00BREAK00

1) COUNTY: Iron

2) STUDY NAME: Iron River, City of

3) WATERCOURSE: Iron River

4) DOCUMENT TYPE: 100 yr run

00BREAK00

```
  7992 00      8 20  1481.90      0 00  1481.79  1482 05      0.15      0 48      0 00  1480 00
    1340        36     1248        7.      127      391       11.        90        27   1480 30
    0 71      0 68     3 19      0 58    0 070    0 035     0 070     0 000  1473 70    171 14
 0 000547      849      849       849        2        0         0      0 00    151 19    322 33
0
1
 15 SEP 87    13 57 04                                                                          PAGE    33

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 8042 000

 3370 NORMAL BRIDGE, NRD= 33 MIN ELTRD= 1484 70 MAX ELLC= 1487 75

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=     1484 70 ELREA=     1484 70

          DOWNSTREAM FACE OF OLD RR BRIDGE
  8042.00      7 95  1481 85      0 00  1481 74  1482.21      0.36      0 06      0.11  1479 70
    1340         0     1340.        0         0      277         0        90       27.   1480.90
    0 71      0 00     4 84      0 00    0.000    0 035    0.000    0.000  1473.90    126 50
 0 004279        50       50        50         0        0         0    -59 08     53 50    180.00
0
 *SECNO 8057 000

 3370 NORMAL BRIDGE, NRD= 33 MIN ELTRD= 1484 70 MAX ELLC= 1487 75

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=     1484.70 ELREA=     1484.70

          UPSTREAM FACE OF OLD RR BRIDGE
  8057 00      8 01  1481.91      0 00  1481.81  1482 28      0 36      0 06      0.00  1479.70
    1340         0     1340         0        0.      277        0.        90       28.   1480.90
    0 71      0 00     4 84      0.00    0 000    0 035    0 000    0 000  1473 90    126.50
 0 004279        15      15.        15         0        0         0    -62 52     53 50    180.00
0
 *SECNO 8107 000
 2800 NAT Q1=     484 35  WSEL=    1482 06  ENC Q1=     494 09  WSEL=    1482 16  RATIO= -0 0201
 NAT Q1=     497   RATIOS LOB, CH, ROB=  0 0058  0 9941  0 0001  WSEL=    1482.16

 3470 ENCROACHMENT STATIONS=     126 5     180.0  TYPE=     4  TARGET=       0.006
          CROSS SECTION UPSTREAM OF OLD RR BRIDGE
  8107 00      8 27  1482 17      0 00  1482.06  1482.40      0 22      0 08      0.04  1479 70
    1340         0     1340         0        0      354        0        91       28.   1480.90
    0 72      0 00     3 79      0 00    0 000    0 035    0 000    0 000  1473 90    126 50
 0 000793        50      50.        50         2        0         0      0 00     53 50    180 00
0
 *SECNO 8233 000
 2800 NAT Q1=     448 86  WSEL=    1482 16  ENC Q1=     460 13  WSEL=    1482 26  RATIO= -0 0251
 NAT Q1=     460   RATIOS LOB, CH, ROB=  0 0000  1 0000  0 0000  WSEL=    1482 26
1
 15 SEP 87    13 57 04                                                                          PAGE    34

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
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3470 ENCROACHMENT STATIONS=      250 0      307 0  TYPE=      4  TARGET=        0 000
          DOWNSTREAM FACE OF MINKLER ST BRIDGE
  8233 00      9 28  1482 28      0 00  1482.16  1482 50      0 22      0 10      0 00  1483 70
     1340         0     1340         0        0      356         0        92       28.   1484 40
     0 73      0 00     3 77      0 00    0 000    0 035     0 000     0 000  1473 00   250.23
  0 000842      126      126       126        0        0         0      0 00    56 30   306 53
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0 00       2 32       2 80       0 00      25 00      0.00      190 00      3.00    1473 00    1473 00

*SECNO 8267 000
 PRESS FLOW BECAUSE EGLWC OF   1484 11  EXCEEDS 1 5 DEPTH
 2800 NAT Q1=     647 62  WSEL=    1483 79  ENC Q1=     655 62  WSEL=    1483.89  RATIO= -0.0123
 NAT Q1=     663   RATIOS LOB,CH,ROB=  0 0107  0 9893  0.0000  WSEL=    1483 89
 WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

3470 ENCROACHMENT STATIONS=      250 0      307 0  TYPE=      4  TARGET=        0 011
          UPSTREAM FACE OF MINKLER ST BRIDGE
  8267 00     10 91  1483 91      0 00  1483 79  1484 05      0 14      0.02      0.02  1483 70
     1340.        0     1340.        0        0      448         0        92       28.   1484 40
     0 73      0 00     2 99      0 00    0 000    0.035     0 000     0 000  1473 00   250 00
  0 000416       34       34.       34        0        0         3      0 00    56.89   306 89
0
CCHV=   0 100 CEHV=   0 300
*SECNO 9054 000

3265 DIVIDED FLOW

3280 CROSS SECTION   9054 00 EXTENDED       1 86 FEET
          CROSS SECTION # 3
  9054 00      9 96  1484 16      0 00  1484 05  1484 19      0 03      0 13      0 01  1479 60
     1340       374       959         B      779      641        38       109        32   1484 20
     0 91      0 48      1 50      0 20    0 070    0 035     0 070     0 000  1474.20      0.00
  0 000089      787       787       787        2        0         0      0 00   374.53   375.00
0
1
 15 SEP 87    13 57 04                                                                          PAGE    3

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0 300 CEHV=   0 500
*SECNO 9731 000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      1486 40 ELREA=      1486 40

          DOWNSTREAM FACE OF 16TH AVE BRIDGE
  9731 00      7 41  1484 21      0 00  1484 10  1484 42      0 21      0 14      0.09  1480 00
     1340         0     1340         0        0      365         0       123       35   1482.60
     0 96      0 00     3 68      0 00    0 000    0 035     0 000     0 000  1476 80   250.00
  0 000812      677       677       677        2        0         0      0 00    60 00   310.00
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
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     0 00       4 88       3 00       0 00      53 00       0 00     345 00       0 00    1476 80    1476 80

 *SECNO 9769 000

 6070.LOW FLOW BY NORMAL BRIDGE

 EGPRS=      0 000  EGLWC=  1484 418  ELLC=  1486 400  PCWSE=  1484 208  ELTRD=  1486 400

 3370 NORMAL BRIDGE,NRD= 39 MIN ELTRD= 1486 40 MAX ELLC= 1486 40


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1486 40 ELREA=     1486 40

          UPSTREAM FACE OF 16TH AVE BRIDGE
   9769 00      7 37  1484.17      0 00  1484 06  1484 57      0 40      0 05      0 09  1480.00
     1340         0     1340         0         0      265         0       124        35   1482 60
      0 96      0 00      5 06      0 00     0.000    0 035     0 000     0.000  1476.80    250.00
  0 003174        38        38        38         2         0         0   -120.94    60.00    310.00
0
 *SECNO 9819 000
  2800 NAT Q1=     540 06  WSEL=   1484 45  ENC Q1=     540 06  WSEL=   1484.55  RATIO=  0 0000
  NAT Q1=     556   RATIOS LOB,CH,ROB=  0 0530  0 9254  0 0216  WSEL=   1484.55

 3470 ENCROACHMENT STATIONS=      237.8      317 0  TYPE=      4  TARGET=        0.029
   9819 00      7 73  1484.53      0 00  1484 45  1484.70      0 16      0 06      0 07  1480 00
     1340        53     1278.         9       47.      384        13      124.       35.   1482.60
      0 97      1 13      3.33      0 70     0 070    0 035     0.070     0 000  1476.80    237.77
  0 000621        50        50       50.         2         0         0      0 00    79 20    316 97
0
1
  15 SEP 87     13 57 04                                                                          PAGE    36


    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST


 CCHV=    0 100 CEHV=    0 300
 *SECNO 11650 000
  2800 NAT Q1=    1554.55  WSEL=   1484 90  ENC Q1=    1554 55  WSEL=   1485 00  RATIO=  0 0000
  NAT Q1=    1602   RATIOS LOB,CH,ROB=  0 2322  0.3467  0 4211  WSEL=   1485 00
 3280 CROSS SECTION  11650.00 EXTENDED      4 20 FEET


 3470 ENCROACHMENT STATIONS=      139 9      539.6  TYPE=      4  TARGET=        0.029
          CROSS SECTION AT WEST CITY LIMITS
  11650 00      9 40  1485 00      0.00  1484.90  1485.01      0 01      0 30      0 02  1479.80
     1340       300       479       561       558.      330      1127       176        45   1480 10
      1 57      0 54      1 45      0 50     0 070    0 035     0 070     0.000  1475 60    139 90
  0 000075     1831      1831      1831         2         0         0      0.00    399 66    539 56
0
1
  15 SEP 87     13 57 04                                                                          PAGE    37


                                                                                THIS RUN EXECUTED 15 SEP 87    13.57.21
 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
 ***************************************************
```

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1*********************************************************
 *  WATER SURFACE PROFILES                               *
 *  VERSION OF NOVEMBER 1976                             *
 *  UPDATED MAY 1984                                     *
 *                                                       *
 *  RUN DATE  15 SEP 87 TIME   13:57:04                  *
 *********************************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

1

15 SEP 87 13:57:04

THIS RUN EXECUTED 15 SEP 87 13:57:04

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
```

```
C
T1 CITY OF IRON RIVER
T2 LIMITED MAP MAINTENANCE PROGRAM
T3 IRON RIVER - 100 YR FLOOD

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0.      2.       0.       0.   0.003310     0.00     0.0      0.   1469.000   0.000

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    1.000    0.000   -1.000    0.000    0.000    0.000    0.000    0 000    0.000    0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

