
Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey  Special Topographic
Field No. 25130 Office No. T-11319
(3 Sheets)

LOCALITY
State  Rhode Island
General locality
Locality  Providence

194 54-56

CHIEF OF PARTY
I.R. RUBOTTOM, Chief of Field Party
L. W. Swanson, Photo. Div. Wash., D.C.

LIBRARY & ARCHIVES

DATE  January 7, 1958
Adequately applied after verification - Review - Jeff Stone 12-1-12
DATA RECORD

T -11319 (3 sheets)

Project No. (II): 25130 Quadrangle Name (IV): Providence, R. I.

Field Office (II): Chief of Party: I. R. Rubottom
Photogrammetric Office (III): Washington Officer-in-Charge: L. W. Swanson
Instructions dated (II) (III): See Field Inspection Report
Item 1

Copy filed in Division of
Library in completion report.

Method of Compilation (III): Kelsh Plotter

Manuscript Scale (III): 1:2,400 Stereoscopic Plotting Instrument Scale (III): 1:4,800

Scale Factor (III): Date received in Washington Office (IV): --
Date reported to Nautical Chart Branch (IV): --

Applied to Chart No. -- Date: -- Date registered (IV): 3-11-57

Publication Scale (IV): 1:24,000

Geographic Datum (III): NA 1927

Publication date (IV): Oct. 1956
City of Providence

Vertical Datum (III): MHW Datum

Mean sea level except as follows:
Elevations shown as (2s) refer to mean high water
Elevations shown as (g) refer to sounding datum
i.e., mean low water or mean lower low water

Reference Station (III):

Lat.: Long.: Adjusted

Unadjusted

Plane Coordinates (IV):

State: Zone:

Y= X=

Roman numerals indicate whether the item is to be entered by (II) Field Party, (III) Photogrammetric Office,
or (IV) Washington Office.

When entering names of personnel on this record give the surname and initials, not initials only.
PHOTOGRAPHS (III)

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Tide (III)

Reference Station: Not Applicable
Subordinate Station:
Subordinate Station:
Washington Office Review by (IV): C. Theurer
Date: Sept. 1956
Final Drafting by (IV): W.D. Halluin
Date: Oct. 1956
Drafting verified for reproduction by (IV): "
Date: "
Proof Edit by (IV): C. Theurer, J. Streifler
Date: Oct. 1956
Land Area (Sq. Statute Miles) (III): Not applicable
Shoreline (More than 200 meters to opposite shore) (III):
Shoreline (Less than 200 meters to opposite shore) (III):
Control Leveling - Miles (II):
Number of Triangulation Stations searched for (II): Recovered: Identified:
Number of BMs searched for (II): Recovered: identified:
Number of Recoverable Photo Stations established (III):
Number of Temporary Photo Hydro Stations established (III):
Remarks:
DATA RECORD

Field Inspection by (II):  None  
Date:  

Planetable contouring by (II):  I. Y. Fitzgerald  
Date:  14 Sept. 1956  

Completion Surveys by (II):  I. Y. Fitzgerald  
Date:  14 Sept. 1956  

Mean High Water Location (III) (State date and method of location):  
Date of Photography  

Projection and Grids ruled by (IV):  J. Chaconis  
Date:  April 1956  

Projection and Grids checked by (IV):  
Date:  

Control plotted by (III):  C. E. Cook  
Date:  April 1956  

Control checked by (III):  M. Keller  
Date:  April 1956  

Radial Plot or Stereoscopic Control extension by (III):  None  
Date:  

Stereoscopic Instrument compilation (III):  
Planimetry  C. E. Cook  
Date:  April-June 1956  
Contours  None  
Date:  

