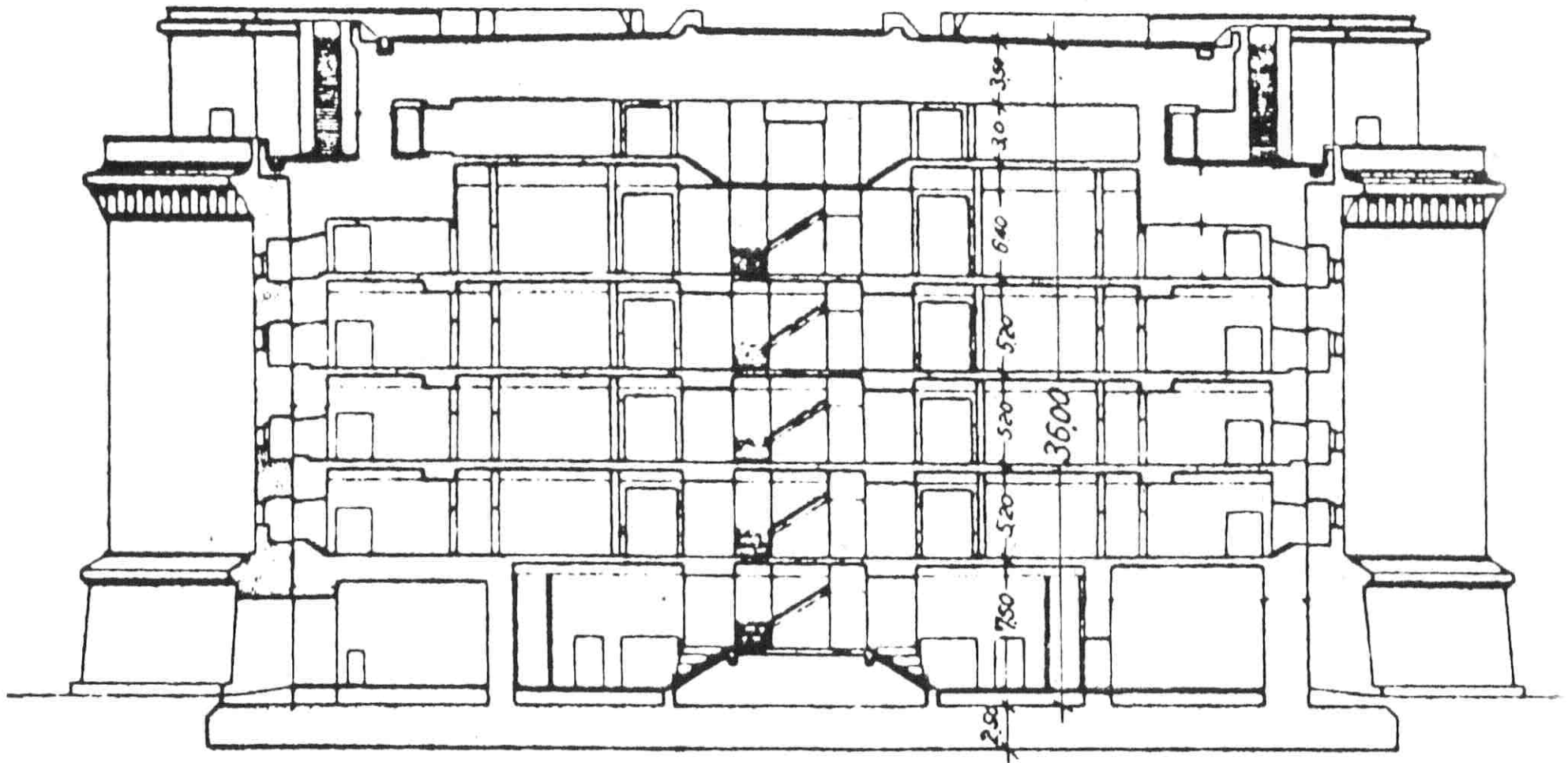


Flak - Towers



By Michael Foedrowitz
Sponsored by Berlin Underworlds' Association

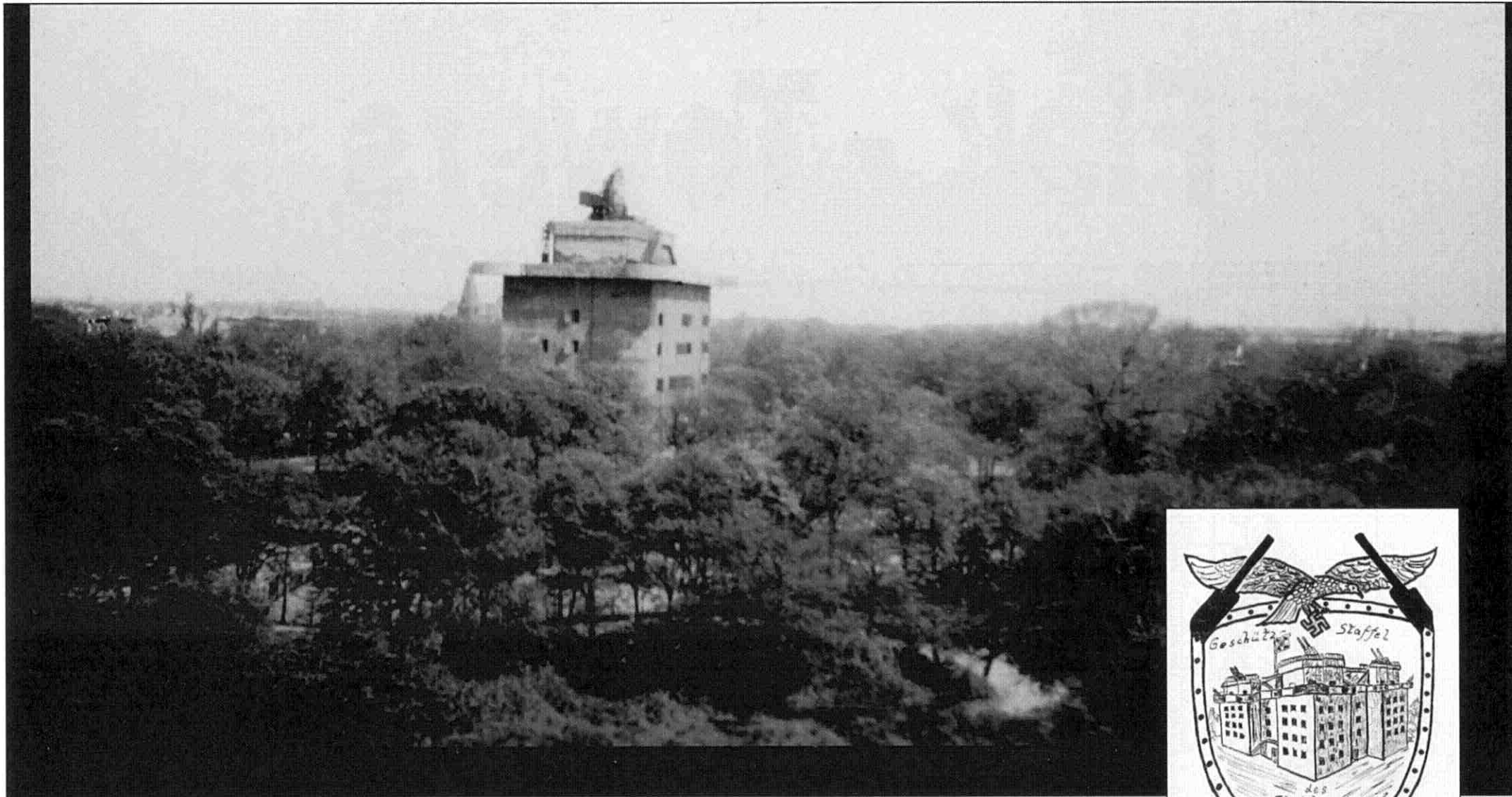


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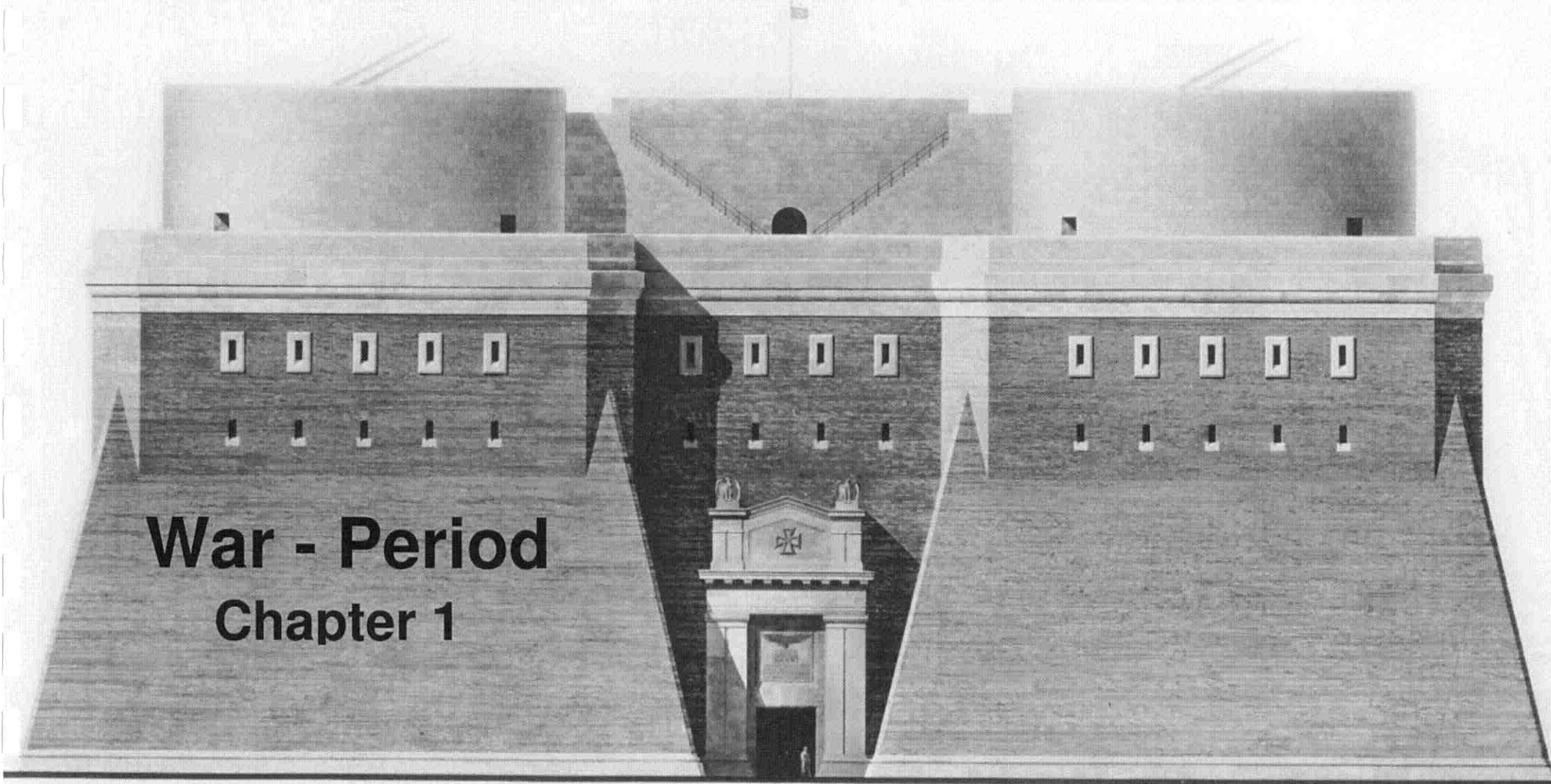
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For my wife Marie B. and my daughter Larissa, who have helped me so much to realize the Flak Towers project. Special thanks to the Berlin Underworlds' Association for their indefatigable drive to continue the research into the Flak Towers and Gavin Hodge for his help with translating this English text.
Berlin, 2007

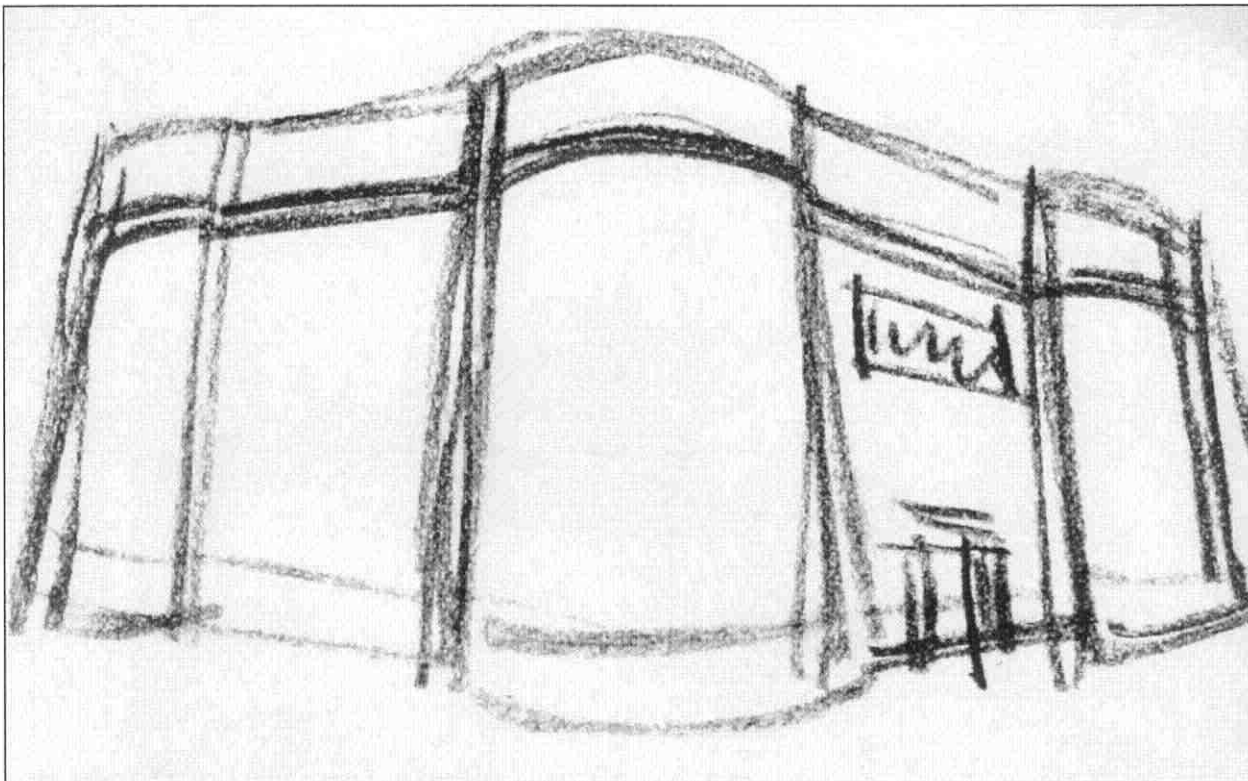


War - Period

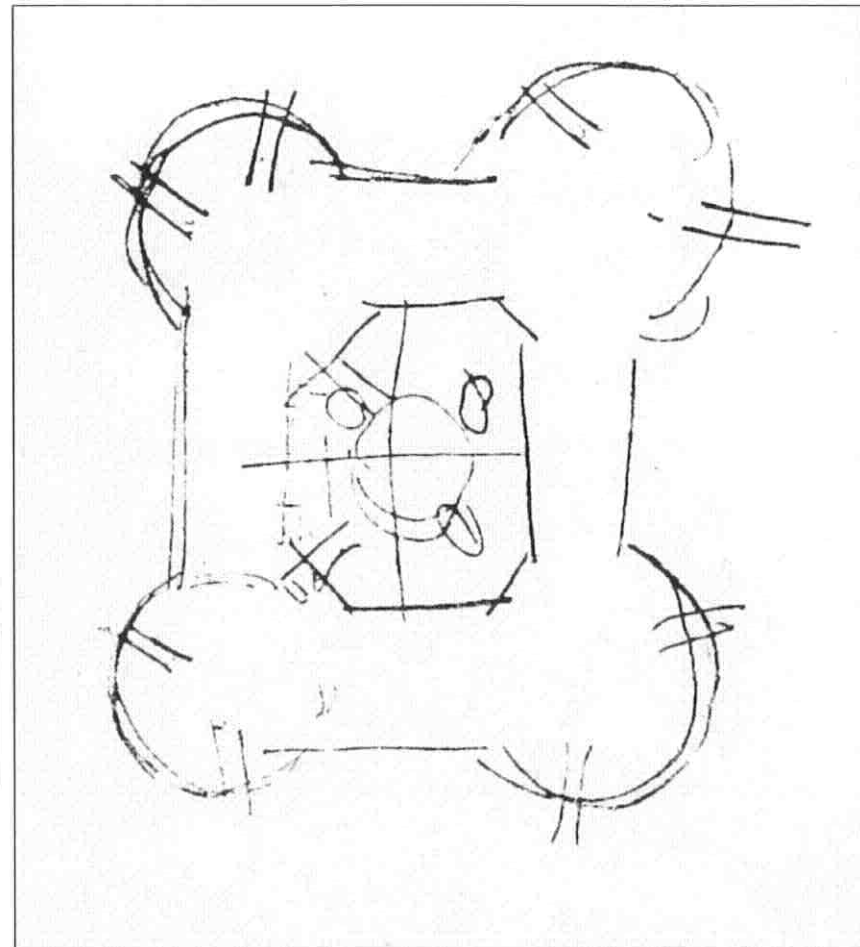
Chapter 1

FLAKTURM IV

An early design for a Flak tower by Prof. Friedrich Tamms. This typical Nazi architecture was intended to impress the people and to harmonize with the designs for the new capital of the world GERMANIA, planned by Adolf Hitler and Albert Speer. Huge marble plaques with the names of Luftwaffe heroes were to be mounted over the main entrance, here for instance Colonel Hahn.



