

F.P. 340 APRIL 18, 1980

MARCU, BOB

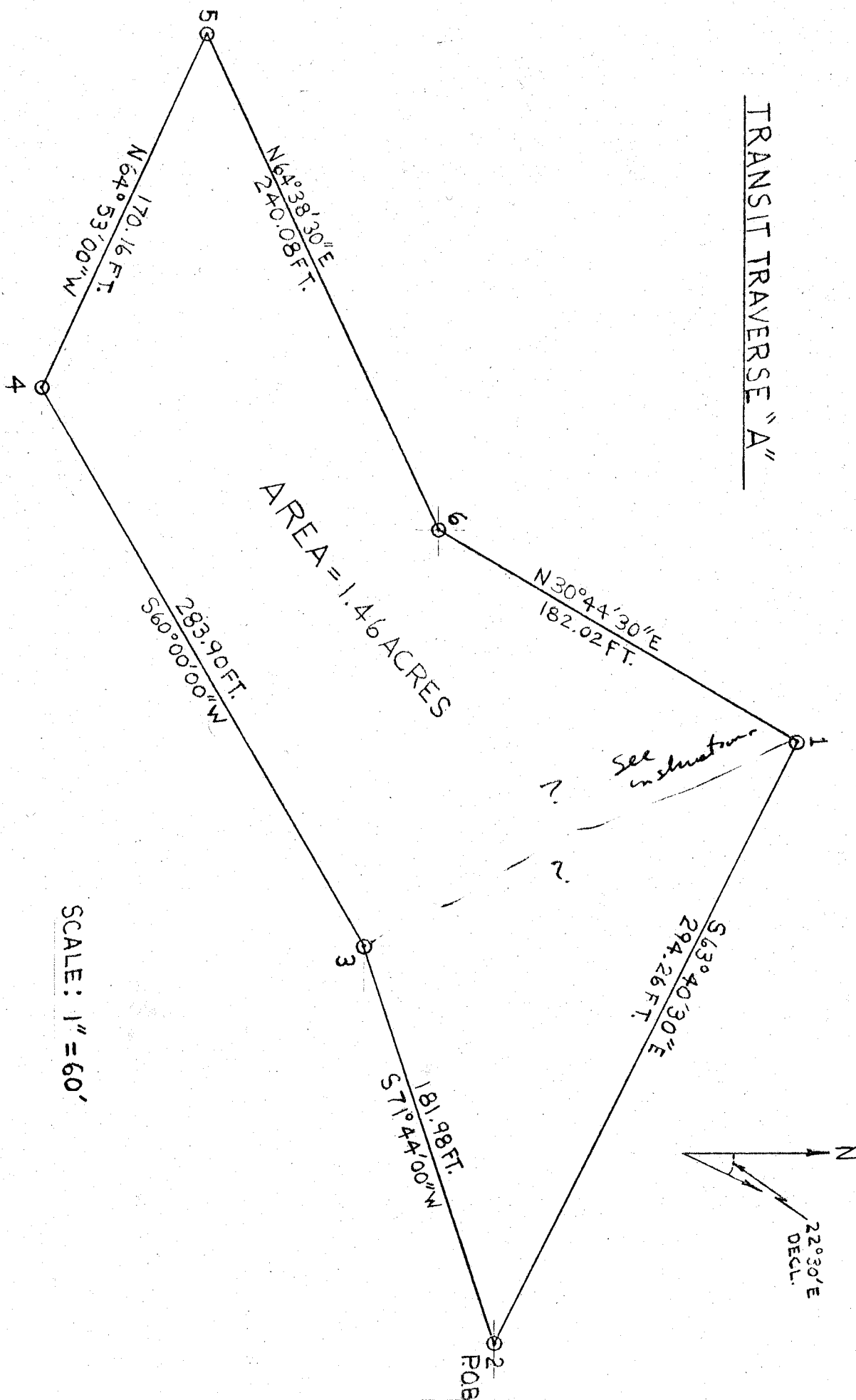
FIELD EXERCISE #5

(35)
3-5/4

PACK FOREST

TRANSIT TRAVERSE

"A"

TRANSIT TRAVERSE "A"

