# MAIER DRIVE FORCE MAIN REPLACEMENT

# **VOLUME II of II**

Contract No. BE18-222 File No. 1976



ENGINEERING DEPARTMENT



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50	AL	ASKA'S CAPIT	AL CITY
	СПУ		CITY AND BOROUG



### **GENERAL NOTES**

- CBJ STANDARD SPECIFICATIONS FOR CIVIL ENGINEERING PROJECTS AND SUBDIVISION IMPROVEMENTS, DECEMBER 2003 WITH ERRATA AND CBJ ENGINEERING STANDARD DETAILS BOOK DATED AUGUST, 2011 ARE MADE A PART OF THIS CONTRACT, DETAILS NOT SHOWN SHALL CONFORM THERETO WITH MODIFICATIONS SPECIFIED
- 2. PROPERTY DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ITS PRE-CONSTRUCTION CONDITION OR BETTER AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO ALL APPLICABLE, LOCAL, STATE AND FEDERAL CODES, PERMITS AND SAFETY 3. REQUIREMENTS.
- PROPERTY LINE LOCATIONS USED IN THESE PLANS ARE DERIVED FROM RECORD PLATS AND DO NOT REPRESENT A BOUNDARY SURVEY.
- THE LOCATIONS AND ELEVATIONS OF EXISTING FEATURES AND UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE. UTILITIES SHOWN ARE TAKEN FROM EXISTING RECORDS AND OTHER SOURCES. ADDITIONAL UTILITIES MAY BE PRESENT HOWEVER ARE NOT SHOWN. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS IN THE FIELD AS NECESSARY PRIOR TO BEGINNING WORK. THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED IN THE FIELD SHALL BE RECORDED ON THE CONTRACTOR'S RECORD DRAWINGS. CONTACT LOCAL UTILITIES AT THE FOLLOWING NUMBERS FOR LOCATE SERVICE A MINIMUM OF TWO BUSINESS DAYS PRIOR TO ANY EXCAVATION:



- 6. CONTRACTOR SHALL COORDINATE WITH ALL AFFECTED BOROUGH DEPARTMENTS AND LOCAL UTILITY COMPANIES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL NOT DISRUPT UTILITY SERVICES EXCEPT AS REQUIRED TO COMPLETE THE RECONFIGURATION OF THOSE SERVICES AS SHOWN IN 7. THE PLANS. COORDINATE ANY DISRUPTIONS WITH OWNER AND NOTIFY AFFECTED RESIDENTS A MINIMUM OF 48 HOURS IN ADVANCE.
- PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION. NO ASSURANCE IS GIVEN THAT THE INDICATED POSITION OF ANY EXISTING UTILITY IS CORRECT OR THAT THE INFORMATION IS COMPLETE. ALL LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE CORRECT AND TRUE LOCATION AS TO AVOID DAMAGE OR DISTURBANCE. DAMAGE TO EXISTING SITE FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- OVERHEAD UTILITIES INCLUDING ELECTRICAL POWER, TELEPHONE, CABLE TV, AND OTHER OVERHEAD LINES ARE GENERALLY NOT SHOWN, THE LINES THAT ARE SHOWN ARE LOCATED BY POINT-TO-POINT, POLE-TO-POLE. DETERMINE THE EXTENT OF HAZARDS OR IMPACTS ON CONSTRUCTION ACTIVITIES CREATED BY OVERHEAD OR UNDERGROUND LINES IN ALL AREAS AND FOLLOW PROCEDURES DURING CONSTRUCTION AS REQUIRED BY LAW. PRIOR TO CONSTRUCTION, MEET WITH UTILITY OWNERS TO DETERMINE THE EXTENT OF HAZARDS AND TAKE PRECAUTIONS AS REQUIRED TO PROTECT PERSONS AND PROPERTY AND TO AVOID DISRUPTION OF SERVICE.
- 10. CONTRACTOR SHALL COORDINATE WITH ALASKA PACIFIC ENVIRONMENTAL SERVICES AS REQUIRED TO ENSURE GARBAGE PICKUP, AND SHALL ENSURE DAILY MAIL SERVICE WILL BE UNINTERRUPTED TO ALL BUSINESSES AND RESIDENCES AFFECTED BY THE PROJECT.
- 11. GRADING AND ALIGNMENT OF PIPE, STRUCTURES & FINAL SURFACING ARE SUBJECT TO MINOR REVISIONS BY THE ENGINEER TO FIT SITE CONDITIONS. GRADE ALL IMPROVEMENTS WITH POSITIVE DRAINAGE AWAY FROM BUILDINGS TO DITCHES, SWALES OR STORM DRAIN INLETS
- 12. THE DRAWINGS DO NOT NECESSARILY SHOW ALL TREES, BUSHES OR OTHER PLANTINGS THAT WILL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES. NO TREES, BUSHES OR OTHER PLANTING SHALL BE DAMAGED OR REMOVED EXCEPT AS SHOWN OR APPROVED BY THE ENGINEER.
- 13. ALL ITEMS DESIGNATED TO BE REMOVED SHALL BE DISPOSED OF AT CONTRACTOR-PROVIDED DISPOSAL SITE, APPROVED BY THE ENGINEER, EXCEPT AS NOTED
- 14. CONTRACTOR SHALL REFERENCE ALL EXISTING PROPERTY CORNER MONUMENTS, RIGHT OF WAY MONUMENTS, AND CENTERLINE MONUMENTS PRIOR TO CONSTRUCTION. UNLESS NOTED OTHERWISE, DISTURBED MONUMENTS SHALL BE RESET OR REPLACED EXCEPT WHERE MONUMENT WOULD BE A HAZARD AS DETERMINED BY THE ENGINEER. EXISTING SURVEY MONUMENTS MAY NOT BE SHOWN ON THE DRAWINGS. ALL WORK SHALL BE DONE BY, OR UNDER THE DIRECTION OF, AN ALASKA REGISTERED LAND SURVEYOR.
- 15. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES TO PRIVATE AND PUBLIC PROPERTY ASSOCIATED WITH THE CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO DAMAGES CAUSED BY COMPACTION EFFORTS.
- 16. EXCEPT WHERE STAGING AND WORK AREAS ARE DESIGNATED ON THE PLANS. THE CONTRACTOR SHALL NOT STORE MATERIALS OR EQUIPMENT, OR PERATE EQUIPMENT WITH ITS TRACKS OR WHEELS PLACED ON PRIVATE PROPERTY, WITHOUT THE WRITTEN APPROVAL OF THE PROPERTY OWNER.
- 17. MINOR FITTINGS AND VARIOUS SYSTEM APPURTENANCES NOT SHOWN IN UTILITY SHEETS MAY BE REQUIRED TO CONSTRUCT UTILITY SYSTEMS. CONTRACTOR SHALL USE INDUSTRY STANDARD PRACTICES TO ACHIEVE ALL CONNECTIONS NOT DETAILED IN ACCORDANCE WITH THE SPECIFICATIONS AND CONSISTENT WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS PER ENGINEER DIRECTION (INCIDENTAL)
- 18. MATCH EXISTING GRADES AT PROJECT LIMITS AND WHERE REQUIRED TO MATCH ELEVATIONS AT EXISTING ROADS.

