



Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

February 26, 1981

Mr. James G. Keppler, Director
Directorate of Inspection and
Enforcement - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Byron Station Units 1 and 2
Cable Tray Stiffener Welds
NRC Docket Nos. 50-454/455

Reference (a): January 13, 1981 letter from J. G. Keppler
to C. Reed

Dear Mr. Keppler:

This is to provide information regarding Commonwealth Edison's review of cable tray stiffener welds at Byron. This review was conducted in accordance with part 3.e of the understanding documented in reference (a).

On February 3, 1981 representatives of Commonwealth Edison discussed the Byron cable tray stiffener inspections with Messrs. J. Konklin, C. Williams, and K. Naidu of your office. The inspectors agreed with our approach and conclusions. In accordance with a subsequent telephone request, the information presented at the meeting is being supplied in Attachment A and Enclosures 1 and 2 to this letter. Also included is a discussion pertaining to weld quality which was requested at the February 3 meeting.

Please address further questions regarding this matter to this office.

Very truly yours,

T. R. Tramm
Nuclear Licensing Administrator

Attachment

ATTACHMENT A

Byron Cable Tray Stiffener Weld Inspection

Introduction

The following is a summary of the information presented during the meeting which took place in the Region III offices on February 3, 1981 to resolve item 3.e. of J.G. Keppler's letter dated January 13, 1981.

Background Information

Commonwealth Edison Company Nonconformance Report F-529 identified cable tray stiffener welds with lengths and spacing not conforming to the approved design document. Weld size and quality were assumed adequate since the nonconformance report did not pertain to these aspects. To determine what corrective action would be required, a field survey was performed. ?

Basis of Sampling Plan

The sampling plan for the field survey was based upon a statistical approach known as "acceptance sampling by attributes".⁽¹⁾ The stiffener lot size was conservatively considered infinite. This results in inspecting a greater number of stiffeners than if the lot was considered finite. Theoretically the method establishes 59 stiffeners as the initial sample size for inspection. If no defects are found, then the acceptance is based on 95% reliability ? confidence level.

Enclosure 1 represents the sampling plan for the field survey. This plan calls for approximately 124 samples to be inspected although only 59 are required by the statistical method. In addition, each sample is represented by a section of cable tray either of standard length or a fitting. Each section of cable tray has a number of stiffeners ranging from one to four. This magnifies even more the conservatism taken in establishing the sampling plan. /

Details of Field Survey

The field survey was performed by an independent testing agency, Pittsburgh Testing Laboratories, and verified by Commonwealth Edison Company Site QA personnel. The inspectors randomly selected cable tray sections to measure and document each stiffener weld length and spacing provided. Commonwealth Edison Company Site QA personnel verified this data by field measurements. The sampling plan

(1)Ang, Alfredo H-S., and Tang, Wilson H., Probability Concepts in Engineering Planning and Design, Volume I - Basic Principles, John Wiley & Sons, Inc.

given in Enclosure 1 was used as a guideline to ensure that a representative set of cable tray sections was selected. The data sheets for this field survey are given in Enclosure 2.

Field Survey Results

Sargent & Lundy reviewed the field survey data in comparison to the minimum stiffener weld required by design. The minimum weld was calculated based upon the governing seismic load case and the most critical location in the safety-related structures. Our review revealed that 100% of the 227 stiffeners surveyed had weld in excess of the minimum required 1/8" weld 3/4" long at 6" center to center spacing or equivalent. For example, 1 1/2" long at 12" center to center spacing is equivalent. ?

The survey demonstrated that there is no basis for concern regarding the adequacy of cable tray stiffener welds. From a statistical standpoint, it showed a 98.7% reliability at 95% confidence level. In other words, there is a 95% confidence that at most 1.3% defective stiffener welds may exist for safety-related cable trays at Byron Units 1 and 2. The probability that this small percentage of defects are at the critical load locations is even more remote. ?

Conclusion

Commonwealth Edison Company stated that based on the conservative statistical sampling plan and the flawless results of the field survey, we consider this nonconformance resolved, and no further corrective action is required. The supporting data is attached. .

NRC Response

The NRC accepted the basis for resolving the nonconformance and considered this item closed as far as resuming cable pulling operations. The NRC requested Commonwealth Edison Company to review stiffener weld quality in the near future.

Weld Quality

It was stated during this meeting that Commonwealth Edison had reported and resolved a deficiency regarding weld quality under 10CFR50.55(e) (see the June 22, 1977 letter from R.L. Bolger to R.F. Heishman) and felt that this was a valid basis for the assumption of adequate weld quality used in the foregoing sampling plan.

It is acknowledged that if all the approximately 60,000 stiffeners and the several hundred thousand associated welds were to be individually inspected, some small percentage, hypothetically, might be found not to meet the minimum weld criteria of an 1/8" weld for the entire 3/4" length at 6" center to center spacing. The small percentage referred to is less than 1.3% based on the sample taken and the statistical methods used in the study above.

However, there are numerous design conservatisms to be considered with regard to the cable pans. For instance, the strength of the cable pan itself is not taken into account in the analysis of stiffener design and weld requirement. Additionally, safety factors are calculated using worst case conditions, which are very conservative for plant elevations other than where the worst case is postulated to occur. Given these and other design conservatisms, it is reasonable to assume that no significant safety problems would result under the conditions of an unlikely seismic event.

The possibility of weld failure is further mitigated since the intensity of cable pan stiffener weld inspection both at the supplier's shop and upon receipt in the field has been increased. Even given a failure of a weld, it is difficult to imagine how that would result in a nuclear safety problem.

In summary, we feel that the statistical approach utilized above is adequate and proper to assure that minimum weld size and spacing is consonant with design requirements. We also maintain that weld quality is adequate, based on shop and field inspections, and that further extensive weld examinations in the field are not necessary to ensure nuclear safety. Further action required to rectify noncompliance of Systems Control with Commonwealth Edison specifications is purely a commercial matter.

Enclosure 1

Revised January 12, 1981
December 18, 1980

Recommended Field Survey for
Commonwealth Edison Company
Nonconformance Report P-529

BUILDING/ELEVATION	SAMPLE SIZE FOR STRAIGHT* CABLE TRAY SECTIONS		
	12" width	18" width	24" width
<u>Auxiliary</u>			
330'	5	--	--
346'	2	3	2
364'	2	2	2
383'	2	3	2
401'	2	2	2
426'	2	2	2
439'	2	2	3
451'	2	2	2
463'-5"	2	--	2
<u>Containment</u>	5	3	2

*Non-standard lengths of straight sections may be substituted for a standard 10' section provided the welds for two stiffeners are field measured and reported.

BUILDING	SAMPLE SIZE FOR CABLE TRAY FITTINGS
Auxiliary	For each of the above elevations: 2 each of 3 different types
Containment	2 each of 3 different types

STRAIGHT PAW SECTION

El. Aux 330'-0

Size 12"

Location, Description

2506M P2F

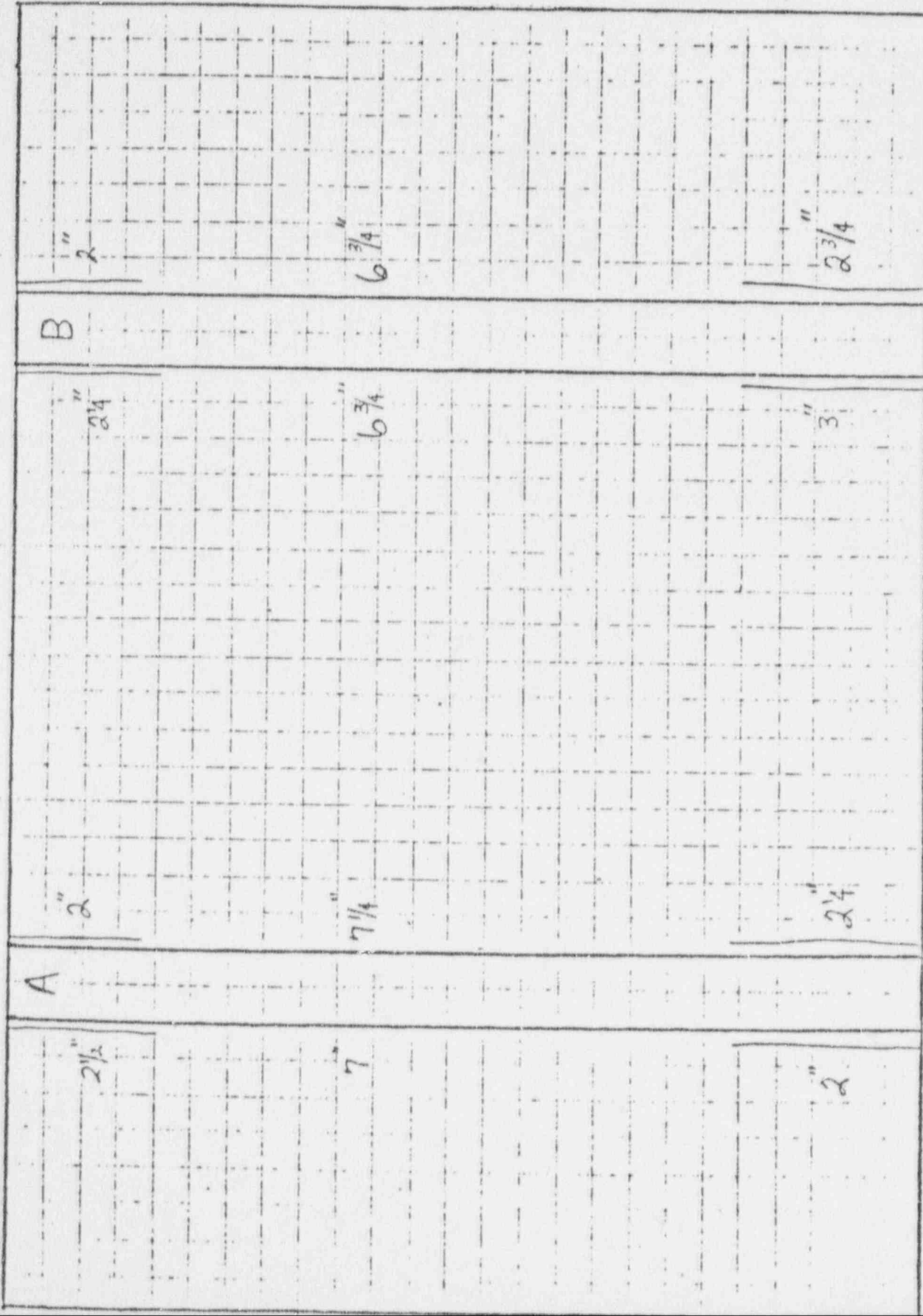
P+20

PREPARED BY

CRITTING/CAMERON
DATE 11/2/81

VERIFIED BY

RONELL A. FRY
DATE 11/2/81



10'-0

STRAIGHT PAW SECTION

El. Aux 330'-0

Size 12

Location, Descrip

2506L P28

P + 20

PREPARED BY

ESTIMATING COMPANY
DATE 1/12/81

VERIFIED BY

Pinell A. Perry
DATE 1/12/81

PAGE 2

<p>" 2 3/4</p>	<p>A</p>	<p>" 2 3/4</p>	<p>B</p>	<p>" 3</p>
<p>" 7</p>		<p>" 4 3/4</p>		<p>" 5 1/2</p>
<p>" 2 1/8</p>		<p>" 3 1/8</p>		<p>" 3</p>

10'-0

STRAIGHT PAW SECTION

El. Aux 330'-0

Size 12"

Location, Descrip

2503E C2E

P+20

PREPARED BY

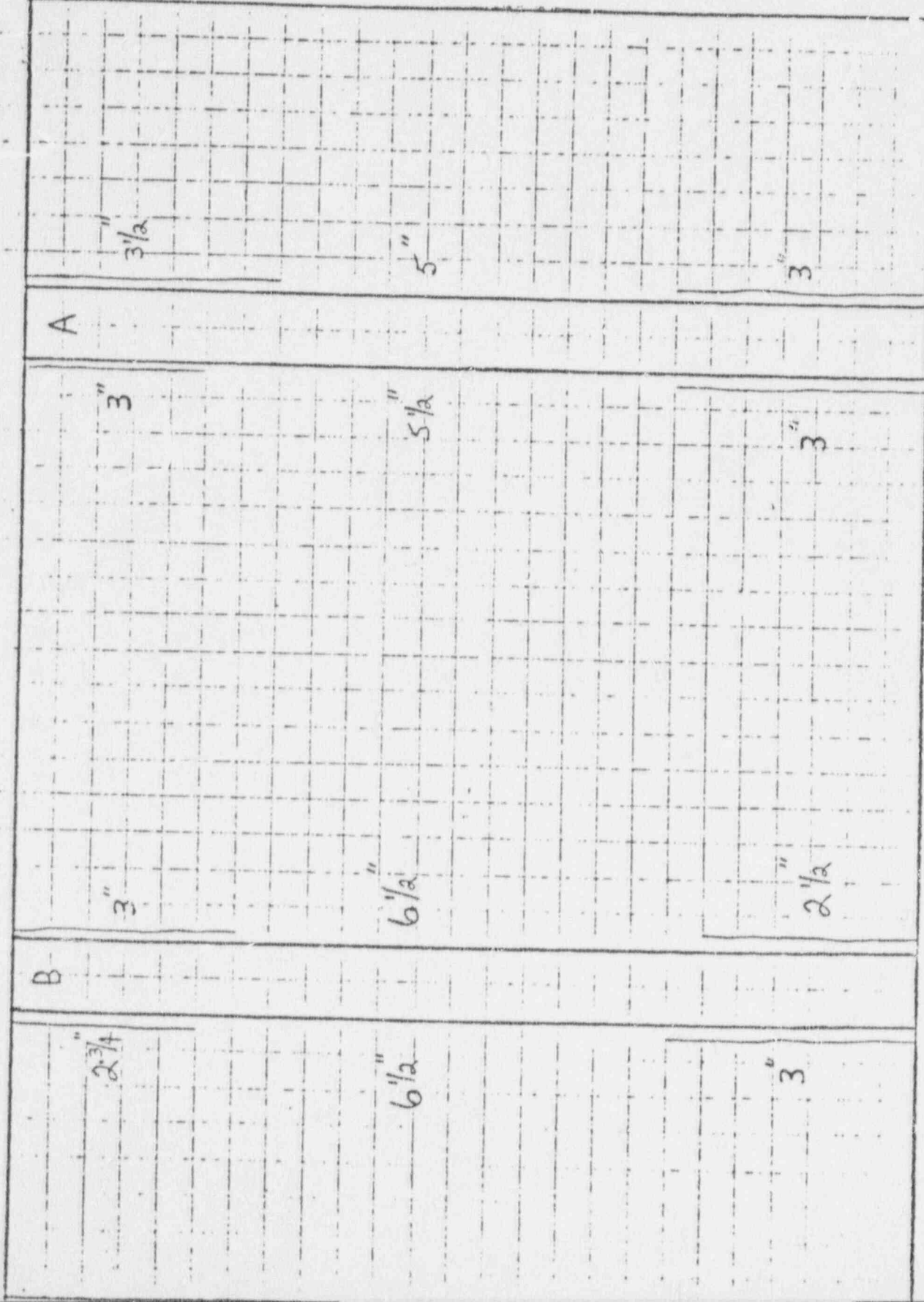
Glenn C. Cawley

DATE 1/12/81

VERIFIED BY

Russell A. Perry

DATE 4/12/81



10'-0

STRAIGHT PAW SECTION

El. Aux 330'-0

Size 12"

Location, Descrip

P+20

Prepared By

Checked/Corrected

DATE 1/12/81

Verified By

Penell A. Pugh

DATE 1/12/81

Page 1

B	3"
B	2 7/8"
A	2 1/2"
B	6"
B	5 7/8"
A	6 1/2"
B	3"
B	3"
A	2 3/4"

10'-0"

STRAIGHT
P.W.
SCHOOLS

El. $A_{\lambda \times} 330'$

Size 12

Location, Descrip

$\rho + 21$

Prepared By

Anthony Corrado

DATE 11/21/81

Unfiled By

Small A. P. 1917

DATE 11/2/81

A

$$2\frac{3}{4}$$

3

 $5\frac{3}{4}$ $5\frac{1}{2}$ $3\frac{1}{4}$ $3\frac{1}{2}$
$$2\frac{1}{4}''$$

3"

5 1/4"

 $5\frac{1}{4}$

21/1/16

3"

10-0

STRAIGHT PAW SECTION

El. Any 346.0

Size 12"

Location, Descrip

1533D CIB

Q+18

PERMANENT BY

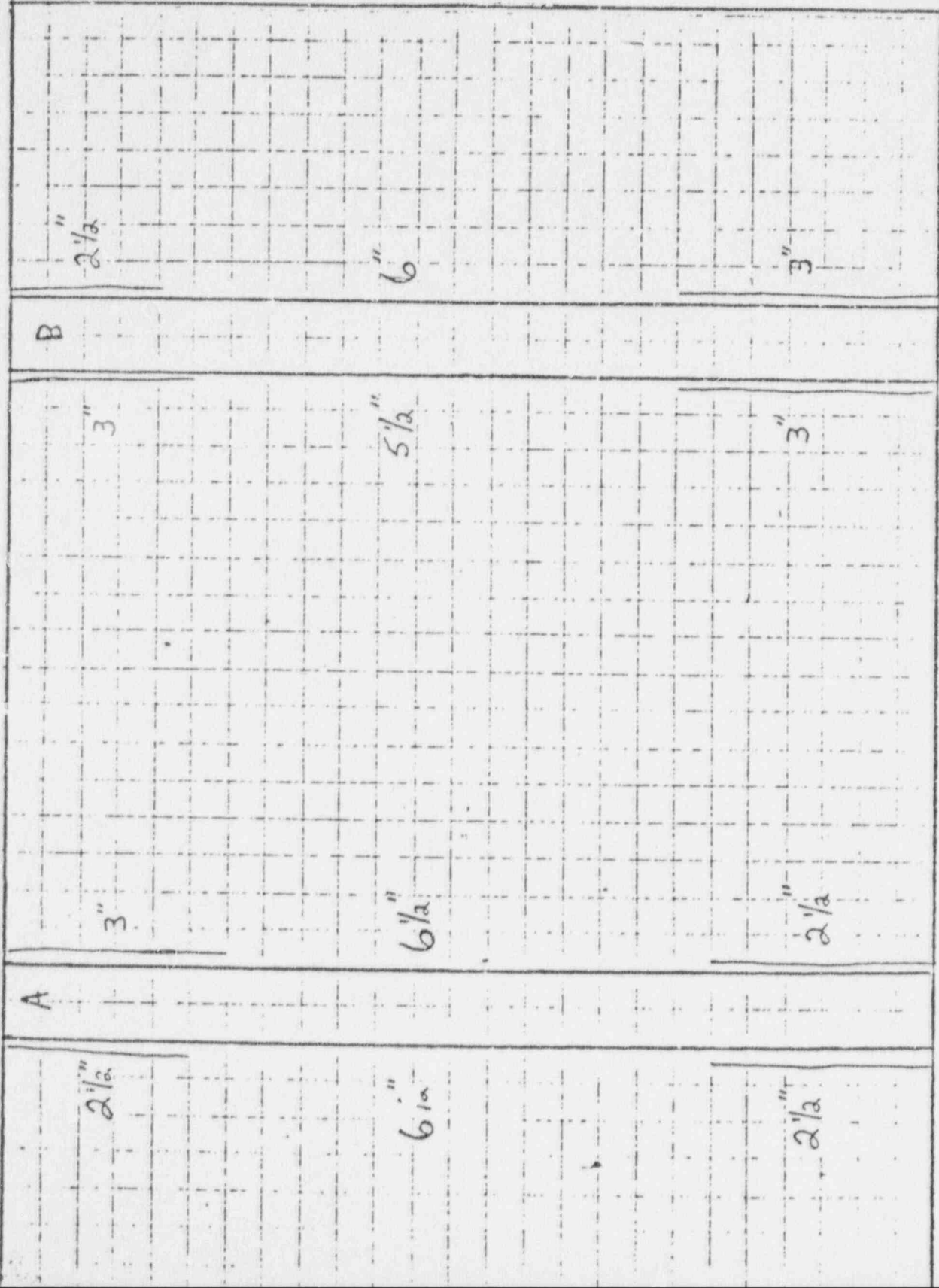
Control Center
DATE 11/12/81

VERIFIED BY

Russa. Pay

DATE 11/12/81

PAGE 6



10'-0"

STRAIGHT PAW SECTION

El. Aux 346'-0

Size 12"

Location, Descr.

1545M C2B

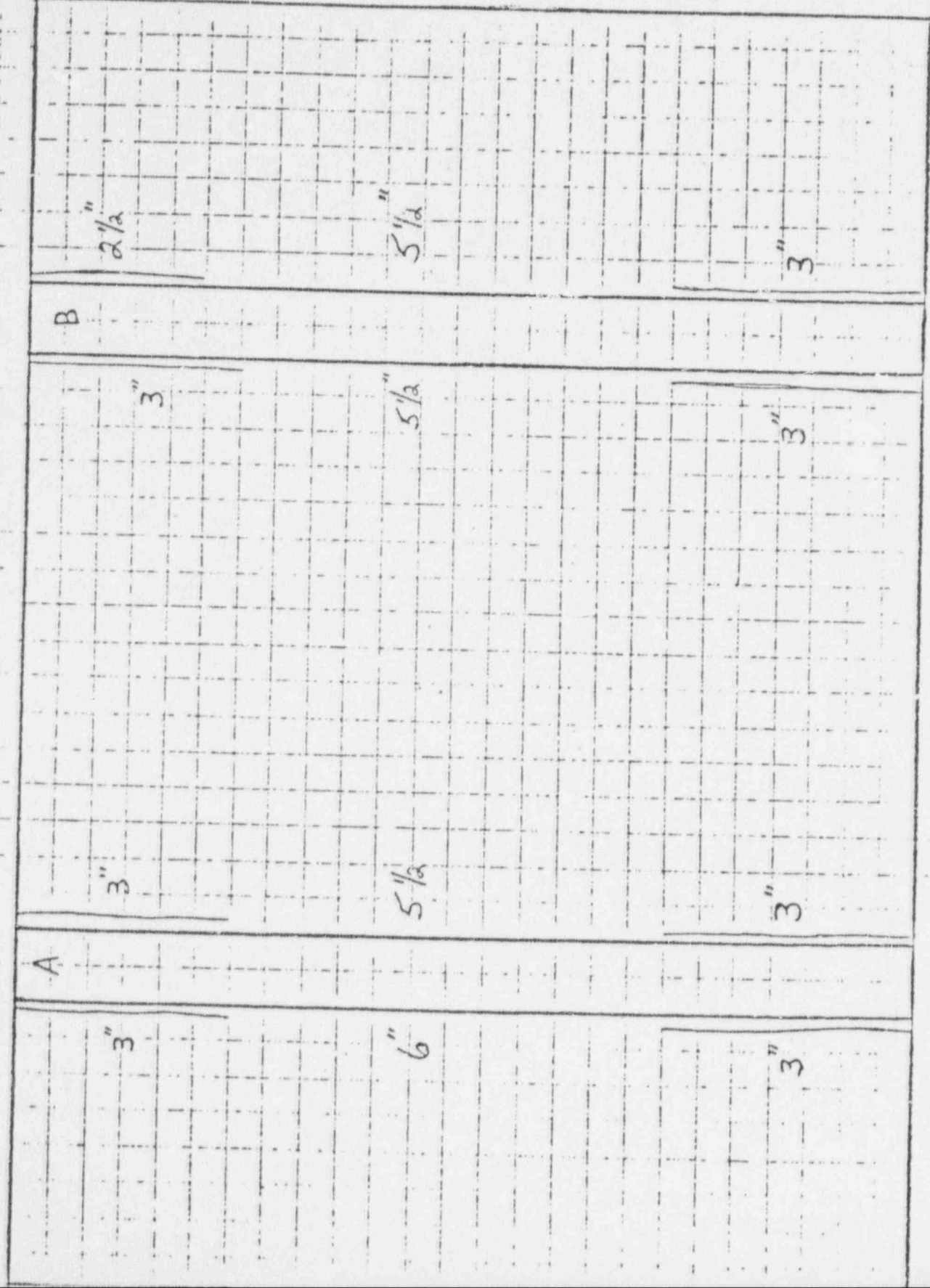
Q+18

PREPARED BY

Anthony Conner
DATE 1/12/81

VERIFIED BY

Rmell A. Per
DATE 1/12/81



10'-0

STRAIGHT PAW SECTION

El. Aux 346-0

Size 18"

Location, Descrip

1552H

Q+18

PREPARED BY

Q+18
DATE 1/12/81

VERIFIED BY

Arnold a. Perry
DATE 1/12/81

PAGE 8

A	B	
3"	2 1/2"	2 1/4"
5 1/2"	6"	6"
2"	1 1/2"	1"
4"	4 1/2"	4 1/2"
3"	3"	3"

10'-0"

STRAIGHT PAV SECTION

El. Ans 346'-0"

Size 18"

Location, Descrip

S+18

PREPARED BY

Anthony Camacho
DATE 1/12/01

VERIFIED BY

Russell A. Long
DATE 1/12/01

PAGE 9

3"	A	3"	B	3"
4"		5 1/2"		4 1/2"
2"		2"		2"
5"		3 1/2"		5"
3"		3 1/2"		3"

10'-0"

STRAIGHT PAV SECTION

El. Asp 346'-0

Size 18"

Location, Descrip

S+18

PREPARED BY

Carl J. Connel

DATE 1/12/81

VERIFIED BY

Arnold A. Perry

DATE 1/12/81

PAGE 10

A		B	
3 1/2"	3"	3 1/2"	3 1/2"
5"	4 1/2"	4"	5 1/2"
1 1/2"	2"	1 1/2"	2"
4 1/2"	4 1/2"	5"	4"
3"	3"	3 1/2"	3"

10'-0"

STRAIGHT PMJ SECTION

El. Aux 346-0

Size 24"

Location, Descrip

1560D CIB

E Level of P+13

Prepared By

Checked by Samuel
DATE 1/12/01

Verified By

Donald A. Perry
DATE 11/2/81

Page 11

B		A	
3"	3 3/4"	2"	2 1/2"
3"	7 1/4"	4"	8 1/2"
2"	2"	1 1/2"	1 1/2"
6 3/4"	2"	7"	8"
2"	8"	2"	3"
3 3/4"	3 1/2"	3 1/2"	3"
3"	3 1/2"	3"	

10'-0"

STRAIGHT PIN SECTION

El. Aux 346-0

Size 24"

Location, Descrip

2551 CIB

P+23

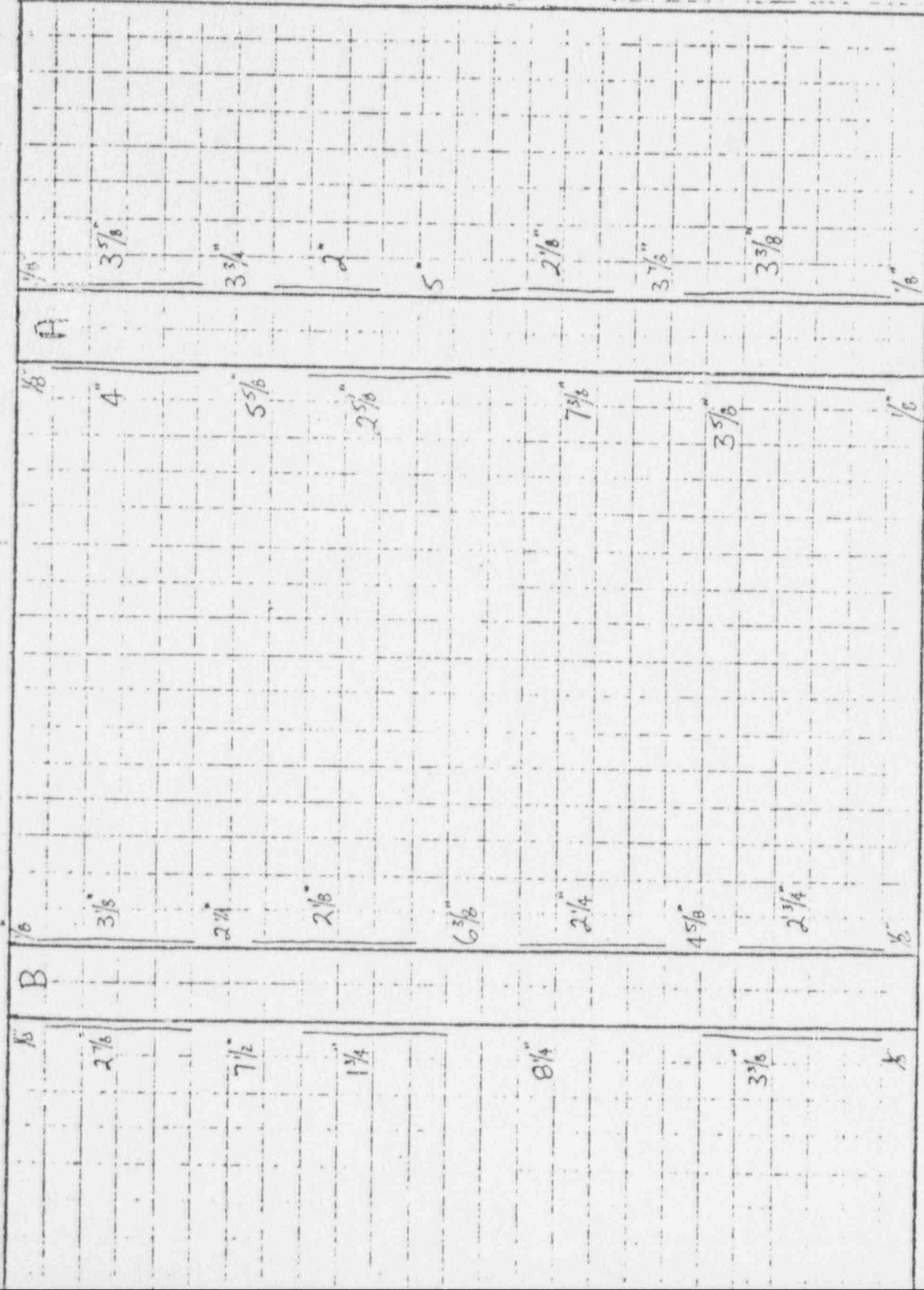
PREPARED BY

Curtis J. Conner
DATE 1/14/81

VERIFIED BY

Rnall O. Perry
DATE 1/14/81

PAGE 12



10'-0"

STRAIGHT P.W. SECTION

El. Amx 364'-0

Size 12"

Location, Desc.

Nea. 1595C KIB

P+13

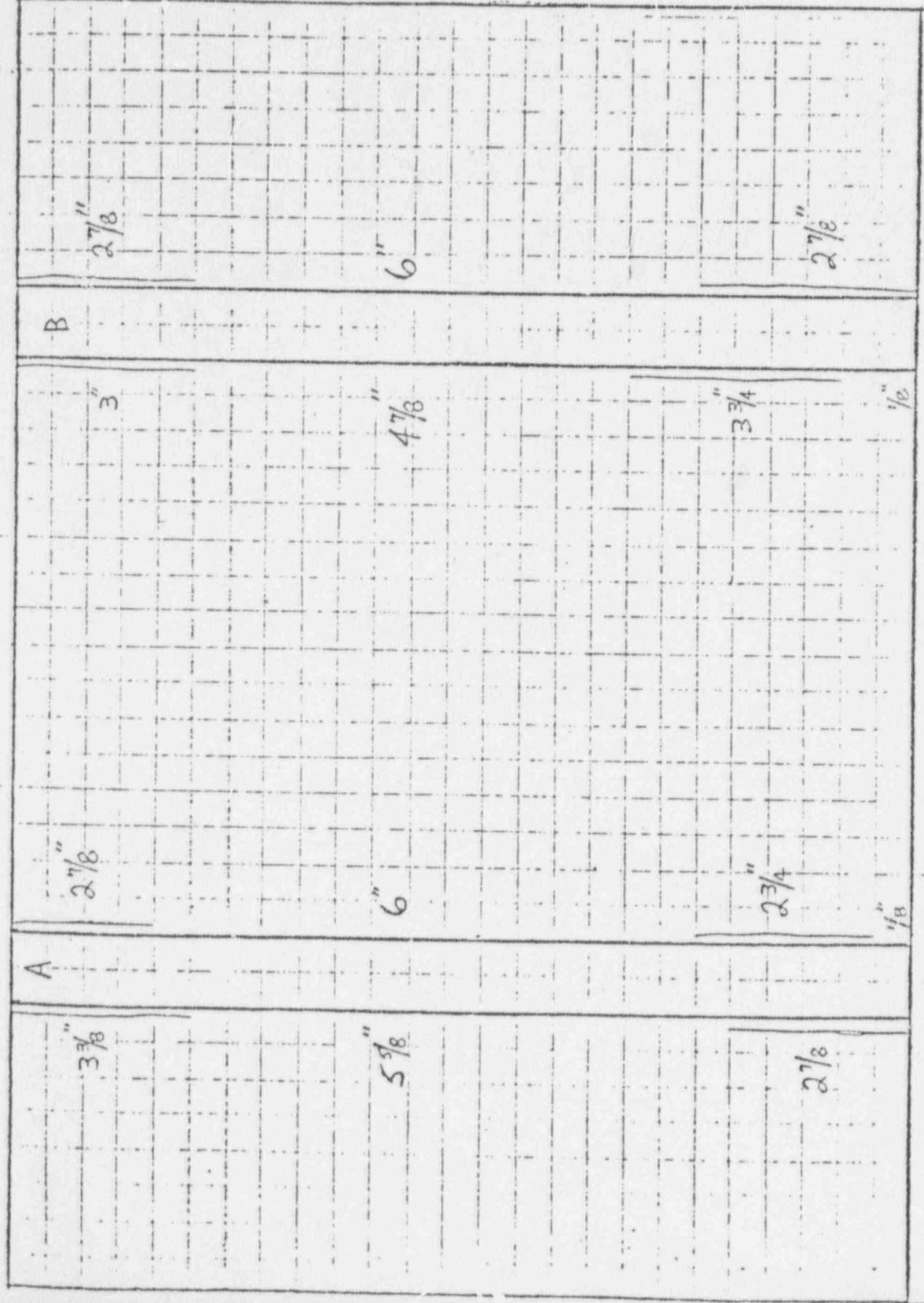
Prepared By

Arthur J. Conner
DATE 1/19/81

Verified By

Ronald A. Per
DATE 1/18/81

PAGE 13



STRAIGHT PAW SECTION

El. Aux 364'-0

Size 12"

Location, Descrip

1595C K1B

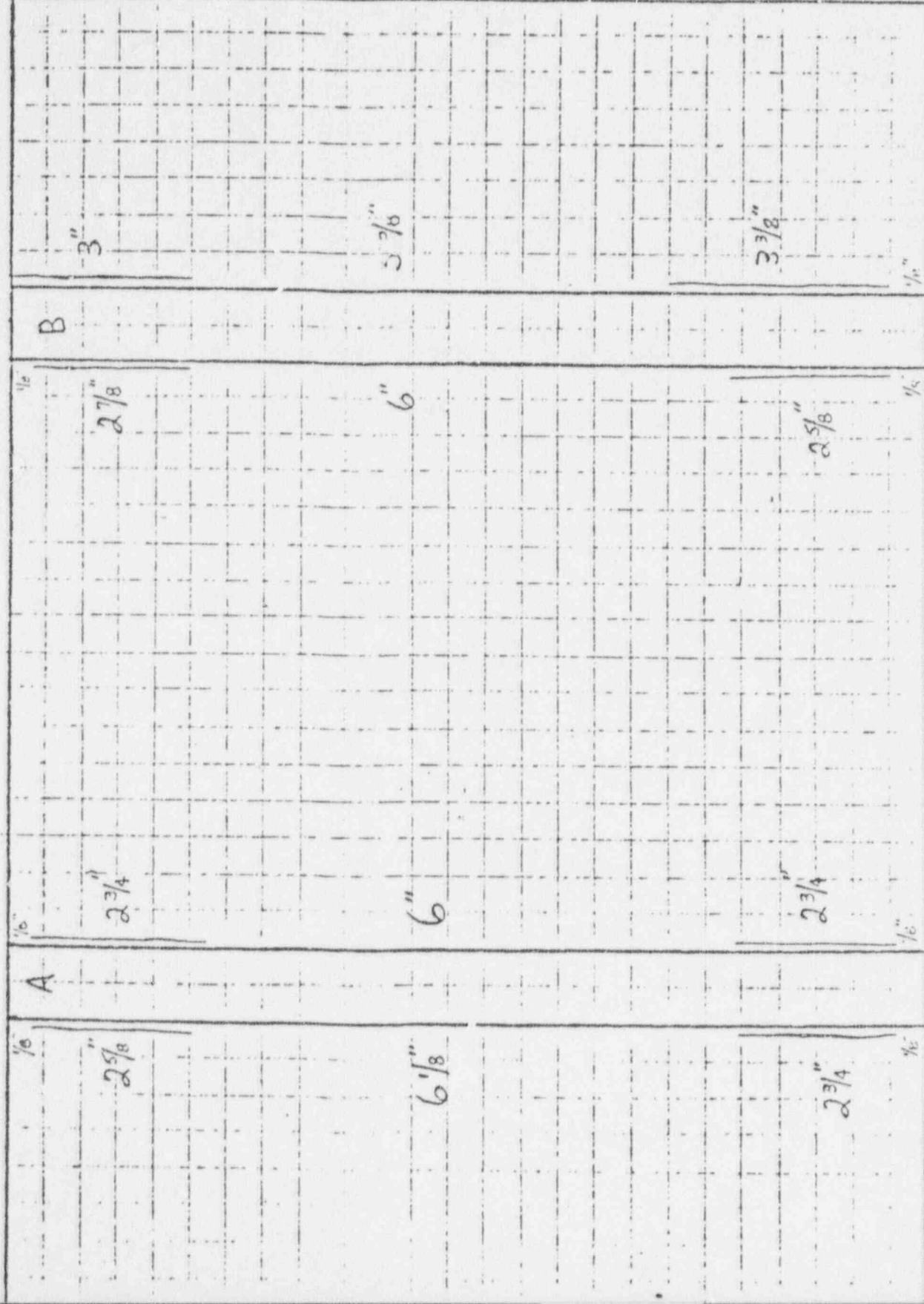
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Prepared By

