STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
and PUBLIC FACILITIES
S.E. REGION DESIGN & CONSTUCTION DIVISION

THE FOLLOWING STANDARD DRAWINGS SHALL APPLY TO THIS PROJECT:
A-1, C-01.01, C-02.00, D-01.00, D-04.01, D-05.01, M-16.00, S-05.00.

CONSTRUCTION PLANS FOR

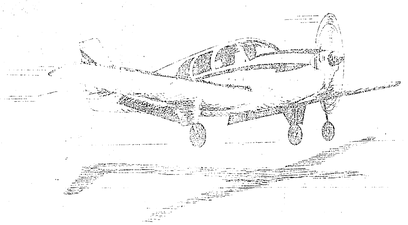
KAKE AIRPORT EXPANSION

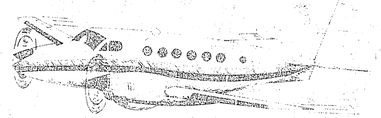
APRON & RUNWAY EXTENSION, LIGHTING & RELATED ITEMS

PROJECT NO. 67496 - D-19712
A.I.P. NO. 831-3-02-0398-01-83

As-Built Set
Do Not Use For Other Purposes

SPONSORED BY
THE STATE OF ALASKA



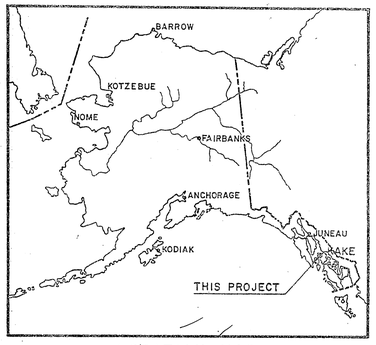


AS-BUILT PLANS
WYMAN CONSTRUCTION CO.
GREG BROWNING - PROJECT ENGINEER
OCT. 27, 1985 - NOV. 12, 1986

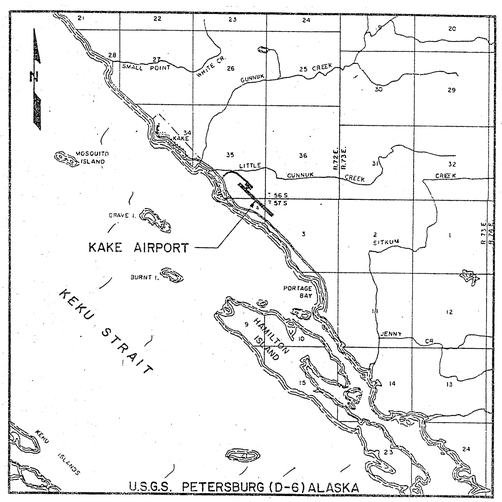
APPROVED
DONALD D. DIECKMEYER, REGIONAL DIRECTOR, S.E. REGION DESIGN & CONSTRUCTION
DATE 8-12-85

APPROVED
WALLACE K. WILLIAMS, DESIGN CHIEF, S.E. REGION DESIGN & CONSTRUCTION
DATE 8/12/85

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



LOCATION MAP



VICINITY MAP
1" = 1 mile

INDEX

STATE OF ALASKA
REGISTERED ENGINEER
P. Bednarowicz
CE-5104
LIMITED ENGINEERING LICENSE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
LOCATION MAP, VICINITY MAP, & INDEX

BY	DATE	CHANGE

REVISIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE R. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: William L. Baumgartner for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE:	DESIGNED:	DRAWN:	SHEET
N.T.S.	MJC	SS	2 OF 25
	CHECKED:	DATE:	

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNIT	SHEET 6	7	8	9	10	11	12 *	13	21 *	TOTAL
90	MBE & WBE Adjustments	C.S.										All Req'd.
100	Mobilization & Demobilization	L.S.										All Req'd.
121	Construction Surveying by the Contractor	L.S.										All Req'd.
125	Engineer's Transportation	EA.										3
130	Engineer's Field Office & Laboratory	L.S.										All Req'd.
200a	Clearing	Acre					50.255 ~~38.3~~					~~38.3~~ 50.255
200e	Clearing & Grubbing	Acre	1.475 ~~1.6~~	0.221 ~~1.696~~	0.971		~~9.4~~ 12.89					~~11~~ 15.557
~~330a~~	~~Common Excavation~~	~~C.Y.~~					~~11,000~~					~~11,000~~
~~330b~~	~~Rock Excavation~~	~~C.Y.~~					~~165,000~~					~~165,000~~
~~330c~~	~~Embankment~~	~~C.Y.~~	~~27,400~~	~~4,600~~	~~6,510~~		~~123,600~~					~~162,110~~
400	Corrugated Metal Pipe (36" Aluminum, 8 gage)	L.F.					487 ~~462~~					~~462~~ 487
540	Aggregate Surface Course	C.Y.	1491.85 ~~1,510~~	553.71 ~~560~~	1211.93 ~~1,500~~	1211.93 ~~1,330~~	2,629.29 ~~2,730~~					~~7,630~~ 7,098.72
550b	Geotextile Reinforcement: Type 1	S.Y.	2,630 ~~5,067~~	~~1133~~ 1,225								~~10,200~~ 8,855
550c	Geotextile Reinforcement. Type 2	S.Y.			1819 ~~2,000~~							~~2,000~~ 1819
701	Survey Monument	Each	1	1	1		2					~~8~~ 5
730	Reflective Markers.	Each						16				16
800	Portland Cement Concrete	C.Y.	~~47~~ 46.3									~~47~~ 46.3
820a	Tiedown Anchors	Each	36									36
900	Seeding	MSF	59.325 → (Kake, Access, Apron)		←		198.750 ~~258~~					~~258~~ 258.1
1000c	New Remote Control Panel, L-821	Each							1			1
1000e	New Medium Intensity Runway Marker Lights, L-861	Each							53			53
1000f	New Taxiway Marker Light, L-861T	Each							10			10
1000g	New Handhole, L-867	Each							19 ~~16~~			~~16~~ 19
1000i	2" Rigid Steel Conduit	L.F.							~~2,970~~ 2364			~~2,970~~ 2364
1000k	2" PVC Conduit	L.F.							12,325 ~~11,560~~	2,388 ~~2,478~~		~~14,038~~ 14,713
1000l	Underground Cable #8AWG Copper, 5kv Type "B", L-824	L.F.							18,969 ~~19,000~~			~~19,000~~ 18,969
1000m	#6 Bare Copper Ground Conductor	L.F.							15,115 ~~15,200~~			~~15,200~~ 15,115
1000n	Multiconductor Control Cable	L.F.							354 ~~406~~			~~406~~ 354
1000p	Underground Cable, Copper, 600V, Type "B", L-824	L.F.							13,699 ~~13,600~~			~~13,600~~ 13,699
1000q	Ground Rod	Each							~~19~~ 20			~~19~~ 20
1000r	3" P.V.C. Conduit	L.F.								4820 ~~4,956~~		~~4,956~~ 4820
1000s	Radio Controller, L-854	Each							1			1
1000t	Underground Vault (36"x36"x36")	Each							~~8~~ 6	~~8~~ 4		~~8~~ ~~9~~ 10
1030a	P.A.P.I. - 4, L-880, Style A, Class II	Pair							~~2~~ 1			~~2~~ 1
1030b	Omni-directional R.E.I.L., L-859	Pair							2			2
1040	Electrial Work - Structures	L.S.							All Req'd			All Req'd.
1050a	URD Cable, 15kv	L.F.								2502 ~~2,529~~		~~2,529~~ 2502
1050b	25 Pair Communication Cable	L.F.								2479 ~~2,529~~		~~2,529~~ 2479
1050c	25 KVA, 7200V Transformer w/Base	L.S.							~~All Req'd~~	All Req'd		All Req'd.
1050d	Load Break	Each							~~2~~	2		2
121(1)	Approach Zone Surveying	L.S.					All Req'd					All Req'd
200 f	Windcone Clearing	L.S.			All Req'd							All Req'd
330d	Borrow Embankment	C.Y.	22,~~791~~ 901.56	4589.57	6,169.63	3,605.03	140,123.15					177,389
330e	Unclassified Excavation	C.Y.	-0-	775.92	1853.93	-0-	72,408.85					75,039
330f	Blue Clay Slope Reconstruct	L.S.		All Req'd								All Req'd

* All lighting equipment quantities related to runway lighting are listed in this column (Sheet 12).

SETTLEMENT PLATFORM SUMMARY

STATION	REMARKS
"R" 10+05	Install Lt. & Rt. on Shoulders
"R" 10+30	Install on Centerline
"R" 10+55	Install Lt. & Rt. on Shoulders
Above were buried at contracts end	

AIRPORT LIGHTING PAD SCHEDULE

STATION	REMARKS
"R" 20+50	Install at Lt. Shoulder
"R" 42+30	Install at Rt. Shoulder
"R" 53+00	Install at Lt. and Rt. Shoulder
"R" 13+00	Install at Lt. and Rt. Shoulder

MONUMENT INSTALLATION SUMMARY

STATION	POINT	REMARKS
"A" 14+98.62	P.T.	Adjust
"A" 20+78.45	P.O.T.	13' Lt. of ℄ End Access Rd. Begin Apron Expansion
"R" 56+00	P.O.T.	End of Runway
"R" 10+00	POT.	~~Begin~~ Runway
"R" 45+60 PI	Property Corner	USS 3852 C2

PIPE CONDUIT SUMMARY

STATION	PIPE LENGTH			REMARKS
		36"		
"R" 46+~~10~~51		~~200'~~	219'	
"R" 51+~~50~~07		~~262'~~	268'	
Total		~~462'~~	487'	

STATE OF ALASKA 49TH P. Bednarowicz CE-5104

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D19712
A.I.P. NO. 831-3-02-0398-01-83

SUMMARY TABLES

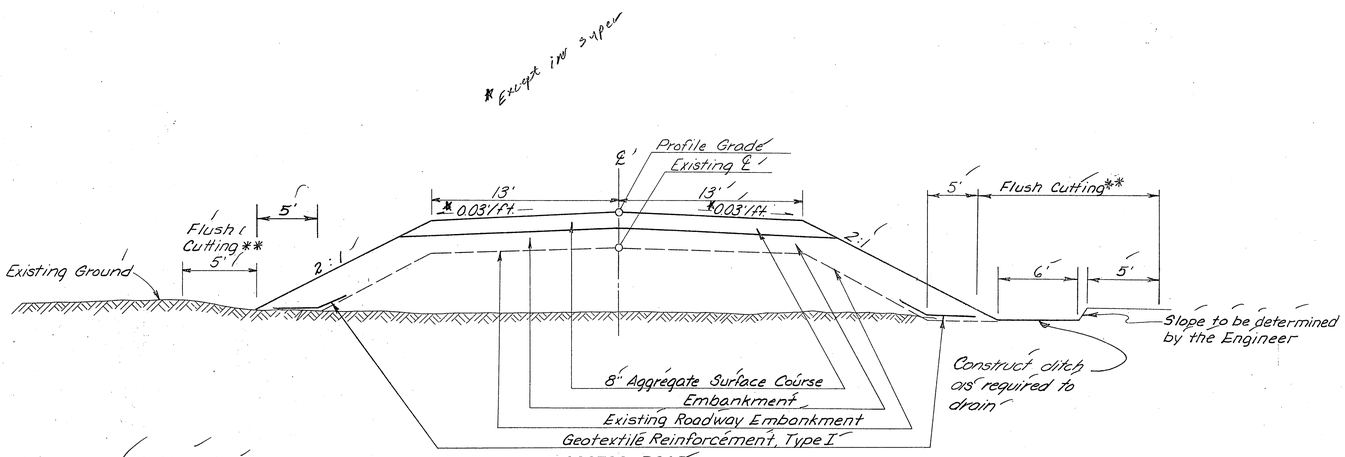
BY	DATE	CHANGE
REVISIONS		

APPROVED BY: Wallace K. Williams 8/12/85
Wallace K. Williams, P.E. — Design Cheif S.E. Region

APPROVED BY: Peter Bednarowicz /for 8/12/85
William L. Baumgartner P.E. — Design Cheif Group B

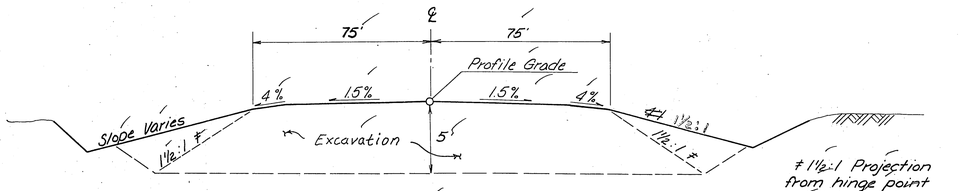
SCALE: No Scale	DESIGNED: MJC	DRAWN: SS	SHEET 3 OF 25
	CHECKED:	DATE:	

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



** See Note 3, Sheet No. 5

ACCESS ROAD
STA. "A" 12+60 to STA. "A" 20+78.45



‡ 1½:1 Projection from hinge point shall be used to determine the width of excavation.

RUNWAY
TYPICAL WASTE REMOVAL SECTION

GENERAL NOTES:

1. Vertical and Horizontal alignments shown on these plans are subject to minor field revisions.
2. Pipe conduit lengths and locations are approximate only and are subject to field adjustments.
3. Clearing and Grubbing Limits shall be 10' beyond the slope limits in cut areas and 5' beyond the slope limits in fill areas.
4. If the Contractor elects to stockpile useable excavation for reuse elsewhere on the Project, no measurement of quantities will be made and all work involved shall be considered a subsidiary obligation of the Contractor.
5. All waste material shall be disposed of at approved locations on the Project Site or at an adjacent site with proper approvals. The Engineer will determine the height and width of the waste embankment adjacent to the Runway. In no case shall the waste be above the Runway. The designated waste area adjacent to the Runway is available for all project waste if the Contractor elects to use this area.
6. A Cushion Blanket (4" minus material) 12" thick shall be placed on all woven Geotextile overlaps. This material shall be included for payment as Embankment.
7. When rock material is encountered in seeding limits, that area shall not be seeded.
8. Stationing for the property monuments are approximate only. The exact location of the existing property monuments are to be tied out and reset by a Registered Land Surveyor. See Section 701. This work shall be considered incidental to other items of work.

STATE OF ALASKA 49TH
P. Bednarowicz
CE-5104

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
RUNWAY WASTE REMOVAL AND ACCESS ROAD - TYPICAL SECTION

BY	DATE	CHANGE

REVISIONS

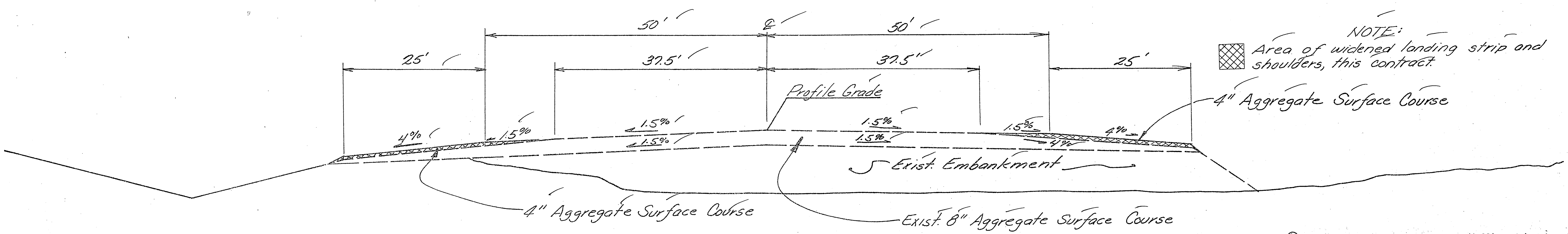
APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: William L. Baumgartner for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE:	DESIGNED:	DRAWN:	SHEET
NO SCALE	MJC	SS	4 OF 25
	CHECKED:	DATE:	

TYPICAL RUNWAY SECTIONS

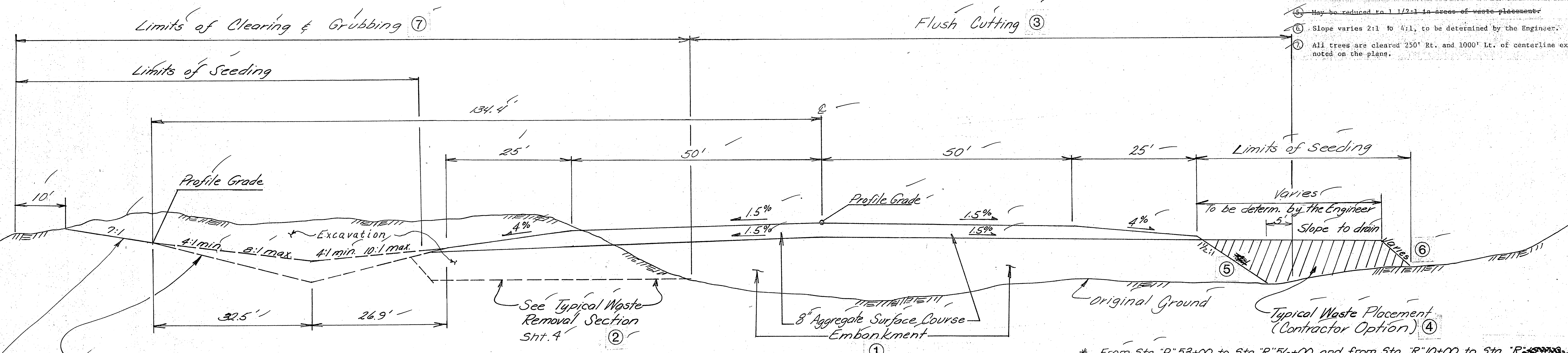
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



RUNWAY SECTION

STA. "R" 10+60 TO STA. "R" 45+40

1. When minimum depth of embankment (4.33' at C_L) cannot be achieved, refer to Typical Waste Removal Section.
2. Waste material may include vegetation, muskeg, organic soils and other materials which are unsuitable for use in Embankment as determined by the Engineer. Note: The thickness and amounts of waste material varies throughout the project. The Typical Waste Removal Section does not apply when in ground suitable for embankment.
3. Flush cutting shall be done in lieu of Clearing and Grubbing, and shall be paid for as Clearing and Grubbing.
4. No waste placement shall be permitted between Sta. "R" 51+00 and "R" 52+00.
5. ~~May be reduced to 1 1/2:1 in areas of waste placement.~~
6. Slope varies 2:1 to 4:1, to be determined by the Engineer.
7. All trees are cleared 250' Rt. and 1000' Lt. of centerline except as noted on the plans.



Ditch slope & depth varies. See sheets 8-10 for flowline elevation.

Ditch section does not apply between Sta. 10+00 & Sta. 10+60. Use a 4:1 fillslope.

Rock may be encountered with pockets of unsuitable material. Construct as directed by the Engineer. Rock may need to be wasted and additional rock obtained from clear zone if directed.

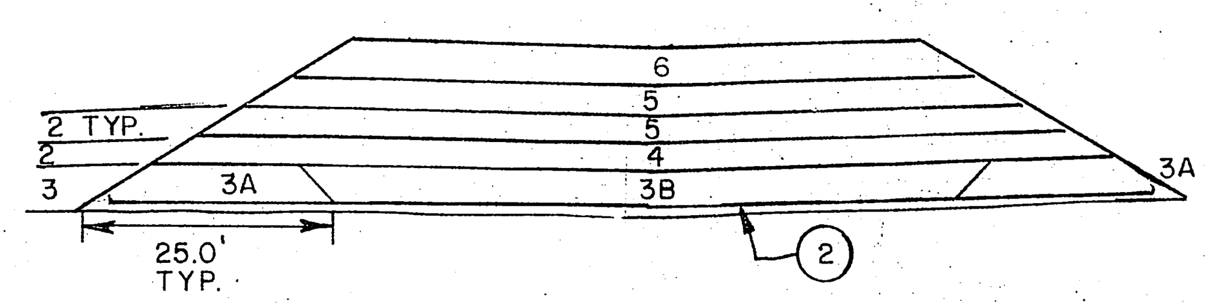
RUNWAY SECTIONS

STA. "R" 45+40 TO STA. "R" 56+00 *
STA. "R" 10+00 TO STA. "R" 10+60 * ‡ ⊞

* From Sta. "R" 53+00 to Sta. "R" 56+00 and from Sta. "R" 10+00 to Sta. "R" 10+60 reduce aggregate surface course thickness to 2."

‡ Place Reinforcing Fabric perpendicular to ℄ on original ground.

⊞ 10+00 to 10+60 Fill slopes will remain 4:1



‡ SEQUENCE OF CONSTRUCTION

STA. "R" 10+00 TO STA. "R" 10+60

1. INSTALL SETTLEMENT PLATFORMS.
2. PLACE GEOTEXTILE REINFORCEMENT, TYPE 2 PERPENDICULAR TO C_L ON ORIGINAL GROUND.
3A. CONSTRUCT OUTSIDE SECTIONS OF INITIAL LIFT.
3B. CONSTRUCT INTERIOR SECTION OF INITIAL LIFT. NEXT, WAIT 10 DAYS.
4. CONSTRUCT SECOND LIFT, 2' MAX. NEXT WAIT 10 DAYS.
5. REPEAT STEP 4 AND WAITING PERIOD, UNTIL EMBANKMENT HAS BEEN CONSTRUCTED TO THE BOTTOM OF SUBBASE.
6. CONSTRUCT AGGREGATE SURFACE COURSE LIFT.

STATE OF ALASKA · 49TH · P. Bednarowicz CE-5104

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
RUNWAY TYPICAL SECTIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: Percy Bednarowicz /for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

BY	DATE	CHANGE

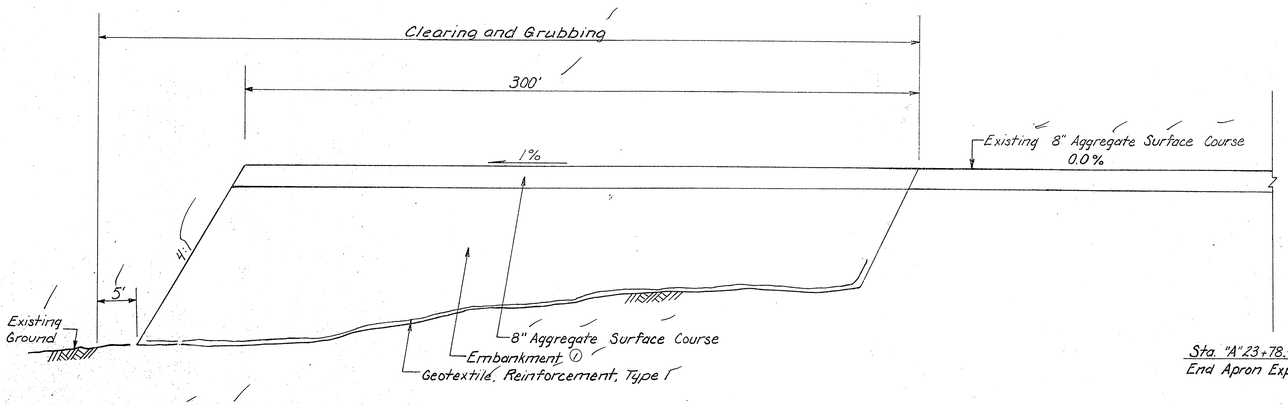
REVISIONS

SCALE: NO SCALE	DESIGNED: MJC	DRAWN: CA	SHEET 5 OF 25
	CHECKED:	DATE:	

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				

TYPICAL APRON EXPANSION SECTION

N.T.S.

