OFI #404-6A

3 3755 001 06884 0
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Docket No. CP80-435
Exhibit Z-6.2
Hearing Exhibit No._____

Alaska Natural Gas Transportation System
Alaska Segment — 48" Natural Gas Pipeline
(Prudhoe Bay To Canadian Border)

OVR-HD
TN
880.51
.A55
C13
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CIVIL
Volume 1 (Revision 3)
Alignment Sheets 1 Thru 131

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MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

FLUOR
PROJECT MANAGEMENT CONTRACTOR

CIVIL CONSTRUCTION DESCRIPTION OF THE ALIGNMENT SHEET DRAWINGS

DESCRIPTION OF THE ALIGNMENT SHEET DRAWING

The Civil Alignment Sheet FERC Drawing is a plan and profile coverage of the civil construction on the project. Civil design data, i.e., off and on right-of-way construction, pipe-ditch earthwork quantities, excavation, disposal, and backfill, are located and quantified on a mile-by-mile listing.

The upper half, or plan portion, of each sheet contains a 1 inch equals 1000 feet aerial photograph mosaic of the pipeline location. It depicts approximately one mile of the land features located on either side of the pipeline. Four general information items are located above the mosaic plan which indicate construction season, soil type, permafrost, and the location of the gas line relative to the existing pipeline, roads, and facilities.

The lower half, or profile portion, of each sheet contains a profile with an exaggerated vertical scale, 1 inch vertically equals 100 feet, while 1 inch horizontally equals 1000 feet. Nine additional items of information are contained below the profile and refer to the Soil Erosion Code (SEC): the typical cross section number, thickness of the workpad, construction zone excavation, borrow, spoil disposal, pipe-ditch special backfill, pipe-ditch common backfill, and reference to Detail Drawings relating to site specific construction. Summaries of materials other than earthwork, reference drawings, and revisions of the sheet are also noted below the profile. A detailed description of each item shown on the Civil Construction Plans is contained in the following sections:

INFORMATION LOCATED ABOVE THE AIR PHOTO BAND

Workpad Construction Season — The workpad construction season is noted as summer months or shoulder months. For scheduling purposes, summer months include May, June, July, August, and September, and shoulder months include March, April, October, and November.

Soil Type (Modified Unified Soil Classification System [USCS]) — See TABLE 1

Permafrost — Permafrost is continuous in the Prudhoe Bay area and nonexistant in some of the southern areas of the state. The following categories have been established for the workpad design:

Generally Frozen	90 — 100% Permafrost
Discontinuous	50 — 90% Permafrost
Sporadic	10 — 50% Permafrost
Generally Absent	0 — 10% Permafrost

When determining workpad thickness, generally frozen and discontinuous permafrost will be considered as frozen, and sporadic and generally absent will be considered as unfrozen.

Relative Facility Location — This information line indicates the position of other facilities relative to the NWA workpad. The identified relative locations are:

- Separate Location
- On Haines Pipeline (PL) Right of Way
- GVEA Power Line Right (Rt) or Left (Lt) of NWA
- Haul Road Rt or Lt of NWA

AIR PHOTO BAND

The air photo band, prepared from an aerial photograph mosaic contains the following data:

a. Orientation features — Lines and numbers of Townships, Ranges and Sections and the state plane coordinates.

b. Topographic Features — Rivers, streams, roads, camps, pump stations and other pipelines.

c. Proposed NWA pipeline construction — Pipe centerline,material and compressor sites, storage yards and access roads.

All off right-of-way service areas and on right-of-way compressor sites are depicted symbolically. Existing camps and roads are shown; the names of each are noted. The Civil Construction Symbols are shown in TABLE 2. They include facility symbols and the numbering system used for sites, yards, etc. The access road numbering system is shown in TABLE 3. Horizontal alignment symbols are shown in TABLE 4.

SURFACE PROFILE

The surface profile along the NWA centerline is depicted on the profile portion of the Civil Design FERC Drawings. Match lines and mileposts are located on the profile. Information contained in the lines below the profile is displayed directly below their location on the profile. A bridge symbol indicating major workpad cross-drainage is placed at the appropriate location on the profile. Vertical alignment symbols are shown in TABLE 4.

INFORMATION LOCATED BELOW THE SURFACE PROFILE

Soil Erosion Code (SEC) — The Soil Erosion Code is a method by which soils are classified according to their sensitivity to erosion, and particle size distribution.

The classifications, their general names (USCS), and the corresponding Unified Soils Classification System (USCS) are listed in TABLE 5. The cut slopes recommended for each of the classifications are tabulated in TABLE 6.

Typical Cross-Section Number — An identifying number system was developed for all typical cross sections. This numbering system consists of three numeric-alpha groups separated by hyphens, such as 30 — 30R — 6L. The general case is AX — BY — CZ, Where A, B, and C represent three Category Groups; X represents the location of an existing facility to the NWA (either right or left), Y symbolizes the transverse ground slope direction in Category B (either right or left); and Z represents the workpad location in Category C relative to the pipe centerline (either right or left). TABLE 7 contains the category charts for categories A, B, and C.

The sample cross-section number given above represents (30) a 50-foot workpad on a separate location. The existing cross-slope (30R) is 30-35% downhill to the right. A stepped-fill section workpad (6L) is located left of the pipe where the ground surface will be stripped prior to placing the granular embankment material.

Pad Material Type and Thickness — The type of material and thickness are indicated on this line.

Construction Zone Excavation (Spoil Storage, Spoil Disposal, and Suitable Material Quantities)

This line depicts the excavation quantities indicating the total excavation in the construction zone grading. A quantity of excavation from stripping will also be shown. These excavation quantities are in-bank measurements at the source.

The material excavated may be used or disposed of in one or more of the following ways:

- **Spoil storage** — That amount of material obtained from the excavation that is stored in the construction zone for later use in restoration and revegetation. Any minor hauling which will be necessary to perform the restoration work will be included in the cubic yard (cu yd) quantities which are in-bank measurements.
- **Spoil disposal** — That amount of material obtained from the excavation that must be hauled to a disposal site. Quantities are in-bank measurements and will be included in the cu yd and the cubic yard-mile (cu yd-mi) quantities in the spoil disposal line.
- **Suitable Material** — That portion of the excavated material that will be used for construction of the workpad embankment. Quantities are in-bank measurements.

Borrow Quantities and Cubic Yard-Miles

All of the material that is supplied from a material site and is transported to the workpad, access roads, storage sites, camps, airfields or any other civil work facility will appear in the summary on this line. This line will also indicate the cu yd-mi of haul necessary to transport the borrow material to the point where it will be used. Shrinkage and spillage factors have been applied to the quantities shown on this line; however, work pad maintenance quantities have not been included.Quantities are in-bank measurement at the material site. Shrinkage, spillage, and maintenance factors are listed in TABLE 8.

Spoil Disposal Quantities and Cubic Yard-Miles

The spoil disposal quantities obtained from the construction zone consist of all excavated material that is not used for pad construction, ditch backfill, or restoration and revegetation. The spoil from off right-of-way excavation is assumed to be wasted in the graded area; therefore, off right-of-way spoil disposal will not be included in these quantities. Cubic yards and cu yd-mi will be shown on this line. Quantities are in-bank measurements at the excavation site. An average haul of 1/2 mile is assumed in disposal site locations for the cu yd-mi quantity.

Pipe-Ditch Special Backfill Quantities and Cubic Yard-Miles

All select material that will be transported from the material processing sites to the construction zone for the purpose of pipeline bedding, padding, and nonfrost-susceptible material is considered special backfill and will be summarized on this line. For pipe-ditches where thermal mounds are provided, three other special backfill subentries, if applicable, will also be shown.

- Cubic yards and cubic-yard miles used for bedding and padding
- Cubic yards and cubic-yard miles used for ditch overfill
- Cubic yards used for workpad maintenance and restoration

All quantities are in-bank measurements at the material site. Material loss factors are listed in TABLE 8.

Pipe-Ditch Common Backfill Quantities and Cubic Yard-Miles

All common backfill material that will be transported from material sites to the construction zone for use in backfilling the pipe-ditch and the cu yd-mi of haul necessary to transport the material to the construction zone will be entered on this line. Quantities are in-bank measurements at the material site. Material loss factors are listed in TABLE 8. (Note: Pipe-ditch excavation used for common or special pipe-ditch backfill is not included in the above quantities.)

Detail Drawings

The drawing number of site-specific construction for civil work on the construction zone will be entered on this the last line of information below the profile band of the Civil Construction Alignment Sheet Plans. (Note: Standard sections and details will not be included on this line.)

TITLE BLOCK BAND

Additional Construction Items

Non-earthwork civil construction items, applicable to the sheet, are listed at the left end of the title block band. The items are self-explanatory and only those appearing on the alignment sheet will be listed.

Reference Drawings

Typical cross sections and standard detail drawings for the civil construction included on the alignment sheet are listed in the reference drawings section.

TABLE 1

MODIFIED UNIFIED SOIL CLASSIFICATION SYSTEM

I. General Types (5-Defined)

A. Coarse Grained	<45% Pass #200 Sieve
B. Coarse to Medium Grained	45-50% Pass #200
C. Medium to Fine Grained	51-55% Pass #200
D. Fine Grained	>55% Pass to #200
E. Highly Organic Soils	Peat

Modification of the Unified Soil Classification System consists of categorizing those soils with 45-50% passing the #200 Sieve as Coarse to Medium Grained Soils; and categorizing those soils with 51-55% passing the #200 Sieve as Medium to Fine Grained Soils.

II. Symbols and Names for Each of the Soils within the Four General Types of Mineral Soils

A. Coarse Grained Soils

Gravels		Sands	
Well Graded Gravel	GW	Well Graded Sand	SW
Poorly Graded Gravel	GP	Poorly Graded Sand	SP
Silty Gravel	GW-GM	Silty Sand	SW-SM
	GP-GM		SP-SM
	GM		SM
Silty-Clayey Gravel	GM-GC	Silty-Clayey Sand	SM-SC
Clayey Gravel	GW-GC	Clayey Sand	SW-SC
	GP-GC		SP-SC
	GC		SC

B. Coarse to Medium Grained Soils

Silty Gravel	ML-GM	Silty Sand	ML-SM
Clayey Gravel	CL-GC	Clayey Sand	CL-SC

C. Medium To Fine Grained Soils

Gravely Silt	GM-ML	Gravely Clay	GC-CL
Sandy Silt	SM-ML	Sandy Clay	SC-CL

D. Fine Grained Soils

Low Plasticity Silt	ML
High Plasticity Silt	MH
Low Plasticity Silty-Clay	ML-CL
High Plasticity Silty-Clay	MH-CH
Low Plasticity Clay	CL
High Plasticity Clay	CH
Low Plasticity Organic	OL
High Plasticity Organic	OH

E. Highly Organic Soils Peat

All Organic Soils	Pt

III. Explanation of Letters

O	Organic	H	High Plasticity	Applies to O, M, and C
G	Gravel	L	Low Plasticity	
S	Sand	W	Well Graded	Applies to G and S
M	Silt	P	Poorly Graded	
C	Clay			

IV. Explanation of Symbols

Normal Condition	— SM: Soil / Modifier	Silty Sand
Modified Condition	— ML-SM: Material Passing #40 Sieve	Silty Sand
Borderline Condition	— SP-SM: Sand Type	Silty Sand

TABLE 2

CIVIL CONSTRUCTION SYMBOLS

FACILITIES SYMBOLS

MS xx-x	Material Site with Number xx-x (Sheet No-Site No.)
Alternate MS	Alternate Material Site not included in Grading Operations
SY xx-x	Off Right-of-Way Graded Storage Yard with Number xx-x (Sheet No-Yard No.)
CC	Proposed Construction Camp Location Named on Plans
CS-X	Proposed Compressor Station Location with Number
Future CS-X	Future Compressor Station
═══	Access Road — Existing Road with Number
———	Access Road — Proposed Road with Number
T	Work Pad Bridge

TABLE 3

ACCESS ROAD NUMBERING SYSTEM

Purpose Symbols

Symbol	Purpose
APL	— Access to Pipeline Right-of-Way
ACS	— Access to Compressor Station
AMS	— Access to Material Site
ASY	— Access to Storage Yard
ACC	— Access to Construction Camp
AAP	— Access to Airport
AVS	— Access to Valve Station
ACF	— Access to Communication Facility

XXX-AAA-X
- X: Road Number on Sheet
- AAA: Purpose
- XXX: Sheet No.

XXX-AAA/AAB-X
- AAA/AAB: Multi-purpose Road

DRAWING NUMBER	REV.
4680-10-00-0-C-001	3

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CIVIL CONSTRUCTION DESCRIPTION OF THE ALIGNMENT SHEET DRAWINGS

TABLE 4
HORIZONTAL AND VERTICAL ALIGNMENT SYSMBOLS

	Point of Horizontal Centerline Intersection (PI) (Plan & Profile)
M◇XXX◇P	Centerline Mile Post (xxx Miles/from Start)
XXX M◇P	Secondary Mile Post (Alaska Highway,)
△	Survey Triangulation Point
Nx,xxx,xxx.xx / Ex,xxx,xxx.xx	Coordinate Point on the True State/ Coordinate System
	5000-Foot Grid of True State Coordinate System

TABLE 5
SOIL EROSION CODE CLASSIFICATIONS

Soil Erosion Code Symbol	General Name	Unified Soil Classification
G	Clean Gravel	GW, GP
D	Dirty Gravel	GM, GC, GP-GM, GM-ML GW-GM, GP-GC, GC-CL, ML-GM, GM-GC, CL-GC, GW-GC
O	Sands	SW, SP, SM, SC, SM-SC
L	Loess	ML
S	Silts	MH, ML, ML-SM, SM-ML, OL, OH
U	Frozen Upland Silt (Always Frozen)	MH, ML, ML-SM, SM-ML, OH, OL
C	Clays	CL, ML-CL, CH, MH-CH, SC-CL, CL-SC, CL-ML
O	Organics	Pt, OL, OH
Rc	Competent Bedrock	
RW	Weathered Bedrock	

TABLE 6
SOIL EROSION CODE CUT SLOPE STANDARDS

SEC Symbol	Soil Cut-Slopes Permafrost	Non-Permafrost
G	2:1	1½:1
D	2:1	2:1
O	2:1	1½:1
L	¼:1	¼:1
S	½:1	2:1
U	½:1	--
C	2:1	1½:1
O	--(a)	--(a)
Rc	¼:1	¼:1
Rw	1½:1	1½:1

a — Same as underlying material

TABLE 7
WORKPAD TYPICAL SECTION SYMBOLS

CHART A
EXISTING FACILITY LOCATION
RELATIVE TO NWA PIPELINE CONSTRUCTION

Adjacent to Prudhoe Bay Road (20-29)

20L — Haul Road Lt of NWA
20R — Haul Road Rt of NWA

Haines or Separate Location (30-39)

30 — Haines ROW, GVEA ROW, or Separate Location

CHART B
GROUND CROSS-SLOPE PERCENT AND DIRECTION

Cross-Slope Nos. 0-50

No.	Slope Range	Avg. Slope for Quan. Calc.
OLR	0 - 5	2½
5	5 - 10	7½
10	10 - 15	12½
15	15 - 20	17½
20	20 - 25	22½
25	25 - 30	27½
30	30 - 35	32½
35	35 - 40	37½
40	40 - 45	42½
45	45 - 50	47½
50	50 - 55	52½

L or R is used with ground slope numbers.
L — Ground slope with low side to the left.
R — Ground slope with low side to the right.

CHART C
(GRADING DESCRIPTION NUMBER)

Fill Sections, Nos. 1-9

1 — Unif. pad surface w/o S or B
2 — Unif. pad surface w/S
3 — Unif. pad surface w/B
4 — Unif pad surface w/B and S
5 — Stepped pad surface w/o S or B
6 — Stepped pad surface w/S
7 — Stepped pad surface w/B
8 — Stepped pad surface w/B and S

Cut Sections Nos. 10 - 19

10 — 2:1 Cut Slopes
11 — 1½:1 Cut Slopes
12 — 1:1 Cut Slopes
13 — 1:2 Cut Slopes
14 — 1:4 Cut Slopes

Thru — Cut Sections Nos. 20 — 29

20 — 2:1 Cut Slopes
21 — 1½:1 Cut Slopes
22 — 1:1 Cut Slopes
23 — 1:2 Cut Slopes
24 — 1:4 Cut Slopes

Cut/Fill Sections Nos. 30 — 45

30 — 2:1 w/o S or B
31 — 2:1 w/S
32 — 2:1 w/B
32A — 2:1 w/B and S
33 — 1½:1 w/o S or B
34 — 1½:1 w/S
35 — 1½:1 w/B
35A — 1½:1 w/S and B
36 — 1:1 w/o S and B
37 — 1:1 w/S
38 — 1:1 w/B
38A — 1:1 w/B and S
39 — 1:4 w/o S and B
40 — 1:4 w/S
41 — 1:4 w/B
41A — 1:4 w/B and S

Notes: Fill, Cut, Thru — Cut & Cut/Fill

L — Work Pad Lt of Pipe Base Line
R — Work Pad Rt of Pipe Base Line
S — Stripping
B — Benching
w/ — with
w/o — without

TABLE 8
EARTHWORK FACTORS — CIVIL CONSTRUCTION
CONSTRUCTION ZONE GRADING (WORKPAD CONSTRUCTION)

Material Site Materials*

Shrinkage (during construction)	= 14.33%	In-Place at Material Site
Spillage (during construction)	= 2.00%	
Maintenance (after construction)	= 13.67%	
Total Loss and Maintenance	30.00%	

$\frac{1}{1.0-.3}$ = 1.43 cu yd @ material site will provide 1.0 cu yd compacted material on workpad

Workpad construction (including shrinkage and spillage)=
0.8633 × total cu yd in-place @ material site

Maintenance (after construction) =
0.1367 × total cu yd in-place @ material site

EXCAVATION FROM CUT SECTIONS SUITABLE FOR WORKPAD MATERIAL*

Shrinkage (during construction)	= 14.33%	In-Place Excavation Sites
Spillage (during construction)	= 2.00%	
Total Loss	16.33%	

Workpad Construction (including shrinkage and spillage):
0.8633 × 1.43 = 1.2345 cu yd of excavation
(will provide 1.0 cu yd of compacted material on workpad)

EXCAVATION FROM CUT SECTIONS

Workpad Construction = 0.8633 × total cu yd in-place from excavation and material site

MATERIAL FROM MATERIAL SITE

Workpad Construction = 0.1367 × total cu yd in-place from excavation and material site

CONSTRUCTION ZONE EXCAVATION FOR DISPOSAL

1.0 cu yd Neatline Excavation = 1.0 cu yd of Disposal Material

*NOTE:
Workpad constructed with construction zone excavation will be maintained with material from the material site. Material estimated for maintaining the above workpads is based on 0.1955 (0.1367 x 1.43) times the construction cubic yard quantities.

PIPE DITCH — BACKFILL AND EXCAVATION

Material site or suitable excavation materials

COMMON BACKFILL

Shrinkage (during construction)	13.00%	In-Place at
Spillage (during construction)	2.00%	Material Site or
Total Loss	15.00%	Excavation Volume

$\frac{1}{1.0-.15}$ = 1.1765 cu yd @ material site or the excavation volume will provide 1.0 cu yd of compacted common backfill

Stable Ditch — Additional Quantity = 25% (For mounding, standard over-excavation of pipe ditch and wall, etc) (Ditch Slopes 1/4:1)

Common Pipe Ditch Backfill (In-place @ material sites or excavation volume)

Stable Ditch Quantity = Neatline Ditch Area × 1.25 × 1.1765 × 5280/27 or Neatline Ditch Area in sq ft × 287.59 cu yd-mi

Unstable Ditch Quantity = Neatline Ditch Area × 1.70 × 1.1765 × 5280/27 = Neatline Ditch Area in sq ft × 391.12 cy yd-mi

SPECIAL BACKFILL BEDDING, PADDING, AND NONFROST—SUSCEPTIBLE BACKFILL

Shrinkage	11.00%
Spillage	2.00%
Total Loss	13.00%

$\frac{1}{1.0-.13}$ = 1.1494 cu yd processed material @ material site will provide 1.0 cu yd bedding and padding or nonfrost susceptible (select backfill) of compacted backfill in pipe ditch

Stable Ditch - Additional Quantity = 25% w/Ditch Slopes 1/4:1

Unstable Ditch — Additional Quantity = 70% w/Ditch Slopes 1/2:1

TABLE 8 (Continued)
EARTHWORK FACTORS — CIVIL CONSTRUCTION
CONSTRUCTION ZONE GRADING (WORKPAD CONSTRUCTION)

SPECIAL PIPE DITCH BACKFILL (IN-PLACE @ MATERIAL SITE)

Stable Ditch Quantity	= Neatline Ditch Area in sq ft × 1.25 × 1.15 × 5280/27
or	= Neatline Ditch Area in sq ft × 281.11 cu yd-mi
Unstable Ditch Quantity	= Neatline Ditch Area in sq ft × 1.70 × 1.15 × 5280/27
or	= Neatline Ditch Area in sq ft × 382.31 cu yd-mi

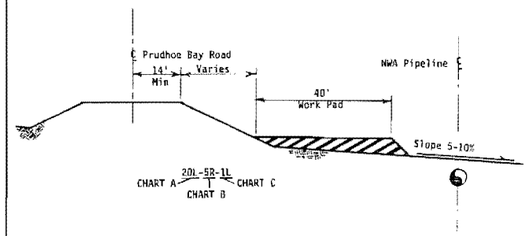
PIPE DITCH EXCAVATION FOR DISPOSAL

1.0 cu yd Neatline Excavation = 1.0 cu yd of disposal material

WORKPAD TYPICAL SECTION SYMBOLS LEGEND

To uniquely identify a work pad typical cross section on the alignment sheet and/or typical section drawings, three components are required. They are used to define the location of existing facilities, the natural ground cross slope and the type of earthwork construction proposed within the work limits. Table 7 on this sheet summarizes the meaning of the symbols used to describe a typical cross section. There are three charts included in Table 7. Chart "A" lists the symbols used to indicate the relative location of existing facilities in proximity to the proposed gasline. Chart "B" lists the symbols used to indicate the amount and direction of the natural ground cross slope. Chart "C" lists the symbols used to indicate the type of earthwork proposed within the work limits.

For example: the symbol 20L - 5R - 1L (See Diagram Below) designates a typical section where the haul road is on the left side of the proposed gasline. The workpad to be constructed will be 40' wide. The natural ground cross slope lies within the range of 5-10%. The NWA line will be downhill of the haul road. To determine if the NWA line is uphill or downhill of an existing facility, it is necessary to look at the "L" and "R" circled in the first two components (20(L) - 5(R) is downhill and 20(R) - 5(R) is uphill; downhill occurs when the circled "L" and "R" symbols are opposite in value).



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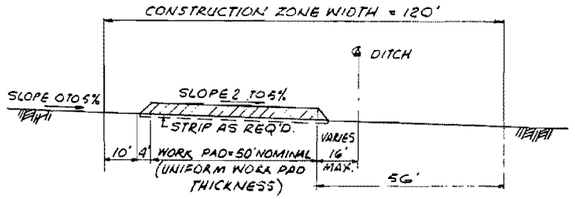
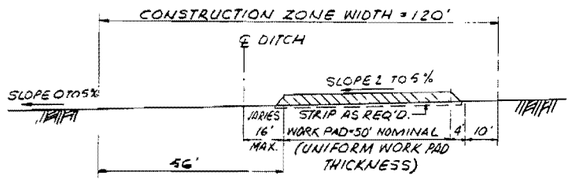
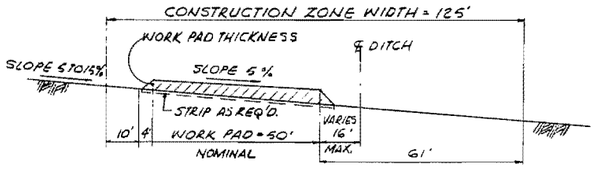


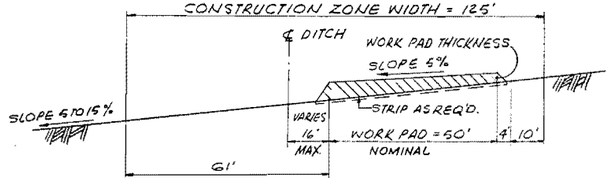
TYPICAL SECTION 30-ORL-1L OR 2L



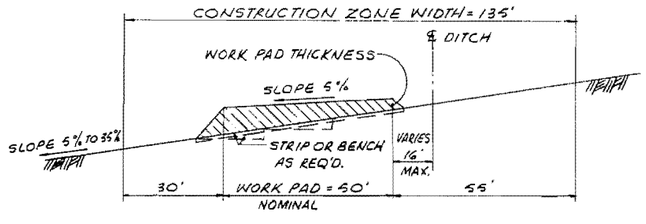
TYPICAL SECTION 30-ORL-1R OR 2R



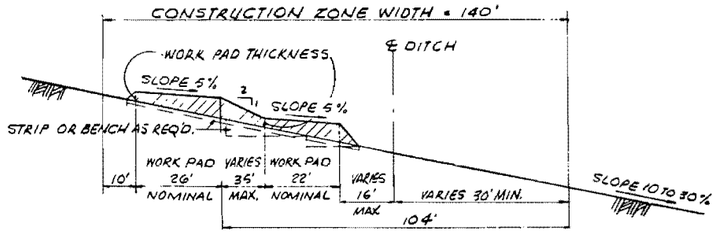
TYPICAL SECTION 30-5R OR 10R-1L OR 2L



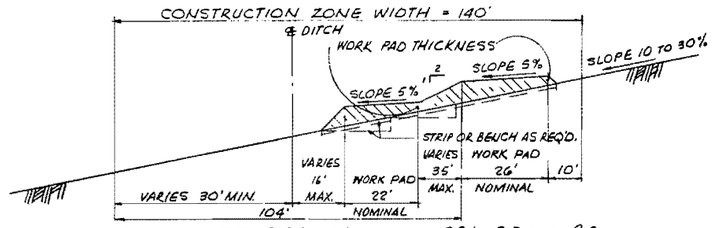
TYPICAL SECTION 30-5L OR 10L-1R OR 2R



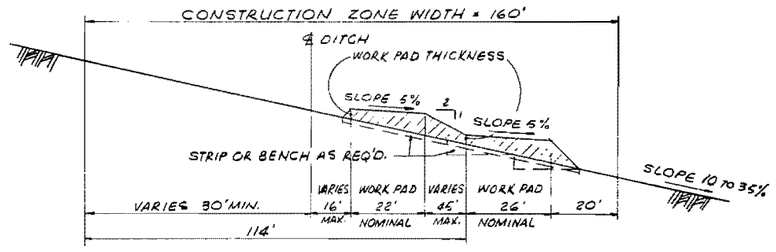
TYPICAL SECTION 30-5L THRU 30L-1L THRU 4L



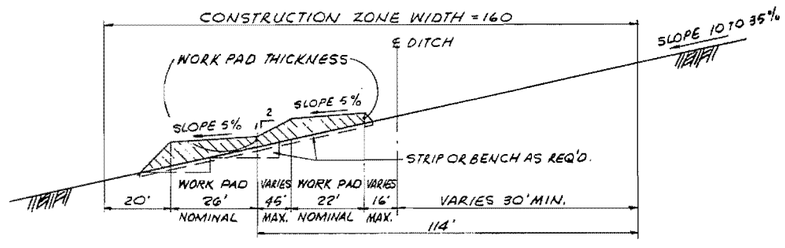
TYPICAL SECTION 30-10R THRU 25R-5L THRU 8L



TYPICAL SECTION 30-10L THRU 25L-5R THRU 8R



TYPICAL SECTION 30-10R THRU 30R-5R THRU 8R



TYPICAL SECTION 30-10L THRU 30L-5L THRU 8L

NOTES

NO.	DATE	REVISION	BY	CHKD.	APP.
1	4-80	RELEASED FOR FAA FILING			
2	8-20-80	NO CHANGE ISSUED FOR RECORD ONLY	AWS	JJM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	AWS	JJM	

DWG. NO.	REFERENCE DRAWING

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL CONSTRUCTION ZONE CROSS SECTIONS
N.W.A. ON SEPARATE ALIGNMENT
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

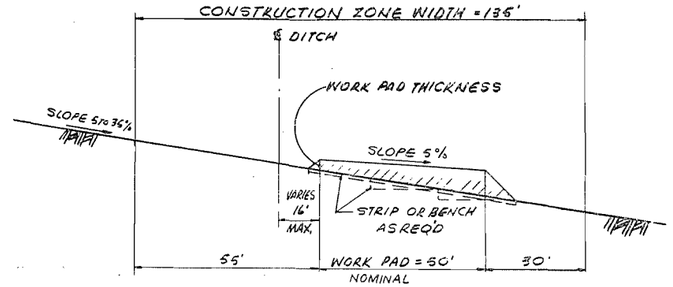
	DATE		DATE
		FLUOR JRBrandt	4/30/80
MICHAEL BAKER, JR., INC. AJ Wilhelm	4-29-80	M-W-Hamilton	5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 20'	4680-10-00-0-C-003	3

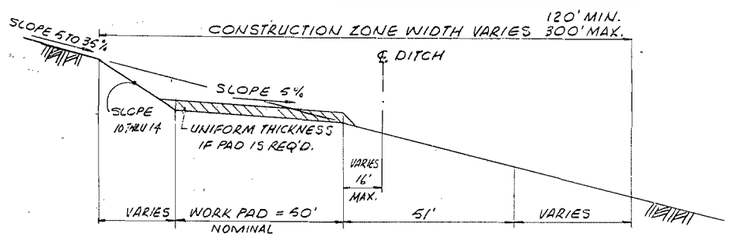
10000 | 10003 | 1a | CIVIL CONSTRUCTION

4 6 8 0

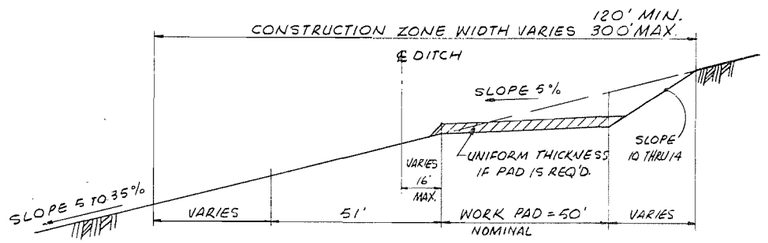
DISTRIBUTION CODE



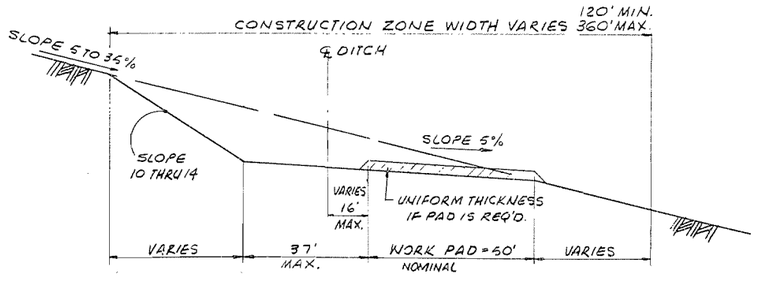
TYPICAL SECTION 30-5R THRU 30R-1R THRU 4R



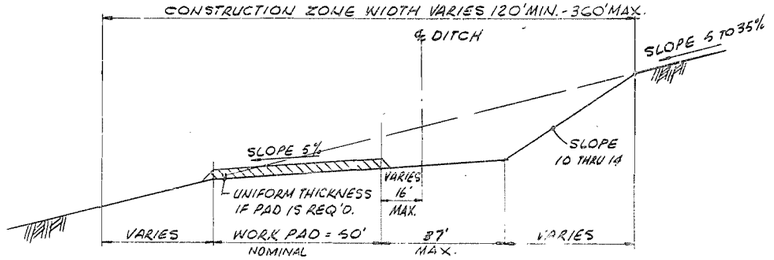
TYPICAL SECTION 30-5R THRU 30R-10L THRU 14L



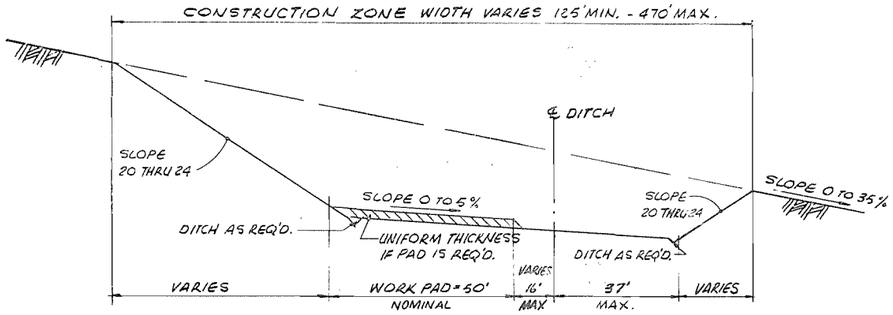
TYPICAL SECTION 30-5L THRU 30L-10R THRU 14R



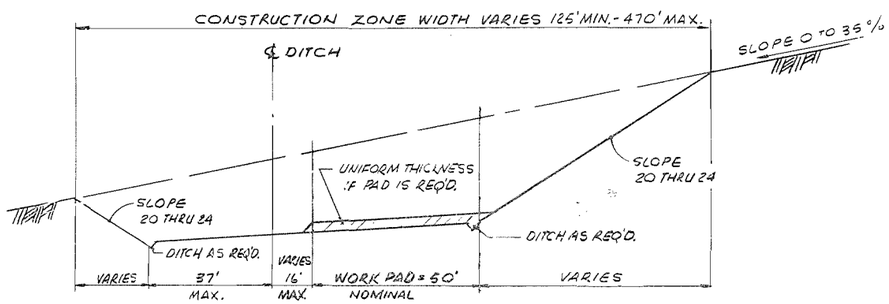
TYPICAL SECTION 30-5R THRU 30R-10R THRU 14R



TYPICAL SECTION 30-5L THRU 30L-10L THRU 14L



* TYPICAL SECTION 30-0R THRU 30R - 20L THRU 24L



* TYPICAL SECTION 30-0L THRU 30L - 20R THRU 24R

NOTES

* SECTION TO BE USED ONLY WHEN MATERIAL IS A GW, GP, GW-GM, GP-GM AND ALL MATERIAL EXCAVATED CAN BE USED IN THE EMBANKMENT. THE NEED FOR A WORK PAD EMBANKMENT WILL BE DETERMINED BY IN SITU MATERIAL GRADATION.

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	RELEASED FOR ENG. FILING			
2	8-26-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JAM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JAM	

DWG. NO.	REFERENCE DRAWING

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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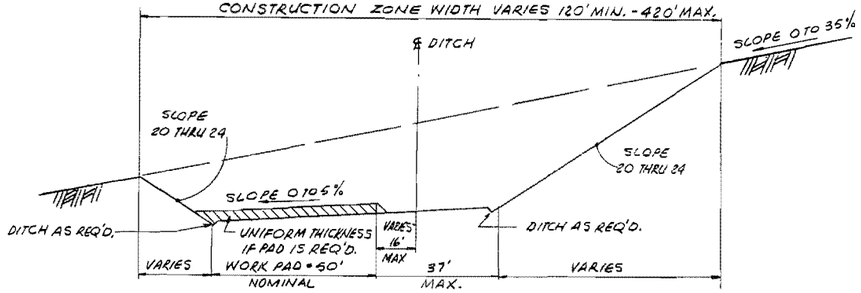
ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL CONSTRUCTION ZONE CROSS SECTIONS
N.W.A. ON SEPARATE ALIGNMENT
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

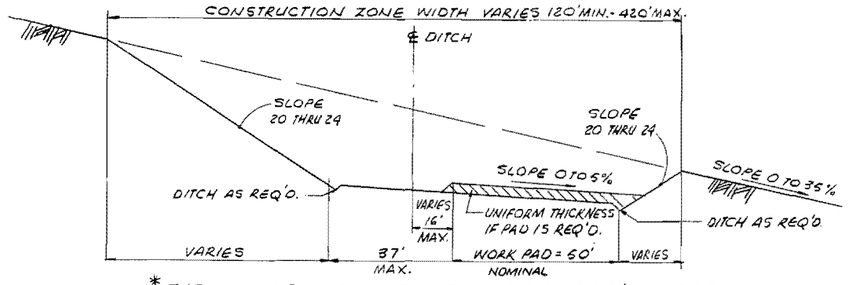
	DATE		DATE
MICHAEL BAKER, JR. INC.	4-29-80	FLUOR	4/30/80
N.W.A.G.A.S.	5/16/80		

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 20'	4680-10-00-0-C-004	3

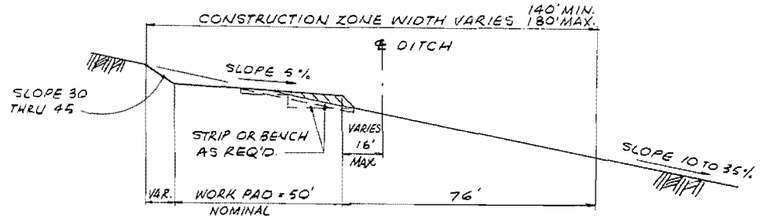
DISTRIBUTION CODE



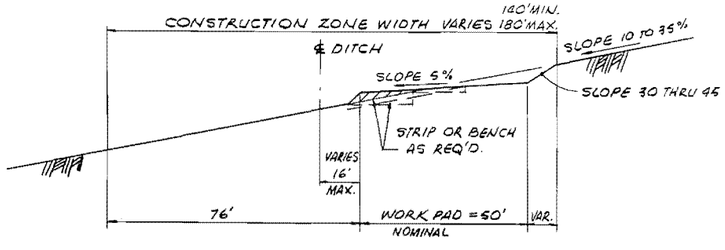
* TYPICAL SECTION 30-0L THRU 30L - 20L THRU 24L



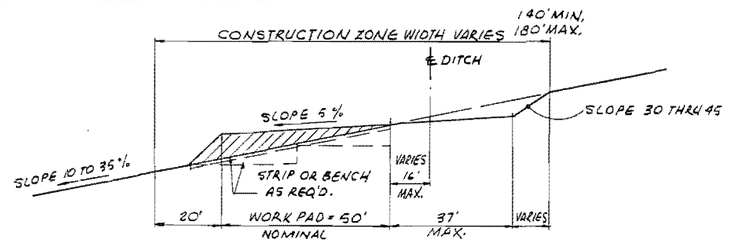
* TYPICAL SECTION 30-0R THRU 30R - 20R THRU 24R



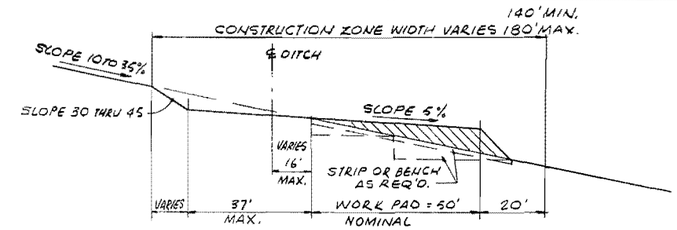
TYPICAL SECTION 30-10R THRU 30R - 30L THRU 45L



TYPICAL SECTION 30-10L THRU 30L - 30R THRU 45R



TYPICAL SECTION 30-10L THRU 30L - 30L THRU 45L



TYPICAL SECTION 30-10R THRU 30R - 30R THRU 45R

NOTES

* SECTION TO BE USED ONLY WHEN MATERIAL IS A GW, GP, GW-GM, GP-GM AND ALL MATERIAL EXCAVATED CAN BE USED IN THE EMBANKMENT. THE NEED FOR A WORK PAD EMBANKMENT WILL BE DETERMINED BY IN SITU MATERIAL GRADATION.

NO.	DATE	REVISION	BY	CHKD	APP.	DWG. NO.	REFERENCE DRAWING
1	4-80	RELEASED FOR FILING					
2	6-20-80	NO CHANGE ISSUED FOR RTF-BND ONLY	RWS	JAM	[illegible]		
3	7-11-80	NO CHANGE ISSUED FOR RECORD ONLY	RWS	JAM	[illegible]		

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

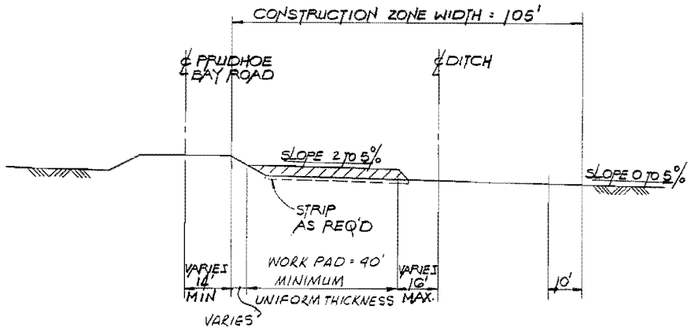
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL CONSTRUCTION ZONE CROSS SECTIONS
N.W.A. ON SEPARATE ALIGNMENT

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

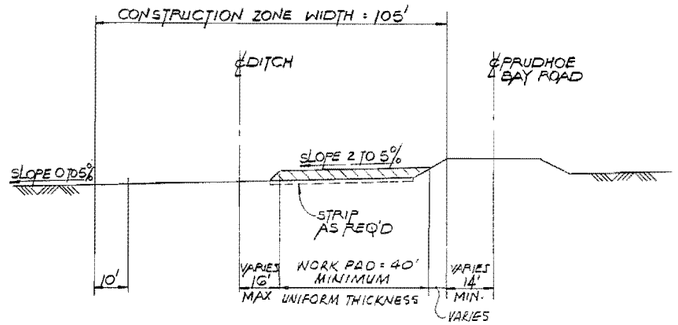
	DATE	FLUOR	DATE
MICHAEL BAKER JR. INC	DATE 4-29-80	N.W.	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 20'	4680-10-00-0-C-005	3

4 5 8 0 DISTRIBUTION CODE



TYPICAL SECTION 20L-0LR-1L OR 2L



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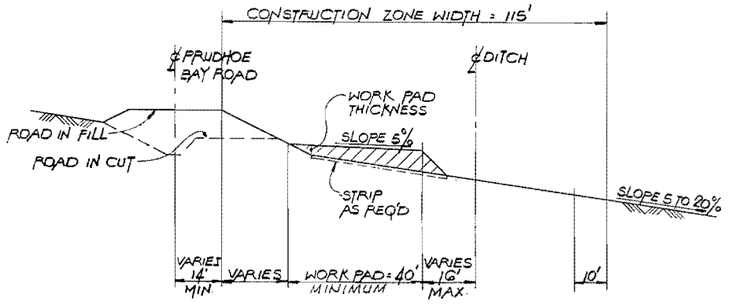
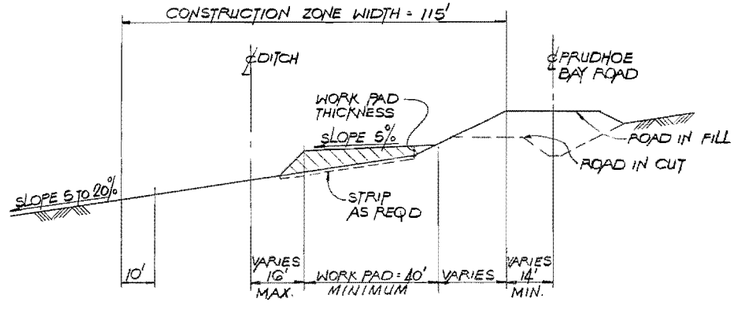
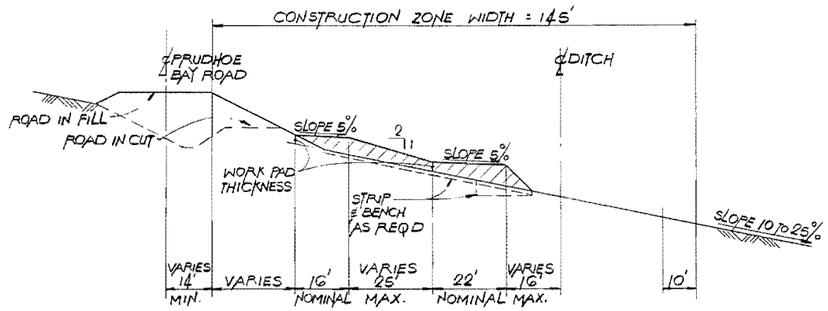


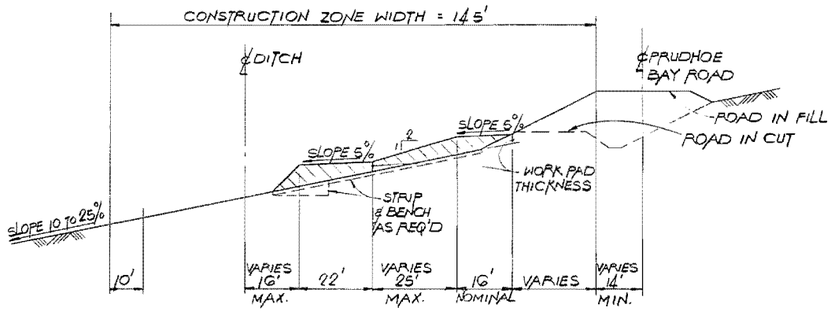
TYPICAL SECTION 20L-5R THRU 15R-1L OR 2L



TYPICAL SECTION 20R-5L THRU 15L-1R OR 2R



TYPICAL SECTION 20L-10R THRU 20R-5L THRU 8L



TYPICAL SECTION 20R-10L THRU 20L-5R THRU 8R

NOTES

WORK PAD WIDTH VARIES TO PROVIDE:

1. A MIN. OF 70 FT. OFFSET FROM THE ℄ OF PRUDHOE BAY ROAD TO ℄ OF N.W.A. PIPE.
2. WORK PAD COVER OVER EXISTING ALYESKA FUEL GAS PIPE AT STANDARD & AT EXTENDED PIPE OFFSETS.
3. EXTENDED OFFSET AS REQUIRED AT THE PRUDHOE BAY ROAD EXISTING CROSS DRAINAGE STRUCTURES.

NO.	DATE	REVISION	BY	CHKD.	APP.
1	6-80	RELEASED FOR FINAL ISSUE			
2	6-24-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JDT	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JDT	

DWG. NO.	REFERENCE DRAWING

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

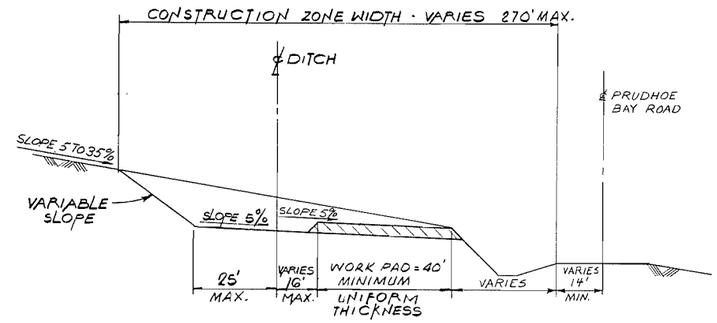
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL CONSTRUCTION ZONE CROSS SECTIONS
N.W.A. ADJACENT TO PRUDHOE BAY ROAD
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

	DATE		DATE
MICHAEL BAKER, JR., INC.	4-29-80	FLUOR	4/30/80
		N.W. ALASKAN	5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 20'	4860-10-00-0-C-012	3

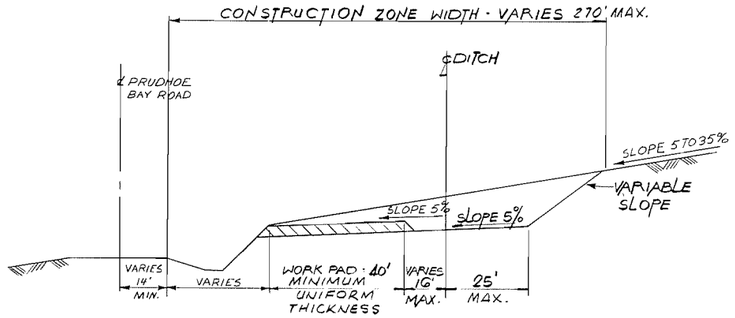
4680

DISTRIBUTION CODE



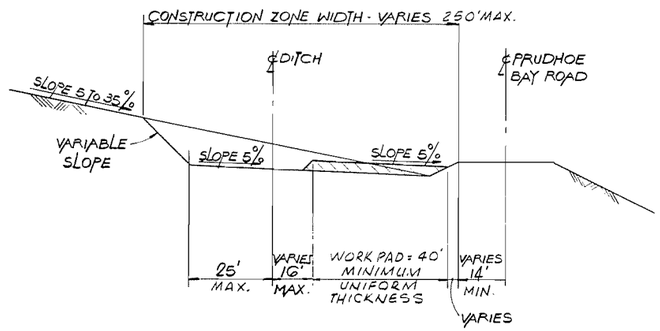
TYPICAL SECTION 20R-5R THRU 30R-20R THRU 24R

CUTS MAY BE DEEPENED IF IN SITU MATERIAL CAN BE USED IN THE WORK PAD

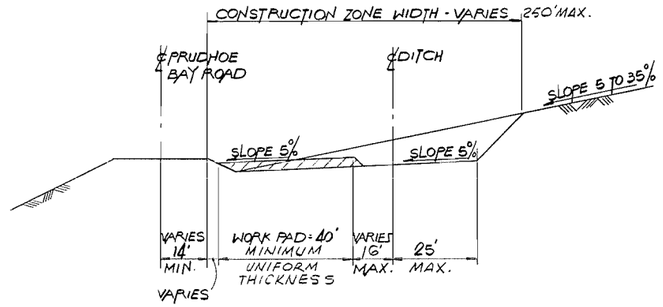


TYPICAL SECTION 20L-5L THRU 30L-20L THRU 24L

CUTS CAN BE DEEPENED IF IN SITU MATERIAL CAN BE USED IN THE WORK PAD



TYPICAL SECTION 20R-5R THRU 30R-10R THRU 14R



TYPICAL SECTION 20L-5L THRU 30L-10L THRU 14L

NOTES

WORK PAD WIDTH VARIES TO PROVIDE:

1. A MIN. OF 70 FT. OFFSET FROM THE ℄ OF PRUDHOE BAY ROAD TO ℄ OF N.W.A. PIPE.
2. WORK PAD COVER OVER EXISTING ALYESKA FUEL GAS PIPE AT STANDARD & AT EXTENDED PIPE OFFSETS.
3. EXTENDED OFFSET AS REQUIRED AT THE PRUDHOE BAY ROAD EXISTING CROSS DRAINAGE STRUCTURES.

NO.	DATE	REVISION	BY	CHKD.	APP.	DWG. NO.	REFERENCE DRAWING
1	4-80	RELEASED FOR THE FILING					
2	8-20-80	NO CHANGE ISSUED FOR RECORD ONLY	GWS	JDM	[illegible]		
3	11-3-80	NO CHANGE ISSUED FOR RECORD ONLY	GWS	JDM	[illegible]		

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

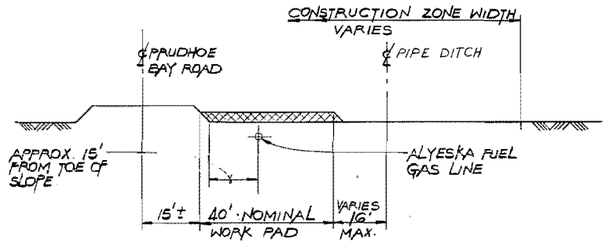
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL CONSTRUCTION ZONE CROSS SECTIONS
N.W.A. ADJACENT TO PRUDHOE BAY ROAD
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

	DATE		DATE
		FLUOR J.R. Brandt	4/30/80
MICHAEL BAKER, JR., INC. L.E. McCRARY	4-29-80	N.W. ALASKAN [illegible]	5/9/80

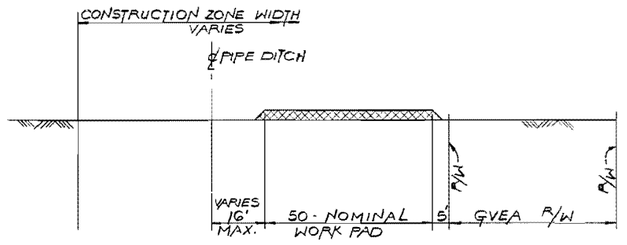
SCALE IN FEET	DRAWING NUMBER	REV.
1" = 20'	4680-10-00-0-C-013	3

4 6 8 0

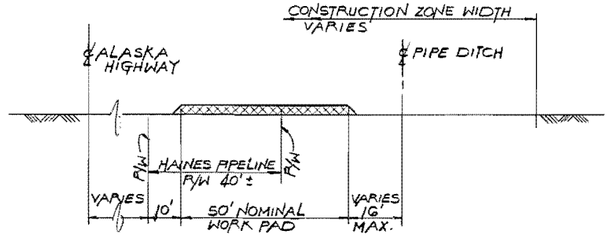
DISTRIBUTION CODE



GENERAL TYPICAL CROSS SECTION
NWA CONSTRUCTION OVER THE ALYESKA FUEL GAS LINE
(APPLICABLE TO THE 20L & 20 TYPICAL CROSS SECTIONS)



GENERAL TYPICAL CROSS SECTION
NWA OFFSET DETAILS ADJACENT TO GVEA R/W
(APPLICABLE TO THE 30 STANDARD TYPICAL CROSS SECTIONS)



GENERAL TYPICAL CROSS SECTION
NWA OFFSET DETAILS ADJACENT TO HAINES PIPELINE R/W
(APPLICABLE TO THE 30 STANDARD TYPICAL CROSS SECTIONS)

NOTES

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	RELEASED FOR BIDDING			
2	4-28-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	RWS	JBM	
3	5-1-80	NO CHANGE ISSUED FOR RECORD ONLY	RWS	JBM	

DWG. NO. | REFERENCE DRAWING

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

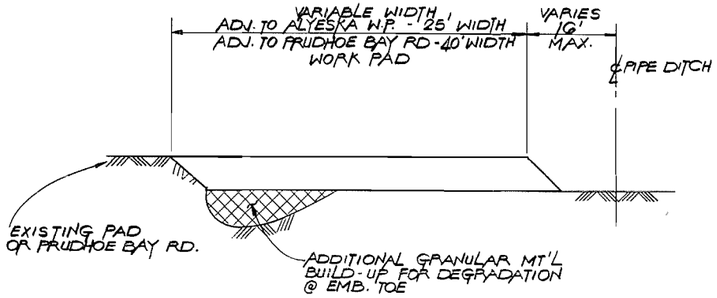
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
GENERAL TYPICAL CROSS SECTIONS
MISCELLANEOUS CONSTRUCTION APPLICABLE TO THE STANDARD CROSS SECTIONS
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

	DATE	FLUOR J.R. Brandt	DATE 4/30/80
MICHAEL BAKER, JR., INC. VA Schaaf	DATE 4-29-80	N.W. Approved Hatle	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
NONE	4680-10-00-0-C-014	3

4680

DISTRIBUTION CODE

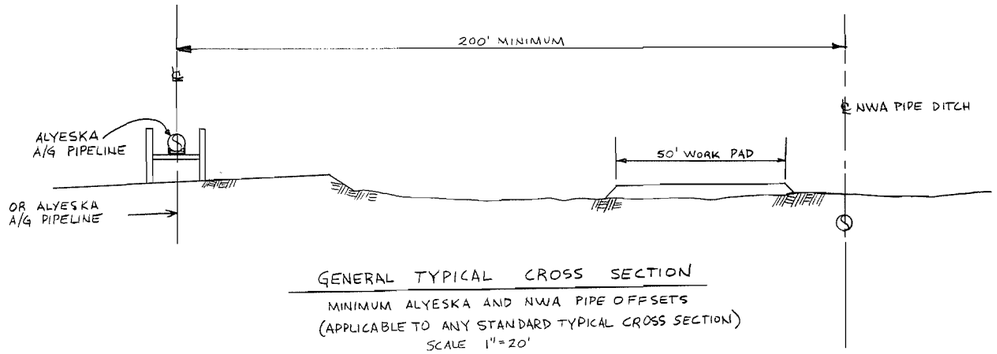


GENERAL TYPICAL CROSS SECTION

ADDITIONAL GRANULAR MT'L BUILD-UP FOR DEGRADATION AT EMB. TOE

(APPLICABLE TO THE 20L, & 20R STANDARD TYPICAL CROSS SECTIONS.)

SCALE 1"= 10'

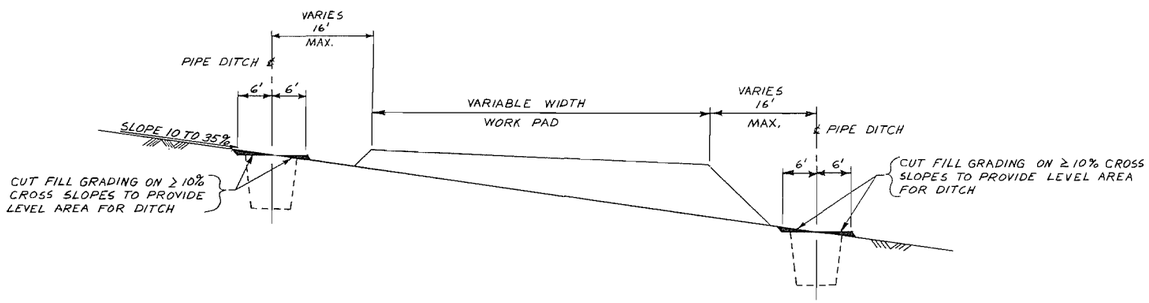


GENERAL TYPICAL CROSS SECTION

MINIMUM ALYESKA AND NWA PIPE OFFSETS

(APPLICABLE TO ANY STANDARD TYPICAL CROSS SECTION)

SCALE 1"=20'



GENERAL TYPICAL SECTION

SIDEHILL GRADING FOR PIPE DITCH BACKHOE EXCAVATION

(APPLICABLE TO ALL STANDARD TYPICAL CROSS SECTIONS WITH THE PIPE DITCH ON CROSS SLOPES OF ≥ 10%)

SCALE 1"= 10'

NOTES

NO.	DATE	REVISION	BY	CHKD.	APP.
1	4-80	RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	BWS	JDH	[illegible]
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	BWS	JDH	[illegible]

DWG. NO. | REFERENCE DRAWING

FLUOR
PROJECT MANAGEMENT CONTRACTOR

MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

GENERAL TYPICAL CROSS SECTIONS

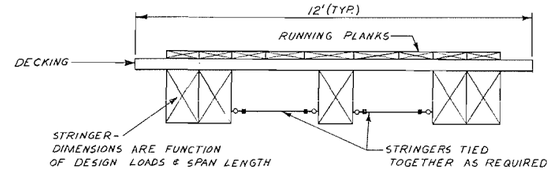
MISCELLANEOUS CONSTRUCTION APPLICABLE TO THE STANDARD CROSS SECTIONS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

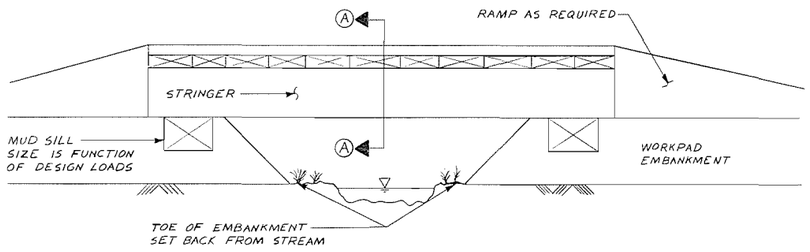
	DATE	FLUOR RBrandt	DATE 7/30/80
MICHAEL BAKER JR., INC. [illegible]	DATE 4-29-80	N.W. ALASKAN [illegible]	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
AS NOTED	4680-10-00-0-C-015	3

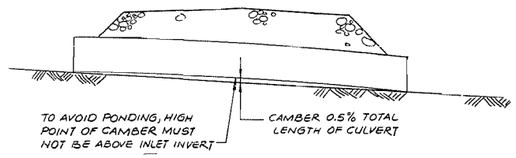
DISTRIBUTION CODE



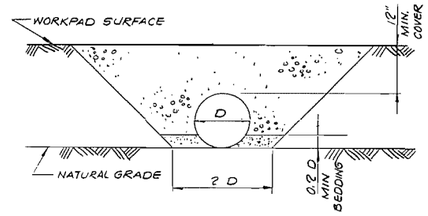
SECTION A-A



TEMPORARY MAT BRIDGE



CULVERT CAMBER



CULVERT BEDDING
(THAW STABLE OR UNFROZEN SOIL)

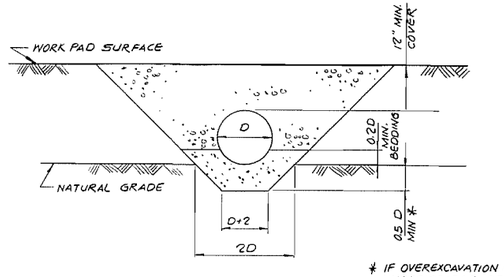
PIPES

DIAMETER	SPACING
UP TO 24"	12"
24" - 72"	½ DIA.
72" AND UP	36"

PIPE ARCHES

SPAN	SPACING
UP TO 36"	12"
36" - 108"	⅓ SPAN
108" - 189"	36"

CULVERT SPACING FOR MULTIPLE INSTALLATION

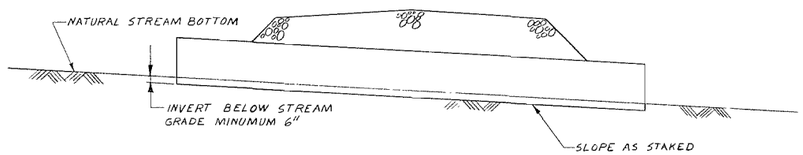


* IF OVEREXCAVATION IS UNDESIREABLE OR INFEASIBLE - USE MIN. 2" WORKPAD INSULATION

CULVERT BEDDING
(NON THAW-STABLE SOILS)

NOTES:

1. COVER OVER ALL STRUCTURES SHALL BE MINIMUM OF 1.0 FEET UNLESS OTHERWISE INDICATED.
2. ALL STEEL AND FASTENERS SHALL BE GALVANIZED, UNLESS OTHERWISE INDICATED. IF PIPE IS ALUMINUM, ADJACENT PARTS SHALL BE ALUMINUM.
3. EXCEPT AS OTHERWISE INDICATED, THE STREAM CHANNEL SHALL BE MAINTAINED TO ITS NATURAL GRADIENT, ROUGHNESS, AND CONDITION



CORRUGATED METAL PIPE OR PIPE ARCH-FISH STREAMS

NOTES	NO.	DATE	REVISION	BY	CHKD.	APP.	DWG. NO.	REFERENCE DRAWING
	1	4-80	RELEASED FOR FERC FILING					
	2	9 26 80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM			
	3	11 3 80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM			

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

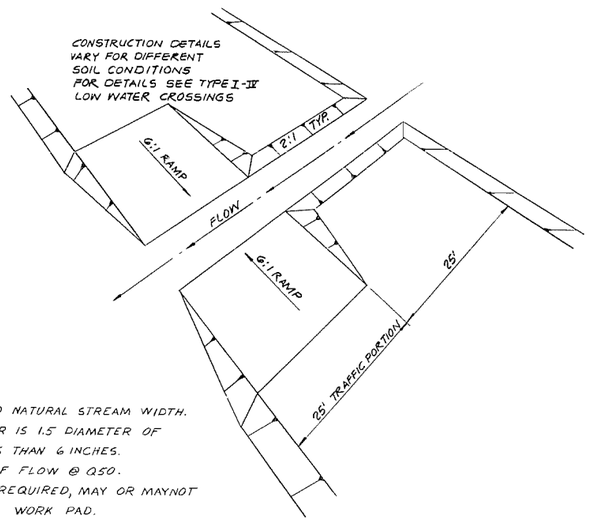
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL DRAINAGE STRUCTURES

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

	DATE	FLUOR J.R. Grant	DATE 4/30/80
MICHAEL BAKER JR INC. J.B. Michaels	DATE 4-29-80	NW ALASKAN J.M. Matte	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
NONE	4680-10-00-0-C-016	3

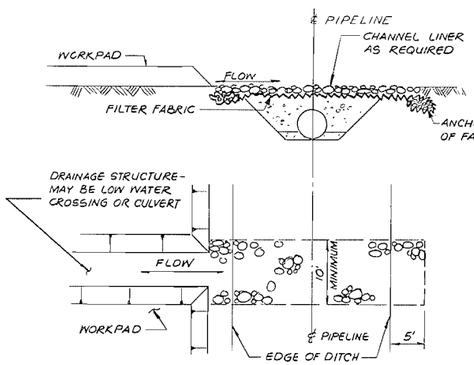
DISTRIBUTION CODE



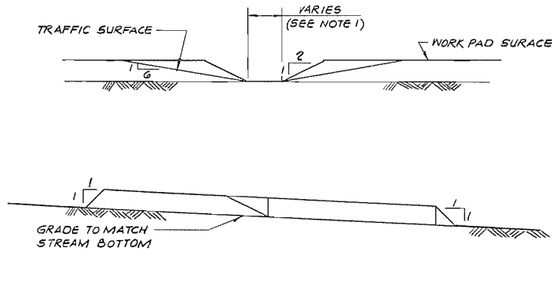
NOTES:

1. BOTTOM WIDTH SHALL CONFORM TO NATURAL STREAM WIDTH.
2. MINIMUM THICKNESS OF CHANNEL LINER IS 1.5 DIAMETER OF LARGEST MATERIAL, BUT NEVER LESS THAN 6 INCHES.
3. APPROACHES ARMORED TO DEPTH OF FLOW @ Q50.
4. INSULATION THICKNESS VARIES AS REQUIRED, MAY OR MAYNOT BE USED IN AREAS OF INSULATED WORK PAD.
5. WELL GRADED GRAVEL BACKFILL IS USED WHEN CROSSING IS EXCAVATED BELOW NATURAL GRADE (HATCHED AREA)
6. TEMPORARY MAT BRIDGES MAY BE USED TO CROSS STREAMS DURING CONSTRUCTION.

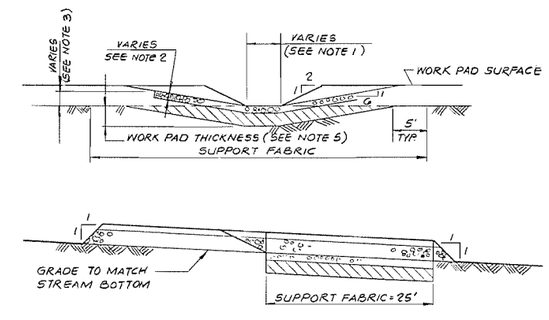
LOW WATER CROSSING



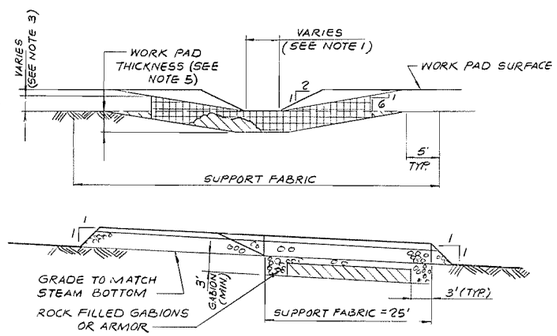
TYPICAL DITCHLINE PROTECTION



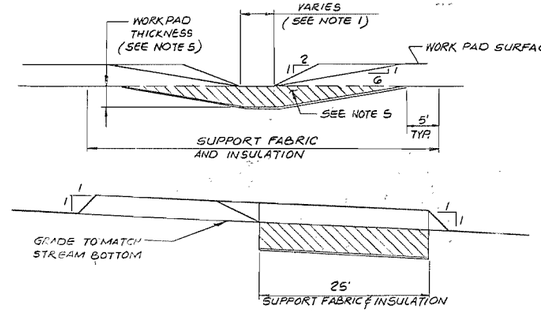
TYPE I LOW WATER CROSSING (SEC G)



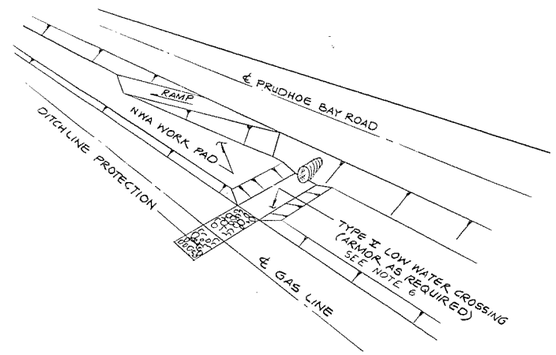
TYPE II LOW WATER CROSSING (SEC D,Q)



TYPE III LOW WATER CROSSING (SEC S,C,L,FU)



TYPE IV LOW WATER CROSSING (INSULATED)



TYPE V LOW WATER CROSSING
(WHEN ADJACENT TO PRUDHOE BAY ROAD)

NOTES	NO.	DATE	REVISION	BY	CHKD.	APP.	DWG. NO.	REFERENCE DRAWING
	1	4-80	RELEASED FOR FERC FILING					
	2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	JWS	JSM	[illegible]		
	3	11-3-80	NO CHANGE ISSUED FOR RECORD ONLY	JWS	JSM	[illegible]		

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

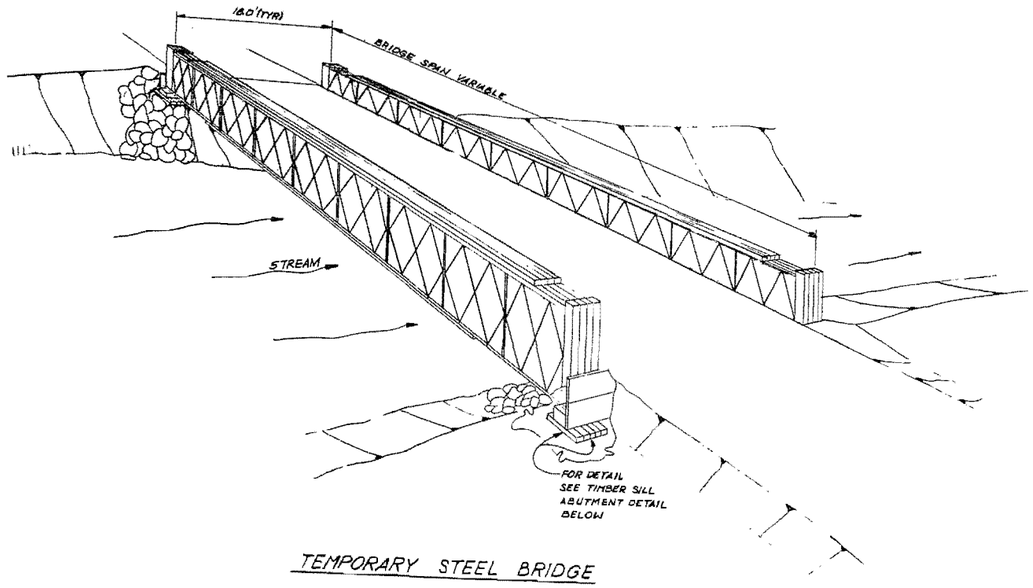
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL PERMANENT DRAINAGE STRUCTURES

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

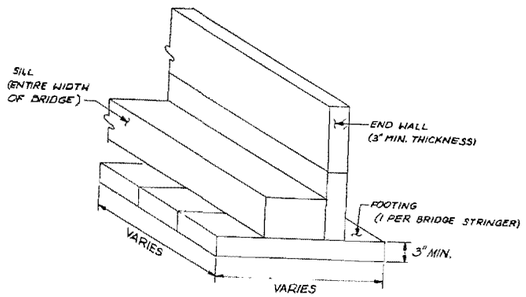
MICHAEL BAKER JR. INC.	DATE 4-29-80	FLUOR J.R. Brandt	DATE 4/30/80
		NW ALASKAN [illegible]	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
NONE	4680-10-00-0-C-017	3

DISTRIBUTION CODE



TEMPORARY STEEL BRIDGE



TIMBER SILL ABUTMENT DETAIL

NOTES

NO.	DATE	REVISION	BY	CHKD.	APP.
1	4-80	RELEASED FOR FERC FILING			
2	9-20-80	NO CHANGE ISSUED FOR RECORD ONLY	BWS	JBM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	BWS	JBM	

DWG. NO.	REFERENCE DRAWING

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PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL DRAINAGE STRUCTURES

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

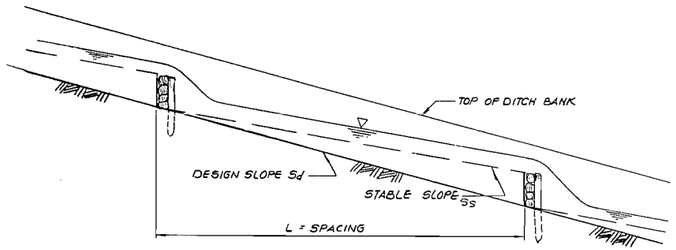
	DATE	FLUOR J.R. Brown	DATE 5/7/80
MICHAEL BAKER, JR., INC.	DATE 5/7/80	N.W. ALASKAN	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
NONE	4680-10-00-0-C-018	3

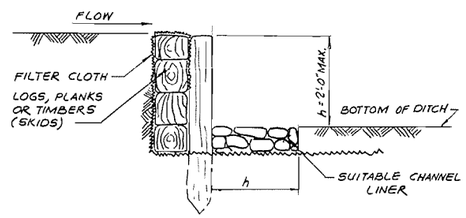
CONSTRUCTION

4 6 8 0
77 78 79 80

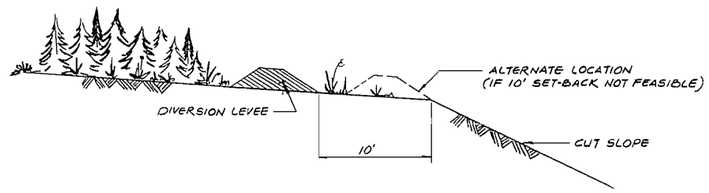
DISTRIBUTION CODE



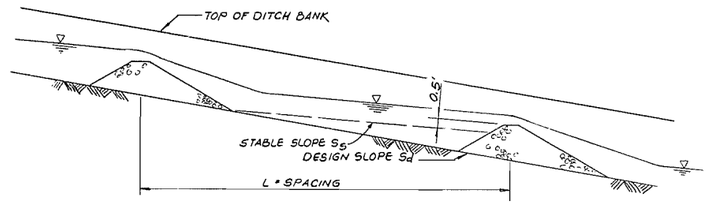
TYPE I DRAINAGE DITCH CHECK
(FOR VELOCITY CONTROL)

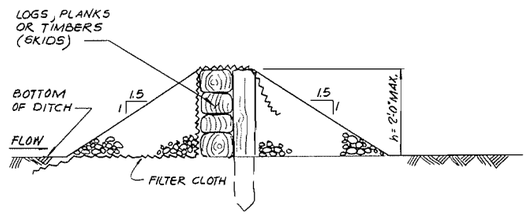


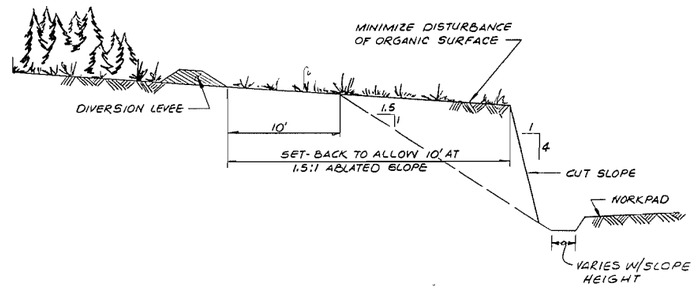
TYPICAL INSTALLATION-TYPE I



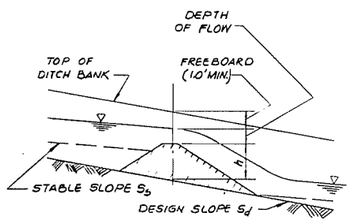
DIVERSION LEVEE ABOVE CUT SLOPE
(EXCEPT ABOVE 1:4 CUT SLOPES)







TYPE II DRAINAGE DITCH CHECK
(FOR VELOCITY AND SEDIMENT CONTROL)



SPACING REQUIREMENTS

FOR TYPE I INSTALLATION

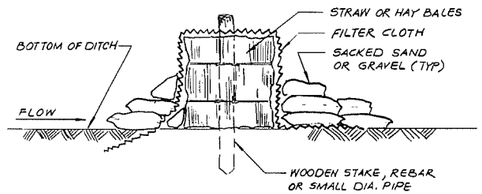
$L = h / (S_d - S_s)$

FOR TYPE II INSTALLATION

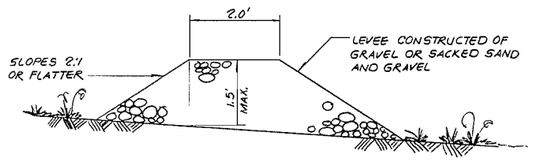
$L = (h - 0.5) / (S_d - S_s)$

L = SPACING
h = HEIGHT OF STRUCTURE IN FEET
S_d = DESIGN SLOPE IN FEET/FOOT
S_s = STABLE SLOPE IN FEET/FOOT

TYPICAL INSTALLATION-TYPE II



TEMPORARY DRAINAGE DITCH CHECK



TYPICAL DIVERSION LEVEE DETAIL

NOTES

NO.	DATE	REVISION	BY	CHKD	APP.	DWG. NO.	REFERENCE DRAWING
1	4-80	RELEASED FOR FERC FILING					
2	6-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JBH	RD Gould		
3	11-3-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBH	RD Gould		

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

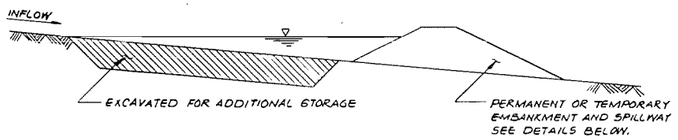
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
TYPICAL EROSION CONTROL STRUCTURES

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

	DATE	FLUOR JR Gaunt	DATE 4/30/80
MICHAEL BAKER, JR., INC. JH Richard	DATE 4-29-80	NW ALASKAN Jack Walker	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
NONE	4680-10-00-0-C-019	3

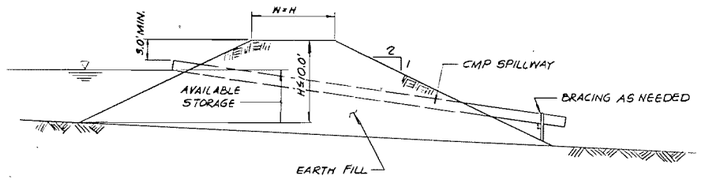
DISTRIBUTION CODE 4|6|8|0

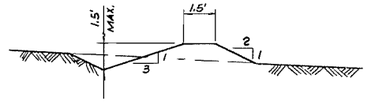


NOTE : ACCESS FOR CLEANOUT MUST BE PROVIDED FOR.