Manuscript delineated by (III):  J. McDonald  
Date:  April-June 1956  

Photogrammetric Office Review by (III):  C. E. Cook  
Date:  June 1956  

Elevations on Manuscript checked by (II) (III):  C. Theurer  
Date:  August 1956  

Form T-Page 3
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<th>LONGITUDE OR X-COORDINATE</th>
<th>DISTANCE FROM GRID IN FEET OR PROJECTION LINE IN METERS</th>
<th>DATUM CORRECTION</th>
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FIELD INSPECTION REPORT
Map T-11319, Sheets 1, 2 and 3
SPECIAL TOPOGRAPHIC MAP
City of Providence, R. I.
Project 25120 (6165)

1. REFERENCES - INSTRUCTIONS AND CORRESPONDENCE

The following is a list of instructions and correspondence under which the field work on this map was accomplished:

a. Office memorandum to Mr. Cravat, CDR Rubottom and Mr. Fitzgerald, 711-eal, dated 3 April 1956

b. Letter, 73-mkl, 19 April 1956, Project 6165 - Providence

c. Letter, 73-mkl, 27 April 1956, Instructions - Project 6165 - Field

d. Chief of Party’s letter dated 11 May 1956, Special Project 6165, Providence, R. I., Third-order Leveling

e. Letter 71-mkl, 18 May 1956, Planimetric Details, Project 6165

f. Letter 73-mkl, 23 May 1956, Leveling, Project 6165, Providence, R. I.

g. Chief of Party’s letter dated 24 May 1956, Edit of Downtown Portion of Special Map of Providence, R. I., Project 6165

h. Letter 711-lah, 1 June 1956, Various Details of Project 6165

i. Chief of Party’s letter dated 4 June 1956, Project 6165, City Planning Commission’s Topographic Maps

j. Letter 73-mkl, 9 August 1956, Project 25120 (6163), Field Edit and Contouring, Sheet 3

A copy of references d, e, g, and i are attached to and make a part of this report for convenience. (as per filed in library)

2. DATA USED

The following is a list of data used during field work, including all data furnished by the Washington Office or obtained by the field party from outside sources.
a. Bureau Tidal Bench Marks
   (1) Providence (State Pier No. 1)
   (2) Providence (Red Bridge) Seekonk River

b. City of Providence Bench Mark descriptions and elevations
   A part of this Compilation Report

c. City of Providence Grade Section Plans showing curb elevations
   Filed in Geographic Branch

d. City of Providence, City Planning Commission, Topographic Maps
   Filed in Geographic Branch

e. Single weight prints of Kelsh Plotter compilation for Field
   Edit of Planimetry

f. Double weight prints of the compilation for contouring of
   Sheet 1 and field edit of planimetry and contouring of Sheet 2

g. Transparencies and single weight prints of the compilation
   with contours transferred from City Planning Commission's
   Topographic Maps for field edit of transferred contours

h. Transparencies and single weight prints of the compilation
   of Sheet 3 for field edit of planimetry and contouring

3. LEVELING

Third-order levels were run to determine the acceptability of bench
marks and curb elevations previously established by the City of Provid-
dence. This leveling started on Providence (State Pier No. 1) Tidal
Bench Marks and closed on Providence (Red Bridge) Seekonk River Tidal
Bench Marks. (See copy of Reference d) pages 5 through 10 of this
report.)

One loop of fly levels was run to control plane table contouring in
the Fields Point area of Sheet 3. The absence of curb elevations in the
area made this supplemental leveling necessary. Curb elevations in the
remainder of Sheet 3 and in Sheets 1 and 2 were sufficient with no sup-
plemental leveling being required.

This loop of fly levels started and closed on the northwest curb at
the intersection of Allens and Thurber Avenues. The error of closure
was $0.33$ foot.

Some doubt existed at the start of leveling as to the most advan-
tageous working hours in order to avoid serious interference by pedestrian
and vehicular traffic. Little interference was encountered at any time
by the leveling party operating during regular working hours even in
the heart of the downtown business area except during the noon hour.
This was not serious because the party's lunch hour was scheduled to
occur at the time of the noon rush period.
4. FIELD EDIT OF PLANIMETRY

All field edit of planimetry was done while walking along the streets on each side of the blocks in the congested business and industrial districts. Residential districts could usually be inspected from two sides of the blocks due to less congestion.