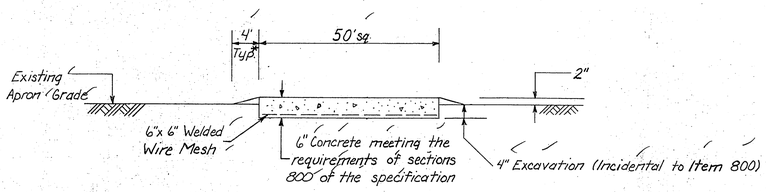


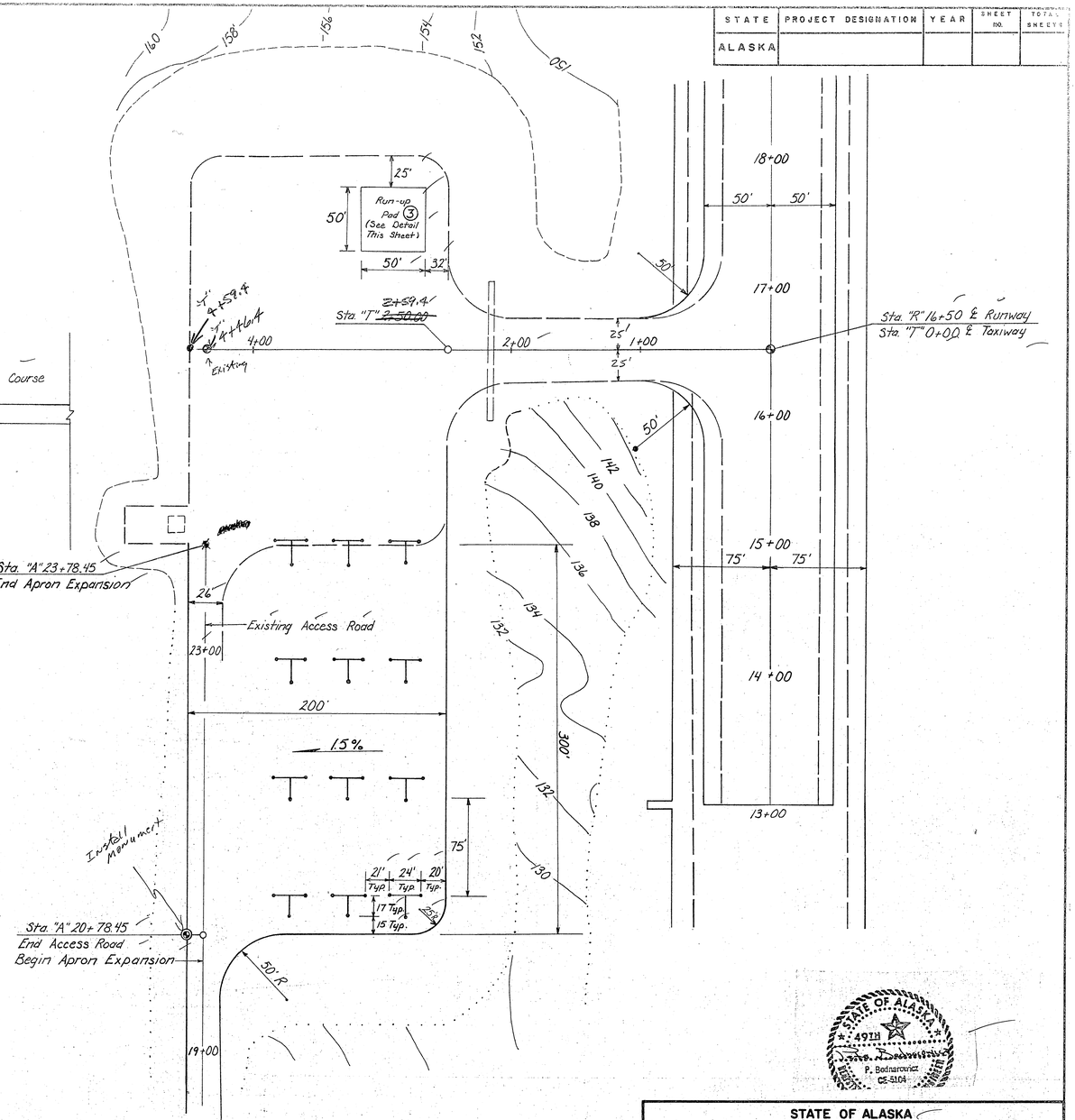
General Notes

1. Minimum 5 ft depth in material unsuitable for embankment or excavate to rock or suitable base material as determined by the engineer.
2. Geotextile shall be placed over unsuitable base material and shall overlap 6'ft over rock or suitable base material. All other geotextile overlaps shall be per manufacturers recommendation.
3. Remove existing tie down anchors in conflict with Run-up pad. This work shall be considered incidental to Item 800.

CONCRETE RUN-UP DETAIL

* Excavation material shall be used to construct ramp





APRON EXPANSION PLAN

SCALE

50 40 30 20 10 0 50 100 150

BY	DATE	CHANGE

REVISIONS

STATE OF ALASKA
P. Bednarowicz
05-5104

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

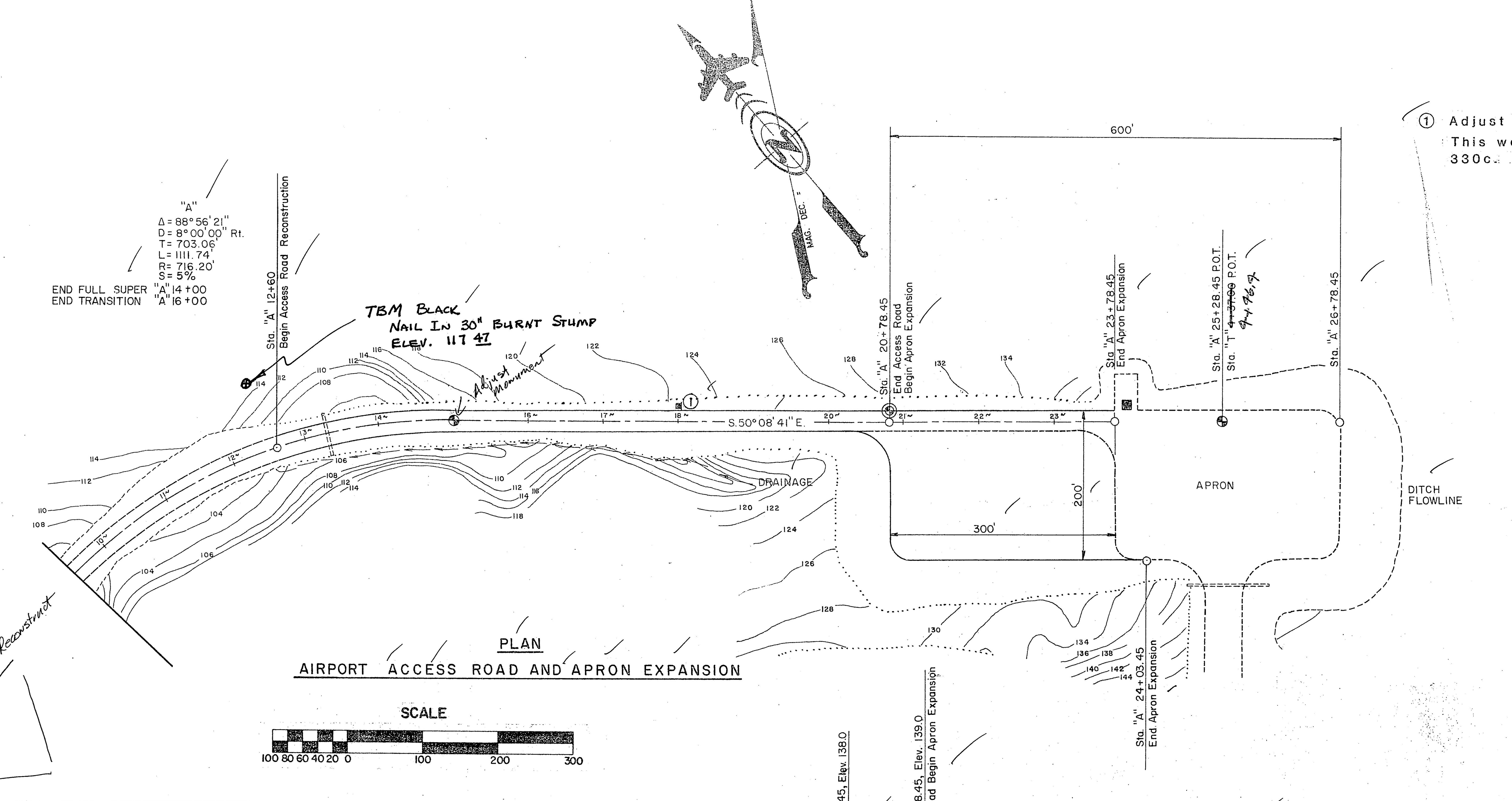
KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
APRON PLAN & TYPICAL SECTION

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: Peter Bednarowicz for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE:	DESIGNED: MJC	DRAWN: MR	SHEET 6 OF 25
AS SHOWN	CHECKED:	DATE:	

① Adjust existing sign as directed by the Engineer. This work shall be considered incidental to Item 330c.



PLAN

AIRPORT ACCESS ROAD AND APRON EXPANSION

SCALE

100 80 60 40 20 0 100 200 300

STATE OF ALASKA 49TH P. Bednarowicz CE-5104 REGISTERED PROFESSIONAL ENGINEER

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

BY	DATE	CHANGE

REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
ACCESS ROAD PLAN & PROFILE

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

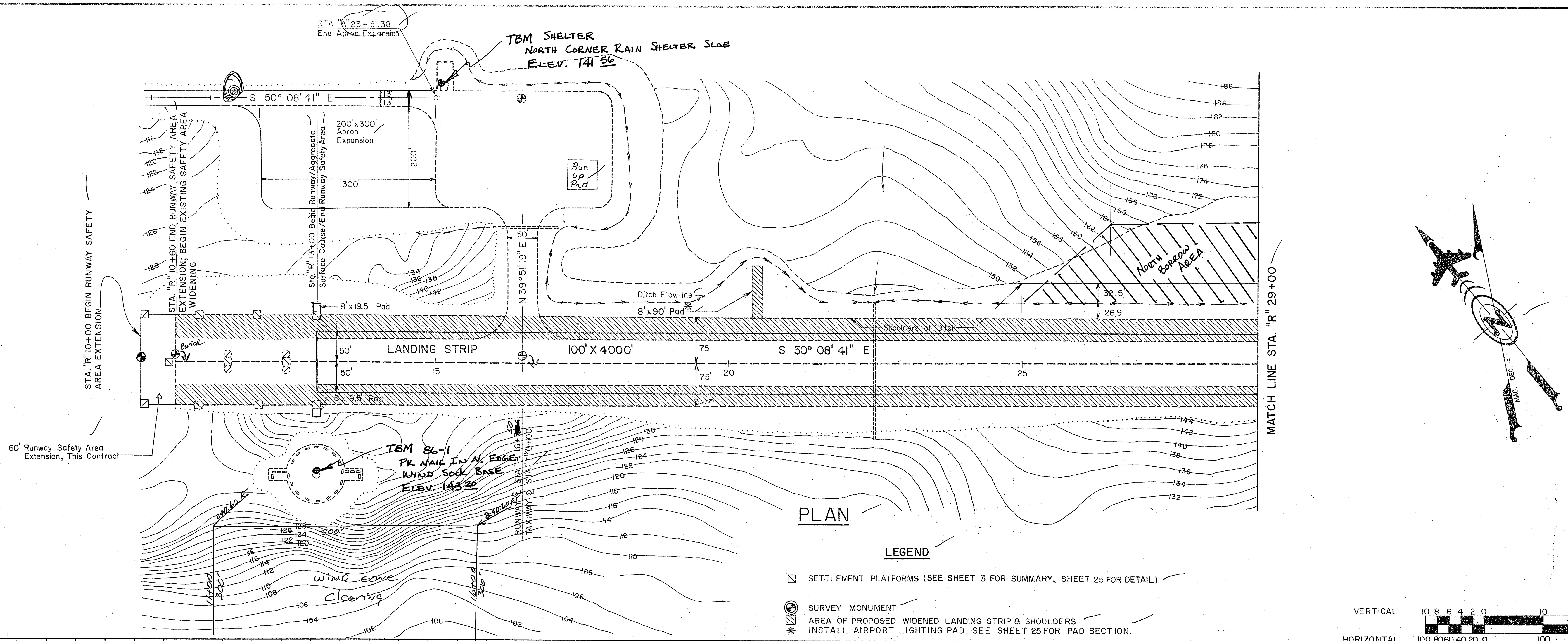
APPROVED BY: 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE: AS SHOWN	DESIGNED: MJC	DRAWN: MR	SHEET 7 OF 25
	CHECKED:	DATE:	

PLAN — NOTE BOOK NO. — SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED — BY — DATE

PROFILE — NOTE BOOK NO. — SURVEYED, PLOTTED, GRADES CHECKED, B. M.'s NOTED, STRUCTURE NOTATNS CH'KD — BY — DATE

KEUFFEL & ESSER


STA. "R" 23+81.38
End Apron Expansion
TBM SHELTER
NORTH CORNER RAIN SHELTER SLAB
ELEV. 141.56
S 50° 08' 41" E
200'x300' Apron Expansion
200
300'
Run-up Pad
STA. "R" 10+60 END RUNWAY SAFETY AREA EXTENSION; BEGIN EXISTING SAFETY AREA WIDENING
Sta. "R" 13+00 Begin Runway/Aggregate Surface Course/End Runway Safety Area
STA "R" 10+00 BEGIN RUNWAY SAFETY AREA EXTENSION
8'x19.5' Pad
N 39°51'19" E
50'
Ditch Flowline
8'x90' Pad
NORTH BORROW AREA
32.5'
26.9'
Shoulders of Strip
LANDING STRIP
100' X 4000'
S 50° 08' 41" E
50'
75'
15
20
25
MATCH LINE STA. "R" 29+00
60' Runway Safety Area Extension, This Contract
TBM 86-1
PK NAIL IN N. EDGE WIND SOCK BASE
ELEV. 143.20
WIND CONE Clearing
RUNWAY STA. 16+
TAXIWAY STA. 1+00
PLAN

LEGEND

- SETTLEMENT PLATFORMS (SEE SHEET 3 FOR SUMMARY, SHEET 25 FOR DETAIL)
- SURVEY MONUMENT
- AREA OF PROPOSED WIDENED LANDING STRIP & SHOULDERS
- INSTALL AIRPORT LIGHTING PAD. SEE SHEET 25 FOR PAD SECTION.

VERTICAL 10 8 6 4 2 0 10 20 30

HORIZONTAL 100 80 60 40 20 0 100 200 300

STATE OF ALASKA 49TH P. Bednarowicz CE-5104


STA. "R" 10+00 BEGIN RUNWAY SAFETY AREA EXTENSION
20:1 APPROACH SLOPE
4:1
STA. "R" 10+60 END RUNWAY SAFETY AREA EXTENSION BEGIN EXISTING RUNWAY SAFETY AREA WIDENING
EXISTING PROFILE GRADE
+0.24%
0.5%
1.198%
0.5%
PROFILE GRADE, Lt DITCH
STA. "R" 29+00 ELEV. 151.7'
160
150
140
PROFILE
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00
27+00
28+00
29+00

BY	DATE	CHANGE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
PLAN & PROFILE
"R" 10+00 to "R" 29+00

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: Paul Bednarowicz for 8/12/85
WILLIAM L. BAUMGARTNER P.E. DESIGN CHIEF GROUP "B"

SCALE: AS SHOWN	DESIGNED: MJC	DRAWN: SS	SHEET 8 OF 25
	CHECKED:	DATE:	

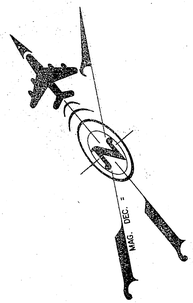
PLAN — NOTE BOOK NO. — SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED — BY — DATE

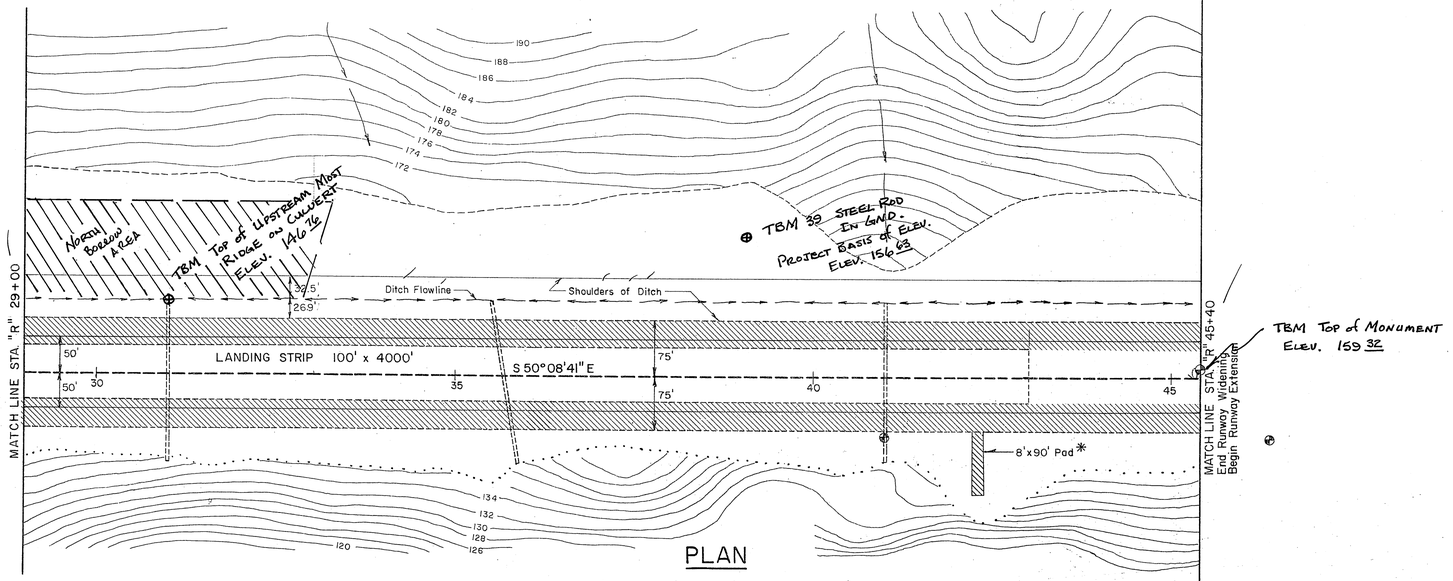
PROFILE — NOTE BOOK NO. — SURVEYED, PLOTTED, GRADES CHECKED, B.M.'S NOTED, STRUCTURE NOTATNS CH'KD — BY — DATE

52396

KEUFFEL & ESSER

PLAN | SURVEYED | BY | DATE
NOTE BOOK | PLOTTED
NO. | ALIGNMENT CHECKED.
RT. OF WAY CHECKED.



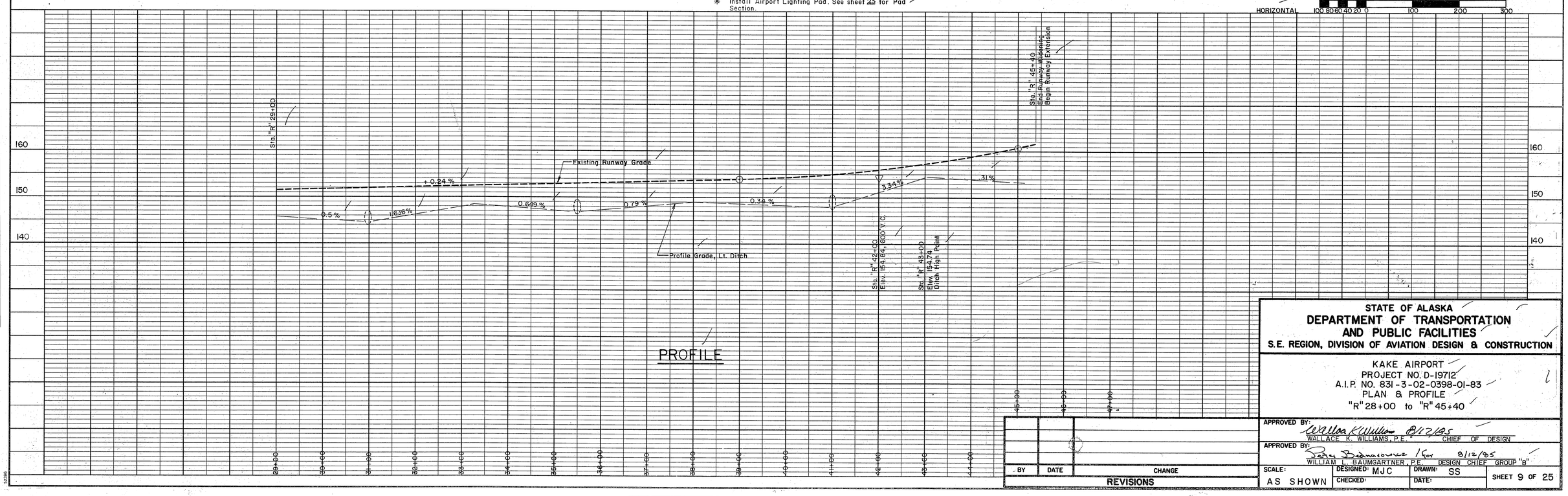


PLAN

▨ – Area of proposed widened Landing Strip & Shoulders
* Install Airport Lighting Pad. See sheet 25 for Pad Section.

VERTICAL 10 8 6 4 2 0 10 20 30
HORIZONTAL 100 80 60 40 20 0 100 200 300

PROFILE | SURVEYED | BY | DATE
NOTE BOOK | PLOTTED
GRADES CHECKED.
B. M.'S NOTED.
NO. | STRUCTURE NOTATIONS CHKD.



PROFILE

BY	DATE	CHANGE
		REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
PLAN & PROFILE
"R" 28+00 to "R" 45+40

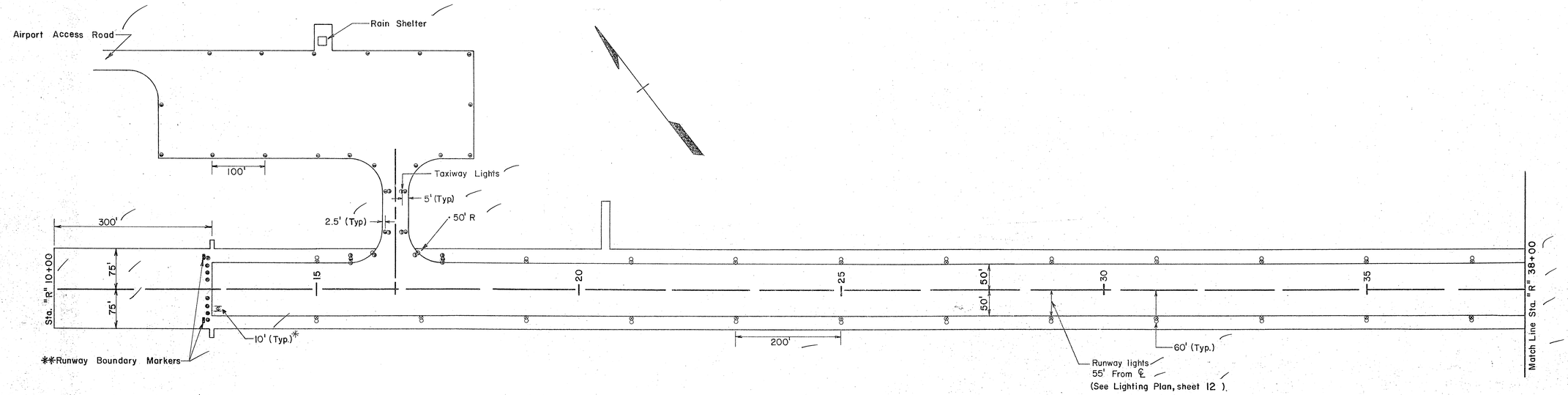
APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN
APPROVED BY: William L. Baumgartner for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

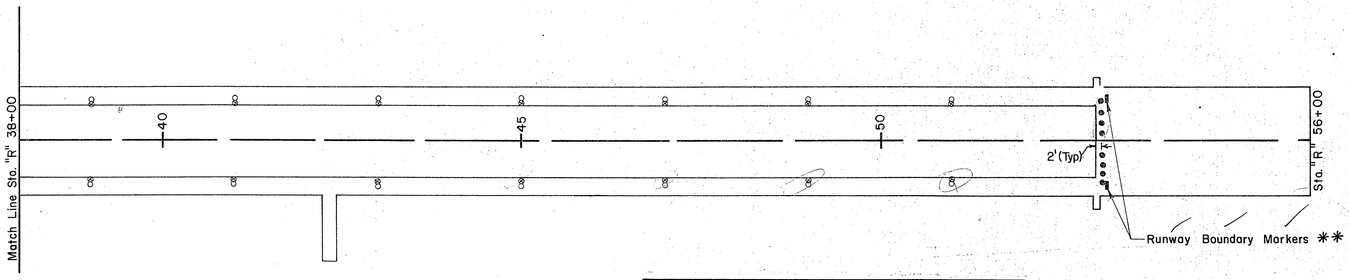
SCALE: AS SHOWN | DESIGNED: MJC | DRAWN: SS | CHECKED: | DATE: | SHEET 9 OF 25

Existing haul road. Location is approximate only. Part of the haul road may be obliterated prior to this contract. The haul road is shown for information only.
TBM 3-56
NAIL IN 24" STUMP
ELEV. 318.75
TBM 86-3
NAIL IN 24" STUMP
ELEV. 228.54
TBM LT RP 52+00
NAIL IN 12" STUMP
ELEV. 172.78
MIDDLE BORROW AREA
Ditch Flowline
Shoulder of Ditch
8' x 19.5' Pad
LANDING STRIP 100' x 4000'
S50°08'41"E
MATCH LINE STA "R" 45+40
1000'
20:1 Approach Slope
Install Airport Lighting Pad See Sheet 25 for Pad Section
Install Survey Monument
VERTICAL
HORIZONTAL
Sta. "R" 53+00 End Runway Extension Begin Runway Extension Safety Area
Sta. "R" 56+00 End Runway Extension Safety Area
EXCAVATION
ELEVATION VARIES
0.0%
Lt. Approach Slope
WIDTH VARIES
ELEVATION 174.33 AT STA."R" 55+00 ELEVATION RISES AT A 20:1 SLOPE.
190' AT STA. "R" 55+00 INCREASING 15' PER 100'
Limits of Clearing and Grubbing
SECTION A-A
STA "R" 55+00 TO STA "R" 69+90
LEFT APPROACH SLOPE PROFILE
Profile Grade
Profile Grade Lt. Ditch
Existing Ground
20:1 APPROACH SLOPE (LT. SIDE)
Sta. "R" 45+40 Elev. 159.93
Begin Approach Slope Elev. 174.33
End Runway Sta. "R" 56+00 Elev. 175.83
Sta. "R" 46+00 Ditch Elev. 153.31 Invert Elev. 153.31
Sta. "R" 49+00 Elev. 162.33 Ditch High Point
Sta. "R" 51+55 Ditch Elev. 162.05 Invert Elev. 161.55
Sta. "R" 54+00 Elev. 167.05 Ditch High Point
Daylight
PLAN
PROFILE
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
GRADES CHECKED
B. M.'S NOTED
STRUCTURE NOTAT'NS CH'KD
NOTE BOOK
NO.
BY
DATE
STATE OF ALASKA
P. Bednarowicz
CE-5104
REVISIONS
CHANGE
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION
KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
PLAN & PROFILE
"R" 45+40 to "R" 56+00
APPROVED BY:
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN
8/12/85
APPROVED BY:
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"
8/12/85
SCALE:
DESIGNED: MJC
DRAWN: SS
CHECKED:
DATE:
SHEET 10 OF 25
KEUFFEL & ESSER
PLATE 1. PLAN-PROFILE

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				

TYPE II
REFLECTIVE MARKER PLAN





* Threshold Reflective Markers shall be placed in line with and approximately 5' outboard (away from centerline) of each threshold light. See lighting plan sheet 12.

