

5453

5453

Form 504	
U. S. DEPARTMENT OF COMMERCE	
COAST AND GEODETIC SURVEY	
DESCRIPTIVE REPORT	
Type of Survey .....	
Field No. ....	Office No. <u>5453</u>
LOCALITY	
State <u>New York</u>	
General locality <u>New York City</u>	
Locality <u>Central Manhattan</u>	
<u>1936</u>	
CHIEF OF PARTY	
<u>J.C. Partington Jr. H86</u>	
LIBRARY & ARCHIVES	
DATE .....	

5453  
5453

SUPPLEMENTAL T

5453

SUPPLEMENTAL T

Form 504 Rev. Dec. 1933	
DEPARTMENT OF COMMERCE U.S. COAST AND GEODETIC SURVEY R. S. PATTON, DIRECTOR	
DESCRIPTIVE REPORT	
Topographic } Hydrographic }	Air Photo Compilation Sheet No. T 5453
State	New York
LOCALITY	
New York City	
Central Manhattan	
1936	
CHIEF OF PARTY	
J. C. Partington, Jr. H. & G. E.	

5453  
SUPPLEMENTAL T

Applied to Chart 746 - May 1937 - R.M. J.  
Applied to Chart 745 - June 1937 - R.M. J.  
Applied to Chart 226 - Dec 11, 1937 - R.M. J.  
Applied to Chart 369 - Apr 3, 1939 - R.M. J.

DEPARTMENT OF COMMERCE  
U.S. COAST AND GEODETIC SURVEY

REG. NO.

TOPOGRAPHIC TITLE SHEET

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 86 & 87

REGISTER NO. T 5453 T5453

State New York

General locality New York City

Locality Central Manhattan

Photos 11/25/34; 3/26/35; 3/27/35.

Scale 1:5000 Date of survey 19

Vessel Air Photo Compilation Party # 25

Chief of party J. C. Partington

Surveyed by See Statistic Sheet, page 2 of this report

Inked by " " " " " " "

Heights in feet above to ground to tops of trees

Contour, Approximate contour, Form line interval — feet

Instructions dated March 14, 1934

Remarks:

T-5453

STATISTICS on SHEET, FIELD NO. 86 & 87 ; REGISTER NO. ~~T-5454~~ & ~~T-5455~~

PHOTOGRAPH NO.	DATE	TIME	TIDE			
			High		Low	
			Time	Ht.	Time	Ht.
114-115 (870 N-8)	Nov. 25, 1934	1:07 to 1:12 PM	10:59 AM 11:52 PM	4.2 3.4	4:47 AM 5:34 PM	0.3 0.0
345-349 (876 A-8)	Nov. 25, 1934	1:15 PM	as above			
470-471 (876 A-8)	Mar. 26, 1935	10:45 AM	- - - 12:21 PM	- - 3.4	6:26 AM 5:58 PM	0.4 0.5
459-469 (876 A-8)	Mar. 26, 1935	10:32 - 10:35 AM	0:48 AM 1:11 PM	4.5 3.4	7:16 AM 6:48 PM	0.4 0.5
457-458 (876 B-8)	Mar. 27, 1935	10:30 AM	1:48 AM 2:13 PM	4.4 3.4	8:39 AM 8:06 PM	0.5 0.6
1 photo (no number)	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

	By	Date	
		From	To
SCALE FACTOR (1.000)	<u>R.C. Bolstad</u>	(Previously determined)	
PROJECTION	<u>W.E. Hackett</u>	12-10-34	
PROJECTION CHECKED	<u>W.D. Ayers</u>	12-10-34	
CONTROL PLOTTED	<u>G.C. McGlossan</u>	3-28-35	
CONTROL CHECKED	<u>W.E. Brown</u>	3-29-35	
SMOOTH RADIAL LINE PLOT	<u>W.E. Hackett</u> (not completed)		
	<u>J.C. Partington</u>	5-3-36	5-20-36
RADIAL LINE PLOT CHECKED	<u>J.C.P.</u>	As detailed	
DETAIL INKED	<u>I. A. Giles</u>	8-1-36	11-30-36
PRELIMINARY REVIEW OF SHEET	<u>J.C. Partington</u>	12-12-36	
AREA OF DETAIL INKED (land area)	<u>7.6</u>	Sq. Statute Miles	
AREA OF DETAIL INKED (Shoals)		Sq. Statute Miles	
LENGTH OF SHORELINE (more than 200 M. from opposite shore)	<u>24.2</u>	Statute Mi.	
LENGTH OF SHORELINE (rivers & sloughs less than 200 M. wide)		Statute Mi.	
LENGTH OF STREETS, ROADS, RAILROADS, TRAILS	<u>244.1</u>	Statute Mi.	