CHERRY CREEK
DATE 1/14/81

Verified By

Ronald A. Perry
DATE 1/14/81



10'-0

Page 14

STRAIGHT P.W. SECTION

El. Aux 364.0

Size 18"

Location, Descrip

1632E CRB

Utren V + 18

Prepared By

By Jeff Cassin
DATE 1/12/81

Verified By

By Paula Perry
DATE 1/15/81

Page 15

B	A	
$\frac{1}{8}$	$3\frac{1}{8}$	$3\frac{1}{8}$
3	$4\frac{7}{8}$	$5\frac{1}{2}$
$4\frac{1}{2}$	$1\frac{7}{8}$	$1\frac{3}{4}$
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$5\frac{3}{4}$	$3\frac{1}{2}$	$2\frac{3}{4}$

10'-0"

STRAIGHT PAW SECTION

El. Aux 364'-0

Size 18"

Location, Description

1632D P2B

U thru V + 18

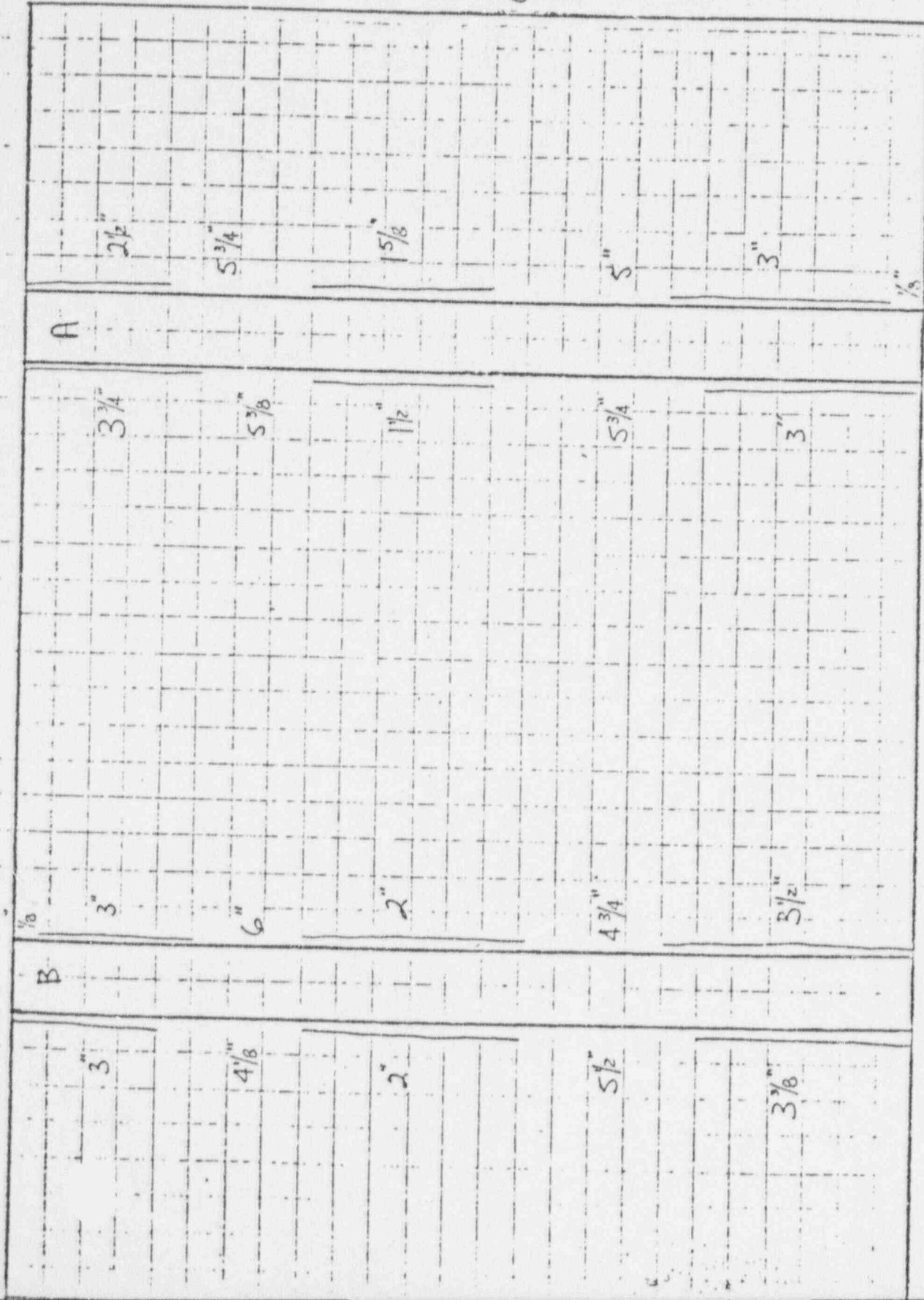
Prepared By

Anthony Camacho
DATE 1/12/81

Verified By

Roll a. Paz
DATE 1/15/81

Page 16



10'-0"

STRAIGHT PAW SECTION

El. Aux 364'-0

Size 24

Location, Descrip

2645B CIB

N Face of N+24

Prepared By

Charles J. Cascard
DATE 1/12/81

Verified By

Small A. Perry
DATE 1/15/81

1/8"	2 3/4"	1/8"	2 7/8"
3 3/8"	4 7/8"	7 1/2"	5 1/4"
1 1/4"	2"	2 1/2"	2 1/2"
8 1/2"	6 1/2"	8"	6"
3"	2 1/2"	2 7/8"	2 1/4"
1/8"	3"	1/8"	3 1/4"

10'-0"

STRAIGHT PAW SECTION

El Aux 364-0

Size 24

Location, Descrip

Near

2614B CIB

N face of P+21

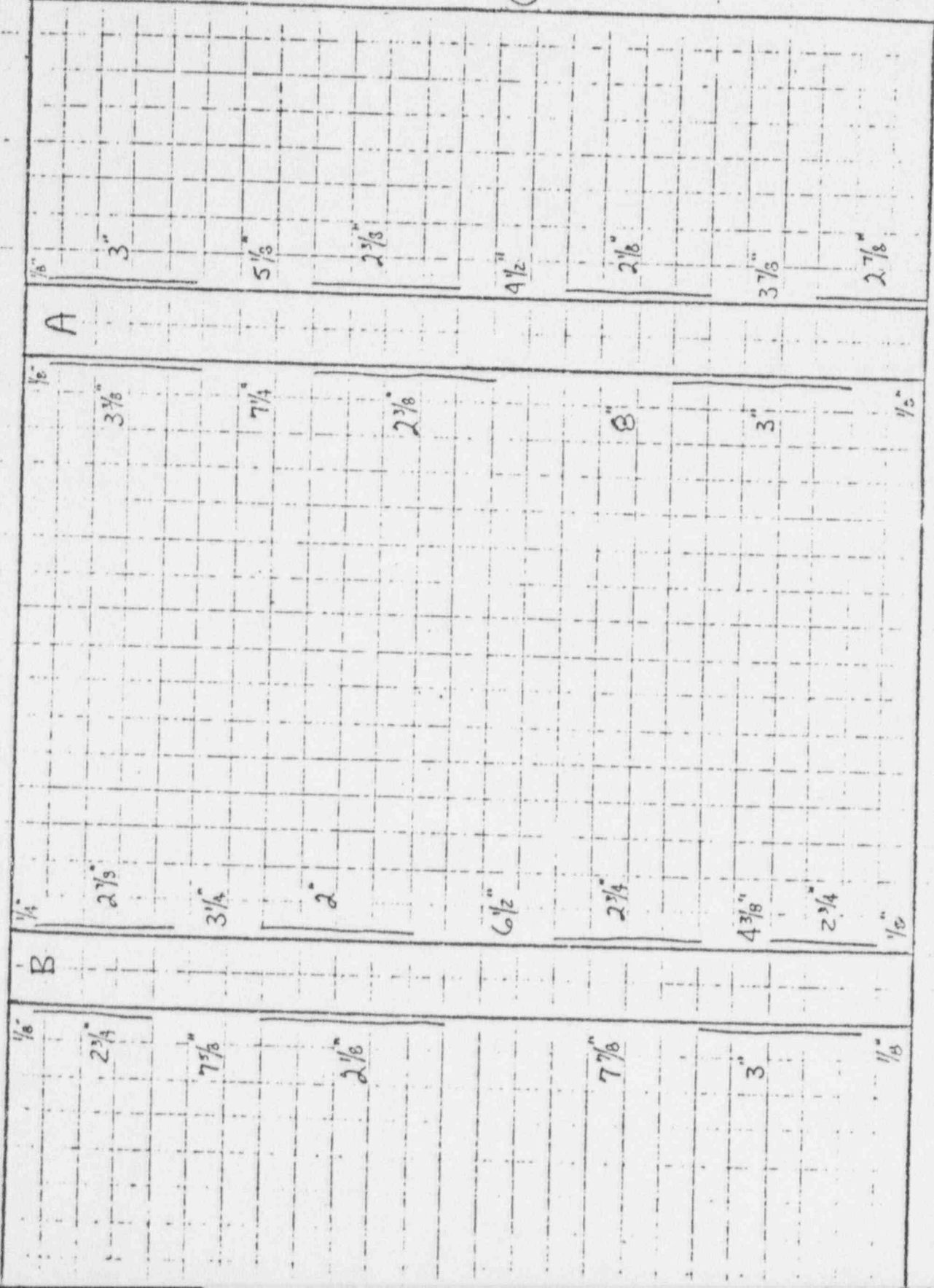
PREPARED BY

Anthony G. ...
DATE 1/14/81

VERIFIED BY

Arnold A. ...
DATE 11/4/81

PAGE 18



10'-0

STRAIGHT PAW SECTION

El. Aux 383'-0

Size 12"

Location, Descrip

2688J KIE

W face of P121

PREPARED BY

Anthony Concedo

DATE 1/12/81

VERIFIED BY

Ronald A. Long

DATE 1/12/81

PAGE 17

B	A	
3 3/8"	3 3/8"	3 3/8"
5 1/2"	5 3/8"	5 1/2"
3 3/8"	3 3/8"	3 3/4"

10'-0"

STRAIGHT PAW SECTION

El. Aux 383'-0

Size 12

Locations, Descrip

2684J KIE

(W) Size of Piece

PREPARED BY

Geological Canada
DATE 1/12/81

VERIFIED BY

Russell A. Peep
DATE 1/12/81

PAGE 20

A	B	
3 1/8"	3 3/8"	4 1/2"
5 5/8"	5 3/8"	5 1/8"
3 3/8"	3 1/8"	3 1/8"

10'-0

STRAIGHT PMW SECTION

El. Aux 383'-0

Size 18"

Location, Descrip

2703R C2E

M-21

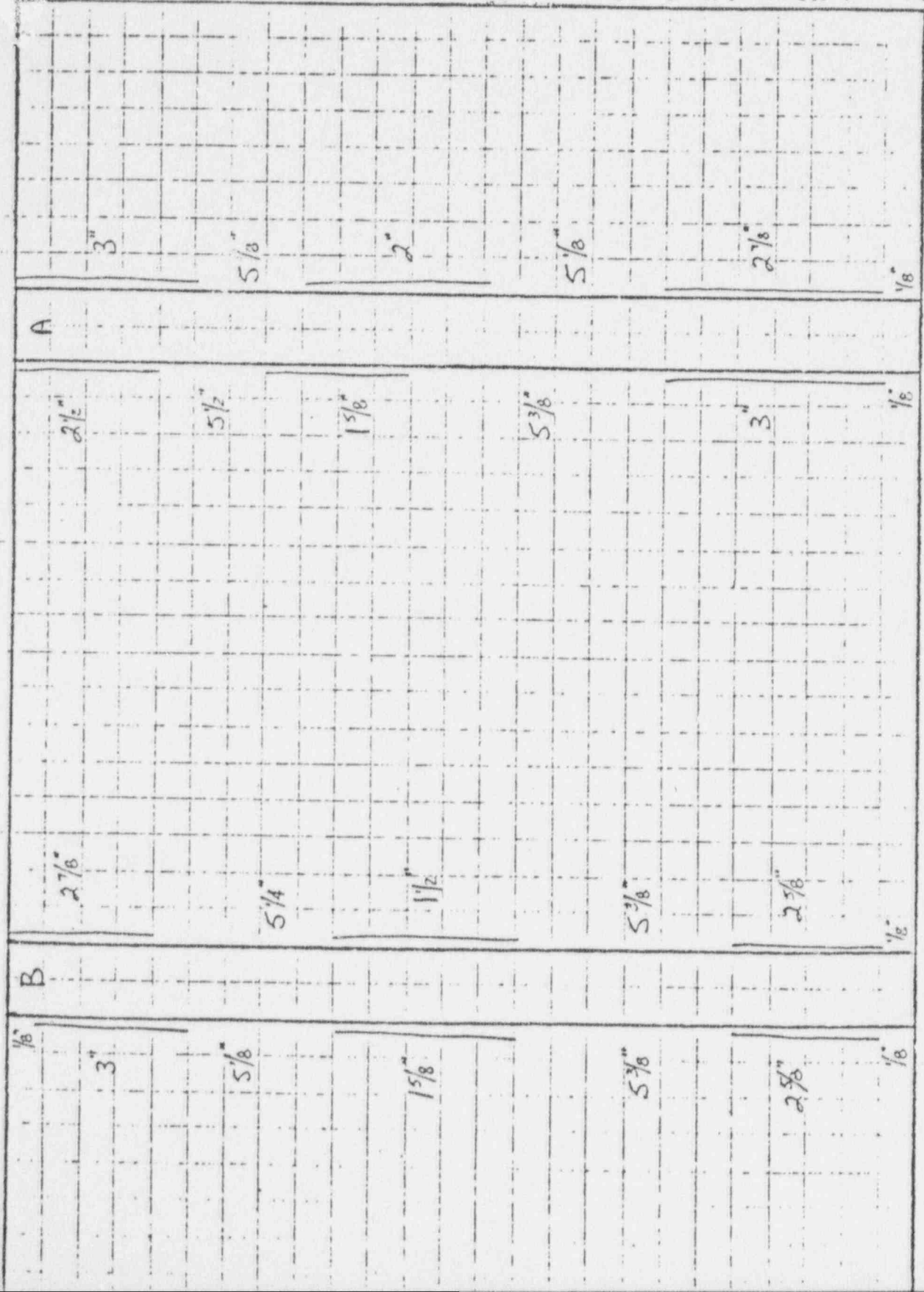
PREPARED BY

Asst. of Counsel
DATE 1/12/81

VERIFIED BY

Arnold A. Perry
DATE 1/12/81

PAGE 21



10'-0

STRAIGHT PAN SECTION

El. Aux 383'-0

Size 18"

Location, Description

1721D CIB

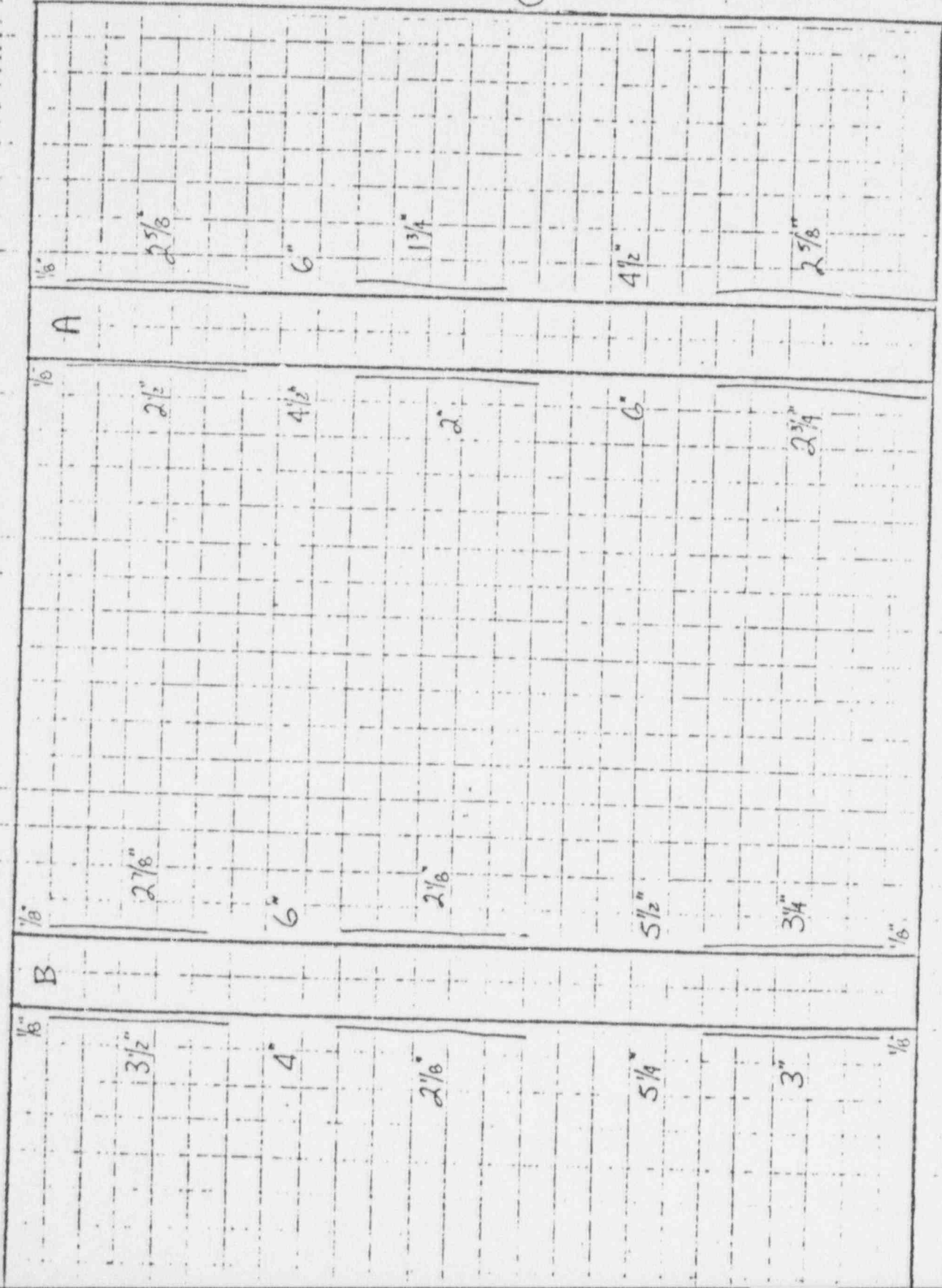
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Prepared By

Anthony Camacho
DATE 1/12/81

Verified By

Russell A. Per
DATE 11/12/81



10'-0"

STRAIGHT PMW SECTION

El. Aug 383'-0

Size 18"

Location, Descrip

1704H CIE

NW 1/4 of M+20

PREPARED BY

Anthony Cavender
DATE 1/12/81

VERIFIED BY

Donald A. King
DATE 1/12/81

PAGE 23

A	B	
2 1/2"	2 7/8"	3 3/8"
3 1/2"	9 1/4"	4 1/2"
1 7/8"	1 1/2"	2"
8 1/4"	7 5/8"	5"
2 1/4"	6 3/4"	1 1/2"
3 7/8"	2 7/8"	4 1/8"
3"	3 1/4"	3"
1/8"		

10'-0"

STRAIGHT PAW SECTION

El. Aux 383.0

Size 24

Location, Descrip

1720L C2B

NW of M+20

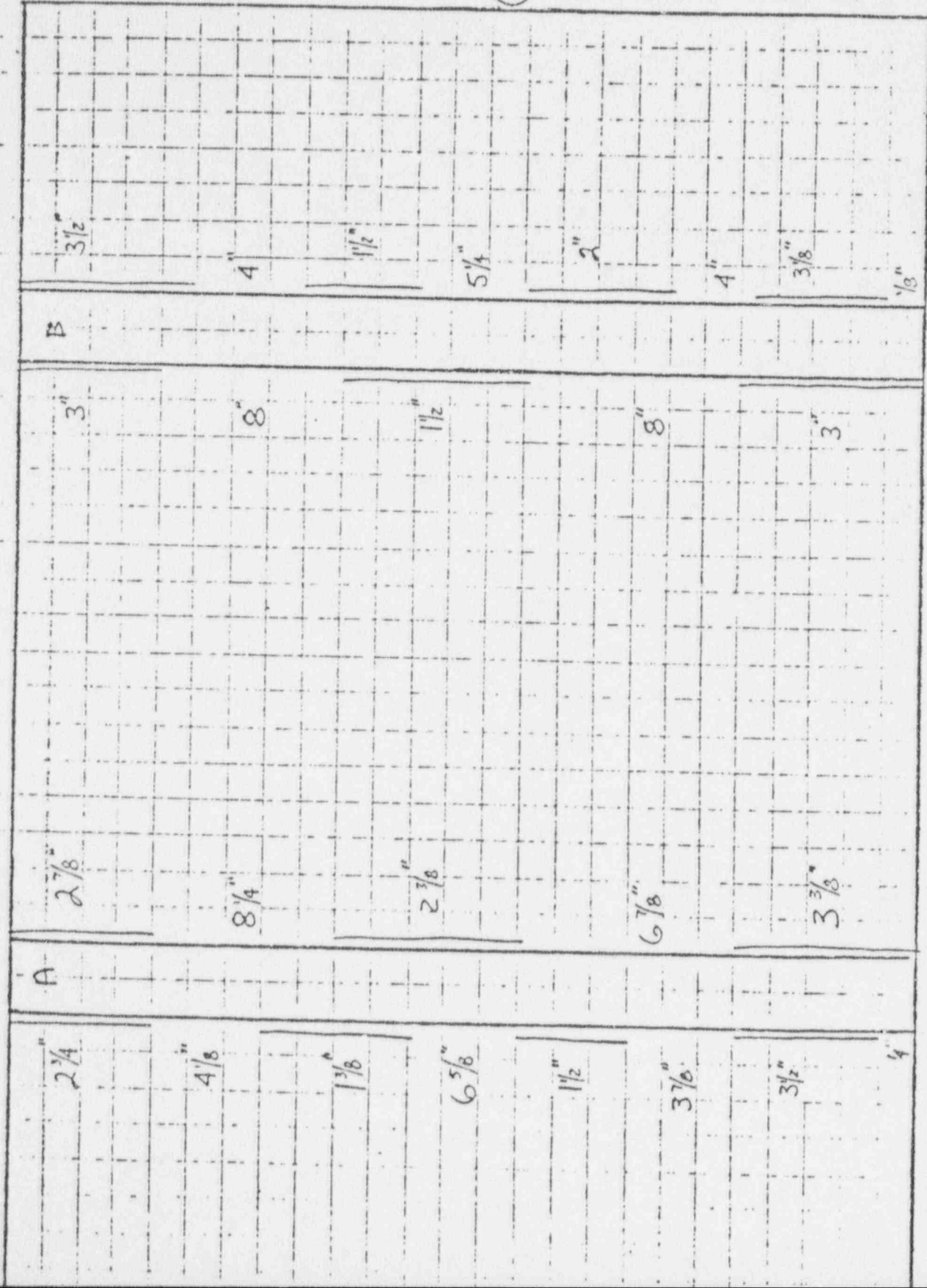
PERMANENT BY

Anthony Camacho
DATE 1/12/81

VERIFIED BY

R. M. A. Perry
DATE 1/12/81

PAGE 24



10'-0"

STRAIGHT PAW SECTION

El. Aux 383'-0

Size 24"

Location, Descrip

1721L C2B

NW of M +20

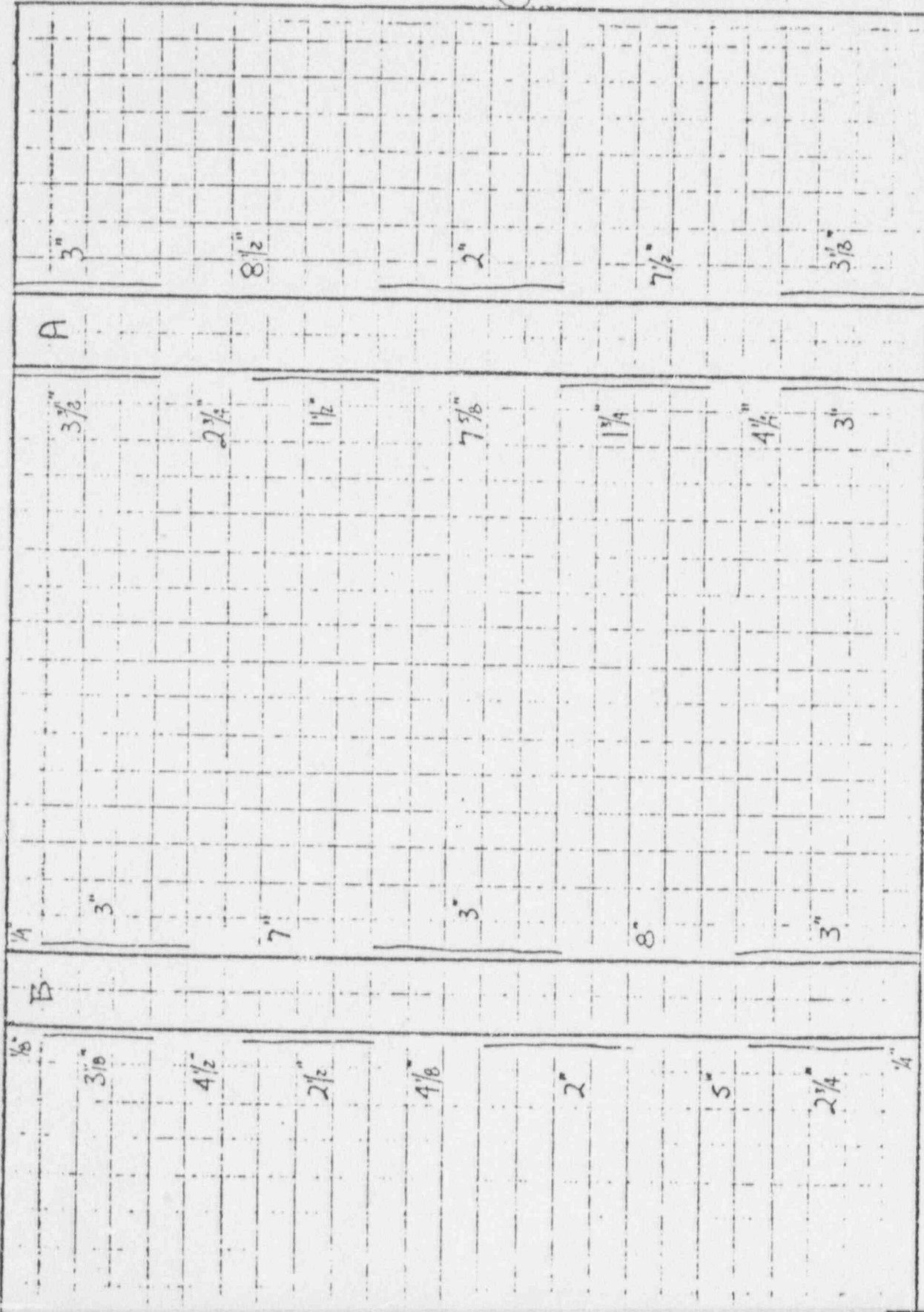
PREPARED BY

Geological Council
DATE 1/12/81

VERIFIED BY

Roll 9. Perry
DATE 1/12/81

Page 25



10'-0"

STRAIGHT PAW SECTION

El. Aux 401-0

Size 12"

Location, Descr:

1962K CAB

Q+17

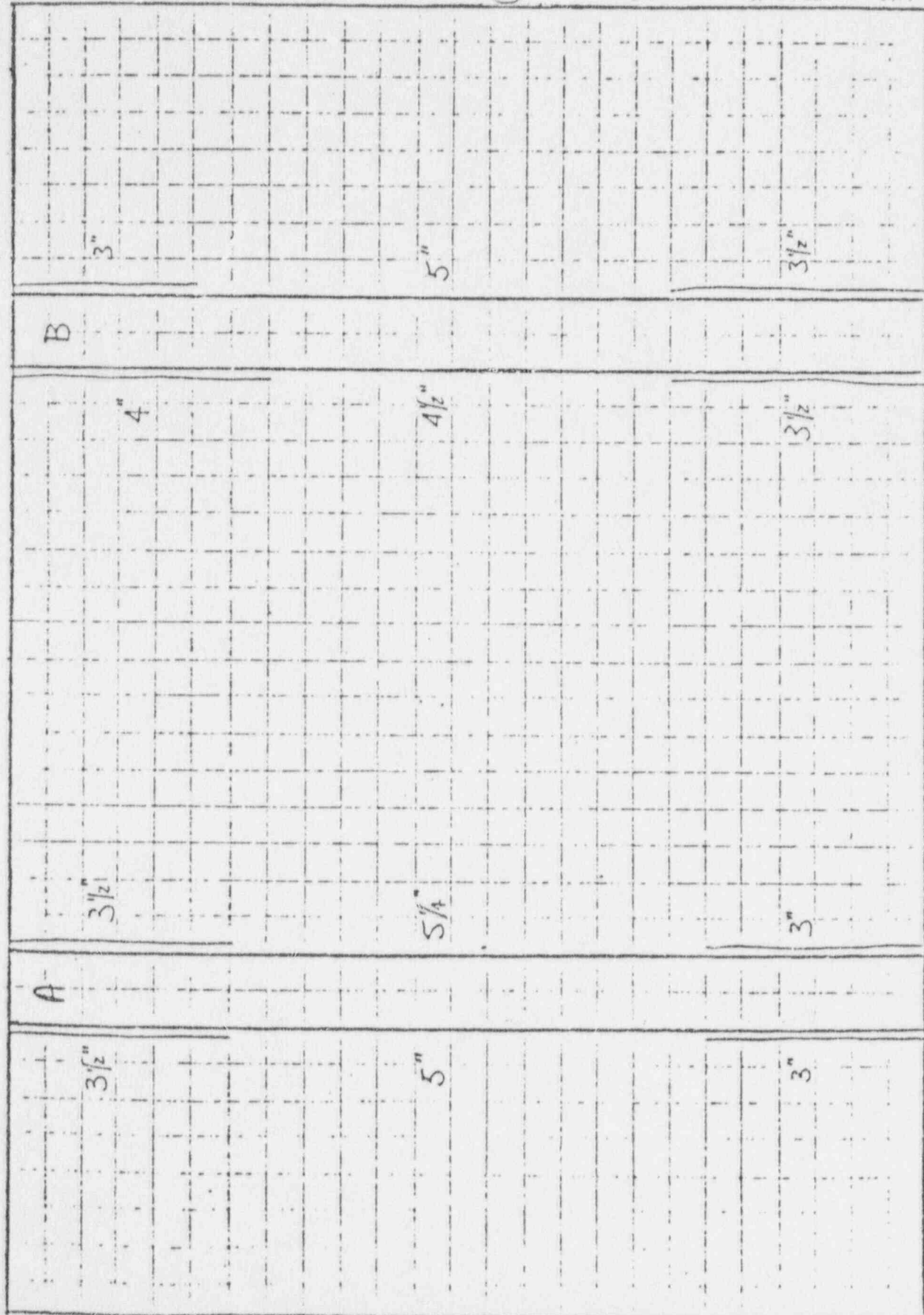
PERMITS BY

Anthony Corrales
DATE 1/12/81

VERIFIED BY

Ronald A. Perez
DATE 4/12/81

PAGE 26



10'-0"

STRAIGHT PMW SECTION

El. Aux 401-0

Size 12"

Location, Desc.

1862C P2B

Q+17

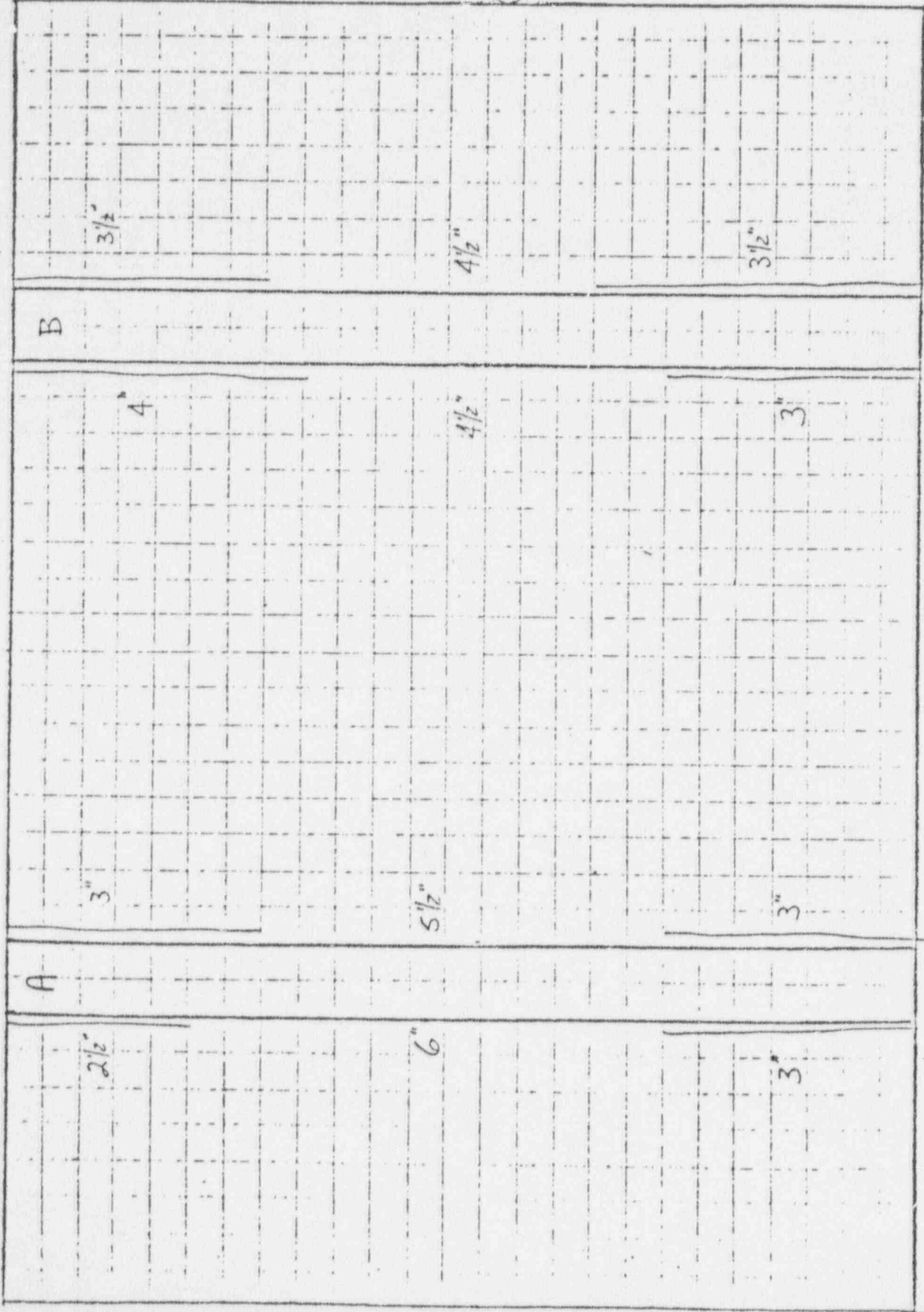
Prepared By

Anthony Caruso
DATE 1/12/81

Verified By

Amel A. Levy
DATE 1/12/81

Page 27



10'-0"

STRAIGHT PAW SECTION

El Aux 401-0
(414-0)

Size 18

Location, Desig.

