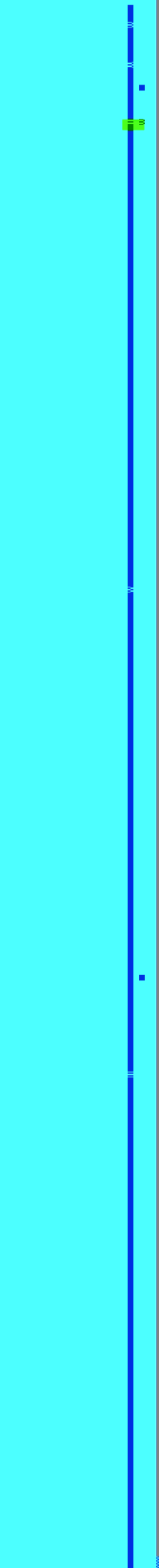
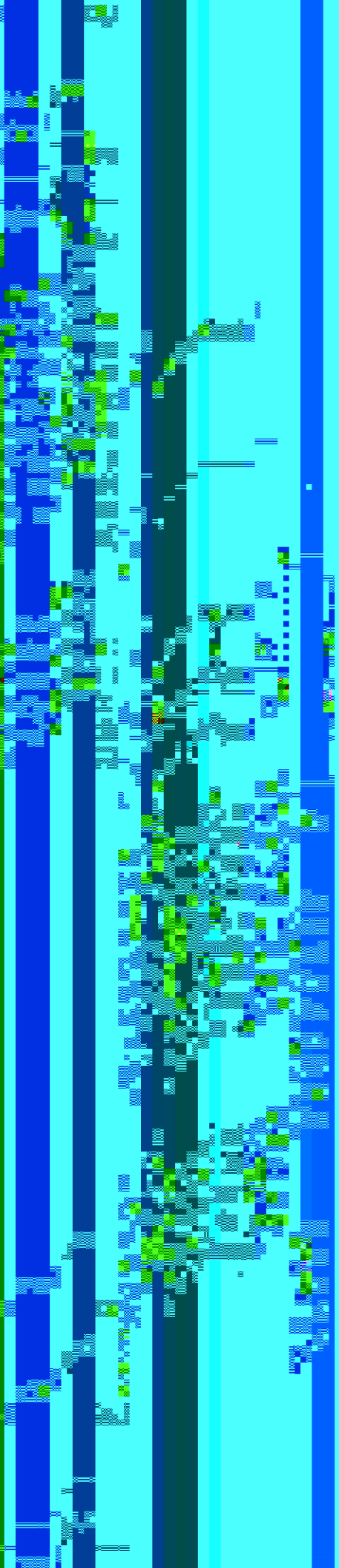
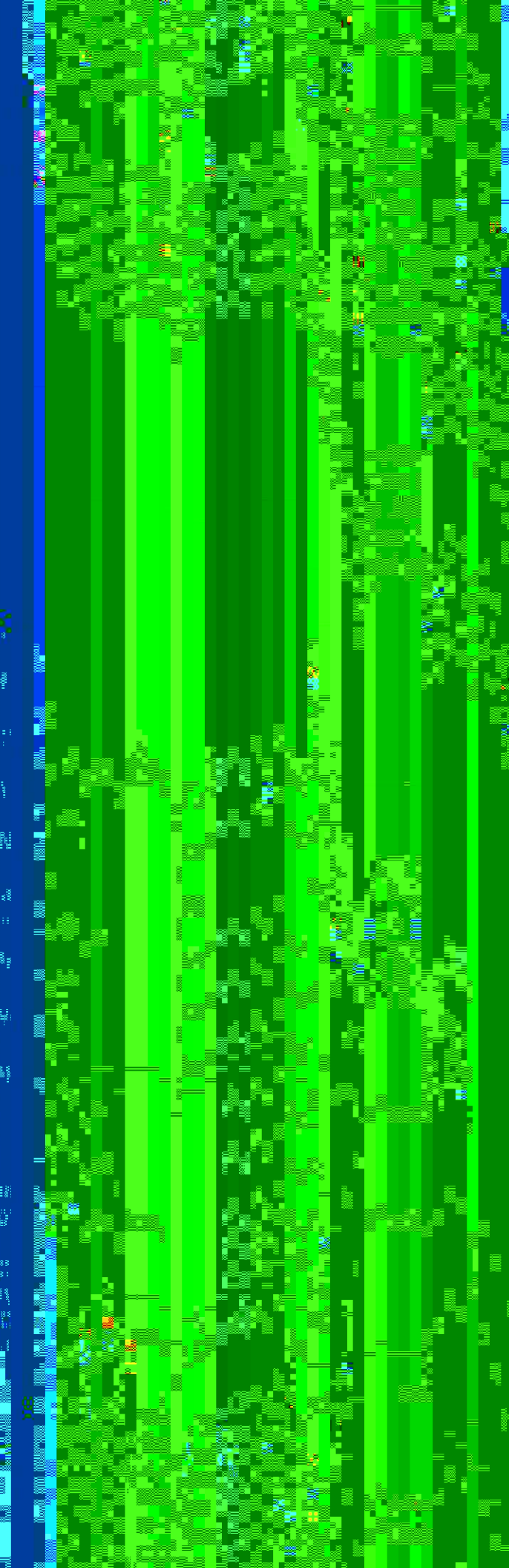