GENERAL LOCATION New York

LOCATION Central Manhattan

DATUM North American 1927

STATION Empire State Building  
1932

Latitude  $40^{\circ} 44' 53.986''$  = 1665.3 M.

Longitude  $73^{\circ} 59' 09.844''$  = 231.9 M

(Adjusted computations)

COMPILER'S REPORT

for

AIR PHOTO TOPOGRAPHIC SHEET, FIELD NO. 86 & 87, REGISTER No. ~~T-5454~~ <sup>T-5453</sup> & 5455

GENERAL INFORMATION

The Air-photo Field Inspection Report for Metropolitan New York attached to the descriptive report of AIR-PHOTO TOPOGRAPHIC SHEET, Field No. 9054 Register No. T-5458, furnished the necessary information for the compilation of this sheet.

This sheet has been compiled from single lens photographs numbers 114 to 115 (870 N-8) and 345 to 349 (876 A-8) taken on Nov. 25, 1934 at 1:07 to 1:15 P.M. These pictures were taken at approximately one and one-quarter hours after high water. Photographs numbers 470 to 471 (876 A-8) were taken on March 26, 1935 at 10:45 A.M. or about one and one half hours before high water. Photographs numbers 459 to 469 (876 A-8) were taken on March 26, 1935 at 10:35 A.M. or about two and one half hours before high water, which is approximately half tide. Photographs numbers 457 to 458 (876 B-8) were taken on March 27, 1935 at 10:30 A.M. or about 2 hours after low water. One photograph having no number or date was also used in compiling this sheet.

The photographs were taken by the U.S. Army Air Corps at Mitchell Field, L.I., N.Y. with a special camera recently developed by the Fairchild Camera Corporation, 62-10 Woodside Ave., Woodside, New York City. Inasmuch as these photographs were among the first to be taken by this camera mechanical troubles were encountered which caused considerable difficulty at first. This probably accounts for the irregular time interval between exposures which in turn affects the overlap. This is also probably the cause of excessive tilt on some pictures. The camera is known as the "K-7C" by the Army and as the "K-7A" by the Fairchild Corporation.

The Army plane was piloted by Lieut. Cullen at an altitude very close to 15,000 feet; the photographer was Sergeant Cates. A 24 inch cone (focal length 24") was used with this camera, producing the negatives on a scale of 1:7,500. Contact prints were furnished the field party for use in field inspection. The original negatives were used to enlarge a set of office prints to a scale of 1:5,000 in the Washington office. The 1:5,000 prints were furnished the field party and were used in compiling this sheet.

CONTROL

(a) Sources.

Control for the compilation of this sheet was obtained from the following sources:

1. Triangulation, 1930 - 1933 by R.W. Woodworth (Adjusted).
2. Triangulation, 1903 - 1908, Greater New York.
3. Triangulation, 1932 by C.D. Meaney.
4. U.S. Engineers stations as described on Form 524 submitted with this report.

(b) Errors.

No error in the position of any of the control established

(b) Errors (cont.)

by the U. S. Coast and Geodetic Survey was discovered.

All of the U. S. Engineers stations shown on this sheet were found to agree with the radial plot within an amount of 1.0 meter or less. The positions of these stations were determined by the radial plot. Their positions were also computed by changing from rectangular coordinates to geographic positions. ( See Special Publication No 71).

All of the U. S. Engineers stations which were recovered by the field inspection party are not shown on this sheet. An effort has been made to show the most permanently marked stations at intervals of about one mile along the waterfront. All U. S. engineers stations are shown by a 1 mm circle and are described on Form 524. Other recoverable stations are shown by the same  $2\frac{1}{2}$  mm circle but these are not described on Form 524.

COMPILATION

(a) Method

The usual radial line plot was used for the compilation of this sheet.

The photographs are free from an abnormal amount of tilt or scale fluctuation. In some cases the radials were drawn from the isocenter where this point differed considerably from the principal point of the pictures. Most of the radial points are strongly established along the waterfront except in the vicinity of Latitude 40 46', Longitude 74 00' where there is insufficient overlap between the photographs 345 and 470.

The centerlines of the following streets were tied in to the existing triangulation by field measurements:

Second Avenue  
Fifth Avenue  
Amsterdam Avenue  
58th Street  
42nd Street

(b) Adjustment of Plot

No great difficulty was encountered in running the radial line plot, and no unusual adjustment of the plot was necessary.

(c) Interpretation .

No attempt has been made to show the street railway systems. Only railroad tracks and elevated tracks have been shown. The railroad yards were generalized in accordance with recent instructions from the office.

The double full line is used to show first class roads and streets (curb to curb), and the double dashed line is used to show second class roads, poor motor roads and walks in park areas.

An attempt has been made to show all of the buildings along the waterfront. Also some of the more important buildings further inland have been shown. The stereoscope has been used freely in interpreting the shapes of the buildings.



(c) Interpretation (Cont.)

In Riverside Park along the Hudson River, the detail could not be distinguished from the photo, hence some of the roads and paths were omitted.

The usual graphic symbols were used and no difficulty was experienced in interpreting the photographic detail except as mentioned above.

(d) Information from other sources.

All information shown on this sheet was obtained from the photos.

(e) Names

A list of the geographic names shown on this sheet are given on Form M234, included with this report.

Street names may be taken from Map of the City of New York, Board of Estimates and Apportionment.

LIST OF RECOVERABLE OBJECTS.

Nine cards Form 524 are included with this report which describe the U. S. Engineers stations shown on this sheet.

The following stations were located by the radial line plot for use as recoverable objects. They are not described.

Name	Latitude			Longitude			Method of Locating.
STACK, N.W. OF FOUR (200')	40	46	144.0m	73	57	116.0m	Radial Plot
STACK, N.E. OF FOUR (200')	40	46	120.5m	73	57	70.0m	" "
STACK, S.E. OF FOUR (200')	40	46	101.0m	73	57	80.0m	" "
STACK, S.W. OF FOUR (200')	40	46	125.0m	73	57	126.5m	" "
STACK, sq yel br. (300')	40	45	1701.5m	73	57	326.0m	" "
STACK (300')	40	45	949.5m	73	57	822.0m	" "
STACK (300')	40	45	910.0m	73	57	849.0m	" "
TOWER (350')	40	45	511.0m	73	57	1155.0m	" "

There are four additional chimneys shown by  $2\frac{1}{2}$  mm circles in Latitude 40 46' and Longitude 73 59'. These four stacks were located by stepping off equal spaces with dividers between two triangulation stations. These are also shown as landmarks on Chart 745.

COMPARISON WITH OTHER SURVEYS

No comparison between this sheet and other surveys has been made due to the fact that no other surveys of this area are on hand at this office.

COMPARISON WITH CHARTS

Due to the fact that the charts of this area are on a 1:10000 scale and



## COMPARISON WITH CHARTS (cont.)

the compilation is on a 1:5000 scale, no direct comparison between the two has been made. However a visual comparison, noting the major differences has been made.

The major difference between this chart 745 and the compilation is the shapes of the buildings along the waterfront and the amount of detail shown. In some cases there are no buildings at the present time as shown on the chart, for example Lat 40 46 and Long 73 59.8 Many of these buildings were removed when the new express highway was built along this section.

There does not seem to be any outstanding differences along the waterfront in regard to docks etc.

## LANDMARKS

With the exception of a tower at Lat 40 45 575m and Long 73 57 1099m (old N. A. Datum) which has been torn down, all landmarks on Chart 745 and that portion of chart 746 covered by this sheet are still in existence and should be shown on the charts.

The following landmarks are recommended for charting in addition to the ones already shown.

STACK, N.W. OF FOUR	(200 ft)
STACK; N.E. OF FOUR	(200 ft)
STACK, S.E. of FOUR	(200 ft)
STACK, S.W. OF FOUR	(200 ft)
STACK; sq yel br	(300 ft)
STACK	(300 ft)
STACK	(300 ft)
TOWER	(350 ft)

These landmarks are listed on form 567 included with this report.

## RECOMMENDATIONS FOR FURTHER SURVEYS.

This sheet is believed to have a probable error of not greater than 2 meters in position of well defined detail of importance for charting in the vicinity of the East and Hudson Rivers, and not more than 5 meters for other detail.

No additional surveys are recommended.

Respectfully submitted

  
J. A. Giles

Head, U. S. C. & G. S.

Approved and forwarded

  
J. C. Partington, Jr. H & G E

## Remarks

## Decisions

1		
2		
3		
4		
5		<i>A, Croton Res. is North of City (Rand McNally)</i>
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19	Charts have N. Y. C & H R R R Co 's Piers Believe N. Y. C. R. R. to be correct	<i>see R.R. Guide</i>
20	Chart shows Union Stock Yards. According to a Railroad Terminal Map of New York by The Port Authority this yard is called N.Y. C. R.R. Poultry Yard.	<i>See the Port of N.Y. Part III No. 33</i>
21		
22		
23		<i>Port of N.Y. Part III No. 32</i>
24		
25		
26		
27		

## GEOGRAPHIC NAMES

Survey No.

T 5453

Name on Survey

	A	B	C	D	E	F	G	H	K	
<u>HUDSON RIVER</u>	x				x	✓				1
<u>EAST RIVER</u>	X				X	✓				2
<u>NEW YORK CITY</u>	X				X	✓				3
<u>CENTRAL PARK</u>					X	✓				4
<del>SAINT</del> <u>RESERVOIR</u>					X					5
<u>THE LAKE</u>					X	HI	✓			6
<u>THE POND</u>					X	HI	✓			7
<u>RIVERSIDE PARK</u>		X			X	✓	✓			8
<u>DE WITT CLINTON PARK</u>		X			X	✓	✓			9
<u>CHELSEA PARK</u>					X	Alex. Hamilton Park →		✓		10
<u>COLUMBUS CIRCLE</u>					X					11
<u>MANHATTAN SQUARE</u>					X	S	✓			12
<u>BRYANT PARK</u>					X	S	✓			13
<u>HORNS HOOK</u>		H-1658	X							14
<u>CARL SCHURZ PARK</u>			X	X	X					15
<u>JOHN JAY PARK</u>					X	S	✓			16
<u>QUEENSBOROUGH BRIDGE</u>	X		X	X	X	S	✓			17
<u>ST. GABRIEL'S PARK</u>					X	St. Gabriel Park	St. Gabriel Park			18
<u>N. Y. C. R.R. YARDS</u>	*	*		X	X					19
<u>UNION STOCK YARDS</u>	*	*								20
<u>ROCKEFELLER INSTITUTE</u>	X		X	X						21
<u>BELLEVUE HOSPITAL</u>	X			X	X					22
<u>N.Y. Central R.R. <del>Docks</del></u>										23
<u>Grand Central Terminal</u>					✓			✓		24
<u>Penna R.R. Station</u>					✓					25
Names underlined in red approved										26
by JHE on 2/15/37										27







REVIEW OF AIR PHOTO COMPILATION T-5453  
Scale 1:5,000

There are no contemporary hydrographic or graphic control surveys in this area.

Comparison with Previous Topographic Surveys

There have been large changes in the structural detail both along the waterfront and in the interior due to extensive construction and small changes in the location of the high water line due to filling. The compilation is complete and adequate to supersede the following previous surveys for charting:

T- 258 (1848)	1:5,000
T- 475 (1854-5)	1:10,000
T- 483 (1855)	1:10,000
T- 484 (1856)	1:10,000
T- 608 (1855-7)	1:10,000
T-1573 (1885)	1:5,000
T-1586 (1885)	1:10,000
T-1668 (1885)	1:5,000
T-2323 (1889)	1:10,000
T-3226 (1911)	1:5,000
T-3242 (1912)	1:5,000

Comparison with Charts 745, 746 and 226

This compilation shows numerous corrections to waterfront detail as shown on the present charts. These corrections consist largely of changes and additions in buildings, piers, piling and dolphins.

Refer to page 5 of the preceding descriptive report, T-5453, regarding landmarks.

General

A number of piles and dolphins left off the compilation by the field party have been added in this office.

Several floats apparently permanent have been added from the photographs and labeled "Float" on the compilation.

Feb. 18, 1937.