1868F PIB

12.45

PREPARED BY

W. E. L.

DATE 5-12-81

VERIFIED BY

Ronald A. Poy

DATE 11/6/81

PAGE 28

B	A	A
3	4 7/8	4 3/4
5 1/4	2 1/2	2
1 7/8	3 3/4	4 1/4
3 1/2		
4	3 1/8	3 5/8

10'-0"

STRAIGHT PAV SECTION

El Aux 401'-0

Size 18"

Location, Descrip

1909F C2E

10'-0 F of P+15

Prepared By

DATE

Verified By

Russell A. Perry

DATE 1/14/81

PAGE 29

B		A	
2 1/2"	2 5/8"	2"	2 1/2"
5"	5"	5"	6"
2"	2"	1 1/2"	1"
5 1/2"	5 1/2"	7"	5"
3"	3"	2 1/2"	2 1/2"

10'-0

STRAIGHT PAW SECTION

El. Aux 40'-0

Size 24"

Location, Descri

1953C P2B

P417

PREPARED BY

Calvin Condo
DATE 1/12/81

VERIFIED BY

Ronald A. Perry
DATE 1/14/81

PAGE 30

2 1/2"	2 1/2"	3 1/2"	3 7/8"
5"	3"	3 1/4"	3"
1 1/2"	1 1/2"	2 1/8"	2"
1 1/2"	3 1/8"	2 7/8"	6 1/4"
6 5/8"	2"	2 1/4"	2"
1 3/4"	3"	2 7/8"	4 1/2"
3 5/8"	2 1/8"	3"	3"
3"	4"	1 1/8"	3"
	2 1/2"	3 5/8"	
	1/8"		

10'-0

STRAIGHT PAW SECTION

El. Aux 401-0

Size 24"

Location, Descrip

1953K C2B

P+17

Prepared By

Anthony Saville
DATE 1/12/81

Verified By

Ronald A. Pugh
DATE 1/14/81

Page 31

3"	3"	2"
6"	2 1/4"	3"
2"	1 1/2"	2"
4"	4 1/2"	2 1/2"
2"	1"	2"
4 1/2"	3 7/8"	2"
3"	1"	2"
3"	3"	3"
	3 3/8"	3"
	1/8"	

10'-0"

STRAIGHT P.W. SECTION

El. Aux 426'-0

Size 12"

Location, Descrip

11340H KIB

P+15

PREPARED BY

Anthony Canale

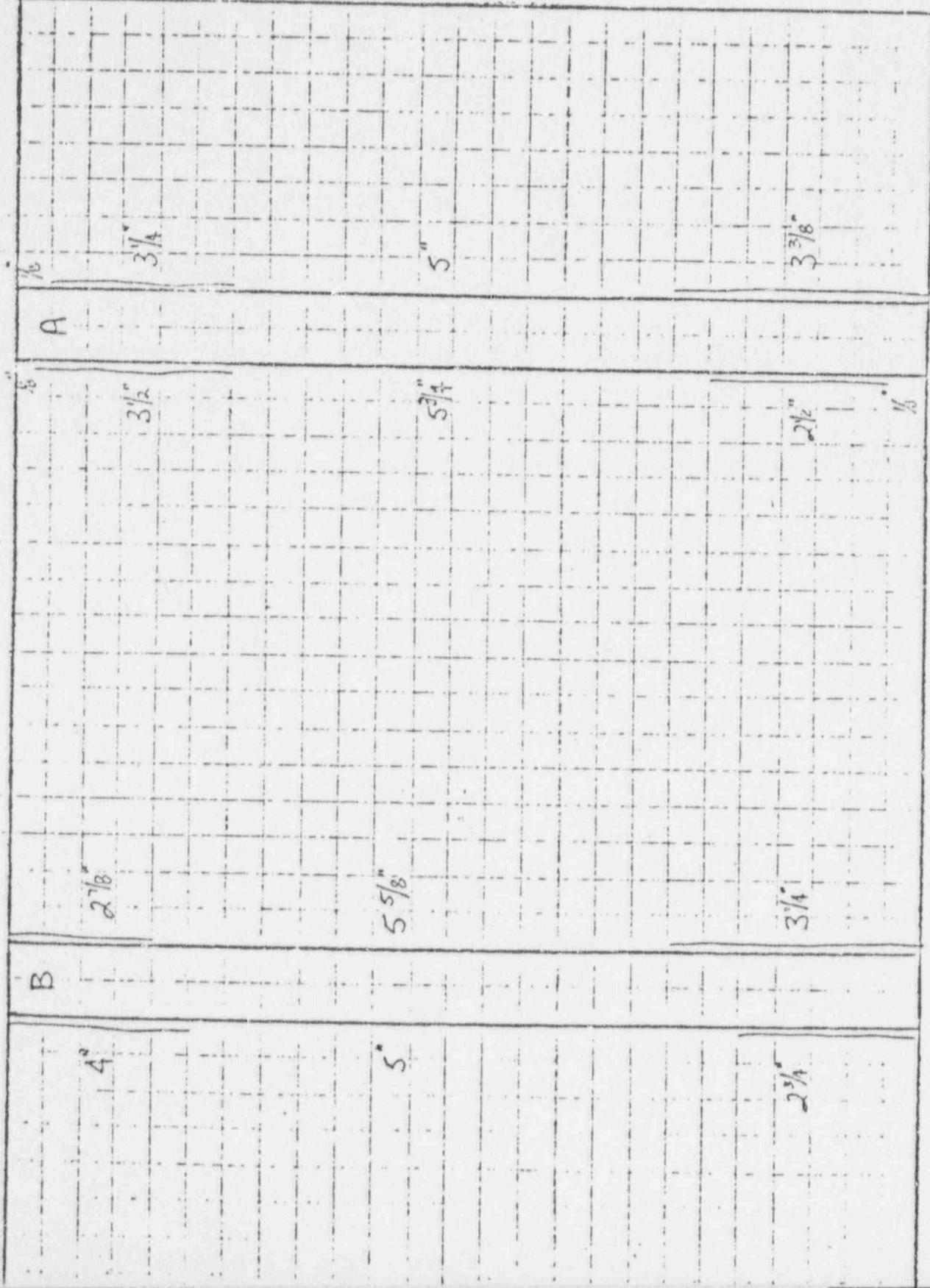
DATE 11/12/81

VERIFIED BY

Paula P. P.

DATE 11/12/81

Page 3.2



10'-0

STRAIGHT P_{AN} SECTION

El. Aug 426'-0

Size 12"

Location, Descrip

11336H KIB

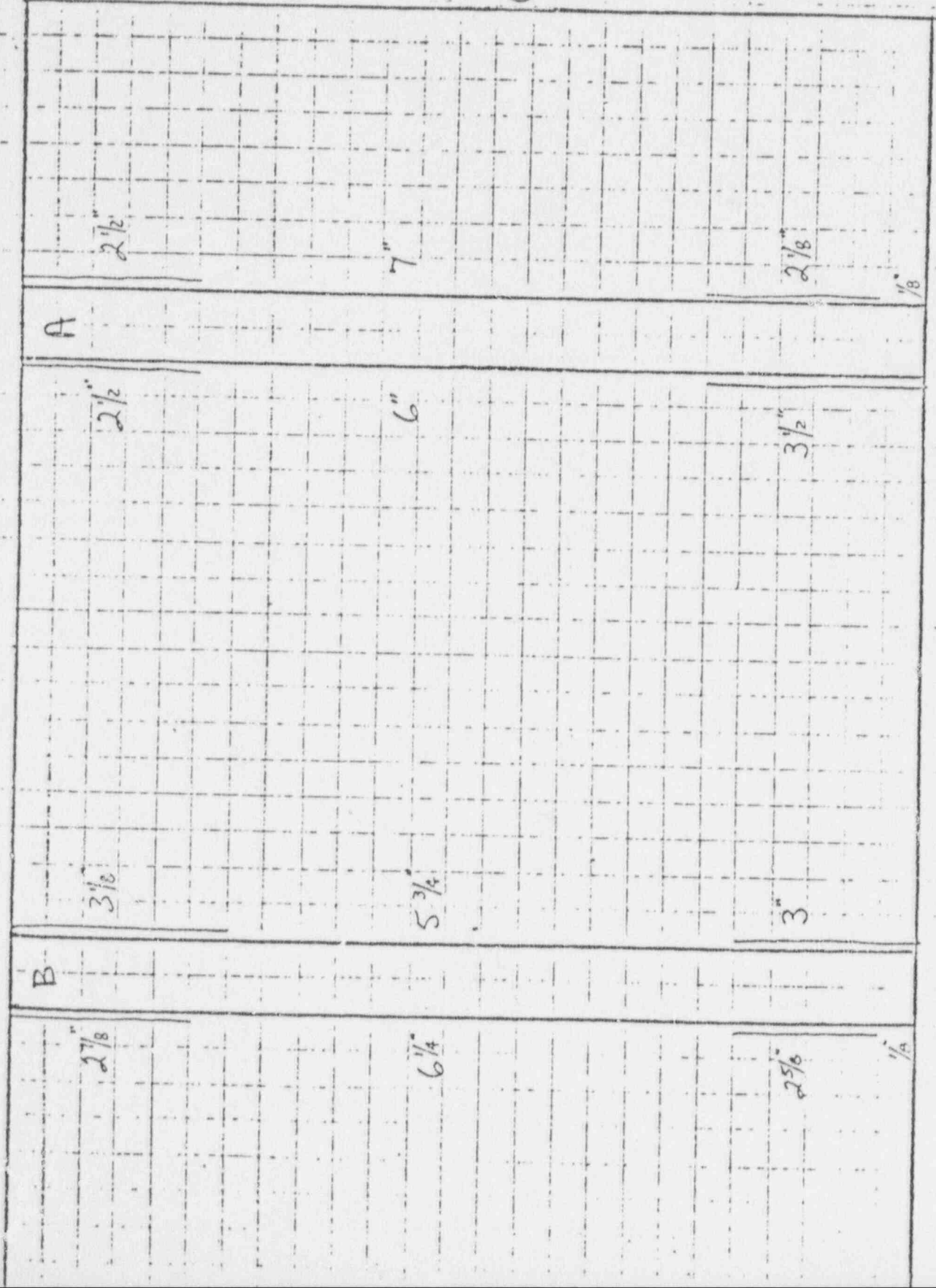
P+15

PREPARED BY

Geoffrey Conner
DATE 1/12/81

VERIFIED BY

Russell A. Perry
DATE 1/12/81



10'-0"

STRAIGHT PMW SECTION

El. Aux 426-D

Size 18"

Location, Description

21337F CIB

W face of N+25

PERMANENT RV

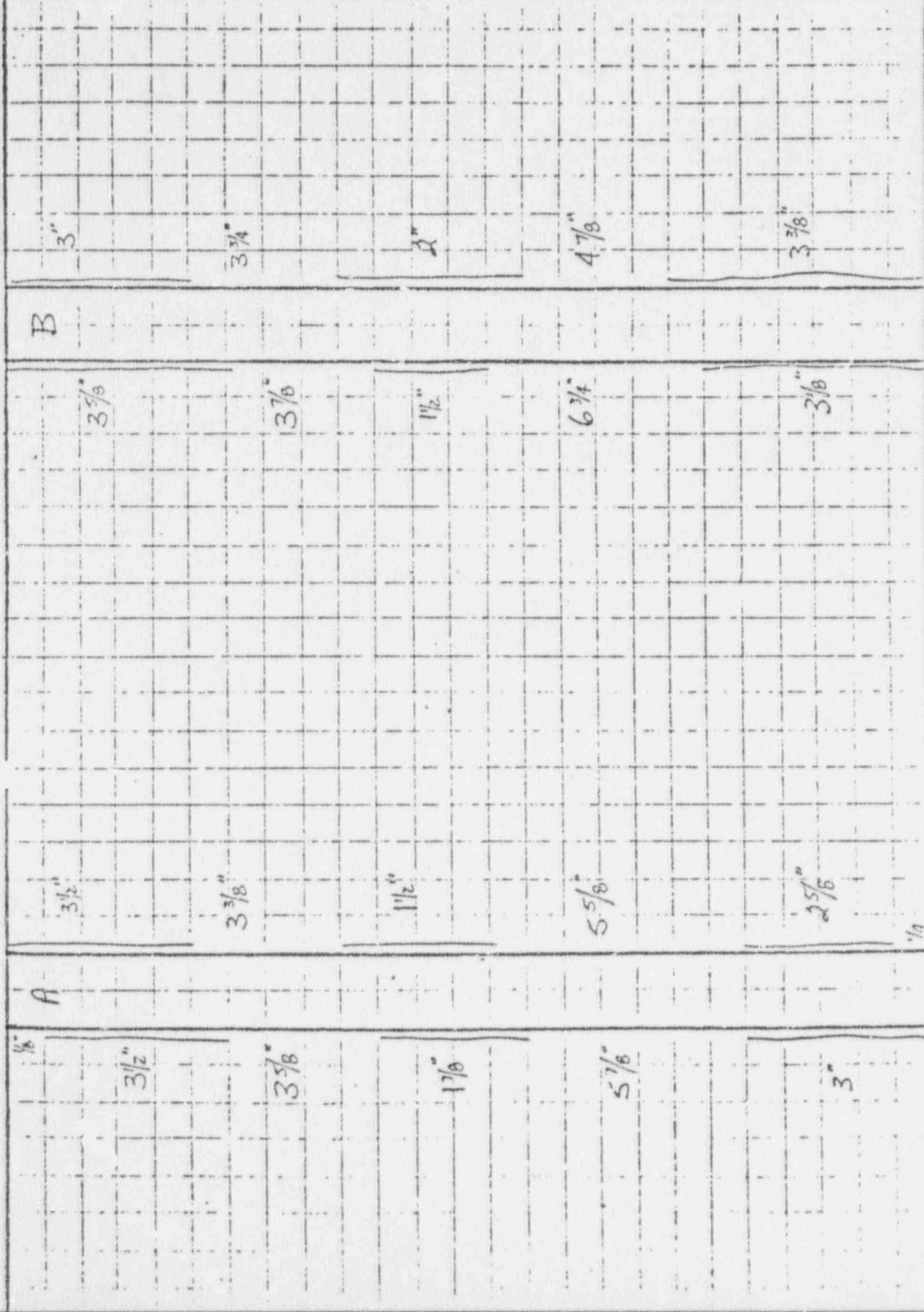
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DATE 1/12/81

VERIFIED BY

Rmell A. Perry

DATE 11/6/81

Page 34



10'-0"

STRAIGHT P.W. SECTION

El. Aux 425.0

Size 1B

Location, Desc:

21332F CIB

W face of N+2

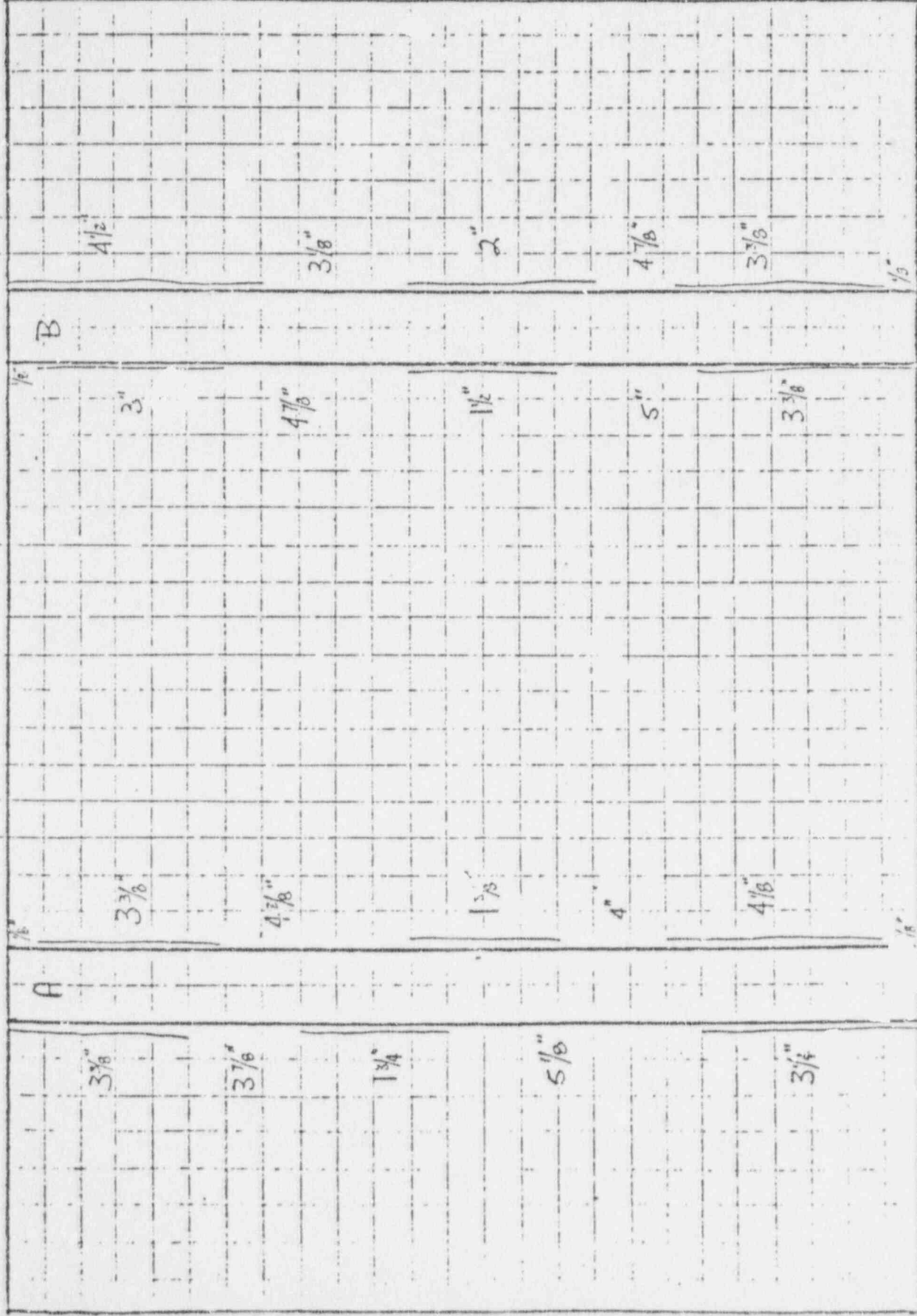
Prepared By

Asst. Prof. Conners
DATE 1/12/81

Verified By

Quail A. Pearson
DATE 1/16/81

PAGE 35



STRAIGHT P.W. SECTION

El. 426'-0" Apx

SE 24"

Location, Descrip

11338B CIE

1415

Prepared By

Anthony Canale

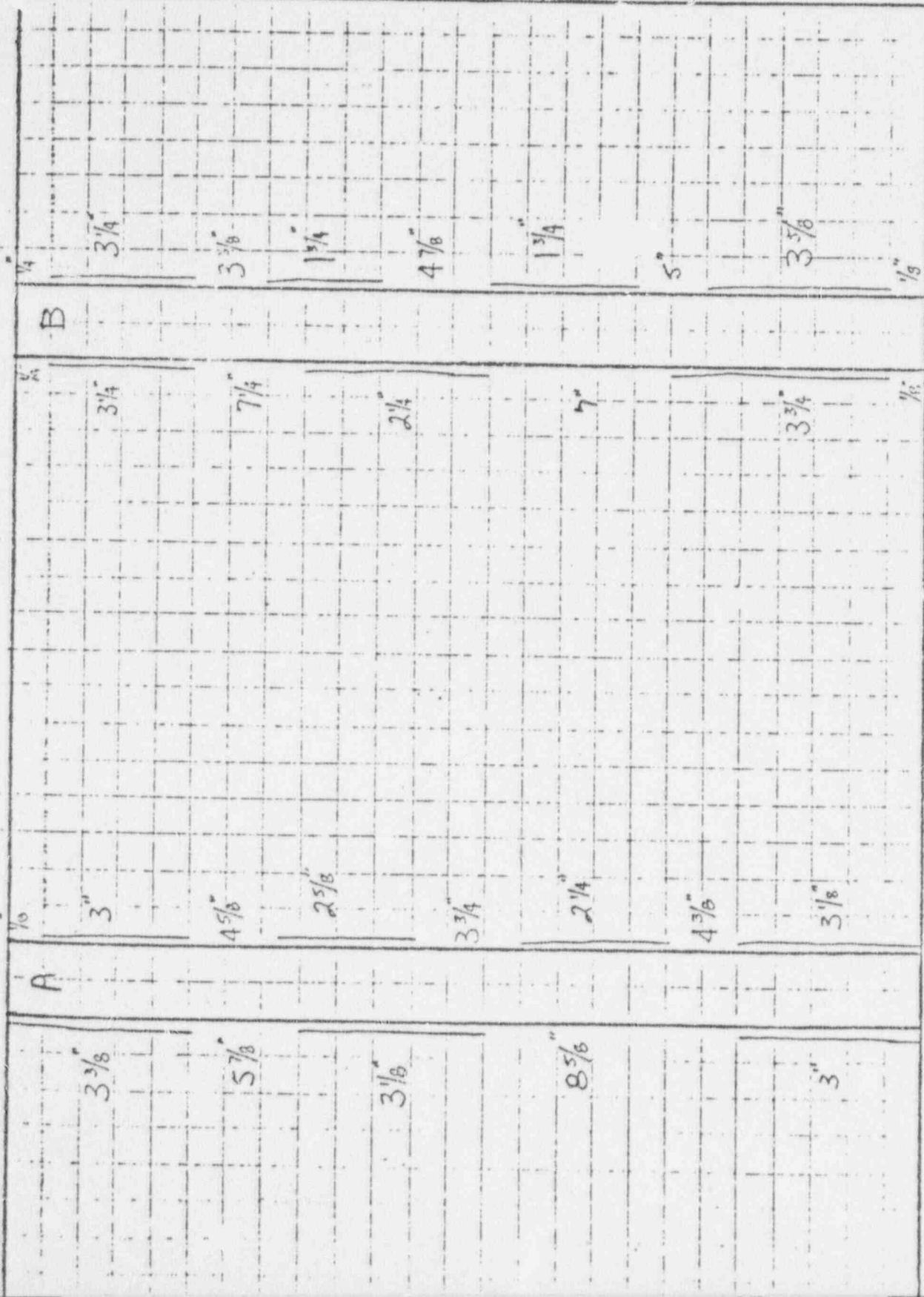
DATE 1/12/81

Verified By

Rudolf A. Perry

DATE 1/12/81

Page 36



10'-0"

STRAIGHT PAW SECTION

El Aux 426-0

Size 24"

Location, Descrip

11336B CIE

P+15

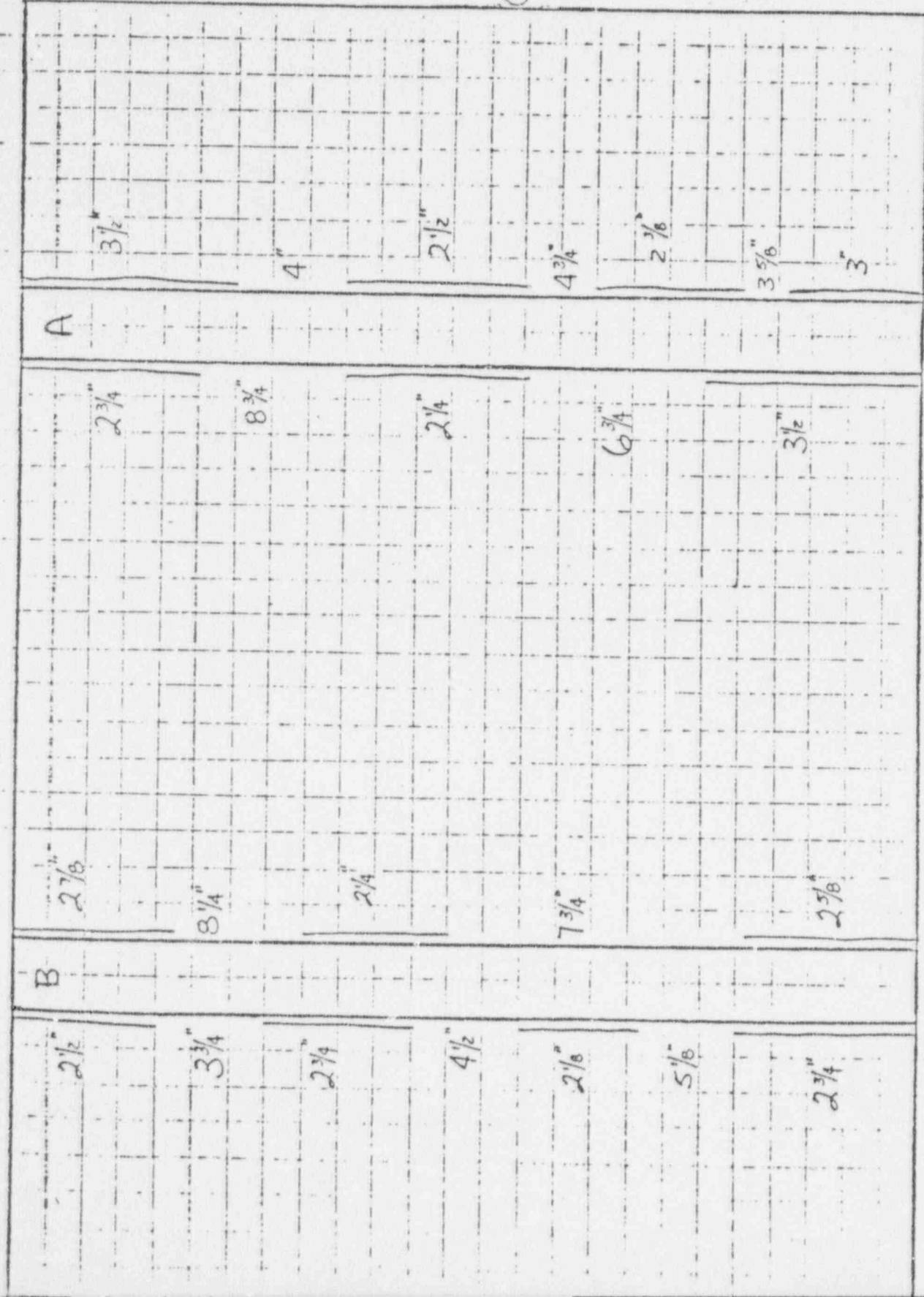
PREPARED BY

Robert J. Conner
DATE 1/12/81

VERIFIED BY

Ronald A. Perry
DATE 1/12/81

PAGE 31



10'-0"

STRAIGHT P.W. SECTION

El. Aux 439'-0"

Size 12"

Location, Descrip

21786M K2E

P+20

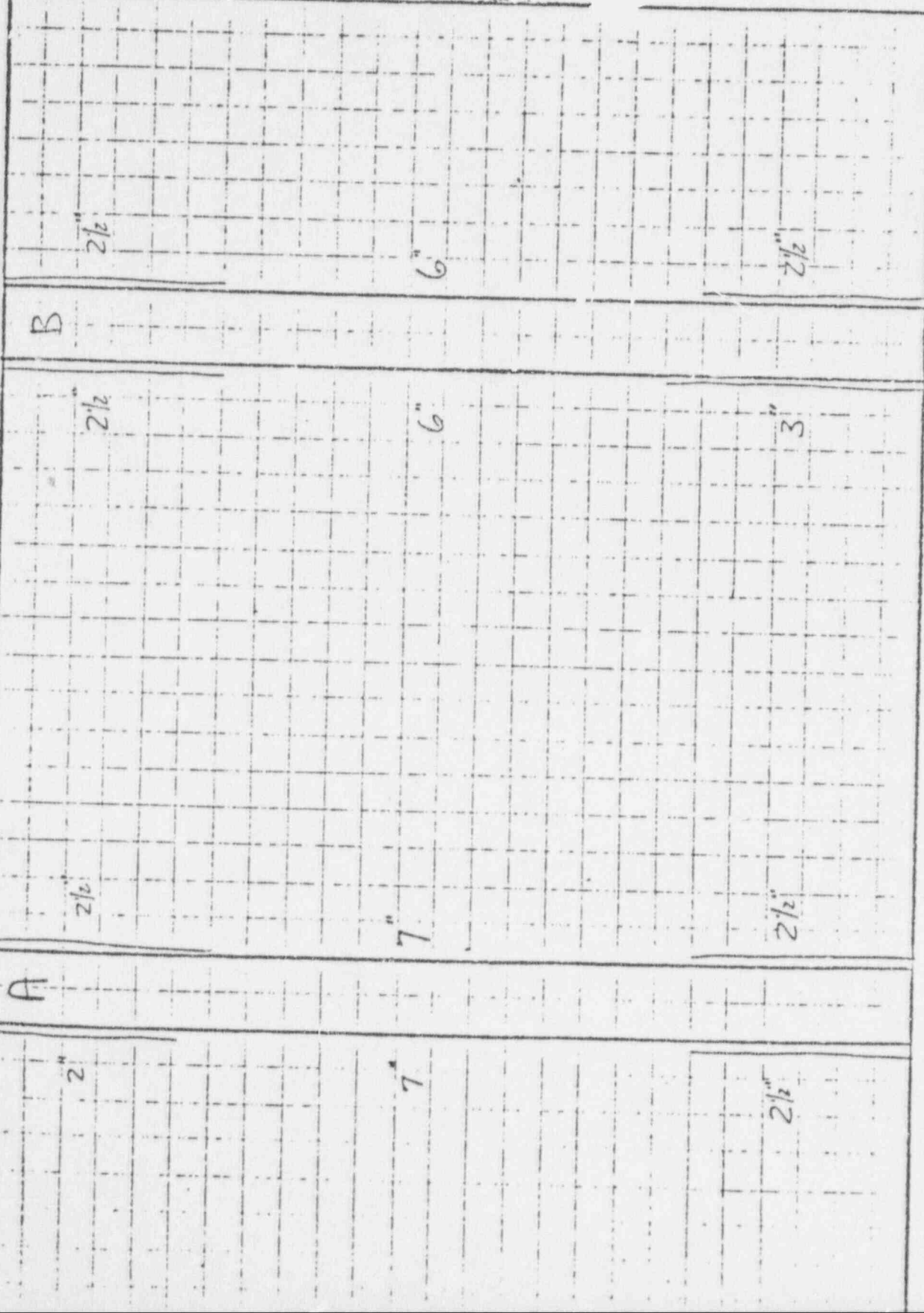
PERMANENT BY

Continued from
DATE 1/12/81

VERIFIED BY

Paul A. Perry
DATE 1/16/81

PAGE 38



STRAIGHT P/W SECTION

El. Aux 439'-0

Size 12"

Location, Descrip

21819J C2E

P. 27

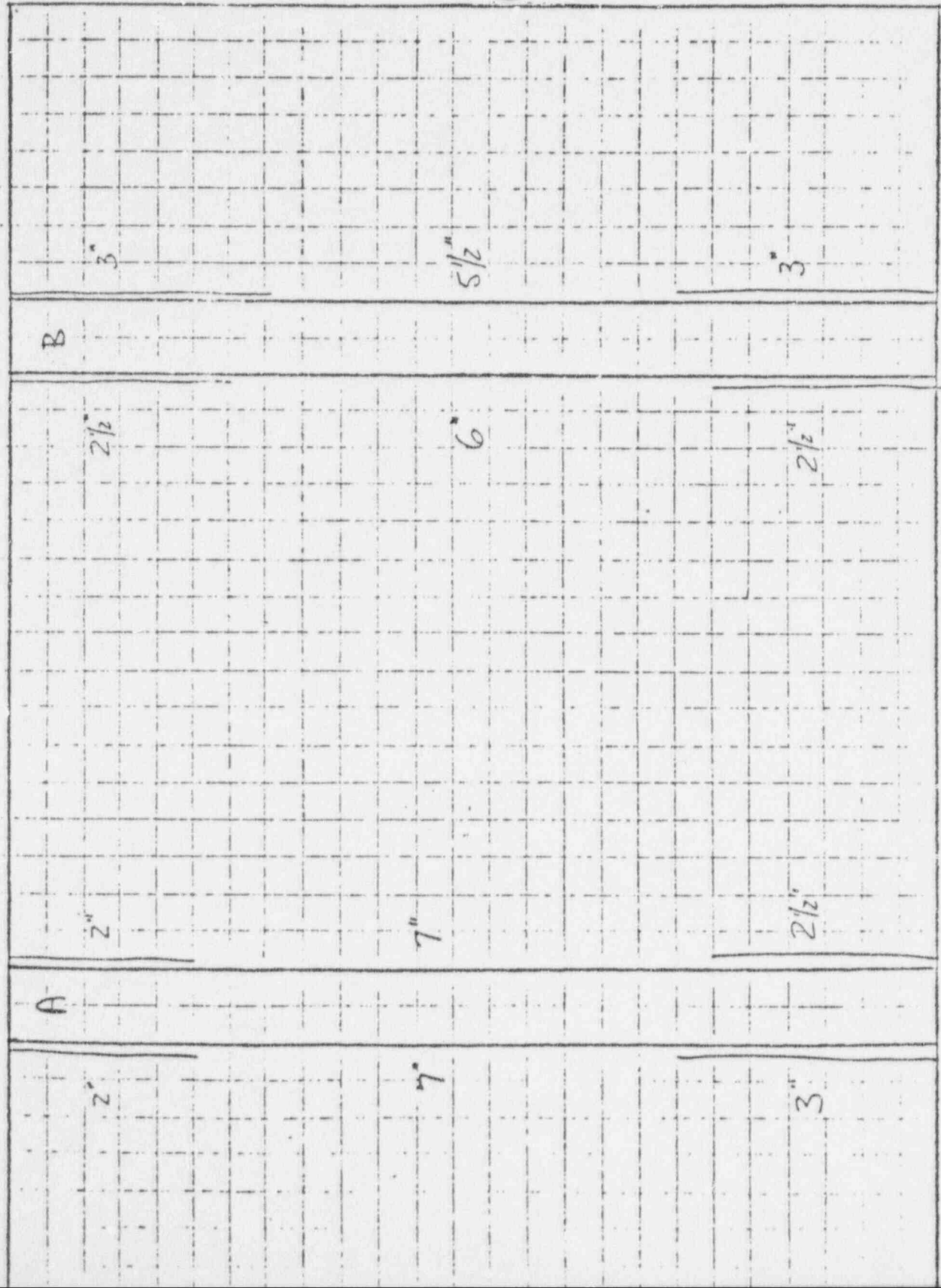
PREPARED BY

Anthony Cramer
DATE 1/12/81

VERIFIED BY

Paul A. King
DATE 1/16/81

PAGE 3/1



STRAIGHT FNU SECTION

El. Aux. 439'-0"

Size 18"

Location, Descrip

21606K C2E

M+26

PERMANENT BY

C. E. H. C. C. C. C.

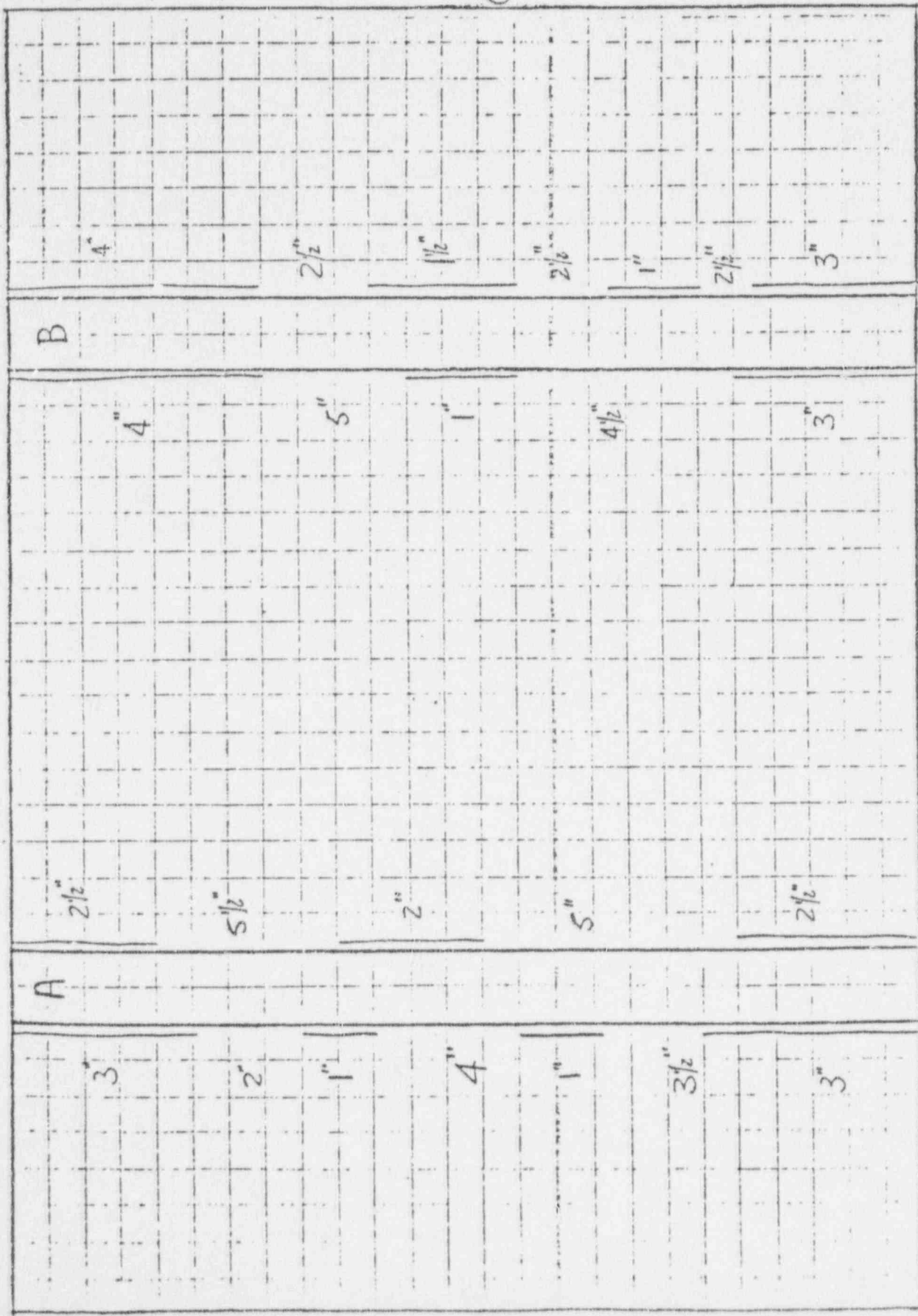
DATE 1/12/81

VERIFIED BY

Paul A. P. P.

