

5461

369-4

5461

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

Air Photo
Topographic }
Hydrographic } Sheet No. T-5461

State New York

LOCALITY
BROOKLYN
New York City

Brooklyn

BAY RIDGE and VICINITY

193 6

CHIEF OF PARTY
J.C. Partington Junior H. & G. E.

U. S. GOVERNMENT-PRINTING OFFICE: 1934

Applied to Chart 541 - Oct 21, 1937 - L. M. Z.
369 - April 19, 1939 - L. M. Z.

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. 93 **T5461**

REGISTER NO. **T-5461**

State New York

General locality BROOKLYN
~~New York City~~

Locality BROOKLYN BAY RIDGE and VICINITY

Scale 1:5000 Date of photographs May 15, 1935
~~survey~~ June 25, 1935, 19

Vessel Photo Compilation Party # 25

Chief of party J.C. Partington

Surveyed by See STATISTICS SHEET

Inked by J.A. Giles & J.C. Partington

Heights in feet above mean low water to ground to tops of trees

Contour, Approximate contour, Form line interval 5 feet

Instructions dated March 14, 1934

Remarks:

STATISTICS
on
AIR PHOTO COMPILATION SHEET, FIELD NO. 93; REGISTER NO. T-5461

PHOTOGRAPH NO.	DATE	TIME	TIDE	
			High Time Ht.	Low Time Ht.
191-195 (870 N-8)	May 15, 1935	9:35 AM	5:40 AM 5:59 PM	3.8 4.9
207-212 (870 N-8)	May 15, 1935	10:25 AM	as above	
224-230 (870 N-8)	June 25, 1935	9:15 AM	2:44 AM 3:26 PM	4.2 5.1
2 photographs - no number or time.				

	By	Date	
		From	To
SCALE FACTOR (1.000)	R.C. Bolstad	(Previously determined)	
PROJECTION	Projection machine	6-25-36	
PROJECTION CHECKED	J.C.P. J.C. Partington	6-27-36	
CONTROL PLOTTED	J.C.P. J.C. Partington	7-1-36	7-2-36
CONTROL CHECKED	R.H. Young	7-21-36	
SMOOTH RADIAL LINE PLOT	J.C.P. J.C. Partington	10-1-36	10-5-36
RADIAL LINE PLOT CHECKED	R.S. Poor	10-15-36	
DETAIL INKED	J.C.P. J.C. Partington J.A. Giles	11-3-36 12-1-36	11-30-36 12-17-36
PRELIMINARY REVIEW OF SHEET	J.C.P. J.C. Partington	12-18-36	12-22-36
AREA OF DETAIL INKED (land area)	4.0	Square Statute Miles	
AREA OF DETAIL UNKED (shoals)	0.0	Square Statute Miles	
LENGTH OF SHORELINE (more than 200 M. from opposite shore)	20.4	Statute Mi.	
LENGTH OF SHORELINE (rivers & sloughs less than 200 M. wide)	0.0	Statute Mi.	
LENGTH OF STREETS, ROADS, RAILROADS, TRAILS	106.0	Statute Mi.	
GENERAL LOCATION	New York City		
LOCATION	Brooklyn		
DATUM	North American 1927		
STATION	Public School 94 1930; r'31 (N.Y.)	Latitude Longitude	40° 38' 36.636" = 1130.1 M. 74 00 32.509 = 763.9 M.

adjusted

(Adjusted Computations)

COMPILER'S REPORT

for

AIR PHOTO TOPOGRAPHIC SHEET, FIELD NO: 93; REGISTER NO. T-5461

GENERAL INFORMATION

The Air-photo Field Inspection Report for Metropolitan New York attached to the descriptive report of AIR PHOTO TOPOGRAPHIC SHEET, Field No. 90, Register No. T-5458, furnished the necessary information for the compilation of this sheet.

