

**GPS SURVEY REPORT  
WINNEBAGO COUNTY, IOWA GIS  
DECEMBER 2002**

Prepared by:

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|   |  |
|---|--|
|  | I hereby certify that this land surveying document was prepared and the related survey work was performed by me or under my direct personal supervision and that I am a duly licensed Land Surveyor under the laws of the State of Iowa. |
|   | <i>Lawrence A. Boyer</i> <i>December 18, 2002</i>  |
|   | Lawrence A. Boyer <span style="float: right;">Date</span>  |
|   | License Number 9761  |
|   | Date of Survey: <i>SEPTEMBER 19, 2002</i>  |
| My license renewal date is December 31, 2002.                                       |  |
| Sheets covered by this seal: <i>SHEETS 1 TO 94</i>                                  |  |

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**Section 1**  
**Project Report**

## GPS SURVEY REPORT WINNEBAGO COUNTY, IOWA GIS

### 1. Introduction

This GPS survey for the Winnebago County GIS established horizontal and vertical control at sixty-three locations in the countywide area at approximately three mile intervals. The work was performed for Winnebago County as a basis for ground control for aerial photography and mapping. Permanent Bernsten NGS style monuments were placed at fifty-eight new locations. Five existing NGS style monuments along the Hancock County line were observed. An additional fifteen GPS stations were existing horizontal and vertical control. The total number of GPS stations observed for the Winnebago County GIS is seventy-eight.

### 2. Existing Horizontal and Vertical Control

Six National Geodetic Survey (NGS) High Accuracy Reference Network (HARN) stations were found in the project vicinity and used as follows:

| Winnebago County Network Point | NGS PID | Designation | Use                     |
|--------------------------------|---------|-------------|-------------------------|
| 2002-1                         | OO0687  | 41 1        | Horizontal and Vertical |
| 2002-4                         | OO1179  | Joice Reset | Horizontal              |
| 2002-23                        | OO1209  | Clover      | Horizontal              |
| 2002-28                        | AC4902  | Miniow      | Horizontal              |
| 2002-31                        | AC4900  | Fure        | Horizontal              |
| 2002-35                        | AC4898  | Food        | Horizontal              |

Four U.S. Coast and Geodetic Survey (NGS) benchmarks were found in the project vicinity and used as follows:

| Winnebago County Network Point | NGS PID | Designation | Use            |
|--------------------------------|---------|-------------|----------------|
| 2002-19                        | OO0700  | Forest City | Vertical (ECC) |
| 2002-27                        | OO0693  | Q 34        | Vertical (ECC) |
| 2002-29                        | OO1472  | TT 79 WM    | Vertical       |
| 2002-36                        | OP0029  | L 4         | Vertical       |

Six U.S. Geological Survey (USGS) benchmarks were found in the project vicinity where no NGS control was available and used as follows:

| Winnebago County Network Point | Designation   | Use      |
|--------------------------------|---------------|----------|
| 2002-3                         | 12 SAN 1972   | Vertical |
| 2002-24                        | 25 WEK 1972   | Vertical |
| 2002-25                        | 24 WEK 1972   | Vertical |
| 2002-32                        | TT 8 WM       | Vertical |
| 2002-33                        | MNDOT ROME-36 | Vertical |
| 2002-34                        | MNDOT ROME-31 | Vertical |

Benchmarks used as vertical control in obstructed locations required conventional leveling techniques to establish a nearby eccentric point coded ECC.

### 3. Horizontal and Vertical Datum

The horizontal datum is the Iowa State Plane Coordinate System, North Zone (1401) North American Datum 1983 (NAD 83) 1996 adjustment.

The vertical datum is the North American Vertical Datum of 1988 (NAVD 1988).

### 4. Personnel, Equipment and Methods

Personnel were as follows: Lawrence A. Boyer, GPS Manager; Timothy Lovik, instrument person; Brian J. Diehl, instrument person; Scott C. Jones, instrument person; Steven J. Lentz, instrument person.

Two Trimble Navigation 4800 dual frequency receivers and two Trimble Navigation 5700 dual frequency receivers were used for the GPS observations. The receivers collected data simultaneously using a minimum 20 minute fast static observation technique. The sampling rate was 15 seconds and the elevation mask was 15 degrees. Each receiver was mounted on a fixed height tripod.

There were fifty-two sessions observed for the project beginning on March 21, 2002 and ending on April 4, 2002. All observations were made to top of monuments placed or found. Differences from the top of monument to ground level were noted and reported for mapping purposes.

The placement of permanent monuments required coordination with local utilities. The result was the locations of all permanent monuments were compatible with underground utilities as determined during reconnaissance.

## 5. Network Adjustment

Trimble Geomatics Office™ software was used for the network adjustment. A free horizontal adjustment was made using the HARN station at 2002-1 as the only fixed control. This free adjustment fit the remaining five HARN stations well. A minimally constrained horizontal adjustment was then made using the remaining HARN stations one at a time until all six HARN stations were held as fixed horizontal control.

A free vertical adjustment was made to ellipsoidal heights using the HARN station at 2002-1 as the only fixed control. The ellipsoidal height differences from this free adjustment were noted at all of the NGS benchmarks. A minimally constrained vertical adjustment for ellipsoidal height was then made one at a time until all of the remaining NGS benchmarks were held as fixed vertical control.

A constrained adjustment modeled with GEIOD99 was made holding all NGS benchmarks one at a time, as fixed vertical control at the published NAVD 88 elevations. This adjustment was compared to the converted NAVD 88 elevations of the six USGS benchmarks and fit well. The fully constrained final adjustment used six HARN stations as fixed horizontal control, five NGS benchmarks and six USGS benchmarks as fixed vertical control with GEIOD99 modeled from the benchmarks.

**Section 2**  
**Network Map**

**Section 3**  
**Coordinate List**

**Project : WINNEBAGO GIS**

|                          |                     |                        |                       |
|--------------------------|---------------------|------------------------|-----------------------|
| <b>User name</b>         | WHKS                | <b>Date &amp; Time</b> | 3:53:07 PM 12/17/2002 |
| <b>Coordinate System</b> | US State Plane 1983 | <b>Zone</b>            | Iowa North 1401       |
| <b>Project Datum</b>     | NAD 1983 (Conus)    |                        |                       |
| <b>Vertical Datum</b>    | NAVD 88             | <b>Geoid Model</b>     | GEOID99 (Conus)       |
| <b>Coordinate Units</b>  | US survey feet      |                        |                       |
| <b>Distance Units</b>    | US survey feet      |                        |                       |
| <b>Height Units</b>      | US survey feet      |                        |                       |

## Point listing

| Name    | Northing    | Easting     | Elevation | Feature Code       |
|---------|-------------|-------------|-----------|--------------------|
| 2002-1  | 3873362.265 | 4920757.252 | 1265.998  | HARN 41 1          |
| 2002-3  | 3962762.835 | 4932496.808 | 1264.873  | USGS 12 SAN 1972   |
| 2002-4  | 3958527.821 | 4945575.639 | 1343.457  | HARN JOICE RESET   |
| 2002-19 | 3923015.753 | 4884399.375 | 1277.780  | BM FOREST CITY ECC |
| 2002-23 | 3910491.842 | 4827991.814 | 1305.473  | HARN CLOVER        |
| 2002-24 | 3920858.328 | 4790619.395 | 1182.711  | USGS 25 WEK 1972   |
| 2002-25 | 3936644.633 | 4790768.403 | 1172.298  | USGS 24 WEK 1972   |
| 2002-27 | 3973528.282 | 4895120.130 | 1227.337  | BM Q 34 ECC        |
| 2002-28 | 4009597.320 | 4959944.213 | 1266.279  | HARN MINIOW        |
| 2002-29 | 4009622.720 | 4956084.875 | 1269.489  | BM TT 79 WM        |
| 2002-31 | 4010880.889 | 4865834.157 | 1261.437  | HARN FURE          |
| 2002-32 | 4010070.610 | 4855296.787 | 1248.019  | USGS TT 8 WM       |
| 2002-33 | 4009907.100 | 4818139.957 | 1152.714  | MNDOT ROME 36      |
| 2002-34 | 4010136.442 | 4786431.594 | 1126.851  | MNDOT ROME 31      |
| 2002-35 | 4010337.546 | 4765214.821 | 1112.488  | HARN FOOD          |
| 2002-36 | 4047285.529 | 4765541.816 | 1096.071  | BM L 4             |
| G1      | 3920926.908 | 4795955.357 | 1183.633  | ALMON              |
| G2      | 3920323.564 | 4827453.206 | 1256.764  | ALMON              |
| G3      | 3920604.355 | 4859018.542 | 1275.104  | ALMON              |
| G4      | 3920266.205 | 4890063.185 | 1228.885  | ALMON              |
| G5      | 3920480.286 | 4921845.032 | 1262.878  | ALMON              |
| G101    | 3923699.092 | 4905976.778 | 1242.069  | ALMON              |
| G102    | 3923267.823 | 4875630.799 | 1243.819  | ALMON              |
| G103    | 3921120.772 | 4843310.852 | 1300.282  | ALMON              |
| G104    | 3922026.647 | 4811676.098 | 1228.340  | ALMON              |
| G105    | 3936695.011 | 4796364.896 | 1166.327  | ALMON              |
| G106    | 3936587.899 | 4811759.340 | 1198.068  | ALMON              |
| G107    | 3936555.060 | 4827483.998 | 1242.154  | ALMON              |
| G108    | 3936211.097 | 4843134.584 | 1274.162  | ALMON              |
| G109    | 3936324.421 | 4858955.571 | 1285.767  | ALMON              |
| G110    | 3936359.693 | 4874337.567 | 1269.792  | ALMON              |
| G111    | 3936598.809 | 4889711.810 | 1269.627  | ALMON              |
| G112    | 3936408.290 | 4906103.492 | 1232.055  | ALMON              |
| G113    | 3936475.972 | 4921842.155 | 1221.399  | ALMON              |
| G114    | 3952522.123 | 4921847.792 | 1248.425  | ALMON              |
| G115    | 3952101.888 | 4905980.963 | 1276.586  | ALMON              |
| G116    | 3951624.618 | 4890130.705 | 1249.327  | ALMON              |
| G117    | 3952346.600 | 4874255.271 | 1273.003  | ALMON              |
| G118    | 3952299.903 | 4860298.536 | 1287.982  | ALMON              |
| G119    | 3952358.680 | 4843187.920 | 1277.757  | ALMON              |
| G120    | 3952460.843 | 4827562.984 | 1204.698  | ALMON              |
| G121    | 3952437.540 | 4811727.612 | 1182.807  | ALMON              |

|      |             |             |          |       |
|------|-------------|-------------|----------|-------|
| G122 | 3952580.873 | 4796221.745 | 1192.205 | ALMON |
| G123 | 3968437.863 | 4796407.591 | 1173.901 | ALMON |
| G124 | 3968485.996 | 4811723.960 | 1191.555 | ALMON |
| G125 | 3968148.110 | 4827601.677 | 1202.798 | ALMON |
| G126 | 3968042.815 | 4843249.131 | 1237.189 | ALMON |
| G127 | 3968148.321 | 4859081.086 | 1255.027 | ALMON |
| G128 | 3967827.251 | 4874378.680 | 1238.143 | ALMON |
| G129 | 3968089.853 | 4890054.910 | 1264.155 | ALMON |
| G130 | 3968253.186 | 4906037.882 | 1290.109 | ALMON |
| G131 | 3965670.690 | 4920743.118 | 1244.980 | ALMON |
| G132 | 3984250.395 | 4921826.841 | 1294.698 | ALMON |
| G133 | 3984263.937 | 4906032.293 | 1262.919 | ALMON |
| G134 | 3984234.322 | 4890056.244 | 1288.435 | ALMON |
| G135 | 3984205.750 | 4873783.980 | 1275.592 | ALMON |
| G136 | 3984248.983 | 4859054.030 | 1237.688 | ALMON |
| G137 | 3984284.165 | 4844161.384 | 1234.321 | ALMON |
| G138 | 3984354.398 | 4827736.387 | 1199.450 | ALMON |
| G139 | 3984342.011 | 4811824.315 | 1196.259 | ALMON |
| G140 | 3983918.097 | 4796279.053 | 1178.236 | ALMON |
| G141 | 4000214.984 | 4797299.226 | 1140.907 | ALMON |
| G142 | 4000311.391 | 4811788.343 | 1167.648 | ALMON |
| G143 | 4000226.526 | 4827694.401 | 1193.068 | ALMON |
| G144 | 4000006.693 | 4843409.382 | 1238.853 | ALMON |
| G145 | 3999888.170 | 4859126.196 | 1244.530 | ALMON |
| G146 | 3999905.022 | 4874422.963 | 1264.771 | ALMON |
| G147 | 4000001.892 | 4889434.896 | 1276.455 | ALMON |
| G148 | 3999580.613 | 4906180.306 | 1277.268 | ALMON |
| G149 | 4000250.732 | 4921914.874 | 1303.436 | ALMON |
| G150 | 4009523.996 | 4921303.552 | 1273.144 | ALMON |
| G151 | 4009554.059 | 4906168.138 | 1236.602 | ALMON |
| G152 | 4009590.981 | 4889758.018 | 1286.805 | ALMON |
| G153 | 4009567.434 | 4874491.426 | 1260.563 | ALMON |
| G154 | 4009617.640 | 4859142.095 | 1242.373 | ALMON |
| G155 | 4009621.512 | 4843085.160 | 1224.181 | ALMON |
| G156 | 4009778.732 | 4827747.629 | 1181.190 | ALMON |
| G157 | 4009846.480 | 4811909.473 | 1141.810 | ALMON |
| G158 | 4009983.404 | 4796480.590 | 1136.475 | ALMON |

**Section 4**  
**NGS Data Sheets**

2002-1.txt

```

OO0687 *****
OO0687 FBN - This is a Federal Base Network Control Station.
OO0687 DESIGNATION - 41 1
OO0687 PID - 000687
OO0687 STATE/COUNTY- IA/HANCOCK
OO0687 USGS QUAD - MILLER (1972)
OO0687
OO0687 *CURRENT SURVEY CONTROL
OO0687
OO0687* NAD 83(1996)- 43 07 33.22864(N) 093 30 06.64456(W) ADJUSTED
OO0687* NAVD 88 - 385.877 (meters) 1266.00 (feet) ADJUSTED
OO0687
OO0687 X - -284,798.750 (meters) COMP
OO0687 Y - -4,653,958.035 (meters) COMP
OO0687 Z - 4,337,964.369 (meters) COMP
OO0687 LAPLACE CORR- 9.55 (seconds) DEFLEC99
OO0687 ELLIP HEIGHT- 357.09 (meters) GPS OBS
OO0687 GEOID HEIGHT- -28.80 (meters) GEOID99
OO0687 DYNAMIC HT - 385.771 (meters) 1265.65 (feet) COMP
OO0687 MODELED GRAV- 980,334.0 (mgal) NAVD 88
OO0687
OO0687 HORZ ORDER - B
OO0687 VERT ORDER - FIRST CLASS II
OO0687 ELLP ORDER - FOURTH CLASS I
OO0687
OO0687.The horizontal coordinates were established by GPS observations
OO0687.and adjusted by the National Geodetic Survey in August 1997.
OO0687
OO0687.The orthometric height was determined by differential leveling
OO0687.and adjusted by the National Geodetic Survey in June 1991.
OO0687
OO0687.The X, Y, and Z were computed from the position and the ellipsoidal ht.
OO0687
OO0687.The Laplace correction was computed from DEFLEC99 derived deflections.
OO0687
OO0687.The ellipsoidal height was determined by GPS observations
OO0687.and is referenced to NAD 83.
OO0687
OO0687.The geoid height was determined by GEOID99.
OO0687
OO0687.The dynamic height is computed by dividing the NAVD 88
OO0687.geopotential number by the normal gravity value computed on the
OO0687.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
OO0687.degrees latitude (g = 980.6199 gals.).
OO0687
OO0687.The modeled gravity was interpolated from observed gravity values.
OO0687
OO0687;
OO0687;SPC IA N - 1,180,603.179 1,499,849.810 MT 0.99997731 -0 00 04.5
OO0687;UTM 15 - 4,774,917.792 459,178.961 MT 0.99962050 -0 20 35.0
OO0687
OO0687 SUPERSEDED SURVEY CONTROL
OO0687
OO0687 NAD 83(1986)- 43 07 33.22055(N) 093 30 06.63372(W) AD( ) 3
OO0687 NGVD 29 - 385.855 (m) 1265.93 (f) ADJ UNCH 1 2
OO0687
OO0687.Superseded values are not recommended for survey control.
OO0687.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
OO0687.See file dsdata.txt to determine how the superseded data were derived.
OO0687

```

000687\_MARKER: DD = SURVEY DISK  
 000687\_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT  
 000687\_STAMPING: 41 1  
 000687\_MAGNETIC: N = NO MAGNETIC MATERIAL  
 000687\_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO  
 000687+STABILITY: SURFACE MOTION  
 000687\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR  
 000687+SATELLITE: SATELLITE OBSERVATIONS - June 26, 1989

000687  
 000687 HISTORY - Date Condition Recov. By  
 000687 HISTORY - UNK MONUMENTED IAGS  
 000687 HISTORY - 1934 GOOD NGS  
 000687 HISTORY - 19890626 GOOD NGS  
 000687 HISTORY - 19950601 GOOD IAHD  
 000687 HISTORY - 19960925 GOOD IADT

000687 STATION DESCRIPTION

000687'DESCRIBED BY NATIONAL GEODETIC SURVEY 1934  
 000687'1.2 MI W FROM GARNER.  
 000687'IN HANCOCK COUNTY, 1.2 MILES WEST ALONG U.S. HIGHWAY 18 FROM THE  
 000687'COUNTY-ROAD CROSSING AT VENTURA, CERRO GORDO COUNTY, IN SEC. 24, T. 96  
 000687'N., R. 23 W., 1127 FEET SOUTHWEST OF A COPPER PLUG IN THE PAVEMENT,  
 000687'62.6 FEET SOUTHEAST OF BLACK DIAMOND TELEPHONE POLE 5, 20 FEET SOUTH  
 000687'OF THE PAVEMENT, AND 3.3 FEET NORTH OF A FENCE. A STATE SURVEY  
 000687'STANDARD DISK, STAMPED 41-1 AND SET IN THE TOP OF A CONCRETE POST.

000687 STATION RECOVERY (1989)

000687'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1989  
 000687'THE STATION IS LOCATED ABOUT 2.5 KM (1.55 MI) WEST-SOUTHWEST OF  
 000687'VENTURA, 8.05 KM (5.00 MI) EAST-NORTHEAST OF GARNER, ON THE SOUTH SIDE  
 000687'OF A PAVED ROAD AND JUST EAST OF A ROAD LEADING SOUTH INTO THE VENTURA  
 000687'MARSH WILDLIFE MANAGEMENT AREA. OWNERSHIP--DEPARTMENT OF  
 000687'TRANSPORTATION, 800 LINCOLN WAY, AMES, IA 50010, PHONE 515-239-1101.  
 000687'TO REACH THE STATION FROM THE JUNCTION OF US HIGHWAY 18 AND US HIGHWAY  
 000687'69 SOUTH IN GARNER, GO EAST ON STATE HIGHWAY 18 FOR 8.2 KM (5.10 MI)  
 000687'TO THE JUNCTION OF COUNTY ROAD R 70. TURN RIGHT, SOUTH, ON COUNTY  
 000687'ROAD R 70 FOR 0.05 KM (0.05 MI) TO A PAVED ROAD ON THE LEFT JUST SOUTH  
 000687'OF A RAILROAD CROSSING. TURN LEFT, EAST, ON THE PAVED ROAD FOR 1.3 KM  
 000687'(0.80 MI) TO THE MARK ON THE RIGHT, JUST PAST THE ENTRANCE ROAD  
 000687'LEADING INTO THE VENTURA MARSH WILDLIFE MANAGMENT AREA.  
 000687'THE STATION IS A STANDARD CGS AND STATE SURVEY DISK PROJECTING ABOUT  
 000687'4-INCHES ABOVE THE GROUND. LOCATED 38.5 M (126.3 FT) EAST OF THE  
 000687'CENTER OF THE ROAD LEADING INTO THE WILDLIFE MANAGEMENT AREA, 9.0 M  
 000687'(29.5 FT) SOUTH OF THE CENTER OF THE PAVED ROAD, 6.1 M (20.0 FT) NORTH  
 000687'OF A BARBED WIRE FENCE, 5.3 M (17.4 FT) SOUTHEAST OF A HIGHWAY SIGN  
 000687'WITH A CURVE SYMBOL AND 0.2 M (0.7 FT) NORTH OF A METAL WITNESS POST.  
 000687'DESCRIBED BY M. L. MCCREADY.

000687 STATION RECOVERY (1995)

000687'RECOVERY NOTE BY IOWA HIGHWAY DEPARTMENT 1995  
 000687'RECOVERED AS DESCRIBED.

000687 STATION RECOVERY (1996)

000687'RECOVERY NOTE BY IOWA DEPARTMENT OF TRANSPORTATION 1996 (SRM)  
 000687'RECOVERED AS DESCRIBED BY IOWA DOT. A PINK STATE HARN SURVEY SIGN WAS  
 000687'SET 6.1 M (20.0 FT) SOUTH IN THE R.O.W. FENCE.

2002-4.TXT

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OO1179 *****
OO1179 CBN - This is a Cooperative Base Network Control Station.
OO1179 DESIGNATION - JOICE RESET
OO1179 PID - OO1179
OO1179 STATE/COUNTY- IA/WORTH
OO1179 USGS QUAD - FERTILE (1972)
OO1179
OO1179 *CURRENT SURVEY CONTROL
OO1179
OO1179* NAD 83(1996)- 43 21 34.26088(N) 093 24 30.73393(W) ADJUSTED
OO1179* NAVD 88 - 409.4 (meters) 1343. (feet) GPS OBS
OO1179
OO1179 X - -276,162.974 (meters) COMP
OO1179 Y - -4,636,681.737 (meters) COMP
OO1179 Z - 4,356,888.184 (meters) COMP
OO1179 LAPLACE CORR- 6.57 (seconds) DEFLEC99
OO1179 ELLIP HEIGHT- 380.29 (meters) GPS OBS
OO1179 GEOID HEIGHT- -29.14 (meters) GEOID99
OO1179
OO1179 HORZ ORDER - B
OO1179 ELLP ORDER - FOURTH CLASS I
OO1179
OO1179.The horizontal coordinates were established by GPS observations
OO1179.and adjusted by the National Geodetic Survey in January 1997.
OO1179.No horizontal observational check was made to the station.
OO1179
OO1179.The orthometric height was determined by GPS observations and a
OO1179.high-resolution geoid model.
OO1179
OO1179.The X, Y, and Z were computed from the position and the ellipsoidal ht.
OO1179
OO1179.The Laplace correction was computed from DEFLEC99 derived deflections.
OO1179
OO1179.The ellipsoidal height was determined by GPS observations
OO1179.and is referenced to NAD 83.
OO1179
OO1179.The geoid height was determined by GEOID99.
OO1179
OO1179; North East Units Scale Converg.
OO1179;SPC IA N - 1,206,561.693 1,507,414.470 MT 1.00001829 +0 03 43.2
OO1179;UTM 15 - 4,800,820.828 466,895.591 MT 0.99961348 -0 16 49.8
OO1179
OO1179: Primary Azimuth Mark Grid Az
OO1179:SPC IA N - JOICE AZ MK 250 53 41.9
OO1179:UTM 15 - JOICE AZ MK 251 14 14.9
OO1179
OO1179|-----|
OO1179| PID Reference Object Distance Geod. Az |
OO1179| | | | dddmmss.s |
OO1179| JOICE RM 3 20.494 METERS 00715 |
OO1179| OO1130 MANLEY ROUND HOUSE CHIMNEY APPROX.17.9 KM 1130132.5 |
OO1179| OO1129 MANLEY STANDPIPE APPROX.18.4 KM 1154859.6 |
OO1179| OO1181 HANLONTOWN GRACE LUTH CH SPIRE APPROX. 9.3 KM 1631845.8 |
OO1179| AC5727 JOICE RM 1 74.963 METERS 18049 |
OO1179| OO1182 FERTILE LUTH CH SPIRE APPROX.10.5 KM 1881633.4 |
OO1179| OO1195 FOREST CITY STANDPIPE APPROX.21.9 KM 2403840.8 |
OO1179| JOICE AZ MK 2505725.1 |
OO1179| JOICE RM 4 19.628 METERS 27015 |
OO1179| AC5728 JOICE RM 2 4.775 METERS 27122 |
OO1179| OO1177 JOICE FARMERS ELEVATOR E GABLE APPROX. 3.5 KM 2744141.1 |

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OO1179| OO1180 JOICE WHEELERS ELEV E GABLE                   APPROX. 3.5 KM 2763836.9 |  
 OO1179| OO1185 LAKE MILLS STANDPIPE                   APPROX.12.0 KM 3024623.7 |  
 OO1179|-----|

OO1179

OO1179

## SUPERSEDED SURVEY CONTROL

OO1179

OO1179 NAD 83(1986)- 43 21 34.25234(N)   093 24 30.72972(W) AD(           ) 1

OO1179 NAD 27       - 43 21 34.41500(N)   093 24 29.98400(W) AD(           ) 1

OO1179 NGVD 29     -           408.6       (m)           1341.       (f) VERT ANG

OO1179

OO1179.Superseded values are not recommended for survey control.

OO1179.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

OO1179.See file dsdata.txt to determine how the superseded data were derived.

OO1179

OO1179\_MARKER: DS = TRIANGULATION STATION DISK

OO1179\_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

OO1179\_STAMPING: JOICE 1926 1971

OO1179\_MAGNETIC: N = NO MAGNETIC MATERIAL

OO1179\_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

OO1179+STABILITY: SURFACE MOTION

OO1179\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

OO1179+SATELLITE: SATELLITE OBSERVATIONS - March 11, 1996

OO1179

| OO1179 | HISTORY | - Date     | Condition  | Recov. By |
|--------|---------|------------|------------|-----------|
| OO1179 | HISTORY | - 1971     | MONUMENTED | NGS       |
| OO1179 | HISTORY | - 1971     | GOOD       | NGS       |
| OO1179 | HISTORY | - 1972     | GOOD       | USGS      |
| OO1179 | HISTORY | - 19960311 | GOOD       | MNDT      |
| OO1179 | HISTORY | - 19960916 | GOOD       | IADT      |

OO1179

OO1179

## STATION DESCRIPTION

OO1179

OO1179'DESCRIBED BY NATIONAL GEODETIC SURVEY 1971 (JLC)

OO1179'THE STATION MARK WAS RECOVERED AND FOUND IN GOOD CONDITION

OO1179'BUT INFORMATION OBTAINED FROM THE WORTH COUNTY ENGINEER STATED

OO1179'THAT THEIR OFFICE HAD LOWERED THE SURFACE MARK. HIS RECORDS

OO1179'INDICATE THAT THE HORIZONTAL POSITION OF THE SURFACE MARK

OO1179'HAD BEEN HELD AND THE MARK LOWERED 4.77 FEET DURING ROAD

OO1179'CONSTRUCTION IN 1955. THE UNDERGROUND MARK, REFERENCE MARKS

OO1179'1 AND 2 WERE DESTROYED AT THE SAME TIME. THE SURFACE MARK WAS

OO1179'RESTAMPED, REFERENCE MARKS 3 AND 4 AND AN AZIMUTH MARK WERE

OO1179'ESTABLISHED AT THIS TIME. FOLLOWING IS A NEW AND COMPLETE

OO1179'DESCRIPTION.

OO1179'

OO1179'THE STATION IS LOCATED ABOUT 6 MILES NORTH OF FERTILE, 2-1/2 MILES

OO1179'EAST OF JOICE IN THE SE 1/4 OF SEC. 26, T. 99 N., R. 22 W.

OO1179'AND ON ROAD RIGHT-OF-WAY.

OO1179'

OO1179'TO REACH THE STATION FROM THE POST OFFICE IN JOICE, GO EAST ON

OO1179'STATE HIGHWAY 397 FOR 0.1 MILE TO A CROSS ROAD. TURN RIGHT

OO1179'AND GO SOUTH ON A PAVED ROAD FOR 0.4 MILE TO A T-ROAD. TURN

OO1179'LEFT AND GO EAST ON A PAVED ROAD FOR 0.5 MILE TO A SIDE ROAD

OO1179'RIGHT. \*\*CONTINUE EAST ON THE PAVED ROAD FOR 1.45 MILE TO

OO1179'A CROSS ROAD. TURN LEFT AND GO NORTH ON A GRAVELED ROAD

OO1179'0.1 MILE TO A PIPE LINE CROSSING. CONTINUE NORTH ON THE

OO1179'GRAVELED ROAD FOR 0.05 MILE TO THE STATION ON THE RIGHT.

OO1179'

OO1179'THE STATION MARK IS A STANDARD DISK STAMPED JOICE 1926 1971.

OO1179'THE SURFACE DISK IS SET IN THE TOP OF A 12-INCH SQUARE CONCRETE

OO1179'MONUMENT THAT PROJECTS 3 INCHES ABOVE THE GROUND SURFACE.

OO1179'IT IS 56 FEET SOUTH OF THE CENTER OF A FIELD ENTRANCE, 34 FEET

OO1179'EAST OF THE CENTER OF A GRAVELED ROAD, 10 FEET WEST OF A WIRE

OO1179'FENCE, 5 FEET WEST OF A METAL WITNESS POST AND ABOUT 4 FEET  
OO1179'LOWER THAN THE ROAD SURFACE.

OO1179'

OO1179'REFERENCE MARK 3, A STANDARD DISK STAMPED JOICE 1926 NO 3 1971,  
OO1179'IS SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT  
OO1179'THAT PROJECTS 2 INCHES ABOVE THE GROUND SURFACE. IT IS 41 FEET  
OO1179'EAST OF THE CENTER OF THE GRAVELED ROAD, 11 FEET NORTH OF THE  
OO1179'CENTER OF THE FIELD ENTRANCE AND 2 FEET WEST OF THE WIRE FENCE.  
OO1179'

OO1179'REFERENCE MARK 4, A STANDARD DISK STAMPED JOICE 1926 NO 4 1971,  
OO1179'IS SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT  
OO1179'THAT PROJECTS 2 INCHES ABOVE THE GROUND SURFACE. IT IS 73 FEET  
OO1179'SOUTH OF THE CENTER OF A FIELD ENTRANCE, 31 FEET WEST OF THE  
OO1179'CENTER OF THE GRAVELED ROAD, 1 FOOT EAST OF A WIRE FENCE  
OO1179'

OO1179'THE AZIMUTH MARK, A STANDARD DISK STAMPED JOICE 1926 1971, IS  
OO1179'SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT  
OO1179'THAT PROJECTS 4 INCHES ABOVE THE GROUND SURFACE. IT IS 50 FEET  
OO1179'WEST OF THE CENTER OF A PAVED ROAD, 2 FEET SOUTH OF A POWER POLE  
OO1179'AND 2 FEET NORTH OF A METAL WITNESS POST.  
OO1179'

OO1179'\*\*\*TO REACH THE AZIMUTH MARK FROM THIS POINT, GO SOUTH ON A  
OO1179'PAVED ROAD FOR 0.4 MILE TO THE AZIMUTH MARK ON THE RIGHT.  
OO1179'

OO1179'HEIGHT OF LIGHT ABOVE STATION MARK 73.2 FEET.