** Remove existing Runway Boundary Markers located at Sta. 43+10 and install at Sta. 53+10, 50 ~~feet~~ Rt. and Lt. of ℄. See sht. 25 for details. This work shall be considered incidental to other items of work.

REFLECTIVE MARKERS SUMMARY

SYMBOL	NO. EXISTING	NO. REQUIRED	LOCATION	COLOR
○	27	10	RUNWAY	WHITE
◒	19	6	~~APRON~~ ~~TAXIWAY~~	YELLOW
⊗	16	0	THRESHOLD	GREEN
TOTAL	62	16		

⊗ - RUNWAY LIGHT
◐ - TAXIWAY LIGHT

SCALE
200' 150' 100' 50' 0 100' 200'

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
REFLECTIVE MARKER PLAN

BY	DATE	CHANGE
		REVISIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: Peter Badnarowicz for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

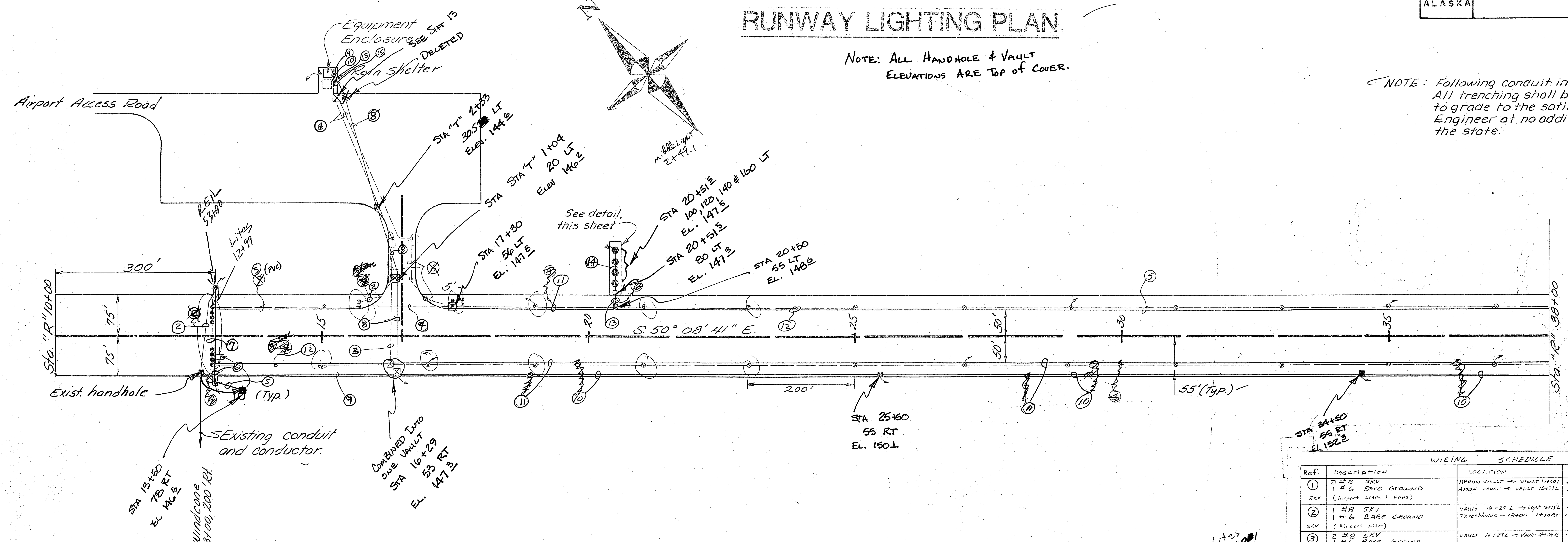
SCALE: AS SHOWN
DESIGNED: MJC
DRAWN: MR
CHECKED:
DATE:
SHEET 11 OF 25

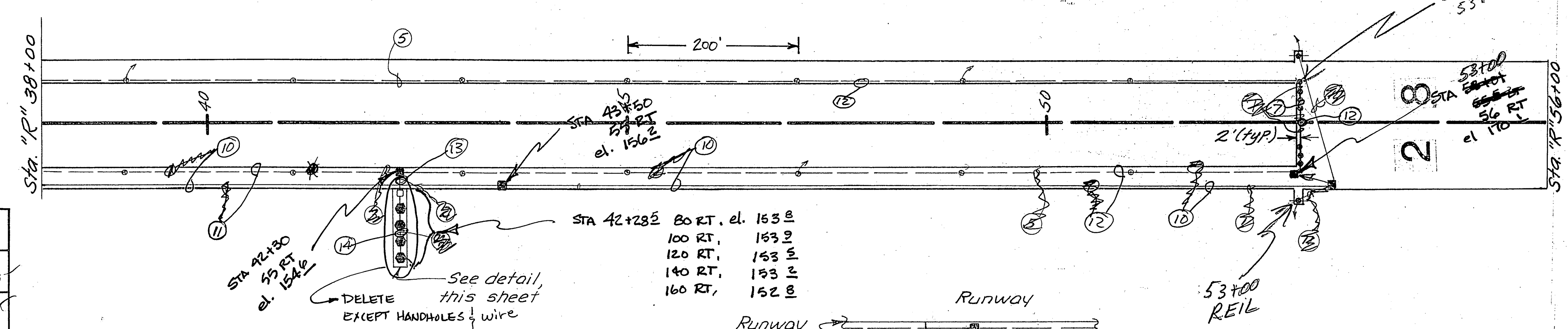
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				

RUNWAY LIGHTING PLAN

NOTE: ALL HANDHOLE & VAULT ELEVATIONS ARE TOP OF COVER.

NOTE: Following conduit installation; All trenching shall be brought back to grade to the satisfaction of the Engineer at no additional cost to the state.

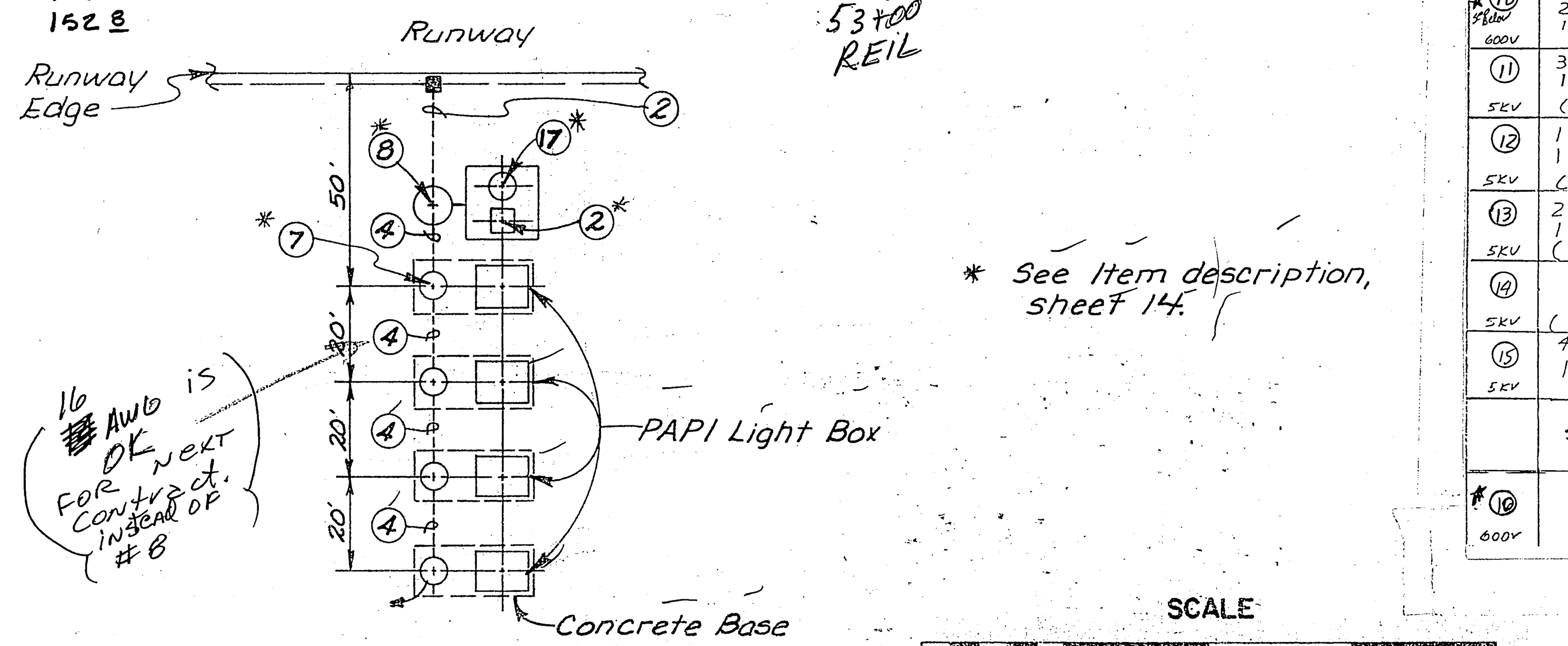




LEGEND			
Symbol	No. Required	Description	Remarks
⊗	37	Runway Lights	White Light
⊖	4	Reil	White Light
◑	10	Taxiway Lights	Blue Light
⬢	8	PAPI	Red/White Light
■	16	Handhole	See Note
⊠	~~8~~ 6	36" x 36" x 36" D Vault PAPI INCLUDED	
↘	19	Ground Rod	
▲	1	Transformer	
●	16	Threshold Lights	Red / Green
□	2	Handhole for mounting PAPI Equipment	
– – –	See Wiring Schedule	2" Conduit w/600 V. Circuit	
———	See Wiring Schedule	2" Conduit w/240 V. Circuit	

NOTE: Total includes 8 L-867 Lightbases Type 1-12" dia. with Base Plate and Gasket. See sheet 14 for details.

16 AWG is OK for Contract instead of #8



PAPI INSTALLATION DETAIL

* See Item description, sheet 14.

WIRING SCHEDULE					
Ref.	Description	Location	Conduit Length	Conduit Type	Total Wire
① 5KV	3 #8 5KV 1 #6 Bare Ground (Airport Lites & PAPI)	APRON VAULT → VAULT 17+30 L APRON VAULT → VAULT 16+29 L	505' 377' 882' TOTAL	RSC (2")	2646 (5KV) 882 (GND)
② 5KV	1 #8 5KV 1 #6 BARE GROUND (Airport Lites)	VAULT 16+29 L → Light 15+75 L Threshholds — 13+00 Lt to Rt	78' 109' 187 TOTAL	RSC (2")	187 (5KV) 187 (GND)
③ 5KV	2 #8 5KV 1 #6 Bare Ground (PAPI)	VAULT 16+29 L → Vault 16+29 R	156' 156 TOTAL	RSC (2")	312 (5KV) 156 (GND)
④ NA	No wire Needed (Delete Next Airport – CONDUIT IN Before the fact)	LIGHT 15+75 L TO VAULT 17+30 L	155' TOTAL	RSC (2")	N A
⑤ 600V	2 #8 600V 1 #6 Bare Ground (wind cone)	REIL 13+00 R → windcone Handhole 13+50 R	52' TOTAL	RSC (2")	104 (600V) 52 (GND)
⑥ 600V	4 #8 600V 2 #10 600V (No pay) 1 #6 Bare GND (Windcone REIL)	Threshhold RT → REIL RIGHT (13+00)	30' TOTAL	RSC (2")	120 (600V) 30 (GND) (60) (#10)
⑦ 600V	2 #8 600V 2 #10 600V (No pay) 1 #6 Bare GND 1 multiconductor control (REIL)	REIL RT → REIL Left (13+00) REIL LT → REIL Rt through Handhole (53+00)	170' 170' 340' TOTAL	RSC (2")	340 (CONTROL) 680 (600V) 340 (GND) (680) (#10)
⑧ 600V	6 #8 600V 2 #10 600V (NOPAY) 1 #6 Bare Ground (REILS windcone)	APRON VAULT → Apron/Taxiway H.H. Apron/Taxiway H.H. → Vault 16+29 Rt. Thru 16+29 Vault L	250' 312' 562 TOTAL	RSC (2")	3372 (600V) 562 (GND) (1124) (#10)
⑨ 600V	4 #8 600V 2 #10 600V (No pay) 1 #6 Bare GND (REIL) windcone	VAULT 16+29 RT → Threshold 13+00 RT APRON VAULT → Shelter	327' 40' 367 TOTAL	PCV (2")	1468 (600V) 367 (GND) (734) (#10)
★⑩ See Below 600V	2 #8 600V 2 #10 600V (no pay) 1 #6 Bare GND (REILS)	VAULT 16+29 R → H.H. 25+50 Rt H.H. 25+50 R → H.H. 34+50 Rt H.H. 34+50 R → H.H. 43+50 Rt H.H. 42+30 R → H.H. 53+01 RT	923' 900' 900' 951' 3674 TOTAL	PCV (2")	7348 (600V) 3674 (GND) (7348) (#10)
⑪ 5KV	3 #8 5KV 1 #6 BARE GND (AIRPORT LIGHTS & PAPI)	VAULT 16+29 R → H.H. 42+30 RT VAULT 17+30 L → H.H. 20+50 LT	2603 320 2923 TOTAL	PCV (2")	8769 (5KV) 2923 (GND)
⑫ 5KV	1 #8 5KV 1 #6 BARE GND (AIRPORT LITES)	Light 15+75 Lt → Thresh. 13+00 L Thresh 13+00 Rt → Vault 16+39 R VAULT 20+50 Lt → Thru Thresholds → VAULT 42+30 Rt.	280' 327' 4430' 5037' TOTAL	PCV (2")	5037 (5KV) 5037 (GND)
⑬ 5KV	2 #8 5KV 1 #6 Bare GND (PAPIS & Airport Lites)	H.H. 20+50 Lt → 80' LT H.H. 42+30 Rt → 80' Rt. Apron Vault → Shelter	25' 25' 34' 84' TOTAL	PCV (2")	168 (5KV) 84 (GND)
⑭ 5KV	6 #8 5KV 1 #6 Bare GND (PAPIS)	20+50 80' LT → 160' LT 42+30 80' RT → 160' LT	80' 80' 160 TOTAL	PCV (2")	960 (5KV) 160 (GND)
⑮ 5KV	4 #8 5KV 1 #6 Bare GND (PAPI)	Apron VAULT → Shelter	40' TOTAL	PCV (2")	160 (5KV) 40 (GND)
	See ATTACHMENT ON BACK FOR AS-BUILT WIRING DIAGRAM.		COLOR	CODED	
★⑩ 600V	2 #8 600V 1 #6 GND 2 #10 (NO pay) (WIND cone) (REIL Intensity)	Apron Vault → Shelter	40' TOTAL	PCU (2")	80 (600V) 40 (GND) 80 (#10)

STATE OF ALASKA 49TH P. Bednarowicz CE-5104 REGISTERED PROFESSIONAL ENGINEER

SCALE 100 80 60 40 20 0 100 200 300

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83
RUNWAY LIGHTING PLAN

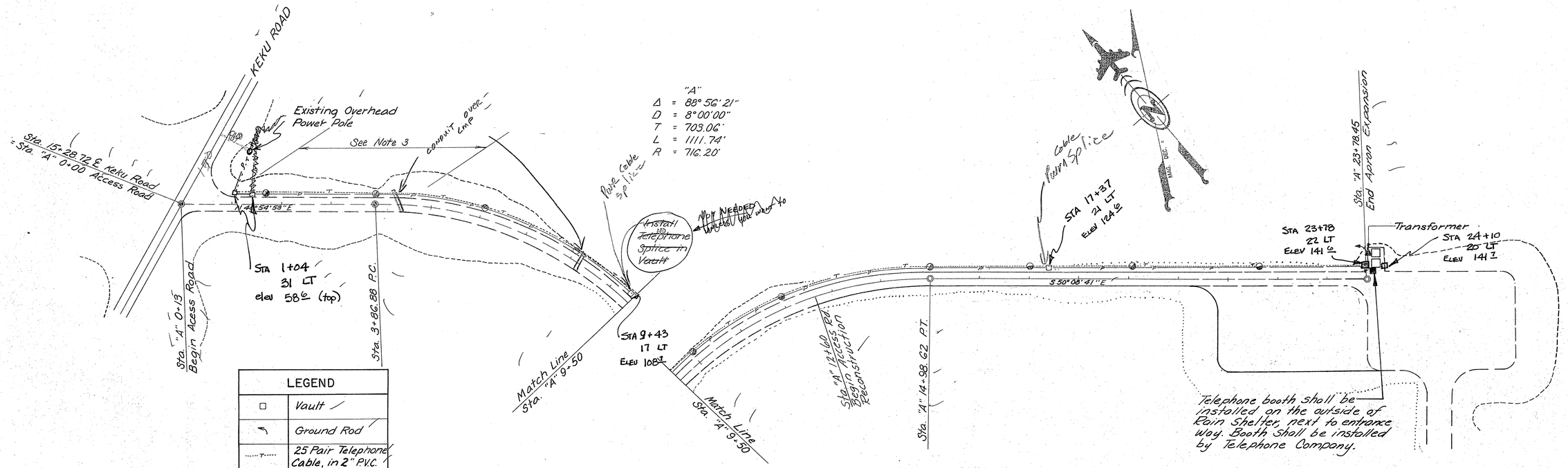
APPROVED BY: Wallace K. Williams 8/12/85 — WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: Peter Bednarowicz (for) 8/12/85 — WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

BY	DATE	CHANGE
REVISIONS		

SCALE: AS SHOWN	DESIGNED: MJC	DRAWN: SS	SHEET 12 OF 25
	CHECKED:	DATE:	

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



LEGEND	
□	Vault
	Ground Rod
..T..	25 Pair Telephone Cable, in 2" P.V.C.
—P—	URD 15KV in 3" P.V.C.
◒	Cable Markers
▲	Transformer**

SCALE
100 80 60 40 20 0 100 200 300

UNDERGROUND VAULT		
STATION	OFFSET	RT/LT
"A" 1+40	13'	Lt.
"A" 9+50	29.5'	Lt.
"A" ~~17+60~~ 26+88	26.5'	Lt.
~~"A" 23+78~~	~~22'~~	~~Lt~~
24+10	20'	LT.

SEE SHEET #12

** 25 KVA 7200V Transformer w/Base

APPROX. AS-BUILT STATION

CABLE MARKER SUMMARY			
STATION	OFFSET	RT/LT	REMARKS
2+50 "A" 1+70	13'	Lt.	Post
3+86 "A" 3+86	13'	Lt.	Post
5+50 "A" 6+00	13'	Lt.	Post
6+50 "A" 8+00	13'	Lt.	Post
7+50 "A" 10+00	13'	Lt.	Post
11+50 "A" 12+00	13'	Lt.	Post
13+50 "A" 14+98	13'	Lt.	Post
15+50 "A" 17+00	13'	Lt.	Post
19+50 "A" 19+10	13'	Lt.	Post
21+50 "A" 21+50	13'	Lt.	Post

BLUE CLAY AREA

POWER & TELEPHONE PLAN

General Notes

1. Telephone Conduit shall be installed in the same trench a minimum of 6" spacing from Power Conduit.
2. Cable Marker Posts and Utility Marker Tape shall be incidental to condiut installation.
3. Rock excavation ~~may~~ will be encountered approximately between Sta. 0+00 to Sta. 5+00. All blasting and rock excavation shall be incidental to conduit installation.
4. Conduit shall be installed adjacent to the Left toe of slope with a min. cover of 36." Any destruction of the structural section as a result of conduit installation shall be repaired to the satisfaction of the Engineer, and at no additional cost to the state.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D19712
A.I.P. NO. 831-3-02-0398-01-83