This sheet has been compiled from single lens photographs listed on page 2 of this report. Photographs numbers 191-195 (870 N-8) were taken on May 15, 1935 at approximately two hours and fifteen minutes before low water. Photographs numbers 207-212 (870 N-8) were taken on May 15, 1935 at approximately one hour and twenty five minutes before low water. Photographs numbers 224-230 (870 N-8) were taken on June 25, 1935 at low water.

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. Due to the fact that 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 effects the overlap. This is also probably the cause of excessive tilt in some pictures. The camera is known as the "K-10" 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 10,000 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 by the Washington office of the U.S. Coast and Geodetic Survey for enlarging a set of office prints on a scale of 1:5,000. The 1:5,000 prints were furnished the field party and were used in compiling this sheet.

COMPARISONSources.

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

1. Triangulation, 1930-33 by R.W. Woodworth (Adjusted)
2. Triangulation, 1903-08, Greater New York.
3. U.S. Engineers stations as described on Form 524 submitted with this report.

The triangulation 1930-33 is given on N.A. 1927 datum. The triangulation 1903-08 is given on N.A. datum and a correction of -12.1 meters was applied to latitude and +3.5 meters to longitude in order to place the positions on N.A. 1927 datum.

The geographic positions of all of the U.S. Engineers stations

(a) Sources. (continued)

were computed from their coordinates and plotted on the sheet with a $2\frac{1}{2}$ mm. circle. It should be noted that the latitude and longitude of these stations are given ^{by the U.S. Engineers} on N.A. datum and a correction of -12.1 meters was applied to latitude and +3.5 meters to longitude in order to place the positions on N.A. 1927 datum.

(b) Lost and Unplotted Triangulation Stations.

WL HEAD, 1908 - The field inspection party reports as follows:
"Station lost. The tower on which this station was located has been razed since a field recovery made in the spring of 1932."

BAY RIDGE, CRESCENT - An examination of the photographs of this
ATHLETIC CLUB, CUP- area shows no cupola or building at this
LA, 1930 spot. The building is believed to have
burned down about 1932.

BAY RIDGE. E.W.BLISS This station is 1.7 meters southeast of
CO., FLAGPOLE (N.Y.) station "BLISS (N.Y.) 1931". To avoid con-
1930 gestion the flagpole was not plotted.

*This has been referred to Goodway
B.G.F.*

(c) Errors.

No error was found in the position of any of the triangulation stations.

No discrepancy of more than 1.0 meter was found in the position of any of the recoverable H.& T. stations and the position as given on the plane table sheet was considered correct.

All of the U.S. Engineers stations agreed with the radial line plot within 1.0 meter, except the position of "Bush #2 (U.S.E.)". The U.S. Engineers positions were considered correct except for this one station.

The U.S. Engineers position of "Bush #2 (U.S.E.)" differs from the radial line plot position by 2.5 meters in azimuth 137° (from north); the U.S. Engineers position appearing to be too far toward the southeast. This station can be clearly spotted on the photographs and the field inspection measurements agree with the U.S. Engineers sketch. The station is located by 4 "cuts" on the radial plot which give a strong angle of intersection. The radial line plot in this area is rigidly fixed by triangulation control and there is little doubt that the U.S. Engineers coordinates of the spotted station are in error. The position of this station as determined by the radial line plot is shown on the sheet with a $2\frac{1}{2}$ mm. circle.

All of the U.S. Engineers stations shown on this sheet are described on Form 524 accompanying this report. The descriptions of recoverable H. & T. Stations will be found with the descriptive report of the plan table sheet.

Some of the U.S. Engineers stations found by the field inspection party may not be shown on this sheet because they are not permanently marked. An effort has been made to show the most permanently marked stations at intervals of about one half mile along the waterfront.

COMPILATION.(a) Method.

The usual radial line method of plotting was used in the compilation of this sheet.

The U.S. Engineers stations and the recoverable H. & T. stations were used as supplementary control and their positions accepted as correct only after it was found that they agreed with the radial line plot. There is ample triangulation control on this sheet to establish the plot independent of U.S. Engineers stations and the recoverable H. & T. stations.

(b) Adjustment of Plot.