OO1179

OO1179

STATION RECOVERY (1972)

OO1179

OO1179'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1972  
OO1179'ALL MARKS FOUND IN GOOD CONDITION. DISTANCES AND DIRECTIONS  
OO1179'CHECKED EXCEPT R.M. 4 IS OBSCURED. DESCRIPTION ADEQUATE.  
OO1179'

OO1179

STATION RECOVERY (1996)

OO1179

OO1179'RECOVERY NOTE BY MN DEPT OF TRANSP 1996 (GWO)  
OO1179'THE STATION WAS RECOVERED IN GOOD CONDITION. RM 3 AND RM 4 WERE  
OO1179'SEARCHED FOR AND NOT FOUND. A RR SPIKE WAS SET BY THE MARK TO MAKE IT  
OO1179'MAGNETIC. A NEW DESCRIPTION FOLLOWS. THE MARK IS ABOUT 2.5 MI (4.0  
OO1179'KM) EAST OF THE TOWN OF JOICE-IA IN THE SE 1/4 OF SECTION 26, T99N,  
OO1179'R22W. TO REACH THE MARK FROM THE IA-MN BORDER ON FAI 35, GO SOUTH ON  
OO1179'FAI 35 FOR 9.9 MI (15.9 KM) TO EXIT 208, THEN GO WEST FOR 2.9 MI (4.7  
OO1179'KM) ON CO RD A38, THEN GO NORTH ON A GRAVEL RD (EVERGREEN RD) FOR 0.15  
OO1179'MI (0.24 KM) TO THE MARK ON THE RIGHT. THE MARK, A DISK SET IN A CONC  
OO1179'MON, IS 34 FT (10.4 M) EAST OF A GRAVEL RD, 56 FT (17.1 M) SOUTH OF A  
OO1179'FIELD ENT, 5.0 FT (1.5 M) WEST OF A WIT POST, 276.7 FT (84.3 M) NNW OF  
OO1179'A GASOLINE WIT POST, 64.4 FT (19.6 M) EAST OF RM 4, AND 67.24 FT  
OO1179'(20.49 M) SOUTH OF RM 3. RECOVERED AND DESCRIBED BY GREGORY W.  
OO1179'OBERN, CHECKED BY J.E.M.

OO1179

OO1179

STATION RECOVERY (1996)

OO1179

OO1179'RECOVERY NOTE BY IOWA DEPARTMENT OF TRANSPORTATION 1996 (SRM)  
OO1179'RECOVERED IN 1996 BY IOWA DOT. TO REACH THE STATION FROM THE  
OO1179'INTERSECTION OF INTERSTATE 35 SOUTHBOUND ON-OFF RAMP AND COUNTY ROAD  
OO1179'A 38, GO WEST ON COUNTY ROAD A 38 FOR 2.9 MI (4.7 KM) TO A CROSSROAD,  
OO1179'EVERGREEN AVENUE. TURN RIGHT AND GO NORTH ON EVERGREEN AVE. FOR 0.15  
OO1179'MI (0.24 KM) TO THE STATION ON THE RIGHT, IN THE SOUTHEAST 1/4 OF  
OO1179'SECTION 26, T 99 N, R 22 W. THE MONUMENT IS 1.5 M (4.9 FT) WEST OF A  
OO1179'WHITE METAL WITNESS POST, AND 2.6 M (8.5 FT) WEST OF A PINK STATE HARN  
OO1179'SURVEY SIGN.

1

National Geodetic Survey, Retrieval Date = OCTOBER 3, 2000

2002-19.TXT

000700 \*\*\*\*\*

000700 DESIGNATION - FOREST CITY  
 000700 PID - 000700  
 000700 STATE/COUNTY- IA/WINNEBAGO  
 000700 USGS QUAD - FOREST CITY (1972)

000700  
 000700 \*CURRENT SURVEY CONTROL

|         |               |                    |                    |          |
|---------|---------------|--------------------|--------------------|----------|
| 000700* | NAD 83(1996)- | 43 15 45.85237(N)  | 093 38 18.86043(W) | ADJUSTED |
| 000700* | NAVD 88       | - 390.319 (meters) | 1280.57 (feet)     | ADJUSTED |
| 000700  | LAPLACE CORR- | 0.67 (seconds)     |                    | DEFLEC99 |
| 000700  | GEOID HEIGHT- | -29.40 (meters)    |                    | GEOID99  |
| 000700  | DYNAMIC HT -  | 390.199 (meters)   | 1280.18 (feet)     | COMP     |
| 000700  | MODELED GRAV- | 980,302.9 (mgal)   |                    | NAVD 88  |

000700 HORZ ORDER - SECOND  
 000700 VERT ORDER - SECOND CLASS 0  
 000700

000700.The horizontal coordinates were established by classical geodetic methods  
 000700.and adjusted by the National Geodetic Survey in May 1999.  
 000700

000700.The orthometric height was determined by differential leveling  
 000700.and adjusted by the National Geodetic Survey in June 1991.  
 000700

000700.The Laplace correction was computed from DEFLEC99 derived deflections.  
 000700

000700.The geoid height was determined by GEOID99.  
 000700

000700.The dynamic height is computed by dividing the NAVD 88  
 000700.geopotential number by the normal gravity value computed on the  
 000700.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45  
 000700.degrees latitude (g = 980.6199 gals.).  
 000700

000700.The modeled gravity was interpolated from observed gravity values.  
 000700

| 000700;         |   | North         | East          | Units | Scale      | Converg.   |
|-----------------|---|---------------|---------------|-------|------------|------------|
| 000700;SPC IA N | - | 1,195,814.654 | 1,488,748.954 | MT    | 0.99999928 | -0 05 38.1 |
| 000700;UTM 15   | - | 4,790,189.878 | 448,173.274   | MT    | 0.99963304 | -0 26 15.5 |

000700 SUPERSEDED SURVEY CONTROL

|        |               |                     |                    |              |
|--------|---------------|---------------------|--------------------|--------------|
| 000700 | NAD 83(1996)- | 43 15 45.85237(N)   | 093 38 18.86043(W) | AD( ) 2      |
| 000700 | NAD 83(1986)- | 43 15 45.84440(N)   | 093 38 18.85400(W) | AD( ) 2      |
| 000700 | NAD 27        | - 43 15 46.00725(N) | 093 38 18.08685(W) | AD( ) 2      |
| 000700 | NGVD 29       | - 390.279 (m)       | 1280.44 (f)        | ADJ UNCH 2 0 |

000700.Superseded values are not recommended for survey control.  
 000700.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.  
 000700.See file dsdata.txt to determine how the superseded data were derived.  
 000700

000700\_MARKER: DB = BENCH MARK DISK  
 000700\_SETTING: 30 = CONCRETE BASE  
 000700\_STAMPING: FOREST CITY 1934  
 000700\_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY  
 000700

| 000700 | HISTORY | - Date | Condition  | Recov. By |
|--------|---------|--------|------------|-----------|
| 000700 | HISTORY | - 1934 | MONUMENTED | CGS       |
| 000700 | HISTORY | - 1942 | GOOD       | NGS       |

000700 HISTORY - 1971 GOOD NGS  
000700 HISTORY - 1971 GOOD NGS

000700

000700

000700

STATION DESCRIPTION

000700

'DESCRIBED BY NATIONAL GEODETIC SURVEY 1942

'IN FOREST CITY.

'AT FOREST CITY, AT THE INTERSECTION OF WEST I STREET AND SOUTH CLARK

'STREET, AT THE CANNON IN THE SOUTHEAST CORNER OF THE COURTHOUSE

'SQUARE, IN THE TOP OF THE CONCRETE BASE, 83 FEET NORTH OF THE

'CENTERLINE OF WEST I STREET, .48 FEET WEST OF THE CENTERLINE OF SOUTH

'CLARK STREET, AND 6 INCHES WEST OF THE SOUTHEAST CORNER OF THE BASE. A

'STANDARD DISK, STAMPED FOREST CITY 1934.

000700

000700

STATION RECOVERY (1971)

000700

'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1971

'THE STATION IS LOCATED IN THE TOWN OF FOREST CITY, IN THE

'CENTER OF TOWN AND ON THE EAST SIDE OF THE COUNTY COURTHOUSE.

000700'

'BM FOREST CITY, A STANDARD BENCH MARK DISK STAMPED FOREST

'CITY 1934 1280.440, IS CEMENTED IN A DRILL HOLE IN THE CONCRETE

'FOOTING FOR A BRICK PIER. IT IS 99 FEET SOUTH OF THE CENTER

'OF THE SIDEWALK LEADING TO THE MAIN ENTRANCE OF THE COURTHOUSE,

'49 FEET WEST OF THE CENTER OF SOUTH CLARK STREET AND AT THE

'SOUTHEAST CORNER OF THE BRICK PIER.

000700

000700

STATION RECOVERY (1971)

000700

'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1971

'RECOVERED IN GOOD CONDITION.

1

National Geodetic Survey, Retrieval Date = OCTOBER 3, 2000

2002-23.TXT

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OO1209 *****
OO1209 CBN - This is a Cooperative Base Network Control Station.
OO1209 DESIGNATION - CLOVER
OO1209 PID - 001209
OO1209 STATE/COUNTY- IA/HANCOCK
OO1209 USGS QUAD - CRYSTAL LAKE (1972)
OO1209
OO1209 *CURRENT SURVEY CONTROL
OO1209
OO1209* NAD 83(1996)- 43 13 38.05195(N) 093 50 59.62281(W) ADJUSTED
OO1209* NAVD 88 - 397.9 (meters) 1305. (feet) GPS OBS
OO1209
OO1209 X - -312,547.597 (meters) COMP
OO1209 Y - -4,644,463.902 (meters) COMP
OO1209 Z - 4,346,182.966 (meters) COMP
OO1209 LAPLACE CORR- -3.45 (seconds) DEFLEC99
OO1209 ELLIP HEIGHT- 368.65 (meters) GPS OBS
OO1209 GEOID HEIGHT- -29.25 (meters) GEOID99
OO1209
OO1209 HORZ ORDER - B
OO1209 ELLP ORDER - FOURTH CLASS I
OO1209
OO1209.The horizontal coordinates were established by GPS observations
OO1209.and adjusted by the National Geodetic Survey in August 1997.
OO1209
OO1209.The orthometric height was determined by GPS observations and a
OO1209.high-resolution geoid model.
OO1209
OO1209.The X, Y, and Z were computed from the position and the ellipsoidal ht.
OO1209
OO1209.The Laplace correction was computed from DEFLEC99 derived deflections.
OO1209
OO1209.The ellipsoidal height was determined by GPS observations
OO1209.and is referenced to NAD 83.
OO1209
OO1209.The geoid height was determined by GEOID99.
OO1209
OO1209;
OO1209; North East Units Scale Converg.
OO1209;SPC IA N - 1,191,920.297 1,471,574.848 MT 0.99999303 -0 14 13.7
OO1209;UTM 15 - 4,786,400.144 430,982.107 MT 0.99965860 -0 34 55.6
OO1209
OO1209; Primary Azimuth Mark Grid Az
OO1209;SPC IA N - CLOVER AZ MK 266 08 00.4
OO1209;UTM 15 - CLOVER AZ MK 266 28 42.3
OO1209
OO1209|-----|
OO1209| PID Reference Object Distance Geod. Az |
OO1209| | | | | | | | |
OO1209| CLOVER RM 1 18.306 METERS 08207 |
OO1209| CLOVER AZ MK 2655346.7 |
OO1209| CLOVER RM 2 19.729 METERS 27616 |
OO1209|-----|
OO1209
OO1209 SUPERSEDED SURVEY CONTROL
OO1209
OO1209 NAD 83(1986)- 43 13 38.04404(N) 093 50 59.61670(W) AD( ) 1
OO1209 NAD 27 - 43 13 38.18857(N) 093 50 58.80923(W) AD( ) 1
OO1209 NGVD 29 - 397.4 (m) 1304. (f) VERT ANG
OO1209
OO1209.Superseded values are not recommended for survey control.

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001209.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.  
001209.See file dsdata.txt to determine how the superseded data were derived.

001209

001209\_MARKER: DS = TRIANGULATION STATION DISK

001209\_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

001209\_STAMPING: CLOVER 1971

001209\_MAGNETIC: N = NO MAGNETIC MATERIAL

001209\_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

001209+STABILITY: SURFACE MOTION

001209\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

001209+SATELLITE: SATELLITE OBSERVATIONS - September 25, 1996

001209

| 001209 | HISTORY | - Date     | Condition  | Recov. By |
|--------|---------|------------|------------|-----------|
| 001209 | HISTORY | - 1971     | MONUMENTED | NGS       |
| 001209 | HISTORY | - 1972     | GOOD       | USGS      |
| 001209 | HISTORY | - 19960925 | GOOD       | IADT      |

001209

#### STATION DESCRIPTION

001209

001209'DESCRIBED BY NATIONAL GEODETIC SURVEY 1971 (JLC)

001209'THE STATION IS LOCATED ABOUT 3 MILES WEST OF CRYSTAL LAKE,  
001209'3 MILES EAST OF WODEN, 2 MILES SOUTH OF THE WINNEBAGO-HANCOCK  
001209'COUNTY LINE AND ON STATE RIGHT-OF-WAY. IT IS IN THE SOUTHWEST  
001209'1/4 OF SECTION 7, T 97 N, R 25 W.

001209'

001209'TO REACH THE STATION FROM THE POST OFFICE IN WODEN, GO WEST ON  
001209'A PAVED STREET FOR 0.1 MILE TO A T-ROAD, TURN LEFT AND GO  
001209'SOUTH ON STATE HIGHWAY 111 FOR 0.2 MILE TO A FORK, TAKE THE  
001209'LEFT FORK AND GO EAST ON STATE HIGHWAY 111 FOR 2.8 MILES TO  
001209'A FIELD ENTRANCE ROAD AND THE AZIMUTH MARK ON THE RIGHT.

001209'CONTINUE EAST ON STATE HIGHWAY 111 FOR 0.25 MILE TO A FIELD  
001209'ENTRANCE ROAD AND THE STATION ON THE LEFT.

001209'

001209'STATION MARKS ARE STANDARD DISKS STAMPED CLOVER 1971. THE SURFACE  
001209'DISK IS SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE  
001209'MONUMENT THAT IS FLUSH WITH THE GROUND SURFACE. IT IS 112 FEET  
001209'NORTH OF A TELEPHONE POLE WITH A TRIANGULAR BLAZE, 50 FEET  
001209'NORTH OF THE CENTER OF STATE HIGHWAY 111 AND 22 FEET EAST  
001209'OF THE CENTER OF THE FIELD ENTRANCE ROAD. THE UNDERGROUND  
001209'DISK IS SET IN THE TOP OF AN IRREGULAR MASS OF CONCRETE 40  
001209'INCHES BELOW THE GROUND SURFACE.

001209'

001209'REFERENCE MARK 1, A STANDARD DISK STAMPED CLOVER NO 1 1971,  
001209'IS SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT  
001209'THAT IS FLUSH WITH THE GROUND SURFACE. IT IS 126 FEET  
001209'NORTH-NORTHEAST OF THE TELEPHONE POLE, 79 FEET EAST OF THE CENTER  
001209'OF THE FIELD ENTRANCE ROAD AND 59 FEET NORTH OF THE CENTER OF  
001209'STATE HIGHWAY 111.

001209'

001209'REFERENCE MARK 2, A STANDARD DISK STAMPED CLOVER NO 2 1971,  
001209'IS SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT  
001209'THAT IS FLUSH WITH THE GROUND SURFACE. IT IS 143 FEET NORTHWEST  
001209'OF THE TELEPHONE POLE, 57 FEET NORTH OF THE CENTER OF STATE  
001209'HIGHWAY 111 AND 43 FEET WEST OF THE CENTER OF THE FIELD  
001209'ENTRANCE ROAD.

001209'

001209'THE AZIMUTH MARK, A STANDARD DISK STAMPED CLOVER 1971, IS SET  
001209'IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT THAT  
001209'IS FLUSH WITH THE GROUND SURFACE. IT IS 59 FEET SOUTH OF THE  
001209'CENTER OF STATE HIGHWAY 111, 9 FEET EAST OF THE CENTER OF THE  
001209'FIELD ENTRANCE ROAD, 2 FEET WEST-NORTHWEST OF A METAL WITNESS  
001209'POST AND 1-FOOT NORTH OF A WIRE FENCE.

001209'

001209'HEIGHT OF LIGHT ABOVE STATION MARK 26.5 METERS.

001209

001209

STATION RECOVERY (1972)

001209

001209'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1972

001209'ALL MARKS FOUND IN GOOD CONDITION. DESCRIPTION ADEQUATE AND

001209'DISTANCES CHECKED.

001209

001209

STATION RECOVERY (1996)

001209

001209'RECOVERY NOTE BY IOWA DEPARTMENT OF TRANSPORTATION 1996 (SRM)  
001209'RECOVERED IN 1996 BY IOWA DOT. STATION IS LOCATED 3.2 MI (5.1 KM)  
001209'EAST OF WODEN AND 2.6 MI (4.2 KM) WEST OF CRYSTAL LAKE IN THE  
001209'SOUTHWEST 1/4 OF SECTION 7, T 97 N, R 25 W. TO REACH THE STATION FROM  
001209'THE INTERSECTION OF PAVED COUNTY ROAD B 14 (WEST) AND PAVED COUNTY  
001209'ROAD R 20 ON THE NORTH SIDE OF THE TOWN OF WODEN, GO SOUTH ON R 20 FOR  
001209'0.8 MI (1.3 KM) TO A Y-INTERSECTION IN THE TOWN OF WODEN. FOLLOW THE  
001209'CURVE LEFT (ONTO COUNTY ROAD R 35) AND GO EAST FOR 3.2 MI (5.1 KM) TO  
001209'A FIELD ENTRANCE AND THE STATION, BOTH ON THE LEFT, NORTH SIDE OF THE  
001209'ROAD. RESET ORANGE CARSONITE MARKER 0.5 M (1.6 FT) WEST OF THE  
001209'MONUMENT, AND SET A PINK STATE HARN SURVEY SIGN 1.0 M (3.3 FT) NORTH  
001209'OF THE MONUMENT. THE MONUMENT IS 50 FT (15.2 M) NORTH OF THE  
001209'CENTERLINE OF COUNTY ROAD R 35, 22 FT (6.7 M) EAST OF THE CENTER OF A  
001209'FIELD ENTRANCE, AND IS FLUSH WITH THE GROUND.

1 National Geodetic Survey, Retrieval Date = OCTOBER 3, 2000

2002-27.TXT

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OO0693 *****
OO0693 DESIGNATION - Q 34
OO0693 PID - 000693
OO0693 STATE/COUNTY- IA/WINNEBAGO
OO0693 USGS QUAD - LAKE MILLS (1972)
OO0693
OO0693 *CURRENT SURVEY CONTROL
OO0693
OO0693* NAD 83(1986)- 43 24 02. (N) 093 35 54. (W) SCALED
OO0693* NAVD 88 - 374.093 (meters) 1227.34 (feet) ADJUSTED
OO0693
OO0693 GEOID HEIGHT- -29.43 (meters) GEOID99
OO0693 DYNAMIC HT - 373.983 (meters) 1226.98 (feet) COMP
OO0693 MODELED GRAV- 980,316.7 (mgal) NAVD 88
OO0693
OO0693 VERT ORDER - SECOND CLASS 0
OO0693
OO0693.The horizontal coordinates were scaled from a topographic map and have
OO0693.an estimated accuracy of +/- 6 seconds.
OO0693
OO0693.The orthometric height was determined by differential leveling
OO0693.and adjusted by the National Geodetic Survey in June 1991.
OO0693
OO0693.The geoid height was determined by GEOID99.
OO0693
OO0693.The dynamic height is computed by dividing the NAVD 88
OO0693.geopotential number by the normal gravity value computed on the
OO0693.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
OO0693.degrees latitude (g = 980.6199 gals.).
OO0693
OO0693.The modeled gravity was interpolated from observed gravity values.
OO0693
OO0693;
OO0693;SPC IA N - 1,211,120. North East Units Estimated Accuracy
OO0693; - 1,211,120. 1,492,030. MT (+/- 180 meters Scaled)
OO0693
OO0693 SUPERSEDED SURVEY CONTROL
OO0693
OO0693 NGVD 29 - 374.055 (m) 1227.21 (f) ADJ UNCH 2 0
OO0693
OO0693.Superseded values are not recommended for survey control.
OO0693.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
OO0693.See file dsdata.txt to determine how the superseded data were derived.
OO0693
OO0693_MARKER: DB = BENCH MARK DISK
OO0693_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
OO0693_STAMPING: Q 34 1934
OO0693_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
OO0693+STABILITY: SURFACE MOTION
OO0693
OO0693 HISTORY - Date Condition Recov. By
OO0693 HISTORY - 1934 MONUMENTED CGS
OO0693
OO0693 STATION DESCRIPTION
OO0693
OO0693'DESCRIBED BY COAST AND GEODETIC SURVEY 1934
OO0693'4 MI SW FROM LAKE MILLS.
OO0693'4 MILES SOUTHWEST ALONG THE MINNEAPOLIS AND ST. LOUIS RAILWAY FROM THE
OO0693'STATION AT LAKE MILLS, AT A GRAVEL ROAD CROSSING, 78 FEET SOUTH OF THE
OO0693'CENTERLINE OF THE ROAD, 44 FEET SOUTHEAST OF THE SOUTHEAST RAIL, 43
OO0693'FEET SOUTHEAST OF A RIGHT-OF-WAY FENCE CORNER, AND 2 FEET NORTHWEST OF

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OO0693'THE FENCE. A STANDARD DISK, STAMPED Q 34 1934 AND SET IN THE TOP OF A  
OO0693'CONCRETE POST PROJECTING 4 INCHES ABOVE GROUND. NOTE-- THE MINNEAPOLIS  
OO0693'AND ST. LOUIS RAILWAY HAS BEEN MERGED WITH THE CHICAGO AND  
OO0693'NORTHWESTERN RAILWAY ON NOVEMBER 1960.

1 National Geodetic Survey, Retrieval Date = OCTOBER 3, 2000

2002-28.TXT

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AC4902 *****
AC4902 CBN - This is a Cooperative Base Network Control Station.
AC4902 DESIGNATION - MINIOW
AC4902 PID - AC4902
AC4902 STATE/COUNTY- MN/FREEBORN
AC4902 USGS QUAD - FERTILE NE (1972)
AC4902
AC4902 *CURRENT SURVEY CONTROL
AC4902
AC4902* NAD 83(1996)- 43 29 58.42834(N) 093 21 15.05230(W) ADJUSTED
AC4902* NAVD 88 - 385.9 (meters) 1266. (feet) GPS OBS
AC4902
AC4902 X - -271,137.204 (meters) COMP
AC4902 Y - -4,626,245.806 (meters) COMP
AC4902 Z - 4,368,172.115 (meters) COMP
AC4902 LAPLACE CORR- 5.35 (seconds) DEFLEC99
AC4902 ELLIP HEIGHT- 356.70 (meters) GPS OBS
AC4902 GEOID HEIGHT- -29.21 (meters) GEOID99
AC4902
AC4902 HORZ ORDER - B
AC4902 ELLP ORDER - FOURTH CLASS I
AC4902
AC4902.The horizontal coordinates were established by GPS observations
AC4902.and adjusted by the National Geodetic Survey in January 1997.
AC4902
AC4902.The orthometric height was determined by GPS observations and a
AC4902.high-resolution geoid model.
AC4902
AC4902.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AC4902
AC4902.The Laplace correction was computed from DEFLEC99 derived deflections.
AC4902
AC4902.The ellipsoidal height was determined by GPS observations
AC4902.and is referenced to NAD 83.
AC4902
AC4902.The geoid height was determined by GEOID99.
AC4902
AC4902;
AC4902;SPC MN S - North East Units Scale Converg.
AC4902;UTM 15 - 155,715.598 852,235.354 MT 1.00007355 +0 27 09.6
AC4902; - 4,816,353.817 471,366.243 MT 0.99961008 -0 14 37.7
AC4902
AC4902|-----|
AC4902| PID Reference Object Distance Geod. Az |
AC4902| AB2418 BEITO 377.175 METERS 27000 |
AC4902|-----|
AC4902
AC4902 SUPERSEDED SURVEY CONTROL
AC4902
AC4902.No superseded survey control is available for this station.
AC4902
AC4902_MARKER: I = METAL ROD
AC4902_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)
AC4902_STAMPING: MINIOW 1995
AC4902_PROJECTION: FLUSH
AC4902_MAGNETIC: T = STEEL SPIKE ADJACENT TO MONUMENT
AC4902_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AC4902_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AC4902+SATELLITE: SATELLITE OBSERVATIONS - 1994
AC4902_ROD/PIPE-DEPTH: 7.3 meters
    
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AC4902\_SLEEVE-DEPTH : 0.9 meters

AC4902

| AC4902 | HISTORY | - Date | Condition  | Recov. By |
|--------|---------|--------|------------|-----------|
| AC4902 | HISTORY | - 1994 | MONUMENTED | MNDT      |

AC4902

AC4902

STATION DESCRIPTION

AC4902

AC4902'DESCRIBED BY MN DEPT OF TRANSP 1994

AC4902'DESCRIBED BY MINNESOTA DEPARTMENT OF TRANSPORTATION 1994. THE MARK IS  
 AC4902'LOCATED ABOUT 5-1/4 MI WSW OF THE TOWN OF GORDONVILLE IN THE SE 1/4  
 AC4902'OF SECTION 33, T101N, R21W. TO REACH THE MARK FROM THE JCT OF TH 65  
 AC4902'AND CO RD 1 IN GORDONVILLE, GO EAST ON CO RD 1 FOR 5.9 TO THE JCT OF  
 AC4902'CO RD 1 AND FAI 35 AND THE MARK ON THE LEFT. THE MARK IS AT FAI 35 MP  
 AC4902'0.0, 21.0 FT (6.4 M) NORTH OF CO RD 1, 117 FT (35.7 M) WEST OF FAI 35,  
 AC4902'10.3 FT (3.1 M) WNW OF CO RD 1 BRDG NO 24862 OVER FAI 35, 4.3 FT (1.3  
 AC4902'M) NORTH OF THE GUARD RAIL, AND 3.3 FT (1.0 M) NORTH OF A WIT POST.  
 AC4902'THE MARK IS A PUNCH MARK ON THE TOP OF A DRIVEN 1/2 INCH DIAMETER BY  
 AC4902'24 FT (7.3 M) LONG STAINLESS STEEL ROD WITH A 3 FT (0.9 M) PLASTIC  
 AC4902'Stabilizer Sleeve. ACCESS TO THE DATUM POINT IS THROUGH A 5 INCH LOGO  
 AC4902'CAP THAT IS FLUSH WITH THE GROUND, STAMPED---MINIOW 1995---, SET ON  
 AC4902'TOP OF A 5 INCH DIAMETER BY 24 INCH LONG PVC PLASTIC PIPE FILLED WITH  
 AC4902'SILICA SAND AND SET IN CONCRETE. A METAL SPIKE WAS PLACED IN THE  
 AC4902'SILICA SAND MAKING THE MARK MAGNETIC. DESCRIBED BY DAVID K. HERDER,  
 AC4902'TYPED BY J.E.M.

1 National Geodetic Survey, Retrieval Date = OCTOBER 4, 2000

2002-29.TXT

```

001472 *****
001472 DESIGNATION - TT 79 WM
001472 PID - 001472
001472 STATE/COUNTY- MN/FREEBORN
001472 USGS QUAD - FERTILE NE (1972)
001472
001472 *CURRENT SURVEY CONTROL
001472
001472* NAD 83(1996)- 43 29 58.74165(N) 093 22 07.40965(W) ADJUSTED
001472* NAVD 88 - 386.941 (meters) 1269.49 (feet) ADJUSTED
001472
001472 X - -272,311.153 (meters) COMP
001472 Y - -4,626,170.919 (meters) COMP
001472 Z - 4,368,179.825 (meters) COMP
001472 LAPLACE CORR- 4.80 (seconds) DEFLEC99
001472 ELLIP HEIGHT- 357.71 (meters) GPS OBS
001472 GEOID HEIGHT- -29.24 (meters) GEOID99
001472 DYNAMIC HT - 386.838 (meters) 1269.15 (feet) COMP
001472 MODELED GRAV- 980,341.8 (mgal) NAVD 88
001472
001472 HORZ ORDER - SECOND
001472 VERT ORDER - SECOND CLASS I
001472 ELLP ORDER - FOURTH CLASS I
001472
001472.The horizontal coordinates were established by GPS observations
001472.and adjusted by the National Geodetic Survey in March 1999.
001472
001472.The orthometric height was determined by differential leveling
001472.and adjusted by the National Geodetic Survey in June 1991.
001472
001472.The X, Y, and Z were computed from the position and the ellipsoidal ht.
001472
001472.The Laplace correction was computed from DEFLEC99 derived deflections.
001472
001472.The ellipsoidal height was determined by GPS observations
001472.and is referenced to NAD 83.
001472
001472.The geoid height was determined by GEOID99.
001472
001472.The dynamic height is computed by dividing the NAVD 88
001472.geopotential number by the normal gravity value computed on the
001472.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
001472.degrees latitude (g = 980.6199 gals.).
001472
001472.The modeled gravity was interpolated from observed gravity values.
001472
001472;
001472;SPC MN S - North East Units Scale Converg.
001472;UTM 15 - 155,716.079 851,058.974 MT 1.00007352 +0 26 32.9
001472 - 4,816,368.588 470,190.500 MT 0.99961093 -0 15 13.7
001472
001472 SUPERSEDED SURVEY CONTROL
001472
001472 NAD 83(1986)- 43 29 58.72814(N) 093 22 07.40412(W) AD( ) 2
001472
001472.Superseded values are not recommended for survey control.
001472.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
001472.See file dsdata.txt to determine how the superseded data were derived.
001472
001472_MARKER: DB = BENCH MARK DISK
001472_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

```

OO1472\_STAMPING: TT 79 WM 1952  
 OO1472\_MAGNETIC: O = OTHER; SEE DESCRIPTION  
 OO1472\_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO  
 OO1472+STABILITY: SURFACE MOTION  
 OO1472\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR  
 OO1472+SATELLITE: SATELLITE OBSERVATIONS - November 12, 1991

OO1472

| OO1472 | HISTORY | - Date     | Condition  | Recov. By |
|--------|---------|------------|------------|-----------|
| OO1472 | HISTORY | - 1952     | MONUMENTED | USGS      |
| OO1472 | HISTORY | - 1981     | GOOD       | MNDT      |
| OO1472 | HISTORY | - 19911112 | GOOD       | MNDT      |
| OO1472 | HISTORY | - 19911112 | GOOD       | MNDT      |

OO1472

OO1472

STATION DESCRIPTION

OO1472

OO1472'DESCRIBED BY MN DEPT OF TRANSP 1981

OO1472'6 MI EAST FROM EMMONS.