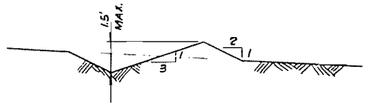
EXCAVATION FOR ADDITIONAL SEDIMENT STORAGE

(THAN STABLE SOIL ONLY; WHERE STORAGE AREA IS LIMITED)

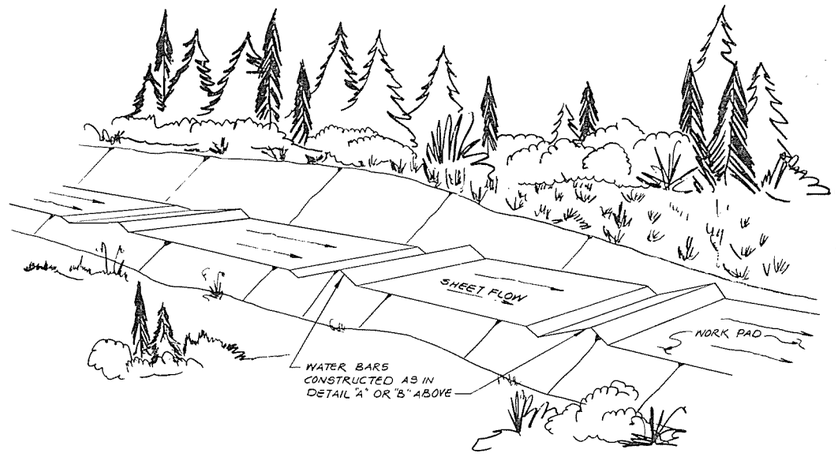


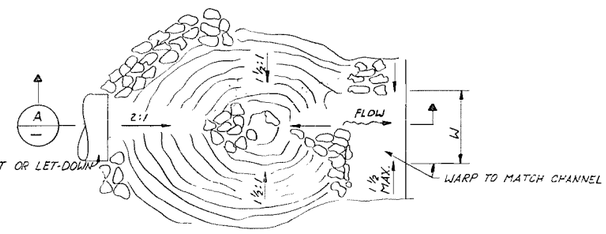


DETAIL "A"

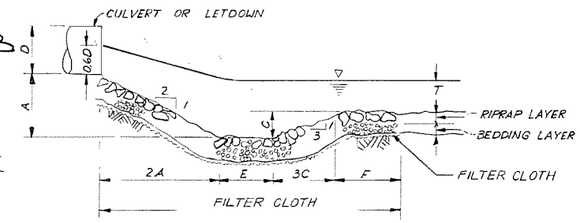


DETAIL "B"



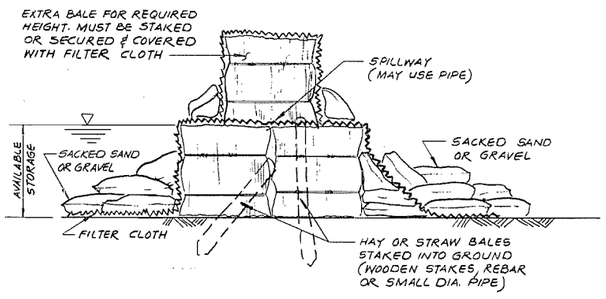


PLAN



SECTION (A)

EARTH FILL EMBANKMENT FOR LARGE SEDIMENT BASIN



NOTE : MAY BE USED AS OUTLET STRUCTURE OR ENTIRE EMBANKMENT

EMBANKMENT FOR TEMPORARY SEDIMENT BASIN

WATER BARS

FOR PROTECTION OF GRADED SURFACES FROM EROSION BY SHEET FLOW

PIPE DIA. (INCHES)	PLUNGE BASIN DIMENSIONS (FEET) V ≤ 18 FPS					18 < V ≤ 24					24 < V ≤ 30				
	A	C	E	T	F	A	C	E	T	F	A	C	E	T	F
24	3	1.5	3	1.5	4	3	1.5	5	1.5	4	4	2	7	1.5	4
30	3	1.5	3	2	4	3	1.5	5	2	4	4	2	7	2	4
36	3	1.5	3	2.5	5	3	1.5	5	2.5	5	4	2	7	2.5	5
42	3	1.5	3	3	5	3	1.5	5	3	5	4	2	7	3	5
48	3	1.5	3	3	6	4	2	5	3	6	5	2.5	7	3	6
54	3	1.5	3	4	7	4	2	5	4	7	5	2.5	7	4	7
60	4	2	3	4	8	4	2	5	4	8	6	3	7	4	8

RIPRAP DIMENSIONS (INCHES)

RIPRAP SIZE	RIPRAP THKNS	BEDDING THKNS	RIPRAP SIZE	RIPRAP THKNS	BEDDING THKNS	RIPRAP SIZE	RIPRAP THKNS	BEDDING THKNS
16	18	6	24	24	8	24	30	10

RIPRAP PLUNGE BASIN

NO SCALE

NOTES

NO.	DATE	REVISION	BY	CHKD	APP.	DWG. NO.	REFERENCE DRAWING
1	4-80	RELEASED FOR FERC FILING					
2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	RWS	JBM	[illegible]		
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	RWS	JBM	[illegible]		

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

TYPICAL EROSION CONTROL STRUCTURES

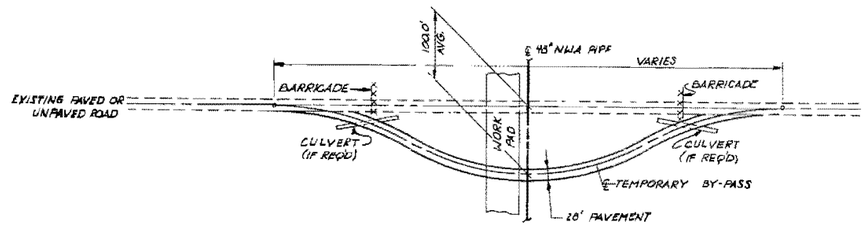
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

	DATE	FLUOR J.R. Brandt	DATE 7/30/80
MICHAEL BAKER, JR., INC. V.A. Mulvey	DATE 4-29-80	N.W. NWNGTC	DATE 5/18/80

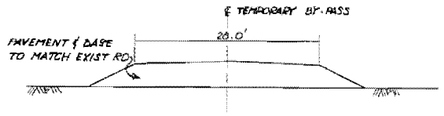
SCALE IN FEET	DRAWING NUMBER	REV.
NONE	4680-10-00-0-C-020	3

4 6 8 0
77 78 79 80

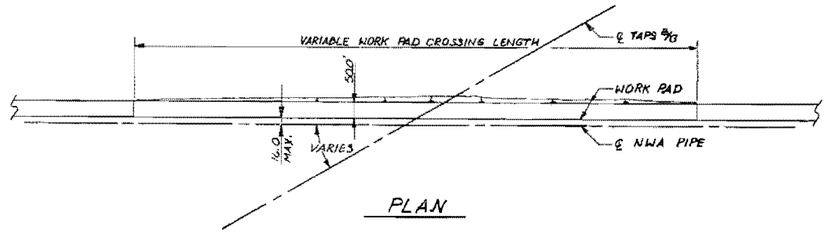
"DISTRIBUTION" CODE



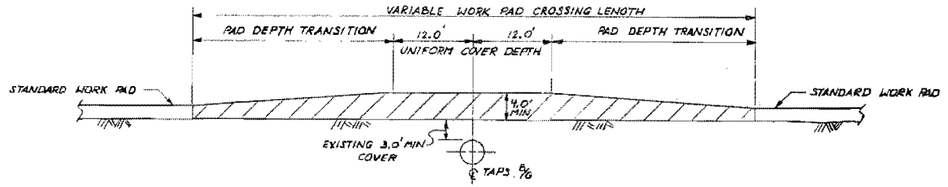
PLAN



TYPICAL SECTION
TEMPORARY BY-PASS

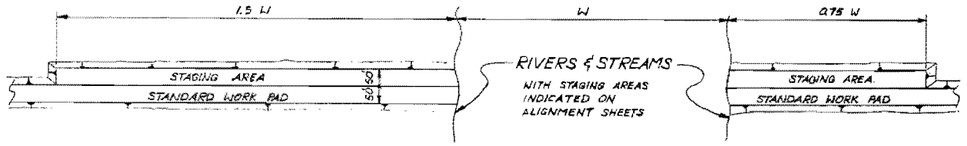


PLAN

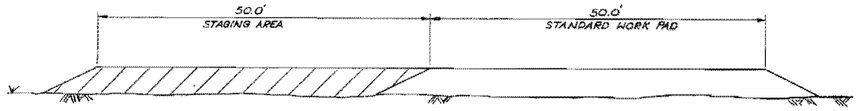


WORK PAD PROFILE

NWA WORK PAD – TAPS B/G CROSSING

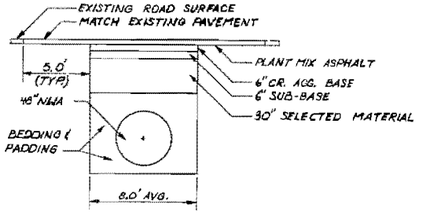


PLAN

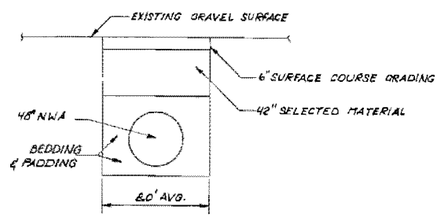


TYPICAL SECTION
STAGING AREA EXTENSION OF THE WORK PAD

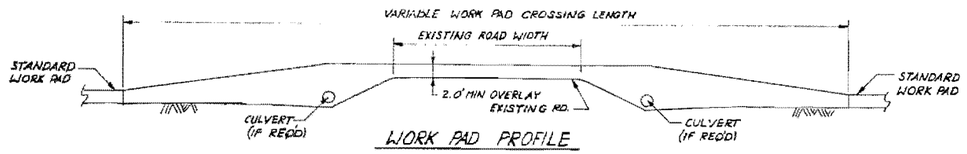
NWA STAGING AREA AT STREAM CROSSINGS



* PIPE DITCH SECTION
@ PAVED ROAD CROSSING



* PIPE DITCH SECTION
@ UNPAVED ROAD CROSSING



WORK PAD PROFILE

NWA WORK PAD – ROAD CROSSING

NOTES

* DIMENSIONS OF STRATA THICKNESSES ARE NOMINAL FOR FERC FILING ESTIMATE. ACTUAL THICKNESSES WILL BE ESTABLISHED ON SITE SPECIFIC BASIS TO MATCH EXISTING ROAD DESIGN. FOR FURTHER DETAILS OF CROSSINGS SEE DRAWINGS 4680-10-00-9-P-201 AND P-202

NO.	DATE	REVISION	BY	CHKD.	APP.
1	4-80	RELEASED FOR FERC FILING			
2	9-29-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBH	RWW
3	11-11-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBH	RWW

DWG. NO.

REFERENCE DRAWING

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
MISC. ON-R/W CONSTRUCTION

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

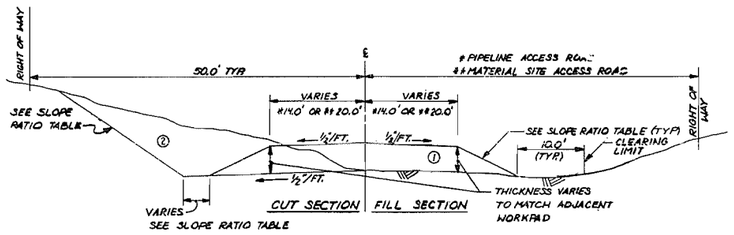
	DATE	FLUOR J.B.Graves	DATE 5/7/80
MICHAEL BAKER, JR., INC.	DATE 5-7-80	N.W. ALASKA R.W.Wesley	DATE 5/16/80

SCALE IN FEET: NONE

DRAWING NUMBER: 4680-10-00-0-C-021

REV.: 3

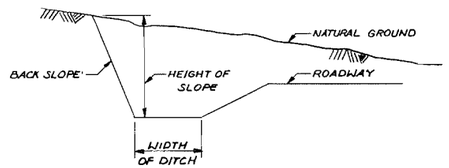
DISTRIBUTION CODE



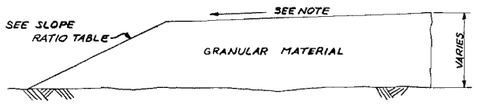
FILL SLOPE RATIO TABLE		
ROCK OR SOIL OR EARTH	HEIGHT OF SLOPE	FILL SLOPE
	0'-5.0'	3:1
	5'-15.0'	2:1
	15'± OVER	1½:1

INDEX OF ROADWAY MATERIAL	
NO.	ITEM
①	EMBANKMENT FROM BORROW OR SUITABLE EXCAVATION
②	UNCLASSIFIED EXCAVATION AND/OR ROCK EXCAVATION

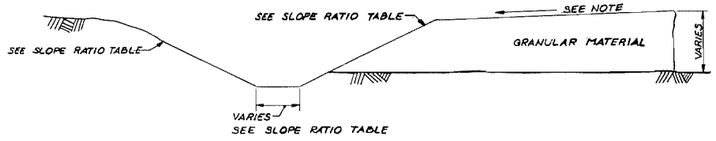
CUT SLOPE RATIO TABLE			
HEIGHT OF SLOPE	WIDTH OF DITCH	SOIL EROSION CODE	BACK SLOPE
0'-5.0'	2.0'	ALL	1½:1
5'-15.0'	8.0'	THAWED C,F,G	1½:1
↑	↑	THAWED S,F,D	2:1
		THAWED L,F,R	1:4
↓	↓	FROZEN C,D,F,G	2:1
5'-15.0'	8.0'	FROZEN U,L,S,F,R	1:4
15'± OVER	14.0'	AS ABOVE	AS ABOVE



TYPICAL ACCESS ROAD SECTION



FILL SECTION



CUT SECTION

TYPICAL GRADED SECTIONS FOR OFF RIGHT OF WAY SERVICE AREAS

(STORAGE YARDS, CAMPS & AIRPORTS)

NOTES

SLOPE AS REQUIRED TO FACILITATE DRAINAGE.

NO.	DATE	REVISION	BY	CHKD.	APP.	OWG. NO.	REFERENCE DRAWING
1	4-80	RELEASED FOR FERC FILING					
2	6-20-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	[illegible]		
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	[illegible]		

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
OFF-R/W CONSTRUCTION
TYPICAL SECTIONS

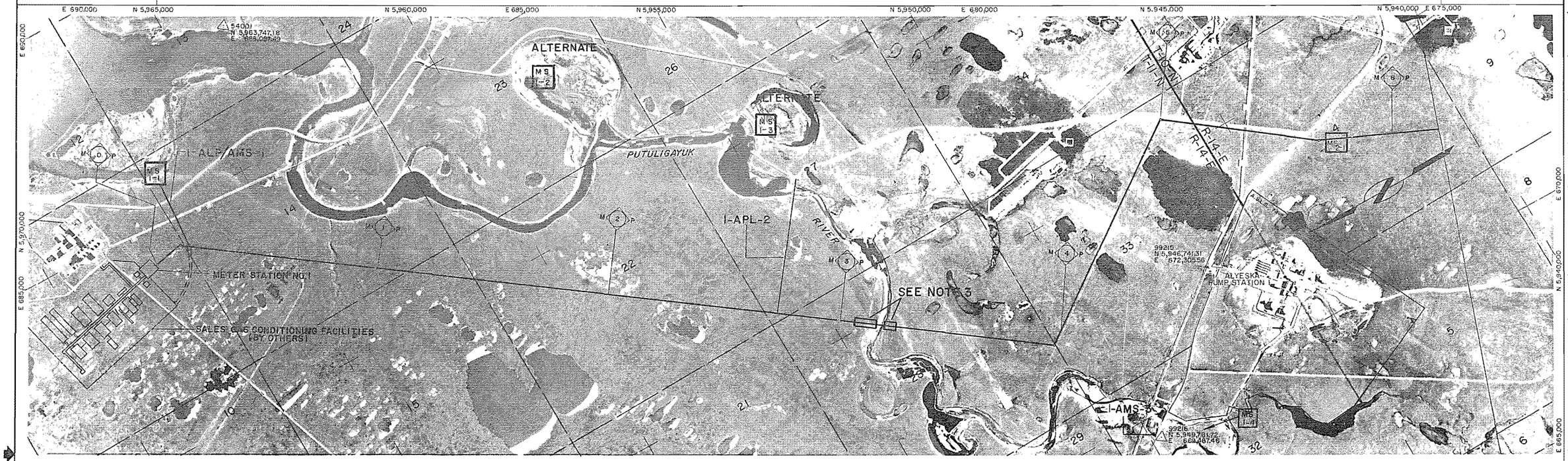
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

MICHAEL BAKER, JR., INC	DATE 5/7/80	FLUOR J.R. Brandt	DATE 5/7/80
		NW ALASKAN [illegible]	DATE 5/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
NONE	4680-10-00-0-C-022	3

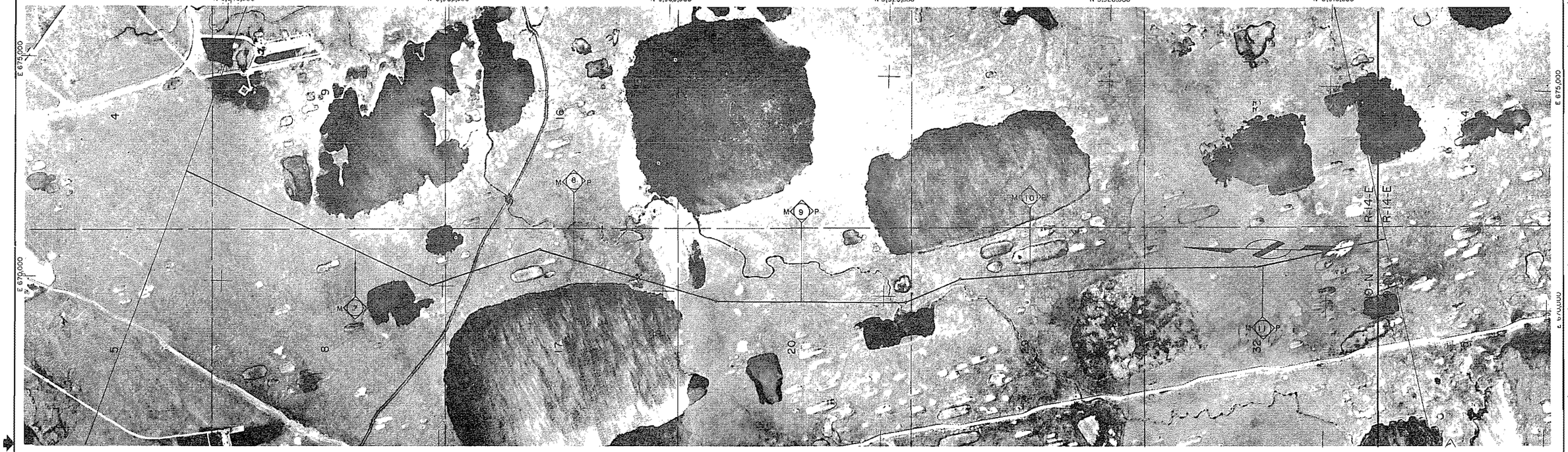
DISTRIBUTION CODE

WORKPAD CONSTR. SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE (USC CLASS)	ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	SEPARATE LOCATION — RIVER X-ING — SEPARATE LOCATION



| | | |

WORKPAD CONSTR SEASON		SHOULDER MONTH	CONSTRUCTION
SOIL TYPE (USC CLASS)		ML	
PERMAFROST		GENERALLY	FROZEN
RELATIVE FACILITY LOCATION		SEPARATE	LOCATION



SOIL EROSION CODE				L,S				
TYPICAL X-SECT NO				30 - OLR-IL				
PAD MAT'L TYPE & THICKNESS				GRANULAR MATERIAL 36" THICK				
CONSTR ZONE EXC - SPOIL STOR SPOIL DISP & SUIT MAT'L QTYS				Ø C.Y.				
BORROW QTY & CY-MILE	MS 1-4	302,620 C.Y.	1,174,130 C Y - MILE				MS 1-4 → ← MS 4-2	SEE SHEET 3
SPOIL DISPOSAL QTY & CY-MILE			TOTAL 40,407	20,204 CY - MILE	FROM	DITCH		
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 1-4			SEE SHEET 1			MS 1-4	
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS 1-4		DITCH OVERFILL	43212 C.Y.	180,880 C.Y. - MILE		MS 1-4 → ← MS 4-2	SEE SHEET 3
DETAIL DWGS								

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	DISPOSAL SITES	6 A.C.			
	W.P. CULVERTS	32 EA.			
	RESTORATION	123,772 S.Y.			
	REVEGETATION	70 A.C.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION			015	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION					017	DRAINAGE STRUCTURES
022	OFF-R/W CONSTRUCTION					019	EROSION CONTROL
						020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION, MULTIPLY DATA SHOWN BY FACTOR

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		RELEASED FOR FERC FILING			
2	9-26-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JDM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JDM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 6.2 TO M.P. 11.5

TOWNSHIP T10N, T9N RANGE R14E

MERIDIAN UMIAT

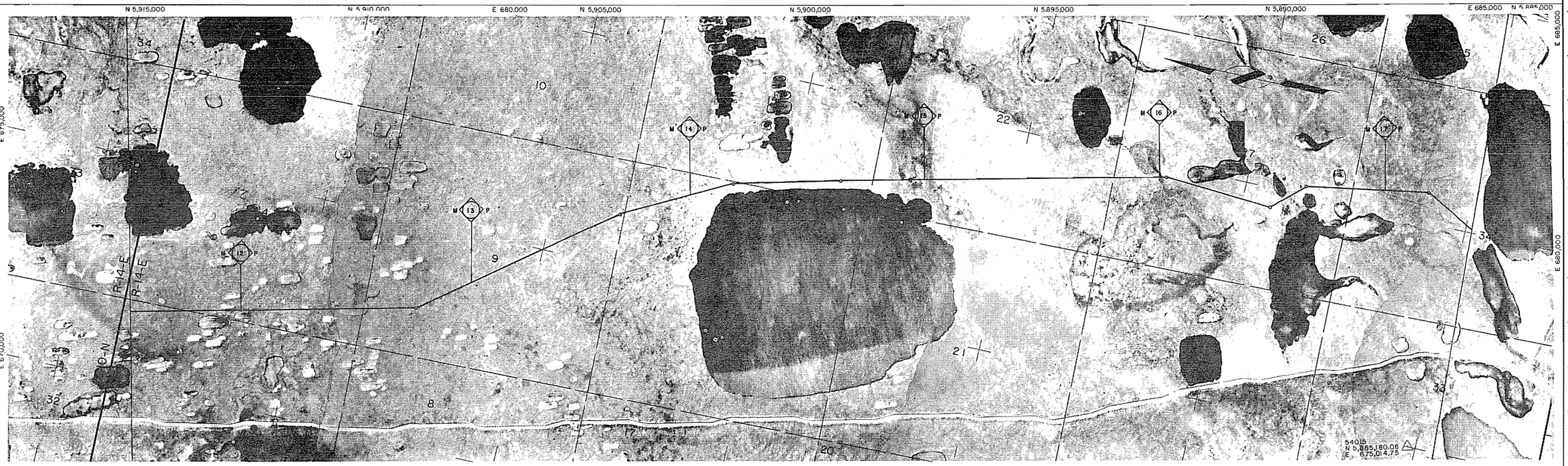
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

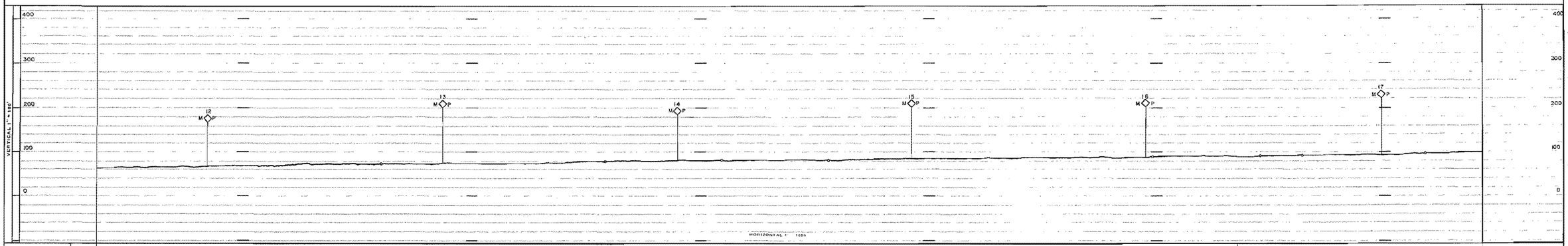
PHOTO APCG	DATE 1980	PROJECT MANAGER	DATE 10/8/80
MICHAEL BAKER, JR., INC.	DATE	DESIGNED	DATE 10/8/80
SCALE IN FEET		DRAWING NUMBER	REV.
1" = 1000'		4680-11-00-B-C-002	3

DISTRIBUTION CODE

MICROFILM INFORMATION
4680
77 78 1980

WORKPAD CONSTR SEASON		SHOULDER	MONTH	CONSTRUCTION	
SOIL TYPE (USC CLASS)			ML	SW - SM	ML
PERMAFROST			GENERALLY	FROZEN	
RELATIVE FACILITY LOCATION			SEPARATE	LOCATION	





SOIL EROSION CODE		L, S			SG	
TYPICAL X-SECT NO		30 - OLR - IL				
PAD MAT'L TYPE & THICKNESS		GRANULAR	MATERIAL	36" THICK	18"	30"
CONSTR ZONE EXC SPOIL/STOR SPOIL DISP & SUIT. MAT'L QTYS				0 C.Y.		
BORROW QTY & C.Y. MILE	MS 4-2			278,333 C.Y. 336,370 C.Y. - MILE		MS 4-2
SPOIL DISPOSAL QTY & C.Y. MILE		TOTAL	34,736 C.Y.	17,368 C.Y. - MILE FROM DITCH		
PIPE DITCH SPECIAL BKFILL QTY & C.Y. MILE	MS 1-4			SEE SHEET 1		MS 1-4
PIPE DITCH COMMON BKFILL QTY & C.Y. MILE	MS 4-2	DITCH	OVERFILL	28,318 C.Y. 166,332 C.Y. - MILE		MS 4-2
DETAIL DWGS						

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	DISPOSAL SITES	5 AC.			
	W.P. LOW WATER X-INGS	5 EA.			
	W.P. CULVERTS	27 EA.			
	RESTORATION	129,976 S.Y.			
	REVEGETATION	74 AC.			

REFERENCE DRAWINGS 4680-10-00-D-C-NO.

NO.		NO.		NO.		NO.	
001	ALIGN SHT. DESCRIPTION	003	ON SEP. LOCATION			016	DRAINAGE STRUCTURES
002	ALIGN SHT. DESCRIPTION					017	DRAINAGE STRUCTURES
022	OFF R/W CONST.					019	EROSION CONTROL
						020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION, MULTIPLY DATA SHOWN BY FACTOR .9991

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR CONSTRUCTION GRANT COMPLIANCE	DWS	JBM	[illegible]
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	[illegible]

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 11.5 TO M.P. 17.4

TOWNSHIP T9N, T8N RANGE R14E

MERIDIAN UMIAT

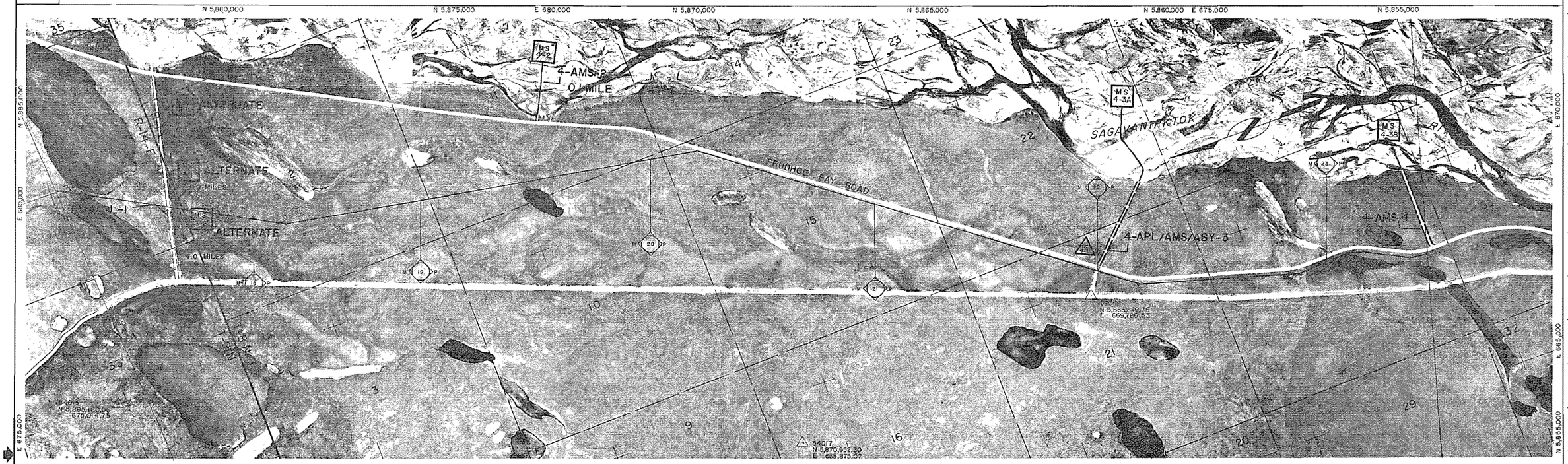
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APCE	DATE	1979	[illegible]	DATE 10/31/80
MICHAEL BAKER, JR., INC.		DATE		N.W. ALASKAN	DATE 8/8/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-11-00-B-C-003	3

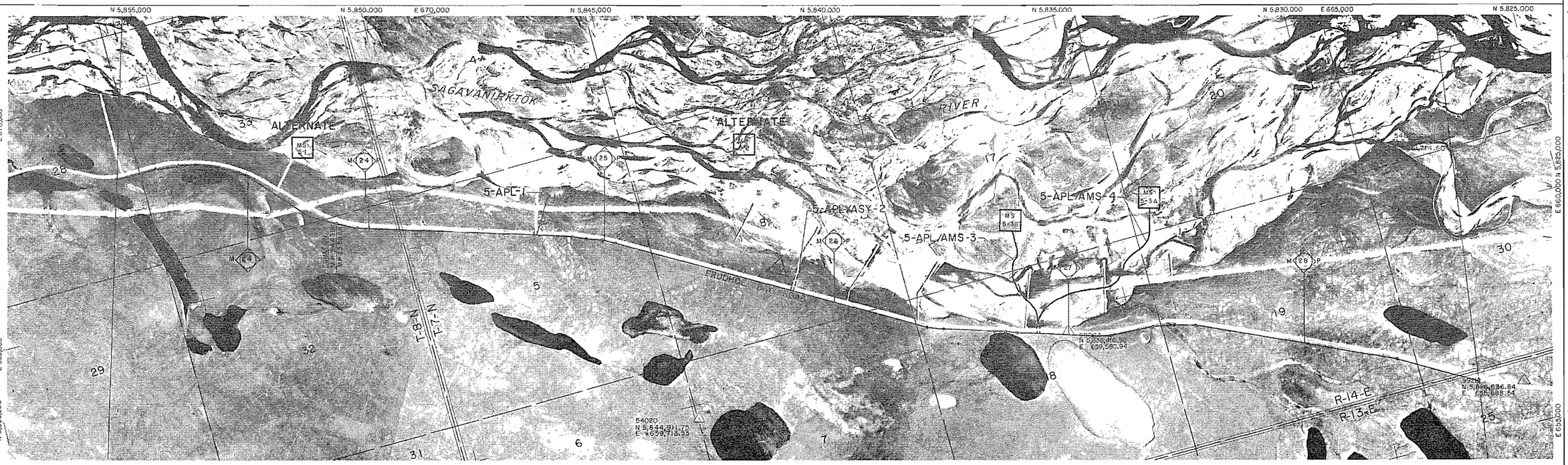
DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE	SW-SM ML / SW - SM
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	SEPARATE LOCATION / HAUL ROAD LT. OF NWA

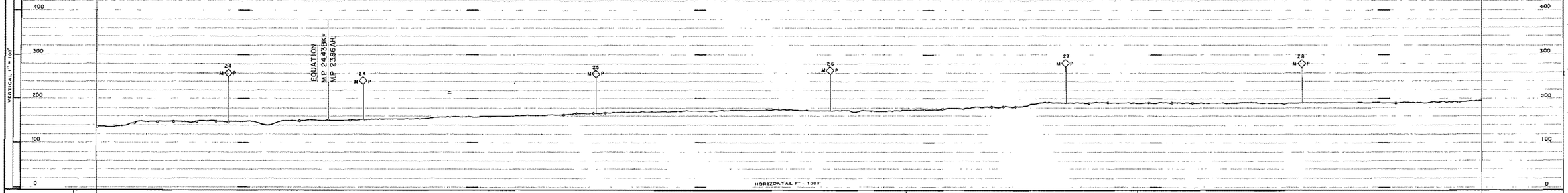


| | | |

WORK AND CONSTR SEASON	SHOULDER MONTH CONSTRUCTION		
SOIL TYPE (USC CLASS)	SW	ML	SM
PERMAFROST	GENERALLY FROZEN		
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA		



SOIL EROSION CODE		PIPELINE X-INS	Q	L,S	S,Q
TYPICAL X-SECT NO	20-OLR-IL	30-OLR-IL & 30-OLR/L	20L-OLR-IL		
PAD MAT'L TYPE & THICKNESS	24"	18"	GRANULAR MATERIAL – 24" THICK	GRANULAR MATERIAL – 36" THICK	GRANULAR MATERIAL – 42" THICK
CONSTR. ZONE EXC SPOIL STOR. SPOIL DISP & SUIT. DAT'L. QTYS			Ø C.Y.		
BORROW QTY & CY-MILE	MS 4-3 SEE SHEET 4 MS 4-3 — MS 5-3		198,900 C.Y.	586,979 C.Y. - MILE	MS 5-3
SPOIL DISPOSAL QTY & CY-MILE		TOTAL 35,870 C.Y.	17,935 C.Y. -MILE FROM DITCH		
PIPE DITCH-SPECIAL BFILL QTY & CY MILE	MS 5-3		55,055 C.Y.	243,714 C.Y. - MILE	MS 5-3
PIPE DITCH-COMMON BFILL QTY & CY MILE	O.C.Y. — MS 5-3		DITCH OVERFILL 35,202 C.Y.	88,555 C.Y. - MILE	MS 5-3
DETAIL DWGS					



ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	4 EA.		RESTORATION	199144 SY.
	ACCESS ROAD PL. X-INGS	3 EA.		REVEGETATION	84 AC.
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	6 AC.			
	STORAGE YARDS	1 EA.			
	W.P.LOW WATER X-INGS	8 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION.	NO	TYP. CONST. ZONE SECTIONS.	NO.	
002	ALIGN. SHT. DESCRIPTION			016	DRAINAGE STRUCTURES.
		012	ADJ. TO ROAD.	017	DRAINAGE STRUCTURES.
022	OFF-R/W CONST.	014	GEN. TYP. SECTION.	019	EROSION CONTROL.
				020	EROSION CONTROL.

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000076604960

PHOTO DATE - AUGUST 1979

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	6-20-80	RELEASE FOR DOI NOW GRANT COMPLIANCE	DWS	JDH	WPM
3	11-11-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JDH	WPM

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

NOTICE
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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 23.4 TO M.P. 28.8

TOWNSHIP T8N T7N RANGE R14E

MERIDIAN UMIAT

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APPD.	DATE 1978	FLUOR J.F. Brandt	DATE 9/30/80
MICHAEL BAKER, JR. INC. W.P. Mitchell	DATE 4-29-80	N.W. ALASKAN W.P. Mitchell	DATE 9/5/80

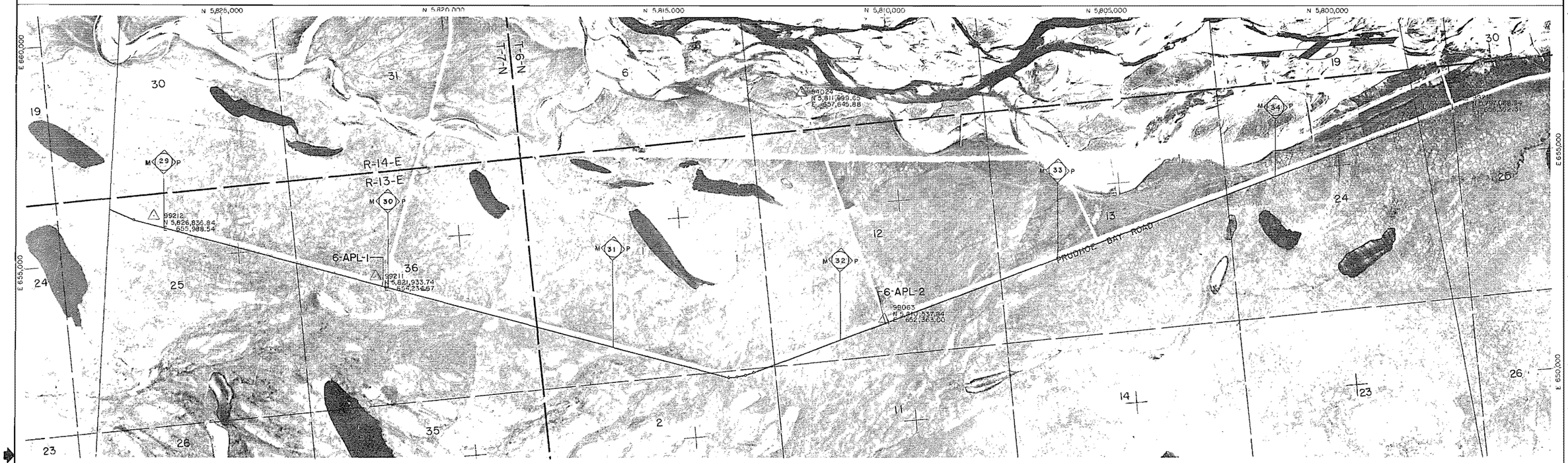
SCALE IN FEET 1" = 1000'

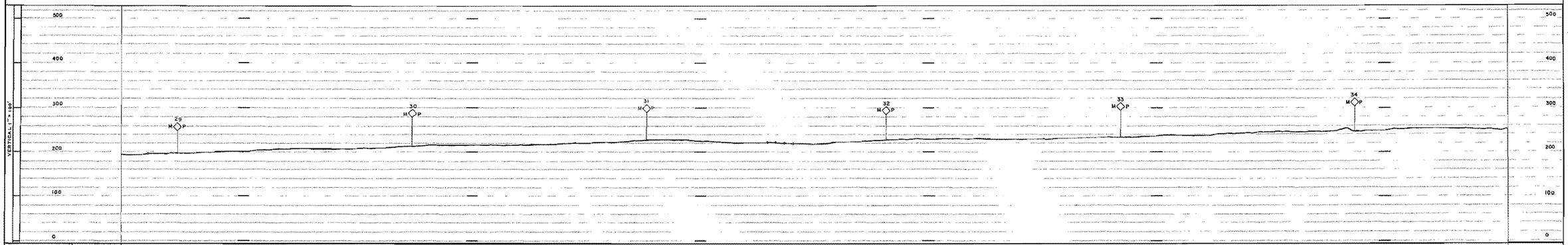
DRAWING NUMBER 4680-11-00-B-C-005 REV 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE (USCE CLASS)	SM
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	ROAD LT. OF NWA





SOIL EROSION CODE	S,Q														
TYPICAL X-SECT NO	20 L-OLR-1L														
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL 42" THICK														
CONSTR ZONE EXC - SPOIL STOR SPOIL DISP & SUIT MAT'L QTYS	Ø C.Y.														
BORROW QTY & CY MILE	MS 5-3	SEE SHEET 5					MS 5-3 — MS 6-2	173,309 C.Y.		380,405 C.Y.-MILE				MS 6-2	
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 42,109 C.Y. 21,055 C.Y.-MILE FROM DITCH														
PIPE DITCH SPECIAL B'FILL QTY & CY MILE	MS 5-3	THAW PROTECTION	71,070 C.Y.	449,160 C.Y.-MILE			PROVIDES BEDDING & PADDING	61,799 C.Y.	390,568 C.Y.-MILE	DITCH OVERFILL	9,271 C.Y.	58,592 C.Y.-MILE		MS 5-3	
PIPE DITCH COMMON B'FILL QTY & CY MILE	MS 5-3	SEE SHEET 5					MS 5-3 — MS 6-2			DITCH OVERFILL	25,272 C.Y.	53,400 C.Y.-MILE		MS 6-2	
DETAIL DWGS															

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	2 EA.			
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	7 AC.			
	W.P. LOW WATER X-INGS	5 EA.			
	RESTORATION	207,900 S.Y.			
	REVEGETATION	77 AC.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.	TYP CONST ZONE SECTIONS	NO.	NO.	
001	ALIGN. SHT DESCRIPTION	NO	016	DRAINAGE STRUCTURES
002	ALIGN. SHT DESCRIPTION	012	ADJ. TO ROAD	017 DRAINAGE STRUCTURES
022	OFF-R/W CONST.	014	GEN. TYP. SECTION	019 EROSION CONTROL
				020 EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	9-29-80	RELEASE FOR GOI ROW ADAPT COMPLIANCE	RWS	JBM	
3	11-11-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 28.8 TO M.P. 34.7

TOWNSHIP T7N T6N RANGE R14E R13E

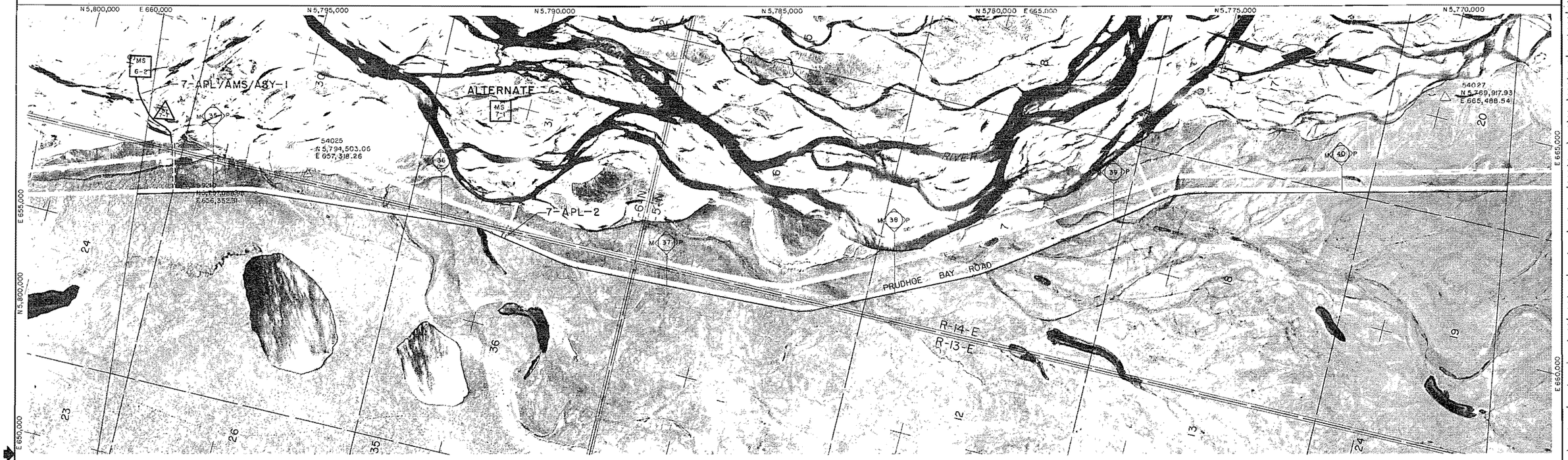
MERIDIAN UMIAT

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APEG	DATE 1978	FLUOR J.R. Bramlett	DATE 4/30/80		
M. BAKER, JR., INC	DATE 4/6/80	N.W. [illegible]	DATE 5/2/80		
SCALE IN FEET		DRAWING NUMBER		REV.	
1" = 1000'		4680-11-00-B-C-006		3	

DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE (USC CLASS)	SM / ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA



SOIL EROSION CODE	S,Q	S				
TYPICAL X-SECT NO	20 L-OLR-1L					
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL-42" THICK	GRANULAR MATERIAL-36" THICK		30"	GRANULAR MATERIAL-36" THICK	
CONSTR. ZONE EXC-SPOIL STOR SPOIL DISP & SUIT. MAT'L QTYS	Ø C.Y.					
BORROW QTY & CY-MILE	MS 6-2 SEE SHEET 6	MS 6-2 — MS 8-1		SEE SHEET 8		MS 8-1
SPOIL DISPOSAL QTY & CY-MILE	TOTAL C.Y. C.Y.-MILE FROM DITCH					
PIPE DITCH-SPECIAL BACKFILL QTY & CY-MILE	MS 5-3 SEE SHEET 6	MS 5-3 — MS 10-2		SEE SHEET 10		MS 10-2
PIPE DITCH-COMMON BACKFILL QTY & CY-MILE	MS 6-2 SEE SHEET 6	MS 6-2 — MS 8-1		SEE SHEET 8		MS 8-1
DETAIL DWGS						

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	2 EA.			
	ACCESS ROAD P.L. X-INGS	1 EA.			
	DISPOSAL SITES	5 AC.			
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	10 EA.			
	RESTORATION	127,380 S.Y.			
	REVEGETATION	88 AC.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP CONST ZONE SECTIONS NO.		NO.	
001	ALIGN. SHT. DESCRIPTION NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	012	ADJ. TO ROAD	017	DRAINAGE STRUCTURES
022	OFF-R/W CONST.	014	GEN. TYP. SECTIONS	019	EROSION CONTROL
				020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000035919

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	9-29-80	RELEASE FOR DOI NON-GRANT COMPLIANCE	DOS	JBH	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DOS	JBH	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 34.7 TO M.P. 40.7

TOWNSHIP T6N T5N RANGE R14E R13E

MERIDIAN UMIAT

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

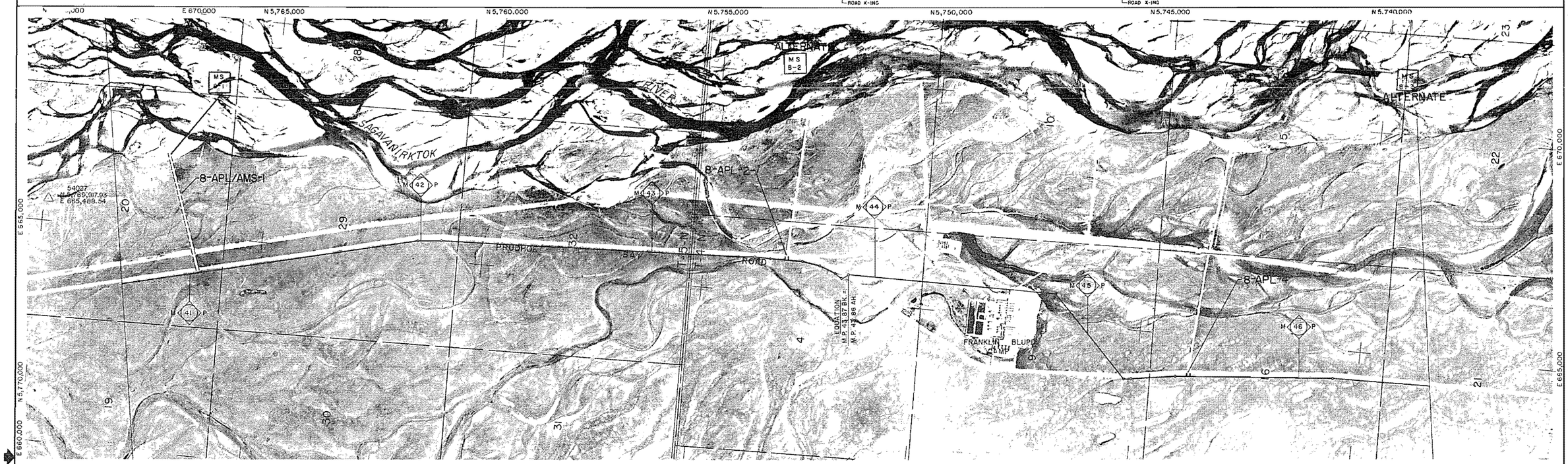
PHOTO APCO	DATE 1979	FLUOR J.R. Burrell	DATE 4/30/80		
MICHAEL BAKER JR. INC	DATE 4-29-80	N.W. TRANSCO	DATE 5-5-80		
SCALE IN FEET 1" = 1000'		DRAWING NUMBER 4680-11-00-A-C-007		REV 3	

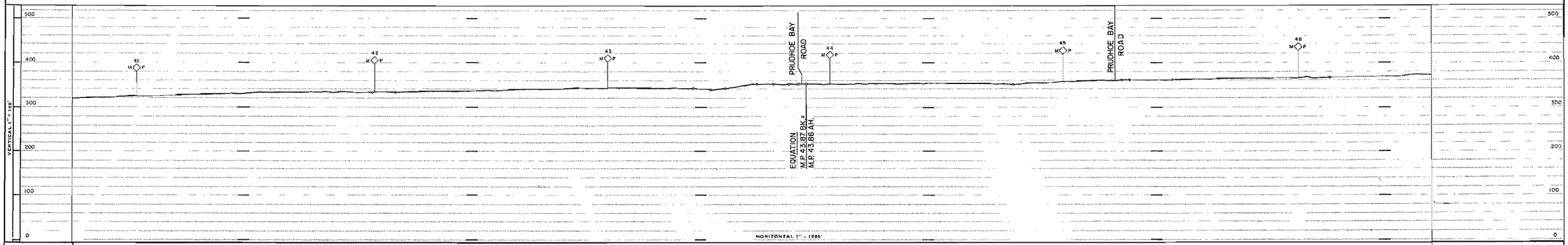
Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

416 16 16

DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE USC CLASS	ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA — ROAD X-ING — SEPARATE LOCATION — ROAD X-ING — HAUL ROAD LT. OF NWA





SOIL EROSION CODE		ROAD X-ING — S	
TYPICAL X-SECT NO	20L-OLR-1L	30-OLR-1L	20L-OLR-1L
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 36" THICK	NO WP — GRANULAR MATERIAL - 36" THICK	NO WP — GRANULAR MATERIAL - 36" THICK
CLIMATIC ZONE & XC SPOIL STOR SPOIL DISP & SU T. MAT'L QTYS	Ø C.Y.		
BORROW QTY & CY/MILE	MS 8-1 — 181,887 C.Y. 481,693 C.Y.-MILE	MS 8-1 → MS 9-0	SEE SHEET 9 — MS 9-0
SPOIL DISPOSAL QTY & CY/MILE	Ø C.Y.		
PIPE DITCH SPECIAL BFILL QTY & CY/MILE	MS 10-2	SEE SHEET 10	MS 10-2
PIPE DITCH COMMON BFILL QTY & CY/MILE	MS 8-1 — DITCH OVERFILL 5,590 C.Y. 20,840 C.Y.-MILE	MS 8-1 →	
DETAIL DWGS			

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	4 EA.		W.P. CULVERTS	5 EA.
	ACCESS ROAD CULVERTS	2 EA.			
	ACCESS ROAD P.L. X-INGS.	1 EA.		W.P. ROAD X-INGS	2 EA.
	MATERIAL SITES	1 EA.		RESTORATION	174,680 S.Y.
				REVEGETATION	183 AC.
	AIRFIELDS	1 EA.			
	CAMPS	1 EA.			
	W.P. LOW WATER XINGS	5 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.	TYP CONST. ZONE SECTIONS	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP LOCATION	017	DRAINAGE STRUCTURES
		012	ADJ. TO ROAD		
021	MISC. ON-R/W CONST.			019	EROSION CONTROL
022	OFF-R/W CONST.	014	GEN. TYP. SECTION	020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000068483629

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE HOUSE & MILEPOST			
		RELEASED FOR ENG FILING			
2	8-30-80	RELEASE FOR 60' ROW GRANT COMPLIANCE	DWS	JBH	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JBH	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 40.7 TO M.P. 46.5

TOWNSHIP T5N T4N RANGE R14E

MERIDIAN UMIAT

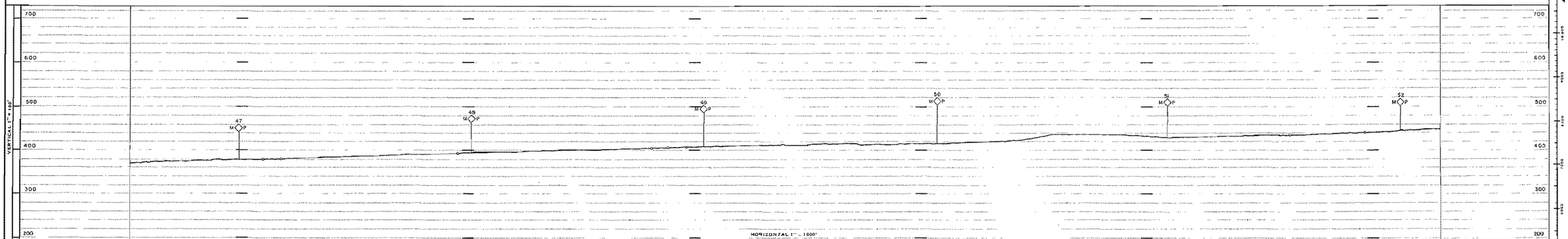
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCO	DATE 1978	FLUOR J.B. Barnett	DATE 4/30/80
MICHAEL BAKER, JR., INC.	DATE 4-29-80	NWNGTS	DATE 5/2/80
SCALE IN FEET		DRAWING NUMBER	REV
1" = 1000'		4680-11-00-B-C-008	3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORK PAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE USGC CLASS	ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA



SOIL EROSION CODE	L,S
TYPICAL X-SECT NO	20L-OLR-IL
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 36" THICK
LONGTH, ZONE EXC., SPOIL STOR SPOIL DISP & SUIT MAT'L QTYS	Ø C.Y.
BORROW QTY & C.Y./MILE	MS 9-0 — 190,086 C.Y. — 637,999 C.Y. - MILE — MS 9-0 ⟷ MS 10-2 SEE SHEET 10
SPCL DISPOSAL QTY & C.Y./MILE	Ø C.Y.
PIPE DITCH SPECIAL BFILL QTY & C.Y./MILE	MS 10-2 — SEE SHEET 10 — MS 10-2
PIPE DITCH COMMON BFILL QTY & C.Y./MILE	Ø C.Y.
DETAIL DWGS	

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	2 EA.			
	ACCESS ROAD P.L. X-INGS	1 EA.			
	MATERIAL SITES	1 EA.			
	W.P. LOW WATER X-INGS	6 EA.			
	RESTORATION	171,160 S.Y.			
	REVEGETATION	87 AC.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.	TYP. CONST ZONE SECTIONS	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	012	ADJ. TO ROAD	017	DRAINAGE STRUCTURES
022	OFF-R/W CONST.	014	GEN. TYP. SECTION	019	EROSION CONTROL
				020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000086866

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FAMC FILING			
2	8-28-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	RWS	JBM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	RWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 46.5 TO M.P. 52.2
TOWNSHIP T4N T3N RANGE R14E
MERIDIAN UMIAT
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

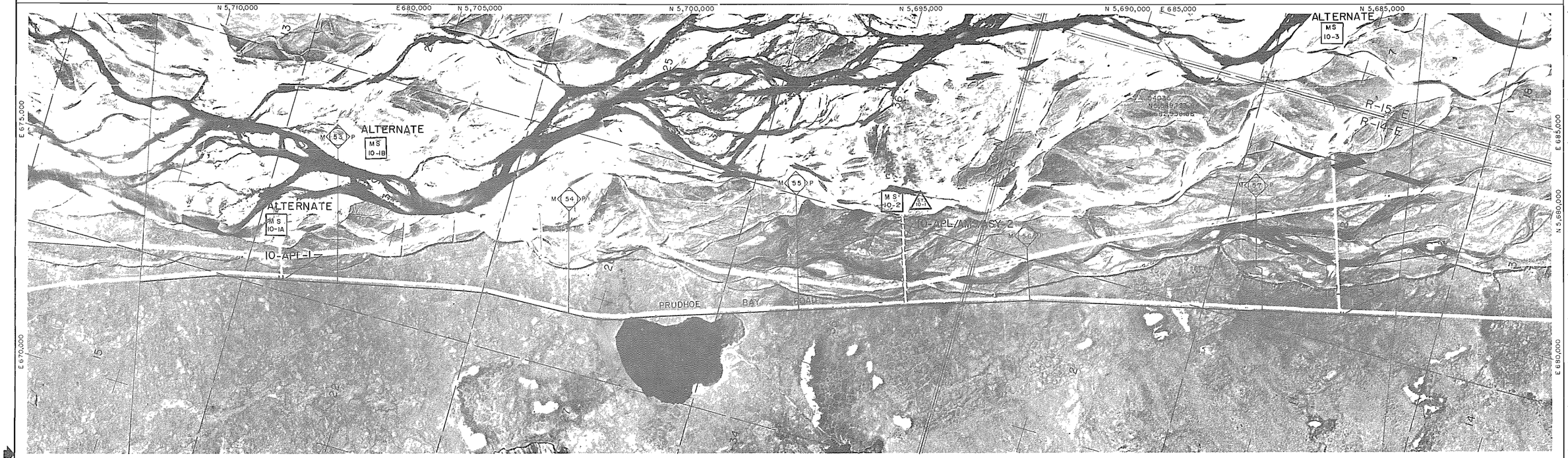
PHOTO	ARCE	DATE 1978	FLUOR J.R. Brandt	DATE 4/30/80
MICHAEL BAKER JR., INC	DATE 4-29-80	N.W. [illegible]	DATE 5/2/80

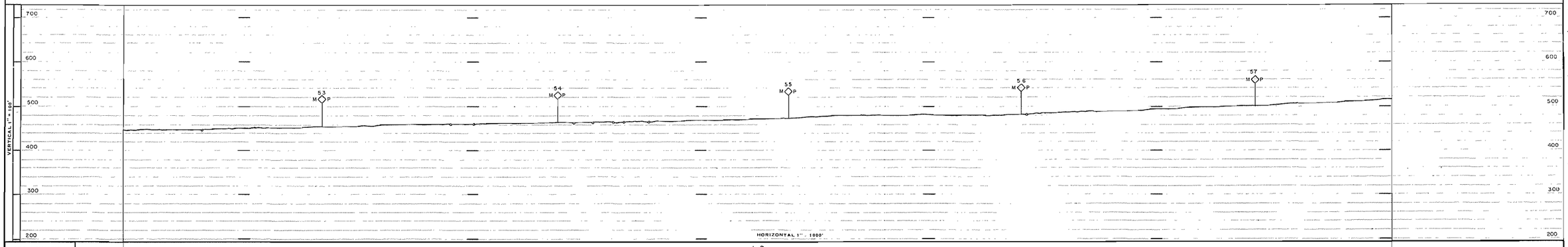
SCALE IN FEET: 1" = 1000'
DRAWING NUMBER: 4680-11-00-B-C-009
REV.: 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONST.# SEASON		SHOULDER MONTH CONSTRUCTION		
SOIL TYPE (USC CLASS)	ML	GP	ML	
PERMAFROST		GENERALLY FROZEN		
RELATIVE FACILITY LOCATION		HAUL ROAD LT. OF NWA		





SOIL EROSION CODE		L,S			
TYPICAL X-SECT NO		20L-0LR-IL			
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL — 36" THICK	6"	GRANULAR MATERIAL — 36" THICK		
CONSTR. ZONE & INC. SPOIL (TOP SOIL) DISP & SUIT. MAT'L QTYS.		Ø C.Y.			
BORROW QTY & C.Y. MILE	MS 10-2	145,721 C.Y.	288,386 C.Y. — MILE	MS 10-2	
SPOIL DISPOSAL QTY & C.Y.-MILE		Ø C.Y.			
PIPE DITCH SPECIAL B'FILL QTY & C.Y. MILE	MS 10-2	C.Y.	1,905,520 C.Y. — MILE	MS 10-2	
PIPE DITCH-COMMON B'FIL, QTY & C.Y. MILE		Ø C.Y.			
DETAIL DWGS					

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	3 EA.			
	ACCESS ROADS PL. X-INGS	1 EA.			
	MATERIAL SITES	1 EA.			
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	7 EA.			
	RESTORATION	167,640 S.Y.			
	REVEGETATION	78 AC.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS.	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION.	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	012	ADJ. TO ROAD.		017	DRAINAGE STRUCTURES.
022	OFF-R/W CONST.	014	GEN. TYP. SECTION.		019	EROSION CONTROL
					020	EROSION CONTROL.

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000156008

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADING			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	6-20-80	RELEASE FOR DOI NOW GRANT COMPLIANCE	DWS	JBM	RHW
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	RHW

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 52.2 TO M.P. 57.6

TOWNSHIP T3N T2N RANGE R14E

MERIDIAN UMIAT

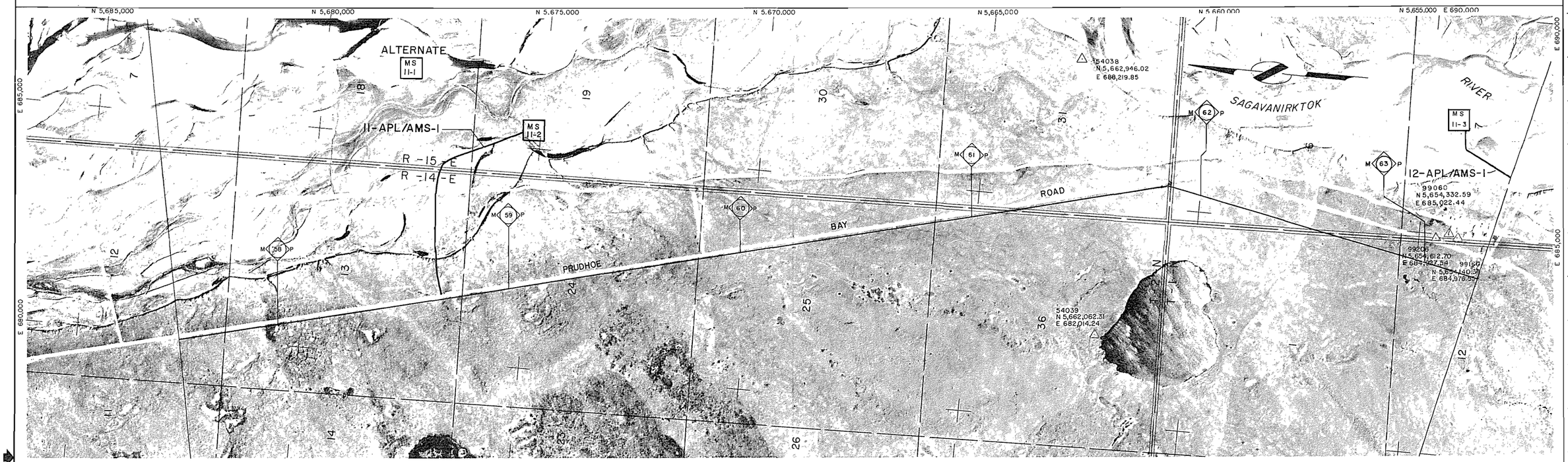
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

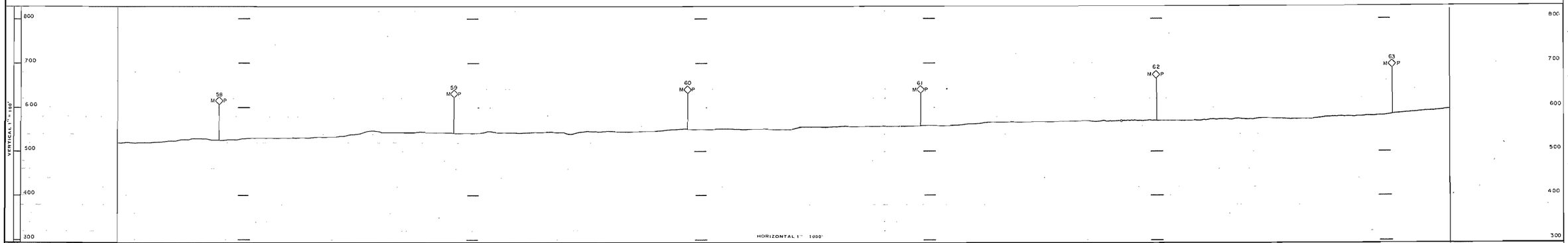
PHOTO APCG	DATE 1978	FLUOR J.R. Brandt	DATE 4/30/80		
MICHAEL BAKER, JR. INC JR Michael	DATE 4-29-80	N.W. Pipeline	DATE 5/2/80		

SCALE IN FEET	DRAWING NUMBER	REV
1" = 1000'	4680-11-00-B-C-010	3

DISTRIBUTION CODE

WORK PAD CONSTR SEASON	SHOULDER MONTH COSTRUCTION
SOIL TYPE-USC CLASS	ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA — SEPARATE LOCATION





SOIL EROSION CODE	L, S								
TYPICAL X-SECT NO	20L-OLR-IL							30-OLR-IL	
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL – 36" THICK								
CONSTR. ZONE, EXC., SPOIL STOR, SPOIL DISP & SUIT. MAT'L. QTYS	Ø C.Y.								
JORRO QTY & C.Y. / MILE	MS 11-2	160,862 C.Y.	252,414 C.Y. – MILE			MS 11-2 ⟶	⟵ MS 11-3	SEE SHEET 12	MS 11-3
SPOIL DISPOSAL QTY & C.Y.-MILE	Ø-C.Y.								
PIPE DITCH-SPECIAL & FILL QTY & C.Y. / MILE	MS 10-2	SEE SHEET 10							MS 10-2
PIPE DITCH-COMMON & FILL, QTY & C.Y. / MILE	Ø C.Y.						⟵ MS 11-3	SEE SHEET 12	MS 11-3
DETAIL DWGS									

Prepared by ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	1 EA.		RESTORATION	245,520 S.Y.
	ACCESS ROAD CULVERTS	1 EA.		REVEGETATION	90 AC.
	ACCESS ROAD P.L. X-INGS	1 EA.			
	MATERIAL SITES	2 EA.			
	W.P. LOW WATER X-INGS	6 EA.			
	W.P. CULVERTS	8 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		TYP. CONST ZONE SECTIONS.	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION.	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION.	003	ON SEP LOCATION		017	DRAINAGE STRUCTURES.
		012	ADJ TO ROAD			
021	MISC. ON-R/W CONST.	014	GEN. TYP. SECTION.		019	EROSION CONTROL.
022	OFF-R/W CONST				020	EROSION CONTROL.

