

CALUMET AREA
HYDROLOGIC MASTER PLAN

VOLUME VI

SURVEY CONTROL & MAPPING



**CALUMET AREA
City of Chicago, Cook County, Illinois**

PREPARED FOR:

CHICAGO DEPARTMENT OF ENVIRONMENT
30 NORTH LASALLE STREET – SUITE 2500
CHICAGO, ILLINOIS 60602

PREPARED BY:

V3 COMPANIES, LTD.
120 NORTH LASALLE STREET
CHICAGO, ILLINOIS 60602
312.419.1985

FUNDING PROVIDED BY:

CHICAGO DEPARTMENT OF ENVIRONMENT,
ILLINOIS DEPARTMENT OF NATURAL RESOURCES C2000 PROGRAM,
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT,
AND A SUPPLEMENTAL ENVIRONMENTAL PROJECT WITH CHICAGO SPECIALTIES.

AUGUST 2006

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Special thanks to the primary advisors involved with this project:

- *Nicole Kamins* *Chicago Department of Environment*
- *Suzanne Malec* *Chicago Department of Environment*
- *Michael Miller* *Illinois State Geologic Survey (ISGS)*
- *Chris Pearson* *National Geodetic Survey*
- *George Roadcap* *Illinois State Water Survey (ISWS)*
- *Members of the Calumet Government Working Group*

Thanks to the following landowners for providing site access:

- *Waste Management, Inc.*
- *Metropolitan Water Reclamation District of Greater Chicago*
- *Illinois International Port District*

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CALUMET AREA
HYDROLOGIC MASTER PLAN
TASK 101 – SITE CONTROL



PRIMARY, LIDAR, BENCHMARKS &
SECONDARY SITE CONTROL RECOVERY
SHEETS

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Note: Data and References are accurate up to July 2004.

AUGUST 2006

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- 4.0 Benchmark Recovery Sheets**
- 5.0 Secondary Site Control Recovery Sheets**

1.0 Executive Summary

This report addresses the creation and setup of the Calumet Area Control Network (Task 101).

The Calumet Area Primary Control Network is based on 11 National Geodetic Survey (NGS) Monuments spread in the Chicago area encompassing the project area as outlined by the DOE. V3 Determined the approximate project center Latitude and Longitude coordinates and performed a radial search for National Geodetic Survey (NGS) Data Sheets recovering published Horizontal and Vertical NGS control within 5 miles of the project site, satisfying the minimum Second Order Class 1 requirement outlined. Several points that were researched exceeded the project minimum accuracy requirements.

All of the NGS monuments used and or referenced were: AC 9170, AE 9231, AF 9258, ME 3311, AJ 2776, AJ 2777, ME 1825, ME 1829, ME 1830, ME 1881 & ME 12887. A street atlas map on page 2 of Section 2.0 of this report shows each monument's proximity to the area of study.

Recognizing that although some of the published control by NGS may be listed as 1st, and/or 2nd order there are differences as to the accuracy of the points when established from classical methods or through the use of GPS. A number of the researched NGS monuments were established from the classical method. For this reason the Illinois Geodetic Advisor recommended that V3 start the control network solely from GPS derived points and reference the rest of the control monuments to that network. Further detail regarding the occupation lengths, observation schedule, and procedures for recovering, re-surveying, or proving the NGS control are provided within. Similar recovery data for the Lidar control & Secondary Site control are also provided within.

The Calumet Area Primary Control Network was established using the WGS84 Ellipsoid and Geoid 99. In addition; V3 measured the Lidar and Secondary Site control using the same criteria and field procedures.



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CALUMET AREA HYDROLOGIC MASTER PLAN SURVEY CONTROL

PRIMARY CONTROL:

- 1 - COVER SHEET
- 2 - STREET ATLAS KEY MAP
- 3 - AERIAL PHOTOGRAPH KEY MAP
- 4 - AC 9170 RECOVERY SHEET
- 5 - AE 9231 RECOVERY SHEET
- 6 - AF 9258 RECOVERY SHEET
- 7 - ME 3311 RECOVERY SHEET
- 8 - AJ 2776 RECOVERY SHEET
- 9 - AJ 2777 RECOVERY SHEET
- 10 - ME 1825 RECOVERY SHEET
- 11 - ME 1829 RECOVERY SHEET
- 12 - ME 1830 RECOVERY SHEET
- 13 - ME 1881 RECOVERY SHEET
- 14 - ME 2887 RECOVERY SHEET
- 15 - V3 PRIMARY CONTROL OCCUPATION CHART

ATTACHMENTS:

- V3 EQUIPMENT LIST
- NGS DATA SHEETS
- SKI PRO REPORTS

LIDAR CONTROL:

- 1 - COVER SHEET AND INDEX
- 2 - STREET ATLAS KEY MAP
- 3 - AERIAL PHOTOGRAPHY KEY MAP
- 4 - LC-1 RECOVERY DATA SHEET
- 5 - LC-3 RECOVERY DATA SHEET
- 6 - LC-6 RECOVERY DATA SHEET
- 7 - LC-8 RECOVERY DATA SHEET
- 8 - LC-11 RECOVERY DATA SHEET
- 9 - LC-13 RECOVERY DATA SHEET
- 10 - LC-236 RECOVERY DATA SHEET
- 11 - LC-2 RECOVERY DATA SHEET
- 12 - LC-5 RECOVERY DATA SHEET
- 13 - LC-12 RECOVERY DATA SHEET
- 14 - LC-14 RECOVERY DATA SHEET
- 15 - LC-15 RECOVERY DATA SHEET
- 16 - LC-4 RECOVERY DATA SHEET
- 17 - LC-7 RECOVERY DATA SHEET
- 18 - LC-9 RECOVERY DATA SHEET
- 19 - LC-10 RECOVERY DATA SHEET

ATTACHMENTS:

BOLLENGER, LACH & ASSOC. FIELD NOTES, DATED 2/15/02.

BENCHMARKS:

- 1 - STREET ATLAS KEY MAP
- 2 - AERIAL PHOTOGRAPH KEY MAP
- 3 - V3 BM-1 RECOVERY SHEET
- 4 - V3 BM-2 RECOVERY SHEET
- 5 - V3 BM-3 RECOVERY SHEET
- 6 - V3 BM-4 RECOVERY SHEET
- 7 - V3 BM-5 RECOVERY SHEET
- 8 - V3 BM-6 RECOVERY SHEET
- 9 - V3 BM-7 RECOVERY SHEET
- 10 - V3 BM-8 RECOVERY SHEET
- 11 - V3 BM-9 RECOVERY SHEET
- 12 - V3 CAL RECOVERY SHEET

SECONDARY SITE CONTROL:

- 1- COVER SHEET AND INDEX
- 2- STREET ATLAS KEY MAP
- 3- AERIAL PHOTOGRAPH KEY MAP
- 4- RECOVERY SHEET CP# 586
- 5- RECOVERY SHEET CP# 587
- 6- RECOVERY SHEET CP# 590
- 7- RECOVERY SHEET CP# 868
- 8- RECOVERY SHEET CP# 862
- 9- RECOVERY SHEET CP# 801
- 10- RECOVERY SHEET CP# 932
- 11- RECOVERY SHEET CP# 903
- 12- RECOVERY SHEET CP# 904
- 13- RECOVERY SHEET CP# 131
- 14- RECOVERY SHEET CP# 701
- 15- RECOVERY SHEET CP# 703
- 16- RECOVERY SHEET CP# 706
- 17- RECOVERY SHEET CP# 798
- 18- RECOVERY SHEET CP# 700
- 19- RECOVERY SHEET CP# 411
- 20- RECOVERY SHEET CP# 412

NOTES:

PRIMARY:

1) POINTS UTILIZED WERE GPS DERIVED VS. BEING ESTABLISHED BY CLASSICAL METHODS AT THE RECOMMENDATION OF THE ILLINOIS STATE GEODETIC ADVISOR.

2) SECOND ORDER CLASS 1 SURVEY METHODS WERE USED FOR ALL POINTS MEASURED.

LIDAR:

1) LC-# = LIDAR CONTROL POINT NUMBER. LIDAR CONTROL POINTS SET BY BOLLENGER, LACH & ASSOC., FIELD NOTES PROVIDED TO V3 (SEE ATTACHMENT) DATED FEBRUARY 15, 2002.

2) LC-2, LC-5, LC-12, LC-14 & LC-15 RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

3) LC-4, LC-7, LC-9 & LC-10 NOT FOUND BY V3.

LIDAR, CONTINUED:

4) LOCATIONS FOR ALL LIDAR CONTROL DEPICTED ON 'VICINITY' SKETCHES, BASED ON COORDINATES EXTRACTED FROM PROVIDED LIDAR MAPPING.

BENCHMARKS:

1) A LINE OF BENCHMARKS WERE ESTABLISHED ALONG THE EAST SIDE OF LAKE CALUMET WITH MONUMENTS APPROXIMATELY EVERY HALF MILE ALONG STONY ISLAND AVENUE FROM 103RD STREET ON THE NORTH TO THE CALUMET RIVER ON THE SOUTH.

2) POINTS SET FOR VERTICAL REFERENCE ONLY. NO HORIZONTAL VALUES WERE MEASURED.

SECONDARY SITE CONTROL:

1) ALL POINTS SET BY ENVIRONMENTAL DESIGN INTERNATIONAL, INC. (EDI) AND LATER LOCATED BY V3.

2) SOME POINTS HAVE BEEN DESTROYED SINCE BEING USED FOR THIS PROJECT.



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STREET ATLAS KEY MAP



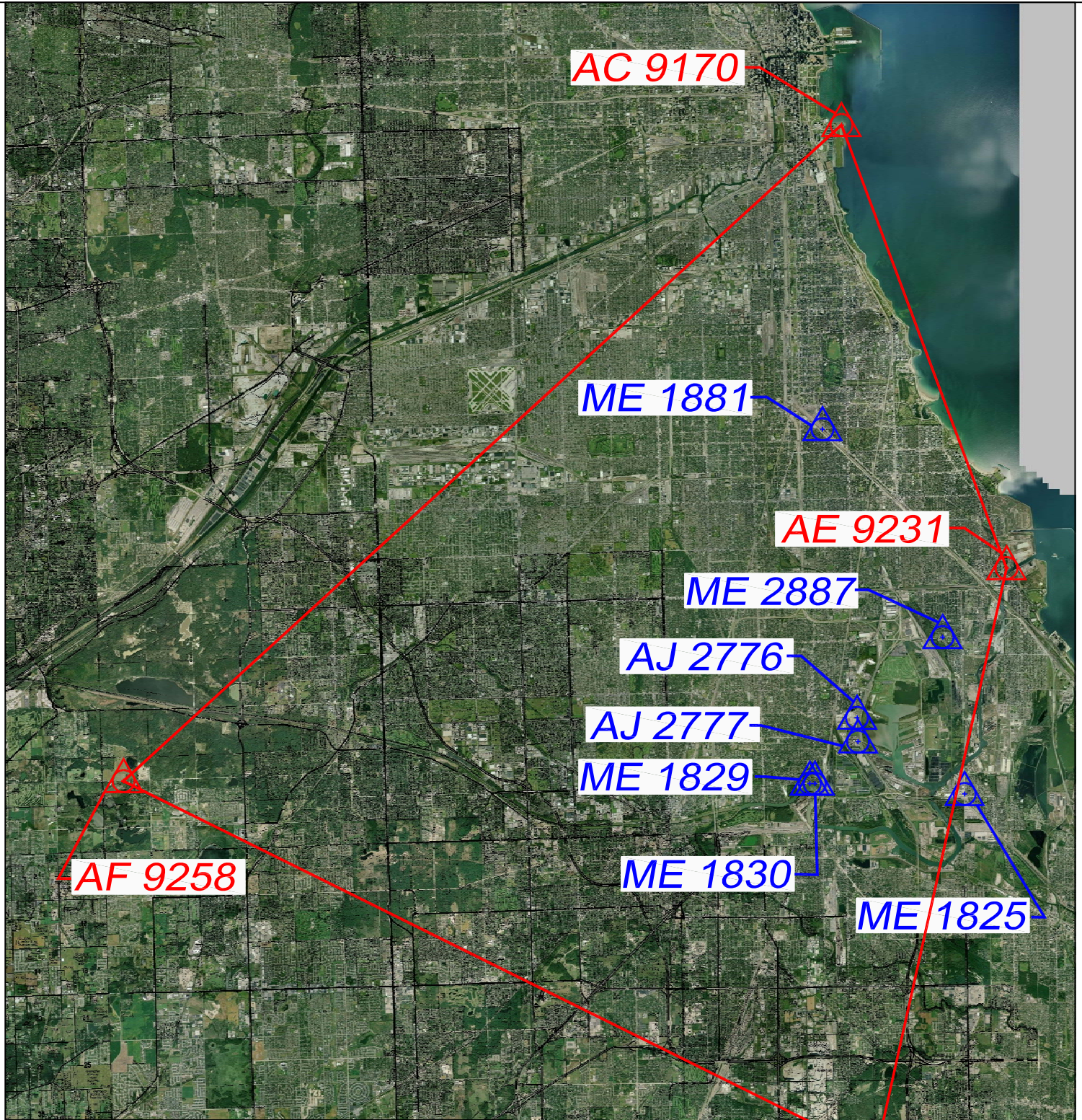


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CALUMET AREA HMP

NGS PRIMARY CONTROL OCCUPATION DATA SHEET

AERIAL PHOTOGRAPH KEY MAP



LEGEND

- PRIMARY NETWORK
- PRIMARY CONTROL BASE POINT
- PRIMARY CONTROL ROVER POINT

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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS AC 9170

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12792	VISIBILITY: N/A	TIME: 8:43A	4:37P
ANTENNA: LEICA AT502	02699	PRECIPITATION: N/A	SATELLITES: 7/7	9/9
ANTENNA HEIGHT: 3.85 FT		WIND SPEED: N/A	PDOP: 2.3	2.5
1.171 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	5684

PHOTOGRAPH 'A'



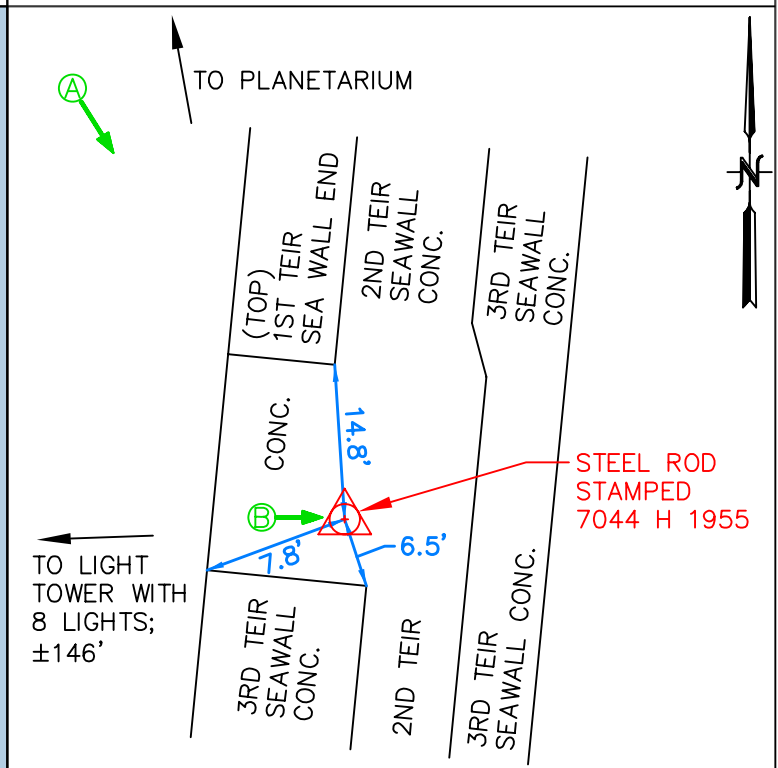
PHOTOGRAPH 'B'



VICINITY



SITE



AC9170.txt

AC9170 *****
 AC9170 CBN - This is a Cooperative Base Network Control Station.
 AC9170 DESIGNATION - DALEY
 AC9170 PID - AC9170
 AC9170 STATE/COUNTY- IL/COOK
 AC9170 USGS QUAD - JACKSON PARK (1993)

*CURRENT SURVEY CONTROL

AC9170*	NAD 83(1997)-	41 51 55.73392(N)	087 36 22.39134(W)	ADJUSTED
AC9170*	NAVD 88	- 180.5 (meters)	592. (feet)	GPS OBS
AC9170	X	- 198,690.416 (meters)		COMP
AC9170	Y	- 4,752,941.762 (meters)		COMP
AC9170	Z	- 4,234,586.652 (meters)		COMP
AC9170	LAPLACE CORR-	-0.43 (seconds)		DEFLEC99
AC9170	ELLIP HEIGHT-	146.89 (meters)	(09/15/03)	GPS OBS
AC9170	GEOID HEIGHT-	-33.53 (meters)		GEOID03

AC9170 HORZ ORDER - B
 AC9170 ELLP ORDER - FOURTH CLASS I

AC9170. This mark is at Merrill C Meigs Airport (CGX)

AC9170. The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in July 1998.

AC9170. The orthometric height was determined by GPS observations and a high-resolution geoid model.

AC9170. The X, Y, and Z were computed from the position and the ellipsoidal ht.

AC9170. The Laplace correction was computed from DEFLEC99 derived deflections.

AC9170. The ellipsoidal height was determined by GPS observations and is referenced to NAD 83.

AC9170. The geoid height was determined by GEOID03.

	North	East	Units	Scale Factor	Converg.
AC9170; SPC ILE	- 577,417.409	360,367.289	MT	1.00001983	+0 29 07.0
AC9170; UTM 16	- 4,635,018.616	449,688.612	MT	0.99963115	-0 24 16.5
AC9170!	- Elev Factor	x Scale Factor	=	Combined Factor	
AC9170! SPC ILE	- 0.99997696	x 1.00001983	=	0.99999679	
AC9170! UTM 16	- 0.99997696	x 0.99963115	=	0.99960812	

SUPERSEDED SURVEY CONTROL

AC9170 ELLIP H (07/17/98) 146.94 (m) GP() 4 1

AC9170. Superseded values are not recommended for survey control.
 AC9170. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AC9170. See file dsdata.txt to determine how the superseded data were derived.

AC9170_U.S. NATIONAL GRID SPATIAL ADDRESS: 16TDM4968935019(NAD 83)
 AC9170_MARKER: DH = HORIZONTAL CONTROL DISK
 AC9170_SETTING: 40 = SET IN A LARGE STRUCTURE WITH DEEP FOUNDATIONS
 AC9170_SP_SET: MASSIVE SEAWALL
 AC9170_STAMPING: DALEY 1997
 AC9170_MARK LOGO: NGS
 AC9170_MAGNETIC: N = NO MAGNETIC MATERIAL
 AC9170_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD

AC9170. txt

AC9170+STABILITY: POSITION/ELEVATION WELL
 AC9170_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AC9170+SATELLITE: SATELLITE OBSERVATIONS - June 17, 2003

AC9170	HI STORY	- Date	Condi ti on	Report By
AC9170	HI STORY	- 1997	MONUMENTED	NGS
AC9170	HI STORY	- 19970625	GOOD	NGS
AC9170	HI STORY	- 20000326	GOOD	SECI
AC9170	HI STORY	- 20000823	GOOD	PATRI C
AC9170	HI STORY	- 20010410	GOOD	JCLS
AC9170	HI STORY	- 20010418	GOOD	JCLS
AC9170	HI STORY	- 20020904	GOOD	NGS
AC9170	HI STORY	- 20030617	GOOD	NGS

AC9170

STATION DESCR IPTION

AC9170

AC9170' DESCRIBED BY NATIONAL GEODETIC SURVEY 1997 (AJL)
 AC9170' THE STATION IS LOCATED ABOUT 1.8 MI (2.9 KM) SOUTHEAST OF DOWNTOWN
 AC9170' CHICAGO, 0.6 MI (1.0 KM) EAST-NORTHEAST OF SOLDIER FIELD, 0.3 MI (0.5
 AC9170' KM) NORTH-NORTHEAST OF MERRILL C. MEIGS FIELD AIRPORT, AND ABOUT 50 M
 AC9170' (164.0 FT) SOUTH-SOUTHEAST OF THE ADLER PLANETARIUM, IN THE TOP OF A
 AC9170' SEAWALL ALONG THE LAKE MICHIGAN COAST. OWNERSHIP--CHICAGO PARK
 AC9170' DISTRICT. EDWARD K. UHLIR IS DIRECTOR OF RESEARCH AND PLANNING,
 AC9170' PHONE 312-747-0696. ROXANNE M. WARD IS FIRST ASSISTANT GENERAL
 AC9170' COUNSEL, JOAN FENCIK, GENERAL COUNSEL, PHONE 312-747-2571. CONTACT
 AC9170' ONE OF THESE OFFICIALS FOR PERMISSION TO OCCUPY THE STATION. DUE TO
 AC9170' ONGOING CONSTRUCTION IN THE VICINITY OF THE PLANETARIUM, ACCESS TO THE
 AC9170' STATION MUST BE MADE ALONG THE NORTH SIDE OF A PUBLIC BEACH, JUST
 AC9170' SOUTH OF THE PLANETARIUM. NOTIFY ANN JOHNSTONE, BEACH MANAGER,
 AC9170' CHICAGO PARK DISTRICT, PHONE 312-747-2524, PRIOR TO STATION OCCUPATION
 AC9170' FOR PERMISSION TO PARK ON AN ASPHALT STRIP AT THE NORTHEAST CORNER OF
 AC9170' THE PARK. NOTE--DO NOT PARK ON GRASS. TO REACH FROM THE CONNECTING
 AC9170' RAMP TO NORTHBOUND U.S. ROUTE 41, LAKE SHORE DRIVE, AT THE EAST END
 AC9170' OF INTERSTATE HIGHWAY 55, GO NORTH ON ROUTE 41 FOR ABOUT 0.1 MI (0.2
 AC9170' KM) TO A GLASS ENCLOSED OVERWALK CONNECTING EAST AND WEST MCCORMICK
 AC9170' PLACE FACILITIES. CONTINUE NORTH ON ROUTE 41 FOR 0.94 MI (1.51 KM) TO
 AC9170' MCFETRIDGE DRIVE AT SIGN ADLER PLANETARIUM. TURN RIGHT, EAST, FOR
 AC9170' 0.25 MI (0.40 KM) TO A ROAD LEFT. TURN LEFT, NORTH, FOR 0.06 MI (0.10
 AC9170' KM) TO SOLIDARITY DRIVE. TURN RIGHT, EAST, FOR 0.05 MI (0.08 KM) TO A
 AC9170' STOP SIGN AND CONTINUE EAST FOR 0.15 MI (0.24 KM) TO LYNN WHITE DRIVE
 AC9170' WHICH IS THE ENTRANCE ROAD TO MEIGS FIELD. TURN RIGHT, SOUTH, ON LYNN
 AC9170' WHITE DRIVE FOR 0.12 MI (0.19 KM) TO A PARKING LOT AT A PUBLIC BEACH
 AC9170' WITH TWIN BRICK BATHHOUSES ON THE LEFT. TURN LEFT, EAST, INTO THE
 AC9170' PARKING LOT AND PROCEED ABOUT 50 M (164.0 FT) TO THE NORTHEAST CORNER
 AC9170' OF THE LOT AND THE STATION ABOUT 200 M (656.2 FT) AHEAD ON THE LEFT,
 AC9170' ATOP THE PROMINENT SEAWALL, 64.9 M (212.9 FT) NORTH OF THE SOUTH END
 AC9170' OF THE SEAWALL, 44.5 M (146.0 FT) EAST-NORTHEAST OF THE NORTHEAST LEG
 AC9170' OF A LIGHT TOWER WITH EIGHT LIGHTS, 27.8 M (91.2 FT) SOUTH OF THE
 AC9170' BEGINNING OF A CURVE IN THE SEAWALL LEADING AROUND THE EAST SIDE OF
 AC9170' THE PLANETARIUM, 14.6 M (47.9 FT) WEST OF THE EAST EDGE OF THE SEAWALL
 AC9170' (AT WATER EDGE), 4.5 M (14.8 FT) SOUTH-SOUTHEAST OF THE SOUTHEAST
 AC9170' CORNER OF THE TOP LEVEL OF THE SEAWALL, AND 1.8 M (5.9 FT) EAST OF THE
 AC9170' WEST EDGE OF THE SEAWALL.

AC9170

STATION RECOVERY (1997)

AC9170

AC9170' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1997 (CSM)
 AC9170' THE STATION IS LOCATED ABOUT 3 KM (1.85 MI) SOUTHEAST OF DOWNTOWN
 AC9170' CHICAGO, 1 KM (0.60 MI) EAST-NORTHEAST OF SOLDIERS FIELD, 0.5 KM (0.30
 AC9170' MI) NORTHEAST OF MEIGS FIELD AIRPORT, AND 100 M (328.1 FT)
 AC9170' SOUTH-SOUTHEAST OF THE ADLER PLANETARIUM, IN THE TOP OF A SEAWALL
 AC9170' ALONG THE LAKE MICHIGAN COAST. OWNERSHIP--CHICAGO PARK DI STRICT.
 AC9170' EDWARD K. UHLIR IS DIRECTOR OF RESEARCH AND PLANNING, PHONE

AC9170.txt

AC9170' 312-747-0696. ROXANNE M. WARD IS FIRST ASSISTANT GENERAL COUNSEL,
AC9170' JOAN FENCIK, GENERAL COUNSEL, PHONE 312-747-2671. CONTACT ONE OF THEM
AC9170' FOR PERMISSION TO OCCUPY THIS STATION. TO REACH FROM THE OVERPASS AT
AC9170' THE JUNCTION OF COMBINED INTERSTATE HIGHWAYS 90 AND 94 AND ROOSEVELT
AC9170' ROAD (EXIT 52) ABOUT 4 KM (2.50 MI) NORTH OF THE JUNCTION OF
AC9170' INTERSTATE HIGHWAYS 90/94 AND 55, GO EAST ON ROOSEVELT ROAD FOR 1.61
AC9170' KM (1.00 MI) TO A PAVED CROSSROAD (MICHIGAN AVENUE). CONTINUE AHEAD,
AC9170' EAST, ON ROOSEVELT ROAD FOR 0.32 KM (0.20 MI) TO A PAVED CROSSROAD
AC9170' (COLUMBUS DRIVE). TURN RIGHT, SOUTH, ON COLUMBUS DRIVE, (IMMEDIATELY
AC9170' GETTING INTO THE LEFT HAND LANES) FOR 0.45 KM (0.25 MI) TO A PAVED
AC9170' ROAD LEFT (MCFETRIDGE DRIVE). TURN LEFT, EAST, ON MCFETRIDGE DRIVE
AC9170' FOR 0.47 KM (0.30 MI) TO A PAVED CROSSROAD (LAKESHORE DRIVE). TURN
AC9170' LEFT, NORTH, ON LAKESHORE DRIVE FOR 0.16 KM (0.10 MI) TO A PAVED ROAD
AC9170' RIGHT AND A SIGN--ADLER PLANETARIUM. TURN RIGHT, EAST, ON THE ROAD
AC9170' FOR 0.59 KM (0.35 MI) TO THE SOUTH SIDE OF THE PLANETARIUM AND THE
AC9170' STATION ON THE RIGHT. THE STATION IS SET FLUSH IN THE TOP OF A 3.5 M
AC9170' (11.5 FT) WIDE X 8 M (26.2 FT) LONG SECTION OF SEAWALL (SECOND TIER
AC9170' FROM THE TOP). IT IS 44.5 M (146.0 FT) EAST-NORTHEAST OF THE
AC9170' NORTHEAST LEG OF A LIGHT POLE WITH EIGHT LIGHTS, 27.8 M (91.2 FT)
AC9170' SOUTH-SOUTHEAST OF THE BEGINNING OF A CURVE IN THE SEAWALL LEADING
AC9170' AROUND THE EAST SIDE OF THE PLANETARIUM, 14.6 M (47.9 FT)
AC9170' WEST-NORTHWEST OF THE EAST EDGE OF THE SEAWALL (AT WATERS EDGE), 4.5 M
AC9170' (14.8 FT) SOUTH-SOUTHEAST OF THE SOUTHEAST CORNER OF THE TOP PORTION
AC9170' OF THE SEAWALL, 2.4 M (7.9 FT) NORTH-NORTHEAST OF THE SOUTH CORNER OF
AC9170' THE 8 X 3.5 M (11.5 FT) PORTION OF SEAWALL, 1.8 M (5.9 FT)
AC9170' EAST-NORTHEAST OF THE WEST EDGE, AND 1.75 M (5.74 FT) WEST-NORTHWEST
AC9170' OF THE EAST EDGE.

AC9170

STATION RECOVERY (2000)

AC9170

AC9170

AC9170' RECOVERY NOTE BY SMITH ENG CONS INC 2000 (RJW)

AC9170' RECOVERED AS DESCRIBED USING 1997 DESCRIPTION

AC9170'

AC9170

AC9170

STATION RECOVERY (2000)

AC9170

AC9170

AC9170' RECOVERY NOTE BY PATRICK ENGINEERING INCORPORATED 2000 (SL)

AC9170' STATION WAS FOUND AS PREVIOUSLY DESCRIBED. PERMISSION IS NOT

AC9170' REQUIRED TO OCCUPY THE STATION. HOWEVER, PARKING IS SCARCE AND

AC9170' DRIVING ON THE GRASS IS NOT RECOMMENDED. BE PREPARED TO PAY FOR

AC9170' PARKING AND WALKING TO MONUMENT

AC9170'

AC9170

STATION RECOVERY (2001)

AC9170

AC9170

AC9170' RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2001 (CLG)

AC9170' RECOVERED IN GOOD CONDITION.

AC9170

STATION RECOVERY (2001)

AC9170

AC9170

AC9170' RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2001

AC9170' RECOVERED IN GOOD CONDITION.

AC9170

STATION RECOVERY (2002)

AC9170

AC9170

AC9170' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2002 (JK)

AC9170' RECOVERED AS DESCRIBED

AC9170'

AC9170

STATION RECOVERY (2003)

AC9170

AC9170

AC9170' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2003 (JMW)

AC9170' RECOVERED AS DESCRIBED.



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS AE 9231

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12784	VISIBILITY: N/A	TIME: 8:09A	4:38P
ANTENNA: LEICA AT502	02827	PRECIPITATION: N/A	SATELLITES: 5/6	7/9
ANTENNA HEIGHT: 4.30 FT		WIND SPEED: N/A	PDOP: 4.3	2.7
1.313 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	6102

PHOTOGRAPH 'A'



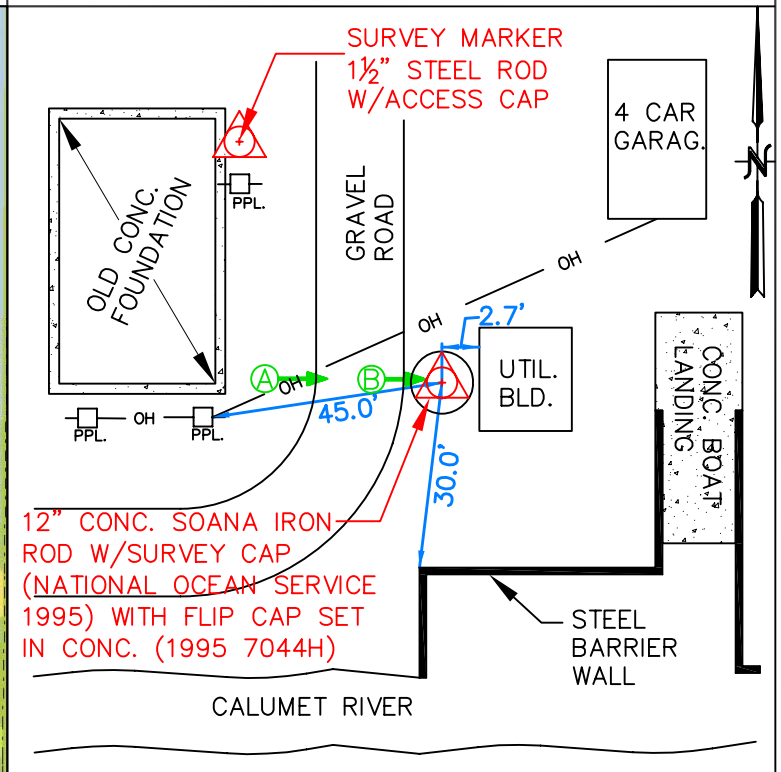
PHOTOGRAPH 'B'



VICINITY



SITE



AE9231.txt

AE9231 *****
 AE9231 CBN - This is a Cooperative Base Network Control Station.
 AE9231 DESIGNATION - 908 7044 H
 AE9231 PID - AE9231
 AE9231 STATE/COUNTY- IL/COOK
 AE9231 USGS QUAD - LAKE CALUMET (1997)

*CURRENT SURVEY CONTROL

AE9231*	NAD 83(1997)-	41 43 47.41120(N)	087 32 18.38218(W)	ADJUSTED
AE9231*	NAVD 88	- 178.336 (meters)	585.09 (feet)	ADJUSTED
AE9231	X	- 204,744.178 (meters)		COMP
AE9231	Y	- 4,762,734.381 (meters)		COMP
AE9231	Z	- 4,223,353.280 (meters)		COMP
AE9231	LAPLACE CORR-	-0.58 (seconds)		DEFLEC99
AE9231	ELLIP HEIGHT-	144.87 (meters)	(04/28/99)	GPS OBS
AE9231	GEOID HEIGHT-	-33.46 (meters)		GEOID03
AE9231	DYNAMIC HT -	178.274 (meters)	584.89 (feet)	COMP
AE9231	MODELED GRAV-	980,269.6 (mgal)		NAVD 88

AE9231 HORZ ORDER - A
 AE9231 VERT ORDER - SECOND CLASS I
 AE9231 ELLP ORDER - THIR D CLASS I

AE9231. The horizontal coordinates were established by GPS observations
 AE9231. and adjusted by the National Geodetic Survey in April 1999.
 AE9231
 AE9231. The orthometric height was determined by differential leveling
 AE9231. and adjusted by the National Geodetic Survey in June 1998.
 AE9231
 AE9231. The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AE9231
 AE9231. The Laplace correction was computed from DEFLEC99 derived deflections.
 AE9231
 AE9231. The ellipsoidal height was determined by GPS observations
 AE9231. and is referenced to NAD 83.
 AE9231
 AE9231. The geoid height was determined by GEOID03.
 AE9231
 AE9231. The dynamic height is computed by dividing the NAVD 88
 AE9231. geopotential number by the normal gravity value computed on the
 AE9231. Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AE9231. degrees latitude (g = 980.6199 gal s.).
 AE9231
 AE9231. The modeled gravity was interpolated from observed gravity values.

	North	East	Units	Scale Factor	Converg.
AE9231; SPC I L E	- 562,401.481	366,133.985	MT	1.00002880	+0 31 44.8
AE9231; UTM 16	- 4,619,921.040	455,219.524	MT	0.99962468	-0 21 30.2
AE9231!	- Elev Factor	x Scale Factor	=	Combined Factor	
AE9231! SPC I L E	- 0.99997728	x 1.00002880	=	1.00000608	
AE9231! UTM 16	- 0.99997728	x 0.99962468	=	0.99960197	

SUPERSEDED SURVEY CONTROL

AE9231 NAVD 88 (04/28/99) 178.34 (m) 585.1 (f) LEVELING 3

AE9231. Superseded values are not recommended for survey control.
 AE9231. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AE9231. See file dsdata.txt to determine how the superseded data were derived.
 AE9231

AE9231.txt

AE9231_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM5522019921(NAD 83)
AE9231_MARKER: DD = SURVEY DISK
AE9231_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT. +)
AE9231_STAMPING: 7044 H 1995
AE9231_MARK LOGO: NOS
AE9231_PROJECTION: FLUSH
AE9231_MAGNETIC: N = NO MAGNETIC MATERIAL
AE9231_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AE9231_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AE9231+SATELLITE: SATELLITE OBSERVATIONS - May 20, 2004
AE9231_ROD/PIPE-DEPTH: 12.2 meters

AE9231

AE9231	HISTORY	- Date	Condition	Report By
AE9231	HISTORY	- 1995	MONUMENTED	NOS
AE9231	HISTORY	- 19971203	GOOD	NGS
AE9231	HISTORY	- 20020904	GOOD	NGS
AE9231	HISTORY	- 20040520	GOOD	JCLS

AE9231

STATION DESCRIPTION

AE9231

AE9231' DESCRIBED BY NATIONAL OCEAN SERVICE 1995 (JRS)
AE9231' IN CHICAGO, AT CALUMET HARBOR ON THE NW SIDE OF CALUMET RIVER, JUST
AE9231' UPSTREAM FROM THE U. S. STEEL CORP., SOUTH OF BOAT SLIP, AT THE U. S.
AE9231' ARMY ENGINEERS DISTRICT FIELD OFFICE, 34.7 METERS (113.8 FT) SOUTH OF
AE9231' THE SW CORNER OF THE U. S. ARMY ENGINEERS DISTRICT FIELD BUILDING
AE9231' (WITH FOUR BAY DOORS) , 9.2 METERS (30.2 FT) WEST OF THE SW CORNER OF
AE9231' STEEL BULKHEAD, 1.3 METERS (4.3 FT) SOUTH OF THE NW CORNER OF THE NOS
AE9231' GAUGE HOUSE, BEING STAINLESS STEEL ROD DRIVEN 12.2 METERS (40.0 FT) TO
AE9231' REFUSAL, ENCASED IN STANDARD KICK-BLOCK WITH NGS ACCESS COVER.

AE9231

STATION RECOVERY (1997)

AE9231

AE9231' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1997 (CSM)
AE9231' IN CHICAGO AT CALUMET HARBOR, ON THE NORTHWEST SIDE OF THE CALUMET
AE9231' RIVER, JUST UPSTREAM FROM THE U. S. STEEL CORP., SOUTH OF A BOAT SLIP
AE9231' AT THE U. S. ARMY ENGINEERS DISTRICT FIELD OFFICE. TO REACH THE
AE9231' STATION YOU MUST ENTER THROUGH THE U. S. STEEL CORP. SECURITY GATE
AE9231' LOCATED AT 86TH STREET AND GREEN BAY. PHONE 773-933-2336. MARK IS A
AE9231' BRONZE DISK CRIMPED TO A STAINLESS STEEL ROD DRIVEN TO DENIAL ENCASED
AE9231' IN A STANDARD KICK-BLOCK WITH ALUMINUM ACCESS COVER. IT IS, 34.7 M
AE9231' (113.8 FT) SOUTH OF THE SOUTHWEST CORNER OF THE U. S. ARMY ENGINEERS
AE9231' DISTRICT FIELD BUILDING (WITH FOUR BAY DOORS) , 9.2 M (30.2 FT) WEST
AE9231' OF THE SOUTHWEST CORNER OF A STEEL BULKHEAD, AND 1.3 M (4.3 FT) SOUTH
AE9231' OF THE NORTHWEST CORNER OF THE NOS WATERLEVEL GAGE HOUSE.

AE9231

STATION RECOVERY (2002)

AE9231

AE9231' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2002 (DS)
AE9231' RECOVERED AS DESCRIBED

AE9231'

AE9231

STATION RECOVERY (2004)

AE9231

AE9231' RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2004 (MRY)
AE9231' RECOVERED IN GOOD CONDITION.



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CALUMET AREA HMP

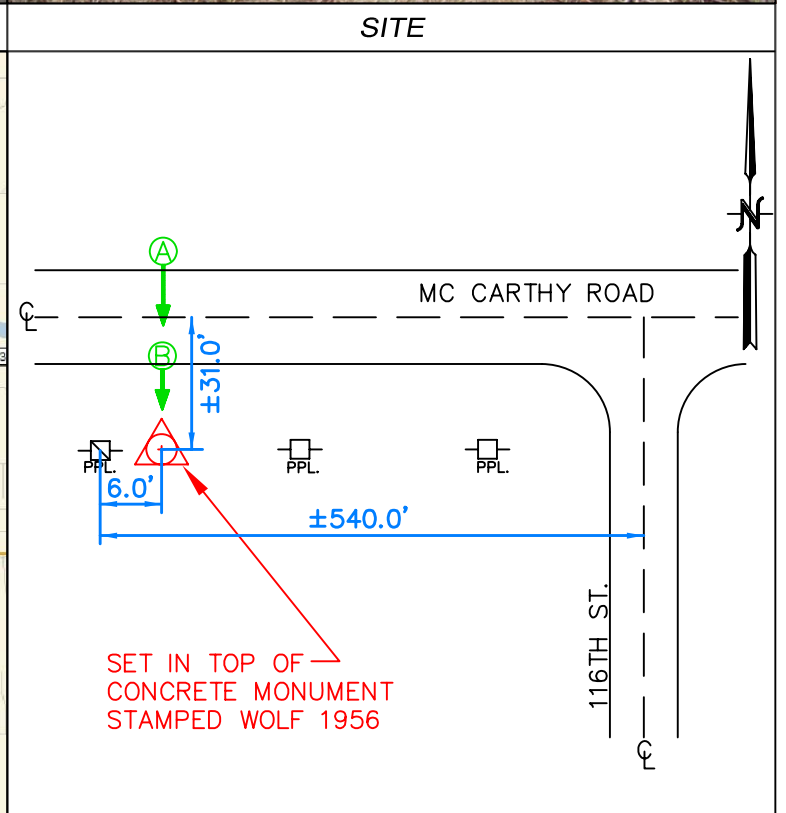
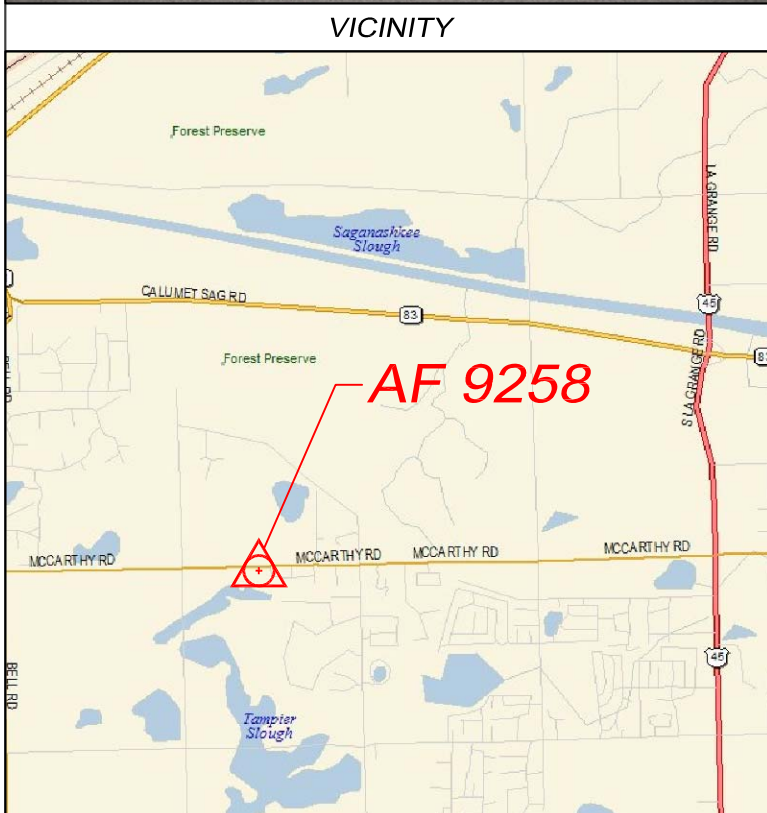
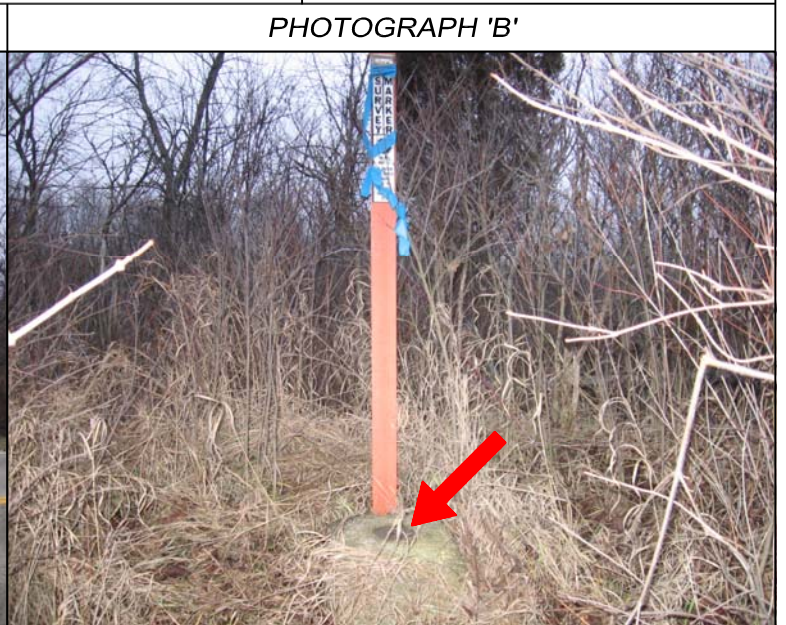
NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS AF 9258

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: $\pm 60^{\circ}$	START	END
RECEIVER: LEICA TR530	12783	VISIBILITY: N/A	TIME: 8:01A	4:40P
ANTENNA: LEICA AT502	02749	PRECIPITATION: N/A	SATELLITES: 6/6	10/10
ANTENNA HEIGHT: 2.93 FT		WIND SPEED: N/A	PDOP: 2.5	2.6
0.892 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	6230



AF9258.txt

AF9258 *****
 AF9258 CBN - This is a Cooperative Base Network Control Station.
 AF9258 DESIGNATION - WOLF AZ MK
 AF9258 PID - AF9258
 AF9258 STATE/COUNTY- IL/COOK
 AF9258 USGS QUAD - SAG BRIDGE (1997)

*CURRENT SURVEY CONTROL

AF9258*	NAD 83(1997)-	41 39 56.88391(N)	087 54 18.02408(W)	ADJUSTED
AF9258*	NAVD 88	- 221.8 (meters)	728. (feet)	GPS OBS
AF9258	X	- 174,443.299 (meters)		COMP
AF9258	Y	- 4,768,707.427 (meters)		COMP
AF9258	Z	- 4,218,071.733 (meters)		COMP
AF9258	LAPLACE CORR-	-1.41 (seconds)		DEFLEC99
AF9258	ELLIP HEIGHT-	188.53 (meters)	(10/15/04)	GPS OBS
AF9258	GEOID HEIGHT-	-33.25 (meters)		GEOID03

AF9258 HORZ ORDER - B
 AF9258 ELLP ORDER - FOURTH CLASS II

AF9258. The horizontal coordinates were established by GPS observations and adjusted by the National Geodetic Survey in July 1998.

AF9258. The orthometric height was determined by GPS observations and a high-resolution geoid model.

AF9258. The X, Y, and Z were computed from the position and the ellipsoidal ht.

AF9258. The Laplace correction was computed from DEFLEC99 derived deflections.

AF9258. The ellipsoidal height was determined by GPS observations and is referenced to NAD 83.

AF9258. The geoid height was determined by GEOID03.

	North	East	Units	Scale Factor	Converg.
AF9258; SPC I L E	- 555,072.690	335,671.414	MT	0.99999065	+0 17 05.1
AF9258; UTM 16	- 4,613,067.166	424,658.236	MT	0.99966985	-0 36 06.0
AF9258!	- Elev Factor	x Scale Factor	=	Combined Factor	
AF9258! SPC I L E	- 0.99997043	x 0.99999065	=	0.99996108	
AF9258! UTM 16	- 0.99997043	x 0.99966985	=	0.99964029	

SUPERSEDED SURVEY CONTROL

AF9258 ELLIP H (07/17/98) 188.53 (m) GP() 4 1

AF9258. Superseded values are not recommended for survey control.
 AF9258. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AF9258. See file dsdata.txt to determine how the superseded data were derived.

AF9258_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM2465813067(NAD 83)

AF9258_MARKER: DZ = AZIMUTH MARK DISK

AF9258_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

AF9258_STAMPING: WOLF 1956

AF9258_MARK LOGO: NONE

AF9258_MAGNETIC: N = NO MAGNETIC MATERIAL

AF9258_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

AF9258+STABILITY: SURFACE MOTION

AF9258_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AF9258+SATELLITE: SATELLITE OBSERVATIONS - January 15, 2005

AF9258.txt

AF9258				
AF9258	HISTORY	- Date	Condition	Report By
AF9258	HISTORY	- 1956	MONUMENTED	CGS
AF9258	HISTORY	- 20000326	GOOD	SECI
AF9258	HISTORY	- 20050115	GOOD	GEOCAC

AF9258

AF9258

AF9258

STATION DESCRIPTION

AF9258' DESCRIBED BY COAST AND GEODETIC SURVEY 1956

AF9258' THE STATION IS LOCATED ABOUT 5 MI (8.0 KM) SOUTHWEST OF WILLOW
AF9258' SPRINGS, 3.5 MI (5.6 KM) WEST OF PALOS PARK. TO REACH FROM THE
AF9258' JUNCTION OF STATE ROUTE 83 AND U.S. HIGHWAY 45, ABOUT 3.5 MI (5.6 KM)
AF9258' SOUTH OF WILLOW SPRINGS, GO SOUTH ON HIGHWAY 45 FOR 1.15 MI (1.85 KM)
AF9258' TO A PAVED CROSSROAD, MCCARTHY ROAD. TURN RIGHT, WEST, ON MCCARTHY
AF9258' ROAD FOR 1.95 MI (3.14 KM) TO A PAVED CROSSROAD, WOLF ROAD, CONTINUE
AF9258' WEST FOR 0.6 MI (1.0 KM) TO THE STATION ON THE LEFT. IT IS 9.4 M
AF9258' (30.8 FT) SOUTH OF THE CENTER OF THE ROAD, 1.7 M (5.6 FT) EAST OF A
AF9258' POWER POLE, AND 0.3 M (1.0 FT) NORTH OF A FIBERGLASS WITNESS POST.

AF9258

AF9258

AF9258

STATION RECOVERY (2000)

AF9258' RECOVERY NOTE BY SMITH ENG CONS INC 2000 (MRF)

AF9258' RECOVERED AS DESCRIBED

AF9258'

AF9258'

AF9258

AF9258

STATION RECOVERY (2005)

AF9258' RECOVERY NOTE BY GEOCACHING 2005 (KMP)

AF9258' GRAVEL ROADS IN THE DESCRIPTION ARE NOW PAVED AND WELL-USED.



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630.724.9202 fax
www.v3co.com

CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS ME 3311

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12789	VISIBILITY: N/A	TIME: 8:38A	4:34P
ANTENNA: LEICA AT502	02768	PRECIPITATION: N/A	SATELLITES: 7/7	9/9
ANTENNA HEIGHT: 4.16 FT		WIND SPEED: N/A	PDOP: 2.7	2.5
1.346 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	5840

PHOTOGRAPH 'A'



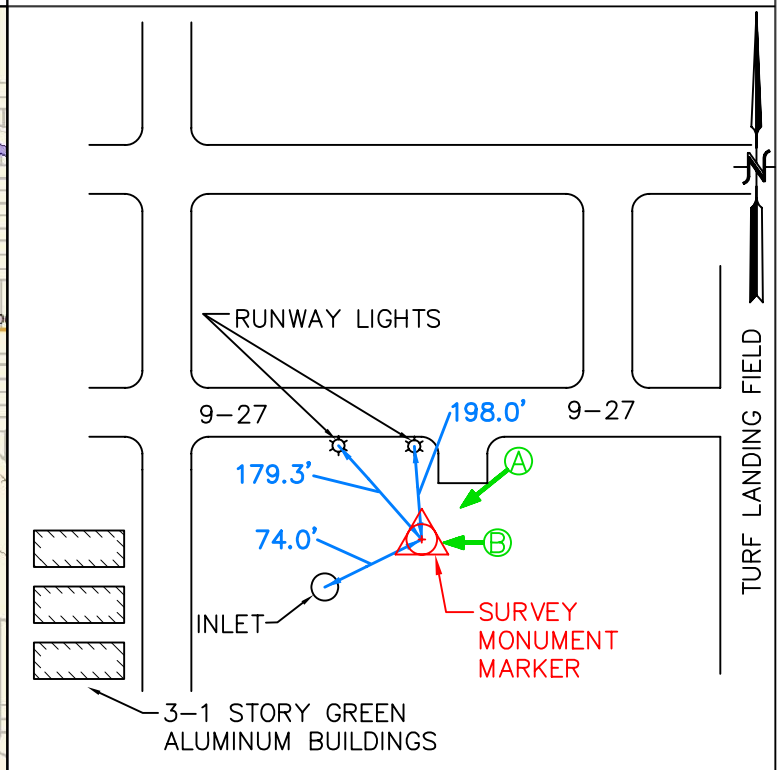
PHOTOGRAPH 'B'



