

**SURVEYOR'S REPORT**  
S.R. 71 Vermillion County  
Reset Survey Monuments  
Indiana Department of Transportation  
Contract No. RS-25954-A

**General:**

Several monuments along S.R. 71 in Vermillion County from Dana, IN to the intersection of S.R. 63 were reset for road construction per said contract. The monuments were uncovered and located by rapid static means with Sokkia GSR2300 12 channel, dual frequency receivers prior to road construction. The monuments were then excavated and reset with Type "B" monuments by the contractor. The reset monuments were then located with Trimble 4700 Real Time Kinematic receivers and compared with the original coordinates.

The monuments were reestablished with Indiana West State Plane Coordinates (International Feet) and reference ties were made for each reestablished point. The following observations were used to determine the survey monuments that were reestablished.

National Geodetic Survey monument (PID KA1750, Designation D 361, USGS Quad Dana 1983, Lat. 39 degrees 50 minutes 19.01566 seconds, Long. 087 degrees 24 minutes 39.36265 seconds (NAD 83 (1997), Elevation 654.63 feet (NAVD 88)) was used as our reference station for this project. (See page 9 for NGS monument data sheet)

Indiana Department of Transportation Project No. 686, Project No. 305 (22) & Project No. S-122(3), were used for the stationing and location of the reestablished monuments as provided by the Indiana Department of Transportation.

**Found Survey Monuments**

Coordinate System: Indiana West State Plane Coordinates (Int. Feet) (NAD 83)

(A) = PK Nail Fnd., (B) = Boat Spike Fnd., (C) = Iron Pin Fnd.

Point No.	Northing	Easting	Description
100	1672081.909	2860761.384	NGS(D361)
102	1668876.717	2837044.258	520+15.9 (C)
103	1671282.636	2837201.245	544+41.3 (C)
104	1677937.450	2837055.326	610+95.9 (C)
105	1681257.183	2836984.917	644.20.0 (C)
106	1683851.902	2836928.533	670+15.5 (C)
108	1686626.477	2838496.679	706+66.5 (C)
109	1686663.960	2838697.549	708+70.6 (C)
110	1686878.452	2839253.537	714+70.1 (C)
111	1689100.336	2843356.852	763+17.5 (C)
112	1689643.687	2843839.335	770+44.1 (C)
113	1690100.377	2844488.632	778.44.1 (C)
12	1690257.093	2844799.123	781+92.0 (C)
114	1690538.786	2845003.118	785+26.6 (B)
115	1691310.111	2848664.136	824+57.9 (B)
116	1691315.113	2849103.304	828+97.2 (B)
117	1692055.240	2849906.846	839+51.2 (B)
120	1693406.900	2852322.196	874+28 (A), Sec. Corner
121	1693567.005	2852319.820	486+12 (B)
122	1695076.404	2852288.425	38+22.74 (A)
124	1696062.629	2851986.323	48+08.31 (B)
125	1682736.711	2836952.224	659+00 (C)
107	1683936.130	2836927.332	671+00 (C)

**Reset Survey Monuments**

Coordinate System: Indiana West State Plane Coordinates (Int. Feet) (NAD 83)

**Type "B" Monuments Set**

Point No.	Northing	Easting	Description
1102	1668876.685	2837044.288	520+15.9
1103	1671282.584	2837201.240	544+41.3
1104	1677937.436	2837055.321	610+95.9
1105	1681257.180	2836984.940	644+20.0
1106	1683851.891	2836928.524	670+15.5
1108	1686626.533	2838496.644	706+66.5
1109	1686664.032	2838697.512	708+70.6
1110	1686878.394	2839253.539	714+70.1
1111	1689100.331	2843356.897	763+17.5
1112	1689643.700	2843839.288	770+44.1
1113	1690100.333	2844488.592	778+44.1
1114	1690538.698	2845003.171	785+26.6
1120	1693406.821	2852322.187	874+28, Sec. Corner
1121	1693566.929	2852319.847	486+12
1122	1695076.371	2852288.377	38+22.74
1125	1682736.646	2836952.208	659+00.0
1107	1683936.076	2836927.384	671+00.0