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING NAD 27 STATE COORDINATE VALUES - ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00006733

PHOTO DATE AUGUST 1979

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JBB	
3	11-5-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBB	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 57.6 TO M.P. 63.3

TOWNSHIP T2N T1N RANGE R14E R15E

MERIDIAN UMIAT

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APPD.	DATE 1978	FLUOR J.R. Brandt II	DATE 9/30/80
MICHAEL BAKER JR. INC. J.A. Michael	DATE 4-29-80	NWA [illegible]	DATE 5/2/80

SCALE IN FEET: 1" = 1000'

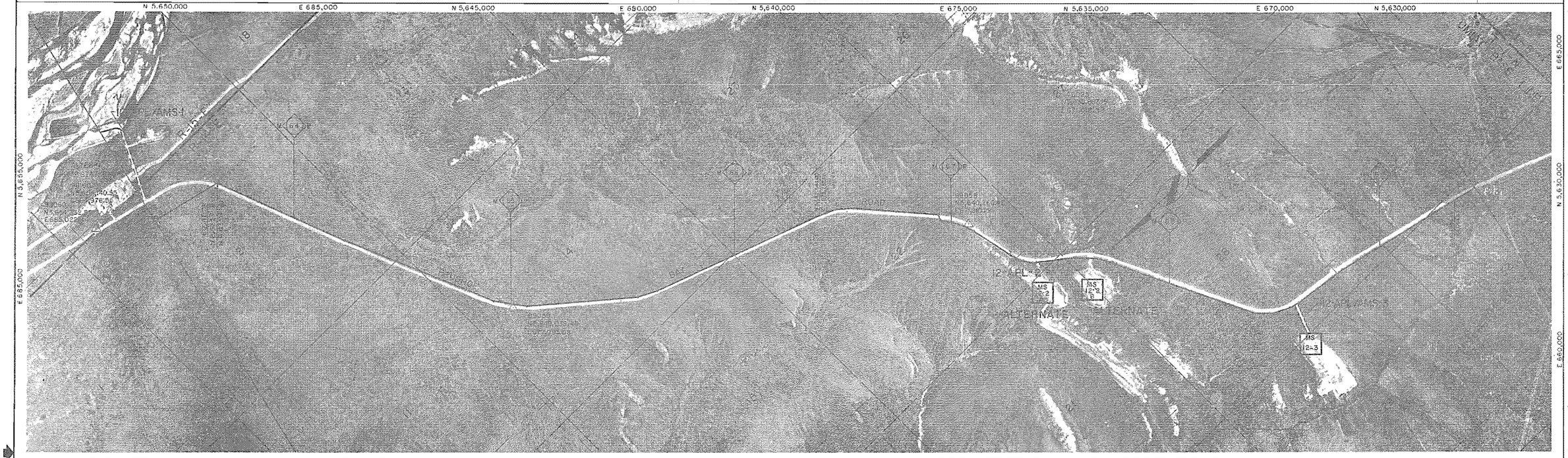
DRAWING NUMBER: 4680-11-00-B-C-011 REV 3

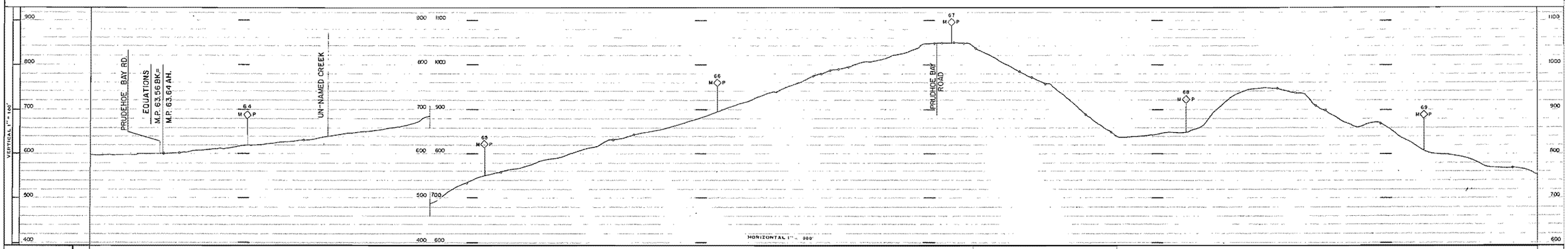
4 6 8 0

77 78 79 80

DISTRIBUTION CODE

WORK PAD CONSTR. SEASON		SHOULDER MONTH CONSTRUCTION		
SOIL TYPE (USC CLASS)	ML	ML & CL	CL	OL
PERMAFROST	SEPARATE LOCATION		GENERALLY FROZEN	
RELATIVE FACILITY LOCATION	HAUL ROAD RT. OF NWA		ROAD X-ING	HAUL ROAD LT. OF NWA





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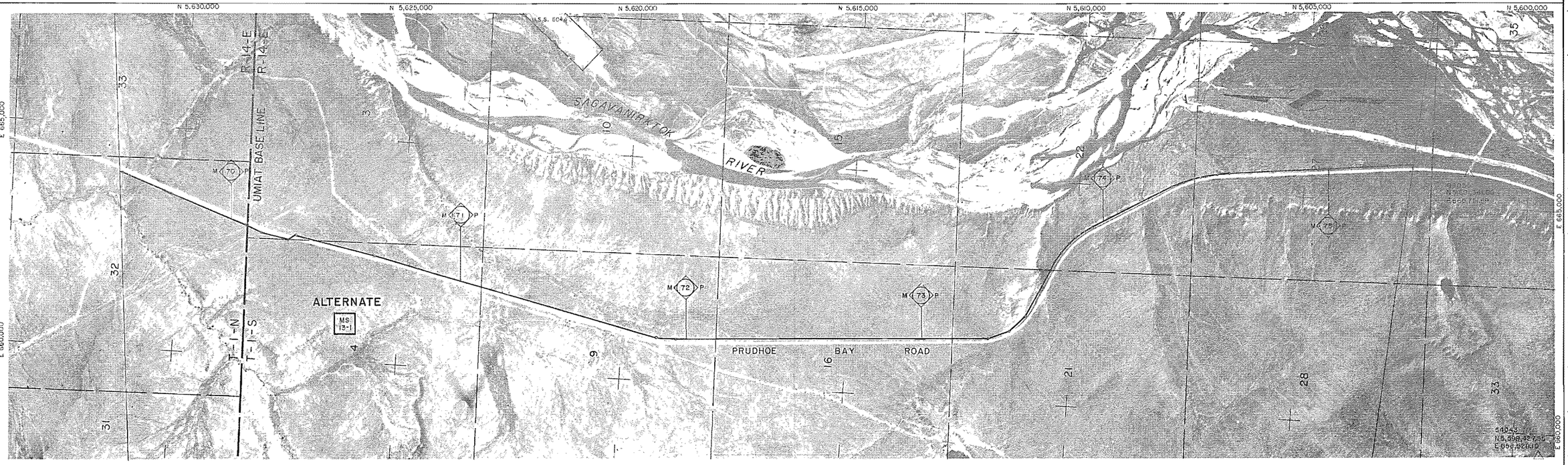
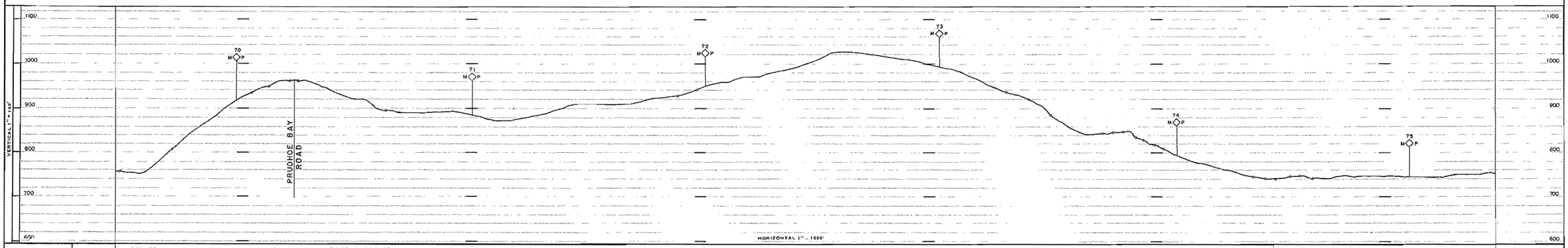
WORKPAD CONSTR. W. ACCESS	SHOULDER MONTH CONSTRUCTION
SOIL TYPE: USCE CLASS	ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA | ROAD X-INS | HAUL ROAD RT. OF NWA





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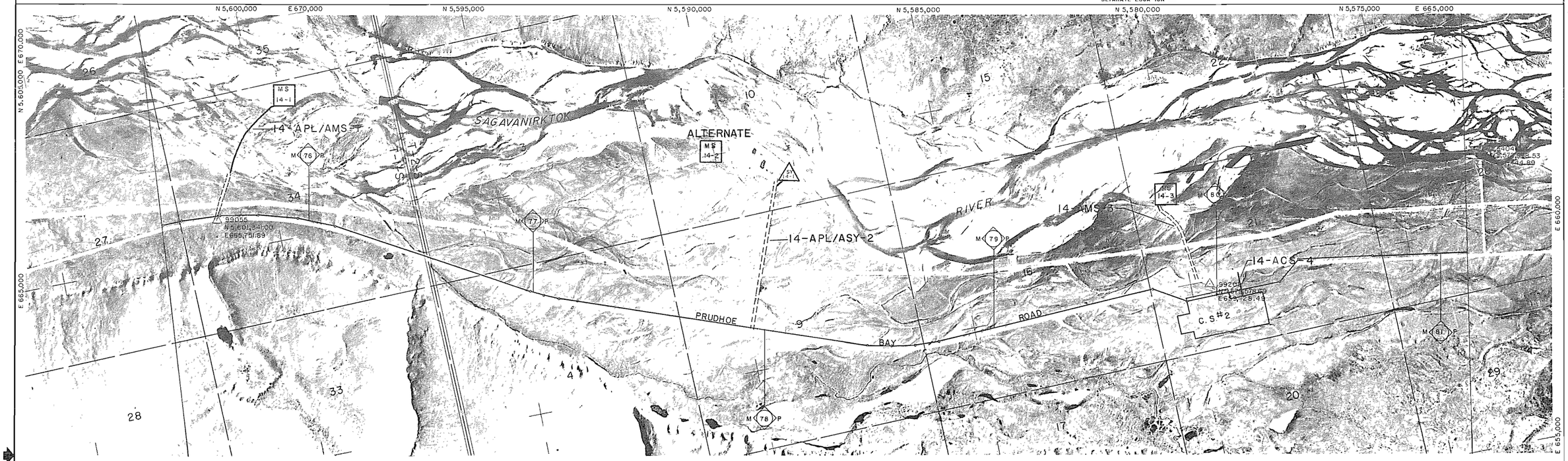
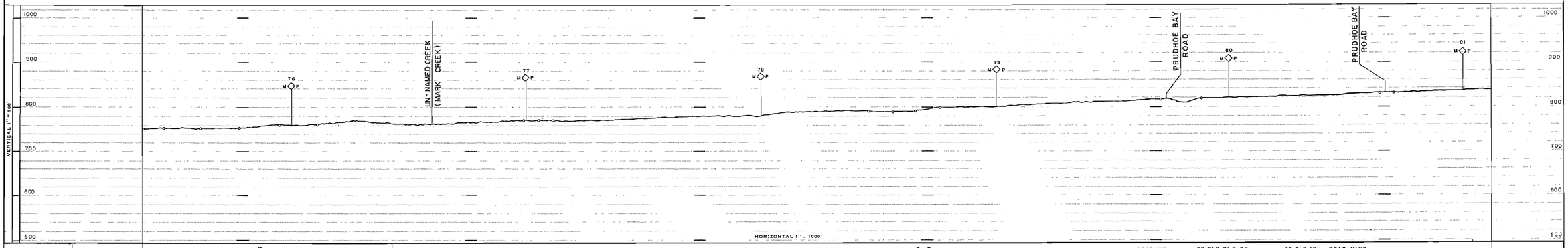
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION										
SOIL TYPE (USC CLASS)	ML	GP	SM	SM/GP							
PERMAFROST	GENERALLY FROZEN										
INFLATIVE FACILITY LOCATION	HAUL ROAD RT. OF NWA				ROAD X-ING	P	COMPRESSOR STATION	SEPARATE LOCATION	ROAD X-ING	HAUL ROAD RT. OF NWA	





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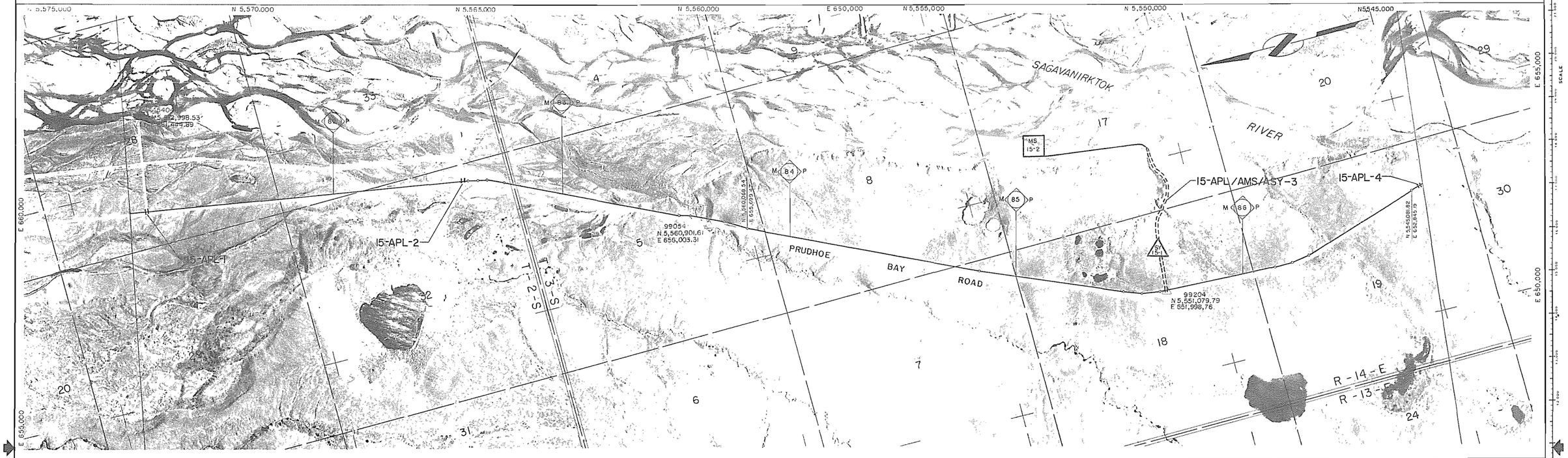
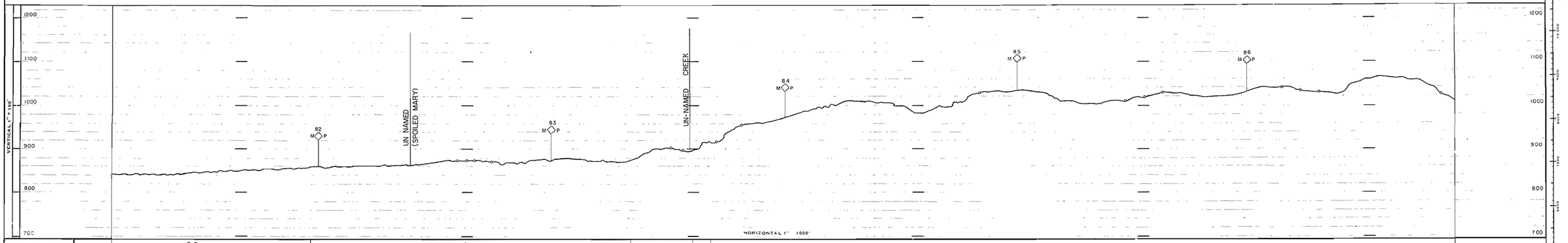
WORKPAD CONSTR SEASON				SHOULDER	MONTH	CONSTRUCTION			
SOIL TYPE (USCE CLASS)	SM	GP		ML	GW	ML			
PERMAFROST				GENERALLY FROZEN					
RELATIVE FACILITY LOCATION				HAUL ROAD RT. OF NWA					





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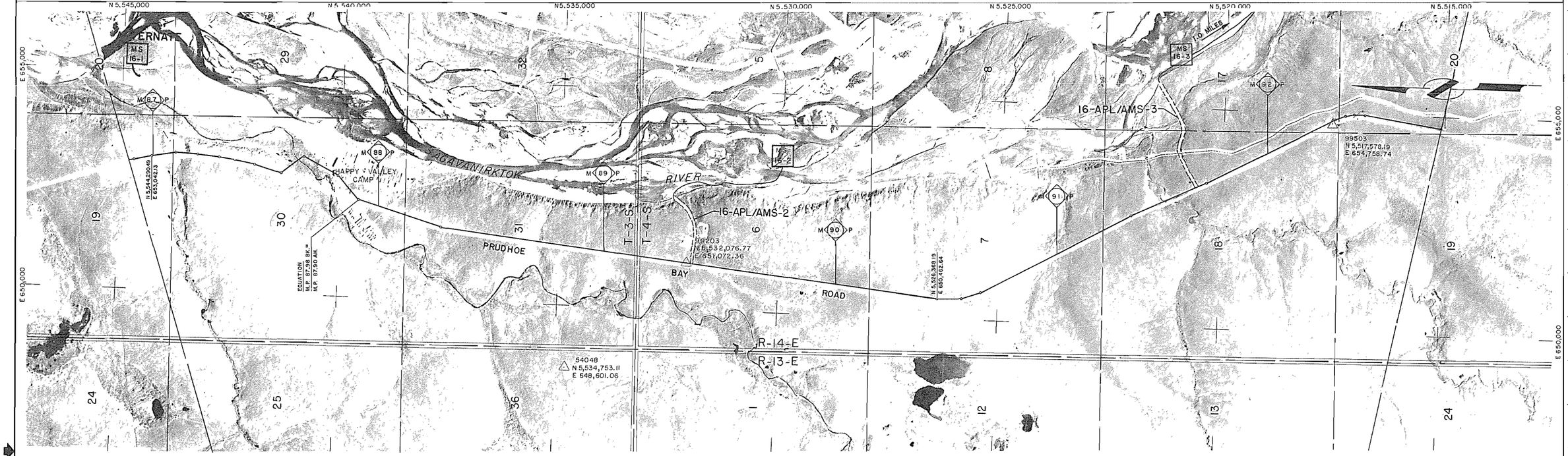
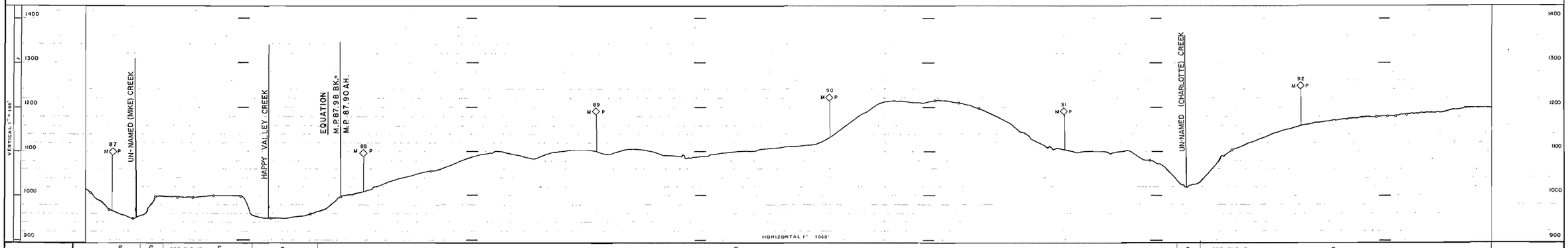
WORKPAD CONSTR SEASON						SHOULDER	MONTH	CONSTRUCTION							
SOIL TYPE (USC CLASS)	ML	ML/GW	ML	GW		ML							SM	ML	
PERMAFROST					SEPARATE LOCATION	GENERALLY FROZEN									
RELATIVE FACILITY LOCATION	HAUL ROAD RT. OF NWA					HAUL ROAD RT. OF NWA									





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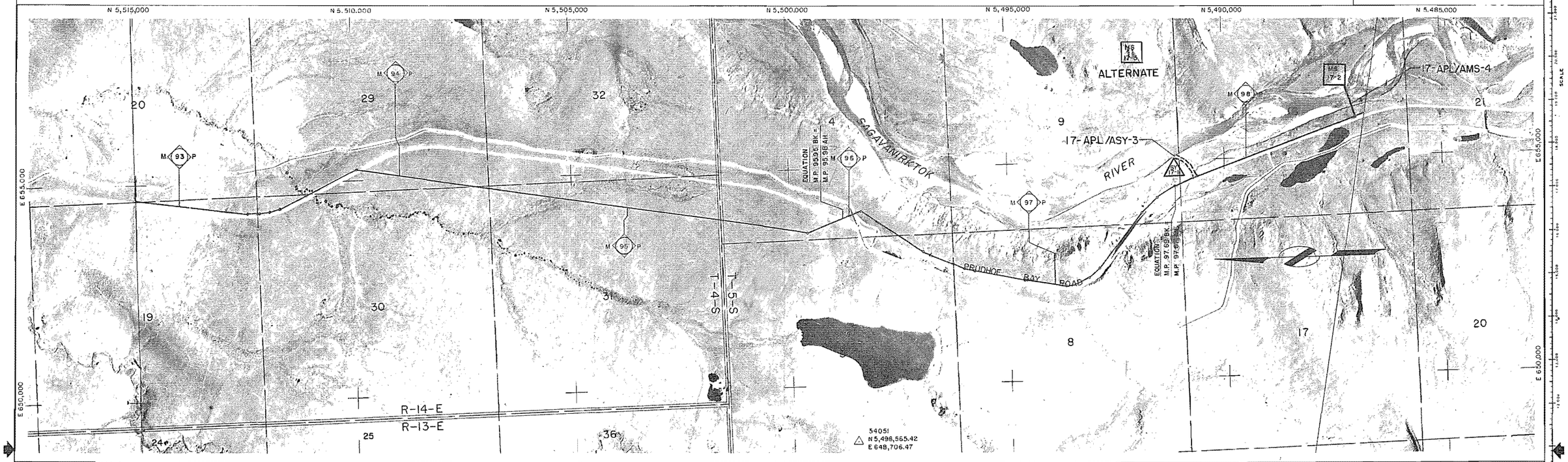
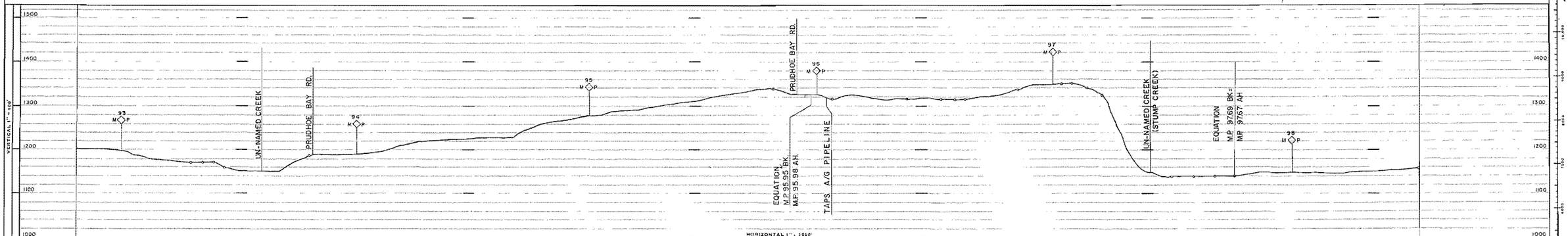
WORKPAD CONSTR SEASON		SHOULDER	MONTH	CONSTRUCTION	
SOIL TYPE (USC CLASS)	ML				ML
PERMAFROST		GENERALLY	FROZEN		
RELATIVE FACILITY LOCATION	HAUL ROAD RT. OF NWA	ROAD X-ING	SEPARATE LOCATION	ROAD X-ING / RR X-ING	SEPARATE LOCATION / HAUL ROAD RT. OF NWA





SOIL EROSION CODE		ROAD X-ING	U	S	U	ROAD X-ING	℄ X-ING U	RW	S
TYPICAL X-SECT NO	20R-OLR-1R	30-OLR-2R	30-5R-2R	30-OLR-2R			30-OLR-2R	20R-OLR-2R	20R-OLR-2R	20R-OLR-1R
PAD MATL - TYPE & THICKNESS							30-OLR-2R 36"		6" 36" 30" 24" 30"	36"
CONSTR ZONE EXC - SPOIL STGE, SPOIL DISP & SUT MATL QTYS								26,631 C.Y. STRIPPING TO SPOIL DISPOSAL		
BORROW QTY & C.Y.-MILE	MS 16-3	152,263 C.Y.	446,633 C.Y.-MILE	MS 16-3 — MS 17-2			63,503 C.Y.	59,486 C.Y.-MILE		MS 17-2
SPOIL DISPOSAL QTY & C.Y.-MILE		TOTAL 71,247 C.Y.	35,624 C.Y.-MILE	FROM DITCH			44,616 C.Y.	22,307 C.Y.-MILE	FROM WORK PAD 26,631 C.Y.	13,316 C.Y.-MILE
PIPE DITCH SPECIAL BEDDING QTY & C.Y. MILE	MS 16-3			SEE SHEET 16						MS 16-3
PIPE DITCH COMMON BEDDING QTY & C.Y. MILE	MS 16-3	DITCH OVERFILL 23,994 C.Y.	70,723 C.Y.-MILE	MS 16-3 — MS 17-2				DITCH OVERFILL 9,283 C.Y.	9,750 C.Y.-MILE	MS17-2
DETAIL DWGS										

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS (APCO)

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	2 EA.		W.P. ROAD X-INGS	2 EA.
	ACCESS ROAD RL X-INGS	2 EA.		RESTORATION	226,160 SY.
				REVEGETATION	91 AC.
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	11 AC.			
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-ING	7 EA.			
	W.P. CULVERTS	6 EA.			
	W.P. PIPELINE X-INGS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT DESCRIPTION	TYP. CONST ZONE SECTIONS NO.		016	DRAINAGE STRUCTURES
002	ALIGN. SHT DESCRIPTION	003	ON SEP LOCATION	017	DRAINAGE STRUCTURES
		012	ADJ TO ROAD		
021	MISC. ON-R/W CONST.			019	EROSION CONTROL
022	OFF-R/W CONST.	014	GEN. TYP. SECTION	020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000015877

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	GWS	JEM	
3	11-14-80	NO CHANGE ISSUED FOR RECORD ONLY	GWS	JEM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 92.8 TO M.P. 98.5

TOWNSHIP T4S T5S RANGE R14E

MERIDIAN UMIAT

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APCO	DATE	1978	FLUOR	DATE 4/30/80
MICHAEL BAKER, JR., INC		DATE 9-29-80		N.W. ALASKAN	DATE 5/2/80

SCALE IN FEET: 1" = 1000'

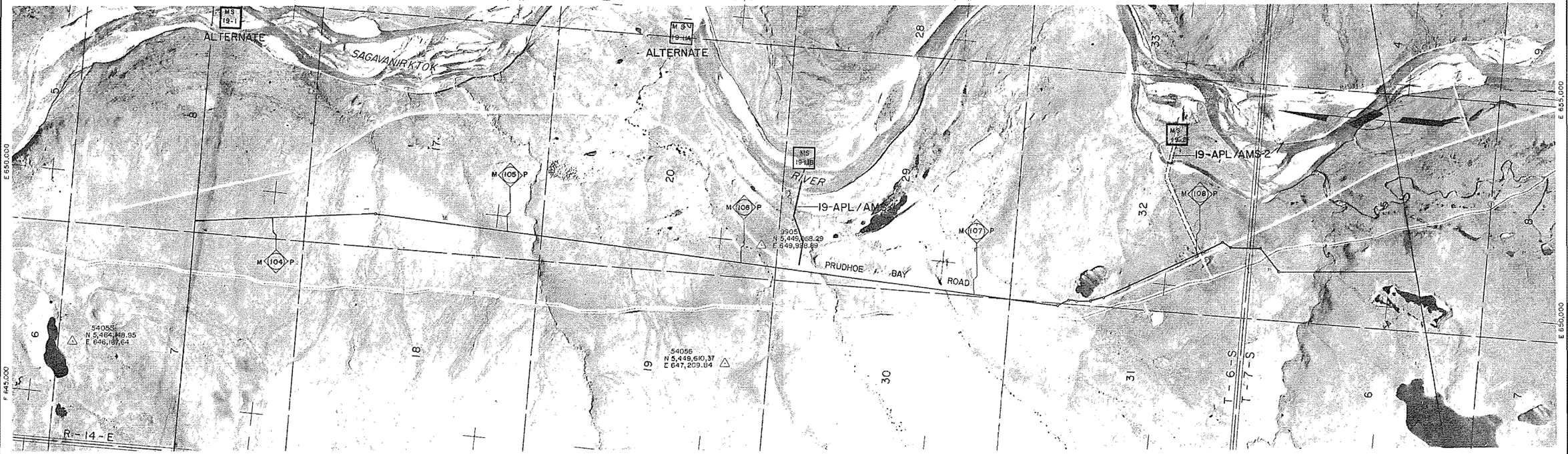
DRAWING NUMBER: 4680-11-00-B-C-017 REV. 3

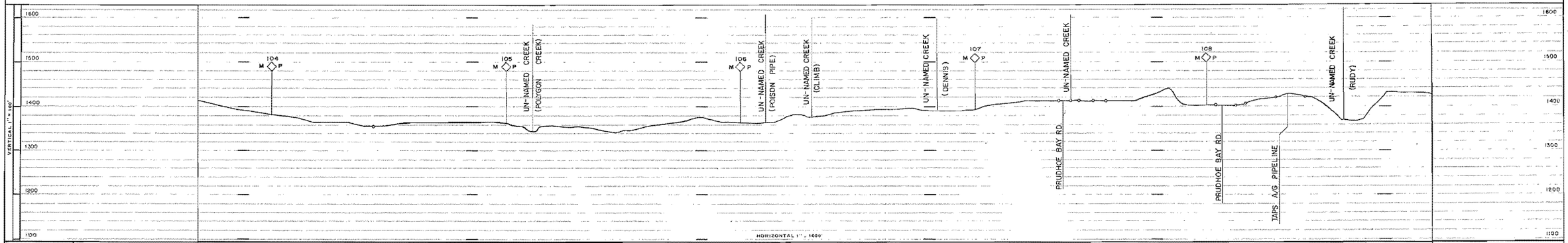
DISTRIBUTION CODE

4 6 8 0
77 78 79 80

| | | |

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE (USC CLASS)	ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	SEPARATE LOCATION — HAUL ROAD LT. OF N.W.A. — ROAD X-ING — HAUL ROAD RT. OF N.W.A. — P/L X-ING — SEPARATE LOCATION





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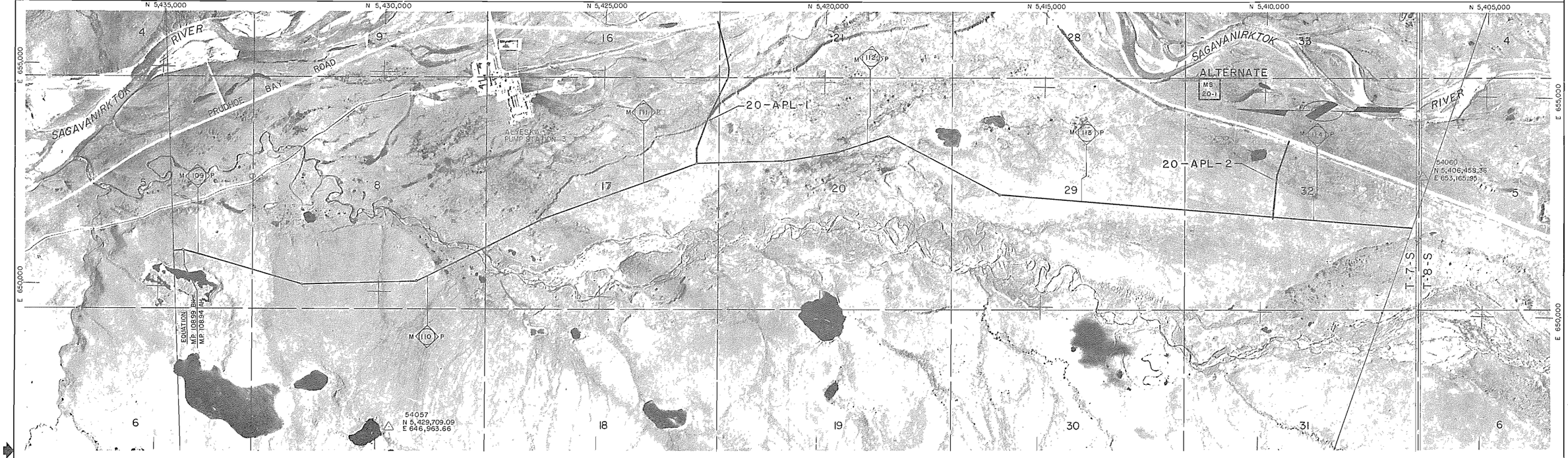
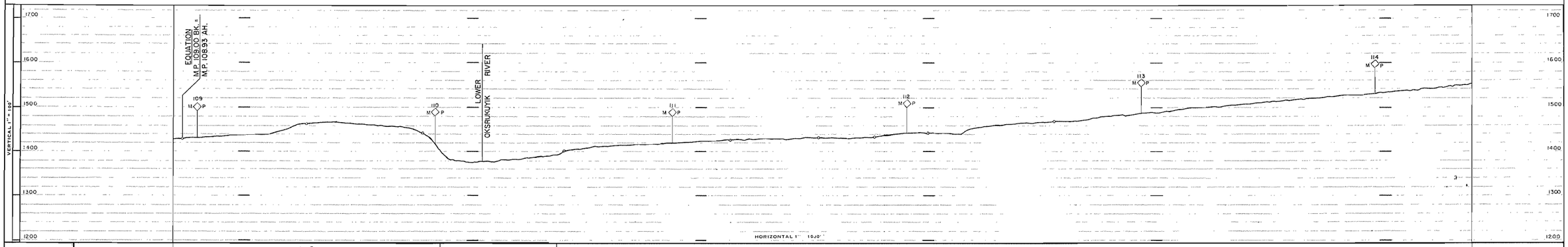
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION					
SOIL TYPE USC CLASS	ML	ML/GW	ML	ML/GW	ML	
PERMAFROST	GENERALLY FROZEN					
RELATIVE FACILITY LOCATION	SEPARATE LOCATION					





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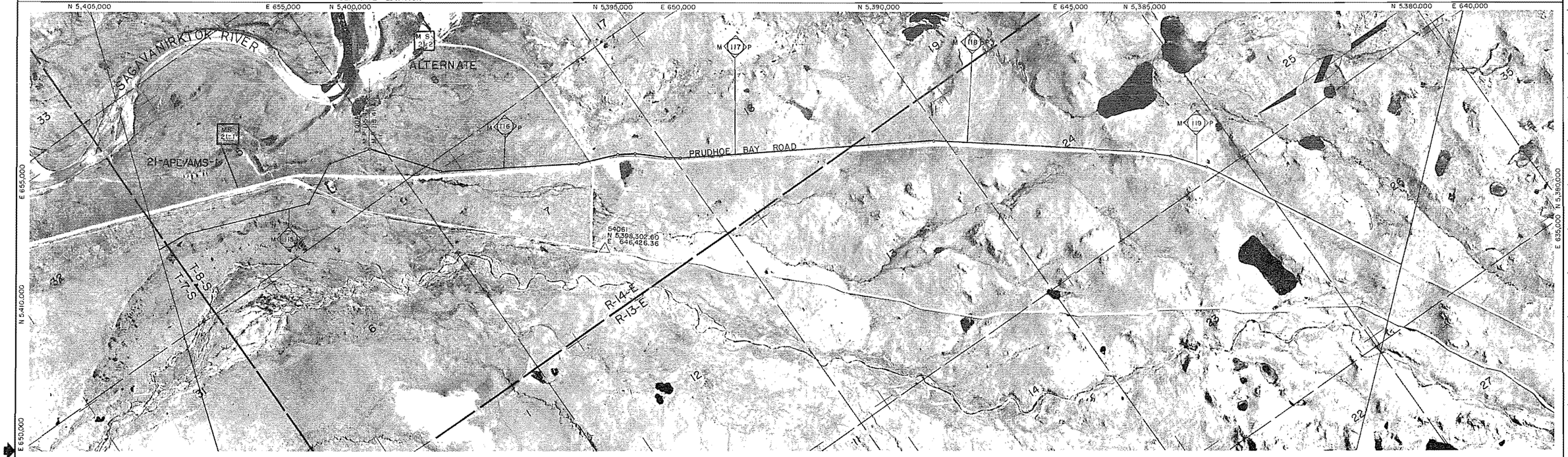
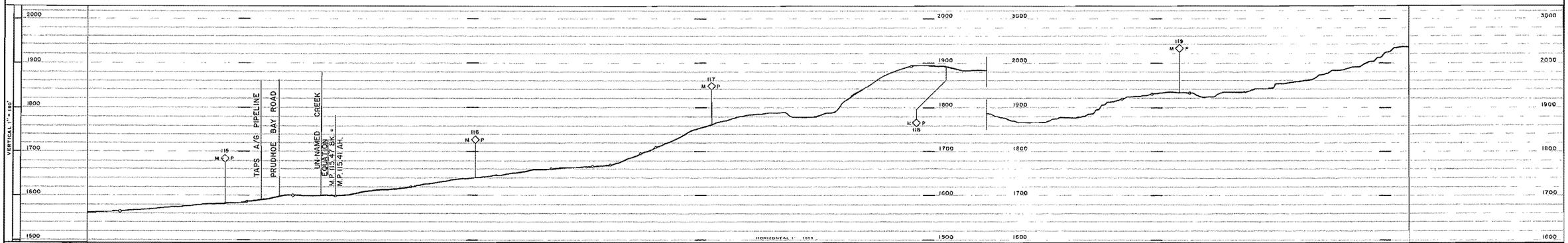
WORKPAD CONSTR DESIGN		SHOULDER MONTH CONSTRUCTION	
SOIL TYPE (USC CLASS)	ML	ML&SM	
PERMAFROST	R X-ING — ROAD X-ING	GENERALLY FROZEN	
RELATIVE FACILITY LOCATION	SEPARATE LOCATION — SEPARATE LOCATION	HAUL ROAD RT. OF NWA	





SOIL EROSION CODE						S,Q							
TYPICAL X SECT NO	30-OLR-2R	R XING L ROAD XING 30-OLR-2R	20R-OLR-2R		20R-5L-2R	20R-OLR-1R			20R-5L-2R		20R-OLR-2R	20L-5L-2R	
PAD MATL TYPE & THICKNESS	36"	30-OLR-2R 36"	30"		36"	30"		36"	30"		36"	30"	
CONSTR ZONE EXC-SPOIL&STOR SPOIL DISP & SUIT MATL QTYS	NO W.P.	26,881 C.Y. STRIPPING TO SPOIL DISPOSAL											
BORROW QTY & C.Y. MILE	MS 21-1 289,628 C.Y. 503,603 C.Y. MILE						MS 21-1 — MS 22-1		MS 21-1 — MS 22-1		SEE SHEET 22	MS 22-1	
SPOIL DISPOSAL QTY & C.Y. MILE	TOTAL 65,585 C.Y. 32,792 C.Y. MILE		FROM DITCH 38,704 C.Y.	19,352 C.Y.-MILE		FROM WORK PAD 26,881 C.Y.	13,440 C.Y. MILE						
PIPE DITCH SPECIAL BEDDING QTY & C.Y. MILE	MS 21-1	SEE SHEET 22										MS 21-1	
PIPE DITCH COMMON BEDDING QTY & C.Y. MILE	MS 21-1 DITCH OVERFILL 26,631 C.Y. 45,224 C.Y. MILE		MS 21-1	0 C.Y.									
DETAIL DWGS													

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	ACCESS ROADS	1 EA.			
	ACCESS ROAD CULVERTS	1 EA.		RESTORATION	220,860 S.Y.
				REVEGETATION	93 A.C.
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	10 AC.			
	W.P. LOW WATER X-ING	12 EA.			
	W.P. CULVERTS	3 EA.			
	W.P. ROAD X-ING	1 EA.			
	W.P. PIPELINE X-ING	7 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT DESCRIPTION	003	ON SEP. LOCATION	016	DRAINAGE STRUCTURES
002	ALIGN. SHT DESCRIPTION			017	DRAINAGE STRUCTURES
021	MS. ON R/W CONST.	012	ADJ. TO ROAD		
022	OFF R/W CONST.			019	EROSION CONTROL
				020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION, MULTIPLY DATA SHOWN BY FACTOR

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS REVISED PIPELINE ROUTE AND MILEPOSTS RELEASED FOR FERC FILING			
2	9-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	GWS	JBS	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	GWS	JBS	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 114.4 TO M.P. 120.0

TOWNSHIP T8S RANGE R14E, R13E

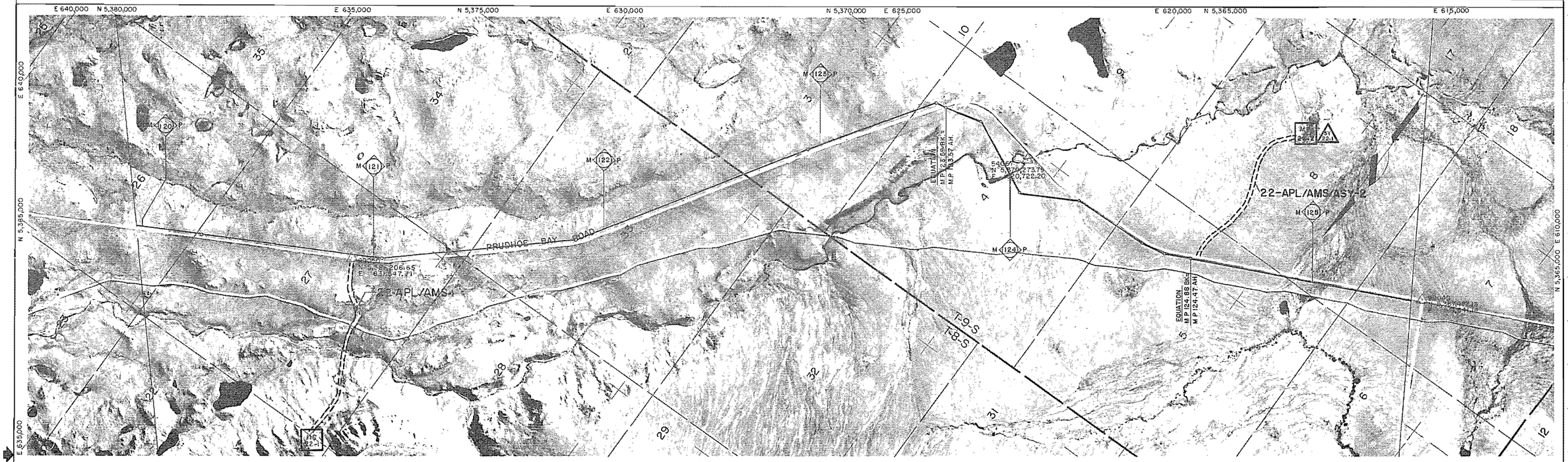
MERIDIAN UMIAT

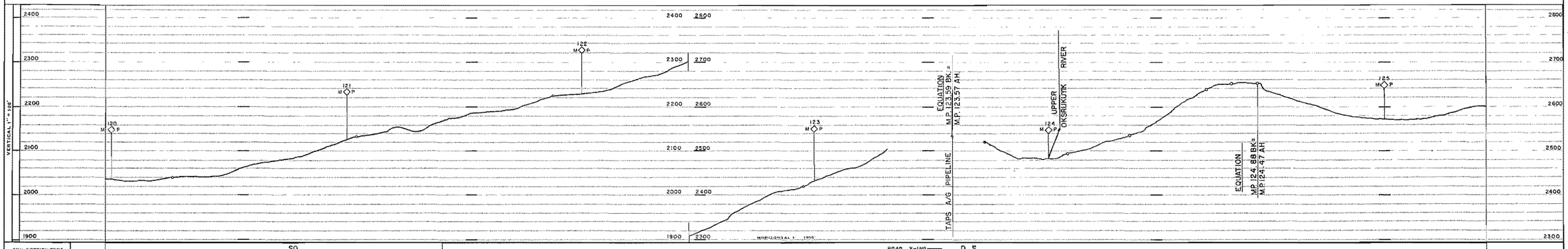
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1980	PROJECT MGR.	DATE 12/2/80
MICHAEL BAKER, JR., INC.	DATE 11/6/80	N.W. PROJECT MGR.	DATE 12/2/80
SCALE IN FEET		DRAWING NUMBER	REV.
1" = 1000'		4680-11-00-B-C-021	3

DISTRIBUTION CODE

WORKPAD CONSTR SEASON		SHOULDER MONTH CONSTRUCTION			
SOIL TYPE (USC CLASS)	ML & SM	GM & ML		PT & OL	GM & ML
PERMAFROST		GENERALLY FROZEN			
RELATIVE FACILITY LOCATION	HAUL ROAD RT OF NWA	ROAD X-ING —○	SEPARATE LOCATION	HAUL ROAD LT OF NWA	





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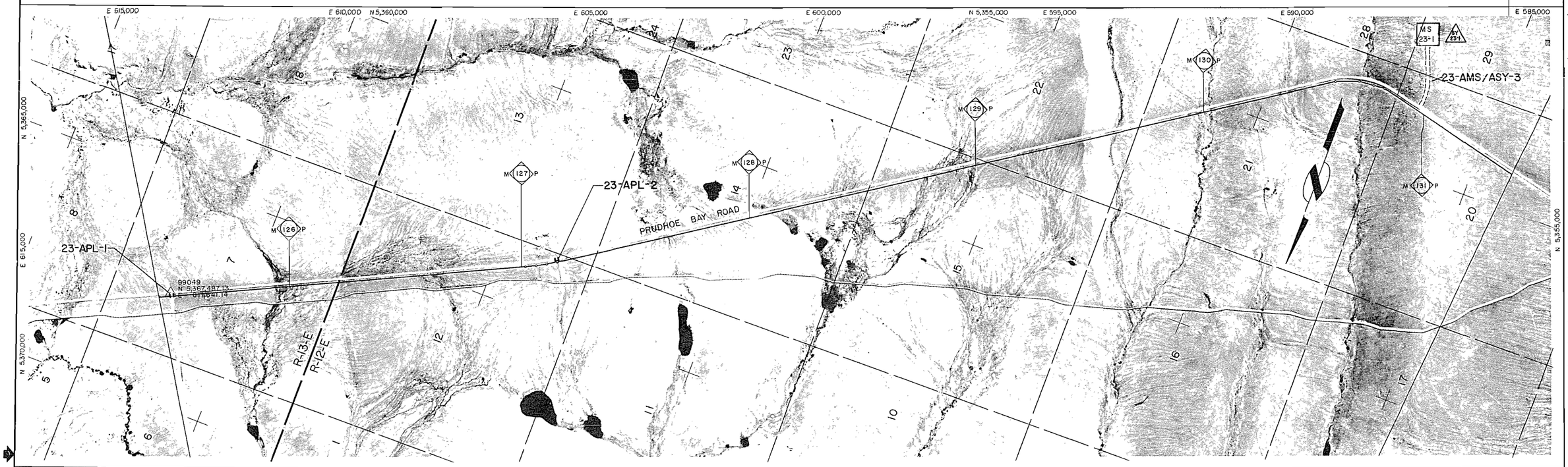
WORKPAD CONSTR. SEASON	SHOULDER	MONTH	CONSTRUCTION			
SOIL TYPE (USC CLASS)	GM	OL	GM	PT	GM	
PERMAFROST	GENERALLY FROZEN					
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA					



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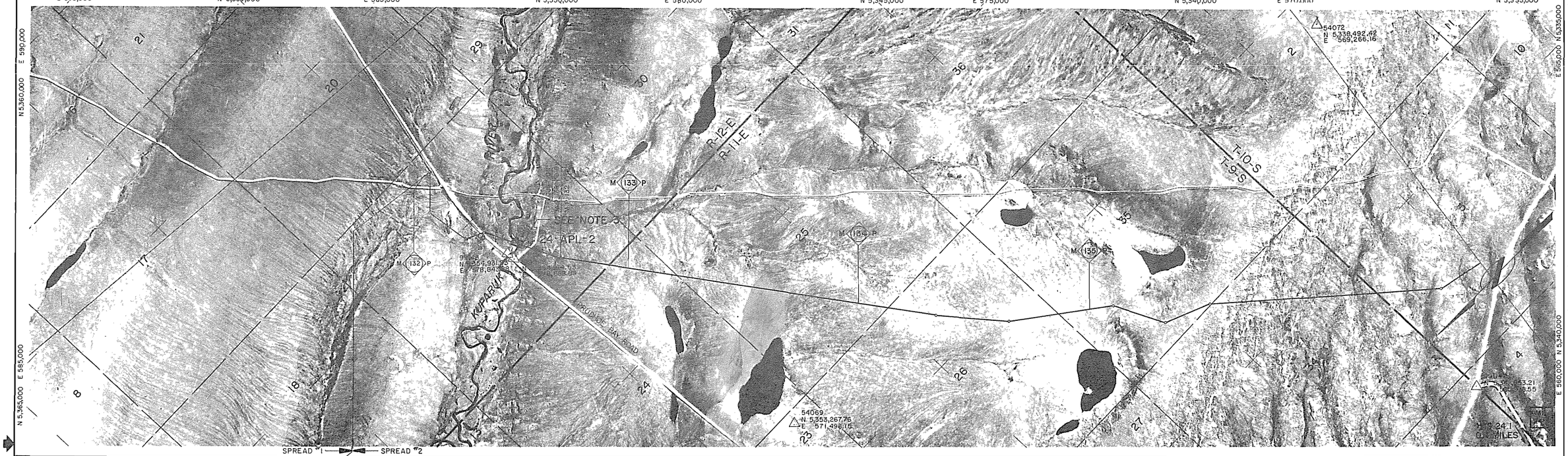
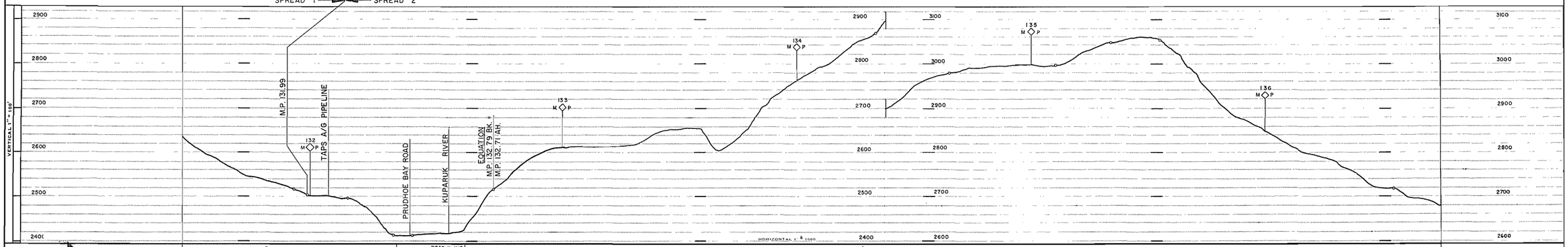
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE USC CLASS	GM / SM
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA · SEPARATE LOC · SEPARATE LOCATION · RIVER CROSSING · ROAD X-ING · R. CROSSING





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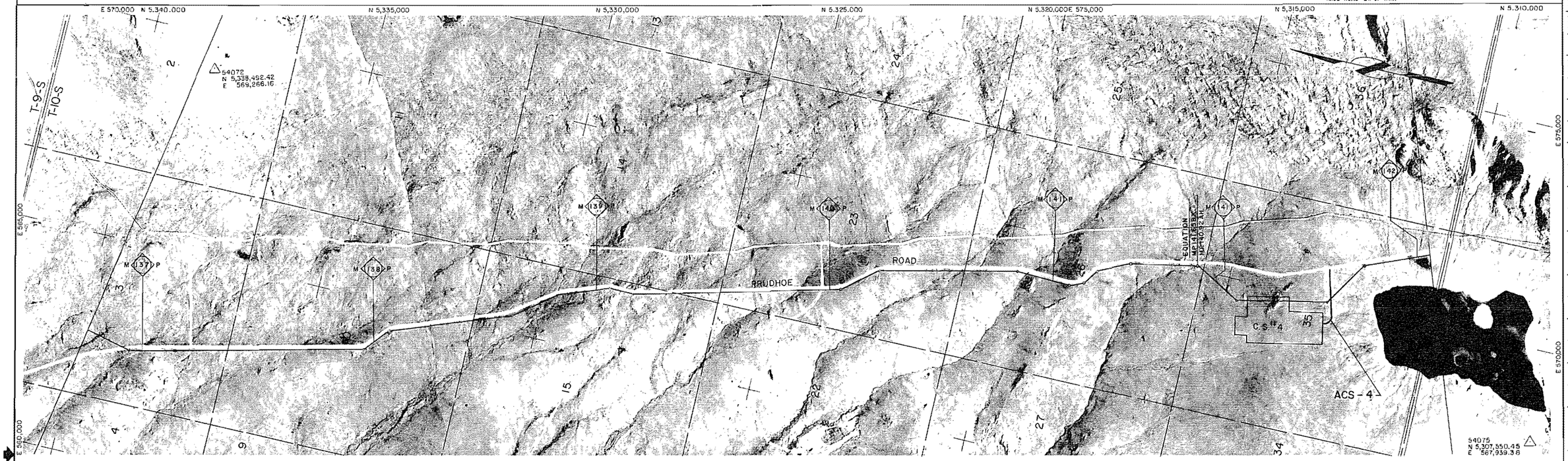
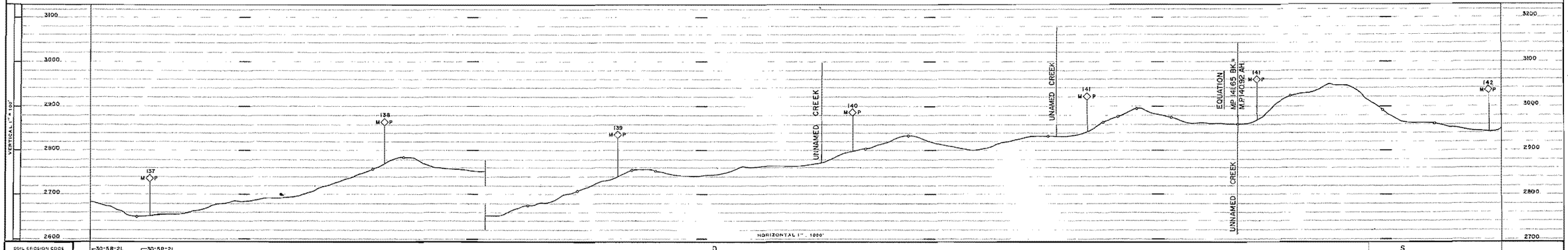
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE (USC CLASS)	GM ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA — SEPARATE LOCATION COMPRESSOR STATION SEPARATE LOCATION — HAUL ROAD LT. OF NWA





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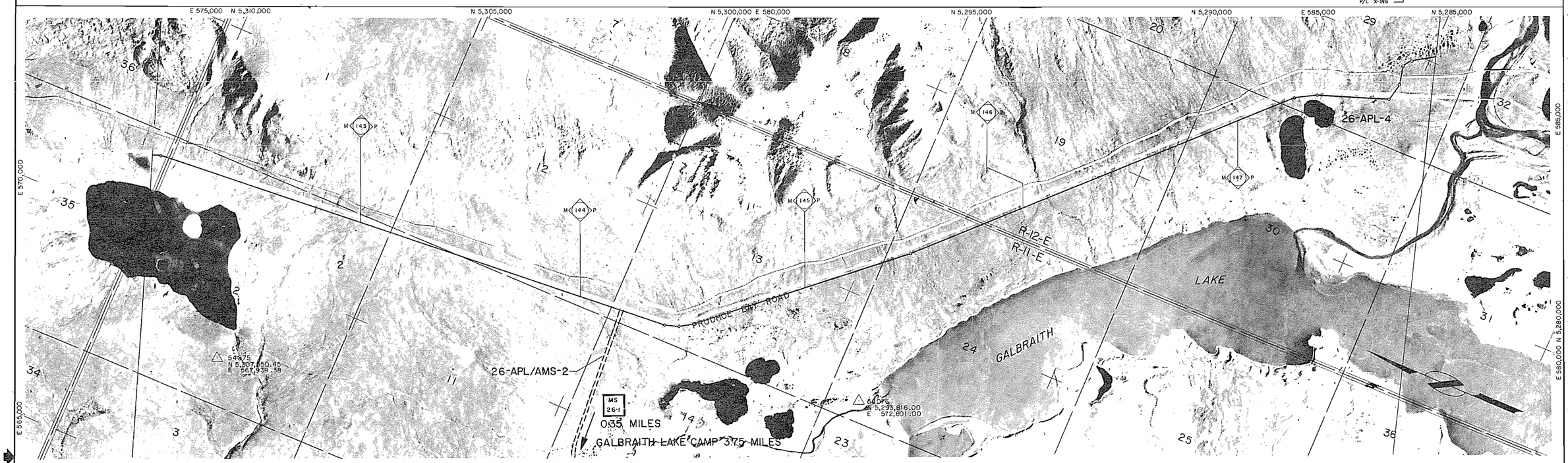
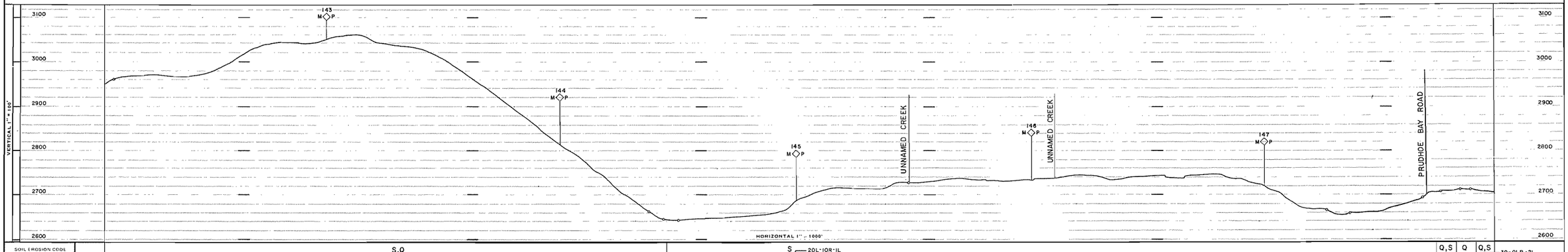
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE (USC CLASS)	ML, OL — ML — SM | SP
PERMAFROST	GENERALLY FROZEN
RELATIVE TRENCHITY LOCATION	HAUL ROAD LT OF NWA — ROAD X-ING | P/L X-ING — SEPARATE LOCATION





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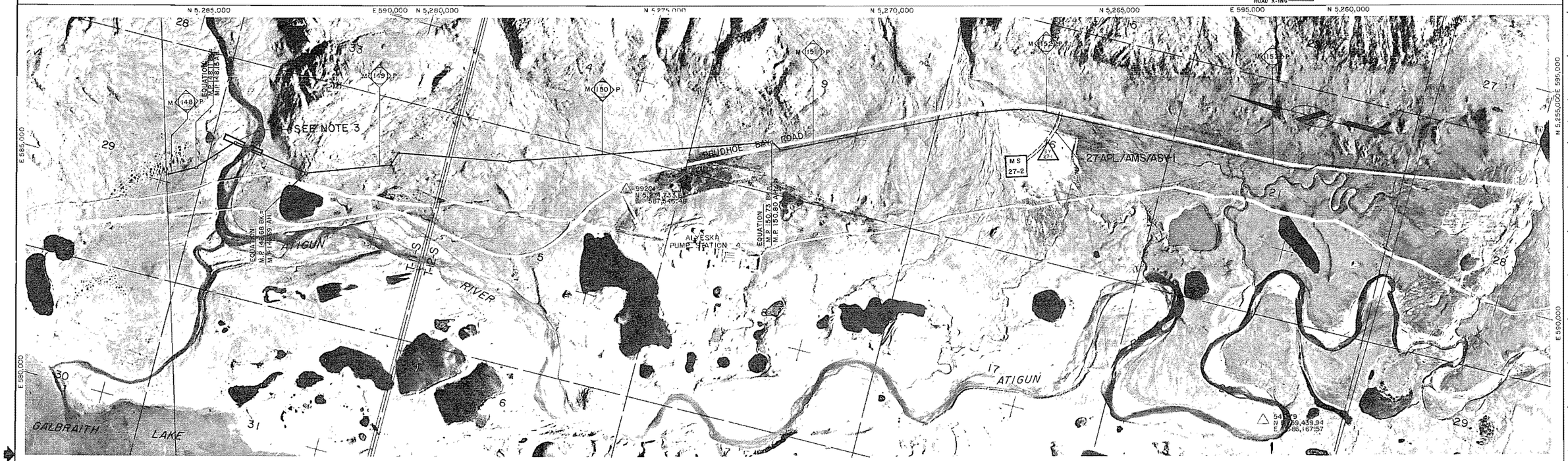
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION
SOIL TYPE USDC CLASS	SM ML GM ML GM ML GM
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	RIVER X-ING; SEPARATE LOCATION; SEPARATE LOCATION; ROAD X-ING; HAUL ROAD LT. OF NWA; ROAD X-ING; HAUL ROAD RT. OF NWA



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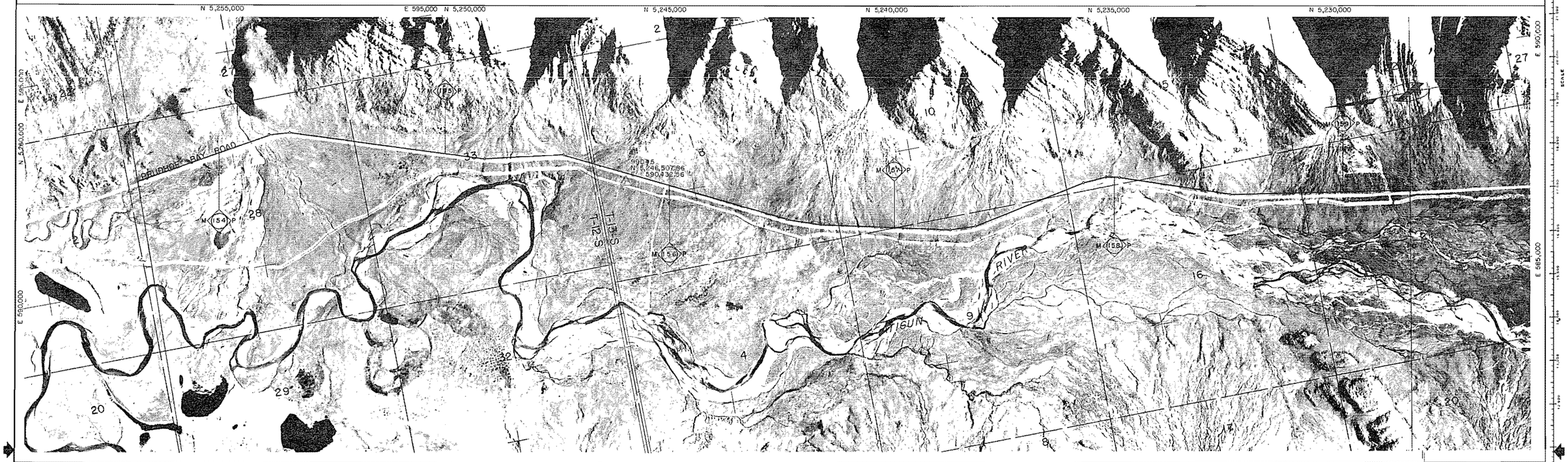
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION								
SOIL TYPE (USC CLASS)	GM	ML	SW-SM	ML	SW-SM	ML	GW-GM		
PERMAFROST	GENERALLY FROZEN								
RELATIVE FACILITY LOCATION	HAUL ROAD RT OF NWA								



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SHOULDER MONTH CONSTRUCTION

ML	GW-GM	ML	SM	SM	ML

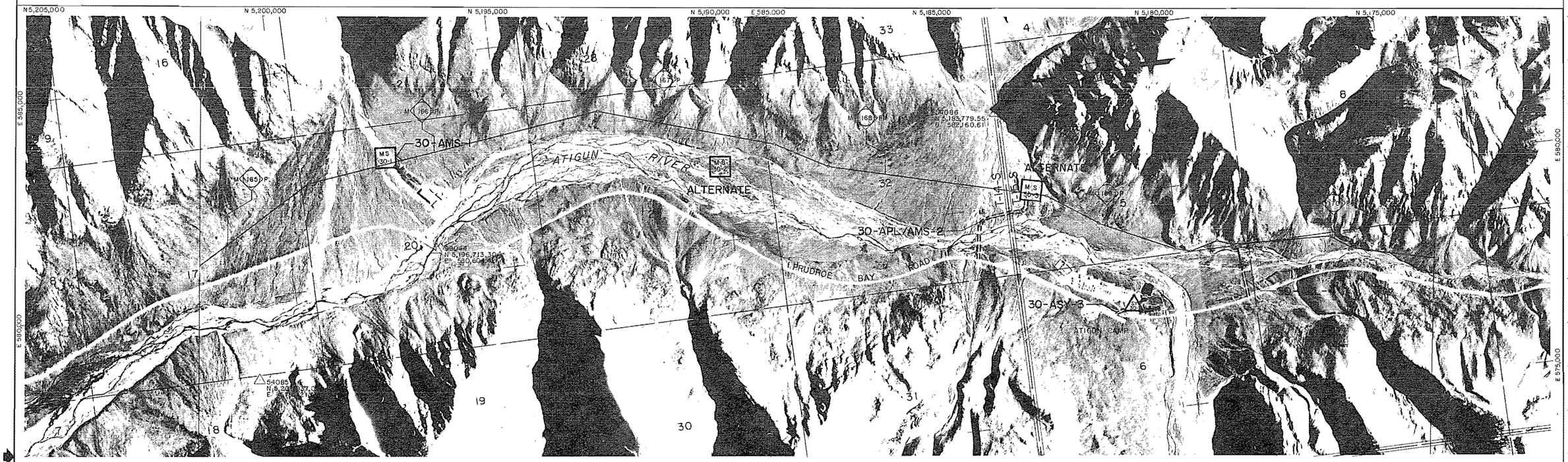
GENERALLY FROZEN

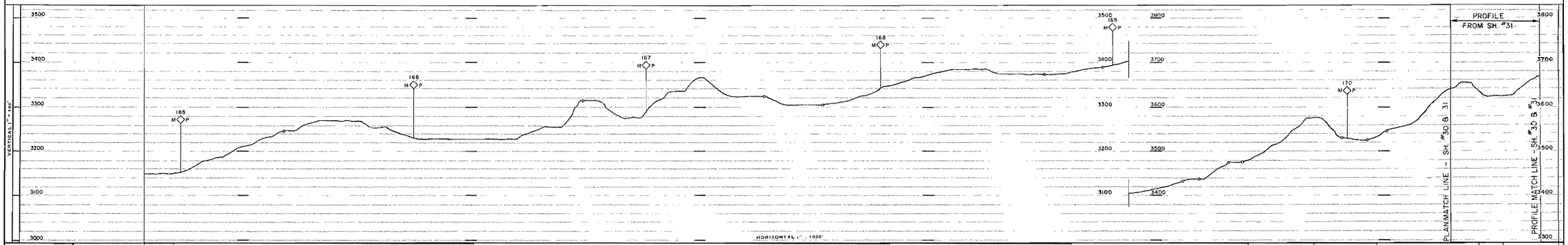
HAUL ROAD RT. OF NWA

SEPARATE LOCATION

| | | |

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION						
SOIL TYPE (USC CLASS)	ML	GW, GM					
PERMAFROST	GENERALLY FROZEN	GENERALLY FROZEN	DISCONTINOUS	GENERALLY FROZEN	DISCONTINUOUS	GENERALLY FROZEN	
RELATIVE FACILITY LOCATION	SEPARATE LOCATION						





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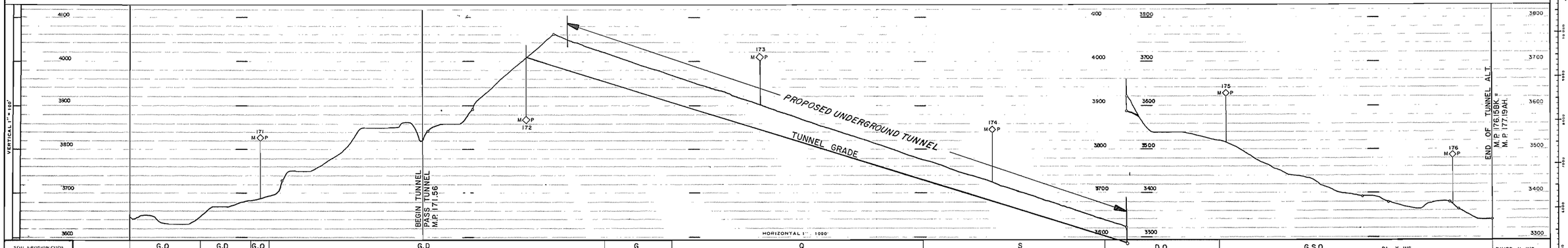
WORKPAD CONSTR SEASON		SHOULDER CONSTRUCTION		SHOULDER CONSTRUCTION	
SOIL TYPE (USC CLASS)		GM		GW GM	GW – GM
PERMAFROST	GEN. FROZEN — DISC.	GENERALLY FROZEN		GENERALLY FROZEN	SPORADIC
RELATIVE FACILITY LOCATION		SEPARATE LOCATION		SEPARATE LOCATION	SEPARATE LOCATION; RIVER X-ING; P.L. X-ING; RD. X-ING



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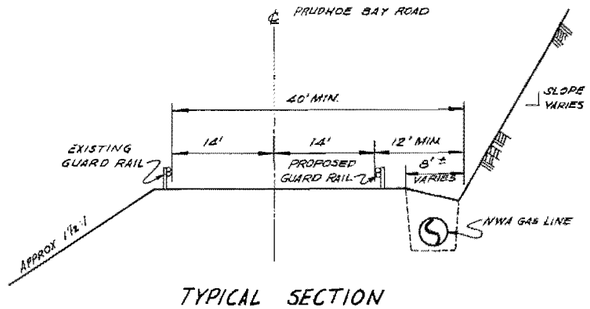

TYPICAL SECTION

GAS LINE IN RIGHT DITCH OF PRUDHOE BAY ROAD
FROM RELOCATED ROAD SECTION, M.P. 172.63 TO
END OF SITE SPECIFIC M.P. 175.08 (12,900'±)

NOTE: DITCH SPOIL AREA NOT PROVIDED
BY CONSTRUCTION ZONE GRADING

NOTES	REV. NO.	DATE	REVISION	DRAWN / CHECK	APP.
	2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	ADS	JBT
	3	11-11-80	NOVEMBER 1980 ROUTE REFINEMENTS	ADS	JBT

DWG. NO.	REFERENCE DRAWING
MICROFILM NO.	