VICINITY



SITE



M33311.txt

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ME3311 *****
ME3311 CBN - This is a Cooperative Base Network Control Station.
ME3311 PACS - This is a Primary Airport Control Station.
ME3311 DESIGNATION - LANSPORT
ME3311 PID - ME3311
ME3311 STATE/COUNTY- IL/COOK
ME3311 USGS QUAD - CALUMET CITY (1991)
ME3311
ME3311 *CURRENT SURVEY CONTROL
ME3311
ME3311* NAD 83(1997)- 41 32 21.50125(N) 087 31 50.37885(W) ADJUSTED
ME3311* NAVD 88 - 186.93 (meters) 613.3 (feet) GPS OBS
ME3311
ME3311 X - 205,996.813 (meters) COMP
ME3311 Y - -4,776,759.458 (meters) COMP
ME3311 Z - 4,207,542.587 (meters) COMP
ME3311 LAPLACE CORR- -1.76 (seconds) DEFLEC99
ME3311 ELLIP HEIGHT- 153.48 (meters) (10/15/04) GPS OBS
ME3311 GEOID HEIGHT- -33.47 (meters) GEIOD03
ME3311
ME3311 HORZ ORDER - B
ME3311 ELLP ORDER - FOURTH CLASS II
ME3311
ME3311. This mark is at Lansing Airport (IGQ)
ME3311
ME3311. The horizontal coordinates were established by GPS observations
ME3311. and adjusted by the National Geodetic Survey in April 1998.
ME3311
ME3311. The orthometric height was determined by GPS observations and a
ME3311. high-resolution geoid model.
ME3311
ME3311. GPS derived orthometric heights for airport stations designated as
ME3311. PACS or SACS are published to 2 decimal places. This maintains
ME3311. centimeter relative accuracy between the PACS and SACS. It does
ME3311. not indicate centimeter accuracy relative to other marks which are
ME3311. part of the NAVD 88 network.
ME3311
ME3311. Photographs are available for this station.
ME3311
ME3311. The X, Y, and Z were computed from the position and the ellipsoidal ht.
ME3311
ME3311. The Laplace correction was computed from DEFLEC99 derived deflections.
ME3311
ME3311. The ellipsoidal height was determined by GPS observations
ME3311. and is referenced to NAD 83.
ME3311
ME3311. The geoid height was determined by GEIOD03.
ME3311
ME3311;
ME3311; North East Units Scale Factor Converg.
ME3311; SPC IL E - 541,246.267 366,978.136 MT 1.00003018 +0 31 56.3
ME3311; SPC IN W - 698,547.667 862,673.661 MT 0.99998381 -0 17 47.9
ME3311; UTM 16 - 4,598,763.877 455,736.293 MT 0.99962411 -0 21 06.9
ME3311
ME3311! - Elev Factor x Scale Factor = Combined Factor
ME3311! SPC IL E - 0.99997593 x 1.00003018 = 1.00000611
ME3311! SPC IN W - 0.99997593 x 0.99998381 = 0.99995974
ME3311! UTM 16 - 0.99997593 x 0.99962411 = 0.99960005
ME3311
ME3311: Primary Azimuth Mark Grid Az
ME3311: SPC IL E - LANSPORT AZ MK 269 26 39.6
ME3311: SPC IN W - LANSPORT AZ MK 270 16 23.8
ME3311: UTM 16 - LANSPORT AZ MK 270 19 42.8
ME3311

```

M33311.txt

PID	Reference Object	Distance	Geod. Az
AI 2095	IGQ A	430.605 METERS	0893307.6
ME3312	LANSPO RT AZ MK	APPROX. 0.6 KM	2695835.9

SUPERSEDED SURVEY CONTROL

ELLIP H (04/10/98)	153.44 (m)	GP()	4 1
NAD 83(1986)- 41 32 21.50527(N)	087 31 50.39510(W)	AD()	1
NAD 83(1997)- 41 32 21.50227(N)	087 31 50.38670(W)	AD()	1
NAD 83(1986)- 41 32 21.50231(N)	087 31 50.38668(W)	AD()	1
NGVD 29 (06/25/91) 186.9 (m)	613. (f)	GPS OBS	

ME3311. Superseded values are not recommended for survey control.
 ME3311. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 ME3311. See file dsdata.txt to determine how the superseded data were derived.

ME3311_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDL5573698764(NAD 83)

ME3311_MARKER: I = METAL ROD

ME3311_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT. +)

ME3311_SP_SET: STAINLESS STEEL ROD IN SLEEVE

ME3311_STAMPING: LANSPO RT 1990

ME3311_MARK LOGO: NONE

ME3311_PROJECTION: FLUSH

ME3311_MAGNETIC: N = NO MAGNETIC MATERIAL

ME3311_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

ME3311_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

ME3311+SATELLITE: SATELLITE OBSERVATIONS - March 26, 2000

ME3311_ROD/PIPE-DEPTH: 6.10 meters

ME3311_SLEEVE-DEPTH : 0.90 meters

HI STORY	Date	Condi ti on	Report By
HI STORY	- 1990	MONUMENTED	NGS
HI STORY	- 19970505	GOOD	ASCPC
HI STORY	- 19970506	GOOD	NGS
HI STORY	- 19970616	GOOD	NGS
HI STORY	- 19990901	GOOD	NGS
HI STORY	- 20000326	GOOD	SECI

STATION DESCRIPTION

ME3311' DESCRIBED BY NATIONAL GEODETIC SURVEY 1990
 ME3311' STATION IS LOCATED ABOUT 3.0 KM (1.9 MI) SOUTH OF LANSING, AT THE
 ME3311' LANSING MUNICIPAL AIRPORT, IN THE SOUTHWEST ANGLE OF THE JUNCTION OF
 ME3311' THE ASPHALT AND GRASS RUNWAYS, IN THE NORTHWEST 1/4 OF SECTION 8, T
 ME3311' 36 N, R 15 E. OWNERSHIP--VILLAGE OF LANSING, LANSING VILLAGE MALL,
 ME3311' LANSING, IL 60438. AIRPORT MANAGER IS ROBERT MALKAS, PHONE
 ME3311' 312-895-8844.
 ME3311' TO REACH FROM THE JUNCTION OF US HIGHWAY 30 AND STATE HIGHWAY 394 ON
 ME3311' THE EAST SIDE OF EAST CHICAGO HEIGHTS, GO EAST ON HIGHWAY 30 FOR 3.66
 ME3311' KM (2.27 MI) TO A T-ROAD. TURN LEFT, NORTHWEST, ON STATE HIGHWAY 83
 ME3311' FOR 0.97 KM (0.60 MI) TO A PAVED ROAD RIGHT. TURN RIGHT, NORTH, ON
 ME3311' BURNHAM AVENUE FOR 3.19 KM (1.98 MI) TO A PAVED CROSSROAD. TURN
 ME3311' RIGHT, EAST, ON GLENWOOD-LANSING ROAD FOR 0.10 KM (0.06 MI) TO THE
 ME3311' AIRPORT ENTRANCE ON THE RIGHT. TURN RIGHT, SOUTH ON PAVEMENT FOR
 ME3311' 0.10 KM (0.06 MI) TO A GATE AT OFFICE ON THE LEFT. PASS THROUGH GATE
 ME3311' AND GO SOUTHWEST ON APRON AND THEN SOUTH ON RAMP FOR 0.23 KM
 ME3311' (0.14 MI) TO THE WEST END OF THE RUNWAY. CROSS RUNWAY FOR 0.06 KM
 ME3311' (0.04 MI) TO THE GRASS STRIP NORTH OF THE PLOWED FIELD. TURN LEFT,
 ME3311' EAST, ON THE GRASS ALONG SOUTH SIDE OF RUNWAY FOR 0.65 KM (0.40 MI)
 ME3311' TO THE STATION ON THE RIGHT JUST BEFORE REACHING THE TURF RUNWAY.

M33311.txt

ME3311' THE STATION IS LOCATED 64.0 M (210.0 FT) SOUTH FROM THE CENTER OF
ME3311' RUNWAY 9-27, 60.6 M (198.8 FT) SOUTHEAST FROM A RUNWAY LIGHT, 53.7 M
ME3311' (176.2 FT) SOUTHWEST FROM THE SOUTHWEST CORNER OF THE ASPHALT
ME3311' CROSSING PAD FOR THE TURF RUNWAY, AND 50.5 M (165.7 FT) WEST FROM THE
ME3311' APPROXIMATE CENTER OF THE TURF RUNWAY.

ME3311' NOTE--ACCESS TO DATUM POINT IS HAD THROUGH A 5-INCH LOGO CAP.

ME3311

STATION RECOVERY (1997)

ME3311

ME3311' RECOVERY NOTE BY AMERICAN SURVEYING CONSULTANTS PC 1997 (PS)
ME3311' RECOVERY NOTE. RECOVERED IN GOOD CONDITION AS DESCRIBED IN PREVIOUS
ME3311' DESCRIPTION.

ME3311

STATION RECOVERY (1997)

ME3311

ME3311' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1997 (CSM)
ME3311' THE STATION IS LOCATED ABOUT 45 KM (27.95 MI) EAST OF JOLIET, 9 KM
ME3311' (5.60 MI) SOUTH OF THE SOUTH SIDE OF CHICAGO, 1 KM (0.60 MI) WEST OF
ME3311' THE ILLINOIS-INDIANA BORDER, ON THE SOUTHEAST SIDE OF LANSING, AT THE
ME3311' LANSING MUNICIPAL AIRPORT, NEAR MIDFIELD, AND IN THE SOUTHWEST
ME3311' QUADRANT OF THE JUNCTION OF ASPHALT RUNWAY 9-27 AND TURF RUNWAY 18-36.
ME3311' OWNERSHIP--VILLAGE OF LANSING, LANSING VILLAGE MALL, LANSING IL 60438,
ME3311' PHONE 312-895-8844. CONTACT BOB MALKAS IN ADVANCE FOR ACCESS THROUGH
ME3311' THE LOCKED GATE AND PERMISSION TO OCCUPY THIS STATION. TO REACH FROM
ME3311' THE OVERPASS AT THE JUNCTION OF COMBINED INTERSTATE HIGHWAYS 94 AND
ME3311' 80, AND STATE HIGHWAY 83 (TORRENCE AVENUE) AT EXIT 161 IN LANSING, GO
ME3311' SOUTH ON TORRENCE AVENUE FOR 3.70 KM (2.30 MI) TO A PAVED CROSSROAD
ME3311' (GLENWOOD LANSING ROAD). TURN LEFT, EAST ON THE ROAD FOR 1.60 KM
ME3311' (1.00 MI) TO A PAVED CROSSROAD (BURNHAM ROAD). CONTINUE AHEAD, EAST
ME3311' ON GLENWOOD LANSING ROAD FOR 0.08 KM (0.05 MI) TO THE PAVED AIRPORT
ME3311' ENTRANCE ROAD ON THE RIGHT. TURN RIGHT, SOUTH, PASSING THROUGH A
ME3311' PARKING LOT FOR 0.1 KM (0.05 MI) TO A GATE AT THE APRON AND THE OFFICE
ME3311' ON THE LEFT. PASS THROUGH THE GATE, SOUTH-SOUTHEAST ACROSS THE APRON,
ME3311' THEN SOUTH ALONG A CONNECTOR TAXI FOR 0.23 KM (0.15 MI) TO THE
ME3311' JUNCTION OF RUNWAY END 9. CONTINUE SOUTH, CROSSING THE RUNWAY FOR
ME3311' 0.08 KM (0.05 MI) TO THE SOUTH SIDE OF THE RUNWAY. TURN LEFT, EAST
ME3311' ALONG THE RUNWAY FOR 0.65 KM (0.40 MI) TO THE STATION ON THE RIGHT
ME3311' JUST BEFORE REACHING THE TURF RUNWAY. THE STATION IS A PUNCH HOLE TOP
ME3311' CENTER OF A STAINLESS STEEL ROD IN A 2.5 CM GREASE FILLED SLEEVE 1 M
ME3311' (3.3 FT) LONG ENCASED IN A 12.7 CM PVC PIPE WITH A LOGO CAP SURROUNDED
ME3311' BY CONCRETE RECESSED 3 CM BELOW THE GROUND. IT IS 63.8 M (209.3 FT)
ME3311' SOUTH OF THE CENTER OF RUNWAY 9-27, 62.7 M (205.7 FT) SOUTHWEST OF THE
ME3311' RUNWAY LIGHT AT THE JUNCTION OF THE RUNWAYS, 60.6 M (198.8 FT)
ME3311' SOUTHEAST OF THE SECOND RUNWAY LIGHT WEST OF THE JUNCTION OF THE
ME3311' RUNWAYS, 53.7 M (176.2 FT) SOUTHWEST OF THE SOUTHWEST CORNER OF THE
ME3311' ASPHALT CROSSING PAD FOR THE TURF RUNWAY, 52.8 M (173.2 FT) SOUTH OF
ME3311' THE SOUTH EDGE OF RUNWAY 9-27, 50.5 M (165.7 FT) WEST OF THE
ME3311' APPROXIMATE CENTER OF THE TURF RUNWAY AND 0.6 M (2.0 FT) NORTH OF A
ME3311' FIBERGLASS WITNESS POST. NOTE--THIS STATION IS DESIGNATED AS THE
ME3311' PRIMARY AIRPORT CONTROL STATION.

ME3311

STATION RECOVERY (1997)

ME3311

ME3311' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1997 (CSM)
ME3311' RECOVERED AS DESCRIBED.

ME3311

STATION RECOVERY (1999)

ME3311

ME3311' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1999 (AJL)
ME3311' RECOVERED AS DESCRIBED.

ME3311

STATION RECOVERY (2000)

ME3311

M33311.txt

ME3311' RECOVERY NOTE BY SMITH ENG CONS INC 2000 (MRF)
ME3311' RECOVERED AS DESCRIBED USING 1997 DESCRIPTION
ME3311'



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS AJ 2776

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: $\pm 60^{\circ}$	START	END
RECEIVER: LEICA TR530	12777	VISIBILITY: N/A	TIME: 11:14A	12:00P
ANTENNA: LEICA AT502	02715	PRECIPITATION: N/A	SATELLITES: 6/7	8/8
ANTENNA HEIGHT: 3.95 FT		WIND SPEED: N/A	PDOP: 3.2	2.2
1.206 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	543

PHOTOGRAPH 'A'



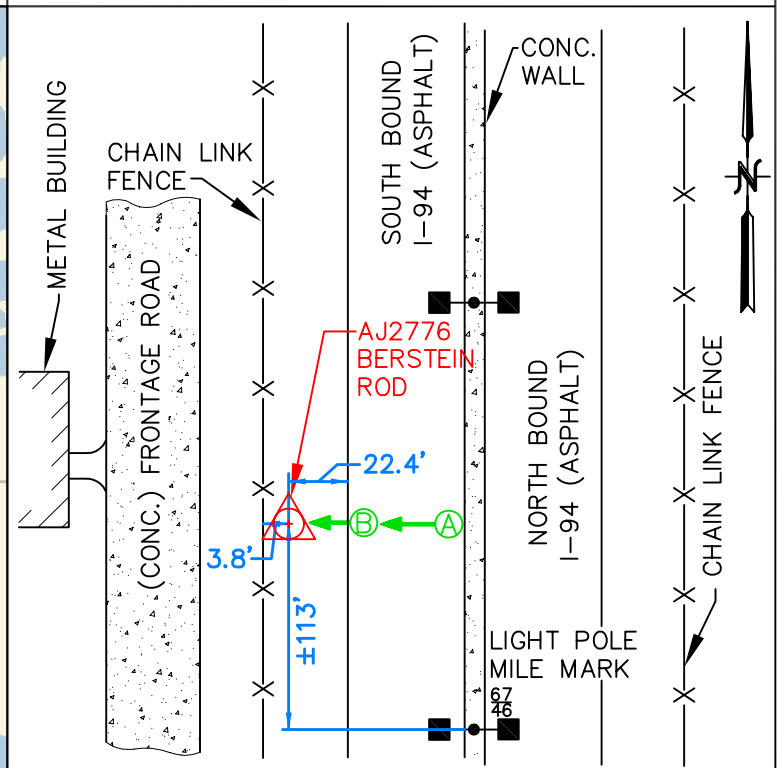
PHOTOGRAPH 'B'



VICINITY



SITE



AJ2776.txt

AJ2776 *****
 AJ2776 DESIGNATION - C0094 3B
 AJ2776 PID - AJ2776
 AJ2776 STATE/COUNTY- IL/COOK
 AJ2776 USGS QUAD - LAKE CALUMET (1997)

AJ2776
 AJ2776 *CURRENT SURVEY CONTROL

AJ2776*	NAD 83(1997)-	41 40 32.54063(N)	087 36 06.22524(W)	ADJUSTED
AJ2776*	NAVD 88	- 178.5 (meters)	586. (feet)	GPS OBS
AJ2776	X	- 199,650.448 (meters)		COMP
AJ2776	Y	- 4,766,954.066 (meters)		COMP
AJ2776	Z	- 4,218,864.594 (meters)		COMP
AJ2776	LAPLACE CORR-	-1.10 (seconds)		DEFLEC99
AJ2776	ELLIP HEIGHT-	145.07 (meters)	(04/23/01)	GPS OBS
AJ2776	GEOID HEIGHT-	-33.44 (meters)		GEOID03

AJ2776
 AJ2776 HORZ ORDER - FIRST
 AJ2776 ELLP ORDER - THIRD CLASS I
 AJ2776
 AJ2776. The horizontal coordinates were established by GPS observations
 AJ2776. and adjusted by the National Geodetic Survey in April 2001.
 AJ2776
 AJ2776. The orthometric height was determined by GPS observations and a
 AJ2776. high-resolution geoid model.
 AJ2776
 AJ2776. Photographs are available for this station.
 AJ2776
 AJ2776. The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ2776
 AJ2776. The Laplace correction was computed from DEFLEC99 derived deflections.
 AJ2776
 AJ2776. The ellipsoidal height was determined by GPS observations
 AJ2776. and is referenced to NAD 83.
 AJ2776
 AJ2776. The geoid height was determined by GEOID03.

	North	East	Units	Scale Factor	Converg.
AJ2776; SPC ILE	- 556,342.718	360,919.412	MT	1.00002065	+0 29 11.3
AJ2776; UTM 16	- 4,613,946.104	449,913.886	MT	0.99963087	-0 24 00.4
AJ2776!	- Elev Factor	x Scale Factor	=	Combined Factor	
AJ2776! SPC ILE	- 0.99997725	x 1.00002065	=	0.99999790	
AJ2776! UTM 16	- 0.99997725	x 0.99963087	=	0.99960813	

AJ2776
 AJ2776: Primary Azimuth Mark Grid Az
 AJ2776: SPC ILE - C0094 3A 357 11 53.1
 AJ2776: UTM 16 - C0094 3A 358 05 04.8

PID	Reference Object	Distance	Geod. Az
			ddmmss.s
AJ2776	AJ2777 C0094 3A	APPROX. 0.7 KM	3574104.4

AJ2776
 AJ2776 SUPERSEDED SURVEY CONTROL
 AJ2776
 AJ2776. No superseded survey control is available for this station.
 AJ2776
 AJ2776 U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM4991413946(NAD 83)
 AJ2776_MARKER: I = METAL ROD
 AJ2776_SETTING: 59 = STAINLESS STEEL ROD IN SLEEVE (10 FT. +)

AJ2776_STAMPING: C0094-3B
AJ2776_MARK LOGO: 1LDT
AJ2776_PROJECTION: RECESSED 5 CENTIMETERS
AJ2776_MAGNETIC: A = STEEL ROD ADJACENT TO MONUMENT
AJ2776_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AJ2776_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ2776+SATELLITE: SATELLITE OBSERVATIONS - June 28, 2000
AJ2776_ROD/PIPE-DEPTH: 4.9 meters
AJ2776_SLEEVE-DEPTH : 0.9 meters

AJ2776
AJ2776 HISTORY - Date Condition Report By
AJ2776 HISTORY - 20000628 MONUMENTED SECI

STATION DESCRIPTION

AJ2776' DESCRIBED BY SMITH ENG CONS INC 2000 (MRF)
AJ2776' STATION IS LOCATED WITHIN THE CITY LIMITS OF CHICAGO APPROXIMATELY
AJ2776' 2.5 MI EAST OF CALUMET PARK IN SECTION 27, T37N, R14E. TO REACH FROM
AJ2776' THE JUNCTION OF INTERSTATE 94 AND US RT 12/20 PROCEED SOUTH ON
AJ2776' INTERSTATE 94 EASTBOUND FOR 4.3 MI TO THE STATION LOCATED 325 FT
AJ2776' SOUTHWEST OF MILE MARKER 67.38. STATION IS LOCATED 0.65 MI SOUTH OF
AJ2776' 115TH ST, 110 FT NORTHWEST OF MILE MARKER 67.46, 36 FT SOUTH OF
AJ2776' ENTRANCE TO SHOPS WITH ADDRESS 12040 E. 120TH ST, 45.0 FT
AJ2776' SOUTHWEST OF PK NAIL IN PAVEMENT, 48.5 FT NORTHWEST OF PK NAIL IN
AJ2776' PAVEMENT, 3.5 FT EAST OF CHAINLINK FENCE, AND 3.5 FT EAST OF ORANGE
AJ2776' FIBERGLASS WITNESS POST. STATION MAY BE ACCESSED FROM E. 120TH ST
AJ2776' WHICH IS ALSO A FRONTAGE ROAD THAT CONNECTS 115TH AND 130TH
AJ2776' STREETS. NOTE- ACCESS TO DATUM POINT THROUGH 6 INCH LOGO CAP.
AJ2776' DATUM POINT IS 0.35 FT BELOW CAP. (WB)

AJ2776'
AJ2776'
AJ2776'
AJ2776'
AJ2776'
AJ2776'
AJ2776'
AJ2776'



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS AJ 2777

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12777	VISIBILITY: N/A	TIME: 10:19A	11:05A
ANTENNA: LEICA AT502	02715	PRECIPITATION: N/A	SATELLITES: 7/7	7/7
ANTENNA HEIGHT: 4.12 FT		WIND SPEED: N/A	PDOP: 2.2	2.7
1.255 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	549

PHOTOGRAPH 'A'



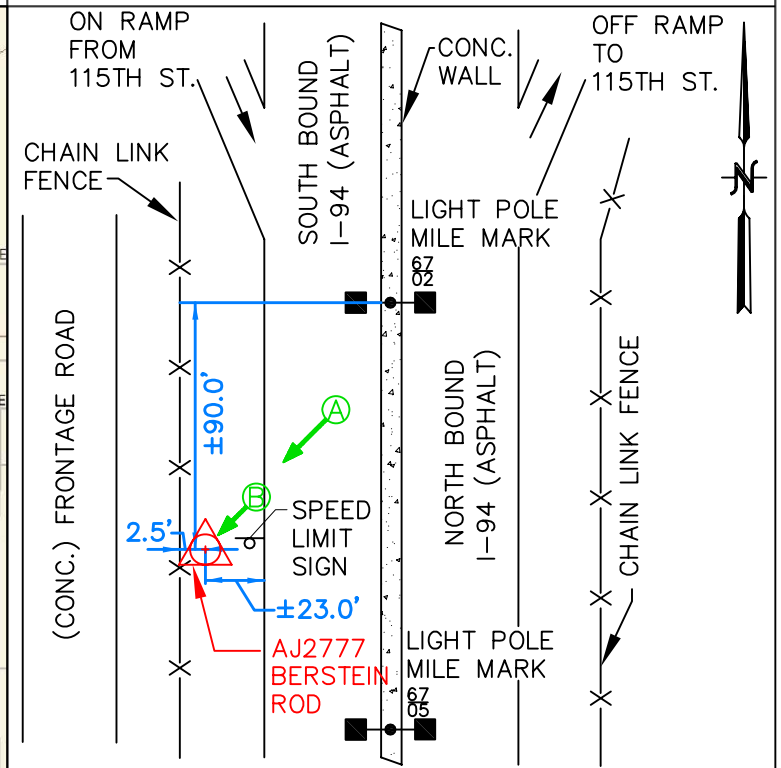
PHOTOGRAPH 'B'



VICINITY



SITE



AJ2777.txt

AJ2777 *****
 AJ2777 DESIGNATION - C0094 3A
 AJ2777 PID - AJ2777
 AJ2777 STATE/COUNTY- IL/COOK
 AJ2777 USGS QUAD - LAKE CALUMET (1997)

AJ2777
 AJ2777 *CURRENT SURVEY CONTROL

AJ2777*	NAD 83(1997)-	41 40 54.01980(N)	087 36 07.38376(W)	ADJUSTED
AJ2777*	NAVD 88	- 178.1 (meters)	584. (feet)	GPS OBS
AJ2777	X	- 199,605.222 (meters)		COMP
AJ2777	Y	- 4,766,514.558 (meters)		COMP
AJ2777	Z	- 4,219,359.228 (meters)		COMP
AJ2777	LAPLACE CORR-	-1.08 (seconds)		DEFLEC99
AJ2777	ELLIP HEIGHT-	144.59 (meters)	(04/23/01)	GPS OBS
AJ2777	GEOID HEIGHT-	-33.44 (meters)		GEOID03

AJ2777
 AJ2777 HORZ ORDER - FIRST
 AJ2777 ELLP ORDER - THIRD CLASS I

AJ2777 The horizontal coordinates were established by GPS observations
 AJ2777 and adjusted by the National Geodetic Survey in April 2001.
 AJ2777 The orthometric height was determined by GPS observations and a
 AJ2777 high-resolution geoid model.
 AJ2777 Photographs are available for this station.
 AJ2777 The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ2777 The Laplace correction was computed from DEFLEC99 derived deflections.
 AJ2777 The ellipsoidal height was determined by GPS observations
 AJ2777 and is referenced to NAD 83.
 AJ2777 The geoid height was determined by GEOID03.

	North	East	Units	Scale Factor	Converg.
AJ2777; SPC ILE	- 557,005.155	360,886.991	MT	1.00002060	+0 29 10.7
AJ2777; UTM 16	- 4,614,608.704	449,891.728	MT	0.99963090	-0 24 01.3
AJ2777!	- Elev Factor	x Scale Factor	=	Combined Factor	
AJ2777! SPC ILE	- 0.99997732	x 1.00002060	=	0.9999792	
AJ2777! UTM 16	- 0.99997732	x 0.99963090	=	0.99960823	

AJ2777
 AJ2777: Primary Azimuth Mark Grid Az
 AJ2777: SPC ILE - C0094 3B 177 11 52.9
 AJ2777: UTM 16 - C0094 3B 178 05 04.9

PID	Reference Object	Distance	Geod. Az
			ddmmss.s
AJ2777	AJ2776 C0094 3B	APPROX. 0.7 KM	1774103.6

AJ2777
 AJ2777 SUPERSEDED SURVEY CONTROL

AJ2777 No superseded survey control is available for this station.
 AJ2777 U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM4989214609(NAD 83)
 AJ2777_MARKER: I = METAL ROD
 AJ2777_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL

AJ2777+WITH SETTING: INFORMATION.
AJ2777_STAMPING: C0094-3A
AJ2777_MARK LOGO: 1LDT
AJ2777_PROJECTION: RECESSED 3 CENTIMETERS
AJ2777_MAGNETIC: A = STEEL ROD ADJACENT TO MONUMENT
AJ2777_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AJ2777_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ2777+SATELLITE: SATELLITE OBSERVATIONS - June 28, 2000
AJ2777_ROD/PIPE-DEPTH: 1.2 meters
AJ2777_SLEEVE-DEPTH : 0.9 meters

AJ2777
AJ2777 HISTORY - Date Condition Report By
AJ2777 HISTORY - 20000628 MONUMENTED SECI

AJ2777
AJ2777 STATION DESCRIPTION
AJ2777

AJ2777' DESCRIBED BY SMITH ENG CONS INC 2000 (MRF)
AJ2777' STATION IS LOCATED WITHIN THE CITY OF CHICAGO APPROXIMATELY 3.0 MI
AJ2777' NORTHEAST OF CALUMET PARK IN SECTION 22, T37N, R14E. TO REACH FROM
AJ2777' THE JUNCTION OF US RT 12/20 AND INTERSTATE 94 PROCEED SOUTH ON I-94
AJ2777' EASTBOUND 3.8 MI TO THE STATION LOCATED 21.0 FT WEST OF
AJ2777' EDGE-OF-PAVEMENT OF I-94 EASTBOUND. STATION IS LOCATED 0.25 MI
AJ2777' SOUTH OF 115TH ST, 230 FT SOUTH OF AGGREGATE ENTRANCE OFF OF EAST
AJ2777' 120TH ST(FRONTAGE RD), 90 FT SOUTH OF MILE MARKER 67.02, 130 FT
AJ2777' NORTH OF MILE MARKER 67.05, 2.5 FT EAST OF CHAIN LINK FENCE, AND 2.5
AJ2777' FT
AJ2777' EAST OF ORANGE FIBERGLASS WITNESS POST. STATION MAY BE REACHED
AJ2777' FROM I-94 EASTBOUND OR E. 120TH STREET (FRONTAGE RD) THAT
AJ2777' CONNECTS 115TH STREET AND 130TH STREET. NOTE- ACCESS TO DATUM
AJ2777' POINT THROUGH 6 INCH LOGO CAP. DATUM POINT IS 0.50 FT BELOW CAP.
AJ2777' THE ROD WAS DRIVEN TO REFUSAL AND ANCHORED. PK NAILS ARE SET IN
AJ2777' WOOD PHYSICAL TIES. (WB)
AJ2777'
AJ2777'



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS ME 1825

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12777	VISIBILITY: N/A	TIME: 3:56P	4:31P
ANTENNA: LEICA AT502	02715	PRECIPITATION: N/A	SATELLITES: 10/11	9/9
ANTENNA HEIGHT: 3.72 FT		WIND SPEED: N/A	PDOP: 2.0	2.4
1.135 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	543

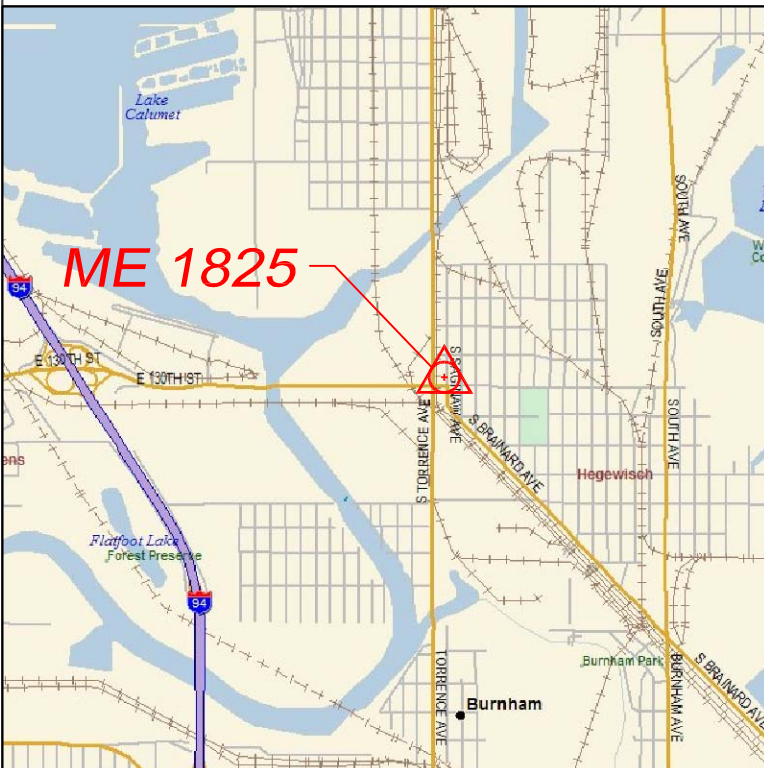
PHOTOGRAPH 'A'



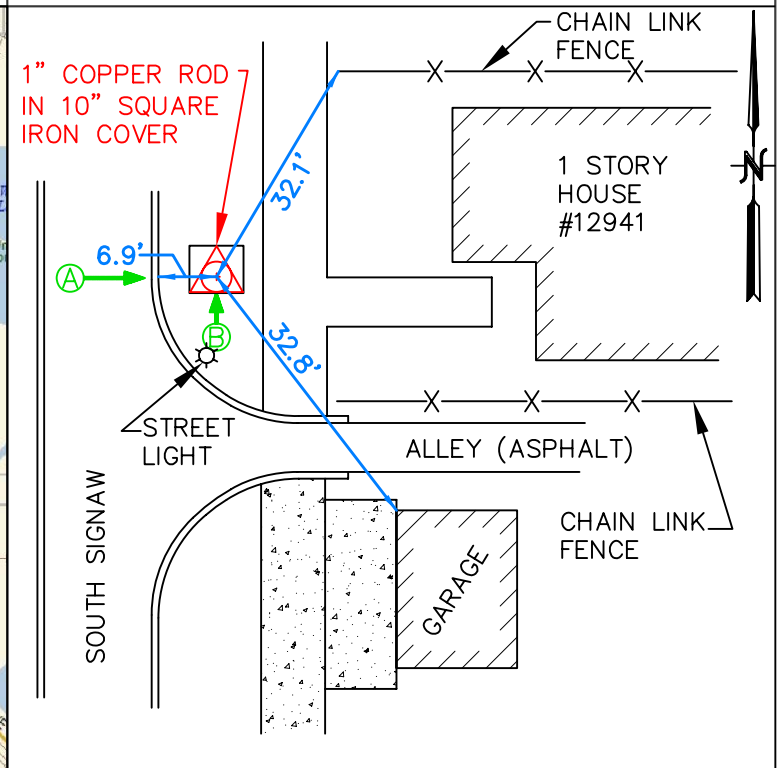
PHOTOGRAPH 'B'



VICINITY



SITE



ME1825.txt

ME1825 *****
 ME1825 DESIGNATION - 387
 ME1825 PID - ME1825
 ME1825 STATE/COUNTY- IL/COOK
 ME1825 USGS QUAD - LAKE CALUMET (1997)

*CURRENT SURVEY CONTROL

ME1825* NAD 83(1997)- 41 39 35.12096(N) 087 33 28.73727(W) ADJUSTED
 ME1825* NAVD 88 - 178.284 (meters) 584.92 (feet) ADJUSTED
 ME1825 LAPLACE CORR- -1.08 (seconds) DEFLEC99
 ME1825 GEOID HEIGHT- -33.46 (meters) GEOID03
 ME1825 DYNAMIC HT - 178.219 (meters) 584.71 (feet) COMP
 ME1825 MODELED GRAV- 980,258.8 (mgal) NAVD 88

ME1825 HORZ ORDER - SECOND
 ME1825 VERT ORDER - FIRST CLASS II

ME1825. The horizontal coordinates were established by classical geodetic methods and adjusted by the National Geodetic Survey in October 1999.

ME1825. The orthometric height was determined by differential leveling and adjusted by the National Geodetic Survey in June 1991.

ME1825. The Laplace correction was computed from DEFLEC99 derived deflections.

ME1825. The geoid height was determined by GEOID03.

ME1825. The dynamic height is computed by dividing the NAVD 88 geopotential number by the normal gravity value computed on the Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45 degrees latitude (g = 980.6199 gal s.).

ME1825. The modeled gravity was interpolated from observed gravity values.

	North	East	Units	Scale Factor	Converg.
ME1825; SPC I L E	- 554,603.091	364,578.084	MT	1.00002630	+0 30 55.4
ME1825; UTM 16	- 4,612,150.792	453,543.774	MT	0.99962656	-0 22 15.2
ME1825!	- Elev Factor x Scale Factor = Combined Factor				
ME1825! SPC I L E	- 0.99997728	x 1.00002630	=	1.00000358	
ME1825! UTM 16	- 0.99997728	x 0.99962656	=	0.99960385	

	Primary Azimuth Mark	Grid Az
ME1825: SPC I L E	- CORBETT	153 35 33.7
ME1825: UTM 16	- CORBETT	154 28 44.3

PID	Reference Object	Distance	Geod. Az
			dddmss. s
ME2883	CORBETT	413.228 METERS	1540629.1
ME2886	051 COC	189.615 METERS	18452

SUPERSEDED SURVEY CONTROL

ME1825 NAD 83(1997)- 41 39 35.12107(N) 087 33 28.73734(W) AD() 2
 ME1825 NAD 83(1997)- 41 39 35.12619(N) 087 33 28.74528(W) AD() 2
 ME1825 NAD 83(1986)- 41 39 35.12611(N) 087 33 28.74497(W) AD() 2
 ME1825 NAD 27 - 41 39 34.99995(N) 087 33 28.58971(W) AD() 2
 ME1825 NGVD 29 (??/??/92) 178.388 (m) 585.26 (f) ADJ UNCH 1 2

ME1825.txt

ME1825. Superseded values are not recommended for survey control.
ME1825. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
ME1825. See file dsdata.txt to determine how the superseded data were derived.

ME1825

ME1825_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM5354412151(NAD 83)

ME1825_MARKER: B = BOLT

ME1825_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

ME1825_SP_SET: SET IN TOP OF CONCRETE MONUMENT

ME1825_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

ME1825+STABILITY: SURFACE MOTION

ME1825

ME1825	HISTORY	- Date	Condition	Report By
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ME1825	HISTORY	- 1977	MONUMENTED	NGS
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ME1825	HISTORY	- 1947	GOOD	NGS
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ME1825	HISTORY	- 1971	GOOD	NGS
--------	---------	--------	------	-----

ME1825

ME1825

STATION DESCRIPTION

ME1825

ME1825' DESCRIBED BY NATIONAL GEODETIC SURVEY 1977 (JLO)

ME1825' A TRAVERSE WAS MADE TO TRINAGULATION STATION CORBETT USING

ME1825' ELECTRONIC DISTANCE EQUIPMENT.

ME1825'

ME1825' THE MARK IS LOCATED AT THE SOUTH SECTION OF CHICAGO, AT

ME1825' THE INTERSECTION OF 130TH STREET AND SAGINAW AVENUE.

ME1825' IT IS 153 FEET NORTH OF THE NORTH EDGE OF

ME1825' 130TH STREET, 9.5 FEET WEST OF THE CENTER OF SAGINAW

ME1825' AVENUE AND SET IN THE TOP OF A CONCRETE POST COVERED

ME1825' BY A 10-INCH SQUARE IRON COVER THAT IS FLUSH WITH THE

ME1825' GROUND SURFACE.

ME1825

ME1825

STATION RECOVERY (1947)

ME1825

ME1825' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1947

ME1825' AT CHICAGO.

ME1825' AT CHICAGO, ON SAGINAW AVENUE, ABOUT 1/2 BLOCK NORTH OF ITS

ME1825' INTERSECTION WITH 130TH STREET, 9.5 FEET WEST OF THE EAST LINE

ME1825' OF SAGINAW AVENUE, 153 FEET NORTH OF THE NORTH EDGE OF THE NORTH

ME1825' CONCRETE SIDE WALK OF 130TH STREET AND SET IN THE TOP OF A

ME1825' CONCRETE POST COVERED BY A 10-INCH SQUARE IRON COVER PROJECTING

ME1825' 4 INCHES.

ME1825

ME1825

STATION RECOVERY (1971)

ME1825

ME1825' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1971

ME1825' RECOVERED IN GOOD CONDITION.



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS ME 1829

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12777	VISIBILITY: N/A	TIME: 1:10P	1:56P
ANTENNA: LEICA AT502	02715	PRECIPITATION: N/A	SATELLITES: 8/8	9/9
ANTENNA HEIGHT: 3.75 FT		WIND SPEED: N/A	PDOP: 2.4	1.9
1.142 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	552

PHOTOGRAPH 'A'



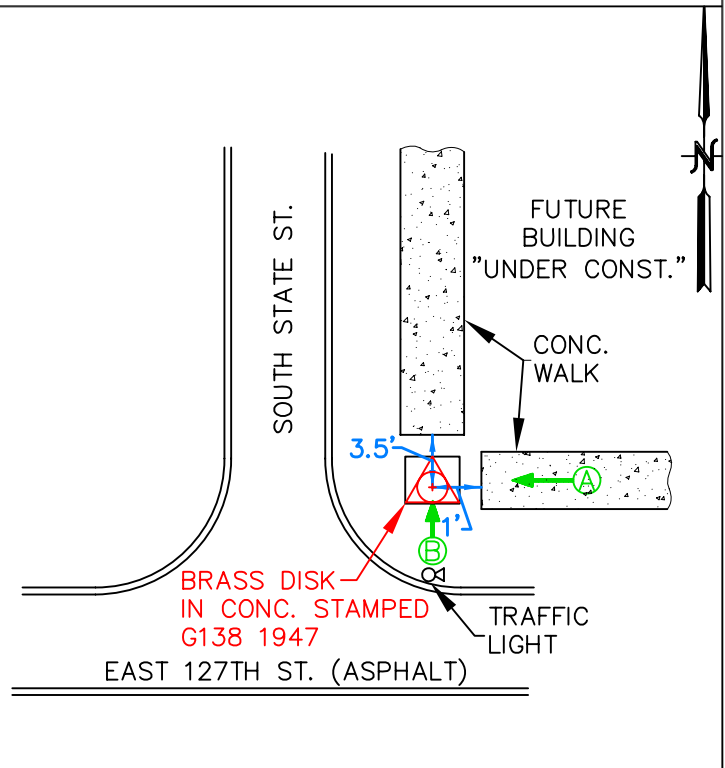
PHOTOGRAPH 'B'



VICINITY



SITE



ME1829.txt

ME1829 *****
 ME1829 DESIGNATION - G 138
 ME1829 PID - ME1829
 ME1829 STATE/COUNTY- IL/COOK
 ME1829 USGS QUAD - LAKE CALUMET (1997)

*CURRENT SURVEY CONTROL

ME1829*	NAD 83(1986)-	41 39 48.	(N)	087 37 19.	(W)	SCALED
ME1829*	NAVD 88	-	183.410	(meters)	601.74	(feet) ADJUSTED

ME1829	GEOID HEIGHT-	-33.43	(meters)			GEOID03
ME1829	DYNAMIC HT -	183.344	(meters)	601.52	(feet)	COMP
ME1829	MODELED GRAV-	980,257.7	(mgal)			NAVD 88

ME1829 VERT ORDER - FIRST CLASS II

ME1829. The horizontal coordinates were scaled from a topographic map and have an estimated accuracy of +/- 6 seconds.

ME1829. The orthometric height was determined by differential leveling and adjusted by the National Geodetic Survey in June 1991.

ME1829. The geoid height was determined by GEOID03.

ME1829. The dynamic height is computed by dividing the NAVD 88 geopotential number by the normal gravity value computed on the Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45 degrees latitude (g = 980.6199 gal s.).

ME1829. The modeled gravity was interpolated from observed gravity values.

	North	East	Units	Estimated Accuracy
ME1829; SPC ILE	- 554,950.	359,250.	MT	(+/- 180 meters Scaled)

SUPERSEDED SURVEY CONTROL

ME1829	NGVD 29 (??/??/92)	183.510	(m)	602.07	(f)	ADJ UNCH	1 2
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ME1829. Superseded values are not recommended for survey control.
 ME1829. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 ME1829. See file dsdata.txt to determine how the superseded data were derived.

ME1829_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM482125(NAD 83)
 ME1829_MARKER: DB = BENCH MARK DISK
 ME1829_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 ME1829_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 ME1829_STAMPING: G 138 1947
 ME1829_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO SURFACE MOTION

ME1829	HISTORY	- Date	Condition	Report By
ME1829	HISTORY	- 1947	MONUMENTED	CGS
ME1829	HISTORY	- 1971	GOOD	NGS
ME1829	HISTORY	- 1977	GOOD	NGS

STATION DESCRIPTION

ME1829' DESCRIBED BY COAST AND GEODETIC SURVEY 1947
 ME1829' 3.2 MI E FROM BLUE ISLAND.
 ME1829' ABOUT 2.5 MILES EAST ALONG VERMONT STREET FROM THE POST OFFICE
 ME1829' AT BLUE ISLAND, THENCE ABOUT 0.75 MILE EAST ALONG 127TH STREET,
 ME1829' AT THE JUNCTION OF SOUTH STATE STREET, 120 FEET SOUTHWEST OF THE

ME1829.txt

ME1829' SOUTHWEST CORNER OF A FRUIT STAND, 39 FEET EAST OF THE CENTER
ME1829' LINE OF SOUTH STATE STREET, 7 FEET NORTH OF THE NORTH CURB OF
ME1829' 127TH STREET, 4.5 FEET NORTH OF A LIGHT POST, 2 FEET WEST OF A
ME1829' WHITE WOODEN WITNESS POST, 0.5 FOOT ABOVE THE JUNCTION, AND
ME1829' SET IN THE TOP OF A CONCRETE POST PROJECTING 6 INCHES.

ME1829

STATION RECOVERY (1971)

ME1829

ME1829

ME1829' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1971

ME1829' RECOVERED IN GOOD CONDITION.

ME1829

ME1829

STATION RECOVERY (1977)

ME1829

ME1829

ME1829' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1977

ME1829' RECOVERED IN GOOD CONDITION.



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS ME 1830

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12777	VISIBILITY: N/A	TIME: 12:16P	1:01P
ANTENNA: LEICA AT502	02715	PRECIPITATION: N/A	SATELLITES: 6/7	7/9
ANTENNA HEIGHT: 5.63 FT		WIND SPEED: N/A	PDOP: 2.4	2.4
1.716 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	541

PHOTOGRAPH 'A'



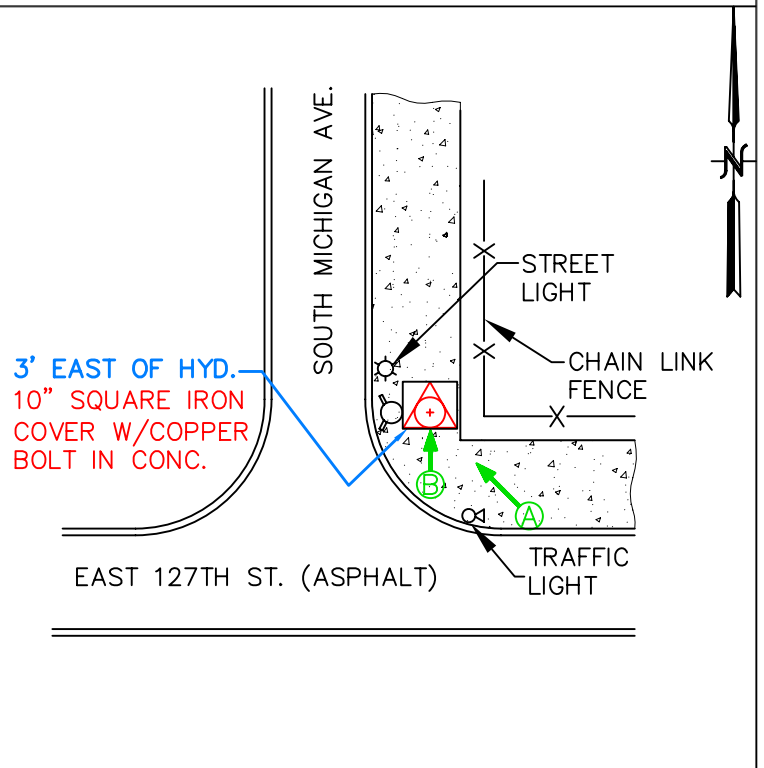
PHOTOGRAPH 'B'



VICINITY



SITE



ME1830.txt

ME1830 *****
ME1830 DESIGNATION - 150
ME1830 PID - ME1830
ME1830 STATE/COUNTY- IL/COOK
ME1830 USGS QUAD - LAKE CALUMET (1997)

*CURRENT SURVEY CONTROL

ME1830* NAD 83(1986)- 41 39 48. (N) 087 37 11. (W) SCALED
ME1830* NAVD 88 - 182.901 (meters) 600.07 (feet) ADJUSTED

ME1830 GEOID HEIGHT- -33.43 (meters) GEOID03
ME1830 DYNAMIC HT - 182.835 (meters) 599.85 (feet) COMP
ME1830 MODELED GRAV- 980,257.8 (mgal) NAVD 88

ME1830 VERT ORDER - FIRST CLASS II

ME1830. The horizontal coordinates were scaled from a topographic map and have
ME1830. an estimated accuracy of +/- 6 seconds.

ME1830. The orthometric height was determined by differential leveling
ME1830. and adjusted by the National Geodetic Survey in June 1991.

ME1830. The geoid height was determined by GEOID03.

ME1830. The dynamic height is computed by dividing the NAVD 88
ME1830. geopotential number by the normal gravity value computed on the
ME1830. Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
ME1830. degrees latitude (g = 980.6199 gal s.).

ME1830. The modeled gravity was interpolated from observed gravity values.

ME1830; North East Units Estimated Accuracy
ME1830; SPC ILE - 554,960. 359,430. MT (+/- 180 meters Scaled)

SUPERSEDED SURVEY CONTROL

ME1830 NGVD 29 (??/??/92) 183.001 (m) 600.40 (f) ADJ UNCH 1 2

ME1830. Superseded values are not recommended for survey control.
ME1830. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
ME1830. See file dsdata.txt to determine how the superseded data were derived.

ME1830_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM484125(NAD 83)
ME1830_MARKER: B = BOLT
ME1830_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
ME1830_SP_SET: SET IN TOP OF CONCRETE MONUMENT
ME1830_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
ME1830+STABILITY: SURFACE MOTION

ME1830 HISTORY - Date Condition Report By
ME1830 HISTORY - UNK MONUMENTED IL1670
ME1830 HISTORY - 1947 GOOD NGS
ME1830 HISTORY - 1971 GOOD NGS
ME1830 HISTORY - 1977 GOOD NGS

STATION DESCRIPTION

ME1830' DESCRIBED BY NATIONAL GEODETIC SURVEY 1947
ME1830' 3.2 MI E FROM BLUE ISLAND.
ME1830' ABOUT 2.5 MILES EAST ALONG VERMONT STREET FROM THE POST OFFICE
ME1830' AT BLUE ISLAND, THENCE ABOUT 0.65 MILES EAST ALONG 127TH STREET,
ME1830' AT THE INTERSECTION OF SOUTH MICHIGAN AVENUE, 6 FEET WEST OF THE

ME1830.txt

ME1830' EAST LINE OF MICHIGAN AVENUE, 8 FEET NORTH OF THE NORTH LINE OF
ME1830' 127TH STREET, 3 FEET EAST OF A FIRE PLUG, AND ABOUT LEVEL WITH
ME1830' THE SIDE WALK. A COPPER BOLT SET IN THE TOP OF A CONCRETE POST
ME1830' COVERED BY A 10-INCH SQUARE IRON COVER WITH HINGED COVER.

ME1830

STATION RECOVERY (1971)

ME1830

ME1830

ME1830' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1971

ME1830' RECOVERED IN GOOD CONDITION.

ME1830

ME1830

STATION RECOVERY (1977)

ME1830

ME1830' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1977

ME1830' RECOVERED IN GOOD CONDITION.



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS ME 1881

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: $\pm 60^{\circ}$	START	END
RECEIVER: LEICA TR530	12777	VISIBILITY: N/A	TIME: 9:09A	9:56A
ANTENNA: LEICA AT502	02715	PRECIPITATION: N/A	SATELLITES: 7/7	6/6
ANTENNA HEIGHT: 3.57 FT		WIND SPEED: N/A	PDOP: 2.0	2.6
1.087 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	555

PHOTOGRAPH 'A'



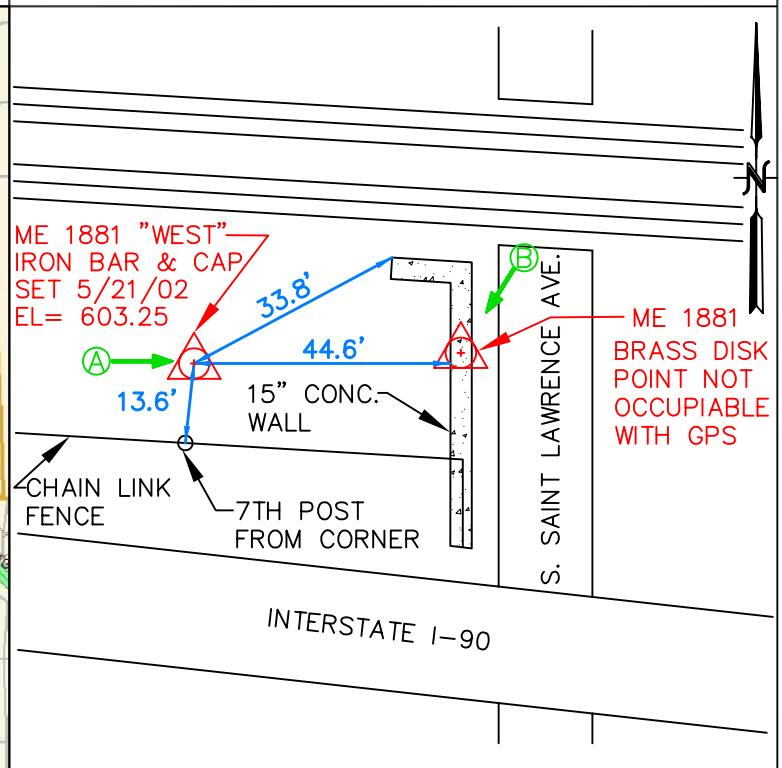
PHOTOGRAPH 'B'



VICINITY



SITE



ME1881.txt

ME1881 *****
 ME1881 DESIGNATION - A 266
 ME1881 PID - ME1881
 ME1881 STATE/COUNTY- IL/COOK
 ME1881 USGS QUAD - JACKSON PARK (1993)

*CURRENT SURVEY CONTROL

ME1881*	NAD 83(1986)-	41 46 04.	(N)	087 36 37.	(W)	SCALED
ME1881*	NAVD 88	-	183.526	(meters)	602.12	(feet) ADJUSTED

ME1881	GEOID HEIGHT-	-33.46	(meters)			GEOID03
ME1881	DYNAMIC HT -	183.462	(meters)	601.91	(feet)	COMP
ME1881	MODELED GRAV-	980,270.4	(mgal)			NAVD 88

ME1881 VERT ORDER - FIRST CLASS I

ME1881. The horizontal coordinates were scaled from a topographic map and have an estimated accuracy of +/- 6 seconds.

ME1881. The orthometric height was determined by differential leveling and adjusted by the National Geodetic Survey in April 1995.

ME1881. The geoid height was determined by GEOID03.

ME1881. The dynamic height is computed by dividing the NAVD 88 geopotential number by the normal gravity value computed on the Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45 degrees latitude (g = 980.6199 gal s.).

ME1881. The modeled gravity was interpolated from observed gravity values.

	North	East	Units	Estimated Accuracy
ME1881; SPC ILE	- 566,560.	360,120.	MT	(+/- 180 meters Scaled)

SUPERSEDED SURVEY CONTROL

ME1881	NAVD 88 (06/15/91)	183.528	(m)	602.12	(f)	UNKNOWN	1 1
ME1881	NGVD 29 (01/19/93)	183.626	(m)	602.45	(f)	ADJUSTED	1 1

ME1881. Superseded values are not recommended for survey control.
 ME1881. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 ME1881. See file dsdata.txt to determine how the superseded data were derived.

ME1881_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM492241(NAD 83)

ME1881_MARKER: DB = BENCH MARK DISK

ME1881_SETTING: 37 = SET IN A MASSIVE RETAINING WALL

ME1881_SP_SET: RETAINING WALL

ME1881_STAMPING: A 266 1968

ME1881_MARK LOGO: CGS

ME1881_MAGNETIC: N = NO MAGNETIC MATERIAL

ME1881_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

ME1881_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

ME1881+SATELLITE: SATELLITE OBSERVATIONS - August 05, 1992

ME1881	HISTORY	- Date	Condition	Report By
ME1881	HISTORY	- 1968	MONUMENTED	CGS
ME1881	HISTORY	- 1977	GOOD	NGS
ME1881	HISTORY	- 19920805	GOOD	NGS

STATION DESCRIPTION

ME1881' DESCRIBED BY COAST AND GEODETIC SURVEY 1968

ME1881.txt

ME1881' AT CHICAGO.

ME1881' AT CHICAGO, ABOUT 1.2 MILES SOUTHEAST ALONG THE PENN CENTRAL
ME1881' RAILROAD FROM THE STATION AT ENGELWOOD, AT THE OVERPASS OVER ST.
ME1881' LAWRENCE AVENUE, SET ON THE TOP OF THE NORTH END OF THE CONCRETE
ME1881' RETAINING WALL ON WEST SIDE OF ST LAWRENCE AVENUE, BETWEEN THE
ME1881' TRACKS AND THE ILLINOIS TOLL ROAD, NEAR THE SOUTH END OF THE
ME1881' WEST CONCRETE AND STONE ABUTMENT OF THE SOUTHERN MOST OVERPASS
ME1881' OVER THE AVENUE, 18 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE
ME1881' SOUTHWEST TRACK, 15 FEET SOUTH OF THE NORTHWEST END OF THE IRON
ME1881' RAILING ON THE SOUTHWEST SIDE OF THE OVERPASS, 0.8 FOOT SOUTH
ME1881' OF THE SOUTH END OF THE WEST ABUTMENT OF THE OVERPASS AND 1/2
ME1881' FOOT BELOW THE LEVEL OF THE TRACK.

ME1881

STATION RECOVERY (1977)

ME1881

ME1881

ME1881' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1977

ME1881' RECOVERED IN GOOD CONDITION.

ME1881

STATION RECOVERY (1992)

ME1881

ME1881

ME1881' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992

ME1881' IN CHICAGO, AT THE INTERSECTION OF THE CONRAIL RAILROAD AND SOUTH
ME1881' SAINT LAWRENCE AVENUE, IN A CONCRETE RETAINING WALL ALONG THE WEST
ME1881' SIDE OF THE AVENUE, BETWEEN THE RAILROAD AND THE CHICAGO SKYWAY TOLL
ME1881' ROAD, 11.4 M (37.4 FT) WEST OF THE AVENUE CENTER, 5.9 M (19.4 FT)
ME1881' SOUTHWEST OF THE NEAR RAIL, AND 0.8 M (2.6 FT) BELOW THE LEVEL OF
ME1881' TRACK.



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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

STATION:
NGS ME 2887

DATE: 5/21/02
CREW: R. DELGADO

INSTRUMENT		WEATHER	OCCUPATION DATA	
MODEL #	SERIAL #	TEMPERATURE: ±60°	START	END
RECEIVER: LEICA TR530	12777	VISIBILITY: N/A	TIME: 2:24P	3:10P
ANTENNA: LEICA AT502	02715	PRECIPITATION: N/A	SATELLITES: 8/9	8/9
ANTENNA HEIGHT: 4.13 FT		WIND SPEED: N/A	PDOP: 2.0	2.1
1.257 M		(*N/A = NOT AVAILABLE)	EPOCHS: 0	553

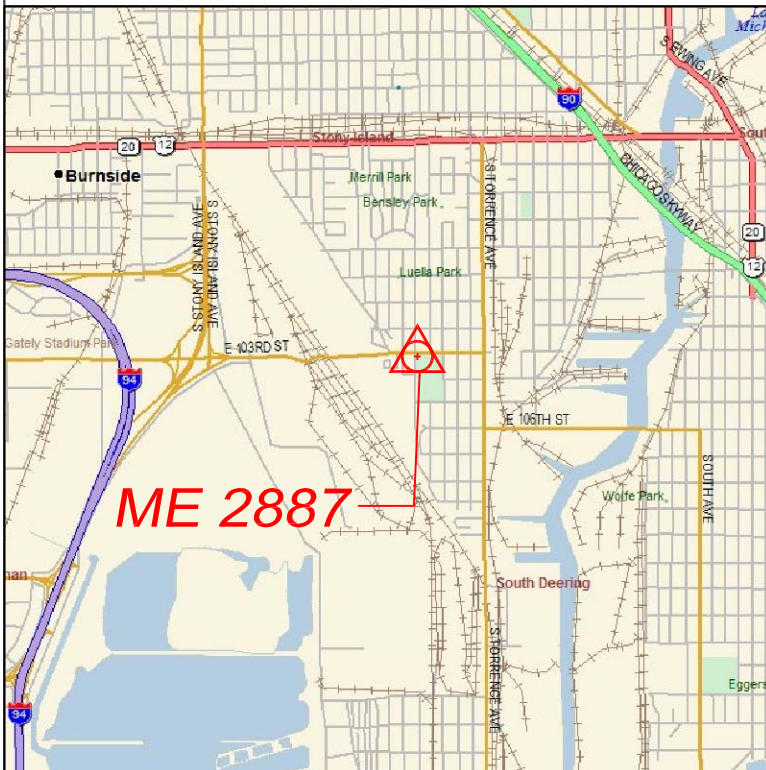
PHOTOGRAPH 'A'



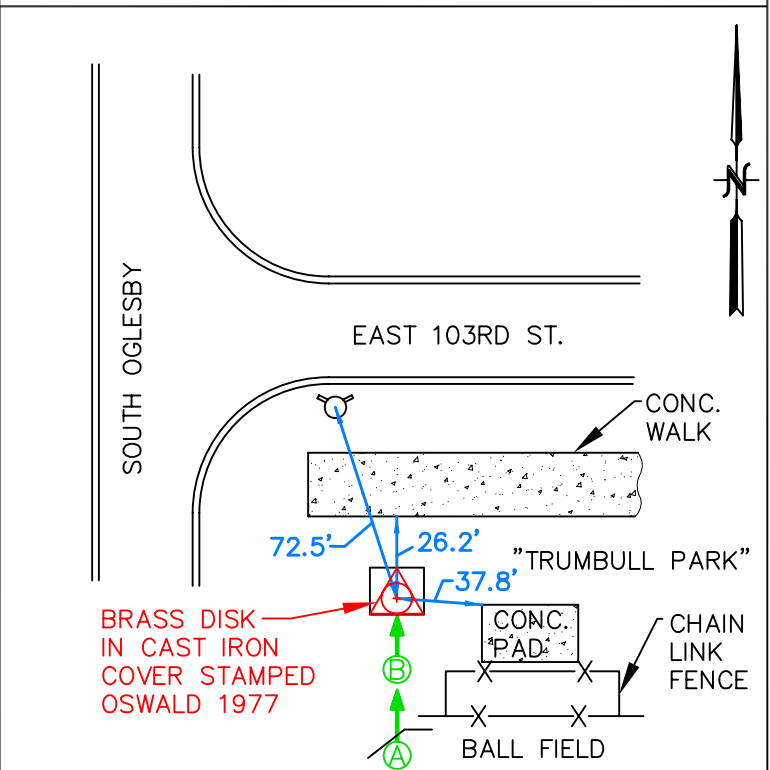
PHOTOGRAPH 'B'



VICINITY



SITE



ME2887.txt

ME2887 *****
 ME2887 DESIGNATION - OSWALD
 ME2887 PID - ME2887
 ME2887 STATE/COUNTY- IL/COOK
 ME2887 USGS QUAD - LAKE CALUMET (1997)

*CURRENT SURVEY CONTROL

ME2887*	NAD 83(1997)-	41 42 28.45582(N)	087 33 55.23208(W)	ADJUSTED
ME2887*	NAVD 88	- 177.809 (meters)	583.36 (feet)	ADJUSTED
ME2887	LAPLACE CORR-	-0.79 (seconds)		DEFLEC99
ME2887	GEOID HEIGHT-	-33.45 (meters)		GEOID03
ME2887	DYNAMIC HT -	177.746 (meters)	583.15 (feet)	COMP
ME2887	MODELED GRAV-	980,265.5 (mgal)		NAVD 88

ME2887 HORZ ORDER - FIRST
 ME2887 VERT ORDER - FIRST CLASS II

ME2887. The horizontal coordinates were established by classical geodetic methods and adjusted by the National Geodetic Survey in October 1999.

ME2887. The orthometric height was determined by differential leveling and adjusted by the National Geodetic Survey in April 1995.

ME2887. The Laplace correction was computed from DEFLEC99 derived deflections.

ME2887. The geoid height was determined by GEOID03.

ME2887. The dynamic height is computed by dividing the NAVD 88 geopotential number by the normal gravity value computed on the Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45 degrees latitude (g = 980.6199 gal s.).

ME2887. The modeled gravity was interpolated from observed gravity values.

	North	East	Units	Scale Factor	Converg.
ME2887; SPC I L E	- 559,945.251	363,917.430	MT	1.00002525	+0 30 39.6
ME2887; UTM 16	- 4,617,500.401	452,966.102	MT	0.99962722	-0 22 34.1
ME2887!	Elev Factor x Scale Factor = Combined Factor				
ME2887! SPC I L E	- 0.99997736	x 1.00002525	=	1.00000261	
ME2887! UTM 16	- 0.99997736	x 0.99962722	=	0.99960459	

	Primary Azimuth Mark	Grid Az
ME2887: SPC I L E	- PAVIA	018 17 53.9
ME2887: UTM 16	- PAVIA	019 11 07.6

PID	Reference Object	Distance	Geod. Az
ME2887	ME2669 PAVIA	APPROX. 5.8 KM	0184833.5
ME2887	ME3354 OSWALD RM 1	29.903 METERS	08944
ME2887	ME3355 OSWALD RM 2	26.835 METERS	22059

SUPERSEDED SURVEY CONTROL

ME2887	NAD 83(1997)-	41 42 28.45600(N)	087 33 55.23224(W)	AD() 1
ME2887	NAD 83(1997)-	41 42 28.46110(N)	087 33 55.24088(W)	AD() 1
ME2887	NAD 83(1986)-	41 42 28.46128(N)	087 33 55.24045(W)	AD() 1
ME2887	NAD 27	- 41 42 28.33399(N)	087 33 55.07892(W)	AD() 1
ME2887	NGVD 29 (01/19/93)	177.922 (m)	583.73 (f)	ADJUSTED 1 2

ME2887.txt

ME2887

ME2887. Superseded values are not recommended for survey control.
ME2887. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
ME2887. See file dsdata.txt to determine how the superseded data were derived.

ME2887

ME2887_U. S. NATIONAL GRID SPATIAL ADDRESS: 16TDM5296617500(NAD 83)

ME2887_MARKER: DS = TRIANGULATION STATION DISK

ME2887_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

ME2887_SP_SET: CONCRETE POST

ME2887_STAMPING: OSWALD 1977

ME2887_MARK LOGO: NGS

ME2887_MAGNETIC: N = NO MAGNETIC MATERIAL

ME2887_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

ME2887+STABILITY: SURFACE MOTION

ME2887_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR

ME2887+SATELLITE: SATELLITE OBSERVATIONS - August 06, 1992

ME2887

ME2887	HISTORY	- Date	Condition	Report By
ME2887	HISTORY	- 1977	MONUMENTED	NGS
ME2887	HISTORY	- 1977	GOOD	NGS
ME2887	HISTORY	- 1979	GOOD	NGS
ME2887	HISTORY	- 19920806	GOOD	NGS

ME2887

ME2887

STATION DESCRIPTION

ME2887

ME2887' DESCRIBED BY NATIONAL GEODETIC SURVEY 1977 (JLO)

ME2887' THE STATION IS LOCATED IN THE SOUTH SECTION OF CHICAGO IN THE

ME2887' NORTHWEST CORNER OF TRUMBULL CITY PARK, IN THE

ME2887' SOUTHEAST ANGLE OF THE INTERSECTION OF EAST 103RD STREET AND

ME2887' SOUTH OGLESBY AVENUE. ADDRESS FOR THE STATION IS 2407 EAST

ME2887' 103RD STREET.

ME2887'

ME2887' STATION MARKS, STAMPED---OSWALD 1977---, ARE STANDARD DISKS.

ME2887' THE SURFACE DISK IS SET IN THE TOP OF A 12-INCH CYLINDRICAL

ME2887' CONCRETE MONUMENT THAT IS 6 INCHES BELOW A CAST IRON COVER

ME2887' WHICH HAS NATIONAL GEODETIC SURVEY CAST ON ITS TOP.

ME2887' IT IS 105 FEET EAST OF THE CENTER

ME2887' OF SOUTH OGLESBY AVENUE AND 60 FEET SOUTH OF THE CENTER OF

ME2887' 103RD STREET. THE UNDERGROUND DISK IS SET IN THE TOP OF AN

ME2887' IRREGULAR MASS OF CONCRETE 42 INCHES BELOW THE GROUND SURFACE.

ME2887'

ME2887' REFERENCE MARK 1, STAMPED---OSWALD NO 1 1977---, IS A STANDARD

ME2887' DISK, SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT

ME2887' THAT IS FLUSH WITH THE GROUND SURFACE. IT IS 60 FEET SOUTH OF

ME2887' THE CENTER OF 103RD STREET AND 20 FEET NORTHEAST OF A LIGHT

ME2887' POLE.

ME2887'

ME2887' REFERENCE MARK 2, STAMPED---OSWALD NO 2 1977---, IS A STANDARD

ME2887' DISK, SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT

ME2887' THAT IS FLUSH WITH THE GROUND SURFACE. IT IS 42 FEET EAST OF

ME2887' THE CENTER OF SOUTH OGLESBY AVENUE AND 13 FEET NORTH-NORTHEAST

ME2887' OF A 10-INCH OAK TREE.

ME2887'

ME2887' NO SUITABLE PLACE TO ESTABLISH AN AZIMUTH MARK.

ME2887'

ME2887' HEIGHT OF LIGHT ABOVE THE STATION MARK WAS 30.5 METERS.

ME2887

ME2887

STATION RECOVERY (1977)

ME2887

ME2887' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1977

ME2887' RECOVERED IN GOOD CONDITION.

ME2887

ME2887

STATION RECOVERY (1979)

ME2887.txt

ME2887

ME2887' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1979 (LHD)
ME2887' STATION MARK AND BOTH REFERENCE MARKS RECOVERED IN GOOD CONDITION
ME2887' AS DESCRIBED.

ME2887

STATION RECOVERY (1992)

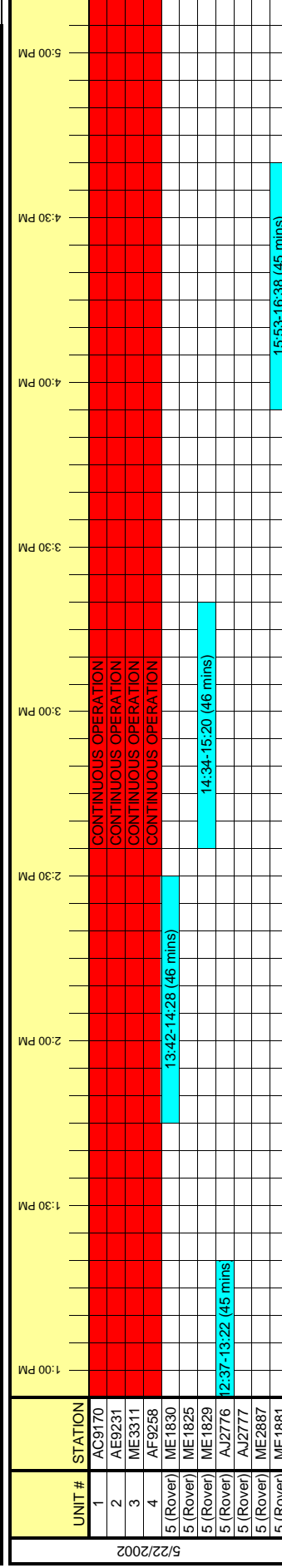
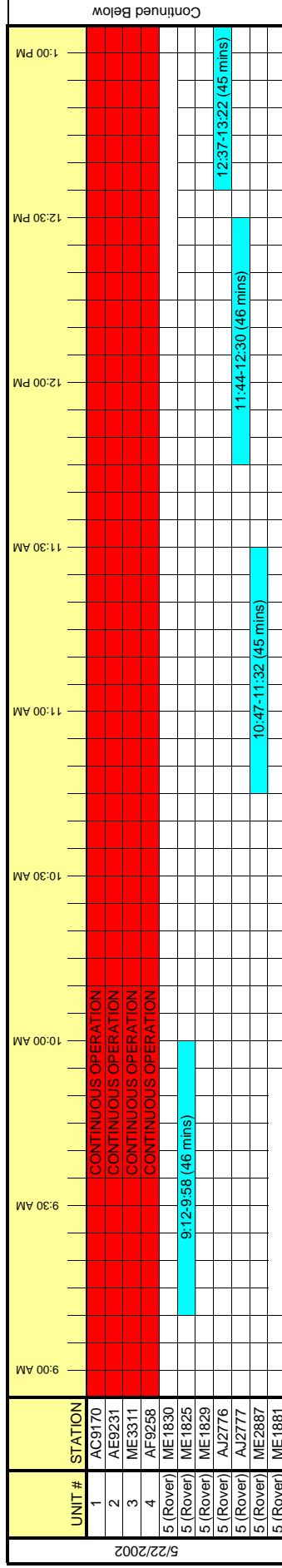
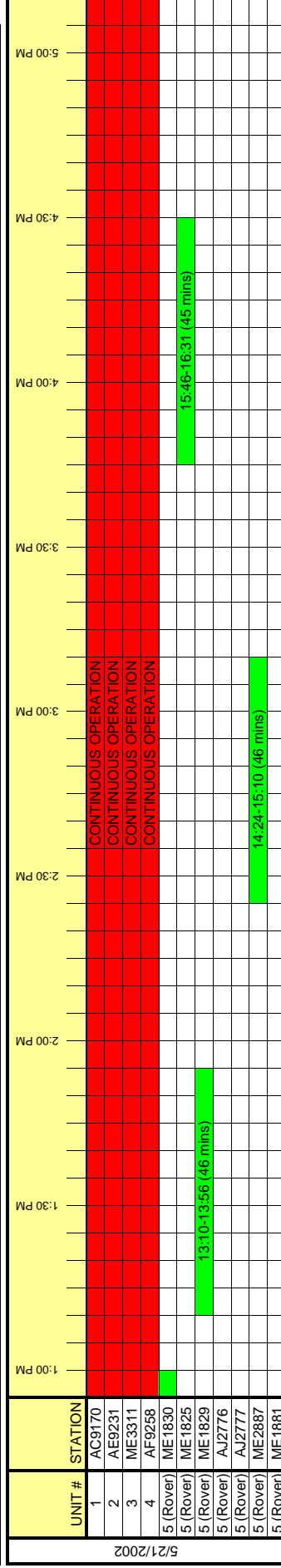
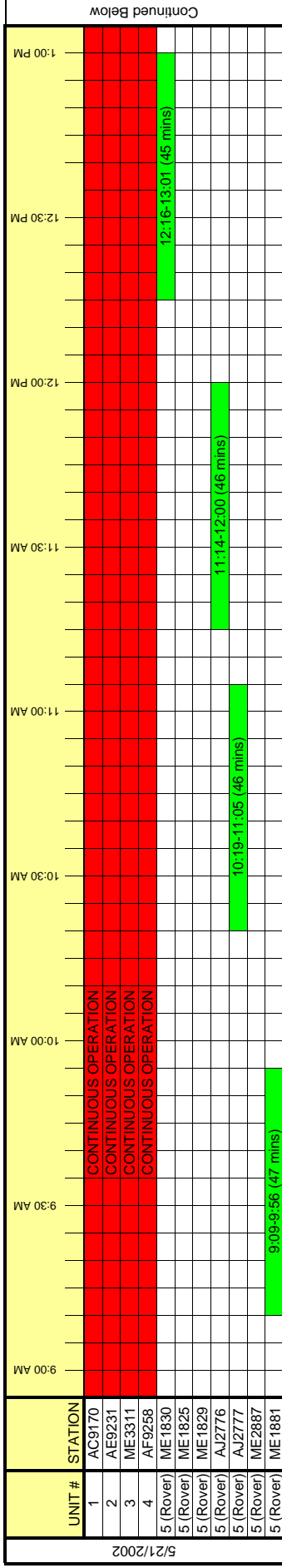
ME2887

ME2887

ME2887' RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992

ME2887' IN CHICAGO, AT THE INTERSECTION OF SOUTH OGLESBY AVENUE AND EAST 103RD
ME2887' STREET, NEAR THE NORTHWEST CORNER OF THE TRUMBALL CITY PARK, 30.8 M
ME2887' (101.0 FT) EAST OF THE AVENUE CENTER, 29.9 M (98.1 FT) WEST OF
ME2887' REFERENCE MARK 1, 26.7 M (87.6 FT) NORTHEAST OF REFERENCE MARK 2,
ME2887' 20.6 M (67.6 FT) SOUTH OF AND LEVEL WITH THE STREET CENTERLINE, 11.0
ME2887' M (36.1 FT) NORTH OF A CHAIN-LINK FENCE ALONG THE NORTH SIDE OF A
ME2887' BASEBALL FIELD, AND THE MONUMENT IS RECESSED 0.1 M (0.3 FT) BELOW THE
ME2887' GROUND SURFACE. NOTE--ACCESS TO THE MONUMENT IS THROUGH A 6-INCH
ME2887' SQUARE METAL COVER INSCRIBED NATIONAL GEODETIC SURVEY.

V3 Companies of Illinois, Ltd., V3 Project #:98216HMP; Task 101 - NGS Primary Control Occupation Chart





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CALUMET AREA HMP

NGS PRIMARY CONTROL

OCCUPATION DATA SHEET

V3 INVENTORY SHEET

V3 GPS Equipment Inventory

(As of 5/22/02)

Unit # 1

Leica TR500 Controller SN 12789
Pacific Crest RFM96W 2 Watt Receiver Radio SN 98417528
Leica AT502 Antenna SN 02768

Unit # 2

Leica TR500 Controller SN 12784
Pacific Crest RFM96W 2 Watt Receiver Radio SN 36164746
Leica AT502 Antenna SN 02827

Unit # 3

Leica TR500 Controller SN 12792
Pacific Crest RFM96W 2 Watt Receiver Radio SN 00114980
Leica AT502 Antenna SN 02699

Unit # 4

Leica TR500 Controller SN 12777
Pacific Crest RFM96W 2 Watt Receiver Radio SN 00114973
Leica AT502 Antenna SN 02715

Unit # 5

Leica TR500 Controller SN 12783
Pacific Crest RFM96W 2 Watt Receiver Radio SN 99170277
Leica AT502 Antenna SN 02749

RTK Transmitter Radios

(1) Pacific Crest RFM96W 35 Watt Transmitter Radio SN 96164715
FCC Id: KEARFM964502

(1) Pacific Crest RFM96W 35 Watt Transmitter Radio SN 00114917
FCC Id: KEARFM964535

(1) Pacific Crest RFM96W 35 Watt Transmitter Radio SN 00074339
FCC Id: KEARFM964535

GPS Post Processing Report

PM: ENB Work Order: N/A Project: 98216HMP Bill Group: V101B Date: 06-07-2004

Ski Pro Project Name: 98216HMP-20020522 Time Zone: CDT (GMT-5h) / CST (GMT-6h)

Raw Data File Name: 98216HMP-20020522R Other Time Zone: —

Units Downloaded: ① ② ③ ④ ⑤ Base Unit (s) # 2

Import Checks: Intervals Merged Crd. Sys. Attchd. (—) Antenna Type Antenna Height

Import Editing: Unit # 1 Rename Temp0522-0705297 TO ME3311
Unit # 2 Rename AL9231 TO AE9231 ON 05-22-2002 MISSION
Unit # 3 None
Unit # 4 Unchecked 10 second observation of AE2776, Renamed ME1830 to ME1830
Unit # 5 (Unit # 4 CONT.) ON 05-22-2002 MISSION.
Unit # 5 - unchecked 2 minute 5 second observation of AF9250.

Mission Type: Static Real Time Kinematic

Fixed Station (s) Info:

Point No:	Fixed (Pstr. / Pstr. & Ht. / Ht.)	Coord. Type (Geodetic / Grid / Surface)	Elev. Format (Ellip. / Ortho.)
<u>AE9231</u>	<u>PSTR + HT.</u>	<u>GEODETIC</u>	<u>ORTHO</u>

Baseline Processing: (From - To)	(05-21-2002)	(05-22-2002)
	<u>SPP -> AE9231</u>	<u>SPP -> AE9231</u>
	<u>AE9231 -> ALL</u>	<u>AE9231 -> ALL</u>
	<u>AE9250 -> ALL</u>	<u>AE9250 -> ALL (ME2887 DID NOT RESOLVE.)</u>
	<u>ME3311 -> ALL</u>	<u>ME3311 -> ALL (" " ")</u>
	<u>AL9170 -> ALL</u>	<u>AL197 -> ALL (" " ")</u>

Projection Type:

Lambert:
T. Mercator:

Horizontal Datum:

NAD 27
NAD 83 (1997)

Vertical Datum:

NAVD 88
NGVD 29
Municipal / County: —

City of Chicago
Site / Arbitrary

Coordinate System Name. (S.P.) IL EAST GEOID 99

Ellipsoid: WGS84 Geoid Model (Year): 99

Coordinate System Name. (Local) —

Avg. Cmbnd. Scl. Fctr. —

Coordinate Set Name. —

N / E Shift: — / —

Transformation Set Name: —

Processor: G. VAN BORTZEL

-or- Local projection Name: —

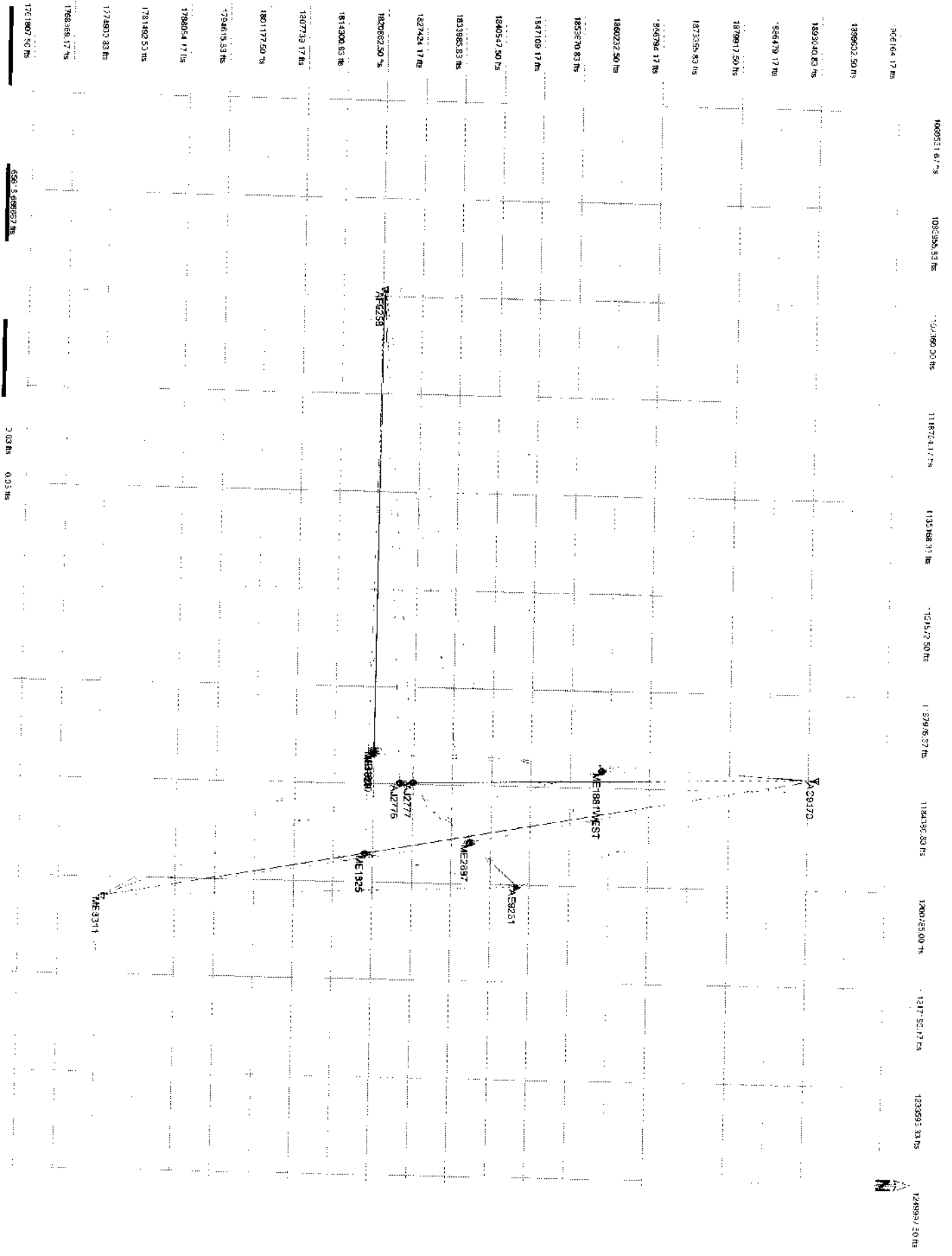
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98216HMP-20020522-METERS

Notes to Project Manager / Technician:

CDT=Central Daylight Savings Time starts on first Sunday in April, CST=Central Standard Time starts on last Sunday in October.

.PTS

Review all Control / Bench mark check coordinates and elevations.



- + Estimated
- Navigation
- SPF
- Washup
- Average
- Reference
- Adjusted
- Fixed Weight
- △ Fixed Height
- ▲ Fixed Pos. top
- ▲ Fixed Pos. bot and Height

1248993.50 ft
 1233593.53 ft
 1218755.17 ft
 1200755.00 ft
 1184380.89 ft
 1179165.57 ft
 1151572.50 ft
 1135168.37 ft
 1118754.17 ft
 1104190.00 ft
 1083985.59 ft
 1009531.67 ft

1/1 EAST GEOID 99
GRAID US FEET

Points of Project 98215HMP_20020522

NAD 83
NAD 80

Point Id	Point Class	Northing	Easting	Ortho. Hgt	Ellip. Hgt	Geoid Sep.	Code	Posn. Qlty	Hgt. Qlty
<input checked="" type="checkbox"/> AE9231	Control	1845145.5266	1201224.5831	585.0900	475.4511	-109.6389	MON	0.0000	0.0000
<input checked="" type="checkbox"/> AC9170	Reference	1894410.2342	1182305.0467	592.0305	482.1390	-109.8915	FDC	0.0082	0.0175
<input checked="" type="checkbox"/> AF9258	Reference	1821100.9917	1101281.9208	727.7379	618.8208	-108.9171	MON	0.0095	0.0422
<input checked="" type="checkbox"/> ME3311	Reference	1775738.8023	1203994.0701	613.2863	503.6704	-109.6159	MON	0.0047	0.0174
<input checked="" type="checkbox"/> ME1825	Averaged	1819560.3759	1196119.9273	584.8681	475.2784	-109.5897	FIR	0.0125	0.0271
<input checked="" type="checkbox"/> ME2887	Averaged	1837086.9345	1193952.5123	583.4320	473.8358	-109.5962	FDC	0.0154	0.0219
<input checked="" type="checkbox"/> AJ2777	Averaged	1827441.0728	1184010.0270	584.1899	474.6592	-109.5306	FBR	0.0116	0.0161
<input checked="" type="checkbox"/> AJ2776	Averaged	1825267.7331	1184116.3942	585.6645	476.1372	-109.5273	FBR	0.0125	0.0173
<input checked="" type="checkbox"/> ME1830	Averaged	1820809.6910	1179200.6364	600.0969	490.6090	-109.4880	FBT	0.0120	0.0122
<input checked="" type="checkbox"/> ME1829	Averaged	1820786.7725	1178630.4177	601.7494	492.2647	-109.4847	FDC	0.0144	0.0207
<input checked="" type="checkbox"/> ME1881WEST	Averaged	1858919.0581	1181375.4610	603.2548	493.6324	-109.6225	SIB	0.0083	0.0105

IL EAST GEOID 99
GEOIDETIC US FEET

Points of Project 98216HMP_20020522

NAD 83
NAD 83

Point Id	Point Class	Latitude	Longitude	Ellip. Hgt.	Code	Posn. Qlty	Hgt. Qlty
<input checked="" type="checkbox"/> AE9231	Control	41° 43' 47.41120" N	87° 32' 18.38218" W	475.4511	MON	0.0000	0.0000
<input checked="" type="checkbox"/> ME3311	Reference	41° 32' 21.50134" N	87° 31' 50.37927" W	503.6704	MON	0.0047	0.0174
<input checked="" type="checkbox"/> AF9258	Reference	41° 39' 56.88399" N	87° 54' 18.02464" W	618.8208	MON	0.0095	0.0422
<input checked="" type="checkbox"/> AC9170	Reference	41° 51' 55.73343" N	87° 36' 22.39093" W	482.1390	FDC	0.0082	0.0175
<input checked="" type="checkbox"/> ME2887	Averaged	41° 42' 28.45474" N	87° 33' 55.23109" W	473.8358	FDC	0.0154	0.0219
<input checked="" type="checkbox"/> ME1881WEST	Averaged	41° 46' 05.20514" N	87° 36' 38.62023" W	493.6324	SIB	0.0083	0.0105
<input checked="" type="checkbox"/> ME1830	Averaged	41° 39' 48.90710" N	87° 37' 11.45552" W	490.6090	FBT	0.0120	0.0122
<input checked="" type="checkbox"/> ME1829	Averaged	41° 39' 48.72725" N	87° 37' 19.00020" W	492.2647	FDC	0.0144	0.0207
<input checked="" type="checkbox"/> ME1825	Averaged	41° 39' 35.12162" N	87° 33' 28.73733" W	475.2784	FIR	0.0125	0.0271
<input checked="" type="checkbox"/> AJ2777	Averaged	41° 40' 54.01975" N	87° 36' 07.38432" W	474.6592	FBR	0.0116	0.0161
<input checked="" type="checkbox"/> AJ2776	Averaged	41° 40' 32.54063" N	87° 36' 06.22582" W	476.1372	FBR	0.0125	0.0173

1/1 EAST GRID 99
GRID METERS

Points of Project 98216HMP, 20020522

NAO 83
NAVO 88

Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Geoid Sep.	Code	Posn. Qty	Hgt. Qty
<input checked="" type="checkbox"/> AE9231	Control	562401.4813	366133.9852	178.3358	144.9178	-33.4180	MON	0.0000	0.0000
<input checked="" type="checkbox"/> ME3311	Reference	541246.2694	366978.1265	186.9300	153.5190	-33.4110	MON	0.0014	0.0053
<input checked="" type="checkbox"/> AF9258	Reference	555072.6924	335671.4008	221.8150	188.6170	-33.1980	MON	0.0029	0.0129
<input checked="" type="checkbox"/> AC9170	Reference	577417.3942	360367.2990	180.4513	146.9563	-33.4950	FDC	0.0025	0.0053
<input checked="" type="checkbox"/> ME2887	Averaged	559945.2175	363917.4536	177.8304	144.4254	-33.4050	FDC	0.0047	0.0067
<input checked="" type="checkbox"/> ME1881WEST	Averaged	566599.6621	360083.9607	183.8724	150.4594	-33.4130	SIB	0.0025	0.0032
<input checked="" type="checkbox"/> ME1830	Averaged	554983.9038	359421.0728	182.9099	149.5379	-33.3720	FBT	0.0037	0.0037
<input checked="" type="checkbox"/> ME1829	Averaged	554976.9182	359247.2698	183.4136	150.0426	-33.3710	FDC	0.0044	0.0063
<input checked="" type="checkbox"/> ME1825	Averaged	554603.1118	364578.0830	178.2682	144.8652	-33.4030	FIR	0.0038	0.0083
<input checked="" type="checkbox"/> AJ2777	Averaged	557005.1530	360886.9780	178.0614	144.6764	-33.3850	FBR	0.0035	0.0049
<input checked="" type="checkbox"/> AJ2776	Averaged	556342.7177	360919.3988	178.5109	145.1269	-33.3840	FBR	0.0038	0.0053

General information - satellite availability

Prediction date: 05/22/02

Site: 98216HMP Time: GMT-05.00

Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19
20 21 22 23 24 26 27 28 29

The U.S. government has the right to modify the position or terminate the operation of these satellites at any time.

Sky plot

Prediction date: 05/22/02

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

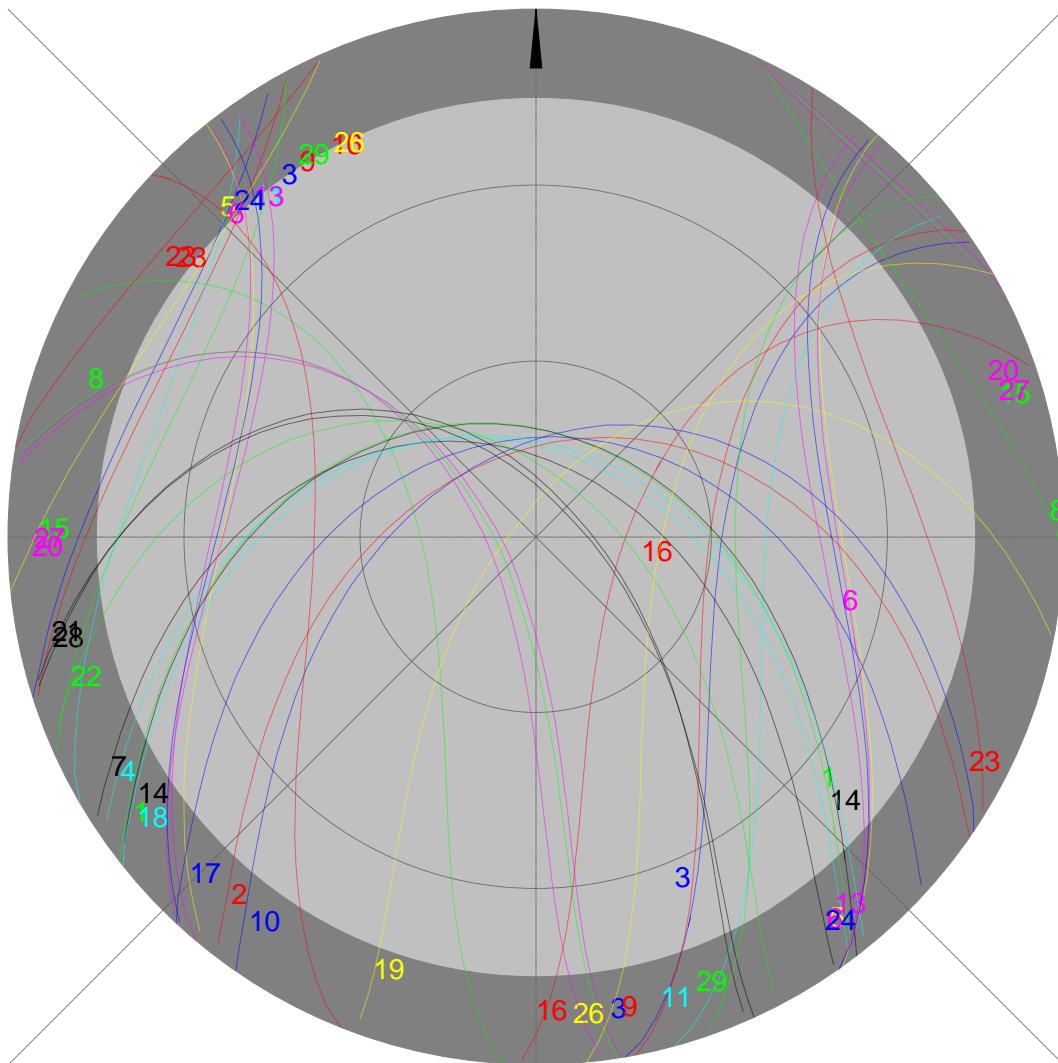
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Sky plot

Prediction date: 05/22/02

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

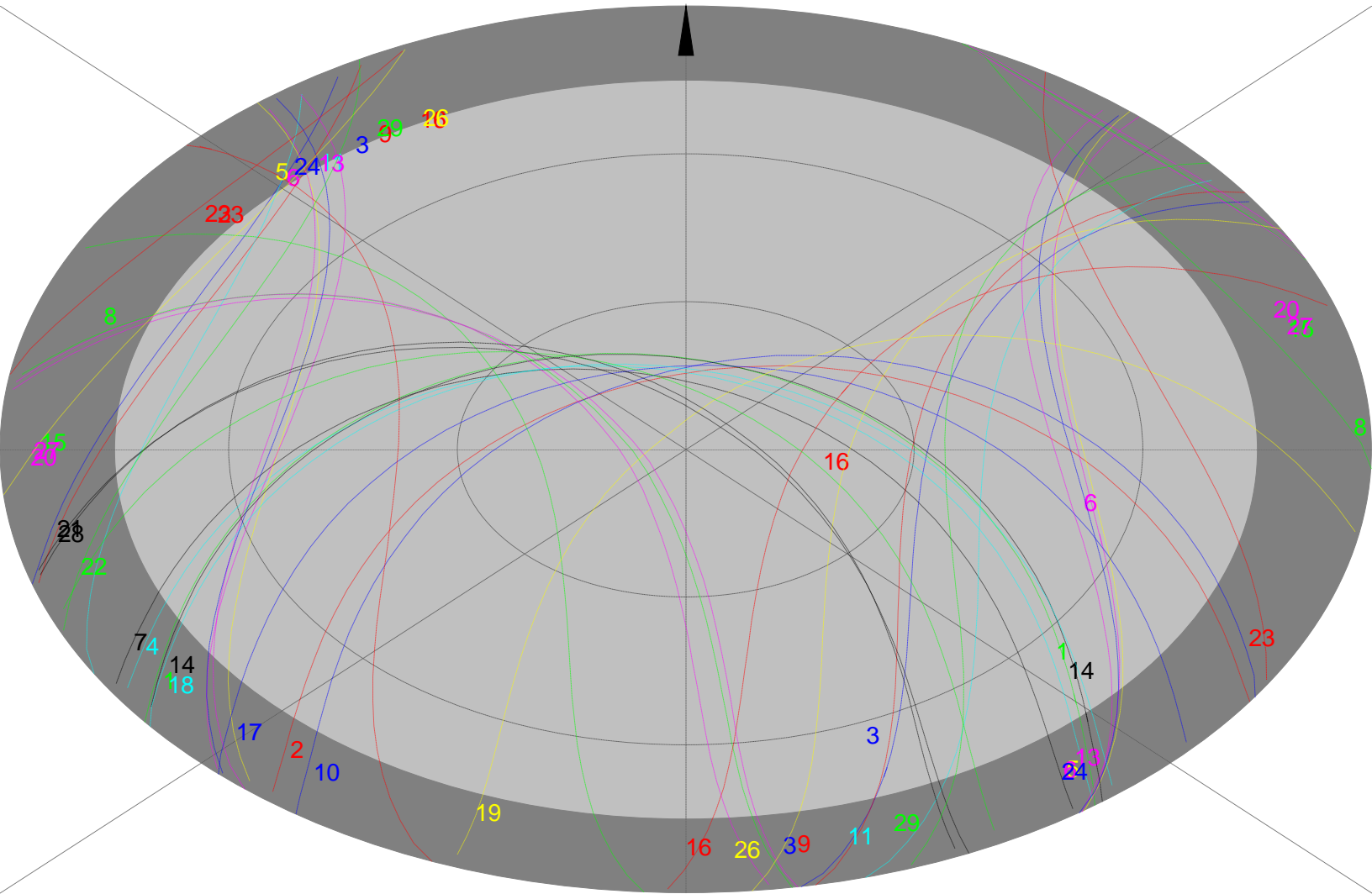
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite visibility

Prediction date: 05/22/02

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

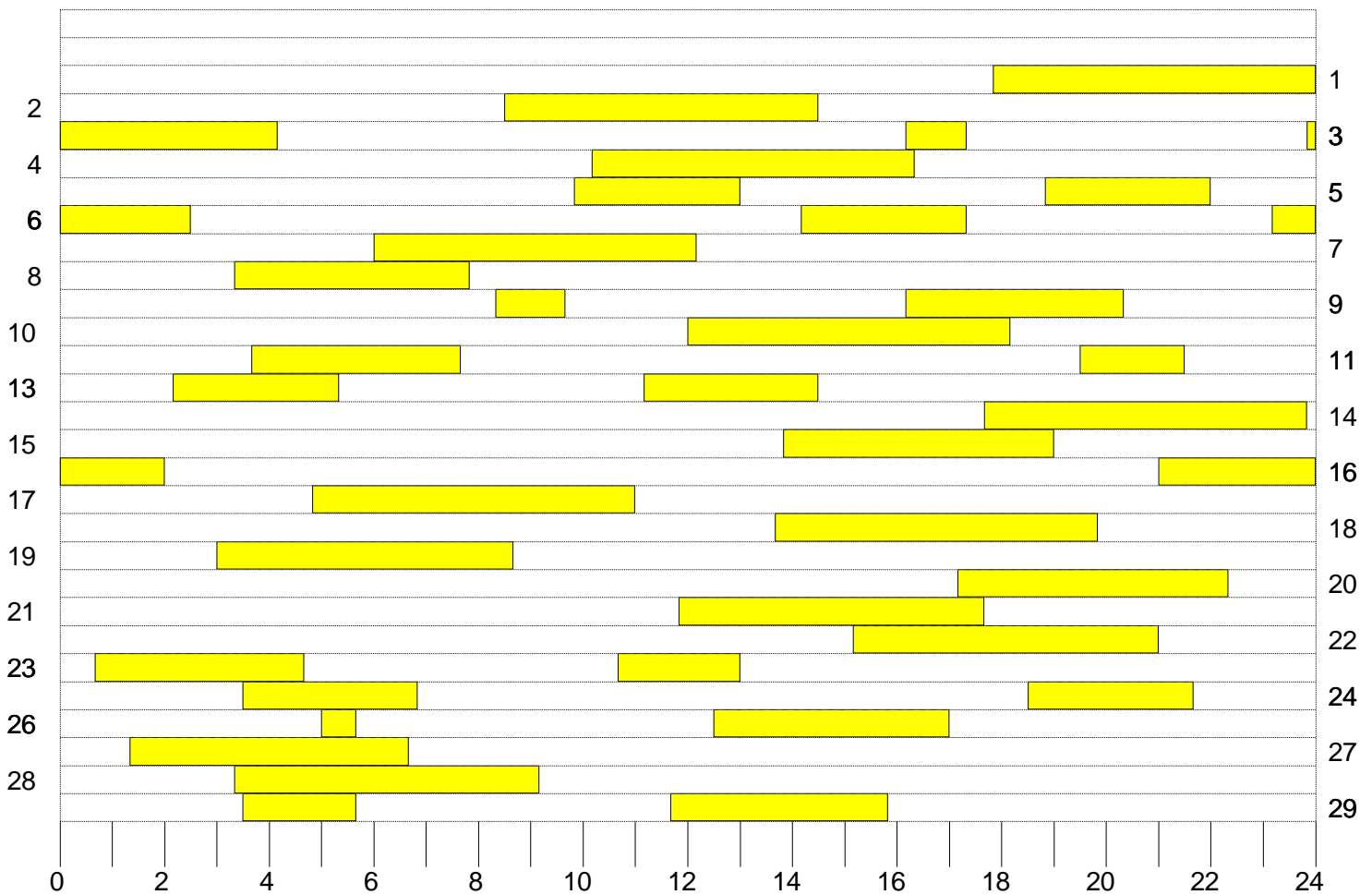
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite summary

Prediction date: 05/22/02

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

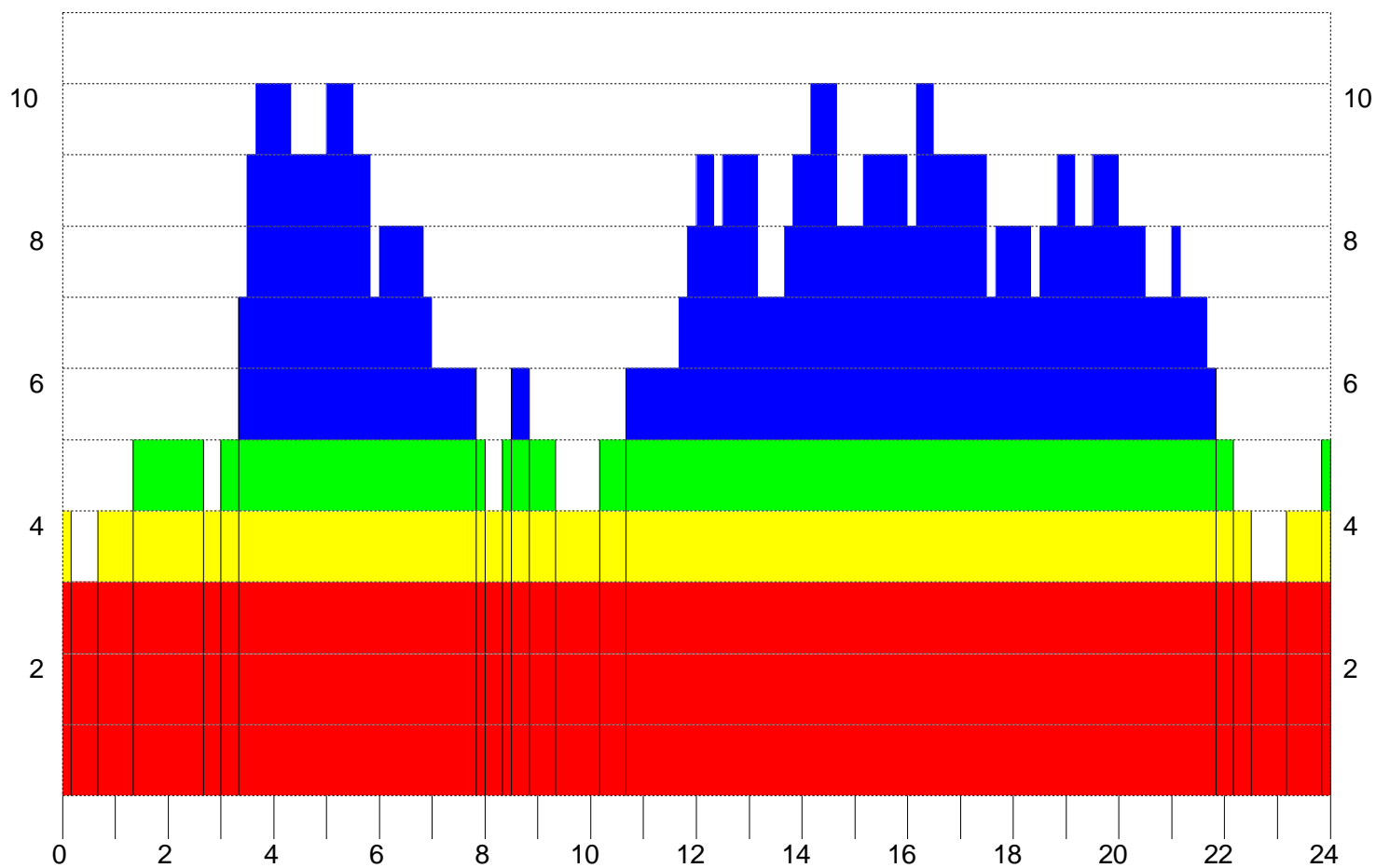
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite PDOP/GDOP

Prediction date: 05/22/02

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

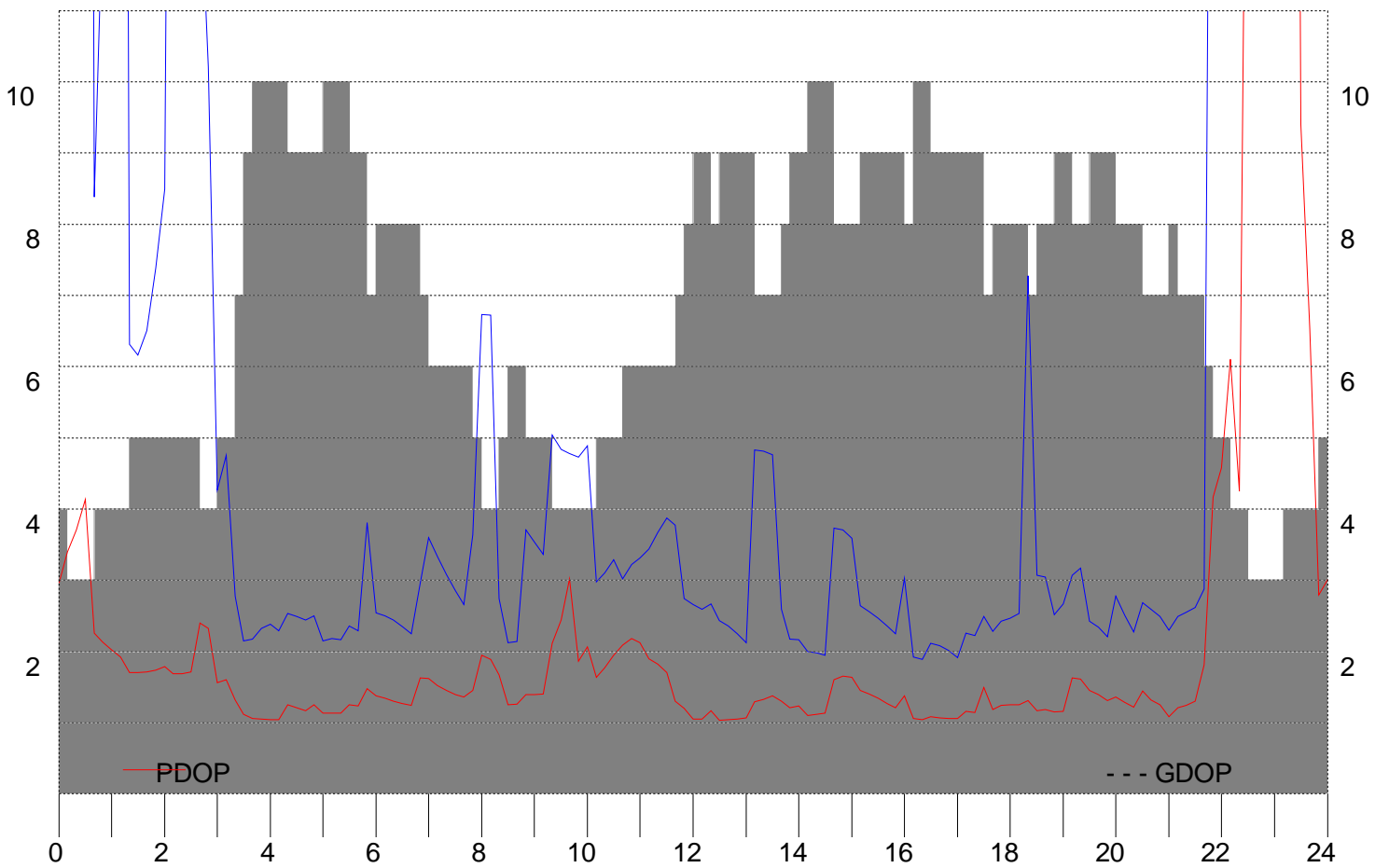
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite elevation

Prediction date: 05/22/02

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

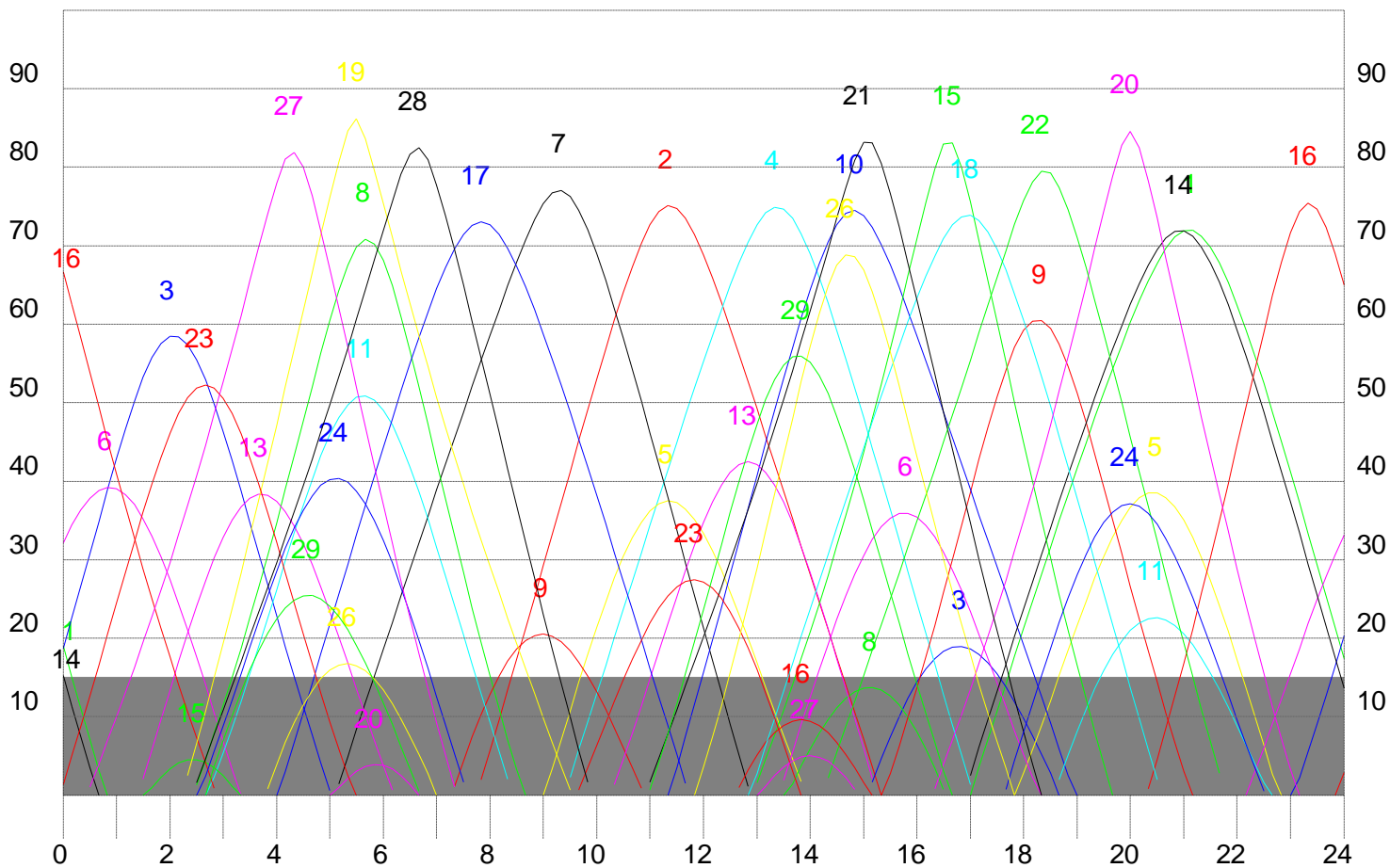
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



 98216HMP Satellite summary, PDOP, GDOP Time: GMT-05.00
 05/22/02 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Time	Sats.	PDOP	GDOP	Satellite Nos
00.00	4	2.97	68.37	1 3 6 16
00.10	3	3.40	-----	3 6 16
00.20	3	3.71	-----	3 6 16
00.30	3	4.14	-----	3 6 16
00.40	4	2.26	8.38	3 6 16 23
00.50	4	2.13	12.40	3 6 16 23
01.00	4	2.02	22.01	3 6 16 23
01.10	4	1.93	65.67	3 6 16 23
01.20	5	1.70	6.32	3 6 16 23 27
01.30	5	1.70	6.17	3 6 16 23 27
01.40	5	1.72	6.52	3 6 16 23 27
01.50	5	1.75	7.40	3 6 16 23 27
02.00	5	1.79	8.50	3 6 16 23 27
02.10	5	1.70	22.33	3 6 13 23 27
02.20	5	1.70	39.35	3 6 13 23 27
02.30	5	1.72	12.86	3 6 13 23 27
02.40	4	2.40	12.73	3 13 23 27
02.50	4	2.33	10.21	3 13 23 27
03.00	5	1.56	4.28	3 13 19 23 27
03.10	5	1.60	4.75	3 13 19 23 27
03.20	7	1.33	2.78	3 8 13 19 23 27 28
03.30	9	1.12	2.15	3 8 13 19 23 24 27 28 29
03.40	10	1.06	2.17	3 8 11 13 19 23 24 27 28 29
03.50	10	1.05	2.32	3 8 11 13 19 23 24 27 28 29
04.00	10	1.05	2.38	3 8 11 13 19 23 24 27 28 29
04.10	10	1.05	2.30	3 8 11 13 19 23 24 27 28 29
04.20	9	1.25	2.54	8 11 13 19 23 24 27 28 29
04.30	9	1.21	2.49	8 11 13 19 23 24 27 28 29
04.40	9	1.18	2.45	8 11 13 19 23 24 27 28 29
04.50	9	1.26	2.50	8 11 13 17 19 24 27 28 29
05.00	10	1.13	2.16	8 11 13 17 19 24 26 27 28 29
05.10	10	1.14	2.18	8 11 13 17 19 24 26 27 28 29
05.20	10	1.14	2.16	8 11 13 17 19 24 26 27 28 29
05.30	9	1.25	2.37	8 11 17 19 24 26 27 28 29
05.40	9	1.24	2.30	8 11 17 19 24 26 27 28 29
05.50	7	1.49	3.81	8 11 17 19 24 27 28
06.00	8	1.39	2.54	7 8 11 17 19 24 27 28
06.10	8	1.35	2.50	7 8 11 17 19 24 27 28
06.20	8	1.31	2.44	7 8 11 17 19 24 27 28
06.30	8	1.27	2.35	7 8 11 17 19 24 27 28
06.40	8	1.24	2.25	7 8 11 17 19 24 27 28
06.50	7	1.63	2.96	7 8 11 17 19 24 28
07.00	6	1.62	3.60	7 8 11 17 19 28
07.10	6	1.52	3.34	7 8 11 17 19 28
07.20	6	1.45	3.08	7 8 11 17 19 28
07.30	6	1.40	2.85	7 8 11 17 19 28
07.40	6	1.36	2.66	7 8 11 17 19 28

Time	Sats.	PDOP	GDOP	Satellite Nos
07.50	5	1.46	3.65	7 8 17 19 28
08.00	4	1.96	6.74	7 17 19 28
08.10	4	1.89	6.72	7 17 19 28
08.20	5	1.68	2.75	7 9 17 19 28
08.30	6	1.26	2.13	2 7 9 17 19 28
08.40	6	1.27	2.14	2 7 9 17 19 28
08.50	5	1.39	3.72	2 7 9 17 28
09.00	5	1.40	3.54	2 7 9 17 28
09.10	5	1.40	3.36	2 7 9 17 28
09.20	4	2.11	5.04	2 7 9 17
09.30	4	2.45	4.84	2 7 9 17
09.40	4	3.03	4.78	2 7 9 17
09.50	4	1.87	4.73	2 5 7 17
10.00	4	2.07	4.89	2 5 7 17
10.10	5	1.65	2.98	2 4 5 7 17
10.20	5	1.78	3.11	2 4 5 7 17
10.30	5	1.95	3.29	2 4 5 7 17
10.40	6	2.10	3.03	2 4 5 7 17 23
10.50	6	2.19	3.22	2 4 5 7 17 23
11.00	6	2.13	3.32	2 4 5 7 17 23
11.10	6	1.90	3.44	2 4 5 7 13 23
11.20	6	1.83	3.67	2 4 5 7 13 23
11.30	6	1.71	3.87	2 4 5 7 13 23
11.40	7	1.31	3.78	2 4 5 7 13 23 29
11.50	8	1.21	2.74	2 4 5 7 13 21 23 29
12.00	9	1.06	2.66	2 4 5 7 10 13 21 23 29
12.10	9	1.05	2.60	2 4 5 7 10 13 21 23 29
12.20	8	1.17	2.68	2 4 5 10 13 21 23 29
12.30	9	1.03	2.44	2 4 5 10 13 21 23 26 29
12.40	9	1.04	2.36	2 4 5 10 13 21 23 26 29
12.50	9	1.06	2.25	2 4 5 10 13 21 23 26 29
13.00	9	1.07	2.12	2 4 5 10 13 21 23 26 29
13.10	7	1.29	4.83	2 4 10 13 21 26 29
13.20	7	1.34	4.81	2 4 10 13 21 26 29
13.30	7	1.38	4.76	2 4 10 13 21 26 29
13.40	8	1.31	2.60	2 4 10 13 18 21 26 29
13.50	9	1.21	2.18	2 4 10 13 15 18 21 26 29
14.00	9	1.23	2.17	2 4 10 13 15 18 21 26 29
14.10	10	1.11	2.01	2 4 6 10 13 15 18 21 26 29
14.20	10	1.12	1.99	2 4 6 10 13 15 18 21 26 29
14.30	10	1.14	1.96	2 4 6 10 13 15 18 21 26 29
14.40	8	1.61	3.74	4 6 10 15 18 21 26 29
14.50	8	1.65	3.72	4 6 10 15 18 21 26 29
15.00	8	1.64	3.59	4 6 10 15 18 21 26 29
15.10	9	1.45	2.64	4 6 10 15 18 21 22 26 29
15.20	9	1.41	2.57	4 6 10 15 18 21 22 26 29
15.30	9	1.35	2.47	4 6 10 15 18 21 22 26 29
15.40	9	1.28	2.37	4 6 10 15 18 21 22 26 29
15.50	9	1.22	2.25	4 6 10 15 18 21 22 26 29
16.00	8	1.39	3.04	4 6 10 15 18 21 22 26
16.10	10	1.07	1.92	3 4 6 9 10 15 18 21 22 26
16.20	10	1.05	1.90	3 4 6 9 10 15 18 21 22 26
16.30	9	1.09	2.11	3 6 9 10 15 18 21 22 26

Time	Sats.	PDOP	GDOP	Satellite Nos
16.40	9	1.07	2.08	3 6 9 10 15 18 21 22 26
16.50	9	1.07	2.01	3 6 9 10 15 18 21 22 26
17.00	9	1.07	1.91	3 6 9 10 15 18 21 22 26
17.10	9	1.17	2.27	3 6 9 10 15 18 20 21 22
17.20	9	1.14	2.22	3 6 9 10 15 18 20 21 22
17.30	7	1.50	2.50	9 10 15 18 20 21 22
17.40	8	1.18	2.28	9 10 14 15 18 20 21 22
17.50	8	1.24	2.42	1 9 10 14 15 18 20 22
18.00	8	1.25	2.47	1 9 10 14 15 18 20 22
18.10	8	1.25	2.54	1 9 10 14 15 18 20 22
18.20	7	1.31	7.28	1 9 14 15 18 20 22
18.30	8	1.17	3.07	1 9 14 15 18 20 22 24
18.40	8	1.19	3.05	1 9 14 15 18 20 22 24
18.50	9	1.16	2.52	1 5 9 14 15 18 20 22 24
19.00	9	1.17	2.68	1 5 9 14 15 18 20 22 24
19.10	8	1.63	3.08	1 5 9 14 18 20 22 24
19.20	8	1.62	3.18	1 5 9 14 18 20 22 24
19.30	9	1.46	2.43	1 5 9 11 14 18 20 22 24
19.40	9	1.40	2.35	1 5 9 11 14 18 20 22 24
19.50	9	1.32	2.21	1 5 9 11 14 18 20 22 24
20.00	8	1.36	2.78	1 5 9 11 14 20 22 24
20.10	8	1.29	2.52	1 5 9 11 14 20 22 24
20.20	8	1.23	2.27	1 5 9 11 14 20 22 24
20.30	7	1.44	2.69	1 5 11 14 20 22 24
20.40	7	1.33	2.59	1 5 11 14 20 22 24
20.50	7	1.26	2.49	1 5 11 14 20 22 24
21.00	8	1.08	2.31	1 5 11 14 16 20 22 24
21.10	7	1.22	2.50	1 5 11 14 16 20 24
21.20	7	1.25	2.55	1 5 11 14 16 20 24
21.30	7	1.30	2.62	1 5 11 14 16 20 24
21.40	6	1.81	2.89	1 5 14 16 20 24
21.50	5	4.18	22.88	1 5 14 16 20
22.00	5	4.59	15.38	1 5 14 16 20
22.10	4	6.10	35.07	1 14 16 20
22.20	4	4.26	41.22	1 14 16 20
22.30	3	18.72	-----	1 14 16
22.40	3	19.74	-----	1 14 16
22.50	3	22.87	-----	1 14 16
23.00	3	29.30	-----	1 14 16
23.10	4	13.72	113.37	1 6 14 16
23.20	4	29.75	51.90	1 6 14 16
23.30	4	9.40	60.77	1 6 14 16
23.40	4	6.53	57.59	1 6 14 16
23.50	5	2.80	49.15	1 3 6 14 16
24.00	4	3.01	32.19	1 3 6 16

98216HMP Azimuth and elevation Time: GMT-05.00
05/22/02 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Time Azimuth and elevation for satellites [°]

Time	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	
00.00	134	---	159	---	---	109	---	---	---	---	---	---	---	135	---	61	---	---	---	---	---	---	---	---	---	---	---	---
	19	---	19	---	---	32	---	---	---	---	---	---	15	---	67	---	---	---	---	---	1	---	---	---	---	---	---	---
00.10	136	---	156	---	---	105	---	---	---	---	---	---	---	138	---	56	---	---	---	---	---	---	---	---	---	---	---	---
	15	---	23	---	---	34	---	---	---	---	---	---	11	---	63	---	---	---	---	---	5	---	---	---	---	---	---	---
00.20	139	---	154	---	---	100	---	---	---	---	---	---	---	139	---	53	---	---	---	---	---	---	---	---	---	---	---	---
	11	---	27	---	---	36	---	---	---	---	---	---	7	---	58	---	---	---	---	---	9	---	---	---	---	---	---	---
00.30	140	---	152	---	---	94	---	---	---	---	---	---	---	141	---	51	---	---	---	---	---	---	---	---	---	---	---	---
	7	---	31	---	---	38	---	---	---	---	---	---	4	---	54	---	---	---	---	---	13	---	---	---	1	---	---	---
00.40	142	---	149	---	---	88	---	---	---	---	---	---	---	---	50	---	---	---	---	---	---	---	---	---	---	---	---	---
	3	---	35	---	---	39	---	---	---	---	---	---	---	50	---	---	---	---	---	---	17	---	---	---	4	---	---	---
00.50	---	---	146	---	---	83	---	---	---	---	---	---	---	---	50	---	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	39	---	---	39	---	---	---	---	---	---	---	45	---	---	---	---	---	---	20	---	---	---	7	---	---	---
01.00	---	---	142	---	---	77	---	---	---	---	---	---	---	---	51	---	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	43	---	---	39	---	---	---	---	---	---	---	41	---	---	---	---	---	---	24	---	---	---	10	---	---	---
01.10	---	---	137	---	---	71	---	---	---	---	---	---	---	---	52	---	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	47	---	---	38	---	---	---	---	---	---	---	37	---	---	---	---	---	---	28	---	---	---	13	---	---	---
01.20	---	---	132	---	---	66	---	---	---	---	---	---	---	---	53	---	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	50	---	---	37	---	---	---	---	---	---	---	33	---	---	---	---	---	---	32	---	---	---	16	---	---	---
01.30	---	---	126	---	---	62	---	---	---	---	---	---	325	---	54	---	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	53	---	---	35	---	---	---	---	---	---	2	---	29	---	---	---	---	---	36	---	---	---	19	---	---	---
01.40	---	---	118	---	---	57	---	---	---	---	---	---	325	---	56	---	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	56	---	---	33	---	---	---	---	---	---	6	---	25	---	---	---	---	---	40	---	---	---	23	---	---	---
01.50	---	---	110	---	---	54	---	---	---	---	---	---	324	---	57	57	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	58	---	---	30	---	---	---	---	---	---	10	---	2	21	---	---	---	---	43	---	---	---	26	---	---	---
02.00	---	---	101	---	---	51	---	---	---	---	---	---	323	---	53	59	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	58	---	---	27	---	---	---	---	---	---	13	---	3	18	---	---	---	---	46	---	---	---	30	---	---	---
02.10	---	---	92	---	---	48	---	---	---	---	---	---	322	---	50	61	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	58	---	---	24	---	---	---	---	---	---	17	---	4	14	---	---	---	---	49	---	---	---	33	---	---	---
02.20	---	---	83	---	---	46	---	---	---	---	---	---	320	---	46	64	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	57	---	---	21	---	---	---	---	---	---	21	---	4	11	---	---	---	---	51	---	---	---	37	---	---	---
02.30	---	---	75	---	---	44	---	---	---	---	---	---	297	---	42	66	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	56	---	---	18	---	---	---	---	---	---	24	---	5	7	---	---	---	---	---	---	---	---	---	---	---	---
02.40	---	---	69	---	---	43	---	---	---	---	---	---	300	---	38	68	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	53	---	---	14	---	---	---	---	---	---	5	---	4	4	---	---	---	---	11	---	---	---	---	---	---	---
02.50	---	---	63	---	---	42	---	---	---	---	---	---	302	---	162	311	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	50	---	---	11	---	---	---	---	---	---	8	---	2	30	---	---	---	---	15	---	---	---	---	---	---	---
03.00	---	---	59	---	---	42	---	---	---	---	---	---	304	---	160	307	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	46	---	---	7	---	---	---	---	---	---	11	---	5	33	---	---	---	---	19	---	---	---	---	---	---	---
03.10	---	---	56	---	---	41	---	---	---	---	---	---	306	---	157	302	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	43	---	---	3	---	---	---	---	---	---	15	---	9	35	---	---	---	---	24	---	---	---	---	---	---	---
03.20	---	---	54	---	---	---	---	---	---	---	---	---	307	---	155	297	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	39	---	---	---	---	---	---	---	---	---	19	---	12	37	---	---	---	---	28	---	---	---	---	---	---	---
03.30	---	---	52	---	---	---	---	---	---	---	---	---	309	---	153	292	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	35	---	---	---	---	---	---	---	---	---	23	---	15	38	---	---	---	---	33	---	---	---	---	---	---	---
03.40	---	---	51	---	---	---	---	---	---	---	---	---	310	---	150	286	---	---	---	---	---	---	---	---	---	---	---	---
	---	---	31	---	---	---	---	---	---	---	---	---	26	---	19	38	---	---	---	---	38	---	---	---	---	---	---	---

Time Azimuth and elevation for satellites [°]

1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29

03.50	---	---	51	---	---	---	---	311	---	---	---	147	280	---	---	---	---	207	---	---	229	120	---	303	278	315		
	---	---	27	---	---	---	---	31	---	---	---	23	38	---	---	---	42	---	---	36	25	---	74	26	21			
04.00	---	---	50	---	---	---	---	312	---	---	---	145	274	---	---	---	---	209	---	---	225	116	333	293	281	311		
	---	---	23	---	---	---	---	35	---	---	---	26	37	---	---	---	47	---	---	32	29	4	78	30	22			
04.10	---	---	51	---	---	---	---	312	---	---	---	141	268	---	---	---	---	225	---	211	---	---	222	112	330	273	284	307
	---	---	19	---	---	---	---	39	---	---	---	30	36	---	---	---	3	52	---	---	28	31	7	81	33	24		
04.20	---	---	51	---	---	---	---	311	---	---	---	138	263	---	---	---	---	226	---	213	---	---	219	107	327	243	288	303
	---	---	15	---	---	---	---	43	---	---	---	33	34	---	---	---	7	57	---	---	24	34	9	82	36	25		
04.30	---	---	52	---	---	---	---	311	---	---	---	134	258	---	---	---	---	228	---	216	---	---	216	102	324	215	291	298
	---	---	11	---	---	---	---	48	---	---	---	37	32	---	---	---	10	62	---	---	21	36	11	80	39	25		
04.40	---	---	53	---	---	---	---	309	---	---	---	130	253	---	---	---	---	231	---	219	---	---	214	97	320	199	295	293
	---	---	8	---	---	---	---	52	---	---	---	40	29	---	---	---	14	67	---	---	17	38	13	76	43	25		
04.50	---	---	54	---	---	---	---	306	---	---	---	125	249	---	---	---	---	233	---	224	---	---	211	91	316	190	299	289
	---	---	4	---	---	---	---	56	---	---	---	43	27	---	---	---	18	71	---	---	13	39	15	72	46	25		
05.00	---	---	---	---	---	---	---	302	---	---	---	119	245	---	---	---	---	236	---	230	---	---	209	85	312	185	302	284
	---	---	---	---	---	---	---	60	---	---	---	46	23	---	---	---	22	76	---	---	9	40	16	67	50	24		
05.10	---	---	---	---	---	---	---	238	296	---	---	113	242	---	---	---	---	238	---	240	---	---	206	79	308	183	306	279
	---	---	---	---	---	---	---	1	64	---	---	48	20	---	---	---	26	81	---	---	6	40	17	62	53	23		
05.20	---	---	---	---	---	---	---	240	287	---	---	106	238	---	---	---	---	241	---	263	54	---	204	73	304	181	311	275
	---	---	---	---	---	---	---	5	68	---	---	50	17	---	---	---	29	85	2	---	2	40	17	57	57	21		
05.30	---	---	---	---	---	---	---	242	275	---	---	99	235	---	---	---	---	245	---	318	50	---	67	299	180	315	271	
	---	---	---	---	---	---	---	8	70	---	---	51	14	---	---	---	33	86	3	---	39	17	52	61	19			