   110.000  150.000  200.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000

NC      0.070      0.070      0.035      0.100      0.300      0.000      0.000      0.000      0.000      0.000
QT      2.000   1340.000   1340.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET      0.000      0 000      1.400      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          CROSS SECTION AT SOUTH CITY LIMITS
X1      0.000     31.000    250.000    285.000      0.000      0.000      0.000      0.000      0.000      0.000
GR   1494.600      0.000   1493.100     25.000   1492.400     50.000   1492.500     75.000   1491.300    100.000
GR   1489.700    125.000   1489.800    150.000   1488.400    172.000   1473.000    200.000   1466.000    225.000
GR   1464.600    250.000   1463.100    252.000   1462.500    255.000   1461.200    260.000   1461.100    265.000
GR   1461.900    270.000   1463.200    275.000   1468.500    285.000   1468.900    300.000   1468.900    325.000
```

GR	1468.900	430.000	1468.700	450.000	1468.300	475.000	1468.100	500.000	1467.800	525.000
GR	1467.500	550.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	4.100	235.000	500.000	0.000	0.000	0.000	0.000	0.000
	CROSS SECTION # 15									
X1	1355.000	30.000	250.000	300.000	1355.000	1355.000	1355.000	0.000	0.000	0.000
GR	1483.700	0.000	1482.000	25.000	1479.600	50.000	1477.300	75.000	1475.500	100.000
GR	1474.500	125.000	1473.900	150.000	1473.300	175.000	1472.800	200.000	1472.900	225.000
GR	1469.100	250.000	1467.300	253.000	1467.100	255.000	1466.700	260.000	1466.200	265.000
GR	1465.900	270.000	1466.000	275.000	1466.200	280.000	1467.000	285.000	1467.300	287.000
GR	1468.800	300.000	1469.600	325.000	1468.900	350.000	1469.000	375.000	1470.200	400.000
GR	1470.300	450.000	1470.800	475.000	1471.200	500.000	1473.200	525.000	1473.500	550.000

X1	1665.000	0.000	0.000	0.000	310.000	310.000	310.000	0.000	1.200	0.000
X3	0.000	0.000	0.000	250.000	0.000	365.000	0.000	0.000	0.000	0.000
X1	1765.000	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.300	0.000
X3	0.000	0.000	0.000	250.000	0.000	315.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.500	0.600	0.000	0.000	0.000	0.000	0.000
	DOWNSTREAM FACE OF US 2 BRIDGE									
X1	1815.000	38.000	282.000	322.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1480.000	1480.000	0.000
GR	1482.800	0.000	1481.900	25.000	1481.400	50.000	1481.100	75.000	1480.600	100.000
GR	1480.400	125.000	1480.200	150.000	1480.000	175.000	1480.000	200.000	1479.700	225.000
GR	1480.100	250.000	1474.700	260.000	1471.700	270.000	1470.400	275.000	1469.100	282.000
GR	1468.600	283.000	1468.500	285.000	1468.200	290.000	1467.900	295.000	1467.800	300.000
GR	1468.000	305.000	1467.800	310.000	1468.200	315.000	1469.000	320.000	1469.400	322.000
GR	1470.300	325.000	1475.300	335.000	1479.100	350.000	1478.700	375.000	1479.000	400.000
GR	1477.900	425.000	1478.000	450.000	1478.900	475.000	1481.200	500.000	1481.800	525.000
GR	1482.800	550.000	1483.100	575.000	1483.900	600.000	0.000	0.000	0.000	0.000
SB	0.000	2.220	2.800	0.000	45.000	0.000	251.000	0.000	0.000	0.000
	UPSTREAM FACE OF US 2 BRIDGE									
X1	1885.000	0.000	0.000	0.000	70.000	70.000	70.000	0.766	0.000	0.000
X2	0.000	0.000	1.000	1477.200	1480.000	0.000	0.000	0.000	0.766	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1480.000	1480.000	0.000
BT	-32.000	0.000	1483.300	0.000	25.000	1482.800	0.000	50.000	1482.300	0.000
BT	0.000	75.000	1481.800	0.000	100.000	1481.400	0.000	125.000	1480.900	0.000
BT	0.000	150.000	1480.500	0.000	175.000	1480.200	0.000	200.000	1480.000	0.000
BT	0.000	225.000	1480.000	0.000	250.000	1480.100	0.000	275.000	1480.150	1470.400
BT	0.000	275.000	1480.150	1472.450	285.000	1480.150	1475.900	295.000	1480.150	1477.200
BT	0.000	300.000	1480.150	1476.700	305.000	1480.100	1476.200	315.000	1480.100	1472.900
BT	0.000	320.000	1480.100	1470.050	322.000	1480.100	1469.400	325.000	1480.100	0.000
BT	0.000	350.000	1480.100	0.000	375.000	1480.100	0.000	400.000	1480.100	0.000
BT	0.000	425.000	1480.400	0.000	450.000	1480.700	0.000	475.000	1481.100	0.000
BT	0.000	500.000	1481.500	0.000	525.000	1482.100	0.000	550.000	1482.900	0.000
BT	0.000	575.000	1483.700	0.000	600.000	1484.700	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
X1	1935.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X1	2200.000	0.000	0.000	0.000	265.000	265.000	265.000	0.000	0.000	0.000
	CROSS SECTION AT ADAMS STREET									
X1	2250.000	42.000	250.000	306.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	1479.000	0.000	1478.700	25.000	1478.400	50.000	1478.200	75.000	1478.100	100.000
GR	1478.300	125.000	1478.700	150.000	1479.200	175.000	1479.600	200.000	1480.100	225.000
GR	1481.400	236.000	1480.100	242.000	1480.300	250.000	1468.600	250.000	1468.000	255.000
GR	1468.500	260.000	1469.000	265.000	1469.000	267.000	1472.700	268.000	1468.400	269.000
GR	1468.600	275.000	1468.300	280.000	1468.800	285.000	1472.600	286.000	1468.600	287.000
[illegible]	[illegible]	290.000	[illegible]	295.000	[illegible]	300.000	[illegible]	305.000	[illegible]	[illegible]

GR	1483.600	308.000	1481.600	318.000	1481.600	325.000	1482.700	350.000	1484.200	375.000
GR	1486.000	400.000	1487.800	425.000	1490.100	450.000	1492.100	475.000	1494.200	500.000
GR	1496.400	525.000	1497.500	550.000	0.000	0.000	0.000	0.000	0.000	0.000

1

ET	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	2300.000	31.000	250.000	285.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	175.000	0.000	295.000	0.000	0.000	0.000	0.000
GR	1476.000	0.000	1475.400	25.000	1475.000	50.000	1474.500	75.000	1474.300	100.000
GR	1473.800	125.000	1473.400	150.000	1472.800	175.000	1471.900	203.000	1471.100	225.000
GR	1471.400	250.000	1469.100	251.000	1469.000	255.000	1468.500	260.000	1468.300	265.000
GR	1468.400	270.000	1468.400	275.000	1469.100	280.000	1469.800	283.000	1471.500	285.000
GR	1474.400	295.000	1478.800	307.000	1479.400	311.000	1489.000	325.000	1500.500	346.000
GR	1500.200	357.000	1502.400	375.000	1502.600	400.000	1503.900	425.000	1505.400	450.000
GR	1506.600	475.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CROSS SECTION # 12

X1	2683.000	0.000	0.000	0.000	383.000	383.000	383.000	0.000	0.000	0.000

CROSS SECTION # 11

X1	4506.000	33.000	250.000	299.000	1823.000	1823.000	1823.000	0.000	0.000	0.000
GR	1485.900	0.000	1484.700	25.000	1483.800	50.000	1482.900	75.000	1481.900	100.000
GR	1481.000	125.000	1480.800	150.000	1479.900	175.000	1479.200	200.000	1478.400	213.000
GR	1476.900	225.000	1473.500	232.000	1472.500	250.000	1469.500	251.000	1469.300	255.000
GR	1469 600	260.000	1469.700	265.000	1469.700	270.000	1469.600	275.000	1469.600	280.000
GR	1469.500	285.000	1471.000	290.000	1472.300	299.000	1472.900	325.000	1473.700	350.000
GR	1473.800	375.000	1474.300	400.000	1475.000	425.000	1475.400	450.000	1475.100	475.000
GR	1475.500	500.000	1475.300	525.000	1475.200	550.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000

CROSS SECTION DOWNSTREAM OF FOOTBRIDGE

X1	4638.000	0.000	0.000	0.000	132.000	132.000	132.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	230.000	0.000	432.000	0.000	0.000	0.000	0.000

DOWNSTREAM FACE OF FOOTBRIDGE

X1	4688.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	230.000	0.000	430.000	0.000	0.000	0.000	0.000
BT	-13.000	0.000	1485.900	0.000	150.000	1480.800	0.000	213.000	1478.400	0.000
BT	0.000	225.000	1477.700	1476.900	250.000	1476.800	1475.800	275.000	1476.200	1475.200
BT	0.000	275.000	1476.200	1469.600	280.000	1476.200	0.000	280.000	1476.200	0.000
BT	0.000	290.000	1476.000	0.000	299.000	1473.500	0.000	400.000	1474.300	0.000
BT	0.000	550.000	1475.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000

UPSTREAM FACE OF FOOTBRIDGE

X1	4693.000	0.000	0.000	0.000	5.000	5.000	5.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	232.000	0.000	410.000	0.000	0.000	0.000	0.000

CROSS SECTION UPSTREAM OF FOOTBRIDGE

X1	4743.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	232.000	0.000	385.000	0.000	0.000	0.000	0.000

CROSS SECTION DOWNSTREAM OF 4TH AVE BRIDGE

X1	4884.000	0.000	0.000	0.000	141.000	141.000	141.000	0.000	1.500	0.000
X3	0.000	0.000	0.000	232.000	0.000	320.000	0.000	0.000	0.000	0.000

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DOWNSTREAM FACE OF 4TH AVE BRIDGE

X1	4934.000	38.000	250.000	318.000	50.000	50.000	50.000	0.000	0.000	0.000

BT	0.000	75.000	1481.400	0.000	100.000	1480.900	0.000	125.000	1481.000	0.000
BT	0.000	150.000	1480.700	0.000	175.000	1480.300	0.000	200.000	1480.000	0.000
BT	0.000	225.000	1480.100	0.000	250.000	1480.900	1480.900	270.000	1480.900	1474.000
BT	0.000	275.000	1481.000	1477.200	280.000	1481.000	1479.200	290.000	1481.100	1480.100
BT	0.000	300.000	1481.100	1478.800	312.000	1480.900	1474.700	325.000	1480.800	0.000
BT	0.000	350.000	1480.900	0.000	374.000	1481.800	0.000	400.000	1483.100	0.000
BT	0.000	425.000	1484.800	0.000	450.000	1486.700	0.000	475.000	1488.500	0.000
BT	0.000	500.000	1490.300	0.000	525.000	1492.000	0.000	550.000	1493.700	0.000
BT	0.000	575.000	1495.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1485.200	0.000	1483.100	25.000	1481.900	50.000	1481.500	75.000	1480.900	100.000
GR	1481.000	125.000	1480.700	150.000	1480.300	175.000	1479.800	200.000	1479.800	225.000
GR	1480.900	250.000	1476.200	255.000	1474.300	260.000	1472.300	265.000	1471.800	270.000
GR	1471.300	275.000	1472.200	280.000	1471.900	285.000	1472.100	290.000	1472.300	295.000
GR	1472.500	300.000	1472.800	301.000	1473.200	305.000	1474.000	307.000	1474.700	312.000
GR	1478.800	318.000	1479.500	325.000	1480.700	350.000	1480.700	356.000	1481.000	374.000
GR	1482.400	400.000	1484.400	425.000	1486.200	450.000	1488.100	475.000	1490.200	500.000
GR	1491.800	525.000	1493.700	550.000	1495.300	575.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000
	UPSTREAM FACE OF 4TH AVE BRIDGE									
X1	4966.000	0.000	0.000	0.000	32.000	32.000	32.000	0.766	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.766	0.000
BT	-28.000	0.000	1483.200	0.000	25.000	1482.400	0.000	50.000	1481.800	0.000
BT	0.000	75.000	1481.400	0.000	100.000	1480.900	0.000	125.000	1481.000	0.000
BT	0.000	150.000	1480.700	0.000	175.000	1480.300	0.000	200.000	1480.000	0.000
BT	0.000	225.000	1480.100	0.000	250.000	1480.900	1480.900	270.000	1480.900	1474.000
BT	0.000	275.000	1481.000	1477.200	280.000	1481.000	1479.200	290.000	1481.100	1480.100
BT	0.000	300.000	1481.100	1478.800	312.000	1480.900	1474.700	325.000	1480.800	0.000
BT	0.000	350.000	1480.900	0.000	374.000	1481.800	0.000	400.000	1483.100	0.000
BT	0.000	425.000	1484.800	0.000	450.000	1486.700	0.000	475.000	1488.500	0.000
BT	0.000	500.000	1490.300	0.000	525.000	1492.000	0.000	550.000	1493.700	0.000
BT	0.000	575.000	1495.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	CROSS SECTION UPSTREAM OF 4TH AVE BRIDGE									
X1	5016.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
X1	5539.000	33.000	250.000	303.000	523.000	523.000	523.000	0.000	0.000	0.000
GR	1481.500	0.000	1480.600	25.000	1480.000	50.000	1479.200	75.000	1478.900	100.000
GR	1478.700	125.000	1478.700	150.000	1478.400	175.000	1478.100	200.000	1478.000	225.000
GR	1474.800	250.000	1473.300	255.000	1473.400	260.000	1473.500	265.000	1473.100	270.000
GR	1473.400	275.000	1472.900	277.000	1473.000	285.000	1473.700	290.000	1474.400	295.000
GR	1475.000	300.000	1475.300	301.000	1475.100	303.000	1478.300	325.000	1479.500	350.000
GR	1480.500	375.000	1482.100	400.000	1483.500	425.000	1485.300	449.000	1486.400	475.000
GR	1487.600	500.000	1488.900	525.000	1489.900	550.000	0.000	0.000	0.000	0.000

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SB	0.000	1.010	3.000	0.000	0.010	0.000	0.010	0.000	0.000	0.000
	WEIR DOWNSTREAM OF 5TH AVE BRIDGE									
X1	5541.000	0.000	0.000	0.000	2.000	2.000	2.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	1473.510	1474.800	0.000	0.000	0.000	0.000	0.000
BT	-7.000	0.000	1481.500	0.000	250.000	1474.800	1474.800	255.000	1474.800	1473.310
BT	0.000	265.000	1474.900	1473.510	285.000	1474.900	1473.110	290.000	1473.700	1473.700
BT	0.000	550.000	1489.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	DOWNSTREAM FACE OF 5TH AVE BRIDGE									
X1	5550.000	0.000	0.000	0.000	9.000	9.000	9.000	0.766	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.766	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1478.000	1478.000
SB	0.000	1.920	2.800	0.000	50.000	2.000	159.000	0.000	0.000	0.000
	UPSTREAM FACE OF 5TH AVE BRIDGE									
X1	5570.000	0.000	0.000	0.000	20.000	20.000	20.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	[illegible]	[illegible]	0.000	0.000	0.000	0.000	[illegible]

X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1478.000	1478.000	0.000
BT	-21.000	0.000	1481.900	0.000	50.000	1480.100	0.000	100.000	1479.100	0.000
BT	0.000	150.000	1479.100	0.000	200.000	1478.300	0.000	250.000	1478.100	1474.800
BT	0.000	250.000	1478.100	1476.900	275.000	1478.100	1476.900	275.000	1478.100	1473.400
BT	0.000	277.000	1478.100	1472.900	277.000	1478.100	1476.900	300.000	1478.000	1476.800
BT	0.000	300.000	1478.000	1475.000	301.000	1478.000	0.000	303.000	1478.100	0.000
BT	0.000	325.000	1478.800	0.000	350.000	1479.600	0.000	400.000	1482.300	0.000
BT	0.000	449.000	1485.300	0.000	500.000	1488.400	0.000	550.000	1490.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
	CROSS SECTION AT 6TH AVENUE									
X1	5900.000	42.000	250.000	336.000	280.000	280.000	280.000	0.000	0.000	0.000
GR	1484.600	0.000	1484.100	25.000	1483.800	50.000	1482.900	75.000	1482.700	100.000
GR	1482.100	115.000	1481.600	125.000	1481.100	150.000	1481.400	175.000	1481.400	200.000
GR	1481.600	225.000	1480.600	250.000	1476.000	262.000	1475.500	265.000	1475.500	270.000
GR	1475.300	275.000	1474.900	280.000	1473.700	285.000	1473.400	290.000	1473.400	295.000
GR	1473.100	300.000	1473.000	305.000	1472.700	310.000	1472.600	315.000	1473.000	320.000
GR	1474.600	325.000	1475.200	330.000	1475.400	331.000	1476.600	336.000	1477.300	350.000
GR	1477.800	375.000	1478.900	400.000	1484.000	425.000	1486.600	441.000	1487.450	453.000
GR	1487.400	468.000	1488.200	475.000	1489.200	500.000	1490.000	525.000	1490.900	550.000
GR	1491.300	575.000	1491.600	600.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	CROSS SECTION DOWNSTREAM OF 7TH AVE BRIDGE									
X1	6080.000	33.000	260.000	325.000	180.000	180.000	180.000	0.000	0.000	0.000
GR	1491.800	0.000	1490.200	25.000	1488.900	50.000	1487.800	75.000	1486.500	100.000
GR	1485.400	125.000	1483.800	150.000	1482.800	175.000	1481.600	201.000	1481.200	225.000
GR	1480.300	243.000	1479.100	250.000	1477.900	255.000	1476.600	260.000	1475.600	263.000
GR	1474.800	265.000	1473.400	270.000	1473.700	275.000	1473.700	280.000	1473.700	285.000
GR	1474.300	290.000	1475.100	295.000	1475.600	300.000	1479.400	325.000	1480.400	350.000
GR	1480.800	375.000	1481.200	400.000	1481.700	425.000	1482.100	450.000	1482.700	475.000
GR	1483.300	500.000	1483.900	525.000	1485.100	550.000	0.000	0.000	0.000	0.000

	DOWNSTREAM FACE OF 7TH AVE BRIDGE									
X1	6130.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
BT	-12.000	0.000	1491.800	0.000	50.000	1488.900	0.000	100.000	1486.500	0.000
BT	0.000	150.000	1484.500	0.000	201.000	1482.500	0.000	250.000	1481.400	1479.100
BT	0.000	300.000	1481.000	1479.400	350.000	1481.100	1480.400	400.000	1481.200	0.000
BT	0.000	450.000	1482.100	0.000	500.000	1483.300	0.000	550.000	1485.100	0.000
	UPSTREAM FACE OF 7TH AVE BRIDGE									
X1	6171.000	0.000	0.000	0.000	41.000	41.000	41.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
	CROSS SECTION UPSTREAM OF 7TH AVE BRIDGE									
X1	6221.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
X1	7113.000	37.000	250.000	315.000	892.000	892.000	892.000	0.000	0.000	0.000
GR	1484.100	0.000	1482.900	25.000	1482 900	50.000	1482.200	75.000	1482.000	100.000
GR	1481.300	125.000	1480.800	136.000	1480.200	150.000	1480.100	175.000	1479.800	198.000
GR	1479.800	200.000	1480.000	225.000	1479.600	250.000	1476.100	258.000	1474.900	260.000
GR	1474.400	265.000	1474.500	270.000	1474.700	275.000	1475.100	280.000	1474.500	285.000
GR	1474.100	290.000	1473.300	295.000	1473.600	300.000	1475.900	304.000	1476.200	305.000
GR	1478.700	310.000	1479.900	315.000	1480.100	325.000	1480.400	350.000	1481.500	375.000
GR	1482.400	400.000	1483.100	425.000	1483.800	450.000	1484.800	475.000	1486.100	500.000
GR	1487.200	525.000	1487.900	550.000	0.000	0.000	0.000	0.000	0.000	0.000
	CROSS SECTION # 6									
X1	7129.000	0.000	0.000	0.000	16.000	16.000	16.000	0.000	0.000	0.000
X4	2.000	1477.200	280.100	1477.400	284.900	0.000	0.000	0.000	0.000	0.000

X1	7143.000	37.000	250.000	315.000	14.000	14.000	14.000	0.000	0.000	0.000
GR	1484.100	0.000	1482.900	25.000	1482.900	50.000	1482.200	75.000	1482.000	100.000
GR	1481.300	125.000	1480.800	136.000	1480.200	150.000	1480.100	175.000	1479.800	198.000
GR	1479.800	200.000	1480.000	225.000	1479.600	250.000	1476.100	258.000	1474.900	260.000
GR	1474.400	265.000	1474.500	270.000	1474.700	275.000	1475.100	280.000	1474.500	285.000
GR	1474.100	290.000	1473.300	295.000	1473.600	300.000	1475.900	304.000	1476.200	305.000
GR	1478.700	310.000	1479.900	315.000	1480.100	325.000	1480.400	350.000	1481.500	375.000
GR	1482.400	400.000	1483.100	425.000	1483.800	450.000	1484.800	475.000	1486.100	500.000
GR	1487.200	525.000	1487.900	550.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000
CROSS SECTION DOWNSTREAM OF OLD RR BRIDGE										
X1	7992.000	0.000	0.000	0.000	849.000	849.000	849.000	0.000	0.400	0.000
DOWNSTREAM FACE OF OLD RR BRIDGE										
X1	8042.000	44.000	253.000	360.000	50.000	50.000	50.000	0.500	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1484.700	1484.700	0.000
BT	-33.000	0.000	1484.700	0.000	25.000	1485.300	0.000	32.000	1485.300	0.000
BT	0.000	45.000	1485.600	0.000	57.000	1485.300	0.000	75.000	1485.300	0.000
BT	0.000	100.000	1485.300	0.000	125.000	1485.500	0.000	150.000	1485 600	0.000
BT	0.000	175.000	1486.000	0.000	200.000	1486.000	0.000	225.000	1486.100	0.000
BT	0.000	250.000	1487.200	1479.750	251.000	1487.200	1480.500	275.000	1487.400	1480.700
BT	0.000	300.000	1487.600	1481.000	300.000	1487.600	1474.500	305.000	1487.700	1474.700

BT	0.000	305.000	1487.700	1481.000	325.000	1487.900	1481.200	350.000	1488.200	1481.500
BT	0.000	360.000	1488.200	1481.600	362.000	1488.200	1487.750	375.000	1487.700	0.000
BT	0.000	400.000	1488.000	0.000	425.000	1488.200	0.000	450.000	1488.300	0.000
BT	0.000	475.000	1488.400	0.000	500.000	1488.700	0.000	525.000	1489.000	0.000
BT	0.000	550.000	1489.200	0.000	575.000	1489.300	0.000	600.000	1489.500	0.000
GR	1484.100	0.000	1484.500	25.000	1484.800	32.000	1485.200	45.000	1485.400	50.000
GR	1485.200	57.000	1484.600	75.000	1484.200	100.000	1483.800	125.000	1484.300	150.000
GR	1485.400	175.000	1485.100	200.000	1485.400	225.000	1479.750	250.000	1479.700	251.000
GR	1479.700	253.000	1477.500	260.000	1477.200	270.000	1476.750	275.000	1476.300	280.000
GR	1475.200	290.000	1474.500	300.000	1474.700	305.000	1474.800	310.000	1475.300	320.000
GR	1474.700	325.000	1474.100	330.000	1473.900	340.000	1474.900	350.000	1475.900	358.000
GR	1480.900	360.000	1480.900	361.000	1487.750	362.000	1486.100	363.000	1486.200	375.000
GR	1486.900	400.000	1487.200	425.000	1486.800	450.000	1487.400	475.000	1487.400	500.000
GR	1487.500	525.000	1487.900	550.000	1488.100	575.000	1488.300	600.000	0.000	0.000
UPSTREAM FACE OF OLD RR BRIDGE										
X1	8057.000	0.000	0.000	0.000	15.000	15.000	15.000	0.000	0.000	0.000
X2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1484.700	1484.700	0.000
CROSS SECTION UPSTREAM OF OLD RR BRIDGE										
X1	8107.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000
DOWNSTREAM FACE OF MINKLER ST BRIDGE										
X1	8233.000	46.000	250.000	307.000	126.000	126.000	126.000	0.000	0.000	0.000
GR	1486.500	0.000	1485.800	25.000	1485.400	50.000	1484.800	75.000	1485.000	88.000
GR	1484.800	100.000	1484.700	125.000	1483.900	150.000	1483.700	175.000	1483.100	198.000
GR	1483.100	200.000	1483.100	225.000	1483.700	250.000	1477.600	251.000	1478.200	255.000
GR	1476.500	260.000	1475.200	261.000	1473.000	265.000	1474.500	270.000	1475.200	275.000
GR	1475.000	280.000	1475.000	285.000	1474.400	290.000	1476.500	295.000	1475.100	296.000
GR	1478.300	300.000	1479.900	306.000	1484.400	307.000	1484.300	310.000	1484.700	325.000
GR	1484.700	350.000	1484.700	364.000	1484.900	372.000	1486.500	375.000	1487.300	376.000
GR	1487.900	400.000	1488.700	425.000	1489.200	443.000	1489.400	450.000	1492.900	473.000
GR	1492.500	483.000	1489.100	494.000	1490.300	500.000	1494.400	518.000	1495.100	525.000
GR	1496.100	550.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	0.000	2.320	2.800	0.000	25.000	0.000	190.000	3.000	0.000	0.000
UPSTREAM FACE OF MINKLER ST BRIDGE										

X1	8267.000	0.000	0.000	0.000	34.000	34.000	34.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	1479.900	1483.700	0.000	0.000	0.000	0.000	0.000
BT	-27.000	0.000	1487.000	0.000	25.000	1486.100	0.000	50.000	1485.700	0.000
BT	0.000	75.000	1485.700	0.000	100.000	1485.700	0.000	125.000	1485.400	0.000
BT	0.000	150.000	1485.000	0.000	175.000	1484.500	0.000	200.000	1484.000	0.000
BT	0.000	225.000	1483.700	0.000	250.000	1483.900	0.000	251.000	1483.900	1477.600
BT	0.000	251.000	1483.900	1479.200	275.000	1484.200	1479.500	300.000	1484.500	1479.800
BT	0.000	306.000	1484.600	1479.900	307.000	1484.600	0.000	325.000	1484.800	0.000
BT	0.000	350.000	1485.100	0.000	375.000	1486.500	0.000	400.000	1487.900	0.000
BT	0.000	425.000	1488.700	0.000	450.000	1489.600	0.000	473.000	1492.900	0.000
BT	0.000	500.000	1493.300	0.000	525.000	1495.100	0.000	550.000	1496.100	0.000

NC	0.000	0.000	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	4.100	0.000	380.000	0.000	0.000	0.000	0.000	0.000
	CROSS SECTION # 3									
X1	9054.000	34.000	250.000	336.000	787.000	787.000	787.000	0.000	0.000	0.000
GR	1482.300	0.000	1482.400	25.000	1482.300	50.000	1481.900	75.000	1481.800	100.000
GR	1481.700	125.000	1481.500	150.000	1481.400	175.000	1480.800	192.000	1478.100	200.000
GR	1477.600	225.000	1479.600	250.000	1476.700	253.000	1474.200	260.000	1474.700	270.000
GR	1475.200	280.000	1475.700	290.000	1475.800	300.000	1475.600	310.000	1476.700	313.000
GR	1476.700	315.000	1484.200	336.000	1482.800	350.000	1483.200	375.000	1488.200	400.000
GR	1493.000	425.000	1496.900	450.000	1499.200	475.000	1502.400	500.000	1506.700	525.000
GR	1512.000	539.000	1513.800	550.000	1515.800	575.000	1516.600	600.000	0.000	0.000
NC	0.000	0.000	0.000	0.300	0.500	0.000	0.000	0.000	0.000	0.000
	DOWNSTREAM FACE OF 16TH AVE BRIDGE									
X1	9731.000	53.000	250.000	310.000	677.000	677.000	677.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1486.400	1486.400	0.000
GR	1484.900	0.000	1485.400	25.000	1486.200	50.000	1486.200	75.000	1486.500	100.000
GR	1486.300	107.000	1485.800	125.000	1485.900	150.000	1486.100	175.000	1485.900	187.000
GR	1484.500	200.000	1483.800	225.000	1483.700	228.000	1479.700	249.000	1480.000	250.000
GR	1477.900	251.000	1477.300	253.000	1477.100	255.000	1477.100	258.000	1477.100	260.000
GR	1477.700	265.000	1478.100	266.000	1480.100	267.000	1479.300	269.000	1479.600	271.000
GR	1478.300	272.000	1477.800	273.000	1477.000	275.000	1476.900	278.000	1476.800	280.000
GR	1477.600	285.000	1480.100	286.000	1479.300	288.000	1479.700	291.000	1477.900	292.000
GR	1477.200	295.000	1477.200	296.000	1477.200	300.000	1478.000	303.000	1477.900	304.000
GR	1480.400	306.000	1482.600	310.000	1482.600	325.000	1486.800	350.000	1490.500	375.000
GR	1492.400	400.000	1497.800	425.000	1497.900	432.000	1498.400	450.000	1500.300	475.000
GR	1502.000	500.000	1503.300	525.000	1506.000	550.000	0.000	0.000	0.000	0.000
SB	0.000	4.880	3.000	0.000	53.000	0.000	345.000	0.000	0.000	0.000
	UPSTREAM FACE OF 16TH AVE BRIDGE									
X1	9769.000	0.000	0.000	0.000	38.000	38.000	38.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	1486.400	1486.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	1486.400	1486.400	0.000
BT	-39.000	0.000	1485.200	0.000	25.000	1485.700	0.000	50.000	1486.200	0.000
BT	0.000	75.000	1486.400	0.000	100.000	1486.800	0.000	107.000	1486.950	0.000
BT	0.000	125.000	1487.200	0.000	150.000	1487.500	0.000	175.000	1487.800	0.000
BT	0.000	200.000	1488.200	0.000	228.000	1488.600	0.000	249.000	1489.200	1479.700
BT	0.000	250.000	1489.200	1483.000	258.000	1489.500	1486.000	265.000	1489.700	1482.000
BT	0.000	266.000	1489.800	1478.100	271.000	1489.900	1479.600	272.000	1490.000	1482.600
BT	0.000	275.000	1490.100	1484.600	278.000	1490.200	1486.150	285.000	1490.400	1483.100
BT	0.000	286.000	1490.500	1480.100	288.000	1490.500	1479.300	291.000	1490.600	1479.700
BT	0.000	292.000	1490.600	1482.700	296.000	1490.800	1486.400	300.000	1490.900	1484.400
BT	0.000	303.000	1491.000	1481.900	304.000	1491.100	1477.900	325.000	1492.100	0.000
BT	0.000	350.000	1493.500	0.000	375.000	1495.100	0.000	400.000	1496.800	0.000
BT	0.000	425.000	1498.500	0.000	450.000	1500.200	0.000	475.000	1501.000	0.000
BT	0.000	500.000	1503.200	0.000	525.000	1504.600	0.000	550.000	1506.000	0.000
ET	0.000	0.000	1.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	9819.000	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.000	0.000

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NC      0.000      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
          CROSS SECTION AT WEST CITY LIMITS
X1  11650.000     34.000    250.000    289.000   1831.000   1831.000   1831.000      0.000      0.000      0.000
GR   1494.400      0.000   1494.000     25.000   1492.500     50.000   1492.100     75.000   1492.400    100.000
GR   1487.800    112.000   1483.000    122.000   1480.700    150.000   1479.700    175.000   1479.900    200.000
GR   1479.400    225.000   1479.800    250.000   1478.600    252.000   1478.200    253.000   1477.500    255.000
GR   1476.600    260.000   1476.100    265.000   1476.100    270.000   1475.600    275.000   1475.600    280.000
GR   1476.000    285.000   1477.300    288.000   1480.100    289.000   1480.300    300.000   1480.000    325.000
GR   1480.200    350.000   1479.900    375.000   1480.500    400.000   1480.700    425.000   1480.800    450.000
GR   1480.700    475.000   1480.900    500.000   1481.000    525.000   1480.800    550.000      0.000      0.000
EJ      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 1

CCHV=   0.100 CEHV=   0.300
*SECNO 0.000

3265 DIVIDED FLOW

3280 CROSS SECTION      0.00 EXTENDED      0.49 FEET

          CROSS SECTION AT SOUTH CITY LIMITS
     0.00      6.89  1467.99      0 00  1469.00  1468.64      0.65      0.00      0.00  1464.60
    1340.       168     1167.        5.       74.      170.       10.        0.        0.  1468.50
     0.00      2.25      6.86      0.54     0.070     0.035     0.070     0.000  1461.10    217.88
  0.003313        0.        0.        0.         0         0         5      0.00    107.27    550.00
0
 *SECNO 1355.000
          CROSS SECTION # 15
  1355.00      5 47  1471.37      0.00      0.00  1471.59      0.22      2.91      0.04  1469.10
    1340.       15.      966.      359.       17.      220.      298.       12.        6.  1468.80
     0.11      0.89      4.38      1.20     0.070     0.035     0.070     0.000  1465 90    235.06
 0.001504     1355.     1355.     1355         3         0         0      0.00    267.09    502.14
0
 *SECNO 1665.000

 3470 ENCROACHMENT STATIONS=      250.0      365.0  TYPE=      1  TARGET=      115.000
  1665.00      4.77  1471.87      0.00      0.00  1472.41      0.54      0.72      0.10  1470.30
    1340.        0.     1167.      173.        0.      185.       98.       15.        7.  1470.00
     0.12      0.00      6.30      1.76     0.000     0.035     0.070     0.000  1467.10    250.00
 0.004078      310.      310.      310.         2         0         0      0.00    115.00    365.00
0
 *SECNO 1765.000

 3470 ENCROACHMENT STATIONS=      250.0      315.0  TYPE=      1  TARGET=       65.000
  1765.00      4.79  1472.19      0.00      0.00  1472 91      0.72      0.45      0.05  1470.60
    1340.        0.     1292.       48.        0.      186.       25.       16.        7.  1470.30
     0.13      0.00      6.94      1.95     0.000     0.035     0.070     0.000  1467.40    250.00
 0.004913      100.      100.      100.         2         0         0      0.00     65.00    315.00
0
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=    0.500 CEHV=    0.600
*SECNO 1815.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1480.00 ELREA=     1480.00

         DOWNSTREAM FACE OF US 2 BRIDGE
  1815.00      4.53  1472.33      0.00      0.00  1473.35      1.02      0.26      0.18  1469.10
    1340.        0.     1340.        0.        0.     166.        0.       16.        7.  1469.40
     0.13      0.00      8.09      0.00     0.000     0.035     0.000     0.000  1467.80   282.00
 0.005510       50.       50.       50.         2         0         0      0.00     40.00   322.00
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      2.22      2.80      0.00     45.00      0.00    251.00      0.00   1467.80   1467.80

*SECNO 1885.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=     0.000  EGLWC=  1474.063  ELLC=  1477.200  PCWSE=  1472.330  ELTRD=  1480.000

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 32 MIN ELTRD= 1480.00 MAX ELLC= 1477.20


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1480.00 ELREA=     1480.00

         UPSTREAM FACE OF US 2 BRIDGE
  1885.00      4.79  1472.59      0.00      0.00  1474.34      1.75      0.55      0.44  1469.10
    1340.        0.     1340.        0.        0.     126.        0.       16.        8.  1469.40
     0.13      0.00     10.63      0.00     0.000     0.035     0.000     0.000  1467.80   216.01
 0.012171       70.       70.       70.         2         0         0    -15.02     30.64   246.65
0
CCHV=    0.100 CEHV=    0.300
*SECNO 1935.000

3301 HV CHANGED MORE THAN HVINS

1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


  1935.00      6.24  1474.04      0.00      0.00  1474.68      0.64      0.23      0.11  1469.10
    1340.       94.     1206.       40.       41.     179.       20.       16.        8.  1469.40
     0.13      2.27      6.73      1.97     0.070     0.035     0.070     0.000  1467.80   200.85
 0.002420       50.       50.       50.         3         0         0      0.00     53.83   254.68
0
*SECNO 2000.000
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  2200.00      6.93   1474.73      0.00      0.00   1475.22      0.49      0.52      0.01   1469.10
    1340.       106.      1189.       46.       52.       200.       26.       18.        8.   1469.40
     0.15      2.01      5.94      1 74     0.070     0.035     0.070     0.000   1467.80    199.12
 0.001623      265.      265.      265.         3         0         0      0.00     56.61    255.73
0
 *SECNO 2250.000
          CROSS SECTION AT ADAMS STREET
  2250.00      7.08   1475.08      0.00      0.00   1475.31      0.23      0.07      0.03   1480.30
    1340.        0.      1340.       0.        0.      347.        0.       18.        8.   1481.10
     0.15      0.00      3.86      0.00     0.000     0.035     0.000     0.000   1468.00    250.00
 0.001153       50.       50.       50.         2         0         0      0.00     55.47    305.47
0
 *SECNO 2300 000

 3470 ENCROACHMENT STATIONS=      175.0      295.0  TYPE=      1  TARGET=      120.000
  2300.00      6.86   1475.16      0.00      0.00   1475.37      0.21      0.05      0.00   1471.40
    1340.       377.       941.       22.      256.      221.       22.       19.        8.   1471.50
     0.15      1.47      4.26      1.02     0.070     0.035     0.070     0.000   1468.30    175.00
 0.000938       50.       50.       50.         0         0         0      0.00    120.00    295.00
0
 *SECNO 2683.000
          CROSS SECTION # 12
  2683.00      7.23   1475.53      0.00      0.00   1475.65      0.12      0.28      0.01   1471.40
    1340.       502.       813.       25.      488.      234.       28.       24.       10.   1471.50
     0.20      1.03      3.47      0.90     0.070     0.035     0.070     0.000   1468.30     19.47
 0.000577      383.      383.      383.         2         0         0      0.00    278.62    298.09
0
 *SECNO 4506.000
 3280 CROSS SECTION    4506.00 EXTENDED       1.24 FEET

          CROSS SECTION # 11
  4506.00      7.15   1476.45      0.00      0.00   1476.54      0.09      0.88      0.00   1472.50
    1340.        65.       897.      378.       71.      313.      496.       58.       22.   1472.30
     0.43      0.92      2.87      0.76     0.070     0.035     0.070     0.000   1469.30    225.94
 0.000411     1823.     1823.     1823.         2         0         0      0.00    324.06    550.00
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 CCHV=    0.300 CEHV=    0.500
 *SECNO 4638.000
 3280 CROSS SECTION    4638.00 EXTENDED       1.31 FEET

 3470 ENCROACHMENT STATIONS=      230.0      432.0  TYPE=      1  TARGET=      202.000
          CROSS SECTION DOWNSTREAM OF FOOTBRIDGE
  4638.00      7.20   1476.50      0.00      0.00   1476.60      0.10      0.06      0.01   1472.50
    1340.        67.       939.      334.       68.      316.      369.       61.       23.   1472.30
     0.44      0.98      2.97      0.91     0.070     0.035     0.070     0.000   1469.30    230.00
 0.000435      132.      132.      132.         1         0         0      0.00    202.00    432.00
0
 *SECNO 4688.000
 3280 CROSS SECTION    4688.00 EXTENDED       1.33 FEET

 3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 1473.50 MAX ELLC= 1476.90

 3470 ENCROACHMENT STATIONS=      230.0      430.0  TYPE=      1  TARGET=      200.000
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      DOWNSTREAM FACE OF FOOTBRIDGE
  4688.00      7.24  1476.54      0.00      0.00  1476.65      0.11      0.05      0.01  1472.50
    1340        98.      572.      669.       63.      171.      320.       62.       23.  1472.30
    0.45      1.57      3.35      2.09     0.070     0.035     0.070     0.000   1469.30   230.00
 0.002881       50.       50.       50.         1         0         0   -201.19    200.00   430.00
0
 *SECNO 4693.000
 3280 CROSS SECTION   4693.00 EXTENDED      1.35 FEET

 3370 NORMAL BRIDGE,NRD= 13 MIN ELTRD= 1473.50 MAX ELLC= 1476.90

 3470 ENCROACHMENT STATIONS=     232.0     410.0  TYPE=     1  TARGET=     178.000
         UPSTREAM FACE OF FOOTBRIDGE
  4693.00      7.25  1476.55      0.00      0.00  1476.67      0.13      0.02      0.01  1472.50
    1340.      90.       600.      649.       58.      171.      288.       62.       23.  1472.30
    0.45      1.57      3.50      2.25     0.070     0.035     0.070     0.000   1469.30   232.00
 0.003161       5.        5.        5.         0         0         0   -201.68    178.00   410.00
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 4743.000
 3280 CROSS SECTION   4743.00 EXTENDED      1.41 FEET

 3470 ENCROACHMENT STATIONS=     232.0     385.0  TYPE=     1  TARGET=     153.000
         CROSS SECTION UPSTREAM OF FOOTBRIDGE
  4743.00      7.31  1476.61      0.00      0.00  1476.72      0.11      0.05      0.00  1472.50
    1340.      62.       989.      289.       65.      321.      286.       62.       24.  1472.30
    0.46      0.96      3.08      1.01     0.070     0.035     0.070     0.000   1469.30   232.00
 0.000458       50.       50.       50.         2         0         0      0.00    153.00   385.00
0
 *SECNO 4884.000

 3470 ENCROACHMENT STATIONS=     232.0     320.0  TYPE=     1  TARGET=      88.000
         CROSS SECTION DOWNSTREAM OF 4TH AVE BRIDGE
  4884.00      5.81  1476.61      0.00      0.00  1476.95      0.34      0.11      0.11  1474.00
    1340.      50.       1209.     81.       38.      248.      54.       64.       24.  1473.80
    0.46      1.33      4.88      1.50     0.070     0.035     0.070     0.000   1470.80   232.00
 0.001628     141.      141.      141.         2         0         0      0.00     88.00   320.00
0
 *SECNO 4934.000

 3370 NORMAL BRIDGE,NRD= 28 MIN ELTRD= 1480.00 MAX ELLC= 1480.90

         DOWNSTREAM FACE OF 4TH AVE BRIDGE
  4934.00      5.27  1476.57      0.00      0.00  1477.28      0.71      0.15      0.19  1480.90
    1340.      0.        1340.     0.        0.       198.      0.        64.       24.  1478.80
    0.47      0.00      6.75      0.00     0.000     0.035     0.000     0.000   1471.30   254.60
 0.007173       50.       50.       50.         2         0         0   -22.46     60.14   314.74
0
 CCHV=   0.500 CEHV=   0.500
 *SECNO 4966.000

 3370 NORMAL BRIDGE,NRD= 28 MIN ELTRD= 1480.00 MAX ELLC= 1480.90
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  4966.00      5.33   1476.63      0.00      0.00   1477.81      1.18      0.29      0.23   1480.90
     1340.       0.     1340.       0.        0.      154.        0.       64.       24.   1478.80
      0.47      0.00      8.71      0.00     0.000     0.035     0.000     0.000   1471.30    194.98
  0.012239       32.       32.       32.         2         0         0    -18.12     46.18    241.16
0
1
  15 SEP 87     13:57:04                                                                          PAGE    15

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 5016.000

 3301 HV CHANGED MORE THAN HVINS

          CROSS SECTION UPSTREAM OF 4TH AVE BRIDGE
  5016.00      6.55   1477.85      0.00      0.00   1478.38      0.53      0.24      0.32   1480.90
     1340.       0.     1340.       0.        0.      229.        0.       65.       24.   1478.80
      0.47      0.00      5.84      0.00     0.000     0.035     0.000     0.000   1471.30    193.99