#### LEGEND THIS PROJECT EXISTING OVERHEAD ELECTRICAL — E<sub>x</sub> — — BURIED ELECTRICAL — w<sub>x</sub> — WATER — Tx — COMMUNICATIONS — SS , — SANITARY SEWER — FMx -FORCE MAIN \_\_\_\_\_ Vx \_\_\_\_\_ VENT PIPE STORM DRAIN (SIZE, TYPE AS NOTED) <sup>⊚</sup> €27 CONTROL POINT 🕁 BH- # BOREHOLE FENCE \_\_\_\_\_ × \_\_\_\_ PROPERTY LINE \_ \_ \_ \_ $-- \rightarrow - - \rightarrow --$ SWALE CENTERLINE EASEMENT TRFF TREE LINE PIPE INLET/TRASH RACK ΨZ MAILBOX \_\_\_\_ SIGN -1×1-GATE OR BUTTERFLY VALVE Y HYDRANT 6) **6 )**(ss) SS MANHOLE 6) SD MANHOLE, SOLID COVER CURB INLET X AREA DRAIN -0-POWER POLE $\dot{\Box}$ LIGHT POLE (M)ELECTRIC METER $\boxtimes$ FLECTRIC TRANSFORMER CONCRETE

PAVEME	ENT
HOUSE	NUMBER
	3

(111)

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	REV.	DATE	REVISIONS DESCRIPTION	DWN.	CKD.	APP.	9360 Glacier Highway Ste 100 Junear Alaska 99801
CITY AND BOROUGH OF							Phone: 907-586-2093 Fax: 917-586-2099
JUNEAU							ENGINEERS, INC. www.pndengineers.com
ALASKA'S CAPITAL CITY							DESIGN: TCB CHECKED: CRS SCALE:
							Drawn: WRB approved: CRS

## ABBREVIATIONS

A @	AT	M Max
ACP	ASPHALT CONCRETE PAVEMENT/	ME
ADA	ASBESTOS CEMENT PIPE AMERICANS WITH DISABILITIES ACT	MFR MH
ALUM	ALUMINUM	MIPT
APPROX.	APPROXIMATE	MJ
B		MLLW
BLDG	BUILDING	MTE
BTM C	BOTTOM	N N
СВ	CATCH BASIN	NIC
CB1 CB1	CENTER LINE	NIS O
CLR	CLEAR	0C
CONC.	CONCRETE CORRUGATED PLASTIC PIPE	OHE
CPEP	CORRUGATED POLYETHYLENE PIPE	P
CIE	CONNECT TO EXISTING COPPER TUBE SIZE	PC PF
CY	CUBIC YARD	PER
ø/dia	DIAMETER	PJ POC
DÍ	DUCTILE IRON	PRC
DR	DUCTILE IRON PIPE DRIVE	PSF PVC
DTL	DETAIL	R
E	EAST	r Rap
EA.	EACH	RD
EF FJIW	ELECTRO-FUSION FAST JORDAN IRON WORKS	REQD
EL/ELEV	ELEVATION	S
ELEC. FP	ELECTRICAL EDGE OF PAVEMENT	SD
EW	EACH WAY	SF
F FC	FACE OF CURB	SS
FG	FINISHED GRADE	SDCB
FH FM	FORCE MAIN SEWER	SDMH
FND	FOUND	ST
FL G	FLOWLINE OR FLANGE	STA
GALV	GALVANIZED	SW
GPM	GALLONS PER MINUTE	T
H		t.
	HOL DENSITY DOLYETHYLENE	U
	HIGH DENSITY POLITETHILENE	UNO
IAW	IN ACCORDANCE WITH	<b>v</b> VB
IE INIV	INVERT ELEVATION	VERT
L		W
L	LENGTH	w/
LF	LUMP SUM	WV
		WW