INTERIOR ANGLES

<u>STA.</u>	<u>EXTERIOR $\angle$</u>	<u>INT $\angle$</u>	<u>CORRECTED INT. $\angle$</u>
1	266°02'30"	93°57'30"	93°58'00"
2	314°58'00"	45°02'00"	45°02'30"
3	168°17'00"	191°43'00"	191°43'30"
4	235°07'30"	124°52'30"	124°53'00"
5	309°31'30"	50°28'30"	50°29'00"
6	146°06'30"	<u>213°54'00"</u>	<u>213°54'00"</u>

$$\Sigma = 719^{\circ}57'00'' \quad \Sigma = 720^{\circ}00'00''$$

CALC. OF INT $\angle$'s :

$$360^{\circ}00'00'' - \text{EXT. } \angle = \text{INT. } \angle$$

SAMPLE: STA. # 1

$$360^{\circ}00'00'' - 266^{\circ}02'30'' = \underline{93^{\circ}57'30''} \quad \checkmark \quad \text{INT. } \angle \#1$$

CALC. OF ANGULAR ERROR:

$$\text{CORRECT } \Sigma \text{ INT. } \angle \text{'s} = (N-2)(180^{\circ})$$

$$= (6-2)(180^{\circ})$$

$$= 720^{\circ}$$

$$\angle \text{ ERROR} = 720^{\circ} - 719^{\circ}57'00'' = \underline{0^{\circ}03'} \quad \checkmark \quad \angle \text{ ERROR}$$

$\angle$ ERROR WAS DIVIDED EVENLY OVER ALL STATIONS (0°00'30"
ADDED TO EACH).

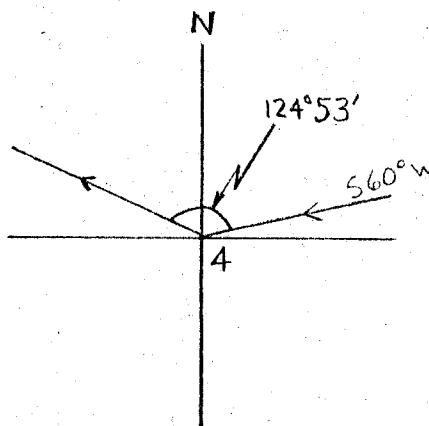
BEARINGS AND DISTANCES

<u>SIDE</u>	<u>ORIGINAL</u>		<u>*CORRECTED</u>	
	<u>HD</u>	<u>BRG</u>	<u>HD</u>	<u>BRG</u>
1-2	294.23'	S63°14'00"E	294.26'	S63°14'30"E
2-3	182.00'	S71°43'30"W	181.98'	S71°44'00"W
3-4	283.93'	S60°00'00"W	283.90'	S60°00'00"W
4-5	170.17'	N64°53'00"W	170.16'	N64°53'00"W
5-6	240.05'	N64°38'00"E	240.08'	N64°38'30"E
6-1	182.00'	N30°44'00"E	182.02'	N30°44'30"E

BRG. AND HD FROM ROB.(STA.2) TO STA.3 IS GIVEN ABOVE. ✓

SAMPLE BRG. CALC.

SIDE 4-5



BRG. SIDE 3-4 DETERMINED W/HAND COMPASS:

$$\text{BRG. SIDE 4-5} = 124^{\circ}53' - 60^{\circ}00'$$

$$= \underline{\underline{N 64^{\circ}53' W}} \quad \checkmark$$

BRG. 4-5

* CORRECTED HD'S & BRG'S COMPUTED W/CORRECTED LAT.'S
& DEP.'S.

SAMPLE BRG. CORRECTION

STA. #1:

$$\text{ARCTAN} \left(\frac{\text{CORRECTED DEP.}}{\text{CORRECTED LAT.}} \right) = \text{CORRECTED BRG.}$$

$$\text{ARCTAN} \left(\frac{262.74}{132.50} \right) = \underline{\underline{563^{\circ} 14' 30'' \text{E}}} \leftarrow$$

CORRECTED
BRG. 1-2SAMPLE HD CORRECTION

SIDE 1-2:

$$\begin{aligned} \text{HD}_{1-2} &= \sqrt{(\text{CORRECTED LAT.})^2 + (\text{CORRECTED DEP.})^2} \\ &= \sqrt{(-132.50)^2 + (262.74)^2} \\ &= \underline{\underline{294.26'}} \leftarrow \end{aligned}$$