FLUOR
PROJECT MANAGEMENT CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
SITE SPECIFIC CONSTRUCTION (ATIGUN PASS)
TYPICAL CROSS SECTION
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

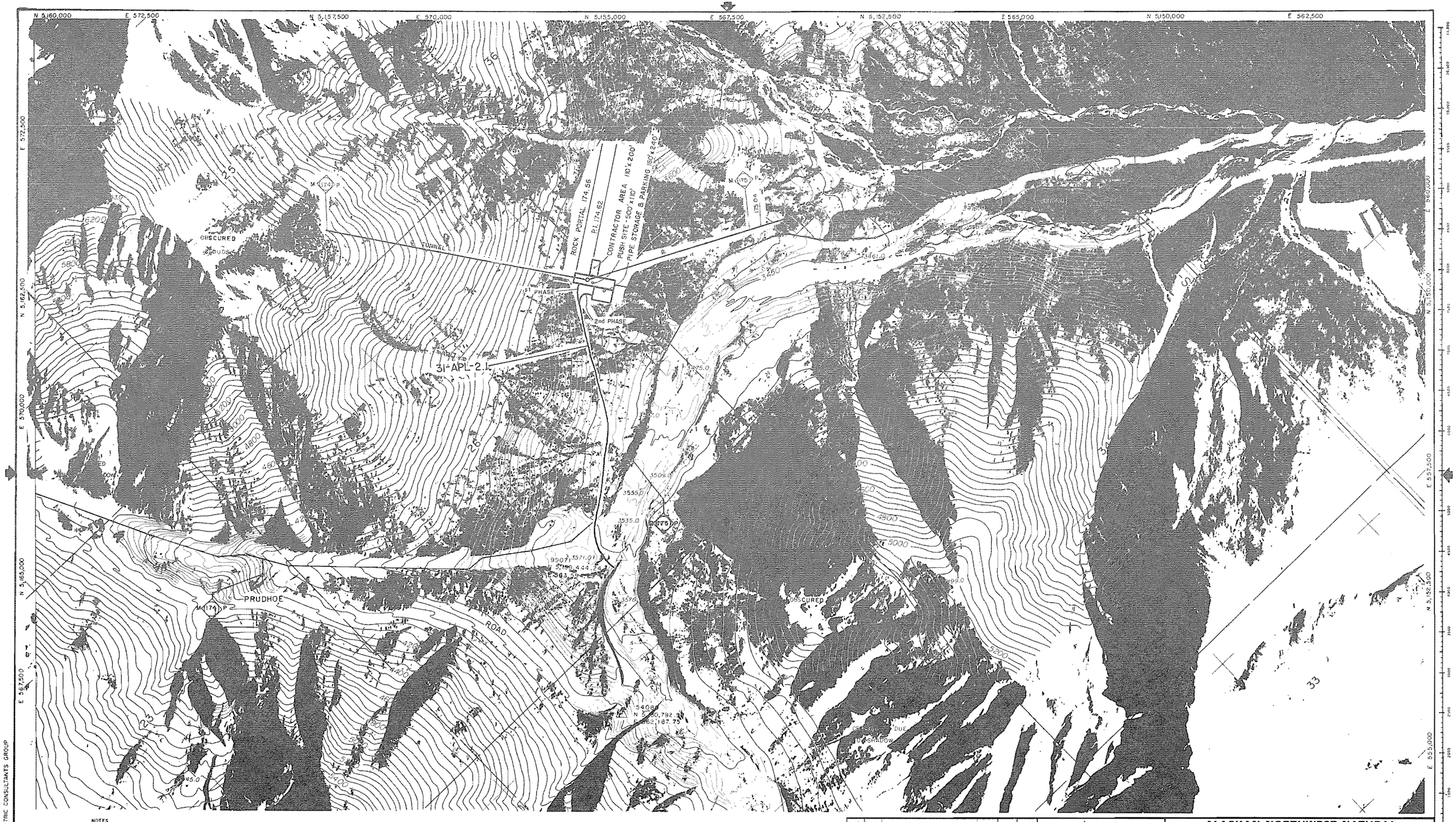
MICHAEL BAKER JR., INC.	DATE 11/6/80	FLUOR	DATE 11/6/80
		NWNGTC	DATE 11/5/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 10'	4680-12-00-0-C-031A	3

DISTRIBUTION CODE NO.

FORM E-727 3/80

REDUCED PRINT SCALES



NOTES

1. ALL CONTOURS SHOULD BE CONSIDERED AS DASHED CONTOURS IN VEGETATED AREAS.
2. DASH CONTOURS INDICATE A LESSER DEGREE OF ACCURACY DUE TO DENSE TREES AND/OR BRUSH

PHOTO DATE AUGUST 1978

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

NO	DATE	REVISION	BY	CHKD	APP
1	2-80	AS VISED MILEPOST			
2A		ATIGUN TUNNEL	RDS		
3A	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	AWS		

FLUOR
PROJECT MANAGEMENT CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION
ATIGUN PASS TUNNEL
CONSTRUCTION AREA AT SOUTH PORTAL

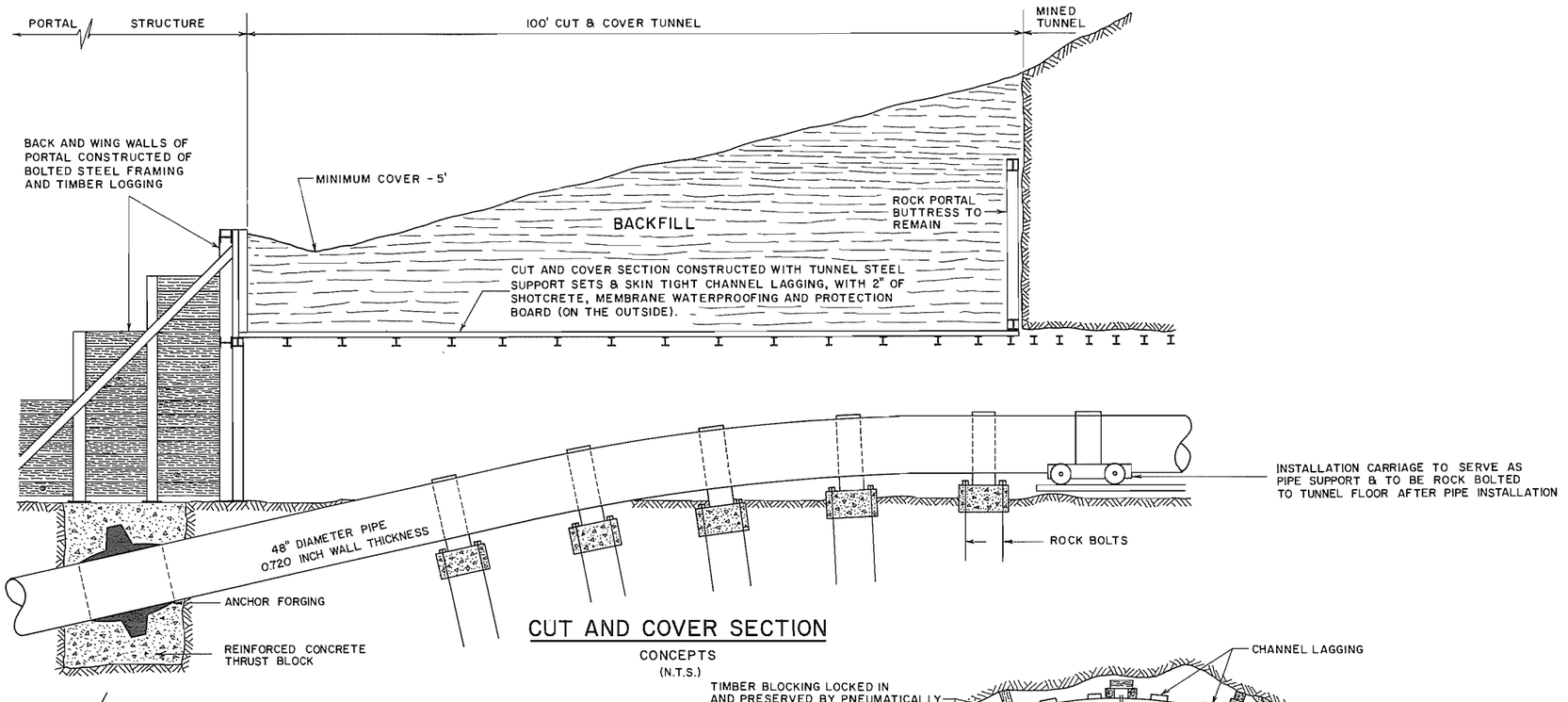
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APCG	DATE		DATE
		10-14-80		10/14/80
		DATE		DATE
		10-14-80		10/30/80

SCALE IN FEET: 1" = 500'

DRAWING NUMBER: 4680-12-00-0-C-031A REV: 3A

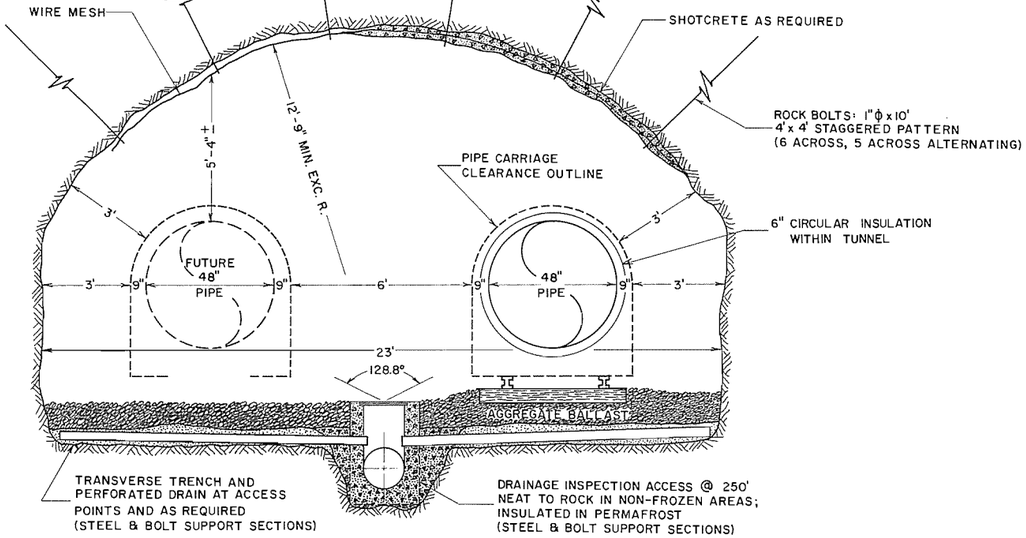
DISTRIBUTION CODE 4 6 8 0



CUT AND COVER SECTION

CONCEPTS

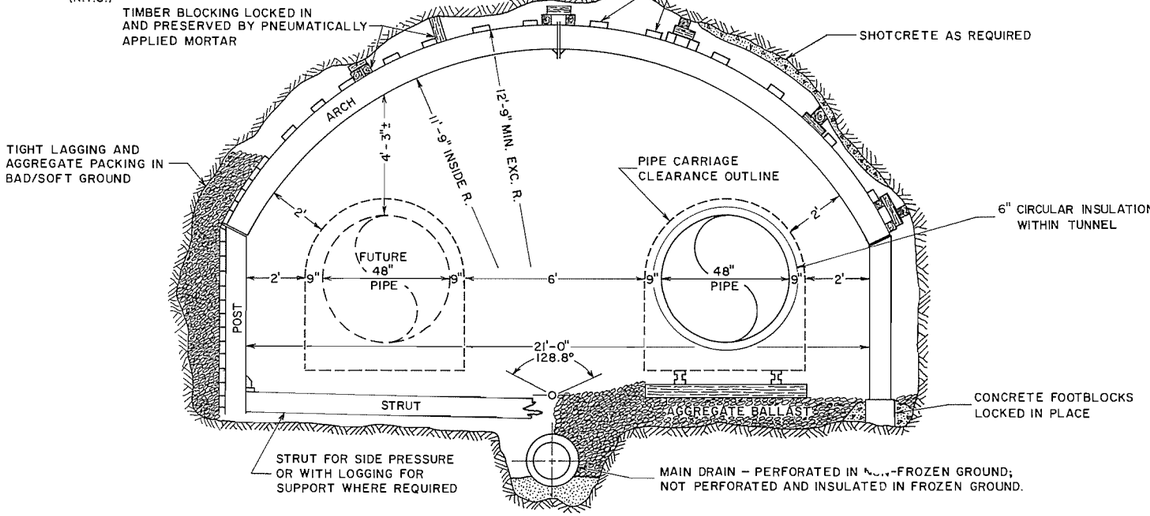
(N.T.S.)



ROCK SUPPORT SECTION

TYPICAL DETAILS

(N.T.S.)



STEEL SUPPORT SECTION

TYPICAL SECTION

(N.T.S.)

NOTES	REV. NO.	DATE	REVISION	DRAWN / CHECK	APP.	DWG. NO.	REFERENCE DRAWING
	3	11 1 80	NO CHANGE ISSUED FOR RECORD ONLY	RDV / LBJ			
						MICROFILM NO.	

Index | C03 | 6.24 | Civil Construction | 4680 | 77 78 79 80

FLUOR
PROJECT MANAGEMENT CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

TYPICAL TUNNEL & CUT-COVER SECTIONS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

	DATE		DATE
		FLUOR	3/14/80
L.B. Michael	10-14-80	H.P. PLANNING	10/20/80

SCALE IN FEET	DRAWING NUMBER	REV.
AS SHOWN	4680-12-00-0-C-031B	3A

DISTRIBUTION CODE NO.

FORM E-727 2/80

REDUCED PRINT SCALES

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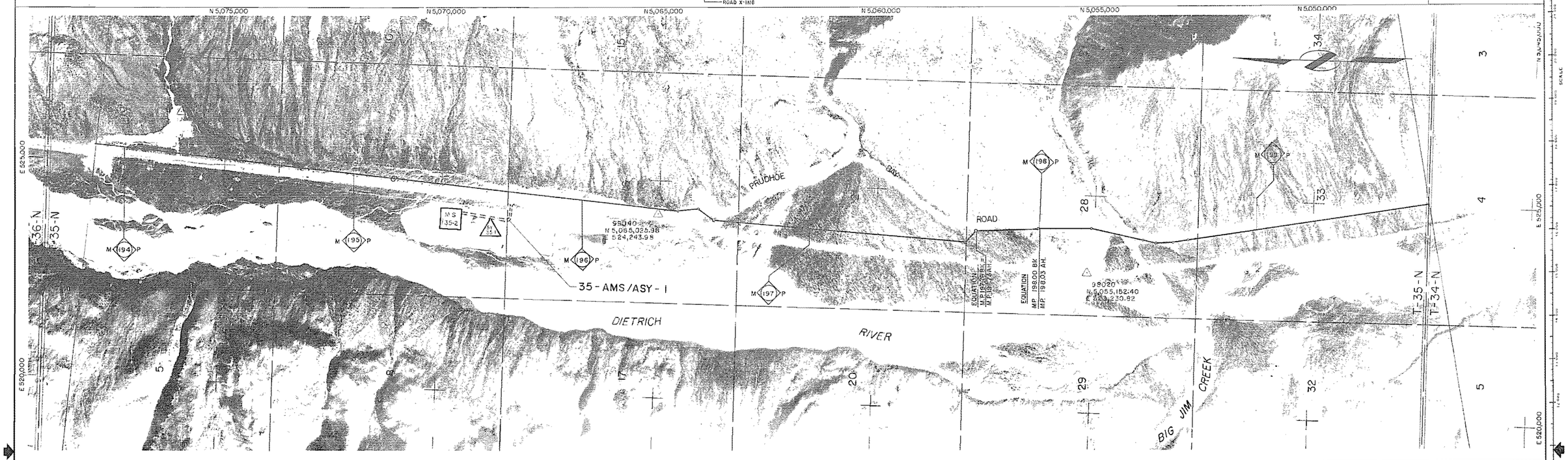
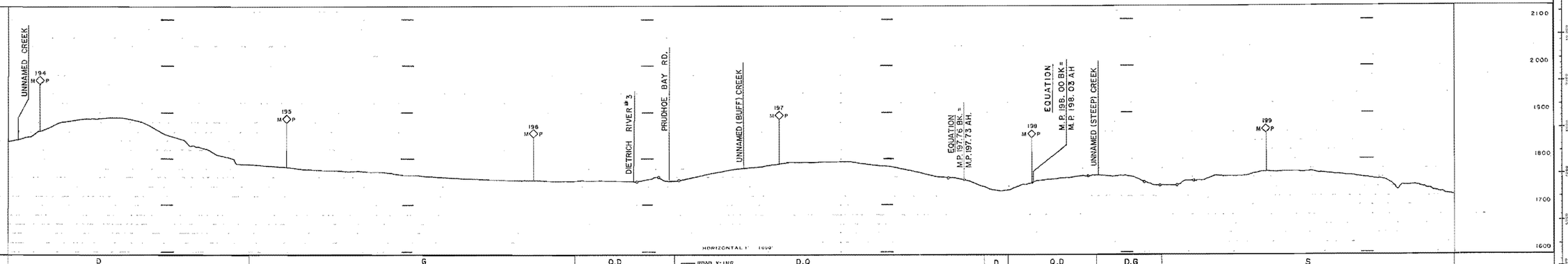
WORK PAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION										
SOIL TYPE USDC Class	GW-GM		SM	GM			SM	GM	ML		
PERMAFROST	DISCONTINUOUS	SPORADIC	GENERALLY FROZEN	DISCONTINUOUS			GENERALLY FROZEN	SPORADIC	GENERALLY FROZEN		
PLOTTING PROFILE LOCATION	HAUL ROAD RT. OF NWA			SEPARATE LOCATION (ROAD X-ING)					HAUL ROAD LT. OF NWA		





SOIL EROSION CODE	D	G	Q,D	ROAD X-ING	D,Q	D	Q,D	D,G	S		
TYPICAL X-SECT NO	20R-0LR-2R		20R-25R-10R	NO W.P.	30-0LR-1L	20L-0LR-1L	20L-10R-6L	20L-10R-5L	20L-20R-6L		
PAD MAT'L TYPE & THICKNESS	GRANULAR - MATERIAL - 12" THICK	GRANULAR MATERIAL - 6" THICK	24"		GRANULAR MATERIAL - 24" THICK			18"	GRANULAR MATERIAL-24" THICK		
CONSTR. ZONE EXC. SPOIL STOR. SPOIL DISP & SUIT. MAT'L QTYS.	3,606 C.Y. EXC.	12,307 C.Y. STRIPPING TO 91,528 C.Y. SPOIL DISPOSAL TO 3,808 C.Y. SUITABLE MATERIAL									
BORROW QTY & C.Y. MILE	MS 35-2 41,230 C.Y. 64,689 C.Y.-MILE							MS 35-2 — MS 36-1 111,419 C.Y.	146,913 C.Y.-MILE	MS 36-1	
SPOIL DISPOSAL QTY & C.Y.-MILE	TOTAL 150,026 C.Y. 75,013 C.Y. - MILE FROM DITCH 58,498 C.Y. 29,249 C.Y.-MILE FROM WORK PAD 91,528 C.Y. 45,764 C.Y. - MILE										
PIPE DITCH SPECIAL BEDDING QTY & C.Y. MILE	MS 32-2 SEE SHEET 33									MS 32-2	
PIPE DITCH COMMON BEDDING QTY & C.Y. MILE	MS 35-2 18,397 C.Y. 25,984 C.Y.-MILE							MS 35-2 — MS 36-1 53,306 C.Y.	73,275 C.Y.-MILE	MS 36-1	
DETAIL DWGS											

Prepared by ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	76 EA.		DRAINAGE DITCHES	2200 L.F
				DIVERSION LEVEES	2200 L.F.
	ACCESS ROADS	1 EA.		LET DOWN STRUCTURES	2 EA.
	ACCESS ROAD PL. X-INGS	1 EA.		W.P. ROAD X-INGS	1 EA.
	MATERIAL SITES	1 EA.		RESTORATION	289,212 S.Y.
	DISPOSAL SITES	23 AC.		REVEGETATION	121 AC.
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	31 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT DESCRIPTION	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT DESCRIPTION	003	ON SEP. LOCATION		017	DRAINAGE STRUCTURES
021	MISC. ON-R/W CONST.				019	EROSION CONTROL
		012	ADJ. TO ROAD		020	EROSION CONTROL
022	OFF-R/W CONST.	014	GEN. TYP. SECTIONS			
		015	GEN. TYP. SECTIONS			

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND/OR CALCULATED USING THE STATE COORDINATE VALUES OF ALASKA ZONE 4 (TRANSVERSE MERCATOR).
2. TO GET TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00018444

PHOTOS TAKEN AUGUST 1979

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
2	9-29-80	RELEASED FOR 90 ROW GRANT COMPLIANCE	DWS	JSH	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JSH	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 193.9 TO M.P. 199.8

TOWNSHIP T35N T34N RANGE R10W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APPD.	ISSUE 1979	FLUOR J.R. Brandt	DATE 9/30/80	
MICHAEL BAKER, JR. INC. W.A. Bischof	DATE 4-29-80		N.W.A.G.T.C. W. Bischof	DATE 5/2/80	
SCALE IN FEET 1" = 1000'			DRAWING NUMBER 4680-12-00-B-C-035		REV. 3

DISTRIBUTION CODE

12 0 0 8 | K 1 2 3 5 | A: 1 9 3 C / M K | C O N S T C O N D N

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

4 6 8 0
77 78 79 80

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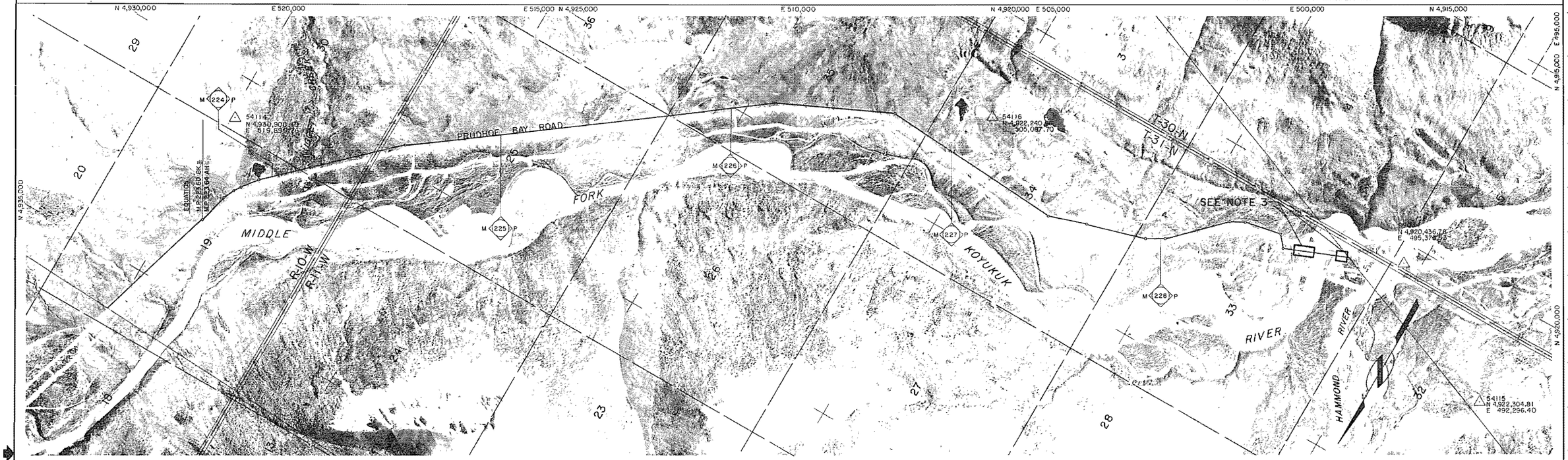
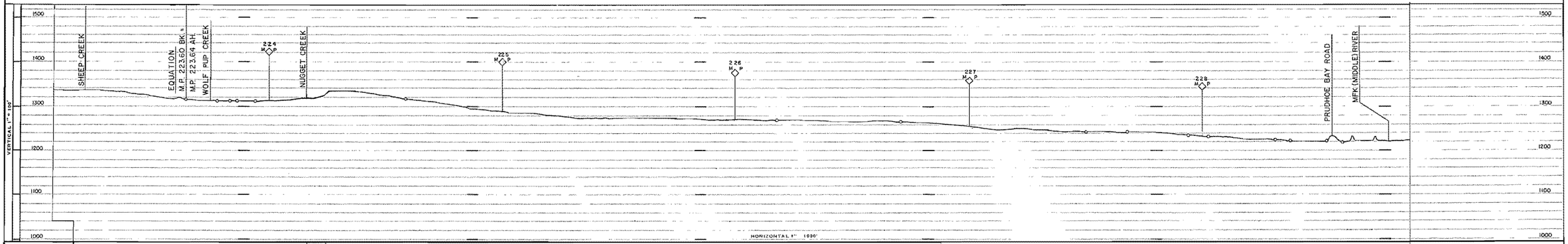
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION				
SOIL TYPE (USC CLASS)	M L	GM	ML		GW, GM
PERMAFROST	GENERALLY FROZEN	o—— GENERALLY ABSENT	GENERALLY FROZEN	DISCONTINUOUS	GEN. ABSENT
RELATIVE FACILITY LOCATION	HAUL ROAD RT. OF NWA				o—— RIVER X-ING.
					o o ROAD X-ING. — SEPERATE LOCATION





SOIL EROSION CODE	S,Q	D	S,Q	S		S,Q	ROAD X-ING.	30-OLR-2L	
TYPICAL X-SECT NO	20R-OLR-1R							RIVER X-ING.	
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 42" THICK	18"	GRANULAR MATERIAL - 42" THICK		18"	GRANULAR MATERIAL - 42" THICK	NO WP	18"	NO WP
CONSTR. ZONE EXC - SPOIL STOR SPOIL DISP & SUIT MAT'L QTYS.	1,296 C.Y. STRIPPING TO SPOIL STORAGE								
BORROW QTY & CY MILE	MS 39-3 SEE SHEET 39	MS 39-3 — MS 41-1	125,276 C.Y. 313,709 C.Y. - MILE						
SPOIL DISPOSAL QTY & CY-MILE	2,926 C.Y. 1,463 C.Y.-MILE FROM DITCH								
PIPE DITCH SPECIAL BACKFILL QTY & CY MILE	MS 39-3		SEE SHEET 39			MS39-3			
PIPE DITCH COMMON BACKFILL QTY & CY MILE	MS 39-3 SEE SHEET 39	MS39-3	0 C.Y.						
DETAIL DWGS									

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	41 AC.		RIVER X-INGS	1 EA.
				RESTORATION	104,148 SY.
				REVEGETATION	70 AC.
	DISPOSAL SITES	< 1 AC.			
	W.P. LOW WATER X-INGS	23 EA.			
	W.P. ROAD X-ING.	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP CONST ZONE SECTIONS	NO.		NO.	
001	ALIGN SHT DESCRIPTION	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SCP LOCATION		017	DRAINAGE STRUCTURES
		012	ADJ TO ROAD			
021	MISC ON-R/W CONST.				019	EROSION CONTROL
					020	EROSION CONTROL
022	OFF-R/W CONST.					

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION, MULTIPLY DATA SHOWN BY FACTOR 1.000665786
3. RIVER CROSSING STAGING AREA FOR PIPELINE CONSTRUCTION.

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMBIAN HEADING IS			
		REVISED PIPELINE ROUTE & MILE POST			
		RELEASED FOR FERC FILING			
2	9-29-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DMS	JDT	RMM
1	11-14-80	NOVEMBER 1980 ROUTE REFINEMENTS	DMS	JDT	RMM

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 223.1 TO M.P. 228.8

TOWNSHIP T31N RANGE R10W, R11W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	AFCO	DATE	1978	PROJ MGR	J.R. Barnett DATE 9/30/80
MICHAEL BAKER, JR. INC	J.A. Nielsen	DATE	9-29-80	FLUOR	DATE 5/1/80
SCALE IN FEET	1" = 1000'	DRAWING NUMBER	4680-12-00-B-C-040	REV	3

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

DISTRIBUTION CODE

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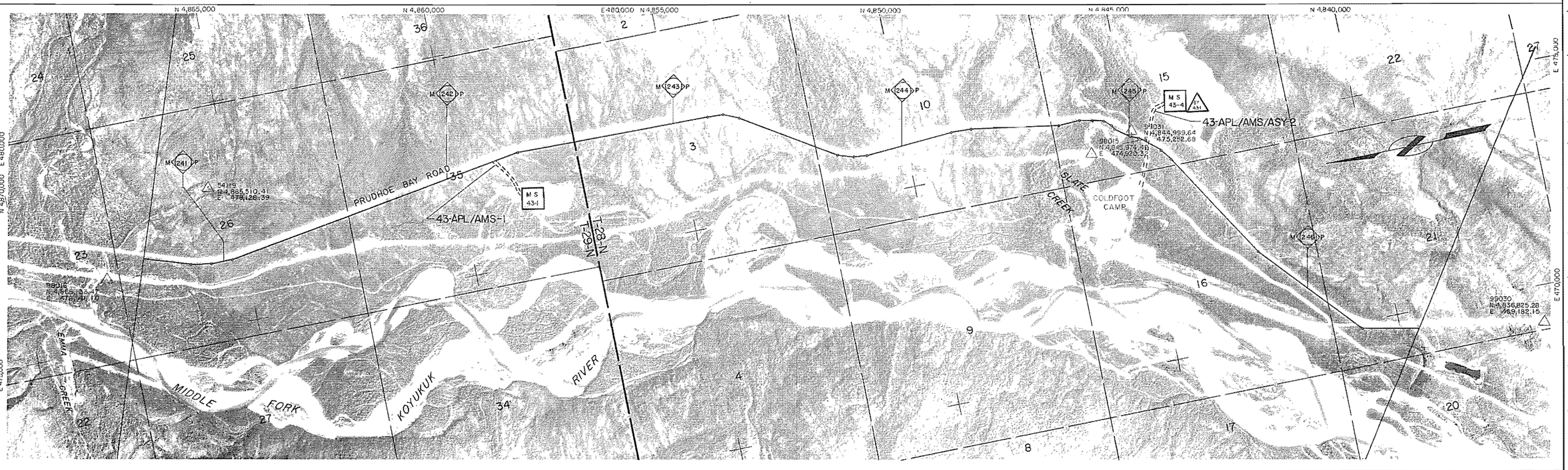
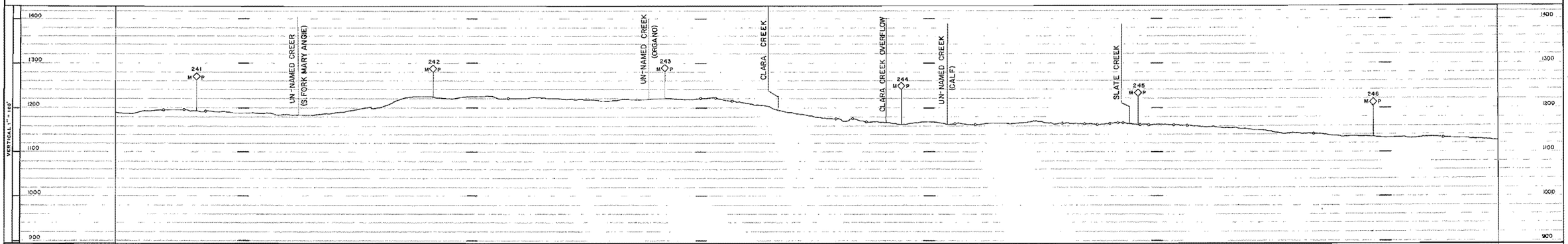
WORK PAD CONSTR SEASON	SUMMER CONSTRUCTION																		
SOIL TYPE (USCE CLASS)	ML/SW-SM	ML							SM	ML		SM			ML		SM		
PERMAFROST	GENERALLY ABSENT	GENERALLY FROZEN	GENERALLY ABSENT	GENERALLY FROZEN								SPORADIC			GENERALLY FROZEN				
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA										SEPARATE LOCATION	HAUL ROAD LT. OF NWA							





SOIL EROSION CODE	G,D,S	S								Q	S,Q		Q,S			S		Q	
TYPICAL X-SECT NO	20L-OLR-2L	20L-OLR-IL											30-OLR-IL	20L-OLR-IL					
PAD MAT'L TYPE & THICKNESS	6"	18"	42"	GRANULAR MAT'L-18"	GRANULAR MATERIAL 42" THICK									GRANULAR MATERIAL-18" THICK		GRANULAR MATERIAL-42" THICK			
CONSTR ZONE STK, SPOIL STOR, SPOIL DISP & SUIT MAT'L QTYS	762 C.Y. STRIPPING TO SPOIL STORAGE																		
BORROW QTY & CY MILE	MS 43-1	155,961 C.Y.	366,748 C.Y.-MILE	MS43-1 — MS 43-4								170,255 C.Y.		351,800 C.Y.-MILE				MS 43-4	
SPOIL DISPOSAL QTY & CY MILE	0 C.Y.																		
PIPE DITCH-SPECIAL BFILL QTY & CY MILE	MS 43-1	133,674 C.Y.	721,695 C.Y.-MILE															MS 43-1	
PIPE DITCH-COMMON BFILL QTY & CY MILE	0 C.Y.	MS 43-4										24,679 C.Y.		70,119 C.Y.-MILE				MS 43-4	
DETAIL DWGS																			

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	142 AC.		W.P. LOW WATER X-INGS	22 EA.
	ACCESS ROADS	2 EA.		RESTORATION	249,040SY
	ACCESS ROAD P.L. X-INGS	3 EA.		REVEGETATION	225 AC.
	MATERIAL SITES	2 EA.			
	STORAGE YARDS	1 EA.			
	AIRFIELDS	1 EA.			
	CAMPS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS.	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION.	NO.			016	DRAINAGE STRUCTURES.
002	ALIGN. SHT. DESCRIPTION.	003	ON SEP. LOCATION		017	DRAINAGE STRUCTURES.
		012	ADJ. TO ROAD.		019	EROSION CONTROL
022	OFF-R/W CONST.				020	EROSION CONTROL.

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
	8-29-80	RELEASE FOR DRAFTING GRANT COMPLIANCE	GHS	JBM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	GHS	JBM	

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 240.6 TO M.P. 246.5
TOWNSHIP T29N T28N RANGE R12W
MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO MGMT.	DATE 1978	FLUOR J.R. Brandt	DATE 9/30/80
MICHAEL BAKER JR., INC. W. Mitchell	DATE 4-23-80	N.W. ALASKAN	DATE 5-12-80
SCALE IN FEET	1" = 1000'	DRAWING NUMBER	4680-13-00-B-C-043 REV 3

DISTRIBUTION CODE

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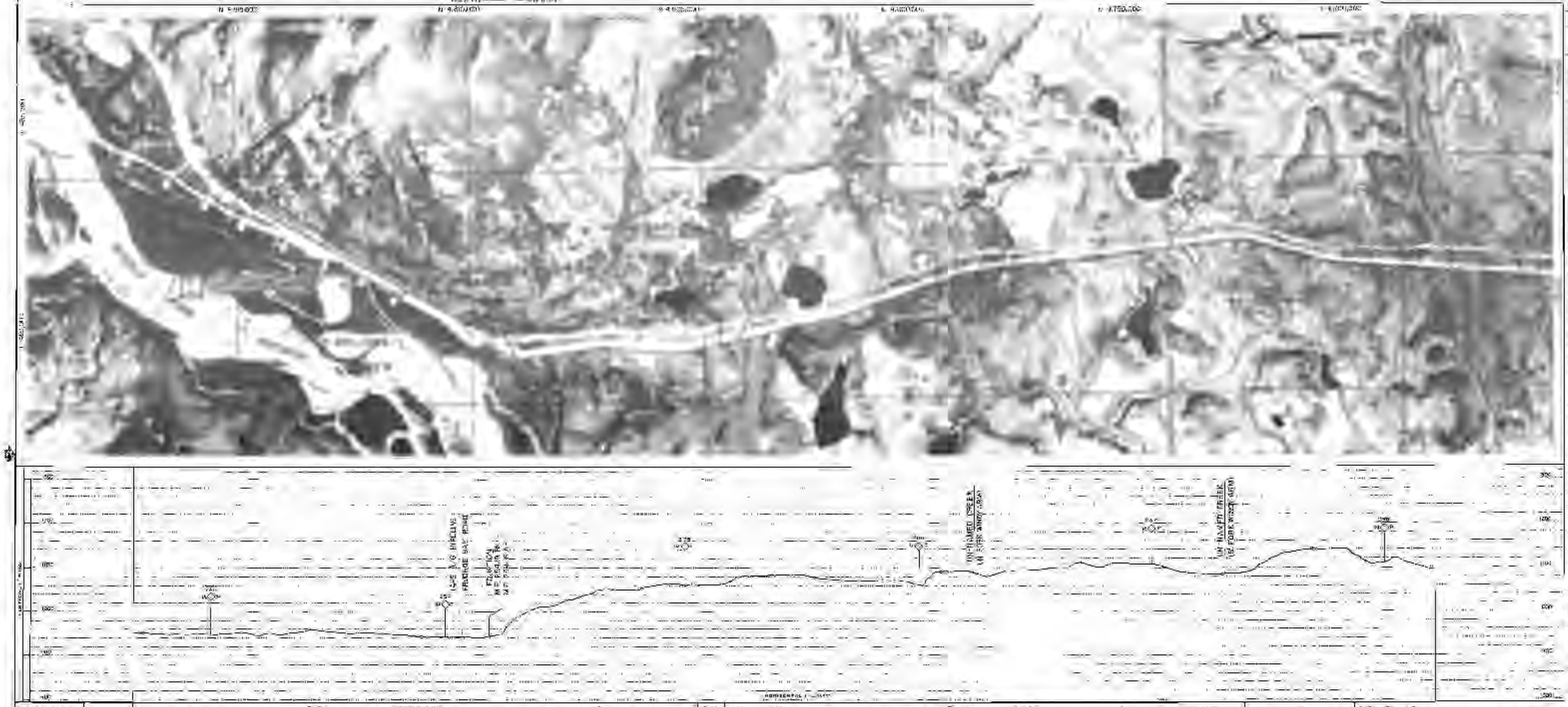

ADDITIONAL CONSTRUCTION ITEMS					REFERENCE DRAWINGS				4680-13-00-B-C-NNC	
ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY	NO.	DESCRIPTION	NO.	DESCRIPTION	NO.
	CLEARING	58 EA.		W.P. PIPELINE X-INGS	1 EA.					
	ACCESS ROADS	3 EA.		W.P. ROAD X-INGS	1 EA.					
	ACCESS ROAD CULVERTS	1 EA.								
	ACCESS ROAD PL. X-INGS	3 EA.								
	MATERIAL SITES	2 EA.		RESTORATION	196 LUMP SUM					
	DISPOSAL SITES	2 EA.		REVEGETATION	105 AC.					
	STORAGE YARDS	1 EA.								
	W.P. LOW WATER X-INGS	47 EA.								

NO.	BY	REVISION	DATE
1	MJB	REVISED ENGINEERING QUANTITIES	4-30
1	MJB	REVISED ENGINEERING QUANTITIES	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 252.7 TO M.P. 256.2
TOWNSHIP T27N, T26S RANGE R13E
MERIDIAN FAIRBANKS
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

SCALE IN FEET 1" = 1000' DRAWING NUMBER 4680-13-00-B-C-045 REV. 3

DISTRIBUTION CODE

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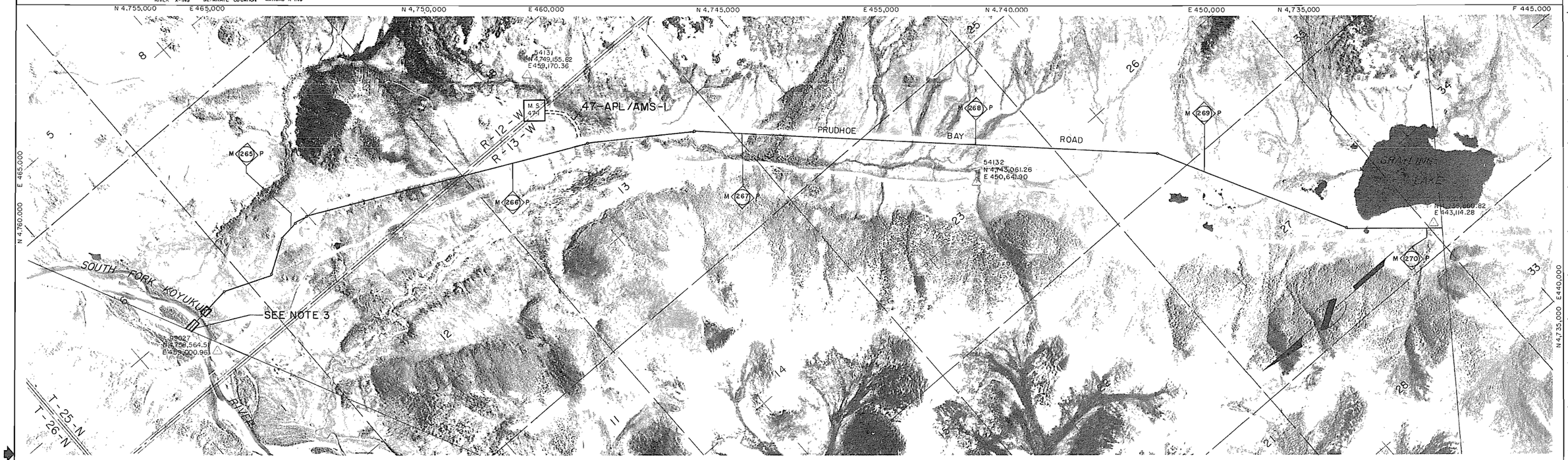
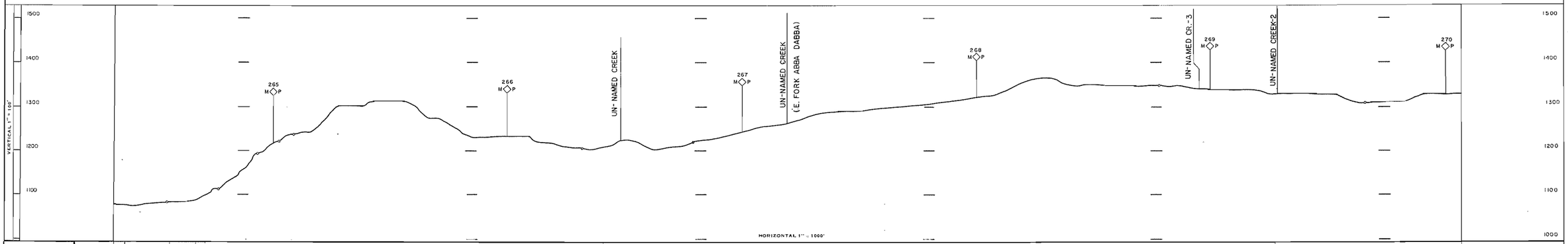
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	M L — PT
PERMAFROST	GENERALLY ABSENT — GENERALLY FROZEN — GENERALLY ABSENT — GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT OF NWA

RIVER X-ING — SEPARATE LOCATION — ROAD X-ING





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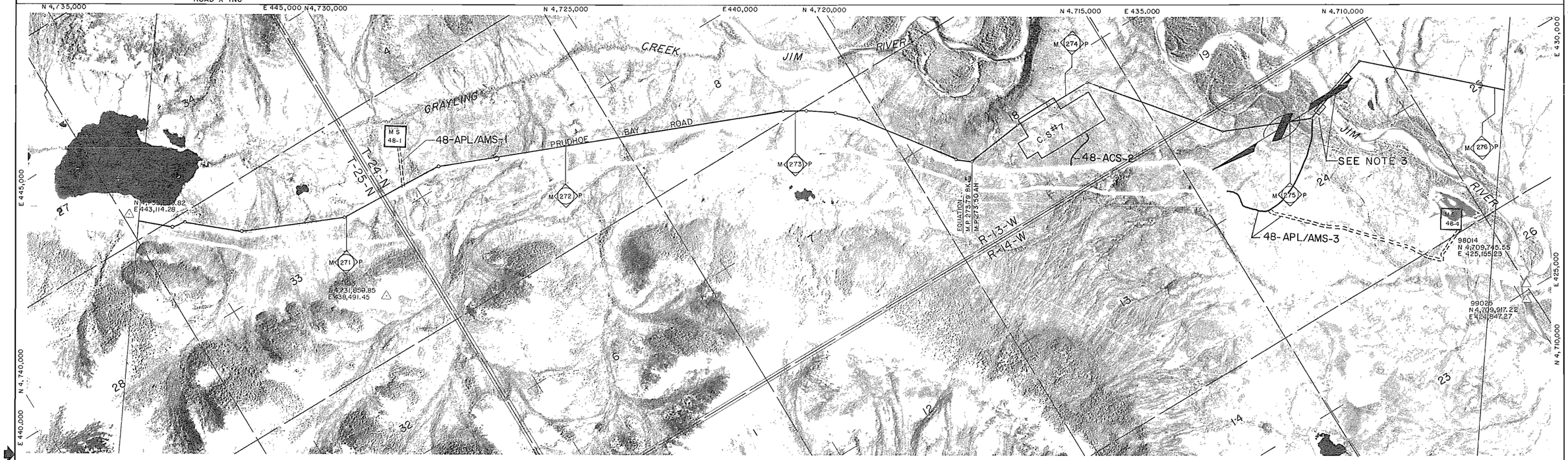
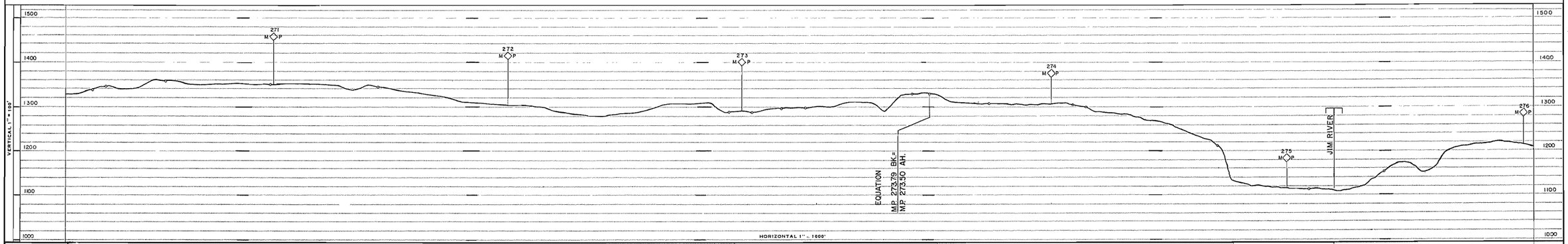
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION										
SOIL TYPE (USC CLASS)	ML			PT							ML
PERMAFROST	GENERALLY FROZEN			DISCONTINUOUS						SPORADIC	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA / HAUL ROAD RT. OF NWA / ROAD X-ING			SEPARATE LOCATION	COMPRESSOR STATION		SEPARATE LOCATION		RIVER X-ING		SEPARATE LOCATION





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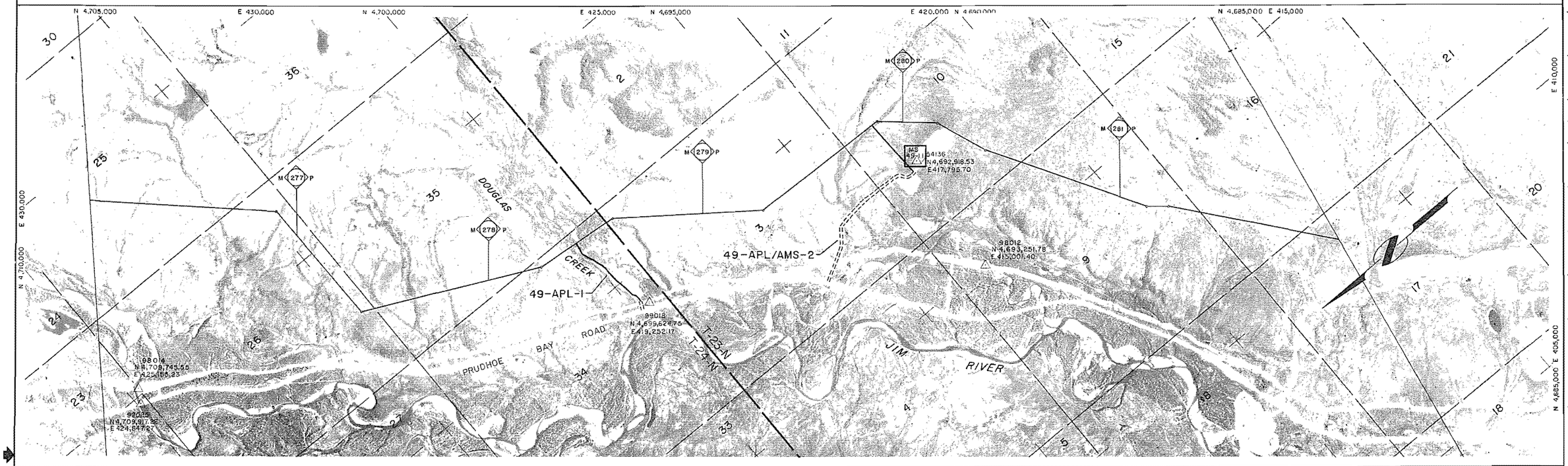
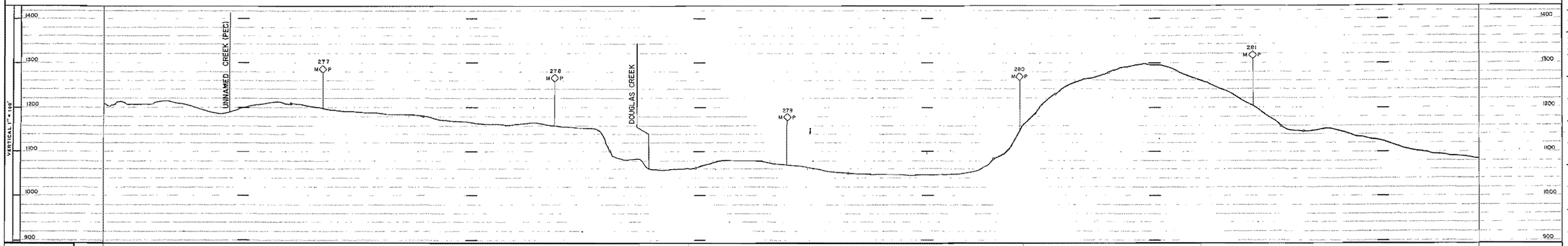
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION												
SOIL TYPE (USCE CLASS)	ML	ML/GP-GM	ML	GW	ML	ML		GM		ML			
PERMAFROST	GENERALLY FROZEN			SPORADIC	GENERALLY FROZEN								
RELATIVE FACILITY LOCATION	SEPARATE LOCATION												





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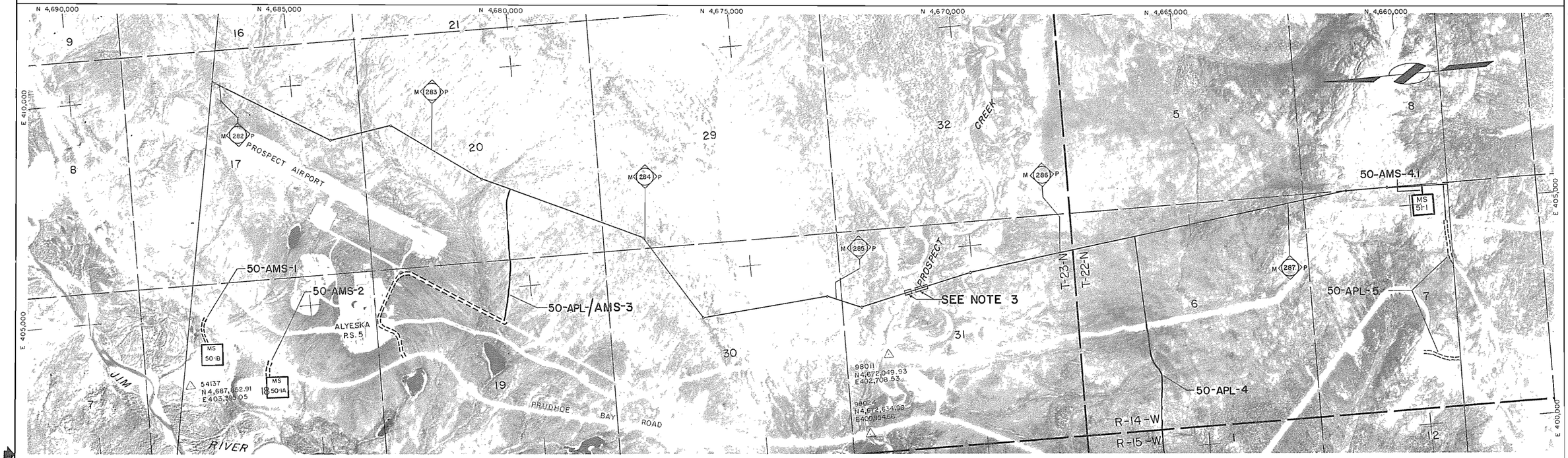
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION							
SOIL TYPE (USC CLASS)	ML		BX			ML		
PERMAFROST	GENERALLY FROZEN	GENERALLY ABSENT	GENERALLY FROZEN		GENERALLY ABSENT	GENERALLY FROZEN		
RELATIVE FACILITY LOCATION	SEPARATE LOCATION				RIVER X-ING	SEPARATE LOCATION		



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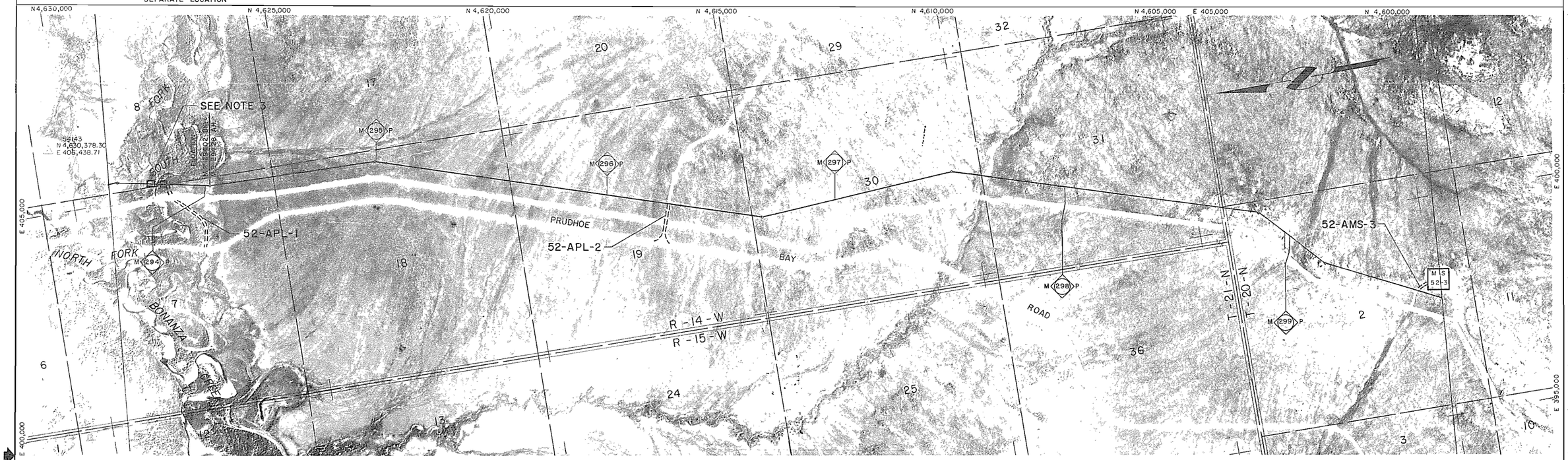
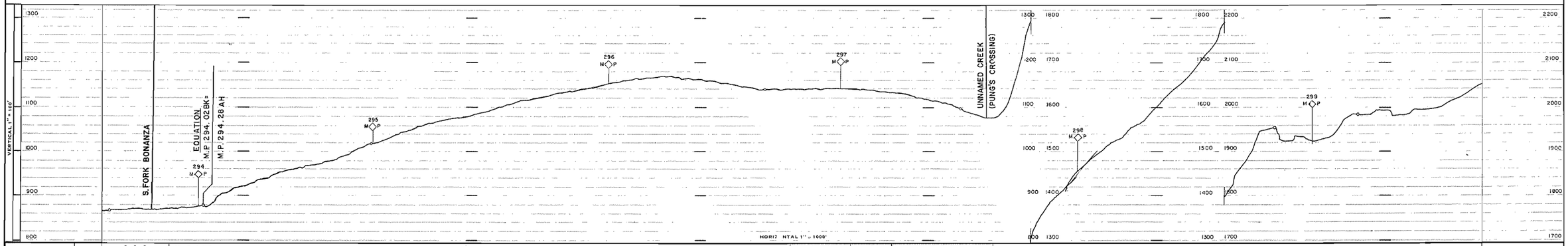
WORKPAD CONSTR SEASON		SUMMER CONSTRUCTION		
SOIL TYPE (USC CLASS)	ML SP	ML	ML/GM	
PERMAFROST	GENERALLY ABSENT	GENERALLY FROZEN	DISCONTINUOUS	SPORADIC
RELATIVE FACILITY LOCATION	RIVER CROSSING SEPARATE LOCATION	SEPARATE LOCATION		





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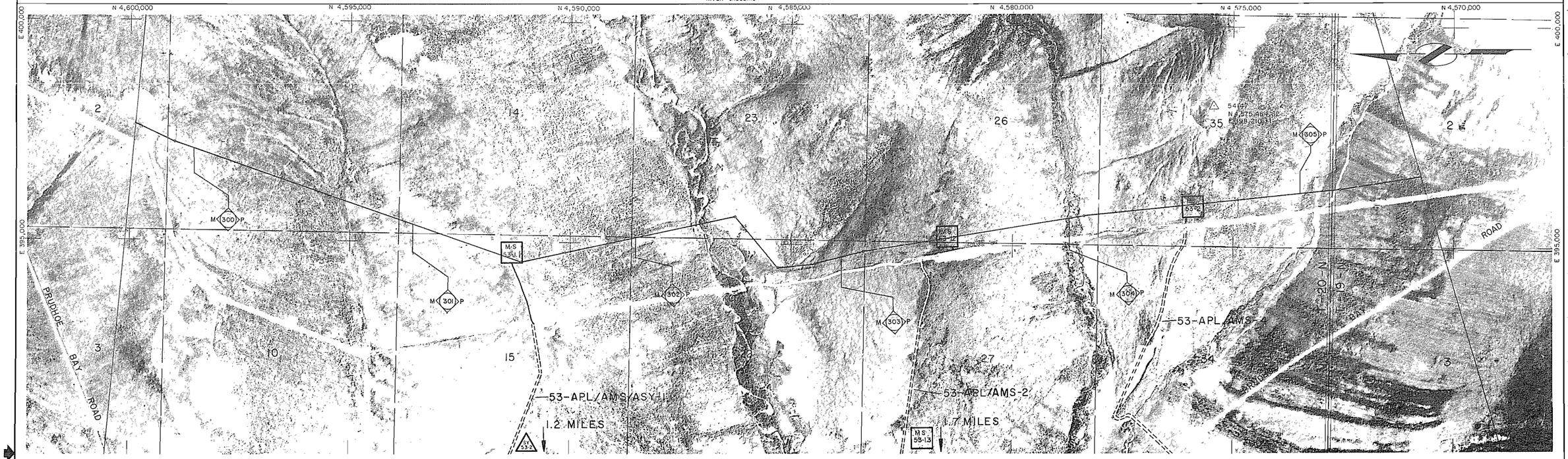
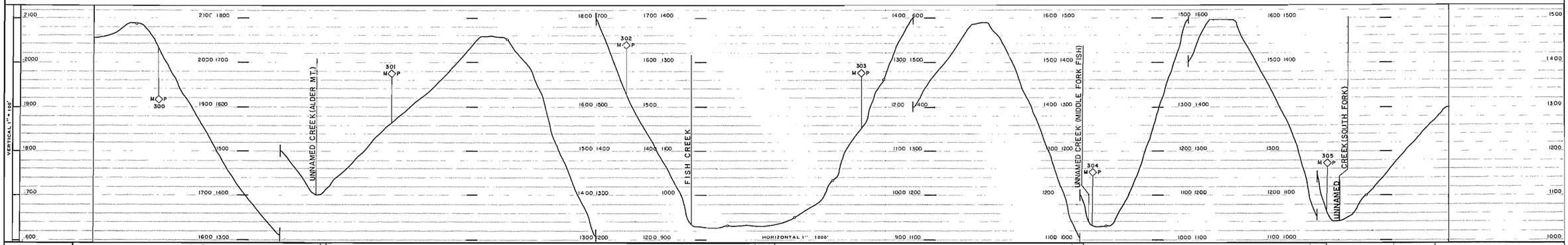
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION
SOIL TYPE (USCS) CLASS	ML | SM | ML | GM | SM | ML | GM | ML | GM | ML | GM | ML
PERMAFROST	SPORADIC | DISCONTINUOUS | GENERALLY ABSENT | GENERALLY FROZEN | GENERALLY ABSENT | GENERALLY FROZEN | GENERALLY ABSENT | GENERALLY FROZEN — DISCONTINUOUS
RELATIVE FACILITY LOCATION	SEPARATE LOCATION | RIVER CROSSING | SEPARATE LOCATION





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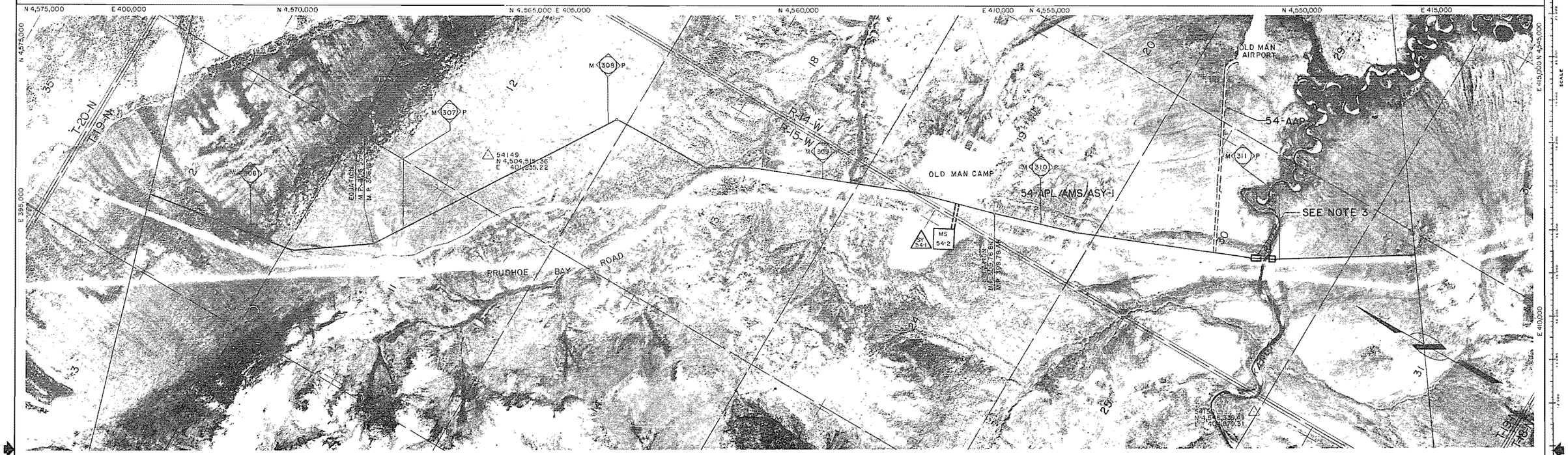
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION						
SOIL TYPE (USC CLASS)	ML	SM		ML		SM	ML
PERMAFROST	DISCONTINUOUS	GENERALLY FROZEN	DISCONTINUOUS	GENERALLY FROZEN		RIVER X-ING	DISCONTINUOUS
RELATIVE FACILITY LOCATION	SEPARATE LOCATION		HAUL ROAD RT. OF NWA			HAUL ROAD	RT. OF NWA



SOIL EROSION CODE	S,G	Q,S		20R-IGL-IR Q,G		S,Q	Q,S	S	
TYPICAL X-SECT NO	30-5L-IR	30-OLR-IR	30-5R-IR	30-OLR-IR	30-IGL-5L	20R-OLR-IR		RIVER X-ING	20R-OLR-IR
PAD MAT'L TYPE & THICKNESS	48"				48"			NO WORK PAD	48"
CONSTR. EQUIP. EXC. SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. QTYS.	Ø C.Y.								
BORROW QTY & CY-MILE	MS 54-2	281,441 C.Y. 617,470 C.Y.-MILE						MS 54-2 — MS 55-1A SEE SHEET 55	
SPOIL DISPOSAL QTY & C.Y. MILE	TOTAL 13,891 C.Y. 6,946 C.Y.-MILE FROM DITCH								
PIPE DITCH-SPECIAL BACKFILL QTY & CY-MILE	MS 53-1.3	SEE SHEET 53							MS 53-1.3
PIPE DITCH-COMMON BACKFILL QTY & CY-MILE	MS 54-2	2,322 C.Y. 1,881 C.Y.-MILE						MS 54-2 — MS 55-1A SEE SHEET 55	
DETAIL DWGS									

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	69 AC.		W.P. LOW WATER X-INGS	4 EA.
				W.P. CULVERTS	8 EA.
	ACCESS ROADS	2 EA.			
	ACCESS ROAD CULVERTS	1 EA.		W.P. ROAD X-INGS	2 EA.
	ACCESS ROAD PL. X-INGS	3 EA.		RIVER X-INGS	1 EA.
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	2 AC.			
	STORAGE YARDS	1 EA.			
	AIRFIELDS	1 EA.		RESTORATION	183,920 S.Y.
	CAMPS	1 EA.		REVEGETATION	212 A.C.

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP CONST. ZONE SECTIONS	NO.	NO.	
001	ALIGN. SHT. DESCRIPTION			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION	017	DRAINAGE STRUCTURES
		004	ON SEP. LOCATION.	019	EROSION CONTROL
021	MISC. ON-R/W CONST.			020	EROSION CONTROL
022	OFF-R/W CONST.	015	GEN. TYP. SECTION		

NOTES

1 ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE 4 (TRANSVERSE MERCATOR)

2 TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000175387

3 RIVER CROSSING STAGING AREA FOR PIPELINE CONSTRUCTION

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	5-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JBM	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 305.5 TO M.P. 311.6

TOWNSHIP T19N RANGE R14W, R15W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APEC	DATE 1978	FLUOR	J.R. Grant	DATE 6/30/80
MICHAEL BAKER, JR., INC		DATE 4-29-80	N.W.		DATE

SCALE IN FEET: 1" = 1000'

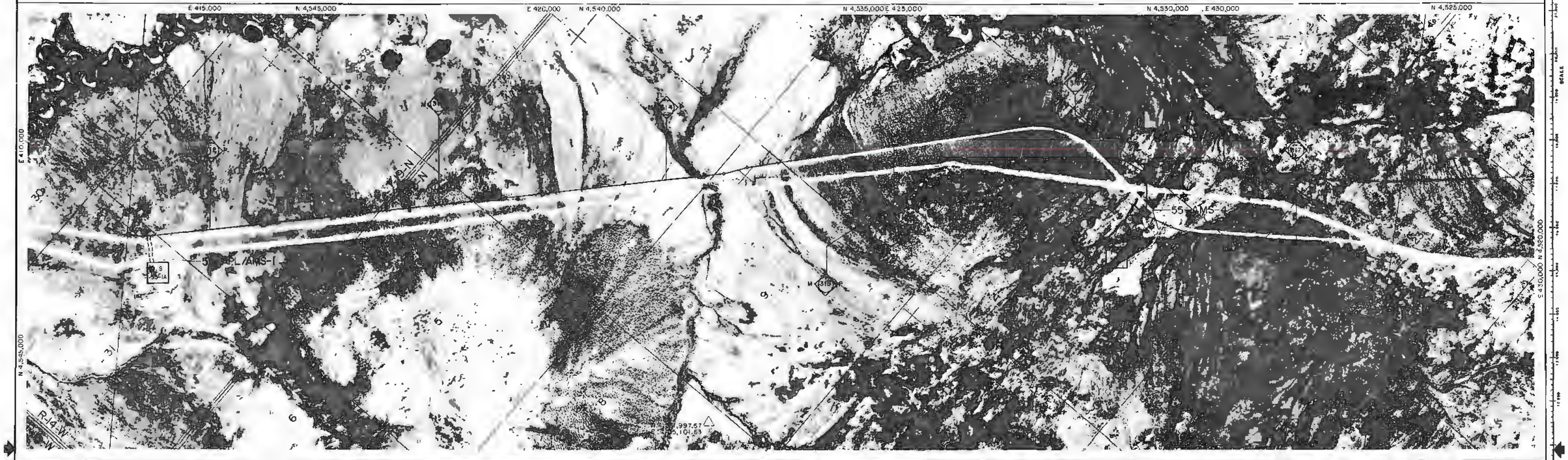
DRAWING NUMBER: 4680-13-00-B-C-054

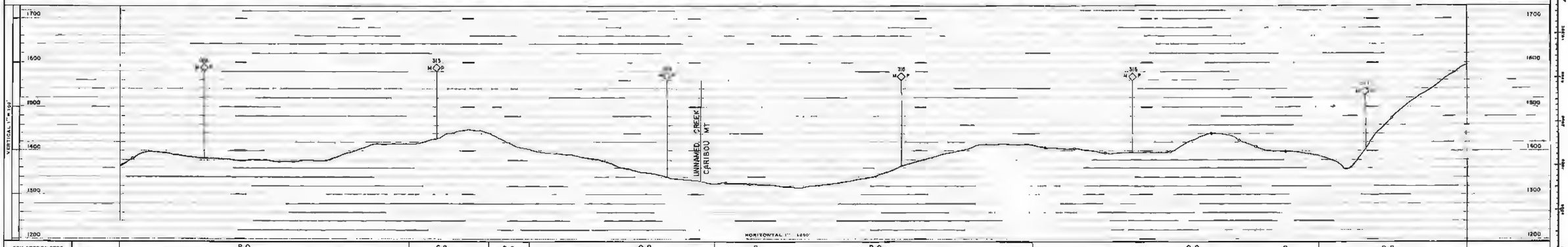
REV. 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR. SEASON	SUMMER CONSTRUCTION										
SOIL TYPE ISSUE CLASS	ML	GW-GM	ML	SP	ML	GM		SM			
PERMAFROST	DISCONTINUOUS	SPORADIC		GENERALLY FROZEN				DISCONTINUOUS		GENERALLY FROZEN	
RELATIVE ALIGNMENT LOCATION	HAUL ROAD RT OF NWA							SEPARATE LOC. ROAD X-INGS	R X-INGS	HAUL ROAD LT OF NWA	SEPARATE LOCATION





SOIL EROSION CODE	S,Q		G,S	S,Q	Q,S	S	D,Q					Q,S	S		Q,S		
TYPICAL X-SECT. NO	20R-5L-1R	20R-5L-1R	20R-10L-2R	20R-5L-2R	20R-0LR-1R		20R-5L-1R	20R-10L-1R	20R-5L-1R	30-5L-1R	30-0LR-1R	20-0LR-1R	20-5L-1R	20L-5R-1R	30-5R-1R		
PAD MAT'L TYPE & THICKNESS	48"		6"	18"	12"		54"			48"							
CONSTR. ZONE PRO-CESS STOR. SPOIL QNTY & SUIT. MAT'L QTY'S	2401 C.Y. STRIPPING TO SPOIL STORAGE																
BORROW QTY'S & CY-MILE	MS 55-1A				185,834 C.Y. 468,570 C.Y-MILE										MS 55-1A — MS 56-1 SEE SHEET 56		
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 13,471 C.Y. 6,736 C.Y.-MILE FROM DITCH																
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 53-1.3				SEE SHEET 53										MS 53-1.3		
PIPE DITCH-COMMON BFILL QTY & CY-MILE	MS 55-1A				18,639 C.Y. 34,038 C.Y.-MILE										MS 55-1A — MS 56-1 SEE SHEET 56		
DETAIL DWGS																	

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	61 AC.		W.P. PIPELINE X-INGS.	1 EA.
				W.P. ROAD X-INGS	1 EA.
	ACCESS ROADS	2 EA.			
	ACCESS ROAD PL. X-INGS	1 EA.			
				RESTORATION	257,444 SY.
	MATERIAL SITES	2 EA.		REVEGETATION	104 AC.
	DISPOSAL SITES	2 AC.			
	W.P. LOW WATER X-INGS	17 EA.			
	W.P. CULVERTS	4 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	TYP CONST ZONE SECTIONS	NO.	015	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
021	MISC. ON-R/W CONST.			019	EROSION CONTROL
		003	ON SEP. LOCATION	020	EROSION CONTROL
022	OFF-R/W CONST.	012	ADJ. TO ROAD		

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND TABULATED USING THE STATE COORDINATE VALUES - ALASKA ZONE 4 (GRID BEARINGS REFLECTED)
2. TO OBTAIN THE HIGH POINT DISTANCES AT GROUND ELEVATION, MULTIPLY BASIS SHOWN BY FACTOR 1.0027
3. PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FILING			
2	8-20-80	RELEASED FOR 90-DAY DRAFT COMPLETION	AHS	JDM	
3	11-1-80	RELEASED FOR 1980 ROUTE REFINEMENTS	AHS	JDM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 311.6 TO M.P. 317.3

TOWNSHIP T19N R18N RANGE R14W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO — MBEC	DATE 1978	FLUOR J.R. Brunell	DATE 5/20/80
MICHAEL BAKER, JR. INC.	DATE 8-29-80	ALYESKA PIPELINE SERVICE CO.	DATE 5-7-80

SCALE IN FEET: 1" = 1000'

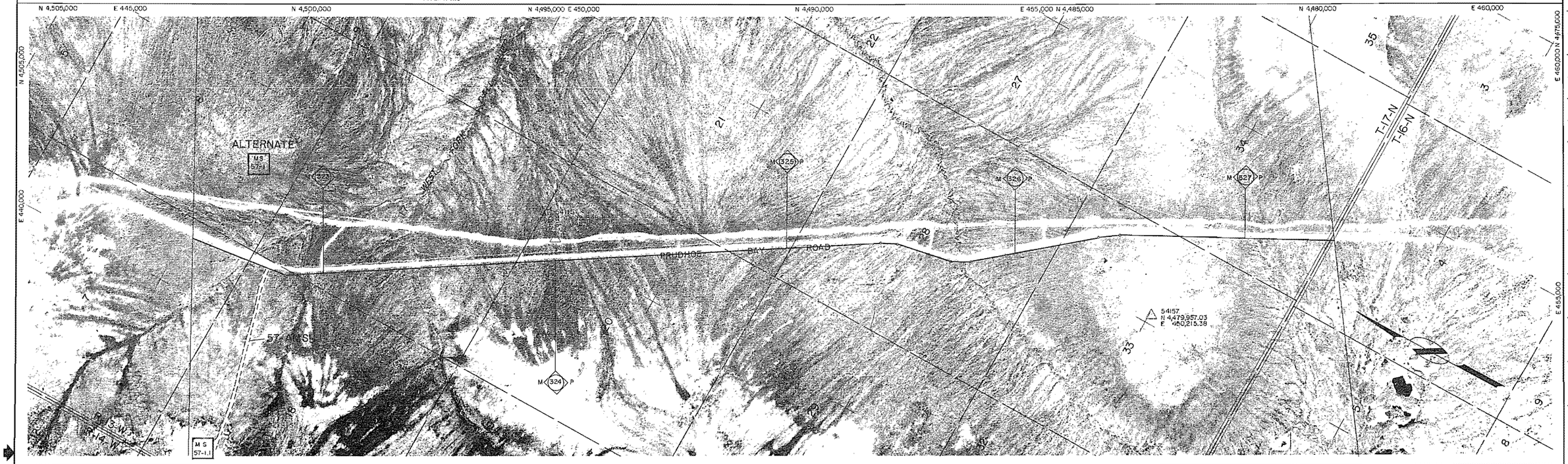
DRAWING NUMBER: 4680-13-00-B-C-055 REV. 3

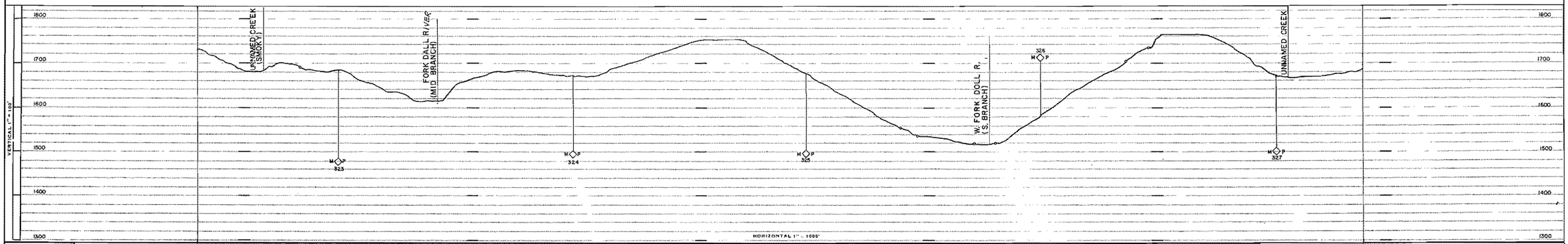
DISTRIBUTION CODE

Prepared by ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

| | | |

WORKPAD CONSTR SEASON		GM		SUMMER CONSTRUCTION									
SOIL TYPE-USC CLASS		ML	ML	SM	ML		SM	ML		SM			
PERMAFROST					GENERALLY FROZEN								
RELATIVE FACILITY LOCATION		HAUL ROAD LT. OF NWA		RIVER X-ING	HAUL ROAD LT. OF NWA								





SOIL EROSION CODE	SQ	Q,S	RIVER X-ING	S,Q	S	S,Q	S	Q	S	S,Q		Q,C	
TYPICAL X-SECT. NO.	20L-5L-IL			20L-5-IL						20L-0LR-IL			
PAD MAT'L TYPE & THICKNESS	48"		NO PAD	GRANULAR MATERIAL - 48" THICK									
CONSTR. ZONE EXC., SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. QTY'S	Ø C.Y.												
BORROW QTY & CY-MILE	MS 57-1.1	SEE SHEET 56						MS 57-1.1 → MS 58-1	133,240 C.Y.	187,046 C.Y.-MILE	MS 58-1		
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 26,693 C.Y. 13,347 C.Y.-MILE FROM DITCH												
PIPE DITCH-SPECIAL B'FILL, QTY & CY-MILE	SEE SHE 53 MS 53.13 → MS 60-2			SEE SHEET 60							MS 60-2		
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS 57-1.1	SEE SHEET 56						MS 57-1.1 → MS 58-1	1,156 C.Y.	3,355 C.Y.-MILE	MS 58-1		
DETAIL DWGS													

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY
	CLEARING	47 AC.
	ACCESS ROADS	1 EA.
	ACCESS ROAD P.L. X-INGS	1 EA.
	MATERIAL SITES	1 EA.
	DISPOSAL SITES	4 AC.
	W.P. LOW WATER X-INGS	27 EA.