Hitler himself felt obliged to propose his own designs for the Flak-fortresses in Berlin to his architect Albert Speer. Here we see not only Hitler the Great War soldier, but also his architectural and artistic ambitions. However, his design is based on the castles of the Stauffer dynasty in Italy and Germany. Nevertheless, the basic design of the later Flak towers was established by his sketches from September 16th 1940.

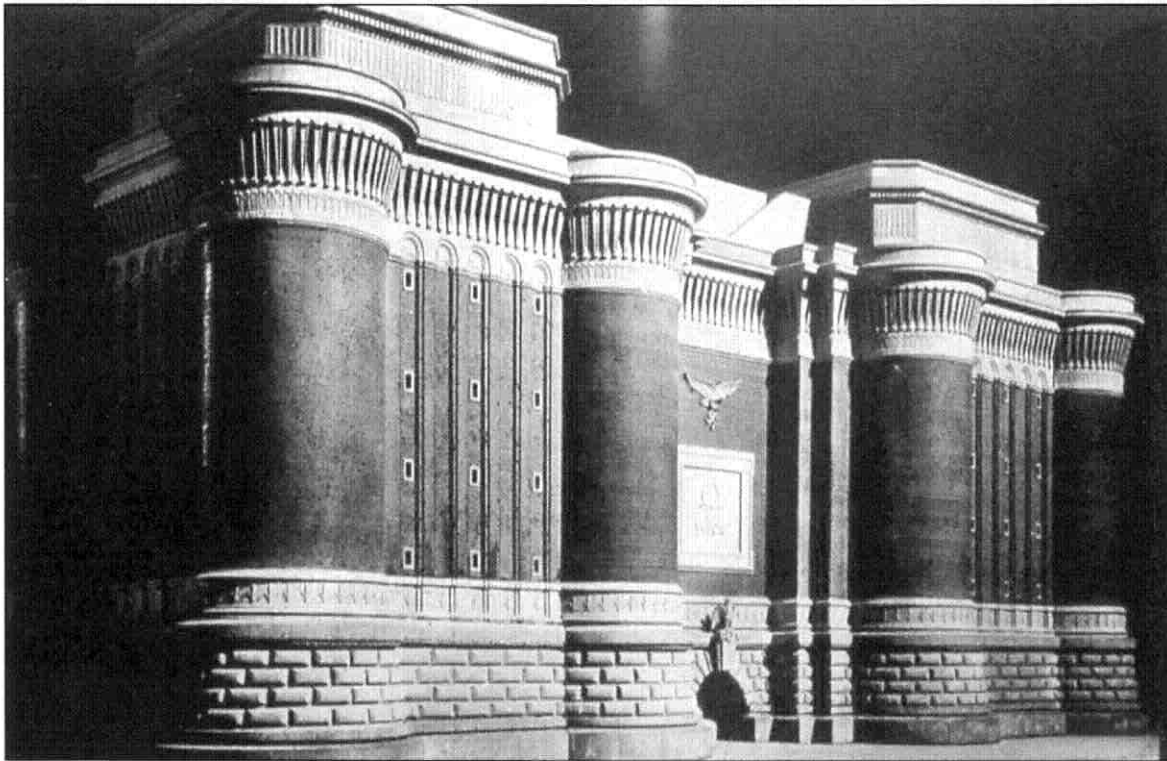


Top: Here one can already see the basic design of the second Flak tower generation as they would be constructed in Hamburg-Wilhelmsburg and in Vienna's Arenbergpark in 1943. There are four big rounded gun positions on the corners for the heavy Flak, in this sketch Hitler equipped each corner tower with two twin guns. In the centre, one can see something similar to the command post, as it was constructed in the first generation of Flak towers.



The most important personalities involved in the Flak tower programme, later called "Special Berlin Program": Adolf Hitler who had the original idea, architect Albert Speer, who had little interest in building bunkers, Dr. Fritz Todt, who headed the "Organisation Todt", which was named after him, and architect Friedrich Tamms, pictured after the war.

Hitler's confidante Albert Speer in his function as the "General Building Inspector of the Capital of the Reich" (GBI) had to build the public air raid shelters inside the "Berlin Ring" and therefore the Flak towers too. Todt declared his responsibility for carrying out the building of the Flak towers and Speer as well as Todt agreed to appoint architect Friedrich Tamms, who had studied with Speer together and made an impact with his highway bridges. The technical planning for the first three Flak towers in Berlin and the paired Flak towers on Heiligengeistfeld in Hamburg fell to the construction giant Dyckerhoff & Widmann, the building work was supervised by chief engineer Cromm.



Left: A possible version of the façade of the Zoo Flak Tower proposed by architect Tamms in 1943. The plinth was in fact partly made of natural stone. The design, as well as that of the smaller radar tower (bottom left) was supposed to match the monstrous buildings of the over-dimensional 'capital of the world' GERMANIA and demonstrate the military power of the German nation, but this state of completion was never achieved.

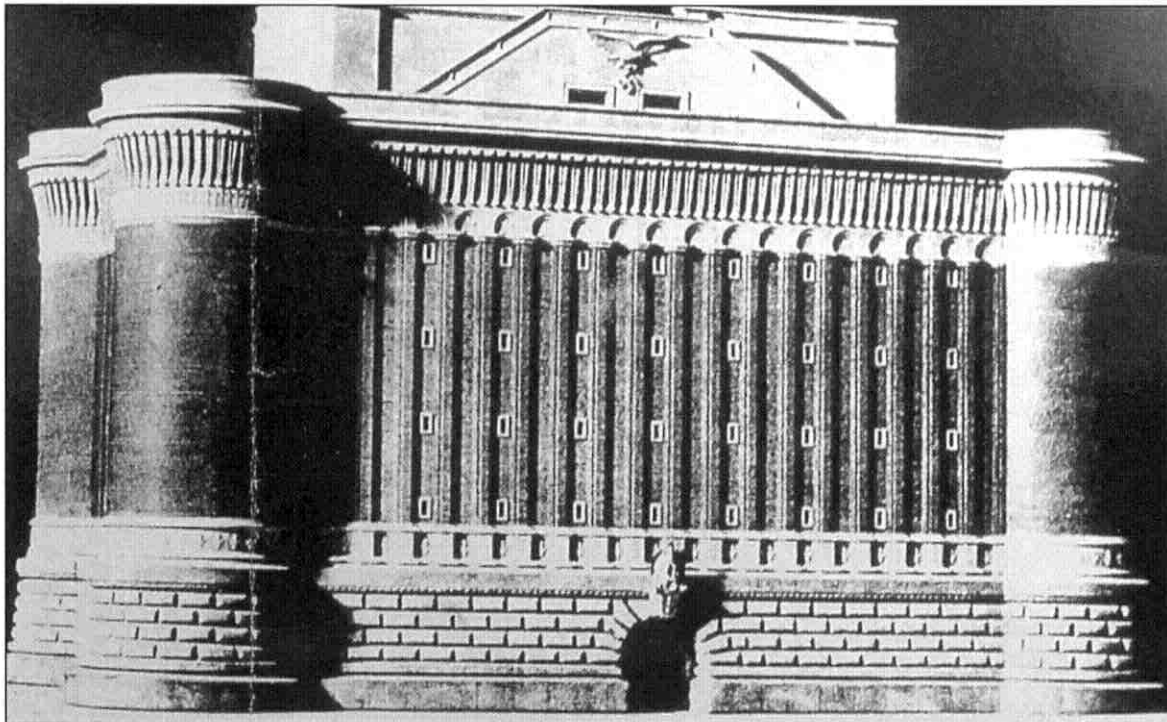
The Berlin Flak Towers

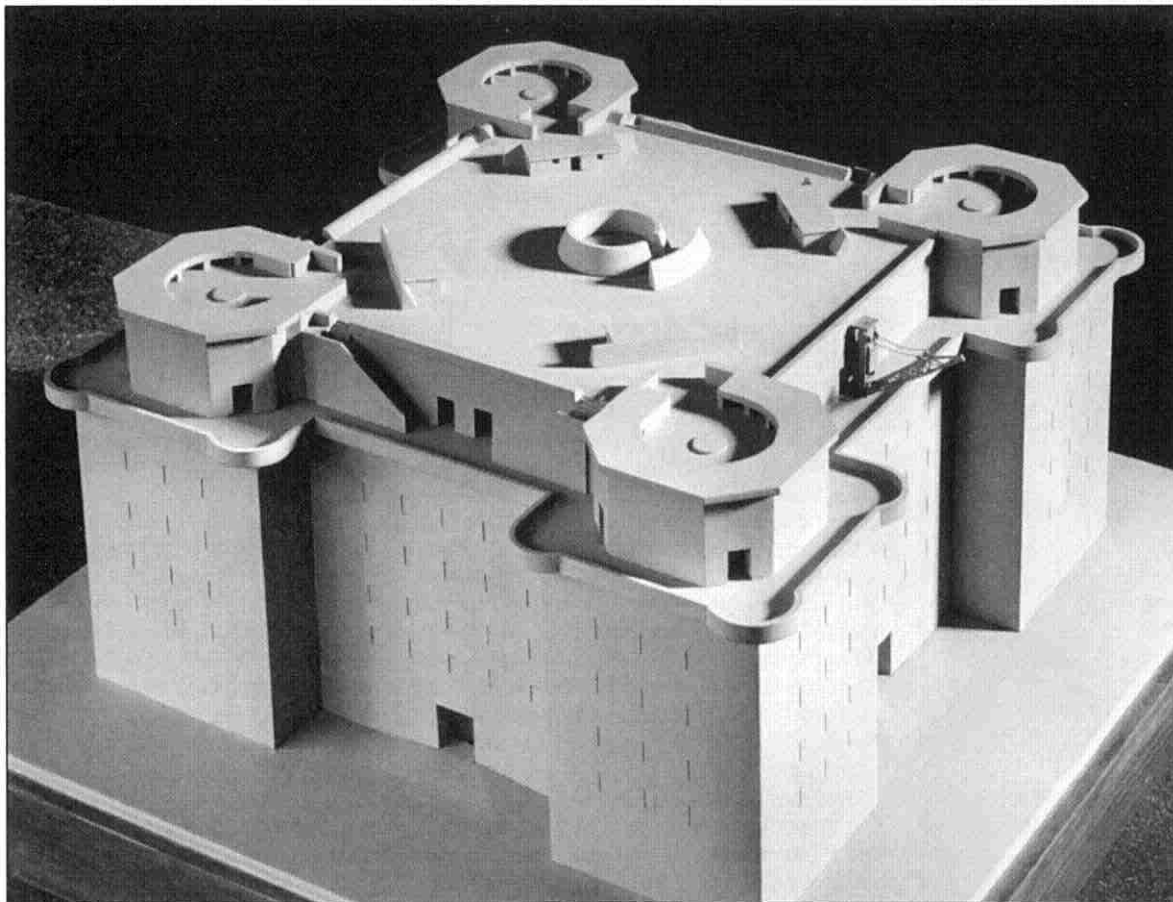
After the air raids on the Reichshauptstadt in August–September 1940 it became obvious that the Luftwaffe, commanded by Reichsmarschall Hermann Göring had failed to protect Germany's air space. Therefore Hitler made several decisions, one of them being to construct Flak towers, for which he gave the order on September 9th 1940. At first, the purpose of the Flak towers was not to shoot down enemy planes but to coordinate the air defences and to prevent Allied planes from flying over vital parts of the city, but this soon proved illusory. In Berlin the vital area was the govt. quarter in the centre, Hamburg's port should be protected and Hitler wanted to secure the cultural and historic centre of Vienna.

It was decided to build the Flak towers in six pairs, because the concussions caused by the firing of the heavy Flak could have influenced the accuracy of the radar equipment. The paired towers were to be built 300 to 400 metres apart (a Gun Tower and a Radar/Listening Tower) and connected by a cable conduit to transmit the firing coordinates. The height of the G-Towers was calculated to avoid the surrounding buildings reflecting the echoes of the firing AA guns.

The sites were chosen and because of the immense weight of the towers, extensive ground borings were carried out and the sinking data was calculated using the 12,650 tonne "Schwerbelastungskörper" or "Heavy Load Body" - a huge block of concrete originally built as a ground-loading experiment for the vast "Building T" (Triumphal Arch) for GERMANIA.).

The specifications of the first generation of G-towers were laid down by the Luftwaffe: the command post B II should be at a distance of min. 35 m from the gun bases, and those at a distance of 50–70 m from each other. The G-Tower measured 70.5 x 70.5 m. The height was 36 m, the outer walls were 2.5 m thick, tapering to two metres at the top. The roof of this seven-storey bunker was of 3.5 m thick reinforced concrete and was essentially bombproof. The L-tower had the same basic data, but was smaller in area (23 x 50 m), 33,000 m³ (76,000 tonnes) were used. Under the platforms of G and L-towers were living quarters, duty and storerooms, the battery command post plus a magazine and a room for processing intelligence reports. As structures vital to the war, the Flak towers were given the highest priority. A pair of Flak towers was estimated to cost 24 million Reichsmarks. From the outset, there were delays in arming the G-towers. The twin 128 mm Flak was not yet available, so the 105 mm Flak 39 was chosen to replace it. The twin 128 mm Flak guns were finally installed in summer 1942. On the lower platforms were light 20 mm AA guns (singles and quads) and searchlights were planned. The Flak towers were open to civilians too and it is reported that some 30,000 found shelter in both towers during air raids. The eight G-towers and L-towers had their own deep wells and generators and were independent of the city's water and power supplies. They housed hospitals and art treasures, research laboratories and arms factories, broadcasting companies and Secret State Police (Gestapo) departments. The main bodies of the Flak towers of the "Special Berlin Program" were finished in an amazingly short space of time: the construction period for the Zoo Towers was from October 1940 to April 1941, Friedrichshain April 1941 to October 1941 and Humboldthain October 1941 to April 1942.