05.40	---	---	---	---	---	---	---	245	260	---	---	92	232	---	---	---	---	248	---	2	47	---	62	295	179	320	267	
	---	---	---	---	---	---	---	12	71	---	---	51	10	---	---	---	37	84	4	---	37	16	47	64	17			
05.50	---	---	---	---	---	---	---	247	245	---	---	85	229	---	---	---	---	252	---	20	43	---	58	290	178	326	263	
	---	---	---	---	---	---	---	15	70	---	---	50	7	---	---	---	41	80	4	---	35	15	42	68	14			
06.00	---	---	---	---	---	---	---	250	232	---	---	78	226	---	---	---	---	256	---	29	39	---	54	286	178	333	259	
	---	---	---	---	---	---	---	19	68	---	---	49	4	---	---	---	44	75	4	---	32	13	37	72	12			
06.10	---	---	---	---	---	---	---	253	222	---	---	72	---	---	---	---	---	261	---	35	35	---	50	282	177	343	256	
	---	---	---	---	---	---	---	22	65	---	---	47	---	---	---	---	48	71	3	---	30	12	32	76	9			
06.20	---	---	---	---	---	---	---	256	214	---	---	67	---	---	---	---	---	266	---	39	31	---	47	278	177	357	252	
	---	---	---	---	---	---	---	25	61	---	---	45	---	---	---	---	52	67	3	---	26	10	27	79	6			
06.30	---	---	---	---	---	---	---	260	208	---	---	62	---	---	---	---	---	271	---	44	28	---	45	274	177	20	249	
	---	---	---	---	---	---	---	29	57	---	---	42	---	---	---	---	55	63	1	---	23	8	23	82	3			
06.40	---	---	---	---	---	---	---	263	204	---	---	59	---	---	---	---	---	277	---	47	---	---	43	271	176	52	---	
	---	---	---	---	---	---	---	32	52	---	---	39	---	---	---	---	58	59	---	---	20	5	18	83	---			
06.50	---	---	---	---	---	---	---	266	201	---	---	56	---	---	---	---	---	284	---	51	---	---	42	267	175	83	---	
	---	---	---	---	---	---	---	36	47	---	---	35	---	---	---	---	62	55	---	---	16	3	14	81	---			
07.00	---	---	---	---	---	---	---	270	199	---	---	54	---	---	---	---	---	292	---	54	---	---	41	---	175	103	---	
	---	---	---	---	---	---	---	39	43	---	---	32	---	---	---	---	65	51	---	---	13	---	9	78	---			
07.10	---	---	---	---	---	---	---	274	197	---	---	52	---	---	---	---	---	302	---	57	---	---	40	---	174	115	---	
	---	---	---	---	---	---	---	42	38	---	---	28	---	---	---	---	67	47	---	---	9	---	5	74	---			
07.20	---	---	---	---	---	---	---	278	195	331	---	51	---	---	---	---	---	313	---	61	---	---	40	---	173	123	---	
	---	---	---	---	---	---	---	46	33	1	---	24	---	---	---	---	70	43	---	---	5	---	1	70	---			
07.30	---	---	---	---	---	---	---	282	193	329	---	50	---	---	---	---	---	325	---	64	---	---	40	---	129	---		
	---	---	---	---	---	---	---	49	28	4	---	20	---	---	---	---	71	40	---	---	2	---	65	---				
07.40	---	---	---	---	---	---	---	287	192	327	---	50	---	---	---	---	---	340	---	67	---	---	---	---	134	---		
	---	---	---	---	---	---	---	52	24	7	---	17	---	---	---	---	73	36	---	---	---	---	60	---				
07.50	---	---	---	---	---	---	---	218	---	---	---	292	191	324	---	50	---	---	355	---	70	---	---	---	138	---		
	---	---	---	---	---	---	---	2	---	---	---	55	19	10	---	13	---	---	73	---	33	---	---	56	---			
08.00	---	---	---	---	---	---	---	219	---	---	---	297	189	321	---	50	---	---	10	---	73	---	---	---	141	---		
	---	---	---	---	---	---	---	6	---	---	---	59	15	13	---	9	---	---	73	---	29	---	---	51	---			

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	
08.10	---	221	---	---	---	---	303	188	318	---	51	---	---	---	---	25	---	77	---	---	---	---	---	---	---	144	---	
	---	10	---	---	---	---	62	11	15	---	6	---	---	---	71	---	26	---	---	---	---	---	---	---	46	---	---	
08.20	---	223	---	---	---	---	310	187	314	---	52	---	---	---	---	37	---	80	---	---	---	---	---	---	---	---	146	---
	---	13	---	---	---	---	65	7	17	---	2	---	---	---	70	---	23	---	---	---	---	---	---	---	---	42	---	---
08.30	---	224	---	---	---	---	318	185	310	---	---	---	---	---	---	48	---	83	---	---	---	---	---	---	---	---	148	---
	---	17	---	---	---	---	68	3	19	---	---	---	---	---	67	---	19	---	---	---	---	---	---	---	---	37	---	---
08.40	---	227	---	---	---	---	327	---	305	---	---	---	---	---	---	58	---	86	---	---	---	---	---	---	---	---	150	---
	---	21	---	---	---	---	71	---	20	---	---	---	---	---	65	---	16	---	---	---	---	---	---	---	---	32	---	---
08.50	---	229	---	---	---	---	338	---	301	---	---	---	---	---	---	66	---	89	---	---	---	---	---	---	---	---	151	---
	---	25	---	---	---	---	73	---	20	---	---	---	---	---	62	---	13	---	---	---	---	---	---	---	---	28	---	---
09.00	---	231	---	---	---	---	353	---	296	---	---	---	---	---	---	73	---	92	---	---	---	---	---	---	---	---	153	---
	---	29	---	---	---	---	75	---	21	---	---	---	---	---	59	---	10	---	---	---	---	---	---	---	---	23	---	---
09.10	---	234	---	---	---	---	321	---	10	---	---	---	---	---	---	79	---	95	---	---	---	---	---	---	---	---	154	---
	---	33	---	---	---	---	3	---	77	---	---	---	---	---	56	---	7	---	---	---	---	---	---	---	---	19	---	---
09.20	---	237	---	---	---	---	321	---	29	---	---	---	---	---	---	85	---	98	---	---	---	---	---	---	---	---	155	---
	---	37	---	---	---	---	7	---	77	---	---	---	---	---	52	---	4	---	---	---	---	---	---	---	---	14	---	---
09.30	---	241	---	---	---	---	237	320	---	48	---	---	---	---	---	90	---	---	---	---	---	---	---	---	---	---	156	---
	---	41	---	---	---	---	2	11	---	76	---	---	---	---	---	49	---	---	---	---	---	---	---	---	---	10	---	---
09.40	---	244	---	---	---	---	239	319	---	64	---	---	---	---	---	95	---	---	---	---	---	---	---	---	---	---	156	---
	---	45	---	---	---	---	6	14	---	75	---	---	---	---	---	45	---	---	---	---	---	---	---	---	---	6	---	---
09.50	---	249	---	---	---	---	241	317	---	77	---	---	---	---	---	99	---	---	---	---	---	---	---	---	---	---	156	---
	---	49	---	---	---	---	9	18	---	72	---	---	---	---	---	42	---	---	---	---	---	---	---	---	---	2	---	---
10.00	---	253	---	---	---	---	244	315	---	88	---	---	---	---	---	103	---	---	---	---	---	---	---	---	---	---	---	---
	---	53	---	---	---	---	13	21	---	69	---	---	---	---	---	38	---	---	---	---	---	---	---	---	---	6	---	---
10.10	---	259	---	---	---	---	247	313	---	96	---	---	---	---	---	107	---	---	---	---	---	---	---	---	---	---	---	---
	---	57	---	---	---	---	17	25	---	66	---	---	---	---	---	35	---	---	---	---	---	---	---	---	---	9	---	---
10.20	---	265	---	---	---	---	250	310	---	103	---	---	---	---	---	111	---	---	---	---	---	---	---	---	---	---	109	---
	---	61	---	---	---	---	20	28	---	62	---	---	---	---	---	31	---	---	---	---	---	---	---	---	---	12	---	---
10.30	---	272	---	---	---	---	253	306	---	109	---	---	---	---	---	114	---	---	---	---	---	---	---	---	---	---	105	---
	---	64	---	---	---	---	24	30	---	58	---	---	---	---	---	27	---	---	---	---	---	---	---	---	---	15	---	---
10.40	---	281	---	---	---	---	256	302	---	114	---	---	---	---	---	117	---	---	---	---	---	---	---	---	---	---	101	---
	---	67	---	---	---	---	27	33	---	54	---	---	---	---	---	24	---	---	---	---	---	---	---	---	---	17	---	---
10.50	---	291	---	---	---	---	260	297	---	118	---	---	---	---	---	120	---	---	---	---	---	---	---	---	---	---	97	---
	---	70	---	---	---	---	31	35	---	50	---	---	---	---	---	20	---	---	---	---	---	---	---	---	---	20	---	---
11.00	---	304	---	---	---	---	263	292	---	122	---	---	---	---	---	123	---	---	---	---	---	---	---	---	---	---	93	---
	---	73	---	---	---	---	34	36	---	46	---	---	---	---	---	16	---	---	---	---	---	---	---	---	---	22	---	---
11.10	---	320	---	---	---	---	267	287	---	125	---	---	---	---	---	126	---	---	---	---	---	---	---	---	---	---	158	---
	---	74	---	---	---	---	38	37	---	42	---	---	---	---	---	13	---	---	---	---	---	---	---	---	---	24	---	---
11.20	---	337	---	---	---	---	271	281	---	128	---	---	---	---	---	128	---	---	---	---	---	---	---	---	---	---	156	---
	---	75	---	---	---	---	41	38	---	38	---	---	---	---	---	9	---	---	---	---	---	---	---	---	---	8	---	---
11.30	---	355	---	---	---	---	275	275	---	131	---	---	---	---	---	130	---	---	---	---	---	---	---	---	---	---	154	---
	---	75	---	---	---	---	45	37	---	34	---	---	---	---	---	5	---	---	---	---	---	---	---	---	---	12	---	---
11.40	---	11	---	---	---	---	280	270	---	134	---	---	---	---	---	132	---	---	---	---	---	---	---	---	---	---	152	---
	---	73	---	---	---	---	48	36	---	30	---	---	---	---	---	2	---	---	---	---	---	---	---	---	---	16	---	---
11.50	---	25	---	---	---	---	285	264	---	136	---	---	---	---	---	114	---	---	---	---	---	---	---	---	---	---	149	---
	---	71	---	---	---	---	52	35	---	25	---	---	---	---	---	17	---	---	---	---	---	---	---	---	---	20	---	---
12.00	---	37	---	---	---	---	291	259	---	138	---	---	---	---	---	110	---	---	---	---	---	---	---	---	---	---	147	---
	---	69	---	---	---	---	55	33	---	21	---	---	---	---	---	20	---	---	---	---	---	---	---	---	---	24	---	---
12.10	---	46	---	---	---	---	296	254	---	140	---	---	---	---	---	104	---	---	---	---	---	---	---	---	---	---	144	---
	---	66	---	---	---	---	59	31	---	17	---	---	---	---	---	23	---	---	---	---	---	---	---	---	---	28	---	---
12.20	---	54	---	---	---	---	303	250	---	141	---	---	---	---	---	99	---	---	---	---	---	---	---	---	---	---	141	---
	---	63	---	---	---	---	62	29	---	13	---	---	---	---	---	27	---	---	---	---	---	---	---	---	---	32	---	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
12.30	---	61	---	311	246	---	143	---	---	227	---	93	---	---	---	---	---	---	---	281	---	51	---	168	---	---	138
	---	60	---	65	26	---	9	---	---	28	---	41	---	---	---	---	---	---	30	---	23	---	16	---	---	---	36
12.40	---	67	---	320	242	---	144	---	---	230	---	87	---	---	---	---	---	---	---	284	---	47	---	167	---	---	134
	---	56	---	68	23	---	5	---	---	32	---	42	---	---	---	---	---	---	33	---	21	---	20	---	---	---	40
12.50	---	73	---	330	238	---	145	---	---	233	---	80	---	---	332	---	---	---	---	287	---	44	---	165	---	---	130
	---	53	---	70	20	---	1	---	---	37	---	42	---	---	3	---	---	---	36	---	19	---	24	---	---	---	44
13.00	---	78	---	343	235	---	---	---	---	236	---	74	---	280	329	---	233	---	---	291	---	41	---	164	---	---	125
	---	49	---	73	17	---	---	---	---	41	---	42	---	2	5	---	3	---	---	40	---	16	---	29	---	---	47
13.10	---	83	---	358	232	---	---	---	---	240	---	68	---	283	326	---	236	---	---	294	---	38	---	162	61	---	119
	---	46	---	74	14	---	---	---	---	45	---	41	---	5	7	---	6	---	---	43	---	13	---	34	1	---	50
13.20	---	87	---	15	229	---	---	---	---	244	---	62	---	285	322	---	238	---	---	298	---	36	---	160	57	---	112
	---	42	---	75	11	---	---	---	---	49	---	40	---	8	8	---	10	---	---	47	---	10	---	38	2	---	53
13.30	---	91	---	32	226	322	---	---	---	249	---	57	---	288	318	---	241	---	---	301	---	34	---	158	54	---	104
	---	39	---	75	8	2	---	---	---	53	---	37	---	11	9	---	13	---	---	50	---	7	---	43	4	---	55
13.40	---	95	---	48	223	321	---	89	---	255	---	53	---	291	315	---	243	---	---	305	---	33	---	155	50	---	95
	---	35	---	74	5	5	---	1	---	57	---	35	---	14	9	---	17	---	---	54	---	3	---	48	4	---	56
13.50	---	99	---	62	220	320	---	86	---	261	---	49	---	293	311	---	246	---	---	309	---	---	---	151	46	---	87
	---	32	---	72	2	9	---	4	---	61	---	32	---	17	10	---	20	---	---	58	---	---	---	53	5	---	56
14.00	---	102	---	73	---	319	---	82	---	269	---	46	---	296	307	---	249	---	---	314	---	---	---	146	43	---	78
	---	28	---	69	---	13	---	6	---	64	---	28	---	21	9	---	24	---	---	62	---	---	---	57	5	---	55
14.10	---	106	---	83	---	318	---	78	---	278	---	44	---	298	303	---	252	---	---	319	---	---	---	139	39	---	71
	---	25	---	66	---	16	---	8	---	68	---	25	---	24	9	---	27	---	---	66	---	---	---	61	5	---	54
14.20	---	109	---	91	---	316	---	74	---	289	---	42	---	301	299	---	256	---	---	324	248	---	---	130	35	---	64
	---	21	---	63	---	19	---	10	---	70	---	21	---	28	8	---	31	---	---	70	2	---	---	65	4	---	51
14.30	---	112	---	98	---	314	---	70	---	303	---	40	---	303	295	---	260	---	---	332	251	---	---	119	32	---	59
	---	18	---	59	---	22	---	11	---	73	---	17	---	32	7	---	34	---	---	74	5	---	---	68	3	---	48
14.40	---	115	---	103	---	311	---	66	---	319	---	39	---	305	291	---	263	---	---	342	254	---	---	105	29	---	55
	---	14	---	56	---	25	---	12	---	74	---	14	---	36	5	---	37	---	---	77	9	---	---	69	2	---	45
14.50	---	117	---	108	---	308	---	62	---	336	---	39	---	307	287	---	267	---	---	358	257	---	---	91	---	---	51
	---	11	---	52	---	28	---	13	---	74	---	10	---	40	3	---	41	---	---	81	12	---	---	69	---	---	41
15.00	---	120	---	113	---	304	---	58	---	353	---	38	---	308	283	---	272	---	---	27	260	---	---	78	---	---	49
	---	7	---	48	---	31	---	14	---	74	---	6	---	44	2	---	44	---	---	83	15	---	---	67	---	---	38
15.10	---	122	329	117	---	300	---	54	---	8	---	38	---	310	---	---	276	---	---	67	263	---	---	68	---	---	47
	---	4	2	44	---	33	---	14	---	72	---	2	---	48	---	---	48	---	---	83	18	---	---	64	---	---	34
15.20	---	---	327	121	---	295	---	49	---	21	---	---	---	311	---	---	281	---	---	95	266	---	---	61	---	---	46
	---	---	5	40	---	34	---	13	---	70	---	---	---	52	---	---	51	---	---	81	22	---	---	61	---	---	30
15.30	---	---	324	124	---	290	---	45	167	32	---	---	---	312	---	---	287	---	---	111	270	---	---	55	---	---	45
	---	---	7	36	---	35	---	13	3	68	---	---	---	57	---	---	54	---	---	77	25	---	---	56	---	---	26
15.40	---	---	322	127	---	285	---	42	165	41	---	---	---	312	---	---	292	---	---	121	273	---	---	52	---	---	45
	---	---	10	32	---	36	---	12	6	65	---	---	---	61	---	---	57	---	---	72	28	---	---	52	---	---	22
15.50	---	---	319	130	---	280	---	38	163	48	---	---	---	311	---	---	299	---	---	127	276	---	---	50	---	---	45
	---	---	12	29	---	36	---	10	10	62	---	---	---	66	---	---	60	---	---	68	32	---	---	48	---	---	18
16.00	---	---	315	132	---	274	---	34	161	55	---	---	---	309	---	---	306	---	---	132	280	---	---	48	---	---	45
	---	---	14	25	---	35	---	8	14	59	---	---	---	71	---	---	63	---	---	63	35	---	---	43	---	---	14
16.10	---	---	312	135	---	269	---	31	159	61	---	---	---	304	---	---	314	---	---	136	284	---	---	48	---	---	46
	---	---	16	21	---	34	---	6	18	55	---	---	---	75	---	---	66	---	---	58	38	---	---	39	---	---	10
16.20	---	---	308	137	---	263	---	28	157	67	---	---	---	293	---	---	324	---	---	139	288	---	---	47	---	---	47
	---	---	17	17	---	33	---	3	22	52	---	---	---	80	---	---	69	---	---	54	42	---	---	34	---	---	7
16.30	---	---	304	139	---	259	---	155	72	---	---	---	---	268	---	---	335	---	---	281	142	292	---	---	48	---	48
	---	---	18	13	---	31	---	26	49	---	---	---	---	83	---	---	71	---	---	4	49	45	---	---	30	---	3
16.40	---	---	299	140	---	254	---	153	77	---	---	---	---	227	---	---	349	---	---	283	144	296	---	---	49	---	---
	---	---	19	9	---	29	---	30	46	---	---	---	---	83	---	---	73	---	---	7	44	48	---	---	26	---	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
16.50	---	---	295	142	---	250	---	---	150	81	---	---	---	200	---	---	4	---	286	146	300	---	---	50	---	---	---
	---	19	5	---	26	---	---	34	42	---	---	---	---	80	---	74	---	10	39	52	---	---	22	---	---	---	---
17.00	---	---	291	143	---	246	---	---	148	86	---	---	---	233	187	---	---	20	---	289	148	305	---	---	51	---	---
	---	19	1	---	23	---	---	39	39	---	---	---	---	3	76	---	74	---	13	35	55	---	---	18	---	---	---
17.10	234	---	286	---	---	242	---	---	144	90	---	---	---	236	181	---	---	36	---	292	150	310	---	---	52	---	---
	4	---	18	---	---	20	---	---	43	36	---	---	---	6	71	---	73	---	17	30	59	---	---	14	---	---	---
17.20	237	---	282	---	---	238	---	---	140	93	---	---	---	238	178	---	---	50	---	294	151	315	---	---	54	---	---
	7	---	17	---	---	17	---	---	47	32	---	---	---	10	66	---	72	---	20	25	62	---	---	10	---	---	---
17.30	239	---	278	---	---	235	---	---	135	97	---	---	---	241	177	---	---	63	---	297	152	322	---	---	56	---	---
	11	---	15	---	---	14	---	---	51	29	---	---	---	13	60	---	70	---	24	21	66	---	---	7	---	---	---
17.40	242	---	274	---	---	232	---	---	128	101	---	---	---	244	176	---	---	73	---	299	153	329	---	---	58	---	---
	14	---	14	---	---	11	---	---	54	26	---	---	---	17	55	---	67	---	27	17	69	---	---	3	---	---	---
17.50	245	---	270	---	---	229	---	---	121	104	---	---	---	247	175	---	---	82	---	301	154	339	---	---	323	---	---
	18	---	12	---	---	8	---	---	57	23	---	---	---	20	50	---	64	---	31	12	73	---	---	4	---	---	---
18.00	248	---	266	---	---	142	226	---	---	112	107	---	---	250	175	---	---	90	---	304	155	351	---	---	322	---	---
	21	---	10	---	3	5	---	---	59	19	---	---	---	24	45	---	61	---	35	8	76	---	---	8	---	---	---
18.10	252	---	262	---	---	139	223	---	---	102	111	---	---	254	174	---	---	96	---	306	155	8	---	321	---	---	---
	25	---	8	---	6	2	---	---	60	16	---	---	---	27	40	---	57	---	39	4	78	---	---	12	---	---	---
18.20	255	---	259	---	---	136	---	---	92	114	---	---	---	257	174	---	---	102	---	308	---	31	---	320	---	---	---
	28	---	5	---	9	---	---	---	60	13	---	---	---	31	35	---	53	---	43	---	79	---	15	---	---	---	---
18.30	259	---	256	---	---	133	---	---	82	116	---	---	---	261	174	---	---	107	---	309	---	55	---	319	---	---	---
	32	---	3	---	12	---	---	---	59	9	---	---	---	34	30	---	50	---	47	---	79	---	19	---	---	---	---
18.40	263	---	---	---	---	130	---	---	73	119	325	---	---	265	174	---	---	112	---	311	---	77	---	316	---	---	---
	35	---	---	---	---	15	---	---	57	6	2	---	---	37	26	---	46	---	51	---	77	---	22	---	---	---	---
18.50	267	---	---	---	---	127	---	---	66	122	323	---	---	270	174	---	---	116	---	312	---	93	---	314	---	---	---
	38	---	---	---	---	18	---	---	55	3	5	---	---	41	21	---	42	---	56	---	75	---	25	---	---	---	---
19.00	271	---	---	---	---	123	---	---	61	---	321	---	---	274	173	---	---	119	---	313	---	104	---	311	---	---	---
	42	---	---	---	---	22	---	---	51	---	8	---	---	44	17	---	38	---	60	---	71	---	28	---	---	---	---
19.10	276	---	---	---	---	120	---	---	56	---	319	---	---	279	173	---	---	123	---	313	---	112	---	307	---	---	---
	45	---	---	---	---	25	---	---	48	---	11	---	---	47	12	---	34	---	65	---	67	---	31	---	---	---	---
19.20	281	---	---	---	---	116	---	---	53	---	316	---	---	284	173	---	---	126	---	312	---	119	---	303	---	---	---
	48	---	---	---	---	28	---	---	43	---	14	---	---	51	8	---	30	---	70	---	63	---	33	---	---	---	---
19.30	286	---	---	---	---	111	---	---	51	---	313	---	---	290	172	---	---	128	---	309	---	124	---	299	---	---	---
	51	---	---	---	---	30	---	---	39	---	16	---	---	54	4	---	26	---	74	---	59	---	35	---	---	---	---
19.40	292	---	---	---	---	107	---	---	49	---	310	---	---	296	---	---	---	131	---	302	---	128	---	294	---	---	---
	54	---	---	---	---	33	---	---	35	---	18	---	---	57	---	---	22	---	79	---	54	---	36	---	---	---	---
19.50	298	---	---	---	---	102	---	---	49	---	306	---	---	303	---	---	---	133	---	284	---	132	---	288	---	---	---
	57	---	---	---	---	35	---	---	31	---	20	---	---	60	---	---	18	---	83	---	50	---	37	---	---	---	---
20.00	305	---	---	---	---	96	---	---	48	---	302	---	---	311	---	---	---	135	---	243	---	135	---	283	---	---	---
	60	---	---	---	---	37	---	---	27	---	21	---	---	63	---	---	14	---	85	---	46	---	37	---	---	---	---
20.10	313	---	---	---	---	90	---	---	48	---	298	---	---	319	---	---	---	137	---	204	---	138	---	277	---	---	---
	63	---	---	---	---	38	---	---	22	---	22	---	---	65	---	---	10	---	82	---	41	---	37	---	---	---	---
20.20	322	---	---	---	---	85	---	---	49	---	294	---	---	329	---	---	---	139	---	187	---	141	---	272	---	---	---
	66	---	---	---	---	38	---	---	18	---	22	---	---	68	---	---	6	---	78	---	37	---	36	---	---	---	---
20.30	331	---	---	---	---	79	---	---	49	---	289	---	---	340	---	---	---	141	---	180	---	143	---	266	---	---	---
	68	---	---	---	---	39	---	---	14	---	23	---	---	69	---	5	---	2	---	73	---	32	---	35	---	---	---
20.40	343	---	---	---	---	73	---	---	50	---	285	---	---	353	---	---	---	177	---	177	---	145	---	261	---	---	---
	70	---	---	---	---	38	---	---	10	---	22	---	---	71	---	9	---	---	68	---	28	---	33	---	---	---	---
20.50	356	---	---	---	---	67	---	---	52	---	280	---	---	7	---	---	---	175	---	175	---	147	---	257	---	---	---
	71	---	---	---	---	37	---	---	7	---	22	---	---	72	---	13	---	---	63	---	24	---	30	---	---	---	---
21.00	10	---	---	---	---	62	---	---	53	---	276	---	---	22	---	---	---	174	---	174	---	148	---	252	---	---	---
	72	---	---	---	---	35	---	---	3	---	21	---	---	72	---	17	---	---	58	---	19	---	28	---	---	---	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
21.10	24				58							272		37		176			174		150		248				
	72				33							19		71		21			53		15		25				
21.20	39				54							267		50		175			173		151		244				
	71				30							17		70		26			48		11		22				
21.30	52				51							264		62		174			173		152		241				
	70				27							16		68		30			43		7		19				
21.40	64				48							260		72		173			173		152		238				
	68				24							13		65		35			38		3		16				
21.50	74				46							256		81		172			173				234				
	65				21							11		62		40			34				13				
22.00	83				44							253		89		170			173				231				
	62				17							9		59		45			29				10				
22.10	90				42							249		95		168			173				229				
	59				14							6		56		49			24				7				
22.20	97				41	142						246		101		166			173				226				
	56				10	3						4		52		54			20				3				
22.30	103				41	139						243		106		163			173								
	52				6	6						2		49		59			15								
22.40	108				40	136								111		158			173								
	49				3	9								45		64			11								
22.50	113					133								115		151			172								
	45					12								41		68			7								
23.00	117					130								119		141			171								
	41					15								37		72			3								
23.10	121				168									123		127											
	37				2									33		74											
23.20	124				166									126		108											
	33				6									29		75											
23.30	127				164									129		90											
	29				9									26		75											
23.40	130				162									132		75											
	25				13									22		72											
23.50	133				160									134		65											
	21				16									18		69											
24.00	135				158									136		59							314				
	17				20									14		65							3				

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98216HMP Satellite visibility Time: GMT-05.00
05/22/02 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Sat.No from to

1	00.00	00.00
1	17.50	24.00
2	08.30	14.30
3	00.00	04.10
3	16.10	17.20
3	23.50	24.00
4	10.10	16.20
5	09.50	13.00
5	18.50	22.00
6	00.00	02.30
6	14.10	17.20
6	23.10	24.00
7	06.00	12.10
8	03.20	07.50
9	08.20	09.40
9	16.10	20.20
10	12.00	18.10
11	03.40	07.40
11	19.30	21.30
13	02.10	05.20
13	11.10	14.30
14	17.40	23.50
15	13.50	19.00
16	00.00	02.00
16	21.00	24.00
17	04.50	11.00
18	13.40	19.50
19	03.00	08.40
20	17.10	22.20
21	11.50	17.40
22	15.10	21.00
23	00.40	04.40
23	10.40	13.00
24	03.30	06.50
24	18.30	21.40
26	05.00	05.40
26	12.30	17.00
27	01.20	06.40
28	03.20	09.10
29	03.30	05.40
29	11.40	15.50



Processing Summary

98216HMP_20020522

Project Information

Project name: 98216HMP_20020522
 Date created: 03/30/2006 13:23:00
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 05/21/2002 18:44:00
 End date and time: 05/23/2002 02:47:30
 Manually occupied points: 20
 Processing kernel: PSI-Pro 1.0
 Processed: 06/08/2004 08:08:42

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

AC9170 - AF9258	Reference: AC9170	Rover: AF9258
Receiver type / S/N:	SR530 / 32630	SR530 / 32634
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -
Antenna height:	3.8419 fts	2.9265 fts
Coordinates:		
Latitude:	41° 51' 55.73343" N	41° 39' 56.88379" N
Longitude:	87° 36' 22.39093" W	87° 54' 18.02471" W
Ellip. Hgt:	482.1390 fts	618.8589 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/21/2002 18:44:00 - 05/22/2002 02:37:40
 Duration: 7h 53' 40"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0015 fts
 Posn. Qlty: 0.0009 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: -0° 11' 58.84964" dLon: -0° 17' 55.63379" dHgt: 136.7199 fts
 Slope: 109268.1125 fts

DOPs (min-max): GDOP: 1.9 - 5.4
 PDOP: 1.7 - 4.5 HDOP: 1.0 - 2.6 VDOP: 1.3 - 3.8

AC9170 - AE9231

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: AC9170

SR530 / 32630

AT502 Tripod / -

3.8419 fts

Rover: AE9231

SR530 / 32623

AT502 Tripod / -

4.3077 fts

Coordinates:

Latitude: 41° 51' 55.73343" N

41° 43' 47.41107" N

Longitude: 87° 36' 22.39093" W

87° 32' 18.38216" W

Ellip. Hgt: 482.1390 fts

475.4528 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/21/2002 18:44:00 - 05/22/2002 02:37:40
 Duration: 7h 53' 40"

Quality: Sd. Lat: 0.0008 fts Sd. Lon: 0.0007 fts Sd. Hgt: 0.0017 fts
 Posn. Qlty: 0.0010 fts Sd. Slope: 0.0007 fts

Baseline vector: dLat: -0° 08' 08.32236" dLon: 0° 04' 04.00877" dHgt: -6.6862 fts
 Slope: 52772.6522 fts

DOPs (min-max): GDOP: 2.0 - 21.5
 PDOP: 1.7 - 16.6 HDOP: 1.0 - 10.3 VDOP: 1.4 - 15.7

AC9170 - ME3311

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: AC9170

SR530 / 32630

AT502 Tripod / -

3.8419 fts

Rover: ME3311

SR530 / 32707

AT502 Tripod / -

4.4160 fts

Coordinates:

Latitude: 41° 51' 55.73343" N

41° 32' 21.50115" N

Longitude: 87° 36' 22.39093" W

87° 31' 50.37937" W

Ellip. Hgt: 482.1390 fts

503.7198 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/21/2002 18:44:00 - 05/22/2002 02:35:15
 Duration: 7h 51' 15"

Quality:	Sd. Lat: 0.0005 fts Posn. Qlty: 0.0007 fts	Sd. Lon: 0.0004 fts Sd. Slope: 0.0005 fts	Sd. Hgt: 0.0010 fts
Baseline vector:	dLat: -0° 19' 34.23228" Slope: 120636.8459 fts	dLon: 0° 04' 32.01156"	dHgt: 21.5808 fts

DOPs (min-max):	GDOP: 1.9 - 5.4 PDOP: 1.7 - 4.5	HDOP: 1.0 - 2.6	VDOP: 1.3 - 3.7
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AC9170 - ME1881WEST

Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AC9170

SR530 / 32630
AT502 Tripod / -
3.8419 fts

Rover: ME1881WEST

SR530 / 32637
AT502 Tripod / -
3.5663 fts

Coordinates:

Latitude:	41° 51' 55.73343" N	41° 46' 05.20500" N
Longitude:	87° 36' 22.39093" W	87° 36' 38.62027" W
Ellip. Hgt:	482.1390 fts	493.6458 fts

Solution type:	Phase
Frequency:	L1 and L2
Ambiguity:	Yes
Time span:	05/21/2002 19:10:00 - 05/21/2002 19:56:10
Duration:	46' 10"

Quality:	Sd. Lat: 0.0011 fts Posn. Qlty: 0.0013 fts	Sd. Lon: 0.0006 fts Sd. Slope: 0.0011 fts	Sd. Hgt: 0.0018 fts
Baseline vector:	dLat: -0° 05' 50.52843" Slope: 35503.4929 fts	dLon: -0° 00' 16.22934"	dHgt: 11.5067 fts

DOPs (min-max):	GDOP: 1.9 - 5.4 PDOP: 1.7 - 4.5	HDOP: 1.0 - 2.6	VDOP: 1.4 - 3.7
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AC9170 - AJ2777

Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AC9170

SR530 / 32630
AT502 Tripod / -
3.8419 fts

Rover: AJ2777

SR530 / 32637
AT502 Tripod / -
4.1174 fts

Coordinates:

Latitude:	41° 51' 55.73343" N	41° 40' 54.01948" N
Longitude:	87° 36' 22.39093" W	87° 36' 07.38432" W
Ellip. Hgt:	482.1390 fts	474.6931 fts

Solution type:	Phase
Frequency:	IonoFree (L3)
Ambiguity:	Yes
Time span:	05/21/2002 20:20:05 - 05/21/2002 21:05:50
Duration:	45' 45"

Quality:	Sd. Lat: 0.0016 fts Posn. Qlty: 0.0020 fts	Sd. Lon: 0.0012 fts Sd. Slope: 0.0016 fts	Sd. Hgt: 0.0036 fts
Baseline vector:	dLat: -0° 11' 01.71395" Slope: 66991.0414 fts	dLon: 0° 00' 15.00661"	dHgt: -7.4459 fts

DOPs (min-max):	GDOP: 2.7 - 3.2 PDOP: 2.3 - 2.7	HDOP: 1.1 - 1.4	VDOP: 2.0 - 2.4
AC9170 - AJ2776	Reference: AC9170	Rover: AJ2776	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8419 fts	3.9567 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 40' 32.54055" N	
Longitude:	87° 36' 22.39093" W	87° 36' 06.22612" W	
Ellip. Hgt:	482.1390 fts	476.1181 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 21:15:00 - 05/21/2002 22:00:10		
Duration:	45' 10"		
Quality:	Sd. Lat: 0.0015 fts Posn. Qlty: 0.0019 fts	Sd. Lon: 0.0012 fts Sd. Slope: 0.0015 fts	Sd. Hgt: 0.0032 fts
Baseline vector:	dLat: -0° 11' 23.19288" Slope: 69166.3866 fts	dLon: 0° 00' 16.16480"	dHgt: -6.0209 fts
DOPs (min-max):	GDOP: 2.0 - 3.3 PDOP: 1.8 - 2.8	HDOP: 1.0 - 1.5	VDOP: 1.5 - 2.4
AC9170 - ME1830	Reference: AC9170	Rover: ME1830	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8419 fts	5.6299 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 39' 48.90779" N	
Longitude:	87° 36' 22.39093" W	87° 37' 11.48615" W	
Ellip. Hgt:	482.1390 fts	490.5762 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 22:16:35 - 05/21/2002 23:01:35		
Duration:	45' 00"		
Quality:	Sd. Lat: 0.0029 fts Posn. Qlty: 0.0036 fts	Sd. Lon: 0.0022 fts Sd. Slope: 0.0029 fts	Sd. Hgt: 0.0062 fts
Baseline vector:	dLat: -0° 12' 06.82564" Slope: 73666.1862 fts	dLon: -0° 00' 49.09522"	dHgt: 8.4372 fts
DOPs (min-max):	GDOP: 2.8 - 4.7 PDOP: 2.5 - 3.9	HDOP: 1.6 - 2.2	VDOP: 1.9 - 3.5
AC9170 - ME1829	Reference: AC9170	Rover: ME1829	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.8419 fts	3.7467 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 39' 48.72705" N	
Longitude:	87° 36' 22.39093" W	87° 37' 18.99988" W	
Ellip. Hgt:	482.1390 fts	492.3530 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 23:10:15 - 05/21/2002 23:56:10		
Duration:	45' 55"		
Quality:	Sd. Lat: 0.0027 fts	Sd. Lon: 0.0022 fts	Sd. Hgt: 0.0057 fts
	Posn. Qlty: 0.0034 fts	Sd. Slope: 0.0027 fts	
Baseline vector:	dLat: -0° 12' 07.00638"	dLon: -0° 00' 56.60896"	dHgt: 10.2140 fts
	Slope: 73715.4083 fts		
DOPs (min-max):	GDOP: 2.1 - 3.0	HDOP: 1.1 - 1.4	VDOP: 1.5 - 2.2
	PDOP: 1.9 - 2.6		
AC9170 - ME2887	Reference: AC9170	Rover: ME2887	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8419 fts	4.1240 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 42' 28.45445" N	
Longitude:	87° 36' 22.39093" W	87° 33' 55.23124" W	
Ellip. Hgt:	482.1390 fts	473.8448 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 00:24:50 - 05/22/2002 01:10:55		
Duration:	46' 05"		
Quality:	Sd. Lat: 0.0038 fts	Sd. Lon: 0.0064 fts	Sd. Hgt: 0.0201 fts
	Posn. Qlty: 0.0074 fts	Sd. Slope: 0.0031 fts	
Baseline vector:	dLat: -0° 09' 27.27898"	dLon: 0° 02' 27.15969"	dHgt: -8.2942 fts
	Slope: 58494.6803 fts		
DOPs (min-max):	GDOP: 3.4 - 25.3	HDOP: 1.3 - 5.1	VDOP: 2.5 - 18.6
	PDOP: 2.8 - 19.3		
AC9170 - ME1825	Reference: AC9170	Rover: ME1825	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8419 fts	3.7237 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 39' 35.12112" N	
Longitude:	87° 36' 22.39093" W	87° 33' 28.73732" W	
Ellip. Hgt:	482.1390 fts	475.2513 fts	

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 01:46:20 - 05/22/2002 02:31:35
 Duration: 45' 15"

Quality: Sd. Lat: 0.0022 fts Sd. Lon: 0.0013 fts Sd. Hgt: 0.0032 fts
 Posn. Qlty: 0.0025 fts Sd. Slope: 0.0021 fts

Baseline vector: dLat: -0° 12' 20.61231" dLon: 0° 02' 53.65360" dHgt: -6.8877 fts
 Slope: 76114.0741 fts

DOPs (min-max): GDOP: 2.0 - 3.0
 PDOP: 1.7 - 2.6 HDOP: 1.0 - 1.4 VDOP: 1.4 - 2.2

AC9170 - AE9231

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AC9170

SR530 / 32630
 AT502 Tripod / -
 3.8943 fts

Rover: AE9231

SR530 / 32623
 AT502 Tripod / -
 4.3373 fts

Coordinates:

Latitude: 41° 51' 55.73343" N 41° 43' 47.41134" N
 Longitude: 87° 36' 22.39093" W 87° 32' 18.38214" W
 Ellip. Hgt: 482.1390 fts 475.4460 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 16:52:10 - 05/23/2002 02:47:30
 Duration: 9h 55' 20"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0015 fts
 Posn. Qlty: 0.0009 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: -0° 08' 08.32210" dLon: 0° 04' 04.00878" dHgt: -6.6930 fts
 Slope: 52772.6276 fts

DOPs (min-max): GDOP: 2.0 - 22.6
 PDOP: 1.7 - 17.2 HDOP: 1.0 - 7.7 VDOP: 1.4 - 16.6

AC9170 - ME3311

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AC9170

SR530 / 32630
 AT502 Tripod / -
 3.8943 fts

Rover: ME3311

SR530 / 32707
 AT502 Tripod / -
 4.5997 fts

Coordinates:

Latitude: 41° 51' 55.73343" N 41° 32' 21.50151" N
 Longitude: 87° 36' 22.39093" W 87° 31' 50.37918" W
 Ellip. Hgt: 482.1390 fts 503.6253 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:05:45 - 05/23/2002 02:47:30
 Duration: 9h 41' 45"

Quality: Sd. Lat: 0.0005 fts Sd. Lon: 0.0004 fts Sd. Hgt: 0.0011 fts
 Posn. Qlty: 0.0007 fts Sd. Slope: 0.0005 fts

Baseline vector: dLat: -0° 19' 34.23192" dLon: 0° 04' 32.01175" dHgt: 21.4862 fts
 Slope: 120636.8127 fts

DOPs (min-max): GDOP: 1.9 - 5.4
 PDOP: 1.7 - 4.5 HDOP: 1.0 - 2.6 VDOP: 1.3 - 3.7

AC9170 - AF9258
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AC9170
 SR530 / 32630
 AT502 Tripod / -
 3.8943 fts

Rover: AF9258
 SR530 / 32634
 AT502 Tripod / -
 3.0184 fts

Coordinates:

Latitude: 41° 51' 55.73343" N 41° 39' 56.88418" N
 Longitude: 87° 36' 22.39093" W 87° 54' 18.02460" W
 Ellip. Hgt: 482.1390 fts 618.7775 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:11:55 - 05/23/2002 02:47:30
 Duration: 9h 35' 35"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0009 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: -0° 11' 58.84926" dLon: -0° 17' 55.63367" dHgt: 136.6385 fts
 Slope: 109268.0796 fts

DOPs (min-max): GDOP: 1.9 - 5.7
 PDOP: 1.7 - 4.6 HDOP: 1.0 - 2.6 VDOP: 1.3 - 4.2

AC9170 - ME1825
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AC9170
 SR530 / 32630
 AT502 Tripod / -
 3.8943 fts

Rover: ME1825
 SR530 / 32637
 AT502 Tripod / -
 3.6450 fts

Coordinates:

Latitude: 41° 51' 55.73343" N 41° 39' 35.12145" N
 Longitude: 87° 36' 22.39093" W 87° 33' 28.73722" W
 Ellip. Hgt: 482.1390 fts 475.2655 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 19:12:45 - 05/22/2002 19:58:30
 Duration: 45' 45"

Quality: Sd. Lat: 0.0031 fts Sd. Lon: 0.0015 fts Sd. Hgt: 0.0049 fts
 Posn. Qlty: 0.0035 fts Sd. Slope: 0.0031 fts

Baseline vector: dLat: -0° 12' 20.61198" dLon: 0° 02' 53.65371" dHgt: -6.8735 fts
 Slope: 76114.0427 fts

DOPs (min-max):	GDOP: 1.9 - 5.4 PDOP: 1.7 - 4.5	HDOP: 1.0 - 2.6	VDOP: 1.4 - 3.7
AC9170 - ME2887	Reference: AC9170	Rover: ME2887	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8943 fts	3.9567 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 42' 28.47058" N	
Longitude:	87° 36' 22.39093" W	87° 33' 55.25793" W	
Ellip. Hgt:	482.1390 fts	471.3118 fts	
Solution type:	Float		
Frequency:	IonoFree (L3)		
Ambiguity:	No		
Time span:	05/22/2002 20:47:35 - 05/22/2002 21:32:10		
Duration:	44' 35"		
Quality:	Sd. Lat: 0.1199 fts Posn. Qlty: 0.2098 fts	Sd. Lon: 0.1721 fts Sd. Slope: 0.1465 fts	Sd. Hgt: 0.2119 fts
Baseline vector:	dLat: -0° 09' 27.26286" Slope: 58492.6893 fts	dLon: 0° 02' 27.13299"	dHgt: -10.8272 fts
DOPs (min-max):	GDOP: 2.7 - 84.8 PDOP: 2.4 - 65.5	HDOP: 1.1 - 19.3	VDOP: 2.1 - 62.6
AC9170 - AJ2777	Reference: AC9170	Rover: AJ2777	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8943 fts	4.0781 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 40' 54.02026" N	
Longitude:	87° 36' 22.39093" W	87° 36' 07.38418" W	
Ellip. Hgt:	482.1390 fts	474.5742 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 21:44:30 - 05/22/2002 22:30:25		
Duration:	45' 55"		
Quality:	Sd. Lat: 0.0019 fts Posn. Qlty: 0.0026 fts	Sd. Lon: 0.0017 fts Sd. Slope: 0.0019 fts	Sd. Hgt: 0.0043 fts
Baseline vector:	dLat: -0° 11' 01.71317" Slope: 66990.9624 fts	dLon: 0° 00' 15.00674"	dHgt: -7.5648 fts
DOPs (min-max):	GDOP: 2.4 - 4.5 PDOP: 2.1 - 3.7	HDOP: 1.1 - 1.7	VDOP: 1.8 - 3.3
AC9170 - AJ2776	Reference: AC9170	Rover: AJ2776	
Receiver type / S/N:	SR530 / 32630	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.8943 fts	3.9304 fts	
Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 40' 32.54103" N	
Longitude:	87° 36' 22.39093" W	87° 36' 06.22585" W	
Ellip. Hgt:	482.1390 fts	476.1579 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 22:38:05 - 05/22/2002 23:23:00		
Duration:	44' 55"		
Quality:	Sd. Lat: 0.0021 fts	Sd. Lon: 0.0014 fts	Sd. Hgt: 0.0040 fts
	Posn. Qlty: 0.0025 fts	Sd. Slope: 0.0021 fts	
Baseline vector:	dLat: -0° 11' 23.19240"	dLon: 0° 00' 16.16508"	dHgt: -5.9811 fts
	Slope: 69166.3382 fts		
DOPs (min-max):	GDOP: 2.4 - 5.7	HDOP: 1.1 - 2.2	VDOP: 1.7 - 4.1
	PDOP: 2.1 - 4.7		

AC9170 - ME1830
Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AC9170
SR530 / 32630
AT502 Tripod / -
3.8943 fts

Rover: ME1830
SR530 / 32637
AT502 Tripod / -
5.7513 fts

Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 39' 48.90729" N	
Longitude:	87° 36' 22.39093" W	87° 37' 11.48485" W	
Ellip. Hgt:	482.1390 fts	490.5710 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 23:42:15 - 05/23/2002 00:29:05		
Duration:	46' 50"		

Quality:	Sd. Lat: 0.0018 fts	Sd. Lon: 0.0017 fts	Sd. Hgt: 0.0046 fts
	Posn. Qlty: 0.0025 fts	Sd. Slope: 0.0019 fts	
Baseline vector:	dLat: -0° 12' 06.82614"	dLon: -0° 00' 49.09393"	dHgt: 8.4320 fts
	Slope: 73666.2320 fts		
DOPs (min-max):	GDOP: 2.0 - 3.4	HDOP: 1.0 - 1.3	VDOP: 1.4 - 2.5
	PDOP: 1.7 - 2.8		

AC9170 - ME1829
Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AC9170
SR530 / 32630
AT502 Tripod / -
3.8943 fts

Rover: ME1829
SR530 / 32637
AT502 Tripod / -
3.7237 fts

Coordinates:			
Latitude:	41° 51' 55.73343" N	41° 39' 48.72766" N	
Longitude:	87° 36' 22.39093" W	87° 37' 18.99998" W	
Ellip. Hgt:	482.1390 fts	492.1854 fts	

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/23/2002 00:35:25 - 05/23/2002 01:20:35
 Duration: 45' 10"

Quality: Sd. Lat: 0.0018 fts Sd. Lon: 0.0017 fts Sd. Hgt: 0.0049 fts
 Posn. Qlty: 0.0025 fts Sd. Slope: 0.0018 fts

Baseline vector: dLat: -0° 12' 07.00577" dLon: -0° 00' 56.60906" dHgt: 10.0464 fts
 Slope: 73715.3468 fts

DOPs (min-max): GDOP: 2.7 - 7.5
 PDOP: 2.3 - 5.9 HDOP: 1.2 - 2.3 VDOP: 1.8 - 5.4

AC9170 - ME1881WEST

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AC9170

SR530 / 32630
 AT502 Tripod / -
 3.8943 fts

Rover: ME1881WEST

SR530 / 32637
 AT502 Tripod / -
 3.5466 fts

Coordinates:

Latitude:	41° 51' 55.73343" N	41° 46' 05.20506" N
Longitude:	87° 36' 22.39093" W	87° 36' 38.62005" W
Ellip. Hgt:	482.1390 fts	493.6251 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 05/23/2002 01:53:35 - 05/23/2002 02:38:35
 Duration: 45' 00"

Quality: Sd. Lat: 0.0009 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0011 fts Sd. Slope: 0.0009 fts

Baseline vector: dLat: -0° 05' 50.52837" dLon: -0° 00' 16.22912" dHgt: 11.4861 fts
 Slope: 35503.4858 fts

DOPs (min-max): GDOP: 2.0 - 2.6
 PDOP: 1.7 - 2.2 HDOP: 1.0 - 1.3 VDOP: 1.4 - 1.8



Processing Summary

98216HMP_20020522

Project Information

Project name: 98216HMP_20020522
 Date created: 03/30/2006 13:23:00
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 05/21/2002 18:28:35
 End date and time: 05/23/2002 02:47:30
 Manually occupied points: 20
 Processing kernel: PSI-Pro 1.0
 Processed: 06/08/2004 08:06:32

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

ME3311 - AF9258	Reference: ME3311	Rover: AF9258
Receiver type / S/N:	SR530 / 32707	SR530 / 32634
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -
Antenna height:	4.4160 fts	2.9265 fts
Coordinates:		
Latitude:	41° 32' 21.50134" N	41° 39' 56.88399" N
Longitude:	87° 31' 50.37927" W	87° 54' 18.02462" W
Ellip. Hgt:	503.6704 fts	618.8107 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/21/2002 18:28:35 - 05/22/2002 02:35:15
 Duration: 8h 06' 40"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0005 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0009 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: 0° 07' 35.38265" dLon: -0° 22' 27.64534" dHgt: 115.1403 fts
 Slope: 112285.1736 fts

DOPs (min-max): GDOP: 1.9 - 5.4
 PDOP: 1.7 - 4.5 HDOP: 1.0 - 2.6 VDOP: 1.3 - 3.8

ME3311 - AE9231

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME3311

SR530 / 32707
 AT502 Tripod / -
 4.4160 fts

Rover: AE9231

SR530 / 32623
 AT502 Tripod / -
 4.3077 fts

Coordinates:

Latitude: 41° 32' 21.50134" N 41° 43' 47.41130" N
 Longitude: 87° 31' 50.37927" W 87° 32' 18.38204" W
 Ellip. Hgt: 503.6704 fts 475.4050 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/21/2002 18:28:35 - 05/22/2002 02:35:15
 Duration: 8h 06' 40"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0016 fts
 Posn. Qlty: 0.0010 fts Sd. Slope: 0.0007 fts

Baseline vector: dLat: 0° 11' 25.90996" dLon: -0° 00' 28.00276" dHgt: -28.2654 fts
 Slope: 69461.5203 fts

DOPs (min-max): GDOP: 2.0 - 21.5
 PDOP: 1.7 - 16.6 HDOP: 1.0 - 10.3 VDOP: 1.4 - 15.7

ME3311 - AC9170

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME3311

SR530 / 32707
 AT502 Tripod / -
 4.4160 fts

Rover: AC9170

SR530 / 32630
 AT502 Tripod / -
 3.8419 fts

Coordinates:

Latitude: 41° 32' 21.50134" N 41° 51' 55.73362" N
 Longitude: 87° 31' 50.37927" W 87° 36' 22.39084" W
 Ellip. Hgt: 503.6704 fts 482.0900 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/21/2002 18:44:00 - 05/22/2002 02:35:15
 Duration: 7h 51' 15"

Quality: Sd. Lat: 0.0005 fts Sd. Lon: 0.0004 fts Sd. Hgt: 0.0010 fts
 Posn. Qlty: 0.0007 fts Sd. Slope: 0.0005 fts

Baseline vector: dLat: 0° 19' 34.23229" dLon: -0° 04' 32.01156" dHgt: -21.5804 fts
 Slope: 120636.8462 fts

DOPs (min-max): GDOP: 1.9 - 5.4
 PDOP: 1.7 - 4.5 HDOP: 1.0 - 2.6 VDOP: 1.3 - 3.7

ME3311 - ME1881WEST**Reference: ME3311****Rover: ME1881WEST**

Receiver type / S/N:

SR530 / 32707

SR530 / 32637

Antenna type / S/N:

AT502 Tripod / -

AT502 Tripod / -

Antenna height:

4.4160 fts

3.5663 fts

Coordinates:

Latitude:

41° 32' 21.50134" N

41° 46' 05.20498" N

Longitude:

87° 31' 50.37927" W

87° 36' 38.62012" W

Ellip. Hgt:

503.6704 fts

493.5151 fts

Solution type:

Phase

Frequency:

IonoFree (L3)

Ambiguity:

Yes

Time span:

05/21/2002 19:10:00 - 05/21/2002 19:56:10

Duration:

46' 10"

Quality: Sd. Lat: 0.0028 fts Sd. Lon: 0.0015 fts Sd. Hgt: 0.0045 fts
 Posn. Qlty: 0.0032 fts Sd. Slope: 0.0028 fts

Baseline vector: dLat: 0° 13' 43.70365" dLon: -0° 04' 48.24085" dHgt: -10.1553 fts
 Slope: 86200.5269 fts

DOPs (min-max): GDOP: 1.9 - 5.4
 PDOP: 1.7 - 4.5 HDOP: 1.0 - 2.6 VDOP: 1.4 - 3.7

ME3311 - AJ2777**Reference: ME3311****Rover: AJ2777**

Receiver type / S/N:

SR530 / 32707

SR530 / 32637

Antenna type / S/N:

AT502 Tripod / -

AT502 Tripod / -

Antenna height:

4.4160 fts

4.1174 fts

Coordinates:

Latitude:

41° 32' 21.50134" N

41° 40' 54.01968" N

Longitude:

87° 31' 50.37927" W

87° 36' 07.38431" W

Ellip. Hgt:

503.6704 fts

474.6736 fts

Solution type:

Phase

Frequency:

IonoFree (L3)

Ambiguity:

Yes

Time span:

05/21/2002 20:20:05 - 05/21/2002 21:05:50

Duration:

45' 45"

Quality: Sd. Lat: 0.0016 fts Sd. Lon: 0.0012 fts Sd. Hgt: 0.0036 fts
 Posn. Qlty: 0.0020 fts Sd. Slope: 0.0016 fts

Baseline vector: dLat: 0° 08' 32.51834" dLon: -0° 04' 17.00504" dHgt: -28.9968 fts
 Slope: 55429.8961 fts

DOPs (min-max):	GDOP: 2.7 - 3.2 PDOP: 2.3 - 2.7	HDOP: 1.1 - 1.4	VDOP: 2.0 - 2.4
ME3311 - AJ2776	Reference: ME3311	Rover: AJ2776	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.4160 fts	3.9567 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 40' 32.54076" N	
Longitude:	87° 31' 50.37927" W	87° 36' 06.22583" W	
Ellip. Hgt:	503.6704 fts	476.1181 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 21:15:00 - 05/21/2002 22:00:10		
Duration:	45' 10"		
Quality:	Sd. Lat: 0.0013 fts Posn. Qlty: 0.0017 fts	Sd. Lon: 0.0011 fts Sd. Slope: 0.0015 fts	Sd. Hgt: 0.0029 fts
Baseline vector:	dLat: 0° 08' 11.03942" Slope: 53368.7811 fts	dLon: -0° 04' 15.84656"	dHgt: -27.5523 fts
DOPs (min-max):	GDOP: 2.0 - 3.3 PDOP: 1.8 - 2.8	HDOP: 1.0 - 1.5	VDOP: 1.5 - 2.4
ME3311 - ME1830	Reference: ME3311	Rover: ME1830	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.4160 fts	5.6299 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 39' 48.90727" N	
Longitude:	87° 31' 50.37927" W	87° 37' 11.48588" W	
Ellip. Hgt:	503.6704 fts	490.6062 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 22:16:35 - 05/21/2002 23:01:35		
Duration:	45' 00"		
Quality:	Sd. Lat: 0.0025 fts Posn. Qlty: 0.0031 fts	Sd. Lon: 0.0018 fts Sd. Slope: 0.0026 fts	Sd. Hgt: 0.0052 fts
Baseline vector:	dLat: 0° 07' 27.40593" Slope: 51440.2469 fts	dLon: -0° 05' 21.10660"	dHgt: -13.0641 fts
DOPs (min-max):	GDOP: 2.8 - 4.7 PDOP: 2.5 - 3.9	HDOP: 1.6 - 2.2	VDOP: 1.9 - 3.5
ME3311 - ME1829	Reference: ME3311	Rover: ME1829	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.4160 fts	3.7467 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 39' 48.72743" N	
Longitude:	87° 31' 50.37927" W	87° 37' 18.99975" W	
Ellip. Hgt:	503.6704 fts	492.2292 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 23:10:15 - 05/21/2002 23:56:10		
Duration:	45' 55"		
Quality:	Sd. Lat: 0.0025 fts	Sd. Lon: 0.0021 fts	Sd. Hgt: 0.0053 fts
	Posn. Qlty: 0.0033 fts	Sd. Slope: 0.0024 fts	
Baseline vector:	dLat: 0° 07' 27.22610"	dLon: -0° 05' 28.62047"	dHgt: -11.4412 fts
	Slope: 51697.5047 fts		
DOPs (min-max):	GDOP: 2.1 - 2.7	HDOP: 1.1 - 1.2	VDOP: 1.5 - 2.0
	PDOP: 1.9 - 2.3		
ME3311 - ME2887	Reference: ME3311	Rover: ME2887	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.4160 fts	4.1240 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 42' 28.45469" N	
Longitude:	87° 31' 50.37927" W	87° 33' 55.23140" W	
Ellip. Hgt:	503.6704 fts	473.8620 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 00:24:50 - 05/22/2002 01:10:55		
Duration:	46' 05"		
Quality:	Sd. Lat: 0.0028 fts	Sd. Lon: 0.0027 fts	Sd. Hgt: 0.0077 fts
	Posn. Qlty: 0.0038 fts	Sd. Slope: 0.0028 fts	
Baseline vector:	dLat: 0° 10' 06.95336"	dLon: -0° 02' 04.85212"	dHgt: -29.8084 fts
	Slope: 62164.2259 fts		
DOPs (min-max):	GDOP: 3.2 - 5.2	HDOP: 1.2 - 1.8	VDOP: 2.3 - 3.8
	PDOP: 2.6 - 4.1		
ME3311 - ME1825	Reference: ME3311	Rover: ME1825	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.4160 fts	3.7237 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 39' 35.12191" N	
Longitude:	87° 31' 50.37927" W	87° 33' 28.73717" W	
Ellip. Hgt:	503.6704 fts	475.2099 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 05/22/2002 01:46:20 - 05/22/2002 02:31:35
 Duration: 45' 15"

Quality: Sd. Lat: 0.0010 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0011 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: 0° 07' 13.62057" dLon: -0° 01' 38.35789" dHgt: -28.4604 fts
 Slope: 44523.2063 fts

DOPs (min-max): GDOP: 2.0 - 3.0
 PDOP: 1.7 - 2.6 HDOP: 1.0 - 1.4 VDOP: 1.4 - 2.2

ME3311 - AE9231

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME3311

SR530 / 32707
 AT502 Tripod / -
 4.5997 fts

Rover: AE9231

SR530 / 32623
 AT502 Tripod / -
 4.3373 fts

Coordinates:

Latitude: 41° 32' 21.50134" N 41° 43' 47.41115" N
 Longitude: 87° 31' 50.37927" W 87° 32' 18.38224" W
 Ellip. Hgt: 503.6704 fts 475.4927 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:05:45 - 05/23/2002 02:47:30
 Duration: 9h 41' 45"

Quality: Sd. Lat: 0.0006 fts Sd. Lon: 0.0005 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0008 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: 0° 11' 25.90981" dLon: -0° 00' 28.00297" dHgt: -28.1776 fts
 Slope: 69461.5059 fts

DOPs (min-max): GDOP: 2.0 - 22.6
 PDOP: 1.7 - 17.2 HDOP: 1.0 - 6.5 VDOP: 1.4 - 16.6

ME3311 - AC9170

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME3311

SR530 / 32707
 AT502 Tripod / -
 4.5997 fts

Rover: AC9170

SR530 / 32630
 AT502 Tripod / -
 3.8943 fts

Coordinates:

Latitude: 41° 32' 21.50134" N 41° 51' 55.73327" N
 Longitude: 87° 31' 50.37927" W 87° 36' 22.39102" W
 Ellip. Hgt: 503.6704 fts 482.1832 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:05:45 - 05/23/2002 02:47:30
 Duration: 9h 41' 45"

Quality: Sd. Lat: 0.0005 fts Sd. Lon: 0.0004 fts Sd. Hgt: 0.0011 fts
 Posn. Qlty: 0.0007 fts Sd. Slope: 0.0005 fts

Baseline vector: dLat: 0° 19' 34.23193" dLon: -0° 04' 32.01175" dHgt: -21.4872 fts
 Slope: 120636.8132 fts

DOPs (min-max): GDOP: 1.9 - 5.3 HDOP: 1.0 - 2.6 VDOP: 1.3 - 3.7
 PDOP: 1.7 - 4.5

ME3311 - AF9258
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME3311
 SR530 / 32707
 AT502 Tripod / -
 4.5997 fts

Rover: AF9258
 SR530 / 32634
 AT502 Tripod / -
 3.0184 fts

Coordinates:

Latitude: 41° 32' 21.50134" N 41° 39' 56.88402" N
 Longitude: 87° 31' 50.37927" W 87° 54' 18.02471" W
 Ellip. Hgt: 503.6704 fts 618.8237 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:11:55 - 05/23/2002 02:47:30
 Duration: 9h 35' 35"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0005 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0009 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: 0° 07' 35.38268" dLon: -0° 22' 27.64543" dHgt: 115.1533 fts
 Slope: 112285.1810 fts

DOPs (min-max): GDOP: 1.9 - 5.7 HDOP: 1.0 - 2.6 VDOP: 1.3 - 4.2
 PDOP: 1.7 - 4.6

ME3311 - ME1825
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME3311
 SR530 / 32707
 AT502 Tripod / -
 4.5997 fts

Rover: ME1825
 SR530 / 32637
 AT502 Tripod / -
 3.6450 fts

Coordinates:

Latitude: 41° 32' 21.50134" N 41° 39' 35.12187" N
 Longitude: 87° 31' 50.37927" W 87° 33' 28.73756" W
 Ellip. Hgt: 503.6704 fts 475.3635 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 05/22/2002 19:12:45 - 05/22/2002 19:58:30
 Duration: 45' 45"

Quality: Sd. Lat: 0.0023 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0036 fts
 Posn. Qlty: 0.0026 fts Sd. Slope: 0.0023 fts

Baseline vector: dLat: 0° 07' 13.62053" dLon: -0° 01' 38.35828" dHgt: -28.3069 fts
 Slope: 44523.2071 fts

DOPs (min-max):	GDOP: 1.9 - 5.4 PDOP: 1.7 - 4.5	HDOP: 1.0 - 2.6	VDOP: 1.4 - 3.7
ME3311 - ME2887	Reference: ME3311	Rover: ME2887	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5997 fts	3.9567 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 42' 28.46326" N	
Longitude:	87° 31' 50.37927" W	87° 33' 55.25711" W	
Ellip. Hgt:	503.6704 fts	472.5246 fts	
Solution type:	Float		
Frequency:	IonoFree (L3)		
Ambiguity:	No		
Time span:	05/22/2002 20:47:35 - 05/22/2002 21:32:10		
Duration:	44' 35"		
Quality:	Sd. Lat: 0.1559 fts Posn. Qlty: 0.2580 fts	Sd. Lon: 0.2056 fts Sd. Slope: 0.1819 fts	Sd. Hgt: 0.2450 fts
Baseline vector:	dLat: 0° 10' 06.96193" Slope: 62165.3798 fts	dLon: -0° 02' 04.87783"	dHgt: -31.1458 fts
DOPs (min-max):	GDOP: 2.7 - 84.8 PDOP: 2.4 - 65.5	HDOP: 1.1 - 19.3	VDOP: 2.1 - 62.6
ME3311 - AJ2777	Reference: ME3311	Rover: AJ2777	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5997 fts	4.0781 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 40' 54.02023" N	
Longitude:	87° 31' 50.37927" W	87° 36' 07.38385" W	
Ellip. Hgt:	503.6704 fts	474.6347 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 21:44:30 - 05/22/2002 22:30:25		
Duration:	45' 55"		
Quality:	Sd. Lat: 0.0016 fts Posn. Qlty: 0.0022 fts	Sd. Lon: 0.0014 fts Sd. Slope: 0.0017 fts	Sd. Hgt: 0.0036 fts
Baseline vector:	dLat: 0° 08' 32.51889" Slope: 55429.9358 fts	dLon: -0° 04' 17.00458"	dHgt: -29.0356 fts
DOPs (min-max):	GDOP: 2.4 - 4.5 PDOP: 2.1 - 3.7	HDOP: 1.1 - 1.7	VDOP: 1.8 - 3.3
ME3311 - AJ2776	Reference: ME3311	Rover: AJ2776	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.5997 fts	3.9304 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 40' 32.54086" N	
Longitude:	87° 31' 50.37927" W	87° 36' 06.22599" W	
Ellip. Hgt:	503.6704 fts	476.2053 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 22:38:05 - 05/22/2002 23:23:00		
Duration:	44' 55"		
Quality:	Sd. Lat: 0.0017 fts	Sd. Lon: 0.0010 fts	Sd. Hgt: 0.0031 fts
	Posn. Qlty: 0.0020 fts	Sd. Slope: 0.0017 fts	
Baseline vector:	dLat: 0° 08' 11.03952"	dLon: -0° 04' 15.84672"	dHgt: -27.4651 fts
	Slope: 53368.7952 fts		
DOPs (min-max):	GDOP: 2.4 - 5.7	HDOP: 1.1 - 2.2	VDOP: 1.7 - 4.1
	PDOP: 2.1 - 4.7		
ME3311 - ME1830	Reference: ME3311	Rover: ME1830	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5997 fts	5.7513 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 39' 48.90708" N	
Longitude:	87° 31' 50.37927" W	87° 37' 11.48520" W	
Ellip. Hgt:	503.6704 fts	490.6273 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 23:42:15 - 05/23/2002 00:29:05		
Duration:	46' 50"		
Quality:	Sd. Lat: 0.0018 fts	Sd. Lon: 0.0017 fts	Sd. Hgt: 0.0046 fts
	Posn. Qlty: 0.0025 fts	Sd. Slope: 0.0017 fts	
Baseline vector:	dLat: 0° 07' 27.40574"	dLon: -0° 05' 21.10593"	dHgt: -13.0431 fts
	Slope: 51440.2057 fts		
DOPs (min-max):	GDOP: 2.0 - 3.4	HDOP: 1.0 - 1.3	VDOP: 1.4 - 2.5
	PDOP: 1.7 - 2.8		
ME3311 - ME1829	Reference: ME3311	Rover: ME1829	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5997 fts	3.7237 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 39' 48.72769" N	
Longitude:	87° 31' 50.37927" W	87° 37' 19.00021" W	
Ellip. Hgt:	503.6704 fts	492.2504 fts	

Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/23/2002 00:35:25 - 05/23/2002 01:20:35		
Duration:	45' 10"		
Quality:	Sd. Lat: 0.0016 fts	Sd. Lon: 0.0015 fts	Sd. Hgt: 0.0044 fts
	Posn. Qlty: 0.0022 fts	Sd. Slope: 0.0016 fts	
Baseline vector:	dLat: 0° 07' 27.22635"	dLon: -0° 05' 28.62093"	dHgt: -11.4200 fts
	Slope: 51697.5440 fts		
DOPs (min-max):	GDOP: 2.7 - 7.5	HDOP: 1.2 - 2.3	VDOP: 1.8 - 5.4
	PDOP: 2.3 - 5.9		
ME3311 - ME1881WEST	Reference: ME3311	Rover: ME1881WEST	
Receiver type / S/N:	SR530 / 32707	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5997 fts	3.5466 fts	
Coordinates:			
Latitude:	41° 32' 21.50134" N	41° 46' 05.20504" N	
Longitude:	87° 31' 50.37927" W	87° 36' 38.62018" W	
Ellip. Hgt:	503.6704 fts	493.6685 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/23/2002 01:53:35 - 05/23/2002 02:38:35		
Duration:	45' 00"		
Quality:	Sd. Lat: 0.0019 fts	Sd. Lon: 0.0011 fts	Sd. Hgt: 0.0028 fts
	Posn. Qlty: 0.0022 fts	Sd. Slope: 0.0018 fts	
Baseline vector:	dLat: 0° 13' 43.70370"	dLon: -0° 04' 48.24091"	dHgt: -10.0019 fts
	Slope: 86200.5339 fts		
DOPs (min-max):	GDOP: 2.0 - 2.6	HDOP: 1.0 - 1.3	VDOP: 1.4 - 1.8
	PDOP: 1.7 - 2.2		



Processing Summary

98216HMP_20020522

Project Information

Project name: 98216HMP_20020522
 Date created: 03/30/2006 13:23:00
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 05/21/2002 18:09:25
 End date and time: 05/23/2002 02:48:00
 Manually occupied points: 20
 Processing kernel: PSI-Pro 1.0
 Processed: 06/08/2004 08:03:21

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

AF9258 - AE9231	Reference: AF9258	Rover: AE9231
Receiver type / S/N:	SR530 / 32634	SR530 / 32623
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -
Antenna height:	2.9265 fts	4.3077 fts
Coordinates:		
Latitude:	41° 39' 56.88399" N	41° 43' 47.41129" N
Longitude:	87° 54' 18.02464" W	87° 32' 18.38208" W
Ellip. Hgt:	618.8208 fts	475.4115 fts

Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 18:09:25 - 05/22/2002 02:38:40		
Duration:	8h 29' 15"		
Quality:	Sd. Lat: 0.0009 fts Posn. Qlty: 0.0011 fts	Sd. Lon: 0.0008 fts Sd. Slope: 0.0008 fts	Sd. Hgt: 0.0019 fts
Baseline vector:	dLat: 0° 03' 50.52730" Slope: 102796.2219 fts	dLon: 0° 21' 59.64256"	dHgt: -143.4093 fts
DOPs (min-max):	GDOP: 2.0 - 21.5 PDOP: 1.7 - 16.6	HDOP: 1.0 - 10.3	VDOP: 1.4 - 15.7
AF9258 - ME3311	Reference: AF9258	Rover: ME3311	
Receiver type / S/N:	SR530 / 32634	SR530 / 32707	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	2.9265 fts	4.4160 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 32' 21.50134" N	
Longitude:	87° 54' 18.02464" W	87° 31' 50.37930" W	
Ellip. Hgt:	618.8208 fts	503.6810 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 18:28:35 - 05/22/2002 02:35:15		
Duration:	8h 06' 40"		
Quality:	Sd. Lat: 0.0007 fts Posn. Qlty: 0.0009 fts	Sd. Lon: 0.0005 fts Sd. Slope: 0.0006 fts	Sd. Hgt: 0.0014 fts
Baseline vector:	dLat: -0° 07' 35.38265" Slope: 112285.1736 fts	dLon: 0° 22' 27.64534"	dHgt: -115.1398 fts
DOPs (min-max):	GDOP: 1.9 - 5.4 PDOP: 1.7 - 4.5	HDOP: 1.0 - 2.6	VDOP: 1.3 - 3.8
AF9258 - AC9170	Reference: AF9258	Rover: AC9170	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	2.9265 fts	3.8419 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 51' 55.73364" N	
Longitude:	87° 54' 18.02464" W	87° 36' 22.39085" W	
Ellip. Hgt:	618.8208 fts	482.1018 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 18:44:00 - 05/22/2002 02:37:40		
Duration:	7h 53' 40"		

Quality:	Sd. Lat: 0.0007 fts Posn. Qlty: 0.0009 fts	Sd. Lon: 0.0006 fts Sd. Slope: 0.0006 fts	Sd. Hgt: 0.0015 fts
Baseline vector:	dLat: 0° 11' 58.84964" Slope: 109268.1128 fts	dLon: 0° 17' 55.63379"	dHgt: -136.7190 fts

DOPs (min-max):	GDOP: 1.9 - 5.4 PDOP: 1.7 - 4.5	HDOP: 1.0 - 2.6	VDOP: 1.3 - 3.8
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AF9258 - ME1881WEST

Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AF9258

SR530 / 32634
AT502 Tripod / -
2.9265 fts

Rover: ME1881WEST

SR530 / 32637
AT502 Tripod / -
3.5663 fts

Coordinates:

Latitude:	41° 39' 56.88399" N	41° 46' 05.20544" N
Longitude:	87° 54' 18.02464" W	87° 36' 38.62010" W
Ellip. Hgt:	618.8208 fts	493.6312 fts

Solution type:	Phase
Frequency:	IonoFree (L3)
Ambiguity:	Yes
Time span:	05/21/2002 19:10:00 - 05/21/2002 19:56:10
Duration:	46' 10"

Quality:	Sd. Lat: 0.0031 fts Posn. Qlty: 0.0034 fts	Sd. Lon: 0.0016 fts Sd. Slope: 0.0019 fts	Sd. Hgt: 0.0049 fts
Baseline vector:	dLat: 0° 06' 08.32145" Slope: 88575.0876 fts	dLon: 0° 17' 39.40454"	dHgt: -125.1896 fts

DOPs (min-max):	GDOP: 1.9 - 5.4 PDOP: 1.7 - 4.5	HDOP: 1.0 - 2.6	VDOP: 1.4 - 3.8
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AF9258 - AJ2777

Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AF9258

SR530 / 32634
AT502 Tripod / -
2.9265 fts

Rover: AJ2777

SR530 / 32637
AT502 Tripod / -
4.1174 fts

Coordinates:

Latitude:	41° 39' 56.88399" N	41° 40' 54.01972" N
Longitude:	87° 54' 18.02464" W	87° 36' 07.38394" W
Ellip. Hgt:	618.8208 fts	474.7704 fts

Solution type:	Phase
Frequency:	IonoFree (L3)
Ambiguity:	Yes
Time span:	05/21/2002 20:20:05 - 05/21/2002 21:05:50
Duration:	45' 45"

Quality:	Sd. Lat: 0.0028 fts Posn. Qlty: 0.0035 fts	Sd. Lon: 0.0021 fts Sd. Slope: 0.0021 fts	Sd. Hgt: 0.0063 fts
Baseline vector:	dLat: 0° 00' 57.13573" Slope: 82972.5999 fts	dLon: 0° 18' 10.64070"	dHgt: -144.0504 fts

DOPs (min-max):	GDOP: 2.7 - 3.2 PDOP: 2.3 - 2.7	HDOP: 1.1 - 1.4	VDOP: 2.0 - 2.4
AF9258 - AJ2776	Reference: AF9258	Rover: AJ2776	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	2.9265 fts	3.9567 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 40' 32.54105" N	
Longitude:	87° 54' 18.02464" W	87° 36' 06.22621" W	
Ellip. Hgt:	618.8208 fts	476.0880 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 21:15:00 - 05/21/2002 22:00:10		
Duration:	45' 10"		
Quality:	Sd. Lat: 0.0019 fts Posn. Qlty: 0.0024 fts	Sd. Lon: 0.0015 fts Sd. Slope: 0.0015 fts	Sd. Hgt: 0.0040 fts
Baseline vector:	dLat: 0° 00' 35.65706" Slope: 82941.0516 fts	dLon: 0° 18' 11.79843"	dHgt: -142.7328 fts
DOPs (min-max):	GDOP: 2.0 - 3.3 PDOP: 1.8 - 2.8	HDOP: 1.0 - 1.5	VDOP: 1.5 - 2.4
AF9258 - ME1830	Reference: AF9258	Rover: ME1830	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	2.9265 fts	5.6299 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 39' 48.90744" N	
Longitude:	87° 54' 18.02464" W	87° 37' 11.48533" W	
Ellip. Hgt:	618.8208 fts	490.5119 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 22:16:35 - 05/21/2002 23:01:35		
Duration:	45' 00"		
Quality:	Sd. Lat: 0.0032 fts Posn. Qlty: 0.0039 fts	Sd. Lon: 0.0023 fts Sd. Slope: 0.0023 fts	Sd. Hgt: 0.0069 fts
Baseline vector:	dLat: -0° 00' 07.97656" Slope: 77921.1333 fts	dLon: 0° 17' 06.53931"	dHgt: -128.3089 fts
DOPs (min-max):	GDOP: 4.1 - 6.3 PDOP: 3.4 - 5.1	HDOP: 1.7 - 2.4	VDOP: 2.8 - 4.6
AF9258 - ME1829	Reference: AF9258	Rover: ME1829	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	2.9265 fts	3.7467 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 39' 48.72719" N	
Longitude:	87° 54' 18.02464" W	87° 37' 19.00019" W	
Ellip. Hgt:	618.8208 fts	492.1762 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/21/2002 23:10:15 - 05/21/2002 23:56:10		
Duration:	45' 55"		
Quality:	Sd. Lat: 0.0030 fts	Sd. Lon: 0.0024 fts	Sd. Hgt: 0.0063 fts
	Posn. Qlty: 0.0038 fts	Sd. Slope: 0.0024 fts	
Baseline vector:	dLat: -0° 00' 08.15680"	dLon: 0° 16' 59.02445"	dHgt: -126.6446 fts
	Slope: 77350.9923 fts		
DOPs (min-max):	GDOP: 2.1 - 2.7	HDOP: 1.1 - 1.3	VDOP: 1.5 - 2.0
	PDOP: 1.9 - 2.3		
AF9258 - ME2887	Reference: AF9258	Rover: ME2887	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	2.9265 fts	4.1240 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 42' 28.45473" N	
Longitude:	87° 54' 18.02464" W	87° 33' 55.23128" W	
Ellip. Hgt:	618.8208 fts	473.9251 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 00:24:50 - 05/22/2002 01:10:55		
Duration:	46' 05"		
Quality:	Sd. Lat: 0.0032 fts	Sd. Lon: 0.0031 fts	Sd. Hgt: 0.0092 fts
	Posn. Qlty: 0.0045 fts	Sd. Slope: 0.0031 fts	
Baseline vector:	dLat: 0° 02' 31.57074"	dLon: 0° 20' 22.79336"	dHgt: -144.8957 fts
	Slope: 94041.1704 fts		
DOPs (min-max):	GDOP: 3.0 - 5.2	HDOP: 1.2 - 1.6	VDOP: 2.1 - 3.8
	PDOP: 2.5 - 4.1		
AF9258 - ME1825	Reference: AF9258	Rover: ME1825	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	2.9265 fts	3.7237 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 39' 35.12102" N	
Longitude:	87° 54' 18.02464" W	87° 33' 28.73750" W	
Ellip. Hgt:	618.8208 fts	475.2342 fts	

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 01:46:20 - 05/22/2002 02:31:35
 Duration: 45' 15"

Quality: Sd. Lat: 0.0029 fts Sd. Lon: 0.0018 fts Sd. Hgt: 0.0043 fts
 Posn. Qlty: 0.0034 fts Sd. Slope: 0.0017 fts

Baseline vector: dLat: -0° 00' 21.76297" dLon: 0° 20' 49.28714" dHgt: -143.5866 fts
 Slope: 94852.3698 fts

DOPs (min-max): GDOP: 2.0 - 4.7
 PDOP: 1.7 - 3.9 HDOP: 1.0 - 2.0 VDOP: 1.4 - 3.4

AF9258 - AE9231
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AF9258
 SR530 / 32634
 AT502 Tripod / -
 3.0184 fts

Rover: AE9231
 SR530 / 32623
 AT502 Tripod / -
 4.3373 fts

Coordinates:

Latitude:	41° 39' 56.88399" N	41° 43' 47.41113" N
Longitude:	87° 54' 18.02464" W	87° 32' 18.38221" W
Ellip. Hgt:	618.8208 fts	475.4966 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:11:55 - 05/23/2002 02:48:00
 Duration: 9h 36' 05"

Quality: Sd. Lat: 0.0008 fts Sd. Lon: 0.0007 fts Sd. Hgt: 0.0019 fts
 Posn. Qlty: 0.0011 fts Sd. Slope: 0.0008 fts

Baseline vector: dLat: 0° 03' 50.52714" dLon: 0° 21' 59.64243" dHgt: -143.3243 fts
 Slope: 102796.2084 fts

DOPs (min-max): GDOP: 2.0 - 22.6
 PDOP: 1.7 - 17.2 HDOP: 1.0 - 6.3 VDOP: 1.4 - 16.6

AF9258 - AC9170
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AF9258
 SR530 / 32634
 AT502 Tripod / -
 3.0184 fts

Rover: AC9170
 SR530 / 32630
 AT502 Tripod / -
 3.8943 fts

Coordinates:

Latitude:	41° 39' 56.88399" N	41° 51' 55.73325" N
Longitude:	87° 54' 18.02464" W	87° 36' 22.39097" W
Ellip. Hgt:	618.8208 fts	482.1825 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:11:55 - 05/23/2002 02:47:30
 Duration: 9h 35' 35"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0009 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: 0° 11' 58.84926" dLon: 0° 17' 55.63367" dHgt: -136.6383 fts
 Slope: 109268.0798 fts

DOPs (min-max): GDOP: 1.9 - 5.7
 PDOP: 1.7 - 4.6 HDOP: 1.0 - 2.6 VDOP: 1.3 - 4.2

AF9258 - ME3311
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AF9258
 SR530 / 32634
 AT502 Tripod / -
 3.0184 fts

Rover: ME3311
 SR530 / 32707
 AT502 Tripod / -
 4.5997 fts

Coordinates:

Latitude: 41° 39' 56.88399" N 41° 32' 21.50131" N
 Longitude: 87° 54' 18.02464" W 87° 31' 50.37921" W
 Ellip. Hgt: 618.8208 fts 503.6675 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 17:11:55 - 05/23/2002 02:47:30
 Duration: 9h 35' 35"

Quality: Sd. Lat: 0.0007 fts Sd. Lon: 0.0005 fts Sd. Hgt: 0.0014 fts
 Posn. Qlty: 0.0009 fts Sd. Slope: 0.0006 fts

Baseline vector: dLat: -0° 07' 35.38268" dLon: 0° 22' 27.64543" dHgt: -115.1533 fts
 Slope: 112285.1812 fts

DOPs (min-max): GDOP: 1.9 - 5.4
 PDOP: 1.7 - 4.5 HDOP: 1.0 - 2.6 VDOP: 1.3 - 3.8

AF9258 - ME1825
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AF9258
 SR530 / 32634
 AT502 Tripod / -
 3.0184 fts

Rover: ME1825
 SR530 / 32637
 AT502 Tripod / -
 3.6450 fts

Coordinates:

Latitude: 41° 39' 56.88399" N 41° 39' 35.12124" N
 Longitude: 87° 54' 18.02464" W 87° 33' 28.73724" W
 Ellip. Hgt: 618.8208 fts 475.4529 fts

Solution type: Phase
 Frequency: IonoFree (L3)
 Ambiguity: Yes
 Time span: 05/22/2002 19:12:45 - 05/22/2002 19:58:30
 Duration: 45' 45"

Quality: Sd. Lat: 0.0042 fts Sd. Lon: 0.0020 fts Sd. Hgt: 0.0066 fts
 Posn. Qlty: 0.0047 fts Sd. Slope: 0.0020 fts

Baseline vector: dLat: -0° 00' 21.76275" dLon: 0° 20' 49.28740" dHgt: -143.3680 fts
 Slope: 94852.3892 fts

DOPs (min-max):	GDOP: 3.5 - 5.4 PDOP: 3.1 - 4.6	HDOP: 1.9 - 2.7	VDOP: 2.4 - 3.7
