Draft Geotechnical Data Review

Appendix F

October 2, 2017 1773748

Mr. Matt Edge, PE
CRW Engineering Group, LLC
3940 Arctic Boulevard, Suite 300
Anchorage, AK 99503

RE: GEOTECHNICAL DATA REVIEW, MIDTOWN CORRIDOR IMPROVEMENTS WEST 32ND AND EAST 33RD AVENUES BETWEEN ARCTIC BOULEVARD AND OLD SEWARD HIGHWAY, ANCHORAGE, ALASKA

Dear Mr. Edge,

Golder Associates Inc. (Golder) is pleased to present the results of our review of available geotechnical information and pavement reconnaissance for the corridor of West 32nd and East 33rd Avenues between Arctic Boulevard and the Old Seward Highway in Anchorage, Alaska, as shown in Figure 1. This work was performed in accordance with our proposal to CRW Engineering Group, LLC (CRW) dated May 2, 2017.

The scope of work for this project included a review of the available soil and groundwater data and to provide a summary discussing geotechnical conditions that may impact future roadway design. The scope of work also included a pavement distress survey which focused on the identification of areas with poor pavement performance and to provide recommendations for a field investigation program.

1.0 BACKGROUND REVIEW

Our review of data for this report included available geologic information and historical test boring logs provided by the Municipality of Anchorage's (MOA) office of Project Management & Engineering (PM&E). These test boring logs were from a variety of projects along the project corridor including waterline construction, roadway construction, and private development. Detailed maps of the project corridor with historical borehole locations are presented in Figures 2 through 4.

1.1 Surface Geology

The project area lies within the geologic unit identified as the Anchorage Plain alluvium, according to Schmoll and Dobrovolny (1972). This unit is generally comprised of gravel and sand and usually well-bedded and sorted. There is also a likelihood of near-surface peat in the project area with thicknesses greater than 2 feet and common thicknesses of 5 to 10 feet. Surface peat and ash deposits have been observed within the project corridor, as noted below in Section 1.2. A map showing the surface geology is attached as Figure 5.

1.2 Historical Log Review and Background Information

Test boring and test pit logs provided by the PM&E generally showed pre-construction conditions for the area dating back to the mid-1970s. The logs indicated that the area soil conditions were consistent with the review of the surface geology information and were predominantly comprised of poorly graded sand and silty sands. The logs for this area also show the presence of peat deposits throughout the alignment ranging from surface deposits to as deep as 12 feet below the original ground surface.

The deepest peat deposits were observed near the intersection of Calais Drive and A Street. Volcanic ash was also observed during an exploration east of this intersection at between 8 and 12 feet below original ground surface.

Groundwater across the project corridor was recorded to be shallowest west of Denali Street at 5 feet below the original ground surface. Groundwater levels were recorded at 7 to 9 feet below original ground surface for the remaining sections of the project area.

Historical test boring and test pit logs are included at the end of this letter as Appendix A and provide additional detail. The locations are identified in Figures 2 through 4.

Based on a site visit to the project area, our review of the available nearby geotechnical data, and our general understanding of the near-surface geology in the area it is possible that, poor soils including near-surface peat and ash have been removed from under the roadway and replaced with granular material. Given the amount of peat that has been observed in the area historically we would anticipate more roadway distress than has been currently observed. As noted in the Section 2, the western portion of the project alignment has recently been repaved. This may have been as a result of poor soils that have remained in place. Based on the lack of construction documentation that was readily available for our review, suggest the verification of subsurface soil conditions and Section 4 presents a phased approach to characterize these conditions.

2.0 PAVEMENT DISTRESS SURVEY

A site reconnaissance to assess the current condition of the pavement was performed by Daniel Willman and Nicholas Moran, PE, on July 26, 2017. Areas of pavement distress were observed and are noted in Table 1 below. A graphical summary of the distress presented in Table 1 is presented in Figures 2 through 4. The survey was performed after recent rains which allowed for numerous observations of drainage issues. Photos from the reconnaissance can be found in Appendix B, Photo Logs.

Table 1: Summary of Pavement Distress

Old Seward Highway and 33rd Avenue - Intersection	■ Drainage issues and heave near intersection with Kinley's Parking lot
Old Seward Highway to Fairbanks Street	■ Longitudinal cracking, joint distress/raveling in center of 33rd Avenue ■ Large pothole across from alley behind Moose's Tooth ■ Fatigue (alligator) cracking and curb rolling on south side of 33rd Avenue, just west of alley
33rd Avenue and Fairbanks Street - Intersection	■ Poor drainage in intersection ■ Potholes, fatigue cracking, longitudinal joints ■ Fatigue cracking west of intersection (towards Eagle Street)
33rd Avenue and Eagle Street - Intersection	■ Poor drainage, longitudinal and transverse cracking
Eagle Street to Denali Street	■ Fatigue (reflective) cracking in previous patch area
Calais Drive (Denali Street to A Street)	■ Appears to be recently resurfaced ■ Transverse crack across road between vault box and light pole near Midtown Place ■ Large patch at Walmart parking lot entrance between Midtown Place and A Street ■ Patching near A Street

A Street to C Street	■ Longitudinal cracking, joint distress ■ Lots of utility patching ■ Drainage issues on south side of street
C Street to Eide Street	■ Longitudinal and Transverse cracks ■ Utility patching ■ Potholes
Eide Street to Eureka Street	■ Apparent new asphalt, sidewalks, and handicap access. ■ No distress noted.
Eureka Street to Montpelier Court	■ Longitudinal/Transverse cracks
Montpelier Court to Dawson Street	■ Longitudinal crack with significant raveling and potholes, possible overlay/reflective crack ■ Utility (storm drain) extends into 32nd Avenue at Dawson Street
Dawson Street to Arctic Boulevard	■ Transverse crack with pothole patch just west of Dawson Street ■ Transverse cracks ■ Longitudinal cracks between Bering Street and Arctic Boulevard ■ Utility patch failing
32nd Avenue and Bering Street - Intersection	■ Poor drainage near storm drain inlets, curb rolling

3.0 FIELD INVESTIGATION RECOMMENDATIONS

The presence of a high groundwater table, historic presence of peat or ash, and potentially poor sub-grade materials shown in the historical logs indicate an additional field exploration to delineate existing conditions may be warranted.

The MOA PM&E Design Criteria Manual (DCM) (Section 7.1 – Soil Investigation Standards) recommends 300-foot spacing between geotechnical boreholes in a road section, which equates to approximately 18 boreholes for this project alignment. However, based on previous discussions with CRW, funding is limited and the MOA needs to reduce costs on the project. Therefore, we outline a phased approach for developing geotechnical design recommendations based on reliance on existing data and limited site specific investigation that can be used to refine interpretation of the historic data.

- **Phase 1 - Limited Field Investigation:** The Phase 1 program will include considerations learned during the background review of available geotechnical data and recommend advancing four boreholes in areas of poorest performance. The field program should include advancing two boreholes along West 33rd Avenue between Old Seward Highway and Denali Street, and two boreholes along West 32nd Avenue between C Street and Arctic Boulevard. The findings of this effort should be compared to historical borings and available as-built documents to develop an understanding of construction efforts from past upgrade projects. The goal of the program is to evaluate the current road section and understand the subsurface conditions within the roadway and evaluate what improvements have been performed in the past. Care will be taken to drill away from existing utility trenches and to attempt to locate remaining peat and ash deposits identified in historical test hole logs.

- **Phase 2 – Optional Investigations:** If additional information to develop geotechnical design criteria is needed for the remaining area, especially if peat and ash deposits still remain within the roadway, additional boreholes should be advanced in select areas. The optional Phase 2 field investigation should consist of drilling additional boreholes to infill gaps in the geotechnical data and identify extents of poor soils. To be consistent with the MOA's recommended borehole spacing, up to 14 additional boreholes may be advanced.

Groundwater level monitoring should also be performed on installed standpipe piezometers following installation. Multiple groundwater monitoring events should be planned to capture the fluctuation of seasonal groundwater levels.

Golder would be pleased to consult with CRW and design a geotechnical exploration program that would meet the needs of the design as well as reduce the risk of unknown subsurface site conditions.

4.0 USE OF REPORT

This report was prepared for the exclusive use of CRW in support of the design study for improvements along 32nd and 33rd Avenues. The interpretation of subsurface conditions in the project area are inferred from historical data and should be confirmed by a site specific exploration.

There are possible variations in the subsurface conditions between explorations and also with time. Unanticipated soil conditions are commonly encountered that cannot fully be determined by a limited number of explorations or soil samples. Such unexpected conditions frequently result in additional project costs in order to build the project as designed. Therefore, a contingency for unanticipated conditions should be included in a construction budget and schedule.

The work program for this review followed the standard of care expected of professionals undertaking similar work in the State of Alaska under similar conditions. No warranty expressed or implied is made.

5.0 CLOSING

Thank you for the opportunity to assist CRW with this project. If you have any questions or require additional information, please call Mark or me at (907) 344-6001.

GOLDER ASSOCIATES INC.

DRAFT, No Signatures

John D. Thornley, PE
Senior Geotechnical Engineer

Mark R. Musial, PE
Principal and Senior Geotechnical Engineer

Figure 1 Area Map
Figure 2-4 Historical Borehole Location Maps
Figure 5 Geologic Map

Appendix A Historical Boreholes
Appendix B Photo Logs

NJM/JDT/MRM/mlp

FIGURES

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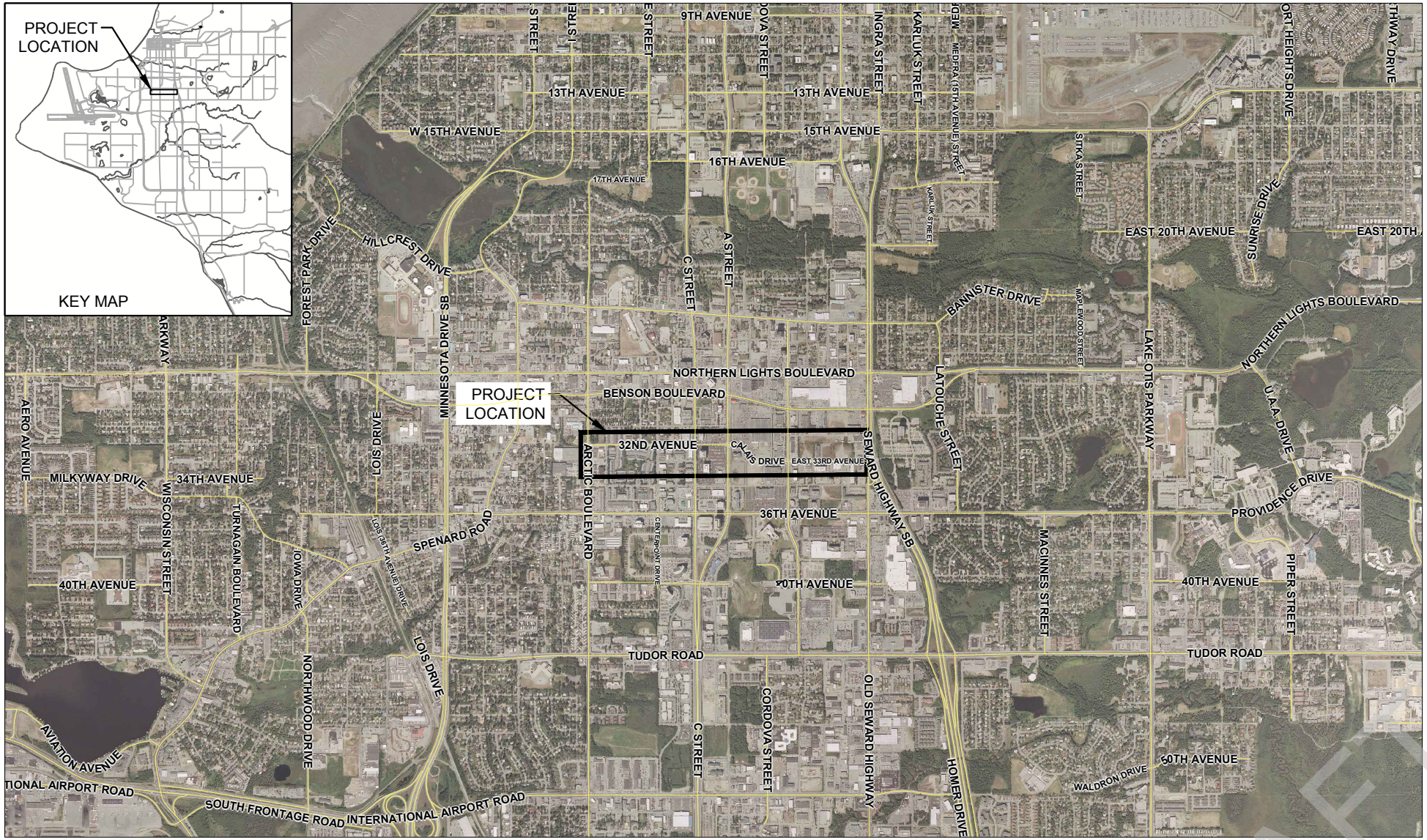

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REFERENCES

1. IMAGERY PROVIDED BY 2015 ANCHORAGE LIDAR AND AERIAL IMAGERY PROJECT.
2. ROAD DATA PROVIDED BY ALASKA DOT&PF.

CLIENT
CRW ENGINEERING GROUP, LLC

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-02
DESIGNED	-
PREPARED	APG
REVIEWED	NJM
APPROVED	JDT

PROJECT
WEST 32ND AVENUE AND EAST 33RD AVENUE UPGRADES

ANCHORAGE, ALASKA

TITLE
VICINITY MAP

PROJECT NO.	CONTROL	REV.	FIGURE
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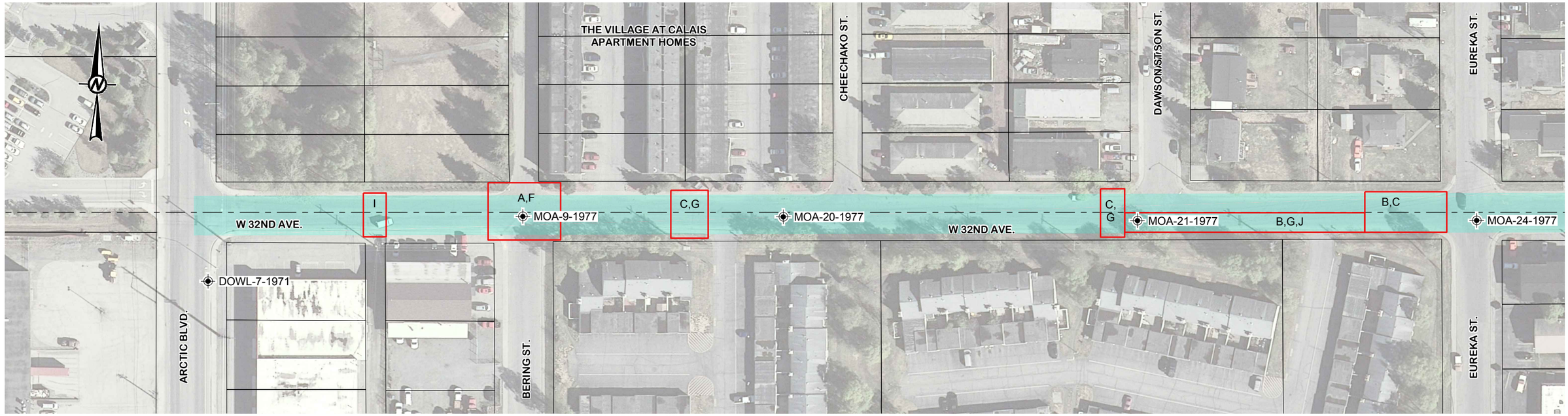

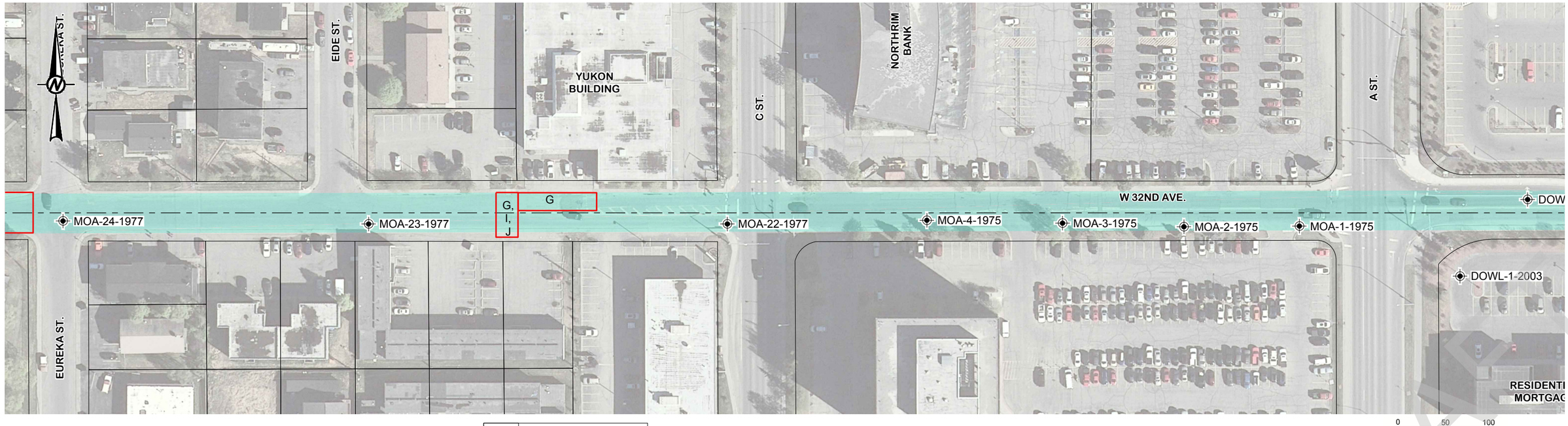

LEGEND

MOA-21-1977 — HISTORICAL BOREHOLE LOCATION AND NAME

A,B — PAVEMENT DISTRESS AREA - LETTER CODE CORRESPONDS WITH LIST OF PAVEMENT DISTRESS TYPES (SEE TABLE) (PAVEMENT DISTRESS AREAS ARE APPROXIMATE)

REFERENCE BASEMAP AND IMAGE PROVIDED BY CRW ON 2017-07-24.

