET 3 of 7
CHECKED: TDM	F.D. BK.: 524412

Kotzebue 2012-3



PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
BIA ROUTE 1003	2011	R4	R7

CURVE TABLE						
CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CHORD BEARING
C18	46°46'45"	900.00'	734.81'	389.27'	714.57'	S17°54'42"W
C19	46°46'45"	950.00'	775.63'	410.90'	754.27'	N17°54'42"E
C20	46°46'45"	1000.00'	816.45'	432.52'	793.96'	N17°54'42"E



- LEGEND**
- ✕ FOUND 3-1/4" BLM MONUMENT
  - FOUND 5/8" REBAR
  - FOUND COPPERWELD MONUMENT
  - ⊙ SET 3-1/4"x30" ALUMINUM CAPPED POST MONUMENT
  - EXISTING PROPERTY LINE
  - - - EXISTING EASEMENT
  - ..... LIMIT OF FILL SLOPE
  - LIMIT OF CUT SLOPE
  - RIGHT-OF-WAY EASEMENT
  - M-# MONUMENT REFERENCE NUMBER TO DESCRIPTION DETAILS, SEE SHEET 7 OF 7
  - ( ) RECORD MEASUREMENT PER BLM RECTANGULAR SURVEY PLAT OR U.S. SURVEY PLAT
  - (R&H) RECORD & HELD
  - (R&M) RECORD & MEASURED
  - K.R.D. KOTZEBUE RECORDING DISTRICT
- TYPICAL

RIGHT-OF-WAY EASEMENT  
**SHUNGNAK LANDFILL ROAD**  
LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042, &  
50-2000-0260,  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4 AND LOT 6, SEC. 9, T. 17 N., R. 8 E., &  
LOT 1, SEC. 33 AND LOT 2, SEC. 34, T. 18 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
ALSO WITHIN  
A PORTION OF LOT 4, TRACT D, U.S. SURVEY 4417  
LYING WITHIN  
T. 17 N., R. 8 E., KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
27.406 ACRES MORE OR LESS

**WHPACIFIC INCORPORATED**  
SURVEYING & MAPPING  
300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

DATE: FEBRUARY 13, 2012  
DRAWN: CAW  
CHECKED: TDM

SCALE: 1" = 100'  
SHEET 4 of 7  
F.D. BK.: 524412

Kotzebue 2012-3

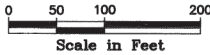




PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
BIA ROUTE 1003	2011	R6	R7

CURVE TABLE						
CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CHORD BEARING
C24	9°28'04"	1950.00'	322.22'	161.48'	321.86'	S14°18'20"W
C25	9°28'04"	2000.00'	330.48'	165.62'	330.11'	N14°18'20"E
C26	9°28'04"	2050.00'	338.75'	169.76'	338.36'	N14°18'20"E

M-19



LEGEND

- FOUND 3-1/4" BLM MONUMENT
- FOUND 5/8" REBAR
- FOUND COPPERWELD MONUMENT
- SET 3-1/4"x30" ALUMINUM CAPPED POST MONUMENT
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- LIMIT OF FILL SLOPE
- LIMIT OF CUT SLOPE
- RIGHT-OF-WAY EASEMENT
- M-# MONUMENT REFERENCE NUMBER TO DESCRIPTION DETAILS, SEE SHEET 7 OF 7
- ( ) RECORD MEASUREMENT PER BLM RECTANGULAR SURVEY PLAT OR U.S. SURVEY PLAT
- (R&H) RECORD & HELD
- (R&M) RECORD & MEASURED
- K.R.D. KOTZEBUE RECORDING DISTRICT



RIGHT-OF-WAY EASEMENT  
SHUNGNAK LANDFILL ROAD

LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042, &  
50-2000-0260,  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4 AND LOT 6, SEC. 9, T. 17 N., R. 8 E., &  
LOT 1, SEC. 33 AND LOT 2, SEC. 34, T. 18 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
ALSO WITHIN  
A PORTION OF LOT 4, TRACT D, U.S. SURVEY 4417  
LYING WITHIN  
T. 17 N., R. 8 E., KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
27.406 ACRES MORE OR LESS

**WHPacific**  
**INCORPORATED**  
SURVEYING & MAPPING

300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

DATE: FEBRUARY 13, 2012	SCALE: 1" = 100'
DRAWN: CAW	SHEET 6 of 7
CHECKED: TDM	F.D. BK.: 524412



Kotzebue 202-3



MONUMENT DETAILS AND DESCRIPTIONS



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT IS 0.2' ABOVE GRADE, FIRMLY SET, CAP LOOSE - HELD.

M-2



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT IS FLUSH WITH GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-3



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT IS 0.1' BELOW GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-4



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT WAS LEANING WEST, PLUMBED AND FIRMED UP TO 0.3' ABOVE GRADE. MONUMENT IS N80°59'07" 0.84' FROM COMPUTED CENTERLINE POSITION - NOT HELD.

M-5



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" IRON POST. THE MONUMENT WAS LEANING EAST, PLUMBED AND FIRMED UP TO 1.2' BELOW GRADE - HELD.

M-6



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT IS 0.2' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-7



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" IRON POST. THE MONUMENT IS 0.5' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT IS 0.3' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-8



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT WAS LEANING WEST, PLUMBED AND FIRMED UP TO 0.3' ABOVE GRADE - HELD.

M-9



FOUND A 3-1/4" DIA. BRASS CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. IRON POST. THE MONUMENT IS 0.2' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-10



FOUND A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 5/8" DIA. ALUMINUM ROD. THE MONUMENT IS 1.0' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-11



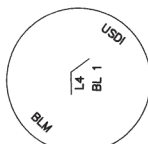
FOUND A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. ALUMINUM POST. THE MONUMENT IS 0.7' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-12



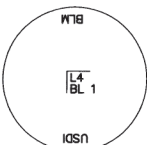
FOUND A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 2-1/2" DIA. ALUMINUM POST. THE MONUMENT IS 0.2' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-13



FOUND A COPPERWELD WITH A 2" CAP STAMPED AS SHOWN, ON A 5/8" ROD. THE MONUMENT WAS 1.5' ABOVE GRADE, POUNDED DOWN TO 0.6' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION. MONUMENT IS S74°52'10"W 0.17' FROM COMPUTED POSITION - NOT HELD.

M-14



FOUND A COPPERWELD WITH A 2" CAP STAMPED AS SHOWN, ON A 5/8" ROD. THE MONUMENT IS 1.1' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-15



SET A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 2-1/2" X 26" ALUMINUM POST. SET FIRMLY AT 0.5' BELOW GRADE WITH MAGNET INSIDE AND CARSONITE POST 0.4' WEST.

M-16



SET A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 2-1/2" X 26" ALUMINUM POST. SET FIRMLY 0.2' BELOW GRADE WITH MAGNET INSIDE AND CARSONITE POST 0.4' NORTHWEST.

M-17



SET A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 2-1/2" X 26" ALUMINUM POST. SET FIRMLY 0.5' BELOW GRADE WITH MAGNET INSIDE AND CARSONITE POST 0.5' WEST.

M-18



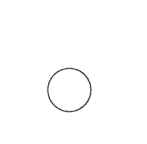
SET A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 2-1/2" X 26" ALUMINUM POST. SET FIRMLY AT 0.5' BELOW GRADE WITH MAGNET INSIDE AND CARSONITE POST 0.4' WEST.

M-19



FOUND A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 5/8" DIA. ALUMINUM ROD. THE MONUMENT IS 2.9' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD.

M-20



FOUND A 5/8" REBAR, NO CAP, LEANING EASTERLY, S66°48'46"E 0.22' FROM COMPUTED POSITION - HELD FOR NORTHERLY LINE OF SECOND STREET ONLY.

M-21

GENERAL NOTES

- EASEMENTS OF RECORD OTHER THAN THOSE SHOWN ON FAIRBANKS TITLE AGENCY "CERTIFICATE TO PLAT", ORDER NO. FTA76817, DATED DECEMBER 6, 2011, ARE NOT SHOWN HEREON.

AREA COORDINATE SYSTEM - SHUNGNAK LANDFILL ROAD

HORIZONTAL CONTROL

THE PROJECT COORDINATE SYSTEM IS A LOCAL SURFACE GRID COORDINATE SYSTEM IN US SURVEY FEET.

THE BASIS OF COORDINATES IS A 3-1/4" ALUMINUM CAP ON A 2-1/2" ALUMINUM POST SET 0.5' BELOW GRADE STAMPED WITH THE FOLLOWING: "WHPACIFIC, SLR-1, 9235-S, 2011". THE GEODETIC POSITION OF SAID MONUMENT WAS ESTABLISHED BY AVERAGING THE OPUS VALUES OF FOUR INDEPENDENT 4 TO 9-HOUR STATIC GPS OBSERVATIONS. THE OPUS SOLUTIONS WERE BASED ON NGS CORS GPS STATIONS: KOTZEBUE WAAS CORS ARP (OTZ1), PID DK4099, BUCKLAND AK2007 CORS ARP (AC07), PID DL6684, KOTZEBUE\_AK2007 CORS ARP (AB18), PID DL6675, KOBUK VALLAK20047 (AB27), PID DL6435. SAID BASIS OF COORDINATES HAS THE FOLLOWING COORDINATES:

NAD83(2011)(EPOCH 2010.0000) GEODETIC COORDINATES (AVERAGED POSITION):  
LAT.= 66 DEGREES 53 MINUTES 36.52302 SECONDS NORTH,  
LONG.= 157 DEGREES 08 MINUTES 11.19424 SECONDS WEST,  
ELLIPSOID HEIGHT = 168.95 US FEET  
ORTHOMETRIC HEIGHT = 153.71 US FEET (NAVD88/GEIOD09)

NAD83(2011)(EPOCH 2010.0000) ASPC ZONE 6 COORDINATES (PER OPUS REPORT):  
4,713,497.7690 N, 1,764,524.7901 E, US Feet

PROJECT LOCAL COORDINATES: 50,000.0000 N, 70,000.0000 E, US Feet;

CONVERSION FROM ALASKA STATE PLANE ZONE 6, NAD83(2011)(EPOCH 2010.0000) US FEET TO LOCAL US FEET:

- SCALE STATE PLANE COORDINATES USING 100000000/99990945 (Base point 0,0)
- TRANSLATE RESULTING COORDINATES USING:  
-4,663,924.61487 N, -1,694,684.58229 E

CONVERSION FROM LOCAL US FEET TO STATE PLANE, ZONE 6, NAD83(2011)(EPOCH 2010.0000) US FEET:

- TRANSLATE RESULTING COORDINATES USING:  
+4,663,924.61487 N, +1,694,684.58229 E
- SCALE RESULTING COORDINATES USING 0.99990945 (Base point 0,0)

THE BEARINGS FOR THIS PROJECT ARE ALASKA STATE PLANE ZONE 6 GRID BEARINGS BASED UPON GPS OBSERVATIONS.