AF9258 - ME2887	Reference: AF9258	Rover: ME2887	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.0184 fts	3.9567 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 42' 28.48381" N	
Longitude:	87° 54' 18.02464" W	87° 33' 55.26863" W	
Ellip. Hgt:	618.8208 fts	471.3264 fts	
Solution type:	Float		
Frequency:	IonoFree (L3)		
Ambiguity:	No		
Time span:	05/22/2002 20:47:35 - 05/22/2002 21:32:10		
Duration:	44' 35"		
Quality:	Sd. Lat: 0.1954 fts Posn. Qlty: 0.3351 fts	Sd. Lon: 0.2721 fts Sd. Slope: 0.2399 fts	Sd. Hgt: 0.3146 fts
Baseline vector:	dLat: 0° 02' 31.59982" Slope: 94038.8471 fts	dLon: 0° 20' 22.75601"	dHgt: -147.4945 fts
DOPs (min-max):	GDOP: 2.7 - 84.8 PDOP: 2.4 - 65.5	HDOP: 1.1 - 19.3	VDOP: 2.1 - 62.6
AF9258 - AJ2777	Reference: AF9258	Rover: AJ2777	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.0184 fts	4.0781 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 40' 54.01988" N	
Longitude:	87° 54' 18.02464" W	87° 36' 07.38408" W	
Ellip. Hgt:	618.8208 fts	474.6613 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 21:44:30 - 05/22/2002 22:30:25		
Duration:	45' 55"		
Quality:	Sd. Lat: 0.0021 fts Posn. Qlty: 0.0029 fts	Sd. Lon: 0.0019 fts Sd. Slope: 0.0019 fts	Sd. Hgt: 0.0047 fts
Baseline vector:	dLat: 0° 00' 57.13589" Slope: 82972.5910 fts	dLon: 0° 18' 10.64056"	dHgt: -144.1595 fts
DOPs (min-max):	GDOP: 2.4 - 4.5 PDOP: 2.1 - 3.7	HDOP: 1.1 - 1.7	VDOP: 1.8 - 3.3
AF9258 - AJ2776	Reference: AF9258	Rover: AJ2776	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.0184 fts	3.9304 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 40' 32.54047" N	
Longitude:	87° 54' 18.02464" W	87° 36' 06.22556" W	
Ellip. Hgt:	618.8208 fts	476.2358 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 22:38:05 - 05/22/2002 23:23:00		
Duration:	44' 55"		
Quality:	Sd. Lat: 0.0026 fts Posn. Qlty: 0.0031 fts	Sd. Lon: 0.0017 fts Sd. Slope: 0.0017 fts	Sd. Hgt: 0.0051 fts
Baseline vector:	dLat: 0° 00' 35.65648" Slope: 82941.0985 fts	dLon: 0° 18' 11.79908"	dHgt: -142.5850 fts
DOPs (min-max):	GDOP: 2.5 - 5.7 PDOP: 2.1 - 4.7	HDOP: 1.2 - 2.2	VDOP: 1.8 - 4.1
AF9258 - ME1830	Reference: AF9258	Rover: ME1830	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.0184 fts	5.7513 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 39' 48.90720" N	
Longitude:	87° 54' 18.02464" W	87° 37' 11.48509" W	
Ellip. Hgt:	618.8208 fts	490.6241 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/22/2002 23:42:15 - 05/23/2002 00:29:05		
Duration:	46' 50"		
Quality:	Sd. Lat: 0.0024 fts Posn. Qlty: 0.0033 fts	Sd. Lon: 0.0023 fts Sd. Slope: 0.0023 fts	Sd. Hgt: 0.0060 fts
Baseline vector:	dLat: -0° 00' 07.97679" Slope: 77921.1513 fts	dLon: 0° 17' 06.53955"	dHgt: -128.1967 fts
DOPs (min-max):	GDOP: 2.0 - 3.4 PDOP: 1.7 - 2.8	HDOP: 1.0 - 1.3	VDOP: 1.4 - 2.5
AF9258 - ME1829	Reference: AF9258	Rover: ME1829	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.0184 fts	3.7237 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 39' 48.72782" N	
Longitude:	87° 54' 18.02464" W	87° 37' 18.99983" W	
Ellip. Hgt:	618.8208 fts	492.1774 fts	

Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/23/2002 00:35:25 - 05/23/2002 01:20:35		
Duration:	45' 10"		
Quality:	Sd. Lat: 0.0022 fts	Sd. Lon: 0.0020 fts	Sd. Hgt: 0.0059 fts
	Posn. Qlty: 0.0030 fts	Sd. Slope: 0.0020 fts	
Baseline vector:	dLat: -0° 00' 08.15618"	dLon: 0° 16' 59.02481"	dHgt: -126.6434 fts
	Slope: 77351.0187 fts		
DOPs (min-max):	GDOP: 2.7 - 7.5	HDOP: 1.2 - 2.3	VDOP: 1.8 - 5.4
	PDOP: 2.3 - 5.9		
AF9258 - ME1881WEST	Reference: AF9258	Rover: ME1881WEST	
Receiver type / S/N:	SR530 / 32634	SR530 / 32637	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.0184 fts	3.5466 fts	
Coordinates:			
Latitude:	41° 39' 56.88399" N	41° 46' 05.20513" N	
Longitude:	87° 54' 18.02464" W	87° 36' 38.62024" W	
Ellip. Hgt:	618.8208 fts	493.5813 fts	
Solution type:	Phase		
Frequency:	IonoFree (L3)		
Ambiguity:	Yes		
Time span:	05/23/2002 01:53:35 - 05/23/2002 02:38:35		
Duration:	45' 00"		
Quality:	Sd. Lat: 0.0024 fts	Sd. Lon: 0.0015 fts	Sd. Hgt: 0.0036 fts
	Posn. Qlty: 0.0028 fts	Sd. Slope: 0.0018 fts	
Baseline vector:	dLat: 0° 06' 08.32114"	dLon: 0° 17' 39.40440"	dHgt: -125.2395 fts
	Slope: 88575.0649 fts		
DOPs (min-max):	GDOP: 2.0 - 2.6	HDOP: 1.0 - 1.3	VDOP: 1.4 - 1.8
	PDOP: 1.7 - 2.2		

(REVISED.)

GPS Post Processing Report

PM : 6VB Work Order : 3358 Project : 98216HMP Bill Group : V105B Date : 06-27-2004

Ski Pro Project Name: 98216HMP_20031001 Time Zone: CDT (GMT-5h) / CST (GMT-6h)

Raw Data File Name: 98216HMP_20031001R Other Time Zone: ---

Units Downloaded: 1 2 (3) (4) 5 Base Unit (s) # 3

Import Checks: N Intervals Merged N Crd. Sys. Attchd. (---) Antenna Type --- Antenna Height ---

Import Editing: Unit # 1 _____
Unit # 2 _____
Unit # 3 (SEE 10-8-2003 REPORT)
Unit # 4 _____
Unit # 5 _____

Mission Type: Static Real Time Kinematic

Fixed Station (s) Info:

Point No:	Fixed (Pstn. / Pstn. & Ht. / Ht.)	Coord. Type (Geodetic / Grid / Surface)	Elev. Format (Ellip. / Ortho.)
<u>AJ2777</u>	<u>PSTN & HT.</u>	<u>GRID</u>	<u>ORTHO</u>
_____	_____	_____	_____

Baseline Processing: (From - To) SPP -> AJ2777 / _____
AJ2777 -> ALL / _____
(SEE BACK SIDE OF 10-8-2003 REPORT FOR SPV ON/OFF NOTES.)

Projection Type:

Lambert: _____
T. Mercator:

Horizontal Datum:

NAD 27 _____
NAD 83 (1997)

Vertical Datum:

NAVD 88 City of Chicago _____
NGVD 29 _____ Site / Arbitrary _____
Municipal / County. _____

Coordinate System Name. (S.P.) IL EAST GEOID 99

Coordinate System Name. (Local) ---

Coordinate Set Name. ---

Transformation Set Name: ---

-or- Local projection Name: ---

Ellipsoid: NBS94 Geoid Model (Year): 99

Avg. Cmbnd. Scl. Fctr. ---

N / E Shift: ---

Processor: (ORIG) T. STRICKLAND
G. VAN BORJEL (REV.)

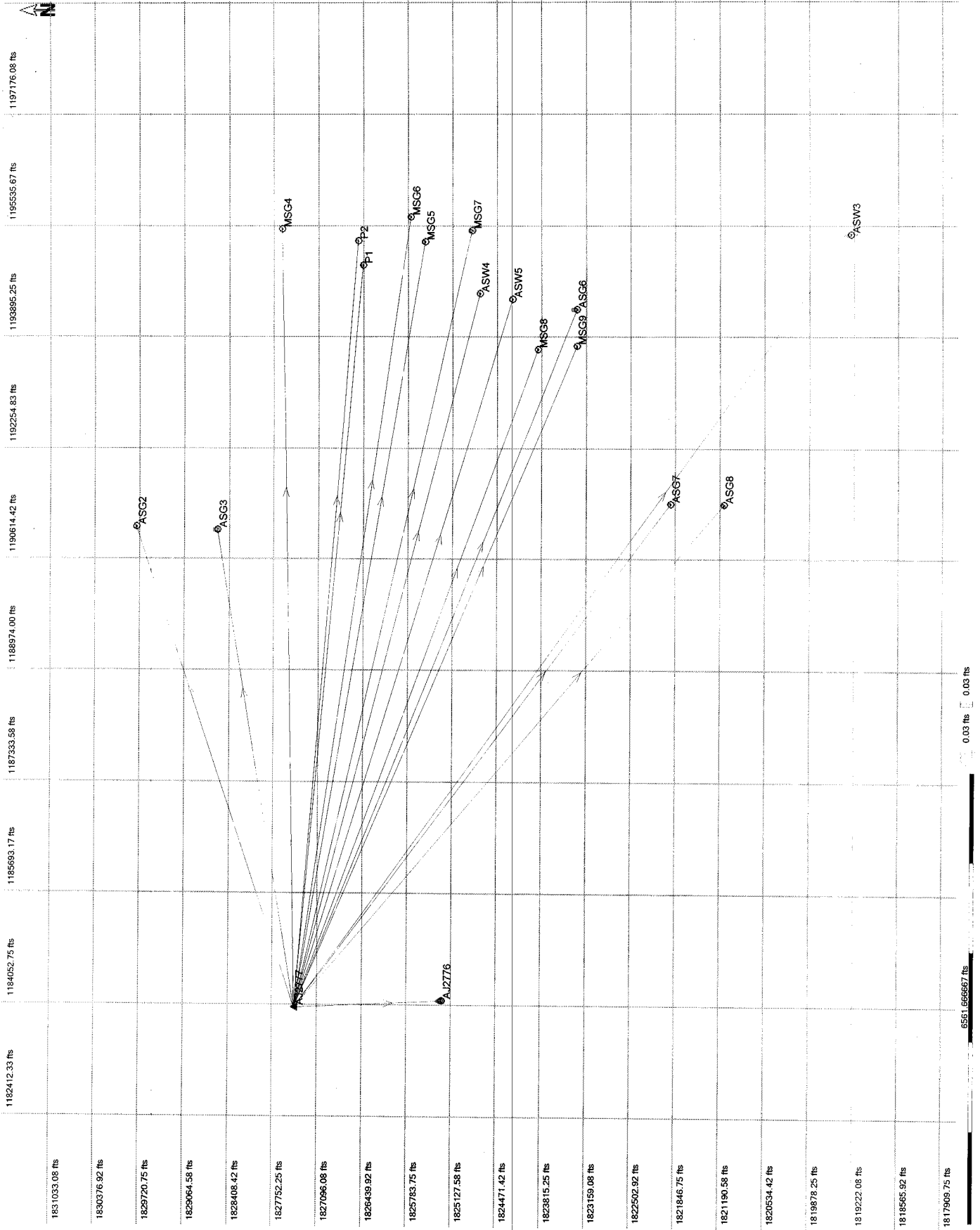
Export file Name: _____

Notes to Project Manager / Technician:

(Review all Control / Bench mark check coordinates and elevations)

(98216HMP_20031001-USFEET
98216HMP_20031001-METERS
.PTS

SEE 10-8-2003 REPORT. ELEVATION OF REFERENCE
MODIFIED.



- + Estimated
- Navigation
- ⊙ SPP
- ⊙ Measured
- ⊕ Adjusted
- ⊕ Average
- ⊕ Fixed Weighted
- ⊕ Fixed Position
- ▲ Fixed Position and Height
- ▲ Fixed Height

6561.66667 ft
0.03 ft 0.03 ft

1L EAST GEOID 99
 GRID US FEET

NAD 83
 NAVD 88

Points of Project 98216HMP_20031001

Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Geoid Sep.	Code	Posn. Qlty	Hgt. Qlty
<input checked="" type="checkbox"/> AJ2777	Reference	1827441.0728	1184010.0270	584.1899	474.6592	-109.5306	FBR	0.2143	0.1364
<input checked="" type="checkbox"/> AJ2776	Averaged	1825267.7283	1184116.3477	585.7298	476.2024	-109.5273	FBR	0.0122	0.0114
<input checked="" type="checkbox"/> P2	Measured	1826529.0189	1195305.2879	589.6668	480.0771	-109.5897	MWL	0.0025	0.0032
<input checked="" type="checkbox"/> P1	Measured	1826453.0127	1194945.9952	591.2886	481.6989	-109.5897	MWL	0.0033	0.0038
<input checked="" type="checkbox"/> MSG9	Measured	1823299.4756	1193745.5051	587.1134	477.5335	-109.5798	MWL	0.0045	0.0054
<input checked="" type="checkbox"/> MSG8	Measured	1823878.1814	1193706.7258	590.8870	481.3072	-109.5798	MWL	0.0035	0.0067
<input checked="" type="checkbox"/> MSG7	Measured	1824844.1740	1195466.4628	586.9899	477.4002	-109.5897	MWL	0.0051	0.0077
<input checked="" type="checkbox"/> MSG6	Measured	1825753.7041	1195657.1634	584.8697	475.2801	-109.5897	MWL	0.0025	0.0034
<input checked="" type="checkbox"/> MSG5	Measured	1825538.5544	1195294.5369	584.1829	474.5932	-109.5897	MWL	0.0038	0.0088
<input checked="" type="checkbox"/> MSG4	Measured	1827646.0924	1195490.2770	585.7890	476.1961	-109.5930	MWL	0.0027	0.0040
<input checked="" type="checkbox"/> ASW5	Measured	1824246.1340	1194443.8315	584.5135	474.9304	-109.5831	MWL	0.0034	0.0076
<input checked="" type="checkbox"/> ASW4	Measured	1824734.8549	1194526.8461	584.9718	475.3887	-109.5831	MWL	0.0036	0.0062
<input checked="" type="checkbox"/> ASW3	Measured	1819271.7451	1195404.4279	589.2141	479.6277	-109.5864	MWL	0.0175	0.0100
<input checked="" type="checkbox"/> ASG8	Measured	1821132.0882	1191419.7853	588.5468	478.9834	-109.5634	MWL	0.0051	0.0053
<input checked="" type="checkbox"/> ASG7	Measured	1821917.0906	1191433.8467	586.9987	477.4352	-109.5634	MWL	0.0039	0.0048
<input checked="" type="checkbox"/> ASG6	Measured	1823301.8427	1194291.5450	584.7068	475.1237	-109.5831	MWL	0.0048	0.0124
<input checked="" type="checkbox"/> ASG3	Measured	1828583.1634	1191046.4660	586.8717	477.3017	-109.5700	MWL	0.0062	0.0102
<input checked="" type="checkbox"/> ASG2	Measured	1829761.6956	1191086.8980	583.9904	474.4172	-109.5733	MWL	0.0022	0.0071

1L EAST GEOID 99
 GEODETIC US FEET

NAD 83
 NAVD 88

Points of Project 98216HMP_20031001

Point Id	Point Class	Latitude	Longitude	Ellip. Hgt.	Code	Posn. Qlty	Hgt. Qlty
<input checked="" type="checkbox"/> AJ2777	Reference	41° 40' 54.01975" N	87° 36' 07.38432" W	474.6592	FBR	0.2143	0.1364
<input checked="" type="checkbox"/> AJ2776	Averaged	41° 40' 32.54058" N	87° 36' 06.22643" W	476.2024	FBR	0.0122	0.0114
<input checked="" type="checkbox"/> P2	Measured	41° 40' 44.03585" N	87° 33' 38.64576" W	480.0771	MWL	0.0025	0.0032
<input checked="" type="checkbox"/> P1	Measured	41° 40' 43.31680" N	87° 33' 43.38919" W	481.6989	MWL	0.0033	0.0038
<input checked="" type="checkbox"/> MSG9	Measured	41° 40' 12.26942" N	87° 33' 59.57800" W	477.5335	MWL	0.0045	0.0054
<input checked="" type="checkbox"/> MSG8	Measured	41° 40' 17.98977" N	87° 34' 00.02110" W	481.3072	MWL	0.0035	0.0067
<input checked="" type="checkbox"/> MSG7	Measured	41° 40' 27.37731" N	87° 33' 36.72115" W	477.4002	MWL	0.0051	0.0077
<input checked="" type="checkbox"/> MSG6	Measured	41° 40' 36.34548" N	87° 33' 34.10080" W	475.2801	MWL	0.0025	0.0034
<input checked="" type="checkbox"/> MSG5	Measured	41° 40' 34.25220" N	87° 33' 38.90445" W	474.5932	MWL	0.0038	0.0088
<input checked="" type="checkbox"/> MSG4	Measured	41° 40' 55.05481" N	87° 33' 36.07601" W	476.1961	MWL	0.0027	0.0040
<input checked="" type="checkbox"/> ASW5	Measured	41° 40' 21.55981" N	87° 33' 50.26593" W	474.9304	MWL	0.0034	0.0076
<input checked="" type="checkbox"/> ASW4	Measured	41° 40' 26.38047" N	87° 33' 49.11462" W	475.3887	MWL	0.0036	0.0062
<input checked="" type="checkbox"/> ASW3	Measured	41° 39' 32.33376" N	87° 33' 38.19687" W	479.6277	MWL	0.0175	0.0100
<input checked="" type="checkbox"/> ASG8	Measured	41° 39' 51.06141" N	87° 34' 30.47154" W	478.9834	MWL	0.0051	0.0053
<input checked="" type="checkbox"/> ASG7	Measured	41° 39' 58.81512" N	87° 34' 30.19530" W	477.4352	MWL	0.0039	0.0048
<input checked="" type="checkbox"/> ASG6	Measured	41° 40' 12.24474" N	87° 33' 52.38344" W	475.1237	MWL	0.0048	0.0124
<input checked="" type="checkbox"/> ASG3	Measured	41° 41' 04.70187" N	87° 34' 34.52726" W	477.3017	MWL	0.0062	0.0102
<input checked="" type="checkbox"/> ASG2	Measured	41° 41' 16.34087" N	87° 34' 33.85791" W	474.4172	MWL	0.0022	0.0071

1L EAST GRID 99
GRID METERS

Points of Project 98216HMP_20031001

NAVD 83
NAVD 88

Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Geoid Sep.	Code	Posn. Qty	Hgt. Qty
<input checked="" type="checkbox"/> AJ2777	Reference	557005.1530	360886.9780	144.6764	144.6764	0.0000	FBR	0.0653	0.0416
<input checked="" type="checkbox"/> AJ2776	Averaged	556342.7163	360919.3846	178.5308	145.1468	-33.3840	FBR	0.0037	0.0035
<input checked="" type="checkbox"/> P2	Measured	556727.1584	364329.7804	179.7308	146.3278	-33.4030	MWL	0.0008	0.0010
<input checked="" type="checkbox"/> P1	Measured	556703.9917	364220.2678	180.2251	146.8221	-33.4030	MWL	0.0010	0.0012
<input checked="" type="checkbox"/> MSG9	Measured	555742.7917	363854.3577	178.9525	145.5525	-33.4000	MWL	0.0014	0.0016
<input checked="" type="checkbox"/> MSG8	Measured	555919.1815	363842.5377	180.1027	146.7027	-33.4000	MWL	0.0011	0.0020
<input checked="" type="checkbox"/> MSG7	Measured	556213.6167	364378.9066	178.9149	145.5119	-33.4030	MWL	0.0016	0.0024
<input checked="" type="checkbox"/> MSG6	Measured	556490.8420	364437.0323	178.2687	144.8657	-33.4030	MWL	0.0008	0.0010
<input checked="" type="checkbox"/> MSG5	Measured	556425.2642	364326.5035	178.0593	144.6563	-33.4030	MWL	0.0011	0.0027
<input checked="" type="checkbox"/> MSG4	Measured	557067.6431	364386.1652	178.5489	145.1449	-33.4040	MWL	0.0008	0.0012
<input checked="" type="checkbox"/> ASW5	Measured	556031.3337	364067.2080	178.1601	144.7591	-33.4010	MWL	0.0010	0.0023
<input checked="" type="checkbox"/> ASW4	Measured	556180.2961	364092.5109	178.2998	144.8988	-33.4010	MWL	0.0011	0.0019
<input checked="" type="checkbox"/> ASW3	Measured	554515.1369	364359.9983	179.5928	146.1908	-33.4020	MWL	0.0053	0.0030
<input checked="" type="checkbox"/> ASG8	Measured	555082.1707	363145.4768	179.3894	145.9944	-33.3950	MWL	0.0016	0.0016
<input checked="" type="checkbox"/> ASG7	Measured	555321.4399	363149.7628	178.9176	145.5226	-33.3950	MWL	0.0012	0.0015
<input checked="" type="checkbox"/> ASG6	Measured	555743.5131	364020.7910	178.2190	144.8180	-33.4010	MWL	0.0015	0.0038
<input checked="" type="checkbox"/> ASG3	Measured	557353.2629	363031.6889	178.8788	145.4818	-33.3970	MWL	0.0019	0.0031
<input checked="" type="checkbox"/> ASG2	Measured	557712.4802	363044.0126	178.0006	144.6026	-33.3980	MWL	0.0007	0.0022

General information - satellite availability

Prediction date: 10/01/03

Site: 98216HMP Time: GMT-05.00

Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19
20 21 22 23 24 26 27 28 29

The U.S. government has the right to modify the position or terminate the operation of these satellites at any time.

Sky plot

Prediction date: 10/01/03

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05:00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

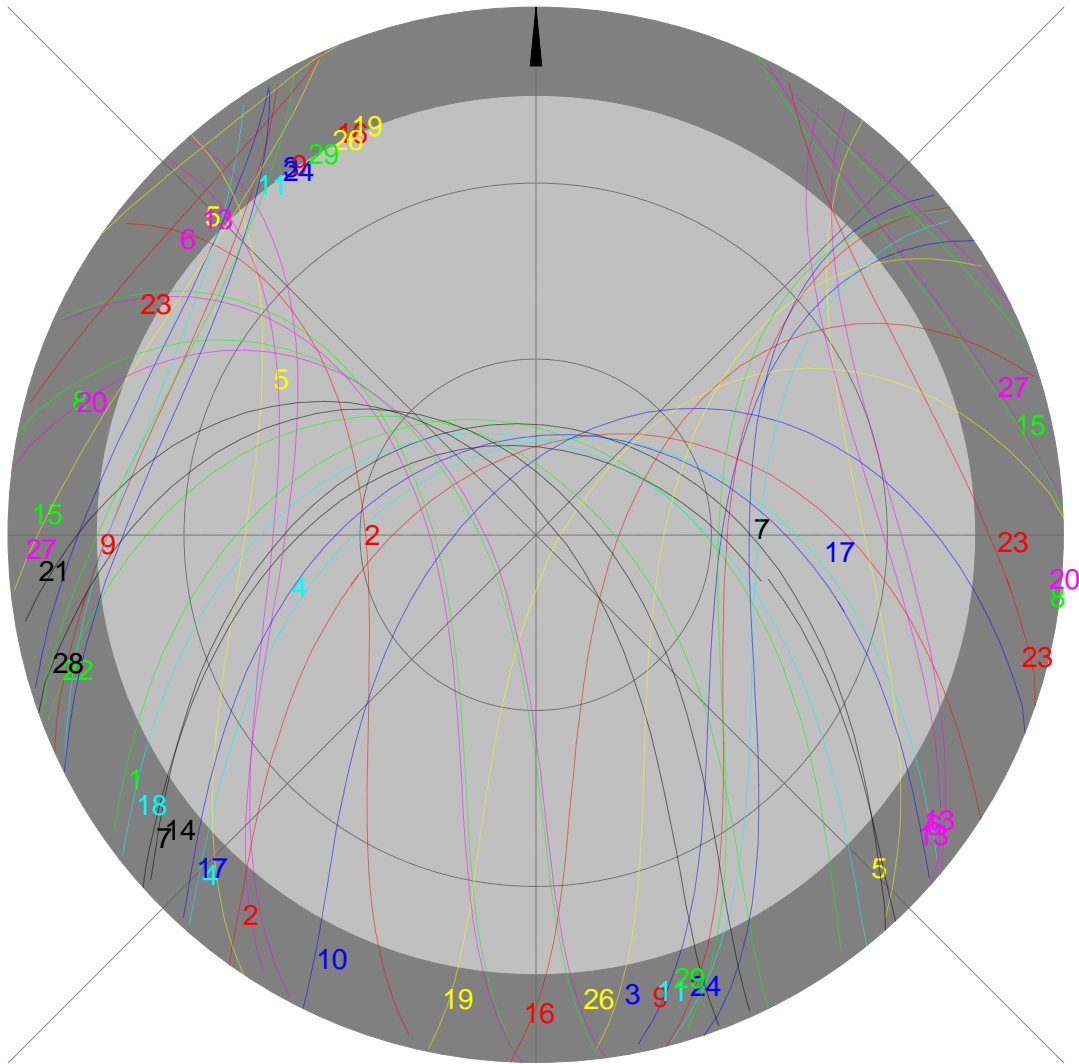
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Sky plot

Prediction date: 10/01/03

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

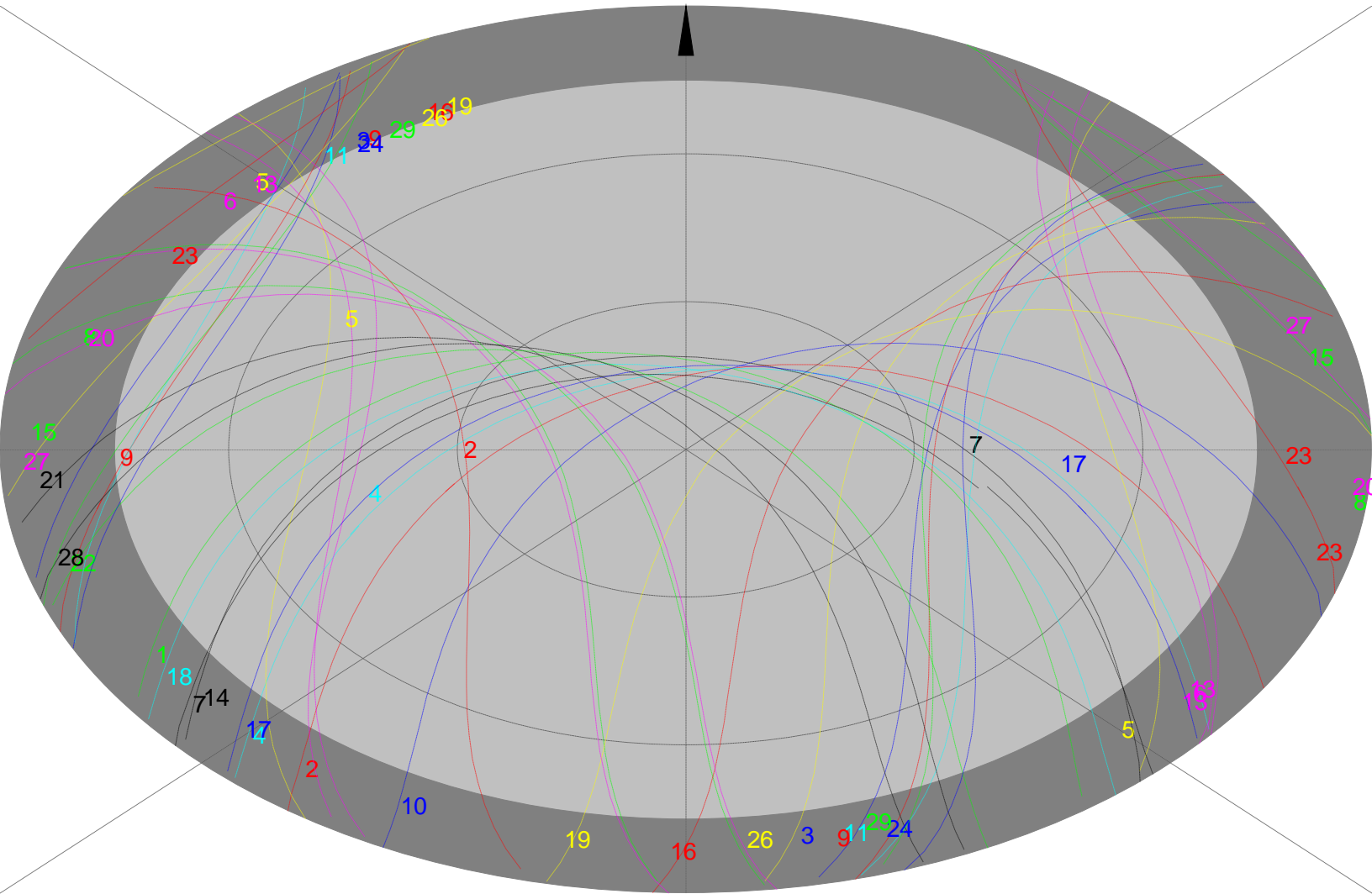
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite visibility

Prediction date: 10/01/03

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

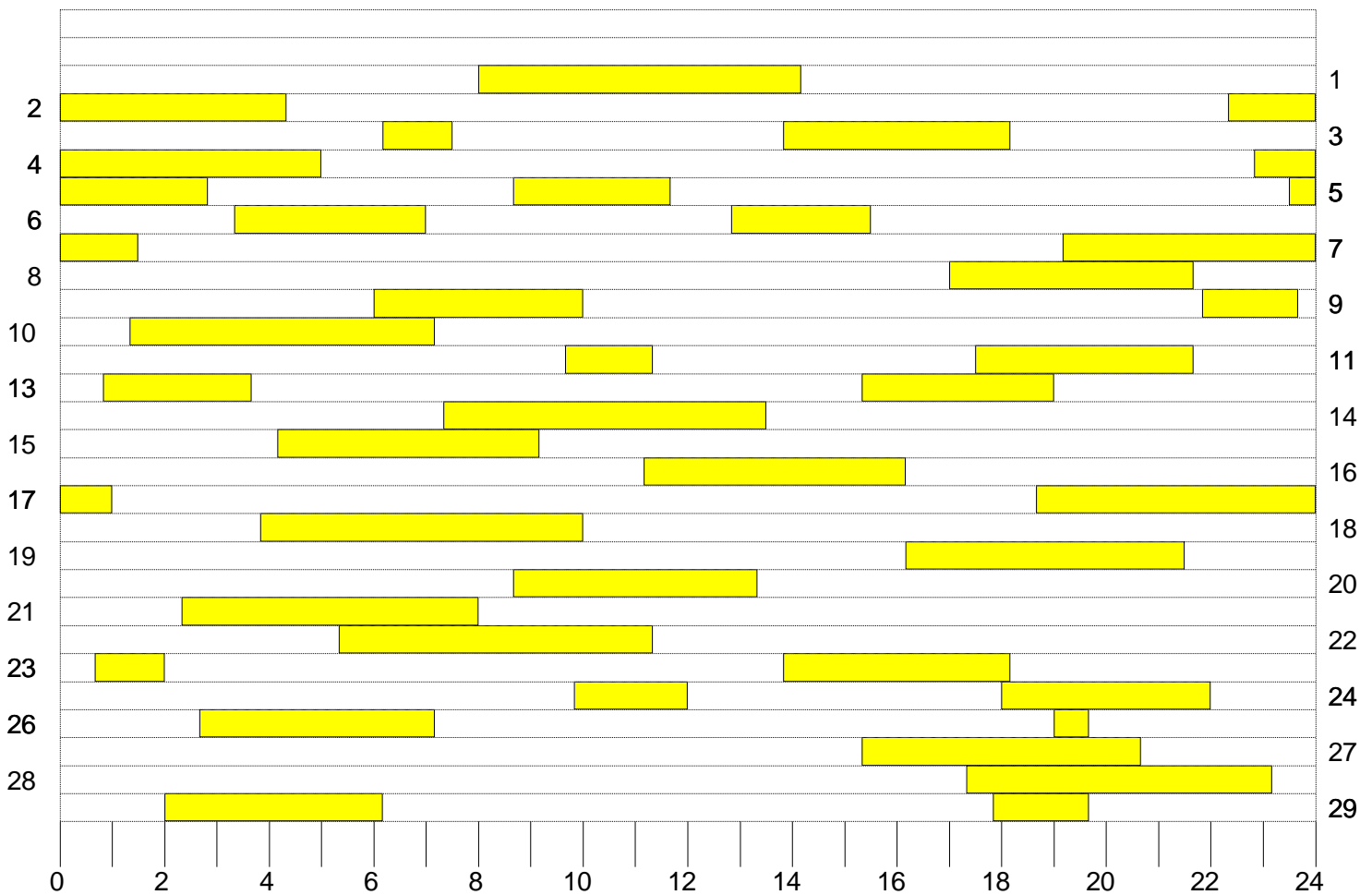
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite summary

Prediction date: 10/01/03

Window: 00.00 - 24.00

Site: 98216HMP Time: GMT-05.00

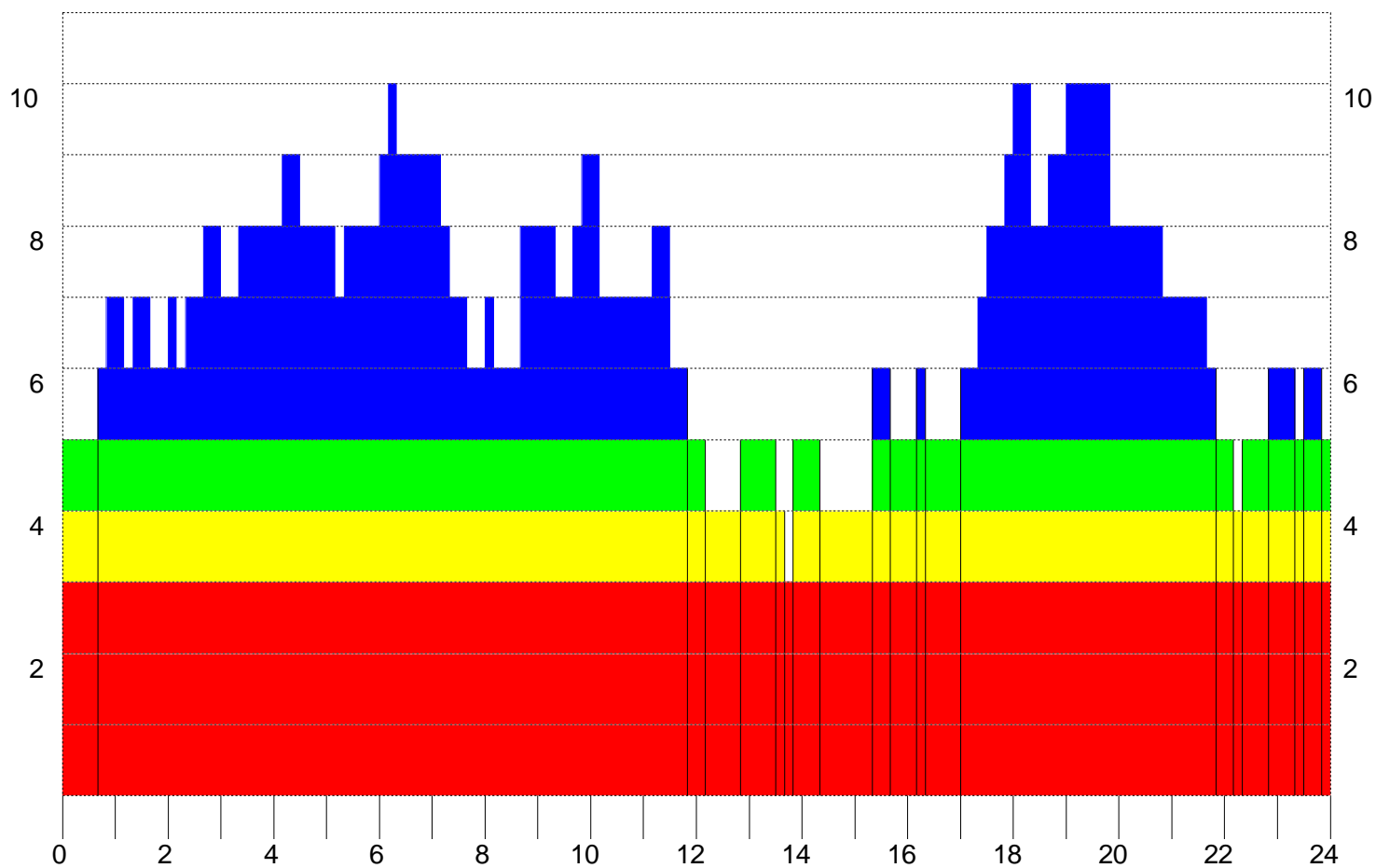
Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite PDOP/GDOP

Prediction date: 10/01/03

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

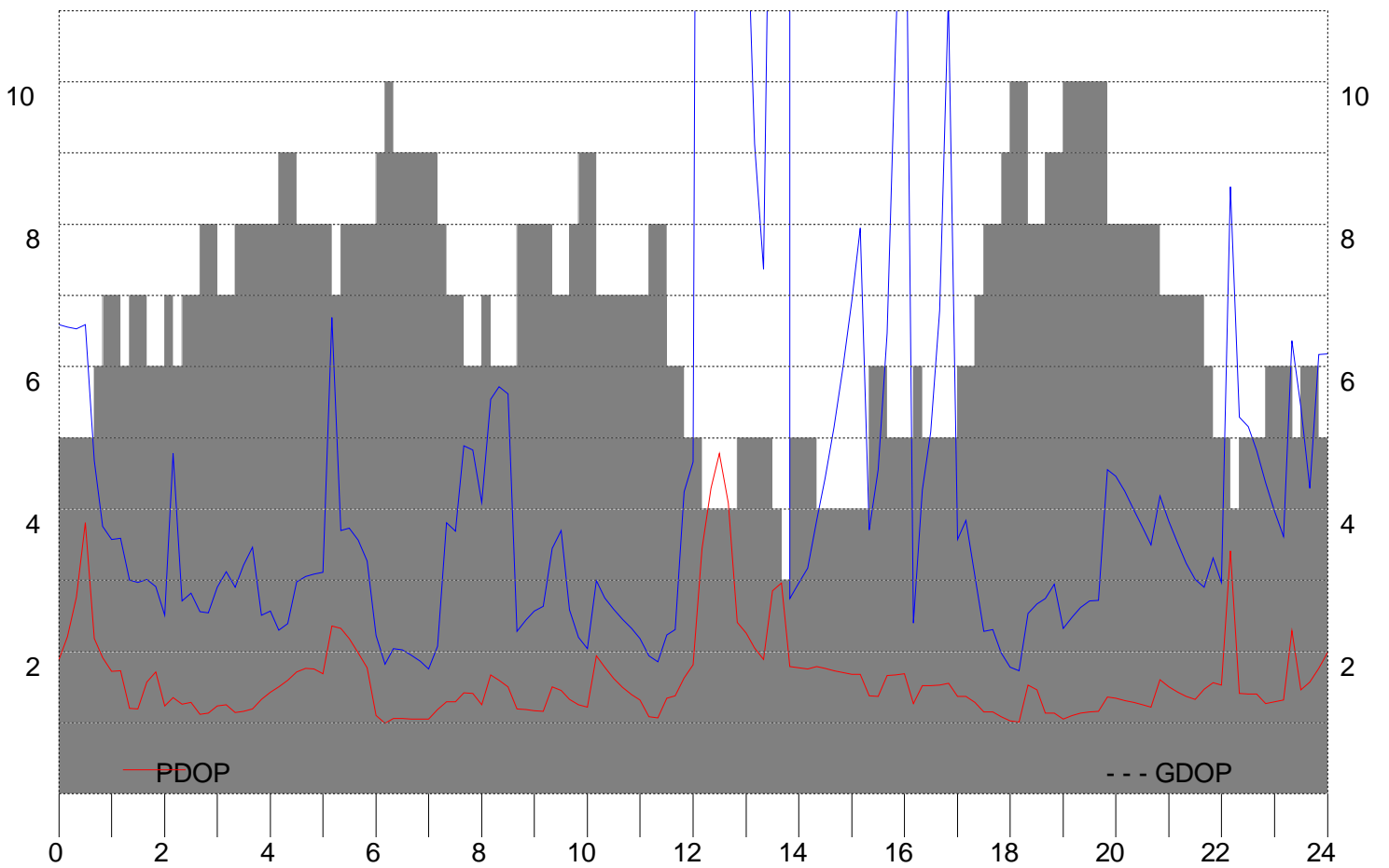
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite elevation

Prediction date: 10/01/03

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

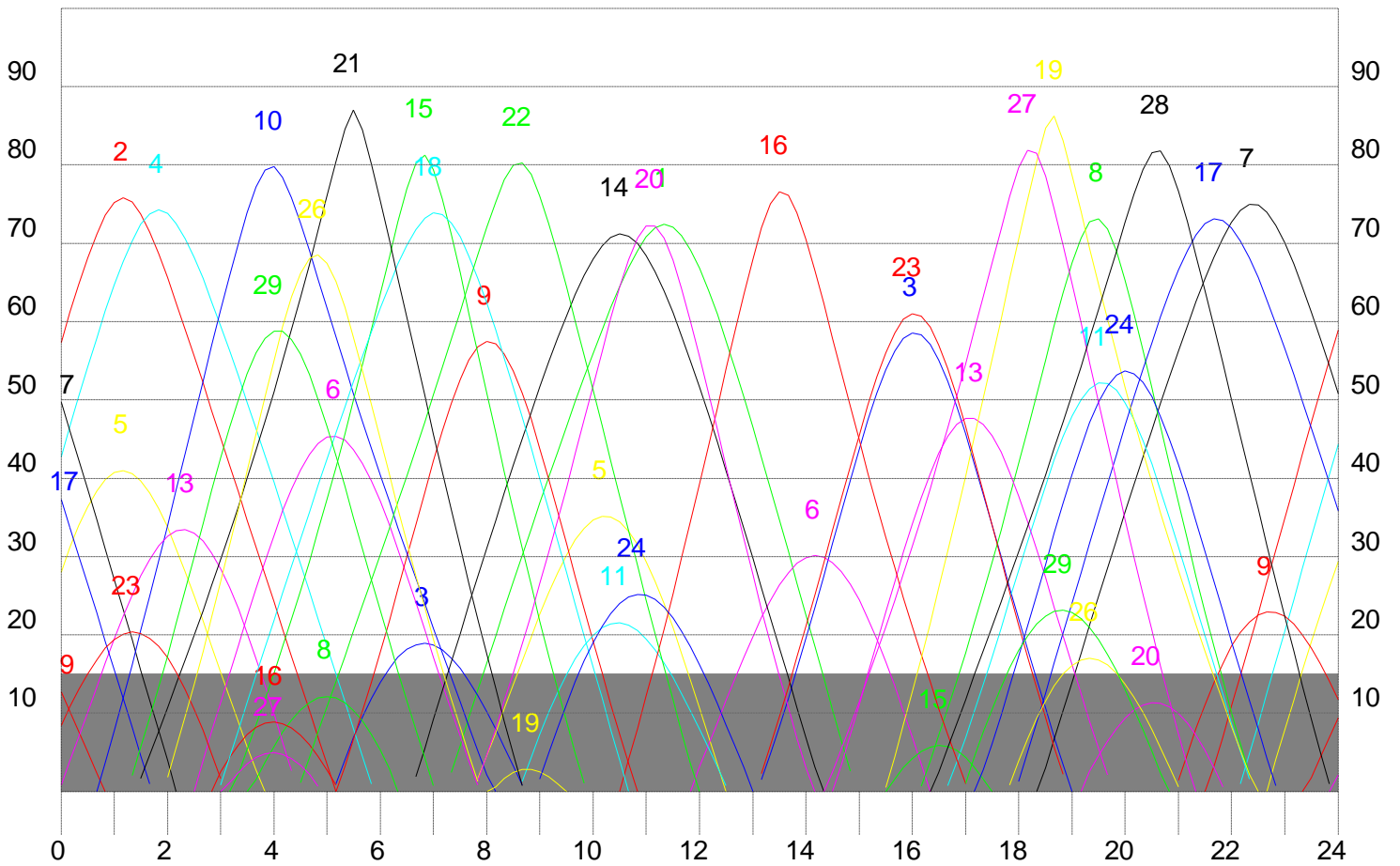
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



:

 98216HMP Satellite summary,PDOP, GDOP Time: GMT-05.00
 10/01/03 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Time	Sats.	PDOP	GDOP	Satellite Nos
00.00	5	1.89	6.59	2 4 5 7 17
00.10	5	2.21	6.57	2 4 5 7 17
00.20	5	2.77	6.54	2 4 5 7 17
00.30	5	3.82	6.60	2 4 5 7 17
00.40	6	2.18	4.69	2 4 5 7 17 23
00.50	7	1.91	3.76	2 4 5 7 13 17 23
01.00	7	1.72	3.58	2 4 5 7 13 17 23
01.10	6	1.73	3.59	2 4 5 7 13 23
01.20	7	1.21	3.01	2 4 5 7 10 13 23
01.30	7	1.20	2.98	2 4 5 7 10 13 23
01.40	6	1.58	3.02	2 4 5 10 13 23
01.50	6	1.71	2.91	2 4 5 10 13 23
02.00	7	1.24	2.52	2 4 5 10 13 23 29
02.10	6	1.35	4.78	2 4 5 10 13 29
02.20	7	1.26	2.71	2 4 5 10 13 21 29
02.30	7	1.29	2.82	2 4 5 10 13 21 29
02.40	8	1.12	2.56	2 4 5 10 13 21 26 29
02.50	8	1.14	2.55	2 4 5 10 13 21 26 29
03.00	7	1.23	2.91	2 4 10 13 21 26 29
03.10	7	1.25	3.12	2 4 10 13 21 26 29
03.20	8	1.15	2.91	2 4 6 10 13 21 26 29
03.30	8	1.17	3.21	2 4 6 10 13 21 26 29
03.40	8	1.19	3.46	2 4 6 10 13 21 26 29
03.50	8	1.34	2.51	2 4 6 10 18 21 26 29
04.00	8	1.43	2.57	2 4 6 10 18 21 26 29
04.10	9	1.50	2.31	2 4 6 10 15 18 21 26 29
04.20	9	1.60	2.39	2 4 6 10 15 18 21 26 29
04.30	8	1.72	2.99	4 6 10 15 18 21 26 29
04.40	8	1.77	3.05	4 6 10 15 18 21 26 29
04.50	8	1.76	3.10	4 6 10 15 18 21 26 29
05.00	8	1.70	3.12	4 6 10 15 18 21 26 29
05.10	7	2.37	6.70	6 10 15 18 21 26 29
05.20	8	2.32	3.71	6 10 15 18 21 22 26 29
05.30	8	2.19	3.73	6 10 15 18 21 22 26 29
05.40	8	1.98	3.56	6 10 15 18 21 22 26 29
05.50	8	1.78	3.27	6 10 15 18 21 22 26 29
06.00	9	1.11	2.22	6 9 10 15 18 21 22 26 29
06.10	10	1.00	1.82	3 6 9 10 15 18 21 22 26 29
06.20	9	1.07	2.04	3 6 9 10 15 18 21 22 26
06.30	9	1.06	2.02	3 6 9 10 15 18 21 22 26
06.40	9	1.06	1.96	3 6 9 10 15 18 21 22 26
06.50	9	1.05	1.86	3 6 9 10 15 18 21 22 26
07.00	9	1.05	1.75	3 6 9 10 15 18 21 22 26
07.10	8	1.19	2.08	3 9 10 15 18 21 22 26
07.20	7	1.30	3.82	3 9 14 15 18 21 22
07.30	7	1.30	3.70	3 9 14 15 18 21 22
07.40	6	1.42	4.89	9 14 15 18 21 22

Time	Sats.	PDOP	GDOP	Satellite Nos
07.50	6	1.41	4.84	9 14 15 18 21 22
08.00	7	1.26	4.10	1 9 14 15 18 21 22
08.10	6	1.68	5.55	1 9 14 15 18 22
08.20	6	1.60	5.73	1 9 14 15 18 22
08.30	6	1.51	5.63	1 9 14 15 18 22
08.40	8	1.20	2.29	1 5 9 14 15 18 20 22
08.50	8	1.18	2.44	1 5 9 14 15 18 20 22
09.00	8	1.17	2.57	1 5 9 14 15 18 20 22
09.10	8	1.16	2.64	1 5 9 14 15 18 20 22
09.20	7	1.51	3.45	1 5 9 14 18 20 22
09.30	7	1.45	3.71	1 5 9 14 18 20 22
09.40	8	1.34	2.58	1 5 9 11 14 18 20 22
09.50	9	1.25	2.21	1 5 9 11 14 18 20 22 24
10.00	9	1.22	2.04	1 5 9 11 14 18 20 22 24
10.10	7	1.95	2.99	1 5 11 14 20 22 24
10.20	7	1.78	2.75	1 5 11 14 20 22 24
10.30	7	1.62	2.59	1 5 11 14 20 22 24
10.40	7	1.50	2.46	1 5 11 14 20 22 24
10.50	7	1.40	2.32	1 5 11 14 20 22 24
11.00	7	1.33	2.19	1 5 11 14 20 22 24
11.10	8	1.08	1.95	1 5 11 14 16 20 22 24
11.20	8	1.07	1.85	1 5 11 14 16 20 22 24
11.30	6	1.35	2.23	1 5 14 16 20 24
11.40	6	1.39	2.32	1 5 14 16 20 24
11.50	5	1.64	4.24	1 14 16 20 24
12.00	5	1.82	4.67	1 14 16 20 24
12.10	4	3.46	36.42	1 14 16 20
12.20	4	4.30	17.57	1 14 16 20
12.30	4	4.79	13.69	1 14 16 20
12.40	4	4.09	17.08	1 14 16 20
12.50	5	2.41	20.15	1 6 14 16 20
13.00	5	2.27	13.09	1 6 14 16 20
13.10	5	2.06	9.13	1 6 14 16 20
13.20	5	1.89	7.38	1 6 14 16 20
13.30	4	2.86	16.46	1 6 14 16
13.40	3	2.97	-----	1 6 16
13.50	5	1.79	2.75	1 3 6 16 23
14.00	5	1.78	2.96	1 3 6 16 23
14.10	5	1.75	3.17	1 3 6 16 23
14.20	4	1.80	3.85	3 6 16 23
14.30	4	1.77	4.43	3 6 16 23
14.40	4	1.73	5.15	3 6 16 23
14.50	4	1.70	6.00	3 6 16 23
15.00	4	1.68	6.94	3 6 16 23
15.10	4	1.68	7.95	3 6 16 23
15.20	6	1.38	3.72	3 6 13 16 23 27
15.30	6	1.37	4.55	3 6 13 16 23 27
15.40	5	1.67	6.48	3 13 16 23 27
15.50	5	1.68	10.50	3 13 16 23 27
16.00	5	1.70	15.40	3 13 16 23 27
16.10	6	1.28	2.41	3 13 16 19 23 27
16.20	5	1.52	4.27	3 13 19 23 27
16.30	5	1.52	5.09	3 13 19 23 27

Time	Sats.	PDOP	GDOP	Satellite Nos
16.40	5	1.53	6.80	3 13 19 23 27
16.50	5	1.56	11.21	3 13 19 23 27
17.00	6	1.37	3.57	3 8 13 19 23 27
17.10	6	1.38	3.84	3 8 13 19 23 27
17.20	7	1.29	3.06	3 8 13 19 23 27 28
17.30	8	1.16	2.29	3 8 11 13 19 23 27 28
17.40	8	1.16	2.32	3 8 11 13 19 23 27 28
17.50	9	1.09	1.98	3 8 11 13 19 23 27 28 29
18.00	10	1.03	1.79	3 8 11 13 19 23 24 27 28 29
18.10	10	1.01	1.74	3 8 11 13 19 23 24 27 28 29
18.20	8	1.54	2.53	8 11 13 19 24 27 28 29
18.30	8	1.46	2.68	8 11 13 19 24 27 28 29
18.40	9	1.14	2.74	8 11 13 17 19 24 27 28 29
18.50	9	1.13	2.94	8 11 13 17 19 24 27 28 29
19.00	10	1.06	2.32	8 11 13 17 19 24 26 27 28 29
19.10	10	1.11	2.48	7 8 11 17 19 24 26 27 28 29
19.20	10	1.13	2.62	7 8 11 17 19 24 26 27 28 29
19.30	10	1.15	2.72	7 8 11 17 19 24 26 27 28 29
19.40	10	1.16	2.72	7 8 11 17 19 24 26 27 28 29
19.50	8	1.37	4.55	7 8 11 17 19 24 27 28
20.00	8	1.35	4.47	7 8 11 17 19 24 27 28
20.10	8	1.32	4.25	7 8 11 17 19 24 27 28
20.20	8	1.28	4.00	7 8 11 17 19 24 27 28
20.30	8	1.25	3.74	7 8 11 17 19 24 27 28
20.40	8	1.23	3.50	7 8 11 17 19 24 27 28
20.50	7	1.61	4.18	7 8 11 17 19 24 28
21.00	7	1.51	3.83	7 8 11 17 19 24 28
21.10	7	1.43	3.52	7 8 11 17 19 24 28
21.20	7	1.38	3.24	7 8 11 17 19 24 28
21.30	7	1.33	3.02	7 8 11 17 19 24 28
21.40	6	1.47	2.90	7 8 11 17 24 28
21.50	5	1.57	3.32	7 9 17 24 28
22.00	5	1.53	2.98	7 9 17 24 28
22.10	4	3.42	8.54	7 9 17 28
22.20	5	1.41	5.30	2 7 9 17 28
22.30	5	1.40	5.16	2 7 9 17 28
22.40	5	1.40	4.83	2 7 9 17 28
22.50	6	1.27	4.37	2 4 7 9 17 28
23.00	6	1.30	3.97	2 4 7 9 17 28
23.10	6	1.33	3.61	2 4 7 9 17 28
23.20	5	2.29	6.36	2 4 7 9 17
23.30	6	1.47	5.43	2 4 5 7 9 17
23.40	6	1.57	4.29	2 4 5 7 9 17
23.50	5	1.76	6.17	2 4 5 7 17
24.00	5	2.00	6.19	2 4 5 7 17

98216HMP Azimuth and elevation Time: GMT-05.00
10/01/03 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
00.00	---	255	---	249	311	---	101	---	263	---	---	---	---	---	---	102	---	---	---	---	---	97	---	---	---	---	---
	---	57	---	43	28	---	50	---	13	---	---	---	---	---	37	---	---	---	---	---	8	---	---	---	---	---	---
00.10	---	261	---	253	308	---	105	---	259	---	---	---	127	---	---	106	---	---	---	---	---	93	---	---	---	---	---
	---	61	---	47	31	---	46	---	10	---	---	4	---	---	34	---	---	---	---	---	11	---	---	---	---	---	---
00.20	---	268	---	257	304	---	109	---	255	---	---	---	124	---	---	110	---	---	---	---	---	89	---	---	---	---	---
	---	65	---	50	34	---	42	---	8	---	---	7	---	---	30	---	---	---	---	---	13	---	---	---	---	---	---
00.30	---	277	---	262	299	---	113	---	252	---	---	---	121	---	---	113	---	---	---	---	---	85	---	---	---	---	---
	---	68	---	54	36	---	39	---	5	---	---	10	---	---	26	---	---	---	---	---	15	---	---	---	---	---	---
00.40	---	288	---	268	295	---	116	---	249	---	---	---	117	---	---	116	---	---	---	---	---	81	---	---	---	---	---
	---	71	---	58	38	---	35	---	2	---	---	13	---	---	23	---	---	---	---	---	17	---	---	---	---	---	---
00.50	---	301	---	275	289	---	119	---	207	---	---	---	114	---	---	119	---	---	---	---	---	77	---	---	---	---	---
	---	74	---	61	40	---	31	---	4	---	---	16	---	---	19	---	---	---	---	---	18	---	---	---	---	---	---
01.00	---	318	---	283	283	---	122	---	207	---	---	---	110	---	---	122	---	---	---	---	---	72	---	---	---	---	---
	---	75	---	65	41	---	27	---	8	---	---	19	---	---	16	---	---	---	---	---	19	---	---	---	---	---	---
01.10	---	336	---	292	277	---	125	---	208	---	---	---	107	---	---	125	---	---	---	---	---	68	---	---	---	---	---
	---	76	---	68	41	---	23	---	12	---	---	22	---	---	12	---	---	---	---	---	20	---	---	---	---	---	---
01.20	---	355	---	303	271	---	128	---	209	---	---	---	102	---	---	127	---	---	---	---	---	63	---	---	---	---	163
	---	75	---	70	41	---	19	---	16	---	---	25	---	---	8	---	---	---	---	---	20	---	---	---	---	---	2
01.30	---	11	---	316	265	---	130	---	---	---	---	---	211	---	---	129	---	---	---	---	260	---	---	---	---	---	161
	---	74	---	72	40	---	16	---	---	---	---	---	21	---	---	5	---	---	---	---	2	---	---	---	---	---	6
01.40	---	25	---	331	260	---	132	---	---	---	---	---	212	---	---	93	---	---	---	---	263	---	---	---	---	---	159
	---	71	---	74	38	---	12	---	---	---	---	---	25	---	---	30	---	---	---	---	5	---	---	---	---	---	9
01.50	---	36	---	348	254	---	134	---	---	---	---	---	214	---	---	88	---	---	---	---	266	---	---	---	---	---	157
	---	69	---	74	36	---	8	---	---	---	---	---	29	---	---	31	---	---	---	---	8	---	---	---	---	---	13
02.00	---	45	---	4	250	---	136	---	---	---	---	---	216	---	---	83	---	---	---	---	269	---	---	---	---	---	154
	---	66	---	74	34	---	4	---	---	---	---	---	34	---	---	33	---	---	---	---	11	---	---	---	---	---	17
02.10	---	53	---	19	245	---	---	---	---	---	---	---	218	---	---	77	---	---	---	---	272	---	---	---	---	---	152
	---	62	---	73	31	---	---	---	---	---	---	---	39	---	---	33	---	---	---	---	14	---	---	---	---	---	21
02.20	---	59	---	32	241	---	---	---	---	---	---	---	221	---	---	72	---	---	---	---	275	---	---	---	---	---	150
	---	59	---	71	28	---	---	---	---	---	---	---	43	---	---	33	---	---	---	---	17	---	---	---	---	---	26
02.30	---	65	---	43	237	---	---	---	---	---	---	---	224	---	---	66	---	---	---	---	278	---	---	---	---	---	147
	---	56	---	68	25	---	---	---	---	---	---	---	48	---	---	33	---	---	---	---	20	---	---	---	---	---	30
02.40	---	71	---	52	234	316	---	---	---	---	---	---	227	---	---	61	---	---	---	---	281	---	---	---	---	---	145
	---	52	---	66	22	4	---	---	---	---	---	---	52	---	---	32	---	---	---	---	23	---	---	---	---	---	34
02.50	---	76	---	60	231	316	---	---	---	---	---	---	232	---	---	56	---	---	---	---	284	---	---	---	---	---	141
	---	49	---	63	19	8	---	---	---	---	---	---	57	---	---	30	---	---	---	---	26	---	---	---	---	---	38
03.00	---	80	---	67	227	316	---	---	---	---	---	---	236	---	---	52	---	---	---	---	333	---	---	---	---	---	138
	---	45	---	59	15	11	---	---	---	---	---	---	61	---	---	28	---	---	---	---	2	---	---	---	---	---	43
03.10	---	85	---	74	225	316	---	---	---	---	---	---	242	---	---	48	---	---	---	---	330	---	---	---	---	---	133
	---	42	---	56	12	15	---	---	---	---	---	---	66	---	---	26	---	---	---	---	4	---	---	---	---	---	46
03.20	---	89	---	79	222	315	---	---	---	---	---	---	250	---	---	44	---	---	---	---	284	---	---	---	---	---	128
	---	38	---	53	9	19	---	---	---	---	---	---	70	---	---	23	---	---	---	---	2	---	---	---	---	---	50
03.30	---	93	---	84	219	314	---	---	---	---	---	---	261	---	---	42	---	---	---	---	287	---	---	---	---	---	121
	---	35	---	50	6	22	---	---	---	---	---	---	74	---	---	20	---	---	---	---	5	---	---	---	---	---	53
03.40	---	96	---	89	216	313	---	---	---	---	---	---	84	---	---	276	---	---	---	---	289	---	---	---	---	---	114
	---	31	---	46	3	26	---	---	---	---	---	---	2	---	---	77	---	---	---	---	9	---	---	---	---	---	56

Time Azimuth and elevation for satellites [°]

1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29

03.50	---	100	---	93	---	311	---	81	---	298	---	37	---	292	316	---	245	---	---	302	---	---	---	152	46	---	105	
	---	28	---	43	---	29	---	4	---	79	---	14	---	12	9	---	18	---	---	47	---	---	50	5	---	58		
04.00	---	103	---	98	---	308	---	77	---	324	---	36	---	294	312	---	248	---	---	305	---	---	---	148	42	---	96	
	---	24	---	39	---	33	---	6	---	80	---	10	---	15	9	---	22	---	---	51	---	---	55	5	---	59		
04.10	---	106	---	101	---	305	---	73	---	349	---	34	---	297	308	---	251	---	---	309	---	---	---	142	39	---	87	
	---	21	---	36	---	36	---	8	---	78	---	6	---	18	9	---	25	---	---	55	---	---	59	5	---	59		
04.20	---	109	---	105	---	301	---	70	---	7	---	34	---	299	304	---	254	---	---	312	---	---	---	134	35	---	78	
	---	17	---	33	---	39	---	9	---	76	---	3	---	22	8	---	29	---	---	59	---	---	63	4	---	58		
04.30	---	112	---	108	---	297	---	66	---	19	---	---	---	301	300	---	257	---	---	315	249	---	---	124	32	---	70	
	---	14	---	29	---	41	---	10	---	73	---	---	---	26	7	---	32	---	---	63	1	---	66	3	---	56		
04.40	---	115	---	112	---	291	---	61	---	29	---	---	---	303	296	---	261	---	---	319	252	---	---	111	28	---	63	
	---	10	---	26	---	43	---	11	---	69	---	---	---	29	6	---	36	---	---	67	4	---	68	2	---	53		
04.50	---	118	---	115	---	286	---	57	---	36	---	---	---	305	292	---	265	---	---	324	255	---	---	97	---	---	58	
	---	7	---	22	---	44	---	12	---	65	---	---	---	33	5	---	39	---	---	72	8	---	69	---	---	50		
05.00	---	120	---	118	---	279	---	53	---	42	---	---	---	307	288	---	269	---	---	329	258	---	---	83	---	---	54	
	---	3	---	19	---	45	---	12	---	62	---	---	---	37	3	---	42	---	---	76	11	---	67	---	---	47		
05.10	---	---	---	120	---	273	---	49	---	48	---	---	---	308	---	---	274	---	---	338	261	---	---	72	---	---	51	
	---	---	---	15	---	45	---	12	---	58	---	---	---	41	---	---	46	---	---	80	14	---	65	---	---	43		
05.20	---	---	---	327	123	---	266	---	45	164	53	---	---	310	---	---	278	---	---	356	264	---	---	64	---	---	49	
	---	---	---	4	12	---	45	---	11	3	54	---	---	46	---	---	49	---	---	85	17	---	62	---	---	39		
05.30	---	---	---	325	125	---	260	---	41	162	57	---	---	311	---	---	284	---	---	52	267	---	---	57	---	---	47	
	---	---	---	7	8	---	44	---	10	7	51	---	---	50	---	---	52	---	---	87	20	---	58	---	---	35		
05.40	---	---	---	322	128	---	254	---	37	159	61	---	---	311	---	---	289	---	---	108	270	---	---	53	---	---	46	
	---	---	---	10	4	---	42	---	9	10	47	---	---	54	---	---	56	---	---	85	24	---	54	---	---	31		
05.50	---	---	---	319	---	---	249	---	34	157	65	---	---	311	---	---	295	---	---	126	274	---	---	50	---	---	46	
	---	---	---	12	---	---	40	---	7	14	44	---	---	59	---	---	59	---	---	80	27	---	49	---	---	27		
06.00	---	---	---	316	---	---	244	---	31	155	69	---	---	310	---	---	302	---	---	134	277	---	---	49	---	---	46	
	---	---	---	14	---	---	37	---	5	18	40	---	---	64	---	---	62	---	---	75	30	---	45	---	---	23		
06.10	---	---	---	312	---	---	239	---	28	153	73	---	---	307	---	---	310	---	---	139	281	---	---	48	---	---	46	
	---	---	---	16	---	---	34	---	3	22	37	---	---	68	---	---	65	---	---	70	34	---	41	---	---	19		
06.20	---	---	---	308	---	---	235	---	151	77	---	---	---	302	---	---	319	---	---	143	284	---	---	47	---	---	47	
	---	---	---	17	---	---	31	---	26	34	---	---	---	73	---	---	67	---	---	66	37	---	36	---	---	15		
06.30	---	---	---	304	---	---	231	---	148	81	---	---	---	292	---	---	329	---	---	146	288	---	---	48	---	---	48	
	---	---	---	18	---	---	28	---	30	30	---	---	---	77	---	---	70	---	---	61	40	---	32	---	---	12		
06.40	---	---	---	300	---	---	228	---	145	84	---	---	---	228	273	---	---	---	---	341	---	---	148	292	---	---	49	
	---	---	---	19	---	---	24	---	34	27	---	---	---	2	80	---	---	---	---	72	---	---	56	44	---	---	8	
06.50	---	---	---	296	---	---	225	---	142	87	---	---	---	230	244	---	---	---	---	355	---	---	150	296	---	---	50	
	---	---	---	19	---	---	21	---	38	24	---	---	---	6	81	---	---	---	---	73	---	---	51	47	---	---	4	
07.00	---	---	---	291	---	---	222	---	138	91	---	---	---	233	216	---	---	---	---	11	---	---	152	300	---	---	---	
	---	---	---	19	---	---	17	---	42	21	---	---	---	9	79	---	---	---	---	74	---	---	46	51	---	---	---	
07.10	---	---	---	287	---	---	219	---	133	94	---	---	---	235	200	---	---	---	---	27	---	---	153	304	---	---	---	
	---	---	---	18	---	---	14	---	46	18	---	---	---	13	76	---	---	---	---	74	---	---	41	54	---	---	---	
07.20	235	---	---	283	---	---	216	---	128	97	---	---	---	238	191	---	---	---	---	43	---	---	155	309	---	---	---	
	2	---	---	17	---	---	10	---	50	15	---	---	---	17	71	---	---	---	---	73	---	---	36	58	---	---	---	
07.30	238	---	---	279	---	---	214	---	122	101	---	---	---	241	186	---	---	---	---	56	---	---	156	314	---	---	---	
	6	---	---	16	---	---	7	---	53	11	---	---	---	20	66	---	---	---	---	71	---	---	31	61	---	---	---	
07.40	240	---	---	275	---	---	211	---	114	104	---	---	---	244	183	---	---	---	---	68	---	---	157	320	---	---	---	
	9	---	---	14	---	---	4	---	55	8	---	---	---	24	61	---	---	---	---	68	---	---	27	65	---	---	---	
07.50	243	---	---	271	---	---	138	---	105	107	---	---	---	247	181	---	---	---	---	78	---	---	294	158	327	---	---	---
	13	---	---	12	---	---	2	---	57	5	---	---	---	27	56	---	---	---	---	66	---	---	1	22	69	---	---	---
08.00	246	---	---	267	---	---	135	---	96	109	---	---	---	250	180	---	---	---	---	86	---	---	297	159	335	---	---	---
	16	---	---	10	---	---	5	---	57	2	---	---	---	31	51	---	---	---	---	62	---	---	5	18	72	---	---	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
08.10	249	---	263	---	132	---	---	---	87	---	---	---	254	179	---	---	93	---	299	159	347	---	---	---	---	---	---
	20	---	8	---	8	---	---	57	---	---	---	35	46	---	---	59	---	8	13	75	---	---	---	---	---	---	---
08.20	252	---	260	---	129	---	---	---	78	---	---	---	258	179	---	---	99	331	301	159	2	---	---	---	---	---	---
	23	---	6	---	11	---	---	56	---	---	---	38	41	---	---	55	2	12	9	78	---	---	---	---	---	---	---
08.30	256	---	256	---	126	---	---	---	70	---	---	---	263	178	---	---	104	328	303	160	24	---	---	---	---	---	---
	27	---	3	---	14	---	---	54	---	---	---	42	36	---	---	52	2	15	5	80	---	---	---	---	---	---	---
08.40	260	---	---	---	122	---	---	---	64	---	326	---	267	178	---	---	109	324	305	---	51	---	---	---	---	---	---
	30	---	---	---	17	---	---	51	---	1	---	45	31	---	---	48	3	19	---	80	---	---	---	---	---	---	---
08.50	263	---	---	---	119	---	---	---	59	---	324	---	272	177	---	---	113	320	306	---	75	---	---	---	---	---	---
	33	---	---	---	20	---	---	48	---	4	---	48	26	---	---	44	3	23	---	79	---	---	---	---	---	---	---
09.00	267	---	---	---	115	---	---	---	55	---	322	---	278	177	---	---	117	316	308	---	93	---	329	---	---	---	---
	37	---	---	---	23	---	---	44	---	7	---	52	22	---	---	40	3	27	---	76	---	2	---	---	---	---	---
09.10	272	---	---	---	111	---	---	---	52	---	320	---	284	176	---	---	121	312	309	---	105	---	328	---	---	---	---
	40	---	---	---	25	---	---	40	---	10	---	55	17	---	---	36	2	31	---	72	---	5	---	---	---	---	---
09.20	276	---	---	---	107	---	---	---	50	---	317	---	290	176	---	---	124	---	310	---	114	---	326	---	---	---	---
	43	---	---	---	28	---	---	36	---	13	---	58	13	---	---	32	---	35	---	69	---	8	---	---	---	---	---
09.30	281	---	---	---	102	---	---	---	49	---	314	---	297	175	---	---	127	---	310	---	121	---	324	---	---	---	---
	47	---	---	---	30	---	---	32	---	15	---	61	9	---	---	28	---	39	---	64	---	11	---	---	---	---	---
09.40	286	---	---	---	97	---	---	---	48	---	311	---	306	174	---	---	130	---	310	---	126	---	321	---	---	---	---
	50	---	---	---	32	---	---	27	---	17	---	63	5	---	---	24	---	43	---	60	---	14	---	---	---	---	---
09.50	292	---	---	---	92	---	---	---	47	---	307	---	315	173	---	---	132	---	310	---	130	---	319	---	---	---	---
	53	---	---	---	34	---	---	23	---	19	---	66	1	---	---	20	---	47	---	56	---	17	---	---	---	---	---
10.00	298	---	---	---	86	---	---	---	47	---	303	---	325	---	---	---	134	---	309	---	134	---	315	---	---	---	---
	56	---	---	---	35	---	---	19	---	20	---	68	---	---	---	16	---	52	---	51	---	19	---	---	---	---	---
10.10	304	---	---	---	81	---	---	---	48	---	299	---	337	---	---	---	136	---	307	---	137	---	312	---	---	---	---
	59	---	---	---	35	---	---	15	---	21	---	70	---	---	---	12	---	56	---	47	---	21	---	---	---	---	---
10.20	311	---	---	---	75	---	---	---	48	---	294	---	350	---	---	---	138	---	303	---	140	---	308	---	---	---	---
	62	---	---	---	35	---	---	11	---	21	---	71	---	---	---	8	---	60	---	42	---	23	---	---	---	---	---
10.30	319	---	---	---	70	---	---	---	49	---	290	---	4	---	---	---	140	---	298	---	142	---	304	---	---	---	---
	64	---	---	---	34	---	---	7	---	22	---	71	---	---	---	4	---	64	---	38	---	24	---	---	---	---	---
10.40	329	---	---	---	65	---	---	---	50	---	286	---	18	---	182	---	---	---	290	---	144	---	299	---	---	---	---
	67	---	---	---	33	---	---	4	---	21	---	71	---	---	---	4	---	68	---	33	---	25	---	---	---	---	---
10.50	339	---	---	---	60	---	---	---	281	---	32	---	180	---	---	---	---	---	279	---	146	---	295	---	---	---	---
	69	---	---	---	32	---	---	---	21	---	70	---	8	---	---	---	71	---	29	---	25	---	---	---	---	---	---
11.00	352	---	---	---	56	---	---	---	277	---	44	---	179	---	---	---	---	---	265	---	148	---	290	---	---	---	---
	71	---	---	---	29	---	---	---	19	---	68	---	12	---	---	---	72	---	24	---	25	---	---	---	---	---	---
11.10	5	---	---	---	52	---	---	---	273	---	55	---	178	---	---	---	---	---	249	---	150	---	285	---	---	---	---
	72	---	---	---	27	---	---	---	18	---	66	---	16	---	---	---	72	---	20	---	25	---	---	---	---	---	---
11.20	20	---	---	---	49	---	---	---	269	---	65	---	178	---	---	---	---	---	234	---	151	---	281	---	---	---	---
	72	---	---	---	24	---	---	---	16	---	64	---	21	---	---	---	71	---	16	---	24	---	---	---	---	---	---
11.30	35	---	---	---	46	---	---	---	265	---	73	---	177	---	---	---	---	---	222	---	152	---	276	---	---	---	---
	72	---	---	---	21	---	---	---	15	---	61	---	25	---	---	---	68	---	12	---	22	---	---	---	---	---	---
11.40	49	---	---	---	44	---	---	---	261	---	81	---	176	---	---	---	---	---	213	---	153	---	272	---	---	---	---
	71	---	---	---	18	---	---	---	12	---	58	---	30	---	---	---	64	---	8	---	20	---	---	---	---	---	---
11.50	62	---	---	---	42	---	---	---	257	---	87	---	175	---	---	---	---	---	207	---	153	---	268	---	---	---	---
	69	---	---	---	14	---	---	---	10	---	55	---	35	---	---	---	60	---	4	---	18	---	---	---	---	---	---
12.00	73	---	---	---	40	127	---	---	254	---	93	---	174	---	---	---	---	---	203	---	---	---	264	---	---	---	---
	67	---	---	---	11	3	---	---	8	---	52	---	39	---	---	---	56	---	---	---	16	---	---	---	---	---	---
12.10	82	---	---	---	39	124	---	---	250	---	98	---	173	---	---	---	---	---	199	---	---	---	260	---	---	---	---
	64	---	---	---	7	6	---	---	6	---	48	---	44	---	---	---	51	---	---	---	14	---	---	---	---	---	---
12.20	90	---	---	---	39	121	---	---	247	---	103	---	171	---	---	---	---	---	197	---	---	---	256	---	---	---	---
	61	---	---	---	3	9	---	---	3	---	45	---	49	---	---	---	46	---	---	---	11	---	---	---	---	---	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	
12.30	97						117							108		169				195							253	
	58						12						41		54				41						9			
12.40	103						114							112		166				193							250	
	54						14						37		59				37						6			
12.50	109						110							115		162				192							246	
	50						17						34		64				32						3			
13.00	113						107							119		156				190								
	47						20						30		68				28									
13.10	118		169				103							122		147				189							307	
	43		2				22						26		72				23						2			
13.20	122		167				98							125		133				188							309	
	39		5				24						22		75				19						6			
13.30	125		164				94							128		113				187							310	
	35		8				26						18		77				15						10			
13.40	128		162				89							130		93				186							311	
	31		12				28						15		76				11						13			
13.50	131		160				85							133		77				184							312	
	27		16				29						11		74				7						17			
14.00	134		158				80							135		65				183							313	
	23		20				30						7		71				3						21			
14.10	136		156				75							137		59											313	
	19		23				30						3		67											25		
14.20	138		154				70								54												313	
	14		28				30							62												29		
14.30	140		151				65								52												280	
	10		32				29							58											33		2	
14.40	142		148				60							319		51											283	
	7		36				28						3		54										37		5	
14.50	144		145				56							320		50											285	
	3		40				26						7		49										42		8	
15.00			141				52							320		50											288	
			44				24						11		45										46		11	
15.10			136				49							320		51											291	
			47				22						15		41										49		15	
15.20			131				46							319		52											293	
			51				19						19		37											53		18
15.30			124				43							318		53											296	
			54				17						23		32											56		21
15.40			117				41							317		65	55			191							286	
			56				14						27		2	29			4							59		24
15.50			108				39							315		61	57			191							277	
			58				10						31		3	25			9							60		28
16.00			99				38							312		58	58			190							268	
			59				7						34		4	21			13							61		31
16.10			90				37							309		54	60			190							257	
			58				4						38		5	17			17							61		35
16.20			81				297							305		50	63			190							248	
			57				4						41		6	14			21							59		39
16.30			74				299							300		46	65			190							239	
			55				7						43		6	11			26							57		42
16.40			67				301							294		42	67			190							232	
			52				11						45		6	7			31							54		46

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29				
16.50	---	---	62	---	---	---	---	303	---	---	---	163	288	---	38	70	---	---	190	---	---	---	226	---	---	311	259	---			
	---	---	49	---	---	---	---	14	---	---	---	4	47	---	5	4	---	---	35	---	---	---	50	---	---	50	9	---			
17.00	---	---	58	---	---	---	---	305	---	---	---	160	281	---	34	---	---	---	191	---	---	---	221	---	---	311	262	332			
	---	---	46	---	---	---	---	18	---	---	---	7	48	---	4	---	---	---	40	---	---	---	47	---	---	55	12	1			
17.10	---	---	56	---	---	---	---	307	---	---	---	158	274	---	31	---	---	---	191	---	---	---	217	---	---	312	265	331			
	---	---	42	---	---	---	---	21	---	---	---	10	48	---	3	---	---	---	45	---	---	---	43	---	---	59	15	4			
17.20	---	---	53	---	---	---	---	308	---	---	---	156	267	---	27	---	---	---	191	---	---	---	214	159	---	311	268	329			
	---	---	38	---	---	---	---	25	---	---	---	14	47	---	2	---	---	---	50	---	---	---	38	3	---	63	18	8			
17.30	---	---	52	---	---	---	---	310	---	---	---	153	260	---	---	---	---	---	191	---	---	---	211	157	---	309	271	327			
	---	---	34	---	---	---	---	29	---	---	---	17	45	---	---	---	---	---	55	---	---	---	34	6	---	67	21	11			
17.40	---	---	51	---	---	---	---	311	---	---	---	151	254	---	---	---	---	---	191	---	---	---	208	154	---	306	274	324			
	---	---	30	---	---	---	---	33	---	---	---	21	43	---	---	---	---	---	60	---	---	---	30	10	---	72	24	13			
17.50	---	---	51	---	---	---	---	311	---	---	---	148	248	---	---	---	---	---	191	---	---	---	206	152	---	299	278	321			
	---	---	26	---	---	---	---	38	---	---	---	25	41	---	---	---	---	---	65	---	---	---	25	13	---	76	27	16			
18.00	---	---	50	---	---	---	---	312	---	---	---	145	243	---	---	---	---	---	223	---	---	---	204	150	333	285	281	318			
	---	---	22	---	---	---	---	42	---	---	---	28	38	---	---	---	---	---	1	---	---	---	21	17	4	80	31	18			
18.10	---	---	51	---	---	---	---	311	---	---	---	142	239	---	---	---	---	---	224	---	---	---	187	---	---	202	147	330	260	284	314
	---	---	18	---	---	---	---	46	---	---	---	32	34	---	---	---	---	---	5	---	---	---	17	21	7	82	34	20			
18.20	---	---	51	---	---	---	---	311	---	---	---	138	235	---	---	---	---	---	226	---	---	---	180	---	---	200	144	327	228	288	310
	---	---	14	---	---	---	---	51	---	---	---	36	31	---	---	---	---	---	9	---	---	---	13	25	9	81	37	21			
18.30	---	---	52	---	---	---	---	230	309	---	---	134	231	---	---	---	---	---	228	---	---	---	160	---	---	198	141	324	206	292	306
	---	---	11	---	---	---	---	3	55	---	---	39	27	---	---	---	---	---	13	---	---	---	85	---	---	9	29	12	79	40	22
18.40	---	---	53	---	---	---	---	232	306	---	---	130	228	---	---	---	---	---	230	---	---	---	103	---	---	196	138	320	194	295	301
	---	---	7	---	---	---	---	7	59	---	---	42	24	---	---	---	---	---	16	---	---	---	86	---	---	6	33	13	74	44	23
18.50	---	---	55	---	---	---	---	234	301	---	---	125	225	---	---	---	---	---	233	---	---	---	63	---	---	194	135	316	187	299	297
	---	---	3	---	---	---	---	10	64	---	---	45	20	---	---	---	---	---	20	---	---	---	83	---	---	2	37	15	70	47	23
19.00	---	---	---	---	---	---	---	236	294	---	---	119	222	---	---	---	---	---	235	---	---	---	52	---	---	130	312	184	303	292	
	---	---	---	---	---	---	---	14	68	---	---	48	16	---	---	---	---	---	24	---	---	---	79	---	---	41	16	65	51	23	
19.10	---	---	---	---	---	---	---	239	284	---	---	112	220	---	---	---	---	---	238	---	---	---	48	---	---	126	308	181	307	287	
	---	---	---	---	---	---	---	18	71	---	---	50	12	---	---	---	---	---	28	---	---	---	74	---	---	44	17	60	54	22	
19.20	---	---	---	---	---	---	---	241	269	---	---	105	217	---	---	---	---	---	241	---	---	---	46	82	---	---	120	304	180	311	283
	---	---	---	---	---	---	---	21	73	---	---	51	9	---	---	---	---	---	32	---	---	---	69	3	---	---	47	17	55	58	21
19.30	---	---	---	---	---	---	---	244	252	---	---	98	214	---	---	---	---	---	245	---	---	---	47	79	---	---	114	299	179	316	279
	---	---	---	---	---	---	---	25	73	---	---	52	5	---	---	---	---	---	36	---	---	---	65	5	---	---	50	17	50	62	19
19.40	---	---	---	---	---	---	---	247	236	---	---	90	212	---	---	---	---	---	248	---	---	---	47	75	---	---	107	295	178	321	274
	---	---	---	---	---	---	---	29	72	---	---	52	2	---	---	---	---	---	39	---	---	---	60	6	---	---	52	16	45	65	18
19.50	---	---	---	---	---	---	---	250	223	---	---	83	---	---	---	---	---	---	252	---	---	---	49	71	---	---	99	290	178	328	270
	---	---	---	---	---	---	---	32	69	---	---	51	---	---	---	---	---	---	43	---	---	---	56	8	---	---	53	15	40	69	15
20.00	---	---	---	---	---	---	---	254	213	---	---	76	---	---	---	---	---	---	257	---	---	---	50	67	---	---	91	286	177	336	266
	---	---	---	---	---	---	---	36	65	---	---	50	---	---	---	---	---	---	47	---	---	---	52	9	---	---	54	14	35	73	13
20.10	---	---	---	---	---	---	---	257	207	---	---	70	---	---	---	---	---	---	262	---	---	---	52	63	---	---	83	282	177	346	263
	---	---	---	---	---	---	---	39	61	---	---	48	---	---	---	---	---	---	50	---	---	---	47	10	---	---	53	12	30	76	10
20.20	---	---	---	---	---	---	---	261	202	---	---	65	---	---	---	---	---	---	267	---	---	---	54	59	---	---	76	278	177	2	259
	---	---	---	---	---	---	---	43	56	---	---	45	---	---	---	---	---	---	54	---	---	---	43	11	---	---	52	10	25	79	8
20.30	---	---	---	---	---	---	---	265	199	---	---	61	---	---	---	---	---	---	273	---	---	---	56	55	---	---	69	274	176	27	256
	---	---	---	---	---	---	---	46	52	---	---	42	---	---	---	---	---	---	57	---	---	---	39	11	---	---	50	8	21	82	5
20.40	---	---	---	---	---	---	---	270	196	---	---	58	---	---	---	---	---	---	279	---	---	---	58	50	---	---	63	271	176	58	253
	---	---	---	---	---	---	---	50	47	---	---	38	---	---	---	---	---	---	61	---	---	---	36	11	---	---	48	6	16	82	2
20.50	---	---	---	---	---	---	---	275	194	---	---	55	---	---	---	---	---	---	287	---	---	---	61	46	---	---	59	267	175	85	---
	---	---	---	---	---	---	---	53	42	---	---	35	---	---	---	---	---	---	64	---	---	---	32	11	---	---	45	3	12	80	---
21.00	---	---	---	---	---	---	---	280	192	330	---	53	---	---	---	---	---	---	296	---	---	---	63	43	---	---	55	---	174	103	---
	---	---	---	---	---	---	---	56	37	1	---	31	---	---	---	---	---	---	67	---	---	---	28	10	---	---	42	---	7	77	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
21.10	---	---	---	---	---	---	286	191	328	---	52	---	---	---	---	307	---	66	39	---	---	---	52	---	173	115	---
	---	---	---	---	---	---	59	32	5	---	27	---	---	---	---	69	---	25	9	---	---	38	---	3	73	---	---
21.20	---	---	---	---	---	---	293	190	326	---	51	---	---	---	---	319	---	69	35	---	---	---	50	---	---	122	---
	---	---	---	---	---	---	63	27	8	---	24	---	---	---	---	71	---	21	7	---	---	35	---	---	68	---	---
21.30	---	---	---	---	---	---	300	189	324	---	51	---	---	---	---	333	---	71	32	---	---	---	48	---	---	128	---
	---	---	---	---	---	---	65	23	11	---	20	---	---	---	---	72	---	18	5	---	---	31	---	---	64	---	---
21.40	---	217	---	---	---	---	309	187	321	---	50	---	---	---	---	348	---	74	29	---	---	---	47	---	---	133	---
	---	3	---	---	---	---	68	19	14	---	16	---	---	---	---	73	---	15	3	---	---	27	---	---	59	---	---
21.50	---	218	---	---	---	---	319	186	317	---	51	---	---	---	---	4	---	77	---	---	---	---	46	---	---	137	---
	---	7	---	---	---	---	71	14	16	---	12	---	---	---	---	73	---	11	---	---	---	23	---	---	55	---	---
22.00	---	219	---	---	---	---	331	185	314	---	51	---	---	---	---	18	---	80	---	---	---	---	46	---	---	140	---
	---	11	---	---	---	---	73	10	19	---	9	---	---	---	---	72	---	8	---	---	---	19	---	---	50	---	---
22.10	---	221	---	---	---	---	345	184	310	---	52	---	---	---	---	32	---	82	---	---	---	---	46	---	---	143	---
	---	15	---	---	---	---	74	6	20	---	5	---	---	---	---	70	---	5	---	---	---	15	---	---	45	---	---
22.20	---	223	---	223	---	---	1	182	305	---	53	---	---	---	---	43	---	85	---	---	---	---	47	---	---	145	---
	---	19	---	5	---	---	75	2	22	---	2	---	---	---	---	68	---	2	---	---	---	12	---	---	41	---	---
22.30	---	225	---	225	---	---	18	---	301	---	---	---	---	---	---	53	---	---	---	---	---	---	47	---	---	147	---
	---	23	---	9	---	---	75	---	23	---	---	---	---	---	---	66	---	---	---	---	---	8	---	---	36	---	---
22.40	---	227	---	227	---	---	33	---	296	---	---	---	---	---	---	61	---	---	---	---	---	48	---	---	149	---	---
	---	27	---	13	---	---	74	---	23	---	---	---	---	---	---	63	---	---	---	---	---	4	---	---	31	---	---
22.50	---	230	---	229	319	---	47	---	291	---	---	---	---	---	---	69	---	---	---	---	---	---	---	---	151	---	---
	---	31	---	17	4	---	72	---	23	---	---	---	---	---	---	60	---	---	---	---	---	---	---	27	---	---	---
23.00	---	232	---	231	319	---	59	---	286	---	---	---	---	---	---	75	---	---	---	---	---	---	---	---	152	---	---
	---	35	---	21	8	---	70	---	22	---	---	---	---	---	---	57	---	---	---	---	---	---	22	---	---	---	---
23.10	---	236	---	234	318	---	69	---	282	---	---	---	---	---	---	81	---	---	---	---	---	---	---	---	153	---	---
	---	39	---	24	12	---	67	---	21	---	---	---	---	---	---	53	---	---	---	---	---	---	---	18	---	---	---
23.20	---	239	---	236	318	---	78	---	277	---	---	---	---	---	---	86	---	---	---	---	---	---	---	---	154	---	---
	---	43	---	28	15	---	64	---	20	---	---	---	---	---	---	50	---	---	---	---	---	---	14	---	---	---	---
23.30	---	243	---	239	316	---	85	---	273	---	---	---	---	---	---	91	---	---	---	---	---	106	---	---	155	---	---
	---	47	---	32	19	---	61	---	18	---	---	---	---	---	---	46	---	---	---	---	---	2	---	---	9	---	---
23.40	---	247	---	243	314	---	91	---	269	---	---	---	---	---	---	96	---	---	---	---	---	102	---	---	155	---	---
	---	51	---	36	23	---	58	---	16	---	---	---	---	---	---	43	---	---	---	---	---	4	---	---	5	---	---
23.50	---	252	---	246	312	---	97	---	265	---	---	---	---	---	---	100	---	---	---	---	---	99	---	---	---	---	---
	---	55	---	40	26	---	54	---	14	---	---	---	---	---	---	39	---	---	---	---	---	7	---	---	---	---	---
24.00	---	257	---	250	309	---	102	---	261	---	---	129	---	---	---	104	---	---	---	---	---	---	95	---	---	---	---
	---	59	---	44	29	---	51	---	12	---	---	2	---	---	---	36	---	---	---	---	---	9	---	---	---	---	---

98216HMP Satellite visibility Time: GMT-05.00
10/01/03 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Sat.No from to

1	08.00	14.10
2	00.00	04.20
2	22.20	24.00
3	06.10	07.30
3	13.50	18.10
4	00.00	05.00
4	22.50	24.00
5	00.00	02.50
5	08.40	11.40
5	23.30	24.00
6	03.20	07.00
6	12.50	15.30
7	00.00	01.30
7	19.10	24.00
8	17.00	21.40
9	06.00	10.00
9	21.50	23.40
10	01.20	07.10
11	09.40	11.20
11	17.30	21.40
13	00.50	03.40
13	15.20	19.00
14	07.20	13.30
15	04.10	09.10
16	11.10	16.10
17	00.00	01.00
17	18.40	24.00
18	03.50	10.00
19	16.10	21.30
20	08.40	13.20
21	02.20	08.00
22	05.20	11.20
23	00.40	02.00
23	13.50	18.10
24	09.50	12.00
24	18.00	22.00
26	02.40	07.10
26	19.00	19.40
27	15.20	20.40
28	17.20	23.10
29	02.00	06.10
29	17.50	19.40



Processing Summary

98216HMP_20031001

Project Information

Project name: 98216HMP_20031001
 Date created: 03/30/2006 13:23:08
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 10/01/2003 23:14:00
 End date and time: 10/01/2003 23:23:50
 Manually occupied points: 1
 Processing kernel: PSI-Pro 1.0
 Processed: 10/08/2003 14:36:43

Processing Parameters

Parameters	Selected
Cut-off angle:	10°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

AJ2777 - ASG6	Reference: AJ2777	Rover: ASG6
Receiver type / S/N:	SR530 / 32630	SR530 / 32637
Antenna type / S/N:	AT502 Tripod / -	AT502 Pole / -
Antenna height:	4.8294 fts	0.9121 fts
Coordinates:		
Latitude:	41° 40' 54.08503" N	41° 40' 12.31001" N
Longitude:	87° 36' 07.40284" W	87° 33' 52.40184" W
Ellip. Hgt:	462.1642 fts	462.6267 fts

Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	10/01/2003 23:14:00 - 10/01/2003 23:23:50		
Duration:	9' 50"		
Quality:	Sd. Lat: 0.0040 fts Posn. Qlty: 0.0048 fts	Sd. Lon: 0.0026 fts Sd. Slope: 0.0031 fts	Sd. Hgt: 0.0124 fts
Baseline vector:	dLat: -0° 00' 41.77502" Slope: 11083.4453 fts	dLon: 0° 02' 15.00100"	dHgt: 0.4624 fts
DOPs (min-max):	GDOP: 3.3 - 5.0 PDOP: 2.8 - 4.4	HDOP: 1.5 - 2.6	VDOP: 2.4 - 3.5



Processing Summary

98216HMP_20031001

Project Information

Project name: 98216HMP_20031001
 Date created: 03/30/2006 13:23:08
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 10/01/2003 23:14:00
 End date and time: 10/01/2003 23:23:50
 Manually occupied points: 1
 Processing kernel: PSI-Pro 1.0
 Processed: 10/08/2003 14:36:22

Processing Parameters

Parameters	Selected
Cut-off angle:	10°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

AJ2777 - ASG6	Reference: AJ2777	Rover: ASG6
Receiver type / S/N:	SR530 / 32630	SR530 / 32637
Antenna type / S/N:	AT502 Tripod / -	AT502 Pole / -
Antenna height:	4.8294 fts	0.9121 fts
Coordinates:		
Latitude:	41° 40' 54.08503" N	41° 40' 12.31001" N
Longitude:	87° 36' 07.40284" W	87° 33' 52.40183" W
Ellip. Hgt:	462.1642 fts	462.6272 fts

Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	10/01/2003 23:14:00 - 10/01/2003 23:23:50		
Duration:	9' 50"		
Quality:	Sd. Lat: 0.0039 fts	Sd. Lon: 0.0026 fts	Sd. Hgt: 0.0123 fts
	Posn. Qlty: 0.0047 fts	Sd. Slope: 0.0031 fts	
Baseline vector:	dLat: -0° 00' 41.77503"	dLon: 0° 02' 15.00101"	dHgt: 0.4630 fts
	Slope: 11083.4459 fts		
DOPs (min-max):	GDOP: 3.4 - 5.0		
	PDOP: 2.9 - 4.4	HDOP: 1.6 - 2.6	VDOP: 2.5 - 3.5



Processing Summary

98216HMP_20031001

Project Information

Project name: 98216HMP_20031001
 Date created: 03/30/2006 13:23:08
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 10/01/2003 23:14:00
 End date and time: 10/01/2003 23:23:50
 Manually occupied points: 1
 Processing kernel: PSI-Pro 1.0
 Processed: 10/08/2003 14:36:03

Processing Parameters

Parameters	Selected
Cut-off angle:	10°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

AJ2777 - ASG6	Reference: AJ2777	Rover: ASG6
Receiver type / S/N:	SR530 / 32630	SR530 / 32637
Antenna type / S/N:	AT502 Tripod / -	AT502 Pole / -
Antenna height:	4.8294 fts	0.9121 fts
Coordinates:		
Latitude:	41° 40' 54.08503" N	41° 40' 12.31001" N
Longitude:	87° 36' 07.40284" W	87° 33' 52.40183" W
Ellip. Hgt:	462.1642 fts	462.6272 fts

Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	10/01/2003 23:14:00 - 10/01/2003 23:23:50		
Duration:	9' 50"		
Quality:	Sd. Lat: 0.0039 fts	Sd. Lon: 0.0026 fts	Sd. Hgt: 0.0123 fts
	Posn. Qlty: 0.0047 fts	Sd. Slope: 0.0031 fts	
Baseline vector:	dLat: -0° 00' 41.77503"	dLon: 0° 02' 15.00101"	dHgt: 0.4630 fts
	Slope: 11083.4459 fts		
DOPs (min-max):	GDOP: 3.3 - 5.0		
	PDOP: 2.8 - 4.4	HDOP: 1.5 - 2.6	VDOP: 2.4 - 3.5

GPS Post Processing Report

PM: GVB Work Order: 4573 Project: 98216HMP Bill Group: V105B Date: 05-18-2004

Ski Pro Project Name: 98216HMP-20040421 Time Zone: CDT (GMT-5h) / CST (GMT-6h)

Raw Data File Name: 98216HMP0421R Other Time Zone: ---

Units Downloaded: 1 2 3 4 Base Unit (s) # 5

Import Checks: Intervals Merged Crd. Sys. Attchd. (---) Antenna Type Antenna Height

Import Editing: Unit # 1 ---
Unit # 2 ---
Unit # 3 MSG3 Ant. Ht. modified from 0.00 to 0.76' (0.231649m)
Unit # 4 ---
Unit # 5 None

Mission Type: Static Real Time Kinematic

Fixed Station (s) Info:

Point No:	Fixed (Pstn. / Pstn. & Ht. / Ht.)	Coord. Type (Geodetic / Grid / Surface)	Elev. Format (Ellip. / Ortho.)
<u>AJ2777</u>	<u>PSTN + HT</u>	<u>SURFACE</u>	<u>ORTHO</u>
<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>

Baseline Processing: (From - To) SPP \rightarrow AJ2777
AJ2777 \rightarrow ALL

Projection Type:

Lambert: ---
T. Mercator:

Horizontal Datum:

NAD 27 ---
NAD 83 (1997)

Vertical Datum:

NAVD 88
NGVD 29 ---
Municipal / County: ---
City of Chicago ---
Site / Arbitrary ---

Coordinate System Name. (S.P.) IL EAST GEOID 99

Ellipsoid: WGS84 Geoid Model (Year): 99

Coordinate System Name. (Local) ---

Avg. Cmbnd. Scl. Fctr. ---

Coordinate Set Name. ---

N / E Shift: --- / ---

Transformation Set Name: ---

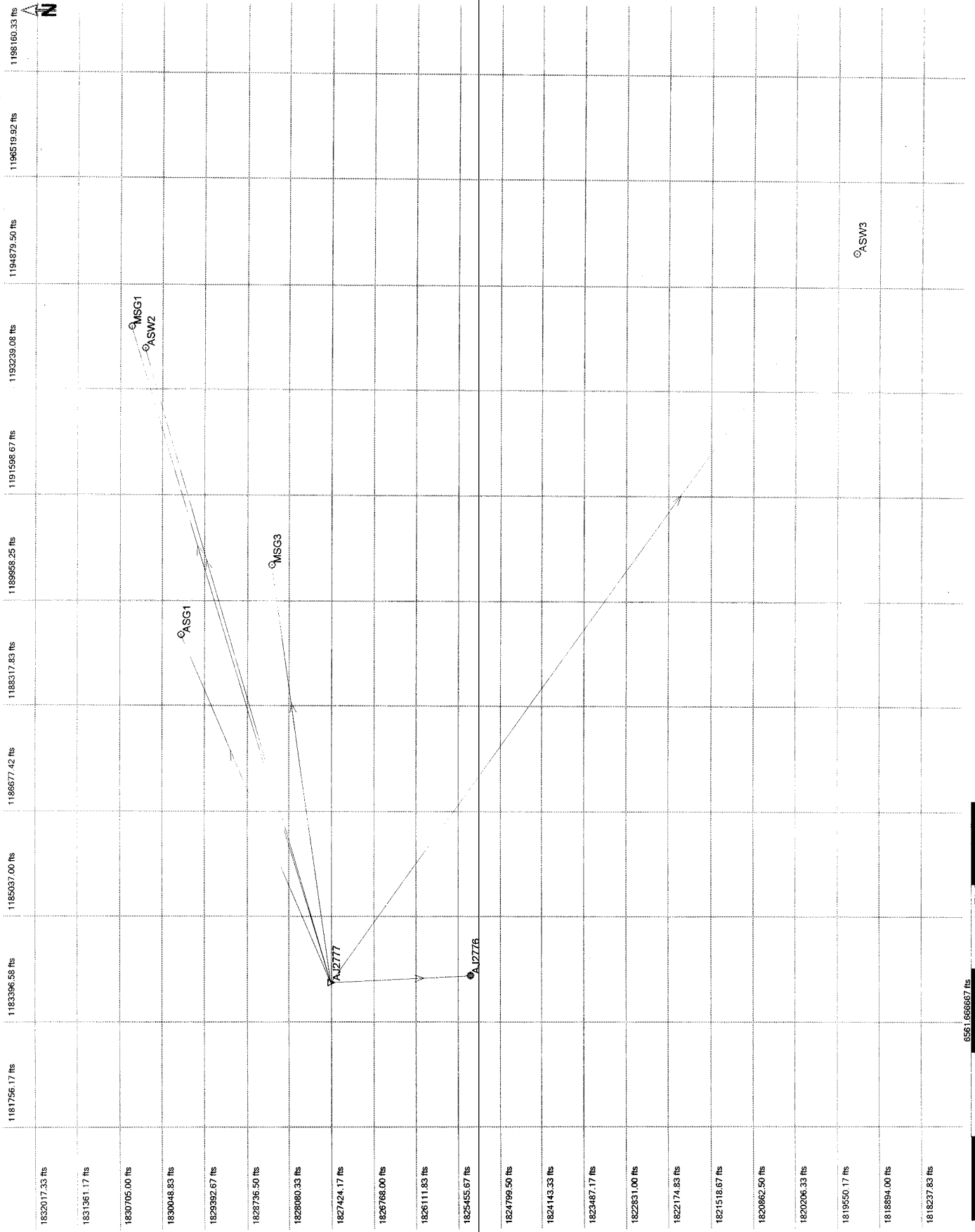
Processor: G. VAN BORTEL

-or- Local projection Name: ---

Export file Name: 98216HMP-20040421-USFEET
98216HMP-20040421-METERS
.pts

Notes to Project Manager / Technician:

(Review all Control / Bench mark check coordinates and elevations)
HELD RESULTS FROM 05-21/22-2002 FOR AJ2777 REFERENCE
DATA. SEE REPORT.



6561.666667 fts

- + Estimated
- Navigation
- ⊗ SPP
- ⊙ Measured
- ⊕ Average
- ▽ Reference
- ⊕ Fixed Position
- ▲ Fixed Position and Height
- ⊙ Fixed Position
- △ Fixed Height

16 EAST 99 / U.S. FEET

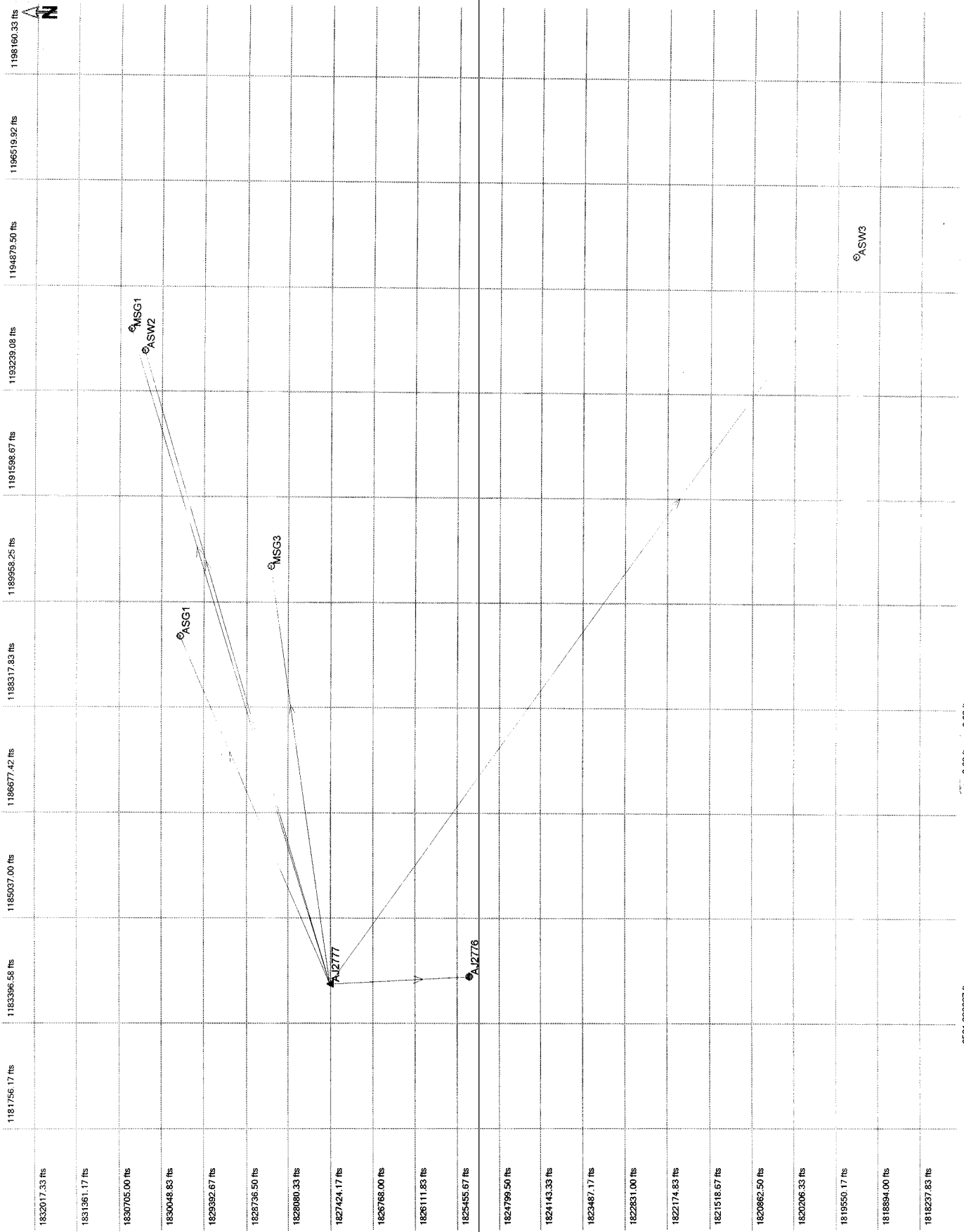
Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Code	Posn. Qty	Hgt. Qty
<input checked="" type="checkbox"/> AJ2777	Reference	1827441.0404	1184010.0725	584.0237	474.4931	FBR	0.1806	0.1358
<input checked="" type="checkbox"/> AJ2776	Averaged	1825267.6927	1184116.4171	585.5375	476.0102	FBR	0.0021	0.0072
<input checked="" type="checkbox"/> MSG3	Measured	1828354.9128	1190517.8251	580.1726	470.6059	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> MSG1	Measured	1830529.8913	1194200.7966	585.3663	475.7767	MWL	0.0025	0.0038
<input checked="" type="checkbox"/> ASW3	Measured	1819272.2810	1195404.6621	589.3385	479.7521	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> ASW2	Measured	1830319.0753	1193870.4144	591.6975	482.1112	MWL	0.0025	0.0042
<input checked="" type="checkbox"/> ASG1	Measured	1829763.5240	1189421.7642	585.0623	475.4989	MWL	0.0021	0.0035

1L EAST 99 / METERS

Point Id	Point Class	Northing	Easting	Ellip. Hgt.	Ortho. Hgt.	Code	Posn. Qlty	Hgt. Qlty
<input checked="" type="checkbox"/> AJ2777	Reference	557005.1431	360886.9919	144.6258	178.0108	FBR	0.0551	0.0414
<input checked="" type="checkbox"/> AJ2776	Averaged	556342.7054	360919.4058	145.0882	178.4722	FBR	0.0006	0.0022
<input checked="" type="checkbox"/> MSG3	Measured	557283.6920	362870.5588	143.4410	176.8370	MWL	0.0005	0.0009
<input checked="" type="checkbox"/> MSG1	Measured	557946.6268	363993.1308	145.0170	178.4200	MWL	0.0008	0.0012
<input checked="" type="checkbox"/> ASW3	Measured	554515.3003	364360.0697	146.2287	179.6307	MWL	0.0005	0.0010
<input checked="" type="checkbox"/> ASW2	Measured	557882.3699	363892.4301	146.9478	180.3498	MWL	0.0008	0.0013
<input checked="" type="checkbox"/> ASG1	Measured	557713.0376	362536.4788	144.9324	178.3274	MWL	0.0006	0.0011

WGS 84 US FEET

Point Id	Point Class	Longitude	Latitude	Ellip. Hgt.	Code	Posn. Qlty	Hgt. Qlty
<input checked="" type="checkbox"/> AJ2777	Reference	87° 36' 07.38372" W	41° 40' 54.01942" N	474.4931	FBR	0.1806	0.1358
<input checked="" type="checkbox"/> AJ2776	Averaged	87° 36' 06.22552" W	41° 40' 32.54023" N	476.0102	FBR	0.0021	0.0072
<input checked="" type="checkbox"/> MSG3	Measured	87° 34' 41.52026" W	41° 41' 02.49285" N	470.6059	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> MSG1	Measured	87° 33' 52.72944" W	41° 41' 23.65727" N	475.7767	MWL	0.0025	0.0038
<input checked="" type="checkbox"/> ASW3	Measured	87° 33' 38.19372" W	41° 39' 32.33904" N	479.7521	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> ASW2	Measured	87° 33' 57.10844" W	41° 41' 21.60376" N	482.1112	MWL	0.0025	0.0042
<input checked="" type="checkbox"/> ASG1	Measured	87° 34' 55.80260" W	41° 41' 16.50295" N	475.4989	MWL	0.0021	0.0035



- + Estimated
- ◊ Measured
- ◊ Adjusted
- ◊ Navigation
- ◊ SPP
- ▲ Fixed Position
- ▲ Fixed Weighted
- ▲ Fixed Position and Height
- ▲ Fixed Height

6581.666667 ft/s 0.03 ft/s 0.03 ft/s

14 EAST GEOID 99
 GRID US FEET

NAVD 83
 NAVD 88

Points of Project 98216HMP_20040421

Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Geoid Sep.	Code	Posn. Qlty	Hgt. Qlty
<input checked="" type="checkbox"/> AJ2777	Reference	1827441.0728	1184010.0270	584.1899	474.6592	-109.5306	FBR	0.2000	0.1053
<input checked="" type="checkbox"/> AJ2776	Averaged	1825267.7251	1184116.3716	585.7037	476.1763	-109.5273	FBR	0.0021	0.0072
<input checked="" type="checkbox"/> MSG3	Measured	1828354.9452	1190517.7796	580.3388	470.7721	-109.5667	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> MSG1	Measured	1830529.9237	1194200.7511	585.5325	475.9428	-109.5897	MWL	0.0025	0.0038
<input checked="" type="checkbox"/> ASW3	Measured	1819272.3134	1195404.6166	589.5047	479.9183	-109.5864	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> ASW2	Measured	1830319.1077	1193870.3688	591.8637	482.2773	-109.5864	MWL	0.0025	0.0042
<input checked="" type="checkbox"/> ASG1	Measured	1829763.5564	1189421.7187	585.2285	475.6651	-109.5634	MWL	0.0021	0.0035

1L EAST GEOID 99
GRID METERS

NAO 83
NAVD 88

Points of Project 98216HMP_20040421

Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Geoid Sep.	Code	Posn. Qty	Hgt. Qty
<input checked="" type="checkbox"/> AJ2777	Reference	557005.1530	360886.9780	178.0614	144.6764	-33.3850	FBR	0.0610	0.0321
<input checked="" type="checkbox"/> AJ2776	Averaged	556342.7153	360919.3919	178.5228	145.1388	-33.3840	FBR	0.0006	0.0022
<input checked="" type="checkbox"/> MSG3	Measured	557283.7019	362870.5450	176.8876	143.4916	-33.3960	MWL	0.0005	0.0009
<input checked="" type="checkbox"/> MSG1	Measured	557946.6366	363993.1169	178.4707	145.0677	-33.4030	MWL	0.0008	0.0012
<input checked="" type="checkbox"/> ASW3	Measured	554515.3102	364360.0558	179.6814	146.2794	-33.4020	MWL	0.0005	0.0010
<input checked="" type="checkbox"/> ASW2	Measured	557882.3798	363892.4162	180.4004	146.9984	-33.4020	MWL	0.0008	0.0013
<input checked="" type="checkbox"/> ASG1	Measured	557713.0474	362536.4649	178.3780	144.9830	-33.3950	MWL	0.0006	0.0011

IL EAST 66010 99
GEODETTIC US FEET

NAO 83
NAVO 88

Points of Project 98216HMP_20040421

Point Id	Point Class	Latitude	Longitude	Ellip. Hgt.	Code	Posn. Qty	Hgt. Qty
<input checked="" type="checkbox"/> AJ2777	Reference	41° 40' 54.01975" N	87° 36' 07.38432" W	474.6592	FBR	0.2000	0.1053
<input checked="" type="checkbox"/> AJ2776	Averaged	41° 40' 32.54055" N	87° 36' 06.22611" W	476.1763	FBR	0.0021	0.0072
<input checked="" type="checkbox"/> MSG3	Measured	41° 41' 02.49317" N	87° 34' 41.52086" W	470.7721	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> MSG1	Measured	41° 41' 23.65760" N	87° 33' 52.73003" W	475.9428	MWL	0.0025	0.0038
<input checked="" type="checkbox"/> ASW3	Measured	41° 39' 32.33936" N	87° 33' 38.19432" W	479.9183	MWL	0.0017	0.0031
<input checked="" type="checkbox"/> ASW2	Measured	41° 41' 21.60409" N	87° 33' 57.10904" W	482.2773	MWL	0.0025	0.0042
<input checked="" type="checkbox"/> ASG1	Measured	41° 41' 16.50328" N	87° 34' 55.80319" W	475.6651	MWL	0.0021	0.0035

General information - satellite availability

Prediction date: 04/21/04

Site: 98216HMP Time: GMT-05.00

Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19
20 21 22 23 24 26 27 28 29

The U.S. government has the right to modify the position or terminate the
operation of these satellites at any time.

Sky plot

Prediction date: 04/21/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05:00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

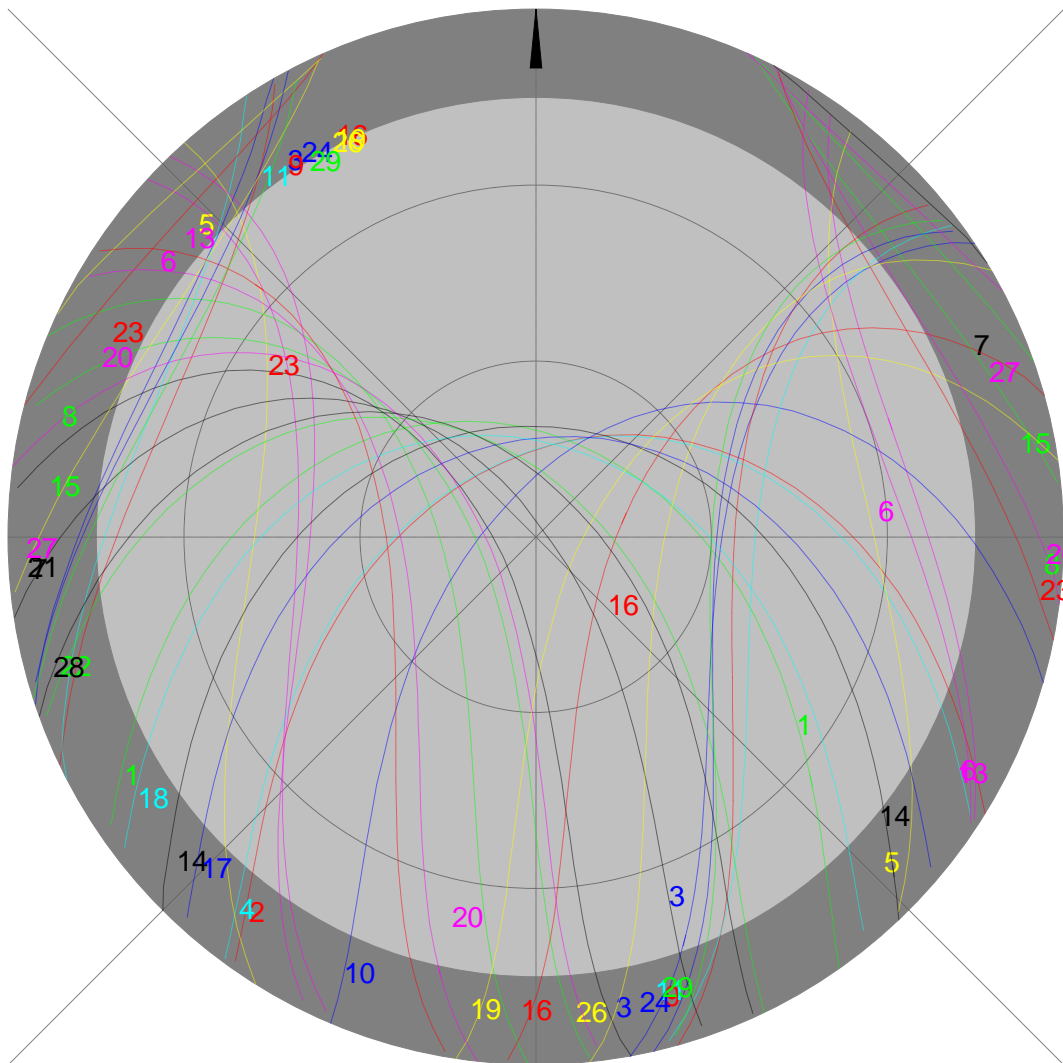
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Sky plot

Prediction date: 04/21/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05:00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

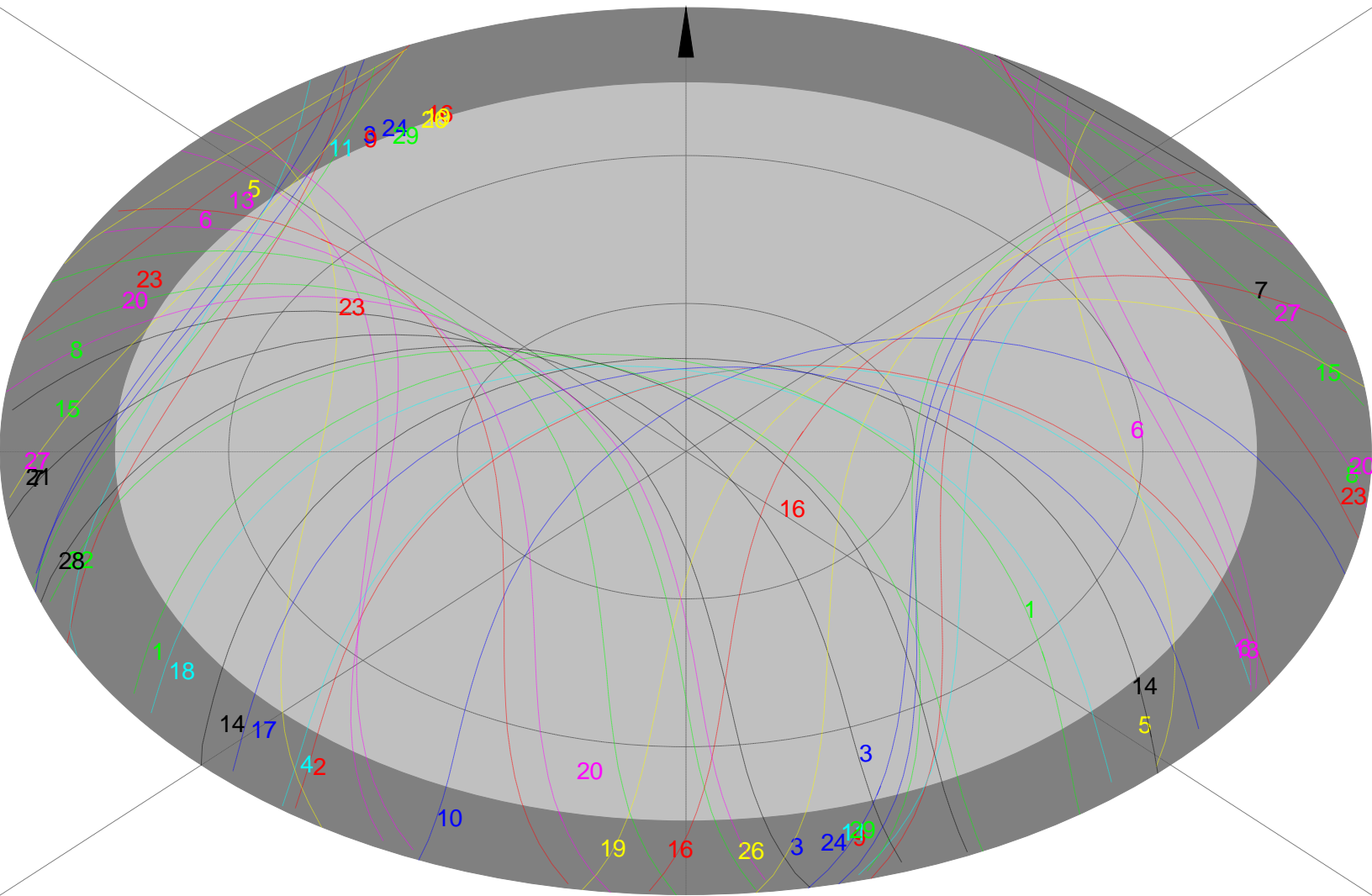
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite visibility

Prediction date: 04/21/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

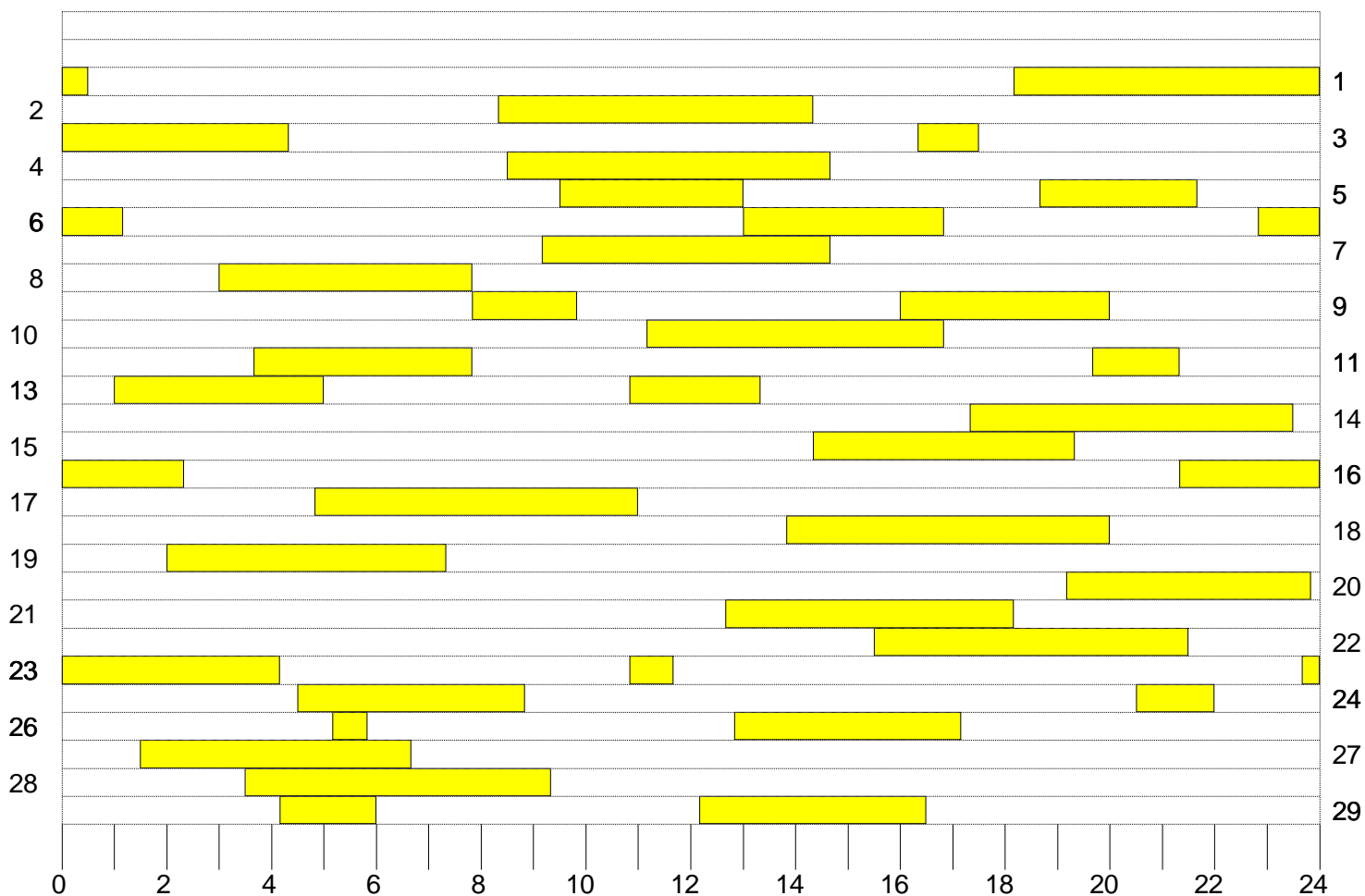
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite summary

Prediction date: 04/21/04

Window: 00.00 - 24.00

Site: 98216HMP Time: GMT-05.00

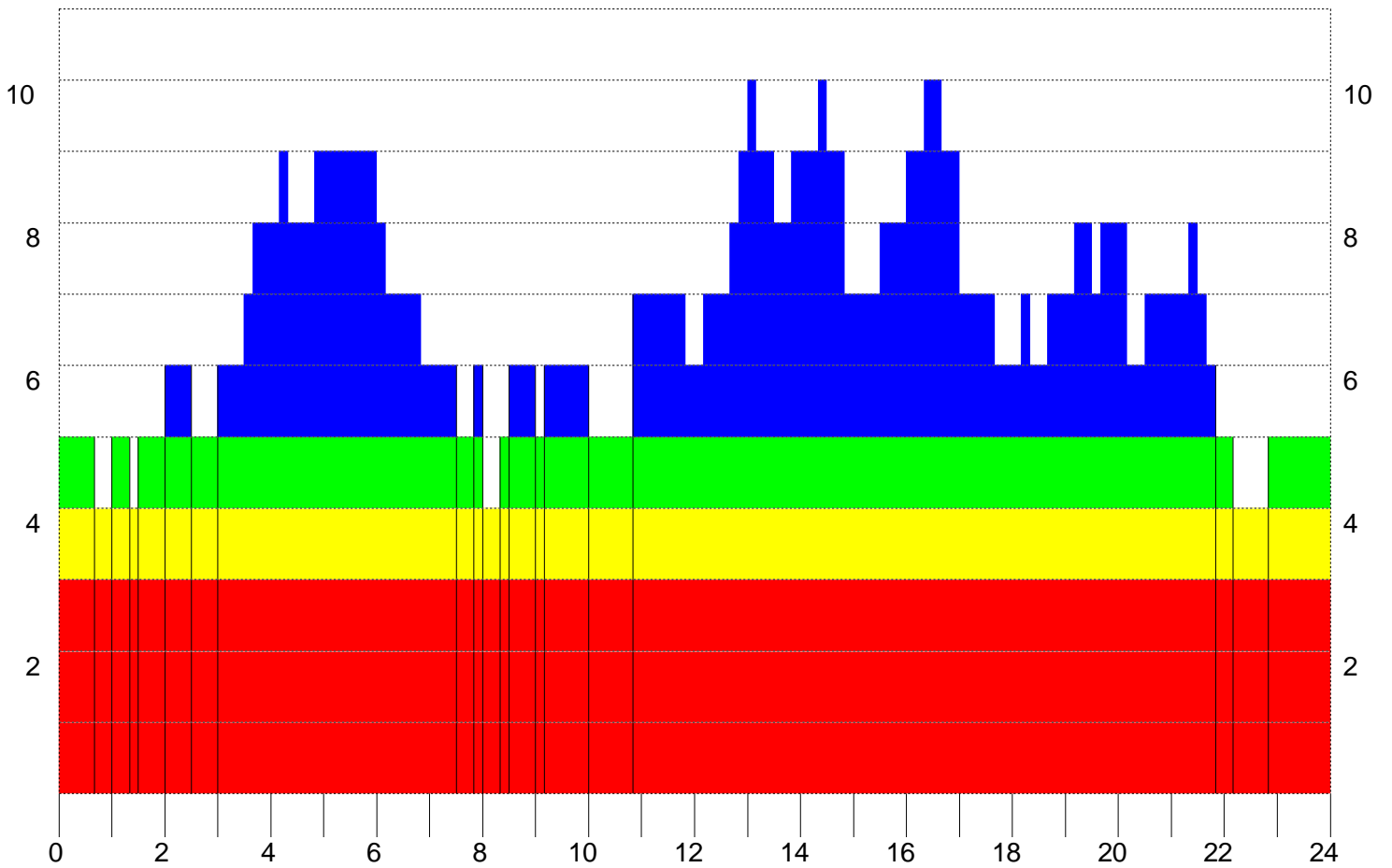
Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite PDOP/GDOP

Prediction date: 04/21/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

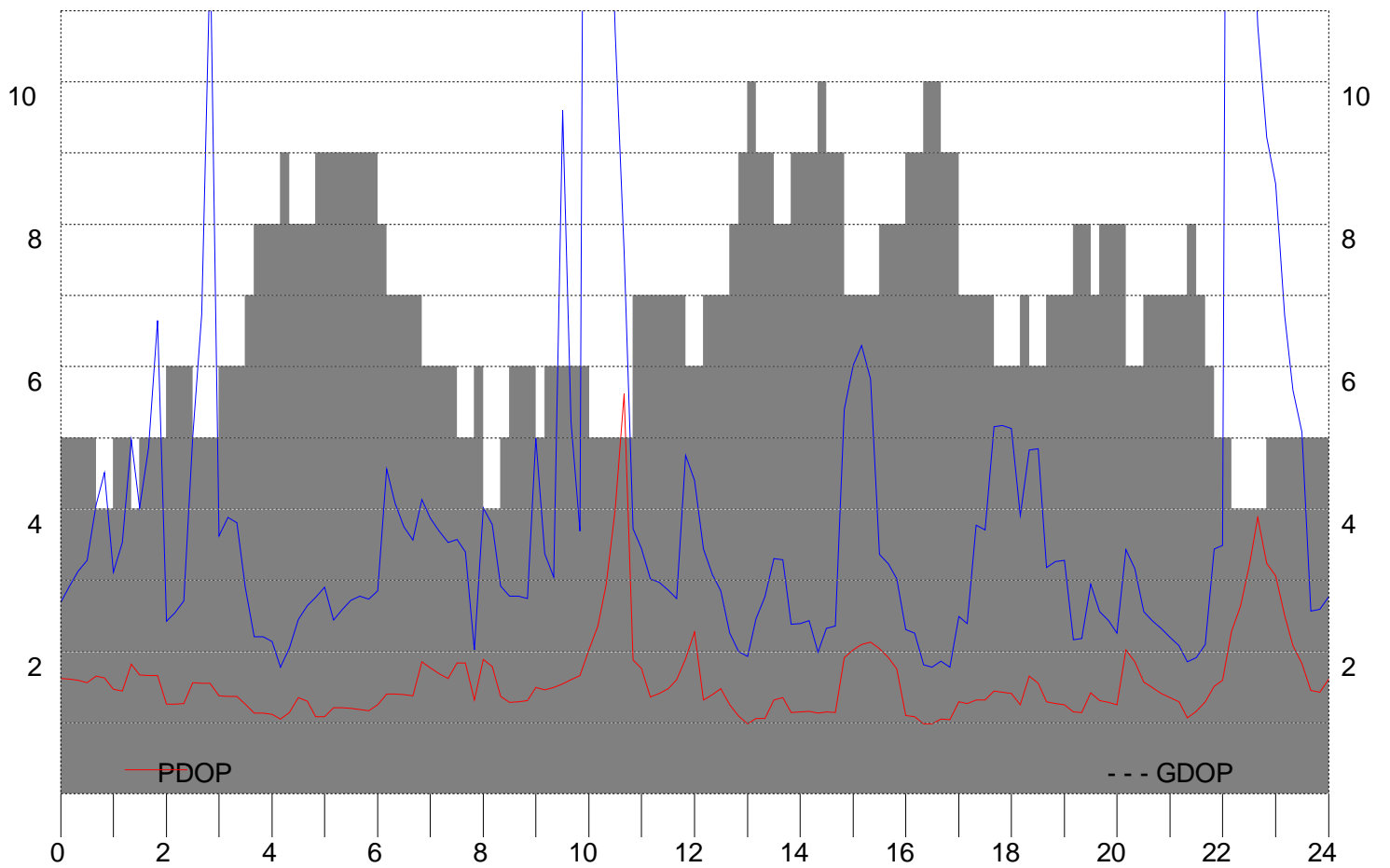
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite elevation

Prediction date: 04/21/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

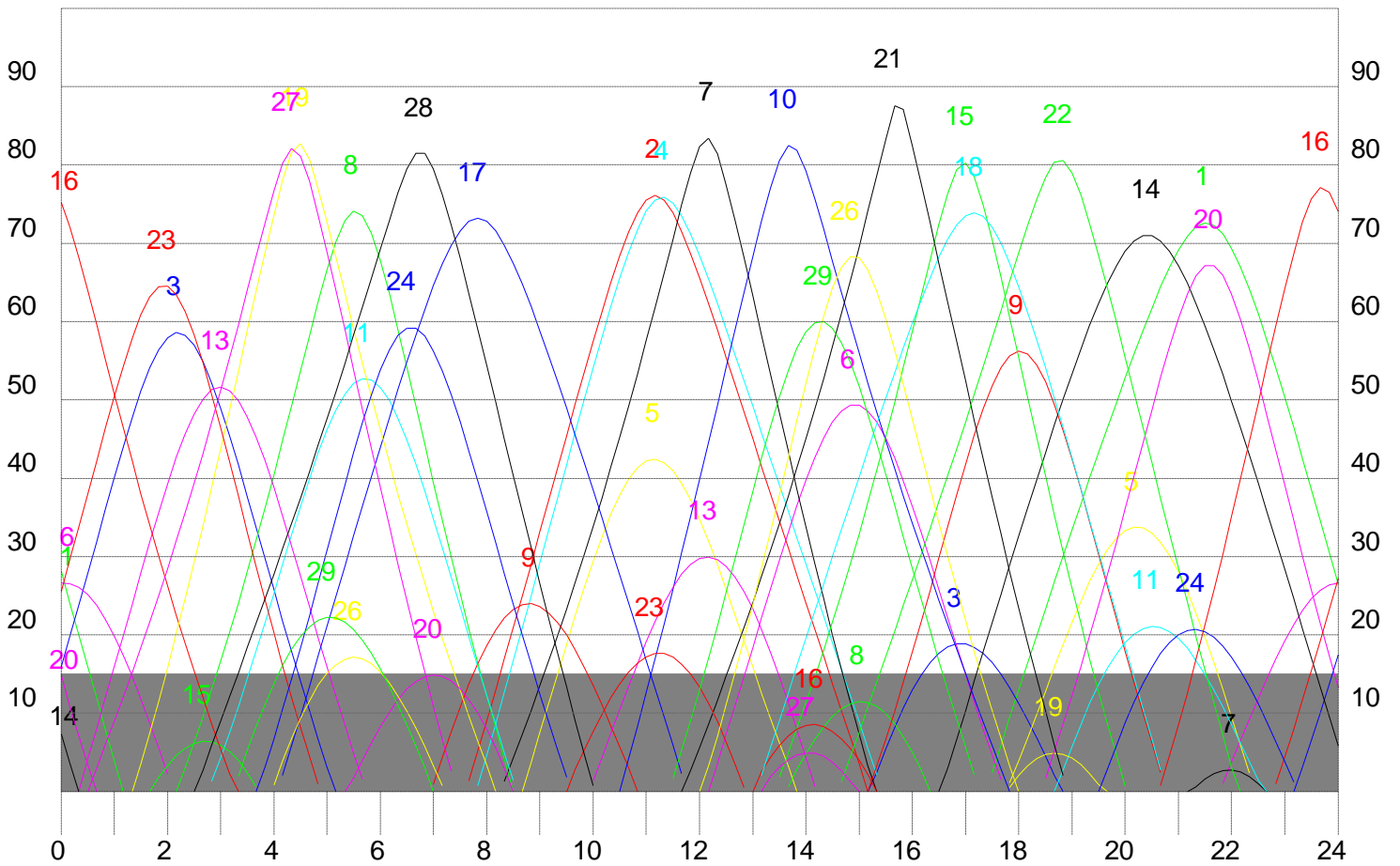
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



98216HMP Satellite summary, PDOP, GDOP Time: GMT-05.00
04/21/04 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Time	Sats.	PDOP	GDOP	Satellite Nos
00.00	5	1.62	2.69	1 3 6 16 23
00.10	5	1.61	2.91	1 3 6 16 23
00.20	5	1.59	3.13	1 3 6 16 23
00.30	5	1.57	3.28	1 3 6 16 23
00.40	4	1.65	4.06	3 6 16 23
00.50	4	1.64	4.52	3 6 16 23
01.00	5	1.47	3.12	3 6 13 16 23
01.10	5	1.44	3.53	3 6 13 16 23
01.20	4	1.82	4.98	3 13 16 23
01.30	5	1.68	4.02	3 13 16 23 27
01.40	5	1.67	4.87	3 13 16 23 27
01.50	5	1.66	6.66	3 13 16 23 27
02.00	6	1.26	2.42	3 13 16 19 23 27
02.10	6	1.27	2.54	3 13 16 19 23 27
02.20	6	1.28	2.71	3 13 16 19 23 27
02.30	5	1.56	5.02	3 13 19 23 27
02.40	5	1.56	6.74	3 13 19 23 27
02.50	5	1.56	11.69	3 13 19 23 27
03.00	6	1.38	3.63	3 8 13 19 23 27
03.10	6	1.37	3.88	3 8 13 19 23 27
03.20	6	1.37	3.82	3 8 13 19 23 27