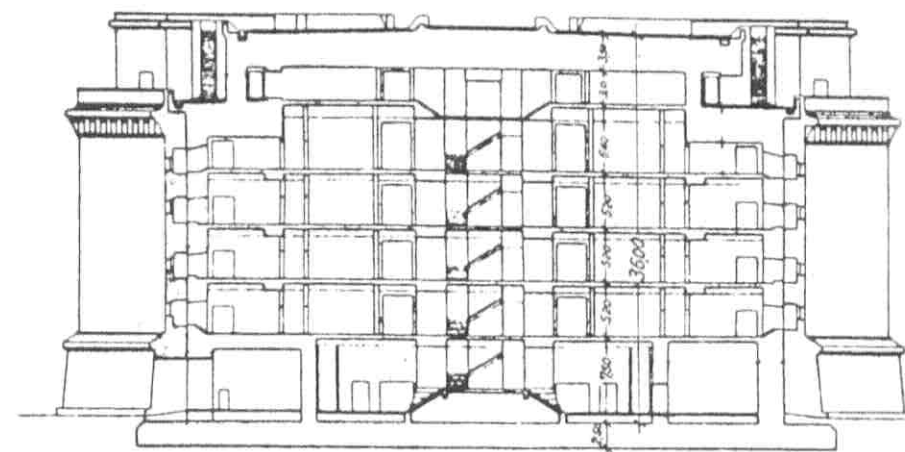
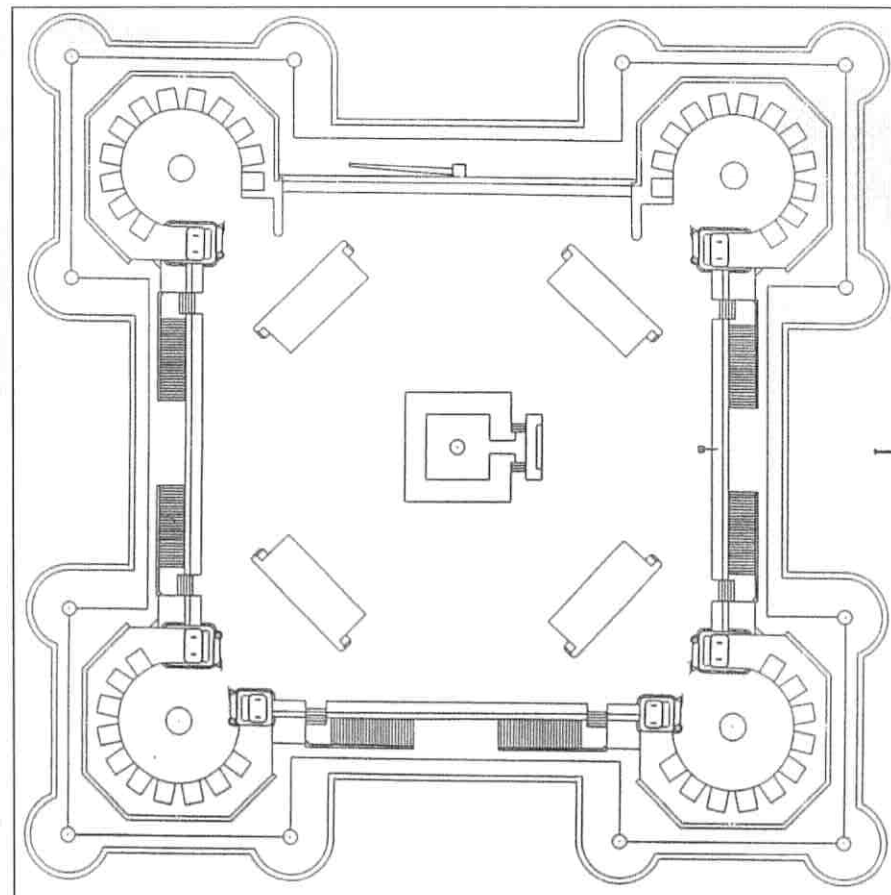


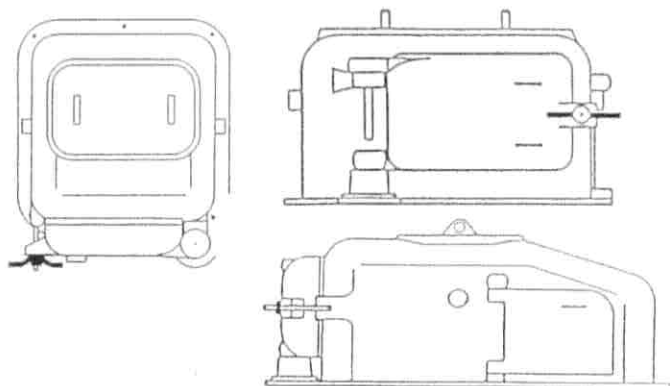
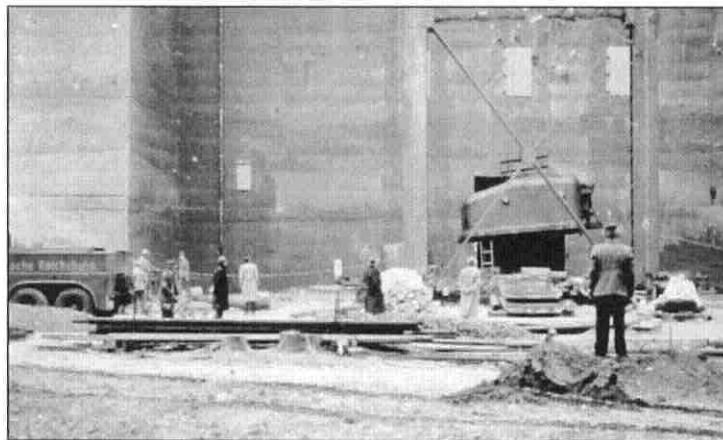
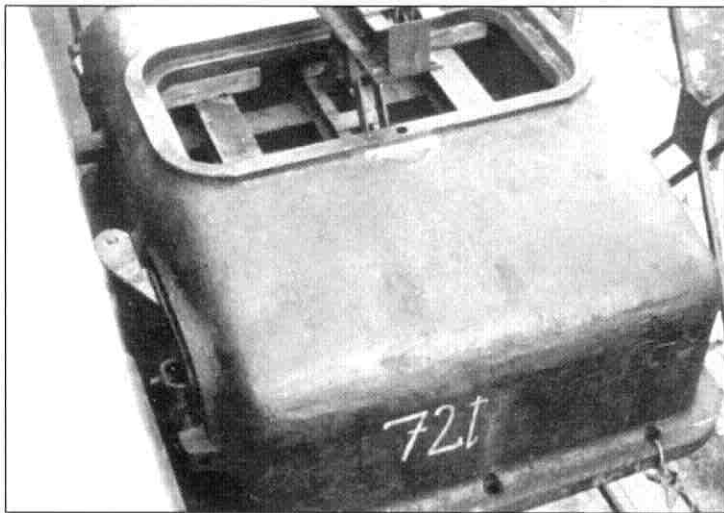


Zoo FlakTower

The term "Zoo Flak Tower" means the combination of both towers, the Gun Tower and its Command Tower (also designated as Lead or Radar Tower). Huge amounts of building material were needed for both units: 120,000 tonnes of gravel sand, 78,000 tonnes of crushed stone, 35,000 tonnes of cement, 9,500 tonnes of iron reinforcement and 15,000 m³ of wood for installations, shuttering and scaffolding. The Reichsbahn guaranteed the supply by rail of 1,600 tonnes of building materials per day on two trains, while another 400 tonnes a day were delivered via waterways. British sources calculate the weight of the G-Tower as being 190,000 tons. Construction of the G-Tower began in the mid-October 1940, the L-Tower at the end of November the same year. The main structures of both towers could only be finished by the end of March 1941 by pouring concrete all winter. This was only possible by taking certain anti-freezing measures such as warming up the building materials and mix water, and the installation of coke heaters and steam pipes. The height of the G-Tower was 36 m, the sides 70.5 m, the perimeter length of a corner tower 20.5 m. In the beginning the OT employed some 1,500 workers, later 3,250 - half of them Germans. The majority of the foreign workers were Italians and some 300-400 prisoners of war were engaged to unload the building material.

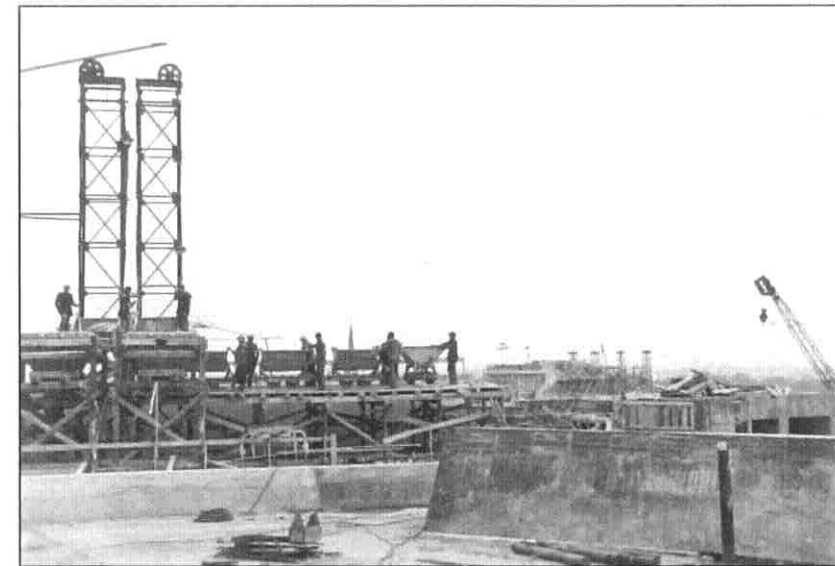
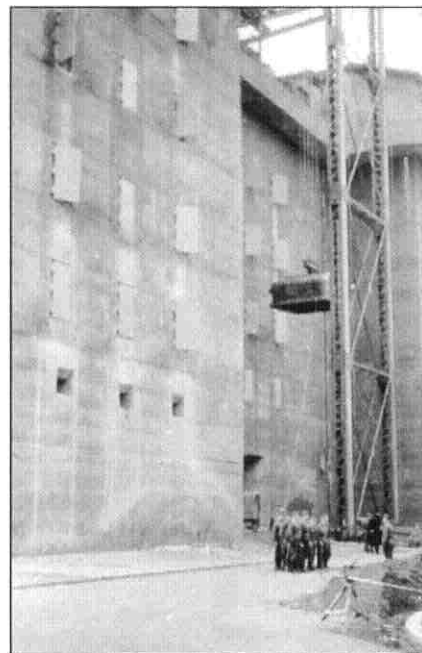
Top: A model of the Zoo G-Tower. Top right: Ground plan of the upper platform of the Friedrichshain G-Tower, which in contrast to the Zoo G-Tower had an angular command post. Bottom right: A remarkable elevation view from 1941 showing that the facade was already in planning.





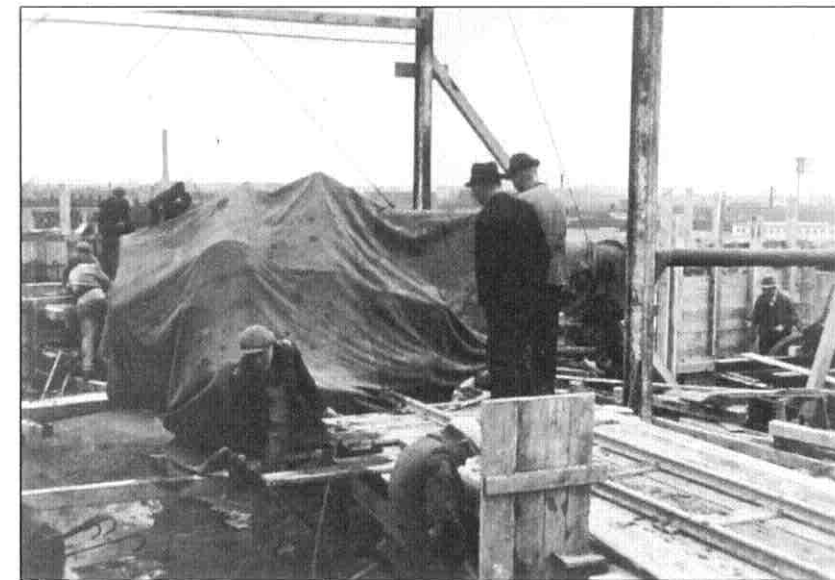
Some rare photographs showing the equipment of the Zoo G-Tower from 1941. Top left: There were 72 tonne heavy steel cupolas beside each 128 mm AA gun base, which could be sealed with heavy steel doors. There were also similar but smaller steel cupolas situated on the opposite side. Their purpose was the disposal of the empty shell cases. Only the G-Towers I (Zoo) and II (Friedrichshain) had two smaller-sized ammunition lifts.

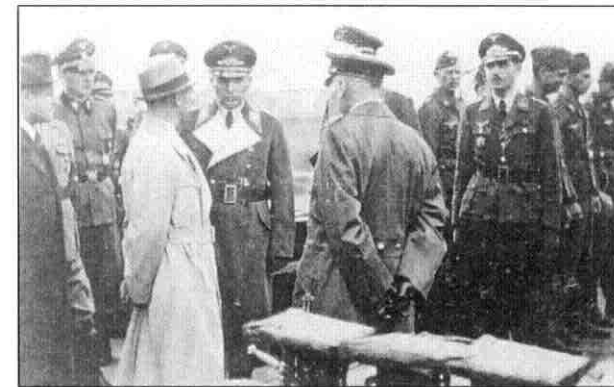
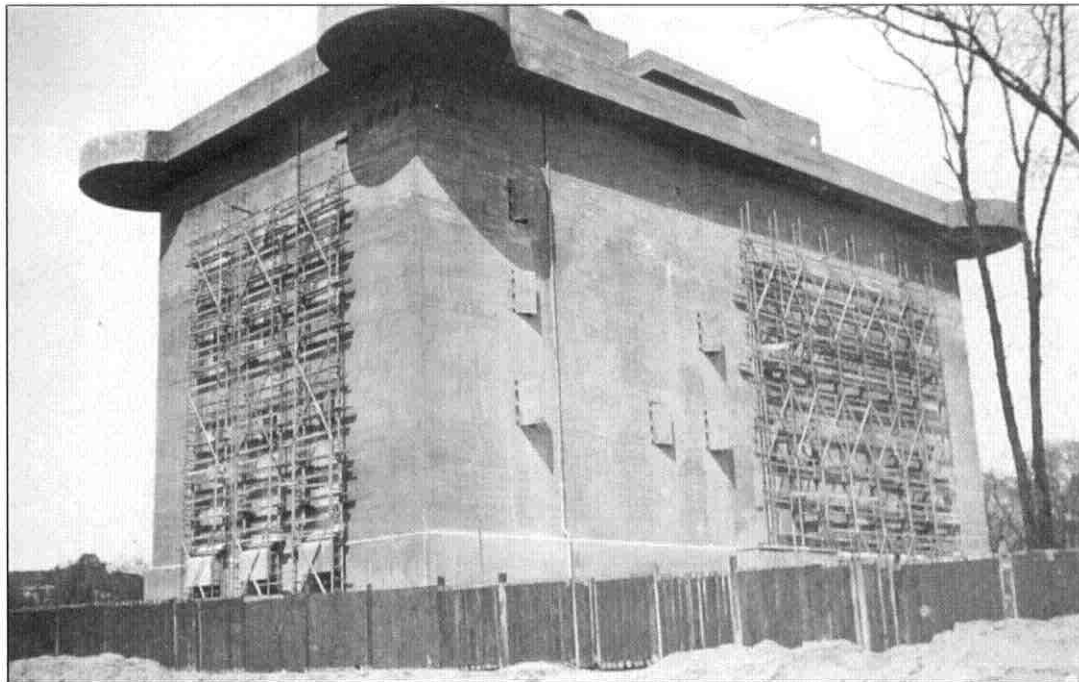
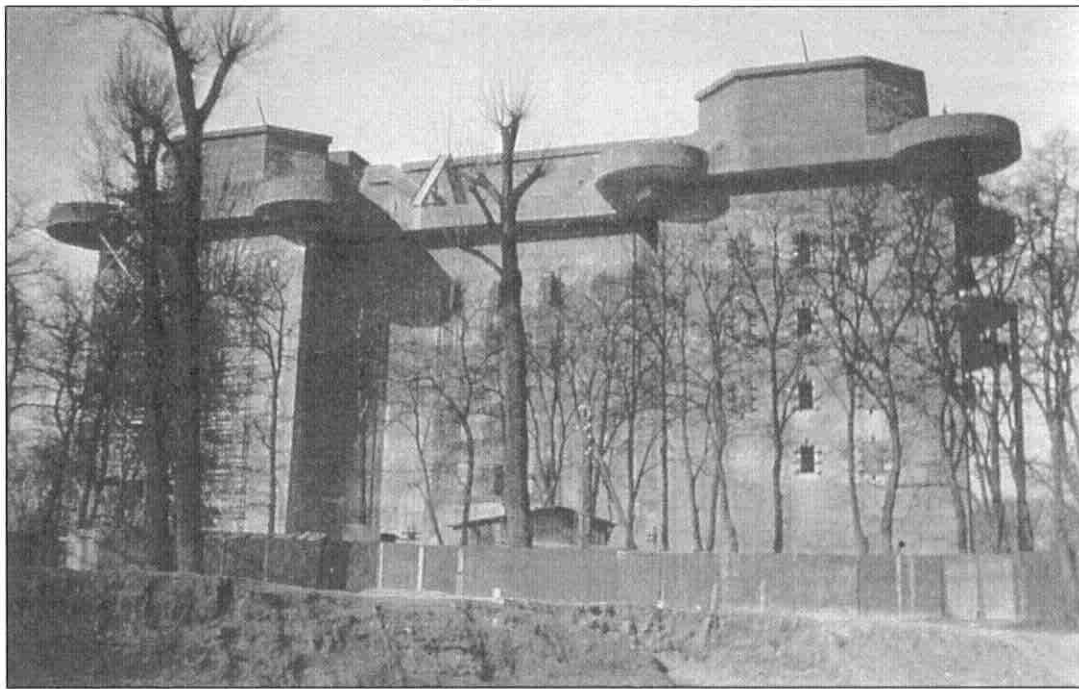
Middle left: Hoisted by an external crane on a "Culemeyer-Straßenroller" the steel cupola is put into position on the upper platform. The heavy transporter was equipped with 16 solid rubber wheels for loads of up to 40 tonnes, with 24 solid rubber wheels for loads of 80 tonnes. The latter version was used to transport the cupolas. The "Culemeyer-Straßenroller", designed for the road transport of railway goods wagons, was towed by a Kaelble tractor from the State Railway Company. Bottom left: Diagrams of the 72 tonne steel cupola.



