



DEPARTMENT OF THE ARMY  
UNITED STATES MILITARY ACADEMY  
WEST POINT, NEW YORK 10996

MADN-B

2 July 1975

MEMORANDUM FOR RECORD

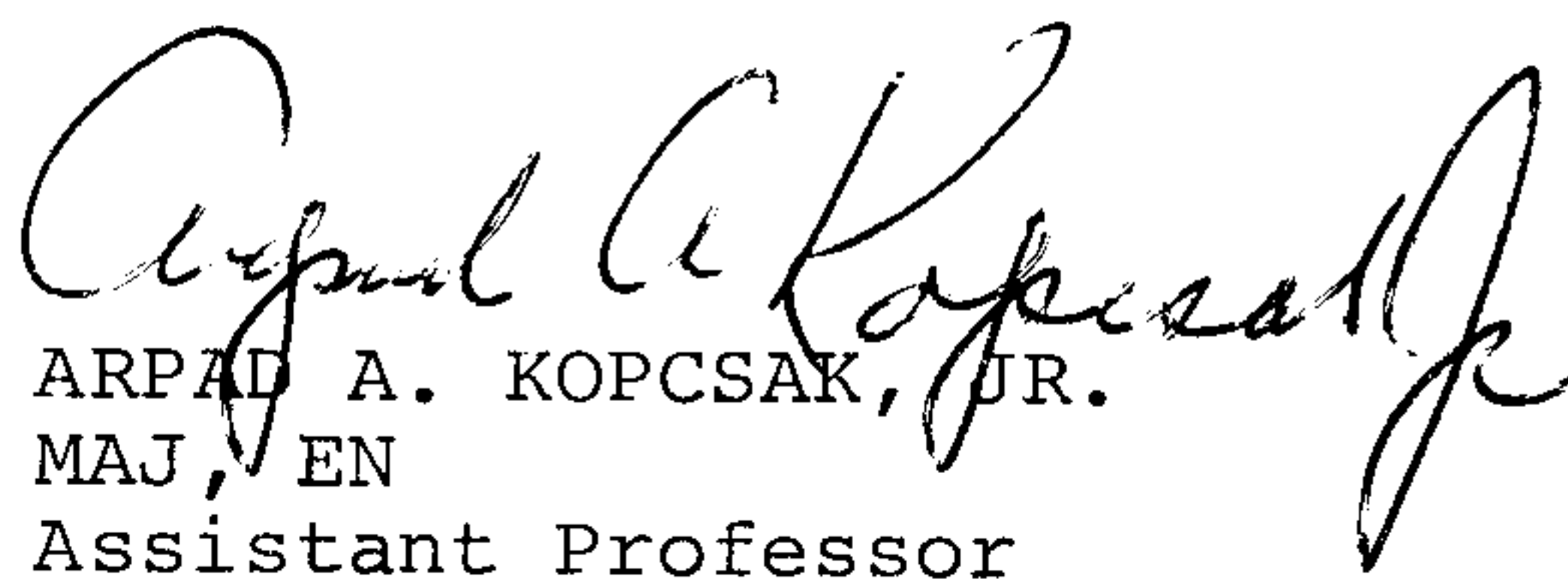
SUBJECT: Trig List

1. This trig list has been compiled by Major Arpad A. Kopcsak, Jr., with the assistance of the following:
  - a. Cadet John J. Cimral (Class of '75): Computer programs for the conversion of UTM coordinates to geographical and vice versa.
  - b. Cadet J.P. Jarvis (Class of '75): Sketches, verification of all ties and of the condition of those markers located off the West Point Military Reservation.
  - c. Mr. W. Hunter and Mr. C. Storms: General survey work.
  - d. Others as noted on the various trig list forms.
2. Work was initiated on this trig list by Major Kopcsak in 1971 to support EF 384, an elective course entitled "Principles of Surveying."
3. Current data concerning survey control were not readily available, but through archives searches, correspondence and field work, Major Kopcsak was able to obtain sufficient control data and to extend them to the points listed in this document.
4. The vertical control data are based on the USGS data for the markers *North Dock* and BM 161 (known at West Point as *USGS*), both located at West Point, New York.
  - a. *USGS* was recovered by Major Kopcsak. By running a first-order level loop between the two points, it was determined that the marker *USGS* (BM 161) had been disturbed. The new elevation is 160.324'.
  - b. The U.S. Geological Survey was contacted concerning the elevation at *North Dock*, and their examination of the bench marks common to edition 6/6/67 and the edition 1/7/75 corroborates the ES&GS elevation for *North Dock* of 4.53 feet above mean sea level, 1929 datum.
  - c. Subsequent vertical control is of third order, except as indicated.
5. The horizontal control data are based on the true azimuth lines and geographical coordinates established by the U.S. Army Corps of Engineers in the early 1930's.

MADN-B  
SUBJECT: Trig List

2 July 1975

- a. The geographical coordinates are for the point known on the NOAA (USC&GS) lists as "West Point South Azimuth 1933" and known at West Point as *South Azimuth Mark (SOAZMK)*.
- b. First-order control was then extended to the points on the main post at West Point by Major Kopcsak, using an assumed coordinate system in feet with a true north azimuth. The 10,000N, 10,000E point is at marker *Flag*. This coordinate system was then converted to UTM and geographical. The assumed system was designated "Local Coordinates (Flag)."
- c. Major Kopcsak's computer program was used for computing, adjusting and correcting the traverses. Cadet Cimral's program which was integrated into Major Kopcsak's was used to convert the local grid system into the UTM and geographical coordinates shown for each point.

  
ARPAD A. KOPCSAK, JR.  
MAJ, EN  
Assistant Professor

NO: 1

STATION: SOUTH AZIMUTH

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL	587263.538	4582503.144	UTM Meters
ORDER: I	15034428.949	1926713.776	UTM Feet
ELEV: 158.910'	10628.689	587263.538	Local (Flag)
DATUM: Mean Sea Level, 1929	73°57'22.4700"W	41°23'28.4719"N	Geographical

DESCRIPTION: NAME - *South Azimuth Mark* ABBREVIATION - SOAZMK SKETCH:

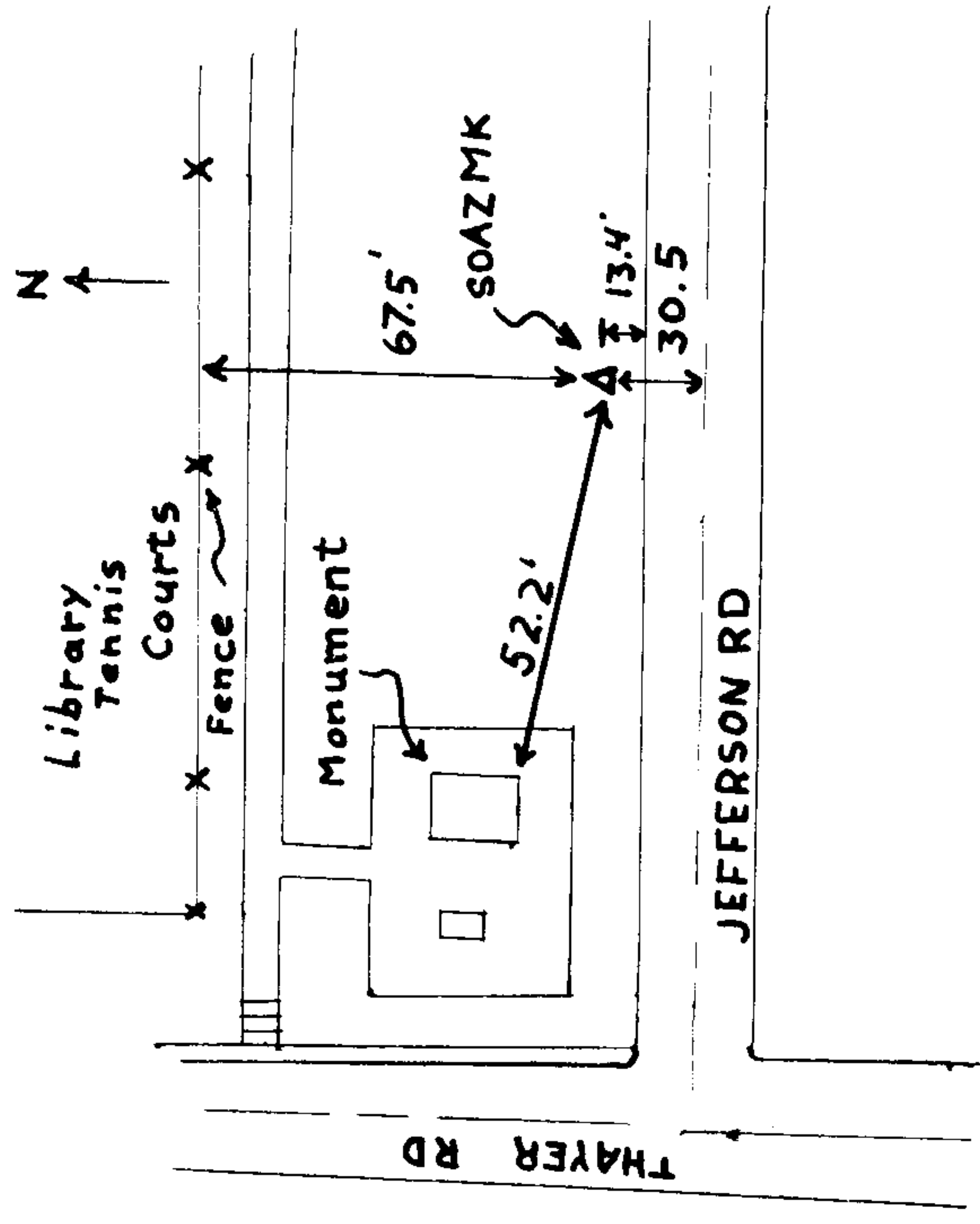
1. The 1973 description of the marker is: It is located 67.5' south of the fence around the library tennis courts, 108.9' east of the center line of Thayer Road and 30.5' north of the center line of Jefferson Road.

2. The 1933 description was: "WEST POINT SOUTH AZIMUTH (Orange County, New York, C.A.E., 1933)--This station is located at West Point, New York, across the street from East Academic Building near the Thayer Road and Jefferson Street. It is the southern end of an azimuth line established by the U.S. Army Engineers. The station is the center of a cross in a copper plug set in lead in a stone monument 6" square, the top of which is 8" above ground."

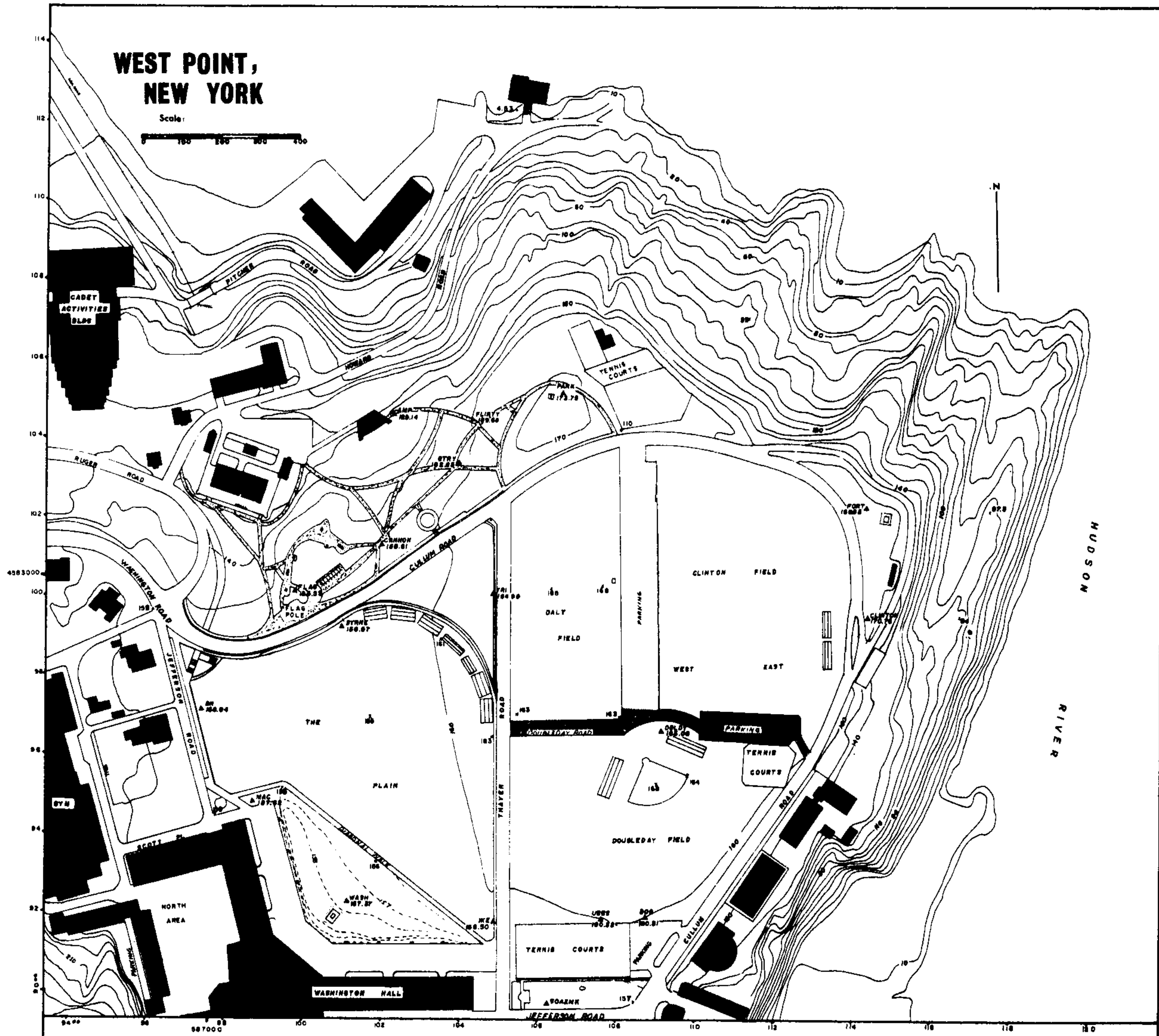
Object	Distance	Direction
Crow's Nest	2995.213'	309°11'35" or 5495.351 M (UTM) 309°51'55" (TRUE)

3. The UTM coordinates were obtained in 1972 by a conversion from geographic coordinates to UTM. The conversion was accomplished by the Topographic Center, Defense Mapping Agency (Geodetic Section).

4. Vertical control was established in 1974 by cadets enrolled in EF 384.



# WEST POINT, NEW YORK



Prepared by MAJ AA Kopssek  
 Assisted by Capt T. Colahan 1962

**LEGEND**

Buildings		Blockers	
Roads		Canon	
Path		Canon Row	

NO: 2

STATION: USGS

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	587305.622	4582568.260	UTM Meters
ELEV: 160.324'; Order III	1926851.848	15034642.584	UTM Feet
DATUM: Mean Sea Level, 1929	10769.257	9157.017	Local (Flag)
	73°57'20.6244"W	41°23'30.5667"N	Geographical

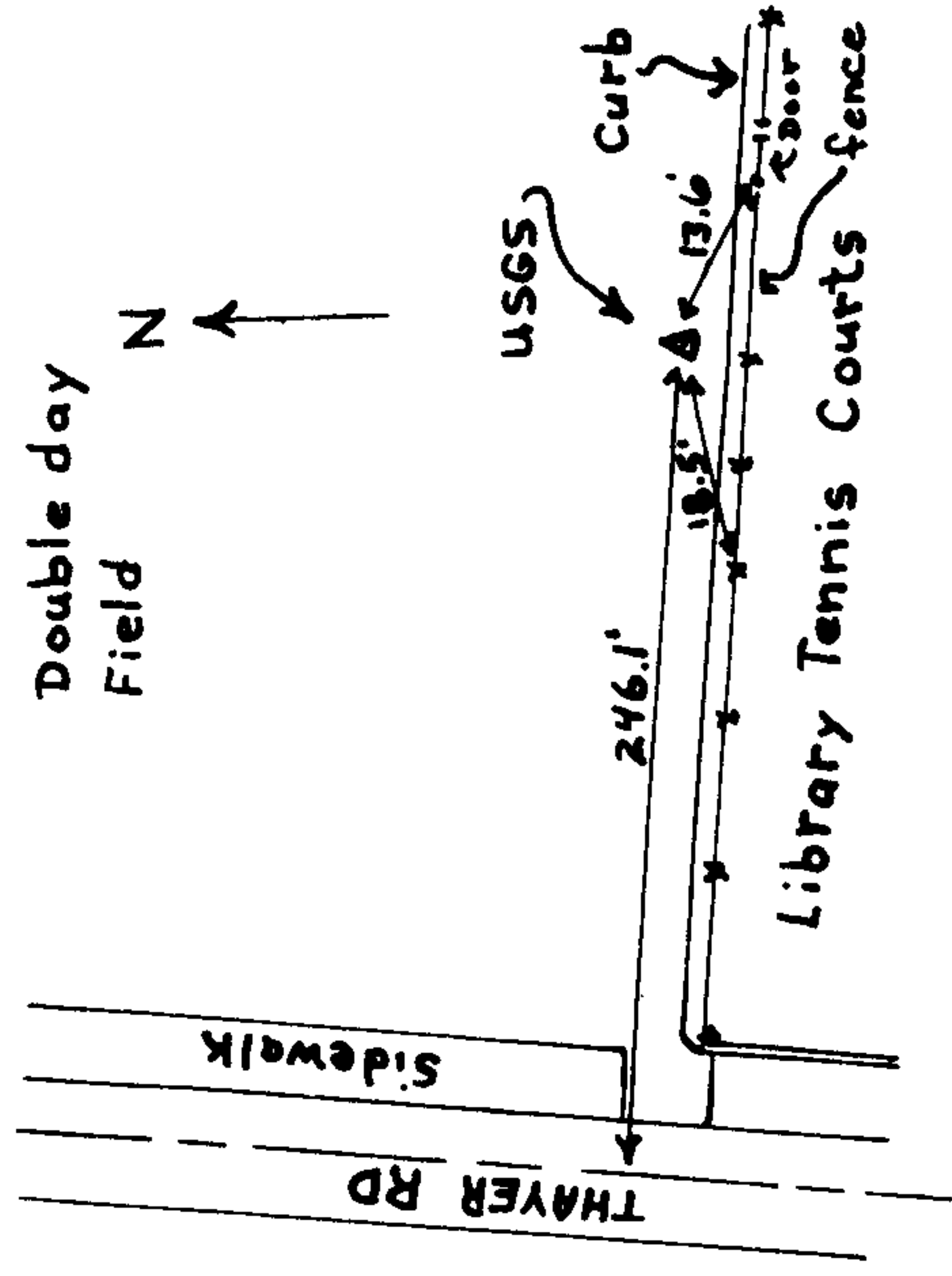
SKETCH:

ABBREVIATION - USGS

NAME - USGS

DESCRIPTION:

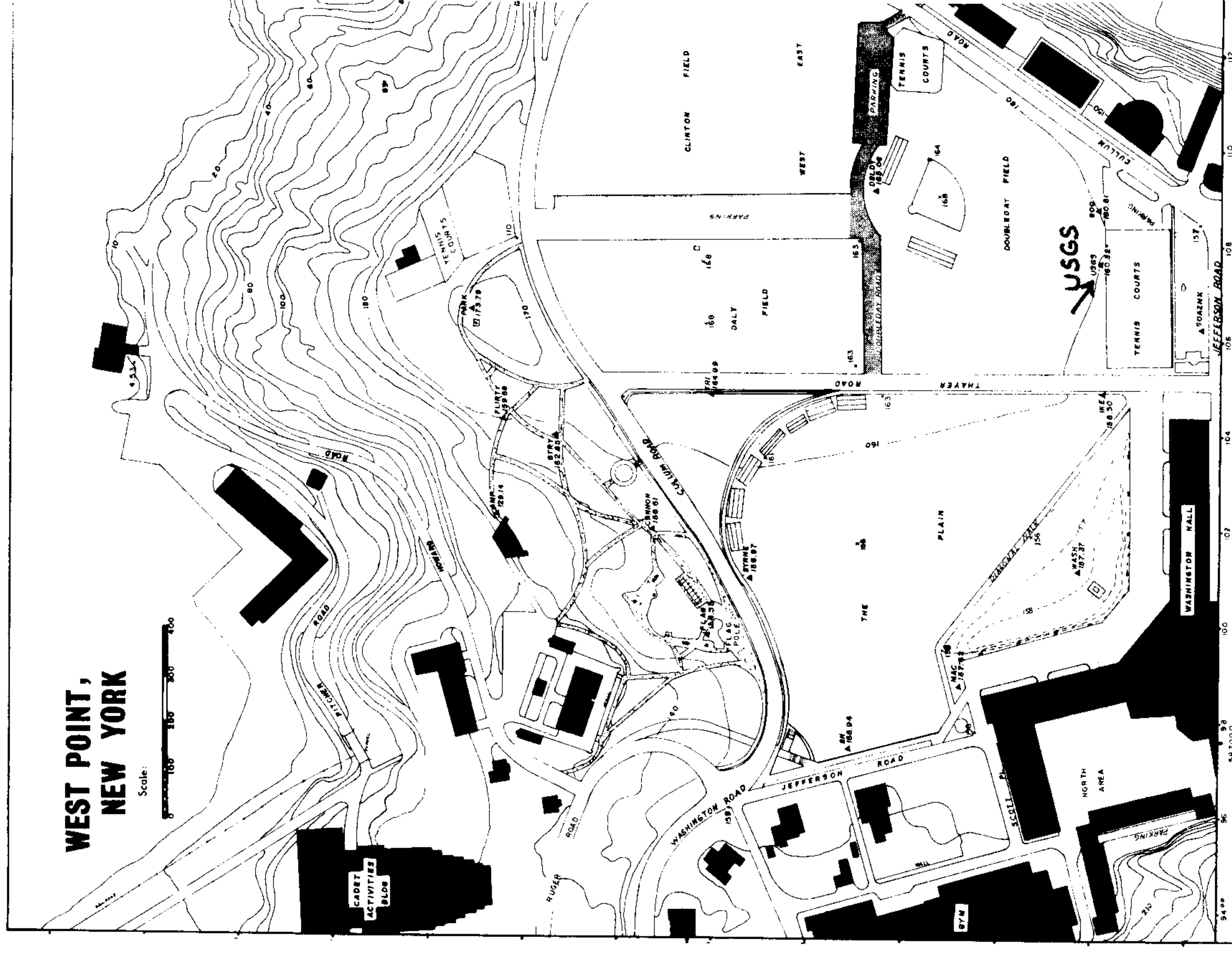
- The 1973 description of the marker is: "It is located on the southern end of Doubleday Field, 6.1' north of the northern side of the curb around the library tennis courts and 246.1' east of the center line of Thayer Road. It is brass with the standard USGS tablet stamped 'R23 RESET 1945.'"
- The marker was recovered in the fall of 1972 by MAJ A. A. Kopsak and CPT F. C. Pope. It had been buried for approximately 10 years. CPT Pope and CPT J. E. Ferguson ran a first-order level net from the marker at North Dock (elevation 4.53', mean sea level 1929) to the R23 tablet and found that the 1945 elevation of 160.224' is now +0.10' in error and should be 160.324'. The North Dock elevation is described as point 2 on this trigonometric list.
- The marker was described in 1945 as: "27 WEST POINT, NEW YORK--West Point; in southern end of meridian line on parade grounds; 250' east of Central Avenue; 350' west of Memorial Hall; 10' north of tennis courts; in concrete post; standard tablet stamped 'R23 RESET 1945.'"



NO: 2 (CONT)

4. With the exception of "RESET 1945," the description was the same as that given to it in 1926 by Mr. M. S. Roudabush, who surveyed both USGS and *North Dock* for the U.S. Geodetic Survey. He determined the elevation of USGS to be 160.524'. The 1929 datum for mean sea level corrected this elevation to 160.224', which is the same elevation assigned to the marker when it was reset in 1945.

5. The marker is 18.5' northeast of the fiftieth fence pole east of the northwestern corner and 13.6' northwest of the western side of the first doorway west of the northeastern corner of the fence.



NO: 3

STATION: FLAG

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

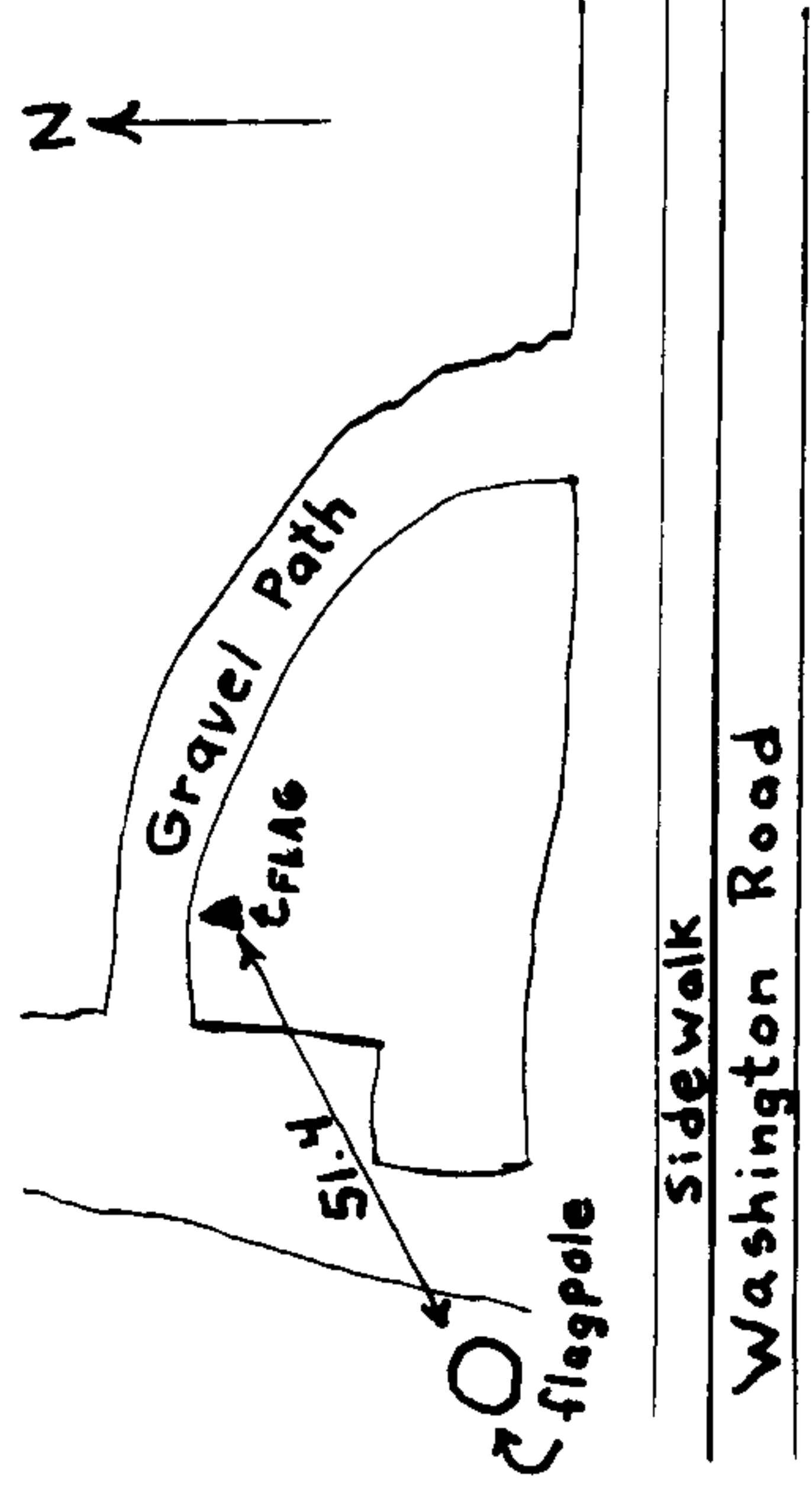
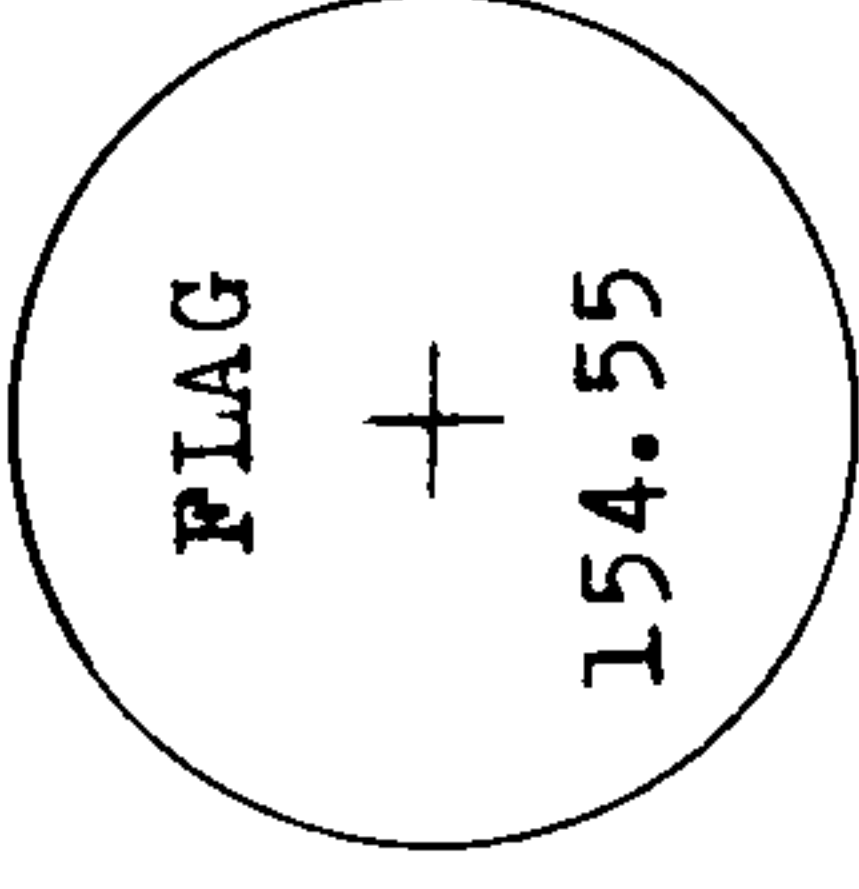
	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	587068.154	4582822.433	UTM Meters
ELEV: 154.55', Order III	1926072.755	15035476.484	UTM Feet
DATUM: Mean Sea Level, 1929	10000.000	10000.000	Local (Flag)
	73°57'30.7166"W	41°23'38.9003"N	Geographical

DESCRIPTION: NAME - Flag

ABBREVIATION - Flag

SKETCH:

- The marker is a copper disk 2" in diameter and set in an 8"-diameter concrete monument. The top of the monument is flush with the ground and is inscribed:

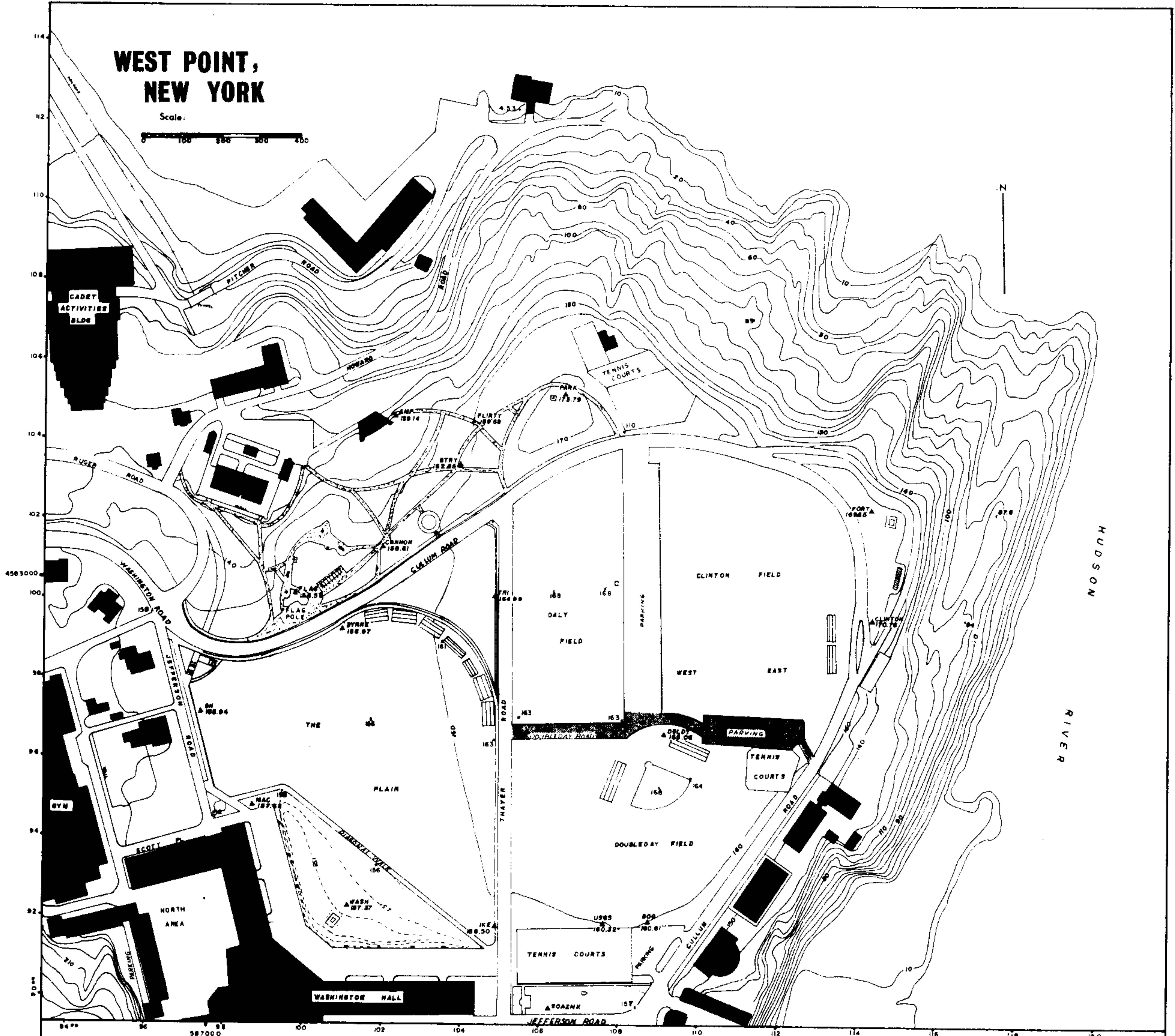


- Origin unknown but it was probably established between 1926 and 1933 by military personnel assigned to USMA. The original elevation was 154.81', based on the 1926 datum for mean sea level.
- The marker was originally used in the cadet triangulation net. It was resurveyed and relevelled in 1972 by the Survey Committee, Department of ES&GS, USMA.
- Located 51.4' northeast of the flagpole adjacent to a gravel path (southeastern side of path).



# WEST POINT, NEW YORK

Scale:  
0 100 200 400



Prepared by MAJ AA Kopsak 12/15/52  
Assisted by Capt T. Cohen 12/52

**LEGEND**

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 4

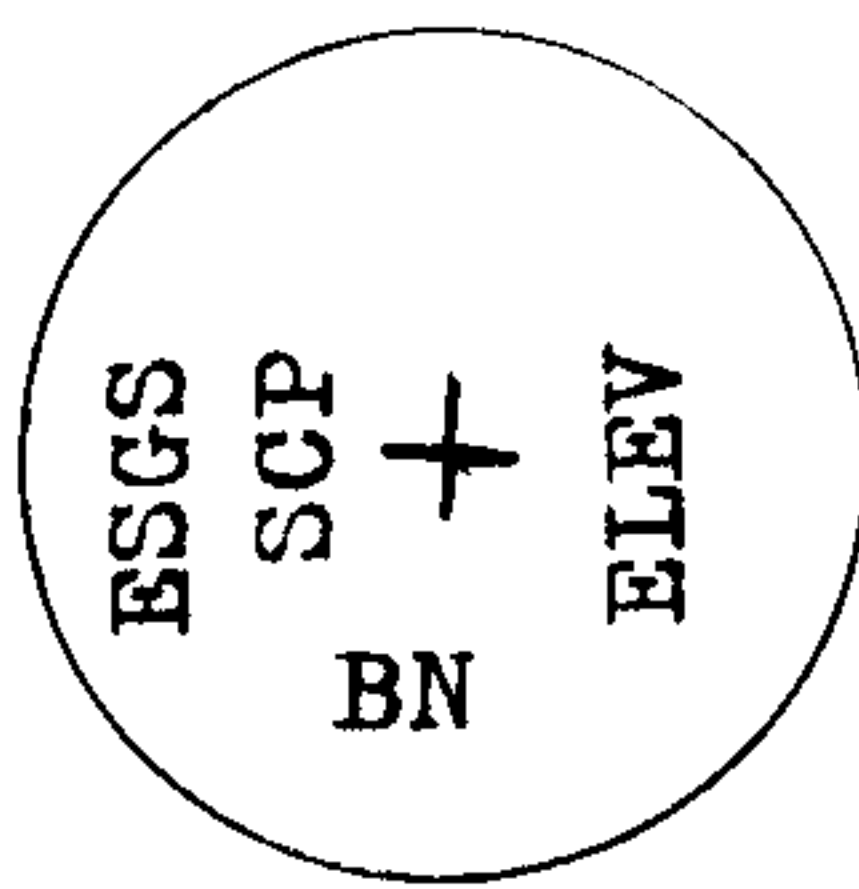
STATION: BATTALION SURVEY CONTROL POINT

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER:	586995.487	4582730.950	UTM Meters
ELEV: 155.945'	1925834.344	15035176.343	UTM Feet
DATUM: Mean Sea Level, 1929	9758.086	9702.677	Local (Flag)
	73°57'33.8926"W	41°23'35.9625"N	Geographical

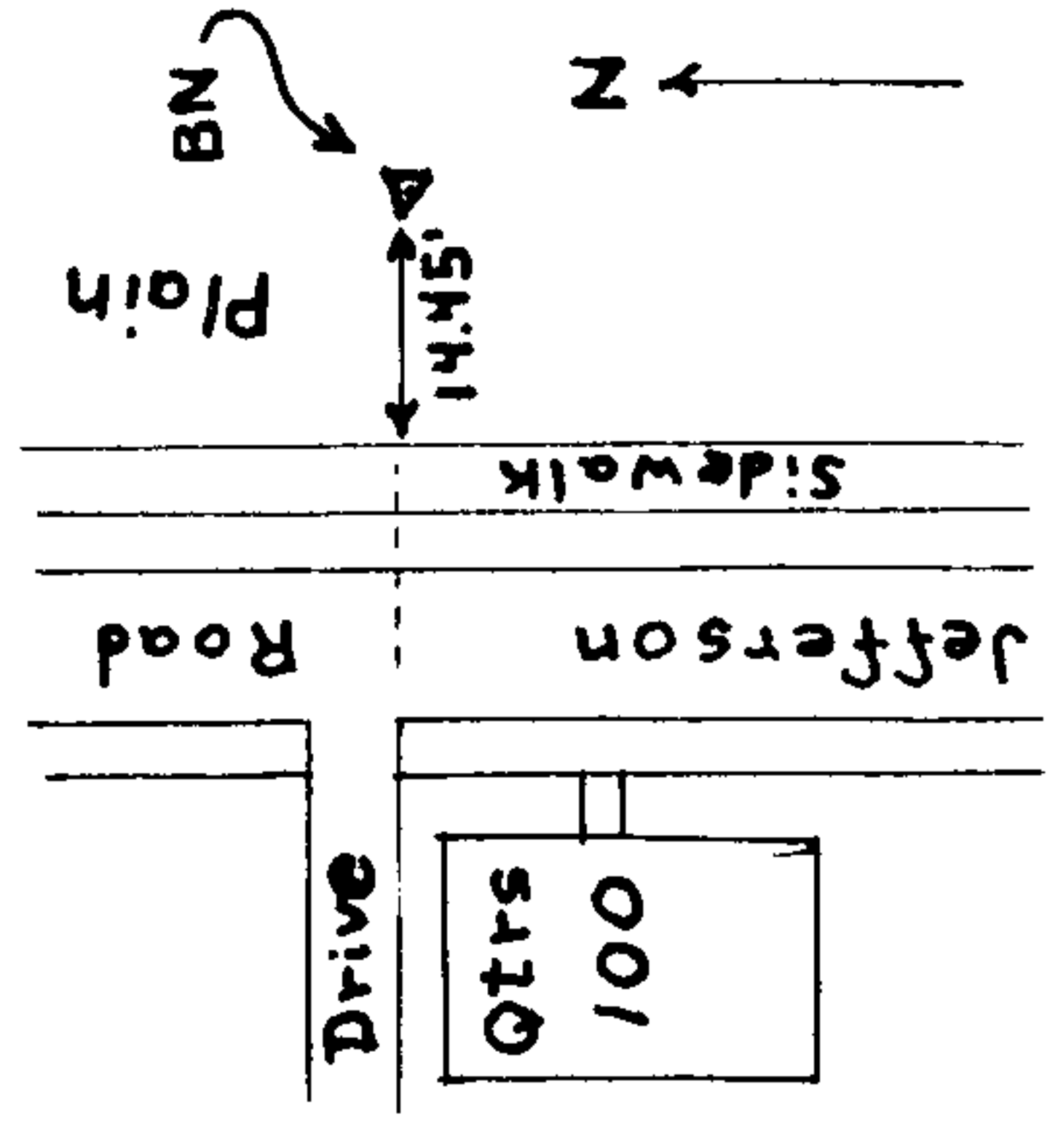
DESCRIPTION: NAME - *Battalion Survey Control Point* ABBREVIATION - *BNSCP* SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



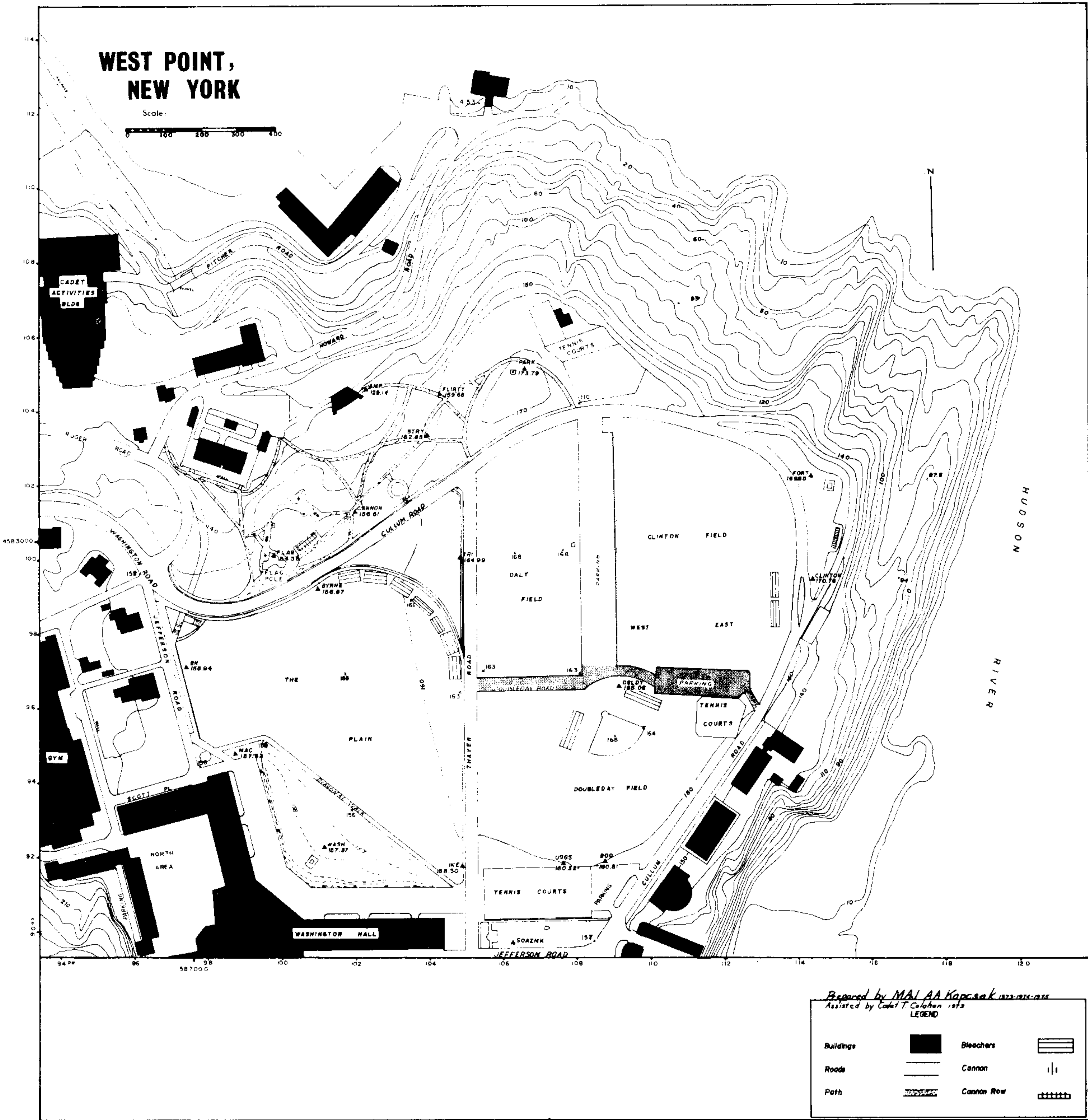
4. Object BARRACKS Distance 483.385 (m) Direction True 144°47'42" UTM Grid 324°07'22" (5762.183 m)

- The marker was set in the summer of 1972 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
- It is located on the Plain east of Jefferson Road and on line with the southern side of the east-west driveway on the northern side of Quarters 100 and is 14.45' east of the sidewalk located east of Jefferson Road.



# WEST POINT, NEW YORK

Scale:  
0 100 200 300 400



Prepared by MAJ AA Kapsak, 1922-1923  
Assisted by Capt T. Colahan, 1922

**LEGEND**

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 5

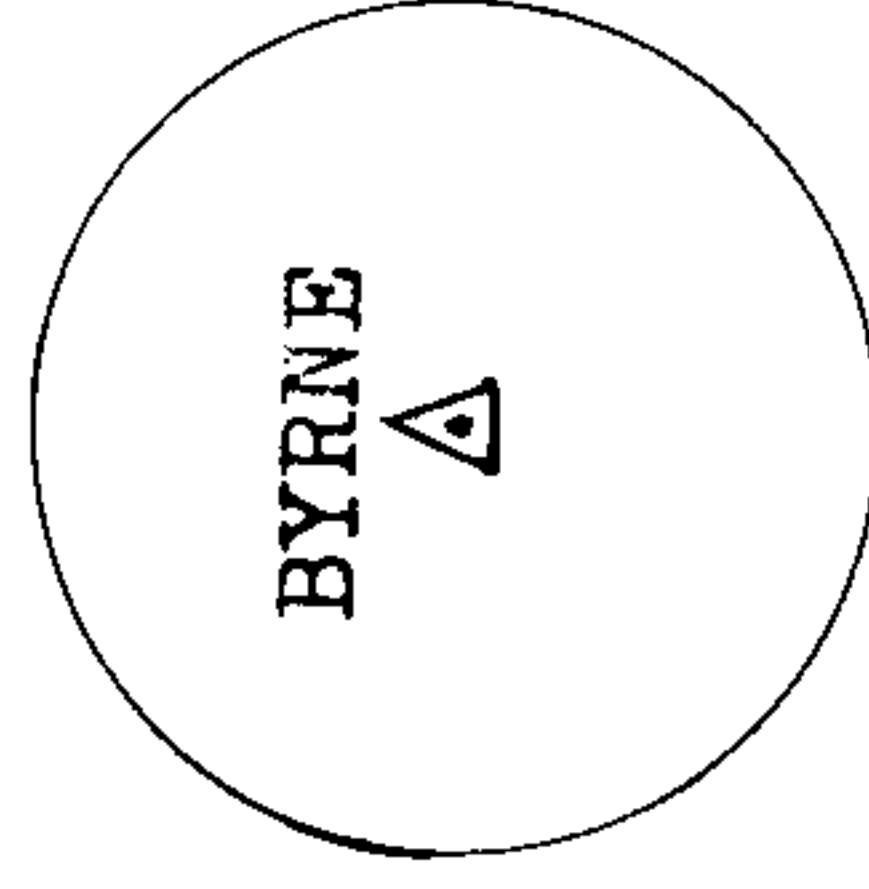
STATION: BYRNE

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

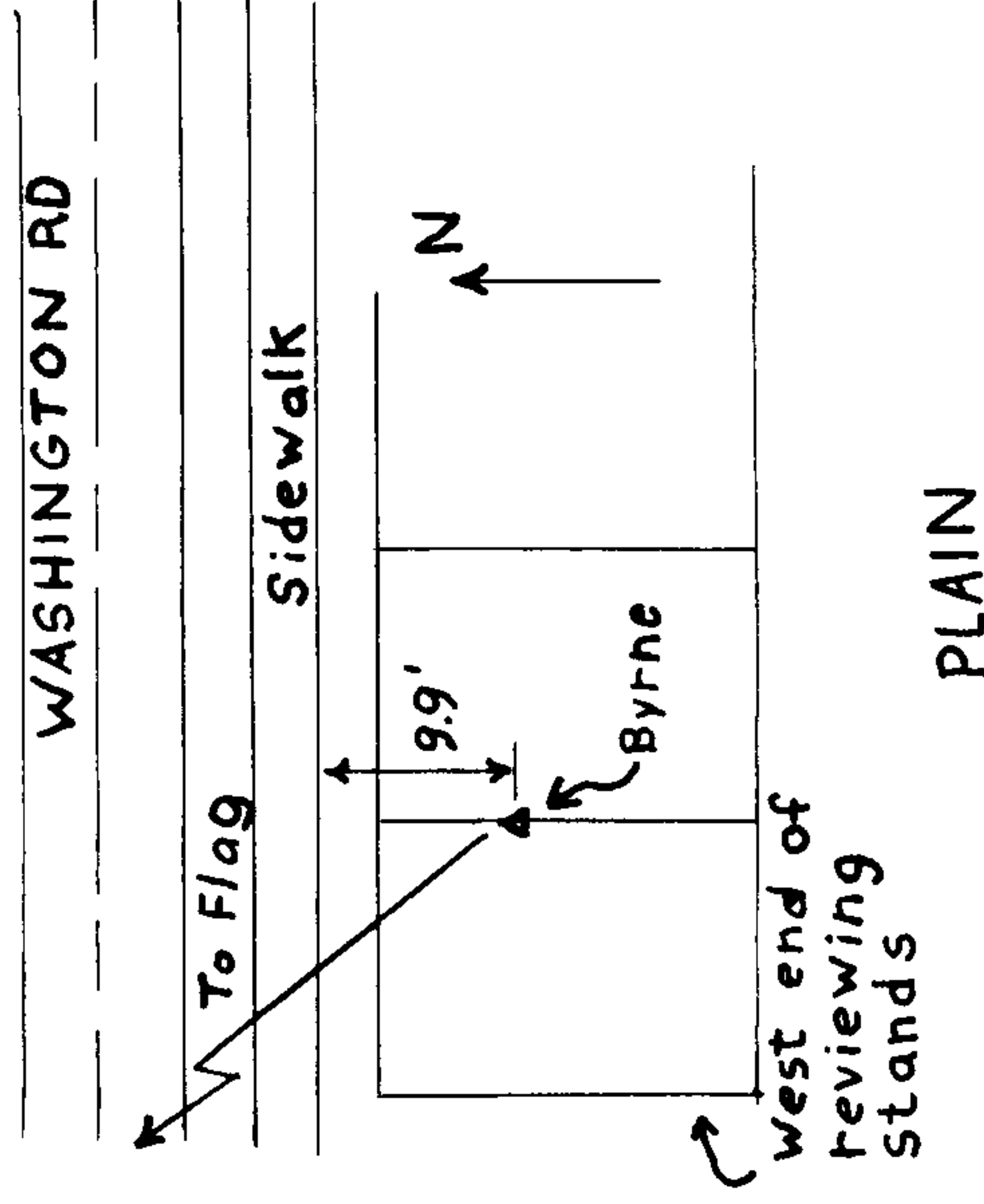
	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER:	587104.147	4582794.916	UTM Meters
ELEV: 156.975'; Order III	1926190.841	15035386.203	UTM Feet
DATUM: Mean Sea Level, 1929	10117.020	9908.340	Local (Flag)
	73°57'29.1812"W	41°23'37.9941"N	Geographical

DESCRIPTION: NAME - *Byrne* ABBREVIATION - *Byrne* SKETCH:

- The marker is a copper disk 2" in diameter and set in an 8"-diameter concrete monument. The top of the monument is flush with the ground and is inscribed:

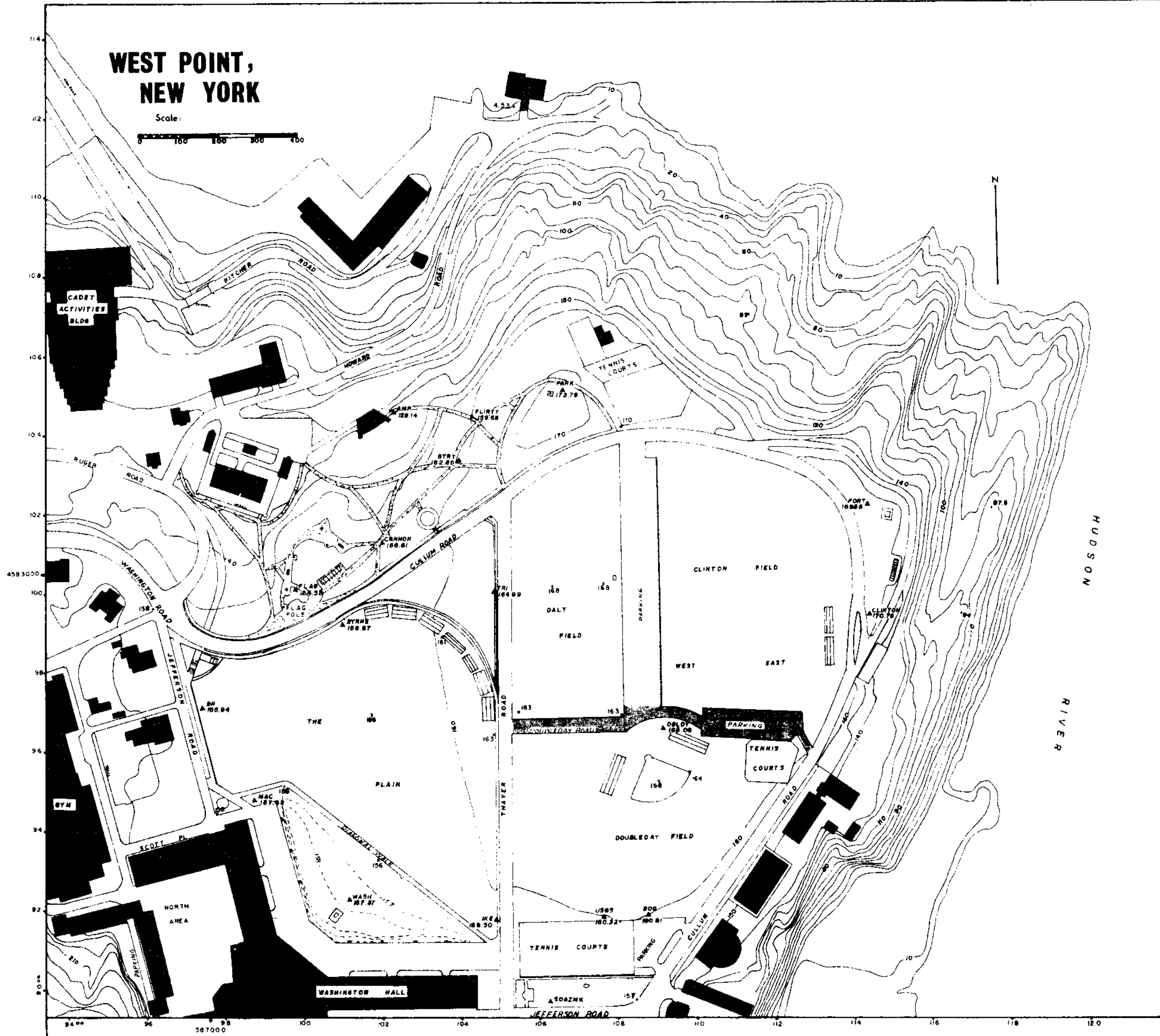


- Origin unknown but it was probably established between 1926 and 1933 by military personnel assigned to USMA. The original elevation was 157.25', based on the 1926 datum for mean sea level.
- The marker was originally used in the USMA cadet triangulation net. It was resurveyed and releveled in 1972 by the Survey Committee, Department of ES&GS, USMA.
- Byrne* is located on the Plain southeast of marker *Flag* (azimuth 128°04'17", distance 148.623') and 9.9' from sidewalk bordering the Plain.