03.30	7	1.26	2.90	3 8 13 19 23 27 28
03.40	8	1.14	2.22	3 8 11 13 19 23 27 28
03.50	8	1.13	2.21	3 8 11 13 19 23 27 28
04.00	8	1.13	2.14	3 8 11 13 19 23 27 28
04.10	9	1.05	1.78	3 8 11 13 19 23 27 28 29
04.20	8	1.14	2.05	3 8 11 13 19 27 28 29
04.30	8	1.35	2.46	8 11 13 19 24 27 28 29
04.40	8	1.31	2.65	8 11 13 19 24 27 28 29
04.50	9	1.08	2.77	8 11 13 17 19 24 27 28 29
05.00	9	1.08	2.90	8 11 13 17 19 24 27 28 29
05.10	9	1.21	2.45	8 11 17 19 24 26 27 28 29
05.20	9	1.21	2.59	8 11 17 19 24 26 27 28 29
05.30	9	1.20	2.72	8 11 17 19 24 26 27 28 29
05.40	9	1.19	2.79	8 11 17 19 24 26 27 28 29
05.50	9	1.18	2.74	8 11 17 19 24 26 27 28 29
06.00	8	1.26	2.85	8 11 17 19 24 27 28 29
06.10	7	1.40	4.56	8 11 17 19 24 27 28
06.20	7	1.40	4.08	8 11 17 19 24 27 28
06.30	7	1.39	3.76	8 11 17 19 24 27 28
06.40	7	1.38	3.56	8 11 17 19 24 27 28
06.50	6	1.86	4.13	8 11 17 19 24 28
07.00	6	1.78	3.88	8 11 17 19 24 28
07.10	6	1.70	3.69	8 11 17 19 24 28
07.20	6	1.62	3.54	8 11 17 19 24 28
07.30	5	1.84	3.58	8 11 17 24 28
07.40	5	1.84	3.40	8 11 17 24 28

Time	Sats.	PDOP	GDOP	Satellite Nos
07.50	6	1.32	2.03	8 9 11 17 24 28
08.00	4	1.89	4.02	9 17 24 28
08.10	4	1.79	3.79	9 17 24 28
08.20	5	1.37	2.93	2 9 17 24 28
08.30	6	1.29	2.79	2 4 9 17 24 28
08.40	6	1.30	2.78	2 4 9 17 24 28
08.50	6	1.32	2.75	2 4 9 17 24 28
09.00	5	1.50	5.00	2 4 9 17 28
09.10	6	1.46	3.38	2 4 7 9 17 28
09.20	6	1.50	3.04	2 4 7 9 17 28
09.30	6	1.54	9.61	2 4 5 7 9 17
09.40	6	1.60	5.23	2 4 5 7 9 17
09.50	6	1.66	3.69	2 4 5 7 9 17
10.00	5	2.02	30.54	2 4 5 7 17
10.10	5	2.36	27.55	2 4 5 7 17
10.20	5	2.95	17.67	2 4 5 7 17
10.30	5	4.00	10.72	2 4 5 7 17
10.40	5	5.62	7.61	2 4 5 7 17
10.50	7	1.88	3.72	2 4 5 7 13 17 23
11.00	7	1.77	3.46	2 4 5 7 13 17 23
11.10	7	1.36	3.03	2 4 5 7 10 13 23
11.20	7	1.41	2.98	2 4 5 7 10 13 23
11.30	7	1.49	2.86	2 4 5 7 10 13 23
11.40	7	1.61	2.74	2 4 5 7 10 13 23
11.50	6	1.90	4.76	2 4 5 7 10 13
12.00	6	2.28	4.41	2 4 5 7 10 13
12.10	7	1.32	3.45	2 4 5 7 10 13 29
12.20	7	1.40	3.09	2 4 5 7 10 13 29
12.30	7	1.49	2.85	2 4 5 7 10 13 29
12.40	8	1.26	2.26	2 4 5 7 10 13 21 29
12.50	9	1.10	2.01	2 4 5 7 10 13 21 26 29
13.00	10	0.98	1.93	2 4 5 6 7 10 13 21 26 29
13.10	9	1.06	2.46	2 4 6 7 10 13 21 26 29
13.20	9	1.07	2.78	2 4 6 7 10 13 21 26 29
13.30	8	1.32	3.31	2 4 6 7 10 21 26 29
13.40	8	1.35	3.29	2 4 6 7 10 21 26 29
13.50	9	1.15	2.38	2 4 6 7 10 18 21 26 29
14.00	9	1.16	2.40	2 4 6 7 10 18 21 26 29
14.10	9	1.16	2.43	2 4 6 7 10 18 21 26 29
14.20	10	1.13	1.99	2 4 6 7 10 15 18 21 26 29
14.30	9	1.15	2.33	4 6 7 10 15 18 21 26 29
14.40	9	1.15	2.36	4 6 7 10 15 18 21 26 29
14.50	7	1.92	5.41	6 10 15 18 21 26 29
15.00	7	2.02	6.03	6 10 15 18 21 26 29
15.10	7	2.10	6.30	6 10 15 18 21 26 29
15.20	7	2.13	5.84	6 10 15 18 21 26 29
15.30	8	2.05	3.36	6 10 15 18 21 22 26 29
15.40	8	1.92	3.23	6 10 15 18 21 22 26 29
15.50	8	1.76	3.03	6 10 15 18 21 22 26 29
16.00	9	1.11	2.32	6 9 10 15 18 21 22 26 29
16.10	9	1.09	2.26	6 9 10 15 18 21 22 26 29
16.20	10	0.99	1.82	3 6 9 10 15 18 21 22 26 29
16.30	10	0.98	1.78	3 6 9 10 15 18 21 22 26 29

Time	Sats.	PDOP	GDOP	Satellite Nos
16.40	9	1.05	1.87	3 6 9 10 15 18 21 22 26
16.50	9	1.05	1.78	3 6 9 10 15 18 21 22 26
17.00	7	1.30	2.49	3 9 15 18 21 22 26
17.10	7	1.28	2.40	3 9 15 18 21 22 26
17.20	7	1.32	3.77	3 9 14 15 18 21 22
17.30	7	1.32	3.71	3 9 14 15 18 21 22
17.40	6	1.45	5.16	9 14 15 18 21 22
17.50	6	1.43	5.17	9 14 15 18 21 22
18.00	6	1.42	5.14	9 14 15 18 21 22
18.10	7	1.26	3.92	1 9 14 15 18 21 22
18.20	6	1.65	4.83	1 9 14 15 18 22
18.30	6	1.56	4.86	1 9 14 15 18 22
18.40	7	1.30	3.18	1 5 9 14 15 18 22
18.50	7	1.28	3.27	1 5 9 14 15 18 22
19.00	7	1.26	3.28	1 5 9 14 15 18 22
19.10	8	1.15	2.16	1 5 9 14 15 18 20 22
19.20	8	1.14	2.18	1 5 9 14 15 18 20 22
19.30	7	1.42	2.94	1 5 9 14 18 20 22
19.40	8	1.31	2.56	1 5 9 11 14 18 20 22
19.50	8	1.28	2.44	1 5 9 11 14 18 20 22
20.00	8	1.25	2.27	1 5 9 11 14 18 20 22
20.10	6	2.03	3.43	1 5 11 14 20 22
20.20	6	1.86	3.16	1 5 11 14 20 22
20.30	7	1.58	2.57	1 5 11 14 20 22 24
20.40	7	1.50	2.44	1 5 11 14 20 22 24
20.50	7	1.42	2.32	1 5 11 14 20 22 24
21.00	7	1.35	2.21	1 5 11 14 20 22 24
21.10	7	1.30	2.09	1 5 11 14 20 22 24
21.20	8	1.08	1.86	1 5 11 14 16 20 22 24
21.30	7	1.16	1.92	1 5 14 16 20 22 24
21.40	6	1.29	2.11	1 5 14 16 20 24
21.50	5	1.51	3.44	1 14 16 20 24
22.00	5	1.59	3.50	1 14 16 20 24
22.10	4	2.29	36.02	1 14 16 20
22.20	4	2.64	19.70	1 14 16 20
22.30	4	3.21	13.17	1 14 16 20
22.40	4	3.89	10.79	1 14 16 20
22.50	5	3.24	9.22	1 6 14 16 20
23.00	5	3.07	8.57	1 6 14 16 20
23.10	5	2.52	6.72	1 6 14 16 20
23.20	5	2.09	5.68	1 6 14 16 20
23.30	5	1.83	5.08	1 6 14 16 20
23.40	5	1.46	2.57	1 6 16 20 23
23.50	5	1.43	2.59	1 6 16 20 23
24.00	5	1.62	2.78	1 3 6 16 23

Time Azimuth and elevation for satellites [°]

1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29

03.50	---	---	51	---	---	---	---	311	---	---	---	151	240	---	---	---	---	177	---	---	201	165	---	305	274	326	
	---	---	30	---	---	---	36	---	---	22	42	---	---	---	---	69	---	---	24	3	---	73	25	11			
04.00	---	---	51	---	---	---	311	---	---	148	235	---	---	---	---	172	---	---	199	163	---	297	278	323			
	---	---	26	---	---	---	40	---	---	25	39	---	---	---	---	74	---	---	20	7	---	77	28	14			
04.10	---	---	51	---	---	---	312	---	---	145	231	---	---	---	---	223	---	162	---	---	197	161	333	282	281	320	
	---	---	22	---	---	---	45	---	---	29	35	---	---	---	2	78	---	---	16	10	4	80	31	16			
04.20	---	---	51	---	---	---	311	---	---	142	228	---	---	---	---	224	---	142	---	---	195	159	330	254	284	317	
	---	---	18	---	---	---	49	---	---	33	31	---	---	---	6	82	---	---	12	14	7	82	34	18			
04.30	---	---	51	---	---	---	310	---	---	139	224	---	---	---	---	226	---	108	---	---	194	157	327	223	288	313	
	---	---	14	---	---	---	54	---	---	36	28	---	---	---	10	83	---	---	8	18	9	81	37	20			
04.40	---	---	52	---	---	---	308	---	---	135	221	---	---	---	---	228	---	78	---	---	192	154	324	203	292	309	
	---	---	10	---	---	---	58	---	---	40	24	---	---	---	13	81	---	---	4	22	12	78	41	21			
04.50	---	---	53	---	---	---	304	---	---	130	219	---	---	---	---	230	---	62	---	---	152	320	192	295	304		
	---	---	7	---	---	---	62	---	---	43	20	---	---	---	17	77	---	---	27	14	74	44	22				
05.00	---	---	55	---	---	---	298	---	---	125	216	---	---	---	---	233	---	55	---	---	150	316	186	299	300		
	---	---	3	---	---	---	67	---	---	46	16	---	---	---	21	73	---	---	31	15	69	48	22				
05.10	---	---	---	---	---	---	289	---	---	119	214	---	---	---	---	235	---	51	---	---	147	312	183	303	295		
	---	---	---	---	---	---	70	---	---	49	12	---	---	---	25	68	---	---	35	16	64	51	22				
05.20	---	---	---	---	---	---	276	---	---	112	211	---	---	---	---	238	---	50	---	---	144	308	181	307	291		
	---	---	---	---	---	---	73	---	---	51	9	---	---	---	29	64	---	---	39	17	59	55	22				
05.30	---	---	---	---	---	---	259	---	---	105	209	---	---	---	---	241	---	49	94	---	---	140	304	180	312	286	
	---	---	---	---	---	---	74	---	---	52	5	---	---	---	33	59	2	---	43	17	54	58	21				
05.40	---	---	---	---	---	---	241	---	---	97	207	---	---	---	---	245	---	49	90	---	---	135	299	179	316	282	
	---	---	---	---	---	---	74	---	---	53	2	---	---	---	36	55	4	---	47	17	49	62	19				
05.50	---	---	---	---	---	---	226	---	---	89	---	---	---	---	---	249	---	50	87	---	---	130	295	178	322	278	
	---	---	---	---	---	---	71	---	---	53	---	---	---	---	40	50	6	---	51	16	44	66	18				
06.00	---	---	---	---	---	---	215	---	---	82	---	---	---	---	---	253	---	51	83	---	---	124	290	178	328	273	
	---	---	---	---	---	---	68	---	---	52	---	---	---	---	44	46	8	---	54	15	39	69	16				
06.10	---	---	---	---	---	---	207	---	---	75	---	---	---	---	---	257	---	53	79	---	---	116	286	177	337	270	
	---	---	---	---	---	---	64	---	---	50	---	---	---	---	48	42	10	---	56	14	34	73	13				
06.20	---	---	---	---	---	---	202	---	---	70	---	---	---	---	---	262	---	55	75	---	---	108	282	177	348	266	
	---	---	---	---	---	---	59	---	---	48	---	---	---	---	51	38	12	---	58	12	29	76	11				
06.30	---	---	---	---	---	---	198	---	---	65	---	---	---	---	---	267	---	57	71	---	---	99	278	177	4	262	
	---	---	---	---	---	---	54	---	---	45	---	---	---	---	55	34	13	---	59	10	24	79	8				
06.40	---	---	---	---	---	---	195	---	---	61	---	---	---	---	---	273	---	59	67	---	---	89	274	176	29	259	
	---	---	---	---	---	---	49	---	---	42	---	---	---	---	58	30	14	---	59	8	20	81	6				
06.50	---	---	---	---	---	---	193	---	---	58	---	---	---	---	---	280	---	61	62	---	---	80	271	176	60	255	
	---	---	---	---	---	---	44	---	---	38	---	---	---	---	62	27	15	---	58	6	15	82	3				
07.00	---	---	---	---	---	---	192	---	---	55	---	---	---	---	---	288	---	63	58	---	---	72	267	175	86	---	
	---	---	---	---	---	---	39	---	---	35	---	---	---	---	65	23	15	---	56	3	11	80	---				
07.10	---	---	---	---	---	---	190	328	---	53	---	---	---	---	---	298	---	66	54	---	---	66	---	174	103	---	
	---	---	---	---	---	---	35	4	---	31	---	---	---	---	67	20	15	---	54	---	7	76	---				
07.20	---	---	---	---	---	---	189	326	---	52	---	---	---	---	---	309	---	68	50	---	---	61	---	173	114	---	
	---	---	---	---	---	---	30	8	---	27	---	---	---	---	70	16	14	---	51	---	3	72	---				
07.30	---	---	---	---	---	---	188	324	---	51	---	---	---	---	---	322	---	71	46	---	---	56	---	122	---		
	---	---	---	---	---	---	25	11	---	24	---	---	---	---	72	13	13	---	47	---	68	---					
07.40	---	---	---	---	---	---	215	---	---	187	321	---	---	---	---	336	---	73	42	---	---	53	---	128	---		
	---	---	---	---	---	---	1	---	---	21	14	---	---	---	73	10	12	---	43	---	64	---					
07.50	---	---	---	---	---	---	216	---	---	186	318	---	---	---	---	352	---	76	38	---	---	51	---	132	---		
	---	---	---	---	---	---	5	---	---	16	16	---	---	---	73	6	10	---	40	---	59	---					
08.00	---	---	---	---	---	---	218	---	---	185	314	---	---	---	---	7	---	79	35	---	---	50	---	136	---		
	---	---	---	---	---	---	9	---	---	5	---	---	---	---	73	3	8	---	36	---	54	---					

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
08.10	---	219	---	219	---	---	---	---	183	310	---	51	---	---	---	21	---	---	32	---	---	49	---	---	139	---	
	---	13	---	9	---	---	---	8	21	---	9	---	---	---	72	---	6	---	---	32	---	---	50	---	---	---	---
08.20	---	221	---	220	---	---	---	275	182	306	---	52	---	---	---	34	---	---	29	---	---	48	---	---	142	---	
	---	17	---	13	---	---	1	4	22	---	5	---	---	---	70	---	3	---	---	28	---	---	45	---	---	---	---
08.30	---	223	---	222	---	---	---	278	---	302	---	53	---	---	---	45	---	---	---	---	---	48	---	---	145	---	
	---	21	---	17	---	---	4	---	23	---	1	---	---	---	67	---	---	---	---	24	---	---	40	---	---	---	---
08.40	---	225	---	224	---	---	---	281	---	297	---	---	---	---	---	54	---	---	---	---	---	48	---	---	147	---	
	---	25	---	21	---	---	7	---	24	---	---	---	---	---	65	---	---	---	---	20	---	---	36	---	---	---	---
08.50	---	227	---	226	319	---	---	283	---	292	---	---	---	---	---	62	---	---	---	---	---	49	---	---	149	---	
	---	29	---	25	4	---	10	---	24	---	---	---	---	---	62	---	---	---	---	16	---	---	31	---	---	---	---
09.00	---	230	---	229	318	---	---	286	---	287	---	---	---	---	---	70	---	---	---	---	---	50	---	---	150	---	
	---	33	---	29	8	---	13	---	24	---	---	---	---	---	59	---	---	---	---	13	---	---	27	---	---	---	---
09.10	---	233	---	232	318	---	---	289	---	282	---	---	---	---	---	76	---	---	---	---	---	51	---	---	152	---	
	---	37	---	33	11	---	17	---	23	---	---	---	---	---	56	---	---	---	---	9	---	---	22	---	---	---	---
09.20	---	236	---	234	317	---	---	291	---	278	---	---	---	---	---	82	---	---	---	---	---	52	---	---	153	---	
	---	41	---	38	15	---	20	---	22	---	---	---	---	---	52	---	---	---	---	5	---	---	18	---	---	---	---
09.30	---	240	---	238	316	---	---	294	---	273	---	---	---	---	---	87	---	---	---	---	---	54	---	---	154	---	
	---	45	---	42	19	---	23	---	20	---	---	---	---	---	49	---	---	---	---	2	---	---	13	---	---	---	---
09.40	---	244	---	241	315	---	---	296	---	269	---	---	---	---	---	92	---	---	---	---	---	98	---	---	155	---	
	---	49	---	46	22	---	27	---	18	---	---	---	---	---	46	---	---	---	---	3	---	---	9	---	---	---	---
09.50	---	248	---	246	313	---	---	298	---	265	---	---	---	---	---	96	---	---	---	---	---	94	---	---	155	---	
	---	53	---	50	26	---	30	---	16	---	---	---	---	---	42	---	---	---	---	5	---	---	5	---	---	---	---
10.00	---	253	---	250	310	---	---	300	---	261	---	---	123	---	---	100	---	---	---	---	---	91	---	---	---	---	---
	---	57	---	54	29	---	34	---	14	---	---	1	---	---	38	---	---	---	---	8	---	---	---	---	---	---	---
10.10	---	259	---	256	307	---	---	302	---	258	---	---	120	---	---	104	---	---	---	---	---	87	---	---	---	---	---
	---	61	---	58	33	---	38	---	11	---	---	4	---	---	35	---	---	---	---	10	---	---	---	---	---	---	---
10.20	---	266	---	262	303	---	---	304	---	254	---	---	117	---	---	108	---	---	---	---	---	83	---	---	---	---	---
	---	65	---	62	35	---	41	---	8	---	---	7	---	---	31	---	---	---	---	12	---	---	---	---	---	---	---
10.30	---	275	---	269	299	---	---	306	---	251	---	---	114	---	---	111	---	---	---	---	---	79	---	---	---	---	---
	---	68	---	66	38	---	45	---	6	---	---	10	---	---	28	---	---	---	---	14	---	---	---	---	---	---	---
10.40	---	286	---	279	294	---	---	308	---	248	203	---	110	---	---	114	---	---	---	---	---	75	---	---	---	---	---
	---	71	---	69	40	---	49	---	3	4	---	13	---	---	24	---	---	---	---	15	---	---	---	---	---	---	---
10.50	---	300	---	290	288	---	---	309	---	204	107	---	---	---	---	118	---	---	---	---	---	71	---	---	---	---	---
	---	74	---	72	41	---	53	---	8	---	16	---	---	---	20	---	---	---	---	16	---	---	---	---	---	---	---
11.00	---	317	---	304	282	---	---	310	---	204	103	---	---	---	---	120	---	---	---	---	---	66	---	---	---	---	---
	---	76	---	74	42	---	58	---	13	---	19	---	---	---	17	---	---	---	---	17	---	---	---	---	---	---	---
11.10	---	336	---	321	276	---	---	310	---	205	99	---	---	---	---	123	---	---	---	---	---	62	---	---	---	---	---
	---	76	---	76	42	---	62	---	17	---	22	---	---	---	13	---	---	---	---	18	---	---	---	---	---	---	---
11.20	---	355	---	340	270	---	---	309	---	206	94	---	---	---	---	125	---	---	---	---	---	58	---	---	---	---	---
	---	75	---	76	42	---	66	---	21	---	24	---	---	---	10	---	---	---	---	18	---	---	---	---	---	---	---
11.30	---	11	---	358	264	---	---	307	---	208	90	---	---	---	---	128	---	---	---	---	---	53	---	---	---	164	---
	---	74	---	75	41	---	71	---	26	---	26	---	---	---	6	---	---	---	---	17	---	---	---	---	---	---	---
11.40	---	25	---	14	258	---	---	303	---	209	85	---	---	---	---	130	---	---	---	---	---	49	---	---	---	162	---
	---	72	---	73	39	---	75	---	30	---	28	---	---	---	2	---	---	---	---	16	---	---	---	---	---	---	---
11.50	---	36	---	27	252	---	---	294	---	211	80	---	---	---	---	---	---	---	---	264	---	45	---	---	---	160	---
	---	69	---	71	37	---	79	---	35	---	29	---	---	---	---	3	---	---	---	15	---	---	---	---	---	---	---
12.00	---	45	---	37	248	---	---	274	---	213	75	---	---	---	---	---	---	---	---	267	---	41	---	---	---	158	---
	---	66	---	68	35	---	82	---	40	---	30	---	---	---	---	6	---	---	---	13	---	---	---	---	---	---	---
12.10	---	52	---	46	243	---	---	239	---	215	69	---	---	---	---	---	---	---	---	270	---	38	---	---	---	156	---
	---	62	---	65	32	---	83	---	45	---	30	---	---	---	---	9	---	---	---	11	---	---	---	---	---	---	---
12.20	---	59	---	53	239	313	207	---	---	217	64	---	---	---	---	---	---	---	---	273	---	35	---	---	---	154	---
	---	59	---	62	29	4	81	---	---	49	30	---	---	---	---	12	---	---	---	9	---	---	---	---	---	---	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
16.50	---	---	298	---	---	217	---	---	140	88	---	---	229	272	---	---	346	---	---	152	292	---	---	48	---	---	49
	---	---	19	---	---	19	---	---	38	18	---	---	7	79	---	---	72	---	---	57	44	---	---	26	---	---	9
17.00	---	---	294	---	---	214	---	---	136	91	---	---	231	244	---	---	1	---	---	153	296	---	---	49	---	---	50
	---	---	19	---	---	15	---	---	42	15	---	---	10	80	---	---	74	---	---	52	47	---	---	22	---	---	6
17.10	---	---	289	---	---	211	---	---	131	94	---	---	234	219	---	---	17	---	---	155	300	---	---	51	---	---	52
	---	---	18	---	---	11	---	---	46	12	---	---	14	79	---	---	74	---	---	47	51	---	---	18	---	---	2
17.20	---	---	285	---	---	209	---	---	126	97	---	---	236	203	---	---	33	---	---	156	305	---	---	52	---	---	---
	---	---	18	---	---	8	---	---	49	9	---	---	18	75	---	---	73	---	---	42	54	---	---	14	---	---	---
17.30	236	---	281	---	---	206	---	---	119	100	---	---	239	194	---	---	48	---	---	157	309	---	---	54	---	---	---
	2	---	16	---	---	5	---	---	52	6	---	---	22	70	---	---	72	---	---	38	58	---	---	10	---	---	---
17.40	238	---	277	---	---	204	---	---	111	103	---	---	242	188	---	---	61	---	---	158	315	---	---	55	---	---	---
	6	---	15	---	---	2	---	---	54	3	---	---	25	66	---	---	70	---	---	33	61	---	---	7	---	---	---
17.50	241	---	273	---	---	136	---	---	103	---	---	---	245	185	---	---	71	---	---	159	320	---	---	57	---	---	---
	9	---	13	---	---	1	---	---	56	---	---	---	29	61	---	---	67	---	---	28	65	---	---	3	---	---	---
18.00	244	---	269	---	---	133	---	---	94	---	---	---	249	183	---	---	81	---	---	333	---	---	160	327	---	---	---
	13	---	11	---	---	4	---	---	56	---	---	---	33	55	---	---	64	---	---	2	---	---	23	69	---	---	---
18.10	247	---	265	---	---	130	---	---	85	---	---	---	253	182	---	---	88	---	---	329	---	---	161	336	---	---	---
	16	---	9	---	---	7	---	---	56	---	---	---	36	50	---	---	61	---	---	3	---	---	19	72	---	---	---
18.20	250	---	262	---	---	127	---	---	77	---	---	---	257	181	---	---	95	---	---	325	---	---	161	347	---	---	---
	20	---	7	---	---	10	---	---	54	---	---	---	40	45	---	---	58	---	---	4	---	---	15	76	---	---	---
18.30	253	---	258	---	---	124	---	---	69	---	---	---	261	180	---	---	101	---	---	322	300	161	3	---	---	---	---
	23	---	5	---	---	13	---	---	52	---	---	---	43	40	---	---	54	---	---	5	2	10	78	---	---	---	---
18.40	257	---	255	---	---	120	---	---	63	---	---	---	266	179	---	---	106	---	---	318	302	161	25	---	---	---	---
	27	---	2	---	---	16	---	---	49	---	---	---	47	35	---	---	50	---	---	5	5	6	80	---	---	---	---
18.50	260	---	---	---	---	117	---	---	58	---	---	---	325	---	---	---	111	---	---	314	304	161	53	---	---	---	---
	30	---	---	---	---	19	---	---	46	---	---	---	3	50	---	---	46	---	---	5	9	2	81	---	---	---	---
19.00	264	---	---	---	---	113	---	---	55	---	---	---	323	---	---	---	115	---	---	310	306	---	77	---	---	---	---
	33	---	---	---	---	22	---	---	42	---	---	---	6	53	---	---	43	---	---	4	12	---	79	---	---	---	---
19.10	268	---	---	---	---	109	---	---	52	---	---	---	321	---	---	---	118	---	---	306	307	---	95	---	---	---	---
	37	---	---	---	---	24	---	---	39	---	---	---	9	57	---	---	39	---	---	3	16	---	76	---	---	---	---
19.20	273	---	---	---	---	105	---	---	50	---	---	---	318	---	---	---	122	---	---	302	309	---	107	---	---	---	---
	40	---	---	---	---	27	---	---	34	---	---	---	11	60	---	---	35	---	---	2	20	---	72	---	---	---	---
19.30	277	---	---	---	---	100	---	---	48	---	---	---	316	---	---	---	125	---	---	310	---	116	---	---	---	---	---
	43	---	---	---	---	29	---	---	30	---	---	---	14	62	---	---	31	---	---	24	---	68	---	---	---	---	---
19.40	282	---	---	---	---	95	---	---	47	---	---	---	312	---	---	---	128	---	---	310	---	122	---	330	---	---	---
	47	---	---	---	---	31	---	---	26	---	---	---	16	65	---	---	27	---	---	28	---	64	---	3	---	---	---
19.50	287	---	---	---	---	90	---	---	47	---	---	---	309	---	---	---	130	---	---	311	---	127	---	328	---	---	---
	50	---	---	---	---	32	---	---	22	---	---	---	18	67	---	---	23	---	---	32	---	60	---	6	---	---	---
20.00	292	---	---	---	---	85	---	---	47	---	---	---	305	---	---	---	133	---	---	311	---	132	---	326	---	---	---
	53	---	---	---	---	33	---	---	18	---	---	---	19	69	---	---	19	---	---	36	---	55	---	9	---	---	---
20.10	298	---	---	---	---	79	---	---	47	---	---	---	301	---	---	---	135	---	---	311	---	135	---	323	---	---	---
	56	---	---	---	---	34	---	---	14	---	---	---	20	70	---	---	15	---	---	40	---	51	---	11	---	---	---
20.20	305	---	---	---	---	74	---	---	48	---	---	---	297	---	---	---	137	---	---	310	---	138	---	320	---	---	---
	59	---	---	---	---	34	---	---	10	---	---	---	21	71	---	---	11	---	---	44	---	46	---	14	---	---	---
20.30	312	---	---	---	---	69	---	---	49	---	---	---	292	---	---	---	139	---	---	308	---	141	---	317	---	---	---
	62	---	---	---	---	33	---	---	6	---	---	---	21	71	---	---	7	---	---	49	---	42	---	16	---	---	---
20.40	320	---	---	---	---	64	---	---	50	---	---	---	288	---	---	---	140	---	---	305	---	143	---	314	---	---	---
	64	---	---	---	---	32	---	---	2	---	---	---	21	70	---	---	3	---	---	53	---	37	---	18	---	---	---
20.50	329	---	---	---	---	59	---	---	---	---	---	---	284	---	---	---	---	---	---	301	---	145	---	310	---	---	---
	67	---	---	---	---	30	---	---	---	---	---	---	20	69	---	---	5	---	---	57	---	33	---	19	---	---	---
21.00	340	---	---	---	---	55	---	---	---	---	---	---	279	---	---	---	---	---	---	296	---	147	---	306	---	---	---
	69	---	---	---	---	28	---	---	---	---	---	---	20	67	---	---	8	---	---	60	---	29	---	20	---	---	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
21.10	352	---	---	---	51	---	---	---	---	---	---	---	275	---	56	---	180	---	---	288	---	149	---	301	---	---	---
	71	---	---	---	26	---	---	---	---	---	---	---	18	---	65	---	13	---	---	64	---	24	---	21	---	---	---
21.20	6	---	---	---	48	---	---	---	---	---	---	---	271	---	65	---	179	---	---	278	---	150	---	297	---	---	---
	72	---	---	---	23	---	---	---	---	---	---	---	17	---	62	---	17	---	---	66	---	20	---	21	---	---	---
21.30	21	---	---	---	45	---	52	---	---	---	---	---	267	---	73	---	178	---	---	267	---	151	---	292	---	---	---
	73	---	---	---	20	---	2	---	---	---	---	---	15	---	59	---	21	---	---	67	---	16	---	20	---	---	---
21.40	36	---	---	---	43	---	48	---	---	---	---	---	263	---	80	---	177	---	---	254	---	153	---	288	---	---	---
	72	---	---	---	16	---	2	---	---	---	---	---	13	---	56	---	26	---	---	67	---	11	---	20	---	---	---
21.50	50	---	---	---	41	123	44	---	---	---	---	---	259	---	86	---	176	---	---	242	---	153	---	284	---	---	---
	71	---	---	---	13	1	3	---	---	---	---	---	11	---	53	---	30	---	---	66	---	7	---	19	---	---	---
22.00	63	---	---	---	40	120	41	---	---	---	---	---	256	---	92	---	176	---	---	232	---	154	---	279	---	---	---
	69	---	---	---	10	4	3	---	---	---	---	---	9	---	50	---	35	---	---	64	---	3	---	17	---	---	---
22.10	74	---	---	---	39	116	37	---	---	---	---	---	252	---	97	---	175	---	---	224	---	---	---	275	---	---	---
	67	---	---	---	6	6	2	---	---	---	---	---	6	---	46	---	40	---	---	60	---	---	---	15	---	---	---
22.20	84	---	---	---	38	113	33	---	---	---	---	---	249	---	102	---	173	---	---	217	---	---	---	271	---	---	---
	64	---	---	---	2	9	2	---	---	---	---	---	4	---	43	---	45	---	---	57	---	---	---	13	---	---	---
22.30	92	---	---	---	110	---	---	---	---	---	---	---	246	---	106	---	172	---	---	212	---	---	---	268	---	---	---
	61	---	---	---	12	---	---	---	---	---	---	---	1	---	39	---	50	---	---	52	---	---	---	11	---	---	---
22.40	99	---	---	---	106	---	---	---	---	---	---	---	110	---	170	---	---	---	208	---	---	---	264	---	---	---	---
	58	---	---	---	14	---	---	---	---	---	---	---	36	---	55	---	---	---	48	---	---	---	9	---	---	---	---
22.50	105	---	---	---	102	---	---	---	---	---	---	---	114	---	167	---	---	---	205	---	---	---	261	---	---	---	---
	54	---	---	---	17	---	---	---	---	---	---	---	32	---	59	---	---	---	44	---	---	---	6	---	---	---	---
23.00	110	---	---	---	98	---	---	---	---	---	---	---	117	---	163	---	---	---	203	---	---	---	305	257	---	---	---
	50	---	---	---	19	---	---	---	---	---	---	---	28	---	64	---	---	---	39	---	---	---	4	4	---	---	---
23.10	115	---	---	---	94	---	---	---	---	---	---	---	121	---	157	---	---	---	200	---	---	---	307	254	---	---	---
	47	---	---	---	21	---	---	---	---	---	---	---	25	---	69	---	---	---	35	---	---	---	8	1	---	---	---
23.20	119	---	168	---	90	---	---	---	---	---	---	---	124	---	147	---	---	---	199	---	---	---	308	---	---	---	---
	43	---	3	---	23	---	---	---	---	---	---	---	21	---	73	---	---	---	30	---	---	---	12	---	---	---	---
23.30	123	---	166	---	85	---	---	---	---	---	---	---	126	---	132	---	---	---	197	---	---	---	310	---	---	---	---
	39	---	6	---	25	---	---	---	---	---	---	---	17	---	76	---	---	---	26	---	---	---	15	---	---	---	---
23.40	126	---	163	---	81	---	---	---	---	---	---	---	129	---	112	---	---	---	195	---	---	---	311	---	---	---	---
	35	---	10	---	26	---	---	---	---	---	---	---	13	---	77	---	---	---	21	---	---	---	19	---	---	---	---
23.50	129	---	161	---	76	---	---	---	---	---	---	---	131	---	91	---	---	---	194	---	---	---	312	---	---	---	---
	31	---	14	---	26	---	---	---	---	---	---	---	10	---	76	---	---	---	17	---	---	---	23	---	---	---	---
24.00	132	---	159	---	71	---	---	---	---	---	---	---	134	---	75	---	---	---	192	---	---	---	312	---	---	---	---
	26	---	18	---	27	---	---	---	---	---	---	---	6	---	74	---	---	---	13	---	---	---	27	---	---	---	---

98216HMP Satellite visibility Time: GMT-05.00
04/21/04 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Sat.No from to

1	00.00	00.30
1	18.10	24.00
2	08.20	14.20
3	00.00	04.20
3	16.20	17.30
3	24.00	24.00
4	08.30	14.40
5	09.30	13.00
5	18.40	21.40
6	00.00	01.10
6	13.00	16.50
6	22.50	24.00
7	09.10	14.40
8	03.00	07.50
9	07.50	09.50
9	16.00	20.00
10	11.10	16.50
11	03.40	07.50
11	19.40	21.20
13	01.00	05.00
13	10.50	13.20
14	17.20	23.30
15	14.20	19.20
16	00.00	02.20
16	21.20	24.00
17	04.50	11.00
18	13.50	20.00
19	02.00	07.20
20	19.10	23.50
21	12.40	18.10
22	15.30	21.30
23	00.00	04.10
23	10.50	11.40
23	23.40	24.00
24	04.30	08.50
24	20.30	22.00
26	05.10	05.50
26	12.50	17.10
27	01.30	06.40
28	03.30	09.20
29	04.10	06.00
29	12.10	16.30



Processing Summary

98216HMP_20040421

Project Information

Project name: 98216HMP_20040421
 Date created: 03/30/2006 13:23:16
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 04/21/2004 18:16:55
 End date and time: 04/21/2004 23:28:45
 Manually occupied points: 7
 Processing kernel: PSI-Pro 1.0
 Processed: 06/07/2004 14:21:36

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

AJ2777 - AJ2776	Reference: AJ2777	Rover: AJ2776
Receiver type / S/N:	SR530 / 32634	SR530 / 32630
Antenna type / S/N:	AT502 Tripod / -	AT502 Pole / -
Antenna height:	4.3000 fts	6.5617 fts
Coordinates:		
Latitude:	41° 40' 54.08244" N	41° 40' 32.60325" N
Longitude:	87° 36' 07.39466" W	87° 36' 06.23645" W
Ellip. Hgt:	461.9454 fts	463.4682 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 04/21/2004 18:16:55 - 04/21/2004 18:26:55
 Duration: 10' 00"

Quality: Sd. Lat: 0.0012 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0025 fts
 Posn. Qlty: 0.0017 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: -0° 00' 21.47919" dLon: 0° 00' 01.15820" dHgt: 1.5228 fts
 Slope: 2175.9511 fts

DOPs (min-max): GDOP: 2.7 - 2.8
 PDOP: 2.3 - 2.4 HDOP: 1.2 - 1.2 VDOP: 2.0 - 2.0

AJ2777 - ASG1

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: AJ2777

SR530 / 32634

AT502 Tripod / -

4.3000 fts

Rover: ASG1

SR530 / 32630

AT502 Pole / -

1.0500 fts

Coordinates:

Latitude: 41° 40' 54.08244" N

Longitude: 87° 36' 07.39466" W

Ellip. Hgt: 461.9454 fts

41° 41' 16.56598" N

87° 34' 55.81347" W

462.9517 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 04/21/2004 19:56:20 - 04/21/2004 20:06:25
 Duration: 10' 05"

Quality: Sd. Lat: 0.0019 fts Sd. Lon: 0.0008 fts Sd. Hgt: 0.0035 fts
 Posn. Qlty: 0.0021 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: 0° 00' 22.48354" dLon: 0° 01' 11.58119" dHgt: 1.0063 fts
 Slope: 5889.0063 fts

DOPs (min-max): GDOP: 4.9 - 5.4
 PDOP: 4.1 - 4.5 HDOP: 2.0 - 2.2 VDOP: 3.5 - 3.9

AJ2777 - MSG3

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: AJ2777

SR530 / 32634

AT502 Tripod / -

4.3000 fts

Rover: MSG3

SR530 / 32630

AT502 Pole / -

0.7600 fts

Coordinates:

Latitude: 41° 40' 54.08244" N

Longitude: 87° 36' 07.39466" W

Ellip. Hgt: 461.9454 fts

41° 41' 02.55587" N

87° 34' 41.53112" W

458.0582 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 04/21/2004 20:27:30 - 04/21/2004 20:37:15
 Duration: 9' 45"

Quality:	Sd. Lat: 0.0014 fts Posn. Qlty: 0.0017 fts	Sd. Lon: 0.0009 fts Sd. Slope: 0.0009 fts	Sd. Hgt: 0.0031 fts
Baseline vector:	dLat: 0° 00' 08.47343" Slope: 6571.6102 fts	dLon: 0° 01' 25.86353"	dHgt: -3.8872 fts
DOPs (min-max):	GDOP: 2.6 - 2.7 PDOP: 2.2 - 2.3	HDOP: 1.1 - 1.1	VDOP: 1.9 - 2.0

AJ2777 - ASW3
Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AJ2777
SR530 / 32634
AT502 Tripod / -
4.3000 fts

Rover: ASW3
SR530 / 32630
AT502 Pole / -
3.9400 fts

Coordinates:

Latitude:	41° 40' 54.08244" N	41° 39' 32.40200" N
Longitude:	87° 36' 07.39466" W	87° 33' 38.20452" W
Ellip. Hgt:	461.9454 fts	467.2015 fts

Solution type:	Phase
Frequency:	L1 and L2
Ambiguity:	Yes
Time span:	04/21/2004 20:53:05 - 04/21/2004 21:03:50
Duration:	10' 45"

Quality:	Sd. Lat: 0.0013 fts Posn. Qlty: 0.0017 fts	Sd. Lon: 0.0010 fts Sd. Slope: 0.0012 fts	Sd. Hgt: 0.0031 fts
Baseline vector:	dLat: -0° 01' 21.68043" Slope: 14020.1692 fts	dLon: 0° 02' 29.19013"	dHgt: 5.2561 fts
DOPs (min-max):	GDOP: 2.6 - 2.8 PDOP: 2.2 - 2.4	HDOP: 1.1 - 1.2	VDOP: 1.9 - 2.1

AJ2777 - MSG1
Receiver type / S/N:
Antenna type / S/N:
Antenna height:

Reference: AJ2777
SR530 / 32634
AT502 Tripod / -
4.3000 fts

Rover: MSG1
SR530 / 32630
AT502 Pole / -
0.6100 fts

Coordinates:

Latitude:	41° 40' 54.08244" N	41° 41' 23.72031" N
Longitude:	87° 36' 07.39466" W	87° 33' 52.74025" W
Ellip. Hgt:	461.9454 fts	463.2295 fts

Solution type:	Phase
Frequency:	L1 and L2
Ambiguity:	Yes
Time span:	04/21/2004 22:28:05 - 04/21/2004 22:38:05
Duration:	10' 00"

Quality:	Sd. Lat: 0.0021 fts Posn. Qlty: 0.0025 fts	Sd. Lon: 0.0013 fts Sd. Slope: 0.0015 fts	Sd. Hgt: 0.0038 fts
Baseline vector:	dLat: 0° 00' 29.63787" Slope: 10648.5582 fts	dLon: 0° 02' 14.65440"	dHgt: 1.2841 fts

DOPs (min-max):	GDOP: 3.7 - 4.1 PDOP: 3.1 - 3.5	HDOP: 1.6 - 1.7	VDOP: 2.7 - 3.0
AJ2777 - ASW2	Reference: AJ2777	Rover: ASW2	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Pole / -	
Antenna height:	4.3000 fts	3.3800 fts	
Coordinates:			
Latitude:	41° 40' 54.08244" N	41° 41' 21.66680" N	
Longitude:	87° 36' 07.39466" W	87° 33' 57.11926" W	
Ellip. Hgt:	461.9454 fts	469.5639 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	04/21/2004 22:43:35 - 04/21/2004 22:53:35		
Duration:	10' 00"		
Quality:	Sd. Lat: 0.0023 fts Posn. Qlty: 0.0025 fts	Sd. Lon: 0.0011 fts Sd. Slope: 0.0013 fts	Sd. Hgt: 0.0042 fts
Baseline vector:	dLat: 0° 00' 27.58436" Slope: 10271.7803 fts	dLon: 0° 02' 10.27540"	dHgt: 7.6185 fts
DOPs (min-max):	GDOP: 4.2 - 4.5 PDOP: 3.6 - 3.8	HDOP: 1.8 - 1.8	VDOP: 3.1 - 3.3
AJ2777 - AJ2776	Reference: AJ2777	Rover: AJ2776	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Pole / -	
Antenna height:	4.3000 fts	6.5620 fts	
Coordinates:			
Latitude:	41° 40' 54.08244" N	41° 40' 32.60321" N	
Longitude:	87° 36' 07.39466" W	87° 36' 06.23645" W	
Ellip. Hgt:	461.9454 fts	463.4537 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	04/21/2004 23:17:40 - 04/21/2004 23:28:45		
Duration:	11' 05"		
Quality:	Sd. Lat: 0.0013 fts Posn. Qlty: 0.0016 fts	Sd. Lon: 0.0009 fts Sd. Slope: 0.0013 fts	Sd. Hgt: 0.0029 fts
Baseline vector:	dLat: -0° 00' 21.47923" Slope: 2175.9552 fts	dLon: 0° 00' 01.15821"	dHgt: 1.5083 fts
DOPs (min-max):	GDOP: 2.5 - 2.6 PDOP: 2.2 - 2.3	HDOP: 1.1 - 1.2	VDOP: 1.9 - 1.9



Processing Summary

98216HMP_20040421

Project Information

Project name: 98216HMP_20040421
 Date created: 03/30/2006 13:23:16
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 04/21/2004 18:08:30
 End date and time: 04/21/2004 23:37:50
 SPP points: 1
 Processing kernel: PSI-Pro 1.0
 Processed: 06/07/2004 14:21:04

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

SPP Overview

AJ2777

Receiver type / S/N: SR530 / 32634
 Antenna type / S/N: AT502 Tripod / -
 Antenna height: 4.3000 fts

Coordinates:
 Latitude: 41° 40' 54.08244" N
 Longitude: 87° 36' 07.39466" W
 Ellip. Hgt: 461.9454 fts

Solution type:	Code (Nav)		
Frequency:	IonoFree (L3)		
Time span:	04/21/2004 18:08:30 - 04/21/2004 23:37:50		
Duration:	5h 29' 20"		
Quality:	Sd. Lat: 0.0994 fts	Sd. Lon: 0.0740 fts	Sd. Hgt: 0.1890 fts
	Posn. Qlty: 0.1239 fts		
DOPs (min-max):	GDOP: 1.8 - 6.0		
	PDOP: 1.6 - 5.0	HDOP: 1.0 - 2.2	VDOP: 1.3 - 4.4

GPS Post Processing Report

PM : 6V13 Work Order : 1907 Project No : 98216Hmp Bill Group : V1013 Date : 2004-09-27

Project Name: LAKE CALUMET Hmp GPS Project: 98216Hmp-20040823

Raw Data File Name: 98216Hmp-20040823 R Time Zone: CDT (GMT-5h) / CST (GMT-6h) Other

Units Downloaded: 1 2 3 4 5 Base Unit (s) # 1, 2, 3, 4

Import Checks: N Intervals Merged N Crd. Sys. Attchd. (—) Antenna Type Antenna Height

Import Editing: Unit # 1 _____
Unit # 2 _____
Unit # 3 (8/24 ANT HT 3.72', NOT 3.96'), (ID V3-BM9, NOT V3-BM8)
Unit # 4 ME-1329
Unit # 5 (8/23 ANT HT 3.87, NOT 3.82) = 1.178m

Mission Type: Static Real Time Kinematic

Fixed Station (s) Info:

Point No:	Fixed (Pstn. / Pstn. & Ht. / Ht.)	Coord. Type (Geodetic / Grid / Surface)	Elev. Format (Ellip. / Ortho.)
<u>AJ2777</u>	<u>PSTN # HT</u>	<u>GRID</u>	<u>ORTHO</u>
_____	_____	_____	_____
_____	_____	_____	_____

Baseline Processing: (From - To) AJ2777 / ME 2987, ME1329, ME1325
AJ2777, ME2987, 1329, 1325 / ALL

Projection Type:	Horizontal Datum:	Vertical Datum:	
Lambert: _____	NAD 27 _____	NAVD 88 <input checked="" type="checkbox"/>	City of Chicago _____
T. Mercator: <input checked="" type="checkbox"/>	NAD 83 <input checked="" type="checkbox"/>	NGVD 29 _____	Site / Arbitrary _____
		Municipal / County. _____	

Coordinate System Name. (S.P.) IL EAST GEOID 99 Ellipsoid: WGS84 Geoid Model (Year): 99

Coordinate System Name. (Local) _____ Avg. Cmbnd. Scl. Fctr. _____

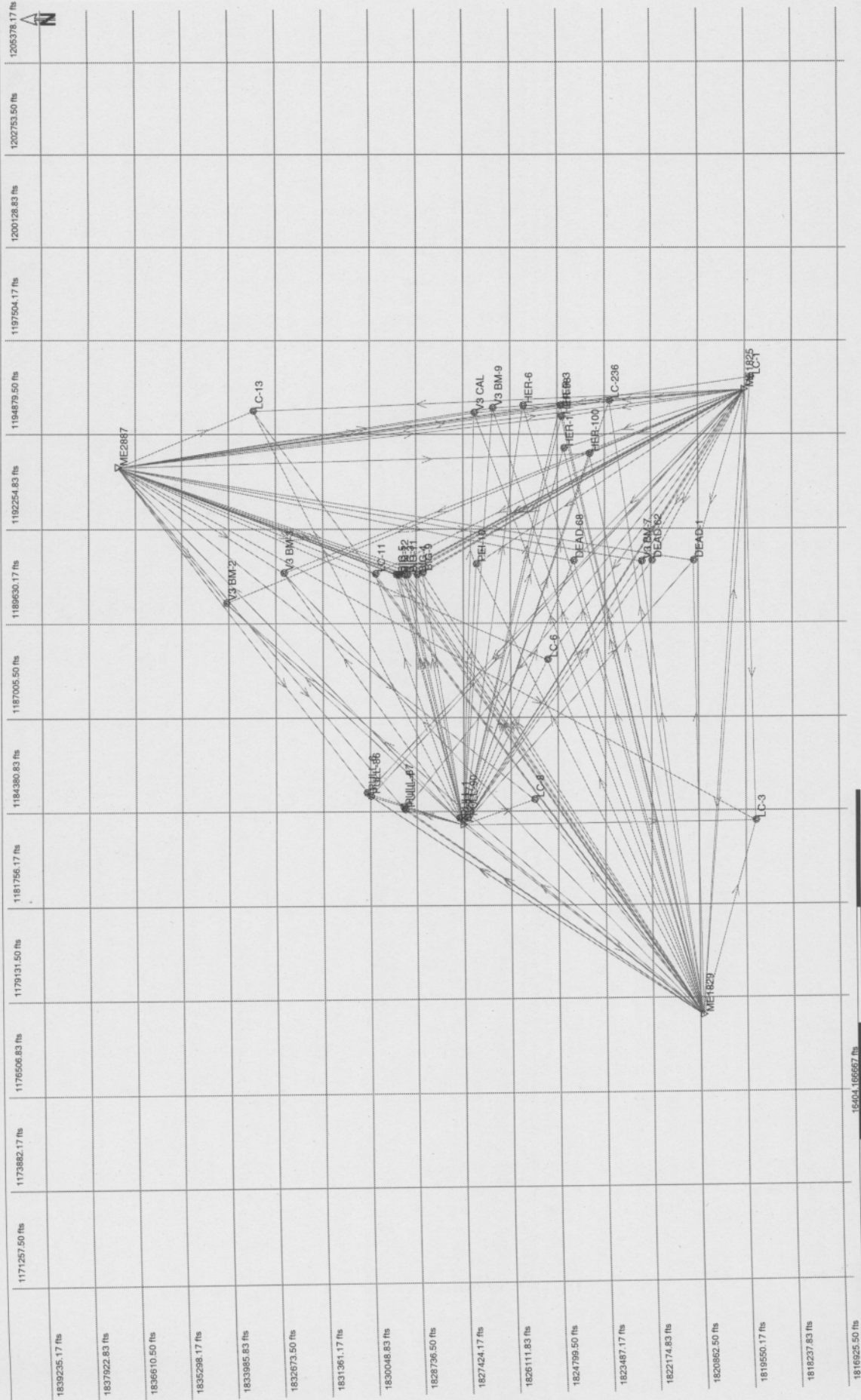
Coordinate Set Name. _____ N / E Shift: _____ / _____

Transformation Set Name: _____ Processor: G. VAN BORTEL

-or- Local projection Name: _____ Export file Name: _____

Notes to Project Manager / Technician:
CDT=Central Daylight Savings Time starts on first Sunday in April, CST=Central Standard Time starts on last Sunday in October.

Review all Control / Bench mark check coordinates and elevations.
PULL - 90 NO AVG. AVAIL.



Date: 10/28/2005 Time: 14:55:45

- + Estimated
- Navigation
- ⊗ SPP
- Measured
- ⊙ Average
- ▽ Reference
- ⊕ Adjusted
- △ Fixed Weighted
- ▲ Fixed Height
- ▲ Fixed Position and Height

1/2 EAST GEOID 99
 GEODETIC US FEET

Points of Project 98216HMP_20040823

Point Id	Point Class	Longitude	Latitude	Ellip. Hgt.	Posn. Qlty	Hgt. Qlty
ME2887	Reference	87° 33' 55.23160" W	41° 42' 28.45452" N	473.8551	0.0008	0.0013
ME1829	Reference	87° 37' 19.00006" W	41° 39' 48.72705" N	492.2666	0.0075	0.0086
ME1825	Reference	87° 33' 28.73749" W	41° 39' 35.12143" N	475.3732	0.0014	0.0093
AJ2777	Reference	87° 36' 07.38432" W	41° 40' 54.01975" N	474.6593	0.0990	0.0802
V3 CAL	Averaged	87° 33' 36.33437" W	41° 40' 49.70613" N	476.2612	0.0118	0.0203
V3 BM-9	Averaged	87° 33' 34.63923" W	41° 40' 44.80711" N	476.4656	0.0247	0.0282
V3 BM-7	Averaged	87° 34' 31.48288" W	41° 40' 04.06497" N	480.0825	0.0098	0.0205
V3 BM-3	Averaged	87° 34' 34.54712" W	41° 41' 42.79726" N	477.3225	0.0183	0.0365
V3 BM-2	Averaged	87° 34' 45.23587" W	41° 41' 58.80035" N	481.3170	0.0082	0.0174
PULL-87	Averaged	87° 36' 00.81659" W	41° 41' 10.59396" N	475.3881	0.0049	0.0172
PULL-86	Averaged	87° 35' 56.51648" W	41° 41' 19.66805" N	475.3020	0.0219	0.0101
PULL-6	Averaged	87° 35' 55.32324" W	41° 41' 20.73702" N	475.5396	0.0119	0.0030
PULL-4	Averaged	87° 36' 01.52159" W	41° 41' 10.21951" N	475.6617	0.0206	0.0239
PULL-1	Averaged	87° 36' 05.12153" W	41° 40' 55.12644" N	474.8233	0.0100	0.0209
PEI-10	Averaged	87° 34' 31.90944" W	41° 40' 49.83027" N	480.2131	0.0036	0.0063
LC-8	Averaged	87° 35' 58.56108" W	41° 40' 34.38137" N	480.6919	0.0139	0.0348
LC-6	Averaged	87° 35' 07.17044" W	41° 40' 30.43113" N	477.6979	0.0156	0.0083
LC-3	Averaged	87° 36' 07.14828" W	41° 39' 33.43889" N	475.7687	0.0134	0.0098
LC-236	Averaged	87° 33' 32.40597" W	41° 40' 12.47932" N	496.2890	0.0190	0.0197
LC-13	Averaged	87° 33' 34.78631" W	41° 41' 50.93823" N	477.3610	0.0136	0.0262
LC-11	Averaged	87° 34' 35.10256" W	41° 41' 17.56878" N	479.3877	0.0221	0.0083
LC-1	Averaged	87° 33' 23.90630" W	41° 39' 33.45066" N	475.1034	0.0110	0.0153
HER-98	Averaged	87° 33' 38.08723" W	41° 40' 25.80792" N	478.0883	0.0110	0.0056
HER-6	Averaged	87° 33' 33.78436" W	41° 40' 36.32796" N	474.5772	0.0051	0.0035
HER-3	Averaged	87° 33' 33.87153" W	41° 40' 25.89587" N	475.4909	0.0181	0.0095
HER-100	Averaged	87° 33' 52.00485" W	41° 40' 18.24299" N	473.8245	0.0113	0.0253
HER-1	Averaged	87° 33' 49.86617" W	41° 40' 25.29634" N	483.9739	0.0135	0.0118
DEAD-68	Averaged	87° 34' 30.98951" W	41° 40' 22.91919" N	477.6002	0.0063	0.0049
DEAD-62	Averaged	87° 34' 31.10142" W	41° 40' 01.18500" N	480.2751	0.0101	0.0176
DEAD-1	Averaged	87° 34' 31.41335" W	41° 39' 49.64430" N	478.3767	0.0089	0.0103
BIG-9	Averaged	87° 34' 34.92538" W	41° 41' 04.57434" N	480.4253	0.0098	0.0084
BIG-5	Averaged	87° 34' 35.52283" W	41° 41' 11.77403" N	479.0867	0.0124	0.0191
BIG-4	Averaged	87° 34' 35.45001" W	41° 41' 06.13525" N	481.1656	0.0128	0.0172
BIG-3	Averaged	87° 34' 35.49549" W	41° 41' 09.55575" N	479.9500	0.0125	0.0221
BIG-12	Averaged	87° 34' 35.50146" W	41° 41' 11.13678" N	479.2052	0.0104	0.0124
BIG-11	Averaged	87° 34' 35.46652" W	41° 41' 08.66998" N	480.2777	0.0177	0.0108
PULL-90	Measured	87° 36' 05.16311" W	41° 40' 53.00562" N	474.8599	0.0018	0.0026

11 EAST GEOID 99
GRID METERS

Points of Project 98216HMP_20040823

Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Geoid Sep.	Posn. Qlty	Hgt. Qlty
ME2887	Reference	559945.2108	363917.4418	177.8363	144.4313	-33.4050	0.0003	0.0004
ME1829	Reference	554976.9119	359247.2730	183.4141	150.0431	-33.3710	0.0023	0.0026
ME1825	Reference	554603.1057	364578.0792	178.2970	144.8940	-33.4030	0.0004	0.0028
AJ2777	Reference	557005.1530	360886.9780	178.0614	144.6764	-33.3850	0.0302	0.0245
V3 CAL	Averaged	556902.5747	364381.6710	178.5687	145.1647	-33.4040	0.0036	0.0062
V3 BM-9	Averaged	556751.7843	364422.2344	178.6310	145.2270	-33.4040	0.0075	0.0086
V3 BM-7	Averaged	555483.1433	363118.5518	179.7244	146.3294	-33.3950	0.0030	0.0062
V3 BM-3	Averaged	558528.5615	363020.9002	178.8872	145.4882	-33.3990	0.0056	0.0111
V3 BM-2	Averaged	559020.1140	362769.4188	180.1037	146.7057	-33.3980	0.0025	0.0053
PULL-87	Averaged	557517.7833	361034.5258	178.2856	144.8986	-33.3870	0.0015	0.0053
PULL-86	Averaged	557798.5798	361131.5857	178.2604	144.8724	-33.3880	0.0067	0.0031
PULL-6	Averaged	557831.7946	361158.8989	178.3328	144.9448	-33.3880	0.0036	0.0009
PULL-4	Averaged	557506.0924	361018.3199	178.3680	144.9820	-33.3860	0.0063	0.0073
PULL-1	Averaged	557039.7405	360939.0219	178.1114	144.7264	-33.3850	0.0030	0.0064
PEI-10	Averaged	556894.9837	363096.2672	179.7662	146.3692	-33.3970	0.0011	0.0019
LC-8	Averaged	556401.0148	361096.2022	179.9002	146.5152	-33.3850	0.0042	0.0106
LC-6	Averaged	556289.3647	362285.9282	178.9946	145.6026	-33.3920	0.0048	0.0025
LC-3	Averaged	554519.1639	360913.5357	178.3956	145.0146	-33.3810	0.0041	0.0030
LC-236	Averaged	555754.8877	364482.8502	184.6722	151.2692	-33.4030	0.0058	0.0060
LC-13	Averaged	558792.0028	364400.5086	178.9059	145.4999	-33.4060	0.0041	0.0080
LC-11	Averaged	557750.1101	363014.8961	179.5157	146.1177	-33.3980	0.0067	0.0025
LC-1	Averaged	554552.5667	364690.3179	178.2158	144.8118	-33.4040	0.0034	0.0047
HER-98	Averaged	556164.9152	364347.7422	179.1246	145.7216	-33.4030	0.0033	0.0017
HER-6	Averaged	556490.3674	364444.3563	178.0554	144.6514	-33.4040	0.0016	0.0011
HER-3	Averaged	556168.5036	364445.2309	178.3329	144.9299	-33.4030	0.0055	0.0029
HER-100	Averaged	555928.6459	364027.8973	177.8230	144.4220	-33.4010	0.0034	0.0077
HER-1	Averaged	556146.6939	364075.4256	180.9165	147.5155	-33.4010	0.0041	0.0036
DEAD-68	Averaged	556064.9241	363124.8482	178.9688	145.5728	-33.3960	0.0019	0.0015
DEAD-62	Averaged	555394.3697	363128.1579	179.7831	146.3881	-33.3950	0.0031	0.0054
DEAD-1	Averaged	555038.2590	363124.0730	179.2045	145.8095	-33.3950	0.0027	0.0031
BIG-9	Averaged	557349.2477	363022.5163	179.8309	146.4339	-33.3970	0.0030	0.0026
BIG-5	Averaged	557571.2477	363006.7476	179.4229	146.0259	-33.3970	0.0038	0.0058
BIG-4	Averaged	557397.2976	363009.9599	180.0566	146.6596	-33.3970	0.0039	0.0052
BIG-3	Averaged	557502.8158	363007.9811	179.6860	146.2890	-33.3970	0.0038	0.0067
BIG-12	Averaged	557551.5919	363007.4145	179.4590	146.0620	-33.3970	0.0032	0.0038
BIG-11	Averaged	557475.4945	363008.8912	179.7859	146.3889	-33.3970	0.0054	0.0033
PULL-90	Measured	556974.3017	360938.6161	178.1226	144.7376	-33.3850	0.0006	0.0008

1L EAST GEOID 99
GR10 US FEET

Points of Project 98216HMP_20040823

HELD →

Point Id	Point Class	Northing	Easting	Ortho. Hgt.	Ellip. Hgt.	Geoid Sep.	Posn. Qlty	Hgt. Qlty
ME2887	Reference	1837086.9126	1193952.4735	583.4513	473.8551	-109.5962	0.0008	0.0013
ME1829	Reference	1820786.7518	1178630.4281	601.7513	492.2666	-109.4847	0.0075	0.0086
ME1825	Reference	1819560.3559	1196119.9149	584.9629	475.3732	-109.5897	0.0014	0.0093
AJ2777	Reference	1827441.0728	1184010.0270	584.1899	474.6593	-109.5306	0.0990	0.0802
V3 CAL	Averaged	1827104.5304	1195475.5322	585.8541	476.2612	-109.5930	0.0118	0.0203
V3 BM-9	Averaged	1826609.8122	1195608.6140	586.0586	476.4656	-109.5930	0.0247	0.0282
V3 BM-7	Averaged	1822447.6127	1191331.4487	589.6459	480.0825	-109.5634	0.0098	0.0205
V3 BM-3	Averaged	1832439.1221	1191011.0700	586.8991	477.3225	-109.5766	0.0183	0.0365
V3 BM-2	Averaged	1834051.8241	1190186.0014	590.8902	481.3170	-109.5733	0.0082	0.0174
PULL-87	Averaged	1829122.9274	1184494.1068	584.9253	475.3881	-109.5372	0.0049	0.0172
PULL-86	Averaged	1830044.1739	1184812.5441	584.8425	475.3020	-109.5405	0.0219	0.0101
PULL-6	Averaged	1830153.1461	1184902.1541	585.0801	475.5396	-109.5405	0.0119	0.0030
PULL-4	Averaged	1829084.5716	1184440.9379	585.1956	475.6617	-109.5339	0.0206	0.0239
PULL-1	Averaged	1827554.5487	1184180.7744	584.3540	474.8233	-109.5306	0.0100	0.0209
PEI-10	Averaged	1827079.6256	1191258.3365	589.7830	480.2131	-109.5700	0.0036	0.0063
LC-8	Averaged	1825458.9960	1184696.4566	590.2225	480.6919	-109.5306	0.0139	0.0348
LC-6	Averaged	1825092.6906	1188599.7496	587.2515	477.6979	-109.5536	0.0156	0.0083
LC-3	Averaged	1819284.9568	1184097.1585	585.2862	475.7687	-109.5175	0.0134	0.0098
LC-236	Averaged	1823339.1606	1195807.4845	605.8787	496.2890	-109.5897	0.0190	0.0197
LC-13	Averaged	1833303.4291	1195537.3354	586.9605	477.3610	-109.5995	0.0136	0.0262
LC-11	Averaged	1829885.1529	1190991.3717	588.9610	479.3877	-109.5733	0.0221	0.0083
LC-1	Averaged	1819394.5458	1196488.1514	584.6964	475.1034	-109.5930	0.0110	0.0153
HER-98	Averaged	1824684.3926	1195364.2177	587.6780	478.0883	-109.5897	0.0056	0.0056
HER-6	Averaged	1825752.1470	1195681.1924	584.1701	474.5772	-109.5930	0.0051	0.0035
HER-3	Averaged	1824696.1654	1195684.0618	585.0805	475.4909	-109.5897	0.0181	0.0095
HER-100	Averaged	1823909.2325	1194314.8598	583.4076	473.8245	-109.5831	0.0113	0.0253
HER-1	Averaged	1824624.6116	1194470.7921	593.5570	483.9739	-109.5831	0.0135	0.0118
DEAD-68	Averaged	1824356.3384	1191352.1062	587.1669	477.6002	-109.5667	0.0063	0.0049
DEAD-62	Averaged	1822156.3612	1191362.9646	589.8385	480.2751	-109.5634	0.0101	0.0176
DEAD-1	Averaged	1820988.0213	1191349.5628	587.9401	478.3767	-109.5634	0.0089	0.0103
BIG-9	Averaged	1828569.9902	1191016.3722	589.9953	480.4253	-109.5700	0.0098	0.0084
BIG-5	Averaged	1829298.3352	1190964.6378	588.6567	479.0867	-109.5700	0.0124	0.0191
BIG-4	Averaged	1828727.6337	1190975.1769	590.7356	481.1656	-109.5700	0.0128	0.0172
BIG-3	Averaged	1829073.8216	1190968.6848	589.5199	479.9500	-109.5700	0.0125	0.0221
BIG-12	Averaged	1829233.8478	1190966.8257	588.7752	479.2052	-109.5700	0.0104	0.0124
BIG-11	Averaged	1828984.1848	1190971.6707	589.8477	480.2777	-109.5700	0.0177	0.0108
PULL-90	Measured	1827339.8549	1184179.4428	584.3905	474.8599	-109.5306	0.0018	0.0026

General information - satellite availability

Prediction date: 08/23/04

Site: 98216HMP Time: GMT-05.00

Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19
20 21 22 23 24 26 27 28 29

The U.S. government has the right to modify the position or terminate the operation of these satellites at any time.

Sky plot

Prediction date: 08/23/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05:00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

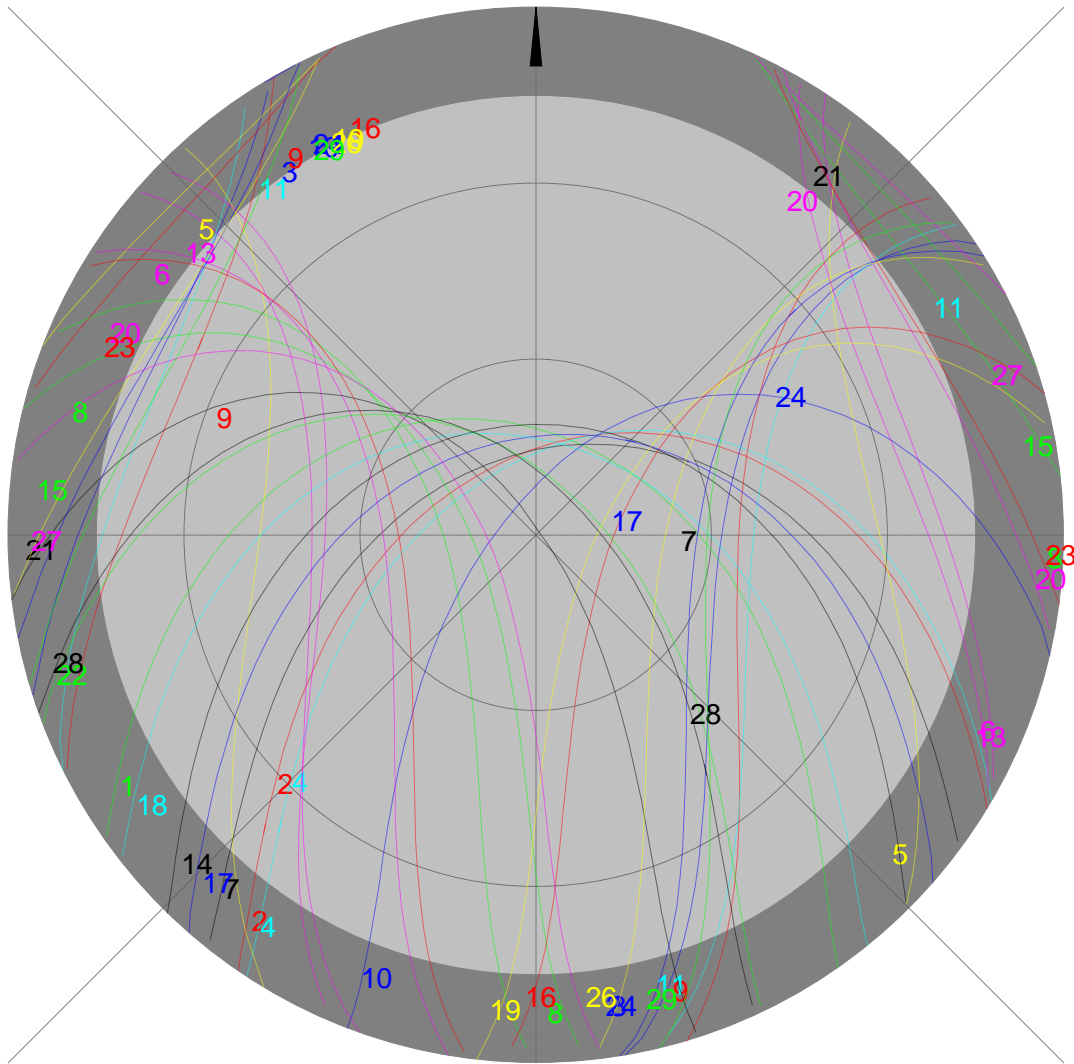
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Sky plot

Prediction date: 08/23/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

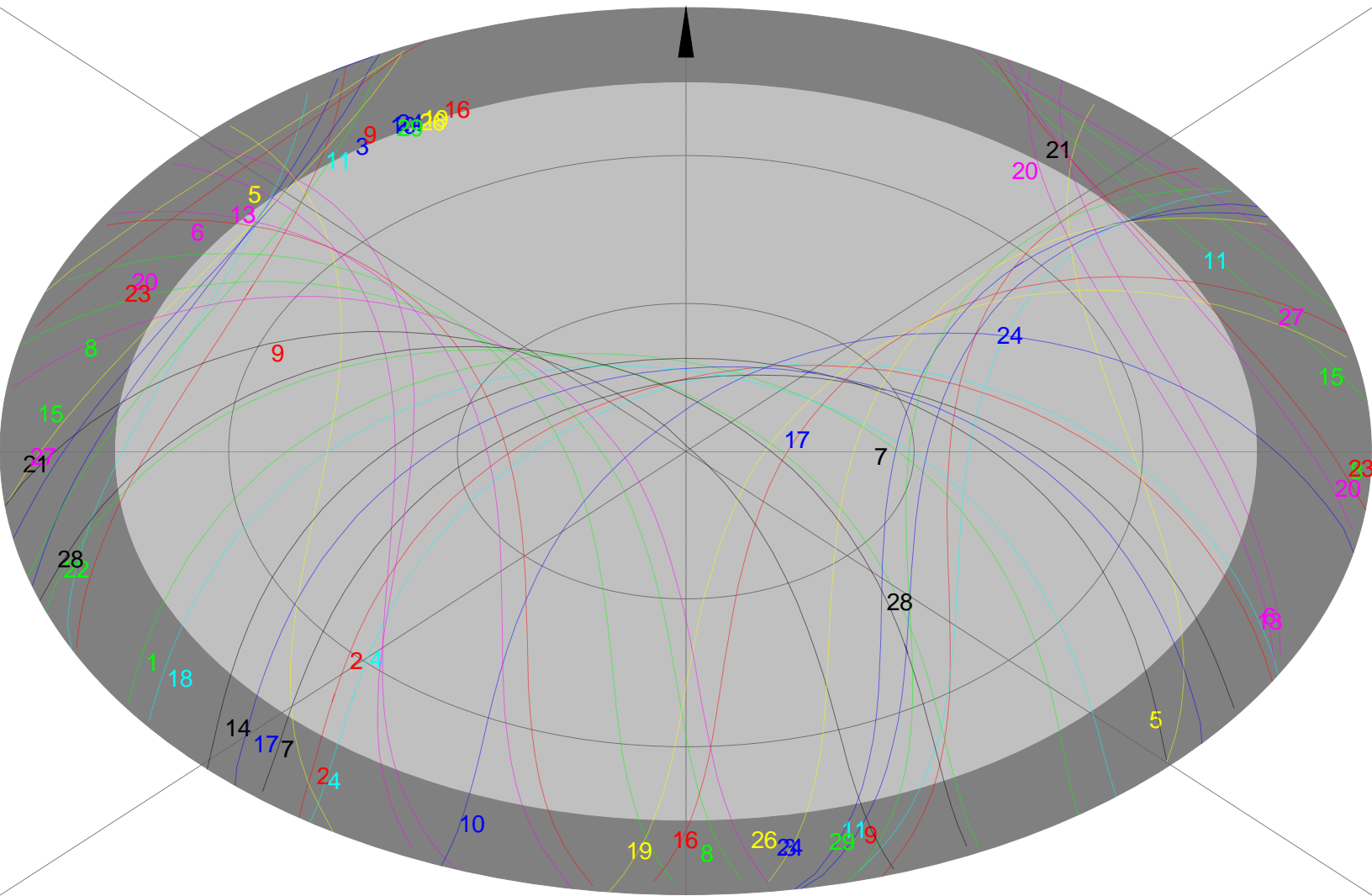
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite visibility

Prediction date: 08/23/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

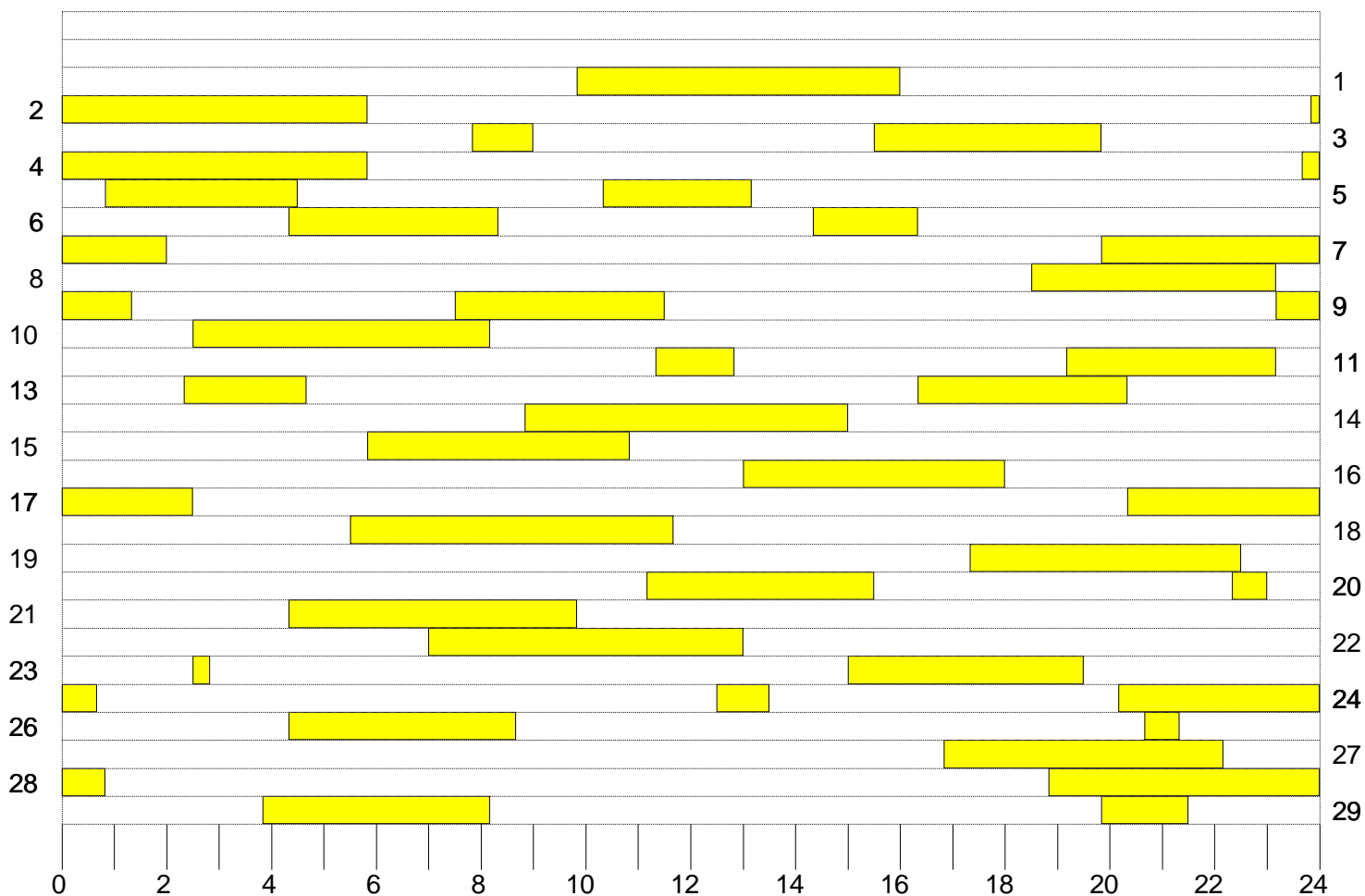
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite summary

Prediction date: 08/23/04

Window: 00.00 - 24.00

Site: 98216HMP Time: GMT-05.00

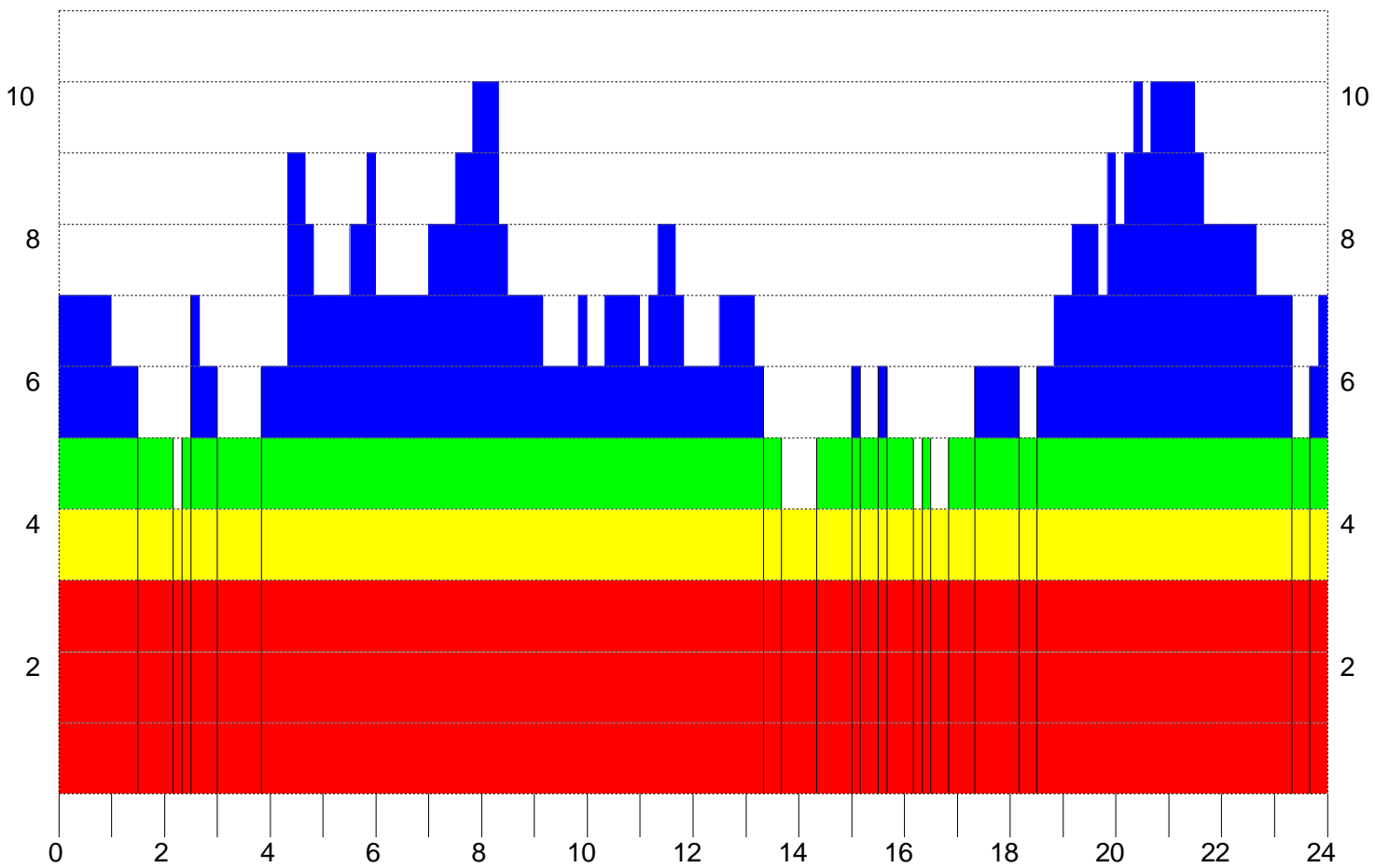
Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite PDOP/GDOP

Prediction date: 08/23/04

Window: 00.00 - 24.00

Site: 98216HMP

Time: GMT-05.00

Latitude: 41°40'N

Longitude: 87°36'W

Height: 144m

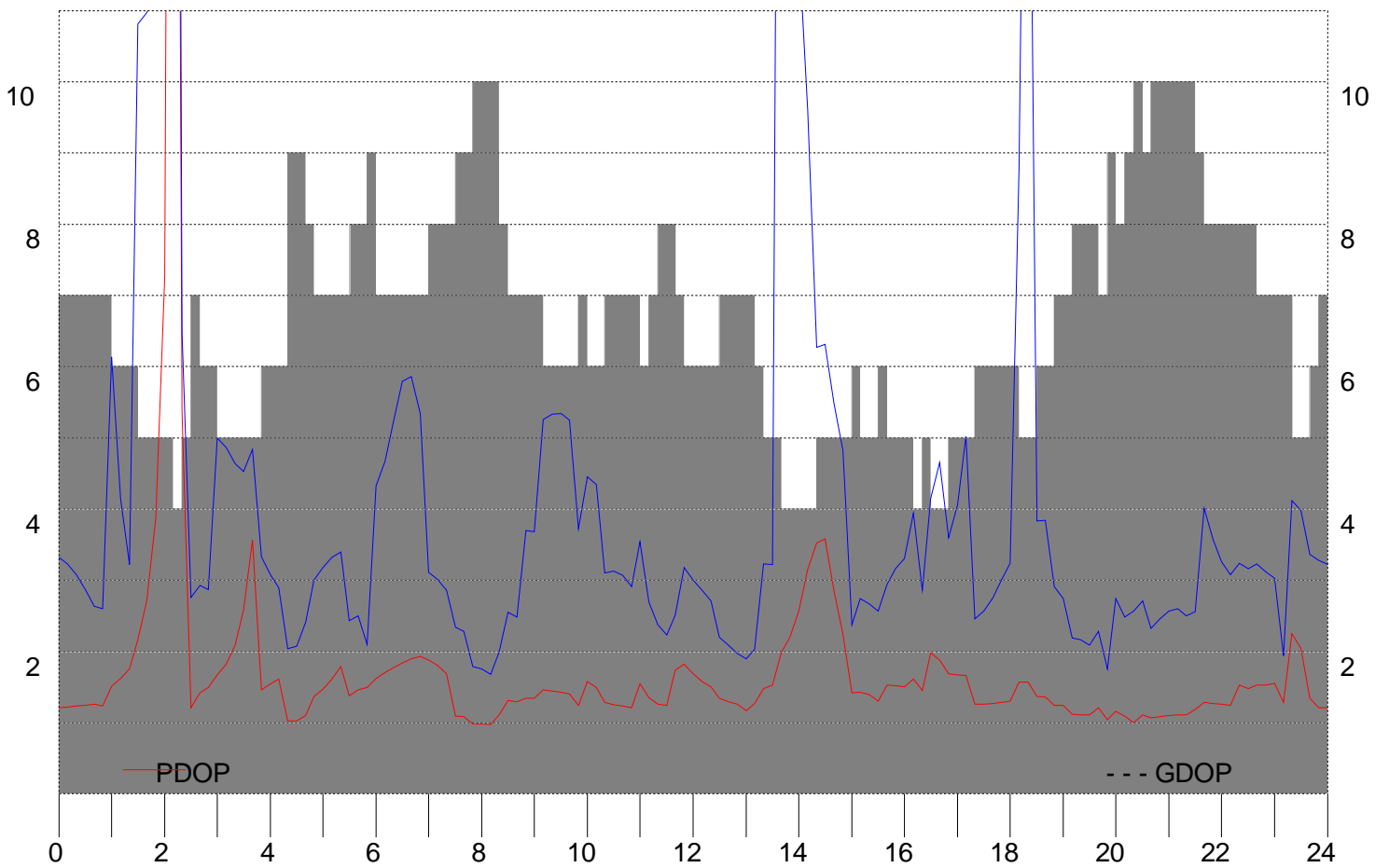
Cut-off angle: 15°

Almanac from: 03/26/06

Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



Satellite elevation

Prediction date: 08/23/04

Window: 00.00 - 24.00

Site: 98216HMP Time: GMT-05.00

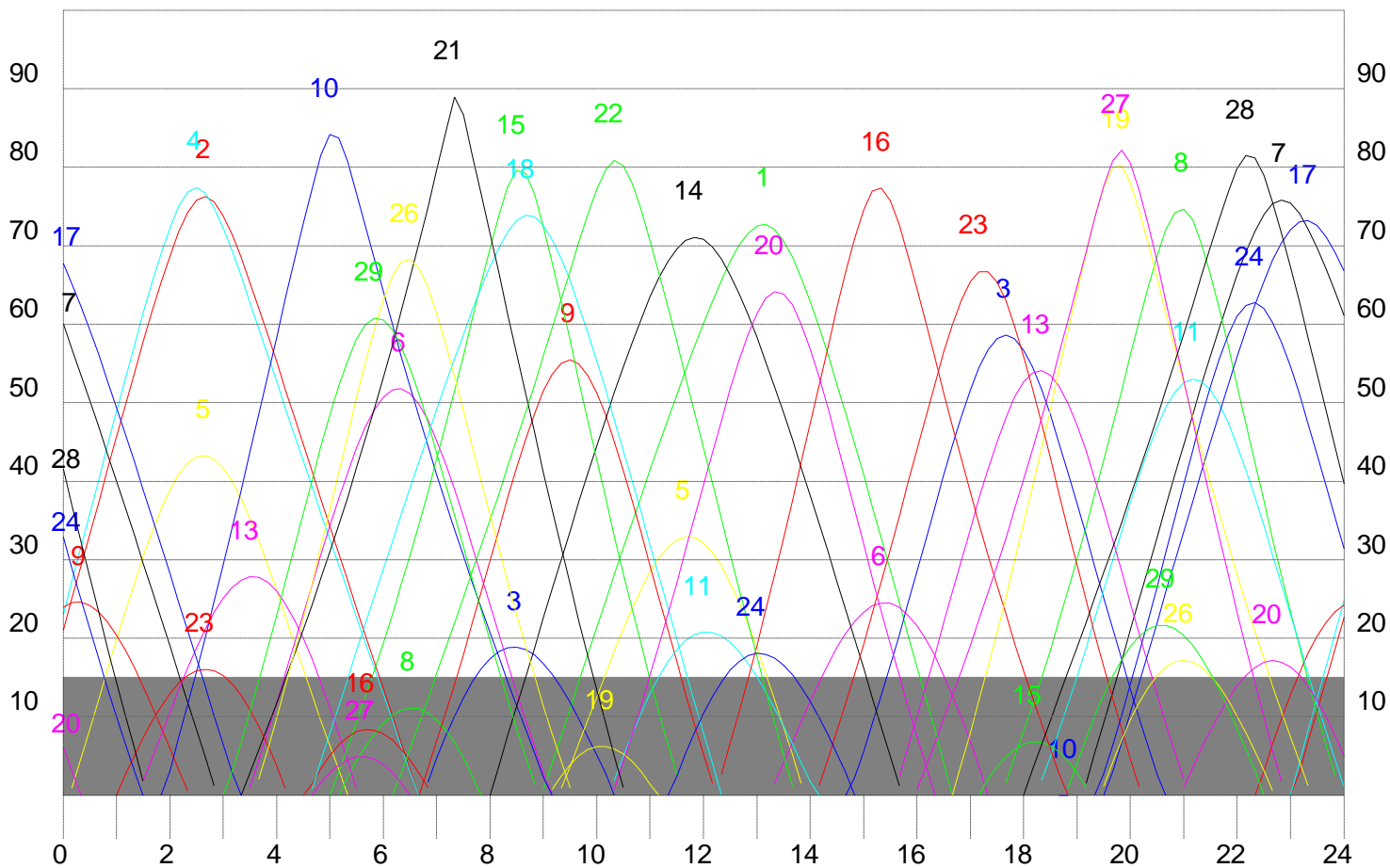
Latitude: 41°40'N Longitude: 87°36'W

Height: 144m Cut-off angle: 15°

Almanac from: 03/26/06 Obstructions: none

Sats. not used: 25 30

Sats. used: 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17 18 19 20 21 22 23 24 26 27 28 29



 98216HMP Satellite summary, PDOP, GDOP Time: GMT-05.00
 08/23/04 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Time	Sats.	PDOP	GDOP	Satellite Nos
00.00	7	1.22	3.33	2 4 7 9 17 24 28
00.10	7	1.22	3.24	2 4 7 9 17 24 28
00.20	7	1.23	3.08	2 4 7 9 17 24 28
00.30	7	1.25	2.87	2 4 7 9 17 24 28
00.40	7	1.27	2.63	2 4 7 9 17 24 28
00.50	7	1.23	2.60	2 4 5 7 9 17 28
01.00	6	1.51	6.14	2 4 5 7 9 17
01.10	6	1.63	4.16	2 4 5 7 9 17
01.20	6	1.76	3.22	2 4 5 7 9 17
01.30	5	2.17	10.82	2 4 5 7 17
01.40	5	2.72	10.97	2 4 5 7 17
01.50	5	3.88	11.59	2 4 5 7 17
02.00	5	7.27	13.85	2 4 5 7 17
02.10	4	34.20	35.07	2 4 5 17
02.20	5	5.37	6.47	2 4 5 13 17
02.30	7	1.21	2.76	2 4 5 10 13 17 23
02.40	6	1.43	2.93	2 4 5 10 13 23
02.50	6	1.49	2.88	2 4 5 10 13 23
03.00	5	1.67	5.01	2 4 5 10 13
03.10	5	1.83	4.86	2 4 5 10 13
03.20	5	2.10	4.65	2 4 5 10 13
03.30	5	2.59	4.53	2 4 5 10 13
03.40	5	3.57	4.84	2 4 5 10 13
03.50	6	1.47	3.33	2 4 5 10 13 29
04.00	6	1.54	3.08	2 4 5 10 13 29
04.10	6	1.62	2.90	2 4 5 10 13 29
04.20	9	1.02	2.05	2 4 5 6 10 13 21 26 29
04.30	9	1.02	2.08	2 4 5 6 10 13 21 26 29
04.40	8	1.11	2.42	2 4 6 10 13 21 26 29
04.50	7	1.37	3.01	2 4 6 10 21 26 29
05.00	7	1.47	3.18	2 4 6 10 21 26 29
05.10	7	1.61	3.32	2 4 6 10 21 26 29
05.20	7	1.80	3.41	2 4 6 10 21 26 29
05.30	8	1.38	2.44	2 4 6 10 18 21 26 29
05.40	8	1.47	2.51	2 4 6 10 18 21 26 29
05.50	9	1.49	2.11	2 4 6 10 15 18 21 26 29
06.00	7	1.63	4.34	6 10 15 18 21 26 29
06.10	7	1.70	4.68	6 10 15 18 21 26 29
06.20	7	1.78	5.23	6 10 15 18 21 26 29
06.30	7	1.85	5.79	6 10 15 18 21 26 29
06.40	7	1.90	5.86	6 10 15 18 21 26 29
06.50	7	1.94	5.34	6 10 15 18 21 26 29
07.00	8	1.88	3.12	6 10 15 18 21 22 26 29
07.10	8	1.80	3.02	6 10 15 18 21 22 26 29
07.20	8	1.69	2.87	6 10 15 18 21 22 26 29
07.30	9	1.10	2.34	6 9 10 15 18 21 22 26 29
07.40	9	1.08	2.28	6 9 10 15 18 21 22 26 29

Time	Sats.	PDOP	GDOP	Satellite Nos
07.50	10	0.99	1.80	3 6 9 10 15 18 21 22 26 29
08.00	10	0.98	1.75	3 6 9 10 15 18 21 22 26 29
08.10	10	0.98	1.69	3 6 9 10 15 18 21 22 26 29
08.20	8	1.11	2.00	3 6 9 15 18 21 22 26
08.30	7	1.31	2.56	3 9 15 18 21 22 26
08.40	7	1.29	2.48	3 9 15 18 21 22 26
08.50	7	1.34	3.71	3 9 14 15 18 21 22
09.00	7	1.34	3.68	3 9 14 15 18 21 22
09.10	6	1.46	5.26	9 14 15 18 21 22
09.20	6	1.45	5.34	9 14 15 18 21 22
09.30	6	1.43	5.34	9 14 15 18 21 22
09.40	6	1.41	5.26	9 14 15 18 21 22
09.50	7	1.24	3.72	1 9 14 15 18 21 22
10.00	6	1.59	4.45	1 9 14 15 18 22
10.10	6	1.49	4.34	1 9 14 15 18 22
10.20	7	1.29	3.11	1 5 9 14 15 18 22
10.30	7	1.26	3.14	1 5 9 14 15 18 22
10.40	7	1.23	3.07	1 5 9 14 15 18 22
10.50	7	1.21	2.92	1 5 9 14 15 18 22
11.00	6	1.55	3.55	1 5 9 14 18 22
11.10	7	1.36	2.69	1 5 9 14 18 20 22
11.20	8	1.27	2.38	1 5 9 11 14 18 20 22
11.30	8	1.24	2.24	1 5 9 11 14 18 20 22
11.40	7	1.74	2.51	1 5 11 14 18 20 22
11.50	6	1.82	3.19	1 5 11 14 20 22
12.00	6	1.69	3.01	1 5 11 14 20 22
12.10	6	1.59	2.87	1 5 11 14 20 22
12.20	6	1.50	2.72	1 5 11 14 20 22
12.30	7	1.34	2.20	1 5 11 14 20 22 24
12.40	7	1.30	2.09	1 5 11 14 20 22 24
12.50	7	1.26	1.98	1 5 11 14 20 22 24
13.00	7	1.17	1.90	1 5 14 16 20 22 24
13.10	6	1.27	2.04	1 5 14 16 20 24
13.20	5	1.49	3.24	1 14 16 20 24
13.30	5	1.53	3.22	1 14 16 20 24
13.40	4	1.99	24.48	1 14 16 20
13.50	4	2.21	16.63	1 14 16 20
14.00	4	2.58	12.10	1 14 16 20
14.10	4	3.15	9.61	1 14 16 20
14.20	5	3.52	6.27	1 6 14 16 20
14.30	5	3.58	6.32	1 6 14 16 20
14.40	5	2.85	5.49	1 6 14 16 20
14.50	5	2.24	4.82	1 6 14 16 20
15.00	6	1.43	2.37	1 6 14 16 20 23
15.10	5	1.44	2.75	1 6 16 20 23
15.20	5	1.40	2.67	1 6 16 20 23
15.30	6	1.31	2.57	1 3 6 16 20 23
15.40	5	1.54	2.94	1 3 6 16 23
15.50	5	1.52	3.16	1 3 6 16 23
16.00	5	1.50	3.31	1 3 6 16 23
16.10	4	1.61	3.94	3 6 16 23
16.20	5	1.45	2.86	3 6 13 16 23
16.30	4	1.98	4.16	3 13 16 23

Time	Sats.	PDOP	GDOP	Satellite Nos
16.40	4	1.88	4.66	3 13 16 23
16.50	5	1.70	3.61	3 13 16 23 27
17.00	5	1.68	4.06	3 13 16 23 27
17.10	5	1.66	5.03	3 13 16 23 27
17.20	6	1.27	2.47	3 13 16 19 23 27
17.30	6	1.27	2.58	3 13 16 19 23 27
17.40	6	1.27	2.76	3 13 16 19 23 27
17.50	6	1.29	2.99	3 13 16 19 23 27
18.00	6	1.31	3.24	3 13 16 19 23 27
18.10	5	1.57	8.82	3 13 19 23 27
18.20	5	1.57	18.11	3 13 19 23 27
18.30	6	1.38	3.83	3 8 13 19 23 27
18.40	6	1.36	3.85	3 8 13 19 23 27
18.50	7	1.24	2.91	3 8 13 19 23 27 28
19.00	7	1.25	2.75	3 8 13 19 23 27 28
19.10	8	1.12	2.19	3 8 11 13 19 23 27 28
19.20	8	1.12	2.17	3 8 11 13 19 23 27 28
19.30	8	1.11	2.09	3 8 11 13 19 23 27 28
19.40	7	1.22	2.29	3 8 11 13 19 27 28
19.50	9	1.04	1.75	3 7 8 11 13 19 27 28 29
20.00	8	1.17	2.74	7 8 11 13 19 27 28 29
20.10	9	1.09	2.48	7 8 11 13 19 24 27 28 29
20.20	10	1.01	2.58	7 8 11 13 17 19 24 27 28 29
20.30	9	1.11	2.71	7 8 11 17 19 24 27 28 29
20.40	10	1.07	2.32	7 8 11 17 19 24 26 27 28 29
20.50	10	1.09	2.46	7 8 11 17 19 24 26 27 28 29
21.00	10	1.10	2.57	7 8 11 17 19 24 26 27 28 29
21.10	10	1.11	2.60	7 8 11 17 19 24 26 27 28 29
21.20	10	1.11	2.50	7 8 11 17 19 24 26 27 28 29
21.30	9	1.19	2.57	7 8 11 17 19 24 27 28 29
21.40	8	1.29	4.02	7 8 11 17 19 24 27 28
21.50	8	1.27	3.57	7 8 11 17 19 24 27 28
22.00	8	1.26	3.27	7 8 11 17 19 24 27 28
22.10	8	1.25	3.08	7 8 11 17 19 24 27 28
22.20	8	1.53	3.24	7 8 11 17 19 20 24 28
22.30	8	1.49	3.16	7 8 11 17 19 20 24 28
22.40	7	1.53	3.23	7 8 11 17 20 24 28
22.50	7	1.54	3.12	7 8 11 17 20 24 28
23.00	7	1.55	3.03	7 8 11 17 20 24 28
23.10	7	1.29	1.95	7 8 9 11 17 24 28
23.20	5	2.25	4.13	7 9 17 24 28
23.30	5	2.06	3.98	7 9 17 24 28
23.40	6	1.34	3.36	4 7 9 17 24 28
23.50	7	1.22	3.29	2 4 7 9 17 24 28
24.00	7	1.22	3.23	2 4 7 9 17 24 28

98216HMP Azimuth and elevation Time: GMT-05.00
08/23/04 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Table with columns: Time, Azimuth and elevation for satellites [°], and satellite IDs (1-29). Rows show data for times from 00:00 to 03:40 in 10-minute increments.

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	
03.50	---	59	---	61	238	313	---	---	---	---	215	---	60	---	---	---	---	---	---	271	---	32	---	171	---	---	156	
	---	59	---	56	29	8	---	---	---	53	---	27	---	---	---	---	---	9	---	6	---	6	---	---	---	19	---	
04.00	---	64	---	66	234	313	---	---	---	---	218	---	55	---	---	---	---	---	---	274	---	29	---	170	---	---	154	
	---	55	---	53	26	12	---	---	---	58	---	26	---	---	---	---	---	12	---	4	---	10	---	---	---	23	---	
04.10	---	70	---	70	230	313	---	---	---	---	222	---	51	---	---	---	---	---	---	277	---	---	---	168	---	---	152	
	---	52	---	49	23	15	---	---	---	63	---	24	---	---	---	---	---	15	---	---	---	14	---	---	---	27	---	
04.20	---	74	---	75	227	313	---	---	---	---	226	---	47	---	---	---	---	---	---	280	---	---	---	167	---	---	149	
	---	48	---	46	19	19	---	---	---	68	---	22	---	---	---	---	---	18	---	---	---	18	---	---	---	32	---	
04.30	---	79	---	79	224	313	---	---	---	---	232	---	43	---	---	---	---	---	---	283	---	---	---	165	---	---	147	
	---	45	---	43	16	23	---	---	---	73	---	20	---	---	---	---	---	21	---	---	---	23	---	---	---	36	---	
04.40	---	83	---	83	222	312	---	---	---	---	242	---	40	---	---	335	---	---	---	286	---	---	---	164	---	---	144	
	---	41	---	39	13	27	---	---	---	77	---	17	---	---	1	---	---	24	---	---	---	27	---	---	---	40	---	
04.50	---	87	---	87	219	311	---	---	---	---	258	---	37	---	---	332	---	234	---	---	---	289	---	---	162	59	140	
	---	38	---	36	9	31	---	---	---	81	---	14	---	---	3	---	4	---	---	28	---	---	32	2	---	44	---	
05.00	---	91	---	91	216	309	---	---	---	---	292	---	35	---	---	329	---	237	---	---	---	292	---	---	160	56	135	
	---	34	---	33	6	34	---	---	---	84	---	11	---	---	5	---	8	---	---	31	---	---	36	3	---	48	---	
05.10	---	95	---	94	214	307	---	---	---	---	337	---	33	---	---	287	325	---	239	---	---	295	---	---	158	52	130	
	---	31	---	29	3	38	---	---	---	84	---	8	---	3	6	---	11	---	---	34	---	---	41	4	---	52	---	
05.20	---	98	---	98	---	303	---	80	---	4	---	31	---	289	321	---	242	---	---	---	---	297	---	---	155	48	123	
	---	27	---	26	---	41	---	2	---	81	---	4	---	6	7	---	15	---	---	38	---	---	46	5	---	55	---	
05.30	---	102	---	101	---	299	---	76	---	19	---	---	---	292	317	---	245	---	---	---	---	300	---	---	151	45	115	
	---	24	---	23	---	44	---	4	---	77	---	---	---	9	8	---	18	---	---	42	---	---	51	5	---	58	---	
05.40	---	105	---	104	---	295	---	73	---	27	---	---	---	294	314	---	247	---	---	---	---	303	---	---	147	41	106	
	---	20	---	19	---	47	---	6	---	73	---	---	---	13	8	---	22	---	---	45	---	---	55	5	---	60	---	
05.50	---	108	---	107	---	289	---	69	---	34	---	---	---	297	310	---	251	---	---	---	---	306	---	---	141	37	96	
	---	17	---	16	---	49	---	8	---	68	---	---	---	16	8	---	25	---	---	49	---	---	59	5	---	61	---	
06.00	---	111	---	110	---	282	---	65	---	39	---	---	---	299	306	---	254	---	---	---	---	308	---	---	133	34	86	
	---	14	---	13	---	51	---	9	---	64	---	---	---	19	8	---	29	---	---	53	---	---	63	4	---	61	---	
06.10	---	114	---	113	---	275	---	61	---	43	---	---	---	301	302	---	257	---	---	---	---	311	---	---	122	30	77	
	---	10	---	10	---	52	---	10	---	60	---	---	---	23	7	---	32	---	---	57	---	---	66	3	---	59	---	
06.20	---	116	---	115	---	268	---	57	---	47	---	---	---	303	298	---	261	---	---	---	---	314	252	---	110	27	69	
	---	7	---	6	---	52	---	11	---	56	---	---	---	27	6	---	36	---	---	62	3	---	68	2	---	57	---	
06.30	---	119	---	118	---	260	---	53	---	51	---	---	---	305	294	---	265	---	---	---	---	317	254	---	96	---	63	
	---	3	---	3	---	51	---	11	---	52	---	---	---	31	4	---	39	---	---	66	6	---	68	---	---	54	---	
06.40	---	---	---	---	---	253	---	48	---	55	---	---	---	307	290	---	269	---	---	---	---	319	257	---	83	---	57	
	---	---	---	---	---	50	---	11	---	48	---	---	---	35	3	---	42	---	---	70	9	---	67	---	---	51	---	
06.50	---	---	---	---	---	329	---	---	---	---	---	---	---	308	---	---	---	---	---	---	---	322	260	---	72	---	54	
	---	---	---	---	---	2	---	---	---	---	---	---	---	39	---	---	---	---	---	---	---	75	12	---	65	---	48	---
07.00	---	---	---	---	---	327	---	---	---	---	---	---	---	309	---	---	---	---	---	---	---	326	263	---	63	---	51	
	---	---	---	---	---	5	---	---	---	---	---	---	---	43	---	---	---	---	---	---	---	80	16	---	61	---	44	---
07.10	---	---	---	---	---	324	---	---	---	---	---	---	---	310	---	---	---	---	---	---	---	333	266	---	57	---	49	
	---	---	---	---	---	7	---	---	---	---	---	---	---	47	---	---	---	---	---	---	---	84	19	---	58	---	40	---
07.20	---	---	---	---	---	322	---	---	---	---	---	---	---	311	---	---	---	---	---	---	---	6	270	---	53	---	47	
	---	---	---	---	---	10	---	---	---	---	---	---	---	52	---	---	---	---	---	---	---	89	22	---	53	---	36	---
07.30	---	---	---	---	---	319	---	---	---	---	---	---	---	310	---	---	---	---	---	---	---	131	273	---	50	---	47	
	---	---	---	---	---	12	---	---	---	---	---	---	---	56	---	---	---	---	---	---	---	87	25	---	49	---	32	---
07.40	---	---	---	---	---	315	---	---	---	---	---	---	---	310	---	---	---	---	---	---	---	142	276	---	49	---	46	
	---	---	---	---	---	14	---	---	---	---	---	---	---	61	---	---	---	---	---	---	---	82	28	---	44	---	28	---
07.50	---	---	---	---	---	311	---	---	---	---	---	---	---	307	---	---	---	---	---	---	---	146	280	---	48	---	46	
	---	---	---	---	---	16	---	---	---	---	---	---	---	65	---	---	---	---	---	---	---	77	32	---	40	---	24	---
08.00	---	---	---	---	---	308	---	---	---	---	---	---	---	303	---	---	---	---	---	---	---	149	283	---	47	---	47	
	---	---	---	---	---	17	---	---	---	---	---	---	---	70	---	---	---	---	---	---	---	72	35	---	36	---	20	---

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
08.10			303			214			142	85			226	296			329			151	287			47			48
			18			20			34	18			4	74			70			66	38			31			16
08.20			299			212			138	88			228	282			341			153	291			48			49
			19			17			38	14			8	78			72			61	42			27			12
08.30			295			209			134	91			230	259			356			154	295			49			50
			19			13			42	11			11	80			73			56	45			23			8
08.40			290			207			129	94			233	232			11			156	299			50			51
			19			10			45	8			15	79			74			51	49			19			5
08.50			286			204			124	97			235	212			27			157	303			51			53
			18			6			49	5			19	77			74			46	52			15			1
09.00			282			202			117	100			238	200			43			158	307			53			
			17			3			51	2			23	72			73			41	56			11			
09.10	237		278						109				241	193			56			159	312			55			
	4		15						54				26	68			71			36	60			8			
09.20	240		274						101				245	188			68			68	332			160	317		57
	8		14						55				30	63			68			2	32	63		4			
09.30	243		270			132			92				248	185			78			78	329			161	323		
	11		12			4			55				34	58			66			4	27	67					
09.40	246		266			129			84				252	184			86			86	325			162	331		
	15		10			7			55				37	53			62			5	22	70					
09.50	249		262			126			76				256	182			93			93	322			162	340		
	18		7			10			54				41	48			59			6	18	74					
10.00	252		259			123			69				261	181			99			99	318			162	353		
	21		5			13			51				44	43			55			6	13	77					
10.10	255		256			119			63				266	181			104			104	314			162	12		
	25		3			15			48				48	38			52			6	9	80					
10.20	259					116			58				326	271	180				109		109	310			162	38	
	28					18			45				2	51	33			48			6	5	81				
10.30	263					112			54				324	277	180				113		113	306	305		66		
	32					21			41				5	55	28			44			5	4	80				
10.40	267					108			51				322	283	179				117		117	302	306		88		
	35					24			37				8	58	24			40			4	8	78				
10.50	271					104			49				319	291	178				121		121	298	308		102		
	38					26			33				10	61	19			36			3	11	75				
11.00	275					99			48				316	299	178				124		124	295	309		113		
	41					28			29				13	63	15			32			1	15	71				
11.10	280					94			47				313	308	177				127		127	310	120				
	45					30			25				15	66	11			28			19	67					
11.20	285					89			47				310	319	176				130		130	311	126				
	48					32			21				17	68	7			24			23	62					
11.30	290					84			47				306	331	175				132		132	311	130		332		
	51					33			17				19	70	3			20			27	58		2			
11.40	295					78			47				302	344					134		134	312	134		329		
	54					33			13				20	71				16			31	53		5			
11.50	301					73			47				298	358					136		136	311	137		327		
	57					33			9				20	71				12			35	49		8			
12.00	308					68			48				293	12					138		138	311	140		324		
	60					32			5				21	71				8			40	44		10			
12.10	316					63			49				289	25					140		140	309	143		321		
	63					31			1				21	70				4			44	40		13			
12.20	324					58							285	37					307		307	145	318				
	66					29							20	68				3			48	35		14			

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
12.30	334				54						280		48		182				304		147		314				
	68				27						19		66		7				52		31		16				
12.40	345				50						276		58		181				299		149		310				
	70				25						18		64		11				55		26		17				
12.50	358				47						272		66		180				293		150		306				
	72				22						17		61		15				59		22		18				
13.00	13				45						268		73		179				286		151		302				
	73				19						15		58		19				61		18		18				
13.10	28				42						264		80		178				276		152		297				
	73				16						13		55		24				63		13		18				
13.20	43				41	118					260		86		177				265		153		293				
	72				12	1					11		52		28				64		9		17				
13.30	57				39	115					257		92		176				254		154		289				
	71				9	4					9		49		33				64		5		17				
13.40	69				38	112					253		97		175				244		154		285				
	68				5	7					6		45		38				62		1		15				
13.50	79				37	108					250		101		174				235				280				
	66				2	9					4		42		42				60				14				
14.00	88				105						247		106		173				227				276				
	63				12						2		38		47				57				12				
14.10	96				101						109		171						221				301	273			
	60				14						35		52						53				1	10			
14.20	102				97						113		169						216				303	269			
	56				17						31		57						49				5	8			
14.30	108				93						117		166						212				305	266			
	52				19						27		62						45				8	5			
14.40	113				89						120		161						209				307	262			
	49				21						24		67						41				12	3			
14.50	117		168		85						123		153						207				308				
	45		2		22						20		71						36				15				
15.00	121		166		80						126		141						204				310				
	41		6		23						16		75						32				19				
15.10	125		164		76						128		123						202				311				
	37		9		24						12		77						28				23				
15.20	128		162		71						131		102						200				311				
	33		13		24						9		77						23				27				
15.30	131		160		66						133		82						198				312				
	29		17		24						5		76						19				31				
15.40	134		158		62						315	135	69						197				312				
	25		20		24						2	1	73						15				35				
15.50	136		156		58						316		60						195				311				
	20		24		23						6		69						11				40				
16.00	138		153		53						317		55						193				310				
	16		28		22						10		65						8				44				
16.10	140		150		50						317		52						191				309			281	
	12		33		20						14		60						4				48			4	
16.20	142		148		46						317		51										306			284	
	8		37		18						18		56										52			7	
16.30	144		144		43						317		50										302			286	
	4		41		15						22		51										56			10	
16.40			140		41						317		50										297			289	
			45		13						26		47										60			13	

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
16.50			135				38						316			51			185				289			292	
			48				10						30			43			4				63			16	
17.00			130				36						314			52			185				279			294	
			52				7						34			39			8				65			19	
17.10			123				35						312			53			184				268			297	
			54				4						38			35			12				67			22	
17.20			115										309			68	54		183				255			299	
			57										42		2	31			16				67			26	
17.30			106										305			64	56		182				243			301	
			58										45		4	27			21				65			29	
17.40			97										293			300			60	58			182			233	
			59										48		5	23			25				63			33	
17.50			88										296			294			56	60			181			225	
			58										51		6	19			30				60			36	
18.00			79										298			287			52	62			181			218	
			57										53		6	16			35				56			40	
18.10			72										300			279			48	64			180			213	
			55										54		7	12			39				52			44	
18.20			66										302			165	271		44	67			180			209	
			52										15		2	54			7	9			44			47	
18.30			61										304			163	263		40	69			179			206	
			48										19		5	54			6	6			49			43	
18.40			58										306			160	255		37	72			178			204	
