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Japanese Defense of Cities as Exemplified by THE BATTLE FOR MANILA

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A REPORT BY XIV CORPS

PUBLISHED BY A. C. of S., G-2
HEADQUARTERS, SIXTH ARMY

1 JULY 1945

HEADQUARTERS XIV CORPS
Office of the A. C. of S., G-2

APO 453

26 April 1945

The following report on The Battle for Manila is submitted in compliance with War Department radiogram, and letter from the A. C. of S., G-2, Headquarters Sixth Army, dated 17 March 1945.

The report has been prepared by the A. C. of S., G-2 and A. C. of S., G-3 Headquarters XIV Corps from data submitted by the 37th Infantry Division and the 1st Cavalry Division. This data is based on the experiences and observations of small unit commanders and of commanders and staff officers of echelons down to and including battalions and squadrons.

Tactics and methods employed by the Japanese in the fanatical defense of the city of Manila are believed to be as accurately portrayed as possible from observation on the ground and the study of captured documents of various types, and are covered in Part I.

The tactics and techniques successfully employed by the attacking troops in accomplishing the mission assigned indicate "a" solution to the problem which faced them. This portion of the report was prepared under the direction of the A. C. of S., G-3 and is covered in Part II.

The reproductive work on the inclosures illustrating the report was done by the 670th Engineer Topographical Company.

H. O. EATON, JR.,
Colonel, G. S. C.,
A. C. of S., G-2.

P R E F A C E

HEADQUARTERS SIXTH ARMY

Office of the AC of S, G-2

APO 442

1 July 1945

The Battle for Manila presented the first instance in the present war in which a metropolitan city strongly defended by the Japanese was assaulted and captured by U. S. forces. The account of this engagement has obvious value in training for future operations.

The enclosed report was prepared jointly by the A. C. of S., G-2 and the A. C. of S., G-3, Headquarters XIV Corps. As pointed out in the body of the report, there were certain conditions present in the Battle for Manila which may not be duplicated in later operations. Chief among these conditions may be mentioned the prohibition against aerial bombing by American forces and the initial restrictions on our artillery fire, both of which measures were prompted by the humanitarian desire to spare the lives and property of a friendly people. Likewise, the presence of these people in the city during the battle operated as a marked deterrent to the adoption of other forceful measures. Obviously, the presence of a population hostile to our forces in a Japanese-defended metropolitan area will exert a marked effect upon the conduct both of the offense and the defense.

In other ways, the situation in Manila was unique. The defense of the city was entrusted to a naval commander. The garrison was of conglomerate composition. Many of the enemy troops were untrained and of low combat efficiency. Adequate basic organic weapons were lacking. Hostile civilians presented a constant problem to the defender. These, presumably, are conditions which are not likely to be found in enemy cities yet to be taken. Where an enemy city is defended by a well-organized and well trained garrison under army command, there will probably be a higher degree of coordination.

Subject to these considerations, a careful study of this report by all echelons of command is highly recommended.

F. W. HEIN,
Colonel, G. S. C.,
Acting AC of S, G-2.

TABLE OF CONTENTS

PART ONE—ENEMY DEFENSES

<i>Subject</i>	<i>Page</i>
I INTRODUCTION	1
II GENERAL	1
III PERSONNEL AND ORGANIZATION	2
IV DEFENSIVE INSTALLATIONS	3
1. Buildings and Streets	3
a. General	3
b. Buildings	3
c. Streets	5
2. Other Fortifications	5
a. Pillboxes	5
b. Barricades	5
c. Minefields	6
d. Demolitions	7
V WEAPONS AND THEIR EMPLOYMENT	8
1. General	8
2. Grenades	9
3. Small Arms	10
4. Automatic, Aircraft and Anti-Aircraft	10
5. Mortars	11
6. Artillery	11
7. Rockets	12
VI TACTICS AND TECHNIQUES	13
1. General	13
2. Conduct of the Defense	13
3. Counterattacks	15
4. Espionage and counter-espionage	16
5. Chemical Warfare	17
6. Armor	17
7. Summary	17

PART TWO—ASSAULT TACTICS EMPLOYED

I GENERAL PLAN	19
1. Factors precluding early planning	19
2. Estimate of the Situation	19
3. Plan for the attack	19
4. Conduct of the attack	20
5. Limitations on bombing and artillery fire	20
II SPECIFIC METHODS USED	21
1. Street fighting	21
2. Assault teams	21
3. Reduction of fortified buildings	22
a. General	22
b. Development of techniques	22
4. Method of assault	23
5. Mine removal	24
6. Assault on Intramuros	24
7. Special techniques	25
a. Observation posts in street fighting	25
b. Use of flame throwing tanks	25
c. Effect of unfuzed projectiles on walls	25
d. Night operations	26
8. Conclusions	26

PART ONE

ENEMY DEFENSES

I. INTRODUCTORY

The following points are stressed in this report: weapons used by the Japanese, obstacles encountered, the integration of weapons and obstacles in defensive organization, and tactics employed in small unit engagements by both Allied and Japanese troops. In order to make the report as comprehensive and as clear as possible, additional subjects, as listed in the Index, have been included. Illustrations, sketches and pictures are in the numbered Annexes.

II. GENERAL

The familiar fatalistic mental attitude on the part of the Japanese was as apparent in city fighting as in combat in any other type of terrain where this enemy has been encountered. He has been indoctrinated with the offensive spirit to such an extent that, when forced to the defensive, his only objective is to live as long as possible. His communications were faulty; positions, while sometimes mutually supporting, did not provide for continuous prepared areas behind which he might retire, nor a route of withdrawal over which he might conduct the bulk of his forces to an assembly area from which to launch an attack at an opportune time against an enemy with extended lines of supply and communication. Thus he could not be maneuvered out of his position, but had to be exterminated in place. For example—prior to our advance on Manila enemy leaders directed that supplies and equipment be buried near positions in which a last stand would be made. Throughout the campaign suicidal attacks were ordered and sick and wounded soldiers were directed to take their own lives. Nowhere are there indications of any plan or attempt to withdraw the Manila Naval Defense Force so that it might be preserved as a fighting unit in event of the fall of the city to American forces. Any deficiencies, however, in the plan adopted or tactics employed were not reflected in the combat qualities of individual soldiers and small groups. These fought tenaciously and skillfully, to the bitter end, using all available weapons and barriers, natural and artificial.

The main purpose of the enemy in defending Manila was threefold: first, to effect maximum attrition of American fighting power by utilizing the advantages of natural and man-made defenses within the city; secondly, to delay the occupation and utilization of the Port of Manila as long as possible; thirdly, to cripple the city as a base for future military operations and as a center for civilian production and governmental control. This third objective was covered in Manila Naval Defense Force (MNDF) Order No. 43, dated 3 Feb., 1945, which reads in part as follows:

“1. The South, Central and North Forces must destroy the factories, warehouses, and other installations and materiel being used by Naval and Army forces, insofar as the combat and preparations of Naval forces in Manila and of Army forces in their vicinity will not be hindered thereby.

“2. The demolition of such installations within the city limits will be carried out secretly for the time being so that such actions will not disturb the tranquility of the civil population nor be used by the enemy for counter-propaganda. Neither large scale demolition nor burning by incendiaries will be committed.

“3. A special order will be issued concerning the demolition of the water system and the electrical installations.”

Prior to the arrival of U. S. Army units in Manila, the enemy situation was obscure. These things were apparent: the enemy in Manila and its environs was not organized into any large combat unit; his activities were of a passive nature, or indicated a withdrawal to the east; his communications had been badly crippled; he had no reserve and no mobile combat force to employ against American units driving aggressively and swiftly into Manila. The situation was further complicated by the threats of three separate American Divisions, the 1st Cavalry, the 37th Infantry and the 11th Airborne, attacking the city from different directions. Approximately 18,400 troops, including a large proportion of miscellaneous personnel, hospital patients, and freshly inducted civilians, were assembled and organized into provisional units of company and battalion size for the defense of Greater Manila. About three-fourths of the assemblage were of naval origin and one-fourth Army. Basic infantry weapons were insufficient in number to arm all troops. Weapons were salvaged from destroyed airplanes on Manila fields and from sunken ships in the harbor. These provided a large proportion of the weapons utilized by the Japanese.

The overall defenses of Greater Manila were entrusted to Rear Admiral Iwabuchi, Mitsuji. The forces north of the Pasig River were commanded by Col. Noguchi, former adjutant of the Fourteenth Army, who had under his control two provisional Army battalions and one provisional Navy battalion. Those south of the river were under the direct control of Iwabuchi. The organization of the MNDF is shown in detail in Section III, Part One.

The evidence seems conclusive that the original defenses of Manila were prepared to meet attack from the seaward or from the south. There is no evidence of any attempted re-organization of these defenses on the part of the enemy until the 23rd of January, 1945. An order issued on that date, later captured by our troops, indicated a concern for our approaching thrust from the north. The order provided for a screening force north of the Pasig. The southern portions of the city, especially the Paco, Ermita, Port and Malate Districts, were covered by a great number of prepared positions of all types. Road blocks and street barricades were constructed at all important street intersections; and disposed along Manila Bay were over three hundred and fifty anti-aircraft and dual purpose gun positions.

As our forces approached the city the Japanese adopted a plan of defense which was based on the Walled City as the inner stronghold. This core was surrounded by a rough semi-circular formation of public buildings, garrisoned and prepared for defense. Slightly to the rear of these buildings were other strong points. These positions consisted of a series of well constructed pill boxes so placed as to utilize the protection afforded by existing obstacles, machine gun, anti-tank and rifle-fire. While the defenders utilized prepared positions, the defense itself was largely one of small units which were imperfectly coordinated. As the enemy areas became further compressed the lack of integration became more apparent. Groups of defenders became isolated in the large fortified public buildings. This, however, did not entirely preclude the shifting of some personnel from one building to another and some measure of mutual support.

A map of the city proper showing principal installations discussed herein is set forth in Annex 1.

III. PERSONNEL AND ORGANIZATION

The enemy forces defending Manila were predominantly naval with a small number of army troops cooperating. These forces were assigned operational sectors as shown in Annex 2.

The naval force was a combination of many base defense, service and miscellaneous units, and included, in addition to the normal Naval Guard forces assigned to a large Naval Base establishment, elements of naval flying units, crew members of both naval and merchant ships sunk or disabled in Manila Bay, and some civilian employees of the Naval Base. These diverse units and individuals were successfully organized into the Manila Naval Defense Force under the command of Rear Admiral Iwabuchi, Mitsuji, as shown in Annex 3. With a total strength of approximately 14,000, the force was disposed (less one battalion) south of the Pasig River in defense sectors. The remaining battalion was located in the southern portion of the Eastern Sector, north of the river.

The army units were two: The Manila Detachment of the Kobayashi Group (Heidan) and the South Flank Detachment of the same organization. Both units were composed of heterogeneous personnel: remnants of the units which had passed through Manila, men drawn from a Field Replacement Depot, and recently inducted civilians. As in the case of the naval force the army strength included various base and service units converted to infantry. The organization of these units is shown in Annex 4. Both detachments, although a part of the Kobayashi Group, came under the tactical control of Rear Admiral Iwabuchi, and may be considered elements of his command.

The Manila Detachment, estimated strength 2,900, was originally deployed north of the Pasig, in the Northern Sector, but ultimately concentrated the bulk of its strength in the Intramuros and the Port District for the final phase of the Manila operation. The South Flank Detachment, estimated strength 1,500, was disposed in the area of Nichols Field, in the Isthmus Sector, where they were contacted and finally destroyed.

IV. DEFENSIVE INSTALLATIONS

1. Buildings and Streets

a. *General*: Japanese defenses within the city were characterized by improvisation. Mines, barricades, and weapons of all types were used; these and the tactics employed were adapted to the situation at hand. No reliance seems to have been placed on any particular doctrine or training except the usual Japanese tendency to accept death rather than withdrawal. Grenades, mortars, small arms and some artillery were used in much the same way as in any other type of combat, the chief difference being that ranges were reduced to a minimum.

b. *Buildings*: Instructions concerning the use of buildings in defense are outlined in the following extract from the Noguchi Force order of 23 Jan. (The directive pertains chiefly to defense against air attack but positions constructed pursuant thereto were used for ground defense as well.)

"a. Counter-measures to be taken against furious enemy air and artillery bombardment before the attack of ground forces, etc. It is necessary for each unit to take the following measures, as the enemy attempts to destroy completely our key points by fierce bombardment prior to attack by his ground forces.

"1. It is necessary to strengthen the buildings at each key point as much as possible but because of the fact that no buildings can stand against bombs of 100 kg and above, men must not gather in one building but will deploy and take cover or construct many individual fox-holes (in the shape of an octopus-pot) and shelter trenches.

"In case of enemy bombing prior to the attack by enemy ground forces, it is necessary to reduce losses as much as possible by having men temporarily take cover, etc. It is preferable to reuse buildings destroyed by bombing."

Since Manila is located within an earthquake zone, its buildings are necessarily of very strong, heavy construction gauged by American standards. As an example of this, the Finance Building in downtown Manila was so constructed that, as the lower portion of the outside walls disintegrated under the direct fire of our artillery, the walls and roof settled and the structure bent, rather than collapsed. Intramuros was surrounded by a wall varying in thickness from ten to forty feet, and contained tunnels and excavated positions for gun emplacements. Projecting from the wall were bastions heavily organized. The entire area was medieval in structure and its defense combined the fortress of the Middle Ages with the fire power of modern weapons. The Japanese used all types of earthquake-proof structures—private homes, churches, schools and government buildings—as isolated strong points. Machine guns and anti-tank weapons were sited within the buildings in such a manner as to protect approaches. The positions were improved by conventional defensive installations. Concrete structures were strengthened by sand bags. Entrances, stairways, windows and corridors were sandbagged or reinforced by concrete, and often protected by barricades of such construction that they withstood numerous hits from tanks firing 75 and 105mm guns at point blank ranges. Small rifle and machine-gun slits were chipped in walls. In several cases these slits were found to have the drawback of being very narrow apertures which limited fire to a single passageway; little thought seems to have been given to small arcs of traverse and search which, in some cases, would have been desirable. There were alternate positions for automatic weapons throughout the buildings. Man-made tunnels connected the rear and side with outlying bunkers. Barbed wire entanglements were employed inside and outside of buildings. In adjacent grounds there were foxholes of the standing type. The enemy's main defensive organization was usually on the ground floor. In some instances troops were deployed in upper stories and on roofs to support the main defensive positions; these troops carried on the fight after our forces had siezed the lower floors. Inside buildings were found bomb shelters constructed of a large cement culvert pipe, with one-half inch steel sheeting as a base for the roof, over which sandbags were stacked.

Approaches to buildings were also blocked by obstacles and mines covered by rifles, machine guns and anti-tank weapons, which were normally protected by heavily sandbagged pill boxes. Full advantage was taken of stone walls around houses and buildings to add to delaying obstructions.

Typical of the tenacious defense of buildings was the action centering around the Manila Hotel. After our troops occupied the upper floors of this structure following an all night battle, the enemy re-occupied the lower levels. The following morning the Japanese retired under pressure to an air raid shelter located in the basement. An estimated 200 of the enemy perished upon the sealing of the shelter entrance.

Charts and pictures illustrating building defenses are attached as Annexes 5 to 25. Particular attention is invited to Far Eastern University, (Annex 5) and to Rizal Stadium (Annex 6). The purpose of the defense of the University was to deny us the use of Quezon Blvd. and its approach to Quezon Bridge. No attempt was made to coordinate the defense of this position with Bilibid Prison or with Santo Tomas University, several blocks to the east. Enemy troops in Far Eastern University were estimated at not less than 200. The position was reinforced by sand bags and wooden barricades. The machine guns at the northwest corner of Quezon Blvd. and Azcarraga Ave. were emplaced in pillboxes of reinforced concrete and were additionally covered by three bands of barbed wire strung on steel rails embedded in concrete. The defense within the building was typical of that found in the Manila area.

The Rizal Stadium area was two blocks square and consisted of four main athletic structures within a large cement stadium. A drainage ditch 15 feet wide and 10 feet

deep along the entire east side of the stadium provided a natural tank trap. This approach was further protected by a concrete wall 15 feet high and 2 feet thick. Open fields to the north and west of the Stadium and a wide avenue (Vito Cruz) on the south afforded the enemy excellent fields of fire. The defense was centered around two buildings on the south side of the area, the Ball Park and the Coliseum. In each building all doors, windows and passageways were barricaded with sand bags. Small rifle slots had been chipped in the walls and street approaches were heavily mined.

c. *Streets*: Streets were blocked by all types of obstacles. Intersections were barricaded and further defended by automatic and anti-tank weapons sited to cover streets approaching the intersection. Approximately fifty barriers were removed between 7 February and 3 March in the Paco, Ermita and Intramuros Districts of South Manila. Annex 26 shows an approximate reconstruction of the installation at one typical street intersection. In this particular case there was a supply of railroad car axles nearby; these were set upright in the pavement to serve as barricades.

2. Other Fortifications.

a. *Pillboxes*: Pillboxes in the Manila area showed little departure from the conventional type. Annex 27 illustrates a type frequently encountered. Essentially, the materials used—concrete, metal, wood and sandbags—were standard. The thickness of the pillbox walls ranged from inches to several feet. Some had the inside walls sandbagged to a depth of several feet; thus reducing fragmentation within the confines of the positions.

The pillboxes and their immediate approaches were provided with obstacles, usually consisting of barbed wire entanglements, designed to force our troops into fire swept areas and to prevent the close approach of infantry and engineer assault groups. Connecting trenches, both covered and uncovered, were a normal part of the defensive scheme. (See Annex 28). In some cases, tunnels led from the pillboxes to the interior of nearby buildings and other pillboxes. These connecting trenches and tunnels permitted the rapid and unobserved movement of troops to or from threatened areas. Some of the pillboxes had limited fields of fire, but, when incorporated into the general scheme of organized defense, covered each other with well directed fire. Those having limited fields of fire were in positions that did not permit the opening of fire until the assaulting troops were fairly close. Such positions, while possessing this disadvantage, had the merit of being protected from the fire of weapons in the hands of attacking troops until they were at very short ranges, as is illustrated in Annex 29.

Following their doctrine of utilizing camouflage to the utmost, the Japanese found the destroyed areas of great value in providing material with which to conceal their positions. The debris from shattered buildings furnished additional protection to pillboxes inasmuch as it acted as a buffer, when piled around and on top of the positions, by dissipating the effect of exploding shells and demolition charges.

b. *Barricades*: Like other defensive installations discussed, barricades were constructed to meet the needs of the situation as it developed. A barricade in the form of steel rails embedded in the ground and standing six to eight feet high, irregularly spaced from two to three feet with barbed wire strung between, was commonly encountered. Anti-tank and anti-personnel mines were interspersed throughout the barricade itself and in front of it. Others encountered were of the "hedgehog" and "Cheval de Frise" types. Some barricades were made by merely overturning automobiles and trucks. In other instances heavy factory machinery was moved into the streets and there firmly embedded. Fuel drums, into which steel rails or hardwood timbers were placed and then

packed with cement or earth were frequently found. Here, too, barbed wire and smooth wire was used. One kind of anti-tank barricade was composed of fuel drums set upright and arranged in two or more columns. The space between these columns was then filled with dirt, as were the drums themselves, and the areas in front of the barricades were sown with mines. (Annex 32). Anti-tank ditches and shell craters used as such were employed extensively.

Within buildings, corridors were heavily barricaded with ordinary household and office furniture. Other obstructions in the form of walls arranged in staggered positions were set up inside the passage ways. These walls, usually wooden forms filled with dirt, were from three to four feet thick and from seven to ten feet high, and provided enough clearance between the top of the wall and the ceiling to permit the lobbing over of grenades. (Annex 33).

Although the barricades encountered in the Manila City area were frequently well made, many were hastily improvised. Despite the fact that the troops committed to the defense of the city were a conglomeration of different branches and services and were equipped with comparatively little in the way of heavy construction material and machinery, an efficient system of barricades which facilitated stubborn defense was devised.

The ingenuity demonstrated in the utilization of means at hand for obstructions indicates that with more suitable materials the Japanese will in future operations oppose a more formidable type of barricade to attacking Allied troops.

c. *Minefields*: Minefields were used extensively by the enemy throughout the Manila area. Controlled and uncontrolled minefields as well as combinations of both types were found on roads, bridges, in the vicinity of barricades, and in open lots. Most minefields were covered by fire, but in many cases the enemy withdrew or was forced to evacuate from covering positions. No regular pattern within minefields was noted, and the minefields themselves were liable to be encountered anywhere. In general, the fields were poorly camouflaged, many mines being only partially buried and easy to locate.

There was apparently no organization in the choice of types of mines, for all available explosives were freely used and indiscriminately mixed. Naval beach mines were most common, and were followed in number by converted aerial bombs. These types were frequently found together, in the proportion of two beach mines to one aerial bomb. In addition artillery shells, mortar shells, depth charges were often used as mines.

As a rule, depth charges were prepared for electrical detonation, with control wires leading to a concealed position. These were also found placed on end six to eight inches below ground level. On top of the depth charge was a ceramic or yardstick mine flush with the ground. In fields and on grassy road shoulders, depth charges with ceramic mines and trip wires, either single or interconnected, were met. Fifty-five gallon drums were found to contain depth charges in conjunction with ceramic mines. This combination was most often used in road blocks.

Ceramic mines were frequently trip-wired, and yardstick mines were scattered on road surfaces or placed above buried 100 pound aerial bombs. In other instances, aerial bombs with a nose impact fuse set close to the surface were found; a pressure of only fifty pounds was sufficient for detonation.

Annex 34 shows a typical minefield in the New Manila Subdivision. North-south streets were prepared throughout with scattered mines. Two cross streets were mined; extensions into fields at the flanks included a potato patch, in which was found one of

the few pattern fields laid out by the enemy. Another field at approximately the center of the subdivision, in the unused portion of a block, consisted of scattered depth charge—ceramic mine combinations, all independently trip-wired with a set of easily detected yellow wires.