OO1472'THE MARK IS LOCATED 6.2 MILES EAST ALONG COUNTY ROAD 1 FROM ITS  
 OO1472'JUNCTION WITH TRUNK HIGHWAY 69 AT EMMONS AND IS IN THE SE 1/4 OF  
 OO1472'SECTION 32, T101N, R21W. THE MARK IS 400 FEET EAST OF A T-ROAD TO  
 OO1472'THE SOUTH, 40.7 FEET NORTH OF AND 3 FEET LOWER THAN THE CENTERLINE OF  
 OO1472'COUNTY ROAD 1, 24 FEET OF A POWER POLE MARKED REA 15 XS-10, 6.8 FEET  
 OO1472'WEST-SOUTHWEST OF A WOOD CORNER FENCE POST AND 1.5 FEET SOUTH OF A  
 OO1472'STEEL WITNESS POST. THE MARK, A STANDARD USGS BENCH MARK DISK  
 OO1472'STAMPED---TT 79 WM 1952 1269---, IS SET IN THE TOP OF A CONCRETE POST  
 OO1472'THAT IS FLUSH WITH THE GROUND. A RAILROAD SPIKE BURIED ADJACENT TO  
 OO1472'THE POST MAKES THE MARK MAGNETIC.

OO1472

OO1472

STATION RECOVERY (1991)

OO1472

OO1472'RECOVERY NOTE BY MN DEPT OF TRANSP 1991 (HTS)

OO1472'RECOVERED AS DESCRIBED IN ALBERT LEA USGS QUAD 10, LINE 8 AND IN MNDT  
 OO1472'LINE VFAIR.

OO1472

OO1472

STATION RECOVERY (1991)

OO1472

OO1472'RECOVERY NOTE BY MN DEPT OF TRANSP 1991 (HTS)

OO1472'RECOVERED AS DESCRIBED.

1 National Geodetic Survey, Retrieval Date = OCTOBER 4, 2000

2002-31.TXT

AC4900 \*\*\*\*\*

AC4900 CBN - This is a Cooperative Base Network Control Station.

AC4900 DESIGNATION - FURE

AC4900 PID - AC4900

AC4900 STATE/COUNTY- MN/FARIBAULT

AC4900 USGS QUAD - KIESTER (1982)

AC4900

AC4900 \*CURRENT SURVEY CONTROL

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AC4900\* NAD 83(1996)- 43 30 10.75818(N) 093 42 31.84507(W) ADJUSTED

AC4900\* NAVD 88 - 384.4 (meters) 1261. (feet) GPS OBS

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AC4900 X - -299,751.578 (meters) COMP

AC4900 Y - -4,624,216.329 (meters) COMP

AC4900 Z - 4,368,447.106 (meters) COMP

AC4900 LAPLACE CORR- -3.25 (seconds) DEFLEC99

AC4900 ELLIP HEIGHT- 355.19 (meters) GPS OBS

AC4900 GEOID HEIGHT- -29.27 (meters) GEOID99

AC4900

AC4900 HORZ ORDER - B

AC4900 ELLP ORDER - FOURTH CLASS I

AC4900

AC4900.The horizontal coordinates were established by GPS observations  
AC4900.and adjusted by the National Geodetic Survey in January 1997.

AC4900

AC4900.The orthometric height was determined by GPS observations and a  
AC4900.high-resolution geoid model.

AC4900

AC4900.The X, Y, and Z were computed from the position and the ellipsoidal ht.

AC4900

AC4900.The Laplace correction was computed from DEFLEC99 derived deflections.

AC4900

AC4900.The ellipsoidal height was determined by GPS observations  
AC4900.and is referenced to NAD 83.

AC4900

AC4900.The geoid height was determined by GEOID99.

AC4900

| AC4900;         | North           | East        | Units | Scale      | Converg.   |
|-----------------|-----------------|-------------|-------|------------|------------|
| AC4900;SPC MN S | - 155,931.737   | 823,548.077 | MT    | 1.00007252 | +0 12 14.7 |
| AC4900;UTM 15   | - 4,816,917.286 | 442,696.581 | MT    | 0.99964039 | -0 29 16.7 |

AC4900

AC4900 SUPERSEDED SURVEY CONTROL

AC4900

AC4900.No superseded survey control is available for this station.

AC4900

AC4900\_MARKER: I = METAL ROD

AC4900\_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)

AC4900\_STAMPING: FURE 1995

AC4900\_PROJECTION: FLUSH

AC4900\_MAGNETIC: I = MARKER IS A STEEL ROD

AC4900\_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

AC4900\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AC4900+SATELLITE: SATELLITE OBSERVATIONS - December 05, 1996

AC4900\_ROD/PIPE-DEPTH: 8 meters

AC4900

| AC4900 | HISTORY | - Date     | Condition  | Recov. By |
|--------|---------|------------|------------|-----------|
| AC4900 | HISTORY | - 1994     | MONUMENTED | MNDT      |
| AC4900 | HISTORY | - 19961205 | GOOD       | NGS       |

AC4900

AC4900 STATION DESCRIPTION

AC4900

AC4900'DESCRIBED BY MN DEPT OF TRANSP 1994

AC4900'DESCRIBED BY MINNESOTA DEPARTMENT OF TRANSPORTATION 1994. THE MARK IS  
AC4900'LOCATED ABOUT 2-1/4 MI SOUTH OF THE TOWN OF KIESTER IN THE SE 1/4 OF  
AC4900'SECTION 33, T101N, R24W. TO REACH THE MARK FROM THE JCT OF TH 22 AND  
AC4900'CO RD 2 IN KIESTER, GO SOUTH ON TH 22 FOR 2.25 MI (3.62 KM) TO TH 22  
AC4900'MP 0.4 AND THE MARK ON THE RIGHT. THE MARK IS 51.3 FT (15.6 M) WEST  
AC4900'OF TH 22, 26.0 FT (7.9 M) NORTH OF A FIELD ENT, 44.7 FT (13.6 M) SW OF  
AC4900'A DELINEATOR SIGN POST, AND 3.3 FT (1.0 M) SOUTH OF A WIT POST. THE  
AC4900'MARK IS A PUNCH MARK ON THE TOP OF A DRIVEN 1/2 INCH DIAMETER BY 28 FT  
AC4900'(8.5 M) LONG STAINLESS STEEL ROD WITH A 3 FT (0.9 M) PLASTIC  
AC4900'STABILIZER SLEEVE. ACCESS TO THE DATUM POINT IS THROUGH A 5 INCH LOGO  
AC4900'CAP THAT IS FLUSH WITH THE GROUND, STAMPED---FURE 1995---, SET ON TOP  
AC4900'OF A 5 INCH DIAMETER BY 24 INCH LONG PVC PLASTIC PIPE FILLED WITH  
AC4900'SILICA SAND AND SET IN CONCRETE. A METAL SPIKE WAS PLACED IN THE  
AC4900'SILICA SAND MAKING THE MARK MAGNETIC. DESCRIBED BY DAVID K. HERDER,  
AC4900'TYPED BY J.E.M.

AC4900

AC4900

## STATION RECOVERY (1996)

AC4900

AC4900'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1996 (JDS)

AC4900'FROM KIESTER MN., ALONG THE IOWA-MINNESOTA BORDER, 2.25 MI (3.62 KM)  
AC4900'SOUTH ALONG TH 22 FROM THE JUNCTION OF TH 22 AND CO RD 2 IN KIESTER,  
AC4900'AT TH 22 MP 0.4, 51.3 FT (15.6 M) WEST OF TH 22, 26 FT (7.9 M) NORTH  
AC4900'OF FIELD ENT, 44.7 FT (13.6 M) SW OF DELINEATOR SIGN POST, 3.3 FT (1.0  
AC4900'M) SOUTH OF WITNESS POST, STATION IS A PUNCH MARK ON A 28 FT (8.5.M)  
AC4900'LONG DRIVEN STEEL ROD WITH ACCESS COVER.

1 National Geodetic Survey, Retrieval Date = OCTOBER 4, 2000

2002-35.TXT

AC4898 \*\*\*\*\*

AC4898 CBN - This is a Cooperative Base Network Control Station.

AC4898 DESIGNATION - FOOD

AC4898 PID - AC4898

AC4898 STATE/COUNTY- MN/FARIBAULT

AC4898 USGS QUAD - ELMORE (1967)

AC4898

AC4898 \*CURRENT SURVEY CONTROL

AC4898

| AC4898* | NAD 83(1996)- | 43 30 00.70894(N)        | 094 05 16.89977(W) | ADJUSTED |
|---------|---------------|--------------------------|--------------------|----------|
| AC4898* | NAVD 88       | - 339.1 (meters)         | 1113. (feet)       | GPS OBS  |
| AC4898  | X             | - 330,360.643 (meters)   |                    | COMP     |
| AC4898  | Y             | - 4,622,312.087 (meters) |                    | COMP     |
| AC4898  | Z             | - 4,368,191.494 (meters) |                    | COMP     |
| AC4898  | LAPLACE CORR- | -3.02 (seconds)          |                    | DEFLEC99 |
| AC4898  | ELLIP HEIGHT- | 310.68 (meters)          |                    | GPS OBS  |
| AC4898  | GEOID HEIGHT- | -28.42 (meters)          |                    | GEOID99  |
| AC4898  |               |                          |                    |          |
| AC4898  | HORZ ORDER    | - B                      |                    |          |
| AC4898  | ELLP ORDER    | - FOURTH CLASS I         |                    |          |
| AC4898  |               |                          |                    |          |

AC4898.The horizontal coordinates were established by GPS observations  
AC4898.and adjusted by the National Geodetic Survey in January 1997.

AC4898

AC4898.The orthometric height was determined by GPS observations and a  
AC4898.high-resolution geoid model.

AC4898

AC4898.The X, Y, and Z were computed from the position and the ellipsoidal ht.

AC4898

AC4898.The Laplace correction was computed from DEFLEC99 derived deflections.

AC4898

AC4898.The ellipsoidal height was determined by GPS observations  
AC4898.and is referenced to NAD 83.

AC4898

AC4898.The geoid height was determined by GEOID99.

AC4898

| AC4898;         | North           | East        | Units | Scale      | Converg.   |
|-----------------|-----------------|-------------|-------|------------|------------|
| AC4898;SPC MN S | - 155,583.474   | 792,880.113 | MT    | 1.00007336 | -0 03 42.1 |
| AC4898;UTM 15   | - 4,816,938.185 | 412,039.131 | MT    | 0.99969517 | -0 44 56.4 |
| AC4898          |                 |             |       |            |            |

AC4898

AC4898 SUPERSEDED SURVEY CONTROL

AC4898

AC4898.No superseded survey control is available for this station.

AC4898

AC4898\_MARKER: I = METAL ROD

AC4898\_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT.+)

AC4898\_STAMPING: FOOD 1995

AC4898\_PROJECTION: RECESSED 7 CENTIMETERS

AC4898\_MAGNETIC: N = NO MAGNETIC MATERIAL

AC4898\_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

AC4898\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AC4898+SATELLITE: SATELLITE OBSERVATIONS - December 06, 1996

AC4898\_ROD/PIPE-DEPTH: 11 meters

AC4898\_SLEEVE-DEPTH : 1 meters

AC4898

| AC4898 | HISTORY | - Date     | Condition  | Recov. By |
|--------|---------|------------|------------|-----------|
| AC4898 | HISTORY | - 1995     | MONUMENTED | MNDT      |
| AC4898 | HISTORY | - 19961206 | GOOD       | NGS       |

AC4898

AC4898

## STATION DESCRIPTION

AC4898

AC4898'DESCRIBED BY MN DEPT OF TRANSP 1995

AC4898'DESCRIBED BY MINNESOTA DEPARTMENT OF TRANSPORTATION 1994. THE MARK IS  
 AC4898'LOCATED ABOUT 1/2 MI SOUTH OF THE TOWN OF ELMORE IN THE SW 1/4 OF  
 AC4898'SECTION 33, T101N, R27W. TO REACH THE MARK FROM THE JCT OF TH 169 AND  
 AC4898'CO RD 9 IN ELMORE, AT TH 169 MP 0.0, GO SOUTH ON CO RD 9 FOR 0.5 MI  
 AC4898'(0.8 KM) AND THE MARK ON THE LEFT. THE MARK IS 146.5 FT (44.7 M) EAST  
 AC4898'OF TH 169, 50.0 FT (15.2 M) NORTH OF CO RD 102 (MN/IA STATE LINE) ,  
 AC4898'29.0 FT (8.8 M) ENE OF A CABLE MARKER, 3.1 FT (0.9 M) WEST OF A R/W  
 AC4898'POST, AND 3.0 FT (0.9 M) EAST OF A WIT POST. THE MARK IS A PUNCH MARK  
 AC4898'ON THE TOP OF A DRIVEN 1/2 INCH DIAMETER BY 36 FT (11.0 M) LONG  
 AC4898'STAINLESS STEEL ROD WITH A 3 FT (0.9 M) PLASTIC STABILIZER SLEEVE.  
 AC4898'ACCESS TO THE DATUM POINT IS THROUGH A 5 INCH LOGO CAP THAT IS FLUSH  
 AC4898'WITH THE GROUND, STAMPED---FOOD 1995---, SET ON TOP OF A 5 INCH  
 AC4898'DIAMETER BY 24 INCH LONG PVC PLASTIC PIPE FILLED WITH SILICA SAND AND  
 AC4898'SET IN CONCRETE. A METAL SPIKE WAS PLACED IN THE SILICA SAND MAKING  
 AC4898'THE MARK MAGNETIC. DESCRIBED BY DAVID K. HERDER, TYPED BY J.E.M.

AC4898

## STATION RECOVERY (1996)

AC4898

AC4898'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1996 (JDS)

AC4898'THE STATION IS LOCATED 0.5 MI (0.8 KM) SOUTH OF ELMORE ON THE HIGHWAY  
 AC4898'RIGHT OF WAY, IN THE NORTH EAST ANGLE OF THE JUNCTION OF U.S. HWY 169  
 AC4898'AND COUNTY ROAD 102, WHICH IS ALSO THE MINNESOTA-IOWA STATE LINE.  
 AC4898'OWNERSHIP--MINNESOTA DEPARTMENT OF TRANSPORTATION. TO REACH THE  
 AC4898'STATION FROM THE JUNCTION OF US HWY 169 AND COUNTY ROAD 9 AT THE  
 AC4898'INTERSECTION OF YOUNG AVE AND WEST RAMUSSEN ST IN ELMORE, PROCEED  
 AC4898'SOUTH ON HWY 169 FOR 0.5 MI (0.8 KM) TO THE JUNCTION OF COUNTY ROAD  
 AC4898'102 ON THE LEFT. TURN LEFT AND PROCEED EAST ON CR 102 FOR 146 FT  
 AC4898'(44.5 M) TO THE STATION ON THE LEFT. THE STATION IS LOCATED 146 FT  
 AC4898'(44.5 M) EAST OF THE CENTERLINE OF HWY 169, 51 FT (15.5 M) NORTH OF  
 AC4898'THE CENTER OF CR 102 AND THE MINNESOTA-IOWA STATE LINE, 29.5 FT (9.0  
 AC4898'M) EAST-NORTHEAST OF AN UNDERGROUND CABLE JUNCTION BOX WITH A 4.7 FT  
 AC4898'(1.4 M) WOOD POST, 3.1 FT (0.9 M) WEST OF A RIGHT OF WAY POST, AND 3.0  
 AC4898'FT (0.9 M) EAST OF A MNDT/NGS METAL WITNESS POST. THE STATION IS A  
 AC4898'FLANGE ENCASED STAINLESS STEEL ROD W/ SLEEVE, ABOUT 3.3 FT (1.0 M)  
 AC4898'BELOW ROAD LEVEL AND 7 CM BELOW GROUND LEVEL.

1 National Geodetic Survey, Retrieval Date = OCTOBER 4, 2000

2002-36.TXT

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OP0029 *****
OP0029 DESIGNATION - L 4
OP0029 PID - OP0029
OP0029 STATE/COUNTY- MN/FARIBAULT
OP0029 USGS QUAD - ELMORE (1967)
OP0029
OP0029 *CURRENT SURVEY CONTROL
OP0029
OP0029* NAD 83(1996)- 43 36 05.60540(N) 094 05 15.94868(W) ADJUSTED
OP0029* NAVD 88 - 334.083 (meters) 1096.07 (feet) ADJUSTED
OP0029
OP0029 X - -329,785.941 (meters) COMP
OP0029 Y - -4,614,570.253 (meters) COMP
OP0029 Z - 4,376,350.354 (meters) COMP
OP0029 LAPLACE CORR- -2.97 (seconds) DEFLEC99
OP0029 ELLIP HEIGHT- 305.71 (meters) GPS OBS
OP0029 GEOID HEIGHT- -28.38 (meters) GEOID99
OP0029 DYNAMIC HT - 334.016 (meters) 1095.85 (feet) COMP
OP0029 MODELED GRAV- 980,407.3 (mgal) NAVD 88
OP0029
OP0029 HORZ ORDER - SECOND
OP0029 VERT ORDER - FIRST CLASS II
OP0029 ELLP ORDER - FOURTH CLASS I
OP0029
OP0029.This mark is at Blue Earth Airport (SBU)
OP0029
OP0029.The horizontal coordinates were established by GPS observations
OP0029.and adjusted by the National Geodetic Survey in March 1999.
OP0029
OP0029.The orthometric height was determined by differential leveling
OP0029.and adjusted by the National Geodetic Survey in June 1991.
OP0029
OP0029.The X, Y, and Z were computed from the position and the ellipsoidal ht.
OP0029
OP0029.The Laplace correction was computed from DEFLEC99 derived deflections.
OP0029
OP0029.The ellipsoidal height was determined by GPS observations
OP0029.and is referenced to NAD 83.
OP0029
OP0029.The geoid height was determined by GEOID99.
OP0029
OP0029.The dynamic height is computed by dividing the NAVD 88
OP0029.geopotential number by the normal gravity value computed on the
OP0029.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
OP0029.degrees latitude (g = 980.6199 gals.).
OP0029
OP0029.The modeled gravity was interpolated from observed gravity values.
OP0029
OP0029;
OP0029;          North          East          Units          Scale          Converg.
OP0029;SPC MN S - 166,845.566 792,913.573 MT 1.00004434 -0 03 41.5
OP0029;UTM 15 - 4,828,194.970 412,207.757 MT 0.99969480 -0 45 00.8
OP0029
OP0029 SUPERSEDED SURVEY CONTROL
OP0029
OP0029 NAD 83(1986)- 43 36 05.59782(N) 094 05 15.94664(W) AD( ) 2
OP0029 NGVD 29 - 334.038 (m) 1095.92 (f) ADJ UNCH 1 2
OP0029
OP0029.Superseded values are not recommended for survey control.
OP0029.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
OP0029.See file dsdata.txt to determine how the superseded data were derived.

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OP0029

OP0029\_MARKER: DB = BENCH MARK DISK

OP0029\_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

OP0029\_STAMPING: L 4 1930 1095.923

OP0029\_MAGNETIC: N = NO MAGNETIC MATERIAL

OP0029\_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

OP0029+STABILITY: SURFACE MOTION

OP0029\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

OP0029+SATELLITE: SATELLITE OBSERVATIONS - July 03, 1990

OP0029

| OP0029 | HISTORY | - Date     | Condition  | Recov. By |
|--------|---------|------------|------------|-----------|
| OP0029 | HISTORY | - 1930     | MONUMENTED | CGS       |
| OP0029 | HISTORY | - 1976     | GOOD       | MNDT      |
| OP0029 | HISTORY | - 1980     | GOOD       | MNDT      |
| OP0029 | HISTORY | - 19900703 | GOOD       | NGS       |

OP0029

OP0029

## STATION DESCRIPTION

OP0029

OP0029'DESCRIBED BY MN DEPT OF TRANSP 1976

OP0029'1.75 MI S FROM BLUE EARTH.

OP0029'THE BENCH MARK IS 2.6 MILES SOUTH OF THE EAST JUNCTION TH 16 AND 169,  
 OP0029'7TH STREET IN BLUE EARTH. A STANDARD USC AND GS DISK STAMPED L4 1930  
 OP0029'1095.923 AND SET IN THE TOP OF A CONCRETE MONUMENT. 2.3 MILES SOUTH  
 OP0029'ALONG THE CHICAGO AND NORTHWESTERN RAILWAY FROM BLUE EARTH, FARIBAULT  
 OP0029'COUNTY, 0.5 MILE SOUTH OF RR MILEPOST L C 36, AT A TOWNSHIP ROAD  
 OP0029'CROSSING, 41 FEET NORTH OF THE GRAVEL TOWNSHIP ROAD, 48 FEET EAST OF  
 OP0029'THE CENTERLINE OF THE RAILROAD TRACKS, IN THE NORTHWEST CORNER OF THE  
 OP0029'INTERSECTION TH 169 AND TOWNSHIP ROAD, 53 FEET WEST OF TH 169 STA.  
 OP0029'370+58, 1.5 FEET SOUTH OF A STEEL WITNESS POST, AND ABOUT LEVEL WITH  
 OP0029'THE GROUND. TH 169 M.P. 7.0. SW 1/4, SEC 28, T 102N, R 27W.

OP0029

OP0029

## STATION RECOVERY (1980)

OP0029

OP0029'RECOVERY NOTE BY MN DEPT OF TRANSP 1980

OP0029'THE MARK WAS RECOVERED IN GOOD CONDITION AS DESCRIBED IN NGS LINE 68  
 OP0029'MINN AND IS LOCATED ABOUT 2.6 MILES SOUTH ALONG TRUNK HIGHWAY 169  
 OP0029'FROM ITS JUNCTION WITH OLD TRUNK HIGHWAY 16 AT BLUE EARTH AND IS NEAR  
 OP0029'HIGHWAY 169 MILE POST 7 IN THE SW 1/4 OF SECTION 28, T102N, R27W.  
 OP0029'THE MARK IS 81.5 FEET WEST OF MILE POST 7, 52.5 FEET WEST OF THE  
 OP0029'CENTERLINE OF HIGHWAY 169, 40 FEET NORTH OF THE CENTER OF A TOWNSHIP  
 OP0029'ROAD, 24.9 FEET NORTHWEST OF THE NORTH END OF AN 18 INCH METAL  
 OP0029'CULVERT UNDER THE TOWNSHIP ROAD AND 0.9 FOOT EAST OF A STEEL WITNESS  
 OP0029'POST. THE MARK, A STANDARD CGS BENCH MARK DISK STAMPED---L 4 1930  
 OP0029'1195.923---, IS SET IN THE TOP OF A CONCRETE POST THAT IS FLUSH WITH  
 OP0029'THE GROUND. A RAILROAD SPIKE BURIED ADJACENT TO THE POST MAKES THE  
 OP0029'MARK MAGNETIC.

OP0029

OP0029

## STATION RECOVERY (1990)

OP0029

OP0029'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1990

OP0029'STATION IS LOCATED ABOUT 54.8 KM (34.1 MI) WEST OF ALBERT LEA, 6.9 KM  
 OP0029'(4.3 MI) SOUTH OF BLUE EARTH, AT A GRAVEL CROSSROADS, AND ABOUT 0.81  
 OP0029'KM (0.50 MI) NORTH OF AIRPORT ENTRANCE ROAD. OWNERSHIP-STATE OF  
 OP0029'MINNESOTA.

OP0029'TO REACH THE STATION FROM THE INTERSTATE 90 AND U.S.HIGHWAY 169 SOUTH  
 OP0029'INTERCHANGE, LOCATED AT THE NORTH SIDE OF BLUE EARTH, GO SOUTH ALONG  
 OP0029'U.S.HIGHWAY 169 FOR 6.5 KM (4.0 MI) TO THE STATION ON THE RIGHT AT A  
 OP0029'CROSSROADS.

OP0029'STATION MARK IS A CGS BENCH MARK DISK STAMPED---L 4 1930---, SET IN  
 OP0029'THE TOP OF A 30-CM SQUARE CONCRETE POST FLUSH WITH THE GROUND  
 OP0029'SURFACE. IT IS 16.0 M (52.5 FT) WEST OF THE CENTERLINE OF HIGHWAY,  
 OP0029'12.0 M (39.4 FT) NORTH OF THE CENTERLINE OF A GRAVEL ROAD, 3.0 M

OP0029' (9.8 FT) NORTHWEST OF A TELEPHONE JUNCTION BOX, 0.31 M (1.02 FT) EAST  
OP0029' OF A METAL WITNESS POST AND ABOUT 0.61 M (2.00 FT) BELOW THE LEVEL OF  
OP0029' THE HIGHWAY.  
OP0029' DESCRIBED BY G.F.S.

1 National Geodetic Survey, Retrieval Date = OCTOBER 4, 2000

**Section 5**  
**Winnebago County Monument**  
**Data Sheets**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G1**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3920926.908    | 1195100.912 |
| Easting:          | 4795955.357    | 1461810.117 |
| Elevation:        | 1183.633       | 360.772     |
| Ellipsoid Height: | 1088.472       | 331.767     |
| Geoid 99 Height:  | -95.162        | -29.005     |

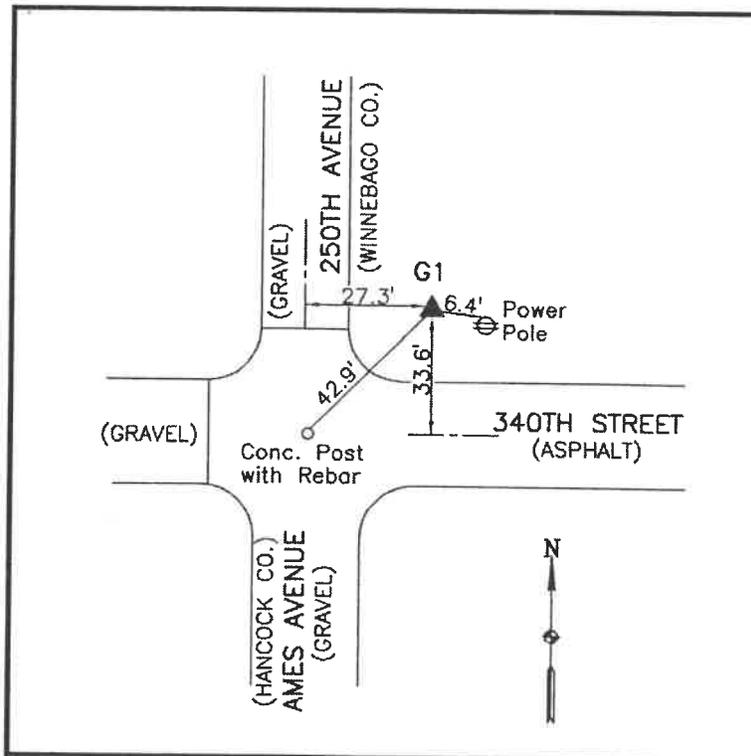
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'19.58088"N |
| Longitude:       | 93°58'13.11022"W |
| Scale Factor:    | 0.9999979679     |
| Convergence:     | -0°19'07"        |
| Combined Factor: | 0.99994604       |

Description:

Found NGS Style Aluminum Monument With Access Cover

Location:

NE Corner of 340th Street and 250th Avenue - near SW Corner Section 31-T98N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G2**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3920323.564    | 1194917.012 |
| Easting:          | 4827453.206    | 1471410.680 |
| Elevation:        | 1256.764       | 383.062     |
| Ellipsoid Height: | 1160.905       | 353.844     |
| Geoid 99 Height:  | -95.859        | -29.218     |

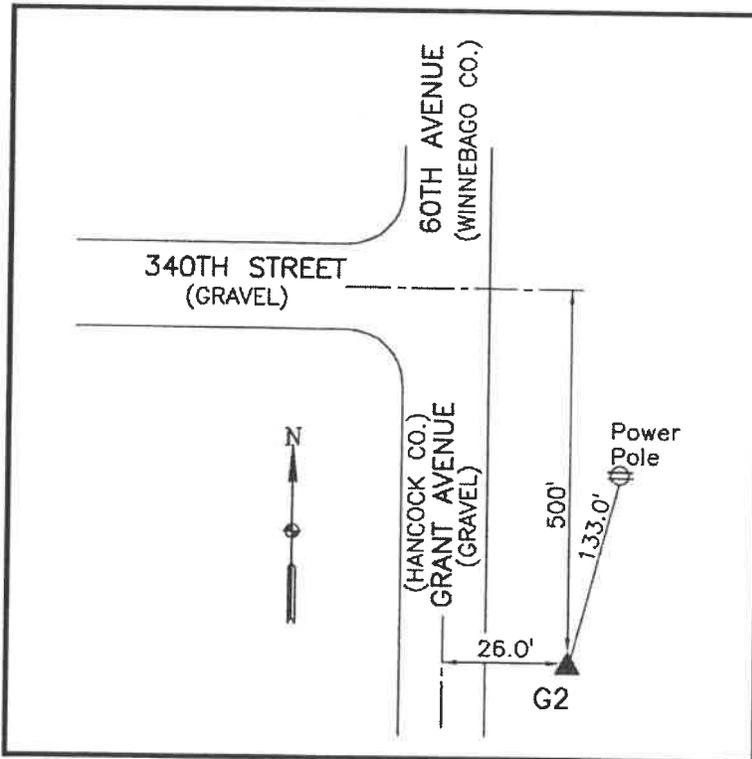
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'15.13500"N |
| Longitude:       | 93°51'07.45065"W |
| Scale Factor:    | 0.9999977467     |
| Convergence:     | -0°14'19"        |
| Combined Factor: | 0.99994236       |

**Description:**

Found NGS Style Aluminum Monument With Access Cover

**Location:**

On the east side of Grant Avenue (Hancock Co.) - 500'± south of NW Corner Section 6-T97N-R25W.