TYPE CODE	PAVEMENT DISTRESS TYPE
A	DRAINAGE ISSUE
B	LONGITUDINAL CRACKING
C	TRANSVERSE CRACKING
D	JOINT DISTRESS
E	FATIGUE CRACKING
F	CURB ROLLING
G	POTHOLES
H	PATCHING
I	UTILITY CRACKING
J	RAVELLING

0 50 100
1" = 100' FEET

CLIENT
CRW ENGINEERING GROUP, LLC

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-02
DESIGNED	-
PREPARED	APG
REVIEWED	NJM
APPROVED	JDT

PROJECT
WEST 32ND AVENUE AND EAST 33RD AVENUE UPGRADES

ANCHORAGE, ALASKA

TITLE
HISTORICAL BOREHOLE LOCATION MAP - ARCTIC AVENUE TO A STREET

PROJECT NO.	CONTROL	REV.	FIGURE
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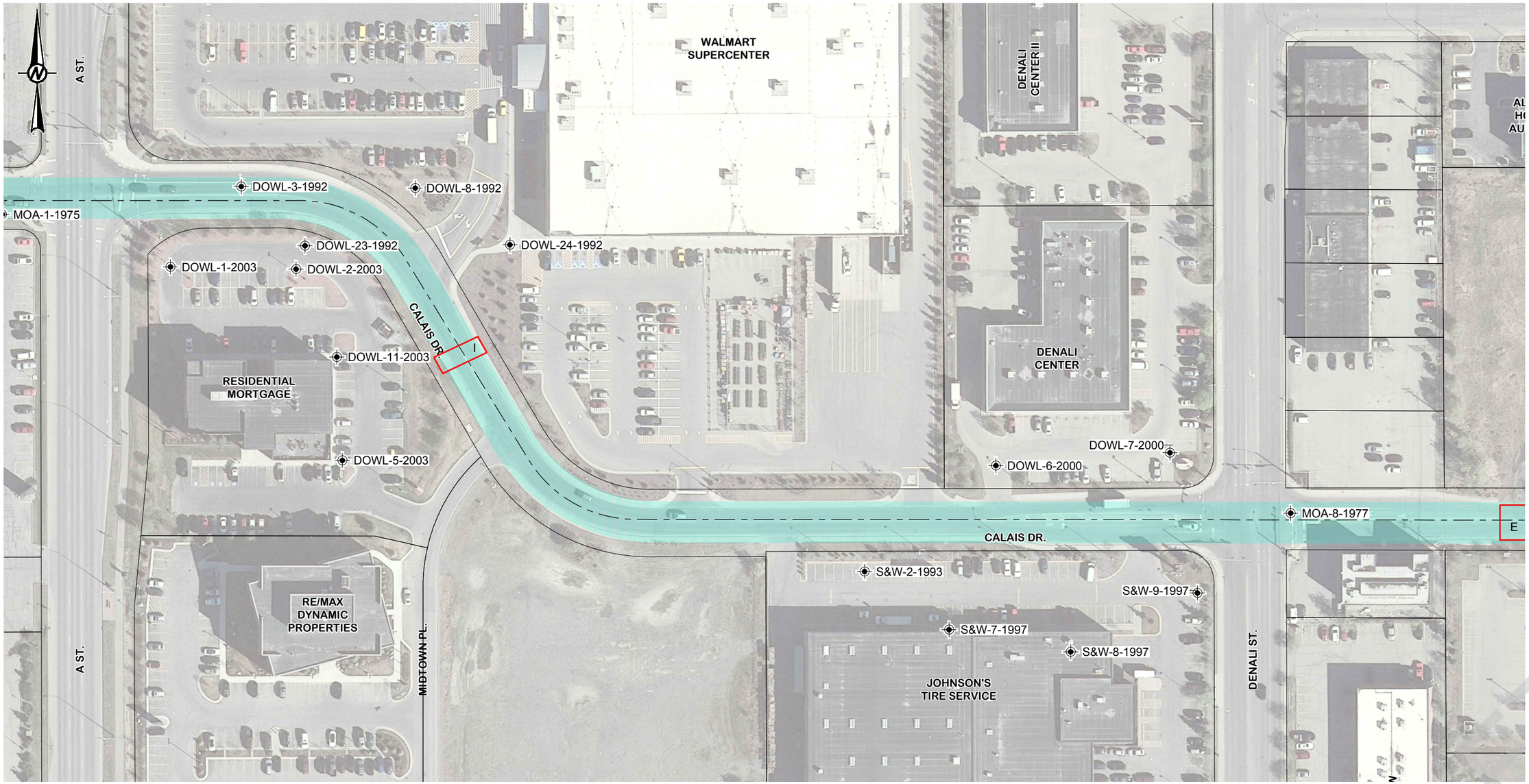

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1" = 100' FEET

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MOA-21-1977 — HISTORICAL BOREHOLE LOCATION AND NAME

I — PAVEMENT DISTRESS AREA - LETTER CODE CORRESPONDS WITH LIST OF PAVEMENT DISTRESS TYPES (SEE TABLE)

REFERENCE BASEMAP AND IMAGE PROVIDED BY CRW ON 2017-07-24.

TYPE CODE	PAVEMENT DISTRESS TYPE
A	DRAINAGE ISSUE
B	LONGITUDINAL CRACKING
C	TRANSVERSE CRACKING
D	JOINT DISTRESS
E	FATIGUE CRACKING
F	CURB ROLLING
G	POTHOLES
H	PATCHING
I	UTILITY CRACKING
J	RAVELLING

CLIENT
CRW ENGINEERING GROUP, LLC

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-02
DESIGNED	-
PREPARED	APG
REVIEWED	NJM
APPROVED	JDT

PROJECT
WEST 32ND AVENUE AND EAST 33RD AVENUE UPGRADES

ANCHORAGE, ALASKA

TITLE
HISTORICAL BOREHOLE LOCATION MAP - A STREET TO DENALI AVENUE

PROJECT NO.	CONTROL	REV.	FIGURE
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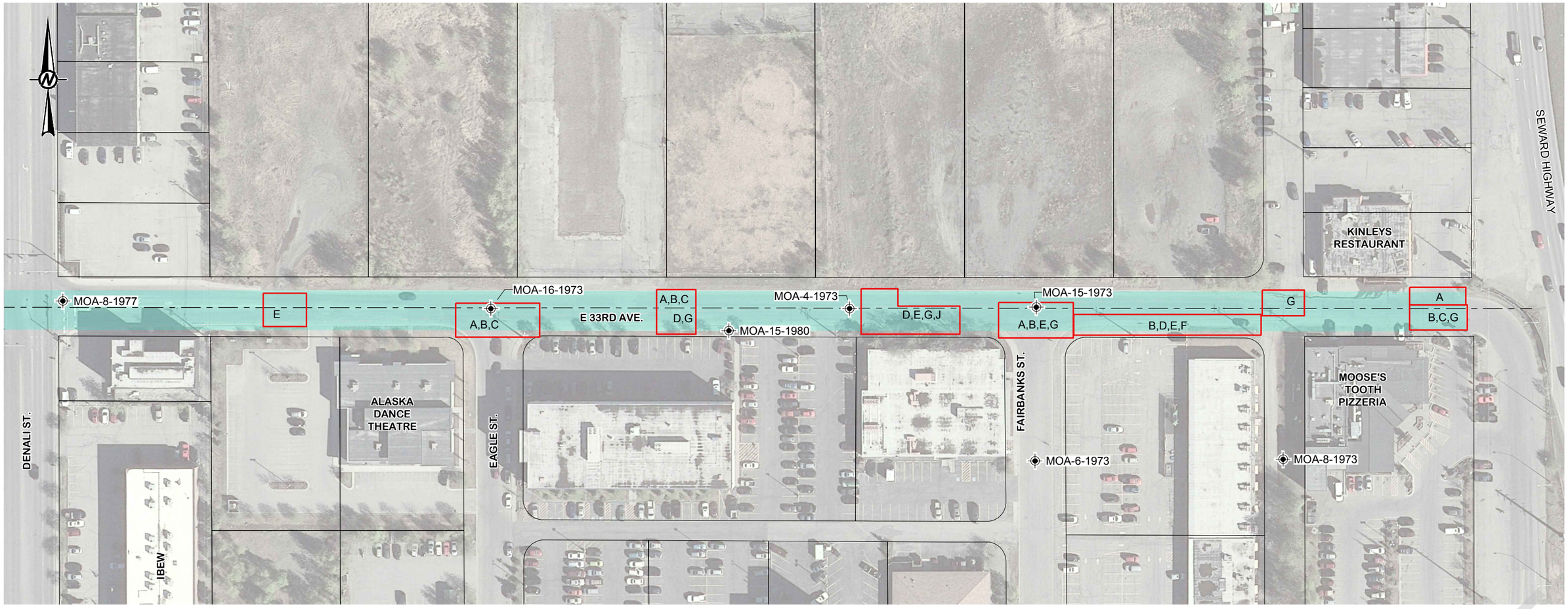

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1" = 100' FEET

LEGEND

MOA-21-1977 — HISTORICAL BOREHOLE LOCATION AND NAME

A,B — PAVEMENT DISTRESS AREA - LETTER CODE CORRESPONDS WITH LIST OF PAVEMENT DISTRESS TYPES (SEE TABLE) (PAVEMENT DISTRESS AREAS ARE APPROXIMATE)

REFERENCE BASEMAP AND IMAGE PROVIDED BY CRW ON 2017-07-24.

TYPE CODE	PAVEMENT DISTRESS TYPE
A	DRAINAGE ISSUE
B	LONGITUDINAL CRACKING
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F	CURB ROLLING
G	POTHOLES
H	PATCHING
I	UTILITY CRACKING
J	RAVELLING

CLIENT
CRW ENGINEERING GROUP, LLC

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-02
DESIGNED	-
PREPARED	APG
REVIEWED	NJM
APPROVED	JDT

PROJECT
WEST 32ND AVENUE AND EAST 33RD AVENUE UPGRADES

ANCHORAGE, ALASKA

TITLE
HISTORICAL BOREHOLE LOCATION MAP - DENALI AVENUE TO SEWARD HIGHWAY

PROJECT NO.	CONTROL	REV.	FIGURE
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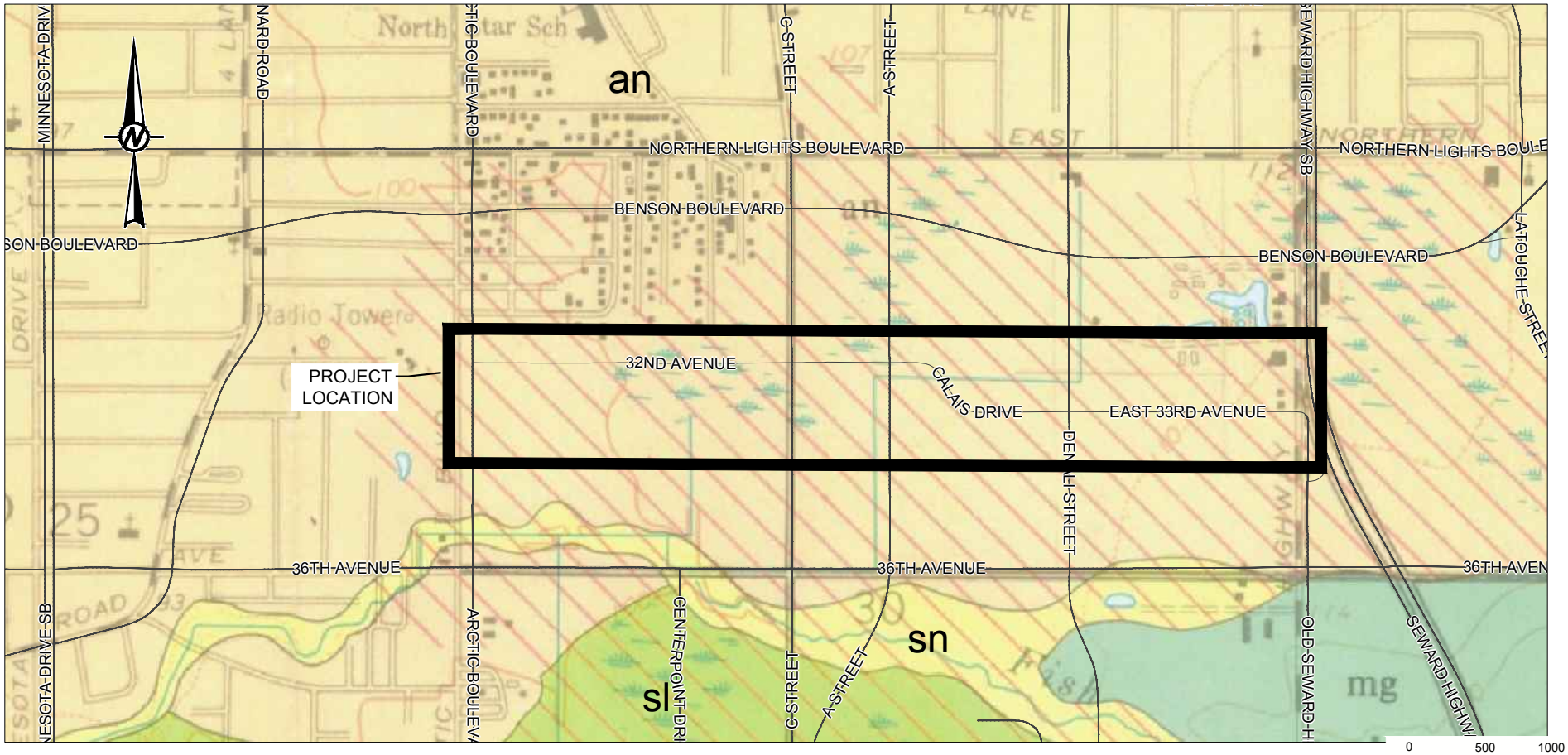

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an	an- ALLUVIUM OF THE ANCHORAGE PLAIN. GRAVEL AND SAND, GENERALLY WELL BEDDED AND SORTED.
al	al - ALLUVIUM IN ABANDONED STREAMS CHANNELS AND IN TERRACES ALONG MODERN STREAMS. GRAVEL AND SAND, GENERALLY WELL BEDDED AND WELL SORTED.
mg	mg - MARINE, GLACIAL, AND OR LACUSTRINE DEPOSITS. CHIEFLY FINE SAND AND SILT.
sl	sl - SAND DEPOSITS IN A WIDE LOW-LYING BELT CENTERED AROUND CONNORS LAKE. CHIEFLY SAND, WELL BEDDED AND WELL SORTED.
	PEAT - COMMONLY RANGES FROM 5-10 FEET THICK

REFERENCES

1. GEOLOGIC MAPPING PROVIDED BY MOA, AND BASED ON SURFICIAL GEOLOGY BY SCHMOLL AND DOBROVOLNY (1972).

CLIENT
CRW ENGINEERING GROUP, LLC

CONSULTANT
Golder Associates

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PREPARED	APG
REVIEWED	NJM
APPROVED	JDT

PROJECT
WEST 32ND AVENUE AND EAST 33RD AVENUE UPGRADES

ANCHORAGE, ALASKA

TITLE
GEOLOGIC MAP

PROJECT NO.	CONTROL	REV.	FIGURE
1773748		0	5

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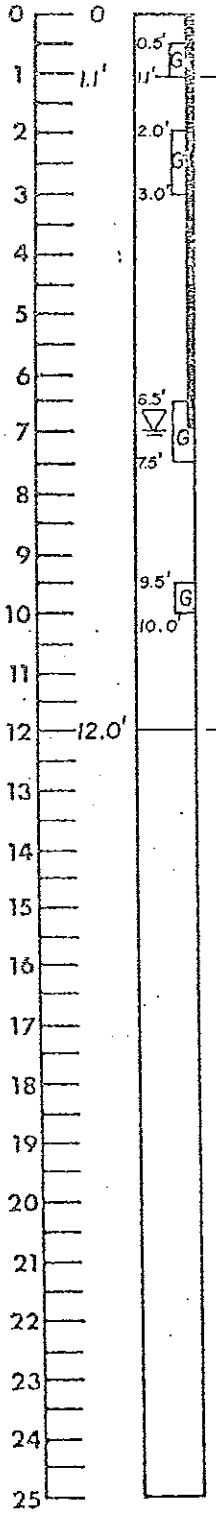
APPENDIX A
HISTORICAL BOREHOLES

SHEET 7 OF 18

CLIENT W. Redbi, & Assoc.
PROJECT Arctic Blvd. Expl.

DA. 16 March 1971
W.O. NO. 11413

T.H. 7 ELEV. 94.1 (3)
Sta. 38 + 82 5' L CL



NFS/F-1, Asphalt Seal, Sandy Gravel Base.

M = 5.2 %

M = 4.2 %

NFS, Brown, Slightly Silty, Gravelly Sand, Damp.

Water Table 6.5'
M = 14.7 %

Color Changed to Gray at 6.0', Same Matl.

M = 17.8 %

Bottom of Hole

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(14)

SOILS LOG

HOLE NO. #9

LOCATION W-32ND AVE & EUREKA ST / ℄ OF BERING ST / 5 FT SO. OF THE ℄ OF W-32ND AVE.