ITEM	DESCRIPTION	QUANTITY
	RESTORATION	179,564 S.Y.
	REVEGETATION	84 AC.

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION		TYP. CONST. ZONE SECTIONS	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP LOCATION	017	DRAINAGE STRUCTURES
		012	ADJ. TO ROAD	019	EROSION CONTROL
022	OFF-R/W CONST.			020	EROSION CONTROL
		015	GEN. TYP. SECTIONS		

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TAUE STATE COORDINATE VALUES – ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000180442

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	9-25-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JDM	
3	11-13-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JDM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 322.4 TO M.P. 327.4

TOWNSHIP T17N RANGE R13W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APES	DATE 1978	FLUOR	J.R. Brandt	DATE 9/30/80
MICHAEL BAKER, JR., INC		DATE 4-22-80	N.W. ALASKAN	W.P. Wexler	DATE 5/12/80
J.A. Burkett					

SCALE IN FEET: 1" = 1000'

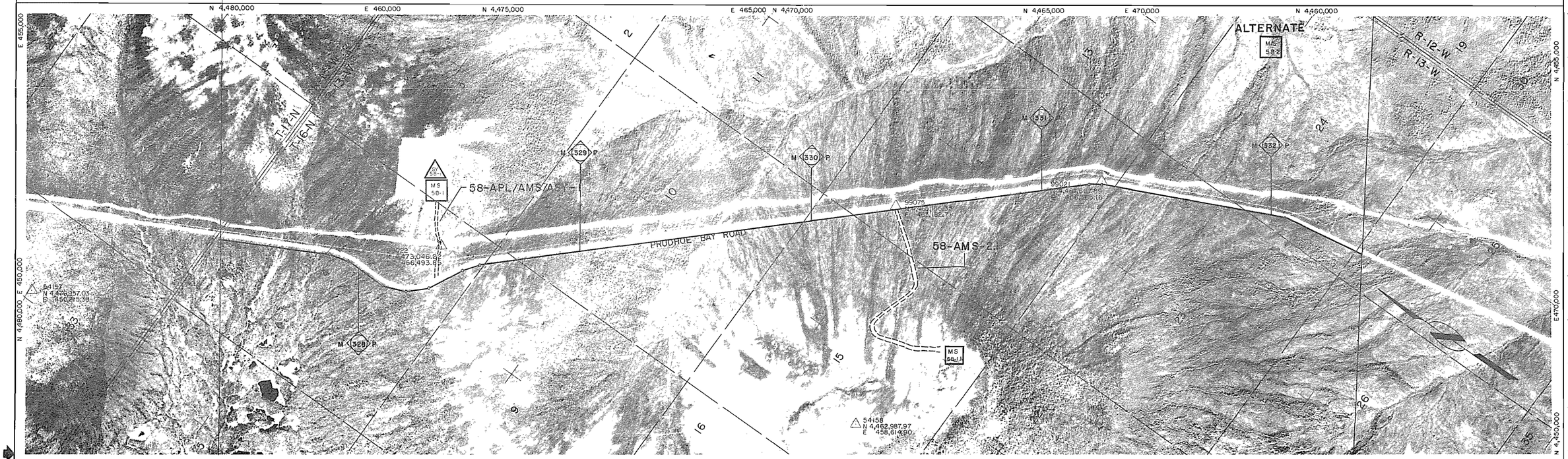
DRAWING NUMBER: 4680-13-00-P-C 057

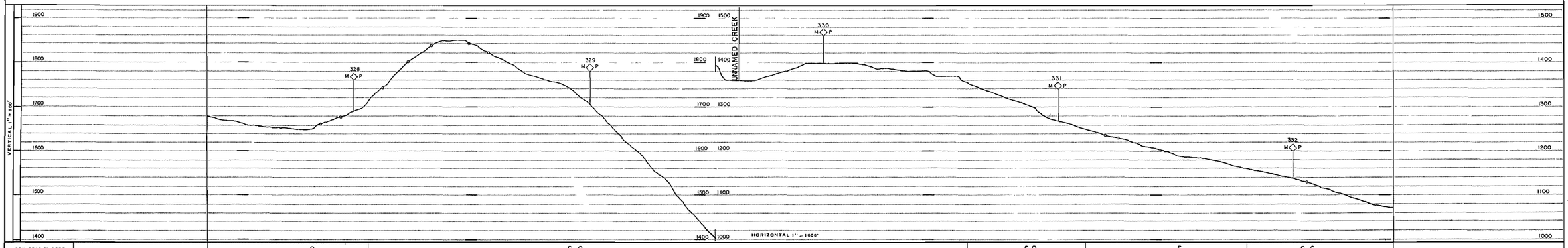
REV.: 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION			
SOIL TYPE (USC CLASS)	SM		ML	
PERMAFROST	DISCONTINUOUS	GENERALLY FROZEN	DISCONTINUOUS	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA			





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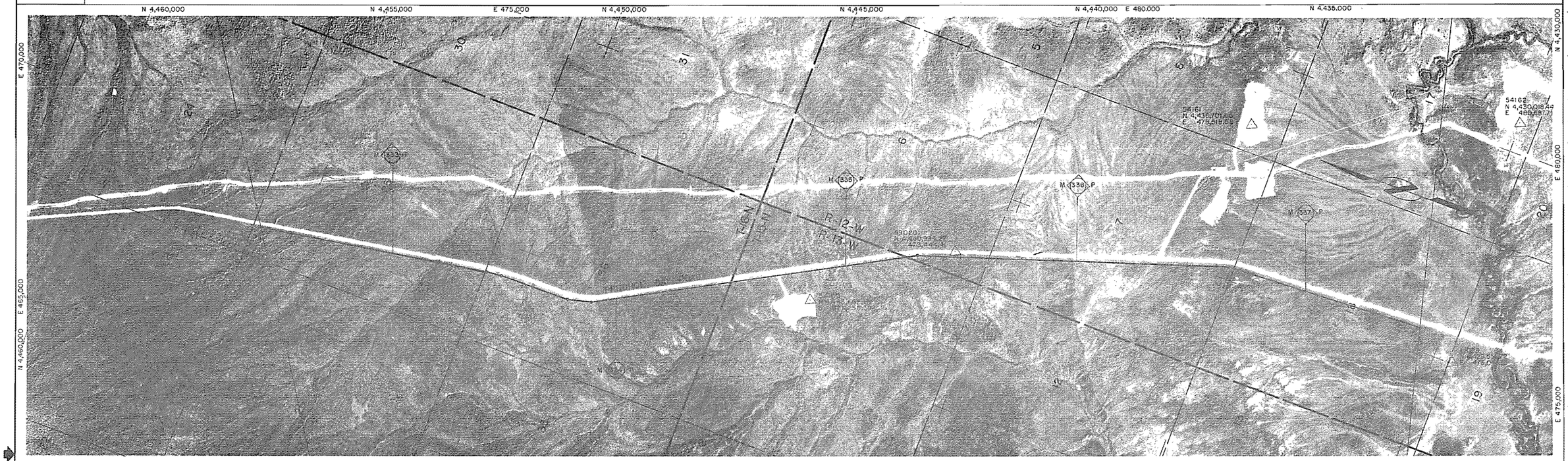
WORKPAD CONSTR SEASON		SUMMER CONSTRUCTION	
SOIL TYPE (USC CLASS)		ML SM ML	
PERMAFROST		GENERALLY FROZEN	
RELATIVE FACILITY LOCATION		HAUL ROAD LT. OF N.W.A.	



SOIL EROSION CODE		S,C		Q	S	
TYPICAL X-SECT NO		20L-0LR-1L		20L-5L-1L	20-0LR-1L	
PAD MAT'L TYPE & THICKNESS		GRANULAR MATERIAL - 48" THICK				
CONSTR ZONE EXC - SPOIL STOR SPOIL DISP & SUIT MAT'L QTYS		Ø C. Y.				
BORROW QTY & CY-MILE	MS 58-1.1	SEE SHEET 58	MS 58-1.1 →	← MS 60-2	SEE SHEET 60	MS 60-2
SPOIL DISPOSAL QTY & CY-MILE		TOTAL 41,759 C.Y. 20,880 C.Y. - MILE FROM DITCH				
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE		SEE SHEET 60				
PIPE DITCH-COMMON BFILL QTY & CY-MILE	MS 58-1.1	SEE SHEET 58	MS 58-1.1 →	← MS 60-2	SEE SHEET 60	MS 60-2
DETAIL DWGS						

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	47 AC.			
	DISPOSAL SITES	7 AC.			
	W.P. LOW WATER X-INGS	10 EA.			
	RESTORATION	121,220 S.Y.			
	REVEGETATION	68 AC.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	012	ADJ. TO ROAD	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
				019	EROSION CONTROL
				020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR

NO	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	6-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	AWB	JBM	CSW
3	11-1-80	NO CHANGE ISSUED FOR RECORD	DWS	JBM	CSW

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 332.4 TO M.P. 337.5

TOWNSHIP T16N, T15N RANGE R13W, R12W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1978	T. Abraham	DATE 10/3/80
MICHAEL BAKER, JR., INC.	DATE	R. W. Sloan	DATE 10/6/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-13-00-B-C-059	3

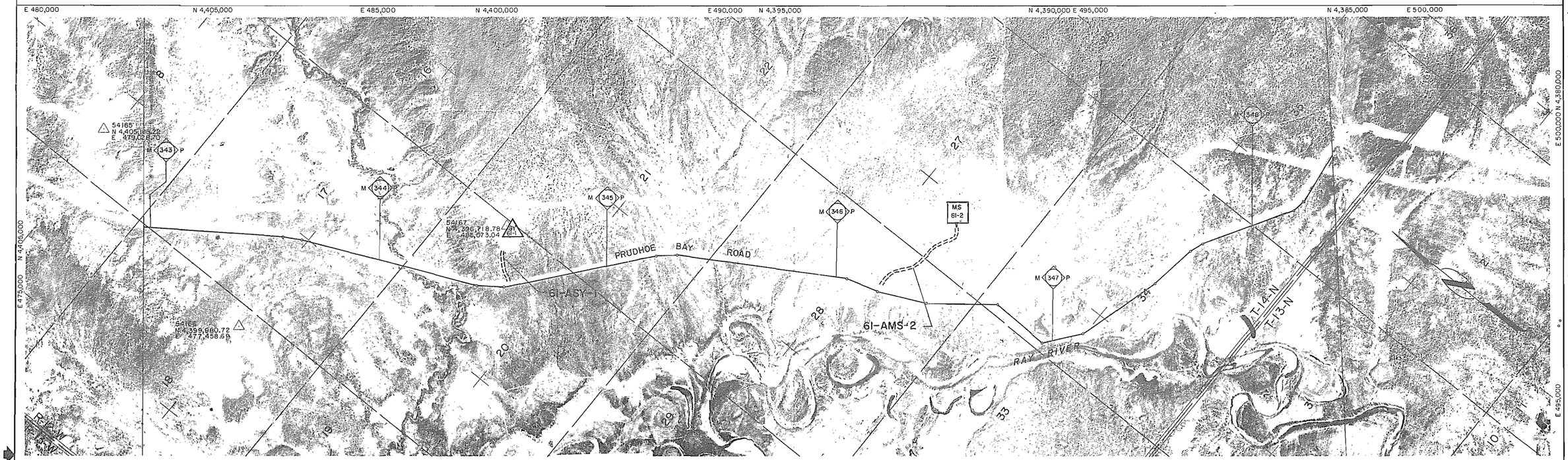
DISTRIBUTION CODE

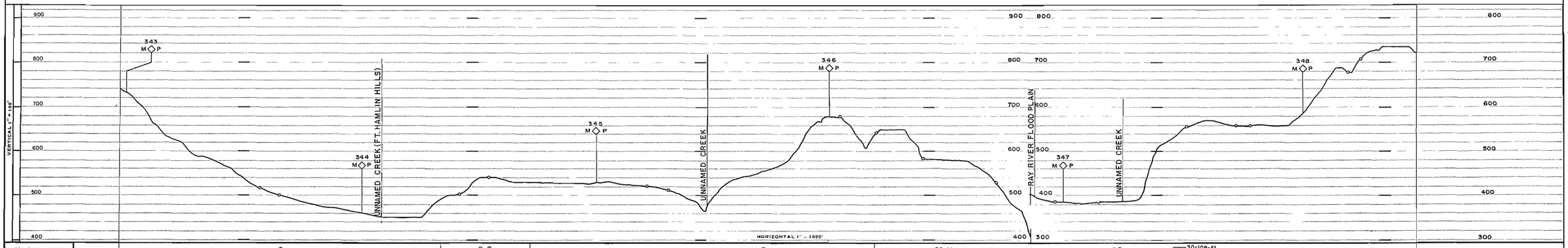
4 6 8 0
77 78 7980

13004 | 6059 | 1 2 3 3 4 4 | 1 1 1 1 | CSW STAMP VIEW
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

| | | |

WORKPAD CONSTR SEASON	SOMMER CONSTRUCTION			
SOIL TYPE (USC CLASS)	ML	SM	ML	
PERMAFROST	GENERALLY FROZEN			
RELATIVE FACILITY LOCATION	HAUL ROAD LT OF NWA		SEPARATE LOCATION	





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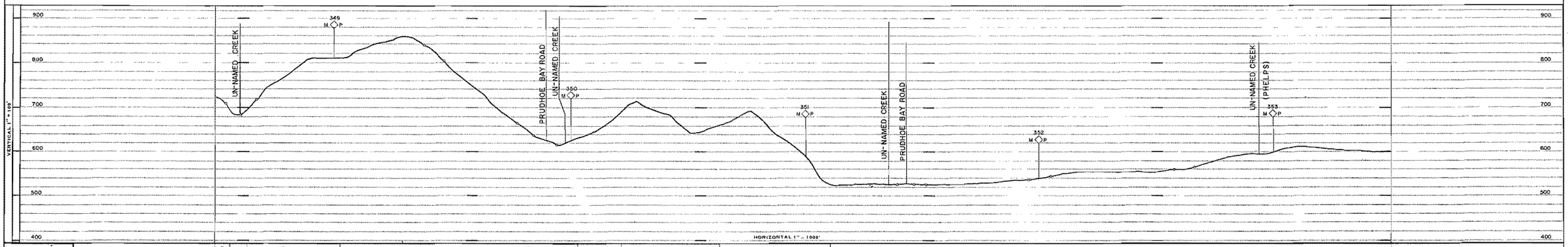
WORK PAD CONSTR SEASON	SUMMER CONSTRUCTION			
SOIL TYPE (USC CLASS)	ML SM	ML		
PERMAFROST	GENERALLY FROZEN / GENERALLY ABSENT	DISCONTINUOUS	GENERALLY FROZEN	
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA	SEPARATE LOCATION	HAUL ROAD LT. OF NWA	

ROAD X-ING — ROAD X-ING



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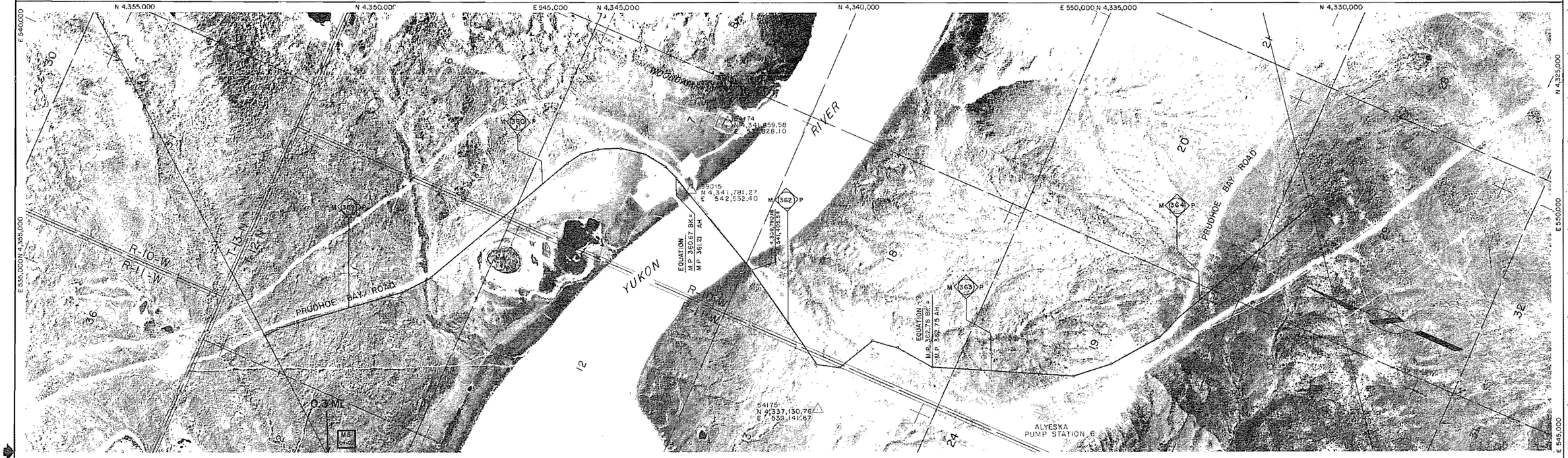
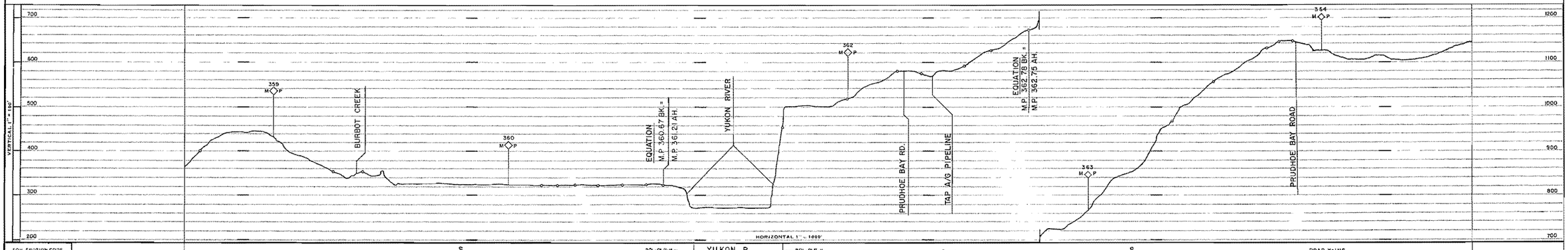
WORK PAD CONSTR SEASON		SUMMER CONSTRUCTION	
SOIL TYPE (USC CLASS)		ML	
PERMAFROST		GENERALLY FROZEN	
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA	SEPARATE LOCATION ℄ X-ING SEPARATE LOCATION	HAUL ROAD LT. OF NWA

| | | |

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION		SHOULDER MONTH CONSTRUCTION	SUMMER CONSTRUCTION	
SOIL TYPE (USC CLASS)	ML		GW ○— BX	ML	
PERMAFROST	GENERALLY FROZEN		GENERALLY ABSENT	GENERALLY FROZEN	
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA		YUKON RIVER BRIDGE — HAUL ROAD LT. OF NWA — ROAD X-ING.	SEPAPATE LOCATION — HAUL ROAD RT OF NWA — ROAD X-ING.	SEPARATE LOCATION





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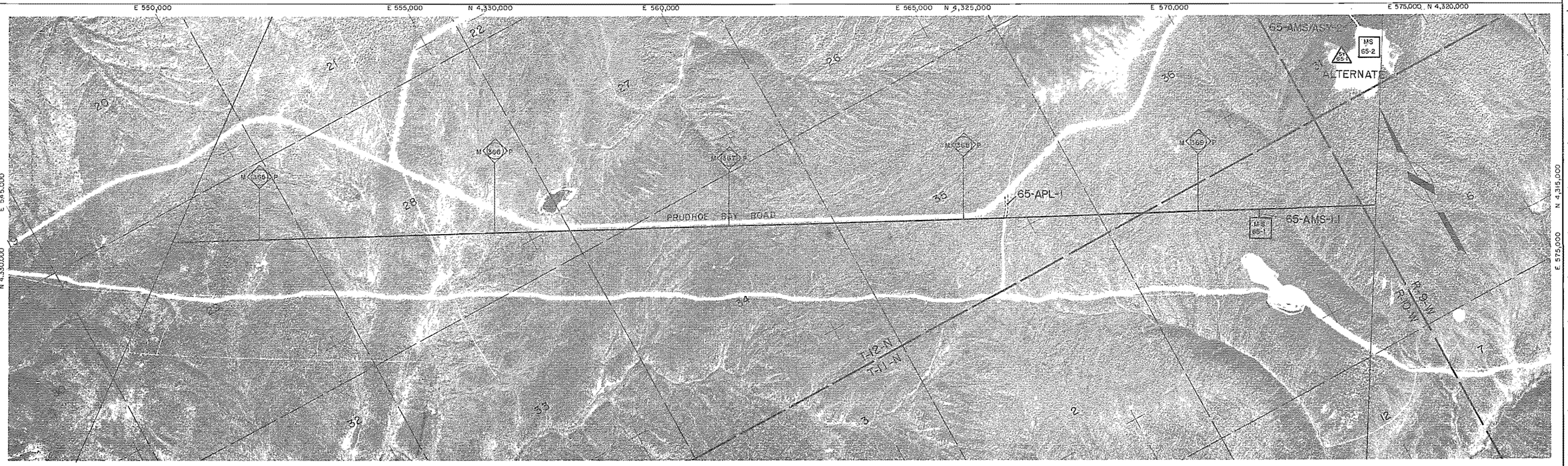
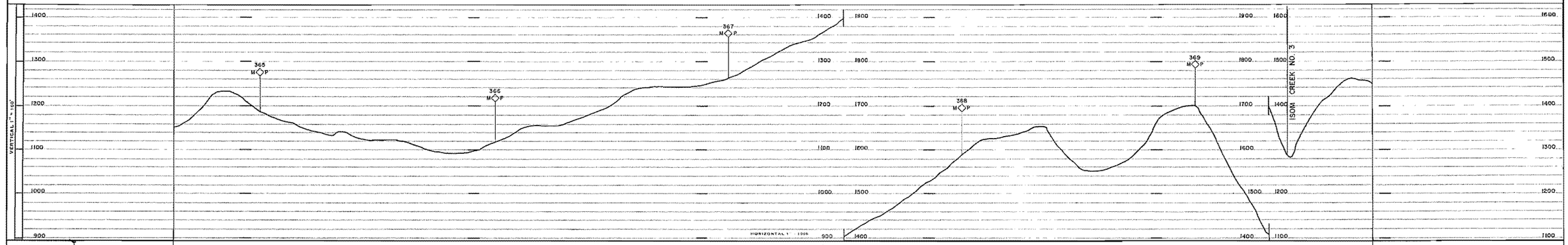
WORK PAD CONSTR SEASON	SUMMER CONSTRUCTION			
SOIL TYPE USC CLASS	ML			
PERMAFROST	GENERALLY FROZEN		GENERALLY ABSENT	
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	HAUL ROAD LT. OF N.W.A.	SEPARATE LOCATION	





SOIL EROSION CODE	S											
TYPICAL X-SECT. NO	30-0LR-1L	20L-0LR-1L			30-5R-1L	30-10R-1L	30-5R-1L	30-10R-1L	30-0LR-1L	30-10R-1L	30-0LR-1L	
PAD MAT'L TYPE & THICKNESS	GANULAR MATERIAL 48" THICK											
CONST. ZONE TYP. - SPOIL STOR. SPOIL DISP & SUIT. MAT'L. QTYS	0 C.Y.											
BORROW QTY & CY-MILE	MS 65-2	SEE SHEET 64									MS 65-2	
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 13,603 C.Y. 6,802 C.Y.-MILE FROM DITCH											
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 64-0	SEE SHEET 64									MS 64-0	
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS 65-2	SEE SHEET 64									MS 65-2	
DETAIL DWGS												

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	77 AC.		RESTORATION	172,524 S.F.
				REVEGETATION	94 AC.
	ACCESS ROADS	3 EA.			
	ACCESS ROAD P/L X-INGS	2 EA.			
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	2 AC.			
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	3 EA.			
	W.P. CULVERTS	13 EA.			

REFERENCE DRAWINGS 460-10-00-0-C-NO.

NO.		NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	003	ON SEPARATE LOCATION			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION					017	DRAINAGE STRUCTURES
		012	ADJ. TO ROAD				
022	OFF R/W CONSTRUCTION					019	EROSION CONTROL
		015	GEN. TYP. SECTIONS			020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION, MULTIPLY DATA SHOWN BY FACTOR

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	8-28-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JSM	
3	11-11-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JSM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P.364.6 TO M.P. 367.8

TOWNSHIP T12N, T11N RANGE R10W, R9W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1979	APCG	DATE 10/3/80
MICHAEL BAKER JR., INC.	DATE 11/6/80	N.W.A.G.T.S.	DATE 10/80

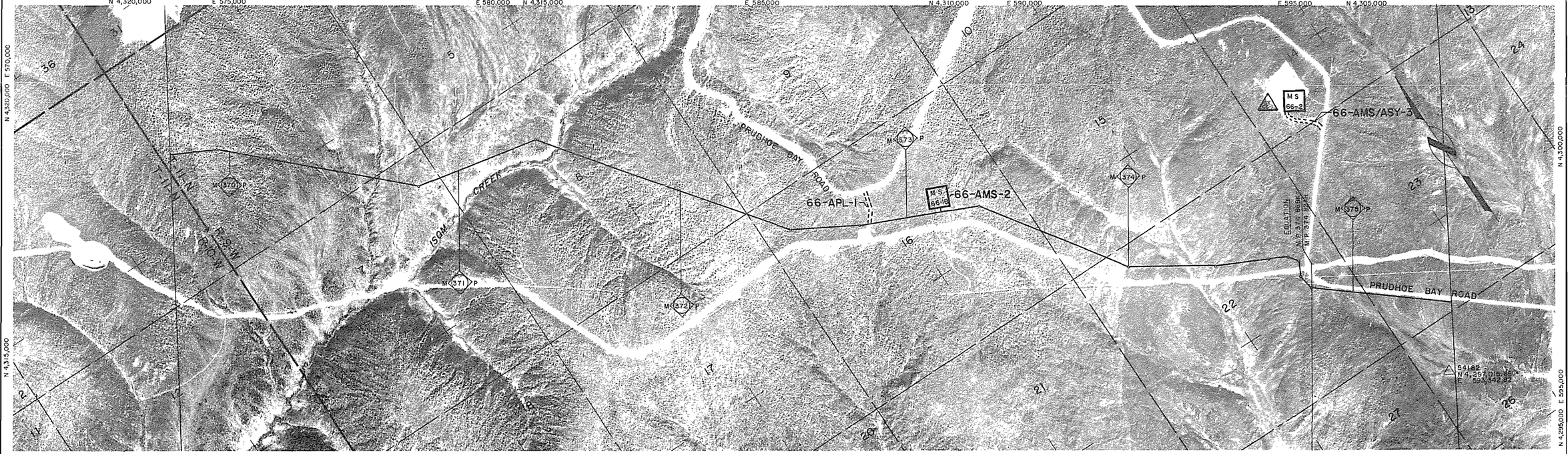
SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-13-00-8-C-065	3

4680
M 78 7598

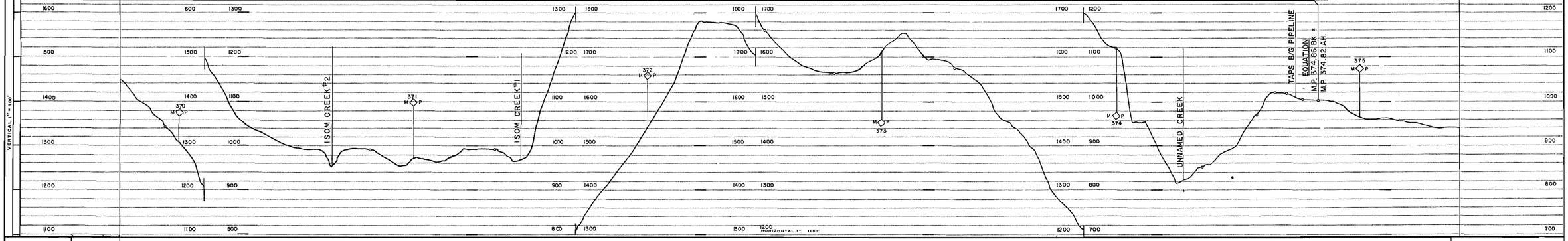
DISTRIBUTION CODE

WORKPAD CONSTR. SEASON		SUMMER CONSTRUCTION	
SOIL TYPE USCS		ML	
PERMAFROST	DISCONTINUOUS	GENERALLY FROZEN	
RELATIVE FAA LOCATION		SEPARATE LOCATION	HAUL ROAD LT. OF N.W.A.

P/L X-ING — SEPARATE LOCATION



SPREAD #3 — SPREAD #4



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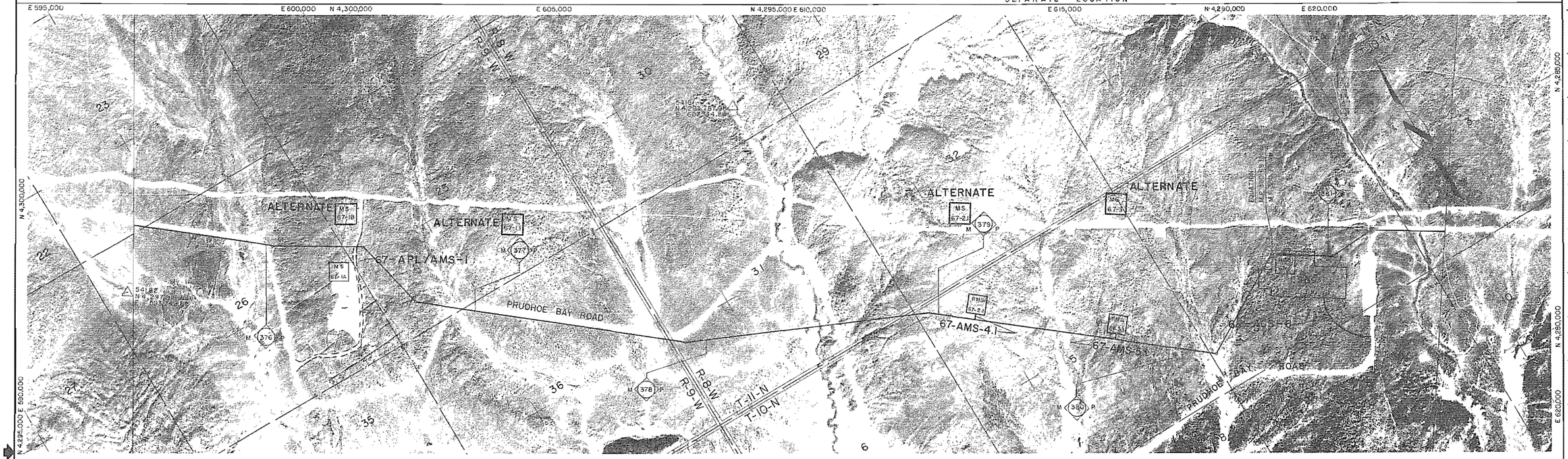
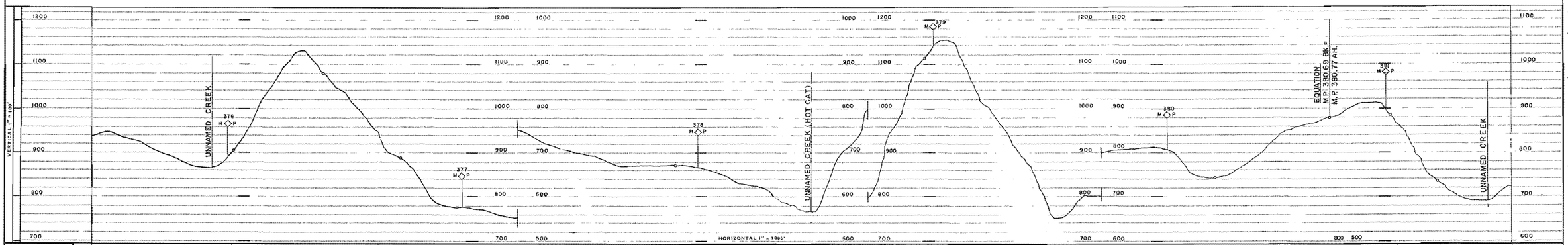
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION						
SOIL TYPE (USC CLASS)	ML						
PERMAFROST	GENERALLY FROZEN	GENERALLY ABSENT	GENERALLY FROZEN	DISCONTINUOUS	GENERALLY FROZEN	DISCONTINUOUS	GEN. FROZEN
RELATIVE FACILITY LOCATION	HAUL RD LT. OF NWA — ROAD X-ING — SEPARATE LOCATION	— ROAD X-ING — HAUL RD. LT. OF NWA			SEPARATE LOCATION		





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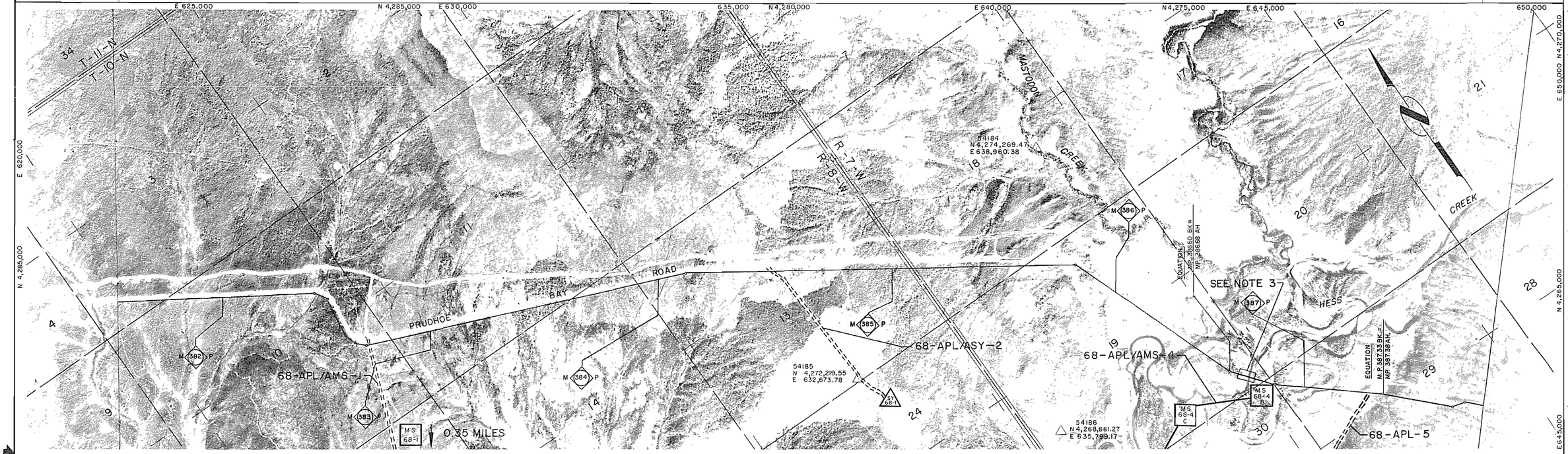
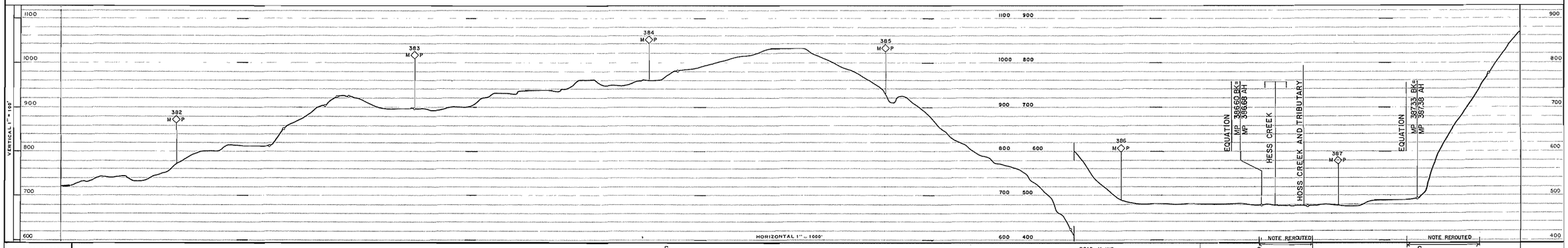
WORK PAD CONSTR SEASON	SUMMER CONSTRUCTION				
SOIL TYPE (USC CLASS)	ML		SM	ML	
PERMAFROST	GENERALLY FROZEN		GENERALLY ABSENT	GENERALLY FROZEN	
RELATIVE FACILITY LOCATION	HAUL ROAD LT. OF NWA	SEPARATE LOCATION (ROAD X-ING)		SEPARATE LOCATION (RIVER X-ING)	





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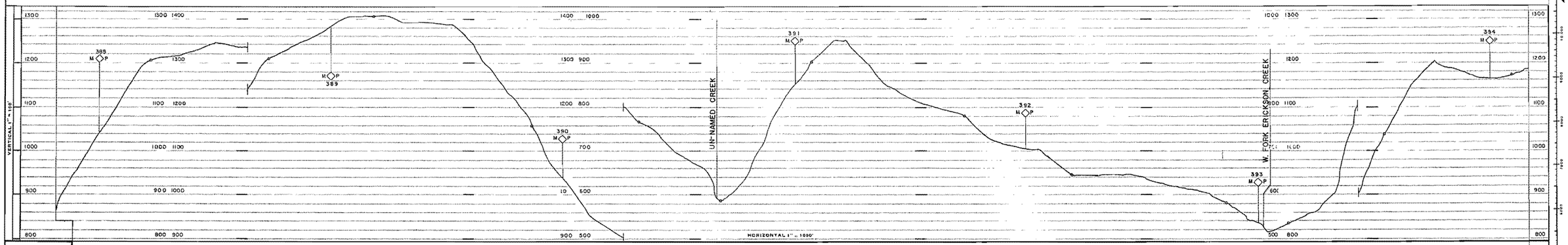
WORK PAD CONSTR SEASON	SUMMER CONSTRUCTION		SHOULDER WIDTH CONSTRUCTION	
SOIL TYPE (USC CLASS)	ML			
PERMAFROST	GENERALLY FROZEN: DISCONTINUOUS		GENERALLY FROZEN	SPORADIC
RELATIVE FACILITY LOCATION	SEPARATE LOCATION			



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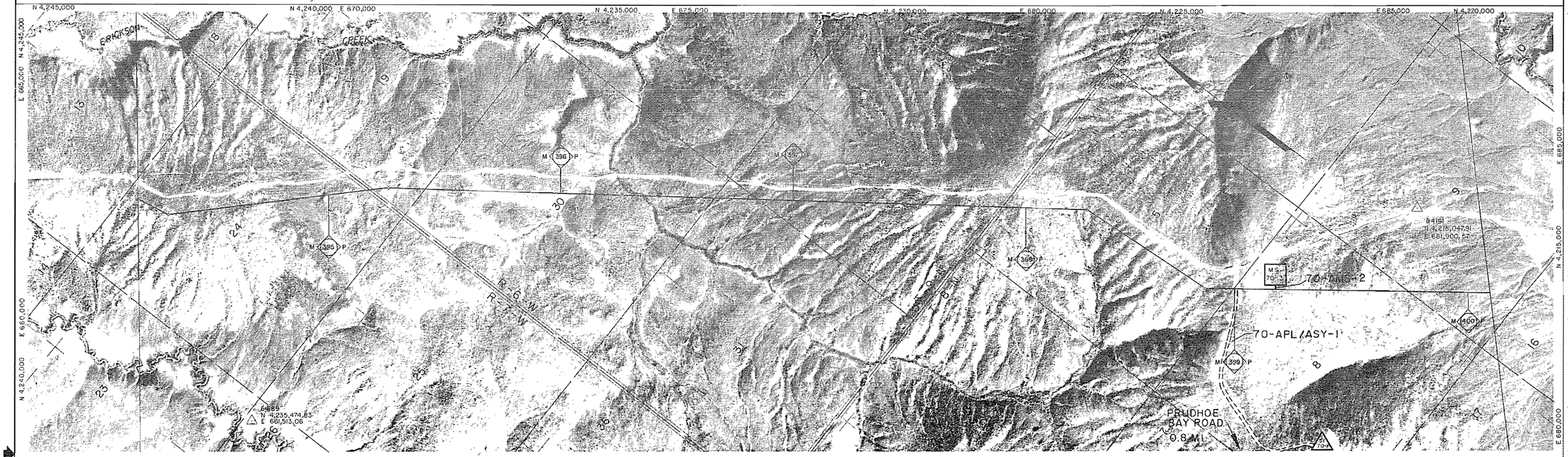
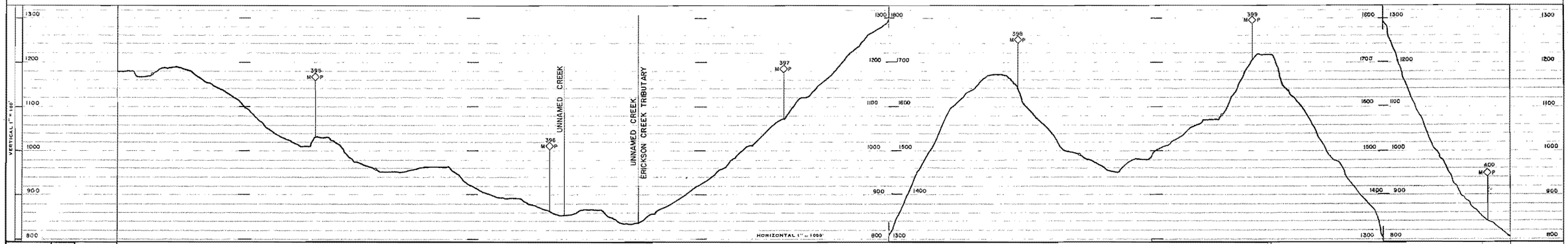
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION	SUMMER CONSTRUCTION	
SOIL TYPE (USC CLASS)		ML	
PERMAFROST		GENERALLY FROZEN	DISCONTINUOUS — GENERALLY FROZEN
RELATIVE FACILITY LOCATION		SEPARATE LOCATION	





SOIL EROSION CODE								S					S,G		S
TYPICAL X-SECT NO.	30-15R-6L	30-0LR-1L	30-5L-1L	30-0LR-1L	30-5R-1L	30-10L-1L	30-0LR-1L	30-5R-1L	30-10R-1L		30-5R-1L	30-0LR-1L	30-5L-1L		30-0LR-1L
PAD MAT'L TYPE & THICKNESS	36"	GRANULAR MATERIAL – 48" THICK													
CONSTR. ZONE EXC-SPOIL STOR.-SPOIL DISP & SUIT. MAT'L. QTYS	8,513 C.Y. STRIPPING TO SPOIL DISPOSAL														
BORROW QTY & C.Y.-MILE	MS 69-3A	SEE SHEET 69		MS 69-3A ⟵ MS 70-3			275,519 C.Y. 310,181 C.Y.-MILE								MS 70-3
SPOIL DISPOSAL QTY & C.Y.-MILE	TOTAL 76,209 C.Y.			38,105 C.Y.-MILE			FROM DITCH 67,696 C.Y.		33,848 C.Y. MILE		FROM WORK PAD 8,513		4257 C.Y. MILE		
PIPE DITCH-SPECIAL BF'ILL QTY & C.Y.-MILE	MS 68-4			SEE SHEET 68							MS 68-4 ⟵ MS 71-4			SEE SHEET 71	MS 71-4
PIPE DITCH-COMMON BF'ILL QTY & C.Y.-MILE	MS 69-3	SEE SHEET 69		MS 69-3A ⟵ MS 70-3			31,600 C.Y. 45,832 C.Y.-MILE								MS 70-3
DETAIL DWGS															

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	101 AC.			
	ACCESS ROAD	2 EA.			
	ACCESS ROAD P.L. X-INGS	1 EA.			
				RESTORATION	233,552 S.Y.
	MATERIAL SITES	1 EA.		REVEGETATION	120 AC.
	DISPOSAL SITES	12 AC.			
	STORAGE YARDS	1 EA.			
	W.P. CULVERTS	30 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.	TYP. CONST. ZONE SECTIONS	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION	017	DRAINAGE STRUCTURES
022	OFF-R/W CONST.			019	EROSION CONTROL
				020	EROSION CONTROL
		015	GEN. TYP. SECTIONS		

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING THE STATE COORDINATE VALUES – ALASKA ZONE 4 (TRANSVERSE MERCATOR).
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00011960.

PHOTO DATE AUGUST 1979

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	9-30-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	JWS	JGM	
3	11-11-80	NO CHANGE ISSUED FOR RECORD ONLY	JWS	JGM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 394.2 TO M.P. 400.1
TOWNSHIP T9N, T8N RANGE R7W, R6W
MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

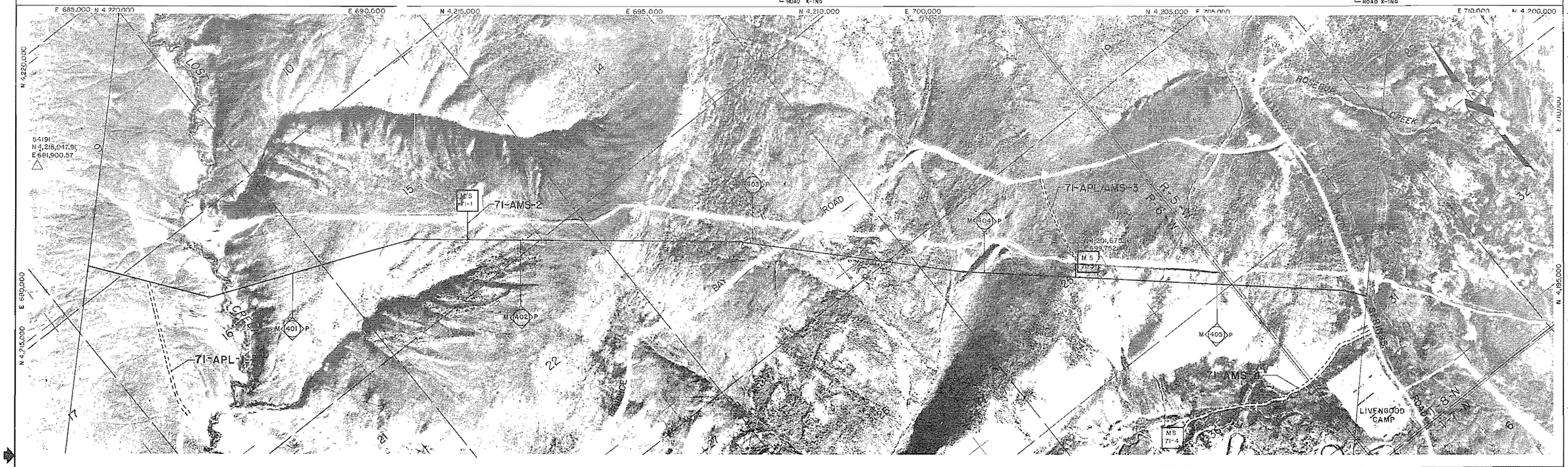
PHOTO ARCS	DATE 1978	FLUOR J.R. Brandt	DATE 9/30/80
MICHAEL BAKER, JR., INC.	DATE 4-29-80	N.W. [illegible]	DATE 9/26/80

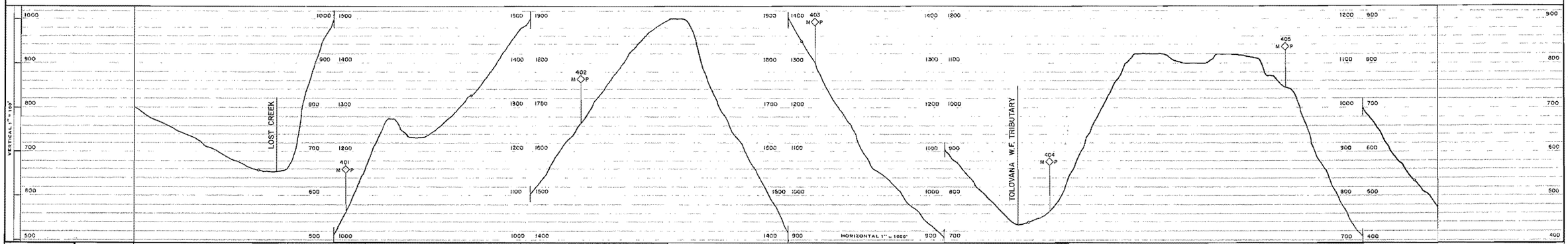
SCALE IN FEET: 1" = 1000'
DRAWING NUMBER: 4680-14-00-B-C-070
REV: 3

DISTRIBUTION CODE

Prepared - By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	M L
PERMAFROST	GENERALLY FROZEN — DISCONTINUOUS
RELATIVE FACILITY LOCATION	SEPARATE LOCATION — ROAD X-ING — SEPARATE LOCATION — ROAD X-ING





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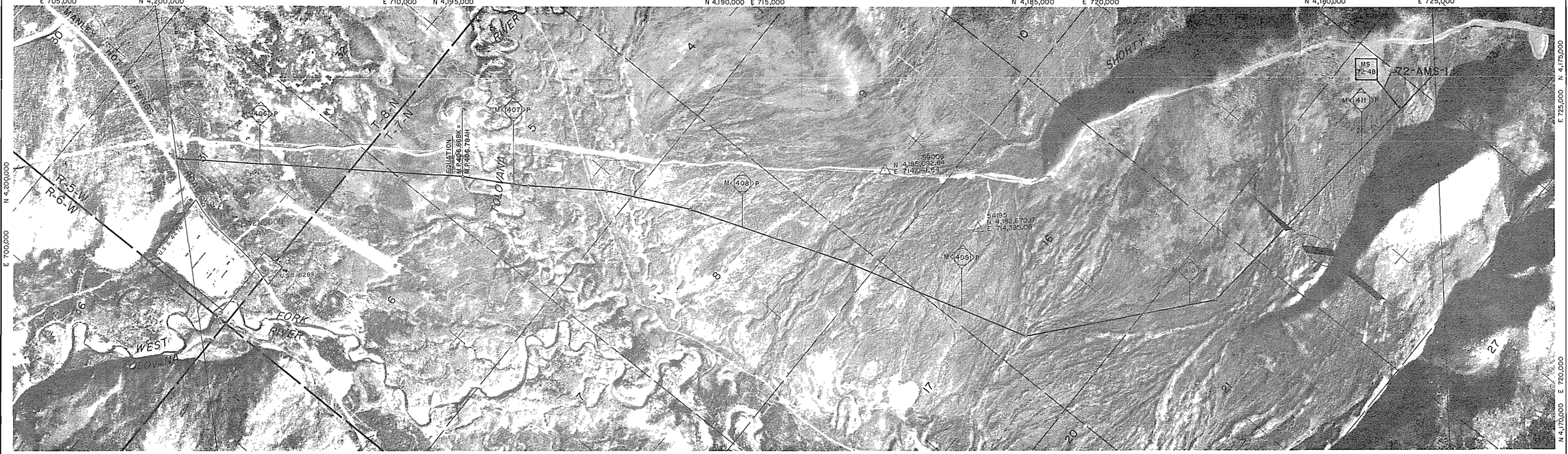
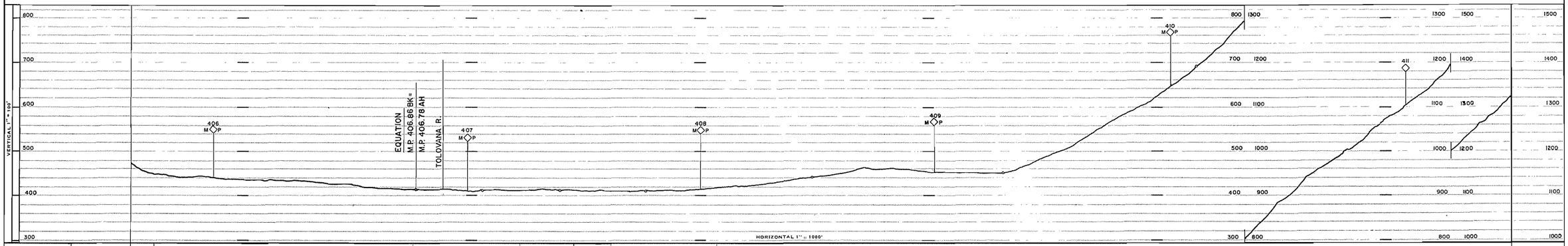
WORKPAD CONSTR. SEASON		SUMMER CONSTRUCTION			
SOIL TYPE (USC CLASS)	ML	SM	ML		
PERMAFROST	DISCONTINUOUS		GENERALLY FROZEN		
RELATIVE FACILITY LOCATION	SEPARATE LOCATION				





SOIL EROSION CODE	S	S,G	Q,S	Q	Q,S	S,Q	S				
TYPICAL X-SECT NO	30-OLR-IL									30-5R-IL	
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERAL – 48" THICK										
CONSTR. ZONE EXC – SPOIL STOR, SPOIL DISP & SUIT. MAT'L QTYS	0 C.Y.										
BORROW QTY & CY-MILE	MS 71-3	206,459 C.Y.	265,441 C.Y. – MILE	MS 71-3 →		← MS 72-48	219,137 C.Y.	420,248 C.Y. – MILE			MS-72-48
SPOIL DISPOSAL QTY & CY-MILE					31,398 C.Y.	15,699 C.Y. – MILE					
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 71-4			SEE SHEET 71							MS 71-4
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS 71-3	23,751 C.Y.	8,902 C.Y. – MILE	MS 71-3 →			0 C.Y.				
DETAIL DWGS											

ADDITIONAL CONSTRUCTION ITEMS,

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	89 AC.		RESTORATION	200,156 S.Y.
				REVEGETATION	92 AC.
	ACCESS ROADS	1 EA.			
	ACCESS ROAD P/L X-ING.	1 EA.			
	MATERIAL SITES	1 EA.			
	W.P. CULVERTS	19 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.		NO.	
001	ALIGN SHT. DESCRIPTION	003	ON SEP. LOCATION			016	DRAINAGE STRUCTURES
002	ALIGN SHT. DESCRIPTION					017	DRAINAGE STRUCTURES
022	OFF R/W CONST.					019	EROSION CONTROL
						020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR DGI ROW GRANT COMPLIANCE	[illegible]	[illegible]	[illegible]
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	[illegible]	[illegible]	[illegible]

FLUOR
PROJECT MANAGEMENT CONTRACTOR

MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P.405.7 TO M.P.411.4

TOWNSHIP T8N,T7N RANGE R5W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APCO	DATE 1978	FIELD		DATE 10/3/80
MICHAEL BAKER, JR., INC.		DATE 11/6/80	M.W.		DATE 10/8/80

SCALE IN FEET: 1" = 1000'

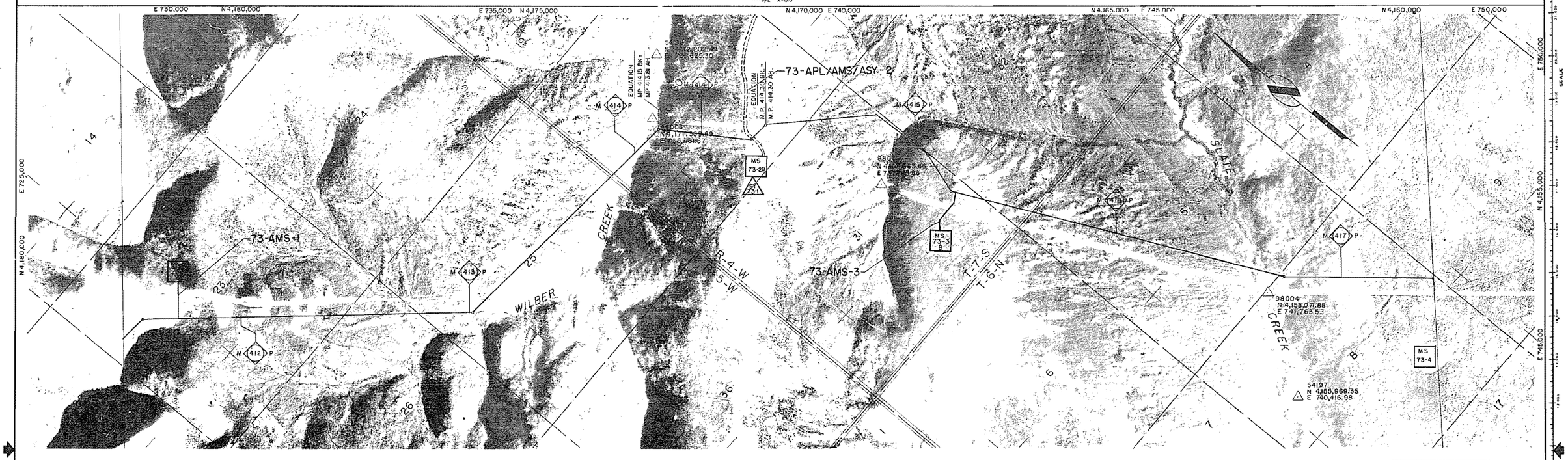
DRAWING NUMBER: 4680-14-00-B-C-072

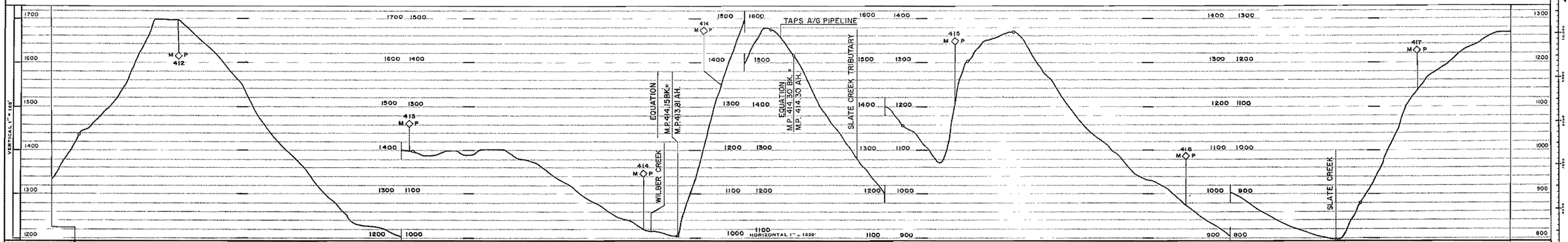
REV. 3

DISTRIBUTION CODE

1 4 0 0 8 | | | 1 0 0 7 2 | | | 1 2 3 0 5 C 1 M 1 L | CLASS 1 Apart 1 New | | | | | | | | | | |

WORK PAD CONSTR SEASON	SUMMER CONSTRUCTION				
SOIL TYPE (USCE CLASS)	GM-ML	SM	ML		
PERMAFROST	DISCONTINUOUS	GENERALLY FROZEN	DISCONTINUOUS		GENERALLY ABSENT
RELATIVE FACILITY LOCATION	GENERALLY FROZEN	SEPARATE LOCATION	P/L X-ING	SEPARATE LOCATION	





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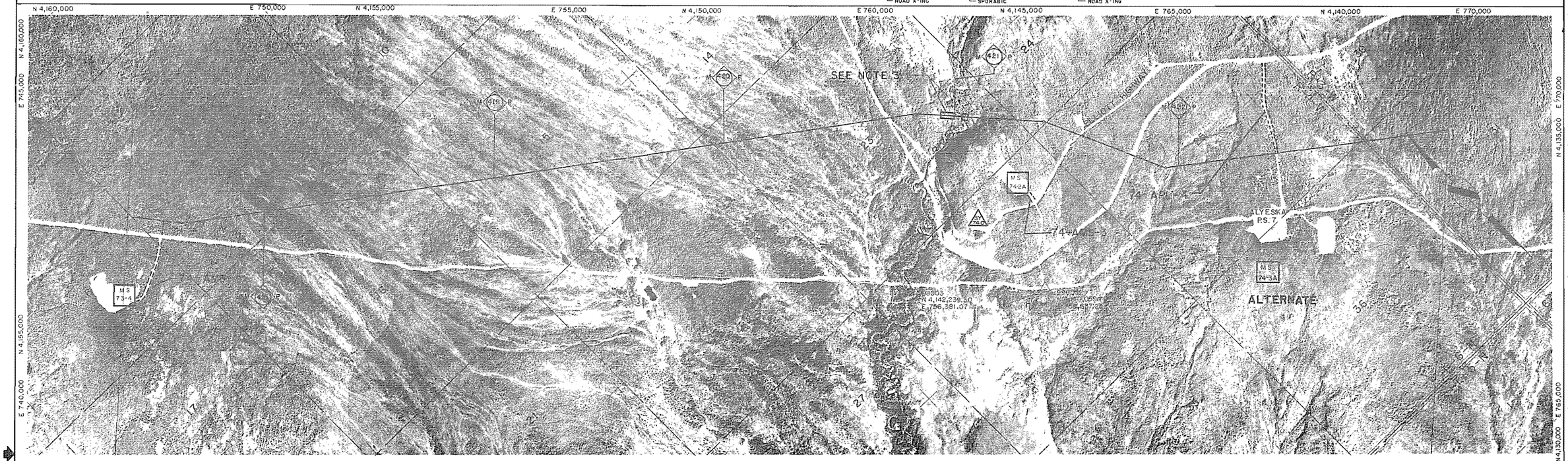
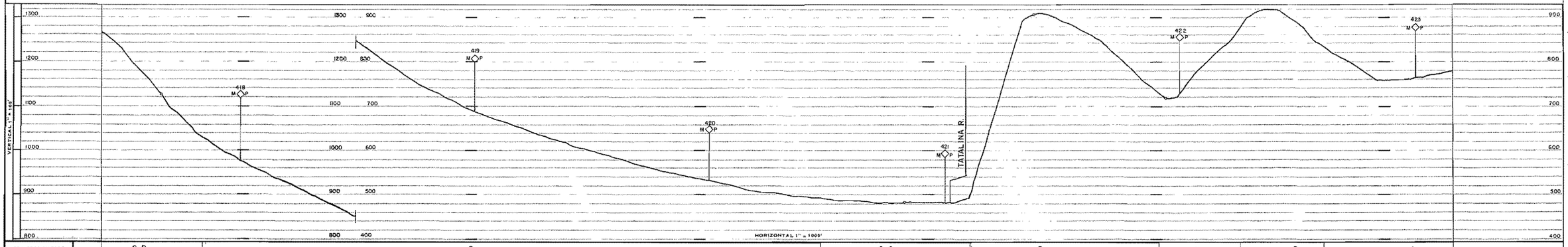
WORK PAD CONSTR SEASON	SUMMER CONSTRUCTION									
SOIL TYPE USC CLASSI	ML				GP-GM		SM		ML	
PERMAFROST	GENERALLY ABSENT	SPORADIC		DISCONTINUOUS	?		DISCONTINUOUS	GENERALLY ABSENT	SPORADIC	
RELATIVE FACILITY LOCATION	SEPARATE LOCATION			? SEPARATE LOCATION (ROAD X-ING)		? SEPARATE LOCATION (SPORADIC)		? SEPARATE LOCATION (ROAD X-ING)		





SOIL EROSION CODE	S,D	S		ROAD X-ING — S,O	D	ROAD X-ING	S	D	30'-0LR-1L	S
TYPICAL X-SECT. NO.	30-5R-2L	30-0LR-2L		30-0LR-1L	30-0LR-1L	30-0LR-2L	30-5R-2L	30-0LR-1L	30-0LR-2L	30-5R-2L 30-5R-1L
PAC MAT'L TYPE & THICKNESS	GRANULAR MATERIAL – 18" THICK			54"	18"	30-5R-2L 6" 30-5R-1L	42"	GRANULAR MATERIAL 18" THICK		
CONSTR. ZONE EXC. STOR. SPOIL DISP. & SUIT. MAT'L. QTYS	48,698 C.Y. STRIPPING TO SPOIL STORAGE									
OBARROW QTY & CY-MILE	MS 73-4A 105,400 C.Y. 85,398 C.Y.-MILE	MS 73-4A — MS 74-2A		SEE SHEET 73				MS 74-2A		
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.									
PIPE DITCH-SPECIAL BFILL QTY & CY MILE	MS 73-4A	SEE SHEET 73						MS 73-4A		
PIPE DITCH-COMMON BFILL QTY & CY-MILE	Ø C.Y.			MS 74-3A	SEE SHEET 73			MS 74-2A		
DETAIL DWGS										

Prepared by ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	86 AC.		W.P. CULVERTS	6 EA.
				RIVER CROSSINGS	1 EA.
	ACCESS ROADS	3 EA.			
	ACCESS ROAD CULVERTS	1 EA.			
	ACCESS ROAD RL. X-INGS	1 EA.			
				RESTORATION	247,280 SY.
	MATERIAL SITES	2 EA.		REVEGETATION	116 AC.
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	13 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	TYP. CONST. ZONE SECTIONS		016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	GN SEP. LOCATION	017	DRAINAGE STRUCTURES
021	MISC. ON-R/W CONST.			019	EROSION CONTROL
022	OFF-R/W CONST.	015	GEN. TYP. SECTIONS	020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000060945
3. RIVER CROSSING STAGING AREA FOR PIPELINE CONSTRUCTION

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	6-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	9-26-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JBB	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBB	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 417.5 TO M.P. 423.2

TOWNSHIP 15N RANGE R4W

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1978	FLUOR J.R. Blount	DATE 4/30/80		
MICHAEL BAKER, JR. INC	DATE 4-29-80	N.W. ALASKAN	DATE 5/6/80		

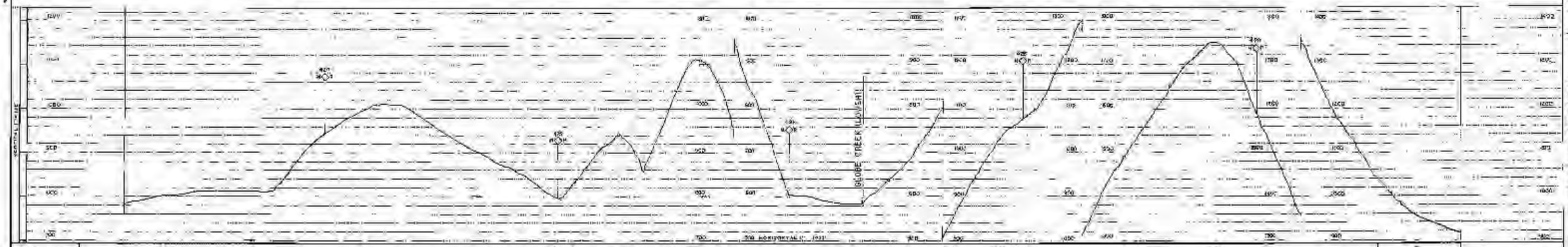
SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-14-00-B-C 074	3

DISTRIBUTION CODE

SUMMER CONSTRUCTION

		ML			GM	ML	
	SPORADIC		GEN. FROZEN (DISCONT.)	GENERALLY FROZEN	SPORADIC	GENERALLY FROZEN	

SEPARATE LOCATION



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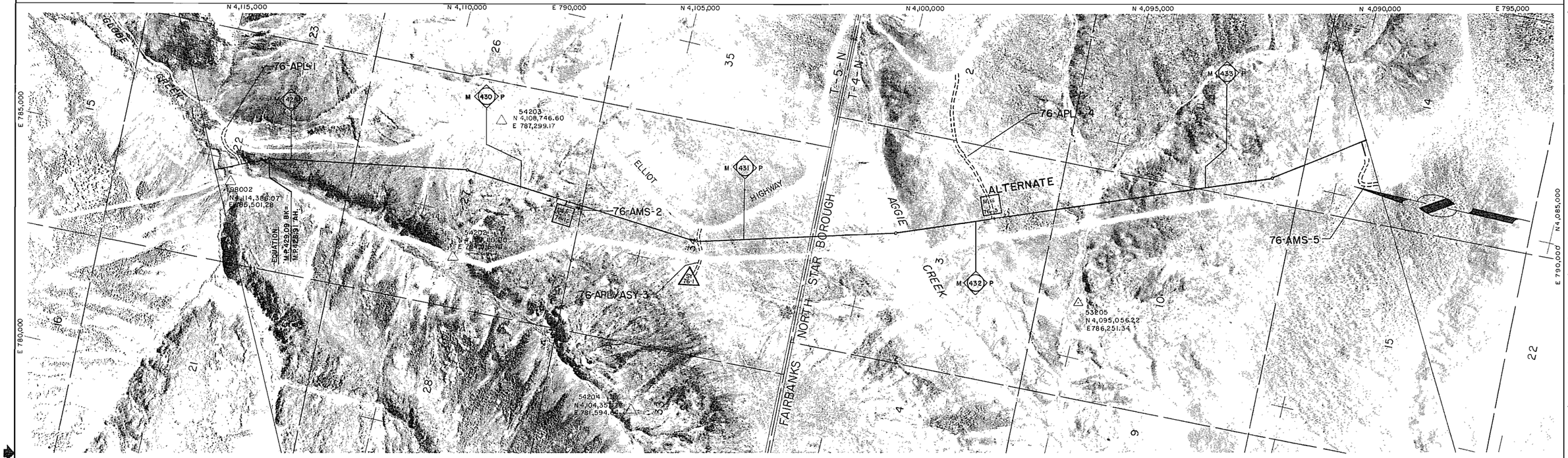
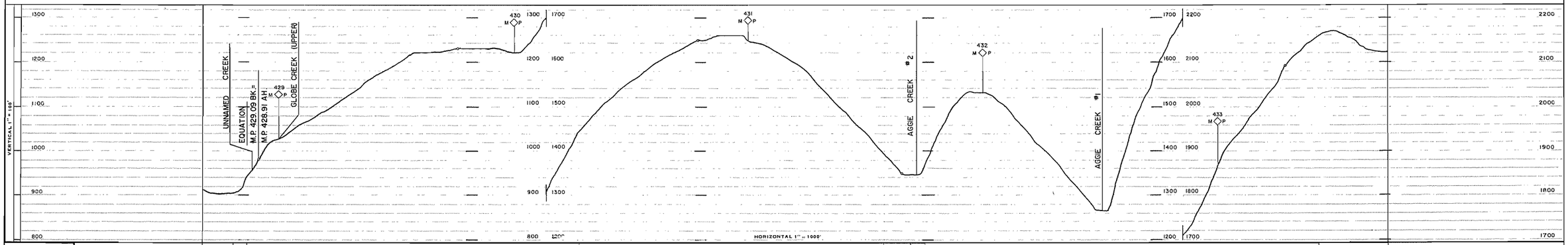
WORKPAD CONSTR SEASON		SUMMER CONSTRUCTION							
SOIL TYPE (USC CLASS)		ML	PT	ML	GM	ML	GM	ML	
PERMAFROST	GENERALLY FROZEN	SPORADIC	GENERALLY FROZEN	DISCONTINUOUS		GENERALLY FROZEN	DISCONTINUOUS	GENERALLY ABSENT	
RELATIVE FACILITY LOCATION		SEPARATE LOCATION							





SOIL EROSION CODE	S	D,S	S	D	S,D	S	D,S	S		
TYPICAL X-SECT NO.	30-5L-1L	30-10R-5L	30-0LR-1L	30-5R-1L	30-10R-1L	30-5R-1L	30-10R-5L	30-5R-1L	30-10L-5L	30-15L-5L
PAD MAT'L TYPE & THICKNESS	48"	30-0LR-1L	GRANULAR MATERIAL - 42" THICK							
CONSTR. ZONE EXC. SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. QTYS	0 C.Y.									
BORROW QTY & CY-MILE	MS-76-1C 256,829 C.Y. 288,185 C.Y. - MILE FROM DITCH							MS-76-1C — MS-77-1 SEE SHEET 77		
SPOIL DISPOSAL QTY & CY-MILE	4710 C.Y. 2,355 C.Y. - MILE FROM DITCH									
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	SEE SHEET 73					MS 73-4A — MS 79-1		SEE SHEET 79		MS-79-1
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS-76-1C 5,006 C.Y. 6,838 C.Y. - MILE						MS 76-1C	Ø C.Y.		
DETAIL DWGS										

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	62 AC.			
				W.P. CULVERTS	15 EA.
	ACCESS ROADS	5 EA.			
	ACCESS ROAD CULVERTS	3 EA.			
	ACCESS ROAD PL. X-INGS	6 EA.			
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	<1 AC.			
	STORAGE YARDS	1 EA.		RESTORATION	163,988 S.Y.
				REVEGETATION	95 AC.