			45										22		8	52			5	3			54			38	
18.50			55										308			158	248		33				176			201	
			41										26		12	50			4				59			34	
19.00			53										309			156	242		29				173			199	
			37										30		15	47			3				64			29	
19.10			52										219	310		153	236						169			198	
			33										1	34		19	44					69			25		
19.20			51										220	311		151	232						162			196	
			29										5	38		22	40					74			21		
19.30			51										222	312		148	228						149			194	
			25										9	43		26	36					77			16		
19.40			51										223	312		145	224						223			128	
			21										13	47		30	33					3			80		
19.50			51										225	311		142	221						224			100	
			17										17	52		34	29					7			80		
20.00			52										227	309		138	218						226			77	
			14										21	56		37	25					11			78		
20.10			52										229	307		134	216						228			64	
			10										25	60		41	21					14			74		
20.20			54										232	302		129	213						231			57	
			6										29	65		44	17					18			70		
20.30			55										235	295		124	211						233			53	
			3										33	69		47	13					22			66		
20.40													238	284		118	209						236			51	
													37	72		49	9					26			61		
20.50													241	269		111	206						239			50	
													41	74		51	6					30			57		
21.00													244	250		104	204						242			50	
													45	75		53	2					34			53		

Time Azimuth and elevation for satellites [°]

	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29
21.10	---	---	---	---	---	---	248	233	---	---	96	---	---	---	---	245	---	51	97	---	---	---	146	299	179	317	283
	---	---	---	---	---	---	49	73	---	---	53	---	---	---	37	---	48	4	---	---	---	44	17	48	62	19	
21.20	---	---	---	---	---	---	253	219	---	---	88	---	---	---	---	249	---	52	93	---	---	---	142	294	178	323	279
	---	---	---	---	---	---	52	70	---	---	53	---	---	---	41	---	44	6	---	---	---	48	16	43	66	17	
21.30	---	---	---	---	---	---	258	210	---	---	81	---	---	---	---	253	---	53	90	---	---	---	137	290	178	330	275
	---	---	---	---	---	---	56	66	---	---	52	---	---	---	45	---	40	8	---	---	---	52	15	38	70	16	
21.40	---	---	---	---	---	---	263	203	---	---	74	---	---	---	---	258	---	54	86	---	---	---	131	286	177	338	271
	---	---	---	---	---	---	60	62	---	---	50	---	---	---	49	---	36	10	---	---	---	56	14	33	73	13	
21.50	---	---	---	---	---	---	270	199	---	---	69	---	---	---	---	263	---	56	82	---	---	---	124	282	177	350	267
	---	---	---	---	---	---	63	57	---	---	47	---	---	---	52	---	32	12	---	---	---	59	12	28	77	11	
22.00	---	---	---	---	---	---	277	196	---	---	64	---	---	---	---	268	---	58	78	---	---	---	115	278	176	8	264
	---	---	---	---	---	---	66	52	---	---	45	---	---	---	56	---	28	14	---	---	---	61	10	23	80	9	
22.10	---	---	---	---	---	---	286	193	---	---	60	---	---	---	---	275	---	60	74	---	---	---	105	274	176	34	260
	---	---	---	---	---	---	69	47	---	---	41	---	---	---	59	---	24	15	---	---	---	62	8	19	81	6	
22.20	---	---	---	---	---	---	297	191	---	---	57	---	---	---	---	282	---	62	69	---	---	---	95	270	175	64	257
	---	---	---	---	---	---	72	42	---	---	38	---	---	---	62	---	21	16	---	---	---	63	6	14	81	3	
22.30	---	---	---	---	---	---	310	190	329	---	55	---	---	---	---	290	---	65	65	---	---	---	85	267	175	89	---
	---	---	---	---	---	---	74	38	3	---	34	---	---	---	65	---	17	17	---	---	---	62	3	10	79	---	
22.40	---	---	---	---	---	---	326	189	327	---	53	---	---	---	---	300	---	67	61	---	---	---	76	---	174	104	---
	---	---	---	---	---	---	75	33	6	---	31	---	---	---	68	---	14	17	---	---	---	60	---	6	76	---	
22.50	---	---	---	---	---	---	343	188	325	---	52	---	---	---	---	311	---	70	56	---	---	---	68	---	173	115	---
	---	---	---	---	---	---	76	28	10	---	27	---	---	---	70	---	11	17	---	---	---	58	---	2	72	---	
23.00	---	---	---	---	---	---	360	187	322	---	51	---	---	---	---	325	---	72	52	---	---	---	62	---	---	122	---
	---	---	---	---	---	---	75	23	13	---	23	---	---	---	72	---	7	16	---	---	---	55	---	---	67	---	
23.10	---	215	---	214	---	---	16	186	319	---	51	---	---	---	---	340	---	75	48	---	---	---	58	---	---	128	---
	---	3	---	4	---	---	74	19	16	---	19	---	---	---	73	---	4	15	---	---	---	51	---	---	63	---	
23.20	---	216	---	215	---	---	29	185	316	---	51	---	---	---	---	355	---	78	44	---	---	---	54	---	---	133	---
	---	7	---	8	---	---	72	15	18	---	15	---	---	---	73	---	1	14	---	---	---	47	---	---	58	---	
23.30	---	218	---	217	---	---	40	184	312	---	51	---	---	---	---	11	---	40	---	---	---	52	---	---	136	---	
	---	11	---	12	---	---	70	10	20	---	12	---	---	---	73	---	---	12	---	---	---	43	---	---	54	---	
23.40	---	219	---	218	---	---	50	182	308	---	52	---	---	---	---	25	---	37	---	---	---	50	---	---	140	---	
	---	15	---	16	---	---	67	6	22	---	8	---	---	---	71	---	10	---	---	---	---	39	---	---	49	---	
23.50	---	221	---	220	---	---	58	181	303	---	53	---	---	---	---	37	---	34	---	---	---	49	---	---	142	---	
	---	19	---	21	---	---	64	3	23	---	4	---	---	---	69	---	8	---	---	---	---	35	---	---	44	---	
24.00	---	223	---	222	---	---	65	---	299	---	---	---	---	---	47	---	---	32	---	---	---	49	---	---	145	---	
	---	23	---	25	---	---	61	---	24	---	---	---	---	---	67	---	5	---	---	---	---	31	---	---	40	---	

98216HMP Satellite visibility Time: GMT-05.00
08/23/04 41°40'N 87°36'W 144m 15° Almanac from: 03/26/06

Sat.No from to

1	09.50	16.00
2	00.00	05.50
2	23.50	24.00
3	07.50	09.00
3	15.30	19.50
4	00.00	05.50
4	23.40	24.00
5	00.50	04.30
5	10.20	13.10
6	04.20	08.20
6	14.20	16.20
7	00.00	02.00
7	19.50	24.00
8	18.30	23.10
9	00.00	01.20
9	07.30	11.30
9	23.10	24.00
10	02.30	08.10
11	11.20	12.50
11	19.10	23.10
13	02.20	04.40
13	16.20	20.20
14	08.50	15.00
15	05.50	10.50
16	13.00	18.00
17	00.00	02.30
17	20.20	24.00
18	05.30	11.40
19	17.20	22.30
20	11.10	15.30
20	22.20	23.00
21	04.20	09.50
22	07.00	13.00
23	02.30	02.50
23	15.00	19.30
24	00.00	00.40
24	12.30	13.30
24	20.10	24.00
26	04.20	08.40
26	20.40	21.20
27	16.50	22.10
28	00.00	00.50
28	18.50	24.00
29	03.50	08.10
29	19.50	21.30



Processing Summary

98216HMP_20040823

Project Information

Project name: 98216HMP_20040823
 Date created: 03/30/2006 13:23:24
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 08/25/2004 19:50:25
 End date and time: 08/26/2004 00:48:15
 Manually occupied points: 52
 Processing kernel: PSI-Pro 1.0
 Processed: 08/14/2005 17:18:41

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

ME1829 - V3 BM-7	Reference: ME1829	Rover: V3 BM-7
Receiver type / S/N:	SR530 / 32634	SR530 / 32630
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -
Antenna height:	3.8900 fts	3.8000 fts
Coordinates:		
Latitude:	41° 39' 48.72705" N	41° 40' 04.06517" N
Longitude:	87° 37' 19.00006" W	87° 34' 31.48279" W
Ellip. Hgt:	492.2666 fts	480.0869 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 19:50:25 - 08/25/2004 20:22:55
 Duration: 32' 30"

Quality: Sd. Lat: 0.0019 fts Sd. Lon: 0.0017 fts Sd. Hgt: 0.0047 fts
 Posn. Qlty: 0.0026 fts Sd. Slope: 0.0016 fts

Baseline vector: dLat: 0° 00' 15.33812" dLon: 0° 02' 47.51727" dHgt: -12.1796 fts
 Slope: 12809.1947 fts

DOPs (min-max): GDOP: 3.6 - 6.9 HDOP: 1.7 - 2.3 VDOP: 2.4 - 5.0
 PDOP: 3.0 - 5.5

ME1825 - V3 BM-7

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: ME1825

SR530 / 32623

AT502 Tripod / -

3.5000 fts

Rover: V3 BM-7

SR530 / 32630

AT502 Tripod / -

3.8000 fts

Coordinates:

Latitude: 41° 39' 35.12143" N

Longitude: 87° 33' 28.73749" W

Ellip. Hgt: 475.3732 fts

41° 40' 04.06485" N

87° 34' 31.48300" W

480.0505 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 19:50:25 - 08/25/2004 20:22:55
 Duration: 32' 30"

Quality: Sd. Lat: 0.0013 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0031 fts
 Posn. Qlty: 0.0017 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: 0° 00' 28.94343" dLon: -0° 01' 02.74551" dHgt: 4.6773 fts
 Slope: 5591.5604 fts

DOPs (min-max): GDOP: 3.6 - 4.8 HDOP: 1.7 - 1.9 VDOP: 2.4 - 3.4
 PDOP: 3.0 - 3.9

ME2887 - V3 BM-7

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: ME2887

SR530 / 32707

AT502 Tripod / -

4.1950 fts

Rover: V3 BM-7

SR530 / 32630

AT502 Tripod / -

3.8000 fts

Coordinates:

Latitude: 41° 42' 28.45452" N

Longitude: 87° 33' 55.23160" W

Ellip. Hgt: 473.8551 fts

41° 40' 04.05583" N

87° 34' 31.48748" W

480.0804 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 19:50:25 - 08/25/2004 20:22:55
 Duration: 32' 30"

Quality: Sd. Lat: 0.0037 fts Sd. Lon: 0.0033 fts Sd. Hgt: 0.0093 fts
 Posn. Qlty: 0.0050 fts Sd. Slope: 0.0034 fts

Baseline vector: dLat: -0° 02' 24.39870" dLon: -0° 00' 36.25588" dHgt: 6.2253 fts
 Slope: 14873.0318 fts

DOPs (min-max): GDOP: 4.1 - 12.2
 PDOP: 3.4 - 9.6 HDOP: 1.8 - 5.2 VDOP: 2.9 - 8.1

AJ2777 - V3 BM-7
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777
 SR530 / 32637
 AT502 Tripod / -
 4.0850 fts

Rover: V3 BM-7
 SR530 / 32630
 AT502 Tripod / -
 3.8000 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 40' 04.06500" N
 Longitude: 87° 36' 07.38432" W 87° 34' 31.48281" W
 Ellip. Hgt: 474.6593 fts 480.1142 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 19:50:25 - 08/25/2004 20:22:55
 Duration: 32' 30"

Quality: Sd. Lat: 0.0013 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0031 fts
 Posn. Qlty: 0.0017 fts Sd. Slope: 0.0014 fts

Baseline vector: dLat: -0° 00' 49.95475" dLon: 0° 01' 35.90151" dHgt: 5.4550 fts
 Slope: 8862.1678 fts

DOPs (min-max): GDOP: 3.6 - 4.8
 PDOP: 3.0 - 3.9 HDOP: 1.7 - 1.9 VDOP: 2.4 - 3.4

ME1829 - HER-1
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 3.8900 fts

Rover: HER-1
 SR530 / 32630
 AT502 Tripod / -
 3.7550 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 40' 25.29645" N
 Longitude: 87° 37' 19.00006" W 87° 33' 49.86626" W
 Ellip. Hgt: 492.2666 fts 483.9766 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 20:32:25 - 08/25/2004 20:47:45
 Duration: 15' 20"

Quality: Sd. Lat: 0.0021 fts Sd. Lon: 0.0019 fts Sd. Hgt: 0.0042 fts
 Posn. Qlty: 0.0029 fts Sd. Slope: 0.0018 fts

Baseline vector: dLat: 0° 00' 36.56940" dLon: 0° 03' 29.13380" dHgt: -8.2899 fts
 Slope: 16298.6810 fts

DOPs (min-max):	GDOP: 2.5 - 3.6 PDOP: 2.1 - 3.0	HDOP: 1.2 - 1.6	VDOP: 1.7 - 2.5
ME1825 - HER-1	Reference: ME1825	Rover: HER-1	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5000 fts	3.7550 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 25.29616" N	
Longitude:	87° 33' 28.73749" W	87° 33' 49.86634" W	
Ellip. Hgt:	475.3732 fts	483.9524 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 20:32:25 - 08/25/2004 20:47:45		
Duration:	15' 20"		
Quality:	Sd. Lat: 0.0018 fts Posn. Qlty: 0.0024 fts	Sd. Lon: 0.0016 fts Sd. Slope: 0.0019 fts	Sd. Hgt: 0.0035 fts
Baseline vector:	dLat: 0° 00' 50.17473" Slope: 5325.9788 fts	dLon: -0° 00' 21.12885"	dHgt: 8.5792 fts
DOPs (min-max):	GDOP: 2.5 - 2.6 PDOP: 2.1 - 2.2	HDOP: 1.2 - 1.3	VDOP: 1.7 - 1.8
ME2887 - HER-1	Reference: ME2887	Rover: HER-1	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1950 fts	3.7550 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 25.29531" N	
Longitude:	87° 33' 55.23160" W	87° 33' 49.83771" W	
Ellip. Hgt:	473.8551 fts	483.3074 fts	
Solution type:	Float		
Frequency:	L1 and L2		
Ambiguity:	No		
Time span:	08/25/2004 20:32:25 - 08/25/2004 20:47:45		
Duration:	15' 20"		
Quality:	Sd. Lat: 0.0113 fts Posn. Qlty: 0.0192 fts	Sd. Lon: 0.0156 fts Sd. Slope: 0.0112 fts	Sd. Hgt: 0.0140 fts
Baseline vector:	dLat: -0° 02' 03.15922" Slope: 12473.2232 fts	dLon: 0° 00' 05.39389"	dHgt: 9.4523 fts
DOPs (min-max):	GDOP: 2.5 - 3.8 PDOP: 2.1 - 3.2	HDOP: 1.2 - 1.9	VDOP: 1.7 - 2.5
AJ2777 - HER-1	Reference: AJ2777	Rover: HER-1	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.0850 fts	3.7550 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 25.29644" N	
Longitude:	87° 36' 07.38432" W	87° 33' 49.86596" W	
Ellip. Hgt:	474.6593 fts	483.9907 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 20:32:25 - 08/25/2004 20:47:45		
Duration:	15' 20"		
Quality:	Sd. Lat: 0.0017 fts Posn. Qlty: 0.0023 fts	Sd. Lon: 0.0015 fts Sd. Slope: 0.0017 fts	Sd. Hgt: 0.0032 fts
Baseline vector:	dLat: -0° 00' 28.72331" Slope: 10833.2997 fts	dLon: 0° 02' 17.51836"	dHgt: 9.3314 fts
DOPs (min-max):	GDOP: 2.5 - 2.6 PDOP: 2.1 - 2.2	HDOP: 1.2 - 1.4	VDOP: 1.7 - 1.8
ME1829 - HER-100	Reference: ME1829	Rover: HER-100	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8900 fts	4.3050 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 18.24300" N	
Longitude:	87° 37' 19.00006" W	87° 33' 52.00470" W	
Ellip. Hgt:	492.2666 fts	473.8555 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 20:54:50 - 08/25/2004 21:09:55		
Duration:	15' 05"		
Quality:	Sd. Lat: 0.0020 fts Posn. Qlty: 0.0026 fts	Sd. Lon: 0.0016 fts Sd. Slope: 0.0016 fts	Sd. Hgt: 0.0037 fts
Baseline vector:	dLat: 0° 00' 29.51596" Slope: 15992.2687 fts	dLon: 0° 03' 26.99537"	dHgt: -18.4111 fts
DOPs (min-max):	GDOP: 1.9 - 2.5 PDOP: 1.7 - 2.1	HDOP: 0.9 - 1.2	VDOP: 1.5 - 1.8
ME1825 - HER-100	Reference: ME1825	Rover: HER-100	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5000 fts	4.3050 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 18.24304" N	
Longitude:	87° 33' 28.73749" W	87° 33' 52.00504" W	
Ellip. Hgt:	475.3732 fts	473.7734 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 20:54:50 - 08/25/2004 21:09:55
 Duration: 15' 05"

Quality: Sd. Lat: 0.0016 fts Sd. Lon: 0.0013 fts Sd. Hgt: 0.0029 fts
 Posn. Qlty: 0.0020 fts Sd. Slope: 0.0016 fts

Baseline vector: dLat: 0° 00' 43.12161" dLon: -0° 00' 23.26755" dHgt: -1.5998 fts
 Slope: 4708.5993 fts

DOPs (min-max): GDOP: 1.9 - 2.5
 PDOP: 1.7 - 2.1 HDOP: 0.9 - 1.2 VDOP: 1.5 - 1.8

ME2887 - HER-100

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.1950 fts

Rover: HER-100

SR530 / 32630
 AT502 Tripod / -
 4.3050 fts

Coordinates:

Latitude:	41° 42' 28.45452" N	41° 40' 18.24342" N
Longitude:	87° 33' 55.23160" W	87° 33' 52.00506" W
Ellip. Hgt:	473.8551 fts	473.7660 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 20:54:50 - 08/25/2004 21:09:55
 Duration: 15' 05"

Quality: Sd. Lat: 0.0036 fts Sd. Lon: 0.0019 fts Sd. Hgt: 0.0066 fts
 Posn. Qlty: 0.0040 fts Sd. Slope: 0.0036 fts

Baseline vector: dLat: -0° 02' 10.21110" dLon: 0° 00' 03.22653" dHgt: -0.0890 fts
 Slope: 13182.5829 fts

DOPs (min-max): GDOP: 2.5 - 6.0
 PDOP: 2.1 - 4.8 HDOP: 1.2 - 2.6 VDOP: 1.8 - 4.1

AJ2777 - HER-100

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.0850 fts

Rover: HER-100

SR530 / 32630
 AT502 Tripod / -
 4.3050 fts

Coordinates:

Latitude:	41° 40' 54.01975" N	41° 40' 18.24286" N
Longitude:	87° 36' 07.38432" W	87° 33' 52.00469" W
Ellip. Hgt:	474.6593 fts	473.8641 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 20:54:50 - 08/25/2004 21:09:55
 Duration: 15' 05"

Quality: Sd. Lat: 0.0015 fts Sd. Lon: 0.0012 fts Sd. Hgt: 0.0027 fts
 Posn. Qlty: 0.0019 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: -0° 00' 35.77688" dLon: 0° 02' 15.37963" dHgt: -0.7951 fts
 Slope: 10893.2888 fts

DOPs (min-max): GDOP: 1.9 - 2.5
 PDOP: 1.7 - 2.1 HDOP: 0.9 - 1.2 VDOP: 1.5 - 1.8

ME1829 - HER-98
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 3.8900 fts

Rover: HER-98
 SR530 / 32630
 AT502 Tripod / -
 4.0200 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 40' 25.80799" N
 Longitude: 87° 37' 19.00006" W 87° 33' 38.08746" W
 Ellip. Hgt: 492.2666 fts 478.0877 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 21:17:20 - 08/25/2004 21:32:20
 Duration: 14' 60"

Quality: Sd. Lat: 0.0020 fts Sd. Lon: 0.0016 fts Sd. Hgt: 0.0040 fts
 Posn. Qlty: 0.0026 fts Sd. Slope: 0.0016 fts

Baseline vector: dLat: 0° 00' 37.08095" dLon: 0° 03' 40.91261" dHgt: -14.1788 fts
 Slope: 17181.7245 fts

DOPs (min-max): GDOP: 2.1 - 3.8
 PDOP: 1.9 - 3.1 HDOP: 1.0 - 1.7 VDOP: 1.6 - 2.6

ME1825 - HER-98
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825
 SR530 / 32623
 AT502 Tripod / -
 3.5000 fts

Rover: HER-98
 SR530 / 32630
 AT502 Tripod / -
 4.0200 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 40' 25.80800" N
 Longitude: 87° 33' 28.73749" W 87° 33' 38.08714" W
 Ellip. Hgt: 475.3732 fts 478.0897 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 21:17:20 - 08/25/2004 21:32:20
 Duration: 14' 60"

Quality: Sd. Lat: 0.0014 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0029 fts
 Posn. Qlty: 0.0018 fts Sd. Slope: 0.0014 fts

Baseline vector: dLat: 0° 00' 50.68657" dLon: -0° 00' 09.34965" dHgt: 2.7165 fts
 Slope: 5179.4528 fts

DOPs (min-max):	GDOP: 2.1 - 3.8 PDOP: 1.9 - 3.1	HDOP: 1.0 - 1.7	VDOP: 1.6 - 2.6
ME2887 - HER-98	Reference: ME2887	Rover: HER-98	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1950 fts	4.0200 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 25.80748" N	
Longitude:	87° 33' 55.23160" W	87° 33' 38.08713" W	
Ellip. Hgt:	473.8551 fts	478.1102 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 21:17:20 - 08/25/2004 21:32:20		
Duration:	14' 60"		
Quality:	Sd. Lat: 0.0026 fts Posn. Qlty: 0.0032 fts	Sd. Lon: 0.0019 fts Sd. Slope: 0.0027 fts	Sd. Hgt: 0.0054 fts
Baseline vector:	dLat: -0° 02' 02.64704" Slope: 12482.6196 fts	dLon: 0° 00' 17.14447"	dHgt: 4.2551 fts
DOPs (min-max):	GDOP: 2.1 - 5.8 PDOP: 1.9 - 4.7	HDOP: 1.0 - 2.5	VDOP: 1.6 - 3.9
AJ2777 - HER-98	Reference: AJ2777	Rover: HER-98	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0850 fts	4.0200 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 25.80795" N	
Longitude:	87° 36' 07.38432" W	87° 33' 38.08725" W	
Ellip. Hgt:	474.6593 fts	478.0764 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 21:17:20 - 08/25/2004 21:32:20		
Duration:	14' 60"		
Quality:	Sd. Lat: 0.0018 fts Posn. Qlty: 0.0023 fts	Sd. Lon: 0.0015 fts Sd. Slope: 0.0016 fts	Sd. Hgt: 0.0036 fts
Baseline vector:	dLat: -0° 00' 28.21180" Slope: 11684.0386 fts	dLon: 0° 02' 29.29707"	dHgt: 3.4172 fts
DOPs (min-max):	GDOP: 2.1 - 3.8 PDOP: 1.9 - 3.1	HDOP: 1.0 - 1.7	VDOP: 1.6 - 2.6
ME1829 - HER-3	Reference: ME1829	Rover: HER-3	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.8900 fts	3.9800 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 25.89622" N	
Longitude:	87° 37' 19.00006" W	87° 33' 33.87176" W	
Ellip. Hgt:	492.2666 fts	475.4982 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 21:35:05 - 08/25/2004 21:50:05		
Duration:	14' 60"		
Quality:	Sd. Lat: 0.0022 fts Posn. Qlty: 0.0028 fts	Sd. Lon: 0.0017 fts Sd. Slope: 0.0017 fts	Sd. Hgt: 0.0052 fts
Baseline vector:	dLat: 0° 00' 37.16918" Slope: 17496.0135 fts	dLon: 0° 03' 45.12830"	dHgt: -16.7684 fts
DOPs (min-max):	GDOP: 3.0 - 3.1 PDOP: 2.6 - 2.7	HDOP: 1.3 - 1.3	VDOP: 2.3 - 2.4
ME1825 - HER-3	Reference: ME1825	Rover: HER-3	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5000 fts	3.9800 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 25.89587" N	
Longitude:	87° 33' 28.73749" W	87° 33' 33.87150" W	
Ellip. Hgt:	475.3732 fts	475.4749 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 21:35:05 - 08/25/2004 21:50:05		
Duration:	14' 60"		
Quality:	Sd. Lat: 0.0013 fts Posn. Qlty: 0.0016 fts	Sd. Lon: 0.0010 fts Sd. Slope: 0.0013 fts	Sd. Hgt: 0.0030 fts
Baseline vector:	dLat: 0° 00' 50.77445" Slope: 5154.2535 fts	dLon: -0° 00' 05.13401"	dHgt: 0.1017 fts
DOPs (min-max):	GDOP: 3.0 - 3.1 PDOP: 2.6 - 2.7	HDOP: 1.3 - 1.3	VDOP: 2.3 - 2.4
ME2887 - HER-3	Reference: ME2887	Rover: HER-3	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1950 fts	3.9800 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 25.89522" N	
Longitude:	87° 33' 55.23160" W	87° 33' 33.87107" W	
Ellip. Hgt:	473.8551 fts	475.5207 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 21:35:05 - 08/25/2004 21:50:05
 Duration: 14' 60"

Quality: Sd. Lat: 0.0026 fts Sd. Lon: 0.0020 fts Sd. Hgt: 0.0061 fts
 Posn. Qlty: 0.0032 fts Sd. Slope: 0.0026 fts

Baseline vector: dLat: -0° 02' 02.55931" dLon: 0° 00' 21.36053" dHgt: 1.6657 fts
 Slope: 12511.1885 fts

DOPs (min-max): GDOP: 3.0 - 9.4
 PDOP: 2.6 - 7.4 HDOP: 1.3 - 2.9 VDOP: 2.3 - 6.9

AJ2777 - HER-3

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.0850 fts

Rover: HER-3

SR530 / 32630
 AT502 Tripod / -
 3.9800 fts

Coordinates:

Latitude:	41° 40' 54.01975" N	41° 40' 25.89595" N
Longitude:	87° 36' 07.38432" W	87° 33' 33.87166" W
Ellip. Hgt:	474.6593 fts	475.5027 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 21:35:05 - 08/25/2004 21:50:05
 Duration: 14' 60"

Quality: Sd. Lat: 0.0018 fts Sd. Lon: 0.0014 fts Sd. Hgt: 0.0042 fts
 Posn. Qlty: 0.0023 fts Sd. Slope: 0.0015 fts

Baseline vector: dLat: -0° 00' 28.12380" dLon: 0° 02' 33.51267" dHgt: 0.8434 fts
 Slope: 11992.3786 fts

DOPs (min-max): GDOP: 3.0 - 3.1
 PDOP: 2.6 - 2.7 HDOP: 1.3 - 1.3 VDOP: 2.3 - 2.4

ME1829 - HER-6

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829

SR530 / 32634
 AT502 Tripod / -
 3.8900 fts

Rover: HER-6

SR530 / 32630
 AT502 Tripod / -
 3.9750 fts

Coordinates:

Latitude:	41° 39' 48.72705" N	41° 40' 36.32784" N
Longitude:	87° 37' 19.00006" W	87° 33' 33.78428" W
Ellip. Hgt:	492.2666 fts	474.5880 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 21:56:10 - 08/25/2004 22:11:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0031 fts Sd. Lon: 0.0020 fts Sd. Hgt: 0.0058 fts
 Posn. Qlty: 0.0036 fts Sd. Slope: 0.0020 fts

Baseline vector: dLat: 0° 00' 47.60080" dLon: 0° 03' 45.21579" dHgt: -17.6785 fts
 Slope: 17759.0750 fts

DOPs (min-max): GDOP: 2.6 - 3.1 HDOP: 1.2 - 1.3 VDOP: 1.9 - 2.3
 PDOP: 2.3 - 2.7

ME1825 - HER-6
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825
 SR530 / 32623
 AT502 Tripod / -
 3.5000 fts

Rover: HER-6
 SR530 / 32630
 AT502 Tripod / -
 3.9750 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 40' 36.32802" N
 Longitude: 87° 33' 28.73749" W 87° 33' 33.78438" W
 Ellip. Hgt: 475.3732 fts 474.5746 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 21:56:10 - 08/25/2004 22:11:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0019 fts Sd. Lon: 0.0013 fts Sd. Hgt: 0.0037 fts
 Posn. Qlty: 0.0023 fts Sd. Slope: 0.0019 fts

Baseline vector: dLat: 0° 01' 01.20660" dLon: -0° 00' 05.04689" dHgt: -0.7986 fts
 Slope: 6207.2998 fts

DOPs (min-max): GDOP: 2.6 - 3.1 HDOP: 1.2 - 1.3 VDOP: 1.9 - 2.3
 PDOP: 2.3 - 2.7

ME2887 - HER-6
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887
 SR530 / 32707
 AT502 Tripod / -
 4.1950 fts

Rover: HER-6
 SR530 / 32630
 AT502 Tripod / -
 3.9750 fts

Coordinates:

Latitude: 41° 42' 28.45452" N 41° 40' 36.32833" N
 Longitude: 87° 33' 55.23160" W 87° 33' 33.76970" W
 Ellip. Hgt: 473.8551 fts 474.6262 fts

Solution type: Float
 Frequency: L1 and L2
 Ambiguity: No
 Time span: 08/25/2004 21:56:10 - 08/25/2004 22:11:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0225 fts Sd. Lon: 0.0169 fts Sd. Hgt: 0.0339 fts
 Posn. Qlty: 0.0282 fts Sd. Slope: 0.0206 fts

Baseline vector: dLat: -0° 01' 52.12620" dLon: 0° 00' 21.46190" dHgt: 0.7711 fts
 Slope: 11465.9225 fts

DOPs (min-max):	GDOP: 2.6 - 3.5 PDOP: 2.3 - 3.0	HDOP: 1.2 - 1.5	VDOP: 1.9 - 2.6
AJ2777 - HER-6	Reference: AJ2777	Rover: HER-6	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0850 fts	3.9750 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 36.32794" N	
Longitude:	87° 36' 07.38432" W	87° 33' 33.78438" W	
Ellip. Hgt:	474.6593 fts	474.5751 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 21:56:10 - 08/25/2004 22:11:05		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0020 fts Posn. Qlty: 0.0024 fts	Sd. Lon: 0.0013 fts Sd. Slope: 0.0014 fts	Sd. Hgt: 0.0039 fts
Baseline vector:	dLat: -0° 00' 17.69180" Slope: 11792.7245 fts	dLon: 0° 02' 33.59994"	dHgt: -0.0842 fts
DOPs (min-max):	GDOP: 2.6 - 4.9 PDOP: 2.3 - 4.0	HDOP: 1.2 - 1.9	VDOP: 1.9 - 3.5
ME1829 - LC-8	Reference: ME1829	Rover: LC-8	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8900 fts	3.8850 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 34.38135" N	
Longitude:	87° 37' 19.00006" W	87° 35' 58.56124" W	
Ellip. Hgt:	492.2666 fts	480.6755 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 22:22:05 - 08/25/2004 22:52:00		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0025 fts Posn. Qlty: 0.0028 fts	Sd. Lon: 0.0012 fts Sd. Slope: 0.0018 fts	Sd. Hgt: 0.0035 fts
Baseline vector:	dLat: 0° 00' 45.65431" Slope: 7656.8259 fts	dLon: 0° 01' 20.43883"	dHgt: -11.5911 fts
DOPs (min-max):	GDOP: 2.2 - 16.8 PDOP: 2.0 - 13.8	HDOP: 1.0 - 9.4	VDOP: 1.7 - 10.1
ME1825 - LC-8	Reference: ME1825	Rover: LC-8	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.5000 fts	3.8850 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 34.37780" N	
Longitude:	87° 33' 28.73749" W	87° 35' 58.57741" W	
Ellip. Hgt:	475.3732 fts	481.4818 fts	
Solution type:	Float		
Frequency:	L1 and L2		
Ambiguity:	No		
Time span:	08/25/2004 22:22:05 - 08/25/2004 22:52:00		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0028 fts Posn. Qlty: 0.0055 fts	Sd. Lon: 0.0047 fts Sd. Slope: 0.0040 fts	Sd. Hgt: 0.0043 fts
Baseline vector:	dLat: 0° 00' 59.25638" Slope: 12857.4101 fts	dLon: -0° 02' 29.83992"	dHgt: 6.1086 fts
DOPs (min-max):	GDOP: 2.1 - 2.7 PDOP: 1.9 - 2.4	HDOP: 1.0 - 1.5	VDOP: 1.6 - 1.9
ME2887 - LC-8	Reference: ME2887	Rover: LC-8	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1950 fts	3.8850 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 34.38118" N	
Longitude:	87° 33' 55.23160" W	87° 35' 58.56048" W	
Ellip. Hgt:	473.8551 fts	480.8143 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 22:22:05 - 08/25/2004 22:52:00		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0030 fts Posn. Qlty: 0.0034 fts	Sd. Lon: 0.0017 fts Sd. Slope: 0.0025 fts	Sd. Hgt: 0.0044 fts
Baseline vector:	dLat: -0° 01' 54.07335" Slope: 14862.0931 fts	dLon: -0° 02' 03.32888"	dHgt: 6.9592 fts
DOPs (min-max):	GDOP: 2.1 - 3.6 PDOP: 1.9 - 3.2	HDOP: 1.0 - 2.2	VDOP: 1.6 - 2.5
AJ2777 - LC-8	Reference: AJ2777	Rover: LC-8	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0850 fts	3.8850 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 34.38142" N	
Longitude:	87° 36' 07.38432" W	87° 35' 58.56115" W	
Ellip. Hgt:	474.6593 fts	480.6709 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 22:22:05 - 08/25/2004 22:52:00
 Duration: 29' 55"

Quality: Sd. Lat: 0.0015 fts Sd. Lon: 0.0008 fts Sd. Hgt: 0.0021 fts
 Posn. Qlty: 0.0016 fts Sd. Slope: 0.0014 fts

Baseline vector: dLat: -0° 00' 19.63833" dLon: 0° 00' 08.82318" dHgt: 6.0116 fts
 Slope: 2097.5801 fts

DOPs (min-max): GDOP: 2.1 - 2.6
 PDOP: 1.9 - 2.3 HDOP: 1.0 - 1.3 VDOP: 1.6 - 1.9

ME1829 - PULL-90

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829

SR530 / 32634
 AT502 Tripod / -
 3.8900 fts

Rover: PULL-90

SR530 / 32630
 AT502 Tripod / -
 3.6100 fts

Coordinates:

Latitude:	41° 39' 48.72705" N	41° 40' 52.98264" N
Longitude:	87° 37' 19.00006" W	87° 36' 05.12781" W
Ellip. Hgt:	492.2666 fts	473.5764 fts

Solution type: Float
 Frequency: L1 and L2
 Ambiguity: No
 Time span: 08/25/2004 22:57:35 - 08/25/2004 23:12:30
 Duration: 14' 55"

Quality: Sd. Lat: 0.0214 fts Sd. Lon: 0.0277 fts Sd. Hgt: 0.0248 fts
 Posn. Qlty: 0.0350 fts Sd. Slope: 0.0162 fts

Baseline vector: dLat: 0° 01' 04.25559" dLon: 0° 01' 13.87226" dHgt: -18.6902 fts
 Slope: 8586.9317 fts

DOPs (min-max): GDOP: 2.7 - 9.5
 PDOP: 2.3 - 7.9 HDOP: 1.1 - 5.2 VDOP: 2.0 - 5.9

ME1825 - PULL-90

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825

SR530 / 32623
 AT502 Tripod / -
 3.5000 fts

Rover: PULL-90

SR530 / 32630
 AT502 Tripod / -
 3.6100 fts

Coordinates:

Latitude:	41° 39' 35.12143" N	41° 40' 53.02095" N
Longitude:	87° 33' 28.73749" W	87° 36' 05.17222" W
Ellip. Hgt:	475.3732 fts	474.0626 fts

Solution type: Float
 Frequency: L1 and L2
 Ambiguity: No
 Time span: 08/25/2004 22:57:35 - 08/25/2004 23:12:30
 Duration: 14' 55"

Quality: Sd. Lat: 0.0115 fts Sd. Lon: 0.0217 fts Sd. Hgt: 0.0131 fts
 Posn. Qlty: 0.0246 fts Sd. Slope: 0.0222 fts

Baseline vector: dLat: 0° 01' 17.89953" dLon: -0° 02' 36.43473" dHgt: -1.3106 fts
 Slope: 14252.5802 fts

DOPs (min-max): GDOP: 2.6 - 7.0
 PDOP: 2.3 - 5.8 HDOP: 1.1 - 3.8 VDOP: 2.0 - 4.3

ME2887 - PULL-90

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: ME2887

SR530 / 32707

AT502 Tripod / -

4.1950 fts

Rover: PULL-90

SR530 / 32630

AT502 Tripod / -

3.6100 fts

Coordinates:

Latitude: 41° 42' 28.45452" N

41° 40' 53.00710" N

Longitude: 87° 33' 55.23160" W

87° 36' 05.14923" W

Ellip. Hgt: 473.8551 fts

473.6947 fts

Solution type:

Float

Frequency:

L1 and L2

Ambiguity:

No

Time span:

08/25/2004 22:57:35 - 08/25/2004 23:12:30

Duration:

14' 55"

Quality: Sd. Lat: 0.4869 fts Sd. Lon: 0.4879 fts Sd. Hgt: 0.7840 fts
 Posn. Qlty: 0.6893 fts Sd. Slope: 0.5024 fts

Baseline vector: dLat: -0° 01' 35.44743" dLon: -0° 02' 09.91763" dHgt: -0.1604 fts
 Slope: 13801.9374 fts

DOPs (min-max): GDOP: 2.7 - 4.4
 PDOP: 2.3 - 3.7 HDOP: 1.1 - 1.8 VDOP: 2.0 - 3.2

AJ2777 - PULL-90

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: AJ2777

SR530 / 32637

AT502 Tripod / -

4.0850 fts

Rover: PULL-90

SR530 / 32630

AT502 Tripod / -

3.6100 fts

Coordinates:

Latitude: 41° 40' 54.01975" N

41° 40' 53.00562" N

Longitude: 87° 36' 07.38432" W

87° 36' 05.16311" W

Ellip. Hgt: 474.6593 fts

474.8598 fts

Solution type:

Phase

Frequency:

L1 and L2

Ambiguity:

Yes

Time span:

08/25/2004 22:57:35 - 08/25/2004 23:12:30

Duration:

14' 55"

Quality: Sd. Lat: 0.0016 fts Sd. Lon: 0.0009 fts Sd. Hgt: 0.0026 fts
 Posn. Qlty: 0.0018 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: -0° 00' 01.01413" dLon: 0° 00' 02.22121" dHgt: 0.2006 fts
 Slope: 197.3499 fts

DOPs (min-max):	GDOP: 2.6 - 2.9 PDOP: 2.3 - 2.5	HDOP: 1.1 - 1.1	VDOP: 2.0 - 2.3
ME1829 - PULL-1	Reference: ME1829	Rover: PULL-1	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8900 fts	3.9400 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 55.12621" N	
Longitude:	87° 37' 19.00006" W	87° 36' 05.12171" W	
Ellip. Hgt:	492.2666 fts	474.7666 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 23:14:40 - 08/25/2004 23:32:35		
Duration:	17' 55"		
Quality:	Sd. Lat: 0.0021 fts Posn. Qlty: 0.0027 fts	Sd. Lon: 0.0016 fts Sd. Slope: 0.0022 fts	Sd. Hgt: 0.0042 fts
Baseline vector:	dLat: 0° 01' 06.39916" Slope: 8752.7038 fts	dLon: 0° 01' 13.87835"	dHgt: -17.4999 fts
DOPs (min-max):	GDOP: 2.4 - 5.4 PDOP: 2.1 - 4.5	HDOP: 1.1 - 2.9	VDOP: 1.8 - 3.5
ME1825 - PULL-1	Reference: ME1825	Rover: PULL-1	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5000 fts	3.9400 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 55.12163" N	
Longitude:	87° 33' 28.73749" W	87° 36' 05.11686" W	
Ellip. Hgt:	475.3732 fts	473.5612 fts	
Solution type:	Float		
Frequency:	L1 and L2		
Ambiguity:	No		
Time span:	08/25/2004 23:14:40 - 08/25/2004 23:32:35		
Duration:	17' 55"		
Quality:	Sd. Lat: 0.0058 fts Posn. Qlty: 0.0093 fts	Sd. Lon: 0.0073 fts Sd. Slope: 0.0080 fts	Sd. Hgt: 0.0060 fts
Baseline vector:	dLat: 0° 01' 20.00021" Slope: 14367.7959 fts	dLon: -0° 02' 36.37937"	dHgt: -1.8120 fts
DOPs (min-max):	GDOP: 2.4 - 3.2 PDOP: 2.1 - 2.8	HDOP: 1.1 - 1.3	VDOP: 1.8 - 2.5
ME2887 - PULL-1	Reference: ME2887	Rover: PULL-1	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.1950 fts	3.9400 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 55.12650" N	
Longitude:	87° 33' 55.23160" W	87° 36' 05.10501" W	
Ellip. Hgt:	473.8551 fts	475.5324 fts	
Solution type:	Float		
Frequency:	L1 and L2		
Ambiguity:	No		
Time span:	08/25/2004 23:14:40 - 08/25/2004 23:32:35		
Duration:	17' 55"		
Quality:	Sd. Lat: 0.0348 fts Posn. Qlty: 0.0608 fts	Sd. Lon: 0.0498 fts Sd. Slope: 0.0381 fts	Sd. Hgt: 0.0352 fts
Baseline vector:	dLat: -0° 01' 33.32803" Slope: 13650.1708 fts	dLon: -0° 02' 09.87341"	dHgt: 1.6774 fts
DOPs (min-max):	GDOP: 2.4 - 4.8 PDOP: 2.1 - 4.1	HDOP: 1.1 - 2.5	VDOP: 1.8 - 3.2
AJ2777 - PULL-1	Reference: AJ2777	Rover: PULL-1	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0850 fts	3.9400 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 55.12647" N	
Longitude:	87° 36' 07.38432" W	87° 36' 05.12151" W	
Ellip. Hgt:	474.6593 fts	474.8310 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 23:14:40 - 08/25/2004 23:32:35		
Duration:	17' 55"		
Quality:	Sd. Lat: 0.0008 fts Posn. Qlty: 0.0010 fts	Sd. Lon: 0.0006 fts Sd. Slope: 0.0008 fts	Sd. Hgt: 0.0016 fts
Baseline vector:	dLat: 0° 00' 01.10672" Slope: 205.0195 fts	dLon: 0° 00' 02.26281"	dHgt: 0.1718 fts
DOPs (min-max):	GDOP: 2.4 - 3.2 PDOP: 2.1 - 2.7	HDOP: 1.1 - 1.2	VDOP: 1.8 - 2.4
ME1829 - PULL-87	Reference: ME1829	Rover: PULL-87	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8900 fts	4.1300 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 41' 10.59391" N	
Longitude:	87° 37' 19.00006" W	87° 36' 00.81664" W	
Ellip. Hgt:	492.2666 fts	475.3668 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 23:36:50 - 08/25/2004 23:52:25
 Duration: 15' 35"

Quality: Sd. Lat: 0.0014 fts Sd. Lon: 0.0013 fts Sd. Hgt: 0.0032 fts
 Posn. Qlty: 0.0019 fts Sd. Slope: 0.0016 fts

Baseline vector: dLat: 0° 01' 21.86686" dLon: 0° 01' 18.18343" dHgt: -16.8998 fts
 Slope: 10191.9317 fts

DOPs (min-max): GDOP: 2.4 - 2.5
 PDOP: 2.1 - 2.2 HDOP: 1.1 - 1.1 VDOP: 1.8 - 1.9

ME1825 - PULL-87

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825

SR530 / 32623
 AT502 Tripod / -
 3.5000 fts

Rover: PULL-87

SR530 / 32630
 AT502 Tripod / -
 4.1300 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 41' 10.60056" N
 Longitude: 87° 33' 28.73749" W 87° 36' 00.83015" W
 Ellip. Hgt: 475.3732 fts 474.7811 fts

Solution type: Float
 Frequency: L1 and L2
 Ambiguity: No
 Time span: 08/25/2004 23:36:50 - 08/25/2004 23:52:25
 Duration: 15' 35"

Quality: Sd. Lat: 0.0049 fts Sd. Lon: 0.0072 fts Sd. Hgt: 0.0054 fts
 Posn. Qlty: 0.0087 fts Sd. Slope: 0.0073 fts

Baseline vector: dLat: 0° 01' 35.47914" dLon: -0° 02' 32.09266" dHgt: -0.5921 fts
 Slope: 15054.5168 fts

DOPs (min-max): GDOP: 2.4 - 2.5
 PDOP: 2.1 - 2.2 HDOP: 1.1 - 1.1 VDOP: 1.8 - 1.9

ME2887 - PULL-87

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.1950 fts

Rover: PULL-87

SR530 / 32630
 AT502 Tripod / -
 4.1300 fts

Coordinates:

Latitude: 41° 42' 28.45452" N 41° 41' 10.60233" N
 Longitude: 87° 33' 55.23160" W 87° 36' 00.83165" W
 Ellip. Hgt: 473.8551 fts 475.0531 fts

Solution type: Float
 Frequency: L1 and L2
 Ambiguity: No
 Time span: 08/25/2004 23:36:50 - 08/25/2004 23:52:25
 Duration: 15' 35"

Quality: Sd. Lat: 0.0255 fts Sd. Lon: 0.0280 fts Sd. Hgt: 0.0230 fts
 Posn. Qlty: 0.0379 fts Sd. Slope: 0.0222 fts

Baseline vector: dLat: -0° 01' 17.85220" dLon: -0° 02' 05.60005" dHgt: 1.1981 fts
 Slope: 12365.0340 fts

DOPs (min-max): GDOP: 2.4 - 4.0
 PDOP: 2.1 - 3.4 HDOP: 1.1 - 1.8 VDOP: 1.9 - 2.8

AJ2777 - PULL-87
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777
 SR530 / 32637
 AT502 Tripod / -
 4.0850 fts

Rover: PULL-87
 SR530 / 32630
 AT502 Tripod / -
 4.1300 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 41' 10.59399" N
 Longitude: 87° 36' 07.38432" W 87° 36' 00.81656" W
 Ellip. Hgt: 474.6593 fts 475.4021 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 23:36:50 - 08/25/2004 23:52:25
 Duration: 15' 35"

Quality: Sd. Lat: 0.0012 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0026 fts
 Posn. Qlty: 0.0016 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: 0° 00' 16.57424" dLon: 0° 00' 06.56776" dHgt: 0.7428 fts
 Slope: 1750.1413 fts

DOPs (min-max): GDOP: 2.4 - 2.5
 PDOP: 2.1 - 2.2 HDOP: 1.1 - 1.1 VDOP: 1.8 - 1.9

ME1829 - PULL-4
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 3.8900 fts

Rover: PULL-4
 SR530 / 32630
 AT502 Tripod / -
 3.7550 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 41' 10.21893" N
 Longitude: 87° 37' 19.00006" W 87° 36' 01.52157" W
 Ellip. Hgt: 492.2666 fts 475.7323 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 23:54:05 - 08/26/2004 00:09:10
 Duration: 15' 05"

Quality: Sd. Lat: 0.0015 fts Sd. Lon: 0.0014 fts Sd. Hgt: 0.0037 fts
 Posn. Qlty: 0.0020 fts Sd. Slope: 0.0017 fts

Baseline vector: dLat: 0° 01' 21.49188" dLon: 0° 01' 17.47849" dHgt: -16.5343 fts
 Slope: 10129.9510 fts

DOPs (min-max):	GDOP: 2.5 - 6.5 PDOP: 2.2 - 5.1	HDOP: 1.2 - 2.3	VDOP: 1.9 - 4.7
ME1825 - PULL-4	Reference: ME1825	Rover: PULL-4	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5000 fts	3.7550 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 41' 10.21966" N	
Longitude:	87° 33' 28.73749" W	87° 36' 01.52184" W	
Ellip. Hgt:	475.3732 fts	475.6049 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 23:54:05 - 08/26/2004 00:09:10		
Duration:	15' 05"		
Quality:	Sd. Lat: 0.0015 fts Posn. Qlty: 0.0021 fts	Sd. Lon: 0.0014 fts Sd. Slope: 0.0011 fts	Sd. Hgt: 0.0038 fts
Baseline vector:	dLat: 0° 01' 35.09824" Slope: 15070.1540 fts	dLon: -0° 02' 32.78435"	dHgt: 0.2317 fts
DOPs (min-max):	GDOP: 2.5 - 6.5 PDOP: 2.2 - 5.1	HDOP: 1.2 - 2.3	VDOP: 1.9 - 4.7
ME2887 - PULL-4	Reference: ME2887	Rover: PULL-4	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1950 fts	3.7550 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 10.21942" N	
Longitude:	87° 33' 55.23160" W	87° 36' 01.52242" W	
Ellip. Hgt:	473.8551 fts	475.6347 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 23:54:05 - 08/26/2004 00:09:10		
Duration:	15' 05"		
Quality:	Sd. Lat: 0.0029 fts Posn. Qlty: 0.0041 fts	Sd. Lon: 0.0029 fts Sd. Slope: 0.0035 fts	Sd. Hgt: 0.0071 fts
Baseline vector:	dLat: -0° 01' 18.23511" Slope: 12430.1257 fts	dLon: -0° 02' 06.29082"	dHgt: 1.7797 fts
DOPs (min-max):	GDOP: 3.1 - 6.8 PDOP: 2.7 - 5.5	HDOP: 1.5 - 2.5	VDOP: 2.2 - 4.9
AJ2777 - PULL-4	Reference: AJ2777	Rover: PULL-4	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.0850 fts	3.7550 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 10.21969" N	
Longitude:	87° 36' 07.38432" W	87° 36' 01.52144" W	
Ellip. Hgt:	474.6593 fts	475.6583 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 23:54:05 - 08/26/2004 00:09:10		
Duration:	15' 05"		
Quality:	Sd. Lat: 0.0009 fts	Sd. Lon: 0.0009 fts	Sd. Hgt: 0.0023 fts
	Posn. Qlty: 0.0013 fts	Sd. Slope: 0.0010 fts	
Baseline vector:	dLat: 0° 00' 16.19994"	dLon: 0° 00' 05.86288"	dHgt: 0.9990 fts
	Slope: 1699.0747 fts		
DOPs (min-max):	GDOP: 2.5 - 6.5	HDOP: 1.2 - 2.3	VDOP: 1.9 - 4.7
	PDOP: 2.2 - 5.1		
ME1829 - PULL-86	Reference: ME1829	Rover: PULL-86	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8900 fts	3.9250 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 41' 19.66750" N	
Longitude:	87° 37' 19.00006" W	87° 35' 56.51637" W	
Ellip. Hgt:	492.2666 fts	475.3141 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/26/2004 00:14:45 - 08/26/2004 00:31:15		
Duration:	16' 30"		
Quality:	Sd. Lat: 0.0018 fts	Sd. Lon: 0.0017 fts	Sd. Hgt: 0.0062 fts
	Posn. Qlty: 0.0025 fts	Sd. Slope: 0.0018 fts	
Baseline vector:	dLat: 0° 01' 30.94046"	dLon: 0° 01' 22.48369"	dHgt: -16.9525 fts
	Slope: 11131.8772 fts		
DOPs (min-max):	GDOP: 3.1 - 7.7	HDOP: 1.6 - 2.0	VDOP: 2.1 - 5.7
	PDOP: 2.6 - 6.0		
ME1825 - PULL-86	Reference: ME1825	Rover: PULL-86	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5000 fts	3.9250 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 41' 19.66810" N	
Longitude:	87° 33' 28.73749" W	87° 35' 56.51665" W	
Ellip. Hgt:	475.3732 fts	475.3229 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/26/2004 00:14:45 - 08/26/2004 00:31:15
 Duration: 16' 30"

Quality: Sd. Lat: 0.0018 fts Sd. Lon: 0.0018 fts Sd. Hgt: 0.0066 fts
 Posn. Qlty: 0.0026 fts Sd. Slope: 0.0017 fts

Baseline vector: dLat: 0° 01' 44.54668" dLon: -0° 02' 27.77916" dHgt: -0.0503 fts
 Slope: 15419.6969 fts

DOPs (min-max): GDOP: 3.1 - 7.7
 PDOP: 2.6 - 6.0 HDOP: 1.6 - 2.0 VDOP: 2.1 - 5.7

ME2887 - PULL-86

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.1950 fts

Rover: PULL-86

SR530 / 32630
 AT502 Tripod / -
 3.9250 fts

Coordinates:

Latitude: 41° 42' 28.45452" N 41° 41' 19.67033" N
 Longitude: 87° 33' 55.23160" W 87° 35' 56.51901" W
 Ellip. Hgt: 473.8551 fts 473.6459 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/26/2004 00:14:45 - 08/26/2004 00:31:15
 Duration: 16' 30"

Quality: Sd. Lat: 0.0037 fts Sd. Lon: 0.0051 fts Sd. Hgt: 0.0157 fts
 Posn. Qlty: 0.0063 fts Sd. Slope: 0.0050 fts

Baseline vector: dLat: -0° 01' 08.78420" dLon: -0° 02' 01.28741" dHgt: -0.2092 fts
 Slope: 11538.5727 fts

DOPs (min-max): GDOP: 3.7 - 10.5
 PDOP: 3.2 - 8.1 HDOP: 2.0 - 3.2 VDOP: 2.5 - 7.8

AJ2777 - PULL-86

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.0850 fts

Rover: PULL-86

SR530 / 32630
 AT502 Tripod / -
 3.9250 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 41' 19.66824" N
 Longitude: 87° 36' 07.38432" W 87° 35' 56.51647" W
 Ellip. Hgt: 474.6593 fts 475.2899 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/26/2004 00:14:45 - 08/26/2004 00:31:15
 Duration: 16' 30"

Quality: Sd. Lat: 0.0011 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0039 fts
 Posn. Qlty: 0.0016 fts Sd. Slope: 0.0011 fts

Baseline vector: dLat: 0° 00' 25.64849" dLon: 0° 00' 10.86785" dHgt: 0.6306 fts
 Slope: 2724.0233 fts

DOPs (min-max): GDOP: 3.0 - 7.7
 PDOP: 2.6 - 6.0 HDOP: 1.6 - 2.0 VDOP: 2.1 - 5.7

ME1829 - PULL-6
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 3.8900 fts

Rover: PULL-6
 SR530 / 32630
 AT502 Tripod / -
 3.8800 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 41' 20.73676" N
 Longitude: 87° 37' 19.00006" W 87° 35' 55.32336" W
 Ellip. Hgt: 492.2666 fts 475.5323 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/26/2004 00:33:10 - 08/26/2004 00:48:15
 Duration: 15' 05"

Quality: Sd. Lat: 0.0019 fts Sd. Lon: 0.0012 fts Sd. Hgt: 0.0047 fts
 Posn. Qlty: 0.0023 fts Sd. Slope: 0.0016 fts

Baseline vector: dLat: 0° 01' 32.00971" dLon: 0° 01' 23.67670" dHgt: -16.7343 fts
 Slope: 11272.2874 fts

DOPs (min-max): GDOP: 3.4 - 7.1
 PDOP: 2.9 - 5.5 HDOP: 1.7 - 2.0 VDOP: 2.3 - 5.1

ME1825 - PULL-6
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825
 SR530 / 32623
 AT502 Tripod / -
 3.5000 fts

Rover: PULL-6
 SR530 / 32630
 AT502 Tripod / -
 3.8800 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 41' 20.73698" N
 Longitude: 87° 33' 28.73749" W 87° 35' 55.32314" W
 Ellip. Hgt: 475.3732 fts 475.5388 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/26/2004 00:33:10 - 08/26/2004 00:48:15
 Duration: 15' 05"

Quality: Sd. Lat: 0.0018 fts Sd. Lon: 0.0012 fts Sd. Hgt: 0.0047 fts
 Posn. Qlty: 0.0022 fts Sd. Slope: 0.0016 fts

Baseline vector: dLat: 0° 01' 45.61555" dLon: -0° 02' 26.58565" dHgt: 0.1656 fts
 Slope: 15428.6960 fts

DOPs (min-max):	GDOP: 3.4 - 7.1 PDOP: 2.9 - 5.5	HDOP: 1.7 - 2.0	VDOP: 2.3 - 5.1
ME2887 - PULL-6	Reference: ME2887	Rover: PULL-6	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1950 fts	3.8800 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 20.73507" N	
Longitude:	87° 33' 55.23160" W	87° 35' 55.34116" W	
Ellip. Hgt:	473.8551 fts	475.4042 fts	
Solution type:	Float		
Frequency:	L1 and L2		
Ambiguity:	No		
Time span:	08/26/2004 00:33:10 - 08/26/2004 00:48:15		
Duration:	15' 05"		
Quality:	Sd. Lat: 0.0291 fts Posn. Qlty: 0.0860 fts	Sd. Lon: 0.0809 fts Sd. Slope: 0.0800 fts	Sd. Hgt: 0.0748 fts
Baseline vector:	dLat: -0° 01' 07.71946" Slope: 11402.3142 fts	dLon: -0° 02' 00.10956"	dHgt: 1.5491 fts
DOPs (min-max):	GDOP: 3.5 - 16.9 PDOP: 2.9 - 12.7	HDOP: 1.7 - 4.7	VDOP: 2.3 - 11.8
AJ2777 - PULL-6	Reference: AJ2777	Rover: PULL-6	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0850 fts	3.8800 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 20.73715" N	
Longitude:	87° 36' 07.38432" W	87° 35' 55.32323" W	
Ellip. Hgt:	474.6593 fts	475.5430 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/26/2004 00:33:10 - 08/26/2004 00:48:15		
Duration:	15' 05"		
Quality:	Sd. Lat: 0.0012 fts Posn. Qlty: 0.0014 fts	Sd. Lon: 0.0008 fts Sd. Slope: 0.0011 fts	Sd. Hgt: 0.0030 fts
Baseline vector:	dLat: 0° 00' 26.71740" Slope: 2855.0543 fts	dLon: 0° 00' 12.06109"	dHgt: 0.8837 fts
DOPs (min-max):	GDOP: 3.4 - 7.1 PDOP: 2.9 - 5.5	HDOP: 1.7 - 2.0	VDOP: 2.3 - 5.1



Processing Summary

98216HMP_20040823

Project Information

Project name: 98216HMP_20040823
 Date created: 03/30/2006 13:23:24
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 08/24/2004 19:35:00
 End date and time: 08/25/2004 02:14:10
 Manually occupied points: 52
 Processing kernel: PSI-Pro 1.0
 Processed: 08/14/2005 17:17:35

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

ME1829 - V3 BM-2	Reference: ME1829	Rover: V3 BM-2
Receiver type / S/N:	SR530 / 32634	SR530 / 32630
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -
Antenna height:	4.0000 fts	4.0850 fts
Coordinates:		
Latitude:	41° 39' 48.72705" N	41° 41' 58.80026" N
Longitude:	87° 37' 19.00006" W	87° 34' 45.23576" W
Ellip. Hgt:	492.2666 fts	481.3235 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 19:35:00 - 08/24/2004 20:05:55
 Duration: 30' 55"

Quality: Sd. Lat: 0.0011 fts Sd. Lon: 0.0009 fts Sd. Hgt: 0.0028 fts
 Posn. Qlty: 0.0014 fts Sd. Slope: 0.0008 fts

Baseline vector: dLat: 0° 02' 10.07321" dLon: 0° 02' 33.76430" dHgt: -10.9430 fts
 Slope: 17592.4703 fts

DOPs (min-max): GDOP: 3.8 - 6.6 HDOP: 1.8 - 2.2 VDOP: 2.6 - 4.8
 PDOP: 3.2 - 5.3

ME1825 - V3 BM-2

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: ME1825

SR530 / 32623

AT502 Tripod / -

3.6700 fts

Rover: V3 BM-2

SR530 / 32630

AT502 Tripod / -

4.0850 fts

Coordinates:

Latitude: 41° 39' 35.12143" N

Longitude: 87° 33' 28.73749" W

Ellip. Hgt: 475.3732 fts

41° 41' 58.80026" N

87° 34' 45.23591" W

481.2626 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 19:35:00 - 08/24/2004 20:05:55
 Duration: 30' 55"

Quality: Sd. Lat: 0.0012 fts Sd. Lon: 0.0009 fts Sd. Hgt: 0.0028 fts
 Posn. Qlty: 0.0014 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: 0° 02' 23.67884" dLon: -0° 01' 16.49841" dHgt: 5.8894 fts
 Slope: 15659.2727 fts

DOPs (min-max): GDOP: 3.8 - 6.3 HDOP: 1.8 - 2.0 VDOP: 2.6 - 4.6
 PDOP: 3.2 - 5.0

ME2887 - V3 BM-2

Receiver type / S/N:

Antenna type / S/N:

Antenna height:

Reference: ME2887

SR530 / 32707

AT502 Tripod / -

4.1200 fts

Rover: V3 BM-2

SR530 / 32630

AT502 Tripod / -

4.0850 fts

Coordinates:

Latitude: 41° 42' 28.45452" N

Longitude: 87° 33' 55.23160" W

Ellip. Hgt: 473.8551 fts

41° 41' 58.80013" N

87° 34' 45.23533" W

481.3585 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 19:35:00 - 08/24/2004 20:05:55
 Duration: 30' 55"

Quality: Sd. Lat: 0.0024 fts Sd. Lon: 0.0022 fts Sd. Hgt: 0.0058 fts
 Posn. Qlty: 0.0033 fts Sd. Slope: 0.0014 fts

Baseline vector: dLat: -0° 00' 29.65439" dLon: -0° 00' 50.00373" dHgt: 7.5035 fts
 Slope: 4837.1356 fts

DOPs (min-max): GDOP: 4.8 - 12.3
 PDOP: 3.9 - 9.6 HDOP: 1.9 - 4.7 VDOP: 3.2 - 8.4

AJ2777 - V3 BM-2
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777
 SR530 / 32637
 AT502 Tripod / -
 4.2500 fts

Rover: V3 BM-2
 SR530 / 32630
 AT502 Tripod / -
 4.0850 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 41' 58.80045" N
 Longitude: 87° 36' 07.38432" W 87° 34' 45.23595" W
 Ellip. Hgt: 474.6593 fts 481.3342 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 19:35:00 - 08/24/2004 20:05:55
 Duration: 30' 55"

Quality: Sd. Lat: 0.0008 fts Sd. Lon: 0.0006 fts Sd. Hgt: 0.0019 fts
 Posn. Qlty: 0.0010 fts Sd. Slope: 0.0005 fts

Baseline vector: dLat: 0° 01' 04.78070" dLon: 0° 01' 22.14837" dHgt: 6.6750 fts
 Slope: 9046.8192 fts

DOPs (min-max): GDOP: 4.1 - 6.3
 PDOP: 3.3 - 5.0 HDOP: 1.8 - 2.0 VDOP: 2.8 - 4.6

ME1829 - V3 BM-3
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 4.0000 fts

Rover: V3 BM-3
 SR530 / 32630
 AT502 Tripod / -
 3.9450 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 41' 42.79724" N
 Longitude: 87° 37' 19.00006" W 87° 34' 34.54692" W
 Ellip. Hgt: 492.2666 fts 477.3995 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 20:11:45 - 08/24/2004 20:41:45
 Duration: 30' 00"

Quality: Sd. Lat: 0.0010 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0023 fts
 Posn. Qlty: 0.0014 fts Sd. Slope: 0.0008 fts

Baseline vector: dLat: 0° 01' 54.07019" dLon: 0° 02' 44.45314" dHgt: -14.8671 fts
 Slope: 17001.7593 fts

DOPs (min-max):	GDOP: 2.5 - 4.2 PDOP: 2.2 - 3.4	HDOP: 1.2 - 1.9	VDOP: 1.7 - 2.9
ME1825 - V3 BM-3	Reference: ME1825	Rover: V3 BM-3	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.6700 fts	3.9450 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 41' 42.79729" N	
Longitude:	87° 33' 28.73749" W	87° 34' 34.54693" W	
Ellip. Hgt:	475.3732 fts	477.3004 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 20:11:45 - 08/24/2004 20:41:45		
Duration:	30' 00"		
Quality:	Sd. Lat: 0.0011 fts Posn. Qlty: 0.0015 fts	Sd. Lon: 0.0010 fts Sd. Slope: 0.0012 fts	Sd. Hgt: 0.0024 fts
Baseline vector:	dLat: 0° 02' 07.67586" Slope: 13855.0335 fts	dLon: -0° 01' 05.80944"	dHgt: 1.9272 fts
DOPs (min-max):	GDOP: 2.5 - 4.2 PDOP: 2.2 - 3.4	HDOP: 1.2 - 1.9	VDOP: 1.7 - 2.9
ME2887 - V3 BM-3	Reference: ME2887	Rover: V3 BM-3	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1200 fts	3.9450 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 42.79802" N	
Longitude:	87° 33' 55.23160" W	87° 34' 34.54849" W	
Ellip. Hgt:	473.8551 fts	477.1076 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 20:11:45 - 08/24/2004 20:41:45		
Duration:	30' 00"		
Quality:	Sd. Lat: 0.0025 fts Posn. Qlty: 0.0034 fts	Sd. Lon: 0.0023 fts Sd. Slope: 0.0020 fts	Sd. Hgt: 0.0057 fts
Baseline vector:	dLat: -0° 00' 45.65651" Slope: 5500.3298 fts	dLon: -0° 00' 39.31690"	dHgt: 3.2525 fts
DOPs (min-max):	GDOP: 2.5 - 8.6 PDOP: 2.2 - 6.8	HDOP: 1.2 - 4.8	VDOP: 1.7 - 4.8
AJ2777 - V3 BM-3	Reference: AJ2777	Rover: V3 BM-3	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.2500 fts	3.9450 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 42.79718" N	
Longitude:	87° 36' 07.38432" W	87° 34' 34.54722" W	
Ellip. Hgt:	474.6593 fts	477.3086 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 20:11:45 - 08/24/2004 20:41:45		
Duration:	30' 00"		
Quality:	Sd. Lat: 0.0009 fts	Sd. Lon: 0.0008 fts	Sd. Hgt: 0.0019 fts
	Posn. Qlty: 0.0012 fts	Sd. Slope: 0.0007 fts	
Baseline vector:	dLat: 0° 00' 48.77743"	dLon: 0° 01' 32.83710"	dHgt: 2.6493 fts
	Slope: 8602.0346 fts		
DOPs (min-max):	GDOP: 2.5 - 5.1	HDOP: 1.2 - 1.9	VDOP: 1.7 - 3.7
	PDOP: 2.2 - 4.1		
ME1829 - BIG-5	Reference: ME1829	Rover: BIG-5	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0000 fts	3.9600 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 41' 11.77413" N	
Longitude:	87° 37' 19.00006" W	87° 34' 35.52246" W	
Ellip. Hgt:	492.2666 fts	479.0889 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 20:47:10 - 08/24/2004 21:02:05		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0018 fts	Sd. Lon: 0.0016 fts	Sd. Hgt: 0.0034 fts
	Posn. Qlty: 0.0024 fts	Sd. Slope: 0.0013 fts	
Baseline vector:	dLat: 0° 01' 23.04708"	dLon: 0° 02' 43.47760"	dHgt: -13.1777 fts
	Slope: 14986.0537 fts		
DOPs (min-max):	GDOP: 1.9 - 47.8	HDOP: 0.9 - 15.8	VDOP: 1.5 - 33.7
	PDOP: 1.7 - 37.2		
ME1825 - BIG-5	Reference: ME1825	Rover: BIG-5	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.6700 fts	3.9600 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 41' 11.77411" N	
Longitude:	87° 33' 28.73749" W	87° 34' 35.52284" W	
Ellip. Hgt:	475.3732 fts	479.1009 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 20:47:10 - 08/24/2004 21:02:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0020 fts Sd. Lon: 0.0017 fts Sd. Hgt: 0.0037 fts
 Posn. Qlty: 0.0027 fts Sd. Slope: 0.0022 fts

Baseline vector: dLat: 0° 01' 36.65268" dLon: -0° 01' 06.78535" dHgt: 3.7277 fts
 Slope: 11018.3826 fts

DOPs (min-max): GDOP: 1.9 - 47.8
 PDOP: 1.7 - 37.2 HDOP: 0.9 - 15.8 VDOP: 1.5 - 33.7

ME2887 - BIG-5

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.1200 fts

Rover: BIG-5

SR530 / 32630
 AT502 Tripod / -
 3.9600 fts

Coordinates:

Latitude:	41° 42' 28.45452" N	41° 41' 11.77379" N
Longitude:	87° 33' 55.23160" W	87° 34' 35.52320" W
Ellip. Hgt:	473.8551 fts	479.1463 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 20:47:10 - 08/24/2004 21:02:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0020 fts Sd. Lon: 0.0017 fts Sd. Hgt: 0.0038 fts
 Posn. Qlty: 0.0027 fts Sd. Slope: 0.0018 fts

Baseline vector: dLat: -0° 01' 16.68074" dLon: -0° 00' 40.29160" dHgt: 5.2912 fts
 Slope: 8342.0283 fts

DOPs (min-max): GDOP: 2.5 - 47.8
 PDOP: 2.1 - 37.2 HDOP: 1.2 - 15.8 VDOP: 1.8 - 33.7

AJ2777 - BIG-5

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.2500 fts

Rover: BIG-5

SR530 / 32630
 AT502 Tripod / -
 3.9600 fts

Coordinates:

Latitude:	41° 40' 54.01975" N	41° 41' 11.77404" N
Longitude:	87° 36' 07.38432" W	87° 34' 35.52285" W
Ellip. Hgt:	474.6593 fts	479.0546 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 20:47:10 - 08/24/2004 21:02:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0013 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0025 fts
 Posn. Qlty: 0.0017 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: 0° 00' 17.75430" dLon: 0° 01' 31.86147" dHgt: 4.3953 fts
 Slope: 7198.3398 fts

DOPs (min-max): GDOP: 1.9 - 47.8 HDOP: 0.9 - 15.8 VDOP: 1.5 - 33.7
 PDOP: 1.7 - 37.2

ME1829 - BIG-12
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 4.0000 fts

Rover: BIG-12
 SR530 / 32630
 AT502 Tripod / -
 3.9500 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 41' 11.13678" N
 Longitude: 87° 37' 19.00006" W 87° 34' 35.50117" W
 Ellip. Hgt: 492.2666 fts 479.2212 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:03:00 - 08/24/2004 21:17:55
 Duration: 14' 55"

Quality: Sd. Lat: 0.0015 fts Sd. Lon: 0.0012 fts Sd. Hgt: 0.0028 fts
 Posn. Qlty: 0.0019 fts Sd. Slope: 0.0012 fts

Baseline vector: dLat: 0° 01' 22.40973" dLon: 0° 02' 43.49890" dHgt: -13.0454 fts
 Slope: 14951.3161 fts

DOPs (min-max): GDOP: 2.1 - 4.8 HDOP: 1.0 - 2.4 VDOP: 1.6 - 3.3
 PDOP: 1.8 - 4.1

ME1825 - BIG-12
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825
 SR530 / 32623
 AT502 Tripod / -
 3.6700 fts

Rover: BIG-12
 SR530 / 32630
 AT502 Tripod / -
 3.9500 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 41' 11.13659" N
 Longitude: 87° 33' 28.73749" W 87° 34' 35.50142" W
 Ellip. Hgt: 475.3732 fts 479.2390 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:03:00 - 08/24/2004 21:17:55
 Duration: 14' 55"

Quality: Sd. Lat: 0.0018 fts Sd. Lon: 0.0015 fts Sd. Hgt: 0.0034 fts
 Posn. Qlty: 0.0023 fts Sd. Slope: 0.0018 fts

Baseline vector: dLat: 0° 01' 36.01516" dLon: -0° 01' 06.76393" dHgt: 3.8658 fts
 Slope: 10960.3762 fts

DOPs (min-max):	GDOP: 2.1 - 4.8 PDOP: 1.8 - 4.1	HDOP: 1.0 - 2.4	VDOP: 1.6 - 3.3
ME2887 - BIG-12	Reference: ME2887	Rover: BIG-12	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1200 fts	3.9500 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 11.13704" N	
Longitude:	87° 33' 55.23160" W	87° 34' 35.50168" W	
Ellip. Hgt:	473.8551 fts	479.1700 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:03:00 - 08/24/2004 21:17:55		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0023 fts Posn. Qlty: 0.0028 fts	Sd. Lon: 0.0015 fts Sd. Slope: 0.0021 fts	Sd. Hgt: 0.0043 fts
Baseline vector:	dLat: -0° 01' 17.31748" Slope: 8401.4393 fts	dLon: -0° 00' 40.27008"	dHgt: 5.3150 fts
DOPs (min-max):	GDOP: 2.1 - 6.0 PDOP: 1.9 - 4.8	HDOP: 1.0 - 2.6	VDOP: 1.6 - 4.1
AJ2777 - BIG-12	Reference: AJ2777	Rover: BIG-12	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.2500 fts	3.9500 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 11.13679" N	
Longitude:	87° 36' 07.38432" W	87° 34' 35.50156" W	
Ellip. Hgt:	474.6593 fts	479.1925 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:03:00 - 08/24/2004 21:17:55		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0011 fts Posn. Qlty: 0.0014 fts	Sd. Lon: 0.0009 fts Sd. Slope: 0.0009 fts	Sd. Hgt: 0.0020 fts
Baseline vector:	dLat: 0° 00' 17.11704" Slope: 7184.0845 fts	dLon: 0° 01' 31.88276"	dHgt: 4.5332 fts
DOPs (min-max):	GDOP: 2.1 - 4.8 PDOP: 1.8 - 4.1	HDOP: 1.0 - 2.4	VDOP: 1.6 - 3.3
ME1829 - BIG-3	Reference: ME1829	Rover: BIG-3	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.0000 fts	4.0450 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 41' 09.55576" N	
Longitude:	87° 37' 19.00006" W	87° 34' 35.49549" W	
Ellip. Hgt:	492.2666 fts	479.9866 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:20:00 - 08/24/2004 21:34:55		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0015 fts Posn. Qlty: 0.0020 fts	Sd. Lon: 0.0013 fts Sd. Slope: 0.0012 fts	Sd. Hgt: 0.0031 fts
Baseline vector:	dLat: 0° 01' 20.82872" Slope: 14863.0166 fts	dLon: 0° 02' 43.50457"	dHgt: -12.2800 fts
DOPs (min-max):	GDOP: 2.1 - 4.3 PDOP: 1.9 - 3.6	HDOP: 1.0 - 1.9	VDOP: 1.6 - 3.0
ME1825 - BIG-3	Reference: ME1825	Rover: BIG-3	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.6700 fts	4.0450 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 41' 09.55599" N	
Longitude:	87° 33' 28.73749" W	87° 34' 35.49536" W	
Ellip. Hgt:	475.3732 fts	479.8781 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:20:00 - 08/24/2004 21:34:55		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0018 fts Posn. Qlty: 0.0023 fts	Sd. Lon: 0.0014 fts Sd. Slope: 0.0019 fts	Sd. Hgt: 0.0035 fts
Baseline vector:	dLat: 0° 01' 34.43456" Slope: 10818.5523 fts	dLon: -0° 01' 06.75787"	dHgt: 4.5049 fts
DOPs (min-max):	GDOP: 2.1 - 3.8 PDOP: 1.9 - 3.2	HDOP: 1.0 - 1.8	VDOP: 1.6 - 2.7
ME2887 - BIG-3	Reference: ME2887	Rover: BIG-3	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1200 fts	4.0450 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 09.55528" N	
Longitude:	87° 33' 55.23160" W	87° 34' 35.49536" W	
Ellip. Hgt:	473.8551 fts	479.9709 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:20:00 - 08/24/2004 21:34:55
 Duration: 14' 55"

Quality: Sd. Lat: 0.0023 fts Sd. Lon: 0.0015 fts Sd. Hgt: 0.0046 fts
 Posn. Qlty: 0.0027 fts Sd. Slope: 0.0021 fts

Baseline vector: dLat: -0° 01' 18.89925" dLon: -0° 00' 40.26376" dHgt: 6.1158 fts
 Slope: 8550.6202 fts

DOPs (min-max): GDOP: 2.1 - 6.0
 PDOP: 1.9 - 4.8 HDOP: 1.0 - 2.6 VDOP: 1.6 - 4.1

AJ2777 - BIG-3

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.2500 fts

Rover: BIG-3

SR530 / 32630
 AT502 Tripod / -
 4.0450 fts

Coordinates:

Latitude:	41° 40' 54.01975" N	41° 41' 09.55575" N
Longitude:	87° 36' 07.38432" W	87° 34' 35.49561" W
Ellip. Hgt:	474.6593 fts	479.9559 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:20:00 - 08/24/2004 21:34:55
 Duration: 14' 55"

Quality: Sd. Lat: 0.0012 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0025 fts
 Posn. Qlty: 0.0016 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: 0° 00' 15.53601" dLon: 0° 01' 31.88871" dHgt: 5.2966 fts
 Slope: 7147.6392 fts

DOPs (min-max): GDOP: 2.1 - 3.8
 PDOP: 1.9 - 3.1 HDOP: 1.0 - 1.8 VDOP: 1.6 - 2.6

ME1829 - BIG-11

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829

SR530 / 32634
 AT502 Tripod / -
 4.0000 fts

Rover: BIG-11

SR530 / 32630
 AT502 Tripod / -
 4.0050 fts

Coordinates:

Latitude:	41° 39' 48.72705" N	41° 41' 08.66995" N
Longitude:	87° 37' 19.00006" W	87° 34' 35.46639" W
Ellip. Hgt:	492.2666 fts	480.2538 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:36:10 - 08/24/2004 21:51:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0014 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0032 fts
 Posn. Qlty: 0.0018 fts Sd. Slope: 0.0011 fts

Baseline vector: dLat: 0° 01' 19.94290" dLon: 0° 02' 43.53368" dHgt: -12.0128 fts
 Slope: 14815.7179 fts

DOPs (min-max): GDOP: 2.1 - 5.0 HDOP: 1.0 - 2.0 VDOP: 1.6 - 3.7
 PDOP: 1.8 - 4.2

ME1825 - BIG-11
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825
 SR530 / 32623
 AT502 Tripod / -
 3.6700 fts

Rover: BIG-11
 SR530 / 32630
 AT502 Tripod / -
 4.0050 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 41' 08.67026" N
 Longitude: 87° 33' 28.73749" W 87° 34' 35.46657" W
 Ellip. Hgt: 475.3732 fts 480.3032 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:36:10 - 08/24/2004 21:51:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0013 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0030 fts
 Posn. Qlty: 0.0017 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: 0° 01' 33.54884" dLon: -0° 01' 06.72907" dHgt: 4.9300 fts
 Slope: 10738.3921 fts

DOPs (min-max): GDOP: 2.1 - 5.0 HDOP: 1.0 - 2.0 VDOP: 1.6 - 3.7
 PDOP: 1.8 - 4.2

ME2887 - BIG-11
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887
 SR530 / 32707
 AT502 Tripod / -
 4.1200 fts

Rover: BIG-11
 SR530 / 32630
 AT502 Tripod / -
 4.0050 fts

Coordinates:

Latitude: 41° 42' 28.45452" N 41° 41' 08.66928" N
 Longitude: 87° 33' 55.23160" W 87° 34' 35.46632" W
 Ellip. Hgt: 473.8551 fts 480.2637 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:36:10 - 08/24/2004 21:51:05
 Duration: 14' 55"

Quality: Sd. Lat: 0.0020 fts Sd. Lon: 0.0016 fts Sd. Hgt: 0.0050 fts
 Posn. Qlty: 0.0026 fts Sd. Slope: 0.0018 fts

Baseline vector: dLat: -0° 01' 19.78525" dLon: -0° 00' 40.23472" dHgt: 6.4087 fts
 Slope: 8633.6681 fts

DOPs (min-max):	GDOP: 2.1 - 11.4 PDOP: 1.8 - 8.9	HDOP: 1.0 - 3.2	VDOP: 1.6 - 8.3
AJ2777 - BIG-11	Reference: AJ2777	Rover: BIG-11	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.2500 fts	4.0050 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 08.67002" N	
Longitude:	87° 36' 07.38432" W	87° 34' 35.46664" W	
Ellip. Hgt:	474.6593 fts	480.2781 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:36:10 - 08/24/2004 21:51:05		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0012 fts Posn. Qlty: 0.0015 fts	Sd. Lon: 0.0009 fts Sd. Slope: 0.0009 fts	Sd. Hgt: 0.0027 fts
Baseline vector:	dLat: 0° 00' 14.65027" Slope: 7130.6135 fts	dLon: 0° 01' 31.91768"	dHgt: 5.6189 fts
DOPs (min-max):	GDOP: 2.1 - 5.0 PDOP: 1.8 - 4.2	HDOP: 1.0 - 2.0	VDOP: 1.6 - 3.7
ME1829 - BIG-4	Reference: ME1829	Rover: BIG-4	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0000 fts	3.8900 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 41' 06.13532" N	
Longitude:	87° 37' 19.00006" W	87° 34' 35.45011" W	
Ellip. Hgt:	492.2666 fts	481.1857 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:53:20 - 08/24/2004 22:08:15		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0014 fts Posn. Qlty: 0.0017 fts	Sd. Lon: 0.0010 fts Sd. Slope: 0.0010 fts	Sd. Hgt: 0.0030 fts
Baseline vector:	dLat: 0° 01' 17.40827" Slope: 14678.2642 fts	dLon: 0° 02' 43.54995"	dHgt: -11.0809 fts
DOPs (min-max):	GDOP: 2.7 - 3.5 PDOP: 2.4 - 3.0	HDOP: 1.2 - 1.5	VDOP: 2.0 - 2.6
ME1825 - BIG-4	Reference: ME1825	Rover: BIG-4	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.6700 fts	3.8900 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 41' 06.13541" N	
Longitude:	87° 33' 28.73749" W	87° 34' 35.44987" W	
Ellip. Hgt:	475.3732 fts	481.1449 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:53:20 - 08/24/2004 22:08:15		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0012 fts	Sd. Lon: 0.0009 fts	Sd. Hgt: 0.0026 fts
	Posn. Qlty: 0.0015 fts	Sd. Slope: 0.0012 fts	
Baseline vector:	dLat: 0° 01' 31.01398"	dLon: -0° 01' 06.71238"	dHgt: 5.7717 fts
	Slope: 10512.2330 fts		
DOPs (min-max):	GDOP: 2.7 - 3.5	HDOP: 1.2 - 1.5	VDOP: 2.0 - 2.6
	PDOP: 2.4 - 3.0		
ME2887 - BIG-4	Reference: ME2887	Rover: BIG-4	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1200 fts	3.8900 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 06.13482" N	
Longitude:	87° 33' 55.23160" W	87° 34' 35.44965" W	
Ellip. Hgt:	473.8551 fts	481.2401 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 21:53:20 - 08/24/2004 22:08:15		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0019 fts	Sd. Lon: 0.0013 fts	Sd. Hgt: 0.0043 fts
	Posn. Qlty: 0.0023 fts	Sd. Slope: 0.0018 fts	
Baseline vector:	dLat: -0° 01' 22.31971"	dLon: -0° 00' 40.21805"	dHgt: 7.3851 fts
	Slope: 8873.6798 fts		
DOPs (min-max):	GDOP: 2.7 - 3.5	HDOP: 1.3 - 1.6	VDOP: 2.0 - 2.6
	PDOP: 2.4 - 3.0		
AJ2777 - BIG-4	Reference: AJ2777	Rover: BIG-4	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.2500 fts	3.8900 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 06.13523" N	