University of Alaska Fairbanks
Department of Biology
100 University Heights
Fairbanks, Alaska 99775
Phone: (907) 475-1500
Fax: (907) 475-1501
Email: biology@alaska.edu
Website: www.alaska.edu/biology



Approved
Penetration
Project
This
P
L
F
D
OR
ne
jec
ca
jec
A
te o
R
to
a
pr
r
or
o
a
th
d
e
r
p
a
an
ct
v
er
at
ni
nu
og
na
si
ic
n
th
C
R



Abstract

The Alaska Satellite Facility (ASF) is part of the Geophysical Institute. Approximately 50 individuals responsible for a variety of technical operations. ASF has operated two satellite tracking antenna systems on Elvey Building. The systems include a 10-meter antenna (designated AS2) and an 11-meter antenna (designated AS1) in the Elvey Building. NASA funds ASF in excess of \$7M per year to support the center uses spacecraft data collected by the ASF and its data systems.

Due to the age of the existing antennas, AS2 on top of Elvey, has passed its operational life and is to be replaced with a system similar in size and function to the AS1 on top of the IARC Building. Preliminary site and structural analysis determined that a direct replacement of the antenna on Elvey was not recommended due to the structural upgrades to the building due to the fact that the new antenna and it rotates faster with more torsion forces.

A number of sites were reviewed for the possible location of the replacement antenna. The reasons for unsuitability, included power and communication infrastructure, obstructions to Elvey Building, radio frequency interference (RFI) from existing cellular communication towers, and the presence of the large Animal Research Station (LARS), Rifle Range, Agricultural Fields, and the West Ridge site west of the existing AS1 antenna. The North Campus Committee and UAF Management determined the West Ridge site east of the existing AS1 antenna as the

Conclusions

Final Considerations

The construction phase of this project will be in two phases. Phase I will be the freeze up of the concrete base and the required attachment of the high L-3 Datron 11 meter antenna dish, tie-ins of the L-3 Datron antenna will be shipped in pre-assembled site for installation.

Project Cost and Funding Sources

Phase II of the project is estimated to be \$5,000,000. Total funding for the project is estimated to be \$5,000,000, is fully funded through NASA and its contracting partner.