LOCAL COORDINATES - SHUNGNAK LANDFILL ROAD

POINT	NORTHING	EASTING	DESCRIPTION
M-1	48414.3975'	69337.2855'	FND 3-1/4" BRASS CAP MONUMENT
M-2	48588.0689'	70346.4630'	FND 3-1/4" BRASS CAP MONUMENT
M-3	48990.0402'	70399.2107'	FND 3-1/4" BRASS CAP MONUMENT
M-4	49119.9835'	70094.6391'	FND 3-1/4" BRASS CAP MONUMENT
M-5	49305.4252'	70170.8757'	FND 3-1/4" BRASS CAP MONUMENT
M-6	49261.3724'	70431.1578'	FND 3-1/4" BRASS CAP MONUMENT
M-7	49825.9949'	70259.0523'	FND 3-1/4" BRASS CAP MONUMENT
M-8	49785.1327'	70499.7005'	FND 3-1/4" BRASS CAP MONUMENT
M-9	51151.5483'	68827.8465'	FND 3-1/4" BRASS CAP MONUMENT
M-10	50178.1308'	70575.0917'	FND 3-1/4" BRASS CAP MONUMENT
M-11	55862.3012'	73170.5723'	FND 3-1/4" ALUMINUM CAP MONUMENT
M-12	55620.5021'	73174.4879'	FND 3-1/4" ALUMINUM CAP MONUMENT
M-13	58303.8971'	75769.9178'	FND 3-1/4" ALUMINUM CAP MONUMENT
M-14	49299.6185'	70204.7653'	FND COPPERWELD
M-15	49135.6492'	70134.8428'	FND COPPERWELD
M-16	50000.0000'	70000.0000'	SET 3-1/4"x30" ALUMINUM CAP MONUMENT
M-17	52673.6639'	71753.0716'	SET 3-1/4"x30" ALUMINUM CAP MONUMENT
M-18	57192.7086'	72554.4049'	SET 3-1/4"x30" ALUMINUM CAP MONUMENT
M-19	61838.9439'	73980.3505'	SET 3-1/4"x30" ALUMINUM CAP MONUMENT
M-20	55788.5349'	67938.5482'	FND 3-1/4" ALUMINUM CAP MONUMENT
M-21	48767.7123	69977.8625	FND 5/8" REBAR

RIGHT-OF-WAY EASEMENT  
SHUNGNAK LANDFILL ROAD

LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042, &  
50-2000-0260,  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4 AND LOT 6, SEC. 9, T. 17 N., R. 8 E., &  
LOT 1, SEC. 33 AND LOT 2, SEC. 34, T. 18 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
ALSO WITHIN  
A PORTION OF LOT 4, TRACT D, U.S. SURVEY 4417  
LYING WITHIN  
T. 17 N., R. 8 E., KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
27.406 ACRES MORE OR LESS

**WHPACIFIC**  
**INCORPORATED**  
SURVEYING & MAPPING

300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

DATE: FEBRUARY 13, 2012 SCALE: N/A

DRAWN: CAW SHEET 7 of 7

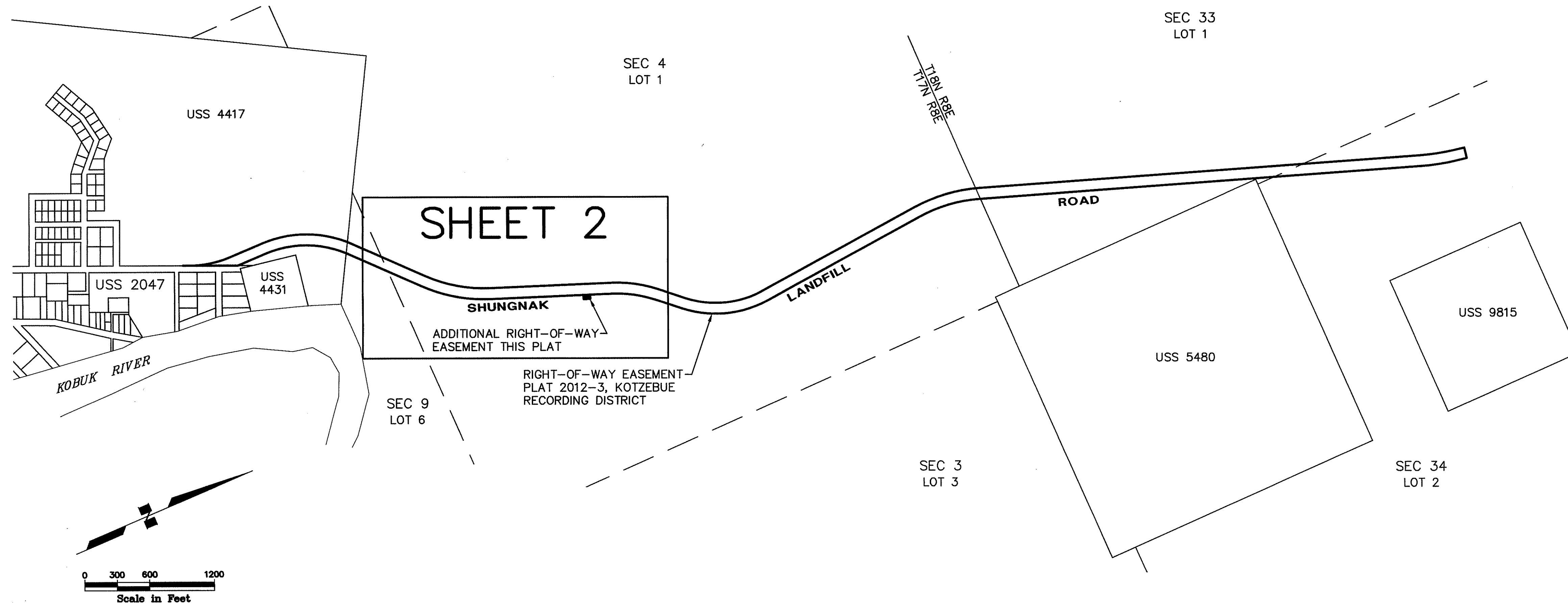
CHECKED: TDM F.D. BK.: 524412



2012-3  
Plat #  
Kotzebue  
Rec Dist  
6-4 2012  
Date  
Time 1:40 P.M.

# NATIVE VILLAGE OF SHUNGNAK

## ADDITIONAL RIGHT OF WAY EASEMENT SHUNGNAK LANDFILL ROAD : BIA ROUTE 1003



### GENERAL NOTES

1. THIS SURVEY DOES NOT CONSTITUTE A SUBDIVISION AS DEFINED BY A.S. 40.15.900(5A).
2. THE INFORMATION SHOWN IS BASED ON A FIELD SURVEY PERFORMED BY WHPACIFIC, INC., OCTOBER 15, 2011 THROUGH OCTOBER 26, 2011.
3. THIS PLAT ADOPTS ADDITIONAL RIGHT-OF-WAY EASEMENT FOR SHUNGNAK LANDFILL ROAD, RECORDED AS PLAT 2012-3, KOTZEBUE RECORDING DISTRICT. REFER TO SAID PLAT 2012-3 FOR SURVEY CONTROL AND OTHER SURVEY INFORMATION.

### BOROUGH APPROVAL CERTIFICATE

THE NORTHWEST ARCTIC BOROUGH HERBY APPROVES THE EASEMENT SHOWN HEREON.

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

BY APPROVAL OF THE PLAT, THE NORTHWEST ARCTIC BOROUGH HERBY ACCEPTS FOR PUBLIC USES AND FOR PUBLIC PURPOSES THE ADDITIONAL RIGHT-OF-WAY EASEMENT SHOWN HEREON. THE ACCEPTANCE OF LANDS FOR PUBLIC USE OR PUBLIC PURPOSE DOES NOT OBLIGATE THE PUBLIC OR GOVERNING BODY TO CONSTRUCT, OPERATE OR MAINTAIN IMPROVEMENTS.