Longitude:	87° 36' 07.38432" W	87° 34' 35.45017" W	
Ellip. Hgt:	474.6593 fts	481.1500 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 21:53:20 - 08/24/2004 22:08:15
 Duration: 14' 55"

Quality: Sd. Lat: 0.0010 fts Sd. Lon: 0.0008 fts Sd. Hgt: 0.0022 fts
 Posn. Qlty: 0.0013 fts Sd. Slope: 0.0007 fts

Baseline vector: dLat: 0° 00' 12.11548" dLon: 0° 01' 31.93415" dHgt: 6.4907 fts
 Slope: 7082.9711 fts

DOPs (min-max): GDOP: 2.7 - 3.5
 PDOP: 2.4 - 3.0 HDOP: 1.2 - 1.5 VDOP: 2.0 - 2.6

ME1829 - BIG-9

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829

SR530 / 32634
 AT502 Tripod / -
 4.0000 fts

Rover: BIG-9

SR530 / 32630
 AT502 Tripod / -
 3.8800 fts

Coordinates:

Latitude:	41° 39' 48.72705" N	41° 41' 04.57431" N
Longitude:	87° 37' 19.00006" W	87° 34' 34.92546" W
Ellip. Hgt:	492.2666 fts	480.4297 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 22:10:25 - 08/24/2004 22:26:25
 Duration: 15' 60"

Quality: Sd. Lat: 0.0016 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0029 fts
 Posn. Qlty: 0.0020 fts Sd. Slope: 0.0011 fts

Baseline vector: dLat: 0° 01' 15.84726" dLon: 0° 02' 44.07460" dHgt: -11.8369 fts
 Slope: 14628.4409 fts

DOPs (min-max): GDOP: 2.4 - 20.0
 PDOP: 2.1 - 15.6 HDOP: 1.1 - 6.3 VDOP: 1.8 - 14.3

ME1825 - BIG-9

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825

SR530 / 32623
 AT502 Tripod / -
 3.6700 fts

Rover: BIG-9

SR530 / 32630
 AT502 Tripod / -
 3.8800 fts

Coordinates:

Latitude:	41° 39' 35.12143" N	41° 41' 04.57426" N
Longitude:	87° 33' 28.73749" W	87° 34' 34.92515" W
Ellip. Hgt:	475.3732 fts	480.4394 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 22:10:25 - 08/24/2004 22:26:25
 Duration: 15' 60"

Quality:	Sd. Lat: 0.0015 fts Posn. Qlty: 0.0018 fts	Sd. Lon: 0.0010 fts Sd. Slope: 0.0015 fts	Sd. Hgt: 0.0027 fts
Baseline vector:	dLat: 0° 01' 29.45283" Slope: 10354.6550 fts	dLon: -0° 01' 06.18766"	dHgt: 5.0662 fts
DOPs (min-max):	GDOP: 2.4 - 20.0 PDOP: 2.1 - 15.6	HDOP: 1.1 - 6.3	VDOP: 1.8 - 14.3
ME2887 - BIG-9	Reference: ME2887	Rover: BIG-9	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1200 fts	3.8800 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 04.57283" N	
Longitude:	87° 33' 55.23160" W	87° 34' 34.92164" W	
Ellip. Hgt:	473.8551 fts	481.2187 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 22:10:25 - 08/24/2004 22:26:25		
Duration:	15' 60"		
Quality:	Sd. Lat: 0.0084 fts Posn. Qlty: 0.0116 fts	Sd. Lon: 0.0081 fts Sd. Slope: 0.0055 fts	Sd. Hgt: 0.0250 fts
Baseline vector:	dLat: -0° 01' 23.88170" Slope: 9008.8478 fts	dLon: -0° 00' 39.69004"	dHgt: 7.3636 fts
DOPs (min-max):	GDOP: 2.5 - 20.0 PDOP: 2.2 - 15.6	HDOP: 1.2 - 6.5	VDOP: 1.8 - 14.3
AJ2777 - BIG-9	Reference: AJ2777	Rover: BIG-9	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.2500 fts	3.8800 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 04.57443" N	
Longitude:	87° 36' 07.38432" W	87° 34' 34.92549" W	
Ellip. Hgt:	474.6593 fts	480.4120 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 22:10:25 - 08/24/2004 22:26:25		
Duration:	15' 60"		
Quality:	Sd. Lat: 0.0013 fts Posn. Qlty: 0.0016 fts	Sd. Lon: 0.0009 fts Sd. Slope: 0.0008 fts	Sd. Hgt: 0.0023 fts
Baseline vector:	dLat: 0° 00' 10.55468" Slope: 7096.7116 fts	dLon: 0° 01' 32.45883"	dHgt: 5.7527 fts

DOPs (min-max):	GDOP: 2.4 - 20.0 PDOP: 2.1 - 15.6	HDOP: 1.1 - 6.3	VDOP: 1.8 - 14.3
ME1829 - DEAD-68	Reference: ME1829	Rover: DEAD-68	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0000 fts	3.9650 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 22.91920" N	
Longitude:	87° 37' 19.00006" W	87° 34' 30.98955" W	
Ellip. Hgt:	492.2666 fts	477.6027 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 22:31:30 - 08/24/2004 22:46:25		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0019 fts Posn. Qlty: 0.0022 fts	Sd. Lon: 0.0010 fts Sd. Slope: 0.0011 fts	Sd. Hgt: 0.0027 fts
Baseline vector:	dLat: 0° 00' 34.19216" Slope: 13213.0203 fts	dLon: 0° 02' 48.01052"	dHgt: -14.6638 fts
DOPs (min-max):	GDOP: 2.1 - 4.0 PDOP: 1.9 - 3.5	HDOP: 1.0 - 2.2	VDOP: 1.6 - 2.6
ME1825 - DEAD-68	Reference: ME1825	Rover: DEAD-68	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.6700 fts	3.9650 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 22.91913" N	
Longitude:	87° 33' 28.73749" W	87° 34' 30.98934" W	
Ellip. Hgt:	475.3732 fts	477.6001 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 22:31:30 - 08/24/2004 22:46:25		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0017 fts Posn. Qlty: 0.0019 fts	Sd. Lon: 0.0009 fts Sd. Slope: 0.0013 fts	Sd. Hgt: 0.0024 fts
Baseline vector:	dLat: 0° 00' 47.79770" Slope: 6762.6219 fts	dLon: -0° 01' 02.25185"	dHgt: 2.2269 fts
DOPs (min-max):	GDOP: 2.1 - 2.5 PDOP: 1.9 - 2.2	HDOP: 1.0 - 1.2	VDOP: 1.6 - 1.8
ME2887 - DEAD-68	Reference: ME2887	Rover: DEAD-68	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.1200 fts	3.9650 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 22.91906" N	
Longitude:	87° 33' 55.23160" W	87° 34' 30.98951" W	
Ellip. Hgt:	473.8551 fts	477.6265 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 22:31:30 - 08/24/2004 22:46:25		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0032 fts	Sd. Lon: 0.0018 fts	Sd. Hgt: 0.0046 fts
	Posn. Qlty: 0.0037 fts	Sd. Slope: 0.0032 fts	
Baseline vector:	dLat: -0° 02' 05.53546"	dLon: -0° 00' 35.75791"	dHgt: 3.7714 fts
	Slope: 12993.4272 fts		
DOPs (min-max):	GDOP: 2.1 - 3.2	HDOP: 1.0 - 1.5	VDOP: 1.6 - 2.3
	PDOP: 1.9 - 2.8		
AJ2777 - DEAD-68	Reference: AJ2777	Rover: DEAD-68	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.2500 fts	3.9650 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 22.91927" N	
Longitude:	87° 36' 07.38432" W	87° 34' 30.98961" W	
Ellip. Hgt:	474.6593 fts	477.5935 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 22:31:30 - 08/24/2004 22:46:25		
Duration:	14' 55"		
Quality:	Sd. Lat: 0.0015 fts	Sd. Lon: 0.0008 fts	Sd. Hgt: 0.0021 fts
	Posn. Qlty: 0.0016 fts	Sd. Slope: 0.0009 fts	
Baseline vector:	dLat: -0° 00' 31.10048"	dLon: 0° 01' 36.39471"	dHgt: 2.9342 fts
	Slope: 7963.7691 fts		
DOPs (min-max):	GDOP: 2.1 - 2.5	HDOP: 1.0 - 1.2	VDOP: 1.6 - 1.8
	PDOP: 1.9 - 2.2		
ME1829 - DEAD-62	Reference: ME1829	Rover: DEAD-62	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0000 fts	4.0300 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 01.18985" N	
Longitude:	87° 37' 19.00006" W	87° 34' 31.11351" W	
Ellip. Hgt:	492.2666 fts	479.7689 fts	

Solution type: Float
 Frequency: L1 and L2
 Ambiguity: No
 Time span: 08/24/2004 22:50:15 - 08/24/2004 23:05:15
 Duration: 14' 60"

Quality: Sd. Lat: 0.0058 fts Sd. Lon: 0.0114 fts Sd. Hgt: 0.0097 fts
 Posn. Qlty: 0.0128 fts Sd. Slope: 0.0115 fts

Baseline vector: dLat: 0° 00' 12.46281" dLon: 0° 02' 47.88655" dHgt: -12.4976 fts
 Slope: 12805.1553 fts

DOPs (min-max): GDOP: 2.4 - 12.4
 PDOP: 2.1 - 10.2 HDOP: 1.1 - 6.7 VDOP: 1.8 - 7.6

ME1825 - DEAD-62

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825

SR530 / 32623
 AT502 Tripod / -
 3.6700 fts

Rover: DEAD-62

SR530 / 32630
 AT502 Tripod / -
 4.0300 fts

Coordinates:

Latitude:	41° 39' 35.12143" N	41° 40' 01.18495" N
Longitude:	87° 33' 28.73749" W	87° 34' 31.10130" W
Ellip. Hgt:	475.3732 fts	480.2923 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 22:50:15 - 08/24/2004 23:05:15
 Duration: 14' 60"

Quality: Sd. Lat: 0.0028 fts Sd. Lon: 0.0014 fts Sd. Hgt: 0.0037 fts
 Posn. Qlty: 0.0031 fts Sd. Slope: 0.0017 fts

Baseline vector: dLat: 0° 00' 26.06353" dLon: -0° 01' 02.36381" dHgt: 4.9191 fts
 Slope: 5419.1882 fts

DOPs (min-max): GDOP: 2.4 - 11.2
 PDOP: 2.1 - 9.2 HDOP: 1.1 - 6.1 VDOP: 1.8 - 6.9

ME2887 - DEAD-62

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.1200 fts

Rover: DEAD-62

SR530 / 32630
 AT502 Tripod / -
 4.0300 fts

Coordinates:

Latitude:	41° 42' 28.45452" N	41° 40' 01.18968" N
Longitude:	87° 33' 55.23160" W	87° 34' 31.09755" W
Ellip. Hgt:	473.8551 fts	479.1833 fts

Solution type: Float
 Frequency: L1 and L2
 Ambiguity: No
 Time span: 08/24/2004 22:50:15 - 08/24/2004 23:05:15
 Duration: 14' 60"

Quality:	Sd. Lat: 0.1823 fts Posn. Qlty: 0.2762 fts	Sd. Lon: 0.2075 fts Sd. Slope: 0.1848 fts	Sd. Hgt: 0.3223 fts
Baseline vector:	dLat: -0° 02' 27.26484" Slope: 15152.8997 fts	dLon: -0° 00' 35.86595"	dHgt: 5.3282 fts
DOPs (min-max):	GDOP: 2.4 - 11.2 PDOP: 2.1 - 9.2	HDOP: 1.1 - 6.1	VDOP: 1.8 - 6.9
AJ2777 - DEAD-62	Reference: AJ2777	Rover: DEAD-62	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.2500 fts	4.0300 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 01.18505" N	
Longitude:	87° 36' 07.38432" W	87° 34' 31.10154" W	
Ellip. Hgt:	474.6593 fts	480.2571 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 22:50:15 - 08/24/2004 23:05:15		
Duration:	14' 60"		
Quality:	Sd. Lat: 0.0028 fts Posn. Qlty: 0.0031 fts	Sd. Lon: 0.0014 fts Sd. Slope: 0.0019 fts	Sd. Hgt: 0.0037 fts
Baseline vector:	dLat: -0° 00' 52.83470" Slope: 9055.0427 fts	dLon: 0° 01' 36.28278"	dHgt: 5.5978 fts
DOPs (min-max):	GDOP: 2.4 - 11.2 PDOP: 2.1 - 9.2	HDOP: 1.1 - 6.1	VDOP: 1.8 - 6.9
ME1829 - DEAD-1	Reference: ME1829	Rover: DEAD-1	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0000 fts	3.9600 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 39' 49.64414" N	
Longitude:	87° 37' 19.00006" W	87° 34' 31.41346" W	
Ellip. Hgt:	492.2666 fts	478.3796 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 23:10:10 - 08/24/2004 23:43:50		
Duration:	33' 40"		
Quality:	Sd. Lat: 0.0011 fts Posn. Qlty: 0.0014 fts	Sd. Lon: 0.0008 fts Sd. Slope: 0.0008 fts	Sd. Hgt: 0.0022 fts
Baseline vector:	dLat: 0° 00' 00.91710" Slope: 12720.7527 fts	dLon: 0° 02' 47.58660"	dHgt: -13.8869 fts

DOPs (min-max):	GDOP: 2.8 - 3.4 PDOP: 2.5 - 2.9	HDOP: 1.1 - 1.3	VDOP: 2.2 - 2.6
ME1825 - DEAD-1	Reference: ME1825	Rover: DEAD-1	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.6700 fts	3.9600 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 39' 49.64443" N	
Longitude:	87° 33' 28.73749" W	87° 34' 31.41318" W	
Ellip. Hgt:	475.3732 fts	478.3899 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 23:10:10 - 08/24/2004 23:43:50		
Duration:	33' 40"		
Quality:	Sd. Lat: 0.0010 fts Posn. Qlty: 0.0012 fts	Sd. Lon: 0.0008 fts Sd. Slope: 0.0007 fts	Sd. Hgt: 0.0020 fts
Baseline vector:	dLat: 0° 00' 14.52300" Slope: 4979.3865 fts	dLon: -0° 01' 02.67569"	dHgt: 3.0167 fts
DOPs (min-max):	GDOP: 2.8 - 4.0 PDOP: 2.5 - 3.4	HDOP: 1.1 - 1.6	VDOP: 2.2 - 3.0
ME2887 - DEAD-1	Reference: ME2887	Rover: DEAD-1	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1200 fts	3.9600 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 39' 49.64409" N	
Longitude:	87° 33' 55.23160" W	87° 34' 31.41349" W	
Ellip. Hgt:	473.8551 fts	478.3154 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 23:10:10 - 08/24/2004 23:43:50		
Duration:	33' 40"		
Quality:	Sd. Lat: 0.0022 fts Posn. Qlty: 0.0028 fts	Sd. Lon: 0.0018 fts Sd. Slope: 0.0022 fts	Sd. Hgt: 0.0043 fts
Baseline vector:	dLat: -0° 02' 38.81044" Slope: 16307.9493 fts	dLon: -0° 00' 36.18189"	dHgt: 4.4604 fts
DOPs (min-max):	GDOP: 2.8 - 5.0 PDOP: 2.5 - 4.2	HDOP: 1.1 - 2.6	VDOP: 2.2 - 3.3
AJ2777 - DEAD-1	Reference: AJ2777	Rover: DEAD-1	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.2500 fts	3.9600 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 39' 49.64432" N	
Longitude:	87° 36' 07.38432" W	87° 34' 31.41341" W	
Ellip. Hgt:	474.6593 fts	478.3746 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 23:10:10 - 08/24/2004 23:43:50		
Duration:	33' 40"		
Quality:	Sd. Lat: 0.0009 fts Posn. Qlty: 0.0011 fts	Sd. Lon: 0.0007 fts Sd. Slope: 0.0007 fts	Sd. Hgt: 0.0019 fts
Baseline vector:	dLat: -0° 01' 04.37543" Slope: 9772.9556 fts	dLon: 0° 01' 35.97091"	dHgt: 3.7153 fts
DOPs (min-max):	GDOP: 2.8 - 3.4 PDOP: 2.5 - 2.9	HDOP: 1.1 - 1.3	VDOP: 2.2 - 2.6
ME1829 - V3 BM-9	Reference: ME1829	Rover: V3 BM-9	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0000 fts	3.7139 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 44.80732" N	
Longitude:	87° 37' 19.00006" W	87° 33' 34.63893" W	
Ellip. Hgt:	492.2666 fts	476.4746 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 01:08:40 - 08/25/2004 01:39:00		
Duration:	30' 20"		
Quality:	Sd. Lat: 0.0025 fts Posn. Qlty: 0.0030 fts	Sd. Lon: 0.0017 fts Sd. Slope: 0.0017 fts	Sd. Hgt: 0.0039 fts
Baseline vector:	dLat: 0° 00' 56.08027" Slope: 17949.0599 fts	dLon: 0° 03' 44.36113"	dHgt: -15.7920 fts
DOPs (min-max):	GDOP: 2.2 - 5.1 PDOP: 1.9 - 4.1	HDOP: 1.2 - 2.1	VDOP: 1.5 - 3.5
ME1825 - V3 BM-9	Reference: ME1825	Rover: V3 BM-9	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.6700 fts	3.7139 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 44.80697" N	
Longitude:	87° 33' 28.73749" W	87° 33' 34.63913" W	
Ellip. Hgt:	475.3732 fts	476.4364 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 01:08:40 - 08/25/2004 01:39:00
 Duration: 30' 20"

Quality: Sd. Lat: 0.0024 fts Sd. Lon: 0.0016 fts Sd. Hgt: 0.0037 fts
 Posn. Qlty: 0.0029 fts Sd. Slope: 0.0025 fts

Baseline vector: dLat: 0° 01' 09.68555" dLon: -0° 00' 05.90164" dHgt: 1.0633 fts
 Slope: 7067.9366 fts

DOPs (min-max): GDOP: 2.1 - 5.1
 PDOP: 1.9 - 4.1 HDOP: 1.2 - 2.2 VDOP: 1.4 - 3.5

ME2887 - V3 BM-9

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.1200 fts

Rover: V3 BM-9

SR530 / 32630
 AT502 Tripod / -
 3.7139 fts

Coordinates:

Latitude: 41° 42' 28.45452" N 41° 40' 44.80563" N
 Longitude: 87° 33' 55.23160" W 87° 33' 34.63928" W
 Ellip. Hgt: 473.8551 fts 476.2414 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 01:08:40 - 08/25/2004 01:39:00
 Duration: 30' 20"

Quality: Sd. Lat: 0.0056 fts Sd. Lon: 0.0044 fts Sd. Hgt: 0.0115 fts
 Posn. Qlty: 0.0072 fts Sd. Slope: 0.0056 fts

Baseline vector: dLat: -0° 01' 43.64889" dLon: 0° 00' 20.59232" dHgt: 2.3863 fts
 Slope: 10607.3039 fts

DOPs (min-max): GDOP: 2.2 - 60.1
 PDOP: 1.9 - 45.0 HDOP: 1.2 - 17.0 VDOP: 1.4 - 41.7

AJ2777 - V3 BM-9

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.2500 fts

Rover: V3 BM-9

SR530 / 32630
 AT502 Tripod / -
 3.7139 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 40' 44.80727" N
 Longitude: 87° 36' 07.38432" W 87° 33' 34.63950" W
 Ellip. Hgt: 474.6593 fts 476.5005 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 01:08:40 - 08/25/2004 01:39:00
 Duration: 30' 20"

Quality: Sd. Lat: 0.0021 fts Sd. Lon: 0.0014 fts Sd. Hgt: 0.0033 fts
 Posn. Qlty: 0.0026 fts Sd. Slope: 0.0014 fts

Baseline vector: dLat: -0° 00' 09.21248" dLon: 0° 02' 32.74482" dHgt: 1.8412 fts
 Slope: 11628.3075 fts

DOPs (min-max): GDOP: 2.1 - 5.1 HDOP: 1.2 - 2.1 VDOP: 1.4 - 3.5
 PDOP: 1.9 - 4.1

ME1829 - V3 CAL
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 4.0000 fts

Rover: V3 CAL
 SR530 / 32630
 AT502 Tripod / -
 3.7950 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 40' 49.70631" N
 Longitude: 87° 37' 19.00006" W 87° 33' 36.33455" W
 Ellip. Hgt: 492.2666 fts 476.2753 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 01:43:45 - 08/25/2004 02:14:10
 Duration: 30' 25"

Quality: Sd. Lat: 0.0011 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0019 fts
 Posn. Qlty: 0.0014 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: 0° 01' 00.97926" dLon: 0° 03' 42.66551" dHgt: -15.9913 fts
 Slope: 17990.9019 fts

DOPs (min-max): GDOP: 2.3 - 2.7 HDOP: 1.2 - 1.4 VDOP: 1.6 - 1.8
 PDOP: 2.0 - 2.3

ME1825 - V3 CAL
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825
 SR530 / 32623
 AT502 Tripod / -
 3.6700 fts

Rover: V3 CAL
 SR530 / 32630
 AT502 Tripod / -
 3.7950 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 40' 49.70608" N
 Longitude: 87° 33' 28.73749" W 87° 33' 36.33407" W
 Ellip. Hgt: 475.3732 fts 476.2967 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/25/2004 01:43:45 - 08/25/2004 02:14:10
 Duration: 30' 25"

Quality: Sd. Lat: 0.0010 fts Sd. Lon: 0.0009 fts Sd. Hgt: 0.0017 fts
 Posn. Qlty: 0.0013 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: 0° 01' 14.58466" dLon: -0° 00' 07.59658" dHgt: 0.9235 fts
 Slope: 7571.6124 fts

DOPs (min-max):	GDOP: 2.3 - 2.5 PDOP: 2.0 - 2.1	HDOP: 1.2 - 1.2	VDOP: 1.6 - 1.8
ME2887 - V3 CAL	Reference: ME2887	Rover: V3 CAL	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.1200 fts	3.7950 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 49.70621" N	
Longitude:	87° 33' 55.23160" W	87° 33' 36.33443" W	
Ellip. Hgt:	473.8551 fts	476.1923 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 01:43:45 - 08/25/2004 02:14:10		
Duration:	30' 25"		
Quality:	Sd. Lat: 0.0015 fts Posn. Qlty: 0.0020 fts	Sd. Lon: 0.0013 fts Sd. Slope: 0.0015 fts	Sd. Hgt: 0.0026 fts
Baseline vector:	dLat: -0° 01' 38.74832" Slope: 10097.8668 fts	dLon: 0° 00' 18.89716"	dHgt: 2.3373 fts
DOPs (min-max):	GDOP: 2.3 - 8.7 PDOP: 2.0 - 6.9	HDOP: 1.2 - 3.9	VDOP: 1.6 - 5.7
AJ2777 - V3 CAL	Reference: AJ2777	Rover: V3 CAL	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.2500 fts	3.7950 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 49.70598" N	
Longitude:	87° 36' 07.38432" W	87° 33' 36.33450" W	
Ellip. Hgt:	474.6593 fts	476.2415 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/25/2004 01:43:45 - 08/25/2004 02:14:10		
Duration:	30' 25"		
Quality:	Sd. Lat: 0.0010 fts Posn. Qlty: 0.0014 fts	Sd. Lon: 0.0009 fts Sd. Slope: 0.0009 fts	Sd. Hgt: 0.0019 fts
Baseline vector:	dLat: -0° 00' 04.31377" Slope: 11470.4269 fts	dLon: 0° 02' 31.04982"	dHgt: 1.5822 fts
DOPs (min-max):	GDOP: 2.3 - 2.5 PDOP: 2.0 - 2.1	HDOP: 1.2 - 1.2	VDOP: 1.6 - 1.8



Processing Summary

98216HMP_20040823

Project Information

Project name: 98216HMP_20040823
 Date created: 03/30/2006 13:23:24
 Time zone: -5h 00'
 Coordinate system name: IL EAST GEOID99
 Application software: Leica SKI-Pro 3.0
 Start date and time: 08/23/2004 20:46:05
 End date and time: 08/24/2004 01:50:50
 Manually occupied points: 32
 Processing kernel: PSI-Pro 1.0
 Processed: 08/14/2005 17:14:55

Processing Parameters

Parameters	Selected
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

ME1829 - LC-3	Reference: ME1829	Rover: LC-3
Receiver type / S/N:	SR530 / 32634	SR530 / 32630
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -
Antenna height:	3.8648 fts	4.0350 fts
Coordinates:		
Latitude:	41° 39' 48.72705" N	41° 39' 33.43923" N
Longitude:	87° 37' 19.00006" W	87° 36' 07.14815" W
Ellip. Hgt:	492.2666 fts	475.7592 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 20:46:05 - 08/23/2004 21:16:05
 Duration: 29' 60"

Quality: Sd. Lat: 0.0011 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0021 fts
 Posn. Qlty: 0.0014 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: -0° 00' 15.28782" dLon: 0° 01' 11.85192" dHgt: -16.5074 fts
 Slope: 5669.3070 fts

DOPs (min-max): GDOP: 1.9 - 2.5
 PDOP: 1.7 - 2.2 HDOP: 0.9 - 1.2 VDOP: 1.5 - 1.8

ME1825 - LC-3

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825

SR530 / 32623
 AT502 Tripod / -
 3.5150 fts

Rover: LC-3

SR530 / 32630
 AT502 Tripod / -
 4.0350 fts

Coordinates:

Latitude:	41° 39' 35.12143" N	41° 39' 33.43882" N
Longitude:	87° 33' 28.73749" W	87° 36' 07.14828" W
Ellip. Hgt:	475.3732 fts	475.7547 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 20:46:05 - 08/23/2004 21:16:05
 Duration: 29' 60"

Quality: Sd. Lat: 0.0011 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0021 fts
 Posn. Qlty: 0.0015 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: -0° 00' 01.68260" dLon: -0° 02' 38.41079" dHgt: 0.3815 fts
 Slope: 12025.9015 fts

DOPs (min-max): GDOP: 1.9 - 3.2
 PDOP: 1.7 - 2.6 HDOP: 0.9 - 1.5 VDOP: 1.5 - 2.2

ME2887 - LC-3

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.0900 fts

Rover: LC-3

SR530 / 32630
 AT502 Tripod / -
 4.0350 fts

Coordinates:

Latitude:	41° 42' 28.45452" N	41° 39' 33.43883" N
Longitude:	87° 33' 55.23160" W	87° 36' 07.14861" W
Ellip. Hgt:	473.8551 fts	475.8099 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 20:46:05 - 08/23/2004 21:16:05
 Duration: 29' 60"

Quality: Sd. Lat: 0.0015 fts Sd. Lon: 0.0013 fts Sd. Hgt: 0.0029 fts
 Posn. Qlty: 0.0020 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: -0° 02' 55.01570" dLon: -0° 02' 11.91701" dHgt: 1.9548 fts
 Slope: 20347.9084 fts

DOPs (min-max): GDOP: 2.1 - 6.0
 PDOP: 1.9 - 4.8 HDOP: 1.0 - 2.5 VDOP: 1.6 - 4.1

AJ2777 - LC-3
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777
 SR530 / 32637
 AT502 Tripod / -
 4.5450 fts

Rover: LC-3
 SR530 / 32630
 AT502 Tripod / -
 4.0350 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 39' 33.43872" N
 Longitude: 87° 36' 07.38432" W 87° 36' 07.14825" W
 Ellip. Hgt: 474.6593 fts 475.7698 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 20:46:05 - 08/23/2004 21:16:05
 Duration: 29' 60"

Quality: Sd. Lat: 0.0009 fts Sd. Lon: 0.0008 fts Sd. Hgt: 0.0017 fts
 Posn. Qlty: 0.0012 fts Sd. Slope: 0.0009 fts

Baseline vector: dLat: -0° 01' 20.58102" dLon: 0° 00' 00.23607" dHgt: 1.1105 fts
 Slope: 8156.6156 fts

DOPs (min-max): GDOP: 1.9 - 2.5
 PDOP: 1.7 - 2.2 HDOP: 0.9 - 1.2 VDOP: 1.5 - 1.8

ME1829 - LC-3
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 3.8648 fts

Rover: LC-3
 SR530 / 32630
 AT502 Tripod / -
 4.0200 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 39' 34.39803" N
 Longitude: 87° 37' 19.00006" W 87° 34' 42.74821" W
 Ellip. Hgt: 492.2666 fts 476.6432 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 21:23:20 - 08/23/2004 21:53:20
 Duration: 29' 60"

Quality: Sd. Lat: 0.0014 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0030 fts
 Posn. Qlty: 0.0018 fts Sd. Slope: 0.0012 fts

Baseline vector: dLat: -0° 00' 14.32901" dLon: 0° 02' 36.25186" dHgt: -15.6234 fts
 Slope: 11948.8147 fts

DOPs (min-max):	GDOP: 2.1 - 3.1 PDOP: 1.8 - 2.7	HDOP: 1.0 - 1.3	VDOP: 1.6 - 2.4
ME1825 - LC-3	Reference: ME1825	Rover: LC-3	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5150 fts	4.0200 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 39' 34.39790" N	
Longitude:	87° 33' 28.73749" W	87° 34' 42.74802" W	
Ellip. Hgt:	475.3732 fts	476.6888 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 21:23:20 - 08/23/2004 21:53:20		
Duration:	29' 60"		
Quality:	Sd. Lat: 0.0012 fts Posn. Qlty: 0.0016 fts	Sd. Lon: 0.0010 fts Sd. Slope: 0.0010 fts	Sd. Hgt: 0.0026 fts
Baseline vector:	dLat: -0° 00' 00.72353" Slope: 5618.4802 fts	dLon: -0° 01' 14.01053"	dHgt: 1.3156 fts
DOPs (min-max):	GDOP: 2.1 - 3.1 PDOP: 1.8 - 2.7	HDOP: 1.0 - 1.3	VDOP: 1.6 - 2.4
ME2887 - LC-3	Reference: ME2887	Rover: LC-3	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0900 fts	4.0200 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 39' 34.39735" N	
Longitude:	87° 33' 55.23160" W	87° 34' 42.74757" W	
Ellip. Hgt:	473.8551 fts	476.6793 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 21:23:20 - 08/23/2004 21:53:20		
Duration:	29' 60"		
Quality:	Sd. Lat: 0.0017 fts Posn. Qlty: 0.0022 fts	Sd. Lon: 0.0013 fts Sd. Slope: 0.0016 fts	Sd. Hgt: 0.0036 fts
Baseline vector:	dLat: -0° 02' 54.05717" Slope: 17983.6434 fts	dLon: -0° 00' 47.51597"	dHgt: 2.8242 fts
DOPs (min-max):	GDOP: 2.1 - 5.8 PDOP: 1.8 - 4.7	HDOP: 1.0 - 2.5	VDOP: 1.6 - 3.9
AJ2777 - LC-3	Reference: AJ2777	Rover: LC-3	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	4.5450 fts	4.0200 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 39' 34.39783" N	
Longitude:	87° 36' 07.38432" W	87° 34' 42.74806" W	
Ellip. Hgt:	474.6593 fts	476.6656 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 21:23:20 - 08/23/2004 21:53:20		
Duration:	29' 60"		
Quality:	Sd. Lat: 0.0013 fts	Sd. Lon: 0.0011 fts	Sd. Hgt: 0.0028 fts
	Posn. Qlty: 0.0017 fts	Sd. Slope: 0.0013 fts	
Baseline vector:	dLat: -0° 01' 19.62192"	dLon: 0° 01' 24.63626"	dHgt: 2.0064 fts
	Slope: 10306.1638 fts		
DOPs (min-max):	GDOP: 2.1 - 3.1	HDOP: 1.0 - 1.3	VDOP: 1.6 - 2.4
	PDOP: 1.8 - 2.7		
ME1829 - LC-1	Reference: ME1829	Rover: LC-1	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8648 fts	4.0500 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 39' 33.45063" N	
Longitude:	87° 37' 19.00006" W	87° 33' 23.90664" W	
Ellip. Hgt:	492.2666 fts	475.0777 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 22:00:20 - 08/23/2004 22:30:20		
Duration:	30' 00"		
Quality:	Sd. Lat: 0.0018 fts	Sd. Lon: 0.0013 fts	Sd. Hgt: 0.0036 fts
	Posn. Qlty: 0.0022 fts	Sd. Slope: 0.0013 fts	
Baseline vector:	dLat: -0° 00' 15.27642"	dLon: 0° 03' 55.09342"	dHgt: -17.1889 fts
	Slope: 17911.9070 fts		
DOPs (min-max):	GDOP: 2.4 - 4.6	HDOP: 1.2 - 2.0	VDOP: 1.8 - 3.2
	PDOP: 2.1 - 3.7		
ME1825 - LC-1	Reference: ME1825	Rover: LC-1	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5150 fts	4.0500 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 39' 33.45068" N	
Longitude:	87° 33' 28.73749" W	87° 33' 23.90630" W	
Ellip. Hgt:	475.3732 fts	475.0917 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 22:00:20 - 08/23/2004 22:30:20
 Duration: 30' 00"

Quality: Sd. Lat: 0.0010 fts Sd. Lon: 0.0007 fts Sd. Hgt: 0.0020 fts
 Posn. Qlty: 0.0012 fts Sd. Slope: 0.0008 fts

Baseline vector: dLat: -0° 00' 01.67074" dLon: 0° 00' 04.83119" dHgt: -0.2815 fts
 Slope: 403.8435 fts

DOPs (min-max): GDOP: 2.4 - 4.6
 PDOP: 2.1 - 3.7 HDOP: 1.1 - 2.0 VDOP: 1.8 - 3.2

ME2887 - LC-1

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.0900 fts

Rover: LC-1

SR530 / 32630
 AT502 Tripod / -
 4.0500 fts

Coordinates:

Latitude: 41° 42' 28.45452" N 41° 39' 33.45084" N
 Longitude: 87° 33' 55.23160" W 87° 33' 23.90569" W
 Ellip. Hgt: 473.8551 fts 475.1751 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 22:00:20 - 08/23/2004 22:30:20
 Duration: 30' 00"

Quality: Sd. Lat: 0.0021 fts Sd. Lon: 0.0016 fts Sd. Hgt: 0.0045 fts
 Posn. Qlty: 0.0027 fts Sd. Slope: 0.0022 fts

Baseline vector: dLat: -0° 02' 55.00369" dLon: 0° 00' 31.32591" dHgt: 1.3200 fts
 Slope: 17873.0825 fts

DOPs (min-max): GDOP: 2.4 - 20.1
 PDOP: 2.1 - 15.7 HDOP: 1.1 - 6.4 VDOP: 1.8 - 14.3

AJ2777 - LC-1

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.5450 fts

Rover: LC-1

SR530 / 32630
 AT502 Tripod / -
 4.0500 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 39' 33.45057" N
 Longitude: 87° 36' 07.38432" W 87° 33' 23.90634" W
 Ellip. Hgt: 474.6593 fts 475.1162 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 22:00:20 - 08/23/2004 22:30:20
 Duration: 30' 00"

Quality: Sd. Lat: 0.0014 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0029 fts
 Posn. Qlty: 0.0017 fts Sd. Slope: 0.0013 fts

Baseline vector: dLat: -0° 01' 20.56918" dLon: 0° 02' 43.47798" dHgt: 0.4569 fts
 Slope: 14847.5548 fts

DOPs (min-max): GDOP: 2.4 - 4.6 HDOP: 1.2 - 2.0 VDOP: 1.8 - 3.2
 PDOP: 2.1 - 3.7

ME1829 - LC-236
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829
 SR530 / 32634
 AT502 Tripod / -
 3.8648 fts

Rover: LC-236
 SR530 / 32630
 AT502 Tripod / -
 3.9200 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 40' 12.47980" N
 Longitude: 87° 37' 19.00006" W 87° 33' 32.40616" W
 Ellip. Hgt: 492.2666 fts 496.3222 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 22:41:50 - 08/23/2004 23:12:00
 Duration: 30' 10"

Quality: Sd. Lat: 0.0017 fts Sd. Lon: 0.0007 fts Sd. Hgt: 0.0022 fts
 Posn. Qlty: 0.0019 fts Sd. Slope: 0.0008 fts

Baseline vector: dLat: 0° 00' 23.75275" dLon: 0° 03' 46.59390" dHgt: 4.0556 fts
 Slope: 17365.6752 fts

DOPs (min-max): GDOP: 2.4 - 9.9 HDOP: 1.2 - 5.5 VDOP: 1.8 - 6.1
 PDOP: 2.1 - 8.2

ME1825 - LC-236
 Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825
 SR530 / 32623
 AT502 Tripod / -
 3.5150 fts

Rover: LC-236
 SR530 / 32630
 AT502 Tripod / -
 3.9200 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 40' 12.47900" N
 Longitude: 87° 33' 28.73749" W 87° 33' 32.40593" W
 Ellip. Hgt: 475.3732 fts 496.2459 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 22:41:50 - 08/23/2004 23:12:00
 Duration: 30' 10"

Quality: Sd. Lat: 0.0017 fts Sd. Lon: 0.0007 fts Sd. Hgt: 0.0021 fts
 Posn. Qlty: 0.0018 fts Sd. Slope: 0.0017 fts

Baseline vector: dLat: 0° 00' 37.35757" dLon: -0° 00' 03.66844" dHgt: 20.8727 fts
 Slope: 3791.7125 fts

DOPs (min-max):	GDOP: 2.4 - 9.9 PDOP: 2.1 - 8.2	HDOP: 1.2 - 5.5	VDOP: 1.8 - 6.1
ME2887 - LC-236	Reference: ME2887	Rover: LC-236	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0900 fts	3.9200 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 12.47904" N	
Longitude:	87° 33' 55.23160" W	87° 33' 32.40598" W	
Ellip. Hgt:	473.8551 fts	496.3479 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 22:41:50 - 08/23/2004 23:12:00		
Duration:	30' 10"		
Quality:	Sd. Lat: 0.0029 fts Posn. Qlty: 0.0031 fts	Sd. Lon: 0.0012 fts Sd. Slope: 0.0029 fts	Sd. Hgt: 0.0036 fts
Baseline vector:	dLat: -0° 02' 15.97549" Slope: 13872.3495 fts	dLon: 0° 00' 22.82562"	dHgt: 22.4929 fts
DOPs (min-max):	GDOP: 2.4 - 13.0 PDOP: 2.1 - 11.3	HDOP: 1.2 - 9.0	VDOP: 1.8 - 6.8
AJ2777 - LC-236	Reference: AJ2777	Rover: LC-236	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5450 fts	3.9200 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 12.47930" N	
Longitude:	87° 36' 07.38432" W	87° 33' 32.40585" W	
Ellip. Hgt:	474.6593 fts	496.2834 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 22:41:50 - 08/23/2004 23:12:00		
Duration:	30' 10"		
Quality:	Sd. Lat: 0.0015 fts Posn. Qlty: 0.0016 fts	Sd. Lon: 0.0006 fts Sd. Slope: 0.0007 fts	Sd. Hgt: 0.0019 fts
Baseline vector:	dLat: -0° 00' 41.54045" Slope: 12490.2491 fts	dLon: 0° 02' 34.97847"	dHgt: 21.6241 fts
DOPs (min-max):	GDOP: 2.4 - 9.9 PDOP: 2.1 - 8.2	HDOP: 1.2 - 5.5	VDOP: 1.8 - 6.1
ME1829 - LC-13	Reference: ME1829	Rover: LC-13	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.8648 fts	4.3500 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 41' 50.93815" N	
Longitude:	87° 37' 19.00006" W	87° 33' 34.78633" W	
Ellip. Hgt:	492.2666 fts	477.3400 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 23:20:45 - 08/23/2004 23:50:40		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0016 fts Posn. Qlty: 0.0022 fts	Sd. Lon: 0.0015 fts Sd. Slope: 0.0016 fts	Sd. Hgt: 0.0037 fts
Baseline vector:	dLat: 0° 02' 02.21110" Slope: 21035.9606 fts	dLon: 0° 03' 44.21373"	dHgt: -14.9265 fts
DOPs (min-max):	GDOP: 2.4 - 5.0 PDOP: 2.1 - 4.2	HDOP: 1.1 - 2.6	VDOP: 1.8 - 3.3
ME1825 - LC-13	Reference: ME1825	Rover: LC-13	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.5150 fts	4.3500 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 41' 50.93818" N	
Longitude:	87° 33' 28.73749" W	87° 33' 34.78582" W	
Ellip. Hgt:	475.3732 fts	477.4326 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/23/2004 23:20:45 - 08/23/2004 23:50:40		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0023 fts Posn. Qlty: 0.0031 fts	Sd. Lon: 0.0020 fts Sd. Slope: 0.0023 fts	Sd. Hgt: 0.0051 fts
Baseline vector:	dLat: 0° 02' 15.81676" Slope: 13755.3630 fts	dLon: -0° 00' 06.04833"	dHgt: 2.0594 fts
DOPs (min-max):	GDOP: 2.4 - 5.0 PDOP: 2.1 - 4.2	HDOP: 1.1 - 2.6	VDOP: 1.8 - 3.3
ME2887 - LC-13	Reference: ME2887	Rover: LC-13	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0900 fts	4.3500 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 50.93845" N	
Longitude:	87° 33' 55.23160" W	87° 33' 34.78689" W	
Ellip. Hgt:	473.8551 fts	477.2721 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 23:20:45 - 08/23/2004 23:50:40
 Duration: 29' 55"

Quality: Sd. Lat: 0.0024 fts Sd. Lon: 0.0025 fts Sd. Hgt: 0.0057 fts
 Posn. Qlty: 0.0035 fts Sd. Slope: 0.0025 fts

Baseline vector: dLat: -0° 00' 37.51608" dLon: 0° 00' 20.44471" dHgt: 3.4170 fts
 Slope: 4101.9692 fts

DOPs (min-max): GDOP: 2.4 - 5.1
 PDOP: 2.1 - 4.2 HDOP: 1.1 - 2.6 VDOP: 1.8 - 3.8

AJ2777 - LC-13

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: AJ2777

SR530 / 32637
 AT502 Tripod / -
 4.5450 fts

Rover: LC-13

SR530 / 32630
 AT502 Tripod / -
 4.3500 fts

Coordinates:

Latitude: 41° 40' 54.01975" N 41° 41' 50.93825" N
 Longitude: 87° 36' 07.38432" W 87° 33' 34.78635" W
 Ellip. Hgt: 474.6593 fts 477.3757 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/23/2004 23:20:45 - 08/23/2004 23:50:40
 Duration: 29' 55"

Quality: Sd. Lat: 0.0014 fts Sd. Lon: 0.0013 fts Sd. Hgt: 0.0032 fts
 Posn. Qlty: 0.0019 fts Sd. Slope: 0.0014 fts

Baseline vector: dLat: 0° 00' 56.91850" dLon: 0° 02' 32.59797" dHgt: 2.7164 fts
 Slope: 12932.3559 fts

DOPs (min-max): GDOP: 2.4 - 5.0
 PDOP: 2.1 - 4.2 HDOP: 1.1 - 2.6 VDOP: 1.8 - 3.3

ME1829 - LC-6

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829

SR530 / 32634
 AT502 Tripod / -
 3.8648 fts

Rover: LC-6

SR530 / 32630
 AT502 Tripod / -
 3.9500 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 40' 30.43066" N
 Longitude: 87° 37' 19.00006" W 87° 35' 07.17041" W
 Ellip. Hgt: 492.2666 fts 477.6950 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 00:06:35 - 08/24/2004 00:36:40
 Duration: 30' 05"

Quality: Sd. Lat: 0.0012 fts Sd. Lon: 0.0011 fts Sd. Hgt: 0.0032 fts
 Posn. Qlty: 0.0016 fts Sd. Slope: 0.0012 fts

Baseline vector: dLat: 0° 00' 41.70361" dLon: 0° 02' 11.82965" dHgt: -14.5716 fts
 Slope: 10859.5105 fts

DOPs (min-max): GDOP: 3.0 - 7.6 HDOP: 1.5 - 1.9 VDOP: 2.1 - 5.6
 PDOP: 2.6 - 5.9

ME1825 - LC-6

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825

SR530 / 32623
 AT502 Tripod / -
 3.5150 fts

Rover: LC-6

SR530 / 32630
 AT502 Tripod / -
 3.9500 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 40' 30.43122" N
 Longitude: 87° 33' 28.73749" W 87° 35' 07.17042" W
 Ellip. Hgt: 475.3732 fts 477.6925 fts

Solution type:

Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 00:06:35 - 08/24/2004 00:36:40
 Duration: 30' 05"

Quality: Sd. Lat: 0.0011 fts Sd. Lon: 0.0010 fts Sd. Hgt: 0.0031 fts
 Posn. Qlty: 0.0015 fts Sd. Slope: 0.0009 fts

Baseline vector: dLat: 0° 00' 55.30979" dLon: -0° 01' 38.43293" dHgt: 2.3193 fts
 Slope: 9335.9199 fts

DOPs (min-max): GDOP: 3.0 - 7.6 HDOP: 1.5 - 1.9 VDOP: 2.1 - 5.6
 PDOP: 2.6 - 5.9

ME2887 - LC-6

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME2887

SR530 / 32707
 AT502 Tripod / -
 4.0900 fts

Rover: LC-6

SR530 / 32630
 AT502 Tripod / -
 3.9500 fts

Coordinates:

Latitude: 41° 42' 28.45452" N 41° 40' 30.43135" N
 Longitude: 87° 33' 55.23160" W 87° 35' 07.17065" W
 Ellip. Hgt: 473.8551 fts 477.7443 fts

Solution type:

Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 00:06:35 - 08/24/2004 00:36:40
 Duration: 30' 05"

Quality: Sd. Lat: 0.0019 fts Sd. Lon: 0.0018 fts Sd. Hgt: 0.0052 fts
 Posn. Qlty: 0.0026 fts Sd. Slope: 0.0021 fts

Baseline vector: dLat: -0° 01' 58.02318" dLon: -0° 01' 11.93905" dHgt: 3.8892 fts
 Slope: 13134.3923 fts

DOPs (min-max):	GDOP: 3.0 - 7.7 PDOP: 2.6 - 6.0	HDOP: 1.5 - 2.1	VDOP: 2.1 - 5.7
AJ2777 - LC-6	Reference: AJ2777	Rover: LC-6	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5450 fts	3.9500 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 30.43129" N	
Longitude:	87° 36' 07.38432" W	87° 35' 07.17042" W	
Ellip. Hgt:	474.6593 fts	477.6932 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 00:06:35 - 08/24/2004 00:36:40		
Duration:	30' 05"		
Quality:	Sd. Lat: 0.0009 fts Posn. Qlty: 0.0012 fts	Sd. Lon: 0.0008 fts Sd. Slope: 0.0007 fts	Sd. Hgt: 0.0023 fts
Baseline vector:	dLat: -0° 00' 23.58846" Slope: 5155.6234 fts	dLon: 0° 01' 00.21390"	dHgt: 3.0339 fts
DOPs (min-max):	GDOP: 3.0 - 7.6 PDOP: 2.6 - 5.9	HDOP: 1.5 - 1.9	VDOP: 2.1 - 5.6
ME1829 - PEI-10	Reference: ME1829	Rover: PEI-10	
Receiver type / S/N:	SR530 / 32634	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	3.8648 fts	4.0700 fts	
Coordinates:			
Latitude:	41° 39' 48.72705" N	41° 40' 49.83020" N	
Longitude:	87° 37' 19.00006" W	87° 34' 31.90946" W	
Ellip. Hgt:	492.2666 fts	480.1980 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 00:44:00 - 08/24/2004 01:13:55		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0017 fts Posn. Qlty: 0.0020 fts	Sd. Lon: 0.0011 fts Sd. Slope: 0.0011 fts	Sd. Hgt: 0.0041 fts
Baseline vector:	dLat: 0° 01' 01.10315" Slope: 14109.0466 fts	dLon: 0° 02' 47.09060"	dHgt: -12.0686 fts
DOPs (min-max):	GDOP: 3.5 - 36.0 PDOP: 2.9 - 26.8	HDOP: 1.7 - 9.7	VDOP: 2.4 - 25.0
ME1825 - PEI-10	Reference: ME1825	Rover: PEI-10	
Receiver type / S/N:	SR530 / 32623	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	

Antenna height:	3.5150 fts	4.0700 fts	
Coordinates:			
Latitude:	41° 39' 35.12143" N	41° 40' 49.83033" N	
Longitude:	87° 33' 28.73749" W	87° 34' 31.90940" W	
Ellip. Hgt:	475.3732 fts	480.2242 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 00:44:00 - 08/24/2004 01:13:55		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0013 fts	Sd. Lon: 0.0009 fts	Sd. Hgt: 0.0032 fts
	Posn. Qlty: 0.0016 fts	Sd. Slope: 0.0013 fts	
Baseline vector:	dLat: 0° 01' 14.70890"	dLon: -0° 01' 03.17191"	dHgt: 4.8510 fts
	Slope: 8953.9986 fts		
DOPs (min-max):	GDOP: 3.5 - 36.0	HDOP: 1.7 - 9.7	VDOP: 2.4 - 25.0
	PDOP: 2.9 - 26.8		
ME2887 - PEI-10	Reference: ME2887	Rover: PEI-10	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0900 fts	4.0700 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 40' 49.82829" N	
Longitude:	87° 33' 55.23160" W	87° 34' 31.93115" W	
Ellip. Hgt:	473.8551 fts	479.5721 fts	
Solution type:	Float		
Frequency:	L1 and L2		
Ambiguity:	No		
Time span:	08/24/2004 00:44:00 - 08/24/2004 01:13:55		
Duration:	29' 55"		
Quality:	Sd. Lat: 0.0055 fts	Sd. Lon: 0.0174 fts	Sd. Hgt: 0.0181 fts
	Posn. Qlty: 0.0183 fts	Sd. Slope: 0.0091 fts	
Baseline vector:	dLat: -0° 01' 38.62624"	dLon: -0° 00' 36.69955"	dHgt: 5.7170 fts
	Slope: 10364.2163 fts		
DOPs (min-max):	GDOP: 3.5 - 41.3	HDOP: 1.7 - 11.2	VDOP: 2.4 - 28.7
	PDOP: 2.9 - 30.8		
AJ2777 - PEI-10	Reference: AJ2777	Rover: PEI-10	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5450 fts	4.0700 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 40' 49.83025" N	
Longitude:	87° 36' 07.38432" W	87° 34' 31.90945" W	
Ellip. Hgt:	474.6593 fts	480.2119 fts	

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 00:44:00 - 08/24/2004 01:13:55
 Duration: 29' 55"

Quality: Sd. Lat: 0.0010 fts Sd. Lon: 0.0007 fts Sd. Hgt: 0.0025 fts
 Posn. Qlty: 0.0012 fts Sd. Slope: 0.0007 fts

Baseline vector: dLat: -0° 00' 04.18950" dLon: 0° 01' 35.47487" dHgt: 5.5526 fts
 Slope: 7257.3208 fts

DOPs (min-max): GDOP: 3.5 - 36.0
 PDOP: 2.9 - 26.8 HDOP: 1.7 - 9.7 VDOP: 2.4 - 25.0

ME1829 - LC-11

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1829

SR530 / 32634
 AT502 Tripod / -
 3.8648 fts

Rover: LC-11

SR530 / 32630
 AT502 Tripod / -
 3.8300 fts

Coordinates:

Latitude: 41° 39' 48.72705" N 41° 41' 17.56908" N
 Longitude: 87° 37' 19.00006" W 87° 34' 35.10258" W
 Ellip. Hgt: 492.2666 fts 479.3729 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 01:20:25 - 08/24/2004 01:50:50
 Duration: 30' 25"

Quality: Sd. Lat: 0.0012 fts Sd. Lon: 0.0009 fts Sd. Hgt: 0.0018 fts
 Posn. Qlty: 0.0015 fts Sd. Slope: 0.0010 fts

Baseline vector: dLat: 0° 01' 28.84203" dLon: 0° 02' 43.89748" dHgt: -12.8937 fts
 Slope: 15348.4704 fts

DOPs (min-max): GDOP: 2.1 - 3.6
 PDOP: 1.9 - 3.0 HDOP: 1.2 - 1.8 VDOP: 1.4 - 2.3

ME1825 - LC-11

Receiver type / S/N:
 Antenna type / S/N:
 Antenna height:

Reference: ME1825

SR530 / 32623
 AT502 Tripod / -
 3.5150 fts

Rover: LC-11

SR530 / 32630
 AT502 Tripod / -
 3.8300 fts

Coordinates:

Latitude: 41° 39' 35.12143" N 41° 41' 17.56844" N
 Longitude: 87° 33' 28.73749" W 87° 34' 35.10253" W
 Ellip. Hgt: 475.3732 fts 479.3889 fts

Solution type: Phase
 Frequency: L1 and L2
 Ambiguity: Yes
 Time span: 08/24/2004 01:20:25 - 08/24/2004 01:50:50
 Duration: 30' 25"

Quality:	Sd. Lat: 0.0012 fts Posn. Qlty: 0.0014 fts	Sd. Lon: 0.0008 fts Sd. Slope: 0.0011 fts	Sd. Hgt: 0.0018 fts
Baseline vector:	dLat: 0° 01' 42.44702" Slope: 11528.3166 fts	dLon: -0° 01' 06.36504"	dHgt: 4.0157 fts
DOPs (min-max):	GDOP: 2.1 - 3.9 PDOP: 1.9 - 3.2	HDOP: 1.2 - 1.9	VDOP: 1.4 - 2.6
ME2887 - LC-11	Reference: ME2887	Rover: LC-11	
Receiver type / S/N:	SR530 / 32707	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.0900 fts	3.8300 fts	
Coordinates:			
Latitude:	41° 42' 28.45452" N	41° 41' 17.56807" N	
Longitude:	87° 33' 55.23160" W	87° 34' 35.10427" W	
Ellip. Hgt:	473.8551 fts	479.4549 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 01:20:25 - 08/24/2004 01:50:50		
Duration:	30' 25"		
Quality:	Sd. Lat: 0.0030 fts Posn. Qlty: 0.0040 fts	Sd. Lon: 0.0027 fts Sd. Slope: 0.0033 fts	Sd. Hgt: 0.0059 fts
Baseline vector:	dLat: -0° 01' 10.88646" Slope: 7786.8546 fts	dLon: -0° 00' 39.87267"	dHgt: 5.5999 fts
DOPs (min-max):	GDOP: 2.9 - 56.6 PDOP: 2.5 - 42.4	HDOP: 1.7 - 16.1	VDOP: 1.8 - 39.2
AJ2777 - LC-11	Reference: AJ2777	Rover: LC-11	
Receiver type / S/N:	SR530 / 32637	SR530 / 32630	
Antenna type / S/N:	AT502 Tripod / -	AT502 Tripod / -	
Antenna height:	4.5450 fts	3.8300 fts	
Coordinates:			
Latitude:	41° 40' 54.01975" N	41° 41' 17.56892" N	
Longitude:	87° 36' 07.38432" W	87° 34' 35.10243" W	
Ellip. Hgt:	474.6593 fts	479.3932 fts	
Solution type:	Phase		
Frequency:	L1 and L2		
Ambiguity:	Yes		
Time span:	08/24/2004 01:20:25 - 08/24/2004 01:50:50		
Duration:	30' 25"		
Quality:	Sd. Lat: 0.0011 fts Posn. Qlty: 0.0013 fts	Sd. Lon: 0.0008 fts Sd. Slope: 0.0008 fts	Sd. Hgt: 0.0016 fts
Baseline vector:	dLat: 0° 00' 23.54917" Slope: 7396.8227 fts	dLon: 0° 01' 32.28189"	dHgt: 4.7340 fts

DOPs (min-max):

GDOP: 2.1 - 3.6

PDOP: 1.9 - 3.0

HDOP: 1.2 - 1.8

VDOP: 1.4 - 2.3



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CALUMET AREA HYDROLOGIC MASTER PLAN SURVEY CONTROL

PRIMARY CONTROL:

- 1 - COVER SHEET
- 2 - STREET ATLAS KEY MAP
- 3 - AERIAL PHOTOGRAPH KEY MAP
- 4 - AC 9170 RECOVERY SHEET
- 5 - AE 9231 RECOVERY SHEET
- 6 - AF 9258 RECOVERY SHEET
- 7 - ME 3311 RECOVERY SHEET
- 8 - AJ 2776 RECOVERY SHEET
- 9 - AJ 2777 RECOVERY SHEET
- 10 - ME 1825 RECOVERY SHEET
- 11 - ME 1829 RECOVERY SHEET
- 12 - ME 1830 RECOVERY SHEET
- 13 - ME 1881 RECOVERY SHEET
- 14 - ME 2887 RECOVERY SHEET
- 15 - V3 PRIMARY CONTROL OCCUPATION CHART

ATTACHMENTS:

- V3 EQUIPMENT LIST
- NGS DATA SHEETS
- SKI PRO REPORTS

LIDAR CONTROL:

- 1 - COVER SHEET AND INDEX**
- 2 - STREET ATLAS KEY MAP**
- 3 - AERIAL PHOTOGRAPHY KEY MAP**
- 4 - LC-1 RECOVERY DATA SHEET**
- 5 - LC-3 RECOVERY DATA SHEET**
- 6 - LC-6 RECOVERY DATA SHEET**
- 7 - LC-8 RECOVERY DATA SHEET**
- 8 - LC-11 RECOVERY DATA SHEET**
- 9 - LC-13 RECOVERY DATA SHEET**
- 10 - LC-236 RECOVERY DATA SHEET**
- 11 - LC-2 RECOVERY DATA SHEET**
- 12 - LC-5 RECOVERY DATA SHEET**
- 13 - LC-12 RECOVERY DATA SHEET**
- 14 - LC-14 RECOVERY DATA SHEET**
- 15 - LC-15 RECOVERY DATA SHEET**
- 16 - LC-4 RECOVERY DATA SHEET**
- 17 - LC-7 RECOVERY DATA SHEET**
- 18 - LC-9 RECOVERY DATA SHEET**
- 19 - LC-10 RECOVERY DATA SHEET**

ATTACHMENTS:

**BOLLENGER, LACH & ASSOC. FIELD NOTES,
DATED 2/15/02.**

BENCHMARKS:

- 1 - STREET ATLAS KEY MAP
- 2 - AERIAL PHOTOGRAPH KEY MAP
- 3 - V3 BM-1 RECOVERY SHEET
- 4 - V3 BM-2 RECOVERY SHEET
- 5 - V3 BM-3 RECOVERY SHEET
- 6 - V3 BM-4 RECOVERY SHEET
- 7 - V3 BM-5 RECOVERY SHEET
- 8 - V3 BM-6 RECOVERY SHEET
- 9 - V3 BM-7 RECOVERY SHEET
- 10 - V3 BM-8 RECOVERY SHEET
- 11 - V3 BM-9 RECOVERY SHEET
- 12 - V3 CAL RECOVERY SHEET

SECONDARY SITE CONTROL:

- 1- COVER SHEET AND INDEX
- 2- STREET ATLAS KEY MAP
- 3- AERIAL PHOTOGRAPH KEY MAP
- 4- RECOVERY SHEET CP# 586
- 5- RECOVERY SHEET CP# 587
- 6- RECOVERY SHEET CP# 590
- 7- RECOVERY SHEET CP# 868
- 8- RECOVERY SHEET CP# 862
- 9- RECOVERY SHEET CP# 801
- 10- RECOVERY SHEET CP# 932
- 11- RECOVERY SHEET CP# 903
- 12- RECOVERY SHEET CP# 904
- 13- RECOVERY SHEET CP# 131
- 14- RECOVERY SHEET CP# 701
- 15- RECOVERY SHEET CP# 703
- 16- RECOVERY SHEET CP# 706
- 17- RECOVERY SHEET CP# 798
- 18- RECOVERY SHEET CP# 700
- 19- RECOVERY SHEET CP# 411
- 20- RECOVERY SHEET CP# 412

NOTES:

PRIMARY:

1) POINTS UTILIZED WERE GPS DERIVED VS. BEING ESTABLISHED BY CLASSICAL METHODS AT THE RECOMMENDATION OF THE ILLINOIS STATE GEODETIC ADVISOR.

2) SECOND ORDER CLASS 1 SURVEY METHODS WERE USED FOR ALL POINTS MEASURED.

LIDAR:

1) LC-# = LIDAR CONTROL POINT NUMBER. LIDAR CONTROL POINTS SET BY BOLLENGER, LACH & ASSOC., FIELD NOTES PROVIDED TO V3 (SEE ATTACHMENT) DATED FEBRUARY 15, 2002.

2) LC-2, LC-5, LC-12, LC-14 & LC-15 RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

3) LC-4, LC-7, LC-9 & LC-10 NOT FOUND BY V3.

LIDAR, CONTINUED:

4) LOCATIONS FOR ALL LIDAR CONTROL DEPICTED ON 'VICINITY' SKETCHES, BASED ON COORDINATES EXTRACTED FROM PROVIDED LIDAR MAPPING.

BENCHMARKS:

1) A LINE OF BENCHMARKS WERE ESTABLISHED ALONG THE EAST SIDE OF LAKE CALUMET WITH MONUMENTS APPROXIMATELY EVERY HALF MILE ALONG STONY ISLAND AVENUE FROM 103RD STREET ON THE NORTH TO THE CALUMET RIVER ON THE SOUTH.

2) POINTS SET FOR VERTICAL REFERENCE ONLY. NO HORIZONTAL VALUES WERE MEASURED.

SECONDARY SITE CONTROL:

1) ALL POINTS SET BY ENVIRONMENTAL DESIGN INTERNATIONAL, INC. (EDI) AND LATER LOCATED BY V3.

2) SOME POINTS HAVE BEEN DESTROYED SINCE BEING USED FOR THIS PROJECT.






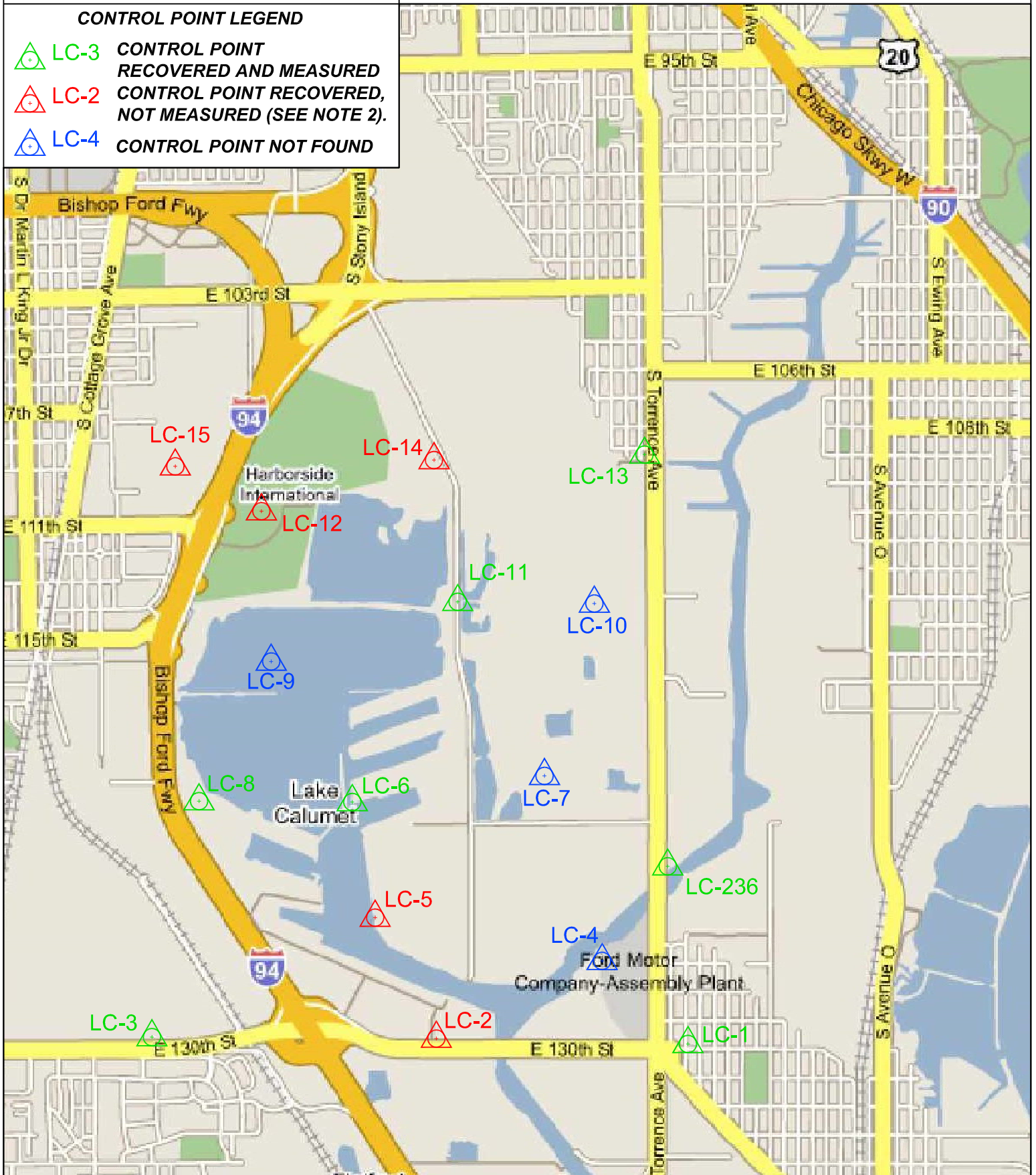
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CALUMET AREA HMP

LIDAR CONTROL POINT RECOVERY DATA SHEET STREET ATLAS KEY MAP

CONTROL POINT LEGEND

-  LC-3 CONTROL POINT RECOVERED AND MEASURED
-  LC-2 CONTROL POINT RECOVERED, NOT MEASURED (SEE NOTE 2).
-  LC-4 CONTROL POINT NOT FOUND








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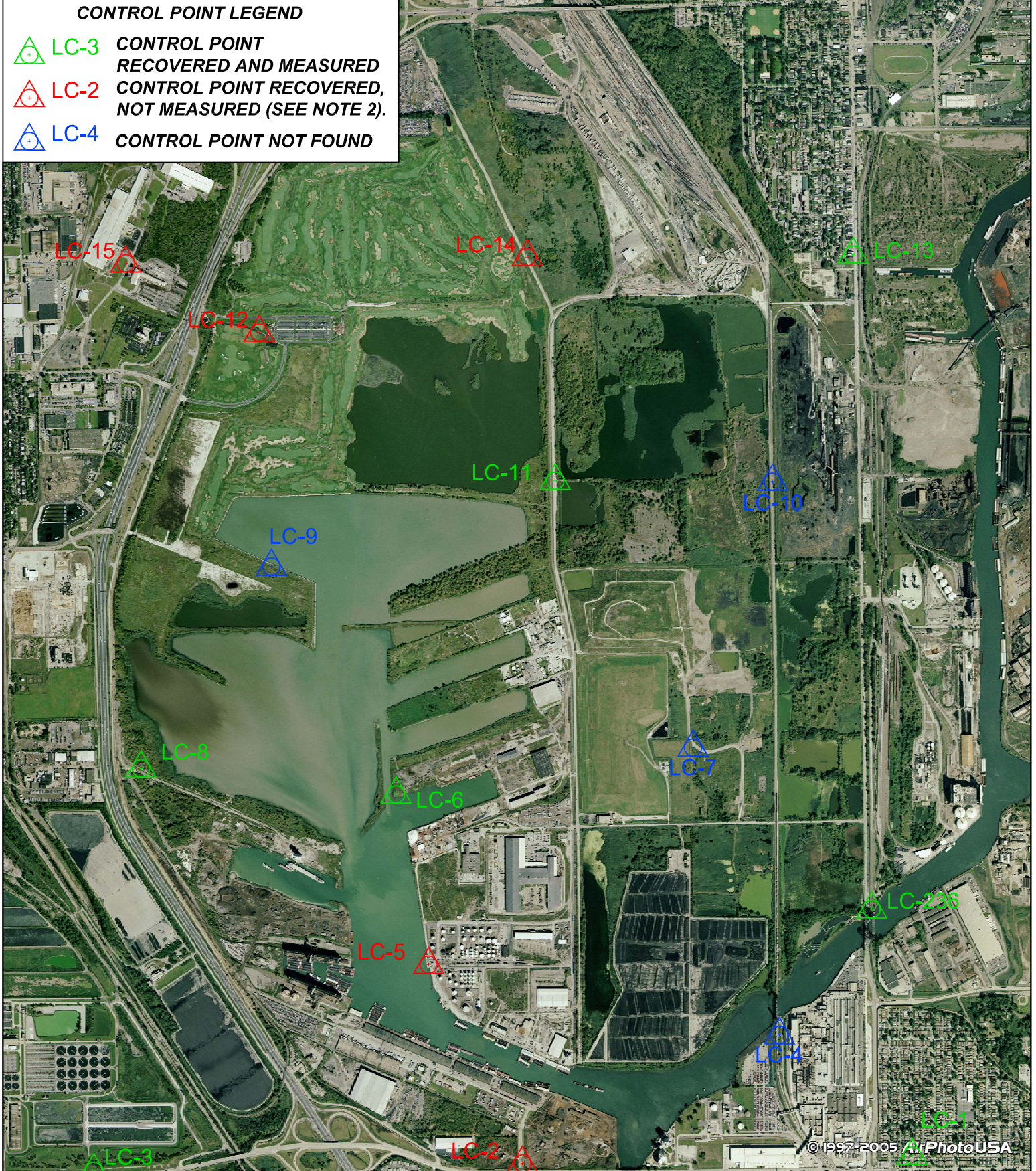
CALUMET AREA HMP

LIDAR CONTROL POINT RECOVERY DATA SHEET

AERIAL PHOTOGRAPHY KEY MAP

CONTROL POINT LEGEND

-  **LC-3** CONTROL POINT RECOVERED AND MEASURED
-  **LC-2** CONTROL POINT RECOVERED, NOT MEASURED (SEE NOTE 2).
-  **LC-4** CONTROL POINT NOT FOUND



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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-1

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1819394.5458

ELEVATION: 584.6964

VERTICAL DATUM: NAVD 88

EAST: 1196488.1514

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

ALUMINUM DISK SET SLIGHTLY BELOW GRADE JUST OFF THE NORTHEAST CORNER OF CONCRETE SIDEWALK AT NORTHEAST CORNER OF 130TH AND MARQUETTE, IN FRONT OF RESIDENCE #2734.

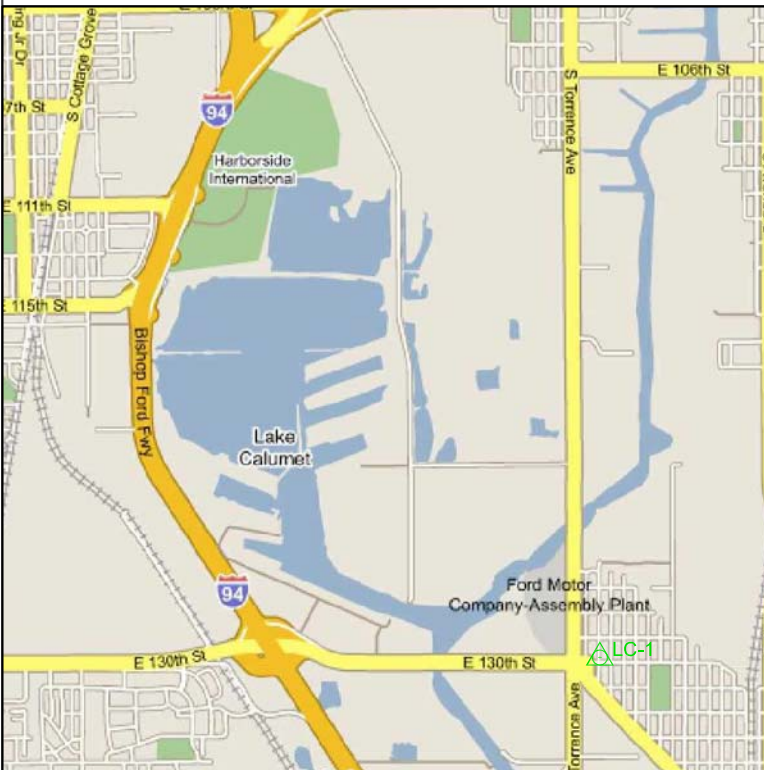
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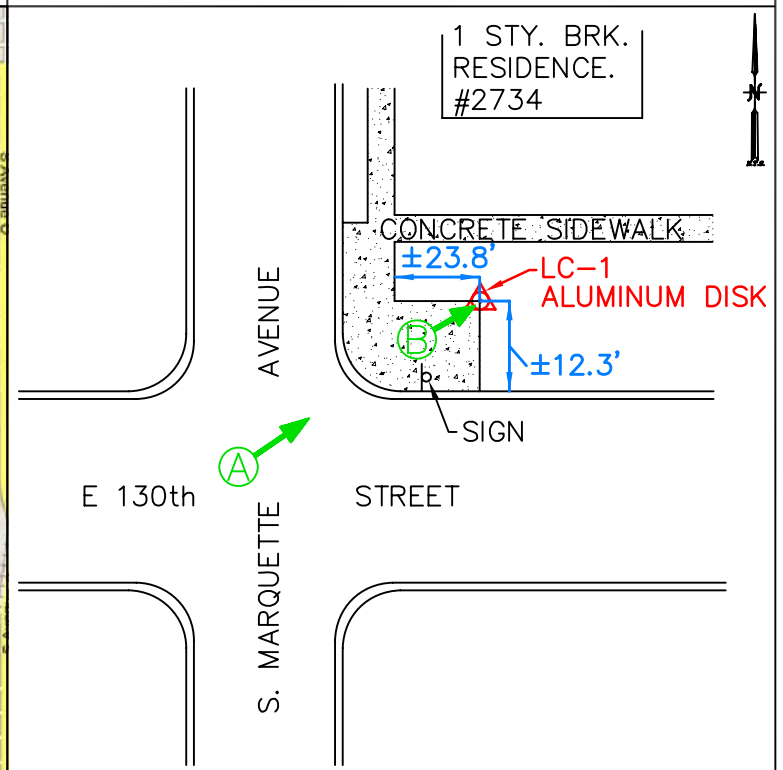
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-3

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1819284.9568

ELEVATION: 585.2862

VERTICAL DATUM: NAVD 88

EAST: 1184097.1585

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

ALUMINUM DISK SET IN GRASS 14.0 FEET NORTH OF BACK OF CURB ALONG NORTH SIDE OF 130TH STREET IN LINE WITH 3 POWER POLE EAST OF EVANS AVENUE.

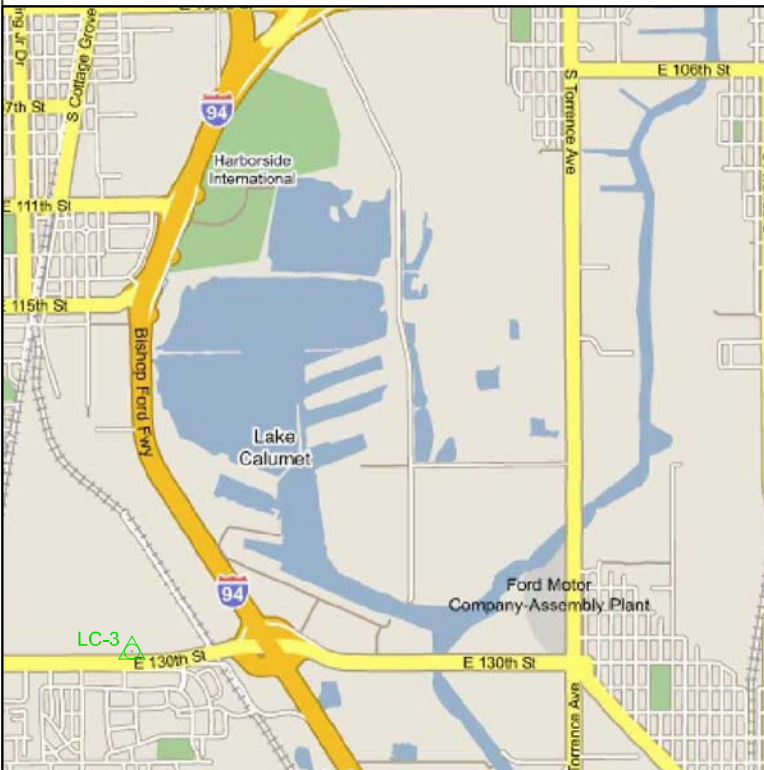
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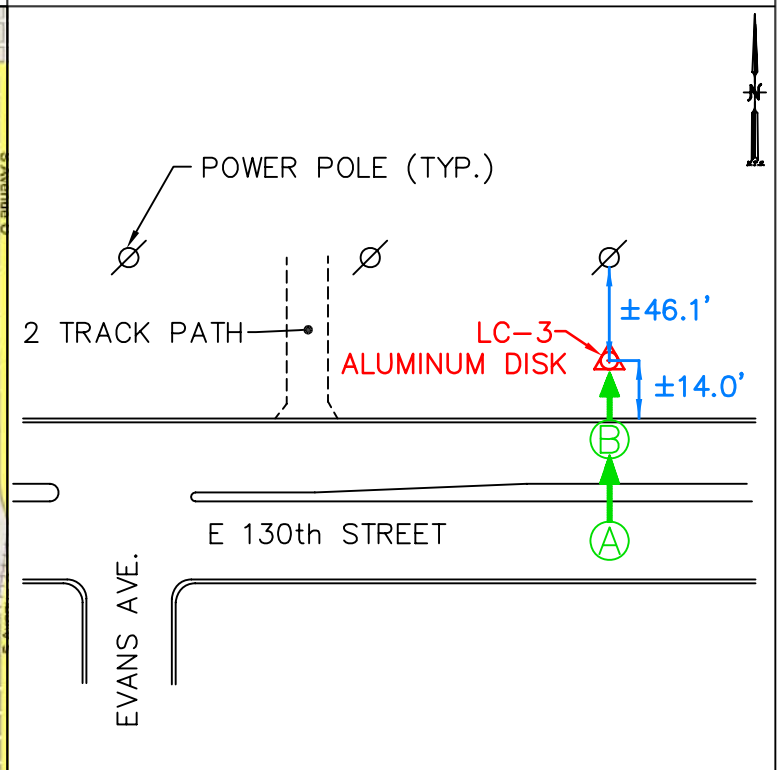
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-6

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1825092.6906

ELEVATION: 587.2515

VERTICAL DATUM: NAVD 88

EAST: 1188599.7496

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

FROM THE INTERSECTION OF 122ND STREET AND STONEY ISLAND ROAD GO NORTH TO ENTRANCE TO COX METAL PROCESSING FACILITY ENTRANCE. FOLLOW ENTRANCE DRIVE WEST TO BOAT SLIP, FOLLOW NORTH EDGE OF SLIP ALMOST TO NOSE OF PENINSULA. MARK IS AN ALUMINUM DISK APPROXIMATELY 65'-70' NORTH OF EDGE OF WATER & 95'-100' EAST OF WATERS EDGE AT CENTER OF CLOTHE PHOTO PANEL.

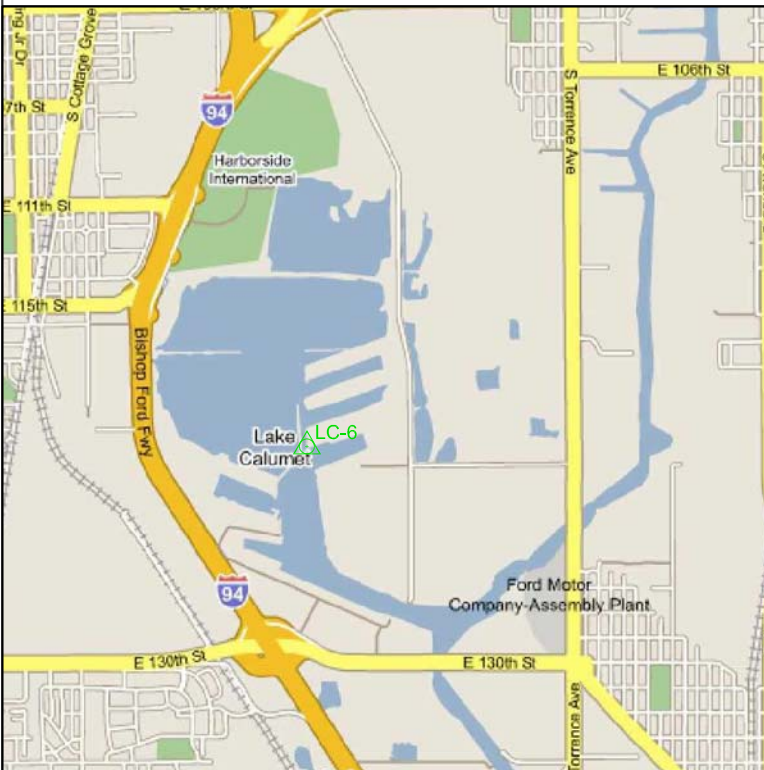
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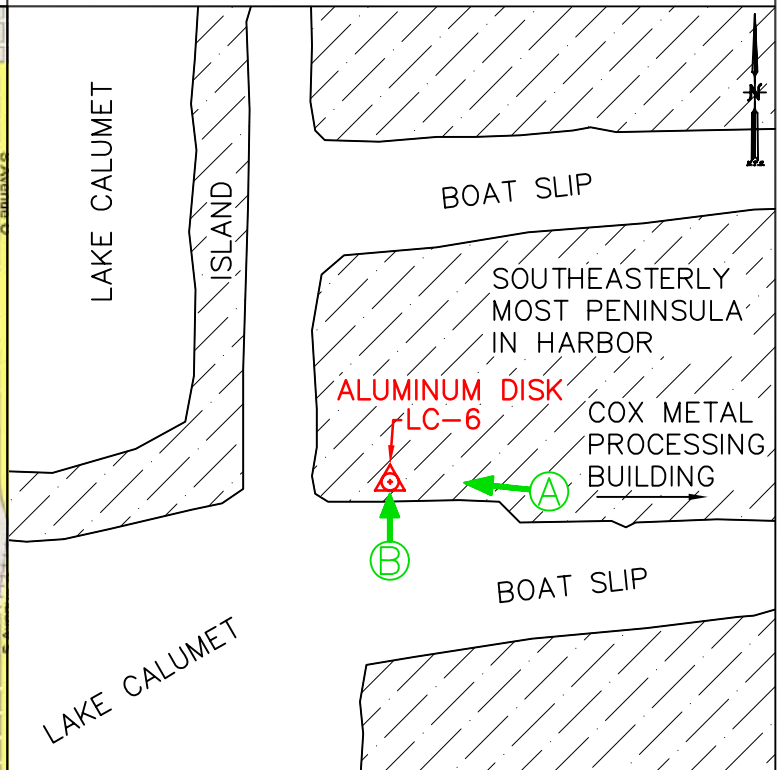
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-8

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1825458.9960

ELEVATION: 590.2225

VERTICAL DATUM: NAVD 88

EAST: 1184696.4566

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

FROM THE INTERSECTION OF 130TH AND DOTY ROAD GO SOUTH TO THE ENTRANCE TO ST. MARY'S CEMENT INC. FACILITY. ENTRANCE IS A GATED GRAVEL ROAD WITH SIGN READING: "ST. MARY'S CEMENT INC (U.S.), CHICAGO TERMINAL, 12101 S. DOTY AVE. CHICAGO, IL". FOLLOW GRAVEL ROAD APPROXIMATELY 0.15 MILES PAST A CHAIN LINK FENCE TO A POWER POLE ON NORTH SIDE OF ROAD; MARK IS AN ALUMINUM DISK APPROXIMATELY 47' NORTHEAST OF POWER POLE AT CENTER OF CLOTHE PHOTO PANEL.

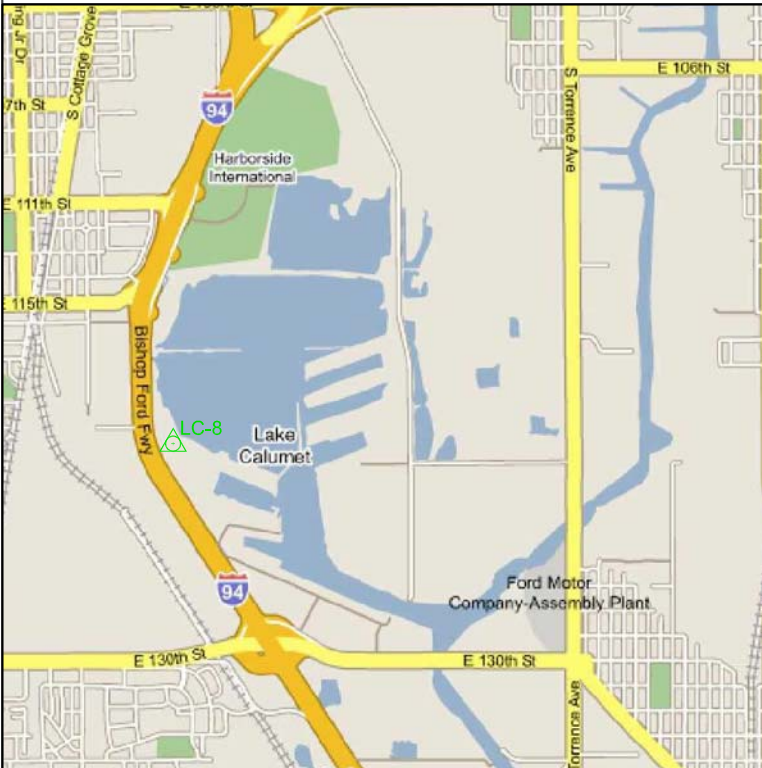
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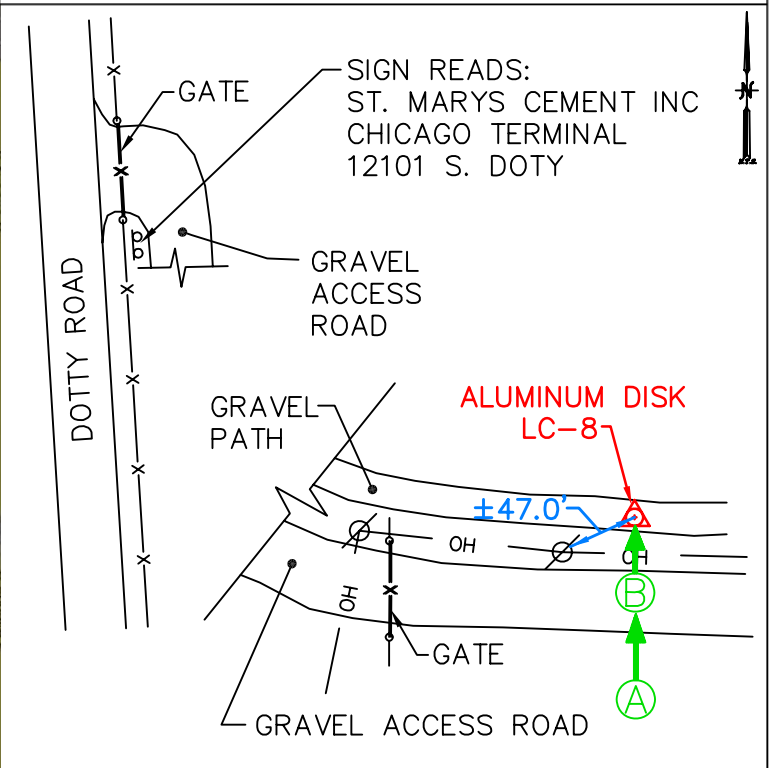
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-11

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1829885.1529

ELEVATION: 588.9610

VERTICAL DATUM: NAVD 88

EAST: 1190991.3717

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

PK NAIL IN PAVEMENT IN SHOULDER OF STONY ISLAND AVENUE. APPROXIMATELY 1 MILE NORTH OF 122ND STREET (MEASURED ALONG STONY ISLAND), APPROXIMATELY 17' EAST OF CENTER LINE AND 53' SOUTHEAST OF POWER POLE WITH MAG NAIL.

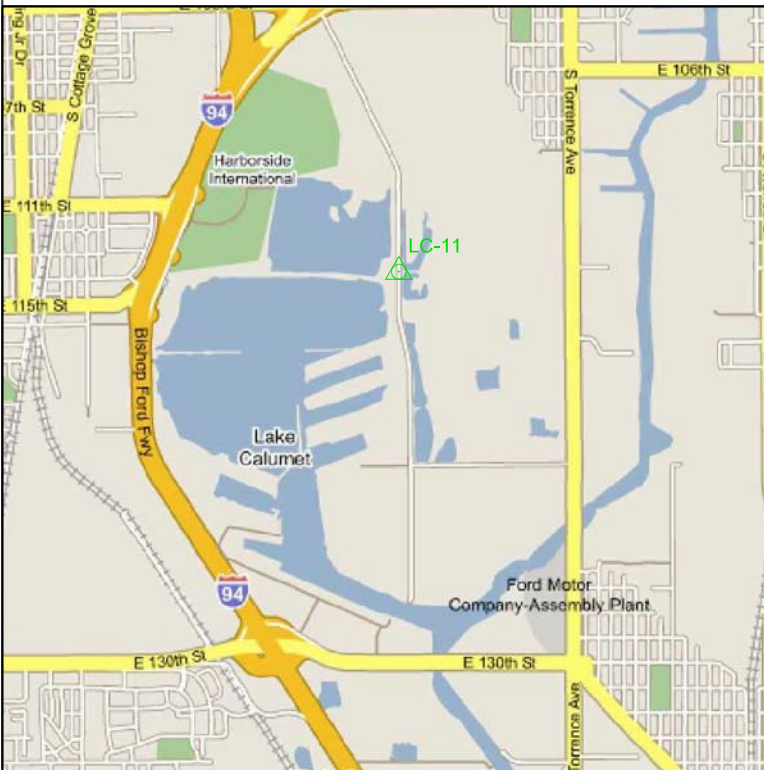
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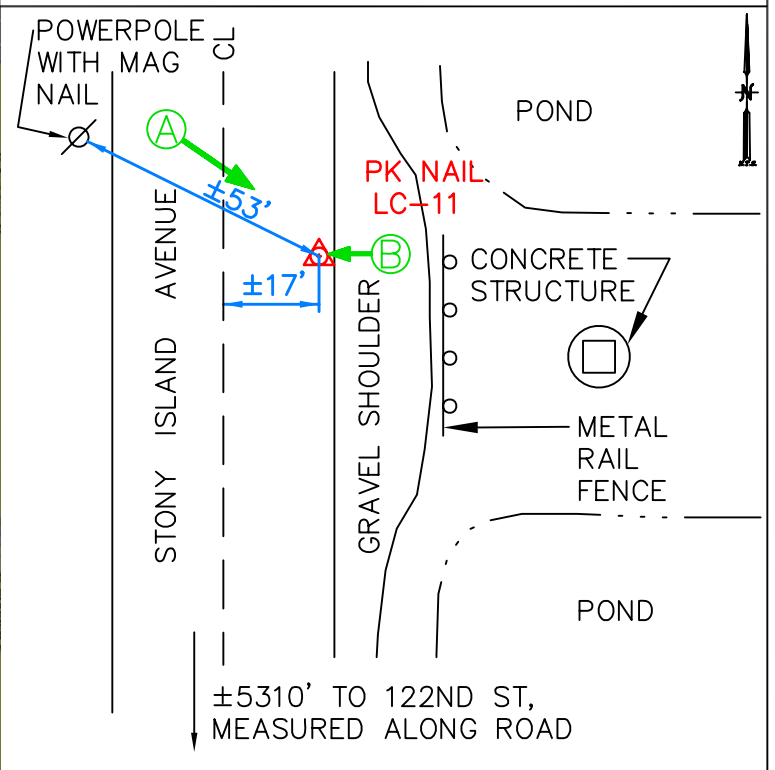
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-13

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 183303.4291

ELEVATION: 586.9605

VERTICAL DATUM: NAVD 88

EAST: 1195537.3354

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

SET CROSS CUT 1.5' EAST OF WEST EDGE OF CONCRETE SIDEWALK ON WEST SIDE OF TORRENCE AVE. APPROXIMATELY 96.50' SOUTH OF THE CENTER LINE OF 109TH COURT.

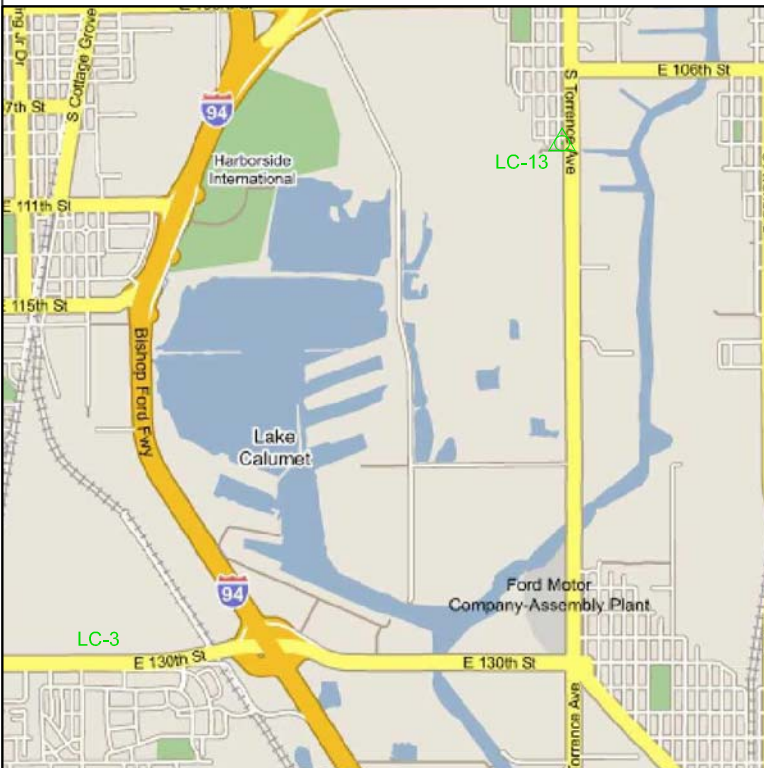
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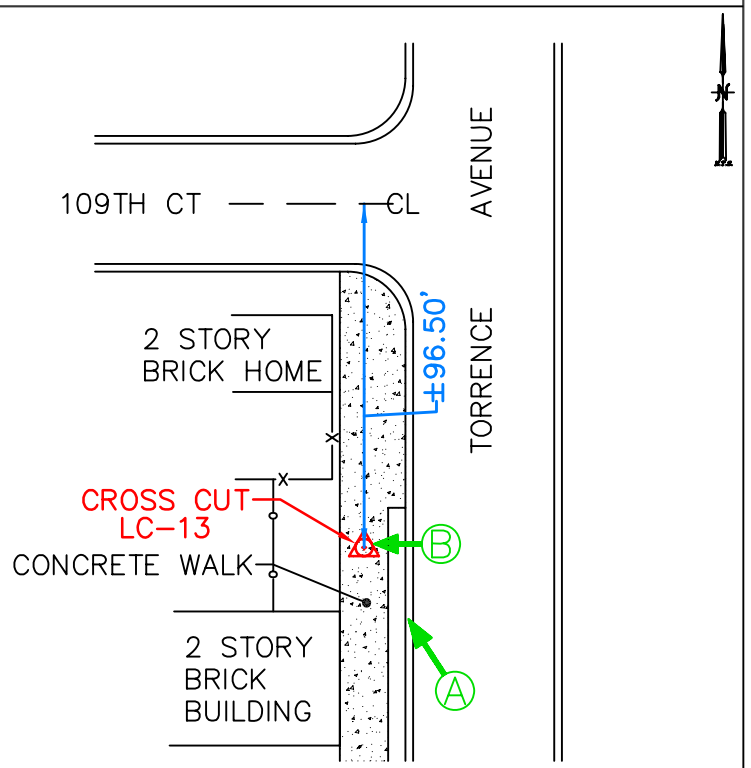
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:
LC-236

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1823339.1606

ELEVATION: 605.8787

VERTICAL DATUM: NAVD 88

EAST: 1195807.4845

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

BRASS DISK SET IN CONCRETE AT END OF CONCRETE WALL NORTH OF NORTH END OF RAILROAD BRIDGE PIER OVER CALUMET RIVER. TRACKS RUNNING PARALLEL WITH AND EAST OF TORRENCE AVENUE.

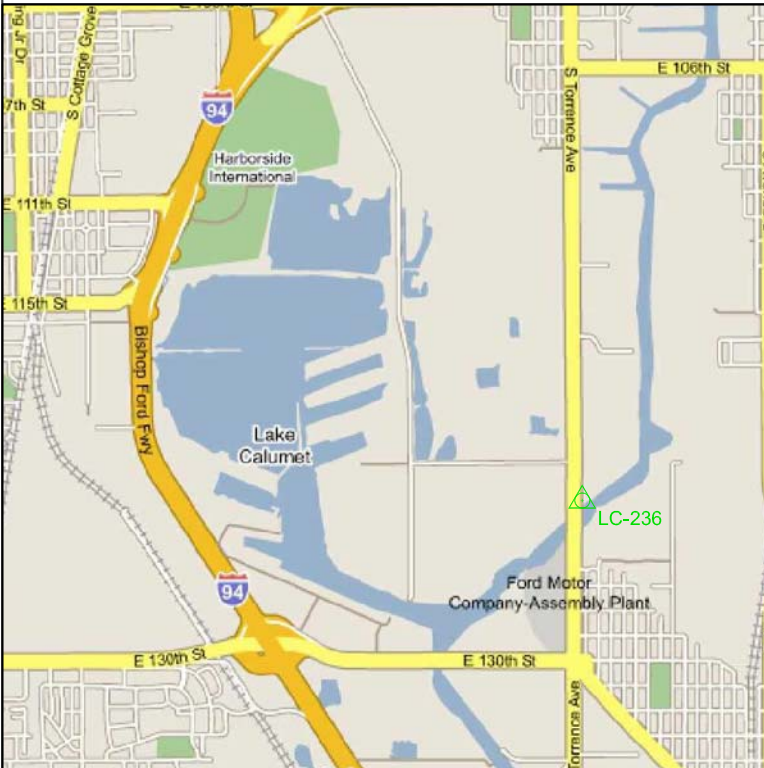
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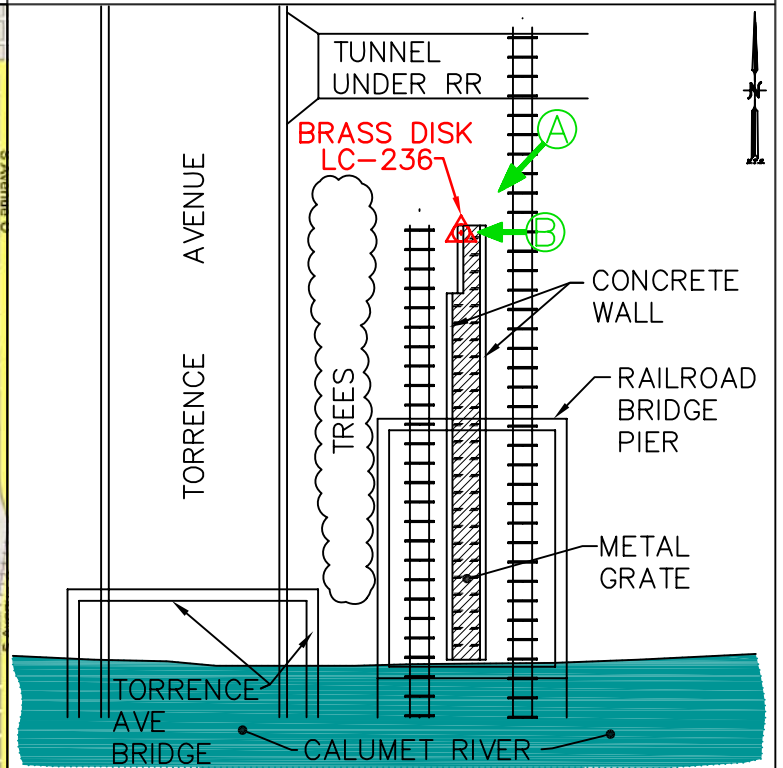
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-2

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

PHOTOGRAPH 'A'

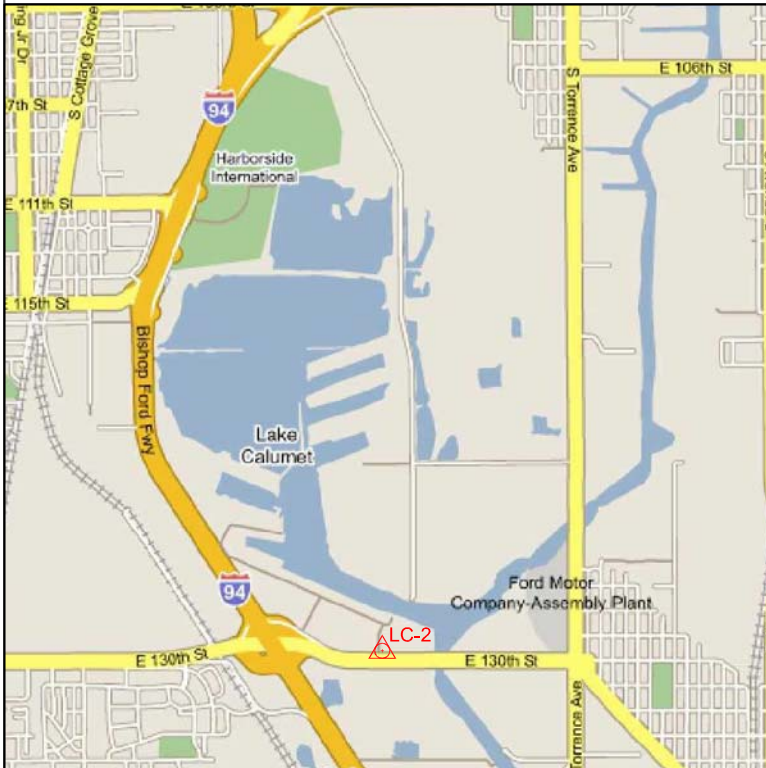
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-5

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

PHOTOGRAPH 'A'

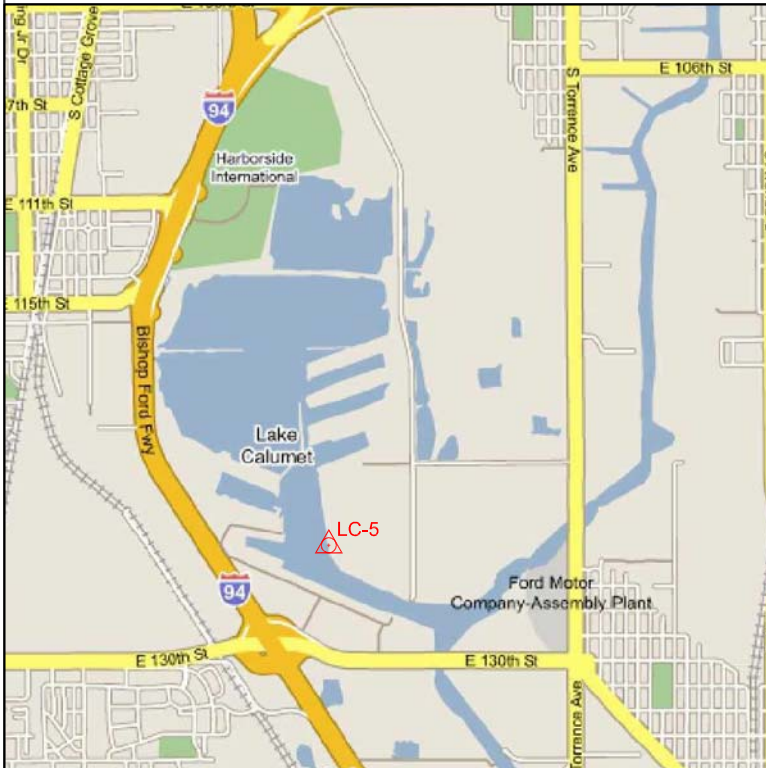
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:
LC-12

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

PHOTOGRAPH 'A'

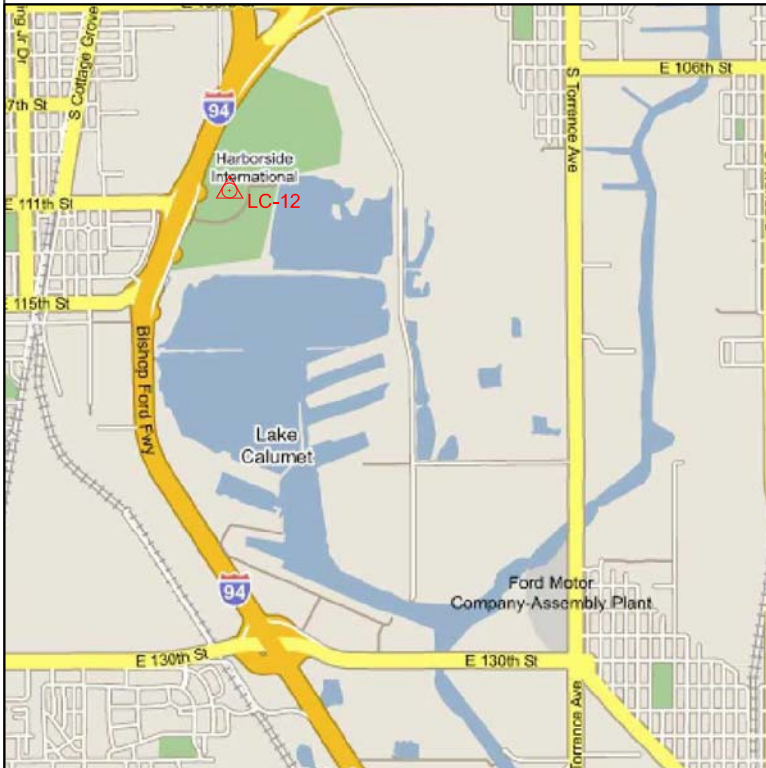
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-14

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

PHOTOGRAPH 'A'

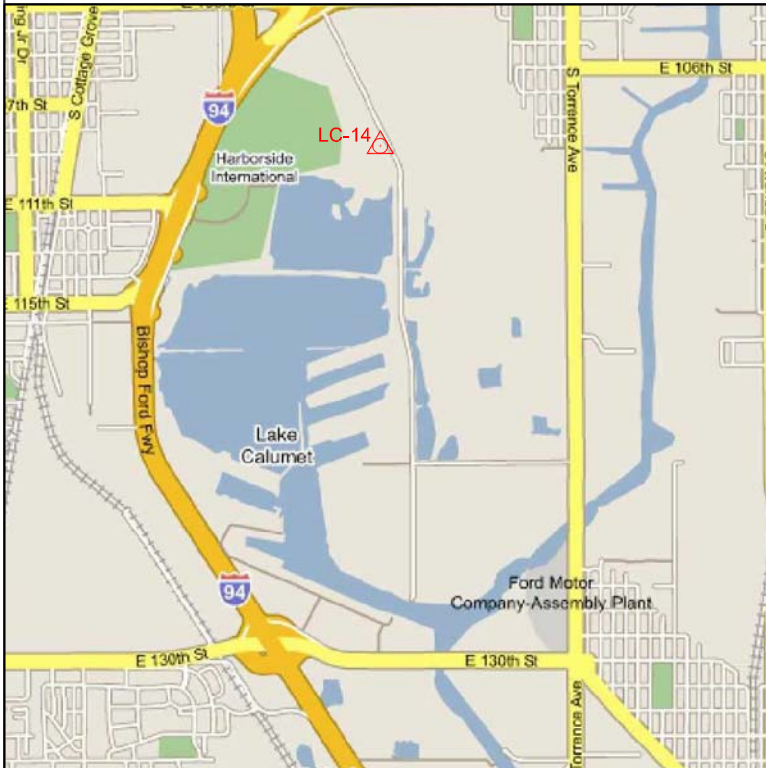
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:
LC-15

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

PHOTOGRAPH 'A'

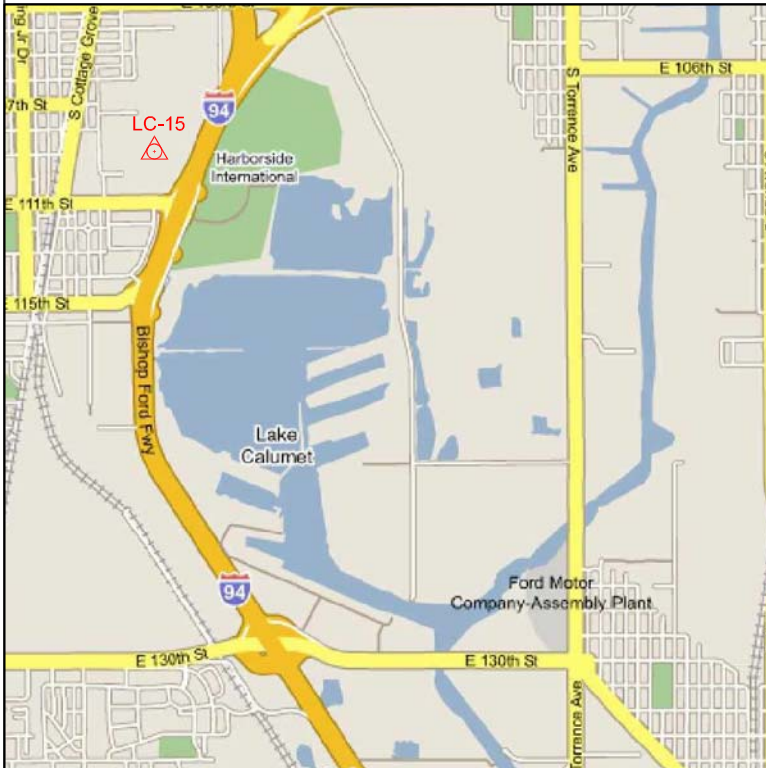
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-4

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT NOT FOUND BY V3.

PHOTOGRAPH 'A'

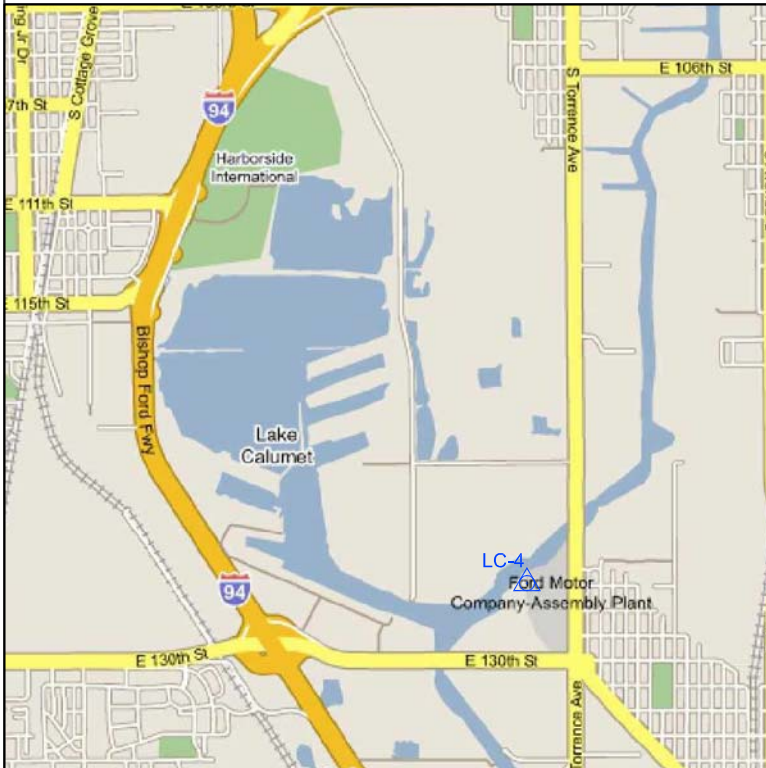
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-7

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT NOT FOUND BY V3.

PHOTOGRAPH 'A'

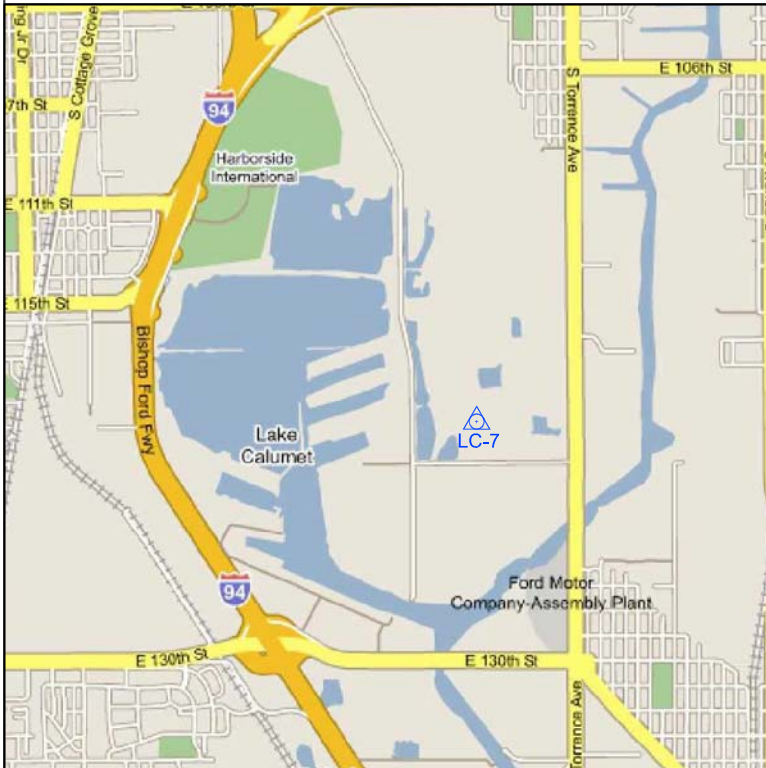
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:

LC-9

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CONTROL POINT NOT FOUND BY V3.

PHOTOGRAPH 'A'

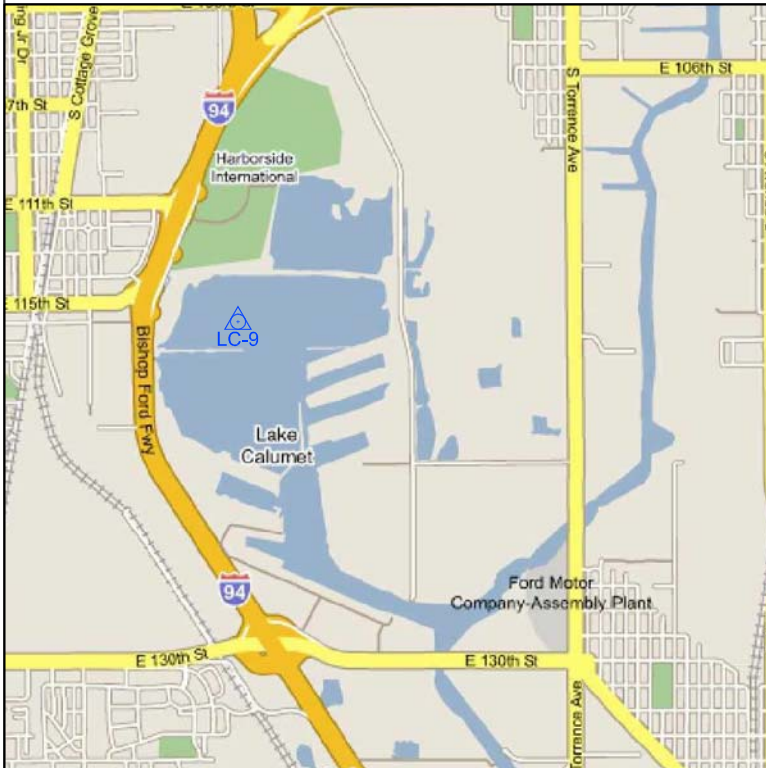
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CALUMET AREA HMP

LIDAR CONTROL RECOVERY SHEET

STATION:
LC-10

MEASURED: NOT

HORIZONTAL DATUM: NAD 83

NORTH: UNKNOWN

ELEVATION: XXXXXX

VERTICAL DATUM: NAVD 88

EAST: UNKNOWN

MONUMENTED: ?-?-2001

STATION DESCRIPTION:
CONTROL POINT NOT FOUND BY V3.

PHOTOGRAPH 'A'

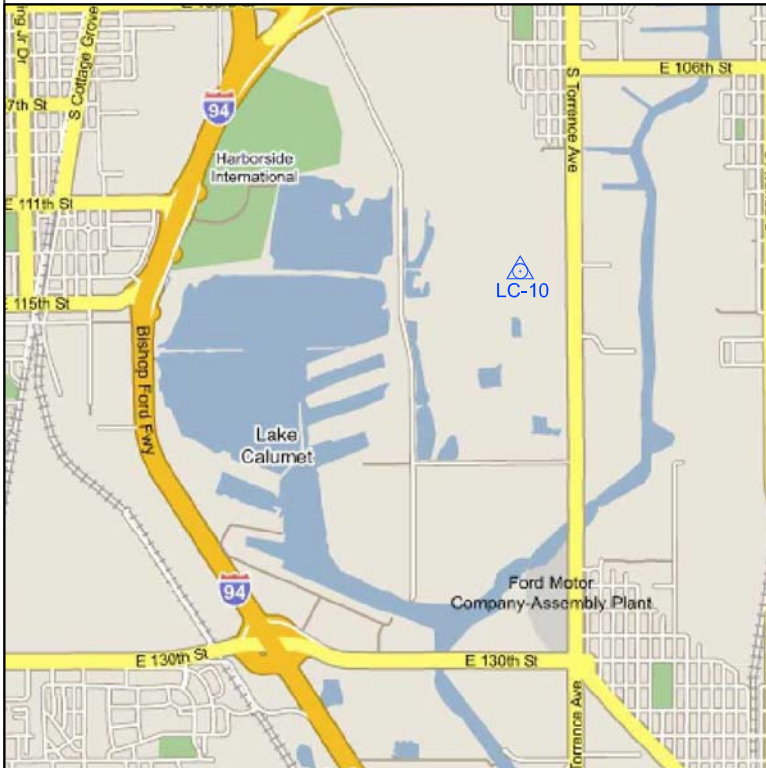
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PHOTOGRAPH NOT AVAILABLE

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ENGINEERS
& LAND
SURVEYORS



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FAX TRANSMITTAL TO:

NAME	COMPANY	FAX #
Grant Van Bartel	V3 Consultants	724-0384

Date: 15-Feb-02

From: Paul Hendricks

Re: Lake Calumet

Total number of pages including this sheet: 20

Comments: _____

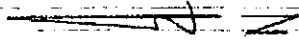
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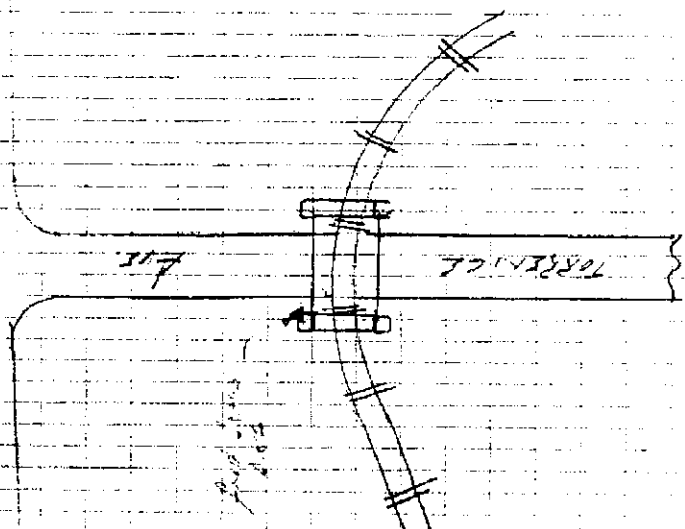
D/E 1824

4-138



CUT

130 TH



AND STAIRS

D/E 1824

4-138

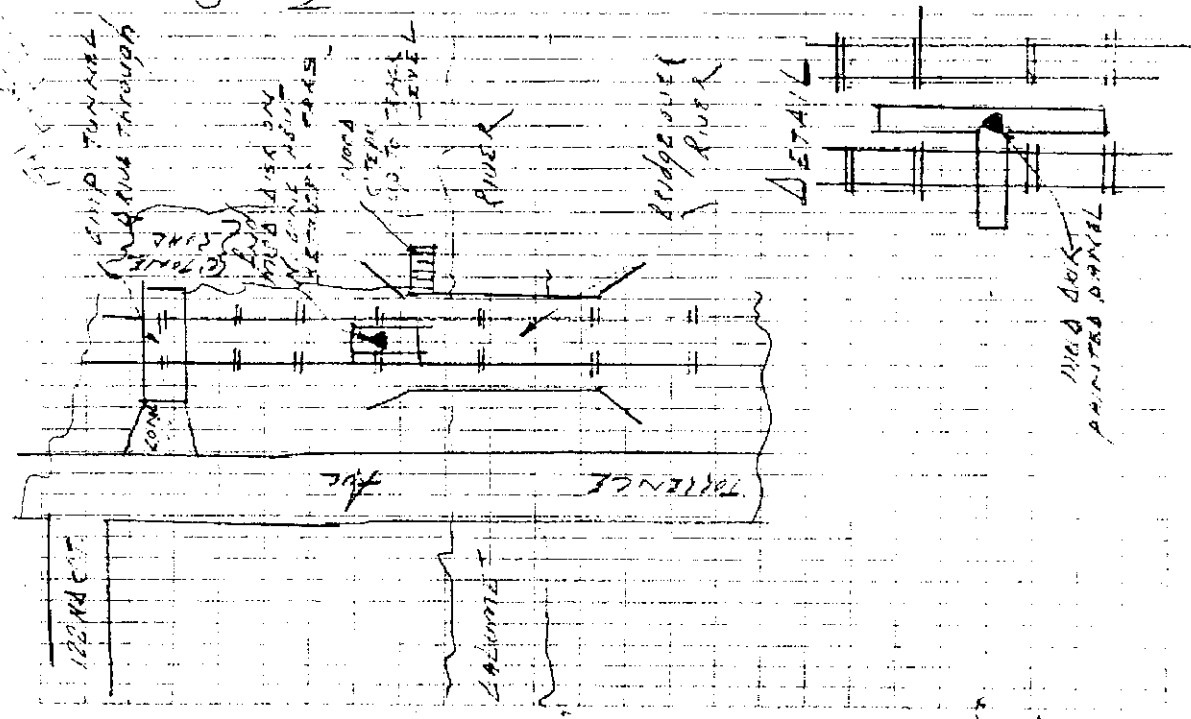
END 3.00 W N.A. CUT ON
BRIDGE DECK FOR RR. BRIDGE
OVER TERRACE AND ± 200'±
CUT 130 TH AND 29'± W
OF THE E. OF TERRACE. DO
ON THE N. SIDE OF RR
BRIDGE

GPU BAD

N. EDGE OF BRIDGE OVERHEAD
AND AGAINST COLUMN
OF BRIDGE

9

11150 DISE 65-236



11150 DISE 65-236

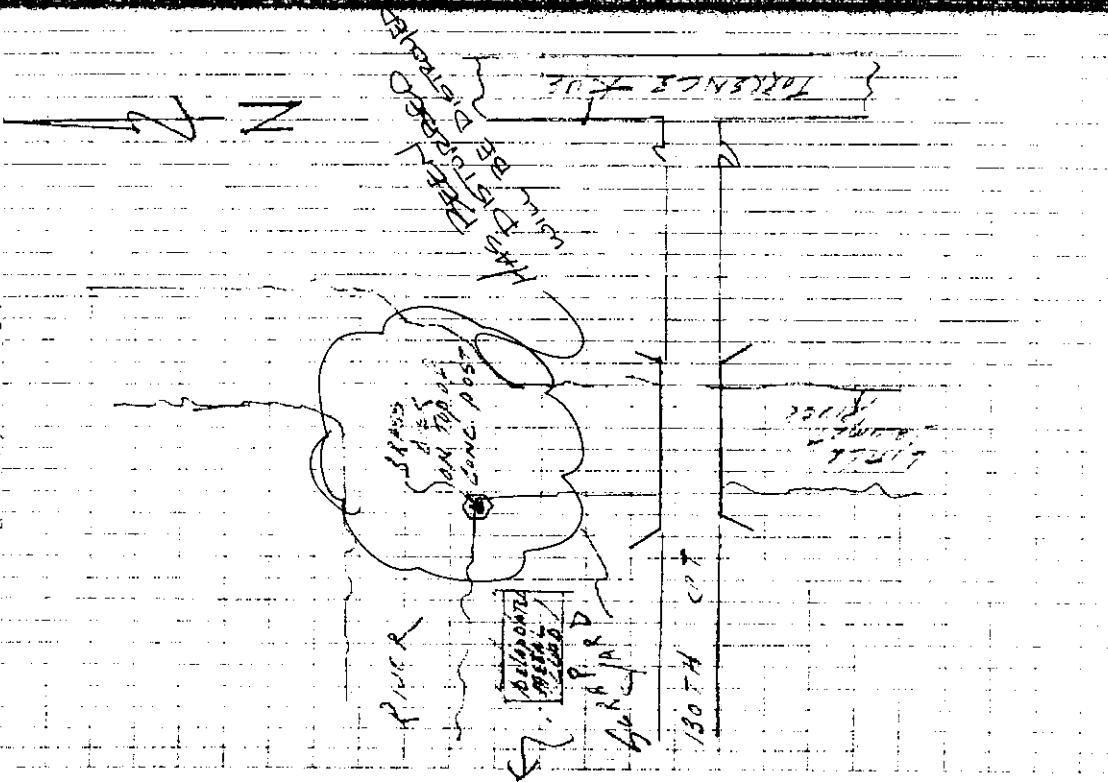
find ~~more~~ 1/2" in the
 side edge beam in the
 N side of bridge over the
 laundry shop of det. 11150
 of TRAILING etc.

SPD - 11150 No. 100-11150
 PHOTO UNIT - 11150

SECTION - 11150 - 11150
 in the E. side - 11150
 the - 100-11150
 11150 No. 100-11150
 CAL. RIVER BRIDGE THROUGH
 TUNNEL FROM TOWN TO THE
 RIVER - 11150 - 11150
 11150 to the level and
 11150-236

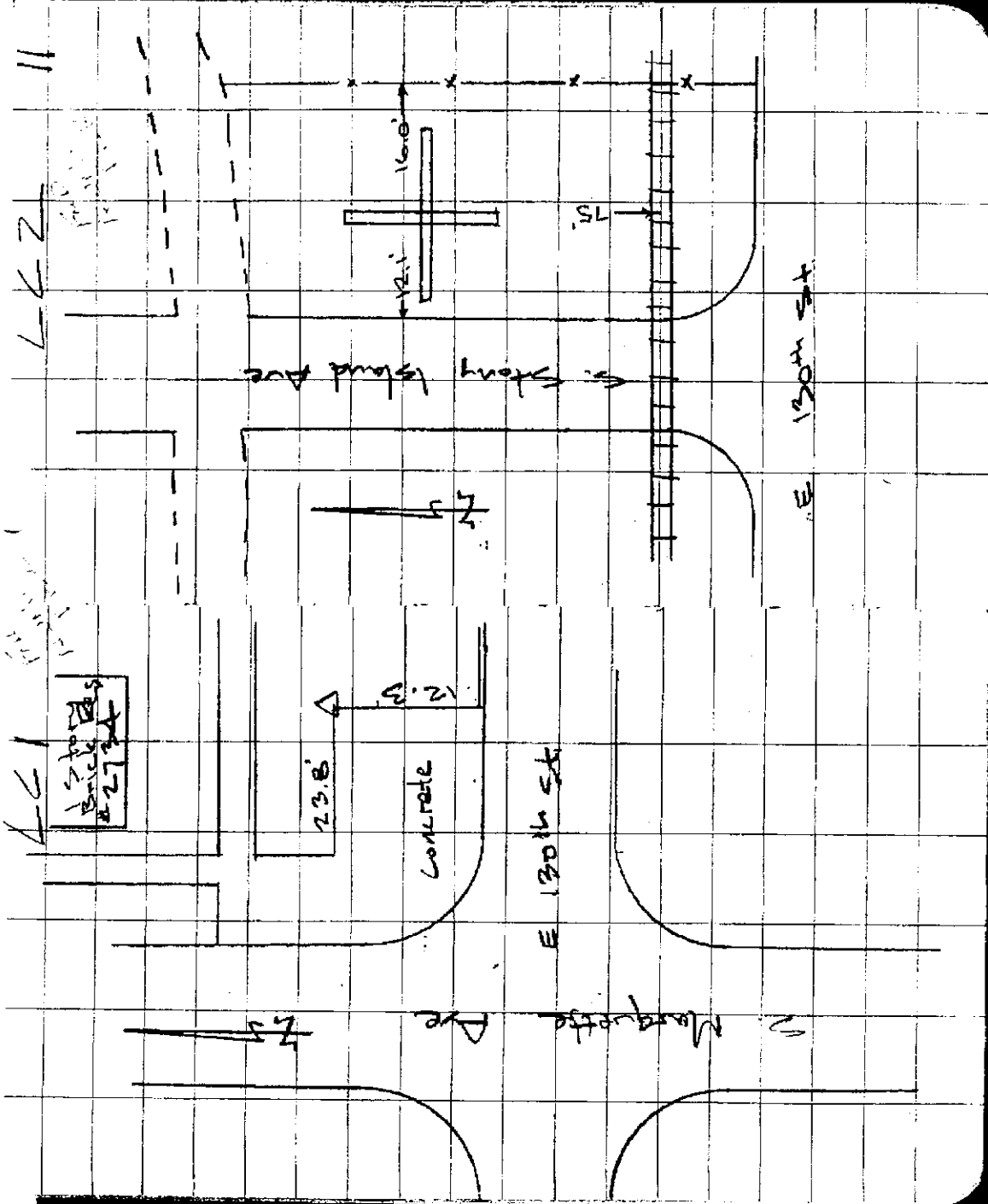
10

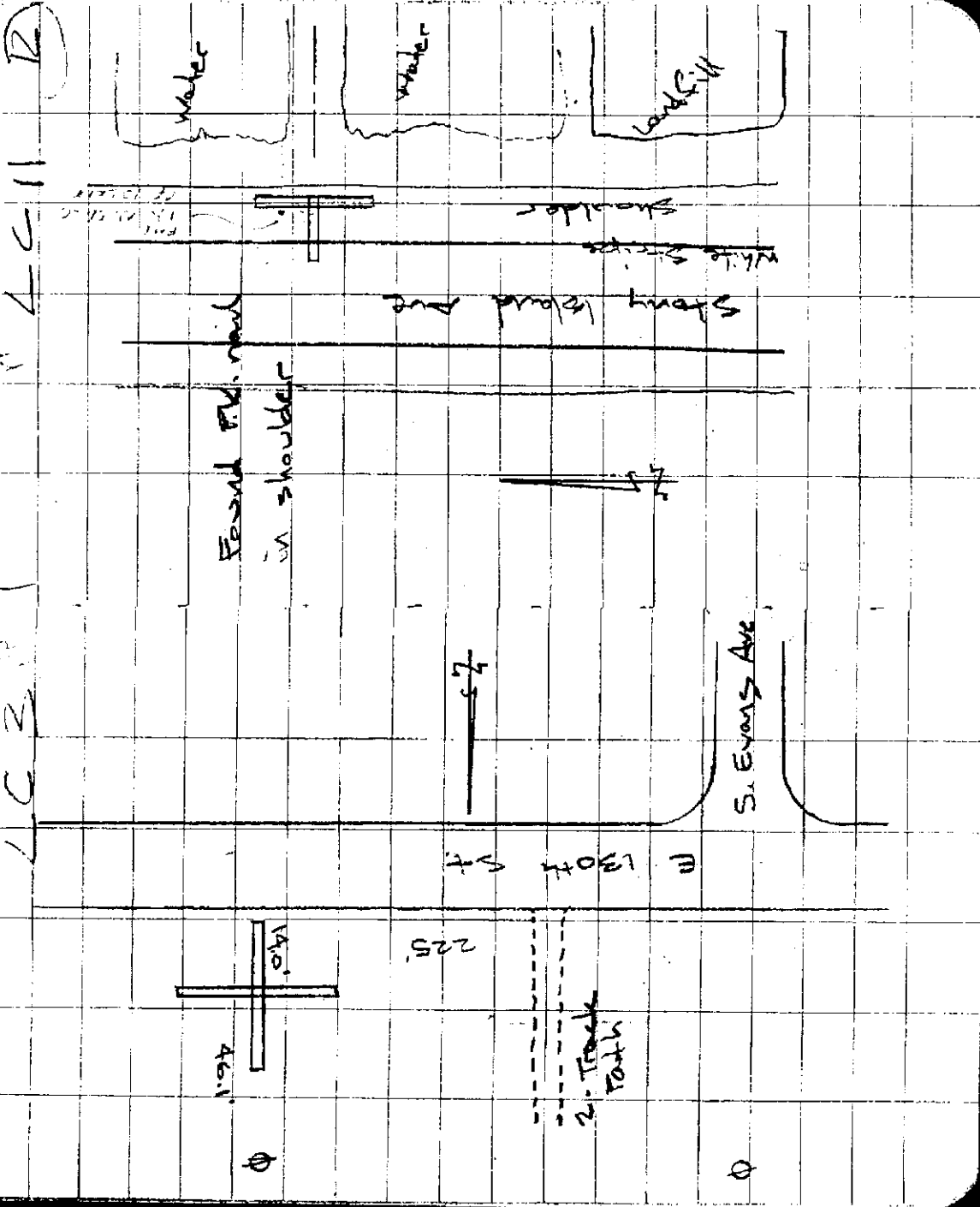
STATION 461
CITATION 461

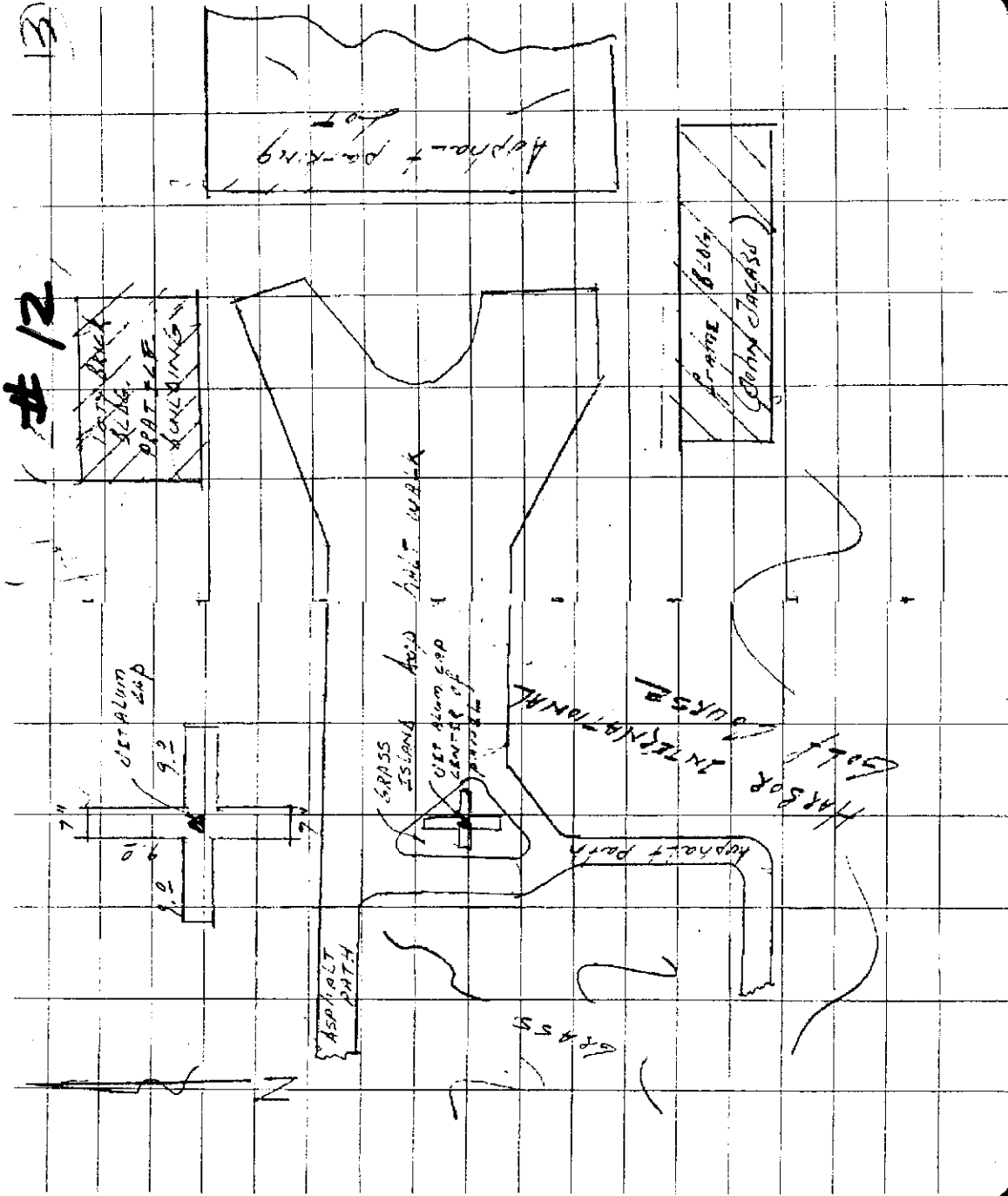


STATION 461
 SANDS SECTION TOP OF SAND POST
 AT THE INTERSECTION OF THE LITTLE
 RIVER - CANAL RIVER.
 G.P.D. - GOOD NO CONSTRUCTIONS
 PHOTO CANAL - IMPOSSIBLE.

SECTION INTER. INTO SANDS - 2000
 CANYON ISLAND, NOT BEING GAUGED
 BELOW. SPONGE THROUGH SANDS TO
 LITTLE RIVER, WHICH RIVER TO ITS
 INTERSECTION WITH THE LITTLE
 RIVER.

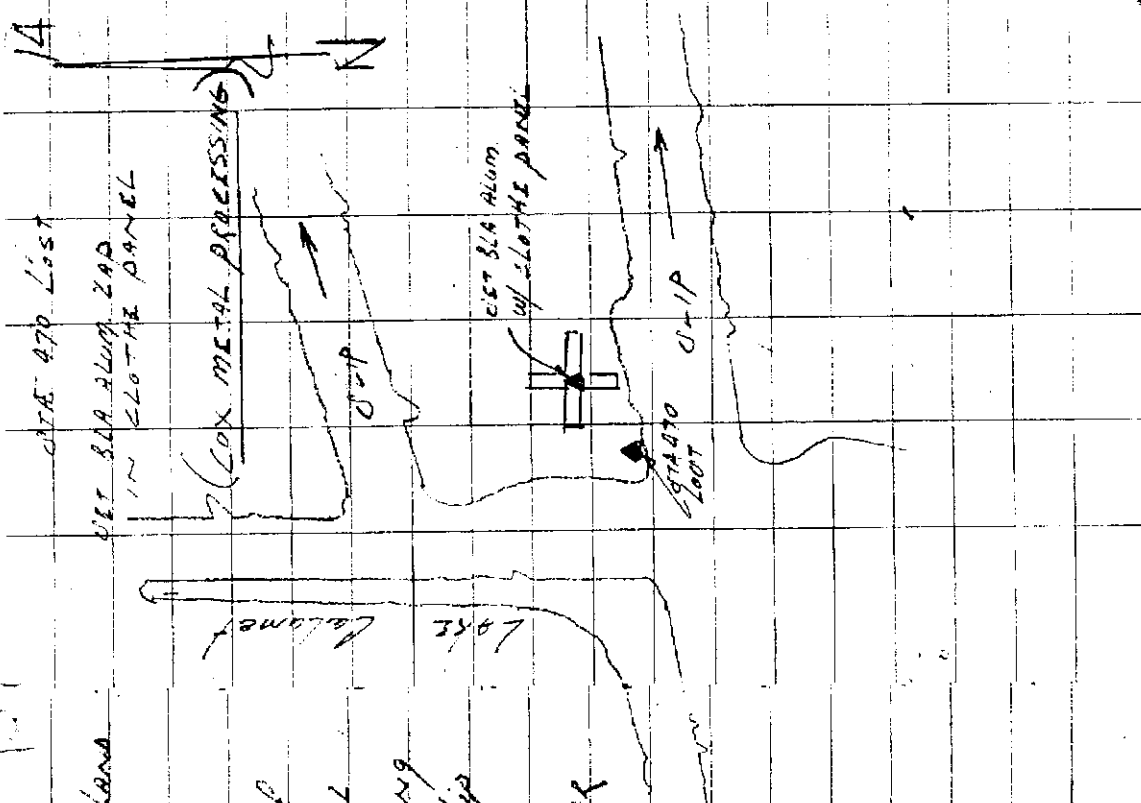






#6

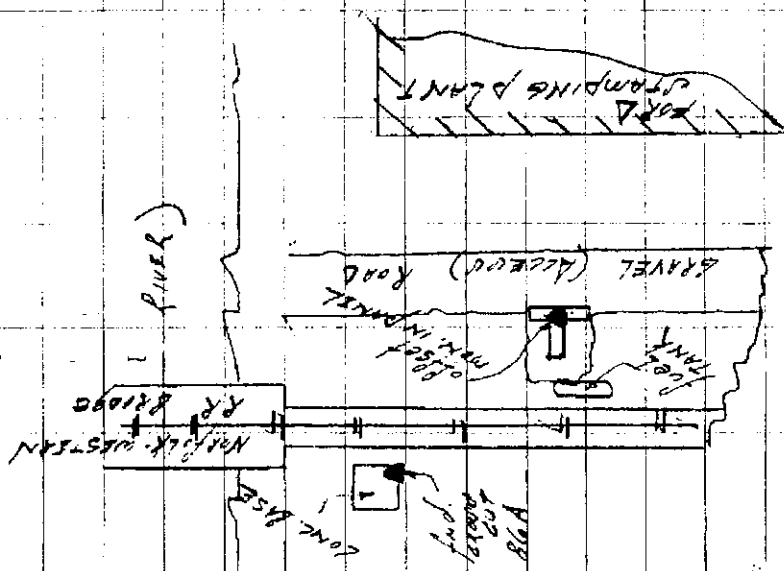
DIRECTIONS: CHASE ISLAND
 to REAR of N. Along
 front of INDUSTRIAL
 buildings to N. east of
 METAL GLASS (COMMERCIAL
 PROCESSING) WEST ALONG
 SLIP TO SLIP FOLLOW SLIP
 TO ITS INTERSECTION
 WITH THE CALUMET RIVER



(15)

CITA 86A

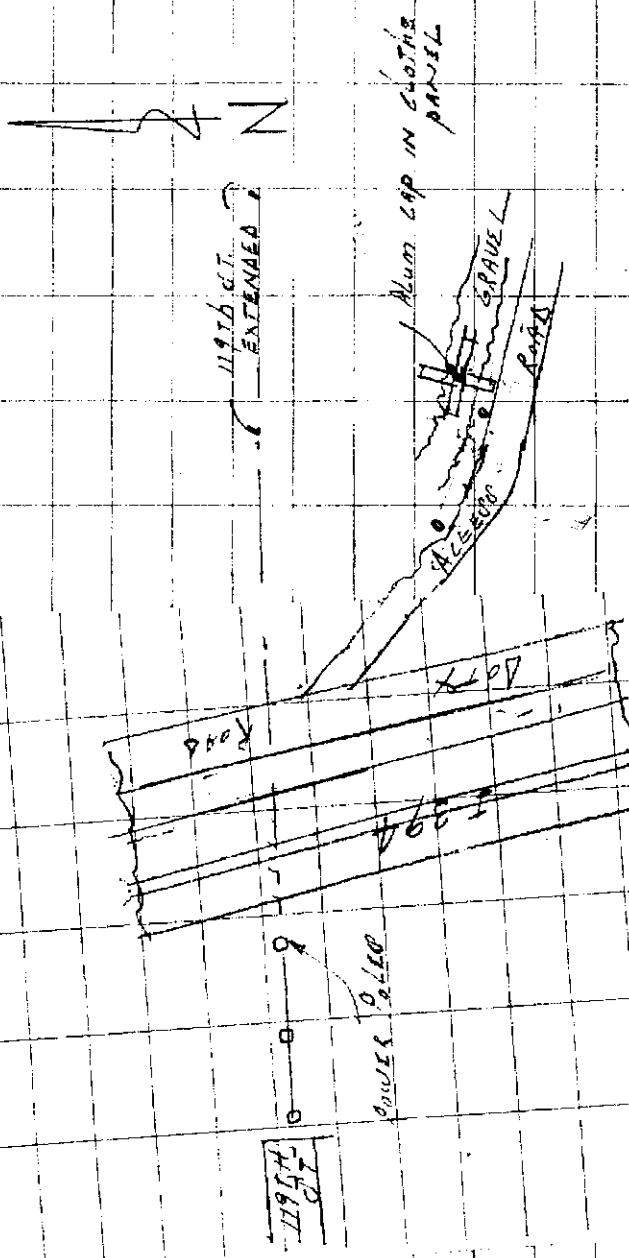
Directions: to 500' W of Tennessee
 Ave. Along 130th St. to gravel
 Access Road between RR tracks and
 N. end of 130th St. and just E.
 of main entry for FUSA (CALUMET
 Employee parking follows
 gravel Access to RR bridge over
 the Calumet canal



to TALKS IN ROAD
 ELECTRIC WHEEL

76

#8



DIRECTION: 2.15 MILES ALONG
 130TH ST. FROM ITS INTERSECTION
 W/ 130TH ST. TO GRAVEL ACCESS RD.
 2 0.15 MILE ALONG GRAVEL RD.
 TO PHOTO PANEL IN GRAVEL
 N. 1/2 of ACCESS ROAD.

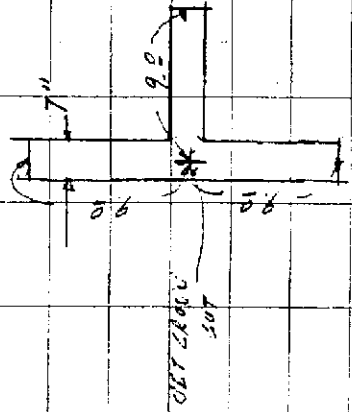
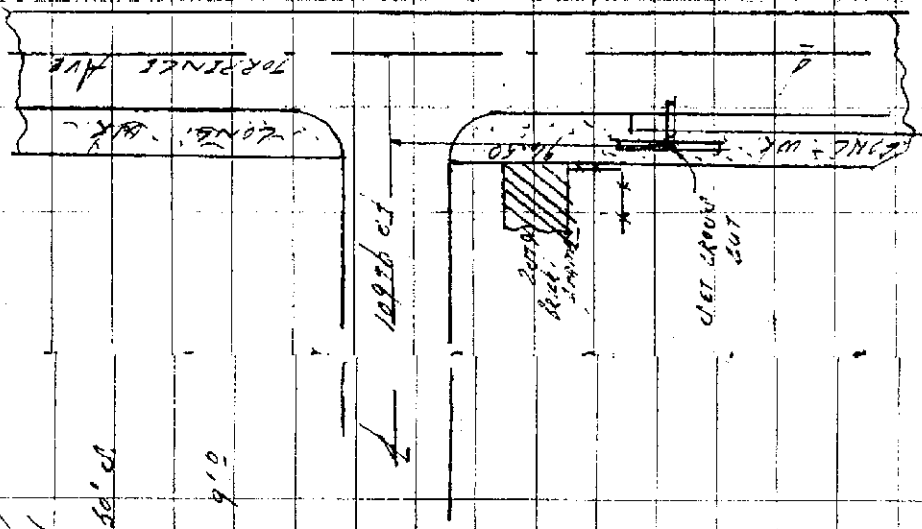
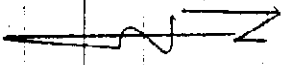
#.3

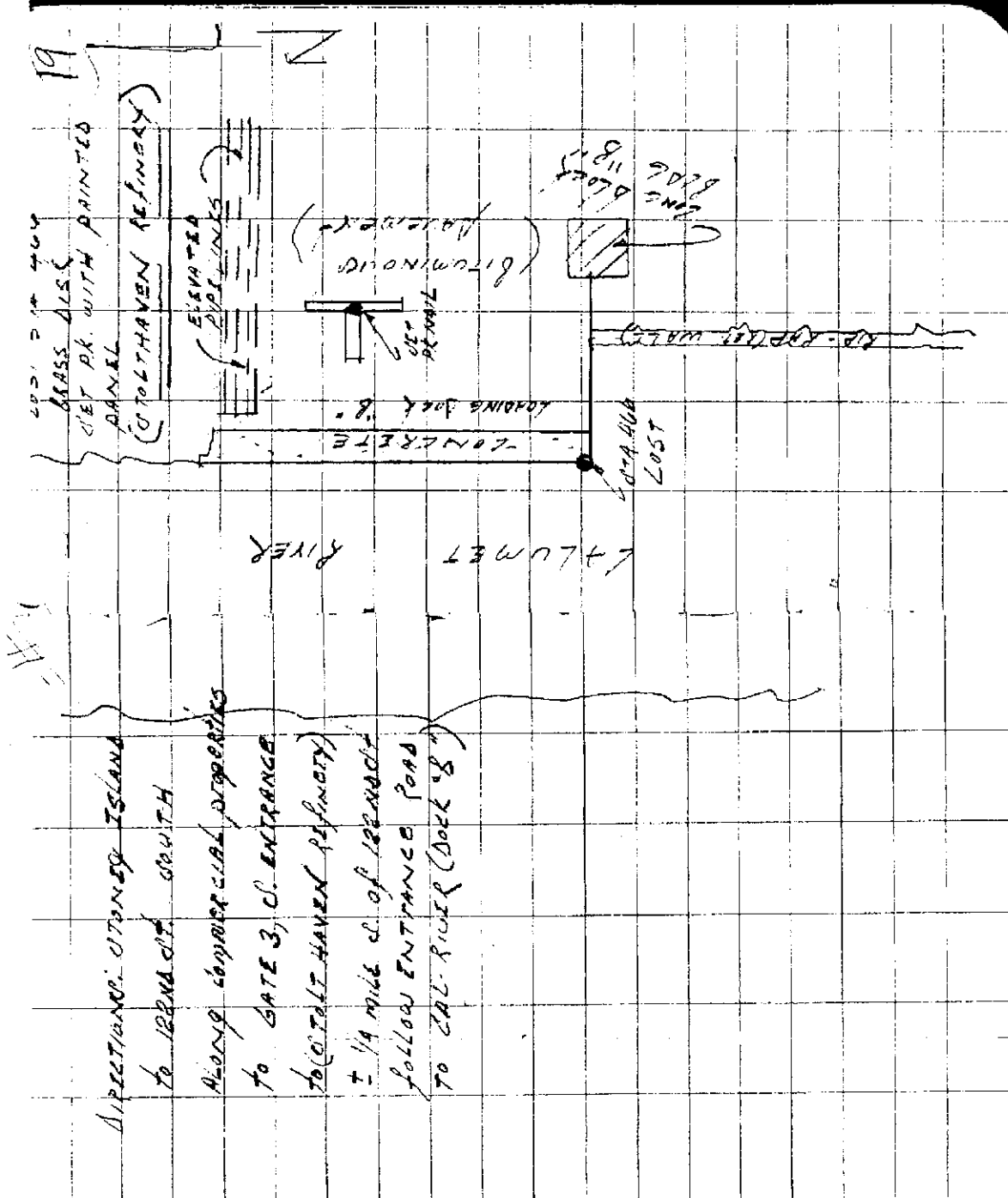
17

DESCRIPTION:

SET CROSSWALK 150' E. of West back of walk on TORRENCE AVE AND 96.50' S. of the E. of 109th ST. Painted 18" x 10" by 9" 0

PANEL EAST





DIRECTION: CITONGU ISLAND
to IBERNACIA SOUTH
Along commercial pier
to GATE 3, C. ENTRANCE
to (TOLEHAVEN REFINERY)
± 1/4 mile S. of IBERNACIA
follow ENTRANCE ROAD
to CAL. RIVER (DOCK #8)

19

CONSULTING
ENGINEERS
& LAND
SURVEYORS



Bollinger, Lach & Associates, Inc.

1010 Junie Blvd. • Oak Brook, IL 60521 • 630 990 1385 FAX 630 990 0038

FAX TRANSMITTAL TO:

NAME	COMPANY	FAX #
Grant Van Bartel	V3 Consultants	724-0384 ⁹²⁰²

Date: 15-Feb-02

From: Paul Hendricks

Re: Lake Calumet

Total number of pages including this sheet: 20

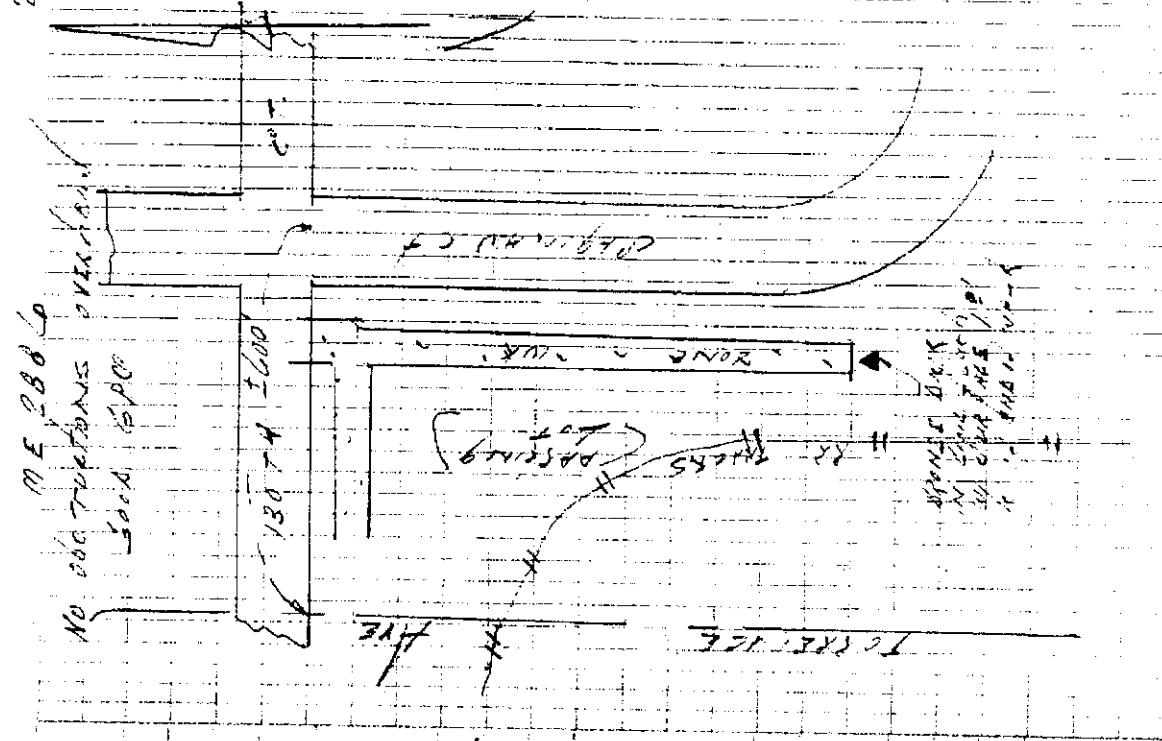
Comments: _____

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2

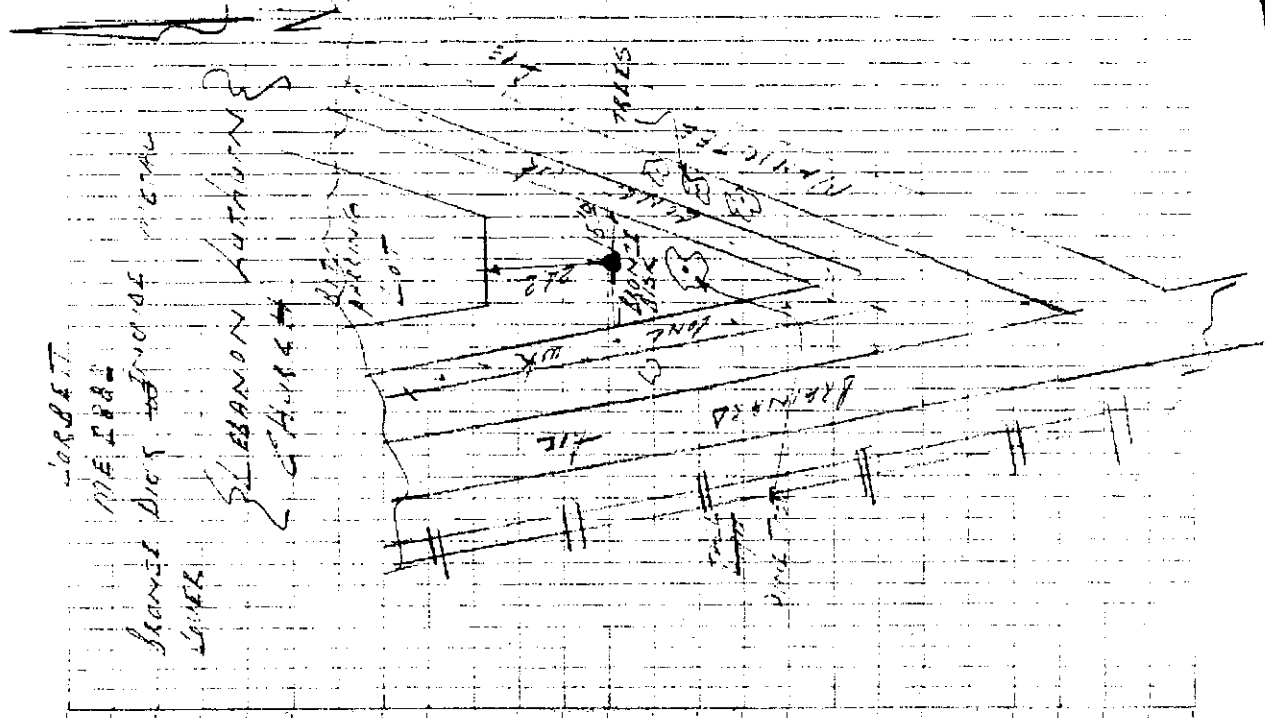


ME 2886

FOUND STRONG SEEDS COMPARED
 051 TRIANGLE CITY 1977
 T 047 C. C. 1307A CITY S.
 ON W. SIDE OF CHAPMAN CT.
 @ THE END OF - ONE WT.

500' No. obstructions
 overhead
 SEEDS

3



CORBETT
ME 8882

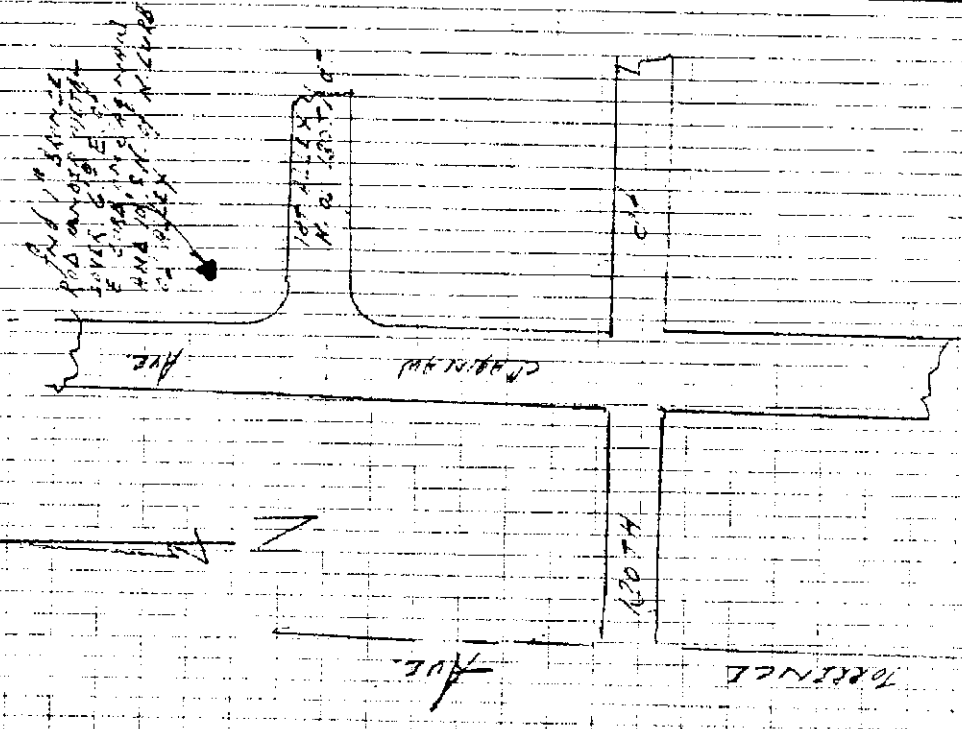
1.2 MILE CO. of BRANARD
± 115' N. of THE INT. of
BRANARD AND MANICIEL
AVE

S.P.O. TALL PINE TREE
± 10' S. of STATION
MARK AND ROW of
TREES ± 20' E, OPEN
STREETLY OVERHEAD
FAIR

4

(387)

ME 1825



ME 1825
387

Found 1 "Scanse Disk
 UNDER METAL COVER
 (CITY OF CHICAGO) ± 10'±
 N. of N. 8 1/2 of 1st Alley N.
 of 130th St. ± 6'± E. of
 E. 3 1/2 of C. AGINAW AVE.

G.P.C. No obstructions
 overhead
 Good

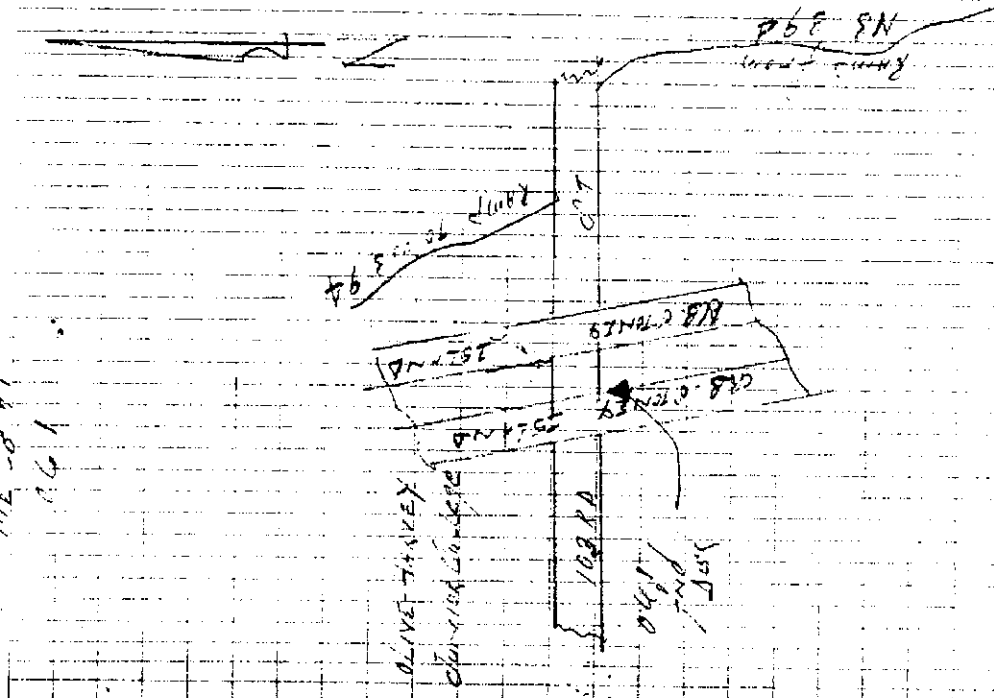
ME 2891
061

FOUND BRAN DISK BLASIN
W/ ANGLENT ON THE E.
DONG. CHLD OF C.B. BRIDGE
C'WAY ISLANDS = 130' 9" C.B.
THE 103RD C.T.

S.P.C. N9 OVERHEAD
CONSTRUCTION
5005

DIRECTIONS: N.D. 99A EX157
C'WAY ISLANDS - 103RD C.T.
WEST ON 103RD C.T. TO 157
BRIDGE OVER 103RD C.T. COST
W/ EAST OF HARVY COLLEGE.
WALK UP ON C'WAY OF 103RD
C.T. BETWEEN N-D BRIDGE
MON. 10 ± 10' C. OF C.T. BRIDGE
WALL IN E. WING. CHLD. C.
C.B. C'WAY ISLAND BRIDGE

ME - 891
061



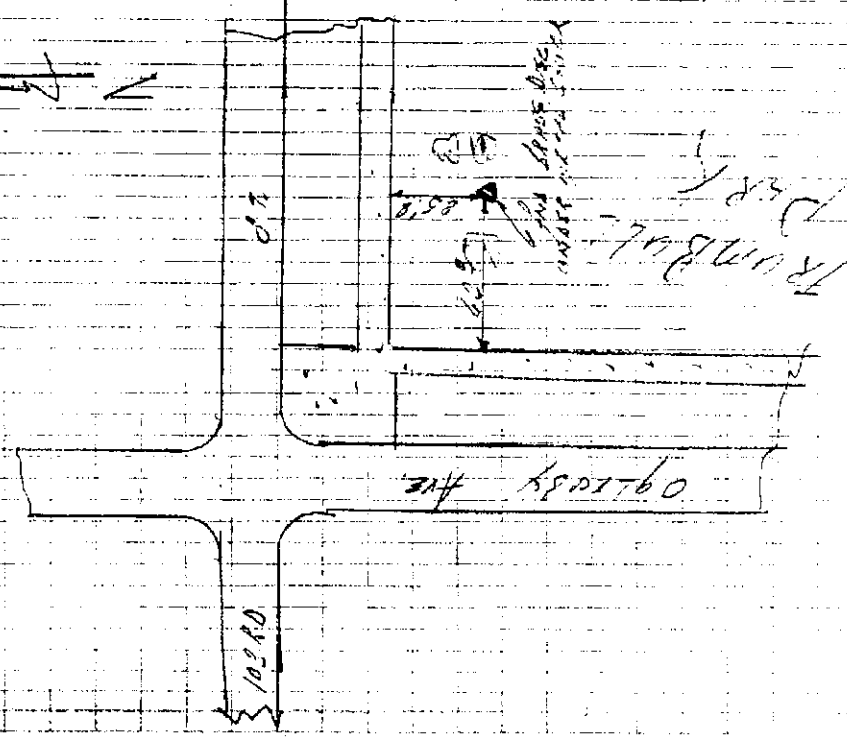
6

ME 2887
C. S. WALKER

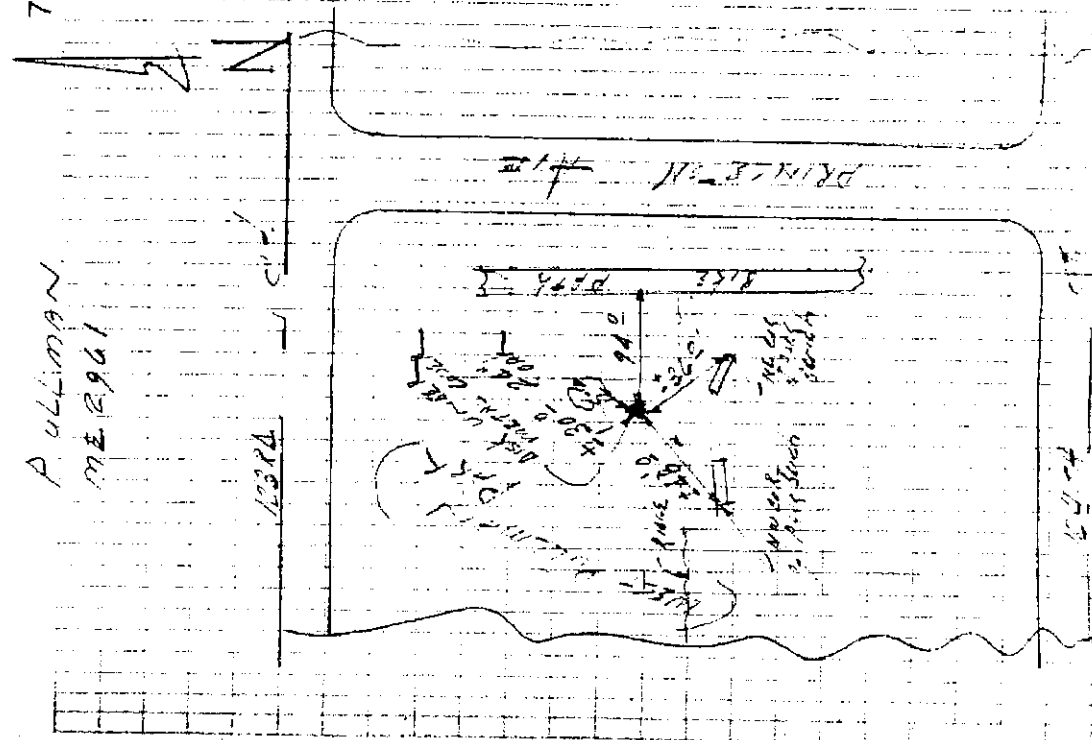
FOUND BRASS DISC UNDER METAL BLOCK

ME 2887
C. S. WALKER
FOUND BRASS DISC UNDER
METAL BLOCK ± 659 E. 0. 5
S. W. IN EGRESSIVE TUBE AND
± 559 C. S. W. S. W. IN
TUBING

APR. CENTERED RAIL
TRAILS NEARBY, ONE
LARGE 24" JUST WEST OF
C. S. W. TUBING
FAIR - BAD



M



PULLMAN
ME 2961

PULLMAN
ME 2961

FOUND SPASSING UNDER MIDDLE
 COVER ON HIGH RIDGE IN
 CENTER OF PULLMAN PARK
 BETWEEN 12324 & 12476
 ± 90° W. of SIDE PATH
 HORIZ. W. END OF TRINSECTIN
 AVE. ± 48°-49° N.W. of
 SNA PARK BENCH ± 36° from
 N.E. of 1st park bench in
 of PRINCE-TON AVE ± 30°
 E.W. of 2nd park bench.

GPO - OPEN QUARTERS, LARGE
 ONE TREE NEARBY
 FAIR - BAD.



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CALUMET AREA HYDROLOGIC MASTER PLAN SURVEY CONTROL

PRIMARY CONTROL:

- 1 - COVER SHEET
- 2 - STREET ATLAS KEY MAP
- 3 - AERIAL PHOTOGRAPH KEY MAP
- 4 - AC 9170 RECOVERY SHEET
- 5 - AE 9231 RECOVERY SHEET
- 6 - AF 9258 RECOVERY SHEET
- 7 - ME 3311 RECOVERY SHEET
- 8 - AJ 2776 RECOVERY SHEET
- 9 - AJ 2777 RECOVERY SHEET
- 10 - ME 1825 RECOVERY SHEET
- 11 - ME 1829 RECOVERY SHEET
- 12 - ME 1830 RECOVERY SHEET
- 13 - ME 1881 RECOVERY SHEET
- 14 - ME 2887 RECOVERY SHEET
- 15 - V3 PRIMARY CONTROL OCCUPATION CHART

ATTACHMENTS:

- V3 EQUIPMENT LIST
- NGS DATA SHEETS
- SKI PRO REPORTS

LIDAR CONTROL:

- 1 - COVER SHEET AND INDEX
- 2 - STREET ATLAS KEY MAP
- 3 - AERIAL PHOTOGRAPHY KEY MAP
- 4 - LC-1 RECOVERY DATA SHEET
- 5 - LC-3 RECOVERY DATA SHEET
- 6 - LC-6 RECOVERY DATA SHEET
- 7 - LC-8 RECOVERY DATA SHEET
- 8 - LC-11 RECOVERY DATA SHEET
- 9 - LC-13 RECOVERY DATA SHEET
- 10 - LC-236 RECOVERY DATA SHEET
- 11 - LC-2 RECOVERY DATA SHEET
- 12 - LC-5 RECOVERY DATA SHEET
- 13 - LC-12 RECOVERY DATA SHEET
- 14 - LC-14 RECOVERY DATA SHEET
- 15 - LC-15 RECOVERY DATA SHEET
- 16 - LC-4 RECOVERY DATA SHEET
- 17 - LC-7 RECOVERY DATA SHEET
- 18 - LC-9 RECOVERY DATA SHEET
- 19 - LC-10 RECOVERY DATA SHEET

ATTACHMENTS:

BOLLINGER, LACH & ASSOC. FIELD NOTES, DATED 2/15/02.

BENCHMARKS:

- 1- COVER SHEET AND INDEX**
- 2 - STREET ATLAS KEY MAP**
- 3 - AERIAL PHOTOGRAPH KEY MAP**
- 4 - V3 BM-1 RECOVERY SHEET**
- 5 - V3 BM-2 RECOVERY SHEET**
- 6 - V3 BM-3 RECOVERY SHEET**
- 7 - V3 BM-4 RECOVERY SHEET**
- 8 - V3 BM-5 RECOVERY SHEET**
- 9 - V3 BM-6 RECOVERY SHEET**
- 10 - V3 BM-7 RECOVERY SHEET**
- 11 - V3 BM-8 RECOVERY SHEET**
- 12 - V3 BM-9 RECOVERY SHEET**
- 13 - V3 CAL RECOVERY SHEET**

SECONDARY SITE CONTROL:

- 1- COVER SHEET AND INDEX
- 2- STREET ATLAS KEY MAP
- 3- AERIAL PHOTOGRAPH KEY MAP
- 4- RECOVERY SHEET CP# 586
- 5- RECOVERY SHEET CP# 587
- 6- RECOVERY SHEET CP# 590
- 7- RECOVERY SHEET CP# 868
- 8- RECOVERY SHEET CP# 862
- 9- RECOVERY SHEET CP# 801
- 10- RECOVERY SHEET CP# 932
- 11- RECOVERY SHEET CP# 903
- 12- RECOVERY SHEET CP# 904
- 13- RECOVERY SHEET CP# 131
- 14- RECOVERY SHEET CP# 701
- 15- RECOVERY SHEET CP# 703
- 16- RECOVERY SHEET CP# 706
- 17- RECOVERY SHEET CP# 798
- 18- RECOVERY SHEET CP# 700
- 19- RECOVERY SHEET CP# 411
- 20- RECOVERY SHEET CP# 412

NOTES:

PRIMARY:

1) POINTS UTILIZED WERE GPS DERIVED VS. BEING ESTABLISHED BY CLASSICAL METHODS AT THE RECOMMENDATION OF THE ILLINOIS STATE GEODETIC ADVISOR.

2) SECOND ORDER CLASS 1 SURVEY METHODS WERE USED FOR ALL POINTS MEASURED.

LIDAR:

1) LC-# = LIDAR CONTROL POINT NUMBER. LIDAR CONTROL POINTS SET BY BOLLINGER, LACH & ASSOC., FIELD NOTES PROVIDED TO V3 (SEE ATTACHMENT) DATED FEBRUARY 15, 2002.

2) LC-2, LC-5, LC-12, LC-14 & LC-15 RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

3) LC-4, LC-7, LC-9 & LC-10 NOT FOUND BY V3.

LIDAR, CONTINUED:

4) LOCATIONS FOR ALL LIDAR CONTROL DEPICTED ON 'VICINITY' SKETCHES, BASED ON COORDINATES EXTRACTED FROM PROVIDED LIDAR MAPPING.

BENCHMARKS:

1) A LINE OF BENCHMARKS WERE ESTABLISHED ALONG THE EAST SIDE OF LAKE CALUMET WITH MONUMENTS APPROXIMATELY EVERY HALF MILE ALONG STONY ISLAND AVENUE FROM 103RD STREET ON THE NORTH TO THE CALUMET RIVER ON THE SOUTH.

2) POINTS SET FOR VERTICAL REFERENCE ONLY. NO HORIZONTAL VALUES WERE MEASURED.

SECONDARY SITE CONTROL:

1) ALL POINTS SET BY ENVIRONMENTAL DESIGN INTERNATIONAL, INC. (EDI) AND LATER LOCATED BY V3.

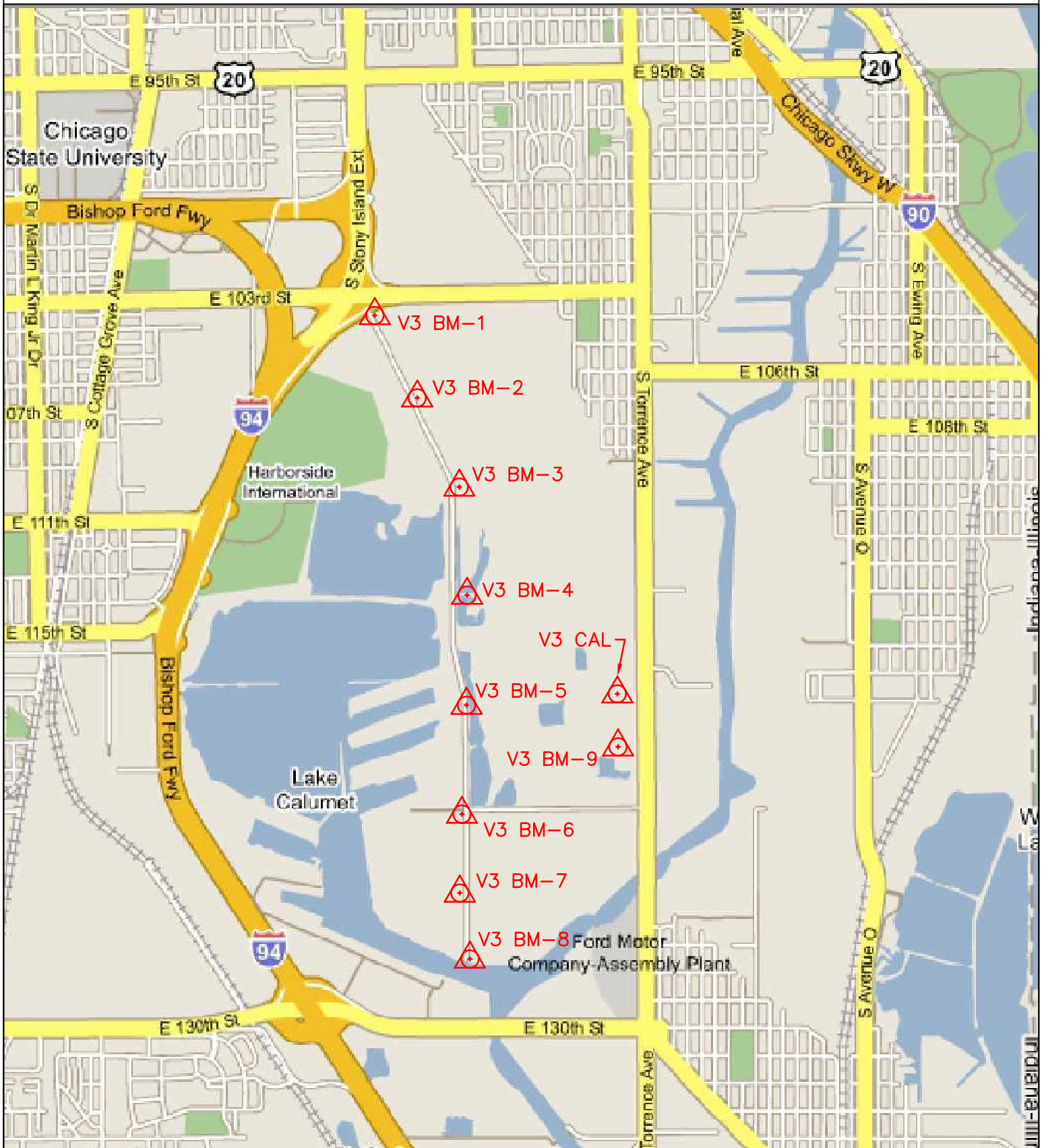
2) SOME POINTS HAVE BEEN DESTROYED SINCE BEING USED FOR THIS PROJECT.



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CALUMET AREA HMP BENCHMARK RECOVERY DATA SHEET

STREET ATLAS KEY MAP

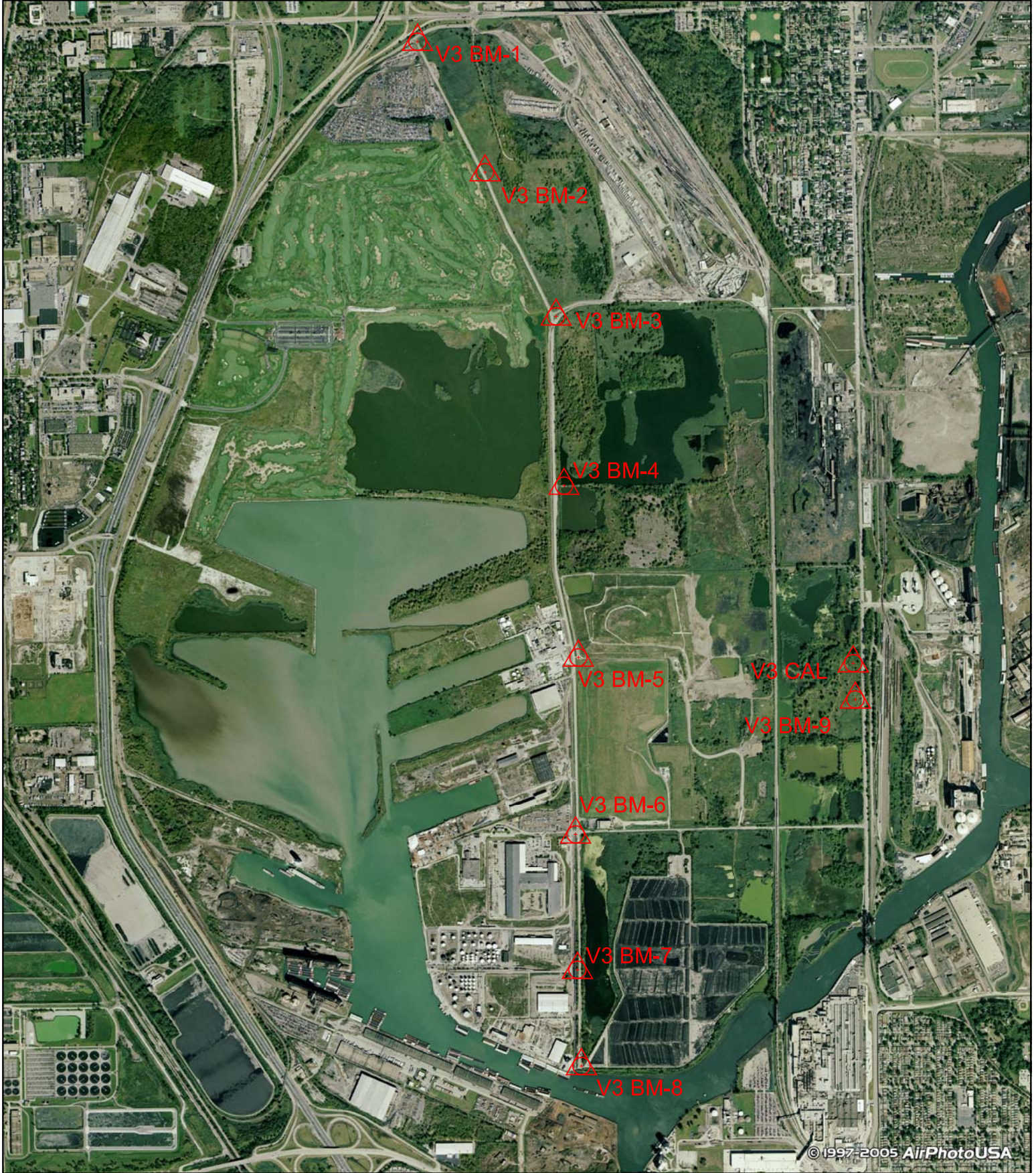




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CALUMET AREA HMP BENCHMARK RECOVERY DIAGRAM

AERIAL PHOTOGRAPH KEY MAP





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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-1

STATION ELEVATION: 586.2619

DATE MONUMENTED: 7/23/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF DOTTY ROAD AND STONY ISLAND AVENUE, GO APPROXIMATELY 9 FEET EAST OF EAST EDGE OF PAVEMENT OF STONY ISLAND AND ± 15.7 FEET NORTHEAST OF THE END OF THE CONCRETE CURB TO A CONCRETE LIGHT POLE BASE TO A CHISLED SQUARE CUT ON THE SOUTH SIDE OF SAID BASE.

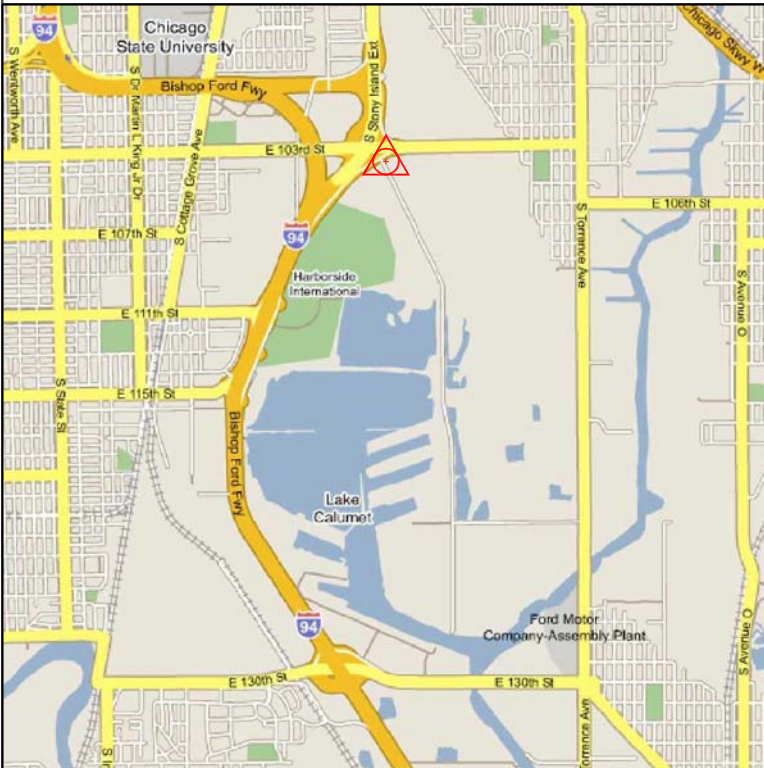
PHOTOGRAPH 'A'



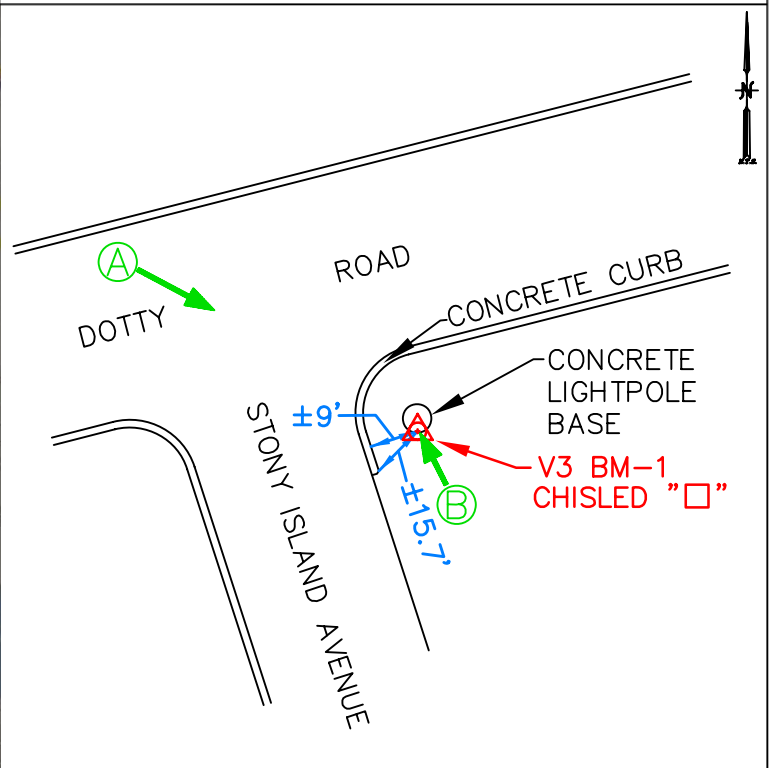
PHOTOGRAPH 'B'



VICINITY



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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-2

STATION ELEVATION: 590.9449

DATE MONUMENTED: 7/23/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF STONY ISLAND AVENUE AND THE INTERSECTION OF "CALUMET TRANSFER" TRASH FACILITY ENTRANCE GO NORTH ALONG STONY ISLAND APPROXIMATELY 1475' TO A DISK IN CONCRETE APPROXIMATELY 11' EAST OF THE EAST EDGE OF BITOUMINOUS SHOULDER DIRECTLY ACROSS FROM A "NO TRESPASSING" SIGN BOLTED TO THE CHAIN LINK FENCE ON THE WEST SIDE OF STONY ISLAND. SIGN IS FILLED WITH HOLES.

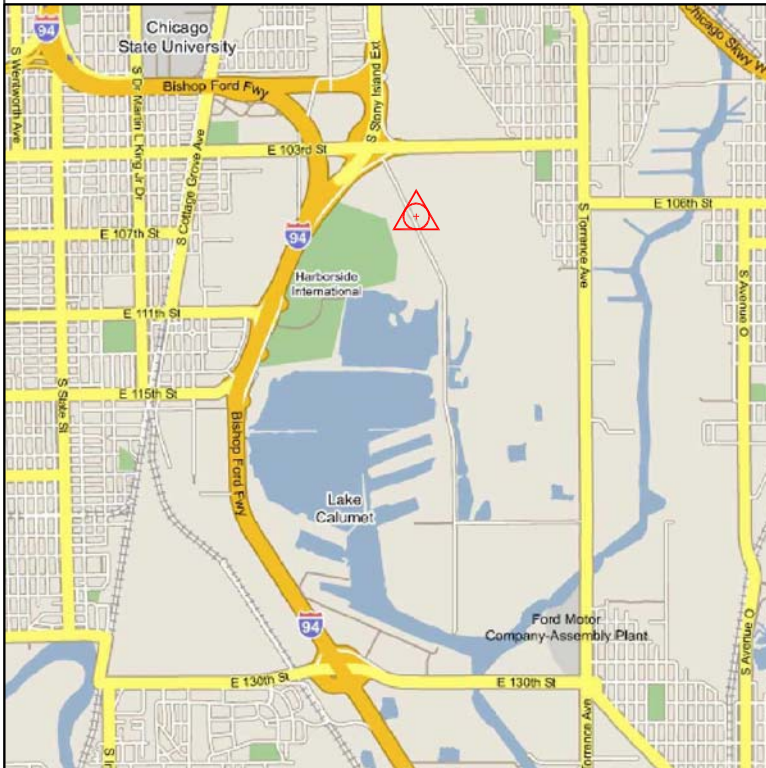
PHOTOGRAPH 'A'



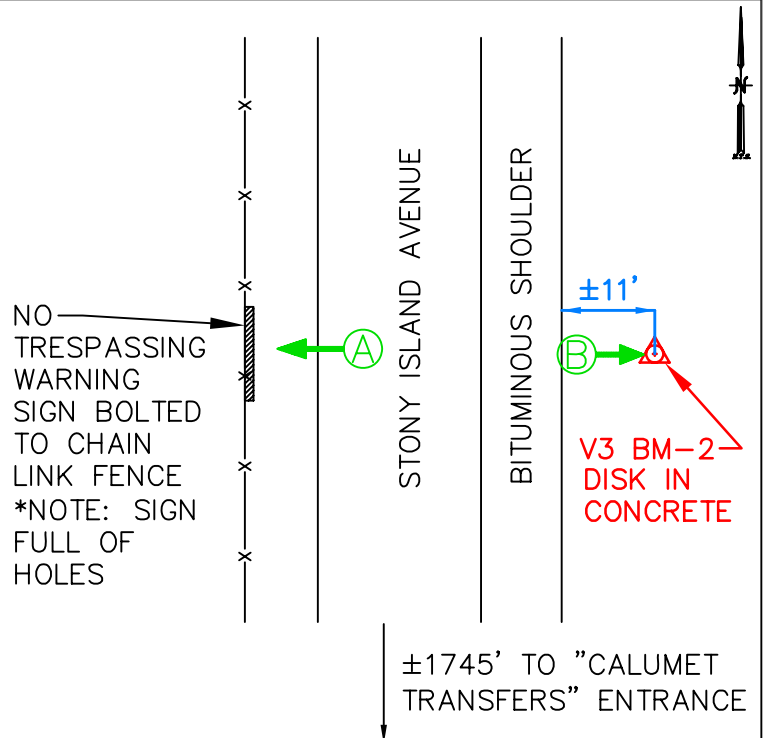
PHOTOGRAPH 'B'



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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-3

STATION ELEVATION: 586.9319

DATE MONUMENTED: 7/23/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF STONY ISLAND AVENUE AND THE ENTRANCE TO "CALUMET TRANSFER" TRASH FACILITY TO $\pm 53.5'$ EAST OF THE EAST EDGE OF PAVEMENT OF STONY ISLAND AVENUE AND $\pm 44.5'$ SOUTH OF SOUTH BACK OF CURB ALONG SAID ENTRANCE TO A DISK IN CONCRETE.

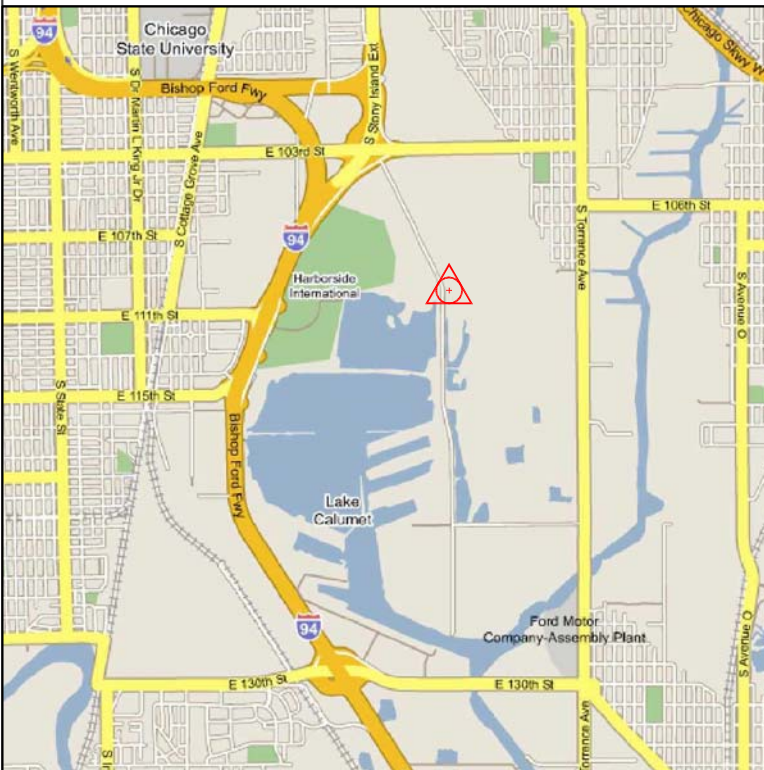
PHOTOGRAPH 'A'



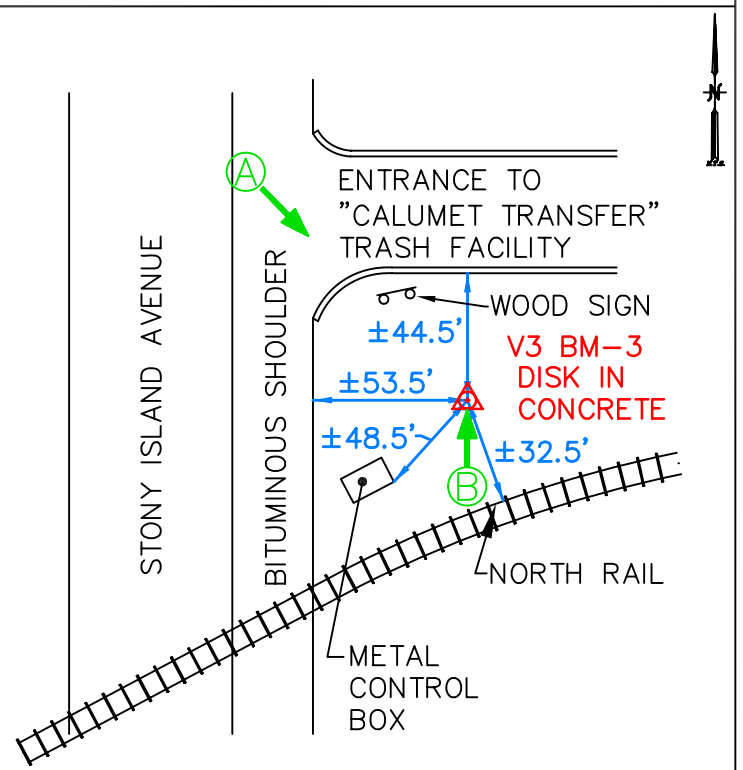
PHOTOGRAPH 'B'



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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-4

STATION ELEVATION: 584.3449

DATE MONUMENTED: 7/23/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF STONY ISLAND AVENUE AND 122ND STREET GO APPROXIMATELY 5310' NORTH ALONG STONY ISLAND TO ADJACENT TO A METAL RAIL FENCE, FROM EAST EDGE OF PAVEMENT OF ROAD ADJACENT TO METAL FENCE GO $\pm 158'$ EAST TO A CHISLED SQUARE CUT ON WEST SIDE OF CONCRETE BASE OF A STORM STRUCTURE ON THIN STRIP OF LAND BETWEEN TWO PONDS.