DATE 1/16/81

PAGE 40



10'-0"

STRAIGHT P.W. SECTION

El. Aux 439'-0

Size 18"

Location, Descrip

21606J C2E

M126

PERFORMED BY

Anthony Conrado
DATE 1/12/81

VERIFIED BY

Rudolph
DATE 11/16/81

PAGE 41

B	A		
6 1/2"	3"	4"	3"
2 1/2"	4 1/2"	4"	4 1/2"
2 1/2"	3"	2"	1 1/2"
3 1/2"	5"	4"	3"
3"	2 1/2"	3"	2"

10'-0

STRAIGHT PAW SECTION

El Aux 439.0

Size 24

Location, Desc

21669A C2B

M+24

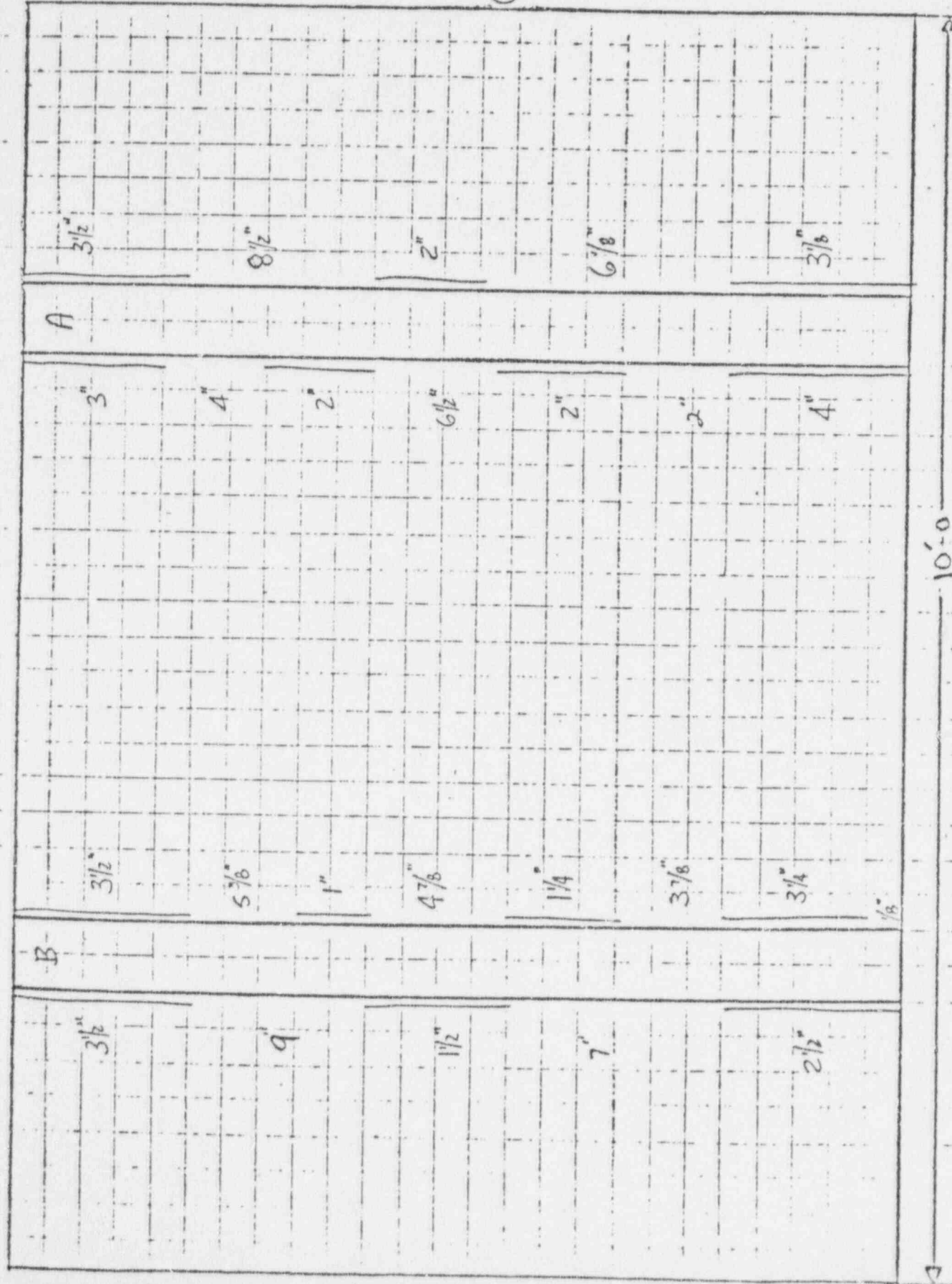
PREPARED BY

Anthony Canale
DATE 1/12/81

VERIFIED BY

Bradley
DATE 1/16/81

PAGE 42



STRAIGHT PAN SECTION

El. Aux 439'-0

Size 24"

Location, Descrip

21689A C2B

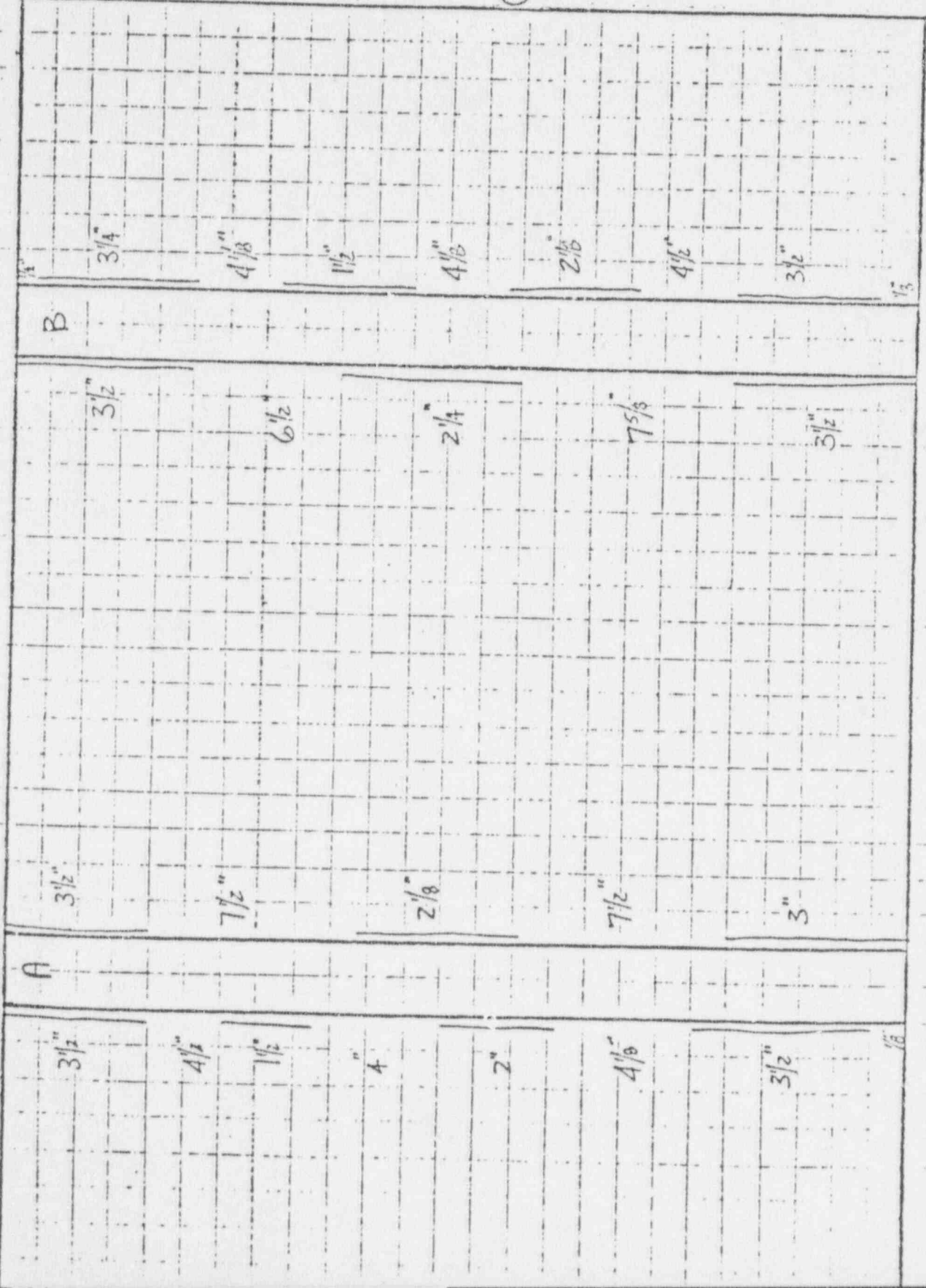
Plat 24

PREPARED BY

Gettysburg College
DATE 1/12/81

VERIFIED BY

Donald A. Pies
DATE 1/16/81



10'-0

STRAIGHT P.W. SECTION

El. Aux 439'-0

Size 24"

Location, Descrip

21258T P1B

L-50

PREPARED BY

Richard G. Peay

DATE 1/12/81

UNITED BY

Richard G. Peay

DATE 1/16/81

Page 11

A	B	A	B
3	3 7/8	3	3 7/8
6 1/8	9 1/8	7 5/8	4
1 5/8	1 1/2	2"	1 1/4
2 3/4	7 3/8	7 5/8	4 5/8
2 1/8	2 7/8	2 7/8	1 1/4
4 3/4			4 1/2
3			2 1/2

10'0

STRAIGHT PAN SECTION

El. Aux 463-5

Size 12"

Location, Descrip

21890G KIE

P+25

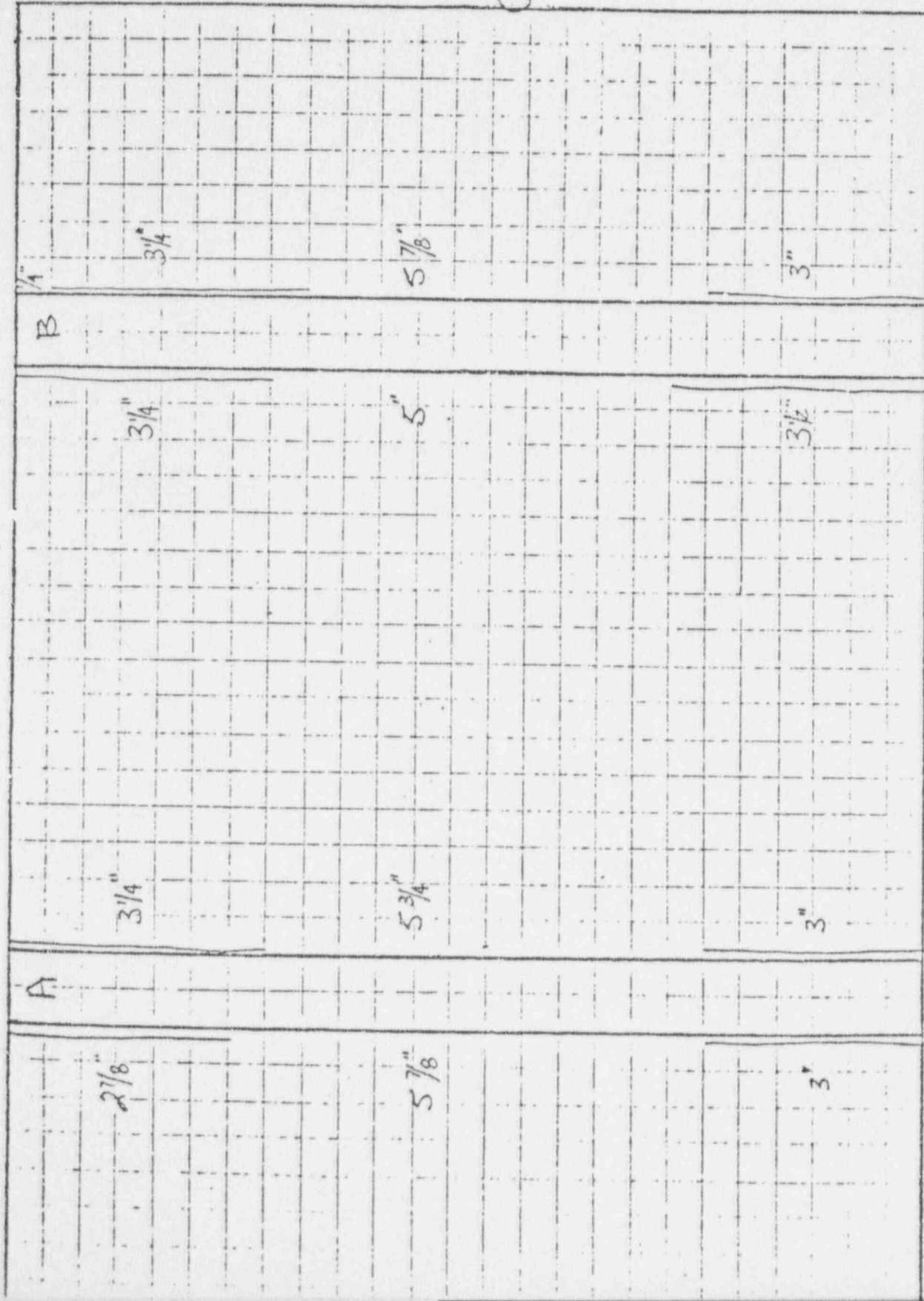
PREPARED BY

Ruthy J. Curren
DATE 1/12/81

VERIFIED BY

Ronald A. Perry
DATE 1/16/81

PAGE 15



10'-0"

STRAIGHT PAW SECTION

El. Aux 463.5

Size 12"

Location, Descrip

11890 F KIR

N+12

Prepared By

Anthony G. Gaudin

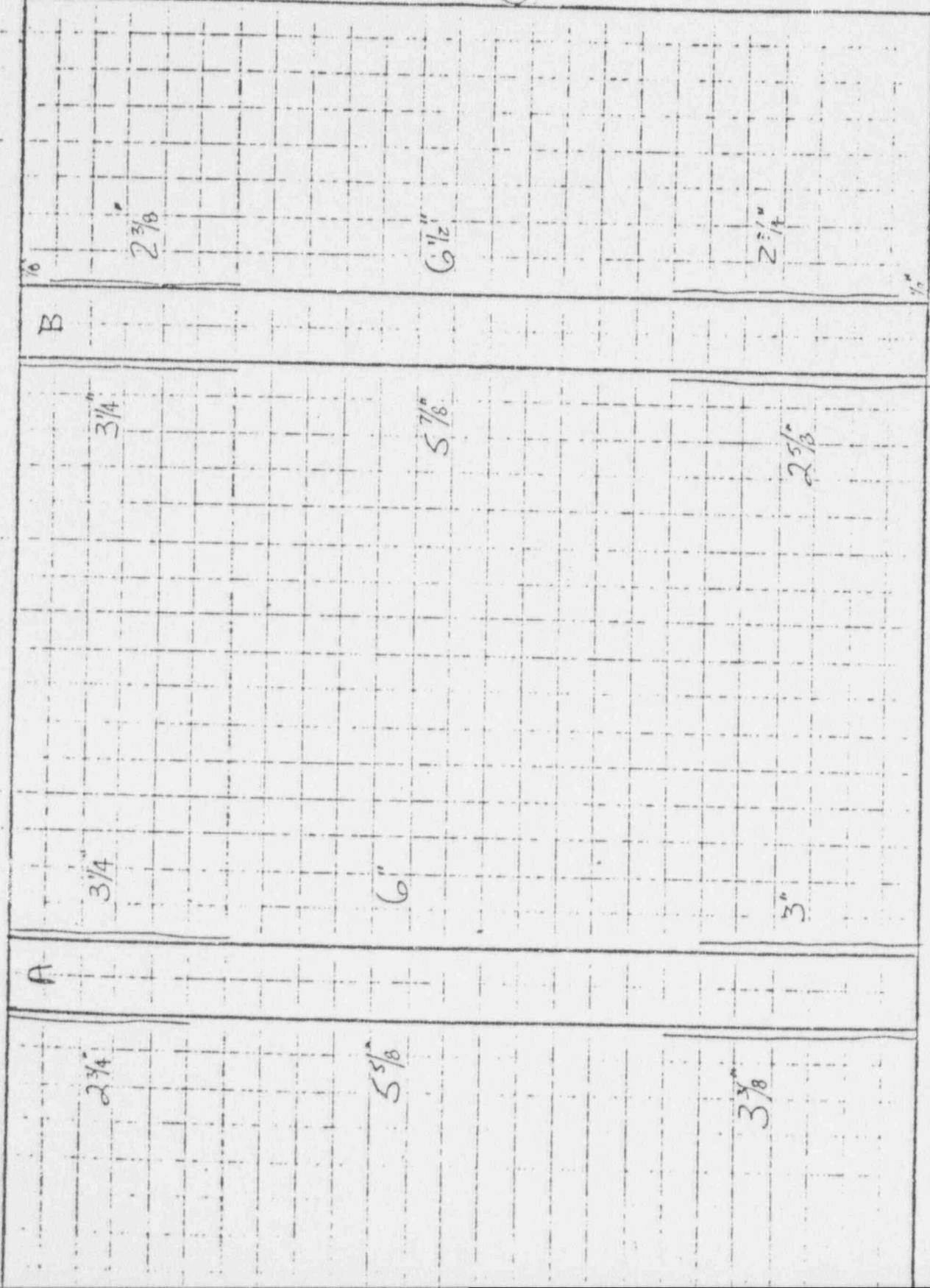
DATE 1/12/81

Verified By

R. A. P. J.

DATE 1/16/81

Page 16



STRAIGHT P.W. SECTION

El. Aux 463'-5"

Size 24"

Location, Descrip

22003C CIE

P+25

PREPARED BY

Robert J. Conner
DATE 1/12/81

VERIFIED BY

Donald A. Fay
DATE 1/15/81

PAGE 17

A		B	
1/8"	3/8"	3/4"	
2 1/4"			
8 5/8"	3 1/2"	9"	
2 1/8"	2 1/4"	2"	
7 1/2"	5"	5 1/2"	
	2"		
	4"		
3"	3 1/2"	4"	
1/8"			

10'-0"

STRAIGHT PAW SECTION

El. Aux 463'-5"

Size 24"

Location, Descrip.

21990B KIB

M+21

PREPARED BY

Anthony Caruso

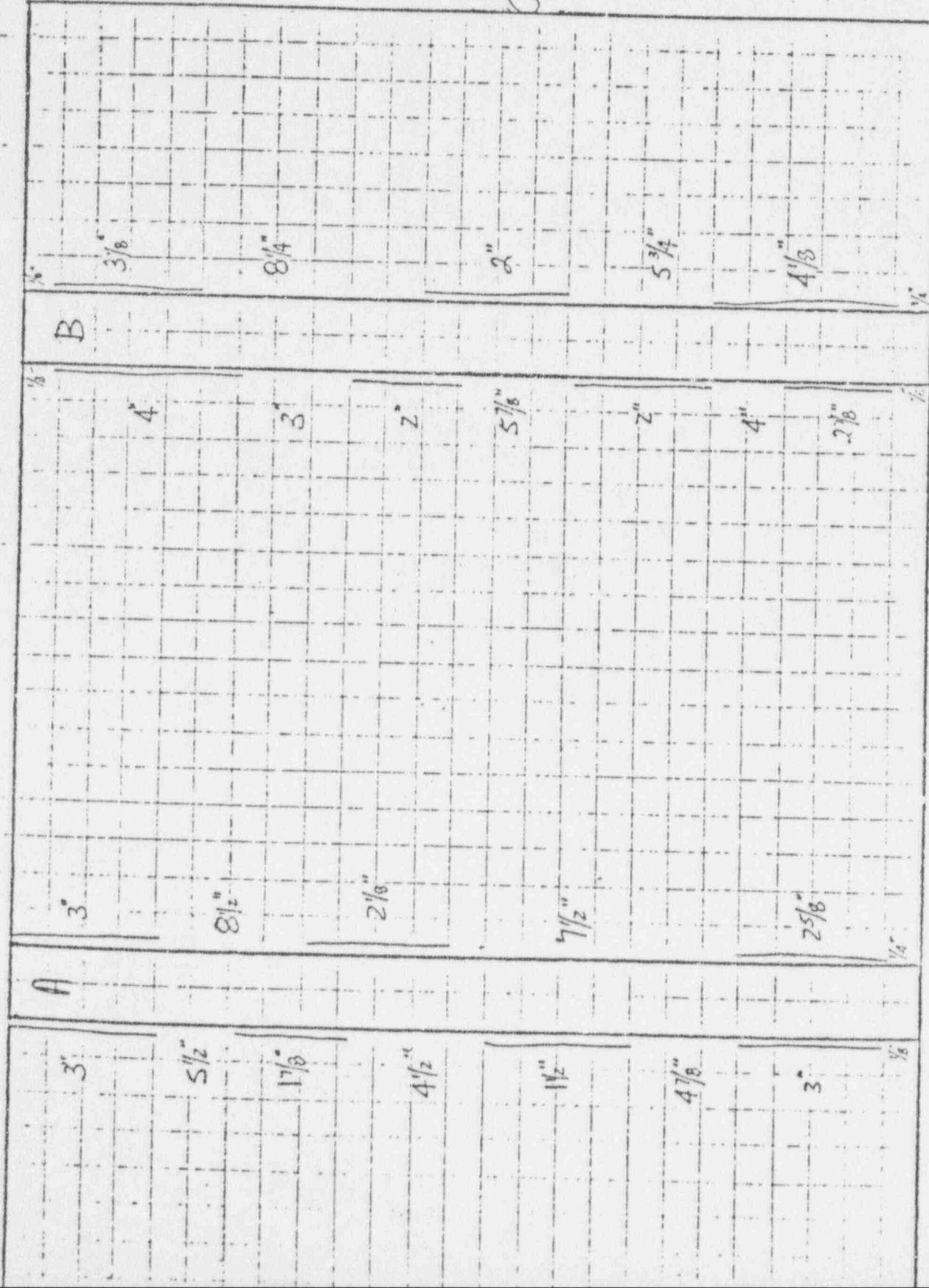
DATE 1/12/81

VERIFIED BY

Brilla, P.

DATE 1/16/81

PAGE 48



STRAIGHT FAN SECTION

El. Cont 1 412'-0"

Size 12"

Location, Descrip.

1350D V2B

P-18

PREPARED BY

Ashten G. Conner

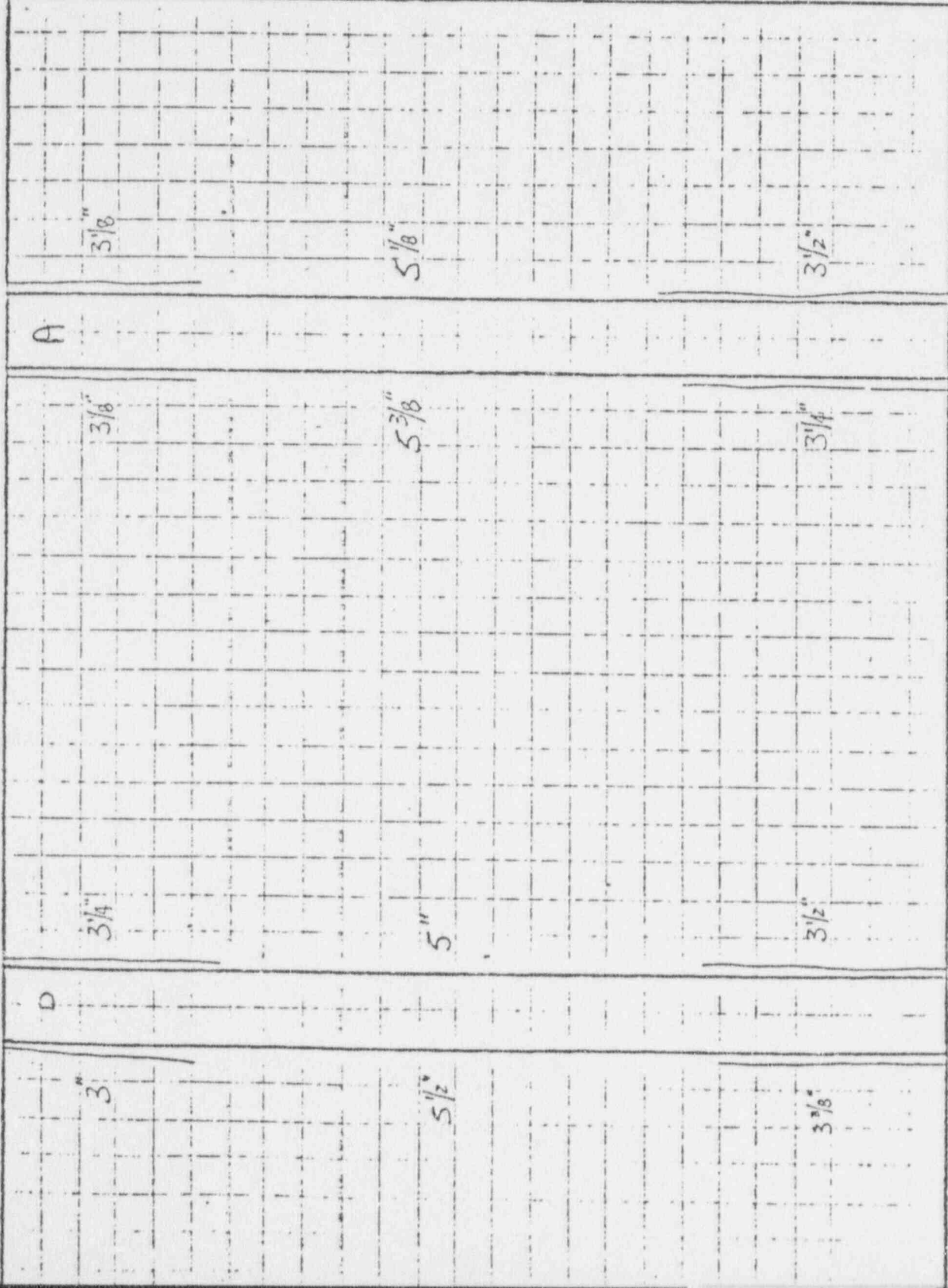
DATE 1/12/81

VERIFIED BY

Ronald G. Perry

DATE 1/16/81

Page 49



STRAIGHT PMW SECTION

El Cont'r 412'-0

Size 12"

Location, Descrip

1347J C13

P.1 at SSW

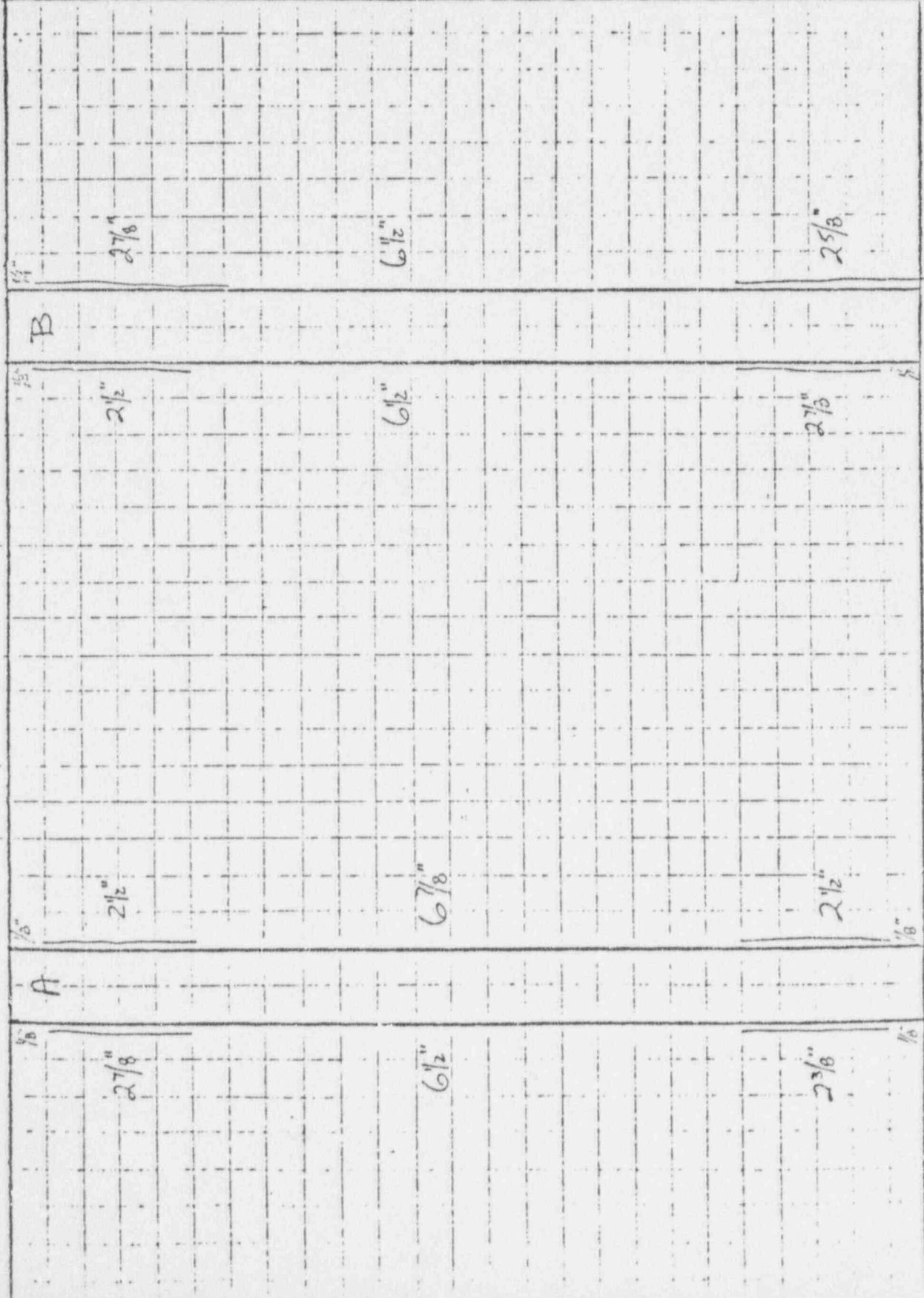
Prepared By

Jeffrey Combs
DATE 1/12/01

Verified By

Ronald G. Lee
DATE 1/16/01

PAGE 50



10'-0

STRAIGHT P.W. SECTION

El. Cont'l 412.0

Size 12"

Location, Descrip

Next to B47J CIB

R-1 at SSW

PREPARED BY

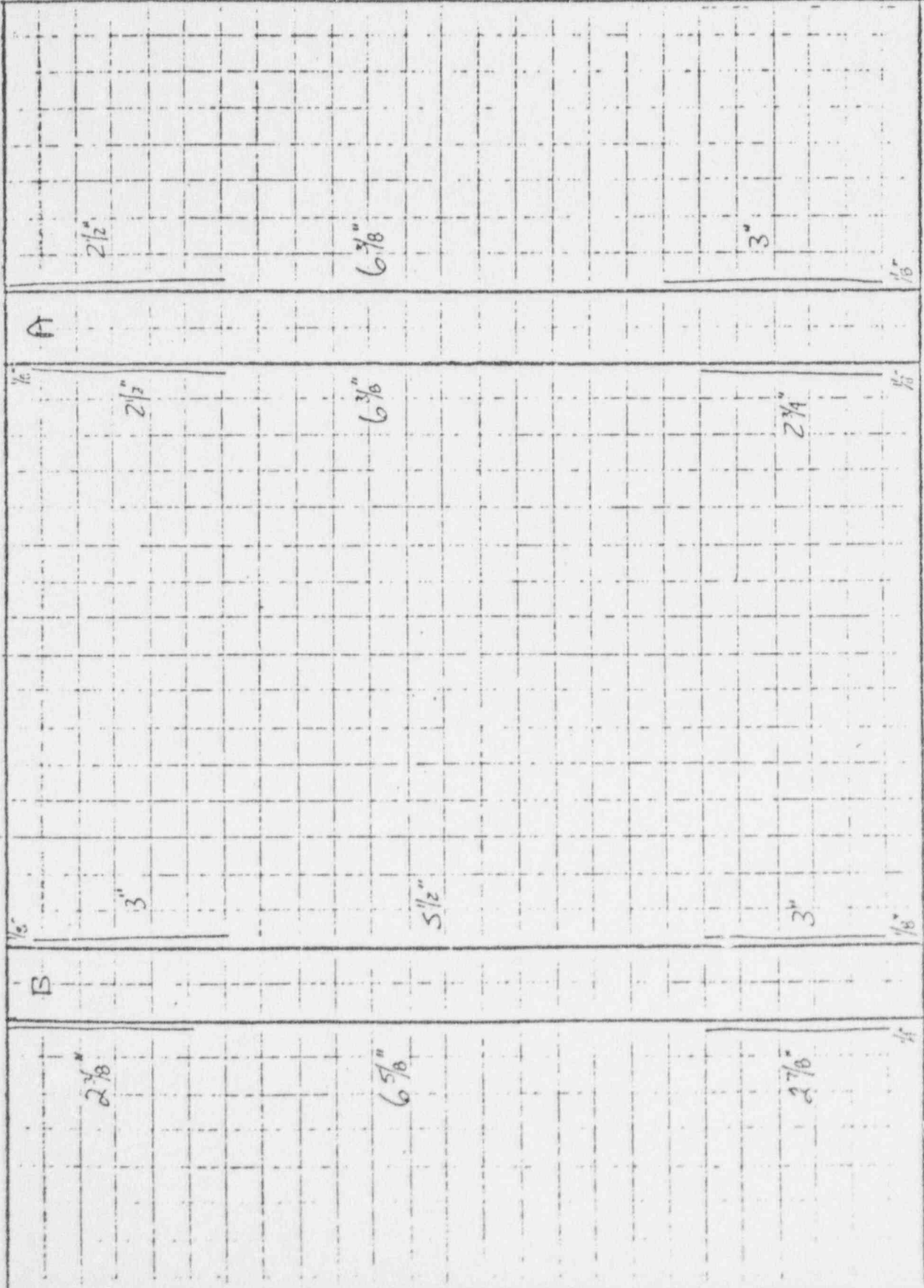
W.E.L.

DATE 11/13/81

VERIFIED BY

Rudella, Peter

DATE 11/18/81



10'-0"

STRAIGHT PAW SECTION

El. Cont 1 412'-0"

Size 12"

Location, Desc.

1370M CIE

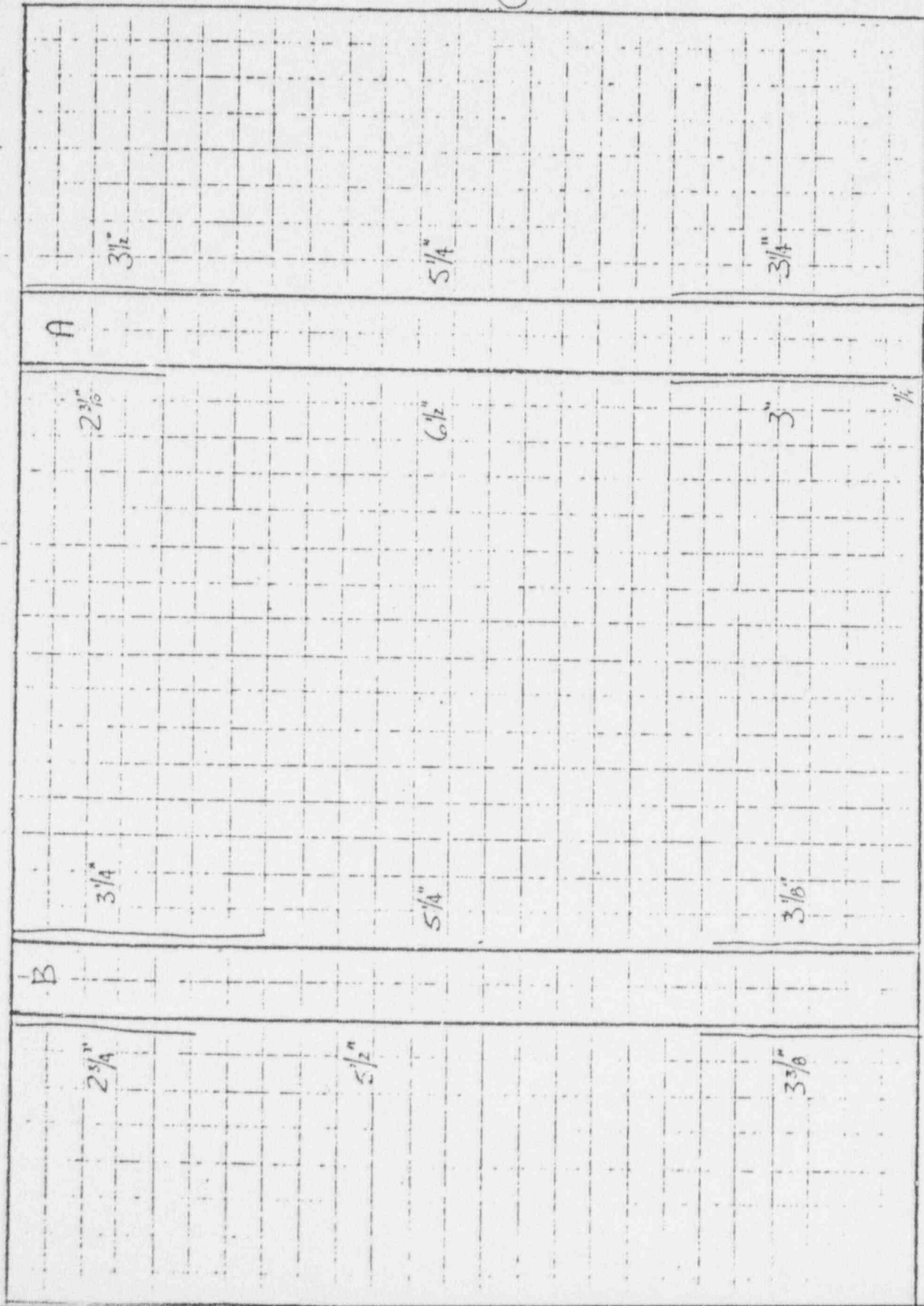
2-12

PERFORMED BY

GILLIAN A. CARROLL
DATE 1/12/81

VERIFIED BY

R. A. P. R.
DATE 1/16/81



STRAIGHT PAN SECTION

El. Cont'l. 412-0

Size 12"

Location, Descrip

1363 CIE

E-9

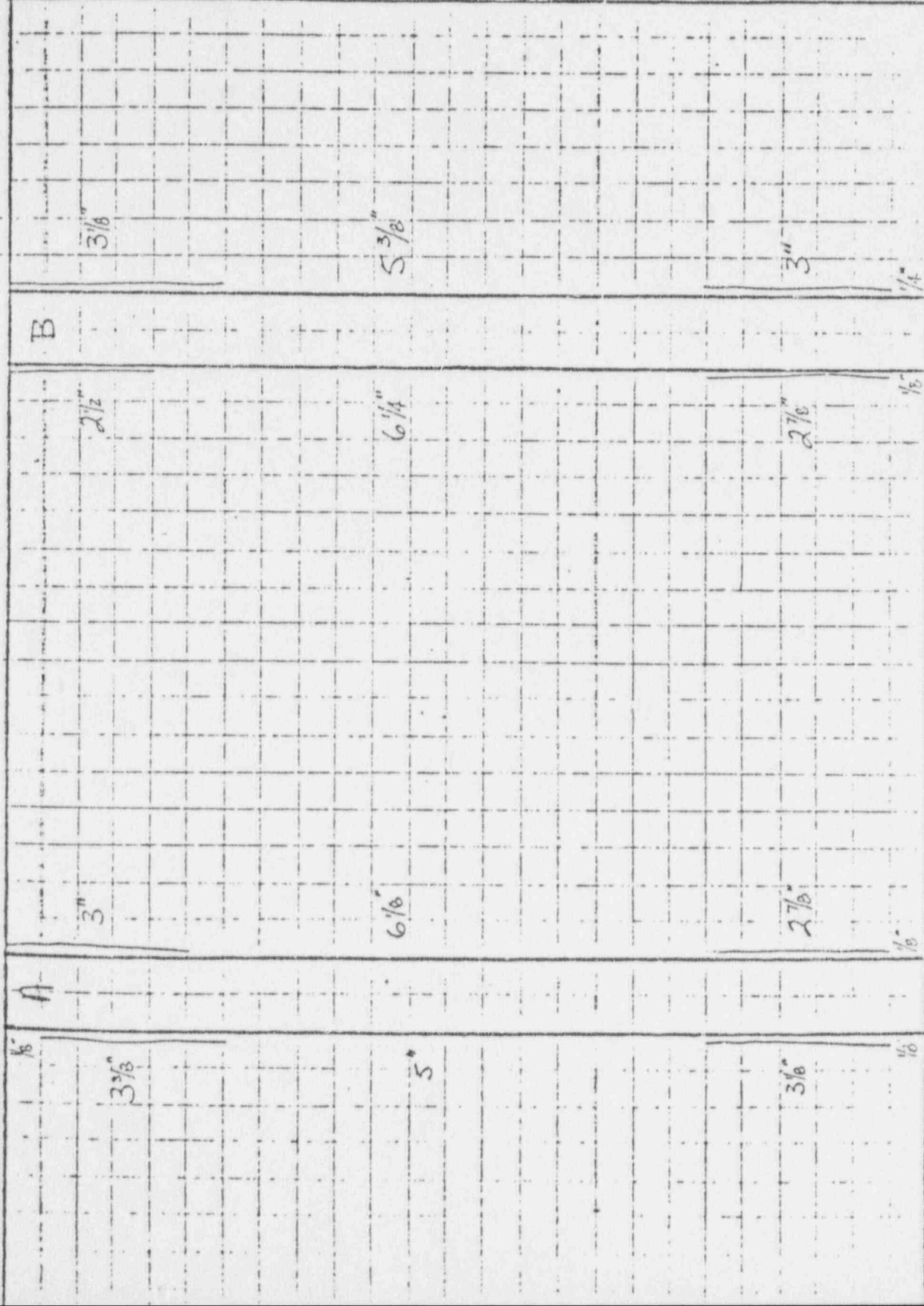
PREPARED BY

Anthony J. [unclear]
DATE 1/12/81

VERIFIED BY

Paula [unclear]
DATE 1/16/81

PAGE 53



10'-0"

STRAIGHT T.W. SECTION

El Cont'l 412'0.