Top: One of the very rare pictures of the G - tower Zoo during the construction time, shot on the upper platform in 1941. In the background the R- tower. Over there the topping-out ceremony has already celebrated.

Bottom: Still during the last concreting works the first 105 mm Flak 39 were delivered and mounted on the G - tower. The photo shows the AA gun still under the canvas cover.





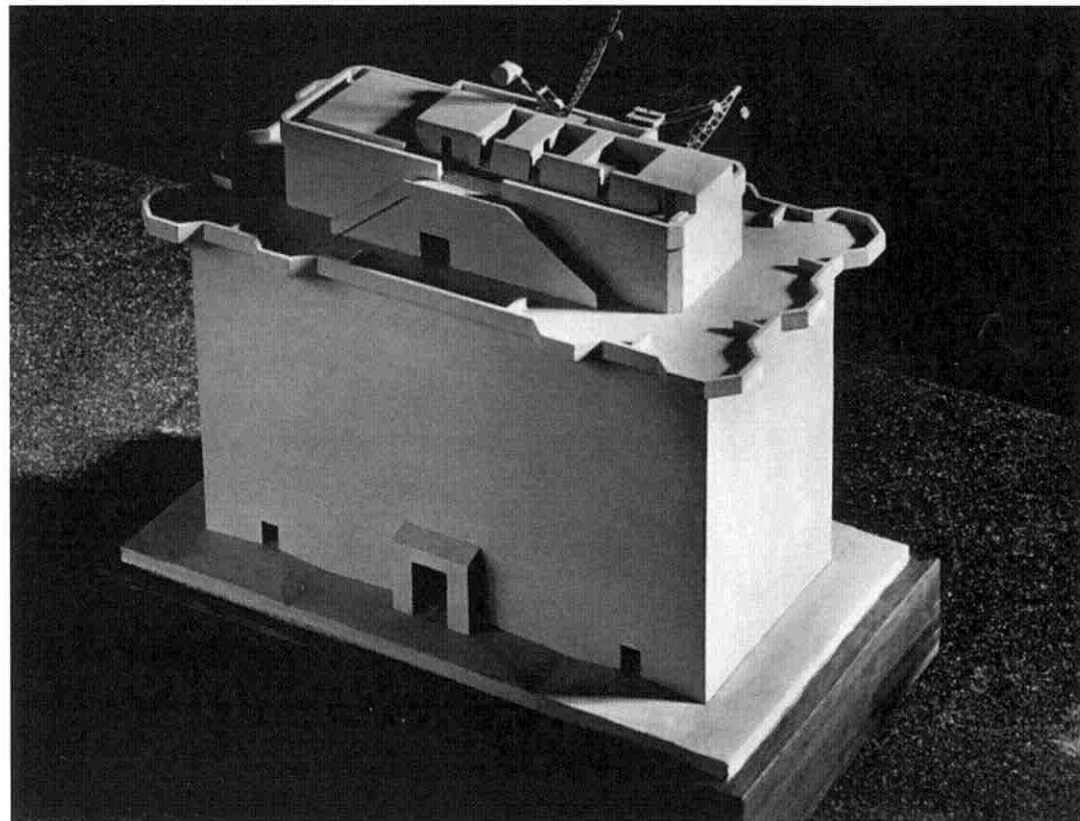
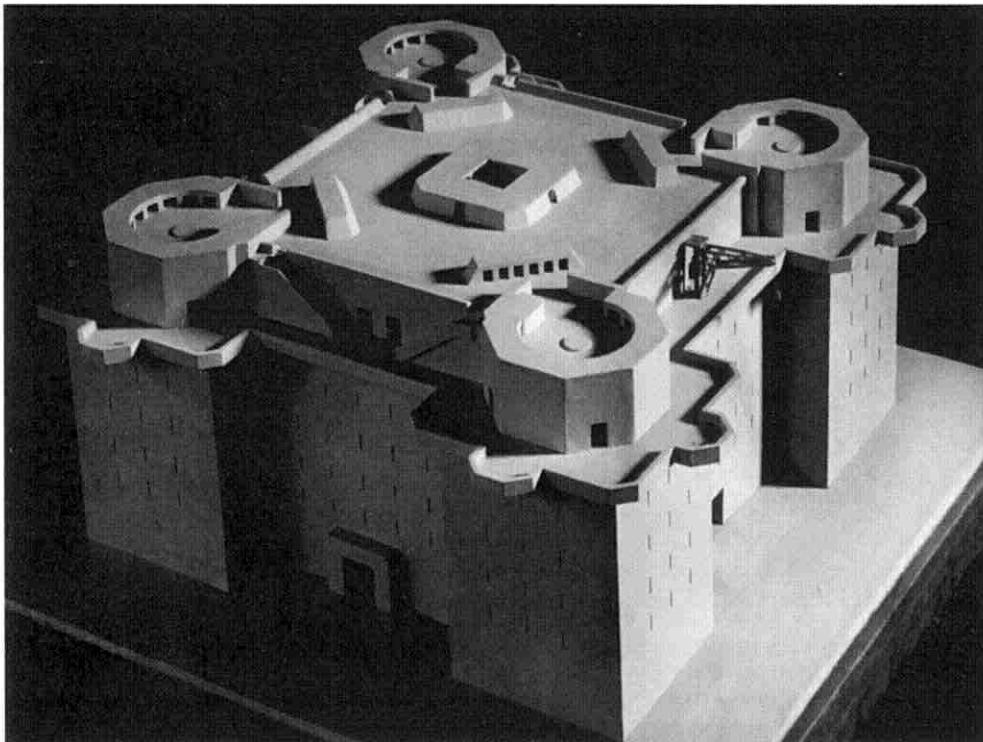
Nazi – prominents came quite often to visit the flak-towers in Berlin, the minister of arms production Albert Speer, minister of propaganda Joseph Goebbels or Reichsmarschall Hermann Göring, C-in-C of the german Luftwaffe. Top: Goebbels visited the G-Tower Humboldthain in the end of 1942. Below: When Göring was announced, the soldiers exchanged live ammunition into practice ammunition, because the C-in-C had the nature to play with equipement, to push bottoms und to pull levers without knowing the results. Here Göring inspects the G-Tower Zoo. As far as it is known Hitler himself never visited a flak tower, but he was regulary informed by Speer and steadily asked for photographs. He was inspired by the twin 128 mm flak mk. 40 because of its "beauty". Even the minister of arms production Speer was impressed by the flak towers. When in the evening of November 22nd 1943 air alert sirenes sounded Speer hurried to one flak tower to watch the air raid. "Barely arrived on top, I had to look for shelter, because heavy bursts shattered the tower inspite of his thick walls. Behind me groggy flak soldiers pushed downwards, who were thrown against the walls because of the shock waves and injured. Twenty minutes long burst after burst ensued. In the hall of the tower one could see crowded people in the fume, caused by the fallen cement dust from the walls, becoming more and more tight..."

Top left: The Friedrichshain L-tower shortly before completion, the "Würzburg-Giant" is already installed. On the front side, there is scaffolding and strengthened concrete in the area of the ventilation shafts. Left: The G-tower, still with partial scaffolding. The chute for spent shell cases is visible on the upper platform.



Left: The transmission tower (Project C) was erected in 1941 at a cost of 500,000 RM on a hill near Tremmen in the Havelland area, 40 km west of Berlin. The tower was equipped with the first long range radar (Panoramagerät) with a range of 300 km. The tower was linked by landline to the headquarters of the 1st AA-Division in the Zoo Flak Tower. When RAF Mosquitos attacked the tower in February 1944, Propaganda Minister Joseph Goebbels wrote resignedly in his diary on 12th of February 1944, that although the Panoramagerät had survived the raid undamaged, he was depressed to know that the RAF had such intimate knowledge of Berlin's air-defences. Top: Picture from 1942. The long-range radar was a 20 m long beam equipped with 16 dipoles. Bottom: West view of the hill where the transmission tower once stood, blown up after the war by the Russians. Some concrete remains can still be found today.



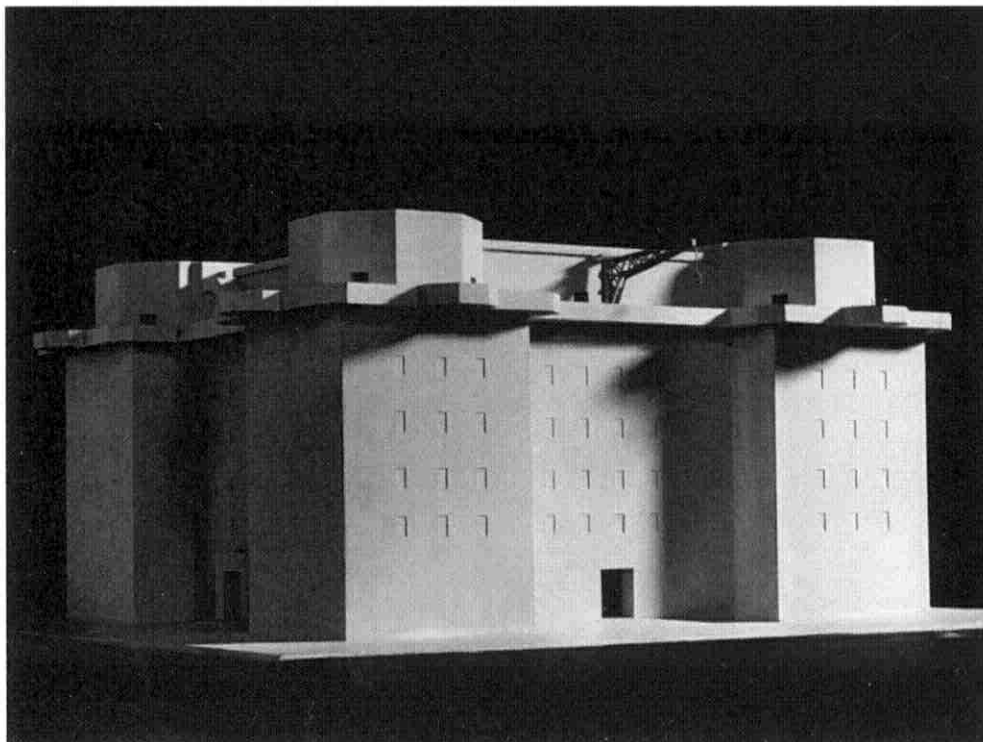


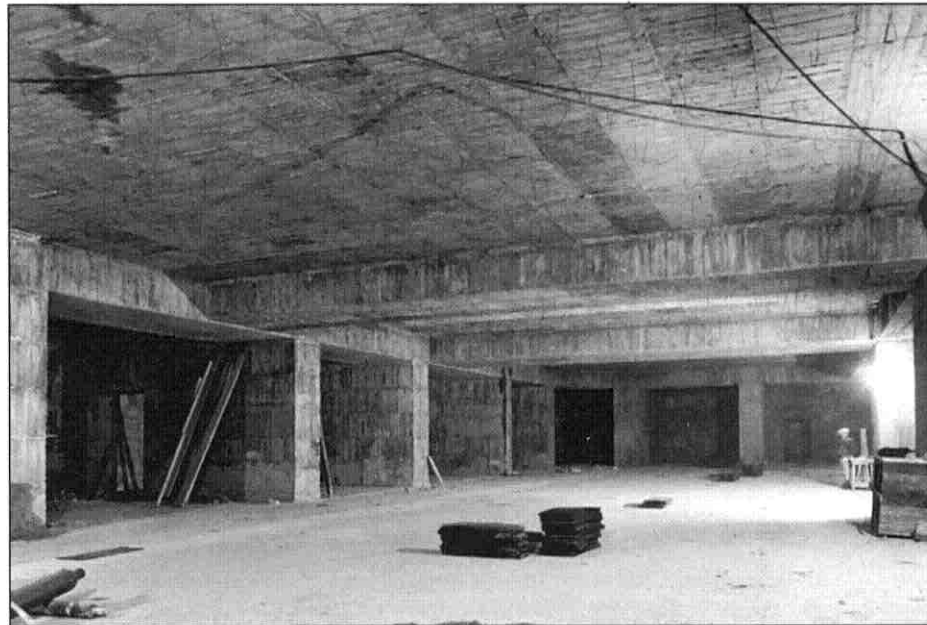
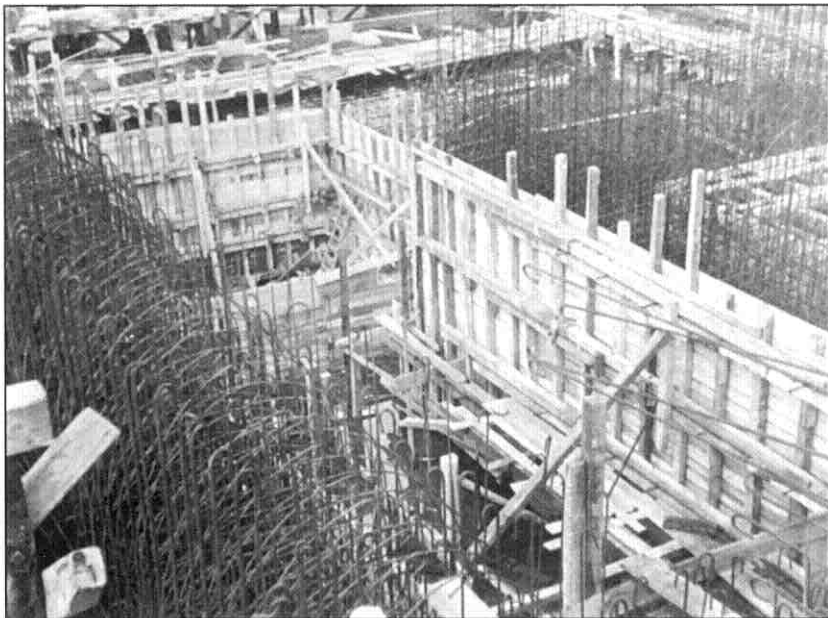
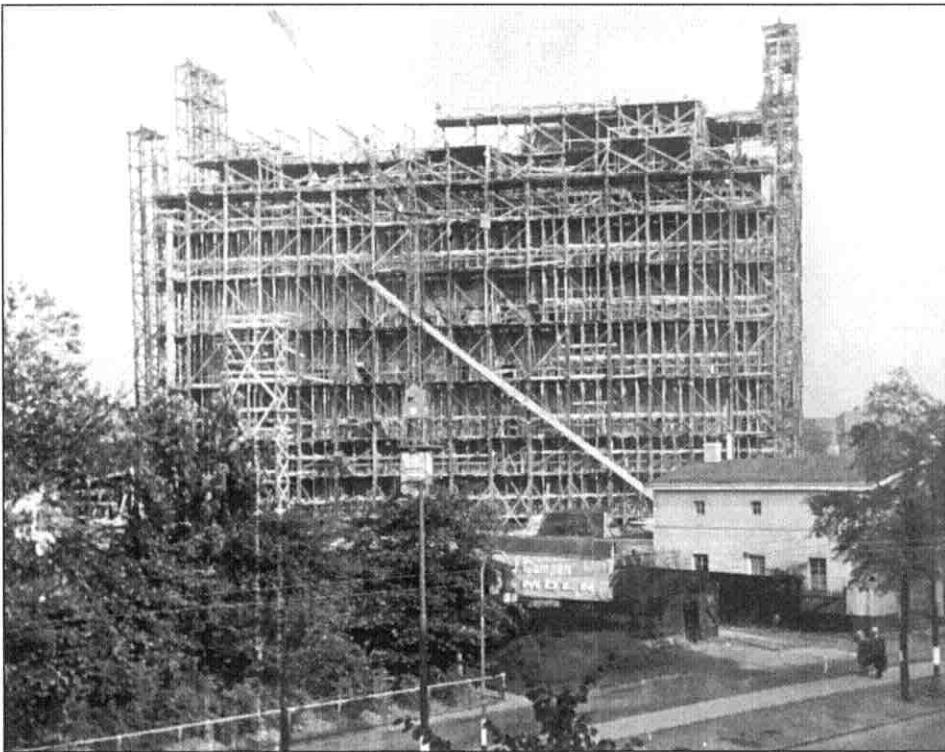
Flak Towers in Hamburg