*H. W. Schleiter*

H. W. Schleiter.

*B. J. Jones*

REVIEW OF AIR PHOTO COMPILATION NO. *T-5453*Chief of Party: *J.C. Partington*Compiled by: *sheet*Project: *HT-175*Instructions dated: *Mar. 14, 1934*

1. ✓ The charts of this area have been examined and topographic information necessary to bring the charts up to date is shown on this compilation. (Par. 16a, b, c, d, e, g and i; 26; and 64)
2. ✓ Change in position, or non-existence of wharfs, lights, and other topographic detail of particular importance to navigation which affect the chart, is discussed in the descriptive report. (Par. 26; and 66 g, n)
3. ✓ Ground surveys by plane table, sextant, or theodolite have been used to supplement the photographic plot where necessary to obtain complete information, and all such surveys are discussed in the descriptive report. (Par. 65; and 66 d, e)  
*4 of five streets tied to existing triangulation,  
See descriptive report, paragraph "Compilation"*
4. ✓ Blue-prints and maps from other sources which were transmitted by the field party contain sufficient control for their application to the charts. (Par. 28)  
*No blue-prints or maps transmitted.*
5. ✓ Differences between this compilation and contemporary plane table and hydrographic surveys have been examined and rectified in the field before forwarding the compilations to the office and are discussed in the descriptive report.  
*No contemporary surveys.*
6. ✓ The control and adjustment of the photo plot are discussed in the descriptive report. Unusual or large adjustments are discussed in detail and limits of the area affected are stated. (Par. 12b; 44; and 66 c, h, i)
7. ✓ High water line on marshy and mangrove coast is clear and adequate for chart compilation. (Par. 16a, 43, and 44)  
*No such coast in this area*

NOTE: Strike out paragraphs, words or phrases not applicable and modify those requiring it. Paragraph numbers refer to those in the Topographic Manual. Refer also to the pamphlet "Notes on the Compilation of Planimetric Line Maps from Five Lens Air Photographs."



8. ✓ The representation of low water lines, reefs, coral reefs and rocks, and legends pertaining to them is satisfactory. (Par. 36, 37, 38, 39, 40, 41)
9. ✓ Recoverable objects have been located and described on Form 524 in accordance with circular 30, 1933, circular letter of March 3, 1933, and circular 31, 1934. (Par. 29, 30, and 57)
10. ✓ A list of landmarks was furnished on Form 567 and instructions in the Director's letter of July 16, 1934, Landmarks for Charts, complied with. (Par. 16d, e; and 60)
11. ✓ All bridges shown on the compilation are accompanied by a note stating whether fixed or draw, clearance, and width of draw if a draw bridge. Additional information of importance to navigation is given in the descriptive report. (Par. 16c)
12. ✓ Geographic names are shown on the overlay tracing. The accepted local usage of new names has been determined and they are listed in the report, together with a general statement as to source of information and a specific statement when advisable. Complete discussion of place names differing from the charts and from the U. S. G. S. Quadrangles is given in the descriptive report, together with reasons for recommendations made. (Par. 64, and 66k)  
*List of names included with descriptive report.*
13. ✓ The geographic datum of the compilation is *N.A. 1927* and the reference station is correctly noted. ✓
14. ✓ Junctions with adjoining compilations have been examined and are in agreement. (Par. 66j) ✓  
*Yes.*
15. ✓ The drafting is satisfactory and particular attention has been given the following:
  1. ✓ Standard symbols authorized by the Board of Surveys and Maps have been used throughout ✓ except as noted in the report.
  2. ✓ The degrees and minutes of Latitude and Longitude are correctly marked. ✓

- ✓3. All station points are exactly marked by fine ✓  
black dots.
- ✓4. Closely spaced lines are drawn sharp and clear ✓  
for printing.
- ✓5. Topographic symbols for similar features are of ✓  
uniform weight.
- ✓6. All drawing has been retouched where partially ✓  
rubbed off.
- ✓7. Buildings are drawn with clear straight lines ✓  
and square corners where such is the case on  
the ground.

(Par. 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48)

16. ✓ No additional surveying is recommended at this time.

17. Remarks:

18. Examined and approved;

*J. C. Partington*  
Chief of Party

19. Remarks after review in office:

Reviewed in office by: *H. W. Schleeter* 2/16/37 *B. J. Jones*

Examined and approved:

*C. R. Green*  
Chief, Section of Field Records

*L. O. Robert*  
Chief, Division of Charts

*Fred. L. Pearson*  
Chief, Section of Field Work

*Stude*  
Chief, Division of Hydrography  
and Topography.