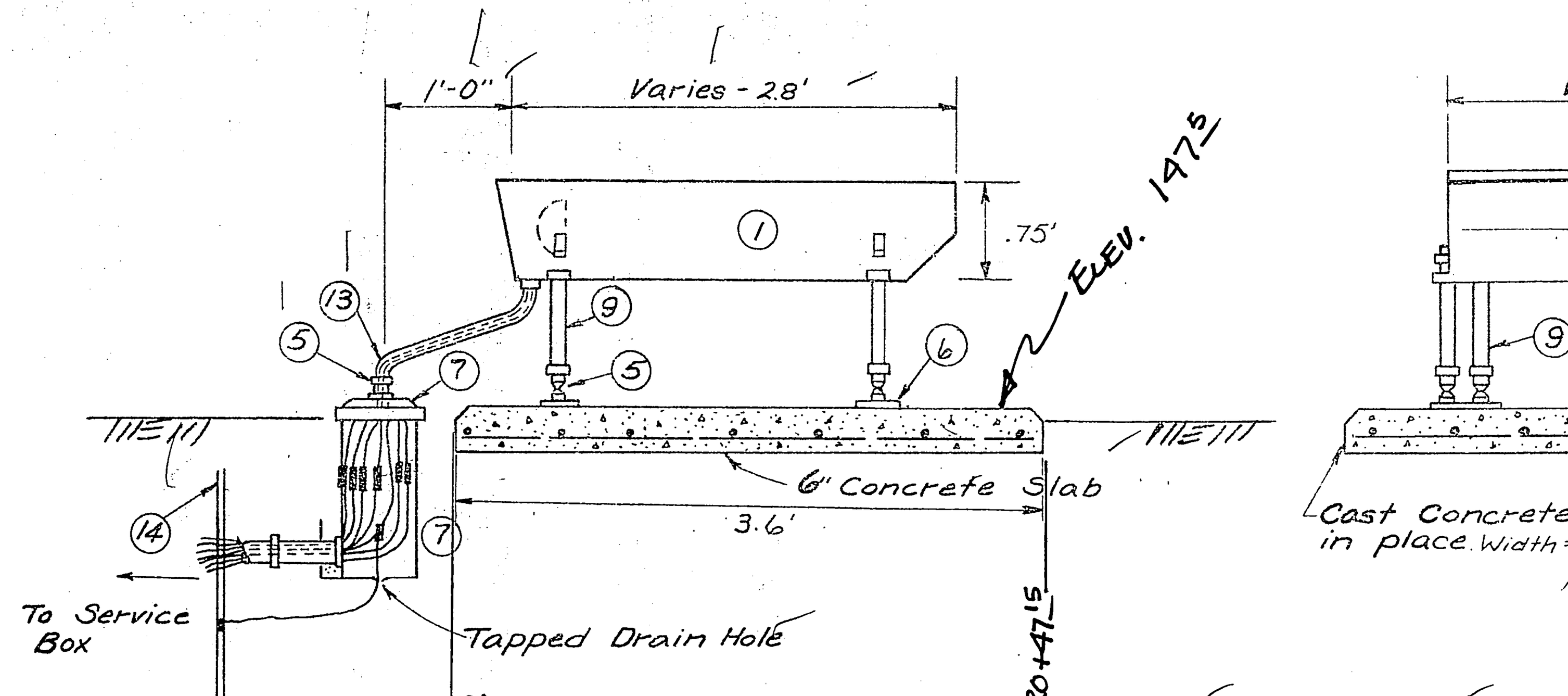
POWER & TELEPHONE PLAN

BY	DATE	CHANGE
		REVISIONS

APPROVED BY: Wallace K Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

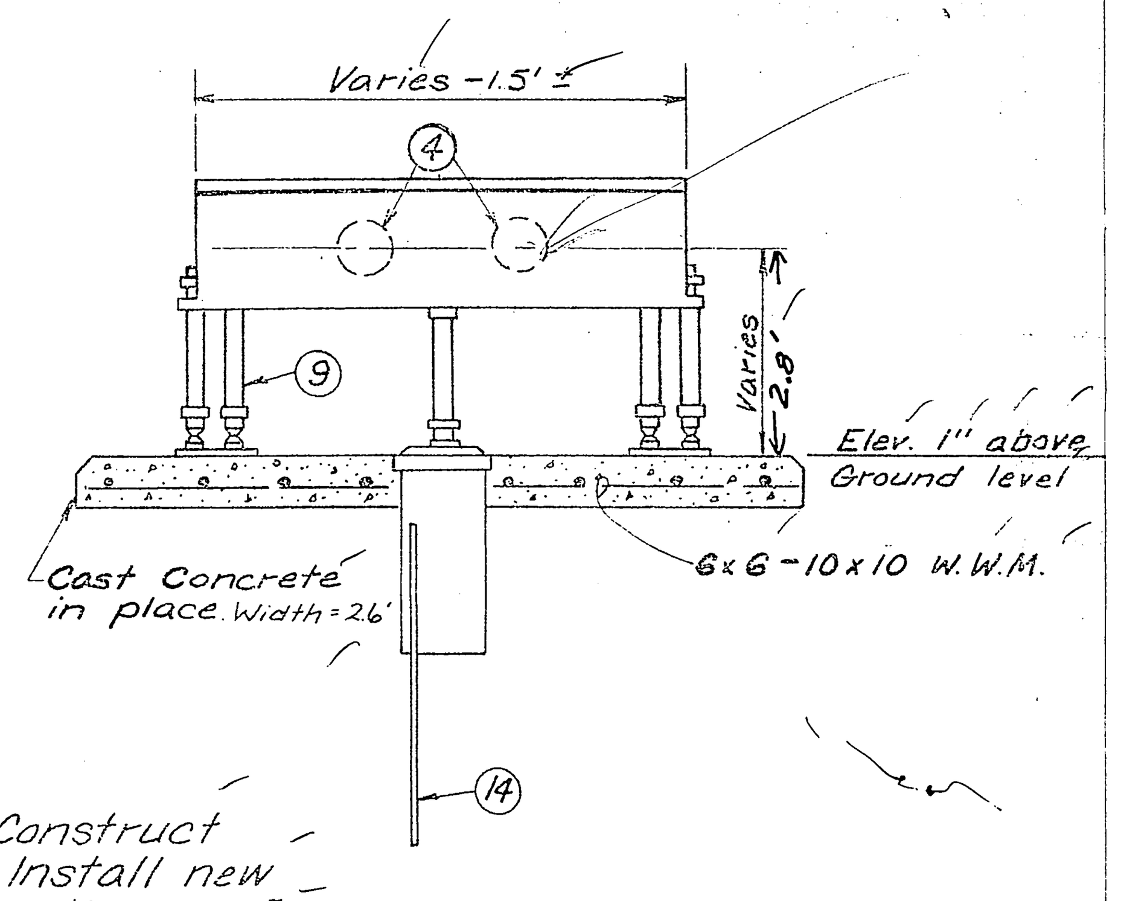
APPROVED BY: William L Baumgartner 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE:	DESIGNED: MJC	DRAWN: SS	SHEET 13 OF 25
AS SHOWN	CHECKED:	DATE: 2/16/84	

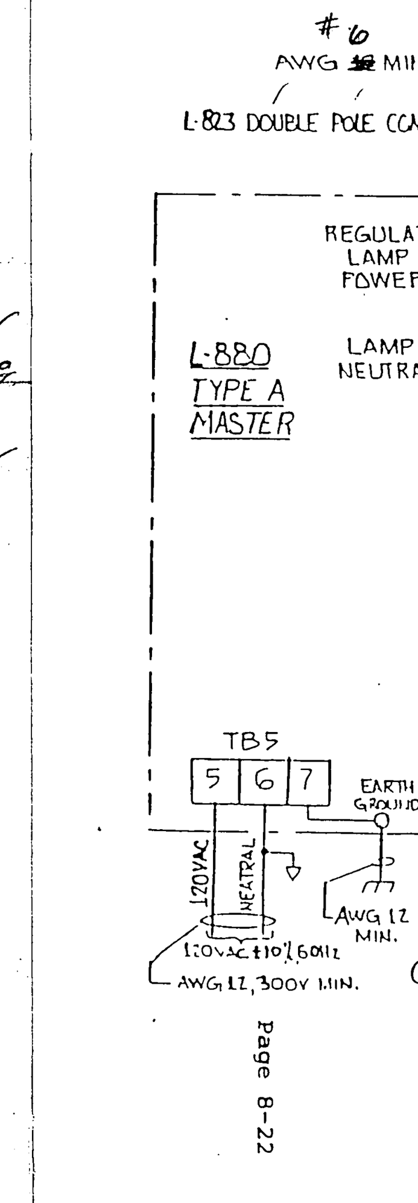


Note: Contractor to grade locations. Construct new reinforced concrete slabs. Install new L-857 bases w/new 2" flexible weatherproof conduit and fittings.

PAPI SIDE ELEVATION



PAPI FRONT ELEVATION

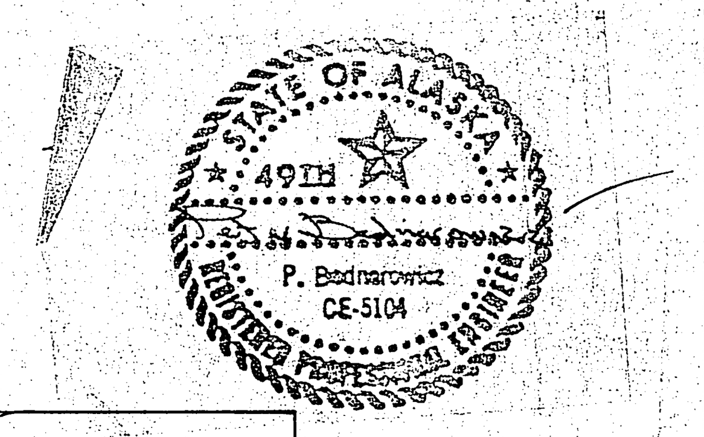


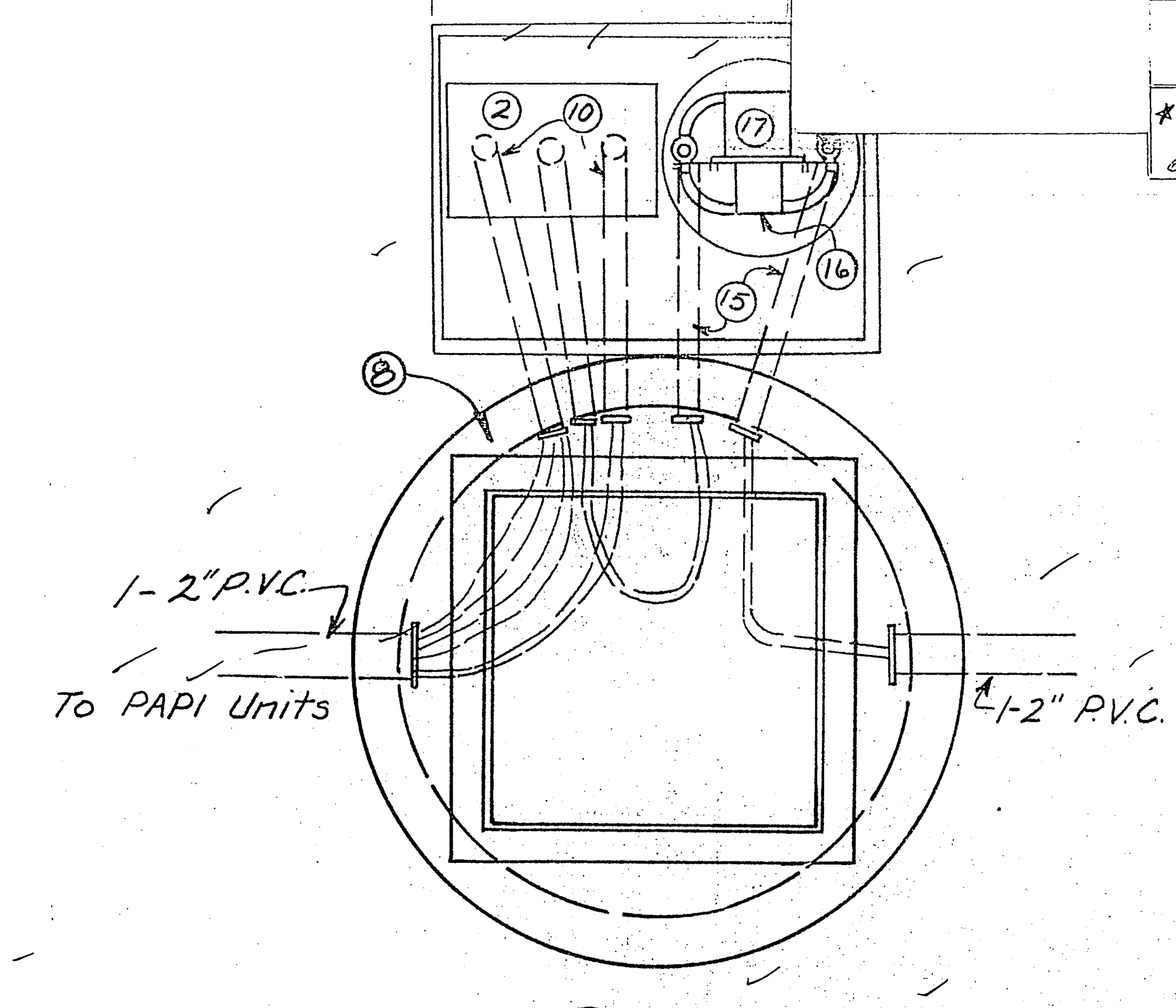
WIRING SCHEDULE					
Ref.	Description	Location	Conduit Length	Conduit Type	Total Wire
① 5KV	3 #8 5KV 1 #6 Bare Ground (Airport Lites & PAPI)	APRON VAULT → VAULT 17+30L APRON VAULT → VAULT 16+29L	505' 377' 882' TOTAL	RSC (2")	2646 (5KV) 882 (GND)
② 5KV	1 #8 5KV 1 #6 BARE GROUND (Airport Lites)	VAULT 16+29 L → Light 15+75L Threshholds – 13+00 Lt TO RT	78' 109' 187 TOTAL	RSC (2")	187 (5KV) 187 (GND)
③ 5KV	2 #8 5KV 1 #6 Bare Ground (PAPI)	VAULT 16+29L → Vault 16+29R	156' 156 TOTAL	RSC (2")	312 (5KV) 156 (GND)
④ NA	No wire Needed (Delete Next Airport – CONDUIT IN Before the fact)	LIGHT 15+75 L TO VAULT 17+30 L	155' TOTAL NO wire	RSC (2")	N A
⑤ 600V	2 #8 600V 1 #6 Bare Ground (windcone)	REIL 13+00 R → Windcone Handhole 13+50 R	52' TOTAL	RSC (2")	104 (600V) 52 (GND)
⑥ 600V	4 #8 600V 2 #10 600V (No pay) 1 #6 Bare GND (Windcone REIL)	Threshhold RT → REIL RIGHT (13+00)	30' TOTAL	RSC (2")	120 (600V) 30 (GND) (60) (#10)
⑦ 600V	2 #8 600V 2 #10 600V (No pay) 1 #6 Bare GND 1 multiconductor control (REIL)	REIL RT → REIL Left (13+00) REIL LT → REIL Rt → Through Handhole (53+00)	170' 170' 340' TOTAL	RSC (2")	340 (CONTROL) 680 (600V) 340 (GND) (680) (#10)
⑧ 600V	6 #8 600V 2 #10 600V (NO PAY) 1 #6 Bare Ground (REILS windcone)	APRON VAULT → Apron/Taxiway Hand Hole Apron/Taxiway H.H. → Vault 16+29 Rt. Thru 16+29 Vault L	250' 312' 562 TOTAL	RSC (2")	3372 (600V) 562 (GND) (1124) (#10)
⑨ 600V	4 #8 600V 2 #10 600V (No pay) 1 #6 Bare GND (REIL) windcone	VAULT 16+29 RT → Threshold 13+00 RT APRON VAULT → Shelter	327' 40' 367 TOTAL	PCV (2")	1468 (600V) 367 (GND) (734) (#10)
★⑩ See Below 600V	2 #8 600V 2 #10 600V (no pay) 1 #6 Bare GND (REILS)	VAULT 16+29 R → H.H. 25+50 Rt H.H. 25+50R → H.H. 34+50Rt H.H. 34+50R → H.H. 43+50Rt H.H. 42+30R → H.H. 53+01 RT	923 900 900 951 3674 TOTAL	PCV (2")	7348 (600V) 3674 (GND) (7348) (#10)
⑪ 5KV	3 #8 5KV 1 #6 BARE GND (AIRPORT LIGHTS & PAPI)	VAULT 16+29R → H.H. 42+30 RT VAULT 17+30 L → H.H. 20+50 LT	2603 320 2923 TOTAL	PCV (2")	8769 (5KV) 2923 (GND)
⑫ 5KV	1 #8 5KV 1 #6 Bare GND (Air Port Lites)	Light 15+75 Lt → Thresh. 13+00 L Thresh 13+00 Rt → Vault 16+39 R VAULT 20+50 Lt → Thru Threshholds VAULT 42+30 Rt.	280 327 4430' 5037' TOTAL	PCV (2")	5037 (5KV) 5037 (GND)
⑬ 5KV	2 #8 5KV 1 #6 Bare GND (PAPIS & Airport Lites)	H.H. 20+50 Lt → 80' LT H.H. 42+30 Rt → 80' Rt. Apron Vault → Shelter	25' 25' 34' 84' TOTAL	PCV (2")	168 (5KV) 84 (GND)
⑭ 5KV	6 #8 5KV 1 #6 Bare GND (PAPIS)	20+50 80' LT → 42+30 80' RT →	80' 80' 160' TOTAL	PCV (2")	960 (5KV) 160 (GND)
⑮ 5KV	4 #8 5KV 1 #6 Bare GND (PAPI)	Apron VAULT → Shelter	40' TOTAL	PCV (2")	160 (5KV) 40 (GND)
★⑩ 600V	2 #8 600V 1 #6 GND 2 #10 (no pay) (Wind Cone) (REIL Intensity)	Apron Vault → Shelter	40' TOTAL	PCU (2")	80 (600V) 40 (GND) 80 (#

Document No. 96A0057

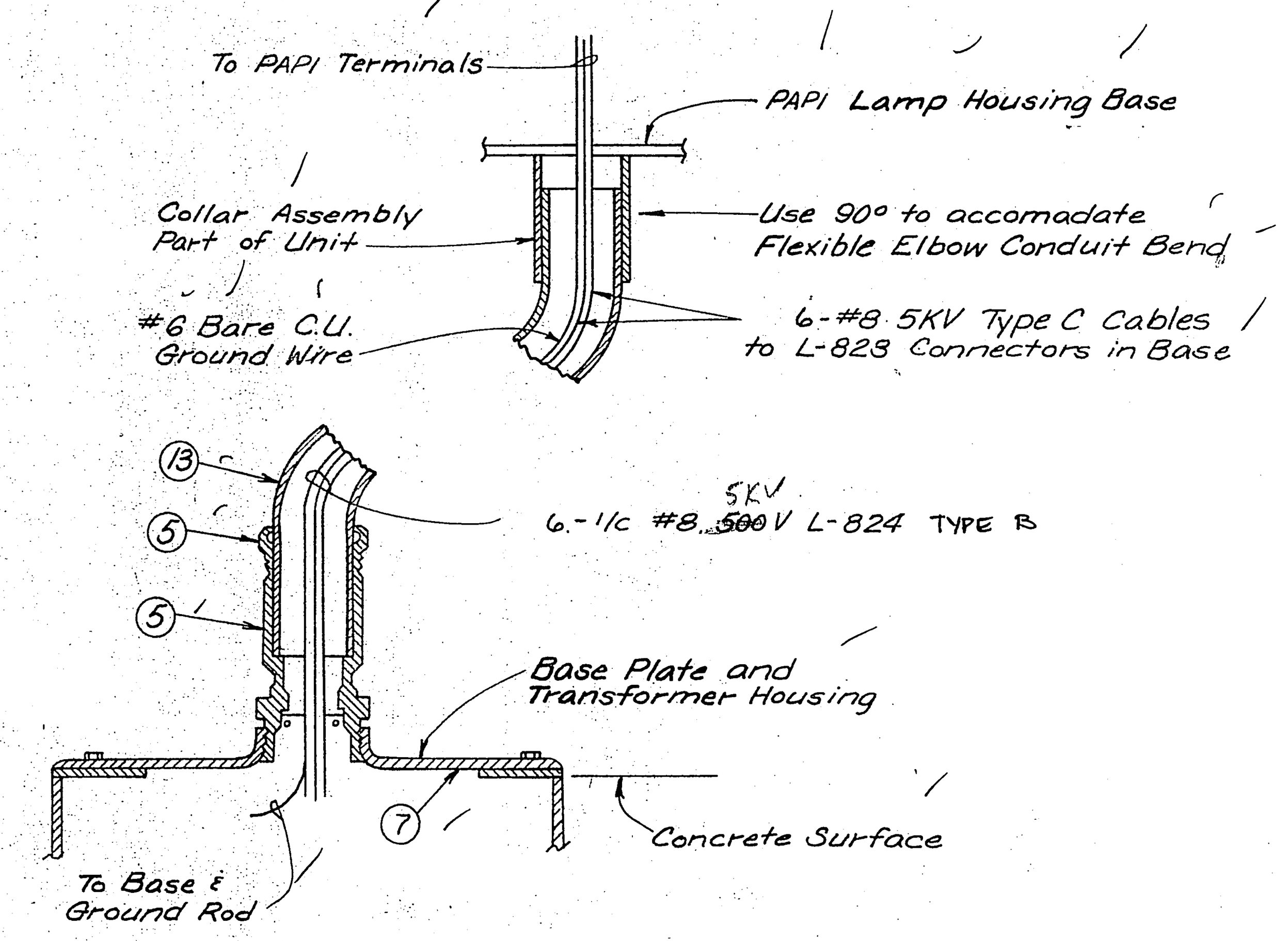
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				

ITEM	QUAN.	DESCRIPTION
1	8	L-880 Precision Approach Path Indictor (PAPI) Lamp Housing
2	2	Power Control Unit (PCU) W/Day Night Intensity
3	Not Shown	Leveling Device & Calibration Bar For installation & Maintenance (becomes property of the sponsor).
4	32 16	PAPI indicator Lamps per AC 150/5345-28D, 200 Watts 6.6A-1000 hours (Incl. 8 spares for maintenance)
5	As Req'd.	Breakabe Coupling, 2" thread, for EMT or Liquid Tight Conduit
6	As Req'd.	Flange, Aluminum
7	8	L-867 Light Base, Type-1-12" Dia. with Base Plate and Gasket (Paid for under Item 1000g)
8	2	Type III handhole for mounting PAPI equip. Carlon PS 4238 P or equal (Paid for under item 1000f)
9	Lot	2" EMT Conduit and or Adjustable Mounting Leg
10	Lot	2" Rigid Conduit, w/ Coupling & Fitting
11	As Req'd	1/c. No. 8-5KV Type L-824 Type B Cables with Connectors
12	As Req'd. (not shown)	Frangible Couplings, for Rigid Conduit.
13	Lot	2" Flexible Weatherproof Conduit
14	As Req'd.	3/4" x 10'-0" Ground Rod "Copper Weld" or equal (Paid for under Item 1000g)
15	Not Shown	Instruction Books, Drawings, Installation Data becomes property of sponsor
16	2	Safety Switch, 600V, 30 Amp, Fusible, NEMA-3R ENC. 2 Pole equipped w/Amp Bussmann FRS Fuses, or equal
17	2	Step Down Transformer, 20 KVA, 600V PRI 120/140V Sec 60 Hz. 2-5% FCBN Taps, Indoor or Outdoor

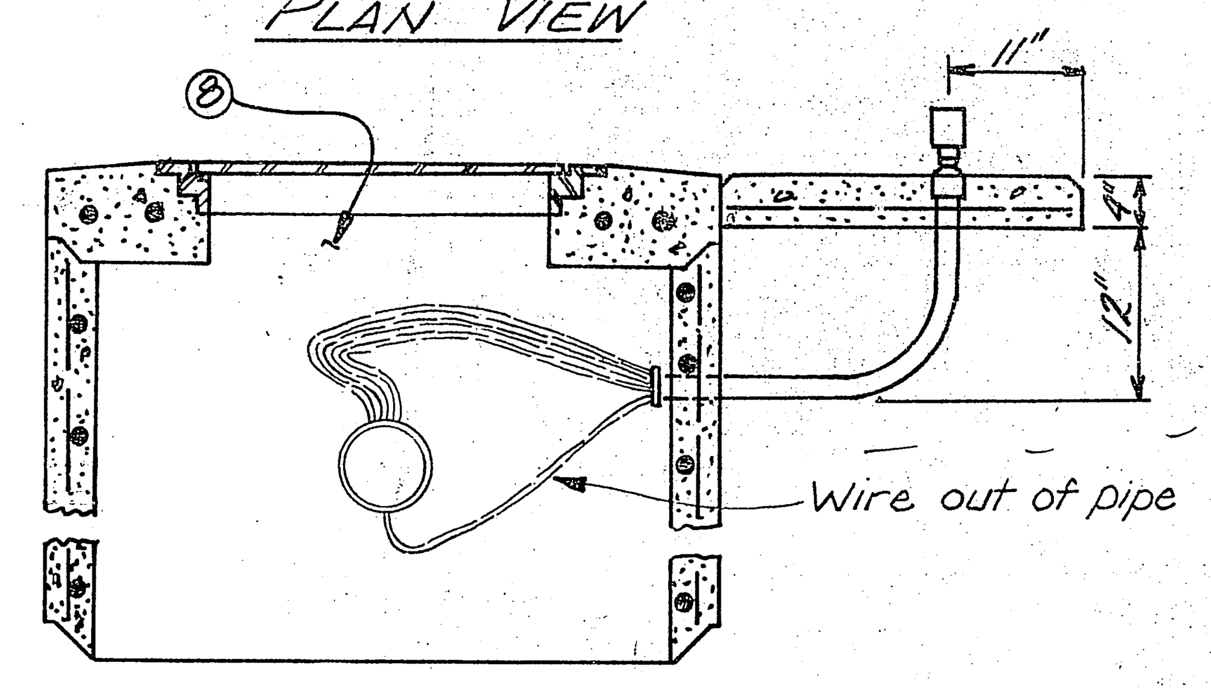




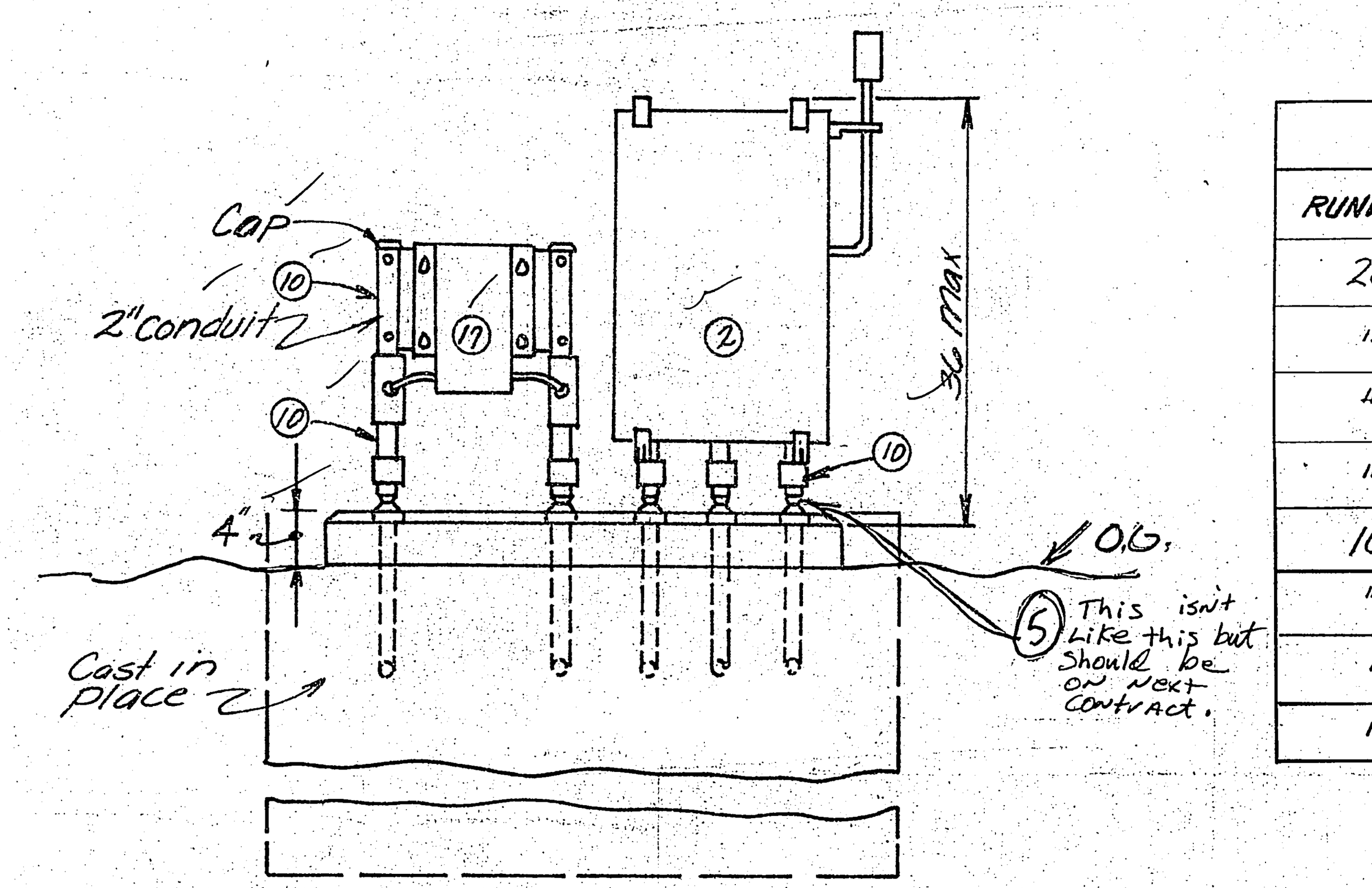
PLAN VIEW



MOUNTING INSTALLATION DETAIL



SIDE VIEW
HANDHOLE FOR MOUNTING PAPI EQUIPMENT



POWER CONTROL UNIT & TRANSFORMER FRANGIBLE MOUNTING

PAPI SITING DETAILS					
RUNWAY	STATION	PAPI Unit	Offset From ℄	ELEVATION PAPI LIGHT	AIMING ANGLE
~~28~~	~~42+30~~	~~1~~	~~100~~	~~156.1~~	~~3.50~~
~~"~~		~~2~~	~~120~~	~~156.1~~	~~3.17~~
~~"~~	~~"~~	~~3~~	~~140~~	~~156.1~~	~~2.83~~
~~"~~	~~"~~	~~4~~	~~160~~	156.1	2.50
10	20+50	1	100	149.7	3.50
"	"	2	120	149.7	3.17
"	"	3	140	149.7	2.83
"	"	4	160	149.7	2.50