### TAX CERTIFICATE

### SURVEYOR'S CERTIFICATE

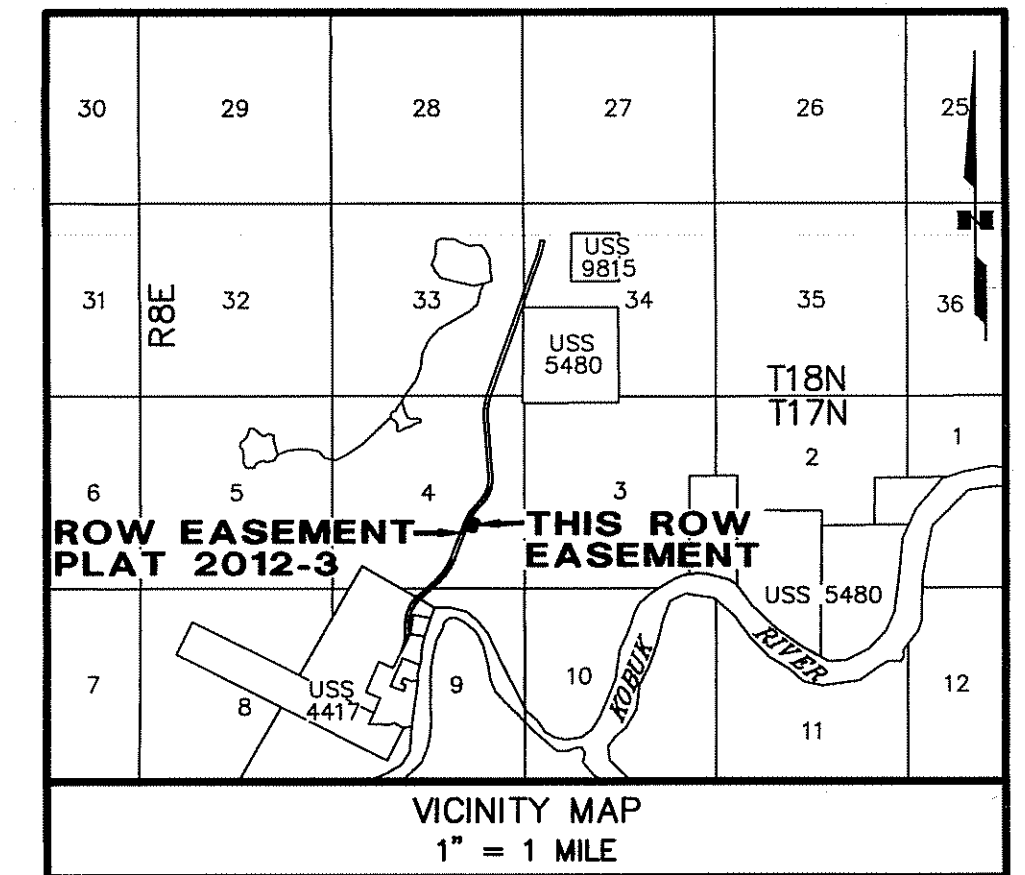
I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR, AND THAT THIS PLAT REPRESENTS THE SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THE MONUMENTS SHOWN THEREON ACTUALLY EXIST AS LOCATED, AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT.



TALLAK D. MAAKESTAD, LS-9235  
WHPACIFIC INC.  
300 W. 31st AVE.  
ANCHORAGE, AK 99503

5/20/2014  
DATE

PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
BIA ROUTE 1003	2011	R8	R9



### CERTIFICATE OF OWNERSHIP AND DEDICATION

I THE UNDERSIGNED, HEREBY CERTIFY THAT NANA REGIONAL CORPORATION IS THE OWNER OF THAT PORTION OF THE PROPERTY SHOWN HEREON AS ADDITIONAL RIGHT-OF-WAY EASEMENT. SAID PORTION OF LAND FALLS WITHIN U.S. PATENT NUMBERS 50-2011-0041 & 50-2011-0042, RECORDED ON DECEMBER 15, 2010, KOTZEBUE RECORDING DISTRICT. ON BEHALF OF NANA REGIONAL CORPORATION I APPROVE AND ADOPT THIS RIGHT-OF-WAY EASEMENT FOR PUBLIC USE AS SHOWN AND DESCRIBED ON THIS SURVEY.

NAME: Rosie Barr

TITLE: Vice President Lands DATE: 6/19/14

NANA REGIONAL CORPORATION INC.  
P.O. BOX 49  
KOTZEBUE, ALASKA 99752

### NOTARY'S ACKNOWLEDGMENT

SUBSCRIBED AND SWORN TO BEFORE ME THIS

DAY OF JUNE 19, 2014

FOR NANA REGIONAL CORPORATION INC.

Samantha Goodwin  
NOTARY PUBLIC FOR ALASKA

February 17, 2017  
MY COMMISSION EXPIRES



### ADDITIONAL RIGHT-OF-WAY EASEMENT SHUNGNAK LANDFILL ROAD

LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4, T. 17 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
0.054 ACRES MORE OR LESS

**WHPACIFIC**  
**INCORPORATED**  
SURVEYING & MAPPING

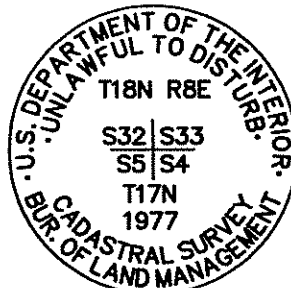
300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

DATE: MAY 20, 2014 SCALE: 1" = 600'  
DRAWN: KJB SHEET 1 of 2  
CHECKED: TDM F.D. BK.: 524412



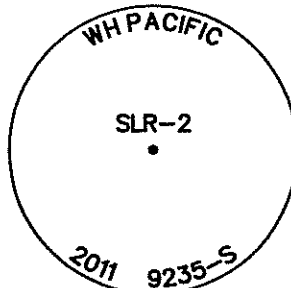
PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
BIA ROUTE 1003	2011	R9	R9

MONUMENT DETAILS AND DESCRIPTIONS



M-20

FOUND A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 5/8" DIA. ALUMINUM ROD. THE MONUMENT IS 2.9' ABOVE GRADE, FIRMLY SET IN GOOD CONDITION - HELD. SEE PLAT 2012-3, K.R.D. FOR ADDITIONAL INFORMATION.



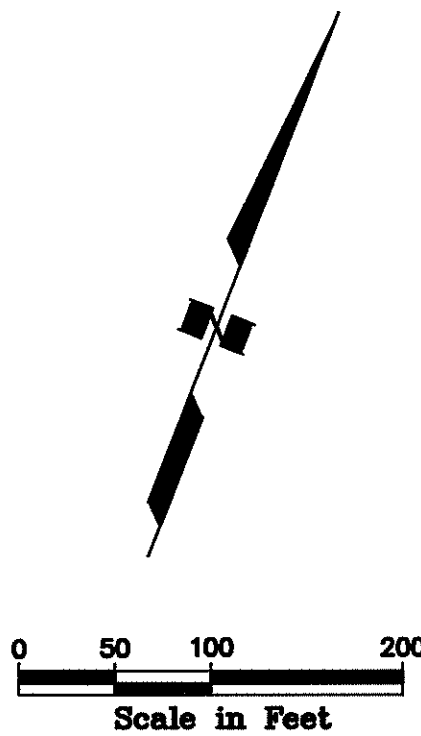
M-17

SET A 3-1/4" DIA. ALUMINUM CAP STAMPED AS SHOWN, ON A 2-1/2" X 28" ALUMINUM POST. SET FIRMLY 0.2' BELOW GRADE WITH MAGNET INSIDE AND CARSONITE POST 0.4' NORTHWEST. SEE PLAT 2012-3, K.R.D. FOR ADDITIONAL INFORMATION.

M-20, THIS SHEET & PLAT 2012-3, K.R.D.

M-17, THIS SHEET & PLAT 2012-3, K.R.D.

SEE SHEET 3, PLAT 2012-3, K.R.D.



LEGEND

- FOUND 3-1/4" BLM MONUMENT
- FOUND 5/8" REBAR
- FOUND COPPERWELD MONUMENT
- SET 3-1/4"x30" ALUMINUM CAPPED POST MONUMENT
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- LIMIT OF FILL SLOPE
- LIMIT OF CUT SLOPE
- RIGHT-OF-WAY EASEMENT PER PLAT 2012-3
- M-# MONUMENT REFERENCE NUMBER TO DESCRIPTION DETAILS, SEE SHEET 7 OF 7, PLAT 2012-3, K.R.D.
- K.R.D. KOTZEBUE RECORDING DISTRICT
- ADDITIONAL RIGHT-OF-WAY EASEMENT THIS PLAT
- ROW RIGHT-OF-WAY



CURVE TABLE						
CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CHORD BEARING
C12	26°12'29"	1350.00'	617.51'	314.25'	612.14'	S33°49'46"W
C13	26°12'29"	1400.00'	640.38'	325.89'	634.81'	N33°49'46"E
C14	26°12'29"	1450.00'	663.25'	337.53'	657.49'	N33°49'46"E
C15	20°34'34"	1200.00'	430.94'	217.82'	428.63'	S31°00'48"W
C16	20°34'34"	1150.00'	412.99'	208.74'	410.77'	N31°00'48"E
C17	20°34'34"	1100.00'	395.03'	199.67'	392.91'	N31°00'48"E

ADDITIONAL RIGHT-OF-WAY EASEMENT  
SHUNGNAK LANDFILL ROAD

LOCATED WITHIN  
A PORTION OF NANA REGIONAL CORPORATION, INC.  
PATENT NUMBERS 50-2011-0041, 50-2011-0042  
KOTZEBUE RECORDING DISTRICT,  
SECOND JUDICIAL DISTRICT, ALASKA,  
WITHIN  
LOT 1, SEC. 4, T. 17 N., R. 8 E.,  
KATEEL RIVER MERIDIAN, ALASKA  
CONTAINING  
0.054 ACRES MORE OR LESS

**WHPacific**  
INCORPORATED  
SURVEYING & MAPPING

300 WEST 31st AVENUE  
ANCHORAGE, ALASKA 99503  
PHONE (907) 339-6500  
FAX (907) 339-5327

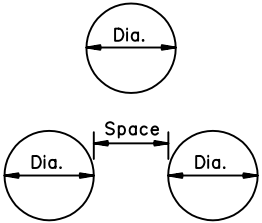
DATE: MAY 20, 2014	SCALE: 1" = 100'
DRAWN: KJB	SHEET 2 of 2
CHECKED: TDM	F.D. BK.: 524412



GENERAL NOTES:

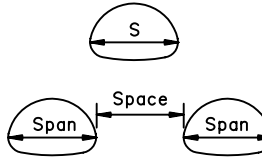
- 1. Sidefill shall be placed and compacted with care under haunches of pipe and shall be brought up evenly and simultaneously on both sides of pipe to 1 foot above the top of the full length of the pipe.
- 2. Alternate installation methods may only be used when specified or approved by the Engineer.