  0.002612       50.       50.       50.         3         0         0      0.00     48.53    242.52
0
 *SECNO 5539.000
  5539.00      6.19   1479.09      0.00      0.00   1479.30      0.21      0.77      0.16   1474.80
     1340.      124.     1153.      63.       146.      289.       59.       69.       26.   1475.10
      0.51      0.85      3.99      1.06     0.070     0.035     0.070     0.000   1472.90     84.38
  0.000935      523.      523.      523.         3         0         0      0.00    257.03    341.41
0

 SPECIAL BRIDGE

 5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      0.00      1.01      3.00      0.00      0.01      0.00      0.01      0.00   1472.90   1472.90

 *SECNO 5541.000
 6870 D.S. ENERGY OF 1479.30 HIGHER THAN COMPUTED ENERGY OF 1479.21
 PRESSURE AND WEIR FLOW

  EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID     ELLC      ELTRD
                                                                  AREA
 **********  1479.30    0.00      1342.     0.        0.        0.        1473.51   1474.80


          WEIR DOWNSTREAM OF 5TH AVE BRIDGE
  5541.00      6.19   1479.09      0.00      0.00   1479.30      0.22      0.00      0.00   1474.80
     1340.      124.     1153.      63.       146.      289.       59.       69.       26.   1475.10
      0.51      0.85      3.99      1.06     0.070     0.035     0.070     0.000   1472.90     84.48
  0.000935        2.        2.        2.         2         0        11      0.00    256.90    341.38
0
 *SECNO 5550.000
          DOWNSTREAM FACE OF 5TH AVE BRIDGE
  5550.00      6.11   1479.01      0.00      0.00   1479.40      0.39      0.01      0.09   1474.80
     1340.      117.     1162.      61.       102.      218.       43.       69.       26.   1475.10
      0.51      1.15      5.33      1.42     0.070     0.035     0.070     0.000   1472.90     69.45
  0.001709        9.        9.        9.         2         0         0      0.00    190.87    260.31
0
1
  15 SEP 87     13:57:04                                                                          PAGE    16
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   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN     SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID    ENDST


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.92      2.80      0.00     50.00      2.00    159.00      0.00   1472.90   1472.90

*SECNO 5570.000
PRESSURE AND WEIR FLOW


 EGPRS      EGLWC       H3        QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
  1481.13   1479.40     0.00       678.      662.       159.      192.      1476.90   1478.00


        UPSTREAM FACE OF 5TH AVE BRIDGE
  5570.00      6.29  1479.19      0.00      0.00  1479.53      0.34      0.13      0.00  1474.80
    1340.       135.     1139.       65.      125.      225.       48.       69.       26.  1475.10
     0.51      1.08      5.06      1.35     0.070     0.035     0.070     0.000  1472.90     57.93
 0.001473       20.       20.       20.         2         0         4      0.00    205.26    263.19
0
 CCHV=    0.100 CEHV=    0.300
 *SECNO 5900.000
        CROSS SECTION AT 6TH AVENUE
  5900.00      7.06  1479.66      0.00      0.00  1479.79      0.12      0.24      0.02  1480.60
    1340.        0.     1241.       99.        0.      427.      125.       72.       27.  1476.60
     0.54      0.00      2.90      0.79     0.000     0.035     0.070     0.000  1472.60    252.44
 0.000542      280.      280.      280.         2         0         0      0.00    151.30    403.74
0
 CCHV=    0 300 CEHV=    0.500
 *SECNO 6080.000
        CROSS SECTION DOWNSTREAM OF 7TH AVE BRIDGE
  6080.00      6.31  1479.71      0.00      0.00  1480.07      0.36      0.17      0.12  1476.60
    1340.       28.     1312.        0.       19.      270.        1.       74.       28.  1479.40
     0.55      1.43      4.86      0.28     0.070     0.035     0.070     0.000  1473.40    246.42
 0.002006      180.      180.      180.         2         0         0      0.00     86.42    332.84
0
 *SECNO 6130.000

 3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 1481.00 MAX ELLC= 1480.40

1
  15 SEP 87     13:57:04                                                                          PAGE    17


        DOWNSTREAM FACE OF 7TH AVE BRIDGE
  6130.00      6.44  1479.84      0.00      0.00  1480.27      0.43      0.16      0.03  1476.60
    1340.       18.     1321.        2.       13.      251.        2.       74.       28.  1479.40
     0.55      1.40      5.27      0.62     0.070     0.035     0.070     0.000  1473.40    245.66
 0.006298       50.       50.       50.         2         0         0    -36.31     90.47    336.12
0
 *SECNO 6171.000

 3370 NORMAL BRIDGE, NRD= 12 MIN ELTRD= 1481.00 MAX ELLC= 1480.40

        UPSTREAM FACE OF 7TH AVE BRIDGE
  6171.00      6.71  1480.11      0.00      0.00  1480.53      0.42      0.26      0.00  1476.60
    1340.       18.     1319.        3.       13.      251.        5.       75.       28.  1479.40
     0.56      1.42      5.26      0.55     0.070     0.035     0.070     0.000  1473.40    244.12
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0
 *SECNO 6221.000
          CROSS SECTION UPSTREAM OF 7TH AVE BRIDGE
   6221.00      7.05   1480.45      0.00      0.00   1480 70      0.25      0.11      0.05   1476.60
     1340.       38.     1296.       6.        31.      317.       13.       75.       28.    1479.40
      0.56      1.22      4.09      0.47     0.070     0.035     0.070     0.000   1473.40    240.28
  0.001147       50.       50.       50.         1         0         0      0.00    111.95    352.24
0
 CCHV=   0.100 CEHV=    0.300
 *SECNO 7113.000
   7113.00      7.98   1481.28      0.00      0.00   1481.43      0.15      0.72      0.01   1479.60
     1340.       89.     1227.       24.      146.      376.       47.       85.       32.    1479.90
      0.64      0.61      3.26      0.51     0.070     0.035     0.070     0.000   1473.30    125.50
  0.000598      892.      892.      892.         3         0         0      0.00    244.44    369.94
0
 *SECNO 7129.000
          CROSS SECTION # 6
   7129.00      7.98   1481.28      0.00      0.00   1481.44      0.16      0.01      0.00   1479.60
     1340.       99.     1214.       27.      148.      365.       48.       85.       32.    1479.90
      0.64      0.67      3.33      0.56     0.070     0.035     0.070     0.000   1473.30    125.24
  0.000712       16.       16.       16.         0         0         0      0.00    244.97    370.21
0
 *SECNO 7143.000
   7143.00      8.00   1481.30      0.00      0.00   1481.45      0.15      0.01      0.00   1479.60
     1340.       90.     1225.       24.      148.      377.       48.       85.       32.    1479.90
      0.64      0.61      3.25      0.51     0.070     0.035     0.070     0.000   1473.30    125.19
  0.000592       14.       14.       14.         0         0         0      0.00    245.07    370.26
0
1
  15 SEP 87     13:57:04                                                                          PAGE    18


    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA     LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN        SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID       ENDST


 CCHV=    0.300 CEHV=    0.500
 *SECNO 7992.000
          CROSS SECTION DOWNSTREAM OF OLD RR BRIDGE
   7992.00      8.09   1481.79      0.00      0.00   1481.93      0.14      0.48      0.00   1480.00
     1340.       99.     1213.       28.      161.      384.       54.       96.       37.    1480.30
      0.72      0.61      3.16      0.51     0.070     0.035     0.070     0.000   1473.70    121.66
  0.000548      849.      849.      849.         2         0         0      0.00    250.93    372.58
0
 *SECNO 8042.000

 3370 NORMAL BRIDGE, NRD= 33 MIN ELTRD= 1484.70 MAX ELLC= 1487.75


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1484.70 ELREA=      1484.70

          DOWNSTREAM FACE OF OLD RR BRIDGE
   8042.00      7.84   1481.74      0.00      0.00   1482.11      0.36      0.06      0.11   1479.70
     1340.        0.     1340.        0.        0.      277.        0.       97.       37.    1480.90
      0.73      0.00      4.84      0.00     0.000     0.035     0.000     0.000   1473.90    126.50
  0.004279       50.       50.       50.         2         0         0    -53.73     53.50    180.00
0
 *SECNO 8057.000

 3370 NORMAL BRIDGE, NRD= 33 MIN ELTRD= 1484.70 MAX ELLC= 1487.75


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1484.70 ELREA=      1484.70
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          UPSTREAM FACE OF OLD RR BRIDGE
  8057.00      7.91   1481.81      0.00      0.00   1482.17      0.36      0.06      0.00   1479.70
     1340.        0.     1340.        0.        0.      277.        0.       97.       37.   1480.90
      0.73      0.00      4.84      0.00     0.000     0.035     0.000     0.000   1473.90    126.50
  0.004279       15.       15.       15.         2         0         0    -57.17     53.50    180.00
0
 *SECNO 8107.000
          CROSS SECTION UPSTREAM OF OLD RR BRIDGE
  8107.00      8.16   1482.06      0.00      0.00   1482.29      0.23      0.08      0.04   1479.70
     1340.        7.     1333.        0.        9.      347.        1.       97.       37.   1480.90
      0.73      0.77      3.84      0.27     0.070     0.035     0.070     0.000   1473.90    119.89
  0.000765       50.       50.       50.         2         0         0      0.00     60.69    180.58
0
1
  15 SEP 87     13:57:04                                                                          PAGE    19


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *SECNO 8233.000
          DOWNSTREAM FACE OF MINKLER ST BRIDGE
  8233.00      9.16   1482.16      0.00      0.00   1482.39      0.23      0.10      0.00   1483.70
     1340.        0.     1340.        0.        0.      349.        0.       98.       37.   1484.40
      0.74      0.00      3.84      0.00     0.000     0.035     0.000     0.000   1473.00    250.25
  0.000891      126.      126.      126.         2         0         0      0.00     56.25    306.50
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      0.00      2.32      2.80      0.00     25.00      0.00    190.00      3.00   1473.00   1473.00

 *SECNO 8267.000
 PRESSURE AND WEIR FLOW


  EGPRS     EGLWC     H3        QWEIR     QPR       BAREA   TRAPEZOID     ELLC      ELTRD
                                                              AREA
  1483.95   1482.39   0.00         5.     1331.      190.      315      1479.90   1483.70


          UPSTREAM FACE OF MINKLER ST.BRIDGE
  8267.00     10.79   1483.79      0.00      0.00   1483.93      0.14      1.54      0.00   1483.70
     1340.       11.     1329.        0.       38.      441.        0.       99.       37.   1484.40
      0.74      0.29      3.01      0.00     0.070     0.035     0.000     0.000   1473.00    163.77
  0.000428       34.       34.       34.         2         0         3      0.00    143.09    306.86
0
 CCHV=    0.100 CEHV=    0.300
 *SECNO 9054.000

 3265 DIVIDED FLOW

 3280 CROSS SECTION    9054.00 EXTENDED       1.75 FEET

          CROSS SECTION # 3
  9054.00      9.85   1484.05      0.00      0.00   1484.08      0.03      0.14      0.01   1479.60
     1340.      366.      967.        7.      751.      632.       36.      116.       42.   1484.20
      0.92      0.49      1.53      0.20     0.070     0.035     0.070     0.000   1474.20      0.00
  0.000095      787.      787.      787.         2         0         0      0.00    377.36    379.26
0
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.300 CEHV=   0.500
*SECNO 9731.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1486.40 ELREA=     1486.40

         DOWNSTREAM FACE OF 16TH AVE BRIDGE
  9731.00      7.30  1484.10      0.00      0.00  1484.32      0.22      0.14      0.10  1480.00
    1340.        0.     1340.        0.        0.     358.        0.      130.       45.  1482.60
     0.97      0.00      3.74      0.00     0.000     0.035     0.000     0.000  1476.80   250.00
 0.000861      677.      677.      677.         2         0         0      0.00     60.00   310.00
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      4.88      3.00      0.00     53.00      0.00    345.00      0.00   1476.80   1476.80

*SECNO 9769.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=     0.000  EGLWC=  1484.319  ELLC=  1486.400  PCWSE=  1484.102  ELTRD=  1486.400

3370 NORMAL BRIDGE,NRD= 39 MIN ELTRD= 1486.40 MAX ELLC= 1486.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1486.40 ELREA=     1486.40

         UPSTREAM FACE OF 16TH AVE BRIDGE
  9769.00      7.26  1484.06      0.00      0.00  1484.47      0.41      0.06      0.09  1480.00
    1340.        0.     1340.        0.        0.     262.        0.      130.       45.  1482.60
     0.97      0.00      5.11      0.00     0.000     0.035     0.000     0.000  1476.80   250.00
 0.003210       38.       38.       38.         2         0         0   -115.60     60.00   310.00
0
*SECNO 9819.000
  9819.00      7.65  1484.45      0.00      0.00  1484.60      0.16      0.06      0.07  1480.00
    1340.       68.     1245.       27.       72.     379.       38.      130.       46.  1482.60
     0.98      0.95      3.29      0.71     0.070     0.035     0.070     0.000  1476.80   201.86
 0.000616       50.       50.       50.         2         0         0      0.00    134.15   336.00
0
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

CCHV=   0.100 CEHV=   0.300
*SECNO 11650.000
3280 CROSS SECTION  11650.00 EXTENDED      4.11 FEET

         CROSS SECTION AT WEST CITY LIMITS
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    1340.     310.     469.     561.     599.     326.    1147.     184.      57.   1480.10
     1.59     0.52     1.44     0.49    0.070    0.035    0.070    0.000  1475.60    118.03
 0.000074    1831.    1831.    1831.        3        0        0     0.00   431.97    550.00
0
1
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                                                                          THIS RUN EXECUTED 15 SEP 87   13:57:15
 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
 ***************************************************


 T1    CITY OF IRON RIVER
 T2    LMMP
 T3    IRON RIVER - 100 YR FLOOD, ENCROACHED

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.        3.        0.        0.   0.000000    0.00      0.0       0.   1468.100   0.000

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15.000    0.000    -1.000    0.000     0.000     0.000     0.000     0.000     0.000     0.000

1
 15 SEP 87    13:57:04                                                                          PAGE   23

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *PROF 2

 CCHV=   0.100 CEHV=   0.300
 *SECNO 0.000
  2800 NAT Q1=    232.82  WSEL=   1467.99  ENC Q1=    232.82  WSEL=   1468.09  RATIO=  0.0000
  NAT Q1=    241.  RATIOS LOB,CH,ROB=  0.1286  0.8649  0.0065  WSEL=   1468.09

 3265 DIVIDED FLOW

 3280 CROSS SECTION      0.00 EXTENDED      0.60 FEET


 3470 ENCROACHMENT STATIONS=     229.3     507.2  TYPE=     4  TARGET=       0.035
          CROSS SECTION AT SOUTH CITY LIMITS
      0.00      7 00  1468.10     0.00  1467.99  1468.77     0.67      0.00      0.00  1464.60
     1340.      140.     1200.       0.       61.     174.       0.        0.        0.   1468.50
      0.00      2.31      6.90     0.15    0.070    0.035    0.070     0.000  1461.10   229.27
  0.003291        0.        0.       0.        0        0        0      0.00    62.16   507.19
0
 *SECNO 1355.000

 3470 ENCROACHMENT STATIONS=     235.0     500.0  TYPE=     1  TARGET=     265.000
          CROSS SECTION # 15
   1355.00      5.52  1471.42     0.00  1471.37  1471.63     0.21      2.81      0.05  1469.10
     1340.        16      958.     366.       18.     223      308.       12.        5.   1468.80
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  0.001428     1355.     1355.     1355.        3         0         0      0.00    265.00    500.00
0
 *SECNO 1665.000

 3470 ENCROACHMENT STATIONS=      250.0      365.0  TYPE=      1  TARGET=      115.000
   1665.00      4.79   1471.89     0.00   1471.87   1472.42      0.54      0.69      0.10   1470.30
     1340.        0.     1165.     175.        0.      186.      100.       15.        6.   1470.00
      0.13      0.00      6.26     1.75     0.000     0.035     0.070     0.000   1467.10    250.00
  0.003997      310.      310.     310.         2         0         0      0.00    115.00    365.00
0
 *SECNO 1765.000

 3470 ENCROACHMENT STATIONS=      250.0      315.0  TYPE=      1  TARGET=       65.000
   1765.00      4.80   1472.20     0.00   1472.19   1472.92      0.72      0.44      0.05   1470.60
     1340.        0.     1291.      49.        0.      187.       25.       16.        7.   1470.30
      0.13      0.00      6.92     1.95     0.000     0.035     0.070     0.000   1467.40    250.00
  0.004870      100.      100.     100.         2         0         0      0.00     65.00    315.00
0
1
  15 SEP 87     13:57:04                                                                          PAGE    24

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 CCHV=   0.500 CEHV=    0.600
 *SECNO 1815.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1480.00 ELREA=      1480.00

          DOWNSTREAM FACE OF US 2 BRIDGE
   1815.00      4.54   1472.34     0.00   1472.33   1473.35      1.01      0.26      0.18   1469.10
     1340.        0.     1340.       0.        0.      166.       0.       16.        7.   1469.40
      0.13      0.00      8.08     0.00     0.000     0.035     0.000     0.000   1467.80    282.00
  0.005476       50.       50.      50.         2         0         0      0.00     40.00    322.00
0

 SPECIAL BRIDGE

 5070, VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB   XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      0.00       2.22       2.80       0.00      45.00       0.00     251.00       0.00    1467.80    1467.80

 *SECNO 1885.000

 6070, LOW FLOW BY NORMAL BRIDGE

 EGPRS=      0.000  EGLWC=  1474.064  ELLC=  1477.200  PCWSE=  1472.338  ELTRD=  1480.000

 3301 HV CHANGED MORE THAN HVINS


 3370 NORMAL BRIDGE, NRD= 32 MIN ELTRD= 1480.00 MAX ELLC= 1477.20


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1480.00 ELREA=      1480.00

          UPSTREAM FACE OF US 2 BRIDGE
   1885.00      4.79   1472.59     0.00   1472.59   1474.34      1.75      0.55      0.44   1469.10
     1340.        0.     1340.       0.        0.      126.       0.       16.        7.   1469.40
      0.13      0.00     10.62     0.00     0.000     0.035     0.000     0.000   1467.80    216.01
  0.012136       70.       70.      70.         2         0         0    -15.06     30.64    246.65
```

```
CCHV=    0.100 CEHV=    0.300
*SECNO 1935.000

3301 HV CHANGED MORE THAN HVINS.

1
 15 SEP 87     13:57:04                                                                                                                PAGE    25

   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

  1935.00      6.24    1474.04       0.00    1474.04    1474.68       0.64       0.23       0.11    1469.10
    1340.       94.      1206.        40.        41.       179.        20.        16.         7.    1469.40
     0.14      2.26       6.73       1 97      0.070      0.035      0.070      0.000    1467.80     200.84
 0.002418       50.         50        50.         3          0          0       0.00      53.83     254.68
0
 *SECNO 2200.000
  2200.00      6.93    1474.73       0.00    1474.73    1475.22       0.49       0.52       0.01    1469.10
    1340.      106.      1189.        46.        52.       200.        26.        18.         7.    1469.40
     0.15      2.01       5.94       1.74      0.070      0.035      0.070      0.000    1467.80     199.12
 0.001623      265.       265.       265.          3          0          0       0.00      56.61     255.73
0
 *SECNO 2250.000
          CROSS SECTION AT ADAMS STREET
  2250.00      7.08    1475.08       0.00    1475.08    1475.31       0.23       0.07       0.03    1480.30
    1340.        0.      1340.         0.         0.       347.         0.        18.         7.    1481.10
     0.15      0.00       3.86       0.00      0.000      0.035      0.000      0.000    1468.00     250.00
 0.001153       50.        50.        50.          2          0          0       0.00      55.47     305.47
0
 *SECNO 2300.000

 3470 ENCROACHMENT STATIONS=      175.0      295.0  TYPE=      1  TARGET=      120.000
  2300.00      6.86    1475.16       0.00    1475.16    1475.37       0.21       0.05       0.00    1471.40
    1340.      377.       941.        22.       256.       221.        22.        19.         7.    1471.50
     0.16      1.47       4.26       1.02      0.070      0.035      0.070      0.000    1468.30     175.00
 0.000938       50.        50.        50.          0          0          0       0.00     120.00     295.00
0
 *SECNO 2683.000
 2800 NAT Q1=     557.96  WSEL=    1475.53  ENC Q1=     557.96  WSEL=    1475.63  RATIO=   0.0000
 NAT Q1=     580.   RATIOS LOB,CH,ROB=  0.3826  0.5984  0 0190  WSEL=    1475.63

 3470 ENCROACHMENT STATIONS=       93.3      285.0  TYPE=      4  TARGET=        0.038
          CROSS SECTION # 12
  2683.00      7.25    1475.55       0.00    1475.53    1475.68       0.12       0.30       0.01    1471.40
    1340.      521.       819.         0.       442.       235.         0.        24.         9.    1471.50
     0.20      1.18       3.49       0.00      0.070      0.035      0.000      0.000    1468.30      93.35
 0.000665      383.       383.       383.          2          0          0       0.00     191.65     285.00
0
1
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

 *SECNO 4506.000
 2800 NAT Q1=     661.35  WSEL=    1476.45  ENC Q1=     661.35  WSEL=    1476.55  RATIO=   0.0000
 N T Q1=     690.   R'TIOS LOB,CH,ROB=  0.0493  0.6596  0.2911  WSEL=    1476.55
```

```
3470 ENCROACHMENT STATIONS=      237.4      502.2  TYPE=      4  TARGET=        0.041
          CROSS SECTION # 11
   4506.00      7.23  1476.53      0.00  1476.45  1476.62      0.09      0.95      0.00  1472.50
     1340.       41.      923.      376.       46.      317.      460.       55.       18.  1472.30
      0.42      0.88      2.91      0.82    0.070    0.035    0.070     0.000   1469.30    237.36
  0.000416     1823.     1823.     1823.        2        0        0      0.00    264.85    502.21
0
 CCHV=    0.300 CEHV=    0.500
 *SECNO 4638.000
 3280 CROSS SECTION    4638.00 EXTENDED       1.39 FEET


 3470 ENCROACHMENT STATIONS=      230.0      432.0  TYPE=      1  TARGET=      202.000
          CROSS SECTION DOWNSTREAM OF FOOTBRIDGE
   4638.00      7.28  1476.58      0.00  1476.50  1476.68      0.10      0.05      0.00  1472.50
     1340.       68.      932.      341.       70.      320.      380.       58.       19.  1472.30
      0.44      0.97      2.91      0.90    0.070    0.035    0.070     0.000   1469.30    230.00
  0.000410      132.      132.      132.        1        0        0      0.00    202.00    432.00
0
 *SECNO 4688.000
 3280 CROSS SECTION    4688.00 EXTENDED       1.41 FEET


 3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 1473.50 MAX ELLC= 1476.90


 3470 ENCROACHMENT STATIONS=      230.0      430.0  TYPE=      1  TARGET=      200.000
          DOWNSTREAM FACE OF FOOTBRIDGE
   4688.00      7.32  1476.62      0.00  1476.54  1476.73      0.10      0.04      0.00  1472.50
     1340.       93.      560.      687.       63.      174.      331.       59.       19.  1472.30
      0.44      1.48      3.22      2.08    0.070    0.035    0.070     0.000   1469.30    230.00
  0.002715       50.       50.       50.        1        0        0   -203.49    200.00    430.00
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *SECNO 4693.000
 3280 CROSS SECTION    4693.00 EXTENDED       1.43 FEET


 3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD= 1473.50 MAX ELLC= 1476.90


 3470 ENCROACHMENT STATIONS=      232.0      410.0  TYPE=      1  TARGET=      178.000
          UPSTREAM FACE OF FOOTBRIDGE
   4693.00      7.33  1476.63      0.00  1476.55  1476.75      0.12      0.01      0.01  1472.50
     1340.       86.      589.      665.       58.      175.      298.       59.       19.  1472.30
      0.44      1.50      3.37      2.23    0.070    0.035    0.070     0.000   1469.30    232.00
  0.002987        5.        5.        5.        0        0        0   -203.91    178.00    410.00
0
 *SECNO 4743.000
 3280 CROSS SECTION    4743.00 EXTENDED       1.49 FEET


 3470 ENCROACHMENT STATIONS=      232.0      385.0  TYPE=      1  TARGET=      153.000
          CROSS SECTION UPSTREAM OF FOOTBRIDGE
```

```
    1340.      63.      984.      293.      66.      325.      292.      59.      19.      1472.30
     0.45      0.95     3.03      1.00     0.070     0.035     0.070    0.000   1469.30    232.00
  0.000436     50.       50.       50.       2         0         0      0.00    153.00    385.00
0
 *SECNO 4884.000

 3470 ENCROACHMENT STATIONS=      232.0      320.0  TYPE=      1  TARGET=      88.000
          CROSS SECTION DOWNSTREAM OF 4TH AVE BRIDGE
   4884.00     5.88   1476.68     0.00   1476.61   1477.01     0.32      0.10      0.11   1474.00
     1340.      52.     1206.      82.      39.      251       55.       61.       20.    1473.80
     0.46      1.32     4.80      1.48     0.070     0.035    0.070    0.000   1470.80    232.00
  0.001542     141.     141.      141.       2         0         0      0.00     88.00    320.00
0
 *SECNO 4934.000
  2800 NAT Q1=     158.22  WSEL=    1476.57  ENC Q1=     162.25  WSEL=    1476.67  RATIO= -0.0255
  NAT Q1=     162.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    1476.67

 3370 NORMAL BRIDGE,NRD= 28 MIN ELTRD= 1480.00 MAX ELLC= 1480.90

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 3470 ENCROACHMENT STATIONS=      250.0      318.0  TYPE=      4  TARGET=       0.000
          DOWNSTREAM FACE OF 4TH AVE BRIDGE
   4934.00     5.34   1476.64     0.00   1476.57   1477.33     0.69      0.14      0.18   1480.90
     1340.       0.     1340.       0.        0.      201.       0.       61.       20.    1478.80
     0.46      0.00     6.65      0.00     0.000     0.035    0.000    0.000   1471.30    254.53
  0.006910     50.       50.       50.       2         0         0    -23.94     60.32    314.85
0
 CCHV=    0.500 CEHV=    0.500
 *SECNO 4966.000
  2800 NAT Q1=     121.13  WSEL=    1476.63  ENC Q1=     124.09  WSEL=    1476.73  RATIO= -0.0245
  NAT Q1=     124.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    1476.73

 3370 NORMAL BRIDGE,NRD= 28 MIN ELTRD= 1480.00 MAX ELLC= 1480.90

 3470 ENCROACHMENT STATIONS=      191.5      243.6  TYPE=      4  TARGET=       0.000
          UPSTREAM FACE OF 4TH AVE BRIDGE
   4966.00     5.40   1476.70     0.00   1476.63   1477.85     1.15      0.28      0.23   1480.90
     1340.       0.     1340.       0.        0.      156.       0.       61.       20.    1478.80
     0.46      0.00     8.59      0.00     0.000     0.035    0.000    0.000   1471.30    194.92
  0.011832     32.       32        32.       2         0         0    -19.21     46.31    241.24
0
 *SECNO 5016.000
  2800 NAT Q1=     262.21  WSEL=    1477.85  ENC Q1=     270.76  WSEL=    1477.95  RATIO= -0.0326
  NAT Q1=     271.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    1477.95

 3301 HV CHANGED MORE THAN HVINS

 3470 ENCROACHMENT STATIONS=      191.5      243.6  TYPE=      4  TARGET=       0.000
          CROSS SECTION UPSTREAM OF 4TH AVE BRIDGE
   5016.00     6.57   1477.87     0.00   1477.85   1478.40     0.52      0.24      0.31   1480.90
     1340.       0.     1340.       0.        0.      231.       0.       62.       20.    1478.80
     0.46      0.00     5.81      0.00     0.000     0.035    0.000    0.000   1471.30    193.97
  0.002577     50.       50.       50.       3         0         0      0.00     48.57    242.54
0
```

```
*SECNO 5539 000
 2800 NAT Q1=     438.34  WSEL=    1479 09  ENC Q1=     438 34  WSEL=    1479.19  RATIO=  0 0000
 NAT Q1=     457   RATIOS LOB,CH,ROB=  0 1004  0 8511  0 0486  WSEL=    1479 19
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


3470 ENCROACHMENT STATIONS=      195 3      312 3  TYPE=      4  TARGET=       0 040
  5539 00      6 19  1479 09      0 00  1479 09  1479 33      0.24      0 79      0.14  1474.80
    1340.      108      1194       39        98       289       31        66        21    1475 10
     0 50      1 10      4 13      1 26    0 070    0 035    0 070    0 000  1472 90    195 28
 0 000998      523       523       523        2        0        0     0 00   117 06    312.34
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0 00      1 01      3 00      0 00      0.01      0 00      0 01      0 00   1472 90   1472.90

*SECNO 5541 000
6870 D S  ENERGY OF 1479 33 HIGHER THAN COMPUTED ENERGY OF 1479 22
 2800 NAT Q1=     438 13  WSEL=    1479 09  ENC Q1=     438 13  WSEL=    1479 19  RATIO=  0 0000
 NAT Q1=     457   RATIOS LOB,CH,ROB=  0 1003  0 8511  0 0486  WSEL=    1479.19
 WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

3470 ENCROACHMENT STATIONS=      195 7      312 3  TYPE=      4  TARGET=       0 040
         WEIR DOWNSTREAM OF 5TH AVE BRIDGE
  5541 00      6 19  1479.09      0 00  1479 09  1479.33      0 24      0 00      0 00  1474 80
    1340       107      1194       39        98       289       31        66        21    1475 10
     0 50      1 10      4 13      1 26    0.070    0 035    0 070    0 000  1472 90    195 73
 0 000998        2         2         2         0        0       11     0 00   116 53    312 25
0
 *SECNO 5550 000
 2800 NAT Q1=     324 14  WSEL=    1479 01  ENC Q1=     324.14  WSEL=    1479.11  RATIO=  0 0000
 NAT Q1=     338   RATIOS LOB,CH,ROB=  0 0949  0 8579  0 0472  WSEL=    1479 11

3470 ENCROACHMENT STATIONS=      154 8      239 1  TYPE=      4  TARGET=       0.040
         DOWNSTREAM FACE OF 5TH AVE BRIDGE
  5550 00      6 11  1479.01      0 00  1479 01  1479 44      0 43      0 01      0 10  1474 80
    1340.      100      1204       36        67       218       23        66       21.    1475 10
     0 50      1 49      0 52      1 60    0 070    0 035    0 070    0 000  1472 90    154 83
 0 001836        9         9         9         2        0        0     0 00    84.25    239 09
0
1
```



```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
```

```
     0 00      1 92      2 80      0 00     50 00      2 00    159 00      0 00   1472 90   1472 90

 *SECNO 5570 000
  2800 NAT Q1=     349.20  WSEL=   1479 19  ENC Q1=     349 20  WSEL=   1479 29  RATIO=  0 0000
  NAT Q1=     363   RATIOS LOB,CH,ROB=  0 1086  0 8411  0 0503  WSEL=   1479 29
  WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

 3470 ENCROACHMENT STATIONS=     139 9     240 5  TYPE=     4  TARGET=       0 039
          UPSTREAM FACE OF 5TH AVE BRIDGE
   5570 00     6 29  1479 19     0 00  1479 19  1479 56     0 38     0 03     0 03  1474 80
     1340      119     1178       43       88      225.       28       66       21   1475 10
      0 50     1 35     5 23     1 55    0 070    0.035    0 070    0 000  1472.90   139 94
  0 001580      20       20       20        0        0        4     0 00   100 53   240 47
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 5900 000
  2800 NAT Q1=     575 39  WSEL=   1479 66  ENC Q1=     575 39  WSEL=   1479 76  RATIO=  0 0000
  NAT Q1=     595   RATIOS LOB,CH,ROB=  0 0000  0 9223  0 0777  WSEL=   1479 76

 3470 ENCROACHMENT STATIONS=     250 0     362 4  TYPE=     4  TARGET=       0.033
          CROSS SECTION AT 6TH AVENUE
   5900 00     7 10  1479.70     0 00  1479.66  1479 84     0 13     0 25     0 02  1480.60
     1340        0     1280       60        0      431       67       68      22.   1476 60
      0 53     0 00     2 97     0 90    0 000    0.035    0 070    0 000  1472.60   252 34
  0 000563     280      280      280        2        0        0     0 00   110.04   362 37
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 6080 000
  2800 NAT Q1=     299 16  WSEL=   1479 71  ENC Q1=     304 70  WSEL=   1479 81  RATIO= -0 0185
  NAT Q1=     312   RATIOS LOB,CH,ROB=  0.0218  0 9777  0 0005  WSEL=   1479 81

 3470 ENCROACHMENT STATIONS=     260 0     325 0  TYPE=     4  TARGET=       0.022
          CROSS SECTION DOWNSTREAM OF 7TH AVE BRIDGE
   6080 00     6.36  1479.76     0 00  1479.71  1480.14     0 37     0 18     0 12  1476.60
     1340        0     1340        0        0      273        0       70      22.   1479 40
      0 54     0 00     4.91     0 00    0.000    0 035    0 000    0 000  1473 40   260.00
  0 002160     180      180      180        2        0        0     0 00    65.00   325 00
0
1
```



```
    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        DLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 6130 000

 3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD= 1481 00 MAX ELLC= 1480 40

          DOWNSTREAM FACE OF 7TH AVE BRIDGE
   6130 00     6 51  1479 91     0 00  1479 84  1480 33     0 42     0.17     0 02  1476.60
     1340       18     1320        2      13.      251        3      70.       22   1479 40
      0 54     1 42     5 26     0.67    0 070    0 035    0 070    0 000  1473 40   245 28
  0 005464      50       50       50        2        0        0   -41 37    92 46   337.74
0
 *SECNO 6171 000
  2800 NAT Q1=     166 75  WSEL=   1480 11  ENC Q1=     166.75  WSEL=   1480 21  RATIO=  0 0000
  NAT Q1=     167   RATIOS LOB,CH,ROB=  0 0133  0 9845  0 0022  WSEL=   1480 21

 3370 NORMAL BRIDGE,NRD= 12 MIN ELTRD= 1481 00 MAX ELLC= 1480 40

 3470 ENCROACHMENT STATIONS=     254 4     328.0  TYPE=     4  TARGET=       0 000
```

```
          UPSTREAM FACE OF 7TH AVE BRIDGE
   6171 00      6 77  1480 17      0 00  1480 11  1480 60      0.43      0 27      0 00  1476 60
     1340        16      1323         1        10       251         1        71        22   1479 40
      0 55      1 57      5 28      0 62     0 070    0 035     0.070     0 000  1473 40   254.41
  0 006495        41        41        41         0        0         0    -55 37     73 60   328 01
0
 *SECNO 6221 000
  2800 NAT Q1=     395 74  WSEL=    1480 45  ENC Q1=     397 08  WSEL=    1480 55  RATIO= -0 0034
  NAT Q1=     412   RATIOS LOB,CH,ROB=  0 0295  0 9642  0 0063  WSEL=    1480 55

 3470 ENCROACHMENT STATIONS=      260 0      325 0  TYPE=      4  TARGET=        0.036
          CROSS SECTION UPSTREAM OF 7TH AVE BRIDGE
   6221 00      7 10  1480 50      0 00  1480 45  1480 77      0 27      0 12      0.05  1476 60
     1340         0      1340         0         0       321         0        71        22   1479 40
      0 55      0 00      4 18      0 00     0 000    0 035     0 000     0 000  1473 40   260 00
  0 001293        50        50        50         2        0         0      0 00     65 00   325 00
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 7113 000
  2800 NAT Q1=     547.76  WSEL=    1481 28  ENC Q1=     547.76  WSEL=    1481 38  RATIO=  0 0000
  NAT Q1=     569   RATIOS LOB,CH,ROB=  0.0728  0 9070  0 0202  WSEL=    1481.38
1
  15 SEP 87     13 57 04                                                                          PAGE    32


    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST


 3470 ENCROACHMENT STATIONS=      174 7      318.4  TYPE=      4  TARGET=        0.037
   7113 00      8 09  1481 38      0 00  1481 28  1481.54      0.16      0 75      0.01  1479 60
     1340        77      1261         3       113      383.         5        79        24   1479 90
      0.63      0 68      3 29      0 53     0 070    0 035     0 070     0.000  1473.30   174 67
  0 000597       892       892       892         2        0         0      0 00    143 75   318.42
0
 *SECNO 7129 000
  2800 NAT Q1=     502.13  WSEL=    1481 28  ENC Q1=     502.13  WSEL=    1481.38  RATIO=  0.0000
  NAT Q1=     521   RATIOS LOB,CH,ROB=  0 0801  0 8976  0.0223  WSEL=    1481.38

 3470 ENCROACHMENT STATIONS=      172 1      321 6  TYPE=      4  TARGET=        0 036
          CROSS SECTION # 6
   7129 00      8 09  1481 39      0 00  1481.28  1481 55      0 16      0 01      0.00  1479.60
     1340        86      1248.        6       117      371         9        80       24.   1479 90
      0 63      0 74      3 36      0 63     0 070    0 035     0 070     0.000  1473 30   172.08
  0 000709        16       16.       16         0        0         0      0 00    149.48   321.56
0
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 3470 ENCROACHMENT STATIONS=      176 4      316 6  TYPE=      4  TARGET=        0 040
   7143 00      8 10  1481 40      0 00  1481 30  1481 56      0 16      0 01      0 00  1479 60
     1340        76      1263         1       112      384         2        80       25   1479 90
      0 63      0 68      3 29      0 43     0 070    0 035     0 070     0 000  1473 30   176 43
  0 000594        14        14        14         0        0         0      0 00    140 13   316 55
0
 CCHV=   0 300 CEHV=   0 500
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  NAT Q1=     594   RATIOS LOB,CH,ROB=  0 0802  0 8968  0 0231  WSEL=    1481 89

 3470 ENCROACHMENT STATIONS=      171 1      322 3  TYPE=      4  TARGET=        0 037
          CROSS SECTION DOWNSTREAM OF OLD RR BRIDGE
```