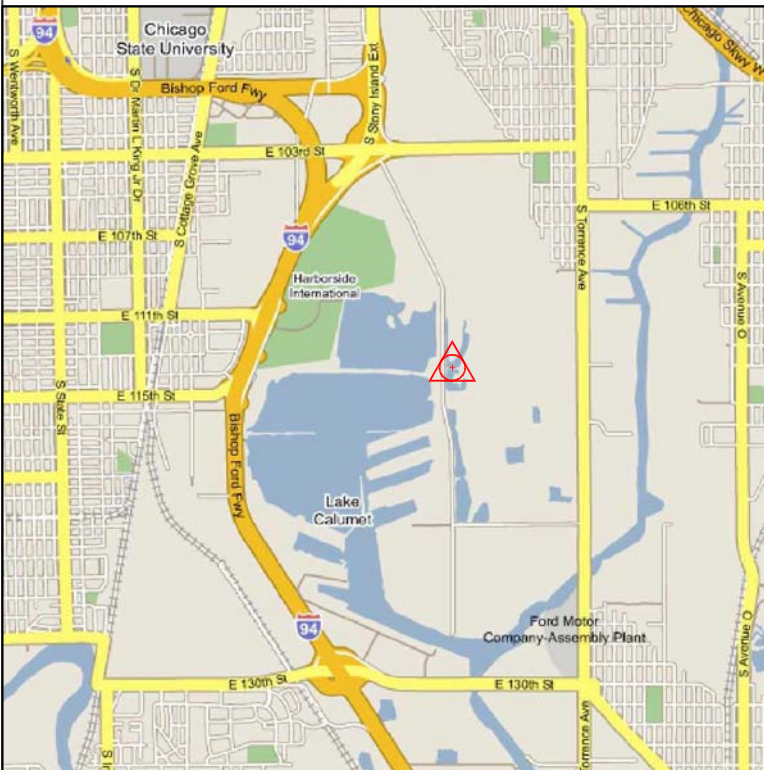
PHOTOGRAPH 'A'



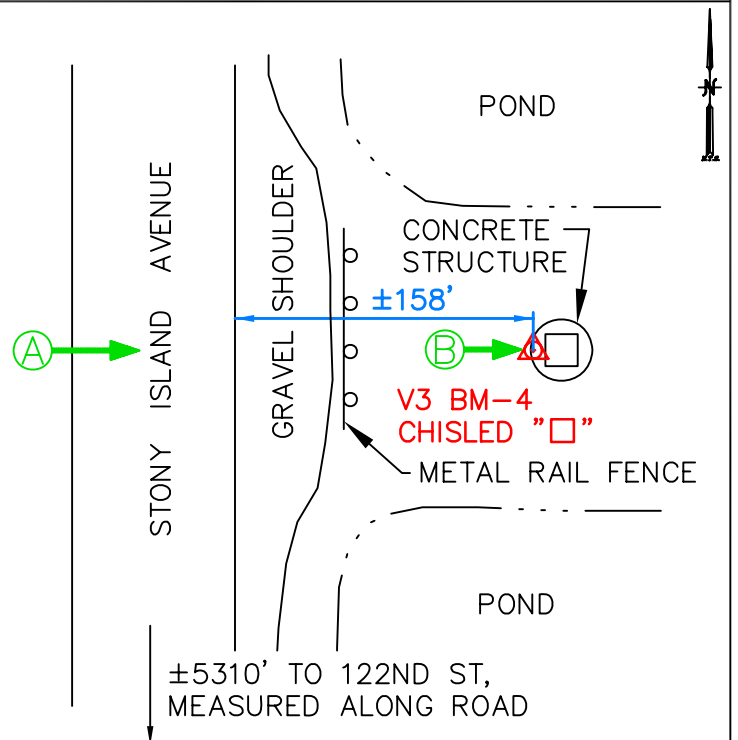
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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-5

STATION ELEVATION: 593.4699

DATE MONUMENTED: 7/23/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF 122ND ST AND STONY ISLAND AVENUE GO APPROXIMATELY 2640' NORTH ALONG STONY ISLAND TO A BLOCKED ENTRANCE TO THE LIFT STATION BETWEEN THE TWO LANDFILLS ON THE EAST SIDE OF STONY ISLAND. BENCHMARK IS A CHISLED SQUARE CUT ON THE WEST SIDE OF MIDDLE OF THREE CONCRETE STRUCTURES FOR SAID LIFT STATION.

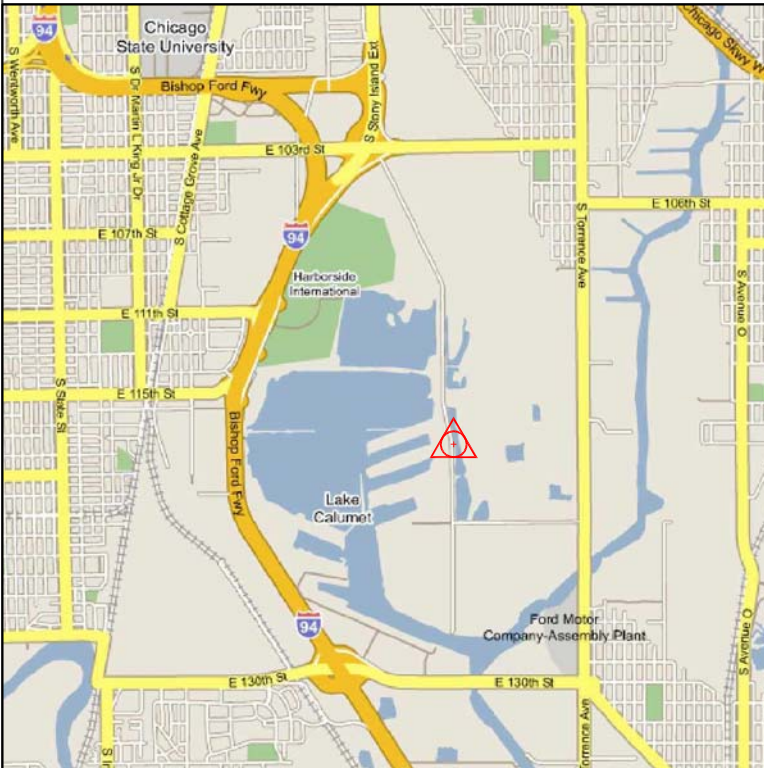
PHOTOGRAPH 'A'



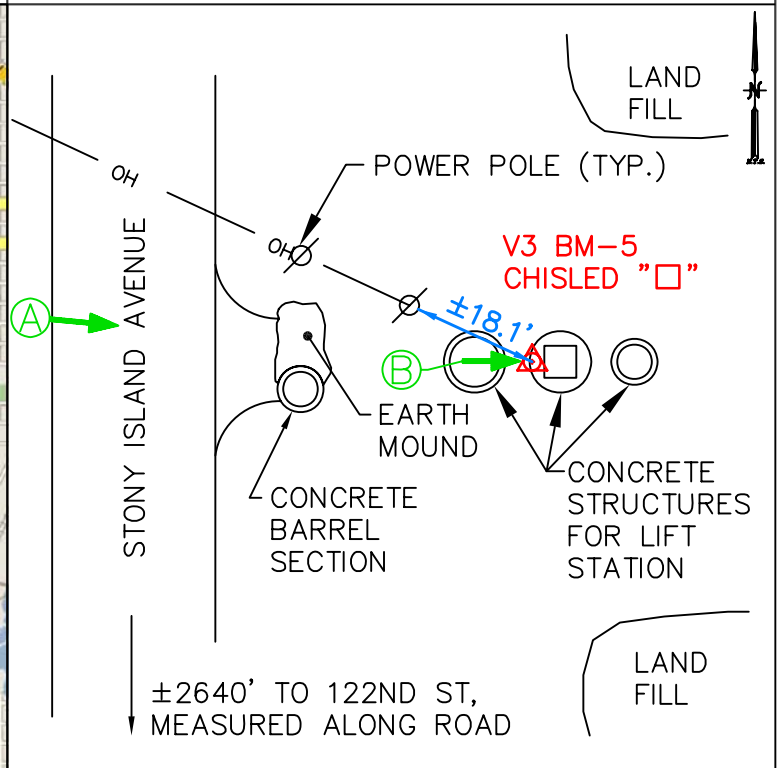
PHOTOGRAPH 'B'



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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-6

STATION ELEVATION: 587.6269

DATE MONUMENTED: 7/23/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF 122ND ST AND STONY ISLAND AVENUE GO TO THE SOUTHWEST CORNER, APPROXIMATELY 9' WEST OF THE ROUGH EDGE OF PAVEMENT TO A CONCRETE PAD WITH A CHISELED "X" CUT ON NORTHEAST CORNER OF SAID CONCRETE PAD.

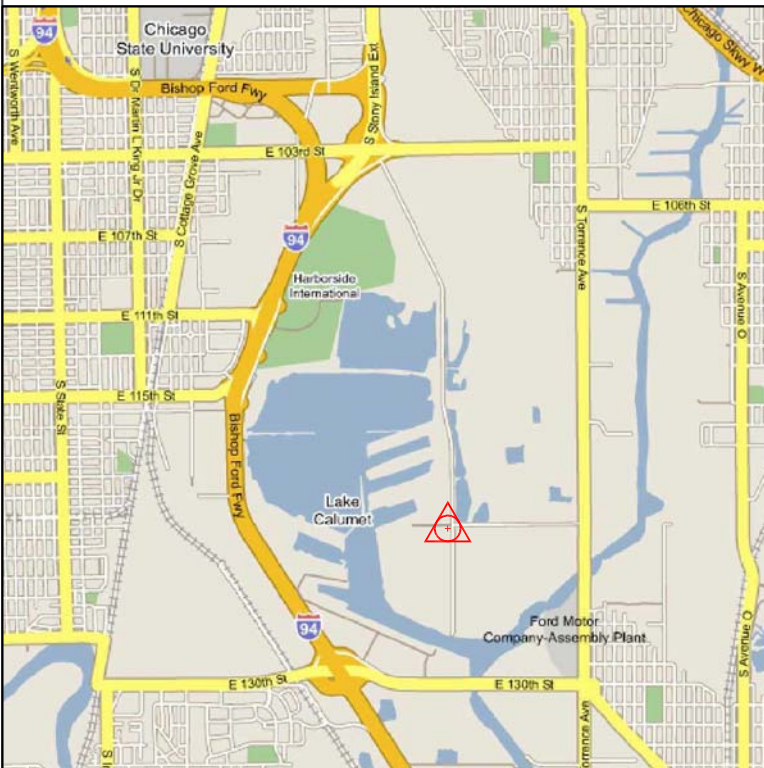
PHOTOGRAPH 'A'



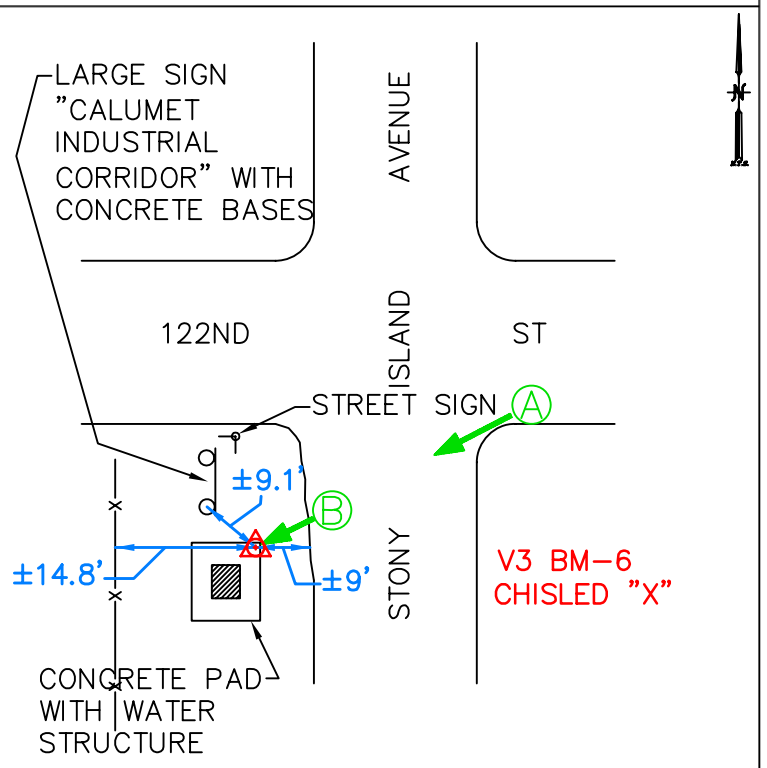
PHOTOGRAPH 'B'



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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-7

STATION ELEVATION: 589.6459

DATE MONUMENTED: 7/23/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF 122ND STREET AND STONY ISLAND AVENUE GO APPROXIMATELY 2120' SOUTH TO LOCATE DISK IN CONCRETE APPROXIMATELY 12' WEST OF THE WEST EDGE OF PAVEMENT OF STONY ISLAND AVENUE.

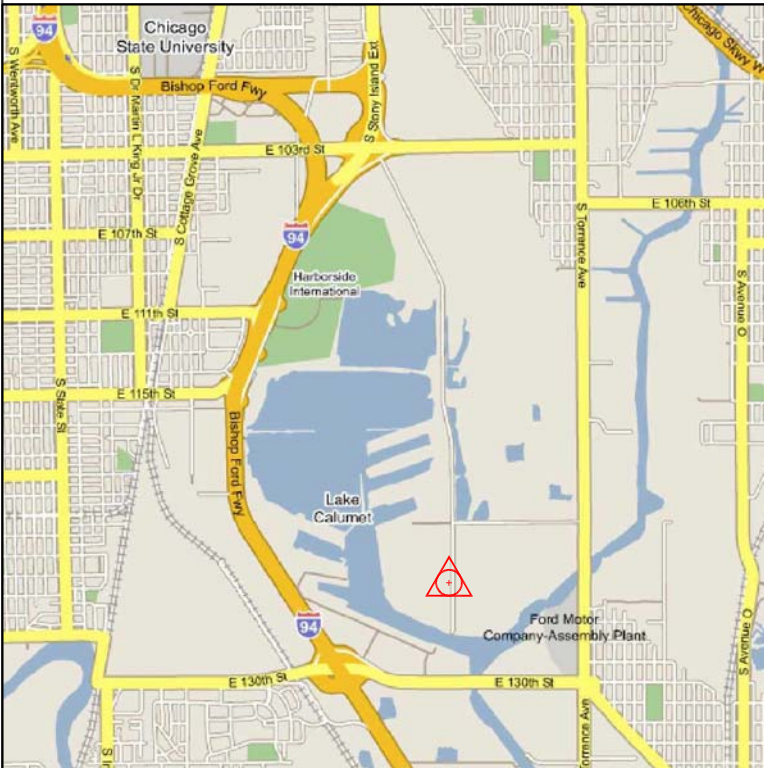
PHOTOGRAPH 'A'



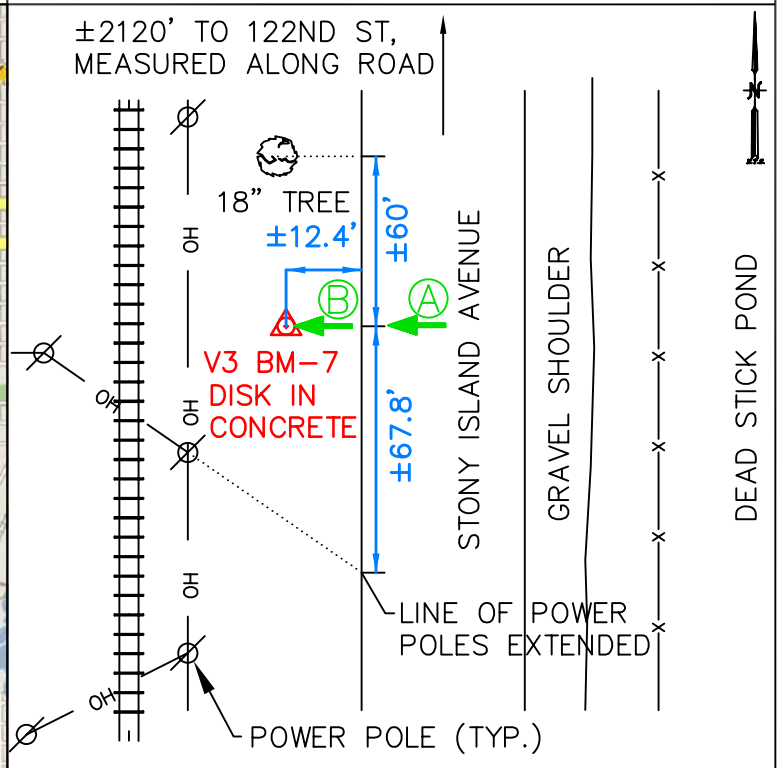
PHOTOGRAPH 'B'



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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-8

STATION ELEVATION: 589.0969

DATE MONUMENTED: 7/22/04

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE SOUTHERLY END OF STONY ISLAND AVENUE JUST NORTH OF THE CALUMET RIVER LOCATE THE ENTRANCE GATE AND ASSOCIATED CONCRETE BOLLARDS TO THE MWRD BIOSOLIDS FACILITY, GO APPROXIMATELY 15' NORTH AND WEST TO A SANITARY MANHOLE WITH A CHISELED SQUARE CUT ON SOUTH SIDE OF RIM OF SAID SANITARY MANHOLE.

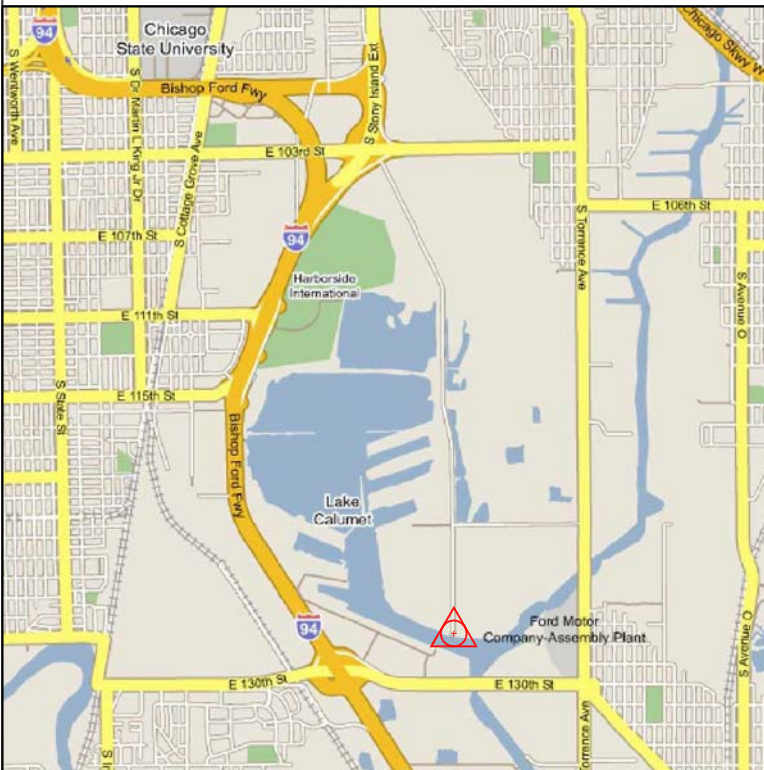
PHOTOGRAPH 'A'



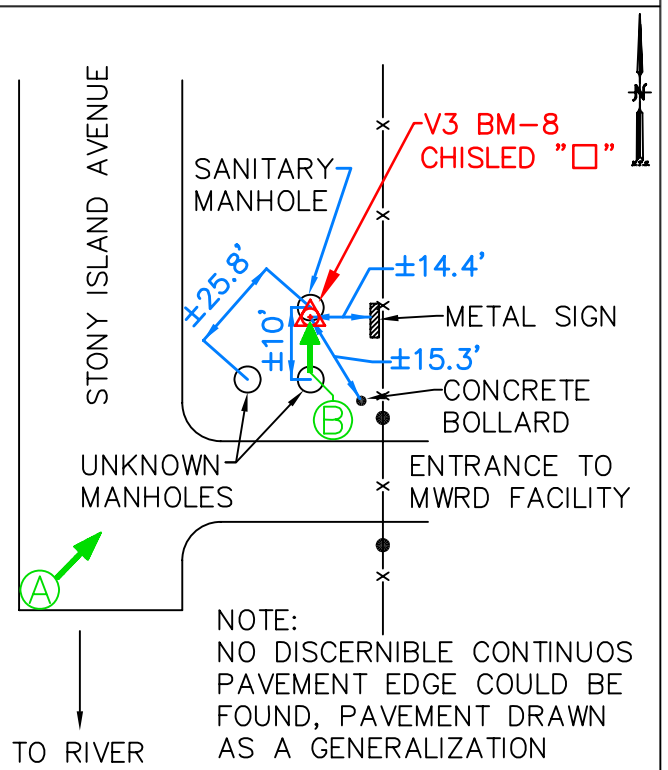
PHOTOGRAPH 'B'



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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3 BM-9

STATION ELEVATION: 586.0586

DATE MONUMENTED: 8/24/05

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF 122ND STREET AND TORRENCE AVENUE GO APPROXIMATELY 1945' NORTH TO DIRECTLY IN LINE WITH LARGE BILLBOARD SIGN #001906, THEN FROM THE WEST EDGE OF SAID BILLBOARD GO $\pm 29'$ TO A DISK SET IN CONCRETE.

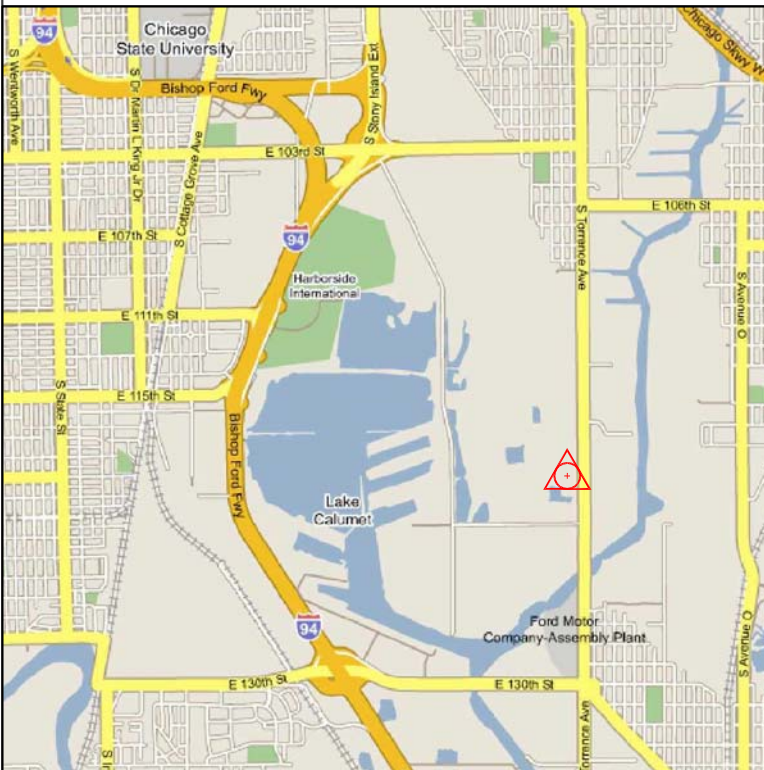
PHOTOGRAPH 'A'



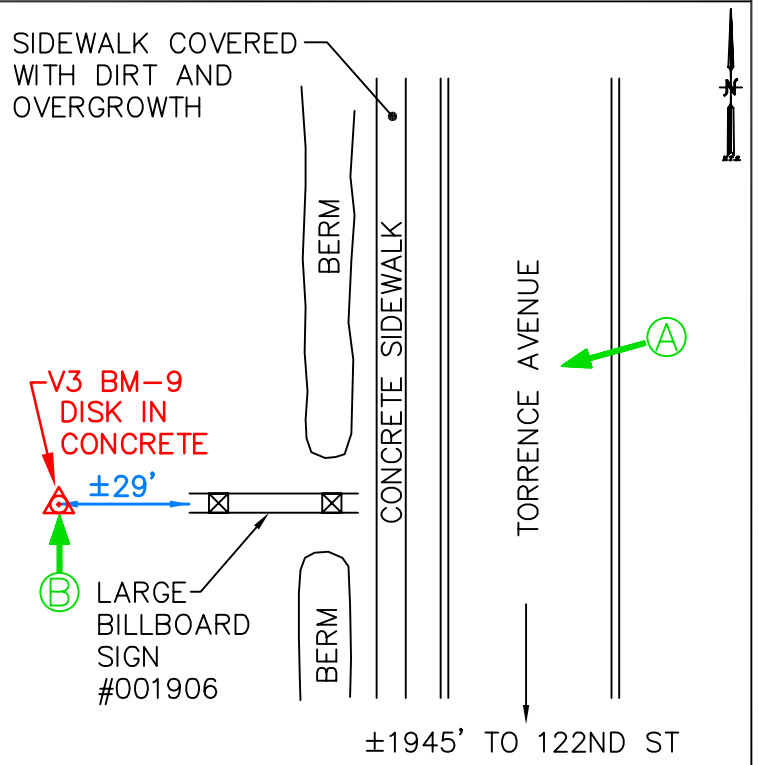
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CALUMET AREA HMP

BENCHMARK RECOVERY DATA SHEET

STATION NAME: V3-CAL

STATION ELEVATION: 585.8541

DATE MONUMENTED: 8/24/05

STATION DATUM: NAVD 88

STATION DESCRIPTION:

FROM THE INTERSECTION OF 122ND ST AND TORRENCE AVENUE GO APPROXIMATELY 2440' NORTH TO A PLACE JUST SOUTH OF LARGE BILLBOARD SIGN #001908, THEN WEST APPROXIMATELY 185.5' TO A DISK SET IN CONCRETE.

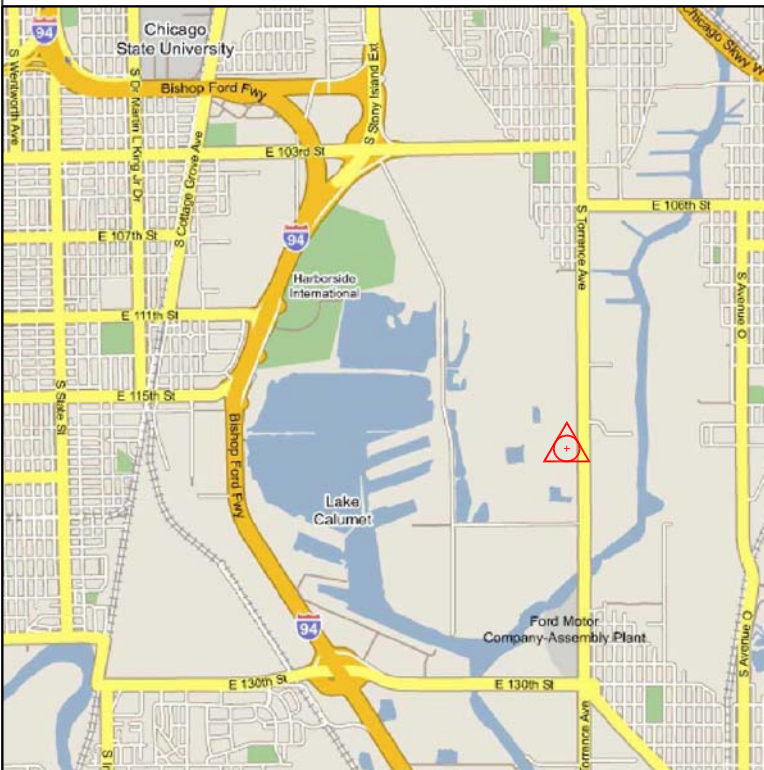
PHOTOGRAPH 'A'



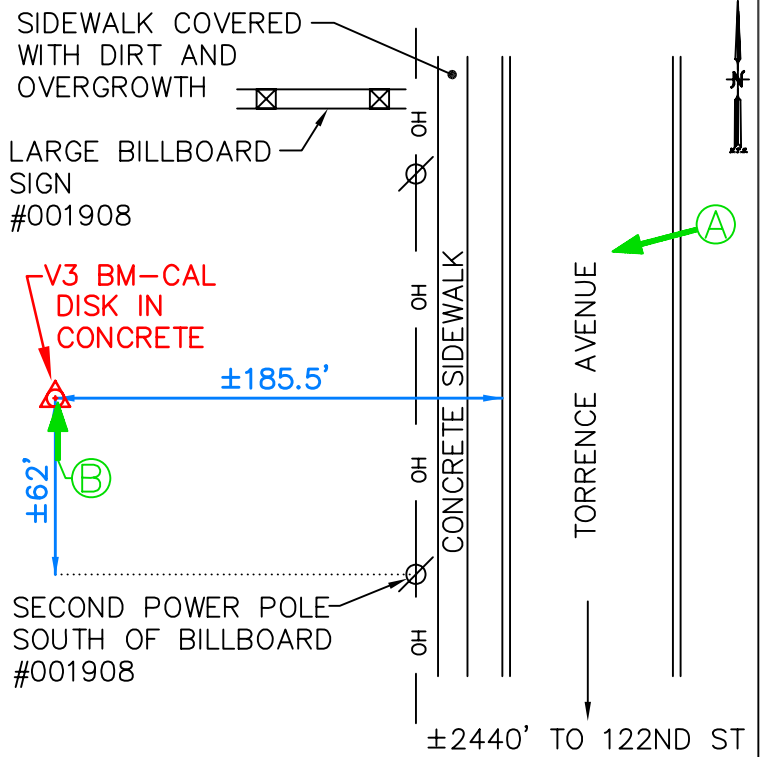
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CALUMET AREA HYDROLOGIC MASTER PLAN SURVEY CONTROL

PRIMARY CONTROL:

- 1 - COVER SHEET
- 2 - STREET ATLAS KEY MAP
- 3 - AERIAL PHOTOGRAPH KEY MAP
- 4 - AC 9170 RECOVERY SHEET
- 5 - AE 9231 RECOVERY SHEET
- 6 - AF 9258 RECOVERY SHEET
- 7 - ME 3311 RECOVERY SHEET
- 8 - AJ 2776 RECOVERY SHEET
- 9 - AJ 2777 RECOVERY SHEET
- 10 - ME 1825 RECOVERY SHEET
- 11 - ME 1829 RECOVERY SHEET
- 12 - ME 1830 RECOVERY SHEET
- 13 - ME 1881 RECOVERY SHEET
- 14 - ME 2887 RECOVERY SHEET
- 15 - V3 PRIMARY CONTROL OCCUPATION CHART

ATTACHMENTS:

- V3 EQUIPMENT LIST
- NGS DATA SHEETS
- SKI PRO REPORTS

LIDAR CONTROL:

- 1 - COVER SHEET AND INDEX
- 2 - STREET ATLAS KEY MAP
- 3 - AERIAL PHOTOGRAPHY KEY MAP
- 4 - LC-1 RECOVERY DATA SHEET
- 5 - LC-3 RECOVERY DATA SHEET
- 6 - LC-6 RECOVERY DATA SHEET
- 7 - LC-8 RECOVERY DATA SHEET
- 8 - LC-11 RECOVERY DATA SHEET
- 9 - LC-13 RECOVERY DATA SHEET
- 10 - LC-236 RECOVERY DATA SHEET
- 11 - LC-2 RECOVERY DATA SHEET
- 12 - LC-5 RECOVERY DATA SHEET
- 13 - LC-12 RECOVERY DATA SHEET
- 14 - LC-14 RECOVERY DATA SHEET
- 15 - LC-15 RECOVERY DATA SHEET
- 16 - LC-4 RECOVERY DATA SHEET
- 17 - LC-7 RECOVERY DATA SHEET
- 18 - LC-9 RECOVERY DATA SHEET
- 19 - LC-10 RECOVERY DATA SHEET

ATTACHMENTS:

BOLLENGER, LACH & ASSOC. FIELD NOTES, DATED 2/15/02.

BENCHMARKS:

- 1 - STREET ATLAS KEY MAP
- 2 - AERIAL PHOTOGRAPH KEY MAP
- 3 - V3 BM-1 RECOVERY SHEET
- 4 - V3 BM-2 RECOVERY SHEET
- 5 - V3 BM-3 RECOVERY SHEET
- 6 - V3 BM-4 RECOVERY SHEET
- 7 - V3 BM-5 RECOVERY SHEET
- 8 - V3 BM-6 RECOVERY SHEET
- 9 - V3 BM-7 RECOVERY SHEET
- 10 - V3 BM-8 RECOVERY SHEET
- 11 - V3 BM-9 RECOVERY SHEET
- 12 - V3 CAL RECOVERY SHEET

SECONDARY SITE CONTROL:

- 1- COVER SHEET AND INDEX**
- 2- STREET ATLAS KEY MAP**
- 3- AERIAL PHOTOGRAPH KEY MAP**
- 4- RECOVERY SHEET CP# 586**
- 5- RECOVERY SHEET CP# 587**
- 6- RECOVERY SHEET CP# 590**
- 7- RECOVERY SHEET CP# 868**
- 8- RECOVERY SHEET CP# 862**
- 9- RECOVERY SHEET CP# 801**
- 10- RECOVERY SHEET CP# 932**
- 11- RECOVERY SHEET CP# 903**
- 12- RECOVERY SHEET CP# 904**
- 13- RECOVERY SHEET CP# 131**
- 14- RECOVERY SHEET CP# 701**
- 15- RECOVERY SHEET CP# 703**
- 16- RECOVERY SHEET CP# 706**
- 17- RECOVERY SHEET CP# 798**
- 18- RECOVERY SHEET CP# 700**
- 19- RECOVERY SHEET CP# 411**
- 20- RECOVERY SHEET CP# 412**

NOTES:

PRIMARY:

1) POINTS UTILIZED WERE GPS DERIVED VS. BEING ESTABLISHED BY CLASSICAL METHODS AT THE RECOMMENDATION OF THE ILLINOIS STATE GEODETIC ADVISOR.

2) SECOND ORDER CLASS 1 SURVEY METHODS WERE USED FOR ALL POINTS MEASURED.

LIDAR:

1) LC-# = LIDAR CONTROL POINT NUMBER. LIDAR CONTROL POINTS SET BY BOLLENGER, LACH & ASSOC., FIELD NOTES PROVIDED TO V3 (SEE ATTACHMENT) DATED FEBRUARY 15, 2002.

2) LC-2, LC-5, LC-12, LC-14 & LC-15 RECOVERED BY V3 DURING RECONNAISSANCE PHASE, BUT DENIED ACCESS TO MEASURE AND PHOTOGRAPH POINT.

3) LC-4, LC-7, LC-9 & LC-10 NOT FOUND BY V3.

LIDAR, CONTIUED:

4) LOCATIONS FOR ALL LIDAR CONTROL DEPICTED ON 'VICINITY' SKETCHES, BASED ON COORDINATES EXTRACTED FROM PROVIDED LIDAR MAPPING.

BENCHMARKS:

1) A LINE OF BENCHMARKS WERE ESTABLISHED ALONG THE EAST SIDE OF LAKE CALUMET WITH MONUMENTS APPROXIMATELY EVERY HALF MILE ALONG STONEY ISLAND ROAD FROM 103RD STREET ON THE NORTH TO THE CALUMET RIVER ON THE SOUTH.

2) POINTS SET FOR VERTICAL REFERENCE ONLY. NO HORIZONTAL VALUES WERE MEASURED.

SECONDARY SITE CONTROL:

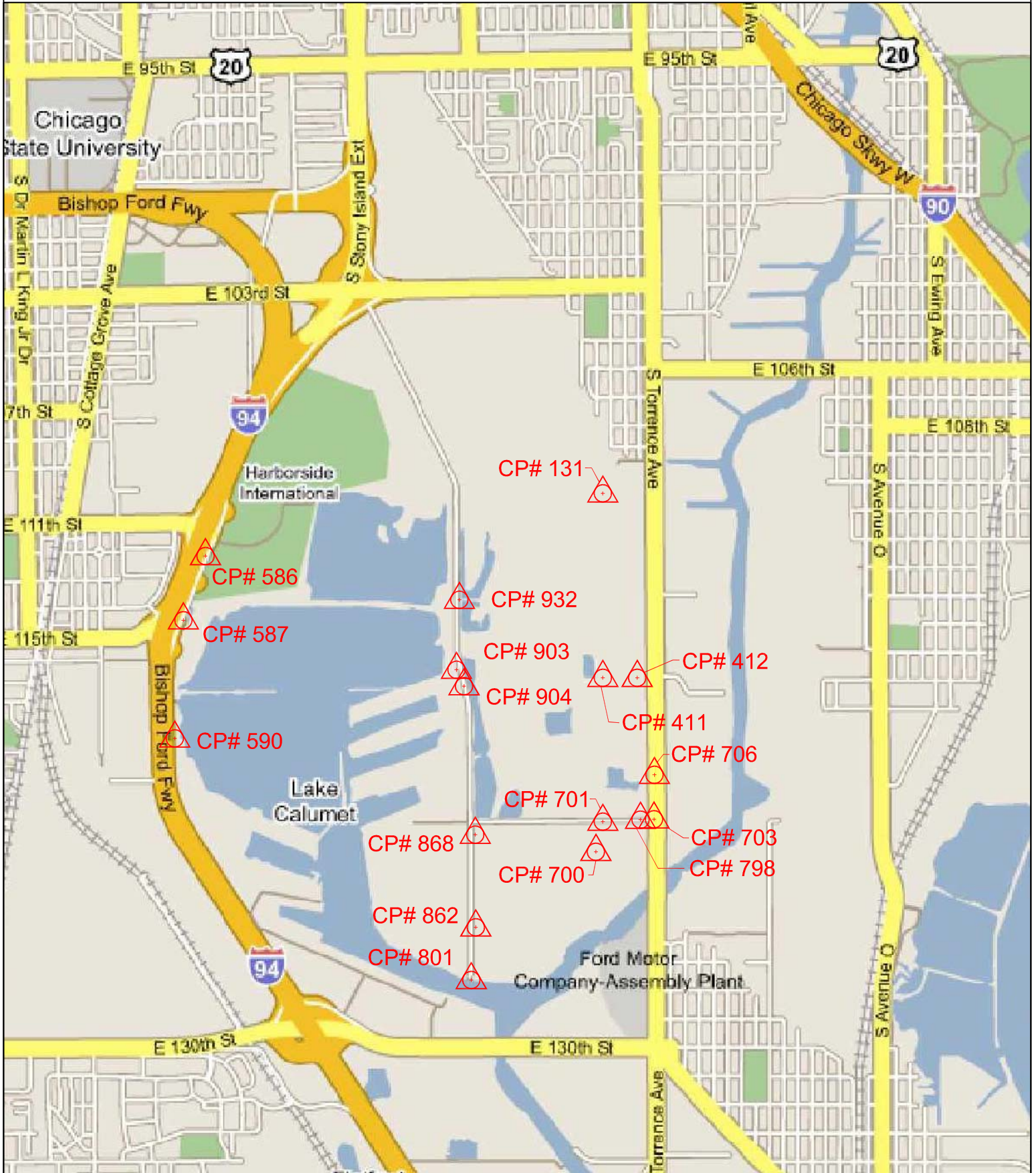
1) ALL POINTS SET BY ENVIRONMENTAL DESIGN INTERNATIONAL, INC. (EDI) AND LATER LOCATED BY V3.

2) SOME POINTS HAVE BEEN OBLITERATED SINCE BEING USED FOR THIS PROJECT.



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET STREET ATLAS KEY MAP

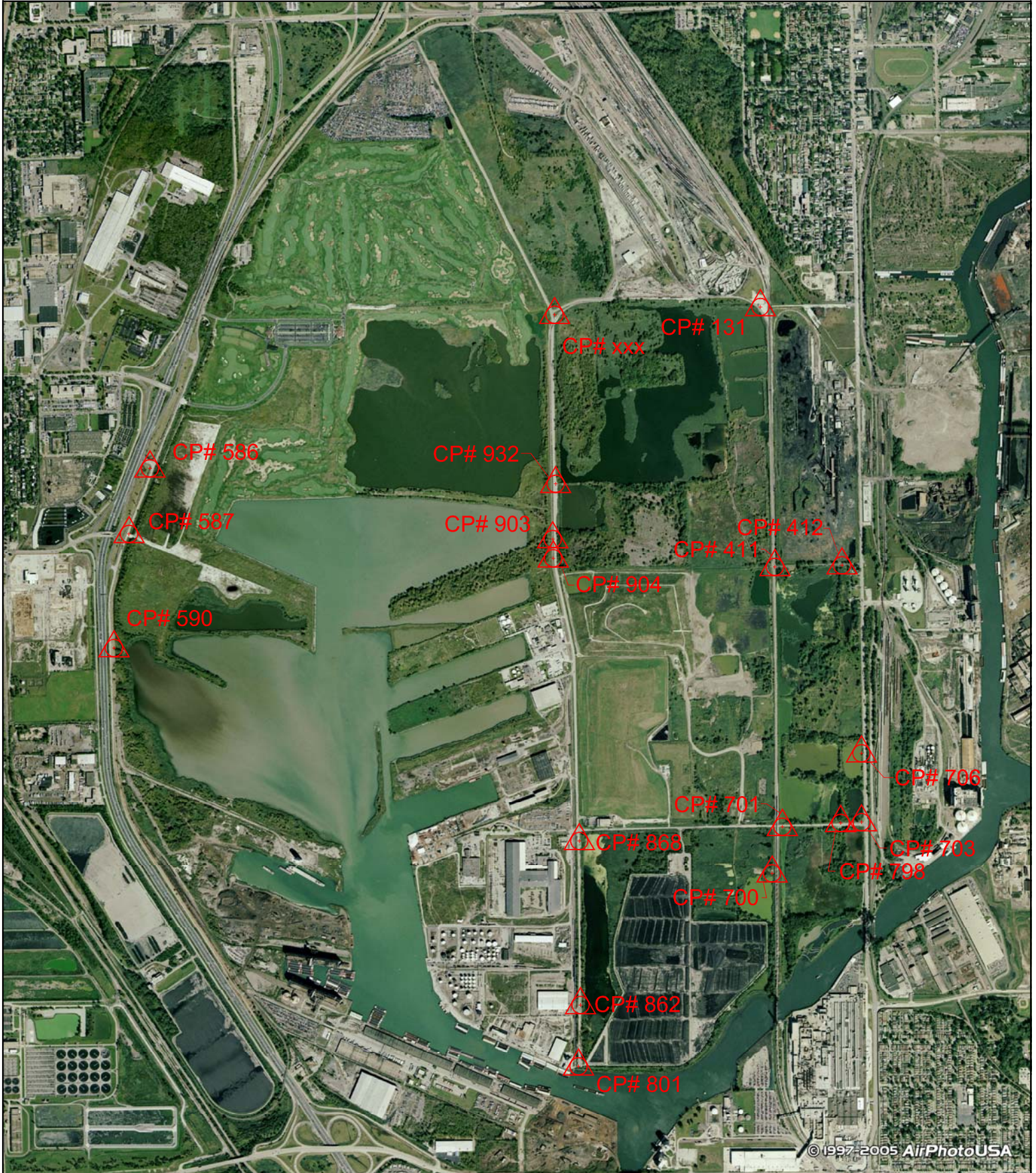




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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

AERIAL PHOTOGRAPHY KEY MAP





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CALUMET AREA HMP

SITE CONTROL POINT

RECOVERY DATA SHEET

STATION:

#586

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1830044.1739

ELEVATION: 584.8425

VERTICAL DATUM: NAVD 88

EAST: 1184812.5441

MONUMENTED: 1/26/04

STATION DESCRIPTION:

SET IRON PIPE NEAR THE SOUTHWEST CORNER OF THE INTERSECTION OF DOTY ROAD AND THE ENTRANCE RAMP TO I-94 WEST AND 111TH ST. 45.71 FEET NORTH OF FENCE POST AT NORTH END OF FENCE LINE; 64.46 FEET SOUTHWEST OF POWER POLE.

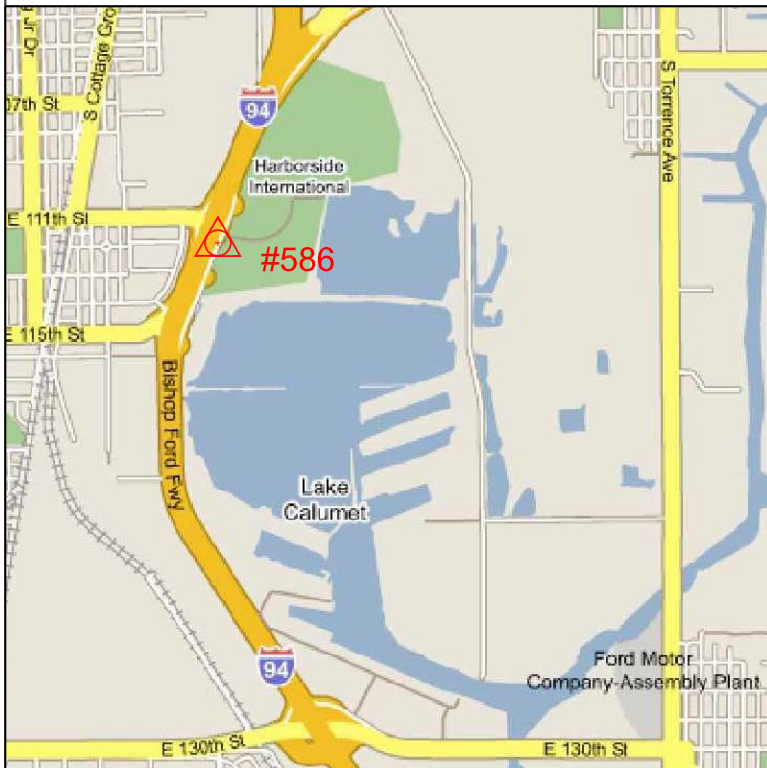
PHOTOGRAPH 'A'



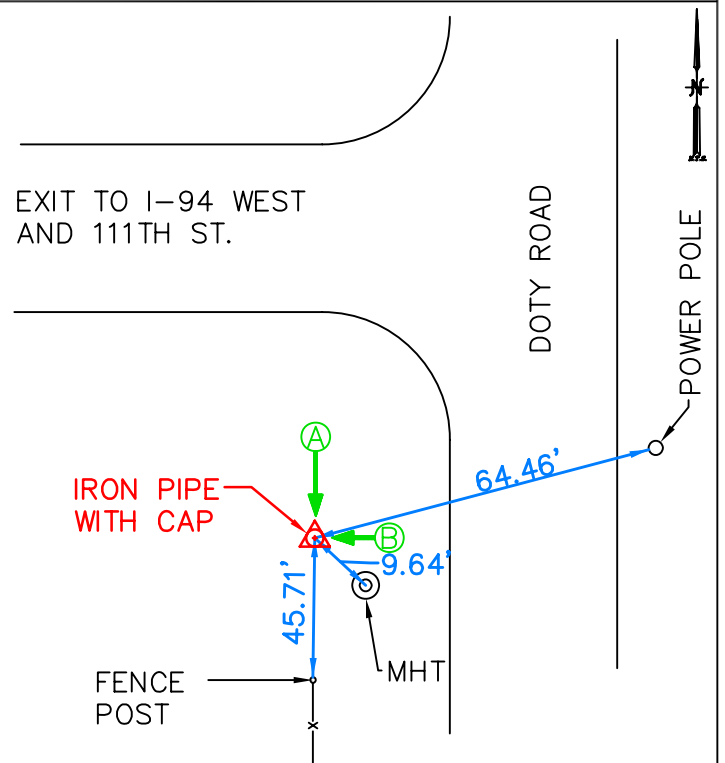
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#587

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1829122.9274

ELEVATION: 584.9253

VERTICAL DATUM: NAVD 88

EAST: 1184494.1068

MONUMENTED: 1/26/04

STATION DESCRIPTION:

CUT CROSS IN CONCRETE APRON ENTRANCE TO PORT AUTHORITY PROPERTY ALONG DOTY ROAD. POINT 21.06 FEET SOUTHWEST OF NORTHERLY END OF GUARD RAIL ON NORTH SIDE OF SAID CONCRETE APRON; ALSO BEING 89.60 FEET SOUTH WEST OF A POWER POLE.

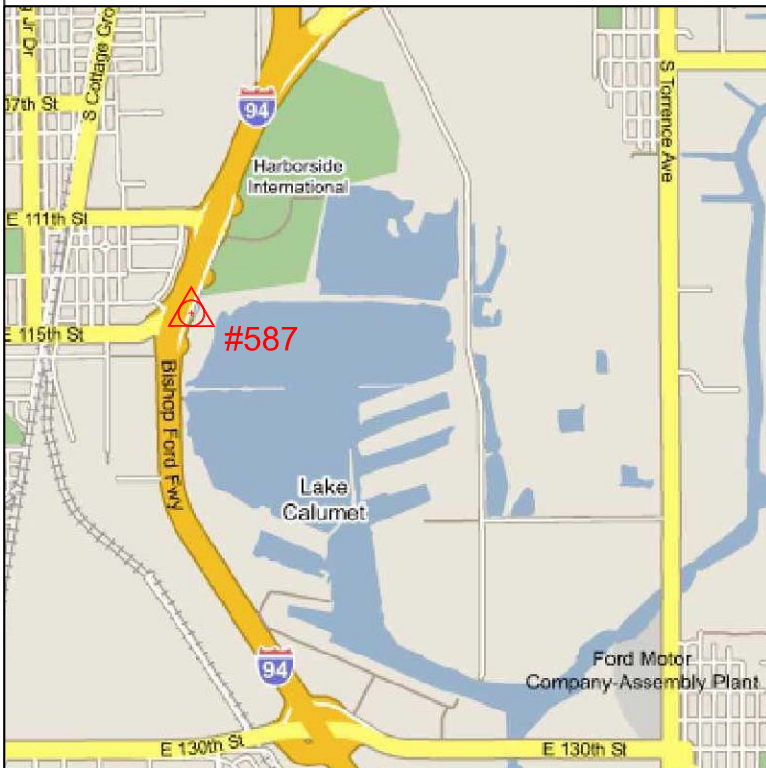
PHOTOGRAPH 'A'



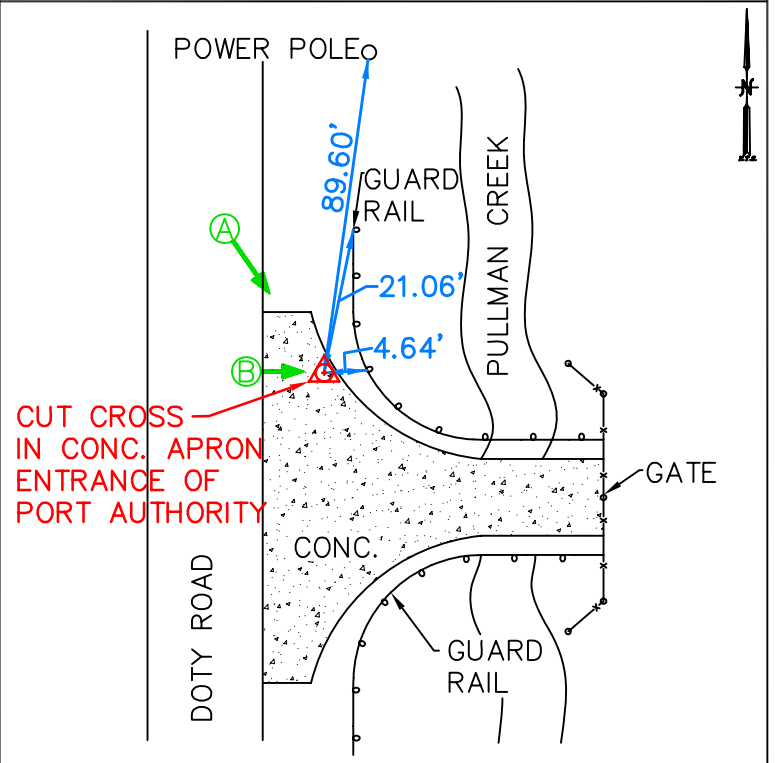
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#590

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1827339.8549

ELEVATION: 584.3905

VERTICAL DATUM: NAVD 88

EAST: 1184179.4428

MONUMENTED: 1/26/04

STATION DESCRIPTION:

IRON BAR APPROXIMATELY 14 FEET WEST OF THE WEST EDGE OF PAVEMENT OF DOTY ROAD APPROXIMATELY 1.9 MILES NORTH OF 130TH STREET EASTERLY OF LIGHT POLE IN CENTER MEDIAN OF BISHOP FORD EXPRESSWAY AT MILE MARKER 67/07. APPROXIMATELY 119.45 FEET SOUTHWEST OF WOOD POWER POLE AND 98.26 FEET NORTHWEST OF WOOD POWER POLE; BOTH POWER POLES ON EAST SIDE OF DOTY ROAD.

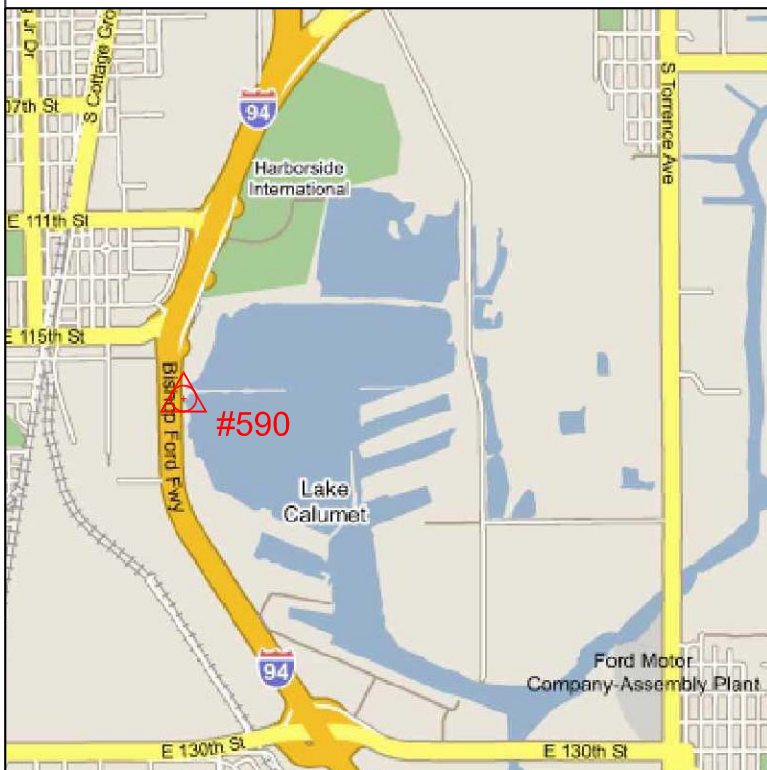
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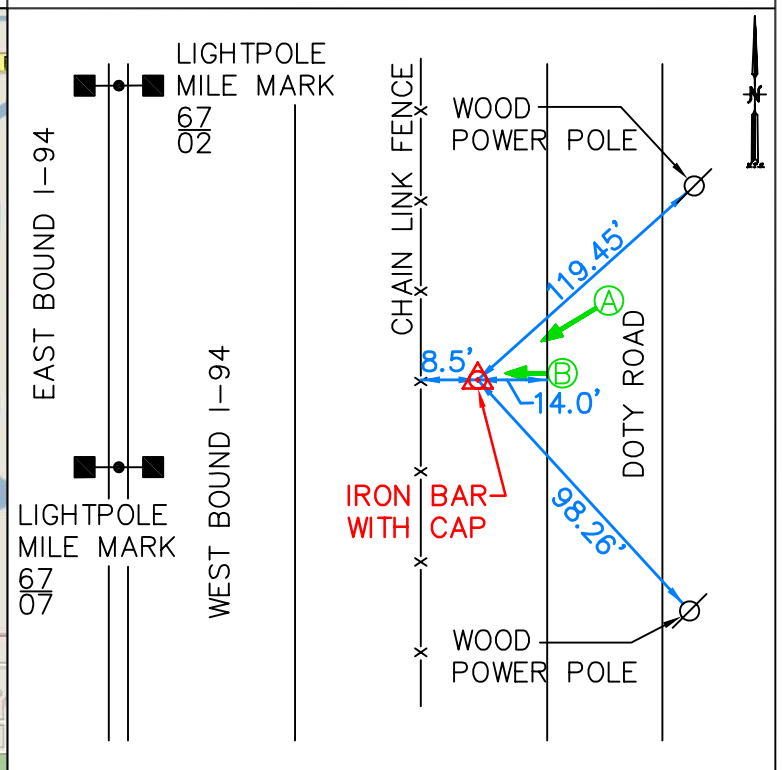
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#868

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1824356.3384

ELEVATION: 587.1669

VERTICAL DATUM: NAVD 88

EAST: 1191352.1062

MONUMENTED: 7/3/03

STATION DESCRIPTION:

PK NAIL APPROXIMATELY 2 EAST OF EAST EDGE OF PAVEMENT OF STONY ISLAND AVENUE AND 225 FEET SOUTH OF THE CENTERLINE OF 122ND STREET. POINT ALSO BEING 49.75 FEET SOUTHWEST OF THE SOUTH FENCE POST OF THE FIRST GATE FROM NORTH END OF FENCE RUNNING ALONG THE WEST SIDE OF DEADSTICK POND.

PHOTOGRAPH 'A'

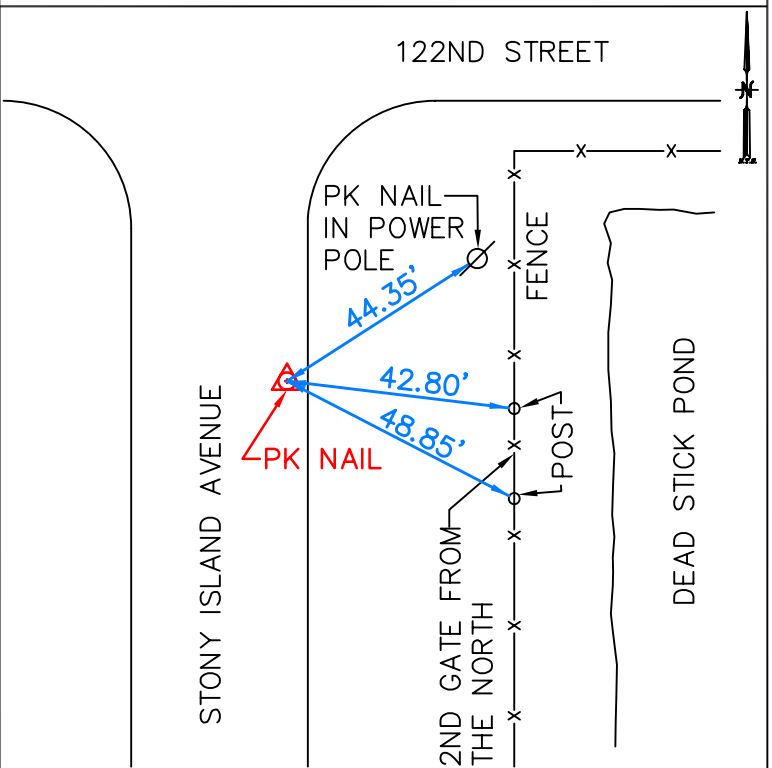
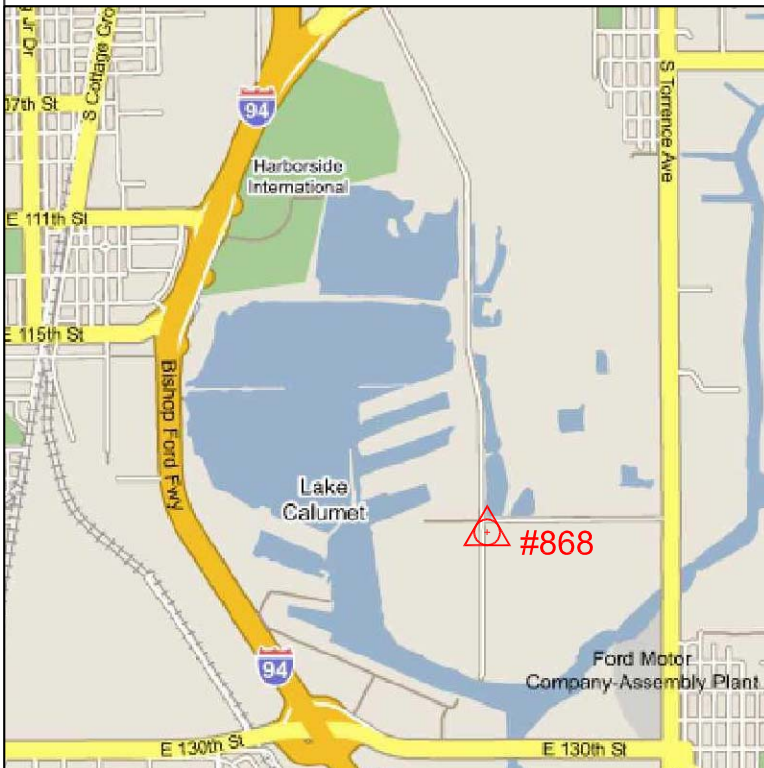
PHOTOGRAPH 'B'

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PHOTOGRAPH NOT AVAILABLE

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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#862

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1822156.3612

ELEVATION: 589.8385

VERTICAL DATUM: NAVD 88

EAST: 1191362.9646

MONUMENTED: 7/3/03

STATION DESCRIPTION:

PK NAIL IN PAVEMENT OF STONY ISLAND AVENUE APPROXIMATELY 2415 FEET SOUTH OF 122ND STREET, APPROXIMATELY 40 FEET WEST OF A GATE POST IN FENCE LINE ALONG WEST SIDE OF DEADSTICK POND.

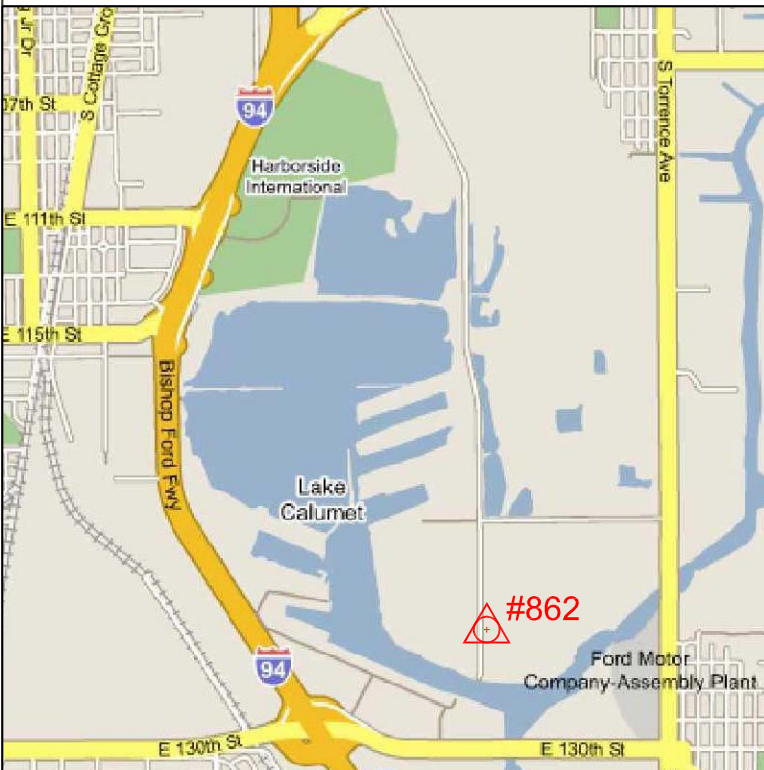
PHOTOGRAPH 'A'



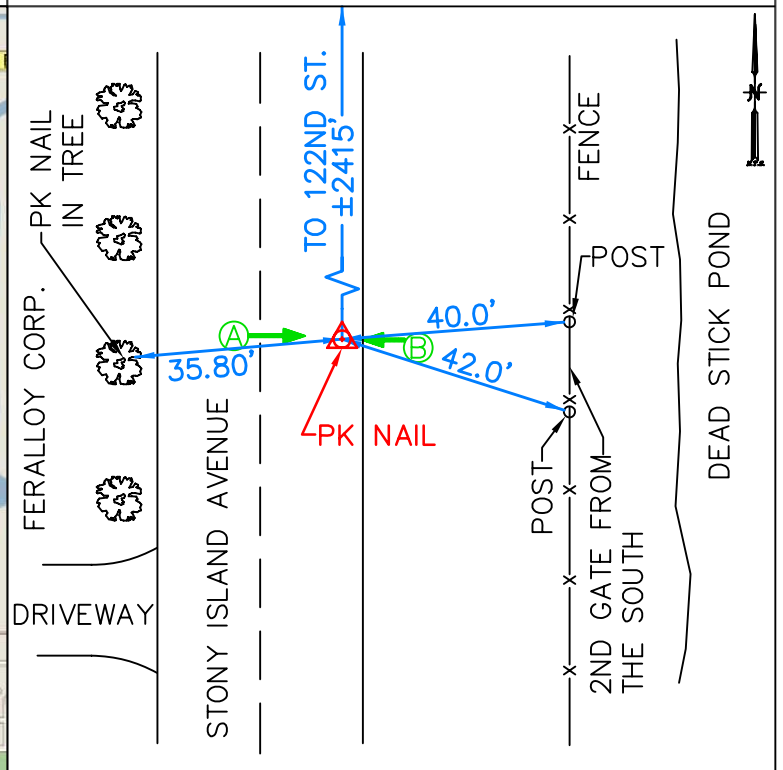
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#801

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1820988.0213

ELEVATION: 587.9401

VERTICAL DATUM: NAVD 88

EAST: 1191349.5628

MONUMENTED: 7/3/03

STATION DESCRIPTION:

MAG NAIL IN PAVEMENT AT SOUTH END OF STONY ISLAND AVENUE APPROXIMATELY 60 FEET WEST OF GATE INTO WMRD BIOSOLIDS PROCESSING FACILITY; ALSO APPROXIMATELY 32 FEET NORTH OF MANHOLE.

PHOTOGRAPH 'A'

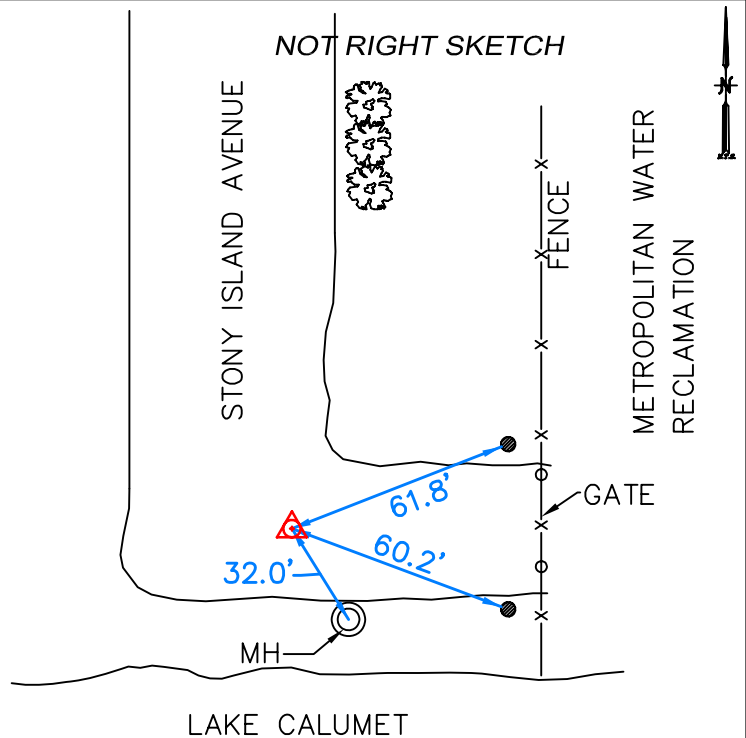
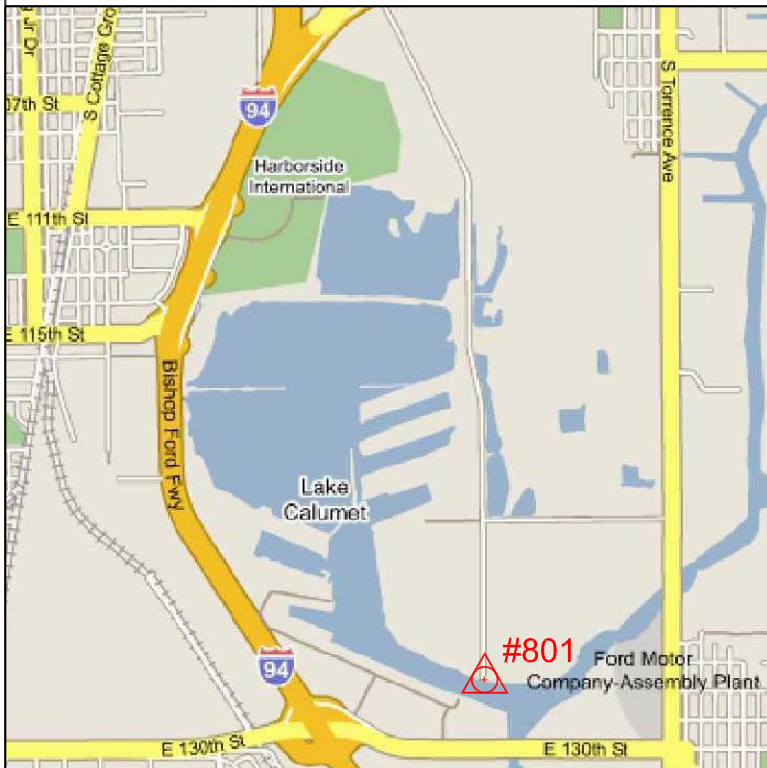
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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#932

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1829847.7044

ELEVATION: 589.1753

VERTICAL DATUM: NAVD 88

EAST: 1190957.2287

MONUMENTED: 7/1/04

STATION DESCRIPTION:

MAG NAIL IN STONY ISLAND AVENUE SHOULDER PAVEMENT APPROXIMATELY 5310 FEET NORTH OF 122ND STREET. ALSO BEING APPROXIMATELY 50 SOUTH EAST OF A POWER POLE WITH TRAFFIC SIGN.

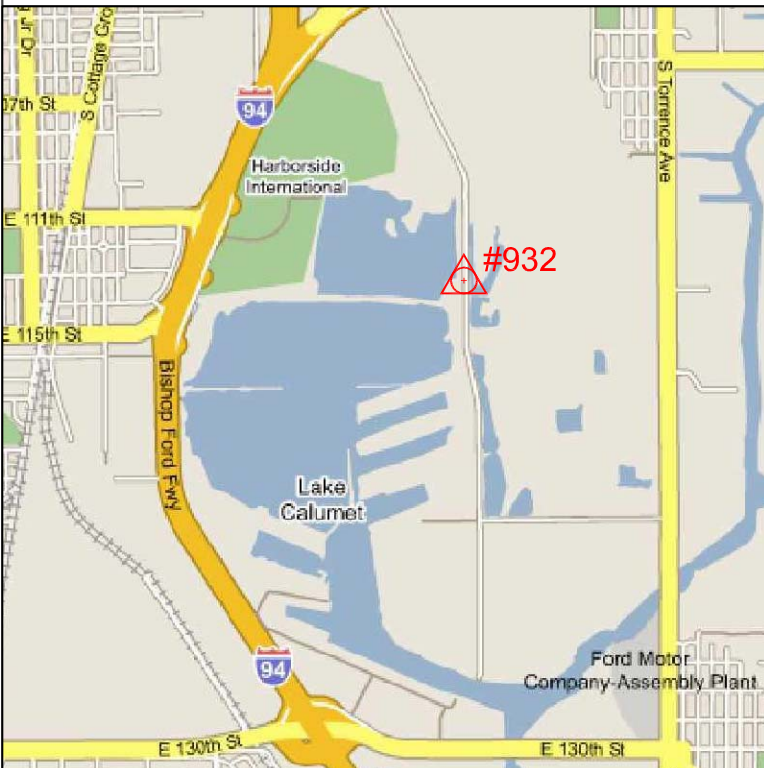
PHOTOGRAPH 'A'



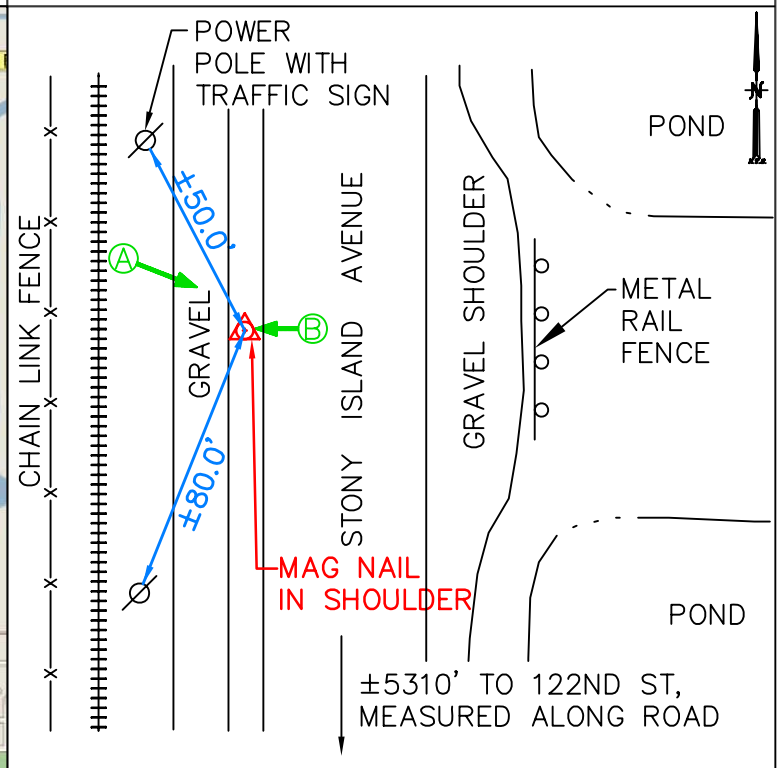
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#903

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1829073.8216

ELEVATION: 589.5199

VERTICAL DATUM: NAVD 88

EAST: 1190968.6848

MONUMENTED: 7/1/04

STATION DESCRIPTION:

MAG NAIL IN WEST SHOULDER PAVEMENT OF STONY ISLAND AVENUE APPROXIMATELY 4530 FEET NORTH OF 122ND STREET; ALSO BEING 78.2 FEET SOUTHEAST OF A POWER POLE AND 73.95 FEET NORTHEAST OF A POWER POLE, BOTH POLE ON WEST SIDE OF STONY ISLAND AVENUE.

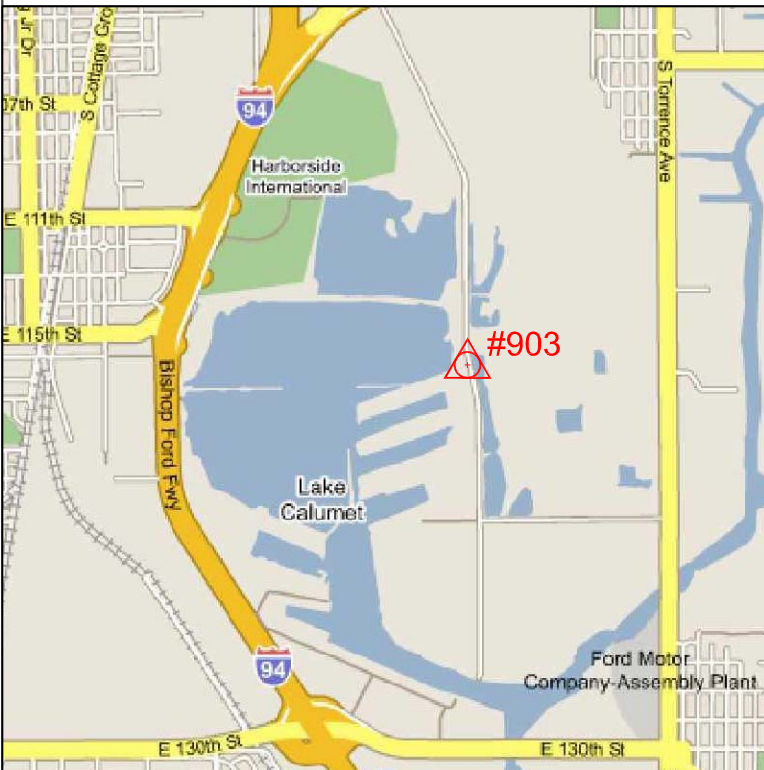
PHOTOGRAPH 'A'



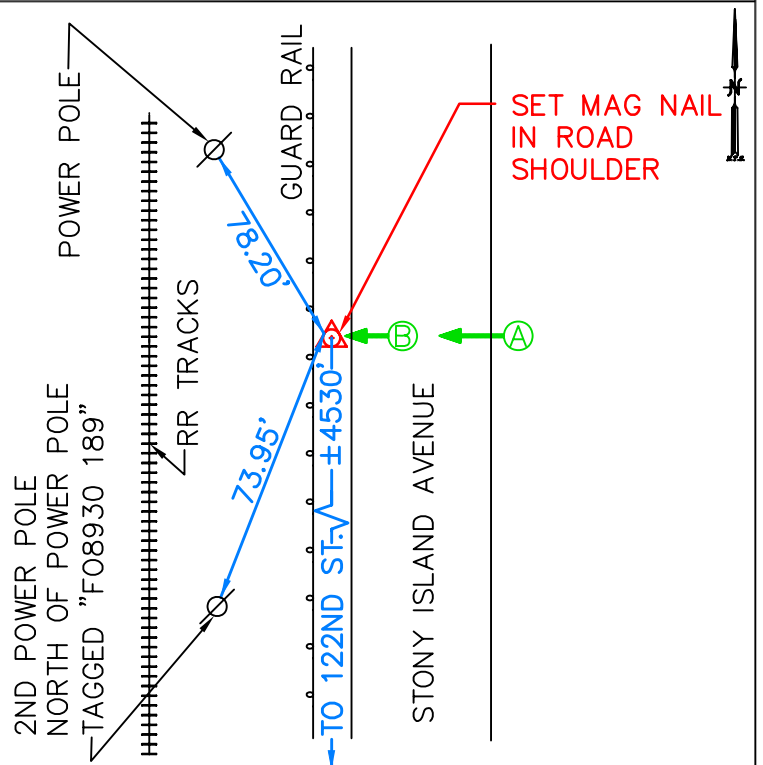
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#904

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1828727.6337

ELEVATION: 590.7536

VERTICAL DATUM: NAVD 88

EAST: 1190975.1769

MONUMENTED: 7/1/04

STATION DESCRIPTION:

SET MAG NAIL IN WEST SHOULDER PAVEMENT OF STONY ISLAND AVENUE APPROXIMATELY 4185 FEET NORTH OF 122ND STREET. ALSO 28.65 FEET NORTHEAST OF A POWER POLE ON THE WEST SIDE OF STONY ISLAND AVENUE TAGGED "F08930 189".

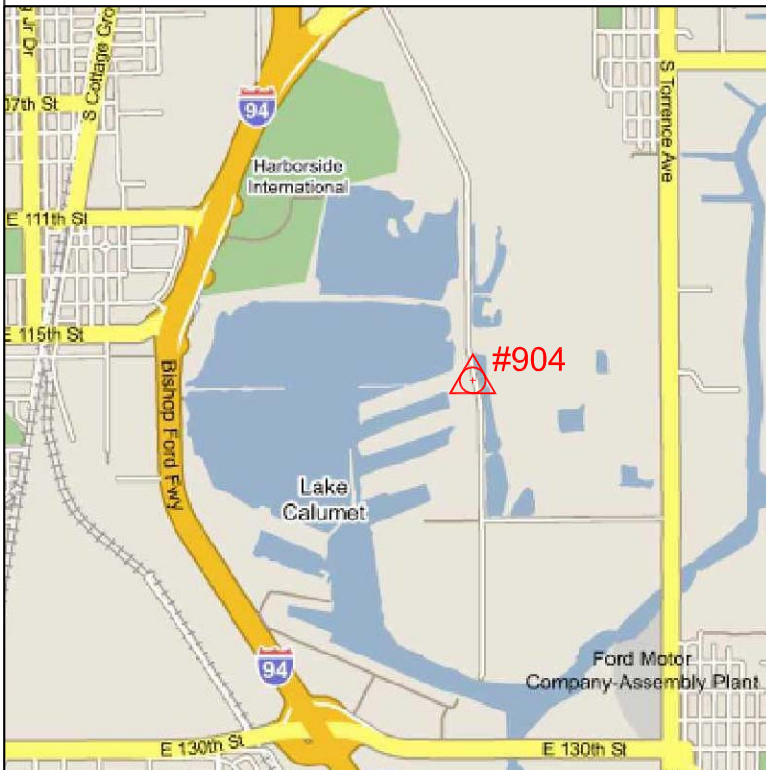
PHOTOGRAPH 'A'



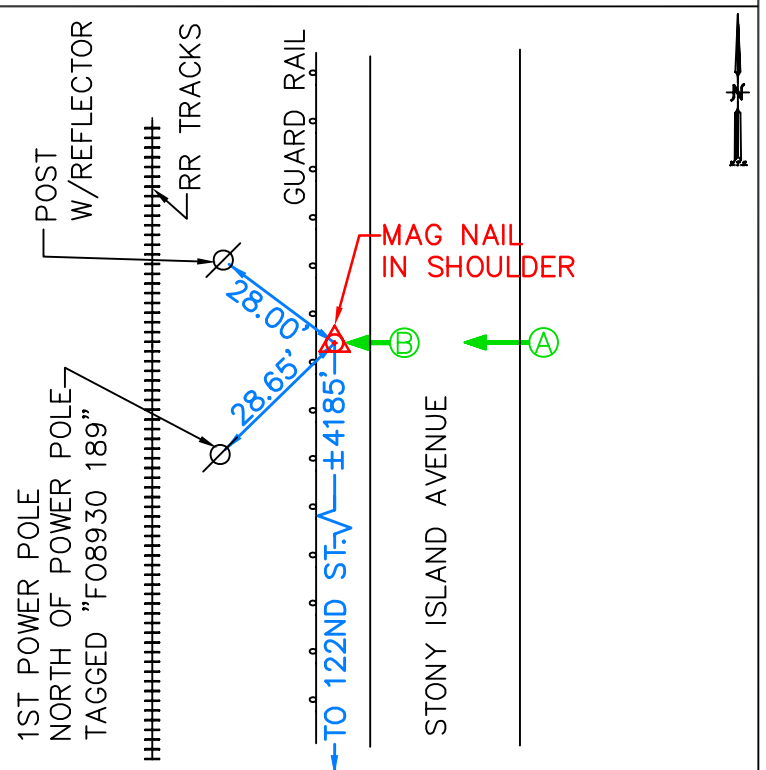
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#131

MEASURED: 10/18/05

HORIZONTAL DATUM: NAD 83

NORTH: 1832487.5769

ELEVATION: 586.2471

VERTICAL DATUM: NAVD 88

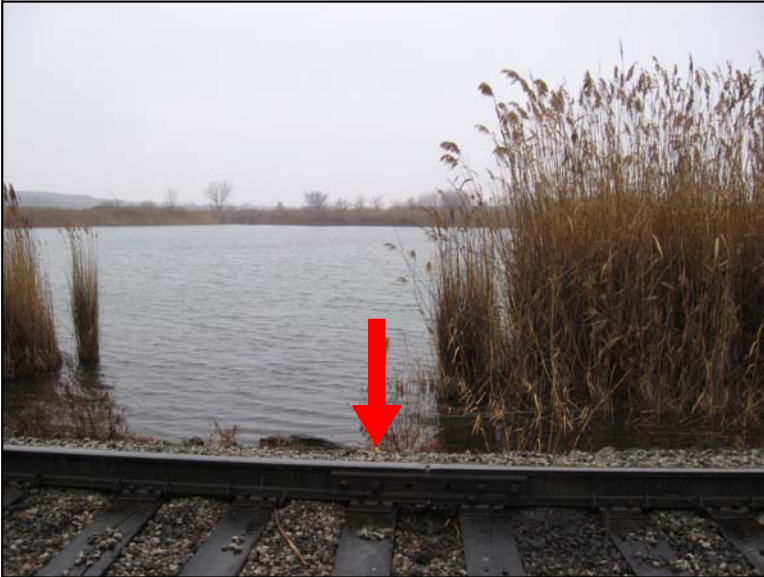
EAST: 1194117.3330

MONUMENTED: 6/9/05

STATION DESCRIPTION:

IRON BAR WITH CAP NORTHWESTERLY OF POINT OF CURVATURE OF RAILROAD; POINT JUST EAST OF EDGE OF WATER AT NORTHEAST END OF BIG MARSH POND. POINT ACCESSED THROUGH "CALUMET TRANSFERS" FACILITY.

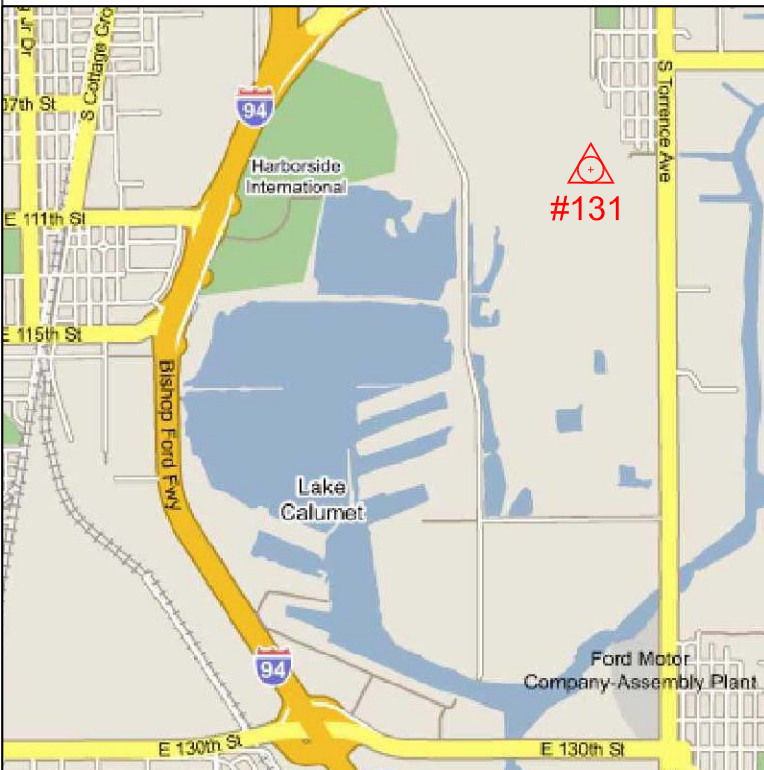
PHOTOGRAPH 'A'



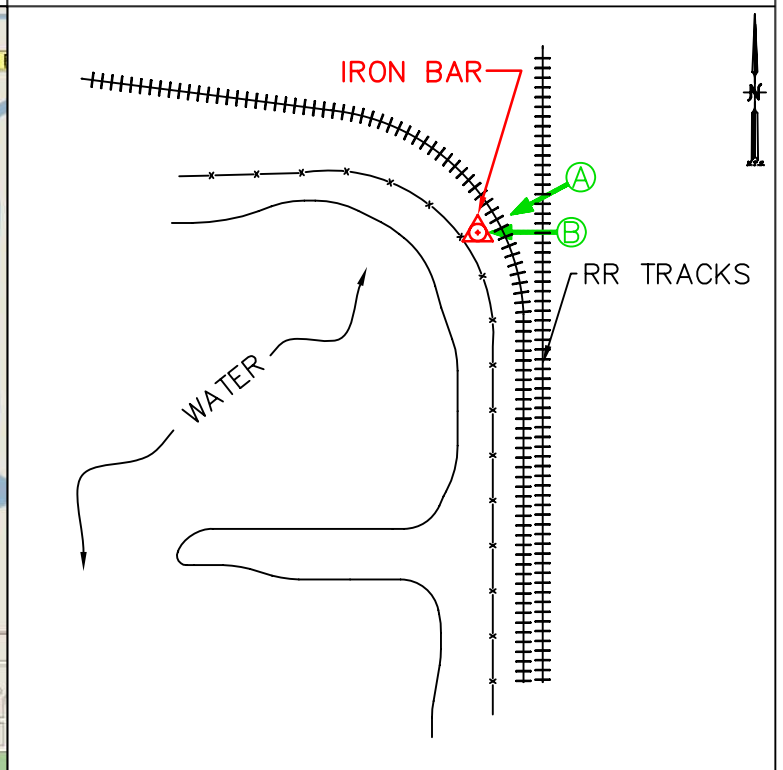
PHOTOGRAPH 'B'



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630.724.9202 fax
www.v3co.com

CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#701

MEASURED: 8/23/04

HORIZONTAL DATUM: NAD 83

NORTH: 1830044.1739

ELEVATION: 593.5570

VERTICAL DATUM: NAVD 88

EAST: 1184812.5441

MONUMENTED: 5/15/02

STATION DESCRIPTION:

SET IRON BAR WITH CAP APPROXIMATELY 4.2 FEET SOUTH OF THE SOUTH EDGE OF PAVEMENT OF 122ND STREET APPROXIMATELY 110 FEET EAST OF CENTERLINE OF NORFOLK SOUTHERN RAIL ROAD CROSSING OF 122ND STREET.

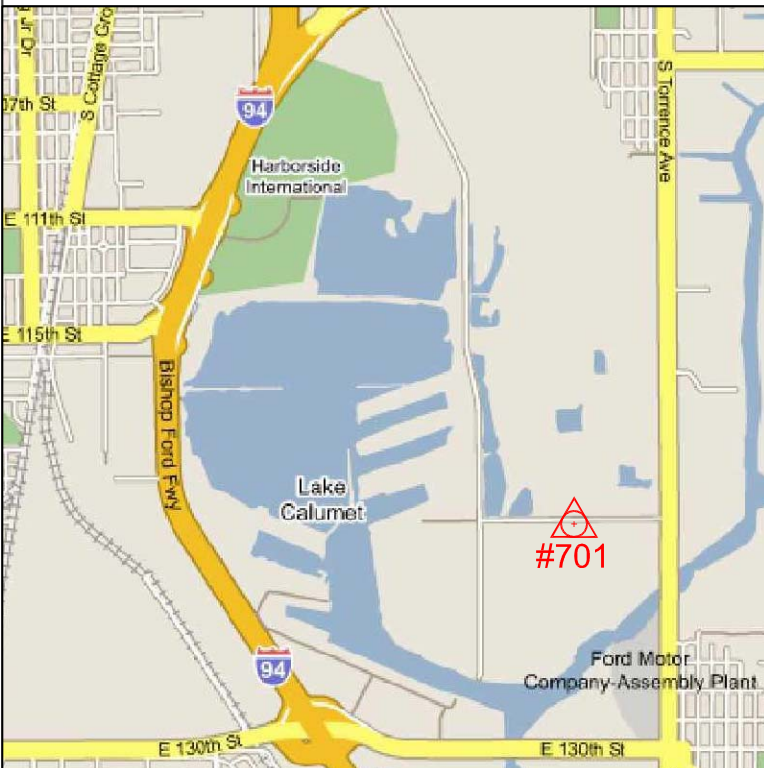
PHOTOGRAPH 'A'



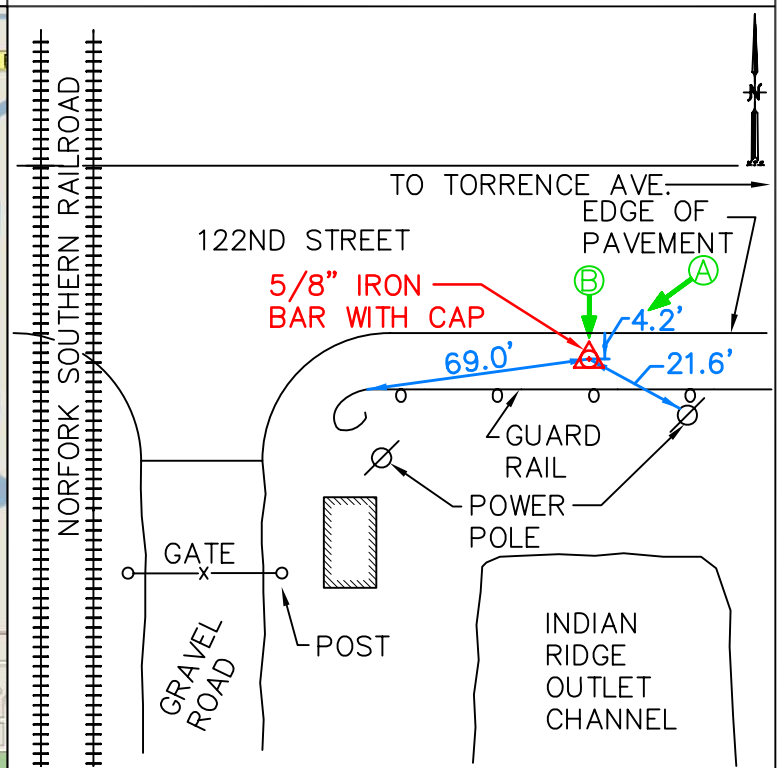
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#703

MEASURED 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1824696.1654

ELEVATION: 585.0805

VERTICAL DATUM: NAVD 88

EAST: 1195684.0618

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CROSS CUT IN ELECTRIC MANHOLE RIM AT NORTHWEST CORNER OF 122ND STREET AND TORRENCE AVENUE. ALSO APPROXIMATELY 33 FEET NORTH OF THE CENTERLINE 122ND STREET AND 43 FEET WEST OF THE CENTERLINE OF TORRENCE AVENUE

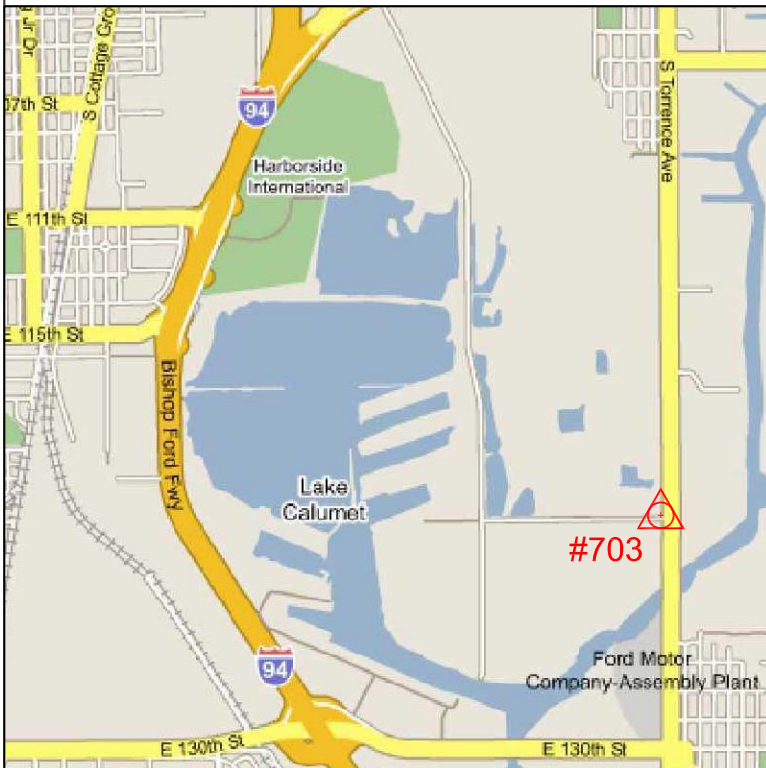
PHOTOGRAPH 'A'



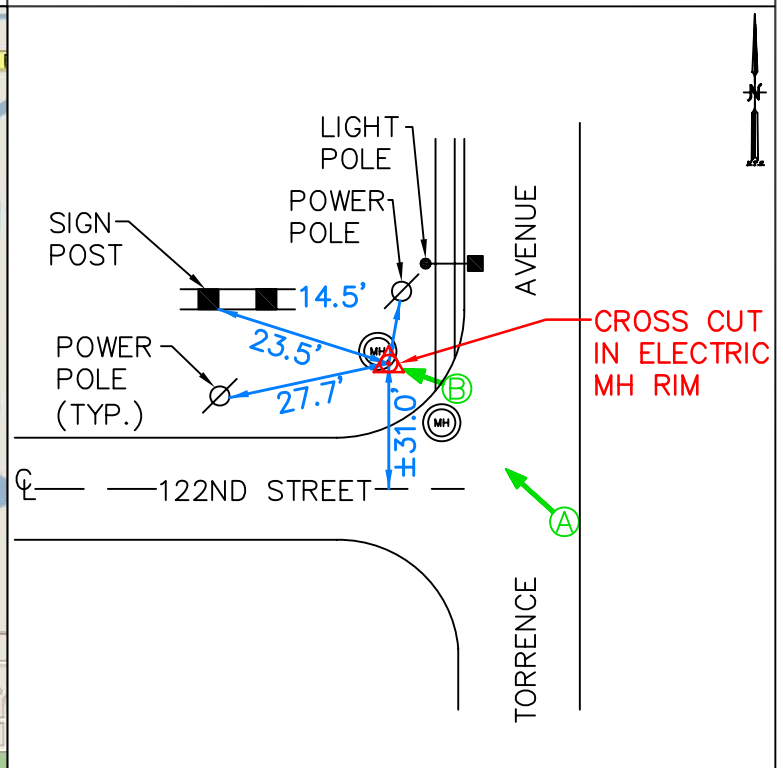
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#706

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1825752.1470

ELEVATION: 584.1701

VERTICAL DATUM: NAVD 88

EAST: 1195681.1924

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CROSS CUT IN SIDEWALK ON WEST SIDE OF TORRENCE AVENUE APPROXIMATELY 1090 FEET NORTH OF THE CENTERLINE OF 122ND STREET. ALSO APPROXIMATELY 4.5 FEET WEST OF FACE OF CURB, 56.7 FEET SOUTHWEST OF 11TH STREET LIGHT NORTH OF 122ND STREET, SAID 11TH STREET LIGHT ON EAST SIDE OF TORRENCE AVENUE.

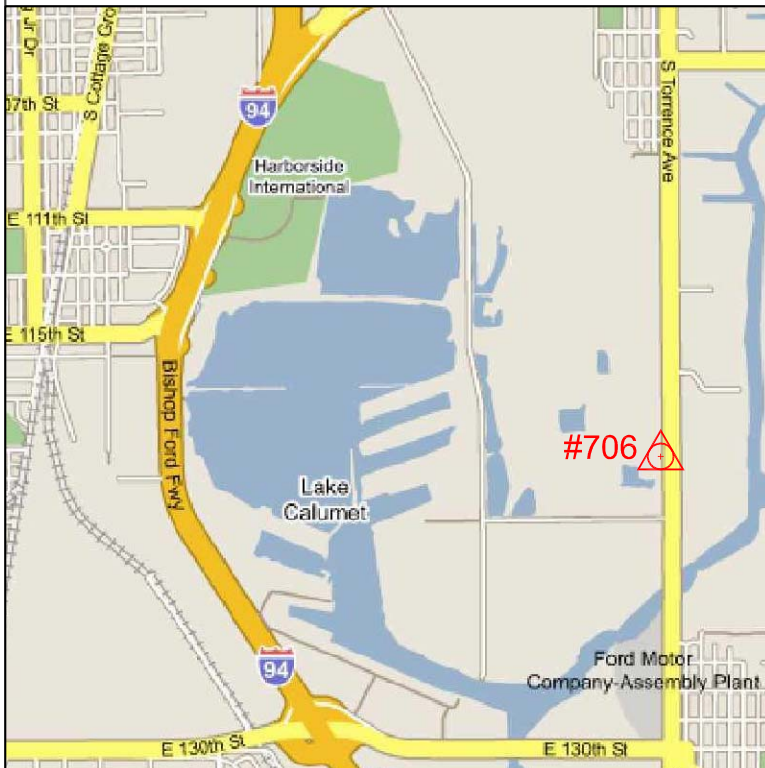
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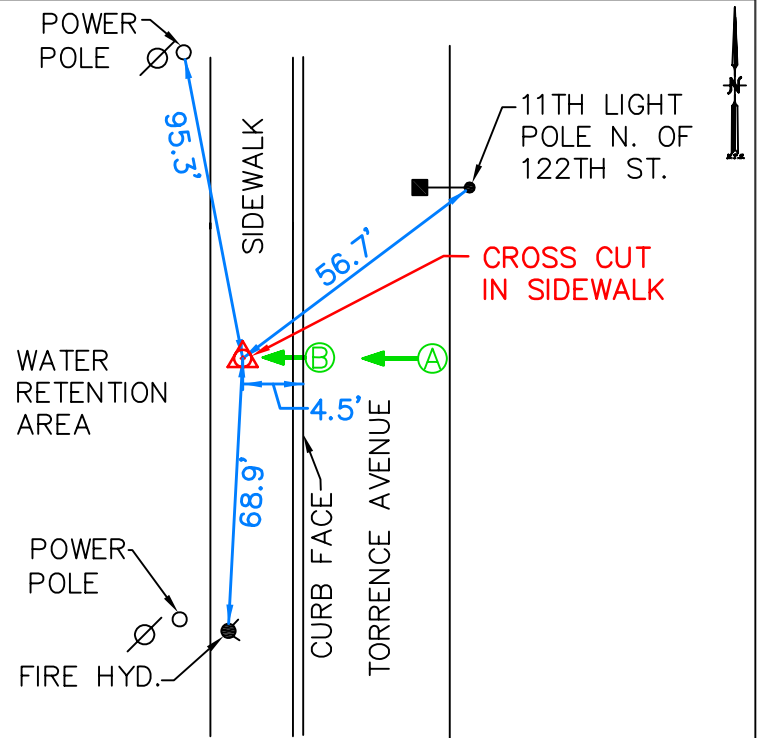
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#798

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1824684.3926

ELEVATION: 587.6780

VERTICAL DATUM: NAVD 88

EAST: 1195364.2177

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

IRON BAR WITH CAP IN GRAVEL SHOULDER APPROXIMATELY 12.4 FEET NORTH OF NORTH EDGE OF PAVEMENT OF 122ND STREET APPROXIMATELY 350 FEET WEST OF CENTERLINE OF TORRENCE AVENUE. ALSO APPROXIMATELY 61.85 NORTH OF NORTHEAST FENCE POST OF FENCE SURROUNDING GAS HOUSE OF SOUTH SIDE OF 122ND STREET.

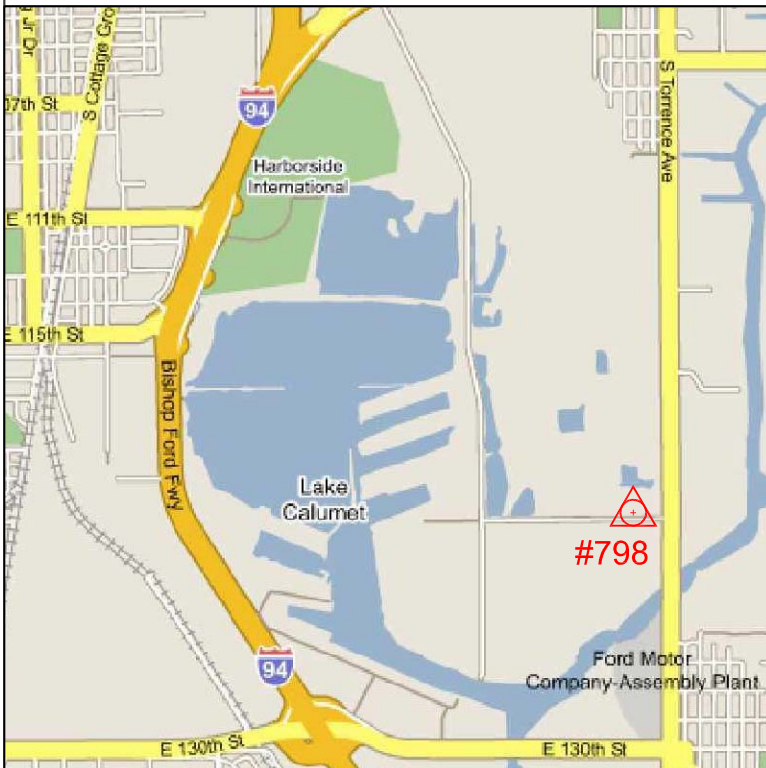
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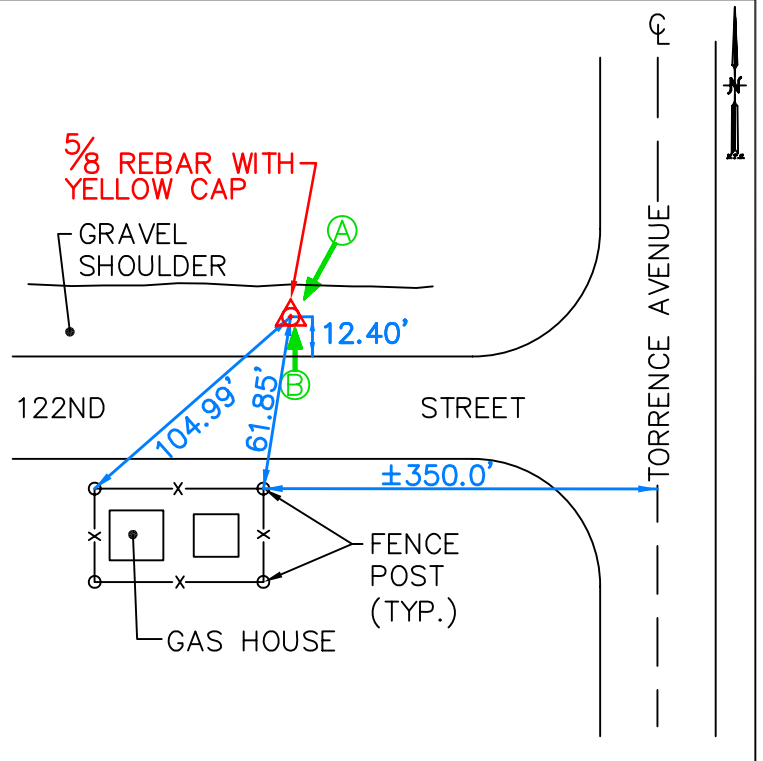
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#700

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1823909.2325

ELEVATION: 583.4076

VERTICAL DATUM: NAVD 88

EAST: 1194314.8598

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

CUT CROSS IN PATCH OF CONCRETE NEAR NORTHEAST END OF HERON POND. CONCRETE PATCH AT APPROXIMATELY SOUTHERLY END OF ACCESS ROAD RUNNING WEST OF AND PARALLEL WITH RAILROAD; APPROXIMATELY 28 FEET SOUTHEAST OF SOUTHEAST CORNER OLD SHACK.

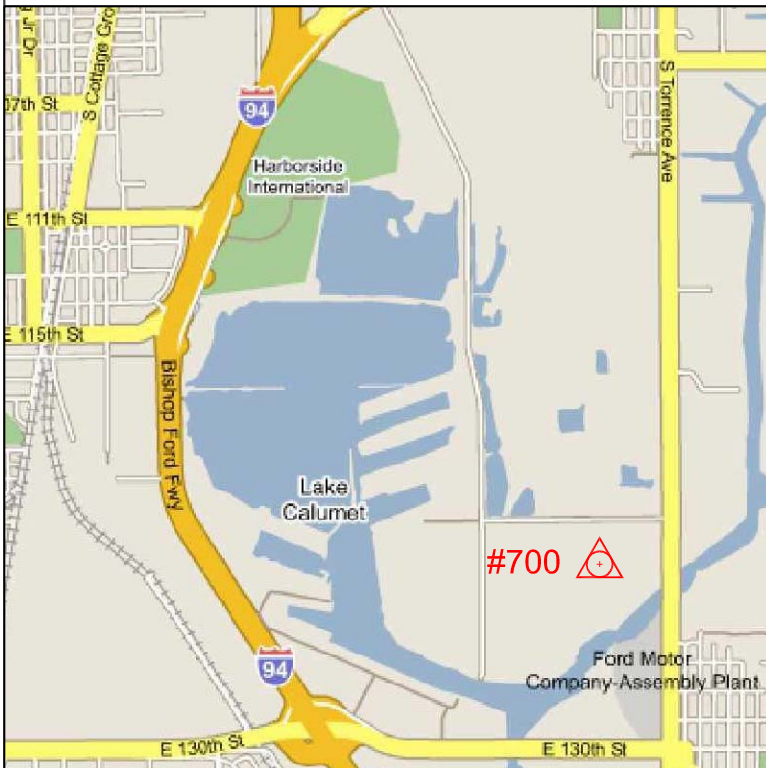
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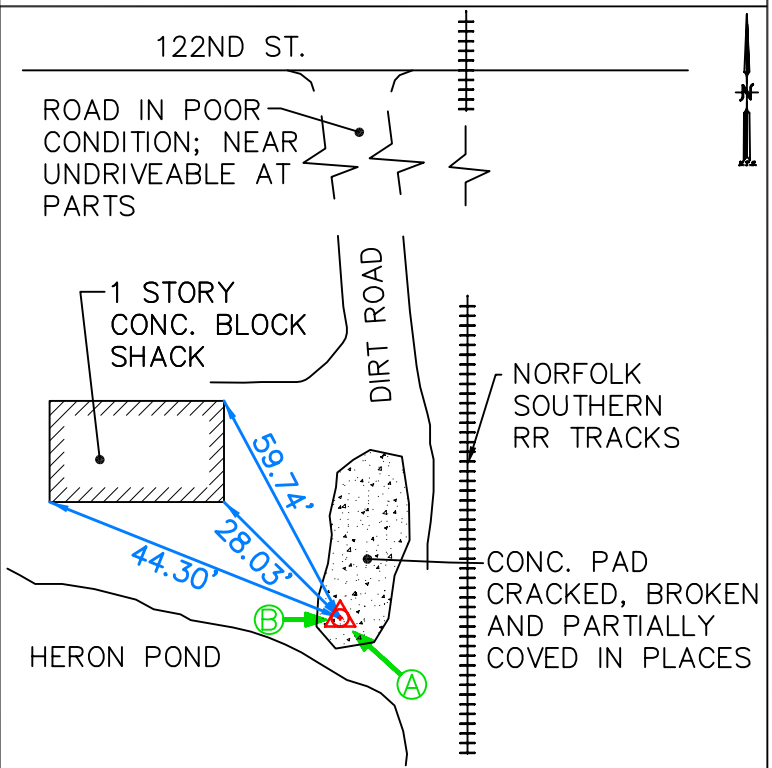
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#411

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1828590.6694

ELEVATION: 588.6127

VERTICAL DATUM: NAVD 88

EAST: 1194346.9203

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

PK NAIL IN PAVEMENT ON EAST SIDE OF RAIL ROAD CROSSING OF NORFOLK SOUTHERN RAIL ROAD AND 116TH STREET. 116TH IS A GRAVEL ROAD RUNNING ALONG THE SOUTH PROPERTY LINE OF ACME STEEL COMPANY AND ONLY ACCESSED FROM TORRENCE AVENUE. PK NAIL IS 46.13 FEET NORTHWEST OF GATE POST AND 14.68 FEET SOUTH OF A RAIL ROAD CROSSING SIGN.

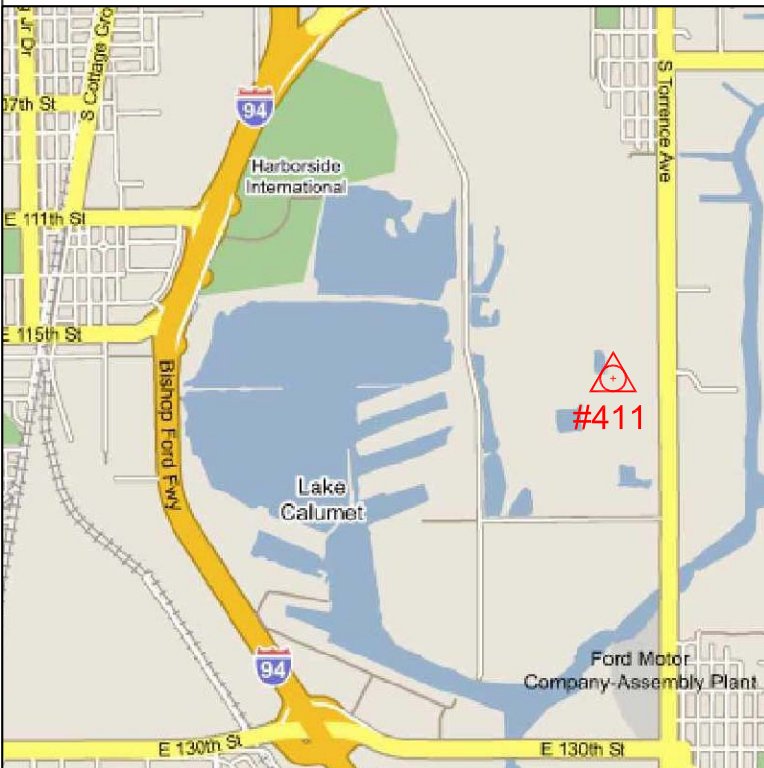
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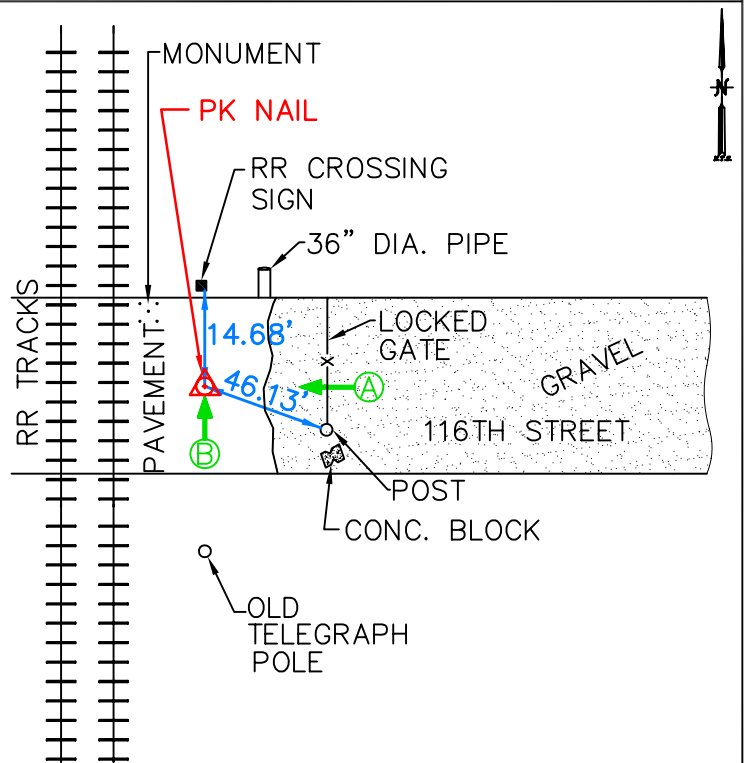
PHOTOGRAPH 'B'



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CALUMET AREA HMP SECONDARY SITE CONTROL RECOVERY SHEET

STATION:

#412

MEASURED: 5/21/02

HORIZONTAL DATUM: NAD 83

NORTH: 1828636.7757

ELEVATION: 586.6068

VERTICAL DATUM: NAVD 88

EAST: 1195326.2574

MONUMENTED: ?-?-2001

STATION DESCRIPTION:

IRON ROD WITH CAP SOUTH OF LARGE CONCRETE BLOCK IN 116TH STREET. 116TH IS A GRAVEL ROAD RUNNING ALONG THE SOUTH PROPERTY LINE OF ACME STEEL COMPANY AND ONLY ACCESSED FROM TORRENCE AVENUE. IRON ROD AND CONCRETE BLOCK IN FRONT OF LOCKED GATE IN FENCE LINE; FIRST GATE WEST OF TORRENCE.

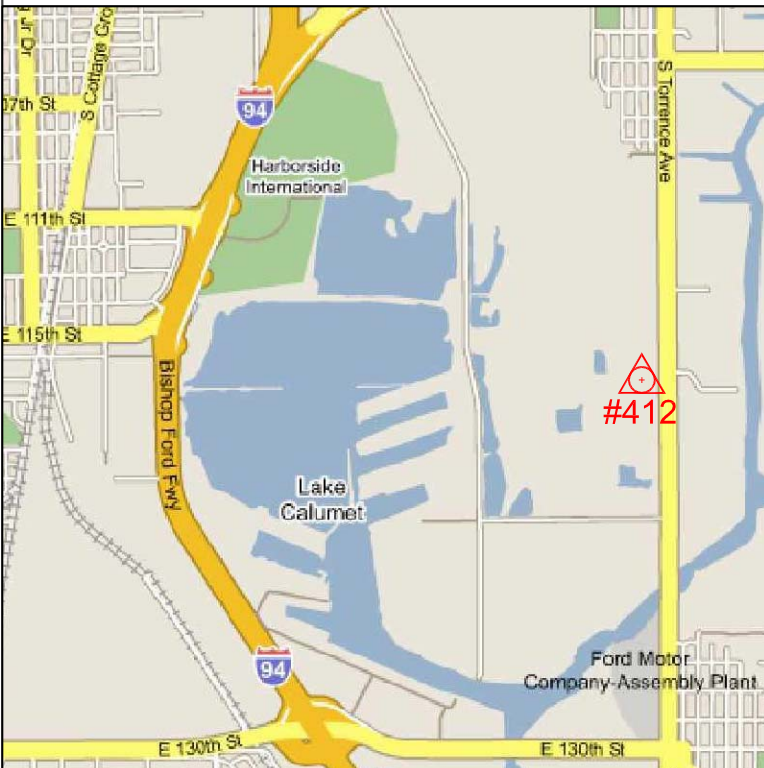
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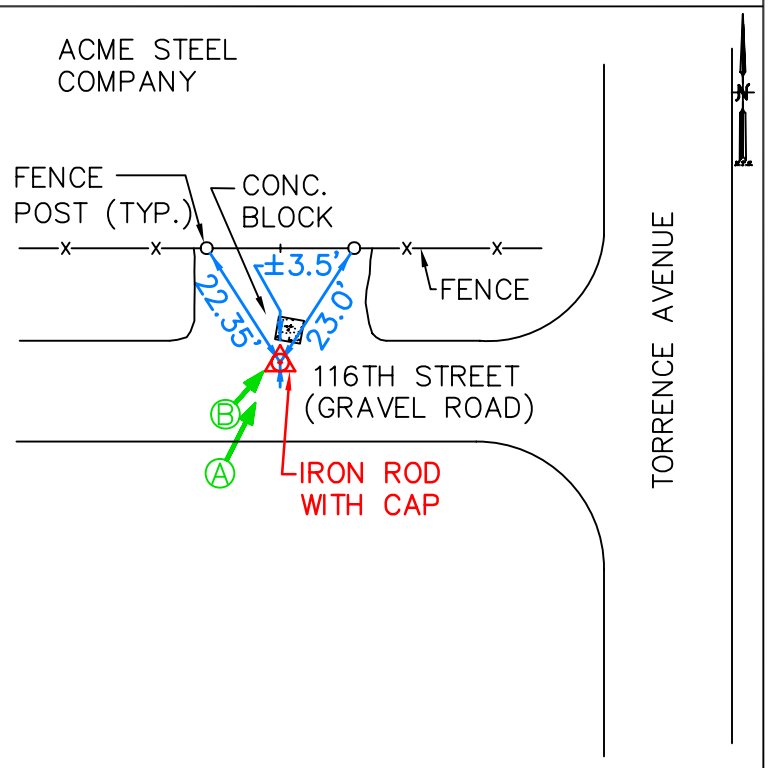
PHOTOGRAPH 'B'



VICINITY



SITE



CALUMET AREA
HYDROLOGIC MASTER PLAN

TASK 102

TOPOGRAPHIC MAPPING



CALUMET AREA
City of Chicago, Cook County, Illinois

PREPARED FOR:

CHICAGO DEPARTMENT OF ENVIRONMENT
30 NORTH LASALLE STREET – SUITE 2500
CHICAGO, ILLINOIS 60602

PREPARED BY:

V3 COMPANIES, LTD.
120 NORTH LASALLE STREET
CHICAGO, ILLINOIS 60602
312.419.1985

FUNDING PROVIDED BY:

CHICAGO DEPARTMENT OF ENVIRONMENT,
ILLINOIS DEPARTMENT OF NATURAL RESOURCES C2000 PROGRAM,
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT,
AND A SUPPLEMENTAL ENVIRONMENTAL PROJECT WITH CHICAGO SPECIALTIES.

Note: Data and References are accurate up to July 2004.

AUGUST 2006



VICINITY MAP
NOT TO SCALE

TOPOGRAPHIC MAPPING FOR AREAS A - J CALUMET AREA HMP CHICAGO, ILLINOIS

SHEET INDEX

SHEET 1 - KEY MAP & DRAWING LIST

SHEET 2 - DETAIL OF AREAS: A, B, C, F, G & H

SHEET 3 - DETAIL OF AREAS: D & J

*1 - SEE TASK # 106 - "CROSS SECTIONS & PROFILE OF PULLMAN CREEK"

*2 - SEE TASK # 106 - "CROSS SECTIONS OF BIG MARSH INLET"

*3 - SEE TASK # 106 - "CROSS SECTIONS OF BIG MARSH OUTLET"

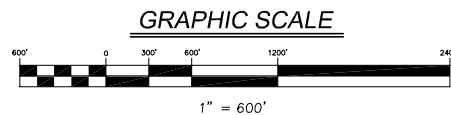
*4 - SEE TASK # 104 - "BATHYMETRIC MAP OF DEAD STICK POND"

*5 - SEE TASK # 104 - "BATHYMETRIC MAP OF HERON POND"

*6 - SEE TASK # 103 - "PLAN AND PROFILE FOR STONY ISLAND AVENUE"

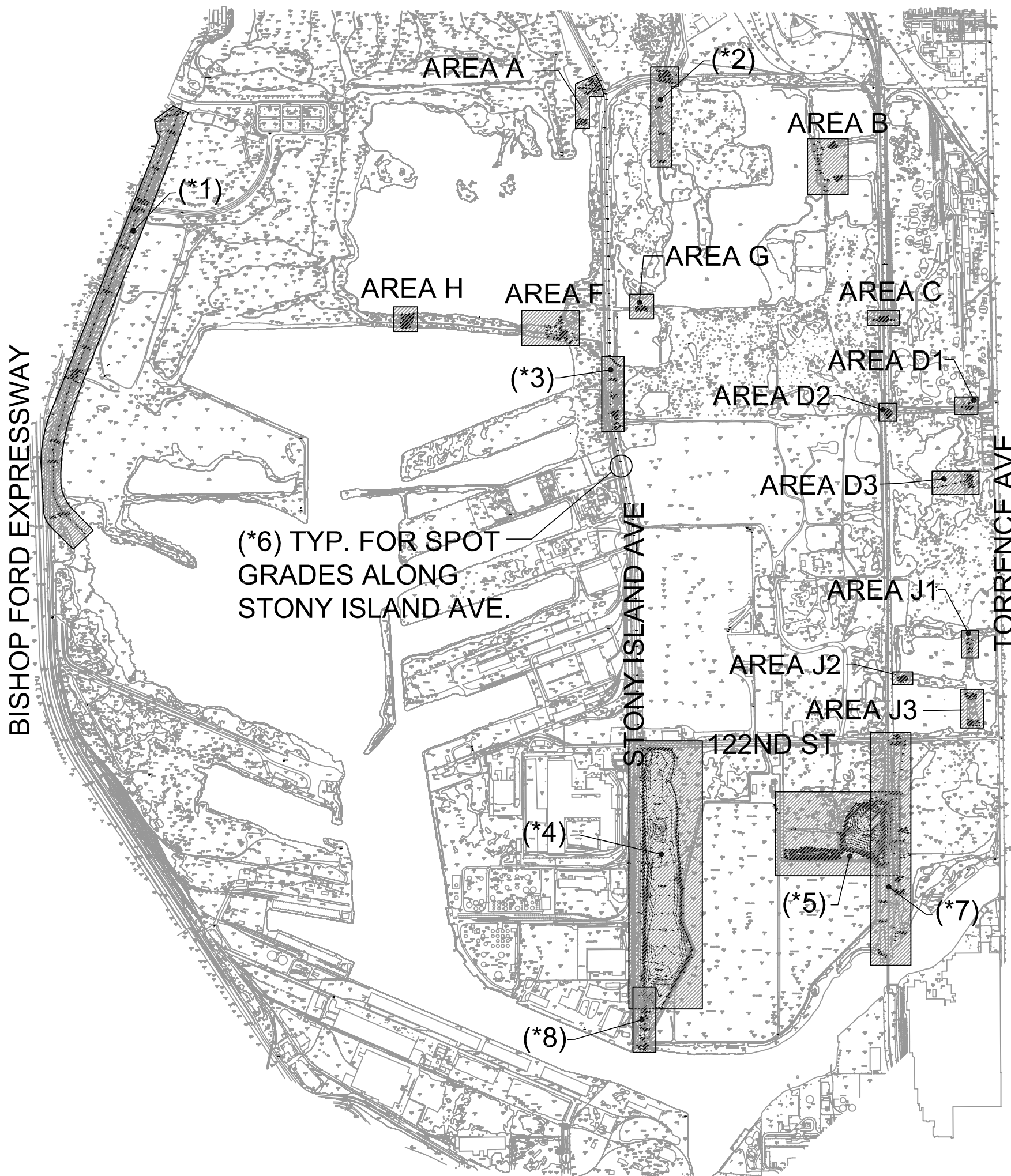
*7 - SEE TASK # 106 - "INDIAN RIDGE OUTLET CHANNEL CROSS SECTIONS"

*8 - SEE TASK # 106 - "DEADSTICK POND OUTLET CHANNEL CROSS SECTIONS"



GENERAL NOTES

1. COMPARE ALL POINTS IN FIELD PRIOR TO ANY CONSTRUCTION AND REPORT ANY DISCREPANCIES TO SURVEYOR AT ONCE.
2. FOR BUILDING RESTRICTIONS AS ESTABLISHED BY LOCAL ORDINANCES NOT SHOWN HEREON, CONSULT YOUR LOCAL MUNICIPAL AUTHORITIES.
3. DO NOT SCALE DIMENSIONS FROM THIS MAP.
4. CALL J.U.L.I.E. AT 1-800-892-0123 FOR FIELD LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO ANY DIGGING OR CONSTRUCTION.
5. UTILITIES AND IMPROVEMENTS, IF ANY EXIST, SHOWN HEREON PER LIDAR MAPPING, SHOWN UNDERLYING.
6. UNDERLYING LIDAR TOPOGRAPHY PREPARED BY ATLANTIC TECHNOLOGIES, APRIL 2001, SHOWN FOR REFERENCE AND ORIENTATION.
7. NO BOUNDARY INFORMATION SHOWN HEREON.
8. THIS MAP DOES NOT CONSTITUTE A PLAT OF SURVEY.
9. FULL TONE CONTOURS AND SPOT GRADES ENVIRONMENTAL DESIGN INTERNATIONAL, INC. (EDI) FIELD WORK AS OF VARIOUS DATES.



**Engineers
Scientists
Surveyors**
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v3consultants.com

PREPARED FOR:
CITY OF CHICAGO
DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

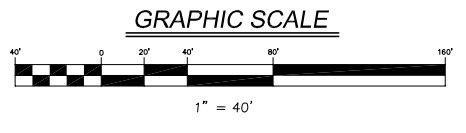
NO.		DATE		REVISIONS DESCRIPTION	
1.		8/31/06		PER CHICAGO D.O.E. REVIEW	

TOPOGRAPHIC MAPPING AREAS A-J
CALUMET AREA HMP, CHICAGO, IL

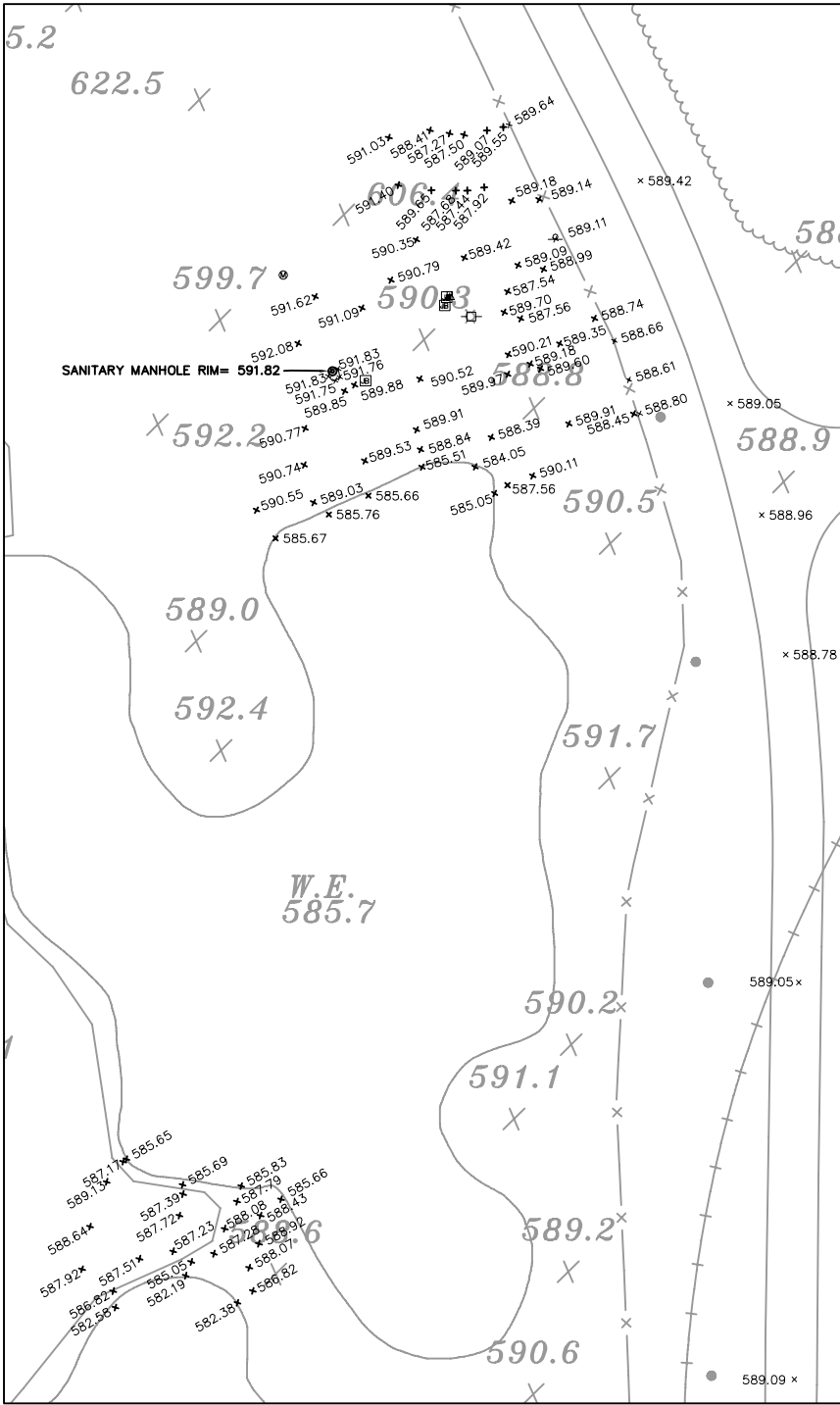
DRAFTING COMPLETED:	VARIES	DRAWN BY:	DRW	PROJECT MANAGER:	GVB
FIELD WORK COMPLETED:	1/22/04	CHECKED BY:	GVB	SCALE:	1" = 600'

Project No: 98216HMP
Task: #102
SHEET NO.
1 of 3

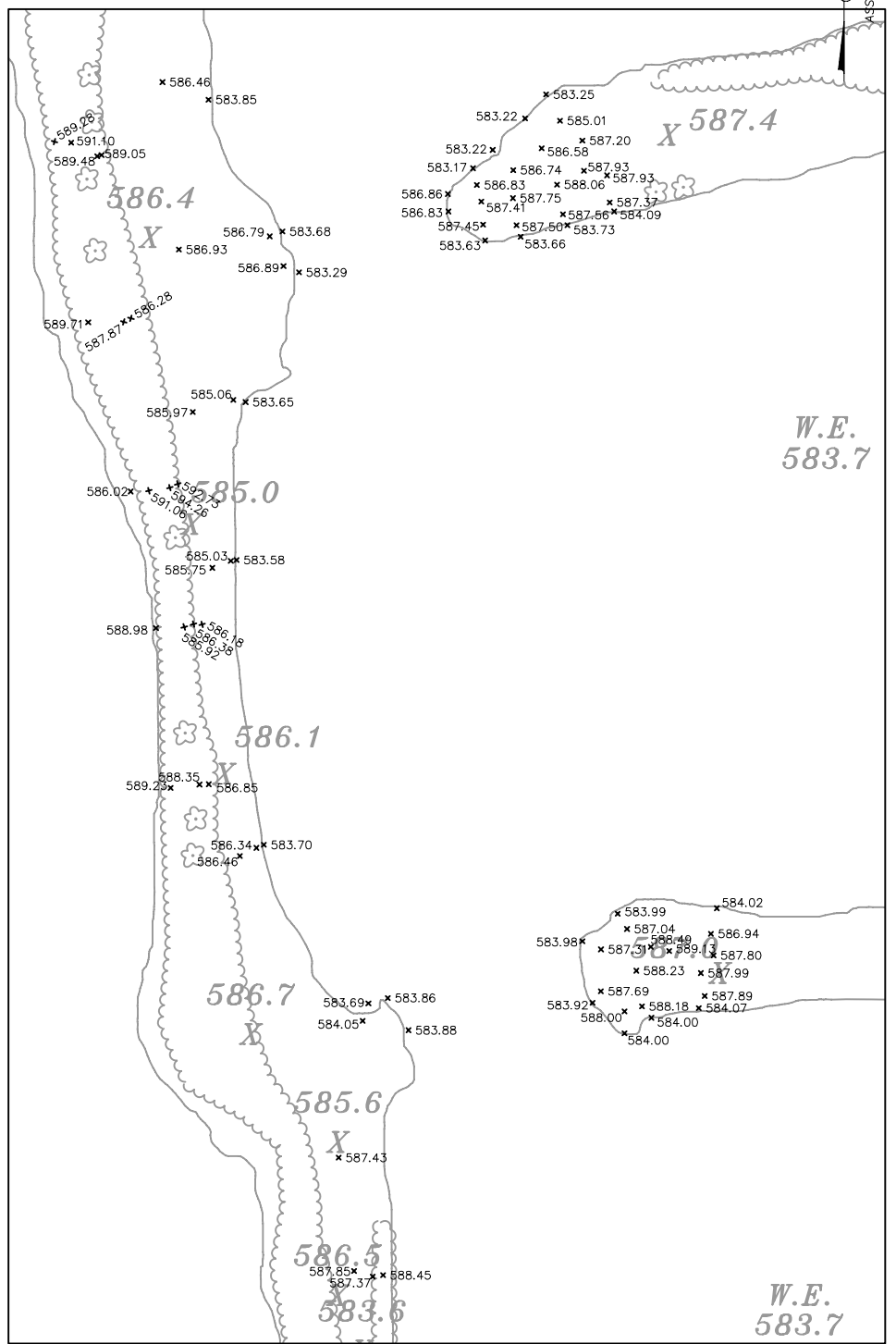
TOPOGRAPHIC MAPPING FOR AREAS A - J CALUMET AREA HMP CHICAGO, ILLINOIS



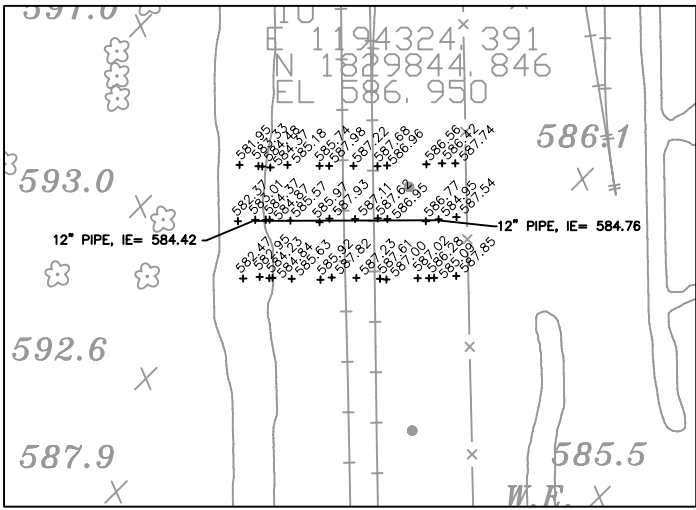
DETAIL AREA 'A'



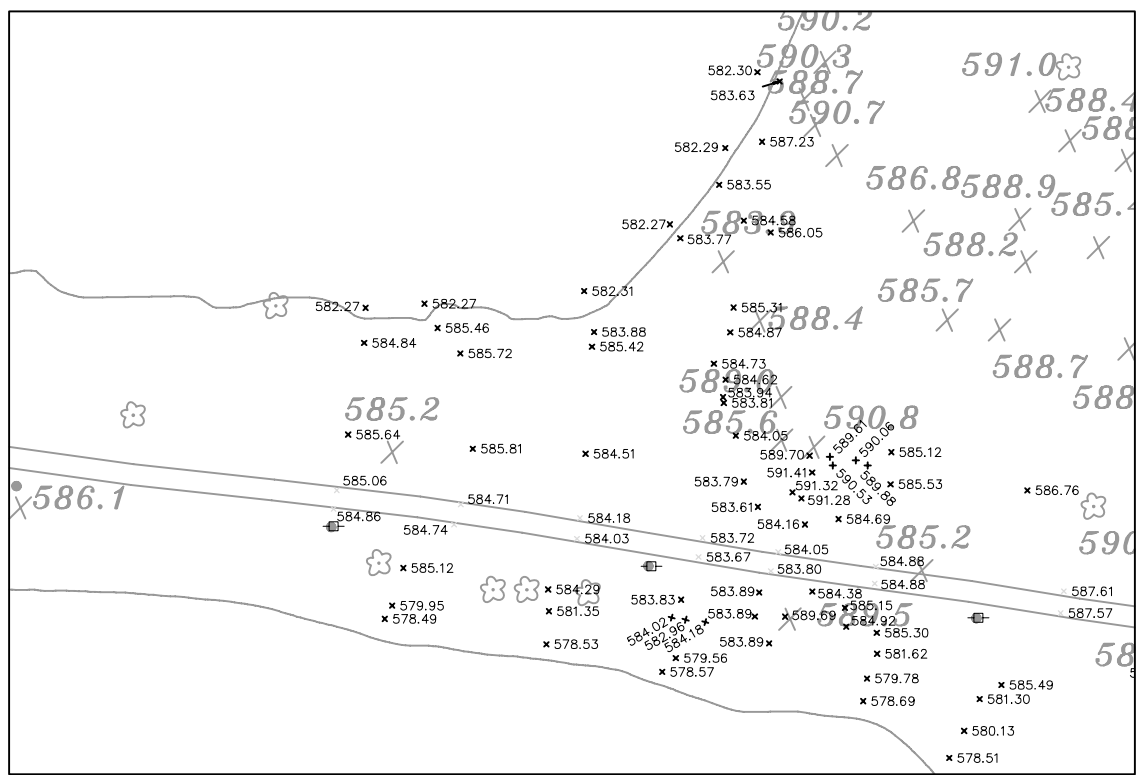
DETAIL AREA 'B'



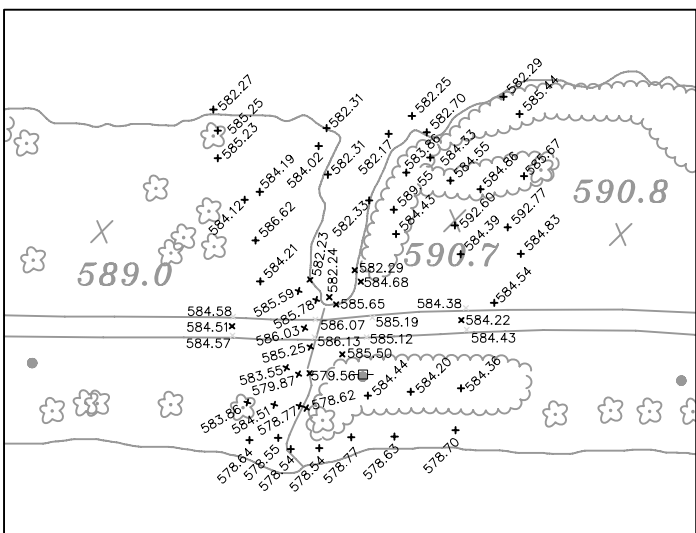
DETAIL AREA 'C'



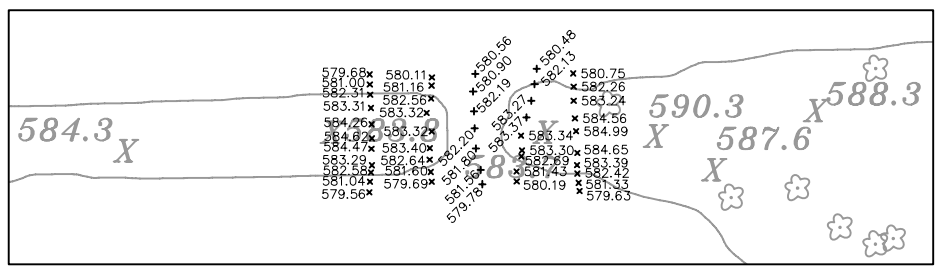
DETAIL AREA 'F'



DETAIL AREA 'G'



DETAIL AREA 'H'



**Engineers
Scientists
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PREPARED FOR:
CITY OF CHICAGO
DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

NO.		DATE		REVISIONS DESCRIPTION	
1.		8/31/06		PER CHICAGO D.O.E. REVIEW	

TOPOGRAPHIC MAPPING AREAS A-J
CALUMET AREA HMP, CHICAGO, IL

Project No: 98216HMP
Task: #102
SHEET NO. 2 of 3

DRAFTING COMPLETED: VARIES DRAWN BY: DRW PROJECT MANAGER: GVB
FIELD WORK COMPLETED: 1/22/04 CHECKED BY: GVB SCALE: 1" = 40'

CALUMET AREA
HYDROLOGIC MASTER PLAN

TASK 103

LIDAR GROUND TRUTHING
ANALYSIS



CALUMET AREA
City of Chicago, Cook County, Illinois

PREPARED FOR:

CHICAGO DEPARTMENT OF ENVIRONMENT
30 NORTH LASALLE STREET – SUITE 2500
CHICAGO, ILLINOIS 60602

PREPARED BY:

V3 COMPANIES, LTD.
120 NORTH LASALLE STREET
CHICAGO, ILLINOIS 60602
312.419.1985

FUNDING PROVIDED BY:

CHICAGO DEPARTMENT OF ENVIRONMENT,
ILLINOIS DEPARTMENT OF NATURAL RESOURCES C2000 PROGRAM,
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT,
AND A SUPPLEMENTAL ENVIRONMENTAL PROJECT WITH CHICAGO SPECIALTIES.

Note: Data and References are accurate up to July 2004.

AUGUST 2006

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- 1.0 Lidar Ground Truthing Report Executive Summary**
- 2.0 Starting Materials and Information**
- 3.0 V3 Field Work**
- 4.0 V3 Measurements**
- 5.0 Results Comparison**
- 6.0 Potential Expectations**
- 7.0 Lidar Ground Truthing Spread Sheet**
- 8.0 Stony Island Avenue Plan and Profile**

1.0 Executive Summary

This report addresses the task of assessing the contour accuracy within the project area of the Lidar mapping provided to the DOE by Atlantic Technologies LLC, dated May 3, 2001 (Task 103).

2.0 Starting Materials and Information

V3 was provided electronic copies of the Lidar topographic mapping and the Analytical Triangulation Report as prepared by Atlantic Technologies, LLC dated May 3, 2001. Note: as of the submittal date of this report (3/31/06) it is known that Atlantic Technologies has been acquired by Optimal Geomatics. Contact was made to acquire more information or metadata on the datums and control. From V3's understanding persons involved in the project are no longer with the company and information received was too scarce to make absolute datum determinations.

3.0 V3 Field Work

As outlined by the DOE, V3 identified 50+ locations on the Lidar maps for verification. These locations were spot grades shown on the Lidar maps that appeared to be reasonably recoverable in the field. Spot grades were identified to be on varying surfaces and spread throughout the site. The majority of the spot grades fell on bituminous pavement or in open grassy areas. A reasonable measure of care was taken to recover the location of the Lidar spot grades regardless of the surface they fell on. See Page 1 of Section 7.0 of this report for an overview of the site with the approximate location for the spot grades chosen for verification; pages 2 and 3 show more detailed explanation of the actual location, full description & elevations as measured vs. as shown. Caution should be used when comparing the "V3 Control Network" GPS profile against the sampled "Atlantic Technologies" Lidar profile due to the Lidar profile data being so sparse.

Additionally, V3 took measurements along the centerline of Stony Island Avenue adjacent to the existing power poles running along the west side of the road. Measurements were taken from the Calumet River on the south to approximately the entrance to the Calumet Transfers trash facility on the north. A comparison of the Lidar mapping vs. those V3 measurements is shown in Section 8.0: Plan and Profile of Stony Island Avenue.

4.0 V3 Measurements

All of the Lidar comparison measurements made by V3 were done utilizing GPS and the Calumet Area Control Network established as part of Task 101. See Task 101 for a more detailed explanation of the Calumet Area Control Network. A reasonable measure of care was taken during all phases of measurement to ensure the lowest potential for error, if any, in the measurements. The measurements by V3 were taken on 10-18-2005.

5.0 Results Comparison

Comparison between the Lidar mapping spot grades and V3 measured spot grades was done on a number of criteria:

- a) The horizontal difference between the Lidar spot grade and V3's spot grade.
- b) The vertical difference between the spot grades.
- c) What material type the spot grades were on.
- d) The height of the surrounding vegetation.

Notes:

a) Comparison between spot grades, in this section, was done purely on a statistical basis: only numbers were compared. Section 6.0 explores possible reasons for any potential numerical differences.

b) While reasonable care was used to recover the Lidar mapping spot grade locations not all of the spots could be accurately recovered. Mitigating factors, such as, but not limited to; undergrowth, permitted access restrictions or general accessibility prevented GPS measurement at some locations.

- For spot grades on bituminous surfaces:

Elevation differentials ranged from 0.62' high to 0.88' low, averaging 0.17' low.

- For spot grades on concrete surfaces:

Elevation differentials ranged from 0.62' high to 1.25' high, averaging 0.94' high. However, only two spot grades on concrete surfaces were measured.

- For spot grades on gravel or loose rock surfaces:

Elevation differentials ranged from 1.02' high to 0.77' low, averaging 0.53' low. One gravel measurement showed a 4.26' elevation difference. This number was not used in the average because it seems so out-of-place an error was assumed to have occurred in measuring it.

- For spot grades on grass or weeded areas:

Elevation differentials ranged from 0.62' high to 1.39' low, averaging 0.41' low. 'Grass or weeded' areas ranged from mowed grass to chest high vegetation. Separate sub categories were not broken out.

- For the Lidar Control points:

All of the Lidar control points were Aluminum disks set in concrete by Bollinger, Lach & associates. Field recovery notes for these were provided to V3.

Elevation differentials ranged from 0.24' low to 0.42' low, averaging 0.32' low.

6.0 Potential Expectations

Conclusions that can be drawn from this data vary depending on the information one is seeking. Based solely on the control elevation differentials it might appear that the entire Lidar map is anywhere from 0.24' to 0.42' low, which may point to a difference in datum or purely limitations of the Lidar mapping process. All of the different material type spot grades, and the elevation differential averages for each, do not represent the entire project history, nor do they allow for any definitive conclusions.

- Site Historical Data:

The condition of the site vegetation, roads, waterways and other features at the time of the Lidar survey are unknown. Conditions such as erosion, sedimentation, blocking of discharge structures and other unforeseeable environmental circumstances could have changed the lay-of-the-land between the time that the Lidar topography was performed and the time V3 verified it.

- Lidar Metadata & Control:

Information regarding how the Lidar control monuments were set and how they were originally measured is limited. V3 was provided field recovery sketches of the Lidar control by Bollinger, Lach & Associates, Inc. on February 15th, 2002, but no additional metadata was included therein. Horizontal location and vertical elevation values for these monuments were provided within the Atlantic Technologies Analytical Triangulation Report dated May 3, 2001. No reference to the origin of these values was made. V3 had to assume that these values were from the Lidar mapping and were per the control measurements by Bollinger, Lach & Associates. This assumption was reached after considering the possibility that the Lidar control monuments were on a different datum than the Calumet Area Control Network performed by V3. A strict datum difference would not have produced a range of elevation differentials as wide as 0.24' to 0.42', but rather a consistent difference.

- Paxton Landfill:

None of the control within the Paxton landfill area was recovered by V3: access was denied.

- TIN Subtraction Feasibility:

As outlined in Lidar Ground Truthing Plan it was suggested V3 would create a Digital Terrain Model Triangulated Irregular Network (TIN) Subtraction Exhibit for further depth of comparison between the Lidar topographic mapping and the various areas mapped as requested for drainage boundary delineation and outlined within this project's scope. The Ground Truthing Plan called for a systematic review of the data to determine or establish trends of accuracies or inaccuracies between the Lidar and the V3 topography through digital terrain model comparisons. Due to the limited topographic information acquired and the minimal level of detail on the Lidar maps it was determined that a TIN Subtraction comparison would not yield an accurate report of the two surfaces.

- Uses:

V3 does not advise using the Lidar mapping for site engineering design purposes. The Lidar topography does not appear to have the design level detail that is typically required. The Lidar map does show general land flow trends, limits of water ways & planimetric features and relative elevational differences across this site; that have value in large scale planning.

Initial research and discussions with various Lidar contractors and photogramatists informed V3 that accuracies typical of this data's era are generally no better than 15 centimeters vertically and 3 meters horizontally. The Lidar topography for this project appears to be within that tolerance.

Precautions should be made if using the Lidar topography: site specific checks are recommended.

➤ Conclusion:

V3's concludes the Lidar topography to be approximately 0.20' to 0.30' lower than the as-measured ground elevation based upon the project's datum requirements used to prepare the control network (see Task 101).



Lidar Ground Truthing Report

Meta Data

V3:
Horizontal Datum: NAD83 (IL East Zone 1201), Geoid 99, GRS 80

Vertical Datum: NAVD88

NGS Primary Control Network based: AE9231, AE9258, ME3311 & AC9170

V3 Abbreviations:
Bit. = Bituminous Pavement
Conc. = Concrete
KHW = Knee high weeds*
WHW = Waist high weeds*
LCG = Low Cut Grass*
N = North
S = South
E = East
W = West
N'y = Northerly
P.T. = Point of Tangency

*Field crew note: Weeds and tall grass contained large amounts of gravel throughout the site.

Atlantic Technologies:

The horizontal control for this project is based on the Illinois state plane coordinate system, east zone.
The horizontal datum is adjusted to the North American datum 1983, nad1983.
The vertical datum is adjusted to the North American vertical datum 1988, navd1988.
All control is defined in U.S. survey feet.

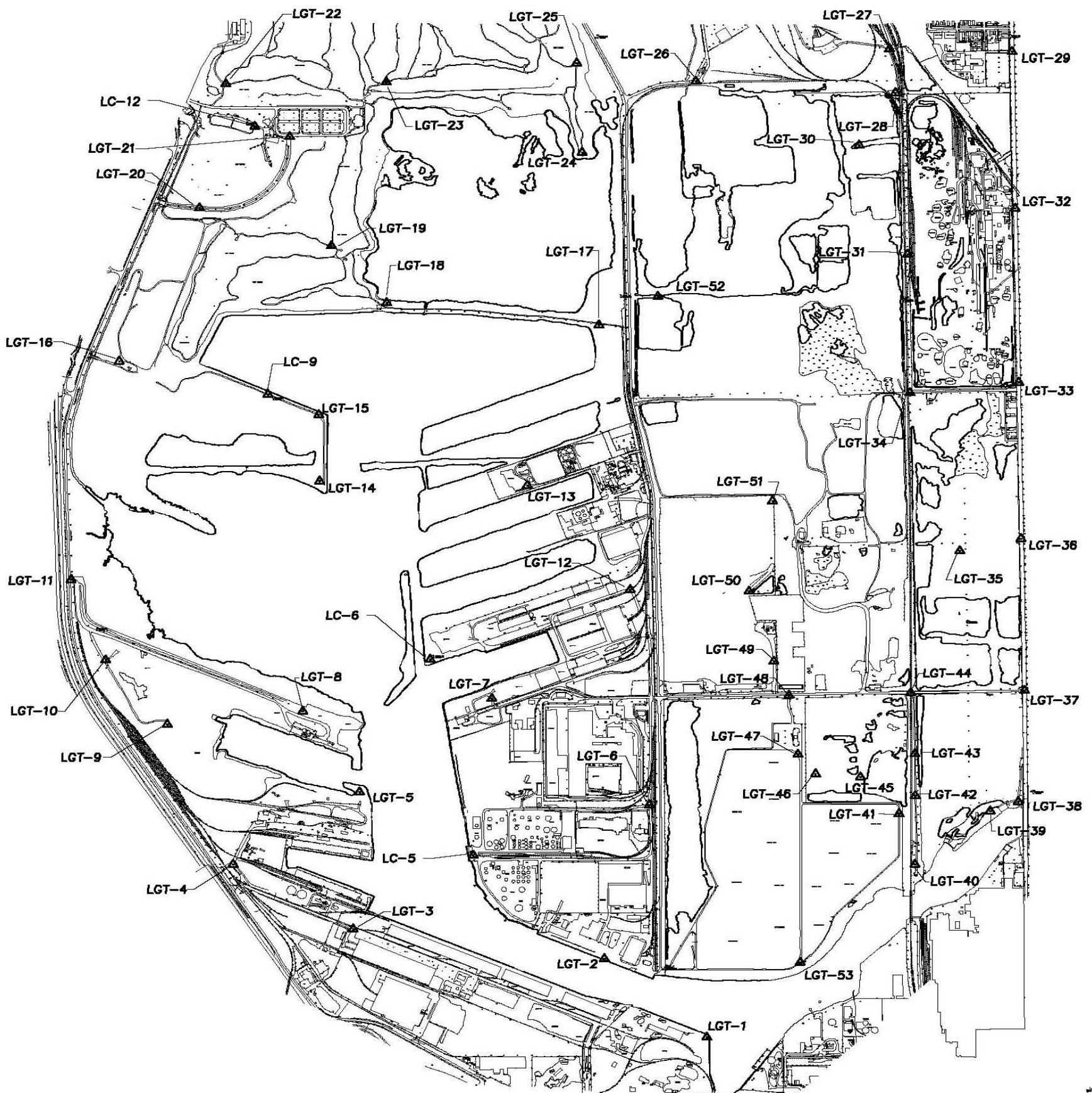
This topographic mapping is prepared by Atlantic technologies of Indianapolis, Indiana.

This topographic mapping meets national map accuracy standards.

Date of photogrammetric compilation: May of 2001
Date of lidar data collection: April of 2001

Task # 103
V3 Project Number: 98216HMP
V3 Project Manager: KRO, GVB
Field Crew Chief: RRD
V3 Field Work Completed: 10/20/05
Calculations Completed: 12/1/05
Revised: 8/31/06 per Chicago D.O.E. Review
Technician: DRW

Point location Map



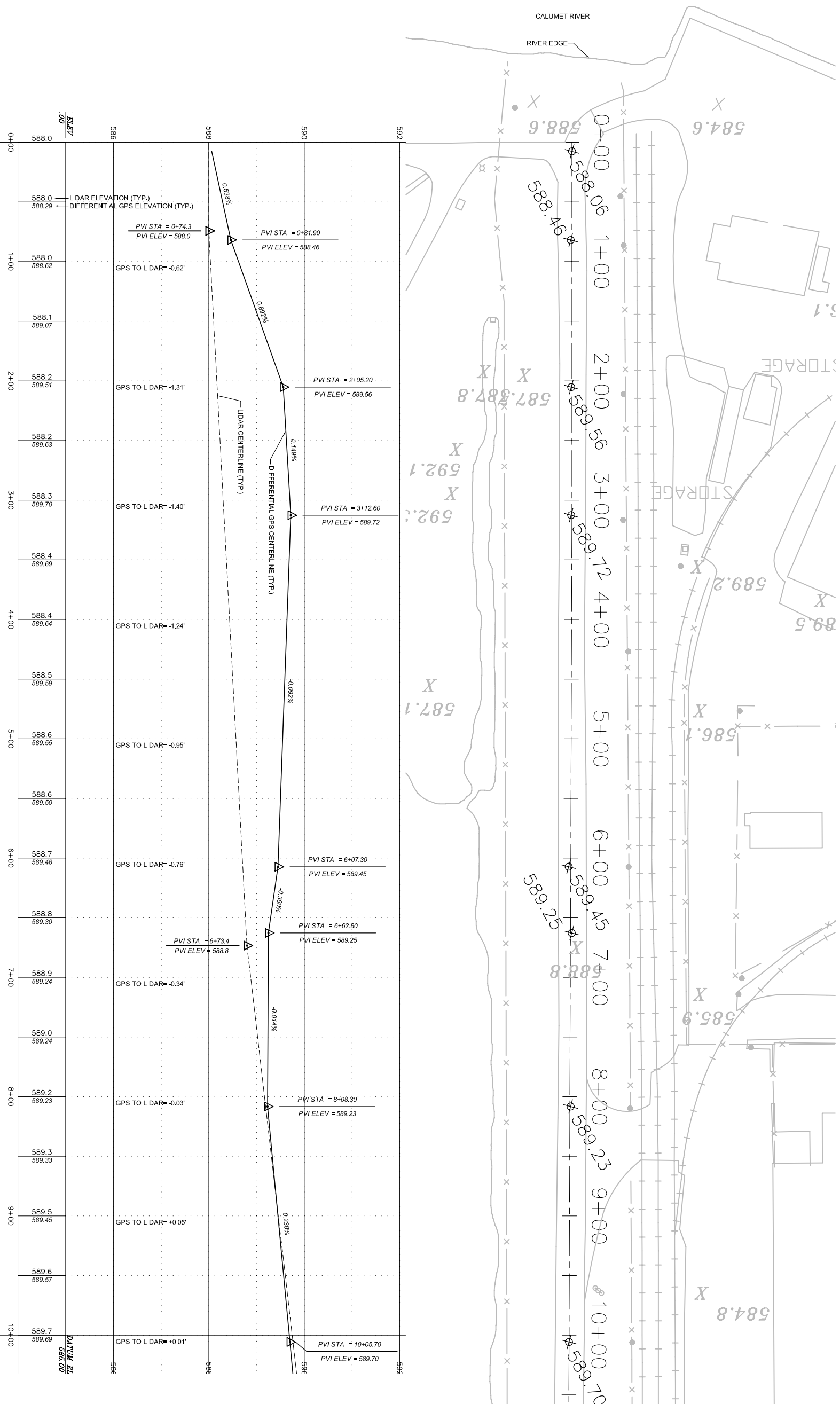
Name	Surface Material	Description	Horizontal						Vertical				
			Lidar Published Coords		V3 Measured Coords		Horizontal Difference		Lidar Published Elevation	V3 Measured Elevation	Elevation Difference		
			Northing	Easting	Northing	Easting	D N/S	D E/W					
LC-1		Aluminum disk in concrete	1819394.59	1196488.14	1819394.55	1196488.15	0.04'	S	0.01'	E	584.42	584.6964	0.28
LC-3		Aluminum disk in concrete			1819284.96	1184097.16						585.2862	
LC-6		Aluminum disk in concrete	1825092.79	1188599.73	1825092.69	1188599.75	0.10'	S	0.02'	E	586.83	587.2515	0.42
LC-8		Aluminum disk in concrete	1825459.05	1184696.48	1825459.00	1184696.46	0.06'	S	0.03'	W	589.86	590.2225	0.36
LC-11		Aluminum disk in concrete	1829854.73	1190991.92	1829885.15	1190991.37	30.42'	N	0.55'	W	588.72	588.961	0.24
LC-13		Aluminum disk in concrete	1833303.47	1195537.33	1833303.43	1195537.34	0.04'	S	0.01'	E	586.67	586.9605	0.29
LC-236		Found disk in concrete	1823339.20	1195807.48	1823339.16	1195807.48	0.03'	S	0.00'	E	605.53	605.8787	0.35
LC-9		Access denied to V3	1828548.61	1186671.89							585.55		
LC-12		Access denied to V3	1832101.89	1186474.06							610.16		
LGT-1	Gravel	S. side of Calumet river E. of Stony Island Ave. extended S. at SW side of river "Y".	1820099.4	1191897.5	1820091.6	1191901.3	7.8'	S	3.8'	E	581.6	585.86	4.26
LGT-2	Bit.	Docks on N. side of Calumet river, W of end of Stony Island Ave.	1821197.2	1190651.2	1821143.8	1190678.0	53.5'	S	26.7'	E	584.1	584.56	0.46
LGT-3	Bit.	Pavement on S. side of harbor near SW corner of harbor, approx. 164 N & E of warehouse. In gated area.	1821529.4	1187645.0	1821533.3	1187649.7	3.9'	N	4.8'	E	583.4	584.28	0.88
LGT-4	Conc.	Access road to steel recycling plant on SW side of lake approx. 200' E. of Doty rd.	1822389.3	1186202.5	1822396.1	1186206.1	6.8'	N	3.6'	E	584.5	585.75	1.25
LGT-5	KHW	NE end of SW'ly most peninsula in harbor. In gated area of steel recycling plant.	1823326.9	1187733.5	1823331.7	1187742.1	4.8'	N	8.6'	E	585.0	586.30	1.30
LGT-6	Bit.	On E/W rd intersection approx. 1420' S. of 122nd st., W. of Stony Island Ave.	1823164.0	1191208.6	1823155.4	1191210.9	8.6'	S	2.3'	E	588.3	588.41	0.11
LGT-7	Bit.	NW corner of SE'ly most peninsula of harbor.	1824569.8	1189321.1	1824564.8	1189315.8	5.0'	S	5.2'	W	588.3	587.68	-0.62
LGT-8	KHW	On 2nd peninsula from south on W. side of Harbor, approx. 230' N. concrete silos.	1824391.2	1187048.6	1824395.8	1187048.9	4.6'	N	0.3'	E	593.4	593.77	0.37
LGT-9	KHW	S. of path, SE of bend in gravel road, just E. of Bishop Ford Expressway in a gated area.	1824220.5	1185420.9	1824223.3	1185419.2	2.7'	N	1.7'	W	585.6	586.30	0.70
LGT-10	Gravel	At CL-CL of gravel roads E of Bishop Ford Exp. approx. middle of Sly curve concave E. gated area.	1825063.6	1184671.6	1825068.8	1184666.1	5.2'	N	5.5'	W	590.9	591.37	0.47
LGT-11	Conc.	At CL-CL of Doty and access rd E of N P.T. of S'ly curve of Bishop Ford Exp.	1826129.2	1184239.8	1826128.9	1184241.8	0.4'	S	2.0'	E	584.1	584.72	0.62
LGT-12	Bit.	Road corner, NE of Cox steel building approx. 1420 N of 122nd, W of Stony Island Ave.	1825998.9	1190966.7	1825996.9	1190962.7	2.0'	S	4.0'	W	587.6	587.88	0.28
LGT-13	KHW	Middle on S side of 2nd most Nly peninsula on E side of harbor. In gated area.	1827373.7	1189750.0	1827374.0	1189783.2	0.3'	N	33.2'	E	589.5	590.18	0.68
LGT-14	KHW	SE corner of Nly most peninsula on W side of harbor. In gated area.	1827397.0	1187253.2	1827425.8	1187251.5	28.9'	N	1.6'	W	586.1	586.55	0.45
LGT-15	LCG	NE corner of Nly most peninsula on W side harbor. In gated area.	1828306.1	1187227.2	1828298.4	1187249.1	7.7'	S	21.9'	E	583.8	585.19	1.39
LGT-16	KHW	E of Bishop Ford & 115th St. interchange. In gated area.	1829010.8	1184851.3	1829045.5	1184880.0	34.8'	N	28.7'	E	594.8	595.72	0.92
LGT-17	KHW	Near NE'ly most edge of water near NE end of harbor. In gated area.	1829486.6	1190613.4	1829486.4	1190602.8	0.2'	S	10.5'	W	587.3	587.83	0.53
LGT-18	On golf course T-box	Near SW edge of water at SW side of Conservation area. In gated area.	1829781.6	1188055.6	1829775.2	1188057.5	6.4'	S	1.9'	E	590.9	591.53	0.63
LGT-19		ACCESS DENIED	1830523.0	1187387.0							609.4		
LGT-20	Bit.	On club entrance drive at 1st break in median E of Doty road, S of 111th St.	1831023.3	1185799.0	1831026.0	1185806.5	2.7'	N	7.5'	E	601.5	601.66	0.16
LGT-21	Bit.	SW corner of club parking lot at S entrance drive.	1831978.5	1186884.0	1831984.1	1186877.5	5.7'	N	6.5'	W	611.0	611.33	0.33
LGT-22	Bit.	On cart path. 1st path E of Doty along N'ly club entrance drive, approx 315' N of drive.	1832666.5	1186100.9	1832665.0	1186100.6	1.5'	S	0.4'	W	608.6	608.48	-0.12
LGT-23		ACCESS DENIED	1832687.6	1188054.6							631.4		
LGT-24	KHW	S'ly end of nose of NE'ly most peninsula of Conservation area N of golf course cart path.	1831757.8	1190402.3	1831753.6	1190402.8	4.2'	S	0.4'	E	595.2	594.83	-0.37
LGT-25	KHW	In path loop near SE corner of golf course.	1832936.4	1190337.9	1832936.5	1190333.9	0.2'	N	4.1'	W	626.3	626.91	0.61
LGT-26	Bit.	Pavement near island at 1st entrance E of Stony Island Ave. on access road running on N side of Big Marsh	1832700.2	1191774.5	1832695.2	1191780.8	5.0'	S	6.3'	E	589.5	589.87	0.37
LGT-27	Bit.	At intersection of railroad and road E of building, N of Big marsh.	1833125.2	1194107.5	1833125.8	1194104.1	0.5'	N	3.5'	W	588.2	588.47	0.27
LGT-28	Gravel	In railroad "V" N & E of Big Marsh East.	1832547.5	1194175.2	1832536.2	1194172.1	11.4'	S	3.2'	W	586.9	585.88	-1.02


Name	Surface Material	Description	Horizontal								Vertical		
			Lidar Published Coords		V3 Measured Coords		Horizontal Difference				Lidar Published Elevation	V3 Measured Elevation	Elevation Difference
			Northing	Easting	Northing	Easting	D N/S	D E/W					
LGT-29	Bit.	At CL-CL of Torrence and 110th st.	1833087.0	1195578.3	1833091.7	1195578.9	4.7'	N	0.6'	E	587.0	587.26	0.26
LGT-30	WHW	Nose of NE'ly most peninsula at NE corner of Big Marsh.	1831863.3	1193758.8	1831845.1	1193716.0	18.1'	S	42.8'	W	587.4	587.93	0.53
LGT-31	Mowed grass	Between railraod tracks on W side of Steel Coke plant, approx. 470' N of 114th st extended W.	1830432.8	1194328.6	1830401.5	1194330.8	31.2'	S	2.2'	E	588.3	587.85	-0.45
LGT-32	Bit.	Centerline of Torrence ave. approx 270' S of railroad crossing.	1831022.6	1195611.6	1831018.7	1195616.2	3.8'	S	4.6'	E	586.9	587.18	0.28
LGT-33	Bit.	Centerline of Torrence ave. approx 685' N of E 117th st.	1828726.8	1195660.5	1828732.2	1195657.4	5.4'	N	3.1'	W	586.1	586.10	0.00
LGT-34	Bit.	On E/W access road just E of railroad crossing near SE corner of steel coke plant.	1828591.4	1194350.0	1828590.8	1194354.2	0.6'	S	4.1'	E	588.3	588.57	0.27
LGT-35	KHW	Middle of field, approx 730' W of Torrence & 1550' S of 117th.	1826517.0	1194960.1	1826496.7	1194940.4	20.2'	S	19.7'	W	587.2	587.20	0.00
LGT-36	Bit.	Centerline of Torrence approx 1375' S of 117th.	1826664.9	1195684.8	1826671.4	1195693.8	6.6'	N	9.0'	E	584.9	585.23	0.33
LGT-37	Bit.	At centerline-centerline of Torrence and 122nd.	1824665.6	1195727.5	1824666.2	1195728.8	0.6'	N	1.3'	E	585.0	584.83	-0.17
LGT-38	Gravel	On access rd. just west of N. end of Torrence Ave. bridge over Calumet river.	1823199.4	1195658.6	1823204.2	1195648.3	4.8'	N	10.3'	W	583.4	583.37	-0.03
LGT-39	Mowed grass	In island W of water control structure near N end of Torrence Ave. bridge of Calumet river.	1823089.4	1195321.1	1823073.7	1195315.3	15.7'	S	5.8'	W	593.5	592.88	-0.62
LGT-40	Gravel	Ground just N. of railroad bridge over Calumet river, on E. side of tracks at metal steps.	1822378.2	1194409.2	1822374.8	1194412.0	3.4'	S	2.8'	E	590.9	590.70	-0.20
LGT-41	Bit.	On perimeter road around MWRD property just S. of NE corner of property.	1823036.0	1194217.6	1823051.5	1194218.4	15.4'	N	0.9'	E	592.9	592.71	-0.19
LGT-42	Gravel	Along path E. of railroad, just N & E of Se corner of Heron pond.	1823288.5	1194414.3	1823272.5	1194416.1	16.0'	S	1.8'	E	589.0	588.80	-0.20
LGT-43	Gravel	Along path E of railroad, just E of NE corner of Heron pond.	1823832.2	1194409.6	1823834.7	1194411.6	2.5'	N	2.0'	E	589.0	588.84	-0.16
LGT-44	Bit.	Centerline of crossing of railroad and 122nd.	1824640.0	1194360.3	1824638.8	1194359.9	1.2'	S	0.4'	W	593.7	594.07	0.37
LGT-45	Mowed grass	At paths intersection on W side of larger Heron pond, in gated area.	1823522.0	1193759.7	1823527.5	1193757.4	5.5'	N	2.3'	W	589.4	590.00	0.60
LGT-46	Mowed grass	On path approx. 180' E of N/S perimeter rd on W side of Heron pond & 385' N of E/W perimeter rd on S side of Heron pond. In gated area.	1823565.0	1193208.2	1823567.4	1193219.6	2.4'	N	11.3'	E	591.3	590.86	-0.44
LGT-47	Bit.	On perimeter road around MWRD property just S. of building at NE corner of property.	1823824.0	1192989.7	1823807.3	1193000.1	16.6'	S	10.5'	E	593.3	593.69	0.39
LGT-48	Bit.	At intersection of 122nd and entrance to MWRD facility.	1824602.6	1192893.1	1824603.2	1192893.4	0.6'	N	0.3'	E	587.7	588.10	0.40
LGT-49	Gravel	On gravel rd approx. 435' N of 122nd and 165' W of MWRD facility entrance. Gravel road of land fill entrance.	1825060.1	1192715.7	1825647.6	1192716.3	587.5'	N	0.6'	E	597.4	597.94	0.54
LGT-50	Gravel	Gravel rd at SW corner of triangle shaped pond, approx. 1120' E. of Stony Island rd & 1380' N of 122nd E of land fill area.	1825970.0	1192410.8	1825981.5	1192421.8	11.5'	N	11.0'	E	604.6	605.37	0.77
LGT-51	Gravel	Gravel rd at NE corner of landfill, approx 1430' E of Stony Island & 2550' N of 122nd.	1827165.4	1192698.8	1827162.1	1192699.8	3.3'	S	1.0'	E	604.3	603.65	-0.65
LGT-52	KHW	Near overflow at SW corner of Big Marsh, approx. 350' E of Stony Island Ave.	1829865.0	1191308.2	1829863.6	1191326.2	1.4'	S	18.0'	E	583.8	584.34	0.54
LGT-53	Bit.	On N/S intersection of S side of MWRD property, approx. 34' NE of S end of guard rail.	1821086.0	1193031.8	1821077.9	1193026.4	8.1'	S	5.4'	W	592.5	591.93	-0.57

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 0+00 - 10+00



KEY MAP





**Engineers
Scientists
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DEPARTMENT OF ENVIRONMENT
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PLAN AND PROFILE
STONY ISLAND AVENUE PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

DRWN BY: DRW
CHECKED BY: CVB

PROJECT MANAGER: CVB
SCALE: 1" = 40'

REVISIONS

NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW
2.	8/31/06	PER CHICAGO D.O.E. REVIEW

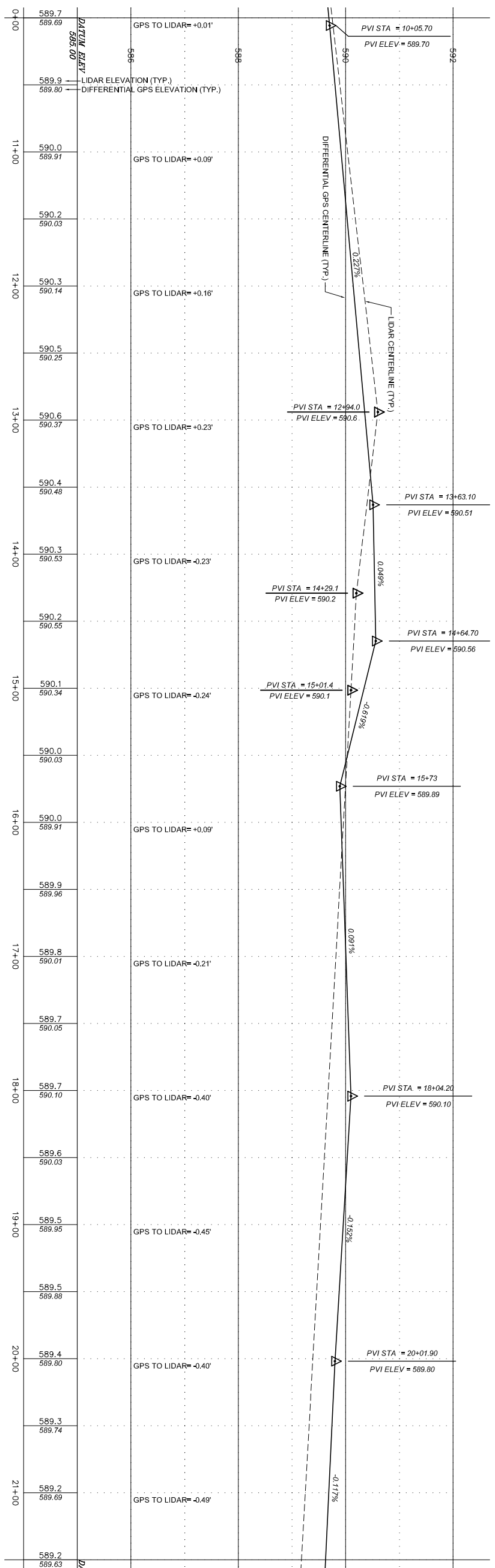
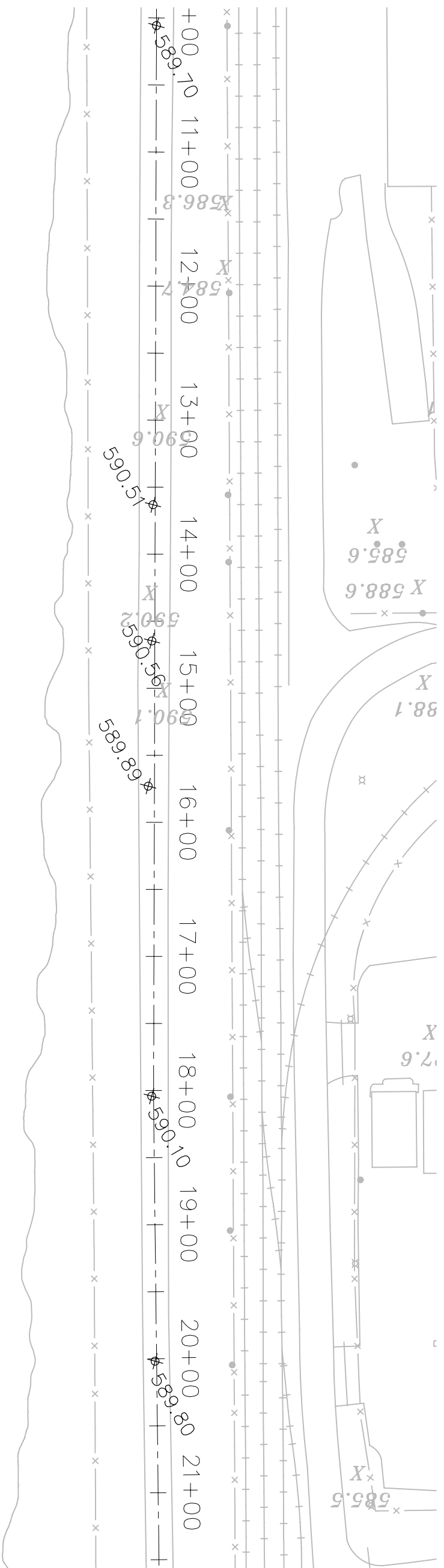
Project No: 98216HMP
Task: #103


SHEET NO. 2 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 10+00 - 21+50



KEY MAP





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NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW
2.	8/31/06	PER CHICAGO D.O.E. REVIEW

NO.	DATE	DESCRIPTION

PLAN AND PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

STONY ISLAND AVENUE PROFILE

DRAWN BY: DRW
PROJECT MANAGER: GVB
SCALE: 1" = 40'

Project No: 98216HMP

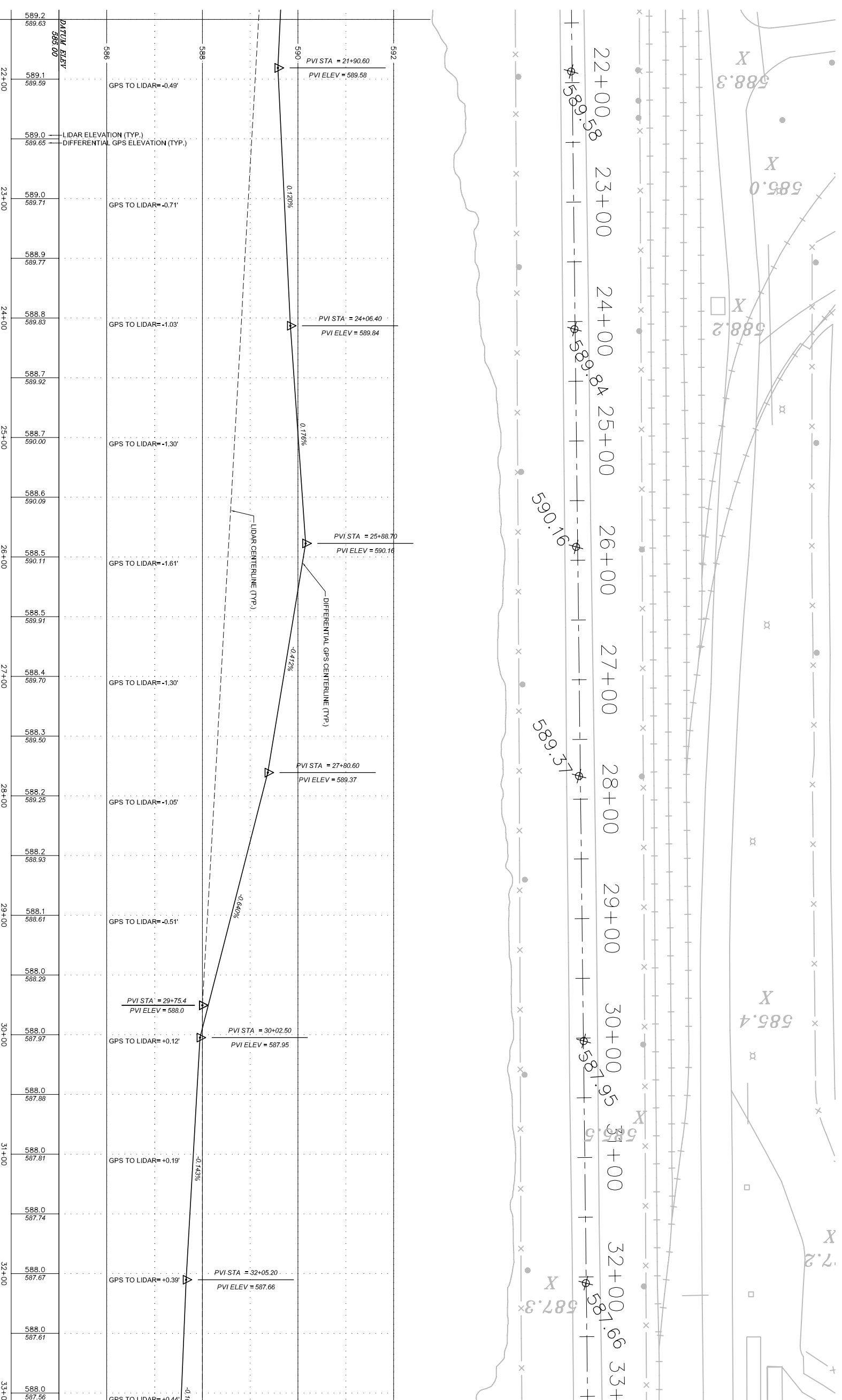
Task: #103

SHEET NO. 3 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 21+50 - 33+00



KEY MAP



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PLAN AND PROFILE
STONY ISLAND AVENUE PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

DRAWN BY: DRW
CHECKED BY: GVB

PROJECT MANAGER: GVB
SCALE: 1" = 40'

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW			
2.	8/31/06	PER CHICAGO D.O.E. REVIEW			

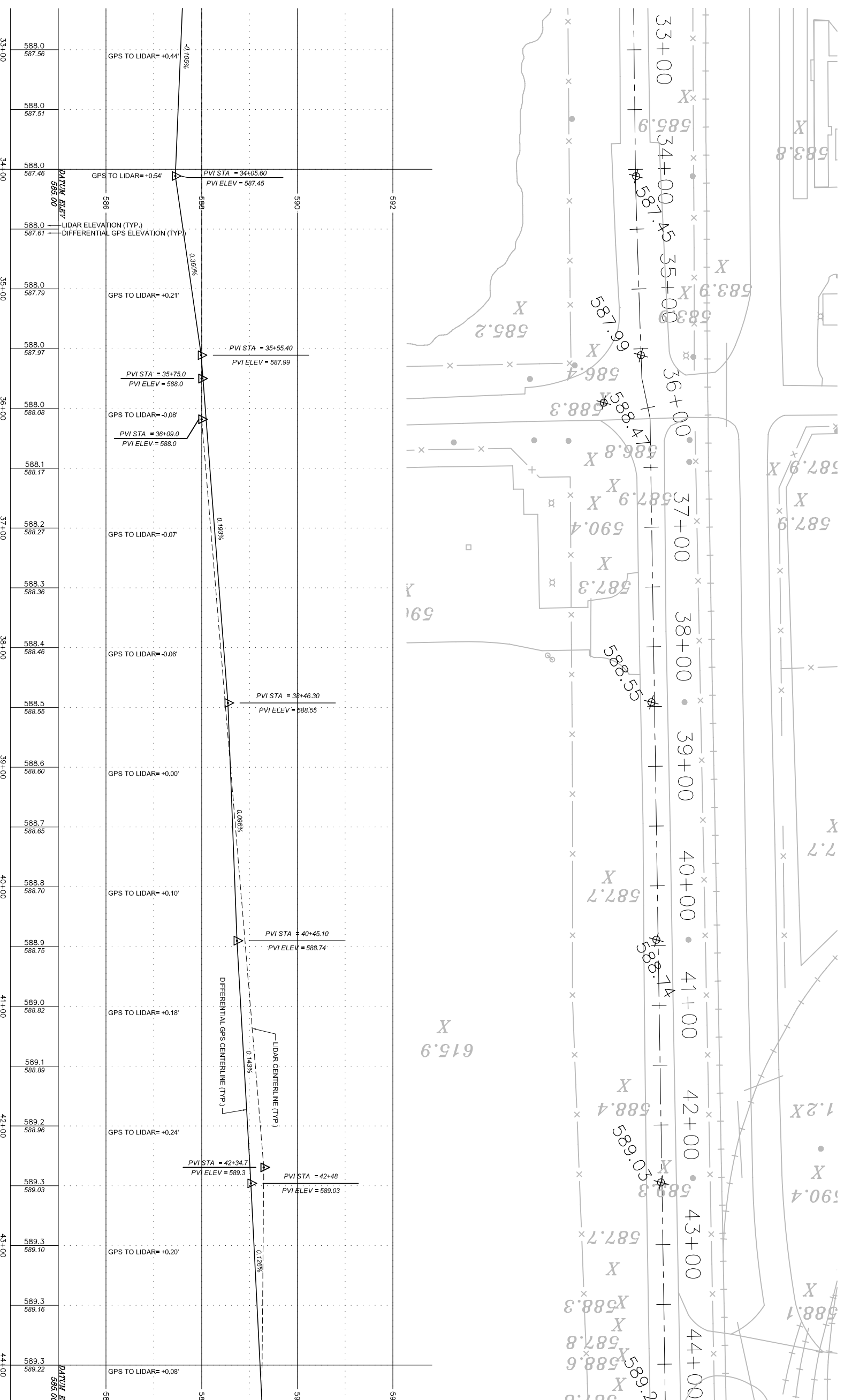
Project No: 98216HMP
Task: #103

SHEET NO. 4 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 33+00 - 44+00



KEY MAP



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PLAN AND PROFILE

STONY ISLAND AVENUE PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

DRAWN BY: DRW
CHECKED BY: CVB

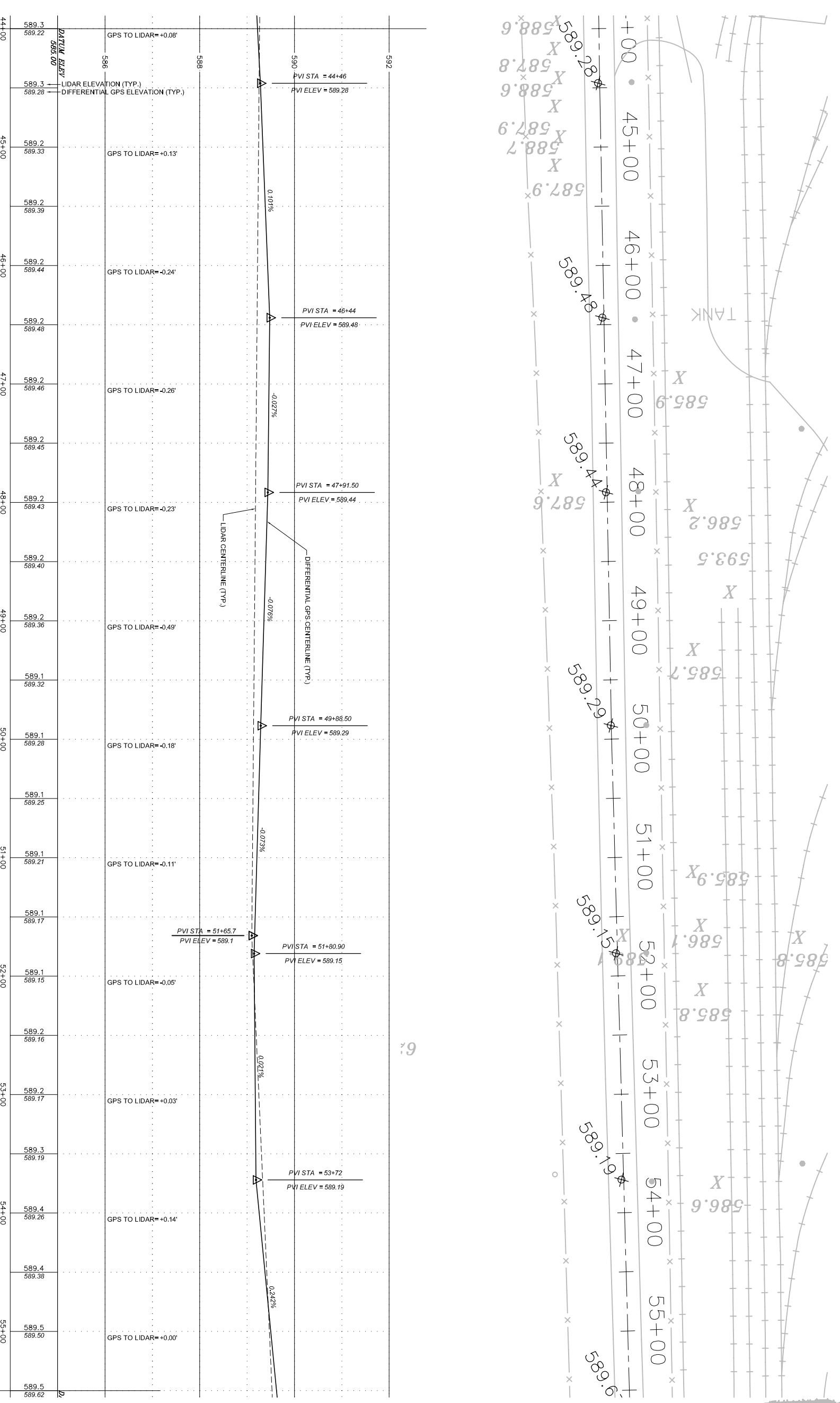
PROJECT MANAGER: CVB
SCALE: 1" = 40'

Project No: 98216HMP
Task: #103
SHEET NO. 5 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 44+00 - 55+50



KEY MAP



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NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW			
2.	8/31/06	PER CHICAGO D.O.E. REVIEW			

PLAN AND PROFILE
STONY ISLAND AVENUE PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

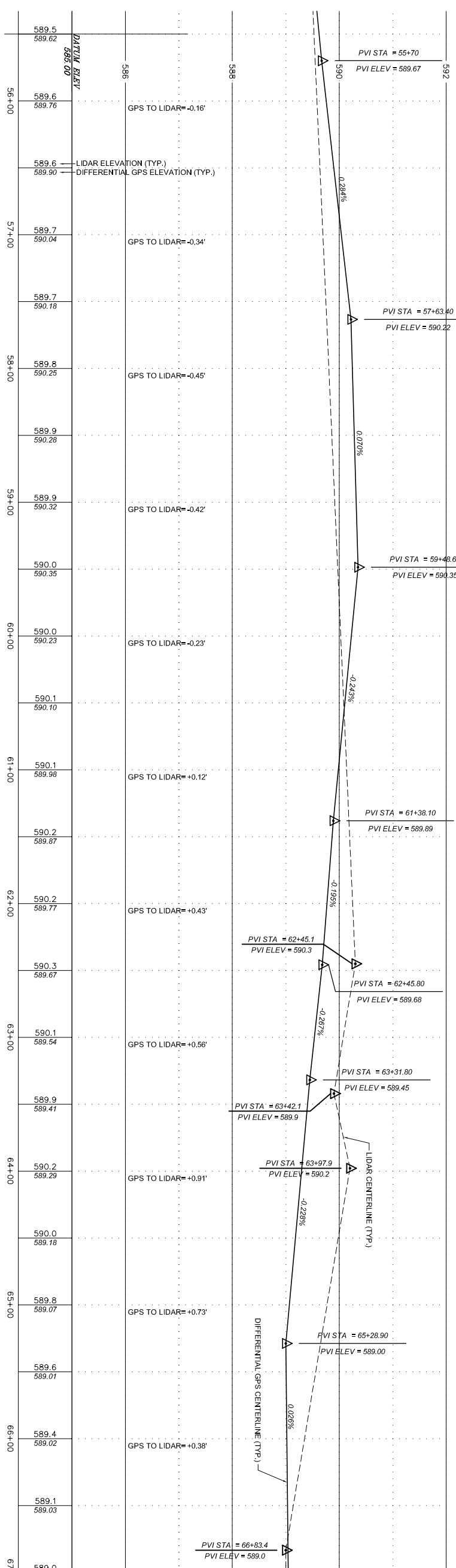
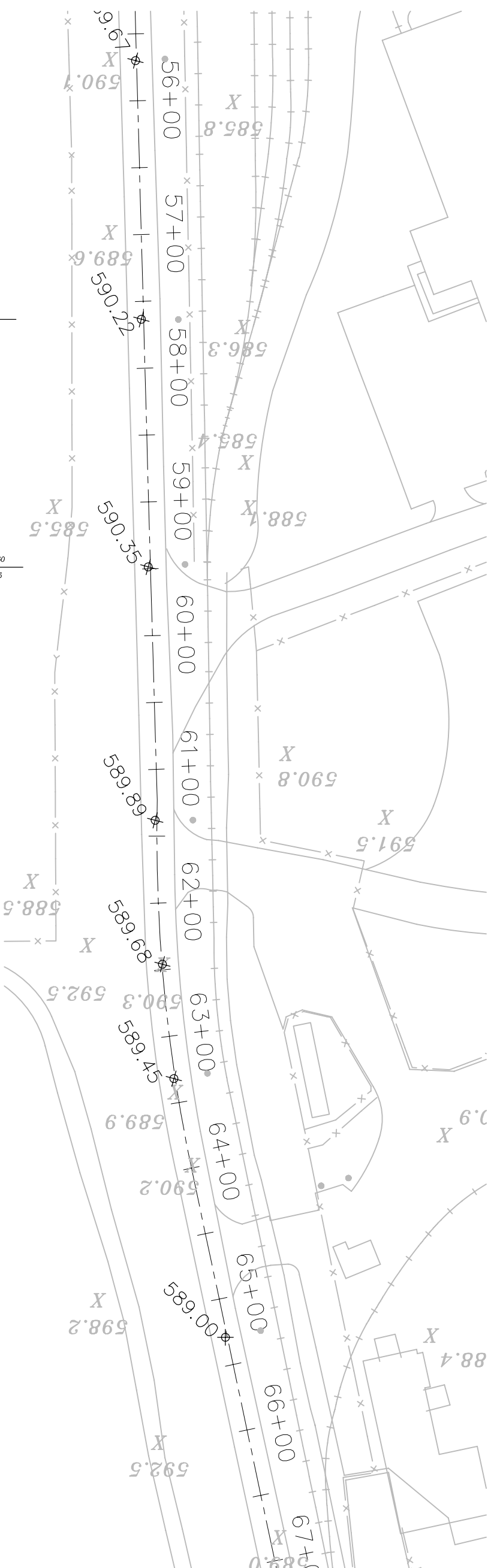
DRAWN BY: DRW
CHECKED BY: CVB
PROJECT MANAGER: CVB
SCALE: 1" = 40'

Project No: 98216HMP
Task: #103
SHEET NO. 6 of 12


PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 55+50 - 67+00



KEY MAP



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NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW			
2.	8/31/06	PER CHICAGO D.O.E. REVIEW			

PLAN AND PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

STONY ISLAND AVENUE PROFILE

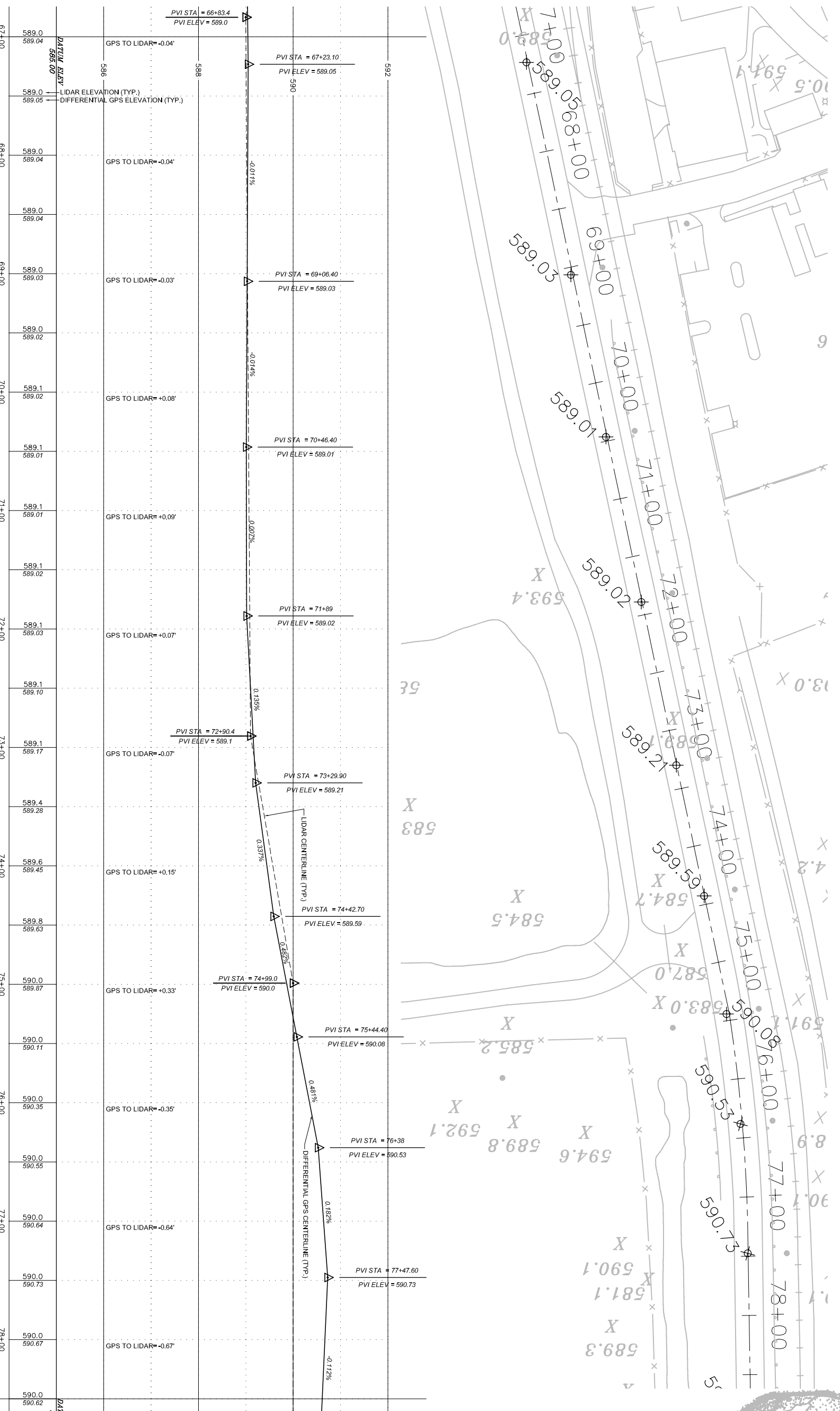
DRAWN BY: DW
CHECKED BY: GVB
PROJECT MANAGER: GVB
SCALE: 1" = 40'

Project No: 98216HMP
Task: #103
SHEET NO. 7 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 67+00 - 78+50



KEY MAP



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PREPARED FOR:
CITY OF CHICAGO
DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

NO.	DATE	DESCRIPTION	REVISIONS	NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW				
2.	8/31/06	PER CHICAGO D.O.E. REVIEW				

PLAN AND PROFILE

DRAFTING COMPLETED: 12/1/05
FIELD WORK COMPLETED: 10/20/05

STONY ISLAND AVENUE PROFILE

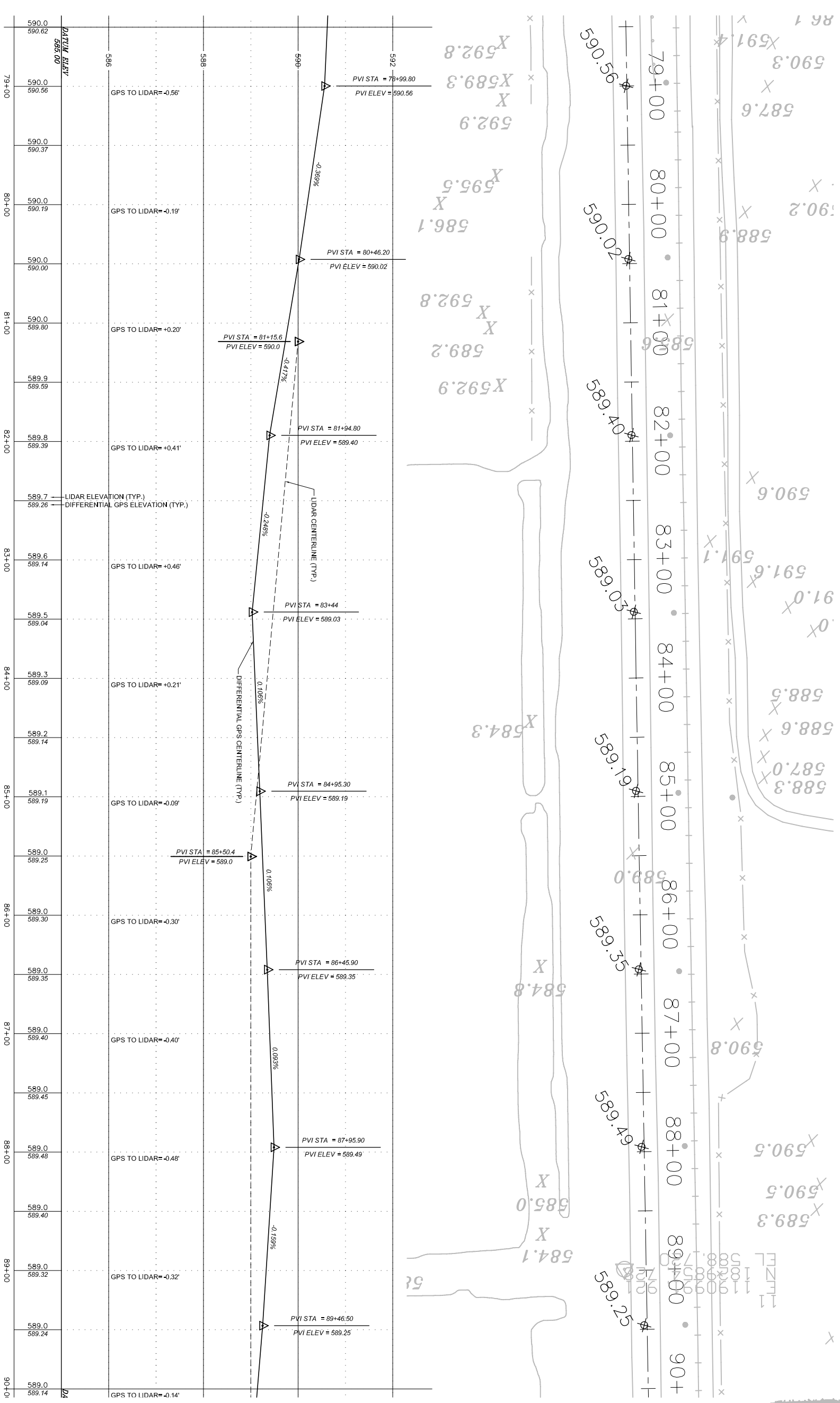
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PROJECT MANAGER: CVB
SCALE: 1" = 40'


Project No: 98216HMP
Task: #103
SHEET NO. 8 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 78+50 - 90+00



KEY MAP





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Surveyors**

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630.724.9200 voice
v3consultants.com

PREPARED FOR:
CITY OF CHICAGO
DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW
2.	8/31/06	PER CHICAGO D.O.E. REVIEW

NO.	DATE	DESCRIPTION

PLAN AND PROFILE

STONY ISLAND AVENUE PROFILE

DRAFTING COMPLETED: 12/7/05 DRAWN BY: DRW PROJECT MANAGER: CVB

FIELD WORK COMPLETED: 10/20/05 CHECKED BY: CVB SCALE: 1" = 40'

Project No:
98216HMP

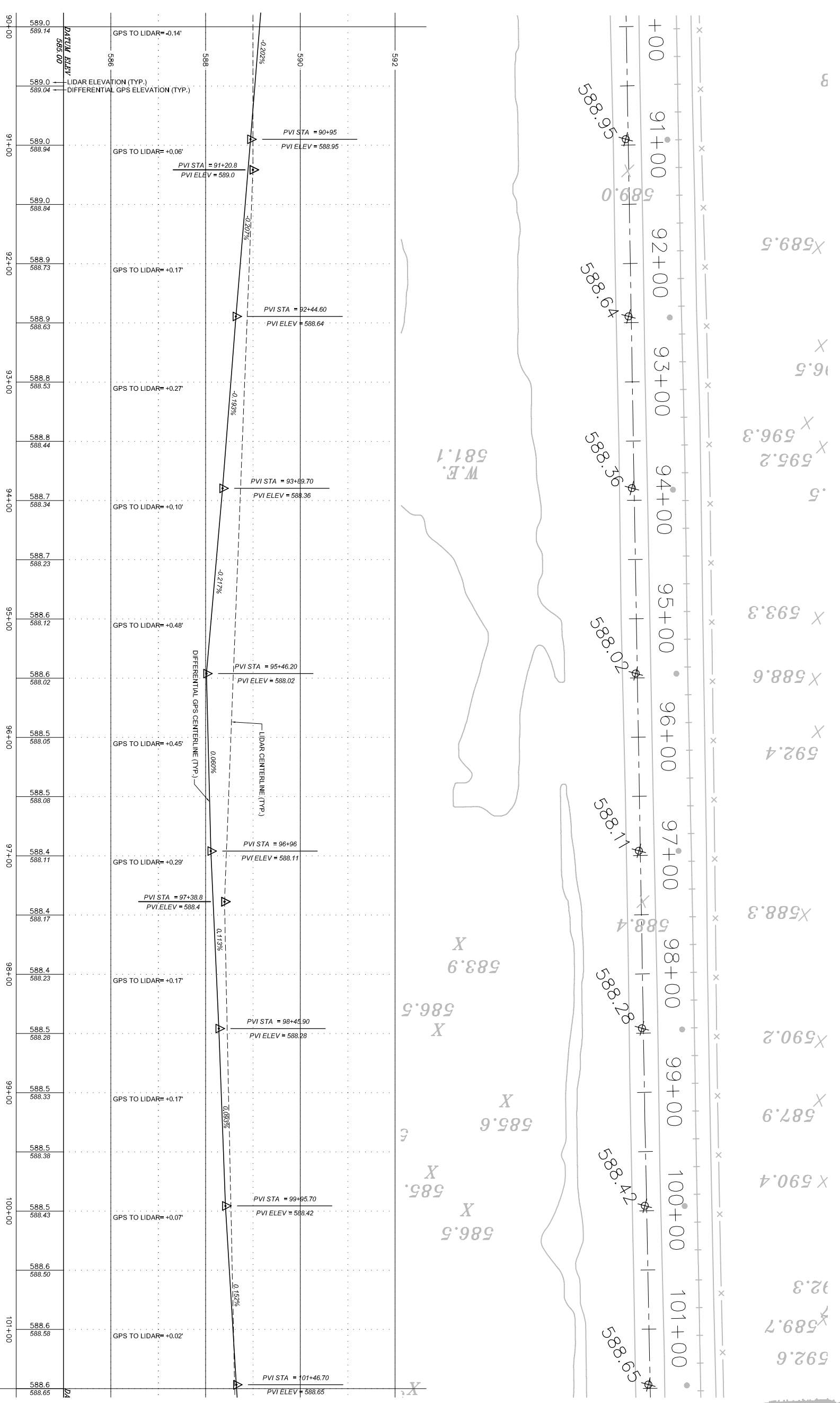
Task:
#103

SHEET NO.
9 of **12**

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 90+00 - 101+50



KEY MAP



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CHICAGO, IL 60602
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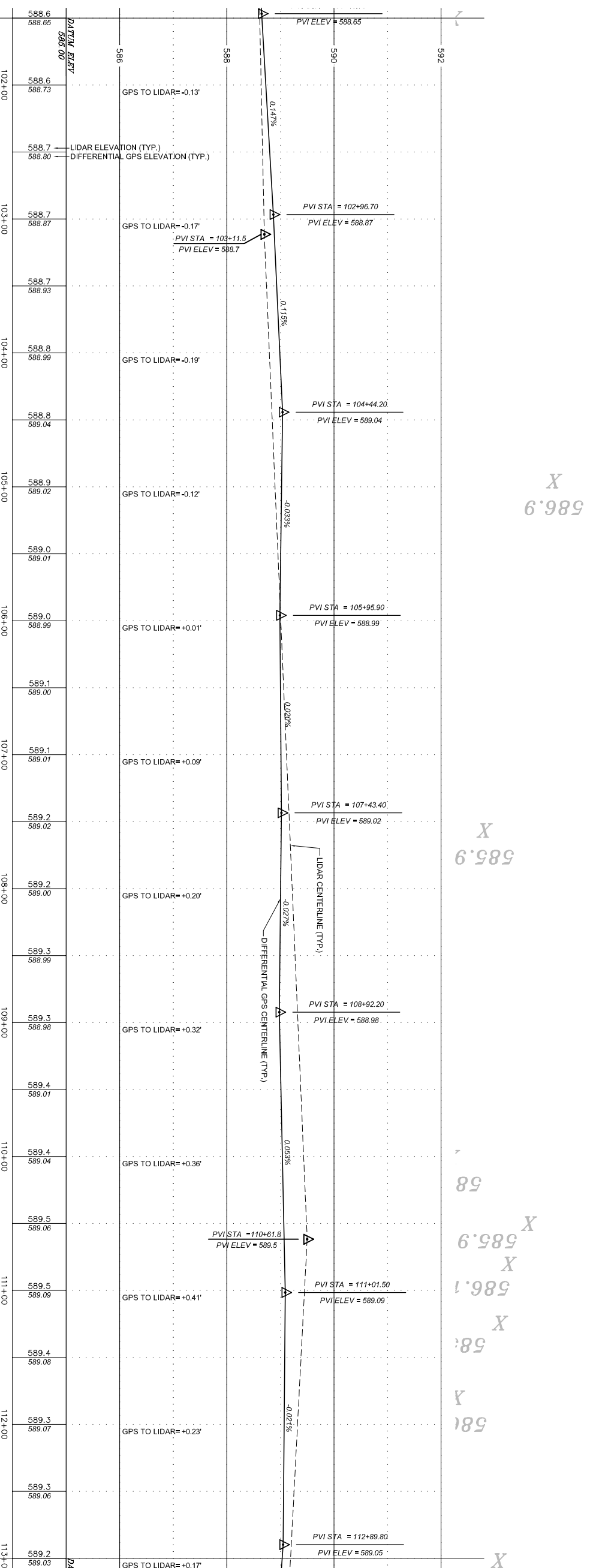
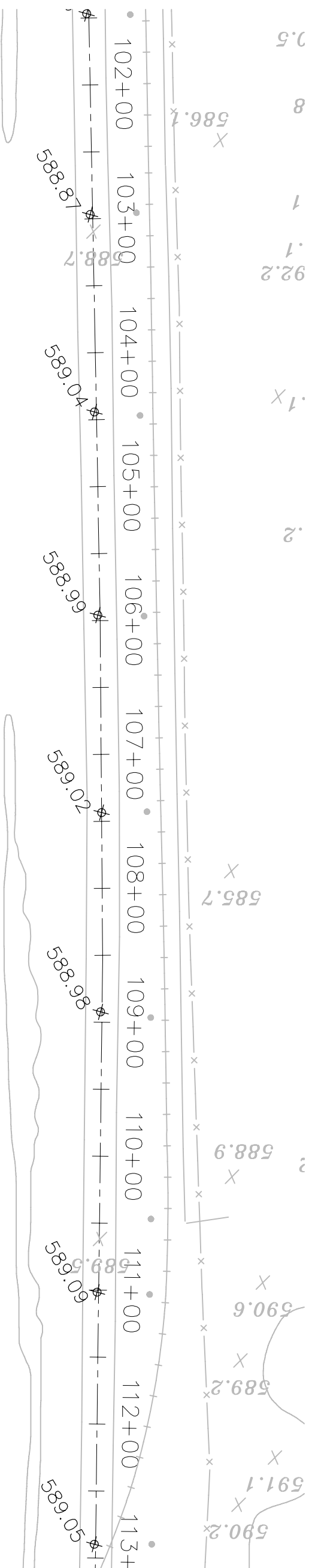
NO.	DATE	DESCRIPTION	REVISIONS
1.	3/31/06	PER IN-HOUSE REVIEW	
2.	8/31/06	PER CHICAGO D.O.E. REVIEW	

PLAN AND PROFILE
STONY ISLAND AVENUE PROFILE
DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05
DRAWN BY: DRW
CHECKED BY: GVB
PROJECT MANAGER: GVB
SCALE: 1" = 40'
Project No: 98216HMP
Task: #103
SHEET NO. 10 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 101+50 - 113+00



KEY MAP



STATION	DRAWN ELEV	GPS TO LIDAR	LIDAR ELEVATION (TYP.)	DIFFERENTIAL GPS ELEVATION (TYP.)
102+00	588.6	-0.13'	588.7	588.80
103+00	588.7	-0.17'	588.7	588.87
104+00	588.8	-0.19'	588.8	588.99
105+00	588.9	-0.12'	588.9	589.02
106+00	589.0	+0.01'	589.0	589.01
107+00	589.1	+0.09'	589.1	589.01
108+00	589.2	+0.20'	589.2	589.02
109+00	589.3	+0.32'	589.3	588.99
110+00	589.4	+0.36'	589.4	589.04
111+00	589.5	+0.41'	589.5	589.06
112+00	589.3	+0.23'	589.3	589.07
113+00	589.2	+0.17'	589.2	589.03

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DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW			
2.	8/31/06	PER CHICAGO D.O.E. REVIEW			

PLAN AND PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

DRAWN BY: DRW
PROJECT MANAGER: CVB
SCALE: 1" = 40'

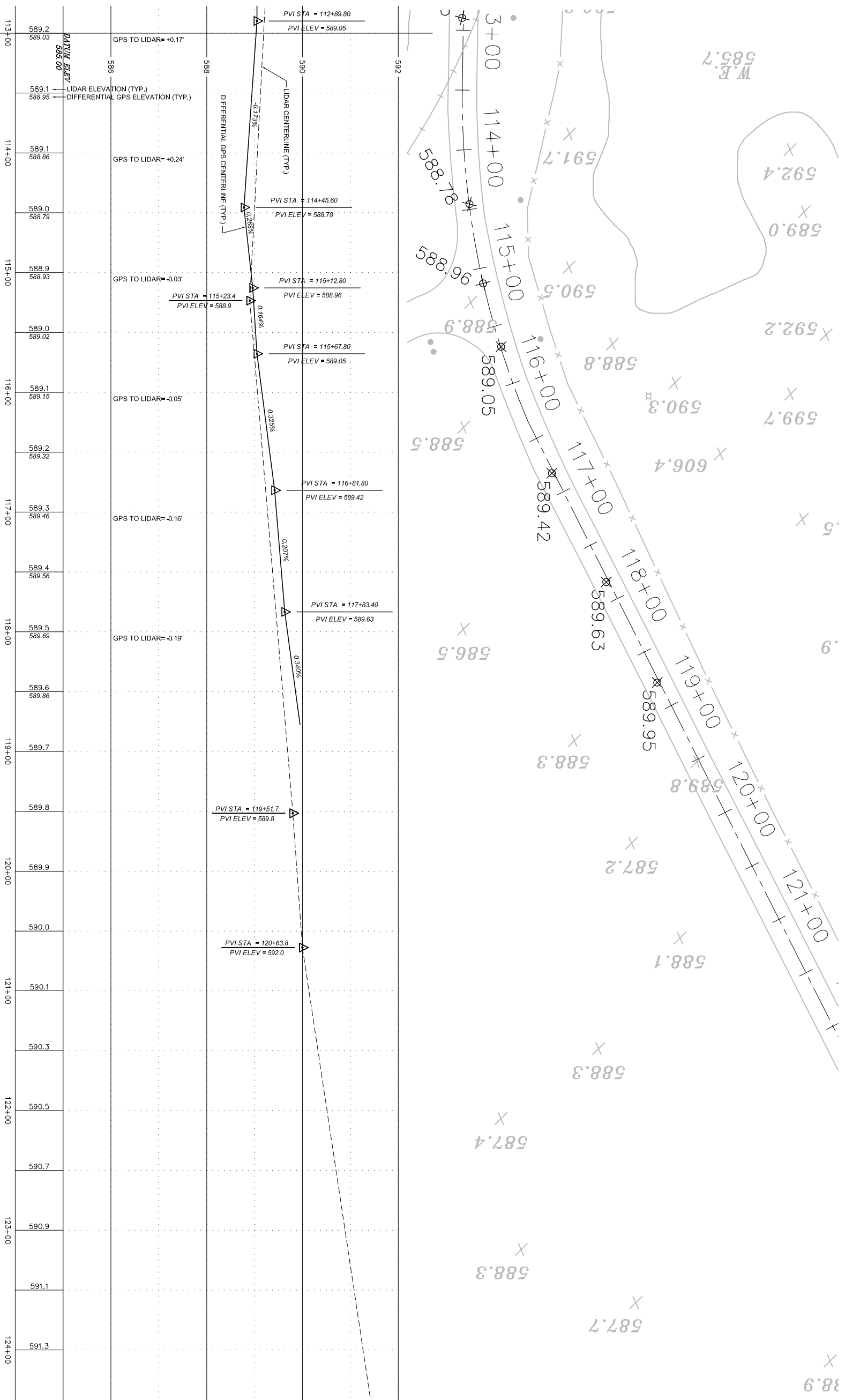
STONY ISLAND AVENUE PROFILE

Project No: 98216HMP
Task: #103
SHEET NO. 11 of 12

PLAN AND PROFILE FOR STONY ISLAND AVENUE STA 113+00 - 121+00



KEY MAP



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DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW			
2.	8/31/06	PER CHICAGO D.O.E. REVIEW			

PLAN AND PROFILE

DRAFTING COMPLETED: 12/7/05
FIELD WORK COMPLETED: 10/20/05

STONY ISLAND AVENUE PROFILE

DRAWN BY: DRW
PROJECT MANAGER: GVB
CHECKED BY: GVB
SCALE: 1" = 40'

Project No: 98216HMP
Task: #103
SHEET NO. 12 of 12

CALUMET AREA
HYDROLOGIC MASTER PLAN

TASK 104

BATHYMETRIC MAPPING



CALUMET AREA
City of Chicago, Cook County, Illinois

PREPARED FOR:

CHICAGO DEPARTMENT OF ENVIRONMENT
30 NORTH LASALLE STREET – SUITE 2500
CHICAGO, ILLINOIS 60602

PREPARED BY:

V3 COMPANIES, LTD.
120 NORTH LASALLE STREET
CHICAGO, ILLINOIS 60602
312.419.1985

FUNDING PROVIDED BY:

CHICAGO DEPARTMENT OF ENVIRONMENT,
ILLINOIS DEPARTMENT OF NATURAL RESOURCES C2000 PROGRAM,
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT,
AND A SUPPLEMENTAL ENVIRONMENTAL PROJECT WITH CHICAGO SPECIALTIES.

Note: Data and References are accurate up to July 2004.

AUGUST 2006



VICINITY MAP
NOT TO SCALE

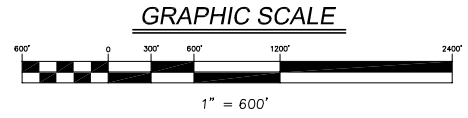
LEGEND

- SIP SET IRON PIPE
- Ⓜ MONITORING WELL

ABBREVIATIONS

- EXISTING SPOT ELEVATION
- EXISTING CHAIN LINK FENCE
- EXISTING CONTOUR LINE
- EDGE OF WATER
- WATER (ELEVATION LABELED)

BATHYMETRIC MAPPING FOR CALUMET AREA HMP CHICAGO, IL



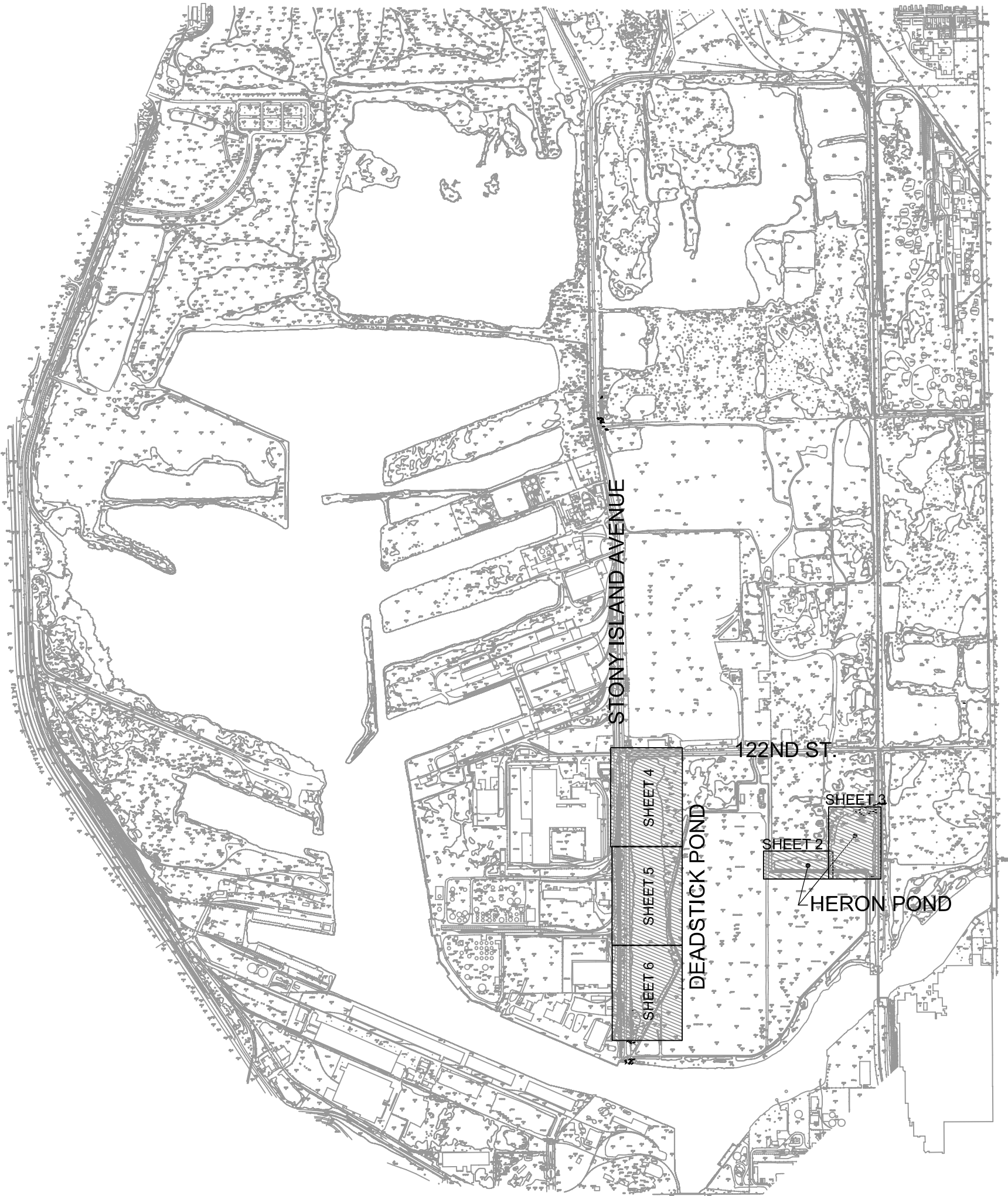
GENERAL NOTES

1. COMPARE ALL POINTS IN FIELD PRIOR TO ANY CONSTRUCTION AND REPORT ANY DISCREPANCIES TO SURVEYOR AT ONCE.
2. FOR BUILDING RESTRICTIONS AS ESTABLISHED BY LOCAL ORDINANCES NOT SHOWN HEREON, CONSULT YOUR LOCAL MUNICIPAL AUTHORITIES.
3. DO NOT SCALE DIMENSIONS FROM THIS MAP.
4. CALL J.U.L.I.E. AT 1-800-892-0123 FOR FIELD LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO ANY DIGGING OR CONSTRUCTION.
5. UTILITIES AND IMPROVEMENTS, IF ANY EXIST, SHOWN HEREON PER LIDAR MAPPING, SHOWN UNDERLYING.
6. UNDERLYING LIDAR TOPOGRAPHY PREPARED BY ATLANTIC TECHNOLOGIES, APRIL 2001, SHOWN FOR REFERENCE AND ORIENTATION.
7. NO BOUNDARY INFORMATION SHOWN HEREON.
8. THIS MAP DOES NOT CONSTITUTE A PLAT OF SURVEY.
9. FULL TONE CONTOURS AND SPOT GRADES ENVIRONMENTAL DESIGN INTERNATIONAL, INC. (EDI) FIELD WORK AS OF 7/18/2003 FOR DEAD STICK POND AND AS OF 9/15/2003 & 1/16/2006 FOR HERON POND.

SHEET INDEX

- 1 - OVERALL KEY MAP & SHEET INDEX
- 2 - HERON POND BATHYMETRY
- 3 - HERON POND BATHYMETRY
- 4 - DEADSTICK POND BATHYMETRY
- 5 - DEADSTICK POND BATHYMETRY
- 6 - DEADSTICK POND BATHYMETRY

KEY MAP



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PREPARED FOR:
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DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

REVISIONS	
NO.	DATE
1.	3/31/05
2.	8/31/06

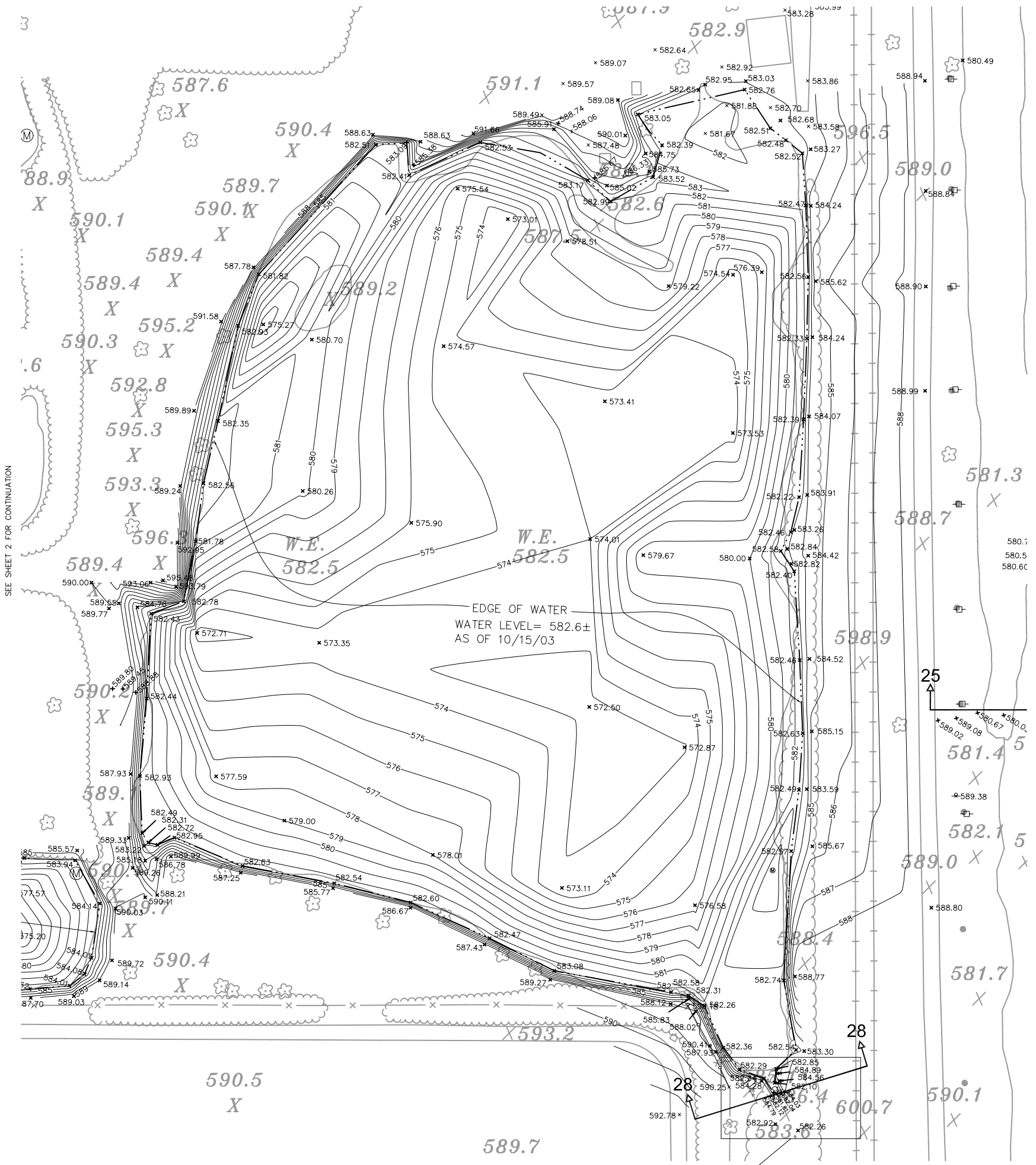
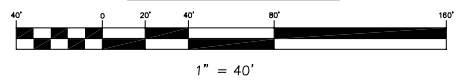
BATHYMETRIC MAPPING
CALUMET AREA HMP, CHICAGO, IL

DRAFTING COMPLETED:	12/1/05	DRAWN BY:	DRW	PROJECT MANAGER:	GVB
FIELD WORK COMPLETED:		CHECKED BY:	GVB	SCALE:	1" = 600'

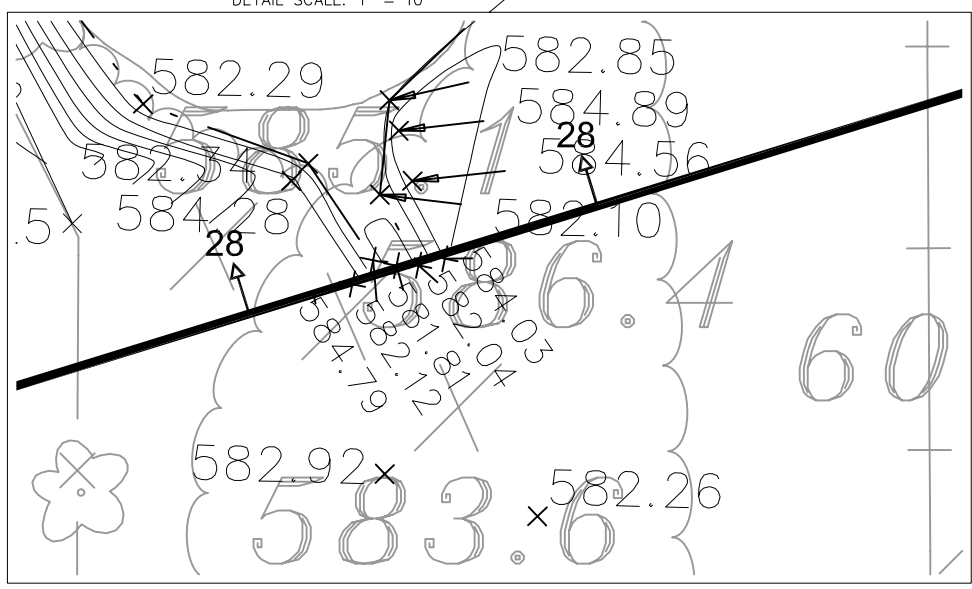
Project No: 98216HMP
Task: #104
SHEET NO.
1 of 6

BATHYMETRY OF HERON POND FOR CALUMET AREA HMP CHICAGO, IL

GRAPHIC SCALE



DETAIL SCALE: 1" = 10'



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CHICAGO, IL 60602

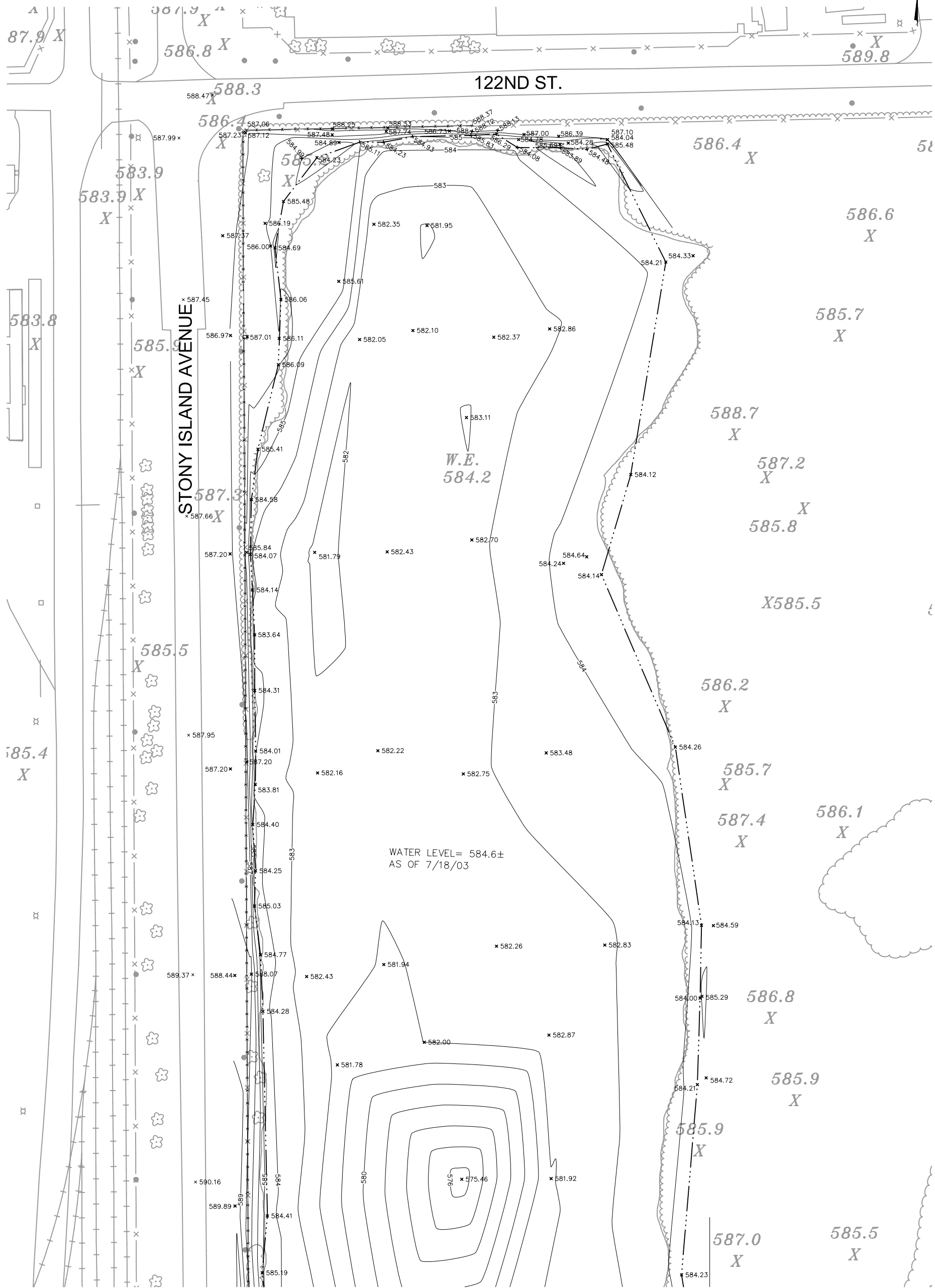
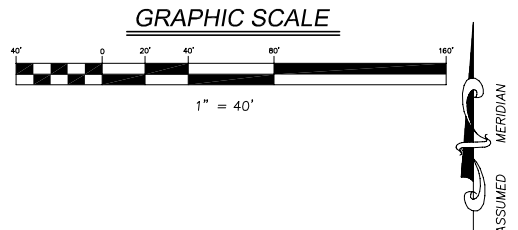
NO.		DATE		REVISIONS DESCRIPTION	
1.		3/31/05		PER IN-HOUSE REVIEW	
2.		8/31/06		PER CHICAGO D.O.E. REVIEW	

BATHYMETRY FOR HERON POND
CALUMET AREA HMP, CHICAGO, IL

DRAFTING COMPLETED: 9/15/03 DRAWN BY: DRW PROJECT MANAGER: GVB
FIELD WORK COMPLETED: 1/22/04 CHECKED BY: GVB SCALE: 1" = 40'

Project No: 98216HMP
Task: #104
SHEET NO. 3 of 6

BATHYMETRIC MAP OF DEADSTICK POND FOR CALUMET AREA HMP CHICAGO, IL



SEE SHEET 5 FOR CONTINUATION

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CHICAGO, IL 60602

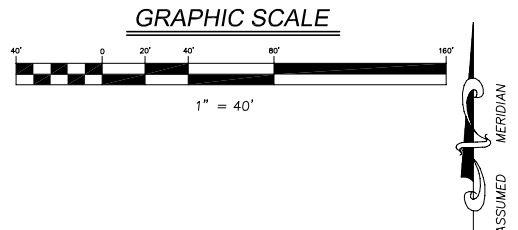
NO.		DATE		REVISIONS DESCRIPTION	
1.		3/31/05		PER IN-HOUSE REVIEW	
2.		8/31/06		PER CHICAGO D.O.E. REVIEW	

BATHYMETRIC MAP OF DEADSTICK POND
CALUMET AREA HMP, CHICAGO, IL

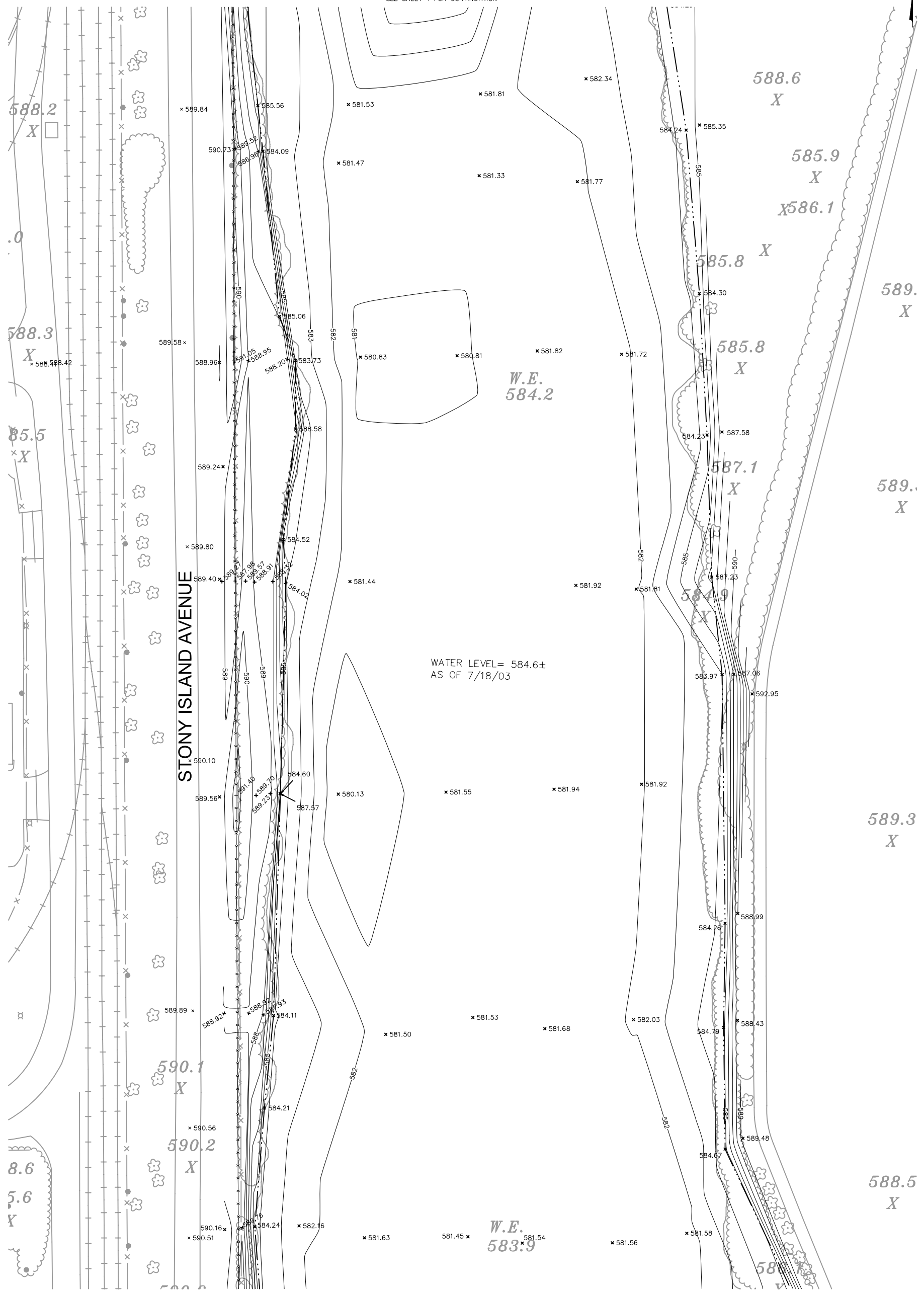
DRAFTING COMPLETED:	12/1/05	DRAWN BY:	DRW	PROJECT MANAGER:	GVB
FIELD WORK COMPLETED:	7/18/03	CHECKED BY:	GVB	SCALE:	1" = 40'

Project No: 98216HMP
Task: #104
SHEET NO. 4 of 6


BATHYMETRIC MAP OF DEADSTICK POND FOR CALUMET AREA HMP CHICAGO, IL



SEE SHEET 4 FOR CONTINUATION



SEE SHEET 6 FOR CONTINUATION



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630.724.9202 fax
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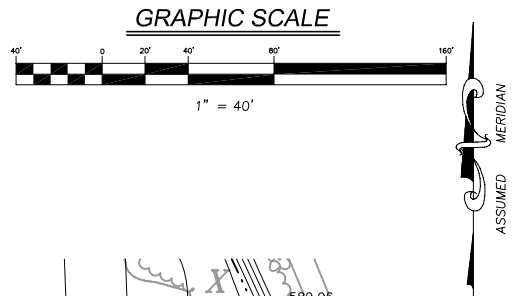
PREPARED FOR:
CITY OF CHICAGO
DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602

REVISIONS	
NO.	DATE
1.	3/31/05
2.	8/31/06

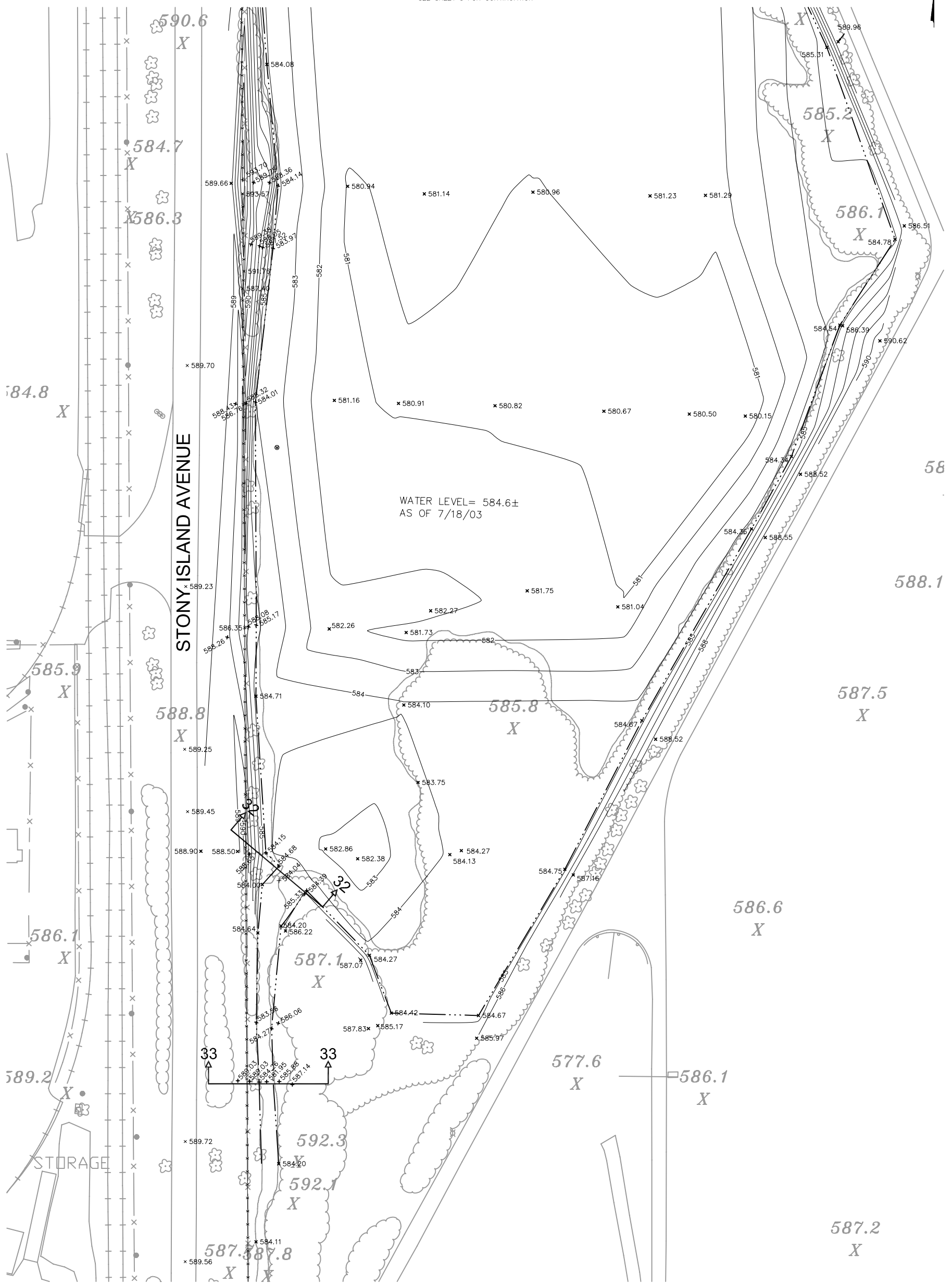
BATHYMETRIC MAP OF DEADSTICK POND		
CALUMET AREA HMP, CHICAGO, IL		
DRAFTING COMPLETED:	12/1/05	DRAWN BY: DRW
FIELD WORK COMPLETED:	7/18/03	CHECKED BY: GVB
PROJECT MANAGER: GVB		SCALE: 1" = 40'

Project No: 98216HMP
Task: #104
SHEET NO.
5 of **6**

BATHYMETRIC MAP OF DEADSTICK POND FOR CALUMET AREA HMP CHICAGO, IL



SEE SHEET 5 FOR CONTINUATION



FOR CONTINUATION SOUTH SEE TASK #106- "CROSS SECTIONS OF DEAD STICK POND OUTLET CHANNEL".

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NO.		DATE		REVISIONS DESCRIPTION	
1.		3/31/05		PER IN-HOUSE REVIEW	
2.		8/31/06		PER CHICAGO D.O.E. REVIEW	

BATHYMETRIC MAP OF DEADSTICK POND			
CALUMET AREA HMP, CHICAGO, IL			
DRAFTING COMPLETED:	12/1/05	DRAWN BY: DRW	PROJECT MANAGER: GVB
FIELD WORK COMPLETED:	7/18/03	CHECKED BY: GVB	SCALE: 1" = 40'

Project No: 98216HMP
Task: #104
SHEET NO.
6 of **6**

CALUMET AREA
HYDROLOGIC MASTER PLAN

TASK 106

CROSS SECTIONS OF STREAMS
AND DITCHES



CALUMET AREA
City of Chicago, Cook County, Illinois

PREPARED FOR:

CHICAGO DEPARTMENT OF ENVIRONMENT
30 NORTH LASALLE STREET – SUITE 2500
CHICAGO, ILLINOIS 60602

PREPARED BY:

V3 COMPANIES, LTD.
120 NORTH LASALLE STREET
CHICAGO, ILLINOIS 60602
312.419.1985

FUNDING PROVIDED BY:

CHICAGO DEPARTMENT OF ENVIRONMENT,
ILLINOIS DEPARTMENT OF NATURAL RESOURCES C2000 PROGRAM,
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT,
AND A SUPPLEMENTAL ENVIRONMENTAL PROJECT WITH CHICAGO SPECIALTIES.

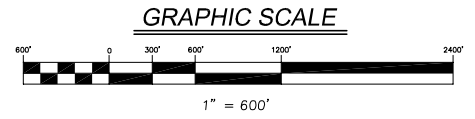
Note: Data and References are accurate up to July 2004.

AUGUST 2006



VICINITY MAP
NOT TO SCALE

CROSS SECTIONS FOR CALUMET AREA HMP CHICAGO, IL



SHEET INDEX

- 1 - OVERALL SITE KEY MAP & SHEET INDEX
- 2 - PULLMAN CREEK CREEK CROSS SECTIONS #1-5
- 3 - PULLMAN CREEK CREEK CROSS SECTIONS #6-8
- 4 - PULLMAN CREEK CREEK CROSS SECTIONS #9-13
- 5 - PULLMAN CREEK PROFILE STA. 0+00 - 13+50
- 6 - PULLMAN CREEK PROFILE STA. 13+50 - 27+00
- 7 - PULLMAN CREEK PROFILE STA. 27+00 - 40+50
- 8 - PULLMAN CREEK PROFILE STA. 40+50 - 54+00
- 9 - BIG MARSH INLET CROSS SECTIONS
- 10 - BIG MARSH OUTLET CROSS SECTIONS
- 11 - INDIAN RIDGE OUTLET CHANNEL CROSS SECTIONS
- 12 - INDIAN RIDGE OUTLET CHANNEL CROSS SECTIONS
- 13 - DEADSTICK POND OUTLET CHANNEL CROSS SECTIONS

GENERAL NOTES

1. COMPARE ALL POINTS IN FIELD PRIOR TO ANY CONSTRUCTION AND REPORT ANY DISCREPANCIES TO SURVEYOR AT ONCE.
2. FOR BUILDING RESTRICTIONS AS ESTABLISHED BY LOCAL ORDINANCES NOT SHOWN HEREON, CONSULT YOUR LOCAL MUNICIPAL AUTHORITIES.
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7. NO BOUNDARY INFORMATION SHOWN HEREON.
8. THIS MAP DOES NOT CONSTITUTE A PLAT OF SURVEY.
9. FULL TONE CONTOURS AND SPOT GRADES PER ENVIRONMENTAL DESIGN INTERNATIONAL, INC. (EDI) FIELD WORK AS OF:
PULLMAN CREEK- 1/29/04
BIG MARSH INLET AND OUTLET- 6/10/05
INDIAN RIDGE OUTLET- 11/25/05
DEAD STICK POND OUTLET- 1/16/06

KEY MAP



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Surveyors**
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PREPARED FOR:
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NO.		DATE	REVISIONS DESCRIPTION
1.		3/31/06	PER IN-HOUSE REVIEW
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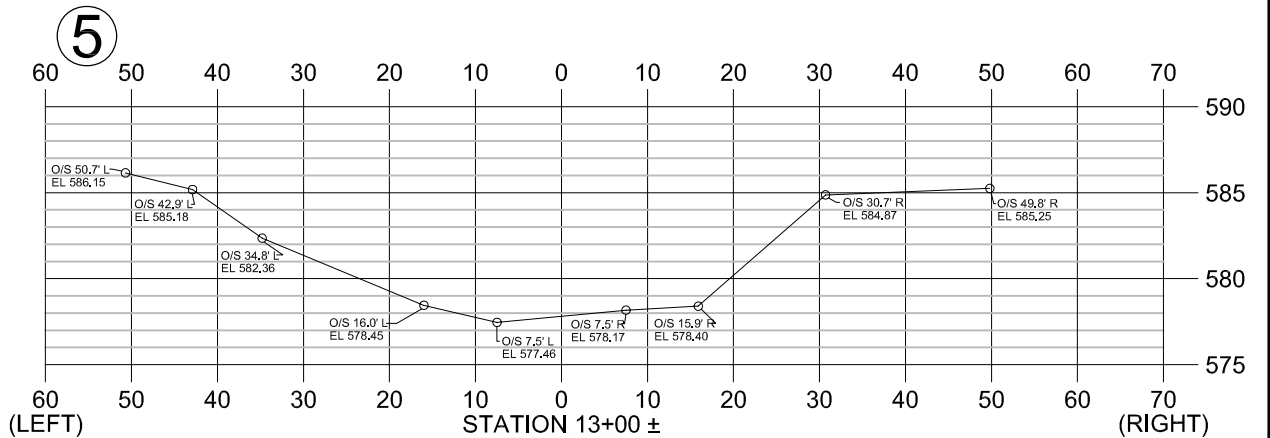
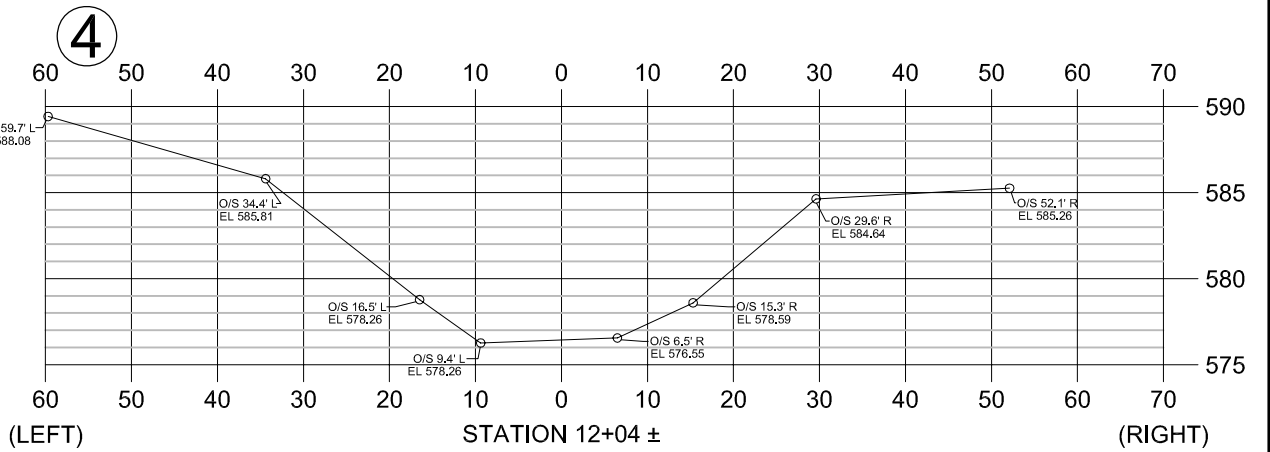
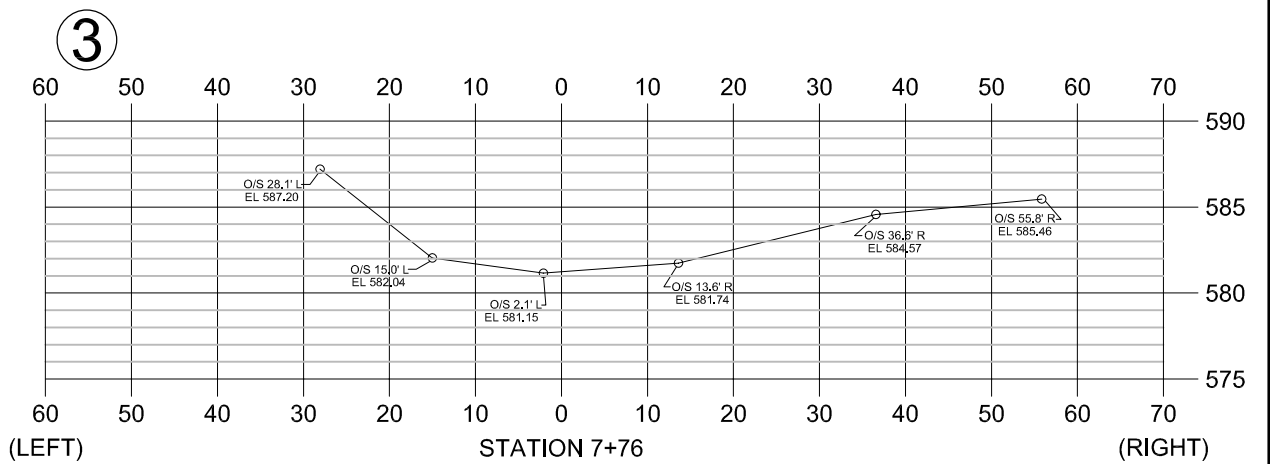
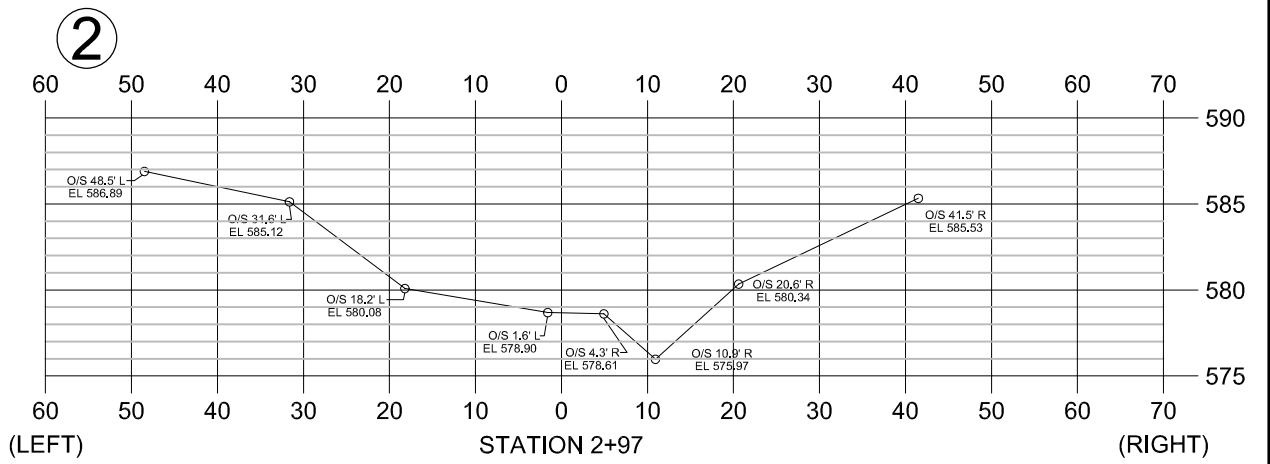
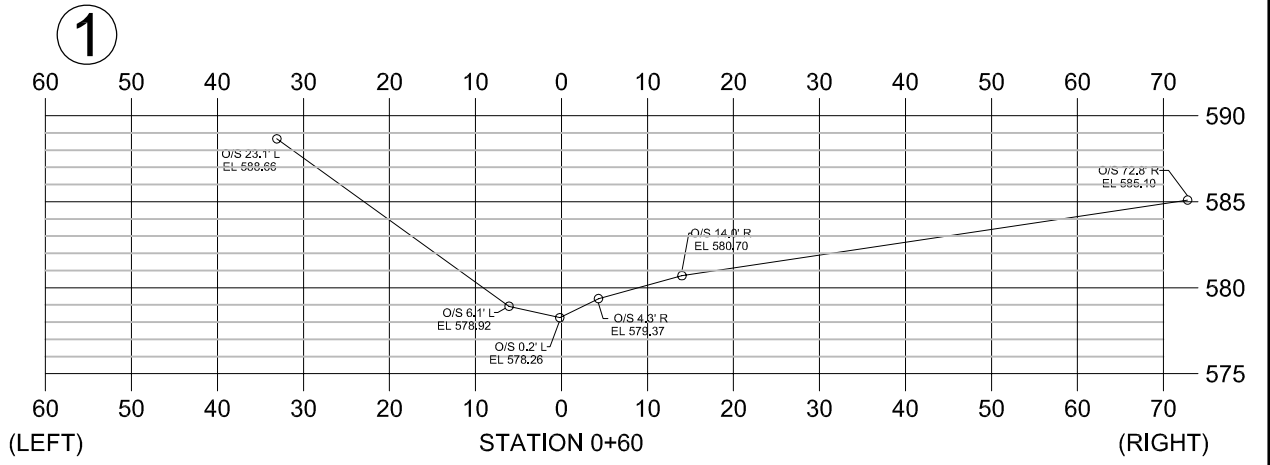
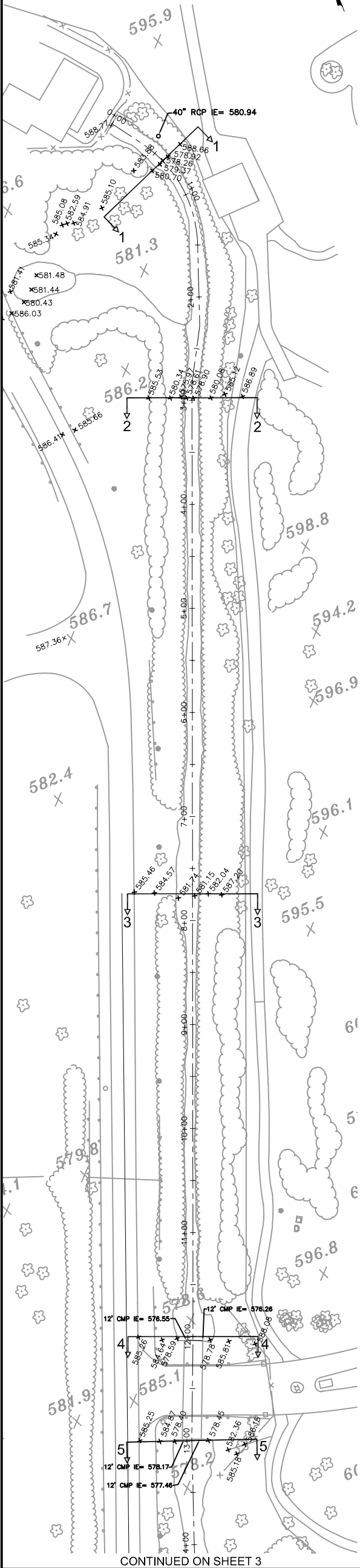
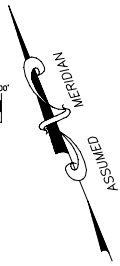
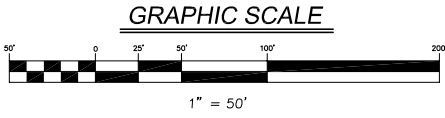
CALUMET AREA CROSS SECTIONS
CALUMET AREA HMP, CHICAGO, IL

DRAFTING COMPLETED:	12/1/05	DRAWN BY:	DRW	PROJECT MANAGER:	GVB
FIELD WORK COMPLETED:	1/22/04	CHECKED BY:	GVB	SCALE:	1" = 600'

Project No: 98216HMP
Task: #106
SHEET NO.
1 of 13

PULLMAN CREEK CROSS SECTIONS FOR CALUMET AREA HMP CHICAGO, IL

PROFILE SCALES
VERTICAL 1" = 5'
HORIZONTAL 1" = 10'



CONTINUED ON SHEET 3

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PREPARED FOR:
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DEPARTMENT OF ENVIRONMENT
CHICAGO, IL 60602
312.744.5959

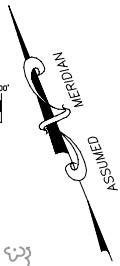
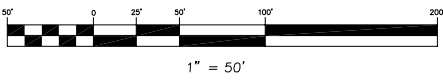
NO.		DATE		REVISIONS DESCRIPTION	
1.		3/31/06		PER IN-HOUSE REVIEW	
2.		8/31/06		PER CHICAGO D.O.E. REVIEW	

CROSS SECTIONS 1 - 5			
PULLMAN CREEK CROSS SECTIONS			
DRAFTING COMPLETED:	12/1/05	DRAWN BY: DRW	PROJECT MANAGER: GVB
FIELD WORK COMPLETED:	1/29/04	CHECKED BY: GVB	SCALE: 1" = 50'

Project No: 98216HMP
Task: #106
SHEET NO.
2 of **13**

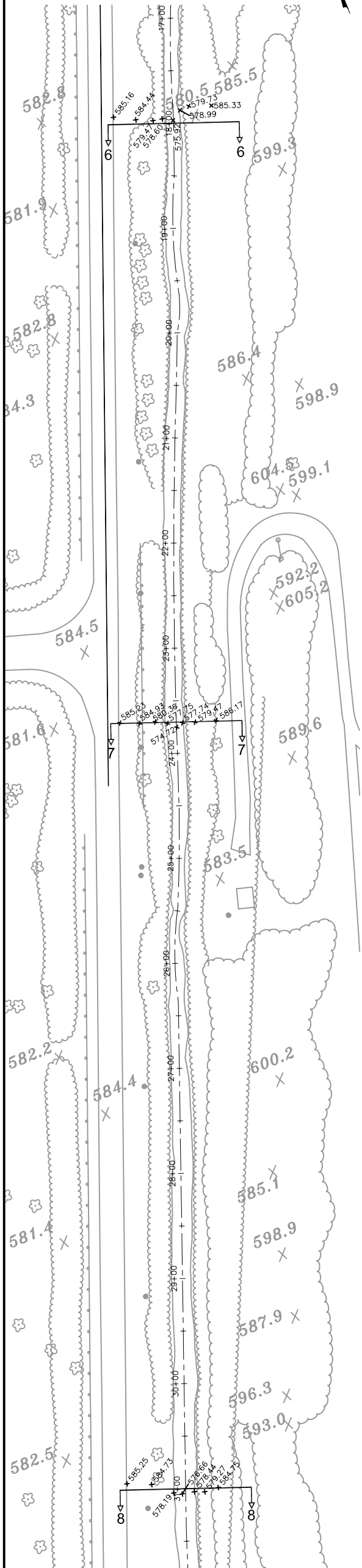
PULLMAN CREEK CROSS SECTIONS FOR CALUMET AREA HMP CHICAGO, IL

GRAPHIC SCALE



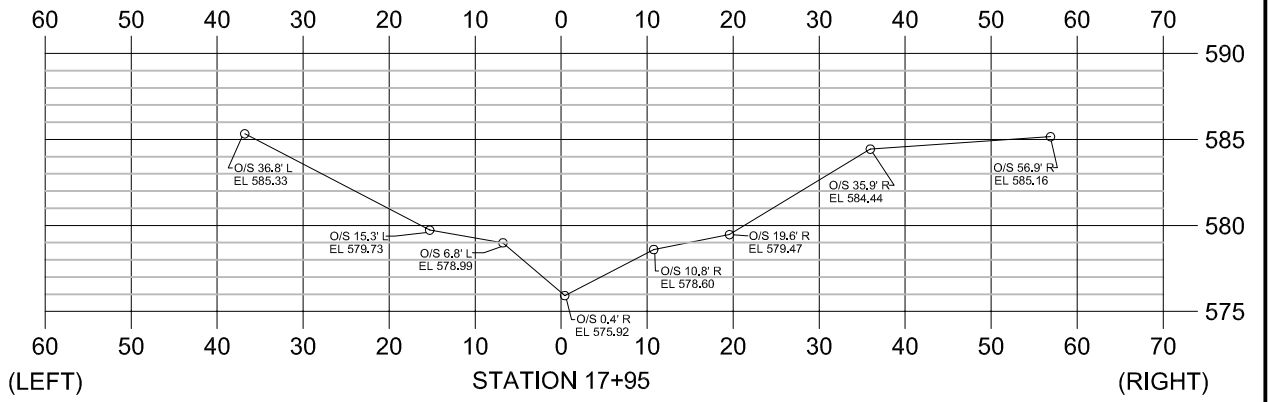
PROFILE SCALES
VERTICAL 1" = 5'
HORIZONTAL 1" = 10'

CONTINUED ON SHEET 2

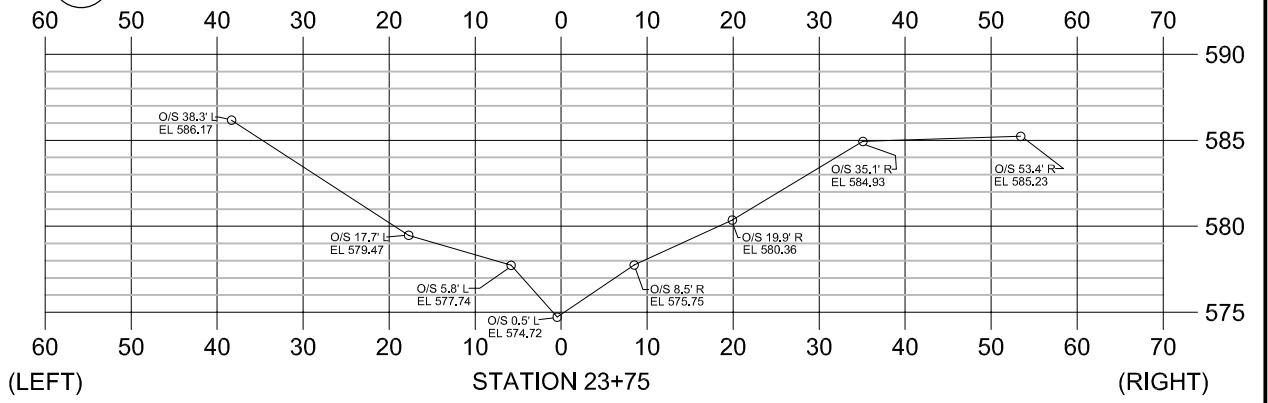


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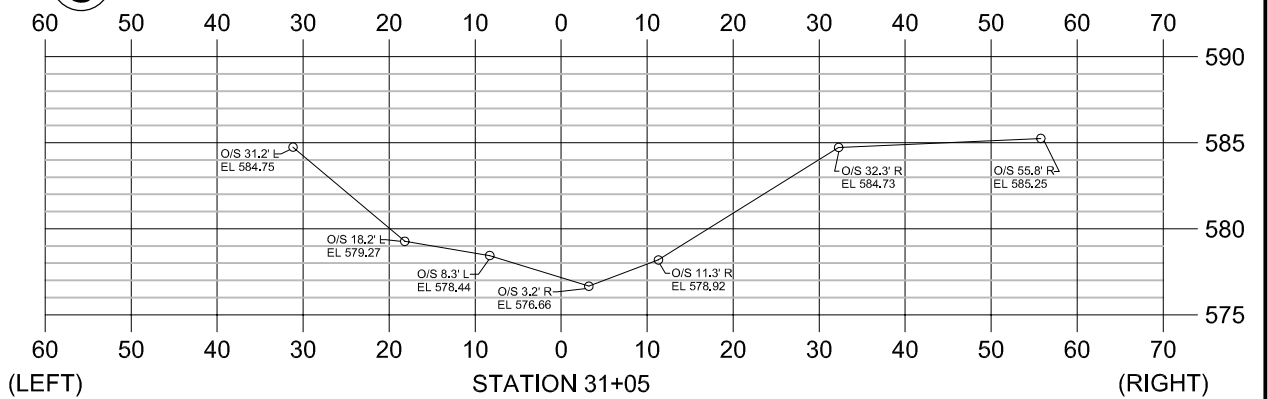
⑥



⑦



⑧



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312.744.5959

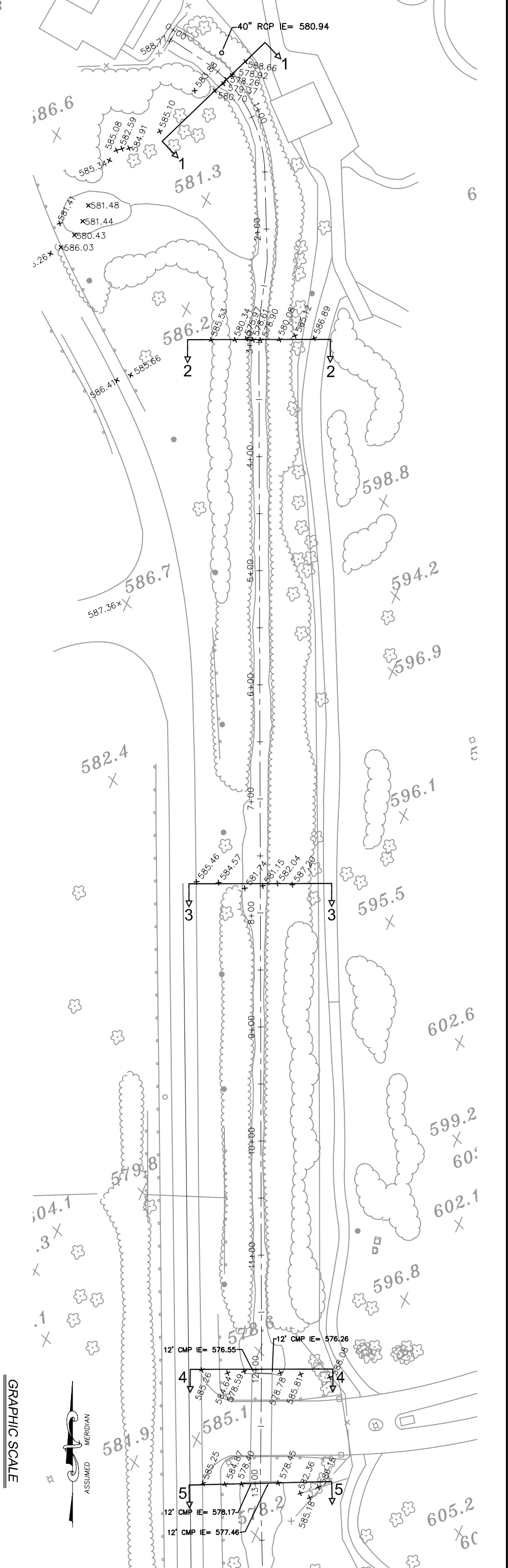
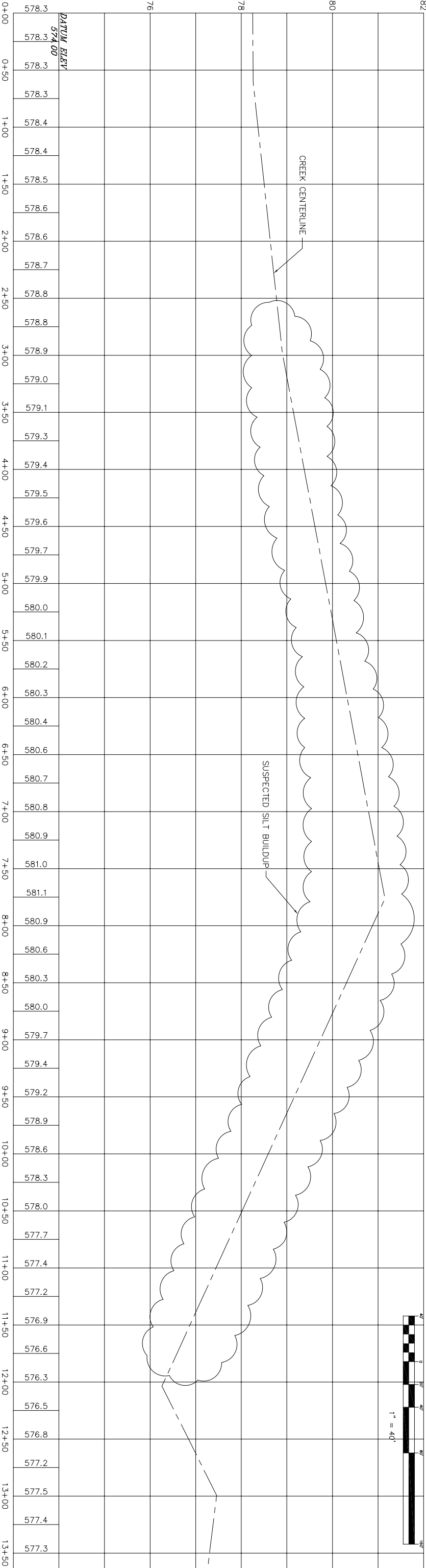
REVISIONS	
NO.	DATE
1.	3/31/06
2.	8/31/06

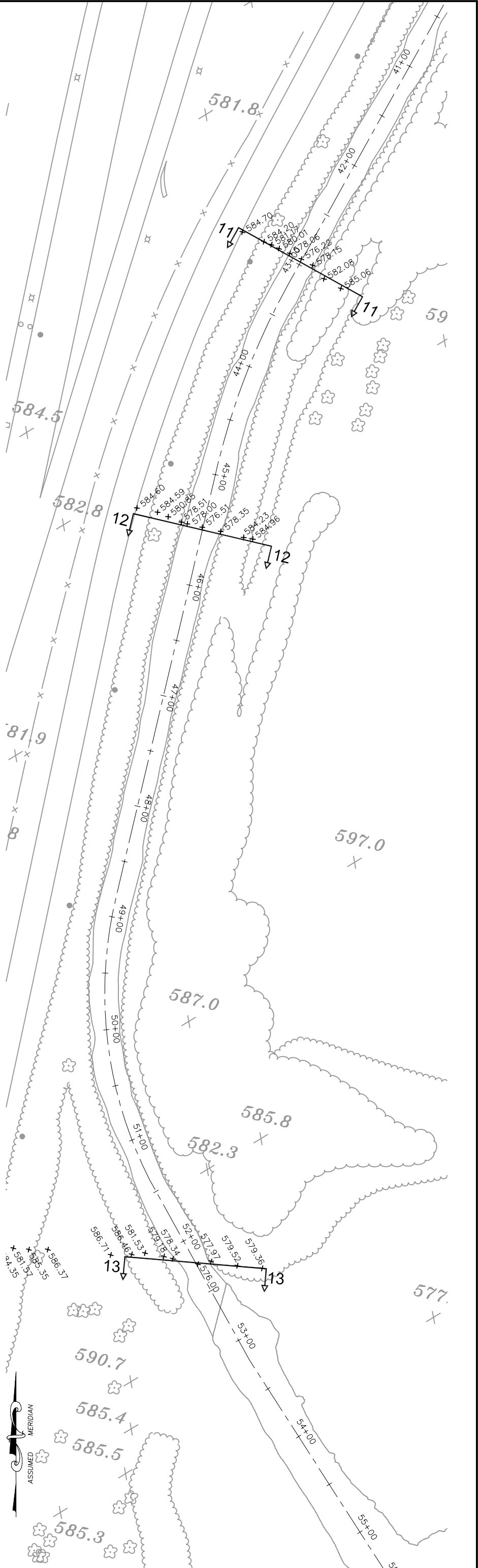
CROSS SECTIONS 6, 7 & 8		
PULLMAN CREEK CROSS SECTIONS		
DRAFTING COMPLETED:	12/1/05	DRAWN BY: DRW
FIELD WORK COMPLETED:	1/29/04	CHECKED BY: GVB
PROJECT MANAGER:	GVB	SCALE: 1" = 50'

Project No: 98216HMP
Task: #106
SHEET NO. 3 of 13

NO.	DATE	DESCRIPTION	REVISIONS
1.	3/31/06	PER IN-HOUSE REVIEW	
2.	8/31/08	PER CHICAGO D.O.E. REVIEW	

NO.	DATE	DESCRIPTION
1.	12/7/05	DRAWN BY: DRW
2.	1/29/04	CHECKED BY: GVB

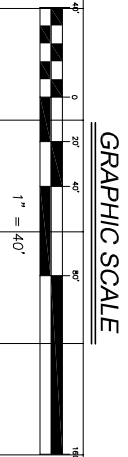





STATION	ELEVATION
40+50	575.9
41+00	576.0
41+50	576.0
42+00	576.1
42+50	576.2
43+00	576.2
43+50	576.3
44+00	576.3
44+50	576.4
45+00	576.5
45+50	576.5
46+00	576.5
46+50	576.4
47+00	576.4
47+50	576.4
48+00	576.3
48+50	576.3
49+00	576.3
49+50	576.2
50+00	576.2
50+50	576.2
51+00	576.2
51+50	576.1
52+00	576.1
52+50	576.1
53+00	576.1
53+50	576.0
54+00	576.0

CREEK CENTERLINE

DATUM ELEV
574.00





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NO.	DATE	DESCRIPTION
1.	3/31/06	PER IN-HOUSE REVIEW
2.	8/31/08	PER CHICAGO D.O.E. REVIEW

NO.	DATE	DESCRIPTION

PROFILE: STA. 40+50 - 54+00

DRAFTING COMPLETED:	12/7/05	DRAWN BY:	DRW	PROJECT MANAGER:	GVB
FIELD WORK COMPLETED:	1/29/04	CHECKED BY:	GVB	SCALE:	1" = 40'

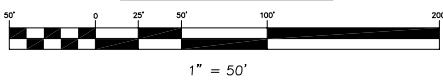
Project No:
98216HMP

Task:
#106

SHEET NO.
8 of 13

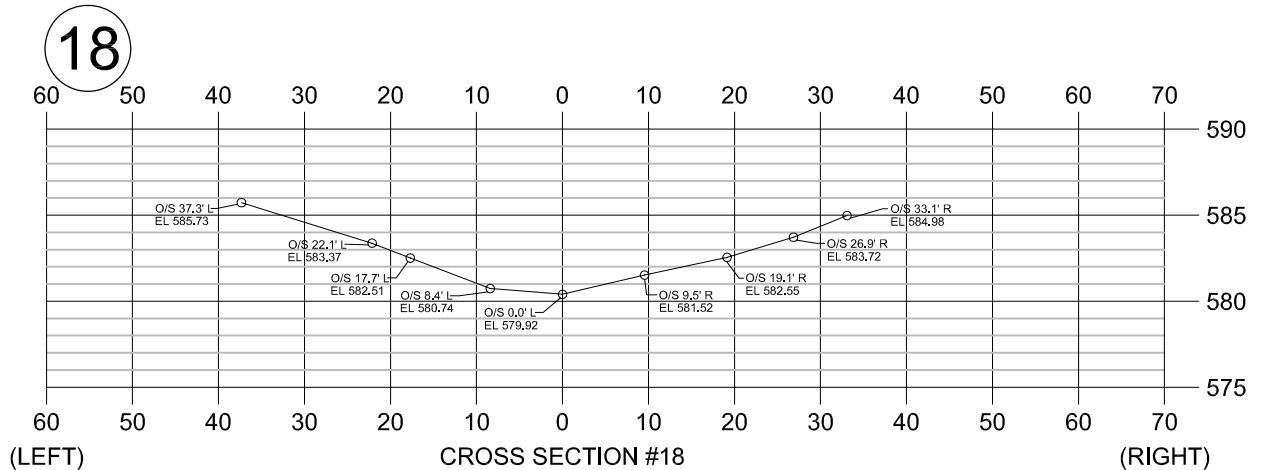
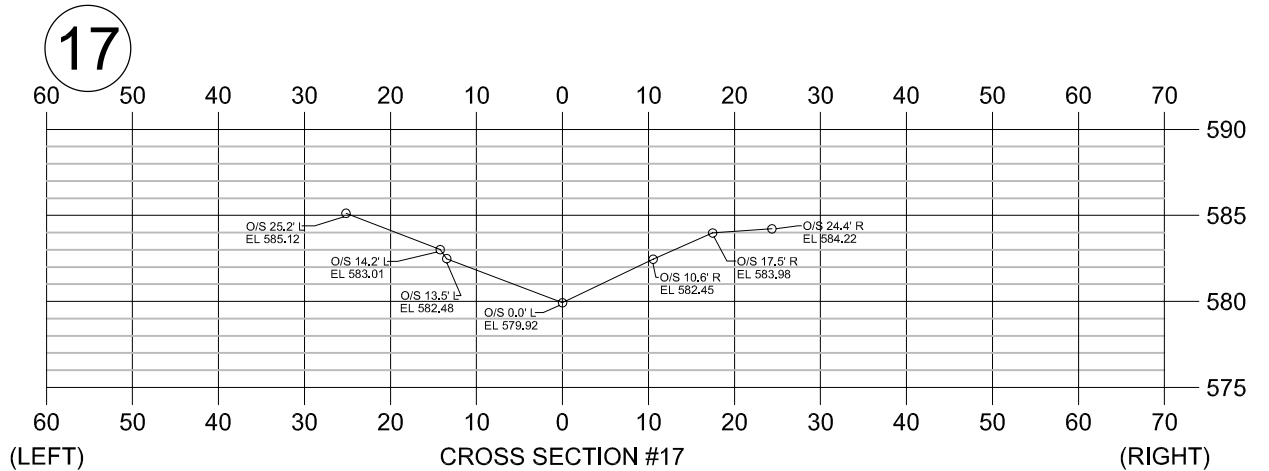
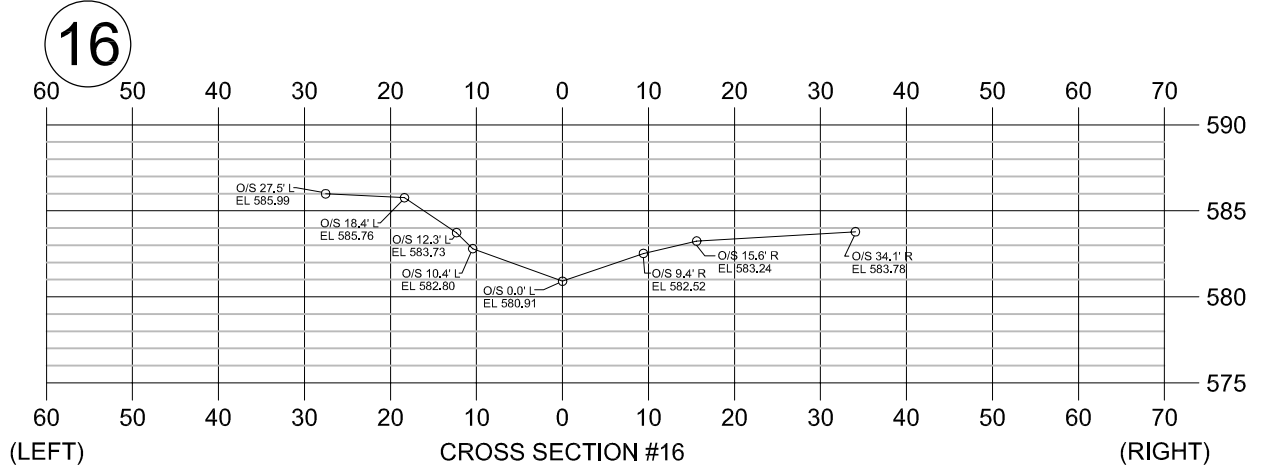
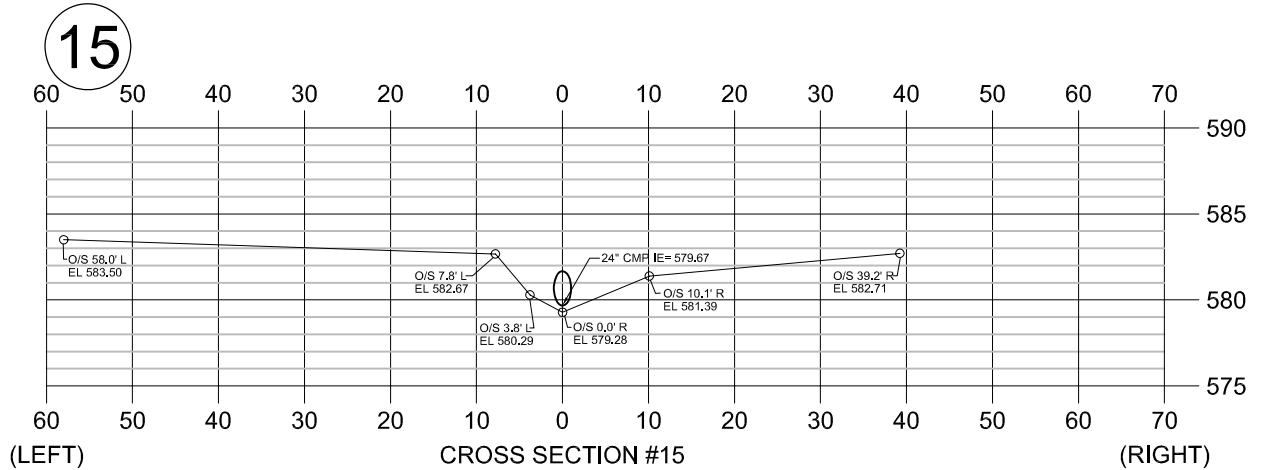
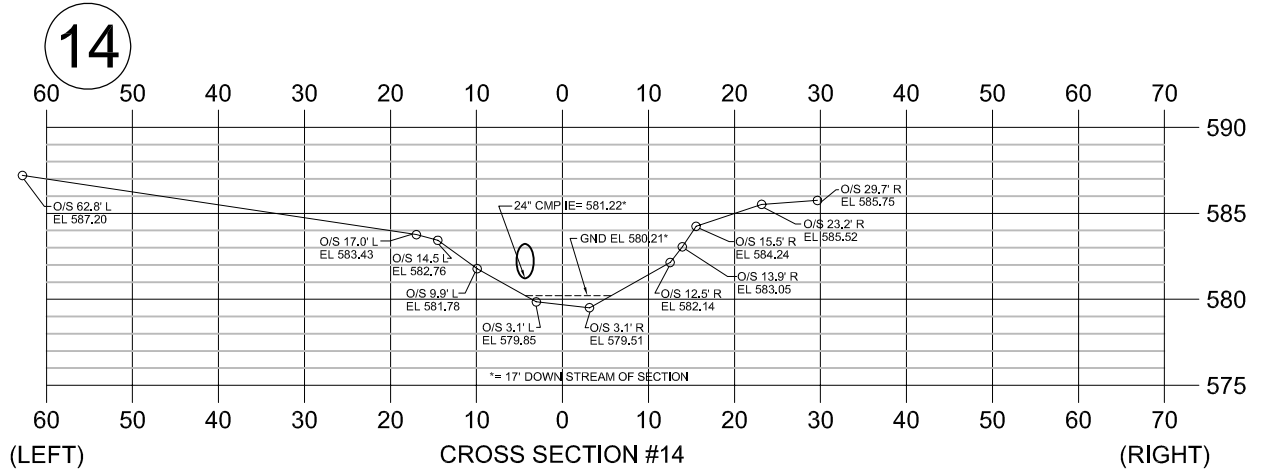
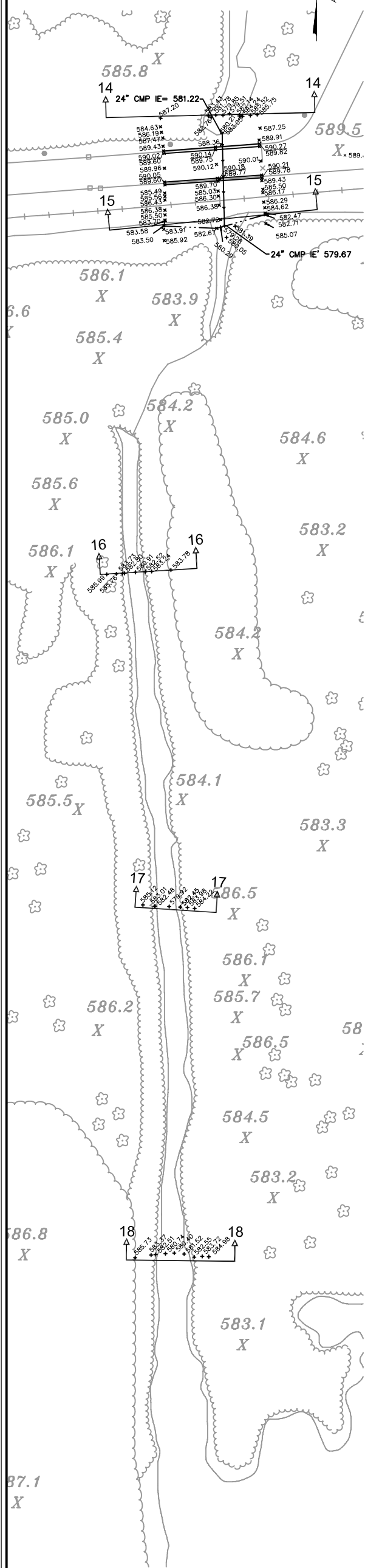
BIG MARSH INLET CROSS SECTIONS FOR CALUMENT AREA HMP CHICAGO, IL

GRAPHIC SCALE



PROFILE SCALES

VERTICAL 1" = 5'
HORIZONTAL 1" = 10'



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CHICAGO, IL 60602
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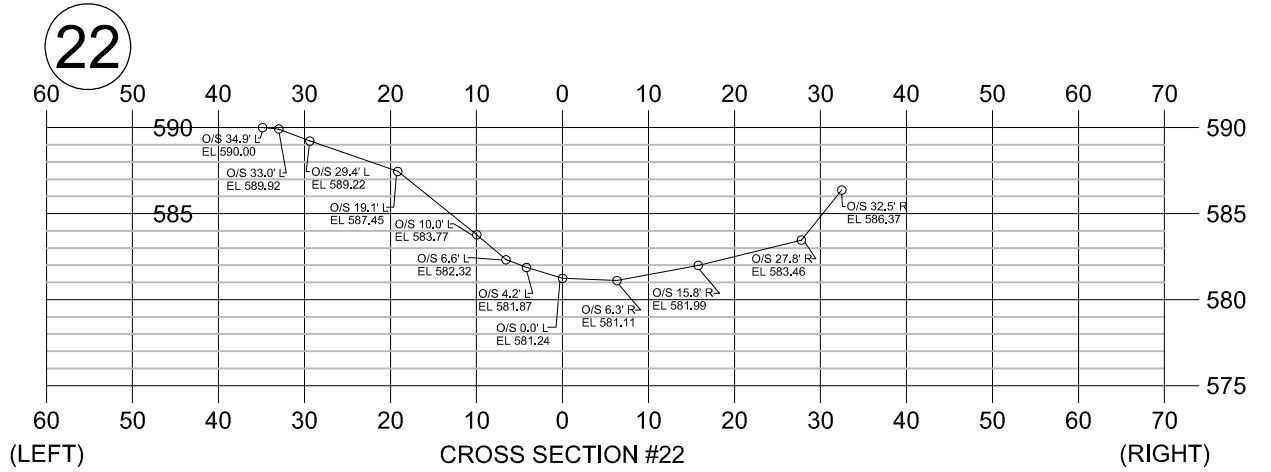
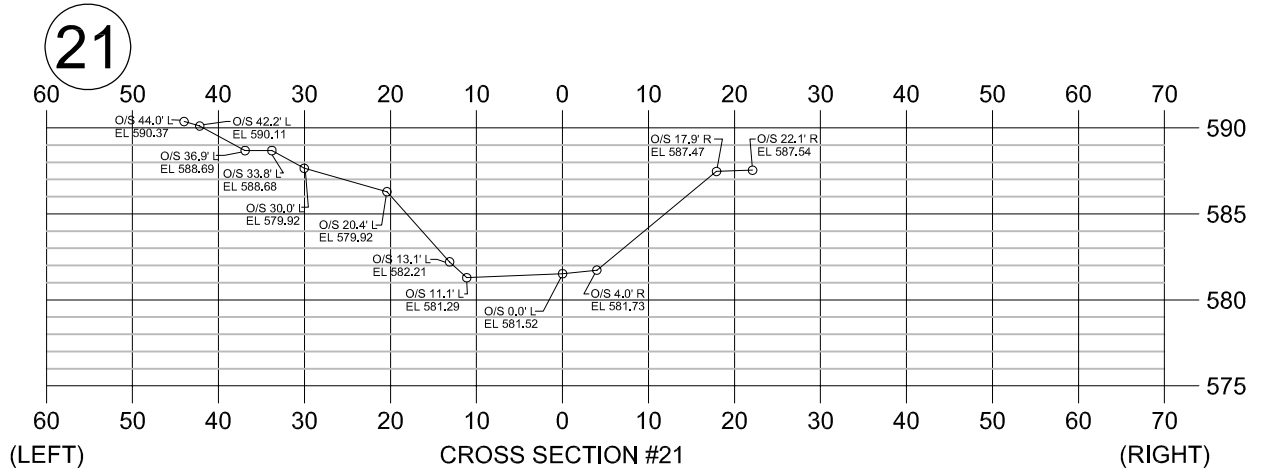
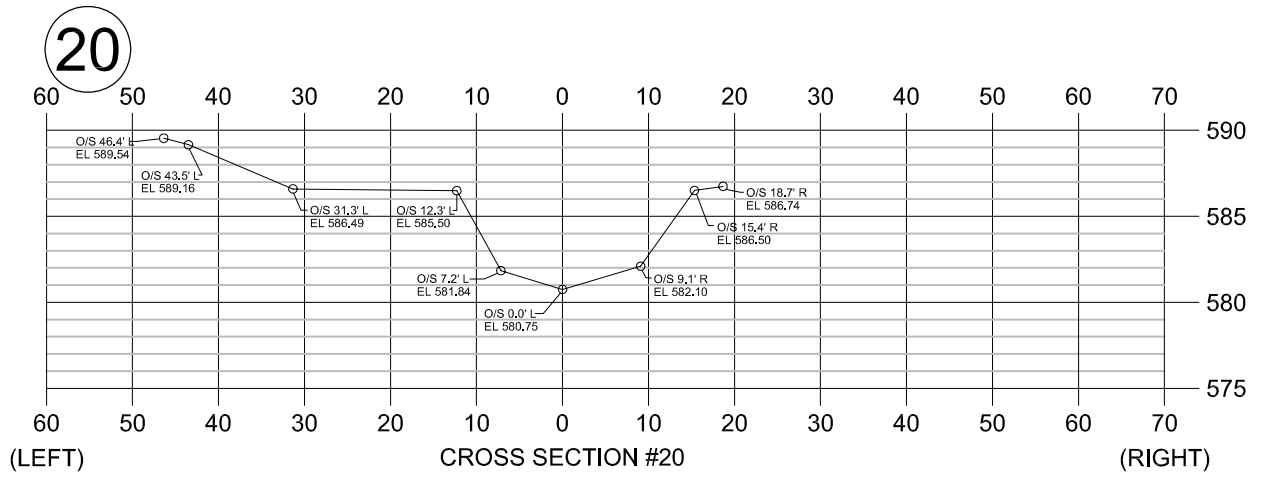
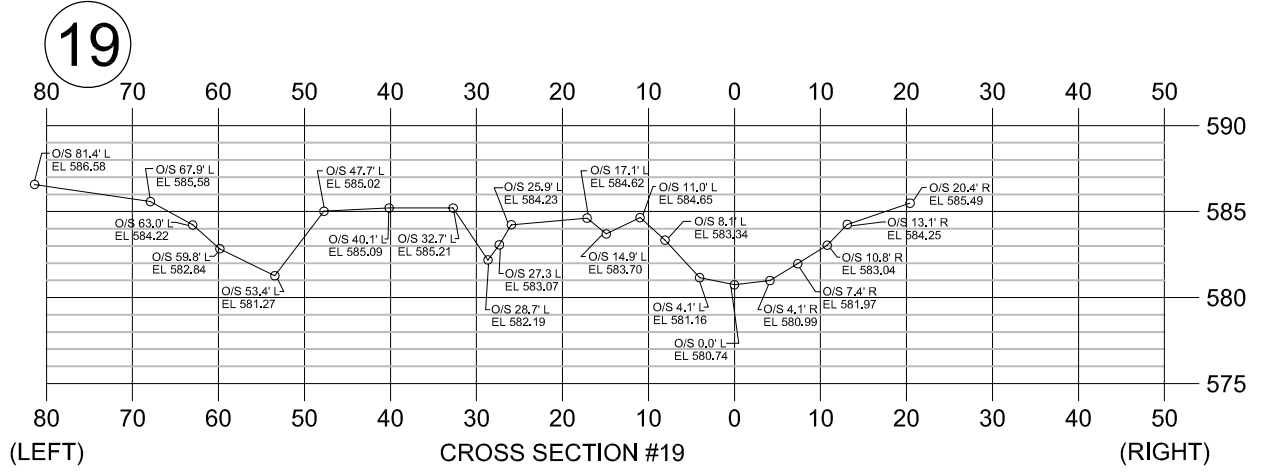
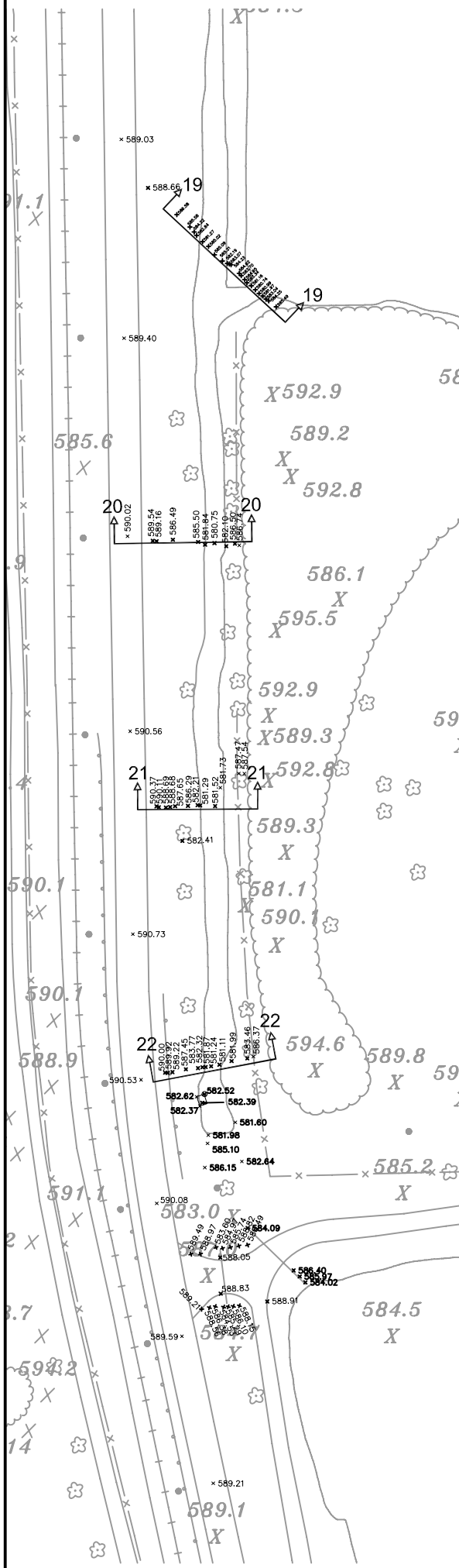
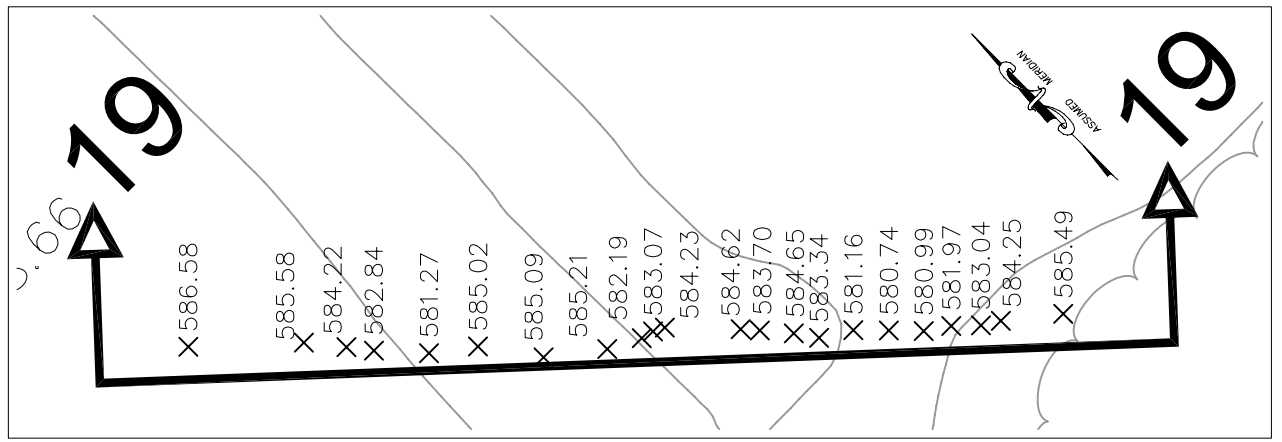
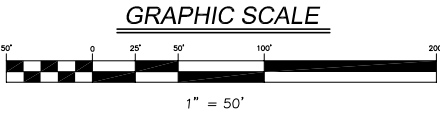
NO.		DATE	REVISIONS DESCRIPTION
1.	3/31/06		PER IN-HOUSE REVIEW
2.	8/31/06		PER CHICAGO D.O.E. REVIEW

CROSS SECTIONS 14-18			
BIG MARSH INLET CROSS SECTIONS			
DRAFTING COMPLETED:	12/1/05	DRAWN BY: DRW	PROJECT MANAGER: GVB
FIELD WORK COMPLETED:	6/10/04	CHECKED BY: GVB	SCALE: 1" = 50'

Project No: **98216HMP**
Task: **#106**
SHEET NO. **9** of **13**

BIG MARSH OUTLET CROSS SECTIONS FOR CALUMET AREA HMP CHICAGO, IL

CROSS SECTION #19 DETAIL
SCALE: 1"=10'



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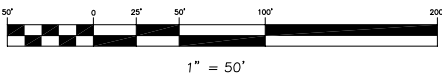
NO.		DATE		REVISIONS DESCRIPTION	
1.		3/31/06		PER IN-HOUSE REVIEW	
2.		8/31/06		PER CHICAGO D.O.E. REVIEW	

CROSS SECTIONS 19-23			
BIG MARSH OUTLET CROSS SECTIONS			
DRAFTING COMPLETED:	12/1/05	DRAWN BY:	DRW
FIELD WORK COMPLETED:	6/10/04	CHECKED BY:	GVB
PROJECT MANAGER:		GVB	
SCALE:		1" = 50'	

Project No: 98216HMP
Task: #106
SHEET NO. 10 of 13

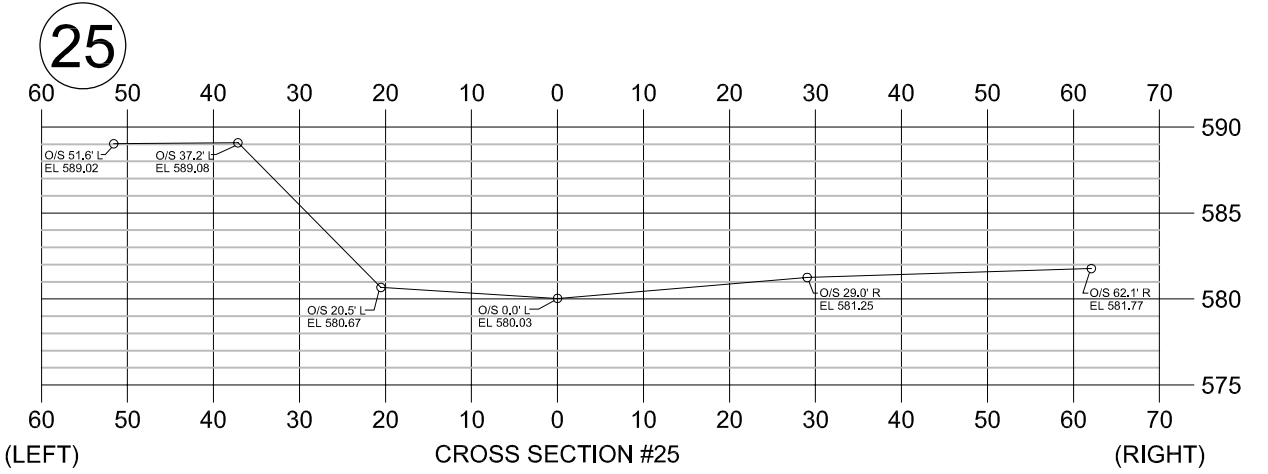
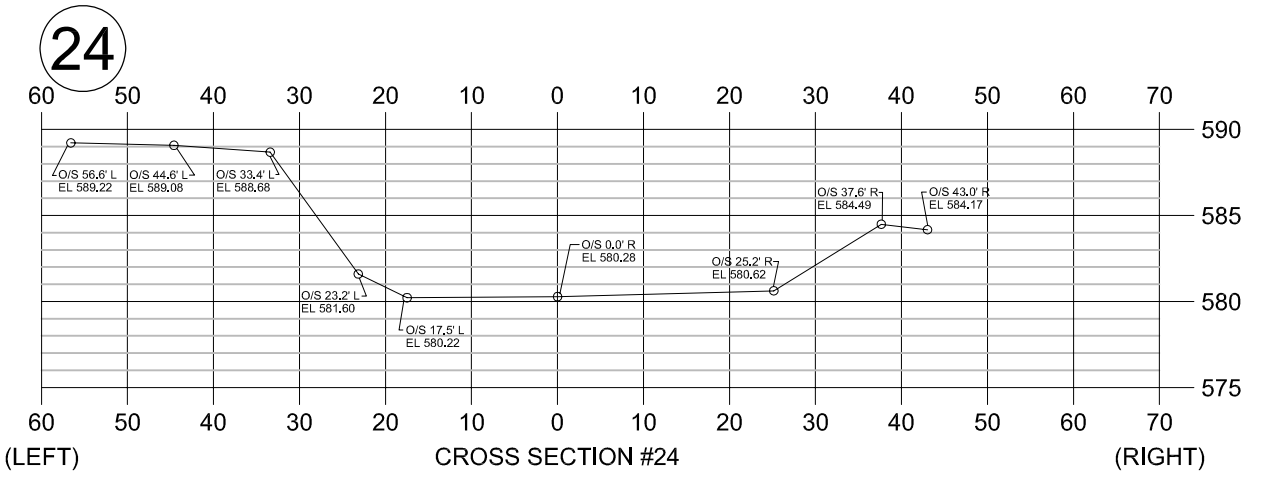
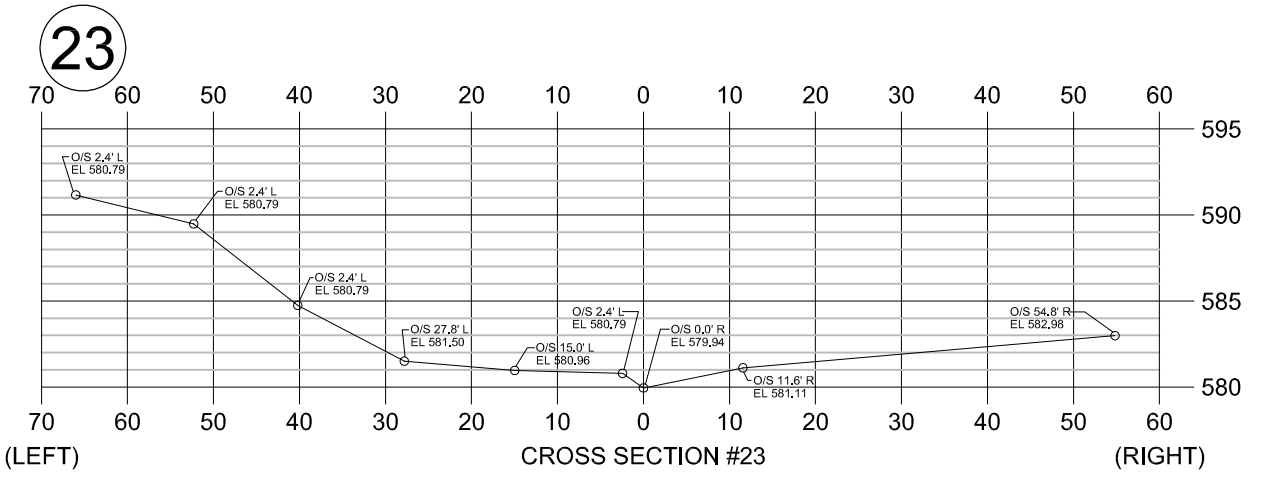
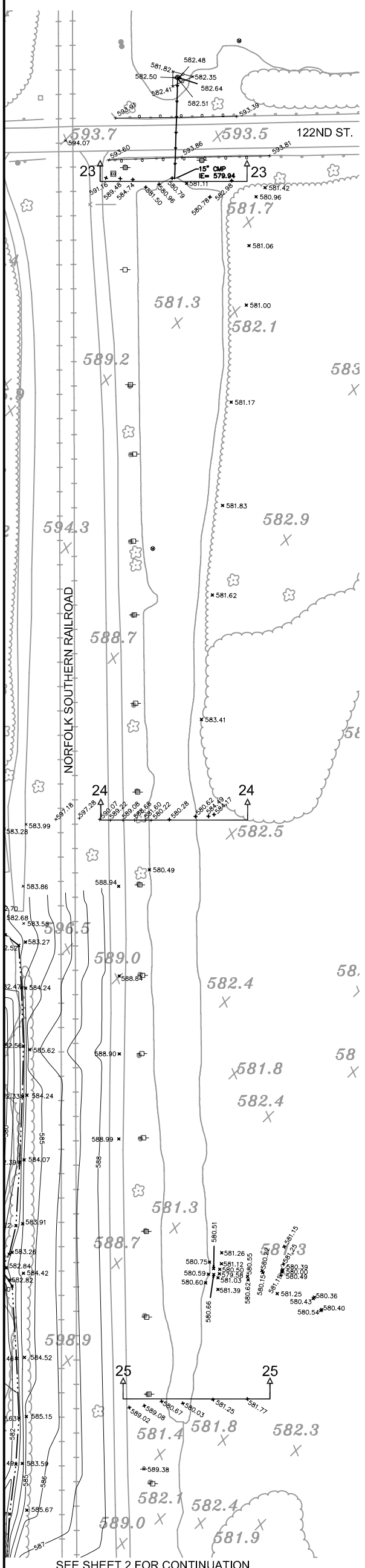
INDIAN RIDGE OUTLET CHANNEL CROSS SECTIONS FOR CALUMET AREA HMP CHICAGO, IL

GRAPHIC SCALE



CROSS SECTION SCALES

VERTICAL 1" = 5'
HORIZONTAL 1" = 10'



	PREPARED FOR: CITY OF CHICAGO DEPARTMENT OF ENVIRONMENT CHICAGO, IL 60602 312.744.5959	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <th>NO.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>3/31/06</td> </tr> <tr> <td>2.</td> <td>8/31/06</td> </tr> </tbody> </table>	REVISIONS		NO.	DATE	1.	3/31/06	2.	8/31/06	CROSS SECTIONS 23-25 INDIAN RIDGE OUTLET CHANNEL CROSS SECTIONS DRAFTING COMPLETED: 12/15/05 DRAWN BY: DRW PROJECT MANAGER: GVB FIELD WORK COMPLETED: 11/25/05 CHECKED BY: GVB SCALE: 1" = 50'	Project No: 98216HMP Task: #106 SHEET NO. 11 of 13
	REVISIONS											
	NO.	DATE										
1.	3/31/06											
2.	8/31/06											
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INDIAN RIDGE OUTLET CHANNEL CROSS SECTIONS FOR CALUMET AREA HMP CHICAGO, IL

GRAPHIC SCALE

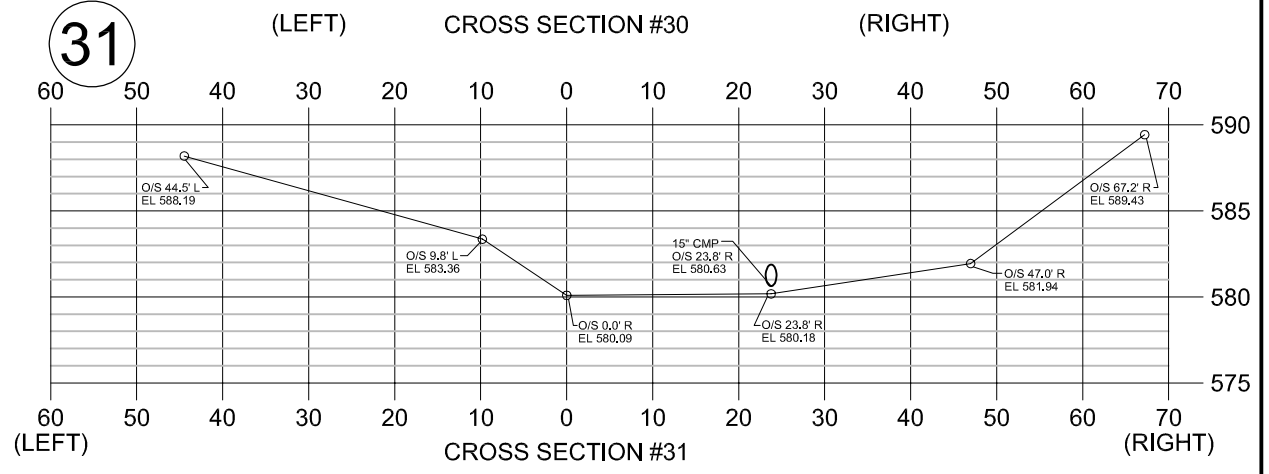
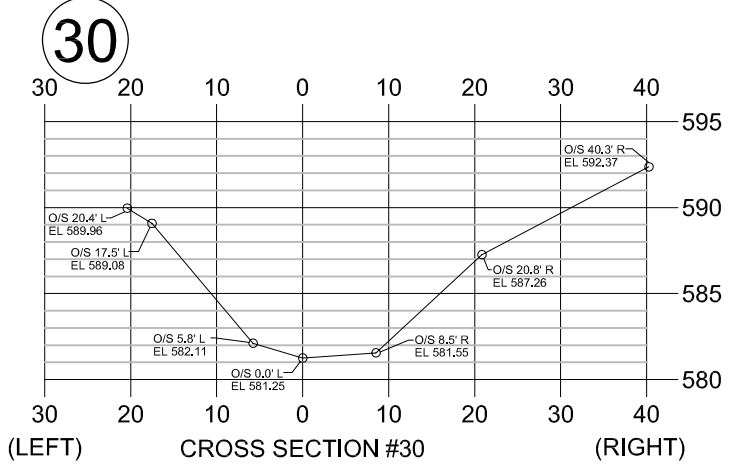
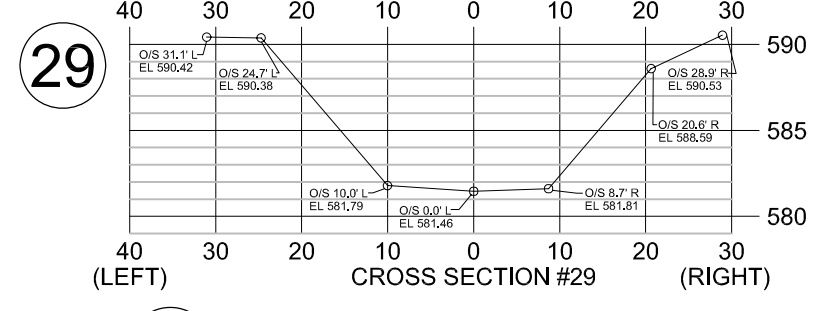
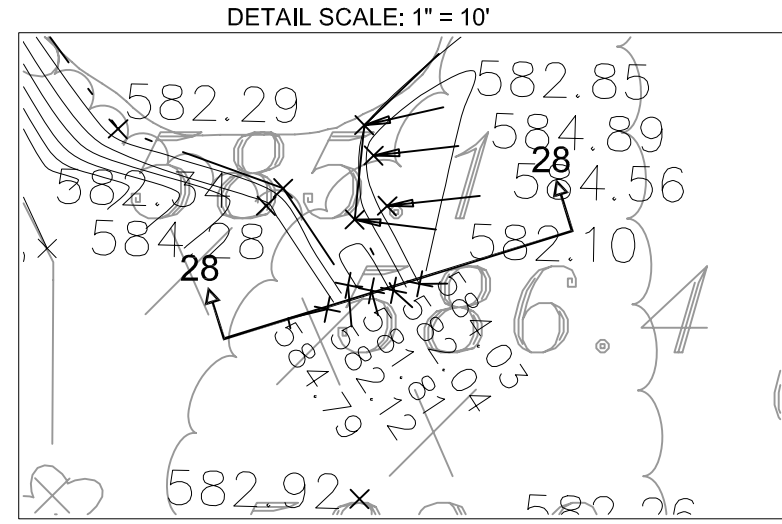
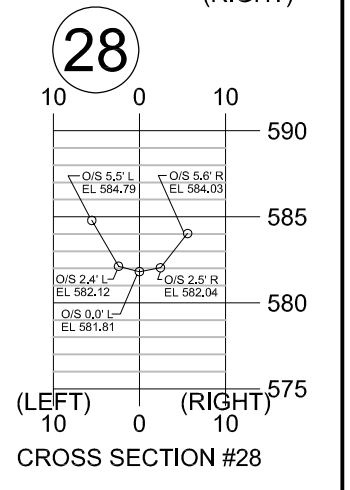
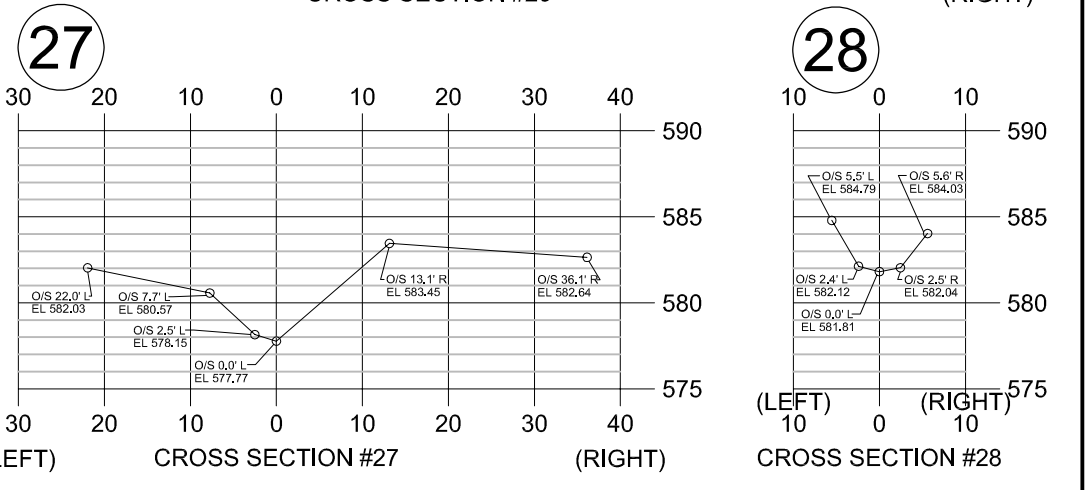
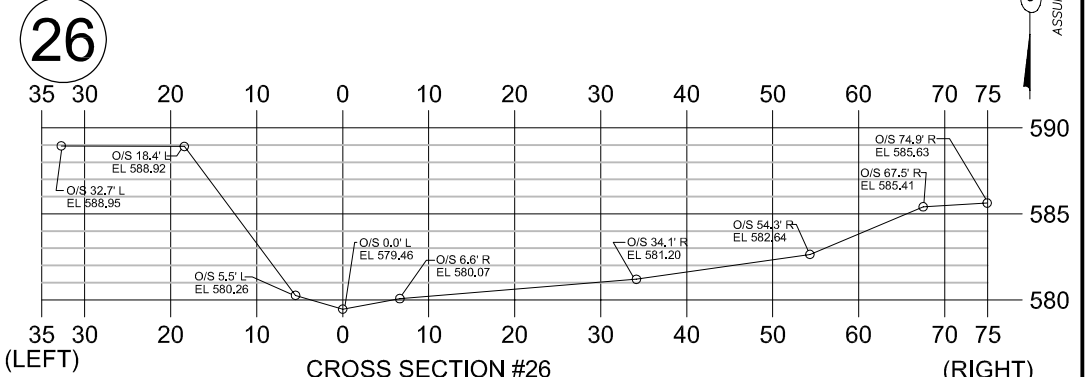
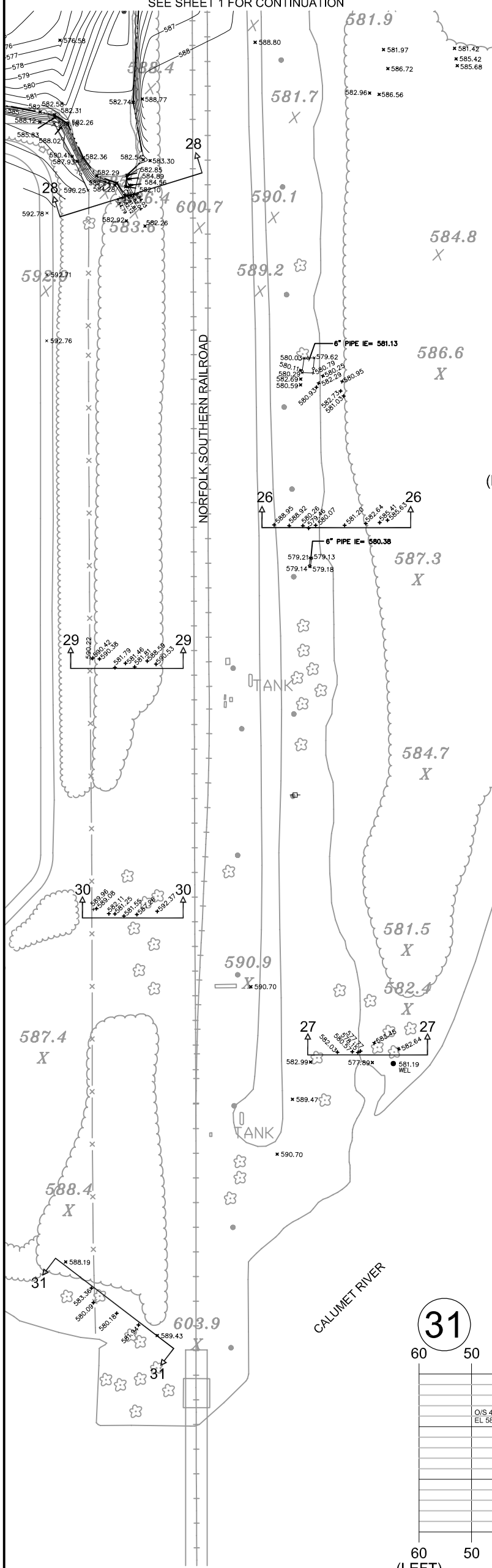


1" = 50'

SEE SHEET 1 FOR CONTINUATION

CROSS SECTION SCALES

VERTICAL 1" = 5'
HORIZONTAL 1" = 10'



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NO.		DATE		REVISIONS DESCRIPTION
1.	3/31/06	PER	IN-HOUSE	REVIEW
2.	8/31/06	PER	CHICAGO D.O.E.	REVIEW

CROSS SECTIONS 26-31

INDIAN RIDGE OUTLET CHANNEL CROSS SECTIONS

DRAFTING COMPLETED:	12/15/05	DRAWN BY:	DRW	PROJECT MANAGER:	GVB
FIELD WORK COMPLETED:	11/25/05	CHECKED BY:	GVB	SCALE:	1" = 50'

Project No: 98216HMP
Task: #106
SHEET NO.
12 of 13