MAXIMUM MATCH EXISTING MANUFACTURE (R) MANHOLF MALE IRON PIPE THREAD MECHANICAL JOINT MINIMUM MEAN LOWER LOW WATER MATCH TO EXISTING NORTH NOT IN CONTRACT NOT TO SCALE ON CENTER OVERHEAD ELECTRICAL OIL-WATER SEPARATOR POINT OF CURVATURE POLYETHYLENE/PLAIN END PERIMETER PACKED JOINT POINT ON CURVE POINT OF REVERSE CURVATURE POUNDS PER SQUARE FOOT POLY-VINYL CHLORIDE RADIUS RECYCLED ASPHALT PAVEMENT ROAD RIM ELEVATION REQUIRED SOUTH. SMOOTH STORM DRAIN SOUARE FEET STAINLESS STEEL/SANITARY SEWER STORM DRAIN CATCH BASIN STORM DRAIN MANHOLE SANITARY SEWER MANHOLE STREET STATION STANDARD SIDEWALK SQUARE YARD THICK TYPICAL UNLESS NOTED OTHERWISE VALVE BOX VERTICAL WEST WATERLINE WATER VALVE WASTEWATER WASTEWATER TREATMENT



#### CITY AND BOROUGH OF JUNEAU. ALASKA MAIER DRIVE FORCE MAIN REPLACEMENT

GENERAL NOTES. LEGEND AND ABBREVIATIONS

WWTP

PLANT.





CITY AND BOROUGH OF
JUNEAU
ALASKA'S CAPITAL CITY

		REVISIONS					9360 Glacier Highway Ste 100	<del>S</del>
REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.		Juneau, Alaska 99801	Pir
							Phone: 907-586-2093	49
							Fax: 907-586-2099	
							ENGINEERS, INC. www.pndengineers.com	Char
							( DESIGN: TCB CHECKED: CRS SCALE IN FEFT )	EREL
						)	$\left( \text{DRAWN: } \underline{WRB} \text{ approved: } \underline{CKS} \right) 0 30 60 FT. \right) \left( \text{DATE} \right)$	ē: _



	REV.	DATE	REVISIONS DESCRIPTION	DWN.	CKD.	APP.	P N D 9360 Glacier Highway Ste 100   Juneau, Alaska 99801 Phone: 907-586-2093 9360   ENGINEERS, INC. Fax: 907-586-2099 9360
ALASKA'S CAPITAL CITY							DESIGN: TCB CHECKED: CRS DRAWN: WRB APPROVED: CRS 0 30 60 FT.

## SOILS CLASSIFICATION, CONSISTENCY AND SYMBOLS

#### CLASSIFICATION

Identification and classification of the soil is accomplished in general accordance with the ASTM version of the Unified Soil Classification System (USCS) as presented in ASTM Standard D2487. The standard is a qualitative method of classifying soil into the following major divisions (1) coarse grained, (2) fine grained, and (3) highly organic soils. Classification is performed on the soils passing the 75 mm (3 inch) sieve and if possible the amount of oversize material (> 75 mm particles) is noted on the soil logs. This is not always possible for drilled test holes because the oversize particles are typically too large to be captured in the sampling equipment. Oversize materials greater than 300 mm (12 inches) are termed boulders, while materials between 75 mm and 300 mm are termed cobbles. Coarse grained soils are those having 50% or more of the non-oversize soil retained on the No. 200 sieve (0.075 mm); if a greater percentage of the coarse grains is retained on the No. 4 (4.76 mm) sieve the coarse grained soil is classified as gravel, otherwise it is classified as sand. Fine grained soils are those having more than 50% of the non-oversize material passing the No. 200 sieve; these may be classified as silt or clay depending their Atterberg liquid and plastic limits or observations of field consistency. Refer to the most recent version of ASTM D2487 for a complete discussion of the classification method.

#### SOIL CONSISTENCY - CRITERIA

Soil consistency as defined below and determined by normal field and laboratory methods applies only to non-frozen material. For these materials, the influence of such factors as soil structure, i.e. Fissure systems, shinkage cracks, slickensides, etc., must be taken into consideration in making any correlation with the consistency values listed below. In permafrost zones, the consistency and strength of frozen soils may vary significantly and unexplainably with ice content, thermal regime and soil type.