00BREAK00

1) COUNTY: Iron

2) STUDY NAME: Iron River, City of

3) WATERCOURSE: Iron River

4) DOCUMENT TYPE: Report

00BREAK00

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

IN REPLY REFER TO

October 6, 1987

RECEIVED
OCT 08 1987
NATURAL RESOURCES
LAND & WATER MGMT.

Planning Division-SS

Mr. Bruce Menerey, P.E.
Land and Water Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Dear Mr. Menerey:

We request your technical review and approval of the enclosed study on the City of Iron River, Michigan, prior to our submittal of the report to the Federal Emergency Management Agency. This study was conducted under the guidelines of FEMA's limited map maintenance program.

We would appreciate a response from your office within 2 weeks. If you have any questions, please contact Mr. Joseph Wanielista at (313) 226-6773.

Sincerely,

C. Argiroff

C. Argiroff, P.E.
Chief, Planning Division

Enclosure

LIMITED MAP MAINTENANCE PROGRAM

CITY OF IRON RIVER, MICHIGAN

IRON COUNTY

SEPTEMBER 1987

U.S. ARMY ENGINEER DISTRICT

DETROIT, MICHIGAN

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Iron River Panel 01P

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Flood Boundary and Floodway Map

LIMITED MAP MAINTENANCE PROGRAM

CITY OF IRON RIVER

IRON COUNTY, MICHIGAN

1.0 INTRODUCTION

1.1 Purpose of Study

This special study, under the Limited Map Maintenance Program (LMMP), updates the existing flood hazard study in the City of Iron River, Iron County, Michigan. This study developed flood risk data for various areas of the community that will be used to update the existing flood hazard boundary map and assist the community in its efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the code of Federal Regulations at 44 CFR, 60.3.

1.2 Authority and Acknowledgments

The sources of authority for this study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers (COE), Detroit District, for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-87-E-2549. This study was completed in September 1987.

1.3 Coordination

The stream requiring detailed study was identified in a discussion between representatives of the study contractor and FEMA on December 12, 1986.

Results of the technical aspects of the study were coordinated with, reviewed and approved in September 1987, by the Michigan Department of Natural Resources (MDNR), the State coordinating agency.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Iron River, Iron County, Michigan. The area of study is shown on the Vicinity Map (Figure 1).