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION		017	DRAINAGE STRUCTURES
022	OFF-R/W CONST				019	EROSION CONTROL
		015	GEN. TYP. SECTIONS		020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 4 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00007798

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHK'D	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	JWS	JBM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	JWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

NOTICE
This drawing/document is the property of the Alaskan Northwest Natural Gas Transportation Company and contains information that is deemed to be confidential and/or proprietary by said Company or by third parties who furnished such information to the Company pursuant to a license or use agreement. Information contained in this drawing/document which is confidential and/or proprietary is not subject to mandatory disclosure under the Freedom of Information Act, and use or disclosure of information contained in this drawing/document may also be prohibited by virtue of applicable laws such as the Federal Trade Secrets Act. No use or disclosure is authorized except as permitted by said Company or its Agent, Northwest Alaskan Pipeline Company

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 428.7 TO M.P. 433.7
TOWNSHIP 15N. 14N RANGE R3W
MERIDIAN FAIRBANKS
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	AFCO	DATE 1978	FLUOR	J.R. Brandt	DATE 4/30/80
MICHAEL BAKER, JR., INC.	J.B. Mirabal	DATE 4-29-80	N.W.	[illegible]	DATE 5/2/80

SCALE IN FEET: 1" = 1000'
DRAWING NUMBER: 4680-14-00-B-C-076
REV: 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

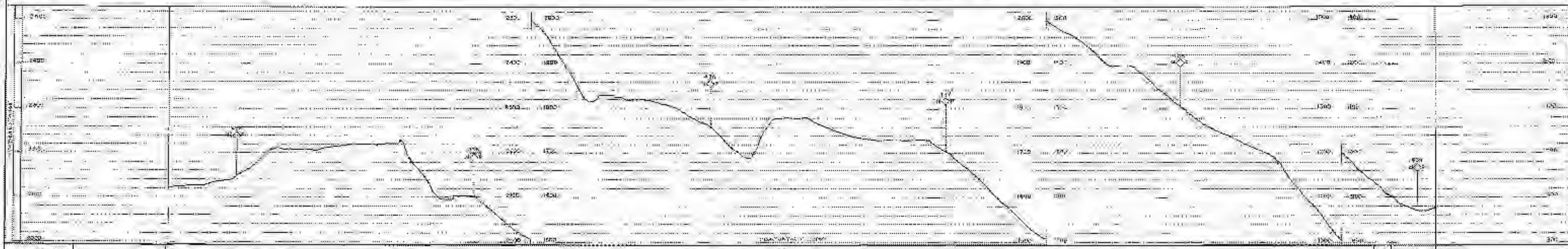
SURVEY CONSTRUCTION

ML

GENERALLY ABSENT

GENERAL LOCATION

SEN. PIGTED



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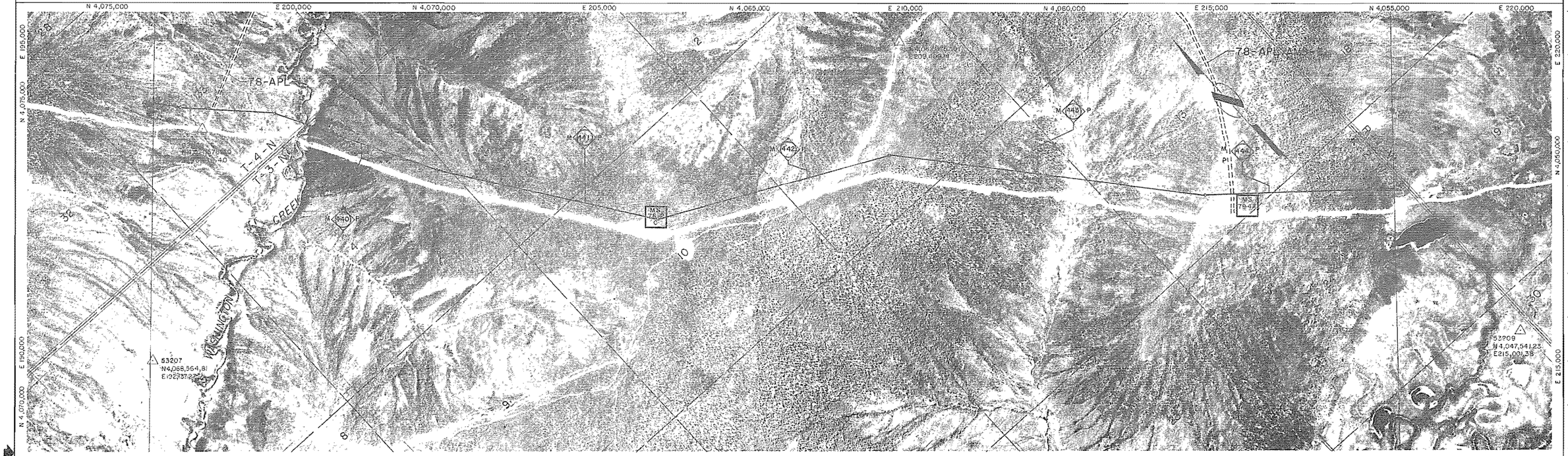
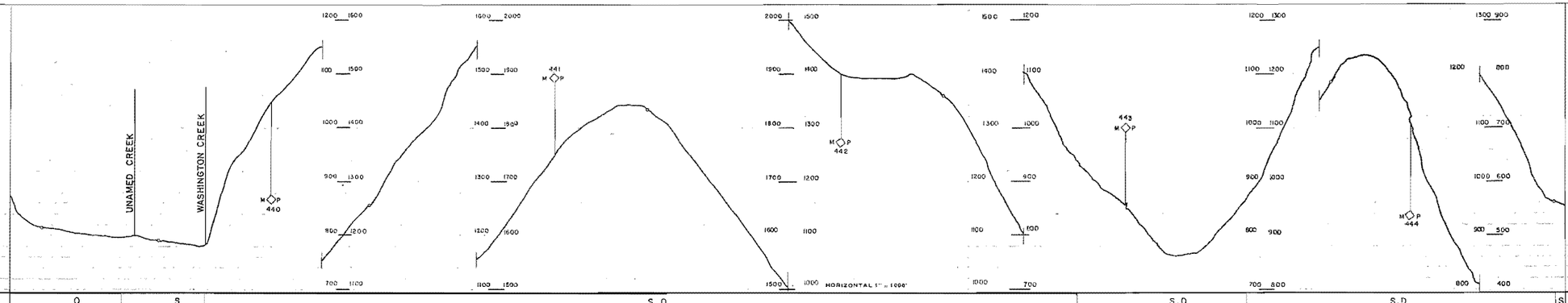
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION										
SOIL TYPE (USC CLASS)	PT	ML			PT	ML					
PERMAFROST	GENERALLY FROZEN	GENERALLY ABSENT			GENERALLY FROZEN	SPORADIC					GENERALLY FROZEN
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	RIVER X-ING	SEPARATE LOCATION								





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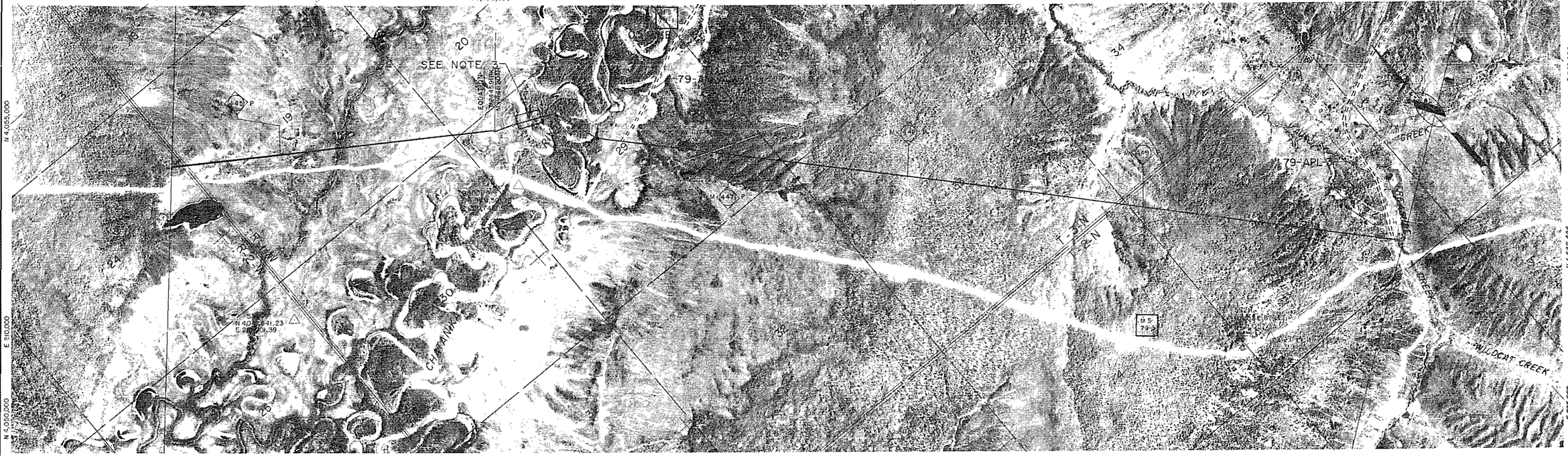
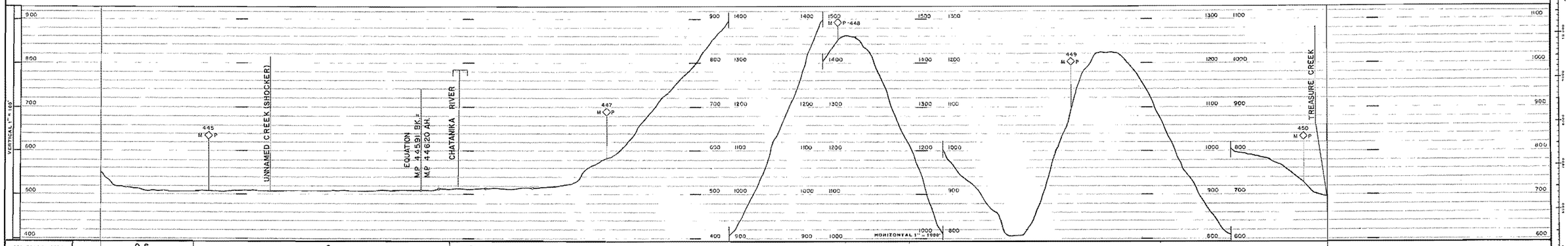
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION					[SHOULDER MONTH CONSTRUCTION]				SUMMER CONSTRUCTION	
SOIL TYPE USE CLASS	ML	PT	ML			GM				ML	
PERMAFROST	GEN FROZEN	DISCONTINUOUS	GENERALLY ABSENT	GENERALLY FROZEN	DISCONTINUOUS	GENERALLY ABSENT		SPORADIC	GENERALLY ABSENT	GENERALLY FROZEN	
RELATIVE FACILITY LOCATION		SEPARATE LOCATION	RIVER X-ING			SEPARATE LOCATION					

E 215,000 N 4,055,000 E 220,000 N 4,050,000 E 225,000 N 4,045,000 E 230,000 N 4,040,000 E 235,000 E 240,000 N 4,035,000





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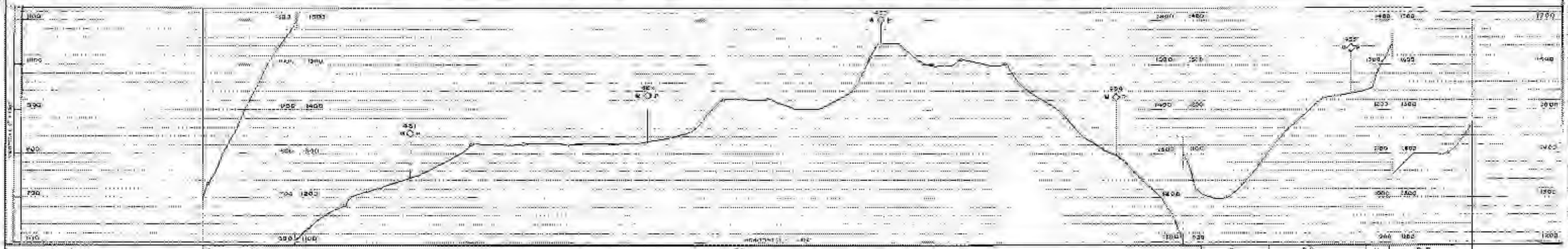


ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	BURSTING	73 MI		AP PUMP X-INGS	2 EA
	ACCESS ROAD	1 EA		RESTORATION	14.2 MSY
	ACCESS TRAIL CL X-INGS	1 EA		REVEGETATION	82 AC
	WATERFALL RIFFLE	1 EA		DRAINAGE DITCHES	4,000 LF
	ERRORS RIFFLE	1 EA		DIVERSION LEVEE	1,000 LF
	WB LOW WATER X-INGS	1 EA		SLOPE DOWN STRUCTURES	2 EA
	WB CLOVERS	1 EA		ANODES PLUNGE WASTE	1 EA

REFERENCE DRAWINGS

NO.	DATE	REVISION	BY	CHKD	APP
1	9-94	ISSUED FOR BID			
2	10-94	ISSUED FOR CONSTRUCTION			

FLUOR
PIPELINE MANAGEMENT CONTRACTORS
MICHAEL BAKER JR., INC.
CIVIL ENGINEERING CONTRACTOR

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

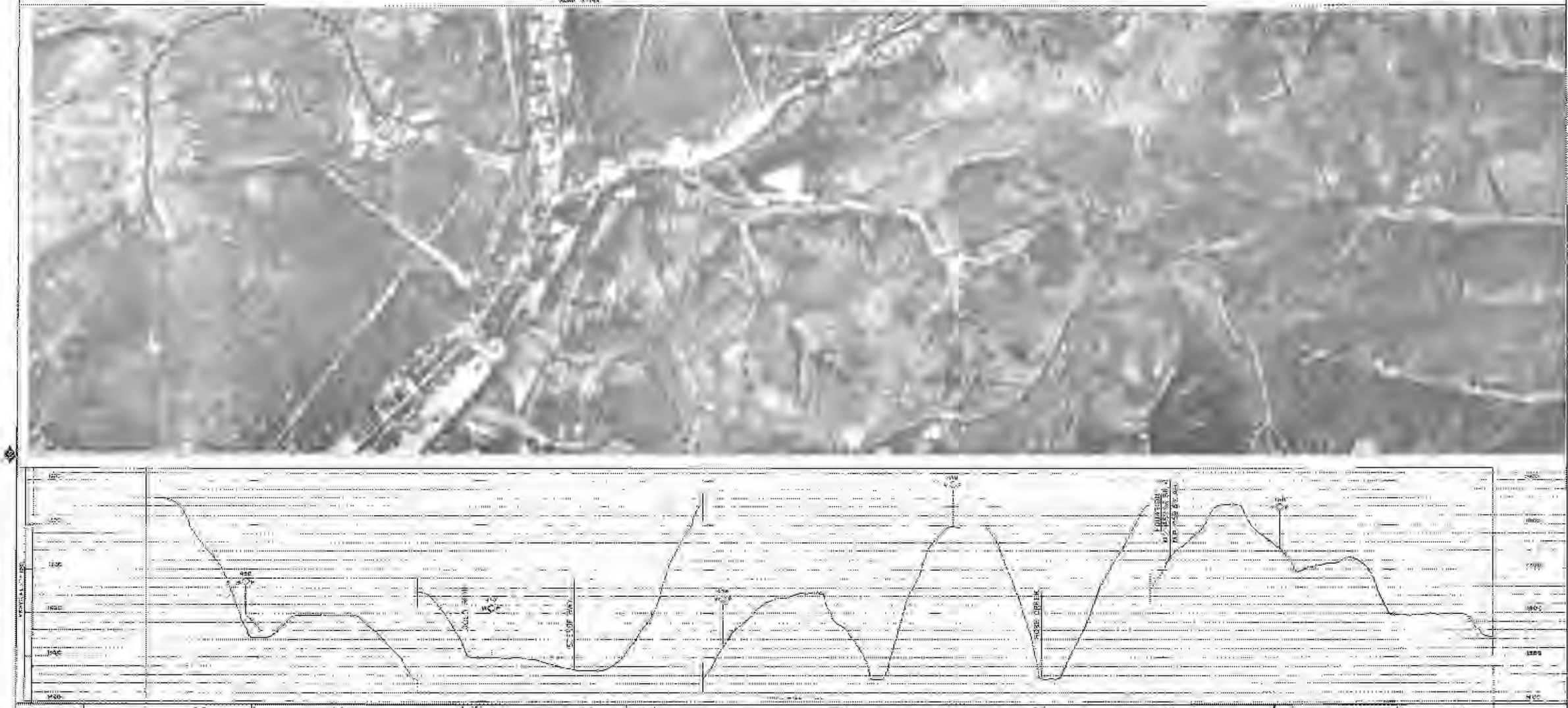
M.P. 450.1 TO M.P. 455.5

TOWNSHIP 1 2N RANGE 8 E

MERIDIAN FAIRBANKS

ALASKA DEPARTMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	8580-14-00-8-C 080	3



ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	85 AC.		W.P. ROAD X-INGS	1 EA.
	ACCESS ROADS	4 EA.		DRAINAGE DITCHES	20,000 L.F.
	ACCESS ROAD P. X-INGS	2 EA.		LET DOWN STRUCTURES	2 EA.
	MATERIAL SITES	2 EA.		ARMOR FLUMES BASINS	3 EA.
	DISPOSAL SITES	<1 AC.		RESTORATION REVEGETATION	26,374 S.Y. 182 AC.
	W.P. LOW WATER X-INGS	13 EA.			
	W.P. CULVERTS	5 EA.			

REFERENCE DRAWINGS 4680-12-00-B-C-010

NOTES

NO.	DATE	REVISION	BY	CHKD	APP'D
		ISSUED FOR BID			
		REVISED PER WP/ROAD CHANGES			
		REVISED PER WP/ROAD CHANGES			
		REVISED PER WP/ROAD CHANGES			
1	11/98	REVISED PER AS-BUILT CONDITIONS	JBP		
2	12/98	REVISED PER AS-BUILT CONDITIONS	JBP		
3	1/99	REVISED PER AS-BUILT CONDITIONS	JBP		

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 455.5 TO M.P. 480.9

TOWNSHIP T3N RANGE R2E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

SCALE (H.&V.)	DRAWING NUMBER	REV
1" = 100'	4680-14-00-B-C-081	3

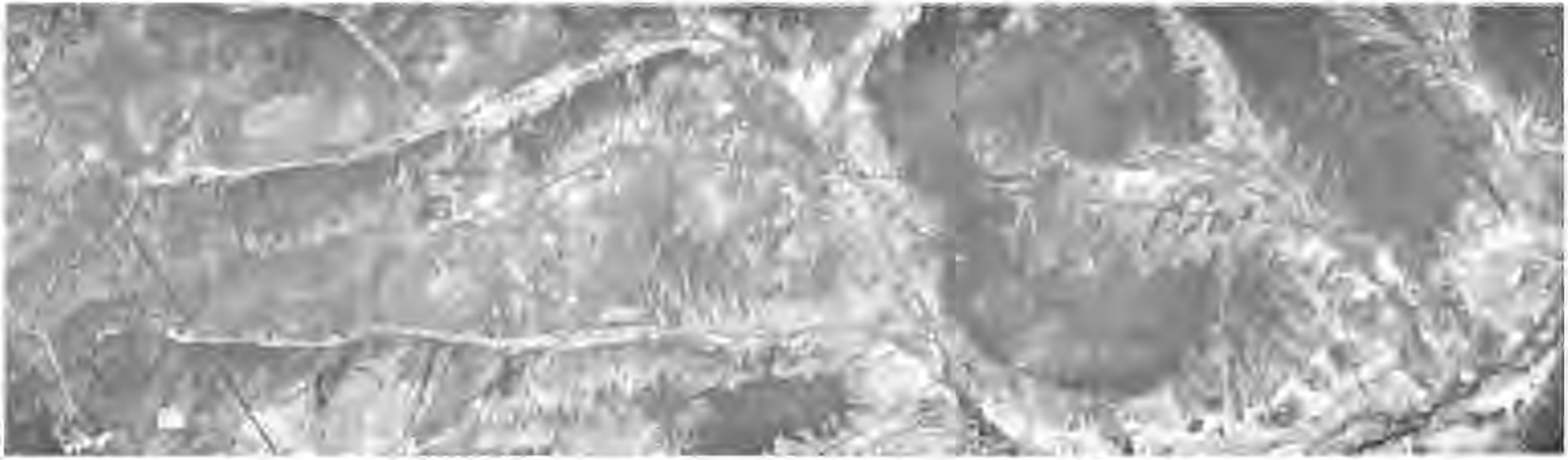
DISTRIBUTION CODE

SUMMER CONSTRUCTION

NO

SEPARATE LOCATION

SEPARATE LOCATION



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ADDITIONAL CONSTRUCTION ITEMS					
ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	98 AC.		RESTORATION	227,878 SY
				REVEGETATION	99 AC.
	ACCESS ROADS	- EA.			
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	10 AC.			
	W.P. LOW WATER X-INGS	6 EA.			
	W.P. CULVERTS	27 EA.			
	TEMPORARY W.P. BRIDGE	1 EA.			

REFERENCE DRAWINGS 4680-10-C-3-C-NO.

NO.		NO.		NO.
	ALIGNMENT SHEET		GEN. SITE LOCATION	
	GEN. MISC. ITEMS			
	MISCELLANEOUS CONST.			
	MISCELLANEOUS CONST.			

NO.	
	MECHANICAL INSULATION
	TEMPORARY STRUCTURES
	DRAINAGE STRUCTURES
	SERVICE CONNECTIONS
	EROSION CONTROL

NOTES

NO.	DATE	REVISIONS	BY	CHKD	APP'D
1	4-80	GENERAL TITLE BLOCK AND GENERAL REVISIONS			
		PERMIT PLOT LINE CHANGES			
		REVISED PLOT REVISION			
2	10-80	REVISED PLOT REVISION			
		ADDED SQUAW CREEK			
3	12-80	REVISED PLOT REVISION			

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 468.8 TO M.P. 472.6

TOWNSHIP T.6,7 S RANGE R32,R2E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKAN NATURAL GAS TRANSPORTATION SYSTEM

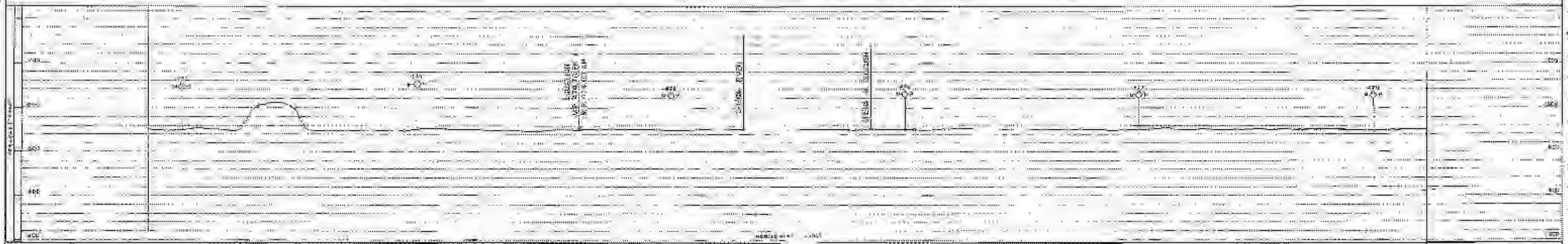
SCALE IN FEET	DRAWING NUMBER	REV. NO.
1" = 1000'	4680-14-00-8-C-063	3

DISTRIBUTION CODE

SUMMER CONSTRUCTION

GENERALLY ABSENT

GENERALLY FROZEN



ITEM	DESCRIPTION	QUANTITY
	CLEARING	78 AC
	ACCESS ROADS	3 EA
	ACCESS ROAD BRIDGES	1 EA
	ACCESS ROAD PIL X-INGS	2 EA
	MATERIAL SITES	1 EA
	DISPOSAL SITES	2 AC
	W.P. LOW WATER X-INGS	16 EA
	W.P. CULVERTS	15 EA

ITEM	DESCRIPTION	QUANTITY
	TEMPORARY W.P. BRIDGE	1 EA
	RIVER CROSSINGS	1 EA
	RESTORATION	17600 C.Y.
	REVEGETATION	30 AC

NOTES

NO.	DATE	REVISION	BY	CHK'D	APP'D

FLUOR
FLUOR DANIEL-WINSTAR (PIPELINE CONSTRUCTORS)
MICHAEL BAKER, JR., INC.
PIPELINE ENGINEERING CONSULTANT

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 472.0 TO M.P. 478.2

TOWNSHIP T15,T2S RANGE R1E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

SCALE IN FEET: 1" = 1000'

DRAWING NUMBER: 4680-14-00-B-C-084 REV. 3

DISTRIBUTION CODE

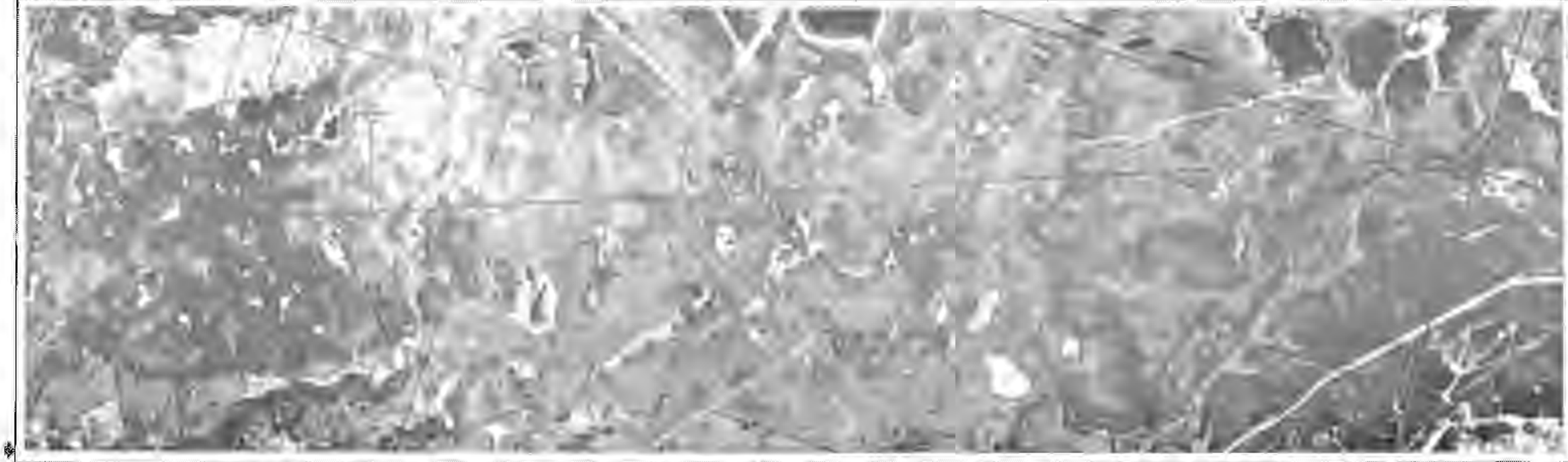
GENERALLY FROZEN

DENSE CONSTRUCTION

TAL

LOOSE

GENERALLY UNFROZEN



SEE SHEET 86

SEE SHEET 86

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	UNIT
	SEEDING	7.9	AC.
	ACCESS ROADS	1	EA.
	ACCESS ROAD PIPE X INCH	1	EA.
	MATERIAL SITES	1	EA.
	W.P. DRYERS	3	EA.
	TEMPORARY W.P. BRIDGES	1	EA.

DESCRIPTION	QUANTITY	UNIT
RESTORATION REVEGETATION	7.9	AC.

REFERENCE DRAWINGS

NO.	DESCRIPTION
HD	
CD	DRAINAGE STRUCTURES
TS	TOPSOIL RESTORE
SD	SURFACE WATER
ED	EROSION CONTROL

FLUOR

PROJECT MANAGEMENT CONTRACTOR

MICHAEL BAKER, JR., INC.

CIVIL ENGINEERING CONTRACTOR

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P 478.2 TO M.P 493.6

TOWNSHIP T2S., 3S. RANGE R4E,R3E

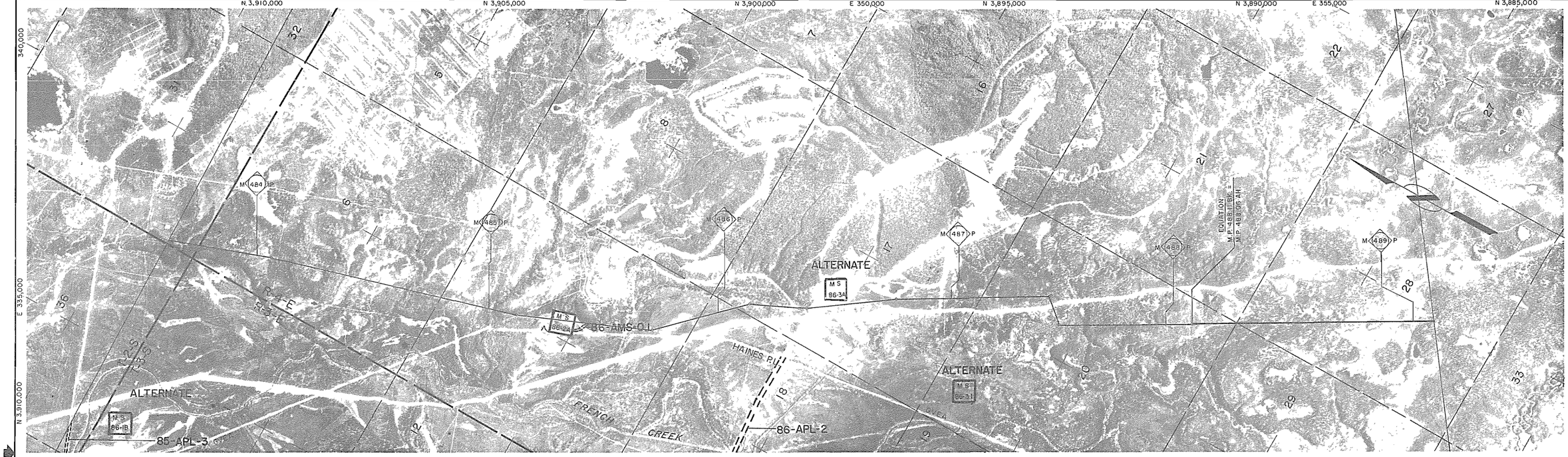
MERIDIAN FAIRBANKS

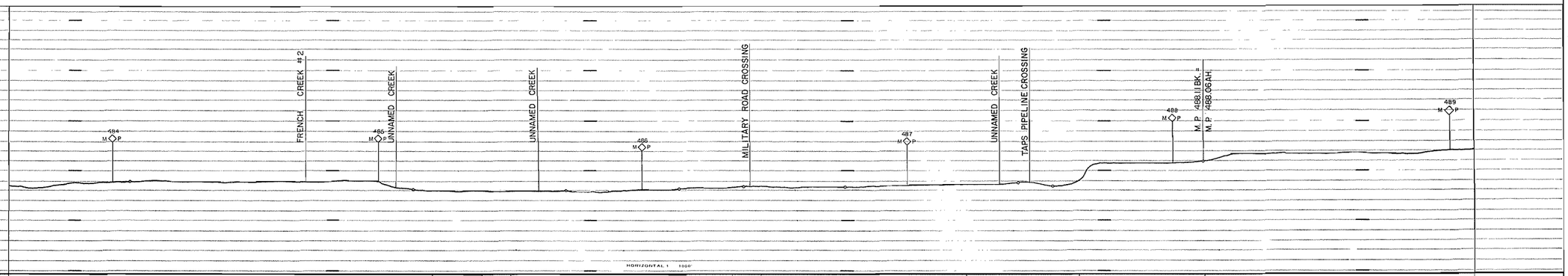
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

SCALE	CONTRACT NUMBER	SHEET
1" = 1000'	4680-14-00-B-C-065	3

DISTRIBUTION CODE

WORKPAD CONSTR. SEASON		SUMMER CONSTRUCTION				
SOIL TYPE (USC CLASS)		ML				
PERMAFROST	GENERALLY FROZEN	DISCONTINUOUS	○ GENERALLY ABSENT	DISCONTINUOUS		
RELATIVE FACILITY LOCATION	SEPARATE LOCATION		ROAD CROSSING	SEPARATE LOCATION	PIPELINE CROSSING	SEPARATE LOCATION





SOIL EROSION CODE	S			S, Q	S	S, Q		S	S, Q		S		S, Q		S, O		
TYPICAL X-SECT NO	30-OLR-IL		30-5R-IL	30-OLR-IL				ROAD X-ING	30-OLR-IL		○ PIPELINE CROSSING		30-OLR-IL				
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL – 48" THICK		54"	48"	54"	48"		18"	48"	GRANULAR MATERIAL – 54" THICK					48"		
CONSTR. ZONE EXC. – SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. QTYS.	0 C.Y.																
BORROW QTY & CY-MILE	MS 86-2A			427,747 C.Y.		945,634 C.Y. MILE									MS 86-2A		
SPOIL DISPOSAL QTY & CY-MILE	0 C.Y.																
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 86-2A			152,181 C.Y.		782,740 C.Y. MILE									MS 86-2A		
PIPE DITCH COMMON BFILL QTY & CY-MILE	MS 86-2A			4,287 C.Y.		2,272 C.Y. MILE									MS 86-2A		
DETAIL DWGS																	

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	81 AC.		W.P. PIPELINE X-INGS	1 EA.
	ACCESS ROADS	2 EA.		RESTORATION	97,680SY.
	ACCESS ROAD CULVERT	1 EA.		REVEGETATION	84 AC.
	ACCESS ROAD P.L. X-INGS	3 EA.			
	W.P. CULVERTS	28 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
022	OFF R/W CONST.			019	EROSION CONTROL
				020	EROSION CONTROL

NOTES

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2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	9-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	GWS	JBM	KWW
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	GWS	JBM	KWW

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

NOTICE

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 483.6 TO M.P. 489.1

TOWNSHIP T3S RANGE R4E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APCO	DATE	1978	PLANNING	DATE 10/31/80
MICHAEL BAKER, JR., INC.		DATE	11/6/80	ENGINEERING	DATE 10/8/80

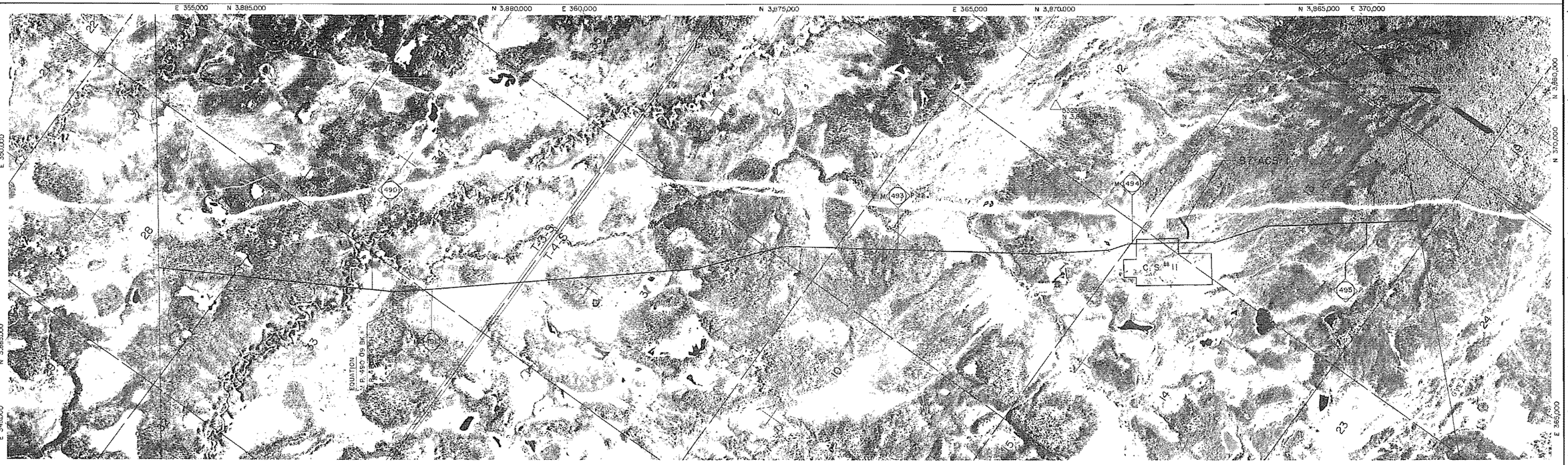
SCALE IN FEET: 1" = 1000'

DRAWING NUMBER: 4680-14-00-B-C-086 REV. 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR. SEASON	SUMMER CONSTRUCTION		
SOIL TYPE (USC CLASS)	ML		
PERMAFROST	DISCONTINUOUS		
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	COMPRESSOR STATION	SEPARATE LOCATION



SOIL EROSION CODE	S, O									S	
TYPICAL X-SECT. NO.	30-OLR-1L			30-SL-1L	30-10L-5L	30-5L-1L	30-OLR-1L		COMPRESSOR STATION	30-OLR-1L	
PAD MAT'L, TYPE & THICKNESS	GRANULAR MATERIAL - 42" THICK									GRANULAR MATERIAL - 42" THICK	
CONSTR. ZONE EXC. - SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. QTYS.	Ø C.Y.										
BORROW QTY & C.Y.-MILE	MS 86-2A	SEE SHEET 86		MS 86-2A ⟵ MS 88-2		270,637 C.Y.	879,086 C.Y.-MILE			MS 88-2	
SPOIL DISPOSAL QTY & C.Y.-MILE	Ø CY										
PIPE DITCH-SPECIAL BFILL QTY & C.Y.-MILE	MS 86-2A			SEE SHEET 86						MS 86-2C	
PIPE DITCH-COMMON BFILL QTY & C.Y.-MILE	MS 86-2A	SEE SHEET 86		MS 86-2A ⟵ MS 88-2		8,390 C.Y.	6,967 C.Y.-MILE			MS 86-2	
DETAIL DWGS											

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	91 AC.			
	ACCESS ROADS	1 EA.			
				RESTORATION	95,040 S.Y.
				REVEGETATION	86 AC.
	COMPRESSOR SITES	1 EA.			
	W.P. CULVERTS	18 EA.			
	TEMPORARY W.P. BRIDGES	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION		017	DRAINAGE STRUCTURES
					018	DRAINAGE STRUCTURES
022	OFF-R/W CONST.	015	GEN. TYP. SECTIONS		019	EROSION CONTROL
					020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GRADING ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000107519

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	9-30-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JBM	[illegible]
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	[illegible]

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

NOTICE
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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 489.1 TO M.P. 495.2

TOWNSHIP T3S, T4S RANGE R4E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

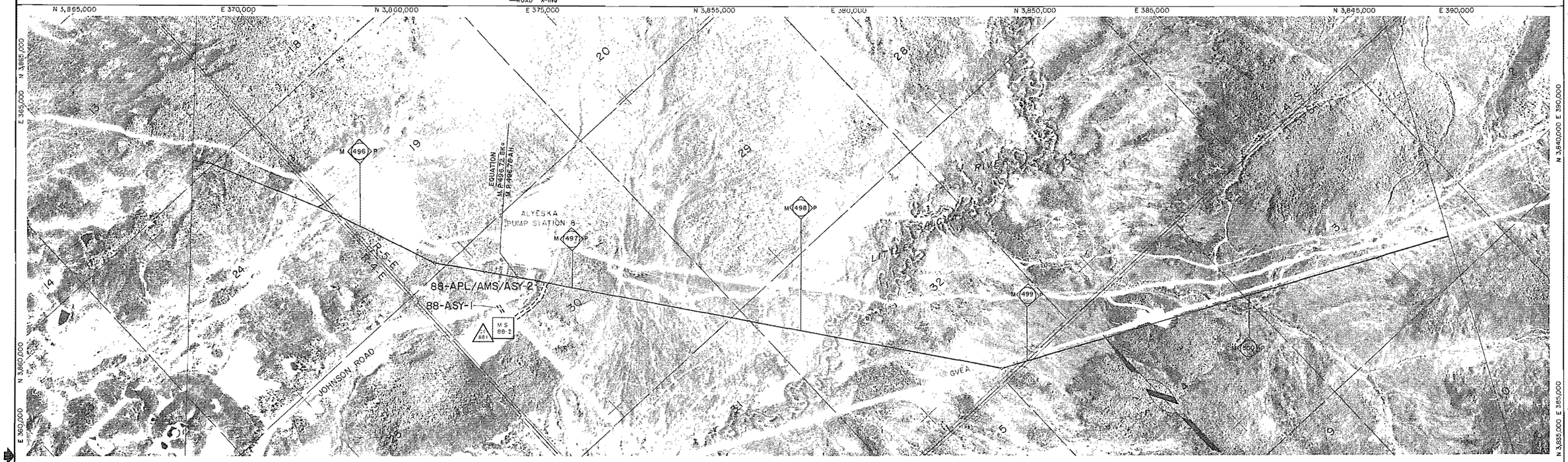
PHOTO AFCE	DATE 1978	FLUOR J.R. Brumett	DATE 4/30/80
MICHAEL BAKER, JR., INC. J.R. Hackett	DATE 4-29-80	N.W. ALASKAN [illegible]	DATE 5/1/80

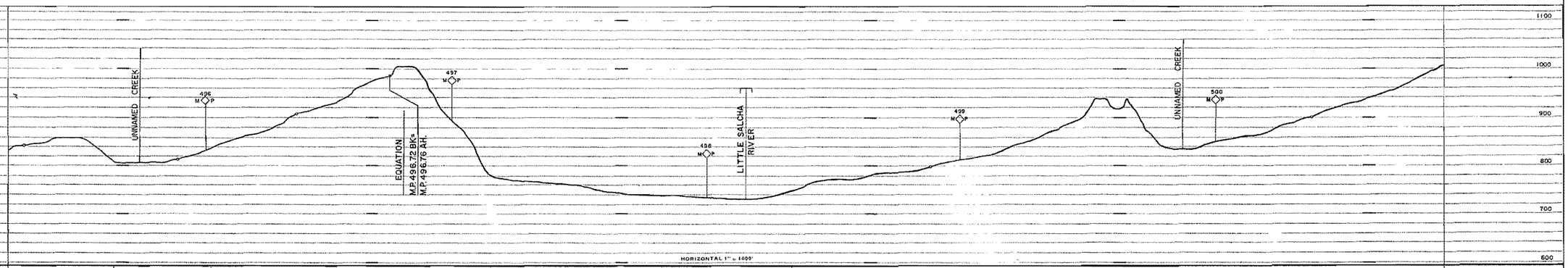
SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-14-00-B-C-087	3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR. SEASON	SUMMER CONSTRUCTION						
SOIL TYPE (USE CLASS)	ML						
PERMAFROST	DISCONTINUOUS	GENERALLY ABSENT	DISCONTINUOUS	GENERALLY ABSENT	DISCONTINUOUS	SPORADIC	DISCONTINUOUS
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	ROAD X-ING	SEPARATE LOCATION		GVEA POWER LINE LT. OF NWA		





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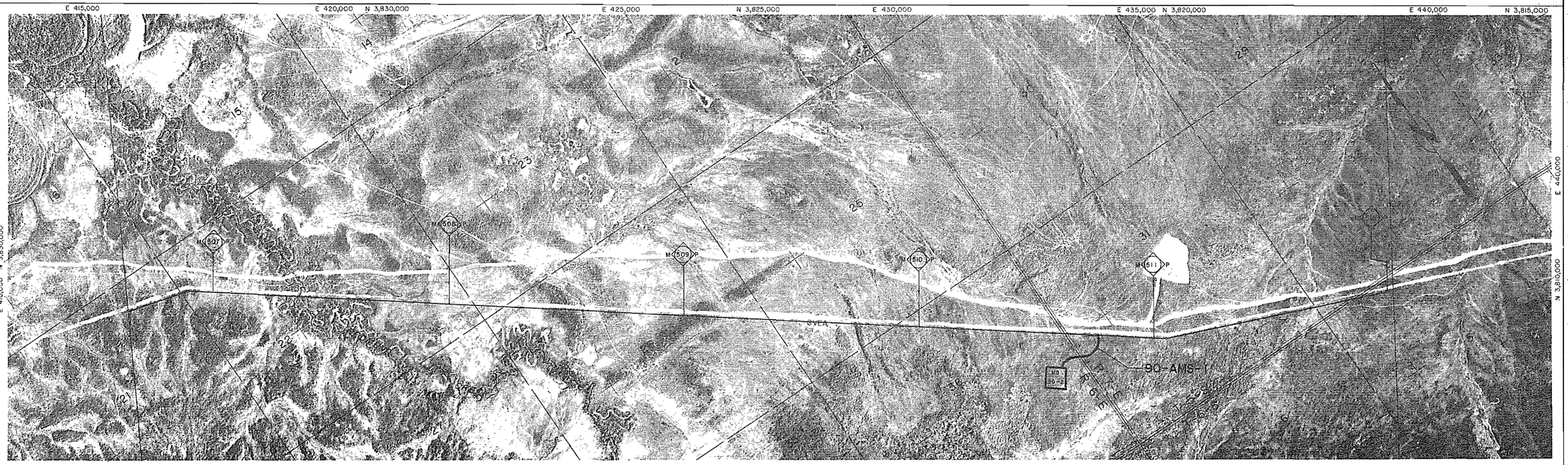
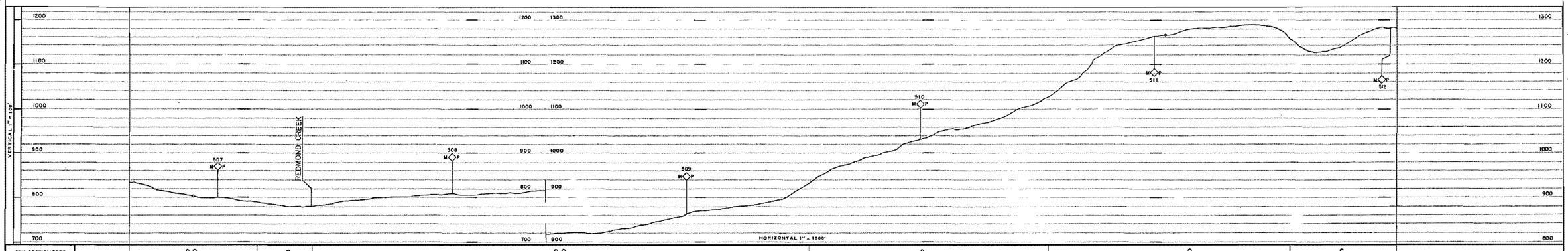
WORKPAD CONSTR SEASON		SUMMER CONSTRUCTION	SHOULDER MONTH CONSTRUCTION	SUMMER CONSTRUCTION		
SOIL TYPE (USC CLASS)		ML			SM	ML
PERMAFROST		GENERALLY FROZEN		DISCONTINUOUS		GENERALLY FROZEN
RELATIVE FACILITY LOCATION		GVEA POWER LINE LT. OF NWA				





SOIL EROSION CODE		S,Q	S	S,O		S		Q	S			
TYPICAL X-SECT. NO.		30-5L-IL	30-OLR-IL	30-OLR-2L	30-OLR-IL		30-5L-IL	30-10L-5L	30-5R-IL	30-OLR-IL		
PAD MAT'L. TYPE & THICKNESS		GRANULAR MAT'L.- 42" THICK		GRANULAR MATERIAL - 36"	GRANULAR MATERIAL-42" THICK							
CONSTR. ZONE EXC.-SPOIL STOR.,SPOIL DISP.& SUIT. MAT'L. QTYS		5,508 C.Y. STRIPPING TO SPOIL STORAGE										
BORROW QTY & CY-MILE		MS 89-3	SEE SHEET 89	MS89-3 ⟵ MS 90-2			222,216 C.Y.	261,344 C.Y.-MILE				MS 90-2
SPOIL DISPOSAL QTY & CY-MILE		Ø C.Y.										
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE		MS 89-3			62,448 C.Y.		443,697 C.Y.-MILE					MS 89-3
PIPE DITCH-COMMON B'FILL QTY & CY-MILE		Ø C.Y.										
DETAIL DWGS												

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	70 AC.		RESTORATION	167,640 S.Y.
				REVEGETATION	81 AC.
	ACCESS ROADS	1 EA.			
	ACCESS ROAD CULVERTS	1 EA.			
	ACCESS ROAD PL. X-INGS	1 EA.			
	MATERIAL SITES	1 EA.			
	W.P. CULVERTS	19 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	TYP. CONST. ZONE SECTIONS NO.		016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION			018	EROSION CONTROL
		003	ON SEP. LOCATION		
022	OFF-R/W CONST.			019	EROSION CONTROL
		014	GEN. TYP. LOCATION		

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES—ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000136543

PHOTO DATE - AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	6-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	9-29-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	Gus	JDJ	
3	11-11-80	NOVEMBER 1980 ROUTE REFINEMENTS	Gus	JDJ	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 506.6 TO M.P. 512.0
TOWNSHIP T5S, T6S RANGE R6E, R7E
MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

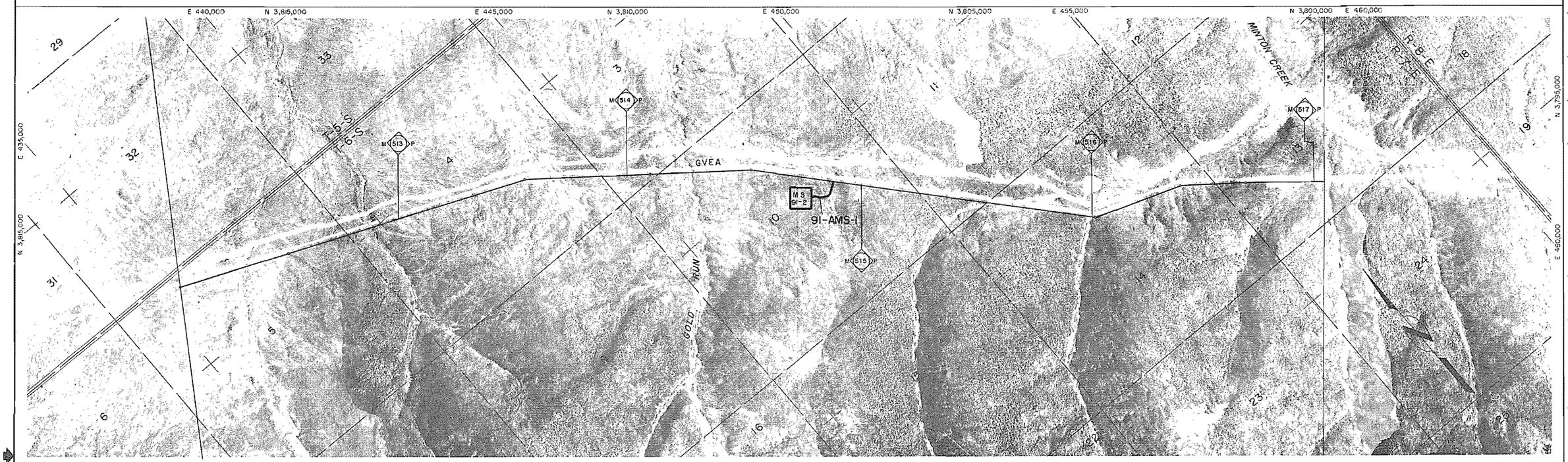
PHOTO APCG	DATE 1978	FLUOR	J.R. Brandt	DATE	9/30/80
MICHAEL BAKER, JR. INC.	DATE 6-29-80	N.W.	[illegible]	DATE	5/2/80

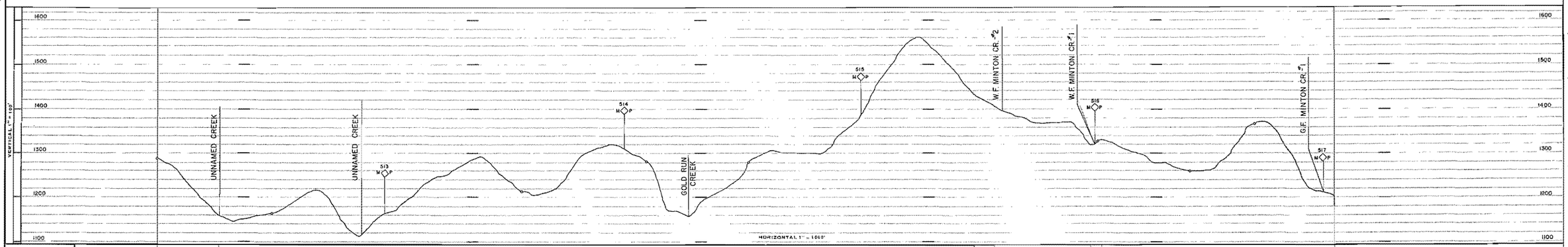
SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-15-00-B-C-090	3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION — SHOULDER MONTH CONSTRUCTION
SOIL TYPE-USC CLASS)	ML
PERMAFROST	GENERALLY FROZEN
RELATIVE FACILITY LOCATION	GVEA POWER LINE LT. OF NWA





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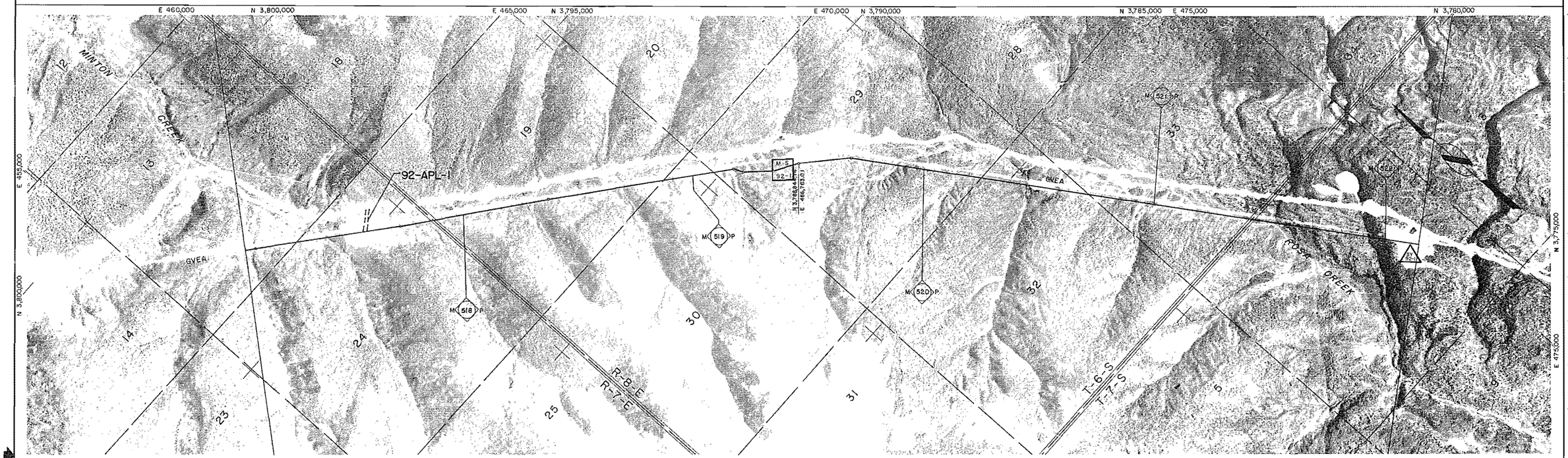
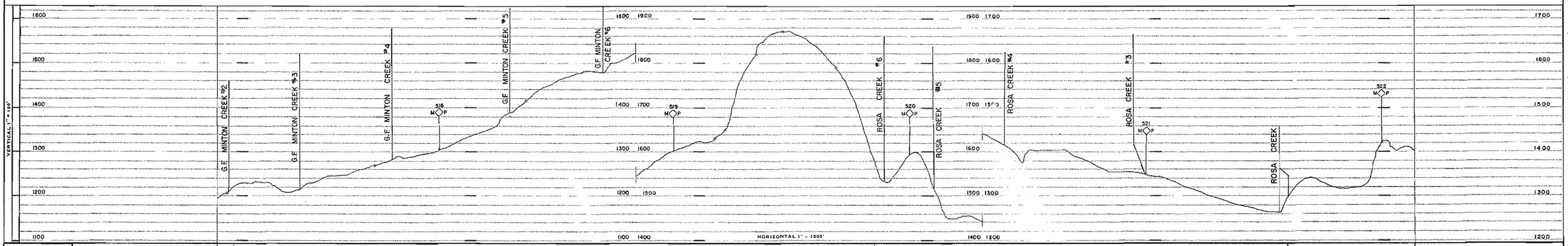
WORKPAD CONSTR SEASON		SHOULDER MONTH CONSTRUCTION		
SOIL TYPE (USCE CLASS)		ML		SP-SM
PERMAFROST		GENERALLY FROZEN		GENERALLY ABSENT
RELATIVE FACILITY LOCATION	GVEA POWER LINE LT. OF NWA	SEPARATE LOCATION	GVEA POWER LINE LT. OF NWA	





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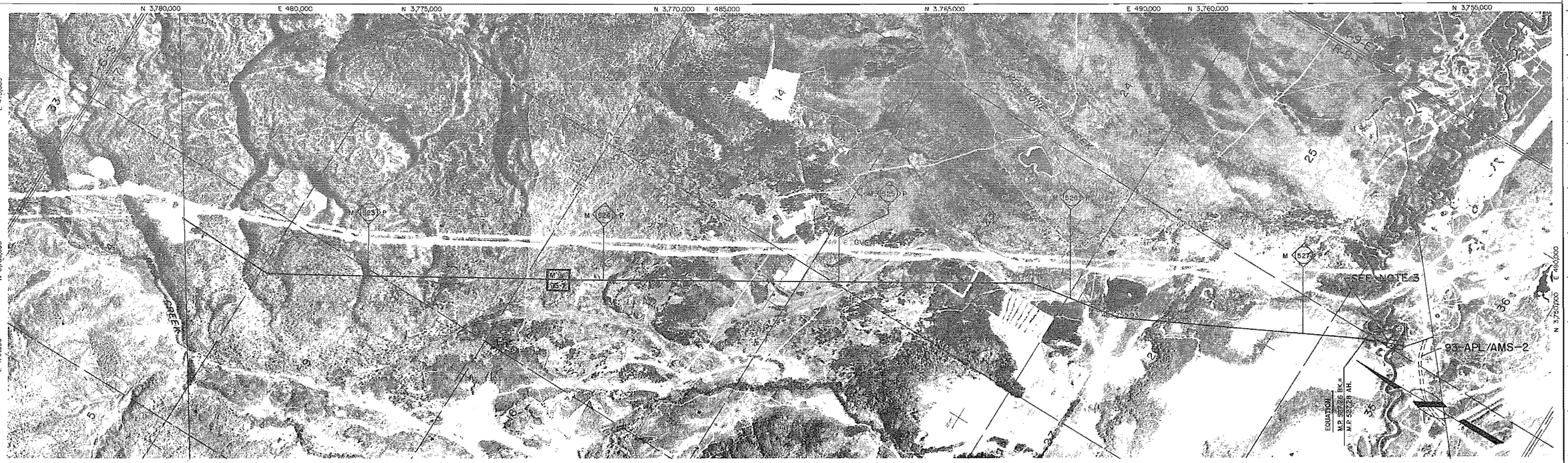
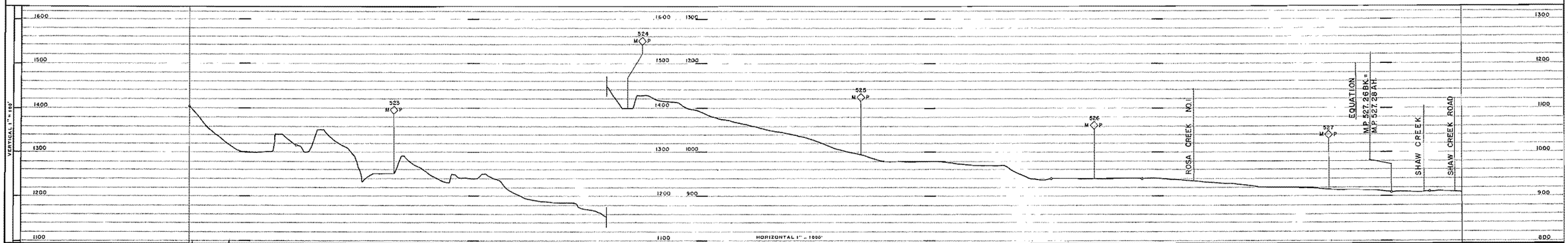
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION	SUMMER CONSTRUCTION									
SOIL TYPE (USC CLASS)	SP-SM	ML	SP-SM	ML		ML,OL				OL	
PERMAFROST	GENERALLY ABSENT				GENERALLY FROZEN			GENERALLY ABSENT →			← GENERALLY FROZEN
RELATIVE FACILITY LOCATION	GVEA POWER LINE LT. OF NWA	SEPARATE LOCATION						RIVER X-ING	ROAD X-ING	SEPARATE LOCATION	





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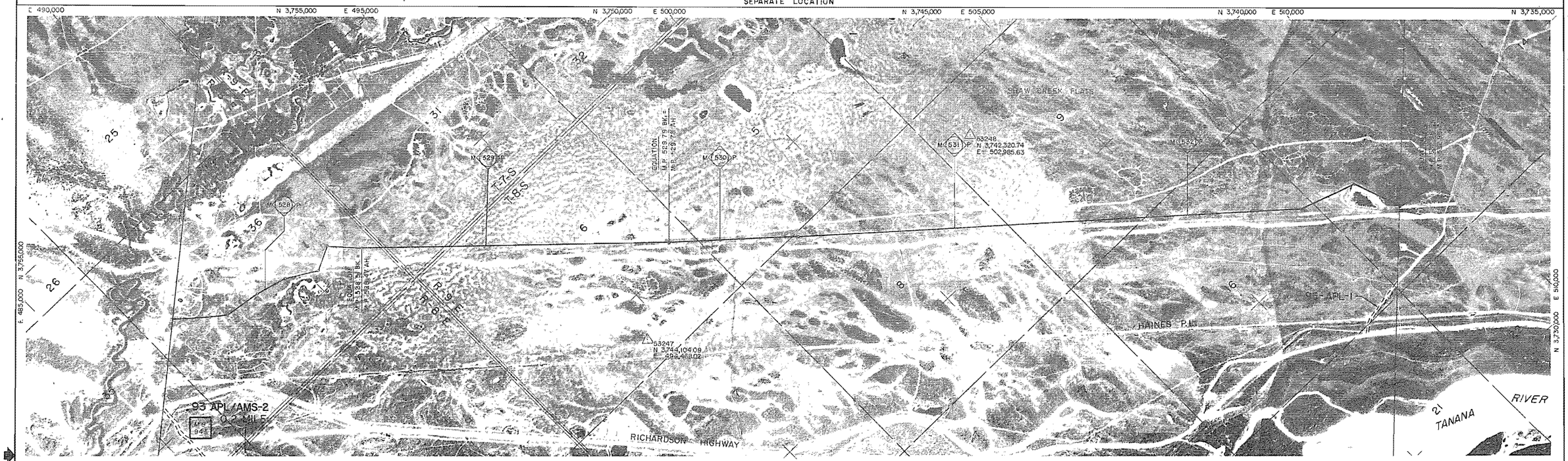
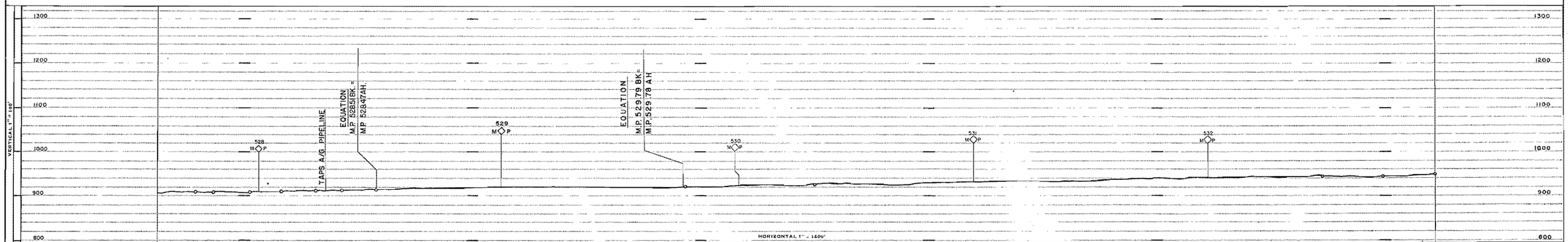
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION				
SOIL TYPE (USC CLASS)	OL	OL & ML	OL	ML	
PERMAFROST	GENERALLY FROZEN				
RELATIVE FACILITY LOCATION	SEPARATE LOCATION ○—PIPELINE X-ING	SEPARATE LOCATION			





SOIL EROSION CODE	L				L, S		
TYPICAL X-SECT NO.	30-OLR-IR						
PAD MAT'L TYPE & THICKNESS	≥ L. X-ING	GRANULAR MATERIAL - 48" THICK			GRANULAR MATERIAL - 42" THICK		
CONSTR. ZONE EXC.-SPOIL STOR.-SPOIL DISP. & SUIT. MAT'L. QTYS.	Ø C.Y.						
BORROW QTY & CY-MILE	MS 94-1	155,858 C.Y.	354,843 C.Y.-MILE	MS 94-1 — MS 95-1	274,169 C.Y.	1,389,254 C.Y.-MILE	MS 95-1
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.						
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 94-1	121,906 C.Y.			911,917 C.Y. - MILE		MS 94-1
PIPE DITCH-COMMON BFILL QTY & CY-MILE	Ø C.Y.						
DETAIL DWGS							

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY
	CLEARING	59 AC.
	MATERIAL SITES	1 EA.
	W.P. CULVERTS	31 EA.
	W.P. PIPELINE X-INGS	1 EA.
	RESTORATION	167,640 SY
	REVEGETATION	80 AC.

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		NO.		NO.	
001	ALIGN SHT. DESCRIPTION	TYP CONST ZONE SECTIONS		016	DRAINAGE STRUCTURES
002	ALIGN SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
		003	ON SEP LOCATION		
021	MISC. ON-R/W CONST.			019	EROSION CONTROL
		014	GEN. TYP SECTION	020	EROSION CONTROL
022	OFF-R/W CONST.				

