

6/1/89

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GENERAL INSTRUCTIONS

GETTING STARTED :

THESE INSTRUCTIONS ARE WRITTEN BASED ON THE ASSUMPTION THAT THE USER IS ALREDY FAMILIAR WITH THE BASIC 41CX OPERATIONS. IF YOU ARE NOT, IT IS RECOMMENDED THAT YOU READ THE OWNERS MANUAL BEFORE GOING ANY FURTHER.

- 1 TURN THE CALCULATOR OFF. REMOVE ANY PROGRAM PACK FROM PORTS 1 & 2.
- 2 PLACE EXTENDED MEMORY MODULES (IF ANY) IN PORTS 2 AND 3.** CAUTION ** IF YOU HAVE ANY PROGRAMS OR FILES IN EXTENDED MEMORY AND YOU HAVE TO MOVE ITS LOCATION. IT IS RECOMMENDED THAT YOU STORE ALL FILES AND PROGRAMS ON CARDS OR DISK BEFORE YOU REMOVE ANY MODULES.
- 3 PLACE THE CAL-TRANS SURVEY CHIP IN PORT 1. THE BACK OF THE CALCULATOR SHOULD LOOK LIKE THIS.

1. C-T CHIP	2. X MEMORY	OR	1. C-T CHIP	2. 2X MEMORY
3. X MEMORY	4.	OR	3.	4.

PORT 4 IS LEFT AVAILABLE FOR THE CARD READER, PRINTER OR DISK DRIVE.

IN THESE INSTRUCTIONS WHEN A KEY INSTRUCTION IS GIVEN...

... [GOLD] IS THE SAME AS [SHIFT].

... WHEN A [SHIFT] KEY COMMAND IS GIVEN THE NEXT KEY WILL BE ONE WRITTEN IN WHITE ON THE KEYBOARD. EX: [SHIFT] 9

... WHEN A [GOLD] KEY COMMAND IS GIVEN THE NEXT KEY WILL BE ONE WRITTEN IN GOLD ON THE KEYBOARD. EX: [GOLD] [CATALOG]

... WHEN AN [ALPHA] KEY COMMAND IS GIVEN THE NEXT KEY WILL BE ONE WRITTEN IN BLUE ON THE KEYBOARD. EX [XEQ] [ALPHA] [FM] [ALPHA]

- 4 TURN THE CALCULATOR ON AND XEQ [ALPHA] INSTALL [ALPHA] THIS PROGRAM SETS UP YOUR CALCULATOR BY SIZING YOUR WORKING MEMORY TO 59, CLEARING ALL ALARMS, SETTING USER, CLEARING ALL EXISTING KEY ASSIGNMENTS, SETTING POINT PROTECT "ON" AND MAKING THE FOLLOWING KEY ASSIGNMENTS.

HMS-	TO [SHIFT] -	FM	TO [SHIFT] 9
HMS+	TO [SHIFT] +	MU1	TO [SHIFT] 8
HMS	TO [SHIFT] X	MU2	TO [SHIFT] 7
HR	TO [SHIFT] :	PROMPT	TO EEX

TIME AND DATE TO [SHIFT] ON

THE GOOSE WILL FLY FOR ABOUT 15 SECONDS, FOLLOWED BY

*" TIME? H.MMSS " EX: -3.2756 IS 3:27:56 PM
IF THE TIME IS ALREADY CORRECT PRESS R/S.

*" DATE?M.DDYYYY" EX: 2.221989 IS 2/22/89
IF THE DATE IS ALREADY CORRECT PRESS R/S

* THESE FUNCTIONS WILL BE IGNORED BY AN41CV WITH OUT A CLOCK MODULE.
BUT THERE ARE OTHER FUNCTIONS THE 41CV CANNOT DO. IT IS NOT ** RECOMMENDED **.

- 5 AZ., NE, FIX, FM

A	B	C	D	PRESS A TO DISPLAY AZIMUTHS
				PRESS B TO DISPLAY NORTHINGS AND EASTINGS.
				PRESS C TO FIX THE NUMBER OF PLACES YOUR ANSWER WILL DISPLAY.
				PRESS D TO GO TO FILE MANAGEMENT.

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MENUS AND PROMPTS

THERE ARE FOUR MENU PROGRAMS. FM, MU1, MU2 AND FMDD ASSIGNED TO [SHIFT] 9, [SHIFT] 8 AND [SHIFT] 7 RESPECTIVELY WITH FMDD UNASSIGNED. THESE PROGRAMS ALL OPERATE BASICALLY THE SAME, WHEN A MENU PROGRAM IS CALLED UP YOU WILL BE GIVEN A CHOICE OF PROGRAMS TO SELECT FROM ON THE SCREEN. THE PROGRAM NAMES ARE ABBREVIATED AND LOCATED ABOVE THE KEY THAT THEY ARE ASSIGNED TO. FOR EXAMPLE EXECUTE FM (FILE MANAGEMENT) BY KEYING IN [SHIFT] 9. THE FIRST PROMPT IS.

CR, DSP, FIX, PP, ?	TO EXECUTE CR (CREATE A FILE)	PRESS A
	TO EXECUTE DSP (DISPLAY)	PRESS B
A B C D E	TO EXECUTE FIX (FIX DECIMAL PT)	PRESS C
	TO EXECUTE PP (POINT PROTECT)	PRESS D
	TO EXECUTE ? (MORE PROGRAMS)	PRESS E

OTHER MENUS APPEAR THROUGHOUT THE PROGRAMS WILL OPERATE IN THE SAME MANNER.

ANOTHER TYPE OF PROMPT WILL BE A Y/N PROMPT. THIS TYPE OF PROMPT WILL SET THE CALCULATOR IN THE ALPHA MODE AND REQUIRES YOU TO RESPOND WITH Y R/S FOR YES, OR N R/S FOR NO. THE DEFAULT FOR EACH PARTICULAR PROMPT IS GIVEN IN THE INSTRUCTIONS, IF YOU WANT THE DEFAULT SIMPLY PRESS R/S. FOR EXAMPLE THE PROMPT OVR RITE Y/N IS LETTING YOU KNOW THAT YOU ARE ABOUT TO WRITE OVER A PAIR OF COORDINATES AND VERIFYING IF YOU WANT TO WRITE OVER THEM. THE DEFAULT IS NO, SO IF YOU DON'T WANT TO WRITE OVER THEM PRESS R/S, YOU DON'T NEED TO PRESS N R/S.

SOME ERROR MESSAGES ARE A RESULT OF ERROR TRAP SUBROUTINES WHICH ARE DESIGNED TO HELP YOU RECOVER FROM COMMON ERRORS. THEY WILL LOOK SIMILAR TO THE BUILT-IN ERROR MESSAGES IN THE 41CX BUT ARE USUALLY FOLLOWED BY -R/S OR Y/N. EXAMPLE END FL-R/S THIS IS THE SAME AS THE END FILE ERROR MESSAGE, EXCEPT INSTEAD OF BOMBING-OUT OF THE PROGRAM YOU CAN PRESS R/S AND CONTINUE BY RESIZING YOUR FILE OR RETURNING TO THE PROMPT THAT CAUSED THE ERROR AND RE-ENTERING A NEW RESPONSE.

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COORDINATE FILE ERROR TRAPS

ALL PROGRAMS THAT USE COORDINATE FILES ON THIS CHIP WILL STOP AND DISPLAY THE CURRENT WORKING FILE NAME, WHEN THE PROGRAM IS EXECUTED AND ANY TIME THE FILE IS CHANGED, PRESS R/S TO CONTINUE. IF THE PRINTER IS USED THE TIME DATE AND FILE NAME WILL BE PRINTED AND PROGRAM EXECUTION WILL CONTINUE AUTOMATICALLY.

MOST ERRORS ARE CAUSED BY ENTERING POINT NUMBERS THAT ARE TOO LARGE FOR THE FILE OR BY SIMPLY PRESSING R/S WITHOUT ENTERING A POINT NUMBER. THE FOLLOWING GROUP OF ERROR TRAPS WAS DESIGNED TO CATCH THOSE KINDS OF ERRORS.

- END FL-R/S MEANS THAT THE POINT NUMBER YOU ENTERED IS GREATER THAN THE FILE SIZE. PRESS R/S TO CONTINUE.
- NO CURNT.FL. MEANS THAT YOU DON'T HAVE A COORDINATE FILE CURRENT, YOU NEED TO CREATE A FILE WITH CR OR SELECT A FILE USING CAT 4.
- RESIZE-Y/N AFTER YOU GET END FL-R/S MESSAGE AND YOU PRESS R/S, THIS MESSAGE WILL COME UP ASKING IF YOU WANT TO RESIZE THE FILE. THE CALCULATOR WILL BE IN ALPHA, PRESS Y OR N FOLLOWED BY R/S (THE DEFAULT IS NO). IF YOU PRESSED N THE PROGRAM EXECUTION RETURNS TO THE PROMPT THAT CAUSED THE ERROR SO YOU CAN ENTER A DIFFERENT POINT NUMBER. IF YOU PRESSED Y AND THERE WAS ROOM AVAILABLE THEN THE PROGRAM EXECUTION CONTINUES AS NORMAL, IF THERE IS NO ROOM THEN YOU WILL GET A NO ROOM-R/S MESSAGE.
- NO ROOM-R/S THIS COMES UP IF THERE IS NO MORE ROOM AVAILABLE IN EXTENDED MEMORY TO RESIZE THE FILE. PRESS R/S AND PROGRAM EXECUTION WILL RETURN TO THE PROMPT THAT CAUSED THE ERROR SO YOU CAN ENTER A DIFFERENT POINT NUMBER. IF YOU NEED MORE ROOM YOU CAN TRY USING SQ TO TAKE ADVANTAGE OF UN-USED SPACE IN OTHER FILES.

DETAILED INSTRUCTIONS

MOST OF THE PROGRAMS IN THE CHIP ARE DESIGNED TO OPERATE WITH COORDINATE FILES, THIS HAS PROVEN TO BE THE BEST METHOD FOR PERFORMING SURVEYING CALCULATIONS BECAUSE ONCE THE COORDINATES HAVE BEEN GENERATED THEY CAN BE STORED AND RE-USED BY SIMPLY CALLING THE COORDINATES BY POINT NUMBER. YOU CAN SEE HOW THIS METHOD COULD SAVE COUNTLESS TRANSPOSITION ERRORS AND THE TIME REQUIRED TO KEY IN THE COORDINATES ONE DIGIT AT A TIME. BECAUSE OF THESE REASONS IT WOULD BE TO YOUR BENEFIT TO GET FAMILIAR WITH THE FM (FILE MANAGEMENT) & FMDD PROGRAMS.

CAT 4

ONE OF THE BEST FUNCTIONS TO UNDERSTAND IS "CAT 4 ". THIS IS A BUILT IN FUNCTION IN YOUR 41CX. IT CAN BE USED AT ANY TIME DURING PROGRAM OPERATION. TO CALL THIS FUNCTION UP SIMPLY KEY IN [GOLD] [CATALOG] WHEN THE " CAT _ " PROMPT APPEARS PRESS 4 FOLLOWED BY R/S.

- A IF THERE ARE NO FILES " DIR EMPTY " WILL BE DISPLAYED, PRESS [←].
- B IF THERE ARE FILES THE FILE NAMES WILL BE DISPLAYED ON THE SCREEN.

YOU CAN SCROLL THROUGH THE CATALOG BY USING SST OR [GOLD] [BST].

IF YOU PRESS [←] THE LAST FILE ON THE SCREEN BECOMES THE FILE YOU ARE WORKING IN.

IF YOU PRESS R/S THE CATALOG WILL CONTINUE TO SCROLL THROUGH TO THE END AND WILL RETURN THE FILE SPACE AVAILABLE TO THE X-REGISTER.

FILE NAMES ARE DISPLAYED ON THE LEFT SIDE OF THE SCREEN AND THE FILE TYPE AND SIZE ON THE RIGHT. EX: " FWY-R/W " D050 " IN THIS EXAMPLE THE FILE NAME IS FWY-R/W THE D050 INDICATES THAT THIS IS A DATA FILE OF 50 RECORDS OR 24 COORDINATES. A PREFIX P IS A PROGRAM FILE AND AN A IS AN ASCII TEXT FILE. IF YOU PRESS THE [←] KEY WITH A PROGRAM FILE IN THE DISPLAY YOU WILL REMAIN IN THE SAME FILE AS BEFORE YOU EXECUTED " CAT 4 ".

FILE MANAGEMENT" CR "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS A SIZE? MAX###ENTER A NUMBER THAT IS 1 MORE THAN
2 TIMES THE NUMBER OF COORDINATES
NEEDED.EXP:50 COOR.NEEDED ENTER 102
IF R/S IS PUSHED THEN MAX IS USED
- 3 PRESS R/S FILE NAMEENTER A NAME YOU WISH TO CALL YOUR
FILE.(DO NOT EXCEED 12 CHARACTERS.
THE FIRST 7 CHARTERS OF ANY FILE
CAN NOT BE THE SAME AS ANY OTHER
FILE NAME.)A R/S WITH OUT ENTERING
A NAME WILL CREATE A FILE CALLED
FILE NAME. (MOST COMMON ERROR)
- 4 PRESS R/S CR,DSP,FIX,PP,?

FILE MANAGEMENT" DSP "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS B AZ.,NE,FIX,FM
- 3 PRESS A BRG,NE,FIX,FMALL PROGRAMS WILL KNOW DISPLAY
AZIMUTH INLIEU OF BEARINGS.
- 4 PRESS A AZ.,NE,FIX,FMALL PROGRAMS WILL KNOW DISPLAY
BEARINGS INLIEU OF AZIMUTHS.
- 5 PRESS B DSP. NE Y/N?ENTER Y TO DISPLAY COORDINATES
ENTER N TO NOT DISPLAY COORDINATES
DEFAULT IS NOT TO.
- 6 PRESS R/S AZ.,NE,FIX,FM
- 7 PRESS C FIX 0-9 ?ENTER THE NUMBER YOU WISH YOUR
ANSWERS TO BE DISPLAYED.
- 8 PRESS R/S AZ.,NE,FIX,FM
- 9 PRESS D CR,DSP,FIX,PP,?

FILE MANAGEMENT" FIX "

SAME AS STEP & 7 IN DSP.

FILE MANAGEMENT" PP "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS D P.PROTCT. Y/N?ENTER Y FOR YES OR N FOR NO.DEFAULT
IS YES.
- 3 PRESS R/S SC,RC,PUR,SQ, ?

FILE MANAGEMENT" SC "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SO, ?
- 3 PRESS A STO. ON CARDIF THIS IS WHAT YOU WANT TO DO CONT
IF NOT [SHIFT] 9 AND RESTART.
- 4 PRESS R/S FILE NAME OF YOUR CURRENT FILE
- 5 PRESS R/S PT=ENTER FIRST POINT TO STORE ON CARD
- 6 PRESS R/S PTS 1-15
- 7 PRESS R/S RDY 01 OF 02RUN SIDE 1 OF THE CARD IN.
- 8 PRESS R/S RDY 02 FO 02RUN SIDE 2 OF THE CARD IN.
- 9 PRESS R/S PT=REPEAT STEPS 5 THROUGH 8

NOTE: TO STORE A BLOCK OF LESS THAN 15 COORDINATES ENTER THE FIRST POINT TO STORE AS THE INTERGER AND THE LAST POINT AS THE FRACTION.
FOR EXAMPLE:

- 3.003 STORES POINT 3 ONLY AND DISPLAYED AS PTS 3-3
- 13.017 STORES POINTS 13 THROUGH 17 DISPLAYED AS PTS 13-17
- 133.145 STORES POINTS 133 THROUGH 145 DISPLAYED AS PTS 133-145

IF YOU GET A CARD ERROR OR MALFUNCTION MESSAGE PRESS [←] THEN START OVER,
THIS TIME TRY RUNNING THE CARD THROUGHT AGAIN OR CLEANING THE CARD.

FILE MANAGEMENT" RC "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SO, ?
- 3 PRESS B RCL. FRM. CARDIF THIS IS WHAT YOU WANT TO DO CONT
IF NOT [SHIFT] 9 AND RESTART.
- 4 PRESS R/S FILE NAME OF YOUR CURRENT FILE
- 5 PRESS R/S PT=ENTER POINT TO BEGIN RECALLING TOO.
- 6 PRESS R/S CARDTHE CARD PROMPT INDICATES THAT THE
CACULATOR IS READY FOR SIDE ONE.
- 7 RUN CARD 1 RDY 02 OF 02RUN SIDE 2 OF THE CARD THROUGH.
THE GOOSE WILL FLY FOR A FEW SEC.
FOLLOWED BY A TONE.
- 8 RUN SIDE 2 PTS 1-15 IF THESE ARE THE WRONG COORDINATES
[SHIFT] 9 AND RESTART. IF OK CONT.
- 9 PRESS R/S PT=REPEAT STEPS 5 THROUGH 8

FILE MANAGEMENT" PUR "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SO, ?
- 3 PRESS C PURGE FL.?ENTER NAME OF FILE TO BE PURGED
FROM EXTENDED MEMORY.
- 4 PRESS R/S DIR EMPTY IF THAT WAS THE ONLY FILE. OR IT
WILL SCROLL THROUGH CAT 4. SEE
DETAILED INSTRUCTIONS FOR CAT 4.

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FILE MANAGEMENT" SQ " (SQUEEZE WILL NOT LOSE ANY DATA.)

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SQ, ?
- 3 PRESS D A=FILE B=CAT4PRESS A IF YOU WANT TO SQUEEZE ONE FILE, OR B TO DO THE WHOLE CATALOG.
- 4A PRESS A FILE NAMEENTER THE FILE NAME
- 5A PRESS R/S THE GOOSE WILL FLY UP TO 6 MIN.PROGRAM WILL RETURN TO FM.
- 4B PRESS B THE GOOSE WILL FLY UP TO 6 MIN. A TONE WILL SOUND ALL DONE
- 5B PRESS R/S CR,DSP,FIX,PP,?

NOTE; SQUEEZE WILL RESIZE YOUR DATA FILES, TAKING ANY UNUSED REGISTERS AT THE END OF THE FILES AND MAKING THEM AVAILABLE FOR USE IN OTHER FILES.

FILE MANAGEMENT" SP "

THE PROGRAM TO BE STORED IN EXTENDED MEMORY MUST BE IN MAIN MEMORY.

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SQ, ?
- 3 PRESS E SP,RP,CLP,MF,?
- 4 PRESS A STD.PRO ?ENTER PROGRAM NAME TO BE STORED.
- 5 PRESS R/S CR,DSP,FIX,PP,?

FILE MANAGEMENT" RP "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SQ, ?
- 3 PRESS E SP,RP,CLP,MF,?
- 4 PRESS B RCL.PRO ?ENTER PROGRAM NAME TO BE RECALLED.
- 5 PRESS R/S CR,DSP,FIX,PP,?

FILE MANAGEMENT" CLP "

CLEARs PROGRAMS FROM WORKING MEMORY. **CAUTION** CLP WILL CLEAR THE PROGRAM YOU NAME AND ALL OTHER PROGRAMS AFTER IT.

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SQ, ?
- 3 PRESS E SP,RP,CLP,MF,?
- 4 PRESS C CL. PRO. ?ENTER PROGRAM TO BE CLEARED.
- 5 PRESS R/S CR,DSP,FIX,PP,?

FILE MANAGEMENT" MF "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SQ, ?
- 3 PRESS E SP,RP,CLP,MF,?
- 4 PRESS D MOVE FL. ?ENTER FILE NAME TO BRING CURRENT.
- 5 PRESS R/S CR,DSP,FIX,PP,?

NOTE; CAT 4 COMMAND IS EASIER.

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FILE MANAGEMENT" CL "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SQ, ?
- 3 PRESS E SP,RP,CLP,MF,?
- 4 PRESS E CL,RSZ, ?, ?, ?
- 5 PRESS A CURRENT FILE NAME WILL DISPLAY
- 6 PRESS R/S CL. FILE Y/NENTER Y FOR YES OR N FOR NO
- 7 PRESS R/S CR,DSP,FIX,PP,?

FILE MANAGEMENT" RSZ "

- 1 [SHIFT] 9 CR,DSP,FIX,PP,?
- 2 PRESS E SC,RC,PUR,SQ, ?
- 3 PRESS E SP,RP,CLP,MF,?
- 4 PRESS E CL,RSZ, ?, ?, ?
- 5 PRESS B CURRENT FILE NAME WILL DISPLAY
- 6 PRESS R/S RESIZE ?ENTER NEW FILE SIZE (NUMBER OF
COORDINATES TIMES 2 PLUS 1)
- 7 PRESS R/S CR,DSP,FIX,PP,?

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DETAILED INSTRUCTIONS

MENU 1 [SHIFT] 8

STA-STATION AND OFFSET

THIS IS A PROGRAM WHEN USED IN THE FIELD MODE ALLOWS YOU TO OCCUPY ANY POINT IN ANY POINT FILE. REFERENCE TO ANY OTHER POINT IN ANY POINT. LOCATE OR STAKE OUT ANY POINT IN ANY POINT FILE AND ANY STATION AND OFFSET IN A CURRENT ALIGNMENT, WHICH INCLUDES CURVES LEFT OR RIGHT, TANGENTS AND THE BARNETT SPIRAL. YOU CAN STORE ANY OF THE CALCULATED POSITIONS. THERE IS ALSO AN INTERVAL MODE TO AUTOMATICALLY CALCULATE A SERIES OF STATIONS AND OFFSETS TO BE STAKED.