# WEST POINT, NEW YORK

Scale: 0 100 200 400



Prepared by MAJ AA Kopsak  
Assisted by Capt T Calahan 1972

LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 6

STATION: CANNON

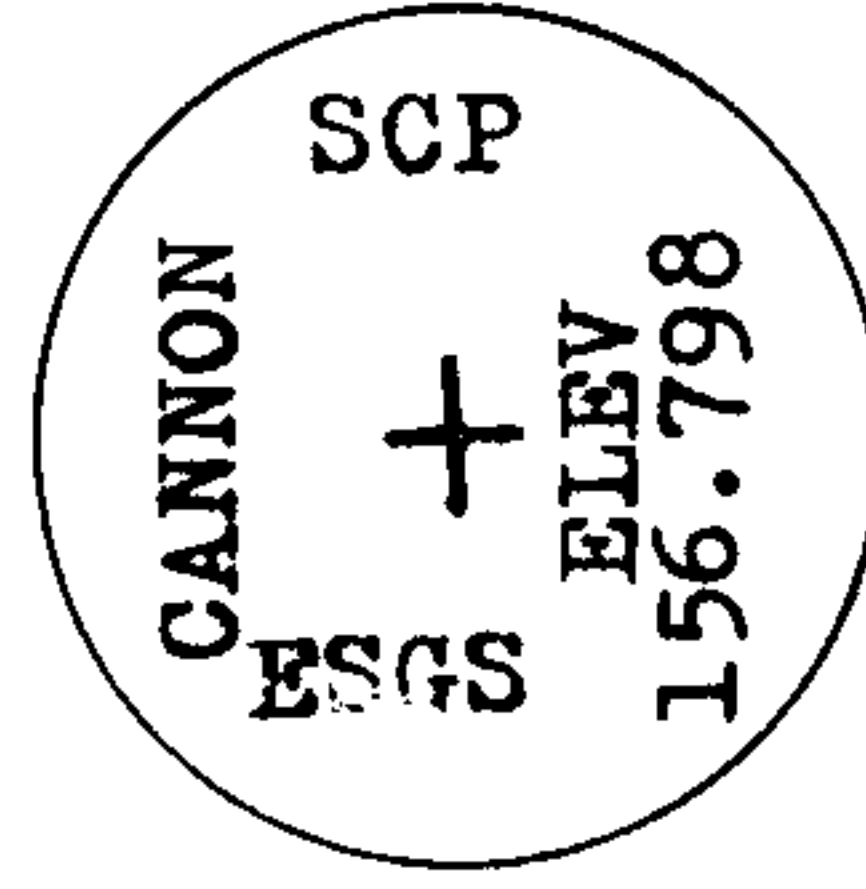
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	587137.049	4582857.843	UTM Meters
ELEV: 156.798'; Order III	1926298.786	15035592.658	UTM Feet
DATUM: Mean Sea Level, 1929	10227.380	10113.514	Local (Flag)
	73°57'27.7320"W	41°23'40.0215"N	Geographical

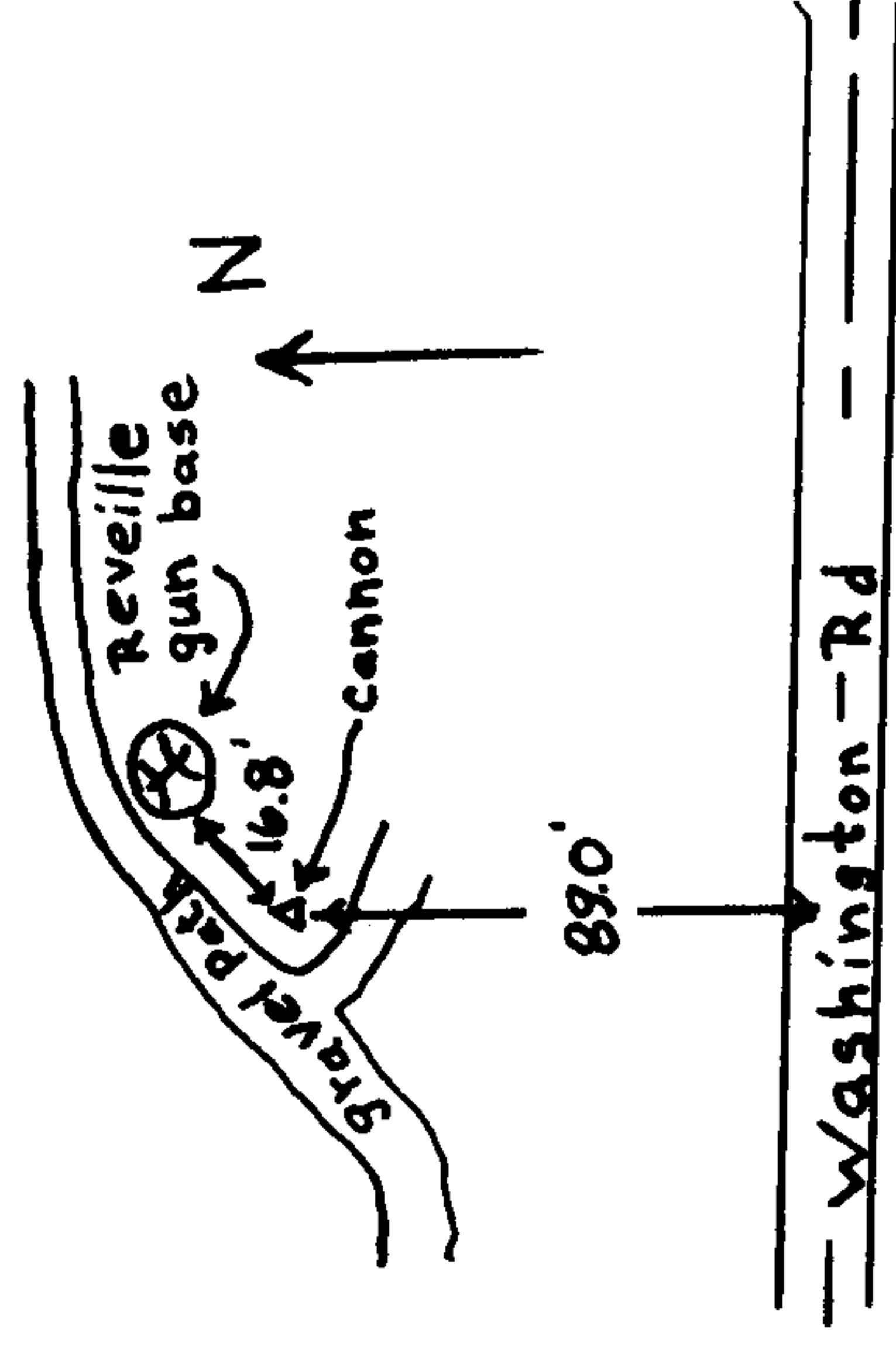
DESCRIPTION: NAME - Cannon ABBREVIATION - Can

SKETCH:

1. The marker is a brass disk 3" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:

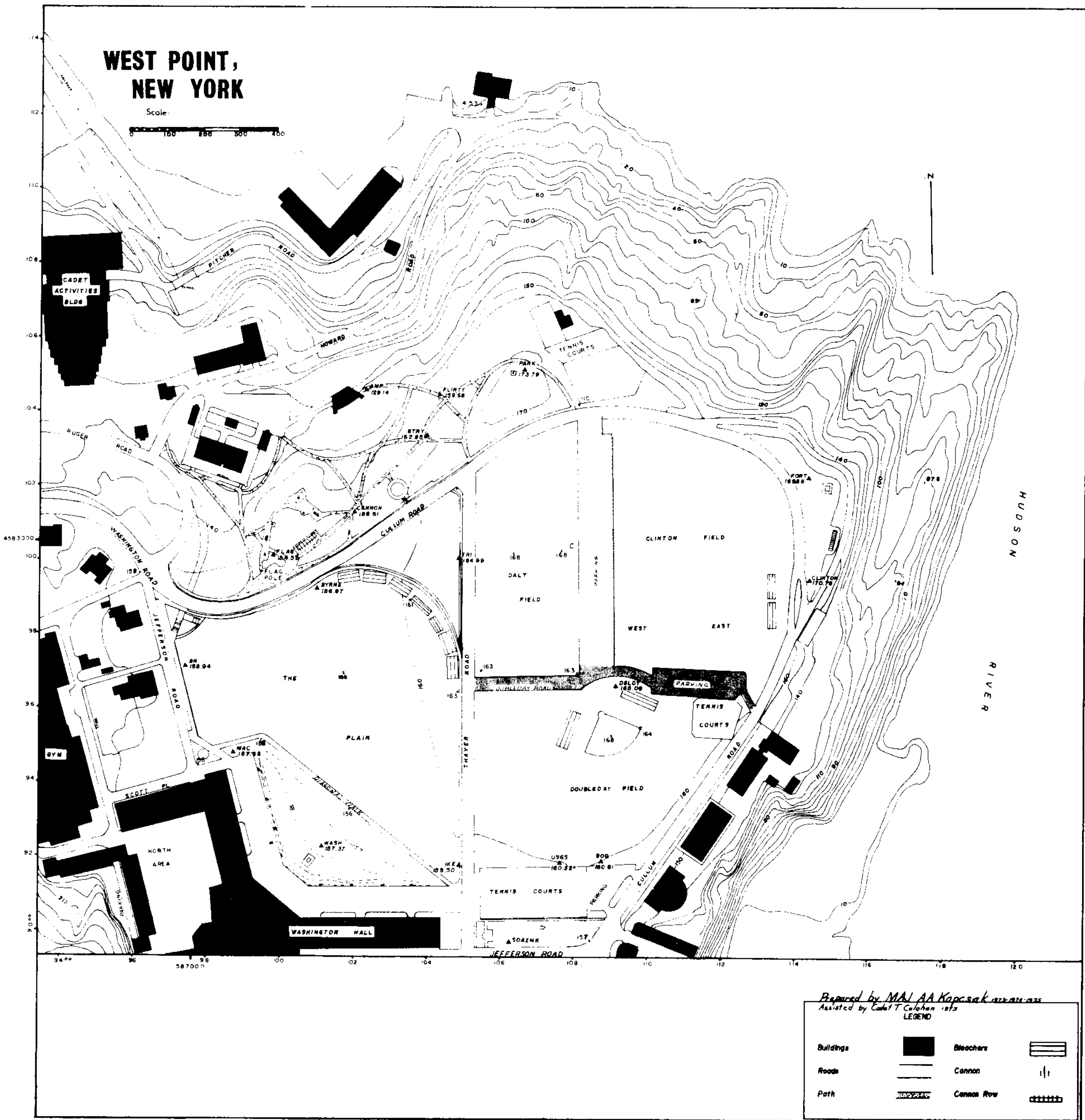


2. The marker was set in the winter of 1973 by MAJ A. A. Kopcak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
3. The marker is located 16.8' southwest of the base of the reveille gun and 89.0' from the center line of Washington Road.



# WEST POINT, NEW YORK

Scale:  
0 100 200 400



Prepared by MAJ AA Kapsak  
Assisted by Capt T Colahan 1975  
LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Canon Row	

NO: 7

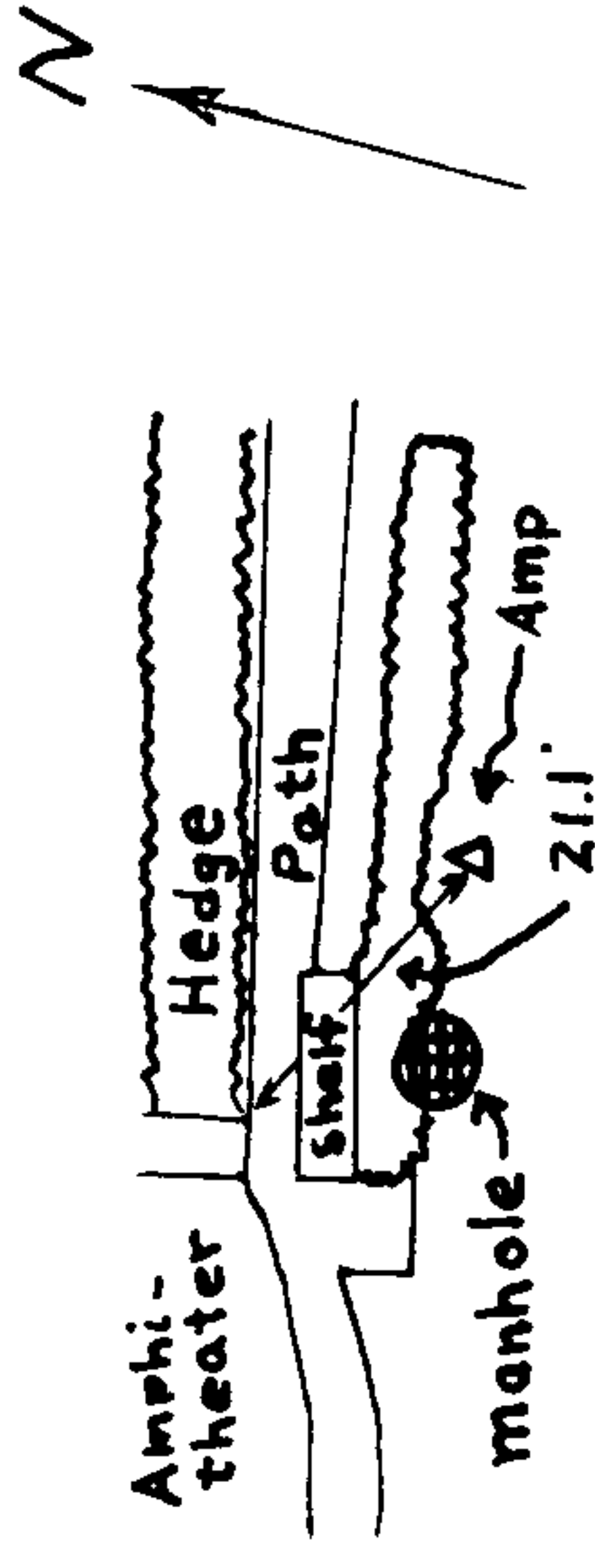
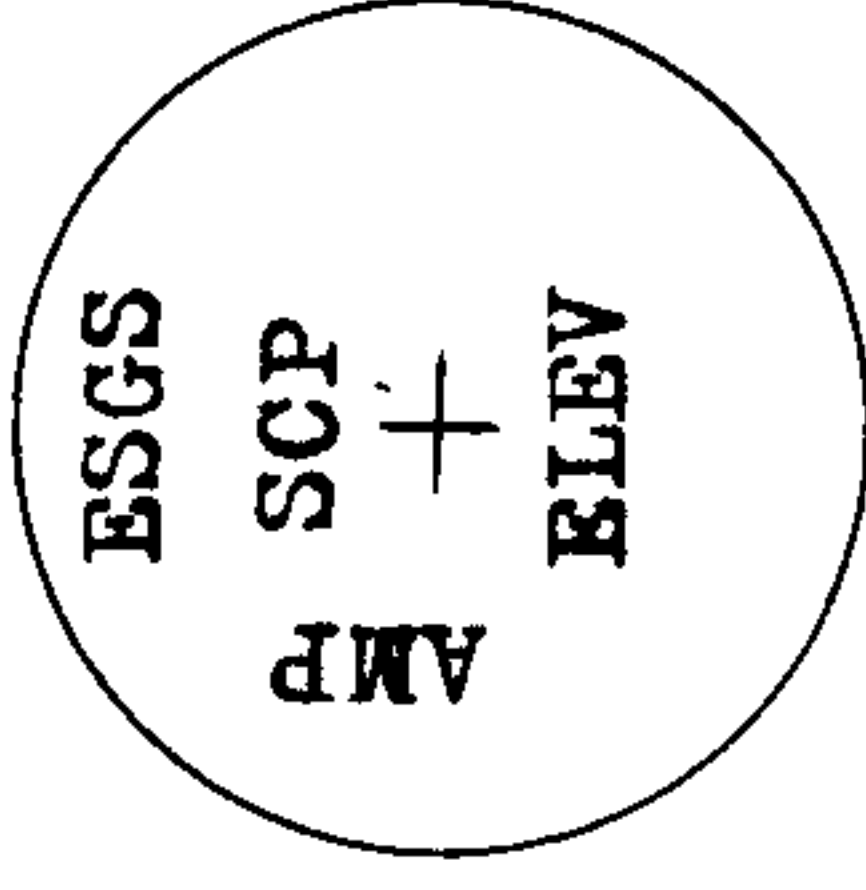
STATION: AMPHITHEATER

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Grid	
	Easting	Northing
HORIZONTAL CONTROL ORDER:	587146.352	4582958.740
ELEV: 129.145'; Order III	1926329.308	15035923.683
DATUM: Mean Sea Level, 1929	10261.783	10444.158
	73°57'27.2792"W	41°23'43.2892"N
		Local (Flag)
		Geographical

DESCRIPTION: NAME - *Amphitheater* ABBREVIATION - *Amp* SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:

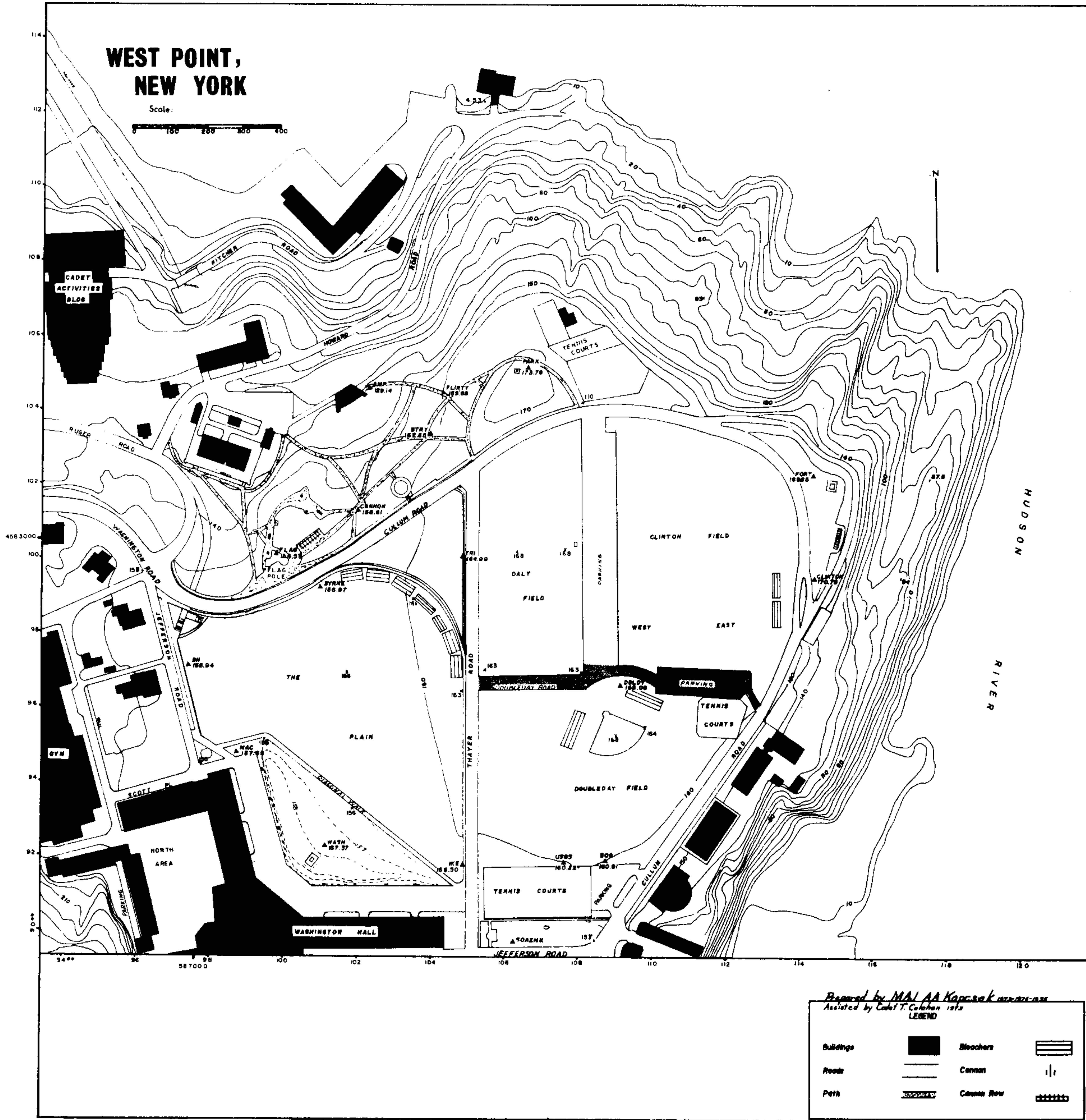


2. The marker was set in the summer of 1972 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
3. It is located 21.1' southeast of the southeastern corner of the Amphitheater on Trophy Point. It is south of the hedge line.



# WEST POINT, NEW YORK

Scale: 0 100 200 300 400



Prepared by MAJ AA Kapszak  
Assisted by Capt T. Colahan 1975

### LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 8

STATION: BATTERY

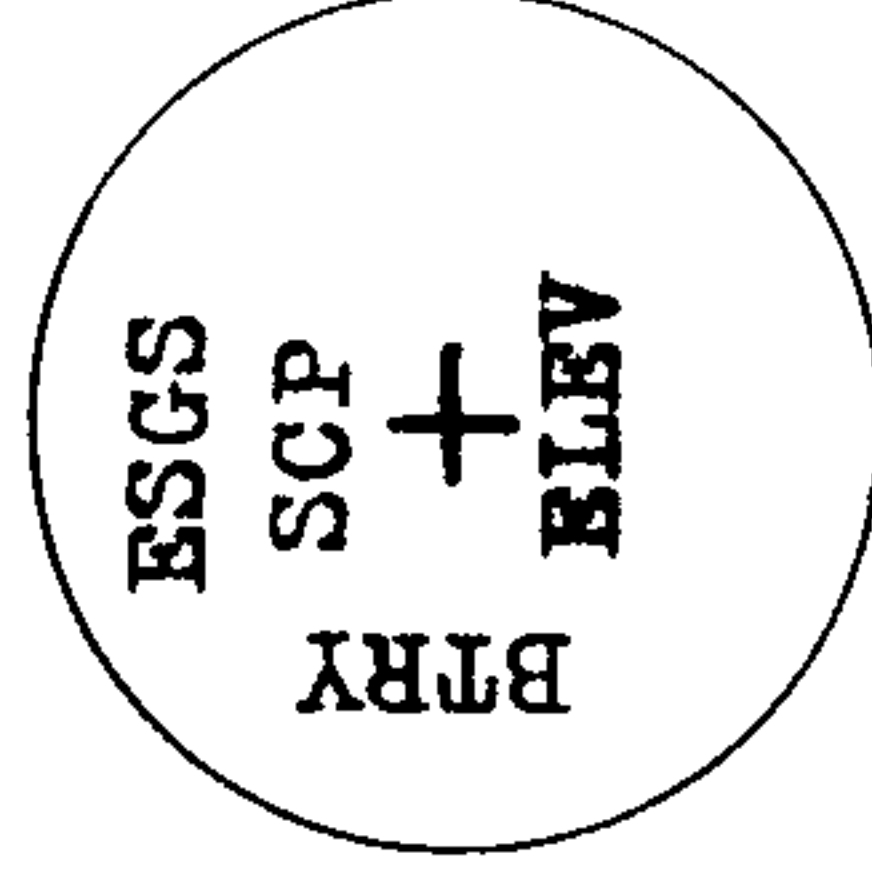
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER: I	587196.794	4582920.768	UTM Meters
ELEV: 162.85'; Order III	1926494.800	15035799.104	UTM Feet
DATUM: Mean Sea Level, 1929	10425.802	10317.646	Local (Flag)
	73°57'25.1271"W	41°23'42.0384"N	Geographical

DESCRIPTION: NAME - Battery ABBREVIATION - Btry

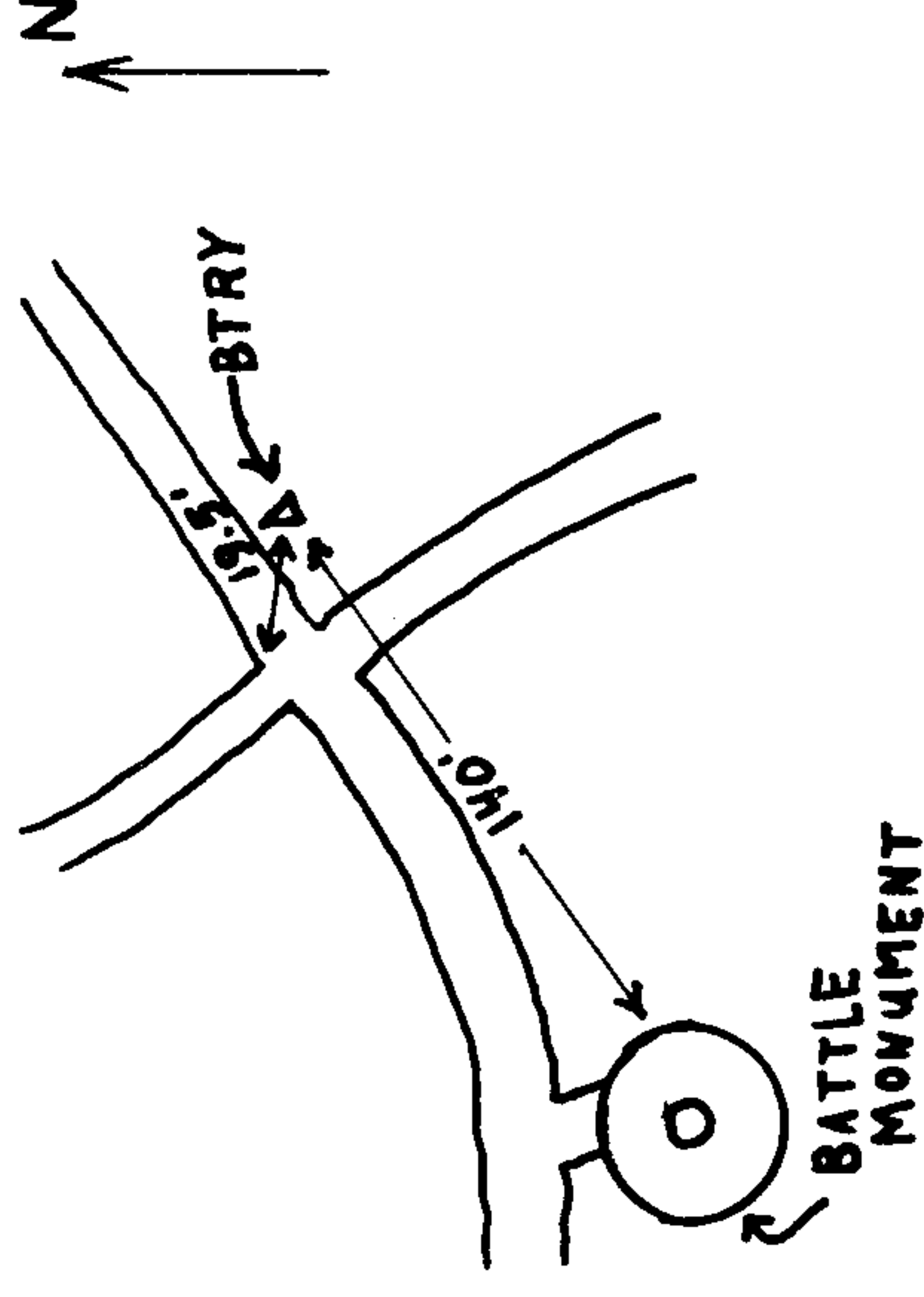
SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



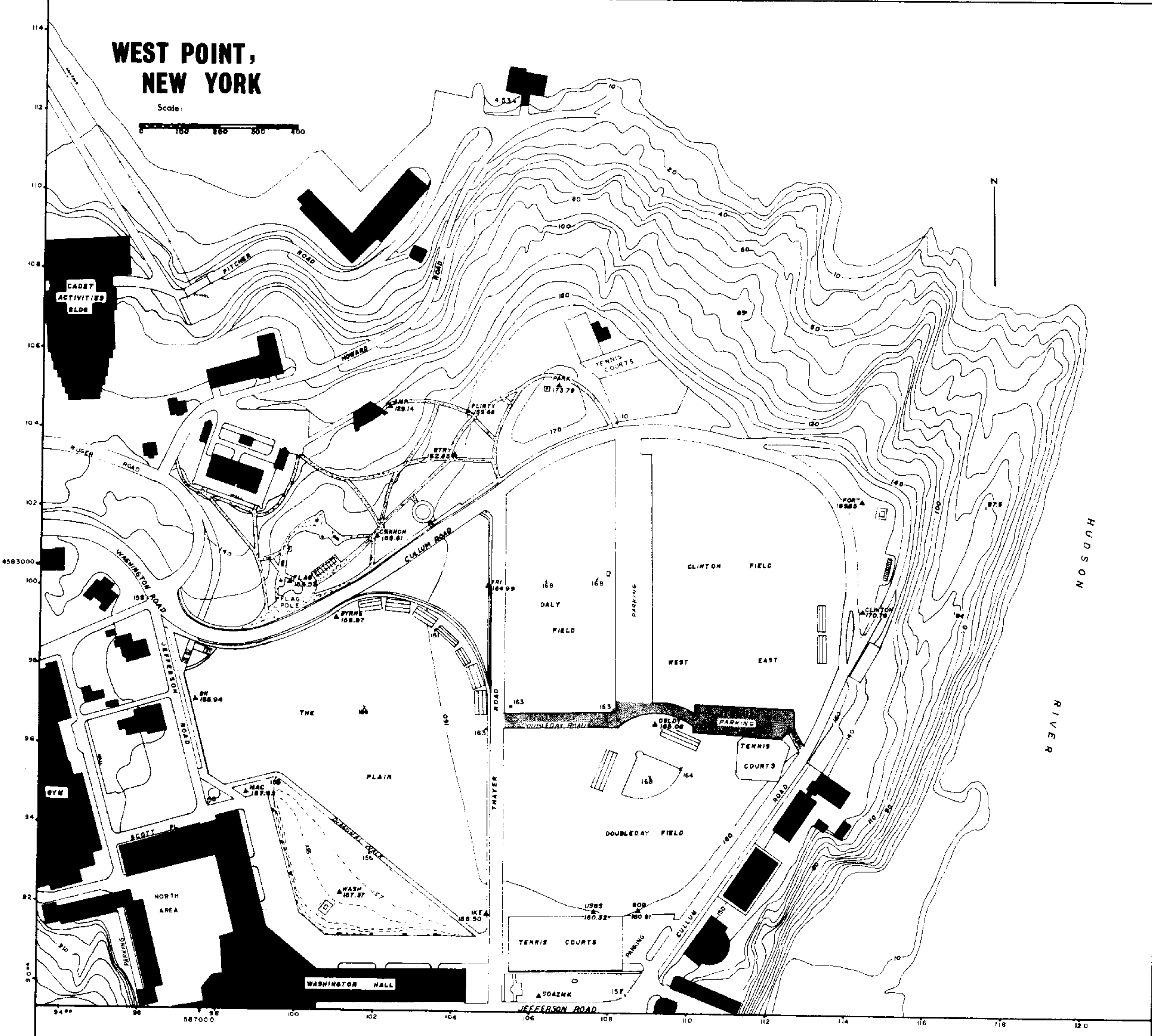
2. The marker was set in the summer of 1973 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

3. It is located east of the confluence of trails 140' northeast of Battle Monument. It overlooks and is on the hill to the southeast of the Amphitheater at Trophy Point. It is 19.5' east of the northern edge of the junction of trails.




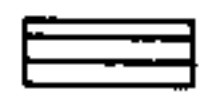
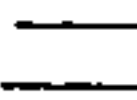



# WEST POINT, NEW YORK

Scale: 



Prepared by MAJ AA Kapsak 112-112-112  
Assisted by Cadet Colahan 112

LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 9

STATION: FLIRTY

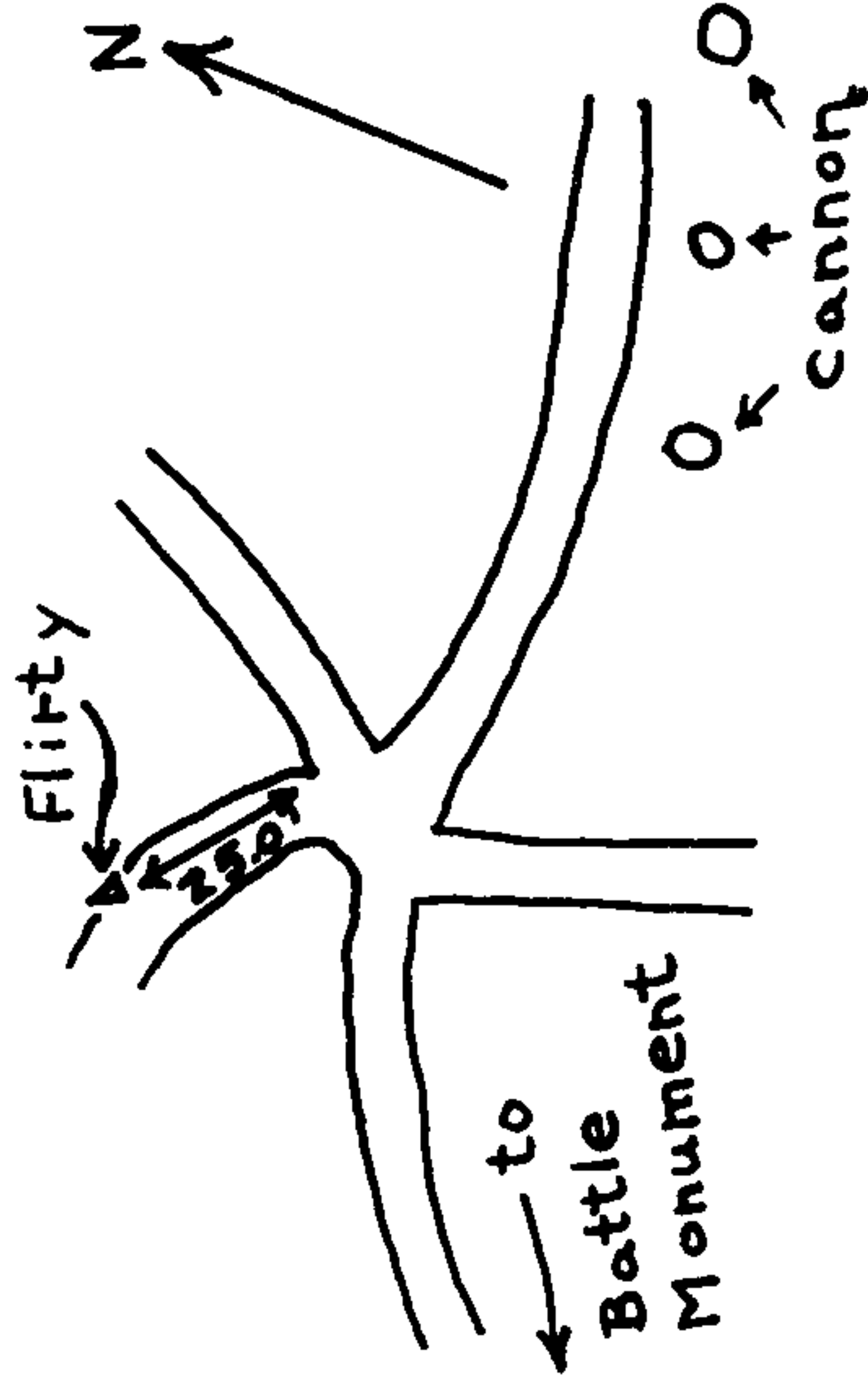
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER: I	587206.418	4582953.911	UTM Meters
ELEV: 159.68'; Order III	1926526.374	15035907.841	UTM Feet
DATUM: Mean Sea Level, 1929	10458.649	10426.005	Local (Flag)
	73°57'24.6956"W	41°23'43.1092"N	Geographical

DESCRIPTION: NAME - *Flirty* ABBREVIATION - *Flirty* SKETCH:

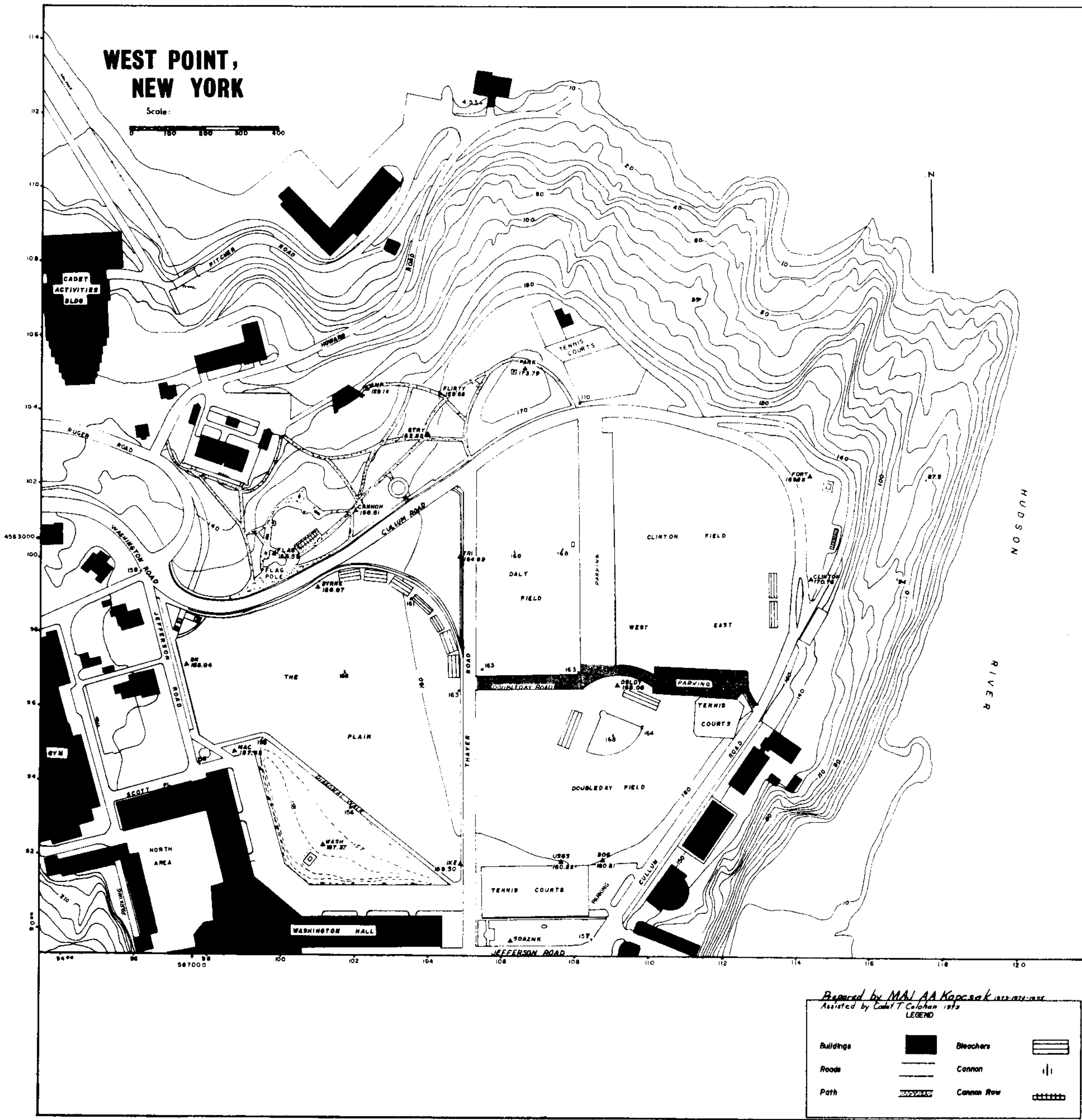
1. The 1"-diameter aluminum marker has a center punch mark. It is set in a 4"-diameter concrete monument on the northeastern side of an asphalt trail. The origin is unknown. Horizontal and vertical controls were re-established during the spring of 1973 by the Department of ES&GS, USMA, West Point, New York.

2. The marker is located on the northernmost edge of a path leading to Flirtation Walk and the Amphitheater from the vicinity of the row of modern cannons located to the east of Battle Monument. The path is along the eastern side of the amphitheater area. The marker is 25.0' from the northernmost edge of the intersection of five paths.



# WEST POINT, NEW YORK

Scale:  
0 100 200 400



Prepared by MALAA Kapsak 1972  
Assisted by Cadet Calahan 1975

LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 10

STATION: TRIANGLE

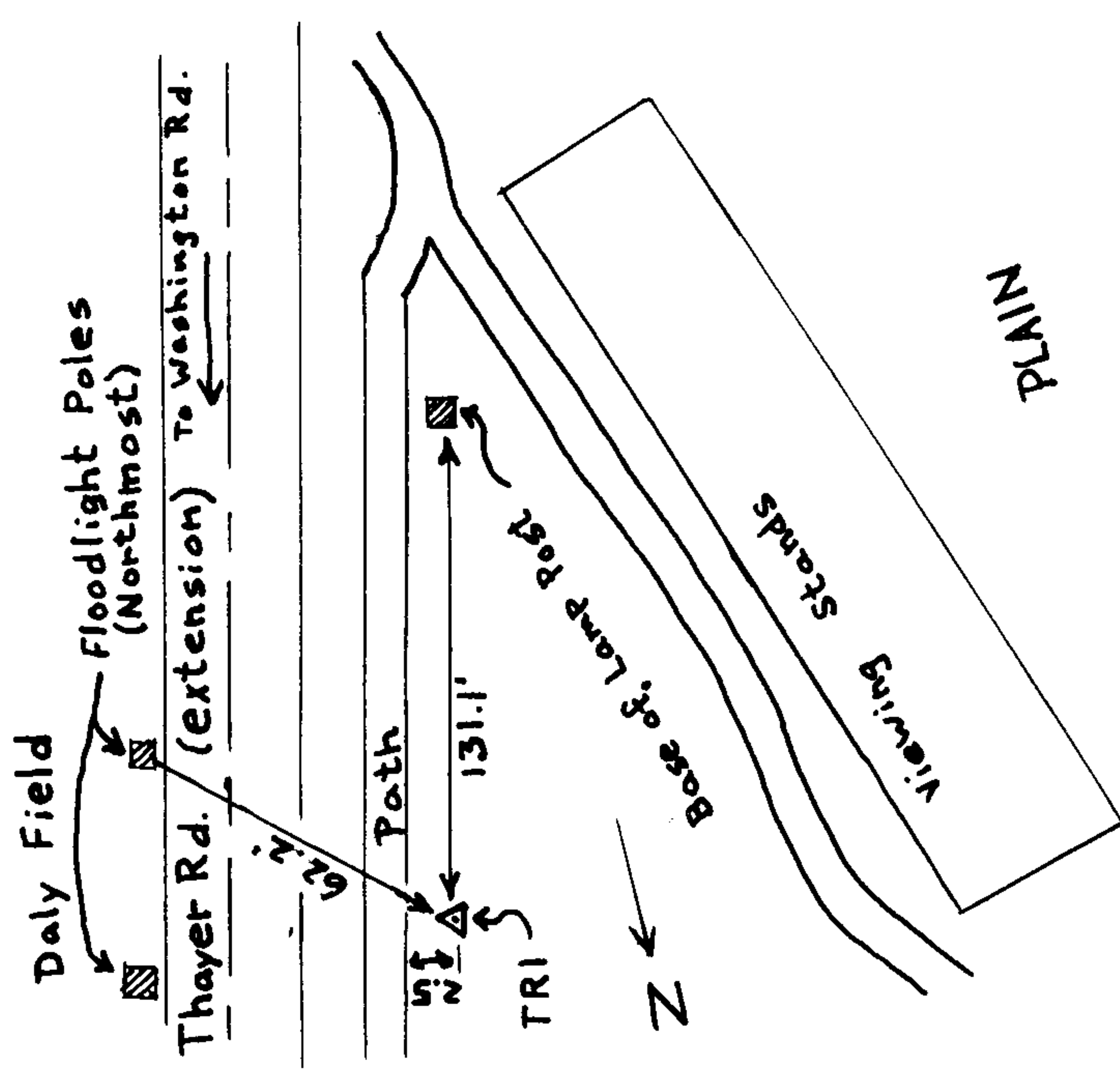
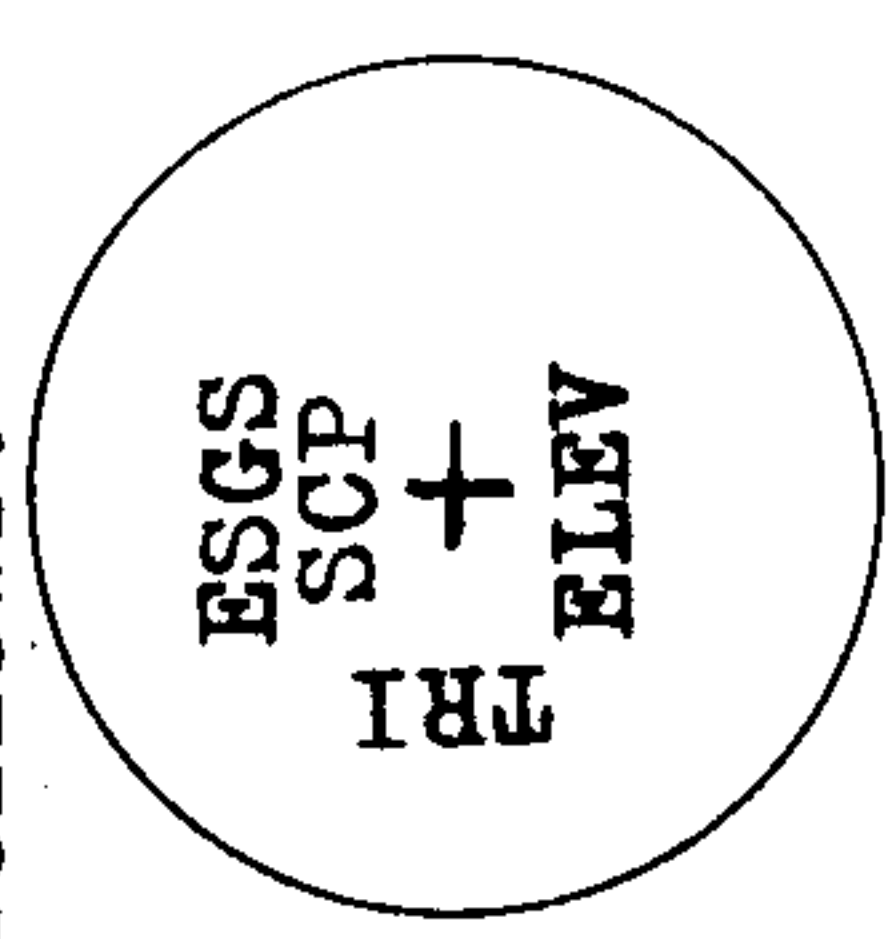
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	587221.868	4582819.437	UTM Meters
ELEV: 164.99'; Order III	1926577.064	15035466.653	UTM Feet
DATUM: Mean Sea Level, 1929	10504.161	9984.253	Local (Flag)
	73°57'24.1000"W	41°23'38.7432"N	Geographical

DESCRIPTION: NAME - Triangle ABBREVIATION - Tri

SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:

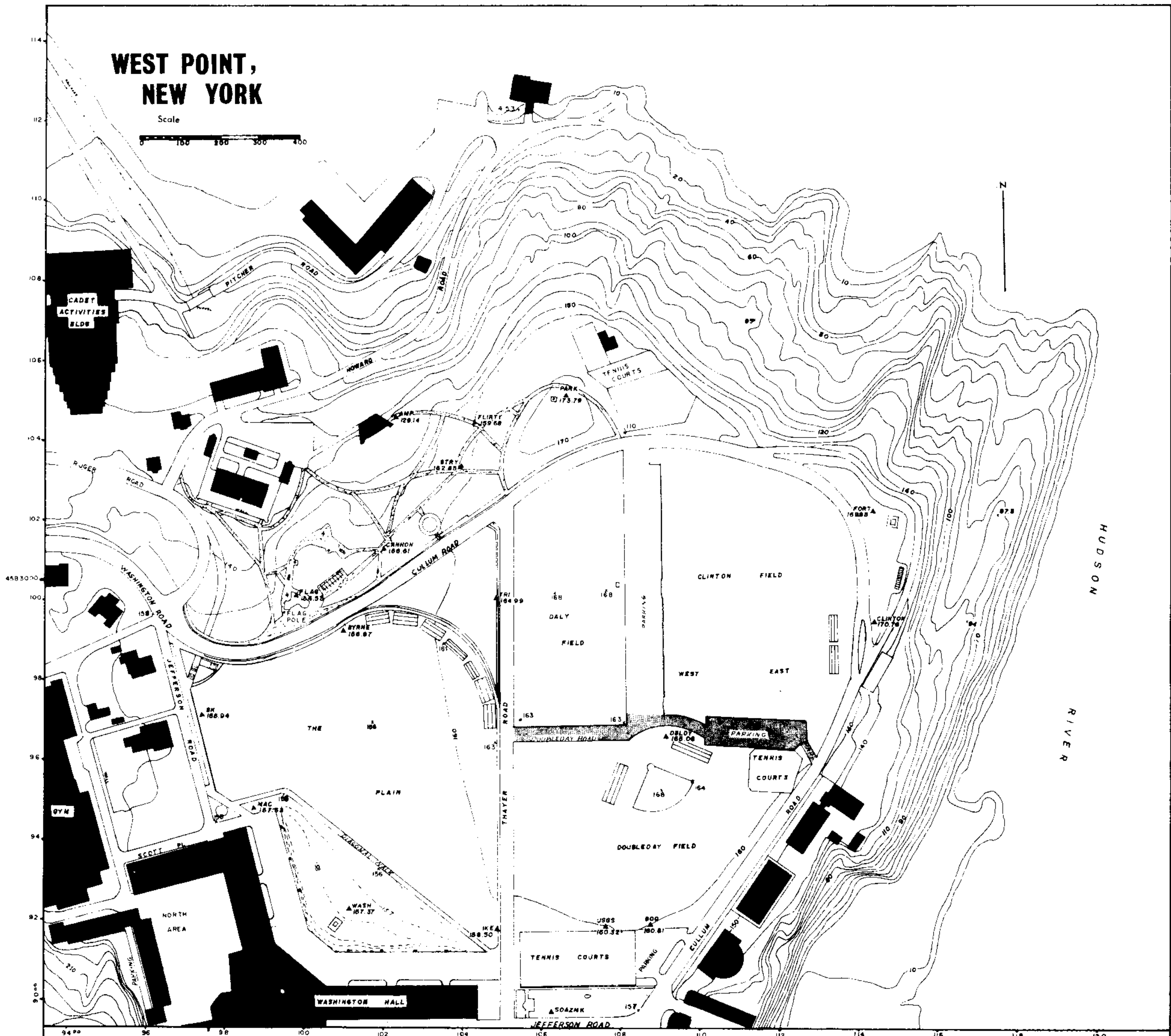


2. The marker was set in the summer of 1972 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

3. It is located 2.5' to the west of the path which runs parallel to and to the west of Thayer Road (extension) and west of Daly Field. It is 131' north of the lamppost nearest the southern corner of the triangle formed by Thayer Road (extension), Washington Road and the sidewalk circling the Plain.

# WEST POINT, NEW YORK

Scale  
0 100 200 300 400



Prepared by MAJ AA Kopsak  
Assisted by Cadet Calahan 1972  
LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 11

STATION: PARK

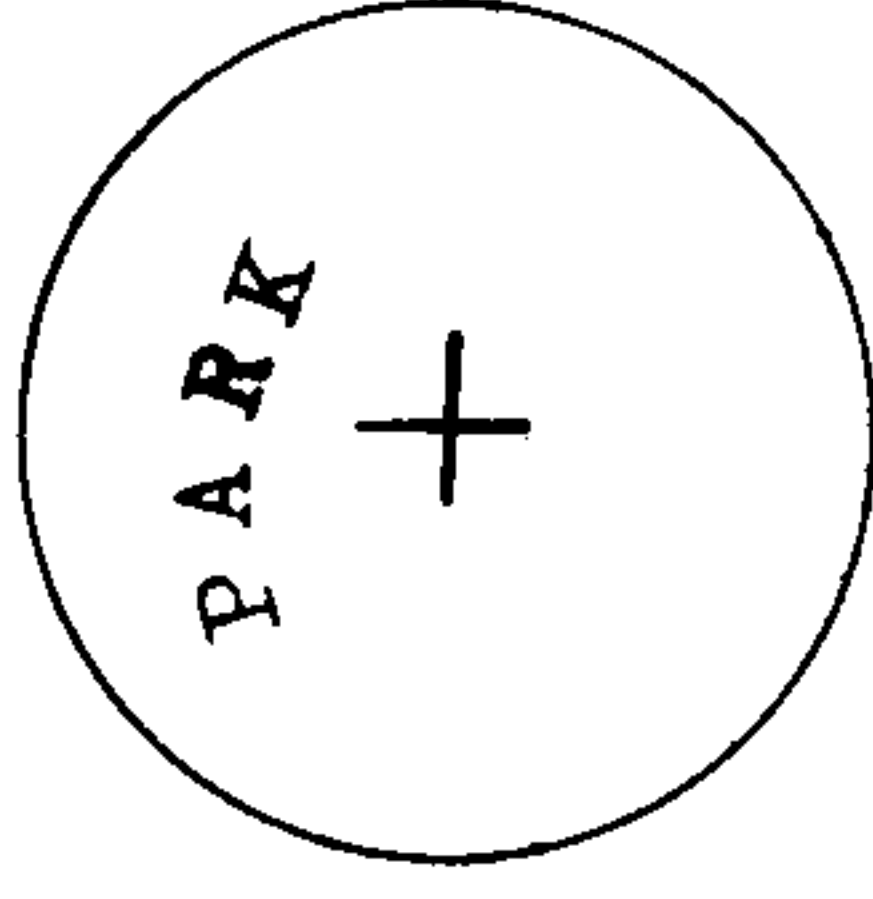
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	587277.571	4582974.126	UTM Meters
ELEV: 173.79'; Order III	1926759.818	15035974.162	UTM Feet
DATUM: Mean Sea Level, 1929	10692.856	10489.583	Local (Flag)
	73°57'21.6215"W	41°23'43.7368"N	Geographical

DESCRIPTION: NAME - Park ABBREVIATION - Park

SKETCH:

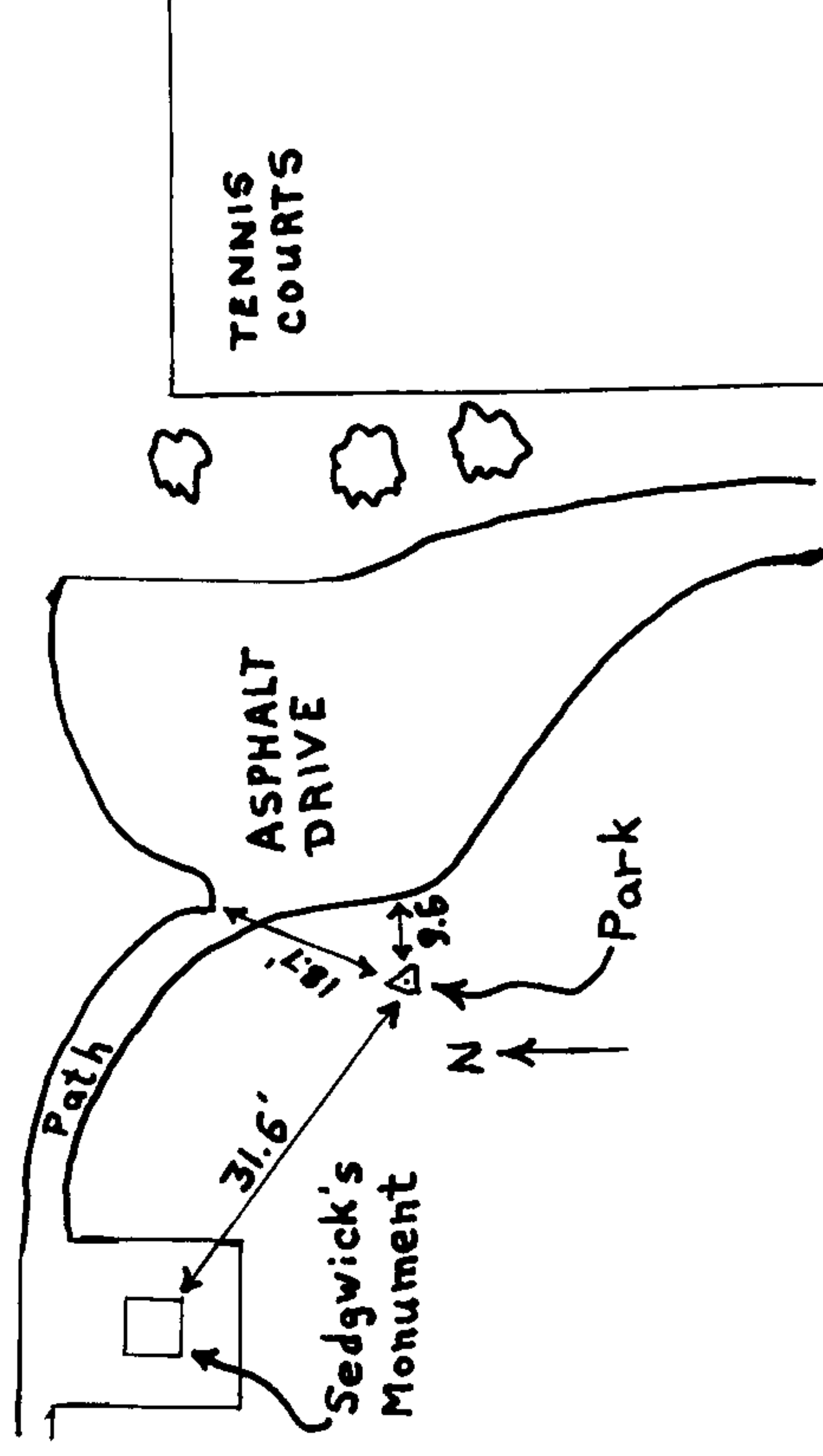
1. The marker is a copper disk 2" in diameter and set in an 8"-diameter concrete monument. The top of the monument is flush with the ground and is inscribed:



2. Origin unknown but it was probably established between 1926 and 1933 by military personnel assigned to the USMA. The original elevation was 174.07', based on the 1926 datum for mean sea level.

3. The marker was originally used in the USMA cadet triangulation net. It was resurveyed and relevelled in 1972 by the Survey Committee, Department of ES&GS, USMA.

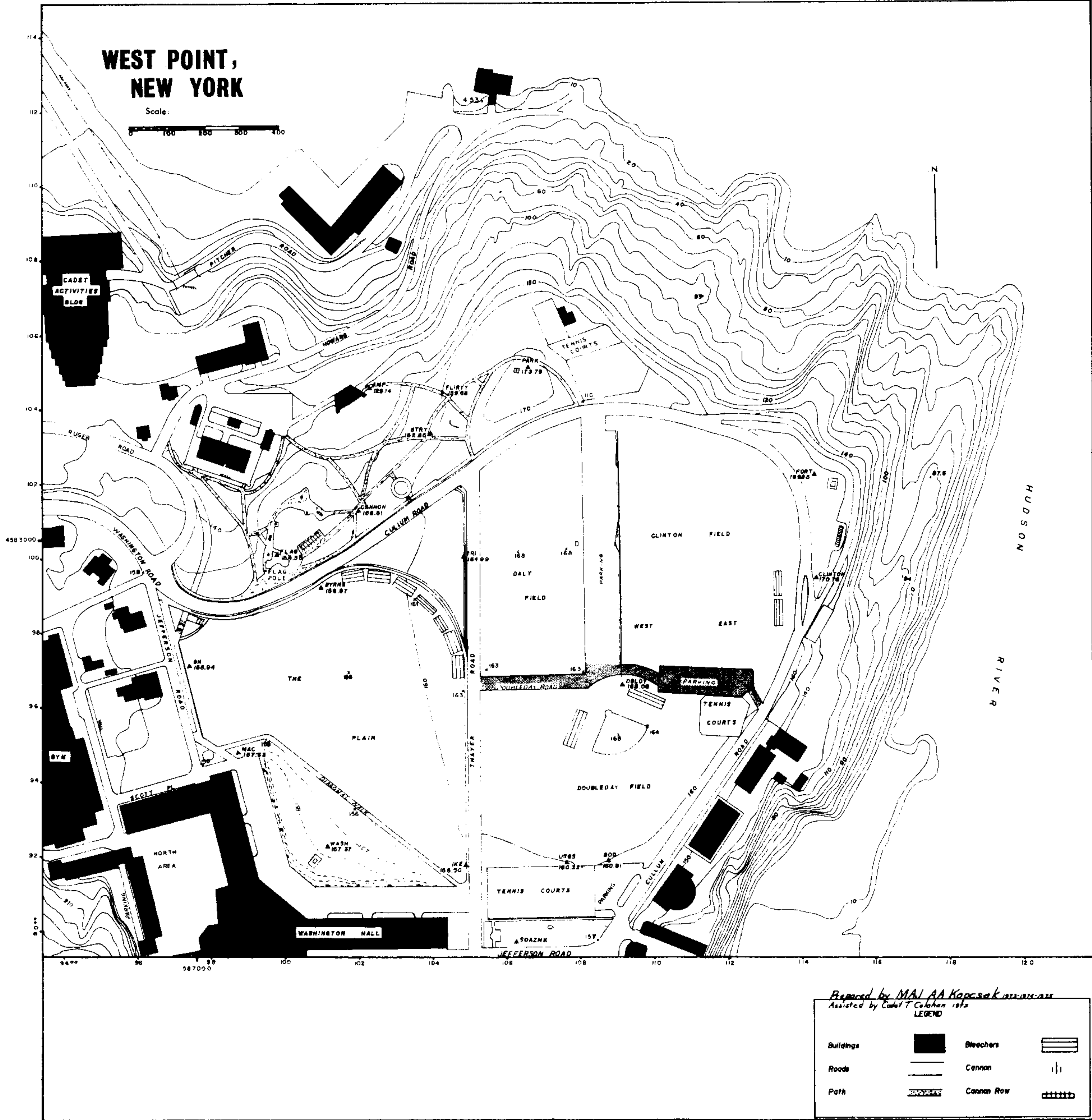
4. It is located to the west of the old hotel tennis courts 9.6' from the asphalt drive which parallels the courts. It is 31.6' southeast of the southeastern corner of the concrete base of Sedgwick's Monument.