#### Standard Penetration Test (Blows/ft) Relative to Denstiy/Consistency

N60	Density	Relative Density	N60	Consistency	Undrained Shear Strength psf
0-4	Very Loose	0-15%	< 2	Very Soft	< 250
4-10	Loose	15-35%	2 - 4	Soft	250 - 500
10-30	Medium	35-65%	4 - 8	Medium	500 - 1000
30-50	Dense	65-85%	8 - 15	Stiff	1000 - 2000
> 50	Very Dense	>85%	15 - 30	Very Stiff	2000 - 4000
	-		> 30	Hard	> 4000

Ref: Terzaghi, Peck, and Mesri Soil Mechanics in Engineering Practice, 3rd Edition, pg 60-63 ASTM D1586 Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils

ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (USCS)

#### SAMPLER TYPE SYMBOLS

А	Auger Sample	Hs	1.4" Spli	t Spoon w/ Air Hammer	Ss	1.4" Split Spoon w/ 140# Hammer
Bs	Bulk (grab) Sample	Pb	Pitcher 1	Barrel	St	1.4" Split Spoon w/ 47# Hammer
Cs	Core Barrel w/ Single Tube	Sl	2.5" Spli	it Spoon w/ 140# Hammer	Sx	2.0" Split Spoon w/ 47# Hammer
		Sm	2.5" Spli	it Spoon w/ 300# Hammer	Sz	1.4 Split Spoon w/ 340# Hammer
Cd	Core Barrel w/ Double Tub	e Sh	2.5" Spli	it Spoon w/ 340# Hammer	Ts	Shelby Tube
Ct	Core Barrel w/ Triple Tube	Sp	2.5" Spli	it Spoon, Pushed	Tm	Modified 2.5 O.D. Shelby Tube
Cm Continuous Coring (Macro-Core)						
Hl	2.5" Split Spoon w/ Air Har	mmer				
Note: Sp	olit Spoon size refers to sampl	ler inside dia	ameter.			
P		esigned: PN	D D	STAND	ARD	BOREHOLE
1		hecked: PN	D	LC	)G D	ETAILS
EN	GINEERS, INC.	roject No.: 172 Pate: DE	116.02 C 2017	BOREHOLE LC	)GS	FIGURE B-1 1 of 4

		SOIL DE	SCRIP	HON				SAM	PI
Depth (feet) Water Table	Graphic Symbol	Soil Name Content, I Soil Struc Other Rock Na	e, Color, I Relative I ture, Min Informa me, Desc	Moisture Density, eralogy, tion ription	Number	Type	Location	Recovery % (RQD %)	F 1 ( {Re
0.0 	0/00/00/00/00/00/00/00/00/00/00/00/00/0	0' - 0.30' A.C. P. POORLY-GR. W/ SILT AND GRAY, MOIST SUBANGULA	AVEMEN ADED G D SAND ( I', DENS R	NT RAVEL (GP-GM) E,	1	Ss		30	
2 		SLATY ARGII grayish black, fi bedded, mediur steeply dipping	LLITE ine graine n hard, B	d, thin X-U,	2	Ct		56 (50)	
12	3		4		5	6	7	8	
CC	DLUM	IN DESCF	RIPTI	ONS					
1	Depth	1	Depth	(in feet) bel	ow tl	he g	rour	nd sur	fac
2	Water	Level	Groun	dwate <del>r</del> level	reco	ordeo	1 wł	nile dr	illi
3	Graph	nic Log	Graph	ic depiction	of m	ater	ials	encou	inte
4	Soil/ Descr	Rock iption	Descri defined	ption of ma 1 in Fig. B-1	terial , pag	s en jes 5	cou anc	nterec l 6.	l, iı
5	Sampl	e Number	Sample	eidentificati	on ni	umb	er.		
6	Sampl	e Type	Type of sheet 1	of soil or roc	k sar	nple	col	lected	at
7	Sampl	e Location	Locatio	on of soil or	rock	s san	nple	taker	1.
8	Sampl	e Recovery	Soil: P	ercentage of	sam	ple 1	eco	vered	. R
9	Sampl Rock	e Blows or Quality	Soil: N with a value.	umber of bl 30-inch dro	ows p. Bl	to a ows	dvai per	nce dr foot g	ive giv
10	Graph	15	Graph Vane S	ic log depict bhear tests d	ing b epict	olow ed v	cou vher	ints po e take	er i en o
11	Comn	nents	Comm	ents or obse	ervati	ions	on	drillin	g/s
12	Elevat	tion	Elevati specifi	ion (in feet) ed.	with	resp	bect	to Me	ean
GE	NER	AL NOTE	S						
1. I	Field des	criptions may	have be	en modifie	d to	refle	ect l	abora	ıto
2. I	Descript varrante	ions on these b d to be represe	ooring le entative	ogs apply o of subsurf?	nly a ice c	t th ond	e sp itio	ecific ns at	: lo otł
3. S	plit spo been cor	on blow count rected to a Star	s shown ndard P	n are uncor	recte Test	ed ra (SP	iw d T).	lata. V Blow	/ar cc
	P	N D		Designed: Drawn: Checked:	PNE PNE PNE	) ) )			
	ENGI	NEERS, INC		Project No.: Date:	1721 DEC	16.02	2	H	30
				Date.	DEC	- 201	1		-

		REVISIONS			9360 Glacier Highway Ste 100
	REV. DATE	DESCRIPTION	DWN. CKD. APP.	P N D	Juneau, Alaska 99801 Phone: 907-586-2093
				ENGINEERS, INC.	Fax: 907-586-2099 www.pndengineers.com
ALASKA'S CAPITAL CITY				DESIGN: <u>TCB</u> CHECKED: <u>CRS</u>	CALE:
				DRAWN: WRB APPROVED: CRS	