## PLANE COORDINATE GRID SYSTEM

Positions of grid intersections used for fitting the grid to this compilation were computed by Division of Geodesy and the computation forms are included in this report.

Positions plotted by R. E. Ask

Positions checked by R. E. Ask

Grid inked on machine by R. E. Ask

Intersections inked by Frank R. Gollon

Points used for plotting grid:

x 2,016,000 ft.  
y 202,000

x 2,004,000  
y 202,000

x 2,010,000  
y 192,000

x 2,008,000  
y 206,000

x 2,008,000  
y 186,000

x  
y

x 1,998,000  
y 192,000

x  
y

Triangulation stations used for checking grid:

1. None 5. \_\_\_\_\_
2. <sup>1932</sup>Empire State Bldg (ref) 6. \_\_\_\_\_  
 $x=2,003,857.36$   $y=190,471.89$
3. \_\_\_\_\_ 7. \_\_\_\_\_
4. Carlyle Hotel 1932 8. \_\_\_\_\_

## Geodetic positions from Lambert coordinates

State Long IslandSheet 5453

Station \_\_\_\_\_

x	2,016,000	$R_b + A$	24,462,545.30
C		y	202,000
$x' (= x - C)$	+ 16,000	$R_b + A - y$	24,260,545.30
	4.20411998		
$\tan \theta$	7.38490056	R	
$\theta$	$\left\{ \begin{array}{l} 6.81921942'' \\ 4.68557493 \\ 2.13364449 \end{array} \right.$	y	202,000
$\frac{\theta}{\ell} (= \Delta \lambda)$	2.31801223	y''	- 5.28
		y'	201,994.72
$\lambda$ (central mer.)	74° 00'		
$-\Delta \lambda$	3 279755	$\phi$ (by interpolation)	40° 46' 47.8488
$\lambda$	73 56 32.0245		110.12 mm
	9.50 mm		

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x	2,010,000	$R_b + A$	24,462,545.30
C		y	192,000
$x' (= x - C)$	+ 10,000	$R_b + A - y$	24,270,545.30
	4.00000000		
$\tan \theta$	7.38507954	R	
$\theta$	$\left\{ \begin{array}{l} 6.61492046'' \\ 4.685574819 \\ 1.92934557 \end{array} \right.$	y	192,000
$\frac{\theta}{\ell} (= \Delta \lambda)$	2.11371331	y''	- 2.06
		y'	191,997.94
$\lambda$ (central mer.)	74° 00'		
$-\Delta \lambda$	2 09.9312	$\phi$ (by interpolation)	40° 45' 09.0683
$\lambda$	73 57 50.0688		55.94 mm
	94.16 mm		

$$\tan \theta = \frac{x - C}{R_b + A - y}$$

$$\Delta \lambda = \frac{\theta}{\ell}$$

$$\lambda = \lambda (\text{central mer.}) - \Delta \lambda$$

$$R = (R_b + A - y) \sec \theta$$

$$y'' = 2R \sin^2 \frac{\theta}{2}$$

$$y' = y - y''$$

C is constant added to  $x'$  in computation  
of coordinates

$R_b$  is map radius of lowest parallel

A is value of  $y'$  for  $R_b$ ; in most cases it is zero

$\phi$  is interpolated from table of  $y'$

## Geodetic positions from Lambert coordinates

State Long Island Station Sheet 5453

x	2,008,000	R <sub>b</sub> + A	24,462,545.30
C		y	186,000
x' (= x - C)	+ 8,000	R <sub>b</sub> + A - y	24,276,545.30
	3.90308999		
tan θ	7.38518689	R	
θ	{ 6.51790310"		
	4.68557488	y	186,000
	1.83232822	y"	- 1.32
$\frac{\theta}{\ell}$ (= Δλ)	2.01669596	y'	185,998.68
λ (central mer.)	74° 00' "		
- Δλ	1 43.9192	φ (by interpolation)	40° 44' 09.7881
λ	73 58 16.0808		60.38 mm
	75.46 mm		