DATE 4/5/77

BY M.E. KRUEGER

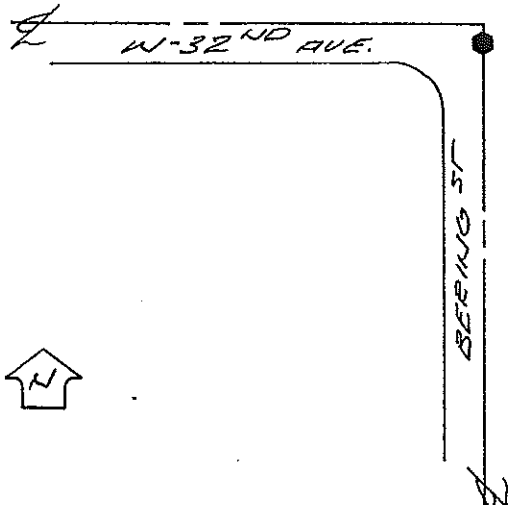
COMMENTS DRIVEN DUE TO WATER TABLE

DEPTH 8.5 FT

WATER TABLE 7.0 FT

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
	0			EXIST. GROUND / ROAD SURFACE
9-A MA-263	1–5	SW-SM	NFS	BRN. GVLY (18%) - SAND (76%) w/ SILT (6%) / MOIST = 7% / NP MED. DENSE
9-B MA-269	5–7	SW-SM	F-2	GR GVLY (12%) - SAND (81%) w/ SILT (7%) / MOIST = 15% / NP LOW DENSITY
	7			▼
	8–14			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL (2–5)

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE #200 UNLESS OTHERWISE NOTED

GRID NO. 1630

HK

MUNICIPALITY OF ANCHORAGE

DEPARTMENT ~~OF~~ PUBLIC WORKS

CONSTRUCTION DIVISION

SOILS LOG

HOLE NO. #20

LOCATION 32ND & EUREKA ST / & OF CHEECHAKO ST
5 FT SO. OF THE & OF W-32ND AVE.

DATE 4/7/77

BY M.E. KRUEGER

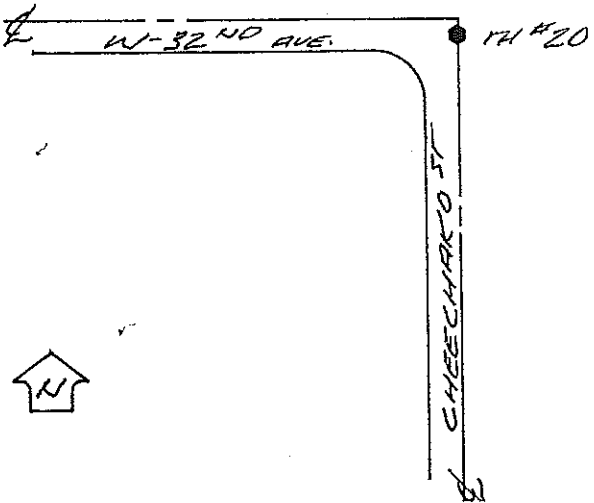
COMMENTS

DEPTH 9 FT

WATER TABLE 7.5'

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
20-A MA-308	0–2	SM	F-2	EXIST. GROUND / ROAD SURFACE BRN. SILTY (14%) - SAND (78%) W/ GRAVEL (8%) / MOIST. = 10% / NP LOW DENSITY
20-B MA-309	3–5	SW	NFS.	BRN. GRAVELLY (17%) - SAND (81%) / MOIST. = 3% / N.P. / SILT = 2% LOW DENSITY
20-C MA-310 ▼	6–7	SW	NFS.	BRN. GRAVELLY (6%) - SAND (92%) / MOIST. = 9% / SILT = 2% MED. DENSITY
20-D MA-311	8–14	SW	NFS.	GR. GRAVELLY (24%) - (COBBLE) - SAND (74%) / MOIST. = 12% / SILT = 2% (WATER BEARING) / N.P. / MED. DENSE

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 1630

MUNICIPALITY OF ANCHORAGE

DEPARTMENT ~~OF~~ PUBLIC WORKS

CONSTRUCTION DIVISION

SOILS LOG

HOLE NO. 21 (21)

LOCATION 32ND & EUREKA ST / ℄ OF DAWSON ST
10 FT SO. OF THE ℄ OF W-32ND AVE.

DATE 9/9/77

BY M.G. KRUEGER

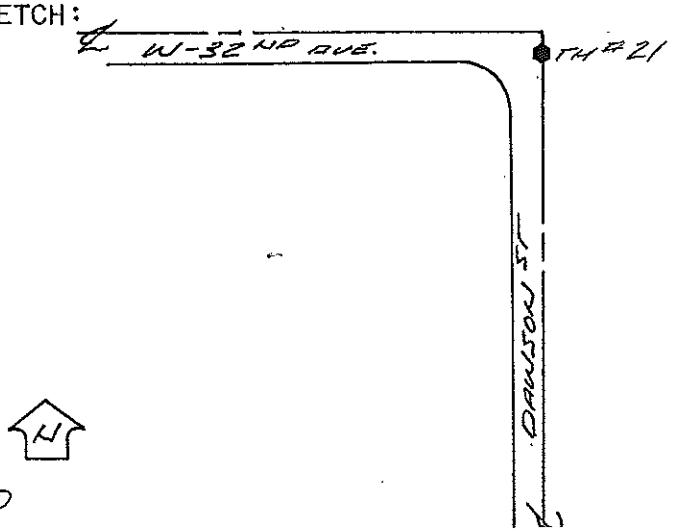
COMMENTS

DEPTH 9 FT

WATER TABLE 7 FT

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
21-A MA-312	0–2	SW-SM	F-2	EXIST. GROUND / ROAD SURFACE BRN. GRAVEL (15%) - SAND (78%) w/ SILT (7%) / MOIST = 5% / N.P. MED. DENSE
21-B MA-313	3–4	SM	F-2	BRN. SILTY (21%) - SAND (75%) / MOIST = 12% / GRAVEL = 4% / N.P. DENSE
21-C MA-314	5–7	SP	NFS	BRN SAND (93%) / MOIST = 5% / N.P. / SILT = 4% / GRAVEL = 3% / LOW DENSITY
21-D MA-315	8–14	SW	NFS.	GR. GRAVEL (37% - COARSE) - SAND (61%) / MOIST = 9% (WATER BEARING) N.P. / LOW DENSITY / SILT = 2%

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 16-30

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(11)

SOILS LOG

HOLE NO. #24

LOCATION 32ND & EUREKA ST / ℄ OF EUREKA ST / 5 FT SO. OF THE ℄ OF W-32ND AVE

DATE 4/5/77

BY M.E. KRUEGER

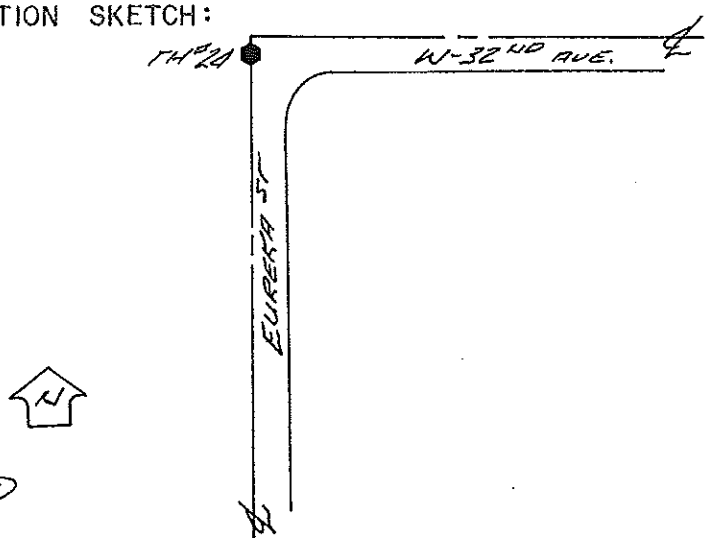
COMMENTS

DEPTH 12.5 FT

WATER TABLE NONE

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
	0			EXIST. GROUND / ROAD SURFACE
24-A MA-325	1	SP-SM	F-2	BRN. GRVLY (34%) - SAND (58%) w/ SILT (8%) / MOIST = 7% / N.P. / MED. DENSE
24-B MA-324	2	SM	F-2	GR. GRVLY (16%) - SAND (18%) - SAND (66%) / MOIST = 18% / N.P. / DENSE
	3			
VISUAL	4	PT	N/A	BRN. ORG. (PEAT)
	5			
24-C MA-325	6	SM	F-2	VARIED COLORATION, BRN. TO GR. SAND (24%) - SAND (67%) w/ GRAVEL (9%)
	7			HIGHLY ORGANIC w/ STICKS & ROOTS / MOIST = 28% / N.P.
	8			LOW DENSITY / (HIGHLY DISTURBED)
VISUAL	9	PT	N/A	NOTE: POSSIBLY DUE TO WATER LINE CONST.
	10			BRN. ORG. (PEAT)
24-D MA-326	11	SW-SM	F-2	GR. GRVLY (13%) - SAND (78%) w/ SILT (9%) / MOIST = 20% / N.P. /
	12			LOW DENSITY (HIGHLY DISTURBED)
	13			
	14			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 16130

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(16)

SOILS LOG

HOLE NO. 23

LOCATION 32ND & EUREKA ST / 15 FT W. OF THE ℄ OF EIDE ST
5 FT SO. OF THE ℄ OF W-32ND AVE

DATE 4/8/77

BY M.E. KRUEGER

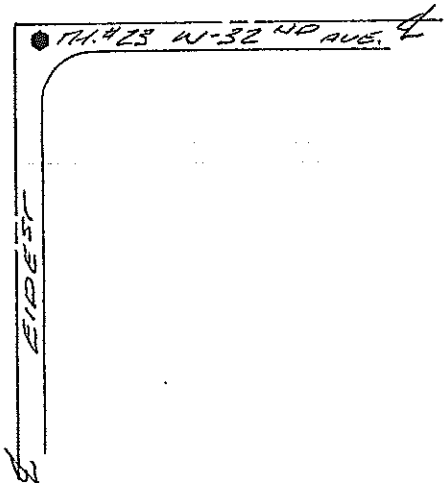
COMMENTS

DEPTH 11.5 FT

WATER TABLE NONE

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
23-A MA-320	0–1	GW-GM	NFS	EXIST. GROUND / ROAD SURFACE BRN SDY (28%) - GRAVEL W/ SILT (5%) + ISOLATED COBBLES / MOIST = 4% / MED. DENSE / N.P. / EST 5% +3" MATL.
23-B MA-321	2–3	SM	F-2	BRN SLTY (15%) - GLY (27%) - SAND (58%) / HIGHLY ORGANIC / MOIST = 41% N.P. / LOW DENSITY
VISUAL	4–8	PT	N/A	BRN. ORG. (PEAT)
23-C MA-322	9–14	SM	F-3	GR. SLTY (33%) - SAND (67%) W/ A TRACE ORG. / MOIST. = 54% / MED. DENSE

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 1630

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

SOILS LOG

HOLE NO. 22 (9)

LOCATION 32ND & EUREKA ST / 40FT W. OF THE ℄ OF "C ST"
10FT SO. OF THE ℄ OF W-32ND AVE.

DATE 4/8/77

BY M.E. KRUEGER

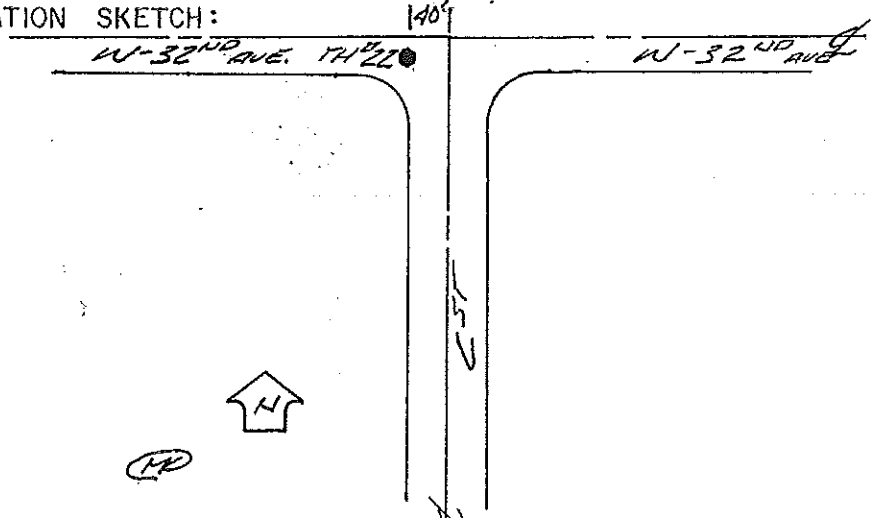
COMMENTS

DEPTH 12FT

WATER TABLE 11FT

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
	0			EXIST. GROUND / ROAD SURFACE
22-A MA-316	1	SW-SM	F-2	BRN. GRVLY (31%) - SAND (58%) W/ SILT (11%) / MOIST = 6% / N.P.
	2			MED. DENSE
	3			
	4			
22-B MA-317	5	SM	F-2	BRN. SLTY (8%) - GRVLY (29%) - SAND (63%) / MOIST = 6% / N.P.
	6			MED. DENSE
	7			
	8			
22-C MA-318	9	SM	F-1	GR. SLTY (33%) - SAND (66%) / MOIST = 16% / GRAVEL = 1%
	10			N.P. / DENSE
	11			
22-D MA-319	12	SW-SM	F-2	GR. GRVLY (17%) - SAND (75%) W/ SILT (8%) / MOIST = 13 / N.P.
	13			MED. DENSE
	14			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

2 3 4 5 FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 16'30

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(16)

SOILS LOG

HOLE NO. 4

LOCATION Calais Sub.

DATE 1975

BY Const. Test Lab.

COMMENTS 200' E. OF ℄ OF C Street ON ℄ OF 32nd Ave

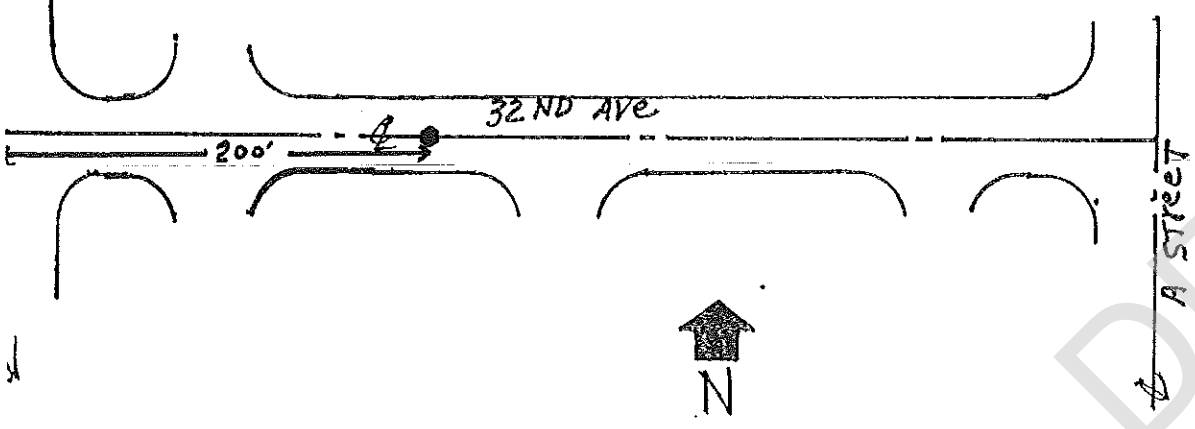
DEPTH 10'

WATER TABLE None

75/89

DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
0			
1			
2		F-2	Gravelly silty sand
3			
4			
5			Peat
6		F-4	Sandy silt
7			
8		NFS	Saturated gravelly sand
9			
10			
11			
12			
13			
14			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

2 3 4 5 FROZEN MATERIAL

ALL FROST CLASSIFICATIC
BASED ON THE .02mm = 50
OF THE #200 UNLESS
OTHERWISE NOTED

GRID NO. 1630 D

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

SOILS LOG

(17)

HOLE NO. 3

LOCATION Calais Sub.

DATE 1975

BY Const. Test Lab.

COMMENTS 310' W. of ℄ of A Street on ℄ of 32 nd. Ave

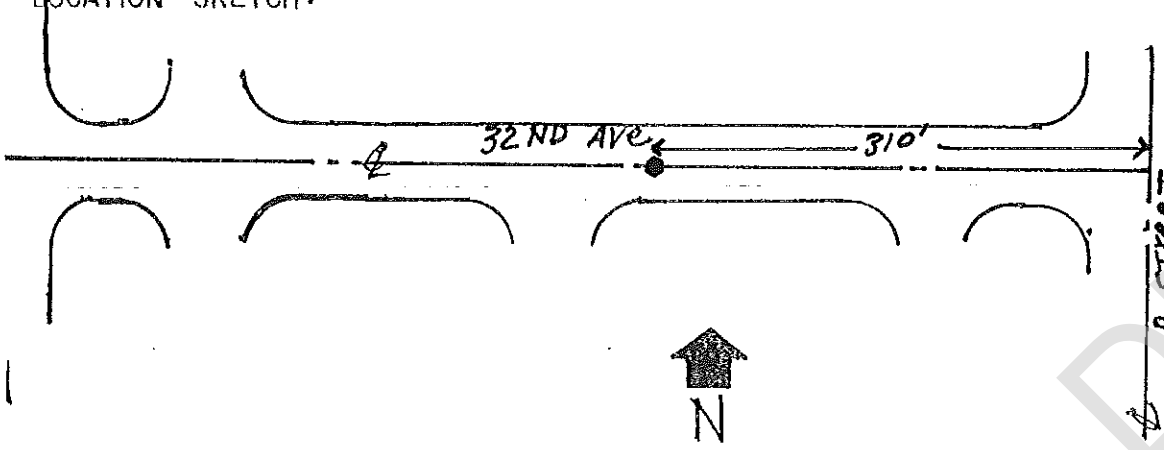
DEPTH 10'

WATER TABLE None

75/89

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
	0			
	1			
	2		F-2	Gravelly silty Sand
	3			
	4			
	5			
	6			Peat
	7			
	8		NFS.	Saturated Grey Sand
	9			
	10			
	11			
	12			
	13			
	14			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATIC BASED ON THE .02mm = 50 OF THE #200 UNLESS OTHERWISE NOTED

GRID NO. 1630 C

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

SOILS LOG

(18)

HOLE NO. 2

LOCATION Calais Sub.

DATE 1975
BY Const Test Lab.