Annex 35 shows a minefield on Vito Cruz between Luna and Taft Avenues which illustrates the tendency to mix all available types. The three ceramic mines to the left of the anti-tank ditch were concealed under galvanized iron sheeting. The group of depth charges were all interconnected and wired to the blockhouse for controlled detonation.

d. *Demolitions*: Demolitions played an important part in the defense of the city, inasmuch as they were used to great effect in destroying bridges prior to our entry and in demolishing sections of buildings after occupation.

Evidence of prior planning of bridge demolition is contained in the following extract:

“Manila Defense Op Order A No. 1. (Shimbu Gp) Santa Mesa
Defense Force Order 2300, 3 Jan 45

“6. Manila Detachment will firmly occupy the key points in the city. Thus it will endeavor to annihilate the enemy airborne forces and thus decrease his fighting strength, and simultaneously the Detachment will take charge of preparations for protection and destruction of Main installations, especially bridges, in the city.

“At key points of traffic, particularly at bridges, the Detachment will check the north and south movements of enemy armored cars. The area of the line connecting west of Novaliches (included), Meycauayan and the lower reaches of the Meycauayan River at Meycauayan, and that north of small stream to north of Manila will be newly added to the combat area of Manila Detachment.

“8. South Flank Detachment Commander will be responsible for the protection and destruction of Pasig Bridges with a portion of one Infantry Company which has been dispatched to the vicinity of Sakura Barracks and with the forces mentioned in the foregoing paragraph.”

Of a total of about 101 bridges in the city of Manila and immediate environs, thirty-nine, were destroyed. The most vital bridges, as far as the tactical situation was concerned, were the six bridges over the Pasig River joining the northern and southern sections of the city. All of these were destroyed. In the section north of the Pasig River, there was a total of fifty-eight bridges, of which nineteen were destroyed.

In the section south of the Pasig River there were thirty-seven bridges; twenty destroyed. The greater percentage of destroyed bridges south of the Pasig River may be explained by the fact that the enemy withdrew toward the south and consequently had more time for demolition work in this section.

As a general rule, the bridges destroyed were from one hundred to four hundred feet long, while those left intact were much shorter and never exceeded seventy feet in length.

Except for certain bridges over the Pasig River, all bridges in the city were blown prior to the entry of our troops. Those over the Pasig were destroyed about the time our troops reached the north bank of the river. The precise time of demolition of those destroyed prior to our entry is not known, but it was probably 3 February, as implied by the following captured order:

Manila Naval Defense Force Comdr Iwabuchi, Mitsuji

"1. The North and South Forces will immediately destroy all bridges in the suburbs with the exception of Novaliches Bridge, (The Kobayashi Gp (Heidan) will be responsible for the Marikina and Pasig Bridges) 33 (MA) (San Juan) Bridge and the five large bridges (1 (I), 2 (RO), 3 (HA), 4 (NI), 5 (HO)) over the Pasig River.

As to the demolition of the above mentioned bridges and of various small bridges in the vicinity of the principal zone of city, special orders will be given. However, the time of demolition will be about the same time as that for the demolition of the 4 large bridges.

"2. The demolition must be done completely and thoroughly. In order to prevent the guerrillas from action to construct bridges, and to prevent speedy transmission of intelligence and passage across, several guard personnel will be posted at the completely demolished principal bridges.

"3. Each unit will quickly report as soon as the principal bridges are destroyed."

Practically every important bridge in the city was destroyed. The relatively few left intact represented very difficult demolition jobs, a fact which suggests that the enemy lacked sufficient qualified personnel to undertake them. As a whole, the bridge demolition work was better executed and destruction more nearly complete in the Manila area than in the Central Plains of Luzon. Most of the bridge demolition in Manila would be considered good by American standards.

Japanese bridge demolition was marked by the following general characteristics:

(1) On multiple span bridges, the span on the Japanese side was usually blown. Other spans in many cases were prepared for demolition but often remained intact.

(2) In the demolition of concrete slab bridges, the enemy apparently concentrated on the destruction of the bridge decking.

(3) Concrete arch type bridges were found blown in middle sections.

(4) Steel truss bridges were sheared close to the supports with only abutments and piers left standing.

(5) No bridges of any type were found that had been prepared for time demolition after our entry.

The only other significant use of demolitions was encountered during the assault on fortified buildings. In many instances our entrance and subsequent occupation of a small section of a structure were met by controlled blasts affecting only that portion held by our forces. Usually charges were too light to cause the destruction intended by the enemy. By this means, however, obstacles were often created, and re-entry by another route made necessary.

V. WEAPONS AND THEIR EMPLOYMENT

1. General

The relatively small enemy garrison left for the defense of Manila proper had a great variety of weapons and ammunition. Months of preparation made possible systematic adaptation and improvisation of weapons for ground defense. One captured order, dated 18 December 1944, stated that "the time of decisive battle on Luzon Island is drawing nearer and nearer", and ordered the rapid execution of combat plans. Guerrilla reports of that period referred to accelerated defense preparations, the construction of underground machine shops, the installation of demolitions in buildings, and

the salvaging of war materials in Manila. A captured undated memorandum, presumably of the Manila Naval Defense Force, called for the immediate manufacture of two-wheeled carriages for 25mm and 13mm machine guns, "the wheels to be found regardless of the circumstances". Another document directed that as large a quantity of aviation gasoline and bombs as possible be removed from the suburbs to suitable places within the city so that they might be used as "weapons of attack or as material for the production of weapons". Scrap metal was saved, captured U. S. weapons and ammunition were made ready, and guns were moved from sunken ships and wrecked aircraft. Ordnance shops were found in Manila, several located in underground tunnels. In these the enemy had produced ground mounts for aircraft machine guns, hollow charge lunge mines, grenades, demolitions and improvised mines. The result was to give the defense force a concentration of automatic and support weapons out of proportion to its numerical strength.

Time also permitted some care in the selection and preparation of sites for all kinds of weapons. Slots for rifles and machine guns often at knee height were made in the walls of buildings. Although this arrangement restricted traverse, the apertures afforded excellent cover of shrewdly selected fields of fire. In the Laloma Cemetery, three 25mm automatic cannon, hidden in pillboxes camouflaged as burial mounds, complete with sod, flowers and statues or crosses, were emplaced for use solely against strategic traffic focal points. In one confirmed instance an artillery piece was emplaced on an upper floor of a downtown building, and many anti-aircraft guns fired into the streets from barricaded rooms in upper stories.

While within each center of resistance the fire plans apparently were characteristically thorough, coordination was lacking in the firing of weapons during the defense. This was probably attributable in large part to poor communications and weak overall organization of the miscellaneous units of the command. Control of the fire of individual weapons was reported as good, with last-minute ambush fire at point blank range repeatedly used to good effect by enemy riflemen, machine gunners and anti-tank gunners. The detonation of electrically controlled mines in buildings was also delayed until the critical moment. Each weapon was generally so emplaced and protected that, even after adjacent positions had been overrun, it remained capable of sustained fire on its original target area until individually rooted out or destroyed.

Except for miscellaneous army units north of the Pasig River, Japanese naval personnel were charged with the defense of Manila. In consequence, relatively few army infantry weapons were used. Some 75mm field guns, a few 47 mm anti-tank guns, standard infantry machine guns, 81mm and 90mm mortars, and 50mm grenade dischargers were encountered. In addition, Army 20cm spin-stabilized rockets with Type 4 launchers were employed in negligible quantity.

A prisoner of war confirmed the removal of 12cm naval guns and anti-aircraft guns from partially submerged ships in Manila Bay to positions within the city. Aircraft 20-mm cannons and anti-aircraft 25mm guns were mounted and emplaced for ground use. On occasion, U. S. Enfield and M1903 rifles, M1911 pistols, Browning automatic rifles, heavy machine guns and cal .50 machine guns were encountered, and a prisoner verified their use. A few captured M-1 rifles were found on enemy dead.

Most of the weapons encountered in Manila and referred to in the following discussion are described and illustrated in current manuals and bulletins on Japanese weapons. Some of the newer types are illustrated in the Annexes. (Part Three).

2. Grenades

Hand grenades were used extensively during the street and room-to-room fighting

in Manila. Type 91 and type 97 hand grenades, stick grenades and conical hollow-charge "grass skirt" hand grenades (see Annex 36) were commonly employed. Grenades were found near almost every Japanese position.

Molotov cocktails, many with red phosphorus as the incendiary substance, were found in practically every house and building that had been occupied by the enemy. It is believed that they were used to start the many fires the Japanese left in the areas they evacuated. These incendiaries were also dropped into the streets from windows of buildings and thrown from room to room and floor to floor. They produced relatively few casualties but were effective delaying weapons.

Small (1-3 kg) aerial bombs intended for use against parked aircraft were dropped from the upper stories of buildings on our troops below and proved effective as hand grenades. Some were found on the ground with dented noses, indicating that the arming vane had failed to rotate sufficiently to arm the bombs and permit detonation.

Small cakes of explosives were found with a pull type igniter, a short piece of delay fuse, and two or three blasting caps. They served as hand grenades and as booby traps. Another improvised grenade consisted of a $2\frac{3}{4}$ " length of 2" pipe, a blasting cap, a cal. .22 shell (captured U. S.), fuse, and powder. The ends were plugged with soft scrap metal.

3. *Small Arms*

The enemy in Manila made conventional use of rifles and automatic weapons. Despite frequent mention by our troops of "snipers," the sniper as a carefully placed individual rifleman specializing in long-range selective firing seldom made an appearance (hardly any telescopic rifle sights were found in Manila). Standard Japanese infantry rifles were not encountered in large numbers, and quantities of captured U. S. rifles were recovered by our forces still packed and unused. Because of the high proportion of automatic weapons, the rifle became a secondary weapon for harassing fire, protection of gun positions, and personal defense.

4. *Automatic, aircraft and anti-aircraft weapons*

Aside from the adaptation of aircraft and anti-aircraft weapons to ground use and the high proportion of automatic fire thus achieved, there was little out of the ordinary in the employment of automatic weapons in Manila. Fire of weapons in adjacent positions was apparently not closely coordinated for surprise or massed effect, although a formidable volume was often achieved.

The 25mm automatic cannon Model 96, apparently the basic automatic anti-aircraft weapon of Japanese naval units, was used in great number in Manila. The majority encountered were of the fixed single mount variety. These weapons, capable of delivering an estimated 250 rounds per minute, fired HE, HE tracer, and AP ammunition. They were used throughout the city, a few being emplaced for employment in a dual role and many for ground fire only.

Twenty mm aircraft machine cannon Model 99, both fixed and flexible, were frequently converted to ground weapons. They were undoubtedly removed from some of the many Japanese aircraft destroyed on the ground by our air strikes. Their great volume of fire was effective in delaying our forces. The muzzle blast of both the 20mm and the 25mm guns made them easy to locate, however. At least two 40mm anti-aircraft guns were also used against our troops in Manila.

The other principal automatic weapons were the 13mm machine gun Model 93, the

7.7mm Lewis machine gun Model 92, and the 7.92mm light Bren-type machine gun. Conventional Japanese army infantry machine guns were encountered in fewer numbers.

5. *Mortars*

Mortars were used extensively for harassing fire, occasionally in conjunction with artillery fire. They were more effective than artillery in producing casualties and delaying our forward elements. Emplaced behind buildings, the mortars were difficult to locate. The calibers most commonly encountered were 15cm, 90mm and 81mm. (Although a new type of 81mm anti-aircraft mortar ammunition functioning as a parachute bomb was found in Manila in 10 February, no reports were received of its use).

On some occasions 50 mm grenade dischargers were used by the enemy inside buildings for direct fire, and throughout the city they were effectively employed against our troops in streets and buildings.

6. *Artillery*

In Manila, as elsewhere in the Pacific, the enemy used his artillery as if for psychological effect rather than for devastation. He seemed to choose as preferred targets our battalion, regiment and division command posts, and placed accurate fire on them. Other targets notably singled out were the areas of activity at the Allied internee concentrations in Old Bilibid Prison and Santo Tomas University. In addition, much harassing fire was delivered on our forward elements. Occasionally a critical target such as a tank park was selected. In Manila the enemy appears to have been too preoccupied with immediate targets to attempt counterbattery fire. Pre-registered fires were frequently employed to cover minefields, critical road junctions, and buildings most likely to be used by our advancing forces.

On targets of all kinds, the enemy failed to mass his fires for destructive effect. Except during a few periods at the height of the battle for Manila, he directed the fire of only one to three guns at a given target. In this way he drew our counterbattery fire on a minimum of targets and conserved some of his pieces for later use.

The main artillery weapons used in the defense of the city were the 12cm Type 10 high angle gun (navy) ; the 8cm (3 inch), 10-year type high angle gun (navy) ; and the 75mm field gun Model 38 on either a wheeled carriage or a modified pedestal mount.

The 12cm high angle naval gun formed the backbone of the Japanese artillery defense. Thirteen were captured or found destroyed in firing position in Manila, and others located at Nichols Field and Fort McKinley were actively employed. They were set on pedestal mounts, permitting wide traverse. A few were emplaced for both anti-aircraft and ground fire. In the Laloma Cemetery a two-gun battery (a third gun was on hand but not emplaced in its intended position) was sited with an open view for AA fire and had wide horizontal views for interdicting two main approaches to the city. To compensate for the lack of natural concealment, camouflage netting was used to mask each emplacement. These two guns also covered a minefield lying south of Grace Park airfield. Near the Manila Water Department reservoir two other 12cm guns were located; one of them destroyed two of our medium tanks.

Time-fused incendiary shells were used to start many of the city fires which destroyed blocks of buildings in the immediate path of our advance. Air bursts about twenty feet above the roofs discharged incendiary pellets into the buildings, while accompanying high explosive air bursts discouraged immediate fire-extinguishing operations. A normal proportion was two or three high explosive shells to one incendiary.

Direct fire, principally of 47mm and 75mm guns, was used from time to time both in street fighting and against buildings. During the shelling of Santo Tomas University, direct fire against buildings came from a 75mm gun or guns situated in an upper floor of an enemy-held building. Authentication of such an emplacement is found in the following translation of excerpts from a captured message book which belonged to a Probationary Officer BATA (unit not stated) :

10 Feb—At 3d Shipping Hq.

"0130—2d Lt AINOUCHI came from Detachment Headquarters and requested me to emplace one field gun; we decided to put the OP on top of the building and emplace the gun on the third floor.

0500—2d Lt AINOUCHI and artillery personnel came from Detachment Headquarters and by using Chinese coolies carried the gun up to the second floor. Later, the platoon leader and 6 men came to help and, with their cooperation, we carried the gun up to the NE corner of the third floor.

0830—Commenced firing. Target—Santo Tomas University. Distance—3400 (TN: possibly meters). First round burst 5 miles to the left of the building. Aimed to the right and fired two rounds. They hit to the right and at the base of the building. White smoke is seen. Thereafter we fired fifty to sixty rounds continuously; fell in the vicinity of the target.

1000—Until 1000 the enemy did not fire. An enemy plane is flying over and appears that it is making an observation of our positions. About this time one enemy shell landed on the center of this tower, and shrapnel fell. Approximately one minute thereafter two more rounds landed. Our forces continued their fire.

Ten minutes after the first round, four rounds in succession fell. Four more rounds followed and hit the pillar. One of these fell in the vicinity of our position. Before the first enemy round landed, I encouraged the gunners, asked them to oil the muzzle of the gun, and went down to my quarters."

7. *Rockets*

Although rockets, like artillery, were not employed in sufficient quantity in Manila to be devastating, their potentialities were demonstrated. Rocket fire was almost always employed at night simultaneously with artillery fire, a circumstance which made accurate reports on its source and effect difficult. More extensive use of rockets in future Japanese city fighting may be expected.

Three standard kinds of rockets were found: the 447mm and 20cm naval spin-stabilized rockets, and the Army 20cm spin-stabilized rocket Model 4. Launching devices were of various types and included tube launchers, open troughs and rail launchers on single, double and triple mounts. Those used in Manila proper are believed to have been the Navy 20cm rocket with rail launchers, and possibly the 447mm rocket. Army 20cm rockets with tube launchers were used extensively in the fighting in the hills east of Manila.

In addition improvised rockets consisting of Navy 60kg Model 97 bombs with welded iron and sheet steel propelling devices attached were found, ready to fire, in Fort McKinley, and may have been used in the Manila area.

The 447mm (17 $\frac{5}{8}$ ") rocket (see Inclosure 37) is 68 $\frac{1}{4}$ " long, weighs approximately 1500 pounds, contains a picric acid bursting charge, has a point-detonating fuse, and is estimated to have a maximum range of not over 2000 yards. Of 85 rounds found in a dump in Quezon City, Manila, the latest manufacturing date was in November, 1944. Observers' reports describing what is believed to have been the 447mm rocket in flight

state that it left a trail of sparks approximately 150 feet long, and detonated with a terrific explosion, doing extensive damage to buildings.

Rockets for the 20cm rocket launcher Model 4 (see Annex 38) recovered in the Manila area were manufactured at the Osaka Army Arsenal in late 1944. The rockets are 20.2cm in diameter, 38 $\frac{3}{4}$ " long, and are fused with a Type 100 mortar fuse. Japanese manuals give the range as from 360 meters at 10 degrees elevation to a maximum of 1800 meters at 50 degrees elevation. The launcher is similar to a large trench mortar. As stated in Japanese manuals and verified by experimental firing, the rocket must be fired by means of a long lanyard, since it shoots flame and showers powder particles to the rear, raising a cloud of dust as it leaves the launcher. It can be seen in flight by day and traced by its trail of sparks at night. Throughout its flight it makes a loud swishing noise. Its detonation is of a high order, greater in blast effect than in fragmentation. Instantaneous fuse settings used in the fighting east of Manila gave it a "daisy cutter" effect.

VI. TACTICS AND TECHNIQUES

1. *General*

On the basis of experience gained in Manila, it may be stated that Japanese tactics and techniques in city fighting presented no radical departures from methods utilized by the enemy in other types of combat. Almost without exception, developments in Manila had ample precedent in previous campaigns.

It should be emphasized at the outset that the defense of Manila was influenced by certain factors which may not be present, either in part or in entirety, during future operations of a similar nature. Some of these circumstances complicated the defense; others facilitated it. In the first category were the following conditions: (a) the relative scarcity of weapons; (b) the lack of training and inexperience of the majority of enemy troops; (c) the conglomerate nature of those troops; and (d) the presence of essentially unfriendly civilians. On the other hand, the enemy's problems were simplified by: (a) the disproportionately large number of automatic weapons available as a result of the cannibalization of armament on planes and ships; (b) the prohibition against aerial bombing by American forces; (c) the initial restrictions on our artillery fire, a procedure prompted by our desire to preserve property to the greatest possible extent; and (d) our efforts to protect the friendly civilian population and our consequent reluctance to proceed ruthlessly.

2. *Conduct of the Defense*

A partial reconstruction of the enemy's plans prior to our assault upon Manila indicates that he anticipated attacks either from the sea, from the south, or by airborne elements. When our true intentions became evident, the enemy was not able to redeploy his strength and to reorient his positions completely. In an attempt to salvage as much as possible from a difficult situation, the Japanese commander apparently decided to establish Intramuros as the core of his defense. This central installation was to be protected by an outlying belt of highly developed positions in earthquake-resistant buildings, which, in turn, were guarded by pillboxes, trenches and barricades (See Annexes 39 and 40). These main defenses were situated south of the Pasig River. Units north of the river were seemingly given the four-fold mission of screening the principal positions to the south, of delaying the advance of our elements, of harassing our rear, and of guarding the approaches to the vital bridges across the Pasig until the moment of demolition.

Although fires set by withdrawing units and by artillery emplaced in the southern section of the city delayed the progress of our troops, the resistance offered by the northern Japanese forces was comparatively weak. Not until the passage of the river was completed did the nature of the enemy defense entirely reveal itself. Then it became clear that the defense was to consist, in the main, of independent centers of resistance which were well sited, well constructed, and fiercely held, but which were not coordinated in an overall plan.

As soon as the first Japanese positions in the southern part of the city were encountered, it was evident that, in constructing defensive installations the enemy had brought all his acknowledged ingenuity to bear. Demonstrating once again his ability to adapt his defense to the existing terrain, the enemy took excellent advantage of the specialized topography of the city. Virtually every street was barricaded. Reinforced pillboxes, carefully placed to allow assaulting troops only severely limited approaches, commanded critical points. Chosen for their strength as well as for their location, buildings took on many of the aspects of fortresses. Minefields, although generally inexpertly laid, were a constant hazard and acted as a delaying element. (Specific instances of the skill shown by the enemy in siting and constructing defenses may be found in Section IV, *Defensive Installations*.)

In these positions the enemy emplaced a considerable variety of weapons, standard, modified or improvised. The Japanese have always been reasonably proficient in the use of infantry weapons or weapons adapted for use by infantry. The defense of Manila produced no significant exceptions to this general rule. Inasmuch as this subject is discussed in some detail in Section V, Part One, only a summary of the salient features is presented here:

- a. On the whole, rifles and automatic weapons were employed conventionally.
- b. Fields of fire were chosen with care and permitted good coverage of critical areas.
- c. Within each center of resistance the fire plan was characteristically thorough; coordination between positions was, however, generally imperfect.
- d. Fire discipline was good; fire was withheld until assault troops were at very short range.
- e. Snipers, as such, were not used to any important extent.

The troops manning the pillboxes and serving the weapons were a variegated lot, poorly trained and inexperienced. What they lacked in skill, however, they redeemed by their suicidal tenacity. The vast majority was resigned to defending the positions until death, and there were no satisfactory indications that plans for withdrawal from outlying buildings to Intramuros were ever made. Within the buildings themselves, however, the Japanese retired to successive positions in the interior until trapped and exterminated.