# WEST POINT, NEW YORK

Scale:  
0 100 200 300 400



Prepared by MAJ AA Kapsak  
Assisted by Capt T Colahan 1975  
LEGEND

Buildings		Beeches	
Roads		Cannon	
Path		Cannon Row	

NO: 12

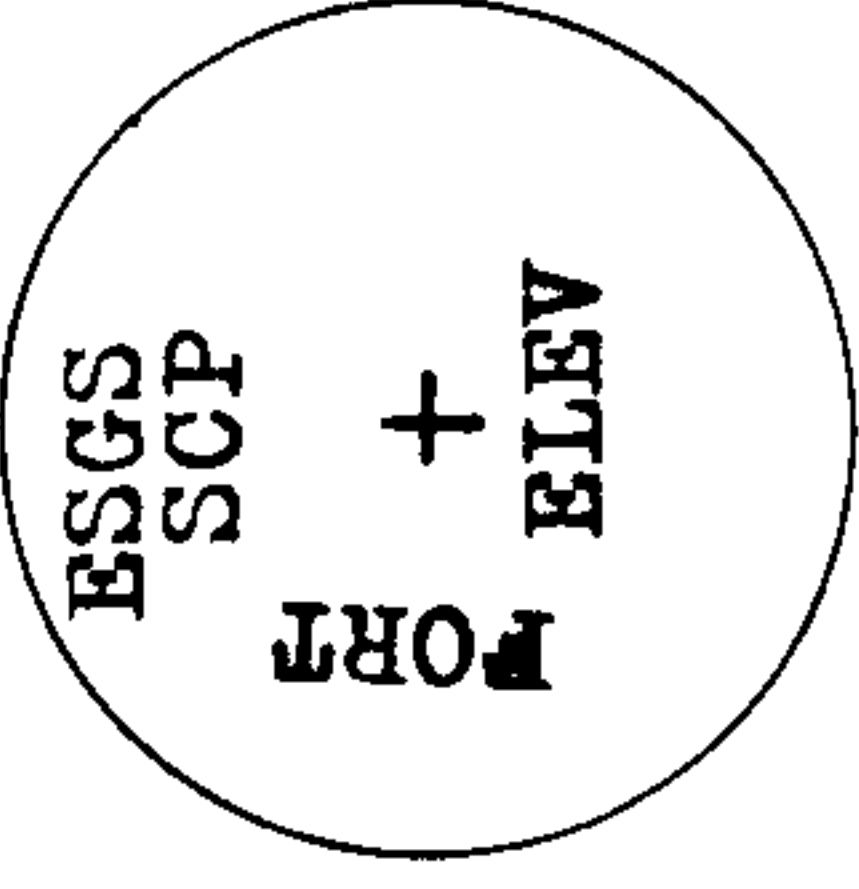
STATION: FORT

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Grid	
	Easting	Northing
HORIZONTAL CONTROL	587512.816	4582885.202
ORDER: 4	1927531.617	15035682.417
ELEV: 169.85; Order III	11461.179	10188.803
DATUM: Mean Sea Level, 1929	73°57'11.5392"W	41°23'40.761"N
		UTM Meters
		UTM Feet
		Local (Flag)
		Geographical

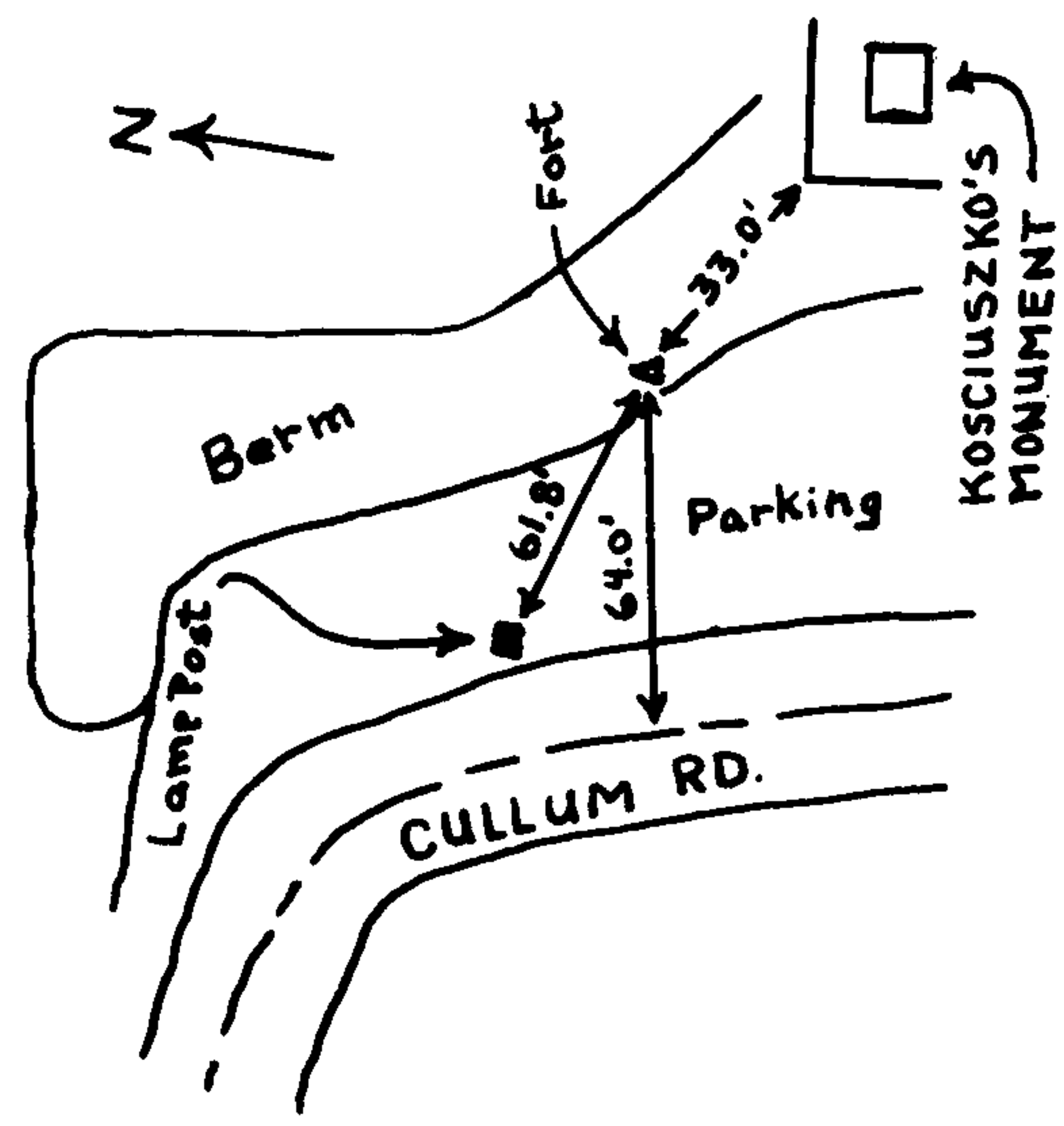
DESCRIPTION: NAME - Fort ABBREVIATION - Fort SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



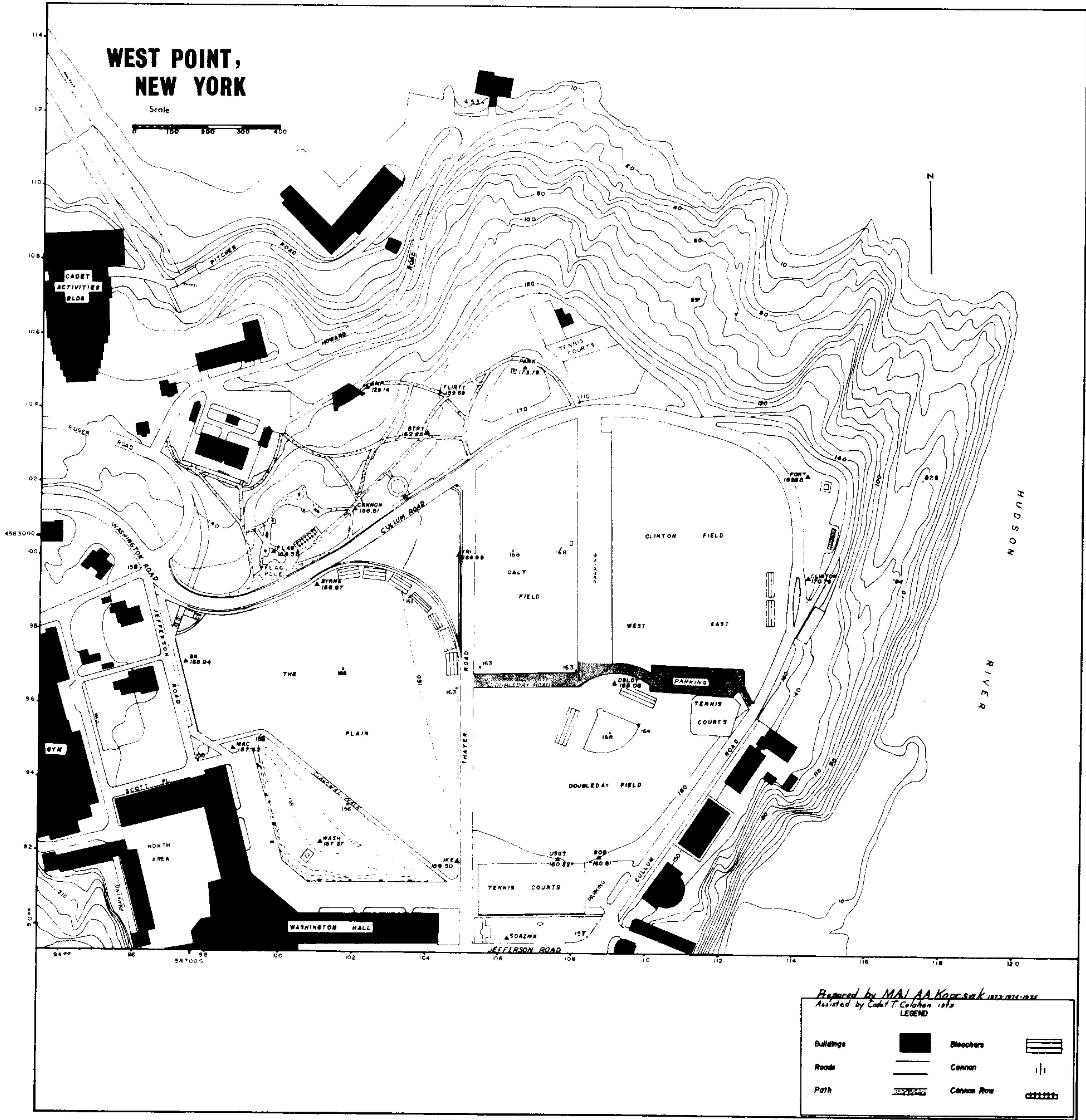
2. The marker was set in the summer of 1973 by MAJ A. A. Kopsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

3. It is located on the top of the berm of Fort Clinton and is 33.0' northwest of the northwestern corner of the curb around Kosciuszko's Monument.



# WEST POINT, NEW YORK

Scale  
0 100 200 300 400



Prepared by MAJ A.A. Kopsak *msw:ax*  
Assisted by Capt T. Calahan 1975

LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 13

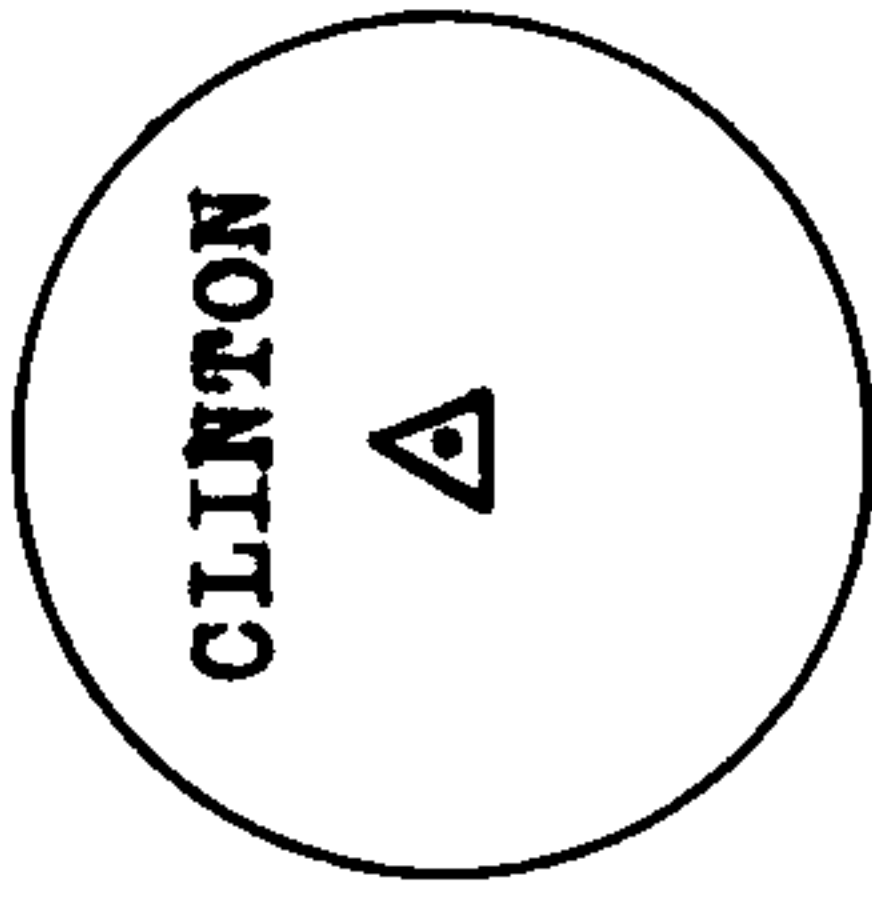
STATION: CLINTON

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

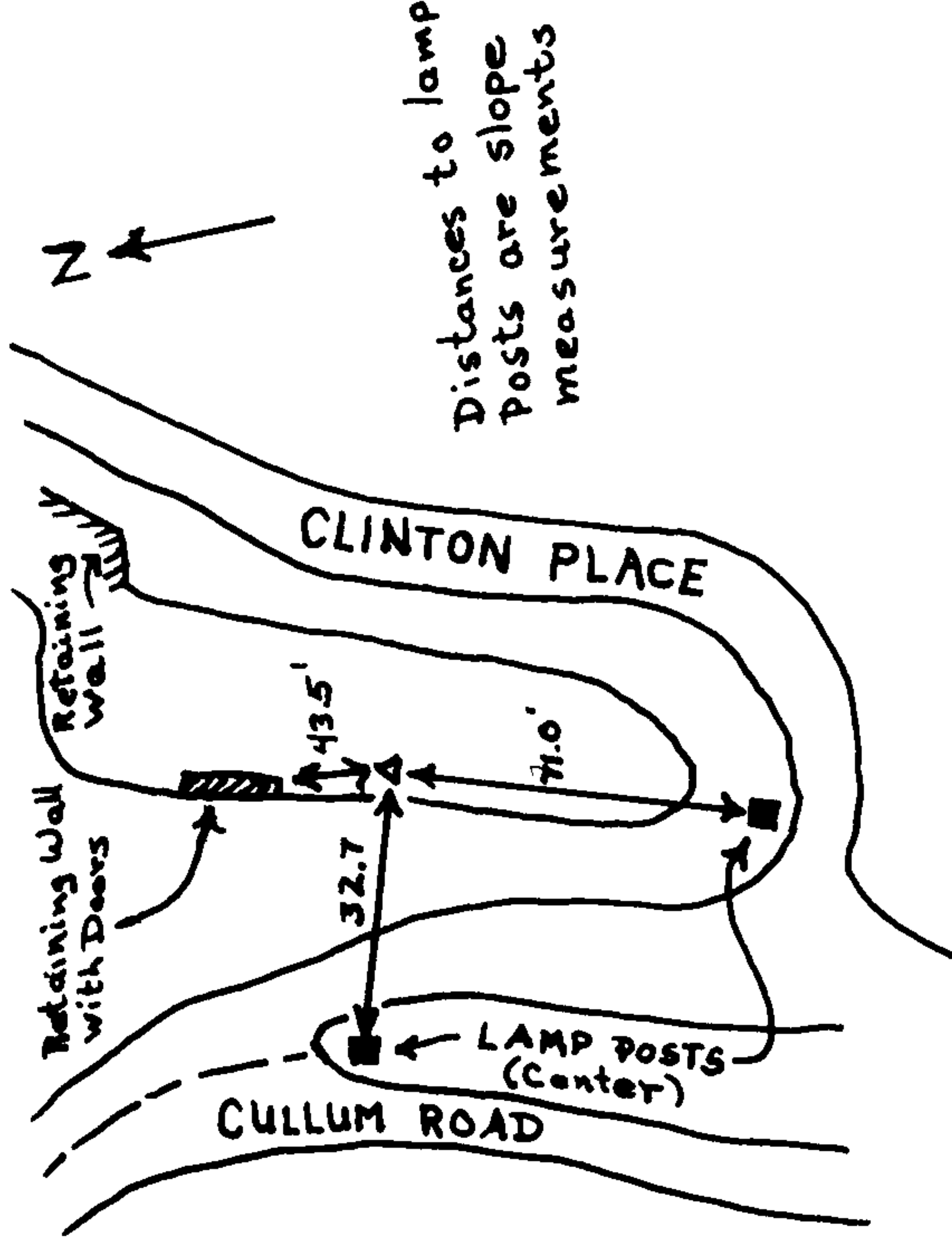
	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	587513.008	4582800.041	UTM Meters
ELEV: 170.76; Order III	1927532.247	15035403.020	UTM Feet
DATUM: Mean Sea Level, 1929	11458.531	9909.418	Local (Flag)
	73°57'11.5752"W	41°23'38.0005"N	Geographical

DESCRIPTION: NAME - Clinton ABBREVIATION - Clinton SKETCH:

1. The marker is a copper disk 2" in diameter and set in an 8"-diameter concrete monument. The top of the monument is flush with the ground and is inscribed:

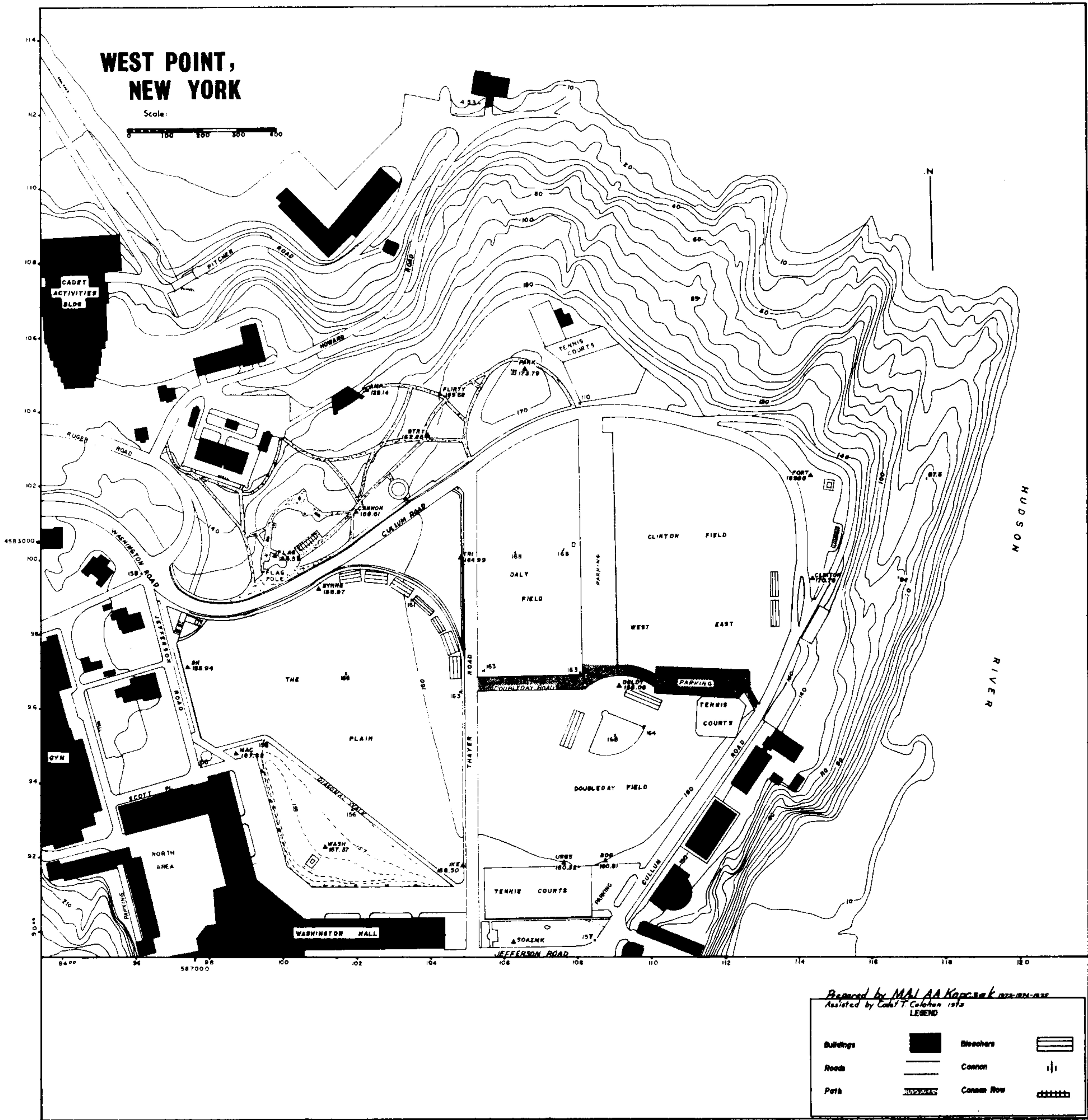


2. Origin unknown but it was probably established between 1926 and 1933 by military personnel assigned to the USMA. The original elevation was 171.02', based on the 1926 datum for mean sea level.
3. The marker was originally used in the USMA cadet triangulation net. It was resurveyed and relevelled in 1972 by the Survey Committee, Department of ES&GS, USMA.
4. The marker is located on the top of the south-eastern end of the berm for Fort Clinton.



# WEST POINT, NEW YORK

Scale:  
0 100 200 300 400



Prepared by MAJ AA Kapczak  
Assisted by Capt T. Colahan 1975

### LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Canon Row	

NO: 14

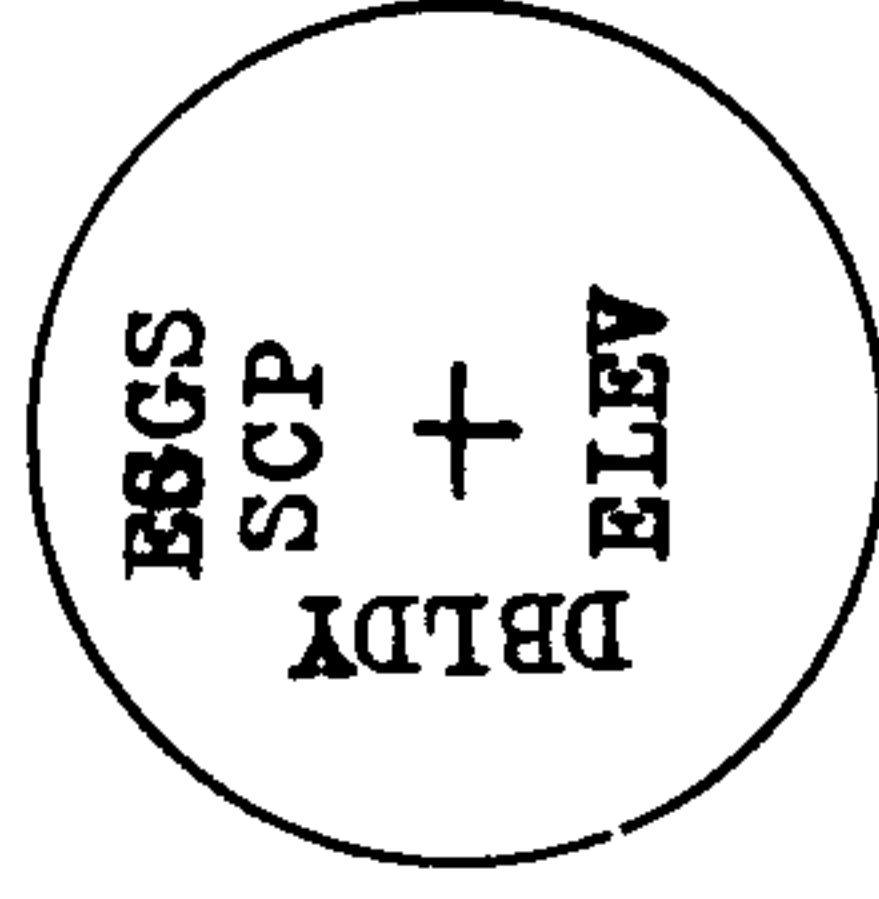
STATION: DOUBLEDAY

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

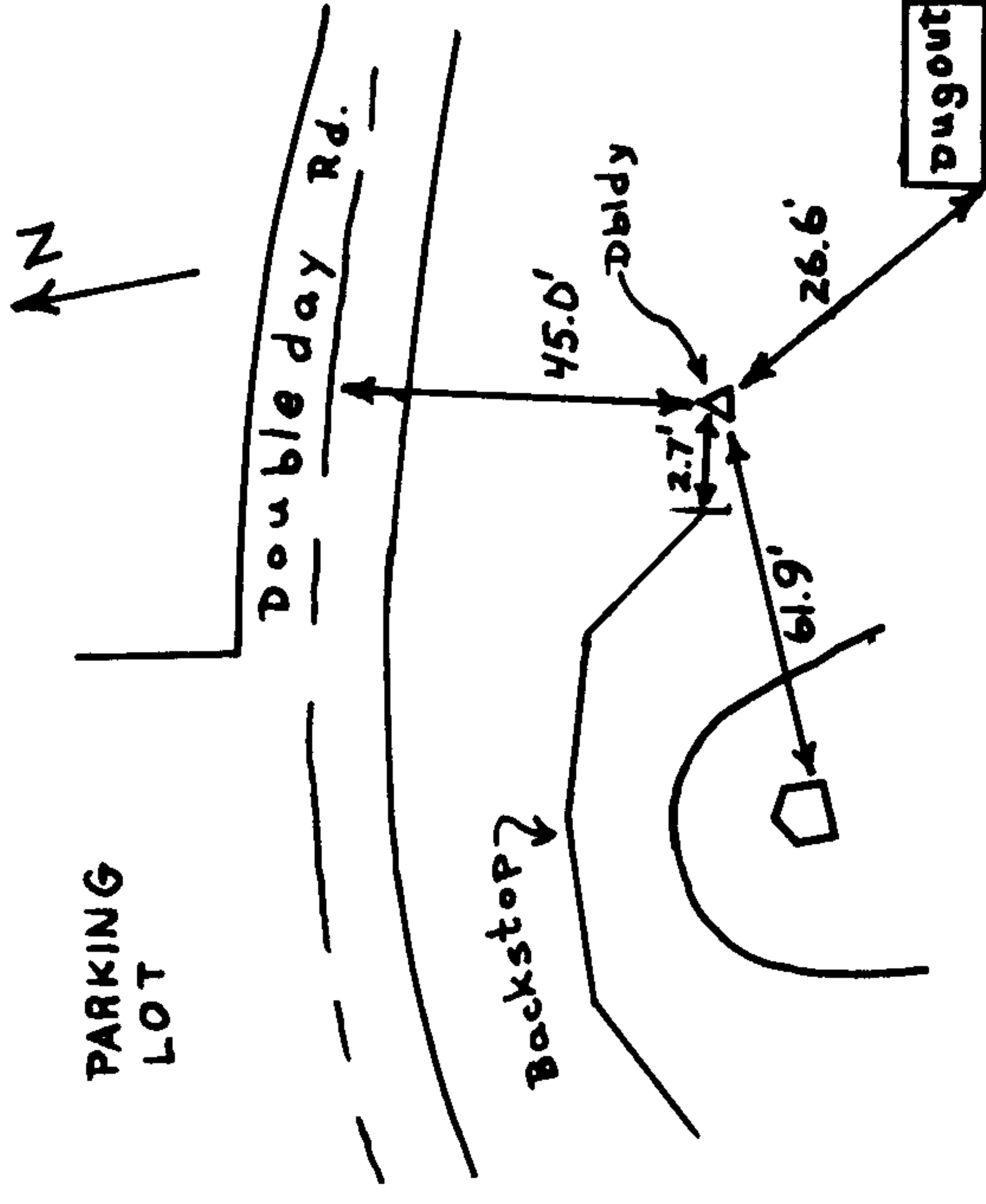
	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	587352.613	4582712.761	UTM Meters
ELEV: 165.06'; Order III	1927006.015	15035116.667	UTM Feet
DATUM: Mean Sea Level, 1929	10928.976	9629.258	Local (Flag)
	73°57'18.5263"W	41°23'35.2334"N	Geographical

DESCRIPTION: NAME - *Doubleday* ABBREVIATION - *Dbl dy* SKETCH:

- The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is below ground level and must be uncovered for use. It is inscribed as follows:

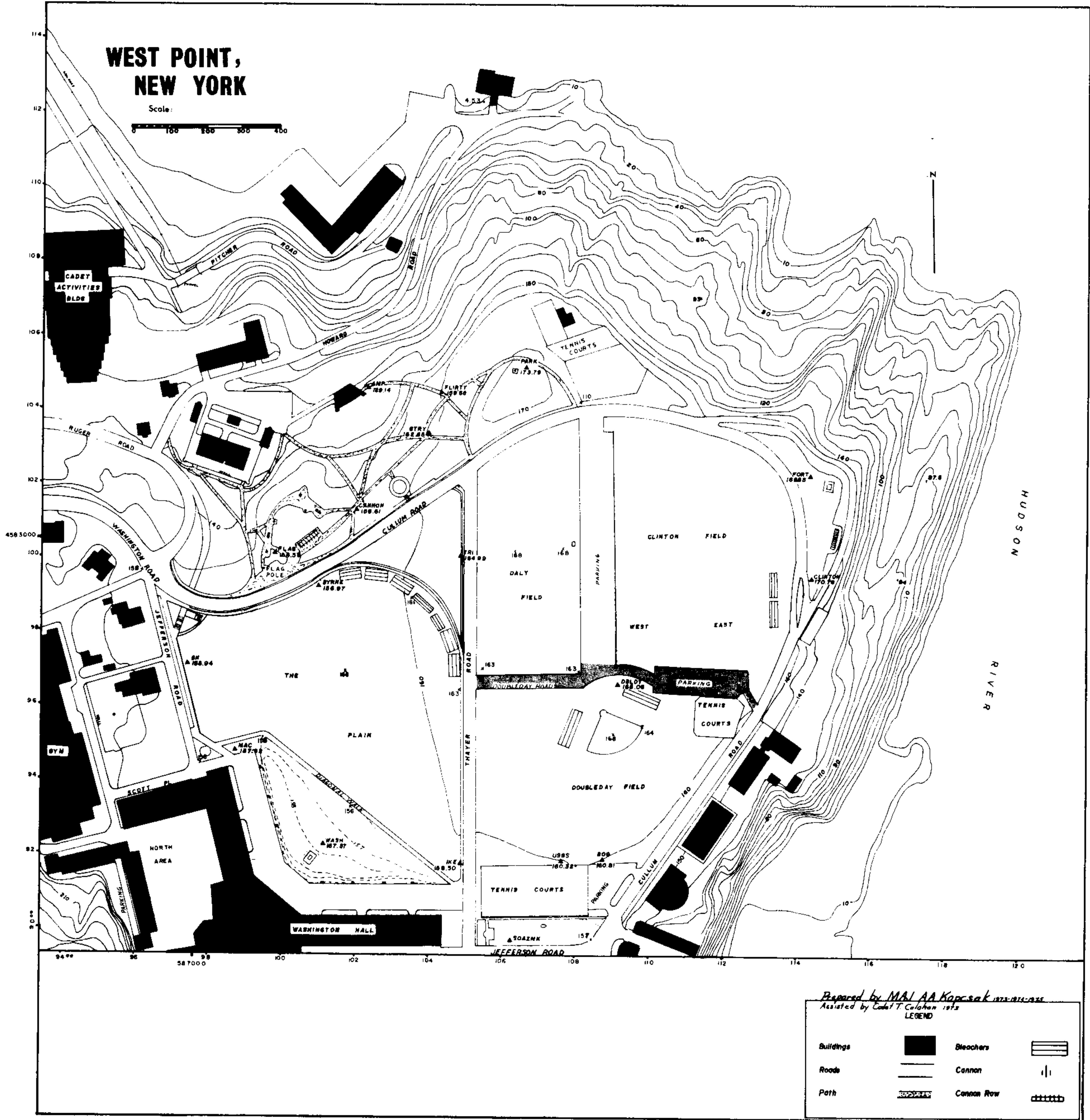


- The marker was set in the summer of 1972 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
- It is located 2.7' east of the southeastern corner of the backstop on Doubleday Field and 26.6' north-west of the southwestern corner of the easternmost dugout.



# WEST POINT, NEW YORK

Scale:  
0 100 200 300 400



Prepared by MAJ AA Kapsak 1975-01-25  
Assisted by Capt T Colahan 1975

### LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 15

STATION: BOQ

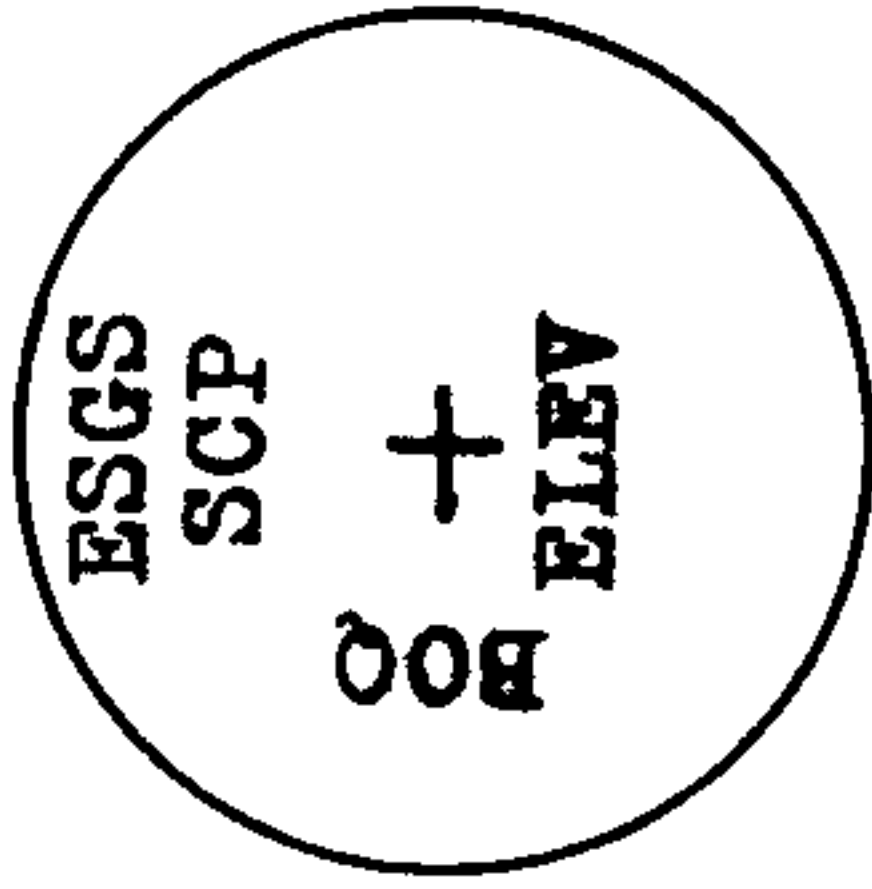
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL	587339.872	4582569.708	UTM Meters
ORDER: I	1926964.217	15034647.335	UTM Feet
ELEV: 160.81; Order III	10881.674	9160.449	Local (Flag)
DATUM: Mean Sea Level, 1929	73°57'19.1491"W	41°23'30.6002"N	Geographical

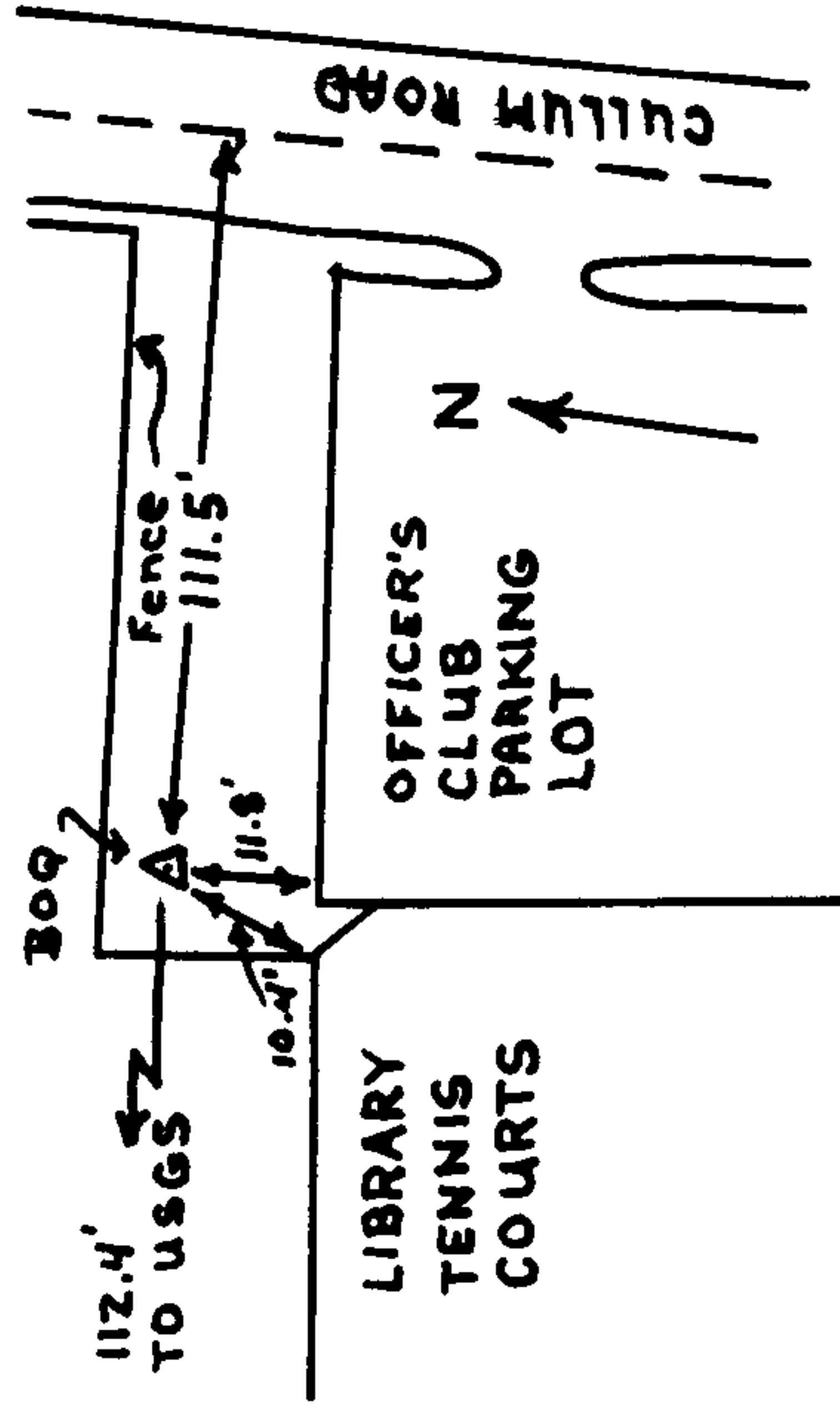
DESCRIPTION: NAME - BOQ ABBREVIATION - BOQ

SKETCH:

- The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:

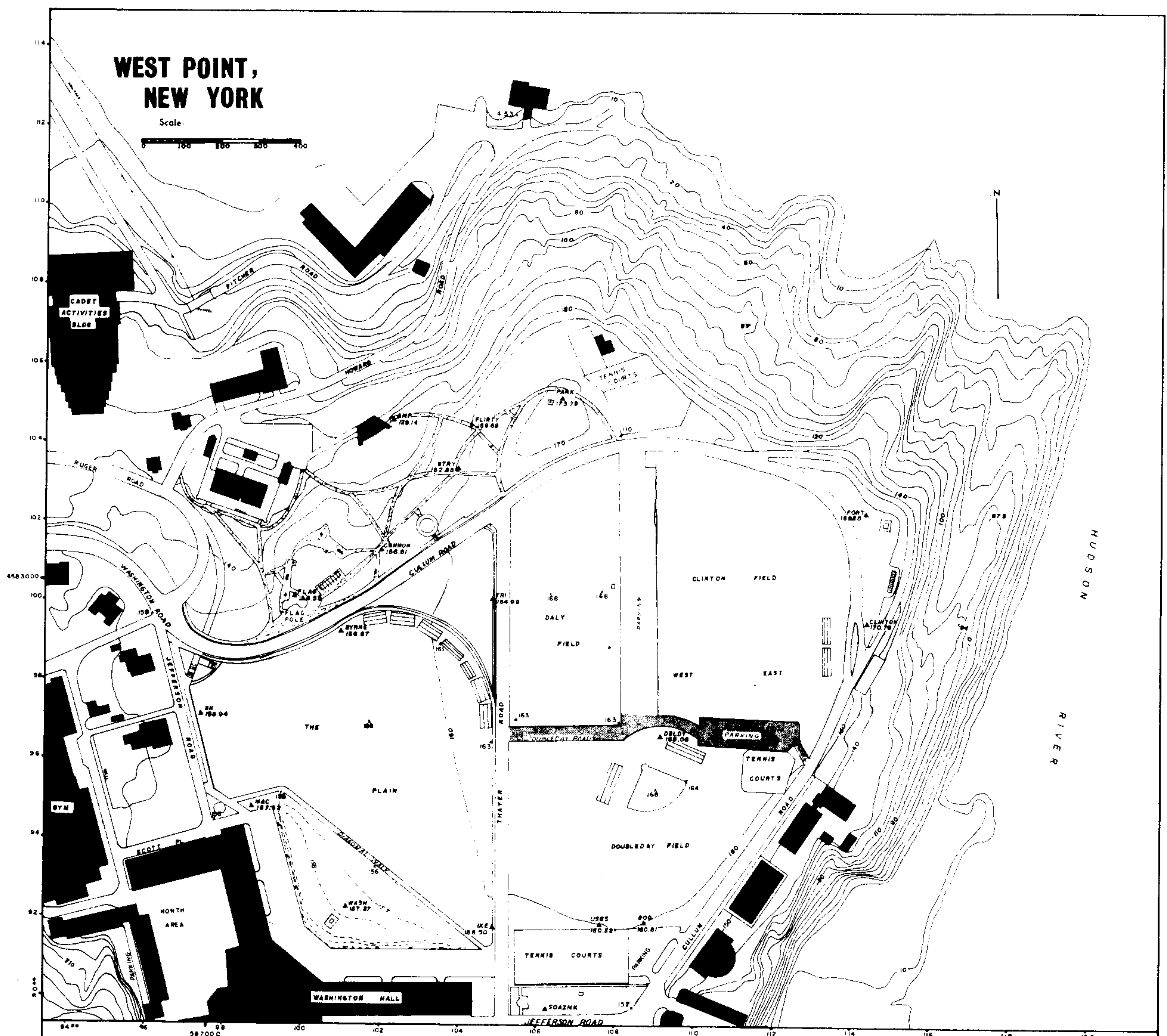


- The marker was set in the summer of 1973 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
- It is located 10.4' to the north-northeast of the northeastern corner of the library tennis courts. It is outside the fence bordering Doubleday Field.





# WEST POINT, NEW YORK



Prepared by MAJ AA Kopsak 1222222222  
 Assisted by Capt T Colahan 1212

LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 16

STATION: EISENHOWER

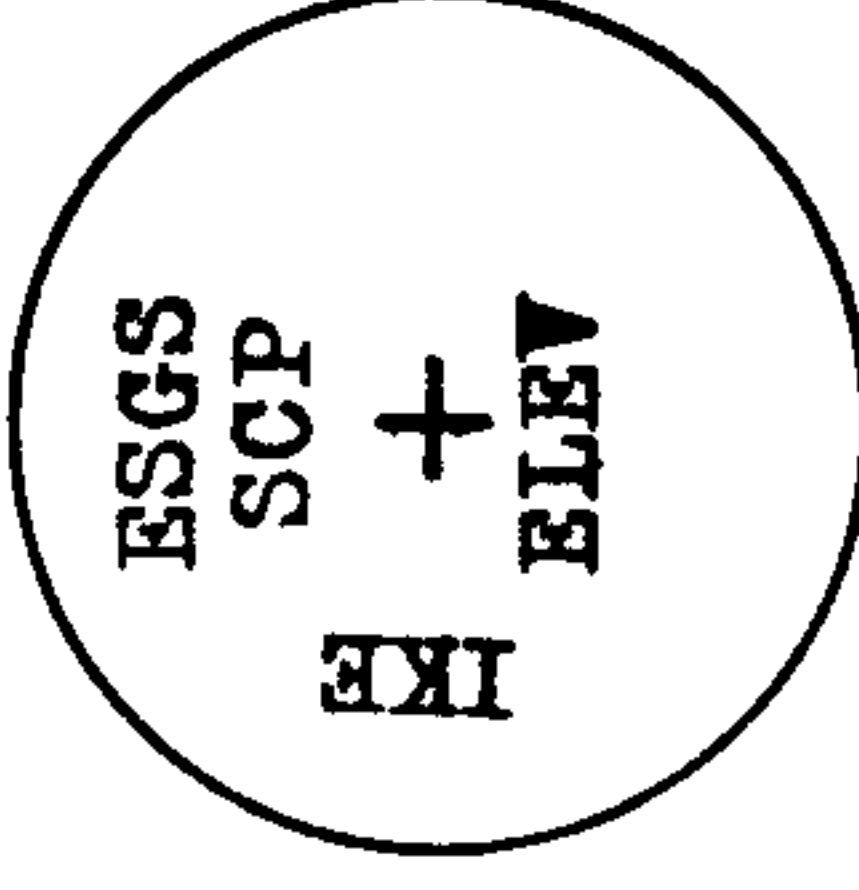
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	587222.095	4582566.463	UTM Meters
ELEV: 158.504'	1926577.809	15034636.687	UTM Feet
DATUM: Mean Sea Level, 1929	10495.168	9154.335	Local (Flag)
	73°57'24.2214"W	41°23'30.5410"N	Geographical

DESCRIPTION: NAME - Eisenhower ABBREVIATION - Ike

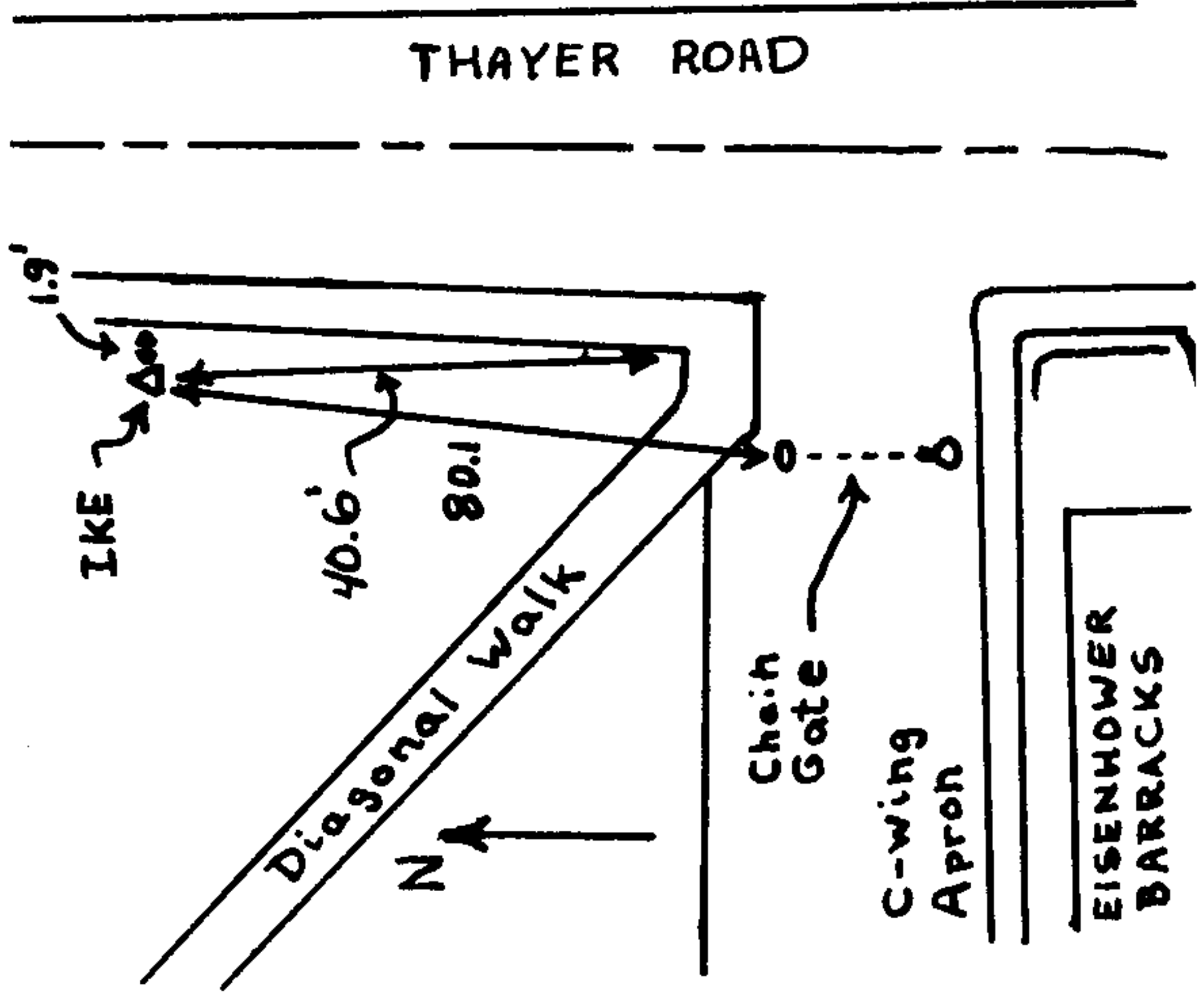
SKETCH:

- The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



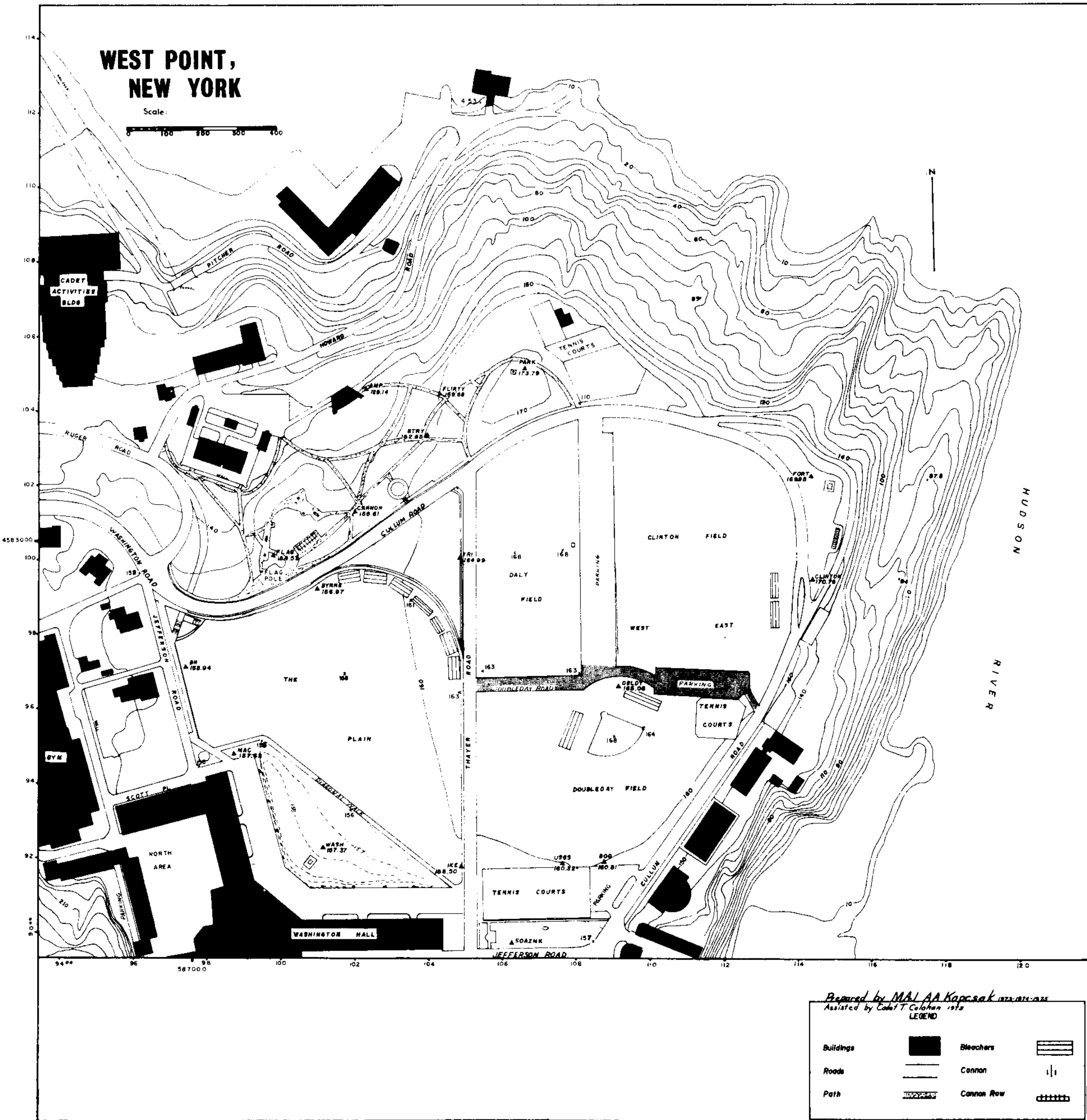
- The marker was set in the summer of 1973 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

- The monument is located on the Plain 1.9' west of the western sidewalk of Thayer Road and 40.6' north of the intersection of Diagonal Walk with the sidewalk. It is 80.1' north of the center of the northern post of the chain gate at the end of the apron north of C-wing of Eisenhower Barracks.



# WEST POINT, NEW YORK

Scale:  
0 100 200 300 400



Prepared by MAJ AA Kapsak 1972-01-25  
 Assisted by Capt T Calahan 1972  
**LEGEND**

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 17

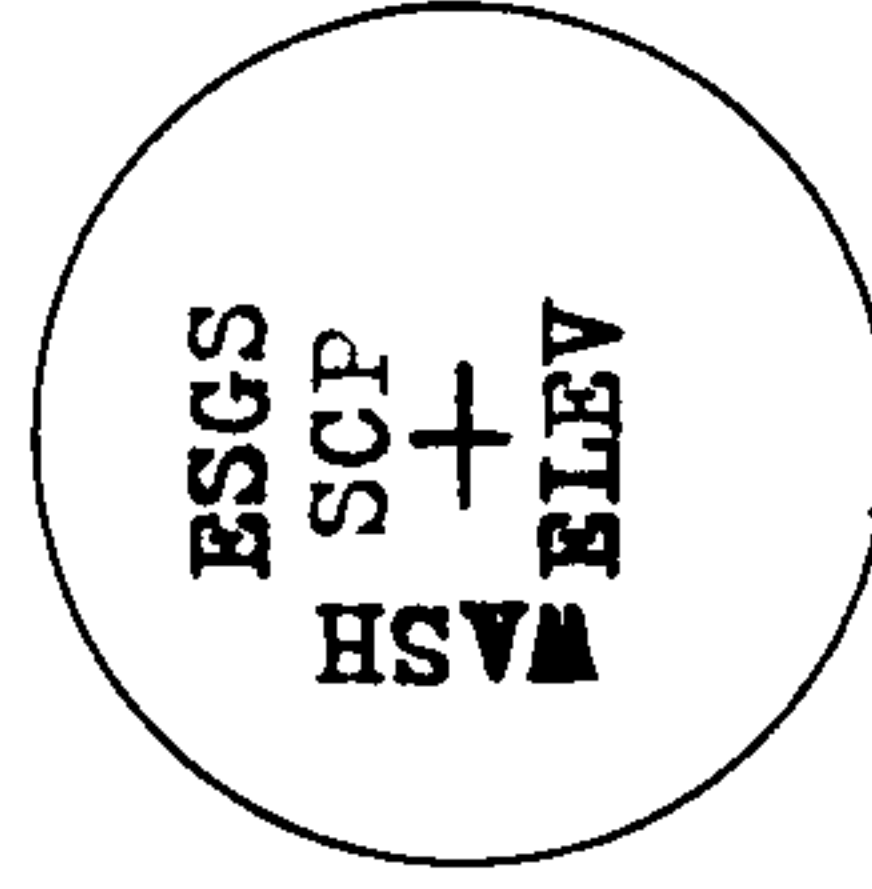
STATION: WASHINGTON (NEW)

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

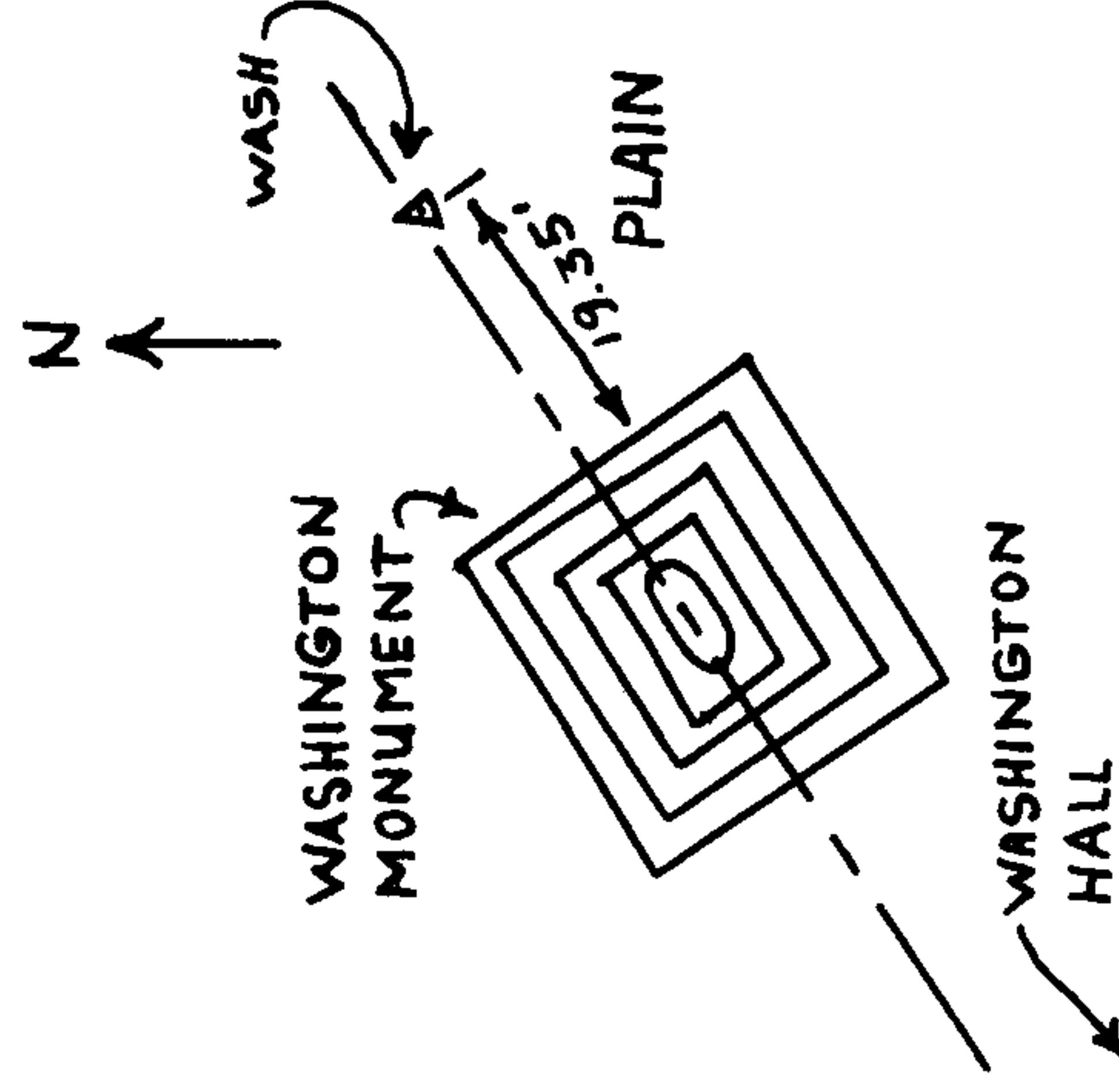
	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	587107.752	4582582.284	UTM Meters
ELEV: 157.37; Order III	1926202.669	15034688.595	UTM Feet
DATUM: Mean Sea Level, 1929	10120.663	9210.641	Local (Flag)
	73°57'29.1360"W	41°23'31.0986"N	Geographical

DESCRIPTION: NAME - *Washington* ABBREVIATION - *Wash* SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6" square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:

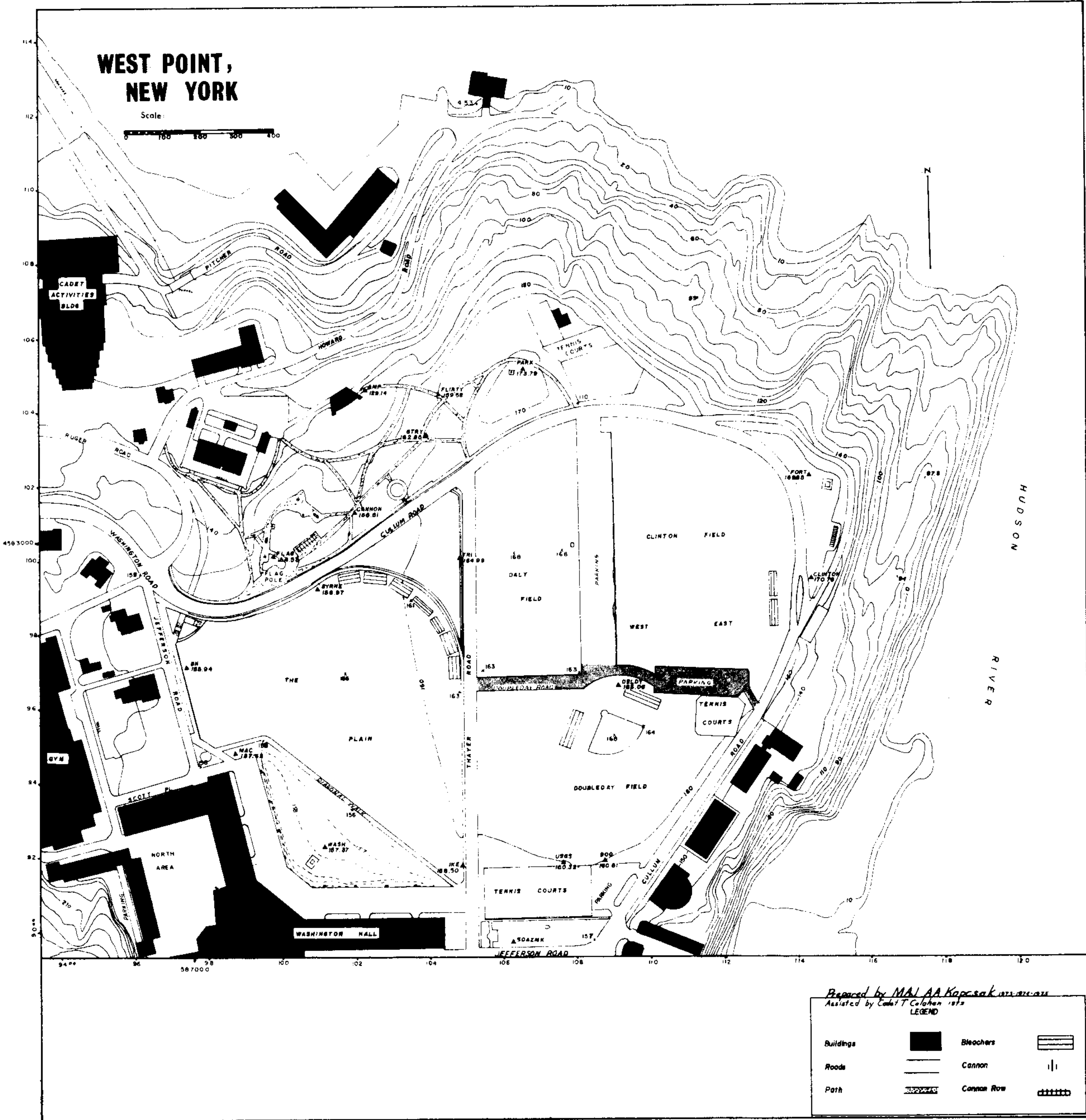


2. The marker was set in the summer of 1972 by MAJ A. A. Kopcak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
3. It is located on the center line of Washington Monument and is 19.35' from the bottom step of the monument toward the northeast. Washington Monument is located in front of the new Washington Hall.



# WEST POINT, NEW YORK

Scale  
0 100 200 300 400



Prepared by MALAA Kopsakian  
Assisted by Capt T. Colahan 1975  
LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 18

STATION: MACARTHUR

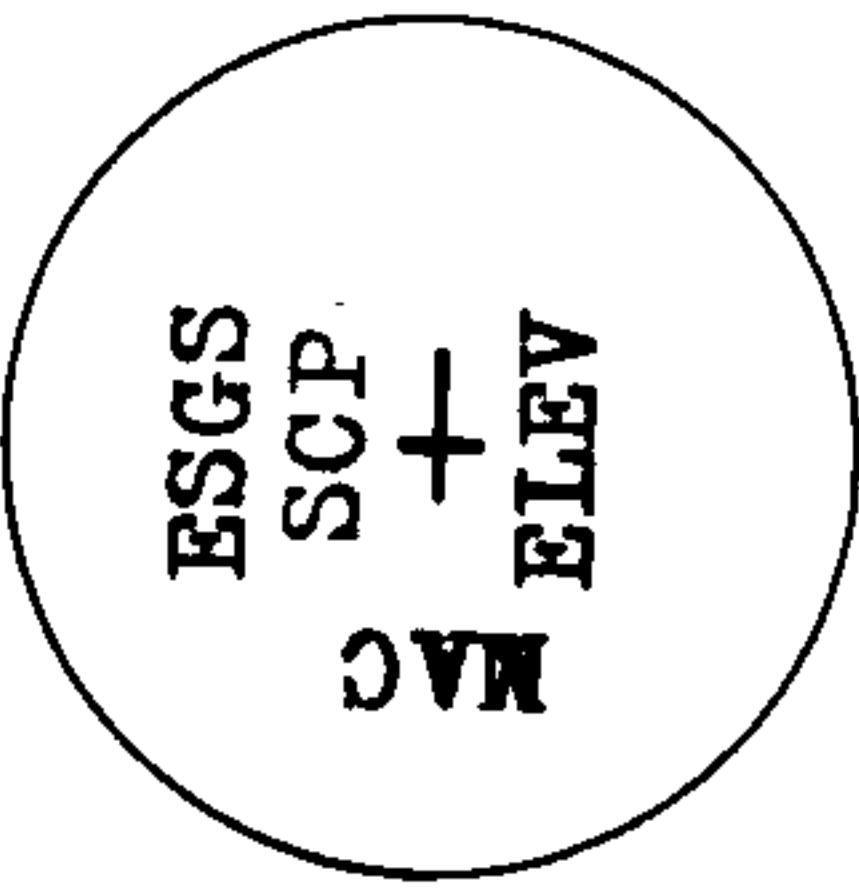
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER: I	587035.177	4582660.210	UTM Meters
ELEV: 157.62; Order III	1925964.560	15034944.255	UTM Feet
DATUM: Mean Sea Level, 1929	9885.570	9469.077	Local (Flag)
	73°57'32.2204"W	41°23'33.6534"N	Geographical

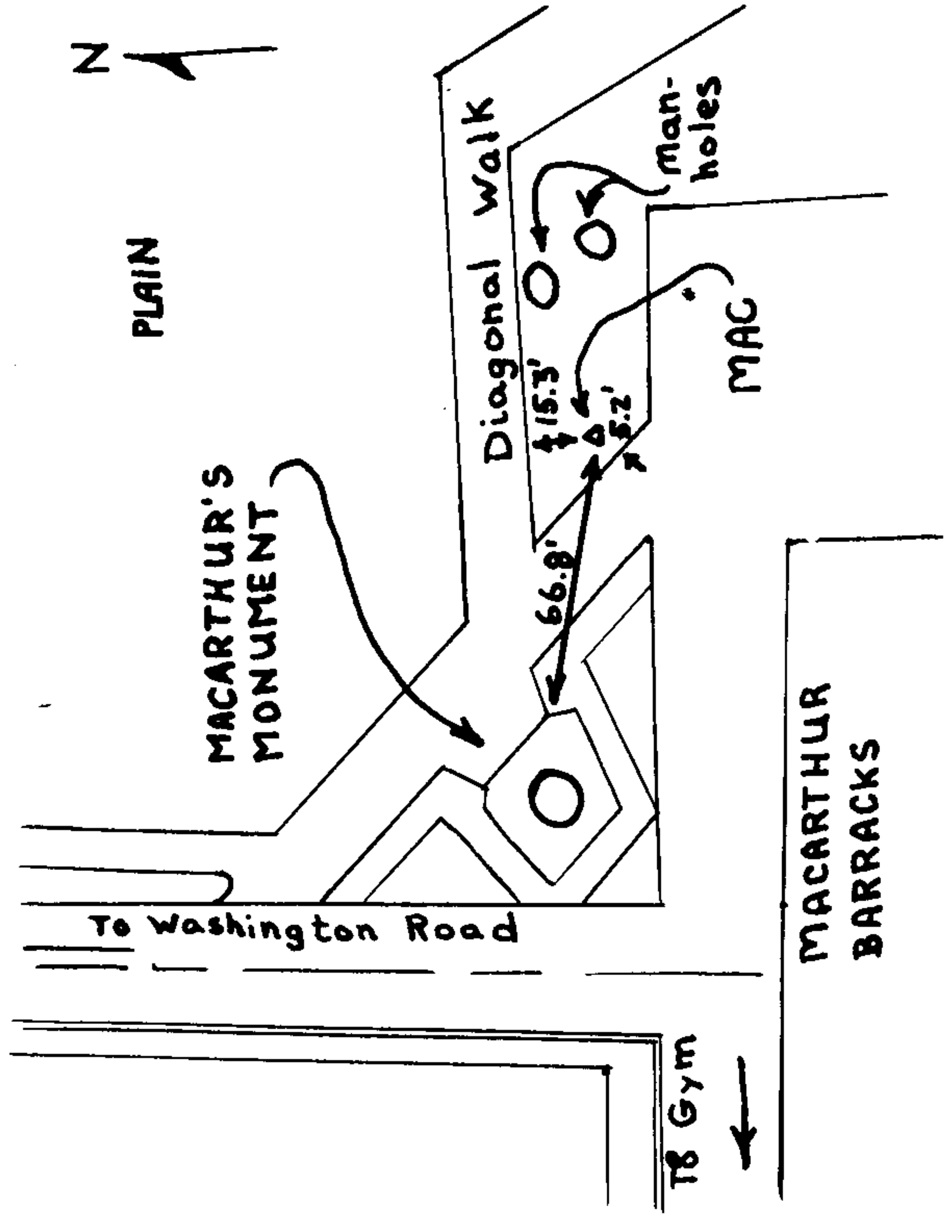
DESCRIPTION: NAME - *MacArthur* ABBREVIATION - *Mac*

SKETCH:

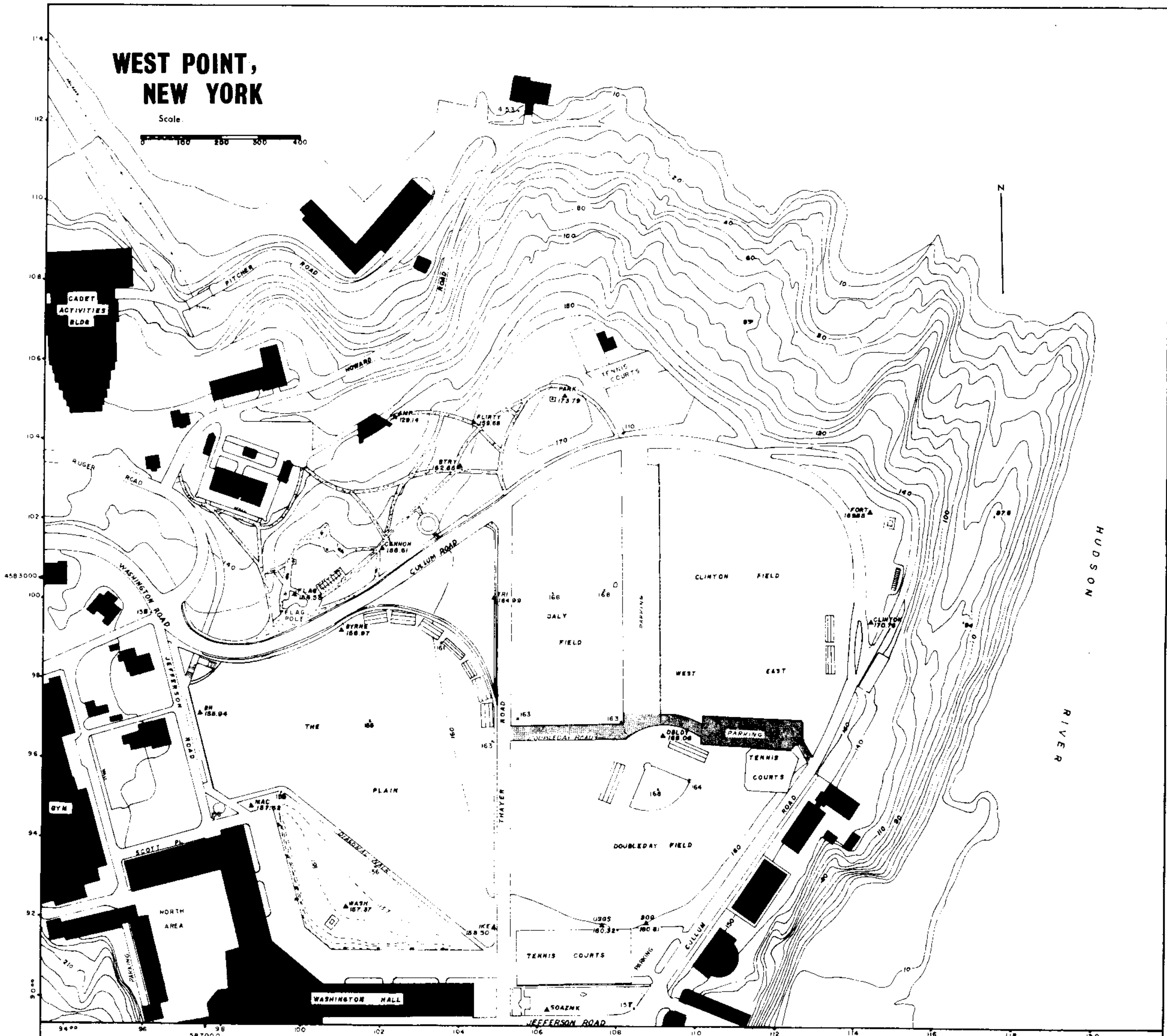
- The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



- The marker was set in the summer of 1972 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
- It is located to the east of Jefferson Road, north of MacArthur Barracks and 66.8' southeast of MacArthur Monument.



# WEST POINT, NEW YORK



Prepared by MAJ AA Kapsak 12/22/52  
Assisted by Capt T Calahan 12/22/52

LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Cannon Row	

NO: 19

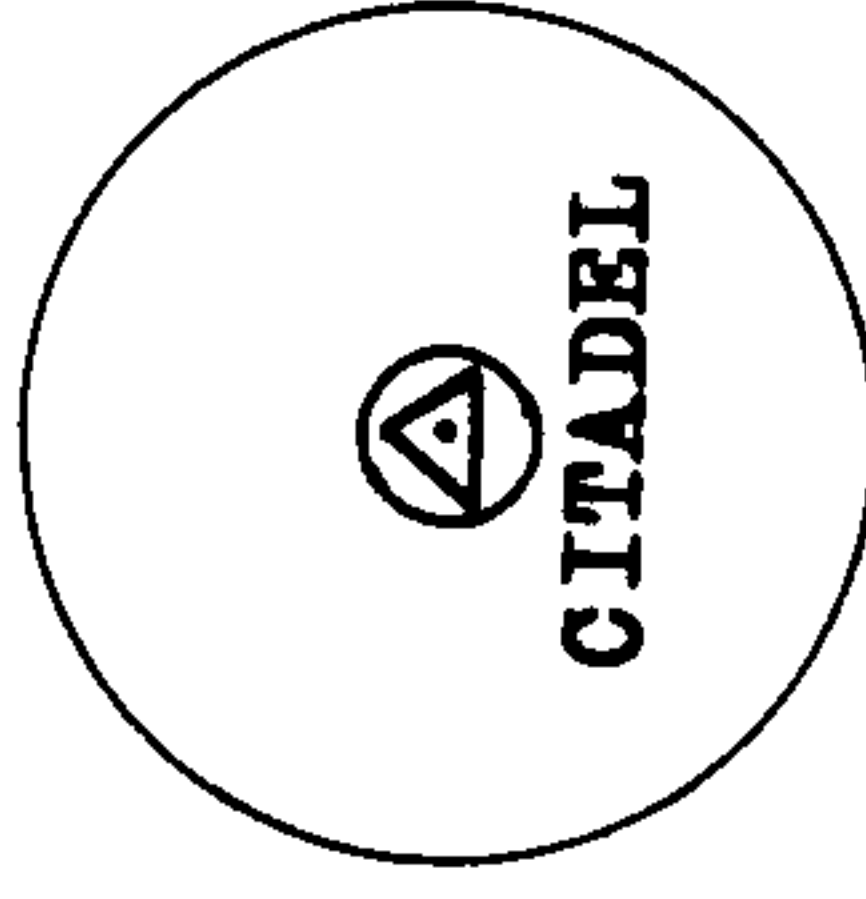
STATION: CITADEL

SPHEROID: CLARKE 1866  
AREA: WEST POINT NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER: I	586850.666	4582862.482	UTM Meters
ELEV: 161.02; Order III	1925359.211	15035607.876	UTM Feet
DATUM: Mean Sea Level, 1929	9288.047	10139.755	Local (Flag)
	73°57'40.0598"W	41°23'40.2834"N	Geographical

DESCRIPTION: NAME - *Citadel* ABBREVIATION - *Citadel* SKETCH:

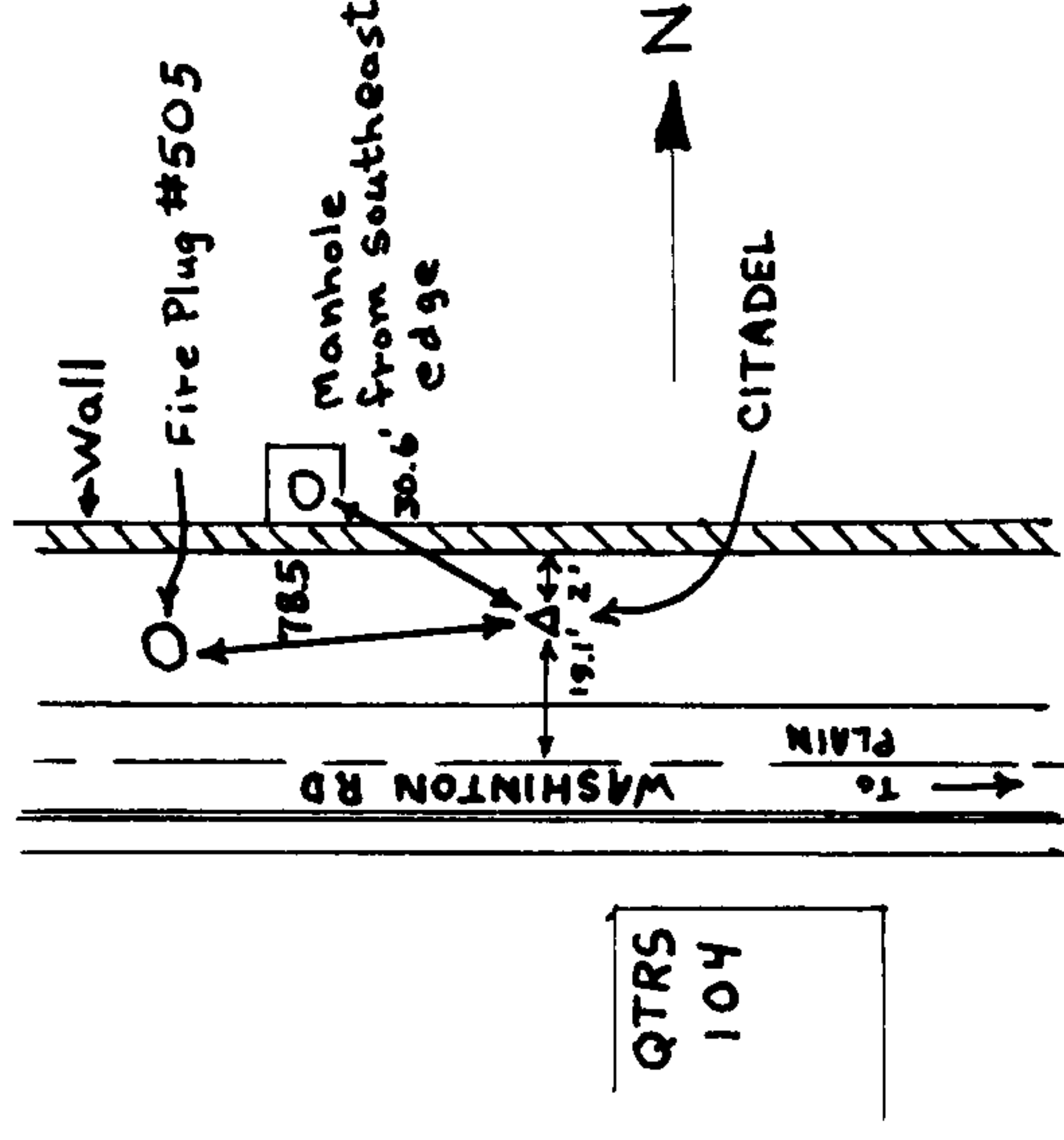
1. The marker is a copper disk 2" in diameter and set in a 6"-diameter concrete monument. The top of the monument is flush with the ground and is inscribed:



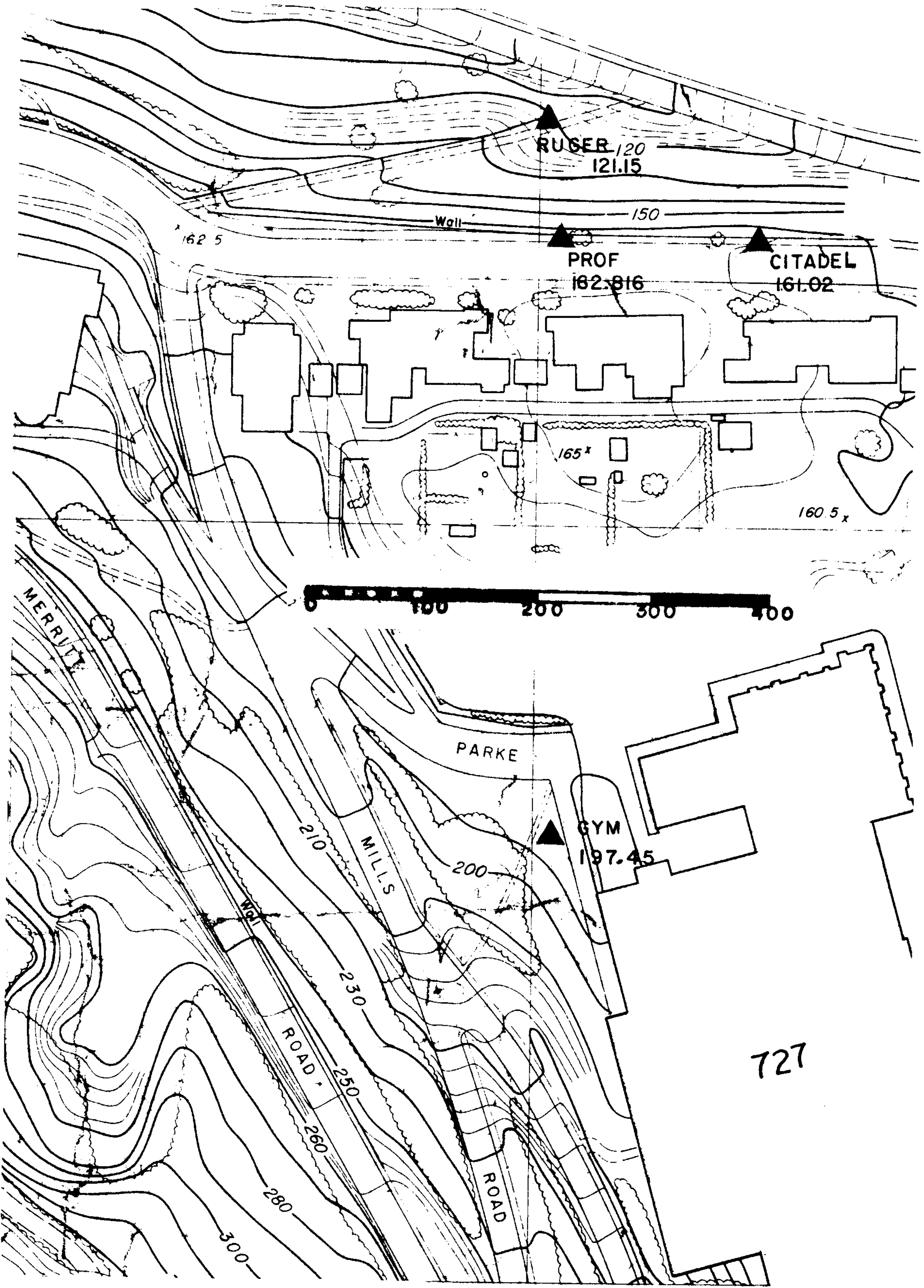
2. Origin unknown but it probably was established between 1926 and 1933 by military personnel assigned to the USMA. The original elevation was based on the 1926 datum for mean sea level. The original name was "Professor."

3. The marker was originally used in the USMA cadet triangulation net. It was resurveyed, relevelled and renamed in 1972 by MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York.

4. It is located north of Washington Road, between Ruger Road and Mills Road, north of Quarters 104.







NO: 20

STATION: PROFESSORS

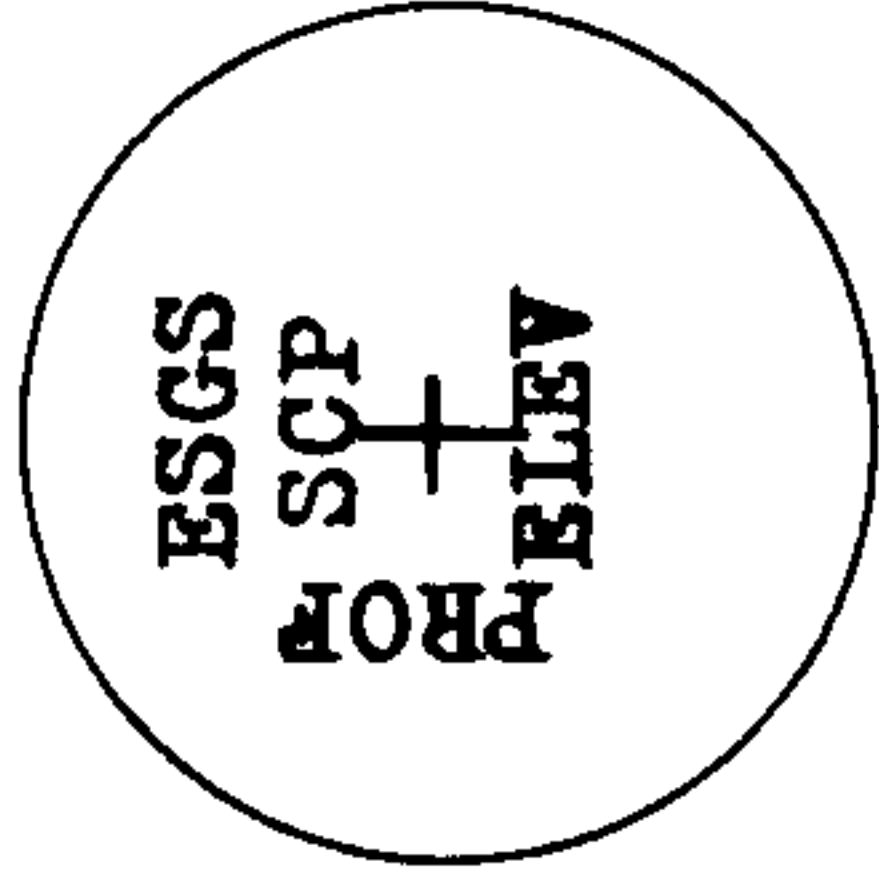
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	586800.806	4582861.746	UTM Meters
ELEV: 161.816'; Order III	1925195.629	15035605.462	UTM Feet
DATUM: Mean Sea Level, 1929	9124.446	10139.264	Local (Flag)
	73°57'42.2069"W	41°23'40.2789"N	Geographical

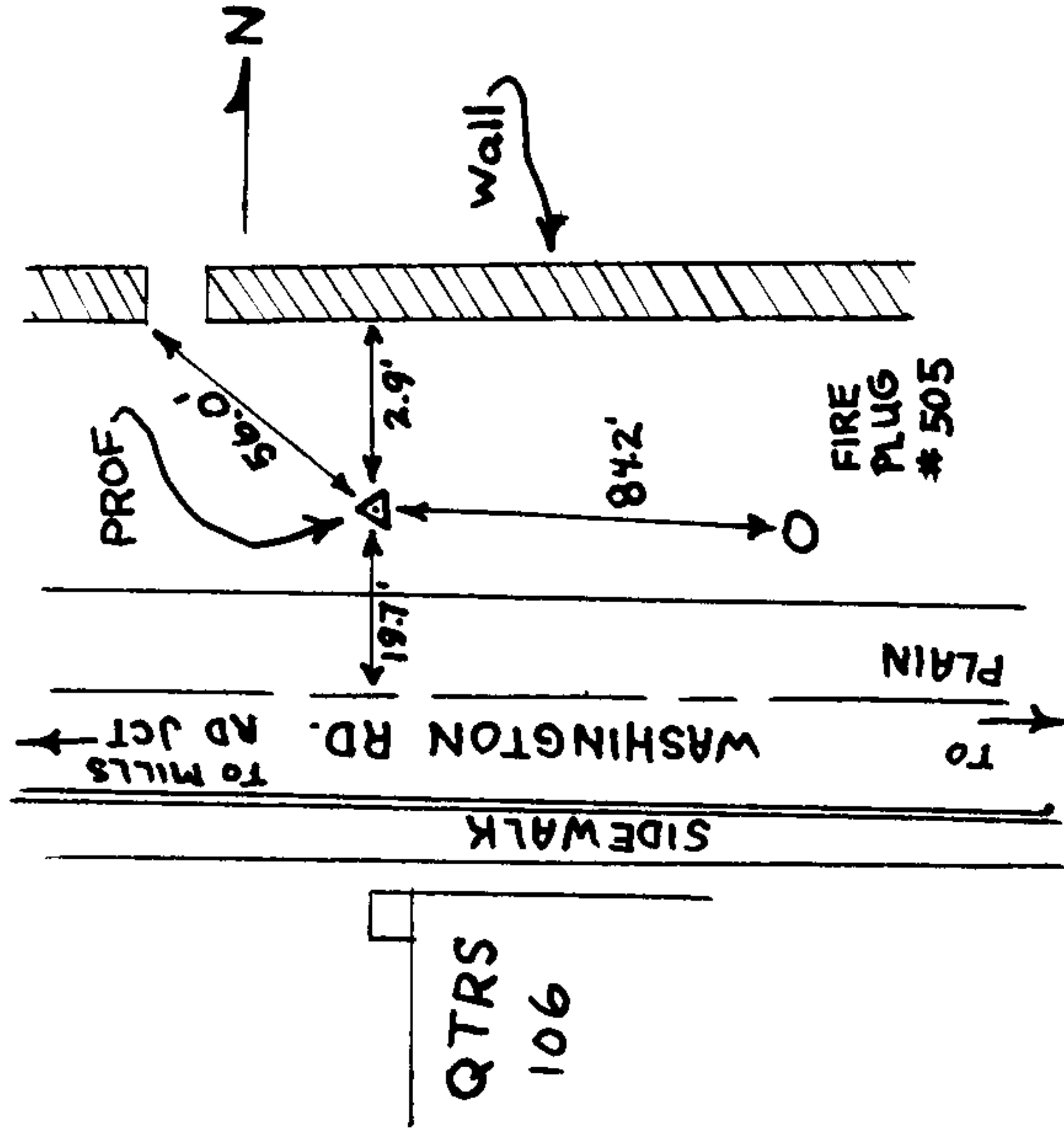
DESCRIPTION: NAME - Professors ABBREVIATION - Prof

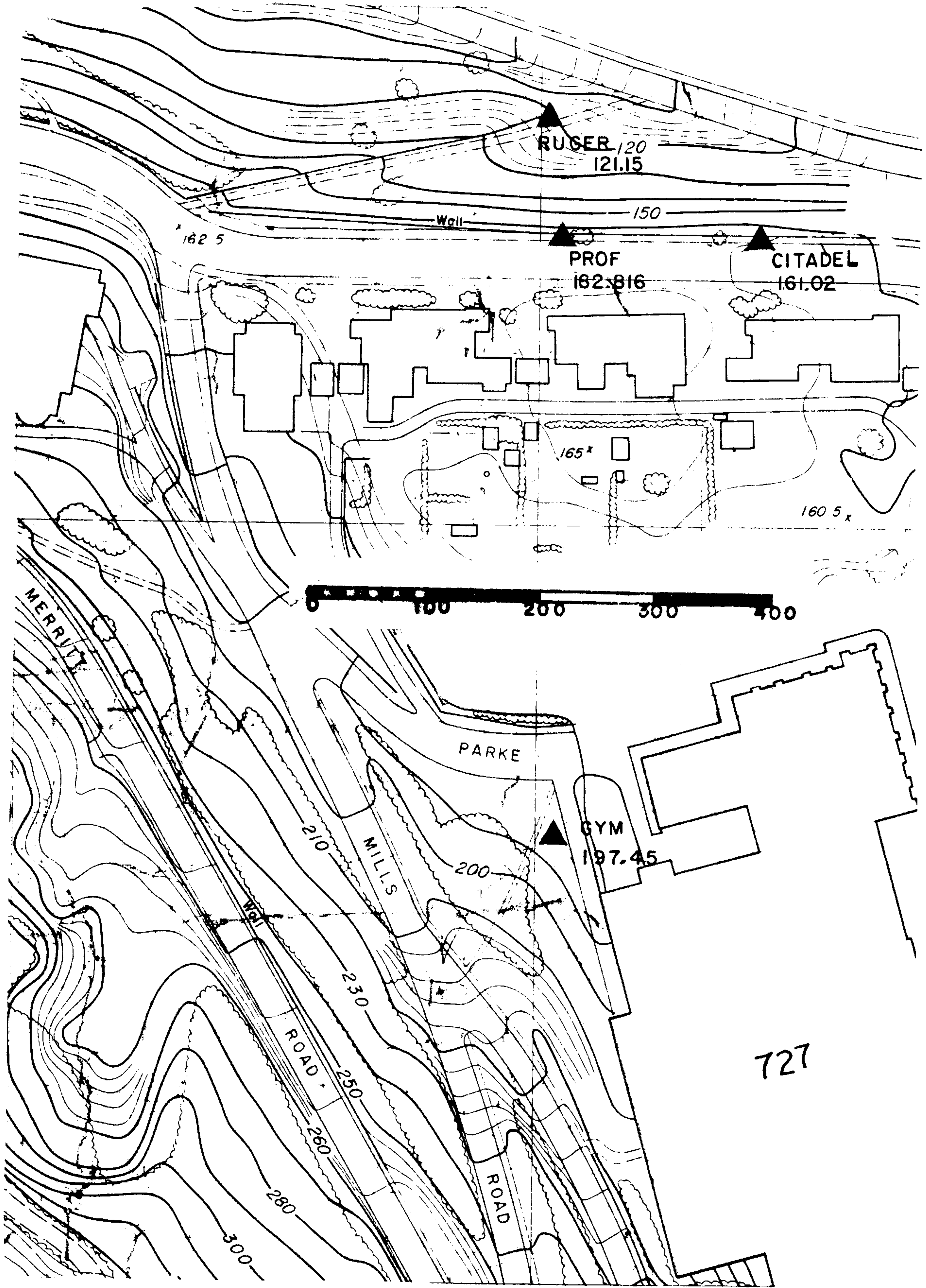
SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



2. The marker was set in the summer of 1973 by MAJ A. A. Kopcak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.
3. It is located just north of Washington Road between Ruger Road and Mills Road north of Quarters 106.





NO: 21

STATION: RUGER

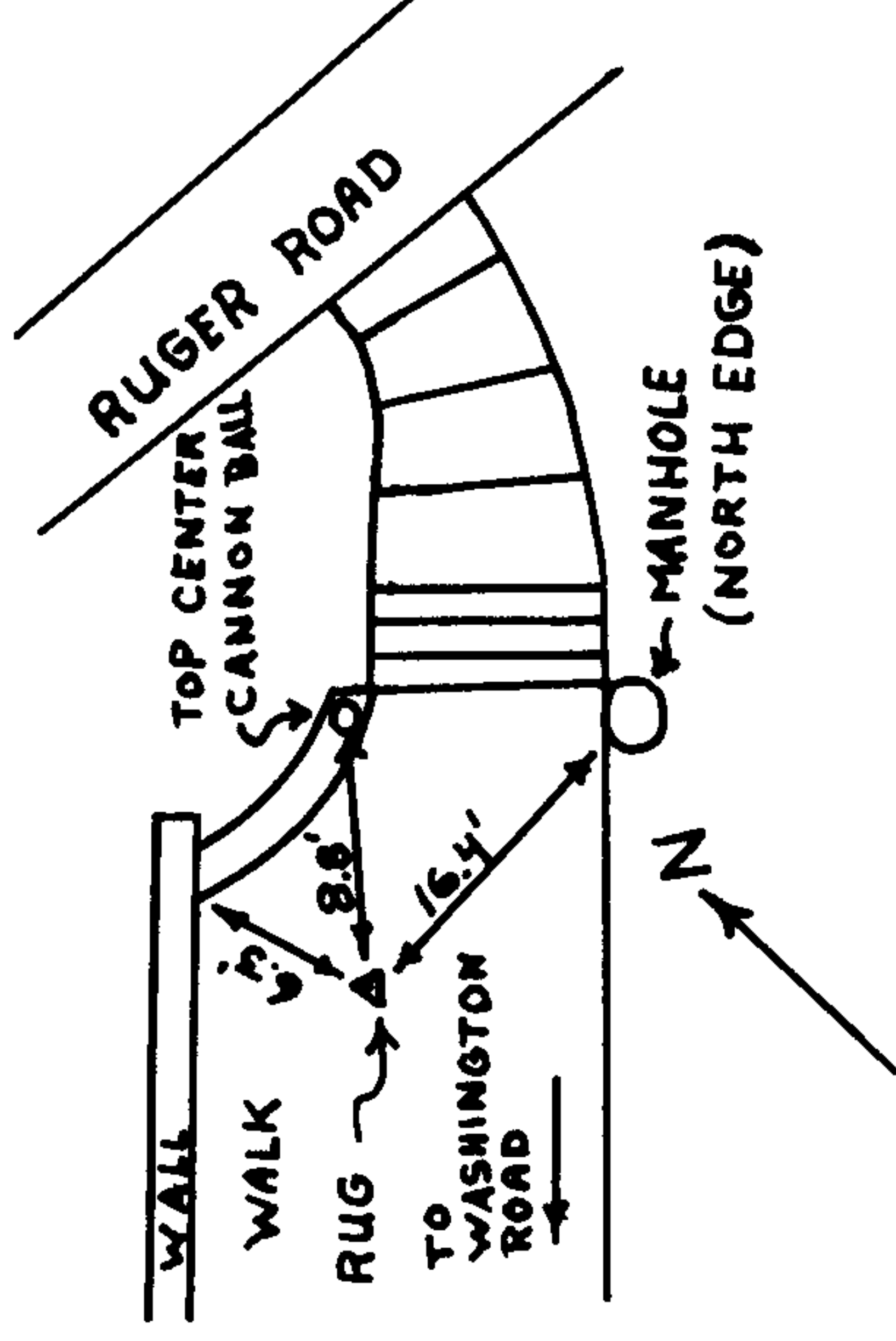
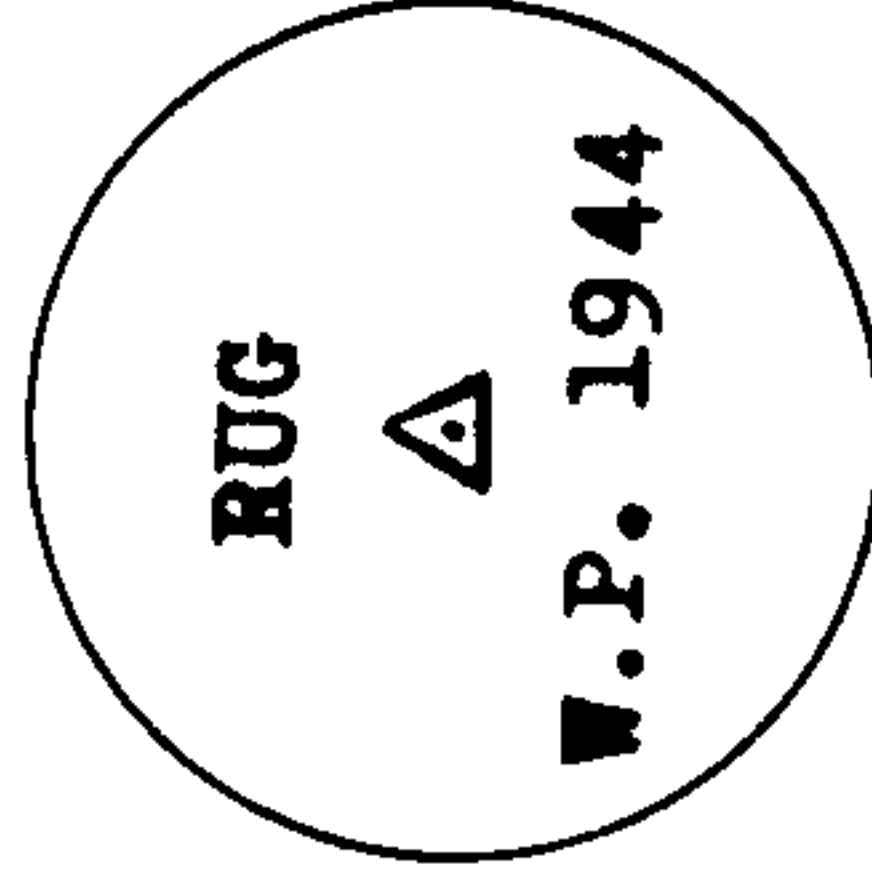
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL	586797.418	4582893.032	UTM Meters
ORDER: II	1925184.513	15035708.105	UTM Feet
ELEV: 121.15'; Order III	9114.537	10242.026	Local (Flag)
DATUM: Mean Sea Level, 1929	73°57'42.3366"W	41°23'41.2946"N	Geographical

DESCRIPTION: NAME - *Ruger* ABBREVIATION - *Rug*

SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 9"-diameter concrete monument. The top of the monument is flush with the ground. It is inscribed:



2. Origin unknown but it probably was established in 1944 by Mr. Jenson of the Post Engineers and intended to be a triangulation station. All data were lost.
3. The marker was recovered, resurveyed and releveled by Cadet J. Matousek, USMA, West Point, New York, in April 1974.
4. It is located at the lower end of the asphalt walk which connects Mills Road with Ruger Road. The walk slopes downhill and is on a northeastern-southwestern line.

NO: 21

STATION: RUGER

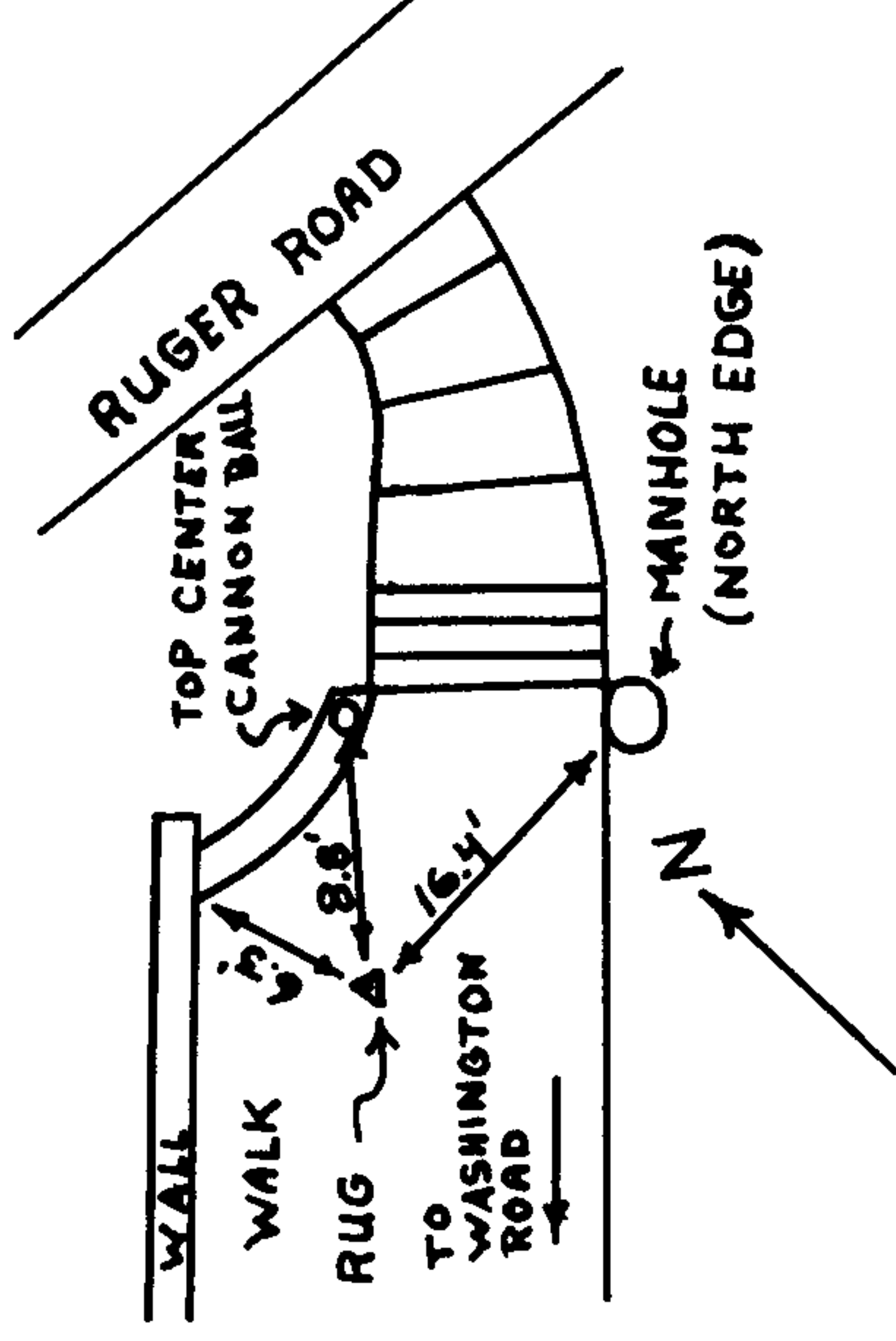
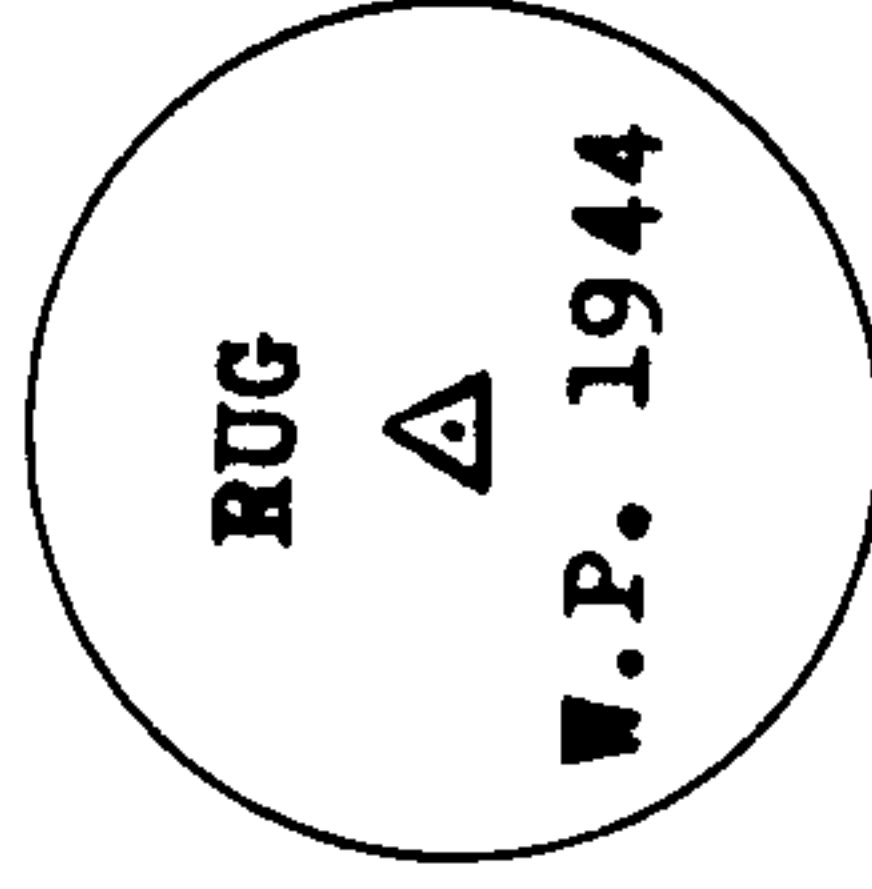
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL	586797.418	4582893.032	UTM Meters
ORDER: II	1925184.513	15035708.105	UTM Feet
ELEV: 121.15'; Order III	9114.537	10242.026	Local (Flag)
DATUM: Mean Sea Level, 1929	73°57'42.3366"W	41°23'41.2946"N	Geographical

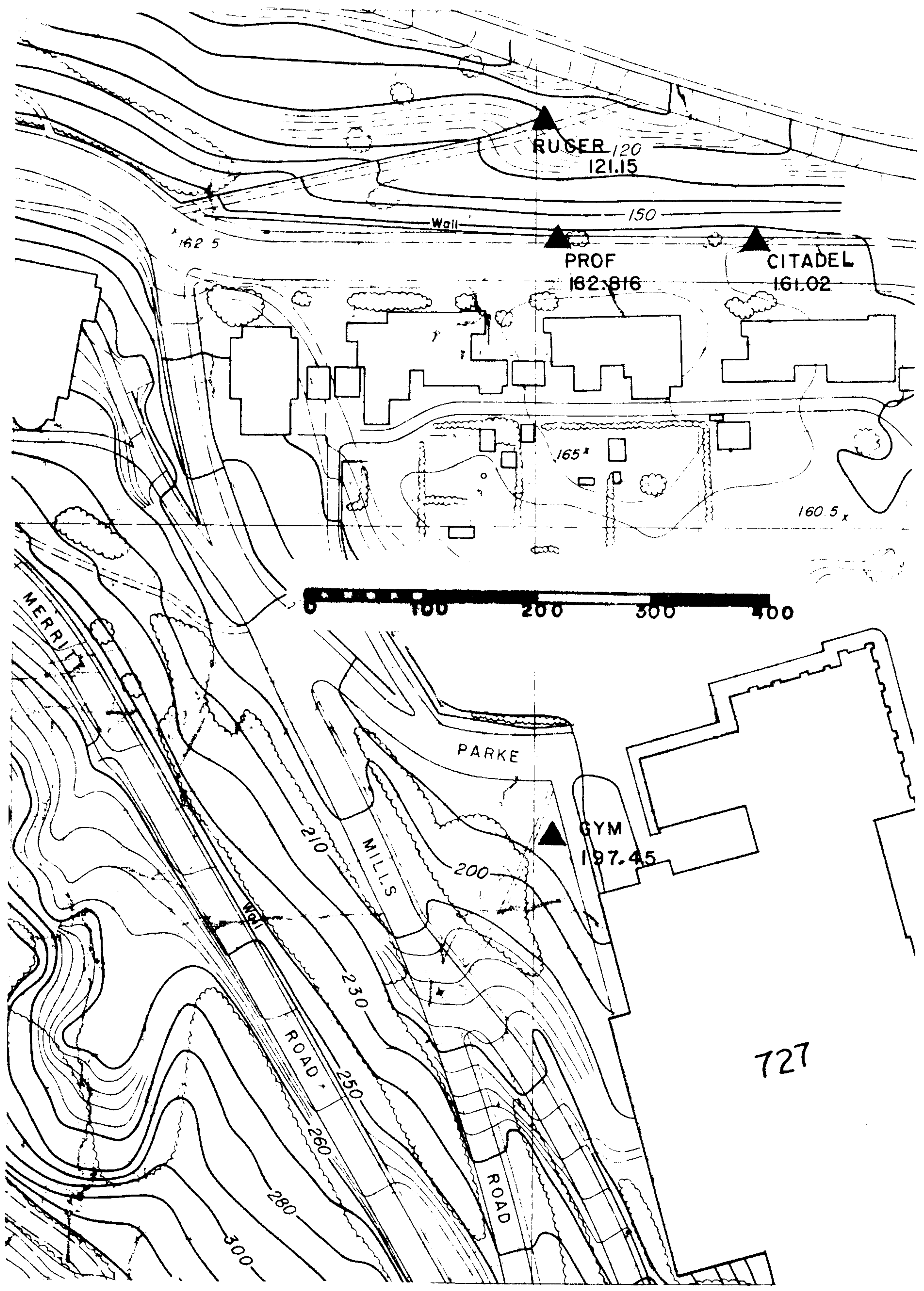
DESCRIPTION: NAME - *Ruger* ABBREVIATION - *Rug*

SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 9"-diameter concrete monument. The top of the monument is flush with the ground. It is inscribed:



2. Origin unknown but it probably was established in 1944 by Mr. Jenson of the Post Engineers and intended to be a triangulation station. All data were lost.
3. The marker was recovered, resurveyed and releveled by Cadet J. Matousek, USMA, West Point, New York, in April 1974.
4. It is located at the lower end of the asphalt walk which connects Mills Road with Ruger Road. The walk slopes downhill and is on a northeastern-southwestern line.



NO: 22

STATION: NORTH DOCK

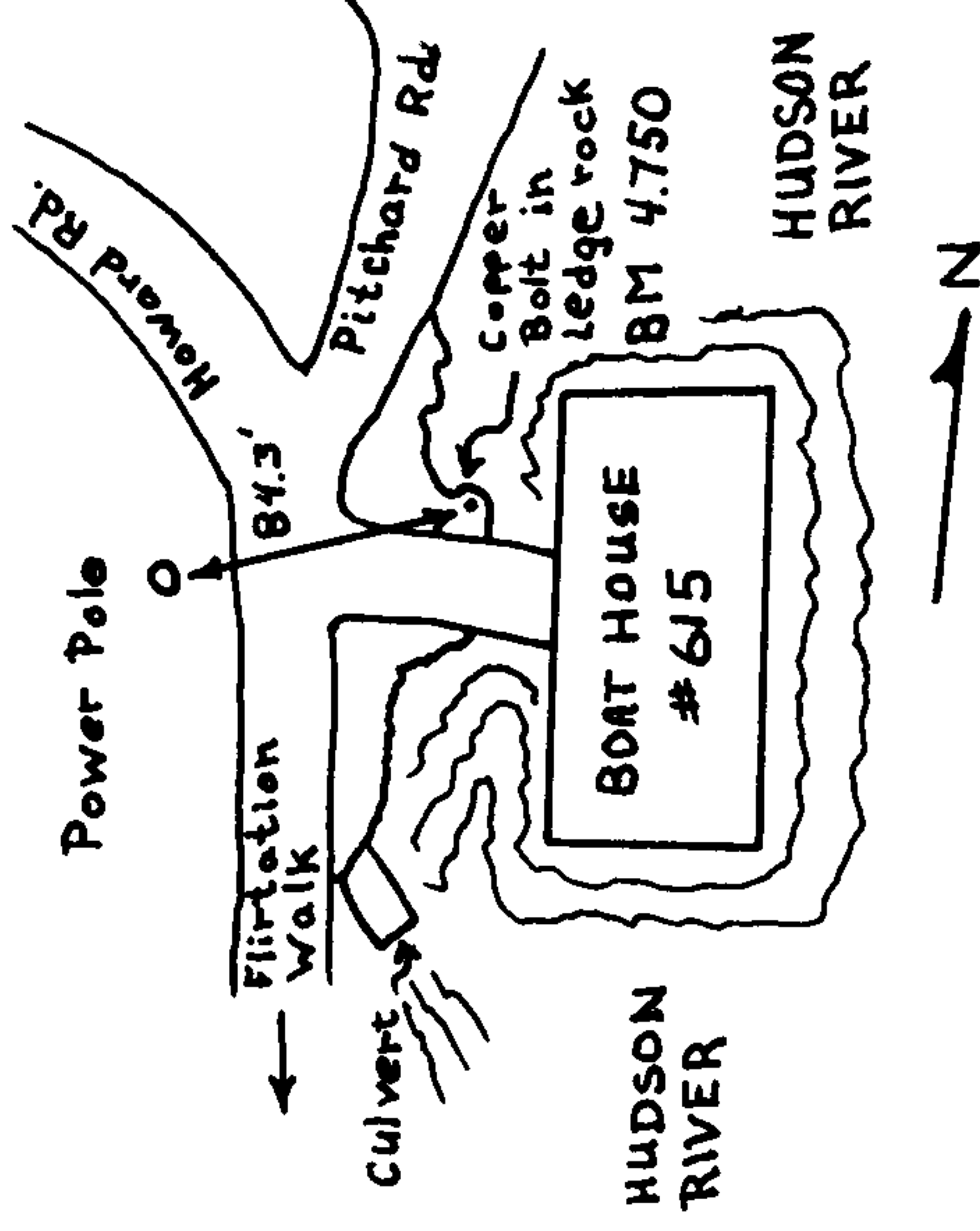
SPHEROID: CLARKE 1866  
 AREA: WEST POINT, NY  
 GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER:	587241.441	4583185.892	UTM Meters
ELEV: 4.53	1926641.281	15036668.931	UTM Feet
DATUM: Mean Sea Level, 1929	10582.477	11185.701	Local (Flag)
	73°57'23.0673"W	41°23'50.6169"N	Geographical

DESCRIPTION: NAME - North Dock ABBREVIATION - ND SKETCH:

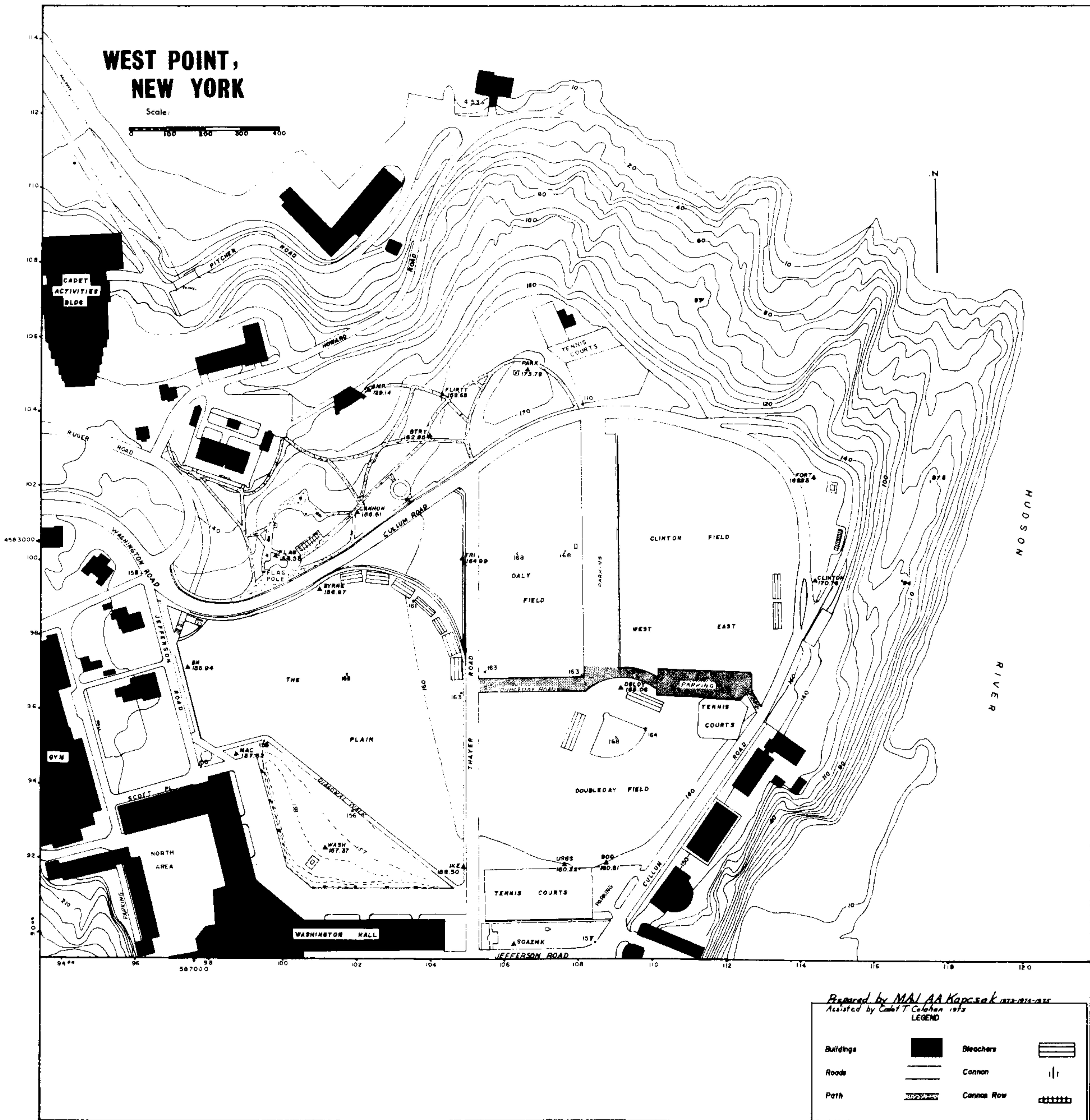
1. The 1973 description of the marker at North Dock is: "A copper bolt in a granite ledge located east of the boathouse (Building 615)."

2. The bolt was an Engineer Corps bench mark with an elevation of 4.750' above mean low water. In 1926 Mr. M.S. Roudabush of the USGS ran a level net to the bolt at North Dock and established an elevation of 4.83'. This elevation was corrected to 4.53' for the 1929 mean sea level datum. The original description from Mr. Roudabush in 1926 is: "West Point, Engr (cadet) boathouse, 16' S. of 3' wooden runway in rock ledge; copper bolt (Engr Corps BM 4.750') (above mean low water)."



# WEST POINT, NEW YORK

Scale: 1" = 400'



Prepared by MAJ AA Kapsak 1972  
Assisted by Capt T Colahan 1972

LEGEND

Buildings		Bleachers	
Roads		Cannon	
Path		Canna Row	



NO: 23

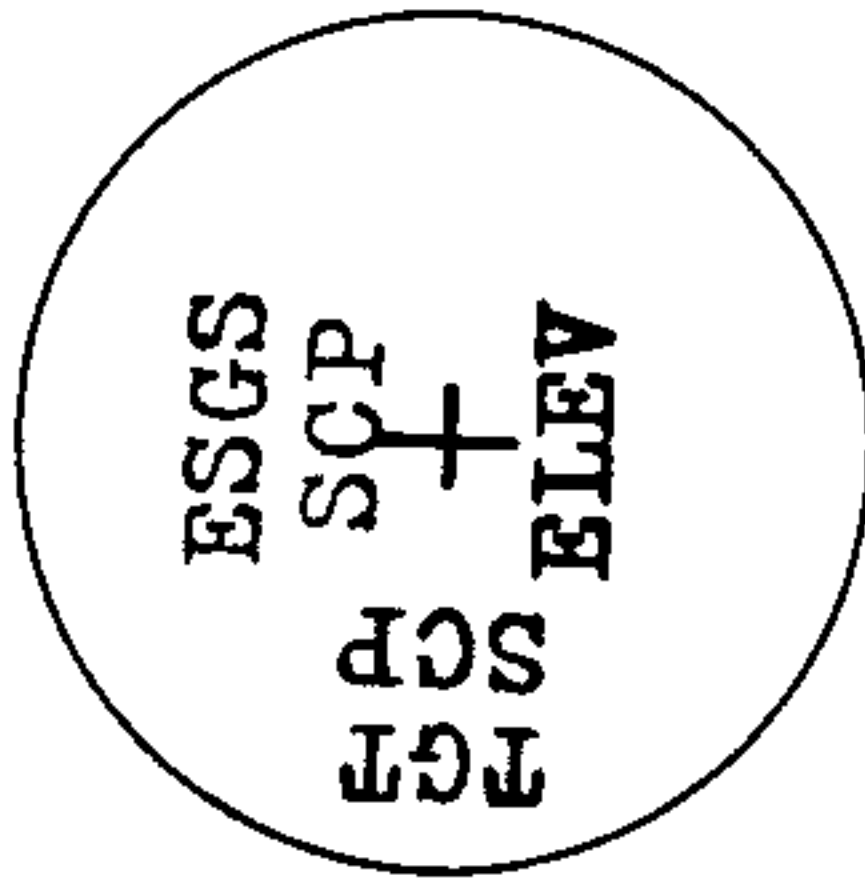
STATION: TARGET SURVEY CONTROL POINT

SPHEROID: CLARKE 1866  
 AREA: WEST POINT, NY  
 GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL	586559.441	4583433.190	UTM Meters
ORDER: I	1924403.750	15037480.274	UTM Feet
ELEV: 7.01'; Order III	8354.617	12023.237	Local (Flag)
DATUM: Mean Sea Level, 1929	73°57'52.3048"W	41°23'58.9003"N	Geographical

DESCRIPTION: NAME - Target Survey Control Point ABBREVIATION - TGTSCP SKETCH:

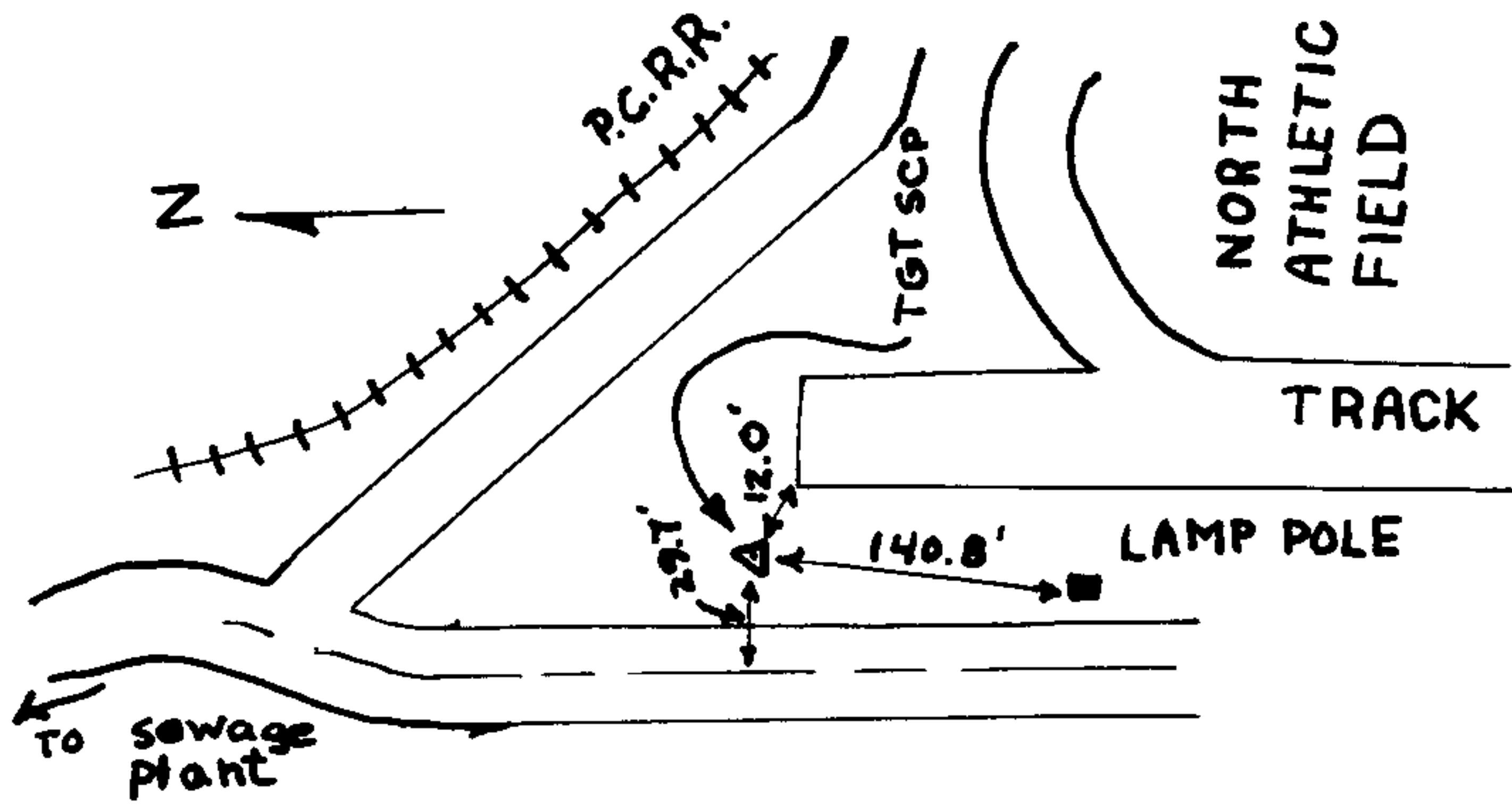
- The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is 8" above the ground and is inscribed as follows:



- The marker was set in the summer of 1972 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

- It is adjacent to Townsley Road on the eastern side and north of Shea Stadium by the northern end on the new track straight-away.

- | Object  | Distance (m) | True       | Direction  | UTM Grid |
|---------|--------------|------------|------------|----------|
| BTRY    | 817.799      | 308°07'33" | 128°47'55" |          |
| Citadel | 640.718      | 152°17'33" | 152°57'55" |          |





NO: 24

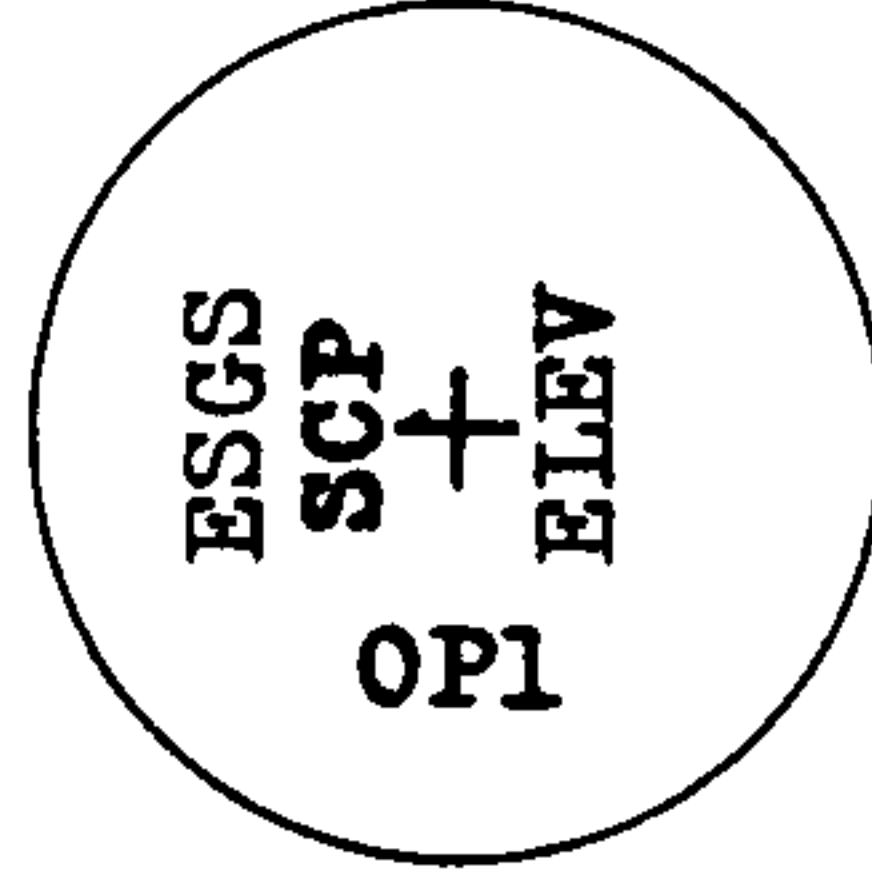
STATION: OBSERVATION POINT 1

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER: I	586495.833	4583629.491	UTM Meters
ELEV: 10.16'; Order III	1924195.064	15038124.305	UTM Feet
DATUM: Mean Sea Level, 1929	8153.500	12669.672	Local (Flag)
	73°57'54.9427"W	41°24'5.2895"N	Geographical

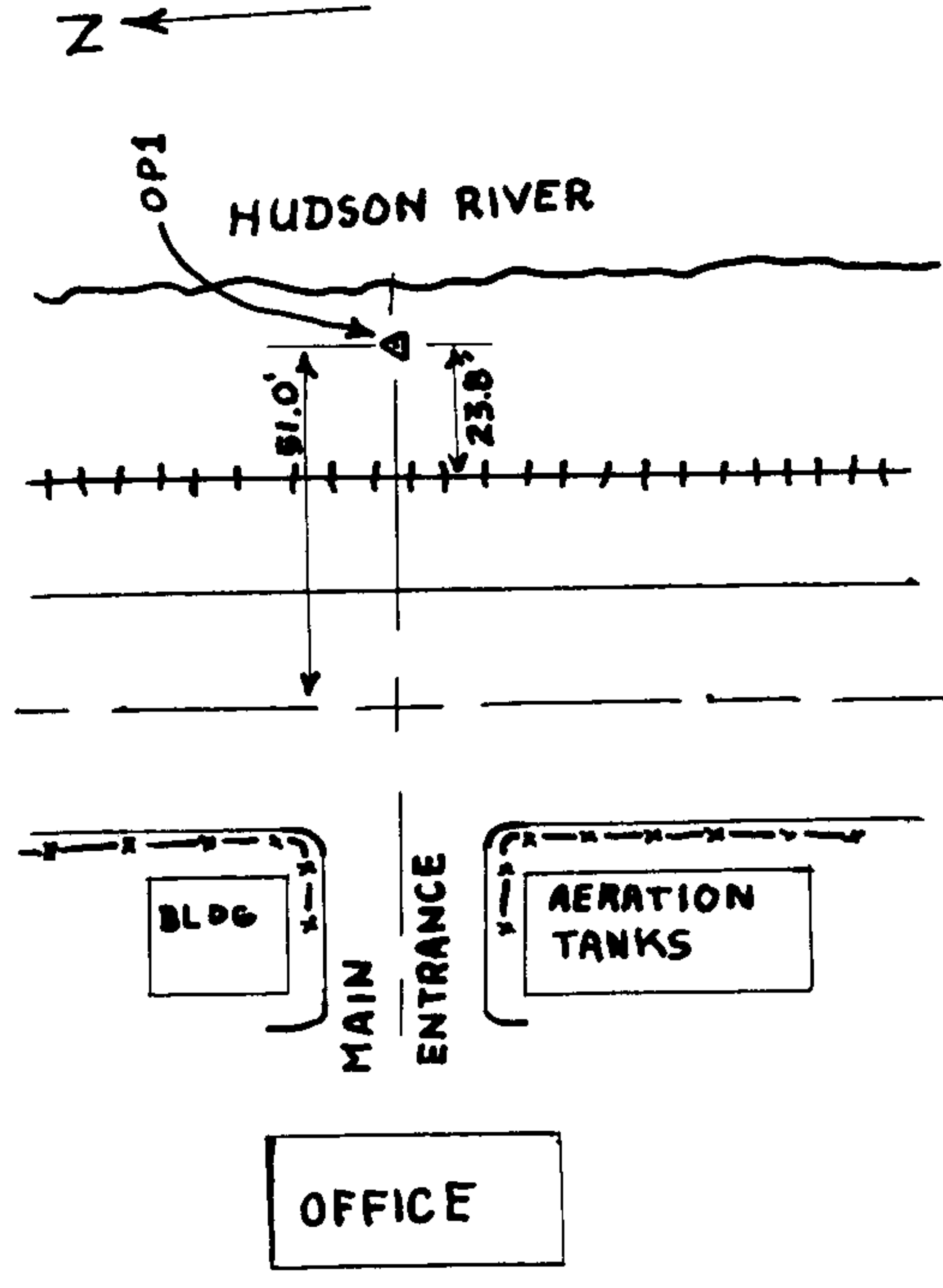
DESCRIPTION: NAME - Observation Point 1 ABBREVIATION - OP1 SKETCH:

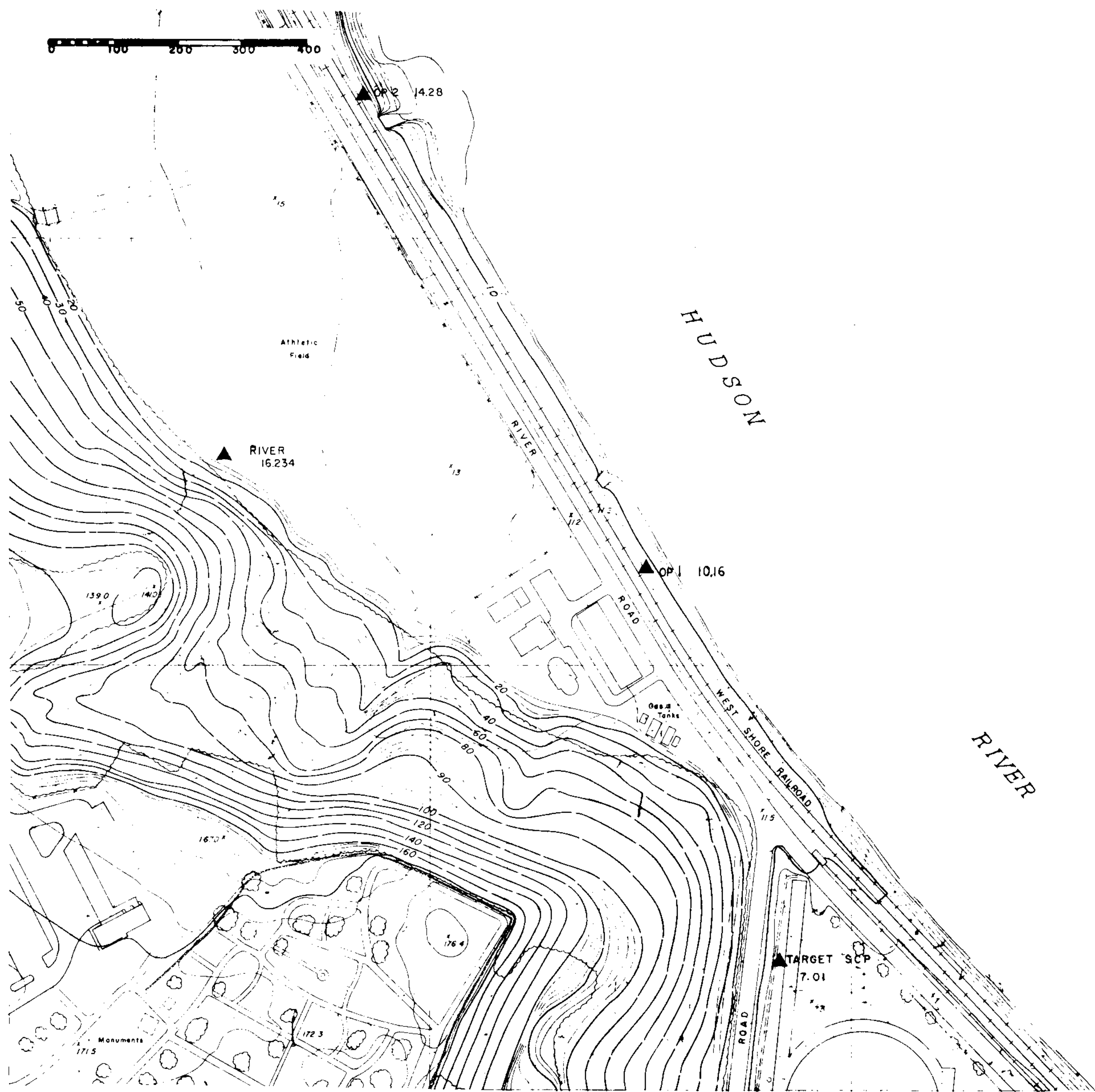
1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



2. The marker was set in the summer of 1973 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1973-1973 by same.

3. The marker is 23.8' east of the eastern rail of the Penn-Central Railroad track on the centerline of the new sewage plant driveway.





NO: 25

STATION: OBSERVATION POINT 2

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

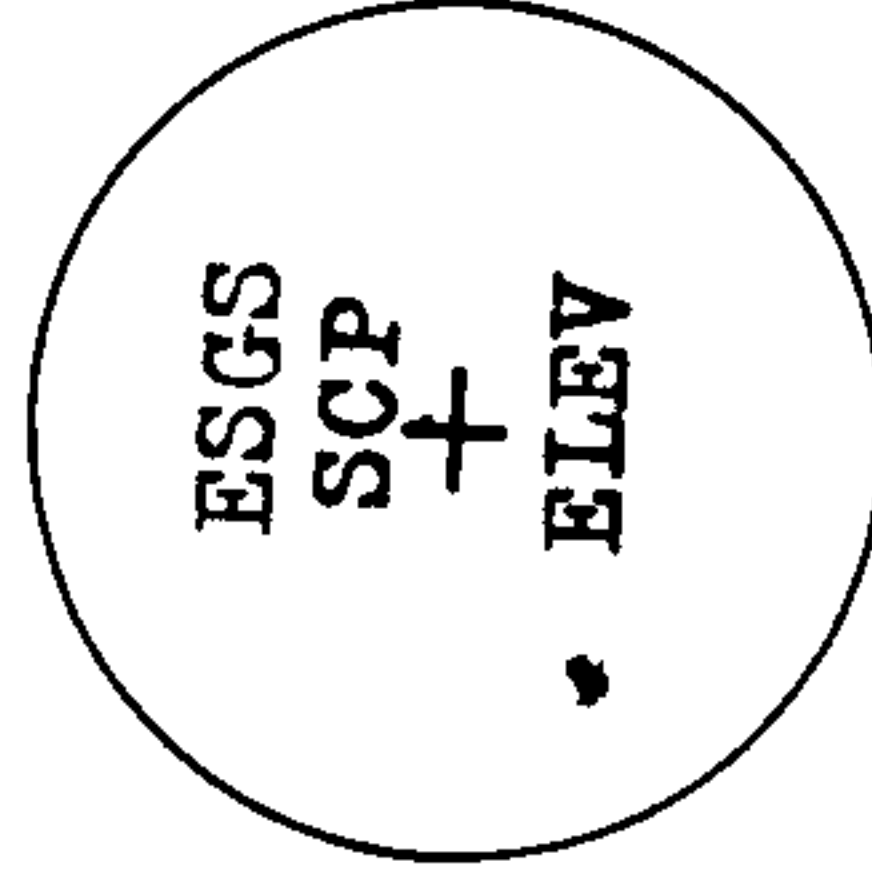
	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER: I	586360.393	4583850.590	UTM Meters
ELEV: 14.28'; Order III	1923750.708	15038849.694	UTM Feet
DATUM: Mean Sea Level, 1929	7717.685	13400.224	Local (Flag)
	73°58'0.6611"W	41°24'12.5105"N	Geographical

DESCRIPTION: NAME - Observation Point 2

ABBREVIATION - OP2

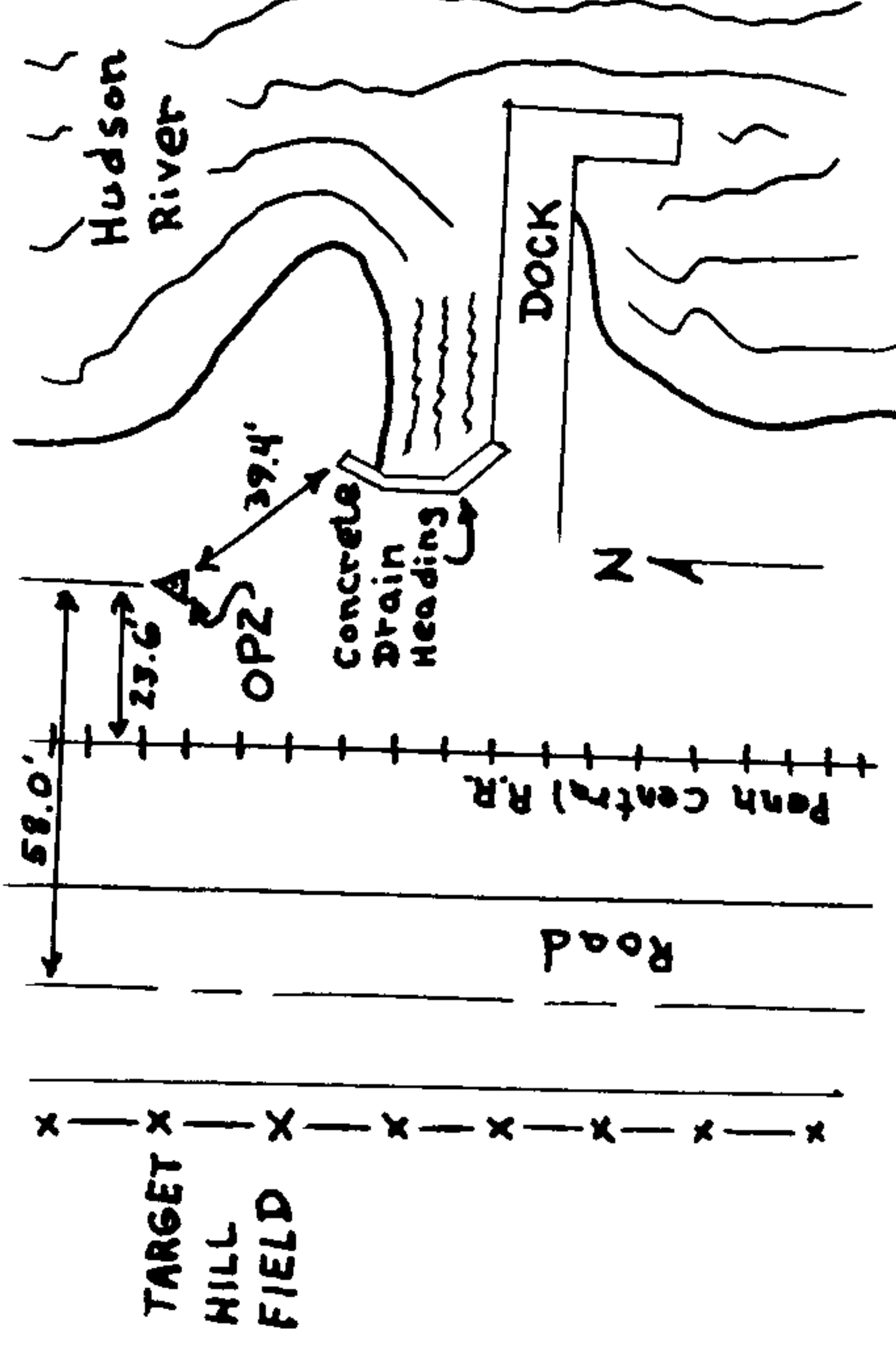
SKETCH:

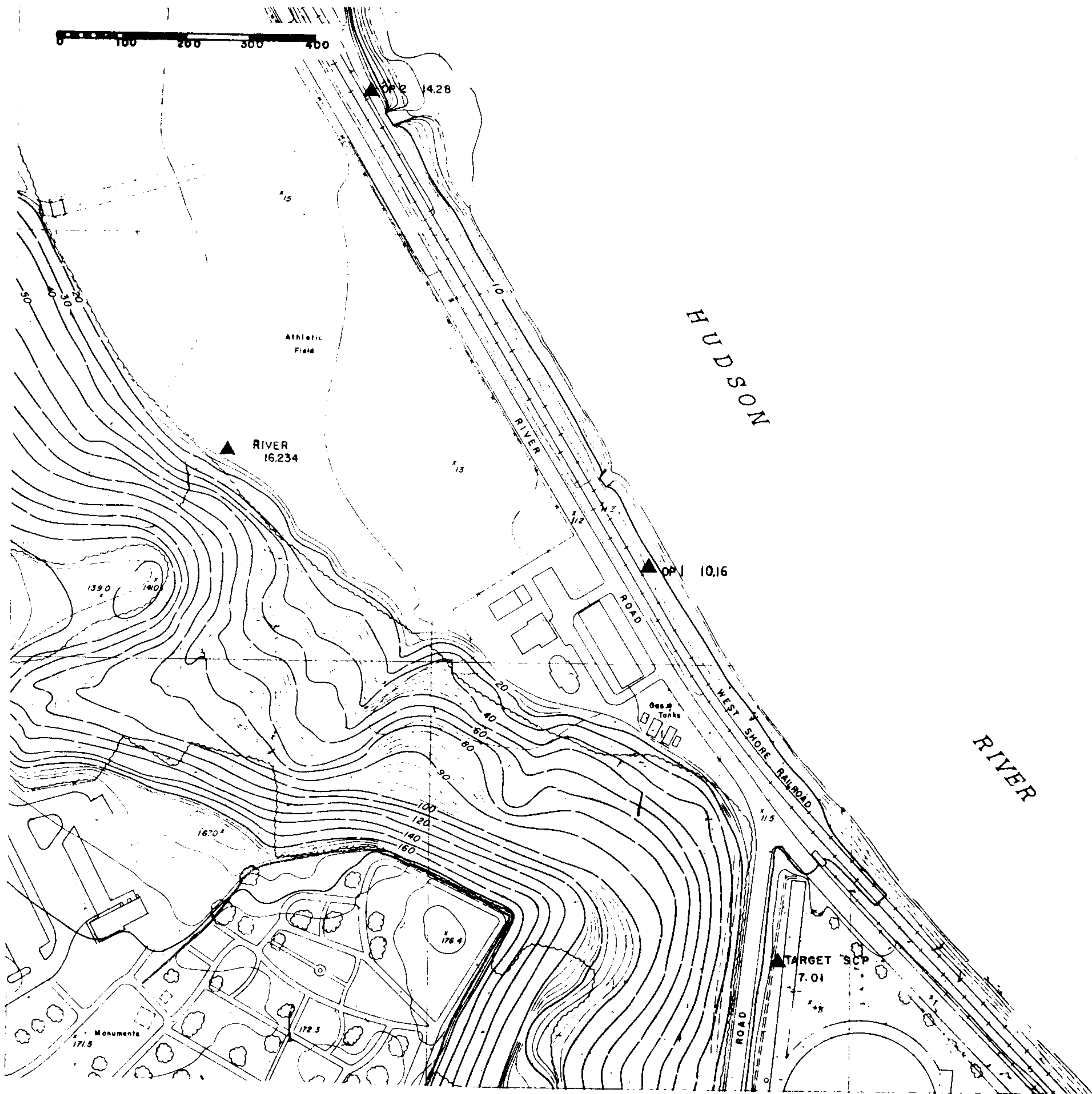
- The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is 2" above the ground and is inscribed as follows:



- The marker was set in the fall of 1973 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

- It is located 23.6' east of the eastern rail of the Penn-Central Railroad tracks and Target Hill Field and is 39.4' northwest of the concrete drain near the small boat dock beside Target Hill Field.





NO: 26

STATION: TARGET 1

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	587497.090	4585914.892	UTM Meters
ELEV: 315.88'	1927480.021	15045622.324	UTM Feet
DATUM: Mean Sea Level, 1929	11526.199	20128.635	Local (Flag)
	73°57'10.6394"W	41°25'18.9977"N	Geographical

DESCRIPTION: NAME - Target 1 ABBREVIATION - Tgt 1 SKETCH:

1. It is the top of the spire on a church in Cold Spring, New York. The church is the one located furthest up the hill from the Hudson River and is visible from Target Field, West Point, New York.
2. The spire is a light gray in color.
3. This point is used as a target in the field artillery problem for USMA cadets enrolled in EF 384.

NO: 27

STATION: TARGET 2

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	587269.729	4584862.084	UTM Meters
ELEV: 4.56'	1926734.088	15042168.236	UTM Feet
DATUM: Mean Sea Level, 1929	10739.793	16683.536	Local (Flag)
	73°57'20.9793"W	41°24'44.9522"N	Geographical

DESCRIPTION: NAME - Target 2 ABBREVIATION - Tgt 2 SKETCH:

1. It is the lower left corner of the *Penn-Central Railroad* bridge located on the eastern bank of the Hudson River and to the north of Constitution Island and south of Cold Spring, New York. The railroad bridge is visible from Target Field, West Point, New York.

2. The point is used as a target in the field artillery problem for USMA cadets enrolled in EF 384.



NO: 28

STATION: TARGET 3

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	589011.379	4583008.301	UTM Meters
ELEV: 301.74'	1932448.150	15036086.286	UTM Feet
DATUM: Mean Sea Level, 1929	16382.108	10534.965	Local (Flag)
	73°56'6.9538"W	41°23'44.1608"N	Geographical

DESCRIPTION: NAME - Target 3 ABBREVIATION - Tgt 3 SKETCH:

1. As viewed from Target Field, West Point, New York, this point is located to the southeast towards Garrison, New York. It is east of the Hudson River and up the hill from the river. As viewed from OPI, the line of sight lies between Constitution Island and North Dock.
2. The point is a squat, conical roof located on top of a turret-like structure of a building. The conical roof is copper and has the characteristic weathered green color. It is sometimes referred to as the "green dome."
3. The point is used as a target in the field artillery problem for USMA cadets enrolled in EF 384.

NO: 29

STATION: CONSTITUTION ISLAND LIGHT  
(USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: WEST POINT NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER: III	586928.328	4583845.461	UTM Meters
ELEV:	1925614.008	15038832.866	UTM Feet
DATUM:	73°57'36.208" W	41°24'12.124" N	Local (Flag) Geographical

DESCRIPTION: NAME - *Constitution Island Light*      ABBREVIATION - *Constitution Island Light*      SKETCH:

1. The station is located on the eastern side of the Hudson River just north of West Point on the western side of Constitution Island. It is on a ledge on the face of a steep cliff and is a red pyramidal skeleton tower on a white concrete foundation. It was established in 1919. It is a USCGS triangulation station. The USCGS is now known as the NOAA.

2. This station is also known as *Target #4* in the USMA ES&GS academic EF 384 field artillery survey problem.

Object	Distance	Az (True)	Az (UTM)
OP-1	483.420 m	243°27'52"	244°08'12"
OP-2	567.958 m	270°31'03"	271°11'22"
Flag	1032.539'	172°53'22"	172°13'02"
	3387.589 m		

NO: 30

STATION: Ex (USCGS/NOAA)

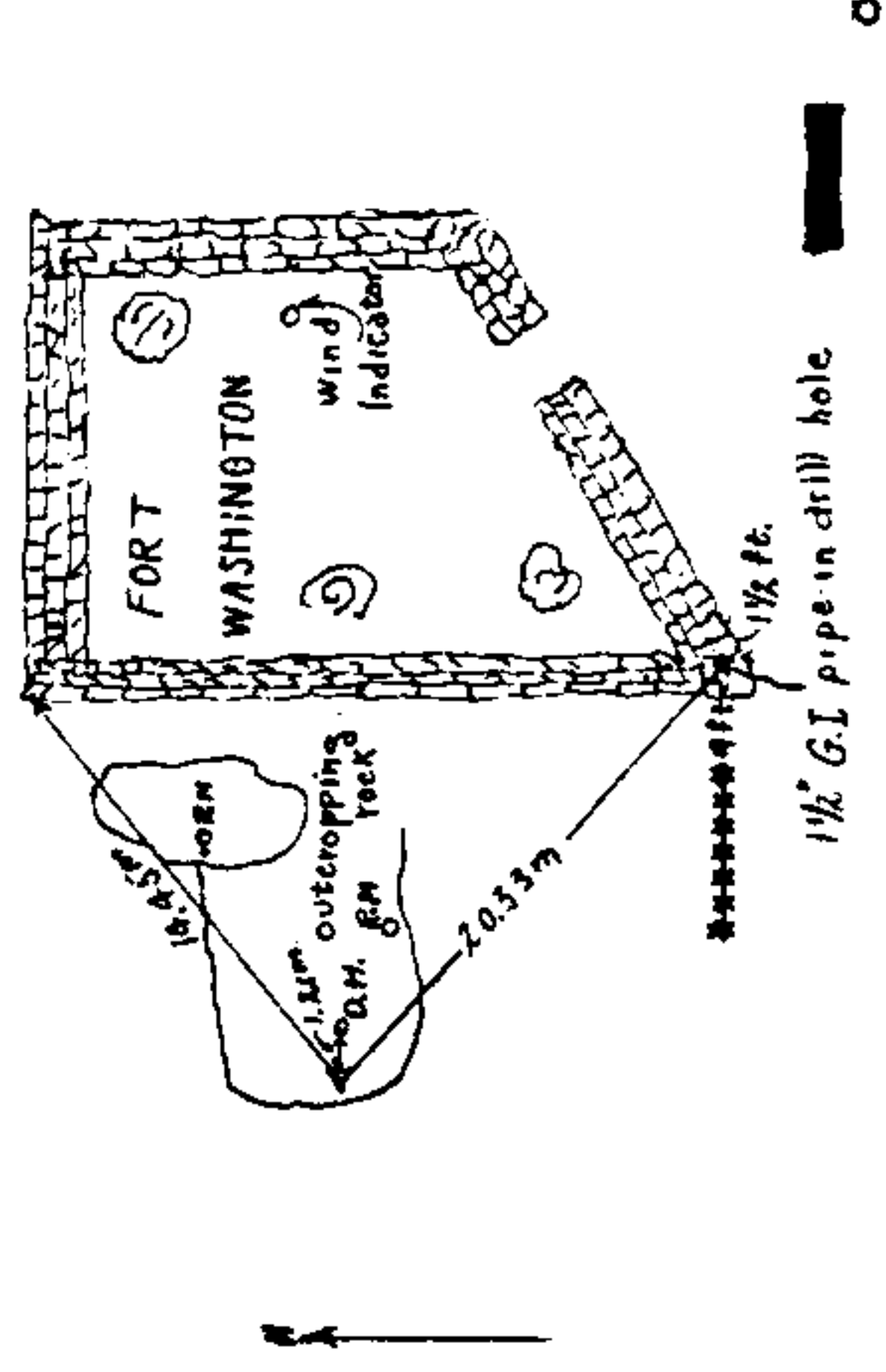
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL	587006.176	4583806.423	UTM Meters
ORDER: III	1925869.415	15038704.791	UTM Feet
ELEV:			Local (Flag)
DATUM:	73°57'32.876" W	41°24'10.828" N	Geographical

DESCRIPTION: NAME - Ex ABBREVIATION - Ex

SKETCH:

- Ex was marked by a .75" drill hole in the outcropping rock with a .5" drill hole nearby. It was re-marked by a standard disk which has no name stamped on it and by two standard disk reference marks cemented in drill holes in nearby outcropping rock. They also are not stamped. The station is located on the western end of Constitution Island on top of the bluff and just west of the remains of Fort Washington, known as Redoubt 7. A 30-foot pole was erected over the station, and the station was not occupied.



Object	Distance (m)	Direction
ZIP		0°00'00.0"
RM N	10.43	117°02'14.0"
Pipe in Fort	20.33	173°39'22.0"
RM S	8.07	198°09'44.0"
.5" Drill Hole	1.21	
RM N to RM S	12.14	

Height of signal above station mark - 10 meters.

- The pole has been removed, but the concrete base over the station marker is still intact. Both reference marks are intact. The station was recovered in May 1975. The station was established by the USCGS, now known as the NOAA.

NO: 31

STATION: CONSTITUTION ISLAND (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: PUTNAM CO., NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER: III	586930.790	4584203.266	UTM Meters
ELEV:	1925622.085	15040006.767	UTM Feet
DATUM:	73°57'35.917" W	41°24'23.724" N	Local (Flag) Geographical

DESCRIPTION: NAME - *Constitution Island* ABBREVIATION - *Constitution Island* SKETCH:

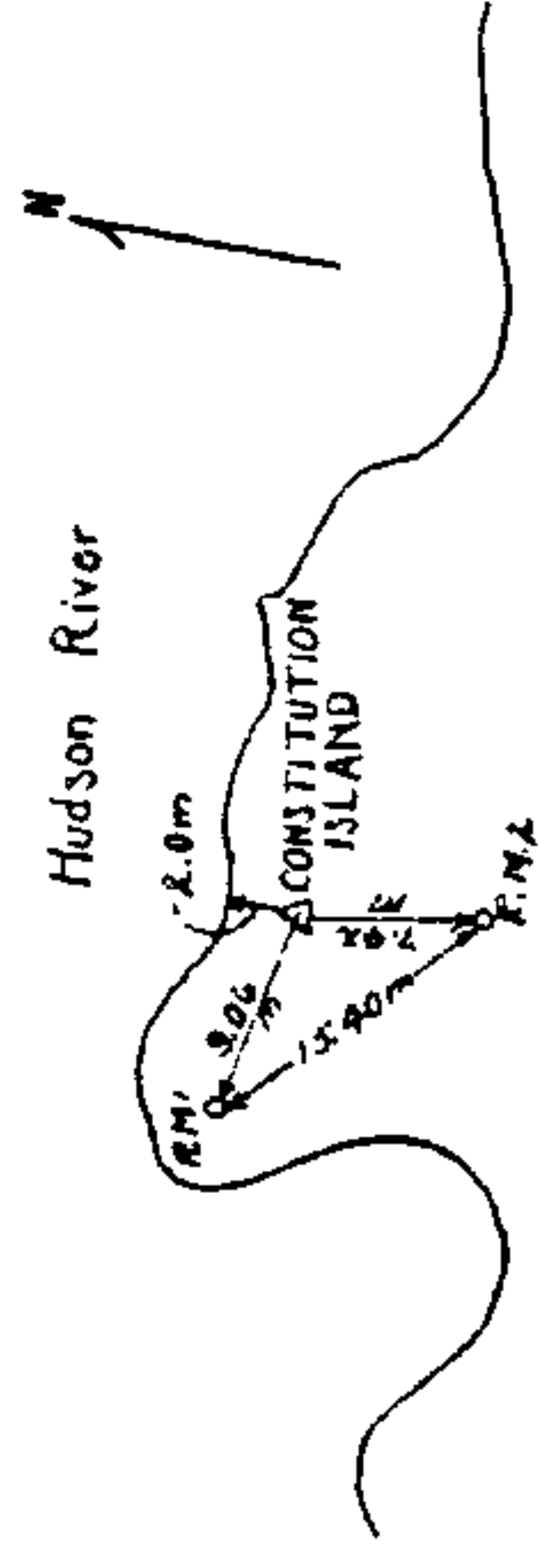
1. This station was recovered and marked using standard disks, properly stamped, cemented in drill holes in rocks. The station is on the northern end of Constitution Island and about .5 mile south of Cold Spring, New York.

Object	Distance (m)	Direction
ZIP		0°00'00.0"
RM 2	7.42	219°01'00.0"
RM 1	9.06	357°42'00.0"
RM 1 to RM 2	15.40	
Chan		49°05'47.8"

Height of signal above station mark - 3.0 meters.  
Height of telescope above station mark - 2.0 meters.

The station is on the second rocky point east of the northwestern corner of Constitution Island.

2. The station was established in 1852 by the USCGS, now known as the NOAA.
3. *Constitution Island* was recovered in May 1975 in good condition.



NO: 32

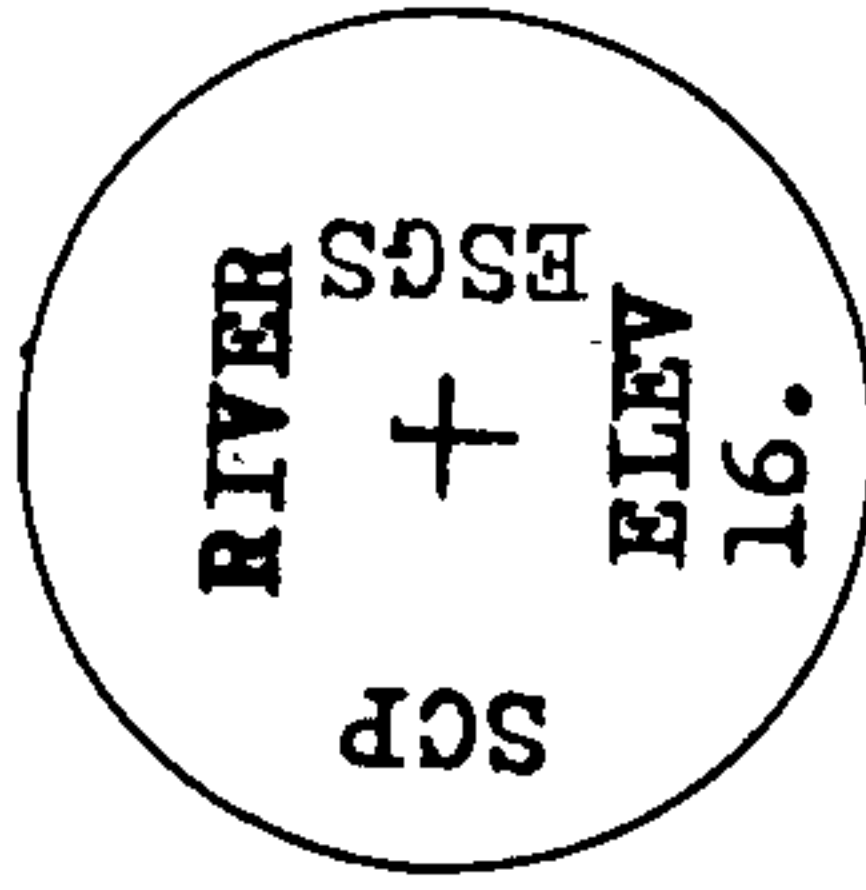
STATION: RIVER

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	586306.203	4583677.100	UTM Meters
ELEV: 16.234'	1923572.919	15038280.502	UTM Feet
DATUM: Mean Sea Level, 1929	7533.230	12833.157	Local (Flag)
	73°58'3.0837"W	41°24'6.9065"N	Geographical

DESCRIPTION: NAME - *River* ABBREVIATION - *River*

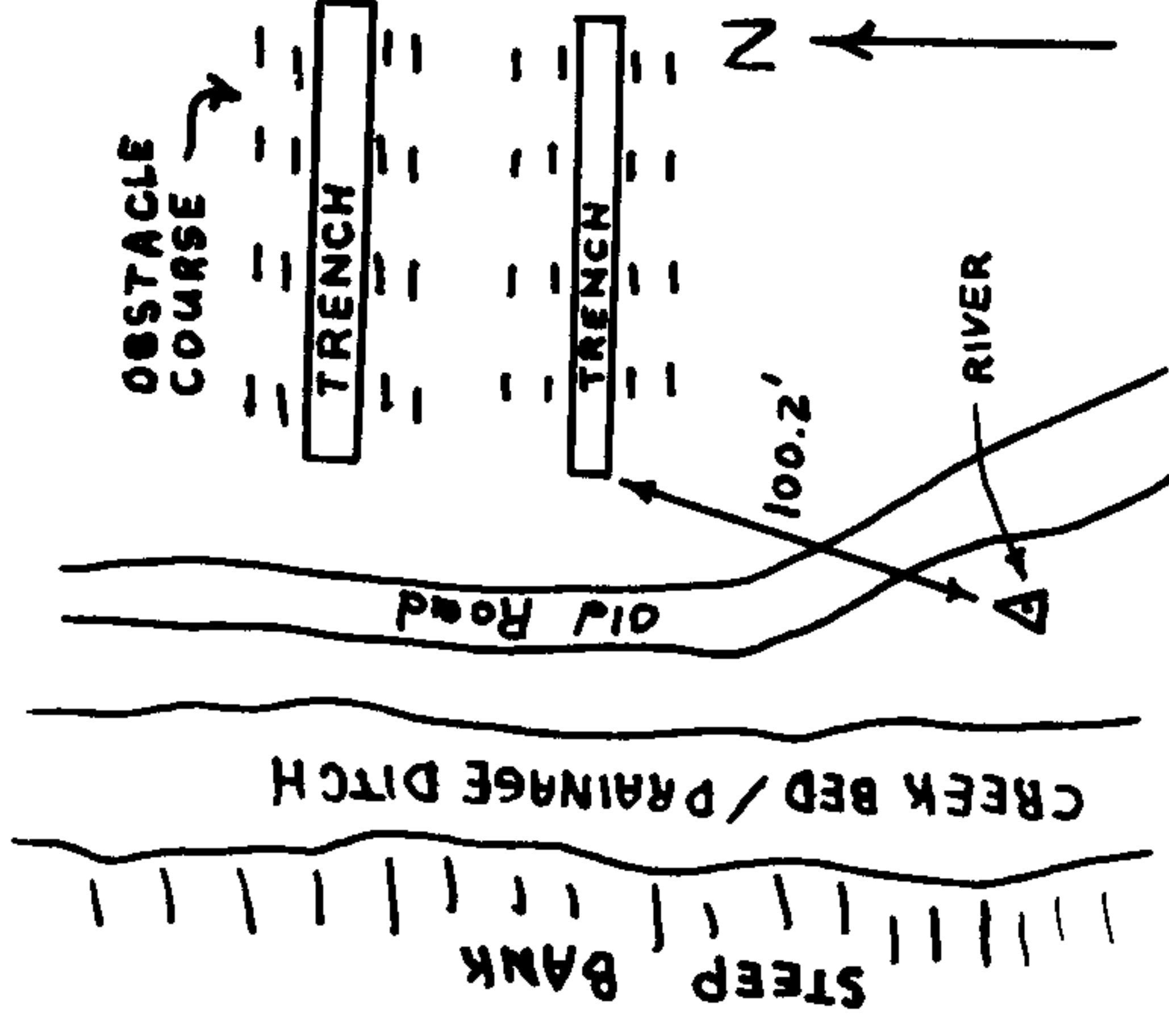
1. The marker is a brass disk 3" in diameter and set in a 6"-square concrete monument. The top of the monument is 4" above ground and has a concrete apron around it. It is inscribed as follows:



2. The marker was set in the winter of 1974 by MAJ A. A. Kopcak, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

3. It is located to the southwest of the cadet obstacle course on Target Field. It is also west of the road that is between Target Field and the hill below the new PX area. It is east of the creek bed at the base of the hill and 100.2' southwest of the corner of the southern trench of the obstacle course.

SKETCH:



NO: 33

STATION: CHAPEL

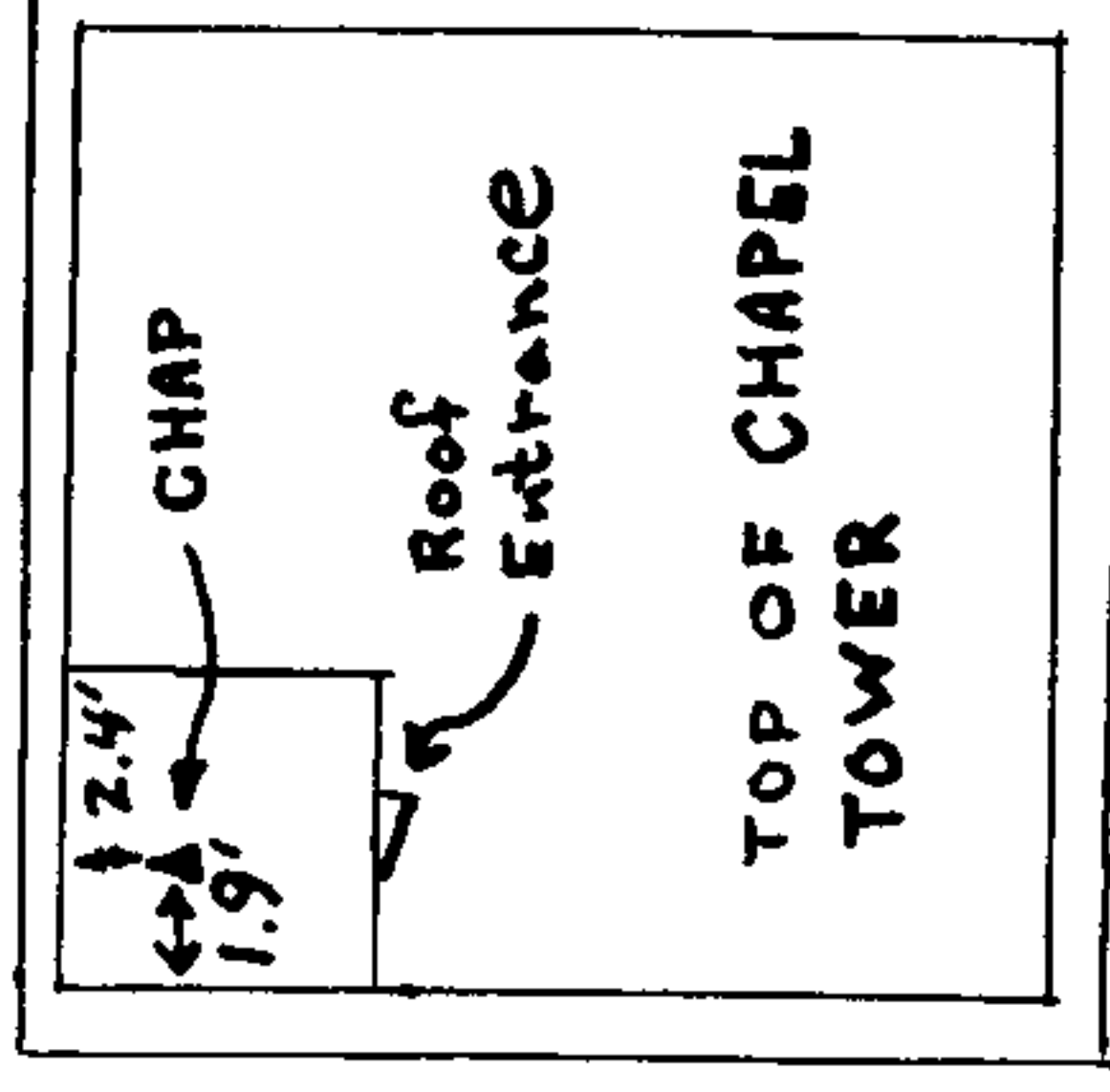
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	586916.919	4582380.415	UTM Meters
ELEV: 414.407'	1925576.578	15034026.295	UTM Feet
DATUM: Mean Sea Level, 1929	9486.843	8555.731	Local (Flag)
	73°57'35.4563"W	41°23'24.6278"N	Geographical

DESCRIPTION: NAME - Chapel ABBREVIATION - Chap

SKETCH:

1. Chapel is located on the highest portion of the Cadet Chapel tower.
2. The point consists of a cup tack driven into the copper sheeting on the roof. It is 2.4' from the north wall and 1.9' from the west wall of the tower.
3. Chap was positioned in the spring of 1973 by MAJ A. A. Kopcsak, Department of ES&GS, USMA, West Point, New York.



NO: 34

STATION: PUTNAM

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER: I	586611.188	4582305.642	UTM Meters
ELEV: 489.799'; Order III	1924573.525	15033780.978	UTM Feet
DATUM: Mean Sea Level, 1929	8480.982	8322.199	Local (Flag)
	73°57'50.6572"W	41°23'22.3222"N	Geographical

DESCRIPTION: NAME - Putnam ABBREVIATION - Put

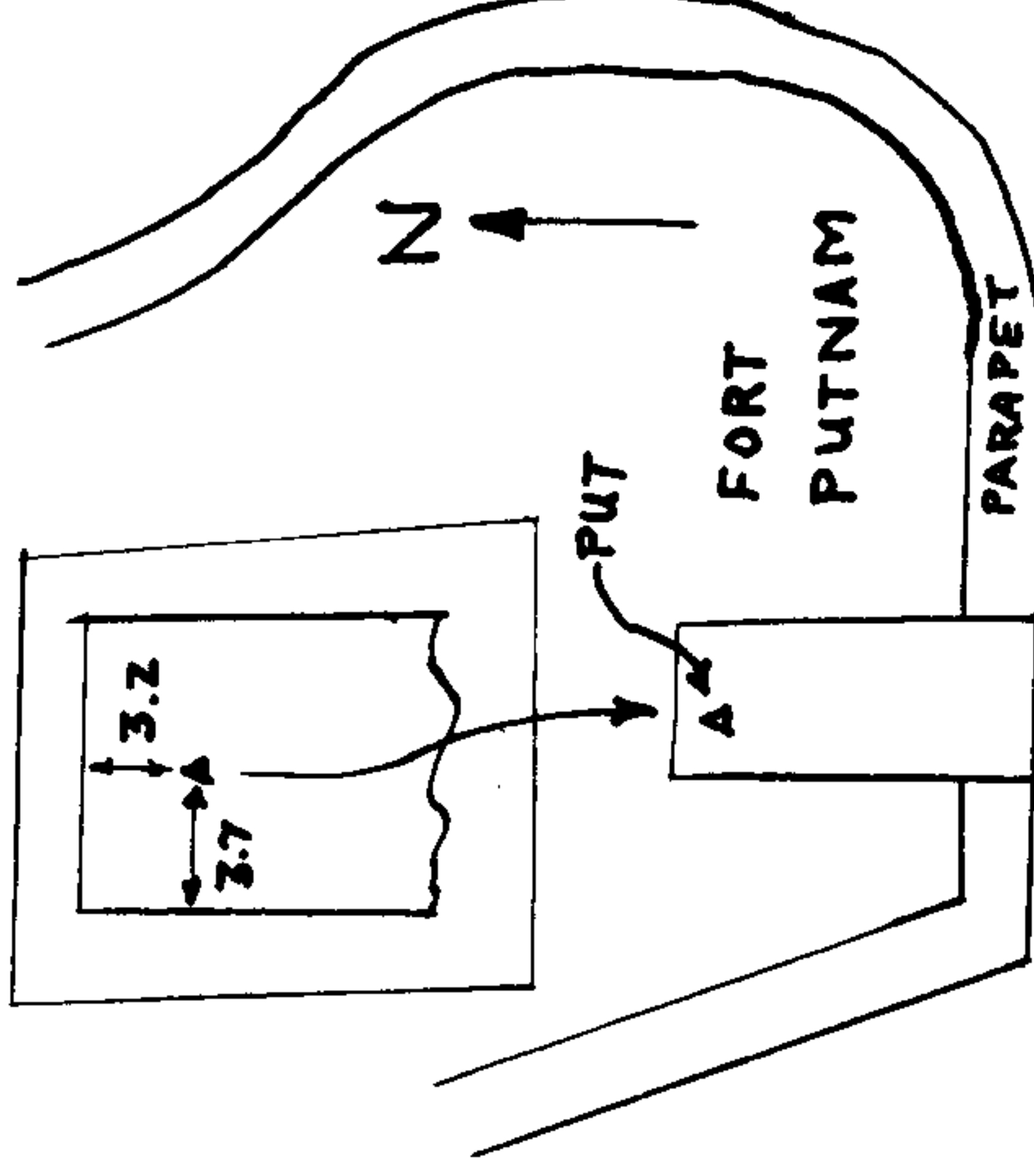
SKETCH:

1. The marker did have a copper disk 2" in diameter and set in an 8"-diameter concrete monument. The disk has been removed, but the shaft remains. There is a center punch hole in the shaft.

2. Origin unknown but it probably was established between 1926 and 1933 by military personnel assigned to the USMA. The original elevation is unknown.

3. The marker was probably originally used in the USMA cadet triangulation net. It was resurveyed and relevelled in 1973 by MAJ A. A. Kopcak, Survey Committee, Department of ES&GS, USMA, West Point, New York.

4. The marker is located near the northwestern corner of the stone and earth-filled 7.8' x 25' x 8' rectangular structure adjacent to the southernmost wall and on top of the parapet of Fort Putnam.



NO: 35

STATION: HIGH POINT

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

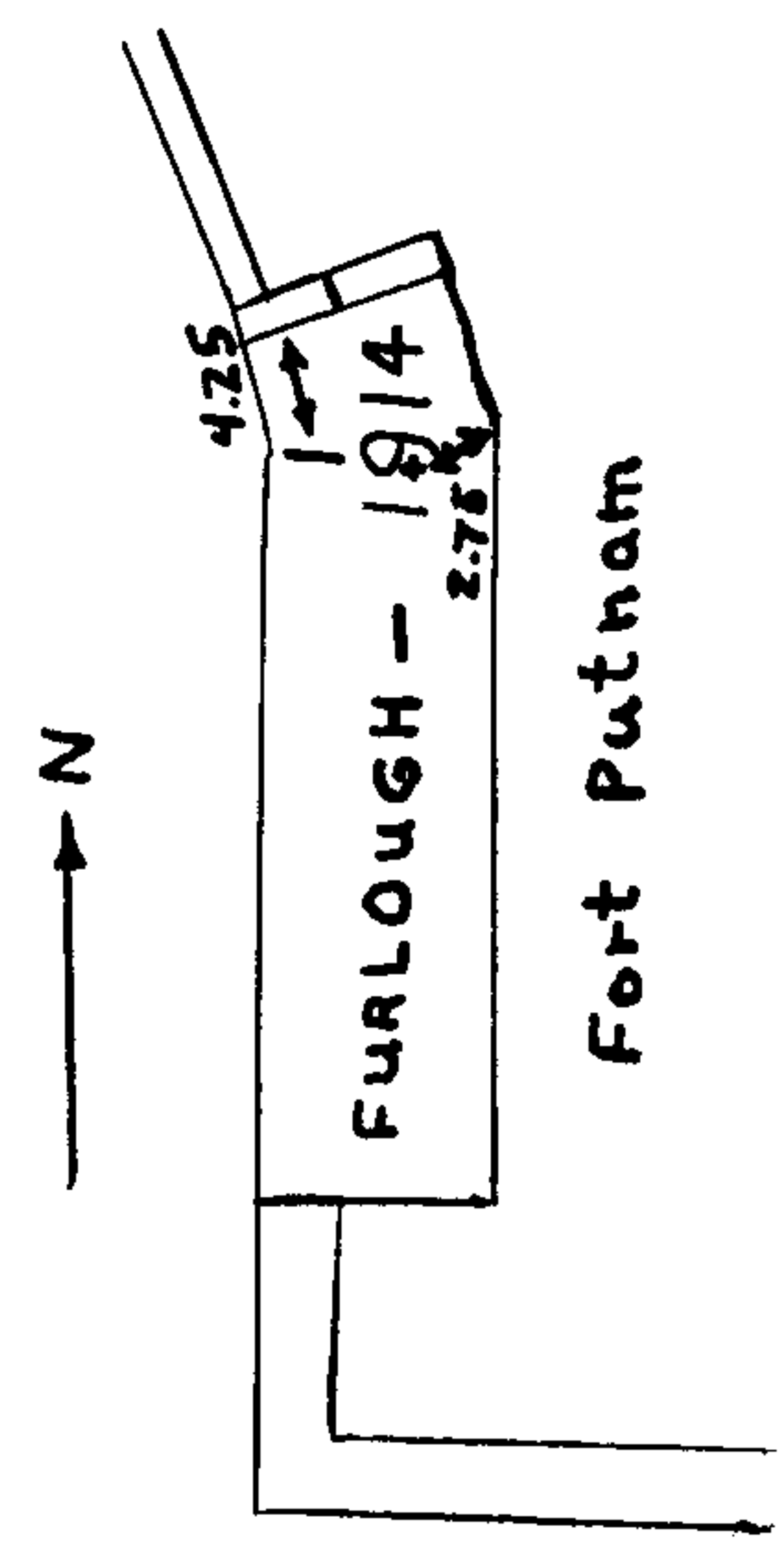
	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	586576.159	4582328.972	UTM Meters
ELEV: 506.929'	1924458.599	15033857.518	UTM Feet
DATUM: Mean Sea Level, 1929	8366.961	8400.082	Local (Flag)
	73°57'52.1532"W	41°23'23.0922"N	Geographical

DESCRIPTION: NAME - *High Point* ABBREVIATION - HP SKETCH:

1. *High Point* is a cup tack located in top of the southwestern wall of Fort Putnam. The wall is marked "FURLOUGH - 1914" on top. That portion of the wall is approximately 4' wide and has a concrete cap. It appears to be a platform. At the northwestern end of the platform is a wall which is perpendicular to the long axis of the platform.