**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G3**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3920604.355    | 1195002.597 |
| Easting:          | 4859018.542    | 1481031.814 |
| Elevation:        | 1275.104       | 388.652     |
| Ellipsoid Height: | 1178.753       | 359.285     |
| Geoid 99 Height:  | -96.351        | -29.368     |

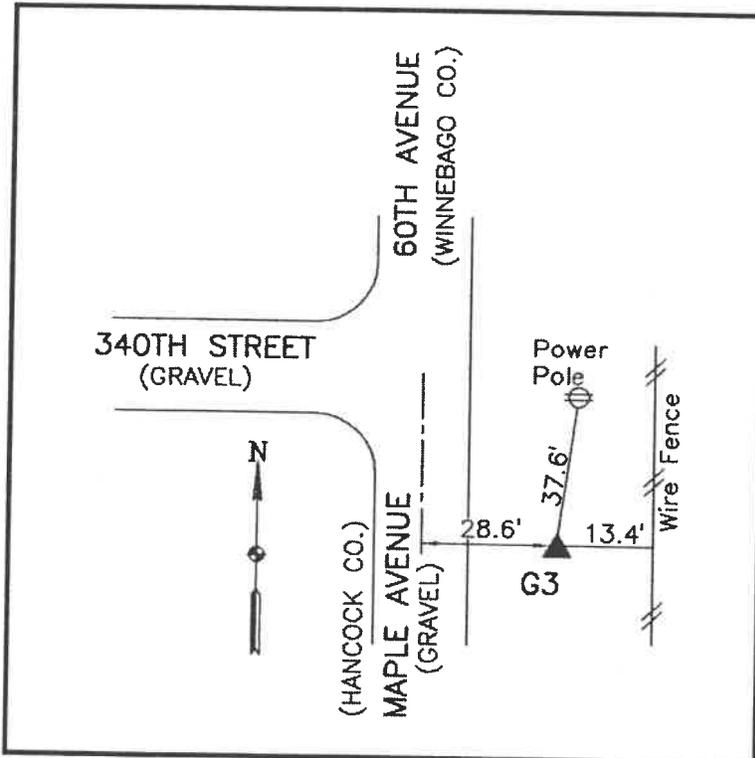
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'18.98819"N |
| Longitude:       | 93°44'00.93003"W |
| Scale Factor:    | 0.9999979384     |
| Convergence:     | -0°09'30"        |
| Combined Factor: | 0.99994170       |

Description:

Found NGS Style Aluminum Monument With Access Cover

Location:

SE Corner of 340th Street and 9th Avenue - near SW Corner Section 31-T98N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER      **G4**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3920266.205    | 1194899.529 |
| Easting:          | 4890063.185    | 1490494.240 |
| Elevation:        | 1228.885       | 374.565     |
| Ellipsoid Height: | 1132.484       | 345.182     |
| Geoid 99 Height:  | -96.401        | -29.383     |

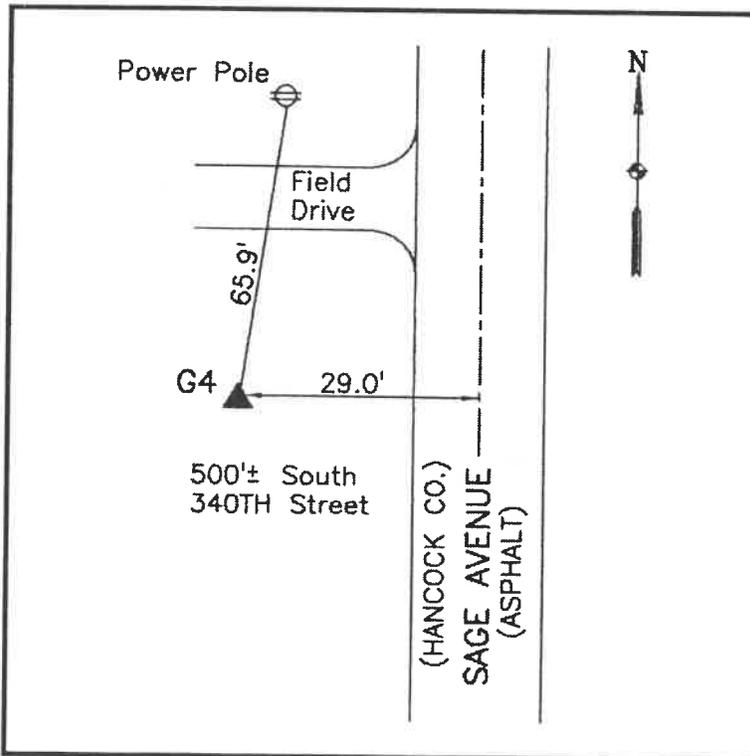
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'16.28427"N |
| Longitude:       | 93°37'01.42007"W |
| Scale Factor:    | 0.9999978039     |
| Convergence:     | -0°04'46"        |
| Combined Factor: | 0.99994377       |

Description:

Found NGS Style Aluminum Monument With Access Cover

Location:

On the west side of Sage Avenue (Hancock Co.) - 500'± south of the NW Corner Section 6-T97N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G101**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3923699.092    | 1195945.875 |
| Easting:          | 4905976.778    | 1495344.713 |
| Elevation:        | 1242.069       | 378.583     |
| Ellipsoid Height: | 1145.884       | 349.266     |
| Geoid 99 Height:  | -96.185        | -29.317     |

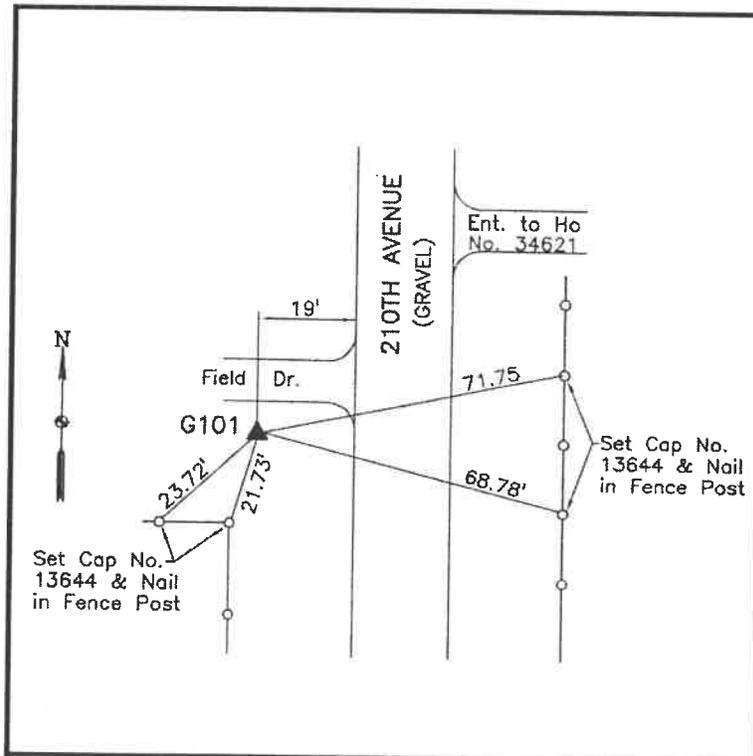
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'50.35210"N |
| Longitude:       | 93°33'26.41501"W |
| Scale Factor:    | 0.9999995114     |
| Convergence:     | -0°02'20"        |
| Combined Factor: | 0.99994484       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G101 and NGS Style Access Cover 2" Deep.

**Location:**

West side 210th Avenue - 0.4± mile south of 430th Street (Highway 9) - near W1/4 Section 34-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G5**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3920480.286    | 1194964.781 |
| Easting:          | 4921845.032    | 1500181.366 |
| Elevation:        | 1262.878       | 384.926     |
| Ellipsoid Height: | 1167.192       | 355.761     |
| Geoid 99 Height:  | -95.685        | -29.165     |

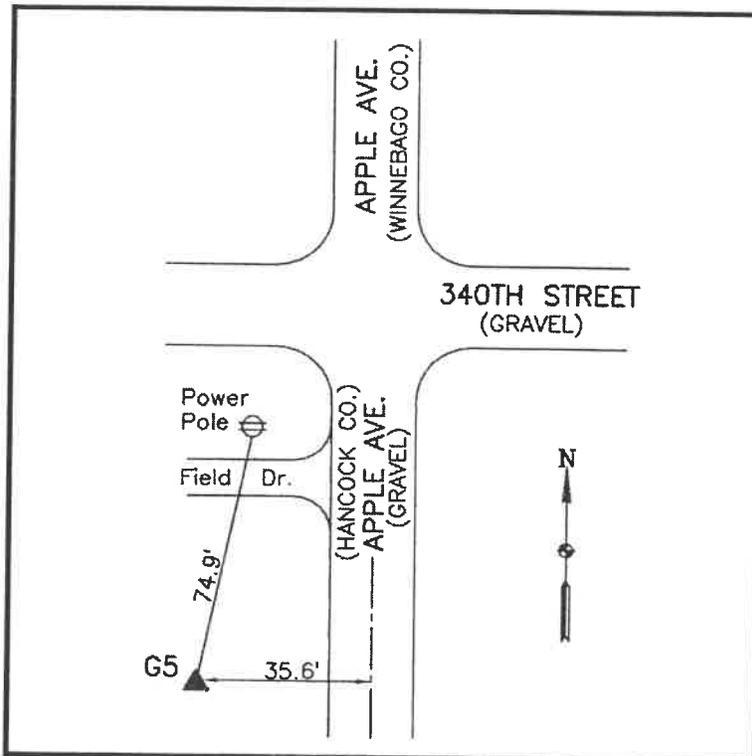
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'18.61189"N |
| Longitude:       | 93°29'51.95939"W |
| Scale Factor:    | 0.9999979197     |
| Convergence:     | 0°00'05"         |
| Combined Factor: | 0.99994220       |

**Description:**

Found NGS Style Aluminum Monument With Access Cover

**Location:**

SW Corner of 340th Street and Apple Avenue - near SE Corner Section 36-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G101**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3923699.092    | 1195945.875 |
| Easting:          | 4905976.778    | 1495344.713 |
| Elevation:        | 1242.069       | 378.583     |
| Ellipsoid Height: | 1145.884       | 349.266     |
| Geoid 99 Height:  | -96.185        | -29.317     |

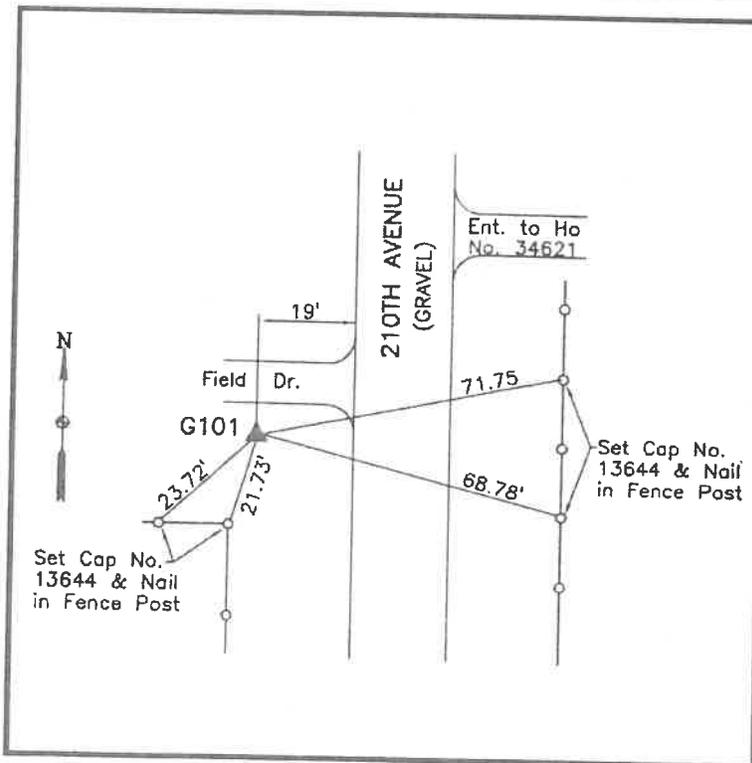
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'50.35210"N |
| Longitude:       | 93°33'26.41501"W |
| Scale Factor:    | 0.9999995114     |
| Convergence:     | -0°02'20"        |
| Combined Factor: | 0.99994484       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G101 and NGS Style Access Cover 2 " Deep.

**Location:**

West side 210th Avenue - 0.4± mile south of 430th Street (Highway 9) - near W1/4 Section 34-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G102**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3923267.823    | 1195814.424 |
| Easting:          | 4875630.799    | 1486095.240 |
| Elevation:        | 1243.819       | 379.117     |
| Ellipsoid Height: | 1147.362       | 349.717     |
| Geoid 99 Height:  | -96.457        | -29.400     |

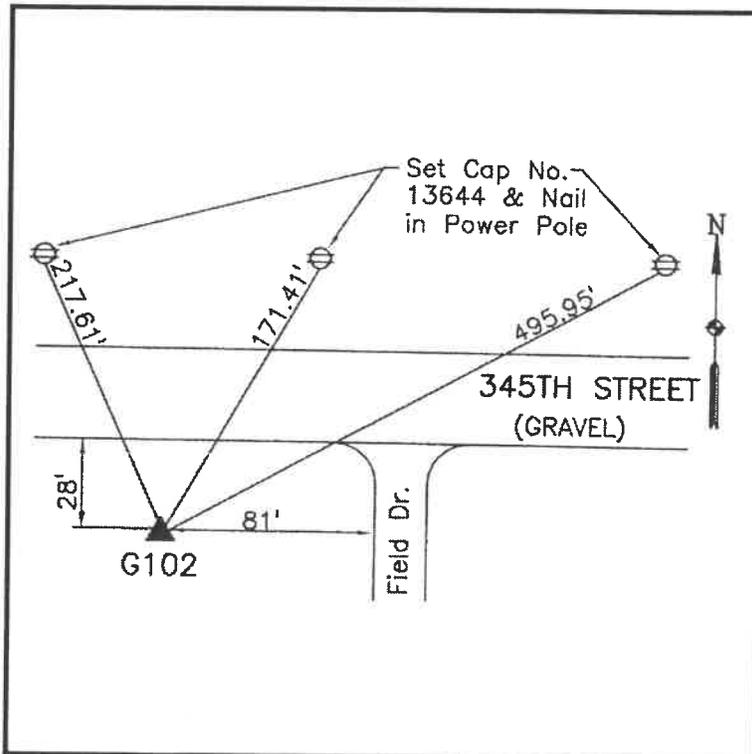
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'45.68736"N |
| Longitude:       | 93°40'16.52322"W |
| Scale Factor:    | 0.9999992760     |
| Convergence:     | -0°06'58"        |
| Combined Factor: | 0.99994453       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G102 and NGS Style Access Cover 2" Deep.

**Location:**

On south side 345th Street - 90'± west of field entrance - 0.75± mile east of 145th Avenue - near W1/4 Section 34-T98N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G103**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3921120.772    | 1195160.002 |
| Easting:          | 4843310.852    | 1476244.100 |
| Elevation:        | 1300.282       | 396.327     |
| Ellipsoid Height: | 1204.144       | 367.024     |
| Geoid 99 Height:  | -96.138        | -29.303     |

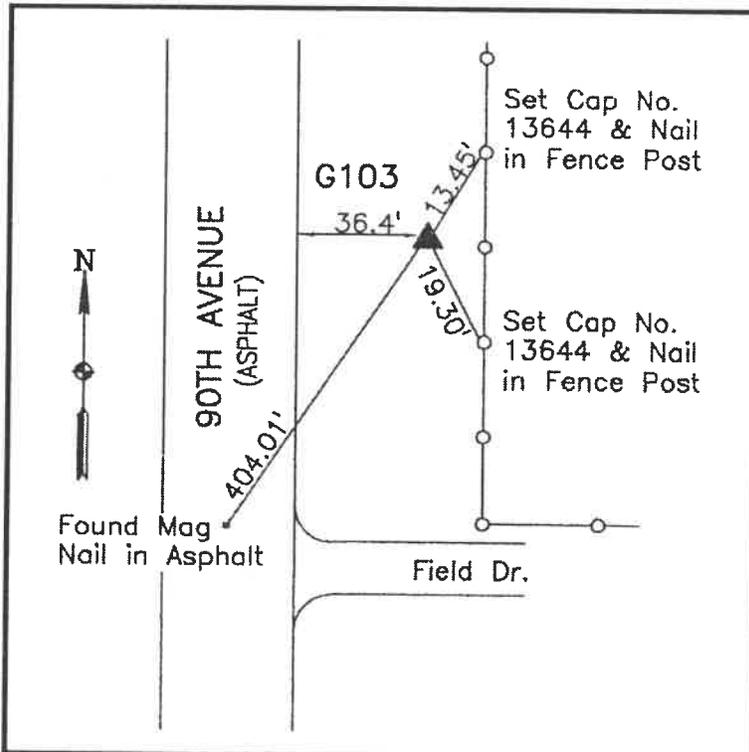
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'23.60591"N |
| Longitude:       | 93°47'33.20975"W |
| Scale Factor:    | 0.9999981685     |
| Convergence:     | -0°11'54"        |
| Combined Factor: | 0.99994072       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G103 and NGS Style Access Cover 2 " Deep.

Location:

On east side 90th Avenue - 300'± north of 340th Street - near SW Corner of Section 34-T98N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G104**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3922026.647    | 1195436.113 |
| Easting:          | 4811676.098    | 1466601.808 |
| Elevation:        | 1228.340       | 374.399     |
| Ellipsoid Height: | 1132.832       | 345.288     |
| Geoid 99 Height:  | -95.508        | -29.111     |

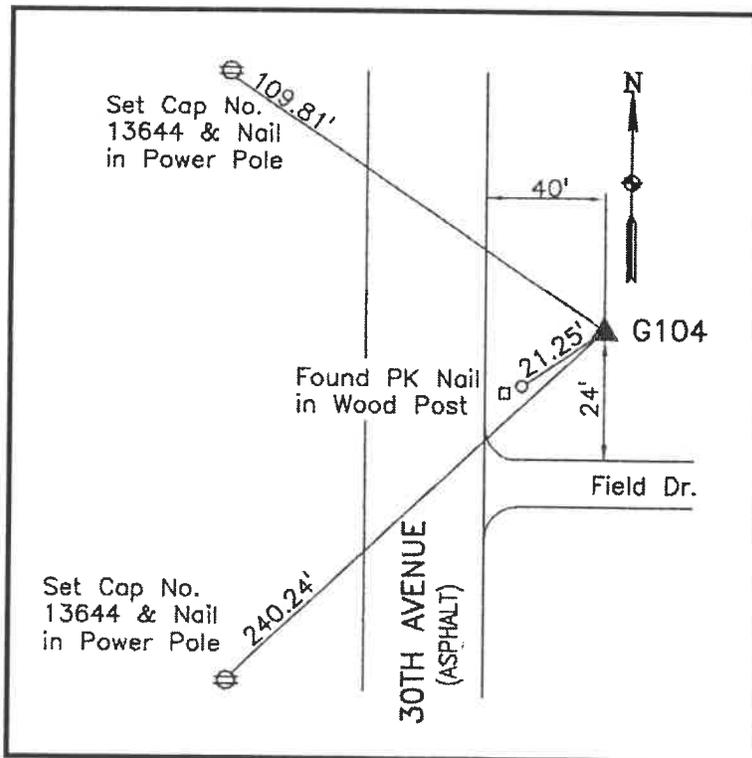
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°15'31.25219"N |
| Longitude:       | 93°54'40.75128"W |
| Scale Factor:    | 0.9999985507     |
| Convergence:     | -0°16'44"        |
| Combined Factor: | 0.99994450       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G104 and NGS Style Access Cover 3" Deep.

Location:

On east side 30th Avenue - 30'± north of field entrance - 0.3± mile north of SW Corner of Section 34-T98N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER     **G105**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936695.011    | 1199907.039 |
| Easting:          | 4796364.896    | 1461934.944 |
| Elevation:        | 1166.327       | 355.497     |
| Ellipsoid Height: | 1071.361       | 326.552     |
| Geoid 99 Height:  | -94.965        | -28.946     |

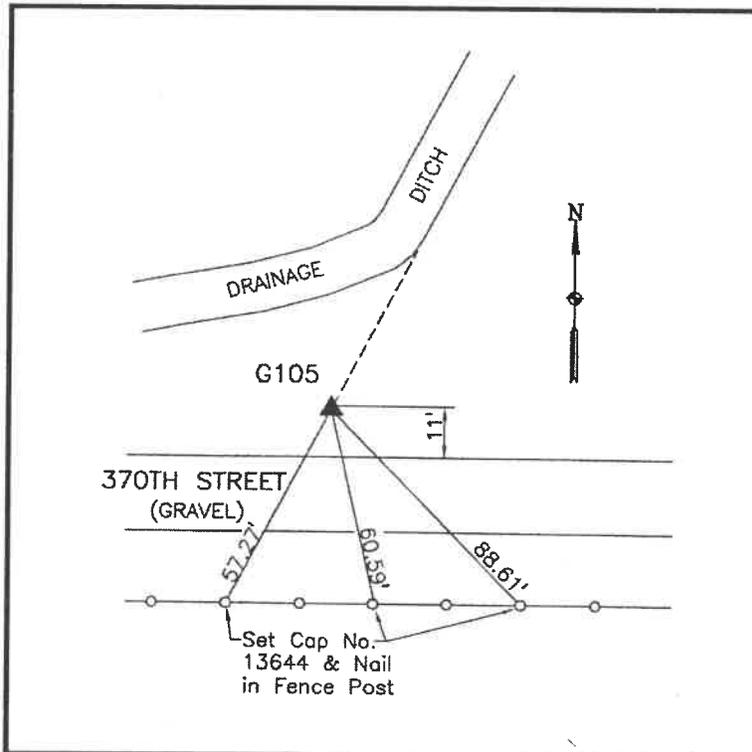
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'55.33735"N |
| Longitude:       | 93°58'08.75854"W |
| Scale Factor:    | 1.0000060112     |
| Convergence:     | -0°19'05"        |
| Combined Factor: | 0.99995490       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G105 and NGS Style Access Cover 2" Deep.

**Location:**

On north side 370th Street - 300'± east of 250th Avenue - near NW Corner Section 19-T98N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G106**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936587.899    | 1199874.391 |
| Easting:          | 4811759.340    | 1466627.180 |
| Elevation:        | 1198.068       | 365.172     |
| Ellipsoid Height: | 1102.730       | 336.113     |
| Geoid 99 Height:  | -95.338        | -29.059     |

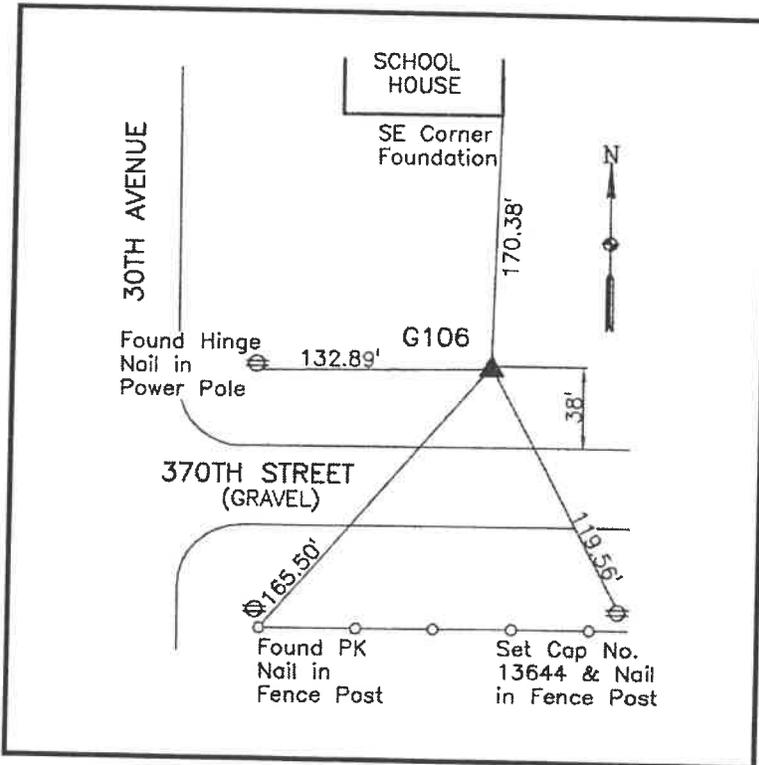
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'55.07115"N |
| Longitude:       | 93°54'40.58368"W |
| Scale Factor:    | 1.0000059970     |
| Convergence:     | -0°16'43"        |
| Combined Factor: | 0.99995338       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G106 and NGS Style Access Cover 1" Deep.

**Location:**

NE Corner of 370th Street and 30th Avenue (County Road R20) - SE Corner of school site - near NW Corner of Section 22-T98N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER      **G107**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936555.060    | 1199864.382 |
| Easting:          | 4827483.998    | 1471420.065 |
| Elevation:        | 1242.154       | 378.609     |
| Ellipsoid Height: | 1146.450       | 349.439     |
| Geoid 99 Height:  | -95.705        | -29.171     |

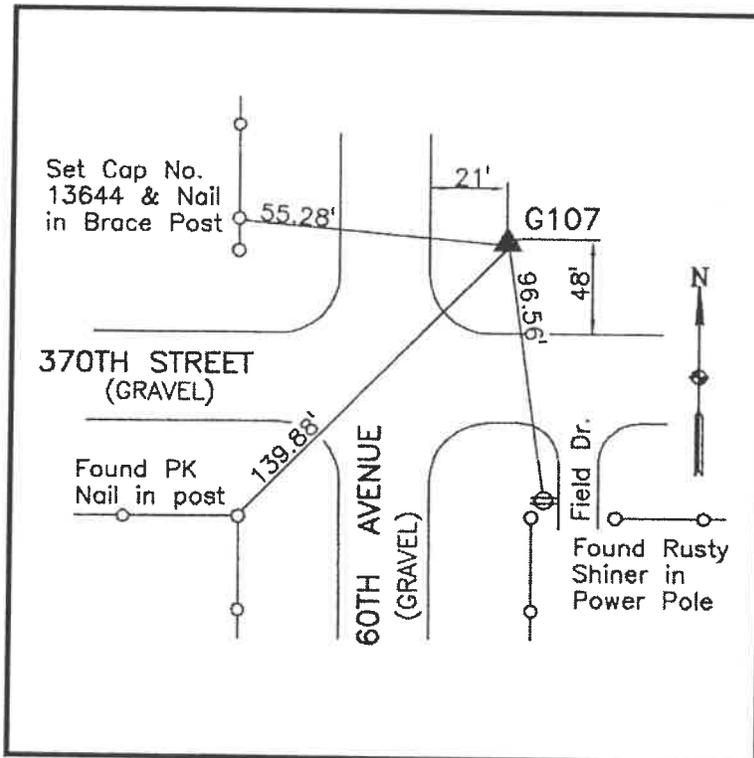
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'55.44810"N |
| Longitude:       | 93°51'07.94836"W |
| Scale Factor:    | 1.0000060171     |
| Convergence:     | -0°14'19"        |
| Combined Factor: | 0.99995132       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G107 and NGS Style Access Cover 2" Deep.

**Location:**

NE Corner of 370th Street and 60th Avenue - near NW Corner of Section 19-T98N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G108**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936211.097    | 1199759.542 |
| Easting:          | 4843134.584    | 1476190.373 |
| Elevation:        | 1274.162       | 388.365     |
| Ellipsoid Height: | 1178.129       | 359.094     |
| Geoid 99 Height:  | -96.033        | -29.271     |

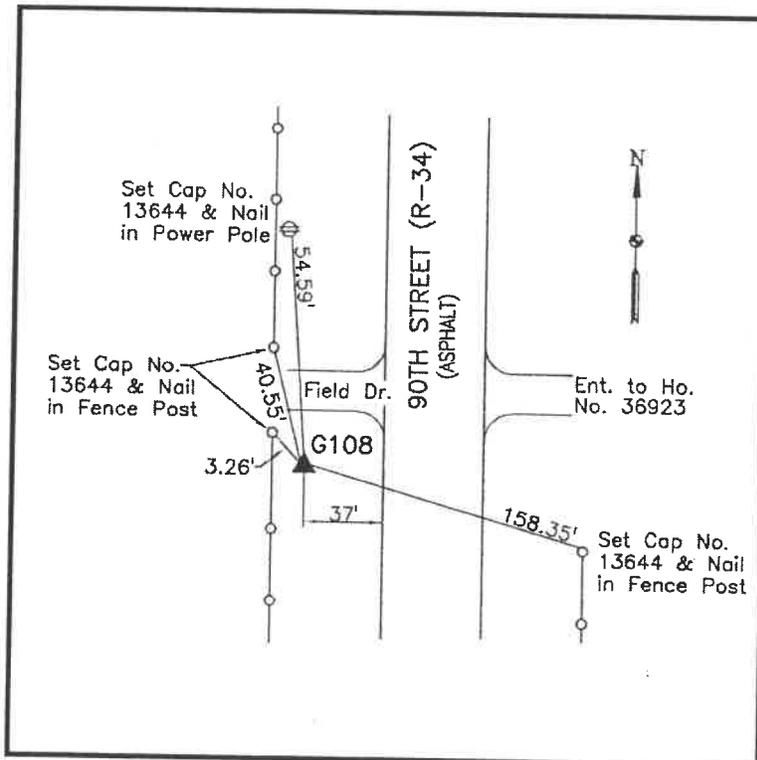
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'52.64118"N |
| Longitude:       | 93°47'36.29944"W |
| Scale Factor:    | 1.0000058671     |
| Convergence:     | -0°11'56"        |
| Combined Factor: | 0.99994966       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G108 and NGS Style Access Cover 2 " Deep.

**Location:**

On west side 90th Avenue (County Road R34) - 20'± south of field entrance - 300'± south of 370th Street - near NW Corner Section 22-T98N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G109**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936324.421    | 1199794.083 |
| Easting:          | 4858955.571    | 1481012.620 |
| Elevation:        | 1285.767       | 391.902     |
| Ellipsoid Height: | 1189.479       | 362.554     |
| Geoid 99 Height:  | -96.288        | -29.349     |

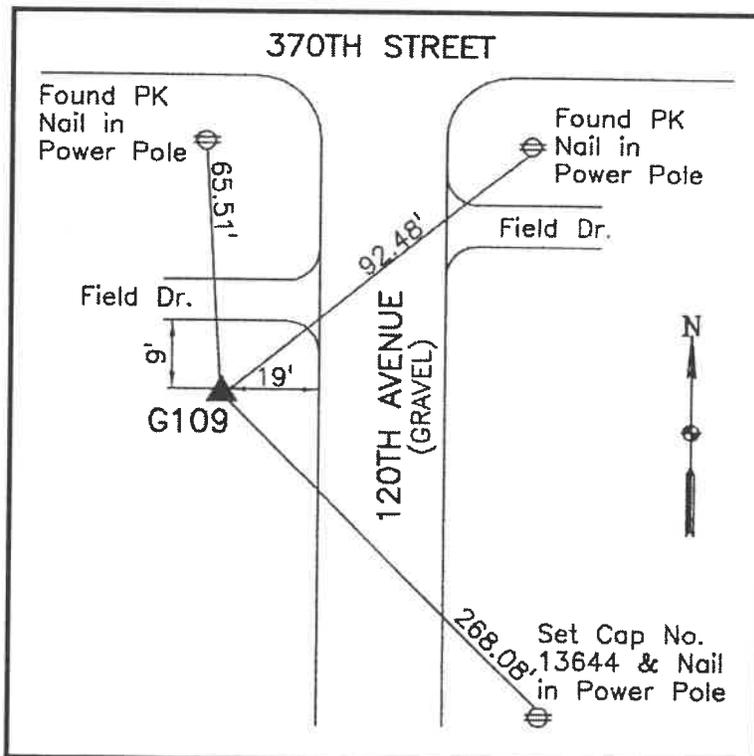
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'54.24786"N |
| Longitude:       | 93°44'02.36890"W |
| Scale Factor:    | 1.0000059529     |
| Convergence:     | -0°09'31"        |
| Combined Factor: | 0.99994920       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G109 and NGS Style Access Cover 2" Deep.

**Location:**

On west side 120th Avenue - 15'± south of field entrance - 100'± south of 370th Street - near NW Corner Section 19-T98N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G110**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936359.693    | 1199804.834 |
| Easting:          | 4874337.567    | 1485701.062 |
| Elevation:        | 1269.792       | 387.034     |
| Ellipsoid Height: | 1173.341       | 357.635     |
| Geoid 99 Height:  | -96.452        | -29.399     |

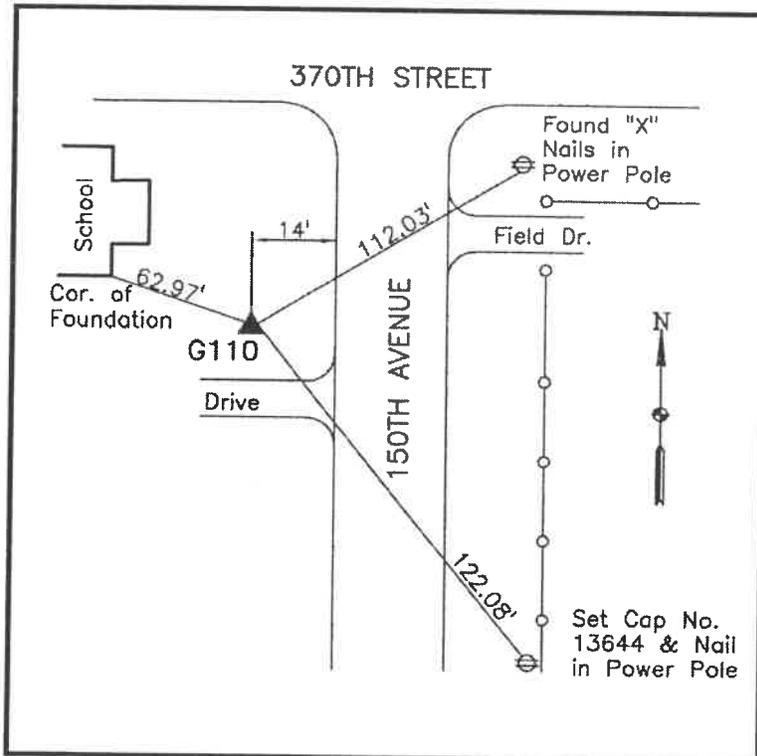
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'54.96480"N |
| Longitude:       | 93°40'34.36941"W |
| Scale Factor:    | 1.0000059913     |
| Convergence:     | -0°07'10"        |
| Combined Factor: | 0.99995001       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G110 and NGS Style Access Cover 3 " Deep.