In spite of excellent positions, good employment of weapons and fierce resistance by his troops, the enemy's defense was seriously impaired by his failure to coordinate centers of resistance. This common enemy weakness was perhaps attributable to inadequacies of the command, poor communications and the heterogeneity of the units available. The absence of an integrated fire plan has already been noted. In addition, there was little evidence of echeloned defense. Although concentrations of installations in certain areas gave the effect of depth, this seems to have been incidental and inadvertent rather than the result of a deliberate plan. The lack of coordination inevitably

caused the enemy defense to become inelastic, in that centers of resistance became isolated and susceptible to destruction in detail.

The enemy employment of artillery also gave evidence of the Japanese inability to coordinate elements in the defense. Artillery fire, although accurate, was never delivered in heavy concentrations. For the most part, the enemy seemed content to undertake harassing missions, never involving more than three pieces against a target. It should be pointed out in this connection, however, that this enemy policy may have been dictated by the necessity of protecting his guns from our counterbattery fire.

3. *Counterattacks*

Concerted counterattacks, in the usual sense of the term, were never launched. That at least one abortive attack was made is evidenced by a captured document, the translation of which appears below:

"Ultra Secret Central Force Op Order No 4
Central Force CO, Iwabuchi, Mitsuji (or Sanji)
Central Unit Order

15 Feb 45

1. The city has fallen into hand-to-hand fighting since this morning, and 5 tanks and 9 armored cars are appearing and disappearing at every turn.
2. This unit will make preparations for an all-out suicide attack to annihilate the enemy to our front. On the night of the 15th each unit will carry out as many daring suicide attacks on the enemy to our front as possible. Although the time of the all-out suicide attack will be indicated in a separate order, preparations will be completed beforehand.
 - a. In addition to annihilating the enemy to the front, the suicide unit will plan to wipe out the enemy in the Malacanan Palace.
 - b. Prior to the all-out suicide attack, wounded will be made to commit suicide and documents and material will be burnt.
 - c. In the all-out suicide attack every man will attack until he achieves a glorious death. Not even one man must become a prisoner. During the attack friends of the wounded will make them commit suicide.
 - d. The Suicide (Nikko) Section will be at the head of the attack and will destroy the enemy tanks.
 - e. /Personnel/ will be lightly garbed in the attack and carry as much ammo as possible. Personal belongings and unnecessary articles will be burnt."

The only indication of this attack was an increase in enemy infiltration attempts on the night of 15-16 February.

Occasionally, when a position became untenable, isolated groups, usually composed of twenty to thirty men, executed frontal suicidal attacks which were easily repulsed.

Highly valued by the enemy but hardly worthy of the title "counterattacks" were infiltration raids by groups normally consisting of from ten to fifteen men carrying demolition charges. Missions were assigned in very general terms, such as "to destroy enemy installations in the rear areas paying particular attention to artillery". These infiltrators, operating within the built up section of the city, usually because separated or lost and were destroyed by our forces before they fulfilled their purpose.

4. *Espionage and counter-espionage*

The enemy frequently employed pro-Japanese Filipinos on intelligence missions. Interrogation of captured spies disclosed that they were not directed to gather any special or unusual intelligence but were instructed to report on the locations of troops, installations, movements, and strengths.

Endeavoring to make the most of their physical resemblance to the Filipinos and to take advantage of the American inability to distinguish between Orientals, Japanese members of special intelligence units allowed their hair to grow long and adopted civilian disguise to facilitate entry into our areas. It has been impossible to determine the degree of success achieved by these units. A pertinent document is set forth below:

“Ultra Secret 4th Bn Daily Order No 2 28 Jan 45, MANDA HILL
From: 4th Bn Co, OGAWA, Sautami
“To: All Co COs and Plat Ldrs

In accordance with Manila Naval Defense Force Op Order No 25, special reconnaissance units will be organized.

1. CO: Naval Lt (legal) ANDO, Masafumi.
- 2: Organization: Two teams (or less) of three men each will be sent by all Bns of the Manila Naval Defense Force from each of their plts.
3. Duties: Observation, reconnaissance, demolition, burning, surprise attacks, and stratagems as ordered.
4. Selection of personnel: Personnel for these units will be carefully chosen and appointed with attention to the following points:
 - a. Firmness of purpose (keeping secrets, avoidance of improper actions).
 - b. Bodily strength.
 - c. Build and features.
 - d. Consideration must be given to personnel fluent in English.
5. Equipment: Pistols, hand grenades, etc., as required.
6. Clothing: As required, but mainly civilian clothes.
7. Performance of duty:
 - a. For the present the personnel will be on duty in their plats, and the Plat Ldr may use them in the patrol duties of his own unit.
 - b. Except when carried out directly under the control of the /Force/ CO, training will be carried out by each unit CO, for his own men.
 - c. The /Force/ CO will use the teams either individually or in conjunction with one another.
8. Miscellaneous: Unit personnel may grow long hair if they have obtained permission.
A nominal roll of personnel selected will be immediately submitted.”

Goaded by their failure to put an end to guerrilla activity in Manila, the Japanese, in desperation, determined to take positive action by declaring that all Filipinos, women and children included, found in the battle areas were to be considered guerrillas and were to be exterminated. This decision was carried out in part. Below appears a translation of the document which directed this mass murder:

1. The Americans who have penetrated into Manila have about 1,000 army troops, and there are several thousand Filipino guerrillas. Even women and children have become guerrillas.
2. All people on the battlefield with the exception of Japanese military personnel, Japanese civilians, Special Constr Units (GANAPS in the Filipino language) will be put to death. Houses——" (Order breaks off here).

5. *Chemical Warfare*

One authenticated instance of the use of gas was reported on 12 February. During the house to house fighting in the Singalong District of Manila, a self-projecting vomiting-gas candle exploded in a room occupied by American troops. The soldiers, having immediately felt a stinging sensation in their eyes, withdrew and later became violently ill. Vomiting gas candles and frangible glass HCN grenades were discovered in dumps in the city and are known to have been in the hands of troops. This isolated instance, however, is believed to have been a lapse in command discipline rather than an authorized resort to chemical warfare.

A very few flame throwers were found in Manila, but none appeared to have been used.

6. *Armor*

One tank was encountered in Manila and it was destroyed by our tank destroyers on Faura Street on 16 February. On the same day, one armored car was observed on Dewey Boulevard.

7. *Summary*

In recapitulation, it may be said that the Japanese defense of Manila produced no innovations of consequence. The enemy's tactics and techniques gave evidence of the same strengths and weaknesses which have been apparent in his methods in other operations. In his favor were: his shrewd use of terrain; his excellent location and construction of individual positions; his ingenuity in improvising and adapting weapons; his skilled employment of individual weapons; and, above all, his great tenacity in defensive combat. He was guilty on the other hand, of several basic errors, among them; his inability to develop any degree of overall coordination in the plan of defense; his weak and ineffective employment of artillery; and his lack of appreciation of the potentialities of mines as defensive weapons.

The enemy, notwithstanding his deficiencies, proved himself a formidable opponent in the defense of a heavily populated area. Unquestionably he will profit by experience gained during the fighting in Manila, and, in consequence, it may be expected that some or all of his shortcomings will be corrected in the future.

PART TWO

ASSAULT TACTICS EMPLOYED

I. GENERAL PLAN

1. *Factors precluding early planning*

It is recognized that proper plans for the capture of a built-up area call for careful estimates of the situation based on detailed study of the city itself, and of enemy dispositions within and without it. The plans should comprise initial seizure within the city of area which gives advantage to the attacker in observation, fields of fire, means of communication, and which works to the disadvantage of the enemy in reducing his combat effectiveness and preventing or hindering his escape. Afterwards a general advance through the built-up area should be made. Formulating such plans for the capture of Manila was greatly influenced by several factors attributable not only to the enemy defense but also to special circumstances.

Initially, the plan of the XIV Corps in attacking Manila was complicated by several factors. Although to the U. S. Forces marching South from Lingayen Gulf the capture of the port of Manila at an early date was very necessary, in the early stages of the battle virtually all effort was directed to liberating American prisoners of war and Allied internees whom the enemy held at Santo Tomas University and at Bilibid Prison in North Manila. Special effort was also made to secure the vital installations of the water system. Advance elements of the XIV Corps came down from the North with great speed and drove rapidly into Manila, liberating the prisoners before the enemy could harm them. This drive resulted, however, not only in freeing the prisoners but also in securing virtually the whole of North Manila.

Another factor which prevented early planning was the difficulty in determining the location of main enemy dispositions within the city, or even if they existed. The Japanese defense of Manila comprised a strongly held core, the Intramuros, with its nearby fortified buildings, and surrounding this core, several isolated fortified localities. Units searched the city thoroughly as they went, yet struck nothing very formidable until reaching the center of the enemy defense. This rendered very difficult properly estimating the situation until major friendly forces were in contact with the bulk of the enemy.

2. *Estimate of the situation*

Before U. S. Forces struck the main line of enemy resistance in Manila there was almost nothing on which to base an estimate. After solid contact was made at the Pasig River, the rigidity of the enemy defenses on the far bank tended to force the plan of action into the elementary expedient of crossing further upstream and attacking the enemy in flank.

3. *Plan for the attack*

The XIV Corps, having secured North Manila to the Pasig River with two divisions abreast, the 37th Infantry Division on the right and the 1st Cavalry Division on the left, planned to move the 1st Cavalry Division and two regiments of the 37th Infantry Division Eastward, effect with this force a double crossing of the Pasig River, and attack Westward with divisions abreast against enemy fortifications in the Intramuros area. One regiment of the 37th Infantry Division was to move directly across the Pasig River and attack enemy positions on the South bank.

4. *Conduct of the attack*

The 37th Infantry Division (less one regiment) moved eastward through North Manila, crossed the Pasig River and attacked West toward the enemy held Intramuros. The remaining regiment of the 37th Infantry Division held the river line directly across the Pasig from Intramuros. The 1st Cavalry Division, abandoning contact with the 37th Infantry Division, executed a wide wheeling movement inland and swept into Manila from the Southeast. This maneuver actually worked somewhat to the detriment of the overall attack, as it permitted a very strong center of enemy resistance, the Makati Circle area, to survive for days directly between the divisions, a thorn in the side of each. In this respect it is believed that by-passing too many strong isolated Japanese centers of resistance is a mistake, as the number of troops necessary to contain the Japanese will far exceed the number of Japanese contained. When Japanese Forces are deployed in rigid defense, it is considered advisable to destroy all enemy as the attack progresses. When it is advisable to by-pass centers of resistance, such centers of resistance should be reduced immediately, employing available reserves. If sufficient reserves are not immediately available, progress of the attack should be controlled by phase lines until strong points are eliminated.

Nevertheless, elements of the XIV Corps closed in on Central Manila and attacked the Japanese prepared defenses of which Intramuros was the hub. The fighting which resulted in the destruction of these defenses and the final elimination of enemy resistance in Manila was in reality that which characterizes the attack of a fortified locality, and for discussion may be divided into three categories, namely normal fighting in city streets, the reduction of strong earthquake proof buildings, and the attack upon the Walled City (Intramuros). The fighting did not fall together chronologically into these categories, as several strong enemy-held buildings were contained and by-passed to permit the assault upon Intramuros, and within Intramuros itself normal street fighting was resumed.

5. *Limitations on bombing and artillery fires*

As it was desired to capture Manila as intact as possible, and since a large fraction of the civil population was still inside the city when U. S. Forces attacked, bombing of Manila or any part of it was forbidden, and the use of artillery fire against enemy fortifications was greatly restricted. Initially, sections of the city were attacked by Infantry, using small arms. Artillery fire was restricted to counter-battery and to observed fire on known enemy strong points. The casualty rate was alarming and the attack was slowed up to a point where more powerful measures were required. These measures consisted of attaching tanks, tank destroyers, and 4.2" mortars to the infantry, and a greater use of field artillery. However, as the main line of Japanese resistance was reached, it became apparent that destruction of the buildings in the path of advancing troops was essential. Artillery fire was still restricted to known Japanese positions but so many enemy riflemen were interspersed within the positions that artillery area fire immediately in front of the advancing troops became the rule rather than the exception. A general overall program of destruction by artillery fire was never employed. Japanese heavy mortars, 20 and 40mm guns, and even large caliber artillery were found in city buildings. The combination, therefore, of counter-battery (directed from observation posts and by plane spot), together with close-in fires in support of the advancing infantry resulted in almost total destruction of the defended areas.

II. SPECIFIC METHODS USED

1. *Street fighting*

Tactics recommended in FM 31-50 for combat in towns were used to great advantage by U. S. Forces in the street fighting in Manila. In the ordinary street fighting most principles used were orthodox.

Streets were used as boundaries and units advanced through the interior of the city block by means of alleys or breaches made in walls. Platoon leaders assigned definite houses and buildings for squads to search. It was found that whenever a street is used as a boundary it should be made inclusive to one unit.

Small units worked from building to building, endeavored to secure the top floor of a building first and then work down through the lower floors. When a squad was used to search an isolated building half the squad remained outside covering the grounds and entrances while the other half entered and searched the building. On larger buildings where platoons were used, the support squad covered the advance of the assault squads which moved in by rushes. Once entrance was gained, one squad would immediately attempt to gain possession of the top floor leaving the other squad to secure the ground floor; however, the stairway leading to the top floor was protected in order to insure a line of supply and evacuation until the intervening floors were secured. Whenever a unit could advance from the top of one building to the top of another this was done and the new building cleaned out by the top to bottom process. In fighting from room to room explosives were freely used to make holes in walls through which grenades or flame throwers could be used against the enemy in adjacent rooms.

Automatic weapons were constantly used in giving support and covering fires, and usually machine gun sections were split to attach one light and one heavy MG to each assault platoon. Mortars were used mostly to provide smoke screens, and to place fire on enemy in the open.

In all aspects of street fighting it was proved highly important not to use too many troops to search or attack a building, but once entered, to reinforce immediately those forces which had executed entrance. As the attack moves on, a small containing force should be left in the building to prevent enemy infiltrators from re-occupying positions just reduced.

Communications: In city fighting, sound power telephones and runners were found to be the only reliable means of communication between company and platoons. Between higher units the SCR 300 proved the best, however it was usually necessary to operate the set from the upper level of a building.

2. *Assault teams*

Squads were organized into small assault teams with bazookas and demolitions. Heavier assault weapons such as flame throwers were kept with the platoon Hq. group available on call. In lightly held buildings most enemy were widely scattered trying to cover entrances, but as the more strongly fortified buildings were encountered it was found that enemy positions commanding the inside of a building were just as formidable as those directed to the outside. This necessitated the increased use of special assault teams which were employed to reduce enemy bunkers both inside and outside of buildings. In general the assault teams employed normal technique of automatic riflemen achieving fire superiority by firing into embrasures while flame thrower or demolitions teams approached and destroyed the enemy position. Prior to

the Luzon operation the 37th Infantry Division had undergone an extensive training program whereby each rifle company had a team of platoon size well versed in the technique of assaulting fortified positions. These assault teams proved invaluable in capturing the fortified buildings just outside Intramuros.

3. *Reduction of Fortified Buildings*

a. *General*

The enemy defenses of Manila included several heavily fortified buildings which stood in the open ground and guarded the approaches to the Intramuros, and which were of the strongest type of construction, being built to resist the earthquakes common in the Islands. These buildings, strongly fortified inside and out, were mutually supporting in fire, and the assault made on them by elements of the XIV Corps incorporated most of the principles advanced by FM 31-50, Part 1, "Attack on a Fortified Position." While the main line of Japanese resistance was based on these bastions, nevertheless enemy riflemen occupied every conceivable place of vantage and were often so cleverly concealed that the effect upon attacking troops was the same as if a wide area were being defended. It is true that this line was breached with the capture of the Post Office Building and the assault on Intramuros then took place, but the later capture of three buildings to the South, the Legislative Building, Finance Building, and City Hall proved to be the heaviest fighting in Manila.

b. *Development of Technique*

The modern buildings in Manila were strongly built, earthquake proof, of heavily reinforced concrete. Many of them were surrounded by parks and wide streets which precluded anything except direct assault across open ground. Buildings were laborously converted into individual fortresses of the most formidable type with sandbagged gun emplacements and barricades in the doors and windows covering all approaches to the building, and emplacements within the building itself covering the corridors and rooms. The reduction of each building was actually a series of battles in itself. The problem of assaulting such a fortified building, constructed to be earthquake resistant, required a specialized solution. The first such buildings to be encountered was the Police Station. Indirect artillery fire was placed upon it and fire from 4.2" mortars and infantry supporting weapons. The building was assaulted by riflemen—unsuccessfully. Tanks were then brought in, and although two of them were put out of action by mines and enemy fire, they succeeded in placing sufficient direct fire upon all sides of the building to permit the final assault. Even then the Japanese did not withdraw and the last of them were destroyed in sandbagged emplacements dug deep in the floor of the basement. The same methods were used against other well constructed buildings, until the large public buildings South of the Pasig River were encountered; namely, the City Hall, the Metropolitan Water District Building, the General Post Office, and the Agricultural, Finance and Legislative Buildings. Here it was necessary to bring in 155mm howitzers for direct fire, from ranges of less than 600 yards. As building after building was captured, the techniques improved until the final assault upon the Finance Building, which incorporated all the techniques developed by experience up to that time. In that action 155mm howitzers, tank destroyers, and tanks fired against two sides of the building. Because the rest of the city was in friendly hands, the direct fire was confined to the ground and first floors in order to prevent the danger of shells going through open windows. As the lower portions of the outer walls disintegrated, the walls and roof settled; but the concrete was so strongly reinforced that the structure bent rather than collapsed. The guns were then moved and fired at the other two walls, and the procedure continued. Just prior to the assault, tanks and M-7's fired

HE and WP into the upper stories, thereby driving the Japs into the basement; and immediately upon cessation of this fire, the infantry assault teams attacked, effected an entrance through breaches in the walls, and succeeded in eliminating the last of the enemy garrison in about four hours.

4. *Method of Assault*

It is necessary to employ all weapons possible in the preparatory fires in order that troops gain a foothold in a fortified building. High-angle artillery and mortar fire prove worthless against buildings of this type. Direct fire, high velocity, self-propelled guns, like tank destroyers, M-7's, and tanks prove effective only after hours of shelling have literally torn the building asunder. Direct fire with 105mm howitzers is useless. However, the 105mm howitzer on carriage M7 may be used to enlarge the cracks created by 76mm tank destroyer guns. During all shelling, the enemy either will move to elaborate previously prepared tunnels in the basement or at least away from the outside defenses so that our troops may move in. Preparatory fires should be as intense as possible to disorganize and shock the fanatical enemy. A building of more than one floor is often untenable if the enemy holds the upper floors, even though our troops are inside. Therefore, the best method of using the direct fire weapons is to pound the roof and top floors first and work the fire down to the basement and ground floor, thus placing our troops on equal terms with the enemy insofar as elevation is concerned. However, if the intention is to demolish the building completely, the direct fire weapons should be employed on the ground floors first. This will prevent the debris and rubble from falling on and forming a large pillbox on the lower floors. The use of artillery at direct fire ranges involves considerable risk from enemy small arms. Service of the piece precludes use of even the light protection afforded by the gun shield, therefore firing positions must be cleared of snipers before the artillery is brought in.

After the assault guns have completed their preparatory fires, heavy fire should be continued from machine guns and rifles placed in adjoining buildings. Smoke must be placed on any adjacent enemy positions capable of firing on the friendly assault units. The enemy will immediately attempt to remain his guns in the building under attack, and this necessitates moving troops very rapidly into the building. Once committed to the assault, troops must not falter. Embrasures caused by our weapons should be used as points of entry rather than normal entrances, which will be covered by fire. The number of casualties will be reduced if, when moving into a Jap occupied building, the attacking units deliver fire from the beginning of the attack even though no enemy fire is received initially. At times the enemy permitted our troops to enter a building, and held their fire until our troops were entering corridors or other exposed places. Also the Japanese frequently dropped grenades from stories above the ground floor. Our troops found that by firing continuously as they moved forward, the enemy tended to open fire sooner and thus enable friendly units to locate his position. This type of fire also greatly reduced the accuracy of enemy return fire.

Inside the building, the attackers should bring corridors, windows, doorways, or other likely sources of enemy resistance under fire as soon as possible. When the first corridor or section of rooms are taken, additional troops should be committed at once. Speed is essential and as soon as a stairway is secured these troops should advance to the upper floors, allowing no time for the enemy to recover. Attackers should get into the highest floor possible immediately either by going up stairs or directly up the walls, since once the upper floors are under control, the remaining enemy can be eliminated much easier. A point to stress—*go into the building firing*. The enemy is usually badly dazed by our tremendous fire power and by continuing heavy fire at

possible positions. By using grenades in closets, fortifications, and rooms or hallways before entering, the assault units can further upset the enemy and prevent him from getting set for the close-in fighting. Rocket launchers or rifle grenades can be used to fire on positions which cannot be reached by hand grenades. The troops on the lower floor should continue to eliminate all resistance encountered. Guards should be left covering all holes and pillboxes suspected of having an underground entrance. Holes and pillboxes should be burned out by flame throwers and then covered, and small parties should be organized to search the building thoroughly, checking debris, holes, and all possible hiding places. In one instance, a large number of Japanese were driven to the basement of a large building. Friendly troops held the balance of the building. Flame throwers and grenades were employed through holes which engineers blew in the floor and the enemy was annihilated without loss to our troops. In attacking buildings and fighting inside, it is important that only sufficient men be assigned to a single assault mission. A small, well-trained unit can take an objective of this type more efficiently than a force which is so large as to cause confusion among the troops. A platoon can often establish a foothold in all except very large buildings. However, this unit should be followed closely by another unit so as to take full advantage of any favorable situation or to counteract any unfavorable one which may have arisen.

The fight for a large fortified building may go on for days, with troops fighting from corridor to corridor and room to room. At night a defensive perimeter must be thrown around the building if at all possible or the enemy will reinforce from the outside. The perimeter system must be organized within the building as well, else the enemy will reoccupy by night the favorable positions he lost during the day.