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.

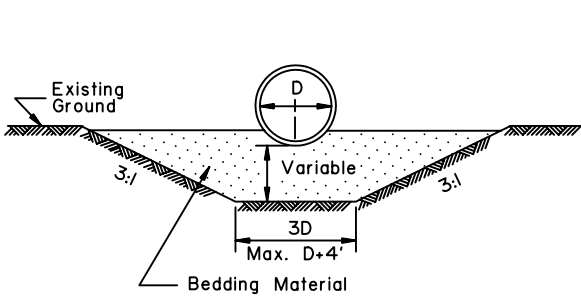
REVISIONS		
Date	Description	By
12/1/87	Delete ref. to Specs.	Gdo
4/1/93	Delete All. Arch	Gdo

State of Alaska  
Department of Transportation  
& Public Facilities

CULVERT PIPE & ARCH  
INSTALLATION DETAILS

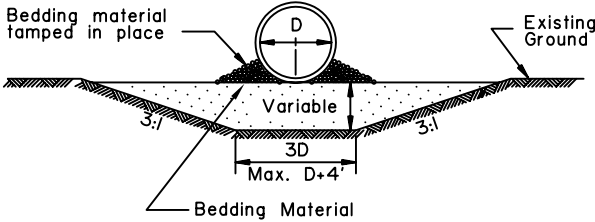


Date 7/15/82



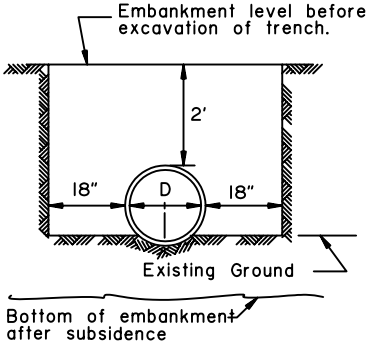
TYPE "A"  
FOUNDATION STABILIZATION

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

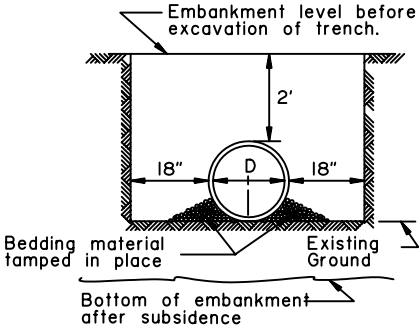


'ALTERNATE'  
TYPE "A"  
FOUNDATION STABILIZATION

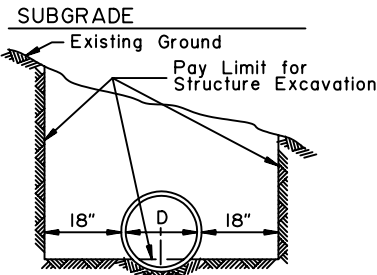
To be used in unstable areas as directed by the Engineer.



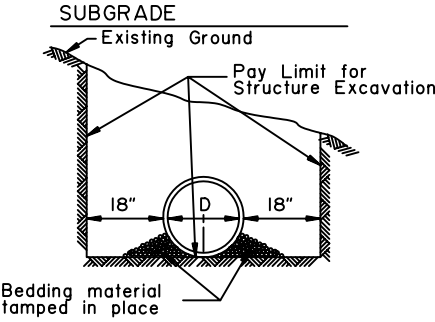
TYPE "B"



'ALTERNATE'  
TYPE "B"

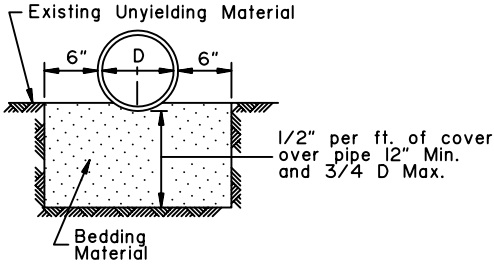


TYPE "C"



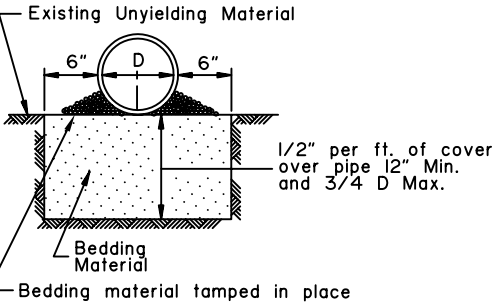
'ALTERNATE'  
TYPE "C"

SUBGRADE



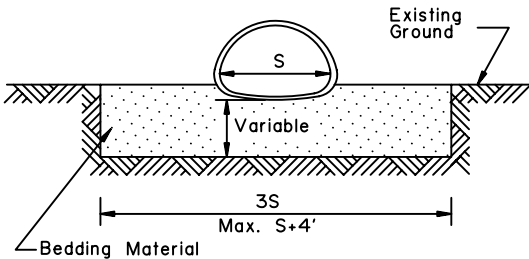
TYPE "D"  
ROCK OR UNYIELDING MATERIAL

SUBGRADE



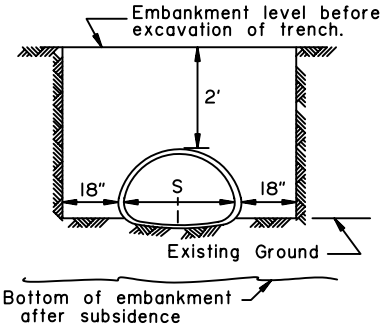
'ALTERNATE' TYPE "D"  
ROCK OR UNYIELDING MATERIAL

CULVERT PIPE

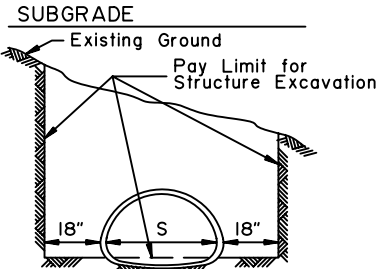


TYPE "A"  
FOUNDATION STABILIZATION

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

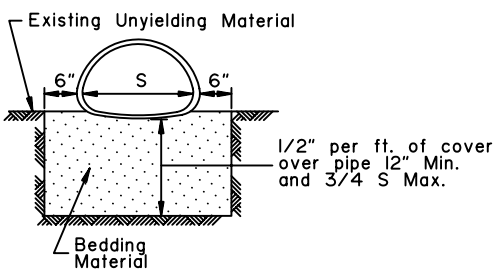


TYPE "B"



TYPE "C"

SUBGRADE



TYPE "D"  
ROCK OR UNYIELDING MATERIAL

ARCH

D-04.21

GENERAL NOTES:

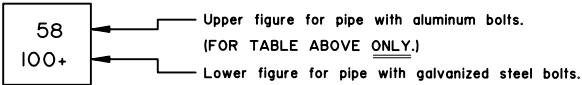
1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or in the special provisions.
3. No more than one type of pipe may 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 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)	
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	58	18	71
120			18	30	18	41	18	54	18	66
126					18	39	18	50	18	62
132					18	36	18	47	18	57
138					18	33	18	43	18	53
144							18	39	18	49
150									19	47

\*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
222	30					24	27	33	39
228	30					23	27	32	38
234	30					23	26	31	37
240	30							25	31
246	36							25	30
252	36								
258	36								
264	36								
270	36								
276	36								
282	36								
288	42								
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

49<sup>TH</sup>

Lars R. Gregovich  
CE-8065

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	24 63		24 82		
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. (In)	Max. (Ft)
18	12		12 72		12	121			
24	12	51			12	97			
30	12	41	12	58	12	81			
36	12	34	12	48	12	69			
42	12	29	12	41	12	61			
48	12	26	12	36	12	54			
54	18	23	18	32	18	47			
60	18	21	18	29	18	44			
66	18	19	18	26	18	41			
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

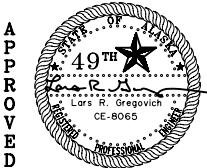
\*3/4 x 3/4 x 7 1/2 in. or 3/4 x 1 x 1 1/2 in. Corrugations

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

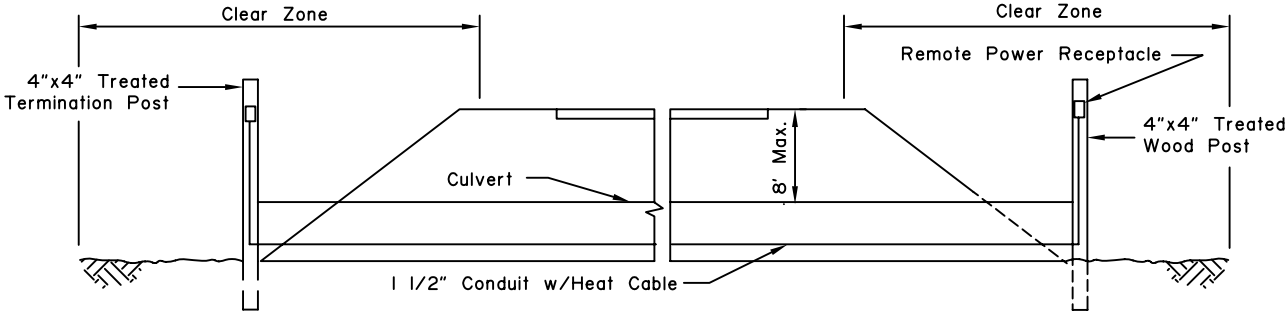


APPROVED

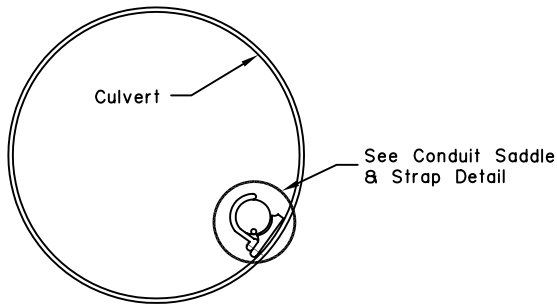
Date 10/31/03

GENERAL NOTES:

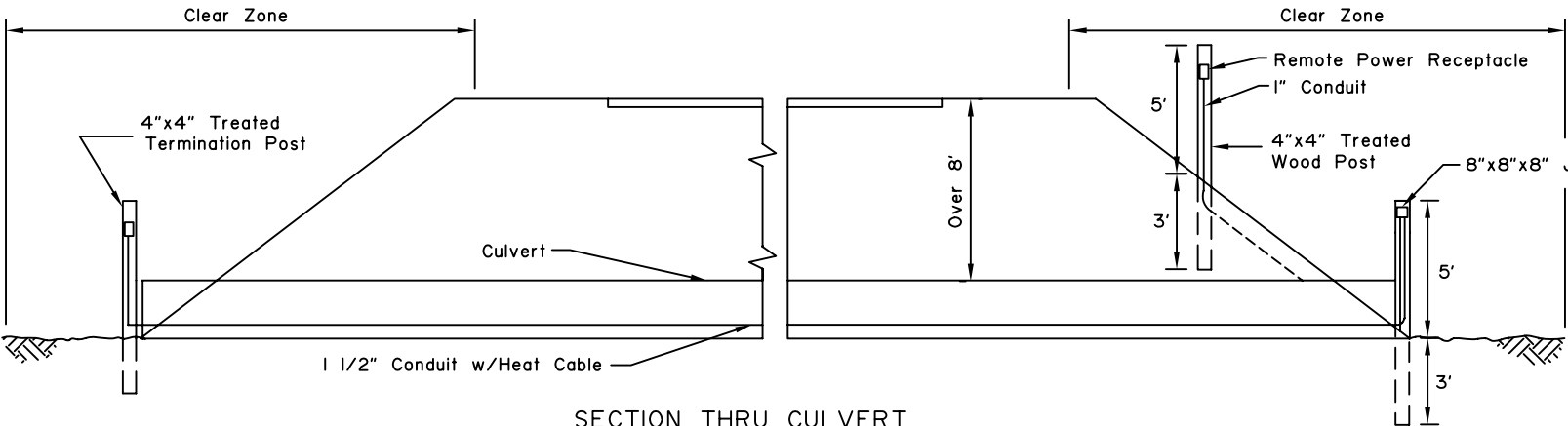
1. Type FD Cast Device Box w/green pilot light on the termination post shall be located a minimum of 6" above high water.



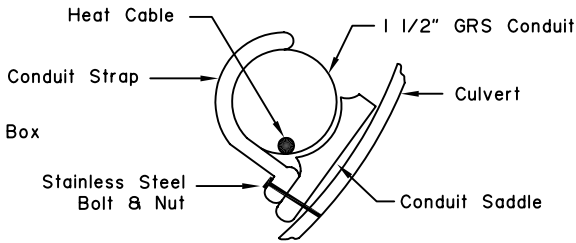
SECTION THRU CULVERT  
(Low Fill)



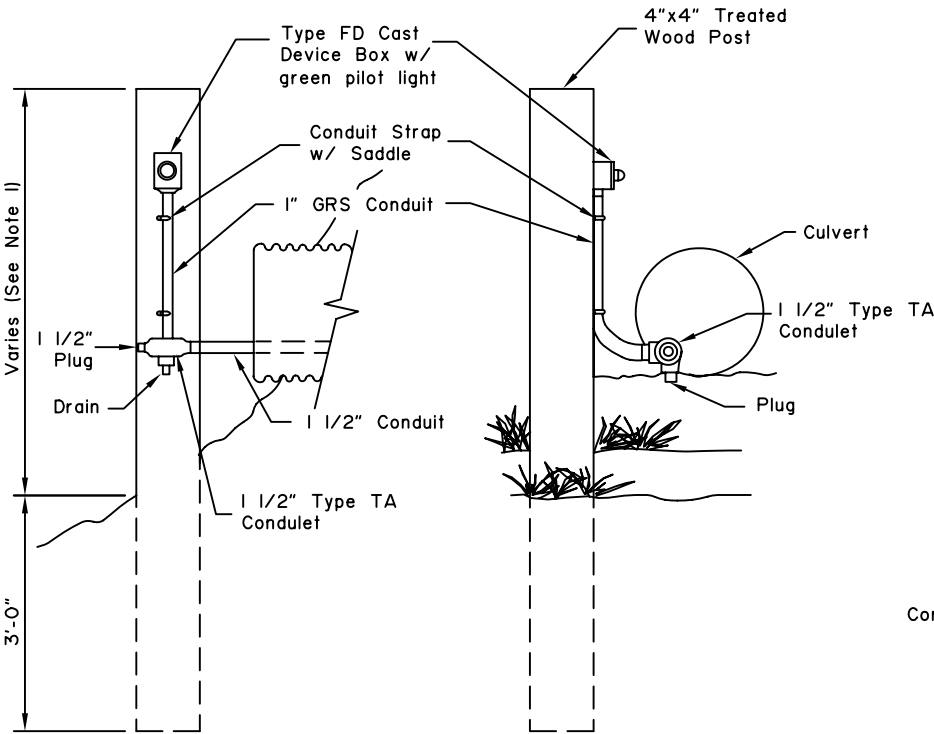
CULVERT CROSS SECTION



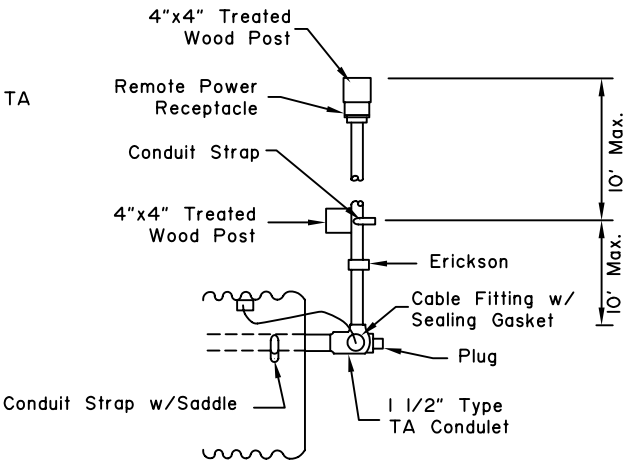
SECTION THRU CULVERT  
(High Fill)



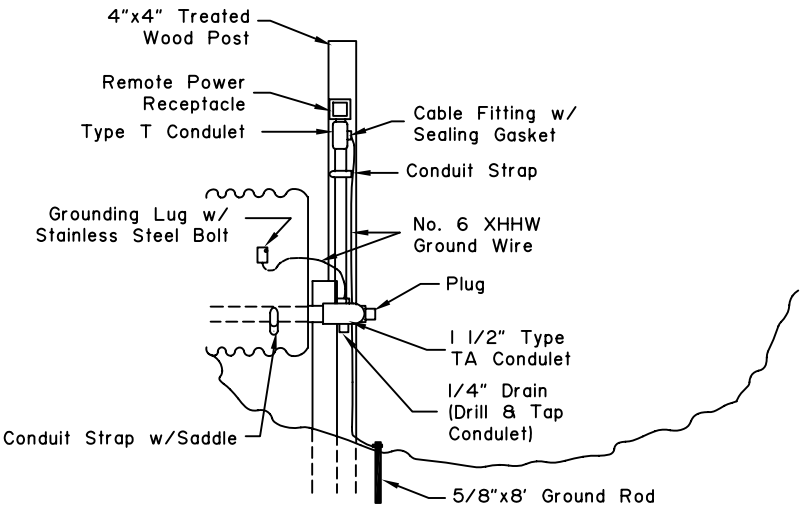
CONDUIT SADDLE &  
STRAP DETAIL



FRONT VIEW  
PROFILE VIEW  
TERMINATION POST DETAIL



PLAN VIEW



ELEVATION

REMOTE CULVERT ENTRY DETAIL

REVISIONS		
Date	Description	By
3/1/83	Revised Gen. Notes	WJF/HK
4/1/93	Modified Drawing	Gdo

State of Alaska  
Department of Transportation  
& Public Facilities

REMOTE THAW WIRE  
INSTALLATION



Date



7/15/82



GENERAL NOTES

1. See the standard specifications for the aluminum alloys that you may use for sign sheeting and wind framing members.
2. Fabricate all signs from 0.125" thick aluminum sheeting.
3. Sign fabricators may use alternates to the zee shaped framing member with approval of the engineer, if the frame manufacturer certifies their design equals or exceeds the strength of the zee shaped design.
4. Install one piece wind framing members on all signs up to 23.5' wide. Use one splice in each wind frame on all signs wider than 23.5'. Locate splices at least 18" from all posts and panel edges. Stagger splices in adjacent framing members at least 8.0' apart.
5. Attach wind framing members with rivets or with an engineer approved, double sided, high strength, adhesive tape. Clean and handle sheeting and framing members and apply tape in accordance with the tape manufacture's written instructions. Install two rivets in both ends of each framing member.
6. Use 3/16" diameter rivets conforming to aluminum alloy 6061-T6 for cold driven rivets, or aluminum alloy 6061-T43 for hot driven rivets.
7. Sign fabricators may use sign panels extruded with integral framing with approval of the engineer, if the manufacturer certifies their design equals or exceeds the strength of the 0.125" thick panel with framing attached to it.
8. Frame all signs taller than 8.0' with five wind framing members located (H-0.15)/4 spaces. If needed, make a horizontal splice at the middle wind frame.