COMMENTS 200' W of L of A Street along C of 32nd Ave

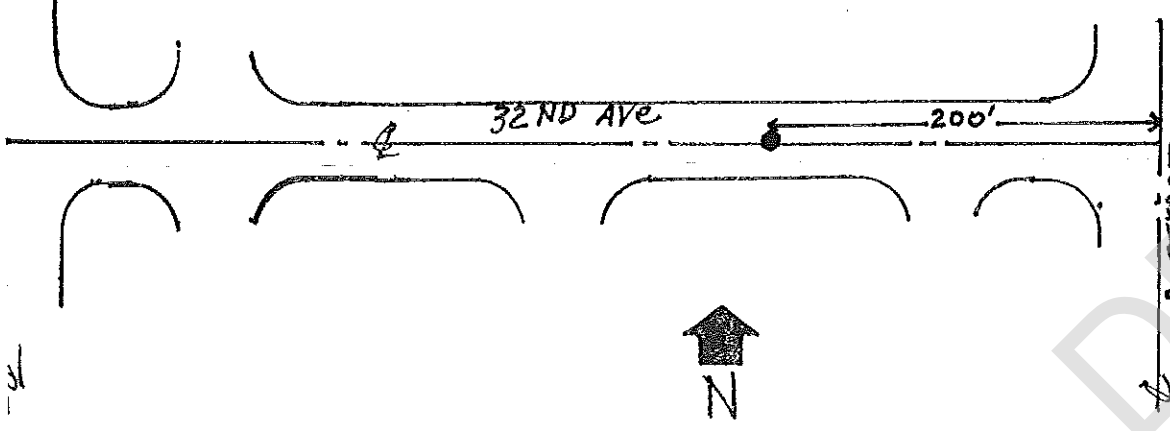
DEPTH 10'

WATER TABLE None

25/89

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
	0			
	1			
	2		F-2	Gravelly Silty Sand
	3			
	4			
	5			
	6			Peat
	7		F-4	Silt
	8			
	9		NFS	Saturated Grey Sand
	10			
	11			
	12			
	13			
	14			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATIC BASED ON THE .02mm = 50 OF THE #200 UNLESS OTHERWISE NOTED

GRID NO. 1630

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

SOILS LOG

HOLE NO. 1 (19)

LOCATION Calais Sub.

DATE 1975

BY Const. Test Lab.

COMMENTS 60' W. OF ℄ OF A Street ON ℄ OF 32ND AVE

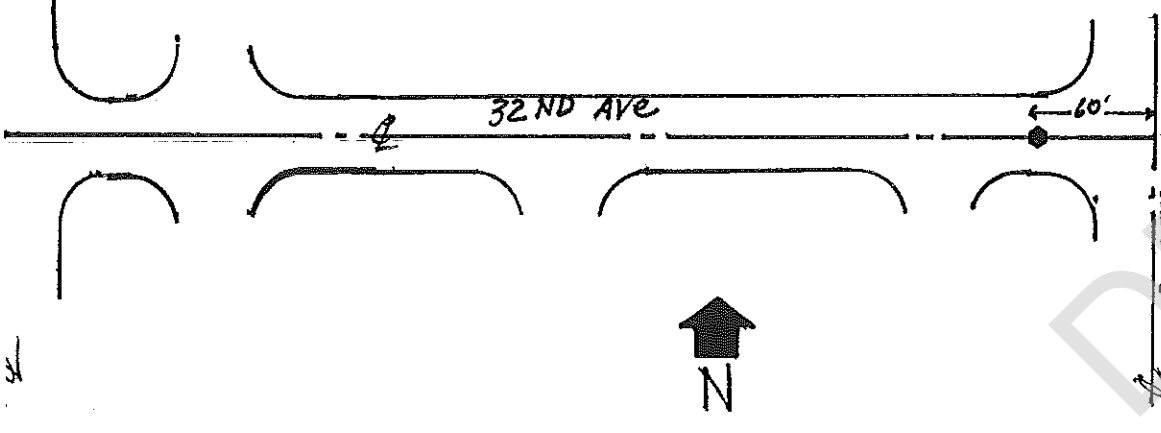
DEPTH 10'

WATER TABLE None

75/89

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
	0			
	1			
	2		F-2	Gravelly Silty Sand
	3			
	4			
	5			
	6			Peat
	7			
	8			
	9		NFS	Grey Sand FES
	10			
	11			
	12			
	13			
	14			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

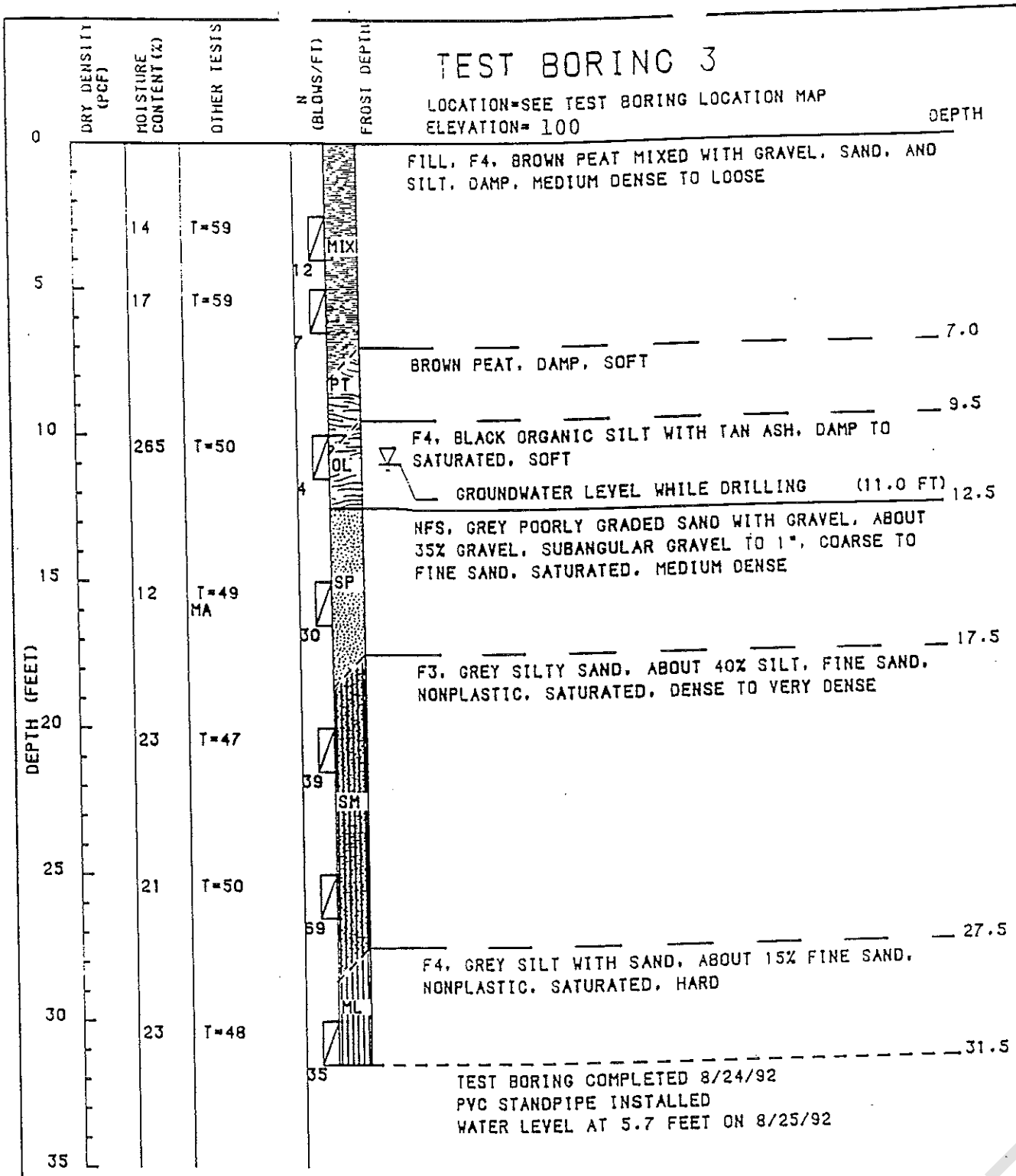
FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 1130 C

TEST BORING 3

LOCATION=SEE TEST BORING LOCATION MAP
ELEVATION= 100



KEY

MA = MECHANICAL ANALYSIS
LL = LIQUID LIMIT
PI = PLASTIC INDEX
PP = POCKET PENETROMETER (TSF)
TV = TORVANE (TSF).
□ = GRAB SAMPLE
▨ = SPT SAMPLE
Ⓢ = SHELBY TUBE-PUSHED
⊠ = 2.5" I.D. SPOON SAMPLE 340# WEIGHT, 30" FALL
T = SAMPLE TEMPERATURE (°F). PROBABLY AFFECTED BY SAMPLING PROCEDURE

DOWL ENGINEERS

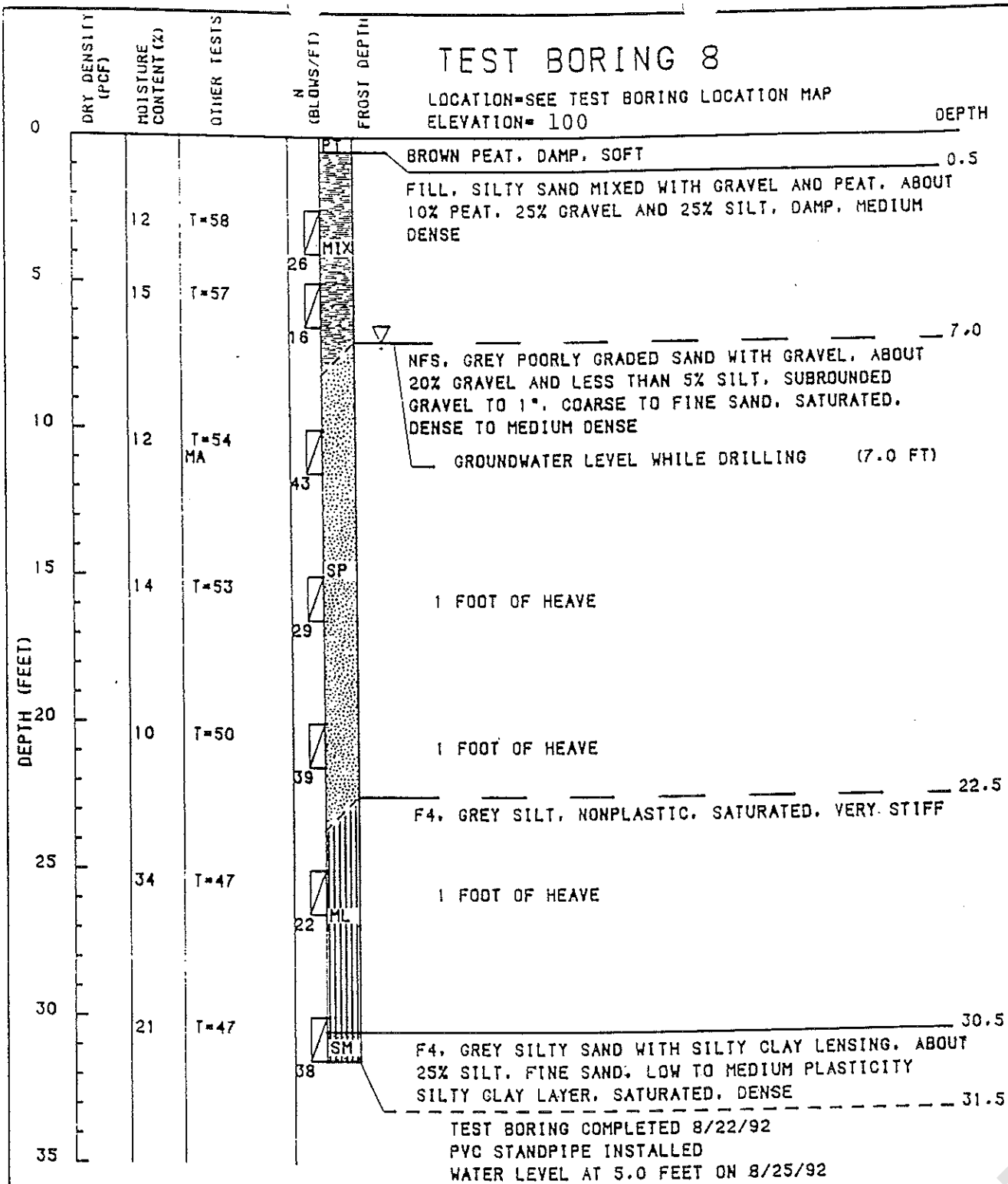
LOG OF BORING

LOGGED BY OZ HATCH
W.O. D54374

FIGURE 5

TEST BORING 8

LOCATION=SEE TEST BORING LOCATION MAP
ELEVATION= 100



KEY

MA = MECHANICAL ANALYSIS
LL = LIQUID LIMIT
PI = PLASTIC INDEX
PP = POCKET PENETROMETER (TSF)
TV = TORVANE (TSF)
☐ = GRAB SAMPLE
☒ = SPT SAMPLE
S = SHELBY TUBE-PUSHED
☒ = 2.5" I.D. SPOON SAMPLE 340# WEIGHT, 30" FALL
T = SAMPLE TEMPERATURE (°F) PROBABLY AFFECTED BY SAMPLING PROCEDURE

DOWL ENGINEERS

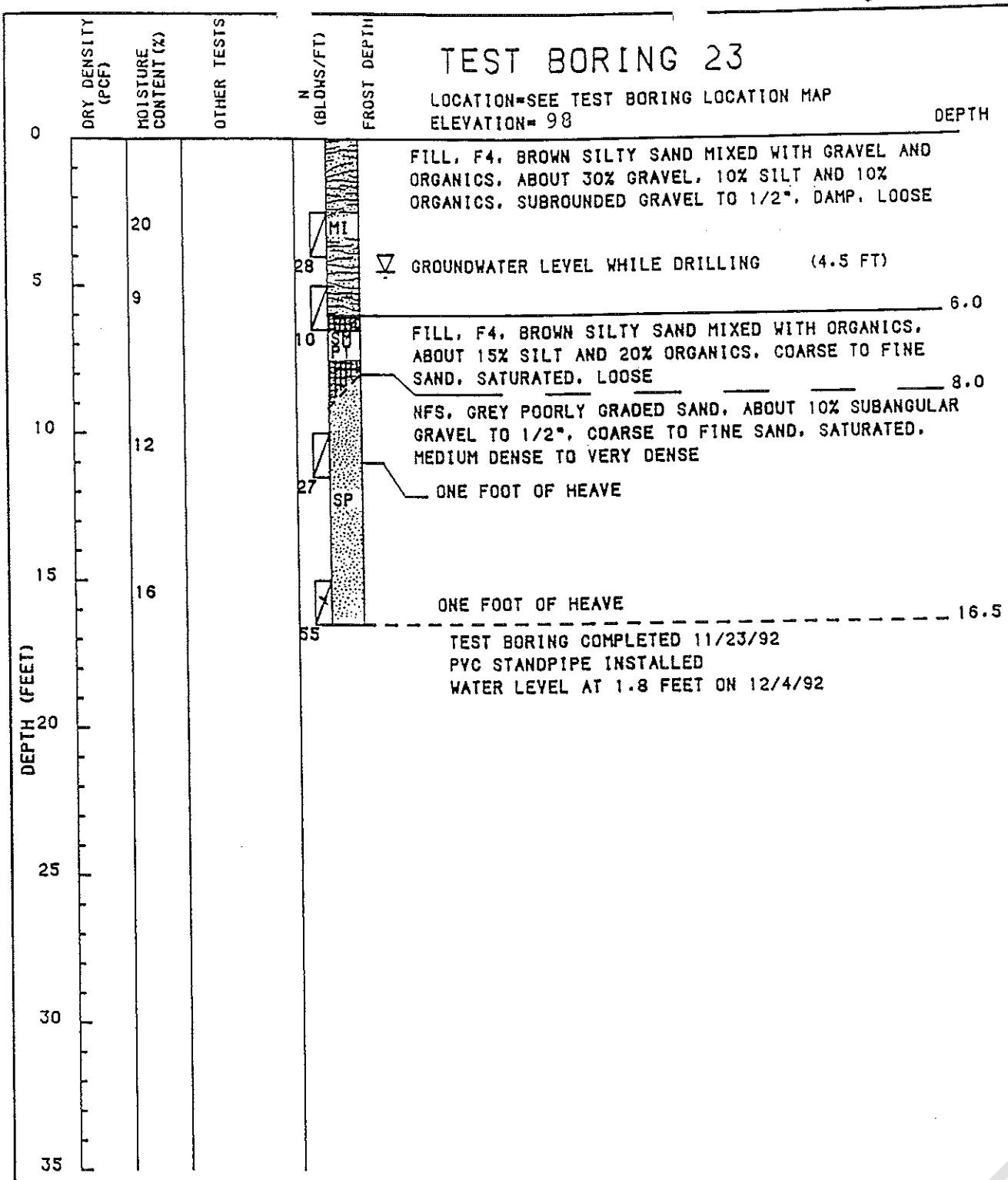
LOG OF BORING

LOGGED BY OZ HATCH
W.O. D54374

FIGURE 10

TEST BORING 23

LOCATION=SEE TEST BORING LOCATION MAP
ELEVATION= 98



KEY

MA = MECHANICAL ANALYSIS
LL = LIQUID LIMIT
PI = PLASTIC INDEX
PP = POCKET PENETROMETER (TSF)
TV = TORVANE (TSF)
☐ = GRAB SAMPLE
☒ = SPT SAMPLE
Ⓢ = SHELBY TUBE-PUSHED
⊠ = 2.5" I.D. SPOON SAMPLE 340# WEIGHT, 30" FALL
T = SAMPLE TEMPERATURE (°F) PROBABLY AFFECTED BY SAMPLING PROCEDURE