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x	1,998,000	R <sub>b</sub> + A	24,462,545.30
C		y	192,000
x' (= x - C)	- 2,000	R <sub>b</sub> + A - y	24,270,545.30
	3.30103000		
tan θ	7.38507954	R	
θ	{ 5.91595046"		
	4.68557487	y	192,000
	1.23037559	y"	- 0.08
$\frac{\theta}{\ell}$ (= Δλ)	1.41474333	y'	191,999.92
λ (central mer.)	74° 00' "		
- Δλ	25.9862	φ (by interpolation)	40° 45' 09.0879
λ	74 00 25.9862		56.06 mm
	121.92 mm		

$$\tan \theta = \frac{x - C}{R_b + A - y}$$

$$\Delta \lambda = \frac{\theta}{\ell}$$

$$\lambda = \lambda (\text{central mer.}) - \Delta \lambda$$

$$R = (R_b + A - y) \sec \theta$$

$$y'' = 2R \sin^2 \frac{\theta}{2}$$

$$y' = y - y''$$

C is constant added to x' in computation  
of coordinates

R<sub>b</sub> is map radius of lowest parallel

A is value of y' for R<sub>b</sub>; in most cases it is zero

φ is interpolated from table of y'

## Geodetic positions from Lambert coordinates

State L.I.

Station Sheet 5453

x	2,004,000	$R_b + A$	24,462,545.30
C		y	202,000
$x' (= x - C)$	+4,000	$R_b + A - y$	24,260,545.30
	3.60205999		
$\tan \theta$	7.38490056	R	
$\theta$	$\left\{ \begin{array}{l} 6.21715943 \\ 4.68557487 \\ 1.53158456 \end{array} \right.$	y	202,000
$\frac{\theta}{\ell} (= \Delta \lambda)$	1.71595230	y''	- .33
		y'	201,999.67
$\lambda$ (central mer.)	74° 00'		
$-\Delta \lambda$	51.9939	$\phi$ (by interpolation)	40° 46' 47.8977
$\lambda$	73 59 08.0061		
	37.54 mm		110.42 mm

Station Sheet 5453

x	2,008,000	$R_b + A$	24,462,545.30
C		y	206,000
$x' (= x - C)$	+8,000	$R_b + A - y$	24,256,545.30
	3.90308999		
$\tan \theta$	7.38482895	R	
$\theta$	$\left\{ \begin{array}{l} 6.51826104 \\ 4.68557488 \\ 1.83268616 \end{array} \right.$	y	206,000
$\frac{\theta}{\ell} (= \Delta \lambda)$	2.01705390	y''	- 1.32
		y'	205,998.68
$\lambda$ (central mer.)	74° 00'		
$-\Delta \lambda$	1 44.0049	$\phi$ (by interpolation)	40° 47' 27.4127
$\lambda$	73 58 15.9951		
	75.00 mm		169.12 mm

$$\tan \theta = \frac{x - C}{R_b + A - y}$$

$$\Delta \lambda = \frac{\theta}{\ell}$$

$$\lambda = \lambda \text{ (central mer.)} - \Delta \lambda$$

$$R = (R_b + A - y) \sec \theta$$

$$y'' = 2R \sin^2 \frac{\theta}{2}$$

$$y' = y - y''$$

C is constant added to  $x'$  in computation  
of coordinates

$R_b$  is map radius of lowest parallel

A is value of  $y'$  for  $R_b$ ; in most cases it is zero

$\phi$  is interpolated from table of  $y'$

71-5453

# Plane coordinates on Lambert projection

State L. I Station Empire State Bldg

$\phi = 40^{\circ} 44' 53.986''$   $\lambda = 73^{\circ} 59' 09.884''$

Tabular difference of R for 1" of  $\phi = 101.20167$

R (for min. of $\phi$ )	24,277,537.19	y' (for min. of $\phi$ )	185,008.11
Cor. for sec. of $\phi$	- 5,463.497	Cor. for sec. of $\phi$	+ 5,463.497
R	24,272,073.72	y'	190,471.6058
		y'' (= $2R \sin^2 \frac{\theta}{2}$ )	+ .31 ✓
$\theta$ (for min. of $\lambda$ )	+ 00 00 39.24493	y	190,471.9189
Cor. for sec. of $\lambda$	- 6.46494		
$\theta$	32.77999	$\frac{\theta}{2}$	16.3900
$\theta''$	For machine computation + 32.7800	For machine computation	
		log $\theta''$	1.51560895 ✓
log $\theta''$	1.51560895	colog 2	9.69897000
S for $\theta$	4.68557486 ✓	S for $\frac{\theta}{2}$	4.68557487
log sin $\theta$	sin $\theta$ 6.20118381 ✓	log sin $\frac{\theta}{2}$	sin $\frac{\theta}{2}$ 5.90015382
log R	7.38510688	R sin $\frac{\theta}{2}$	1.80030764
log x'	3.58628969	log sin <sup>2</sup> $\frac{\theta}{2}$	R sin <sup>2</sup> $\frac{\theta}{2}$ 9.18541333
x'	R sin $\theta$ 3,857.34	log R	
	2,000,000.00	log 2	0.30103000
x	2,003,857.35	log y''	9.48644333