Size 18"

Location, Descrip

1579P P2B

12' E of P-5

Prepared By

D. E. L.

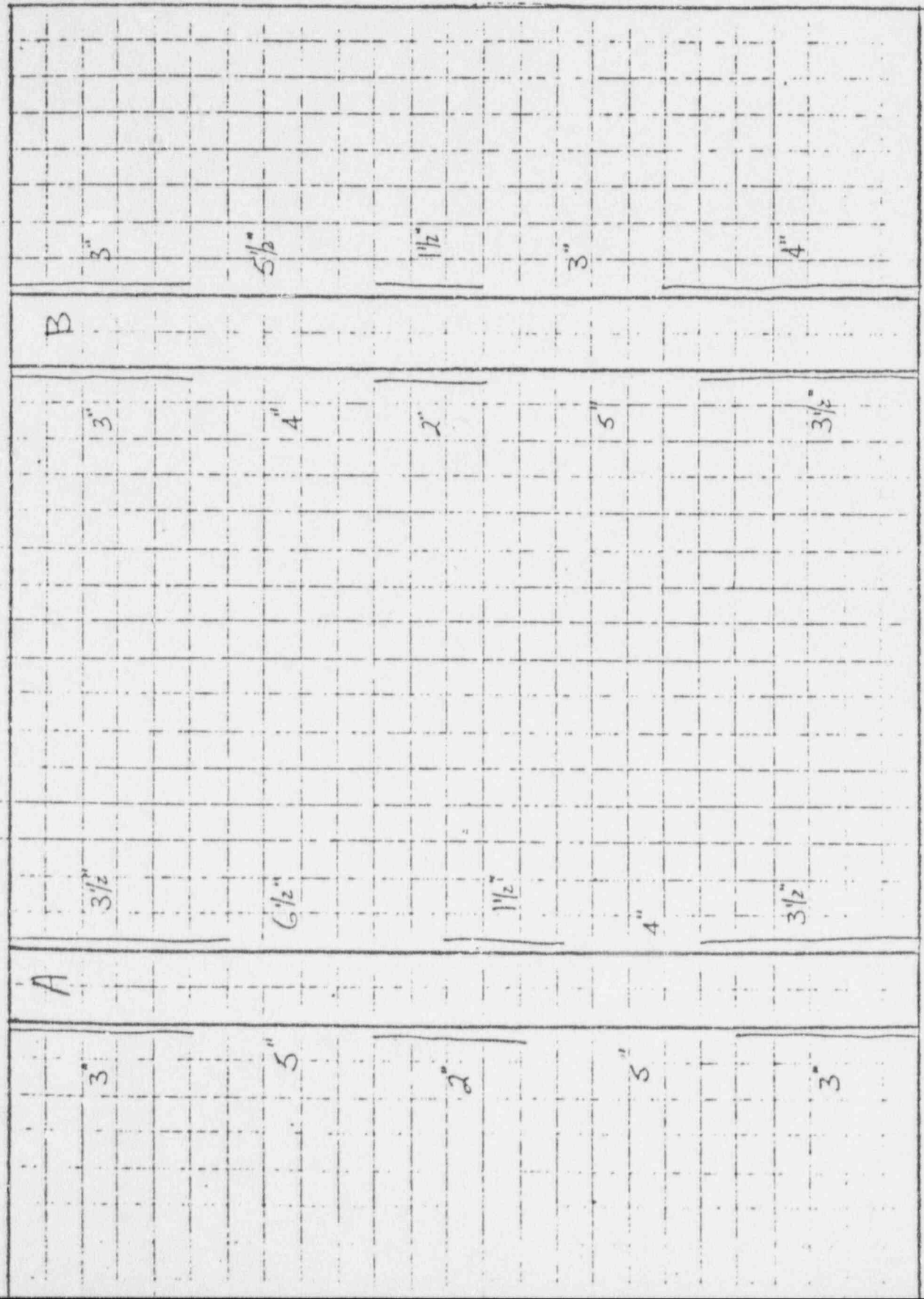
DATE 1-13-81

Verified By

Paul A. Luy

DATE 1/16/81

PAGE 54



STRAIGHT PAW SECTION

El Cont 1 426

Size 18"

Location, Desc:

1428P P2B

2-7

Prepared By

N. S. L.

Date 7/17/81

Verified By

R. A. Perry

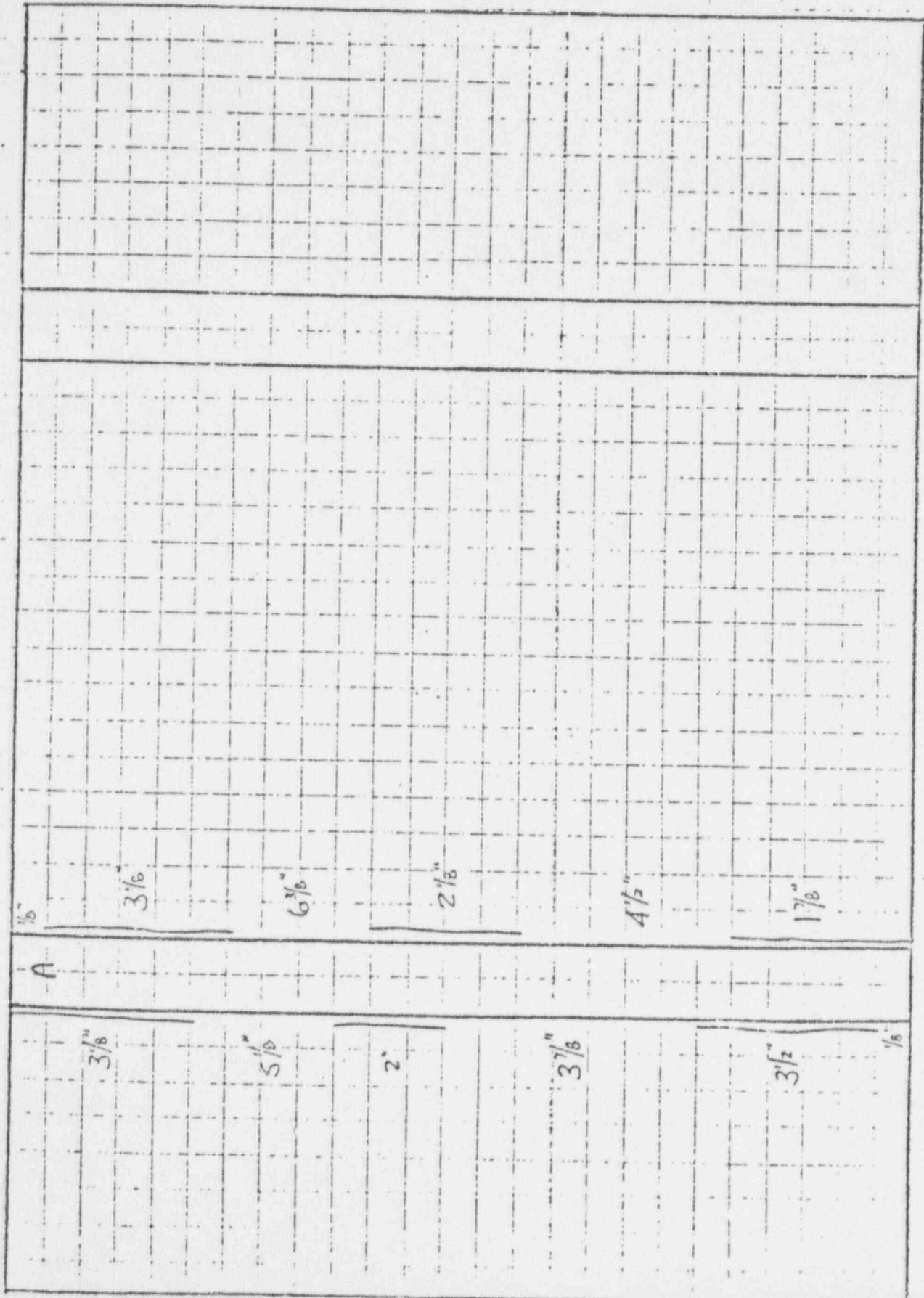
Date 11/14/81

One Stiffener

Required only

Rap

Page 55



STRAIGHT PIN SECTION

El. Cont'l 426'0

Size 18"

Location, Descrip

1428P P2B

R-7

PREPARED BY

W. E. Early

DATE 9/13/84

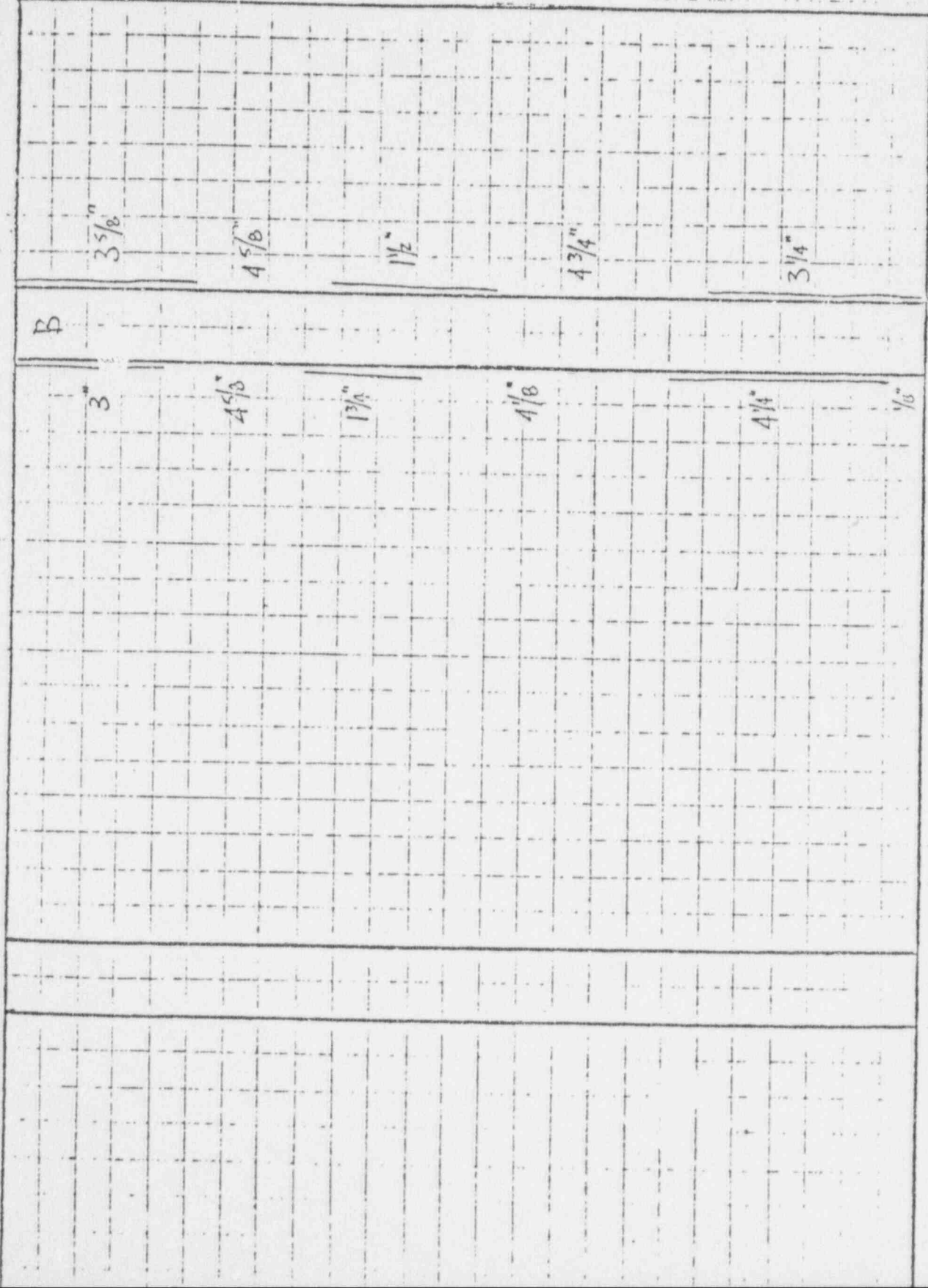
VERIFIED BY

Arnold A. Long

DATE 1/14/81

One stiffer
required only
Rep

PAGE 56



STRAIGHT P.W. SECTION

El Cont 1

Size 18"

Location, Descrip

1409 C2B

Prepared By

21 E. C. L.

DATE 1-9-81

Verified By

Paul A. King

DATE 11/11/81

one stationer

Required only

By

Page 57

B	3 1/4"	2 7/8"
	5 1/4"	5 1/2"
	1 3/4"	2 1/8"
	4 3/4"	4 7/8"
	2 7/8"	2 3/4"
		1/8"

STRAIGHT PAW SECTION

El. Cont¹

Size 18"

Location, Descrip

110C C2B

PREPARED BY

H. E. L.

DATE 2/13/81

VERIFIED BY

R. A. P.

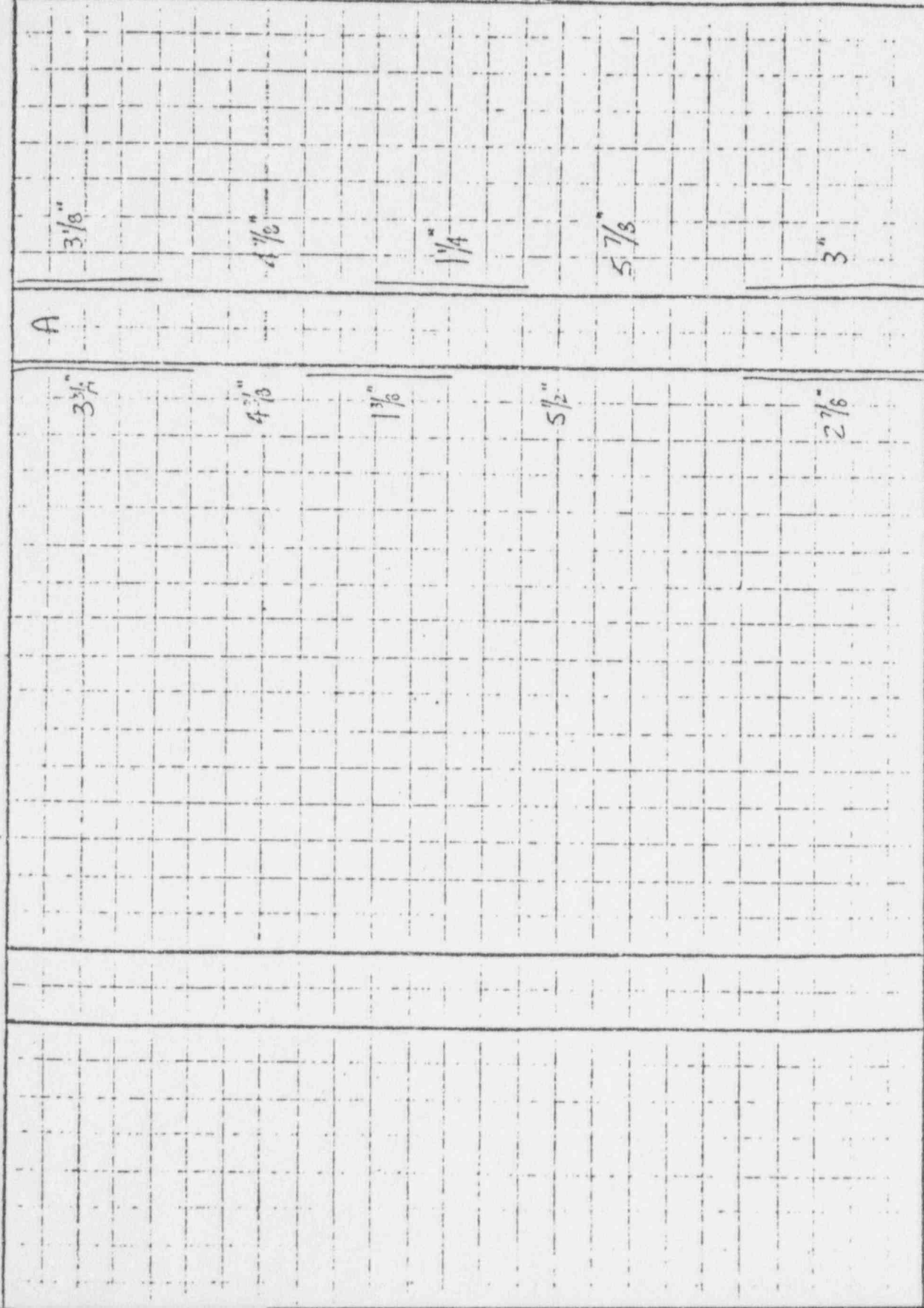
DATE 11/14/81

one St. Haver,

Required only

Req

PAGE 5-B



10'-0"

STRAIGHT PAW SECTION

El. Cont 1426.0

Size 24"

Location, Descrip

1417M R2B

R-11

PREPARED BY

W. E. Eady

DATE 11-13-81

VERIFIED BY

Russell O. Long

DATE 11/14/81

one stiffener

required on 11

2000

PAGE 51

1/8"	B	3 3/4"
4 1/8"		5 1/8"
4 1/8"		1 7/8"
2 1/8"		6 3/4"
5 1/4"		1 1/4"
2 1/8"		6 5/8"
6 3/8"		3 5/8"
4 3/8"		1 1/2"
5 7/8"		

STRAIGHT PMW SECTION

El. Cont. 1 426.0

Size 24"

Location, Descr.

1417N P2B

R-11

Prepared By

W.E.G.

DATE 1-13-91

Verified By

Russell A. Perry

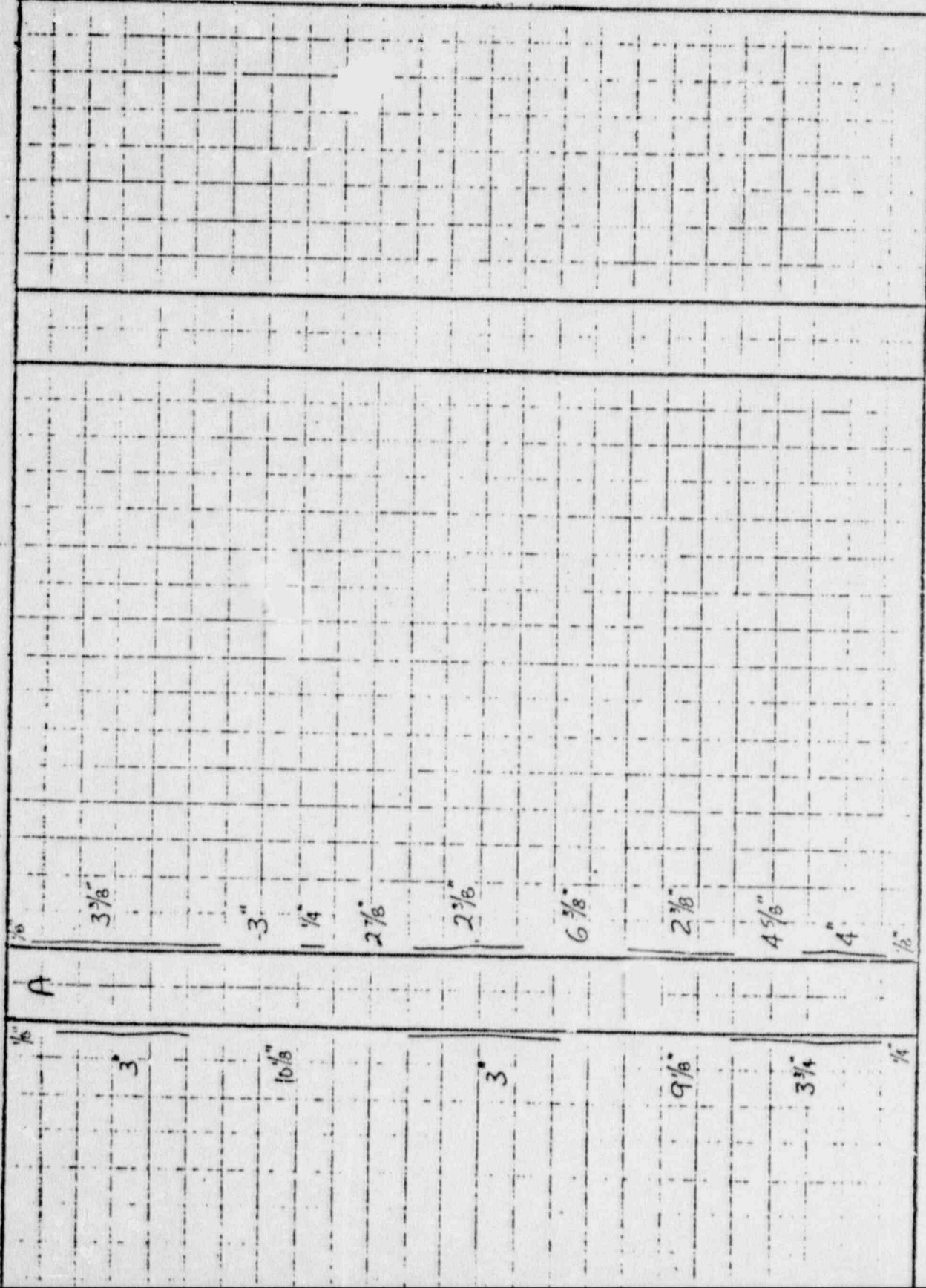
DATE 1/14/91

one stiffener

Required only

Rap

PAGE 60



STRAIGHT PAW SECTION

El Cont'l 426-0

Size 24"

Location, Desert

1405N P2B

3-11

Prepared By

Geology Canada
BRTN 1/12/81

Verified By

Charles A. Lee

Date 11/16/81

one stiffer

Required only

exp

Page 61

A		B	
3 1/2"	4"	4 1/2"	3"
3 1/2"	8 1/2"	10"	4 1/2"
2"	2"	2 1/2"	2"
1 1/2"	10 1/2"	10"	2 1/2"
4 1/2"	4"	3 1/4"	5"
3"			3 1/2"

8-0

FULL SECTION (90° or 45°)

EL. 330' 0" Aux

SIZE 12" 45°

Location, Description

1500A P2E

L+20

PREPARED BY

DATE

Anthony Conner

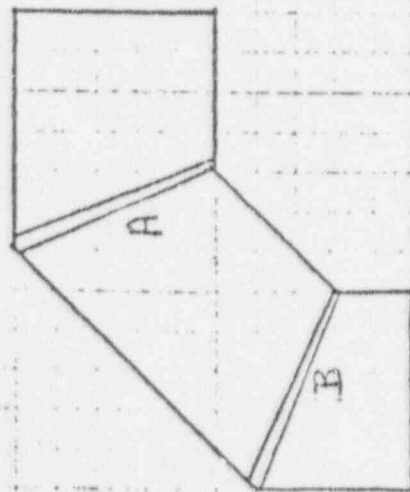
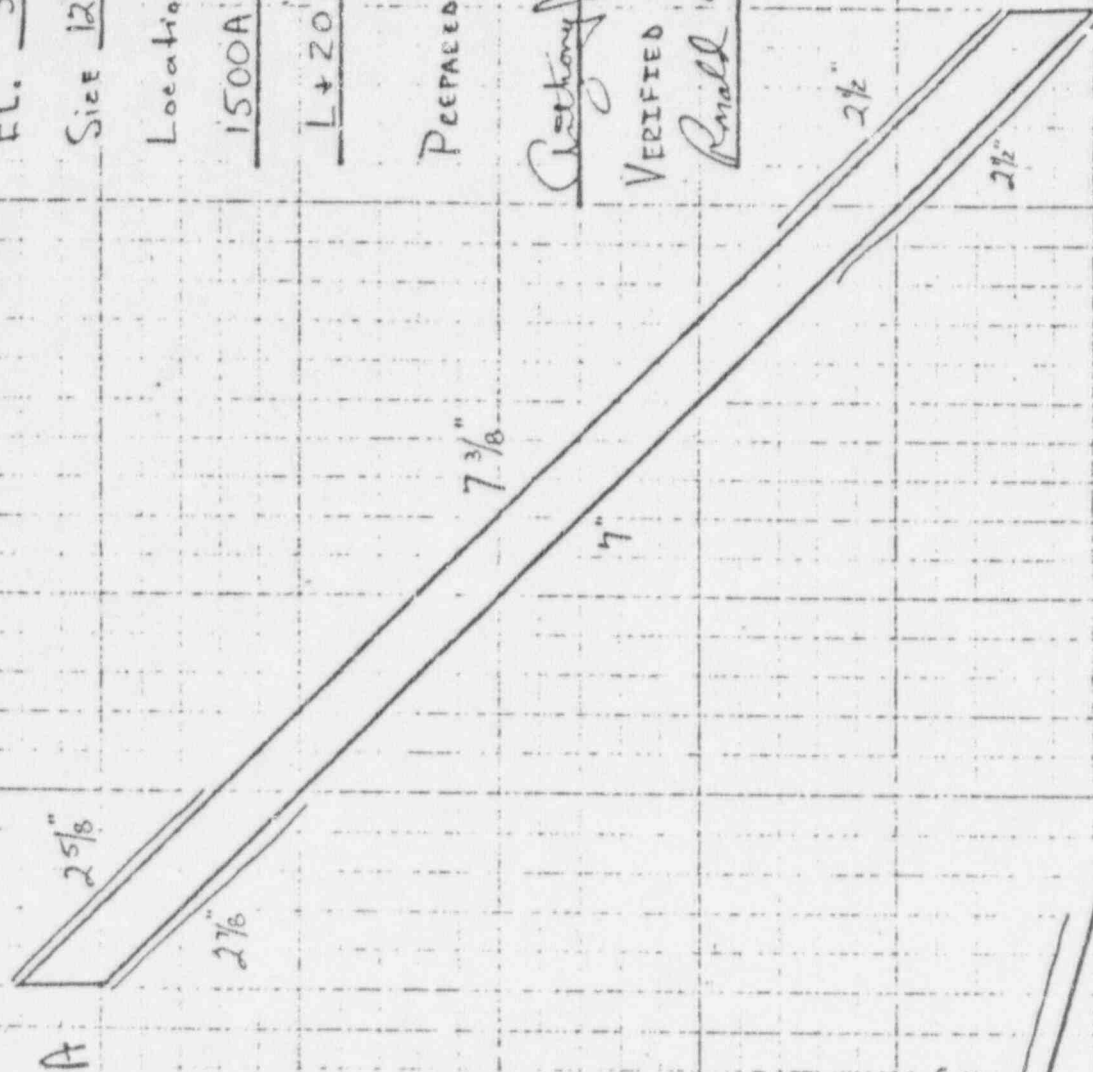
1/12/81

VERIFIED BY

DATE

Ronald A. Perry

1/13/81



$3\frac{1}{2}"$

B

$2\frac{3}{4}"$

$5\frac{1}{4}"$

6"

$2\frac{1}{8}"$

PAGE 62

SECTION (90 or 45)

EL. Aux 330'-0

Size 12" 45°

Location, Description

1500B CJE

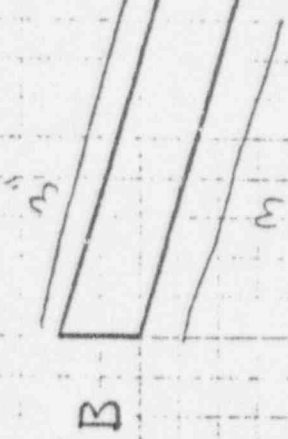
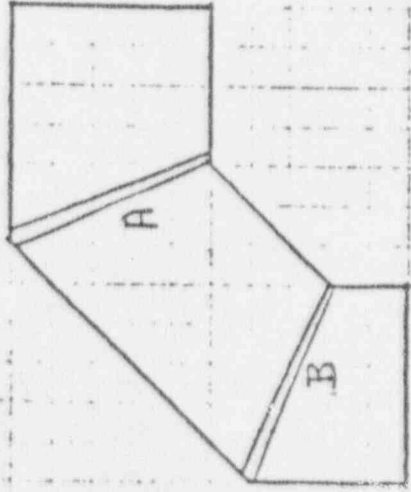
L+20

PREPARED BY

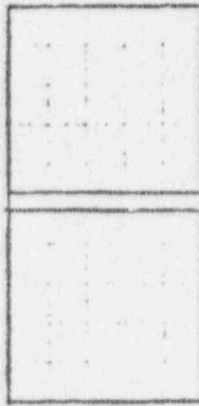
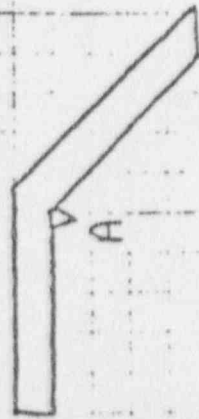
DATE

Anthony Conde 1/12/81

VERIFIED BY
Ronald A. Perry 1/12/81



30 Outside Offset



A 3"

6"

2 3/4"



3 1/8"

5 1/4"

3 1/2"

EL Aux 330'-0"

Size 12"

Location, Description

1500 A P2E

L+20

PREPARED BY

DATE

Richard Conner 1/12/81

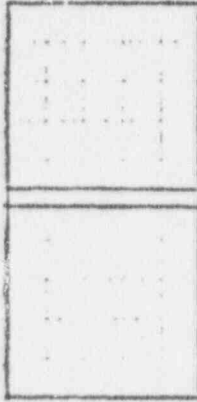
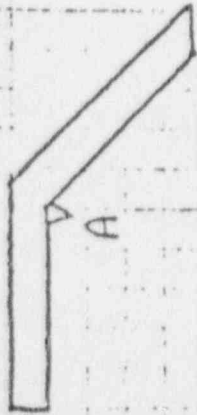
VERIFIED BY

DATE

Ronald A. King 1/12/81

Page 6 of 6

30° Outside Offset



3 7/8"

5 1/2"

3"

2 7/8"

6"

2 7/8"

EL Aux 330'-0"

Size 12"

Location, Description

1500B C2E

L + 20

PREPARED BY DATE

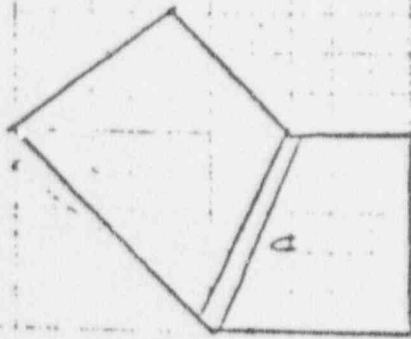
Anthony Conner 1/12/81

VERIFIED BY DATE

Russ A. Poy 1/12/81

Page 6-5

30" offset



EL Aux 364.0

Size 24"

Location, Description

Near 26ASF C2B

N Side of H42A

Prepared By DATE

William J. Lomax 1/22/81

Verified By DATE

Ronald A. Poy 1/22/81

Doc

123

LOWER ELBOW, VERTICAL 1" O RADIUS

EL. 330'-0" Dux

Size 12"

Location, Description

Next to 2R250 C2E

SW of P+19

PREPARED BY DATE

Anthony G. Gower 1/12/81

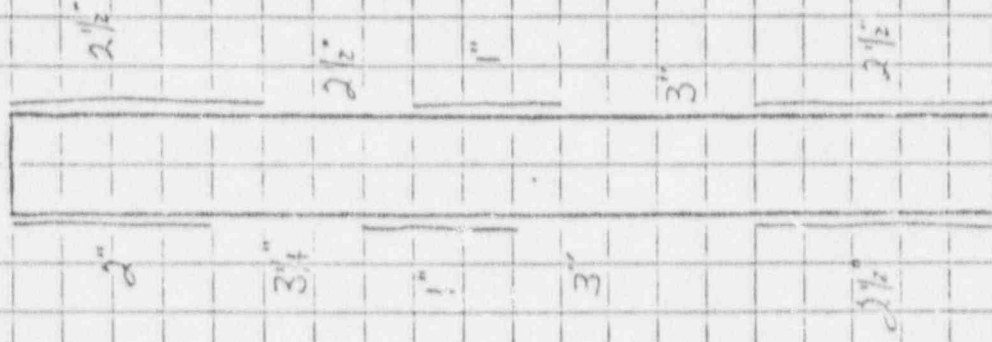
VERIFIED BY DATE

Andrea Pay 1/12/81

Page 60



A



LOWER ELBOW, VERTICAL TO CURB

EL. Ans 330'-0"

Size 12"

Location, Description

22-50 C&E

SW of P+19

PREPARED BY

DATE

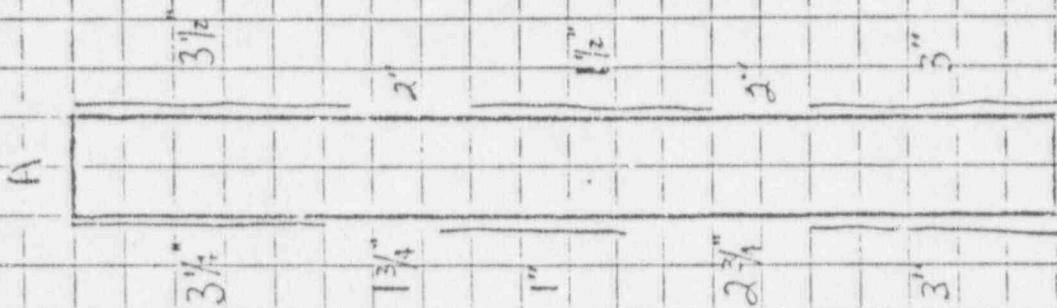
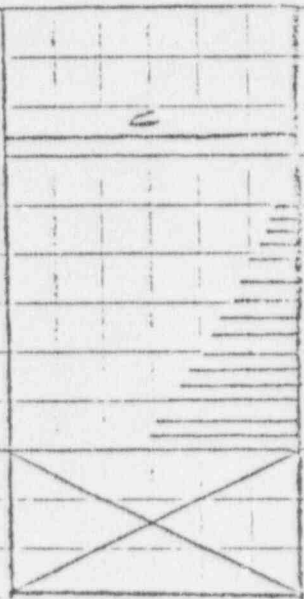
Jeffrey Conner 1/12/81

VERIFIED BY

DATE

Robert A. Perry 1/12/81

Page 67



ELL SECTION (90° or 45°)

EL. Aux 316-0

Size 18"

Location, Description

1530D CIB

S face of P+17

PREPARED BY

DATE

Checked by Conrad J. Conover 1/12/81

VERIFIED BY

DATE

Ronald A. Perry 1/12/81



FULL SECTION (90 or 45°)

EL. Aux 346'-0

Size 18"

Location, Description

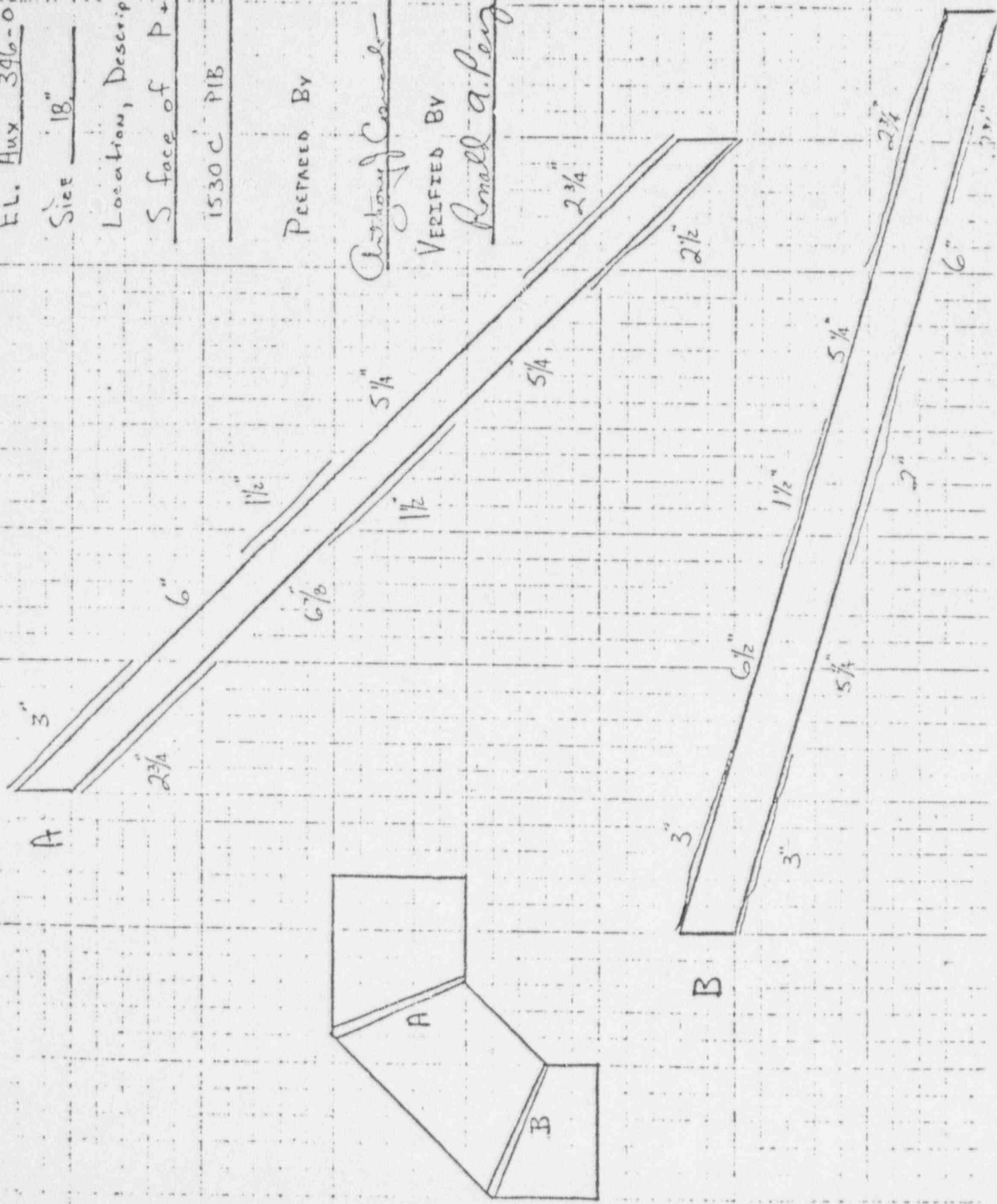
S face of P+17

1530 C PIB

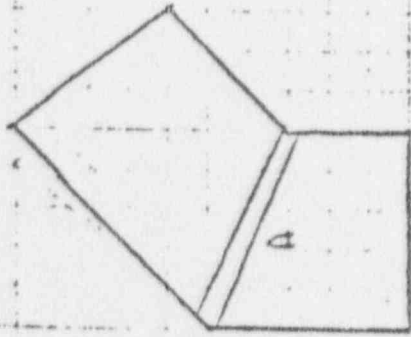
PREPARED BY DATE

Anthony Conner 1/12/81

VERIFIED BY DATE
Ronald A. Long 1/12/81



30 offset



A

3"