CORRECTED
HDLATITUDES AND DEPARTURES

<u>STA.</u>	<u>ORIGINAL</u>		<u>CORRECTED</u>	
	<u>LAT. (FT.)</u>	<u>DEP. (FT.)</u>	<u>LAT. (FT.)</u>	<u>DEP. (FT.)</u>
1	-132.51	+262.70	-132.50	+262.74
2	- 57.07	-172.83	- 57.06	-172.80
3	-141.97	-245.89	-141.97	-245.85
4	+ 72.23	-154.08	+ 72.24	-154.06
5	+102.83	+216.91	+102.84	+216.94
6	+156.44	+ 93.01	+156.45	+ 93.03
	$\Sigma = -0.05$	$\Sigma = -0.18$	$\Sigma = 0.00$	$\Sigma = 0.00 \checkmark$

SAMPLE LAT. & DEP. CALCULATIONS

STA. #1:

$$\begin{aligned}
 \text{LAT.} &= \cos(\text{BRG})(\text{HD}) \\
 &= \cos(63^\circ 14')(294.23) \\
 &= \underline{\underline{-132.51 \text{ FT.}}} \leftarrow
 \end{aligned}$$

LAT₁₋₂

$$\begin{aligned}
 \text{DEP.} &= \sin(\text{BRG})(\text{HD}) \\
 &= \sin(63^\circ 14')(294.23) \\
 &= \underline{\underline{262.70 \text{ FT.}}} \leftarrow
 \end{aligned}$$

DEP₁₋₂SAMPLE LAT. & DEP. CORRECTION

STA. #1:

$$\begin{aligned}
 \text{LAT. CORRECTION} &= (\Sigma \text{ ORIG. LAT.}) \left(\frac{\text{HD}}{\Sigma \text{ HD}} \right) \\
 &= (-0.05) \left(\frac{-294.23}{1352.38} \right) \\
 &= 0.01
 \end{aligned}$$

$$\begin{aligned}
 &-132.51 \\
 &+ 0.01 \\
 &\underline{\underline{-132.52}} \leftarrow
 \end{aligned}$$

CORR. LAT.

$$\begin{aligned}
 \text{DEP. CORRECTION} &= (\Sigma \text{ ORIG. DEP.}) \left(\frac{\text{HD}}{\Sigma \text{ HD}} \right) \\
 &= (-0.18) \left(\frac{-294.23}{1352.38} \right) \\
 &= 0.04
 \end{aligned}$$

$$\begin{aligned}
 &+ 262.70 \\
 &+ 0.04 \\
 &\underline{\underline{+ 262.74}} \leftarrow
 \end{aligned}$$

CORR. DEP.

CALC. OF EOC, EOC BRG., & PRECISION

$$EOC = \sqrt{(\Sigma LAT.)^2 + (\Sigma DEP.)^2}$$

$$= \sqrt{(-0.05)^2 + (-0.18)^2}$$

$$= \underline{0.19 \text{ FT.}}$$

EOC.

$$EOC. \text{ BRG.} = \text{ARCTAN} \left(\frac{\Sigma DEP.}{\Sigma LAT.} \right)$$

$$= \text{ARCTAN} \left(\frac{-0.18}{-0.05} \right)$$

$$= \underline{S 74^\circ 29' W}$$

EOC. BRG.

$$\text{PRECISION} = \left(\frac{EOC.}{\Sigma HD} \right)$$

$$= \frac{0.19}{1352.39} = \frac{(0.19)(1/0.19)}{(1352.38)(1/0.19)} = \frac{1}{7118}$$

good

PRECISION

AREA CALCULATIONS

<u>LINE</u>	<u>LAT.</u>	<u>DEP.</u>	<u>+</u>	<u>-</u>
1-2	-132.50	+262.74	+22,896	-14,992
2-3	-57.06	-172.80	+14,028	+24,532
3-4	-141.97	-245.85	+21,872	-17,768
4-5	+72.27	-154.06	+15,678	-15,844
5-6	+102.84	+216.94	+9,567	+33,940
6-1	+156.45	+93.03	+41,105	-12,326
1-2	-132.50	+262.74		

$$\Sigma = +125,146 \quad \Sigma = -2,458$$

$$\text{AREA} = (0.5)[(125,146) - (-2,458)]$$

$$= 63,802 \text{ SQ. FT.}$$

$$(63,802 \text{ SQ. FT.}) \left(\frac{1 \text{ ACRE}}{43,560 \text{ SQ. FT.}} \right) = \underline{1.46 \text{ ACRES}}$$