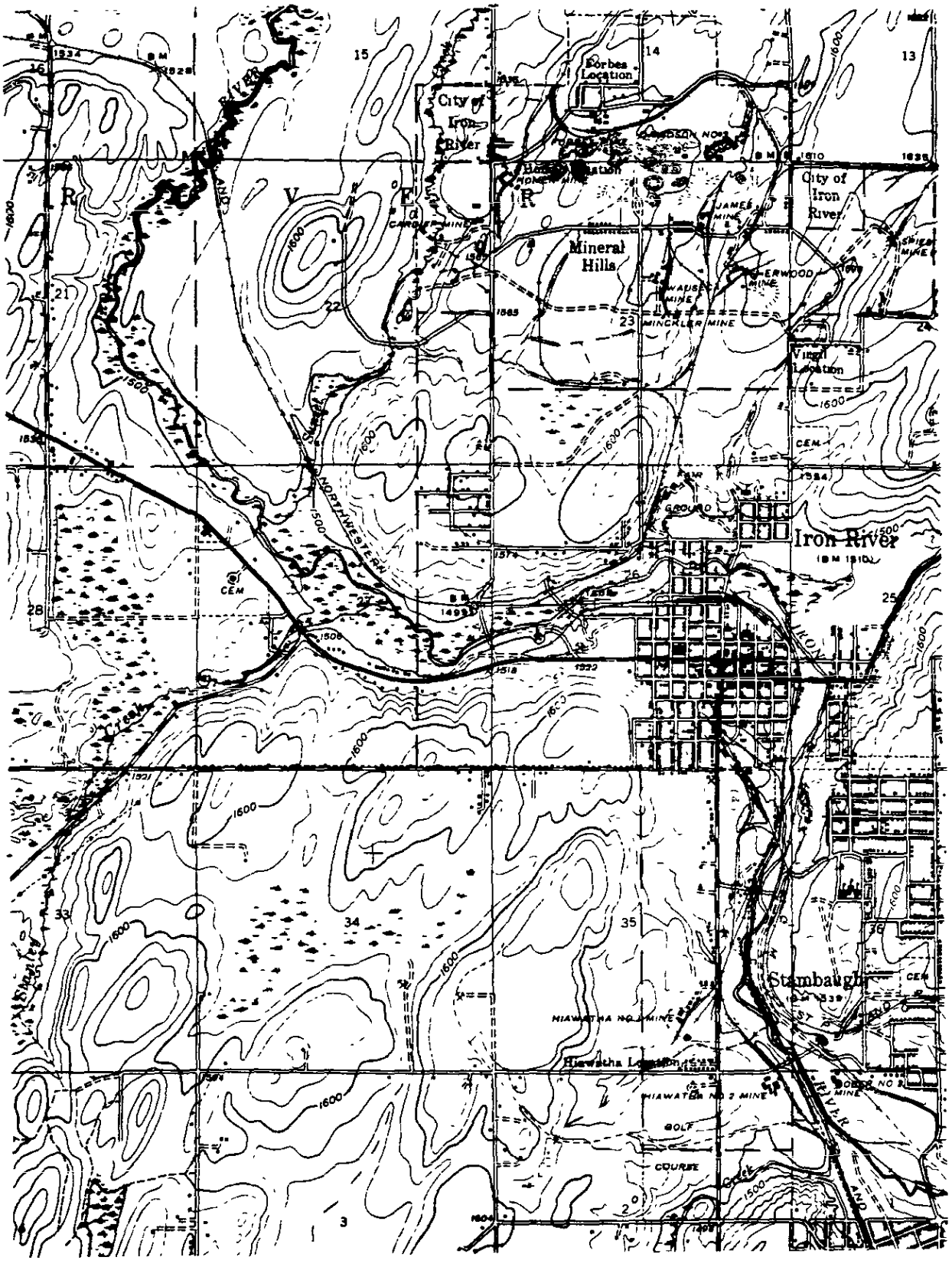
Flooding caused by the overflow of the Iron River within the corporate limits of the City of Iron River were studied in detail.

2.2 Community Description

The City of Iron River is located 7 miles north of the Michigan/Wisconsin border in Michigan's Upper Peninsula. It is about 75 miles northwest of Escanaba, Michigan.

2.3 Flood Protection Measures

Flood protection measures do not exist within the study area.



VICINITY MAP
CITY OF IRON RIVER, MICH

1 ½ 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETRE

FIGURE 1

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. A flood event of a magnitude which is expected to be equaled or exceeded once on the average during any 100-year period (recurrence interval) has been selected as having special significance for flood plain management and for flood insurance rates. This event, commonly termed the 100-year flood, has a one percent chance of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one percent chance of annual exceedence) in any 50-year period is approximately 40 percent (four in ten), and for any 90-year period, the risk increases to approximately 60 percent (six in ten). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the 100-year peak discharge for the Iron River.

A hydrologic analysis of the Iron River was based on gage records collected near the City of Caspian, Michigan. A discharge-frequency analysis was performed on the gage records from 1948 to 1980. The HECWRC Computer Program, which is based on the criteria described in the U.S. Water Resources Council Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency, was used to determine the discharge-frequency relationship. A generalized skew of -0.15, taken from the Detroit District's generalized skew study, was applied. The discharge that was determined was then adjusted using the drainage area ratio method to eliminate the local inflow downstream of the City of Iron River. The 100-year discharge at Iron River was estimated to be 1340 cfs.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the riverine source studied were carried out to provide estimates of the elevation of the 100-year flood.

Bridge cross section data for the backwater analyses were obtained by a field survey completed in February 1986. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles.

Water-surface elevations of the 100-year flood were computed using the COE HEC-2 step-backwater computer program.

Channel and overbank roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the streams and flood plain areas.

The starting water surface elevation for the Iron River was determined by beginning the computations at the downstream corporate limit using the slope-area method.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in the study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and Local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces a flood boundary map designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the one percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. For each stream studied in detail, the 100-year flood plain boundary has been delineated using the flood elevations determined at each cross section. Between cross sections the boundary was interpolated using a topographic map at a scale of 1:24,000, with a contour interval of twenty feet.

Approximate flood boundaries were delineated on the above referenced topographic maps.

The 100-year flood plain boundary is shown on the Flood Boundary and Floodway Map (Exhibit 2). Small areas within the flood plain boundary may lie above the flood elevation but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases the flood heights and velocities and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For the purposes of the National Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot. In Michigan, though, under Michigan Act 245, Public Acts of 1929, as amended by Act 167,

Public Acts of 1968, encroachment in the flood plain is limited to that which will cause only an insignificant increase in flood heights. Thus, a floodway having no more than a 0.1-foot surcharge has been delineated for this study. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were initially computed for certain stream segments on the basis of equal conveyance reduction from each side of the flood plain. In those areas where problems arose with the equal conveyance reduction encroachment option of the HEC-2 backwater program, modifications were applied based on experience. Floodway widths were computed at cross sections. Between cross sections, the boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 1). In cases where the floodway and 100-year flood plain are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 100-year flood plain boundary is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 0.1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

TABLE 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	WITHOUT FLOODWAY	WITH FLOODWAY (FEET NGVD)	INCREASE
A	0	62	235	5.7	1468.1	1468.0	0.1
B	1355	265	548	2.4	1471.4	1471.4	0.0
C	1885	31	126	10.6	1472.6	1472.6	0.0
D	2250	55	347	3.9	1475.1	1475.1	0.0
E	2683	192	677	2.0	1475.5	1475.5	0.0
F	4506	265	824	1.6	1476.5	1476.4	0.1
G	4934	60	201	6.7	1476.7	1476.6	0.1
H	5550	84	308	4.4	1479.0	1479.0	0.0
I	5900	110	498	2.7	1479.7	1479.7	0.0
J	6130	92	267	5.0	1479.9	1479.8	0.1
K	7129	149	497	2.7	1481.4	1481.3	0.1
L	8042	54	277	4.8	1481.8	1481.7	0.1
M	8233	56	356	3.8	1482.3	1482.2	0.1
N	9054	375	1459	0.9	1484.2	1484.1	0.1
O	9731	60	365	3.7	1484.2	1484.1	0.1
P	11650	400	2015	0.7	1485.0	1484.9	0.1

[1]- Feet above downstream corporate limit

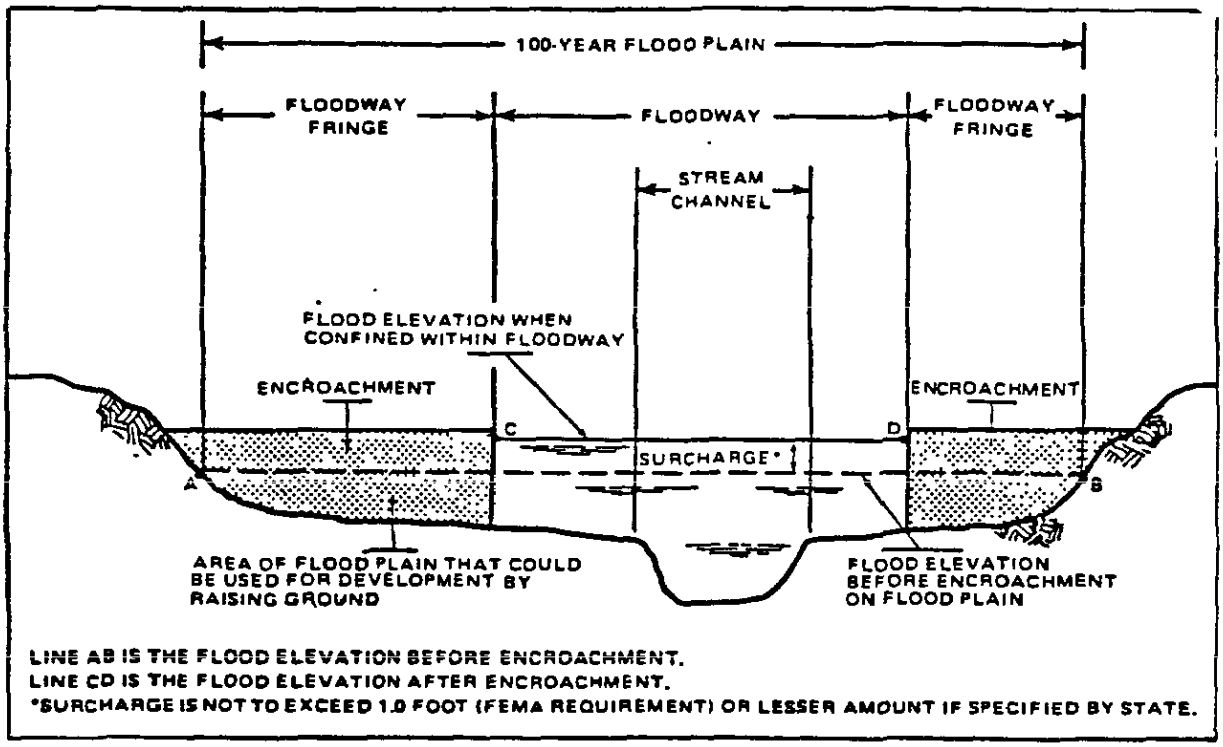


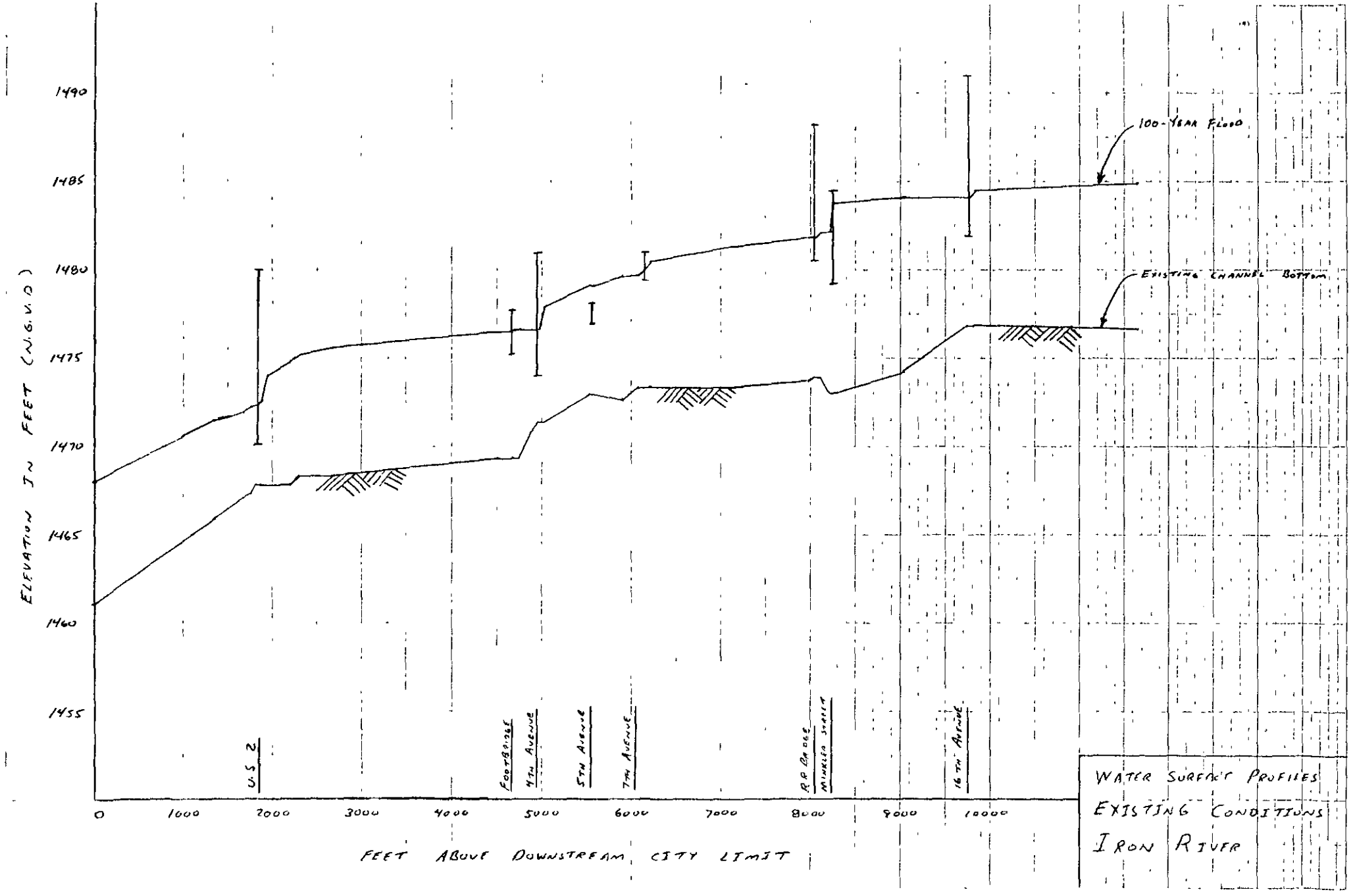
Figure 2.

5.0 OTHER STUDIES

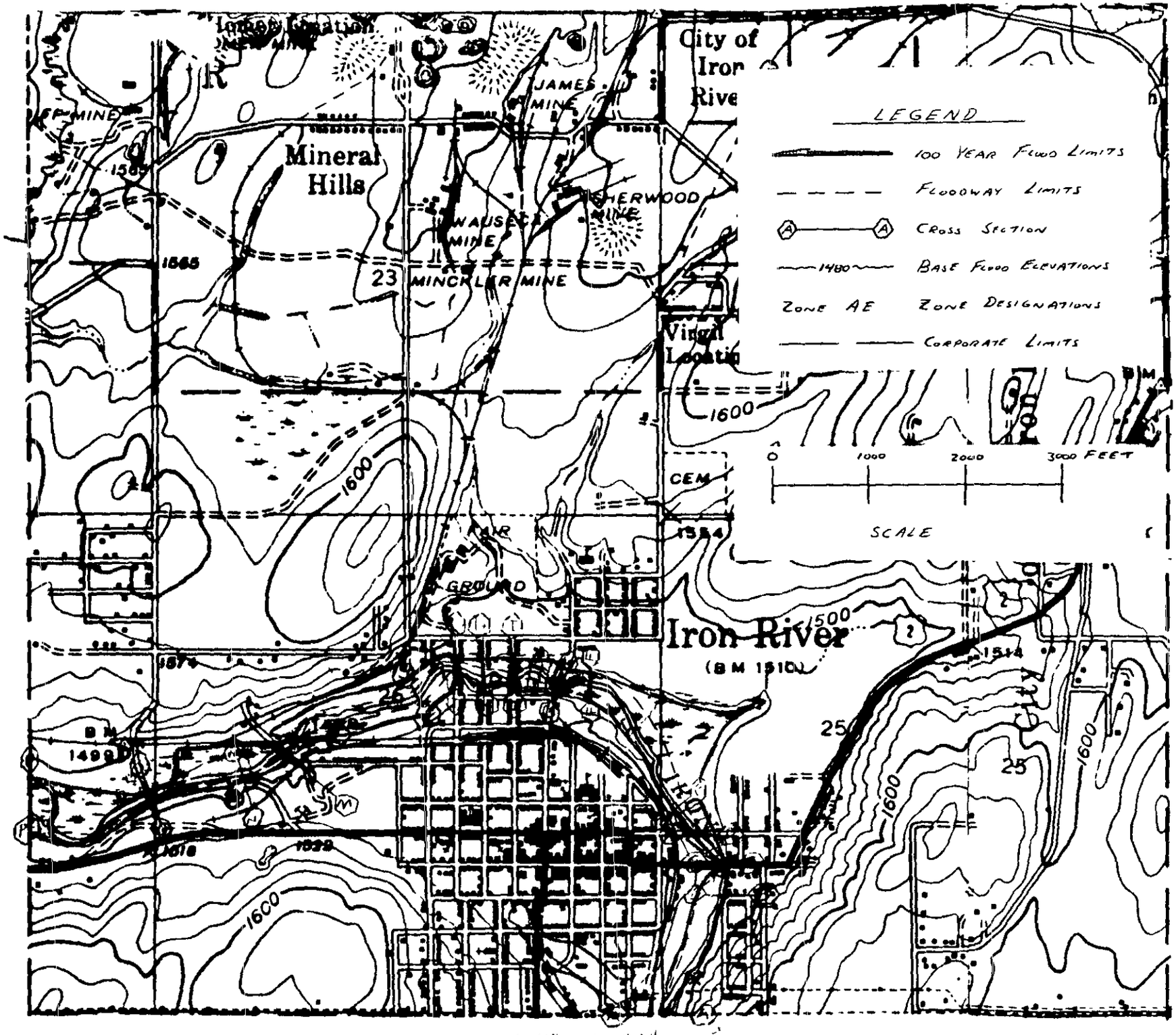
A Flood Hazard Boundary Map has been previously published for the community. The purpose of this study is to update the Flood Hazard Boundary Map. No other studies related to flood elevations have been conducted within the City of Iron River.

6.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, 300 South Wacker Drive, 24th Floor, Chicago, Illinois 60606.



WATER SURFACE PROFILES
EXISTING CONDITIONS
IRON RIVER


LEGEND
100 YEAR FLOOD LIMITS
FLOODWAY LIMITS
CROSS SECTION
1480 BASE FLOOD ELEVATIONS
ZONE AE ZONE DESIGNATIONS
CORPORATE LIMITS
0 1000 2000 3000 FEET
SCALE
City of Iron River
Mineral Hills
JAMES MINE
SHERWOOD MINE
WAUSEC MINE
MINCKLER MINE
Virgil Location
CEM
FAIR GROUND
Iron River
(B M 1510)
1600
1500
1514
1584
1565
1585
1874
1499
1618
1622
25
23

DEPARTMENT OF THE ARMY

DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231

REPLY TO
ATTENTION OF

September 15, 1987

Great Lakes Hydraulics and Hydrology Branch

Look OK if Q ok

Mr. Bruce E. Menerey, P.E.
Technical Programs
Land and Water Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Dear Mr. Menerey:

Submitted for your review and approval is a copy of the hydraulic calculations for the Iron River, Michigan, Limited Map Maintenance Program. Enclosed are the HEC-2 100-year unencroached and encroached runs, a map showing the location of cross sections along with the corresponding section numbers in the computer run, copies of the bridge sketches in the field notes, and a brief write up dealing with items that will assist the review process.

According to FEMA guidelines, the information supplied to aid in the review process is not intended for flood plain management purposes or distribution to other individuals at this time. Before using or distributing this information, approval should be obtained from FEMA.

Since FEMA has requested the submittal of this report by September 30, 1987, response from your office within one week would be appreciated. If you have any questions regarding the enclosed data, please contact Mr. Gary O'Keefe at (313) 226-6772.

Sincerely,

P. M. O'Dell, P.E.
Chief, Engineering Division

Enclosures

RECEIVED

SEP 17 1987

NATURAL RESOURCES
LAND & WATER MGMT

CITY OF IRON RIVER, MICHIGAN
LIMITED MAP MAINTENANCE PROGRAM
HYDRAULIC COMPUTATION BACKGROUND INFORMATION

Three streams were studied: the South Branch Flint River, Hunters Creek and Mirror Lake Drain. The South Branch Flint River was studied from the downstream corporate limit at the City of Lapeer to Greenwood Road. Hunters Creek was studied from the downstream corporate limit at the City of Lapeer to Mirror Lake Drain. Mirror Lake Drain was studied from its confluence with Hunters Creek to Pass Lake.

Analyses of the hydraulic characteristics of flooding along the Iron River were carried out to provide estimates of the elevation of the 100-year flood. Water surface elevations were computed using the COE HEC-2 step-backwater computer program.

Cross section data for the backwater analysis were obtained by a field survey completed in February 1987. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Channel and overbank roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the streams and flood plain areas.

The starting water surface elevation for the Iron River was determined by beginning the computations at the downstream corporate limit using the slope area method.

BOOK INDEX & LOCATION KEY

BOOK 1 OF 3

1. VALLEY SECTION #1 - W. CITY LIMITS
2. BRIDGE SECTION #2 - W 16TH AVE BRIDGE
3. VALLEY SECTION #3
4. W. MINKLER STR. BRIDGE
   RIVER SECTION
   W. MINKLER STR. BRIDGE
   BRIDGE SECTION

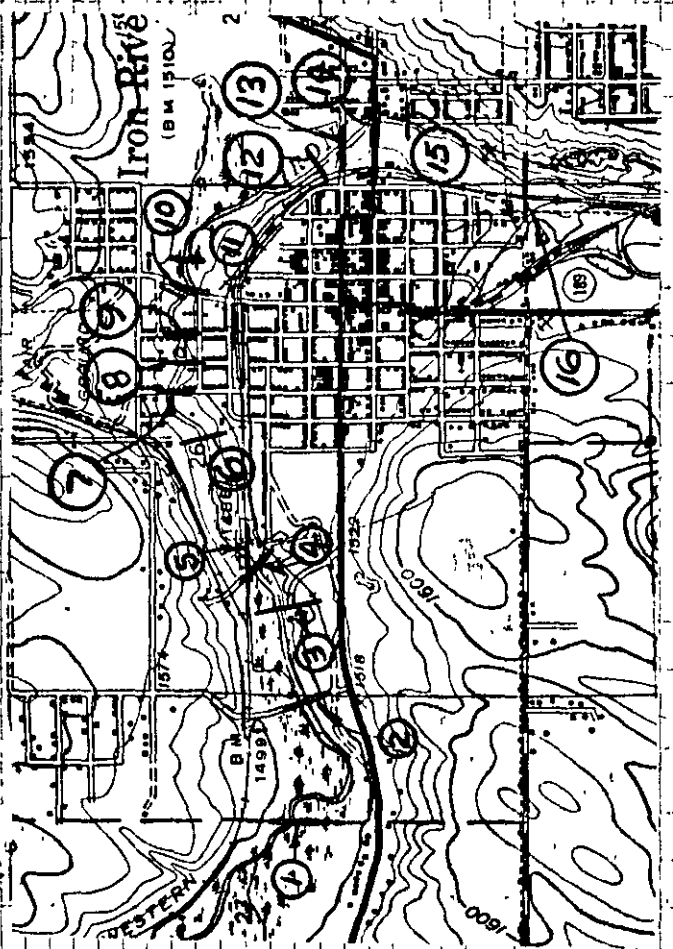
BOOK 2 OF 3

5. OLD RxR BRIDGE - RIVER SECTION
   OLD RxR BRIDGE - BRIDGE SECTION
6. VALLEY SECTION #6
7. RIVER SECTION #7 - 7TH AVE BRIDGE
8. RIVER SECTION #8 - AT 6TH AVE
9. RIVER SECTION #9 - AT N. 5TH AVE
   BRIDGE SECTION #9 - AT N. 5TH AVE.