2. The cup tack is in a crack in the concrete 4.25' from the perpendicular wall and 2.75' from the northeastern side of the platform (that side facing the interior of the fort).

3. HP was established in 1973 by MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York.





NO: 36

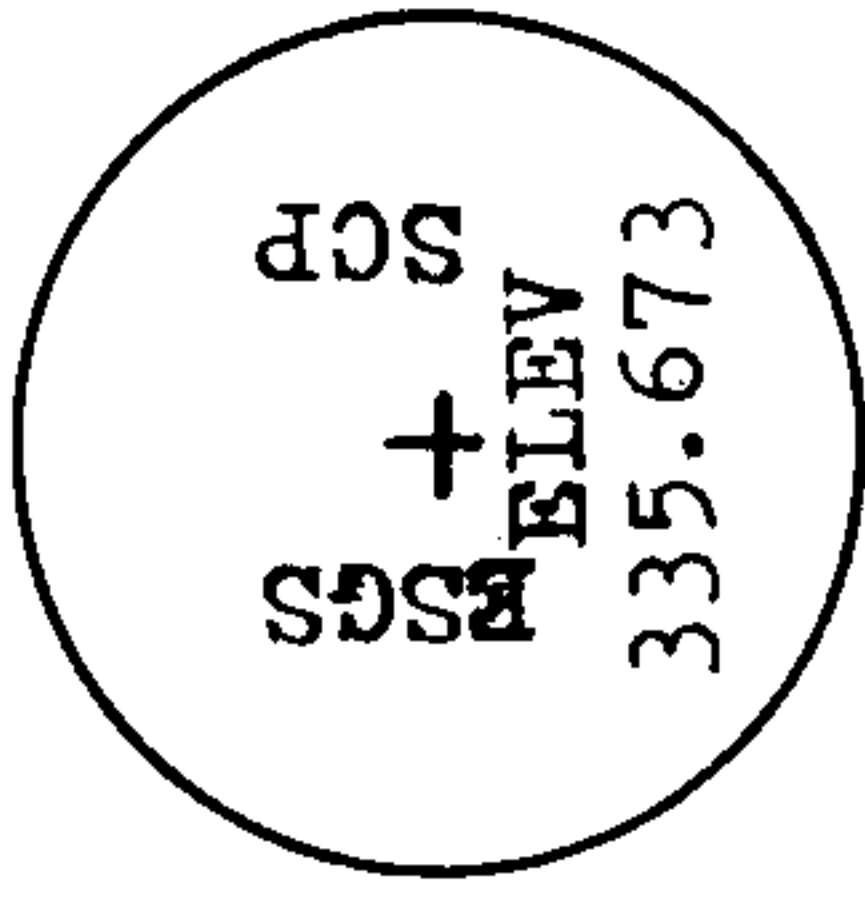
STATION: SOUTH HOWZE

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting		Northing		Grid	
HORIZONTAL CONTROL ORDER:	586634.942	4581635.414	UTM Meters			
ELEV: 336.323'	1924651.458	15031582.010	UTM Feet			
DATUM: Mean Sea Level, 1929	8533.999	6199.065	Local (Flag)			
	73°57'49.9795" W	41°23'0.5824" N	Geographical			

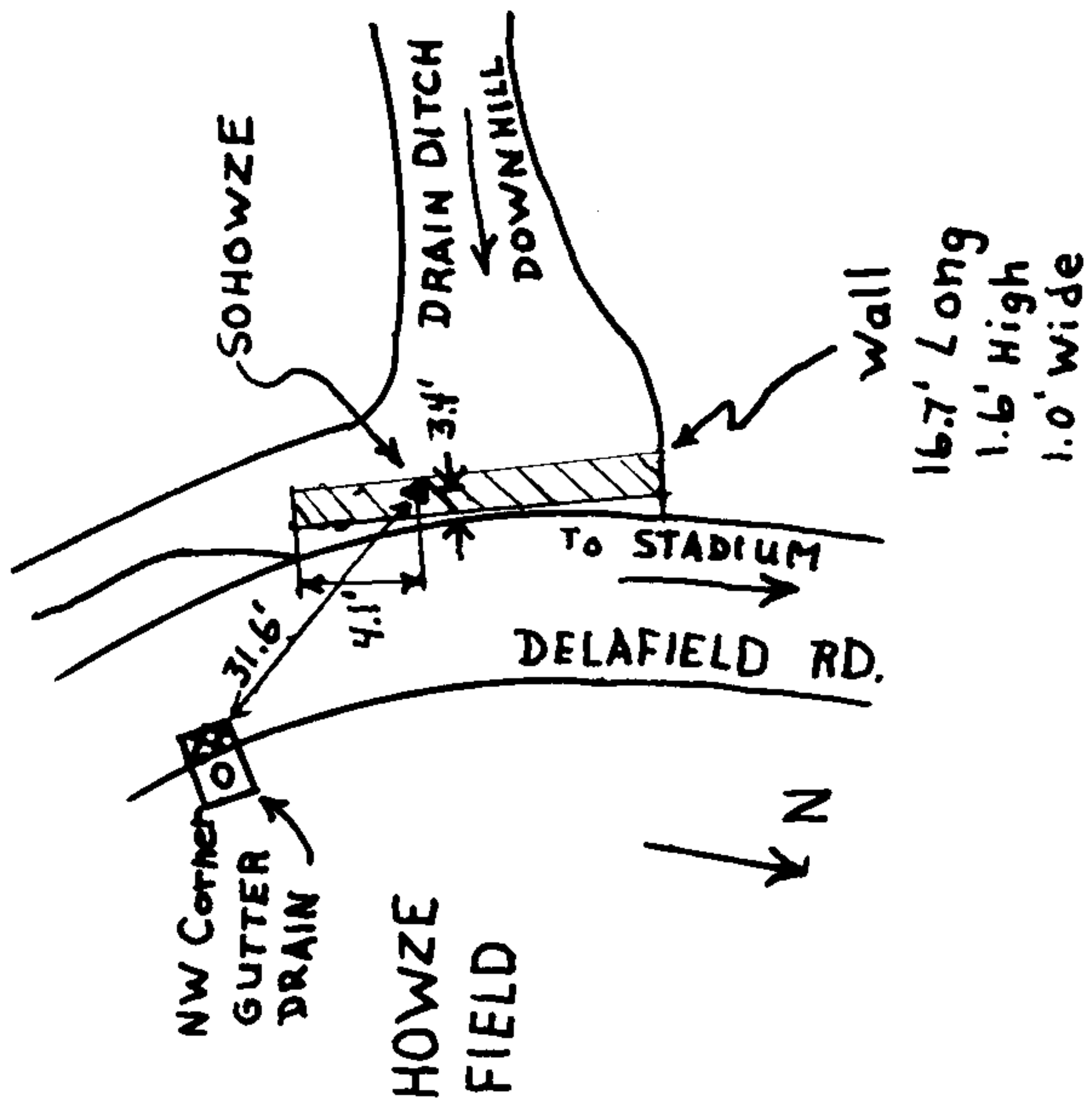
DESCRIPTION: NAME - *South Howze* ABBREVIATION - *SOHOWZE* SKETCH:

- The marker is a brass disk 3" in diameter and set in a 6"-square concrete monument on the top of the headwall and is inscribed as follows:



- The marker was set in December of 1973 by MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1972-1973 by same.

- The marker is near the southwestern corner of Howze Field and west of Delafield Road. It is on the top of a headwall located at the bottom of a drainage ditch leading off the hill.



NO: 37

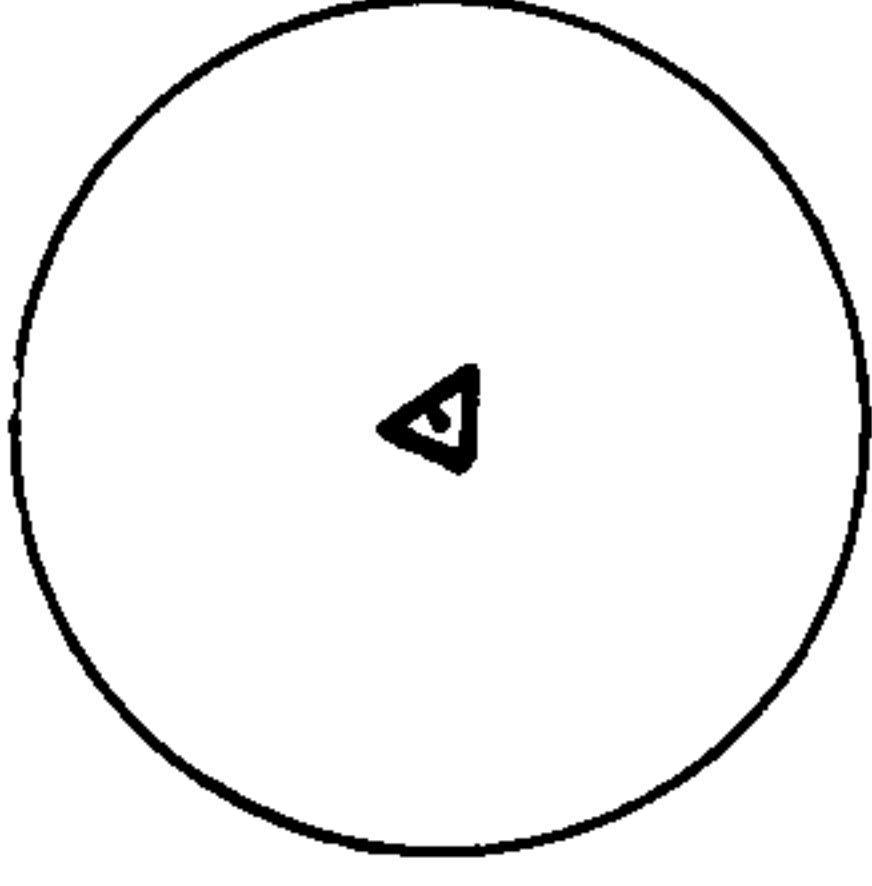
STATION: GYMNASIUM

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER:	586803.132	4582691.740	UTM Meters
ELEV: 197.452'	1925203.260	15035047.700	UTM Feet
DATUM: Mean Sea Level, 1929	9125.536	9581.447	Local (Flag)
	73°57'42.1945"W	41°23'35.7660"N	Geographical

DESCRIPTION: NAME - *Gymnasium* ABBREVIATION - *Gym* SKETCH:

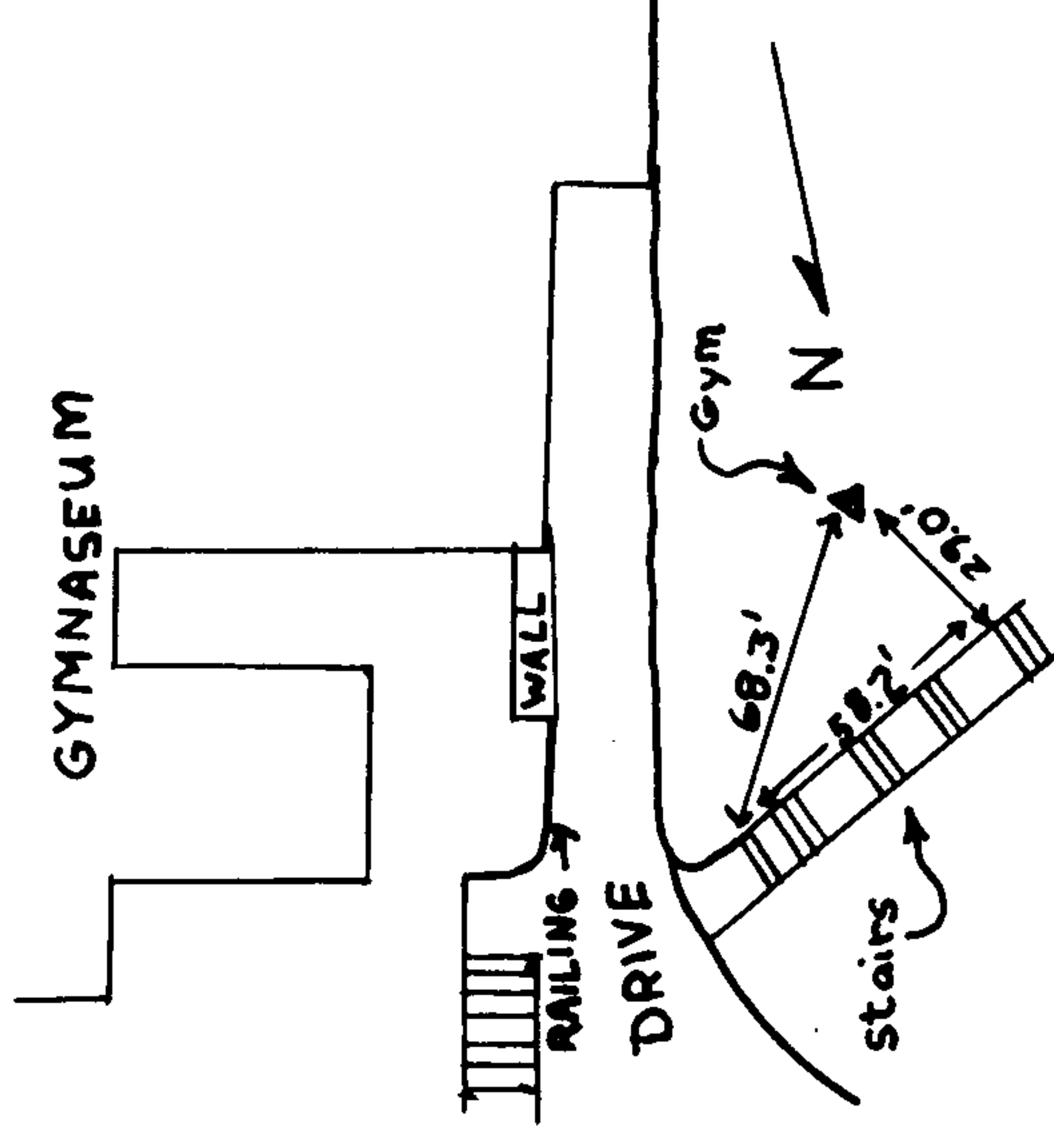
1. The marker is a copper disk 2" in diameter and set in an 8"-diameter concrete monument. The top of the monument is flush with the ground and is inscribed as follows:



2. Origin unknown but it was probably established between 1926 and 1933 by military personnel assigned to the USMA. The original elevation was 197.59', based on the 1926 datum for mean sea level.

3. The marker was originally used in the USMA cadet triangulation net. It was resurveyed and relevelled in 1972 by the Survey Committee, Department of ES&GS, USMA.

4. The marker is located on the hill west of the northern end of the Gymnasium. It is 68.3' southwest of the corner of the first stone step of the stairs leading uphill to the junction of Mills Road and DeRussy Loop. It is located in a wedge of land formed by a drive parallel to the west side of the Gym and the stairs.



NO: 38

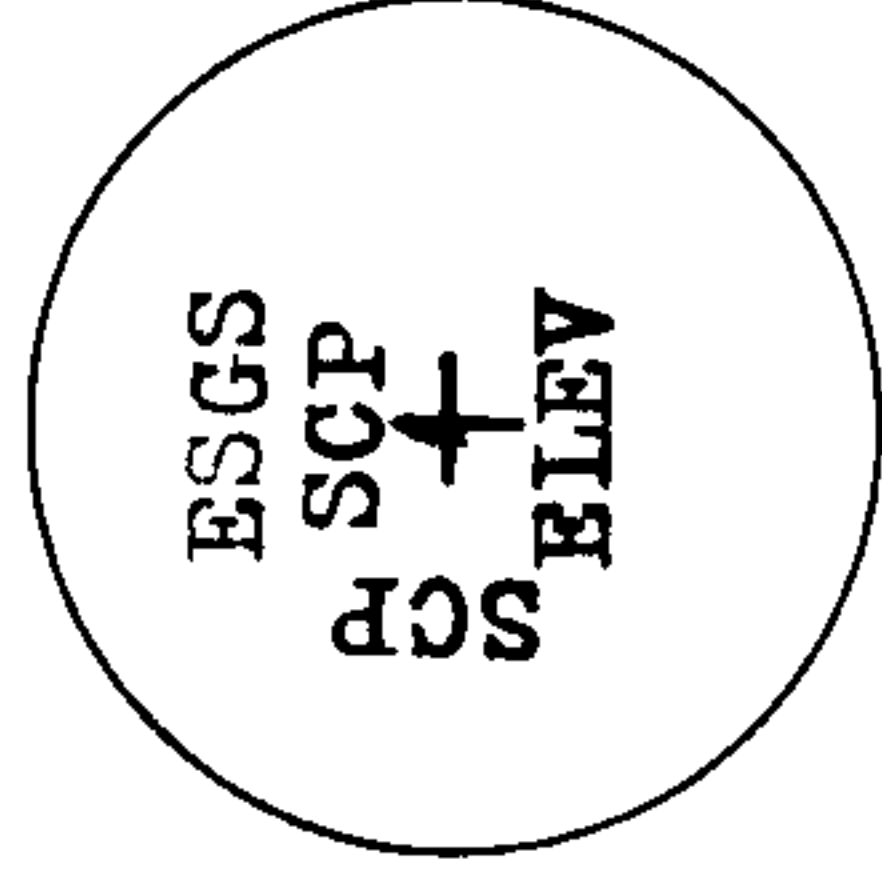
STATION: OBSERVATORY

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	586900.446	4582153.996	UTM Meters
ELEV: 376.217'	1925522.532	15033283.453	UTM Feet
DATUM: Mean Sea Level, 1929	9424.087	7813.574	Local (Flag)
	73°57'38.2824"W	41°23'17.2931"N	Geographical

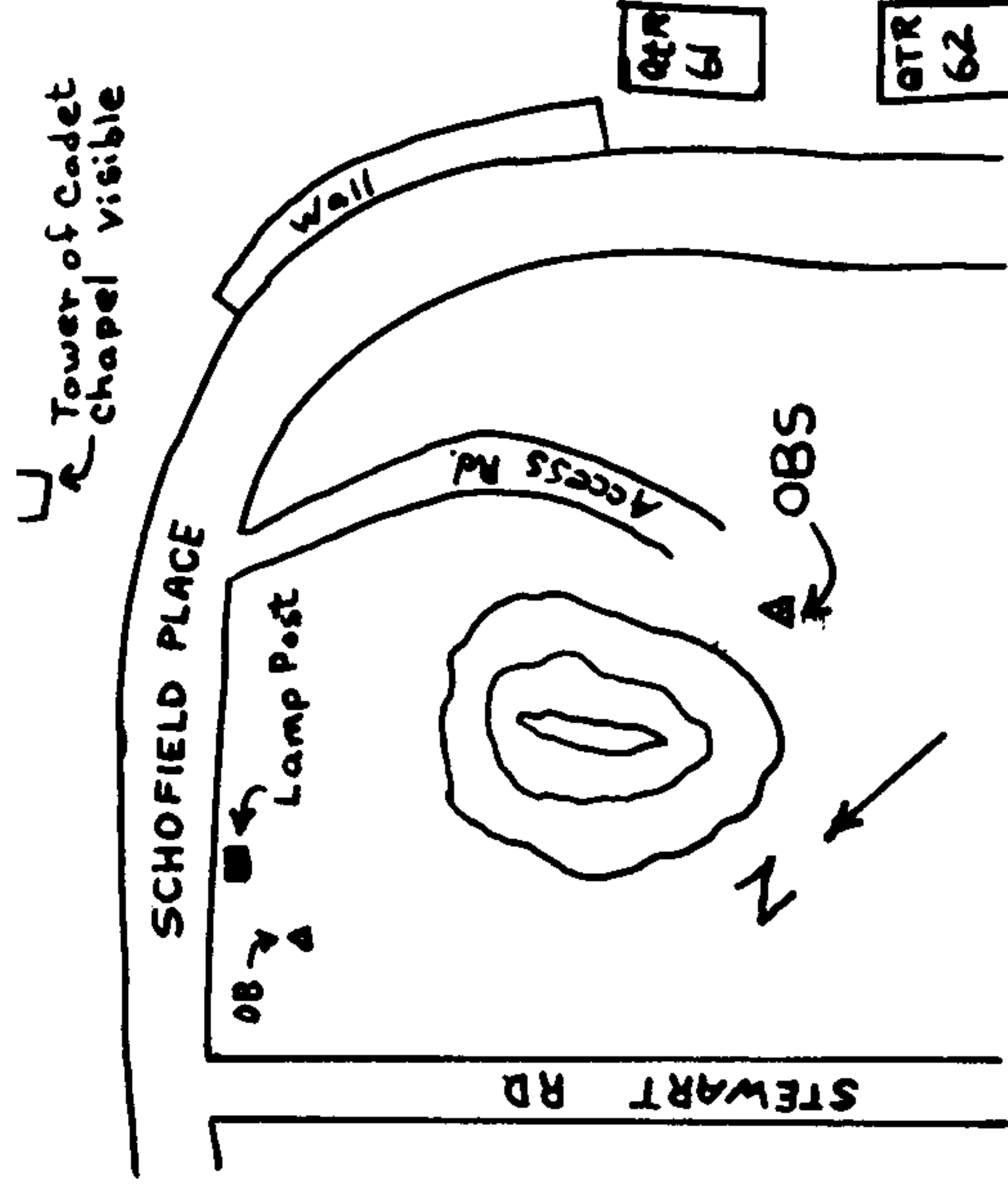
DESCRIPTION: NAME - *Observatory* ABBREVIATION - *Obs* SKETCH:

1. The marker is a brass disk 2" in diameter and set in a 6"-square concrete monument. The top of the monument is 8" above ground and is inscribed as follows:



2. The marker was set in the summer of 1972 by MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York, and horizontal and vertical controls were established in 1973-1974 by same.

3. The monument is located near the top of Observatory Hill to the south and east of its summit. It is between Stewart Road and Schofield Place. The old observatory access road leads directly to the monument from Schofield Place. The monument is in the approximate center of the area where the Observatory had been located.



NO: 39

STATION: OBSERVATORY HILL

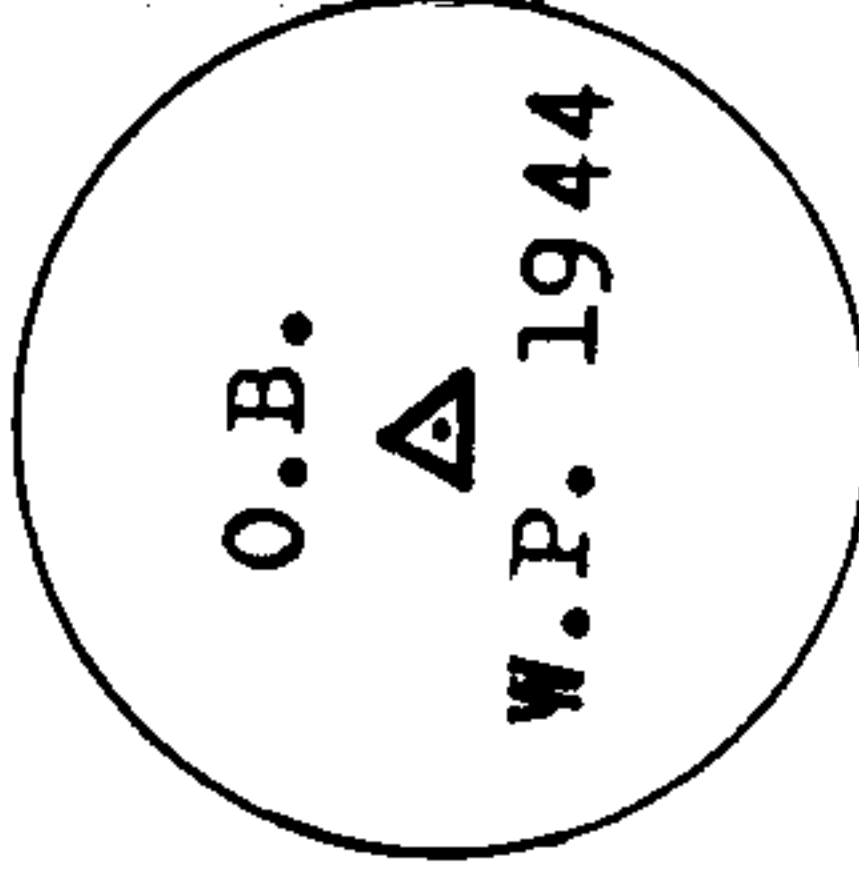
SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	586850.215	4582274.642	UTM Meters
ELEV: 350.877'	1925357.732	15033679.271	UTM Feet
DATUM: Mean Sea Level, 1929	9263.942	8211.298	Local (Flag)
	73°57'40.3826"W	41°23'21.2243"N	Geographical

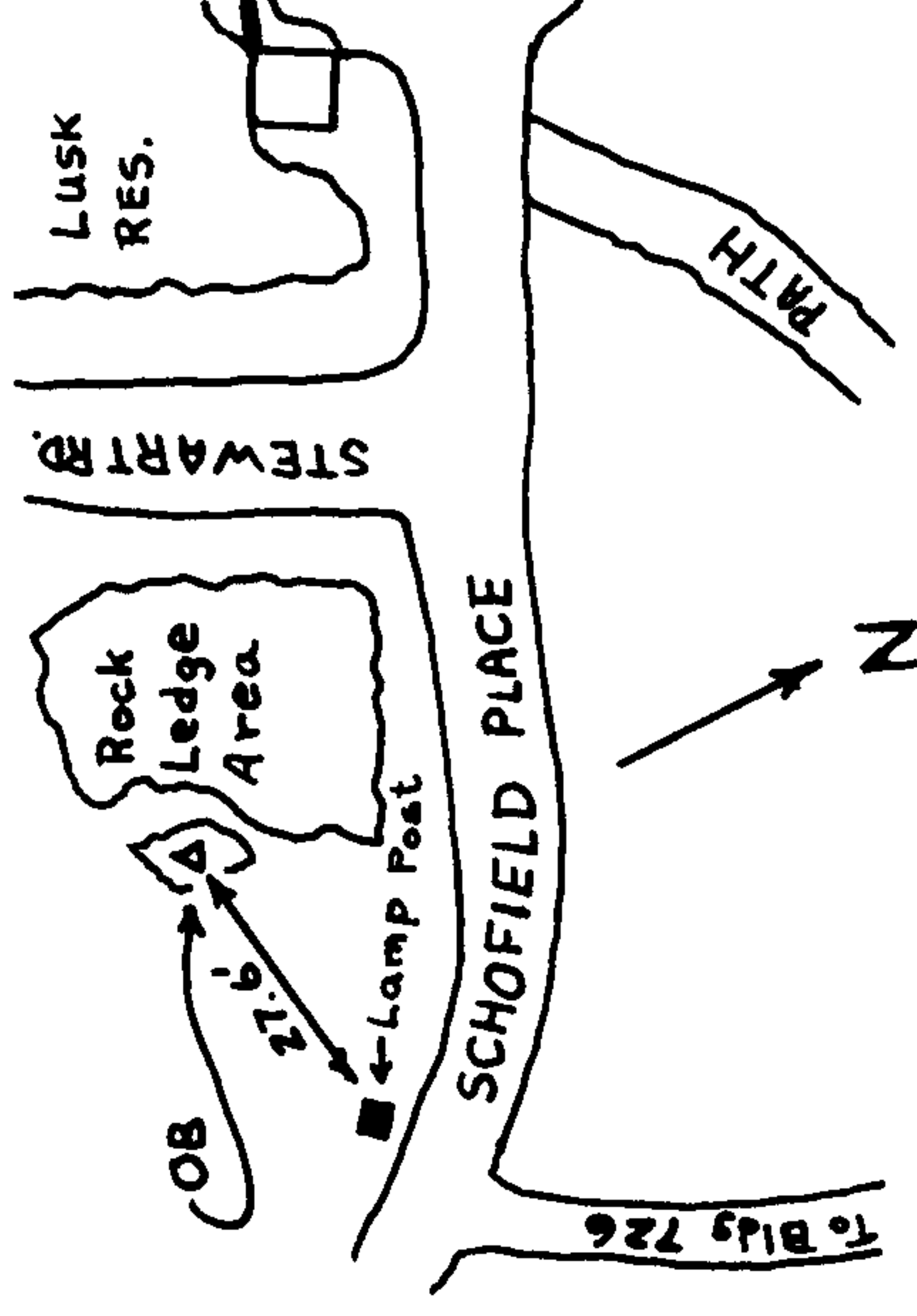
DESCRIPTION: NAME - *Observatory Hill* ABBREVIATION - OH SKETCH:

1. Point *Observatory Hill* is located east of Stewart Road and south of Schofield Place. It is 27.6' west-southwest of the center of a lamppost located on the southern side of Schofield Place.

2. It is a bronze 3" marker set in a rock outcropping. It was set in 1944 by a Mr. Jensen of the Post Engineers' Office. All data had been lost. It is inscribed as follows:



3. The marker was resurveyed and relevelled in 1974 by MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York.



NO: 40

STATION: AZIMUTH MARK

SPHEROID: CLARKE 1866  
AREA: FORT WYLLIS  
WEST POINT, NY  
GRID ZONE 18

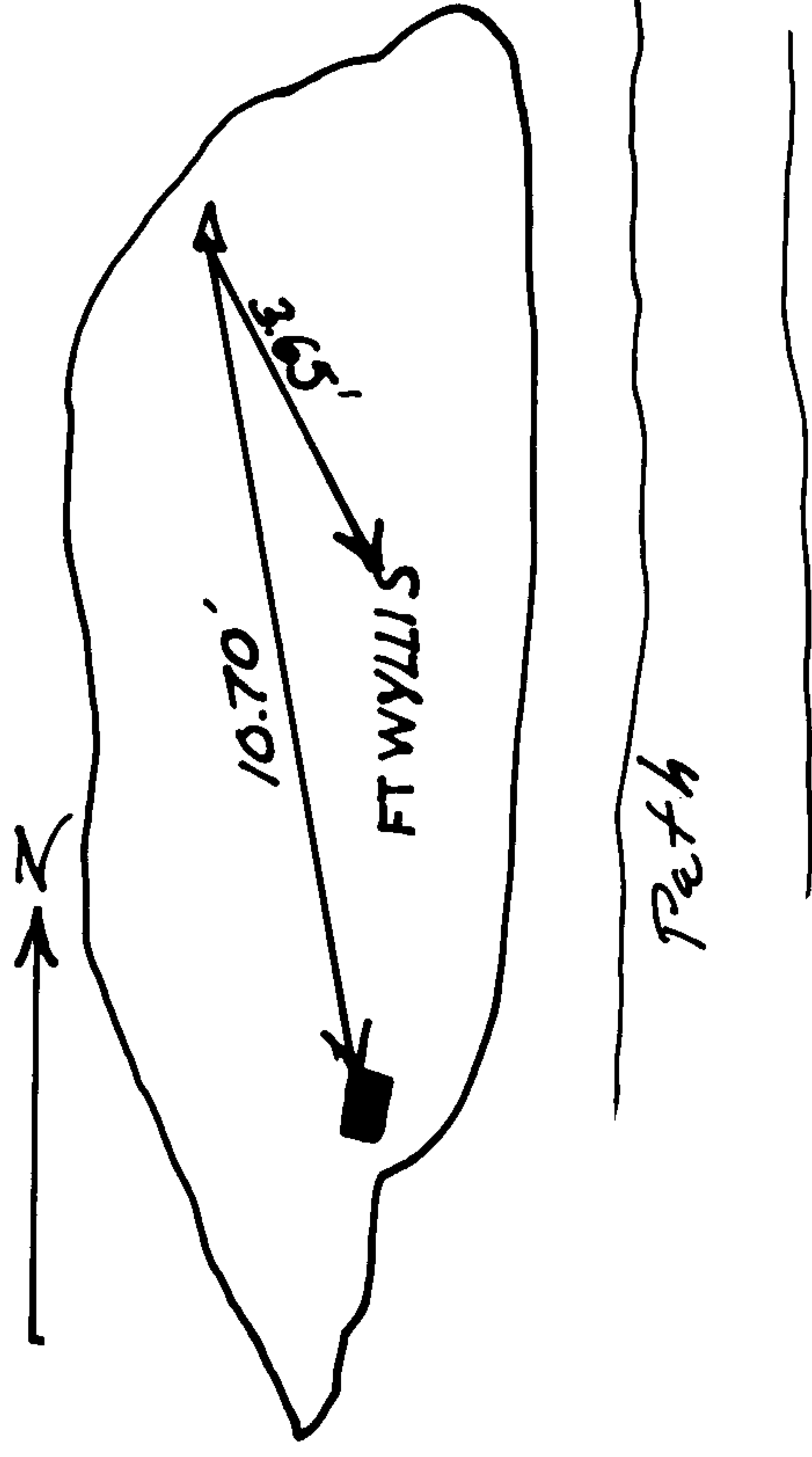
	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:	586880.557	4581775.944	UTM Meters
ELEV: 380.376'	1925457.279	15032043.126	UTM Feet
DATUM: Mean Sea Level, 1929	9345.173	6650.635	Local (Flag)
	73°57'39.3338"W	41°23'05.0434"N	Geographical

DESCRIPTION: NAME - *Azimuth Mark* ABBREVIATION - AZMK SKETCH:

1. This point is located on top of the monument rock at Fort Wyllis. The monument rock is further identified by having the name "FT WYLLIS" chiseled into it and having a bronze plaque cemented to it.

2. The point is further identified by a chiseled "X" with a drill hole in the center of it. The point is 3.65' from the top of the chiseled "S" in WYLLIS and 10.70' from the upper right corner of the bronze plaque.

3. The point was surveyed by Cadets J.S. Sapienza (Class of 1975) and D.M. Young (Class of 1977) while enrolled in EF 489B during the fall of 1974. The survey was accomplished under the guidance of MAJ A.A. Kopcsak, Department of ES&GS, USMA.



NO: 41

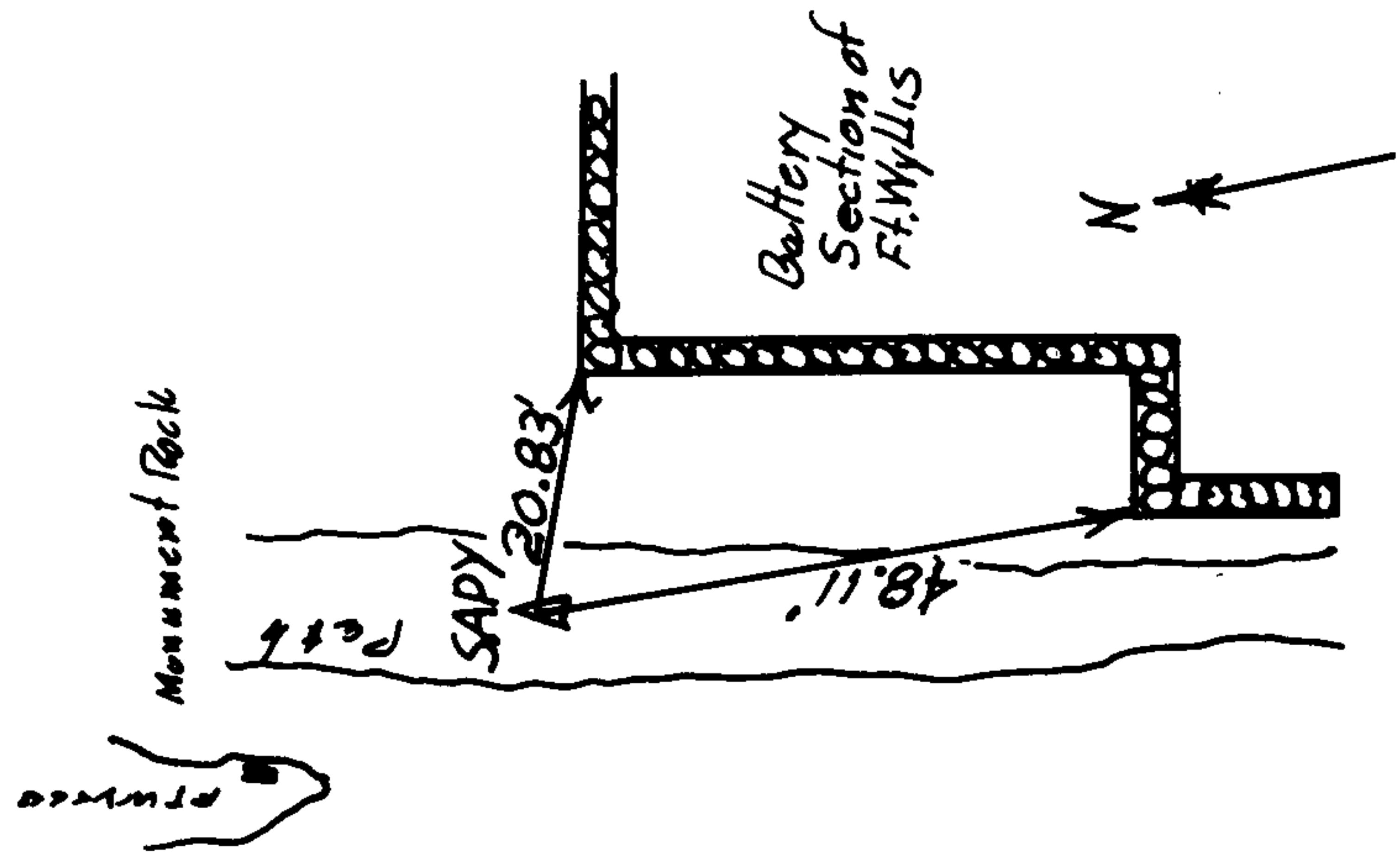
STATION: SAPIENZA-YOUNG

SPHEROID: CLARKE 1866  
 AREA: FORT WYLLIS  
 WEST POINT, NY  
 GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER:	586886.117	4581754.583	UTM Meters
ELEV: 371.398'	1925475.520	15631973.045	UTM Feet
DATUM: Mean Sea Level, 1929	9362.511	6580.345	Local (Flag)
	73°57'39.1055"W	41°23'04.3487"N	Geographical

DESCRIPTION: NAME - *Sapienza-Young* ABBREVIATION - *SAPY* SKETCH:

- SAPY* is the southern end of the north-south line located in the vicinity of Fort Wyllis. The point is marked by an ES&GS type marker set in concrete. The concrete is approximately 1.5' in diameter.
- The point is located 20.83' from the lowest rock in the furthest northwestern corner of the battery position at Fort Wyllis and 48.11' from the northwestern corner of the angled section at the southwestern corner of the battery section of the fort.
- The point was established by Cadets J.S. Sapienza (Class of 1975) and D.M. Young (Class of 1977). They observed Polaris at elongation and culmination during December 1974. The observations were made under the guidance of MAJ A.A. Kopcsak, Department of ES&GS, USMA, while the cadets were enrolled in EF 489B.



Object	Distance (m)	True Direction	UTM Grid
AZMK	22.07	346°04'55.8"	345°24'35.8"
AAK	49.69	000°00'00"	359°19'40.0" (6388.05 m)

NO: 42

STATION: AAK

SPHEROID: CLARKE 1866  
AREA: FORT WYLLIS  
WEST POINT, NY  
GRID ZONE 18

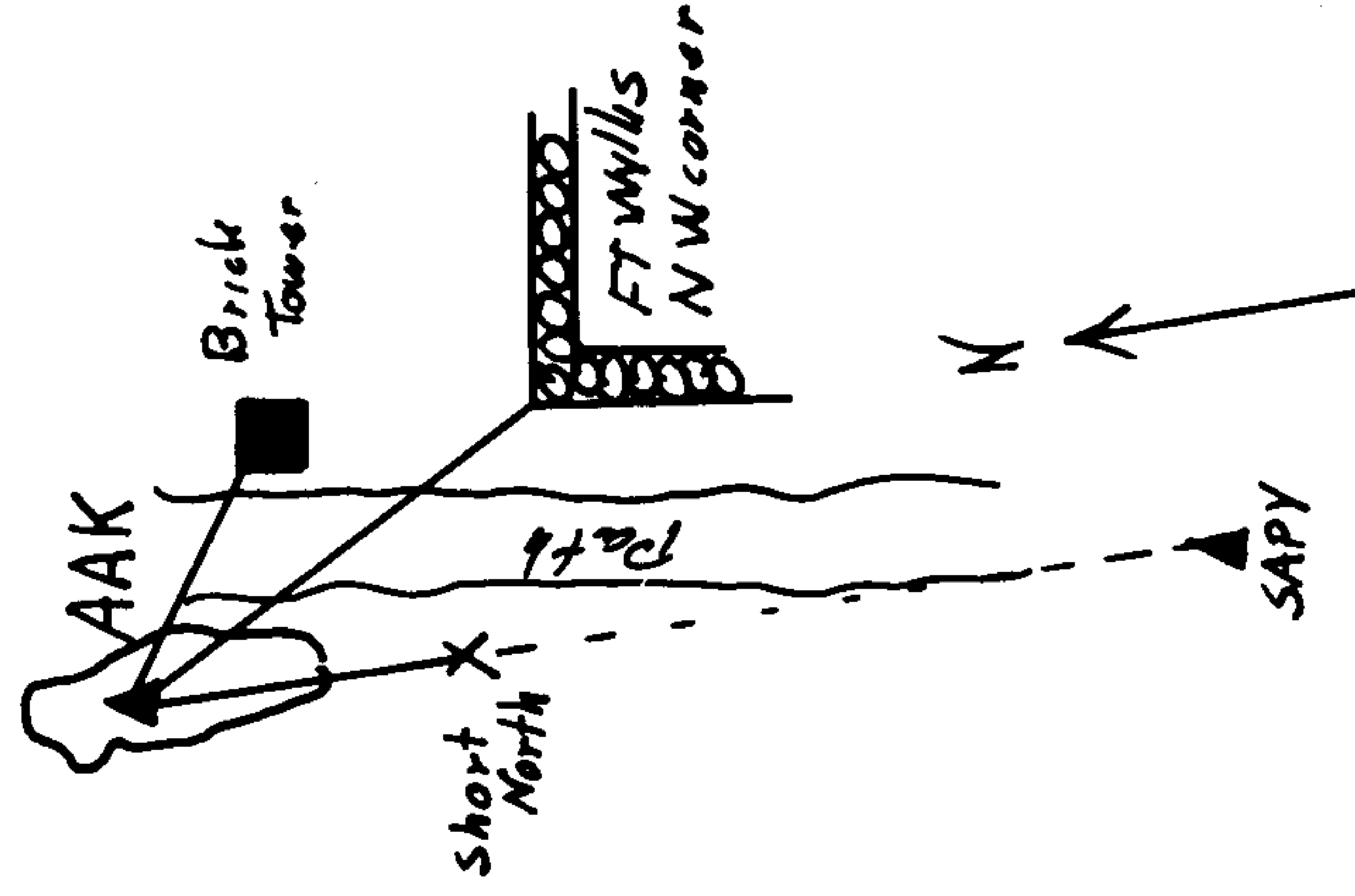
		Grid	
		Northing	Easting
HORIZONTAL CONTROL ORDER:		4581804.273	586885.534
ELEV: 379.425'		15032136.071	1925473.607
DATUM: Mean Sea Level, 1929		6743.382	9362.591
		41°23'05.5600"N	73°57'39.1050"W
		Local (Flag)	Geographical

DESCRIPTION: NAME - AAK ABBREVIATION - AAK SKETCH:

1. The point is the northern end of the north-south line in the vicinity of Fort Wyllis. The point was occupied.

2. The point is marked by an "X" chiseled into a large flat rock. There is a drill hole in the center of the "X." It is located 25.52' from the northwestern corner of the brick tower as measured from the top of the bottom brick. It is also 47.50' from the bottom of the lowest rock in the northwestern corner of Fort Wyllis and 32.15' from point *Short North*.

3. The point was surveyed by Cadets J.S. Sapienza (Class of 1975) and D.M. Young (Class of 1977) while enrolled in EF 489B during the fall of 1974. The survey was accomplished under the guidance of MAJ A.A. Kopcsak, Department of ES&GS, USMA.



NO: 43

STATION: SHORT NORTH

SPHEROID: CLARKE 1866  
AREA: FORT WYLLIS  
WEST POINT, NY  
GRID ZONE 18

Eastings	Northing	Grid
----------	----------	------

HORIZONTAL CONTROL  
ORDER:

ELEV: 378.464'

9362.591

6711.618

Local (Flag)

DATUM: Mean Sea Level, 1929

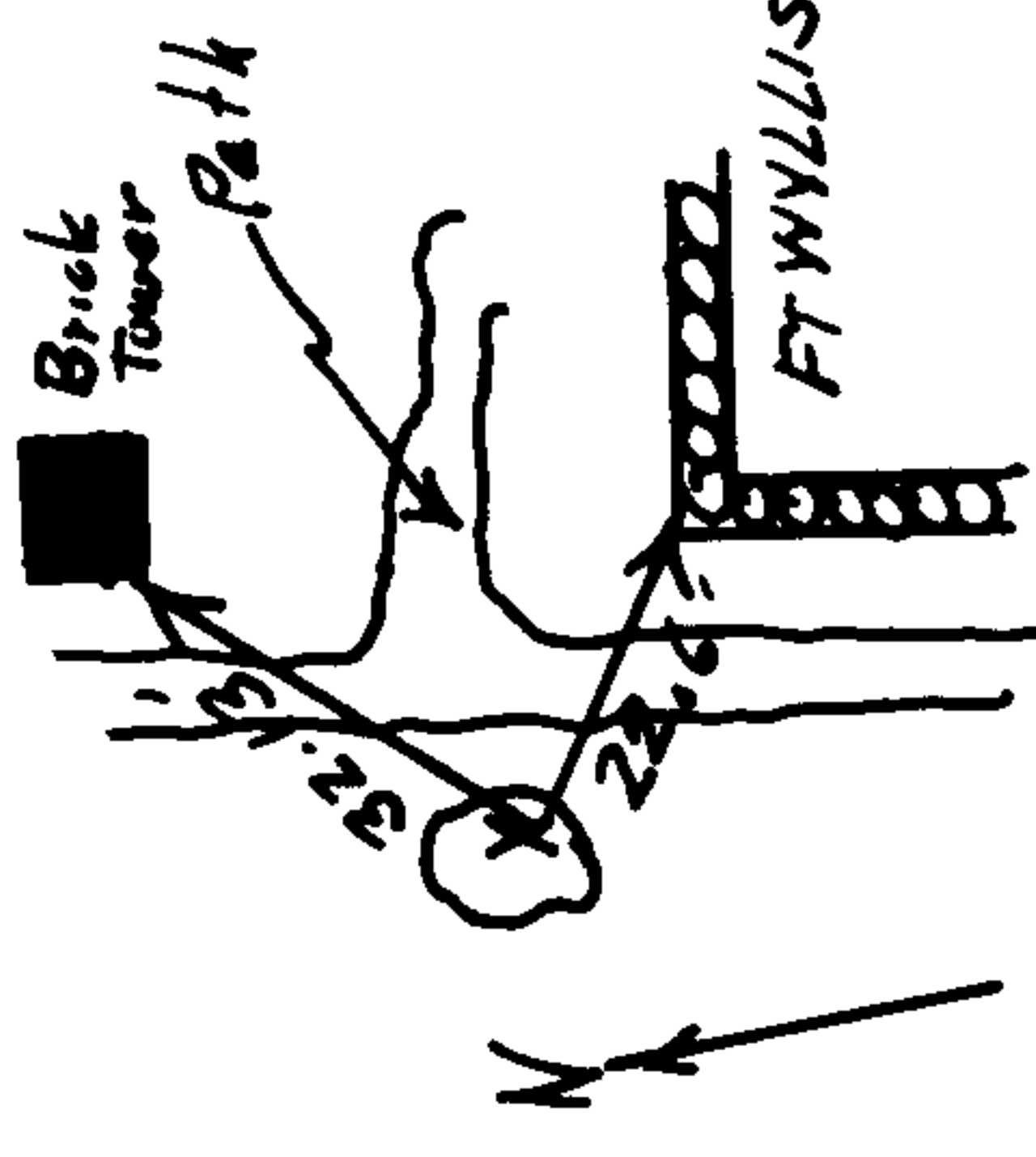
DESCRIPTION: NAME - *Short North* ABBREVIATION - *SN*

SKETCH:

1. *Short North* is a point on the north-south line in the vicinity of Fort Wyllis. The point was not physically occupied.

2. The point is identified by a chiseled "X" in the top of a rock. There is a drill hole in the center of the "X." The point is 32.13' from the southwestern corner of the brick tower, from the bottom of the bottom brick. It is 22.6' from the bottom of the stone in the northwestern corner of Fort Wyllis.

3. The point was established by Cadets J.S. Sapienza (Class of 1975) and D.M. Young (Class of 1977) while enrolled in EF 489B during the fall of 1974. The survey was accomplished under the guidance of MAJ A.A. Kopcsak, Department of ES&GS, USMA.





NO: 44

STATION: SOUTH LUSK

SPHEROID:  
AREA: WEST POINT, NY  
GRID ZONE 18

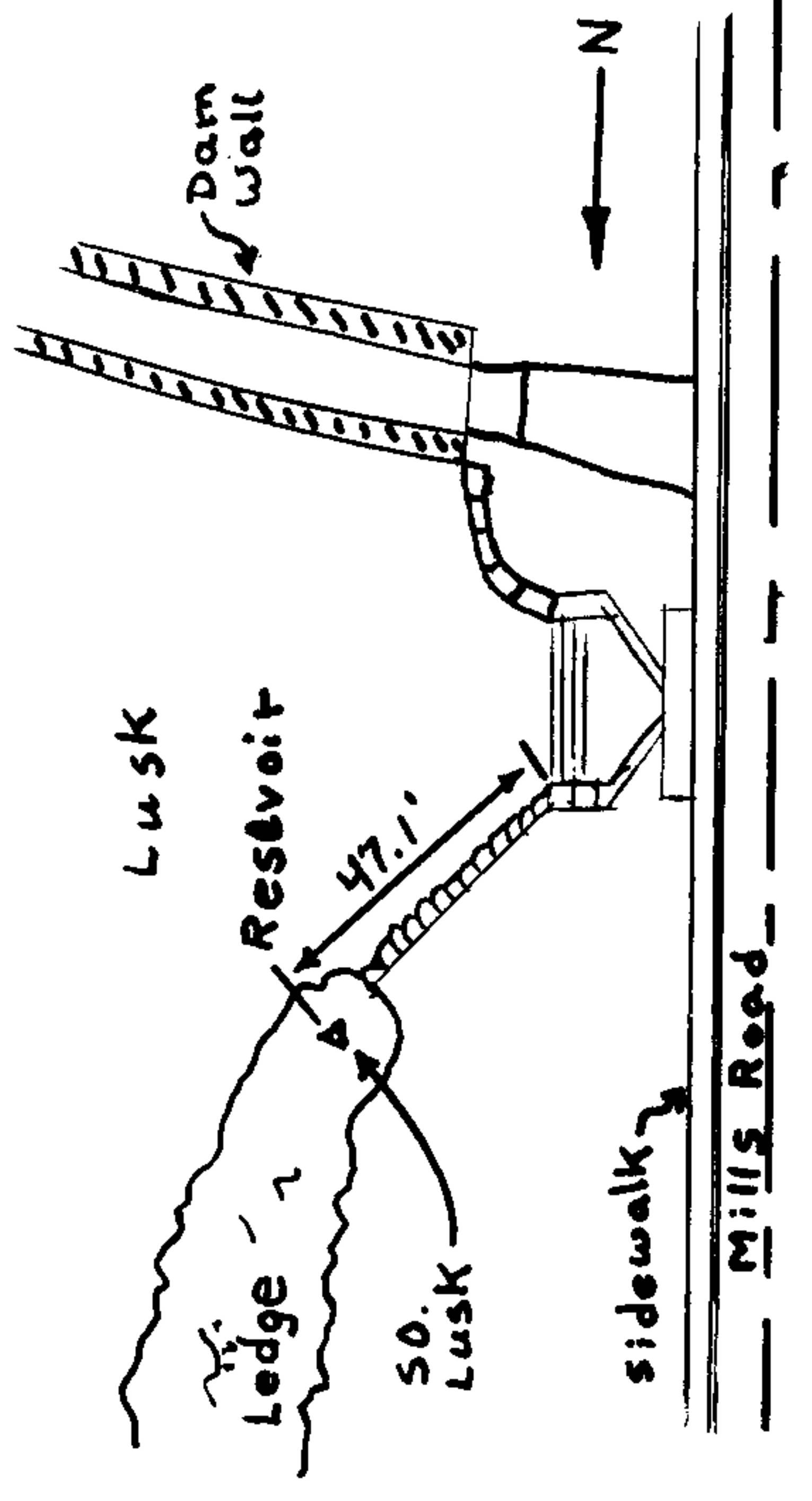
	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER:			
ELEV:	329.818'		
DATUM:	Mean Sea Level, 1929		
UTM Meters			
UTM Feet			
Local (Flag)			
Geographical			

DESCRIPTION: NAME - *South Lusk* ABBREVIATION - SOL SKETCH:

1. The station is marked by a square cut in a rock outcropping which is located 47.1' northeast of the spillway at the southwestern corner of Lusk. It is further marked with the letters "BM."

2. The Post Engineer established the bench mark and determined the elevation to be 330.48'.

3. In 1974 MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York, determined the elevation to be 329.17', based on mean sea level datum for 1929.



NO: 45

STATION: CROW'S NEST (USCGS/NOAA)

SPHEROID: CLARKE 1866  
 AREA: WEST POINT, NY  
 GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL	584942.190	4584395.931	UTM Meters
ORDER: I	1919097.819	15040638.866	UTM Feet
ELEV:	595,901.34'	513,341.52'	NY E State Plane + 0°13'52" $\theta$ Angle
DATUM: Mean Sea Level, 1929	3086.113	15243.861	Local (Flag)
	73°59'01.455" W	41°24'30.736" N	Geographical

DESCRIPTION: NAME - *Crow's Nest* ABBREVIATION - *Crow's Nest* SKETCH:

- Station is on highest part of mountain about 2.5 miles west of West Point Military Academy in US Army reservation. Mark is a bronze bolt set in a drill hole and projecting .5" above ground. Reference mark 1 is northeast of station, a standard bronze disk set in bedrock and stamped "CROWS NEST 1851 R.M. #1." Reference mark 2 is southwest of station, a standard bronze disk set in bedrock and stamped "CROWS NEST 1851."
- 
- The station was established in 1851 by USCGS, now known as NOAA.

Object	Distance (m)	Direction	
		True	UTM Grid
RM 1	3.036		
RM 2	10.625	221°49'04.0"	221°08'44.0" (3931.48 $\mu$ )
Barracks	3112.790	132°01'35.0"	131°21'15.0" (2335.185 $\mu$ )
SOAZMK	2995.213	129°51'55.0"	129°11'35.0" (2295.351 $\mu$ )

- To reach from junction of US 9W and Route 293, go north on US 9W to the second parking area near the top of Crow's Nest Mountain. Take road to the right about 50 meters north of the parking area. The station is at the end of this road.

NO: 46

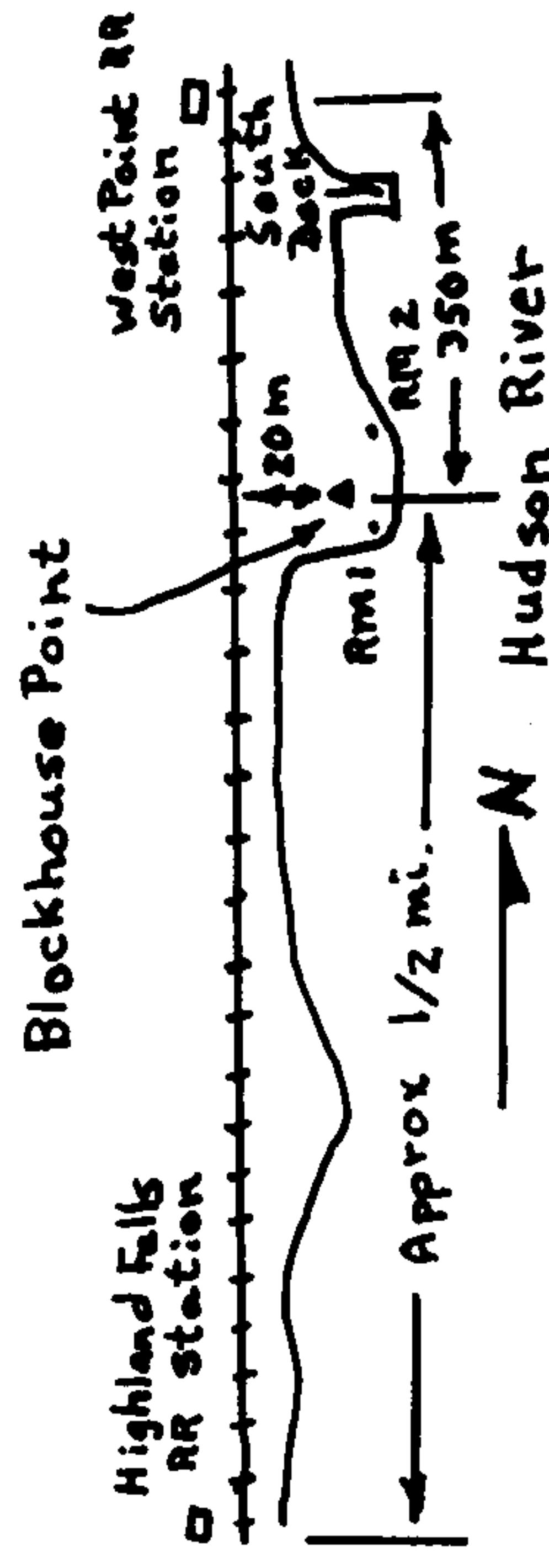
STATION: BLOCKHOUSE POINT (USCGS/NOAA)

SPHEROID: CLARKE 1866  
 AREA: WEST POINT, NY  
 GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL			UTM Meters
ORDER: III	587219.687	4581589.233	
ELEV:	1926569.909	15031430.560	UTM Feet
DATUM:	603,304.48'	504,073.31'	NY E State Plane Code 3101 + 0°14'56" θ Angle (second term neglected)
	73°57'24.83153"W	41°22'58.85778"N	Geographical

DESCRIPTION: NAME - *Blockhouse Point* ABBREVIATION - *Blockhouse Point* SKETCH:

1. It is on the west bank of the Hudson River, on the first point of land south of West Point Military Academy. This point of land is almost directly across the river from the town of Garrison, approximately 350 meters south of West Point railroad station and about .5 mile north of Highland Falls railroad station. Station is on the south end of the above mentioned point. The rock, placed in 1905, is even with the earth's surface, and the station was re-marked with a standard brass disk stamped "BLOCKHOUSE 1905." Station is approximately 20 meters east of eastern rail of the *West Shore Railroad* and 3 meters west of the water's edge. Two standard reference marks stamped "BLOCKHOUSE 1905, No. 1 & No. 2" were placed in the old reference marks designated "A" and "B" in the 1905 sketch.
2. Markers were recovered in April 1975 in good condition. Reference mark 2 is somewhat marred. The station was established in 1852 by the USCGS. It was re-marked in 1932 with standard USCGS markers.