Models of the Heiligengeistfeld (HGF) Flak tower pair in Hamburg, Left: shows the G-Tower, Top: the Command Tower. The last Flak towers of the "Special Berlin Program" are distinguishable from the exterior due to the design of the lower platforms and the command post in the middle of the upper platform of the G-Tower, which gave more protection to the troops there.

The lower platform had straight, slanted corners and the protrusions are not round but polygonal. In contrast to the pictures, the lower platforms were constructed with massive buttresses supporting them. The splinter-proof walls which separated the individual Flak positions on the Command Tower are hinted at. The L-Tower had two additional small entrances on the ends of the longer sides next to the protected main entrance leading to the main staircase. On the opposite side only two small entrances gave access to the bunker, in total there were five.

Small variations can be found in the superstructure of the upper platform. The access to the command apparatus, the "Würzburg" Mk D radar on the long side, plus a further open entrance on the front side nearly in the middle of the superstructure on the Berlin Flak-towers, now provided five entrances on the long side to the respective radar equipment.



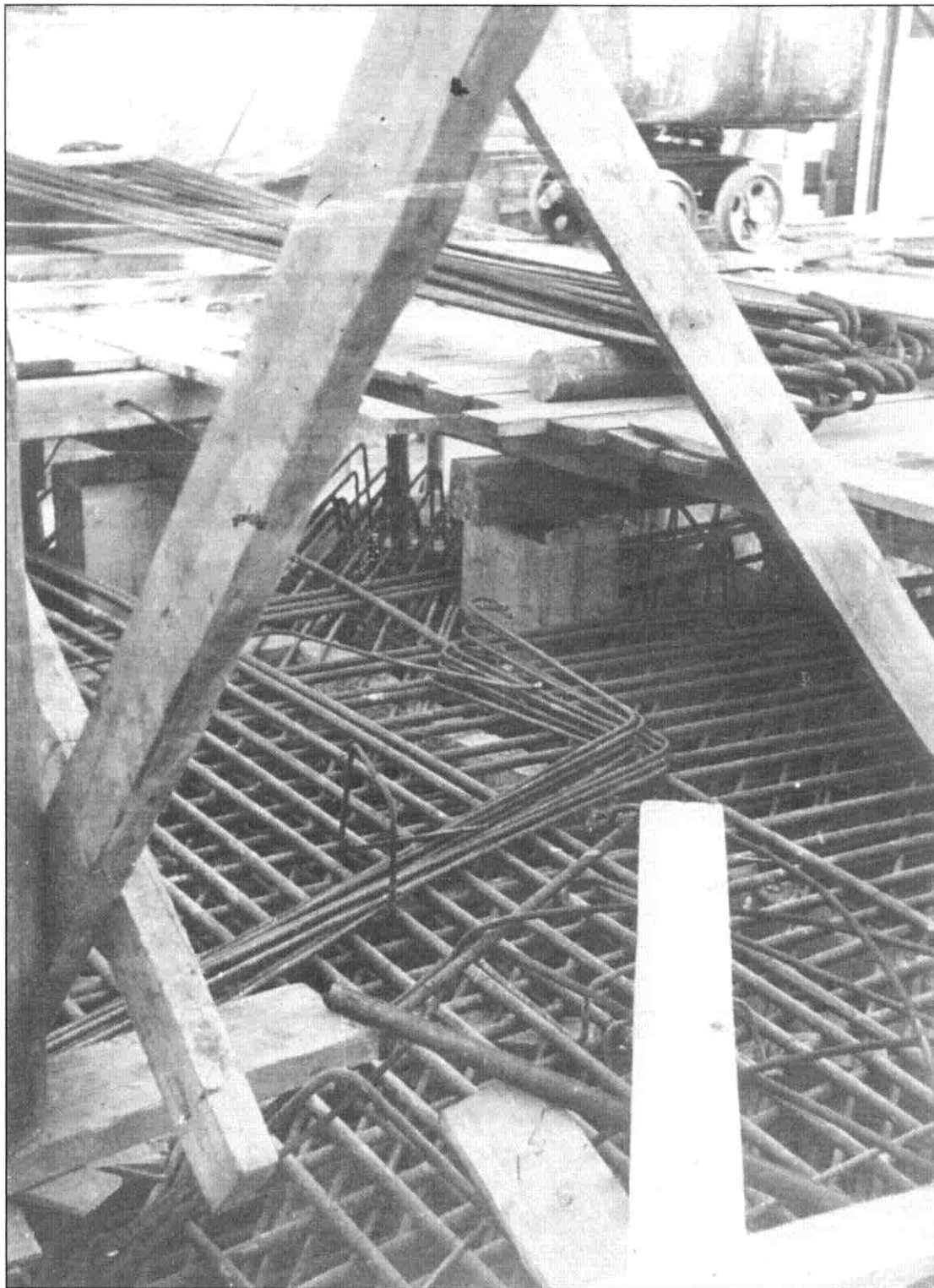


Top left: Wooden scaffolding totally surrounding the Heiligegeistfeld Radar Tower in Hamburg.

Top: View from the Radar Tower to the Gun Tower on Feldstrasse, which was also surrounded by wooden scaffolding.

Far left: the helical steel reinforcement.

Left: After basic completion of the G-Tower: the vast hall with its massive beams and buttresses. .



Left: The construction effort was immense. Some of the steel bars have been formed, others are already in position. The Heiligengeistfeld pair of Flak towers was built between the end of April 1942 and October 1942. About 800 workers - 1,000 according to some sources - worked for 350 days on building the Radar Tower. For the 76,000 tonne Radar Tower some 30,000 cubic metres of concrete were consumed. Danish gravel was used to supplement the building material. The immense masses of wooden scaffolding caused some headaches for the Fire Brigade, because if incendiary bombs had ignited the wood in a hot summer, it would have burned like tinder and caused the concrete to split. Of the three pairs of Flak towers planned for Hamburg, only two were built: on the Heiligengeistfeld and in Wilhelmsburg, a southern industrial district of Hamburg. The third pair was planned for the Wandsbek district but was never realized. General of the Luftwaffe and C-in-C of Luftwaffe Military District IX Ludwig Wolff didn't believe in Flak towers, for him it would have been enough to put a 128 mm battery on a hill, serving the same purpose. But to create the necessary defensive triangle, an artificial "Flak-island" was constructed in the middle of lake Außenalster to accommodate a third 128 mm AA-battery.

Hamburg

Originally, the choice of location for new Flak towers was between the Ruhr area and Hamburg, but the decision went in favour of Hamburg: The first was built on the Heiligengeistfeld between Feldstrasse and Budapesterstrasse, the second in Wilhelmsburg at Spülfeld between Weimarerstrasse and Rotenbäumer Strasse, mainly to defend the vital port and the industrial area.

In mid-December 1941 Dr. Todt received orders from Hitler that a Flak tower pair should be erected in Hamburg as part of the "Special Berlin Program". The Flak tower should be situated so that it would be able to protect "the central area of the port and the city, including the Central Station" with its long-range heavy Flak. Additionally, the tower should be within easy reach for large numbers of people seeking shelter from air raids and should not itself pose a danger for crucial local war industries. The following locations were discussed: Heiligengeistfeld, Grosse Allee near Hamburg Central Station, the Israelite cemetery in the Altona Quarter and Sternschanze. The location of Heiligengeistfeld between Feldstrasse and Budapesterstrasse won.

Heiligengeistfeld

The first G-Tower on the Heiligengeistfeld (officially designated "Flakturm IV Hamburg") of the so-called Special Berlin Program, with its 370 m distance from the Command Tower was almost identical with the Flak towers in Berlin. This Flak tower was erected between April and October 1942. The building work was carried out under the direction of the Military Construction department of the Ministry of Arms and Ammunition, according to planning documents from April 18th 1942, the architects were Vogdt and Hilliger. Dr. Ing. Friedrich Tamms informed the GBI on February 7th 1942, that construction work would soon begin on the fourth Flak tower that Hitler had ordered to be built in Hamburg and that preparations were already underway. Tower IV should be constructed according to the plans Tamms had drawn up for the Flak towers in Berlin the year before.

With regard to those plans following installations were intended for the various floors:



The main body of the Gun Tower at Heiligengeistfeld is complete, parts of the wooden scaffolding can still be seen. All but one of the twin 128 mm AA have already been installed. The white spots on the camouflage paint are interesting, they mark the positions of planned windows. In postwar times, the windows which had only been provisionally bricked up were opened by the OXYGEN Blasting & Building Company. The Gun Tower had a total of 176 windows. The construction site is protected against air attack by several barrage balloons. The external difference compared to the Berlin Gun Towers lies in the design of the projections of the lower platform, which were supported by sturdy beams. The same differences apply to the radar towers.

Ground floor in tower D, the heating equipment: tower A the air conditioning system (fresh air intake); tower B waterworks and tower C the used air exhaust installation. The air raid shelters, workshops and armoury were accommodated here. In the 1st floor in tower A, a poison gas air filtering facility was planned, there were to be bomb-proof depots for art collections in the 1st and 2nd floors of towers B and C. Despite the agreement of July 25th 1943, the Director of the State Archive in Hamburg failed to get more space for valuable records, because these rooms were already occupied by homeless people.

The military hospital was situated in the 2nd floor of tower D, as well as parts of the port hospital and important facilities of the Reichspost. In the 3rd floor between tower A and D was the kitchen and the canteen, accommodation for the female auxiliary forces as well as the Aircraft Spotting Command (FluKo) and the Air Raid Warning Command (WaKo). Accommodation for the AA gunners and later the Luftwaffenhelfer was in the 4th floor. Access was gained through two main and four side entrances, which were marked with large letters.

The building supervisor of the Heiligengeist Flak towers was chief engineer Cromm, head of the Dycjerhoff & Widmann branch office in Hamburg, who had also headed the supervision of the building of the three Flak tower pairs in Berlin. The development of the construction plans for the highly similar Hamburg Flak tower pairs was undertaken by Dywidag.

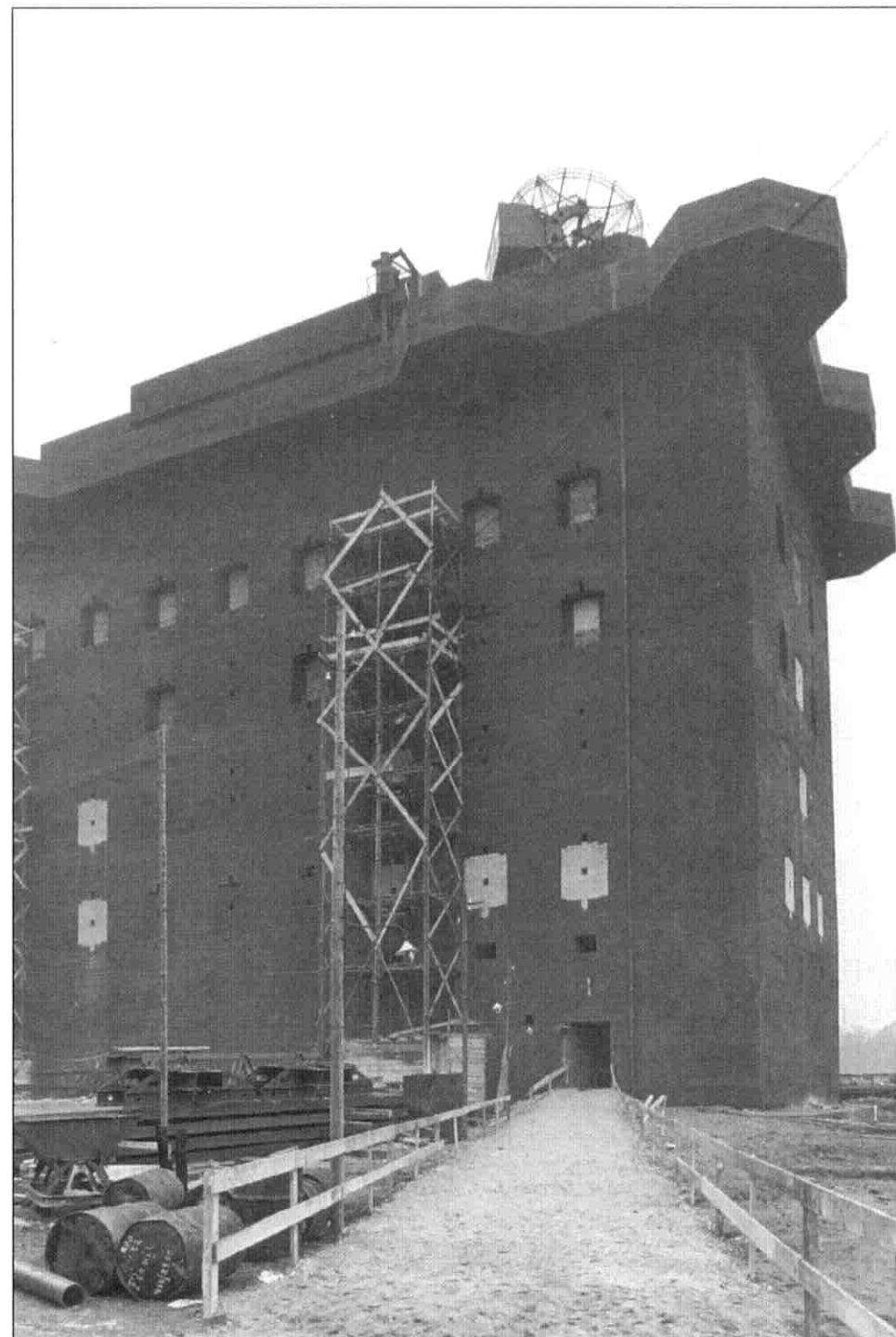
The ground floor had a height of over seven meters, so extra ceilings and floor levels could be inserted. In the Zoo Bunker one of these collapsed. The outer wall was 2.5 m thick, the roof 3.5 m. The foundations were 2.6 metres thick.