BOOK 3 OF 3

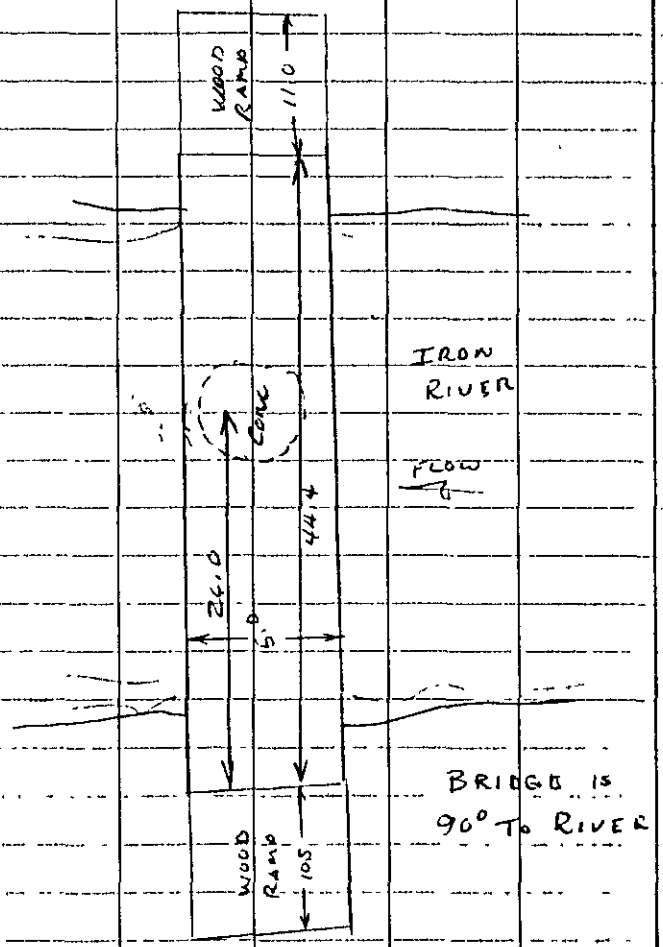
10. BRIDGE SECTION #10 - N. 4TH AVE.
    FOOT BRIDGE 260' DOWNSTREAM OF
    & 4TH AVE.
11. RIVER SECTION #11
12. RIVER SECTION #12
13. RIVER SECTION #13 11NAMS. ST.
14. RIVER SECTION #14 & U.S. 2 BRIDGE
15. RIVER SECTION #15
16. RIVER SECTION #16

LOCATION MAP



(1)

OLD WOODEN FOOT BRIDGE
260' DOWNSTREAM OF
℄ N. 4TH AVE
PLAN CONDITION: POOR



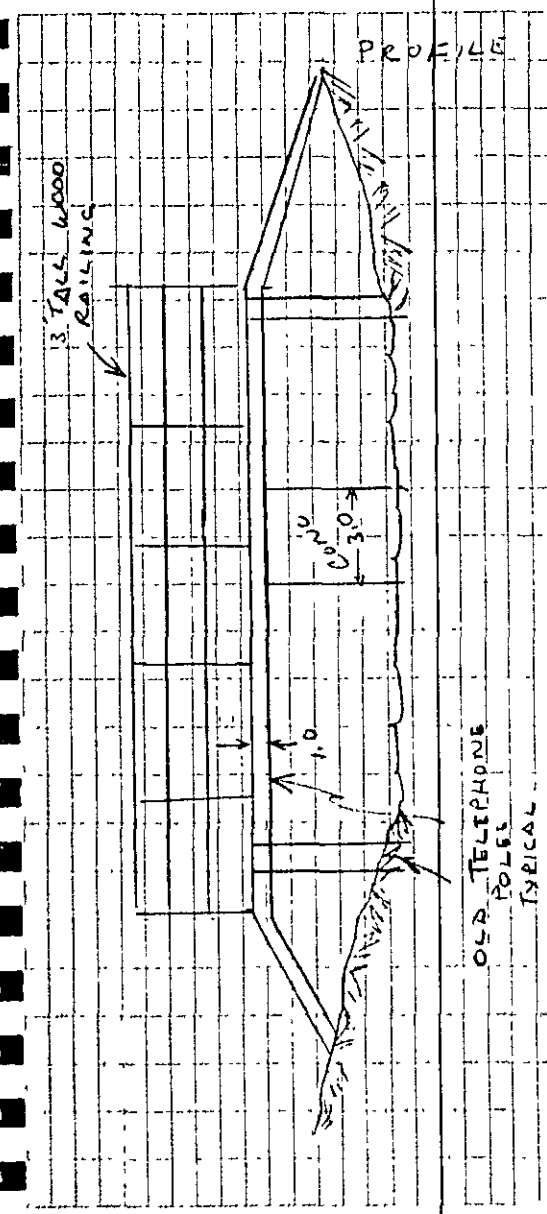
BRIDGE IS 90° TO RIVER

DATE 7-8-87
WEATHER 0 85°

J. EIBLER
T. HARES

(2)

PROFILE



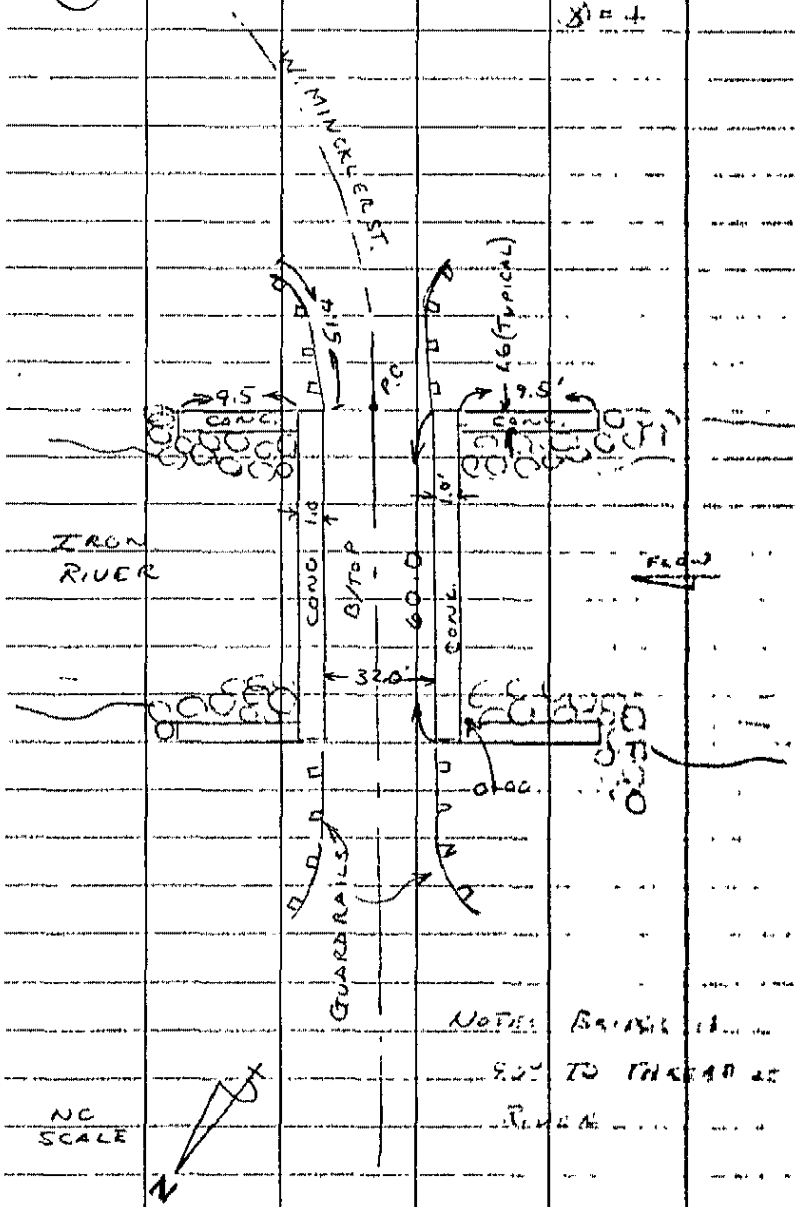
(1)

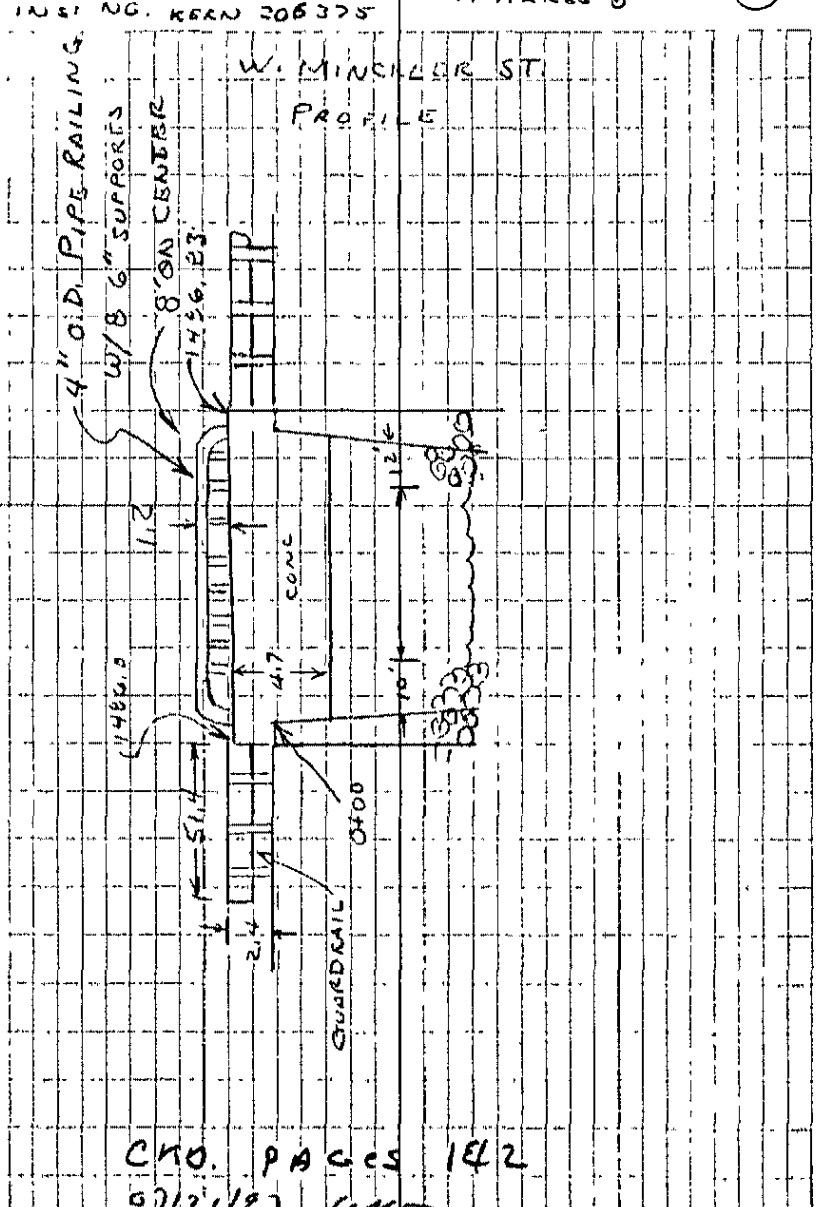
W. MINCKLER ST
PLAN

DATE 6-24-67
WEATHER ☼ 85°
INST NO. KERN 206375

J. GIBLER
T. HARES

(2)





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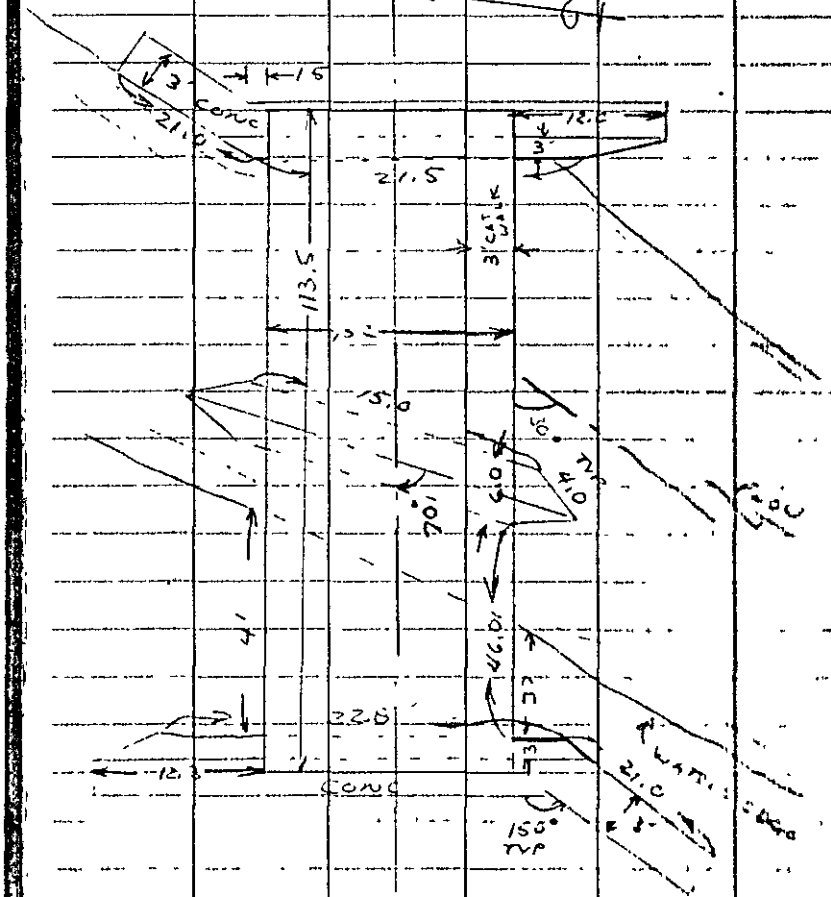
07/21/27

(13)

BRIDGE SECTION
OLD R&R BRIDGE

PLAN



BRIDGE IS 15.2' WIDE WITH A 3' CAT WALK ON BOTH SIDES

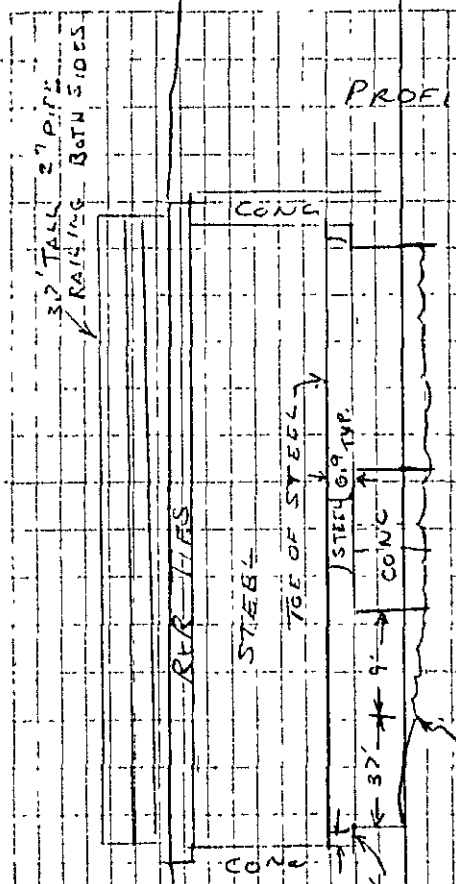
NOTE: BRIDGE IS 30° TO THREAD OF RIVER

DATE 6-28-87
WEATHER RAIN 66°

J EIBLER
T. HARES

(14)

PROFILE

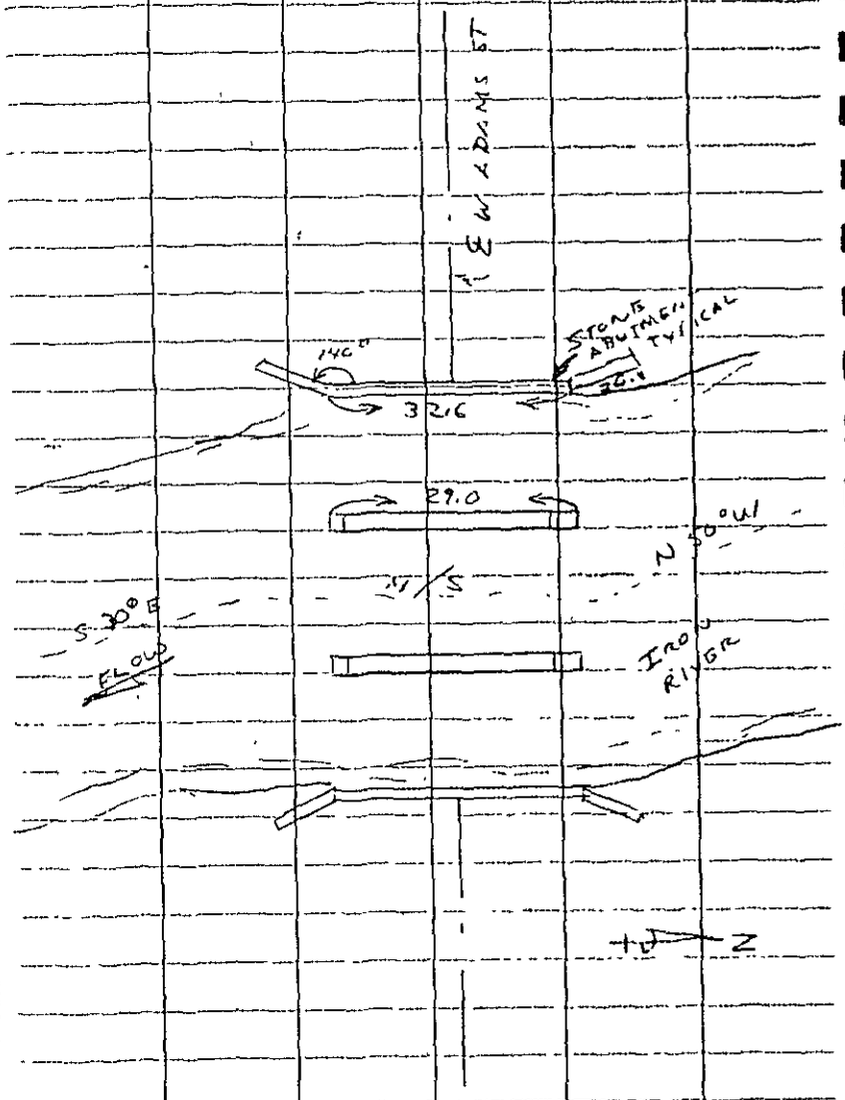


CNO PAGES 3-14
07-21-87 CNO

(27)

RIVER SECTION 13
W. ADAMS STREET

PLAN

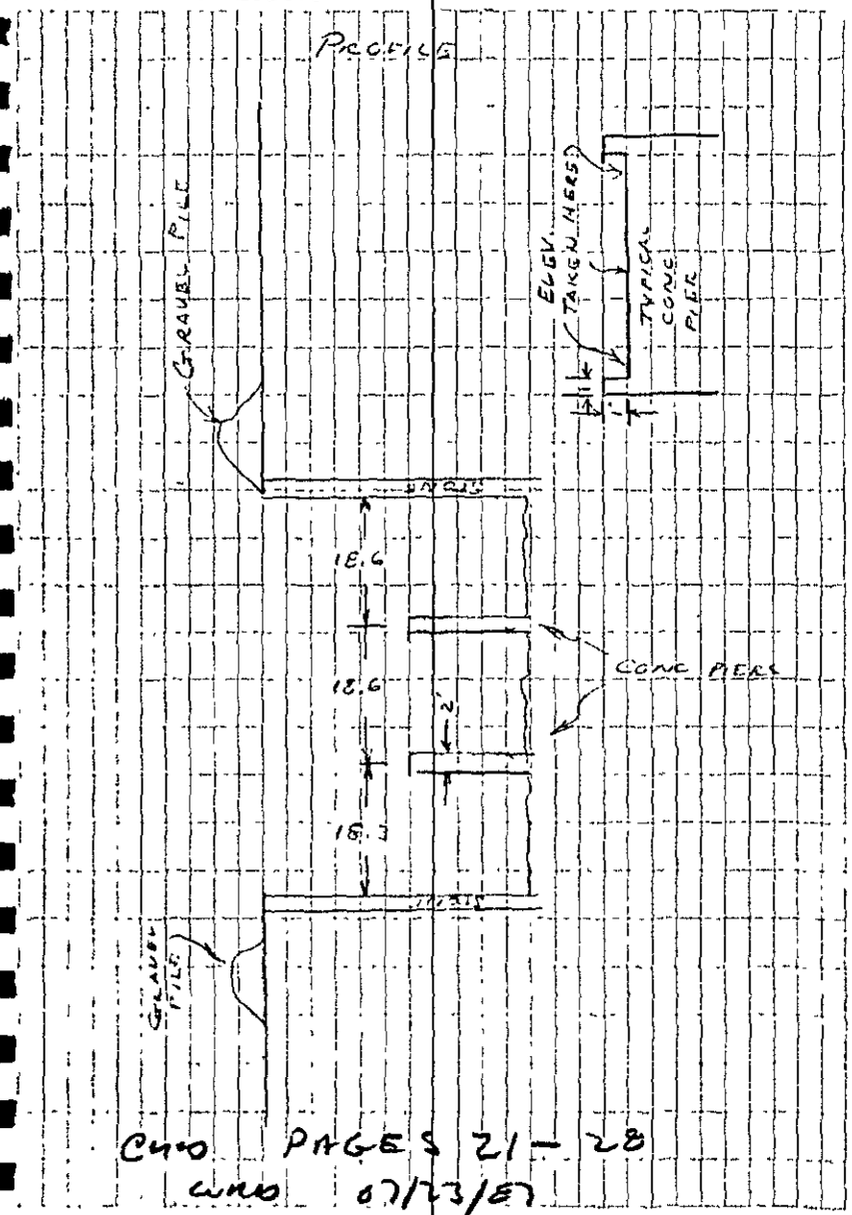


DATE 7-9-57
WEATHER 70°
INST. NO. KERN 206375

TEIBER
T. HARES

(28)

PROFILE



CHG PAGES 21 – 28
CWD 07/23/87

BRIDGE U.S 2 PLAN

SECTION BRIDGE

DATE 2.9.87
WEATHER ☉ Pc.
INST. A/G KERO 206 875

J. EIBLER & M. NARES

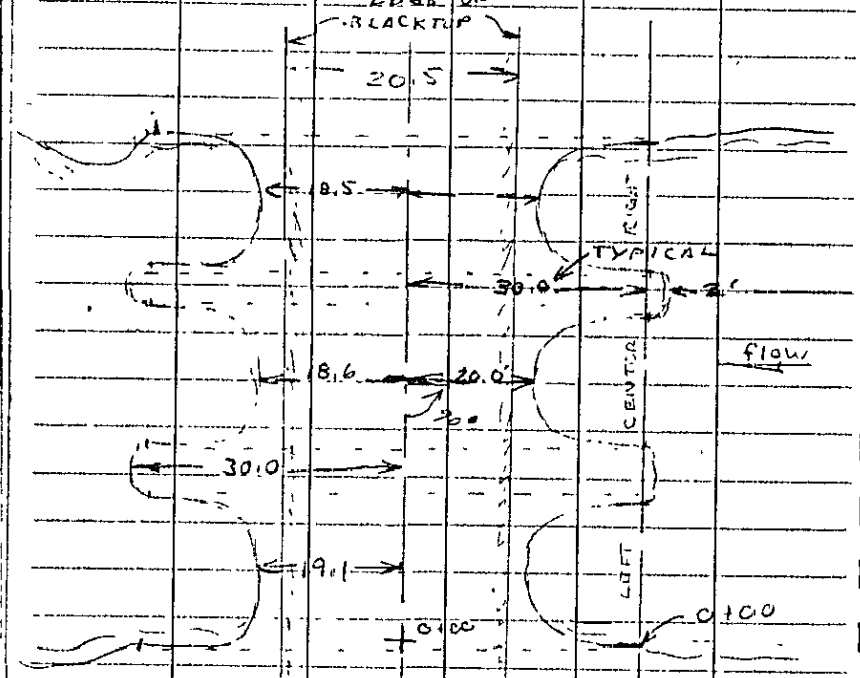
CURB 67/23/87

PAGES 29-40

(47)