**Location:**

SW Corner of 370th Street and 150th Avenue - SE Corner of school property - near NW Corner of Section 22-T98N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

*VOID*  
*See Page 47-A*

GPS POINT NUMBER **G111**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936598.809    | 1199877.717 |
| Easting:          | 4889711.810    | 1490387.141 |
| Elevation:        | 1269.627       | 386.983     |
| Ellipsoid Height: | 1173.138       | 357.573     |
| Geoid 99 Height:  | -96.488        | -29.410     |

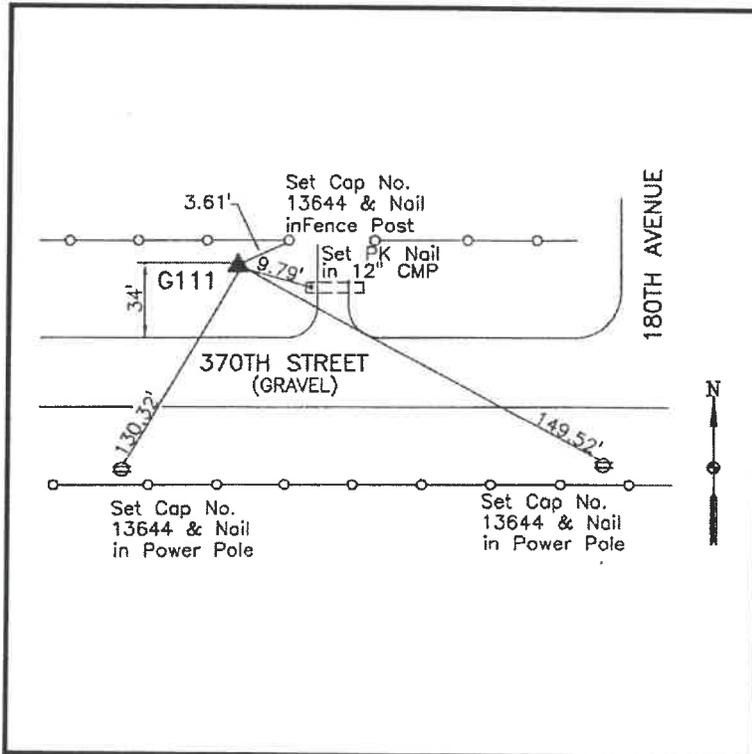
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'57.59110"N |
| Longitude:       | 93°37'06.47737"W |
| Scale Factor:    | 1.0000061318     |
| Convergence:     | -0°04'49"        |
| Combined Factor: | 0.99995016       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G111 and NGS Style Access Cover 0" Deep.

**Location:**

On north side 370th Street - 300'± west of 180th Avenue - 30'± west of field entrance - near NW Corner Section 19-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

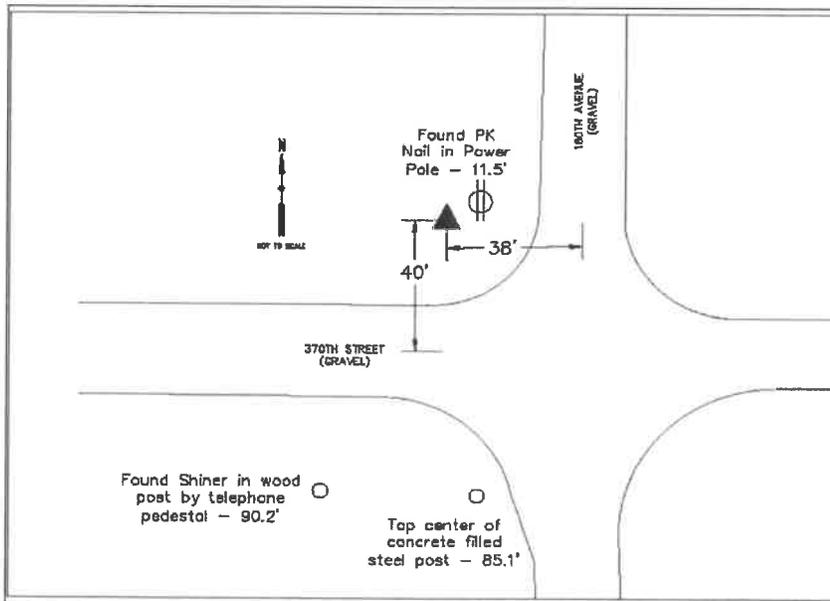
**GPS POINT NUMBER 201 (replaces G111)**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936589.086    | 1199874.753 |
| Easting:          | 4890050.662    | 1490490.423 |
| Elevation:        | 1273.032       | 388.021     |
| Ellipsoid Height: | 1176.545       | 358.612     |
| Geoid 99 Height:  | -96.487        | -29.409     |

|                  |                   |
|------------------|-------------------|
| Latitude:        | 43°17'57.49973" N |
| Longitude:       | 93°37'01.89505" W |
| Scale Factor:    | 1.0000061269      |
| Convergence:     | -0°04'46"         |
| Combined Factor: | 0.99994999        |

**Description:**  
Original GPS Monument "G111" was to close to field and removed. New GPS Monument 201 set. GPS 201 is a set 5/8"x6'-0" long aluminum rod with cap stamped 201 and NGS Style Access Cover flush with

**Location:**  
NW Corner of 370th Street and 180th Avenue - near NW Corner Section 19-T98N-R23W.



**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G112**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936408.290    | 1199819.646 |
| Easting:          | 4906103.492    | 1495383.335 |
| Elevation:        | 1232.055       | 375.531     |
| Ellipsoid Height: | 1135.718       | 346.167     |
| Geoid 99 Height:  | -96.338        | -29.364     |

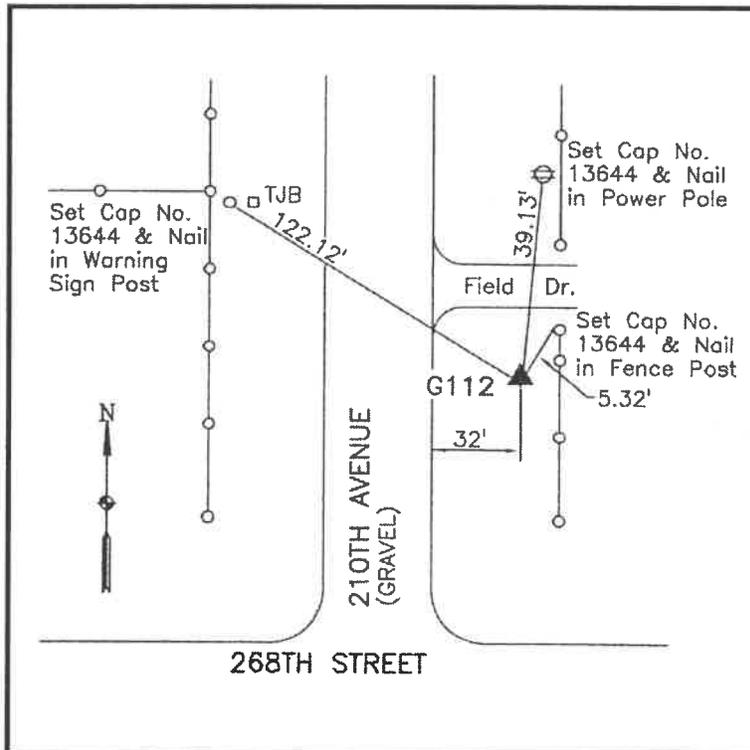
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'55.87732"N |
| Longitude:       | 93°33'24.81809"W |
| Scale Factor:    | 1.0000060401     |
| Convergence:     | -0°02'19"        |
| Combined Factor: | 0.99995185       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G112 and NGS Style Access Cover 1" Deep.

**Location:**

On east side 210th Avenue - 20'± south of field entrance - 0.2± mile north of 268th Street - near NW Corner of Section 22-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G113**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3936475.972    | 1199840.276 |
| Easting:          | 4921842.155    | 1500180.489 |
| Elevation:        | 1221.399       | 372.283     |
| Ellipsoid Height: | 1125.411       | 343.026     |
| Geoid 99 Height:  | -95.989        | -29.257     |

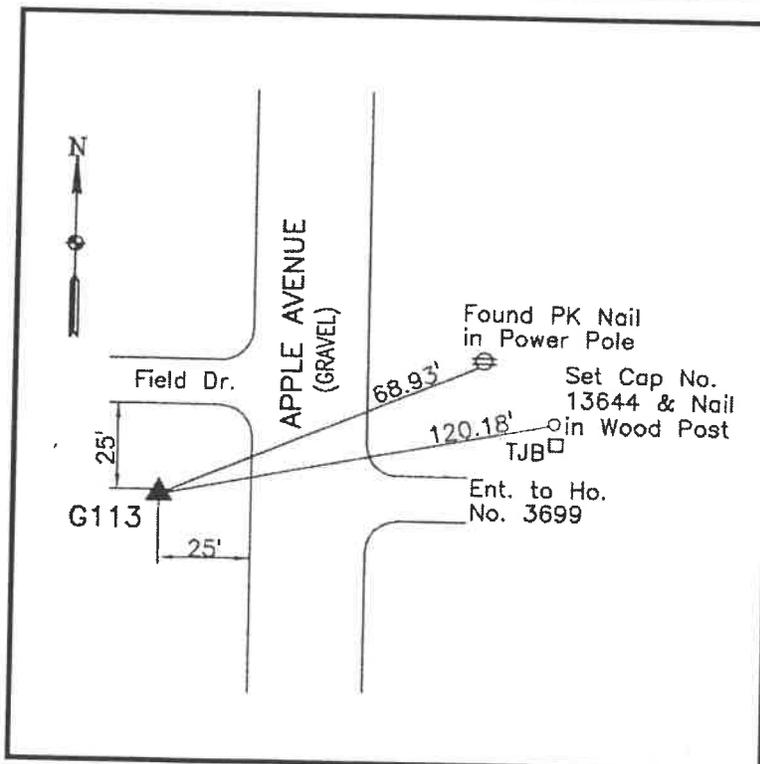
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°17'56.59605"N |
| Longitude:       | 93°29'51.99258"W |
| Scale Factor:    | 1.0000060785     |
| Convergence:     | 0°00'05"         |
| Combined Factor: | 0.99995238       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G113 and NGS Style Access Cover 2 " Deep.

**Location:**

On west side Apple Avenue - 30'± south of field entrance - near NE Corner Section 24-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G114**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952522.123    | 1204731.152 |
| Easting:          | 4921847.792    | 1500182.207 |
| Elevation:        | 1248.425       | 380.521     |
| Ellipsoid Height: | 1152.210       | 351.194     |
| Geoid 99 Height:  | -96.215        | -29.326     |

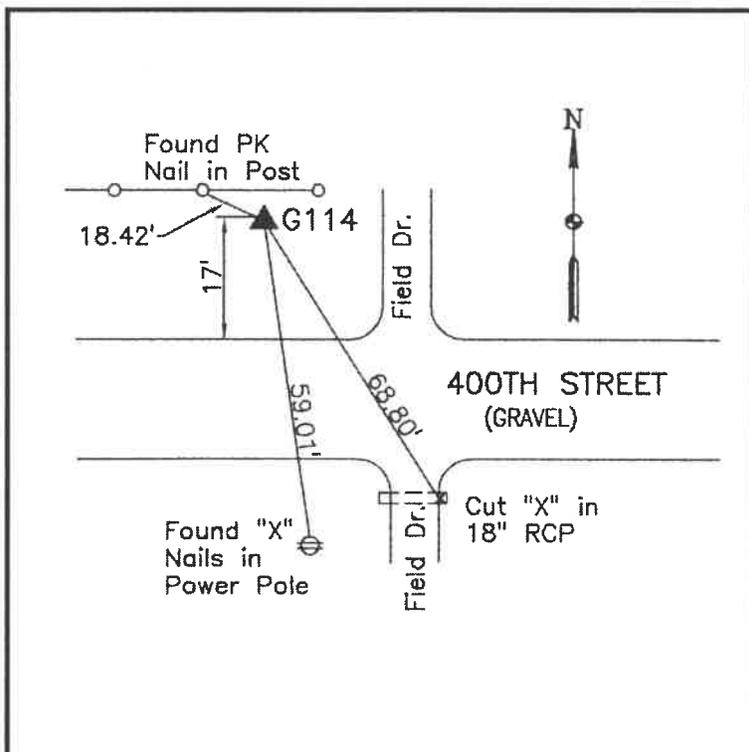
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'35.07608"N |
| Longitude:       | 93°29'51.91059"W |
| Scale Factor:    | 1.0000148566     |
| Convergence:     | 0°00'05"         |
| Combined Factor: | 0.99995988       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G114 and NGS Style Access Cover 2" Deep.

Location:

On north side 400th Street - 20'± west of field entrance - near NE Corner Section 1-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G115**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952101.888    | 1204603.065 |
| Easting:          | 4905980.963    | 1495345.988 |
| Elevation:        | 1276.586       | 389.104     |
| Ellipsoid Height: | 1180.119       | 359.701     |
| Geoid 99 Height:  | -96.467        | -29.403     |

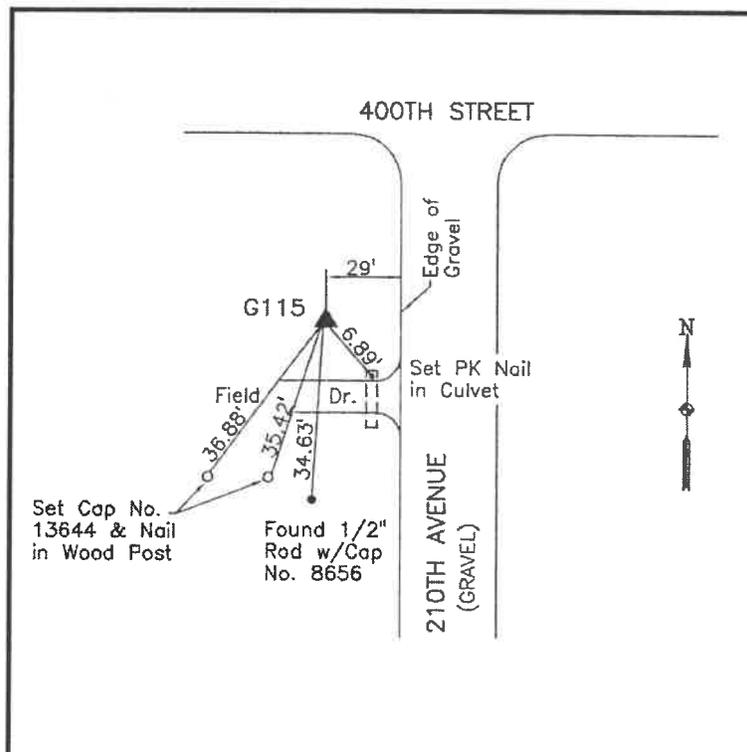
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'30.87455"N |
| Longitude:       | 93°33'26.61906"W |
| Scale Factor:    | 1.0000146162     |
| Convergence:     | -0°02'20"        |
| Combined Factor: | 0.99995831       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G115 and NGS Style Access Cover 2 " Deep.

**Location:**

On west side of 210th Avenue - 30'± north of field entrance - 300'± south of 400th street (County Road A38) - near NW Corner Section 3-T98N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G116**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3951624.618    | 1204457.592 |
| Easting:          | 4890130.705    | 1490514.820 |
| Elevation:        | 1249.327       | 380.796     |
| Ellipsoid Height: | 1152.781       | 351.368     |
| Geoid 99 Height:  | -96.546        | -29.427     |

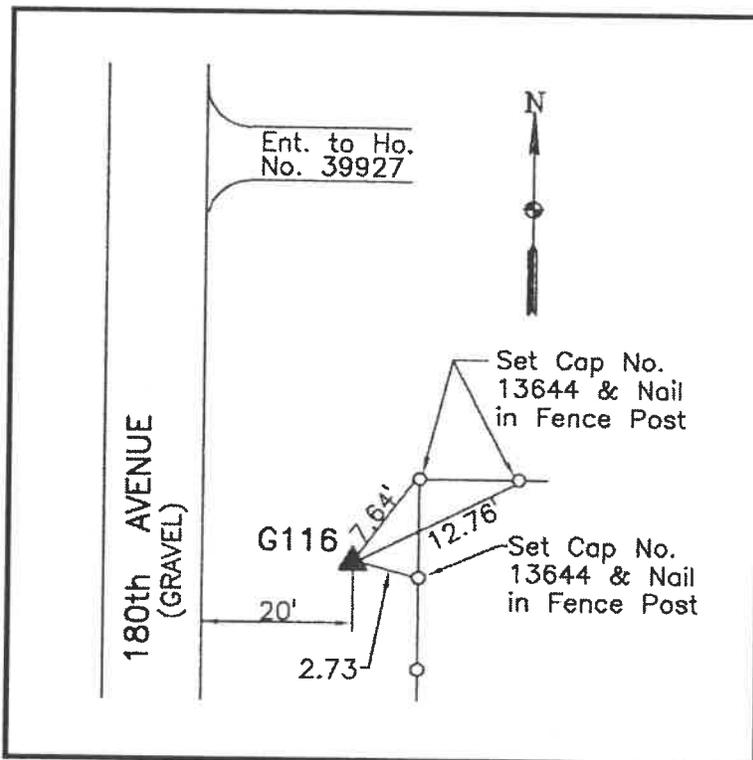
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'25.99939"N |
| Longitude:       | 93°37'01.09399"W |
| Scale Factor:    | 1.0000143378     |
| Convergence:     | -0°04'45"        |
| Combined Factor: | 0.99995934       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G116 and NGS Style Access Cover 1 " Deep.

**Location:**

On east side 180th Avenue - 10'± south of corner post - 0.1± mile south of 400th Street (County Road A38) - near NW Corner Section 6-T98N-R23W.



**WHKS & CO.**

WINNEBAGO COUNTY, IOWA  
 GPS CONTROL MONUMENT  
 IOWA NORTH ZONE (1401)  
 HORIZONTAL DATUM - NAD 83 (1996)  
 VERTICAL DATUM - NAVD 1988

*VOID*

*See Page 53-A*

GPS POINT NUMBER **G117**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952346.600    | 1204677.653 |
| Easting:          | 4874255.271    | 1485675.978 |
| Elevation:        | 1273.003       | 388.012     |
| Ellipsoid Height: | 1176.567       | 358.618     |
| Geoid 99 Height:  | -96.437        | -29.394     |

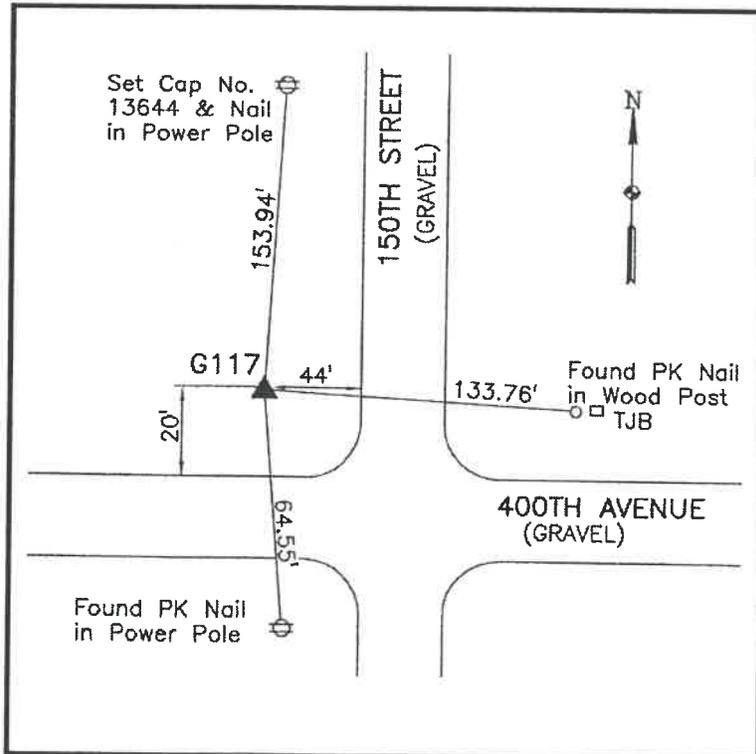
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'32.85770"N |
| Longitude:       | 93°40'35.93398"W |
| Scale Factor:    | 1.0000147296     |
| Convergence:     | -0°07'11"        |
| Combined Factor: | 0.99995859       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G117 and NGS Style Access Cover 2" Deep.

Location:

NW Corner of 400th Street and 150th Avenue - near NW Corner of Section 3-T98N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

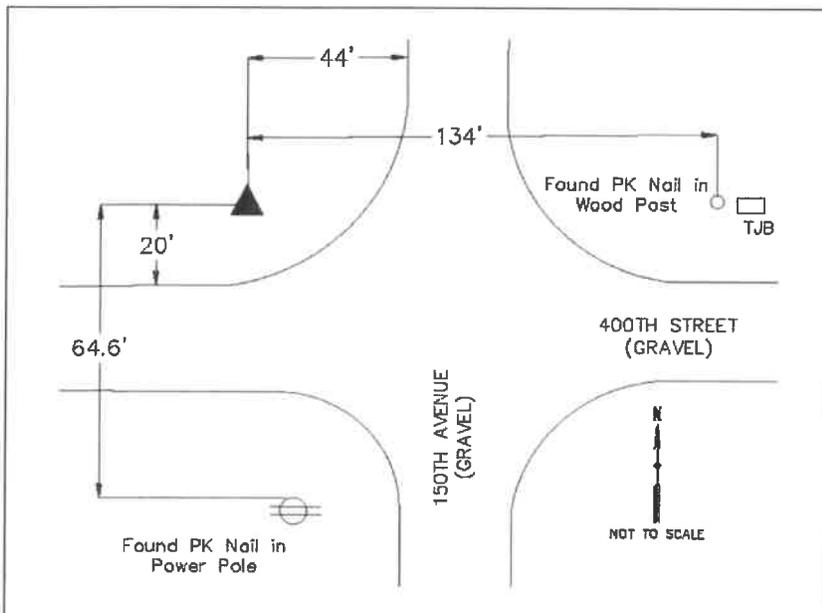
**GPS POINT NUMBER G117**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952346.380    | 1204677.586 |
| Easting:          | 4874255.319    | 1485675.993 |
| Elevation:        | 1272.995       | 388.010     |
| Ellipsoid Height: | 1176.558       | 358.616     |
| Geoid 99 Height:  | -96.437        | -29.394     |

|                  |                   |
|------------------|-------------------|
| Latitude:        | 43°20'32.85553" N |
| Longitude:       | 93°40'35.93332" W |
| Scale Factor:    | 1.0000147296      |
| Convergence:     | -0°07'11"         |
| Combined Factor: | 0.99995859        |

**Description:**  
Original GPS Monument "G117" had shifted. Used existing monument as-is and re-established new coordinates. Existing GPS 117 is a found 5/8"x6'-0" long aluminum rod with cap stamped G117 and NGS Style Access Cover flush with ground

**Location:**  
NW Corner of 400th Street and 150th Avenue - near NW Corner Section 03-T98N-R24W.



**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G118**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952299.903    | 1204663.420 |
| Easting:          | 4860298.536    | 1481421.957 |
| Elevation:        | 1287.982       | 392.578     |
| Ellipsoid Height: | 1191.736       | 363.242     |
| Geoid 99 Height:  | -96.246        | -29.336     |

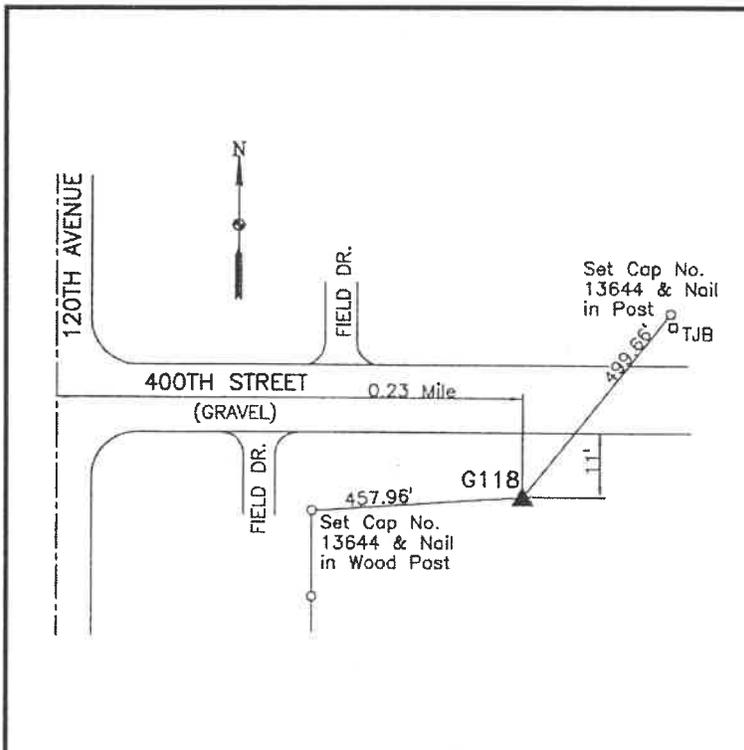
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'32.06570"N |
| Longitude:       | 93°43'44.79437"W |
| Scale Factor:    | 1.0000146843     |
| Convergence:     | -0°09'19"        |
| Combined Factor: | 0.99995783       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G118 and NGS Style Access Cover 1" Deep.

Location:

On south side of 400th Street - 0.25± mile east of 120th Avenue - near NW Corner Section 6-T98N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G119**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952358.680    | 1204681.335 |
| Easting:          | 4843187.920    | 1476206.630 |
| Elevation:        | 1277.757       | 389.461     |
| Ellipsoid Height: | 1181.828       | 360.222     |
| Geoid 99 Height:  | -95.929        | -29.239     |

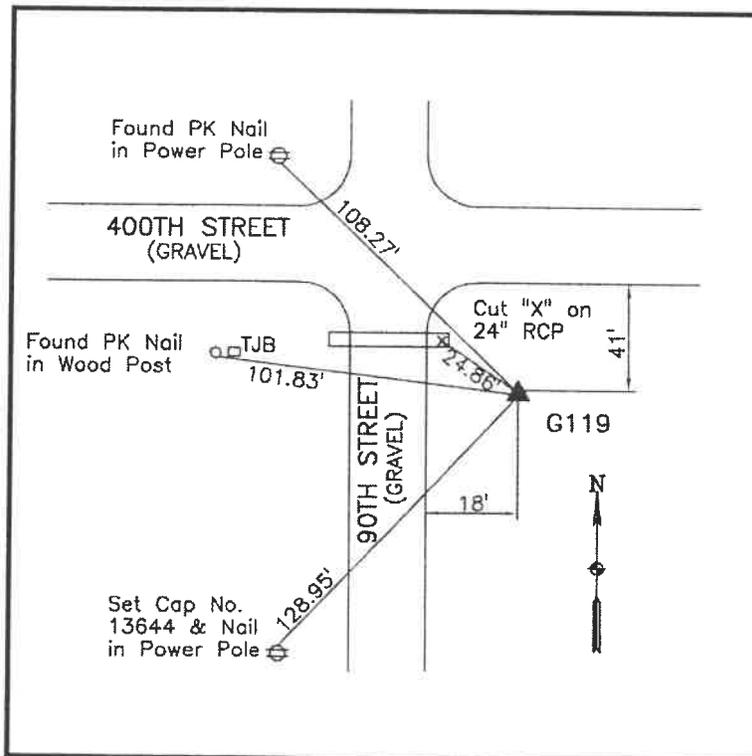
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'32.12394"N |
| Longitude:       | 93°47'36.33609"W |
| Scale Factor:    | 1.0000146876     |
| Convergence:     | -0°11'56"        |
| Combined Factor: | 0.99995830       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G119 and NGS Style Access Cover 1" Deep.

**Location:**

SE Corner of 400th Street and 90th Avenue - near NW Corner Section 3-T98N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G120**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952460.843    | 1204712.474 |
| Easting:          | 4827562.984    | 1471444.140 |
| Elevation:        | 1204.698       | 367.193     |
| Ellipsoid Height: | 1109.130       | 338.064     |
| Geoid 99 Height:  | -95.568        | -29.129     |

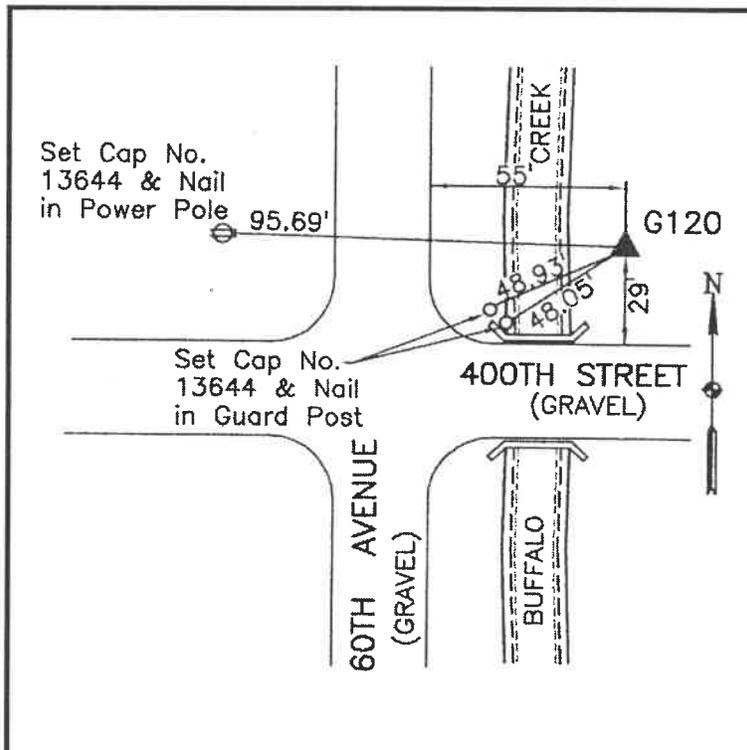
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'32.54370"N |
| Longitude:       | 93°51'07.77624"W |
| Scale Factor:    | 1.0000147116     |
| Convergence:     | -0°14'19"        |
| Combined Factor: | 0.99996179       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G120 and NGS Style Access Cover 1" Deep.