The dimensions of the G-Tower amounted to 70.5 x 70.5 m, the L-Tower had a base surface of 50 x 23 metres. The overall height of the G-Tower was 39.2 m, the height of the L-Tower was 39 m.

The 1st and 2nd AA Batteries of the Turmflakabteilung 414 of the AA Group "North" (Flak Regiment 501) – combined since 1944 as the 1./414 were stationed on the Flak tower, with seven 20 mm Flak 38s (Quad mount). Since January 1943, 105 mm Flak 30s had been installed on the G-Tower, followed later by twin 128 mm AA guns. Added to that there were some fifteen plinths for 20 mm Flak 38s (Quad mount) on the lower platforms. On the L-Tower were ten plinths intended for machineguns. The Flak unit belonged to the 3rd Flak Division. The aiming and radar equipment on the G-Tower was the Kommandogerät Mk. 40 Predictor with a range finder EM 4 m R blc and on the L-Tower the radar "Würzburg-Giant", the radar FuMG 39T or a similar Kommandogerät 40 such as was on the G-Tower.

The thickness of the upper surfaces of the L-Tower was quite strong: the cubically reinforced roof had a thickness of 3.5 m, the upper ceiling of the added 5th floor had a thickness of at least 5 metres! The thickness of the outer walls tapered from three meters at the lower floor levels thinning to two meters at the upper floors.

The four twin 128 mm AA guns could open effective fire at bombers approaching at a map distance of 10.36 km and 7,000 m altitude, or at 9.5 km map distance and 8,000 m altitude respectively. Four 37 mm light Flak were positioned on each corner point and between them on each side was one 20 mm Flak 38 (quad mount), in total eight guns. The L-Tower accommodated the quarters for officers and soldiers of the staff battery of the Flak Regiment, the large command post with the indicator board showing the approach routes and the huge air raid shelters for civilians. The ground floor housed the emergency generator (a ship's diesel engine) for both towers, which was started immediately after an air raid began. When the plot to kill Hitler took place on July 20th 1944, two 20 mm Flak 38 (Quad mount) were removed from their plinths and positioned between the G and L-Towers for "ground defence". After a short time they were reinstalled in their old positions.



Right: The Heiligengeistfeld L-Tower in Hamburg shortly before completion, the "Würzburg-Giant" radar is already installed on the top of the tower. This west-side view shows some different stages of provisionally bricked-up windows as well as markings for the planned windows with recesses and small openings.

A "Würzburg-Giant" was mounted on the L-Tower, plus an "Ansbach" device, which was an optical range finder on a 4 m base, which could be only used in clear weather. The fire control officer on the L-Tower received his information from Stade (Night Fighter deployment) and had a direct link to the combat commander of Hamburg in his bunker at Rotherbaum.

The command post (B-Position) in the middle of the upper platform of the G-Tower was used for the Kommandogerät, a fire control system that was used if some disturbances occurred in the L-Tower. Both towers were connected via two separately laid cables, one of them being a reserve. Amongst the members of the battery crews there were also 16 Luftwaffenhelfer from Aachen, who were trained to operate the fire control instrument for the 128 mm AA and were able to take over immediately if the L-Tower failed. They were quartered in an army barracks near the tower, but they moved into the tower itself in 1945.

During the "Gomorrhah Raids", the twin 128 mm AA guns used up 9,192 shells in total, in 1944 over 3,000 shells the whole year. Between October 13th 1942 and March 31st 1945 it is said that the 1./414 (T) took part in some 50 kills. In both towers were air raid shelters for some 18,000 people, but unconfirmed reports quote 60,000 people seeking shelter in the towers.

A Luftwaffenhelfer who was in action on the Heiligengeistfeld Tower between January 1944 and September 1944 remembers two direct hits on the tower, in June and July 1944. Nothing happened during the first air raid, but the second caused severe damage. *"During the air raid in July 1944 the G-Tower received a direct hit, the bomb penetrated the lower platform near the light Flak squad some 3 metres away from the gun and tore down parts of the balustrade and part of the lower platform. The nearby 37 mm AA gun was rendered useless by the bomb splinters."* There were no losses among the crew. Because the bombers were flying out of range at high altitude, the soldiers were in their quarters.

On March 20th 1945 the G-Tower received a further direct hit, it is possible that a part of the lower platform was demolished by this high explosive bomb.

But the Flak tower had some successes. The 1./414 (T) took part in 50 kills from October 13th 1943 until March 31st 1945. Some kills from the tally board:

29.7.1943:	1 kill
31.12.1943:	2 B-17 11.47 a.m.
	1 B-17 12.15 p.m.
	1 B-17 13.28 p.m.
	2 B-17 12.30 p.m.
	2 B-17 12.42 p.m.

In total: eight B-17s on this day alone!

The gun crews were also successful on March 7th 1945:

1 Lancaster	12.00 p.m.
2 Lancaster	22.00 p.m.
1 Lancaster	22.05 p.m.
1 Halifax	22.15 p.m.
1 Lancaster	22.30 p.m.

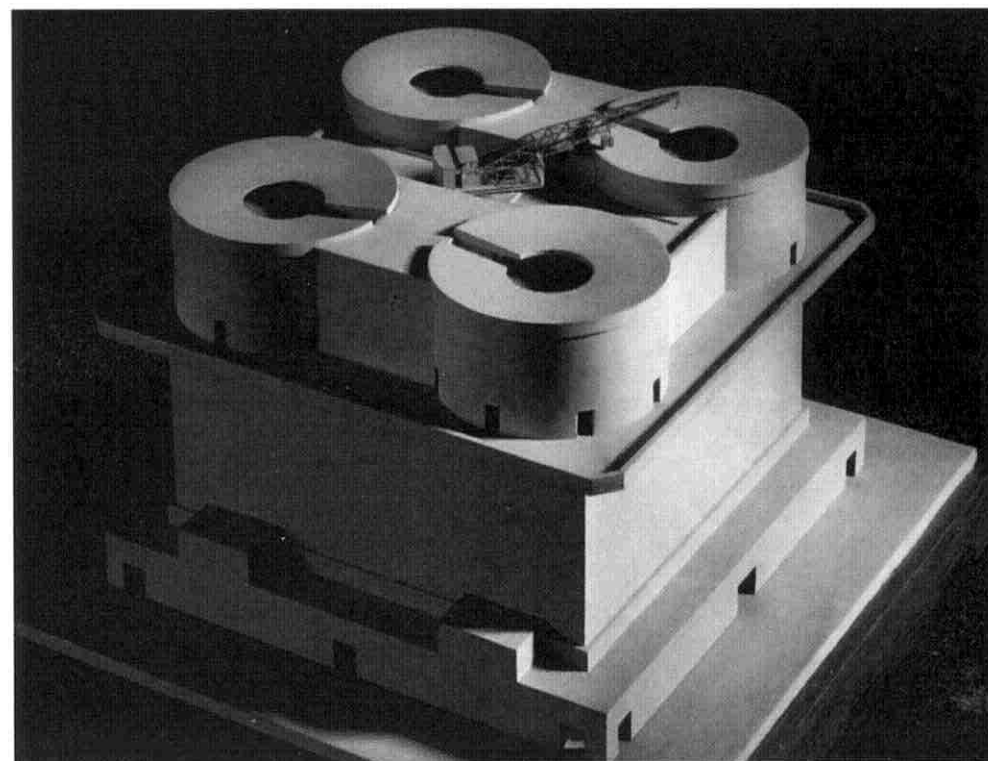
Towards the end of the war, the Volkssturm-Division commanded by NSKK Obergruppenführer Günther Pröhl, set up their headquarters in the Heigengeistfeld G-Tower.

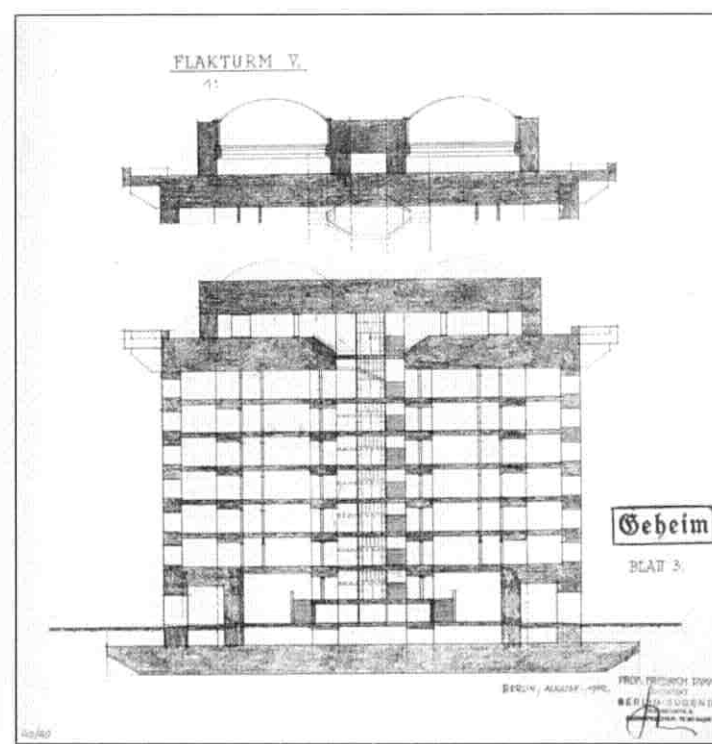
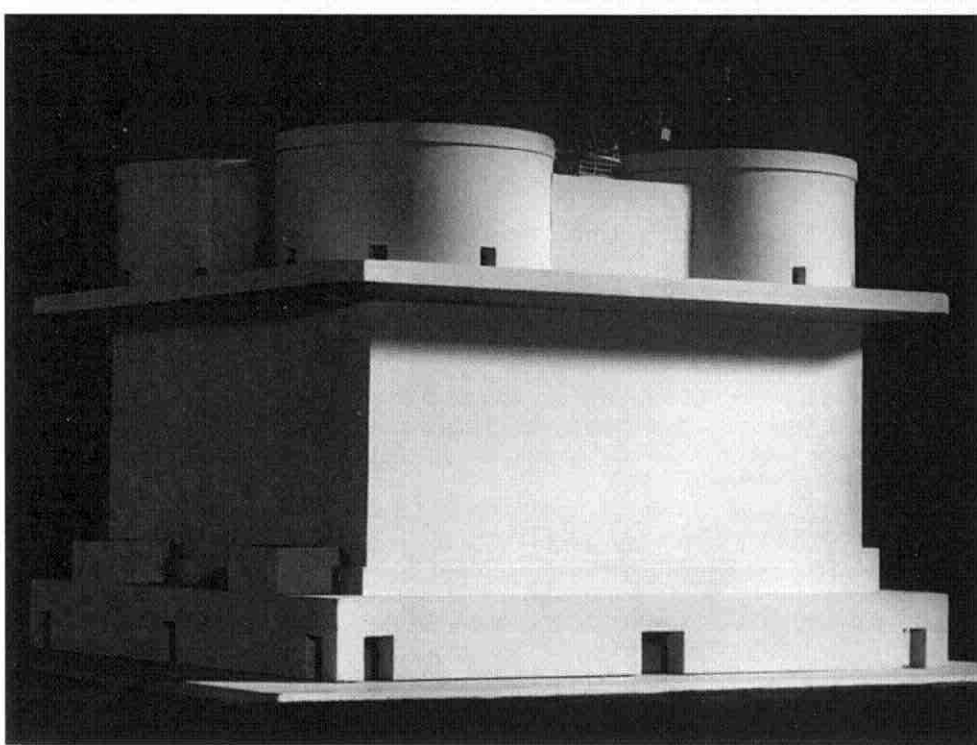
Flak – Tower Wilhelmsburg

The first Flak tower of the second generation was built in Hamburg-Wilhelmsburg. The main task for architect Tamms was to place the gun bases for the twin 128 mm Flak as if on a warship: as compactly as possible given the available space. The idea was to save on building materials but also to provide the gun crews with concrete roofing. The most significant difference compared to the first generation Flak towers was that the lower platform was slightly smaller and there were no plinths for the machine guns. On the upper platform, the crews of the twin 128 mm Flak guns were now protected by round, reinforced concrete roofing. The height of the G-Tower was 41.6 m, so the L-Tower was now only 20 cm taller than its "bigger brother". The ground plans were now 57 x 57 m and 39 x 23.5 metres respectively. Characteristic for the shape of the lower platform of the L-Tower were two "swallows nests" in the centres of the longer sides. The G-Tower was armed with four twin 128 mm Flak cannons, which had already been installed in July 1943, but couldn't protect Hamburg from the devastating "Gomorrhah Raids" of July and August that year.

The Wilhelmsburg G-Tower is reported to have taken a direct hit with no damage and no losses, the bomb hit the Flak tower between towers A and D, on the south side, opposite the L-Tower.

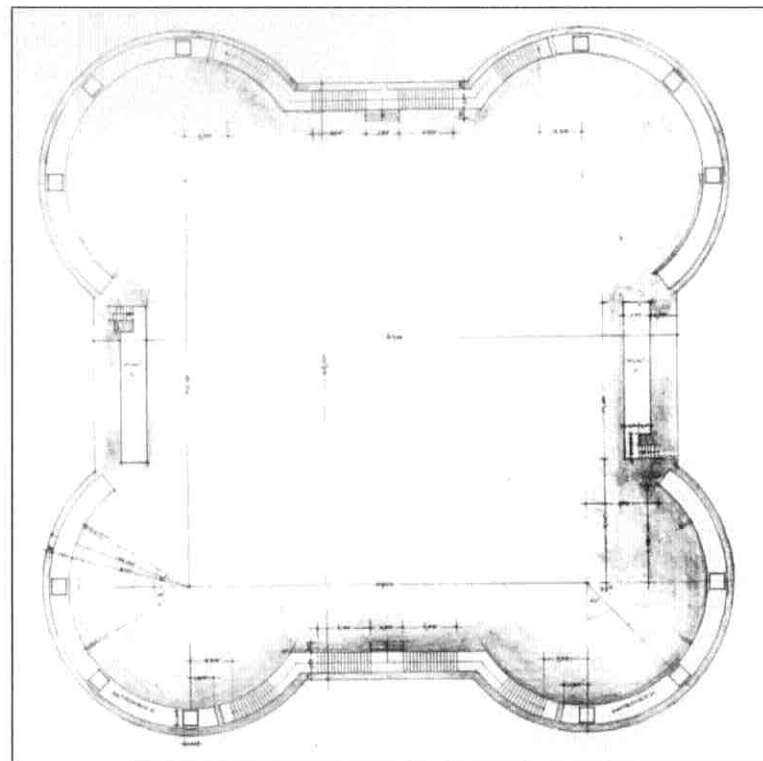
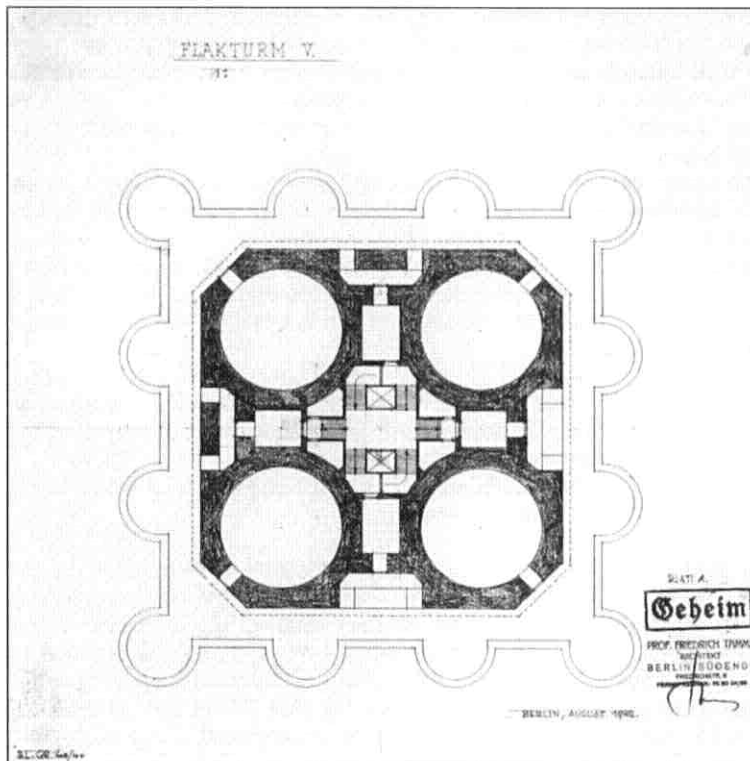
Bottom: a model of the G-Tower from 1943. Another model design differs in the reduced number of entrances to the round gun bases (in each case two). The AA positions rise over a block between them, which was accessible via external stairs. The recesses in the concrete for the zero-position of the gun barrels are not visible.