W. 16TH BRIDGE

PLAN



NOTE: BRIDGE IS 90° TO THREAD OF RIVER

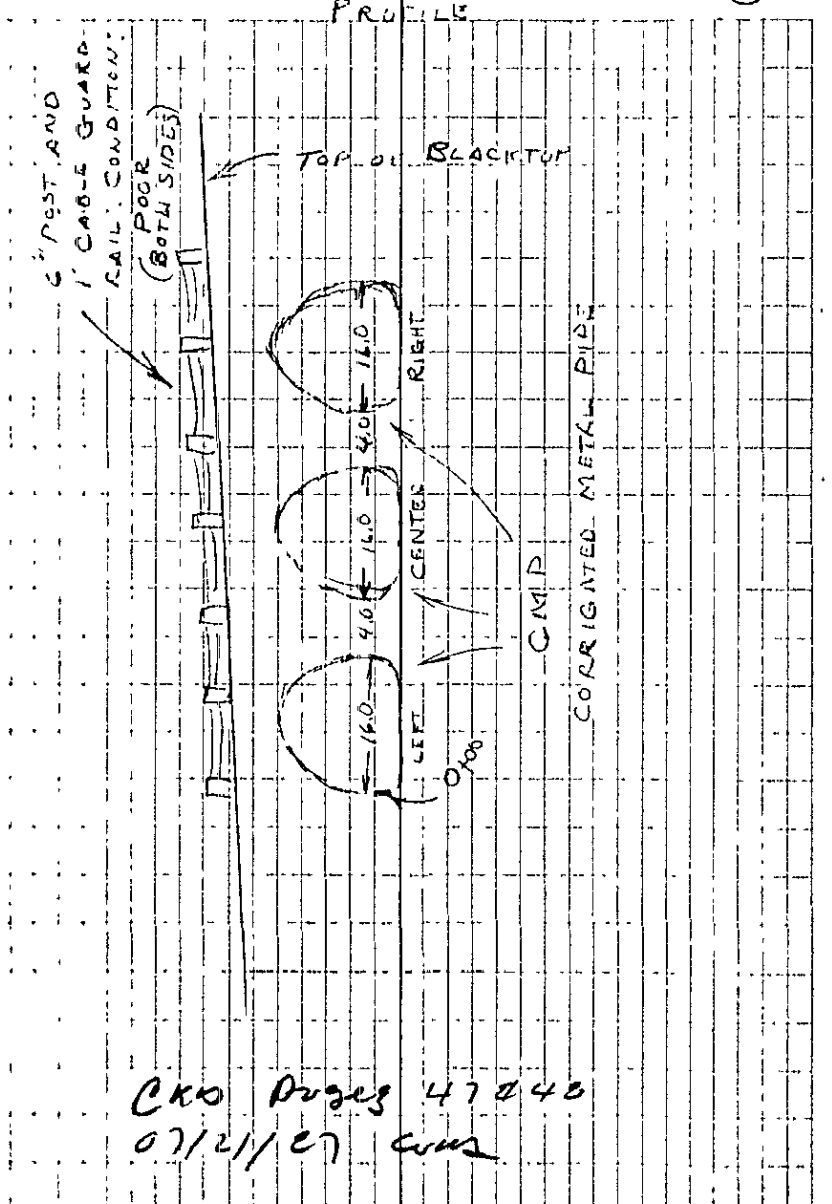
CROSS SECTION LINES

NO SCALE

(48)

W 16TH AVE BRIDGE

PROFILE



CKO Pages 47 & 48
07/21/87 CWS

(53)

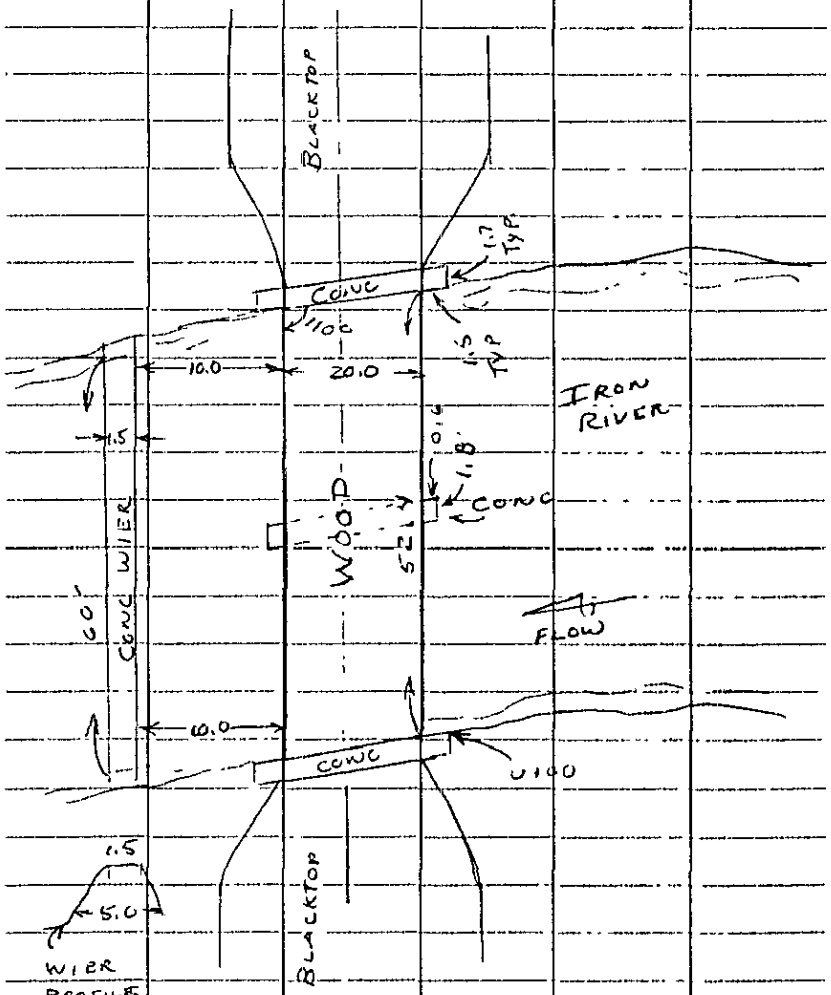
N 5TH AVE

BRIDGE #

PLAN

BRIDGE IS 50° TO THREAD OF RIVER

BRIDGE IS CLOSED AND IN POOR CONDITION



DATE 7-8-87

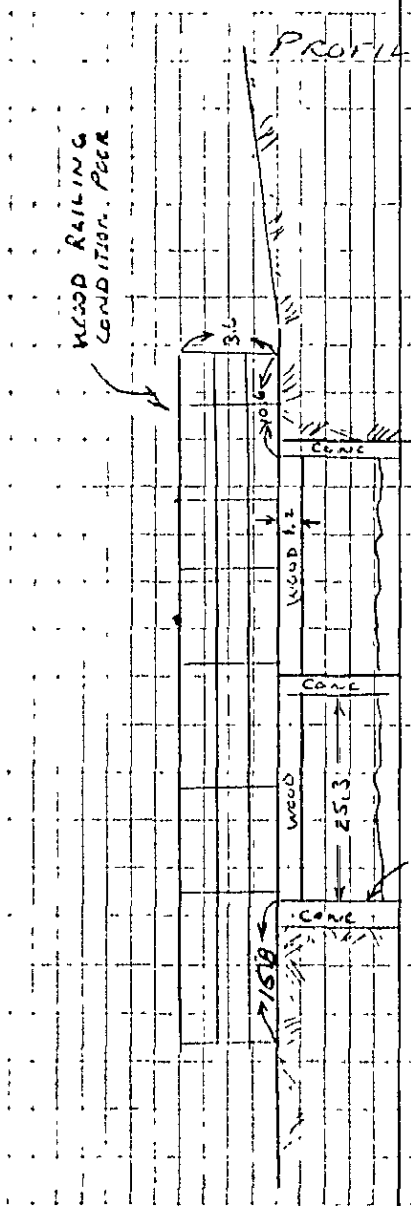
WEATHER 0-65°

J. EIBLER

T. HAKES

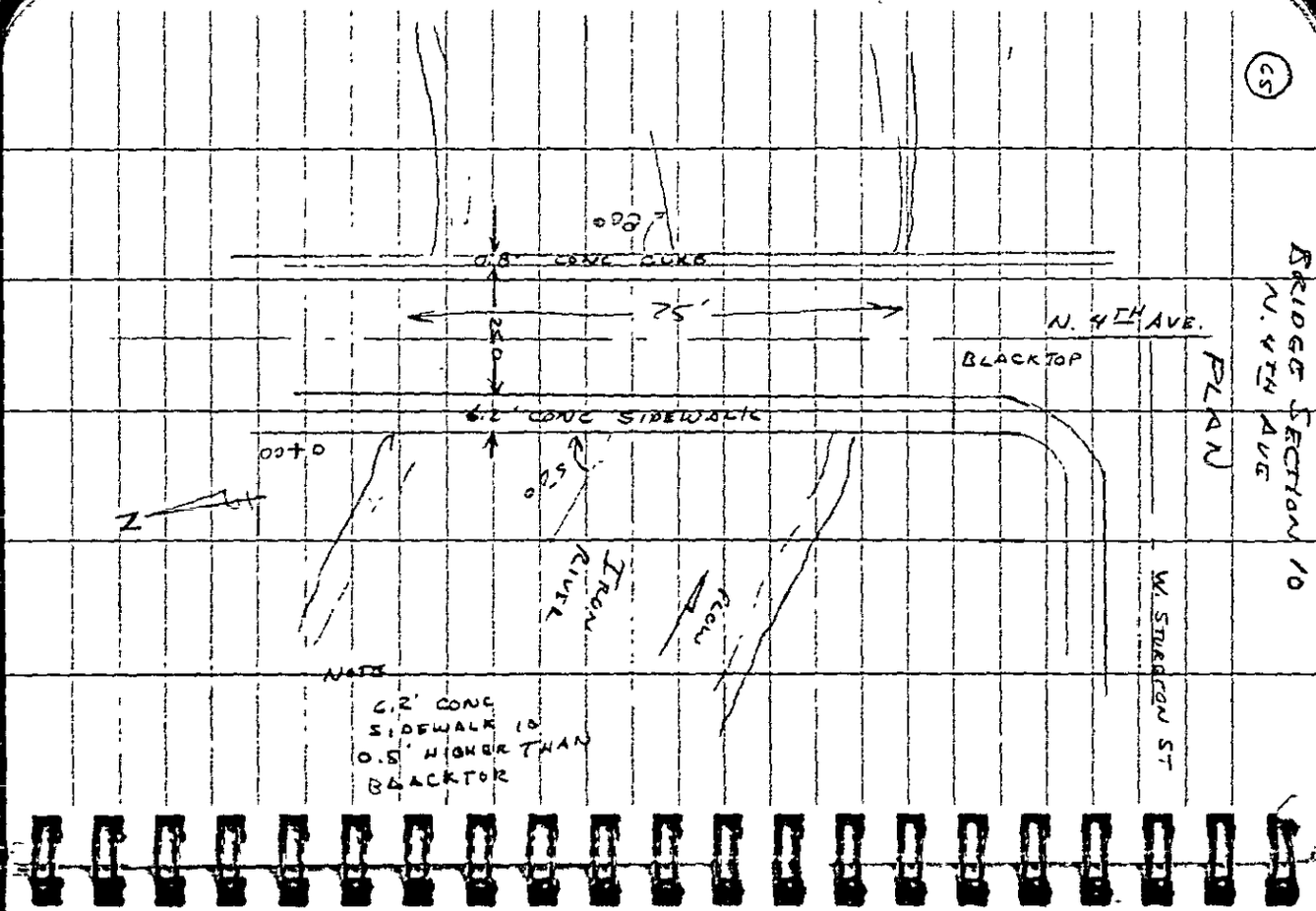
(54)

PROFILE

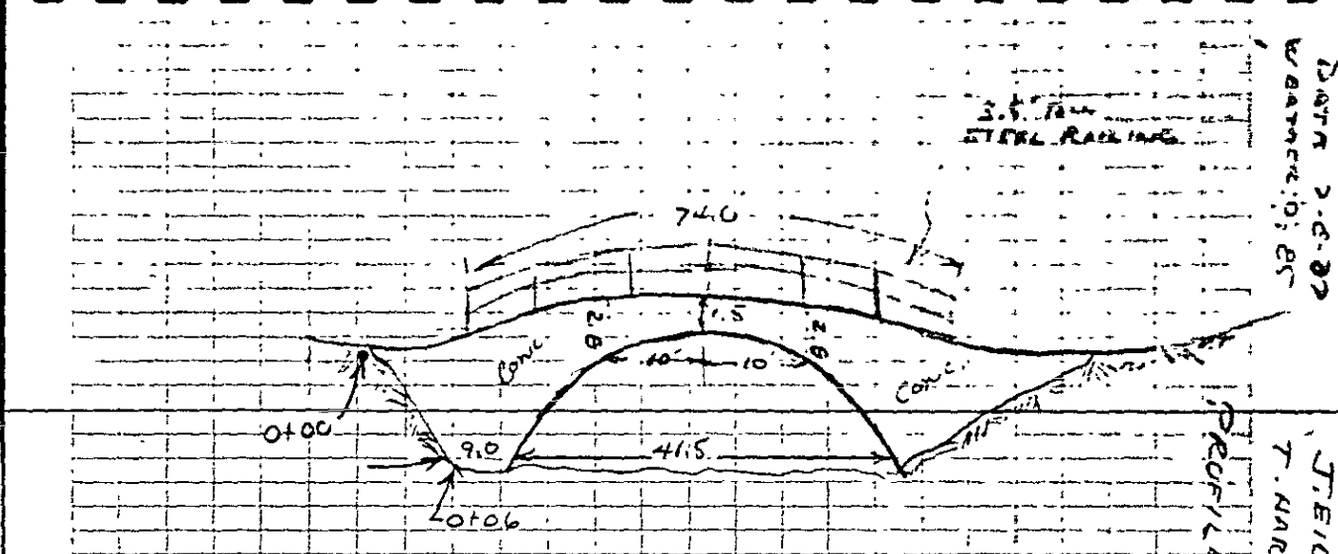


BRIDGE SECTION 10
N. 4TH AVE

PLAN



DATA 7-8-82
WEATHER: 10; 85



PROFILE

J. TEIGEN & T. HARES

BRIDGE IS NEW AND IN EXCELLENT CONDITION

SEE PAGE 67 FOR ELEV OF ARCH.

00BREAK00

1) COUNTY: Iron

2) STUDY NAME: Iron River, City of

3) WATERCOURSE: Iron River

4) DOCUMENT TYPE: Summary

00BREAK00

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

RIVER - 100 YR FLOOD

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
0.000	1467.99	-1.01	1468.64	107.27	167.53	1167.00	5.48	0.00	0.00	250.00	285.00	0.00
0.000	1468.10	0.11	1468.77	62.16	140.06	1199.90	0.05	0.04	229.27	250.00	285.00	507.19
1355.000	1471.37	0.00	1471.59	267.09	15.10	966.05	358.85	0.00	0.00	250.00	300.00	0.00
1355.000	1471.42	0.05	1471.63	265.00	15.69	958.33	365.98	265.00	235.00	250.00	300.00	500.00
1665.000	1471.87	0.00	1472.41	115.00	0.00	1167.31	172.69	115.00	250.00	250.00	300.00	365.00
1665.000	1471.89	0.02	1472.42	115.00	0.00	1165.42	174.58	115.00	250.00	250.00	300.00	365.00
1765.000	1472.19	0.00	1472.91	65.00	0.00	1291.67	48.33	65.00	250.00	250.00	300.00	315.00
1765.000	1472.20	0.01	1472.92	65.00	0.00	1291.43	48.57	65.00	250.00	250.00	300.00	315.00
1815.000	1472.33	0.00	1473.35	40.00	0.00	1340.00	0.00	0.00	0.00	282.00	322.00	0.00
1815.000	1472.34	0.01	1473.35	40.00	0.00	1340.00	0.00	0.00	0.00	282.00	322.00	0.00
1885.000	1472.59	0.00	1474 34	30.64	0.00	1340.00	0.00	0.00	0.00	216.01	246.65	0.00
1885.000	1472.59	0.00	1474 34	30.64	0.00	1340.00	0.00	0.00	0.00	216.01	246.65	0.00
1935.000	1474.04	0.00	1474.68	53.83	93.84	1206.17	39.99	0.00	0.00	216.01	246.65	0.00
1935.000	1474.04	0.00	1474.68	53.83	93.86	1206.14	40.00	0.00	0.00	216.01	246.65	0.00
2200.000	1474.73	0.00	1475.22	56.61	105.56	1188.79	45.64	0.00	0.00	216.01	246.65	0.00
2200.000	1474.73	0.00	1475.22	56.61	105.58	1188.77	45.65	0.00	0.00	216.01	246.65	0.00
2250.000	1475.08	0.00	1475.31	55.47	0.00	1340.00	0.00	0.00	0.00	250.00	306.00	0 00
2250.000	1475.08	0.00	1475.31	55.47	0.00	1340.00	0.00	0.00	0.00	250.00	306.00	0.00
2300.000	1475.16	0.00	1475.37	120.00	376.83	940.68	22.49	120.00	175.00	250.00	285.00	295.00
2300.000	1475.16	0.00	1475.37	120.00	376.86	940.64	22.50	120.00	175.00	250.00	285.00	295.00
2683.000	1475.53	0.00	1475.65	278.62	501.85	813.43	24.71	0.00	0.00	250.00	285.00	0.00
2683.000	1475.55	0.02	1475.68	191.65	520.58	819.42	0.00	0.04	93.35	250.00	285.00	285.00

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SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
4506.000	1476 45	0.00	1476.54	324.06	65.37	897.10	377.52	0.00	0.00	250.00	299.00	0.00
4506.000	1476.53	0.08	1476.62	264.85	41.01	923.10	375.90	0.04	237.36	250.00	299.00	502.21
4638.000	1476 50	0.00	1476.60	202.00	66.94	938.78	334.28	202.00	230.00	250.00	299.00	432 00
4638.000	1476.58	0.09	1476.68	202.00	67.67	931.62	340.70	202.00	230.00	250.00	299.00	432.00
4688.000	1476.54	0.00	1476.65	200.00	98.39	572.45	669.16	200.00	230.00	250.00	299.00	430.00
4688.000	1476.62	0.08	1476.73	200.00	93.02	560.19	686.79	200.00	230.00	250.00	299.00	430.00
4693.000	1476.55	0.00	1476.67	178.00	90 40	600.42	649.18	178.00	232.00	250.00	299.00	410.00
4693.000	1476.63	0.08	1476.75	178.00	86.23	588.77	665.01	178.00	232.00	250.00	299.00	410.00
4743.000	1476.61	0.00	1476.72	153.00	62.41	988.67	288.93	153.00	232.00	250.00	299.00	385.00
4743.000	1476.69	0.08	1476.80	153.00	62.95	984.28	292.77	153.00	232.00	250.00	299.00	385.00
[illegible]	1476.61	0.00	[illegible]	89.00	50.48	[illegible]	80.70	89.00	[illegible]	[illegible]	[illegible]	[illegible]

4884.000	1476.68	0.08	1477.01	88.00	51.94	1205.82	82.23	88.00	232.00	250.00	299.00	320.00
4934.000	1476.57	0.00	1477.28	60.14	0.00	1340.00	0.00	0.00	0.00	250.00	318.00	0.00
4934.000	1476.64	0.07	1477.33	60.32	0.00	1340.00	0.00	0.00	250.00	250.00	318.00	318.00
4966.000	1476.63	0.00	1477.81	46.18	0.00	1340.00	0.00	0.00	0.00	191.50	243.59	0.00
4966.000	1476.70	0.07	1477.85	46.31	0.00	1340.00	0.00	0.00	191.50	191.50	243.59	243.59
5016.000	1477.85	0.00	1478.38	48.53	0.00	1340.00	0.00	0.00	0.00	191.50	243.59	0.00
5016.000	1477.87	0.02	1478.40	48.57	0.00	1340.00	0.00	0.00	191.50	191.50	243.59	243.59
5539.000	1479.09	0.00	1479.30	257.03	124.48	1152.81	62.72	0.00	0.00	250.00	303.00	0.00
5539.000	1479.09	0.01	1479.33	117.06	107.59	1193.51	38.89	0.04	195.28	250.00	303.00	312.34
5541.000	1479.09	0.00	1479.30	256.90	124.36	1152.95	62.69	0.00	0.00	250.00	303.00	0.00
5541.000	1479.09	0.01	1479.33	116.53	107.41	1194.00	38.60	0.04	195.73	250.00	303.00	312.26
5550.000	1479.01	0.00	1479.40	190.87	117.31	1161.82	60.87	0.00	0.00	191.50	232.10	0.00
5550.000	1479.01	0.00	1479.44	84.25	99.96	1203.66	36.38	0.04	154.83	191.50	232.10	239.09
5570.000	1479.19	0.00	1479.53	205.26	135.35	1139.47	65.18	0.00	0.00	191.50	232.10	0.00
5570.000	1479.19	0.00	1479.56	100.53	118.79	1178.36	42.85	0.04	139.94	191.50	232.10	240.47
5900.000	1479.66	0.00	1479.79	151.30	0.00	1240.64	99.36	0.00	0.00	250.00	336.00	0.00
5900.000	1479.70	0.04	1479.84	110.04	0.00	1279.73	60.27	0.03	250.00	250.00	336.00	362.38
6080.000	1479.71	0.00	1480.07	86.42	27.82	1311.84	0.34	0.00	0.00	260.00	325.00	0.00
6080.000	1479.76	0.05	1480.14	65.00	0.00	1340.00	0.00	0.02	260.00	260.00	325.00	325.00
6130.000	1479.84	0.00	1480.27	90.47	17.57	1320.90	1.53	0.00	0.00	260.00	325.00	0.00
6130.000	1479.91	0.06	1480.33	92.46	17.80	1320.03	2.17	0.00	0.00	260.00	325.00	0.00
6171.000	1480.11	0.00	1480.53	98.60	17.79	1319.34	2.87	0.00	0.00	260.00	325.00	0.00
6171.000	1480.17	0.07	1480.60	73.60	15.98	1323.14	0.88	0.00	254.41	260.00	325.00	328.01

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
6221.000	1480.45	0.00	1480.70	111.95	37.87	1295.78	6.35	0.00	0.00	260.00	325.00	0.00
6221.000	1480.50	0.06	1480.77	65.00	0.00	1340.00	0.00	0.04	260.00	260.00	325.00	325.00
7113.000	1481.28	0.00	1481.43	244.44	89.28	1226.71	24.01	0.00	0.00	250.00	315.00	0.00
7113.000	1481.38	0.10	1481.54	143.75	76.55	1260.85	2.60	0.04	174.67	250.00	315.00	318.42
7129.000	1481.28	0.00	1481.44	244.97	98.93	1214.35	26.72	0.00	0.00	250.00	315.00	0.00
7129.000	1481.39	0.10	1481.55	149.48	86.26	1247.85	5.89	0.04	172.08	250.00	315.00	321.56
7143.000	1481.30	0.00	1481.45	245.07	90.46	1225.10	24.45	0.00	0.00	250.00	315.00	0.00
7143.000	1481.40	0.10	1481.56	140.13	75.66	1263.35	0.99	0.04	176.43	250.00	315.00	316.56
7992.000	1481.79	0.00	1481.93	250.93	99.05	1213.29	27.67	0.00	0.00	250.00	315.00	0.00
7992.000	1481.90	0.10	1482.05	151.19	85.81	1247.67	6.51	0.04	171.14	250.00	315.00	322.33
8042.000	1481.74	0.00	1482.11	53.50	0.00	1340.00	0.00	0.00	0.00	126.50	180.00	0.00
8042.000	1481.85	0.11	1482.21	53.50	0.00	1340.00	0.00	0.00	0.00	126.50	180.00	0.00
8057.000	1481.81	0.00	1482.17	53.50	0.00	1340.00	0.00	0.00	0.00	126.50	180.00	0.00
8057.000	1481.91	0.11	1482.28	53.50	0.00	1340.00	0.00	0.00	0.00	126.50	180.00	0.00
8107.000	1482.06	0.00	1482.29	60.69	7.24	1332.59	0.17	0.00	0.00	126.50	180.00	0.00
8107.000	1482.17	0.11	1482.40	53.50	0.00	1340.00	0.00	0.01	126.50	126.50	180.00	180.00