AREA

X & Y COORDINATES

<u>STA.</u>	<u>X-COOR.</u>	<u>Y-COOR.</u>
1	0.00	0.00
2	262.74	-132.44
3	89.93	-189.56
4	-155.92	-331.52
5	-309.98	-259.29
6	-93.03	-156.45

FOR M 340
SEC

NAME

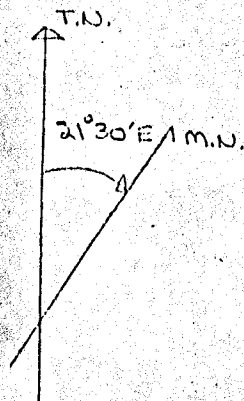
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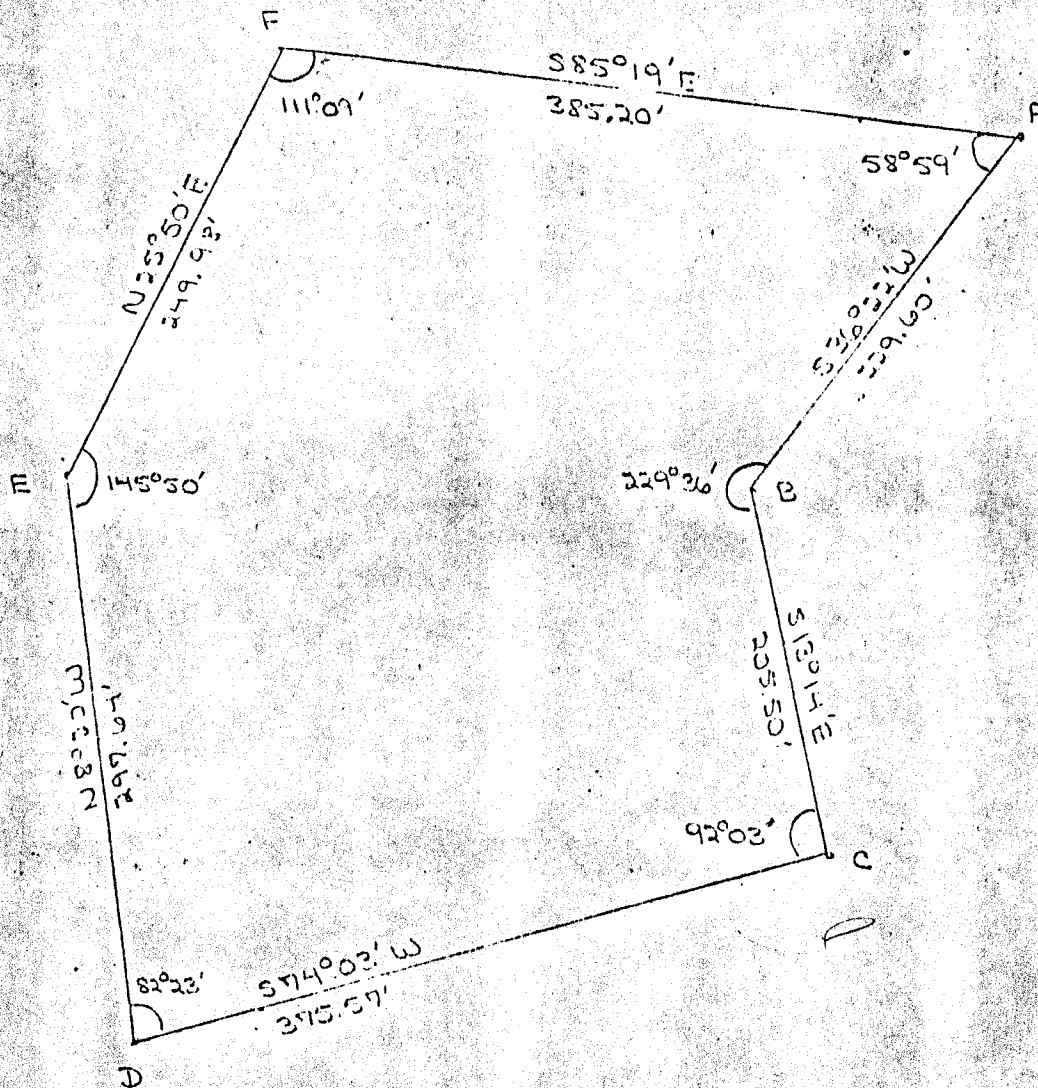
TITLE

SHERRY EISNER
SECTION AP

40



STX-SIDED TRAVERSE



SCALE: 1.00" = 100 FT.