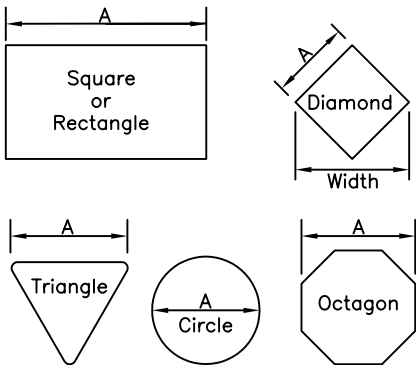
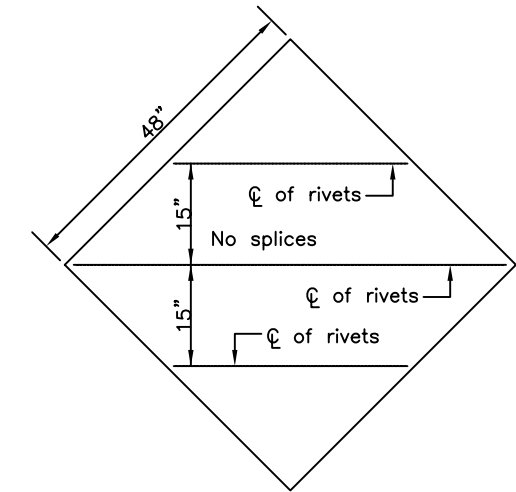
Pipe and Tube Sign Post Spacing			
Sign Width (W)	No. of Posts	Distance Between Posts	Sign Overhang
4.5 ft. to 10.0 ft.	2	0.6W	0.2W
10.5 ft. to 11.0 ft.	2	6.0 feet	Varies

W Shape Sign Post Spacing			
Sign Width (W)	No. of Posts	Distance Between Posts	Sign Overhang
11.5 ft to 13.0 ft	2	8.0 feet	Varies
13.5 ft to 20.0 ft	2	0.6W	0.2W
20.5 ft to 22.5 ft	3	8.0 feet	Varies
23.0 ft to 29.5 ft	3	0.35W	0.15W
30.0 ft to 31.5 ft	4	8.0 feet	Varies
32.0 ft to 40.0 ft	4	0.25W	0.125W

SIGN POST SPACING

SIGN POST SELECTION AND SPACING NOTES

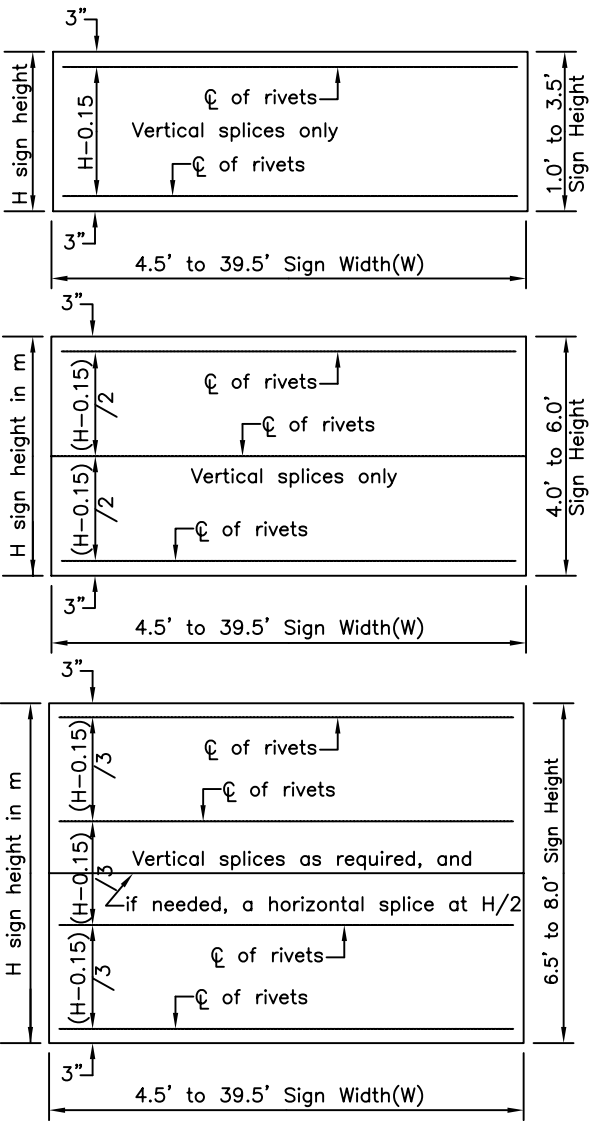
1. Use one tube (solid or perforated) to support all signs that measure 48" or less in width or diameter, diamond shaped signs that measure 48" or less on a side, Class T roadway route marker assemblies, and E5-1 gore signs. Do not use pipe posts for single post signs.
2. Install combination stop and street name signs on a 2-1/2" perforated tube.
3. Use two pipes spaced according to the Pipe and Tube Sign Post Spacing table to support signs too large for one post and not more than 11.0' in width. Tubes may be substituted for pipes provided the tube size equals the nominal pipe size.
4. Do not use perforated tubing larger than 2" for two post installations.
5. Use the number of W shape posts specified in the W Shape Sign Post table to support signs more than 11.0' in width.



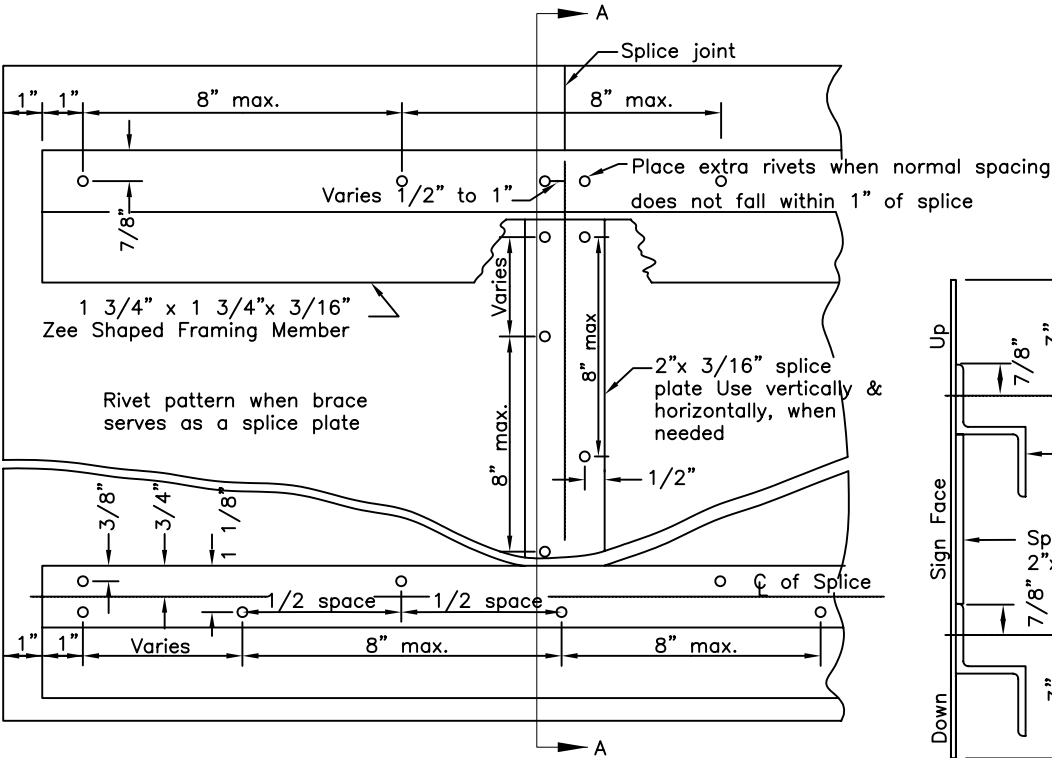
Maximum size unframed signs using 0.125" thick aluminum sheeting.	
Sign Shape	A
Squares, Shields, and Route Markers	48"
Rectangles	48"
Diamonds	48"
Triangles	48"
Rounds and Octagons	48"