Edit of such areas is not practicable from a vehicle due to traffic congestion and restricted vision.

Curb lines and building lines and shapes were examined closely during edit. Any required changes were made by taped or paced distances from acceptable map detail. Shadows and lay-over of the tall buildings in the congested areas made many corrections necessary with the result that field edit of planimetry required an unexpectedly large amount of time.

The plane table was used for correction of building and curb lines of two blocks due to the presence of shadows and one and two story buildings between and behind much higher buildings along the exterior of the blocks.

The difficulties encountered during edit of the congested areas are listed in Reference g, pages 11 and 12 of this report, and are not repeated here. The same difficulties were encountered in the less congested areas except upon a much smaller scale, approximating corrections encountered on routine field edit of a 1:10,000 or 1:20,000 scale topographic quadrangle.

Edit of the downtown business and immediately adjoining industrial areas of Sheet 1 was completed on a single weight print of a portion of the compilation prior to division of the map into Sheets 1, 2 and 3. The single weight field work sheet was then forwarded for corrections to the manuscript. Edit of Sheet 2 was completed on sections of double weight prints of the compilation. Planimetry edit data and contours were transferred to the same transparency from the individual sections of the double weight prints. Field edit of planimetry of Sheet 3 was completed and transferred to a transparency in the same manner but from single weight prints of the compilation.

5. CONTOURING

Large scale topographic maps prepared by a private contractor by stereoscopic plotting instruments for the City Planning Commission were available covering a portion of Sheets 1 and 2.

All contouring was done by sketching, either with or without use of the plane table, except in the areas covered by contours transferred from Topographic Maps of the City Planning Commission. Curb elevations previously established by the City of Providence were used as vertical control for all contouring done by the field party.
Sections of double weight prints of the compilation were used for sketching of contours without the plane table. Additional elevations needed to supplement the curb elevations were determined by hand level and spotted from inspection of, or by taped or paced distances from, compiled detail.

Sections of double weight prints, or of transparencies, were used as plane table sheets for those areas contoured with the plane table. It was necessary to contour four areas by this method due to lack of curb elevations. They were: south of area covered by transferred contours west of Providence River and east of Edy Street and Allens Avenue (Sheet 1); the area north of Union Station, west of the New York, New Haven and Hartford Railroad tracks and east of Caspoe Street (Sheet 1); a small area north of Valley Street in the vicinity of Davis Park (Sheet 2); and, the Fields Point area (Sheet 3).

The number and spacing of curb elevations and supplemental fly level points made long plane table traverses unnecessary. Consequently, all traverses were limited to usually only one and never more than three plane table stations.

Accuracy tests were made of the City Planning Commission's Topographic Map contours prior to transfer of these contours in the Washington Office. Transferred contours were sent to the field on transparencies of the compilation for edit and perfection of junctions with the field party contours. (See Reference 1 page 13 of this report.)

All contours transferred from the City Planning Commission maps were furnished on two transparencies, one of Sheet 1 and one of Sheet 2. As work progressed, contours from the individual sections of the compilation were transferred to these transparencies. Junctions were readily made and hiatuses easily avoided by assembling all contours on the same sheet. Contours along the junctions of Sheet 1 with Sheets 2 and 3 were transferred to a second transparency of Sheet 1 and retained by the field party for perfection of junctions with these two sheets.

14 SEP 1956
Submitted by:

Isaiah J. Fitzgerald
Photogrammetric Engineer

14 SEP 1956
Approved & Forwarded:

Ira R. Rubottom
Comdr., C & GS
Chief of Party
31. **Delineation.** - All sheets were compiled on a Kelsh Plotter at a scale of 1:4,000 from 1:20,000 scale photographs and photographically enlarged to 1:2,400 scale. No field inspection was done prior to compilation and all control was office identified. Delineation of the downtown area of the city was difficult because of shadows and layover of tall buildings. Planimetry was field edited in conjunction with field contouring.