**INVERSE REPORT**

<u>Original</u>	<u>Reset</u>	<u>Grid Azimuth</u>	<u>Grid Difference</u>
100	1000	41°01'00"	0.05 ift
102	1102	136°53'32"	0.04 ift
103	1103	185°02'24"	0.05 ift
104	1104	201°14'32"	0.02 ift
105	1105	97°02'54"	0.02 ift
106	1106	222°16'08"	0.01 ift
107	1107	135°30'48"	0.07 ift
108	1108	327°44'14"	0.07 ift
109	1109	332°51'39"	0.08 ift
110	1110	178°05'25"	0.06 ift
111	1111	96°24'26"	0.05 ift
112	1112	285°21'41"	0.05 ift
113	1113	222°21'29"	0.06 ift
114	1114	149°10'00"	0.10 ift
120	1120	186°11'06"	0.08 ift
121	1121	160°29'12"	0.08 ift
122	1122	235°03'28"	0.06 ift
125	1125	194°07'32"	0.07 ift

Note: The found monuments located prior to construction are designated by the hundred series numbers and the monuments reset as Type "B" monuments are designated by the thousand series numbers. This Inverse shows the difference in the found monument and the reestablished monument. All monuments reset, are within the one-tenth error as stated in Contract No. RS-25954-A per the Indiana Department of Transportation.

## The NGS Data Sheet

DATABASE = Sybase, PROGRAM = datasheet, VERSION = 6.58  
 1 National Geodetic Survey, Retrieval Date = MARCH 12, 2002  
 KA1750 \*\*\*\*\*  
 KA1750 CBN - This is a Cooperative Base Network Control Station.  
 KA1750 DESIGNATION - D 361  
 KA1750 PID - KA1750  
 KA1750 STATE/COUNTY- IN/VERMILLION  
 KA1750 USGS QUAD - DANA (1983)  
 KA1750  
 KA1750 \*CURRENT SURVEY CONTROL  
 KA1750  

KA1750*	NAD 83 (1997)	-	39 50 19.01566 (N)	087 24 39.36265 (W)	ADJUSTED
KA1750*	NAVD 88	-	199.531 (meters)	654.63 (feet)	ADJUSTED

KA1750	X	-	221,540.299 (meters)		COMP
KA1750	Y	-	-4,899,328.054 (meters)		COMP
KA1750	Z	-	4,064,349.374 (meters)		COMP
KA1750	LAPLACE CORR-		-5.16 (seconds)		DEFLEC99
KA1750	ELLIP HEIGHT-		166.67 (meters)		GPS OBS
KA1750	GEOID HEIGHT-		-32.87 (meters)		GEOID99
KA1750	DYNAMIC HT -		199.423 (meters)	654.27 (feet)	COMP
KA1750	MODELED GRAV-		980,080.2 (mgal)		NAVD 88

KA1750	HORZ ORDER	-	B		
KA1750	VERT ORDER	-	FIRST	CLASS II	
KA1750	ELLP ORDER	-	FOURTH	CLASS I	

KA1750.The horizontal coordinates were established by GPS observations  
 KA1750.and adjusted by the National Geodetic Survey in April 1998.  
 KA1750  
 KA1750.The orthometric height was determined by differential leveling  
 KA1750.and adjusted by the National Geodetic Survey in June 1991.  
 KA1750  
 KA1750.The X, Y, and Z were computed from the position and the ellipsoidal ht.  
 KA1750  
 KA1750.The Laplace correction was computed from DEFLEC99 derived deflections.  
 KA1750  
 KA1750.The ellipsoidal height was determined by GPS observations  
 KA1750.and is referenced to NAD 83.  
 KA1750  
 KA1750.The geoid height was determined by GEOID99.  
 KA1750  
 KA1750.The dynamic height is computed by dividing the NAVD 88  
 KA1750.geopotential number by the normal gravity value computed on the  
 KA1750.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45  
 KA1750.degrees latitude (g = 980.6199 gals.).  
 KA1750  
 KA1750.The modeled gravity was interpolated from observed gravity values.  
 KA1750  

KA1750;	North	East	Units	Scale	Converg.
KA1750;SPC IN W	- 509,650.566	871,960.070	MT	0.99997634	-0 12 35.5
KA1750;UTM 16	- 4,409,926.138	464,840.299	MT	0.99961522	-0 15 47.7

KA1750  
 KA1750 \*SUPERSEDED SURVEY CONTROL  
 KA1750  
 KA1750.No superseded survey control is available for this station.  
 KA1750

<http://www.ngs.noaa.gov/cgi-bin/cnv.cgi?PID=KA1750>

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Data Sheet Retrieval

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KA1750\_MARKER: I = METAL ROD  
 KA1750\_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.-4)  
 KA1750\_STAMPING: D 361 1986  
 KA1750\_MARK LOGO: NGS  
 KA1750\_PROJECTION: PROJECTING 2 CENTIMETERS  
 KA1750\_MAGNETIC: O = OTHER; SEE DESCRIPTION  
 KA1750\_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL  
 KA1750\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR  
 KA1750\_SATELLITE: SATELLITE OBSERVATIONS - July 23, 1998  
 KA1750\_ROD/PIPE-DEPTH: 7.3 meters