L DO	CDADU		
LES Penetration	GKAPH BLOW COUNT	COMMEN18	
Blows per 6/Inch	20 40 60 80 POCKET PEN (tsf)	Casing Depth, Drilling Rate, Fluid Loss, Drill Pressure,	ion
(per foot)* or	1 2 3 4 ▲ VANE SHEAR (tsf) ▲	Tests, Instrumentation, Additional Information	Ilevat feet)
ock Quality}	0.2 0.4 0.6 0.8	Pagin drilling 10/24/03	- 24.43 -
		$\begin{array}{c} \text{Begin drilling } 10/24/03\\ 8:00 \text{ a.m.} \end{array}$	_
		1.5' to 2' - Hard, loud drilling (Cobbles/Boulder encountered)	
20-20-25 (45)*		(coobles) Doulder encountered)	
			-
			22.43 —
		Drillhole blockage	
{Poor}			
9		[11]	12
	10	<u></u>	
ce.			
ng. Depths :	and times are recorded	in comments column.	
and			
ereu.			
ncluding US	CS soil descriptions and	d rock desciptions	
depth inter	val depicted; symbols e	xplained on Fig. B-1,	
lock: Percen	tage of sample recovered	ed and RQD value.	
en sampler e	each 6-inch interval usin	ng sampler type specified	
en in parent	heses. Rock: Rock qual	lity as defined from RQD	
foot with a s	specified split spoon. Pe	ocket Penetration and	
on fine grain	red soils.	ocket i chetration and	
sampling by	driller or PND field pe	ersonnel.	
1 Lower Lov	v Water (MLLW) or oth	her datum where	
ny test resu	lts		
ocations at t	the time the borings w	zere drilled. They are not	
her location	is or times.	armean they are not	
rious hamm ounts may v	her sizes and split spoo vary substantially betw	on sizes were used and have veen SPT and these methods	not
	STANDARD	BOREHOLE	
	LOG DI	ETAILS	
OREH	DLE LOGS	FIGURE B-1 2 of 4	
		2011	
OF AL	CIT	Y AND BOROUGH OF JU	JNEAU, ALASK
49 ⊞ 🖌		MAIER DRI	VE
<u>c</u> RÅ		FORCE MAIN REPL	ACEMENT

SHEET TITLE:

6/26/18

**BOREHOLE LOG** 



	D.4			SYM	BOLS	TYPICAL	
	IVI			GRAPH	LETTER	DESCRIPTIO	NS
		GRAVEL AND	CLEAN GRAVELS		GW	Well-graded gravels, gravel sa little or no fines	ind mixtures,
	COARSE	GRAVELLY SOILS	(LITTLE OR NO FINES)		GP	Poorly graded gravels, gravel- mixtures, little or no fines	sand
	SOILS	MORE THAN 50% OF COARSE FRACTION	GRAVELS WITH FINES		GM	Silty gravels, gravel-sand-silt r	nixtures
		RETAINED ON NO. 4 SIEVE (4.75mm)	(APPRECIABLE AMOUNT OF FINES)		GC	Clayey gravels, gravel-sand-cla	ay mixtures
		SAND	CLEAN SANDS	<u> </u>	SW	Well-graded sands, gravely sa no fines	nds, little or
	MORE THAN 50%	SANDY SOILS	(LITTLE OR NO FINES)		SP	Poorly graded sands, gravelly or no fines	sands, little
	RETAINED ON NO. 200 SIEVE (0.075mm)	MORE THAN 50% OF COARSE FRACTION	SANDS WITH FINES		SM	Silty sands, sand-silt mixtures	
		PASSING NO. 4 SIEVE (4.75mm)	(APPRECIABLE AMOUNT OF FINES)		SC	clayey sands, sand-clay mixtur	res
			1		ML	Inorganic silts and very fine sa flour, silty or clayey fine sands silts with slight plasticity	inds, rock s or clayey
	FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		CL	Inorganic clays of low to medi gravelly clays, sandy clays, silt clays	um plasticity, y clays, lean
	00120				OL	Organic silts and organic silty plasticity	clays of low
					MH	Inorganic silts, micaceous or d fine sandy or silty soils, elastic	liatomceous : silts
	MORE THAN 50% PASSING NO. 200 SIEVE (0.075mm)	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		СН	Inorganic clays of high plastici	ty, fat clays
					ОН	Organic clays of medium to hi organic silts	gh plasticity,
	н	GHLY ORGANIC S	OILS	1 1 1 1 1 1 1 1 1	РТ	Peat and other highly organic	soils
	NOTE: Multiple	symbols are used	d to indicate bord	derline or du	al soil class	sifications as per ASTM 2	2488
Strati	graphic Contact						
	— Distinct c	ontact betwee	en soil strata o	or geologi	c units		
	Approxim	nate location o	of soil strata c	hange wit	hin a geo	ologic soil unit	
Labo	ratory / Field Tes	ts List of A	bbreviatio	ons			
%F	Percent Fines	LL	Liquid Limit			PP	Pocket Penetrometer
AL CP	Atterberg Limits	LMA st MC	Limited Mec	hanıcal Ana ntent	lysis	SA TX	Sieve Analysis Triaxial Shear
<b>A A</b>	Consolidation test	MD	Moisture cor	ntent and D	y density	UC	Unconfined Compression
CO	Depth "Peat" Probe	OC	Organic Con	tent	. ,	VS	Vane Shear
CO DP	Direct Shear	PI PM	Plasticity Ind Permeability	lex or Hydrauli	c Conduct	tivity	
CO DP DS HA	Hydrometer Analysis						
CO DP DS HA	Hydrometer Analysis	Designed: PN	D				oppusse
CO DP DS HA	Hydrometer Analysis	Designed: PN Drawn: PN	D D		STA	ANDARD B	OREHOLE
CO DP DS HA	N D D	Designed: PN Drawn: PN Checked: PN	D D D		STA	ANDARD B LOG DE	OREHOLE FAILS