Object	Distance (m)	Direction
PHILLIPS		0°00'00.0"
RM 2	5.025	05°26'40.0"
RM 1	3.480	112°07'40.0"
Lady		145°31'36.6"

NO: 47

STATION: BENCH MARK 225

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

Grid

Northing

Eastings

HORIZONTAL CONTROL  
ORDER:

UTM Meters

ELEV: 225.17'

UTM Feet

DATUM: Mean Sea Level,

Local (Flag)

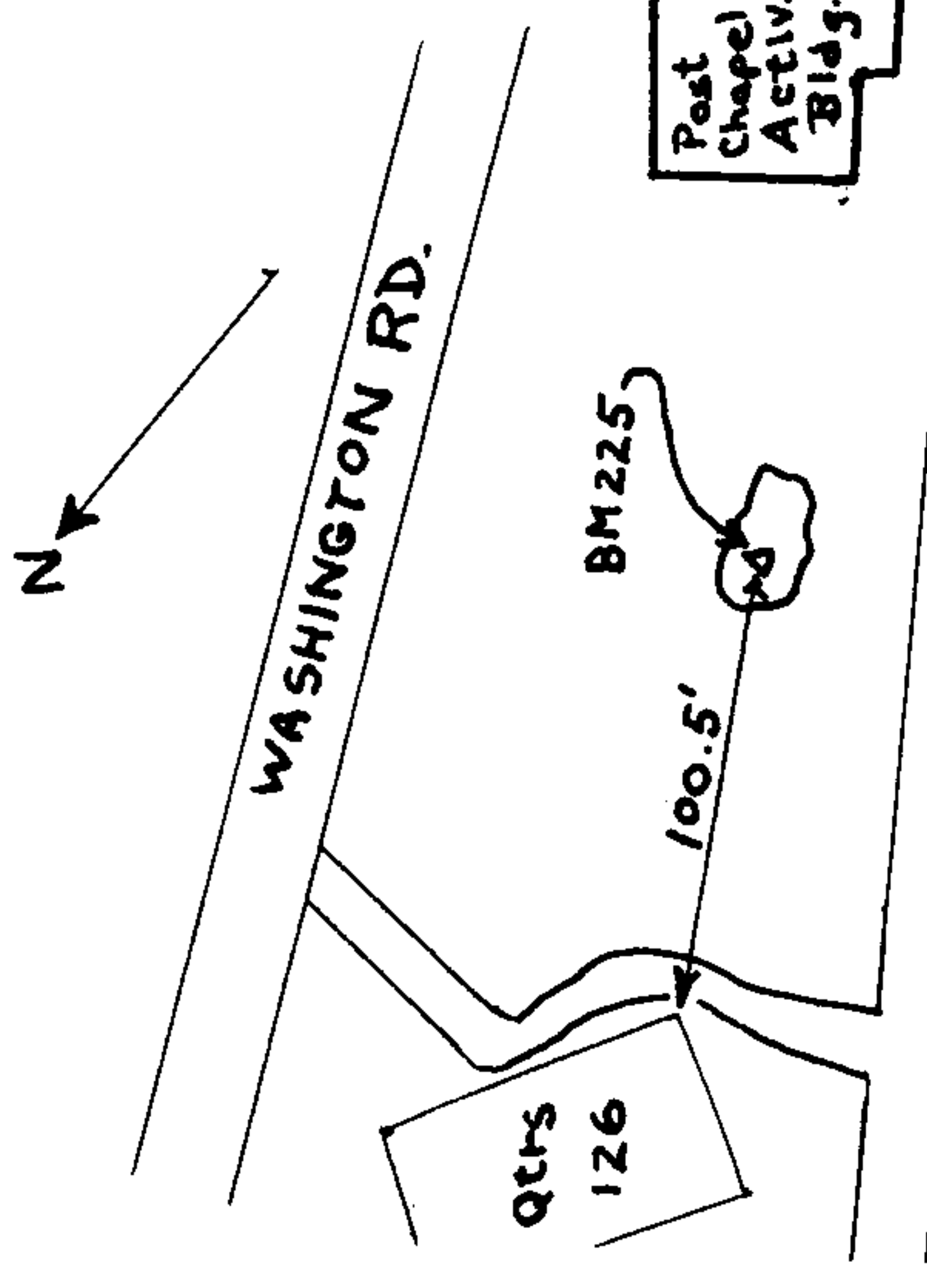
Geographical

DESCRIPTION: NAME - *Bench Mark 225* ABBREVIATION - *BM 225* SKETCH:

1. *BM 225* is located south of Washington Road on a hill overlooking the new PX area. It is a copper bolt in the top of a large boulder located 100.5' southeast of the southeastern corner of Quarters 126, northeast of the Post Chapel Activities Building.

2. The bench mark was established in 1926 by Mr. M. S. Roudabush, USGS, and described as follows: "West Point, in southeast corner of hospital grounds in high boulder; copper bolt, elevation 225.47'."

3. The elevation was corrected to 1929 mean sea level datum in 1974 by MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York.



NO: 48

STATION: BENCH MARK 17

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

Eastings	Northings	Grid
----------	-----------	------

HORIZONTAL CONTROL  
ORDER:

UTM Meters

ELEV: 17.560'

UTM Feet

DATUM: Mean Sea Level, 1929

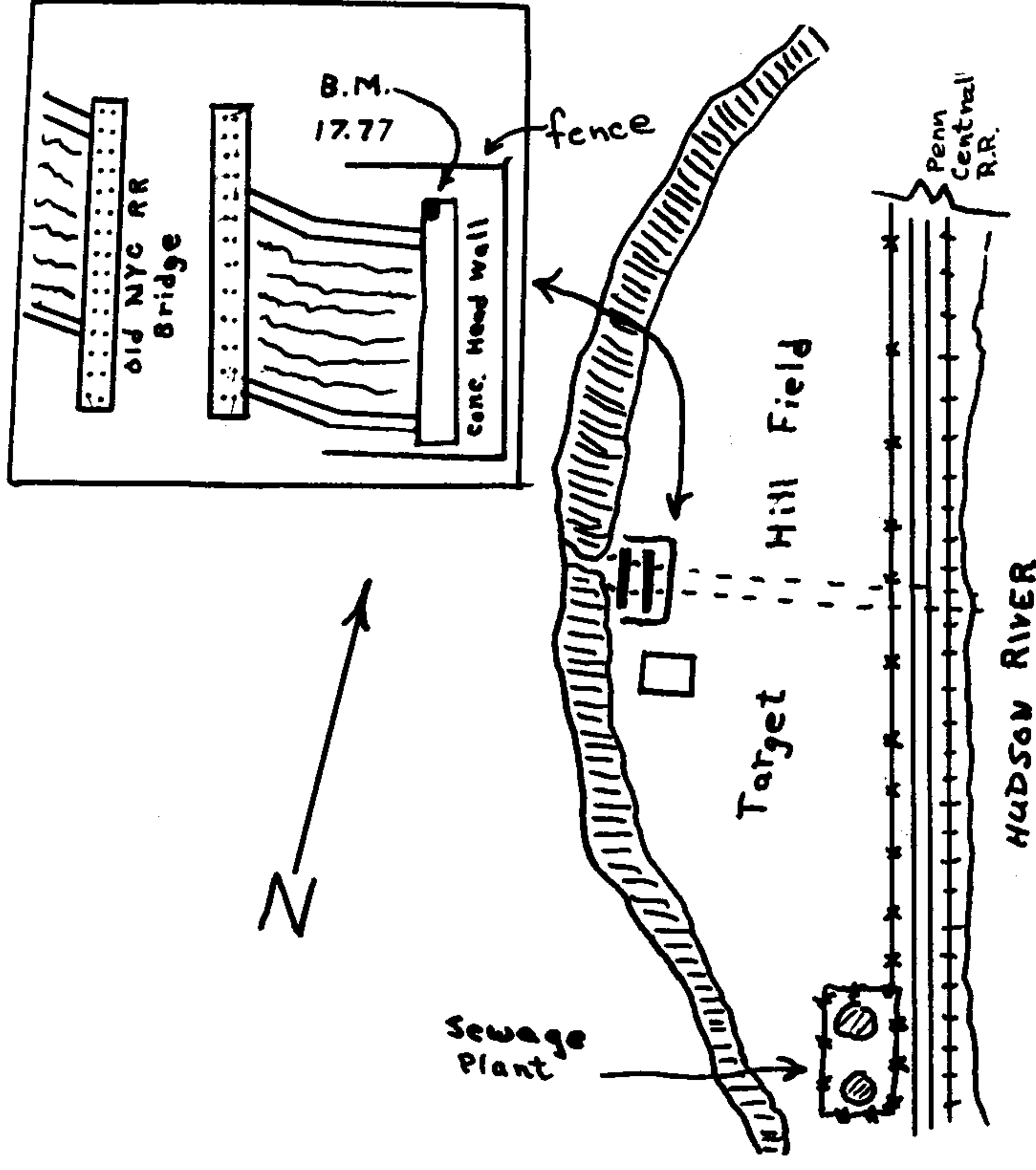
Local (Flag)

Geographical

DESCRIPTION: NAME - Bench Mark 17 ABBREVIATION - BM 17 SKETCH:

1. BM 17 was established by the Post Engineers with an elevation of 17.77'. It is located at the top of the northeastern corner of the eastern retaining wall for the spillway under Target Hill Field.

2. It was relevelled in 1973 and again in 1974 by MAJ A. A. Kopcsak, Survey Committee, Department of ES&GS, USMA, West Point, New York.



NO: 49

STATION: BARRACKS

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:	587278.778	4582339.275	UTM Meters
ELEV:			UTM Feet
DATUM: Mean Sea Level, 1929	73°57'21.899" W	41°23'23.153" N	Geographical

DESCRIPTION: NAME - Barracks ABBREVIATION - Brk

1. Barracks (Orange County, N.Y., C.A.E., 1932)-- Station is the prominent flagpole surmounting the battlemented Administration Building of the U.S. Military Academy at West Point, N.Y.; i.e., Building 600, the Headquarters Building. This building faces the Hudson River and lies at the top of the incline approach from the wharf (South Dock) and the old railway station.

2. The station is the point on this pole immediately above the level of the wall. It is not otherwise marked. The station must be occupied eccentrically.

3.

Object	Distance (m)	True	Direction	UTM Grid
CROW'S NEST	3112.790	312°01'35"	311°21'15"	(5535.185 m)
BNSCP	483.385	324°47'42"	324°07'22"	(5762.183 m)

SKETCH:

NO: 50

STATION: BATTERY CENTER -  
320TH FIELD ARTILLERY

SPHEROID: CLARKE 1866  
RANGE 2  
AREA: WEST POINT, NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL	583359.44	4581022.06	UTM Meters
ORDER: V	74°00'11.2873"W	41°22'41.9414"N	Geographical
ELEV: 238.0 m			
DATUM: Mean Sea Level, 1929			

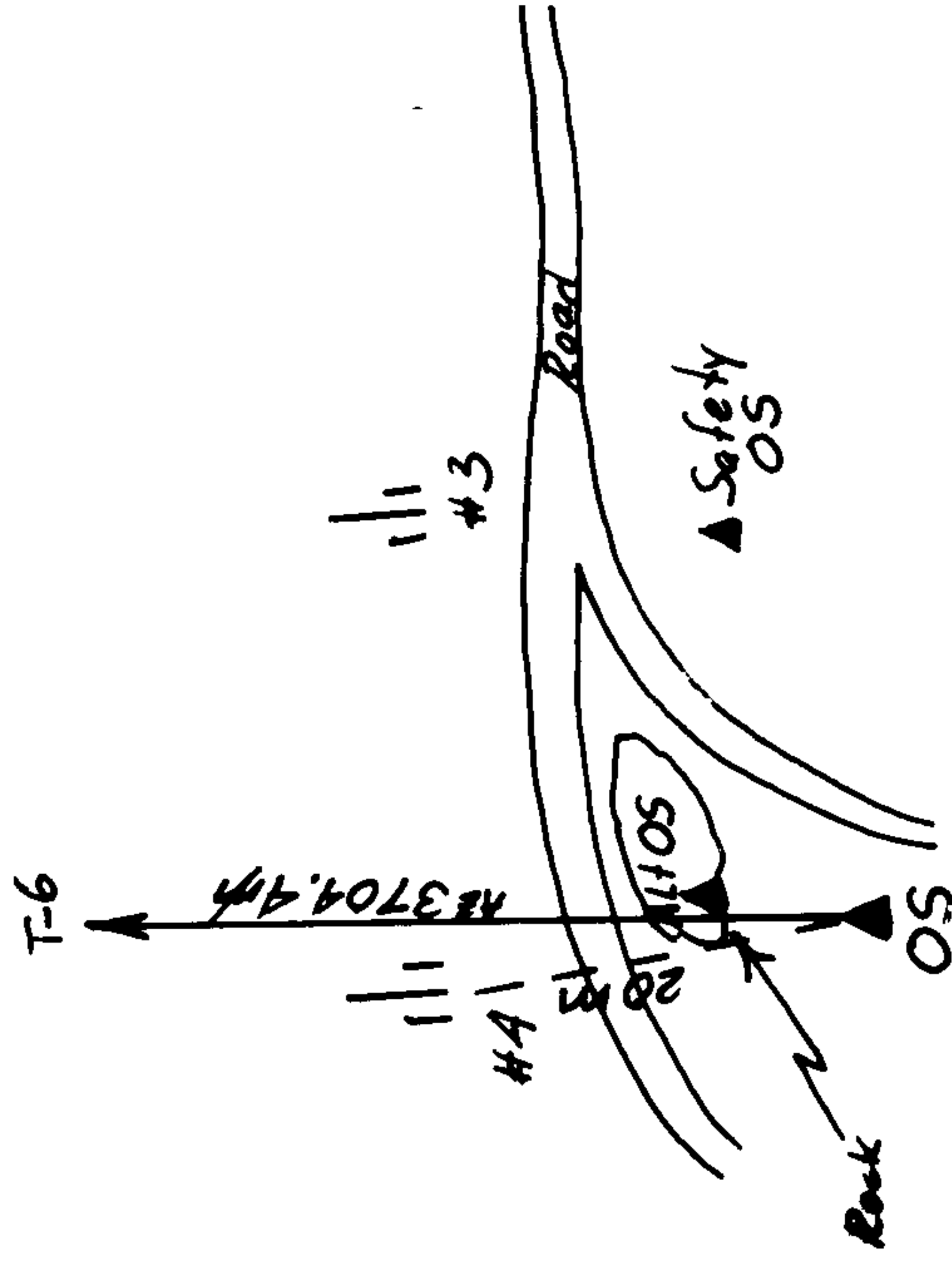
DESCRIPTION: NAME - Battery Center - ABBREVIATION - BC 320 SKETCH:

320th Field  
Artillery

1. Battery Center was established by survey personnel from the 1st Battalion, 320th Field Artillery (Airborne), 82d Airborne Division, in June 1975 using the survey technique of simultaneous observation from the two separate locations.

2. BC 320 is an ES&GS, USMA, brass disk set in concrete and located in the parapet of gun 3. It is marked "BC 320."

3. Object OS 0876.1 M (49°16'50")



NO: 51

STATION: ORIENTING STATION

SPHEROID: CLARKE 1866  
RANGE 2  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER: V	583398.75	4581055.92	UTM Meters
ELEV: 237.7 m	74° 00' 09.5784"W	41° 22' 43.0245"N	Geographical

DATUM: Mean Sea Level, 1929

DESCRIPTION: NAME - *Orienteering Station* ABBREVIATION - OS SKETCH:

1. *Orienteering Station* was established by survey personnel from the 1st Battalion, 320th Field Artillery (Airborne), 82d Airborne Division, in June 1975.

2. OS is a 105mm cannister in concrete approximately 20 meters behind gun 4. The end of the orienting line (EOL) is the quad marker on the top center of tower 6, which is located in a saddle approximately 2,000 meters south of *Battery Center*.

3. Object Az (UTM)  
TOWER 6 3704.4 m (208°22'27")  
BC 4076.1 m (229°16'50")

4. Note: The alternate OS is a red "X" with a circle painted around it on a large rock approximately 5 meters south of the primary OS. UTM azimuth to tower 6 is 3707.1 m.



WC: 52

STATION: JENS - DECLINATION STATION,  
RANGE 6

SPHEROID: CLARKE 1866  
RANGE 6  
AREA: WEST POINT, NY  
GRID ZONE 18

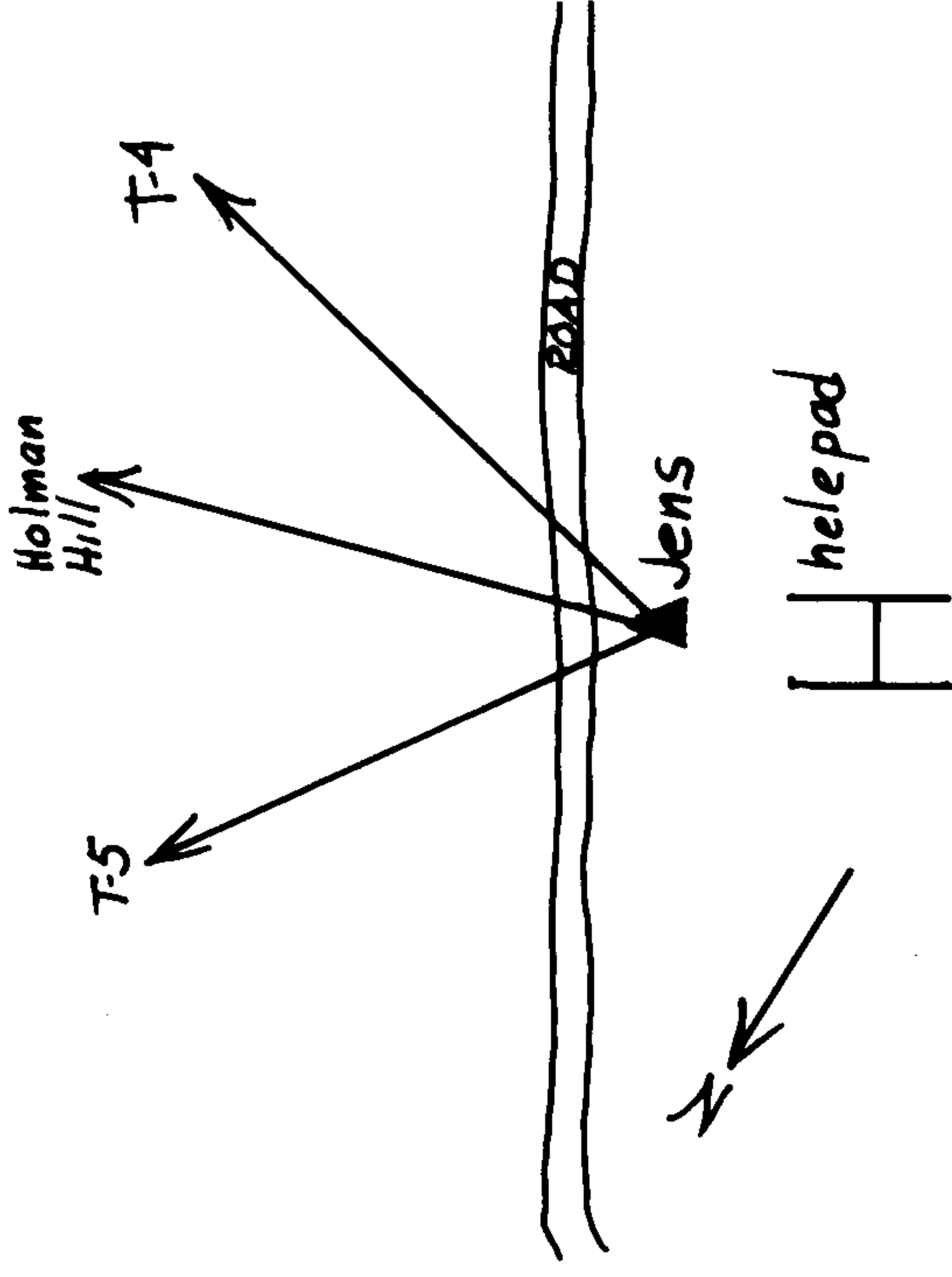
	Easting	Northing	Grid
HORIZONTAL CONTROL	580963.32	4577746.32	UTM Meters
ORDER: IV	74°01'56.0026"W	41°20'56.6113"N	Geographical

ELEV: 235.0 m

DATUM: Mean Sea Level, 1929

DESCRIPTION: NAME - JENS - Declination Station      ABBREVIATION - JENS      SKETCH:

- JENS was established by MAJ J. R. Jenkins, Department of ES&GS, USMA, West Point, New York, in 1966. It is a declination station and is located on the western edge of range 6 approximately 5 meters north of the helipad. It is further identified as a brass cap in a large rock with a yellow and red triangle around it.
- The azimuth marks for this declination station are the quads on the top centers of the towers (from north to south) - tower 5, Holman's Hill, tower 4.



3.

Object	Az (UTM)	UTM Coordinates	
		Easting	Northing
TOWER 5	1064.0 M	582588.01	4578690.08
Holman's Hill	1521.4 M	582065.30	4577831.56
Tower 4	1967.1 M	581585.53	4577511.84

- The coordinates for the mortar Battery Center and Orienting Station at range 6 are:

	Easting	Northing	Elev (ft)
BC	580956.48	4577809.33	234.3
OS	580932.85	4577793.47	233.6

NO: 53

STATION: McNAIR - DECLINATION STATION 2

SPHEROID: CLARKE 1866  
RANGE 3  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL			
ORDER: IV	582000.99	4579292.22	UTM Meters
ELEV: 242.43 m	74°01'10.6039"W	41°21'46.357"N	Geographical
DATUM: Mean Sea Level, 1929			

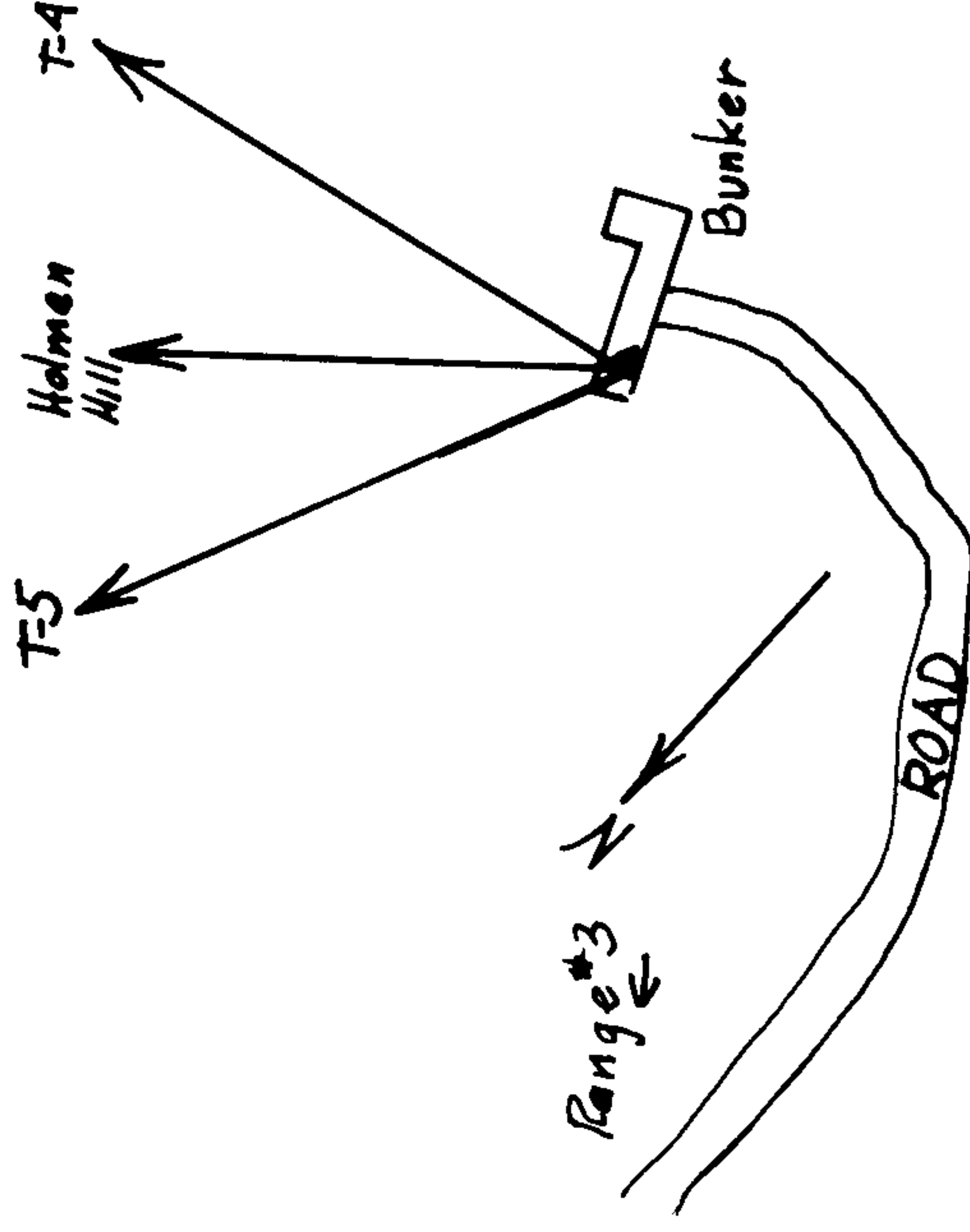
DESCRIPTION: NAME - *McNair - Declination Station 2*      ABBREVIATION - *OP or Bunker*      SKETCH:

1. *McNair* is the bunker (*Observation Post*) on top of Listening Hill, range 3. It can be accessed using the range 3 road. The point is a chiseled "X" painted red on top of the bunker. The point was verified by MAJ J. R. Jenkins, Department of ES&GS, USMA, West Point, New York, in 1966.

2. The azimuth marks for this declination station are the quads on the top centers of the towers (from left to right) - tower 5, Holman's Hill, tower 4.

3.

Object	UTM Coordinates	
	Eastings	Northing
TOWER 5	582588.01	4578690.08
Holman's Hill	582065.30	4577831.56
Tower 4	581585.53	4577511.84



NO: 54

STATION: TELEPHONE (USCGS/NOAA)

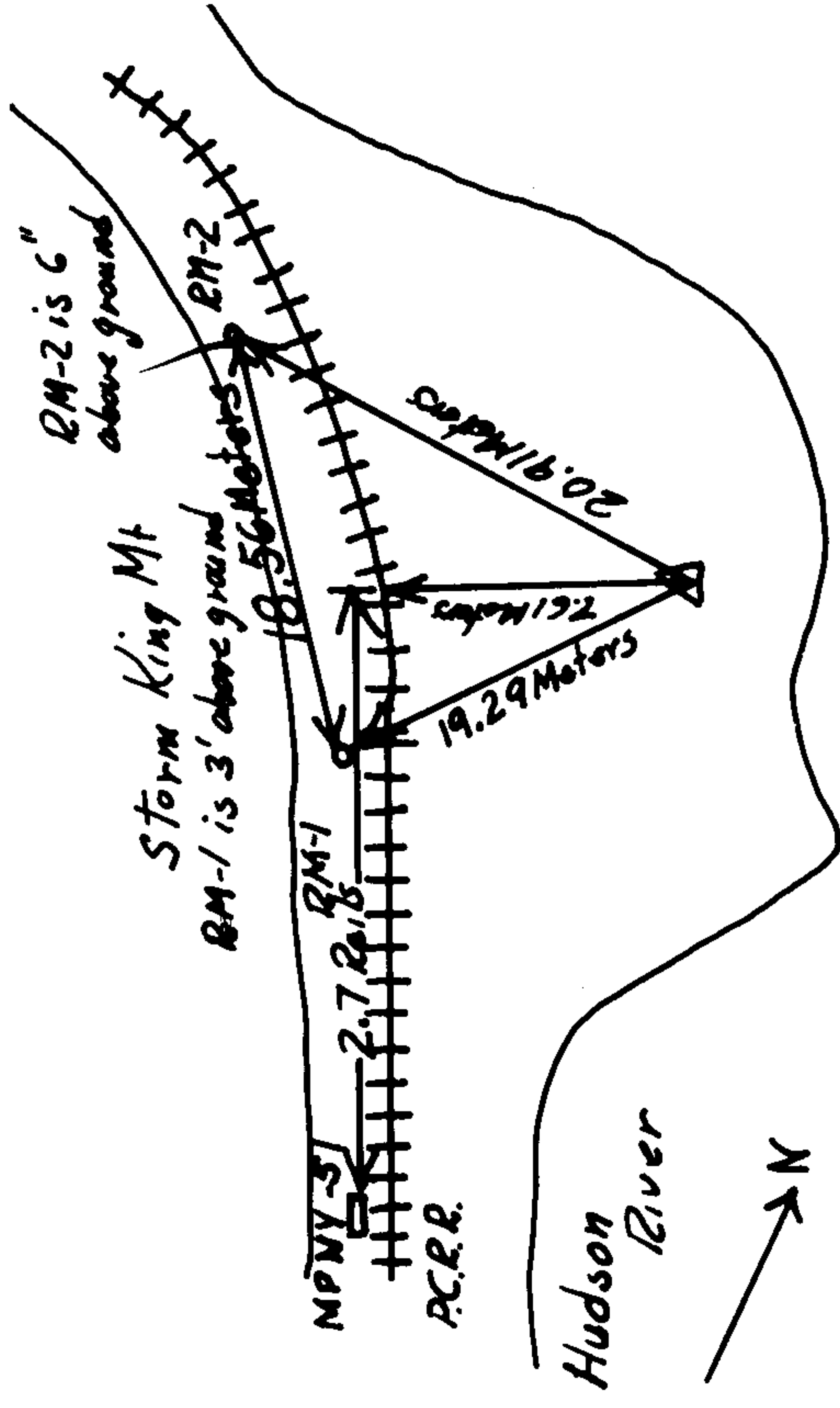
SPHEROID: CLARKE 1866  
 AREA: ORANGE CO., NY  
 GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL			
ORDER: III	584791.882	4587440.988	UTM Meters
ELEV:	1918604.684	15050629.191	UTM Feet
DATUM:	73°59'06.391" W	41°26'09.522" N	Geographical

DESCRIPTION: NAME - Telephone ABBREVIATION - Telephone SKETCH:

1. The station is on the western side of the Hudson River on a small rocky point just outside the trace of the *West Shore Railway* (*Penn Central*) and about 270 meters north of milepost NY 51. This is at the foot of Storm King Mountain and on the first point north of Butter Hill Clough where railroad turns to westward. This is station of 1905, recovered. Center drill hole, marked by a standard disk stamped "TELEPHONE 1905-1933," has a triangle around it. Reference marks (crosses in face of cliff on the inside of the railroad track) were re-marked with standard disks stamped "TELEPHONE 1905-1933, Nos. 1 and 2." Station mark is on a small outcrop, the northern side of which is about 4" high, the station being on the side sloping toward the south. Rock is 2.8' long and 0.8' wide. Reference marks could not be occupied for angles.

2. Telephone was established by the USCGS, now known as the NOAA, in 1905. It was recovered in May 1975. All was in good condition except reference mark 2, which could not be found. It is assumed destroyed.



Object	Distance		Direction
	Feet	Meters	
STONY POINT 2 (Azimuth Mark)			0°00'00.0"
Fry			
RM 1	63.28	19.290	28°10'18.1"
RM 2	68.62	20.915	99°22'28.7"
RM 1 to RM 2	60.89	18.560	154°07'35.6"
High-water Line		6.500	

NO: 55

STATION: POLLELPEL ISLAND LIGHT  
(USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: DUTCHESS CO., NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL	584229.080	4589556.697	UTM Meters
ORDER: I	1916758.225	15057570.481	UTM Feet
ELEV:	73°59'29.576"W	41°27'18.332"N	Geographical
DATUM:			

DESCRIPTION: NAME - *Pollelpelel Island Light* ABBREVIATION - *Pollelpelel Island Light* SKETCH:

1. The station is a navigation light in the Hudson River. It is east and slightly north of Cornwall, New York. It is west of Pollelpelel Island and can be seen from the lookout on Storm King Mountain on Route 218.

2. *Pollelpelel Island Light* was established in 1933 by the USCGS, now known as the NOAA.

NO: 56

STATION: JACK (USCGS/NOAA)

SPHEROID: CLARKE 1866  
 AREA: ORANGE CO., NY  
 GRID ZONE 18

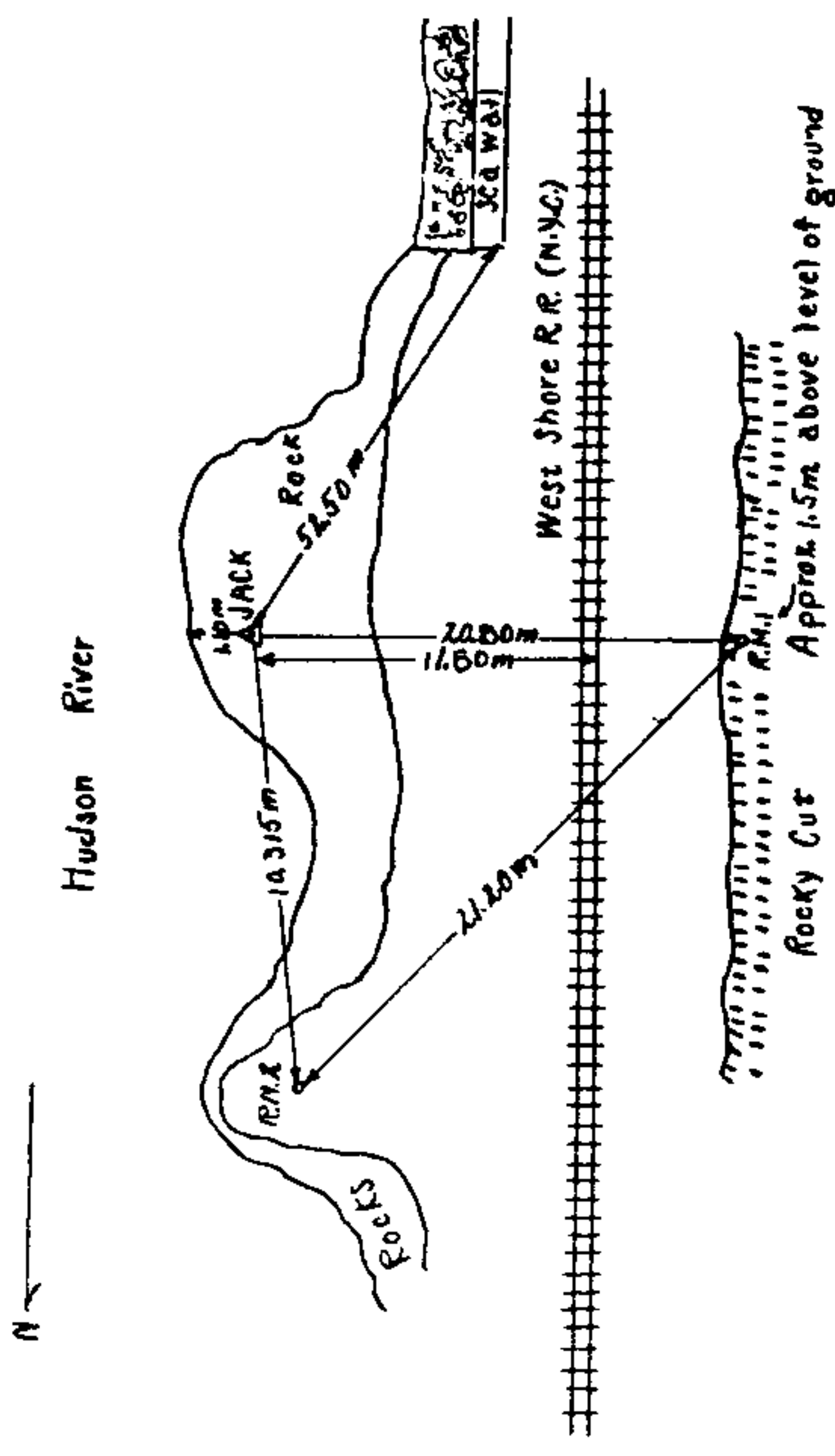
	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER: III	585942.973	4585322.722	UTM Meters
ELEV:	1922381.221	15043679.513	UTM Feet
DATUM:	73°58'17.883"W	41°25'00.402"N	Geographical

DESCRIPTION: NAME - Jack ABBREVIATION - Jack

SKETCH:

1. This station is located on the western shore of the Hudson River. It is marked with a standard disk stamped "JACK 1933," cemented in drill hole in rock. Reference marks are standard disks: 1 is cemented in rock cliff on the opposite side of the railroad tracks, and 2 is cemented in large rock north of the station. It is across the river from Cold Spring, New York, and about 1.25 miles north of West Point. The rock in which the station mark was put is on the edge of the river sloping from the bank down to the river.

2. Jack was established in 1933 by the USCGS, now known as the NOAA. It was recovered in May 1975 in good condition. Reference mark 1 is somewhat weathered.



Object	Distance		Direction
	Feet	Meters	
BREAKNECK POINT 2			0°00'00.0"
Stony Point 2			26°07'08.2"
Cold			94°44'02.4"
RM 1	68.24	20.800	255°23'50.6"
RM 2	33.84	10.315	333°31'58.7"
Constitution L.H.			158°48'07.6"
Azimuth Mark			
RM 1 to RM 2	69.55	21.200	

Height of signal above station mark - 2 meters.  
 Height of telescope above station mark - 1.5 meters.

NO: 57

STATION: NECOR (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: WEST POINT NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL	585999.495	4584956.519	UTM Meters
ORDER: III	1922566.661	15042478.062	UTM Feet
ELEV:			Local (Flag)
DATUM:	73°58'15.636" W	41°24'48.507" N	Geographical

DESCRIPTION: NAME - *Necor* ABBREVIATION - *Necor*

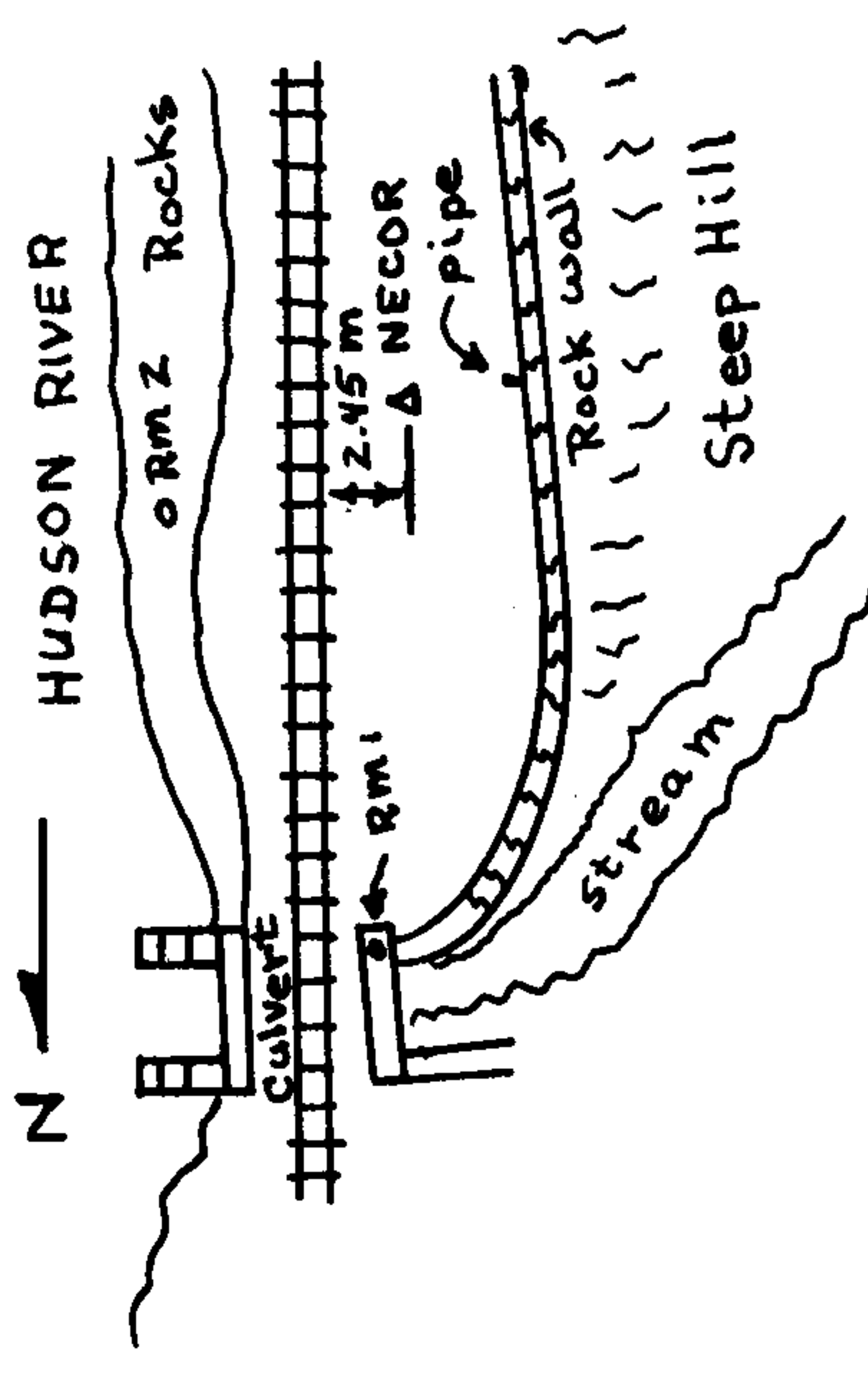
SKETCH:

- The 1933 description reads: "This station is at north limit of U.S. Military Academy (West Point) reservation on the western shore of the Hudson River. It is directly across the river from and just south of Cold Spring, New York. It is marked by an old cannon with the muzzle buried in the ground."  
"Reference mark no. 2 is standard disk cemented in drill hole in rock across the railroad tracks on the bank of the river."  
"Reference mark no. 1 is standard disk cemented in drill hole in concrete abutment forming part of culvert to the north of the station. Disks are stamped 'NECOR 1933.'"

"OBJECT	DISTANCE (meters)
RM No. 1	23.90
RM No. 2	18.30
RM No. 1 to RM No. 2	32.25

"Height of light above station mark - 2 meters.  
Height of telescope above station mark - 1.5 meters."

- Reference mark 2 was recovered in May 1975. The station marker and reference mark 1 were gone. There is an access road for the railroad running directly over the position of *Necor*. A piece of 1" metal pipe driven into the stone wall and painted fluorescent red denotes the USMA boundary. *Necor* probably stands for "northeastern corner."



NO: 58

STATION: HARD (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: PUTNAM CO., NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER: III	587485.669	4580522.089	UTM Meters
ELEV: 10.476'	1927442.552	15027929.437	UTM Feet
DATUM: Mean Sea Level, 1929	604,150.41'	500,564.58'	NY E State Plane Code 3101 + 0°15'03" θ Angle (second term neglected)
	73°57'13.93623" W	41°22'24.15422" N	Geographical

DESCRIPTION: NAME - *Hard* ABBREVIATION - *Hard*

SKETCH:

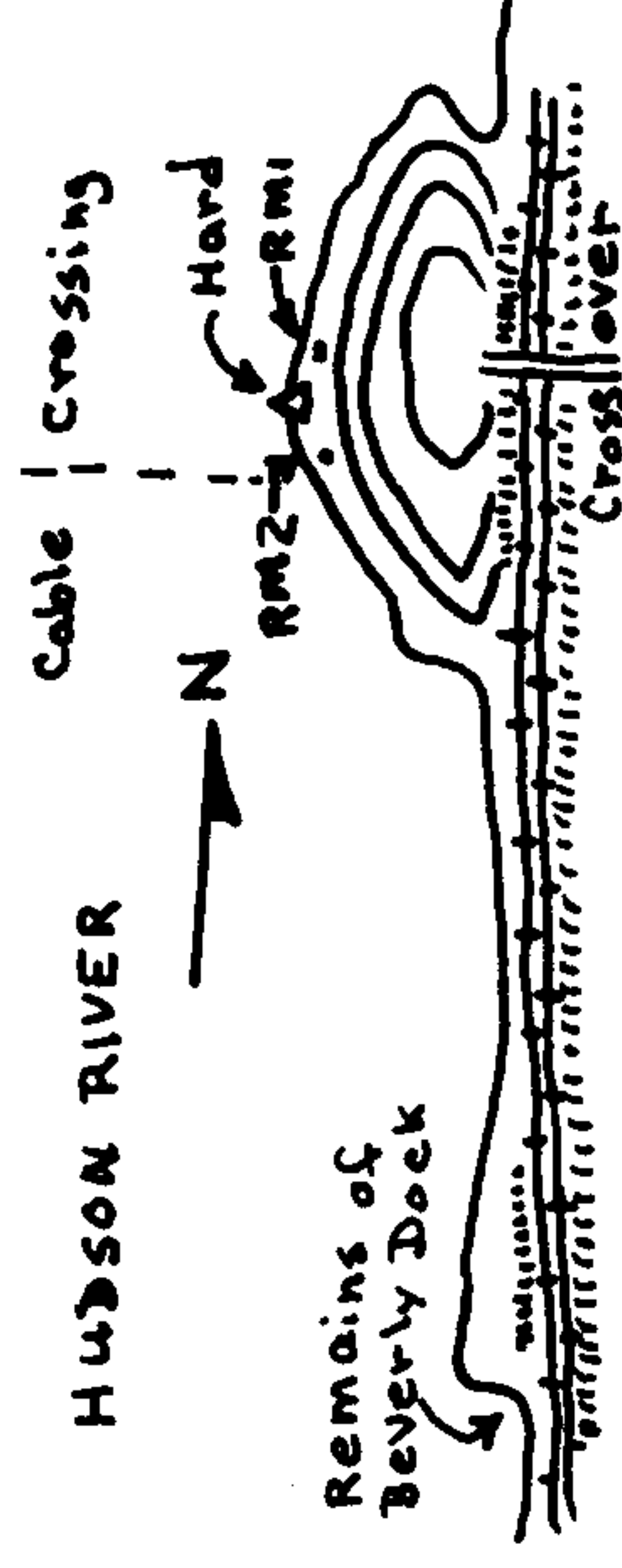
1. *Hard* is about 0.8 mile south along the *New York Central Railroad* from the station at Garrison, thence about 0.1 mile northwest across country to station, on the eastern bank of the Hudson River, in the top of the western edge of a rock ledge about 150' x 25' and 16' high, 70' north of the northern end of a cable crossing sign board, 14.5' south-southwest of reference mark 1, 22.8' north-northwest of reference mark 2, 109' north of south edge of ledge, 1' east of western edge of ledge and about 11' above the water's edge. Mark is directly east and across Hudson River from the railroad station at Highland Falls.

2. The station was established in 1932 by the USCGS, now known as the NOAA, and is a standard disk stamped "HARD 1932."

3. *Hard* was recovered in April 1975 in good condition. The station marker was somewhat weathered. The reference marks are also standard brass disks stamped "HARD 1932."

Object	Distance (m)	Direction
DOCK		0°00'00.0"
RM 1	4.34	220°36'45.0"
RM 2	7.00	340°50'40.0"

4. The elevation of reference mark 1 is 13.064'. The elevation of reference mark 2 is 13.632'.



NO: 59

STATION: CHIK (USCGS/NOAA)

SPHEROID: CLARKE 1866  
 AREA: ORANGE CO., NY  
 GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER: III	586717.766	4578788.087	UTM Meters
ELEV:	1924923.190	15022240.465	UTM Feet
DATUM:	601,586.64'	494,893.53'	NY E State Plane Code 3101 + 0°14'40" θ Angle (second term neglected)
	73°57'47.88006" W	41°21'28.23226" N	Geographical

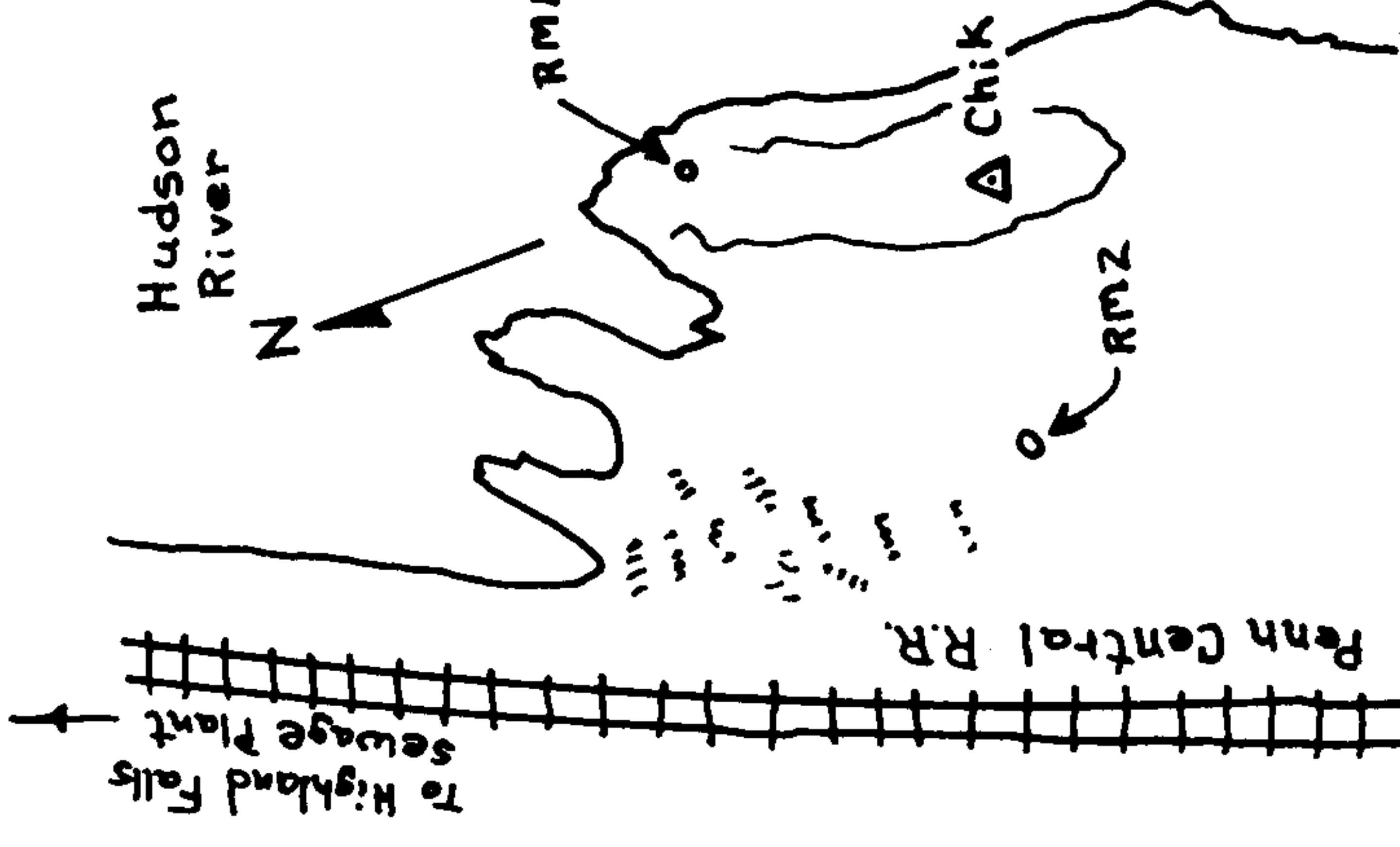
DESCRIPTION: NAME - *Chik* ABBREVIATION - *Chik*

SKETCH:

- The station is on the northern end of the first rocky point north of Con Hook Light on the western side of the Hudson River. Station was re-marked with a standard bronze disk stamped "CHIK 1905" in 1932. Reference marks designated "B" and "C" in the 1905 sketch were re-marked with standard brass disks stamped "CHIK 1905" and numbered 1 and 2 respectively in 1932.

Object	Distance (m)	Direction
DOCK		0°00'00.0"
RM 2	7.94	236°40'50.0"
RM 1	5.32	338°29'57.5"

- Chik* was established in 1905. It was recovered in April 1975 and was in excellent condition.





NO: 60

STATION: CONS HOOK LIGHT (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: ORANGE CO., NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER: III	586775.632	4578140.323	UTM Meters
ELEV:	1925113.039	15020115.261	UTM Feet
DATUM:			NY E State Plane Code 3101 + 0°14'42" θ Angle (second term neglected)
	73°57'45.72350" W	41°21'07.20750" N	Geographical

DESCRIPTION: NAME - *Cons Hook Light* ABBREVIATION - *Cons Hook Light* SKETCH:

1. The station is the automatic light supported by a steel frame on a concrete foundation on the easterly edge of Con Hook. It is about 5 meters from the water's edge. Station is a new light, replacing CON HOOK LIGHT (1905). Station CON HOOK 1905 is 24.4 meters nearly due west from this light. It is now identified as Lower Hudson River Light 23.

2. This station has no markers. It was first established in 1932.

NO: 61

STATION: SIDE (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: PUTNAM CO., NY  
GRID ZONE 18

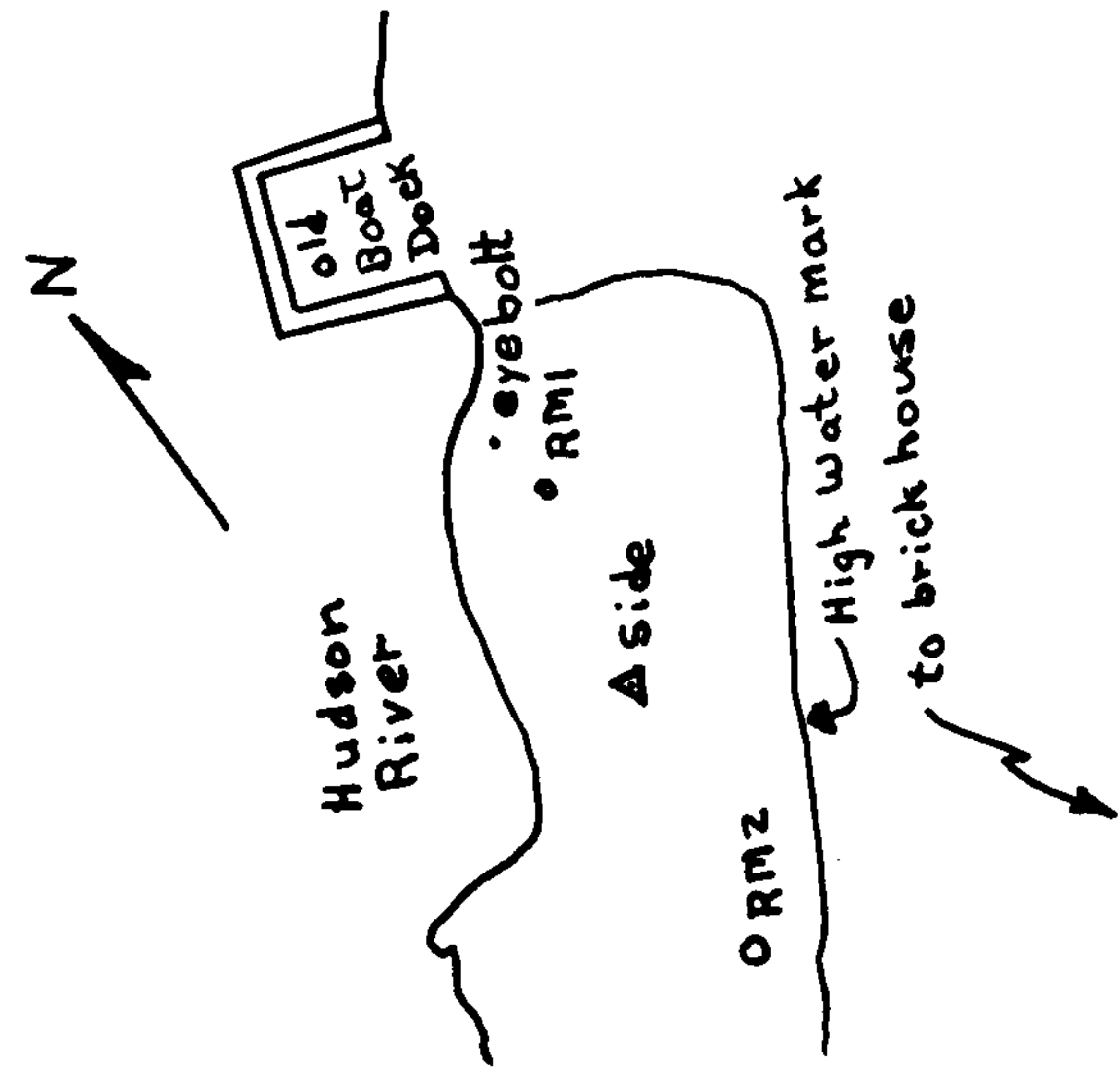
	Grid	
	Easting	Northing
HORIZONTAL CONTROL		
ORDER: III	586701.569	4576824.591
ELEV: 3.0'; Order I	1924870.050	15015798.562
DATUM: Mean Sea Level, 1929	601,483.95'	488,450.38'
	73°57'49.58666" W	41°20'24.57638" N
		Geographical

NY E State Plane  
Code 3101 + 0°14'39"  
θ Angle (second term  
neglected)

DESCRIPTION: NAME - Side ABBREVIATION - Side SKETCH:

- The station is about 3.1 miles south along the *New York Central Railroad* from the station at Garrison, thence about 0.1 mile west across country to the east bank of the Hudson River, about 0.7 mile north of the station and road crossing at Manitou, thence about 0.1 mile west, set in the top of an outcropping rock ledge which is under water at high tide, about 75 yards northwest of northern corner of Mr. E. M. Swinburne's residence, which is located between the track and river, 93' southwest of southwestern edge of a private boat dock, 22' southwest of reference mark 1, 37.5' west of a lone 10" hemlock tree and set in a drill hole.
- The station was established by the USCGS, now known as the NOAA, in 1932. The markers are standard USCGS disks.
- The station was recovered in April 1975, and all the markers were in good condition. An eyebolt used to tie small boats is set 2' from reference mark 1.

- Reference mark 1 has an elevation of 2.493'.



Object	Distance (m)	Direction
CAT		0°00'00.0"
RM 2	7.025	329°35'00.0"
RM 1	6.720	167°33'30.0"
Eyebolt	7.210	166°42'00.0"

NO: 62

STATION: DENNING'S LANDING (USCGS/NOAA)

SPHEROID: CLARKE 1866  
 AREA: PUTNAM CO., NY  
 GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL	587232.844	4577774.892	UTM Meters
ORDER: III	1926613.075	15018916.342	UTM Feet
ELEV: 47.356'	603,251.39'	491,555.56'	NY E State Plane Code 3101 + 0°14'54" θ Angle (second term neglected)
DATUM: Mean Sea Level, 1929			Geographical

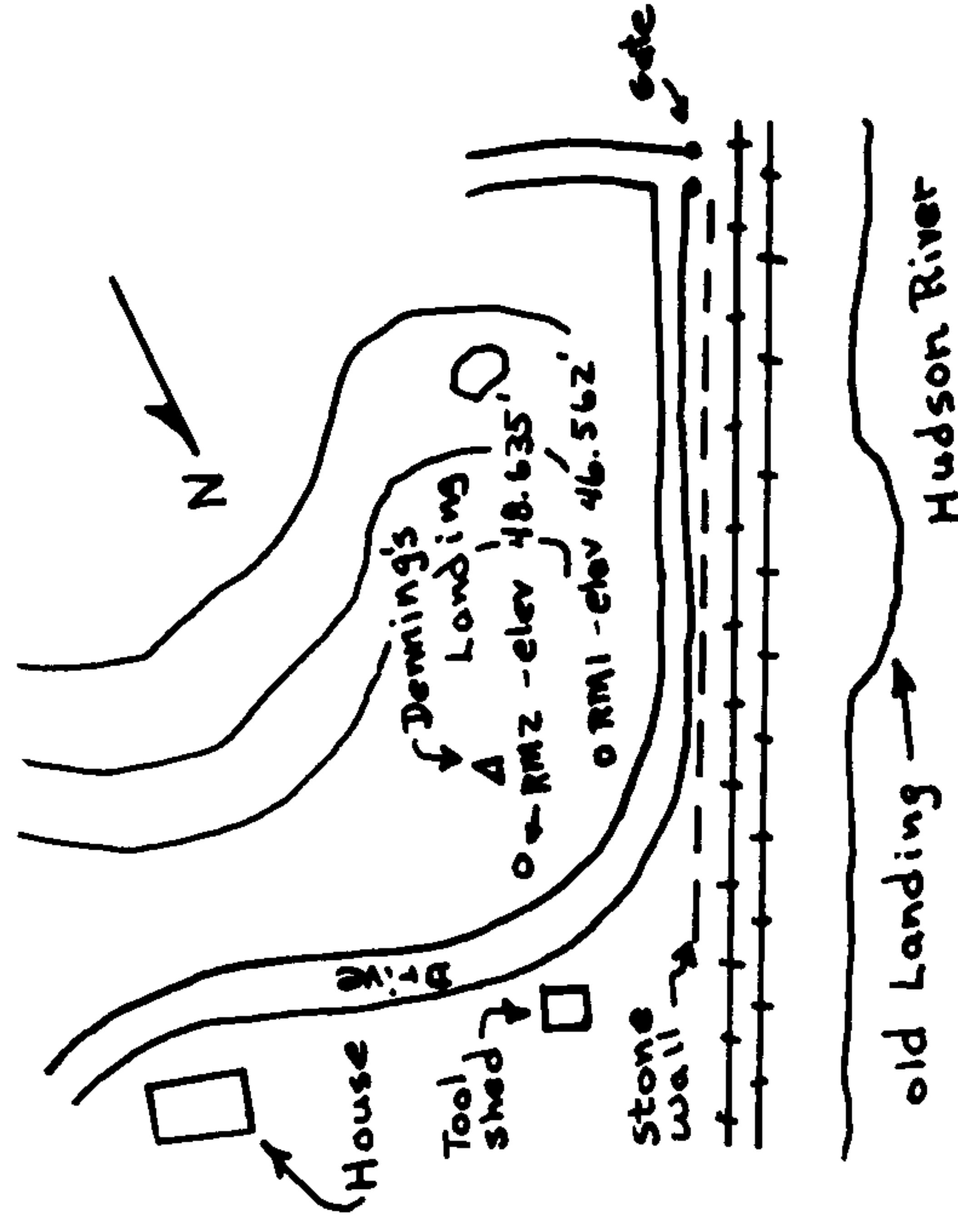
DESCRIPTION: NAME - Denning's Landing ABBREVIATION - Denning's Landing SKETCH:

1. The station is about 2.5 miles south along the *New York Central Railroad* from the station at Garrison, about 1.3 miles north of flag station at Manitou, about 0.4 mile north of milepost NY 47, about 220 yards northeast and across track from Denning's Landing on Hudson River, located at a point where a private drive turns east-northeast away from track and river and on the inside of turn in private drive, 39' south-southeast of center line of private drive, 27' south of a 30" oak tree, 10.1' east-southeast of reference mark 1, 10.6' south-southwest of reference mark 2 and is an 8" x 6" granite post with a cross on top and a 1" hole cut in center and projecting 1". The point leveled to is the highest point of granite post.