$x = 2,000,000.00 + R \sin \theta$  8.69 mm

$y = y' + 2R \sin^2 \frac{\theta}{2}$

y' = the value of y on the central meridian for the latitude of the station

S = log of ratio for reducing arc expressed in seconds to sine

(see log tables)

R, y', and  $\theta$  are given in special tables

28.77 mm  
1.8002  
7.3851  
3010  
9.4863



T-5453

## Plane coordinates on Lambert projection

State L.I. Station Corlyle Hotel.  
 $\phi = 40^{\circ} 46' 27.582''$   $\lambda = 73^{\circ} 57' 48.659''$   
 Tabular difference of R for  $1''$  of  $\phi = 101.20217$

R (for min. of $\phi$ )	24,265,392.94	$y'$ (for min. of $\phi$ )	197,152.32
Cor. for sec. of $\phi$	- 2,791.36	Cor. for sec. of $\phi$	+ 2,791.36
R	24,262,601.62	$y'$	199,943.68
		$y'' (= 2R \sin^2 \frac{\theta}{2})$	+ 2.10
$\theta$ (for min. of $\lambda$ )	+ $00^{\circ} 01' 57.73478''$	$y$	199,945.78
Cor. for sec. of $\lambda$	- 31.82264		
$\theta$	+ $01^{\circ} 25' 59.0714''$	$\frac{\theta}{2}$	$0^{\circ} 01' 25.9557''$
$\theta''$	For machine computation 85.90714		For machine computation
		$\log \theta''$	1.93402926
$\log \theta''$	1.9340 29 26	$\text{colog } 2$	9.69897000
S for $\theta$	4.6855 74 85	S for $\frac{\theta}{2}$	4.6855 74 86
$\log \sin \theta$	sin $\theta$ 6.6196 04 11	$\log \sin \frac{\theta}{2}$	sin $\frac{\theta}{2}$ 6.3185 74 12
$\log R$	7.3849 37 37	$R \sin \frac{\theta}{2}$	2.6371 48 24
$\log x'$	4.0045 41 48	$R \sin^2 \frac{\theta}{2}$	7.3849 37 37
$x'$	R sin $\theta$ + 10,105,12	$\log R$	0.02208561
	2,000,000.00	$\log 2$	0.30103000
$x$	2,010,105.12	$\log y''$	0.32311561
	6.41 mm		3.30 mm

$$x = 2,000,000.00 + R \sin \theta$$

$$y = y' + 2R \sin^2 \frac{\theta}{2}$$

$y'$  = the value of  $y$  on the central meridian for the latitude of the station

S = log of ratio for reducing arc expressed in seconds to sine

(see log tables)

R,  $y'$ , and  $\theta$  are given in special tables

**R MAIL**

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C. PARTINGTON,  
GEODETTIC SURVEY,  
C.

Report for Supplemental T 5453  
3/8/39

The corrections shown in red on T 5453 Supplemental were plotted in this office from single lens air photographs without field inspection.

Field inspection is now in progress and any additional corrections resulting from the field inspection will be added to the Supplemental in another color as soon as the field inspection data is available.

Photographs single lens - 7X9 - scale 1:10,000 negatives on file in this office. Photographs taken early in February 1939 (exact date not furnished) by the Photographic Unit of the Naval Air Station, Washington, DC.

Plot Details in red plotted by J.A. McGann on a separate projection from ratio prints scale 1:5000. Corrections transferred to the Supplemental by J.A. McGann.

Hydrographic Survey The shoreline on the contemporary hydrographic survey is from T 5453 prior to the above corrections and has not been corrected to agree with T 5453 Supplemental.

B.G. Jones 3/8/39  
Details in blue added 4/39 after checking with field inspection. Field inspection notes shown on photographs and on C.S. 158, ~~158~~ (air photo unit files)