5 1/4"

1 1/4"

5 1/2"

2 1/2"

2 3/4"

5 3/8"

1 1/2"

5"

3"

EL Aux 346'-0

Size 18"

Prepared By Date

Robert J. Conner 12/81

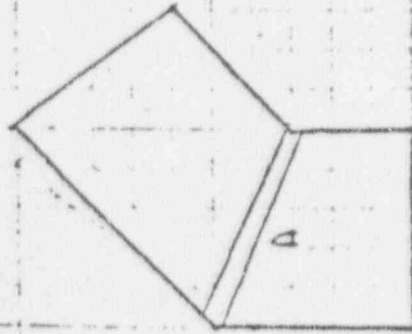
Verified By Date

Russell A. Poy 1/12/81

Location, Description

NE of P+15

Near 15thm C&R



A $2\frac{1}{2}''$ $1\frac{1}{2}''$ $5''$ $3''$

$2\frac{3}{4}''$ $4\frac{7}{8}''$ $1\frac{3}{4}''$ $5''$ $3\frac{1}{4}''$

EL Aux 346-0

Size $18''$

PREPARED BY DATE

Robert J. Canale 1/17/81

Location, Description

NF of P+15

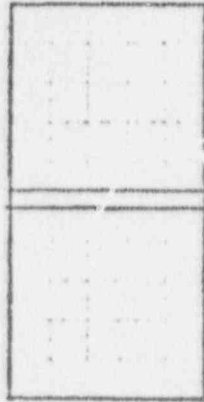
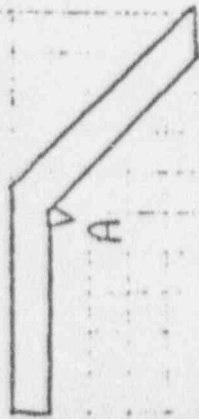
VERIFIED BY DATE

Russell A. Perry 1/12/81

Draw 1546L P2B

Page 71

30° Outside Offset



A

2 1/2"

1 1/2"

1 1/2"

4 3/4"

2 3/4"

2 1/4"

5 7/8"

2"

4 3/4"

2 1/4"

EL Aux 346-0

Size 18"

Location, Description

Near 1540M CZB

NE of P+15

PREPARED BY

DATE

Anthony Casals - 1/12/81

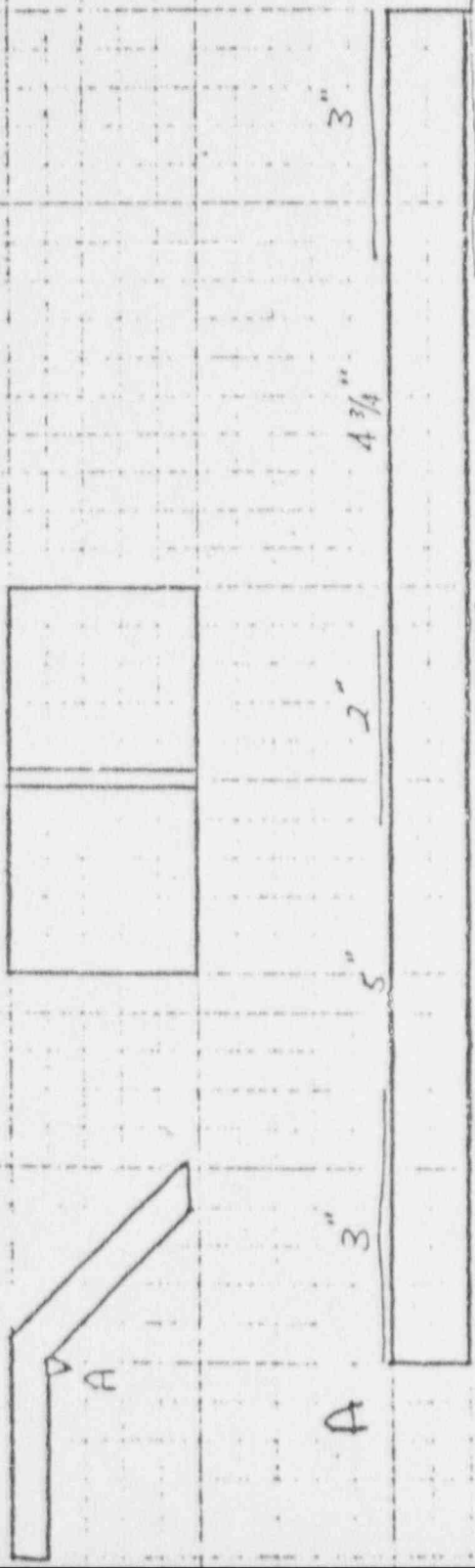
VERIFIED BY

DATE

Rnall a. Ping 11/12/81

Rev 72

30 OUTSIDE CHASE



3" 5 3/8" 1 3/4" 4 1/2" 3"

El. Aux 34'-0"

Size 18"

Location, Description

Near 1540L P2B

NE of P+15

PREPARED BY DATE

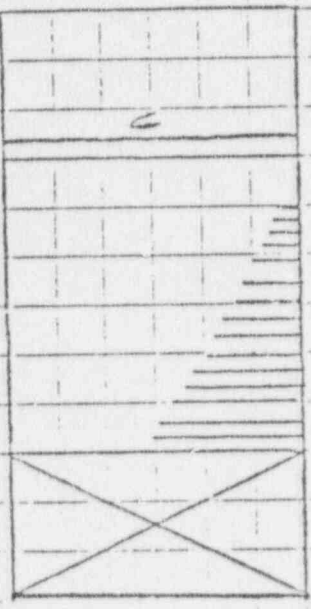
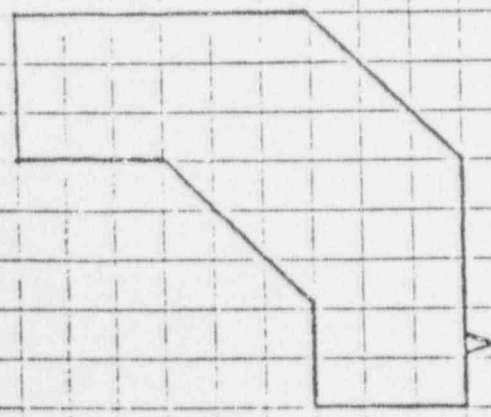
Patricia Conner 1/12/81

VERIFIED BY DATE

Ronald A. Perry 1/12/81

Page 73

LOWER ELBOW, VERTICAL 10 RADIUS



EL. AUG 364'-0

SIZE 18"

Location, Description

Near 1618G C2E

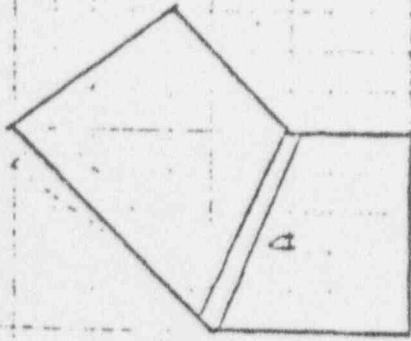
X + 13

PREPARED BY DATE

Prepared by *[Signature]* Date 1/12/81

VERIFIED BY DATE

Verified by *[Signature]* Date 1/12/81



A $3''$ $5''$ $1\frac{5}{8}''$ $6''$ $2''$ $5''$ $3\frac{1}{8}''$

$2\frac{3}{4}''$ $1\frac{7}{8}''$ $2\frac{1}{8}''$ $4''$ $2\frac{1}{2}''$ $4\frac{3}{4}''$ $2\frac{1}{4}''$ $3\frac{1}{4}''$ $2\frac{1}{2}''$

EL Aux 364'-0

Size 24"

PREPARED BY DATE

Anthony G. Conner 1/14/81

VERIFIED BY DATE

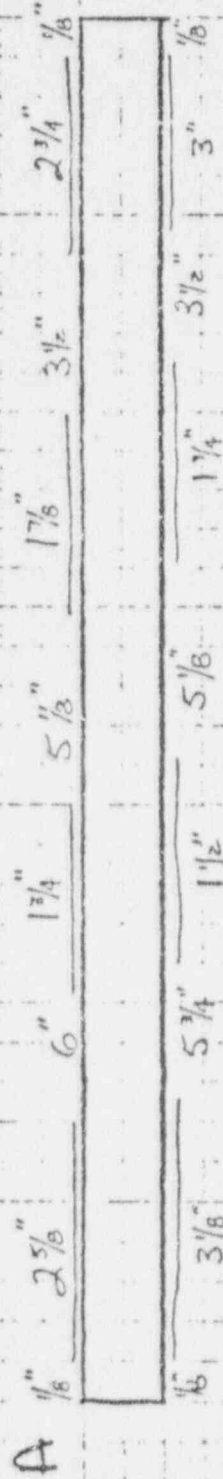
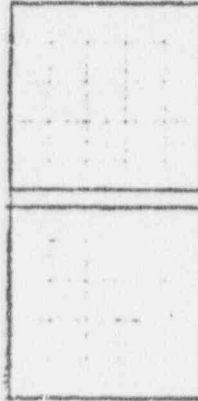
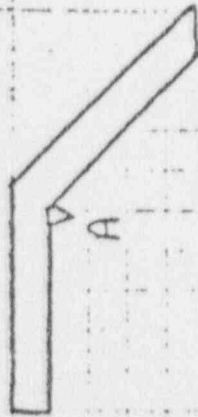
Robert A. King 1/14/81

Location, Description

Next to 2638E PDR

P-121

30° Outside Offset



EL Aux 364-0

Size 24"

Location, Description

2638F C2B

P+21

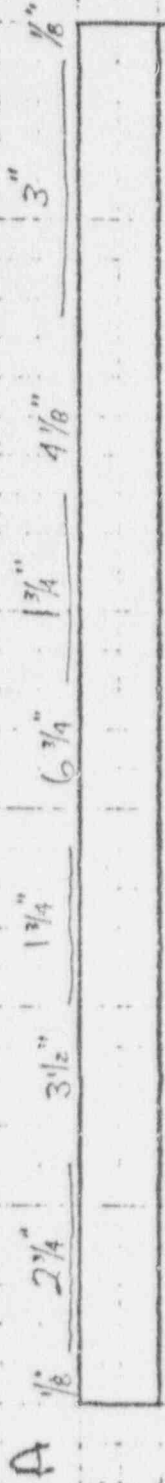
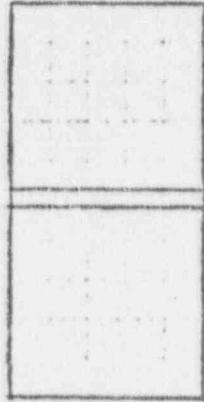
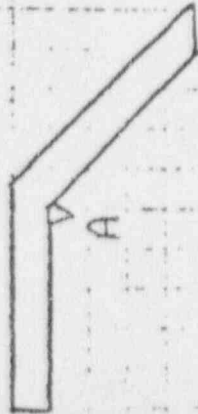
PREPARED BY DATE

Richard Comrade 1/14/81

VERIFIED BY DATE

R. R. A. Long 1/14/81

710



$3\frac{5}{8}$ "

$7\frac{3}{4}$ "

$1\frac{3}{4}$ "

$7\frac{1}{2}$ "

$3\frac{3}{8}$ "

EL Aux 364-0

Size 24"

Location, Description

2638E P2B

P+21

PREPARED BY

DATE

Carlton J. Conner 1/19/81

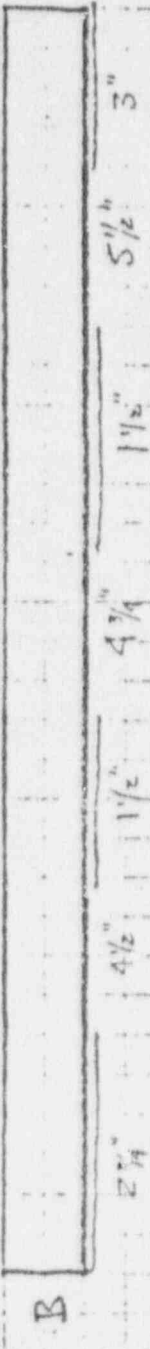
VERIFIED BY

DATE

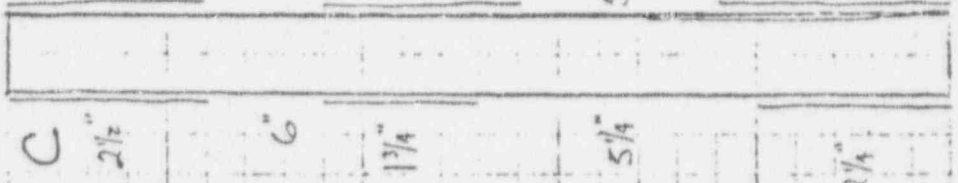
Paul A. Ray 1/14/81

STRAIGHT | EE. SECTION

3" 4" 1 3/4" 4 3/4" 1 1/4" 5 1/2" 3"



C 2 1/2" 2 1/2"



EL. Aux 364'-0"

Size 24" to 18"

Description, Location

15825 CIE

S+13

PREPARED BY DATE

Anthony Caruso 1/12/81

VERIFIED BY DATE

Ronald A. Pay 1/12/81

STRAIGHT FEE SECTION

3 1/2" 6 1/2" 1 1/2" 6" 2" 3 1/2"



EL. AVE 364-0

Size 24" to 15"

Description, Location

1582R PIE

S+13

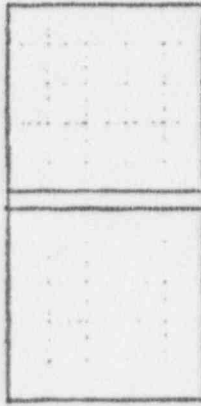
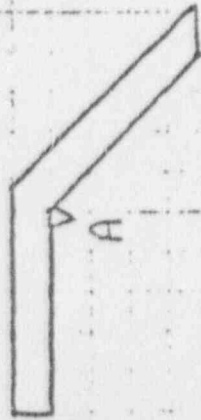
PREPARED BY DATE

Robert J. Conner 1/12/81

VERIFIED BY DATE

Will A. King 1/12/81

30° OUTSIDE Offset



A 1 7/8"

7 3/4"

2 1/8"

2"

7 3/4"

1 7/8"

EL Aux 383'-0"

Size 12"

Location, Description

1773E KIB

P + 21

PREPARED BY DATE

21 E.H. 1-12-81

VERIFIED BY DATE

Ronald A. Perry 11/14/81

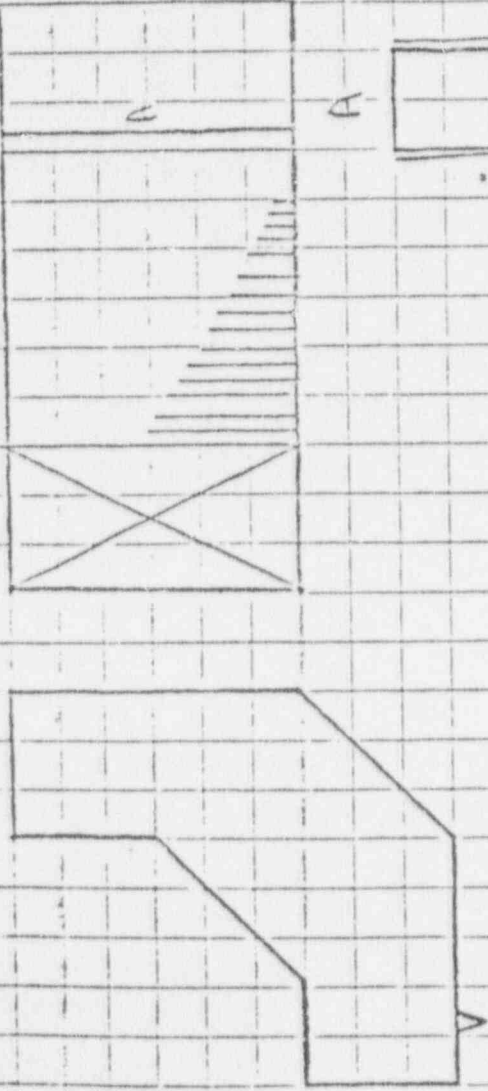
LOWER ELBOW, VERTICAL 10 RADIUS

EL. ANX 383'0

SIZE 24"

Location, Description

P+19



3 3/8" 3 3/4" 1 1/4" 4 1/2" 2 1/4" 3 5/8" 3"

3 1/4"

7 3/8"

2 1/2"

2"

3"

PREPARED BY DATE

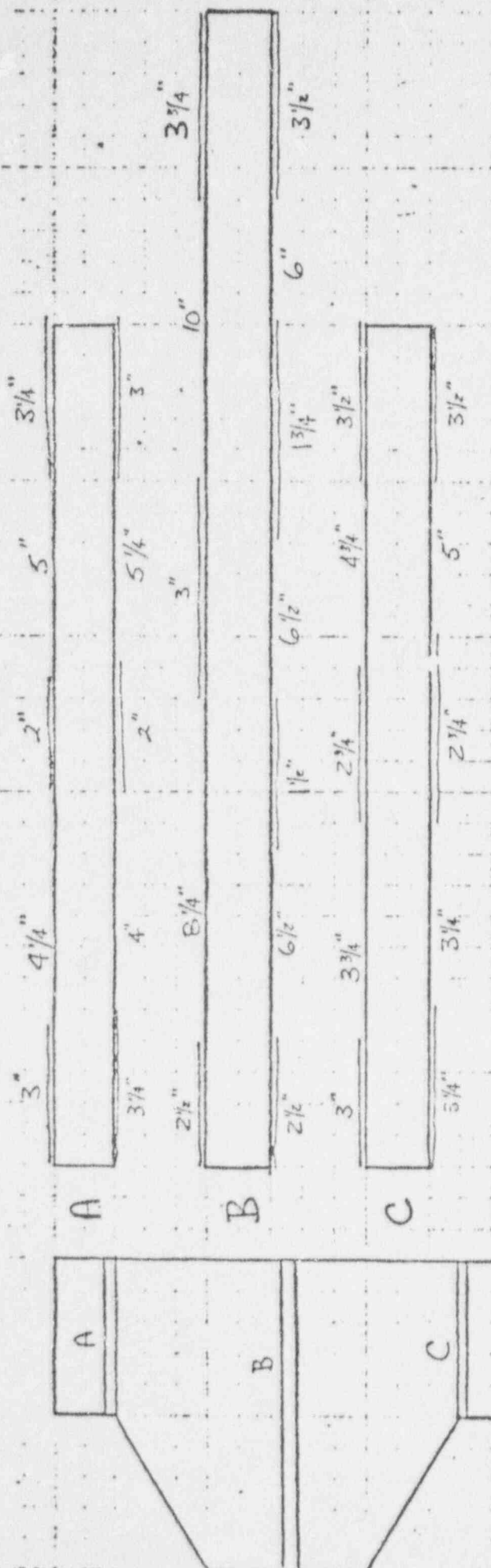
W. E. G. 1/3/81

VERIFIED BY DATE

R. G. P. 1/14/81

PAGE 81

STRAIGHT Tee Section



EL. Aux 383'-0"

Size 18"

Description, Location
Near 1689B CIE

N + 10

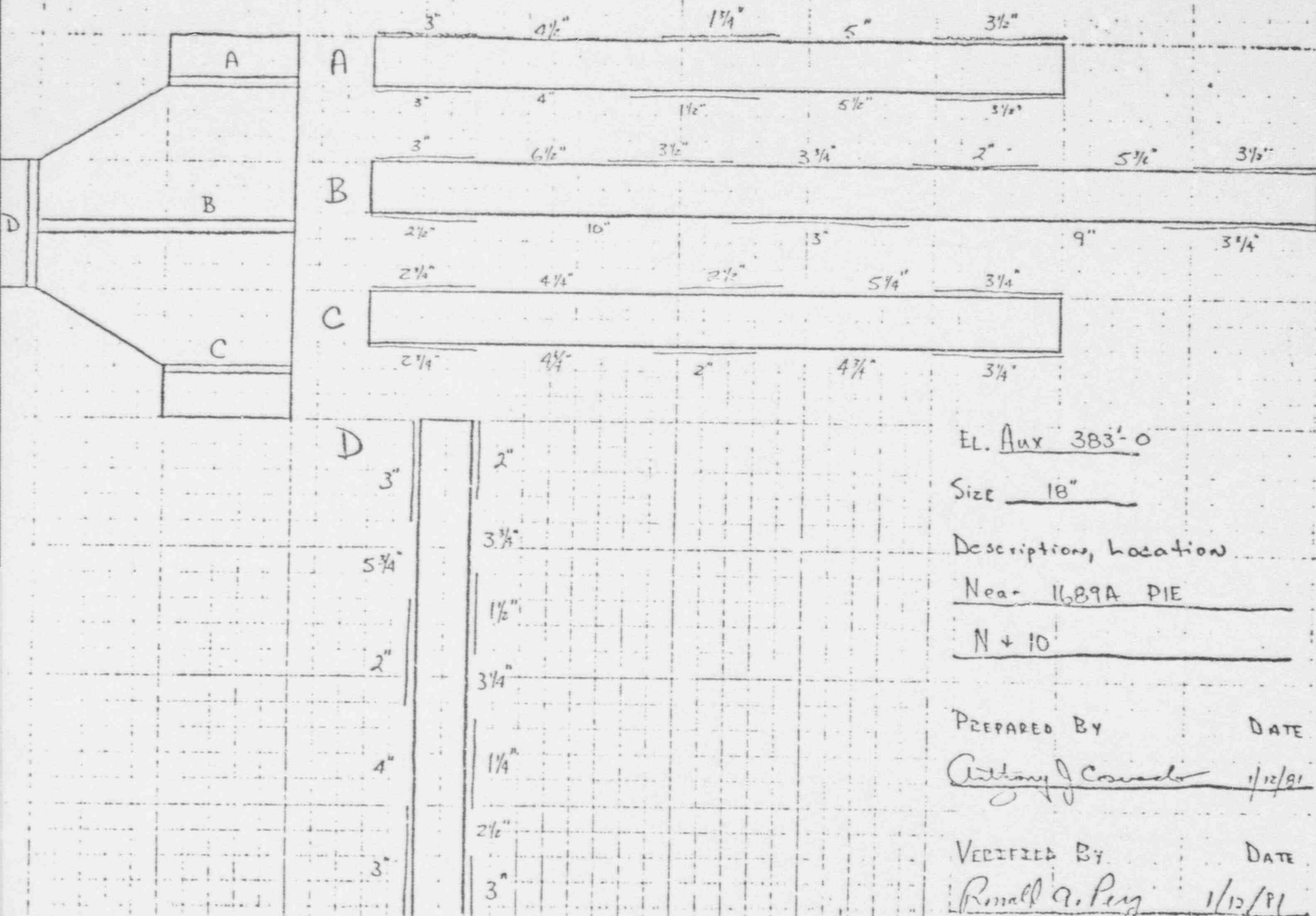
PREPARED BY
Gentry Conner

DATE
1/12/81

VERIFIED BY
R. A. Perry

DATE
1/12/81

STRAIGHT Tee Section



EL. Aux 383'-0

Size 18"

Descriptions, Location

Near 1689A PIE

N + 10

PREPARED BY

DATE

Anthony J. Casado

1/12/81

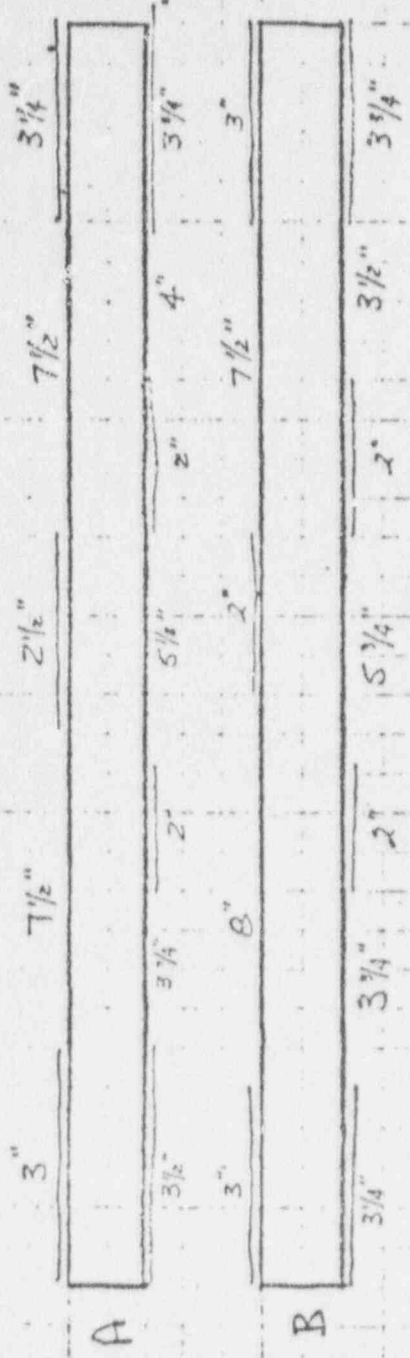
VERIFIED BY

DATE

Ronald A. Perry

1/12/81

STRAIGHT IEE SECTION



EL. Aux 401-0
Size 24" to 18"

Description, Location

1832E LIE

Q-15

PREPARED BY DATE

M. S. L. 1-13-81

VERIFIED BY DATE

Ronald A. Perry 1/14/81

STRAIGHT Tee Section



EL. 401'-0"

Size 12"

Description, Location

1889 J KZE

P + 16

PREPARED BY

DATE

W.E.B. 1-12-81

VERIFIED BY

DATE

Ronald R. Papp 1/14/81

ELL SECTION (90 or 45°)

EL. 401.0 Aux
 Size 12" - 90°

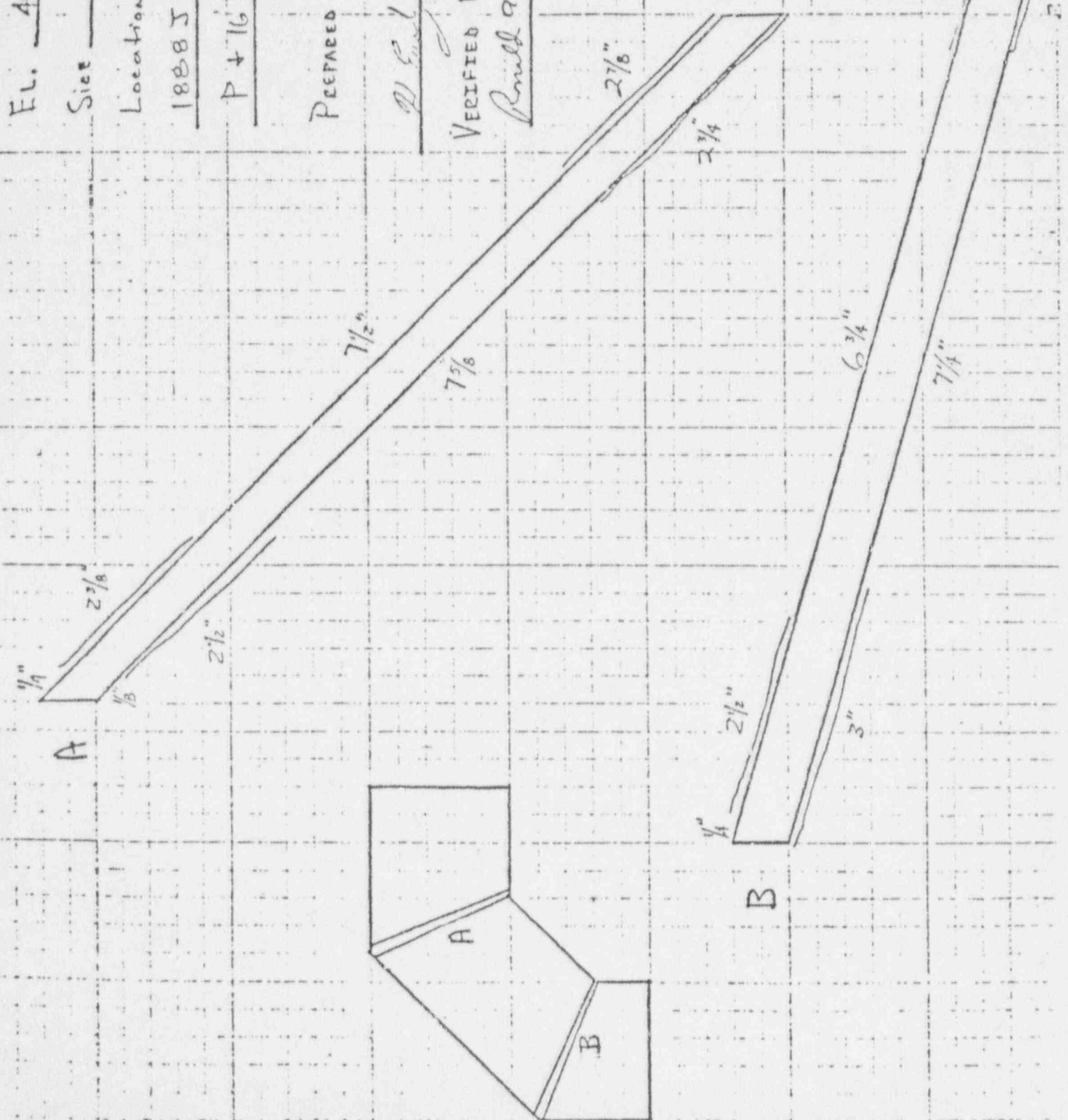
Location, Description
1888 J KZE

P + 16

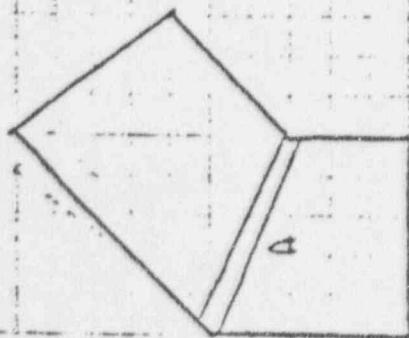
PREPARED BY
 DATE

1-13-81

VERIFIED BY
11/14/81



30 offset



A	1/4"	3"	7 1/8"	2 5/8"	8 1/2"	3 1/4"	1/8"
	1/4"	3"	4"	2"	2 1/4"	4 3/4"	3 7/8"

EL Aux 401-0

Size 24"

PREPARED BY DATE

W. E. L. 1-13-81

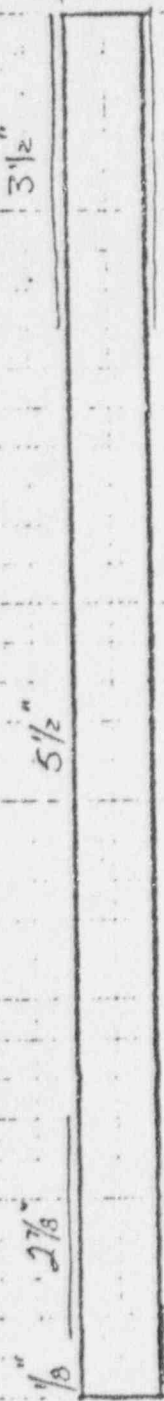
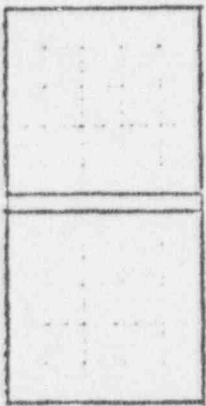
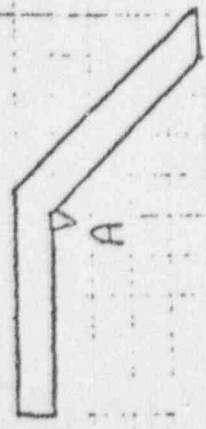
Location, Description

1887B C2E

VERIFIED BY DATE

Rand. D. P. G. 1/14/81

30 Outside Offset



EL 401'-0" Aux

Size 12"

Location, Description

1961K C2B

P+1/6

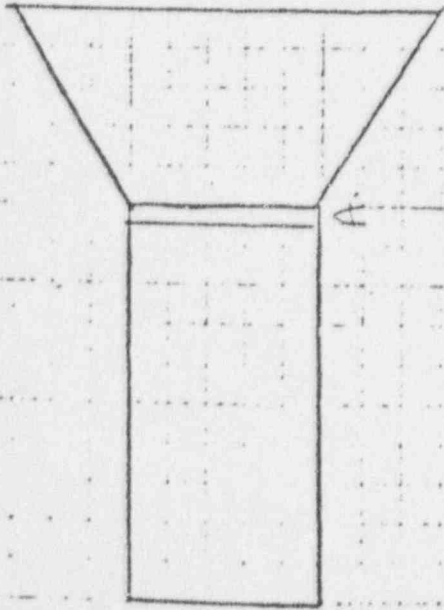
Prepared By DATE

21 Feb 1-13-81

Verified By DATE

R. D. A. P. 11/4/81

Double Flared End



EL. Aux 401-0

Size 18"

Description, Location

1864C P2B

P + 17

PREPARED BY

DATE

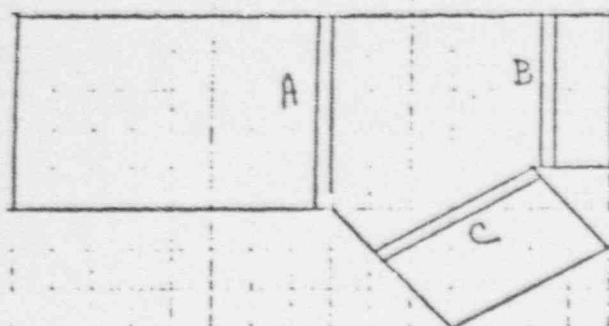
21 Enby 1-13-81

VERIFIED BY

DATE

Russell G. Perry 1/14/81

1 RIGHT HAND
Reference page 98



A	B
2 1/4"	2 1/4"
4 1/4"	7 1/2"
2 7/8"	2 1/4"
7 7/8"	8 3/4"
17 7/8"	3"
3 1/2"	4 1/4"
2 7/8"	2 1/2"
1/8"	

EL Aux 426-0

SAMPLE No. 2Size 24"

Location, Description

11309E EIE

N+10

PREPARED BY

DATE

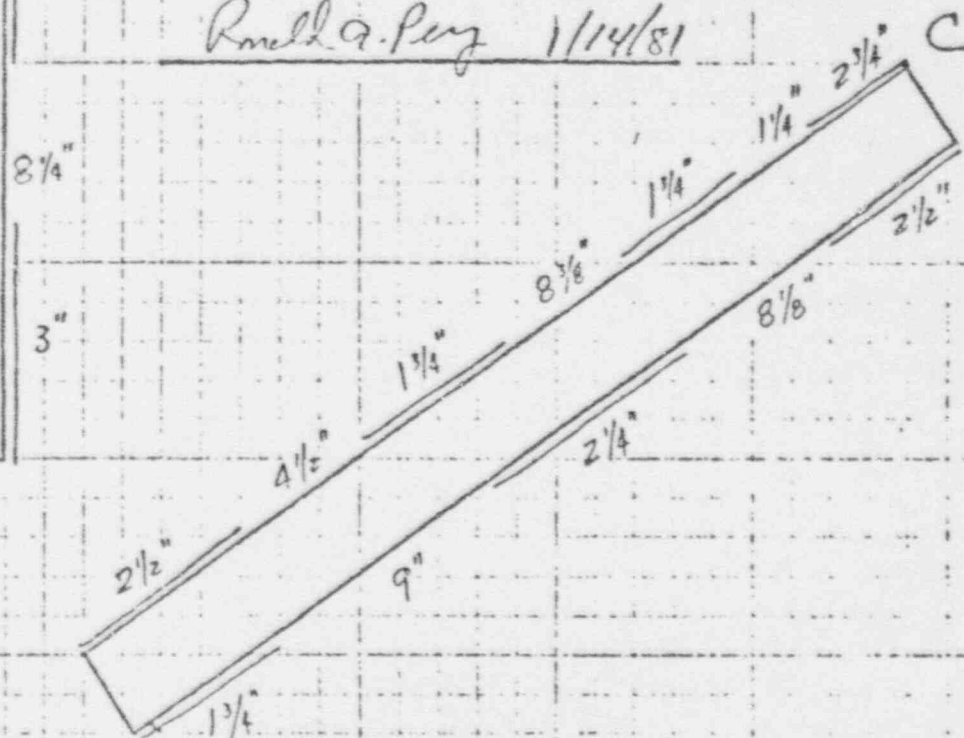
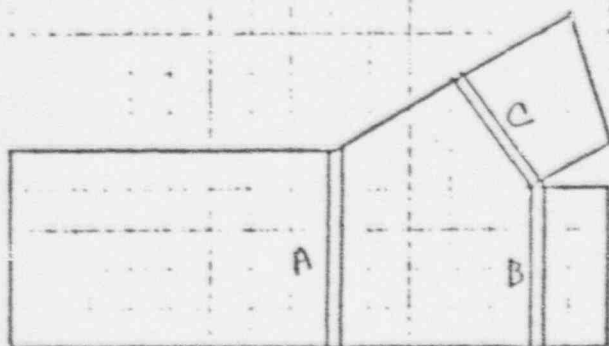
P. E. G. 1-13-81