**Location:**

At NE Corner of 400th Street and 60th Avenue - on east side drainage ditch - 25'± north of NE Corner wood bridge - near NW Corner Section 6-T98N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER      **G121**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952437.540    | 1204705.372 |
| Easting:          | 4811727.612    | 1466617.509 |
| Elevation:        | 1182.807       | 360.520     |
| Ellipsoid Height: | 1087.649       | 331.516     |
| Geoid 99 Height:  | -95.158        | -29.004     |

|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'31.60701"N |
| Longitude:       | 93°54'42.05642"W |
| Scale Factor:    | 1.0000146581     |
| Convergence:     | -0°16'44"        |
| Combined Factor: | 0.99996277       |

**Description:**

Placed 5/8" X 6' - 0" Long  
Aluminum Rod with Cap  
Stamped G121 and NGS Style  
Access Cover 2" Deep.

**Location:**

SE Corner of 400th Street and  
30th Avenue - near NW Corner  
Section 3-T98N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G122**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3952580.873    | 1204749.060 |
| Easting:          | 4796221.745    | 1461891.312 |
| Elevation:        | 1192.205       | 363.385     |
| Ellipsoid Height: | 1097.457       | 334.506     |
| Geoid 99 Height:  | -94.748        | -28.879     |

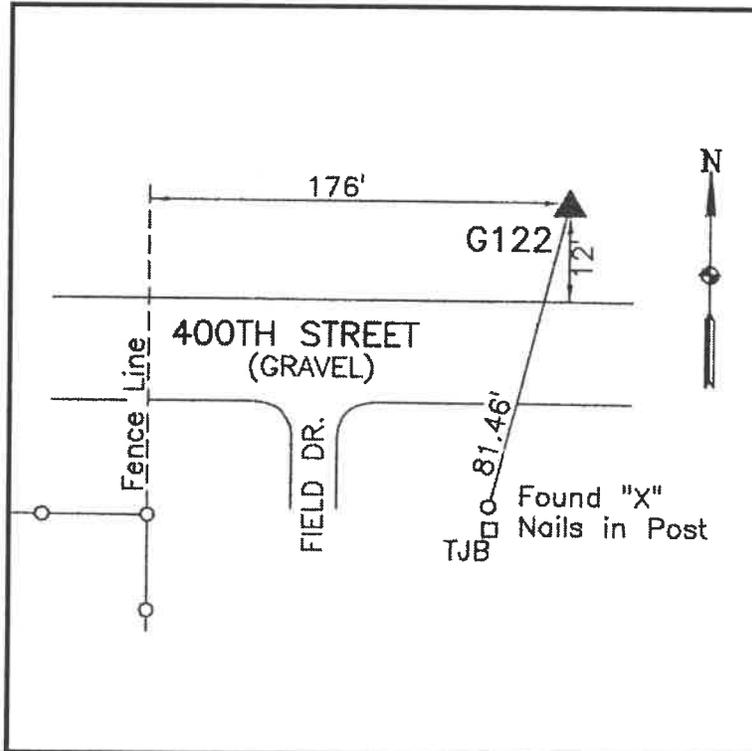
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°20'32.22405"N |
| Longitude:       | 93°58'11.88847"W |
| Scale Factor:    | 1.0000146933     |
| Convergence:     | -0°19'07"        |
| Combined Factor: | 0.99996233       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G122 and NGS Style Access Cover 1" Deep.

**Location:**

On north side 400th Street - 175'± east of county line - near NW Corner Section 6-T98N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER      **G123**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3968437.863    | 1209582.280 |
| Easting:          | 4796407.591    | 1461947.958 |
| Elevation:        | 1173.901       | 357.806     |
| Ellipsoid Height: | 1079.356       | 328.988     |
| Geoid 99 Height:  | -94.545        | -28.817     |

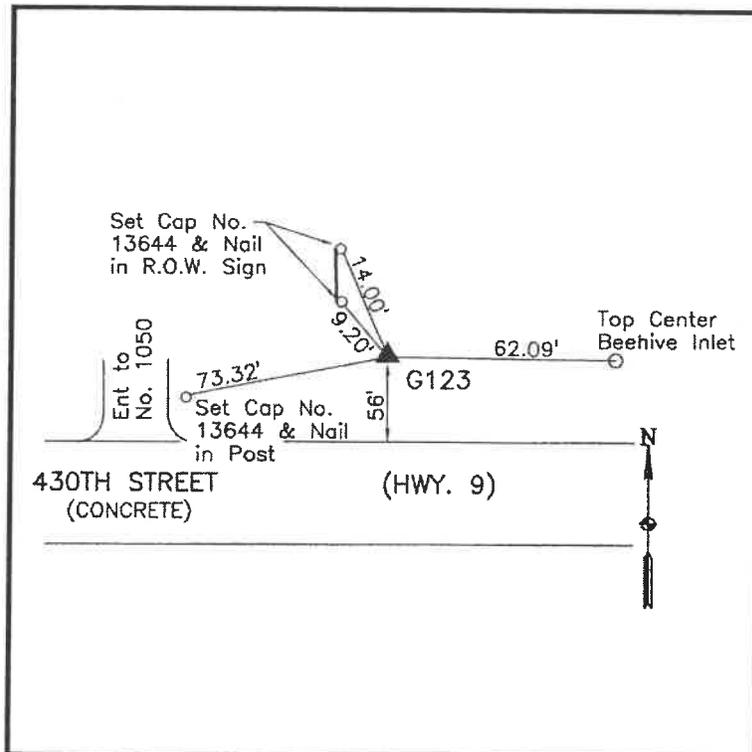
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'08.84105"N |
| Longitude:       | 93°58'10.56557"W |
| Scale Factor:    | 1.0000239421     |
| Convergence:     | -0°19'06"        |
| Combined Factor: | 0.99997244       |

**Description:**

Placed 5/8" X 6' - 0" Long  
Aluminum Rod with Cap  
Stamped G123 and NGS Style  
Access Cover 2" Deep.

**Location:**

On north side 430th Street  
(Highway 9) - near SE Corner  
of Ron's LP Tank Service -  
near NW Corner Section 19-  
T99N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G124**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3968485.996    | 1209596.951 |
| Easting:          | 4811723.960    | 1466616.396 |
| Elevation:        | 1191.555       | 363.187     |
| Ellipsoid Height: | 1096.573       | 334.236     |
| Geoid 99 Height:  | -94.983        | -28.951     |

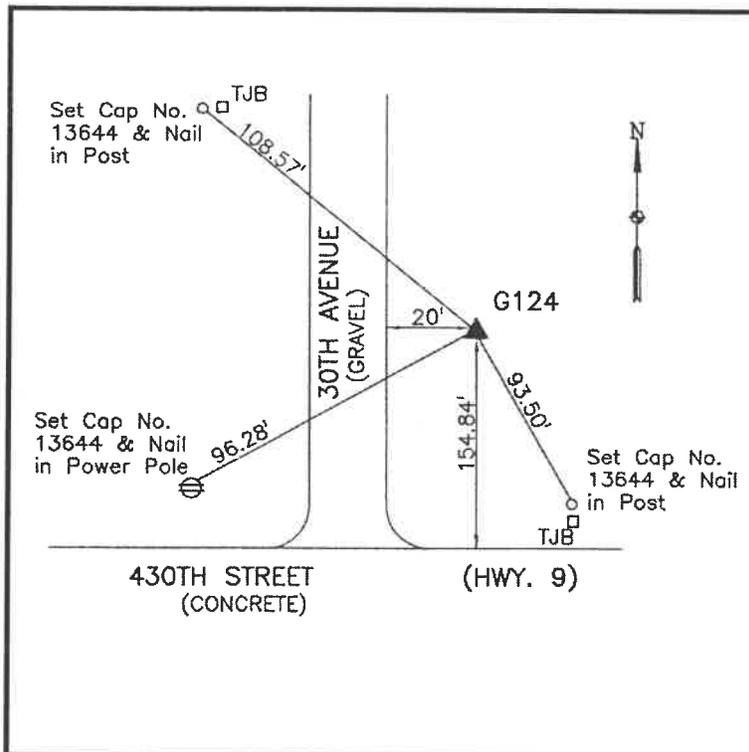
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'10.10515"N |
| Longitude:       | 93°54'43.16417"W |
| Scale Factor:    | 1.0000240191     |
| Convergence:     | -0°16'45"        |
| Combined Factor: | 0.99997170       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G124 and NGS Style Access Cover 1" Deep.

**Location:**

NE Corner 430th Street (Highway 9) and 30th Avenue - 30'± south of field entrance - 5'± south of ROW sign - near NW Corner Section 22-T99N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER     **G125**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3968148.110    | 1209493.963 |
| Easting:          | 4827601.677    | 1471455.934 |
| Elevation:        | 1202.798       | 366.614     |
| Ellipsoid Height: | 1107.355       | 337.523     |
| Geoid 99 Height:  | -95.443        | -29.091     |

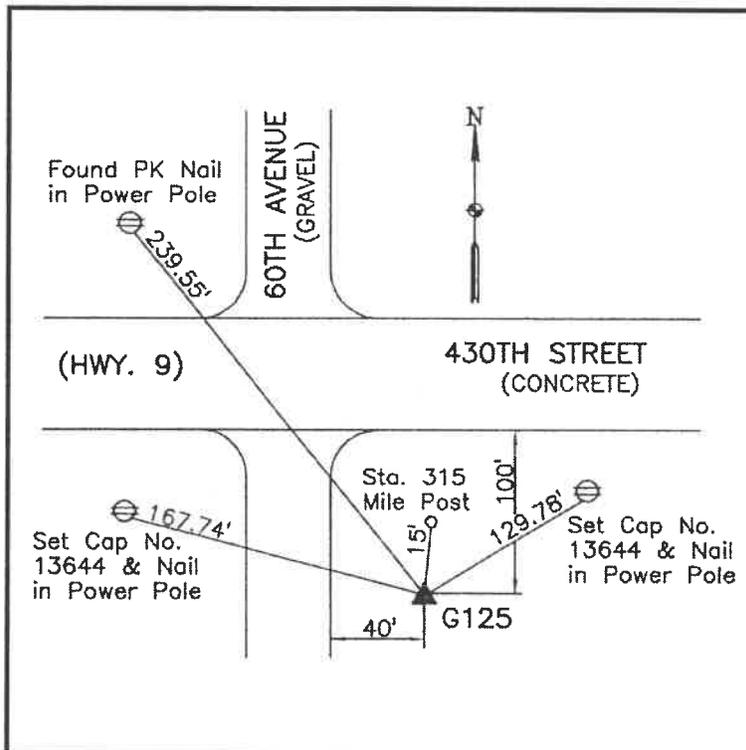
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'07.47693"N |
| Longitude:       | 93°51'08.13719"W |
| Scale Factor:    | 1.0000238590     |
| Convergence:     | -0°14'19"        |
| Combined Factor: | 0.99997103       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G125 and NGS Style Access Cover 1 " Deep.

Location:

SE Corner 430th Street (Highway 9) and 60th Avenue - 15'± west and 15'± south of Station 315 sign - near NW Corner Section 19-T99N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G126**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3968042.815    | 1209461.869 |
| Easting:          | 4843249.131    | 1476225.287 |
| Elevation:        | 1237.189       | 377.096     |
| Ellipsoid Height: | 1141.355       | 347.886     |
| Geoid 99 Height:  | -95.834        | -29.210     |

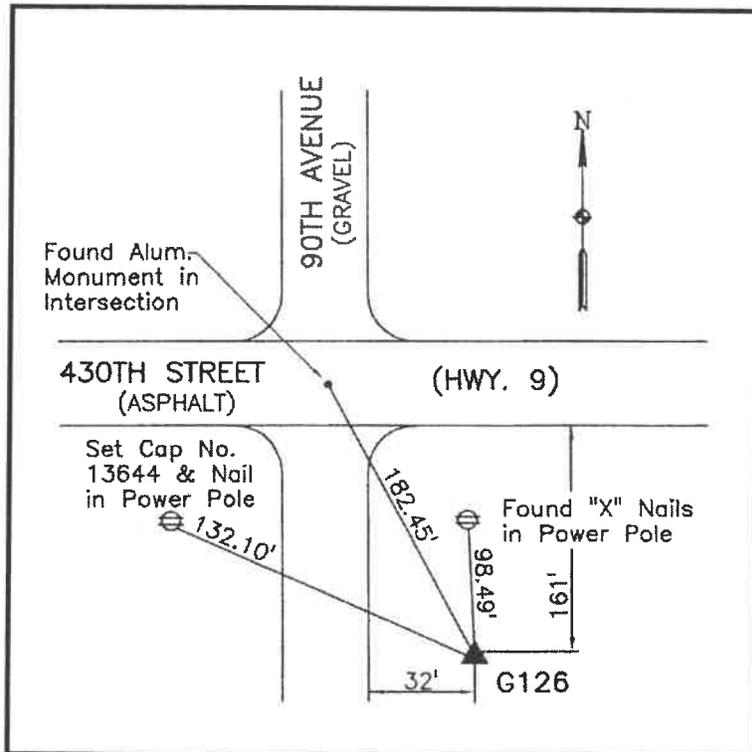
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'07.02716"N |
| Longitude:       | 93°47'36.24438"W |
| Scale Factor:    | 1.0000238317     |
| Convergence:     | -0°11'56"        |
| Combined Factor: | 0.99996938       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G126 and NGS Style Access Cover 2 " Deep.

**Location:**

SE Corner 430th Street (Highway 9) and 90th Avenue - 40± north of field entrance - 5± north of ROW sign - near NW Corner of Section 22-T99N-R25W.



**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G127**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3968148.321    | 1209494.027 |
| Easting:          | 4859081.086    | 1481050.877 |
| Elevation:        | 1255.027       | 382.533     |
| Ellipsoid Height: | 1158.871       | 353.225     |
| Geoid 99 Height:  | -96.155        | -29.308     |

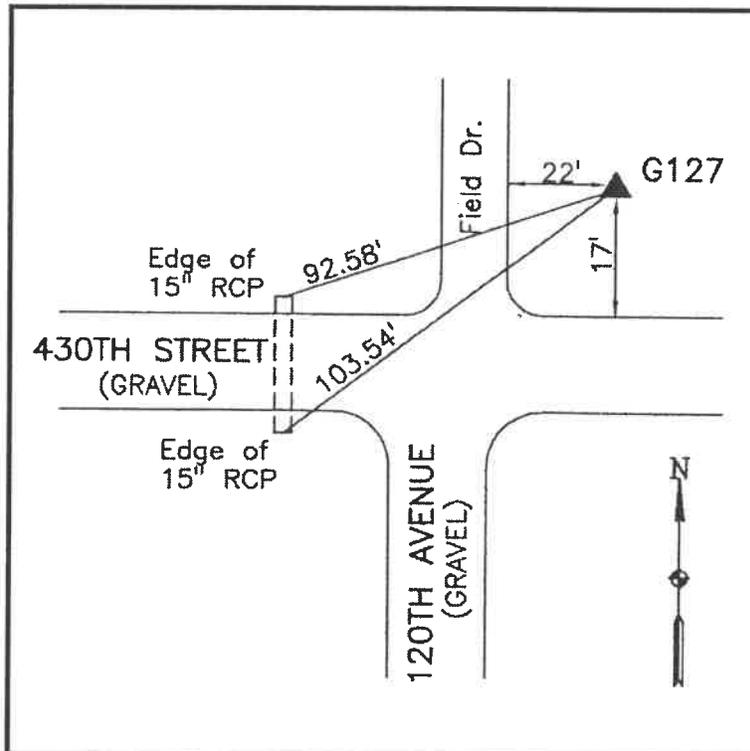
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'08.55675"N |
| Longitude:       | 93°44'01.86204"W |
| Scale Factor:    | 1.0000239248     |
| Convergence:     | -0°09'31"        |
| Combined Factor: | 0.99996863       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G127 and NGS Style Access Cover 1 " Deep.

**Location:**

NE Corner 430th Street and 120th Avenue - near NW Corner Section 19-T99N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G128**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3967827.251    | 1209396.165 |
| Easting:          | 4874378.680    | 1485713.593 |
| Elevation:        | 1238.143       | 377.387     |
| Ellipsoid Height: | 1141.746       | 348.005     |
| Geoid 99 Height:  | -96.397        | -29.382     |

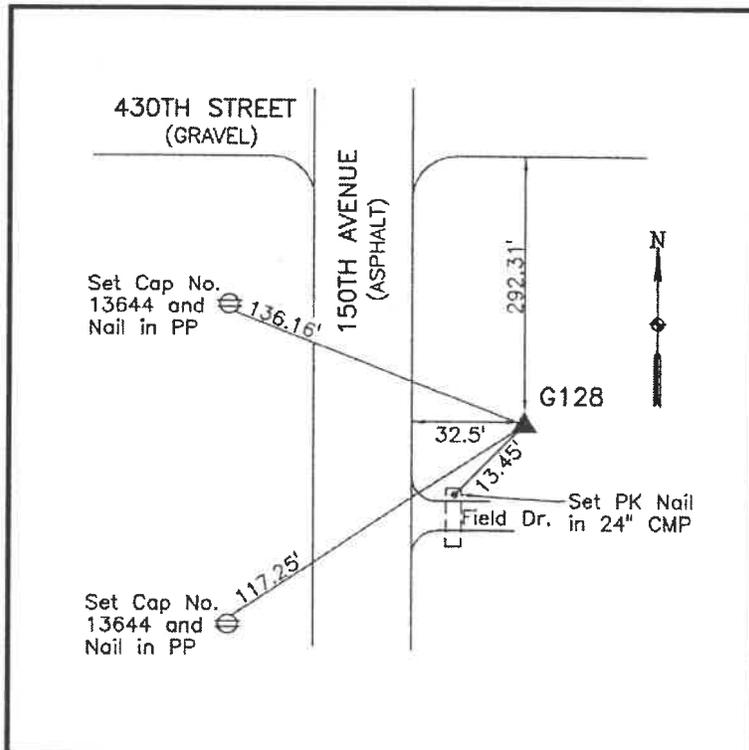
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'05.75230"N |
| Longitude:       | 93°40'34.70088"W |
| Scale Factor:    | 1.0000237541     |
| Convergence:     | -0°07'10"        |
| Combined Factor: | 0.99996928       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G128 and NGS Style Access Cover 1" Deep.

**Location:**

On east side 150th Avenue (County Road R50) - 300'± south of 430th Street - 20'± north of field entrance - near NW Corner Section 22-T99N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G129**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3968089.853    | 1209476.206 |
| Easting:          | 4890054.910    | 1490491.718 |
| Elevation:        | 1264.155       | 385.315     |
| Ellipsoid Height: | 1167.610       | 355.888     |
| Geoid 99 Height:  | -96.545        | -29.427     |

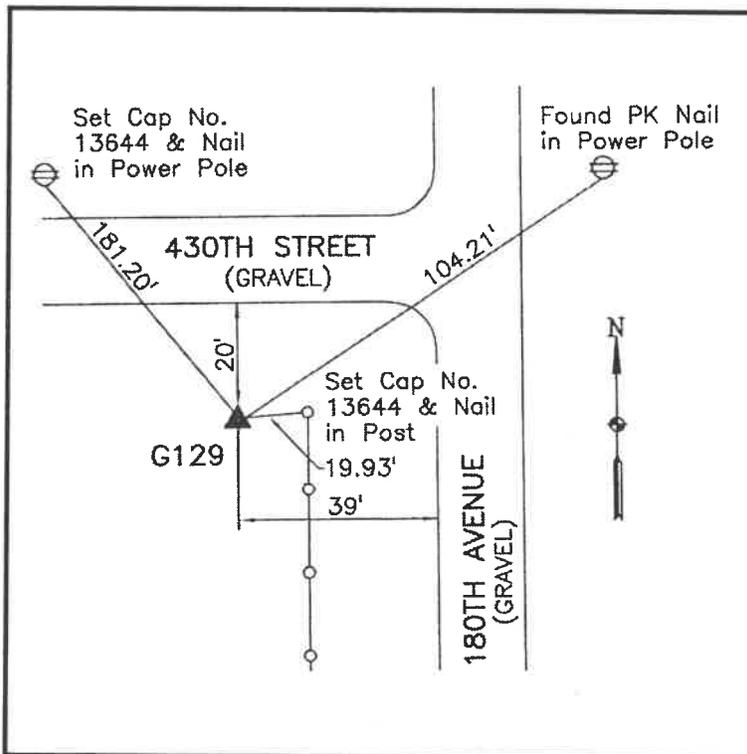
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'08.61470"N |
| Longitude:       | 93°37'02.42886"W |
| Scale Factor:    | 1.0000239283     |
| Convergence:     | -0°04'46"        |
| Combined Factor: | 0.99996822       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G129 and NGS Style Access Cover 1" Deep.

**Location:**

SW Corner of 430th Street and 180th Avenue - near NW Corner Section 19-T99N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G130**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3968253.186    | 1209525.990 |
| Easting:          | 4906037.882    | 1495363.337 |
| Elevation:        | 1290.109       | 393.226     |
| Ellipsoid Height: | 1193.570       | 363.801     |
| Geoid 99 Height:  | -96.540        | -29.425     |

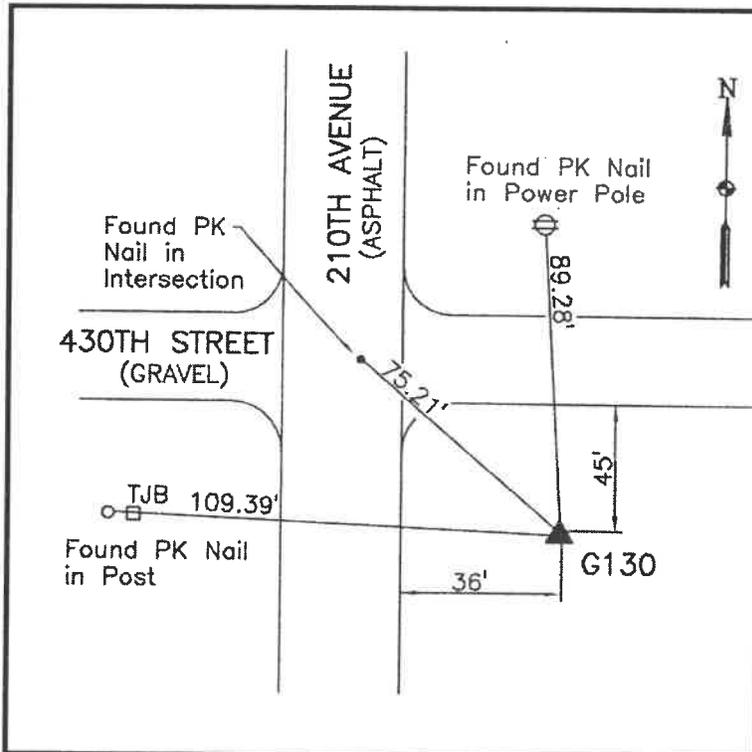
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°23'10.39080"N |
| Longitude:       | 93°33'25.99676"W |
| Scale Factor:    | 1.0000240365     |
| Convergence:     | -0°02'20"        |
| Combined Factor: | 0.99996709       |

Description:

Placed 5/8" X 6" - 0" Long Aluminum Rod with Cap Stamped G130 and NGS Style Access Cover 2" Deep.

Location:

SE Corner of 430th Street and 210th Avenue (County Road R72) - near NW Corner Section 22-T99N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G131**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3965670.690    | 1208738.844 |
| Easting:          | 4920743.118    | 1499845.502 |
| Elevation:        | 1244.980       | 379.471     |
| Ellipsoid Height: | 1148.608       | 350.097     |
| Geoid 99 Height:  | -96.372        | -29.374     |

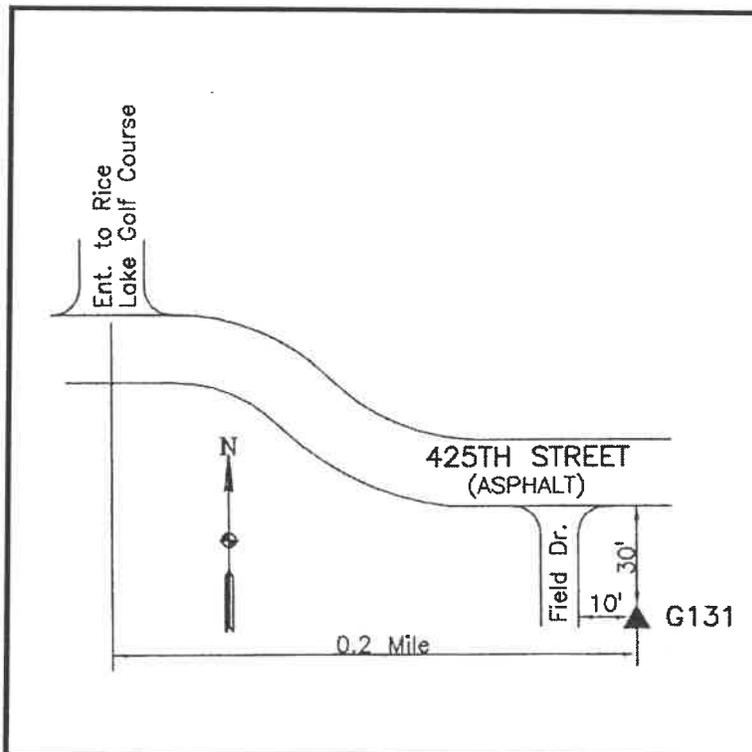
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°22'44.93613"N |
| Longitude:       | 93°30'06.86322"W |
| Scale Factor:    | 1.0000224929     |
| Convergence:     | -0°00'05"        |
| Combined Factor: | 0.99996769       |

**Description:**

Placed 5/8" X 6' - 0" Long  
Aluminum Rod with Cap  
Stamped G131 and NGS Style  
Access Cover 2 " Deep.

**Location:**

On south side 425th Street  
(County Road A34) - at end of  
curve - 0.2± mile east of  
entrance to Rice Lake Golf  
Course (235th Avenue) east of  
center Section 24-T99N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G132**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984250.395    | 1214401.949 |
| Easting:          | 4921826.841    | 1500175.821 |
| Elevation:        | 1294.698       | 394.625     |
| Ellipsoid Height: | 1198.236       | 365.223     |
| Geoid 99 Height:  | -96.462        | -29.402     |

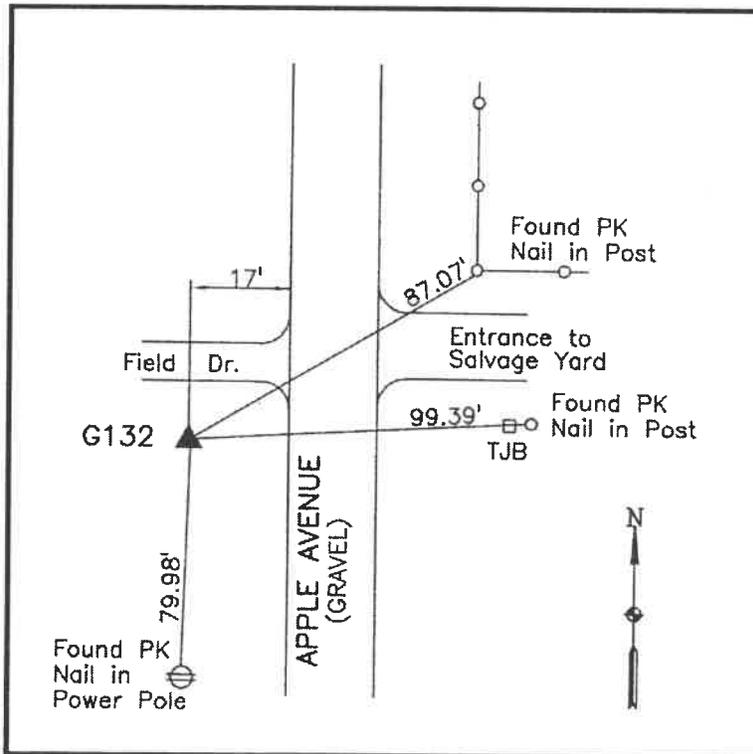
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'48.43289"N |
| Longitude:       | 93°29'52.18308"W |
| Scale Factor:    | 1.0000339647     |
| Convergence:     | 0°00'05"         |
| Combined Factor: | 0.99997679       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G132 and NGS Style Access Cover 2" Deep.

**Location:**

On west side Apple Avenue - 30'± south of field entrance - SW Corner intersection with entrance to salvage yard - near NE Corner Section 1-T99N-R23W.



**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G133**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984263.937    | 1214406.077 |
| Easting:          | 4906032.293    | 1495361.634 |
| Elevation:        | 1262.919       | 384.938     |
| Ellipsoid Height: | 1166.359       | 355.507     |
| Geoid 99 Height:  | -96.560        | -29.432     |

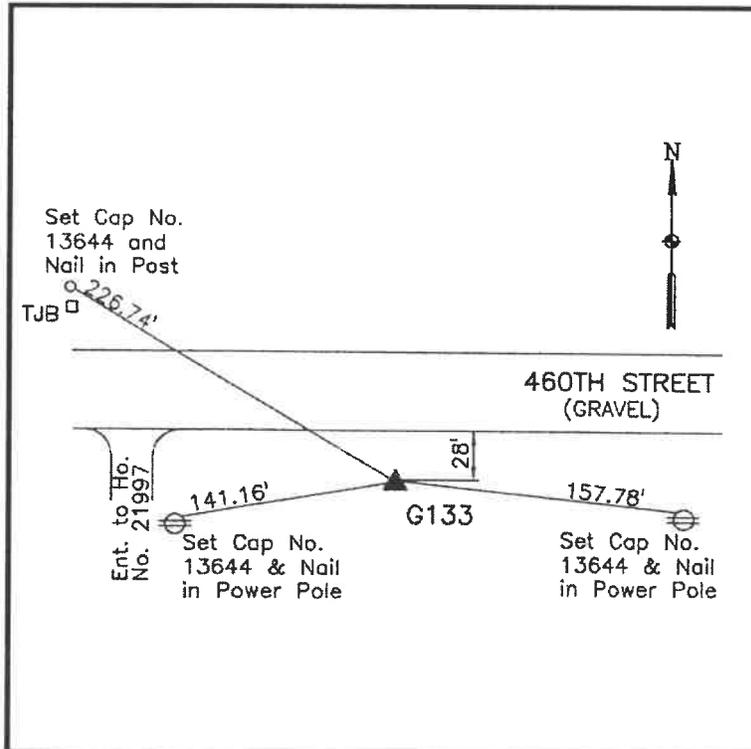
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'48.51578"N |
| Longitude:       | 93°33'26.21935"W |
| Scale Factor:    | 1.0000339701     |
| Convergence:     | -0°02'20"        |
| Combined Factor: | 0.99997832       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G133 and NGS Style Access Cover 1 " Deep.