DOWL ENGINEERS

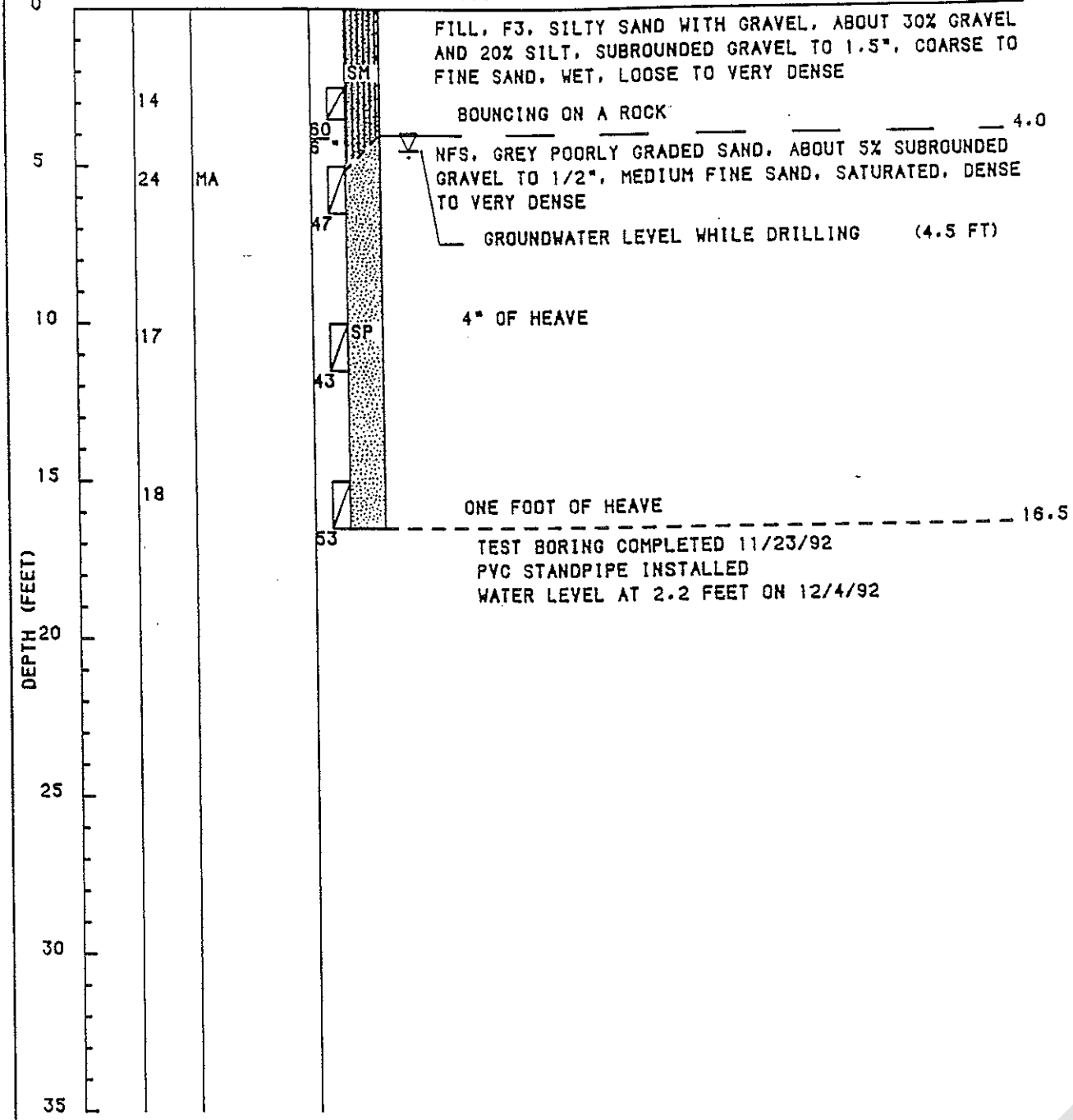
LOG OF BORING

LOGGED BY FEDERICO LIER
W.O. 054374

FIGURE 25

TEST BORING 24

LOCATION=SEE TEST BORING LOCATION MAP
ELEVATION= 99



KEY

MA = MECHANICAL ANALYSIS
LL = LIQUID LIMIT
PI = PLASTIC INDEX
PP = POCKET PENETROMETER (TSF)
TV = TORVANE (TSF)
☐ = GRAB SAMPLE
▨ = SPT SAMPLE
▩ = SHELBY TUBE-PUSHED
☒ = 2.5" I.D. SPOON SAMPLE 340# WEIGHT, 30" FALL
T = SAMPLE TEMPERATURE (°F) PROBABLY AFFECTED BY SAMPLING PROCEDURE

DOWL ENGINEERS

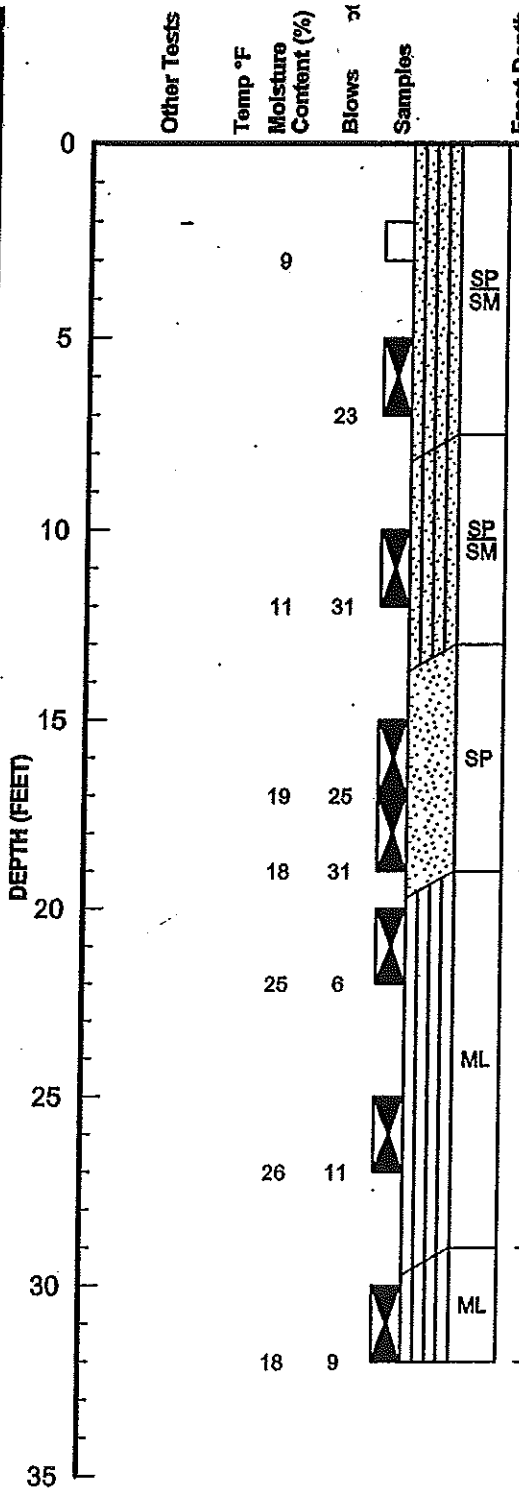
LOG OF BORING

LOGGED BY FEDERICO LIER
W.O. D54374

FIGURE 26

TEST BORIN 1

LOCATION: SEE TEST BORING LOCATION MAP
ELEVATION:



DEPTH	
	GRASS SURFACE
	FILL, S2 (MOA F2), BROWN, **POORLY GRADED SAND WITH SILT AND GRAVEL**, ABOUT 25% GRAVEL AND 10% SILT, GRAVEL SUBROUNDED TO 1", MEDIUM SAND, DAMP, MEDIUM DENSE
	NO SAMPLE RECOVERED - DRIVING COBBLE AHEAD OF SAMPLER, GROUNDWATER ENCOUNTERED AT 6' WHILE DRILLING
7.5	
	S2 (MOA F2), GRAY, **POORLY GRADED SAND WITH SILT AND GRAVEL**, ABOUT 40% GRAVEL AND 10% SILT, GRAVEL SUBROUNDED TO 1", MEDIUM SAND, SATURATED, DENSE
13.0	
	NFS, GRAY, **POORLY GRADED SAND**, ABOUT 10% GRAVEL AND 5% SILT, GRAVEL SUBROUNDED TO 1", MEDIUM SAND, SATURATED, MEDIUM DENSE BECOMING SANDIER, ABOUT 5% GRAVEL AND 5% SILT, GRAVEL SUBROUNDED TO 3/8", DENSE
19.0	
	F4, GRAY, **SILT**, ABOUT 15% SAND, LOW PLASTICITY, FINE SAND, SATURATED, FIRM
	SAME, STIFF
29.0	
	F4, GRAY, **SILT WITH SAND**, ABOUT 5% GRAVEL AND 15% SILT, LOW PLASTICITY, GRAVEL SUBROUNDED TO 3/8", FINE SAND, SATURATED, STIFF
32.0	
	TEST BORING COMPLETED AT 32.0 FT ON 10-02-03
	PVC STANDPIPE INSTALLED
	GROUNDWATER MEASURED AT 3.5' ON 10-8-2003
	GROUNDWATER MEASURED AT 4' ON 10-21-2003

CONTRACTOR: DENALI DRILLING, INC.
EQUIPMENT: MOBILE B-61 TRUCK
OPERATOR: TIM BORER
METHOD: HOLLOW-STEM AUGER

CLIENT: RESIDENTIAL MORTGAGE
PROJECT: CALAIS PROPERTY
LOGGED BY: DANIEL A. WILLMAN
BORING COMPLETED: 10-02-03
W.O. D58538

KEY
□ = Grab Sample
▨ = SPT Sample
▥ = Shelby Tube - pushed
▩ = 2.5" I.D. Spoon Sample 340# weight, 30" fall

LOG OF EXPLORATION 58538.GPJ DOWL.GDT 11/03/03

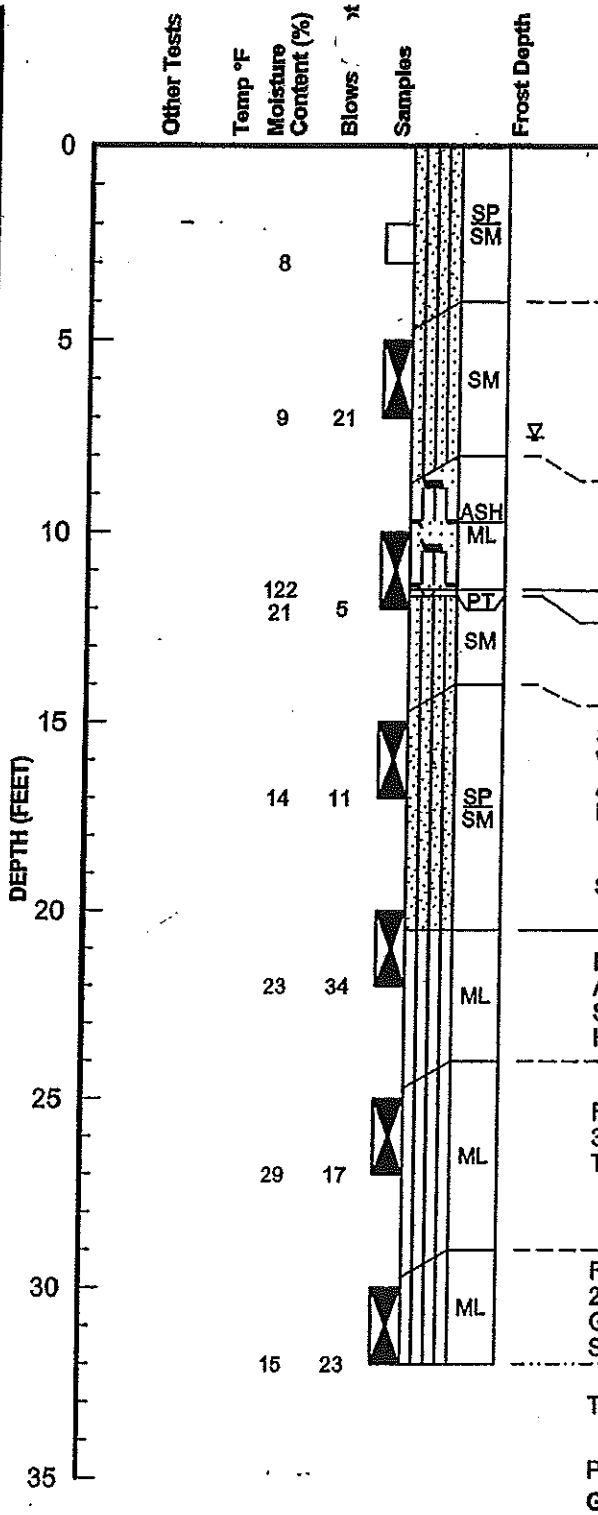
DOWL ENGINEERS

LOG OF BORING

FIGURE 3

TEST BORING 2

LOCATION: SEE TEST BORING LOCATION MAP
ELEVATION:



DEPTH	
	GRASS SURFACE
	FILL, S2 (MOA F2), BROWN, **POORLY GRADED SAND WITH SILT AND GRAVEL**, ABOUT 35% GRAVEL AND 10% SILT, GRAVEL SUBROUNDED TO 2", MEDIUM SAND, DAMP, MEDIUM DENSE
4.0	
	FILL, F2, BROWN, **SILTY SAND WITH GRAVEL**, ABOUT 35% GRAVEL AND 15% SILT, NONPLASTIC, GRAVEL SUBROUNDED TO 1.5", MEDIUM SAND, DAMP, MEDIUM DENSE
	GROUNDWATER ENCOUNTERED AT 7.5' WHILE DRILLING
8.0	
	F4, MOTTLED GRAY/BROWN, **ASH** AND **SILT**, NONPLASTIC, SATURATED, FIRM, TRACES OF **ORGANICS**
11.5	
	F4, BROWN, **PEAT**, SATURATED, FIRM
11.7	
	F2, GRAY, **SILTY SAND**, ABOUT 20% SILT, NONPLASTIC, MEDIUM SAND, SATURATED, VERY LOOSE
14.0	
	S2 (MOA F2), GRAY, **POORLY GRADED SAND WITH SILT AND GRAVEL**, ABOUT 35% GRAVEL AND 10% SILT, GRAVEL SUBROUNDED TO 3/8", MEDIUM SAND, SATURATED, MEDIUM DENSE
	SAME
20.5	
	F4, GRAY, **SILT WITH SAND**, ABOUT 5% GRAVEL AND 20% SAND, NONPLASTIC, GRAVEL SUBROUNDED TO 1/2", FINE SAND, SATURATED, HARD
24.0	
	F4, GRAY, **SANDY SILT**, ABOUT 10% GRAVEL AND 30% SAND, NONPLASTIC, GRAVEL SUBROUNDED TO 1", FINE SAND, SATURATED, VERY STIFF
29.0	
	F4, GRAY, **SANDY SILT WITH GRAVEL**, ABOUT 20% GRAVEL AND 30% SAND, NONPLASTIC, GRAVEL SUBROUNDED TO 1", FINE SAND, SATURATED, VERY STIFF
32.0	
	TEST BORING COMPLETED AT 32.0 FT ON 10-03-03
	PVC STANDPIPE INSTALLED
	GROUNDWATER MEASURED AT 3.5' ON 10-8-2003
	GROUNDWATER MEASURED AT 4' ON 10-21-2003

KEY
□ = Grab Sample
◪ = SPT Sample
◫ = Shelby Tube - pushed
⊠ = 2.5" I.D. Spoon Sample 340# weight, 30" fall

CONTRACTOR: DENALI DRILLING, INC.
EQUIPMENT: MOBILE B-61 TRUCK
OPERATOR: TIM BORER
METHOD: HOLLOW-STEM AUGER

CLIENT: RESIDENTIAL MORTGAGE
PROJECT: CALAIS PROPERTY
LOGGED BY: DANIEL A. WILLMAN
BORING COMPLETED: 10-03-03
W.O. D58538

DOWL ENGINEERS

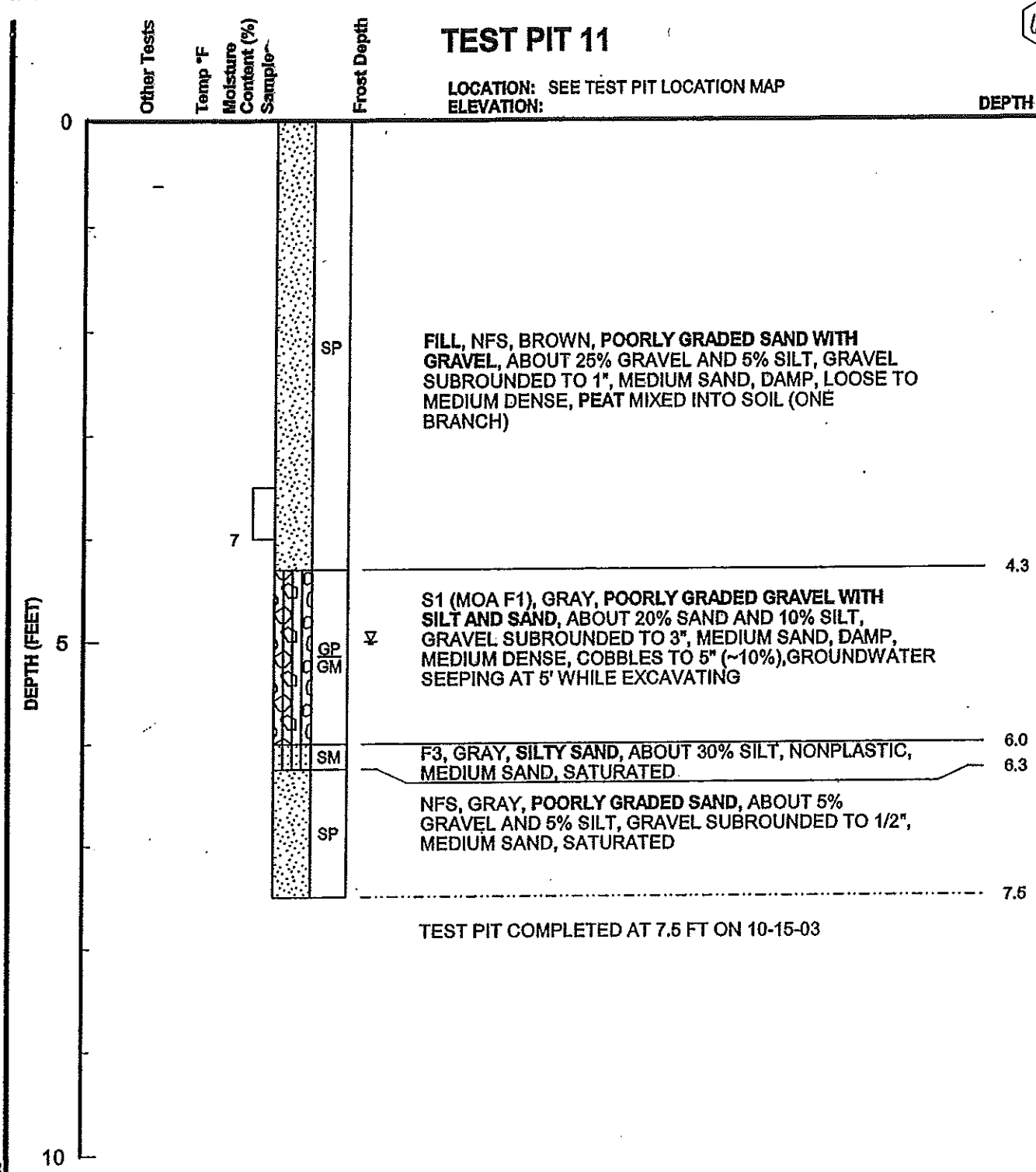
LOG OF BORING

FIGURE 4

LOG OF EXPLORATION 58538.GPJ DOWL.GDT 11/03/03

TEST PIT 11

LOCATION: SEE TEST PIT LOCATION MAP
ELEVATION:



FILL, NFS, BROWN, **POORLY GRADED SAND WITH GRAVEL**, ABOUT 25% GRAVEL AND 5% SILT, GRAVEL SUBROUNDED TO 1", MEDIUM SAND, DAMP, LOOSE TO MEDIUM DENSE, **PEAT** MIXED INTO SOIL (ONE BRANCH)

S1 (MOA F1), GRAY, **POORLY GRADED GRAVEL WITH SILT AND SAND**, ABOUT 20% SAND AND 10% SILT, GRAVEL SUBROUNDED TO 3", MEDIUM SAND, DAMP, MEDIUM DENSE, COBBLES TO 5" (~10%),GROUNDWATER SEEPING AT 5' WHILE EXCAVATING

F3, GRAY, **SILTY SAND**, ABOUT 30% SILT, NONPLASTIC, MEDIUM SAND, SATURATED

NFS, GRAY, **POORLY GRADED SAND**, ABOUT 5% GRAVEL AND 5% SILT, GRAVEL SUBROUNDED TO 1/2", MEDIUM SAND, SATURATED

TEST PIT COMPLETED AT 7.5 FT ON 10-15-03

KEY
- ☐ = Grab Sample
- ☒ = SPT Sample
- ☐ = Shelby Tube - pushed
- ☒ = 2.5" I.D. Spoon Sample 340# weight, 30" fall

CONTRACTOR: BC EXCAVATING
EQUIPMENT: HITACHI 160 LC
METHOD: BACKHOE

CLIENT: RESIDENTIAL MORTGAGE
PROJECT: CALAIS PROPERTY
LOGGED BY: MARIA E. KAMPSEN
BORING COMPLETED: 10-15-03
W.O. D58538

DOWL ENGINEERS

LOG OF PIT

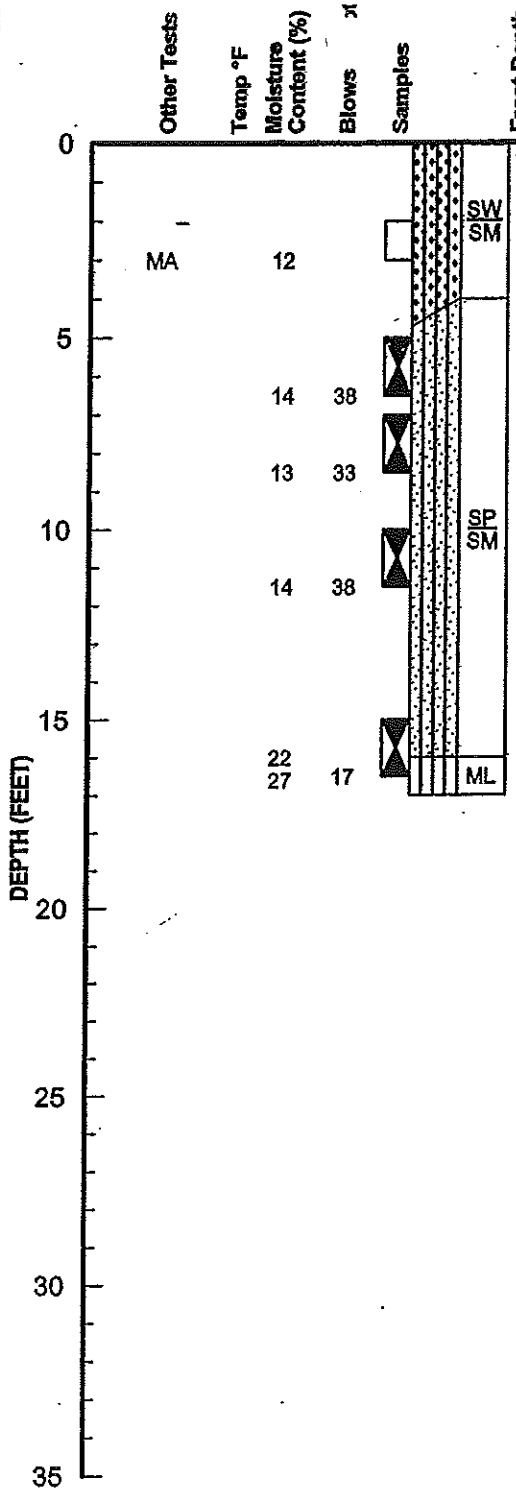
FIGURE 13

LOG OF EXPLORATION 58538.GPJ DOWL.GDT 11/03/03

TEST BORIN 5

(60)

LOCATION: SEE TEST BORING LOCATION MAP
ELEVATION:



DEPTH	
	GRASS SURFACE
	FILL, S2 (MOA F2), BROWN, **WELL GRADED SAND WITH SILT AND GRAVEL**, ABOUT 16% GRAVEL AND 9% SILT, GRAVEL SUBROUNDED TO 1", MEDIUM SAND, DAMP, MEDIUM DENSE
4.0	S2 (MOA F2), GRAY, **POORLY GRADED SAND WITH SILT**, ABOUT 10% SILT, MEDIUM SAND, SATURATED, DENSE, GROUNDWATER ENCOUNTERED AT 5.5' WHILE DRILLING
	BECOMING MORE GRAVELLY, ABOUT 5% GRAVEL AND 10% SILT, GRAVEL SUBROUNDED TO 1/2"
	SAME
	SAME, MEDIUM DENSE
16.0	F4, GRAY, **SANDY SILT**, ABOUT 10% GRAVEL AND 25% SAND, NONPLASTIC, GRAVEL SUBROUNDED TO 1", FINE SAND, SATURATED, VERY STIFF
17.0	
	TEST BORING COMPLETED AT 17.0 FT ON 10-03-03
	PVC STANDPIPE INSTALLED
	GROUNDWATER MEASURED AT 3.5' ON 10-8-2003
	GROUNDWATER MEASURED AT 4' ON 10-21-2003

KEY
MA = Mechanical Analysis
= Grab Sample
= SPT Sample
= Shelby Tube - pushed
= 2.5" I.D. Spoon Sample 340# weight, 30" fall

CONTRACTOR: DENALI DRILLING, INC.
EQUIPMENT: MOBILE B-61 TRUCK
OPERATOR: TIM BORER
METHOD: HOLLOW-STEM AUGER

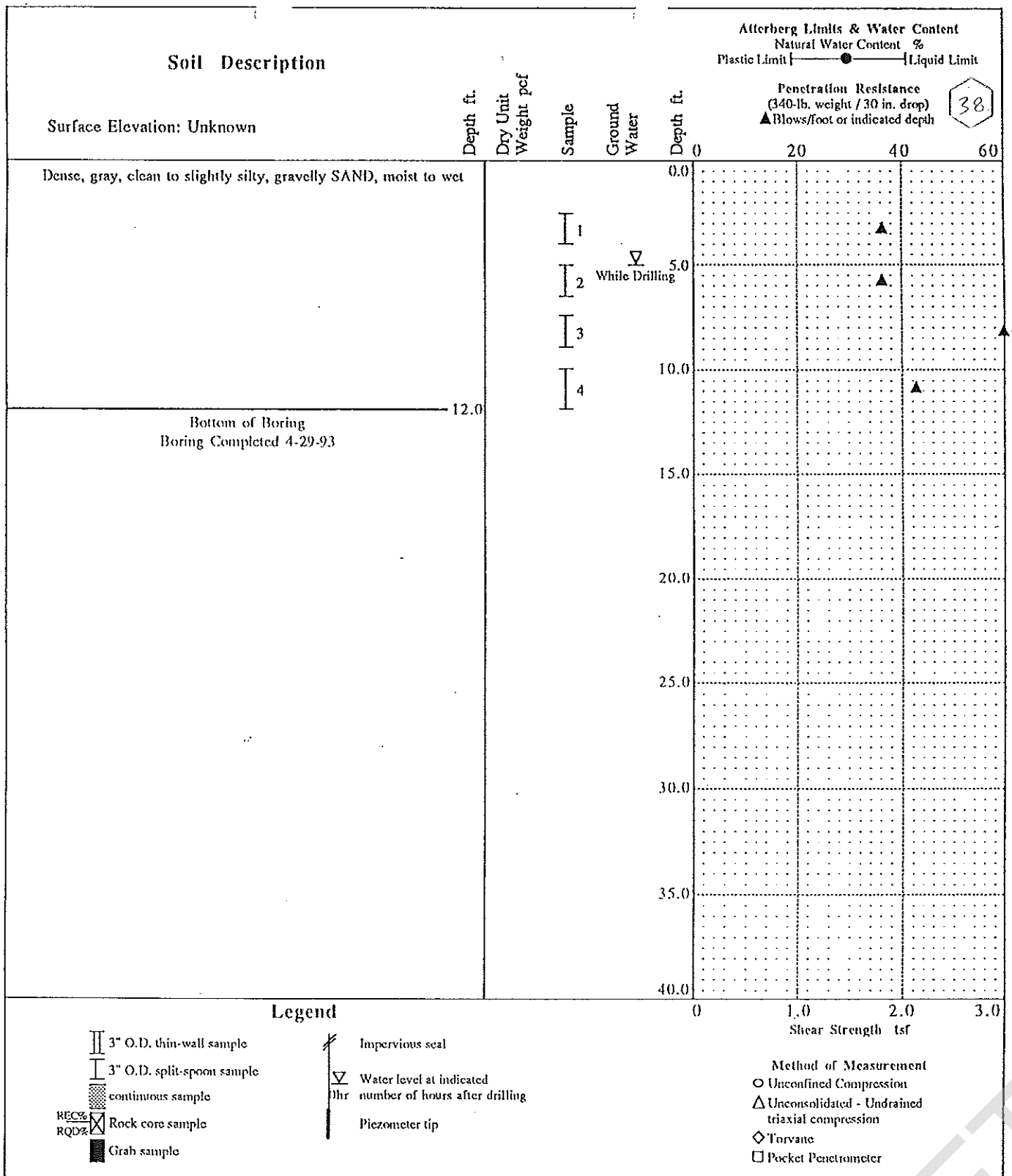
CLIENT: RESIDENTIAL MORTGAGE
PROJECT: CALAIS PROPERTY
LOGGED BY: DANIEL A. WILLMAN
BORING COMPLETED: 10-03-03
W.O. D58538

DOWL ENGINEERS

LOG OF BORING

FIGURE 7

LOG OF EXPLORATION 58538.GPJ DOWL.GDT 11/03/03



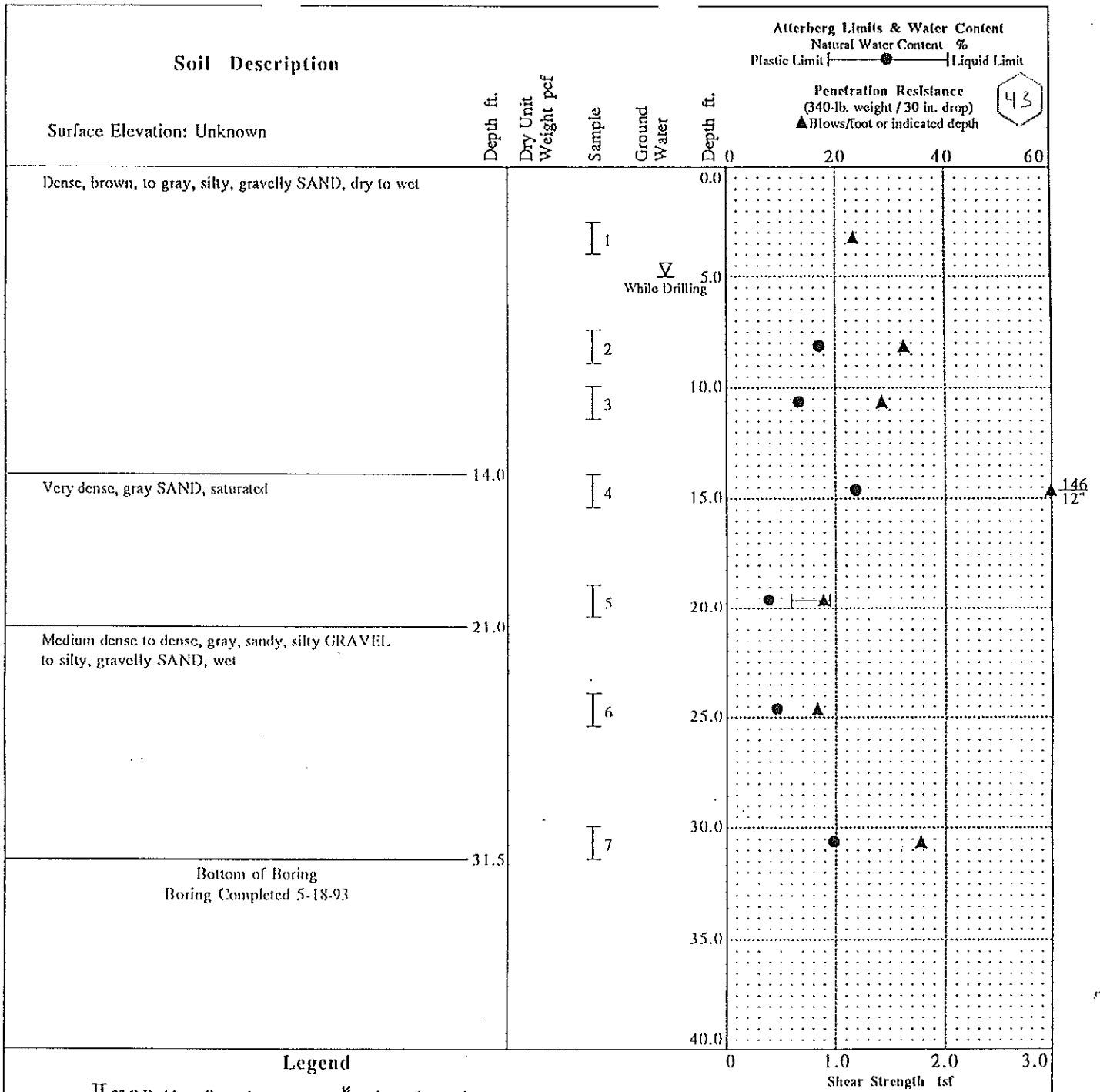
Log of Boring B-2

SHANNON & WILSON, INC.
Geotechnical Consultants

Johnson Tire Service
Anchorage, Alaska

Y-5195

Fig. 3



1. Groundwater levels may vary with time, precipitation, infiltration, and other factors
2. The stratification lines represent approximate soil boundaries. Actual boundary may be transitional.

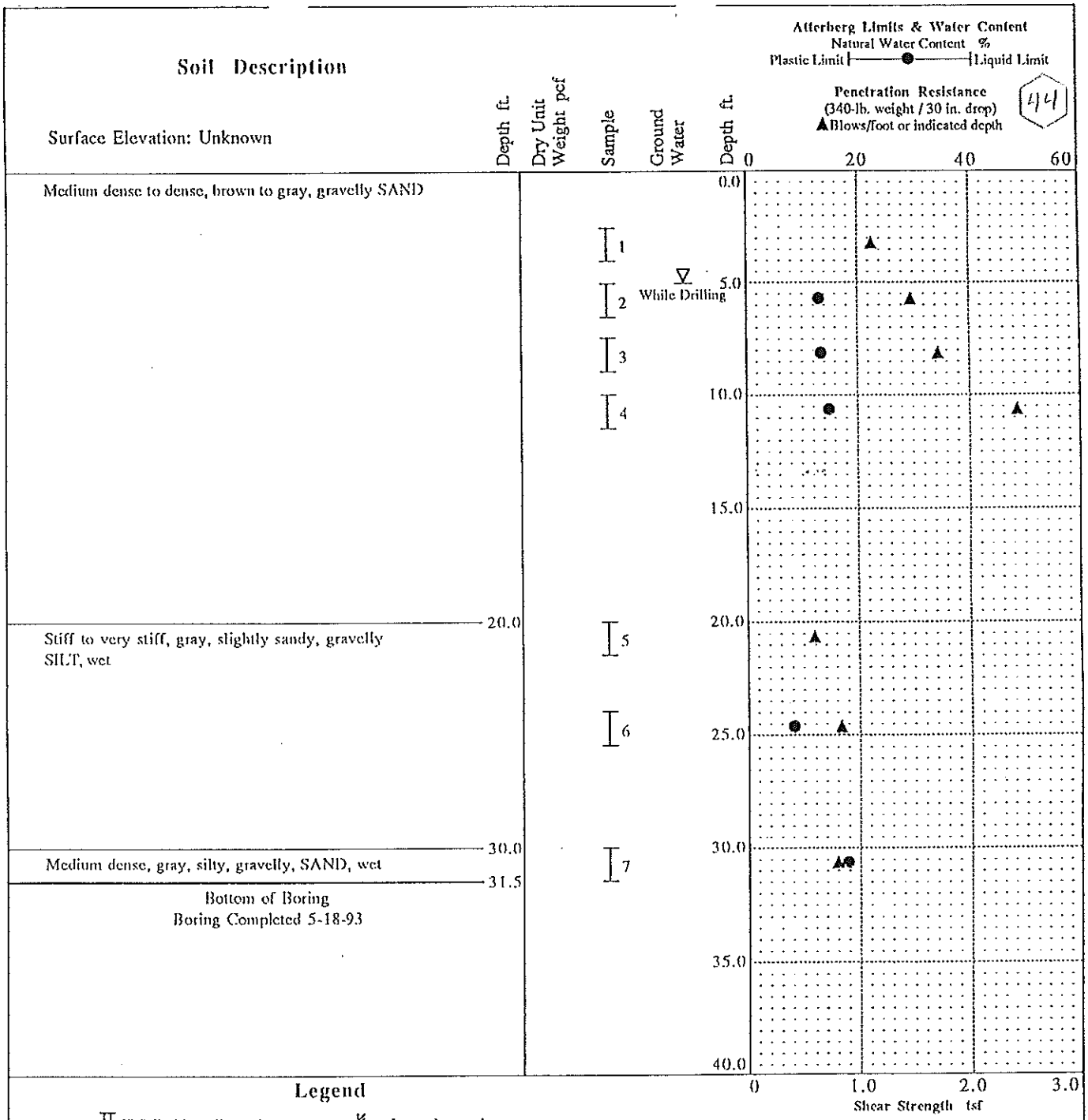
Log of Boring B-7

SHANNON & WILSON, INC.
Geotechnical Consultants

Johnson Tire Service
Anchorage, Alaska

Y-5195

Fig. 8



1. Groundwater levels may vary with time, precipitation, infiltration, and other factors
2. The stratification lines represent approximate soil boundaries. Actual boundary may be transitional.