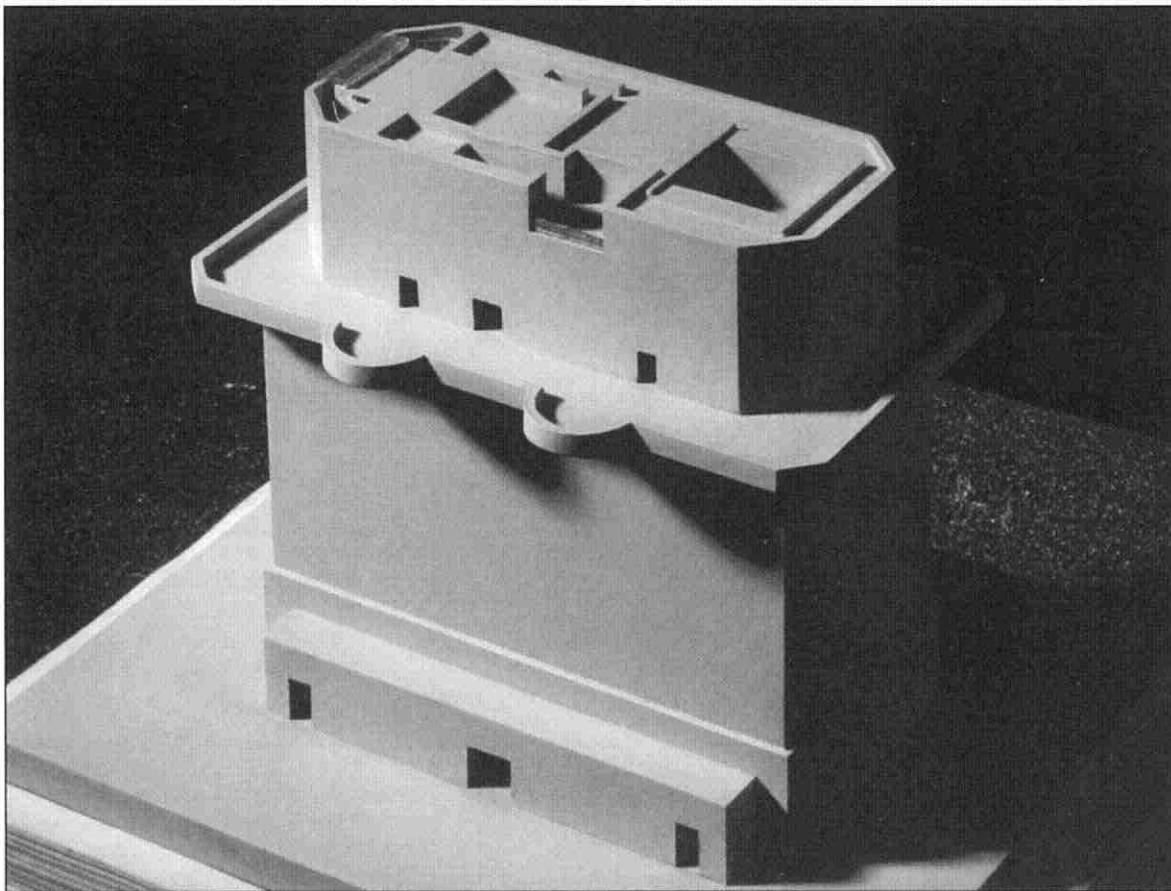
Far left: Model of the Gun Tower with four entrances leading to each of the round gun bases. In contrast to the towers of the "Special Berlin Program" the gun towers of the second generation had no windows in the outer wall but only some small openings of different sizes which are not included in this model. The reduction of openings would increase the security of the G-Tower

Left: A cross-section of a Gun Tower V, a design that was never realized. It already shows the 3rd generation of G-Towers. Here, the Stiftskaserne in Vienna.



Far left: An early design shows twelve "swallows nests" for the light AA guns. This variation was not realized.

Left: Plan of the surface designated for the twin 128 mm AA gun bases. The distance from the AA pivoting-point to the shell dump was exactly nine metres. The platform, which was covered by the concrete gun bases, had an area of 44 x 44 m². On the upper and lower side are staircases drawn in, which should allow access to the top of the plinth from inside the tower.



The radar towers of the second generation had also changed their basic design. The projections are now situated in the middle of the longer sides of the lower platform. The radar equipment was composed of FuMG 65, FuMG 39T, the Predictor 40 with a 4 or 6 m range finder. The opening on top on the right side was the protection-shaft for the "Würzburg-Giant" when enemy planes came too near.

Wilhelmsburg

The Wilhelmsburg Flak Tower pair of the second generation was erected between the Weimarer Strasse and Rotenhäuser Damm from the end 1942 to July 1943. The same type was built in the Arenbergpark in Vienna.

Hitler was particularly satisfied with the reduction of building materials to 42,000 m³ and ordered that this G-Tower should not be erected in the Ruhr region but in Hamburg.

Indeed several different locations were inspected, apart from the Ruhr region, also the city of Bremen. A meeting took place there on October 28th 1942 in the office of the "Haus des Reiches" with the Reichsstatthalter (Governors) of Oldenburg and Bremen, Senator Dr. Fischer, the head of the air protection building office, Baurat (Architectural Counsellor) Assmann, the commanding general of the 8th Flak Division Lieutenant General Wagner and the engineer of the air force building office Bockmann. After the heavy air raids on Bremen, Speer's ministry, GB-Bau department of air protection and the OT had agreed that a Flak tower should be erected in the "Freie Hansestadt" in the parks between the Neustadt-Contrescarpe, Leibnitzstrasse and Richthofenstrasse.

But the building program of Bremen's air raid shelters shouldn't be influenced by this new project, workers

and building material had to be organized by the supervising authorities themselves. It was decided to explore the unstable ground of Bremen with deep borehole drillings. At the beginning of November 1942 an inspection trip to the Flak tower in Hamburg was planned, but in Bremen the plans never came to fruition, no Flak towers were ever built there.

At the end of 1943, pupils from the secondary school in Wilhelmsburg were recruited to the Luftwaffe, becoming Luftwaffenhelfer on the Flak tower. The school was near to the towers, so lessons could be continued without interruption. The Luftwaffenhelfer were quartered in army barracks and looked after by an officer specially seconded to this task.

Manning the twin 128 mm AA guns was hard work: the shells weighed some 48 kg and the hot, spent shell-cases had to be removed from the gun with asbestos gloves. In 1944 manufacturing faults caused instances of shells prematurely exploding in the gun barrels.

The alarm signal for the Luftwaffenhelfer was sounded by a special bell, this alert was code named "Seeadler" (Sea Eagle). At the signal "ready for action" the guns had to be manned, sometimes for many hours. Sometimes during the bomb runs, the crews on the tower were condemned to idleness if the oncoming bombers were shielded by a blind angle and simply not visible.

An enormous amount of ammunition was expended during a major offensive. The supply of the shells was guaranteed by the State Railway, which could get close to the Tower via the Wilhelmsburg Industriebahn industrial railway. During the building phase of the Wilhelmsburg Flak tower pair, one section of track was built to link up with the main rail lines at Bauwiesenstrasse. There were shafts for the ammunition lifts, but the lifts themselves never were installed. This meant that every single Flak shell had to be brought up countless steps to the upper platform by hand. Volunteers from the Flak soldiers and Luftwaffenhelfer did this job.

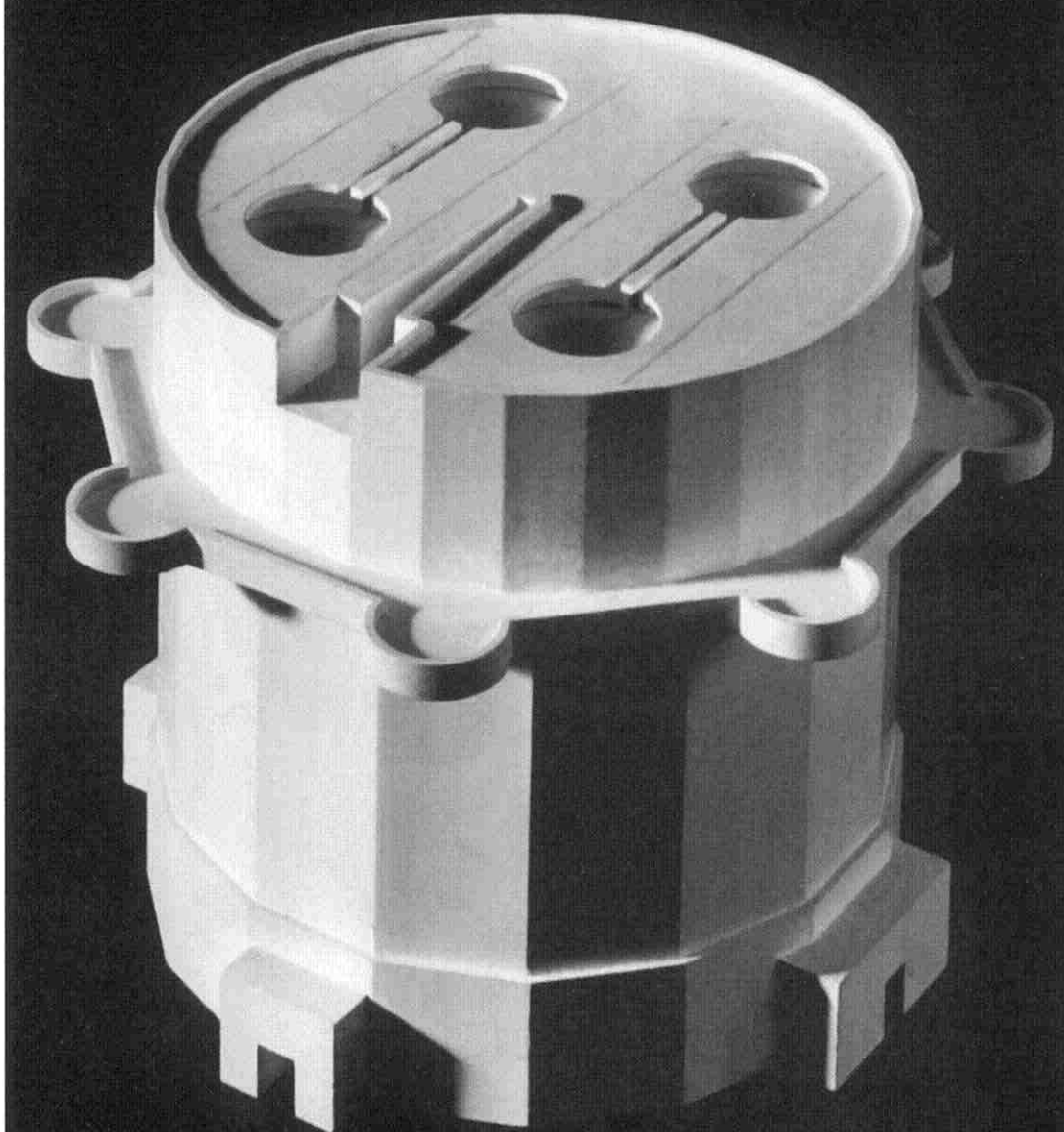
During the "Gomorrhah" raids some 9,000 128 mm calibre shells were fired, but with only little success.

But on the other hand, the Wilhelmsburg G-Tower had some kills on its tally, for instance a reconnaissance aircraft: a PR Spitfire, flying at 36,000 ft on a photo mission. No air raid warning was sounded for the population, so in this situation it was forbidden to fire. But when this Spitfire approached the G-Tower and was clearly visible to the radar, the Lieutenant commanding the battery gave the order to open fire. The twin 128 mm Flak fired three salvos and the Spitfire was shot down, but the Lieutenant was dismissed.

Some 30,000 civilians could find shelter in both towers during the air raids. The upper floors housed a hospital department. Towards the end of the war the towers accommodated a large number of bombed out local residents.

On the night of March 31st 1945, several Wehrmacht barracks close to the Flak tower were damaged by incendiary bombs.

In the last days of the war, the Flak guns were prepared to take part in ground fighting, the combat commander in Hamburg, General Wolz had his command post in the Flak tower, as did the staff of the "Division Süd" of the German Home Guard under the command of Colonel Herpel. The 128 mm Flak went into action on April 26th 1945 to keep the British out of the Kiekeberg-Vahrendorf area, but their fire was inaccurate due to a lack of artillery observers. On May 3rd the first units of the British army arrived in Wilhelmsburg, and the Germans surrendered.



The Flak Towers in Vienna

Hitler himself gave order to erect two Flak tower pairs in Vienna in September 1942 (other sources mention the 9th of November 1942), because in his mind the cultural value of Vienna's city centre should be protected. Later generations should still remember the battle for the Third Reich – even 4,000 years in the future.

The Luftwaffe wanted to build them on the Schmelz, in the Prater and in Floridsdorf (three constructions), but Hitler himself determined the sites. Flak Tower VIII should be situated in Arenbergpark, Tower V in the Stiftskaserne. Hitler originally wanted to see Flak Tower VII in the Rossauer Kaserne (Rossauer barracks) but it was eventually built in the Augarten. The city of Vienna and the Regional Air Authority (*Luftgaukommando*) shared in the decision-making regarding the building site selection.

The planning of the Viennese Flak towers was again carried out by Prof. Tamms. The building supervision was taken over by the *Rüstungsbau* Dept. of the Ministry for Arms Production in Berlin. The first plans for the Flak towers in Vienna went up in flames during an air raid on Berlin. In Vienna, engineer Ruschitzka had to draw up new plans within two days.

The Flak towers were laid out so as to create a triangle, in which the firing range of the heavy Flak could overlap and thus the city centre of Vienna not only could be defended against bombers, but also against strafing fighter planes. Some test emplacements were installed in Lower Saxony, to the north of Celle near the village Unterlüss.

All the L-towers were rectangular like those in the "Old Reich", but in a smaller version (L-towers of the 3rd generation were 18 x 31 m) but the shape of the Stiftskaserne and Augarten G-Towers were quite different - with 16 corners, they were very nearly round.

Some 300 to 500 foreign labourers were employed on each tower, especially Yugoslavs and Greeks, but there were also Italian "military internees" plus some Austrian specialists as well. Additionally, construction units of the RAD and the armed forces, plus Jewish forced labourers were put to work. The building materials were brought to the building sites over an extensive system of narrow-gauge railways (even using the tramlines), via the river Danube and from the Aspern Station.

All of the Flak towers in Vienna were built on two-metre thick concrete base-plates. A very hard sort of concrete was used, which was strengthened with spiral reinforcement. The outer walls were two metres thick, the roof up to 3,5 metres thick. Mobile cranes on tracks were mounted on the tower's flat roof and had the flexibility to be able to reach and replace all 128 mm AA guns if necessary.