Very little difficulty was encountered in running the radial line plot and no unusual adjustment of the plot was necessary. There is sufficient overlap between successive pictures to obtain strong angles of intersection on the radial points and almost without exception the points are located by three or more intersecting "cuts".

The photographs show very little tilt or scale fluctuation.

(c) Interpretation.

No attempt has been made to show street car tracks; only elevated tracks and railroad tracks have been shown. Railroad tracks have been generalized in accordance with recent instructions from the Washington office.

The double full line has been used to show first class roads and streets (curb to curb).

An attempt has been made to show all the buildings along the waterfront. The stereoscope has been used freely indetermining the shapes of buildings.

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

(d) Information from other Sources.

All of the information ~~xxxx~~ shown on this sheet except names was taken from the photographs.

(e) Names.

A list of geographic names shown on this sheet is given on Form M 234 included with this report.

Street names may be obtained ~~ix~~ from the Map of the City of New York, Board of Estimate and Apportionment.

BRIDGES.

There are no bridges on this sheet.

REMARKS.

JUNCTIONS.

The north end of this compilation joins the south end of compilation T-5460 along 23rd street and the junction is satisfactory.

The south end of this compilation joins the north end of compilation T-5462 along the parallel $40^{\circ} 37' 30''$ and the junction is satisfactory.

LIST OF RECOVERABLE OBJECTS.

Four cards form 524 are included with this report which give the description and position of each U.S. Engineers station shown on this sheet.

Recoverable H. & T. stations have the cards form 524 filed with the descriptive report of the plane table sheet.

COMPARISON WITH OTHER SURVEYS.

This sheet has been compared with topographic surveys No. 6380 and 6381 accomplished by M.O. Witherbee, Chief of Party in 1934. T-6380 and T-6381 were done on a 1:10,000 scale. Bromide copies were made on 1:5,000 scale and the bromides were used for the comparison.

In general there is a very close agreement between this compilation and sheets T-6380 and T-6381.

Comparison with T-6380

In latitude $40^{\circ} 39.8'$ longitude $74^{\circ} 00.5'$ the 29th street dock and the docks to the northward ~~seem~~ seem to be too far north on the sheet T-6380 by an amount of about 7.5 meters. This same condition was noted in comparing the south end of compilation T-5460 with plane table sheet T-6380.

The photographs of this area are very close to scale and it is quite unlikely that the compilation is in error by this amount. The position of detail in this area has been checked by putting the photographs under the celluloid sheet and it appears to be shown correctly on the compilation.

Referring to the topographers report of sheet T-6380, it is noted that the docks were located by setting up at convenient points, establishing the position by 3 point fix, and rodding in the docks. It is probable that a strong 3 point fix could not be obtained in this area which would account for this discrepancy.

In latitude $40^{\circ} 39.1'$ longitude $74^{\circ} 01.6'$ the small docks extend farther to the westward than shown on plane table sheet T-6380 by a maximum amount of about 7.0 meters. The radial line plot is rigidly controlled in this area and it is believed that the positions of these docks as shown on this compilation are correct.

Comparison with T-6381.

In latitude $40^{\circ} 38.6'$ longitude $74^{\circ} 02.0'$ the dilapidated dock and the next dock north appear to be too far north on T-6381 by an amount of about 5.0 meters. The high water line in this vicinity also appears to be too far east on T-6381 by about 9.0 meters.

COMPARISON WITH OTHER SURVEYS. (continued)

The photographs of this area are very close to scale and the plot is rigidly controlled. It is believed that the detail in this area is correctly shown on this compilation.

COMPARISON WITH CHARTS.

Due to the fact that chart 541 of this area is on a scale of 1:10,000 and the compilation is on a scale of 1:5,000 no direct comparison between the two has been made.

However, a visual comparison between the two shows the following discrepancies between chart 541, edition of Nov. 18, 1936 and this compilation.