2. *Denning's Landing* was established by the USCGS, now known as the NOAA, in 1853. Two standard brass disk reference marks were placed and stamped "DENNING'S LANDING 1853" in 1932.

Object	Distance (m)	Direction
FRAUTS LANDING RM		
RM 1	3.080	0°00'00.0"
RM 2	3.260	37°31'50.0" 136°35'20.0"

3. The station was recovered in April 1975 in good condition.



NO: 63

STATION: Fog (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: PUTNAM CO., NY  
GRID ZONE 18

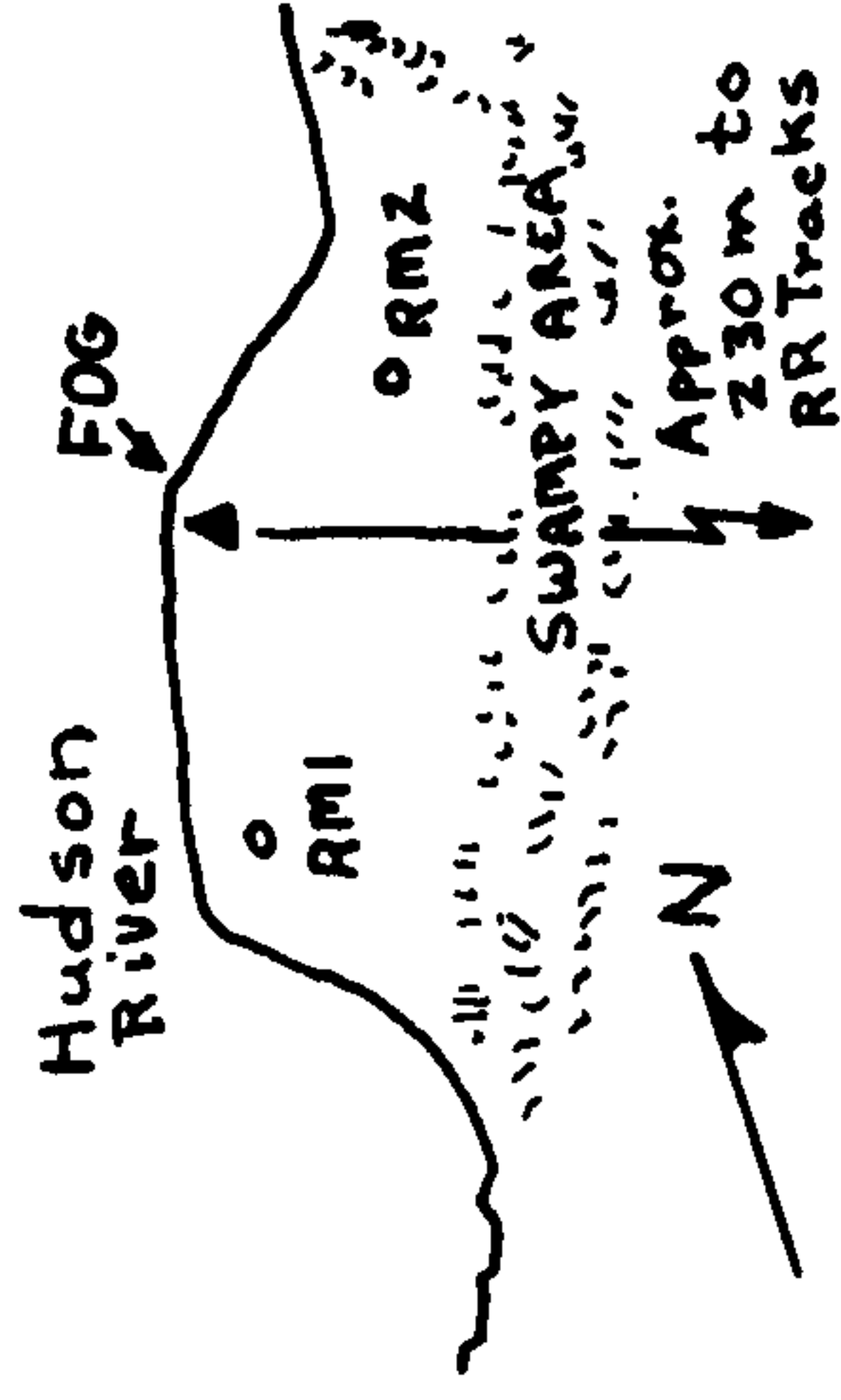
	Grid	
	Eastings	Northing
HORIZONTAL CONTROL ORDER: III	586260.912	4576384.038
ELEV:	1923424.326	15014353.183
DATUM:	600,026.74'	487,015.75'
	73°58'08.76865" W	41°20'10.46262" N
		Geographical

NY E State Plane  
+ 0°14'26"  $\theta$  Angle  
(second term neglected)

DESCRIPTION: NAME - Fog ABBREVIATION - Fog

SKETCH:

1. Fog is a standard disk stamped "FOG 1932" cemented in a drill hole in the ledge rock. It is located on the eastern side of the Hudson River on the point about 1 mile north of Bear Mountain Bridge. It is on the top of a solid rock cliff rising directly from the water. It is 0.6 meter from the edge of the cliff and 1.6 meters from high-water line. Reference mark 1 is a standard disk stamped "FOG 1932 No. 1" cemented in the top of a ledge rock east of the station. Reference mark 2 is a standard disk stamped "FOG 1932 No. 2" cemented in a drill hole in the same rock as the station and is south of the station.



Object	Distance (m)	Direction
CAT		0°00'00.0"
RM 1	3.00	227°17'00.0"
RM 2	5.14	321°12'15.0"

2. The station was established by the USCGS, now called the NOAA, in 1932. It is located north of Manitou on Livingston Island.
3. It was recovered in April 1975. All three markers were observed in good condition.

NO: 64

STATION: Rock (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: PUTNAM CO., NY  
GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL	585702.623	4575536.203	UTM Meters
ORDER: III	1921592.675	15011571.578	UTM Feet
ELEV: 40.177'; Order I	598,173.24'	484,247.50'	NY E State Plane Code 3101 + 0°14'10" θ Angle (second term neglected)
DATUM: Mean Sea Level, 1929			Geographical

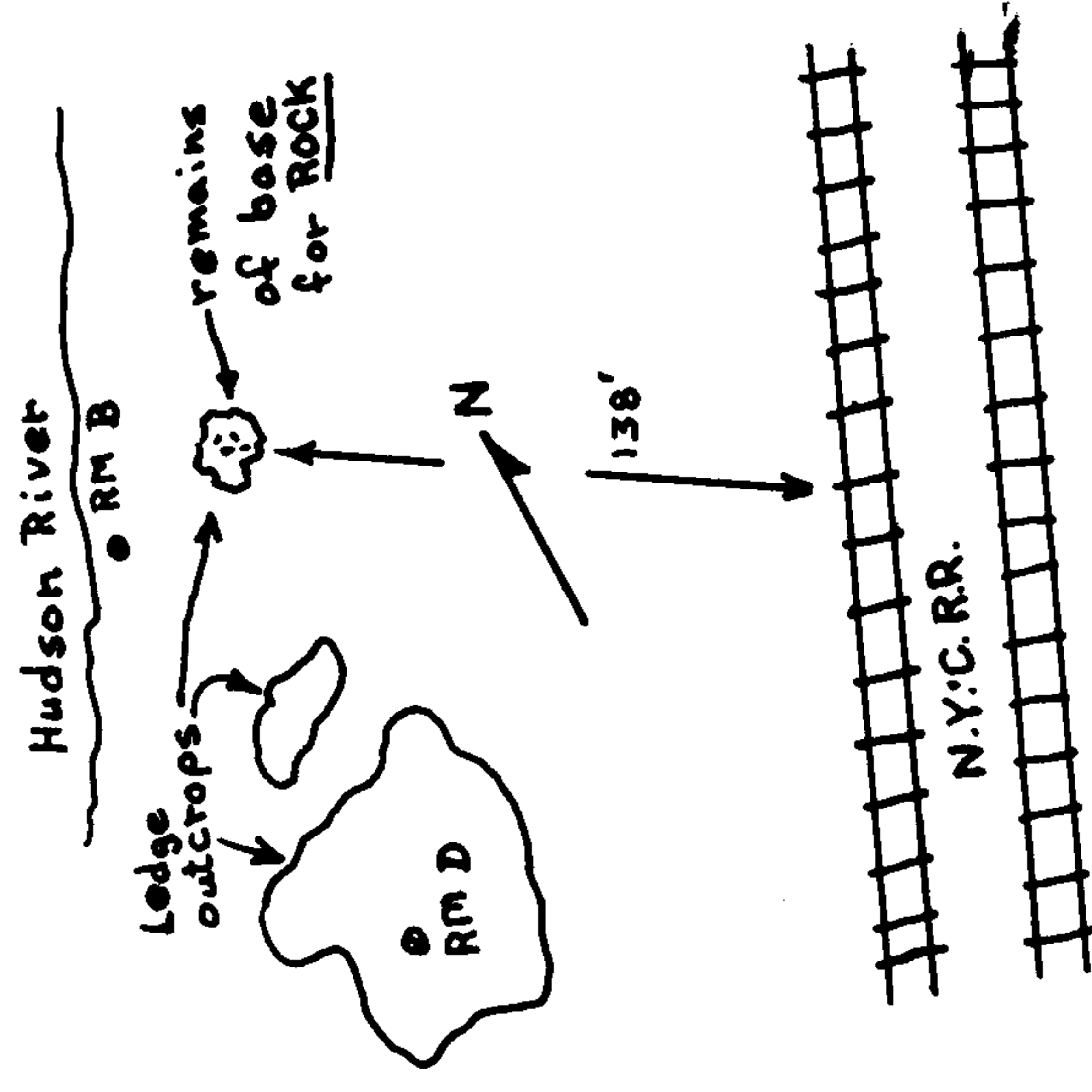
73°58'33.21495" W

41°19'43.18763" N

DESCRIPTION: NAME - Rock ABBREVIATION - Rock

SKETCH:

1. The station is about 4.4 miles northwest along the *New York Central Railroad* from the station at Peekskill, about 0.6 mile north of Bear Mountain Bridge, about 0.3 mile south of milepost NY 46, located on top of a high rock ledge between the railroad and Hudson River (the face of ledge facing river is almost vertical), 138' northwest of northwestern rail of northwestern track, 27.8' northeast of reference mark "D," 11.7' east-southeast of reference mark "B," 14' southeast of northwestern end of ledge, 8' southwest of an 8" scrub oak tree and about 45' above level of track.



2. Rock was established in 1901 by the USCGS. It was re-marked in 1932 by placing a triangular pad of cement over the old iron bolt so that it extended 6" above the surrounding ground and placing a standard USCGS disk stamped "ROCK 1901" in the cement. Standard reference mark disks were cemented in drill holes in crosses marked "B" and "D" in the old description.

NO: 64 (CONT)

<u>Object</u>	<u>Distance (m)</u>	<u>Direction</u>
OMA		0°00'00.0"
RM "B"	3.52	52°03'45.0"
Cross in Rock "C"	4.31	208°50'45.0"
RM "D"	8.47	325°45'15.0"
Cross in Rock "A"	6.23	347°23'40.0"

3. The station was recovered in April 1975. The station marker has been removed. Part of the cement base remains. Reference marks "B" and "D" are still intact and in good condition.
4. Reference mark "D" has an elevation of 43.881'.  
Reference mark "B" has an elevation of 39.344'.

NO: 65

STATION: FRY (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: ORANGE CO., NY  
GRID ZONE 18

	Eastings	Northings	Grid
HORIZONTAL CONTROL			
ORDER: III	585191.597	4586408.568	UTM Meters
ELEV:	1919916.084	15047241.993	UTM Feet
DATUM:	73°58'49.694" W	41°25'35.896" N	Geographical

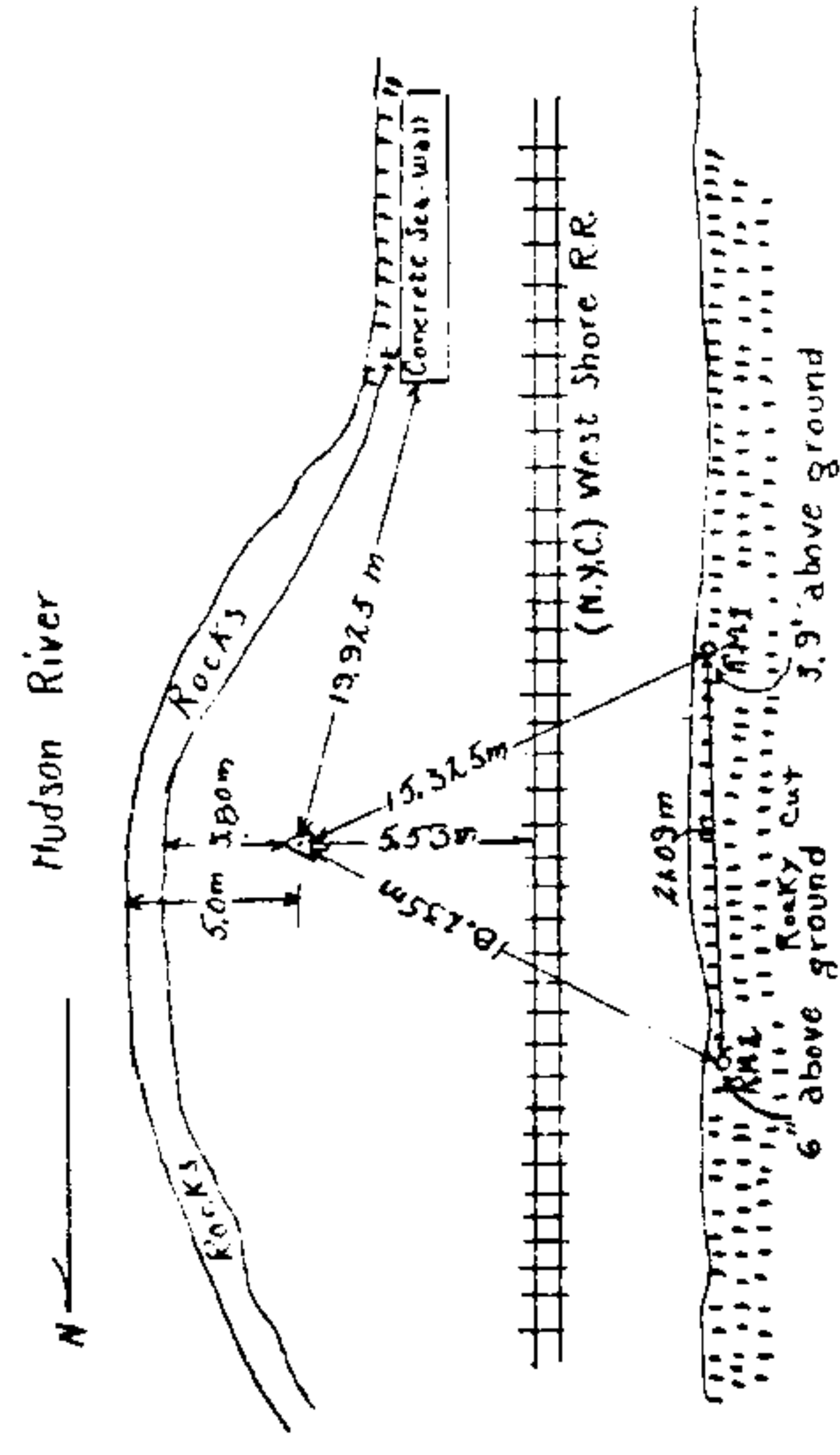
DESCRIPTION: NAME - Fry

ABBREVIATION - Fry

SKETCH:

1. This station is located on the western bank of the Hudson River. It is on the opposite side of the river from and just north of Little Stony Point. It is south of Butter Hill Clough and Storm King Mountain. Underground station mark and surface mark are both standard disks marked "FRY 1905-1933," cemented in rocks. Subsurface mark is 2' below ground, and surface mark is in rock protruding 4" above ground. The station is on a small promontory between railroad tracks and the Hudson River. Reference marks are standard disks marked as above and cemented in rocky cut in old crosses put there in 1905, across the railroad tracks. Unable to occupy reference marks.

3. Fry was established by the USCGS, now known as NOAA, in 1905. The station was recovered in good condition. Reference mark 2 was not recovered. It is believed to be intact beneath a small earth slide.



Object	Distance		Direction
	Feet	Meters	
ANGIE	329°48'	21.1"	
Web	32°16'	26.8"	
Breakneck Point 2	0°00'	00.0"	
RM 1	50.28	15.325	210°57'
RM 2	59.83	18.235	35.9"
RM 1 to RM 2	69.20	21.090	288°19'
Palopel Id. L.H. (Azimuth Mark)			338°49'
			24.4"

Height of signal above station mark - 2 meters.

Height of telescope above station mark - 1.5 meters.

NO: 66

STATION: Dock (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: PUTNAM CO., NY  
GRID ZONE 18

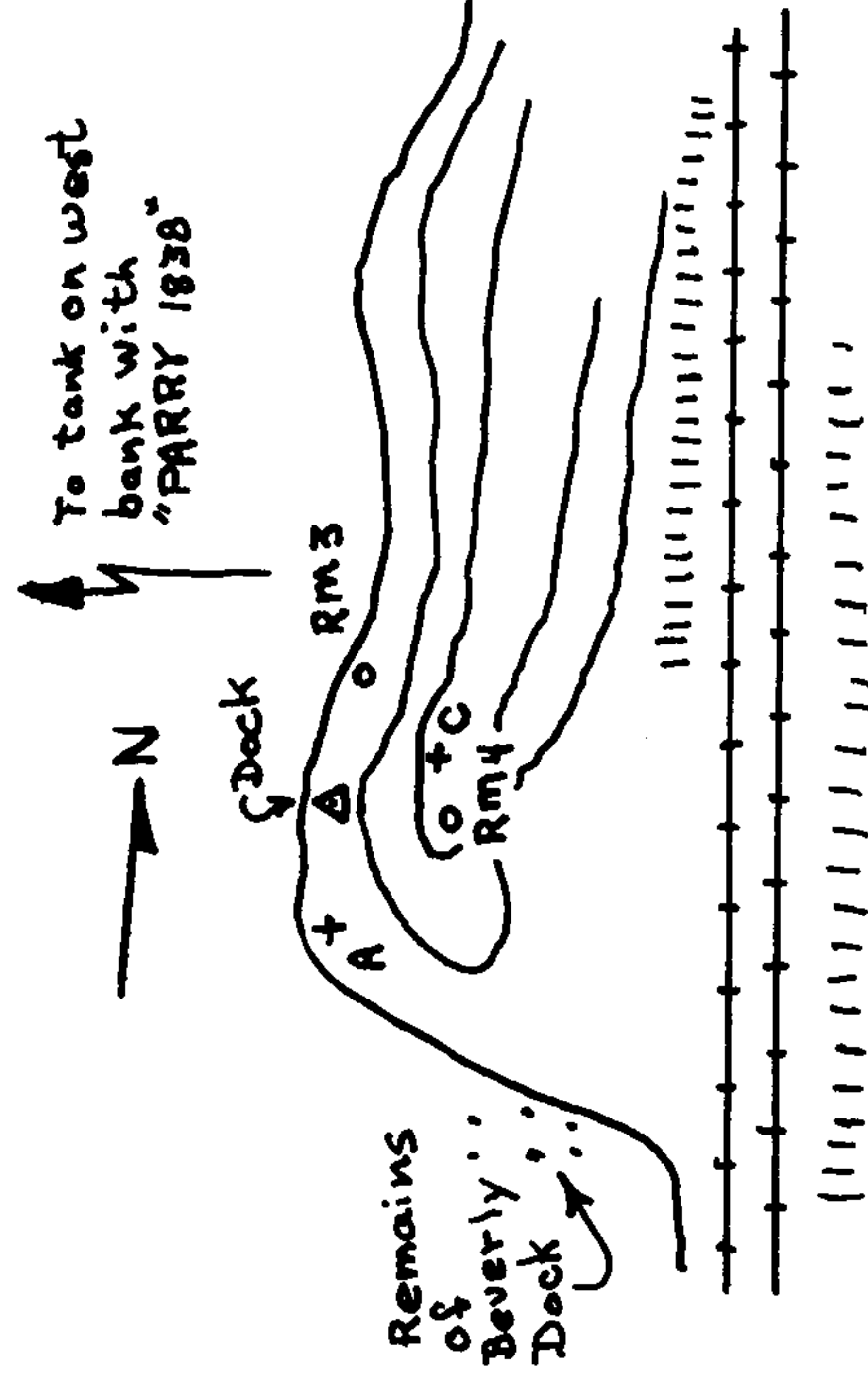
	Eastings	Northings	Grid
HORIZONTAL CONTROL ORDER: III	587218.248	4579347.926	UTM Meters
ELEV: 15.512'	1926346.028	15042288.719	UTM Feet
DATUM: Mean Sea Level, 1929	603,243.18'	496,718.10'	NY E State Plane Code 3101 + 0°14'55" θ Angle (second term neglected)
	73°57'26.05423" W	41°21'46.18911" N	Geographical

DESCRIPTION: NAME - Dock ABBREVIATION - Dock

1. The station is about 1.45 miles south along the *New York Central Railroad* from the station at Garrison, about 180' west of the western rail of the western track, set in the top of an outcropping ledge at the southwestern end of a point extending into the Hudson River, 109' northwest of Beverly Dock (abandoned), 69' northwest of a lone 30" chestnut tree, 15.5' west of reference mark 3, 14.5' south of reference mark 4, 6' east of western edge of rock ledge and about 16' above the level of the water. The disk is set in rock so that the eastern side is high point. The rod held on letter "G" of the casting "GEODETIC."

2. The station was established in 1905 by the USCGS. The station was marked in 1932 with a standard USCGS disk stamped "DOCK 1905." It is on the first point on the eastern bank of the Hudson north of Con's Hook Light. Two standard brass disk reference marks, 3 and 4, were set in rock ledges and stamped "DOCK 1905" in 1932.

SKETCH:





NO: 66 (CONT)

<u>Object</u>	<u>Distance (m)</u>	<u>Direction</u>
CHIK		0°00'00.0"
RM 4	4.323	128°09'25.0"
RM 3	4.730	215°46'05.0"
Cross "C"	5.265	199°25'45.0"
Cross "A"	2.680	357°33'10.0"

3. *Doek* was recovered in April 1975. Reference mark 3 remains intact, but the station marker and reference mark 4 have been removed. Metal studs located beneath the disks are still intact.

4. Reference mark 3 has an elevation of 19.416'. Reference mark 4 has an elevation of 13.428'.

NO: 67

STATION: SECOR (USCGS/NOAA)

SPHEROID: CLARKE 1866  
 AREA: WEST POINT, NY  
 GRID ZONE 18

	Easting	Northing	Grid
HORIZONTAL CONTROL			
ORDER: III	586918.355	458073.306	UTM Meters
ELEV:	1925581.288	15039081.723	UTM Feet
DATUM:	602,297.53'	501,731.48'	NY E State Plane Code 3101 + 0°14'47" θ Angle (second term neglected)
	73°57'38.17270" W	41°22'35.76292" N	Geographical

DESCRIPTION: NAME - Secor ABBREVIATION - Secor

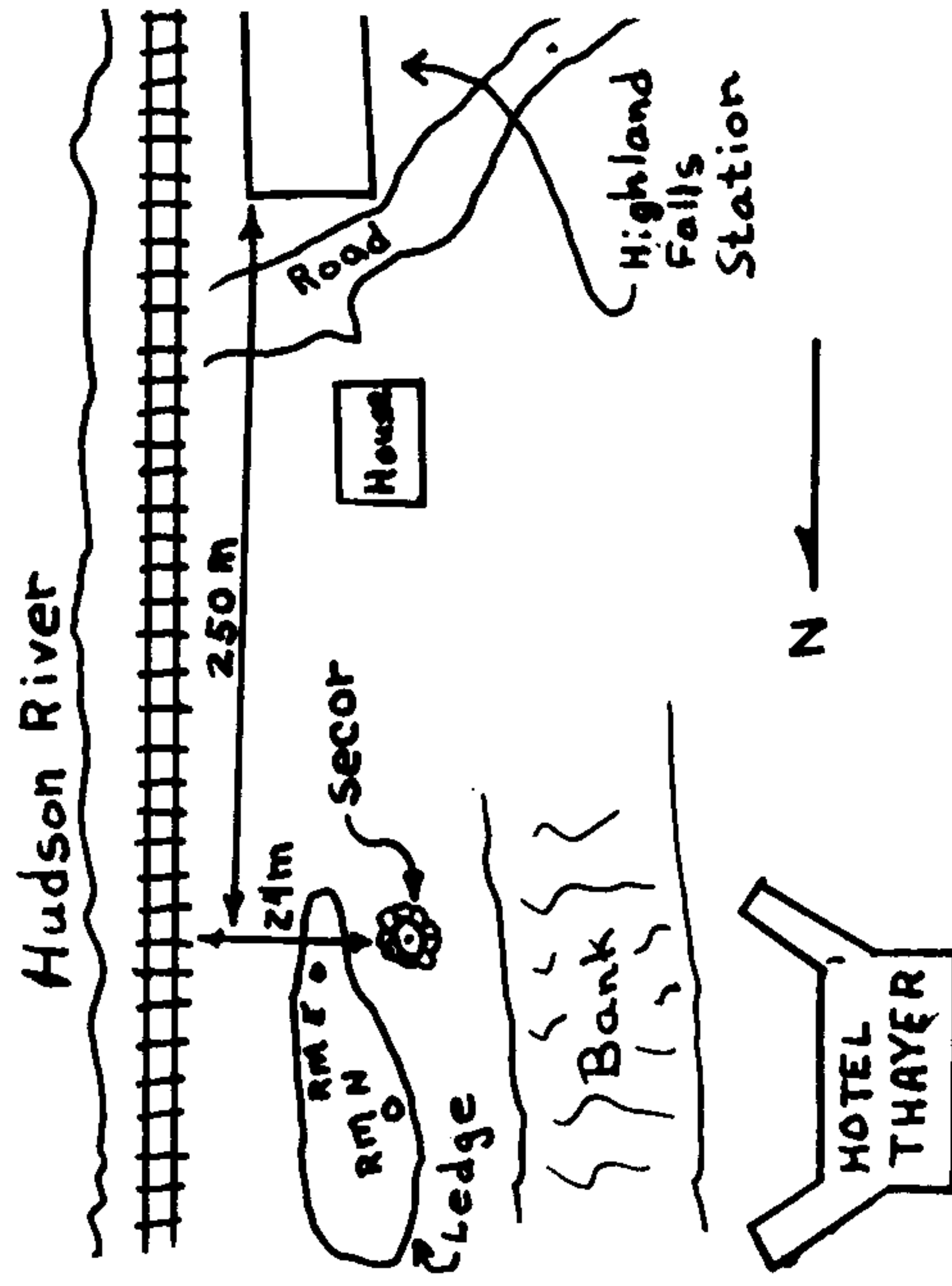
SKETCH:

1. This station is the southeastern corner of the West Point military reservation. It is located 250 meters north of Highland Falls railroad station and 24 meters west of the western rail of the *West Shore Railroad*. It is surrounded by trees and is marked by a 3" bore cannon with muzzle down in the ground so that the breach projects about 3' above the surface of the ground and is surrounded by a heap of rocks. The station is a nail punch mark in the top of the ball on the breach of the cannon. Two standard disk reference marks were cemented in drill holes in the large outcropping rock near the station.

Object	Distance (m)	Direction
HARD		0°00'00.0"
RM North	11.66	260°50'06.0"
RM East	4.48	336°48'46.0"
RM East to RM North	11.43	
Monk Azimuth Mark		16°07'59.6"

2. The marker was recovered in good condition in April 1975. There was no apparent clump of trees around the point.

3. It is probably one of the Military Academy's boundary markers. *Secor* probably stands for "southeastern corner." Reference marks are standard USCGS disks.



NO: 68

STATION: ALT. 2 (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: ORANGE CO., NY  
GRID ZONE 18

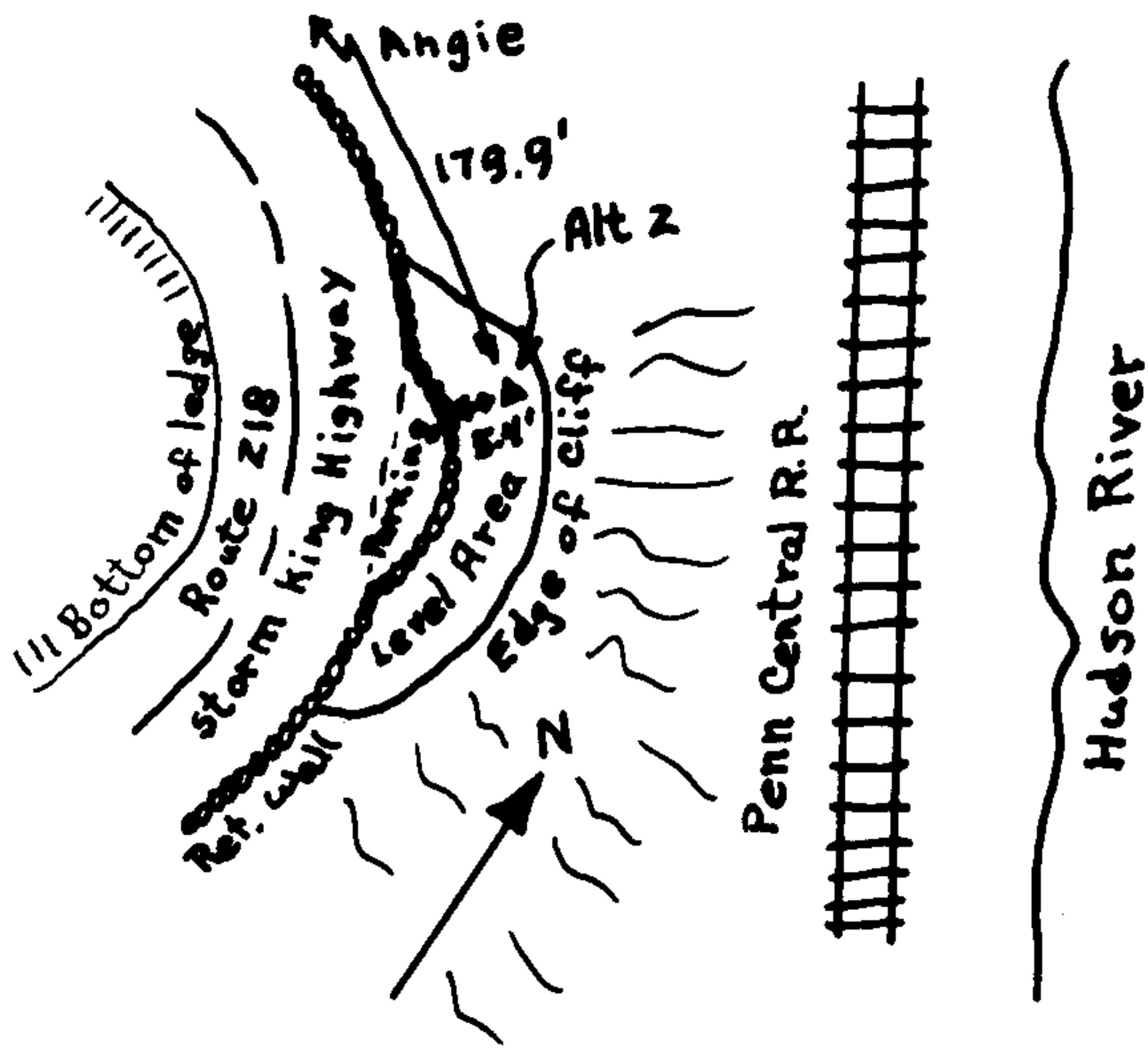
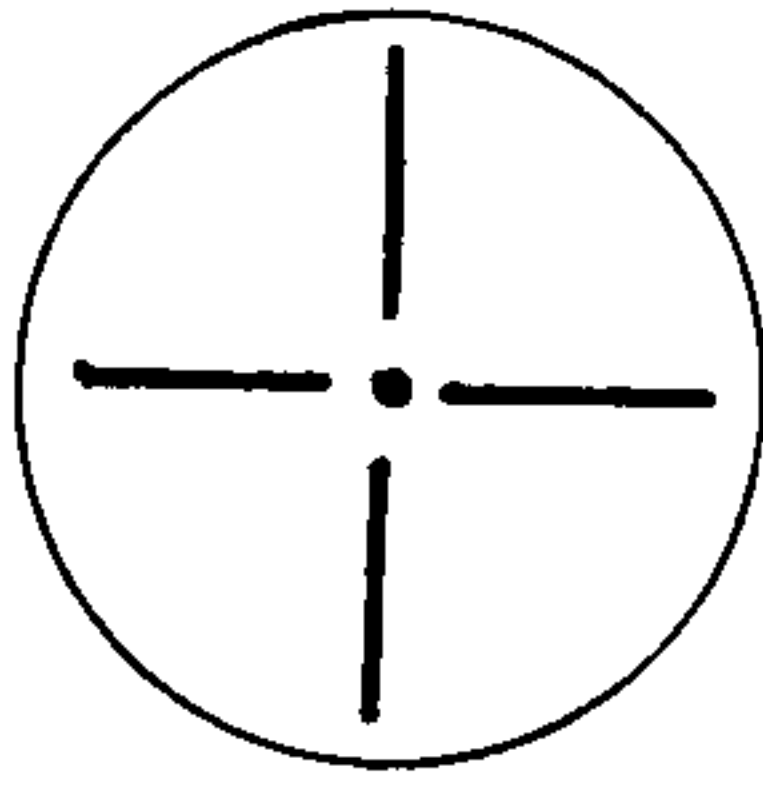
	Easting	Northing	Grid
HORIZONTAL CONTROL ORDER: III	584727.153	4587337.369	UTM Meters
ELEV:	1918392.318	15050289.235	UTM Feet
DATUM: Mean Sea Level, 1927	595,270.00'	522,999.81'	NY E State Plane Code 3101 + 0°13'48" θ Angle
	73°59'09.232" W	41°26'06.187" N	Geographical

DESCRIPTION: NAME - Alt. 2 ABBREVIATION - Alt. 2

SKETCH:

1. This station is a plug set in ledge rock 2.4 miles north of Lee Gate, West Point, measured along the old Storm King Highway. It is 1.3 miles south of the intersection of old Storm King and Clark Street in Cornwall. Alt. 2 is on a lookout point high above the Hudson on a sharp curve in the road.

2. The station was recovered in April 1975. The station was in good condition and is inscribed as shown:



- 3. No reference marks could be located.
- 4. The station was established in 1962 by Chas. H. Sells, Inc.

NO: 69

STATION: PINK (USCGS/NOAA)

SPHEROID: CLARKE 1866  
AREA: WEST POINT, NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER: II	588693.118	4580058.261	UTM Meters
ELEV:	1931403.990	15026407.700	UTM Feet
DATUM:	73°56'22.211" W	41°22'08.640" N	Geographical

DESCRIPTION: NAME - *Pink* ABBREVIATION - *Pink* SKETCH:

1. *Pink* is the peak of the red-topped cupola on a grey castlelike home known as Castle Rock, belonging to Professor Henry F. Osborne, on top of the first hill north of Sugarloaf Hill. It is between U.S. Highways 9 and 9D about 2.3 miles southeast of West Point and about 1.2 miles east of the Hudson River. The building is a three-story grey stone castlelike structure with red tile shingle roof. It can be seen to the east of U.S. Highway 9D. A private road leads up to it from the north.

2. The station was established in 1932 by the USCGS, now known as the NOAA.

NO: 70

STATION: ANGIE (USCGS/NOAA)

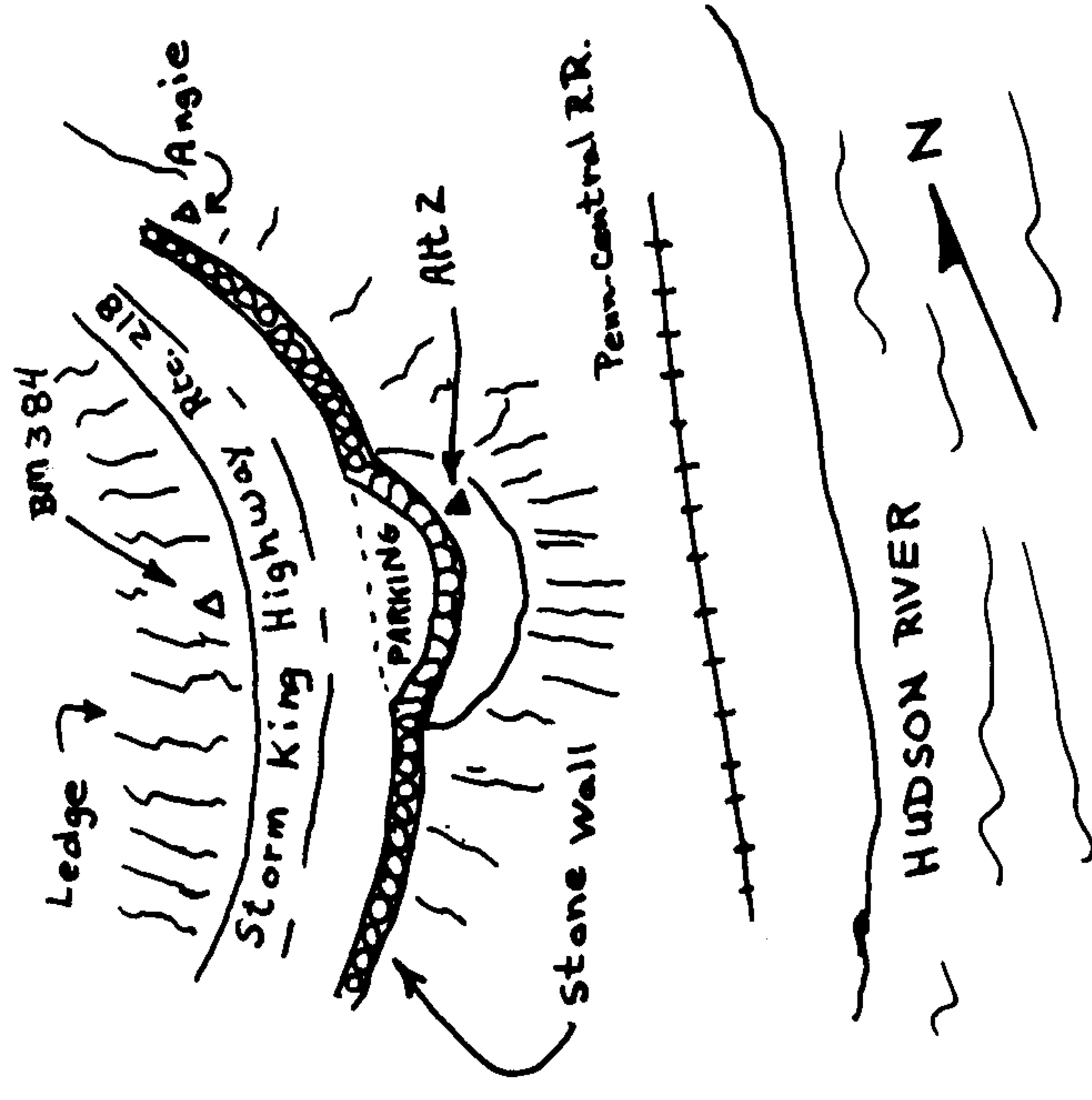
SPHEROID: CLARKE 1866  
AREA: ORANGE CO. NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL	584712.538	4587390.155	UTM Meters
ORDER: III	1918344.369	15050462.416	UTM Feet
ELEV: 360'	73°59'09.835" W	41°26'07.904" N	Geographical
DATUM: Mean Sea Level, 1927			

DESCRIPTION: SKETCH:

DESCRIPTION: NAME - Angie ABBREVIATION - Angie

1. This station is located on the western side of the Hudson River on the ledge rock on top of the cliff and just east of the stone fence along the Storm King Highway. It is near the most easterly portion of the Storm King Highway on the face of Storm King Mountain. It was marked by a standard disk stamped "ANGIE 1933" cemented in a drill hole in the bare ledge rock. The reference marks are standard disks stamped "ANGIE 1933, No. 1 and 2," cemented in drill holes in the vertical face of the cliff on the western side of the highway. Reference mark 1 is 1.4 meters above the level of the highway, and reference mark 2 is 1.25 meters above the level of the highway.

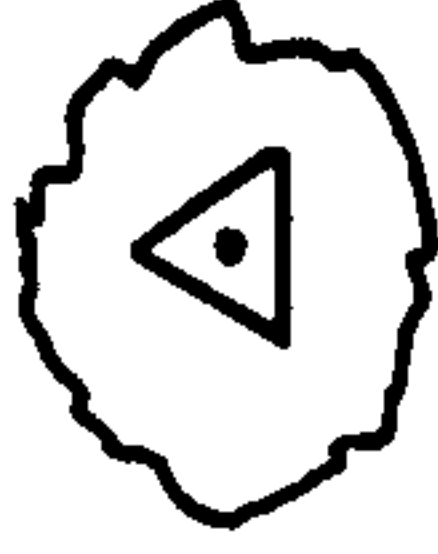


Object	Distance		Direction
	Feet	Meters	
POLYPUS ID. 2			0°00'00.0"
Willow 2			333°16'53.4"
Palopel Id. L.H. Azimuth Mark			356°10'25.0"
RM 1	54.63	16.650	300°15'36.2"
RM 2	52.31	15.945	218°42'25.3"
RM 1 to RM 2	70.21	21.400*	

Height of signal above station mark - 2 meters.  
 Height of telescope above station mark - 1.5 meters.  
 \*Distances between reference marks were measured along face of cliff and not in a straight line.

NO: 70 (CONT)

2. *Angie* was established in 1933. The station marker and reference marks are standard USCGS disks.
3. The station was recovered in April 1975. The station marker is badly mutilated. All that remains is the center portion as shown:



NO: 71

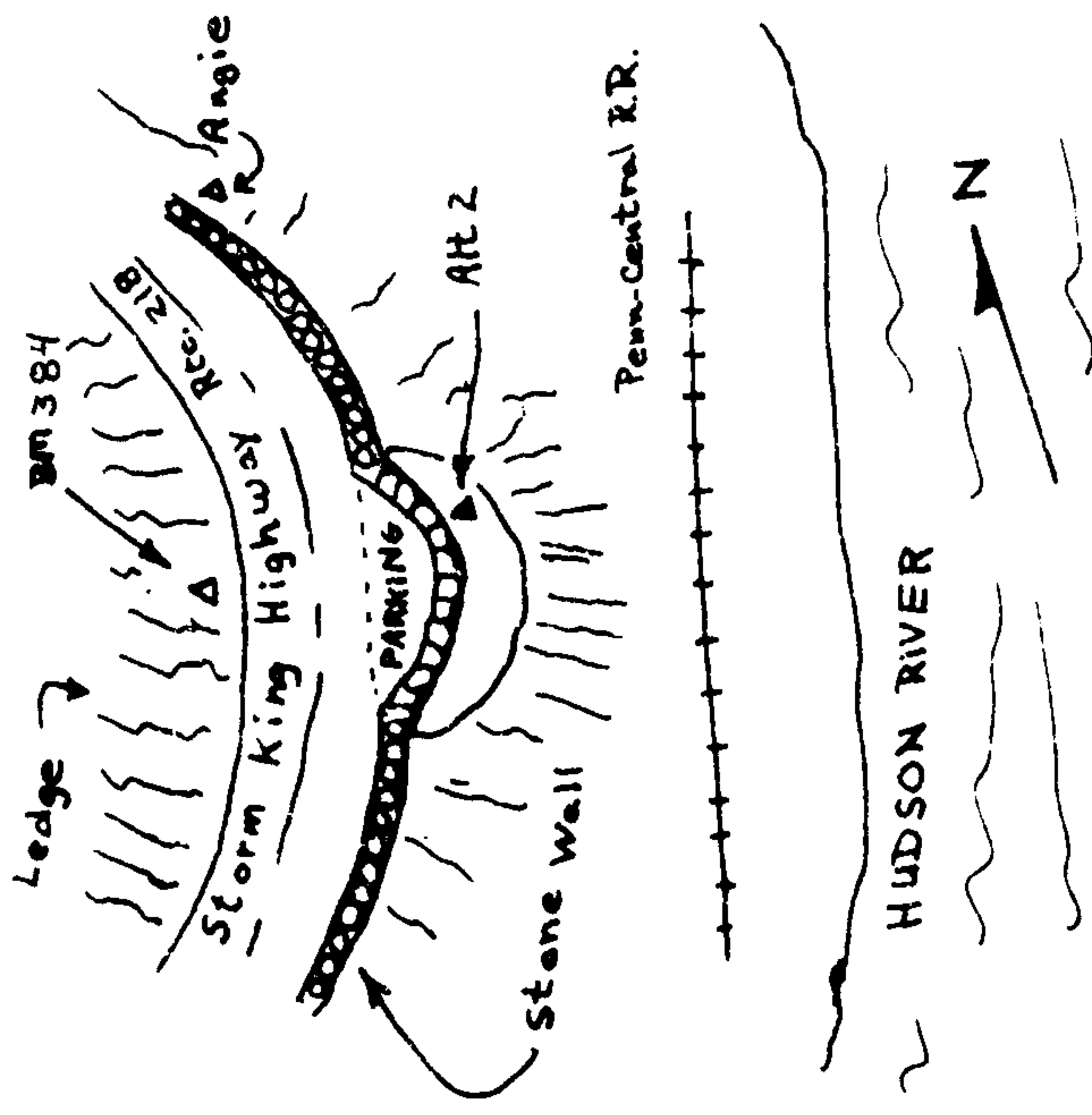
STATION: BM 384 (USGS)

SPHEROID:  
AREA: ORANGE CO., NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL			
ORDER: III Leveling			UTM Meters
ELEV: 383.538'			UTM Feet
DATUM: Mean Sea Level, 1929			Local (Flag)

DESCRIPTION: NAME - BM 384 ABBREVIATION - BM 384 SKETCH:

1. BM 384 was established by Mr. M. A. Roudabush in 1926. It is a USGS bench mark and is marked by a standard USGS disk stamped "R22 1926."
2. The station is located 8' west of NY Route 218 (Storm King Highway) near its highest point on Storm King Mountain. It is 4' above the edge of highway, on a shelf, in a rock cut. The cut is directly across the highway from a small parking area at a scenic lookout.
3. The station was recovered in May 1975. It was in good condition. No reference mark could be located.



NO: 72

STATION S57 (USCGS/NOAA)

SPHEROID: PUTNAM Co., NY  
AREA: GRID ZONE 18

Eastings

Northings

HORIZONTAL CONTROL  
ORDER: I

UTM Meters

ELEV: 13.612

UTM Feet

DATUM: Mean Sea Level, 1929

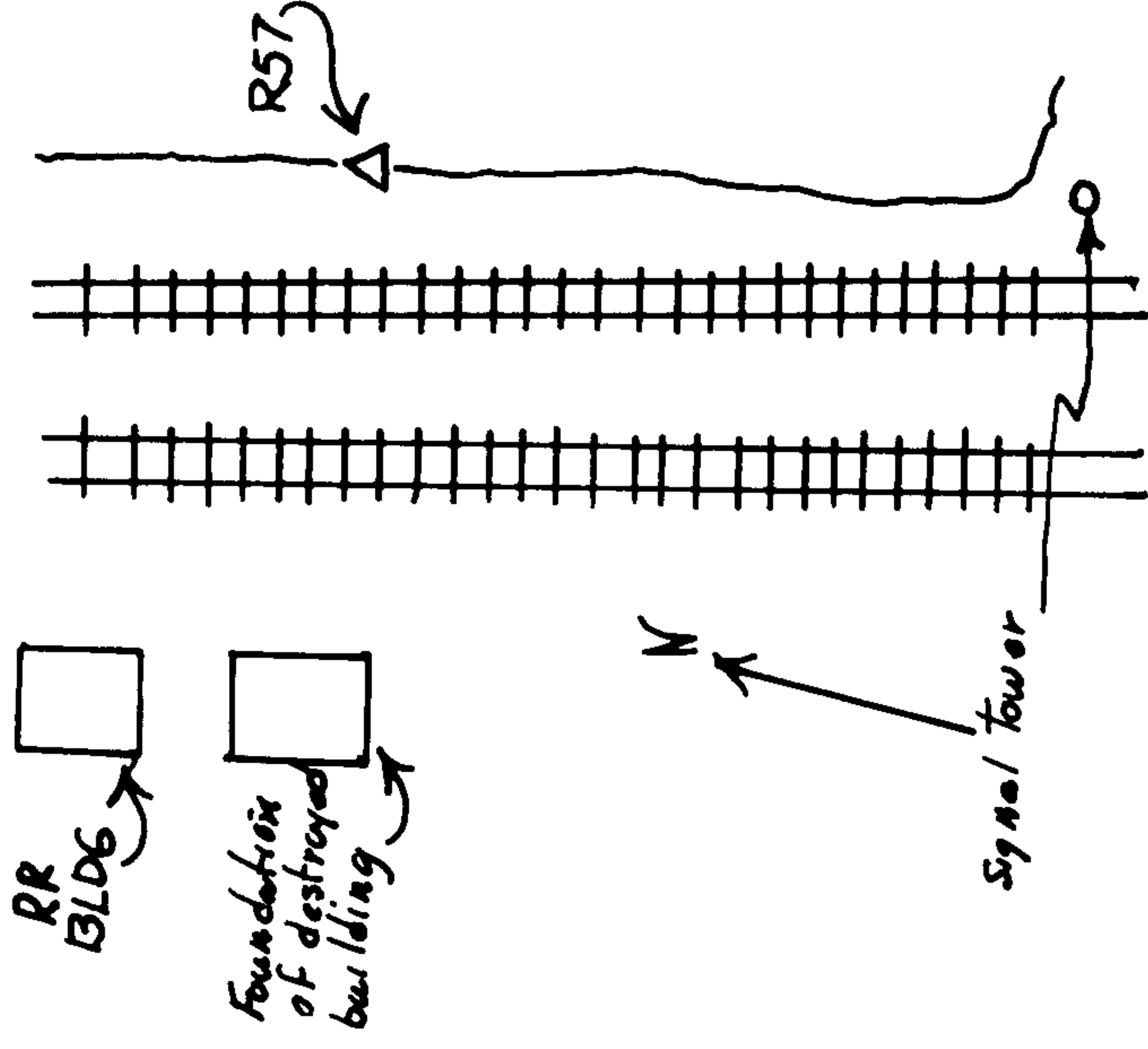
Geographical

DESCRIPTION: NAME - S57 ABBREVIATION - S57

1. S57 is about 4.7 miles northwest along the New York Central Railroad from the station at Peekskill, about 3.9 miles south of the station at Garrison, at Manitou, set vertically in the face of a rock cut, 436' southwest and across a road from the southern corner of flag station, 402' southwest of center of crossing of a road and the northwestern track, 17' northwest of northwestern rail of northwestern track, 90' north and across track from milepost NY 46, 132' northeast of southwestern end of cut and about 3½' above the level of the track.

2. Station was recovered in April 1975 in good condition. Marker is a standard USCGS disk. It was established by the USCGS, now known as the NOAA, in 1955 and is stamped "S57 1955."

SKETCH:





NO: 73

STATION: 6.92 (NYCRR)

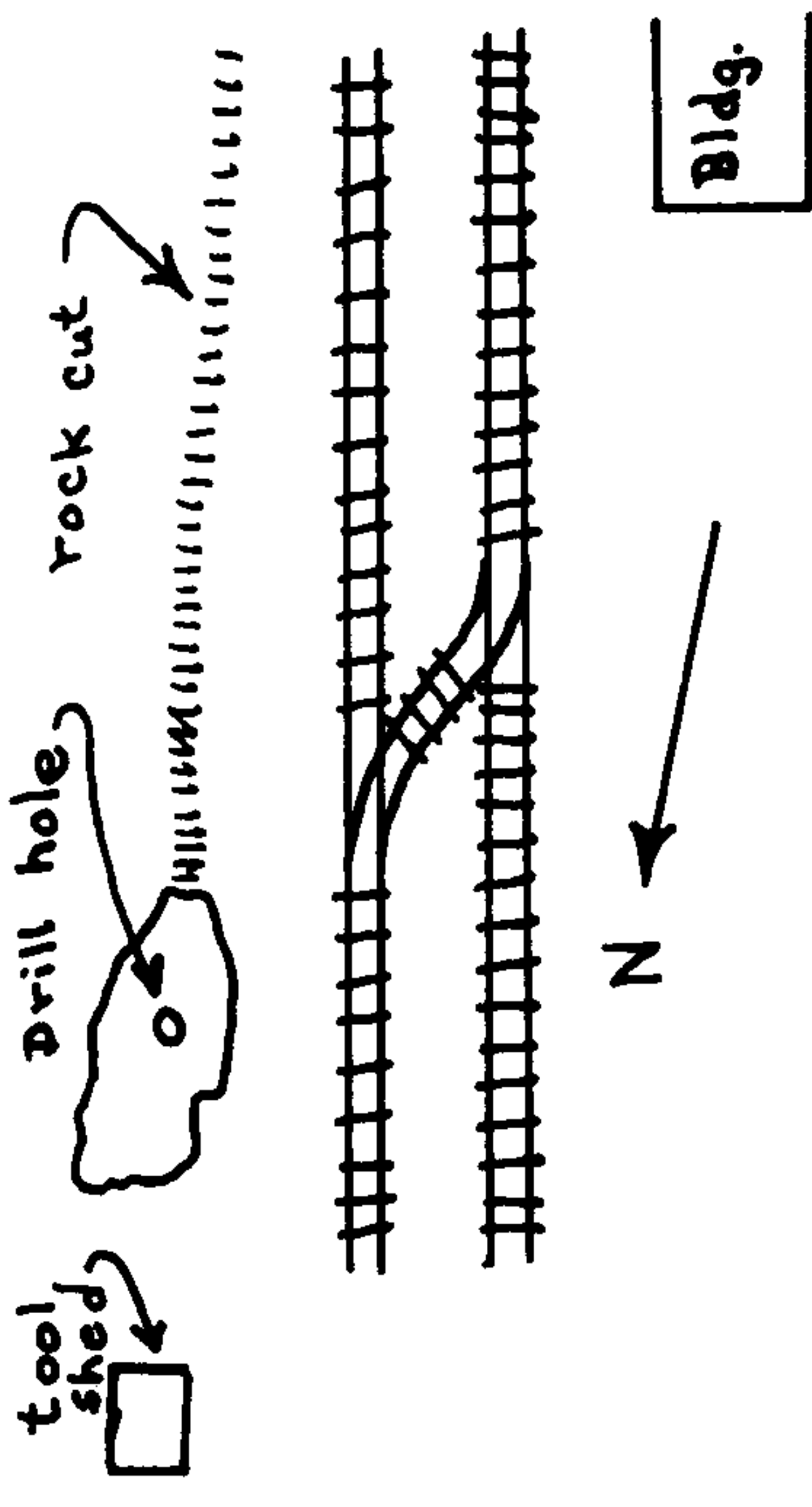
SPHEROID:  
AREA: PUTNAM Co., NY  
GRID ZONE 18

	Eastings	Northing	Grid
HORIZONTAL CONTROL ORDER:			UTM Meters
ELEV:			UTM Feet
DATUM:			Geographical

DESCRIPTION: NAME - 6.92 ABBREVIATION - 6.92

1. The 1955 description reads: "4.5 miles south along the Hudson Division of the New York Central Railroad from the station at Cold Spring, Putnam County, 2.9 miles south of Garrison, 72 yards north of milepost 48, 5 rails south of substation 43, 5 yards east of the east rail of the east track, and on the top of a rock outcrop. The high point of the rock."
2. In April 1975 a point approximately 72 yards north of milepost 48 was located. The description is accurate except "2.9 miles south of Garrison" should be 1.9 miles south of Garrison. The point had no disk but was a drill hole identified by the letters "BM" painted on the rock outcrop. It is believed to be the station 6.92.
3. The station is at the northern end of a rock cut. It was established in June 1955 by the *New York Central Railroad*. It has been classified as "Not identifiable-- NOT RECOVERED."

SKETCH:



NO: 74

STATION: R57 (USCGS/NOAA)

SPHEROID:  
AREA: PUTNAM CO., NY  
GRID ZONE 18

Eastings Northing Grid

HORIZONTAL CONTROL  
ORDER:

UTM Meters

ELEV: 13.884'

UTM Feet

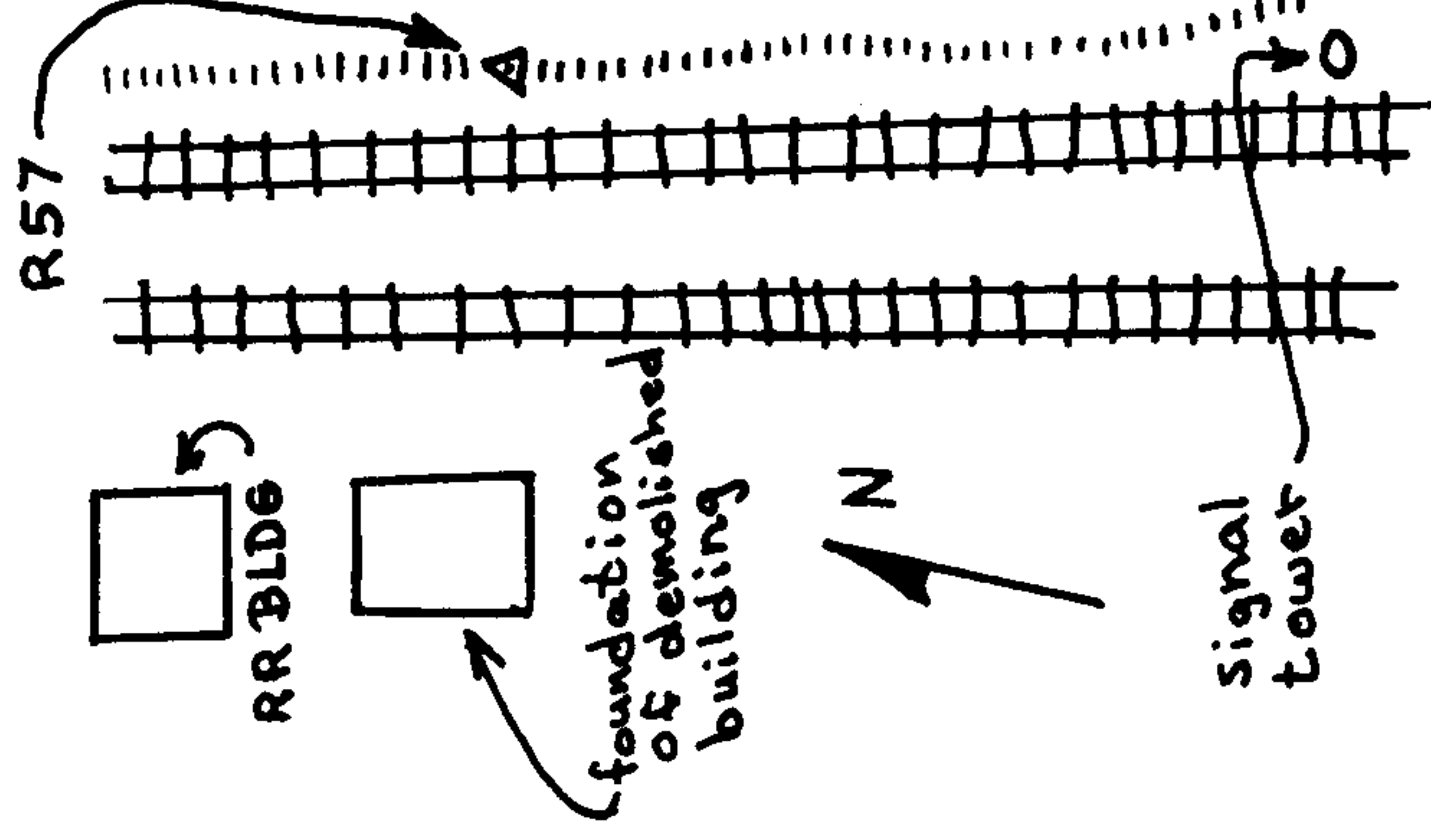
DATUM: Mean Sea Level, 1929

Geographical

DESCRIPTION: NAME - R57 ABBREVIATION - R57

SKETCH:

1. The 1955 description reads: "About 1.8 miles south along the New York Central Railroad from the station at Garrison, about 6 telephone poles north of mile post NY 48, set vertically in face of a rock cut, 9 feet east of east rail of east track, 125 feet southeast of and across track from the southeast corner of control tower No. 43, 99 feet south of a spring, 274 feet north of south end of rock cut, and about 2.5 feet above level of track." This description remains accurate except the station is not 125' south-southeast of control tower 43. A new signal tower is located south of the station on the same side of the tracks.



2. The station was recovered in April 1975. There is no standard disk present. However, its outline is visible in the cement used to fasten it to the rock face of the cut.
3. R57 was established in 1955 by the USCGS, now known as the NOAA. The original standard disk was stamped "R57 1955."