5. *Mine Removal*

Most of the mines found were improvised from depth bombs, high explosive shells, and aerial bombs. The technical problem of disarming was less difficult than the tactical problem of removing them from fire-swept areas. Among the several methods employed, one of the most effective in the South Manila area was as follows:

Infantry occupied the ruins of each side of the street to prevent close-in rifle fire. A tow cable was attached to the front of a tank. With four engineers behind the tank it proceeded along the street toward the mine field, firing machine guns and cannon at the enemy positions. When the mines were reached, the tank stopped its cannon fire but continued with machine gun fire. One engineer ran forward to the nearest mine, disarmed it, and after attaching the tow cable, dashed back to the rear of the tank. The tank, continuing fire, pulled out the mine by backing away. The routine was continued, using alternate engineers, until the field was cleared. The tank and infantry then advanced to new positions. A well-qualified mine removal man can accomplish the disarming and removal in ten to fifteen seconds, and the Japanese do not seem to be able to direct their fire on a man in that length of time.

6. *Assault on Intramuros*

The assault upon Intramuros was unique. A thick masonry wall averaging 20 feet in thickness surrounded Intramuros. Extensive gun emplacements and tunnels in the wall itself had been constructed by the Japanese. Maximum use was made of the apparently impregnable cover to protect enemy defensive installations. The assault upon it was characterized by a prodigious use of direct fire artillery, tanks, tank destroyers, and overhead artillery fire for one hour prior to the attack. In the final assault of the Walled City, the 145th Infantry Regiment used an entire company of medium tanks, an entire company of tank-destroyers, a special assault-gun platoon, two flame thrower tanks, and

the regimental M-7's from the Cannon Company plus an additional platoon from the 148th Infantry. Artillery pieces up to and including 155mm howitzers were used in direct fire missions also, but their particular vulnerability to small arms fire precluded their extensive use. Great difficulty was had in getting direct fire weapons across the Pasig River and into position because of the intensity of enemy fire. The whole attack on Intramuros was delayed until the heavy assault guns could be brought over and placed into battery. The main purpose of the direct fire was to breach the walls, and two places were selected where the masonry was to be opened. Such was the organization of fire that each gun had its own part of the area in the wall to be destroyed. The hour's bombardment, however, did not open the wall cleanly, but rather crumbled it so that foot troops could climb over without having to use ladders. When the breaches were made, one at the North end of the city and the other at the Northeast corner, the assault units moved in. The 129th Infantry attacked across the Pasig River from the North in assault boats (after shooting steps into the river embankment with 76mm tank destroyers), while the 145th Infantry attacked overland from the West. So heavy was the preparation, that entrance was gained almost without opposition. Once our units were inside Intramuros, normal street fighting again took place, except in Fort Santiago. This was a medieval fort, containing many dungeons and deep recesses and tunnels, filled with Japanese. Among the expedients found workable in combating the enemy therein was the sealing of deep cavities by demolition teams. The extinction of other pockets to which access was difficult was effected by pouring gasoline into them and igniting it with WP grenades.

7. Special Techniques

a. Observation Posts in Street Fighting

In some cases it was very helpful to have an observation post in a high building some distance to the rear of the attacking units, with direct communication to the attackers. Because of the limited visibility in many cases this rear CP was able to observe and report to the attacking company actions and locations of the enemy. In close-in fighting, the attacking companies should have the SCR 300 channel number of the adjacent units, so that in an emergency direct communication may be established by switching to the appropriate channel. This means is recommended only for emergencies or situations where the information might become worthless after a few minutes; for example, enemy escaping from a strongpoint.

b. Use of Flame-throwing Tanks

In one instance, Japanese held the second floor of a building and commanded the stairways by the use of hand grenades thrown from sandbagged positions out of sight. A flame-throwing tank was brought into the doorway and maneuvered into position to shoot flame up the stairs into enemy defenses. The Japanese were driven out and the assault troops siezed the stairs. On another occasion a flame-throwing tank discharged its flame through a window into a deeply recessed and sandbagged machine gun position, destroying the enemy.

c. Effect of Unfused Projectiles on Walls

Considerable advantage was thought to be gained by the use of unfuzed 155-mm HE shells for the purpose of opening holes in heavy walls. While the ballistic properties are not noticeably different without the fuze, observers agreed that the initial penetration with unfuzed shells created a more pronounced fissure than was caused by the use of HE with fuze delay. This fissure responded readily to subsequent use of HE with fuze delay.

d. *Night Operations*

Night attacks through the rubble and debris of a defended city are extremely difficult and hazardous. The many hiding places make it impossible to keep from bypassing Japanese who have to be hunted out the next day. Movement is difficult and silence is almost impossible. Any attacks made at night in the city should be local and against known positions and terrain. Attacks against buildings should not be launched after 1600. The enemy had the distinct advantage of being in the dark while our troops were definitely silhouetted when approaching the building. Also the large number of mines used by the Japanese in Manila made night movements extremely dangerous. Moves of a minor nature are desirable and advantageous, but large-scale and continuous moves should be avoided. Usually the danger of disaster involved is too great to compensate for the advantages gained.

8. *Conclusions*

a. Street fighting in Manila was normal and advanced no principles or tactics not already covered in FM 31-50.

b. The stubborn Japanese defense of large fortified buildings standing in open ground necessitated use of combined tactics of assault on fortified positions and combat in towns, in order to secure their reduction.

c. The unique situation of assaulting a medieval rampart presented itself. Large numbers of assault guns and artillery pieces including those of medium caliber were laboriously and dangerously emplaced within close range of the rampart, and only after employing direct fire and heavy bombardment did the guns succeed in driving the defenders from the walls and opening breeches for assaulting troops.

PART THREE

ANNEXES

I N D E X

<i>Annex</i>	<i>Title</i>
1	General Orientation Map
2	Disposition of Manila Naval Defense Force
3	Organization Chart—Manila Naval Defense Force
4	Organization Chart—Kobayashi Heidan
5	Far Eastern University
6	Rizal Stadium
7	Ice Plant Building
8	Metropolitan Theater
9	General Post Office
10	Ground Floor, General Post Office
11	Second Floor, General Post Office
12	Santa Teresa College
13	Pillbox in Front of Santa Teresa College
14	Room in Santa Teresa College
15	New Police Station
16	Southwest Corner of New Police Station
17	Strongpoint New Police Station
18	Connecting Trench from Emplacement to Wall
19	Entrance to South Wall—Intramuros
20	East Side—Ice Plant Building
21	Street and Building Organization
22	Defenses of Legislative Building
23	Defenses of Finance Building
24	Sketch of Ice Plant
25	Sketch of Aquarium
26	Typical Street Intersection
27A	Typical Pillbox
27B	Typical Pillbox
28	Pillbox and Connecting Trench
29	Pillbox Construction
30	Miscellaneous Pillboxes
31	Typical Pillbox
32	Barricade
33	Barricade in Passageway
34	Typical Minefield
35	Vito Cruz Minefield
36	Grass Skirt Grenade
37	447mm Rocket
38A	20cm Rocket
38B	20cm Rocket
38C	20cm Rocket
39	Map of Intramuros
40	Map of Port Area
41	University of the Philippines

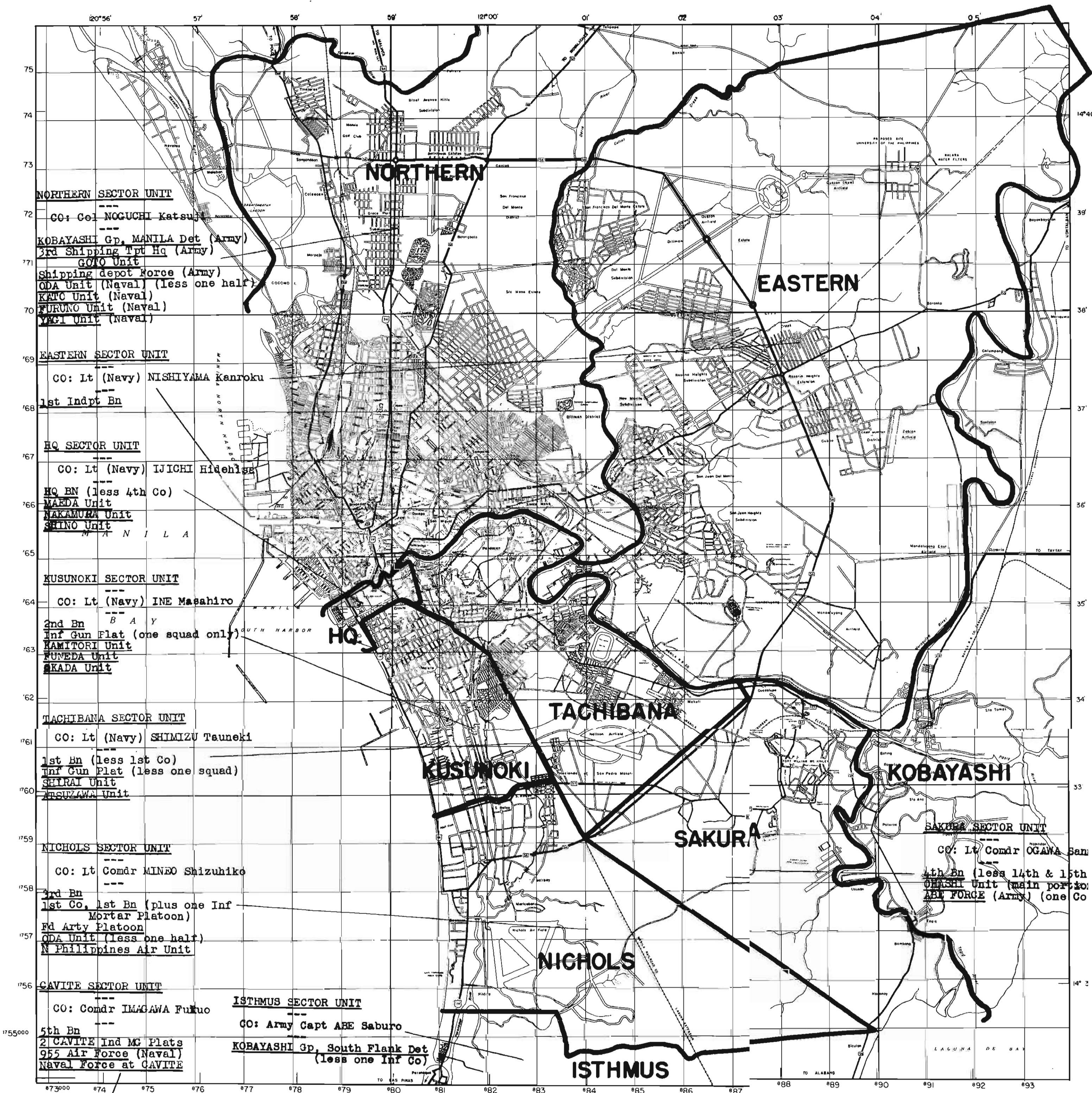
General Orientation Map
Annex

$$B \quad A \quad Y$$

INDEX

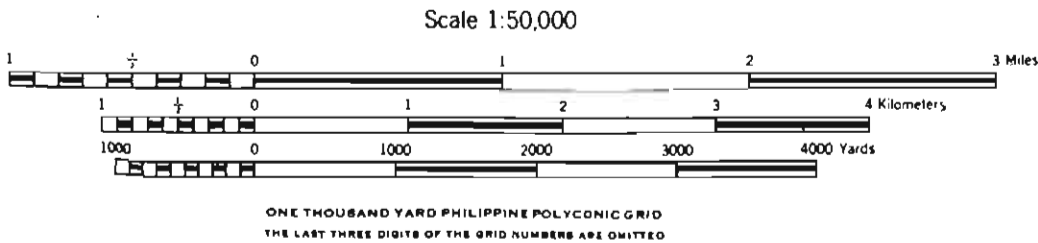
- ① Location of Typical Minefields
- ② Far Eastern University
- ③ General Post Office
- ④ Ice Plant Building
- ⑤ Metro Theater
- ⑥ Intramuros
- ⑦ Port Area
- ⑧ Legislative Building
- ⑨ Santa Teresa College
- ⑩ Finance Building
- ⑪ New Police Station
- ⑫ Street intersection (Dart & Oregon)
- ⑬ Army Navy Club
- ⑭ Rizal Stadium
- ⑮ Street Intersection (Vito Cruz & Taft)
- ⑯ Bilibid Prison
- ⑰ Manila Hotel

Dispositions of Manila Naval Defense Force
Annex 2

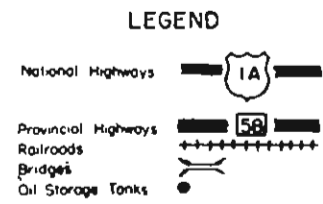
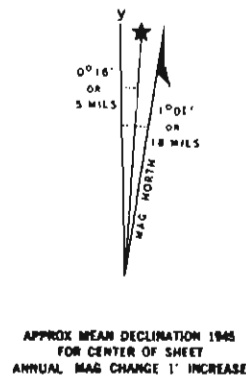


INCLOSURE # 3
DISPOSITIONS OF MANILA
NAVAL DEFENSE FORCE,
per OpOrd, dated 21 Jan, 45
issued by Manila
Naval Defense Force,
and other documents.
Compiled by OB Section
G-2 XIV Corps

Prepared under the direction of the Engineer, U.S. Army, by the 69th Engineer Topo Co, February, 1945. Compiled from 1:100,000 Central Manila, AGS, S. Captured Jap Map, 1:50,000, Manila; and Manila 1:9, X Bomber Command, USAAF, January, 1945. Additional information from Terrain Study 94, Vol. 2, and Terrain Handbook 41, AGS, SWPA.



NOTE: OFFICERS USING THIS MAP WILL MARK HEREON CORRECTIONS AND ADDITIONS WHICH COME TO THEIR ATTENTION AND MAIL DIRECT TO THE CHIEF ENGINEER, GHQ, SWPA, A.P.O. 500



MANILA AND VICINITY
LUZON P.I.

Organization Chart, Manila Naval Defense Force

Annex 3

ORGANIZATION CHART, MANILA NAVAL DEFENSE FORCE
as of late-January 1945

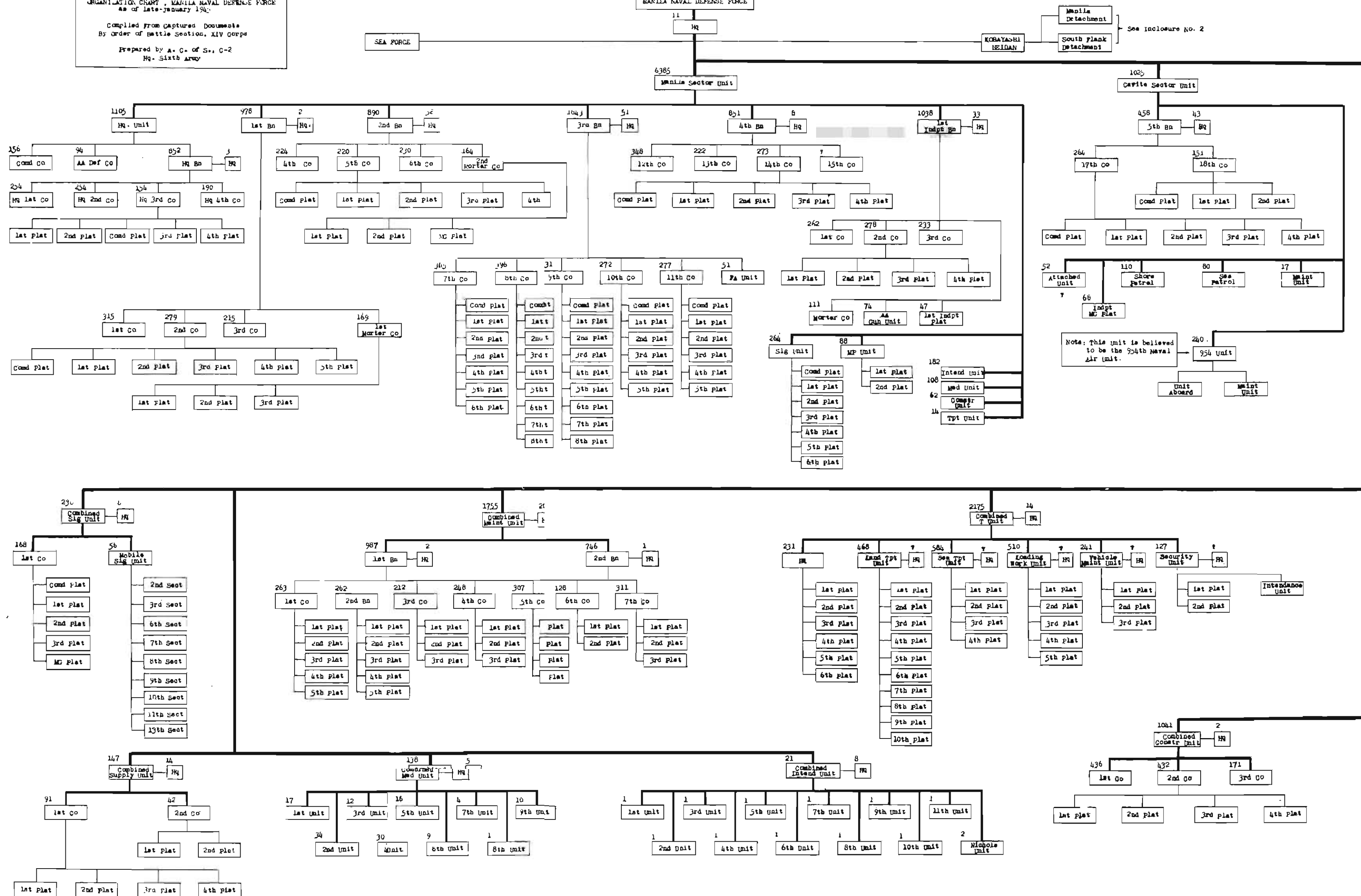
Compiled from Captured Documents
By Order of Battle Section, XIV Corps

Prepared by A. C. of S., G-2
Hq. Sixth Army

(13,000)

MANILA NAVAL DEFENSE FORCE

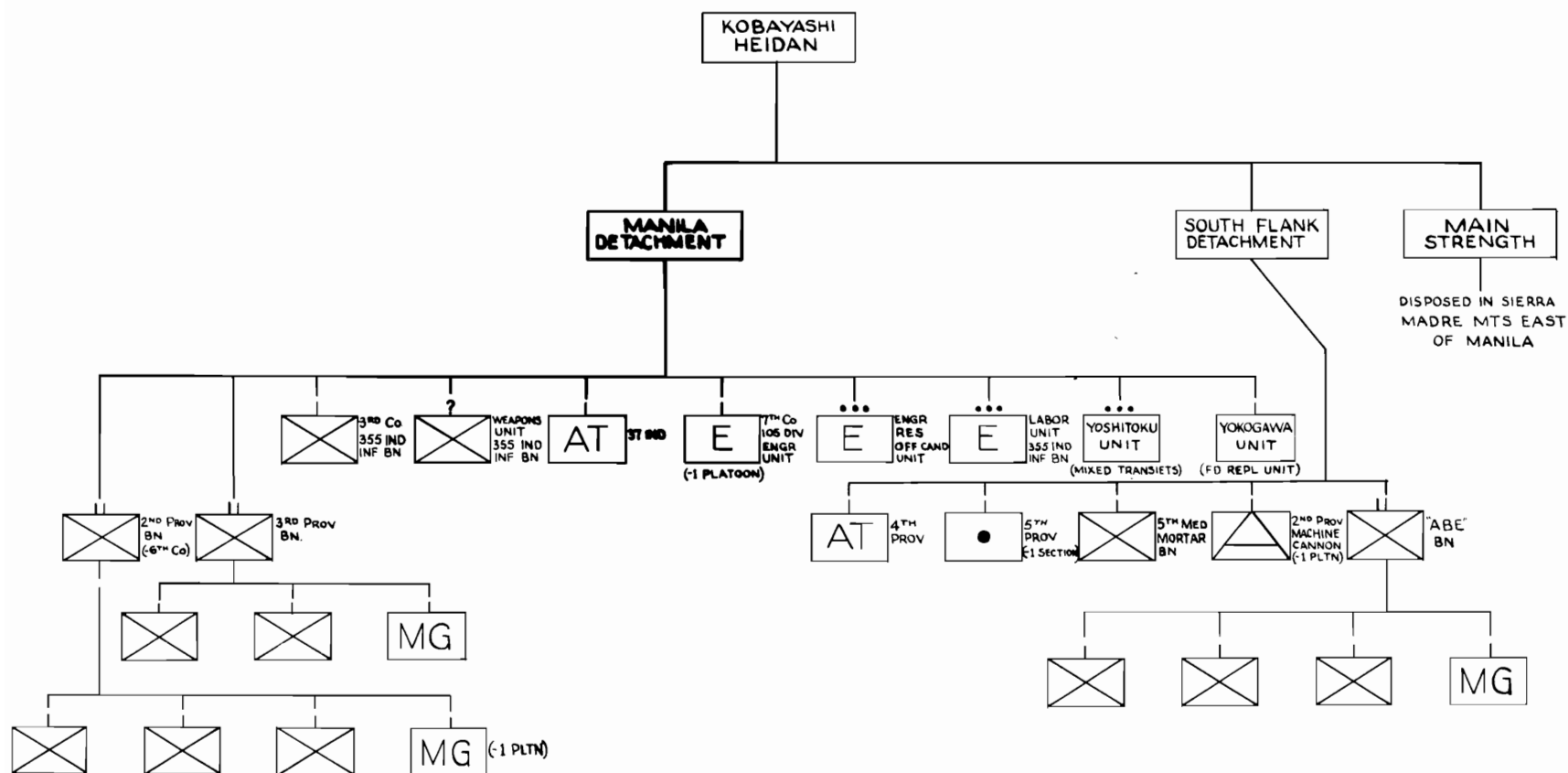
Note: Total Strength figure (in parenthesis) is estimated;
Other Strength figures are from enemy documents.

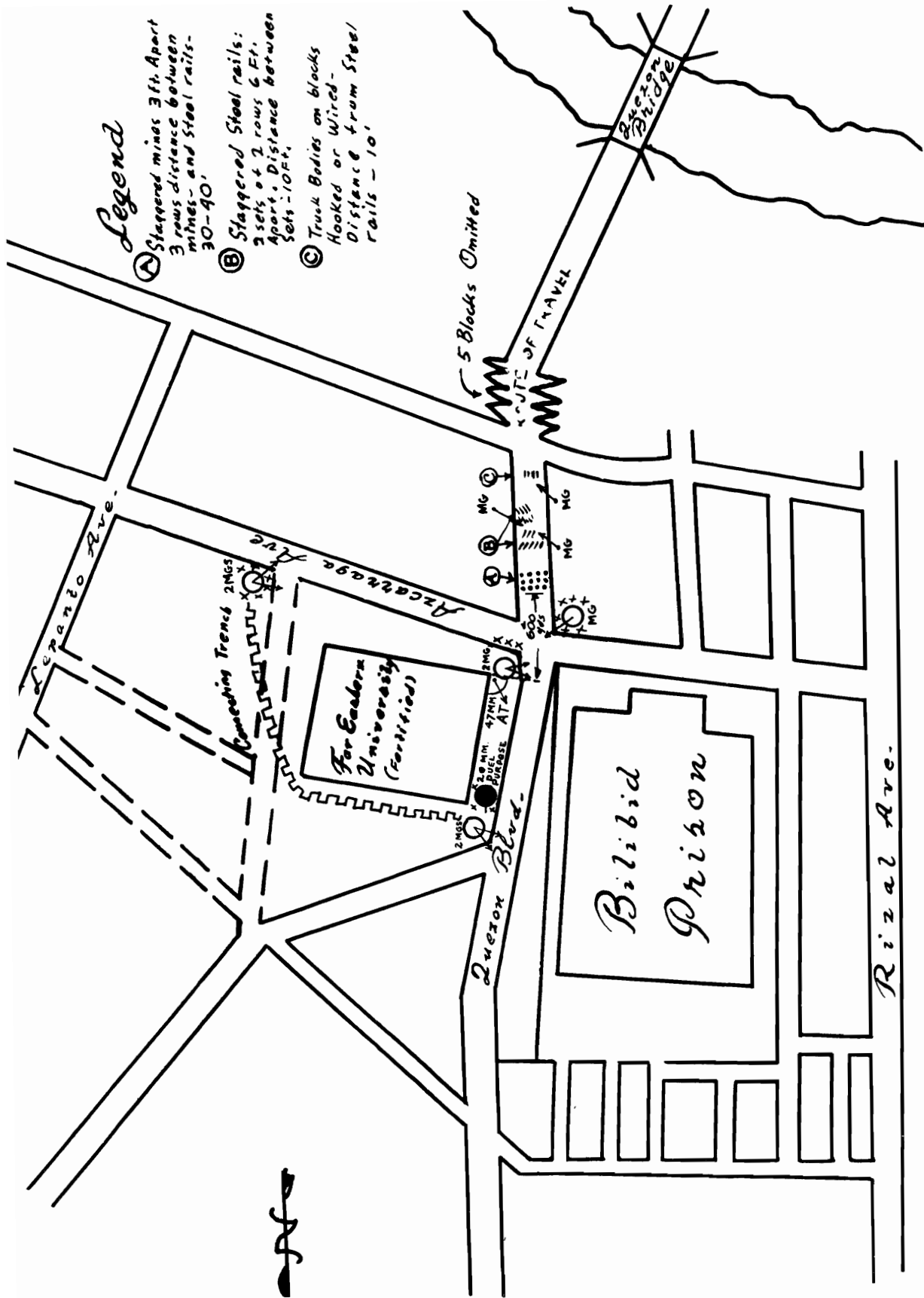


ORGANIZATION CHART

MANILA DETACHMENT } KOBAYASHI HEIDAN
SOUTH FLANK DETACHMENT }

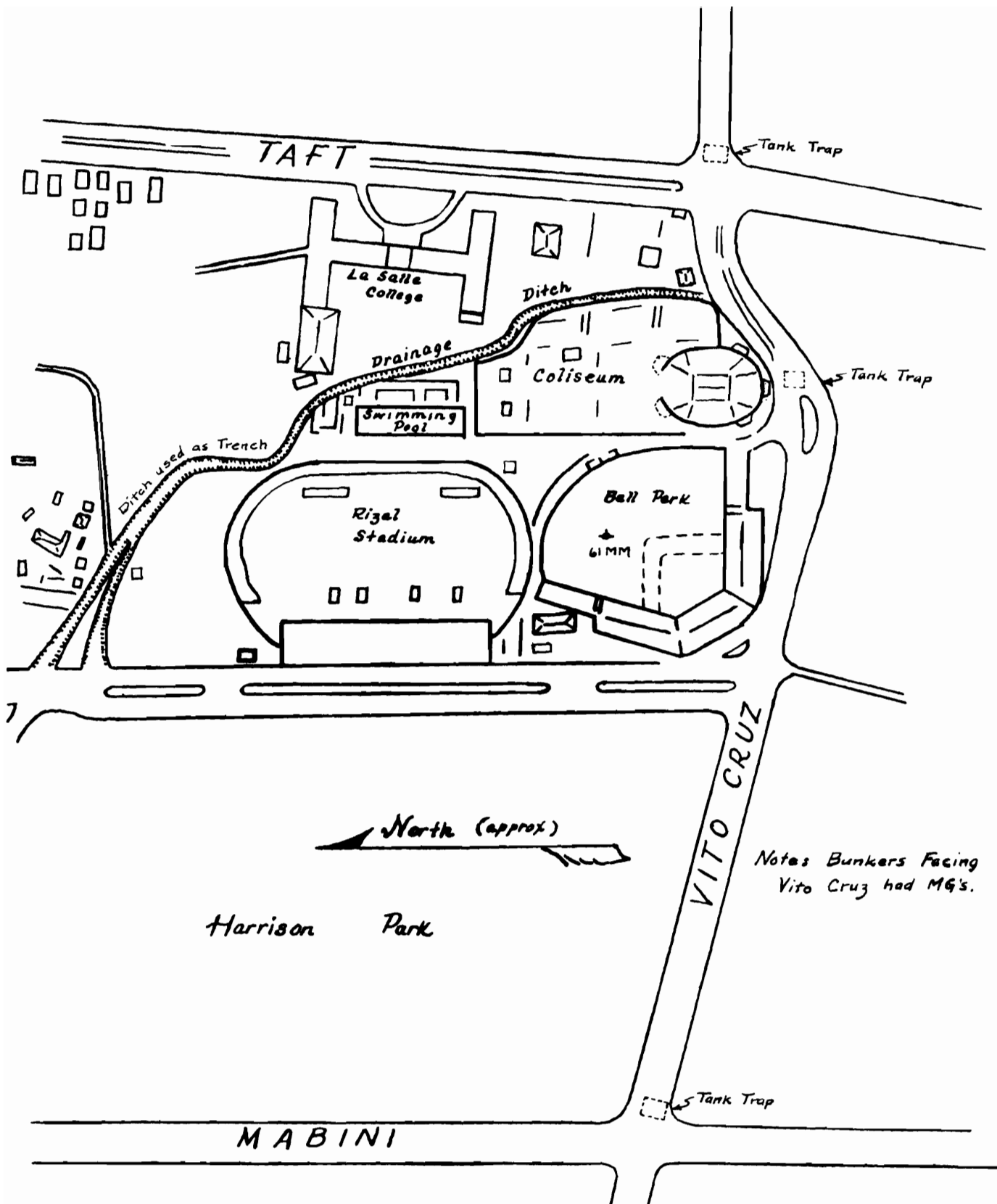
COMPILED FROM CAPTURED DOCUMENTS
BY ORDER OF BATTLE SECTION HQ XIV CORPS





Legend

- ① Staggered mines 3 ft. Apart
3 rows distance between
mines - and steel rails -
30-40'
- ② Staggered Steel rails:
2 sets of 2 rows 6 ft.
Apart. Distance between
sets - 10 ft.
- ③ Truck Bodies on blocks
Hooked or Wired -
Distance from Steel
rails - 10'



Notes Bunkers Facing
Vito Cruz had MG's.



Ice Plant Building
Annex 7



Metropolitan Theater
Annex 8



General Post Office
Annex 9



Ground Floor - General Post Office
Annex 10



Second Floor - General Post Office
Annex 11



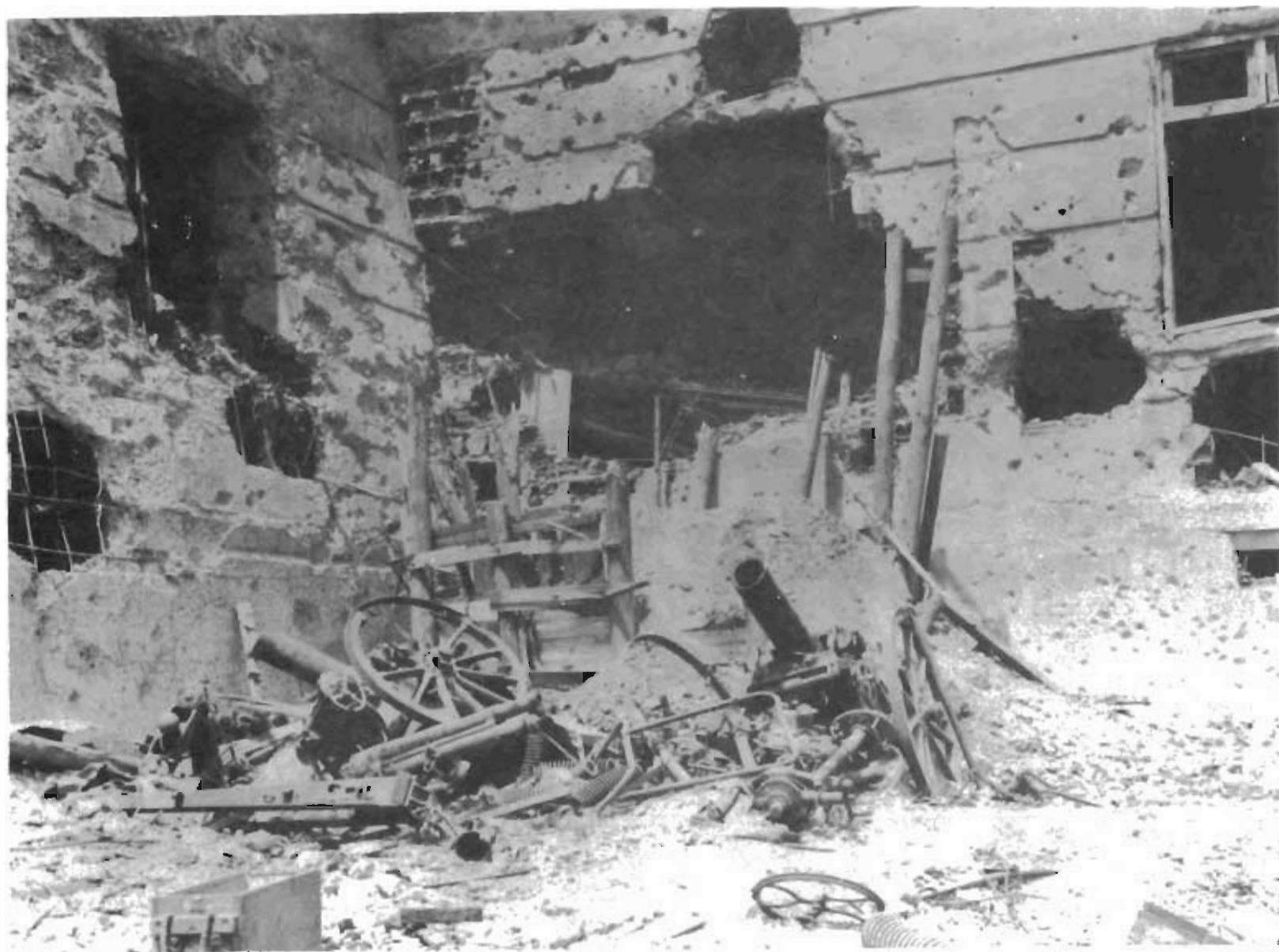
Santa Teresa College
Annex 12



Pillbox in front of Santa Teresa College Building
Annex 13



Room in Santa Teresa College
Annex 14



Front view of New Police Station
Annex 15



S7 corner of New Police Station
Annex 16



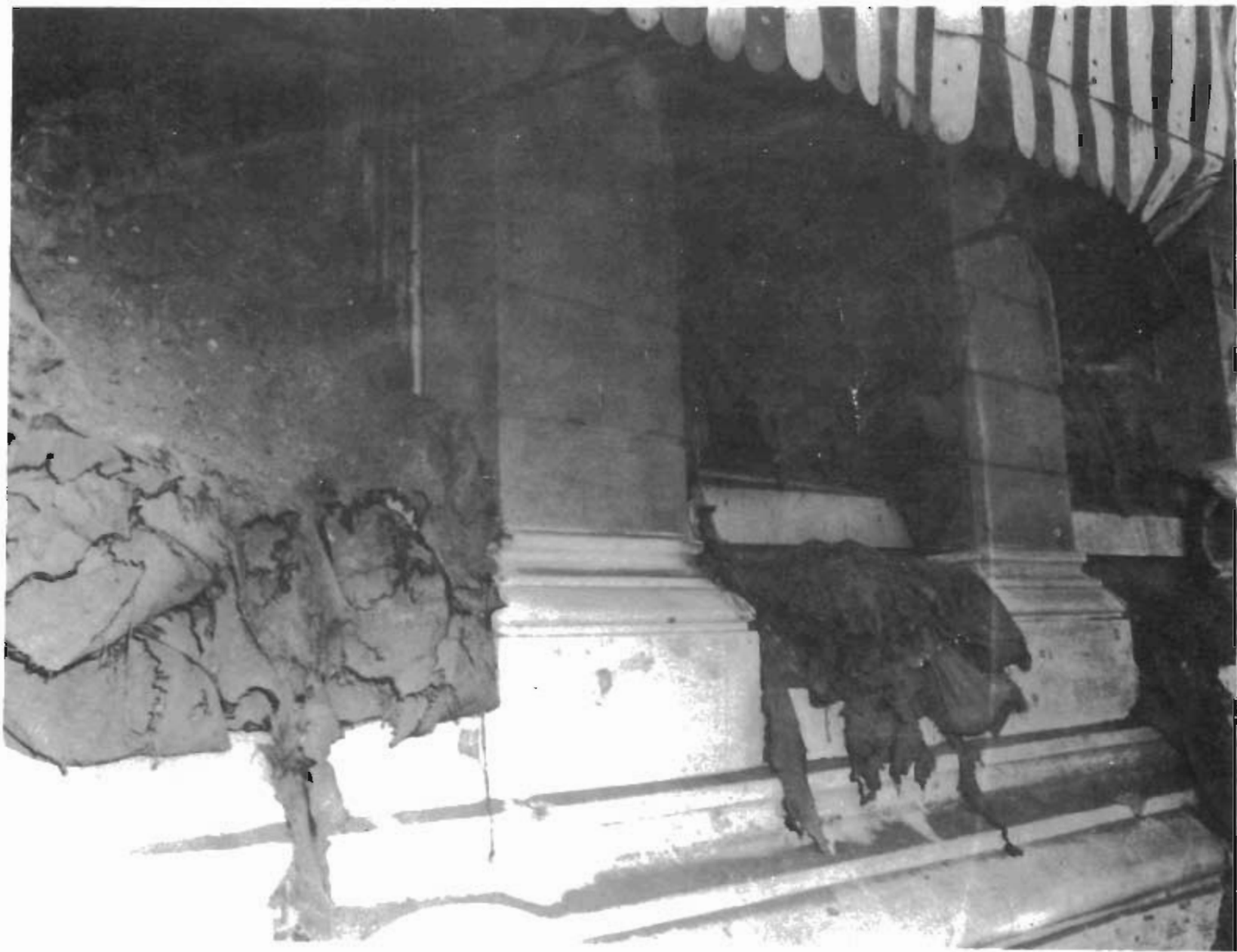
Strongpoint New Police Station
Annex 17



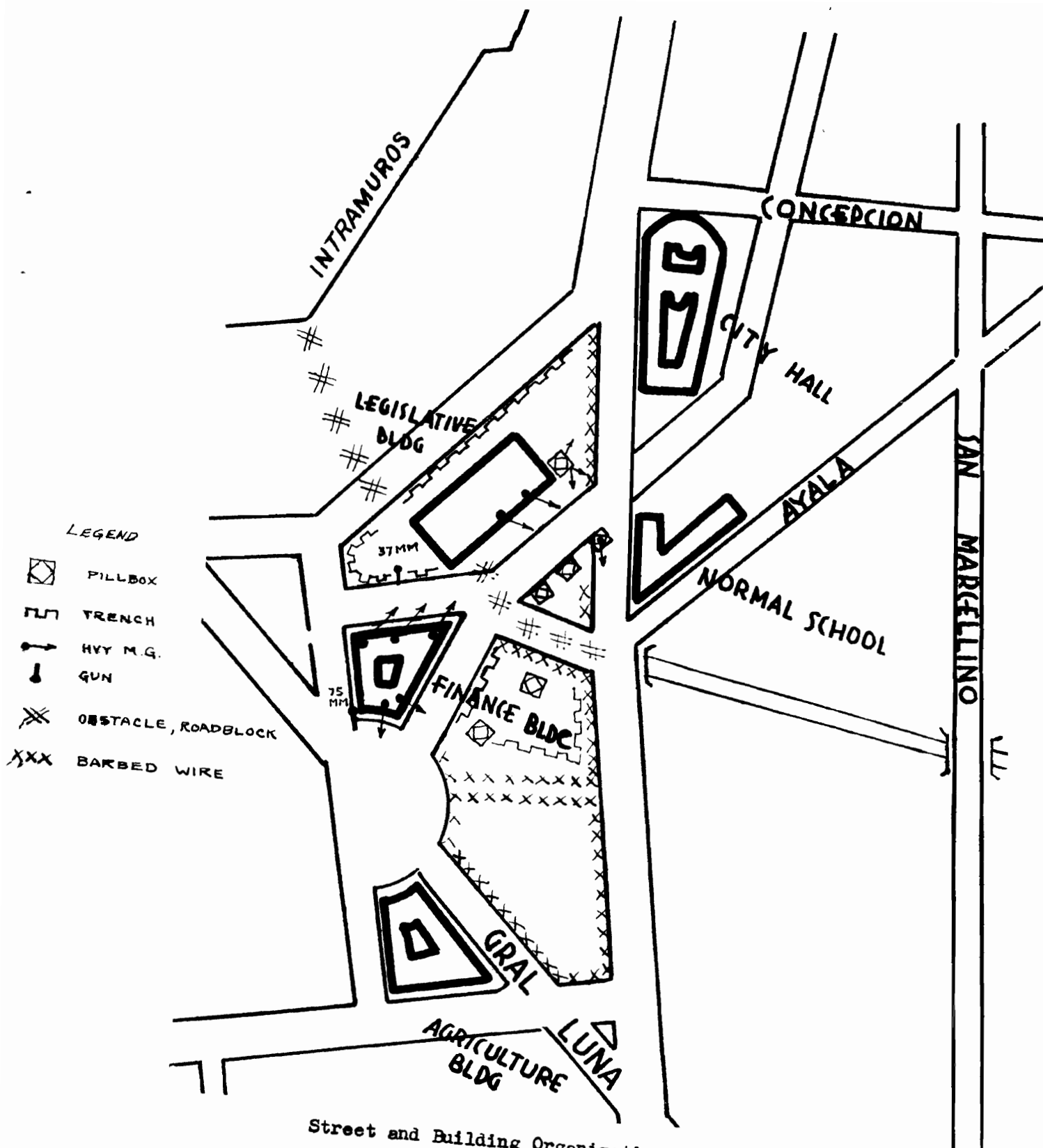
Connecting Trench from emplacement to Wall
Annex 18



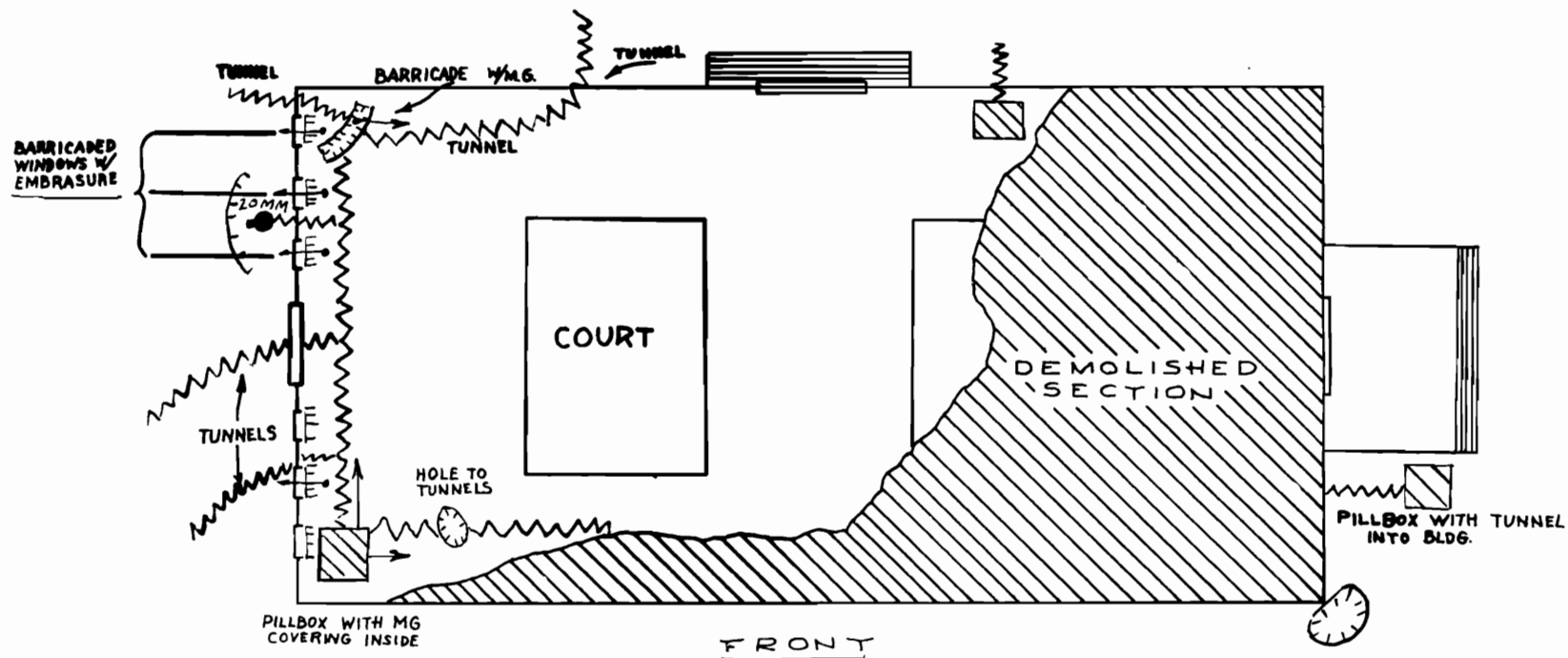
Entrance to South Wall - Intramuros
Annex 19