**Location:**

On south side 460th Street - NE Corner of Acreage No. 21997 (Raymond Peterson) - near NW Corner Section 3-T99N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G134**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984234.322    | 1214397.050 |
| Easting:          | 4890056.244    | 1490492.124 |
| Elevation:        | 1288.435       | 392.716     |
| Ellipsoid Height: | 1191.935       | 363.302     |
| Geoid 99 Height:  | -96.501        | -29.413     |

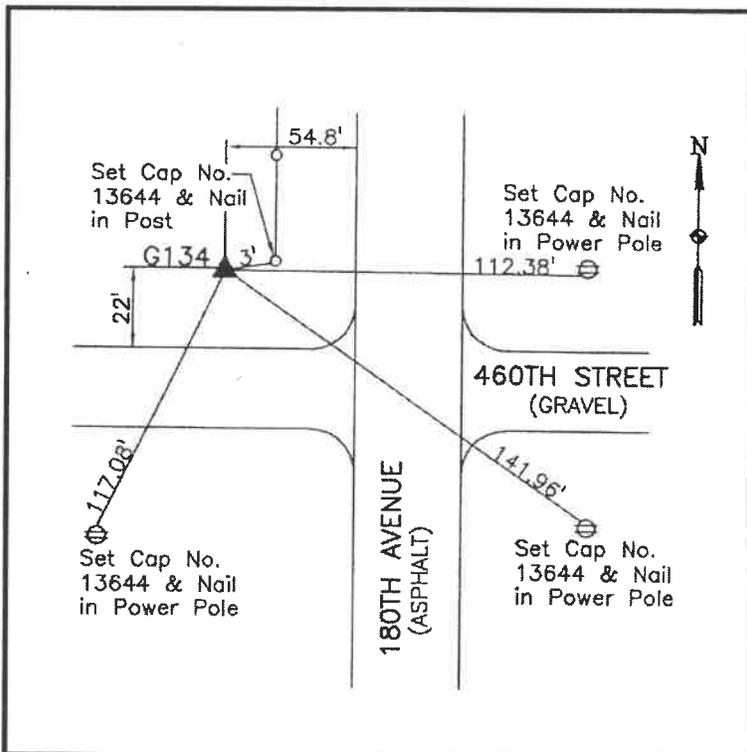
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'48.06027"N |
| Longitude:       | 93°37'02.71445"W |
| Scale Factor:    | 1.0000339406     |
| Convergence:     | -0°04'46"        |
| Combined Factor: | 0.99997707       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G134 and NGS Style Access Cover 2 " Deep.

**Location:**

NW Corner of 460th Street and 180th Avenue (County Road R60) - near NW Corner Section 6-T99N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER      **G135**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984205.750    | 1214388.342 |
| Easting:          | 4873783.980    | 1485532.328 |
| Elevation:        | 1275.592       | 388.801     |
| Ellipsoid Height: | 1179.279       | 359.445     |
| Geoid 99 Height:  | -96.314        | -29.357     |

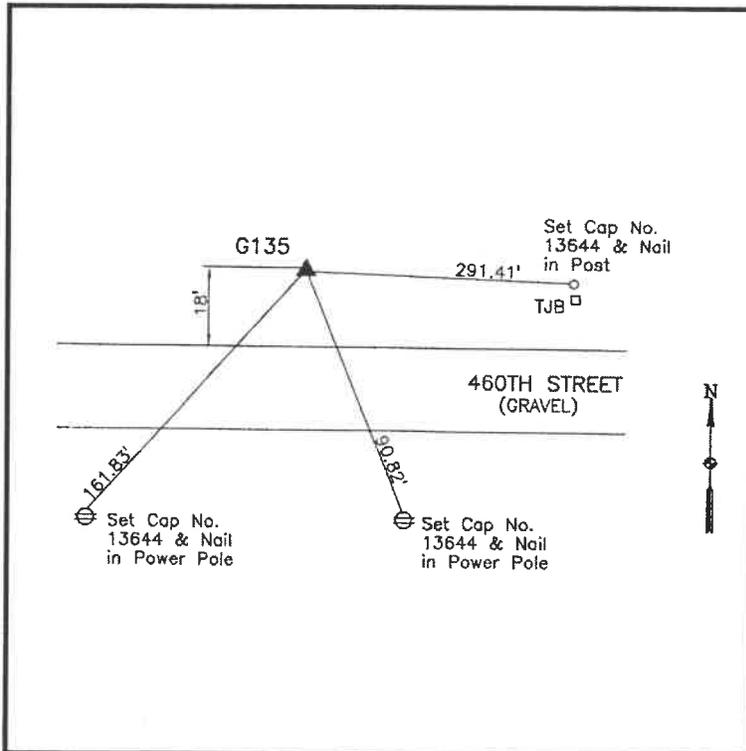
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'47.49666"N |
| Longitude:       | 93°40'43.22264"W |
| Scale Factor:    | 1.0000339042     |
| Convergence:     | -0°07'16"        |
| Combined Factor: | 0.99997764       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G135 and NGS Style Access Cover 1" Deep.

**Location:**

On north side 460th Street - 400'± west of 150th Avenue (County Road R50) - near NW Corner Section 3-T99N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G136**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984248.983    | 1214401.519 |
| Easting:          | 4859054.030    | 1481042.631 |
| Elevation:        | 1237.688       | 377.248     |
| Ellipsoid Height: | 1141.622       | 347.967     |
| Geoid 99 Height:  | -96.066        | -29.281     |

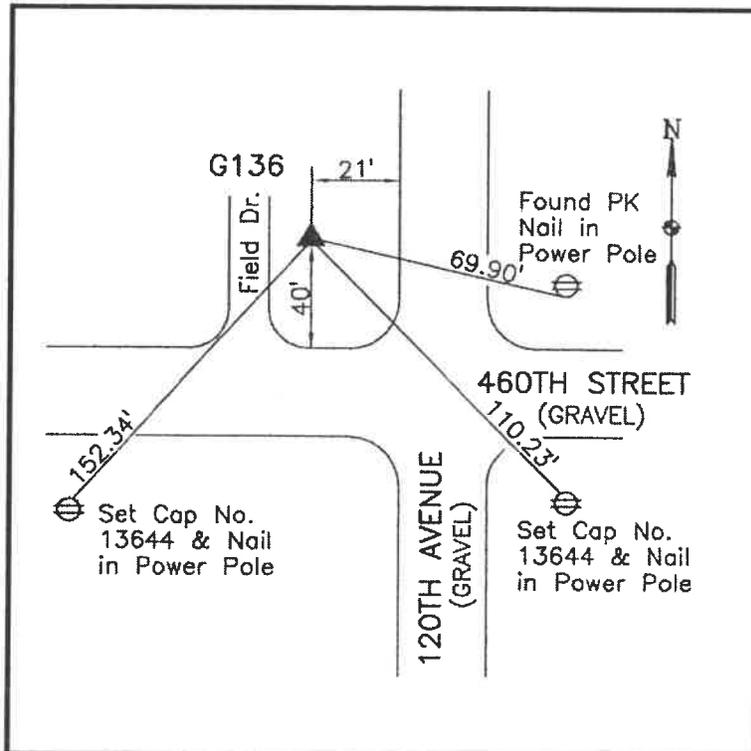
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'47.56846"N |
| Longitude:       | 93°44'02.83221"W |
| Scale Factor:    | 1.0000339088     |
| Convergence:     | -0°09'31"        |
| Combined Factor: | 0.99997944       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G136 and NGS Style Access Cover 3" Deep.

**Location:**

NW Corner of 460th Street and 120th Avenue - near NW Corner Section 6-T99N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G137**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984284.165    | 1214412.242 |
| Easting:          | 4844161.384    | 1476503.343 |
| Elevation:        | 1234.321       | 376.222     |
| Ellipsoid Height: | 1138.576       | 347.039     |
| Geoid 99 Height:  | -95.745        | -29.183     |

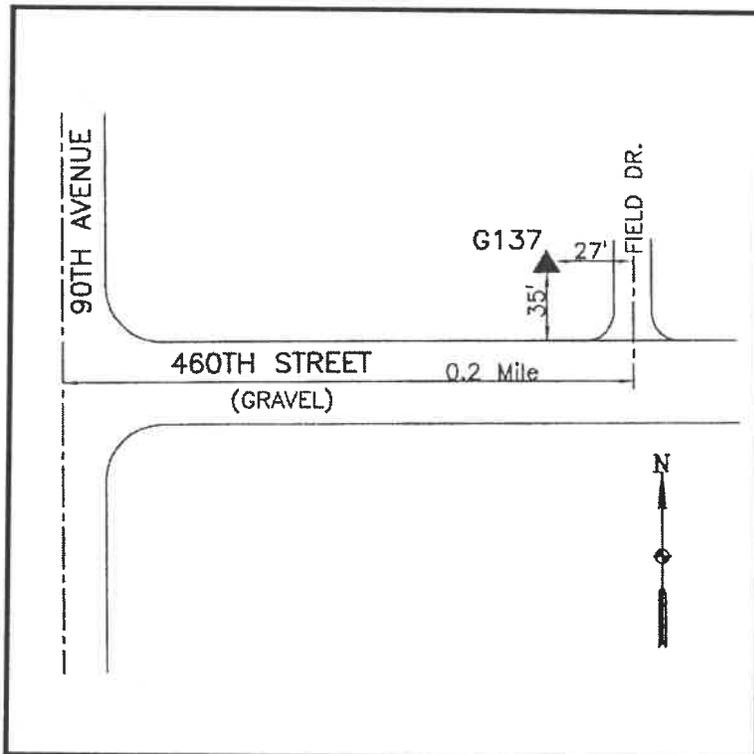
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'47.45983"N |
| Longitude:       | 93°47'24.64616"W |
| Scale Factor:    | 1.0000339018     |
| Convergence:     | -0°11'48"        |
| Combined Factor: | 0.99997958       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G137 and NGS Style Access Cover 3 " Deep.

**Location:**

On north side 460th Street - 0.2± mile east of 90th Avenue - 30'± west of field entrance - near NW Corner Section 3-T99N-R25W.



**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G138**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984354.398    | 1214433.650 |
| Easting:          | 4827736.387    | 1471496.994 |
| Elevation:        | 1199.450       | 365.593     |
| Ellipsoid Height: | 1104.142       | 336.543     |
| Geoid 99 Height:  | -95.308        | -29.050     |

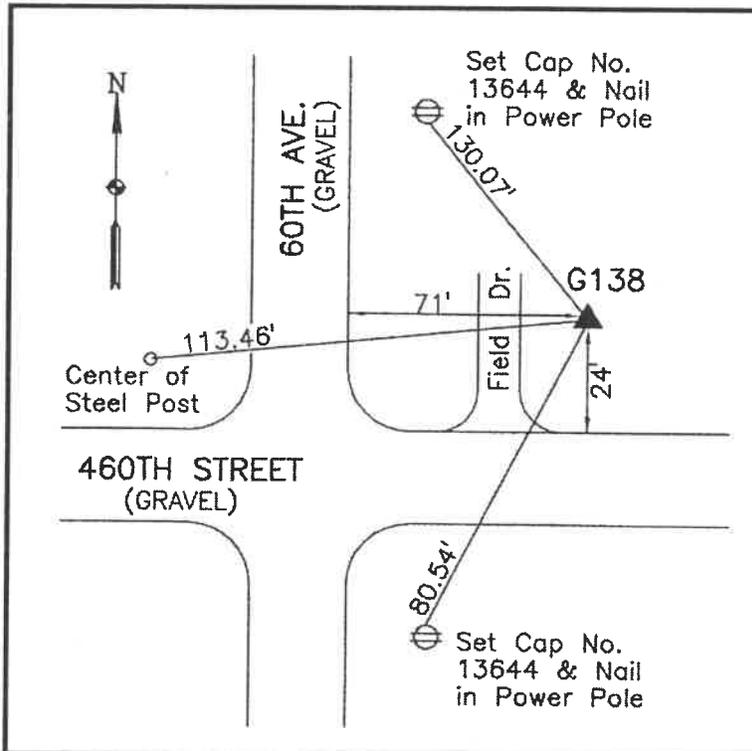
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'47.53734"N |
| Longitude:       | 93°51'07.22682"W |
| Scale Factor:    | 1.0000339068     |
| Convergence:     | -0°14'19"        |
| Combined Factor: | 0.99998123       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G138 and NGS Style Access Cover 1" Deep.

**Location:**

NE Corner of 460th Street and 60th Avenue - 10'± east of field entrance - near NW Corner Section 6-T99N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER     **G139**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3984342.011    | 1214429.874 |
| Easting:          | 4811824.315    | 1466646.985 |
| Elevation:        | 1196.259       | 364.620     |
| Ellipsoid Height: | 1101.441       | 335.720     |
| Geoid 99 Height:  | -94.818        | -28.901     |

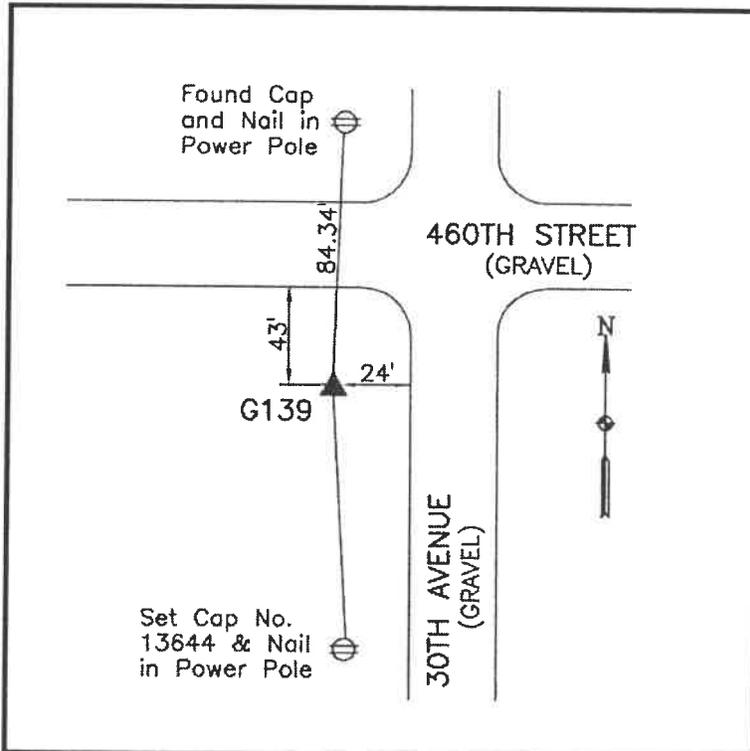
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'46.70499"N |
| Longitude:       | 93°54'42.85138"W |
| Scale Factor:    | 1.0000338530     |
| Convergence:     | -0°16'45"        |
| Combined Factor: | 0.99998130       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G139 and NGS Style Access Cover 1 " Deep.

**Location:**

SW Corner of 460th Street and 30th Avenue - near NW Corner Section 3-T99N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G140**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3983918.097    | 1214300.664 |
| Easting:          | 4796279.053    | 1461908.779 |
| Elevation:        | 1178.236       | 359.127     |
| Ellipsoid Height: | 1083.898       | 330.373     |
| Geoid 99 Height:  | -94.339        | -28.754     |

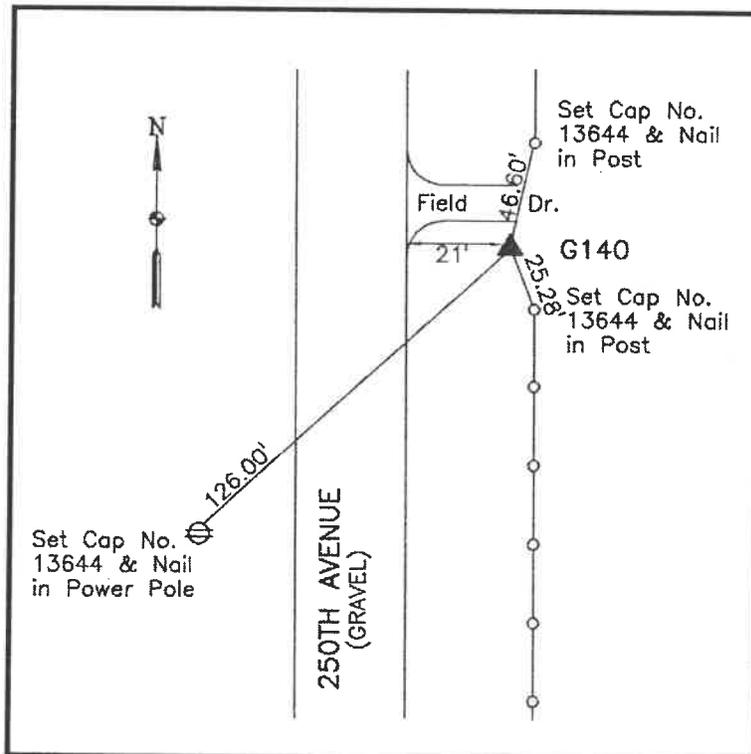
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°25'41.71727"N |
| Longitude:       | 93°58'13.47258"W |
| Scale Factor:    | 1.0000335308     |
| Convergence:     | -0°19'08"        |
| Combined Factor: | 0.99998182       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G140 and NGS Style Access Cover 2" Deep.

**Location:**

On east side 250th Avenue - 0.1± mile south of 460th Street - 15'± south of field entrance - near NW Corner Section 6-T99N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER      **G141**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4000214.984    | 1219267.966 |
| Easting:          | 4797299.226    | 1462219.728 |
| Elevation:        | 1140.907       | 347.749     |
| Ellipsoid Height: | 1046.734       | 319.045     |
| Geoid 99 Height:  | -94.173        | -28.704     |

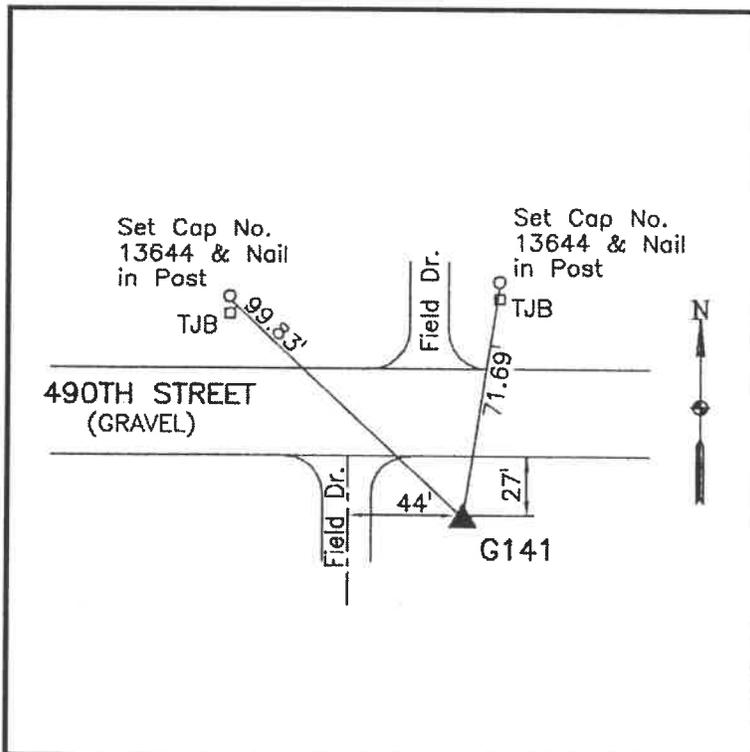
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'22.71886"N |
| Longitude:       | 93°58'00.86825"W |
| Scale Factor:    | 1.0000442286     |
| Convergence:     | -0°18'59"        |
| Combined Factor: | 0.99999429       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G141 and NGS Style Access Cover 1 " Deep.

**Location:**

On south side 490th Street - 30'± east of field entrance - 0.75± mile west of 10th Avenue - 0.2± mile east of NW Corner Section 19-T100N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G142**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4000311.391    | 1219297.350 |
| Easting:          | 4811788.343    | 1466636.020 |
| Elevation:        | 1167.648       | 355.900     |
| Ellipsoid Height: | 1072.992       | 327.049     |
| Geoid 99 Height:  | -94.656        | -28.851     |

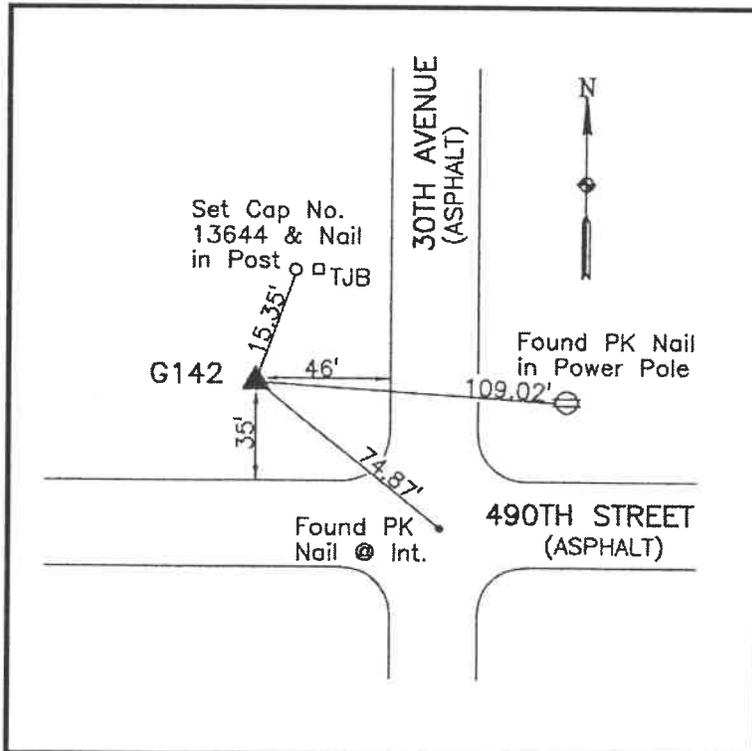
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'24.41506"N |
| Longitude:       | 93°54'44.39433"W |
| Scale Factor:    | 1.0000443446     |
| Convergence:     | -0°16'46"        |
| Combined Factor: | 0.99999315       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G142 and NGS Style Access Cover 2 " Deep.

**Location:**

NW Corner of 490th Street (County Road A16) and 30th Avenue - near NW Corner of Section 22-T100N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G143**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4000226.526    | 1219271.484 |
| Easting:          | 4827694.401    | 1471484.196 |
| Elevation:        | 1193.068       | 363.648     |
| Ellipsoid Height: | 1097.889       | 334.637     |
| Geoid 99 Height:  | -95.180        | -29.011     |

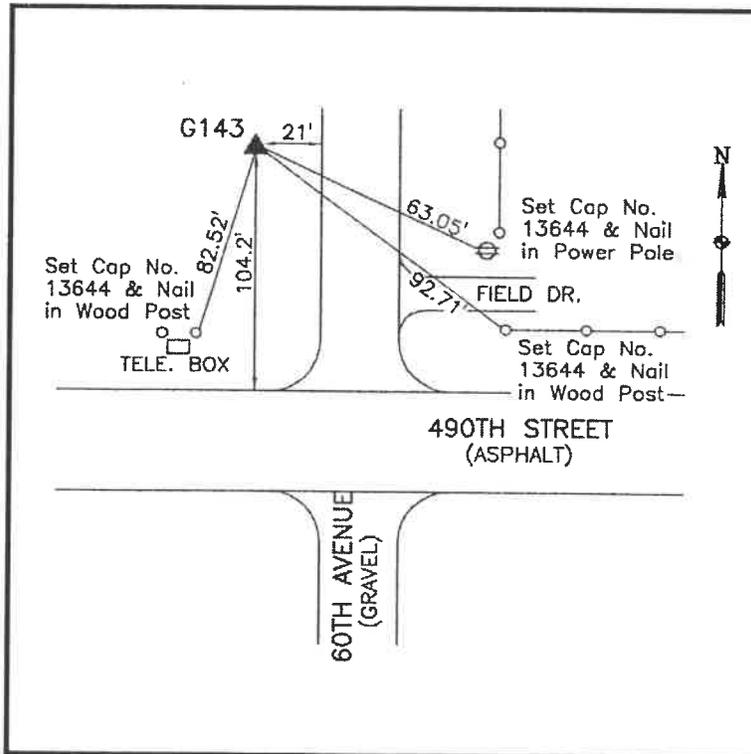
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'24.28746"N |
| Longitude:       | 93°51'08.69240"W |
| Scale Factor:    | 1.0000443358     |
| Convergence:     | -0°14'20"        |
| Combined Factor: | 0.99999195       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G143 and NGS Style Access Cover 3 " Deep.

**Location:**

NW Corner of 490th Street (County Road A16) and 60th Avenue - near NW Corner Section 19-T100N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G144**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4000006.693    | 1219204.478 |
| Easting:          | 4843409.382    | 1476274.132 |
| Elevation:        | 1238.853       | 377.603     |
| Ellipsoid Height: | 1143.231       | 348.457     |
| Geoid 99 Height:  | -95.622        | -29.146     |

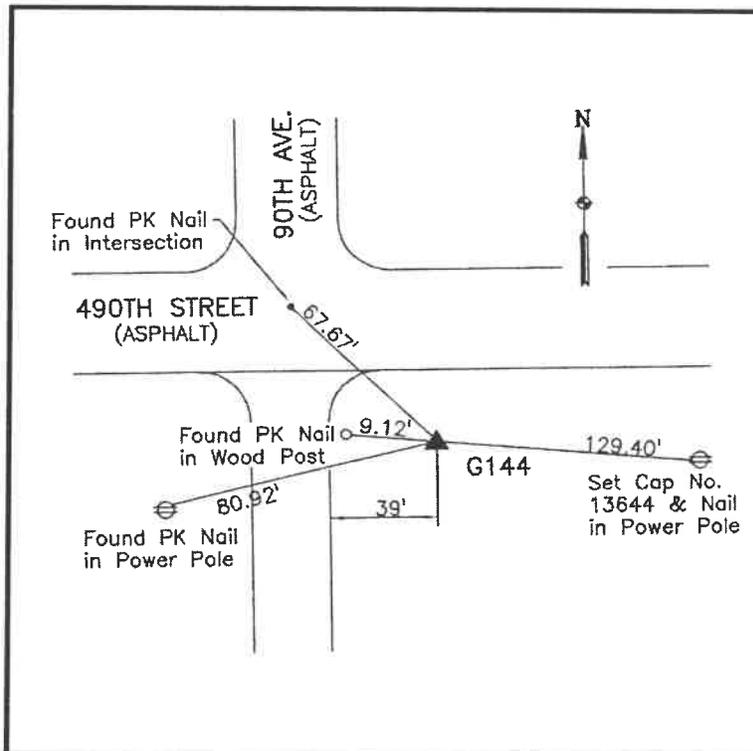
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'22.70905"N |
| Longitude:       | 93°47'35.57561"W |
| Scale Factor:    | 1.0000442279     |
| Convergence:     | -0°11'55"        |
| Combined Factor: | 0.99998968       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G144 and NGS Style Access Cover 2 " Deep.

**Location:**

SE Corner of 490th Street (County Road A16) and 90th Avenue - near NW Corner Section 22-T100N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G145**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3999888.170    | 1219168.352 |
| Easting:          | 4859126.196    | 1481064.627 |
| Elevation:        | 1244.530       | 379.334     |
| Ellipsoid Height: | 1148.558       | 350.081     |
| Geoid 99 Height:  | -95.973        | -29.252     |

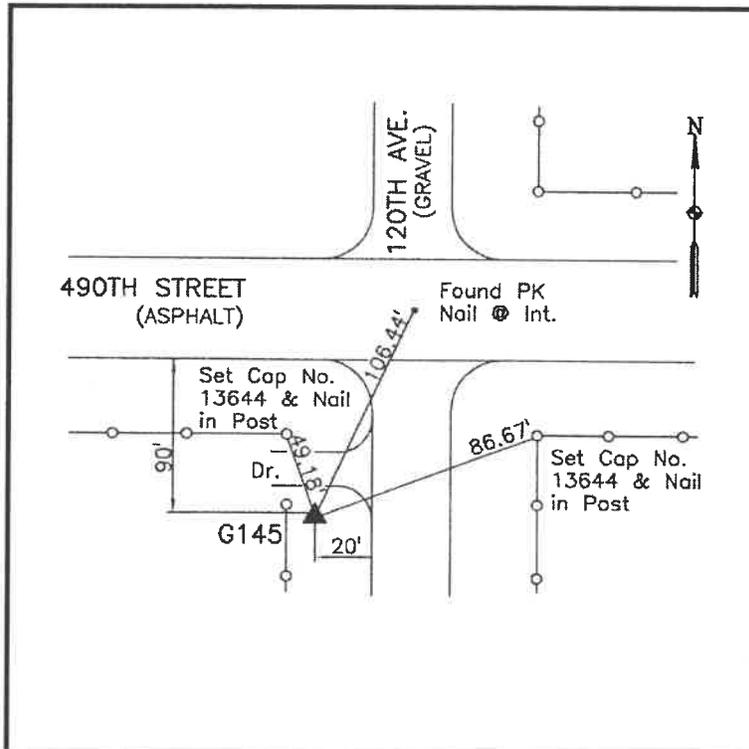
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'22.02254"N |
| Longitude:       | 93°44'02.44093"W |
| Scale Factor:    | 1.0000441810     |
| Convergence:     | -0°09'31"        |
| Combined Factor: | 0.99998938       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G145 and NGS Style Access Cover 2 " Deep.

**Location:**

SW Corner of 490th Street (County Road A16) and 120th Avenue - near NW Corner Section 19-T100N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G146**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3999905.022    | 1219173.489 |
| Easting:          | 4874422.963    | 1485727.091 |
| Elevation:        | 1264.771       | 385.503     |
| Ellipsoid Height: | 1168.537       | 356.171     |
| Geoid 99 Height:  | -96.234        | -29.332     |

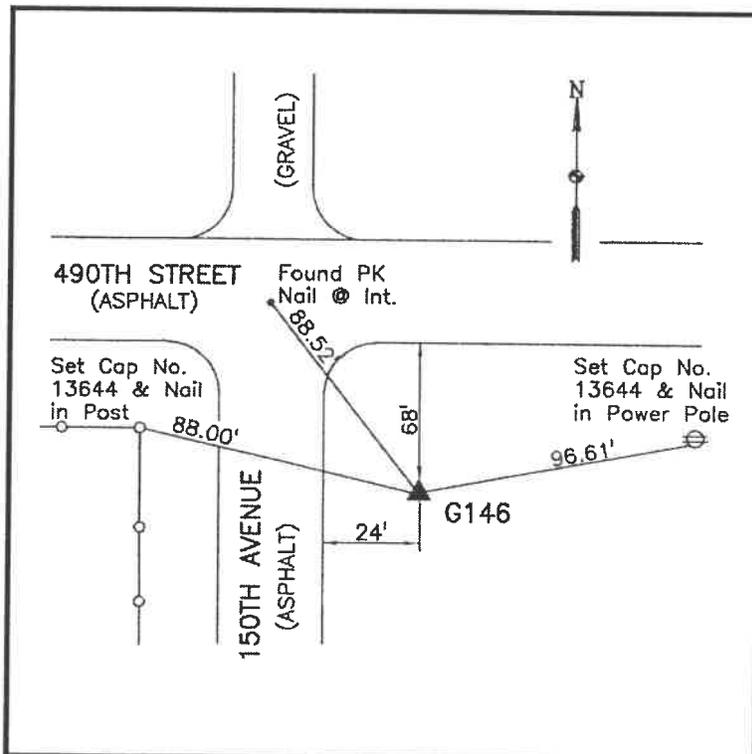
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'22.55566"N |
| Longitude:       | 93°40'35.00756"W |
| Scale Factor:    | 1.0000442174     |
| Convergence:     | -0°07'10"        |
| Combined Factor: | 0.99998846       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G146 and NGS Style Access Cover 2" Deep.