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D 19712
A.I.P. NO. 831-3-02-0398-01-83

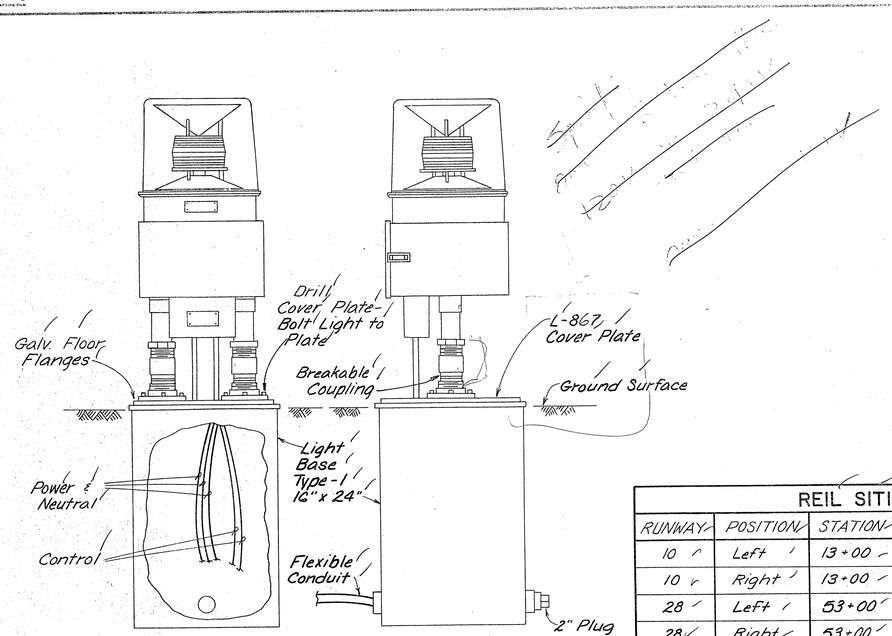
LIGHTING DETAILS - PAPI

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN
APPROVED BY: 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

BY	DATE	CHANGE
		REVISIONS

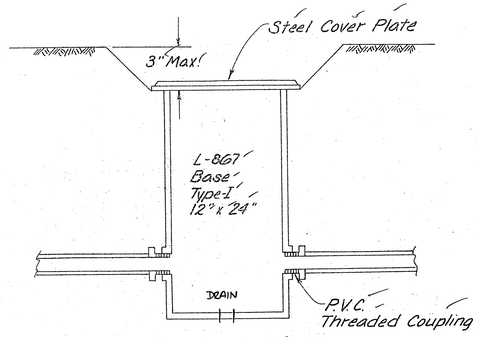
SCALE: N.T.S. | DESIGNED: MJC | CHECKED: | DRAWN: SS | DATE: 2/16/84 | SHEET 14 OF 25

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				

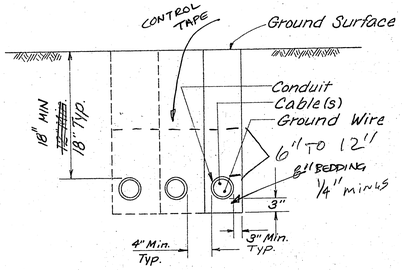


DETAIL L859
INSTALLATION OF OMNIDIRECTIONAL
RUNWAY END IDENTIFIER LIGHT
N.T.S.

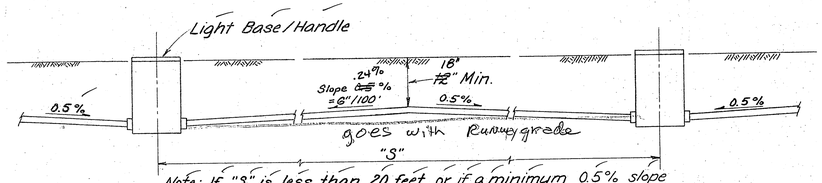
REIL SITING DETAILS					
RUNWAY	POSITION	STATION	REIL ELEV.	GROUND ELEV.	OFFSET FROM ℄
10	Left	13+00	148.2	145.7	85'
10	Right	13+00	148.2	145.7	85'
28	Left	53+00	171.7	169.2	85'
28	Right	53+00	171.7	169.2	85'



HANDHOLE DETAIL
TYPICAL

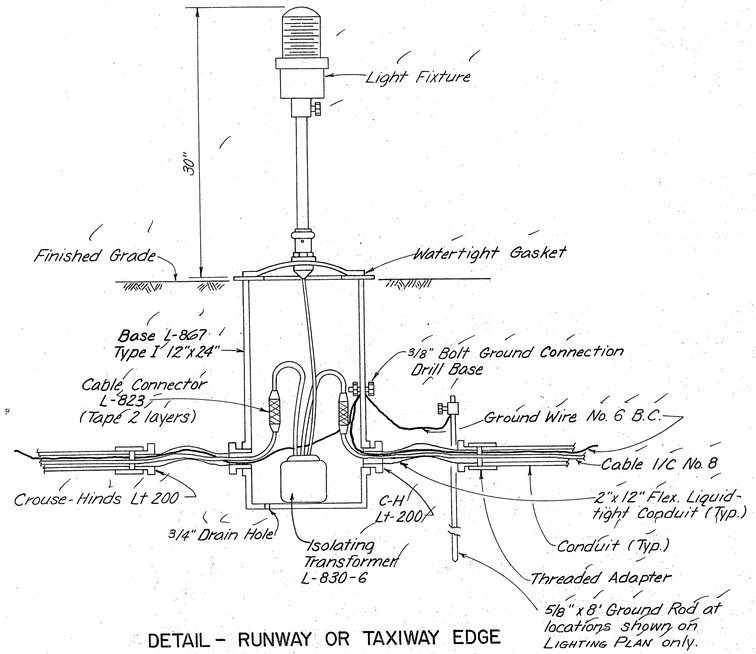


U.G. CONDUITS DETAIL
RUNWAY CIRCUITS ONLY



Note: If "S" is less than 20 feet, or if a minimum 0.5% slope can be maintained, lay conduit straight (no dips) between bases/handholes.

CONDUIT INSTALLATION DETAIL



DETAIL - RUNWAY OR TAXIWAY EDGE
LIGHT OR THRESHOLD LIGHT

BY	DATE	CHANGE

REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D19712
A.I.P. NO. 831-3-02-0398-01-83

LIGHTING DETAILS

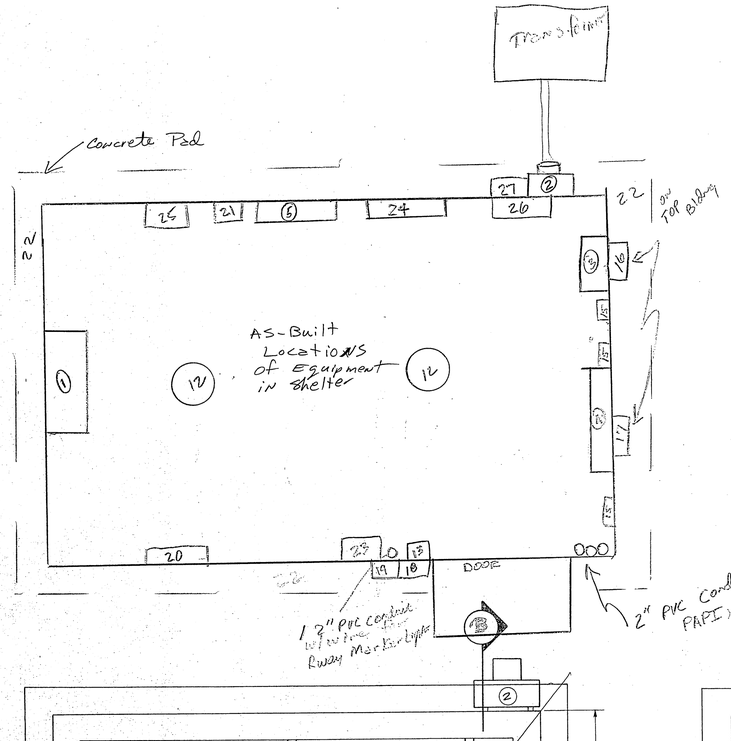
APPROVED BY: Wallace K Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

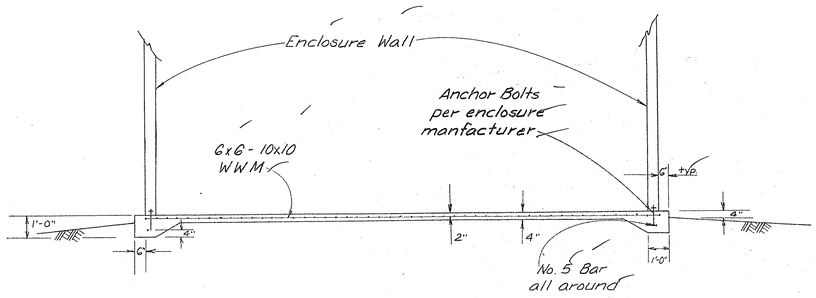
APPROVED BY: Ron Baumgartner for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE:	DESIGNED:	DRAWN:	SHEET
N.T.S.	MJC	SS	15 OF 25
	CHECKED:	DATE: 2/16/84	

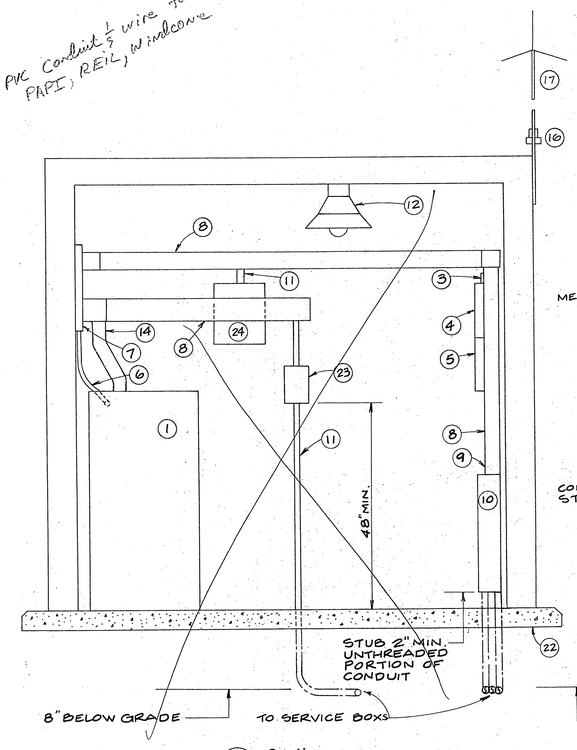
STATE OF ALASKA 49TH
P. Bednarowicz CE-5104
REGISTERED PROFESSIONAL ENGINEER

STATE	PROJECT DESIGNATION	YEAR	STATE NO.	SHEET NO.
ALASKA				

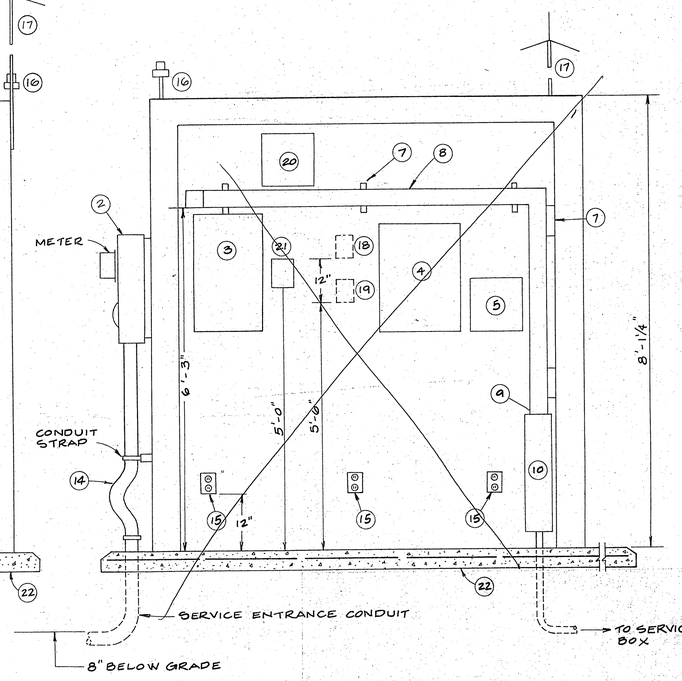




SHELTER FOUNDATION DETAIL
n.t.s.



Section



Section

EQUIPMENT ENCLOSURE DETAIL
n.s.

Enclosure Equipment List

1. Runway Lighting Constant Current Regulator
2. Combination Service Entrance Meter Base
3. Lighting Distribution Power Panel (Panel A)
4. Airport Lighting Control Panel
5. Airport Lighting Radio Control Unit
6. Liquidtight Flexible Metal Conduit (Typ.) 3/4"
7. Unistrut (or Equal) Channel, P-3000 (Typ.)
8. Wireway with Hinged Cover, 4"x4" (6" ~~is~~ Better for future Airports)
9. Wireway Reducer, 4"x4" to 6"x6"
10. Wireway Transition, 6"x6"
11. 1½" I.M.C.
12. Vaportight Light Fixture with shallow dome
13. Building Light Switch, Single Pole
14. Liquidtight Flexible Metel Conduit (Typ.) 2"
15. Duplex Recepticle, Nema 5-20R, 120 VAC, 20A, or equal
16. Photocell Switch for Lighting Control
17. Radio Control Lighting Receiving Antenna
18. External Push Button for Control of Runway Lights
19. External Push Button for Control of Apron Floodlights
20. 12" Exhaust Fan
21. Exhaust Fan Thermostat
22. Concrete Slab
23. Plug Cutout
24. Step Up Transformer for PAPI
25. Electric Heater
26. Manual Transfer Switch
27. Nema 3R Enclosure for future generator

Equipment enclosure shall be Proff Systems Model M-812 or approved equal.

STATE OF ALASKA 49TH P. Bodnarowicz CE-5104 REGISTERED PROFESSIONAL ENGINEER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. DI9712
A.I.P. NO. 831-3-02-0398-01-83

EQUIPMENT SHELTER

BY	DATE	CHANGE

REVISIONS

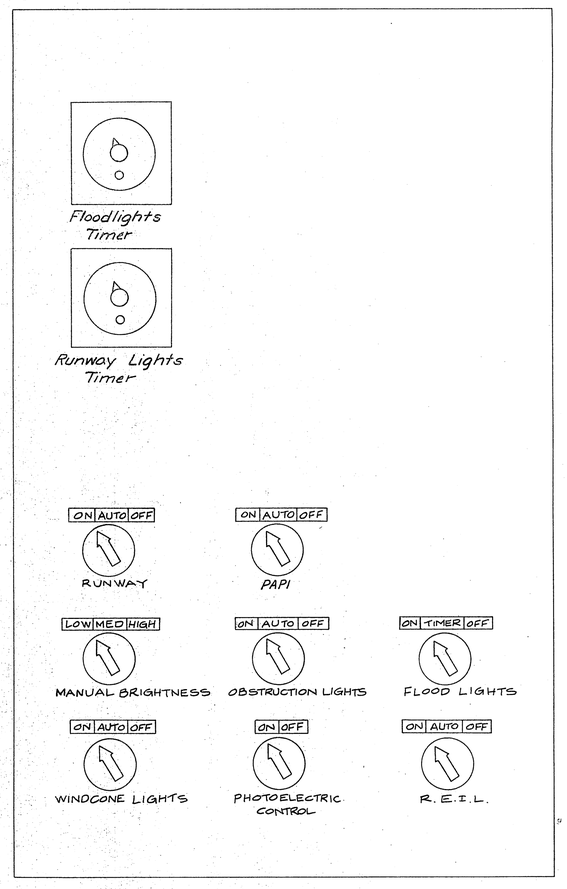
APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: William L. Baumgartner /for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

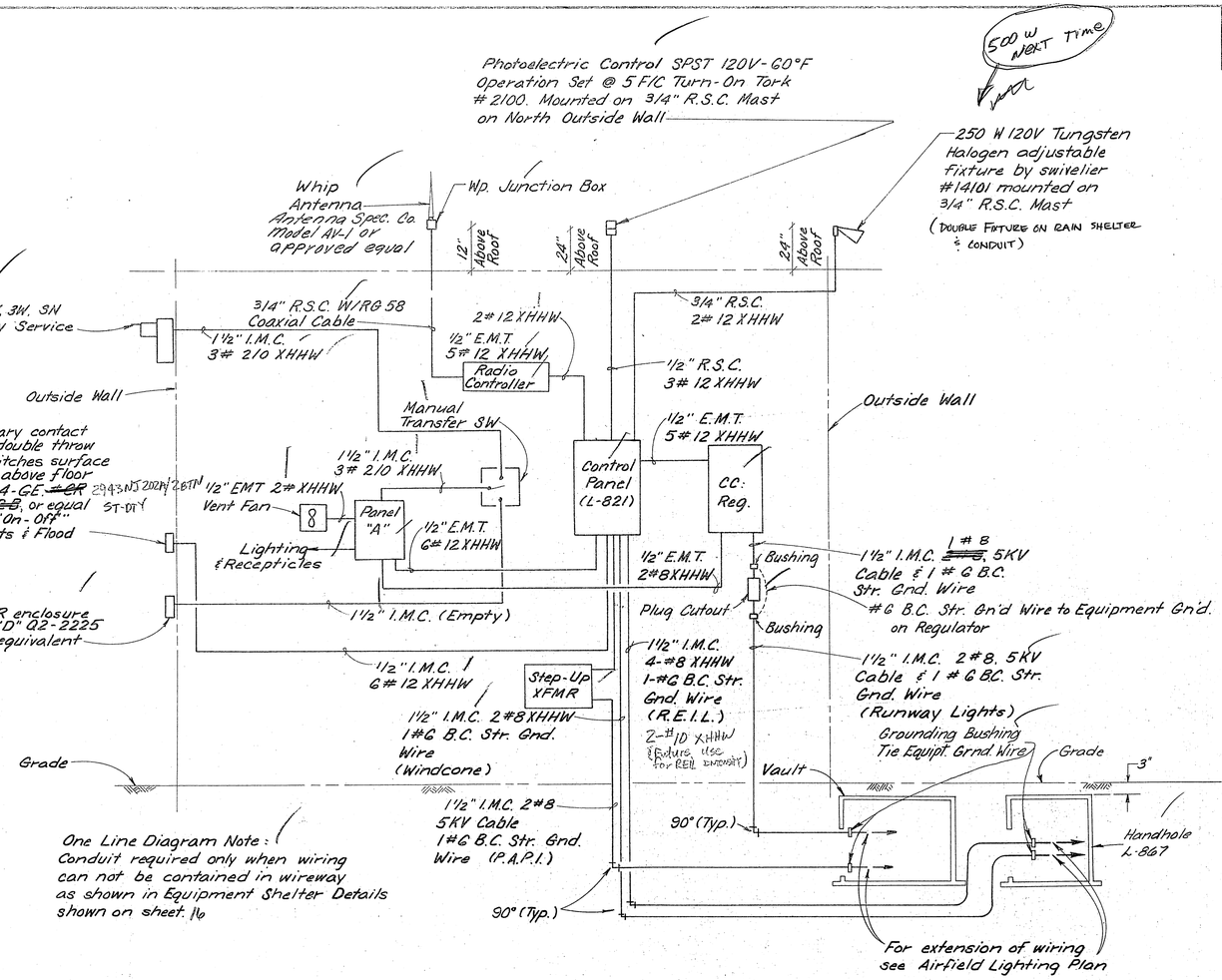
SCALE: N.T.S.
DESIGNED: MJC
DRAWN: SS
CHECKED:
DATE: 2/16/84

SHEET 16 OF 25

STATE	PROJECT DESIGNATION
ALASKA	



CONTROL PANEL
n.t.s.



POWER ONE-LINE WIRING DIAGRAM FOR REGULATOR & CONTROL
n.t.s.

Equipment:
200A., 3W., 240V. S/N DBL. Throw, Non-Fusible Manual Transfer Switch, NEMA 1. Heavy Duty Square "D" # DTU223NRB or equal.

Panels:

Combination Service Entrance Meter Device:	Square "D" Meter Panel (QC 200 QRP) with ~~150A~~ CB (QI2 200VH) or equal
Panel "A"	225 Amp. Mains with 150A. 3 Pole Main Bkr. 120/240V. 1ø. 3 Wire. Surface Mt'd. Square "D" Type NQOB
	1-2P-60A Bkr. (4 KW C.C. Regulator)
	8 6-1P-20A Bkr. (Control, Flood Lights, Wind Cone, Beacon Lights, Receipt's, PAPI, R.E.I.L.)
	1-2P-30A Bkr. (PAPI)
	1-1P-20A Bkr.'s (Spares)

Equipment Notes:
1. Label all breakers indicating load function.
2. All 2 pole breakers rated 10.000 A.I.C.
3. 4.0 KW constant current regulator required. Install and wire to plug cutout for lights.