VERIFIED BY

DATE

Russell A. Perry 1/14/81

2 Left HAND



STRAIGHT Tee Section



EL. Aux 426-0

Size 24"

Description, Location

11330 (4 CIB)

Q+11

PREPARED BY

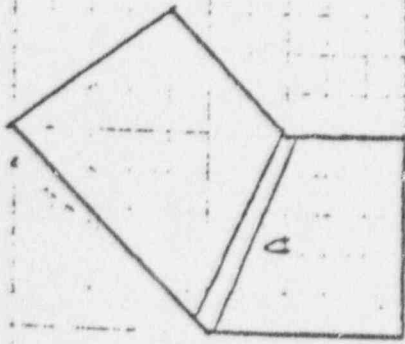
DATE

W. E. L. 1-13-81

VERIFIED BY

DATE

R. C. G. P. 11/18/81



A $3''$ $3\frac{1}{2}''$ $2''$ $6\frac{3}{4}''$ $2''$ $3\frac{3}{4}''$ $3\frac{1}{2}''$

$\frac{1}{8}''$ $3\frac{1}{4}''$ $7\frac{7}{8}''$ $1\frac{7}{8}''$ $8\frac{5}{8}''$ $2\frac{1}{8}''$

EL Aux 426'-0

Size 24"

PREPARED BY DATE

W. E. G. 1-13-81

VERIFIED BY DATE

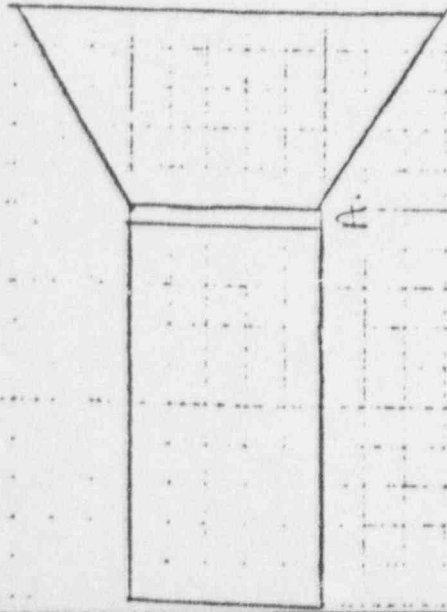
R. A. P. 11/14/81

Location, Description

19962 PIE

M+10

Double Flared End



EL. Aux 426-0

Size 24"

Description, Location

11A19L PIB

Q+10

PREPARED BY

DI Early 1-13-81

DATE

VERIFIED BY

Ronald A. Perry 1/14/81

DATE

PAGE 93

ELL SECTION (90 or 45°)

EL. Aux 426'-0"

Size 18" - 90°

Location, Description

21320B CIE

P-23

PREPARED BY

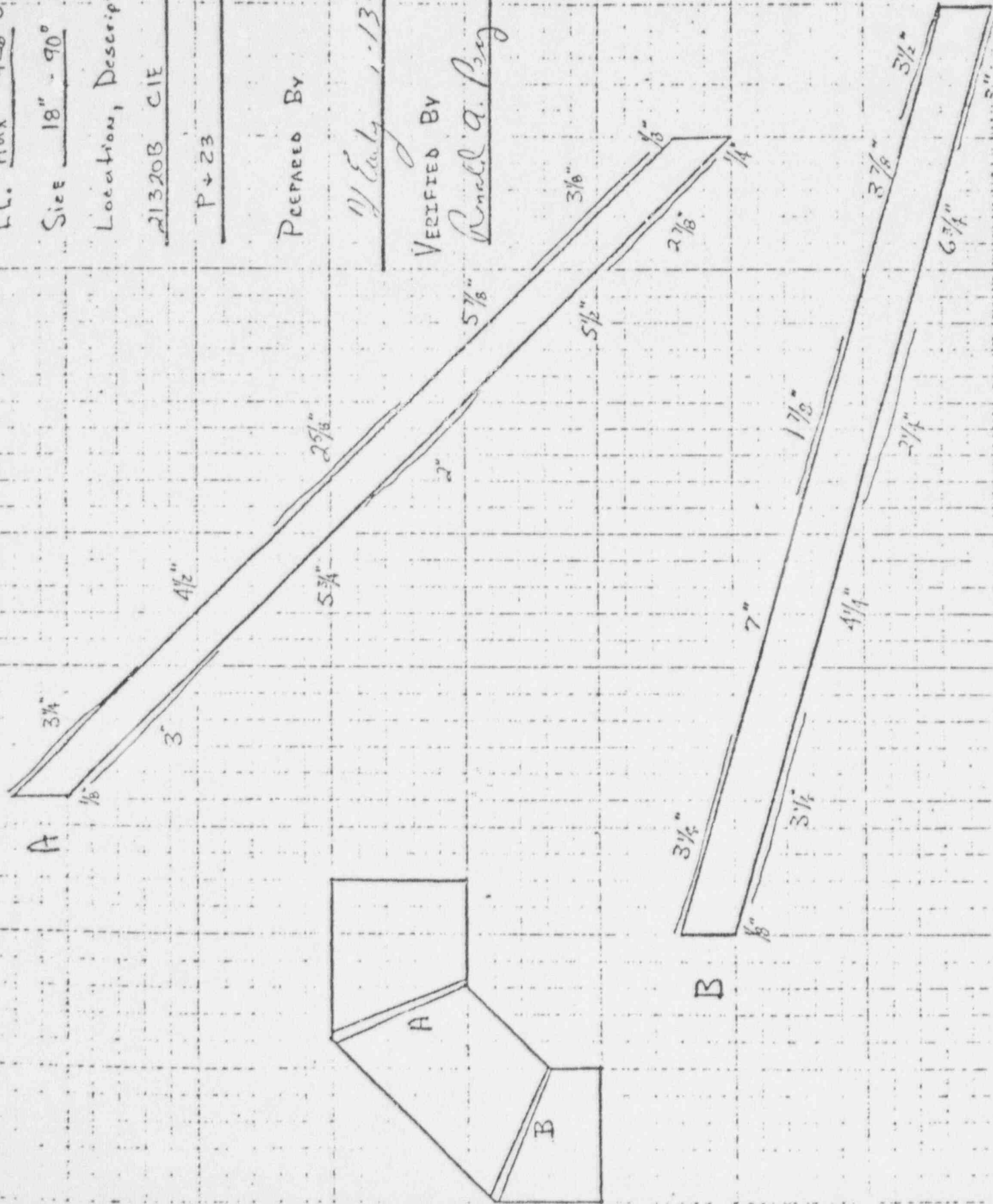
DATE

W. E. G. 1-13-81

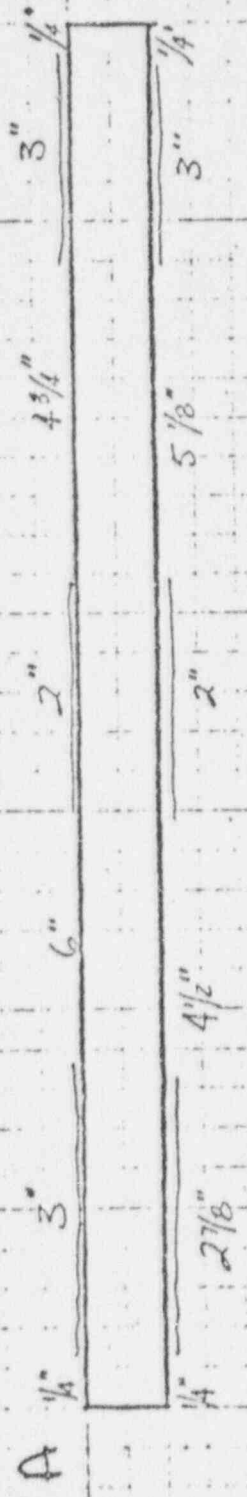
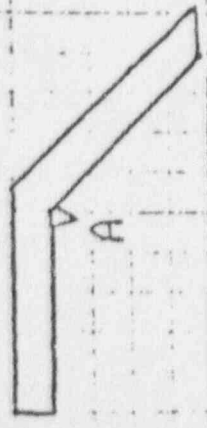
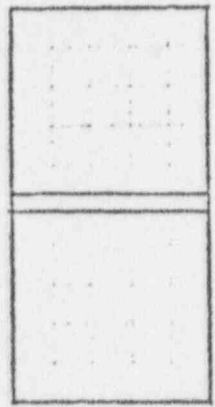
VERIFIED BY

DATE

Russell A. Poy 1/16/81



30° Outside Offset



EL Aux 426'-0

Size 18"

Location, Description

21332F CIB

N + 25

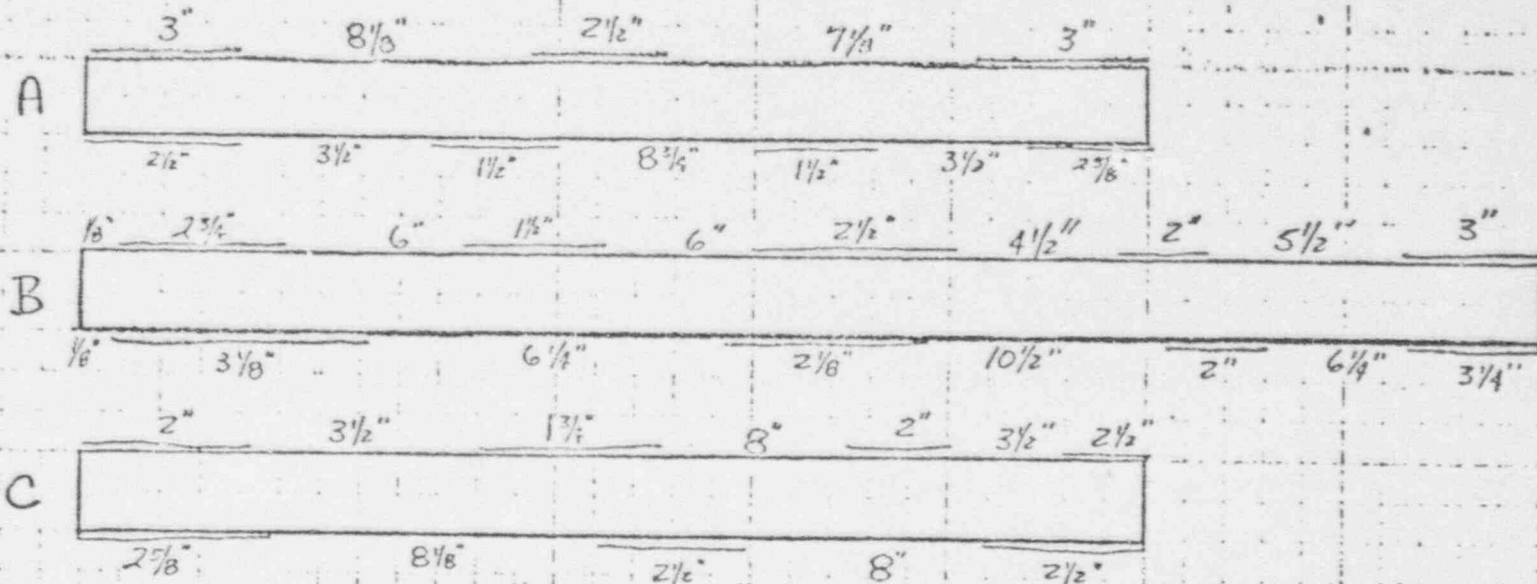
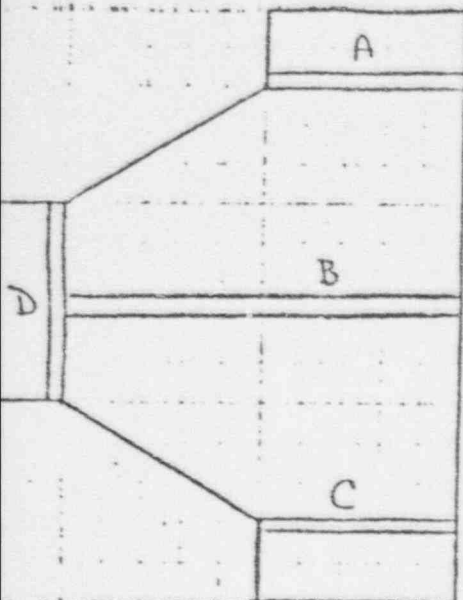
PREPARED BY DATE

H. E. G. 1-13-41

VERIFIED BY DATE

R. M. A. Lee 1/10/41

STRAIGHT Tee Section



D

2 1/2"

8 3/4"

2"

7 1/2"

3"

2 1/2"

3 3/4"

2"

7 1/2"

2"

3 7/8"

2 3/8"

EL. Aux 439'-0

Size 24"

Description, Location

21644 A C2B

P + 20

PREPARED BY

DATE

J. E. L.

1-13-81

VERIFIED BY

DATE

R. M. C. P. C.

1/16/81

Hand-drawn technical drawing of a mechanical part, likely a bracket or support, with dimensions and labels A, B, C, and D.

Dimensions:

- Top horizontal edge: $1\frac{1}{2}"$, $2\frac{1}{2}"$, $5"$, $7\frac{1}{2}"$, $7"$, $2"$, $4"$, $3\frac{1}{2}"$
- Left vertical edge: $3"$, $3\frac{1}{2}"$, $1"$, $2\frac{1}{2}"$, $6"$, $3"$, $2\frac{1}{2}"$, $5"$, $2\frac{1}{2}"$
- Right vertical edge: $3\frac{1}{2}"$, $2\frac{1}{2}"$, $6\frac{1}{2}"$, $2\frac{1}{2}"$, $7"$, $2\frac{1}{2}"$, $4"$, $3"$
- Bottom horizontal edge: $3"$, $3\frac{1}{2}"$, $2\frac{1}{2}"$, $6"$, $3"$, $2\frac{1}{2}"$, $5"$, $2\frac{1}{2}"$
- Internal dimensions: $1"$, $2\frac{1}{2}"$, $6"$, $3"$, $2\frac{1}{2}"$, $5"$, $2\frac{1}{2}"$
- Labels: A, B, C, D

Text:

- EL. Aux 439-0
- SIZE 24

SIZE 24"

Location, Description

21679A C2B

$$N + 24$$

PREPARED By _____ DATE _____

22 July 1-13 51

VERIFIED BY _____ DATE _____

Richard A. Peeg 11/6/81

629

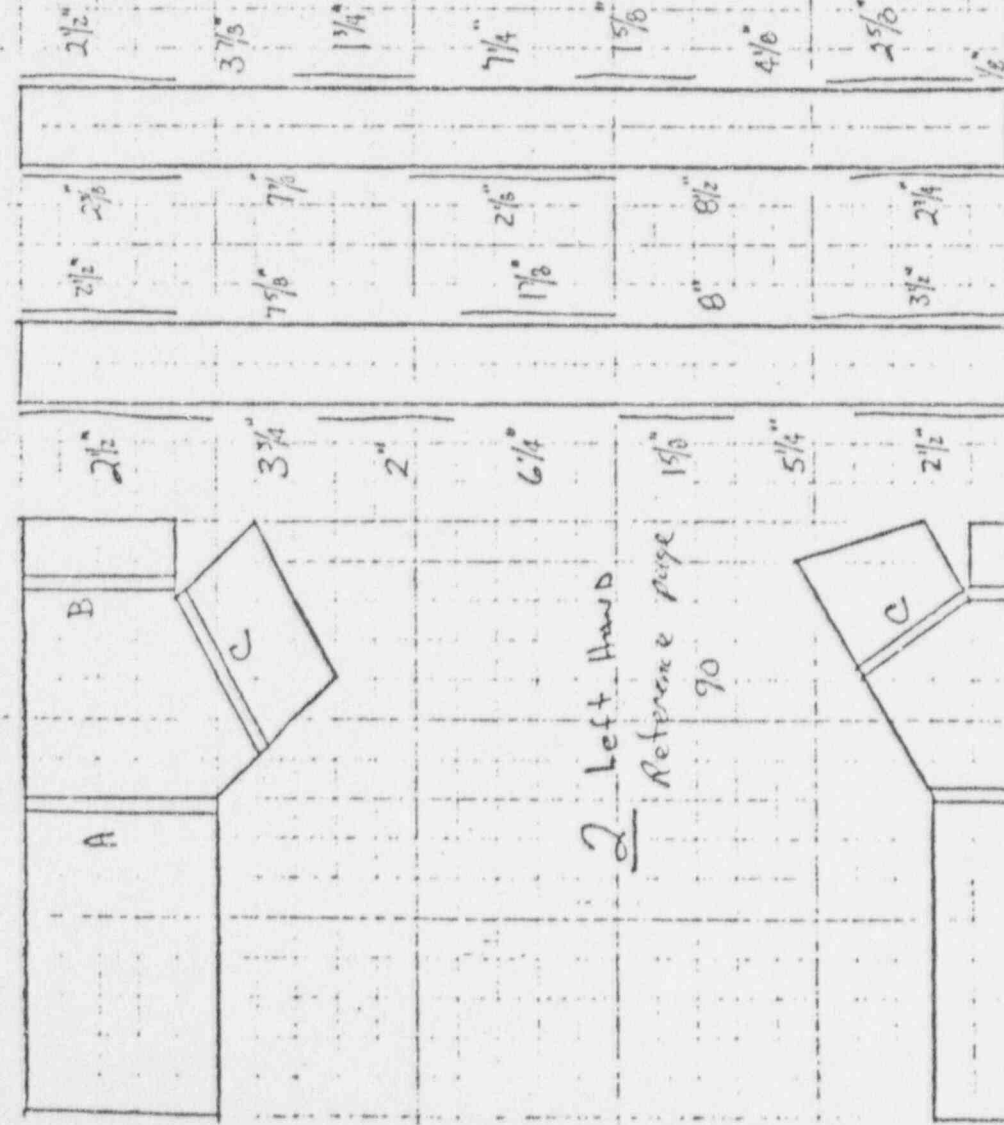
WYE DRAWN, RIGHT HAND, LEFT HAND

RIGHT HAND

1

SAMPLE No. 1

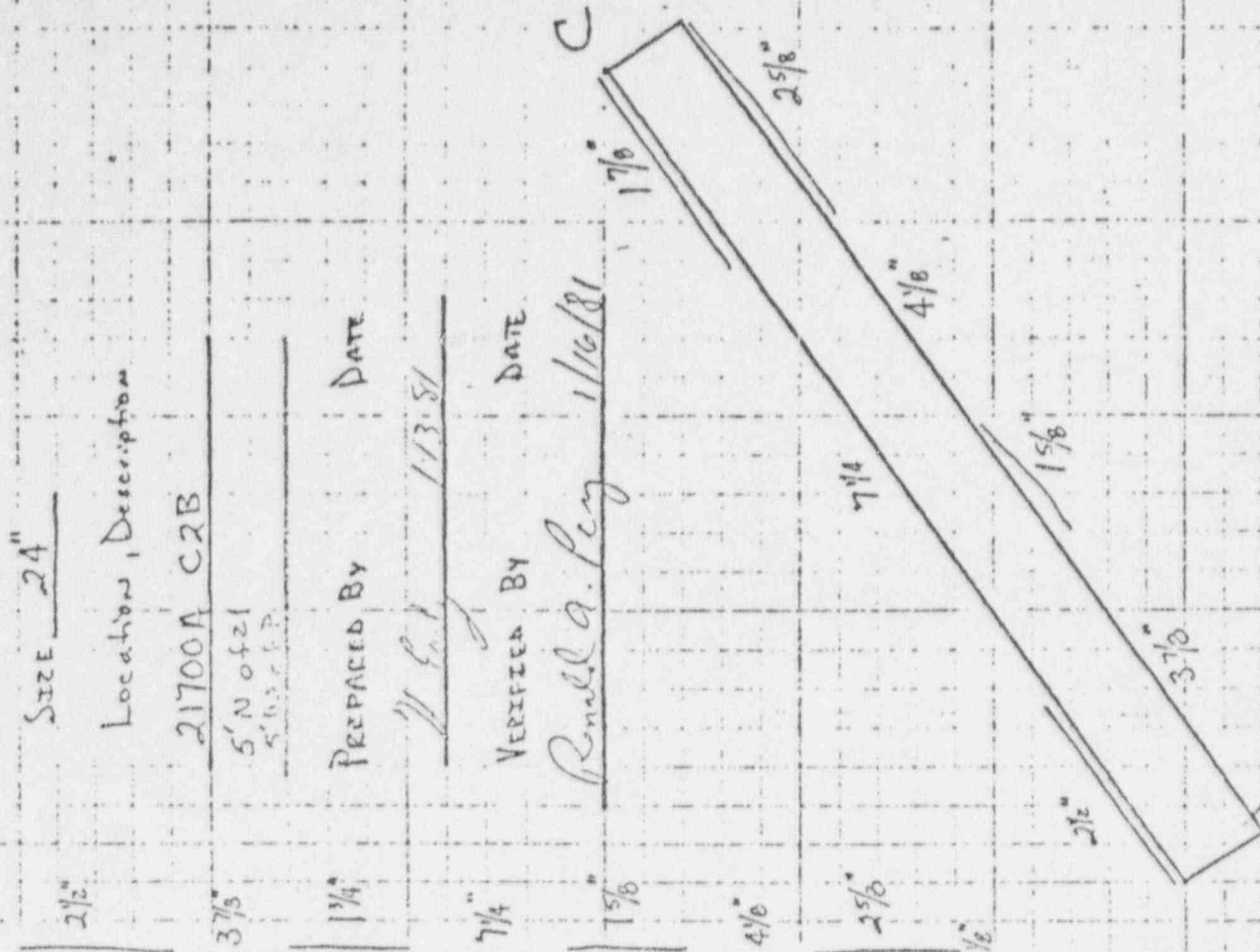
FL BOX 439'-0



2 Left Hand

Reference page

90



Page 98

777 SECTION (90° or 45°)

EL. Aux 439'-0

Size 24" - 90°

Location, Description

21832A C2B

Pg 24

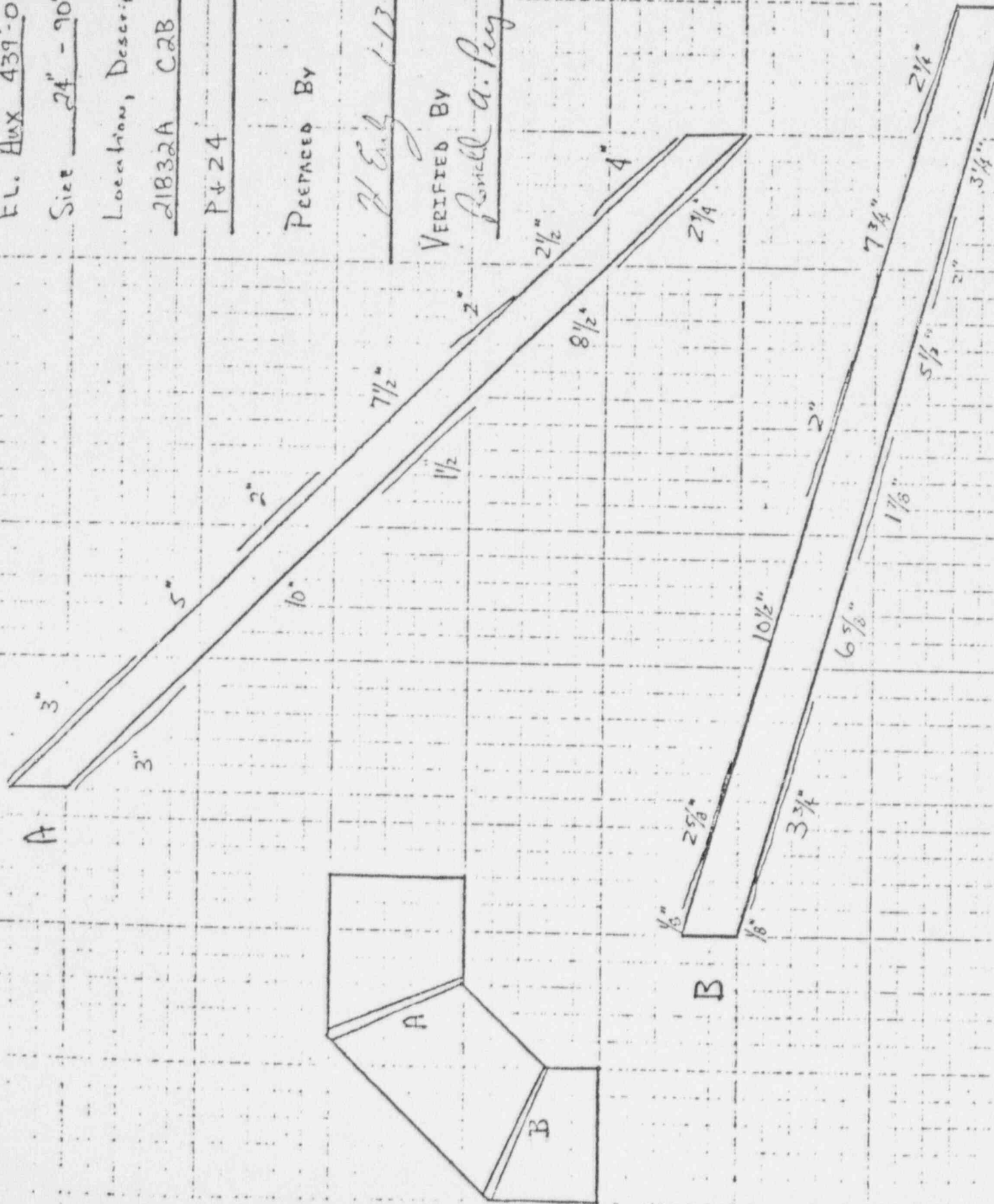
RECEIVED BY _____ DATE _____

21 E. 2 1-13-81

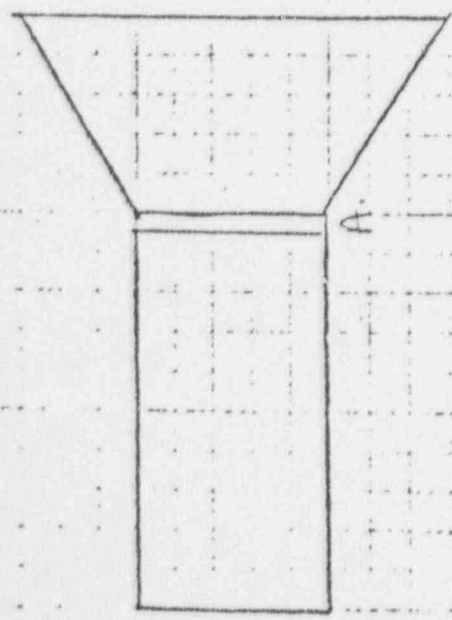
VERIFIED BY _____ DATE _____

Donell A. Day 1/16/81

PAGE 99



Double Flared End



EL. Aux 439'-0

Size 24"

Description, Location

1828A C2B

N + 24

PREPARED BY DATE

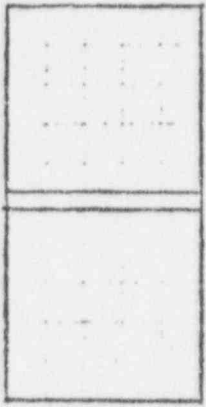
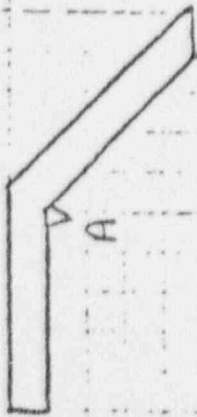
W. E. J. 1.13.81

VERIFIED BY DATE

R. M. A. P. 1/16/81

1/2" 3" 3 3/8" 7 1/4" 2 1/4" 7 1/4" 3 3/2" 1/8"

30° Outside Offset



A $3\frac{3}{4}$ "

7"

$1\frac{1}{2}$ "

$8\frac{3}{4}$ "

$2\frac{1}{2}$ "

3"

$5\frac{1}{2}$ "

$1\frac{3}{8}$ "

$5\frac{1}{8}$ "

$1\frac{1}{8}$ "

$3\frac{1}{2}$ "

$3\frac{3}{8}$ "

$\frac{1}{8}$ "

EL Aux 439-0

Size 24"

Location, Description

21696N CIB

P+25

PREPARED BY DATE

Pl E. J. 1-13-81

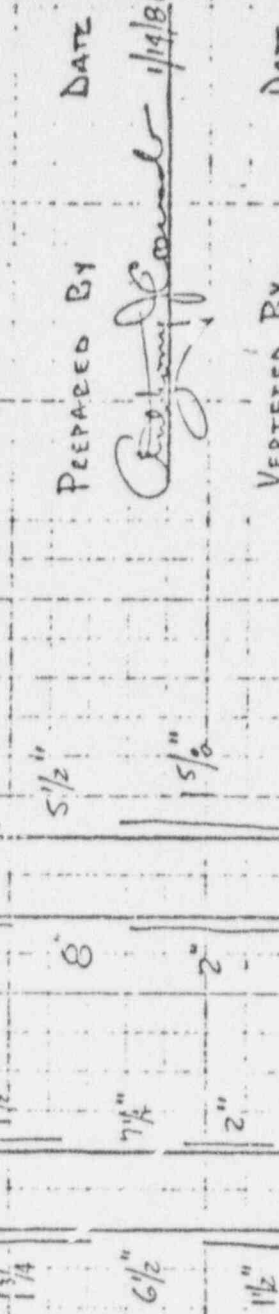
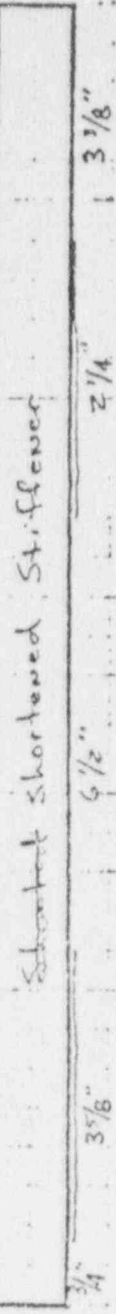
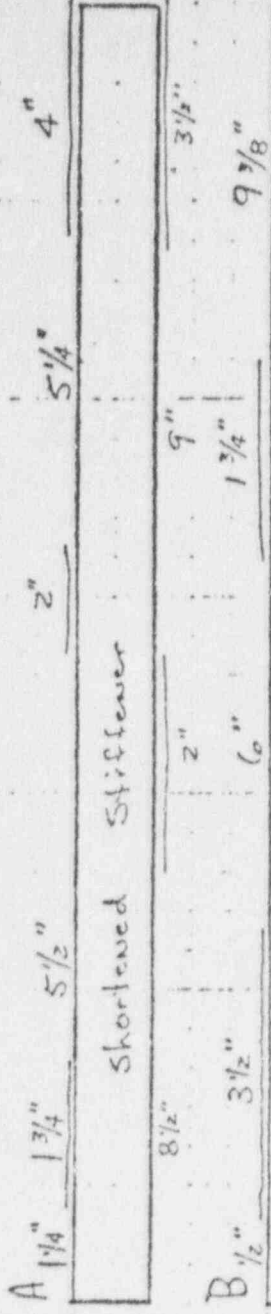
VERIFIED BY DATE

Russell A. Piny 1/16/81

STRAIN REDUCING CROSS SECTION

Example No. 2

1 see pgs 103



EL. Aux 463'-5"

Size 24"

Location, Description

21943A KIB

15' S of Z3

10' E of Q

PREPARED BY

Richard J. Conrad 1/14/81

DATE

VERIFIED BY

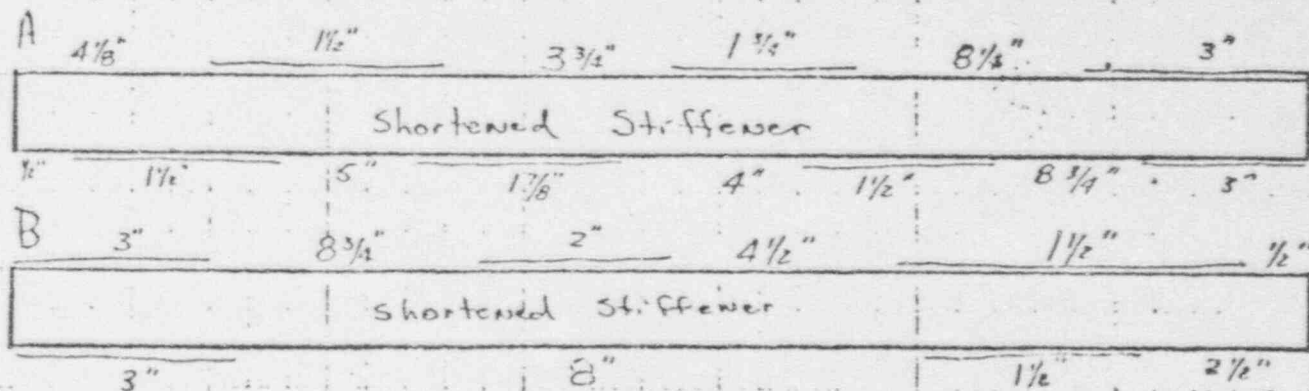
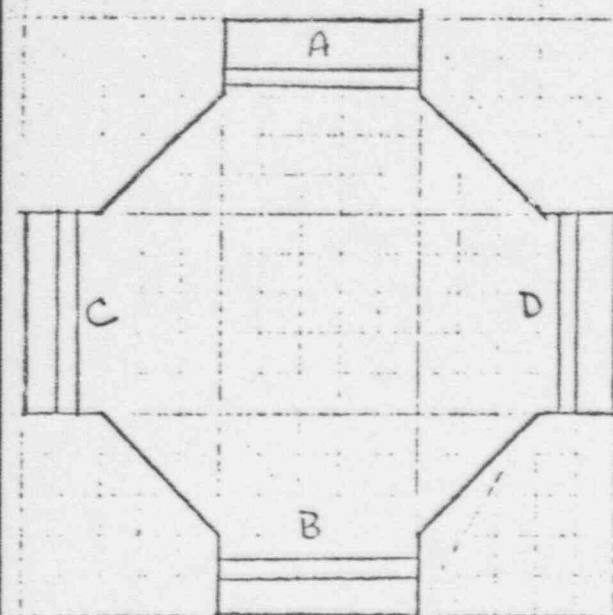
DATE

Russell A. Perry 1/14/81

STRAIGHT REDUCING CROSS SECTION

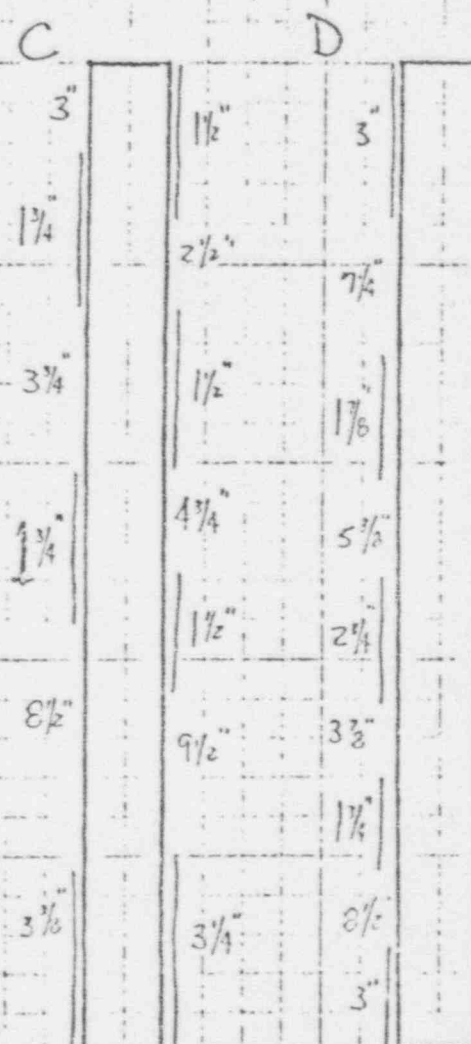
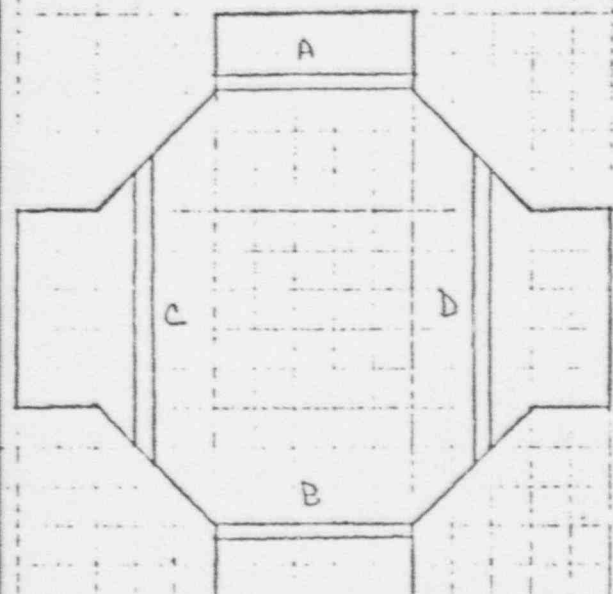
Example No. 1

1



2

See page 102



EL. Aux 463'-5"

Size 24"

Location, Description

21943 B KIB

15' S of 23

10' E of Q

PREPARED BY

DATE

William J. Conner 1/14/81

VERIFIED BY

DATE

Arnold A. Peig 1/14/81

ELL SECTION (90 or 45°)

EL. Aux 463'-5"