Annual Program and Facility Cost Projections

NASA funds ASF approximately \$1.75M per year to operate and maintain approximately 12 employees.

an m le
For n ar /
ASA the ty
on e ro f
Nort Car p
ASA AR Da
ms a I is uc

ing a L Al a
func for s
ent all o
matec A 2
foret m
port the
tenten a s
ops.

radio al be
AS1 system
N/S islands
cost all
sites sh
Padd ch, M
tenn ASF
management
ann
out a e
u idin, wet
potential
The other
ge. Anima
ing AS
star pla
mos, su
installe
unicat
ons t

clearing the s
also II
the pr
tions a
at w

I include
reku. In
syst, r
f the ec
mble, se
atenn s

atenn s
and the

I
E
Z
T
S
Z
T

ry Method

contracts will be used to procure final design and construction s.

omplies with Regents' Policy and the UAF Campus Master Pla

ocuments

inary Project Agreement

approval required for FPA shall be based upon the estimated TP llows:

-
-
-
-

0 million will require approval by the board based on the recom ons of the
nd Land Management Committee (FLMC).

million but not more than \$4.0 million will require approval by the
million but not more than \$2.0 million will require approval by the f the FLMC.
million will require approval by the AVP of Facilities and Land Ma nt.

U
A

The C
Fidd
/ SF
t e W

ter
or
cu
dg

viewed are the Large Ani
cultural Fields, and the W
the North Campus Commit
the existing AS1 antenna

Res
Rid
and
he n

1 S
e
N
su
ation (LARS), Ri
rest of the exist ing
Master Planning Co
able site.

Range
AS1 an
mittee

I
/ ask
a ten
S AR

tic
lli
n t
Cer

(SF) at the Geophysical In
to collect data from the m

ate v
r ant

en
w
fit from the instal
th continued NAS

ion of
suppo

S
rate

ipr

I
ipa

ly:

I
ogr

ha

M
eed

ssi

F
oje

ac



To be provided

ASI

of physical Institute

I
oje

C

The c
freez
will i
a sen
ster
c n sit

ct
is
c
10
e l
ns

his project will be in two
12. Phase II, will comm
the concrete base and the
Datron 11 meter antenna
tenna will be shipped in p

ses.
e spr
uirec
h, ti
asset

se
0
3 soon after break
ch
nent system to ins
of
the communicatio
d
ctions that will be

g the s
). Phas
ll the p
; and e
fully as

I
cre

C

I
opc
I
base
Total
partn

in
the
ng
E

timated to be \$5,000,000
ct estimated at \$6,000,000

fully

de
l through NASA a

l its co

A
nnu
M AS,
a
prc

gr
s
ely

ty Cost Projections
nately \$1.75M per year to
es.

erate

m
aintain the antenn

and th

T
otal
F
A
T

st
g T
m
rc

ding Sources

Fu

Acco
BD

I
oje
L

ed
N

d)

proval

June
2012-A
Deco

Approval
ments

Feb
Feb
M

C

se
se

ing and foundation)
base and assembly)

August
April 20
012-O
13-Sept

I
ojec

en

ia Installation Alaska Satell

acilit

31 - Phase II

COMMISSION
Phase I
MISSION
Phase I

3 /
NE

TESTING

September 2013-November 2013
December 2013-January 2014

Supporting Documents

- One-page
- Reflection
- Vicinity
- Civil Site
- Cross Section
- Structural
- Structural

get
mb
Pla
(P
Cl
era
Sec

Area Foundation (Figure 2.1)
.1)
.1.2)
.1)
Details (S2.0)

Agreement

In witness whereof
date and year first

pa
re v

attest that they have made and executed this

agreement to be effective the

This project as

ed a

meets the requirements of the Alaska Satellite

Facility:

Nettie Labelle

UA

Director for Alaska Satellite Facility

This project as

ed a

meets the requirements of the Geophysical

Institute:

Roger Smith, Director

for

Geophysical Institute

This project schedule

is

appropriate, and schedule as described above is appropriate:

date:

Scott Bell, UA

is

the Chancellor for Facilities Services

This project plan

is

as described above is appropriate:

Pat Pitney, Vice

is

Director Administrative Services

This project as

is

consistent with the research goals of the

Arbuckle Campus

Susan Henrichs

is

Executive Vice Chancellor for Academic Affairs

and Research

This project as

is

consistent with the strategic goals of the campus:

Brian Rogers, U

is

consistent with executive and Board planning

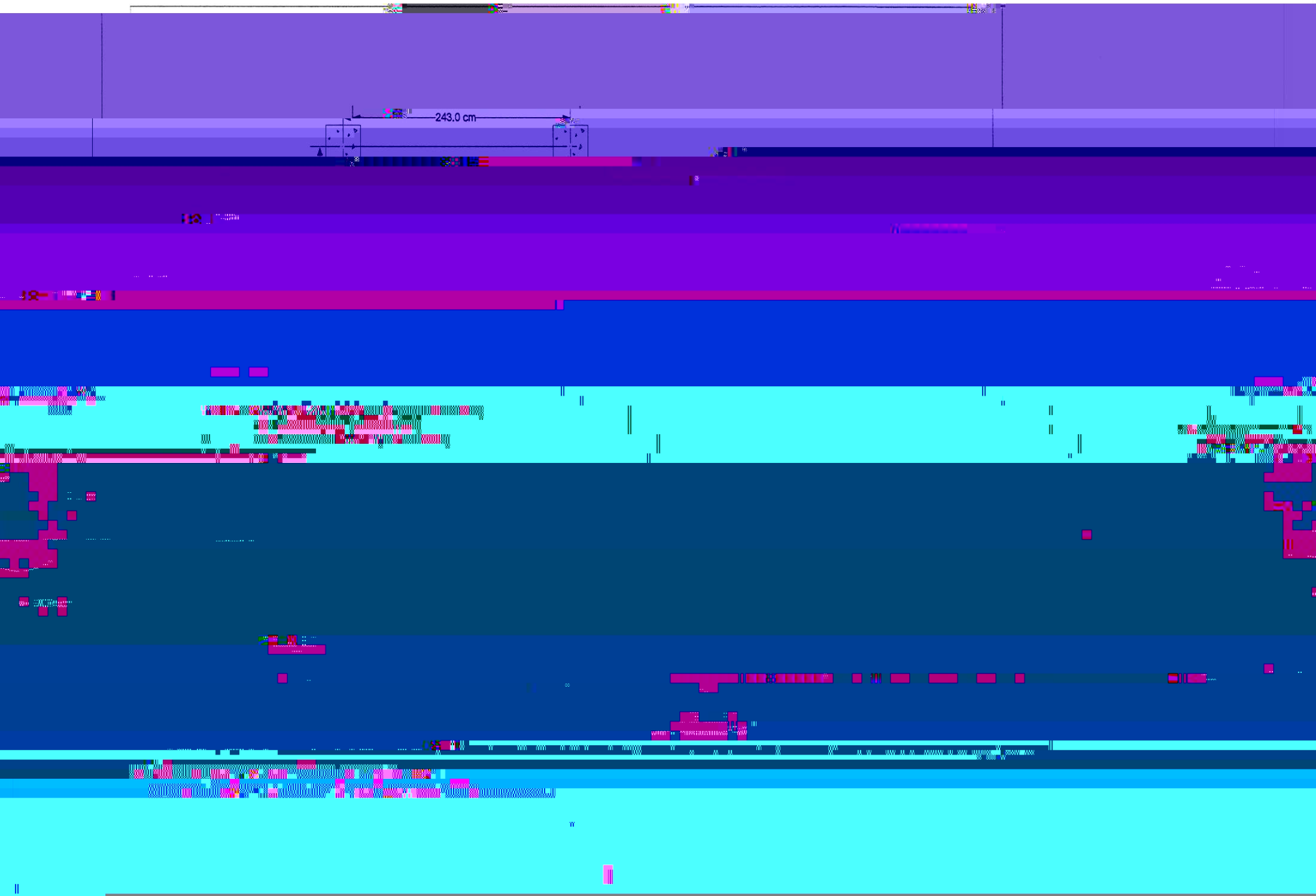
protocols:

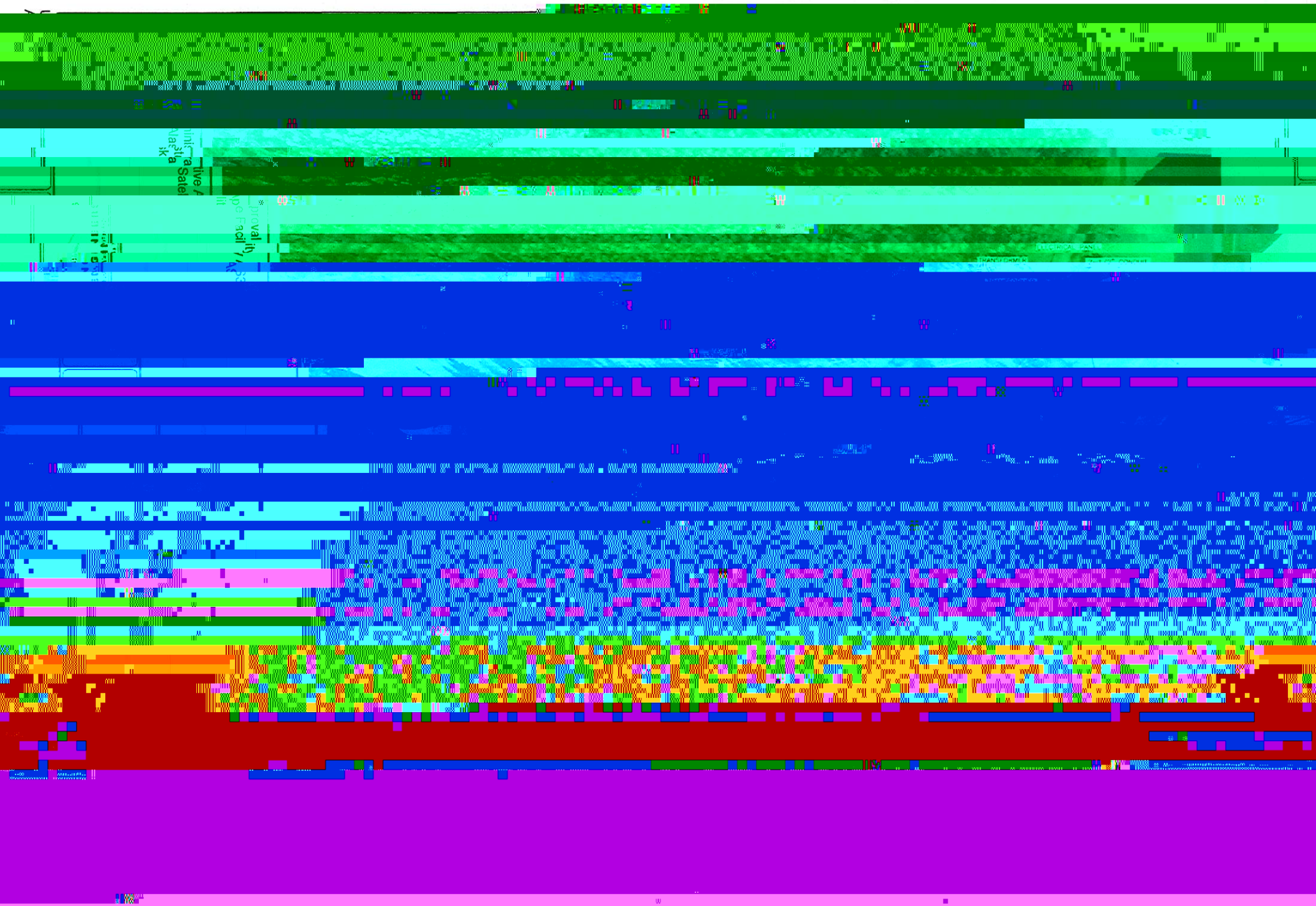
Kit Duke, AVP

Project Agreement

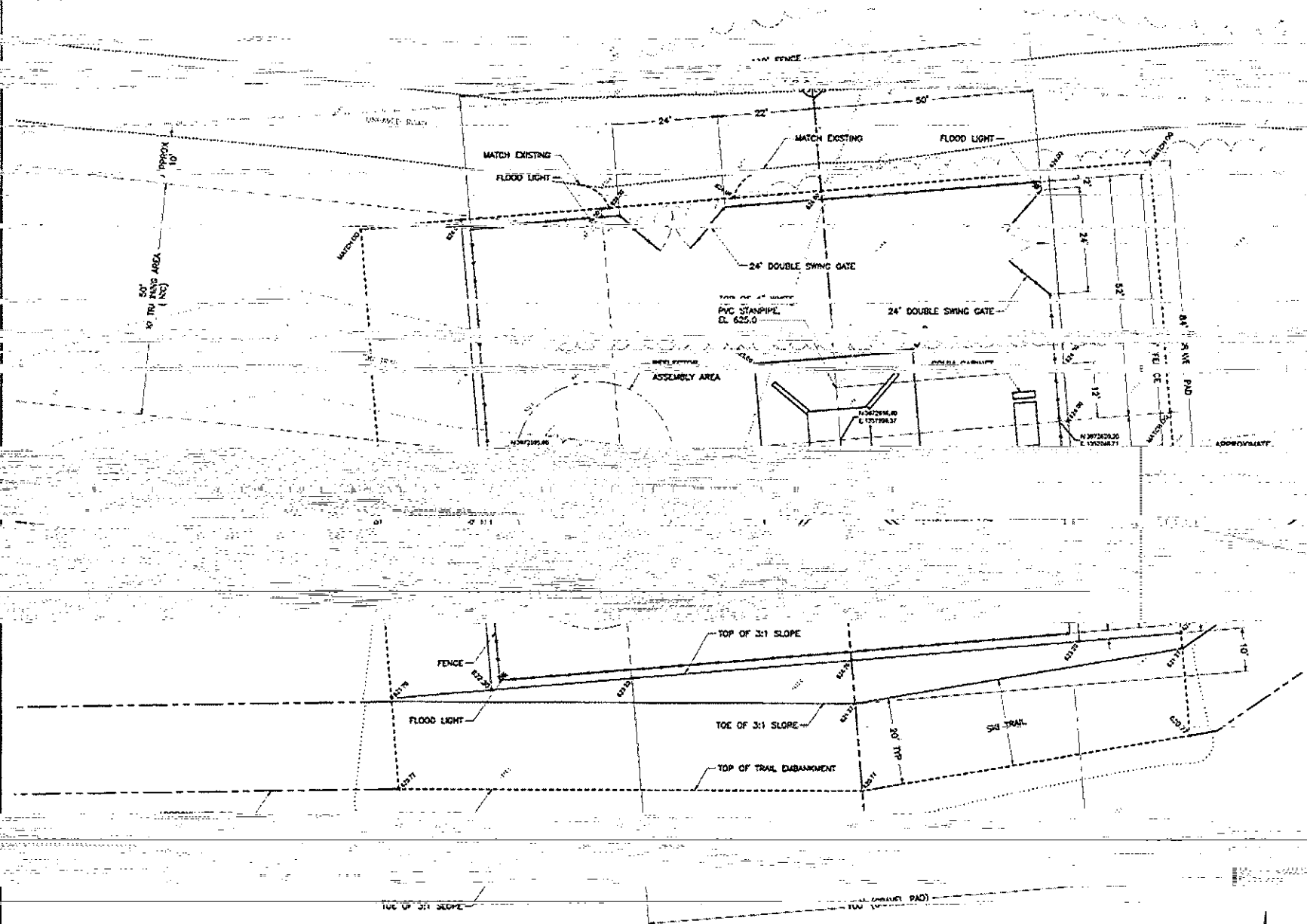
is

for the installation Alaska Satellite Facility AS311 - Phase





JAF Line
Primary Administrative Approval
Antenna
Installation Alaska Satellite Facility A-531-1