The small dock shown on the chart in latitude $40^{\circ} 38.1'$ longitude $74^{\circ} 02.3'$ does not appear on the photographs and is not shown on the compilation. This dock does not appear on plane table sheet T-6381. It has evidently been built since June 25, 1935, the date of the latest photographs of this area.

The landmark CUP (C.A.C. BOATHOUSE) shown on the chart does not appear on the photographs. It is reported to have burned down about 1932. The field inspection notes and sheet T-6381 show that this dock is in ruins.

The siren shown on Pier 2 latitude $40^{\circ} 38.8'$ longitude $74^{\circ} 01.9'$ has evidently been changed. The field inspection party spots this siren on the seaward face of the building as shown on the compilation.

LANDMARKS.

All of the landmarks within the area of this sheet are shown on the chart 541. They are all in existence and should be shown except the following:

CUP (C.A.C. BOATHOUSE) - no longer in existence.
SIREN - pier 2, new position

The position of the SIREN and deletion of CUP (C.A.C. BOATHOUSE) and the old SIREN are given on form 567 included with this report.

RECOMMENDATIONS FOR FURTHER SURVEYS.

This sheet is believed to be complete in all detail of importance for charting and no further surveys are required. The probable error is believed to be not greater than 2 meters in position of well defined objects along the waterfront and not greater than 4 meters for other detail.

It is understood that railroads and similar detail is shown as generalized and the compilation does not show all of the tracks.

Respectfully submitted,

J. C. Partington
J. C. Partington
Chief of Party

Remarks

Decisions

1.		
2		
3		
4		
5		
6	* Called "Owl's Head Park"	
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
M 234		

GEOGRAPHIC NAMES

Survey No. T-5461

GEOGRAPHIC NAMES		Survey No. T-5461		On Chart No. 369		On previous survey No. T-5461 or Chart No. 541		From local information		Field Inspection		Board of Estimate & Apportionment		P. O. Guide or Map		Rand McNally Atlas		U. S. Light List	
Name on Survey		A	B	C	D	E	F	G	H	K									
<u>Brooklyn</u>		app'd X	X	X		X													1
<u>Gowanus Bay</u>		app'd X	X	X		X													2
<u>Bay Ridge Channel</u>		app'd X	X	X															3
<u>Greenwood Cemetery</u>		X				X													4
<u>Sunset Park</u>		X				X													5
<u>Owls Head Park</u>		X			X	X*													6
<u>Bay Ridge</u>		app'd X	X	X															7
DeWitt <u>Eriksson Square</u>						X?													8
<u>Long Island Railroad</u>					X	X													9
																			10
																			11
																			12
																			13
																			14
																			15
																			16
																			17
																			18
																			19
																			20
																			21
																			22
																			23
																			24
		Names underlined in red approved																	
		by <u>SHC</u> on 5/6/37																	

REVIEW OF AIR PHOTO COMPILATION T-5461
Scale 1:5,000

Data Record

Triangulation to 1933
Photographs to 1935
Planetable surveys to 1934
Hydrography to 1934
Field inspection to 1935

The detail on this compilation is that of the date of the photographs except for a few changes along the shoreline as determined by field inspection and the 1934 planetable surveys.

Comparison with Contemporary Graphic Control Surveys

T-6380 (1934), 1:10,000 ✓
T-6381 (1934), 1:10,000

The compilation is in agreement with the graphic control surveys except as noted on page 6 of descriptive report. As a whole the compilation and the graphic control surveys are in good agreement.

All information and detail shown on the above graphic control surveys has been shown on the compilation.

Comparison with Contemporary Hydrographic Surveys

H-5607 (1934), 1:10,000

There are no discrepancies between H-5607 and this compilation.

Comparison with Former Topographic Surveys

T- 12 (1837), 1:10,000
T- 487 (1856), "
T-1413a (1875), "
T-1414 (1875), "
T-1576 (1885), "

Since the time of these surveys practically the entire waterfront has been rebuilt with docks and piers. The compilation is complete and adequate to supersede those portions of the above surveys which it covers except for contours.