Size 24" - 90°

Location, Description

21936A KIB

15' 50.523

8 E 05 Q

PREPARED BY

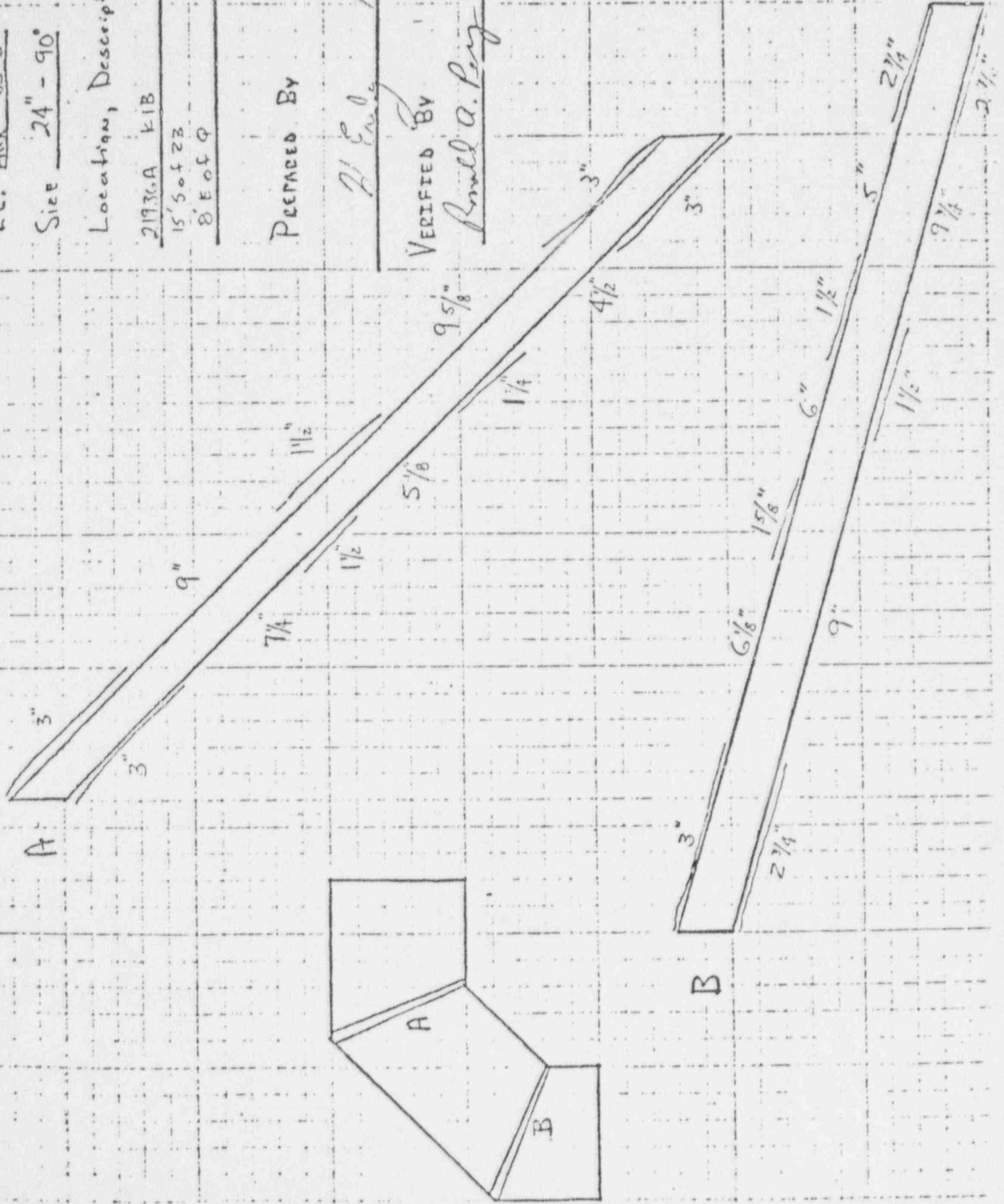
DATE

21 Enly 1-13-81

VERIFIED BY

DATE

Russell A. Perry 11/14/81



ELL SECTION (90° or 45°)

EL. ANX 463'-5"

Size 24" - 90°

Location, Description

21936B KIB

15' 50 4 23

8' E of Q

PREPARED BY

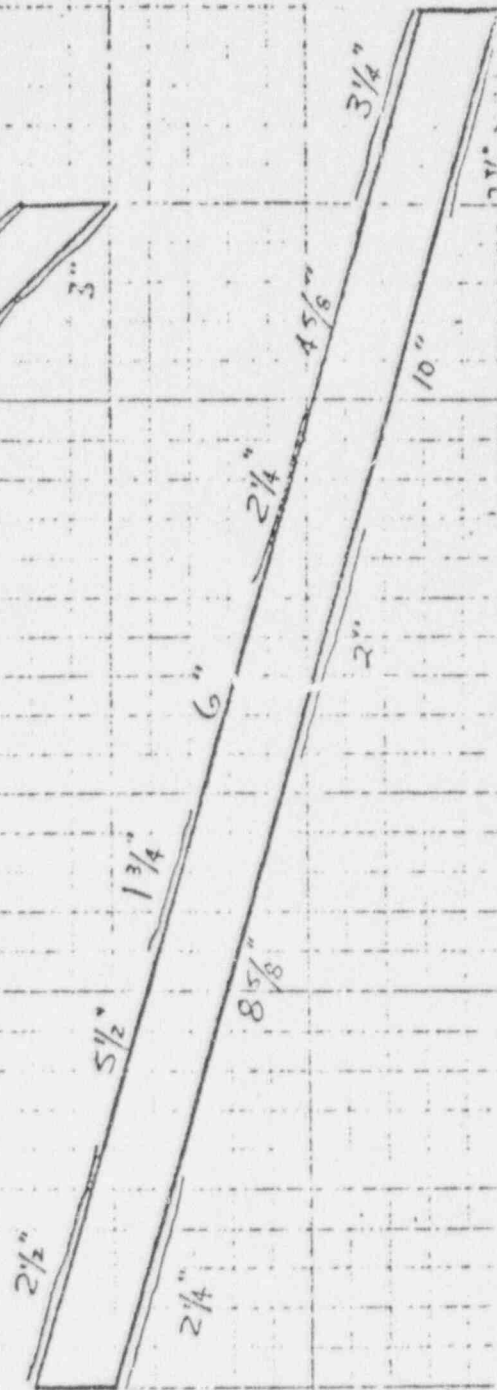
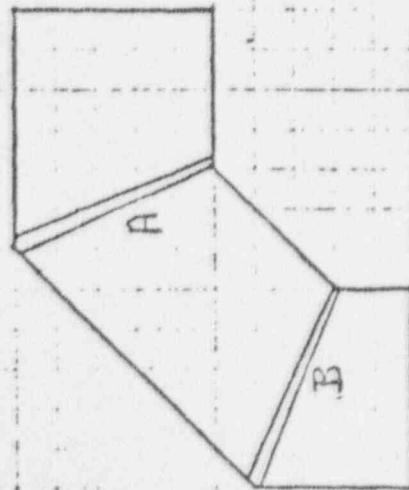
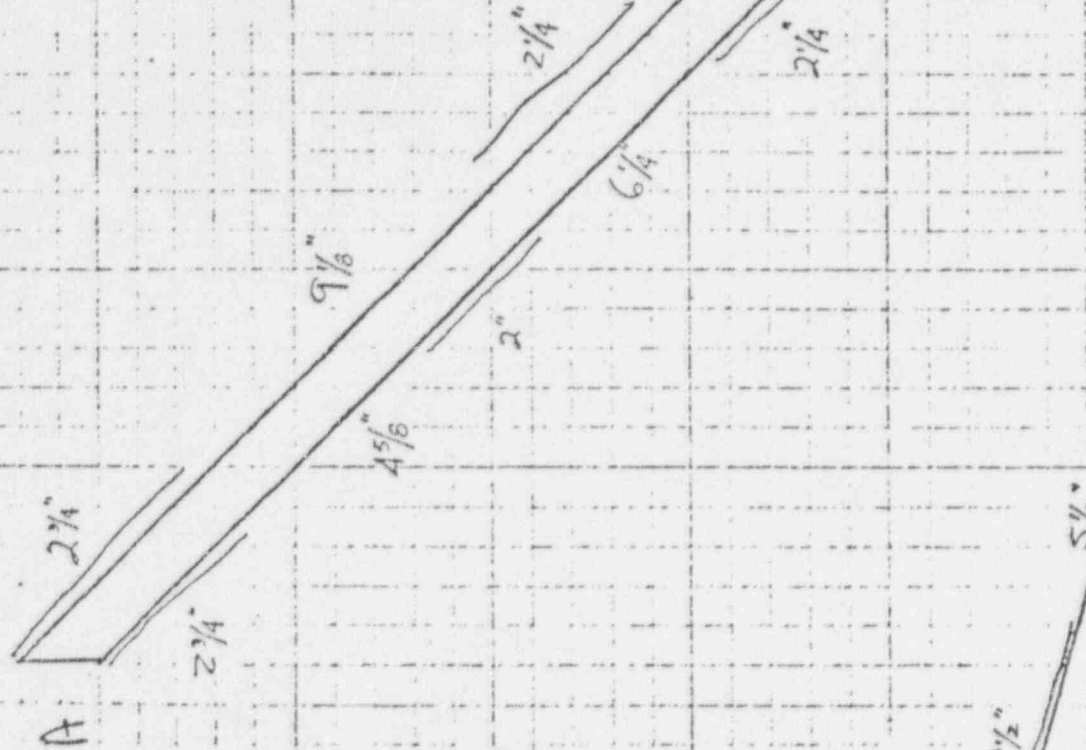
DATE

D. Smith 1-13-81

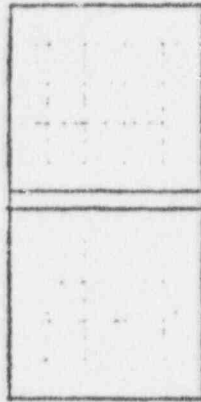
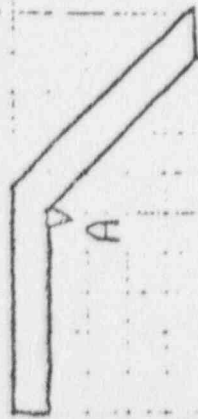
VERIFIED BY

DATE

Paul A. Day 11/14/81



30" Outside Offset



A $2\frac{1}{4}"$

$6"$

$1\frac{1}{4}"$

$5"$

$1\frac{2}{3}"$

$5\frac{1}{8}"$

$2\frac{1}{2}"$

$2\frac{5}{8}"$

$8\frac{1}{4}"$

$1\frac{1}{2}"$

$8\frac{7}{8}"$

$2\frac{3}{8}"$

EL MAX 463'-5"

Size 24"

Location, Description

21937D CIB
20' S of 23
8' E of Q

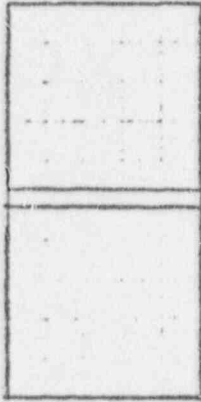
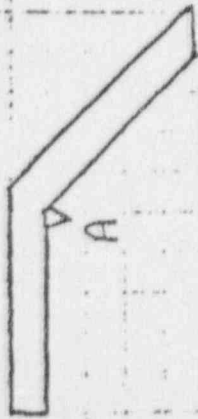
PREPARED BY DATE

W. E. G. 1-13-81

VERIFIED BY DATE

Ronald A. Perry 1/14/81

30° Outside Offset



A $3\frac{1}{4}''$ $3\frac{7}{8}''$ $2\frac{1}{4}''$ $4''$ $2\frac{1}{8}''$ $5\frac{5}{8}''$ $2\frac{7}{8}''$



$3''$ $8\frac{1}{4}''$ $2\frac{1}{8}''$ $6\frac{7}{8}''$ $3\frac{1}{2}''$

EL 463.5" Ans

Size 24"

Location, Description

21937A KIB

23' S of 23
8' E of Q

PREPARED BY

DATE

21 Encl 1-13-81

VERIFIED BY

DATE

Paul A. Perry 1/14/81

Page 107

STRAIGHT TEE SECTION



Cont 1
EL. # 426-0

Size 24"

Description Location

Next to 1405T P2B

P-11

Provided By DATE

Anthony G. Conner 1/14/81

VERIFIED DRAWING BY DATE

Russell A. Perry 1/14/81

1055

STRAIGHT TIE SECTION



EL. Cont 1 426-D

SIZE 24"

Description, Location

Next to MOSN P2B

R-11

Revised by DATE

Anthony Cavale 1/14/81

VERIFIED by

Russell A. Pacy 1/16/81

Size 12"

Description, Location

Near 1426J C1B

12-11

PREPARED BY

DATE

History of Canada

11/14/81

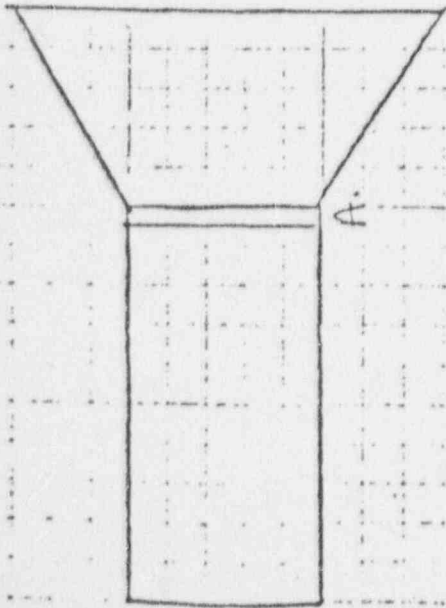
VERIFIED

DATE _____

Roll a. Long

18/12/11

Double Flared End



EL. Cont 1 412-0

Size 12"

Description, Location

Near 1365M CIE

R-11

PREPARED BY

DATE

Anthony Candel

1/14/81

VERIFIED BY

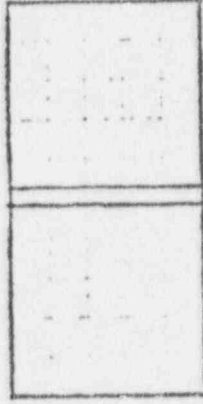
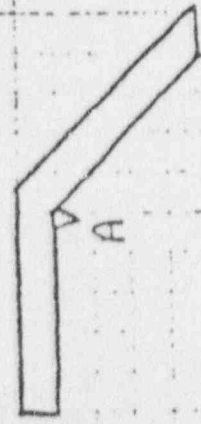
DATE

Ronald A. Perry

1/14/81

PAGE 111

30° OUTSIDE OFFSET



A

2

7 1/2"

2 3/8"

1 1/8"

2 3/8"

7 5/8"

1 3/4"

1/8"

EL Cont 1 426'-0

SIZE 12"

Location, Description

Near 1403R P2E

P-12

PREPARED BY

DATE

Anthony Connel

1/14/81

VERIFIED BY

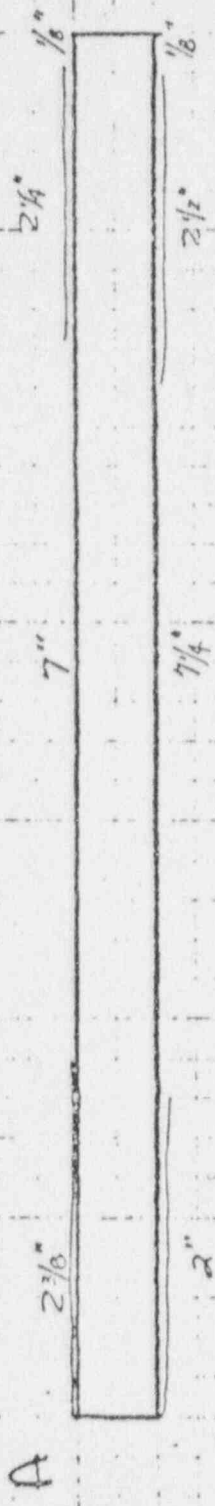
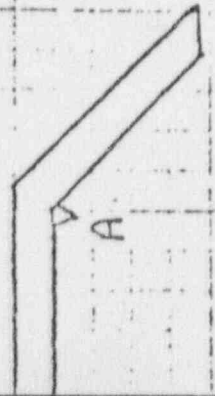
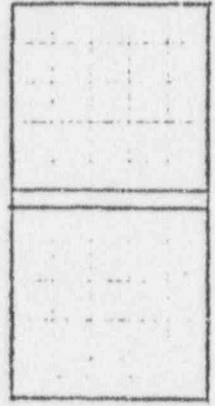
DATE

Paul A. Perry

1/14/81

PAGE 113

30 OUTSIDE OFFSET



EL Contd 420-0

Size 12"

Location, Description

Near 1403R P2E

P-12

PREPARED BY DATE

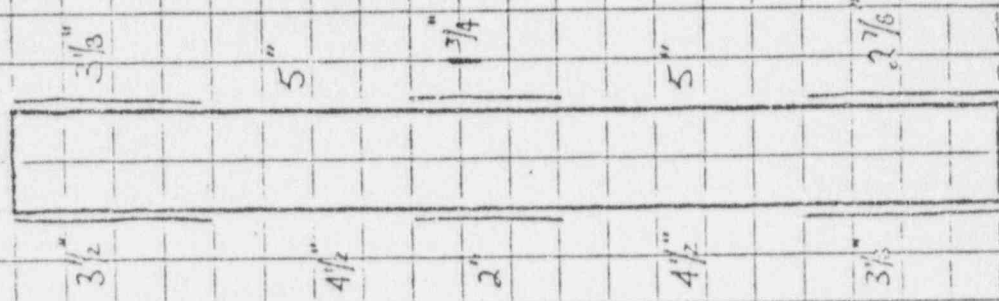
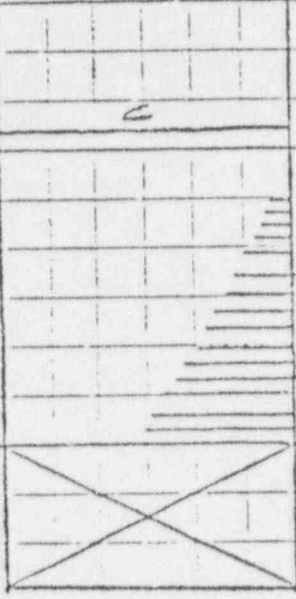
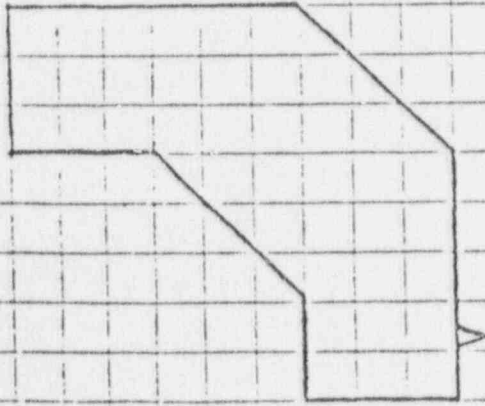
William J. Conner 1/19/81

VERIFIED BY DATE

Robert A. Perry 1/14/81

Page 113

LOWER ELBOW, VERTICAL 10" RADIUS



EL. Cont 1 412-0

Size 18"

Location, Description

12113 P2B

R-9

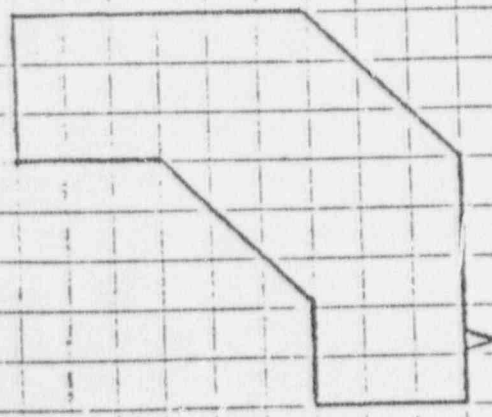
Prepared By DATE

Anthony G. Smith 1/13/81

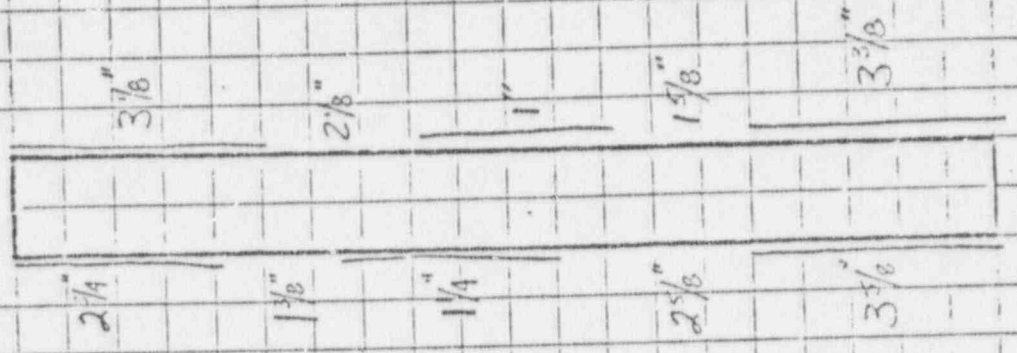
Verified By DATE

Paul A. Day 1/14/81

LOWER ELBOW, VERTICAL 120° ELBOW



A



EL. Const 1 412'-0"

Size 12"

Location, Description

IR137 CAB

R-1

PREPARED BY DATE

William Combs 1/19/81

VERIFIED BY DATE

Ronald A. Perry 1/14/81

Page 1/5

FULL SECTION (90 or 45°)

EL. Cont 1 42'0

Size 12"

Location, Description

Near 13500 L2B

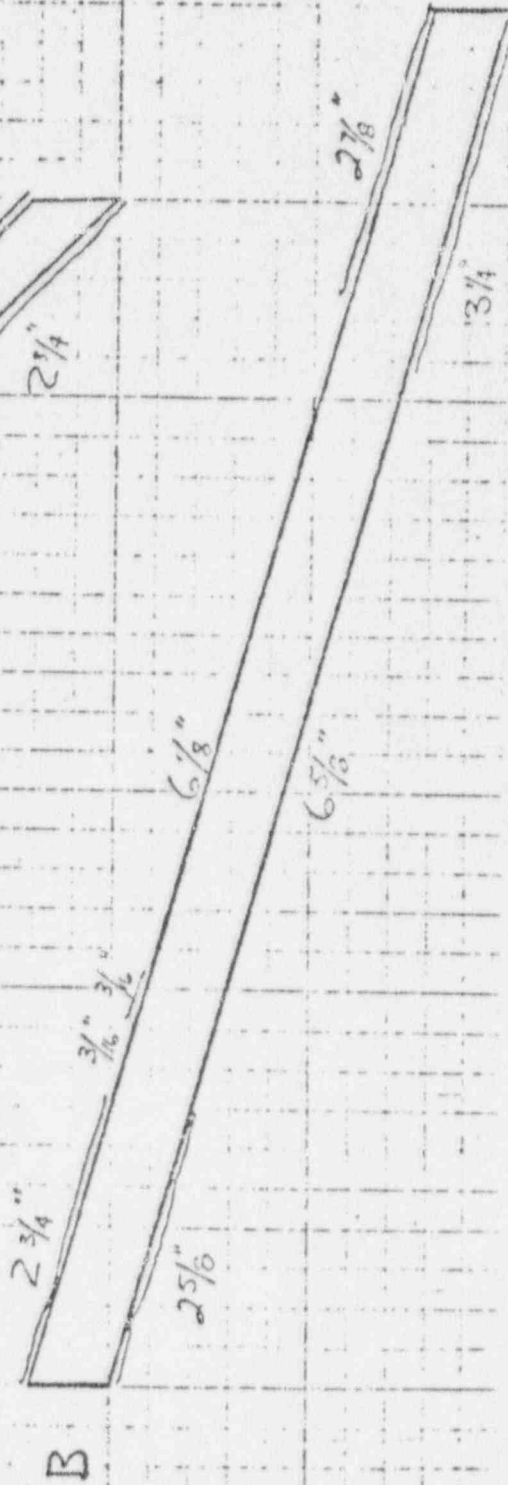
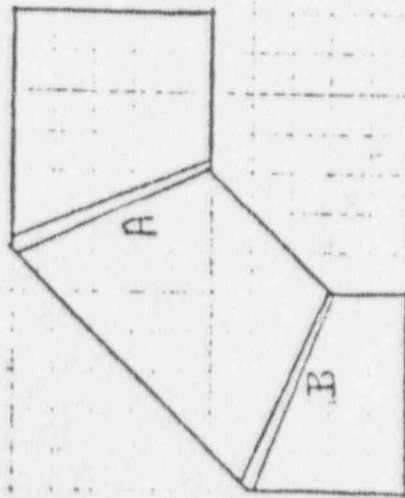
P-17 at SSW

PREPARED BY DATE

Anthony Gaudin 1/14/81

VERIFIED BY DATE

Ronald A. Perry 1/14/81



ELL SECTION (90° or 45°)

EL. CONTI 412-0

Size 12"

Location, Description

Below 136IN PIE

R9 at SSW

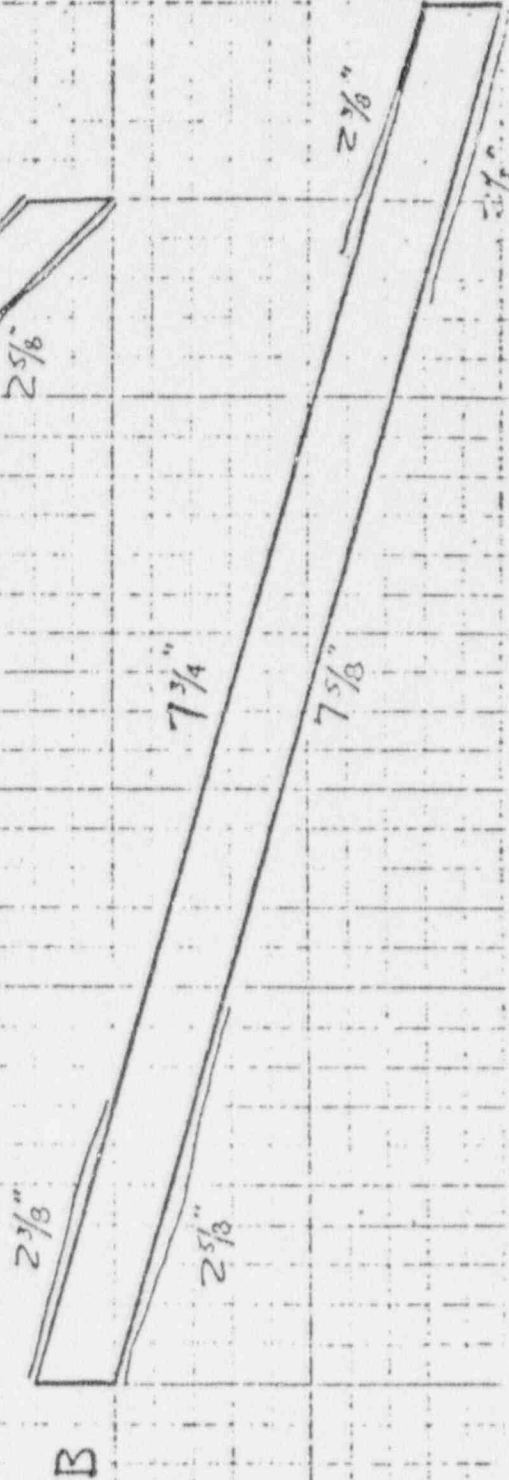
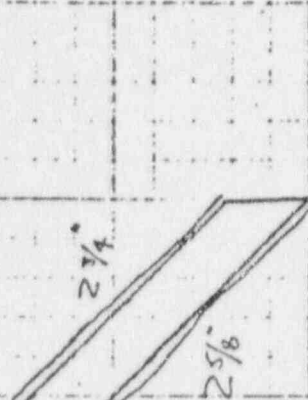
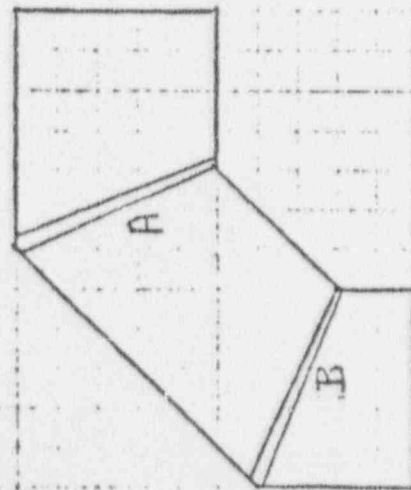
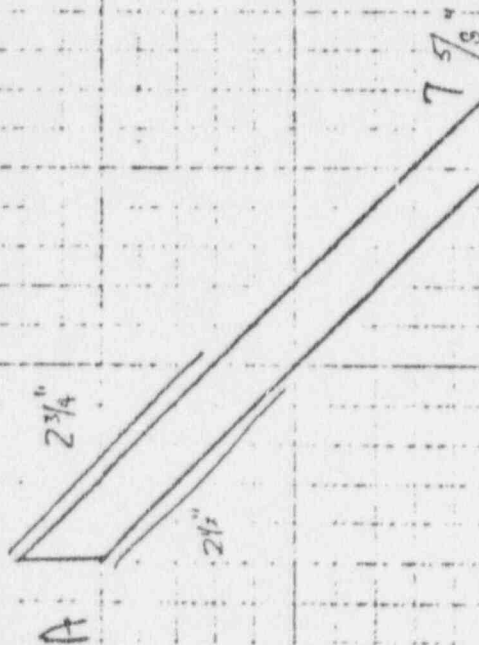
PREPARED BY

DATE

ASST. 1/13/81

VERIFIED BY

1/14/81



Page 117

LOWER ELBOW, VERTICAL 1" O RADIUS

EL, Aux 383-0

Size 18"

Location, Description

AR274 C2B

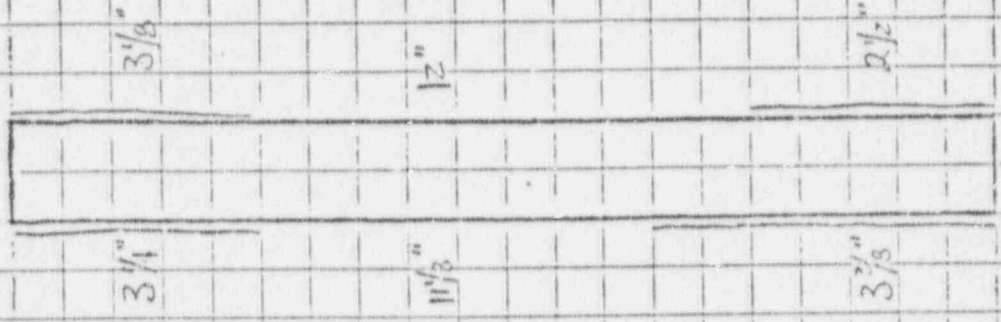
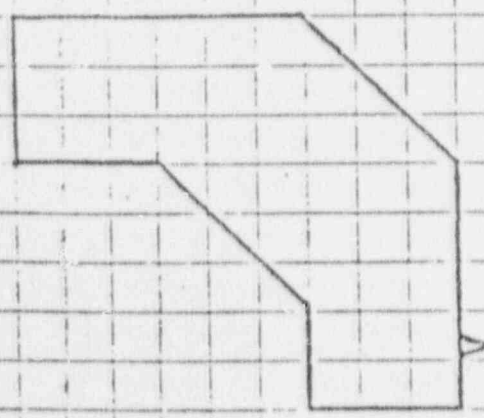
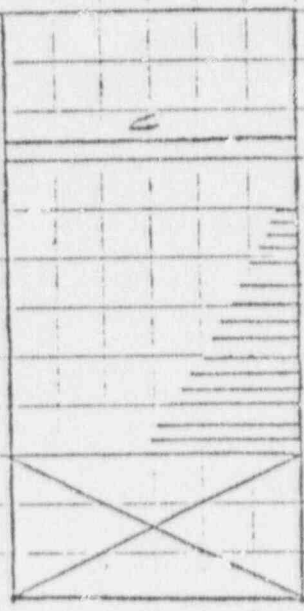
P+19

Prepared By DATE

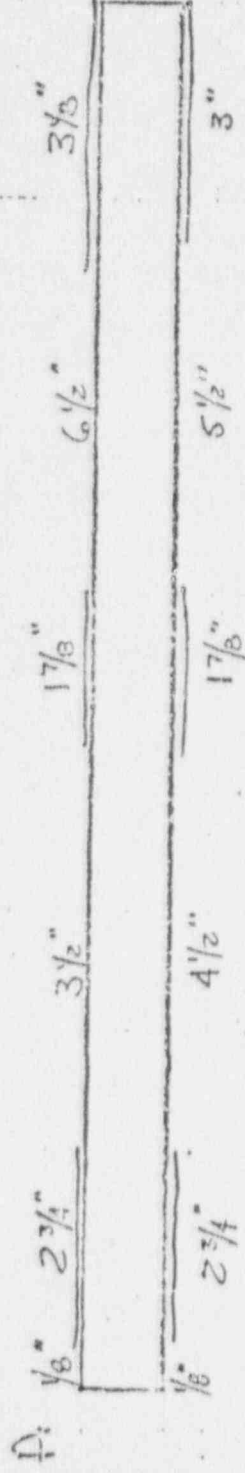
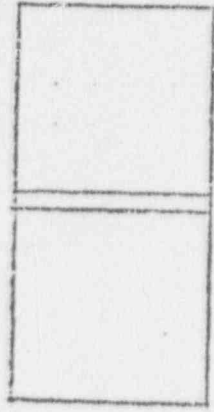
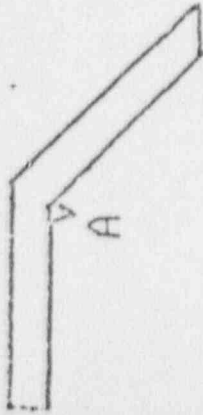
Anthony Camacho 1/22/87

Verified By DATE

Russell Page 1/22/87



30° Outset Offset



EL AX 383'-0

Size 12"

Location, Description

Near 2R274 C2B

P419

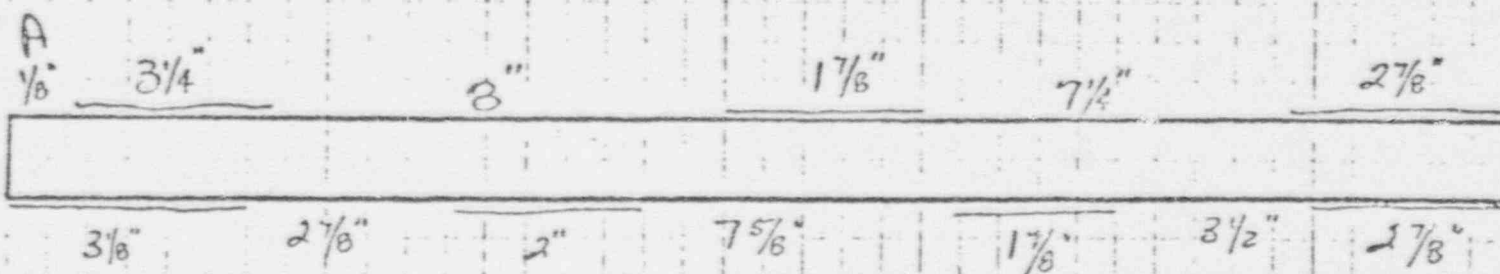
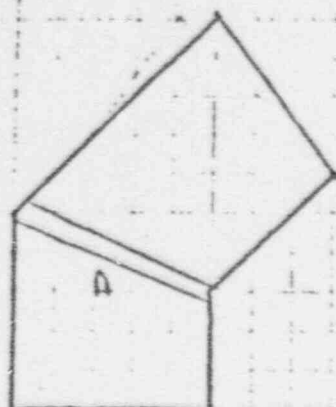
Prepared By Larc

Verified By Anthony Corcoran 1/22/81

Date

Small 9. Rev 1/22/81

30 offset



EL Aux 426-0

Size 24

Location, Description

Near 1997B CIE

P-12

PREPARED By DATE

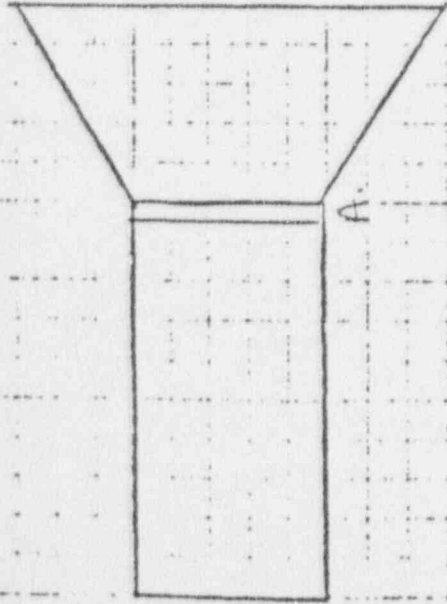
Anthony Conner 1/22/81

VERIFIED BY DATE

Ronald A. Roy 1/22/81

Photo 120

Double Flared End



EL. Aux 401-0

Size 18"

Description, Location

1871P CIB

P+17

PREPARED BY

DATE

Anthony Conner 1/22/81

VERIFIED BY

DATE

Ronald A. Perry 1/22/81

2 1/8"

5 3/8"

1 7/8"

6 1/8"

2 1/8"

2 1/4"

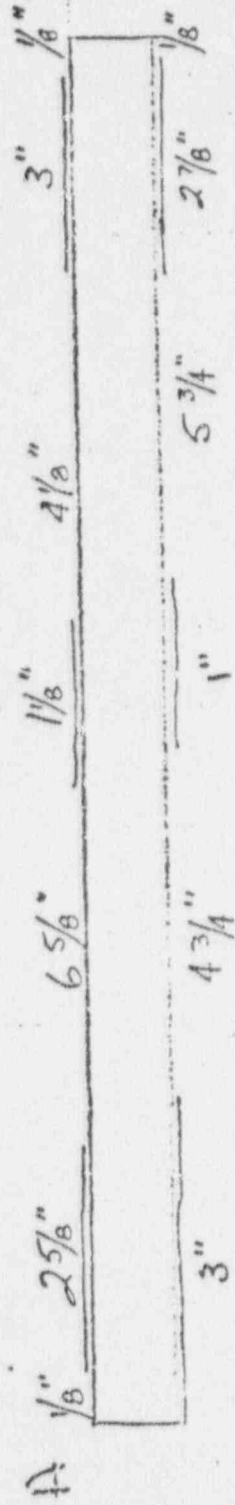
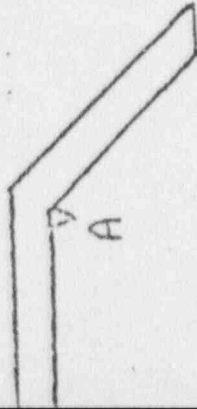
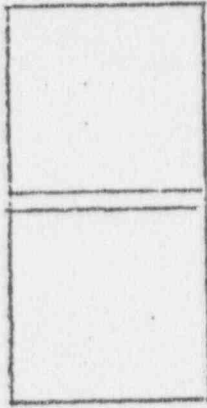
5 3/8"

2 1/8"

5 5/8"

2"

30° Outside Offset



EL Aux 401-0

Size 18"

Location, Description

1871P CIB

P+17

Prepared By Lat

Anthony Conzels 1/22/81

Verified By Don

Revised G. Perry 1/22/81