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

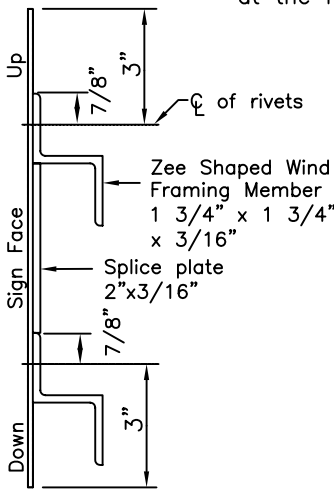
LIGHT SIGNS





WIND FRAMING LOCATIONS



RIVET DETAIL FOR ZEE SHAPED WIND FRAMING & SPLICE PLATE

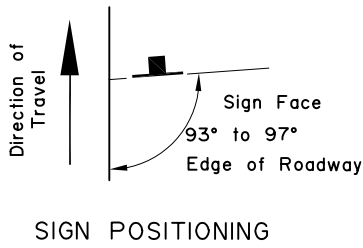
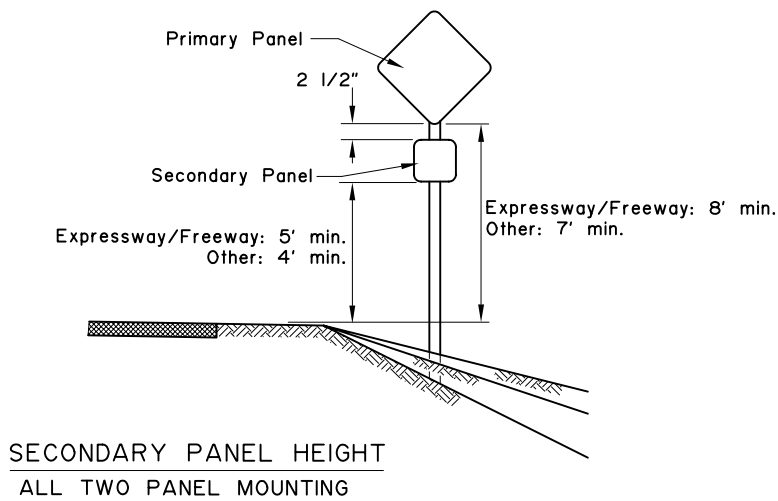
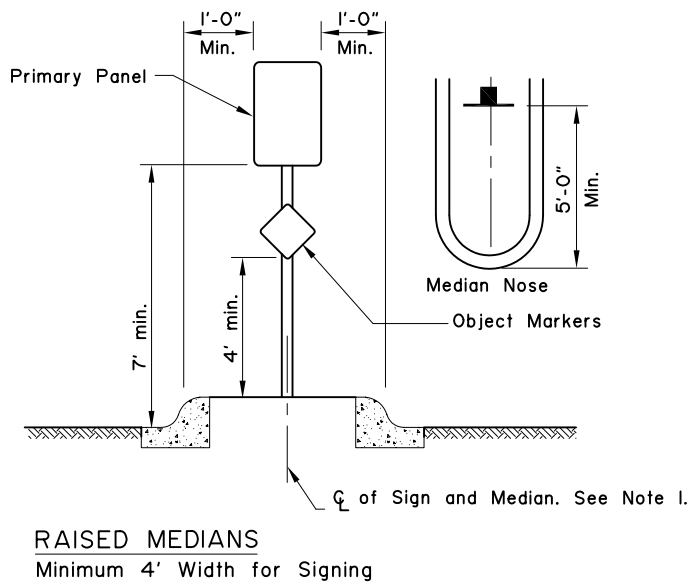
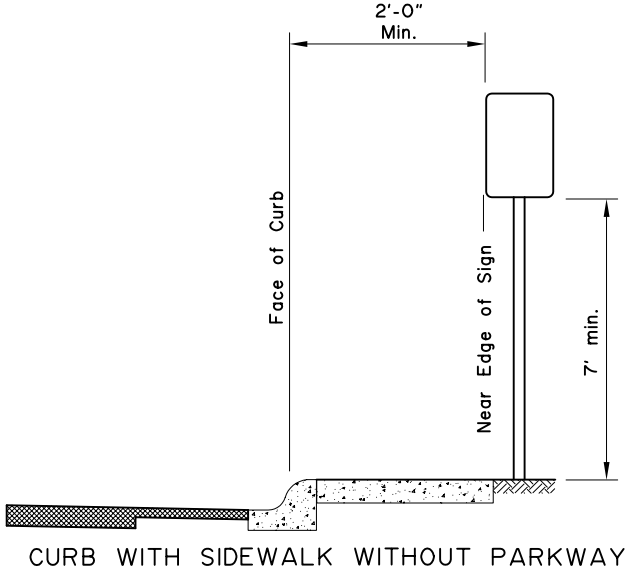
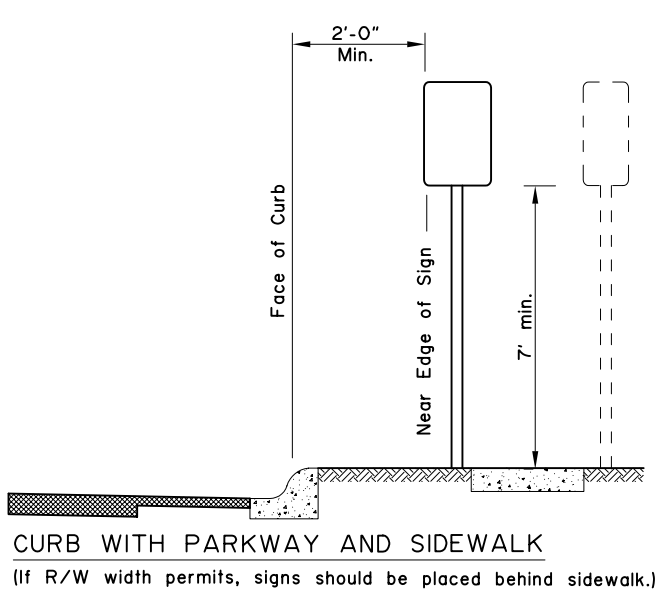
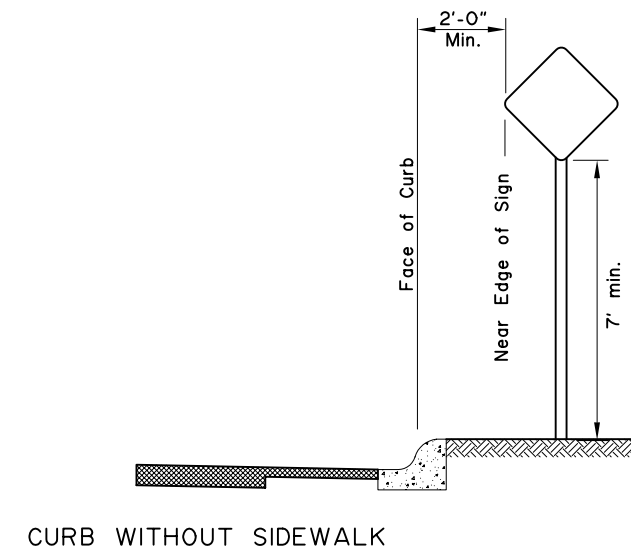
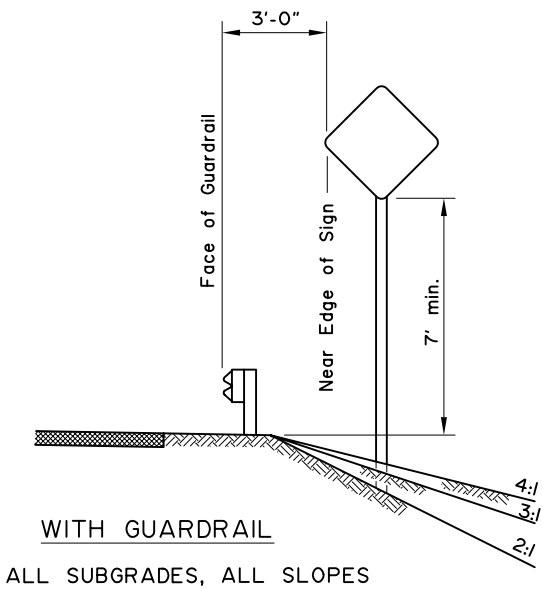
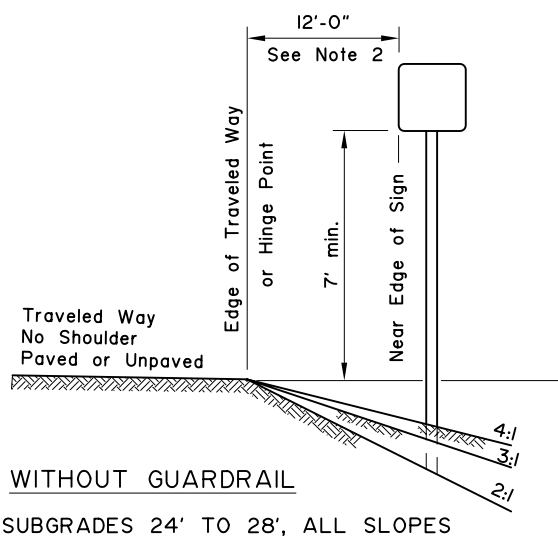
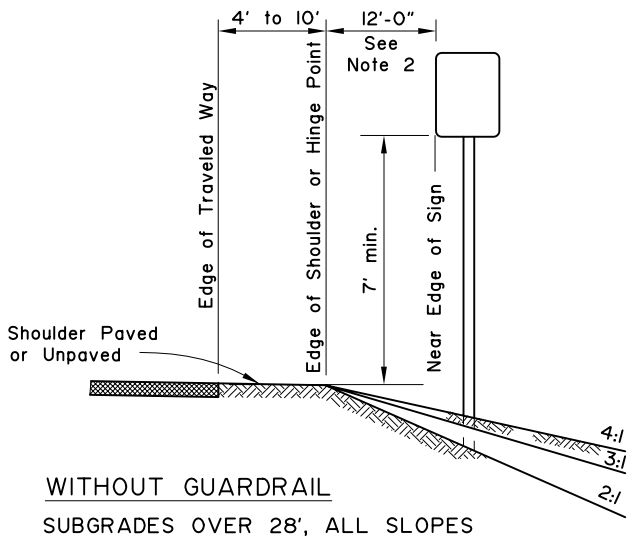


SECTION A-A

REVISIONS		
Date	Description	By
Sheet 1 of 1		
State of Alaska Department of Transportation & Public Facilities		
SIGN FRAMING AND POST SPACING		
 		