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000145316

PHOTO DATE AUGUST 1976

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR DOI ROW GRANT COMPLIANCE	DWS	JDM	
3	11-11-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JDM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 527.6 TO M.P. 532.9

TOWNSHIP 17S T8S RANGE R8E, R9E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APCG	DATE 1978	FLUOR	J.R. Brandt	DATE 9/30/80
MICHAEL BAKER, JR., INC.	J.D. Mitchell	DATE 9-29-80	W.W. ALASKA	A. Wilmarth	DATE 9/27/80

SCALE IN FEET: 1" = 1000'

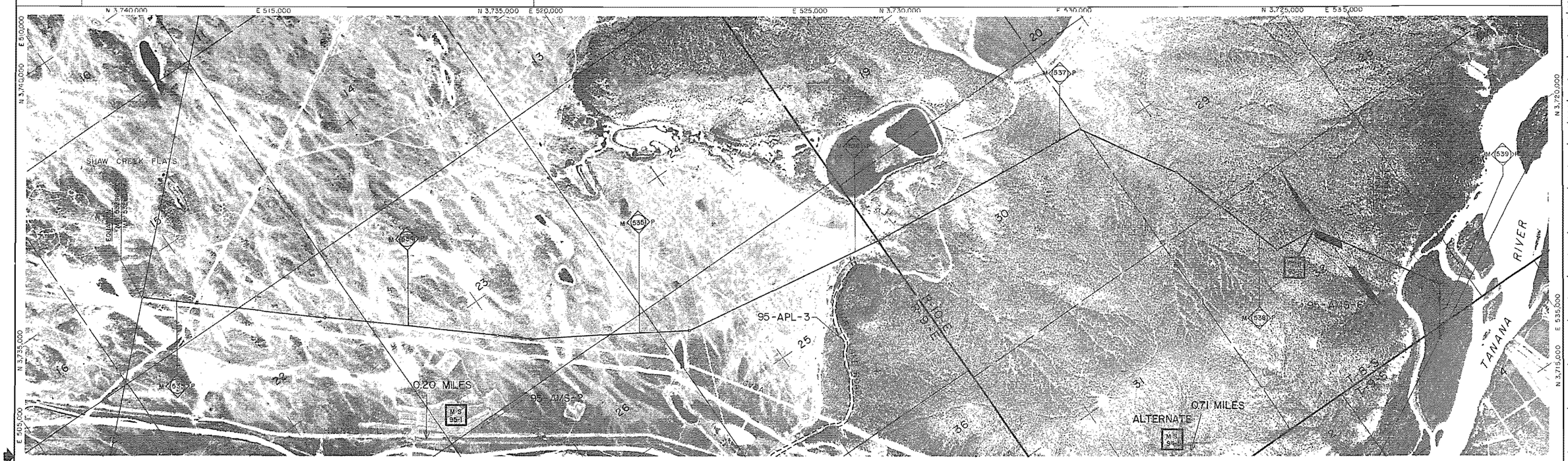
DRAWING NUMBER: 4680-15-00-B-C-094

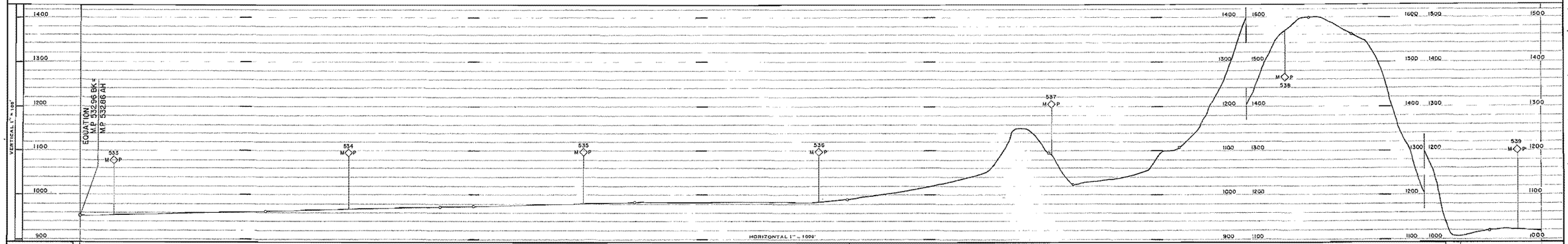
REV. 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION	SHOULDER MONTH CONSTRUCTION	
SOIL TYPE (USC CLASS)	ML		GW, GM, ML, SM
PERMAFROST	GENERALLY FROZEN	DISCONTINUOUS	○
RELATIVE FACILITY LOCATION	GVEA POWER LINE ON RT.	SEPARATE LOCATION	GENERALLY ABSENT





SOIL EROSION CODE	L, S	S	L		G	S, Q
TYPICAL K-SECT NO	30-OLR-1R	30-20L-40R	30-OLR-1R	30-5R-1R	30-OLR-1R	30-OLR-2R
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL 48" THICK		30"			18"
CONSTR. ZONE EXC. - SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. DIST.	17,760 C.Y. EXC. 4,912 C.Y. STRIPPING TO 4,912 C.Y. SPOIL STORAGE TO 17,760 C.Y. SUITABLE MATERIAL					
BORROW QTY & CY-MILE	MS 95-1 SEE SHEET 94	MS 95-1 — MS 95-6	99,073 C.Y. 94,598 C.Y.-MILE			MS 95-6
SPOIL DISPOSAL QTY & CY-MILE		Ø C.Y.				
PIPE DITCH, SPECIAL BFILL QTY & CY-MILE	MS 94-1	SEE SHEET 94				MS 94-1
PIPE DITCH, COMMON BFILL QTY & CY-MILE		Ø C.Y.				
DETAIL DWGS						

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	90 AC.		W.P. ROAD X-ING	1 EA.
				RIP RAP	1,000 C.Y.
	ACCESS ROADS	3 EA		DRAINAGE DITCHES	3,000 L.F.
	ACCESS ROAD CULVERTS	1 EA		DIVERSION LEVEES	3,000 L.F.
	ACCESS ROAD P.L. X-INGS	1 EA		LET DOWN STRUCTURES	1 EA.
				ARMOR PLUNGE BASINS	1 EA.
	MATERIAL SITES	2 EA			
				RESTORATION	254,320 S.Y.
	W.P. CULVERTS	24 EA		REVEGETATION	92 AC.
	TEMPORARY W.P. BRIDGE	1 EA			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
021	MISC. ON R/W CONST.			019	EROSION CONTROL
022	OFF R/W CONST.			020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES – ALASKA ZONE (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION, MULTIPLY DATA SHOWN BY FACTOR

PHOTO DATE: AUGUST 1976

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS REVISED PIPELINE ROUTE & MILE POST			
		RELEASED FOR FERC FILING			
2	8-28-80	RELEASE FOR DOT ROW GRANT COMPLIANCE	MB	JBH	[illegible]
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JBH	[illegible]

FLUOR
PROJECT MANAGEMENT CONTRACTOR

MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

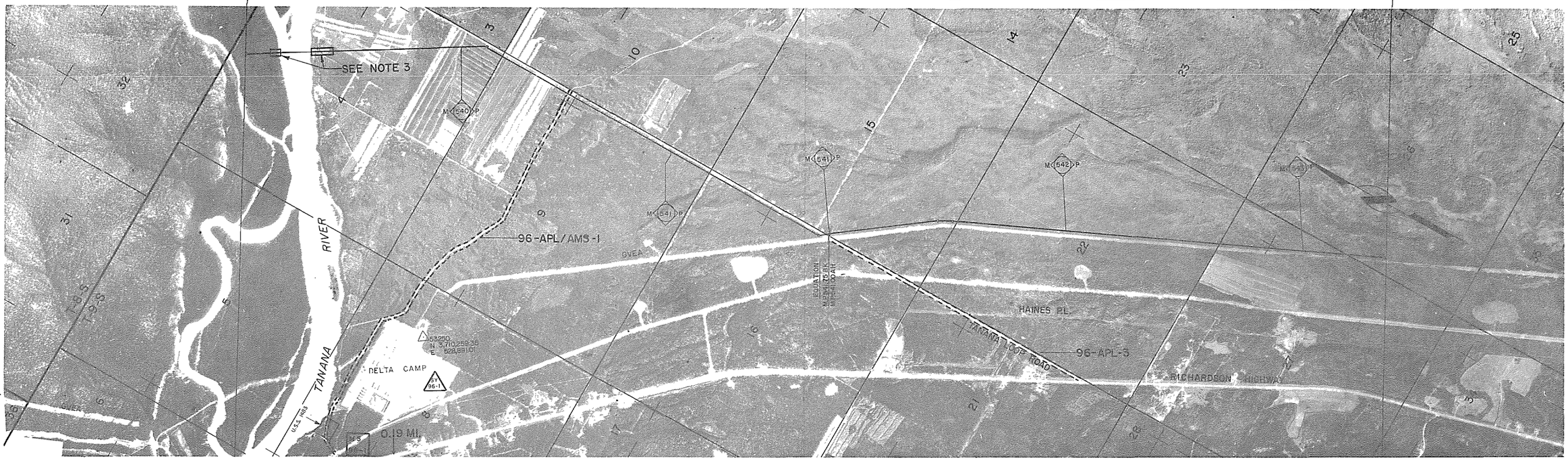
M.P. 532.96 BK.=M.P. 532.86 AH. TO M.P. 539.1
TOWNSHIP T8S, T9S RANGE R10E, R9E
MERIDIAN FAIRBANKS

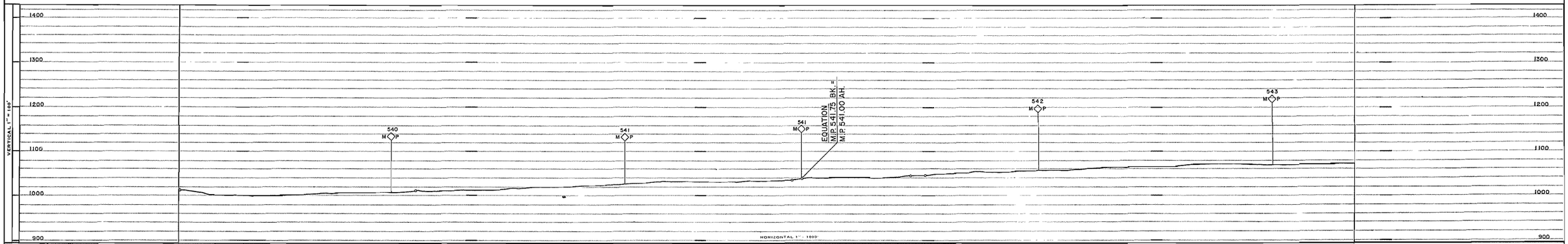
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1975	[illegible]	DATE 10/16/80
MICHAEL BAKER, JR., INC.	DATE 11/6/80	[illegible]	DATE 11/21/80
SCALE IN FEET		DRAWING NUMBER	REV.
1" = 1000'		4680-15-00-B-C-095	3

DISTRIBUTION CODE

WORKPAD CONSTR. SEASON	SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	ML GW ML
PERMAFROST	GENERALLY ABSENT
RELATIVE FACILITY LOCATION	RIVER X-ING SEPARATE LOCATION / SEPARATE LOCATION GVEA POWER LINE RT. OF NWA





SOIL EROSION CODE		SQ	GQ	LS			
TYPICAL X-SECT NO		30-OLR-IL	RIVER X-ING	30-OLR-IR			
PAD MAT'L TYPE & THICKNESS		18"	NO W.P.	GRANULAR MATERIAL — 18" THICK			
CONSTR. ZONE EXC – SPOIL STOR. SPOIL DISP & SUIT. MAT'L. QTYS.				0 C.Y.			
BORROW QTY & CY-MILE	MS 95-6 →		← MS 96-1	101,849 C.Y. 313,187 C.Y.-MILE		MS 96-1 →	← MS 97-2 SEE SHEET 97
SPOIL DISPOSAL QTY & CY-MILE				0 C.Y.			
PIPE DITCH SPECIAL B'FILL QTY & CY-MILE		MS 94-1		SEE - SHEET 94		MS 94-1	
PIPE DITCH-COMMON B'FILL QTY & CY-MILE				0 C.Y.			
DETAIL DWGS							

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	64 AC.		W.P. LOW WATER X-INGS	26 EA.
	ACCESS ROADS	2 EA.		W.P. ROAD X-INGS	1 EA.
	ACCESS ROAD CULVERTS	3 EA.		RIPRAP	1600 C.Y.
	ACCESS ROAD PL. X-INGS	2 EA.		RIVER X-INGS	1 EA.
	MATERIAL SITES	1 EA.		RESTORATION	158,840 S.Y.
	STORAGE YARDS	1 EA.		REVEGETATION	168 AC
	CAMPS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.		NO.	
002	ALIGN. SHT. DESCRIPTION	003	ON SEP LOCATION	016	DRAINAGE STRUCTURES
				017	DRAINAGE STRUCTURES
021	MISC. ON R/W CONST.			019	EROSION CONTROL
022	OFF R/W CONST.			020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TRUE STATE COORDINATE VALUES – ALASKA ZONE (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR
3. RIVER CROSSING STAGING AREA FOR PIPELINE CONSTRUCTION

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCKS AND COLUMAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	RELEASE FOR 60' ROW GRANT COMPLIANCE	DNS	JBM	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	DNS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR

MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

NOTICE

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P.539.1 TO M.P.543.3

TOWNSHIP T9S RANGE R10E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1978	FLUOR	DATE 10/2/80
MICHAEL BAKER, JR., INC.	DATE 11/6/80	M.P. NORTHWEST	DATE 10/29/80

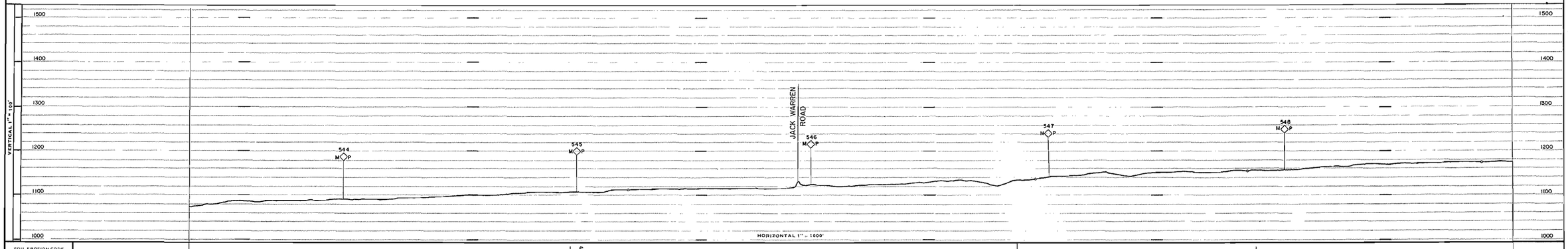
SCALE IN FEET: 1" = 1000'

DRAWING NUMBER: 4680-15-00-B-C-096 REV. 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION			
SOIL TYPE (USC CLASS)	ML	ML/SP-SM	ML	
PERMAFROST	GENERALLY ABSENT		SPORADIC	
RELATIVE FACILITY LOCATION	GVEA POWER LINE RT. OF NWA — ROAD X-ING —	GVEA POWER LINE RT OF NWA	SEPARATE LOCATION	



SOIL EROSION CODE	L, S	L
TYPICAL X-SECT NO	30-OLR-IR	
PAD MAT'L. TYPE & THICKNESS	GRANULAR MATERIAL - 18" THICK	6" GRANULAR - MATERIAL 18" THICK
CONSTR. ZONE EXC - SPOIL STOR. SPOIL DISP & SUIT. MAT'L. QTYS	Ø C.Y.	
BORROW QTY & CY-MILE	MS 97-2 — 176,149 C.Y. 670,923 C.Y. - MILE	MS 97-2
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.	
PIPE DITCH-SPECIAL D'FILL QTY & CY-MILE	MS 94-1 — SEE SHEET 94	MS 94-1
PIPE DITCH-COMMON D'FILL QTY & CY-MILE	MS 97-2 — 43,878 C.Y. 154,880 C.Y. - MILE	MS 97-2
DETAIL DWGS		

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	65 AC			
				RESTORATION	171,160 SY.
	ACCESS ROADS	2 EA.		REVEGETATION	74 AC.
	ACCESS ROAD CULVERTS	3 EA.			
	MATERIAL SITES	1 EA.			
	W.P. LOW WATER X-INGS	34 EA.			
	W.P. CULVERTS	1 EA.			
	W.P. ROADS X INGS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION.		TYP. CONST. ZONE SECTIONS.	016	DRAINAGE STRUCTURES.
002	ALIGN. SHT. DESCRIPTION.			017	DRAINAGE STRUCTURES.
		003	ON SEP. LOCATION.		
021	MISC. ON-R/W CONST.			019	EROSION CONTROL.
		014	GEN. TYP. SECTION.	020	EROSION CONTROL.
022	OFF-R/W CONST.				

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000151605

PHOTO DATE - AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS.			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	8-28-80	NO CHANGE ISSUED FOR RECORD ONLY	MJS	JBM	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	MJS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 543.3 TO M.P. 549.0
TOWNSHIP T9S, T10S RANGE R10E, R11E
MERIDIAN FAIRBANKS

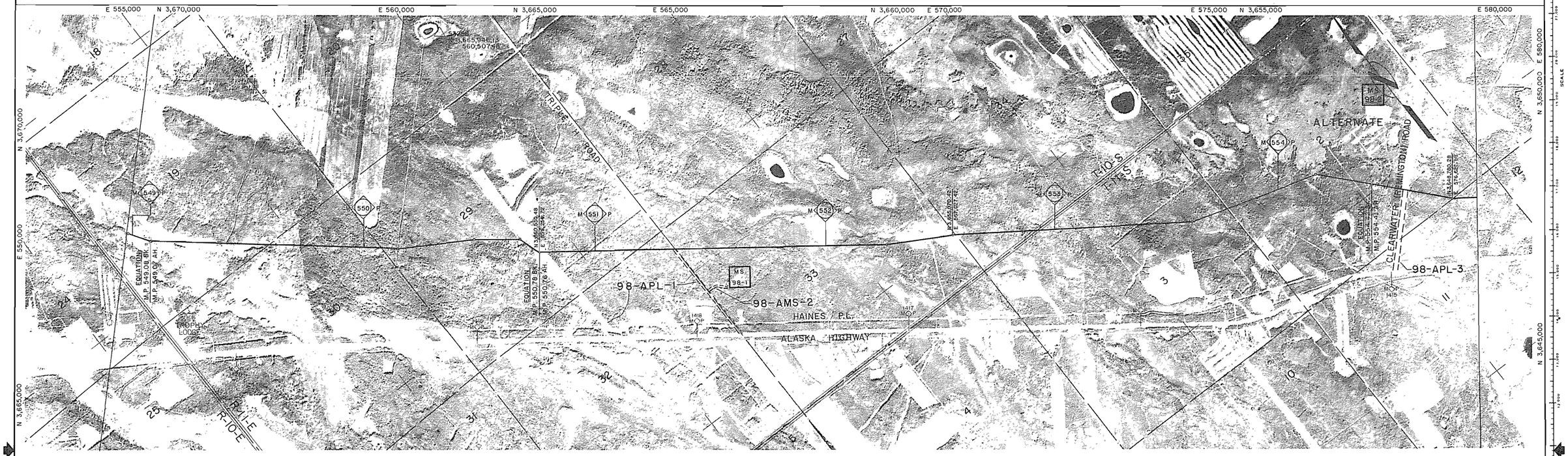
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

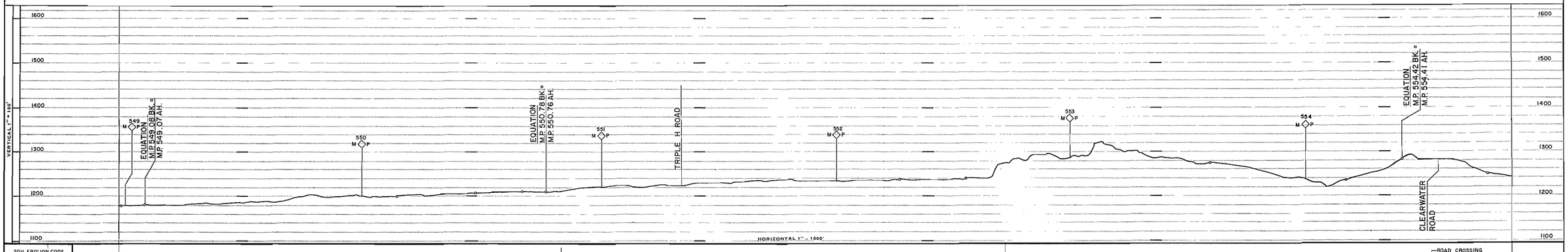
PHOTO APCG	DATE 1978	FLUOR JRBrandt	DATE 9/30/80
MICHAEL BAKER, JR., INC. JB McKee	DATE 4-29-80	NWA [illegible]	DATE 5/6/80
SCALE IN FEET 1" = 1000'		DRAWING NUMBER 4680-15-00-B-C-097	REV. 3

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

4 6 8 0 77 78 79 80 DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	ML / SM
PERMAFROST	SPORADIC
RELATIVE FACILITY LOCATION	SEPARATE LOCATION / ROAD X-ING / SEPARATE LOCATION / ROAD X-ING / SEPARATE LOCATION





SOIL EROSION CODE	L						
TYPICAL X-SECT NO	30-0LR-2R	ROAD CROSSING 30-0LR-2R	30-5R-2R	30-0LR-2R	30-10L-2R	30-0LR-2R	ROAD CROSSING 30-10L-2R / 30-5L-2R / 30-0LR-2R
PAD MAT'L, TYPE & THICKNESS	GRANULAR MATERIAL — 18" THICK	NO W.P.	GRANULAR MATERIAL — 18" THICK				NO W.P. 18"
CONSTR. ZONE EXC. SPOIL STOR. STRIPPING & SUIT. MAT'L. QTYS		31,913 C.Y. STRIPPING TO SPOIL STORAGE					
BORROW QTY & CY-MILE	MS 97-2 SEE SHEET 97	MS 97-2 — MS 98-1	94,431 C.Y.	206,699 C.Y. - MILE			MS 98-1
SPOIL DISPOSAL QTY & CY-MILE		Ø C.Y.					
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 99-2	SEE SHEET 100					MS 99-2
PIPE DITCH-COMMON BFILL QTY & CY-MILE	MS 97-2 SEE SHEET 97	MS 97-2 — MS 98-1	7,920 C.Y.	10,969 C.Y. - MILE			MS 98-1
DETAIL DWGS							

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	106 AC.			
				RESTORATION	176,440SY.
	ACCESS ROADS	3 EA.		REVEGETATION	90 AC.
	ACCESS ROAD CULVERTS	2 EA.			
	MATERIAL SITES	1 EA.			
	W.P. LOW WATER X-INGS	29 EA.			
	W.P. CULVERTS	5 EA.			
	W.P. ROAD X-INGS	2 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		TYP. CONST. ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT DESCRIPTION				017	DRAINAGE STRUCTURES
		003	ON SEP. LOCATION			
021	MISC. ON-R/W CONST.	004	ON SEP. LOCATION		019	EROSION CONTROL
					020	EROSION CONTROL
022	OFF-R/W CONST.	014	GEN. TYP. SECTIONS			

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00015244

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	4-29-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 549.0 TO M.P. 554.9

TOWNSHIP T10S, T11S RANGE R11E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

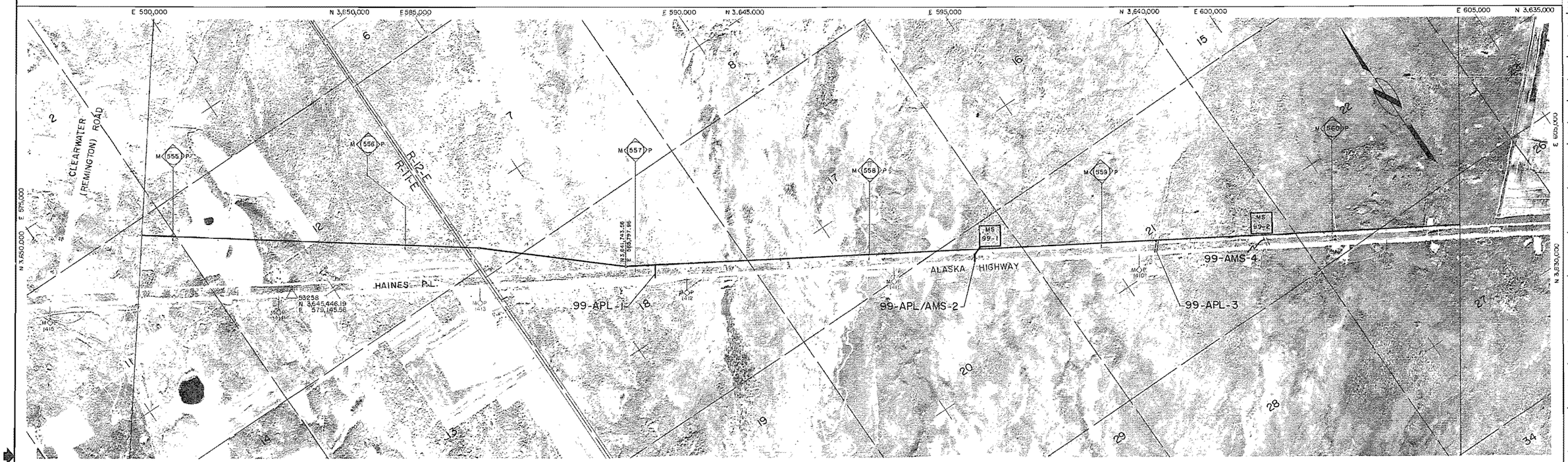
PHOTO APCG	DATE 1978	FLUOR J.R. Brandt	DATE 6/30/80		
MICHAEL BAKER, JR., INC.	DATE 4-29-80	N.W.N.G.T.C.	DATE 5/6/80		

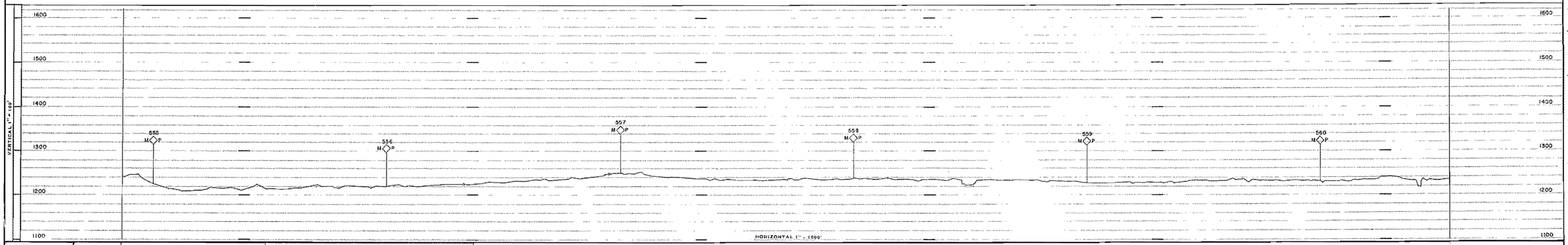
SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-15-00-B-C-098	3

4 6 8 0
77 78 79 80

DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION		
SOIL TYPE (USC CLASS)	SM	GW - GM	ML
PERMAFROST	GENERALLY ABSENT		
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	ON HAINES PIPELINE R/W	





SOIL EROSION CODE	Q	G	L	
TYPICAL X-SECT. NO.	30-DLR-2R			
PAD MAT'L. TYPE & THICKNESS	GRANULAR MATERIAL-18" THICK	GRANULAR MATERIAL-6" THICK	GRANULAR MATERIAL-18" THICK	
CONSTR. ZONE EXC.-SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. QTYS.	30,342 C.Y. STRIPPING TO SPOIL STORAGE			
BORROW QTY & CY-MILE	MS 98-1 SEE SHEET 98 — MS 99-1	119,667 C.Y.	190,112 C.Y.-MILE	MS 99-1
SPOIL DISPOSAL QTY & CY-MILE		Ø C.Y.		
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 99-2	SEE SHEET 100		MS 99-2
PIPE DITCH-COMMON BFILL QTY & CY-MILE	MS 98-1 SEE SHEET 98 — MS 99-1	24,950 C.Y.	43,513 C.Y.-MILE	MS 99-1
DETAIL DWGS				

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	75 AC.		RESTORATION	172,040 S.Y.
				REVEGETATION	85 AC.
	ACCESS ROADS	4 EA.			
	ACCESS ROAD CULVERTS	4 EA.			
	ACCESS ROAD PL. X-INGS	2 EA.			
	MATERIAL SITES	2 EA.			
	W.P. LOW WATER X-INGS	40 EA			
	W.P. CULVERTS	1 EA			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION.	NO.	TYP. CONST. ZONE SECTIONS.	NO.	016 DRAINAGE STRUCTURES.
002	ALIGN. SHT. DESCRIPTION.				017 DRAINAGE STRUCTURES.
		003	ON SEP. LOCATION		
022	OFF-R/W CONST.				019 EROSION CONTROL.
		014	GEN. TYP. SECTION.		020 EROSION CONTROL.

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.0001494

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JGM	
3	11-14-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JGM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 554.9 TO M.P. 560.5

TOWNSHIP T11S RANGE R11E, R12F

MERIDIAN FAIRBANKS

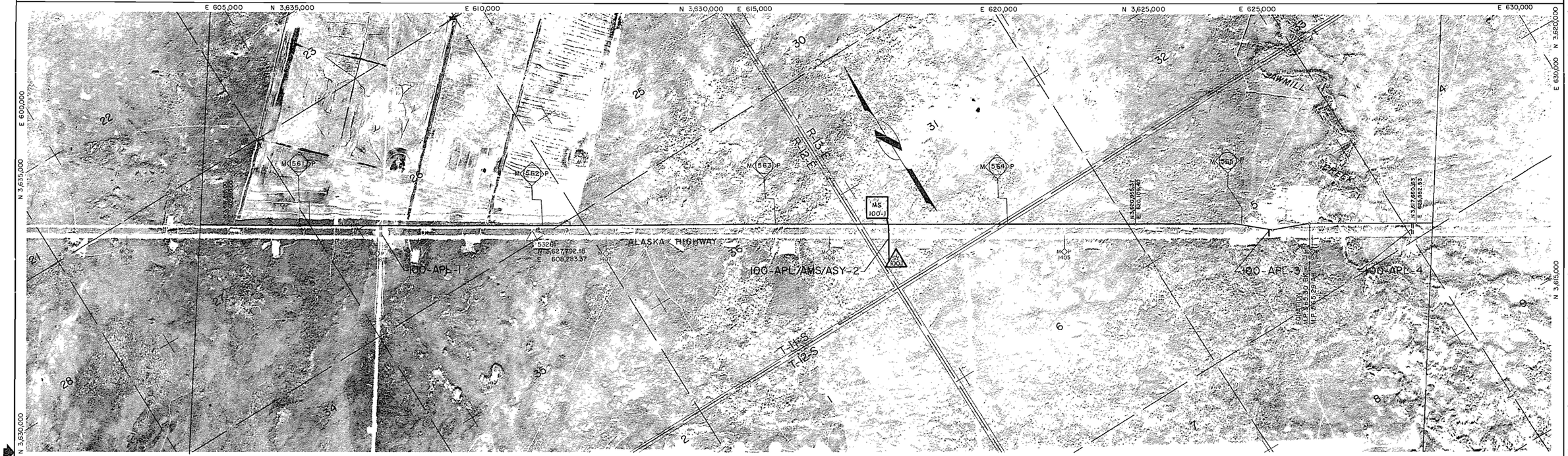
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

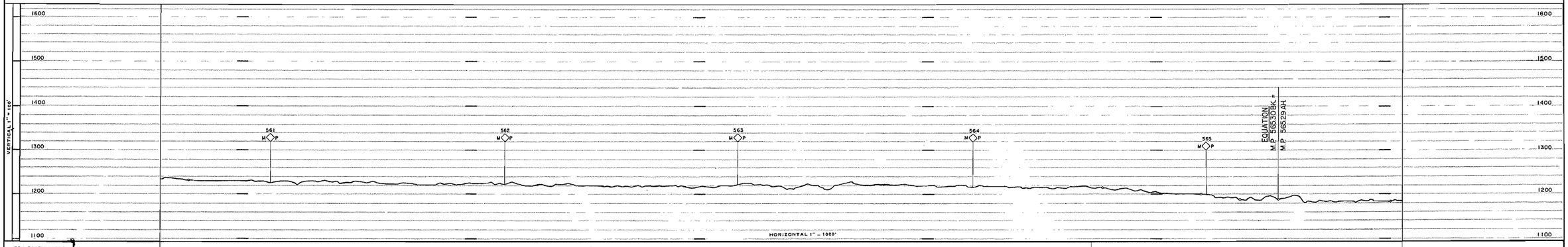
PHOTO AFCO	DATE 1978	FLUOR J.R. Burruff	DATE 9/30/80
MICHAEL BAKER, JR. INC. C.D. Parker	DATE 9-29-80	N.W. ALASKA W.A. Miller	DATE 9/29/80

SCALE IN FEET	DRAWING NUMBER	REV
1" = 1000'	4680-15-00-B-C-099	3

DISTRIBUTION CODE

WORKPAD CONSTR SEASON		SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)		ML
PERMAFROST		GENERALLY ABSENT
RELATIVE FACILITY LOCATION		ON HAINES PIPELINE R/W





SOIL EROSION CODE		L	L,O
TYPICAL X-SECT NO		30-OLR-2R	
PAD MAT'L TYPE & THICKNESS		GRANULAR MATERIAL - 18" THICK	
CONSTR. ZONE EXC.-SPOIL STOR.-SPOIL DISP & SUIT. MAT'L. QTYS		28,366 C.Y. STRIPPING TO SPOIL STORAGE	
BORROW QTY & CY-MILE	SEE SHEET 99 — MS 99-1 — MS 100-1	120,482 C.Y. 125,197 C.Y.-MILE	MS 100-1 — MS 101-2 SEE SHEET 101
SPOIL DISPOSAL QTY & CY-MILE		ϕ C.Y.	
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 99-2	58,453 C.Y. 215,583 C.Y.-MILE	MS 99-2
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	SEE SHEET 99 — MS 99-1 — MS 100-1	21,048 C.Y. 32,939 C.Y.-MILE	MS 100-1 — MS 102-1 SEE SHEET 101-2
DETAIL DWGS			

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	78 AC.			
				RESTORATION	165,880 S.Y.
	ACCESS ROADS	4 EA.		REVEGETATION	91 AC.
	ACCESS ROAD CULVERTS	5 EA.			
	ACCESS ROAD PL. X-INGS	1 EA.			
	MATERIAL SITES	1 EA.			
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	34 EA.			
	W.P. CULVERTS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		NO.		NO.	
001	ALIGN SHT. DESCRIPTION	TYP CONST ZONE SECTIONS NO.		016	DRAINAGE STRUCTURES
002	ALIGN SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
		003	ON SEP. LOCATION		
022	OFF-R/W CONST.			019	EROSION CONTROL
		014	GEN. TYP SECTION	020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00014316

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FNLC FILING			
2	8-28-80	NO CHANGE ISSUED FOR RECORD ONLY	GWS	JBM	
3	11-11-80	NOVEMBER 1980 ROUTE REFINEMENTS	GWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 560.5 TO M.P. 565.8

TOWNSHIP T11S, T12S RANGE R12E, R13E

MERIDIAN FAIRBANKS

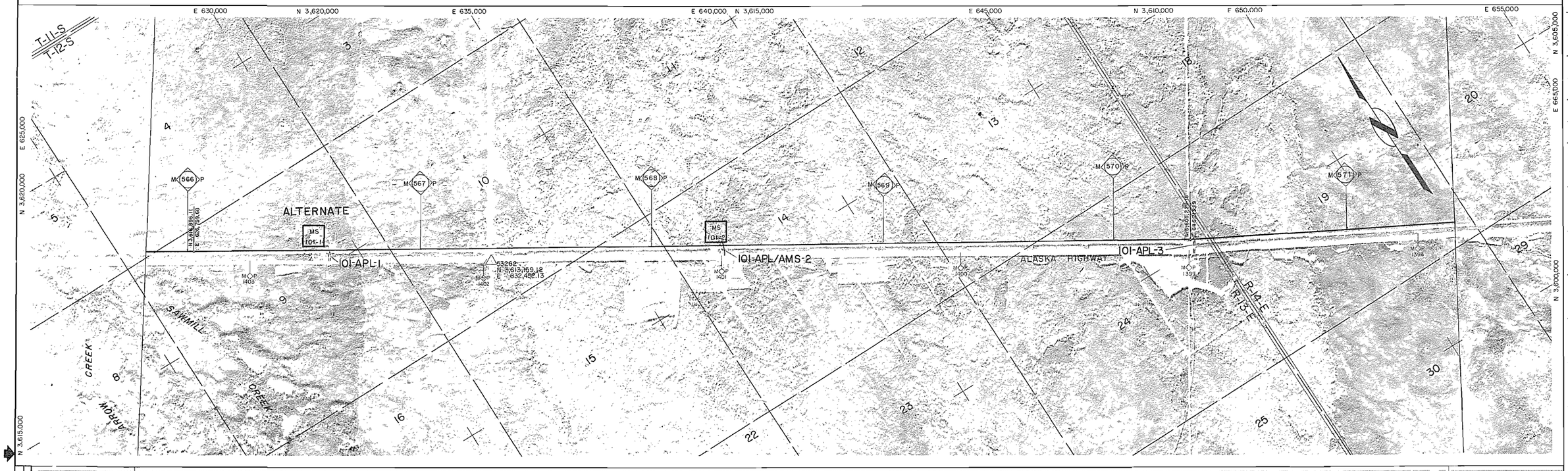
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1978	FLUOR J.R. Brandt	DATE 4/30/80
MICHAEL BAKER, JR., INC. J.B. Miller	DATE 4-29-80	N.W. [illegible]	DATE 5/2/80
SCALE IN FEET		DRAWING NUMBER	REV
1" = 1000'		4680-15-00-B-C 100	3

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION			
SOIL TYPE (USC CLASS)	ML	SM	ML	
PERMAFROST	SPORADIC			
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W			



SOIL EROSION CODE	L,Q	L	L,Q	L		
TYPICAL X-SECT NO	30-0LR-2R					
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL — 18" THICK					
CONSTR. ZONE EXC + SPOIL STOR SPOIL DISP & SUIT MAT'L. QTYS	29,968 C.Y. STRIPPING TO SPOIL STORAGE					
BORROW QTY & CY-MILE	MS 101-2	100,481 C.Y. 132,655 C.Y.-MILE		MS-101-2 ◄ MS-102-1	SEE SHEET 102	MS 102-1
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.					
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 99-2	SEE SHEET 100				MS 99-2
PIPE DITCH-COMMON B'FILL QTY & CY MILE	MS 101-2	22,890 C.Y. 31,085 C.Y.-MILE		MS 101-2 ◄ MS 102-1		MS 102-1
DETAIL DWGS						

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	66 AC.		RESTORATION	172,040 SY.
				REVEGETATION	84 AC.
	ACCESS ROADS	3 EA.			
	ACCESS ROAD CULVERTS	3 EA.			
	ACCESS ROAD P.L. X-INGS	1 EA.			
	MATERIAL SITES	1 EA.			
	W.P. LOW WATER X-INGS	22 EA.			
	W.P. CULVERTS	4 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	TYP. CONST. ZONE SECTIONS		016	DRAINAGE STRUCTURES
002	ALIGN SHT DESCRIPTION			017	DRAINAGE STRUCTURES
		003	ON SEP. LOCATION		
022	OFF-R/W CONST.			019	EROSION CONTROL
		014	GEN. TYP. SECTION	020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000136220

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	9-26-80	NO CHANGE ISSUED FOR RECORD ONLY	DLS	JBM	
3	11-11-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 565.8 TO M.P. 571.5

TOWNSHIP T12S RANGE R13E, R14E

MERIDIAN FAIRBANKS

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1978	FLUOR J.R. Brandt	DATE 4/30/80
MICHAEL BAKER, JR., INC. J.B. Michael	DATE 4-29-80	N.W.N.G.T.C. W.D. Miller	DATE 5/2/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-15-00-B-C-101	3

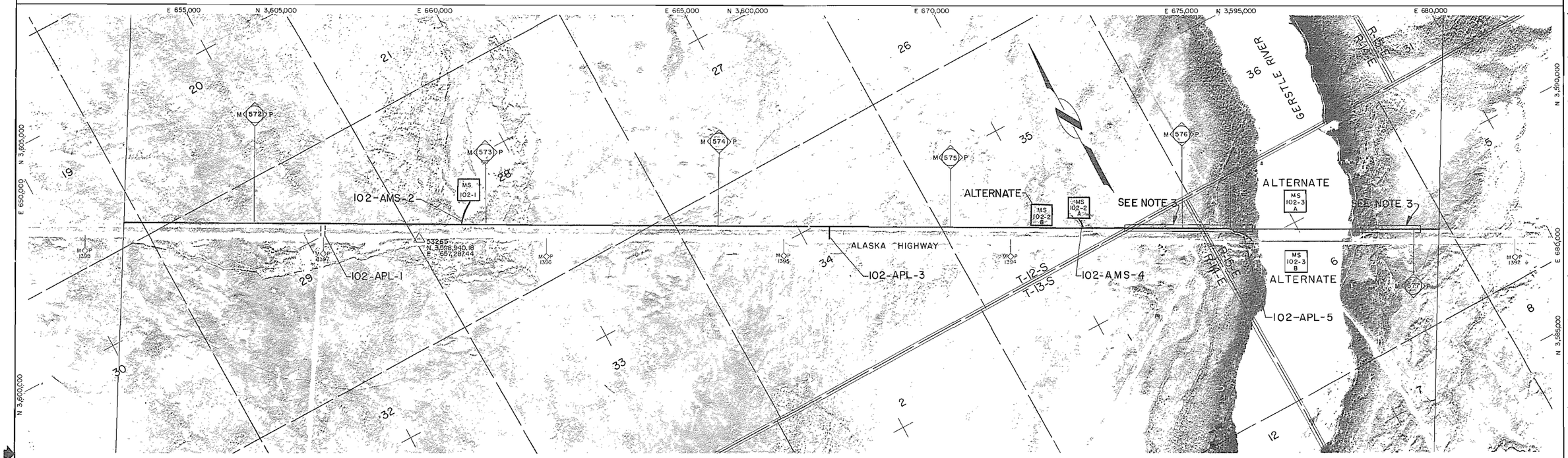
15000 10101 0215657V MIL CLASSIFICATION

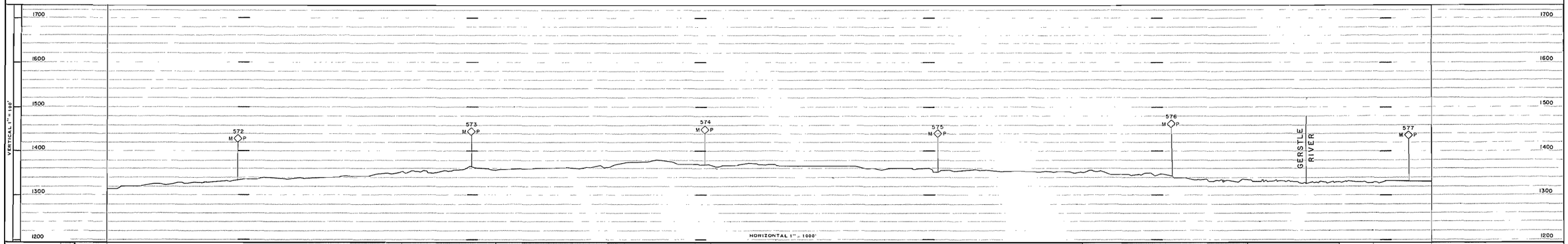
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

4 6 8 0
77 78 79 80

DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION					NO CIVIL CONSTRUCTION	SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	ML	SP	ML	SM	GW - GM	SM	ML
PERMAFROST	GENERALLY ABSENT		SPORADIC				
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W — ROAD CROSSING		ON HAINES PIPELINE R/W		SEPARATE LOCATION - RIVER CROSSING		ON HAINES P/L R/W





SOIL EROSION CODE	L		L,Q	L	Q	L			L,Q	Q		LQ	L
TYPICAL X-SECT NO	30-OLR-2R										RIVER CROSSING	30-ORL-2R	
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 18" THICK										NO WORK PAD	GRANULAR MATERIAL 18" THICK	
CONSTR. ZONE EXC - SPOIL STOR SPOIL DISP & SUIT MAT'L QTYS	27,458 C.Y. STRIPPING TO SPOIL STORAGE												
BORROW QTY & CY-MILE	MS 102-1		129,712 C.Y. 218,733 C.Y. - MILE							MS 102-1 →		← MS 103-1 SEE SHEET 103	
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.												
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 99-2	SEE SHEET 100	MS 99-2 →	← MS 104-2		SEE SHEET 104						MS 104-2	
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS102-1		17,533 C.Y. 34,395 C.Y.-MILE							MS102-1 →		← MS 103-1 SEE SHEET 103	
DETAIL DWGS													

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	97 AC.		RIP RAP	15,000 C.Y.
	ACCESS ROADS	5 EA.		RESTORATION	243,760SY.
	ACCESS ROAD CULVERTS	4 EA.		REVEGETATION	95 AC.
	ACCESS ROAD PL. X-INGS.	2 EA.			
	MATERIAL SITES	2 EA.			
	W.P. LOW WATER X-INGS	34 EA.			
	RIVER X-INGS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		NO.		NO.	
001	ALIGN.SHT.DESCRIPTION.	TYP. CONST. ZONE SECTIONS.		016	DRAINAGE STRUCTURES.
002	ALIGN.SHT.DESCRIPTION.	NO.		017	DRAINAGE STRUCTURES.
		003	ON SEP. LOCATION.		
021	MISC. ON-R/W CONST.			019	EROSION CONTROL.
		014	GEN. TYP. SECTION.	020	EROSION CONTROL.
022	OFF-R/W CONST.				

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00013343
3. RIVER CROSSING STAGING AREA FOR PIPELINE CONSTRUCTION.

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	4-30-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JDM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JDM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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This drawing/document is the property of the Alaskan Northwest Natural Gas Transportation Company and contains information that is deemed to be confidential and/or proprietary by said Company or by third parties who furnished such information to the Company pursuant to a license or use agreement. Information contained in this drawing/document which is confidential and/or proprietary is not subject to mandatory disclosure under the Freedom of Information Act, and use or disclosure of information contained in this drawing/documents may also be prohibited by virtue of applicable laws such as the Federal Trade Secrets Act. No use or disclosure is authorized except as permitted by said Company or its Agent, Northwest Alaskan Pipeline Company.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 571.5 TO M.P. 577.1

TOWNSHIP T12S, T13S RANGE R14E, R15E

MERIDIAN FAIRBANKS

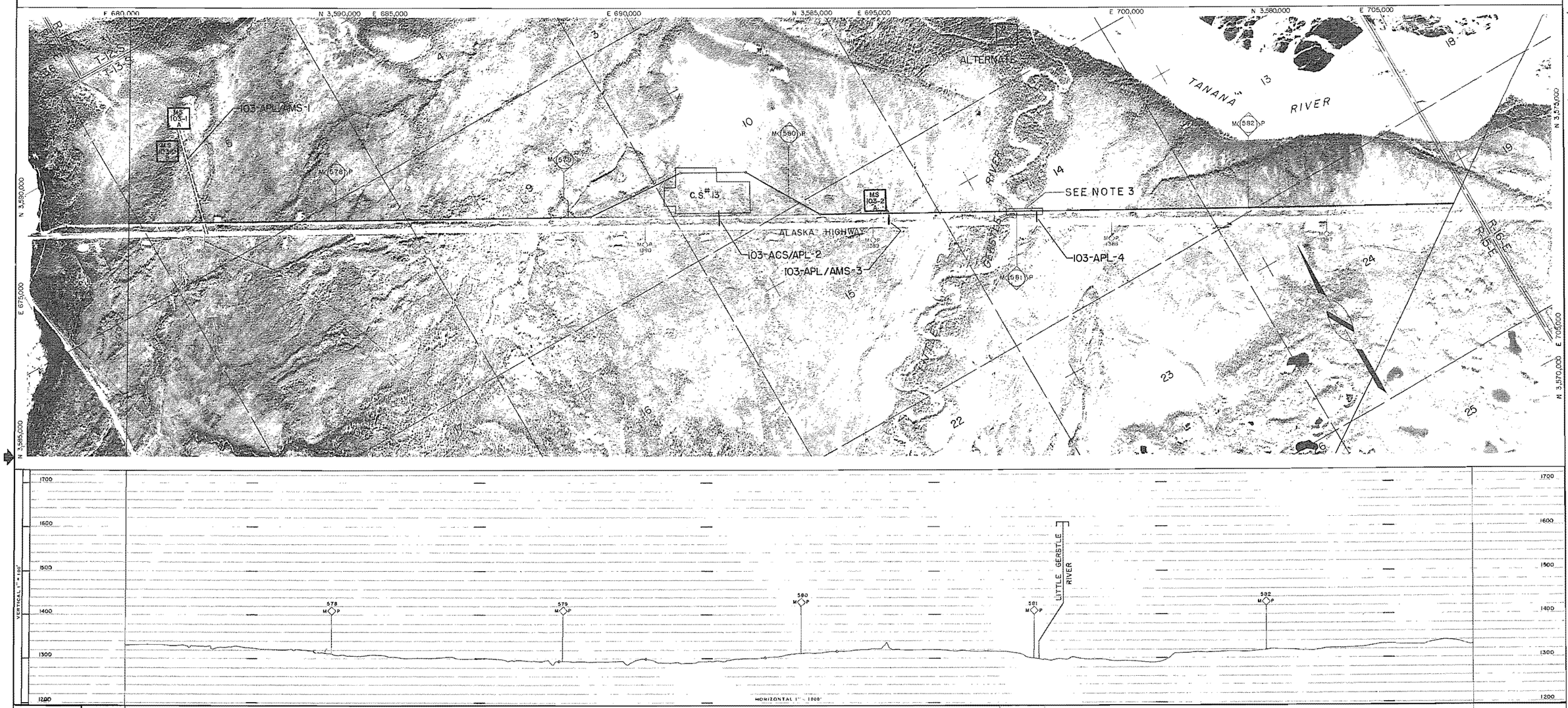
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1978	FLUOR J.R. Brandt	DATE 4/30/80		
MICHAEL BAKER JR., INC. J.D. Mitchell	DATE 4-29-80	N.W. [illegible]	DATE 5/2/80		
SCALE IN FEET		DRAWING NUMBER		REV.	
1" = 1000'		4680-15-00-B-C-102		3	

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION		SHOULDER MONTH CONSTRUCTION	
SOIL TYPE (USC CLASS)	ML	GP-GM	ML	
PERMAFROST	SPORADIC			
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W	C.S.	ON HAINES PIPELINE R/W	



SOIL EROSION CODE	L				G		L	
TYPICAL X-SECT NO	30-OLR-2R	C.S.	30-OLR-2R		30-OLR-2R	RIVER CROSSING	30-OLR-2R	
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 18" THICK	NO W.P	GRANULAR MATERIAL - 18" THICK		6" NO W.P		GRANULAR MATERIAL - 18" THICK	
COASTAL ZONE ETC., SPOIL STOR. & DISP. & SUIT. MAT'L QTYS	30,437 C.Y. STRIPPING	TO	24,413 C.Y. SPOIL STORAGE	TO	6,024 C.Y. SPOIL DISPOSAL			
BORROW QTY & C.Y.-MILE	MS 103 - 1 76,346 C.Y. 82,686 C.Y. - MILE	MS 103-1	MS 103-2A	46,537 C.Y. 37,787 C.Y.-MILE		MS 103-2A	MS 104-2 SEE SHEET 104	MS 104-2
SPOIL DISPOSAL QTY & C.Y.-MILE	TOTAL 6,024 C.Y. 3,012 C.Y.-MILE		FROM WORK PAD					
PIPE DITCH, SPECIAL BACKFILL QTY & C.Y.-MILE	MS 104 - 2				SEE SHEET 104			MS 104-2
PIPE DITCH, COMMON BACKFILL QTY & C.Y.-MILE	MS 103 - 1 9,431 C.Y. 9,195 C.Y.-MILE	MS 103-1	MS 103-2A	961 C.Y. 1,658 C.Y. MILE		MS 103-2A	MS 104-2 SEE SHEET 104	MS 104-2
DETAIL DWGS								

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY	NO.		TYP CONST ZONE SECTIONS	NO.		NO.	
	CLEARING	66 AC.		W.P. CULVERTS	1 EA.	001	ALIGN. SHT. DESCRIPTION	NO.			016	DRAINAGE STRUCTURES
				TEMPORARY W.P. BRIDGES	1 EA.	002	ALIGN SHT. DESCRIPTION				017	DRAINAGE STRUCTURES
	ACCESS ROADS	4 EA.						003	ON SEP LOCATION			
	ACCESS ROAD CULVERTS	6 EA.		RIVER X-INGS	1 EA.	021	MISC. ON-R/W CONST.				019	EROSION CONTROL
	ACCESS ROAD PL. X-INGS	2 EA.						014	GEN. TYP SECTION		020	EROSION CONTROL
				RESTORATION	249,876 S.Y.	022	OFF-R/W CONST.					
	MATERIAL SITES	2 EA.		REVEGETION	124 AC.							
	DISPOSAL SITES	1 EA.										
	COMPRESSOR SITES	1 EA.										
	W.P. LOW WATER X-INGS	34 EA.										

NOTES

1 ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)

2 TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000129

3 RIVER CROSSING STAGING AREA FOR PIPELINE CONSTRUCTION.

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED PIPELINE ROUTE & MILEPOST			
		RELEASED FOR FERC FILING			
2	6-20-80	NO CHANGE ISSUED FOR INFORMATION ONLY	WDS	JEM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	WDS	JEM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 577.1 TO M.P. 582.9
TOWNSHIP T13S RANGE R15E
MERIDIAN FAIRBANKS
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

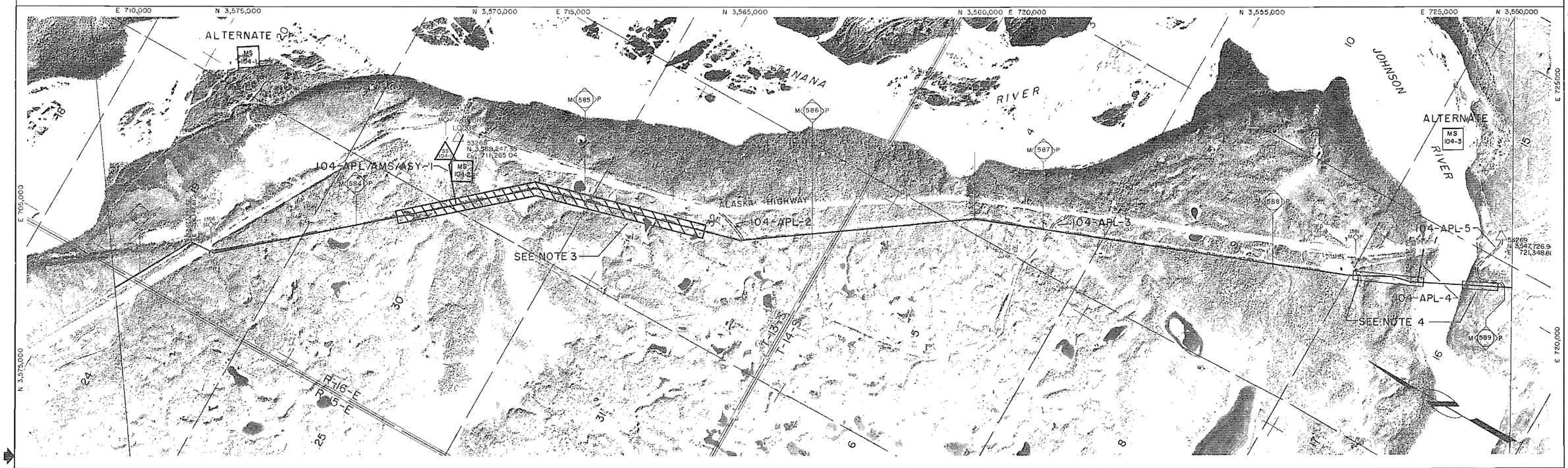
PHOTO	APCC	DATE 1978	FLUOR	JR Brandt	DATE 4/30/80
MICHAEL BAKER, JR. INC.		DATE 4-29-80	NWNGTC		DATE 5/2/80

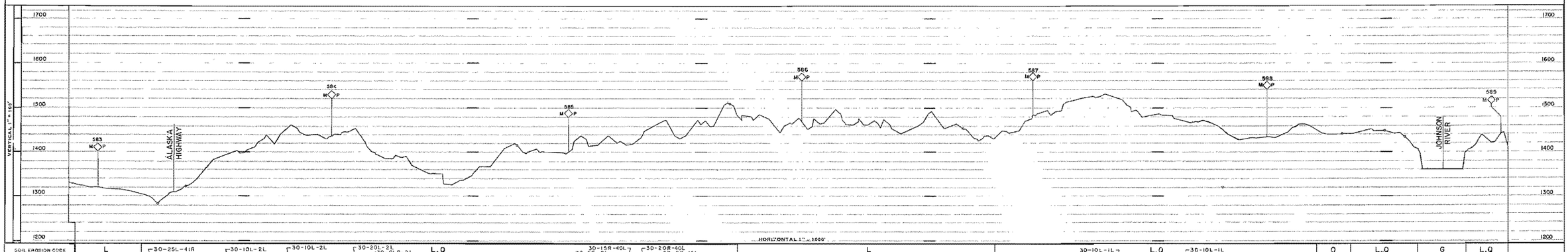
SCALE IN FEET 1" = 1000'
DRAWING NUMBER 4680-15-00-B-C-103
REV. 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

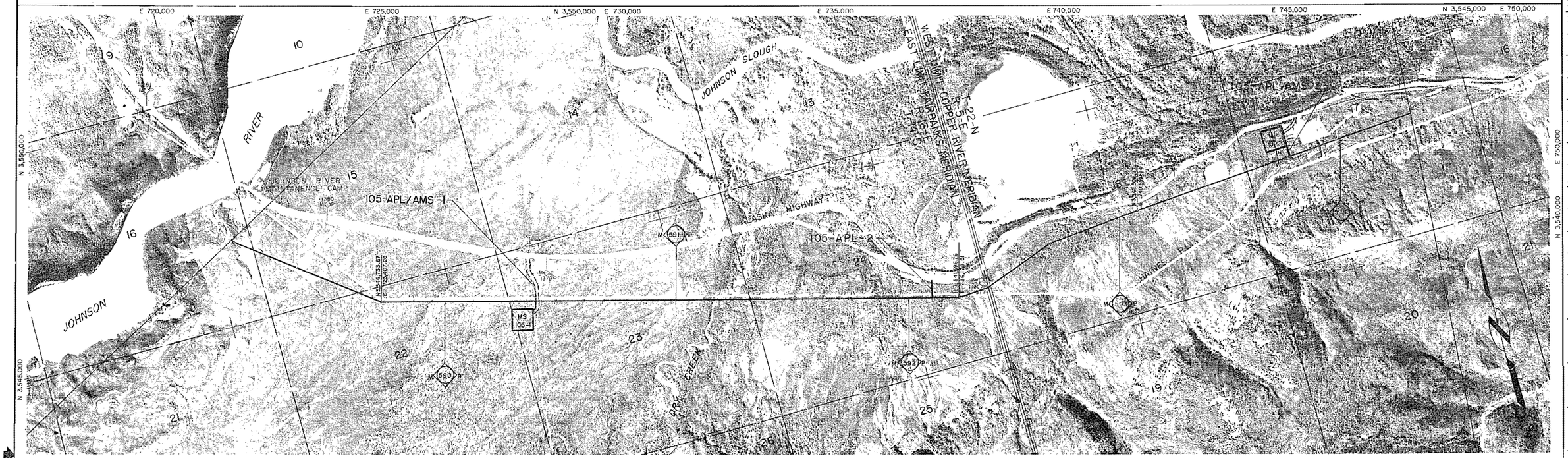
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION	SUMMER CONSTRUCTION	NO CIVIL CONST. / RIVER CROSSING: SUMMER CONST.
SOIL TYPE (USC CLASS)	ML		ML
PERMAFROST	DISCONTINUOUS		
RELATIVE FACILITY LOCATION	ON HAINES PIPLINE R/W / ROAD X-ING	ON HAINES PIPELINE R/W	

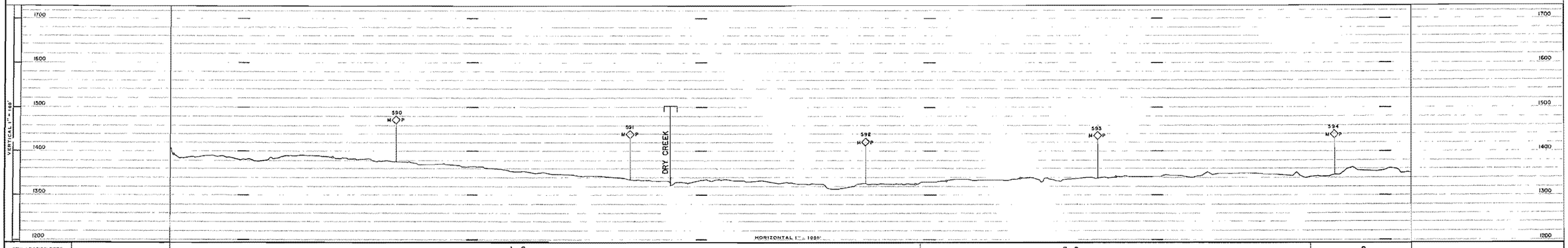




| | | |

WORK PAD CONDITION SEASON	SUMMER CONSTRUCTION		
SOIL TYPE (USCE CLASS)	ML		
PERMAFROST	GENERALLY ABSENT		DISCONTINUOUS
RECEIVER FACILITY LOCATION	SEPARATE LOCATION	ON HAINES PIPELINE R/W	SEPARATE LOCATION





SOIL EROSION CODE	L, Q			S, Q		S
TYPICAL X-SECT NO	30-15L-7L	30-0LR-2L				30-0LR-1L
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 18" THICK					GRANULAR MAT'L - 42" THICK
CONSTR ZONE EXC - SPOIL STOR SPOIL DISP & SUIT MAT'L QTYS	25,055 C.Y. STRIPPING TO SPOIL STORAGE					
BORROW QTY & CY-MILE	MS 105-1	75,057 C.Y.	66,934 C.Y.-MILE	MS 105-1 — MS 105-2	209,336 C.Y.	300,636 C.Y.-MILE MS 105-2
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.					
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 104-2	SEE SHEET 104				MS 104-2
PIPE DITCH-COMMON BFILL QTY & CY-MILE	MS 105-1	12,607 C.Y.	10,293 C.Y.-MILE	MS 105-1 — MS 105-2	SEE SHEET 106	MS 105-2
DETAIL DWGS						

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	93 AC.		TEMPORARY W.P. BRIDGES	1 EA.
	ACCESS ROADS	3 EA.		RESTORATION	236,720 S.Y.
	ACCESS ROAD CULVERTS	4 EA.		REVEGETATION	96 AC.
	ACCESS ROAD P.L. X-INGS	1 EA.			
	MATERIAL SITES	2 EA.			
	W.P. LOW WATER X-INGS	34 EA.			
	W.P. CULVERTS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-D-C-NO.

NO.		TYP CONST ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION				017	DRAINAGE STRUCTURES
		003	ON SEP. LOCATION			
022	OFF-R/W CONST				019	EROSION CONTROL
		014	GEN. TYP. SECTION		020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.0001242

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	6-26-80	NO CHANGE ISSUED FOR RECORD ONLY	WLS	JBM	
3	11-13-80	NO CHANGE ISSUED FOR RECORD ONLY	WLS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 589.0 TO M.P. 594.3

TOWNSHIP T14S, T22N RANGE R16E, R5E

MERIDIAN FAIRBANKS, COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

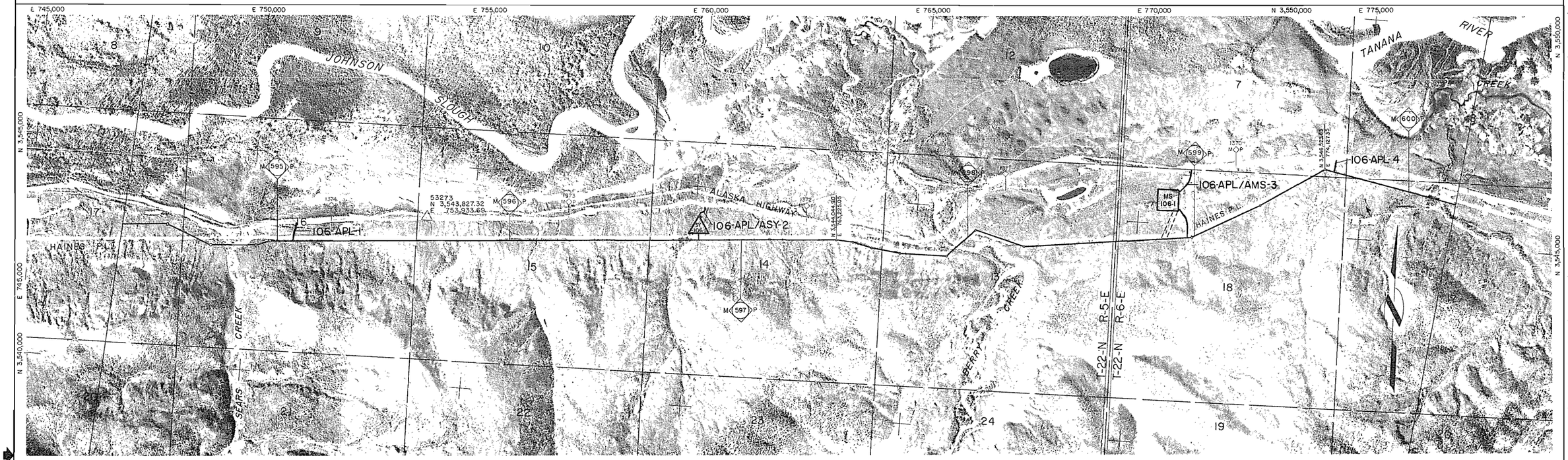
PHOTO APPD.	DATE 1978	FLUOR	JR Brandt	DATE	4/30/80
MICHAEL BAKER JR. INC	DATE 4-29-80	NWNGTC		DATE	5/7/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-15-00-B-C-105	3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION														
SOIL TYPE (USC CLASS)	ML	SW-SM	ML	SM	ML				SM	SW SM	SM	ML			
PERMAFROST	DISCONTINUOUS														SPORADIC
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	ON HAINES PIPELINE R/W													



SOIL EROSION CODE	S	Q	S				Q,D		Q		Q,S		S		
TYPICAL X-SECT. NO	30-5L-IL	30-10L-5L	30-5L-IL				30-10L-5L	30-25L-7L	30-5L-IL		30-10L-5L	30-5L-IL	30-5L-IL		
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL — 42" THICK						30-15L-5L	30-20L-5L	12"	GRANULAR MATERIAL — 18" THICK				30-10L-IL	
CONSTR. ZONE EXC., SPOIL STOR., SPOIL DISP., SUIT. MAT'L. QTYS.	700 C.Y. STRIPPING TO SPOIL STORAGE														
BORROW QTY & CY-MILE	MS 105-2	SEE SHEET 105	MS105-2 ⟷ MS 106-1				247,657 C.Y.		365,804 C.Y - MILE						MS 106-1
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 41,749 C.Y. 20,875 - C.Y.-MILE FROM DITCH														
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 104-2	SEE SHEET 104	MS104-2 ⟷ MS 107-1				SEE SHEET 107								MS107-1
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS 105-2	19,712 C.Y.	33,837 C.Y.-MILE	MS105-2 ⟷ MS106-1			24,778 C.Y.		55,375 C.Y.- MILE						MS 106-1
DETAIL DWGS															

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	105 AC.		TEMPORARY W.P. BRIDGES	1 EA.
	ACCESS ROADS	4 EA.		RESTORATION	207,020 S.Y.
	ACCESS ROAD CULVERTS	4 EA.		REVEGETATION	105 AC.
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	7 AC.			
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	6 EA.			
	W.P. CULVERTS	14 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		TYP. CONST. ZONE SECTIONS NO.		NO.	
001	ALIGN. SHT. DESCRIPTION			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
		003	ON SEP. LOCATION	018	DRAINAGE STRUCTURES
		014	GEN TYP. SECTION	019	EROSION CONTROL
				020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.00008799

PHOTO DATE - AUGUST 1976

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	9-30-80	NO CHANGES ISSUED FOR RECORD ONLY	MWS	JBM	
3	11-11-80	NOVEMBER 1980 ROUTE REFINEMENTS	MWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 594.3 TO M.P. 600.2

TOWNSHIP T22N RANGE R5E, R6E

MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCG	DATE 1978	FLUOR J.R. Brandt	DATE 9/30/80
MICHAEL BAKER, JR. INC. J.B. Mitchell	DATE 9-29-80	N.W. [illegible]	DATE 9/2/80

SCALE IN FEET: 1" = 1000'

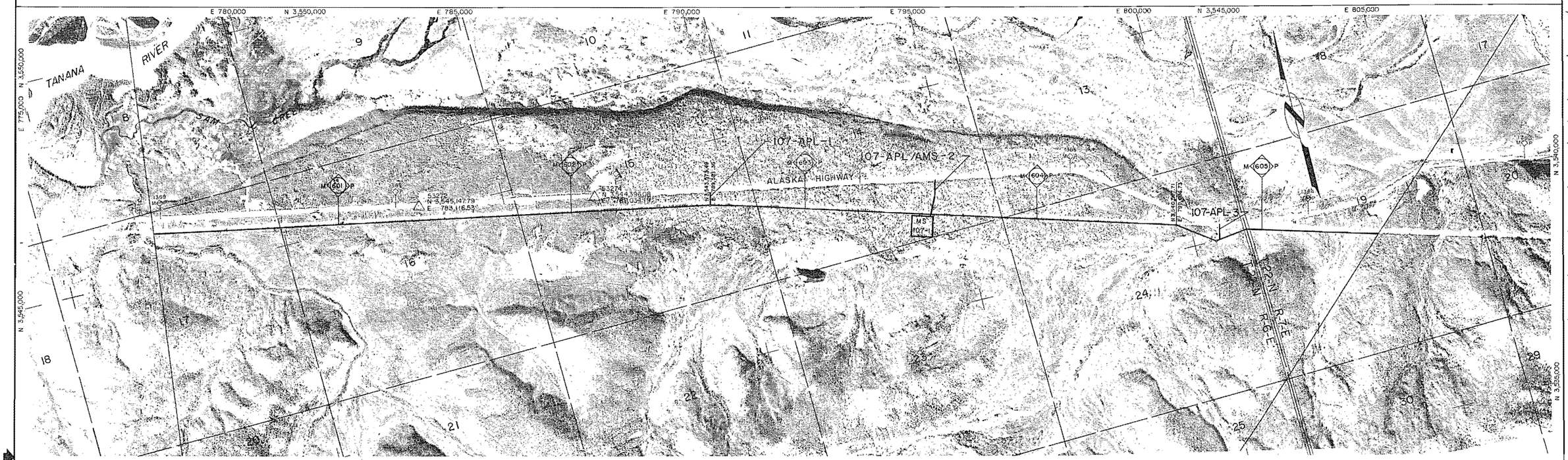
DRAWING NUMBER: 4680-15-00-B-C-106

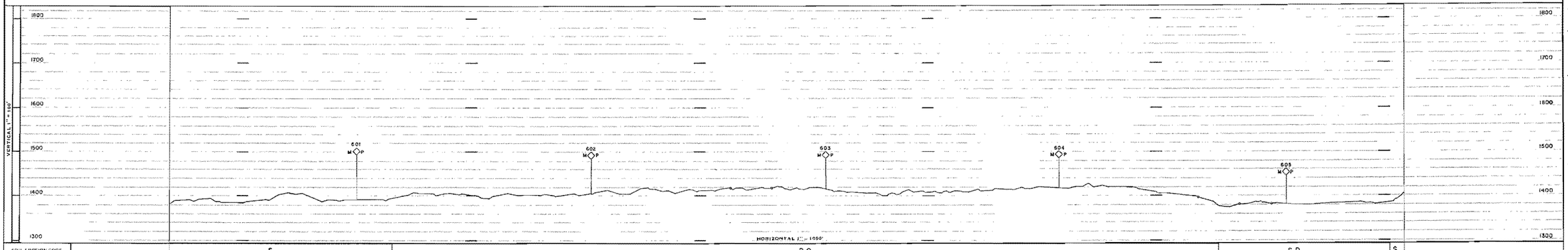
REV: 3

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

DISTRIBUTION CODE

WORKPAD CONSTR SEASON		SUMMER CONSTRUCTION		
SOIL TYPE USCS CLASS	ML	SW - SM	ML	
PERMAFROST		SPORADIC	GENERALLY FROZEN	
RELATIVE FACILITY LOCATION		ON HAINES PIPELINE R/W	SEPARATE LOCATION ON HAINES PIPELINE R/W	





SOIL EROSION CODE	S	D,Q		S,D	S
TYPICAL X-SECT NO		30-OLR-2L		30-OLR-1L	
PAD MATL TYPE & THICKNESS	GRANULAR MATERIAL - 18" THICK	GRANULAR MATERIAL - 6" THICK		GRANULAR MATERIAL - 42" THICK	
CONSERVATION EXC - SPOIL STOR, SPOIL DISP & SHIT MATL QTYS		22,412 C.Y. STRIPPING TO SPOIL STORAGE			
BORROW QTY & CY-MILE	MS 106-1 SEE SHEET 106 MS 106-1 ◄— MS 107-1	125,289 C.Y. 244,284 C.Y. - MILE		MS 107-1	
SPOIL DISPOSAL QTY & CY-MILE		Ø C.Y.			
PIPE DITCH SPECIAL BFILL QTY & CY-MILE	MS 107-1	64,724 C.Y. 287,317 C.Y. - MILE		MS 107-1	
PIPE DITCH COMMON BFILL QTY & CY-MILE	MS 106-1 SEE SHEET 106 MS 106-1 ◄— MS 107-1	13,328 C.Y. 11,723 C.Y. - MILE		MS 107-1	
DETAIL DWGS					

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	72 AC.		W.P. CULVERTS	2 EA.
	ACCESS ROADS	3 EA.		RESTORATION	165,000 S.Y.
	ACCESS ROAD CULVERTS	4 EA.		REVEGETATION	80 AC.
	ACCESS ROAD RL. X-INGS.	1 EA.			
	MATERIAL SITES	1 EA.			
	W.P. LOW WATER X-INGS.	29 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION		TYP. CONST. ZONE SECTIONS	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION			017	DRAINAGE STRUCTURES
022	OFF-R/W CONSTRUCTION	003	ON SEP. LOCATION	019	EROSION CONTROL
		014	GEN. TYP. SECTION	020	EROSION CONTROL

NOTES

1 ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 3 (TRANSVERSE MERCATOR)