STATE OF ALASKA 49TH P. Bednarowicz CE-5104 REGISTERED PROFESSIONAL ENGINEER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D19712
A.I.P. NO. 831-3-02-0398-01-83

EQUIPMENT SHELTER-ONE LINE DIAGRAM

BY	DATE	CHANGE

REVISIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

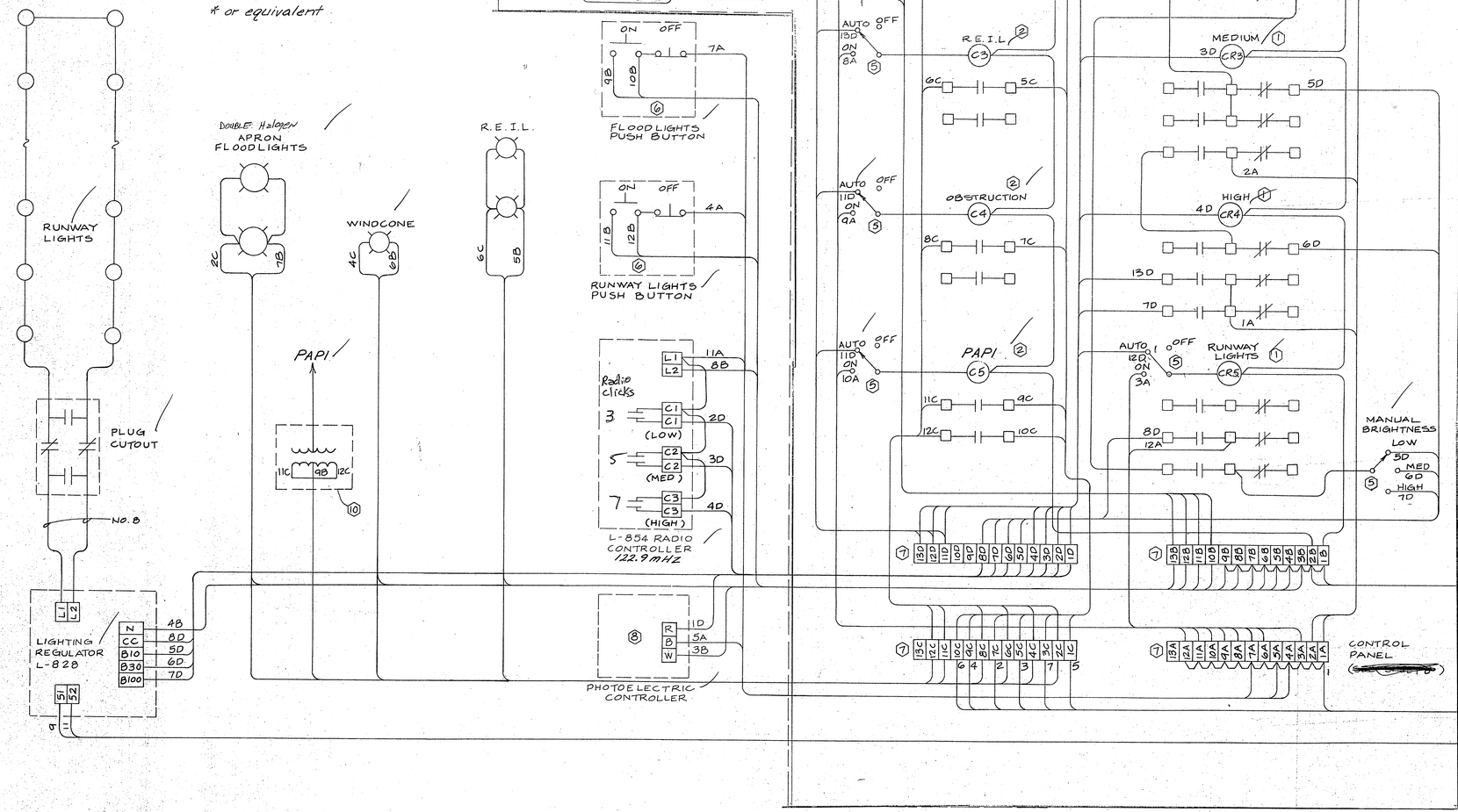
APPROVED BY: William L. Baumgartner 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE:	DESIGNED: MJC	DRAWN: SS	SHEET 17 OF 25
N/A	CHECKED:	DATE: 2/16/84	

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	SHEETS
ALASKA				

1. Control Relay, 3PDT, GE No. CR 120HC47W02 *
2. Contactor, GE No. CR 205K002ADA *
3. Timing Relay 3-100 Min., GE No. CR 122E1046B02 *
4. Switch, SPDT, GE No. CR 104 PSG 21B91
5. Switch, 3-Position, GE No. CR 104 PSG 36B92
6. Push-Button Station Off-On Momentary Contact Water Dust Tight, Corrosion Resistant GE No. CR 2943 NJ 202A
7. Terminal Strip, 20A, 13-Point GE No. CR 151 B 213B *
8. Photoelectric Control Tork No. 2100 *
9. Rain Proof Combination Service Entrance Meter Device - 200A Single Phase (150A CB Installed)
10. Step Up Transformer for PAPI.
11. Regulator for Runway Lights
12. Vent Fan with Automatic Damper, Dayton 2C710 or equivalent. Install adjacent Thermostat, Dayton 2E207 or equivalent.
13. Electric Heater, 1,000 W Intertherm, or equal (240V)

* or equivalent



STATE OF ALASKA
49TH
P. Bednarowicz
CE-5104
REGISTERED PROFESSIONAL ENGINEER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D19712
A.I.P. NO. 831-3-02-0398-01-83

LIGHTING DETAIL - CONTROLLER

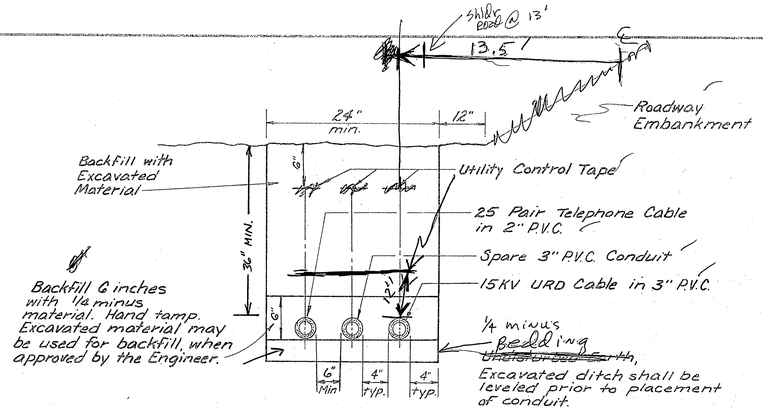
BY	DATE	CHANGE
		REVISIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

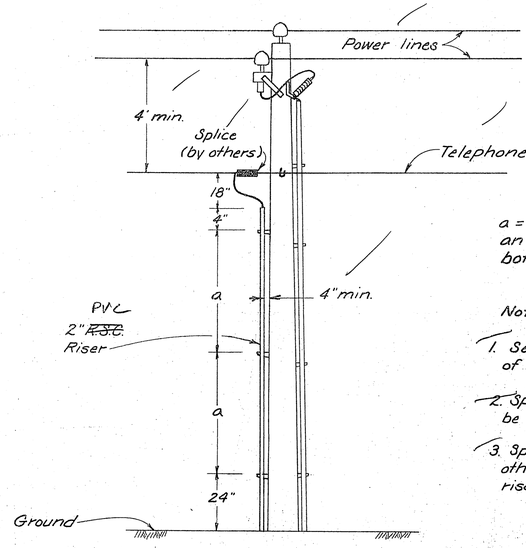
APPROVED BY: for William L. Baumgartner 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE: N/A | DESIGNED: MJC | DRAWN: SS | CHECKED: | DATE: | SHEET 18 OF 25

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



U.G. CONDUIT DETAIL
POWER & TELEPHONE CONDUIT
n.t.s.

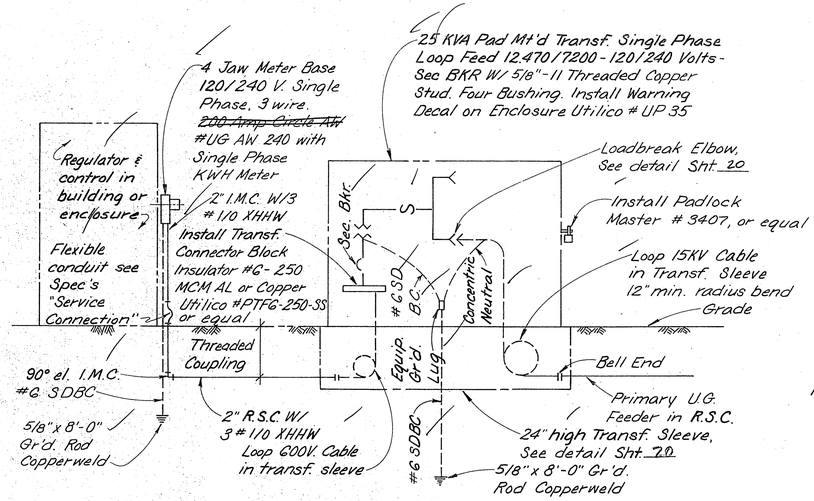


TELEPHONE STAND-OFF RISER
n.t.s.

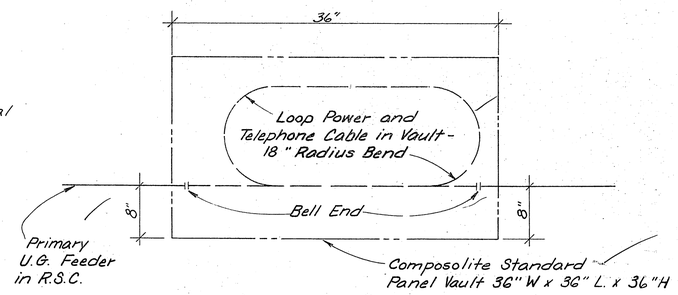
a = Middle bracket to be placed an equal distance from the top & bottom brackets

Notes:

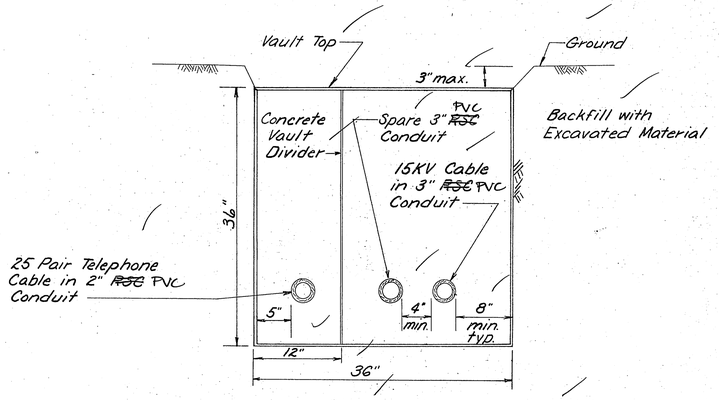
1. Seal & tape around cable at top of all risers.
2. ~~Splice~~ connection to existing shall be done by others.
3. Space telephone conduit riser on other side of pole from power conduit riser.



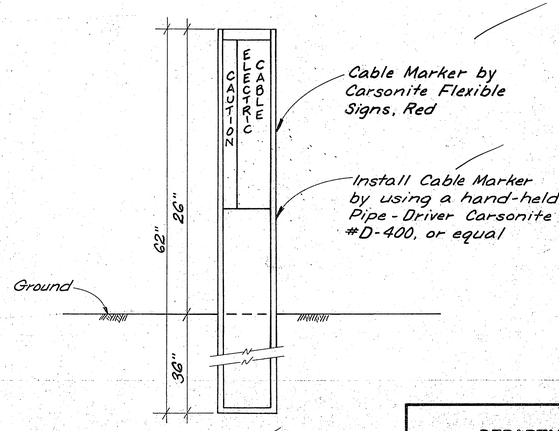
DETAIL
PAD MOUNTED TRANSFORMER ON GRADE
n.t.s.



DETAIL
PLAN VIEW ELECTRICL VAULT END ENTRANCE
NO TERMINATION
n.t.s.



FRONT VIEW ELECTRIC VAULT END ENTRANCE -
NO TERMINATION
n.t.s.



DETAIL
CABLE MARKER
n.t.s.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. DI9712
A.I.P. NO. 831-3-02-0398-01-83
POWER & TELEPHONE DETAILS

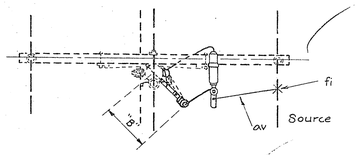
BY	DATE	CHANGE
		REVISIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: William L. Baumgartner for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE: N.T.S.
DESIGNED: MJC
DRAWN: SS
CHECKED:
DATE: 2/16/84
SHEET 19 OF 25

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



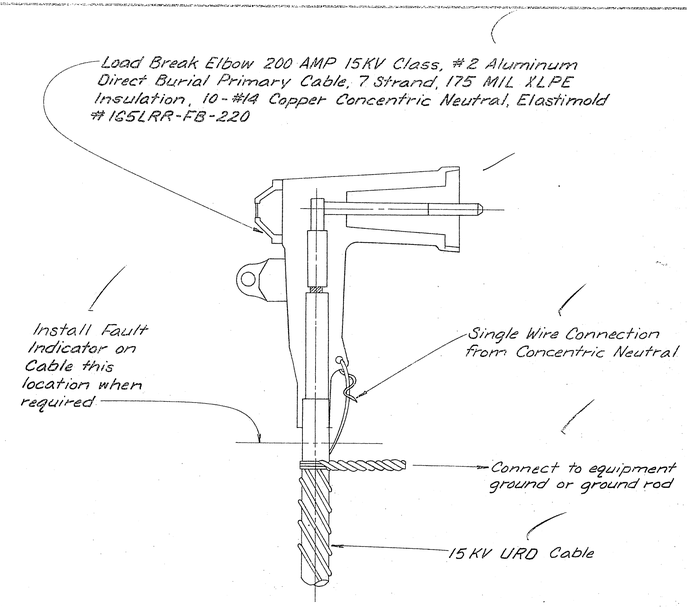
Designate as:
UM 2-3 Single arrester installation
UM 2-3A Parallel arrester installation
7.2/12.5kV only.

"B" minimum -
7.2/12.5kV = 15"
14.4/24.9kV = 20"

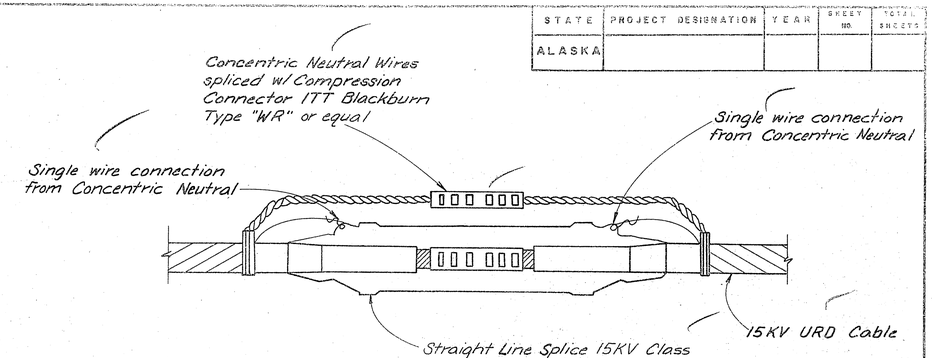
Note:
Total arrester lead length must be as short as possible.

ITEM	NO.	MATERIAL
c	1	Bolt, machine, 5/8" x required length
d	1	Washer, square, 2 1/4"
j		Screw, lag, 1/2" x 4", as required
dq	1	Eye screw, elliptical
p		Connectors, as required
av		Jumpers, as required
Uax	1	Cutout, load break type and single arrester combination (UM 2-3)
bo	1	Shackle, anchor
ek		Locknuts, as required
fi	1	Connector, hot line tap assembly
Ugc	1	Cable riser sheild, length as required
Ugk	1	Cable termination
Uhc	1	Cable support
Uhd	1	Bracket, pothead mounting
Uax	1	Cutout, load break type and parallel arrester combination (UM 2-3A)

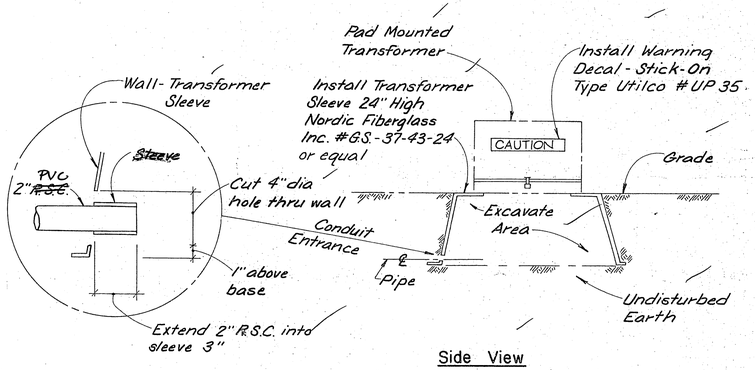
THREE-PHASE OVERHEAD SOURCE
SINGLE-PHASE UNDERGROUND WITH COMBINATION CUT-OUT AND ARRESTER
n.t.s.



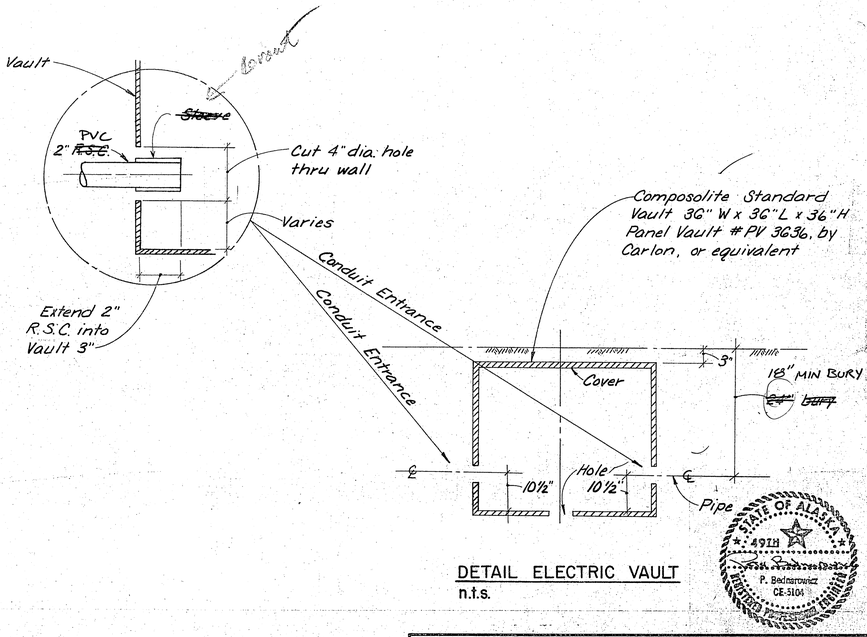
DETAIL 15KV LOADBREAKER ELBOW
n.t.s.



DETAIL 15KV STRAIGHT LINE SPLICE
n.t.s.
see sheet 13 for splice locations



DETAIL PAD MOUNTED TRANSFORMER SLEEVE
n.t.s.



DETAIL ELECTRIC VAULT
n.t.s.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D19712
A.I.P. NO. 831-3-02-0398-01-83

POWER & TELEPHONE DETAILS

BY	DATE	CHANGE

REVISIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

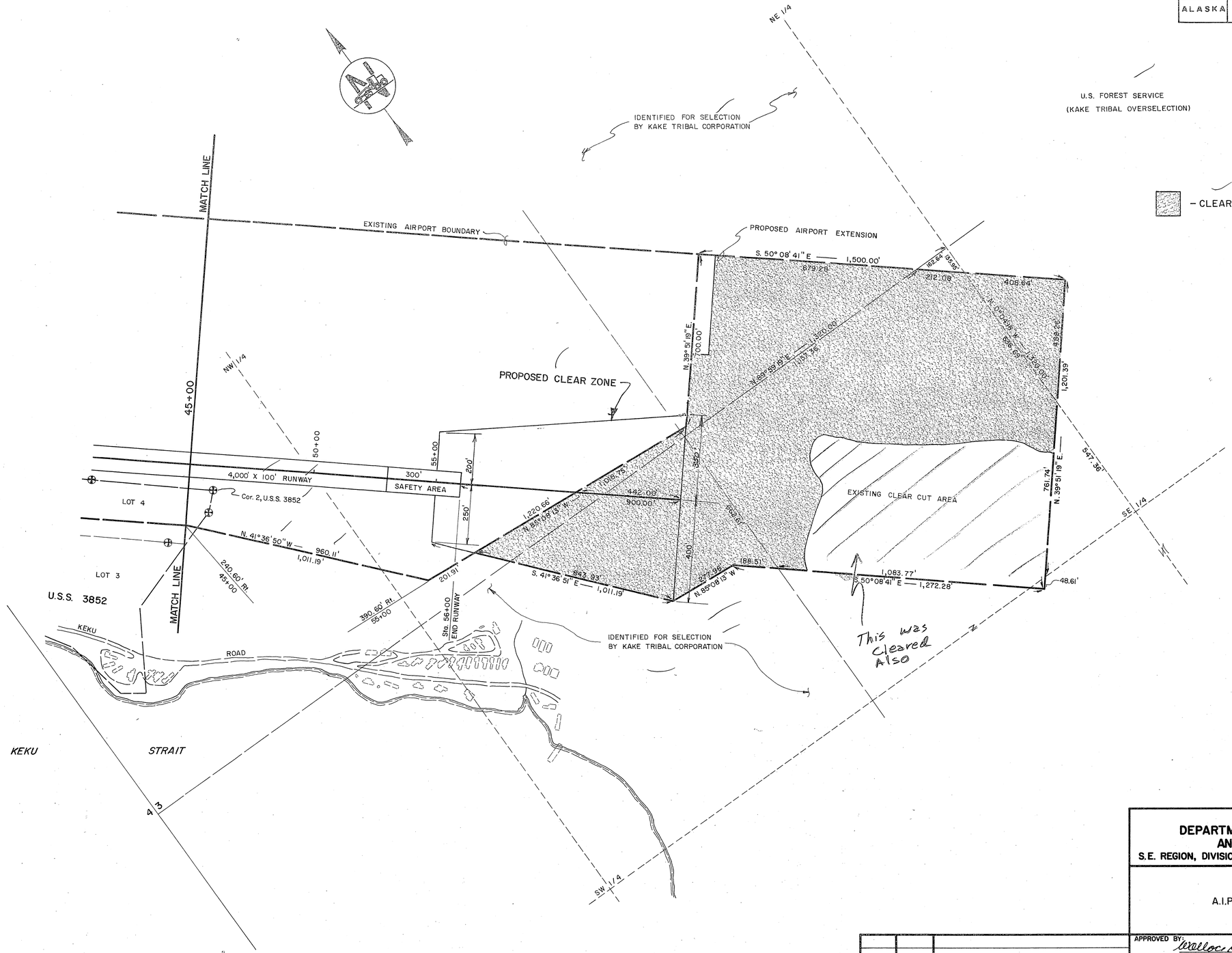
APPROVED BY: William L. Baumgartner for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE: N.T.S.
DESIGNED: MJC
DRAWN: SS
CHECKED: PJ
DATE: 2/16/84

SHEET 20 OF 25

KeE 19 1253 7-81 BC 2693*

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



STATE OF ALASKA
49TH
P. Bednarowicz
05-5104
REGISTERED PROFESSIONAL ENGINEER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83

CLEARING PLAN

BY	DATE	CHANGE

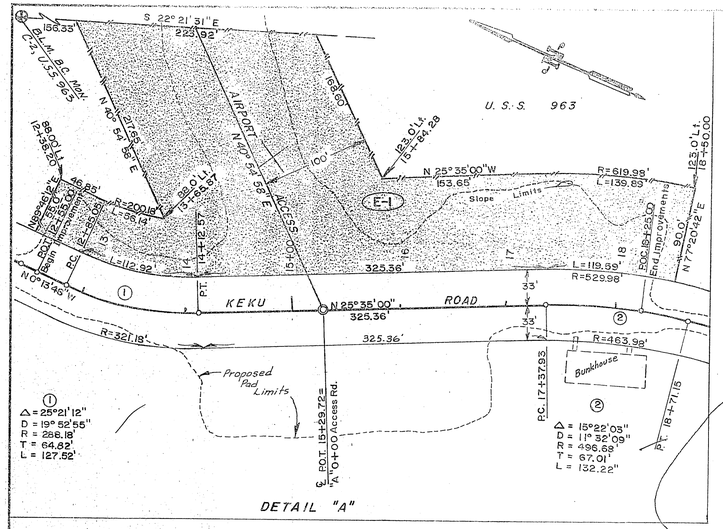
REVISIONS

APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: Peter Bednarowicz for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE: 1" = 200'
DESIGNED: MJC
DRAWN: SS
CHECKED:
DATE:
SHEET 21 OF 25

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA				



VERTICAL CONTROL

THE BASIS OF VERTICAL CONTROL FOR THIS PROJECT WAS N.O.S. TIDAL BENCH MARK NO. 4, KAKE, KEKU STRAIT, 1962, WITH A PUBLISHED ELEVATION OF 14.51 M.L.L.W. (1964 MEAN VALUE).