8233.000	1482.28	0.12	1482.50	56.30	0.00	1340.00	0.00	0.00	250.00	250.00	307.00	307.00
8267.000	1483.79	0.00	1483.93	143.09	10.80	1329.20	0.00	0.00	0.00	250.00	307.00	0.00
8267.000	1483.91	0.12	1484.05	56.89	0.00	1340.00	0.00	0.01	250.00	250.00	307.00	307.00
9054.000	1484.05	0.00	1484.08	377.36	365.89	967.09	7.02	0.00	0.00	250.00	336.00	0.00
9054.000	1484.16	0.11	1484.19	374.53	373.64	958.63	7.73	380.00	0.00	250.00	336.00	380.00
9731.000	1484.10	0.00	1484.32	60.00	0.00	1340.00	0.00	0.00	0.00	250.00	310.00	0.00
9731.000	1484.21	0.11	1484.42	60.00	0.00	1340.00	0.00	0.00	0.00	250.00	310.00	0.00
9769.000	1484.06	0.00	1484.47	60.00	0.00	1340.00	0.00	0.00	0.00	250.00	310.00	0.00
9769.000	1484.17	0.10	1484.57	60.00	0.00	1340.00	0.00	0.00	0.00	250.00	310.00	0.00
9819.000	1484.45	0.00	1484.60	134.15	68.17	1244.81	27.02	0.00	0.00	250.00	310.00	0.00
9819.000	1484.53	0.08	1484.70	79.20	53.12	1277.51	9.37	0.03	237.77	250.00	310.00	316.97
11650.000	1484.90	0.00	1484.92	431.97	309.82	469.47	560.70	0.00	0.00	250.00	289.00	0.00
11650.000	1485.00	0.09	1485.01	399.66	299.74	479.07	561.19	0.03	139.90	250.00	289.00	539.56

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RIVER - 100 YR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	1461.10	1340.00	1467.99	0.00	1468.64	33.13	6.86	254.73	232.82
0.000	0.00	0.00	0.00	1461.10	1340.00	1468.10	0.00	1468.77	32.91	6.90	234.63	233.59
1355.000	1355.00	0.00	0.00	1465.90	1340.00	1471.37	0.00	1471.59	15.04	4.38	535.57	345.51
1355.000	1355.00	0.00	0.00	1465.90	1340.00	1471.42	0.00	1471.63	14.28	4.30	548.05	354.62
1665.000	310.00	0.00	0.00	1467.10	1340.00	1471.87	0.00	1472.41	40.78	6.30	283.58	209.83
1665.000	310.00	0.00	0.00	1467.10	1340.00	1471.89	0.00	1472.42	39.97	6.26	285.80	211.95
1765.000	100.00	0.00	0.00	1467.40	1340.00	1472.19	0.00	1472.91	49.13	6.94	210.92	191.18
1765.000	100.00	0.00	0.00	1467.40	1340.00	1472.20	0.00	1472.92	48.70	6.92	211.56	192.02
1815.000	50.00	0.00	0.00	1467.80	1340.00	1472.33	0.00	1473.35	55.10	8.09	165.62	180.52
1815.000	50.00	0.00	0.00	1467.80	1340.00	1472.34	0.00	1473.35	54.76	8.08	165.92	181.07
1885.000	70.00	1480.00	1477.20	1467.80	1340.00	1472.59	0.00	1474.34	121.71	10.63	126.09	121.46
1885.000	70.00	1480.00	1477.20	1467.80	1340.00	1472.59	0.00	1474.34	121.36	10.62	126.22	121.64
1935.000	50.00	0.00	0.00	1467.80	1340.00	1474.04	0.00	1474.68	24.20	6.73	240.98	272.40
1935.000	50.00	0.00	0.00	1467.80	1340.00	1474.04	0.00	1474.68	24.18	6.73	241.04	272.50
2200.000	265.00	0.00	0.00	1467.80	1340.00	1474.73	0.00	1475.22	16.23	5.94	278.94	332.61
2200.000	265.00	0.00	0.00	1467.80	1340.00	1474.73	0.00	1475.22	16.23	5.94	278.97	332.66
2250.000	50.00	0.00	0.00	1468.00	1340.00	1475.08	0.00	1475.31	11.53	3.86	347.21	394.62
2250.000	50.00	0.00	0.00	1468.00	1340.00	1475.08	0.00	1475.31	11.53	3.86	347.24	394.67
2300.000	50.00	0.00	0.00	1468.30	1340.00	1475.16	0.00	1475.37	9.38	4.26	499.11	437.41
2300.000	50.00	0.00	0.00	1468.30	1340.00	1475.16	0.00	1475.37	9.38	4.26	499.17	437.49
2683.000	383.00	0.00	0.00	1468.30	1340.00	1475.53	0.00	1475.65	5.77	3.47	749.53	557.96
2683.000	383.00	0.00	0.00	1468.30	1340.00	1475.55	0.00	1475.68	6.65	3.49	677.06	519.53
4506.000	1823.00	0.00	0.00	1469.30	1340.00	1476.45	0.00	1476.54	4.11	2.87	880.03	661.35

4638.000	132.00	0.00	0.00	1469.30	1340.00	1476.50	0.00	1476.60	4.35	2.97	752.72	642.20
4638.000	132.00	0.00	0.00	1469.30	1340.00	1476.58	0.00	1476.68	4.10	2.91	770.32	661.77
4688.000	50.00	1473.50	1476.90	1469.30	1340.00	1476.54	0.00	1476.65	28.81	3.35	553.23	249.63
4688.000	50.00	1473.50	1476.90	1469.30	1340.00	1476.62	0.00	1476.73	27.15	3.22	567.93	257.19
4693.000	5.00	1473.50	1476.90	1469.30	1340.00	1476.55	0.00	1476.67	31.61	3.50	517.28	238.34
4693.000	5.00	1473.50	1476.90	1469.30	1340.00	1476.63	0.00	1476.75	29.87	3.37	530.02	245.19
4743.000	50.00	0.00	0.00	1469.30	1340.00	1476.61	0.00	1476.72	4.58	3.08	671.89	626.45
4743.000	50.00	0.00	0.00	1469.30	1340.00	1476.69	0.00	1476.80	4.36	3.03	683.58	641.51

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
4884.000	141.00	0.00	0.00	1470.80	1340.00	1476.61	0.00	1476.95	16.28	4.88	339.55	332.16
4884.000	141.00	0.00	0.00	1470.80	1340.00	1476.68	0.00	1477.01	15.42	4.80	346.16	341.26
4934.000	50.00	1480.00	1480.90	1471.30	1340.00	1476.57	0.00	1477.28	71.73	6.75	198.48	158.22
4934.000	50.00	1480.00	1480.90	1471.30	1340.00	1476.64	0.00	1477.33	69.10	6.65	201.43	161.20
4966.000	32.00	1480.00	1480.90	1471.30	1340.00	1476.63	0.00	1477.81	122.39	8.71	153.88	121.13
4966.000	32.00	1480.00	1480.90	1471.30	1340.00	1476.70	0.00	1477.85	118.32	8.59	155.99	123.19
5016.000	50.00	0.00	0.00	1471.30	1340.00	1477.85	0.00	1478.38	26.12	5.84	229.49	262.21
5016.000	50.00	0.00	0.00	1471.30	1340.00	1477.87	0.00	1478.40	25.77	5.81	230.52	263.97
5539.000	523.00	0.00	0.00	1472.90	1340.00	1479.09	0.00	1479.30	9.35	3.99	493.50	438.34
5539.000	523.00	0.00	0.00	1472.90	1340.00	1479.09	0.00	1479.33	9.98	4.13	417.94	424.18
5541.000	2.00	1474.80	1473.51	1472.90	1340.00	1479.09	0.00	1479.30	9.35	3.99	493.20	438.13
5541.000	2.00	999999.00	0.00	1472.90	1340.00	1479.09	0.00	1479.33	9.98	4.13	417.37	424.09
5550.000	9.00	0.00	0.00	1472.90	1340.00	1479.01	0.00	1479.40	17.09	5.33	363.40	324.14
5550.000	9.00	0.00	0.00	1472.90	1340.00	1479.01	0.00	1479.44	18.36	5.52	307.63	312.77
5570.000	20.00	1478.00	1476.90	1472.90	1340.00	1479.19	0.00	1479.53	14.73	5.06	399.13	349.20
5570.000	20.00	999999.00	0.00	1472.90	1340.00	1479.19	0.00	1479.56	15.80	5.23	340.88	337.08
5900.000	280.00	0.00	0.00	1472.60	1340.00	1479.66	0.00	1479.79	5.42	2.90	552.41	575.39
5900.000	280.00	0.00	0.00	1472.60	1340.00	1479.70	0.00	1479.84	5.63	2.97	497.54	564.80
6080.000	180.00	0.00	0.00	1473.40	1340.00	1479.71	0.00	1480.07	20.06	4.86	290.40	299.16
6080.000	180.00	0.00	0.00	1473.40	1340.00	1479.76	0.00	1480.14	21.60	4.91	272.77	288.30
6130.000	50.00	1481.00	1480.40	1473.40	1340.00	1479.84	0.00	1480.27	62.98	5.27	265.70	168.85
6130.000	50.00	1481.00	1480.40	1473.40	1340.00	1479.91	0.00	1480.33	64.64	5.26	266.54	166.67
6171.000	41.00	1481.00	1480.40	1473.40	1340.00	1480.11	0.00	1480.53	64.58	5.26	268.49	166.75
6171.000	41.00	1481.00	1480.40	1473.40	1340.00	1480.17	0.00	1480.60	64.95	5.28	262.32	166.27
6221.000	50.00	0.00	0.00	1473.40	1340.00	1480.45	0.00	1480.70	11.47	4.09	361.00	395.74
6221.000	50.00	0.00	0.00	1473.40	1340.00	1480.50	0.00	1480.77	12.93	4.18	320.87	372.64
7113.000	892.00	0.00	0.00	1473.30	1340.00	1481.28	0.00	1481.43	5.98	3.26	569.81	547.76
7113.000	892.00	0.00	0.00	1473.30	1340.00	1481.38	0.00	1481.54	5.97	3.29	500.58	548.57
7129.000	16.00	0.00	0.00	1473.30	1340.00	1481.28	0.00	1481.44	7.12	3.33	560.47	502.13
7129.000	16.00	0.00	0.00	1473.30	1340.00	1481.39	0.00	1481.55	7.09	3.36	497.46	503.18
7143.000	14.00	0.00	0.00	1473.30	1340.00	1481.30	0.00	1481.45	5.92	3.25	573.24	550.70
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

7992.000	849.00	0.00	0.00	1473.70	1340.00	1481.79	0.00	1481.93	5.48	3.16	598.59	572.49
7992.000	849.00	0.00	0.00	1473.70	1340.00	1481.90	0.00	1482.05	5.47	3.19	528.44	573.18

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
8042.000	50.00	1484.70	1487.75	1473.90	1340.00	1481.74	0.00	1482.11	42.79	4.84	276.72	204.84
8042.000	50.00	1484.70	1487.75	1473.90	1340.00	1481.85	0.00	1482.21	42.79	4.84	276.72	204.84
8057.000	15.00	1484.70	1487.75	1473.90	1340.00	1481.81	0.00	1482.17	42.79	4.84	276.72	204.84
8057.000	15.00	1484 70	1487.75	1473.90	1340.00	1481.91	0.00	1482.28	42.79	4.84	276.72	204.84
8107.000	50.00	0.00	0.00	1473.90	1340.00	1482.06	0.00	1482.29	7.65	3.84	357.50	484.35
8107.000	50.00	0.00	0.00	1473.90	1340.00	1482.17	0.00	1482.40	7.93	3.79	353.61	475.99
8233 000	126.00	0.00	0.00	1473.00	1340.00	1482.16	0.00	1482.39	8.91	3.84	349.11	448.86
8233.000	126.00	0.00	0.00	1473.00	1340.00	1482.28	0.00	1482.50	8.42	3.77	355.64	461.83
8267.000	34.00	1483.70	1479.90	1473.00	1340.00	1483.79	0.00	1483.93	4.28	3.01	479.05	647.62
8267.000	34.00	999999.00	0.00	1473.00	1340.00	1483.91	0.00	1484.05	4.16	2.99	447.92	656.70
9054.000	787.00	0.00	0.00	1474.20	1340.00	1484.05	0.00	1484.08	0.95	1.53	1418.70	1375.29
9054.000	787.00	0.00	0.00	1474.20	1340.00	1484.16	0.00	1484.19	0.89	1.50	1458.58	1419.08
9731.000	677.00	0.00	0.00	1476.80	1340.00	1484.10	0.00	1484.32	8.61	3 74	358.15	456.67
9731.000	677.00	0.00	0.00	1476.80	1340.00	1484.21	0.00	1484.42	8.12	3.68	364.51	470.28
9769.000	38.00	1486 40	1486.40	1476.80	1340.00	1484.06	0.00	1484.47	32.10	5.11	262.28	236.52
9769.000	38.00	1486.40	1486.40	1476.80	1340.00	1484.17	0.00	1484.57	31.74	5.06	264.72	237.84
9819 000	50.00	0.00	0.00	1476.80	1340.00	1484 45	0.00	1484.60	6.16	3.29	488.72	540.06
9819.000	50.00	0.00	0.00	1476.80	1340.00	1484.53	0.00	1484.70	6.21	3.33	444.31	537.87
11650.000	1831.00	0.00	0.00	1475.60	1340.00	1484.90	0.00	1484.92	0.74	1.44	2072.49	1554.55
11650.000	1831.00	0.00	0.00	1475.60	1340.00	1485.00	0.00	1485.01	0.75	1.45	2015.16	1550.97

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RIVER - 100 YR FLOOD

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	1340.00	1467.99	0.00	0.00	-1.01	107.27	0.00
0.000	1340.00	1468.10	0.11	0.00	0.11	62.16	0.00
1355.000	1340.00	1471.37	0.00	3.38	0.00	267.09	1355.00
1355.000	1340.00	1471.42	0 05	3.32	0.05	265.00	1355.00
1665.000	1340.00	1471.87	0.00	0.50	0.00	115.00	310.00
1665.000	1340.00	1471.89	0.02	0.47	0.02	115.00	310.00
1765.000	1340.00	1472.19	0.00	0.32	0.00	65.00	100.00
1765.000	1340.00	1472.20	0.01	0.31	0.01	65.00	100.00
1815.000	1340.00	1472.33	0.00	0.14	0.00	40.00	50.00
1815.000	1340.00	1472.34	0.01	0.14	0.01	40.00	50.00

1885.000	1340.00	1472.59	0.00	0.26	0.00	30.64	70.00
1885.000	1340.00	1472.59	0.00	0.25	0.00	30.64	70.00
1935.000	1340.00	1474.04	0.00	1.46	0.00	53.83	50.00
1935.000	1340.00	1474.04	0.00	1.45	0.00	53.83	50.00
2200.000	1340.00	1474.73	0.00	0.68	0.00	56.61	265.00
2200.000	1340.00	1474.73	0.00	0.68	0.00	56.61	265.00
2250.000	1340.00	1475.08	0.00	0.35	0.00	55.47	50.00
2250.000	1340.00	1475.08	0.00	0.35	0.00	55.47	50.00
2300.000	1340.00	1475.16	0.00	0.08	0.00	120.00	50.00
2300.000	1340.00	1475.16	0.00	0.08	0.00	120.00	50.00
2683.000	1340.00	1475.53	0.00	0.37	0.00	278.62	383.00
2683.000	1340.00	1475.55	0.02	0.39	0.02	191.65	383.00
4506.000	1340.00	1476.45	0.00	0.92	0.00	324.06	1823.00
4506.000	1340.00	1476.53	0.08	0.98	0.08	264.85	1823.00
4638.000	1340.00	1476.50	0.00	0.05	0.00	202.00	132.00
4638.000	1340.00	1476.58	0.09	0.05	0.09	202.00	132.00
4688.000	1340.00	1476.54	0.00	0.04	0.00	200.00	50.00
4688.000	1340.00	1476.62	0.08	0.04	0.08	200.00	50.00
4693.000	1340.00	1476.55	0.00	0.01	0.00	178.00	5.00
4693.000	1340.00	1476.63	0.08	0.01	0.08	178.00	5.00
4743.000	1340.00	1476.61	0.00	0.07	0.00	153.00	50.00
4743.000	1340.00	1476.69	0.08	0.06	0.08	153.00	50.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
4884.000	1340.00	1476.61	0.00	0.00	0.00	88.00	141.00
4884.000	1340.00	1476.68	0.08	0.00	0.08	88.00	141.00
4934.000	1340.00	1476.57	0.00	-0.04	0.00	60.14	50.00
4934.000	1340.00	1476.64	0.07	-0.04	0.07	60.32	50.00
4966.000	1340.00	1476.63	0.00	0.06	0.00	46.18	32.00
4966.000	1340.00	1476.70	0.07	0.05	0.07	46.31	32.00
5016.000	1340.00	1477.85	0.00	1.22	0.00	48.53	50.00
5016.000	1340.00	1477.87	0.02	1.17	0.02	48.57	50.00
5539.000	1340.00	1479.09	0.00	1.24	0.00	257.03	523.00
5539.000	1340.00	1479.09	0.01	1.22	0.01	117.06	523.00
5541.000	1340.00	1479.09	0.00	0.00	0.00	256.90	2.00
5541.000	1340.00	1479.09	0.01	0.00	0.01	116.53	2.00
5550.000	1340.00	1479.01	0.00	-0.07	0.00	190.87	9.00
5550.000	1340.00	1479.01	0.00	-0.08	0.00	84.25	9.00
5570.000	1340.00	1479.19	0.00	0.18	0.00	205.26	20.00
5570.000	1340.00	1479.19	0.00	0.18	0.00	100.53	20.00
5900.000	1340.00	1479.66	0.00	0.48	0.00	151.30	280.00
5900.000	1340.00	1479.70	0.04	0.52	0.04	110.04	280.00

6080.000	1340.00	1479.71	0.00	0.05	0.00	86.42	180.00
6080.000	1340.00	1479.76	0.05	0.06	0.05	65.00	180.00
6130.000	1340.00	1479.84	0.00	0.13	0.00	90.47	50.00
6130.000	1340.00	1479.91	0.06	0.15	0.06	92.46	50.00
6171.000	1340.00	1480.11	0.00	0.26	0.00	98.60	41.00
6171.000	1340.00	1480.17	0.07	0.26	0.07	73.60	41.00
6221.000	1340.00	1480.45	0.00	0.34	0.00	111.95	50.00
6221.000	1340.00	1480.50	0.06	0.33	0.06	65.00	50.00
7113.000	1340.00	1481.28	0.00	0.83	0.00	244.44	892.00
7113.000	1340.00	1481.38	0.10	0.88	0.10	143.75	892.00
7129.000	1340.00	1481.28	0.00	0.01	0.00	244.97	16.00
7129.000	1340.00	1481.39	0.10	0.01	0.10	149.48	16.00
7143.000	1340.00	1481.30	0.00	0.02	0.00	245.07	14.00
7143.000	1340.00	1481.40	0.10	0.01	0.10	140.13	14.00
7992.000	1340.00	1481.79	0.00	0.50	0.00	250.93	849.00
7992.000	1340.00	1481.90	0.10	0.50	0.10	151.19	849.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
8042.000	1340.00	1481.74	0.00	-0.05	0.00	53.50	50.00
8042.000	1340.00	1481.85	0.11	-0.05	0.11	53.50	50.00
8057.000	1340.00	1481.81	0.00	0.06	0.00	53.50	15.00
8057.000	1340.00	1481.91	0.11	0.06	0.11	53.50	15.00
8107.000	1340.00	1482.06	0.00	0.25	0.00	60.69	50.00
8107.000	1340.00	1482.17	0.11	0.26	0.11	53.50	50.00
8233.000	1340.00	1482.16	0.00	0.10	0.00	56.25	126.00
8233.000	1340.00	1482.28	0.12	0.11	0.12	56.30	126.00
8267.000	1340.00	1483.79	0.00	1.63	0.00	143.09	34.00
8267.000	1340.00	1483.91	0.12	1.63	0.12	56.89	34.00
9054.000	1340.00	1484.05	0.00	0.26	0.00	377.36	787.00
9054.000	1340.00	1484.16	0.11	0.26	0.11	374.53	787.00
9731.000	1340.00	1484.10	0.00	0.05	0.00	60.00	677.00
9731.000	1340.00	1484.21	0.11	0.04	0.11	60.00	677.00
9769.000	1340.00	1484.06	0.00	-0.04	0.00	60.00	38.00
9769.000	1340.00	1484.17	0.10	-0.04	0.10	60.00	38.00
9819.000	1340.00	1484.45	0.00	0.38	0.00	134.15	50.00
9819.000	1340.00	1484.53	0.08	0.36	0.08	79.20	50.00
11650.000	1340.00	1484.90	0.00	0.46	0.00	431.97	1831.00
11650.000	1340.00	1485.00	0.09	0.47	0.09	399.66	1831.00

FLOODWAY DATA, RIVER - 100 YR FLOOD
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
0.000	278.	235.	5.7	1468.1	1468.0	0.1
1355.000	265.	548.	2 4	1471.4	1471.4	0.0
1665.000	115.	286.	4.7	1471 9	1471.9	0.0
1765.000	65.	212.	6.3	1472.2	1472.2	0.0
1815.000	40.	166.	8.1	1472.3	1472.3	0.0
1885.000	31.	126.	10.6	1472.6	1472.6	0.0
1935.000	54.	241.	5.6	1474.0	1474.0	0.0
2200.000	57.	279.	4.8	1474.7	1474.7	0.0
2250.000	55.	347.	3.9	1475.1	1475.1	0.0
2300.000	120.	499.	2.7	1475.2	1475.2	0.0
2683.000	192.	677.	2.0	1475.5	1475.5	0.0
4506.000	265.	824.	1.6	1476.5	1476.4	0.1
4638.000	202.	770.	1 7	1476.6	1476.5	0.1
4688.000	200.	568.	2.4	1476.6	1476.5	0.1
4693.000	178.	530.	2.5	1476.6	1476.5	0.1
4743.000	153	684.	2.0	1476.7	1476.6	0.1
4884.000	88.	346.	3.9	1476.7	1476.6	0.1
4934.000	60.	201.	6.7	1476.7	1476.6	0.1
4966.000	46.	156.	8 6	1476.7	1476.6	0.1
5016.000	49.	231.	5.8	1477.8	1477.8	0.0
5539.000	117.	418.	3.2	1479.1	1479.1	0.0
5541.000	117.	417.	3.2	1479.1	1479.1	0.0
5550 000	84.	308.	4.4	1479.0	1479.0	0.0
5570.000	101.	341.	3.9	1479.2	1479.2	0.0
5900.000	110.	498.	2.7	1479.7	1479.7	0.0
6080.000	65.	273.	4.9	1479.7	1479 7	0.0
6130.000	92.	267.	5.0	1479.9	1479.8	0.1
6171.000	74.	262.	5.1	1480.2	1480.1	0.1
6221.000	65.	321.	4.2	1480.5	1480.4	0.1
7113.000	144.	501.	2.7	1481.4	1481.3	0.1
7129.000	149.	497.	2.7	1481.4	1481.3	0.1
7143.000	140.	498.	2.7	1481.4	1481.3	0.1
7992.000	151.	528.	2 5	1481.9	1481.8	0.1
8042.000	54.	277.	4.8	1481.8	1481.7	0.1
8057.000	54.	277.	4.8	1481.9	1481.8	0.1
8107.000	54.	354	3.8	1482.2	1482.1	0.1
8233.000	56.	356.	3.8	1482 3	1482.2	0.1
8267.000	57.	448.	3.0	1483.9	1483.8	0.1
9054.000	375.	1459.	0.9	1484.2	1484.1	0.1
9731.000	60.	365.	3.7	1484.2	1484.1	0.1
9769.000	60	265.	5.1	1484.2	1484.1	0.1
9819.000	79.	444.	3.0	1484.5	1484.4	0.1

PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
11650.000	400.	2015.	0.7	1485 0	1484.9	0.1

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15 SEP 87 13:57:26

THIS RUN EXECUTED 15 SEP 87 13:57:26

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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