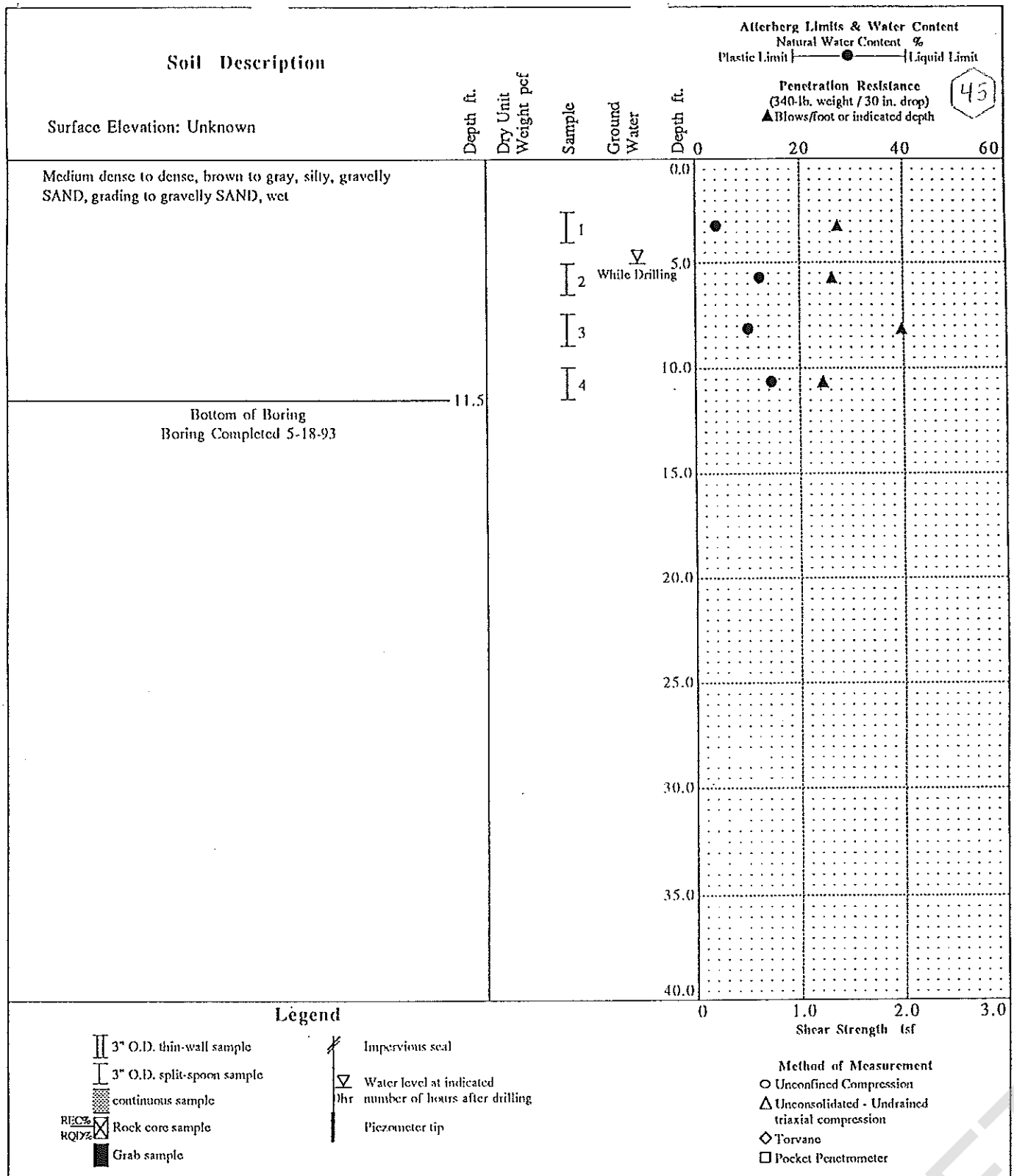
Log of Boring B-8

SHANNON & WILSON, INC.
Geotechnical Consultants

Johnson Tire Service
Anchorage, Alaska

Y-5195

Fig. 9



Log of Boring B-9

SHANNON & WILSON, INC.
Geotechnical Consultants

Johnson Tire Service
Anchorage, Alaska

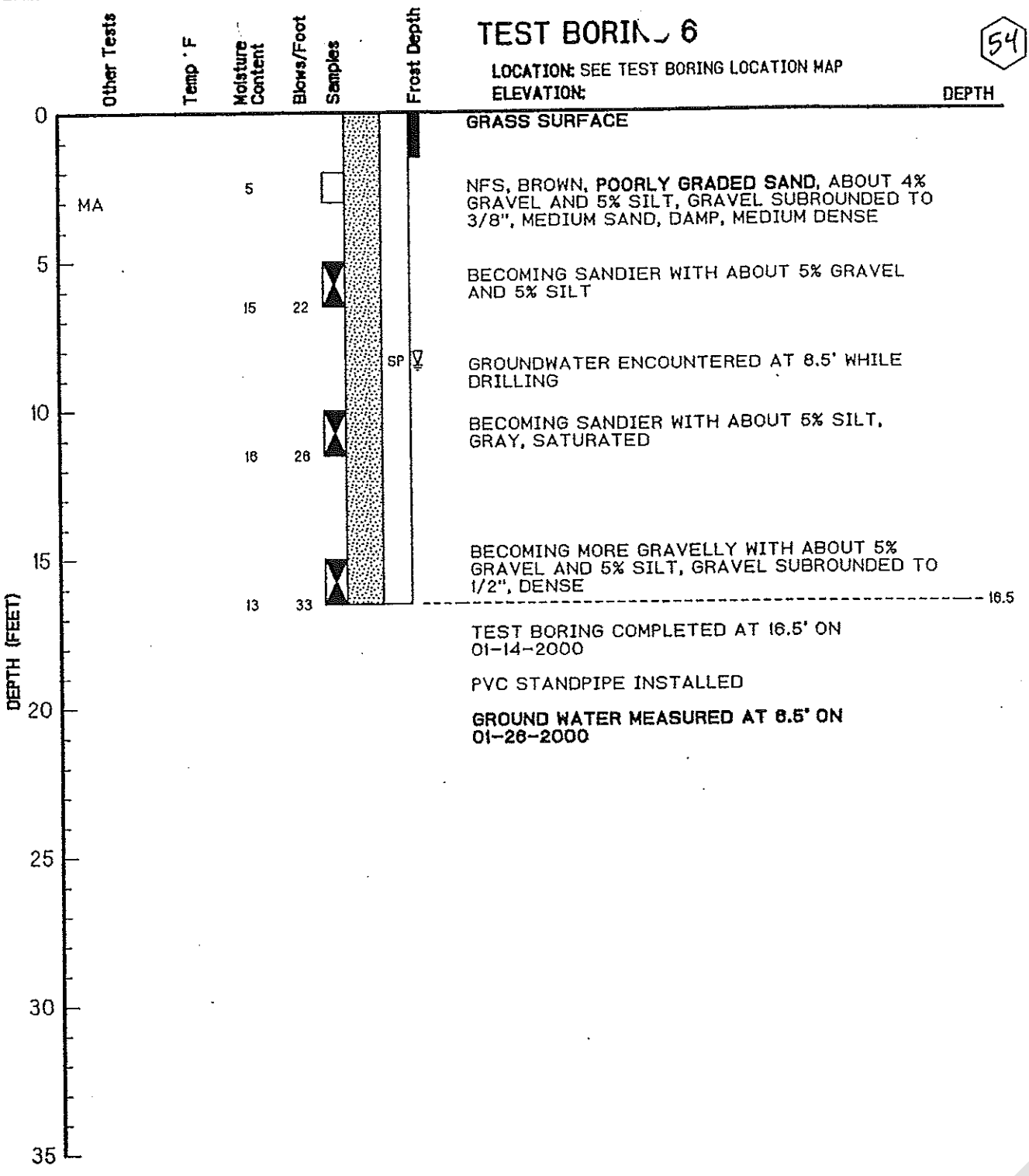
Y-5195

Fig. 10

TEST BORING 6

54

LOCATION: SEE TEST BORING LOCATION MAP
ELEVATION:



KEY
MA = Mechanical Analysis
LL = Liquid Limit
PI = Plastic Index
PP = Pocket Penetrometer (TSF)
TV = Torvane (TSF)
□ = Grab Sample
◪ = SPT Sample
T = Shelby Tube – pushed
⊠ = 2.5" I.D. Spoon Sample 340# weight, 30" fall
T = Sample Temperature (°F) probably affected by sampling procedure

DRILLING CONTRACTOR: DENALI DRILLING, INC.
DRILL RIG: MOBILE B-61
DRILLER: JASON LOVE.
METHOD: HOLLOW-STEM AUGER

CLIENT: KUMIN ASSOCIATES, INC.
PROJECT: DENALI RETAIL PHASE III
LOGGED BY: DANIEL A. HILLMAN
BORING COMPLETED: 01-14-2000
W.O. D56877

DOWL ENGINEERS
ALASKA TESTLAB

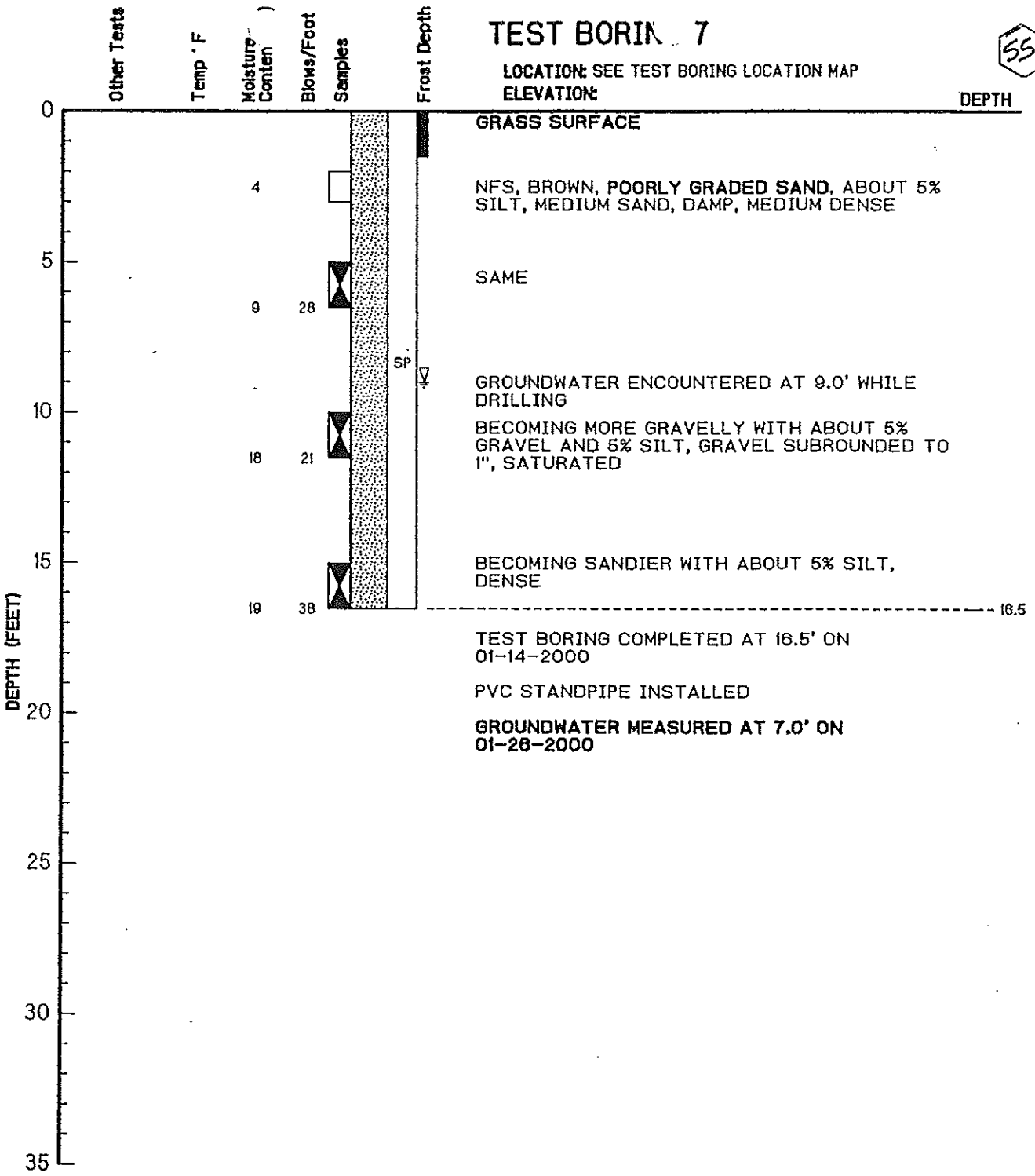
LOG OF BORING

FIGURE 8

TEST BORIN 7

55

LOCATION: SEE TEST BORING LOCATION MAP
ELEVATION:



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DRILL RIG: MOBILE B-61
DRILLER: JASON LOVE
METHOD: HOLLOW-STEM AUGER

CLIENT: KUMIN ASSOCIATES, INC.
PROJECT: DENALI RETAIL PHASE III
LOGGED BY: DANIEL A. WILLMAN
BORING COMPLETED: 01-14-2000
W.O. D56877

DOWL ENGINEERS ALASKA TESTLAB	LOG OF BORING	FIGURE 9

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(6)

SOILS LOG

HOLE NO. 8

LOCATION DENALI ST / 33 FT E. OF THE ℄ OF DENALI ST
℄ OF E-33RD AVE.

DATE 10/26/77

BY M.E. KRUEGER

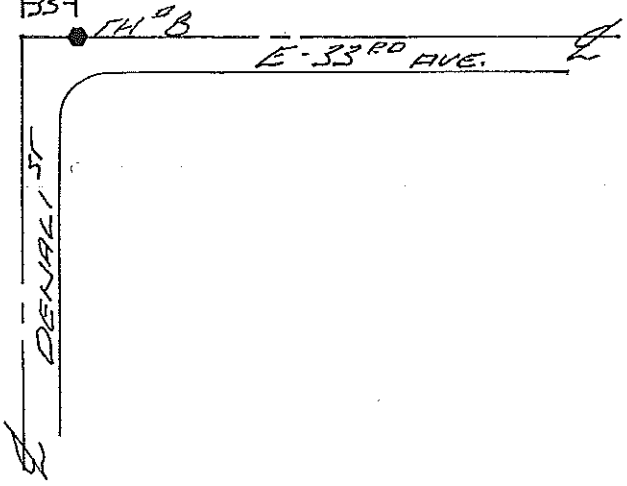
COMMENTS

DEPTH 10 FT

WATER TABLE 5.5 FT

	DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
	0			EXIST. GROUND
EX-317 B-A	1	GW-GM	F-1	BRN. (29%) SDY-GRAVEL (59%) w/ SILT (7%) + OCC. COBBLE / MOIST = 4% DENSE / EST. 10% +3" MATL. / N.P.
	2			
	3			
	4			
▼	5			
EX-318 B-B	6	SW	NFS	GR. GRAVEL (13%) - SAND (83%) / MOIST. = 17% / SILT = 3% / N.P. MED. DENSE
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			

LOCATION SKETCH:



LEGEND

SYMBOL

- TEST HOLE
- WATER TABLE
- FROZEN MATERIAL (2, 3, 4, 5)

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 16 5 C

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(10)

SOILS LOG

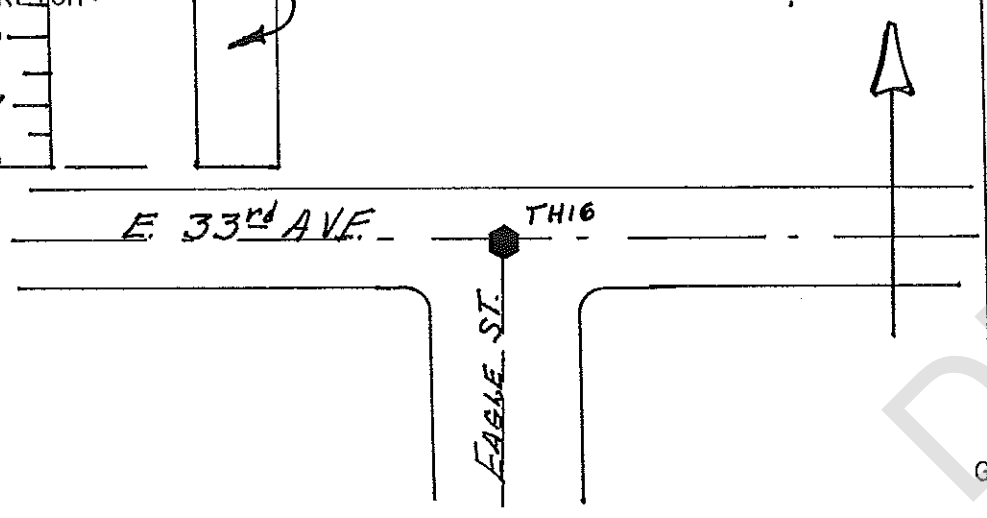
HOLE NO. 16
DATE 1973
BY W. REDBIRD & ASS.
DEPTH 18
WATER TABLE 8'

LOCATION On ℄ of E. 33rd AVE. and ℄ intersection with EAGLE ST.