KA1750	HISTORY	- Date	Condition	Report By
KA1750	HISTORY	- 1986	MONUMENTED	NGS
KA1750	HISTORY	- 19970814	GOOD	SEC
KA1750	HISTORY	- 19980723	GOOD	WOOLPT

KA1750 STATION DESCRIPTION

KA1750 DESCRIBED BY NATIONAL GEODETIC SURVEY 1986  
 KA1750 14.0 KM (8.7 MI) SOUTH FROM CAYUGA.  
 KA1750 14.0 KM (8.7 MI) SOUTHERLY ALONG STATE HIGHWAY 63 FROM ITS JUNCTION  
 KA1750 WITH STATE HIGHWAY 234 IN CAYUGA, 60.9 M (199.8 FT) NORTH OF THE  
 KA1750 CENTER OF COUNTY ROAD 300 S, 36.9 M (121.1 FT) WEST OF THE CENTERLINE  
 KA1750 OF THE SOUTH BOUND LANES OF THE HIGHWAY, 25.0 M (82.0 FT)  
 KA1750 NORTH-NORTHWEST OF THE NORTHEAST CORNER OF THE STONERWORK NEWPORT ARMY  
 KA1750 AMUNITION PLANT SIGN, AND 1.9 M (6.2 FT) NORTH OF THE SOUTH END OF A  
 KA1750 WOVEN WIRE FENCE. NOTE--ACCESS TO DATUM POINT IS HAD THROUGH A 5-INCH  
 KA1750 LOGO CAP.  
 KA1750 THE MARK IS 0.5 METERS E FROM A WITNESS POST AND FENCE  
 KA1750 THE MARK IS ABOVE LEVEL WITH THE HIGHWAY.

KA1750 STATION RECOVERY (1997)

KA1750 RECOVERY NOTE BY SCHNEIDER ENGINEERING CORPORATION 1997 (RGR)  
 KA1750 STATION IS 3 MILES (4.8 KM) SOUTH OF NEWPORT, ON STATE ROAD 63. TO  
 KA1750 REACH STATION FROM INTERSECTION OF U.S. HIGHWAY 31 WITH STATE ROAD 63,  
 KA1750 GO NORTH ON STATE ROAD 63 FOR 3.1 MILES (5.0 KM) TO SOUTH ENTRANCE OF  
 KA1750 NEWPORT CHEMICAL DEPOT AND THE STATION ON THE LEFT (WEST) SIDE OF  
 KA1750 STATE ROAD 63 AND THE NORTH SIDE OF ENTRANCE ROAD. THE MARK IS EAST  
 KA1750 OF RIGHT-OF-WAY FENCE APPARENTLY ON STATE HIGHWAY RIGHT-OF-WAY, BUT IS  
 KA1750 UNDER WATCH OF PLANT SECURITY. POINT OF CONTACT AT NEWPORT CHEMICAL  
 KA1750 DEPOT IS KEVIN RUDDUCK, PHONE 765-245-2251. POINT OF CONTACT AT INDOT  
 KA1750 IS HENRY ALDRIDGE, 100 N. SENATE AVENUE, INDIANAPOLIS IN 46204. THE  
 KA1750 STATION IS A STAINLESS STEEL ROD 0.07 METERS (0.23 FT) BELOW 5-INCH  
 KA1750 LOGO CAP. THE MARK IS 60.9 METERS (199.8 FT) NORTH OF THE CENTERLINE  
 KA1750 OF ENTRANCE ROAD/COUNTY ROAD 300 SOUTH, 36.9 METERS (121.1 FT) WEST OF  
 KA1750 THE CENTERLINE OF STATE ROAD 63 SOUTHBOUND LANES, 24.9 NORTHWEST OF  
 KA1750 THE NORTHEAST CORNER OF THE STONERWORK NEWPORT CHEMICAL DEPOT SIGN  
 KA1750 BASE, 25.5 METERS (83.7 FT) NORTH-NORTHWEST OF THE NORTHWEST CORNER OF  
 KA1750 SAID SIGN, 1.93 METERS (6.33 FT) NORTH OF THE SOUTH END OF THE WOVEN  
 KA1750 WIRE RIGHT-OF-WAY FENCE AND 0.5 METERS (1.6 FT) EAST OF FENCE AND  
 KA1750 FIBERGLASS WITNESS POST.

