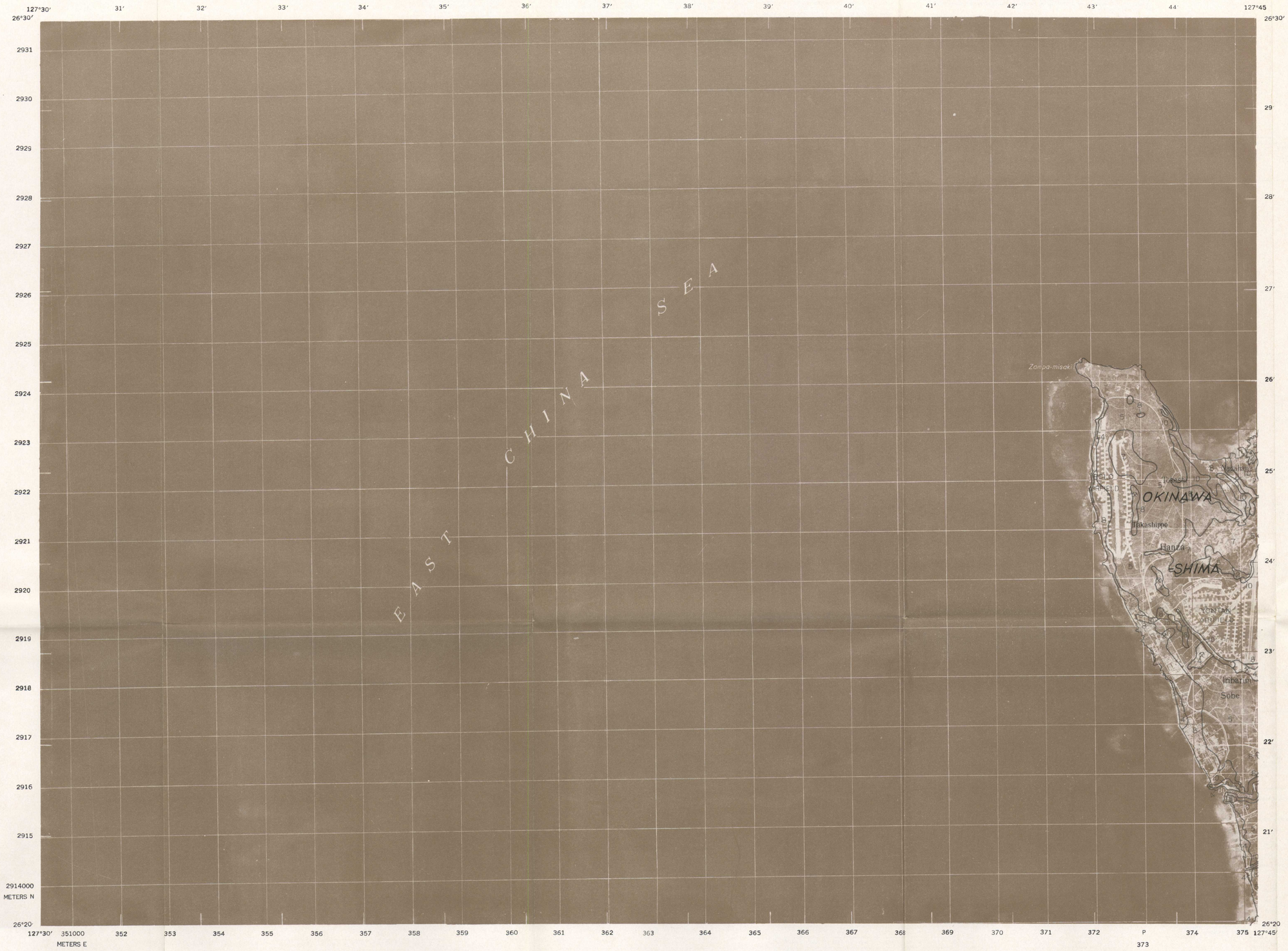
OKINAWA PHOTOMAPS 1:50,000
WITH
SOIL ENGINEERING MAP OVERPRINT

Vol I Plate 2 SHEET 6



PHOTOMAP BASE

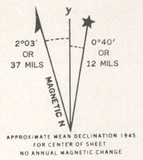
Prepared under the direction of the Engineer, General Headquarters, Far East Command by the 64th Engineer Base Topographic Battalion from aerial photography dated Feb, Apr, May, June, 1948, and Jan, 1949. Controlled mosaic based on Geodetic control established by 29th Engineer Base Survey Company.

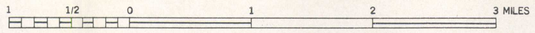
U.S. ARMY MAP SERVICE, FAR EAST - 57-042 - S-15 - 9/57 - 3.7C

SOIL ENGINEERING-OKINAWA

TRANSVERSE MERCATOR PROJECTION

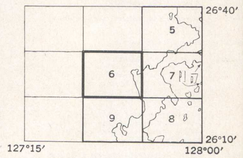
Compiled from Soils of Okinawa, Overprint on Controlled Photomap,
Scale 1:50,000
by
Military Geology Branch
U.S. Geological Survey
for
Intelligence Division
Office of the Engineer
General Headquarters, Far East Command
1951
SCALE 1:50,000





Reprinted in 1957 for report
Military Geology of Okinawa

INDEX TO ADJOINING SHEETS



OKINAWA PHOTOMAP
RYUKYU-RETTO
N 2620 E 12730/10X15

EXPLANATION

1. Well-drained alluvial sandy clay and clayey sand. CL-SC

Grayish-brown to brown sandy clay to clayey sand consisting of Recent stream sediments several to many feet deep, in occasionally flooded valleys and coastal flats. Percentage of fines, 60 ± 25; liquid limit, 30 ± 10; plasticity index, 12 ± 8. Well-drained to 3 feet or more but the water table generally is within 10 feet and locally within 4 feet. Depth to bedrock exceeds 10 feet.

2. Wet alluvial sandy clay and clayey sand. CL

Gray sandy clay or, locally, clayey sand several to many feet deep in irrigated rice paddies located on coastal flats and valleys. Percentage of fines, 65 ± 30; liquid limit, 35 ± 10; plasticity index, 15 ± 10. Depth to bedrock exceeds 10 feet.

3. Alluvial fat clay. CH

Dark-gray to olive-gray calcareous fat clay several to many feet deep, occurring on wet coastal flats and alluvial valleys within clayey upland. Percentage of fines, 90 ± 10; liquid limit, 55 ± 5; plasticity index, 15 ± 10. In the areas on the coastal flats the water table is 2 to 5 feet below the surface during the dry season and at or very near the surface during rainy seasons. Depth to bedrock of bluish-gray hard compact clay averages about 10 feet and ranges from 3 to 15 feet.

4. Coral sand. SP

Impure coral sand somewhat darkened in the upper 12 to 25 inches by organic matter. The areas are old beaches now above wave action and covered with vegetation. The soil is loose, porous, nonplastic and rapidly drained. Depth to bedrock exceeds 10 feet.

5. Permeable fat clay, deep over limestone. CH

Reddish permeable fat clay 2½ to 20 feet deep over coral limestone. The areas comprise the limestone upland with deep soil and are well-drained. Exclusive of the 8 - to 15-inch topsoil, the percentage of fines is 90 ± 10; the liquid limit, 55 ± 5; and the plasticity index, 27 ± 7. The topsoil is a less fat mineral clay with some 3% organic matter, liquid limit of 40 to 55, and plasticity index of 12 to 25. All the soil is porous and permeable and has relatively low shrinkage and swell. The soil-bedrock contact is irregular, with pinnacles of limestone rising several feet into the clay and tongues of clay reaching 10 feet into the limestone.

6. Fat clay, shallow over clay bedrock. CH

Olive-gray or olive-brown relatively porous and permeable fat clay 7 to 30 inches deep over bedrock of compact impervious bluish-gray clay, occupying upland areas. In some 95% of the area, the percentage of fines is 90 ± 10; the liquid limit, 55 ± 5; and the plasticity index, 27 ± 7. Stickiness, and shrinkage and swell with moisture changes are only moderate - relatively low for a fat clay.

7. Sandy clay, deep over bedrock. CL

Reddish sandy clay 10 to 50 feet deep over phyllite or other bedrock, occupying rapidly drained, hilly upland. The bulk of the soil has 60% to 90% fines, liquid limit of 30 to 50, and plasticity index of 10 to 25. There are two to three distinct layers in the soil: (1) a pale-colored 4 - to 9-inch topsoil of very lean sandy clay, (2) a subsoil of fatter sandy clay, which may continue down to the bedrock but commonly gives way at a depth of 3 or 5 feet to (3) leaner sandy clay. The bedrock is phyllite in most of the area but includes chert and slate, sandy or conglomerate limestone, and sandstone. Where the bedrock is sandstone, layer (3) generally is sandy silt to clayey sand.

8. Stony clay, shallow over limestone. CH

Dark-brown to reddish-brown, moderately stony clay less than 30 inches deep, commonly 6 to 15 inches deep, over limestone. The soil is so thin that in most construction it can be disregarded.

9. Lean clay, shallow over bedrock. CL

Lean clay generally less than 10 inches deep over partly weathered bedrock of various kinds (phyllite, chert and slate, sandstone, and, in inextensive areas, greenstone) other than limestone and bluish-gray clay, occurring in the mountainous to very hilly areas of northern Okinawa. In areas underlain by sandstone the depth to firm bedrock is many feet. The engineering characteristics of this unit are primarily those of the bedrock and are hardly affected by the thin layer of soil.

10. Rough stony land.

Rough, mountainous or steep areas of stony fat clay very shallow over limestone and intermingled with numerous outcrops. The soil is so scant that in most construction it can be disregarded and the areas treated as though they were outcrops of limestone.

⚒ Quarries

Letter symbols indicate classification of prevailing soil of unit, according to Corps of Engineers Uniform Soil Classification, March 1949.

Correlation of Soils Engineering Units with Basic Soils Units (Soils of Okinawa, 1:50,000, Volume IV, Plate 1)

Soils Eng. Unit	Basic Soils Unit
1	8
2	7, 11
3	9
4	10, 15, 16, 17
5	1b, 1c, 1d
6	4b, 4d, 13
7	2c, 2d, 2e, 3c, 3d, 3e
8	5b, 5c, 6c
9	6e, 12
10	14