2 TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.0010149

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	9-10-80	RE-ISSUED FOR RECORDS	JWS	JBD	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	JWS	JBD	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

NOTICE
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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 600.2 TO M.P. 605.5

TOWNSHIP T22N RANGE R26E, R7E

MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APLO	DATE 1978	FLUOR J.R. Brandt	DATE 9/30/80
MICHAEL BAKER, JR., INC. J.A. Mickey	DATE 4-29-80	N.W. [illegible]	DATE 9/30/80

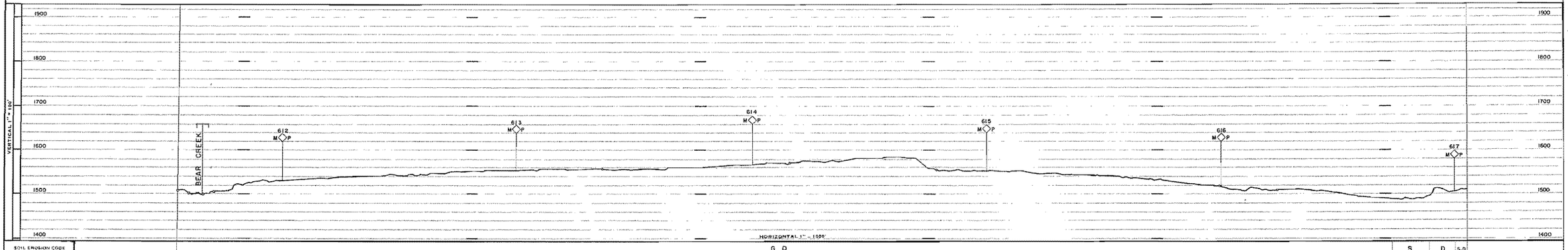
SCALE IN FEET	DRAWING NUMBER	REV
1" = 1000'	4680-15-00-B-C-107	3

Prepared by ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

DISTRIBUTION CODE

| | | |

WORKPAC CONSTR. SEASON		SUMMER CONSTRUCTION			
SOIL TYPE USCE CLASS	SW-SM	SM	ML	GM	ML
PERMAFROST		GENERALLY ABSENT		DISCONTINUOUS	
RELATIVE FACILITY LOCATION		ON HAINES PIPELINE R/W			



SOIL EROSION CODE	G, D												S	D	5,0
TYPICAL X-SECT NO	30-OLR-2R													30-OLR-1R	
PAD MAT'L. TYPE & THICKNESS	GRANULAR MAT'L - 6"	GRANULAR MATERIAL - 18" THICK												6"	42"
CONSTR. ZONE EXC SPOIL STOR SPOIL DISP & SUIT. MAT'L. QTYS	28,200 C.Y. STRIPPING TO SPOIL STORAGE														
BORROW QTY & CY/MILE	MS 109-1	54,397 C.Y.	57,839 C.Y.-MILE	MS 109-1 ⟷ MS 109-2								138,010 C.Y.	170,306 C.Y.-MILE	MS 109-2	
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.														
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 109-2	60,832 C.Y.	230,692 C.Y.-MILE	MS 109-2											
PIPE DITCH-COMMON BFILL QTY & CY-MILE	MS 109-1	351 C.Y.	365 C.Y.-MILE	MS 109-1 ⟷ MS 109-2								273 C.Y.	336 C.Y.-MILE	MS 109-2	
DETAIL DWGS															

Prepared by ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	110 AC.			
				RESTORATION	242,000 SY.
	ACCESS ROADS	3 EA.		REVEGETATION	98 AC.
	ACCESS ROAD CULVERTS	4 EA.			
	ACCESS ROAD P.L. X-INGS	2 EA.			
	MATERIAL SITES	2 EA.			
	W.P. LOW WATER X-INGS	32 EA.			
	TEMPORARY W.P. BRIDGES	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.	
001	ALIGN. SHT. DESCRIPTION		
002	ALIGN. SHT. DESCRIPTION		
003	ON SEP LOCATION		
022	OFF-R/W CONST.		
014	GEN. TYP. SECTION		
	TYP. CONST. ZONE SECTIONS		
016	DRAINAGE STRUCTURES		
017	DRAINAGE STRUCTURES		
018	DRAINAGE STRUCTURES		
019	EROSION CONTROL		
020	EROSION CONTROL		

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 & 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.0000461 (ZONE 3) 1.0000628 (ZONE 2)

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	6-26-80	NO CHANGE ISSUED FOR RECORD ONLY	GWS	JBM	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	GWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 611.6 TO M.P. 617.0

TOWNSHIP T21N RANGE R7E, R8E

MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APEG	DATE 1978	FLUOR J.R. Brandt	DATE 9/30/80
MICHAEL BAKER, JR. INC. G.W. Schneider	DATE 6-26-80	N.W. [illegible]	DATE [illegible]

SCALE IN FEET: 1" = 1000'

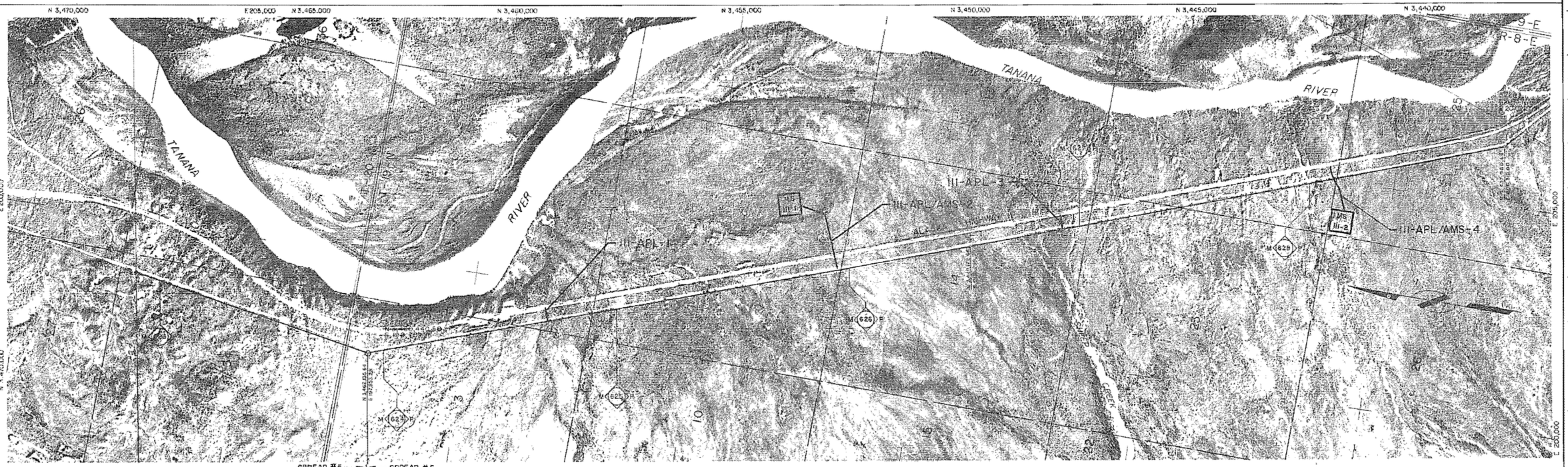
DRAWING NUMBER: 4680-15-00-B-C-109

REV. 3

DISTRIBUTION CODE

| | | |

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION				SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	SM & GM (MIXED)	ML & SM (MIXED)		ML	
PERMAFROST	DISCONTINUOUS		GENERALLY FROZEN		
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W				



SOIL EROSION CODE	0,D	S			S,O				
TYPICAL X-SECT NO.	30-10L-5L	30-5L-1L	30-10L-5L	30-0LR-1L	30-5L-1L	30-0LR-1L	30-5L-1L		
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 24" THICK				GRANULAR MATERIAL - 36" THICK				
CONSTR. ZONE LXS, SPOIL TYP, SPOIL DISP & SUIT MAT'L QTYS	Ø C.Y.								
BORROW QTY & CY-MILE	MS 110-2 SEE SHEET 110	MS 110-2 — MS III-1	128,736 C.Y.	85,298 C.Y.-MILE	MS III-1 — MS III-2		127,140 C.Y.	85,815 C.Y.-MILE	MS III-2
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 53,649 C.Y.	26,825 C.Y.-MILE	FROM DITCH						
PIPE DITCH, SPECIAL DRILL QTY & CY-MILE	MS 110-2 SEE SHEET 110	MS 110-2 — MS III-1	36,115 C.Y.	30,830 C.Y.-MILE			MS III-1 — MS 112-1	SEE SHEET 112	MS 112-1
PIPE DITCH, COMMON DRILL QTY & CY-MILE	MS 110-2 SEE SHEET 110	MS 110-2 — MS III-1	46,513 C.Y.	46,607 C.Y.-MILE	MS III-1		Ø C.Y.		
DETAIL DWGS									

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	112 AC.		RESTORATION	291,852 SY.
				REVEGETATION	115 AC.
	ACCESS ROADS	4 EA.			
	ACCESS ROAD CULVERTS	7 EA.			
	ACCESS ROAD PL. X-INGS	1 EA.			
	MATERIAL SITES	2 EA.			
	DISPOSAL SITES	8 AC.			
	W.P. LOW WATER X-INGS	7 EA.			
	W.P. CULVERTS	26 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO	TYP. CONST. ZONE SECTIONS	016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	GEN. SEP. LOCATION	017	DRAINAGE STRUCTURES
		004	GEN. TYP. SECTIONS		
022	OFF-R/W CONST.			019	EROSION CONTROL
				020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA WAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000078

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHK'D	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMN AD HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	9-29-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	
3	11-7-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 622.9 TO M.P. 628.9
TOWNSHIP T20N, T19N RANGE R8E
MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

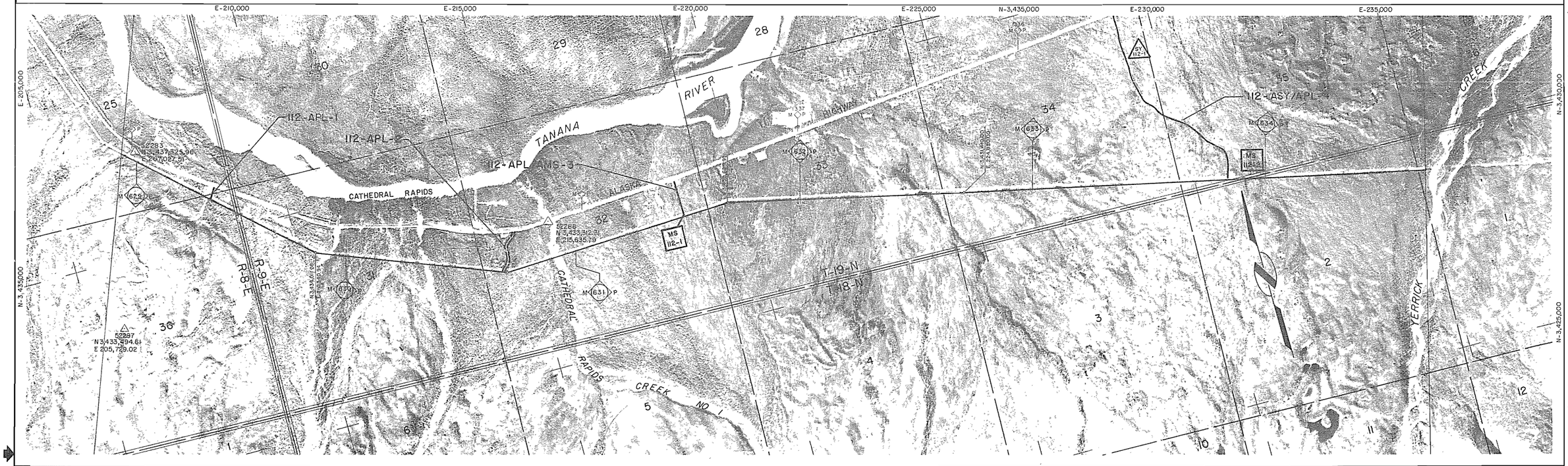
PHOTO ACCT.	DATE 1978	FLUOR	DATE 4/30/80
MICHAEL BAKER, JR. INC.	DATE 4-29-80	N.W.A.N.G.T.C.	DATE 5-2-80

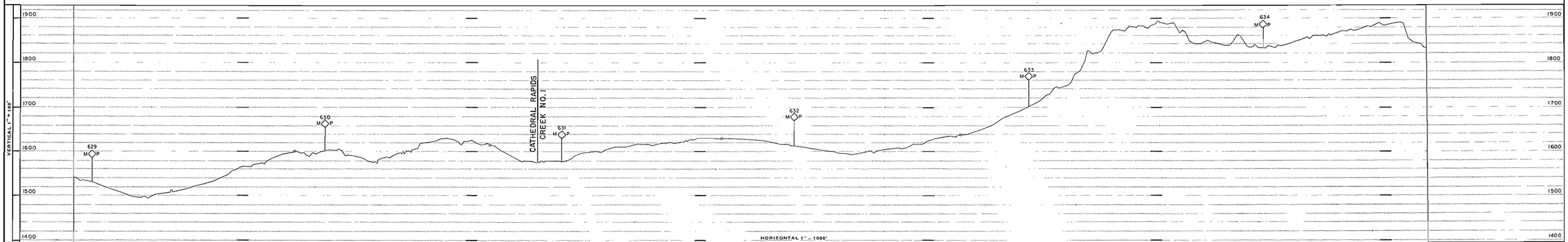
SCALE IN FEET	DRAWING NUMBER	REV
1" = 1000'	4680-16-00-B-C-111	3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

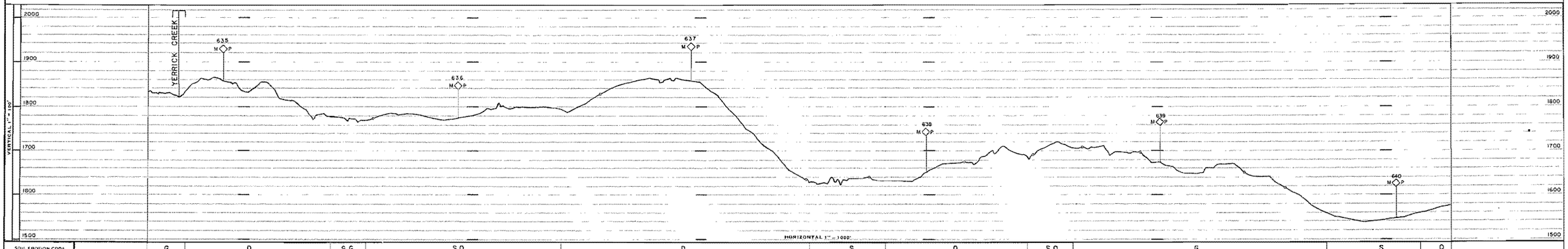
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION						
SOIL TYPE (USC CLASS)	ML	GM	ML	OL	SM	GW	
PERMAFROST	GENERALLY FROZEN	SPORADIC					
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W						





| | | | | | | |

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION		SHOULDER MONTH CONSTRUCTION						SUMMER CONSTRUCTION	
SOIL TYPE USCE CLASS	GW	GM	ML	GM	ML	SM	ML	GM	OL	ML
PERMAFROST	SPORADIC		GENERALLY FROZEN	GENERALLY ABSENT				GENERALLY FROZEN		
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W							SEPARATE LOCATION		



SOIL EROSION CODE	G	D			S,G	S,Q	D					S	Q		S,Q		G		S	Q
TYPICAL X-SECT NO	30-5L-1L	30-10L-5L	30-5L-1L	30-10L-5L	30-5L-1L	30-10L-6L	30-10L-5L	30-15L-5L	30-10L-5L	30-5L-1L	30-10L-6L	30-15L-14L	30-20L-39L	30-15L-30L	30-20L-30L	30-25L-39L	30-20L-33L	30-15L-33L	30-10L-5L	30-5L-1L	
PAD MAT'L TYPE & THICKNESS	NO PAD MATERIAL	GRANULAR MATERIAL-18" THICK		36"		GRANULAR MATERIAL-30" THICK	GRANULAR MATERIAL-18" THICK					GRANULAR MATERIAL-30"		GRANULAR MATERIAL-24"		30"	GRANULAR MATERIAL-24" THICK		GRANULAR MAT'L-36"	42"
CONSTR. ZONE EXC.-SPOIL STOR. SPOIL DISP & SUIT. MAT'L. QTYS	69,179 C.Y. EXC. 5,285 C.Y. STRIPPING TO 33,627 C.Y. SPOIL DISPOSAL 40,837 C.Y. USEABLE MATERIAL																			
BORROW QTY & CY-MILE	MS 113-1 159,348 C.Y. 186,258 C.Y.-MILE						MS 113-1 → MS 114-1B 244,391 C.Y. 436,911 C.Y.-MILE													
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 39,531 C.Y. 19,766 C.Y.-MILE FROM DITCH 5,904 C.Y. 2,952 C.Y.-MILE FROM WORK PAD 33,627 C.Y. 16,814 C.Y.-MILE																			
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 113-1 27,986 C.Y. 47,057 C.Y.-MILE																		M.S. 113-1 → MS 114-2 SEE SHEET	
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS 113-1 1,965 C.Y. 1,394 C.Y.-MILE						MS 113-1 → Ø C.Y.												M.S. 113-1 → MS 114-2 SEE SHEET	
DETAIL DWGS																				

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	124 AC.		DRAINAGE DITCHES	22,000 L.F.
				DIVERSION LEVEES	11,400 L.F.
	ACCESS ROADS	4 EA.		LET DOWN STRUCTURES	6 EA.
	ACCESS ROAD CULVERTS	8 EA.		ARMORED PLUNGE BASINS	5 EA.
	MATERIAL SITES	1 EA.		RESTORATION	195,052 S.Y.
	DISPOSAL SITES	6 AC.		REVEGETATION	96 AC.
	W.P. LOW WATER X-INGS	4 EA.			
	W.P. CULVERTS	20 EA.			
	TEMPORARY W.P. BRIDGE	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS. NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	002		016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION	017	DRAINAGE STRUCTURES
		004	ON SEP. LOCATION	018	DRAINAGE STRUCTURES
022	OFF-R/W CONST.	005	ON SEP. LOCATION	019	EROSION CONTROL
		014	GEN. TYP. SECTIONS	020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR (.9999539)

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHK'D	APP.
1	4-80	CHANGED TITLE BLOCK AND TOLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FIRM FILING			
2	4-29-80	NO CHANGE ISSUED FOR RECORD ONLY	HWS	JBR	
3	11-1-80	NOVEMBER 1980 ROUTE REFINEMENTS	DWS	JBR	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 634.7 TO M.P. 640.2

TOWNSHIP T18N RANGE R9E, , R10E

MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

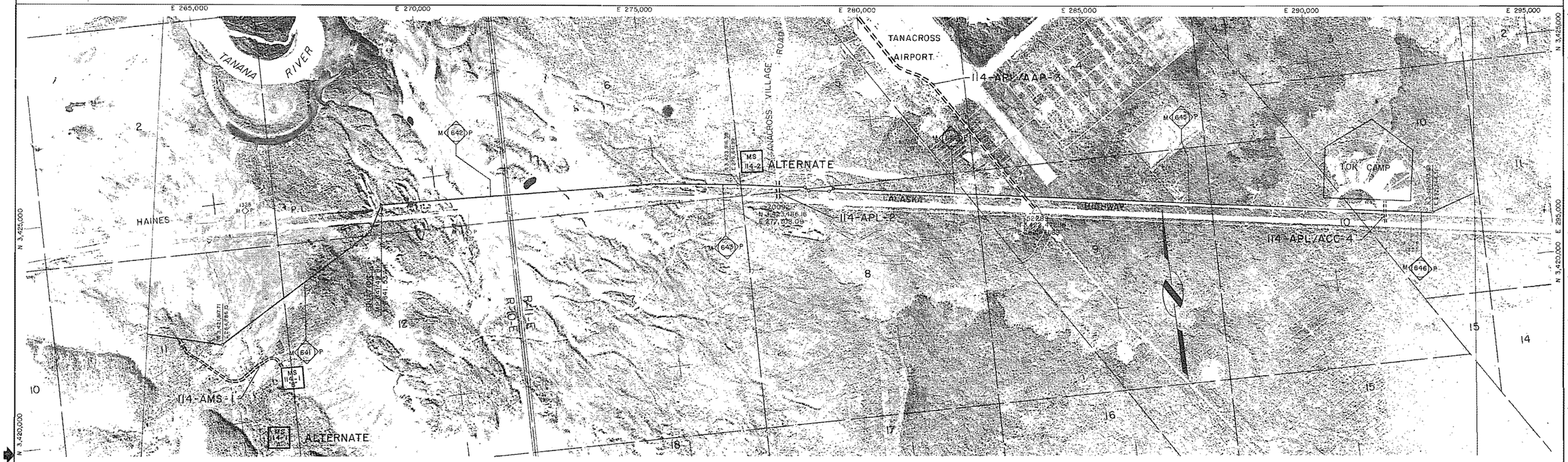
PHOTO	APCO	DATE	1978	FLUOR	J.R. Barnett	DATE	4/30/80
MICHAEL BAKER, JR., INC.	C.T. Mosher	DATE	4-29-80	N.W. ALASKAN		DATE	5-12-80

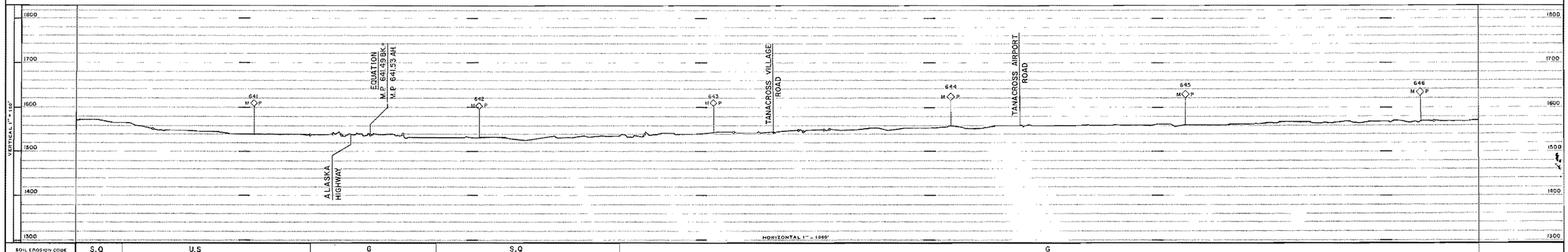
SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-16-00-B-C-113	3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION				
SOIL TYPE - USC CLASS	ML	GM	SM	GM	
PERMAFROST	GENERALLY FROZEN	ROAD CROSSING	GENERALLY ABSENT		
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	ON HAINES PIPELINE R/W	ROAD CROSSING	ROAD CROSSING	ON HAINES PIPELINE R/W





SOIL EROSION CODE	S,Q	U,S	G	S,Q	G	
TYPICAL X-SECT. NO	30-OLR-1L	ROAD X-ING	30-OLR-2R			
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL-42" THICK	NO WORKPAD	GRANULAR MATERIAL-18" THICK			
CONSTR. ZONE EXC - SPOIL STOR. SPOIL DISP. & SUIT. MAT'L. QTYS.	28,690 C.Y. STRIPPING TO SPOIL STORAGE					
BORROW QTY & CY-MILE	MS 114-1B	SEE SHEET 113	MS 114-1B → MS 115-1	142,635 C.Y.	227,109 C.Y.-MILE	MS 115-1
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.					
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 114-2		45,427 C.Y.	98,063 C.Y. - MILE		MS 114-2
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	MS 114-2	5,705 C.Y.	17,640 C.Y. - MILE	MS 114-2 →	Ø C.Y.	
DETAIL DWGS						

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	160 AC.		W.P. LOW WATER X-INGS	32 EA.
	ACCESS ROADS	4 EA.		W.P. CULVERTS	2 EA.
	ACCESS ROAD CULVERTS	5 EA.		W.P. ROAD X-INGS	2 EA.
	ACCESS ROAD P.L. X-INGS	2 EA.			
				RESTORATION	178,200 S.Y.
	MATERIAL SITES	1 EA.		REVEGETATION	209 AC.
	AIRFIELDS	1 EA.			
	CAMPS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP CONST ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO			015	DRAINAGE STRUCTURES
002	ALIGN SHT. DESCRIPTION	003 ON SEP LOCATION			017	DRAINAGE STRUCTURES
		014 GEN. TYP. SECTIONS			019	EROSION CONTROL
021	MISC. ON-R/W CONST.				020	EROSION CONTROL
022	OFF-R/W CONST.					

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 3 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.0001870

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	NO CHANGE ISSUED FOR RECORD ONLY	WDS	JBY	
3	11-11-80	NOVEMBER 1980 ROUTE REFINEMENTS	WDS	JBY	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 640.2 TO M.P. 646.3

TOWNSHIP T18N RANGE R10E R11E

MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO APCO	DATE 1978	FLUOR J.R. Brandt	DATE 4/30/80
MICHAEL BAKER JR. INC.	DATE 4-29-80	M.W. Zimmerman	DATE 5/2/80

SCALE IN FEET: 1" = 1000'

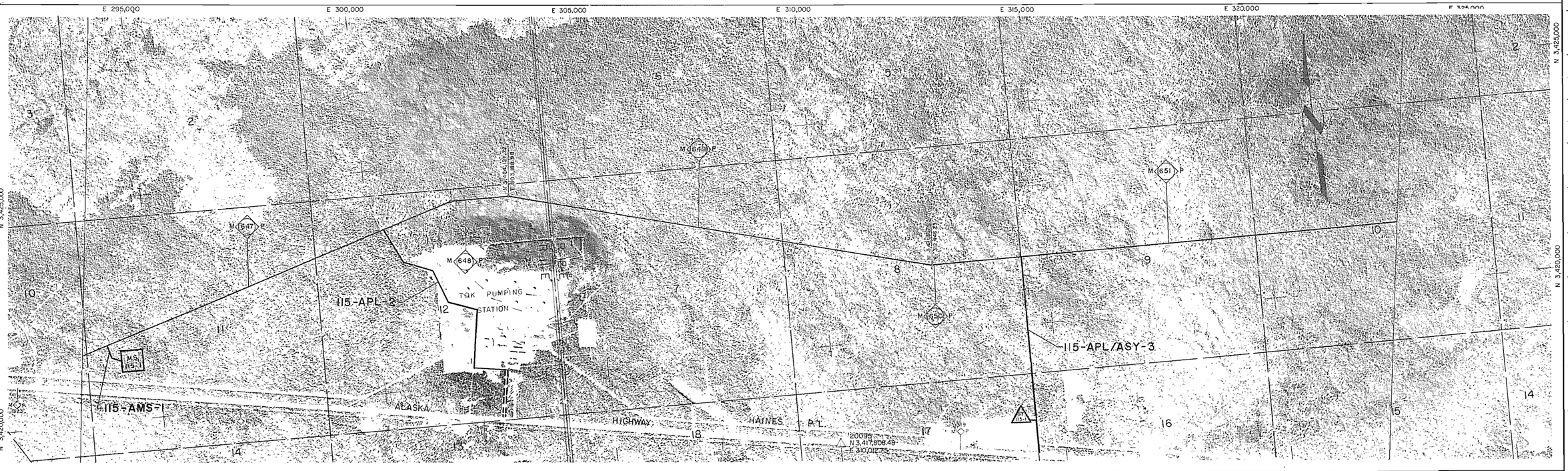
DRAWING NUMBER: 4680-16-00-B-C 114

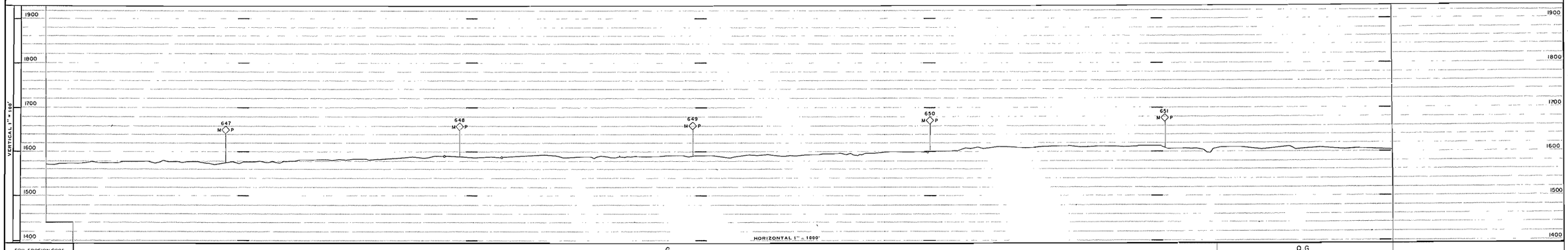
REV.: 3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION		
SOIL TYPE USC CLASS	GM	SW-SM	
PERMAFROST	GENERALLY ABSENT	DISCONTINUOUS	
RELATIVE FACILITY LOCATION	SEPARATE LOCATION		





SOIL EROSION CODE	G	Q,G	
TYPICAL X-SECT NO	30-OLR-2R	30-OLR-1R	
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL-18" THICK	GRANULAR MATERIAL-12" THICK	
CONSTR. CODE & NO. SPOIL STOR. CODE, DISP & SUIT. MAT'L. QTYS	25,216 C.Y. STRIPPING TO SPOIL STORAGE		
BORROW QTY & CY-MILE	MS 115-1 SEE SHEET 114 MS 115-1 — MS 116-1	95,990 C.Y. 166,431 C.Y.-MILE	MS 116-1
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.		
PIPE DITCH-SPECIAL B'FILL QTY & CY-MILE	MS 114-2 SEE SHEET 114 MS 114-2 — MS 116-2 41,136 C.Y. 116,811 C.Y.-MILE		MS 116-2
PIPE DITCH-COMMON B'FILL QTY & CY-MILE	Ø C.Y.		
DETAIL DWGS			

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	123 AC.			
				RESTORATION	173,448 S.Y.
	ACCESS ROADS	3 EA.		REVEGETATION	108 AC.
	ACCESS ROAD CULVERTS	6 EA.			
	MATERIAL SITES	1 EA.			
	STORAGE YARDS	1 EA.			
	W.P. LOW WATER X-INGS	36 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP CONST ZONE SECTIONS	NO.		NO.	
001	ALIGN SHT DESCRIPTION	NO			016	DRAINAGE STRUCTURES
002	ALIGN SHT DESCRIPTION	003	ON SEP. LOCATION		017	DRAINAGE STRUCTURES
		014	GEN. TYP. SECTIONS		019	EROSION CONTROL
022	OFF-R/W CONST.				020	EROSION CONTROL

NOTES

1 ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES — ALASKA ZONE 2 (TRANSVERSE MERCATOR)

2 TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 1.000352

PHOTO DATE AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	
3	11-1-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

NOTICE
This drawing/document is the property of the Alaskan Northwest Natural Gas Transportation Company and contains information that is deemed to be confidential and/or proprietary by said Company or by third parties who furnished such information to the Company pursuant to a license or use agreement. Information contained in this drawing/document which is confidential and/or proprietary is not subject to mandatory disclosure under the Freedom of Information Act, and use or disclosure of information contained in this drawing/document may also be prohibited by virtue of applicable laws such as the Federal Trade Secrets Act. No use or disclosure is authorized except as permitted by said Company or its Agent, Northwest Alaskan Pipeline Company.

ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 646.3 TO M.P. 652.0

TOWNSHIP T18N RANGE R11E, R12E

MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

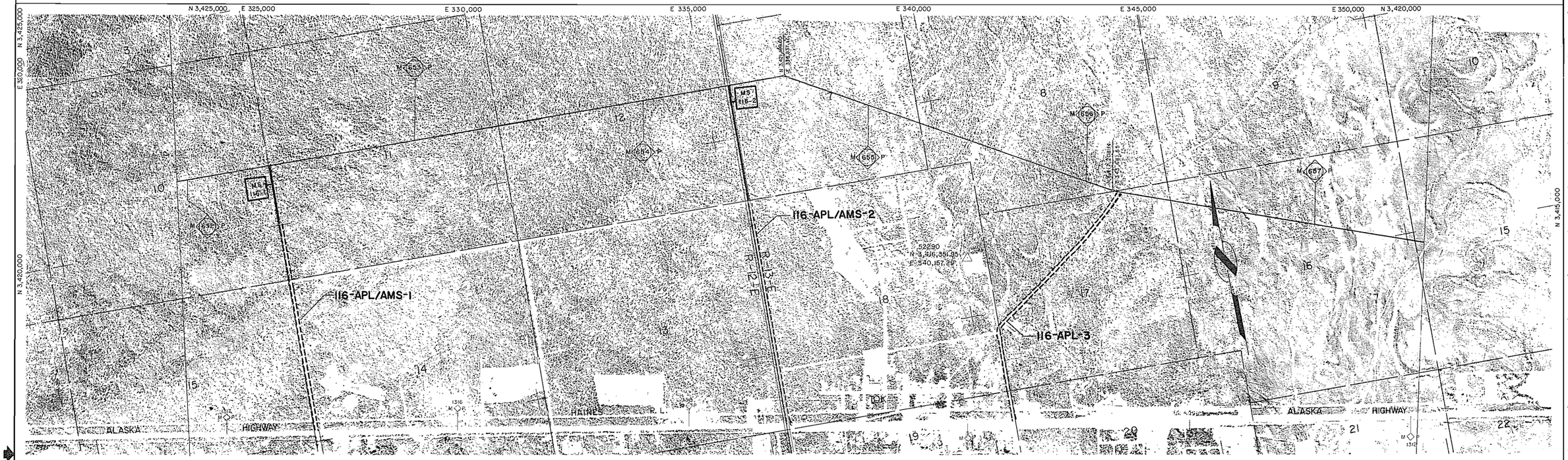
PHOTO APCG	DATE 1978	FLUOR	DATE 9/30/80
MICHAEL BAKER, JR., INC	DATE 4-23-80	N.W.	DATE 9/26/80

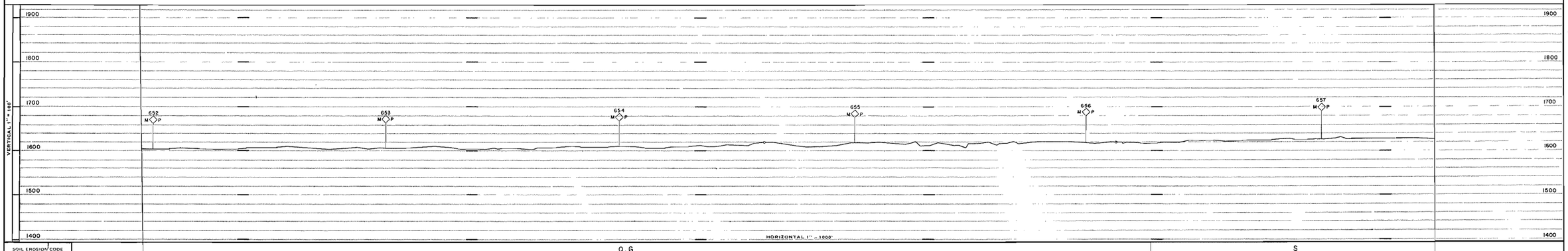
SCALE IN FEET	DRAWING NUMBER	REV
1" = 1000'	4680-16-00-B-C-115	3

DISTRIBUTION CODE

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION		
SOIL TYPE (USC CLASS)	SW - SM	ML	
PERMAFROST	DISCONTINUOUS		
RELATIVE FACILITY LOCATION	SEPARATE LOCATION		





SOIL EROSION CODE	Q, G	S	
TYPICAL X-SECT NO	30-OLR-1R		
PAD MAT'L. TYPE & THICKNESS	GRANULAR MATERIAL-12" THICK	GRANULAR MATERIAL-42" THICK	
CONSTR. ZONE EXC. SPOIL STOR. SPOIL DISP & SUIT. MAT'L. QTYS	Ø C.Y.		
BORROW QTY & CY-MILE	MS 116-1 SEE SHEET 115 MS 116-1 ⟷ MS 116-2	260,135 C.Y. 858,398 C.Y.-MILE	MS 116-2
SPOIL DISPOSAL QTY & CY-MILE	Ø C.Y.		
PIPE DITCH-SPECIAL BFILL QTY & CY-MILE	MS 116-2	SEE SHEET 115	MS 116-2
PIPE DITCH-COMMON BFILL QTY & CY-MILE	Ø C.Y.		
DETAIL DWGS			

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	133 EA.		RESTORATION	242,000 S.Y.
				REVEGETATION	122 AC.
	ACCESS ROADS	3 EA.			
	ACCESS ROAD CULVERTS	8 EA.			
	MATERIAL SITES	2 EA.			
	W.P. LOW WATER X-INGS	27 EA.			
	W.P. CULVERTS	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		NO.		NO.	
001	ALIGN. SHT DESCRIPTION		TYP CONST. ZONE SECTIONS	016	DRAINAGE STRUCTURES
002	ALIGN SHT DESCRIPTION	003	ON SEP. LOCATION	017	DRAINAGE STRUCTURES
		014	GEN. TYP. SECTIONS	019	EROSION CONTROL
022	OFF-R/W CONST.			020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED, USING TRUE STATE COORDINATE VALUES – ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION, MULTIPLY DATA SHOWN BY FACTOR 1.000147.9

PHOTO DATE: AUGUST 1978

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	8-20-80	NO CHANGE ISSUED FOR RECORD ONLY	MDS	JBM	
3	11-11-80	NO CHANGE ISSUED FOR RECORD ONLY	MDS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

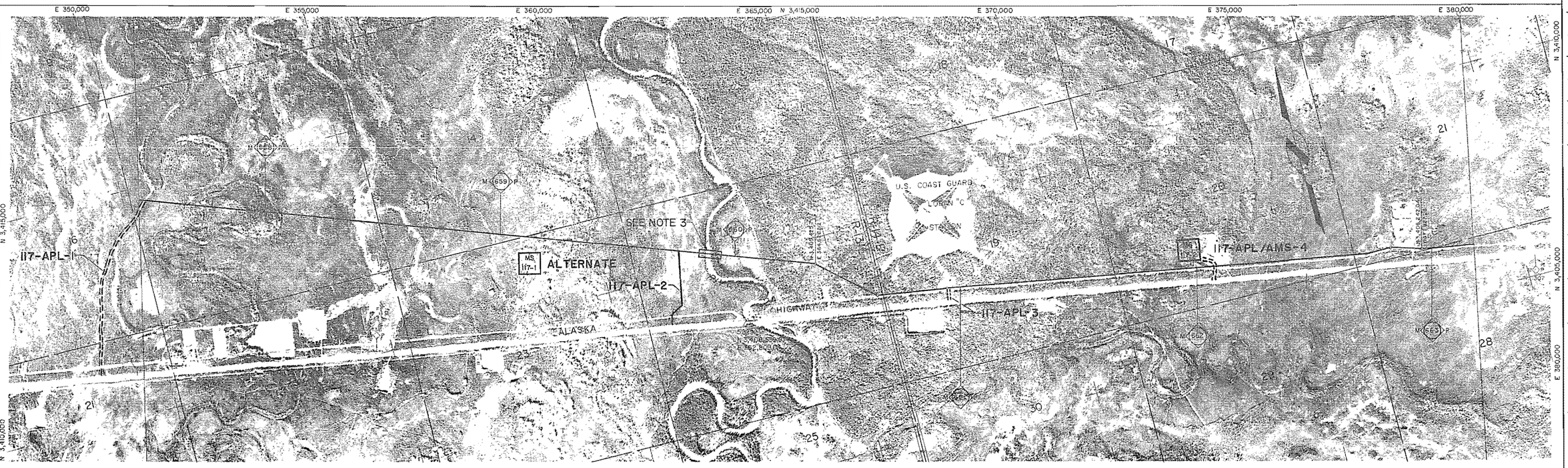
48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 652.0 TO M.P. 657.5
TOWNSHIP T18N RANGE R12E, R13E
MERIDIAN COPPER RIVER
ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

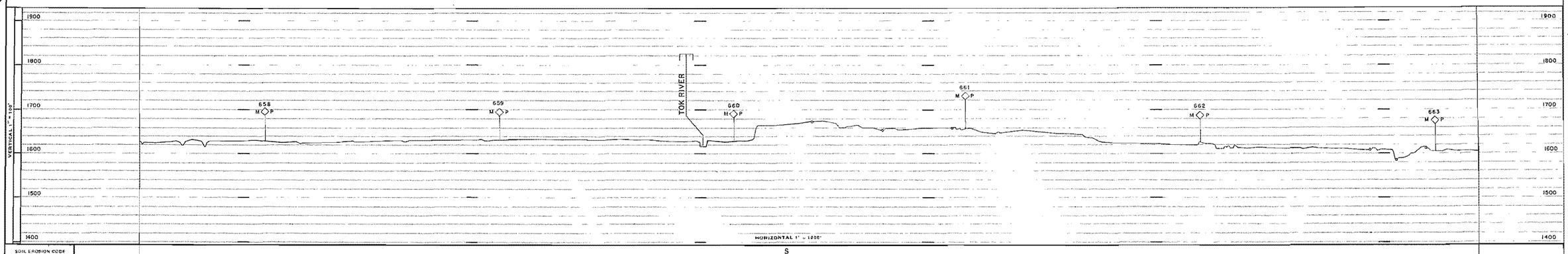
PHOTO APCG	DATE 1978	FLUOR J.R. Brunell	DATE 9/30/80
MICHAEL BAKER, JR., INC. V.B. Mitchell	DATE 9-29-80	N.W. ALASKA	DATE 9/26/80

SCALE IN FEET	DRAWING NUMBER	REV.
1" = 1000'	4680-16-00-B-C-116	3

DISTRIBUTION CODE

WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	ML
PERMAFROST	DISCONTINUOUS
RELATIVE FACILITY LOCATION	SEPARATE LOCATION — RIVER CROSSING — SEPARATE LOCATION — ON HAINES PIPELINE R/W





SOIL EROSION CODE	S		
TYPICAL X-SECT NO	30-0LR-IR	RIVER CROSSING	30-0LR-IR
PAD MAT'L TYPE & THICKNESS	GRANULAR MATERIAL - 42" THICK	NO WORK PAD	GRANULAR MATERIAL - 42" THICK
CONSTR. ZONE EXC., SPOIL STOR. SPOIL DISP & SUIT. MAT'L QTYS	Ø C.Y.		
BORROW QTY & C.Y.-MILE	MS 116-2 SEE SHEET 116 MS 116-2 → MS 117-2	183,101 C.Y.	198,619 C.Y.-MILE MS 117-2
SPOIL DISPOSAL QTY & C.Y.-MILE	Ø C.Y.		
PIPE DITCH, SPECIAL BFILL QTY & C.Y.-MILE	MS 117-2	51,178 C.Y.	120,607 C.Y.-MILE MS 117-2
PIPE DITCH, COMMON BFILL QTY & C.Y.-MILE	MS 117-2	6,010 C.Y.	9,285 C.Y.-MILE MS 117-2
DETAIL DWGS			

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	100 AC.		TEMPORARY W.P. BRIDGES	1 EA.
	ACCESS ROADS	4 EA.		RIVER X-INGS	1 EA.
	ACCESS ROAD CULVERTS	7 EA			
	ACCESS ROAD PL. X-ING	1 EA.		RESTORATION	172,920SY.
				REVEGETATION	93 AC.
	MATERIAL SITES	1 EA.			
	W.P. CULVERTS	30 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION		017	DRAINAGE STRUCTURES
		014	GEN. TYP. SECTIONS		018	DRAINAGE STRUCTURES
021	MISC. ON-R/W CONST.				019	EROSION CONTROL
022	OFF-R/W CONST.				020	EROSION CONTROL

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING TRUE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL DISTANCES AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR 0.999710
3. RIVER CROSSING STAGING AREA FOR PIPELINE CONSTRUCTION.

PHOTO DATE AUGUST 1976

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGED TITLE BLOCK AND COLUMNAR HEADINGS			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING			
2	6-30-80	NO CHANGE ISSUED FOR RECORD ONLY	JWS	JBM	
3	11-13-80	NO CHANGE ISSUED FOR RECORD ONLY	JWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE

CIVIL CONSTRUCTION

M.P. 657.5 TO M.P. 663.2

TOWNSHIP T18N RANGE R13E, R14E

MERIDIAN COPPER RIVER

ALASKA SEGMENT OF THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APEC	DATE 1978	FLUOR J.R. Burnett	DATE 4/30/80	
MICHAEL BAKER, JR., INC		DATE 4-29-80	N.W. ALASKAN	DATE 5/2/80	
SCALE IN FEET			DRAWING NUMBER		REV.
1" = 1000'			4680-16-00-B-C-117		3

Prepared By ALASKA PHOTOGRAMMETRIC CONSULTANTS GROUP

DISTRIBUTION CODE

WORKFACE CONSTR SEASON	SUMMER CONSTRUCTION		SHOULDER MONTH CONSTRUCTION	
SOIL TYP (USCS CL +SM)	ML		SP-SM	o—SM
PERMAFROST	DISCONTINUOUS	GENERALLY ABSENT	DISCONTINUOUS	
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W	SEPARATE LOCATION—o o SEPARATE LOCATION	ON HAINES PIPELINE R/W	ROAD CROSSING ON HAINES PIPELINE R/W

RIVER CROSSING

E 360,000 E 385,000 N 3,410,000 E 390,000 E 395,000 E 400,000 E 405,000 E 410,000

N 3,410,000 N 3,405,000 N 3,400,000

SCALE

118-AMS-5
MS 116-2
118-APL-4
118-APL-3
118-APL-6
118-APL-1
118-AMS/ASY-2
SEE NOTE 3
MS 118-1
MS 119-1
M 664 P
M 665 P
M 666 P
M 667 P
M 668 P
M 669 P
M 1300
52234
N 3,405,264.00
E 393,668.20
N 3,405,264.27
E 393,673.70
N 3,405,213.27
E 385,213.70
ALASKA HIGHWAY
TANANA RIVER
ALASKA HIGHWAY
TAYLOR HIGHWAY
TOK JUNCTION
ROAD TO TOK
R-14-E
R-15-E
T 18 N
T 17 N
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

VERTICAL 1" = 100'

2000 1900 1800 1700 1600 1500

TANANA RIVER INACTIVE OVERFLOW CHANNELS

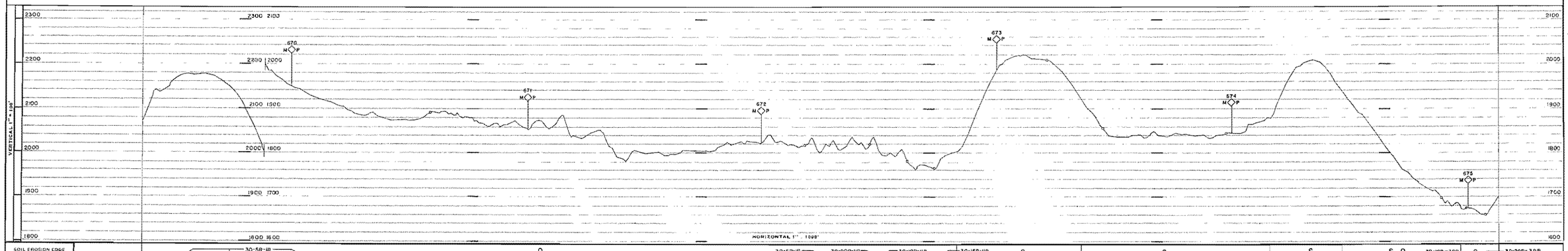
TANANA RIVER

TAYLOR HIGHWAY

HORIZONTAL 1" = 1000'

| | | | |

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION	SUMMER CONSTRUCTION															SNOW NO. CONST.
SOIL TYPE (USC CLASS)	SM	SP-SM	SM	SP	SP-SM	SM	SP	SM	ML	SP-SM	ML						
PERMAFROST	GENERALLY ABSENT	DISCONTINUOUS				GENERALLY ABSENT		DISCONTINUOUS		GENERALLY FROZEN							
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W																



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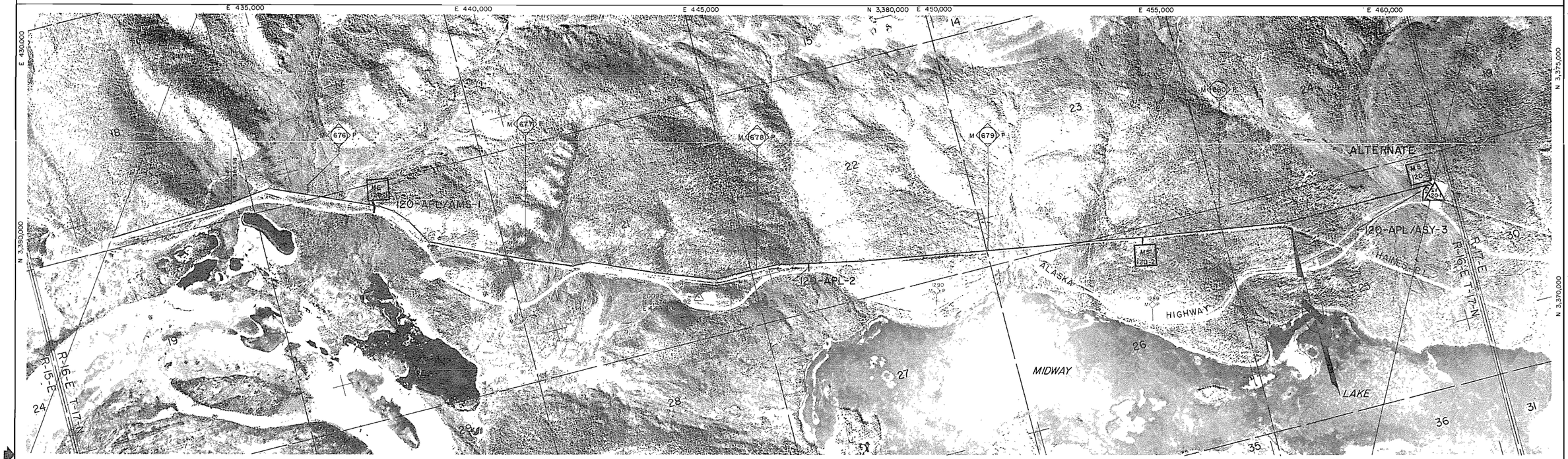
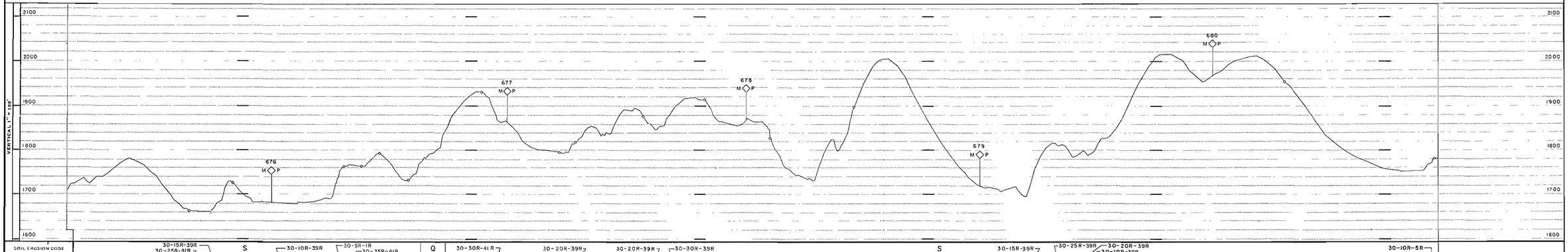
WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION								
SOIL TYPE (USC CLASS)	ML		SM	ML	SM	ML			
PERMAFROST	GENERALLY ABSENT	DISCONTINUOUS							
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W							SEPARATE LOCATION	





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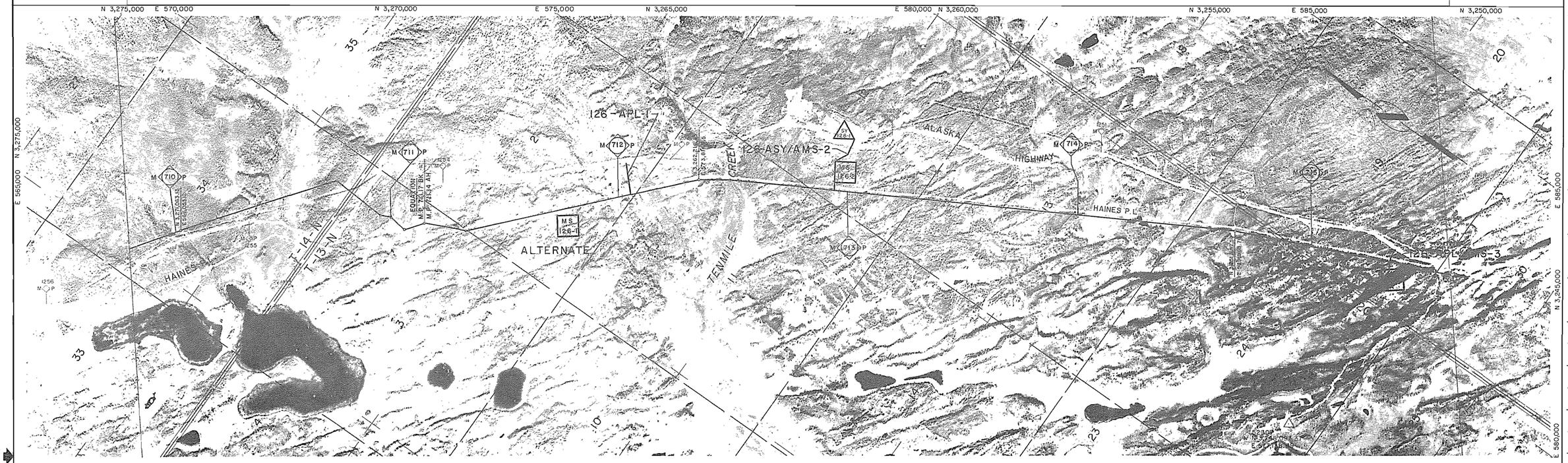
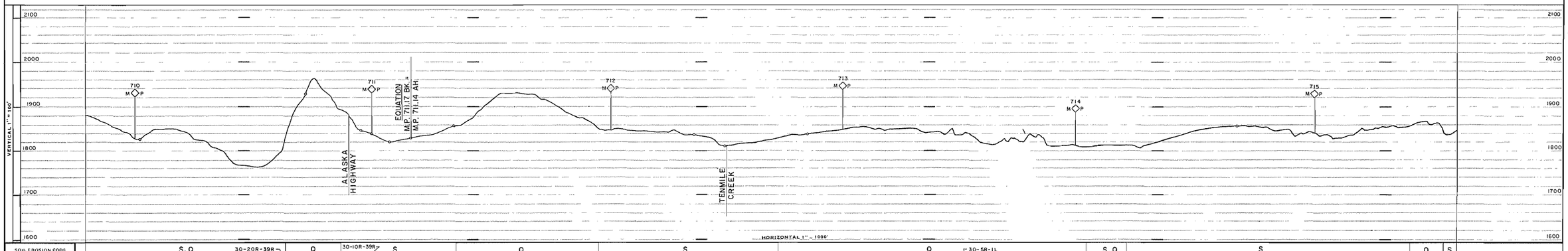
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION	SHOULDER MONTH CONSTRUCTION	SUMMER CONSTRUCTION			
SOIL TYPE (USC CLASS)	ML	SM	SP	ML	SP	ML
PERMAFROST	GENERALLY FROZEN					
RELATIVE FACILITY LOCATION	SEPARATE LOCATION	ROAD X-ING SEPARATE LOCATION	ON HAINES PIPELINE R/W		SEPARATE LOCATION	





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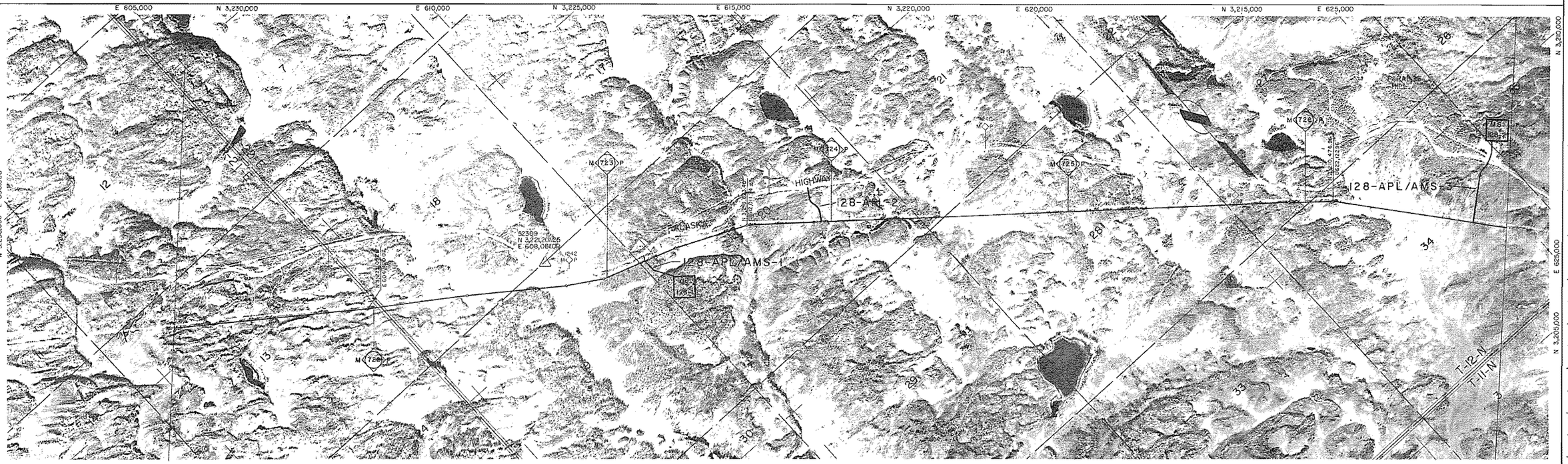
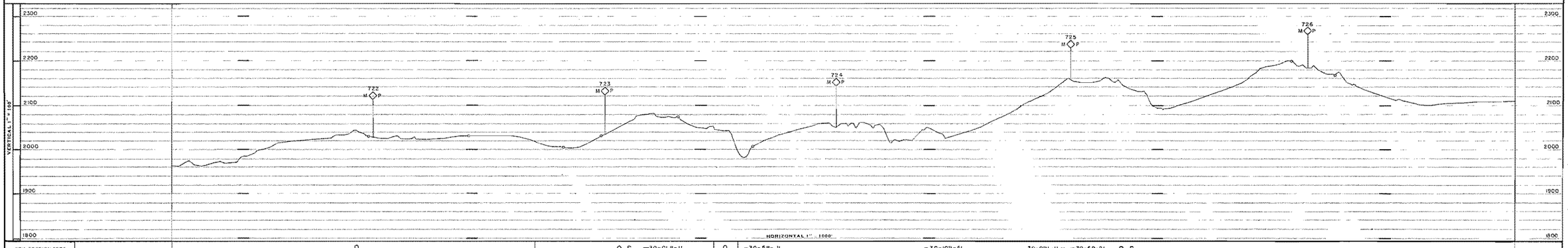
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION
SOIL TYPE (USC CLASS)	SM / ML / SP-SM / ML / SP-SM / ML
PERMAFROST	GENERALLY FROZEN / SPORADIC / GENERALLY FROZEN.
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W





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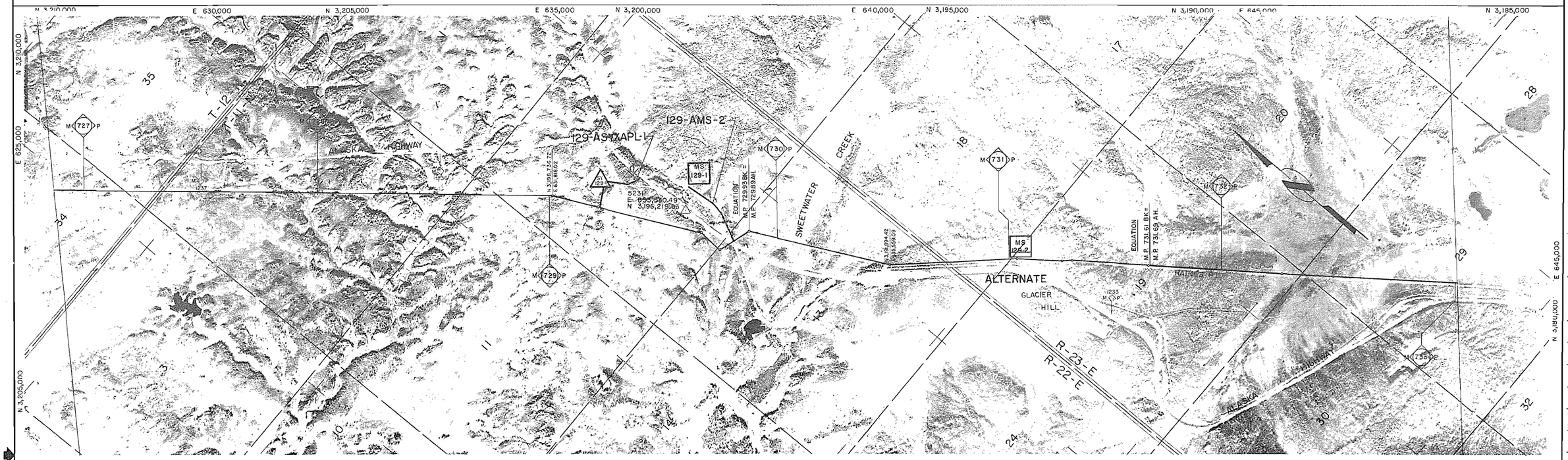
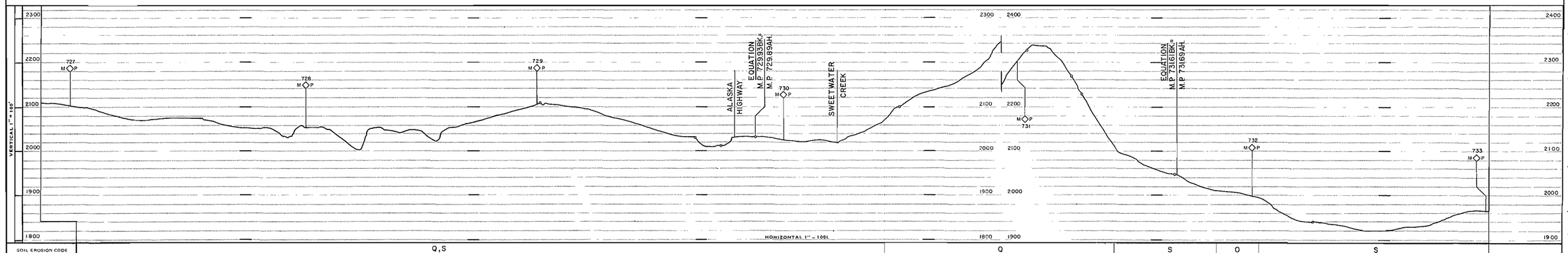
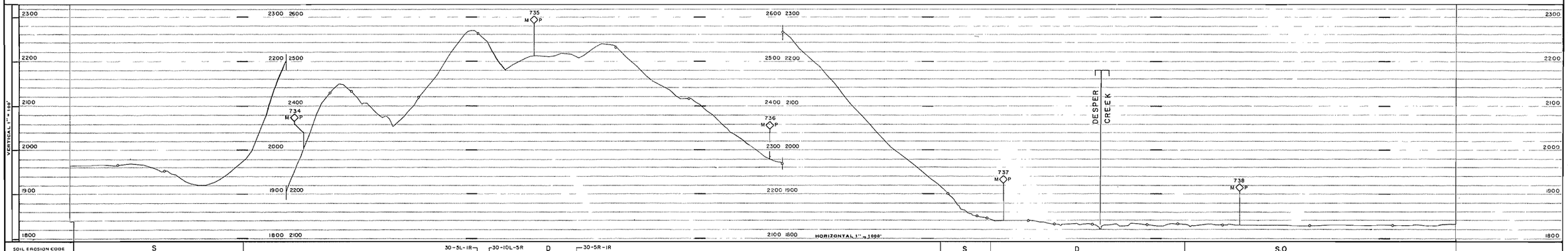
WORKPAD CONSTR SEASON	SUMMER CONSTRUCTION		SHOULDER MONTH CONSTRUCTION
SOIL TYPE (USC CLASS)	ML & SM (MIXED)	SM	ML SM ML
PERMAFROST	GENERALLY FROZEN	GENERALLY ABSENT	GENERALLY FROZEN GENERALLY ABSENT GENERALLY FROZEN
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W — ROAD X-ING — ON HAINES PIPELINE R/W		





| | | |

WORKPAD CONSTR SEASON	SHOULDER MONTH CONSTRUCTION								
SOIL TYPE (USC CLASS)	ML	GM/BX	GM	GM/BX	GM	ML	GM	ML	
PERMAFROST	GENERALLY FROZEN								
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W								



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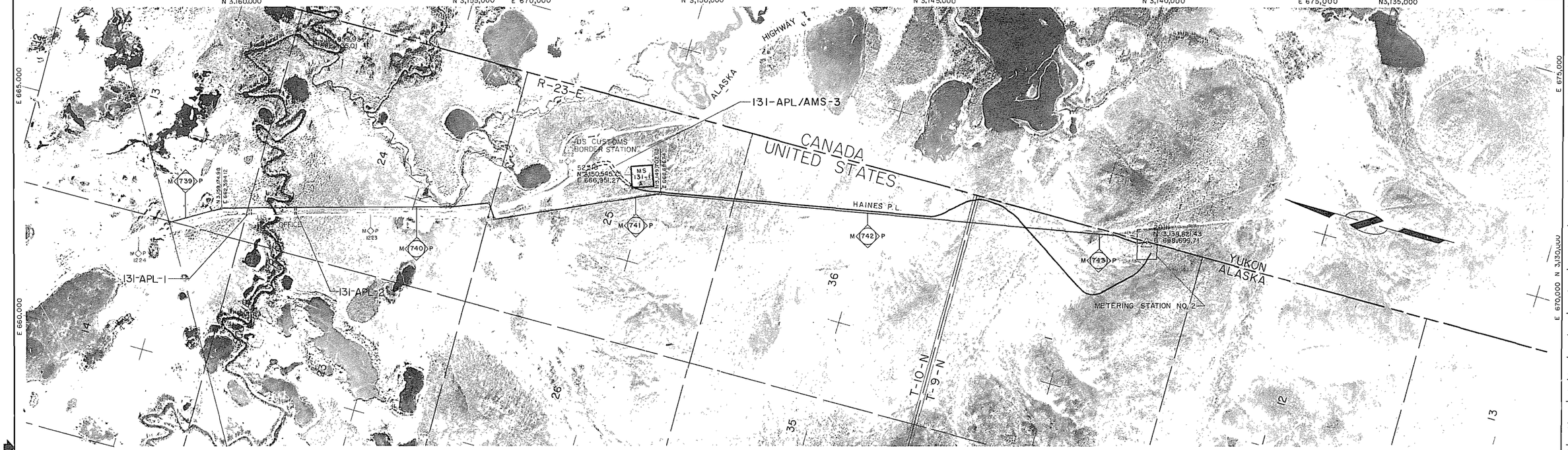
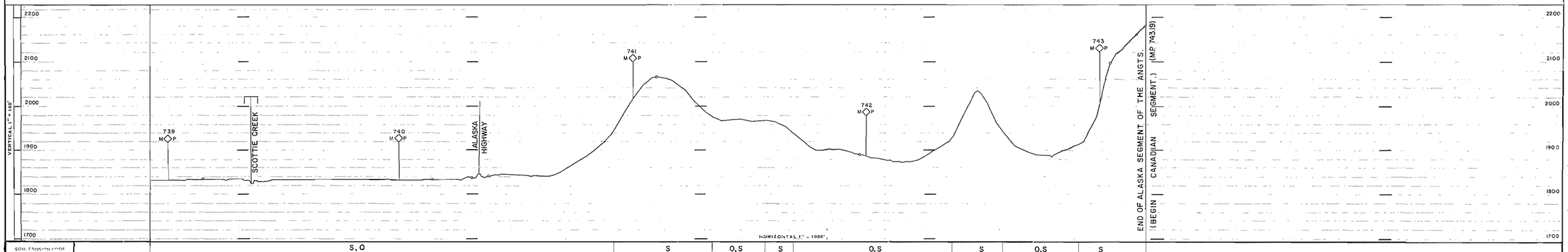
WORKPAD CONSTR. SEASON	SHOULDER MONTH CONSTRUCTION												
SOIL TYPE & SCLASS	ML		OL		ML		OL		ML		OL		ML
PERMAFROST	GENERALLY FROZEN												
RELATIVE FACILITY LOCATION	ON HAINES PIPELINE R/W	ROAD X-ING	ON HAINES PIPELINE R/W										





SOIL EROSION MODE	S, O				S		0, S	S	0, S		S	0, S	S
TYPICAL SECT. NO	30-ORL-1R	30-ORL-1L		30-10L-5L	30-15L-5L		30-5L-1L	30-10L-5L	30-5L-1L	30-ORL-1L		30-ORL-1L	
PAD MATL. TYPE & THICKNESS	GRANULAR MATERIAL-30" THICK	GRANULAR MATERIAL-36" THICK											24"
CONSTR. MODE FACT., SPOIL STOR. SPOIL DISP & SUBT. MAT'L QTYS.					∅ C.Y.					30-10L-5L			
BORROW QTY & CY-MILE	MS 131-1A				223,152 C.Y.		237,231 C.Y.- MILE						MS 131-1A
SPOIL DISPOSAL QTY & CY-MILE	TOTAL 40,787 C.Y.	20,393 C.Y.- MILE FROM DITCH											
PIPE DITCH, SPECIAL BACKFILL QTY & CY MILE	MS 131-1	SEE SHEET 130											MS 130-1
PIPE DITCH, COMMON BACKFILL QTY & CY MILE	SEE SHEET 130 MS 130-1 MS 131-1A				36,228 C.Y.		38,063 C.Y-MILE						MS 131-1A
DETAIL DWG													

ADDITIONAL CONSTRUCTION ITEMS

ITEM	DESCRIPTION	QUANTITY	ITEM	DESCRIPTION	QUANTITY
	CLEARING	63 AC.			
				W.P. ROAD X-INGS	1 EA.
	ACCESS ROADS	3 EA.			
	ACCESS ROAD CULVERTS	4 EA.		RESTORATION	175,252 S.Y.
				REVEGETATION	81 AC.
	MATERIAL SITES	1 EA.			
	DISPOSAL SITES	6 AC.			
	W.P. CULVERTS	21 EA.			
	TEMPORARY W.P. BRIDGES	1 EA.			

REFERENCE DRAWINGS 4680-10-00-0-C-NO.

NO.		TYP. CONST. ZONE SECTIONS	NO.		NO.	
001	ALIGN. SHT. DESCRIPTION	NO.			016	DRAINAGE STRUCTURES
002	ALIGN. SHT. DESCRIPTION	003	ON SEP. LOCATION		017	DRAINAGE STRUCTURES
		014	GEN. TYP. SECTIONS			
021	MISC. ON-R/W CONST.				019	EROSION CONTROL
					020	EROSION CONTROL
022	OFF-R/W CONST.					

NOTES

1. ALL SURVEY DATA HAS BEEN MEASURED AND CALCULATED USING THE STATE COORDINATE VALUES - ALASKA ZONE 2 (TRANSVERSE MERCATOR)
2. TO DETERMINE TRUE HORIZONTAL [illegible] AS AT GROUND ELEVATION MULTIPLY DATA SHOWN BY FACTOR: 1.00015890

PHOTO DATE AUGUST '79

NO.	DATE	REVISION	BY	CHKD	APP.
1	4-80	CHANGE [illegible] AND COLUMN [illegible]			
		REVISED MILEPOST			
		RELEASED FOR FERC FILING	DWS	JBM	
2	8-20-80	[illegible] RECORD ONLY	DWS	JBM	
3	11-7-80	NO CHANGE ISSUED FOR RECORD ONLY	DWS	JBM	

FLUOR
PROJECT MANAGEMENT CONTRACTOR
MICHAEL BAKER, JR., INC.
CIVIL ENGINEERING CONTRACTOR

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ALASKAN NORTHWEST NATURAL GAS TRANSPORTATION COMPANY

48" NATURAL GAS PIPELINE
CIVIL CONSTRUCTION
M.P. 738.9 TO M.P. 743.1
TOWNSHIP T10N, T9N RANGE R23E
MERIDIAN COPPER RIVER
ALASKA SEGMENT OF THE ALASKAN NATURAL GAS TRANSPORTATION SYSTEM

PHOTO	APEG	DATE	1978	FLUOR	DATE 4/30/80
MICHAEL BAKER, JR., INC.		DATE	4-29-80	N.W. ALASKAN	DATE 5/6/80

SCALE IN FEET: 1" = 1000'
DRAWING NUMBER: 4680-16-00-B-C-131
REV: 3

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