East side Ice Plant Building
Annex 20

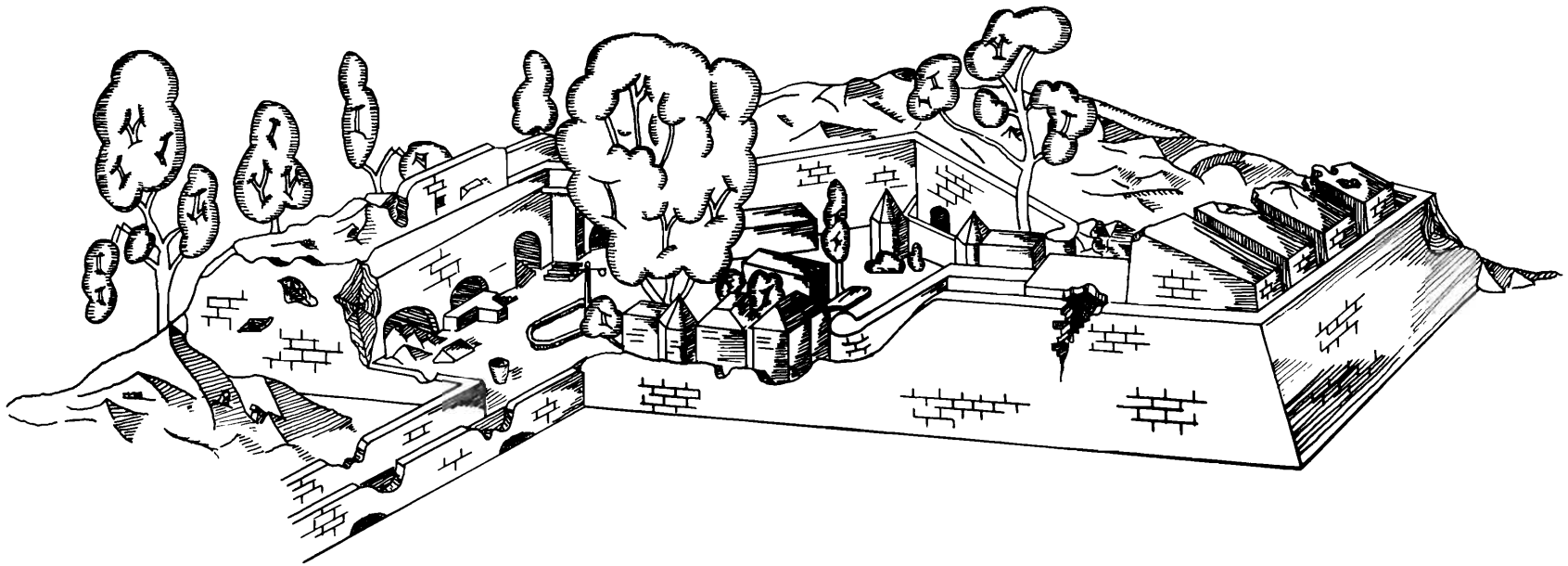


Street and Building Organization
Annex 21



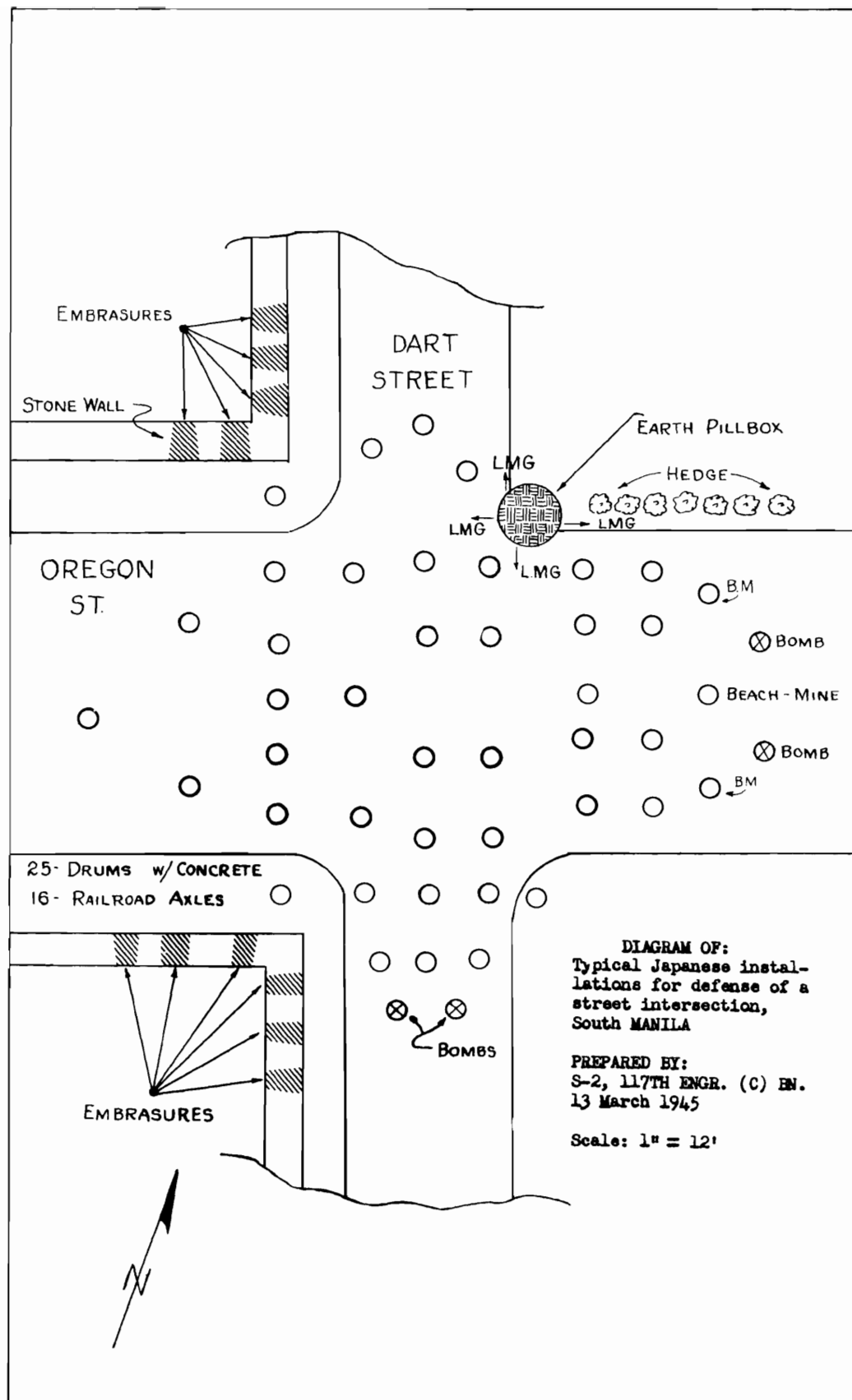
LEGISLATIVE BUILDING
 PLAN of GROUND FLOOR
 SHOWING ENEMY EMBLEMENTS

NOTE : UPPER FLOORS - WINDOWS ALL
 BARRICADED - SNIPERS AT
 VARIOUS POINTS



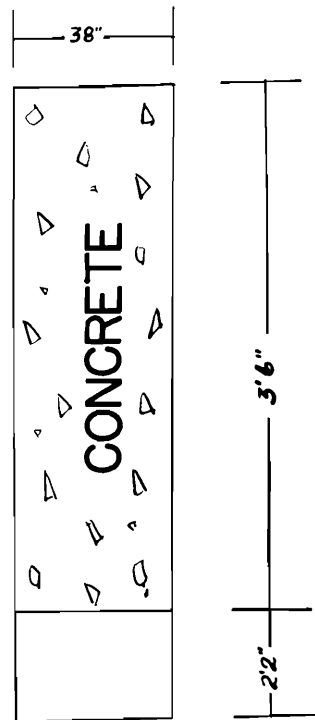
SKETCH OF AQUARIUM LOOKING SOUTH FROM WALL
OF INTRAMUROS

TROOPS ENTERED THROUGH BREACH MADE BY DIRECT
FIRE FROM ASSAULT GUNS AND TANKS. 115 ENEMY
DEAD WERE COUNTED IN THIS BASTION.



Typical Street Intersection
 Annex 26

END VIEW

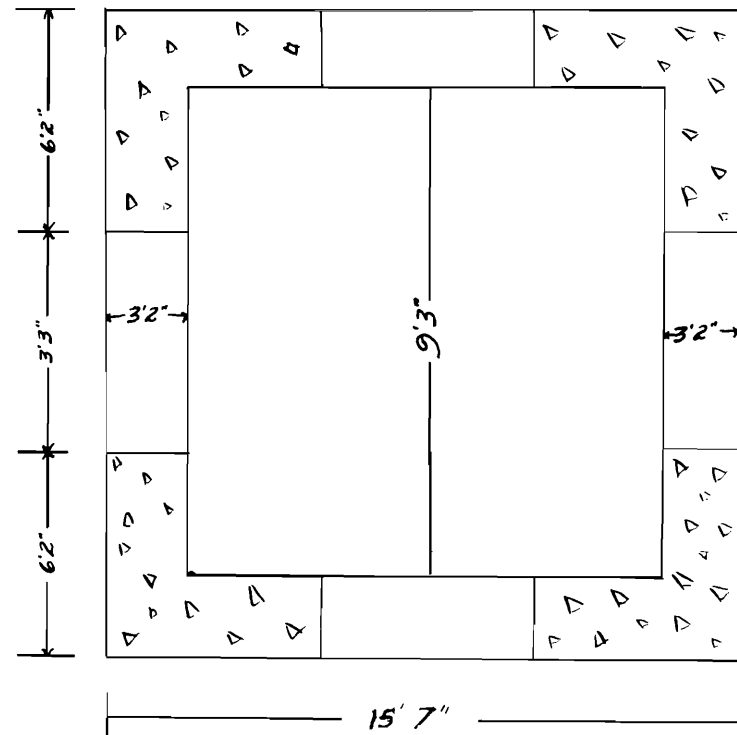
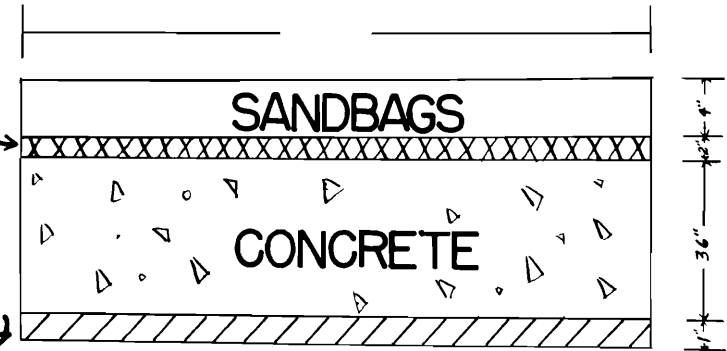


NOT DRAWN TO SCALE

CROSS SECTION - TOP

WIRE MESH FENCE

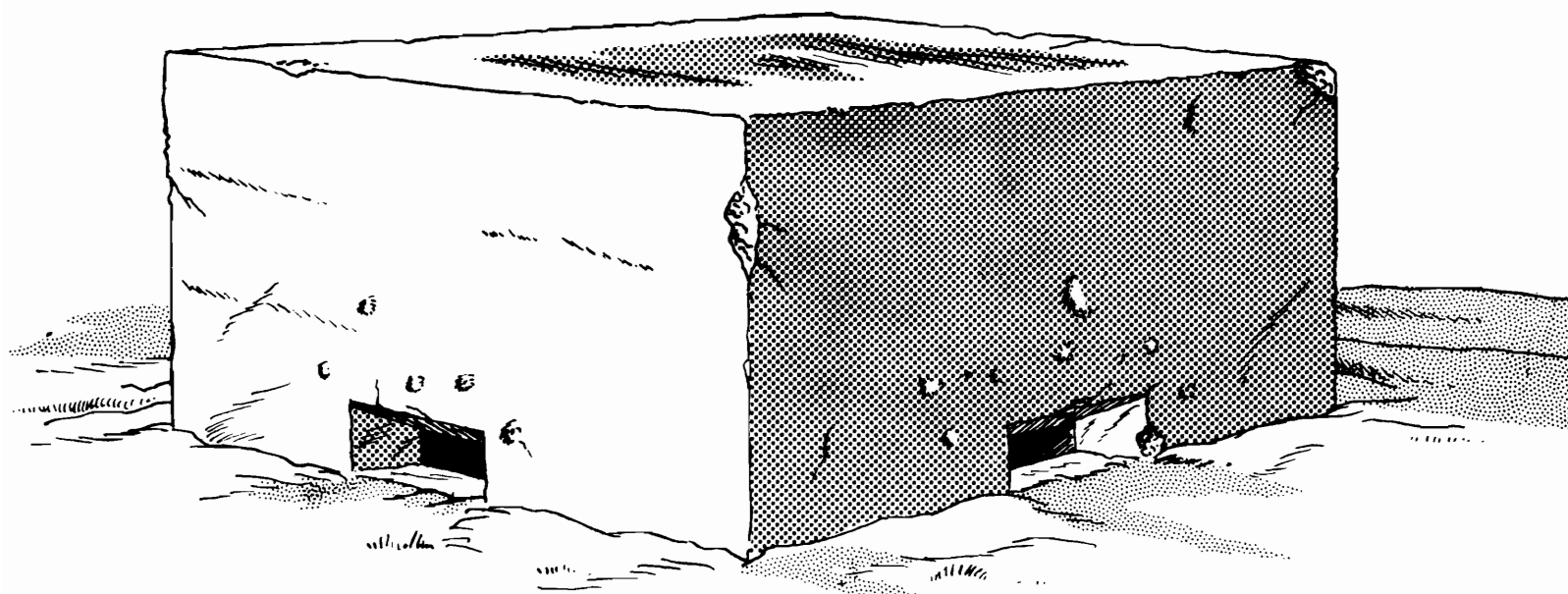
1" STEEL
PLATE



HORIZONTAL SECTION

Typical Pillbox
Annex 27 A

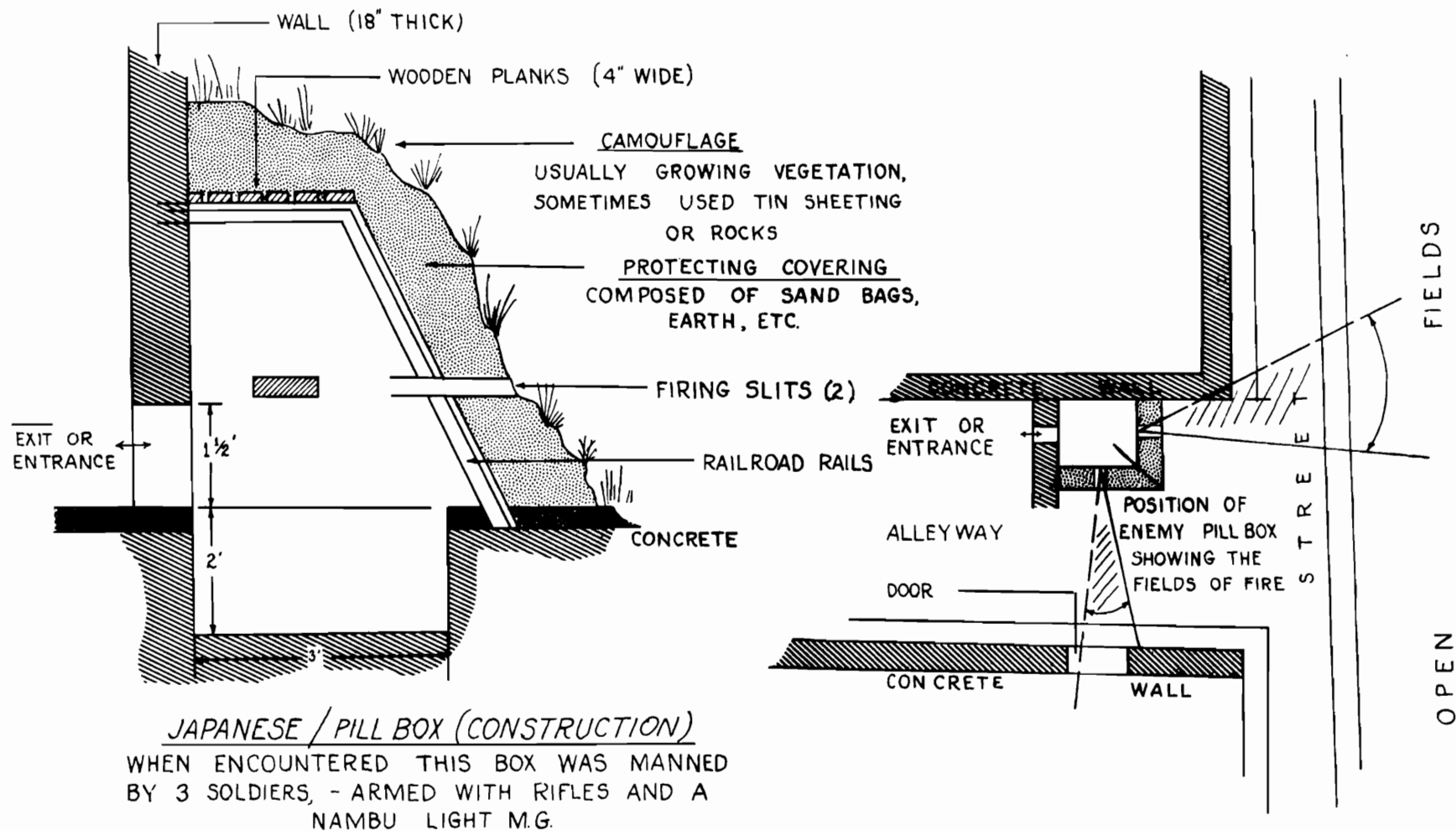
PILLBOX AT PACO R.R. STATION

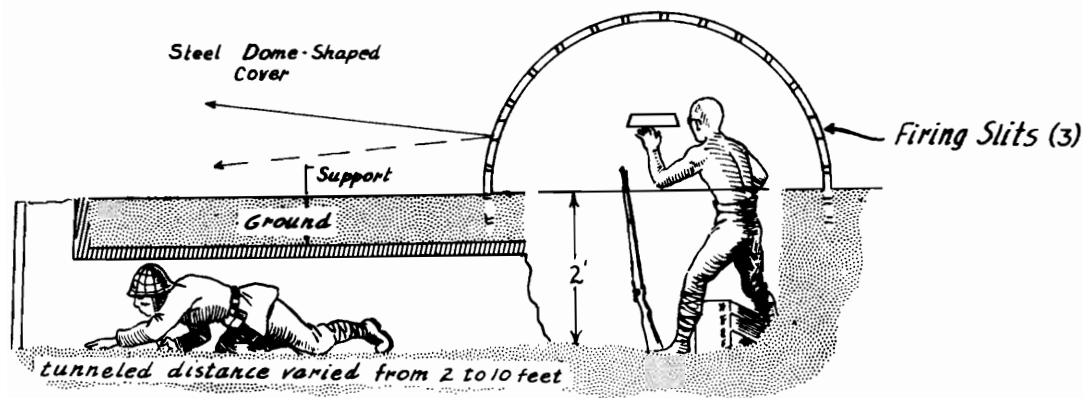


ELEVATION



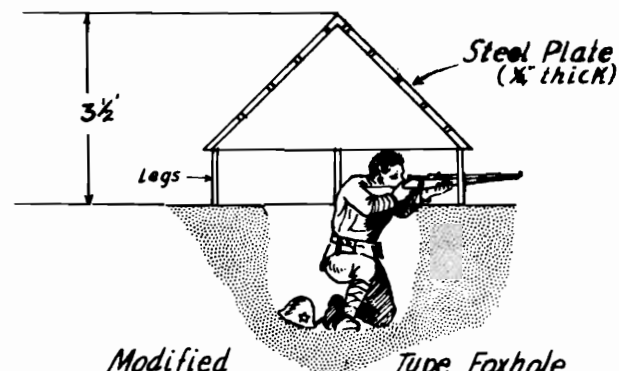
Pillbox and connecting Trench
Annex 28





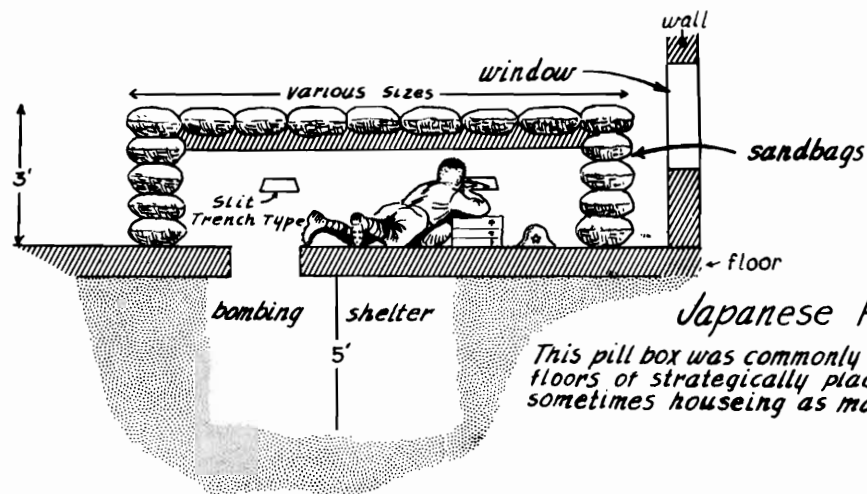
Japanese Pill Box

2-man type, usually defended
an area requiring a limited
field of fire.



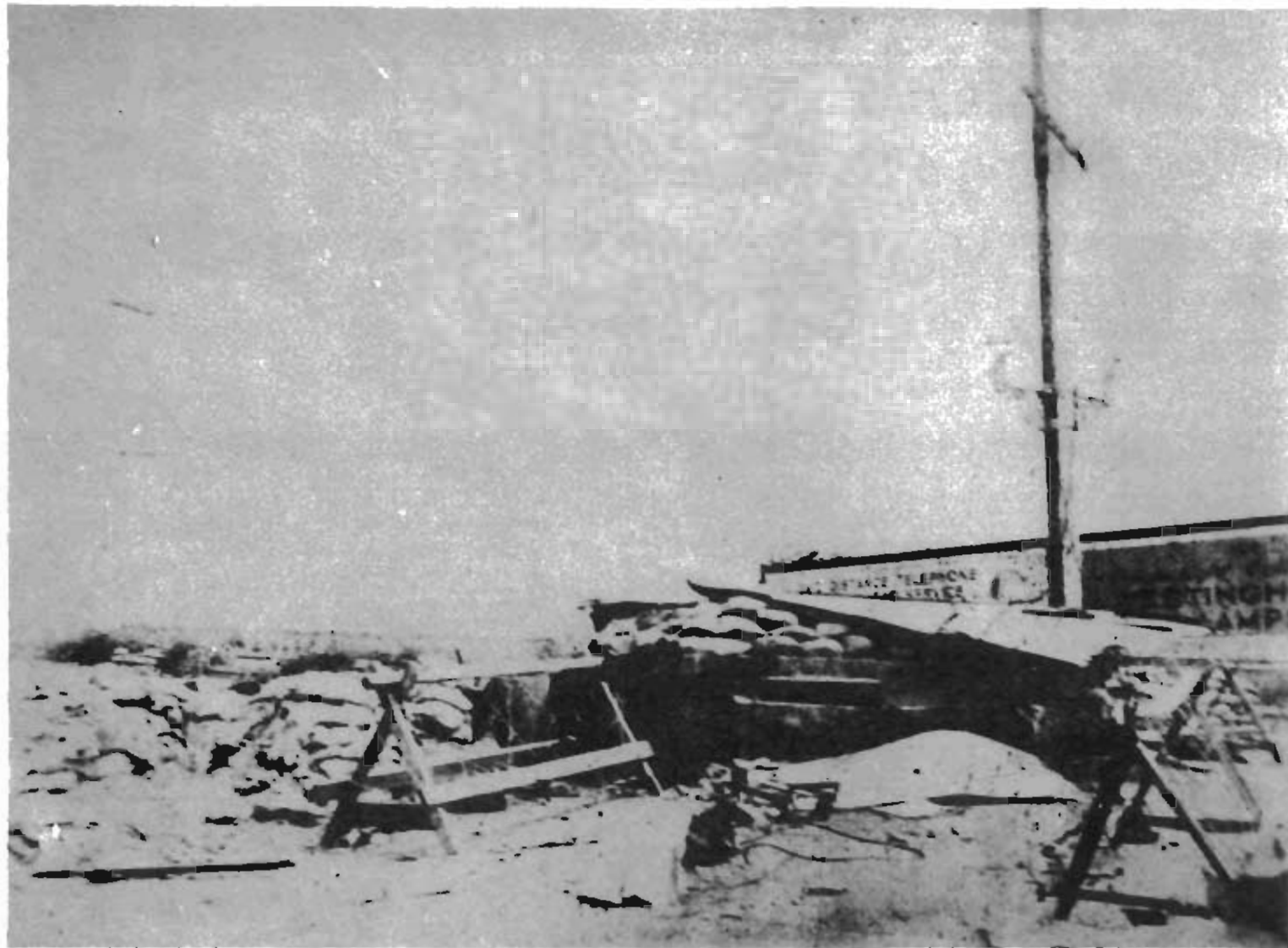
Modified Type Foxhole

This particular emplacement was
located at the gate entrance of a
factory. All around visibility was
afforded by the type of construction
used.



Japanese Pill Box

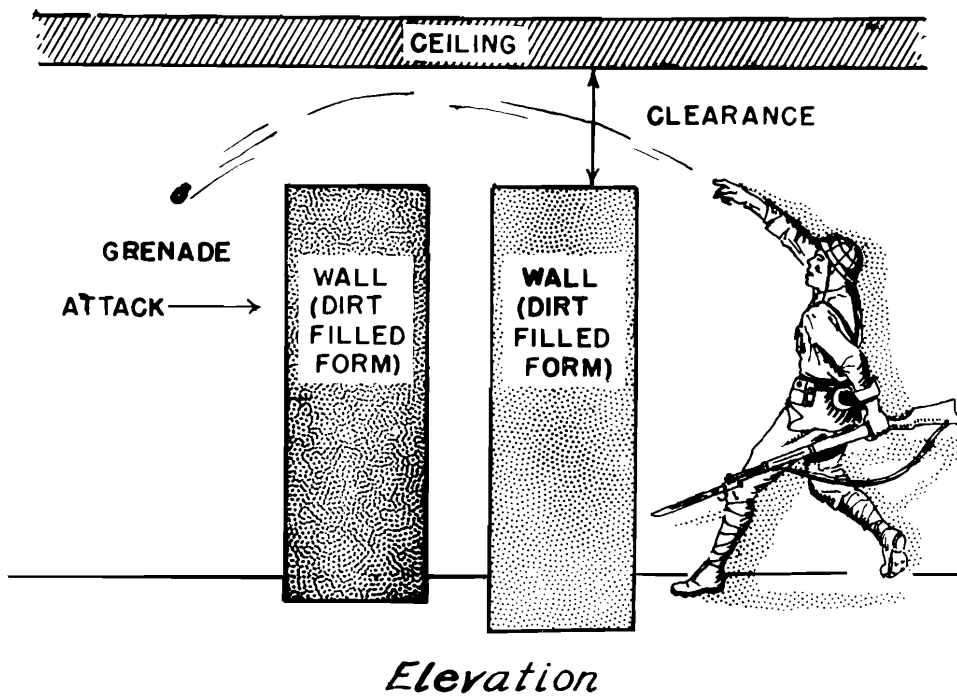
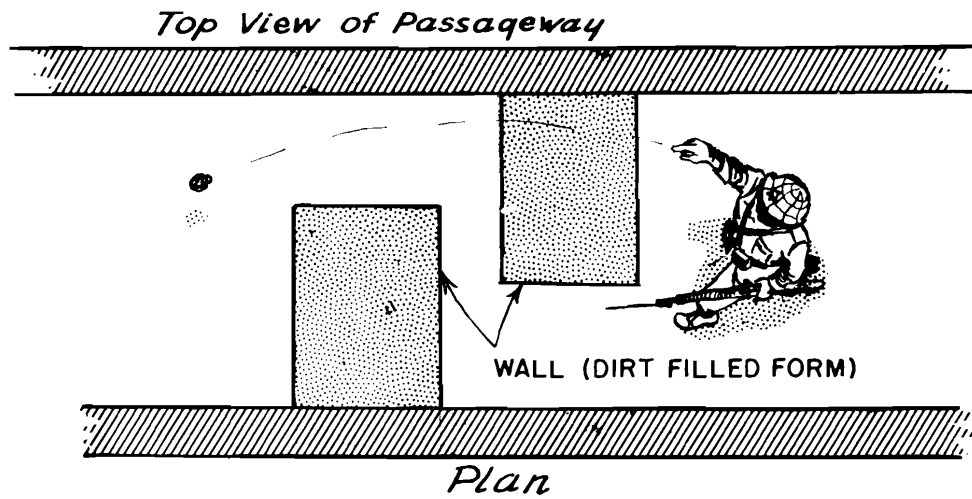
This pill box was commonly found on the ground
floors of strategically placed buildings,
sometimes housing as many as 12 men.

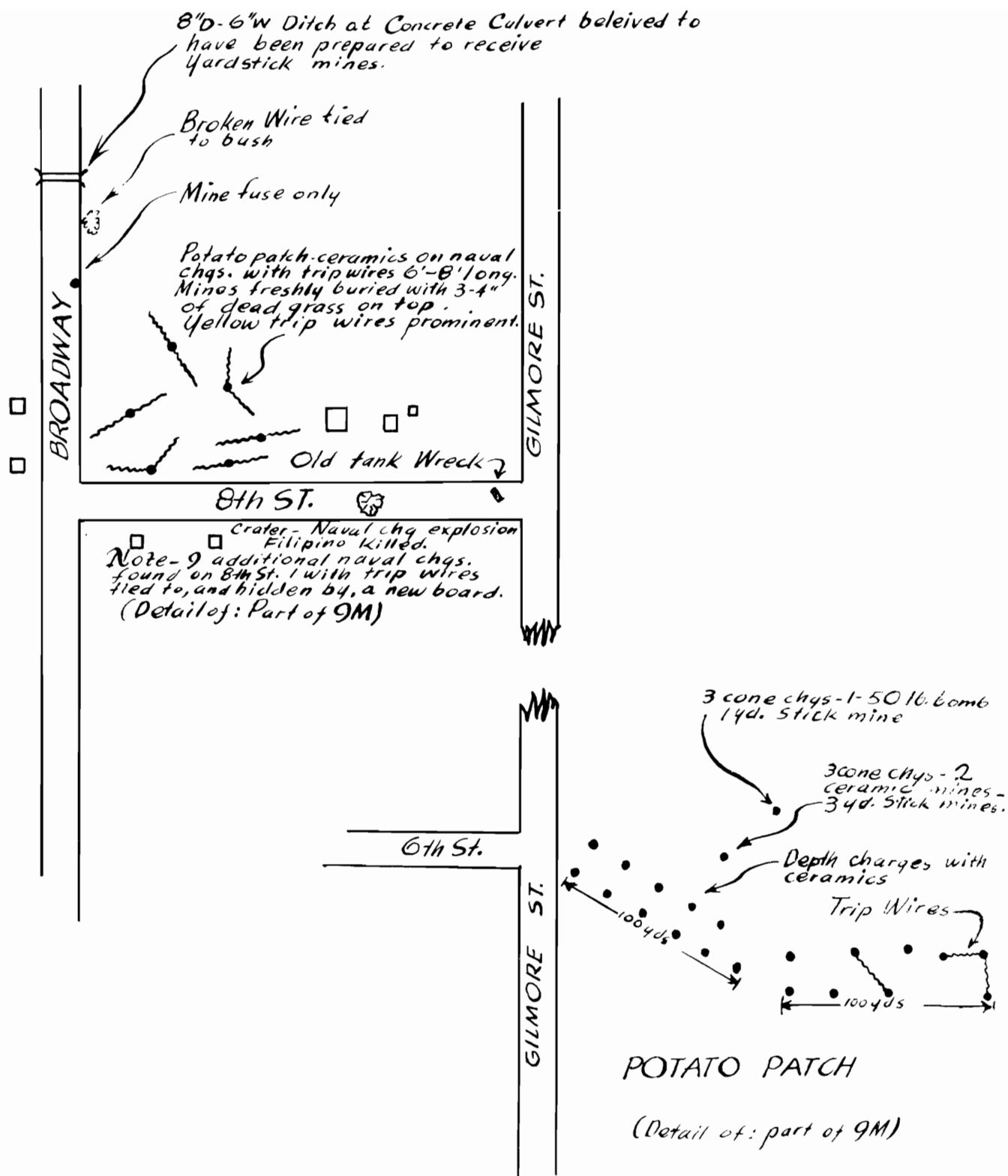


Typical Pillbox
Annex 31



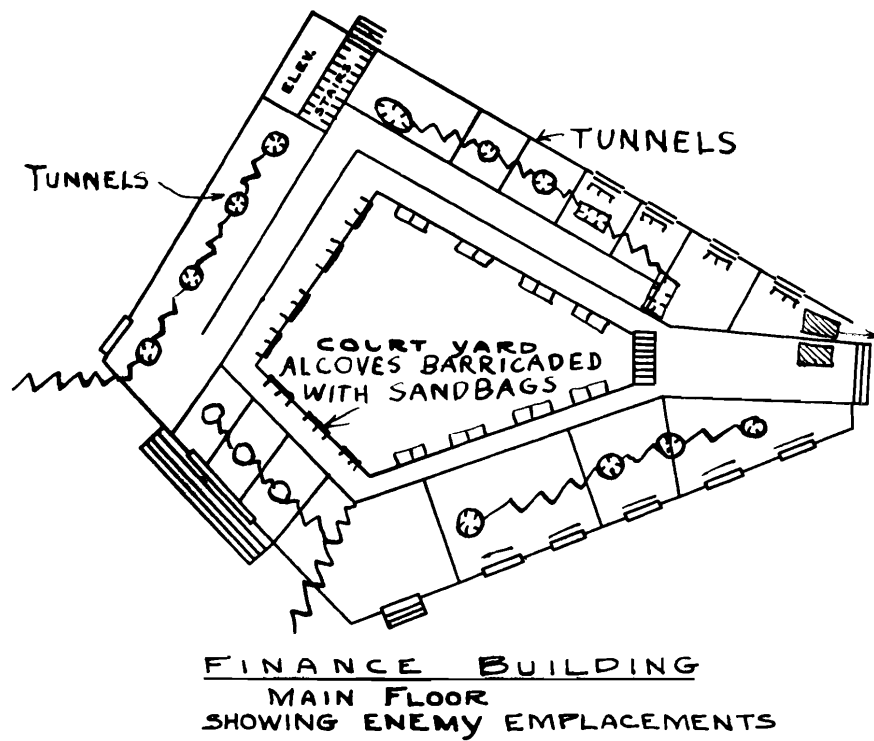
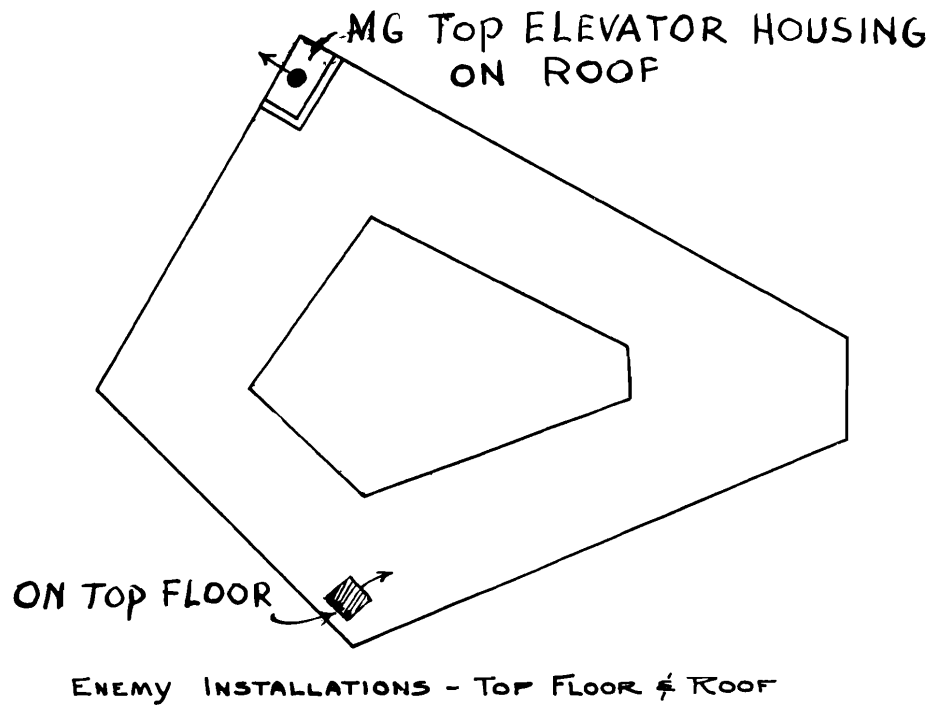
Barriade
Annex 32

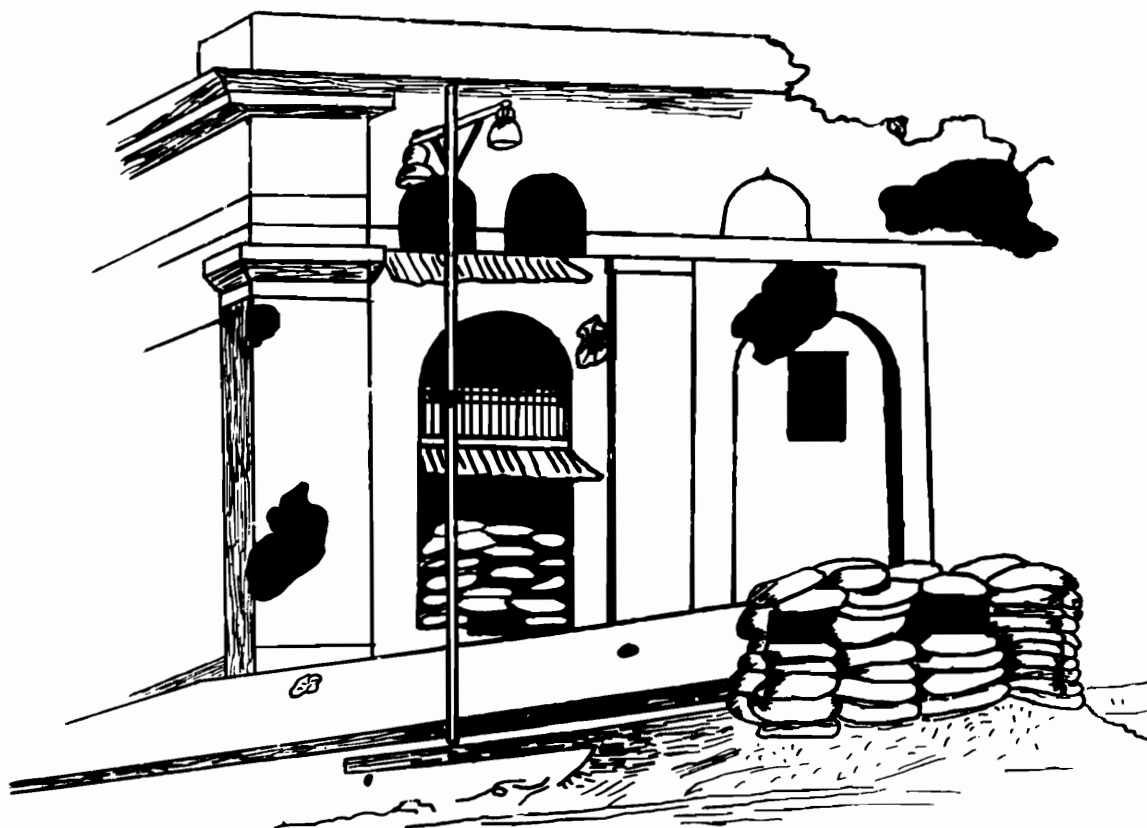




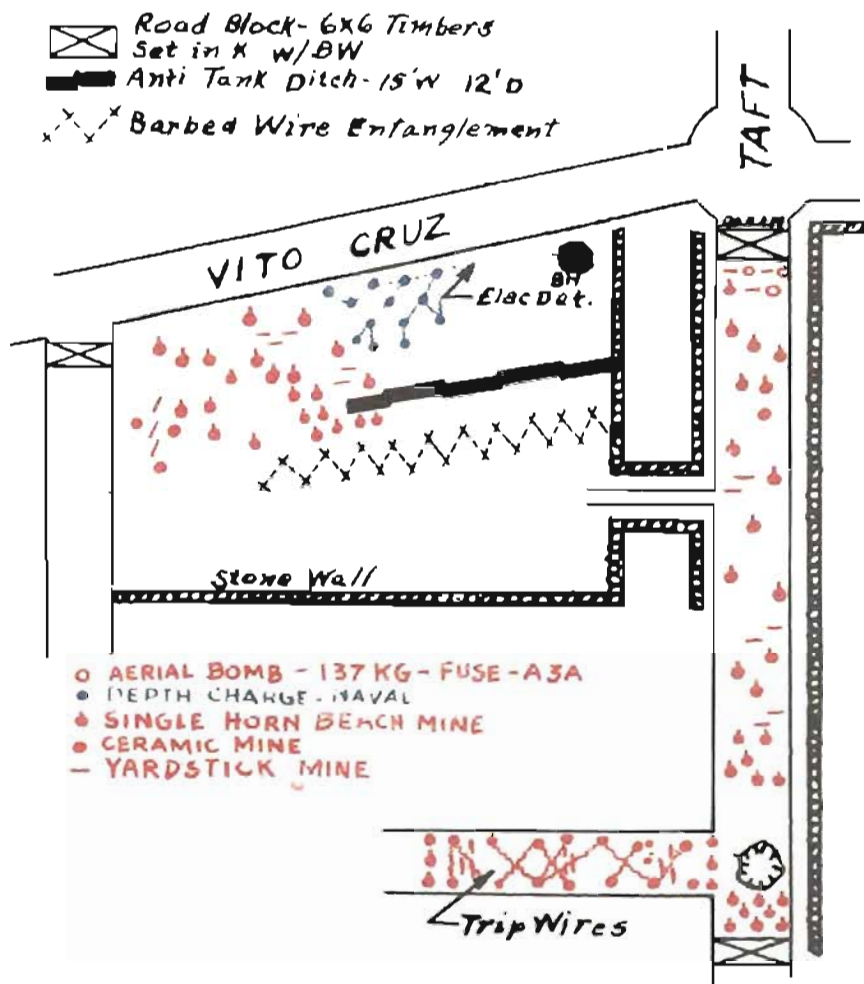
Typical Minefield
Annex 34

NOTE: MANY WINDOWS BARRICADED
ON UPPER FLOORS.