TIDAL DATUMS

MEAN HIGHER HIGH WATER	14.00
MEAN HIGH WATER	13.10
MEAN TIDE LEVEL	7.25
MEAN LOW WATER	1.40
MEAN LOWER LOW WATER	0.00
ESTIMATED HIGHEST TIDE	18.00
ESTIMATED LOWEST TIDE	-4.00

HORIZONTAL CONTROL

THE BASIS OF BEARING WAS THE LINE-OF-SIGHT BETWEEN N.O.S. STATION "KAKE" AND U.S.K.H. ENGINEERS PHOTOCONTROL POINT NO. 61 (1981), WITH AN A.S.P GRID BEARING OF S. 53°06'10"E. BASED ON THE FOLLOWING ACCEPTED VALUES:

U.S.C.& G.S "KAKE" (1927)	LAT. 56°58'26.945" N LONG. 133°56'57.815" W (Y) 1,877,872.15 N (X) 2,629,236.43 E
U.S.K.H. NO. 61 (1981)	LAT. 56°57'42.495" N LONG. 133°55'08.529" W (Y) 1,873,337.785 N (X) 2,635,276.252 E

PROJECT COORDINATES

A LOCAL SYSTEM OF COORDINATES FOR THIS PROJECT WAS DEVELOPED ON A PLANE WITH ITS POINT OF TANGENCY AT C-1, U.S.S. 3852 AND THE FOLLOWING PROJECT AVERAGE GRID VALUES APPLIED IN CONVERTING THE A.S.P VALUES

PROJECT AVERAGE GAMMA ∢ = -0°12'30"
PROJECT AVERAGE SCALE FACTOR = .9999031

C-1, U.S.S. 3852	N 75,561.200	E 34,677.865
A.S.P. GRID	(Y) 1,875,561.200N	(X) 2,634,677.865 E
C-2, U.S.S. 3852	N 72,394.795	E 38,316.833
0+00, ℄ RUNWAY	N 75,425.202	E 34,854.109
45+00, ℄ RUNWAY	N 72,541.380	E 38,308.609

LEGEND

⊕ B.C. Monuments (BLM-GLO)

NOTES:

1. The Section Lines, as shown, where they are not monumented, are based on protracted values taken from the official Department of Natural Resources Protraction Diagrams CR-40 and CR-41.
2. Record bearings and distances are shown enclosed in parenthesis, those measured or computed by this survey are without parenthesis.

PROPERTY STATUS

PARCEL	AREA	OWNER	INTEREST
E-1	1.963 ACRES	Organized Village of Kake	Perpetual Easement 6/7/83
2	14.130 ACRES	City of Kake	Corp. Warranty Deed 8/12/83
3	85.717 ACRES	Kake Tribal Corporation & Sealaska Corporation	Corp. Warranty Deeds 3/23/84 4/25/84
4		See Sheet 23	
6		See Sheet 23	

BY	DATE	CHANGE
RTB	1/85	Add notes, Basis of Bearing, etc.
JS	9/83	Delete west portion E-1
G.E.P.	6/83	Added E-1 Detail
M.E.B.	4/83	REVISE E-1

REVISIONS

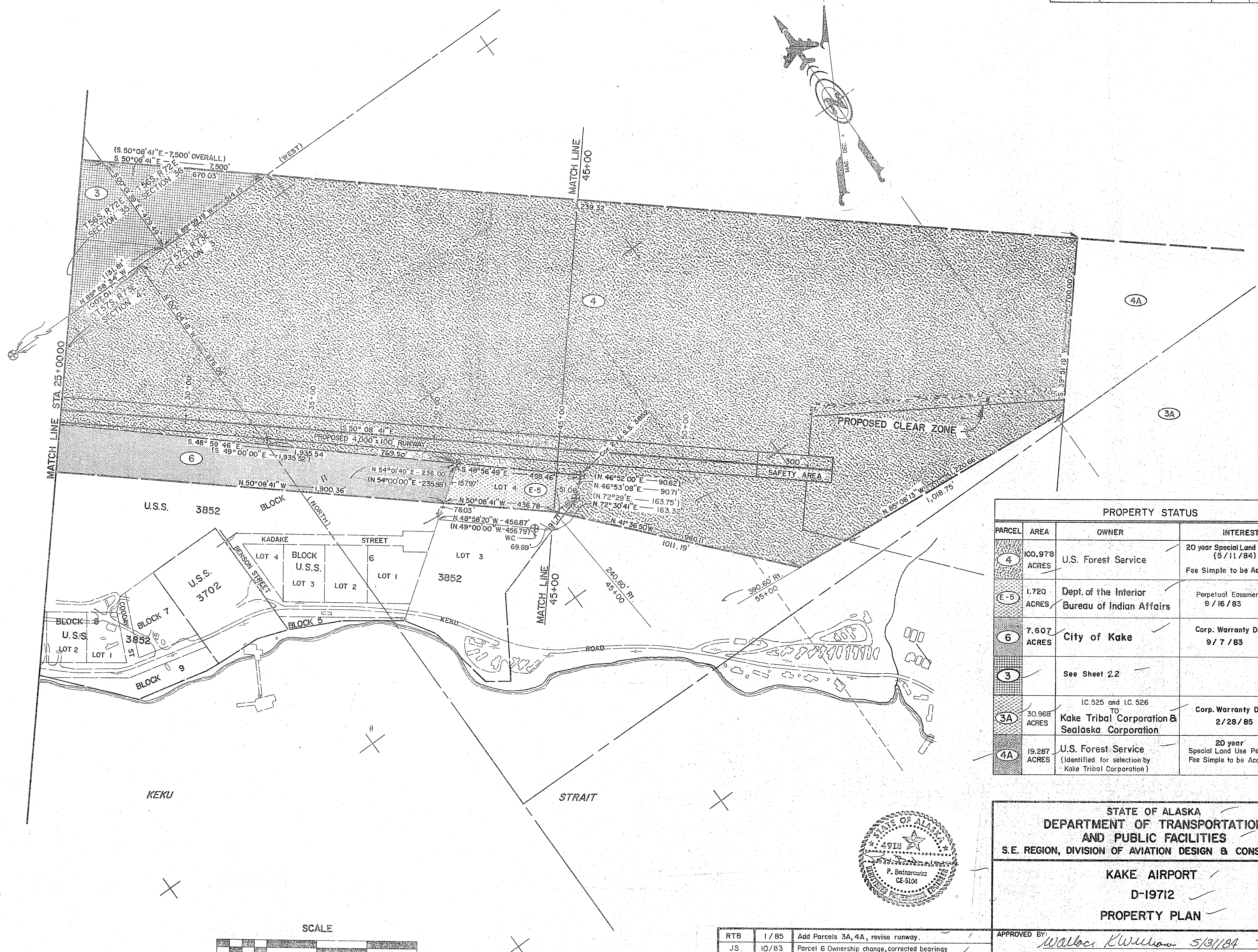
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
D-19712
PROPERTY PLAN

APPROVED BY: Wallace K Willson 5/31/84
APPROVED BY: Peter Bednarowicz / for 8/12/85

SCALE:	DESIGNED:	DRAWN: GEP	SHEET 22 OF 25
1" = 200'	CHECKED: JS	DATE: 3/83	

STATE	PROJECT DESIGNATION	YEAR		
ALASKA	D-19712	1983	2	3



PROPERTY STATUS			
PARCEL	AREA	OWNER	INTEREST
4	100.978 ACRES	U.S. Forest Service	20 year Special Land Use Permit (5/11/84) Fee Simple to be Acquired
E-5	1.720 ACRES	Dept. of the Interior Bureau of Indian Affairs	Perpetual Easement 9/16/83
6	7.607 ACRES	City of Kake	Corp. Warranty Deed 9/7/83
3		See Sheet 22	
3A	30.968 ACRES	I.C. 525 and I.C. 526 TO Kake Tribal Corporation & Sealaska Corporation	Corp. Warranty Deeds 2/28/85
4A	19.287 ACRES	U.S. Forest Service (Identified for selection by Kake Tribal Corporation)	20 year Special Land Use Permit Fee Simple to be Acquired

SCALE

200 150 100 50 0 200 400 600

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

STATE OF ALASKA 49TH P. Bednarowicz CE-5104

KAKE AIRPORT
D-19712
PROPERTY PLAN

BY	DATE	CHANGE
RTB	1/85	Add Parcels 3A, 4A, revise runway.
JS	10/83	Parcel 6 Ownership change, corrected bearings
JS	9/83	Parcel 5 Interest changed to E-5
G.E.P.	6/83	Corrected Callouts Parcel 3

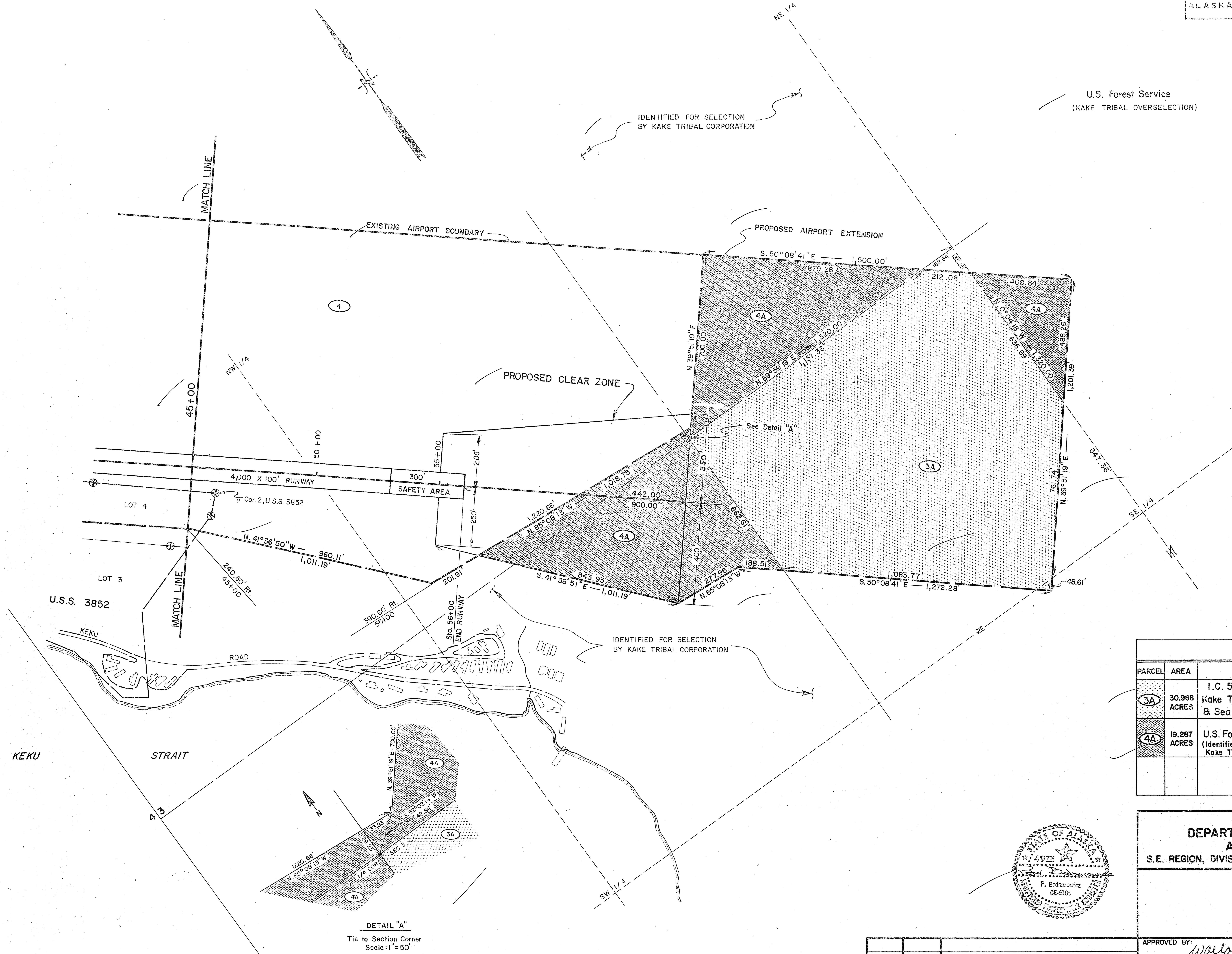
REVISIONS

APPROVED BY: Wallace K Williams 5/31/84

APPROVED BY: Peter Bednarowicz / for 8/12/85

SCALE:	DESIGNED:	DRAWN: GEP	SHEET 23 OF 25
1" = 200'	CHECKED: JS	DATE: 3/83	

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	D-19712	1984	3	3



PROPERTY STATUS

PARCEL	AREA	OWNER	INTEREST
3A	30.968 ACRES	I.C. 525 and I.C. 526 to Kake Tribal Corpororation & Sealaska Corporation	Corp. Warranty Deeds 2/28/85
4A	19.267 ACRES	U.S. Forest Service (Identified for selection by Kake Tribal Corporation)	20 year Special Land Use Permit Fee Simple to be Acquired

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

KAKE AIRPORT
D-19712
PROPERTY PLAN

APPROVED BY: Wallace K. Williams 1/22/85

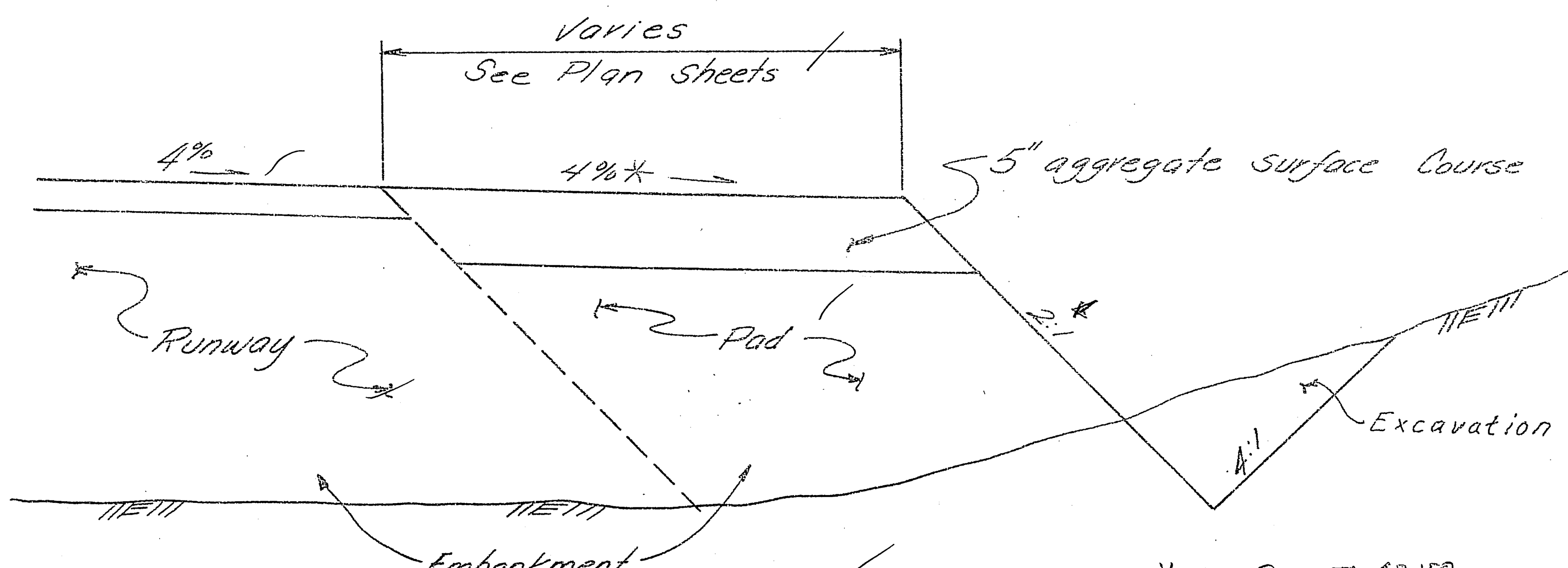
APPROVED BY: Peter Bednarowicz / for 8/12/85

BY	DATE	CHANGE
RTB	1/85	Add Sheet 3, Parcels 3A, 4A, revise runway.

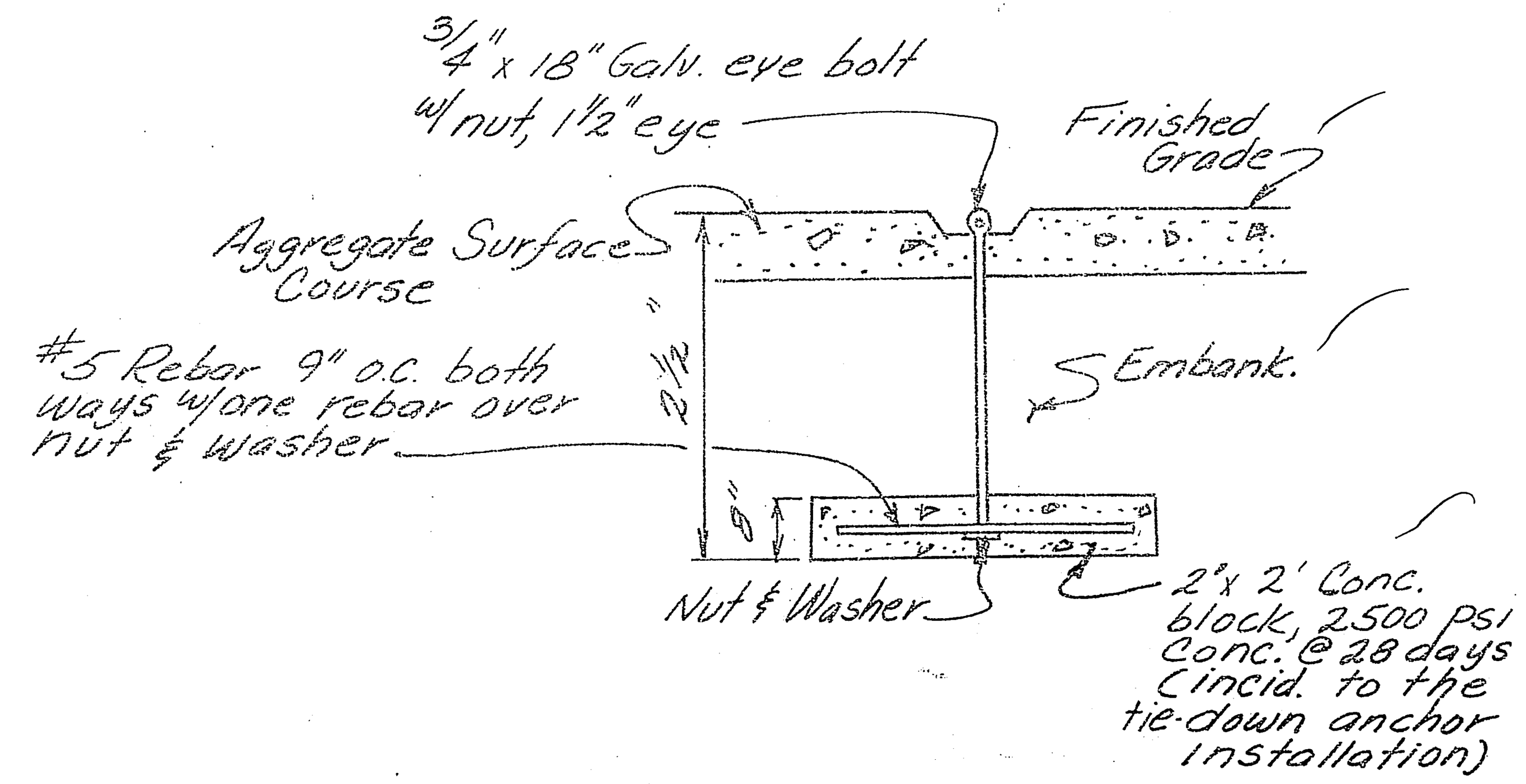
REVISIONS

SCALE: 1" = 200'	DESIGNED:	DRAWN: RTB	SHEET 24 OF 25
	CHECKED: JS	DATE: 1/85	

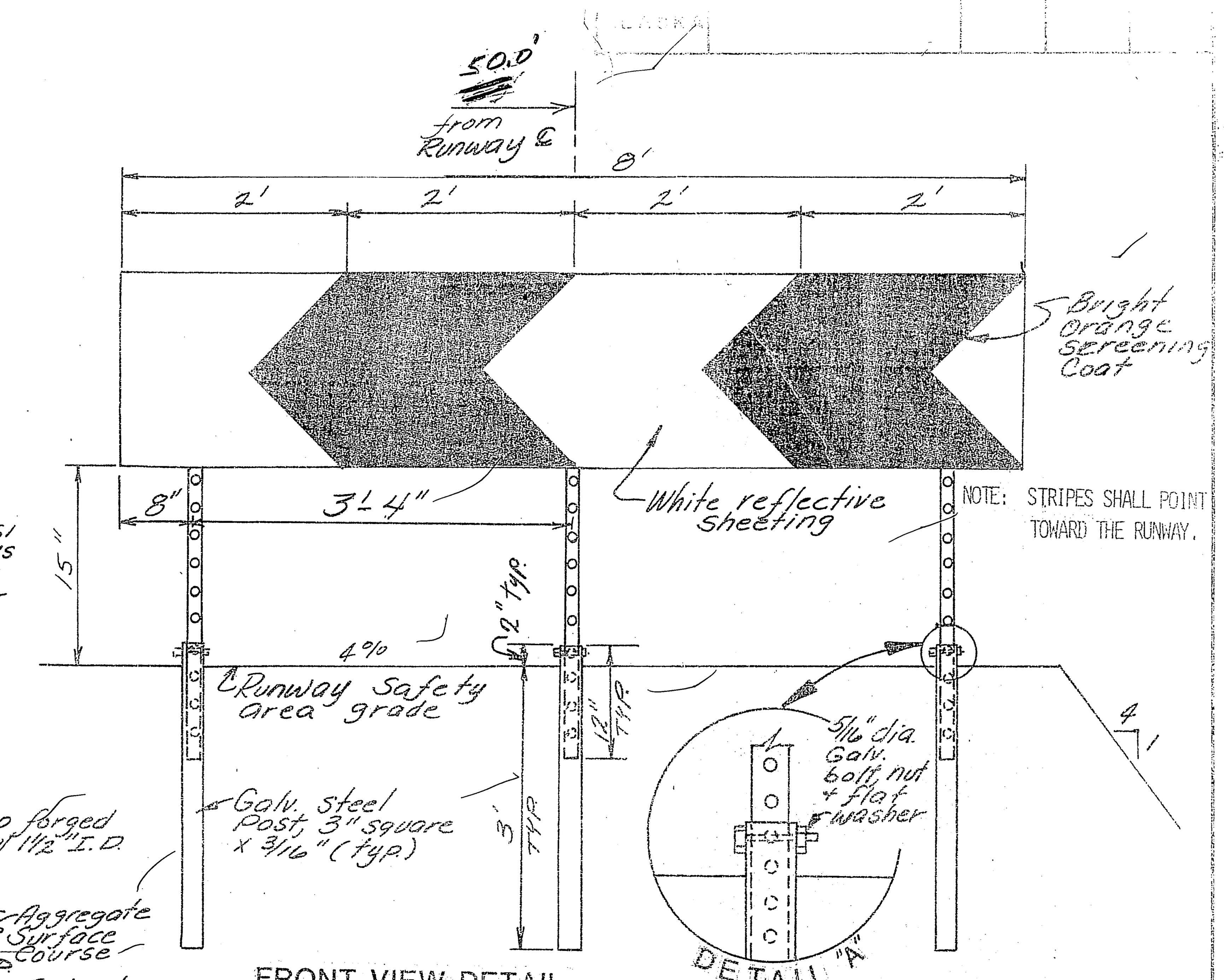
*-Shape shall be Flat for PAPI pads located at Sta. "O" 20+50 and 2% for "R" 42+30.
"R" 42+30.