CONSTRUCTION

PDC IN C. ENGINEERS
1000 S. COLE
FAIRBANKS, ALASKA 99701-5127

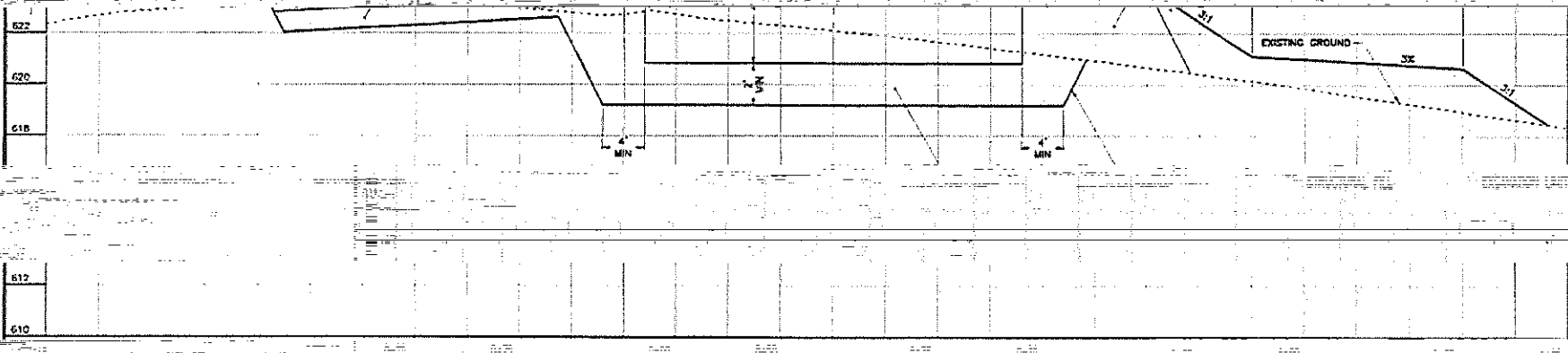
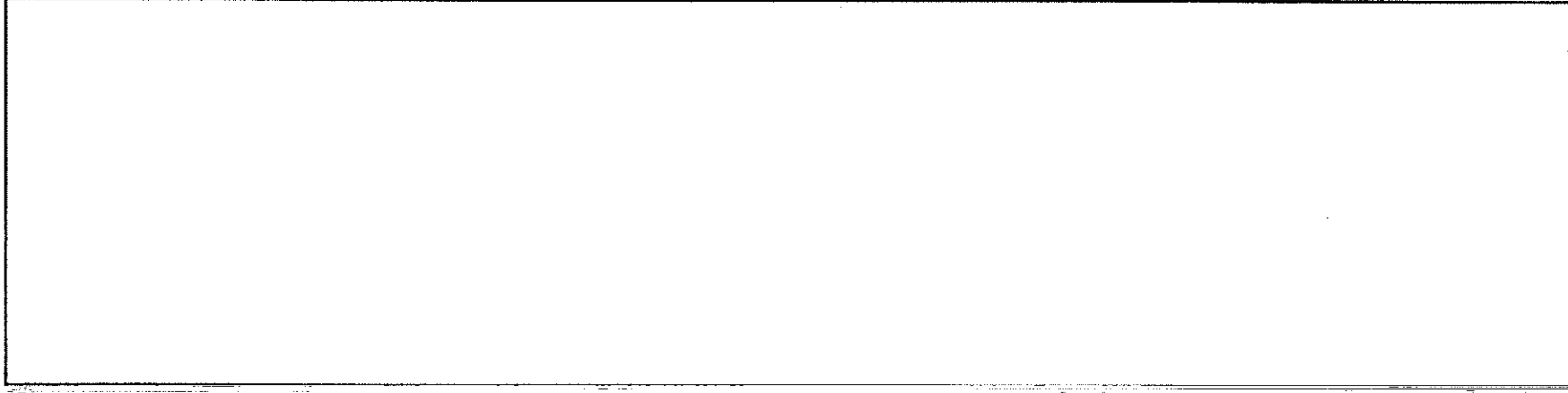
PROJECT 1
UAF AS3 ANTENNA
FAIRBANKS, ALASKA