Comparison with Charts 541 and 369

The above charts show a small dock at lat. $40^{\circ}38.1'$ long. $74^{\circ}02.3'$ which is non-existent and should be deleted from the charts.

See page 7 of Descriptive Report for landmarks.

L. C. Landy

✓ B. J. Jones

April 28, 1937.

REVIEW OF AIR PHOTO COMPILATION NO. T-5461

Chief of Party: J.C. Partington

See STATISTICS
Compiled by: SHEET

Project: HT-175

Instructions dated: March 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, X, d, e, g and i; 26; and 64)

Yes.

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)

Yes.

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)

No ground surveys used to supplement plot.

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 other 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.

Yes. Compared with plane table sheets T-6380, T-6381

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)

Yes.

7. High water line on marshy and mangrove coast is clear and adequate for chart compilation. (Par. 16a, 43, and 44)

Yes.

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)

Yes.

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)

Yes.

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)

No bridges.

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)

Listed on Form M 234 attached to descriptive report.

13. The geographic datum of the compilation is *N.A. 1927 (Adjusted)* and the reference station is correctly noted.

Yes.

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. ✓
No.

17. Remarks:

18. Examined and approved;

J. C. Partington
Chief of Party

19. Remarks after review in office:

Reviewed in office by: *L. C. Lande* *B. G. Jones*

Examined and approved:

C. H. Green
Chief, Section of Field Records
L. O. Robert
Chief, Division of Charts

Fred. L. Peacock
Chief, Section of Field Work
G. H. Wade
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 P. Sushka

Points used for plotting grid:

x 1,994,000 ft.
y 142,000

x 1,994,000
y 152,000

x 1,988,000
y 148,000

x
y

x 2,002,000
y 158,000

x
y

x 1,998,000
y 148,000

x
y

Triangulation stations used for checking grid:

$x = 1,997,493.88$ $y = 152,283.51$

1. Public School 94 (1930) ref. sta. 5. Also check on 74° Meridian
2. School House 46th St (1908) 6. _____
3. School House 79th St (1908) 7. _____
4. Public School 201 (1931-2) 8. _____
flagpole

Geodetic positions from Lambert coordinates

5461

State L. Island

Station _____

x	1,994,000	R _b + A	24 462 545.30
C		y	142,000
x' (= x - C)	- 6,000	R _b + A - y	24,320,545.30
	3.778 15125		
	7.385 97331		
	6.392 17794		
tan θ	4.685 57488	R	
θ	1.7066 0306 "		
	50.8866	y	142,000
θ / ℓ (= Δλ)		y''	- 74
		y'	143,999.26
λ (central mer.)	74° 00' "		
- Δλ	- 1 17.7985	φ (by interpolation)	40° 36 55.0145
λ	73 58 42.2015		40° 37 14.7773
	74 01 17.7985		

83.68 mm

154.33 mm

Station _____

x	1,988,000	R _b + A	24 462 545.30
C		y	148,000
x' (= x - C)	- 12,000	R _b + A - y	24 314,545.30
	4.079 18125		
	7.243 24314		
	385 86613		
tan θ	6.693 31510	R	
θ	4.685 57490		
	2.007 74020 "		
	101.7982	y	148,000
θ / ℓ (= Δλ)		y''	- 2.96
		y'	147,997.04
λ (central mer.)	74° 00' "		
- Δλ	- 2 35.6352	φ (by interpolation)	40° 37 54.2810
λ	74 02 35.6352		

26.48 mm

149.79 mm

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

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

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

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

φ is interpolated from table of y'

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

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

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

State L. Island

Station _____

x	2,002,000	$R_b + A$	24462545.30
C		y	158,000
$x' (= x - C)$	+ 2,000	$R_b + A - y$	24,304,545.30
	3.30103000		
	7.38568750		
	5.91534250		
tan θ	4.68557487	R	
θ	1.22976763"		
	16.9734	y	158,000
$\frac{\theta}{\ell} (= \Delta \lambda)$		y''	-.08
		y'	157,999.92
λ (central mer.)	74° 00'		
$-\Delta \lambda$	25.9500	ϕ (by interpolation)	40° 39' 33.1234
λ	73 59 34.0500		