KA1750 STATION RECOVERY (1998)

KA1750 RECOVERY NOTE BY WOOLPERT CONSULTANTS 1998 (KRB)  
 KA1750 RECOVERED AS DESCRIBED. WOOLPERT LLP 1998 (KRB).

\*\*\* retrieval complete.  
 Elapsed Time = 00:00:03

<http://www.ngs.noaa.gov/cgi-bin/env.cgi?PID=KA1750>

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D361

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Designator: D361 4-Character ID: D361 County: VERMILLION  
PID KH750

Description and Location Map

RECOVERY NOTE BY SCHNEIDER ENGINEERING CORPORATION 1997 (RGR) STATION IS 3 MILES (4.8 KM) SOUTH OF NEWPORT, ON STATE ROAD 63. TO REACH STATION FROM INTERSECTION OF U.S. HIGHWAY 31 WITH STATE ROAD 63, GO NORTH ON STATE ROAD 63 FOR 3.1 MILES (5.0 KM) TO SOUTH ENTRANCE OF NEWPORT CHEMICAL DEPOT AND THE STATION ON THE LEFT (WEST) SIDE OF STATE ROAD 63 AND THE NORTH SIDE OF ENTRANCE ROAD. THE MARK IS EAST OF RIGHT-OF-WAY FENCE. APPARENTLY ON STATE HIGHWAY RIGHT-OF-WAY, BUT IS UNDER WATCH OF PLANT SECURITY. POINT OF CONTACT AT NEWPORT CHEMICAL DEPOT IS KEVIN RUDDUCK, PHONE 765-245-2251. POINT OF CONTACT AT INDOT IS HENRY ALDRIDGE, 100 N. SENATE AVENUE, INDIANAPOLIS IN 46204. THE STATION IS A STAINLESS STEEL ROD 0.97 METERS (0.23 FT) BELOW 5-INCH LOGO CAP. THE MARK IS 60.9 METERS (199.8 FT) NORTH OF THE CENTERLINE OF ENTRANCE ROAD/COUNTY ROAD 300 SOUTH, 36.9 METERS (121.1 FT) WEST OF THE CENTERLINE OF STATE ROAD 63 SOUTHBOUND LANES, 24.9 NORTHWEST OF THE NORTHEAST CORNER OF THE STONEWORK NEWPORT CHEMICAL DEPOT SIGN BASE, 25.5 METERS (83.7 FT) NORTH-NORTHWEST OF THE NORTHWEST CORNER OF SAID SIGN, 1.93 METERS (6.33 FT) NORTH OF THE SOUTH END OF THE WOVEN WIRE RIGHT-OF-WAY FENCE AND 0.5 METERS (1.6 FT) EAST OF FENCE AND FIBERGLASS WITNESS POST.

<http://bridge.ecn.purdue.edu/~oisga/stations/D361.html>

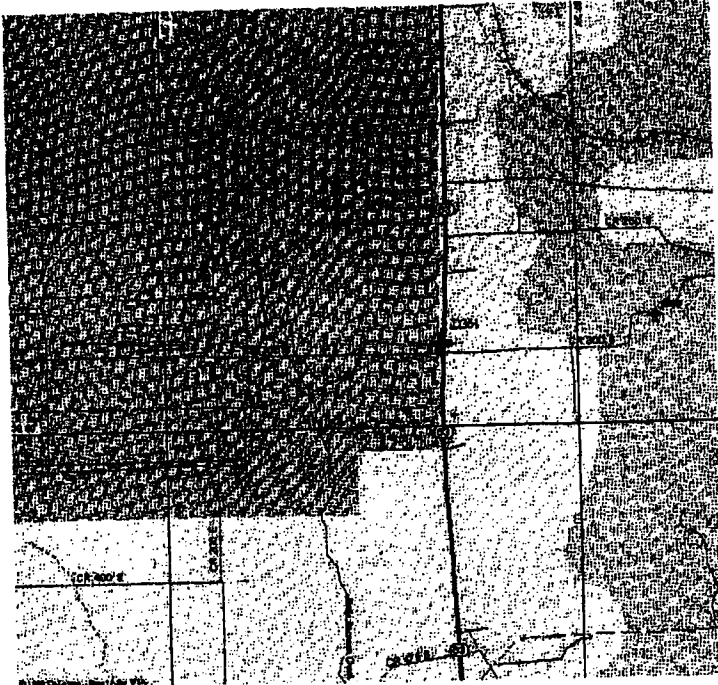
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