COMMENTS FROM S.L.M. Subdivision; Street improvements E 33 AVE & FAIRBANKS ST. No Stick; dead file

DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
0			Original ground Elev 104.5
1			
2			PEAT
3			
4			
5			
6			SILTY SAND
7			
8 ▼			POORLY GRADED SAND
9			
10			
11			POORLY SORTED MEDIUM to COARSE SAND WITH GRAVEL
12			
13			
14			
15			MEDIUM to COARSE SAND
16			
17			
18			

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 1631

DEPARTMENT OF PUBLIC WORKS
CONSTRUCTION DIVISION

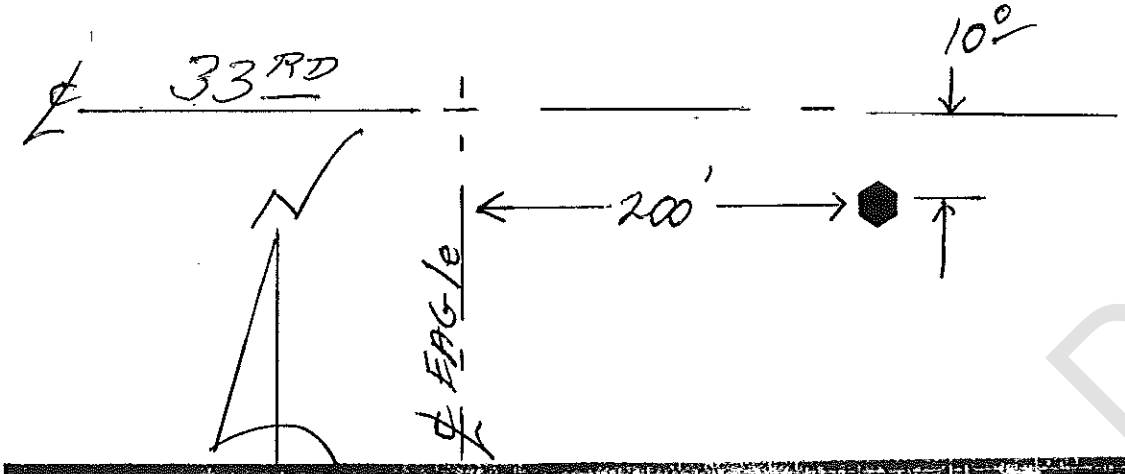
SOILS LOG

LOCATION 33RD 200' EAST ℄ EAGLE
LOTS 1 & 2 - B3, SLM SUBD.
COMMENTS VISUAL ONLY

HOLE NO. (15)
DATE 5-22-80
BY F. TOLPOLSKI
DEPTH 10'
WATER TABLE 7.5

DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
0			TOP ASPHALT
1			
2			
3			
4	SP		BROWN GRAVELLY SAND - ALL DEPTHS
5			
6			
7			WATER TABLE
8			
9			
10			8" D.I. WATER MAIN & B.O.H.
11			
12			
13			
14			

LOCATION SKETCH:



LEGEND
SYMBOL
TEST HOLE
WATER TABLE
FROZEN MATERIAL
ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE #200 UNLESS OTHERWISE NOTED

GRID NO. 1631 D

MUNICIPALITY OF ANCHORAGE
DEPARTMENT OF PUBLIC WORKS
CONSTRUCTION DIVISION

(1)

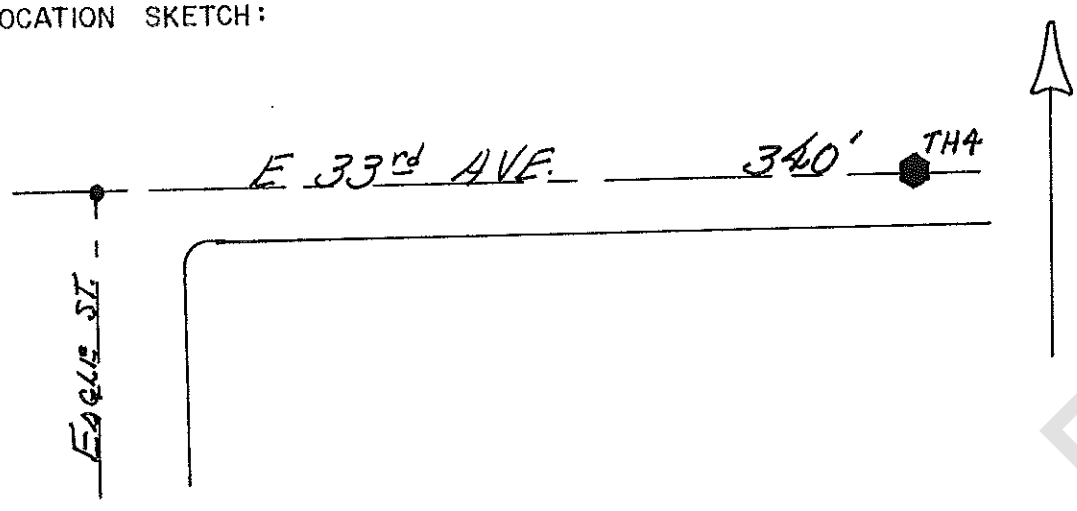
SOILS LOG

HOLE NO. 4
DATE 1973
BY W. REDBIRD & ASS.
DEPTH 10'
WATER TABLE 8'

LOCATION On ℄ of E. 33rd AVE. and 340' East of ℄ intersection of EAGLE STREET
COMMENTS From S.L.M. Subdivision. Street improvements E 33rd AVE & FAIRBANKS ST.
No Stick dwg file

DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
0			Original ground Elev. 107.±
2			PEAT
6			Silty Sand
8 ▼			Poorly graded Sand

LOCATION SKETCH:



LEGEND

SYMBOL

- TEST HOLE
- WATER TABLE
- FROZEN MATERIAL (2 3 4 5)

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE #200 UNLESS OTHERWISE NOTED

GRID NO. 1631

MUNICIPALITY OF ANCHORAGE
DEPARTMENT OF PUBLIC WORKS
CONSTRUCTION DIVISION

(9)

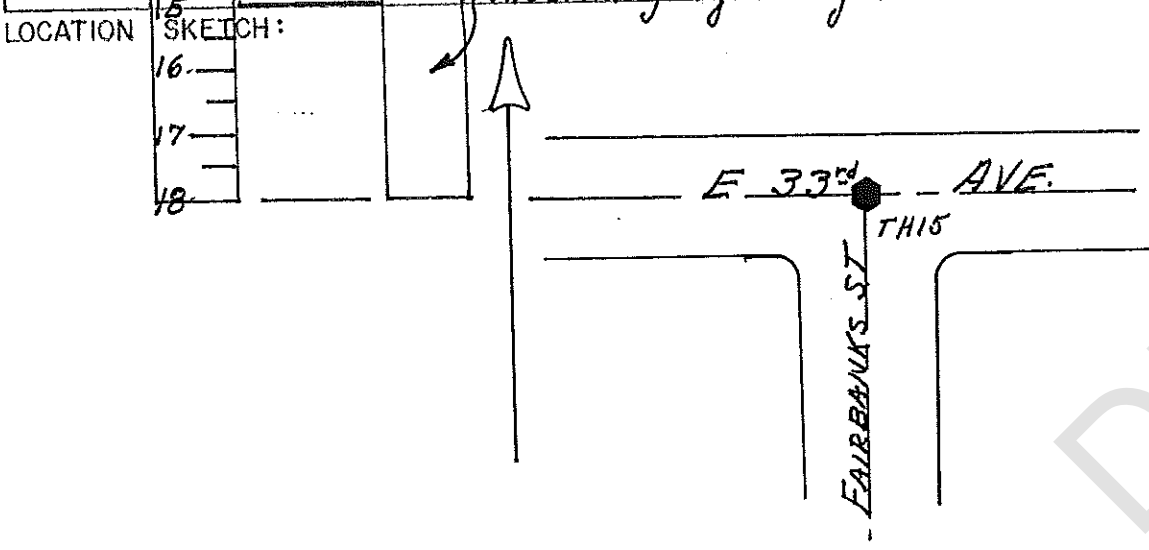
SOILS LOG

HOLE NO. 15
DATE 1973
BY W. REDBIRD & ASS.
DEPTH 18'
WATER TABLE 8'

LOCATION On the C & C intersection of EAST 33rd AVE and EAGLE ST.
COMMENTS FROM S.&M. Subdivision. Street improvements E. 33rd & FAIRBANKS ST.
No Stick ; dead file

DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
0			Original ground Elev 107.7
1			
2			PEAT
3			
4			
5			
6			Silty Sand
7			
8			
9			POORLY GRADED Sand
10			
11			
12			Clean medium to Very Coarse Sand
13			
14			
15			Medium gray Silty Sand
16			
17			
18			

LOCATION SKETCH:



LEGEND

SYMBOL

- TEST HOLE
- WATER TABLE
- 2 3 4 5 FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 1631

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(2)

SOILS LOG

HOLE NO. 6

DATE 1973

BY W. REDGIED & ASS.

DEPTH 10'

WATER TABLE 9'

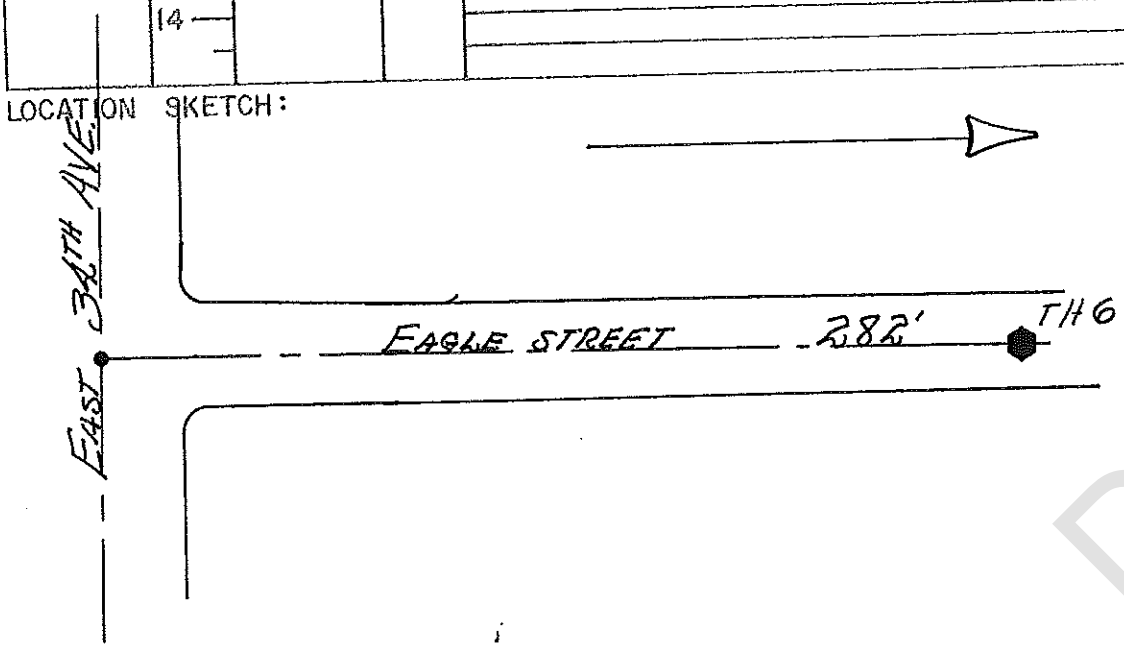
LOCATION On ℄ of EAGLE ST. and 282' North of the ℄ of EAST 34TH AVE.

COMMENTS FROM S.L.M. Subdivision Street improvements EAST 34TH AVE. & EAGLE ST. No Stick, deep test file.

DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
0			Original ground Elev. 107.±
1			
2			
3			Peat
4			
5			
6			
7			Silty Sand
8			
9			Poorly graded Sand
10			
11			
12			
13			
14			

▼ WATER TABLE

LOCATION SKETCH:



LEGEND

SYMBOL

TEST HOLE

WATER TABLE

FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE #200 UNLESS OTHERWISE NOTED

GRID NO. 1631

MUNICIPALITY OF ANCHORAGE

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION DIVISION

(3)

SOILS LOG

HOLE NO. 8

LOCATION 280' North of ℄ of E. 34th AVE. & on the ℄ of FAIRBANKS STREET.

DATE 1973

BY W. REDBIRD & ASS.

COMMENTS From S.L.M. Subdivision Street improvements E 33rd AVE & FAIRBANKS ST. No Stick dep file

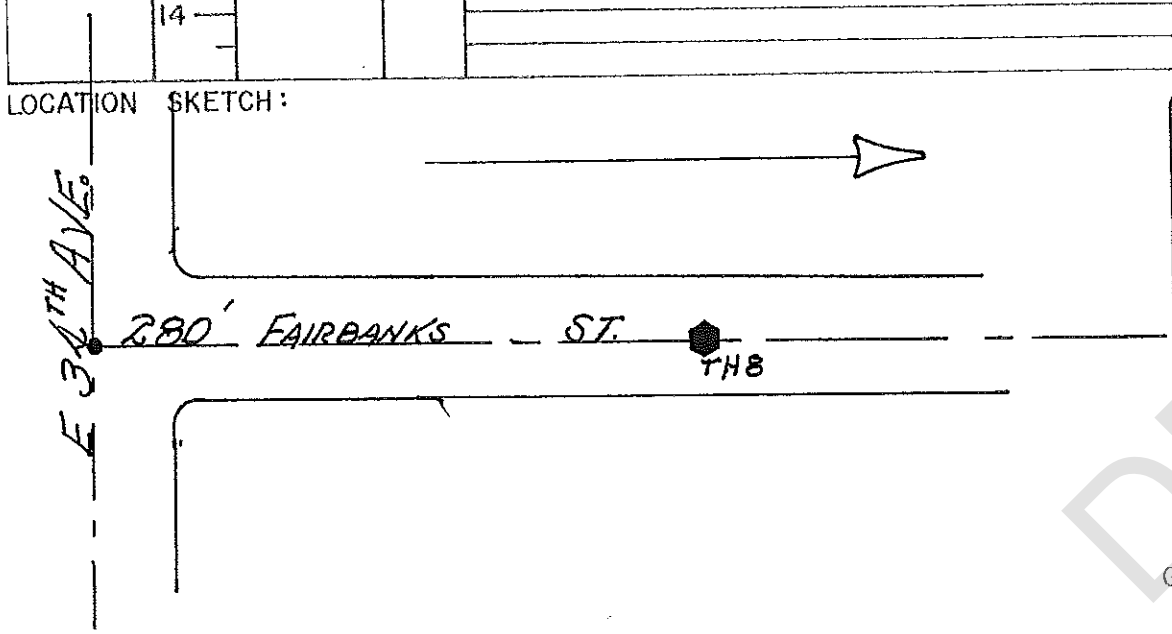
DEPTH 10'

WATER TABLE 7'

DEPTH	UNIFIED CLASS	FROST GROUP	DESCRIPTION
0			Original ground Elev. 108.5
1			
2			
3			PEAT
4			
5			
6			
7			Silty Fine Sand
8			
9			Poorly graded Sand
10			
11			
12			
13			
14			

▼ 7'

LOCATION SKETCH:



LEGEND

SYMBOL

- TEST HOLE
- WATER TABLE
- FROZEN MATERIAL

ALL FROST CLASSIFICATION BASED ON THE .02mm = 50% OF THE -#200 UNLESS OTHERWISE NOTED

GRID NO. 6310

APPENDIX B
PHOTO LOGS

PHOTO 1 View looking west from the intersection of the Old Seward Highway and East 33rd Avenue.	
PHOTO 2 View west along East 33rd Avenue	

PHOTO 3

Intersection of East 33rd Avenue and Fairbanks Street.

PHOTO 4

Longitudinal crack across Calais Drive.

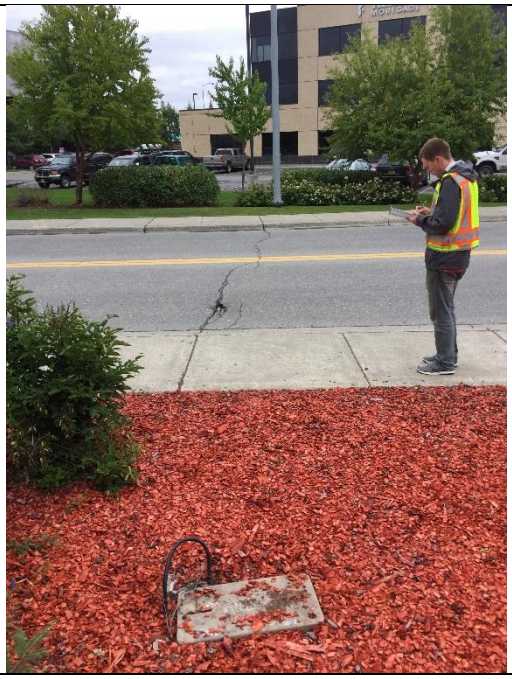


PHOTO 5

Recently resurfaced section of West 32nd Avenue near Eureka Street.

PHOTO 6

Intersection of West 32nd Avenue and Bering Street.