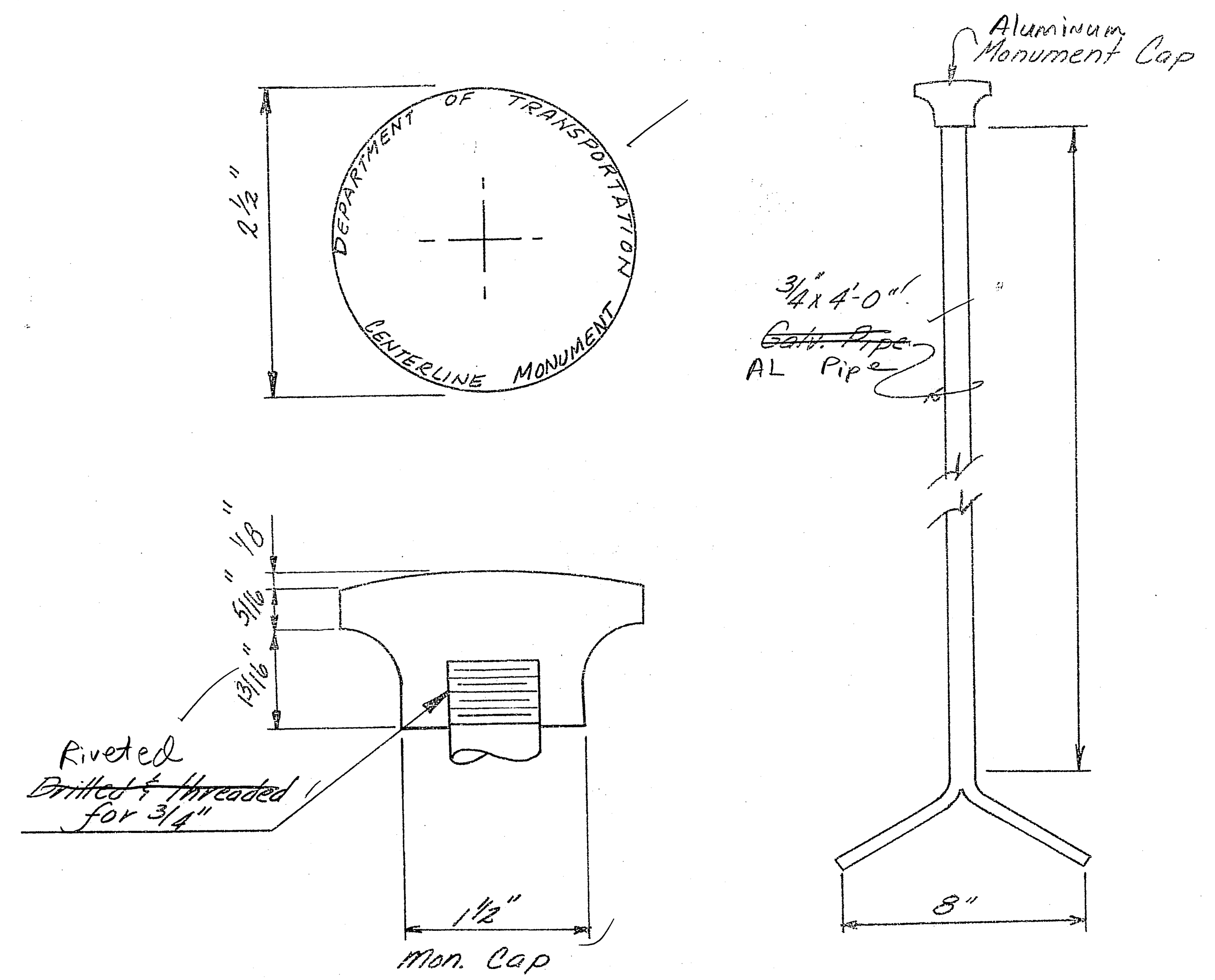
AIRPORT LIGHTING PAD SECTION
N.T.S.



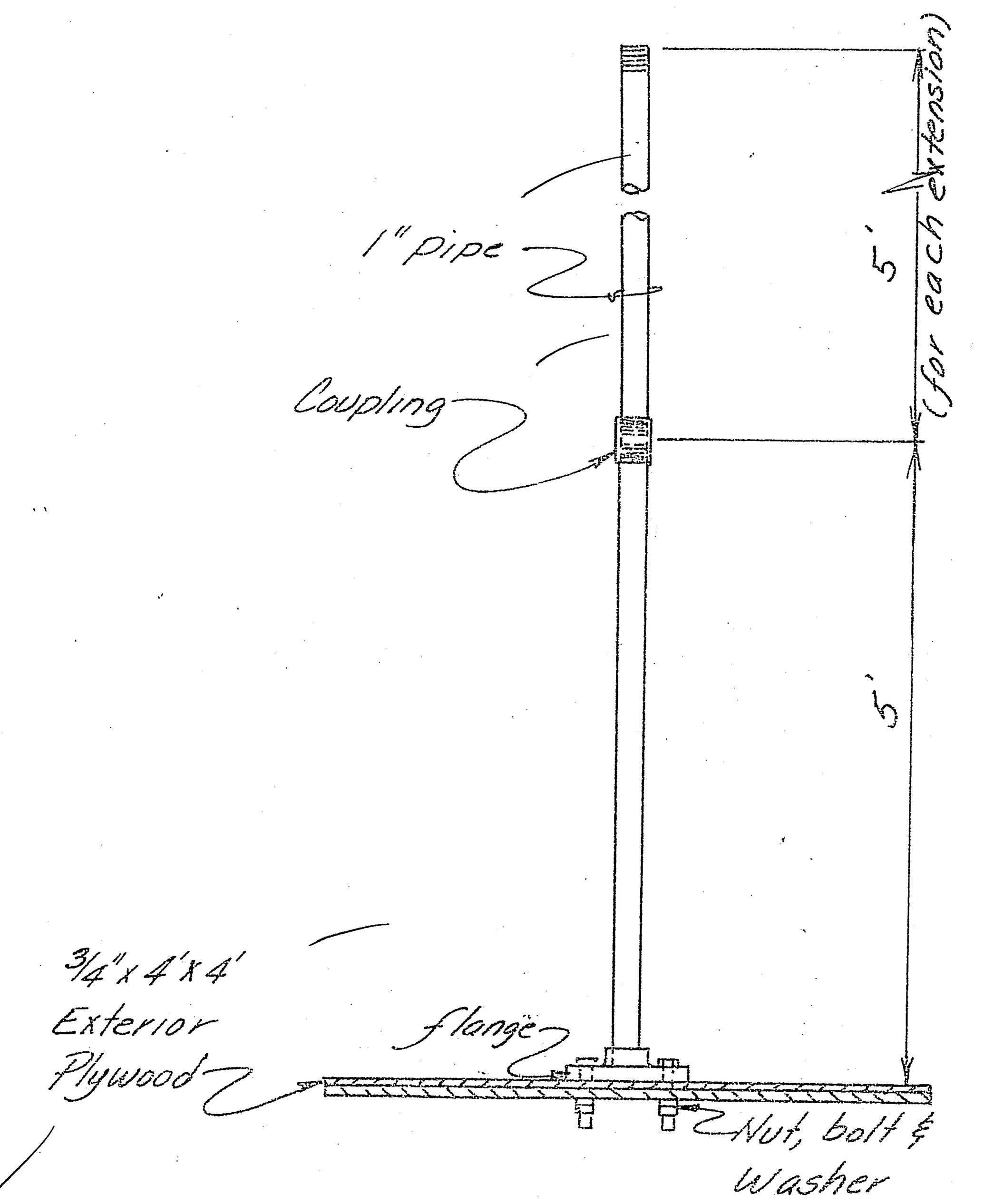
EMBANKMENT TIE-DOWN ANCHOR
N.T.S.



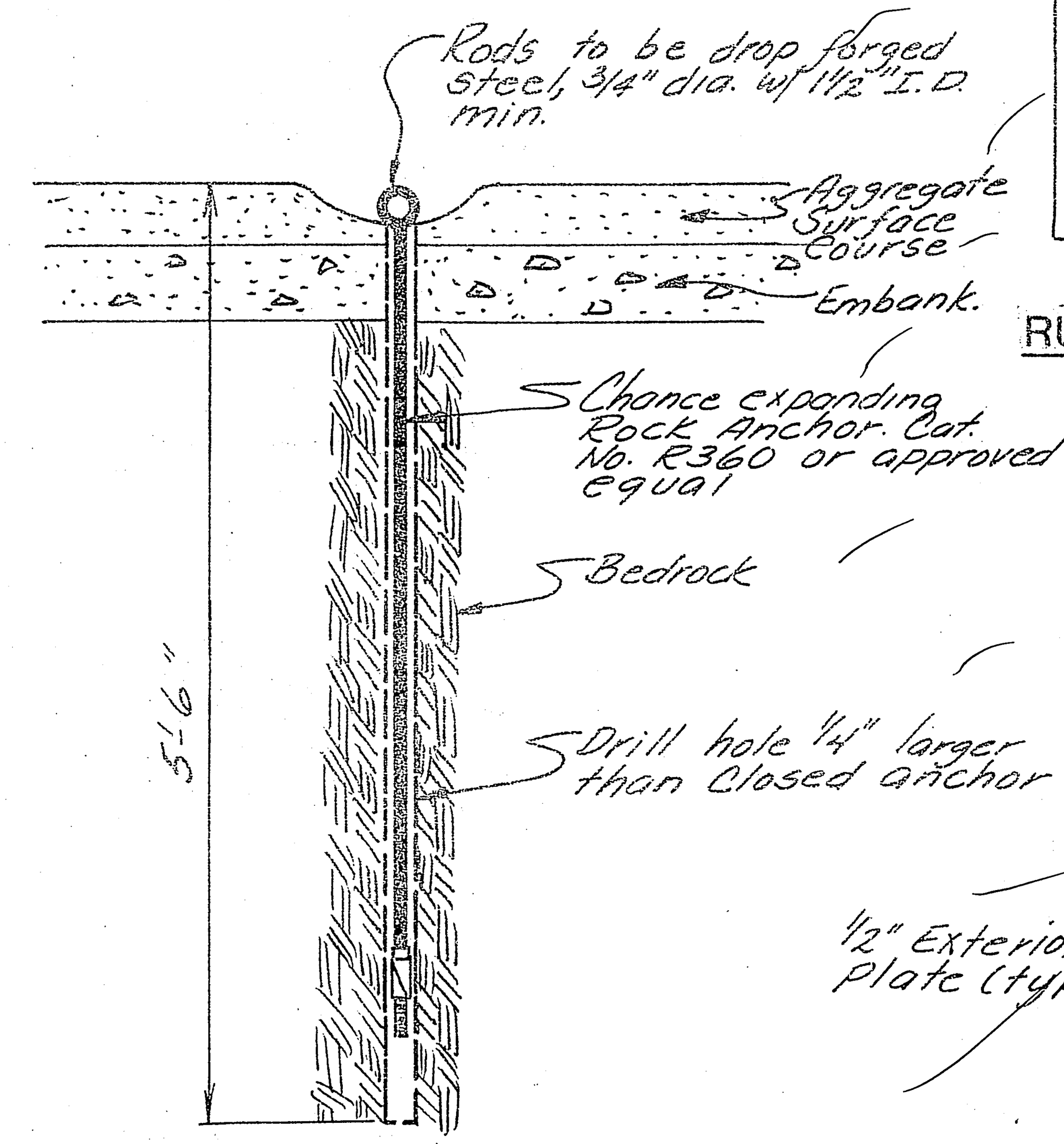
FRONT VIEW DETAIL
RUNWAY BOUNDARY MARKERS
N.T.S.



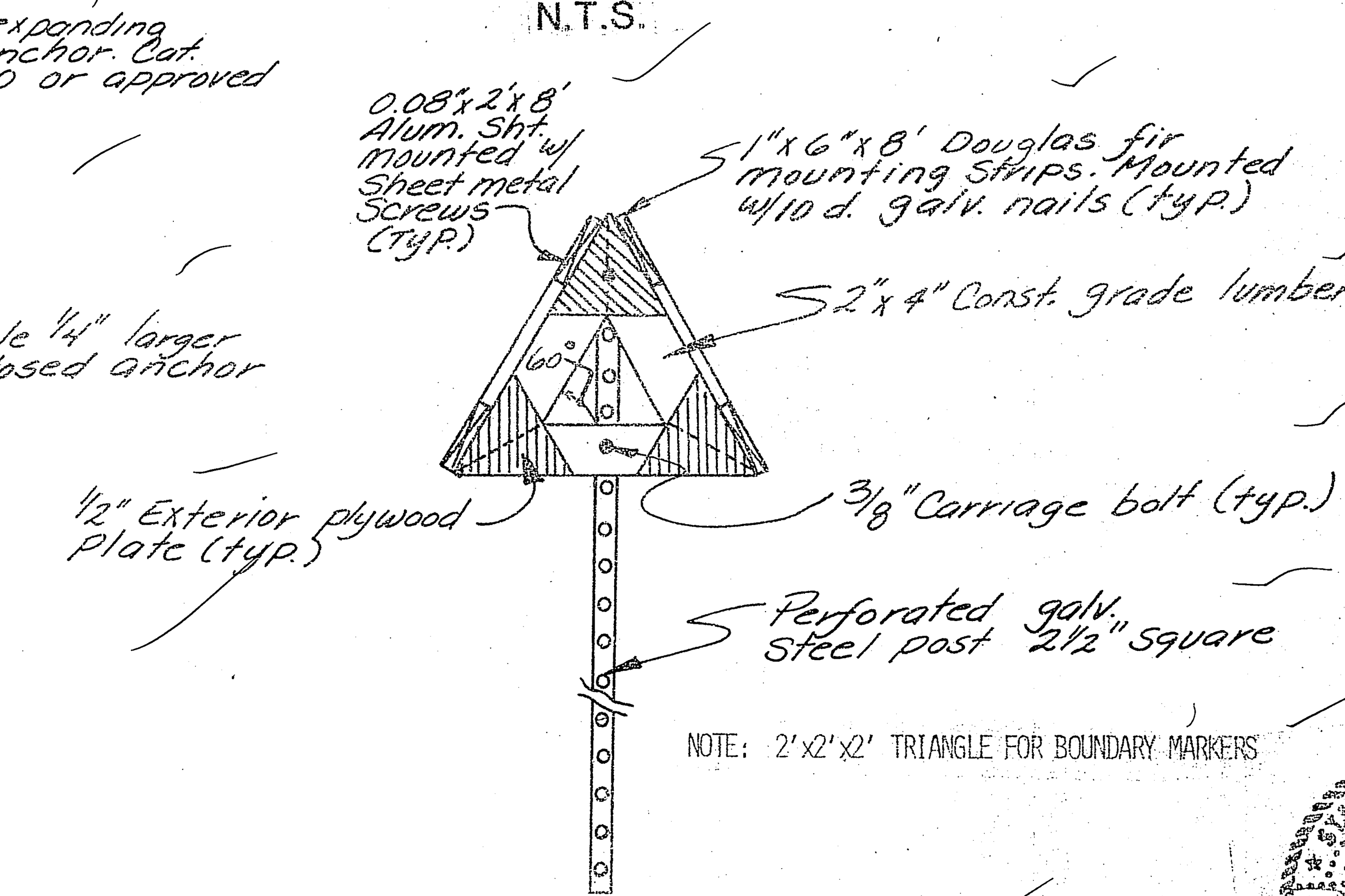
MONUMENT DETAIL
N.T.S.



SETTLEMENT PLATFORM DETAIL
N.T.S.



ROCK TIE-DOWN ANCHOR
N.T.S.



SIDE VIEW DETAIL
BOUNDARY MARKERS AND SEGMENTED CIRCLE
N.T.S.

STATE OF ALASKA 4918 P. Baumgartner CE-5106

MONUMENT DETAIL NOTES

1. IN SOLID ROCK, DRILL A 2" DIA. HOLE A MINIMUM OF 1'-0" DEEP. FILL WITH MORTAR AND SET CAP 3/4" x 9" GALVANIZED PIPE, DESIGNATED LENGTH WHEN SET IN MORTAR.
2. MONUMENTS SHALL BE PLACED 6" BELOW TOP OF THE FINISHED SURFACE.

TIE-DOWN ANCHOR NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE TYPE OF MATERIAL IN THE TIE-DOWNS.
2. DEPTH OF ANCHOR SHALL BE AS REQUIRED TO DEVELOP 5000 LBS. OF PULL-OUT STRENGTH PER ANCHOR.
3. WHEN ROCK IS ENCOUNTERED, ROCK ANCHORS SHALL BE USED. ROD DIAMETER SHALL BE 3/4".
4. ALL EYE-BOLTS SHALL BE ASTM A-36, 40,000 P.S.I. MIN. YEILD STRENGTH.

BY	DATE	CHANGE

REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION, DIVISION OF AVIATION DESIGN & CONSTRUCTION

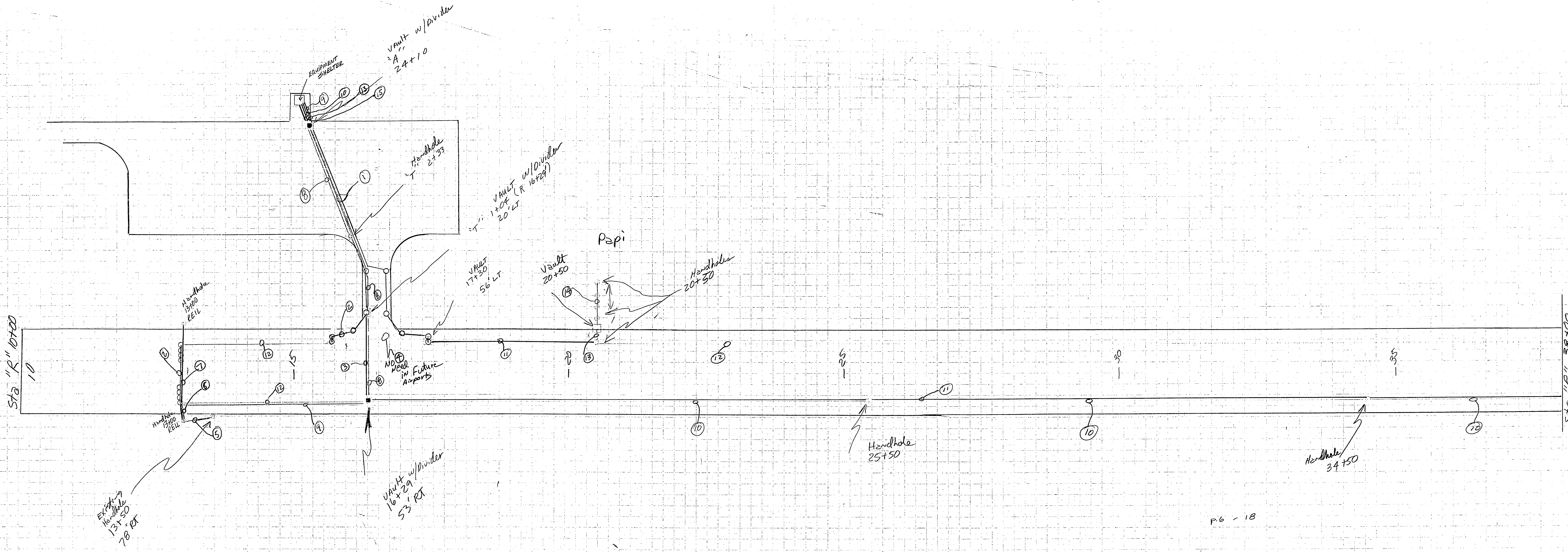
KAKE AIRPORT
PROJECT NO. D-19712
A.I.P. NO. 831-3-02-0398-01-83

MISC. DETAILS

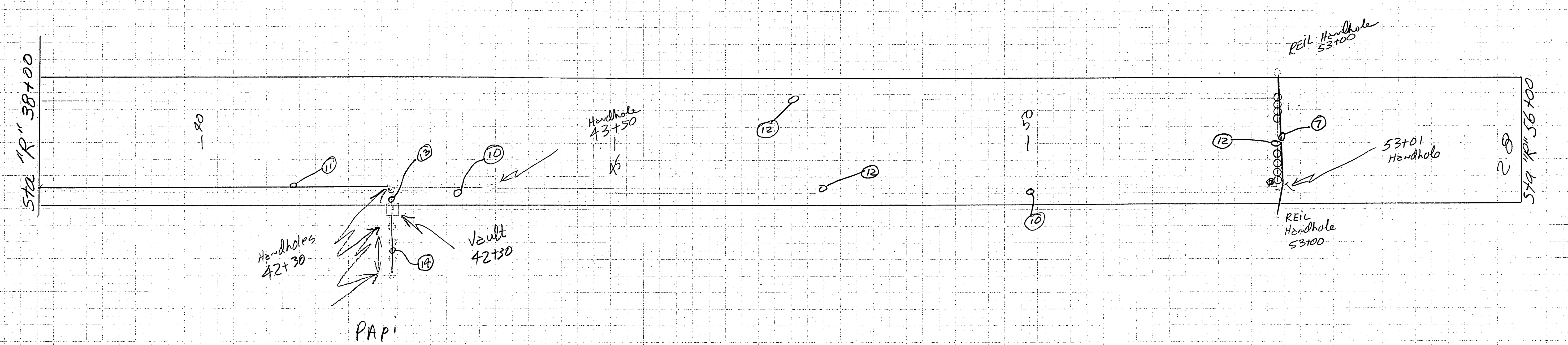
APPROVED BY: Wallace K. Williams 8/12/85
WALLACE K. WILLIAMS, P.E. CHIEF OF DESIGN

APPROVED BY: Paul Baumgartner for 8/12/85
WILLIAM L. BAUMGARTNER, P.E. DESIGN CHIEF GROUP "B"

SCALE: NO SCALE	DESIGNED: MJC	DRAWN: SS	SHEET 25 OF 26
	CHECKED:	DATE:	



pg - 18



WIRING SCHEDULE

Ref.	Description	LOCATION	CONDUIT LENGTH	CONDUIT TYPE	TOTAL WIRE
① 5KV	3 #8 5KV 1 #6 Bare Ground (Airport Lites & PAPI)	APRON VAULT → VAULT 17+30L APRON VAULT → VAULT 16+29L	505' 377' 882' TOTAL	RSC (2")	2646 (5KV) 882 (GND)
② 5KV	1 #8 5KV 1 #6 BARE GROUND (Airport Lites)	VAULT 16+29 L → Light 15+75L Thresholds – 13+00 Lt TO RT	78' 109' 187 TOTAL	RSC (2")	187 (5KV) 187 (GND)
③ 5KV	2 #8 5KV 1 #6 Bare Ground (PAPI)	VAULT 16+29L → Vault 16+29R	156' 156 TOTAL	RSC (2")	312 (5KV) 156 (GND)
④ NA	No wire Needed (Delete Next Airport – CONDUIT IN Before the fact)	LIGHT 15+75 L TO VAULT 17+30 L	155' TOTAL NO wire	RSC (2")	N A
⑤ 600V	2 #8 600V 1 #6 Bare Ground (windcone)	REIL 13+00 R → Windcone Handhole 13+50 R	52' TOTAL	RSC (2")	104 (600V) 52 (GND)
⑥ 600V	4 #8 600V 2 #10 600V (No pay) 1 #6 Bare GND (Windcone REIL)	Threshhold RT → REIL RIGHT (13+00)	30' TOTAL	RSC (2")	120 (600V) 30 (GND) (60) (#10)
⑦ 600V	2 #8 600V 2 #10 600V (No pay) 1 # 6 Bare GND 1 multiconductor control (REIL)	REIL RT → REIL Left (13+00) REIL LT → REIL Rt → Through Handhole (53+00)	170' 170' 340' TOTAL	RSC (2")	340 (CONTROL) 680 (600V) 340 (GND) (680) (#10)
⑧ 600V	6 #8 600V 2 #10 600V (NOPAY) 1 #6 Bare Ground (REILS windcone)	APRON VAULT → Apron/Taxiway Hand hole Apron/Taxiway H.H. → Vault 16+29 Rt. Thru 16+29 Vault L	250' 312' 562 TOTAL	RSC (2")	3372 (600V) 562 (GND) (1124) (#10)
⑨ 600V	4 #8 600V 2 #10 600V (no pay) 1 #6 Bare GND (REIL) windcone	VAULT 16+29 RT → Threshold 13+00 RT APRON VAULT → Shelter	327' 40' 367 TOTAL	PCV (2")	1468 (600V) 367 (GND) (734) (#10)
★⑩ 600V	2 #8 600V 2 #10 600V (nopay) 1 #6 Bare GND (REILS)	VAULT 16+29 R → H.H. 25+50 Rt H.H. 25+50 R → H.H. 34+50 Rt H.H. 34+50 R → H.H. 43+50 Rt H.H. 42+30 R → H.H. 53+01 RT	923 900 900 951 3674 TOTAL	PCV (2")	7348 (600V) 3674 (GND) (7348) (#10)
⑪ 5KV	3 #8 5KV 1 #6 BARE GND (AIRPORT LIGHTS & PAPI)	VAULT 16+29 R → H.H. 42+30 RT VAULT 17+30 L → H.H. 20+50 LT	2603 320 2923 TOTAL	PCV (2")	8769 (5KV) 2923 (GND)
⑫ 5KV	1 #8 5KV 1 #6 BARE GND (AIRPORT LITES)	Light 15+75 Lt → Thresh. 13+00 L Thresh. 13+00 Rt → Vault 16+39 R VAULT 20+50 Lt → Thru Thresholds → VAULT 42+30 Rt.	280 327 4430' 5037' TOTAL	PCV (2")	5037 (5KV) 5037 (GND)
⑬ 5KV	2 #8 5KV 1 #6 Bare GND (PAPIS & Airport Lites)	H.H. 20+50 Lt → 80' LT H.H. 42+30 Rt → 80' Rt. Apron Vault → shelter	25' 25' 34' 84' TOTAL	PCV (2")	168 (5KV) 84 (GND)
⑭ 5KV	6 #8 5KV 1 #6 Bare GND (PAPIS)	20+50 80' LT → 160' LT 42+30 80' RT → 160' LT	80' 80' 160' TOTAL	PCV (2")	960 (5KV) 160 (GND)
⑮ 5KV	4 #8" 5KV 1 #6 Bare GND (PAPI)	Apron VAULT → Shelter	40' TOTAL	PCV (2")	160 (5KV) 40 (GND)
★⑯ 600V	2 #8 600V 1 #6 GND 2 #10 (no pay) (Wind cone) (REIL Intensity)	Apron Vault → shelter	40' TOTAL	PCU (2")	80 (600V) 40 (GND) 80 (#10