32. **Control.** - Control was sparse in all areas except the northeastern section of Sheet No. 1. The first kelsh model was set on control and successive models to the south and west were set on pass points from the preceding models. Detail points were scaled from Providence, City Planning Commission, topographic maps and held in the areas of weakest control.

33. **Supplemental Data.** -
   C&GS Planimetric Map T-5748
   See Field Inspection Report, Item 2

35. **Shoreline and alongshore details.** - Shoreline shown on these maps was office interpreted and not field edited.

40. **Horizontal and Vertical Accuracy.** - Standard accuracy requirements were not met in the compilation of these maps because they were prepared for a special purpose. Contours and planimetry were purposely generalized to facilitate map reading.

48. **Geographic Names.** - All names shown were approved by the Geographic Names Section.

Submitted by:

[Signature]

K. N. Maki, Chief,
Compilation Section
15 November 1956

These maps were reviewed immediately after compilation. No formal review report will be written.
Research Report - Future avoidance
of indicated difficulties.

These comments refer to the difficulties
indicated on page 3.

In fact, after considering all
the sources of information readily
available, it is evident that the
causes of the difficulties are, in
order of their importance, 

1) The compilation was started
to complete all under pressure
of time in order that the
sheets could be forwarded
to the Field Edit Party, which
was already on the ground.
In other words, the compilation
was not begun a sufficiently
long time in advance of the
needs to allow a carefully

2) The occurrence of tall buildings
obstructed some cross streets, and small buildings
in the tall-building areas so
that some objects were hidden in all photographs.
(3) Long, black shadows prevented identification in some areas of tall buildings.

(4) The publication scale was 1.6 times the compilation scale of the Kelvin flats on a times the negative scale, whereupon the Kelvin operation could not be expected to identify all the data that would seem important to the field editor.

(5) An air of "lowered accuracy standards" prevailed during the compilation, accentuated by having to fit to questionable control data and to complete the work in a restricted time.
To avoid similar difficulties in the future, some or all of the following measures are suggested:

1. Plan the work so that the idea of haste is not evident, with the idea that a day or two of office time among the field editor party. Sufficient control should be provided, perhaps by building, so that the models and details can be fitted together without giving an air of "slippiness" or intended inaccuracy.

2. In areas of tall buildings, the photography should have 60% front lap and 60% side lap. The front lap is easy to arrange, but the large side lap requires extra flights. Residence areas do not require the special overlap. Although this will reduce hidden features to a practical minimum, it will not eliminate them altogether.

3. Although the shadows were objectionable, they are of lesser importance than the overhang of tall buildings. It is to be noted, however (see attached graph) that the photography was taken at an optimal time (April 22) for shadows, as any later time would have resulted in leaves on trees, which would have been
even more damaging than shadows for this job.

(4) However, the shadows might have been essentially eliminated by photography beneath a cloudy overcast. Such conditions may be more difficult to require a longer waiting period for the aircraft than clear weather.

(5) The photography should be flown at such an altitude that no enlargement is required from the compilation scale. For this job, the Kelsh plottter was used on this project. Hence, the photo scale should have been 1:12,000 instead of 1:20,000. As an alternative, the compilation could probably have been accomplished properly with a first-order plottter using the 1:20,000 photography, as much or the operator sees more detail. Hence, as a criterion for planning, it may be considered that either the compilation scale should be limited to 5 times the photo scale if the Kelsh is to be used for compilation, or else a first order plottter should be used.

J. B. Reimbold
13 Dec '57
Lengths of Shadows at 15 day intervals at Providence, R.I.

For a 100-foot object