19.03 mm

19.27 mm

Station _____

x	1,998,000	$R_b + A$	24462545.30
C		y	148,000
$x' (= x - C)$	- 2,000	$R_b + A - y$	24,314,545.30
	3.30103000		
	7.38586615		
	5.91516385		
tan θ	4.68557487	R	
θ	1.22958898"		
	16.9663	y	148,000
$\frac{\theta}{\ell} (= \Delta \lambda)$		y''	-.08
		y'	147,999.92
λ (central mer.)	74° 00'		
$-\Delta \lambda$	25.9393	ϕ (by interpolation)	40° 37' 54.3095
λ	74 00 25.9393		

121.92 mm

149.97 mm

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

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

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

C is constant added to x' in computation
of coordinates

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

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

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

"

R_b is map radius of lowest parallel

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

ϕ is interpolated from table of y'

Geodetic positions from Lambert coordinates

5461

State 22.

Station _____

x	1,994,000	$R_b + A$	24462545.30
C		y	152,000
$x' (= x - C)$	- 6,000	$R_b + A - y$	24,310,545.30
$\tan \theta$	3.77815125	R	
θ	7.38579470		
	6.39235655		
	4.48557488		
	1.70678167 "		
	50.9075	y	152,000
$\frac{\theta}{\ell} (= \Delta \lambda)$		y''	- 74
		y'	151,999.26
λ (central mer.)	74° 00' "		
$-\Delta \lambda$	- 1 17.8304	ϕ (by interpolation)	40° 38' 33.8285
λ	74 01 17.8304		

83.8 mm

23.63 mm

Station _____

x		$R_b + A$	
C		y	
$x' (= x - C)$		$R_b + A - y$	
$\tan \theta$		R	
θ	° ' "		
	"		
$\frac{\theta}{\ell} (= \Delta \lambda)$		y	
		y''	-
		y'	
λ (central mer.)	° ' "		
$-\Delta \lambda$		ϕ (by interpolation)	° ' "
λ			

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

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

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

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

C is constant added to x' in computation
of coordinates

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

R_b is map radius of lowest parallel

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

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

ϕ is interpolated from table of y'

T-5461

Plane coordinates on Lambert projection

State L.I.Station Public School 94. $\phi = 40^{\circ} 38' 32.636''$ $\lambda = 74^{\circ} 00' 32.509''$ Tabular difference of R for $1''$ of $\phi = 101.20033$

R (for min. of ϕ)	24,313,969.50	y' (for min. of ϕ)	148,575.80
Cor. for sec. of ϕ	- 3,707.58	Cor. for sec. of ϕ	+ 3,707.58
R	24,310,261.92	y'	152,283.38
		$y'' (= 2R \sin^2 \frac{\theta}{2})$	+ 1.3
θ (for min. of λ)	$00^{\circ} 00' 00.00000''$	y	152,283.51
Cor. for sec. of λ	- 21.26361		
θ	- 21.26361	$\frac{\theta}{2}$	$10.6318''$
θ''	For machine computation - 21.2636		
		log θ''	1.32763679
log θ''	1.3276 3679	colog 2	9.69897000
S for θ	4.6455 7487	S for $\frac{\theta}{2}$	4.6455 7487
log sin θ	sin θ 6.0132 1166	log sin $\frac{\theta}{2}$	sin $\frac{\theta}{2}$ 5.71218166
log R	7.3857 8964	R sin $\frac{\theta}{2}$	1,424,363.32
log x'	3.3990 0130	log sin ² $\frac{\theta}{2}$	R sin ² $\frac{\theta}{2}$ 4,810,152.96
x'	R sin θ 2,506,12	log R	
	2,000,000.00	log 2	0.30103000
x	2,997,493.98	log y''	9.11118296

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

30.85 mm

17.28 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 θ are given in special tables