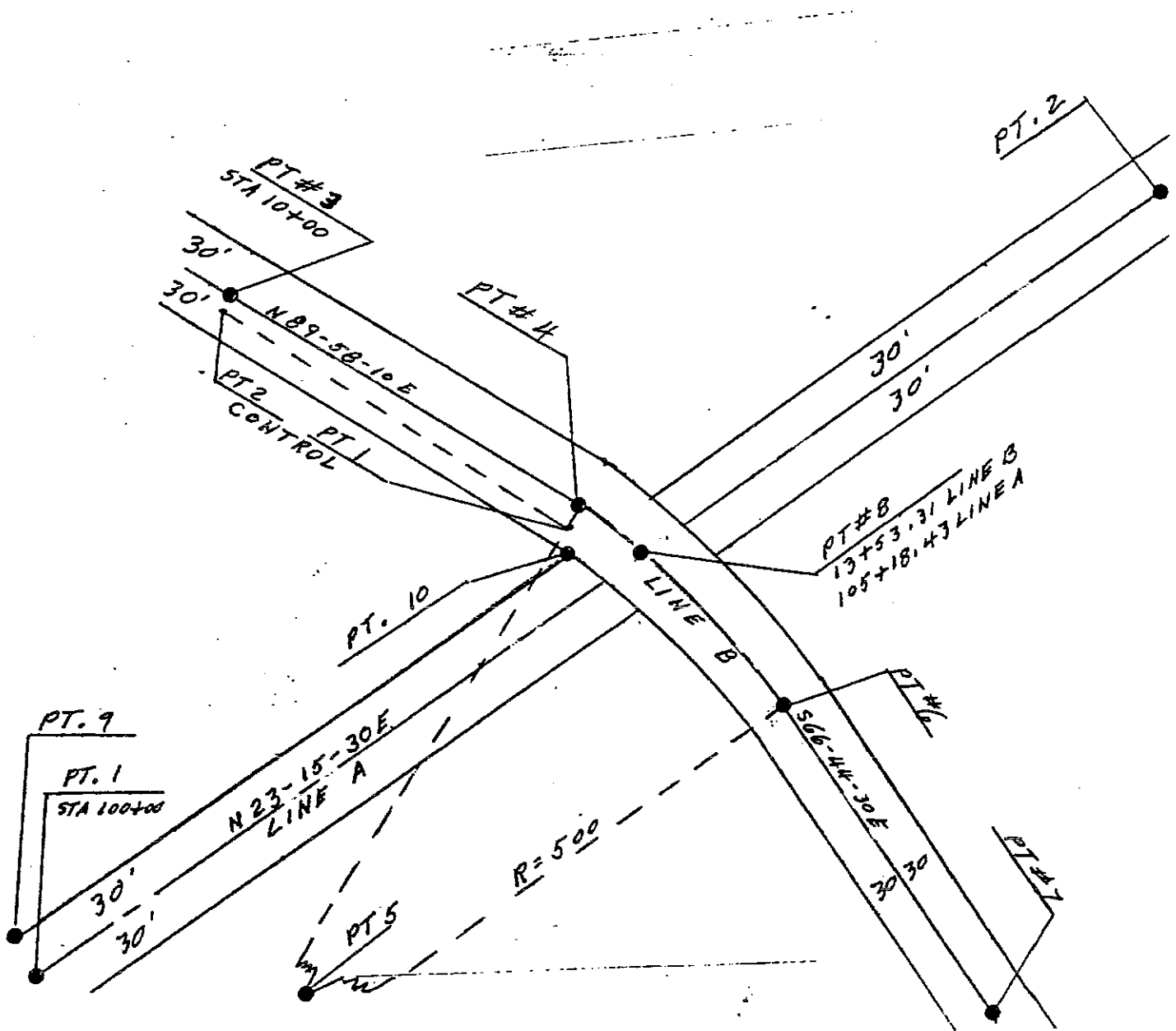
IN OFFICE MODE YOU CAN LOCATE ANY POINT TO YOUR CURRENT ALIGNMENT. LOCATE AND STORE ANY STATION AND OFFSET ON AN ALIGNMENT THEN CHANGE ALIGNMENTS AND RELOCATE THE DIFFERENCE BETWEEN THE ALIGNMENTS.

THE STORE, RECALL AND BB ARE ALL SIDE-KICK PROGRAMS TO STA. FOR EXAMPLE IF YOU NEED TO SOLVE A BEARING/BEARING INTERSECT PROBLEM. YOU JUST EXECUTE BB SOLVE YOUR PROBLEM, STORE THE INTERSECTION POINT AND RETURN TO STA. AT THE STA? PROMPT. THEN LOCATE ITS STATION AND OFFSET.

IN STA AND SPIRAL WHEN YOU PUSH E YOU WILL GET A MENU, OCC, ALN, LOC, ST, I
OCC, PUSH A TO CHANGE OCC. PT. & REF. PT. OR PUSH SHIFT A AT THE STA? PROMPT.
ALN, PUSH B TO CHANGE ALIGNMENT OR PUSH SHIFT B AT THE STA? PROMPT.
LOC, PUSH C TO LOCATE A POINT TO YOUR ALIGNMENT. OR PUSH SHIFT C AT STA? PROMPT.
(SPIRAL HAS NO LOC)
ST, PUSH D TO STORE THE LAST STATION COORDINATE. OR PUSH SHIFT D AT THE STA? PROMPT.
I PUSH E TO ENTER INTERVAL MODE OR PUSH I AT THE STA? PROMPT.
(SPIRAL HAS NO INTERVAL MODE)

STA. EXAMPLE 1

FIRST WE WILL CREATE A POINT FILE CALLED STA1. THEN STORE OUR ALIGNMENT POINTS 1 TO 7 IN IT. THEN LOCATE LINE B BY STATION & OFFSET FROM LINE A. NEXT CALCULATE INTERSECTION OF LINES A & B, AND THE NORTHERLY R/W OF LINE A WITH THE SOUTHERLY R/W LINE OF LINE B. THEN LOCATE ITS STATION & OFFSET. THEN CREATE A POINT FILE CALLED CONTROL & STORE CONTROL POINTS 1 & 2. OCCUPY PT.1 REF. PT.2 & LOCATE BY ANGLE & DISTANCE THE TWO INTERSECTION POINTS



IF YOU WANT TO SEE YOUR COORDINATES (READ FILE MANAGEMENT "DSP") OR SET FLAG 09.

1 [SHIFT] 9 CR,DSP, FIX,FP.?
2 PUSH A SIZE ? MAX 598A R/S HERE WILL USE THE MAX NUMBER.
ENTER 100
3 PUSH R/S FILE NAMEENTER STA1
4 PUSH R/S CR,DSP, FIX,FP,?

N1= 1,000.0000 E1= 3,000.0000
N2= 1,918.7338 E2= 3,394.8775
N3= 1,478.9508 E3= 2,851.5021
N4= 1,479.1108 E4= 3,151.5021
N5= 979.1108 E5= 3,151.7687
N6= 1,438.4777 E6= 3,349.2074
N7= 1,241.0390 E7= 3,808.5743

5 [SHIFT] 8 STA,ST,RL,TRV,?
6 PUSH B STA1
7 PUSH R/S STO PT.?ENTER 1
8 PUSH R/S N1=?ENTER 1000
9 PUSH R/S E1=?ENTER 3000
10 PUSH R/S STO PT.?ENTER 2
11 PUSH R/S N2=?ENTER 1918.7338
12 PUSH R/S E2=?ENTER 3394.8775
13 PUSH R/SCONTINUE THROUGH COORDINATE PT. 7.

27 PUSH R/S STO PT.?
28 [SHIFT] 8 STA,ST,RL,TRV,?
29 PUSH A STA1
30 PUSH R/S OCC PT?R/S HERE PUTS YOU IN OFFICE MODE.
31 PUSH R/S CV,TAN,SP
32 PUSH B EC PT?ENTER 1 (FOR THE EC OF LINE A)
33 PUSH R/S BC PT?ENTER 2 (FOR THE BC LINE A)
34 PUSH R/S N 23-15-30 EBEARING OF LINE A
35 PUSH R/S E.C. STA?ENTER 10000 (FOR STA.100+00)
36 PUSH R/S STA?
37 PUSH E OCC,ALN,LOC,ST,I
38 PUSH C NEW,OLD,RDLTHIS IS THE LOCATE COMAND.
A=NEW (FOR NEW PT.)YOU CAN ENTER
AN ANGLE (IN FIELD MODE) PUSH R/S
DST=? ENTER DISTANCE PUSH R/S
ST LOC (A=STORE AND B=LOCATE)
PT?ENTER 3 (B= OLD (FOR EXISTING PT.#)

39 PUSH B PT?ENTER 3 (B= OLD (FOR EXISTING PT.#)
40 PUSH R/S STA= 103+81.3898(STA ALONG LINE A OF PT.3 LINE B.
41 PUSH R/S OFF= -325.5569 LT.OFFSET LINE A TO LINE B.
42 PUSH R/S STA?*REMEMBER* A=NEW,B=OLD,C=RDL
43 PUSH B PT?ENTER 4
44 PUSH R/S STA= 105+00.0000
45 PUSH R/S OFF= -50.0000 LT
46 PUSH R/S STA?
47 PUSH B PT?ENTER 6
48 PUSH R/S STA= 105+40.7385
49 PUSH R/S OFF= 147.6837 RT.
50 PUSH R/S STA?
51 PUSH B PT?ENTER 7
52 PUSH R/S STA= 105+40.7385
53 PUSH R/S OFF= 647.6837 RT.
54 PUSH R/S STA?ENTER 10000
55 PUSH R/S OFF?ENTER -30 (TO CALC. A POINT ON R/W.)
56 PUSH R/S STA?

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57 PUSH E OCC,ALN,LOC,ST,I
58 PUSH D STD PT? .....ENTER 9 (TO STORE R/W COOR. IN 9.)
59 PUSH R/S STA?
60 [SHIFT] 8 STA,ST,RL,TRV,?
61 PUSH E RAD,+0,BB,TRI,?
62 PUSH C STA1
63 PUSH R/S BB BD DD DFS
64 PUSH B BEG. PT? .....ENTER 1 (FOR PT.1 LINE A)
65 PUSH R/S END PT? .....ENTER 5 (FOR RADIUS PT. LINE B.)
66 PUSH R/S 1ST BRG=? .....IT IS BETTER TO ENTER A PT.# ON A
67 PUSH R/S 1ST PT.? .....ENTER 2 (THE CALCULATOR WILL CALC.
THE BEARING.)
68 PUSH R/S 2ND DST.=? .....IT IS BETTER TO ENTER A PT.# ON B
69 PUSH R/S 2ND PT.? .....ENTER 4 (FOR PT.4 LINE B)
70 PUSH R/S N 23-15-30 E .....BEARING FOR LINE A
71 PUSH R/S DST= 518.4303 .....DIST.ALONG LINE A TO INT. OF LINE B
72 PUSH R/S N 4-04-44 E .....RAD. BEARING TO INTERSECTION.
73 PUSH R/S DST2= 500.0000 .....RAD. DISTANCE
74 PUSH R/S INT. PT.? .....ENTER 8 (TO STORE IN POSITION 8)
75 PUSH R/S S 23-15-30 W .....THIS IS SOLUTION 2 (BUT SOL.1 IS OK)
76 PUSH B BEG. PT? .....ENTER 9 (NEW BD CALCULATION)
77 PUSH R/S END PT? .....ENTER 5 (FOR RADIUS PT.LINE B.)
78 PUSH R/S 1ST BRG.=? .....
79 PUSH R/S 1ST PT.? .....ENTER 1.002 (CALC. BEARING BETWEEN
POINTS 1 AND 2.)
80 PUSH R/S 2ND DST.=? .....ENTER 470 (DIST. TO R/W LINE B)
81 PUSH R/S N 23-15-30 E .....BEARING LINE A NLY R/W.
82 PUSH R/S DST1= 475.8574 .....DIST ALONG 30' R/W LINE A
83 PUSH R/S N 1-02-43 E .....RAD.BEARING TO R/W INTERSECTION.
84 PUSH R/S DST2= 470.0000 .....RAD. DISTANCE
85 PUSH R/S INT. PT.? .....ENTER 10 (TO STORE IN POSITION 10)
86 PUSH R/S S 23-15-30 W .....THIS IS SOLUTION 2 (BUT SOL.1 IS OK)
87 [SHIFT] E STA? .....RETURN TO STA PROGRAM
88 PUSH E OCC,ALN,LOC,ST,I .....CHANGE ALIGNMENT TO LINE B
89 PUSH B CV,TAN,SP
90 PUSH A LT RT .....THE CURVE IS TO THE RIGHT
91 PUSH B RAD PT? .....ENTER 5
92 PUSH R/S BC PT? .....ENTER 4
93 PUSH R/S R= 500.0000
94 PUSH R/S BC STA? .....ENTER 1300 (FOR STA 13+00)
95 PUSH R/S STA? .....LOCATE POINTS 8 & 10
96 PUSH B PT? .....ENTER 8
97 PUSH R/S STA= 13+53.3139 .....STA LINE B OF INT. LINE A
98 PUSH R/S OFF= 0.0000 RT.
99 PUSH R/S STA?
100 PUSH B PT? .....ENTER 10
101 PUSH R/S SAT= 13+09.3891 .....SAT LINE B OF R/W INTERSECTION.
102 PUSH R/S OFF= 30.0000 RT.
103 PUSH R/S STA? .....LETS CREATE ANOTHER FILE
104 [SHIFT] 9 CR,DSP,FIX,PP,?
105 PUSH A SIZE? MAX 498 .....ENTER 10
106 PUSH R/S FILE NAME .....ENTER CONTROL
107 PUSH R/S CR,DSP,FIX,PP,? .....WE MUST RETURN TO STA BEFORE STORING
108 [SHIFT] E STA? .....KNOW WE CAN GO & STO.COORDINATES.
109 [SHIFT] 8 STA,ST,RL,TRV,?
110 PUSH B CONTROL
111 PUSH R/S STD PT.? .....ENTER 1
112 PUSH R/S N1=? .....ENTER 1467.1108
113 PUSH R/S E1=? .....ENTER 3151.5085
114 PUSH R/S STD PT.? .....ENTER 2

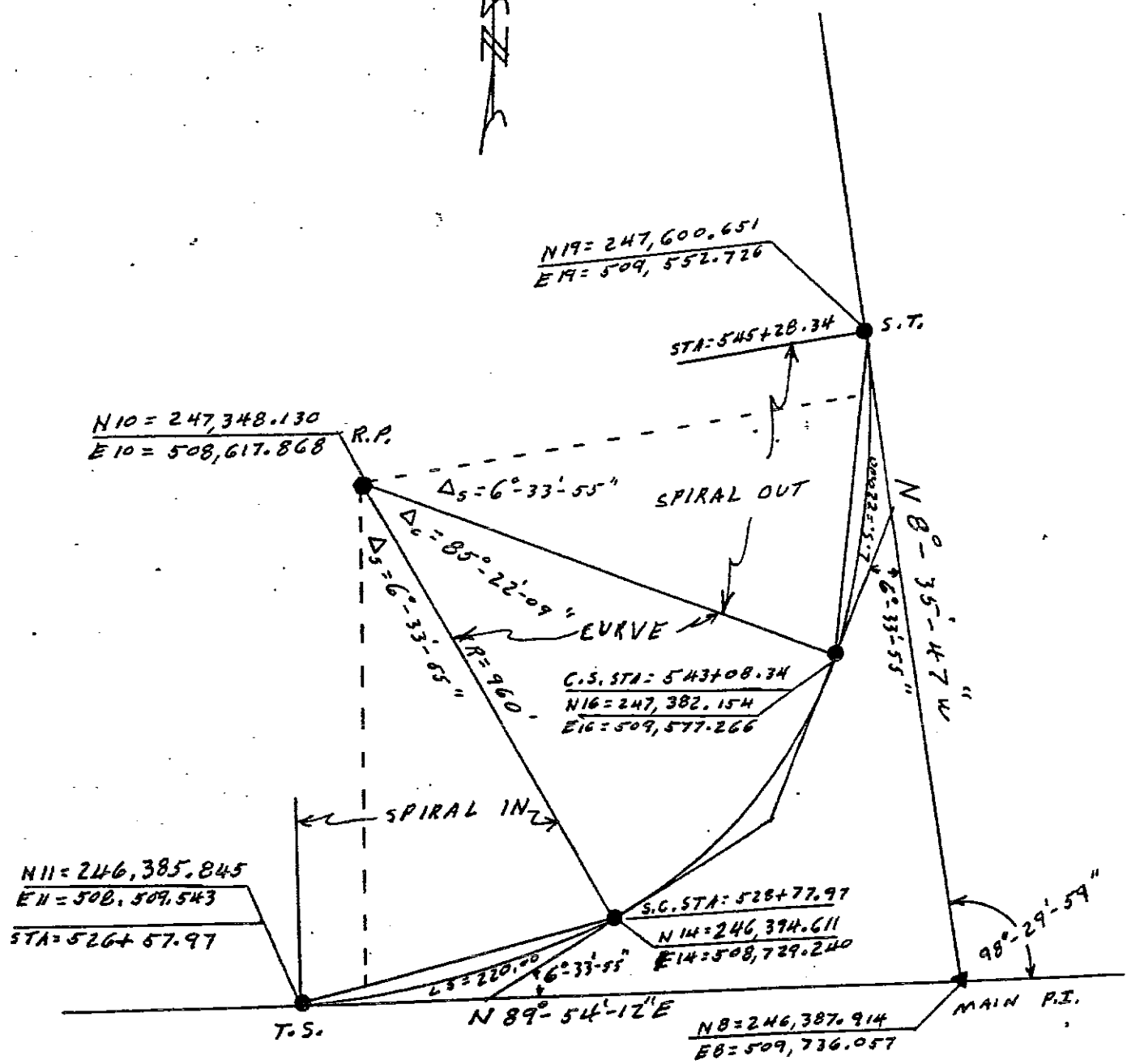
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115 PUSH R/S N2= .....ENTER 1468.9508
116 PUSH R/S E2=? .....ENTER 2851.5174
117 PUSH R/S STO FT.?
118 [SHIFT] E STA?
119 PUSH E OCC,ALN,LOC,ST,I
120 PUSH A OCC PT? .....ENTER 1
121 PUSH R/S REF PT? .....ENTER 2
122 PUSH R/S DST= 299.9967 .....DIST ALONG CONTROL LINE
123 PUSH R/S N 89-38-55 W .....BEARING OF CONTROL LINE
124 PUSH R/S STA? .....ENTER 1353.3139
125 PUSH R/S OFF? .....ENTER 0
126 PUSH R/S <= 169-51-02 .....ANGLE TURNED RIGHT TO PT.8
127 PUSH R/S DST= 53.9956 .....DIST TO MEASURE TO PT 8
128 PUSH R/S STA? .....LETS LOCATE FT. 10 AN OTHER WAY.
129 CAT 4 STA1 .....PRESS R/S [←]
130 PUSH E OCC,ALN,LOC,ST,I
131 PUSH C NEW,OLD,RDL .....WE ARE GOING TO RADIAL STAKE OUT
132 PUSH C RDL. PT? .....ENTER 10
133 PUSH R/S STA1
134 PUSH R/S <= 243-36-13 .....ANGLE RIGHT TO PT. 10
135 PUSH R/S DST= 20.1215 .....DIST. TO PT. 10
136 PUSH R/S RDL. PT?
137 [SHIFT] E STA? .....RETURN TO STA.PROGRAM

```

END



SPIRAL EXAMPLE

FIRST WE WILL CREATE A POINT FILE CALLED SPRL. THEN OUR ALIGNMENT POINTS IN IT.
 LETS SHOW OUR CORDINATES (READ DSP PAGE 7) OR SET FLAG 09.

N 8=246387.914 E 8=509736.057 MAIN P.I.
 N10=247348.130 E10=508617.868 RAD. PT.
 N11=246385.845 E11=508509.543 T.S. (TAN. TO SPIRAL)
 N14=246394.611 E14=508729.240 S.C. (SPIRAL TO CURVE)
 N16=247382.154 E16=509577.266 C.S. (CURVE TO SPIRAL)
 N19=247600.651 E19=509552.726 S.T. (SPIRAL TO TAN.)

1 SHIFT B STA,ST,RL,TRV,?
 2 PUSH A SPRLFILE NAME
 3 PUSH R/S OCC PT?ENTER 10
 4 PUSH R/S N10= 247248.1300
 5 PUSH R/S E10= 508617.8680
 6 PUSH R/S REF PT?ENTER 16
 7 PUSH R/S N16= 247382.1540
 8 PUSH R/S E16= 509577.2660
 9 PUSH R/S DST= 960.0011
 10 PUSH R/S N 87-58-08 E
 11 PUSH R/S CV,TAN,SP
 12 PUSH C IN OUTWE WANT SPIRAL IN
 13 PUSH A LT RTWE WANT A LEFT SPIRAL
 14 PUSH A T.S. FT?ENTER 11
 15 PUSH R/S N11= 246385.8450
 16 PUSH R/S E11= 508509.5430
 17 PUSH R/S T.S. STA?ENTER 52657.97
 18 PUSH R/S MPI PT?ENTER 8 (MAIN P.I.)
 19 PUSH R/S N8= 246387.9140
 20 PUSH R/S E8= 509736.0570
 21 PUSH R/S N 89-54-12 E
 22 PUSH R/S L.S.=?ENTER 220 (LENGTH OF SPIRAL)
 23 PUSH R/S D.S.=?ENTER 6.3355 (DELTA SPIRAL)
 24 PUSH R/S STA?ENTER 52877.97 (OR ANY STA.)
 25 PUSH R/S OFF?ENTER 0 (OR ANY OFFSET)
 26 PUSH R/S N*= 246394.6107
 27 PUSH R/S E*= 508729.2398
 28 PUSH R/S <= 85-22-09
 29 PUSH R/S DST= 960.0014
 30 PUSH R/S STA?

NOTE; THE ANGLE AND DISTANCE CHECKED. TO STAKE THE CURVE JUST CHANGE ALIGNMENT.
 EITHER PUSH E (OR PUSH SHIFT B)

31 SHIFT B CV,TAN,SP
 32 PUSH A LT RT
 33 PUSH A RAD FT?ENTER 10
 34 PUSH R/S N10= 247348.1300
 35 PUSH R/S E10= 508617.8680
 36 PUSH R/S BC FT?ENTER 14
 37 PUSH R/S N=246394.6110
 38 PUSH R/S E14= 508727.2400
 39 PUSH R/S R= 960.0011

40 PUSH R/S BC STA?ENTER 52877.97
 41 PUSH R/S STA?ENTER 54308.34
 42 PUSH R/S OFF
 43 PUSH R/S N*= 247382.1499
 44 PUSH R/S E*= 509577.2662
 45 PUSH R/S <= 0-00-01
 46 PUSH R/S DST= 960.0012

NOTE; THE ANGLE AND DISTANCE CHECKED. TO STAKE THE SPIRAL OUT JUST CHANGE THE ALIGNMENT. EITHER PUSH E (OR PUSH SHIFT B)

47 SHIFT B CV,TAN,SP
 48 PUSH C IN OUT
 49 PUSH B LT RT
 50 PUSH A S.T. PT?ENTER 19
 51 PUSH R/S N19= 247600.6510
 52 PUSH R/S E19= 509552.7260
 53 PUSH R/S S.T. STA?ENTER 54528.34
 54 PUSH R/S MP1 PT?ENTER 8
 55 PUSH R/S N8= 246387.9140
 56 PUSH R/S E8= 509736.0570
 57 PUSH R/S S 8-35-47 E
 58 PUSH R/S L.S.=?ENTER 220
 59 PUSH R/S D.S.=?ENTER 6.3355
 60 PUSH R/S STA?ENTER 54308.34
 61 PUSH R/S OFF?
 62 PUSH R/S N*= 247382.1531
 63 PUSH R/S E*= 509577.2661
 64 PUSH R/S <= 0-00-00
 65 PUSH R/S DST= 960.0012
 66 PUSH R/S STA?

NOTE; ANGLE AND DISTANCE CHECK.

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 1

ST - STORE COORDINATES IN CURRENT FILE

- 1 [SHIFT] B STA,ST,RL,TRV,?
- 2 PUSH B STA1OR NAME OF YOUR CURRENT FILE.
- 3 PUSH R/S STO PT.?ENTER NUMBER WANT TO CALL THE POINT
ENTER 1
- 4 PUSH R/S N1=?ENTER NORTHING 1000
- 5 PUSH R/S E1=?ENTER EASTING 3000
- 6 PUSH R/S STO PT.?CONTINUE STEP 3 TO 5

NOTE; IF YOU MAKE A MISTAKE HERE IS ONE WAY TO CORRECT IT. SAY E1= 3300

- 6A PUSH R/S STO PT.?ENTER 1
- 7 PUSH R/S OVE RIT Y/N?ENTER Y
- 8 PUSH R/S N1=?A R/S HERE WILL RESTORE OLD N1.
- 9 PUSH R/S E1=?
- 10 PUSH [←] 3,000.0000ENTER 300
- 11 PUSH + 3,300.0000IF EASTING IS CORRECT CONTINUE.
- 12 PUSH R/S STO PT.?CONTINUE STEP 3 TO 5

RL - RECALL COORDINATES FROM CURRENT FILE.

- 1 [SHIFT] B STA,ST,RL,TRV,?
- 2 PUSH C STA 1OR NAME OF YOUR CURRENT FILE.
- 3 PUSH R/S BEG. PT?ENTER FIRST POINT TO BEGIN DISPLAY
ENTER 1
- 4 PUSH R/S END PT?ENTER LAST POINT TO DISPLAY
ENTER 2
- 5 PUSH R/S N1= 1,000.0000
- 6 PUSH R/S E1= 3,300.0000
- 7 PUSH R/S N2= 1918.7338
- 8 PUSH R/S E2= 3394.8775
- 9 PUSH R/S BEG. PT?CONTINUE AS IN STEP 3

TRAV. EXAMPLE #1

THIS EXAMPLE WILL BE A OPEN TRAV. WITH COMPASS ADJ. WE WILL START WITH SETTING 4 DECIMAL PLACES, HAVING THE COORDINATES DISPLAYED AND CREATING A FILE CALLED TRV1.

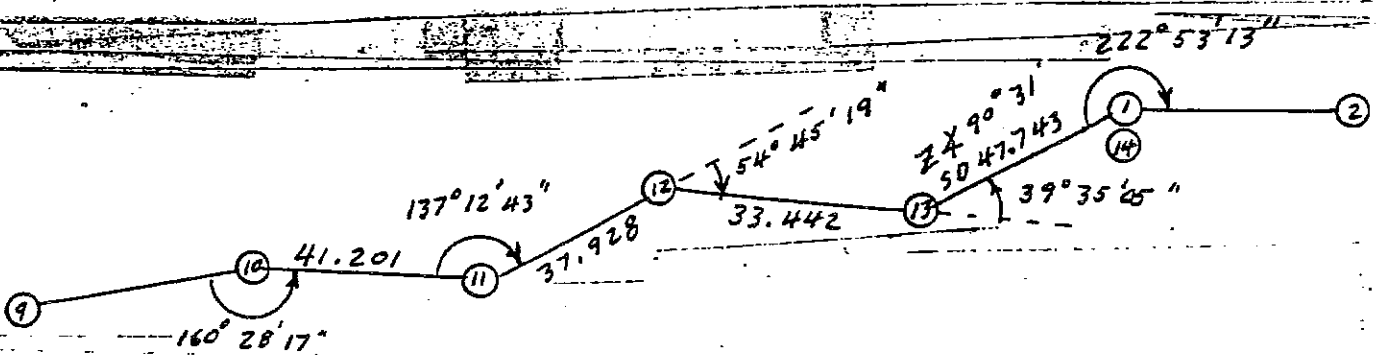
- 1 [SHIFT] 9 CR, DSP, FIX, PP, ?
- 2 PUSH B AZ., NE, FIX, FM
- 3 PUSH B DSP. NE Y/N?
- 4 PUSH Y Y
- 5 PUSH R/S AZ., NE, FIX, FM
- 6 PUSH C FIX 0-9?
- 7 PUSH 4 4
- 8 PUSH R/S AZ., NE, FIX, FM
- 9 PUSH D CR, DSP, FIX, PP, ?
- 10 PUSH A SIZE ? MAX 598 A R/S HERE WILL USE THE MAX NUMBER. ENTER 100
- 11 PUSH R/S FILE NAME ENTER TRV1
- 12 PUSH R/S CR, DSP, FIX, PP, ?

LET SAY THAT THE FIRST 10 COORDINATES ARE KNOWN. WE MUST STORE SOME OF THEM.

- 1 N=177.4500 E=278.2000
- 2 N=177.4500 E=378.2000
- 9 N=42.9354 E=67.8804
- 10 N=100.0000 E=150.0000

- 13 [SHIFT] B STA, ST, RL, TRV, ?
- 14 PUSH B TRV1
- 15 PUSH R/S STO PT. ? ENTER 1
- 16 PUSH R/S N1=? ENTER 177.45
- 17 PUSH R/S E1=? ENTER 278.2
- 18 PUSH R/S STO PT. ? ENTER 2
- 19 PUSH R/S N2=? ENTER 177.45
- 20 PUSH R/S E2=? ENTER 378.2
- 21 PUSH R/S STO PT. ? ENTER 9
- 22 PUSH R/S N9=? ENTER 42.9354
- 23 PUSH R/S E9=? ENTER 67.8804
- 24 PUSH R/S STO PT. ? ENTER 10
- 25 PUSH R/S N10=? ENTER 100
- 26 PUSH R/S E10=? ENTER 150

HERE IS THE TRAV.



FIRST WE WILL DO AN ANGLE CHECK

```
27 [SHIFT] B STA,ST,RL,TRV,?
28 [SHIFT] D TRV1
29 PUSH R/S REF.BRG.=? .....(YOU MAY ENTER THE BEARING OR)
30 PUSH R/S REF.PT.? .....ENTER 10.009 (PT.10 TO PT.9)
31 PUSH R/S F<,D<,CLOSE
32 PUSH A F<=? .....ENTER 160.2817 (PUSH CHS)
33 PUSH R/S N 74-43-60 E
34 PUSH R/S F<,D<,CLOSE
35 PUSH A F<,=? .....ENTER 137.1243
36 PUSH R/S N 31-56-43 E
37 PUSH R/S F<,D<,CLOSE
38 PUSH B D<=? .....ENTER 54.4519
39 PUSH R/S N 86-42-02 E
40 PUSH R/S F<,D<,CLOSE
41 PUSH B D<=? .....ENTER 39.3505 (PUSH CHS)
42 PUSH R/S N 47-06-57 E
43 PUSH R/S F<,D<,CLOSE
44 PUSH A F<=? .....ENTER 222.5313
45 PUSH R/S S 89-59-50 E
46 PUSH R/S F<,D<,CLOSE
47 PUSH C AZ= 90-00-10
48 PUSH R/S OPEN TR. Y/N
49 PUSH Y Y
50 PUSH R/S CLZ BRG.=? .....(YOU MAY ENTER THE BEARING OR)
51 PUSH R/S CLZ PT.? .....ENTER 1.002 (PT.1 TO PT.2)
52 PUSH R/S AZ= 90-00-00
53 PUSH R/S < ERR=LT. 0-00-10
54 PUSH R/S ERR / <= LT. 0-00-02
```

ALL ANGLE ADJUSTMENTS ARE ADDED IF DONE RIGHT.

```
55 STO 00 -0.0002
```

DO NOT USE PRINTER"

WE WILL START THE TRAV. AND ADJUST ANGLES AS WE GO. I WILL MAKE 2 ERRORS IN TRAV. INPUT TO SHOW YOU HOW TO RECOVER WITH OUT STARTING OVER.

"YOU CANNOT RECOVER WITH A PRINTER"

```
56 [SHIFT] B STA,ST,RL,TRV,?
57 PUSH D TRV1
58 PUSH R/S BEG.PT.? .....ENTER 10
59 PUSH R/S N10=100.0000
60 PUSH R/S E10=150.0000
61 PUSH R/S TRV,REF
62 PUSH B REF.BRG.=? .....YOU MAY ENTER BEARING HERE OR
63 PUSH R/S REF.PT.? .....ENTER 9
64 PUSH R/S DST.= 100.0000
65 PUSH R/S S 55-12-17 W
66 PUSH R/S IV,BRG,F<,SS,?
67 PUSH C F<=? .....ENTER 160.2817 (PUSH CHS)
68 RCL 00 -0.0002
69 [SHIFT] + -160.2819
70 PUSH R/S HD,CLZ,CRV,RUN,?
```

71 PUSH A DST.=?ENTER 41.102
 72 PUSH R/S HD,CLZ,CRV,RUN,?
 73 PUSH D TRV.PT.?ENTER 11
 74 PUSH R/S N 74-43-58 E
 75 PUSH R/S H.DST=41.1020

NOTE; DIST IS WRONG

76A PUSH E IV,BRG,F<,SS,?
 70A PUSH E HD,CLZ,CRV,RUN,?
 71A PUSH A DST.=?ENTER 41.201
 72A PUSH R/S HD,CLZ,CRV,RUN,?
 73A PUSH D TRV.PT.?ENTER 11
 74A PUSH R/S N 74-43-58 E
 75A PUSH R/S H.DST.= 41.2010
 76 PUSH R/S N11= 110.8491
 77 PUSH R/S E11= 189.7469
 78 PUSH R/S IV,BRG,F<,SS,?
 79 PUSH C F<=?ENTER 137.1243
 80 RCL 00 -0.0002
 81 [SHIFT] + 137.1241
 82 PUSH R/S HD,CLZ,CRV,RUN,?
 83 PUSH A DST.=?ENTER 37.928
 84 PUSH R/S HD,CLZ,CRV,RUN,?
 85 PUSH D TRV.PT.?ENTER 12
 86 PUSH R/S N 31-56-39 E
 87 PUSH R/S H.DST.= 37.9280
 88 PUSH R/S N12= 143.0334
 89 PUSH R/S E12= 209.8144
 90 PUSH R/S IV,BRG,F<,SS,?
 91 PUSH C F<=?ENTER 54.4519
 92 RCL 00 -0.0002
 93 [SHIFT] + 54.4517
 94 PUSH R/S HD,CLZ,CRV,RUN,?
 95 PUSH A DST=?ENTER 33.442
 96 PUSH R/S HD,CLZ,CRV,RUN,?
 97 PUSH D TRV.PT.?ENTER 13
 98 PUSH R/S S 86-41 56 W

NOTE; BEARING IS WRONG IT MUST BE CORRECTED HERE OR YOU WILL HAVE TO START OVER. BEG. WITH PT.10 AND INV. TO 11 & 12. THEN CONTINUE WITH ANGLE TRAV.

99A PUSH R/S IV,BRG,F<,SS,?
 91A PUSH R/S D<=?ENTER 54.4519
 92A PUSH R/S -0.0002
 93A PUSH R/S 54.4517
 94A PUSH R/S HD,CLZ,CRV,RUN,?
 97A PUSH R/S TRV.PT.?ENTER 13
 98A PUSH R/S N 86-41-56 E
 99 PUSH R/S H.DST.=33.4420
 100 PUSH R/S N13= 144.9592
 101 PUSH R/S E13= 243.2009
 102 PUSH R/S IV,BRG,F<,SS,?
 103 SHIFT] C D<=?ENTER 39.3505 (PUSH CHS)
 104 RCL 00 -0.0002
 105 [SHIFT] + -39.3507

106 PUSH R/S HD,CLZ,CRV,RUN,?
 107 [SHIFT] A S.DST.=?ENTER 47.743
 108 PUSH R/S Z<=?ENTER 90.3
 109 PUSH R/S HD,CLZ,CRV,RUN,?
 110 PUSH D TRV.PT.?ENTER 14
 111 PUSH R/S N 47-06-49 E
 112 PUSH R/S H.DST= 47.7412
 113 PUSH R/S N14= 177.4493
 114 PUSH R/S E14= 278.1811
 115 PUSH R/S IV,BRG,F<,SS,?

IF YOU WANT TO SEE IF YOUR ANGLE IS CORRECT THEN PROCEED TO STEP 116.
 IF YOU KNOW THE ANGLES ARE OK THEN PROCEED TO STEP 125.

116 PUSH C F<=?ENTER 222.5313
 117 RCL 00 -0.0002
 118 [SHIFT] + 222.5311
 119 PUSH R/S HD,CLZ,CRV,RUN,?
 120 PUSH D TRV.PT.?(YOU MAY ENTER ANY PT.NUMBER)
 ENTER 14

121 PUSH R/S OVR RIT Y/N?
 122 PUSH Y Y
 123 PUSH R/S N 90-00-00 E(THE BEARINGS CHECK)
 124 PUSH E IV,BRG,F<,SS,?
 125 PUSH E HD,CLZ,CRV,RUN,?
 126 PUSH B CLOSING PT.?ENTER 1
 127 PUSH R/S N,ERR= 0.0007
 128 PUSH R/S E,ERR= 0.0189
 129 PUSH R/S DIST= 0.0190
 130 PUSH R/S N 87-46-35 E
 131 PUSH R/S [HD= 160.3122
 132 PUSH R/S 1/B,454
 133 PUSH R/S OPEN TR. Y/N?
 134 PUSH Y Y
 135 PUSH R/S ADJ Y/N?
 136 PUSH Y Y
 137 PUSH R/S OLD FL.?
 138 PUSH R/S OLD FL. TRV1
 139 PUSH R/S NEW FL.?
 140 PUSH R/S NEW FL. TRV1
 141 PUSH R/S SAME PT. Y/N?
 142 PUSH Y Y
 143 PUSH R/S P.PROTCT. Y/N?
 144 PUSH N N
 145 PUSH R/S BEG PT.?ENTER 10
 146 PUSH R/S N10= 100.0000
 147 PUSH R/S E10= 150.0000
 148 PUSH R/S TRV.PT.?ENTER 11
 149 PUSH R/S DST= 41.2057ADJ. DST.
 150 PUSH R/S N 74-44-03 EADJ. BEARING
 151 PUSH R/S N11= 110.8493ADJ. NORTHING
 152 PUSH R/S E11= 189.7518ADJ. EASTING
 153 PUSH R/S TRV.PT.?ENTER 12
 154 PUSH R/S DST= 37.9305ADJ. DST.
 155 PUSH R/S N 31-56-59 EADJ. BEARING
 156 PUSH R/S N12= 143.0338ADJ. NORTHING
 157 PUSH R/S E12= 209.8237ADJ. EASTING

158 PUSH R/S TRV.PT.?ENTER 13
159 PUSH R/S DST= 33.4460ADJ. DST.
160 PUSH R/S N 86-41-56 EADJ. BEARING
161 PUSH R/S N13= 144.9597ADJ. NORTHING
162 PUSH R/S E13= 243.2142ADJ. EASTING
163 PUSH R/S TRV.PT.?ENTER 14
164 PUSH R/S DST= 47.7455ADJ. DST.
165 PUSH R/S N 47-07-05 EADJ. BEARING
166 PUSH R/S N14= 177.4500ADJ. NORTHING
167 PUSH R/S E14= 278.2000ADJ. EASTING

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 1 (RAD - RADIAL STAKE-OUT)

1	[SHIFT] B	STA,ST,RL,TRV,?	
2	PUSH E	RAD.+0,BB,TRI,?	
3	PUSH A	CONTROL	OR NAME OF YOUR CURRENT FILE.
4	PUSH R/S	OCC PT?	ENTER POINT NUMBER YOUR INSTRUMENT WILL OCCUPY. ENTER 1
5	PUSH R/S	REF PT?	ENTER POINT NUMBER YOUR GOING TO BACK SIGHT. ENTER 2
6	PUSH R/S	DST= 299.9967	CALC. DIST BETWEEN 1 AND 2
7	PUSH R/S	N 89-38-55 W	CALC. BEARING BETWEEN 1 AND 2
8	PUSH R/S	RDL.PT?	ENTER POINT NUMBER TO BE STAKED OR
9	[SHIFT] N	CAT_	ENTER 4
10	PUSH R/S	STA1 D100	
11	PUSH [←]	0.0000	OR ANY NUMBER
12	PUSH EEX	RDL. PT?	ENTER 8
13	PUSH R/S	STA1	
14	PUSH R/S	<= 169-51-02	ANGLE RT. TO PT. 8
15	PUSH R/S	DST= 53.9956	DIST. TO MEASURE TO PT. 8
16	PUSH R/S	RDL. PT?	CONTINUE STEP 8 OR 12 OR PUSH E TO RESTART PROGRAM.

NOTE; SEE STA. EXAMPLE PAGE 12.

MENU 1

+0 (+ & OFF SET IS SIMILAR TO LOCATE IN STATION PROGRAM.) A GOOD MAP CHECKER.

1	[SHIFT] B	STA,ST,RL,TRV,?	
2	PUSH E	RAD.+0,BB,TRI,?	
3	PUSH B	STA1	OR NAME OF YOUR CURRENT FILE.
4	PUSH R/S	BEG. PT?	ENTER POINT NUMBER WHERE YOU ARE GOING TO BEGIN. ENTER 1
5	PUSH R/S	REF. PT.?	ENTER POINT NUMBER OF BASE LINE ENTER 2
6	PUSH R/S	DST= 1,000.0000	DIST BETWEEN POINT 1 & 2
7	PUSH R/S	N 23-15-30 E	BEARING OF BASE LINE
8	PUSH R/S	+ / OFF PT.?	ENTER NUMBER OF POINT YOU WANT TO LOCATE. ENTER 3
9	PUSH R/S	+= 381.3898	DIST. ALONG BASE LINE.
10	PUSH R/S	OFF= -325.5569 LT.	DIST. LEFT OF BASE LINE.
11	PUSH R/S	DIF= 381.3898	ON FIRST PT.DIF IS SAME AS +
12	PUSH R/S	+ / OFF PT.?	ENTER 4
13	PUSH R/S	+= 500.0000	DIST.ALONG BASE LINE
14	PUSH R/S	OFF= -50.0000 LT.	DIST LEFT OF BASE LINE
15	PUSH R/S	DIF= 118.6102	DIFFERENCE BETWEEN PT 3 & 4 ON BASE LINE. CONTINUE STEP 8
16	PUSH E	BEG. PT?	CHANGE BASE LINES.

NOTE; SEE STA. EXAMPLE PAGE 12.

ALSO IF YOU WISH TO STORE OR RECALL COORDINATES AND WANT TO RETURN TO +0
[SHIF] E WILL RETURN YOU TO STEP 8.

BB -BEARING/BEARING INTERSECTION
 WHEN YOU EXECUTE BB A MENUE WILL APPEAR ON THE SCREEN GIVING YOU THE CHOICE
 OF BEARING/BEARING, BEARING/DISTANCE, DISTANCE/DISTANCE AND OFFSET. THEY
 OPPERATE MUCH LIKE THE INTERSECTION PROGRAMS IN THE HP SURVEY PAC EXCEPT
 THAT ALL COORDINATES ARE STORED IN A COORDINATE FILE AND CALLED BY POINT
 NUMBERS. BB BD DD OFS THESE ARE ABBREVIATIONS FOR THE PROGRAMS LISTED ABOVE
 AND ARE ASSIGNED [A] [B] [C] AND [D] RESPECTIVLY. [E] RESTARTS PROGRAM.

BEARING/BEARING
 PUSH A CURRENT FILE NAME DISPLAYED
 PUSH R/S BEG.PT?ENTER POINT OF ORIGIN FIRST BRG.
 PUSH R/S END PT?ENTER POINT OF ORIG.N SECOND BRG.
 PUSH R/S 1 ST BRG.=?ENTER FIRST BEARING
 PUSH R/S QD=?ENTER 1=NE,2=SE,3=SW,4=NW.
 PUSH R/S 2 ND BRG.=?ENTER SECOND BEARING
 PUSH R/S QD=?ENTER 1=NE,2=SE,3=SW,4=NW.
 SOLUTION
 PUSH R/S READ FIRST BEARING
 PUSH R/S READ DISTANCE ALONG FIRST BRG.
 PUSH R/S READ SECOND BEARING
 PUSH R/S READ DIST. ALONG SECOND BRG.
 PUSH R/S INT.PT.?ENTER THE NUMBER OF THE POINT TO
 STORE THE COORDINATES OF THE
 INTERSECTION UNDER.

NOTE; AT STEPS 4 & 6 YOU HAVE A BETTER CHOICE.

PUSH R/S 1 ST BRG.=?DO NOT ENTER ANYTHING
 PUSH R/S 1 ST PT.?ENTER POINT # .POINT # TO INVERSE
 BETWEEN FOR THE BEARING
 PUSH R/S 2 ND BRG.=?DO NOT ENTER ANYTHING
 PUSH R/S 2 ND PT.?ENTER POINT # .POINT # TO INVERSE
 BETWEEN FOR THE BEARING

B.B. EXAMPLE # 1

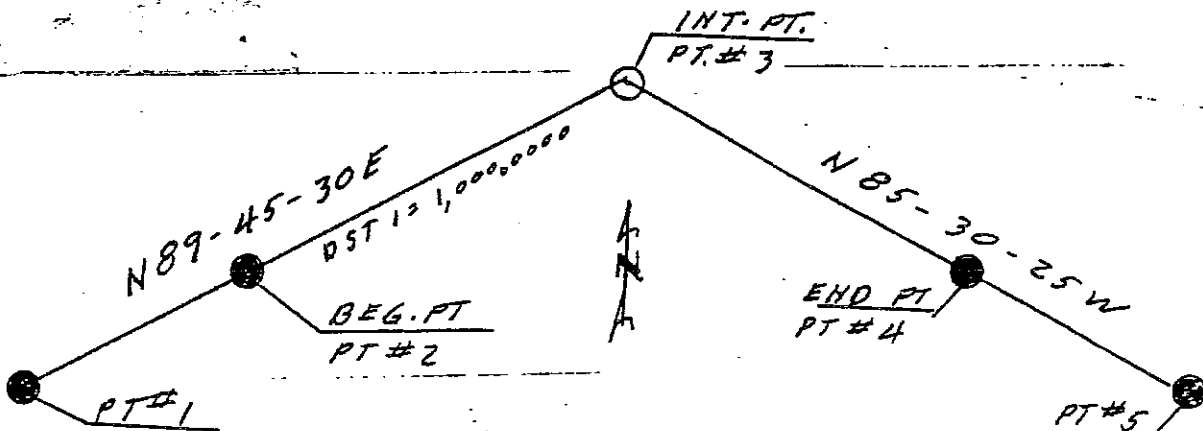
THIS EXAMPLE WILL BE A BEARING/BEARING INTERSECTION. WE WILL START BY SETTING 4 DECIMAL PLACES, NOT DISPLAYING COORDINATES AND CREATING A FILE CALLED BB1.

- 1 [SHIFT] 9 CR,DSP, FIX, PP, ?
- 2 PUSH B AZ., NE, FIX, FM
- 3 PUSH B DSP. NE Y/N?
- 4 PUSH Y Y
- 5 PUSH R/S AZ., NE, FIX, FM
- 6 PUSH C FIX 0-9?
- 7 PUSH 4 4
- 8 PUSH R/S AZ., NE, FIX, FM
- 9 PUSH D CR,DSP, FIX, PP, ?
- 10 PUSH A SIZE ? MAX 598A R/S HERE WILL USE THE MAX NUMBER. ENTER 100
- 11 PUSH R/S FILE NAMEENTER BB1
- 12 PUSH R/S CR,DSP, FIX, PP, ?

LET SAY THAT POINTS 1,2,4 & 5 ARE KNOWN. WE MUST STORE THEM NOW.

- 1 N=3991.5687 E=4000.0178
- 2 N=3995.7844 E=5000.0089
- 4 N=3921.6641 E=6996.9270
- 5 N=3843.3282 E=7993.8540

- 13 [SHIFT] B STA, ST, RL, TRV, ?
- 14 PUSH B BB1
- 15 PUSH R/S STO PT.?ENTER 1
- 16 PUSH R/S N1=?ENTER 3991.5687
- 17 PUSH R/S E1=?ENTER 4000.0178
- 18 PUSH R/S STO PT.?ENTER 2
- 19 PUSH R/S N2=?ENTER 3995.7844
- 20 PUSH R/S E2=?ENTER 5000.0089
- 21 PUSH R/S STO PT.?ENTER 4
- 22 PUSH R/S N4=?ENTER 3921.6641
- 23 PUSH R/S E4=?ENTER 6996.9270
- 24 PUSH R/S STO PT.?ENTER 5
- 25 PUSH R/S N5=?ENTER 3843.3282
- 26 PUSH R/S E5=?ENTER 7993.8540



27	[SHIFT] 8	STA,ST,RL,TRV,?	
28	PUSH E	RAD,+D,BB,TRI,?	
28	PUSH C	BB1	
29	PUSH R/S	BB BD DD OFS	
30	PUSH A	BEG. PT.?ENTER 2 (FOR PT.# 2)
31	PUSH R/S	END PT.?ENTER 4 (FOR PT.# 4)
32	PUSH R/S	1 ST BRG.=?	YOU MAY ENTER THE BEARING HERE BUT ANSWER WILL BE DIFFERENT.
33	PUSH R/S	1 ST PT,?ENTER 1 (THIS PROGRAM WILL INVERSE FROM 2 TO 1 & TURN THE BEARING 180 DEGREES.
34	PUSH R/S	2 ND BRG.=?YOU MAY ENTER BEARING, BUT ?
35	PUSH R/S	2 PT.?ENTER 5 (THIS PROGRAM WILL INVERSE FROM 4 TO 5 & TURN THE BEARING 180 DEGREES.
36	PUSH R/S	N 89-45-30 E	
37	PUSH R/S	DST 1= 999.9988	
38	PUSH R/S	N 85-30-25 W	
39	PUSH R/S	DST 2=1,000.0012	
40	PUSH R/S	INT. PT.?ENTER 3 (TO STORE THE INTER- SECTION POINT IN POSITION 3)
41	PUSH R/S	S 87-52-28 E(BEARING FROM PT.1 TO PT.2)
42	PUSH R/S	DST B-E= 1998.2932(DIST. FROM PT.1 TO PT.2)
43	PUSH R/S	BB BD DD OFS	

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

BEARING/DISTANCE

- 1 PUSH B CURRENT FILE NAME DISPLAYED
- 2 PUSH R/S BEG.PT?ENTER POINT OF ORIGIN FIRST BRG.
- 3 PUSH R/S END PT?ENTER POINT OF ORIGIN SECOND BRG.
- 4 PUSH R/S 1 ST BRG.=?ENTER FIRST BEARING
- 5 PUSH R/S QD=?ENTER 1=NE,2=SE,3=SW,4=NW.
- 6 PUSH R/S 2 ND DST.=?ENTER SECOND DISTANCE

SOLUTION 1

- 7 PUSH R/S READ FIRST BEARING
- 8 PUSH R/S READ DISTANCE ALONG FIRST BRG.
- 9 PUSH R/S READ SECOND BEARING
- 10 PUSH R/S READ DIST. ALONG SECOND BRG.
- 11 PUSH R/S INT.PT.?ENTER THE NUMBER OF THE POINT TO STORE THE COORDINATES OF THE INTERSECTION UNDER.

SOLUTION 2

- 12 PUSH R/S READ FIRST BEARING
- 13 PUSH R/S READ DISTANCE ALONG FIRST BRG.
- 14 PUSH R/S READ SECOND BEARING
- 15 PUSH R/S READ DIST. ALONG SECOND BRG.
- 16 PUSH R/S INT.PT.?ENTER THE NUMBER OF THE POINT TO STORE THE COORDINATES OF THE INTERSECTION UNDER.

NOTE; AT STEPS 4 & 6 YOU HAVE A BETTER CHOICE.

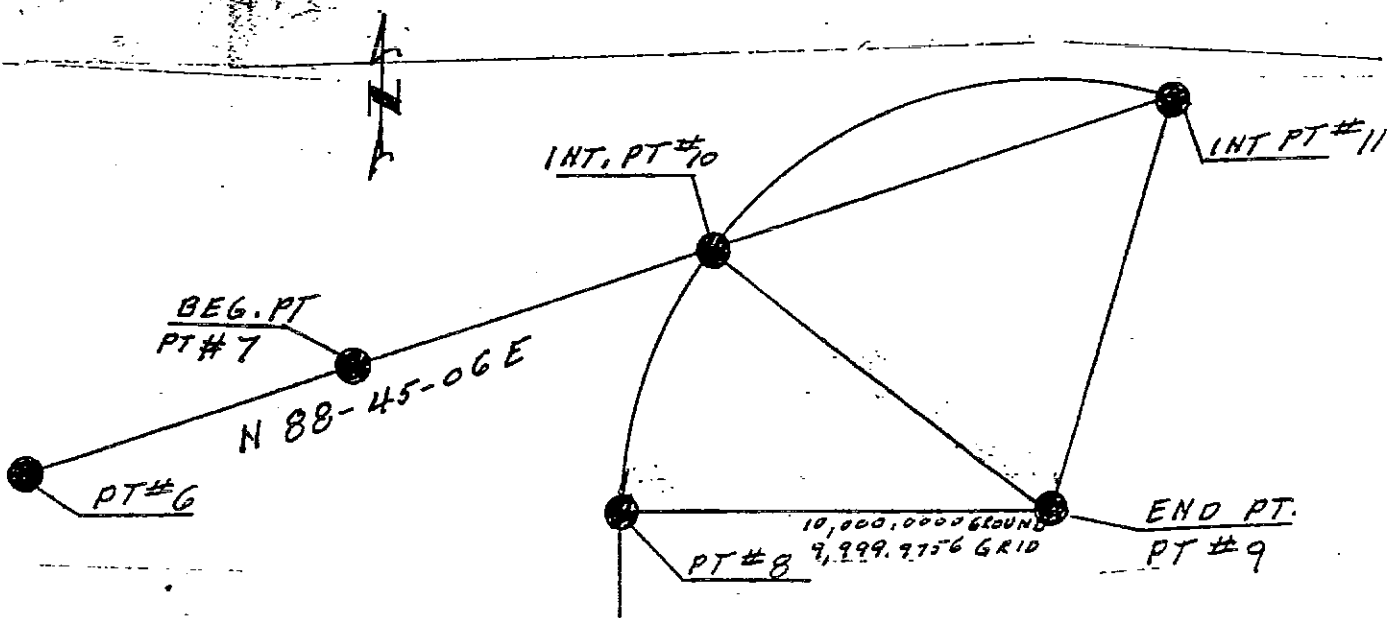
- 4 PUSH R/S 1 ST BRG.=?DO NOT ENTER ANYTHING
- 5 PUSH R/S 1 ST PT.?ENTER POINT # .POINT # TO INVERSE BETWEEN FOR THE BEARING.
- 6 PUSH R/S 2 ND DST.=?DO NOT ENTER ANYTHING
- 7 PUSH R/S 2 ND PT.?ENTER POINT # .POINT # TO INVERSE BETWEEN FOR THE DISTANCE.

B.B. EXAMPLE # 2

THIS EXAMPLE WILL BE A BEARING/DISTANCE INTERSECTION. WE WILL USE FILE BB1. STORE COORDINATES 6,7,8,& 9 AS SHOWN IN B.B. EXAMPLE # 1 STEPS 13-26.

6 N=7934.6353 E=7000.7122
 7 N=7956.4235 E=8000.4748
 8 N=991.8062 E=7133.3535
 9 N=991.8062 E=17133.3291

- 1 [SHIFT] 8 STA,ST,RL,TRV,?
- 2 PUSH E RAD,+0,BB,TRI,?
- 3 PUSH C BB1
- 4 PUSH R/S BB BD DD OFS
- 5 PUSH B BEG. PT.?ENTER 7 (FOR PT.# 7)
- 6 PUSH R/S END PT.?ENTER 9 (FOR PT.# 9)
- 7 PUSH R/S 1 ST BRG.=?
 YOU MAY ENTER THE BEARING HERE
 BUT ANSWER WILL BE DIFFERENT.
- 8 PUSH R/S 1 ST PT,?ENTER 6.007 (THIS PROGRAM WILL
 INVERSE FROM 6 TO 7 FOR ITS
 BEARING
- 9 PUSH R/S 2 ND DST.=?YOU MAY ENTER A DIST. HERE OR
- 10 PUSH R/S 2 PT.?ENTER 8 (FOR DIST. BETWEEN 9&8
- 11 PUSH R/S N 88-45-06 E
- 12 PUSH R/S DST 1= 15,957.9046
- 13 PUSH R/S N 43-00-37 E
- 14 PUSH R/S DST 2= 9,999.9756
- 15 PUSH R/S INT. PT.?ENTER 11 (TO STORE THE INTER-
 SECTION POINT IN POSITION 11)
- 16 PUSH R/S N88-45-06 E
- 17 PUSH R/S DST 1= 1,999.9750
- 18 PUSH R/S N 45-30-26 W
- 19 PUSH R/S DST 2= 9,999.9756
- 20 PUSH R/S INT. PT.?ENTER 10 (TO STORE THE INTER-
 SECTION POINT IN POSITION 10)



DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

DISTANCE/DISTANCE

- 1 PUSH C CURRENT FILE NAME DISPLAYED
- 2 PUSH R/S BEG.PT?ENTER POINT OF ORIGIN FIRST BRG.
- 3 PUSH R/S END PT?ENTER POINT OF ORIGIN SECOND BRG.
- 4 PUSH R/S 1 ST DST.=?ENTER FIRST DISTANCE
- 5 PUSH R/S 2 ND DST.=?ENTER SECOND DISTANCE

SOLUTION 1

- 6 PUSH R/S READ FIRST BEARING
- 7 PUSH R/S READ DISTANCE ALONG FIRST BRG.
- 8 PUSH R/S READ SECOND BEARING
- 9 PUSH R/S READ DIST. ALONG SECOND BRG.
- 10 PUSH R/S INT.PT.?ENTER THE NUMBER OF THE POINT TO
STORE THE COORDINATES OF THE
INTERSECTION UNDER.

SOLUTION 2

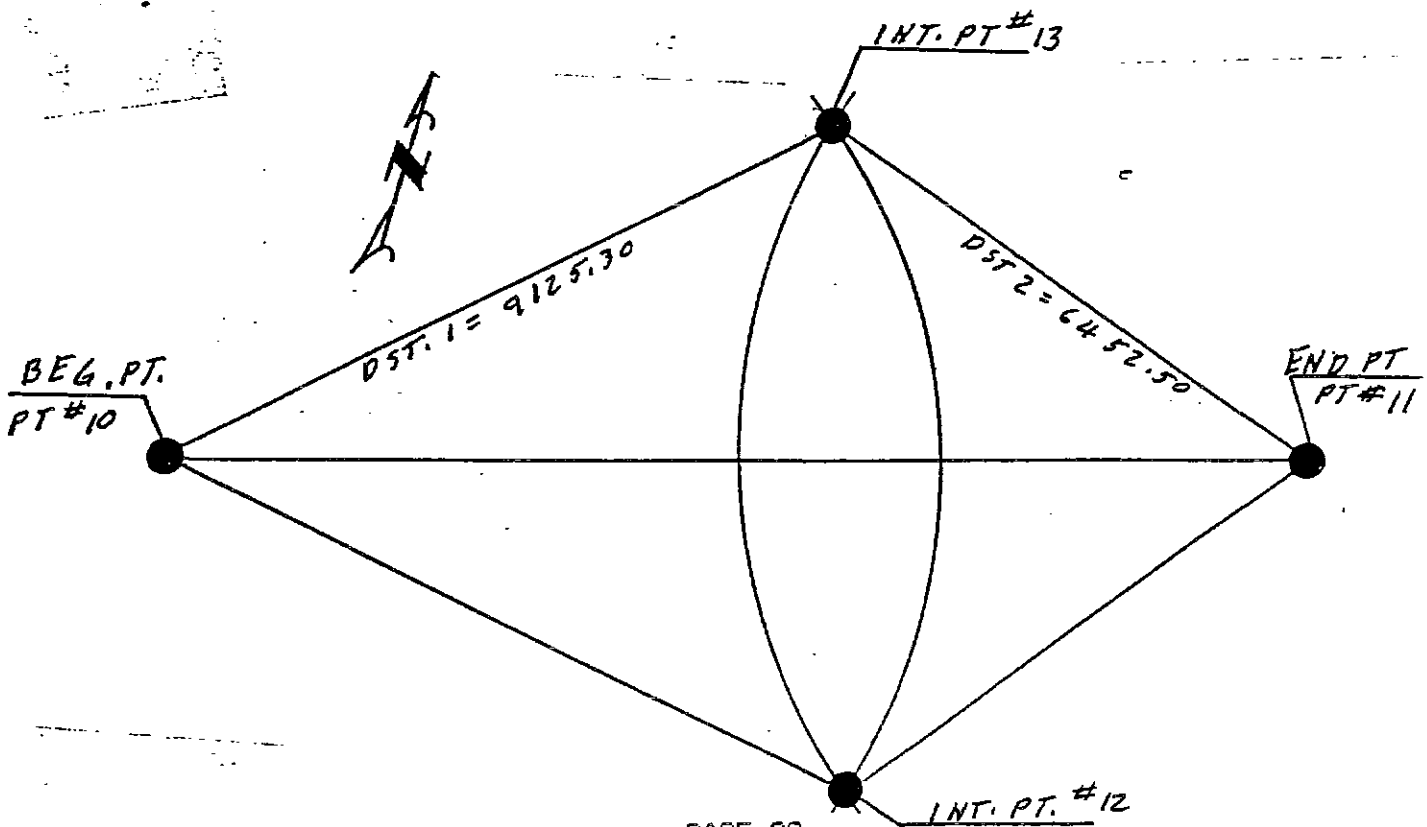
- 11 PUSH R/S READ FIRST BEARING
- 12 PUSH R/S READ DISTANCE ALONG FIRST BRG.
- 13 PUSH R/S READ SECOND BEARING
- 14 PUSH R/S READ DIST. ALONG SECOND BRG.
- 15 PUSH R/S INT.PT.?ENTER THE NUMBER OF THE POINT TO
STORE THE COORDINATES OF THE
INTERSECTION UNDER.

B.B. EXAMPLE # 3

THIS EXAMPLE WILL BE A DISTANCE/DISTANCE INTERSECTION. WE WILL USE FILE BB1. & COORDINATES 10 & 11 IN B.B. EXAMPLE # 2. OR STORE POINTS 10 & 11.

10 N=7999.9994 E=9999.9750
 11 N=8304.1175 E=23954.5911

- 1 [SHIFT] B STA,ST,RL,TRV,?
- 2 PUSH E RAD,+0,BB,TRI,?
- 3 PUSH C BB1
- 4 PUSH R/S BB BD DD OFS
- 5 PUSH C BEG. PT.?ENTER 10 (FOR PT.# 10)
- 6 PUSH R/S END PT.?ENTER 11 (FOR PT.# 11)
- 7 PUSH R/S 1 ST DST.=?ENTER 9125.3
- 8 PUSH R/S 2 ND DST.=?ENTER 6452.5
- 9 PUSH R/S S 69-24-37 E
- 10 PUSH R/S DST 1= 9125.3000
- 11 PUSH R/S S 57-00-40 W
- 12 PUSH R/S DST 2= 6452.5000
- 13 PUSH R/S INT.PT.?ENTER 12 (TO STORE THE INTERSECTION POINT IN POSITION 12)
- 14 PUSH R/S N 66-54-49 E
- 15 PUSH R/S DST 1= 9125.3000
- 16 PUSH R/S N 59-30-29 W
- 17 PUSH R/S DST 2= 6452.5000
- 18 PUSH R/S INT.PT.?ENTER 13 (TO STORE THE INTERSECTION POINT IN POSITION 13)
- 19 PUSH R/S N 88-45-06 EBEARING BETWEEN 10 & 11
- 20 PUSH R/S DST B-E= 13957.9296DIST. BETWEEN 10 & 11
- 21 PUSH R/S BB BD DD OFS



DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

OFFSET

ENTER THE FIRST POINT AND A BEARING FROM THAT POINT AND "OFFSET" WILL GIVE YOU THE PERPENDICULAR OFFSET-DISTANCE TO A SECOND POINT.

- 1 PUSH D CURRENT FILE NAME DISPLAYED
- 2 PUSH R/S BEG.PT?ENTER POINT OF ORIGIN FIRST BRG.
- 3 PUSH R/S END PT?ENTER POINT OF ORIGIN SECOND BRG.
- 4 PUSH R/S 1 ST BRG.=?ENTER FIRST BEARING
- 5 PUSH R/S QD=?ENTER 1=NE,2=SE,3=SW,4=NW.

SOLUTION

- 6 PUSH R/S READ FIRST BEARING
- 7 PUSH R/S READ DISTANCE ALONG FIRST BRG.
- 8 PUSH R/S READ SECOND BEARING
- 9 PUSH R/S READ DIST. ALONG SECOND BRG.
- 10 PUSH R/S INT.PT.?ENTER THE NUMBER OF THE POINT TO STORE THE COORDINATES OF THE INTERSECTION UNDER.

NOTE; AT STEPS 4 YOU HAVE A BETTER CHOICE.

- 4 PUSH R/S 1 ST BRG.=?DO NOT ENTER ANYTHING
- 5 PUSH R/S 1 ST PT.?ENTER POINT # .POINT # TO INVERSE BETWEEN FOR THE BEARING.

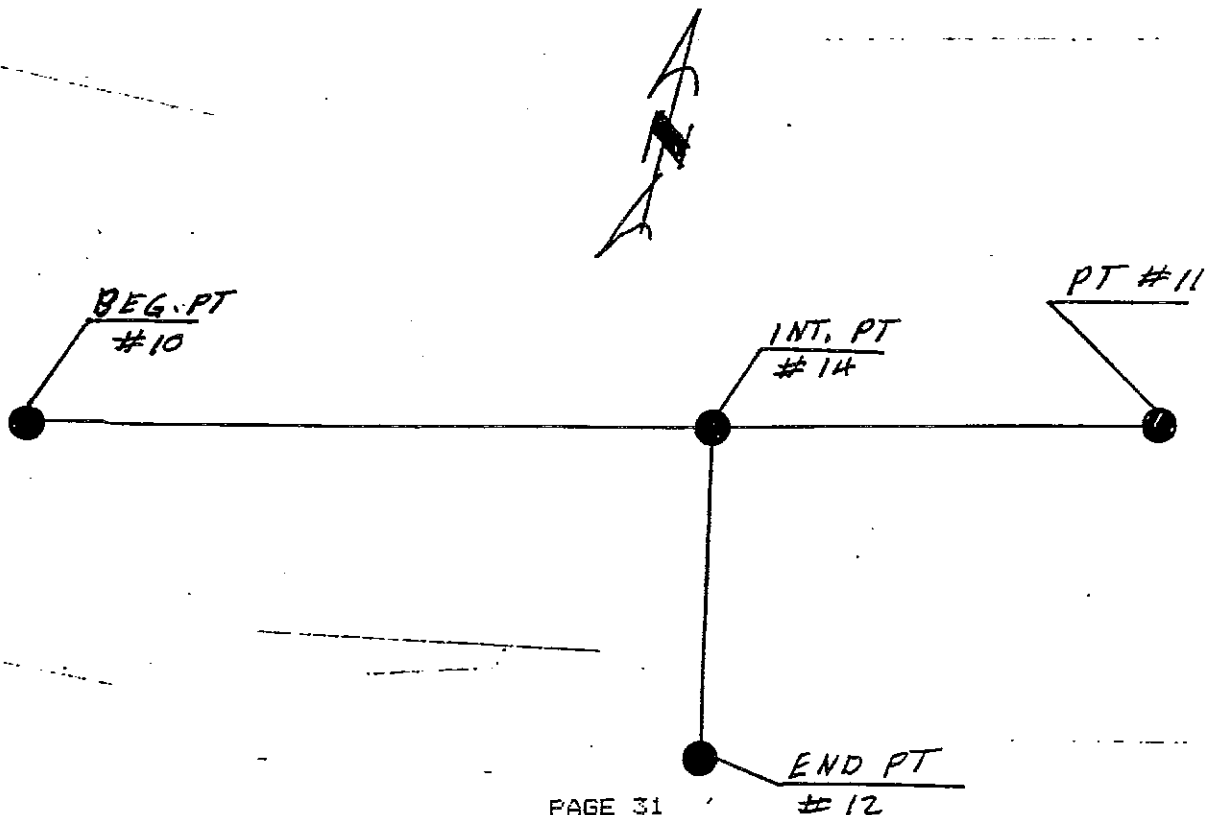
B.B. EXAMPLE # 4

THIS EXAMPLE WILL BE A OFFSET INTERSECTION. WE WILL USE FILE BB1. & COORDINATES 10,11 & 12 IN B.B. EXAMPLE # 3. OR STORE POINTS 10,11 & 12.

10 N=7999.9994 E=9999.9750
 11 N=8304.1175 E=23954.5911
 12 N=4790.8917 E=18542.3826

- | | | | |
|----|-----------|-----------------|---|
| 1 | [SHIFT] B | STA,ST,RL,TRV,? | |
| 2 | PUSH E | RAD,+O,BB,TRI,? | |
| 3 | PUSH C | BB1 | |
| 4 | PUSH R/S | BB BD DD OFS | |
| 5 | PUSH D | BEG. PT.? | ENTER 10 (FOR PT.# 10) |
| 6 | PUSH R/S | END PT.? | ENTER 12 (FOR PT.# 12) |
| 7 | PUSH R/S | 1 ST BRG.=? | YOU MAY ENTER THE BEARING HERE
BUT ANSWER WILL BE DIFFERENT. |
| 8 | PUSH R/S | 1 ST PT,? | ENTER 11 (THIS PROGRAM WILL
INVERSE FROM 10 TO 11 FOR ITS
BEARING |
| 9 | PUSH R/S | N 88-45-06 E | |
| 10 | PUSH R/S | DST1= 8470.4591 | |
| 11 | PUSH R/S | N 1-14-54 W | |
| 12 | PUSH R/S | DST2= 3394.4695 | |
| 13 | PUSH R/S | INT. PT.? | ENTER 14 (TO STORE THE INTER-
SECTION POINT IN POSITION 14) |

NOTE; IF YOU WANT TO KNOW THE BEARING & DISTANCE FROM 10 TO 12 PUSH R/S TWO MORE TIMES. BUT IF YOU WANT TO CALC. ANOTHER OFFSET PUSH D. OR E FOR MENU.



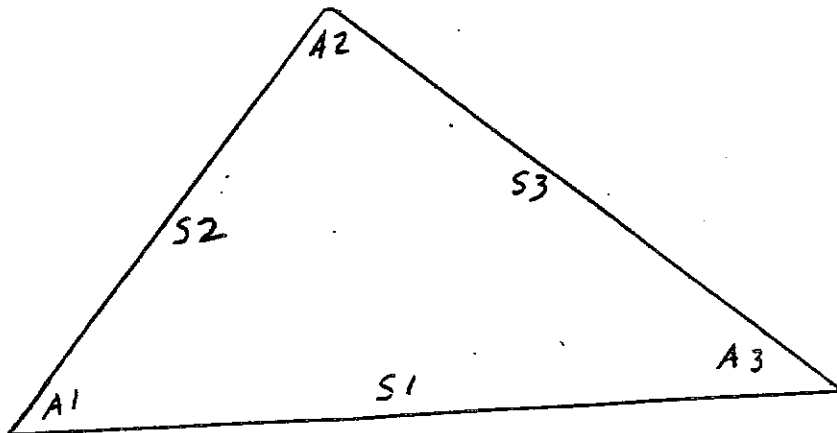
TRI - TRIANGLE SOLUTIONS THIS PROGRAM WILL SOLVE THE FIVE POSSIBLE COMBINATIONS OF TRIANGLE PROBLEMS USING TWO MENUES TO HELP YOU SELECT THE SOLUTION YOU NEED. YOU CAN ALSO EXECUTE ANY ONE OF THE PROGRAMS BY [XEQ] [ALPHA] (THE INITIALS OF THE PROGRAM YOU WANT) [ALPHA]

THESE PROGRAMS ALL OPERATE IN A SIMILAR MANNER BY NUMBERING THE RESPECTIVE PARTS OF THE TRIANGLE IN A CLOCKWISE DIRECTION. AFTER YOU HAVE ENTERED THE THREE PARTS THE SOLUTION WILL BE DISPLAYED IN CONSECUTIVE ORDER.

- 1 [SHIFT] B STA,ST,RL,TRV,?
- 2 PUSH E RAD.+0,BB,TRI,?
- 3 PUSH D SAS,SSA,SSS,?,?
- 4 PUSH E SAA,ASA,?,?,R.S
- 5 PUSH B A3=?ENTER 30
- 6 PUSH R/S S1=?ENTER 100
- 7 PUSH R/S A1=?ENTER 60
- 8 PUSH R/S S1= 100.0000
- 9 PUSH R/S A1= 60-00-00
- 10 PUSH R/S S2=50.000
- 11 PUSH R/S A2= 90-00-00
- 12 PUSH R/S S3= 86.6025
- 13 PUSH R/S A3= 30-00-00
- 14 PUSH R/S AREA=2,165.0635
- 15 PUSH R/S SAS,SSA,SSS,?,?

NOTE; IN STEP 3 A= SAS (OR SIDE-ANGLE-SIDE)
 B= SSA (OR SIDE-SIDE-ANGLE)
 C= SSS (OR SIDE-SIDE-SIDE)
 D= GO TO NEXT MENU
 E= GO TO NEXT MENU

INSTEP 4 A= SAA (OR SIDE-ANGLE-SIDE)
 B= ASA (OR ANGLE-SIDE-ANGLE)
 C= RESTART MENU 1
 D= RESTART MENU 1
 E= RESTART MENU 1

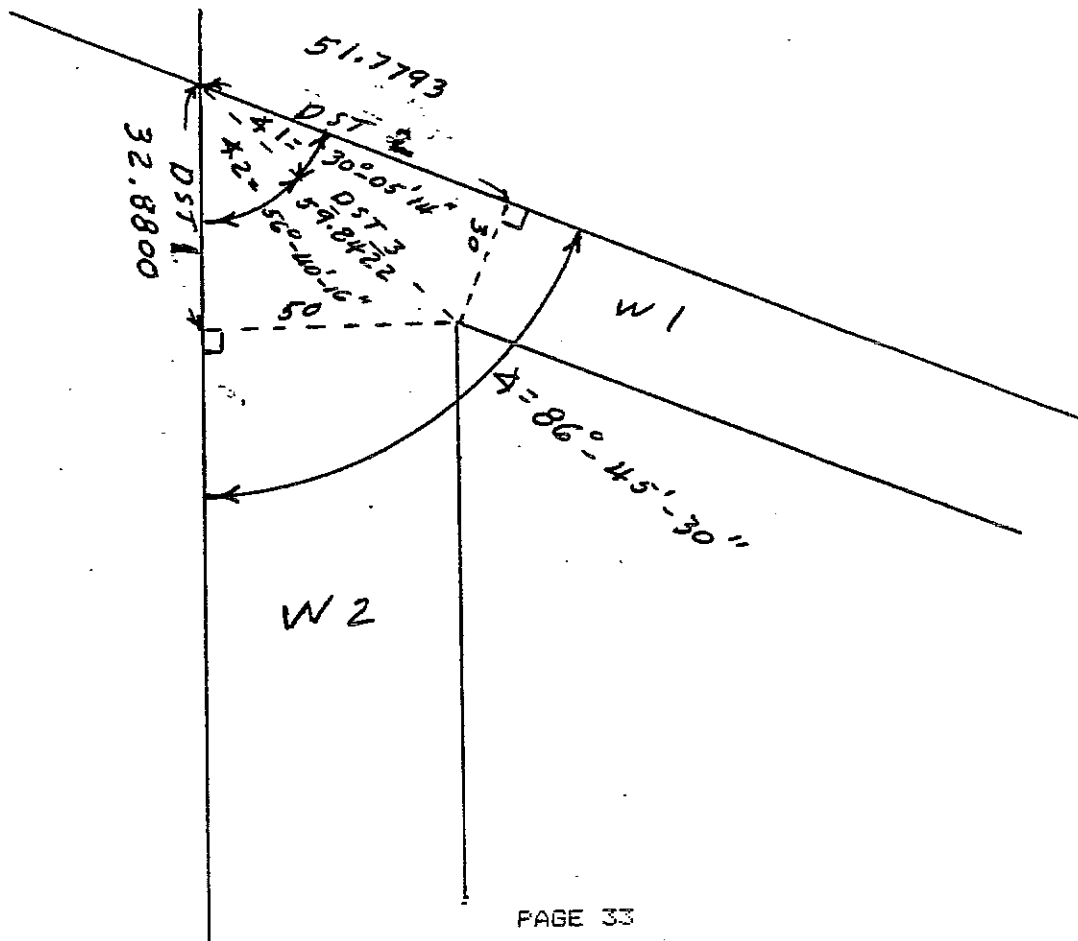


DIST12 V-3
 CAL-TRANS SURVEY CHIP 2.0

MENU 1 (WW - WIDTH/WIDTH)

WW IS PARTICULARLY HELPFULL WHEN CALCULATING THE SIDE LINES OF A STREET INTERSECTION. (ON TANGENT, ON CURVES).

- | | | | |
|----|-----------|---------------------|--|
| 1 | [SHIFT] B | STA,ST,RL,TRV,? | |
| 2 | PUSH E | RAD.+0,BB,TRI,? | |
| 3 | PUSH E | WW,IV, AJ,PPM,? | |
| 4 | PUSH A | W1=? | ENTER 30 |
| 5 | PUSH R/S | W2=? | ENTER 50 |
| 6 | PUSH R/S | <=? | ENTER 86.453 (D.M.S.) |
| 7 | PUSH R/S | DST1= 32.8800 | DISTANCE ALONG SIDE 1 |
| 8 | PUSH R/S | DST2= 51.7793 | DISTANCE ALONG SIDE 2 |
| 9 | PUSH R/S | <1= 30-05-14 | ANGLE FROM SIDE 1 TO SIDELINE PI |
| 10 | PUSH R/S | DST3= 59.8422 | DISTANCE FROM INTERSECTION TO SIDELINE PI. |
| 11 | PUSH R/S | <2= 56-40-16 | ANGLE FROM SIDE 2 TO SIDELINE PI |
| 12 | PUSH R/S | W1=? | CONTINUE AS IN STEP 4 |



DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 1 (IV - INVERSE)

IV WILL DO RADIAL INVERSES FROM ONE POINT IN A COORDINATE FILE TO ANY OTHER POINTS IN THE FILE, GIVING THE AZMUTH, BEARING AND DISTANCE BETWEEN THE POINTS.

- 1 [SHIFT] B STA,ST,RL,TRV,?
- 2 PUSH E RAD.+0,BB,TRI,?
- 3 PUSH E WW,IV, AJ,PPM,?
- 4 PUSH B BB1OR NAME OF YOUR CURRENT FILE.
- 5 PUSH R/S BEG PT?ENTER POINT TO RADIAL OUT FROM.
ENTER 14
- 6 PUSH R/S INV PT?ENTER POINT TO INVERSE TOO.
ENTER 10
- 7 PUSH R/S DST= 8470.4591DISTANCE FROM 14 TO 10.
- 8 PUSH R/S AZ= 268-45-06AZIMUTH FROM 14 TO 10.
- 9 PUSH R/S S 88-45-06 WBEARING FROM 14 TO 10.
- 10 PUSH R/S INV PT?REPEAT STEPS 6 THROUGH 9.

NOTE; YOU MAY PUSH E TO RESTART PROGRAM. SEE PAGE 31 FOR SKETCH.

MENU 1 (AJ - COMPASS RULE ADJUSTMENT AND ANGLE CLOSURE CHECK FOR A TRAVERSE.)

TRAVERSE ADJUSTMENT IF ENTERED FROM A TRV. WORKES AS SHOWN ON PAGE 20 STEP 135 THROUGH 167.

- 1 [SHIFT] B STA,ST,RL,TRV,?
- 2 PUSH E RAD.+0,BB,TRI,?
- 3 PUSH E WW,IV, AJ,PPM,?
- 4 PUSH C <CHK,COMP

NOTE; IF YOU PUSH A, THIS IS THE SAME PROGRAM AS SHOWN ON PAGE 18 STEPS 27-55.

- 5 PUSH B TRV1OR NAME OF YOUR CURRENT FILE.
- 6 PUSH R/S [IHD=?SEE PAGE 20 STEP 131 (160.3122)
- 7 PUSH R/S N,ERR=?SEE PAGE 20 STEP 127 (0.0007)
- 8 PUSH R/S E.ERR=?SEE PAGE 20 STEP 128 (0.0189)
- 9 PUSH R/S OLD FL.?SAME AS STEPS 137-167 ON PAGES 20
AND 21.

MENU 1 PPM (TEMP. & PRESS. CORRECTION IN PARTS PER MILLION & COMBINED GRID FACTOR (GROUND TO GRID).FOR T-2000 ONLY.

- 1 [SHIFT] B STA,ST,RL,TRV,?
- 2 PUSH E RAD.+0,BB,TRI,?
- 3 PUSH E WW,IV, AJ,PPM,?
- 4 PUSH D PRES.?ENTER 30
- 5 PUSH R/S TEMP.?ENTER 75
- 6 PUSH R/S PPM= 12
- 7 PUSH R/S C.GRID F.?ENTER .9999567
- 8 PUSH R/S COMB.PPM= -31
- 9 PUSH R/S STA,ST,RL,TRV,?

NOTE; THE T-2000 WILL ADJUST FOR THE GRID INPUT DISTANCE TO THE GROUND OUTPUT DISTANCE.

** DO NOT USE WHEN RUNNING ELEVATIONS. **

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

CV - CURVE DATA

IF YOU KNOW AT LEAST ONE OF THE THREE MAJOR PARTS OF A CIRCULAR CURVE (RADIUS, DEGREE OF CURVE, DELTA) AND ANY ONE OF THE FOLLOWING: TANGENT, CHORD, MID-ORDINANT OR EXTERNAL THIS PROGRAM WILL CALCULATE THE REMAINING PARTS AND THE AREA OF THE FILLET, SEGMENT AND SECTOR.

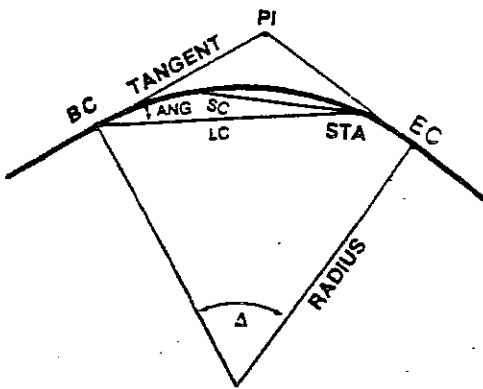
- 1A R=? IF YOU DON'T KNOW THE RADIUS PRESS [R/S]
IF YOU DO ENTER THE RADIUS & PRESS [R/S].
- 1B D=? IF YOU DON'T KNOW THE DEGREE OF CURVE PRESS [R/S].
IF YOU DO ENTER THE DEGREE OF CURVE & PRESS [R/S].
- 1C DELTA=? IF YOU DON'T KNOW THE DELTA PRESS [R/S]
IF YOU DO KNOW ENTER THE DELTA PRESS [R/S]
IF YOU KNOW THE BEARINGS OF THE TWO TANGENTS OR FOUR COORDINATES.
ENTER 0 & PRESS [R/S].
- 2 IF YOU ANSWERED TWO OF THE ABOVE STEPS GO TO STEP 8, OTHERWISE CONTINUE.
- 3 L T C M E THESE ABBREVIATIONS STANDS FOR LENGTH, TANGENT, CHORD, MID-ORDINANT AND EXTERNAL (ASSIGNED TO [A],[B],[C],[D] AND [E] RESPECTIVLY), ENTER THE SECONDD KNOWN PART AND PRESS THR KEY THAT CORRESPONDS TO THAT PART.

SEE STA EXAMPLE 1 PAGE 12 FOR CURVE AND POINT NUMBERS.

- 1 [SHIFT] 7 CV, HZ, VC, RES, ?
- 2 PUSH A R=?ENTER 500
- 3 PUSH R/S DELTA?ENTER 0
- 4 PUSH R/S PI-BC BRG.=?YOU COULD ENTER A BEARING HERE PUT DON'T
- 5 PUSH R/S PI-BC PT.?ENTER 4.003 (FOR BEARING BETWEEN PT. 4&3)
- 6 PUSH R/S PI-EC BRG.=?YOU COULD ENTER A BEARING HERE PUT DON'T
- 7 PUSH R/S PI-EC PT.?ENTER 6.007 (FOR BEARING BETWEEN PT. 6&7)
- 8 PUSH R/S R= 500.0000
- 9 PUSH R/S D= 11-27-33
- 10 PUSH R/S DELTA= 23-17-20
- 11 PUSH R/S L= 203.2339
- 12 PUSH R/S T= 103.0395
- 13 PUSH R/S C= 201.8377
- 14 PUSH R/S M= 10.2905
- 15 PUSH R/S E= 10.5068
- 16 PUSH R/S AREA Y/N?ENTER Y (FOR YES)
- 17 PUSH R/S SEC= 50,808.4738
- 18 PUSH R/S SEC= 1,387.5507
- 19 PUSH R/S FIL= 711.2852
- 20 PUSH R/S R=?ENTER NEW CURVE OR SOLVE EX:2.

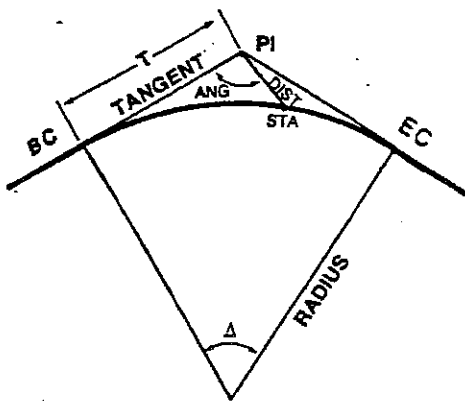
A CURVE WITH A CENTRAL ANGLE OF 35-32-25 HAS A TANGENT OF 35'.
FIND THE DEGREE OF CURVATURE (CHORD DEFINITION) AND THE ARC LENGTH.

- 21 [SHIFT] E D-CHD
- 22 PUSH R/S R=?
- 23 PUSH R/S D=?
- 24 PUSH R/S DELTA?ENTER 35.3225
- 25 PUSH R/S L T C M EENTER 53
- 26 PUSH B R= 165.3717
- 27 PUSH R/S D= 35-11-51
- 28 PUSH R/S DELTA= 35-32-25
- 29 PUSH R/S L= 102.5792
- OR [SHIFT] B L= 102.5792
- [SHIFT] C RESTARTS AREA
- [SHIFT] A RESTARTS CURVE PROGRAM



Field data output for BC deflections consist of:

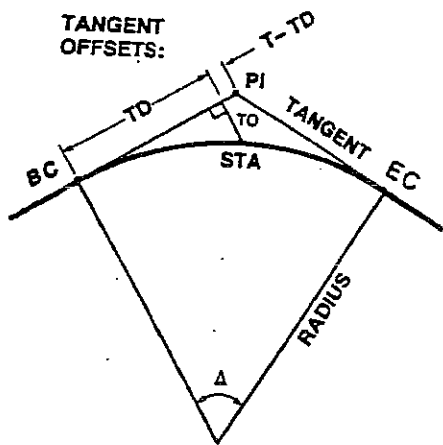
- STA—current station
- ANG—deflection angle from tangent to long chord
- LC—long chord from PC to current station
- SC—short chord from previous station to current station
- Δ —central angle
- PI—point of intersection of tangents
- BC, EC—ends of curve



PI Deflections:

Field data output for PI deflections consists of:

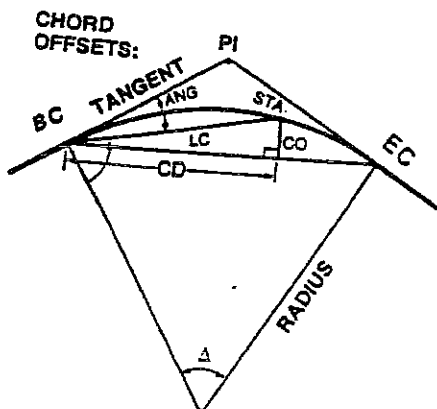
- STA—current station
- ANG—deflection angle from tangent to line joining PI and current station
- DIST—distance from PI to current station



Tangent Offsets:

Field data output for tangent offsets consists of:

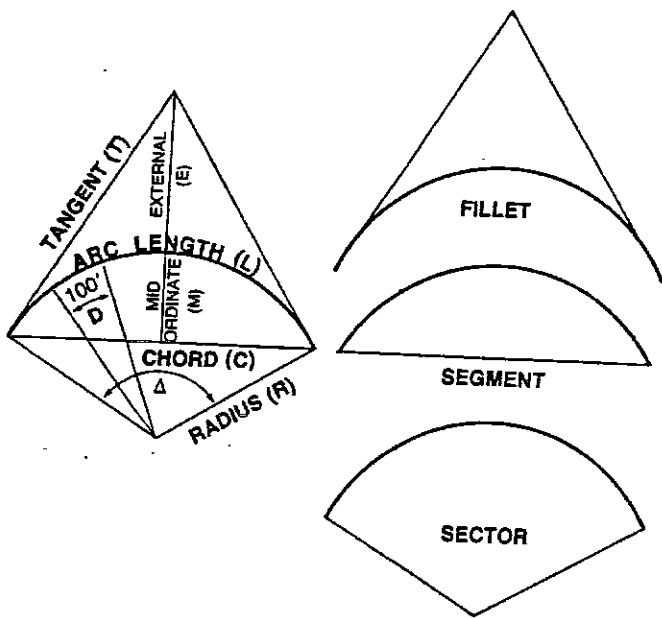
- STA—current station
- TD—tangent distance
- TO—tangent offset
- T—distance from BC to PI



Chord Offsets:

Field data output for chord offsets consists of:

- STA—current station
- CD—chord distance
- CO—chord offset
- L—length of curve from BC to EC



DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

HZ - HORIZONTAL CURVE LAYOUT

THIS PROGRAM LENDS ITS SELF VERY WELL TO CONVENTIONAL SURVEYING METHODS FOR LAYING OUT CIRCULAR CURVES, GIVING THE USER A CHOISE OF LAYING OUT THE CURVE FROM THE BC.SIGHTING THE PI.,FROM THE PI. SIGHTING THE BC.,TANGENT OFFSET METHOD OR CHORD OFFSET.

YOU WILL NOTE THAT THE FIRST EIGHT STEPS OF THIS PROGRAM ARE IDENTICAL TO THOSE OF "CV" THE CURVE DATA PROGRAM. THIS IS BECAUSE "CV" IS USED AS A SUBROUTINE IN ORDER TO SETUP THE CALCULATOR FOR CALCULATING THE HORIZONTAL LAYOUT DATA.

SEE STA EXAMPLE 1 PAGE 12 FOR CURVE AND POINT NUMBERS.

```
1  [SHIFT] 7  CV,HZ, VC,RES,?
2  PUSH B    R=? .....ENTER 500
3  PUSH R/S  DELTA? .....ENTER 0
4  PUSH R/S  PI-BC BRG.=? .....YOU COULD ENTER A BEARING HERE
5  PUSH R/S  PI-BC PT.? .....ENTER 4.003 (FOR BEARING BETWE
6  PUSH R/S  PI-EC BRG.=? .....YOU COULD ENTER A BEARING HERE
7  PUSH R/S  PI-EC PT.? .....ENTER 6.007 (FOR BEARING BETWE
8  PUSH R/S  R= 500.0000
9  PUSH R/S  D= 11-27-33
10 PUSH R/S  DELTA= 23-17-20
11 PUSH R/S  L= 203.2339
12 PUSH R/S  BC STA=? .....ENTER 1300
13 PUSH R/S  BC= 13+00.0000
14 PUSH R/S  EC= 15+03.2339
15 PUSH R/S  PI= 14+03.0395
16 PUSH R/S  BC PI TO CD .....ENTER [A] [B] [C] [D] ANY ONE
17 PUSH A    STA? .....ENTER 1353.31
18 PUSH R/S  S.C.= 53.2848
19 PUSH R/S  L.C.= 53.2848
20 PUSH R/S  <= 3-03-16
21 PUSH R/S  STA? .....ENTER 1400 (IF YOU WANT TO DO EVEN
                        STA. INTERVALS.
22 PUSH R/S  S.C.= 46.6730
23 PUSH R/S  L.C.= 99.8334
24 PUSH R/S  <= 5-43-46
25 PUSH R/S  STA? .....YOU MAY ENTER ANOTHER STA. OR
26 PUSH R/S  INT.=? .....ENTER 100 (FOR 100 FT. INTERVALS)
27 PUSH R/S  END STA.? .....ENTER 1503
28 PUSH R/S  STA.= 1500.0000
29 PUSH R/S  S.C.= 99.8334
30 PUSH R/S  L.C.= 198.6693
31 PUSH R/S  <= 11-27-33
32 PUSH R/S  STA.= 15+03.2339
33 PUSH R/S  S.C.= 3.2339
34 PUSH R/S  L.C.= 201.8377
35 PUSH R/S  <= 11-38-40
36 PUSH R/S  STA?
37 PUSH E    TO RESTART ANOTHER HORIZONTAL CURVE LAYOUT
```

NOTE: IN STEP 12 IF YOU DON'T KNOW THE BC.STA. PUSH R/S IT WILL ASK FOR PI STA=?
IF YOU PUSH R/S AGAIN IT WILL ASK FOR BC STA=? AGAIN.

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

VC - VERTICAL CURVE LAYOUT

THIS PROGRAM CALCULATES STATION AND ELEVATION DATA FOR "VC" VERTICAL CURVES AND "VT" STRAIGHT GRADES. THE REQUIRED INFORMATION FOR A VERTICAL CURVE IS THE BEGINNING STATION (OR STATION AT INTERSECTION OF TANGENTS), ELEVATION, BEGINNING GRADE, ENDING GRADE AND ONE OF THE FOLLOWING: 1) LENGTH OF CURVE, 2) ELEVATION AT HIGH OR LOW POINT, OR 3) STATION AND ELEVATION THROUGH WHICH THE CURVE PASSES.

REQUIRED INFORMATION FOR "VT" STRAIGHT GRADE IS BEGINNING STATION, ELEVATION AND GRADE. STATIONS AT SPECIFIED ELEVATIONS CAN BE CALCULATED AS WELL AS ELEVATIONS AT SPECIFIED STATIONS. IF A STATIONING INTERVAL IS GIVEN, ELEVATIONS AT SUCCESSIVE STATIONS ARE CALCULATED AUTOMATICALLY.

EXAMPLE:

CALCULATE ELEVATIONS FOR STATIONS ALONG A 400 FT. VERTICAL CURVE WITH A PI STA. AT 14+24.08 AND ELEVATION 104.77. THE BEGINNING GRADE IS -5.1% AND ENDING GRADE IS 2.4%. USING A STATION INTERVAL OF 100 FT. STARTING WITH THE FIRST EVEN STATION AFTER THE BVC.