Date	2/28/03	

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

State of Alaska  
Department of Transportation  
& Public Facilities

**POST MOUNTED SIGN  
OFFSET AND HEIGHT**

APPROVED



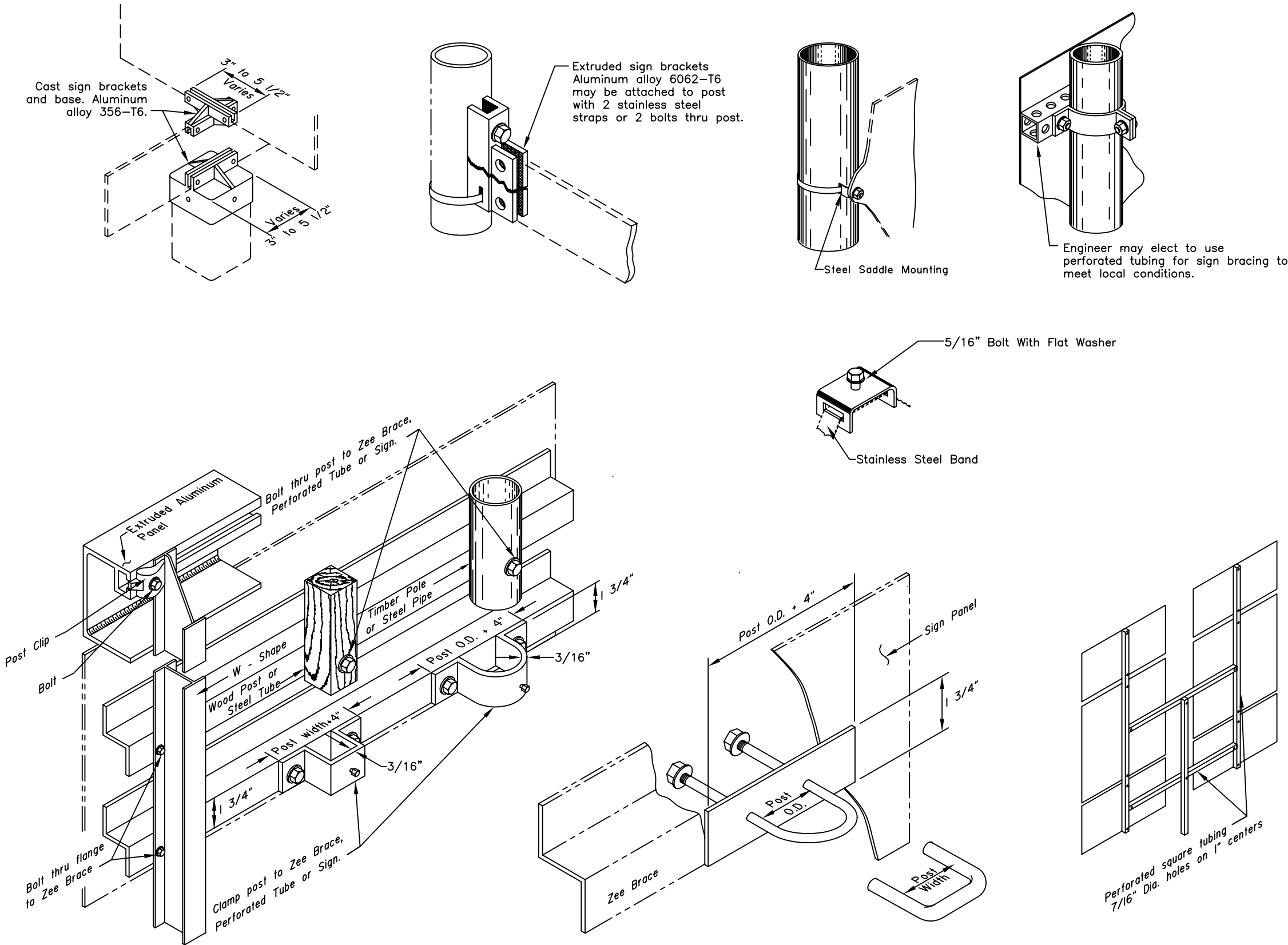
Date 7/15/82



GENERAL NOTES

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

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



REVISIONS		
Date	Description	By

Sheet 1 of 1

State of Alaska  
Department of Transportation  
& Public Facilities

SIGN TO SIGN POST  
CONNECTIONS



Date

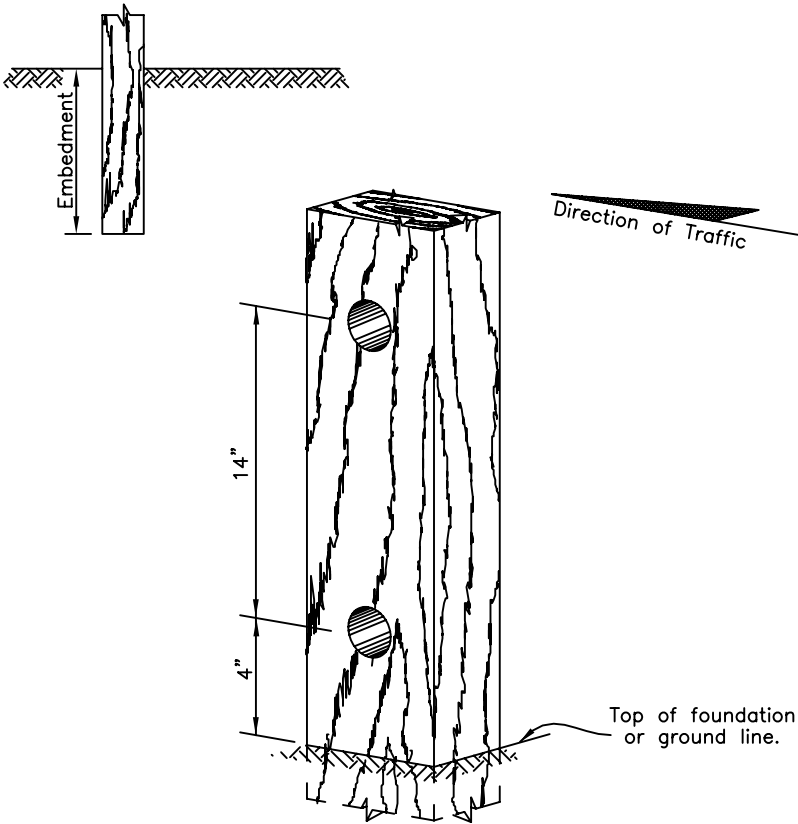
APPROVED



2/28/03

GENERAL NOTES:

- 1. Refer to Standard Drawing "Sheet Aluminum Sign and Framing" for light sign 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. Use larger posts than shown on this sheet, with hinges, for multiple support signs where the supports are separated by more than 7 feet.

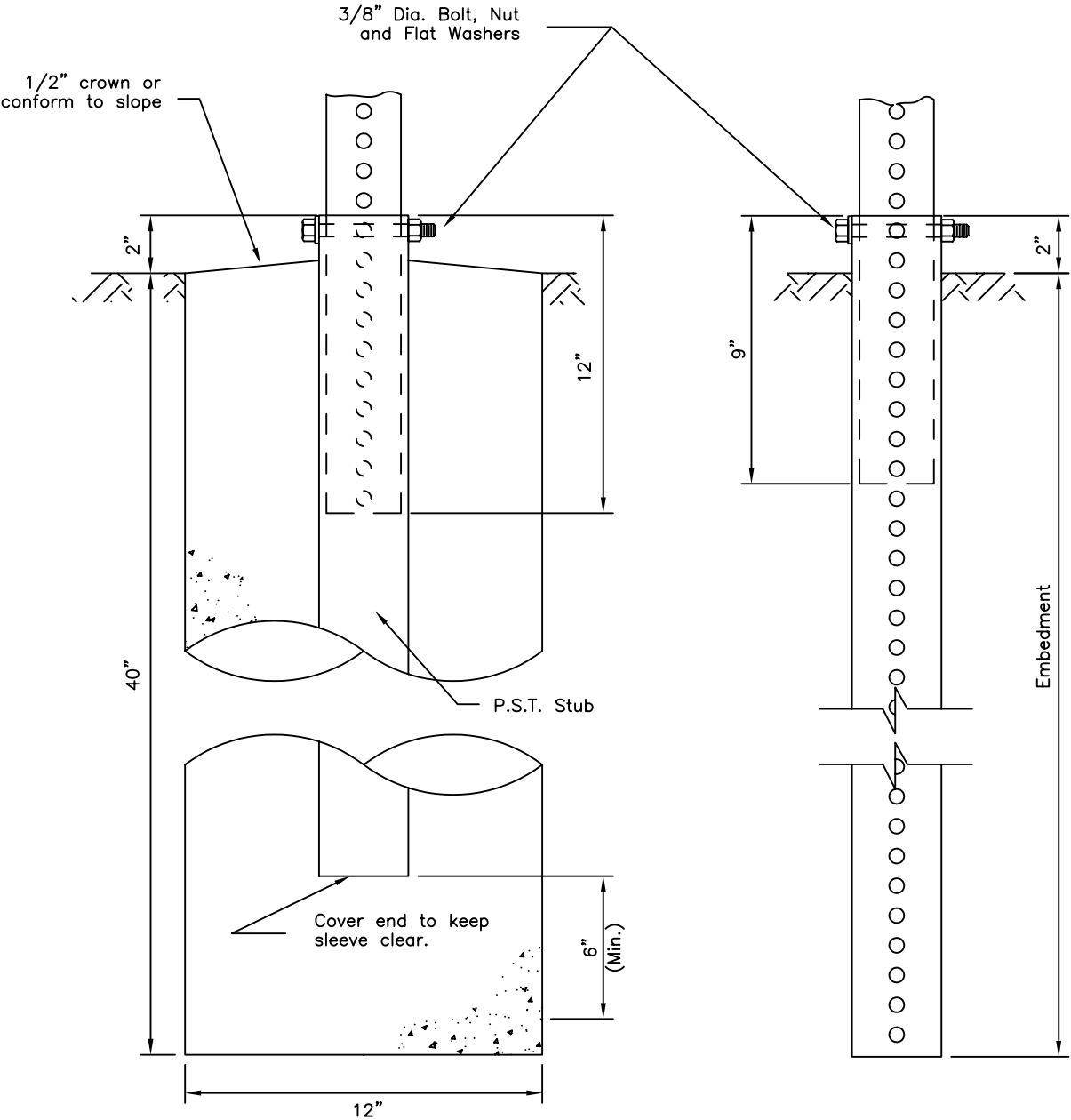


Note: If holes are field drilled after post has been treated, the holes shall be thoroughly swabbed with a 5% solution of pentachlorophenol and mineral spirits.

WOOD POSTS			
SIZE	HOLE DIA.	EMBEDMENT*	NUMBER OF POSTS WITHIN 7 Ft. PATH
4"x4"	NONE	36"	2
4"x6"	1 1/2"	36"	2
6"x6"	1 1/2"	40"	1
6"x8"	3"	48"	1

\* Embedment depth applies in both strong and weak soil.

WOOD POSTS



SLEEVE TYPE  
-CONCRETE FOUNDATION-

SLEEVE TYPE  
-SOIL EMBEDMENT-\*

PERFORATED STEEL TUBES (P.S.T.) (12 ga. - .105" Wall Thickness)		
POST SIZE (inch)	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
1/1/85	Redraft-Delete Post	Gdo
4/2/01	Revised PST table	Kjs
	Added note 3	
2/12/02	Revised Wood Posts	Kjs

Sheet 1 of 1

State of Alaska  
Department of Transportation  
& Public Facilities

LIGHT SIGN  
STRUCTURE POST  
EMBEDMENT



Date 7/15/82