**Location:**

SE Corner of 490th Street (County Road A16) and 150th Avenue (County Road R50) - near NW Corner Section 22-T100N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G147**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4000001.892    | 1219203.015 |
| Easting:          | 4889434.896    | 1490302.737 |
| Elevation:        | 1276.455       | 389.064     |
| Ellipsoid Height: | 1180.032       | 359.675     |
| Geoid 99 Height:  | -96.423        | -29.390     |

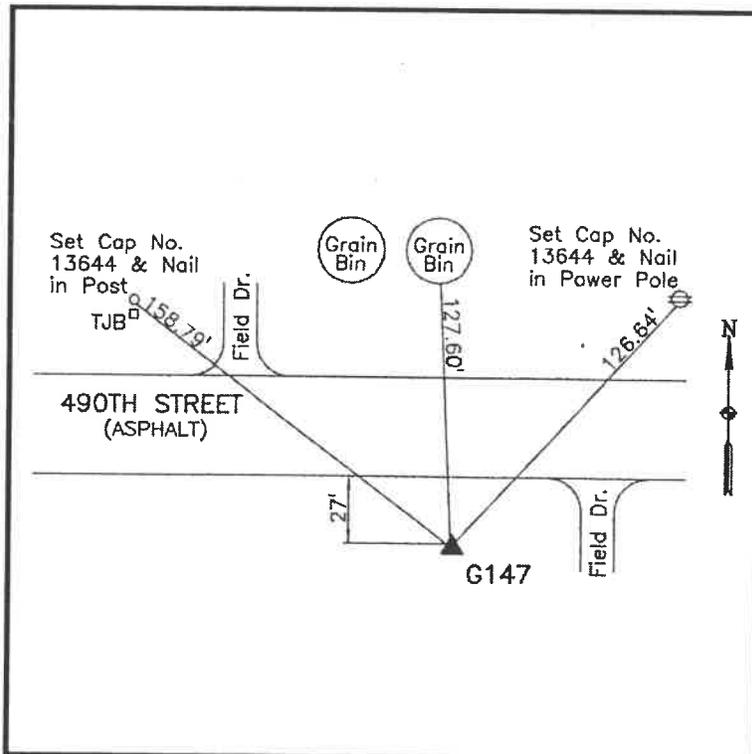
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'23.77210"N |
| Longitude:       | 93°37'11.43739"W |
| Scale Factor:    | 1.0000443006     |
| Convergence:     | -0°04'52"        |
| Combined Factor: | 0.99998800       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G147 and NGS Style Access Cover 2" Deep.

**Location:**

On south side 490th Street (County Road A16) - 600'± west of 180th Avenue (County Road R60) - 30'± west of field entrance - near NW Corner Section 19-T100N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G148**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 3999580.613    | 1219074.609 |
| Easting:          | 4906180.306    | 1495406.748 |
| Elevation:        | 1277.268       | 389.312     |
| Ellipsoid Height: | 1180.741       | 359.891     |
| Geoid 99 Height:  | -96.527        | -29.422     |

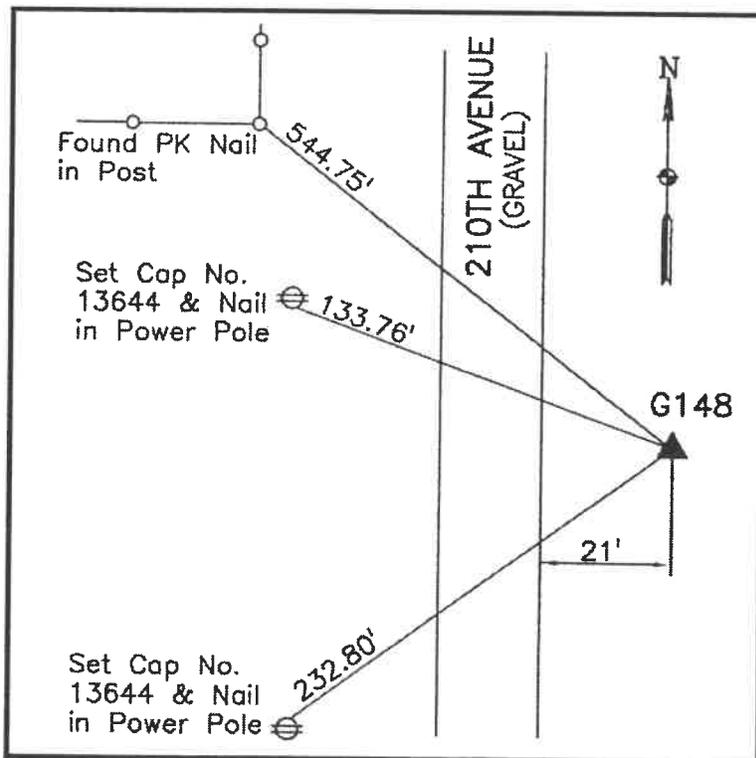
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'19.78432"N |
| Longitude:       | 93°33'24.35296"W |
| Scale Factor:    | 1.0000440281     |
| Convergence:     | -0°02'18"        |
| Combined Factor: | 0.99998769       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G148 and NGS Style Access Cover 1" Deep.

**Location:**

On east side of 210th Avenue - 400'± south of NW Corner Section 22-T100N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G149**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4000250.732    | 1219278.862 |
| Easting:          | 4921914.874    | 1500202.654 |
| Elevation:        | 1303.436       | 397.288     |
| Ellipsoid Height: | 1206.959       | 367.882     |
| Geoid 99 Height:  | -96.477        | -29.406     |

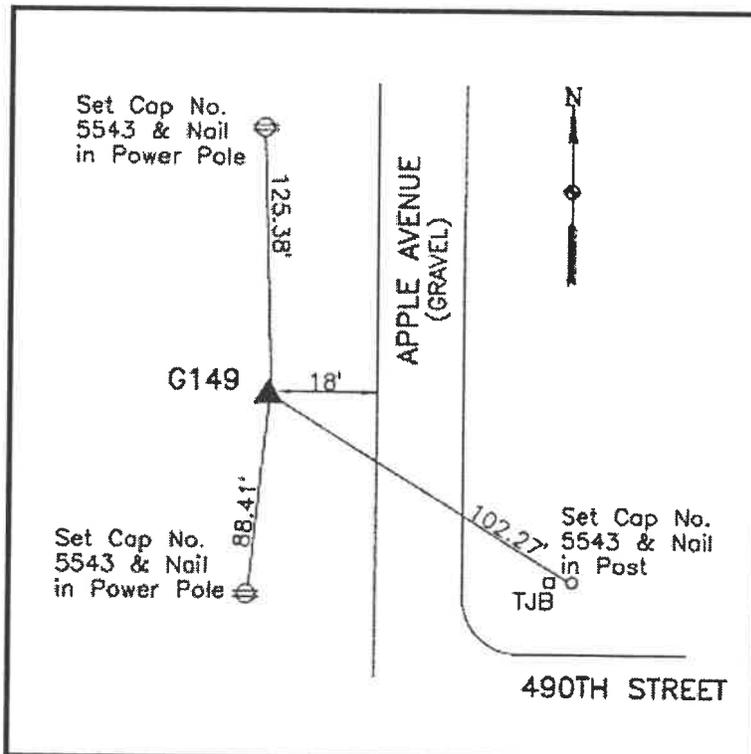
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°28'26.45223"N |
| Longitude:       | 93°29'50.98369"W |
| Scale Factor:    | 1.0000444840     |
| Convergence:     | 0°00'06"         |
| Combined Factor: | 0.99998690       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G149 and NGS Style Access Cover 1" Deep.

**Location:**

West side Apple Avenue - 150'± north of 490th Street - near NE Corner Section 24-T100N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G150**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009523.996    | 1222105.358 |
| Easting:          | 4921303.552    | 1500016.323 |
| Elevation:        | 1273.144       | 388.055     |
| Ellipsoid Height: | 1176.672       | 358.650     |
| Geoid 99 Height:  | -96.472        | -29.405     |

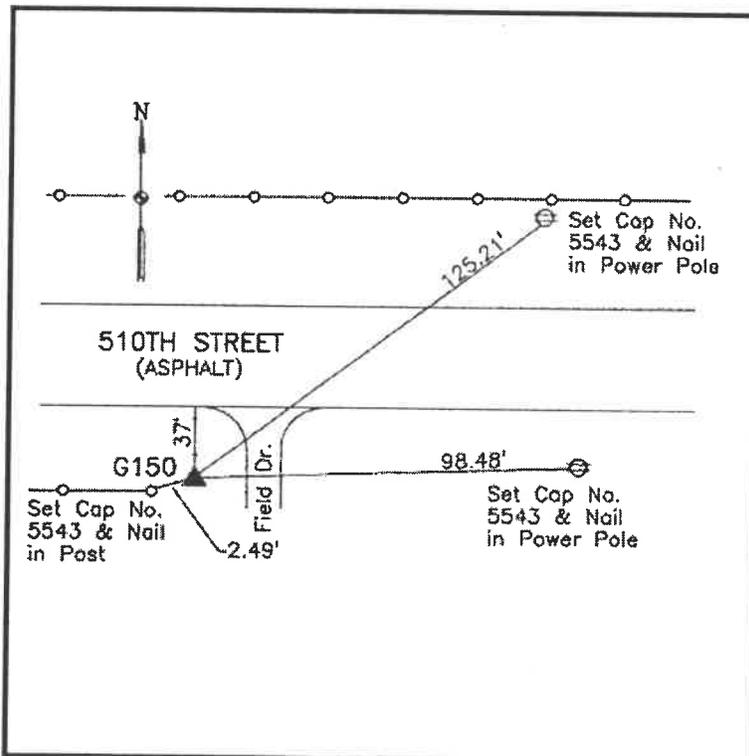
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'58.03378"N |
| Longitude:       | 93°29'59.27348"W |
| Scale Factor:    | 1.0000508518     |
| Convergence:     | 0°00'00"         |
| Combined Factor: | 0.99999471       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G150 and NGS Style Access Cover 2" Deep.

**Location:**

On south side 510th Street (County Road A14) - 0.2± mile west of Apple Avenue - 2'± east of end wood post - near NE Corner Section 12-T100N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G151**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009554.059    | 1222114.521 |
| Easting:          | 4906168.138    | 1495403.039 |
| Elevation:        | 1236.602       | 376.917     |
| Ellipsoid Height: | 1140.108       | 347.506     |
| Geoid 99 Height:  | -96.494        | -29.412     |

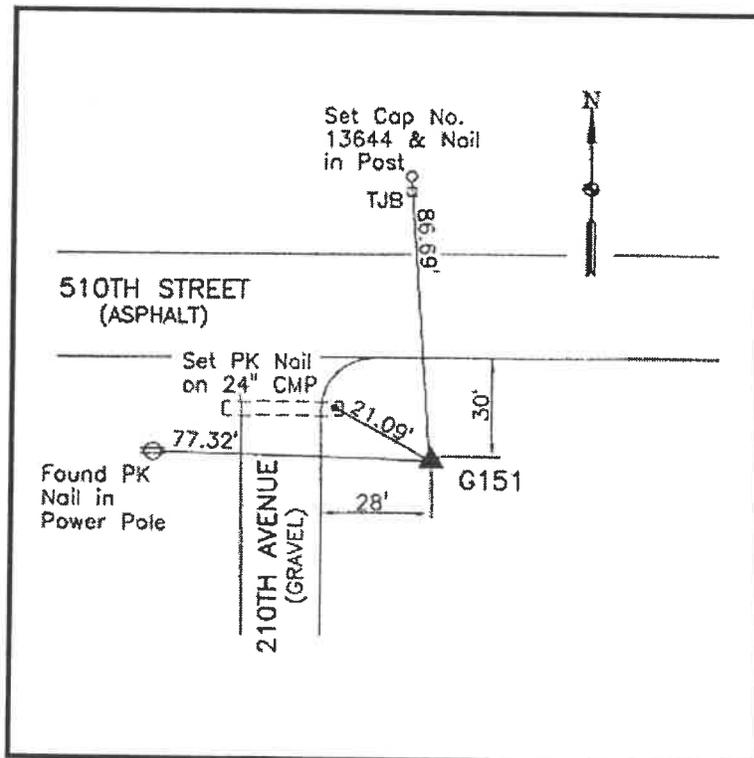
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'58.28060"N |
| Longitude:       | 93°33'24.60889"W |
| Scale Factor:    | 1.0000508692     |
| Convergence:     | -0°02'19"        |
| Combined Factor: | 0.99999647       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G151 and NGS Style Access Cover 3" Deep.

Location:

SE Corner of 510th Street (County Road A14) and 210th Avenue - near NW Corner Section 10-T100N-R23W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G152**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009590.981    | 1222125.775 |
| Easting:          | 4889758.018    | 1490401.225 |
| Elevation:        | 1286.805       | 392.219     |
| Ellipsoid Height: | 1190.430       | 362.844     |
| Geoid 99 Height:  | -96.375        | -29.375     |

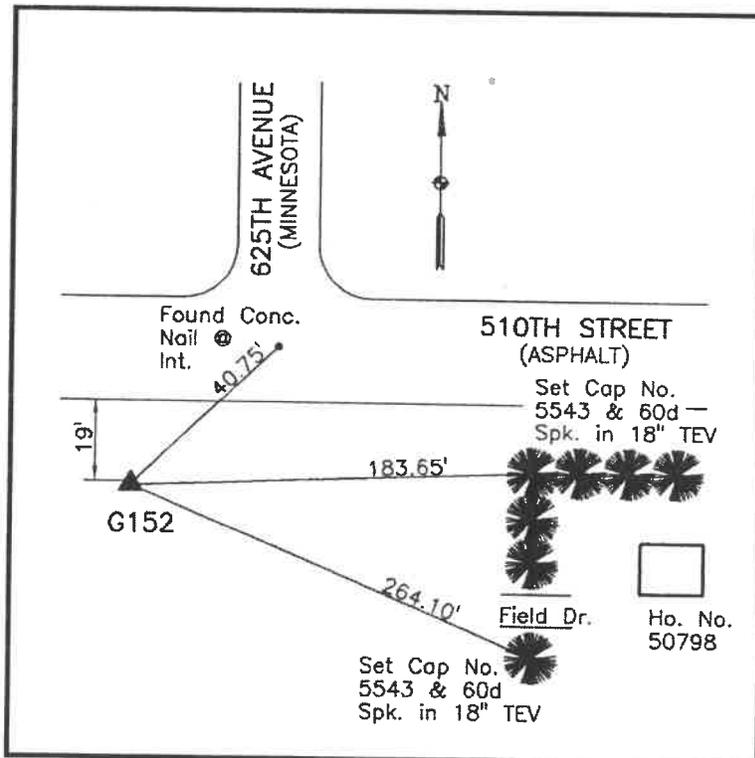
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'58.47701"N |
| Longitude:       | 93°37'07.23816"W |
| Scale Factor:    | 1.0000508831     |
| Convergence:     | -0°04'50"        |
| Combined Factor: | 0.99999409       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G152 and NGS Style Access Cover 1" Deep.

**Location:**

On south side 510th Street - 300'± west of 180th Avenue (County Road R60) - near NW Corner - Section 7-T100N-R23W.



**WHKS & CO.**

WINNEBAGO COUNTY, IOWA  
 GPS CONTROL MONUMENT  
 IOWA NORTH ZONE (1401)  
 HORIZONTAL DATUM - NAD 83 (1996)  
 VERTICAL DATUM - NAVD 1988

*VOID*  
*See Page*  
*89-A*

GPS POINT NUMBER **G153**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009567.434    | 1222118.598 |
| Easting:          | 4874491.426    | 1485747.958 |
| Elevation:        | 1260.563       | 384.220     |
| Ellipsoid Height: | 1164.387       | 354.906     |
| Geoid 99 Height:  | -96.177        | -29.315     |

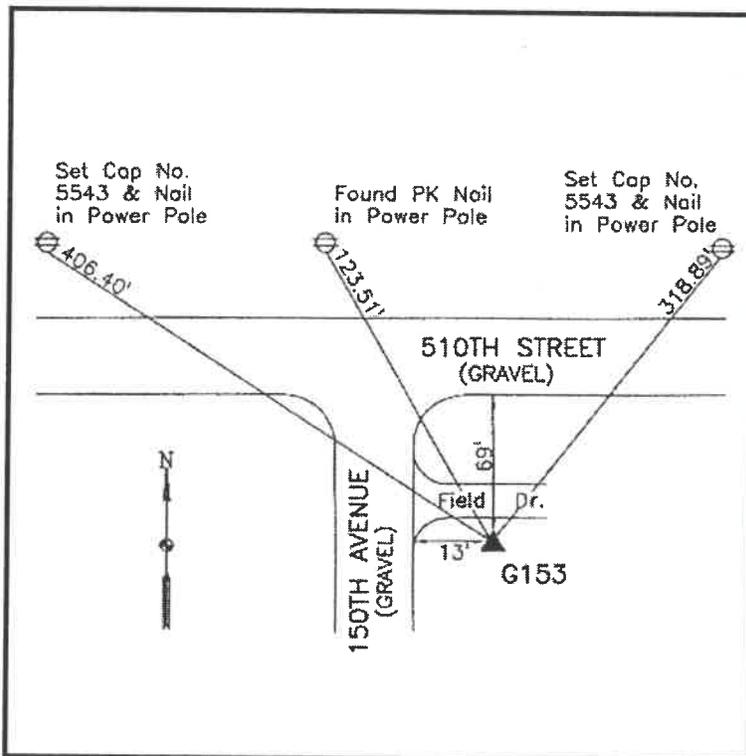
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'57.98151"N |
| Longitude:       | 93°40'34.35226"W |
| Scale Factor:    | 1.0000508481     |
| Convergence:     | -0°07'10"        |
| Combined Factor: | 0.99999529       |

Description:

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G153 and NGS Style Access Cover 2" Deep.

Location:

SE Corner of 510th Street and 150th Avenue - near NW Corner Section 10-T100N-R24W.



WHKS & CO.

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

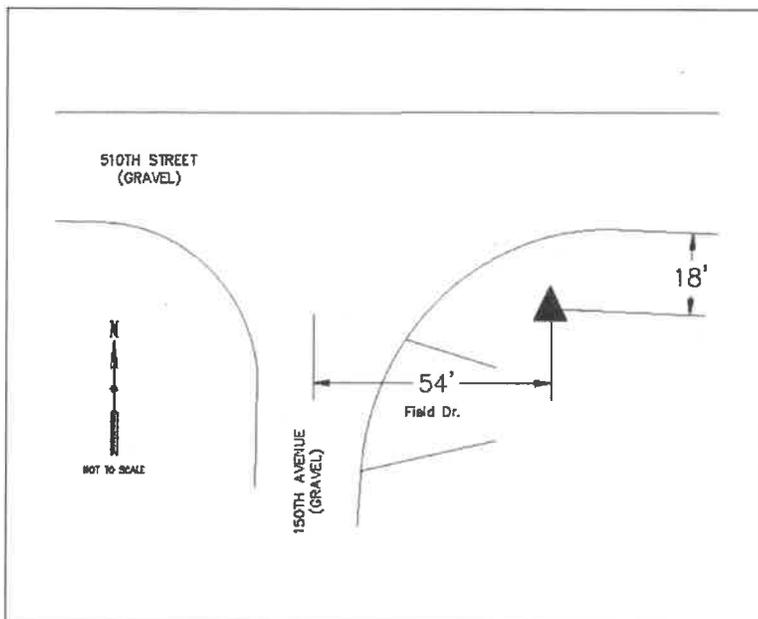
**GPS POINT NUMBER 200 (replaces G153)**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009619.257    | 1222134.394 |
| Easting:          | 4874523.727    | 1485757.804 |
| Elevation:        | 1262.508       | 384.813     |
| Ellipsoid Height: | 1166.331       | 355.498     |
| Geoid 99 Height:  | -96.177        | -29.315     |

|                  |                   |
|------------------|-------------------|
| Latitude:        | 43°29'58.49397" N |
| Longitude:       | 93°40'33.91552" W |
| Scale Factor:    | 1.0000508481      |
| Convergence:     | -0°07'10"         |
| Combined Factor: | 0.99999529        |

Description:  
Original GPS Monument "G153" was destroyed. New GPS Monument 200 set. GPS 200 is a set 5/8"x6'-0" long aluminum rod with cap stamped 200 and NGS Style Access Cover flush with ground

Location:  
SE Corner of 510th Street and 150th Avenue - near NW Corner Section 10-T100N-R24W.



**whks**  
engineers + planners + land surveyors

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G154**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009617.640    | 1222133.901 |
| Easting:          | 4859142.095    | 1481069.473 |
| Elevation:        | 1242.373       | 378.676     |
| Ellipsoid Height: | 1146.454       | 349.440     |
| Geoid 99 Height:  | -95.919        | -29.236     |

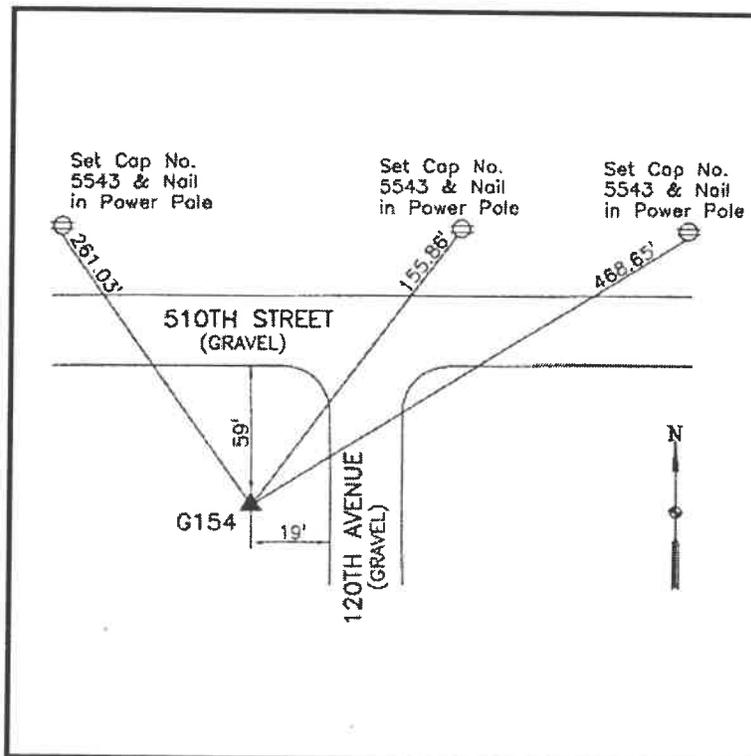
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'58.10951"N |
| Longitude:       | 93°44'02.59060"W |
| Scale Factor:    | 1.0000508572     |
| Convergence:     | -0°09'31"        |
| Combined Factor: | 0.99999616       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G154 and NGS Style Access Cover 1 " Deep.

**Location:**

SW Corner of 510th Street and 120th Avenue - near NW Corner Section 7-T100N-R24W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G155**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009621.512    | 1222135.081 |
| Easting:          | 4843085.160    | 1476175.309 |
| Elevation:        | 1224.181       | 373.131     |
| Ellipsoid Height: | 1128.619       | 344.004     |
| Geoid 99 Height:  | -95.562        | -29.127     |

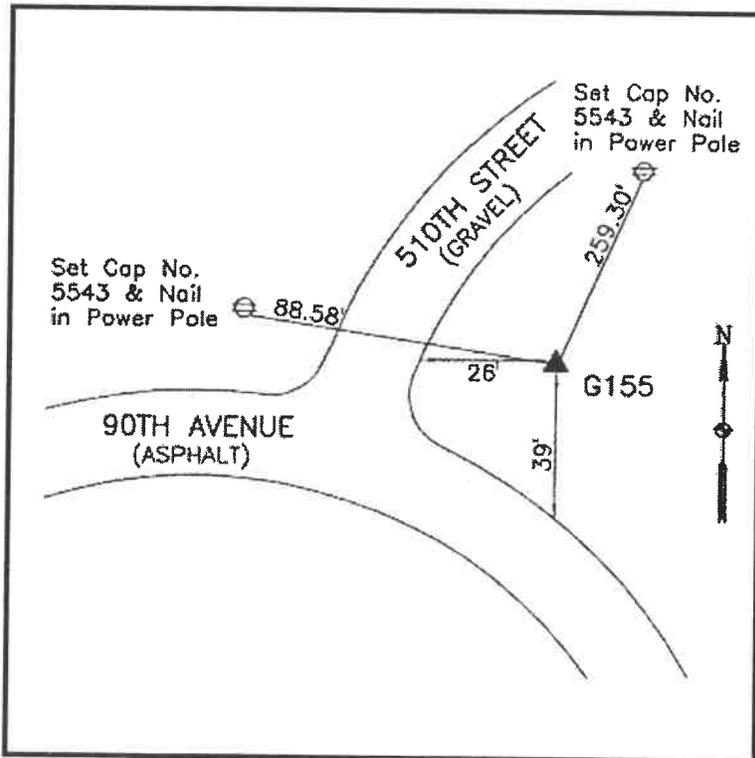
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'57.65197"N |
| Longitude:       | 93°47'40.42657"W |
| Scale Factor:    | 1.0000508249     |
| Convergence:     | -0°11'59"        |
| Combined Factor: | 0.99999698       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G155 and NGS Style Access Cover 2" Deep.

**Location:**

NE Corner at 510th Street and 90th Avenue - 5'± south of street sign - near NW Corner Section 10-T100N-R25W.



**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER      **G156**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009778.732    | 1222183.002 |
| Easting:          | 4827747.629    | 1471500.420 |
| Elevation:        | 1181.190       | 360.027     |
| Ellipsoid Height: | 1086.067       | 331.034     |
| Geoid 99 Height:  | -95.123        | -28.994     |

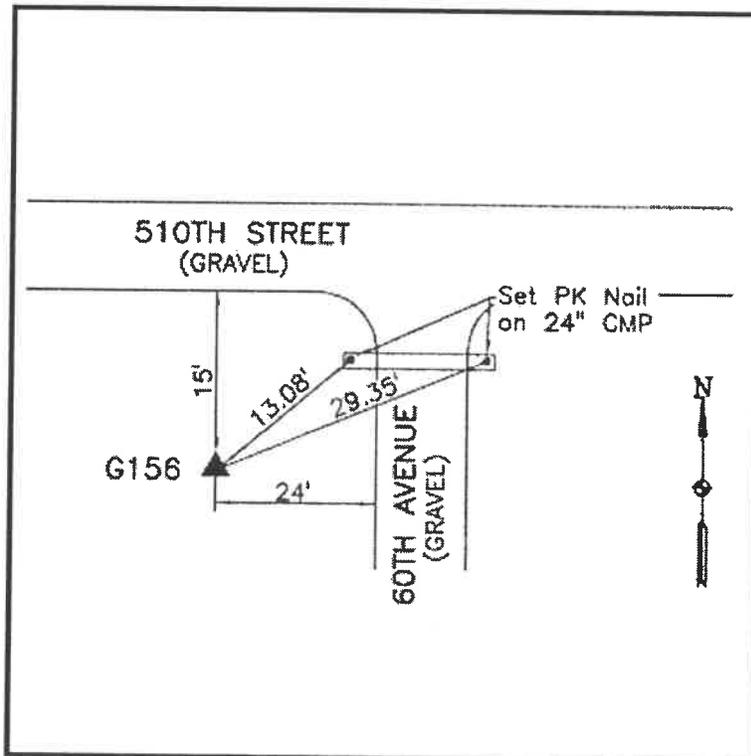
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'58.62508"N |
| Longitude:       | 93°51'08.51050"W |
| Scale Factor:    | 1.0000508936     |
| Convergence:     | -0°14'20"        |
| Combined Factor: | 0.99999907       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G156 and NGS Style Access Cover 1 " Deep.

**Location:**

SW Corner of 510th Street and 60th Avenue - near NW Corner of Section 7-T100N-R25W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G157**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009846.480    | 1222203.651 |
| Easting:          | 4811909.473    | 1466672.941 |
| Elevation:        | 1141.810       | 348.024     |
| Ellipsoid Height: | 1047.233       | 319.197     |
| Geoid 99 Height:  | -94.578        | -28.827     |

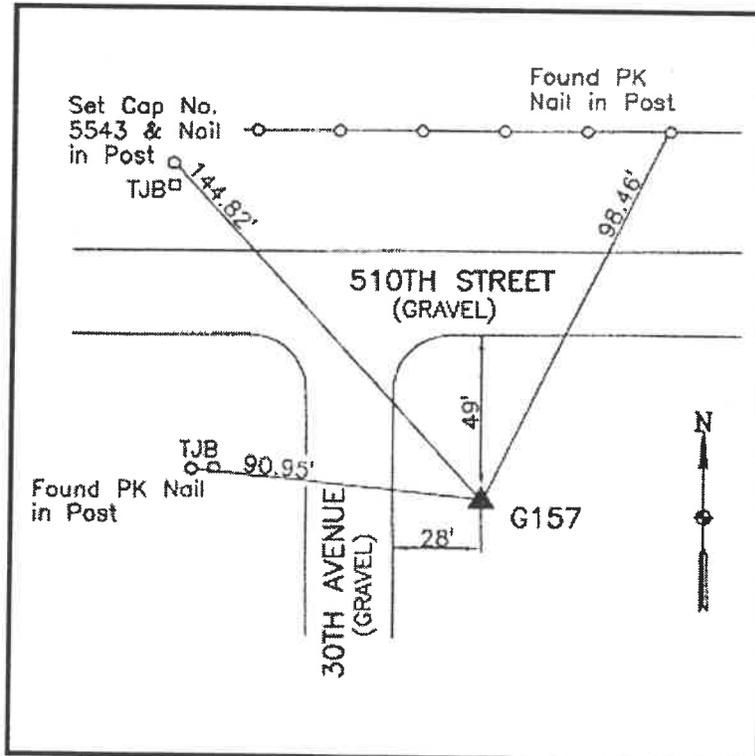
|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'58.58697"N |
| Longitude:       | 93°54'43.38197"W |
| Scale Factor:    | 1.0000508909     |
| Convergence:     | -0°16'45"        |
| Combined Factor: | 1.00000092       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G157 and NGS Style Access Cover 3" Deep.

**Location:**

SE Corner of 510th Street and 30th Avenue - near NW Corner Section 10-T100N-R26W.



**WHKS & CO.**

**WINNEBAGO COUNTY, IOWA  
GPS CONTROL MONUMENT  
IOWA NORTH ZONE (1401)  
HORIZONTAL DATUM - NAD 83 (1996)  
VERTICAL DATUM - NAVD 1988**

GPS POINT NUMBER **G158**

|                   | US SURVEY FEET | METRIC      |
|-------------------|----------------|-------------|
| Northing:         | 4009983.404    | 1222245.386 |
| Easting:          | 4796480.590    | 1461970.208 |
| Elevation:        | 1136.475       | 346.398     |
| Ellipsoid Height: | 1042.440       | 317.736     |
| Geoid 99 Height:  | -94.036        | -28.662     |

|                  |                  |
|------------------|------------------|
| Latitude:        | 43°29'59.14412"N |
| Longitude:       | 93°58'12.70611"W |
| Scale Factor:    | 1.0000509302     |
| Convergence:     | -0°19'07"        |
| Combined Factor: | 1.00000119       |

**Description:**

Placed 5/8" X 6' - 0" Long Aluminum Rod with Cap Stamped G158 and NGS Style Access Cover 3 " Deep.

**Location:**

On south side 510th Street - 150'± east of Section line fence - near NW Corner Section 7-T100N-R26W.