LOCATION

BY TITLE 1
ELIMINARY



CONSULTANT
ENGINEERS



CROSS SECTION:
UAF AS3 ANTENNA

PROJECT :
UAF AS3 ANTENNA

SECTION

AIRBANKS, ALASKA

SHEET TITLE
CROSS SECTION

DATE
DRAWN

PRELIM

JARY DESK

UNLESS REFERRED TO AS EXISTING OR BY OTHERS, ALL WORK ON THESE DRAWINGS SHALL BE CONSIDERED NEW AND SHALL BE PROVIDED UNDER THIS CONTRACT. ANTENNA INSTALLATION IS NOT PART OF THIS CONTRACT.

STRUCTURAL DESIGN DATA

LIVE LOADS:
 SNOW LOAD 50 PSF
 WIND DOWN FORCE 60 K - APPLIED AT TOP-OF CONE VAULT

IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (IBC) 2006 EDITION.

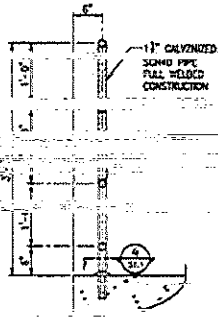
- A. SITE CLASS = D
- B. $I_w = 1.0$
- C. $S_s = 1.12g$
- D. $S_1 = 0.31g$
- E. SEISMIC USE GROUP = 2

SERVICEABILITY LOADS:

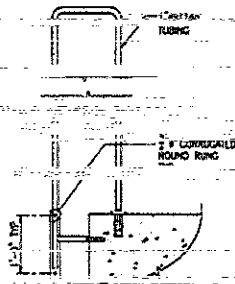
- A. FOUNDATION STIFFNESS = 2.7 E-10 RADIANS/IN-LBS/IN

FOUNDATION NOTES

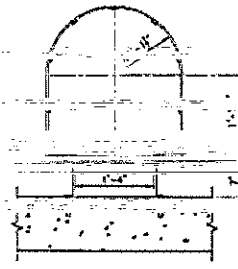
1. MAT SHALL BE FOUNDED UPON COMPACTED STRUCTURAL FILL WITH AN
2. ALL CRACKS AND OR OTHER UNDESIRABLE MATERIALS SHALL BE REPAIRED PER



1 HANDRAIL DETAIL
 21.1 1/2" x 4"



2 LADDER DETAIL
 21.1 1/2" x 4"



3 CAGE AND LADDER DETAIL
 21.1 1/2" x 4"

NOTE:
 CAGE AND LADDER TO BE 1/4" GALVANIZED TREAD-STEEL LADDER OR "COTTERMAN" OR EQUAL. CAGE SHALL HAVE SECURITY SCREEN AND

CO. 201414

ENGINEERS

3'-0"

AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" - ACI 318.

DOWN'S SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING.

8. UNLESS NOTED OTHERWISE, THE FOLLOWING BAR LAPS SHALL BE PROVIDED:

BAR SIZE	MAT AND SLAB		WALLS
	L ₁ (INCHES)	L ₂ (INCHES)	CONCRETE COVER (C) DIA



1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) 2006 EDITION.

2. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" - ACI 318.

3. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" - ACI 318.

4. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" - ACI 318.

5. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" - ACI 318.

6. CHECK ALL EXPOSED CORNERS!

7. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" - ACI 318.

NA

NA

GENERAL TYPICAL

DESIGN