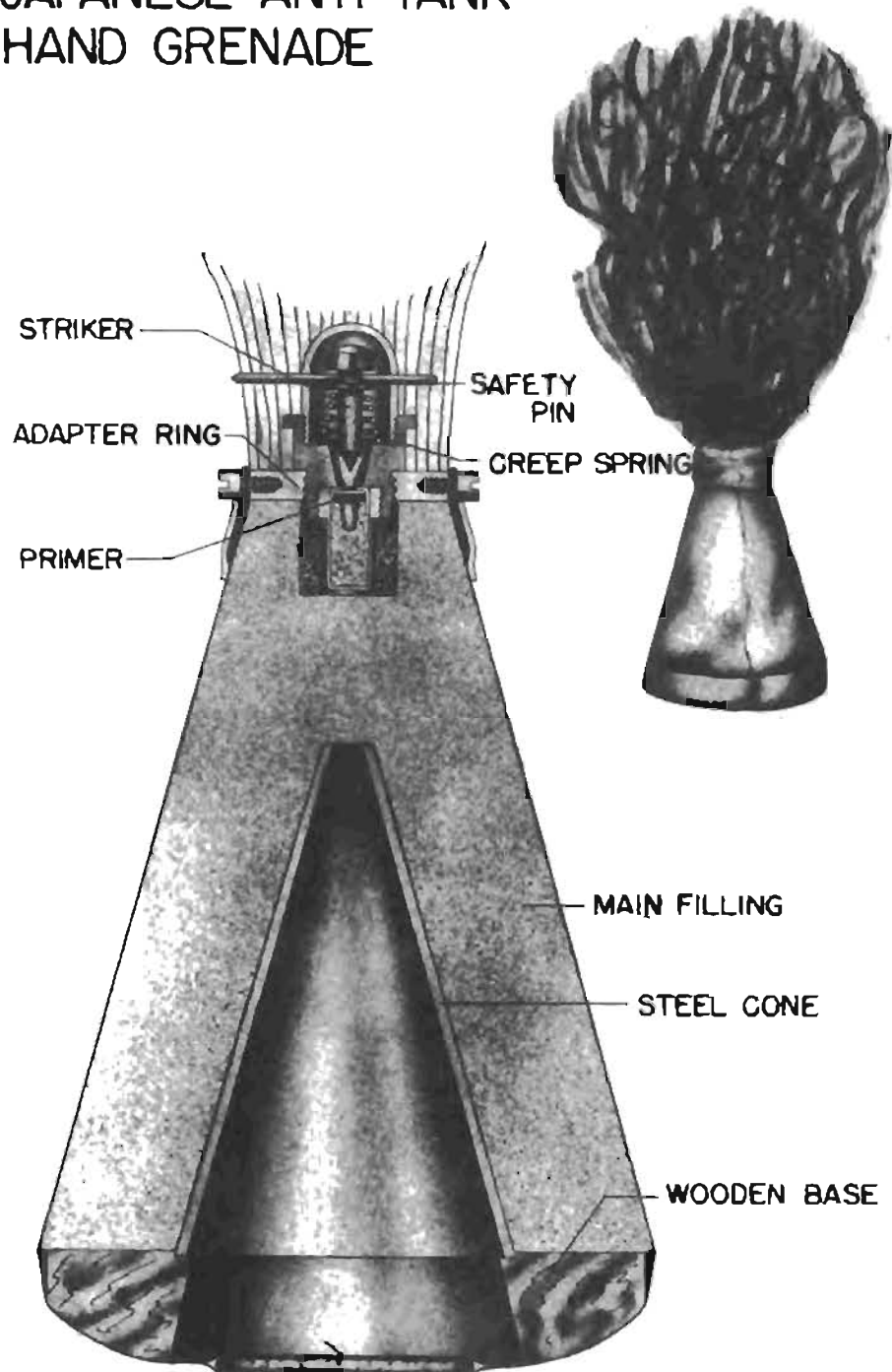


SKETCH OF ICE PLANT SHOWING TYPICAL ENEMY DEFENSIVE INSTALLATIONS



Vito Cruz Minefield
 Annex 35

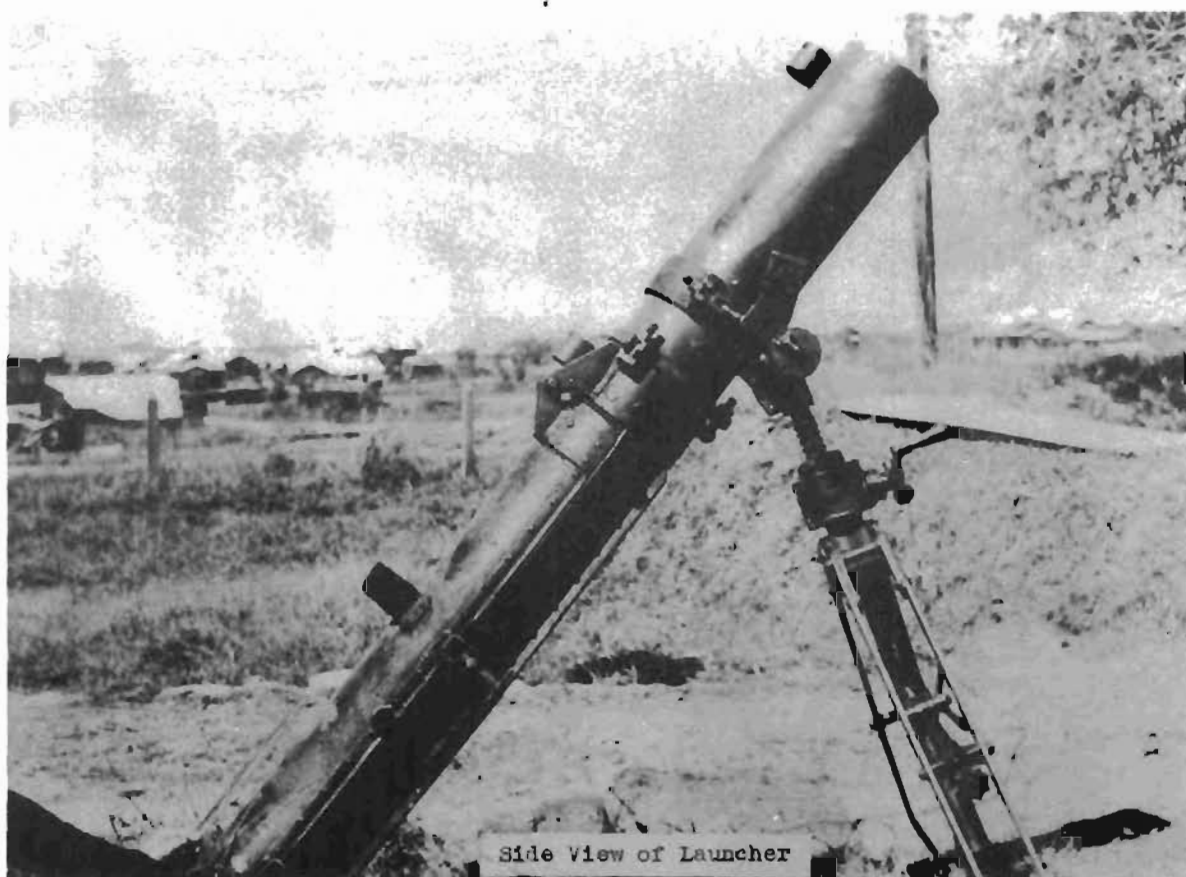
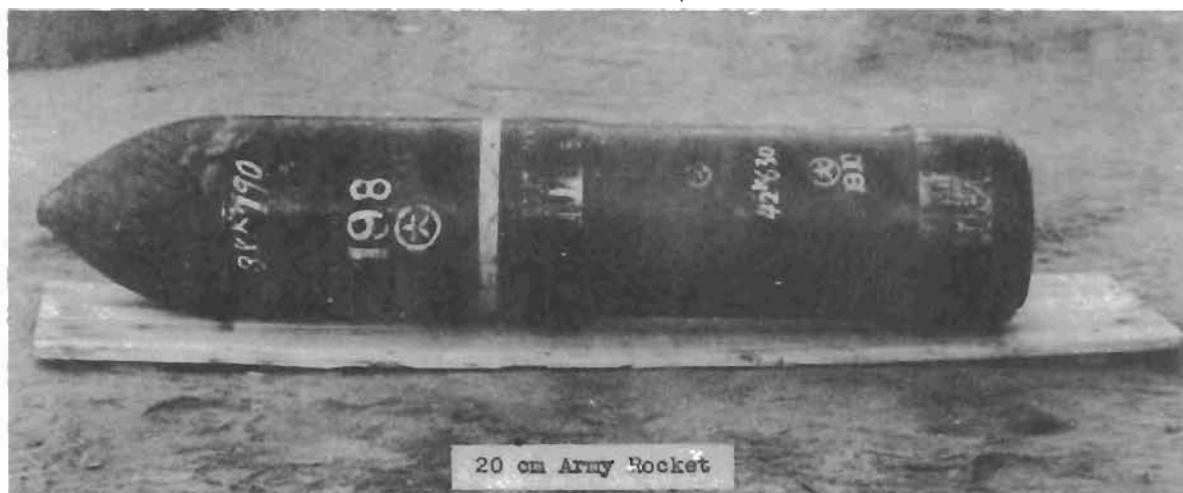
JAPANESE ANTI-TANK HAND GRENADE



Grass Skirt Grenade
Annex 36



447-mm Rocket
Annex 37



20-cm Rocket
Annex 98 ▲



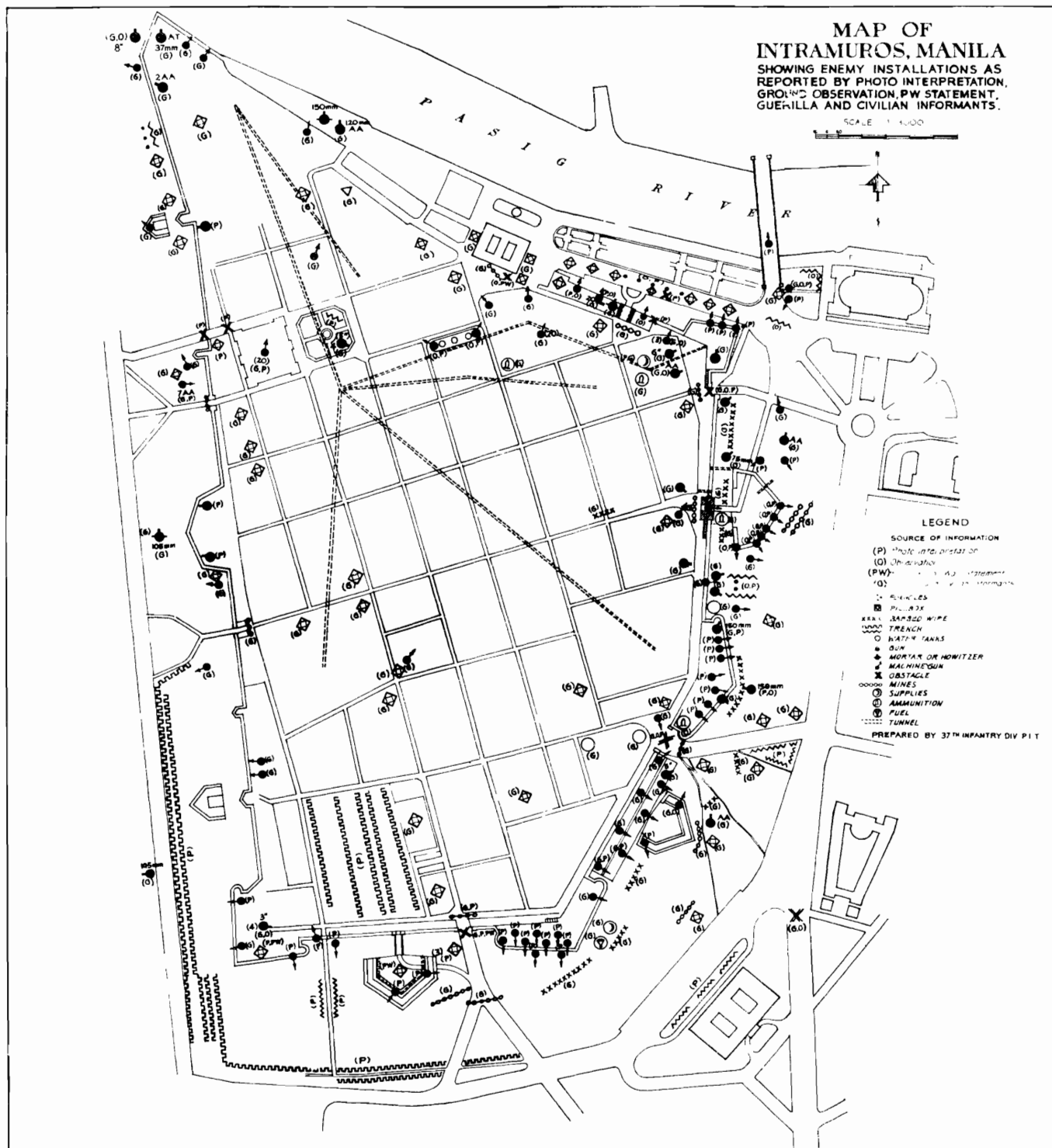
Front View of Launcher
(Showing Traversing Mechanism)

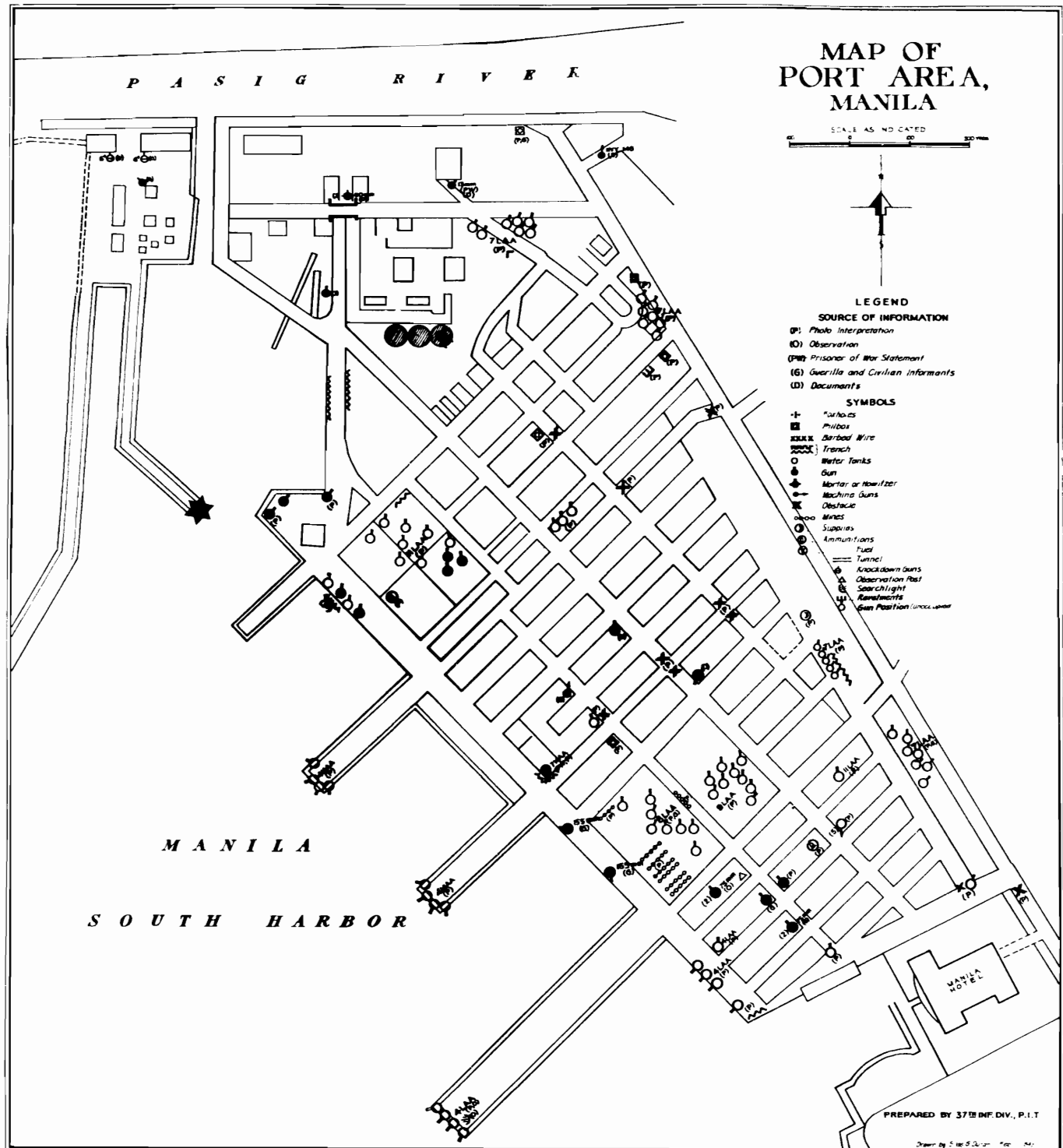
20-cm Rocket
Annex 38 B

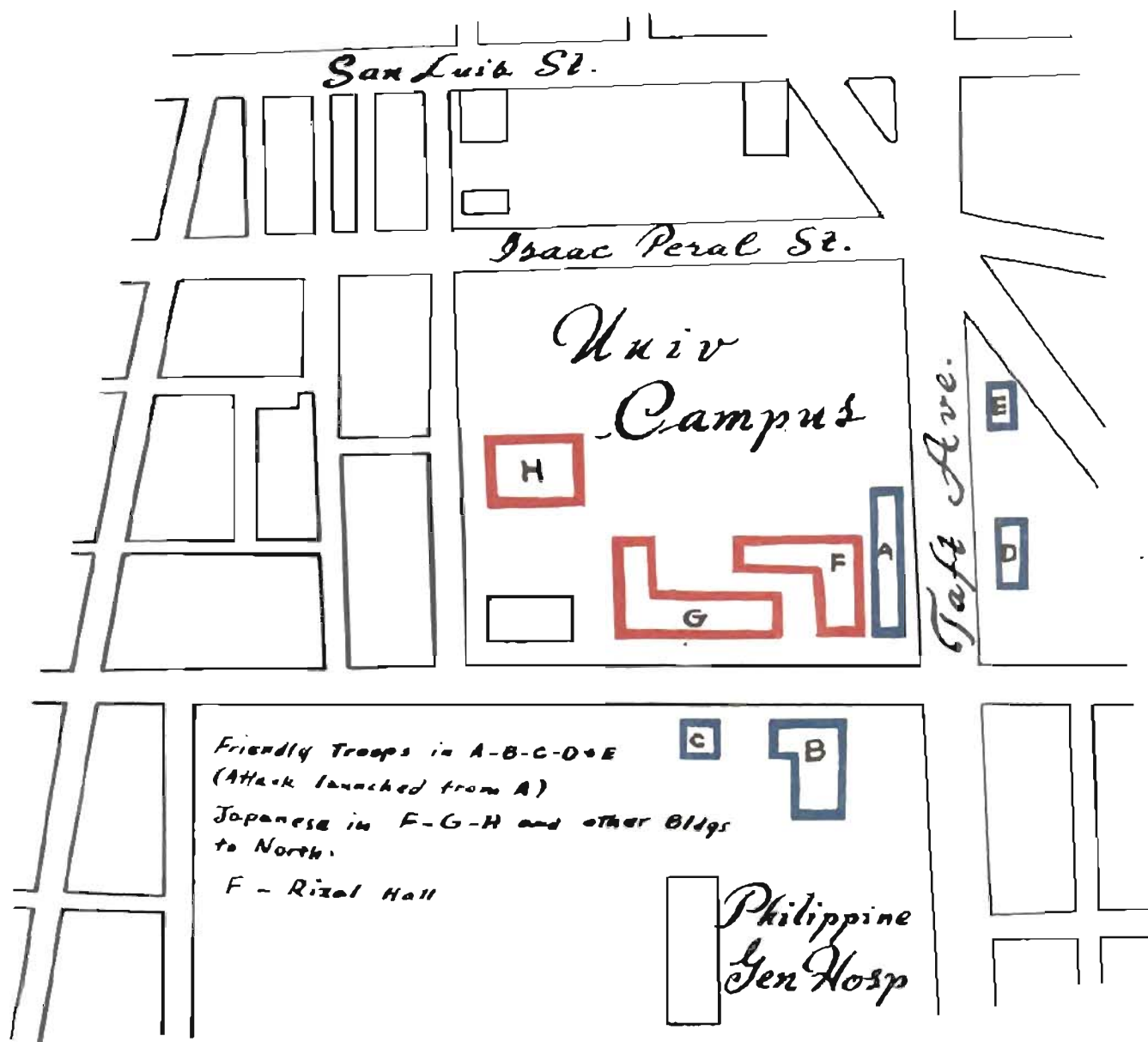


Rear View of Launcher
(Showing Method of Loading)

20-cm Rocket
Annex 38 C







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 Annex 41

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