#### METRIC CONVERSIONS = 25.4 mm Length 1 inch = 0.3048 m 1 foot 1 mile = 1.6093 km Area 1 sq. inch $= 6.452 \text{ cm}^2$ 1 sq. foot $= 0.0929 \text{ m}^2$ = 0.4047 hectare 1 acre 1 sq. mile = 2.59 km<sup>2</sup> $= 16.387 \text{ cm}^3$ Volume 1 cu. inch 1 cu. foot (cc) $= 0.0283 \text{ m}^3$ 1 cu. yard 1 U.S. gallon = $0.7646 \text{ m}^3$ = 3.785 liters = 0.4536 kg Mass 1 lb. Force 1 lb. = 4.448 N 1 ton =8.896 kN Density 1 lb./cu. ft. = 16.019 kg/m<sup>3</sup> $= 0.1571 \text{ kN/m}^3$ = 0.0703 Pressure/Stress 1 lb./sq. in. kg/cm<sup>2</sup> 1 lb./sq. ft. (= 6.895 kPa) $= 4.882 \text{ kg/cm}^2$ 1 U.S. ton/sq. ft. (= 0.04788 kPa) [Note: 1 kPa = 95.76 kPa $= 1 \text{ kN}/m^2$ Flow Velocity $= 6.309 \text{ x } 10^5 \text{ m}^3/\text{sec}$ 1 gal./min. = 0.3048 m/sec 1 ft./sec. Coefficient of 1 sq. ft./U.S. $= 0.0104 \text{ m}^2/\text{kN}$ Compressibility M<sub>v</sub>: ton $= 14.22 \text{ cm}^2/\text{kg}$ 1 sq. in./lb 1 sq. ft./year Coefficient of $= 0.0929 \text{ m}^2/\text{year}$ consolidation $C_v$ : $(= 0.002946 \text{ mm}^2/\text{sec})$ Moment 1 lb.-ft. = 0.1383 kq-m (= 1.3558 Nm) 1 mile/hour = 1.609 km/hour Speed (=0.447 m/sec) 1 foot/sec = 0.3048 m/secDesigned: PND $\mathbf{N}$ D Drawn: PND $\mathbf{P}$ Checked: PND Project No.: 172116.02 ENGINEERS, INC.

	REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.	P	<b>ND</b> GINEERS, INC.	9360 Glacier Highway Ste 100 Juneau, Alaska 99801 Phone: 907-586-2093 Fax: 907-586-2099 www.pndengineers.com	
ALASKA'S CAPITAL CITY							DESIGN: TCE DRAWN: WRE	CHECKED: CRS	SCALE:	

BORI	EHOLE L	OGS FIGURE B-1 4 of 4
ec	1 m/sec	= 3.281 feet/sec
our c)	1 km/hour 1 m/sec	= 0.622 mile/hour = 2.237 mph
n ì)	1 kq-m 1 N-m	= 7.23 lbfoot = 0.7376 lbfoot
year nm²/sec)	1 m²/year 1 mm²/sec	= 10.76 sq. ft. /year = 339.4 sq. ft./year
m³/sec ec kN xg	1 m <sup>3</sup> /sec 1 m/sec	= 15,850 gallons per minute = 3.28 ft./sec
1 <sup>2</sup> a)	1 kg/cm² 1 kPa 1 kg/cm² 1 kPa 1 kPa	= 14.22 lb./sq. inch = 0.145 lb./sq. inch = 0.2048 lb./sq. ft. = 20.886 lb./sq. foot = 0.01044 U.S. ton/sq. foot
n <sup>3</sup>	1 kg/m³ 1 kN/m³	= 0.0624 lb./cu. foot = 6.365 lb./ cu. foot
	1 N 1 kN	= 0.225 lb. = 0.1124 U.S. ton
	1 kg	= 2.205 lb.
	1 cm <sup>3</sup> 1 m <sup>3</sup> 1 m <sup>3</sup> 1 liter	= 0.061 cu. inch = 35.31 cu. foot = 1.308 cu. yard = 0.264 U.S. gallon
е	1 hectare 1 km <sup>2</sup>	= 2.47  acre = 0.386 sq. mile
	1 km 1 cm <sup>2</sup> 1 m <sup>2</sup>	= $3.281$ feet = $0.621$ mile 55 sq. inch = $10.764$ sq. foot
	1 mm 1 m	= 0.0394 inch



DEC 2017

Date:

CITY AND BOROUGH OF JUNEAU, ALASKA MAIER DRIVE FORCE MAIN REPLACEMENT

SHEET TITLE:

### **BOREHOLE LOG**











BOREHOLE LOG

















SHEET TITLE:

BOREHOLE LOG



Г				SOIL DESC	RIPTION			S	AMP	LES	GI	RAPH	COMMENTS	
Depth (feet)	-	Water Table	Graphic Symbol	Soil Name, Color Content, Relativ Soil Structure, M Other Inforr	, Moisture e Density, lineralogy, nation	Number	Type	Location	Recovery % (RQD %)	Penetration Blows per 6/Inch (per foot) or {Rock Quality}	■ BLOV 20 44 ● POCKI 1 22 VANE 0.2 0.2	W COUNT 0  60  80 ET PEN (tsf) 3  4 SHEAR (tsf) 4  0.6  0.8	Casing Depth, Drilling Rate, Fluid Loss, Drill Pressure, Tests, Instrumentation, Additional Information	Elevation (feet)
-	2.5			SILTY SAND (SM) brownish gray, dry, 5 to subrounded gravel 15% fines; gravel to (	% subangular ; 80% sand; .5" max dia.	1	G						Grab surface sample from auger cuttings taken at 8:25AM, 11/19/17 Begin drilling at 8AM, 11-19- 17. Property owner indicates several inches of surficial recycled asphalt pavement (RAP). RAP was not explicitly evident due to snow/frozen ground conditions.	26.7
-	5.0 7.5			SILTY SAND (SM) brownish gray, dry, 5 gravel; 75% sand; 200 gravel to 0.25" max d POORLY-GRADEI gray mottled with bla dry, 5% subrounded sand; 5% fines	% subrounded % fines; trace ia. D SAND (SP) ck and white, gravel; 90%	2	Ss		84	2-3-7-6 (10)			Sample taken at 8:40AM, 11/19/17. Sample 2A: 5'-6'; Sample 2B: 6'-7'	21.7
DT 2/27/18 ©2018	10.0			SANDY SILT (ML) gray, dry, 2% subrour 42% sand; 56% fines to 0.25" max dia, mc plastic	nded gravel; trace gravel =25.2% non-	3	Ss		100	3-6-7-12 (13)			Sample taken at 8:55AM, 11/19/17 Cuttings become moist at 11', sampler is wet upon retrieval of 10' sample.	
DR FM REPLACE BOREHOLE LOGS GPI PND ENGINEERS GI	15.0	ter verte state and the state state state of the state of the state state of the state of the state of the state		POORLY-GRADEI GRAVEL (SP) gray mottled with brc white, dry, 20% subro 75% sand; 5% fines; j max dia.	O SAND WITH own , black and ounded gravel; gravel to 0.75"	4	Ss		75	14-12-13-13 (25)			Sample taken at 9:10AM, 11/19/17	
72116 MATER L	20.0	2	-		Logged By: SC	 cs			М					
OLE LOG 1		ŀ		N D	Data Entry: SC Checked: SF	CS H	. 0.2				K FU	Juneau,	Alaska	
BOREH		EN	IGINI	EERS, INC.	Project No.: 17 Date: De	2116 ec. 2	017				BH-3		FIGURE B-4	1





G10 SHEET 10 OF 20

BOI









- ALL OTHER NOTES AND CALLOUTS DENOTE EXISTING CONDITIONS.
- 2. EXISTING FEATURES AND UTILITIES SHALL REMAIN EXCEPT AS NOTED.
- 3. PRIOR TO BEGINNING ANY WORK ON SMITH PROPERTY, LOCATE SOUTHERN LIMIT OF UTILITY EASEMENT AND MARK WITH PAINT OR OTHER VISIBLE MEANS. MAINTAIN MARKING THROUGHOUT DURATION OF WORK. REMOVE MARK AT CONCLUSION OF WORK.

	REV.	DATE	REVISIONS DESCRIPTION	DWN.	CKD.	APP.	P   N   D   9360 Glacier Highway Ste 100 Juneau, Alaska 99801     Phone: 907-586-2093   9400   9400
JUNEAU							ENGINEERS, INC. Fax: 907-586-2099 www.pndengineers.com
AUSAA'S CAPITAL CIT							DESIGN: TCB CHECKED: CRS DRAWN: WRB APPROVED: CRS 0 30 60 FT.





			REVISIONS				9360 Glacier Highway Ste 100
	REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.	Juneau, Alaska 99801
							Phone: 907-586-2093
CITY AND BOROUGH OF							Fax: 907-586-2099
							ENGINEERS, INC. www.pndengineers.com
ALASKA'S CAPITAL CITY							
							DESIGN: TCB CHECKED: CRS SCALE:
						1 1	/ DRAWN WIND APPROVED () .50 b() FL / DATE:

						MEADOW LA	NE	
	STRINGS OF	DAL WETLANE TI~ 20.6' ML	2201 WILLIAM D BENNING 2201 MEADOW IN JUNEAU, AK 99801 789-4828 DO NOT IMPEDE SWALE FLOW 6 6 B ALDER CLUSTER 8'\$ TO 12'8 LW 50+00 CLE STE	ARING LIMIT /	9574 BRIAN/CHELSY MALLER 9574 MEADOW LN JUNEAU, AK 99801 TEMPORARY ACC RAMP, SEE SHEE SEE SH AND W SEE SH SEE SH SEE SH UNDE UNDE 20' M DISTU CLEAF SPRUCE TO REMA LOWER BRANCHES REQUIRED FOR AC	9570 PATRICK A. MOORE 9570 MEADOW IN JUNEAU, AK 99801 523-9317 T C3. EET C3 FOR LAYOUT DRK LIMIT AT RAMP. SDMH	WILLIAM TOMARO PO BOX 034374 JUNEAU, AK 99803 789-2567 TREE LINE, SMALL SPRUCE, ALDEF SHRUBS AND MISC. VEGETATION, SDMH w/ OWS 300000 F E 300000 F E 33+00 A WHITING WAY) SDCB, WITING WAY	RT MADING REAL TO AND A REAL TO AND A REAL TO AND A REAL TO AND A REAL TO A
					JANEY HOVERDE SEAN P. MCULLO 2211 RADCLIFFE	IN/WCH RD	CULTER STORE	/ <
	DEMOLITION AND CLEARING NOTES		CHRIS K. 2207 RA	. MCDOWELL	JUNEAU, AK 99	801		
DESIGNATION	DESCRIPTION		JUNEAU 789	9-0679	$\langle \rangle$			$\setminus$
A	CLEAR BRANCHES, SMALL TREES AND SHRUBBERY AS REQUIRED FOR ACCESS, REMOVAL OF VEGETATION.	, MINIMIZE		The state of the s		5 <sup>5+</sup> 29		``
B TREE Ø	REMOVE AND DISPOSE TREE AND STUMP. REMOVE PARTIAL ROOT WAD TO THE REQUIRED TO PROVIDE 5' MIN. CLEAR TO NEW FORCE MAIN PIPE AND OTHER IMPROVEMENTS FROM ALL TREE ROOTS. REMOVE AND DISPOSE TREE STIMP AND PARTIAL ROOT WAD MAY REMAIN	E EXTENT		SSMH RIM=26.54 24"ACP(N)=12.98				, MI
C TREE Ø	PROVIDE 5' MIN. CLEAR TO NEW FORCE MAIN PIPE AND OTHER IMPROVEMENTS ALL TREE ROOTS.	S FROM		SSMH RIM=25.70 - 24"PVC(N)=12.52		NH HIT KIN		
D	REMOVE PAVEMENT SURFACE AS REQUIRED TO CONNECT NEW FORCE MAIN PIFEXISTING MANHOLE.	PE TO			p p	DFMO	LITION AND ACCESS PL	ΔN
E	REMOVE 12" CPP FROM EXISTING MANHOLE AND PLUG UPPER CORE HOLE, SEE DEMO AND DISPOSE UPSTREAM PIPE TO NEW SDMH1, SEE C SHEETS	E DETAIL.	NOTE: 1. WORK AND DIRECTION NOTES ARE DENOTE FXISTING CONDITIONS	SHOWN WITH BOXED	CALLOUTS. ALL 01	THER NOTES AND CALLOUTS		
F	CUT 12" CPP PIPE TO CONNECT TO NEW SDMH1, SEE C SHEETS		2. EXISTING FEATURES AND UTILITIES	SHALL REMAIN EXCEPT	AS NOTED.		WETLANDS AREA	1 N
G	DEMOLISH AND DISPOSE INLET STRUCTURE		3. WETLAND AREA INCLUDES ALL ARE	EAS BELOW 20.6' MLLW				A
н	DEMOLISH AND DISPOSE 12" CPP IN ITS ENTIRETY, LOWER CORE AT EXISTING TO BE RE-USED, SEE C SHEETS	MANHOLE	4. CONTRACTOR SHALL CONSTRAIN SURVEY AND FLAG LIMITS PRIOR T 4.1. WETLAND AREA SHALL BE	ALL OPERATIONS TO O BEGINNING WORK. RESTORED TO PRE-	CONSTRUCTION C	N WITHIN WEILANDS AREA. ONDITION, ELEVATION AND	PI#   NOR IHING     1   2386537.57	250
L	1		DRAINAGE PATTERNS SUBSEQU 4.2. ADDITIONAL RESTRICTIONS A SPECIFICATIONS	JENT TO THE WORK. APPLY TO WORK WIT	THIN WETLANDS	AREA, SEE DETAILS AND	2 2386526.92 3 2386519.35	250 250
			5. PRIOR TO BEGINNING ANY WORK, L WITH PAINT OR OTHER VISIBLE ME MARK AT CONCLUSION OF WORK. I	LOCATE SOUTHERN LIMI ANS. MAINTAIN MARKIN DO NOT DISTURB PRIVA	T OF WHITING WAY IG THROUGHOUT D .TE PROPERTY.	RIGHT-OF-WAY AND MARK URATION OF WORK. REMOVE	4   2386524.47     5   2386563.67     6   2386609.27	250 250 250
·			PRIVATE PROPERTY.		INIUVE RUUIS FRU	WI, UN UITERWISE DISTURE,		_
	BOROUGH OF JEAU ALASKA'S CAPITAL CITY	DATE	REVISIONS DESCRIPTION	S DWN. Cł	KD. APP.	<b>P N D</b> Engineers, Inc.	9360 Glacier Highway Ste 100 Juneau, Alaska 99801 Phone: 907-586-2093 Fax: 907-586-2099 www.pndengineers.com	



SOMEL IN

30

DRAWN: WRB APPROVED: CRS









CITY AND BOROUGH OF	

DATE	DESCRIPTION	DWN.	CKD.	APP.			D		9360 Glacier Highway Ste 100 Juneau, Alaska 99801	
							ENGIN	EERS, INC.	Phone: 907-586-2093 Fax: 907-586-2099 www.pndengineers.com	*: 49
						DES	sign: TCB	CHECKED: CRS	SCALE: NTS	A REGIST
					יע	DRA	awn: <u>WRB</u>	APPROVED: CRS		DATE:







