Plegrated civil engineering system v1 m3 nov 1969

| $*$ | JAN 25 | 1993 | TIME-11 2240 |
| :---: | :---: | :---: | :---: |
| - |  |  |  |
| 5 |  |  |  |
| COGO |  |  |  |

\$ D7CG8KC/ USH 8 CTH K/ 91990 / JRW \& RWS
SET SYS XY

| STO 2701 | X 208308 | 84717 | Y 14630 | 931 |  |  | C | SB CUR | 270 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | POINT | 2701 | $\times$ | 2083084 | 717 | Y |  | 146308 | 931 |  | **** | ******* | 2 |  | * |
| D $270 \times$ | 2082846 | 753 y 146847841 |  |  |  |  |  | SB CUR | 270 |  |  |  |  |  |  |
|  | POINT | 270 | x | 2082846 | 753 | Y |  | 146847 | 841 | s |  | ********* | z | ** | ******** |
| D $2703 \times$ | X 2082504 | 107 Y | 147327 | 053 |  |  |  | SB CUR | 270 |  |  |  |  |  |  |
|  | POINT | 2703 | X | 2082504 | 107 |  |  | 147327 | 053 |  | ** | ****** | z |  |  |

STO CUR 270 PB 2701 PI 270 DEG 100 PA 2703 \$ SB CUR 270
CURVE 270 TYPE C CURVE ELEMENTS

| RADIUS | 5729578 | degree | 1 | 0 | 0 | 00 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| length | 1174092 | delta | 11 | 44 | 27 |  |
| tangent | 589109 | BACK | N 23 | 49 | 28 | 54 W |
| EXTERNAL | 30206 | AHEAD | N 35 | 33 | 55 | 85 W |
| LONG CHORD | 1172039 |  |  |  |  |  |
| MID ORD | 30048 |  |  |  |  |  |

CURVE 270 TYPE CURVE POINTS

| POINT CC 270 | $x$ | 2077843 |  | $Y$ | 143994 |  | s |  |  | 7 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 270 | x | 2083084 | 716 | $Y$ | 146308 | 932 | S | 00 | 0 | 2 | ***** |
| POINT PT 270 | X | 2082504 | 108 | Y | 147327 |  | S | $11+74$ |  | 2 | ** *** |
| POINT PI 270 | X | 2082846 | 753 | Y | 146847 |  | S | 5+89 | 109 | 2 |  |

STA CUR 270 PC STA $1854+1089$
STO CUR 979 CON CUR 270 OFF M 125 \$ SB CUR 270 OFF 125 LT
CURVE 979 TYPE C CURVE ELEMENTS

| RADIUS | 5604 | 578 | DEGREE | 1 | 1 | 20 | 29 |  |
| :--- | ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| LENGTH | 1148 | 477 | DELTA | 11 | 44 | 27 | 31 |  |
| TANGENT | 576 | 257 | BACK | N | 23 | 49 | 28 | 54 |
| W |  |  |  |  |  |  |  |  |
| EXTERNAL | 29 | 547 | AHEAD | N | 35 | 33 | 55 | 85 |
| LONG CHORD | 1146 | 469 |  |  |  |  |  |  |
| MID ORD | 29 | 392 |  |  |  |  |  |  |

```
CURVE 979 TYPE C CURVE POINTS
```



| POINT PT 979 | X | 2082402426 | $Y$ | 147254 | 348 | s | 11+48 477 |  | ******** |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PI 979 | X | 2082737596 | $Y$ | 146785 | 592 | S | $5+76257$ | z |  |



STO CUR 273 PB 270 PI 273 DEG 030 PA 283 \$ SB CUR 273
CURVE 273 TYPE CURVE ELEMENTS

| RADIUS | 11459 | 156 | DEGREE | 0 | 30 | 0 | 00 |
| :--- | ---: | :--- | :--- | ---: | ---: | ---: | ---: |
| LENGTH | 7015 | 983 | DELTA | 35 | 4 | 47 | 69 |
| TANGENT | 3621 | 846 | BACK | N | 35 | 33 | 55 |

CURVE 273 TYPE C CURVE POINTS


STO CUR 973 CON CUR 273 OFF M 125 \$ SB CUR 273 OFF 125 LT
CURVE 973 TYPE C CURVE ELEMENTS

|  | 11584 | 156 | DEGREE | 0 | 29 | 40 | 58 |  |
| :--- | ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| RADIUS | 7092 | 515 | DELTA | 35 | 4 | 47 | 69 |  |
| LENGTH | 3661 | 354 | BACK | N | 35 | 33 | 55 | 84 |
| W |  |  |  |  |  |  |  |  |
| TANGENT | 564 | 843 | AHEAD | N | 0 | 29 | 8 | 16 |
| EXTERNAL |  | W |  |  |  |  |  |  |
| LONG CHORD | 6982 | 253 |  |  |  |  |  |  |
| MID ORD | 538 | 582 |  |  |  |  |  |  |

CURVE 973 TYPE C CURVE POINTS

| POINT CC 973 | $x$ | 2090137011 | Y | 156353635 | s | ***** | **** | 2 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 973 | x | 2080713868 | Y | 149615903 | s | 0+ 0 |  | 2 |  |  |
| POINT PT 973 | $\times$ | 2078553272 | Y | 156255457 | s | 70+92 |  | z |  |  |
| POINT PI 973 | x | 2078584302 | Y | 152594235 | s | 36+61 |  | z |  |  |


| RADIUS | 5729 | 578 | DEGREE | 1 | 0 | 0 | 00 |  |
| :--- | ---: | :--- | :--- | :--- | ---: | ---: | ---: | :--- |
| LENGTH | 1773 | 896 | DELTA | 17 | 44 | 20 | 26 |  |
| TANGENT | 894 | 101 | BACK | N | 0 | 29 | 8 | 16 |
| EXTERNAL | 69 | 343 | AHEAD | N | 17 | 15 | 12 | 10 |
| LONG CHORD | 1766 | 82 |  |  |  |  |  |  |
| MID ORD | 68 | 514 |  |  |  |  |  |  |

CURVE 283 TYPE C CURVE POINTS

| POINT CC 283 | X | 2084391622 | $Y$ | 158194925 | s | *** ******* | 2 | ** * |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 283 | x | 2078662250 | $Y$ | 158146366 | s | $0+00$ |  |  |
| POINT PT 283 | x | 2078919860 | $Y$ | 159894304 | s | 17+73 896 | 2 |  |
| POINT PI 283 | X | 2078654672 | Y | 159040435 | S | $8+94101$ | < |  |

STO CUR 293 PB 283 PI 1293 DEG 145 PA 1294 \$ SB CUR 283
CURVE 293 TYPE C CURVE ELEMENTS

| RADIUS | 3274 | 045 | DEGREE | 1 | 45 | 0 | 00 |  |
| :--- | ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| LENGTH | 3670 | 937 | DELTA | 64 | 14 | 29 | 05 |  |
| TANGENT | 2055 | 453 | BACK | N | 17 | 15 | 12 | 10 |
| EXTERNAL | 591 | 735 | AHEAD | N | 46 | 59 | 16 | 95 |
| LONG CHORD | 3481 | 649 |  |  |  |  |  |  |
| MID ORD | 501 | 158 |  |  |  |  |  |  |

CURVE 293 TYPE C CURVE POINTS

| POINT CC 293 | $x$ | 2077517 |  | Y | 166417 |  | s | ** | 7 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 293 | x | 2080644 | 108 | $Y$ | 165446 |  | S | $0+00$ | 7 |  |
| POINT PT 293 | x | 2079750 | 779 | Y | 168811 | 229 | s | 36+70 937 | 2 | **** |
| POINT PI 293 | X | 2081253 |  | $\gamma$ | 167409 | 100 | S | 20+55 453 | 2 | ***** ** |

STO CUR 294 PB 1293 PI 1294 DEG 330 PA 1201 \$ SB CUR 283
CURVE 294 TYPE C CURVE ELEMENTS

| RADIUS | 1637 | 022 | DEGREE | 3 | 30 | 0 | 00 |  |
| :--- | ---: | :--- | :--- | ---: | :--- | :--- | :--- | :--- |
| LENGTH | 1413 | 317 | DELTA | 49 | 27 | 57 | 95 |  |
| TANGENT | 754 | 090 | BACK | N | 46 | 59 | 16 | 95 |
| W |  |  |  |  |  |  |  |  |
| EXTERNAL | 165 | 336 | AHEAD | N | 2 | 28 | 41 | 00 |
| LONG CHORD | 1369 | 831 |  |  |  |  |  |  |
| MID ORD | 150 | 169 |  |  |  |  |  |  |

CURVE 294 TYPE C CURVE POINTS

| POINT CC 294 | x | 2077106626 | Y | 173516756 | S | ********* | 2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 294 | X | 2075989929 | Y | 172319746 | s | 0+ 00 | 2 | ******** |
| POINT PT 294 | x | 2075471134 | $Y$ | 173587535 | s | $14+13317$ | 2 |  |
| POINT PI 294 | x | 2075438530 | Y | 172834150 | s | 7+54 090 | z |  |



CURVE 279 TYPE C CURVE ELEMENTS

| RADIUS | 8594 | 367 | DEGREE | 0 | 40 | 0 | 00 |  |
| :--- | ---: | :--- | :--- | ---: | ---: | ---: | ---: | ---: |
| LENGTH | 4210 | 139 | DELTA | 28 | 4 | 3 | 34 |  |
| TANGENT | 2148 | 202 | BACK | N | 4 | 14 | 34 | 86 |
| EXTERNAL | 264 | 409 |  | AHEAD | N | 23 | 49 | 28 |
|  | 47 | W |  |  |  |  |  |  |
| LONG CHORD | 4168 | 168 |  |  |  |  |  |  |
| MID ORD | 256 | 517 |  |  |  |  |  |  |

CURVE 279 TYPE CURVE POINTS

| POINT CC 279 | X | 2075890529 | $Y$ | 141324 | 943 | S |  | $<$ | ****** |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 279 | $x$ | 2084461340 | $Y$ | 140689 | 072 | S | $0+00$ |  | ******** ** |
| POINT PT 279 | $X$ | 2083752539 | $Y$ | 144796 | 532 | S | 42+10 139 | c | ************ |
| POINT PI 279 | X | 2084620279 | $Y$ | 142831 | 386 | S | 21+48 202 |  | ** * ** |



STATIONING DONE BACK TO BEGINNING OF CHAIN


```
STO LINE 50 PT 270 TO 2703
    LINE 50 THRU PT 270 AT BEARING N 35 33 55 80 W
LOC 1270 ON LINE 50 P 257 85 PT 270 
STO CHA B 2 CUR 270 1270
STA CHA B FROM 2 STA 1837+57 61
```




```
STO COU E1 2833 TO 1293
    COURSE E1 FROM 2833 TO 1293 LENGTH 7553 085 BEARING N 17 15 12 11 E
\begin{tabular}{lllllllllllll} 
STA COU & E1 \(2003+4435\) & & & & & & \\
& POINT & 2833 & \(X\) & 2079013 & 523 & \(Y\) & 160195 & 884 & \(S\) & \(2003+44\) & 350 & \(Z\) \\
& POINT & 1293 & \(X\) & 2081253 & 750 & \(Y\) & 167409 & 100 & \(S\) & \(2078+97\) & 435 & \(Z\)
\end{tabular}
LOC 2834 ON COU E1 STA 2057+00 OFF P 280
    POINT 2834 X 2080869 397 Y 165227 496 S 2057+ 0 0 Z Z*** *****
D 2835 ON COU E1 STA 2020+00 OFF P 280 
LOC 444 FROM 1270 P 1831531270 TO PC 273
```

```
    POINT 444 X 2081288 854 Y 149026 660 S ************* Z * *****
```




```
STO CHA C 66 CUR 273 2731
STA CHA C 1868+68 47
STO CHA D 2731 CUR 283 2833
STA CHA D 1965+75 19
STO CHA E }77\mathrm{ CUR 293 CUR 294
STA CHA E 2003+44 35
$ END 8 02
DES CHA A
description of chaina STA 1713 тグ 238 STA \(1834+13479\)
CHAIN ELEMENTS
\begin{tabular}{lllllllllll} 
COURSE & FROM 263 TO PC \(279 \quad\) BEARING N 4143486 E
\end{tabular}
CURVE 279 TYPE CURVE ELEMENTS
\begin{tabular}{lrllrrrr} 
RADIUS & -8594 & 367 & DEGREE & 0 & 40 & 0 & 00 \\
LENGTH & 4210 & 139 & DELTA & 28 & 4 & 3 & 34 \\
TANGENT & 2148 & 202 & BACK & N & 4 & 14 & 34 \\
\hline
\end{tabular}
```

            CHAIN POINTS
    POINT $263 \times 2084310917 \quad Y \quad 138661542$ S 1773+70 238 *
CURVE 279 TYPE CURVE POINTS


Chain elements


COURSE FROM PT 270 TO 1270 LENGTH 257850 BEARING N 35335580 W

CHAIN POINTS
POINT $2 \times 2083752539 \quad Y \quad 144796532 \quad \mathrm{~S} \quad 1837+57610 \quad Z \quad$ *

CURVE 270 TYPE CURVE POINTS

| POINT CC 270 | $X$ | 2077843377 | $Y$ | 143994538 | \$ |  | *** | 2 | **** |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 270 | $x$ | 2083084716 | $Y$ | 146308932 | S | $1854+10$ | 892 | 2 |  |
| POINT PT 270 | X | 2082504108 | $Y$ | 147327052 | S | $1865+84$ | 984 | 2 | ***** |
| POINT PI 270 | X | 2082846753 | $Y$ | 146847841 | S | $1860+0$ | 001 | 2 | ***** |
| POINT 1270 | $x$ | 2082354133 | Y | 147536801 | S | $1868+42$ | 834 | 2 | ****** |




CHAIN POINTS
POINT $66 \quad X \quad 2082354133 \quad Y \quad 147536801 \quad \mathrm{~S} 1868+68470$ < ** *******

CURVE 273 TYPE C CURVE POINTS

| POINT CC 273 | $x$ | 2090137011 | $Y$ | 156353635 | S | ********** | * |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 273 | X | 2080815550 | $Y$ | 149688607 | S | 1895+13 751 | ** |
| POINT PT 273 | X | 2078678267 | $Y$ | 156256517 | S | 1965+29 734 | 1 |
| POINT PI 273 | X | 2078708963 | $Y$ | 152634801 | S | $1931+35596$ |  |

DESCRIPTION OF CHAIN D

CHAIN ELEMENTS


CHAIN POINTS
POINT $2731 \quad X \quad 2078676948 \quad Y \quad 156412171 \quad S \quad 1965+75190 \quad Z$ * *** ******

CURVE 283 TYPE CURVE POINTS

| POINT CC 283 | $X$ | 2084391622 | $Y$ | 158194925 | $S$ | $* * * * * * * * * *$ | $Z * * * * * * * * * * * *$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| POINT PC 283 | $X$ | 2078662250 | $Y$ | 158146366 | $S$ | $1983+9447$ | $Z * * * * * * * * * * * *$ |
| POINT PT 283 | $X$ | 2078919860 | $Y$ | 159894304 | $S$ | $2000+83343$ | $Z * * * * * * * * * *$ |
| POINT PI 283 | $X$ | 2078654672 | $Y$ | 159040435 | $S$ | $1992+3548$ | $Z * * * * * * * * * *$ |
| POINT 2833 | $X$ | 2079013523 | $Y$ | 160195884 | $S$ | $2003+99133$ | $Z * * * * * * * * *$ |



DESCRIPTION OF CHAIN E

CHAIN ELEMENTS

CURVE 293 TYPE C CURVE ELEMENTS

| RADIUS | 3274 | 045 | DEGREE | 1 | 45 | 0 | 00 |  |
| :--- | ---: | :--- | :--- | :--- | ---: | ---: | ---: | ---: |
| LENGTH | 3670 | 937 | DELTA | 64 | 14 | 29 | 05 |  |
| TANGENT | 2055 | 453 | BACK | N | 17 | 15 | 12 | 10 |
| EXTERNAL | 591 | 735 | AHEAD | N | 46 | 59 | 16 | 95 |
| LONG CHORD | 3481 | 649 |  |  |  |  |  |  |
| MID ORD | 501 | 158 |  |  |  |  |  |  |

COURSE FROM PT 293 TO PC 294 LENGTH 5143315 BEARING N 46591695 W

CURVE 294 TYPE CURVE ELEMENTS

| RADIUS | 1637 | 022 | DEGREE | 3 | 30 | 0 |
| :--- | ---: | :--- | :--- | :--- | :--- | :--- |

## CHAIN POINTS

POINT $77 \quad \mathrm{X} 2079013523$ Y 160195884 S $2003+44350 \quad$ **** **

CURVE 293 TYPE C CURVE POINTS


CURVE 294 TYPE C CURVE POINTS

| POINT CC 294 | $x$ | 2077106626 | $Y$ | 173516 | 756 | s |  | ** | * ********* |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| POINT PC 294 | x | 2075989929 | $Y$ | 172319 | 746 | S | $2146+56$ |  | ******* |
| POINT PT 294 | x | 2075471134 | $Y$ | 173587 | 535 | S | 2160+69 |  | ******** |
| POINT PI 294 | X | 2075438530 | Y | 172834 | 150 | s | 2154+10 |  | ************ |