```
1  [SHIFT] 7  CV,HZ, VC,RES,?
2  PUSH C    VC, VT
3  PUSH A    B.V.C. STA.=? .....IF KNOWN ENTER IT HERE
4  PUSH R/S  V.P.I. STA.=? .....ENTER 1424.08
5  PUSH R/S  EL=? .....ENTER 104.77
6  PUSH R/S  GRADE BEG%=? .....ENTER -5.1
7  PUSH R/S  GRADE END%=? .....ENTER 2.4
8  PUSH R/S  V.C.L.=? .....IF KNOWN ENTER HERE OR
9  PUSH R/S  EL0=? .....IF KNOWN ENTER HERE OR
10 PUSH R/S  P.D.V.C. STA.=? .....IF KNOWN ENTER HERE OR
11 PUSH R/S  V.C.L.=? .....ENTER 400
12 PUSH R/S  B.V.C.= 12+24.0800
13 PUSH R/S  EL= 114.9700
14 PUSH R/S  STA= 14+96.08 .....STA. OF LOW OR HIGH POINT
15 PUSH R/S  EL0= 108.0340 .....ELEVATION OF LOW OR HIGH POINT
16 PUSH R/S  STA.=? .....ENTER 1224.08 (B.V.C.STA)
17 PUSH R/S  STA= 12+24.0800
18 PUSH R/S  EL= 114.9700
19 PUSH R/S  STA.=?
20 PUSH E    STA,EL,INT,VC,VT
21 PUSH R/S  INT.=? .....ENTER 100
22 PUSH R/S  BEG. STA.=? .....ENTER 1300
23 PUSH R/S  END STA.=? .....ENTER 1600
24 PUSH R/S  STA+00.0000
25 PUSH R/S  EL= 111.6384
26 PUSH R/S  STA= 14+00.0000
27 PUSH R/S  EL= 108.8994
28 PUSH R/S  STA= 15+00.0000
29 PUSH R/S  EL= 108.0354
30 PUSH R/S  STA= 16+00.0000
31 PUSH R/S  EL= 109.0464
32 PUSH R/S  STA.=? .....ENTER 1624.08
33 PUSH R/S  STA= 16+24.0800
34 PUSH R/S  EL= 109.5700
35 PUSH R/S  STA.=?
```

WHAT STATIONS WOULD HAVE AN ELEVATION OF 109.00.

36 PUSH R/S EL=?ENTER 109
37 PUSH R/S STA= 15+97.5886
38 PUSH R/S STA= 13+94.5714
39 PUSH R/S EL=?

NOTE; WHEN YOU PUSH E DURING THE RUNNING OF THE PROGRAM CAN -
CHANGE TO STA MODE
CHANGE TO EL MODE (A [R/S] IN EATHER STA OR EL MODE WILL ALSO CHANGE MODES
INTER INTO INTERVAL MODE
CHANGE FROM VERTIAL CURVE TO STRAIGHT GRADE
CHANGE FROM "VT" STRAIGHT GRADE TO VERTICAL CURVE.

MENU 2 [SHIFT] 7

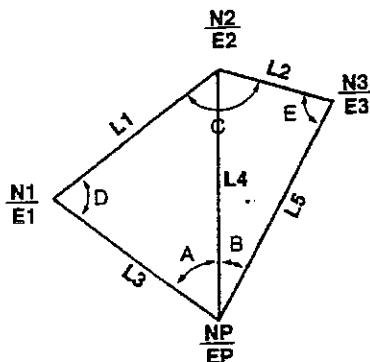
RES - 3 POINT RESECTION

THIS PROGRAM IS DESIGNED TO SOLVE THE "THREE POINT PROBLEM," OR RESECTION, WHICH IS A METHOD OF LOCATING A POINT FROM THREE KNOWN POINTS. REQUIRED INFORMATION IS THE DISTANCE BETWEEN POINTS 1 & 2, POINTS 2 & 3, AND THE ANGLE C. ALTERNATIVELY, THE COORDINATES OF THE THREE POINTS MAY BE USED. THE ANGLES A AND B MUST ALSO BE KNOWN. THE POINTS MUST BE ARRANGED IN CLOCKWISE ORDER AS 1, 2, 3, P. THE ANGLES D AND E ARE CALCULATED AND THE FIVE DISTANCES BETWEEN THE POINTS CAN ALSO BE CALCULATED. IF COORDINATES FOR THE THREE POINTS ARE STORED IN A POINT FILE THEN THE COORDINATES OF POINT P CAN ALSO BE STORED.

THERE ARE THREE POSSIBLE CASES DEPENDING ON THE SPATIAL RELATIONSHIP OF THE POINTS.

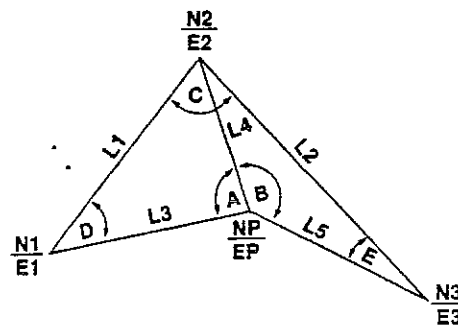
Case 1

Point P is outside the triangle formed by points 1, 2 and 3 and opposite point 2.



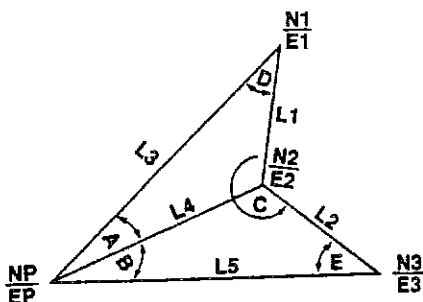
Case 2

Point P is within the triangle formed by points 1, 2 and 3.



Case 3

Point P is outside the triangle formed by points 1, 2 and 3 and on the same side as point 2.



Note:

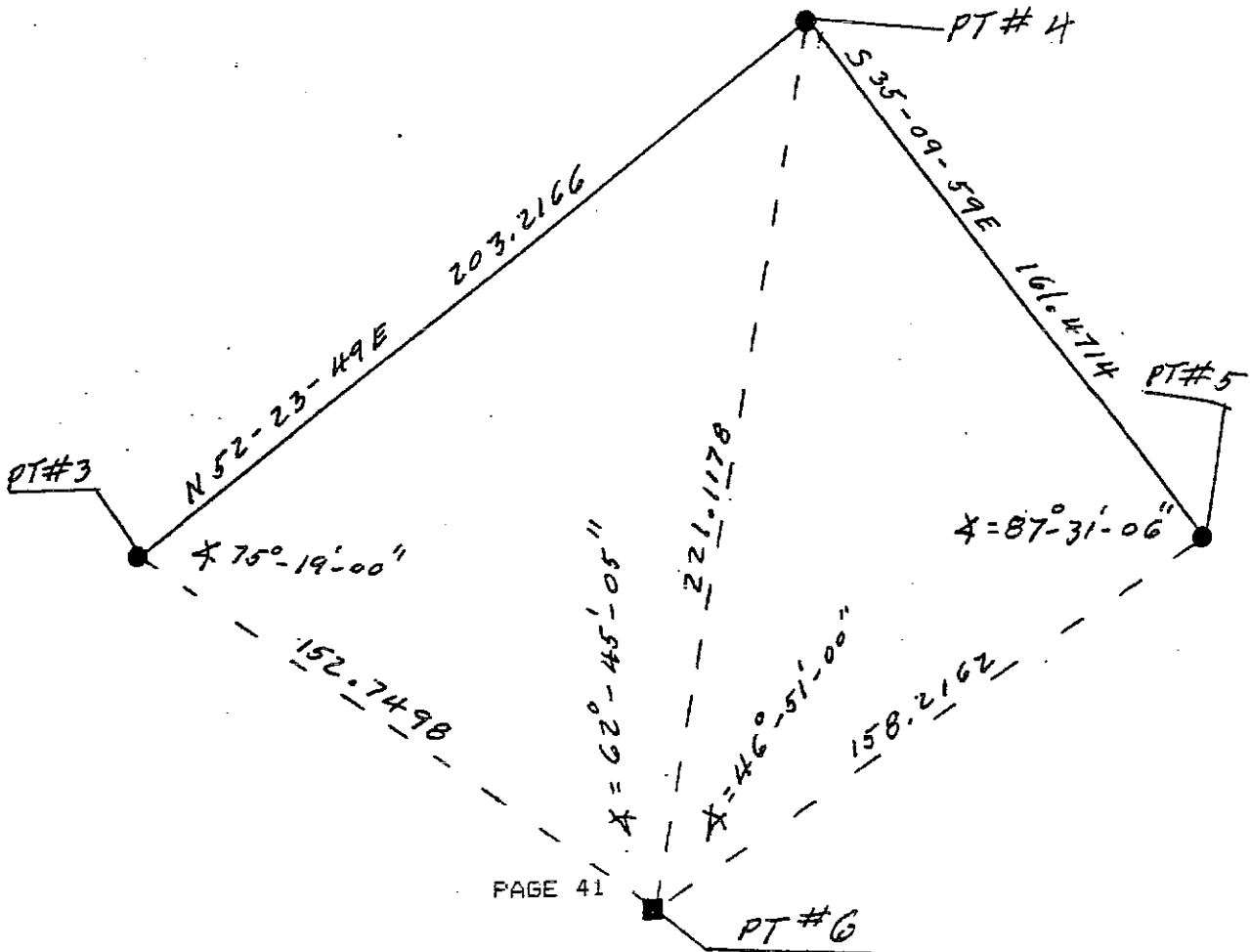
Be sure that the points are arranged 1, 2, 3, P in clockwise order for all three cases.

RESECTION EXAMPLE

FIRST USE CATALOG 4 AND MOVE CONTROL FILE CURRENT. SEE PAGE 6.
 THEN STORE THE FOLLOW COORDINATES.

N3= 232.00 E3= 307.00
 N4= 356.00 E4= 468.00
 N5= 224.00 E5= 561.00

- 1 [SHIFT] 7 CV,HZ, VC,RES,?
- 2 PUSH D COORDS Y/NENTER Y (FOR YES)
- 3 PUSH R/S CONTROLOR ANY FILE NAME
- 4 PUSH R/S BEG. PT?ENTER 3 (FOR POINT NUMBER 3)
- 5 PUSH R/S MID PT?ENTER 4 (FOR POINT NUMBER 4)
- 6 PUSH R/S END PT?ENTER 5 (FOR POINT NUMBER 5)
- 7 PUSH R/S <A=?ENTER 62.4505 (D.M.S.)
- 8 PUSH R/S <B=?ENTER 46.5100 (D.M.S.)
- 9 PUSH R/S <D= 75-19-00
- 10 PUSH R/S <E= 87-31-06
- 11 PUSH R/S STO PT?ENTER 6 (FOR POINT 6)
- 12 PUSH R/S N6= 138.5604
- 13 PUSH R/S E6= 427.8368
- 14 PUSH R/S DST1= 203.2166
- 15 PUSH R/S DST2= 161.4714
- 16 PUSH R/S DST3= 152.7498
- 17 PUSH R/S DST4= 221.1178
- 18 PUSH R/S DST5= 158.2162
- 19 PUSH R/S COORDS Y/N?READY FOR NEW PROBLEM.



DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

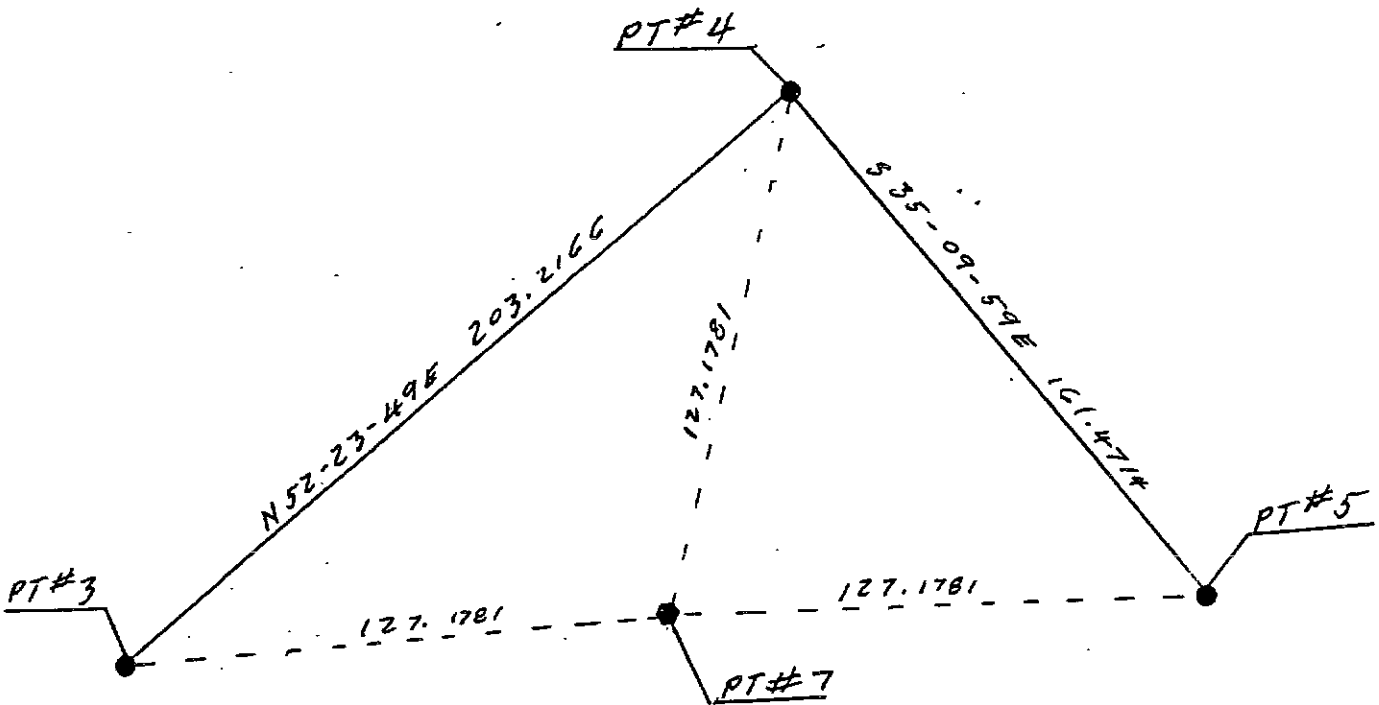
MENU 2 [SHIFT] 7.

CF - 3 POINT CURVE FIT

THIS PROGRAM WILL CALCULATE A RADIUS THROUGH ANY THREE KNOWN COORDINATES.
WE WILL USE FILE "CONTROL" AND POINTS 3,4 AND 5.

- 1 [SHIFT] 7 CV,HZ, VC,RES,?
- 2 PUSH E CF,PA,EV,COR,?
- 3 PUSH A CONTROL
- 4 PUSH R/S BEG. PT?ENTER 3
- 5 PUSH R/S MID. PT?ENTER 4
- 6 PUSH R/S END PT?ENTER 5
- 7 PUSH R/S R= 127.1780
- 8 PUSH R/S RAD PT?ENTER 7 (TO STORE RAD PT. IN POSSION 7)
- 9 PUSH R/S BEG. PT?RESTART NEW PROBLEM.

NOTE: YOU CAN PUSH E ANY TIME DURING THE PROGRAM TO RESTART.



DIST12 V-3
 CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

PA - PREDETERMINED AREA

THIS PROGRAM IS DESIGNED TO SOLVE TWO CASES FOR SPECIFYING THE AREA OF LAND.

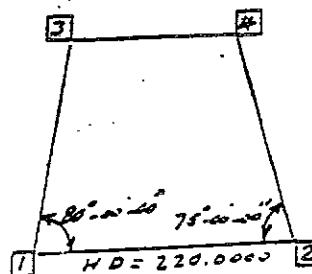
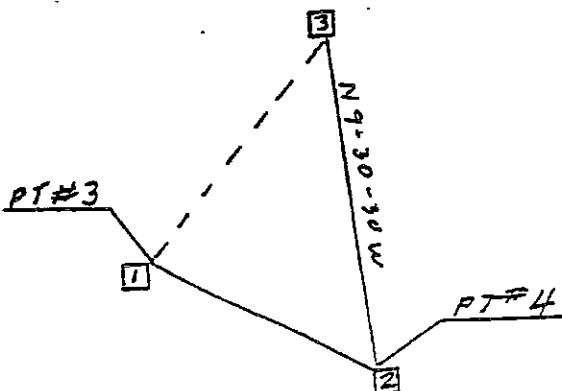
- 1) BY HINGING ONE SIDE OF A TRIANGLE
- 2) BY SLIDING ONE SIDE OF A TRAPEZOID PARALLEL TO THE BASE.

WE WILL USE FILE "CONTROL" AND POINTS 3 AND 4.

```

1  [SHIFT] 7  CV,HZ, VC,RES,?
2  PUSH E    CF,PA,EV,COR,?
3  PUSH B    TRAPZ,TRIK .....A= TRAPEZOIDAL & B=TRINGULAR
4  PUSH B    COORD,NO.COORD .....A=USE POINT FILE WITH COORDINATES
                                   B= USE ANGLES & DISTANCES NO COORDIANTES
5  PUSH R/S  CONTROL .....CURRENT FILE NAME
6  PUSH R/S  1 PT? .....ENTER 3
7  PUSH R/S  2 PT? .....ENTER 4
8  PUSH R/S  2-3 BRG.=? .....ENTER 9.3030
9  PUSH R/S  QD.? .....ENTER 4
10 PUSH R/S  AREA=? .....ENTER 27000 (27000 SQ.FT.)
11 PUSH R/S  < 1= 37-35-55
12 PUSH R/S  DST 1-3= 435.5264
13 PUSH R/S  < 2= 118-05-41
14 PUSH R/S  DST 2-3= 301.2186
15 PUSH R/S  STO 3 PT? .....ENTER 9
16 PUSH R/S  TRAPZ,TRIK
17 PUSH A    COORD,NOCOORD
18 PUSH B    < 1=? .....ENTER 80 (FOR 80-00-00)
19 PUSH R/S  < 2=? .....ENTER 75 (FOR 75-00-00)
20 PUSH R/S  DST.1-2=? .....ENTER 220
21 PUSH R/S  AREA=? .....ENTER 36000 (36000 SQ.FT.)
22 PUSH R/S  < 1= 80-00-00
23 PUSH R/S  DST 1-3= 210.0220
24 PUSH R/S  < 2= 75-00-00
25 PUSH R/S  DST 2-4= 214.1275
26 PUSH R/S  DST 3-4= 128.1098
27 PUSH R/S  TRAPZ,TRIK .....RESTART PROGRAM.
  
```

NOTE: PUSH E ANY TIME DURING PROGRAM TO RESTART.



DIST12 V-3
 CAL-TRANS SURVEY CHIF 2.0

MENU 2 [SHIFT] 7

EV - END VOLUME

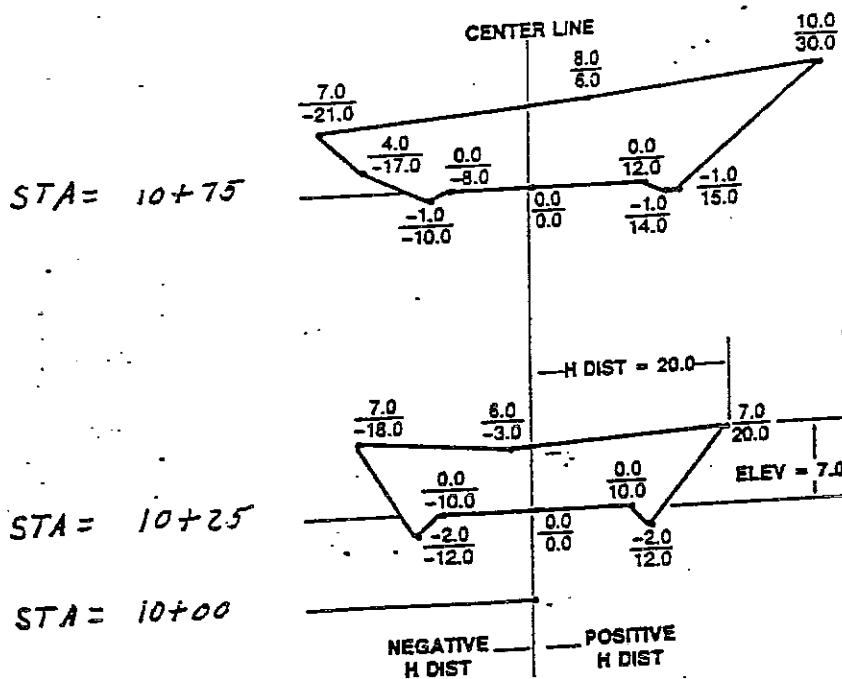
THIS PROGRAM CALCULATES VOLUMES OF EARTH BY THE METHOD OF AVERAGE END AREA. THE REQUIRED INFORMATION IS THE ELEVATION AND OFFSET OR HORIZONTAL DISTANCES FOR EACH POINT ON THE CROSS-SECTION AND THE INTERVAL BETWEEN CROSS-SECTION.

THE VOLUME FOR EACH SECTION IS CALCULATED, AS WELL AS THE TOTAL ACCUMULATED VOLUME. THE CROSS-SECTION AREA IS ALSO CALCULATED.

THE CROSS-SECTION MUST EITHER BE ALL CUT OR ALL FILL. THE USER MAY CHOOSE TO HAVE VOLUMES OUTPUT IN CUBIC YARDS OR CUBIC FEET, ALL AREAS ARE IN SQUARE FEET.

YOU MAY START AT ANY POINT ON THE CROSS-SECTION AND THE ELEVATIONS AND DISTANCE MAY BE MEASURED FROM ANY BASE LINE AS LONG AS THE SAME LINES ARE USED FOR THE WHOLE SECTION. IN ADDITION, YOU MAY WORK AROUND THE SECTION CLOCKWISE OR COUNTERCLOCKWISE.

NOTE: "YOU MUST" BEGIN AND END AT THE SAME POINT.



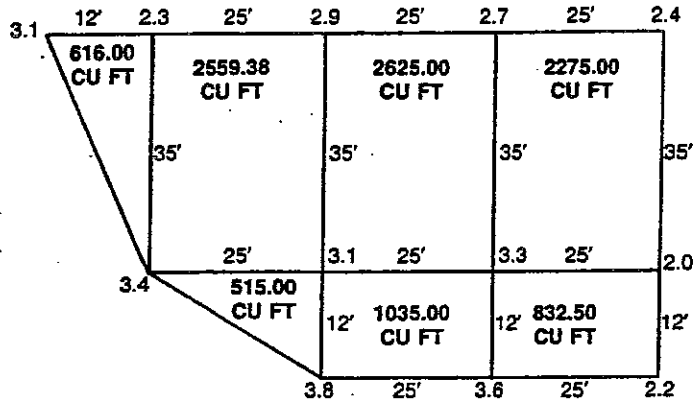
EXAMPLE, VOLUME BY AVERAGE END AREA

```
1  [SHIFT] 7  CV,HZ, VC,RES,?
2  PUSH E    CF,PA,EV,COR,?
3  PUSH C    EVOL,PIT .....A= END VOLUME,B= BORROW PIT
4  PUSH A    C.YD,C.FT .....A= CUBIC YARDS,B=CUBIC FEET
5  PUSH A    BEG. STA=? .....ENTER 1000
6  PUSH R/S  NXT STA=? .....ENTER 1025
7  PUSH R/S  EL=? .....ENTER 0
8  PUSH R/S  OFFSET=? .....ENTER 12
9  PUSH R/S  EL=? (IF YOU HAVE MADE A MISSTAKE JUST [SHIFT] E)
10 [SHIFT] E  NXT STA .....RE ENTER 1025
11 PUSH R/S  EL=? .....ENTER 0
12 PUSH R/S  OFFSET=? .....ENTER 0
13 PUSH R/S  EL=? .....ENTER 0
14 PUSH R/S  OFFSET=? .....ENTER 10
15 PUSH R/S  EL=? .....ENTER -2
16 PUSH R/S  OFFSET=? .....ENTER 12
17 PUSH R/S  EL=? .....ENTER 7
18 PUSH R/S  OFFSET=? .....ENTER 20
19 PUSH R/S  EL=? .....ENTER 6
20 PUSH R/S  OFFSET=? .....ENTER -3
21 PUSH R/S  EL=? .....ENTER 7
22 PUSH R/S  OFFSET=? .....ENTER -18
23 PUSH R/S  EL=? .....ENTER -2
24 PUSH R/S  OFFSET=? .....ENTER -12
25 PUSH R/S  EL=? .....ENTER 0
26 PUSH R/S  OFFSET=? .....ENTER -10
27 PUSH R/S  EL=? .....ENTER 0
28 PUSH R/S  OFFSET=? .....ENTER 0
29 PUSH R/S  EL=? .....DO NOT ENTER ANY THING
30 PUSH R/S  INT= 25.0000
31 PUSH R/S  AREA= 216.0000
32 PUSH R/S  VOL= 100.0000 C.Y.
33 PUSH R/S  TOT VOL = 100.0000 C.Y.
34 PUSH R/S  NXT STA .....CONTINUE AS IN STEP 10
```

NOTE: TO END THE SECTION JUST PUSH R/S AT THE EL=? PROMPT FOLLOWED BY 4 MORE R/S
PUSH E ANY TIME TO RESTART WHOLE PROGRAM.

Volume of a Borrow Pit

Example:



```

1  [SHIFT] 7  CV,HZ, VC,RES,?
2  PUSH E    CF,PA,EV,COR,?
3  PUSH C    EVOL,PIT .....A= END VOLUME,B= BORROW PIT
4  PUSH B    C.YD,C.FT .....A= CUBIC YARDS,B=CUBIC FEET
5  PUSH B    STA 1
6  PUSH R/S  LENGTH=? .....ENTER 12
7  PUSH R/S  WITH=? .....ENTER 35
8  PUSH R/S  EL=? .....ENTER 3.1
9  PUSH R/S  EL=? .....ENTER 2.3
10 PUSH R/S  EL=? .....ENTER 3.4
11 PUSH R/S  EL=? .....DO NOT ANY THING
12 PUSH R/S  VOL= 616.0000 C.F.
13 PUSH R/S  TOT VOL=616.0000 C.F.
14 PUSH R/S  STA2
15 PUSH R/S  LENGTH=? .....ENTER 25
16 PUSH R/S  WITH=? .....ENTER 35
17 PUSH R/S  EL=? .....ENTER 9.2 (ERROR)
18 [SHIFT] E  LENGTH=? .....ENTER 25
19 PUSH R/S  WITH=? .....ENTER 35
20 PUSH R/S  EL=? .....ENTER 2.3
21 PUSH R/S  EL=? .....ENTER 2.9
22 PUSH R/S  EL=? .....ENTER 3.1
23 PUSH R/S  EL=? .....ENTER 3.4
24 PUSH R/S  EL=? .....DO NOT ENTER ANY THING
25 PUSH R/S  VOL=2,559.3750 C.F.
26 PUSH R/S  TOT VOL=3,175.3750 C.F.
27 PUSH R/E  STA 3 .....CONTINUE AS IN STEP 14
    
```

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

COR - COORDINATE TRANSFORMATION

THIS PROGRAM TRANSLATES, ROTATES AND RESCALES COORDINATES. REQUIRED DATA ARE THE ROTATION ANGLE AND A PIVOT POINT IN THE OLD AND NEW COORDINATE SYSTEMS. THE ROTATION ANGLE IS ENTERED AS A NEGATIVE VALUE FOR CLOCKWISE ROTATION OR AS A POSITIVE VALUE FOR COUNTERCLOCKWISE ROTATION. IF A NEW SCALE FACTOR (OTHER THAN UNITY) IS DESIRED, IT MAY BE ENTERED.

ALTERNATIVELY, IF THE COORDINATES OF TWO POINTS ARE KNOWN IN BOTH SYSTEMS THE TRANSFORMATION PARAMETERS MAY BE AUTOMATICALLY CALCULATED AND THE COORDINATE TRANSFORMATION PERFORMED.

FOR THIS EXAMPLE WE WILL CREATE TWO FILES AND STORE THE FOLLOWING COORDINATES.

OLD CONTROL

NEW CONTROL

N1= 999.063	E1=1932.096	N1=1932.000	E2=1000.000
N2=1011.164	E2=2810.942	N2=2811.000	E2=1011.000
N3=1712.901	E3=3775.734		
N4=1566.005	E4=2507.720		
		N5=2600.000	E5=1500.000

1	[SHIFT] 7	CV, HZ, VC, RES, ?
2	PUSH E	CF, PA, EV, COR, ?
3	PUSH D	NEW CONTROLOR ANY CURRENT FILE NAME
4	PUSH R/S	OLD FL. ?ENTER OLD CONTROL
5	PUSH R/S	OLD FL. OLD CONTROL
6	PUSH R/S	NEW FL. ?ENTER NEW CONTROL
7	PUSH R/S	NEW FL. NEW CONTROL
8	PUSH R/S	SAME PT. Y/NENTER Y
9	PUSH R/S	P. PROTCT. Y/NENTER Y
10	PUSH R/S	ROT. <=?DO NOT ENTER ANY THING
11	PUSH R/S	1 OLD PT. ?ENTER 1
12	PUSH R/S	2 OLD PT. ?ENTER 2
13	PUSH R/S	1 NEW PT. ?ENTER 1
14	PUSH R/S	2 NEW PT. ?ENTER 2
15	PUSH R/S	ROT. <= 00-29-39
16	PUSH R/S	SCALE FACT. = 1.00015874
17	PUSH R/S	O/N, N/O
18	PUSH A	O/N, PT. ?ENTER 4
19	PUSH R/S	O/N, PT. ?ENTER 3
20	PUSH R/S	O/N, PT. ?
21	PUSH B	N/O, PT. ?ENTER 5
22	PUSH R/S	N/O, PT. ?

IF YOU WANT TO SEE THE COORDINATES WHEN CALCULATED READ PAGE 7 (DSP).

NEW CONTROL N3=3794.0557 E3=334.7517 N4=2522.4175 E4=448.2930
OLD CONTROL N5= 516.8665 E5=2612.8967

NOTE; IN STEP 21 YOU COULD HAVE PUSHED E AND GOT TO STEP 17.

EXAMPLE 2 (COORDINATE TRANSFORMATION CONTINUED)

A SET OF COORDINATES ARE TO BE ROTATED CLOCKWISE 3 DEGREES AND TRANSLATED SUCH THAT THE NEW COORDINATES OF POINT 1 ARE N=100 & E=350. THE SCALE FACTOR IS 1. CALCULATE THE NEW COORDINATES FOR POINTS 2 & 3. CALCULATE OLD COORDINATES FOR POINTS 4 & 5.

OLD CONTROL	NEW CONTROL
N6=150.000 E3=400.000	N6=100.000 E6=350.000
N7=224.540 E7=561.673	
N8=356.577 E8=468.710	
	N9=187.151 E9=261.767
	N10=285.120 E10=397.850

WE WILL ALSO DISPLAY COORDINATES.

1	[SHIFT] 7	CV,HZ; VC,RES,?
2	PUSH E	CF,PA,EV,COR,?
3	PUSH D	NEW CONTROLOR ANY CURRENT FILE NAME
4	PUSH R/S	OLD FL.?ENTER OLD CONTROL
5	PUSH R/S	OLD FL. OLD CONTROL
6	PUSH R/S	NEW FL.?ENTER NEW CONTROL
7	PUSH R/S	NEW FL. NEW CONTROL
8	PUSH R/S	SAME PT. Y/NENTER Y
9	PUSH R/S	P.PROTCT. Y/NENTER Y
10	PUSH R/S	ROT. <=?ENTER -3
11	PUSH R/S	SCALE FACT.=?A R/S IS THE SAME AS 1
12	PUSH R/S	1 OLD PT.?ENTER 6
13	PUSH R/S	N6= 150.0000
14	PUSH R/S	E6= 400.0000
15	PUSH R/S	1 NEW PT.?ENTER 6
16	PUSH R/S	N6= 100.0000
17	PUSH R/S	E6= 350.0000
18	PUSH R/S	O/N,N/O
19	PUSH A	O/N, PT.?ENTER 7
20	PUSH R/S	N7= 224.5400
21	PUSH R/S	E7= 561.6730
22	PUSH R/S	N7= 165.9765
23	PUSH R/S	E7= 515.3526
24	PUSH R/S	O/N, PT.?ENTER 8
25	PUSH R/S	N8= 356.5770
26	PUSH R/S	E8= 468.7100
27	PUSH R/S	N8= 302.6979
28	PUSH R/S	E8= 429.4272
29	PUSH R/S	O/N, PT.?
30	PUSH B	N/O, PT.?ENTER 9
31	PUSH R/S	N9= 187.1510
32	PUSH R/S	E9= 261.7670
33	PUSH R/S	N9= 232.4138
34	PUSH R/S	E9= 307.3268
35	PUSH R/S	N/O, PT.?ENTER 10
36	PUSH R/S	N10= 285.1200
37	PUSH R/S	E10= 397.8500
38	PUSH R/S	N10= 337.3706
39	PUSH R/S	E10= 438.0960
40	PUSH R/S	N/O, PT.?

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

CT - CONTOUR INTERVAL

THIS PROGRAM IS USED TO PLOT OR CHECK CONTOUR MAPS, AND CALCULATE OR CHECK ELEVATIONS ON STRAIGHT GRADES.

1	[SHIFT] 7	CV, HZ, VC, RES, ?	
2	PUSH E	CF, PA, EV, COR, ?	
3	PUSH E	CT, PRC, TRC, TD, ?	
4	PUSH A	A=CONT. B=DST.	
5	PUSH A	DIST.=?	ENTER DISTANCE BETWEEN TWO KNOWN ELEVATIONS. (ENTER 100)
6	PUSH R/S	EL.1=?	ENTER KNOWN ELEVATION BY THE 0 END OF YOUR SCALE. (ENTER 525.5)
7	PUSH R/S	EL.2=?	ENTER OTHER KNOWN ELEVATION. ENTER 520.5
8	PUSH R/S	CONT.?	ENTER CONTOUR TO BE PLOTTED OR CHECKED ENTER 524
9	PUSH R/S	DIST.= 30.0000	DIST. FROM FIRST KNOWN EL. TO THE 524 CONTOUR.
10	PUSH R/S	CONT.?	CONTINUE AS IN STEP 8.

NOTE: TO CHECK OR PLOT A NEW SET OF CONTOURS JUST PUSH A. IF YOU WANT TO KNOW THE ELEVATION WHERE A DISTANCE INTERSEPTS A STRAIGHT GRADE PUSH B.

11	PUSH B	DIST.=?	ENTER DISTANCE BETWEEN TWO KNO ELEVATIONS. (ENTER 100)
12	PUSH R/S	EL.1=?	ENTER KNOWN ELEVATION BY THE 0 END OF YOUR SCALE. (ENTER 525.5)
13	PUSH R/S	EL.2=?	ENTER OTHER KNOWN ELEVATION. ENTER 520.5
14	PUSH R/S	DIST=?	ENTER THE DISTANCE WHERE YOU WANT TO CHECK OR CALCULATE AN ELEVATION. ENTER 30
15	PUSH R/S	EL.=524.0000	

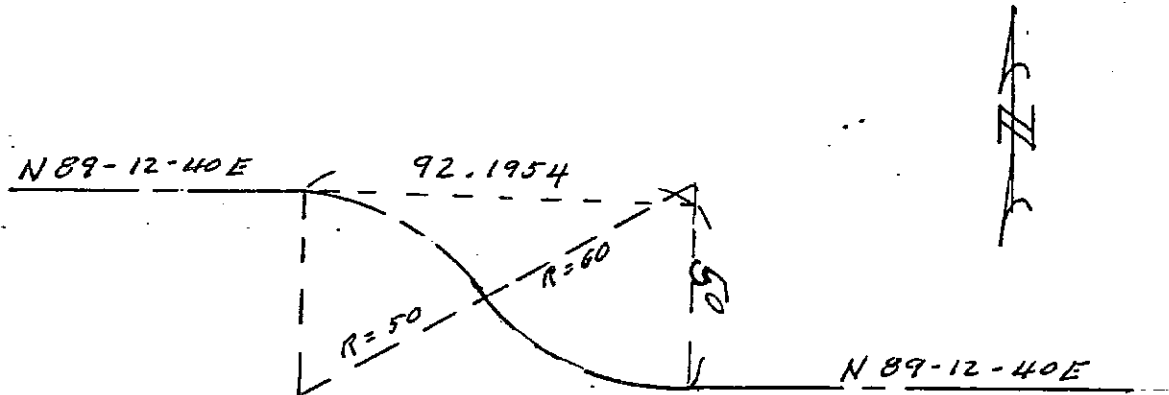
DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

PRC - REVERSING CURVES BETWEEN PARALLEL LINES

THIS PROGRAM WILL CALCULATE THE DELTA AND THE DISTANCE FROM THE BEGINNING TO THE
OF A REVERSING CURVE.

- 1 [SHIFT] 7 CV,HZ, VC,RES,?
- 2 PUSH E CF,PA,EV,COR,?
- 3 PUSH E CT,PRC,TRC,TD,?
- 4 PUSH B OFFSET DST.=?ENTER DISTANCE BETWEEN THE TWO
TWO PARALLEL LINES. (ENTER 50)
- 5 PUSH R/S RAD. 1=?ENTER 50
- 6 PUSH R/S RAD. 2=?ENTER 60
- 7 PUSH R/S DELTA= 56-56-39DELTA ONE WILL BE = TO DELTA TWO
- 8 PUSH R/S B.TO,E= 92.1954
- 9 PUSH R/S OFFSET DST.=?CONTINUE AS IN STEP 4.



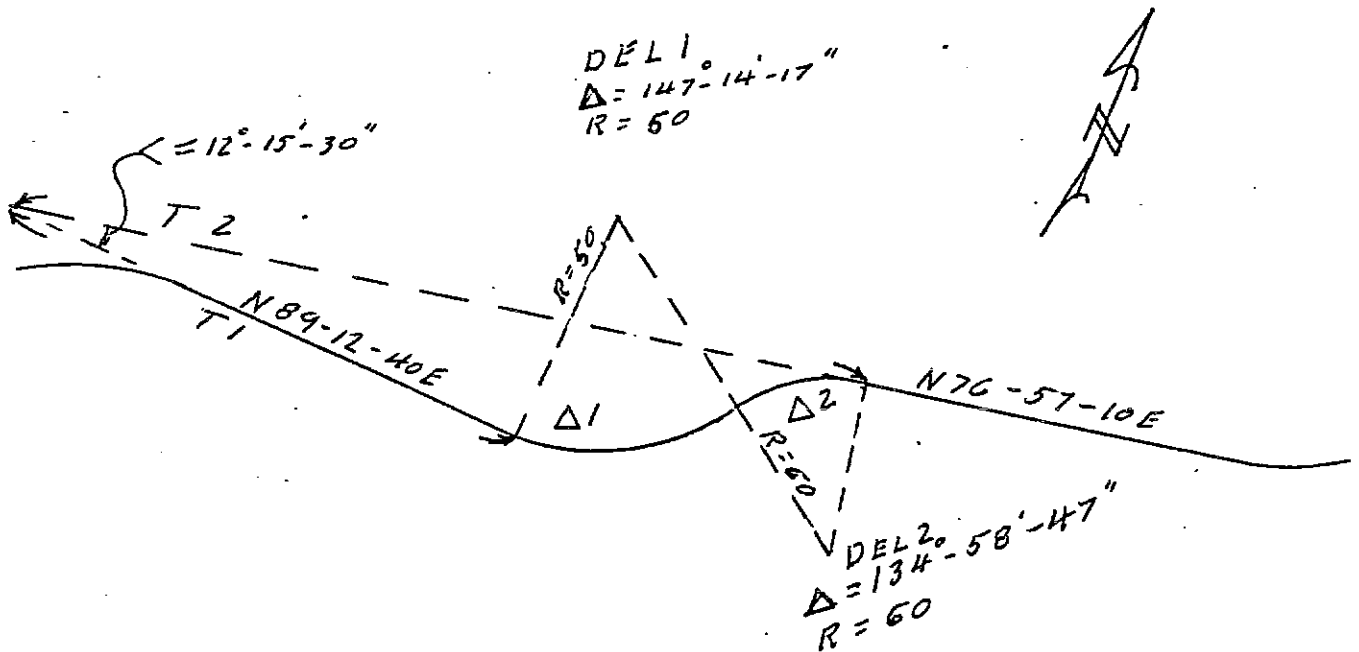
DIST12 V-3
 CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

FRC - REVERSING CURVES BETWEEN NONPARALLEL LINES

THIS PROGRAM WILL CALCULATE THE DELTA AND THE DISTANCE FROM THE POINT OF INTERSECTION TO THE END OF THE REVERSING CURVE.

- 1 [SHIFT] 7 CV, HZ, VC, RES, ?
- 2 PUSH E CF, PA, EV, COR, ?
- 3 PUSH E CT, FRC, TRC, TD, ?
- 4 PUSH C RAD 1=?ENTER 50
- 5 PUSH R/S RAD 2=?ENTER 60
- 6 PUSH R/S < D.M.S. =?ENTER 12.1530
- 7 PUSH R/S T 1=?ENTER 878.93
- 8 PUSH R/S T, 2= 947.3158
- 9 PUSH R/S DEL 1= 147-14-17
- 10 PUSH R/S DEL 2= 134-58-47
- 11 PUSH R/S RAD 1=?CONTINUE AS IN STEP 4.



DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 2 [SHIFT] 7

TD - SET TIME AND DATE

DEPENDING ON BATTERY STRENGTH AND THE AMOUNT OF TIME SPENT RUNNING PROGRAMS,
THE CLOCK WILL GET BEHIND OVER A PERIOD OF TIME. IF YOU WANT TO UPDATE YOUR TIME
AND DATE THIS PROGRAM WILL MAKE IT EASIER TO DO SO. THE CORRECTED TIME WILL
BEGIN AT THE INSTANT YOU PRESS R/S.

- 1 [SHIFT] 7 CV,HZ, VC,RES,?
- 2 PUSH E CF,PA,EV,COR,?
- 3 PUSH E CT,PRC,TRC,TD,?
- 4 PUSH D TIME? H.MMSSENTER -10.27 (IF THE TIME IS 10:27 PM.)
- 5 PUSH R/S DATE?M.DDYYYYENTER 6.081989 (IF THE DATE IS JUNE
EIGHT 1989.)
- 6 PUSH R/S AZ.,NE,FIX,FM

NOTE; IF THE TIME OR DATE IS CORRECT JUST PUSH R/S TO CONTINUE.

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 3 UNASSIGNED (FMDD)

CR - CREATE A DATA FILE ON A DISK DRIVE

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH A SIZE FILE DDENTER A SIZE LARGE ENOUGH FOR FUTURE
COORDINATES. THERE IS NO EASY WAY TO
RESIZE A DISK. (ENTER 800) GOOD FOR 399
COORDINATES.
- 3 PUSH R/S FILE NAME DDENTER A NAME UP TO 7 CHARACTERS.

NOTE; DISK DRIVE WILL START AND CREATE YOUR FILE.

REN - RENAME AN EXISTING FILE ON A DISK DRIVE.

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH B OLDNAMEENTER EXISTING NAME TO BE CHANGED
- 3 PUSH R/S NEWNAMEENTER NAME YOU WANT IT CHANGED TO.
- 4 PUSH R/S

NOTE; DISK DRIVE WILL START AND RENAME YOUR FILE.

SD - STORE COORDINATES FROM HP41CX TO DISK DRIVE.

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH C STD.HP.-D.D.THIS IS ONLY A STATEMENT.
- 3 PUSH R/S CONTROLOR WHAT EVER YOUR CURRENT FILE NAME IS.
- 4 PUSH R/S BEG. PT. HP?ENTER POINT NUMBER OF WHERE YOU WANT
THE PROGRAM TO BEGIN STORING.
- 5 PUSH R/S END PT. HP?ENTER POINT NUMBER OF WHERE YOU WANT
THE PROGRAM TO END STORING.
- 6 PUSH R/S D.D. FILE?ENTER A FILE NAME THAT EXIST ON THE DISK
WHERE YOU WANT THE COORDINATES STORED.
- 7 PUSH R/S BEG. PT. D.D.?ENTER POINT NUMBER OF WHERE YOU WANT
THE PROGRAM TO BEGIN STORING.
- 8 PUSH R/S ALL DONE

NOTE; DISK DRIVE WILL START AND BEGIN STORING YOUR COORDINATES. THE MORE
COORDINATES YOU HAVE THE LONGER IT WILL TAKE.

ALSO IF YOU ARE MAKING A BACK UP OR STORING ANOTHER GROUP OF COORDINATES THE
ONLY STEPS YOU NEED TO DO IS 4,5 AND 7

- 8 PUSH R/S ALL DONE
- 9 PUSH R/S BEG. PT. HP?SEE STEP 4
- 10 PUSH R/S END PT. HP?SEE STEP 5
- 11 PUSH R/S BEG. PT. D.D.?SEE STEP 7
- 12 PUSH R/S ALL DONECONTINUE AS IN STEP 9.

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 3 UNASSIGNED (FMDD)

RD - RECALL COORDINATES FROM DISK DRIVE TO HP41CX.

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH D RCL D.D.-HP.THIS IS ONLY A STATEMENT.
- 3 PUSH R/S D.D. FILE?ENTER A FILE NAME THAT EXIST ON THE DISK
WHERE YOU WANT THE COORDINATES TO BE
RECALLED FROM.
- 4 PUSH R/S BEG. PT. D.D.?ENTER POINT NUMBER OF WHERE YOU WANT
THE PROGRAM TO BEGIN STORING.
- 5 PUSH R/S END PT. D.D.?ENTER POINT NUMBER OF WHERE YOU WANT
THE PROGRAM TO END STORING.
- 6 PUSH R/S CONTROLOR WHAT EVER YOUR CURRENT FILE NAME IS.
- 7 PUSH R/S BEG. PT. HP.?ENTER POINT NUMBER OF WHERE YOU WANT
THE PROGRAM TO BEGIN STORING.
- 8 PUSH R/S ALL DONE

NOTE; DISK DRIVE WILL START AND BEGIN STORING YOUR COORDINATES. THE MORE
COORDINATES YOU HAVE THE LONGER IT WILL TAKE.

ALSO IF YOU ARE STORING ANOTHER GROUP OF COORDINATES THE
ONLY STEPS YOU NEED TO DO IS 4,5 AND 7

- 9 PUSH R/S BEG. PT. D.D.?SEE STEP 4
- 10 PUSH R/S END PT. D.D.?SEE STEP 5
- 11 PUSH R/S BEG. PT. HP.?SEE STEP 7
- 12 PUSH R/S ALL DONECONTINUE AS IN STEP 9.

FD - FORMATE DISK

** CAUTION **

THIS FUNTION IS USED TO SET UP NEW DISK OR COMPLETELY ERASE AN OLD DISK.

THIS FUNTION IS NOT PROGRAMABLE. PUT IT WILL TELL YOU WHAT TO [XEQ] .

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH E FD,PUR,SE,USE,?
- 3 PUSH A XEQ NEWM 048

NOTE; WHEN YOU XEQ NEWM, YOU WILL GET A RESPONCE(NEWM _ _ _). IT WANTS A 3
FIGURE NUMBER. I SUGGEST 048. THIS NUMBER IS THE APPROXIMATE NUMBER OF FILES
TO BE STORED ON THAT DISK. TO LARGE OF A NUMBER WILL TAKE AWAY STORAGE AND
MAKE THE DISK TO RUN SLOWER.

PUR - PURGE FILE FROM DISK DRIVE

THIS PROGRAM WILL ERASE A FILE FROM A DISK.

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH E FD,PUR,SE,USE,?
- 3 PUSH B PURGE FILE ?ENTER FILE NAME TO BE ERASED.
- 4 PUSH R/S CR,REN,SD,RD,?

NOTE; THE DISK DRIVE WILL START AND THE FILE WILL BE ERASED.

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 3 UNASSIGNED (FMDD)

SE - SECURE FILE ON DISK

WHEN A FILE IS SECURED THAT MEANS YOU CANNOT CHANGE IT OR ERASE IT WITH FURGE.
IT CAN BE ERASED WITH THE FORMATE PROGRAM.

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH E FD,PUR,SE,USE,?
- 3 PUSH C SECURE FILE?ENTER NAME OF FILE TO BE SECURED.
- 4 PUSH R/S CR,REN,SD,RD,?

NOTE; DISK DRIVE WILL START AND THE FILE WILL BE SECURED.

USE - UNSECURED FILE ON DISK

YOU UNSECURE A FILE SO YOU CAN ADD OR CURRECT DATA IN A FILE.

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH E FD,PUR,SE,USE,?
- 3 PUSH D UNSECURE FILE?ENTER NAME OF FILE TO BE UNSECURED.
- 4 PUSH R/S CR,REN,SD,RD,?

NOTE; DISK DRIVE WILL START AND THE FILE WILL BE UNSECURED.

SP - STORE PROGRAMS ON DISK

THIS PROGRAM DOES STORE PROGRAMS ON DISK. I LIKE IT BETTER WHEN XEQ. BY HAND.
THE SAME PROGRAM TAKES UP LESS ROOM XEQ. BY HAND.

ALL YOU DO IS ENTER THE NAME OF THE PROGRAM TO BE STORED IN ALPHA AND XEQ WRTP
OR

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH E FD,PUR,SE,USE,?
- 3 PUSH E SP,RP,SUP,DIR,?
- 4 PUSH A STO PROGM.?ENTER NAME OF PROGRAM TO BE STORED.
- 5 PUSH R/S CR,REN,SD,RD,?

NOTE; DISK DRIVE WILL START AND THE PROGRAM WILL BE STORED.

DIST12 V-3
CAL-TRANS SURVEY CHIP 2.0

MENU 3 UNASSIGNED (FMDD)

RP - RECALL PROGRAMS FROM DISK

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH E FD,PUR,SE,USE,?
- 3 PUSH E SP,RP,SUP,DIR,?
- 4 PUSH B RCL PROG. ?ENTER NAME OF PROGRAM TO BE RECALLED.
- 5 PUSH R/S CR,REN,SD,RD,?

NOTE; DISK DRIVE WILL START AND THE PROGRAM WILL BE RECALLED FROM DISK TO HPC

SUP - SET UP FUNCTION FOR 41CX DISK DRIVE AND PRINTER.

RUN THIS PROGRAM WHEN THE HP41CX, DISK DRIVE & THE PRINTER ARE ALL PLUGED IN AND DO NOT ALL WORK.

- 1 XEQ (ALPHA) FMDD (ALPHA)
CR,REN,SD,RD,?
- 2 PUSH E FD,PUR,SE,USE,?
- 3 PUSH E SP,RP,SUP,DIR,?
- 4 PUSH C CR,REN,SD,RD,?

DIR - DIRECTORY

A PRINTER SHOULD BE PLUGED IN WHEN YOU XEQ. THIS FUNCTION. YOU WILL GET A NICE PRINT OF ALL PROGRAMS AND DATA FILES ON A DISK.