It took half a year to build one tower, the last one ready for combat was the Stiftskaserne G-Tower in the early summer of 1944, but in that summer not single tower in Vienna was really finished.

The gun crews of the twin 128 mm Flak were far better protected on the G-towers of the 3rd generation than previously. Because of the fact that the guns were protected by steel cupolas, the crews were safe from splinters and even direct hits by lighter bombs.

Left: In contrast to the Augarten G-Tower, the G-Tower Stiftskaserne was a little smaller. The four round recesses on the upper platform were intended for the twin 128 mm Flak, with slots for the barrels in zero-position. Between them is a further recess for the tower crane.

Platforms for light AA guns were built in the upper third of the G-towers of the 3rd generation, but it seems that no guns were ever mounted there. Each bunker had its own well and power station. The Flak towers were used to store cultural treasures, they also housed military offices and provided air raid shelter for some 15,000 residents. In total though, some 40,000 could find shelter in the towers. Each Flak tower was equipped with a military hospital, some with over 800 beds. War industries moved into the bombproof towers and aircraft engines, electronic valves and ammunition were manufactured.

All three L-towers were equipped with a "Würzburg-Giant" plus the smaller "Würzburg" set or the "Mannheim" radar. Each L-tower also had a type A Predictor Mk 40 on a 6 m base. All six towers had different heights (the Augarten G-Tower was ten metres or three floors higher than its "brother" in the Stiftskaserne) but the upper platforms were at the same level, this was necessary for the accurate transmission of the range-finding data and a precise fire control.

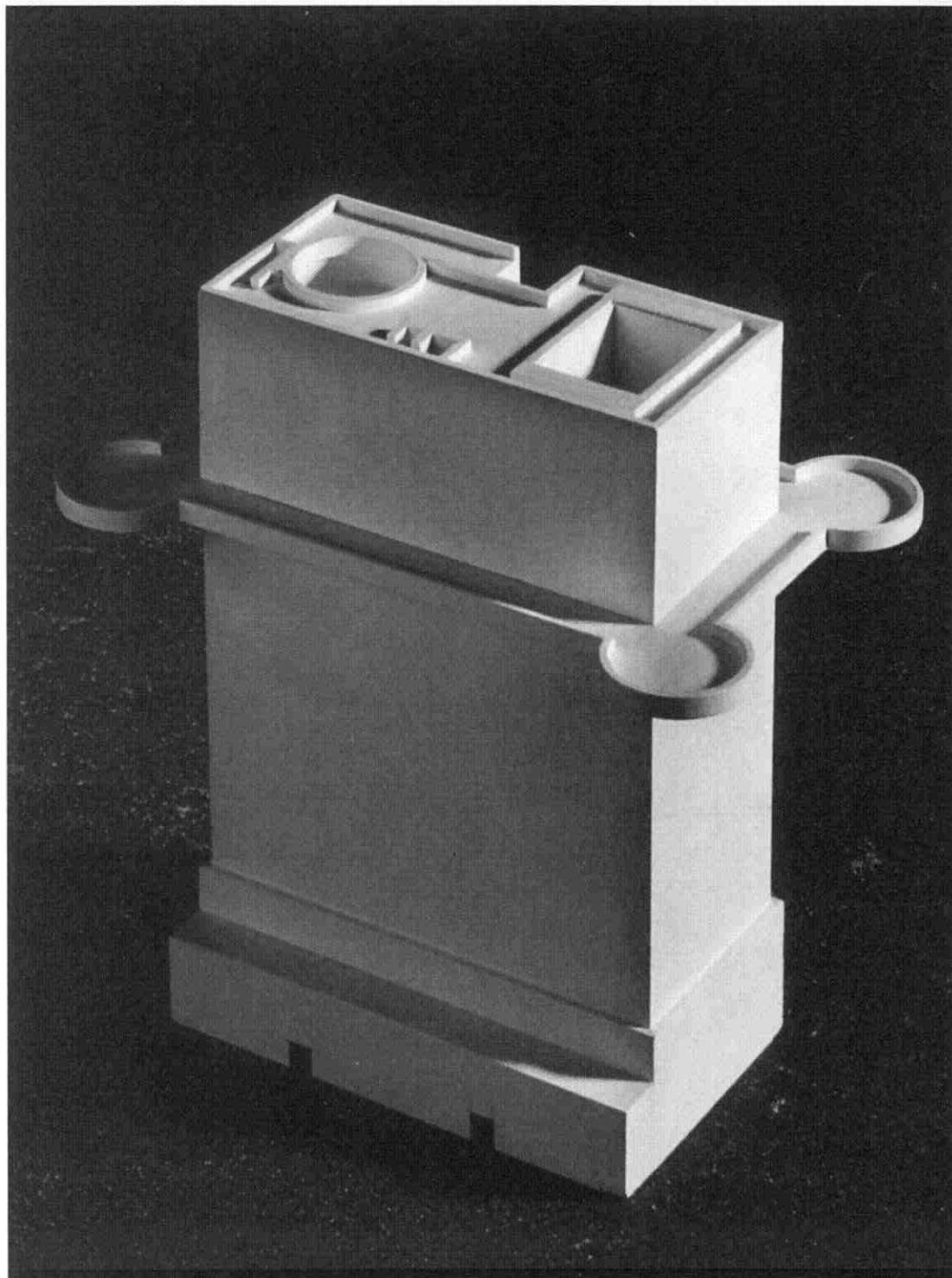
Architect Tamms positioned the Flak towers in Vienna with a view to long-term town planning considerations. So the Stiftskaserne towers were situated exactly on the axis of the Vienna Castle and the towers in the Augarten were placed in the oldest baroque gardens of the city.

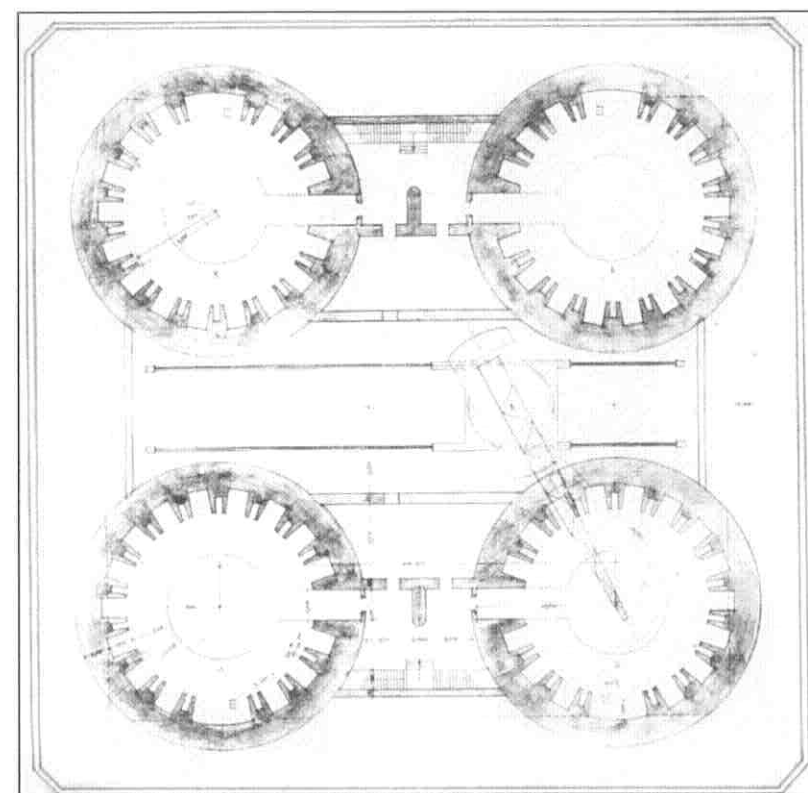
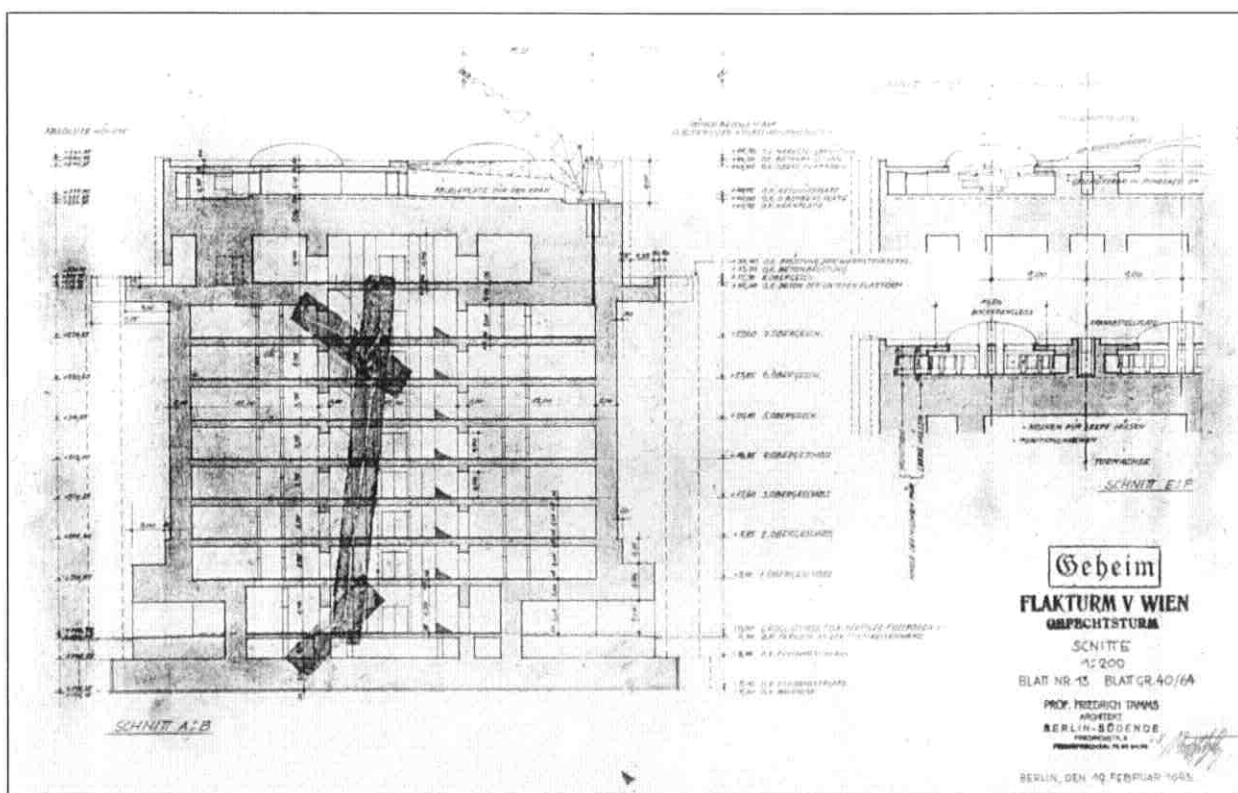
It was quite clear that after the "final victory" it would be impossible to remove the masses of concrete, therefore the Flak towers were styled after the Stauffer clan's castles in Germany and Italy in the Middle Ages. The towers' façades should have been clad with rough bricks and French marble, which was already cut from the quarries near Lyon, Paris and Orleans, but the transportation of the marble by railway couldn't be carried out because of the allied landing in the Normandy on July 6th 1944. The fate of some trains (fully loaded with marble) will probably never be known – they disappeared without trace.

It is said that the Viennese Flak towers proved to be effective. The lightest bomb damage was recorded in the VIIth District of Vienna, where the Stiftskaserne Flak Tower was located, here there were only 107 deaths caused by air raids. But Tamms admitted that these "fire domes" didn't match up the hopes which had been invested in them. The designer Jan Tabor: *"Without denying the military expediency of those buildings completely, the concept was from the very beginning to create an architecture of mood."* Tabor compared the towers with the Egyptian pyramids: *"It is a monument for everyone and for all times. Therefore it is without utilitarian value in the normal sense. It is as useless as a pure sculpture. But it is the bearer of an idea, an elemental sense of power, steadfastness and vital force."*

As in Berlin, the Flak towers in Vienna participated in ground combat during the final fighting and shelled concentrations of Russian troops near the main roads leading to Vienna in the south, south-west and west of the town. Units of the Soviet 4th and 9th Guards Army and the 6th Guard Tank Army were assembled there. The 2nd battery of the Stiftskaserne G-Tower was laying a barrage of fire on Laxenburg, Hennersdorf, Pechtoldsdorf, Rodaun and Mauer. The shock waves caused several windowpanes to shatter and window frames were shaken loose in the barracks. On April 4th 1945, the 1st Battery on the Arenbergpark Flak Tower was laying down curtain fire on ground targets in the south of Vienna. The Luftwaffenhelfer of this battery plus the female auxiliary forces had already been disbanded. The firing continued without pause for four days and nights.

Right: Model of the Esterhazypark L-Tower with large lobes on the corners of the lower platform. Top Right: the shaft of the "Würzburg-Giant" radar set, on the left side in the circle was the Kommandogerät Predictor, the Commanding Officer's command post was in between.



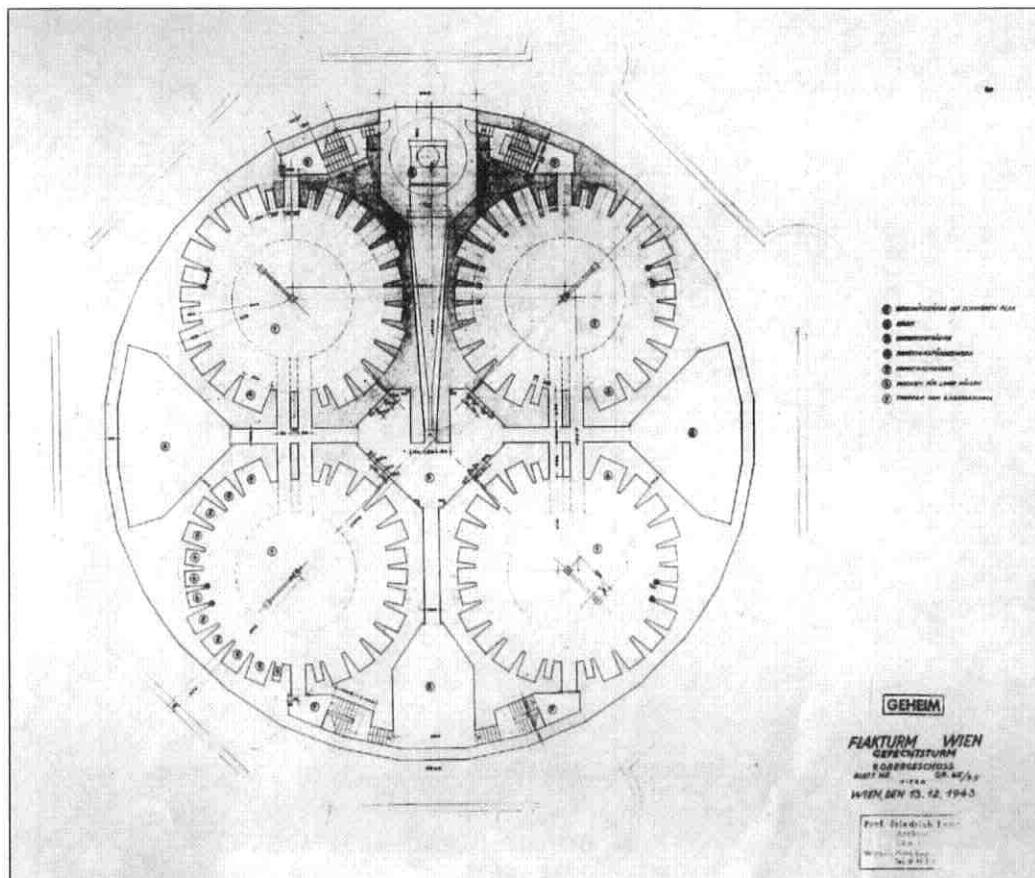


Top left: Plan of Tower V (G-Tower Stiftskaserne), dated February 19th 1943. It is interesting to see that the gun positions are protected by steel cupolas. This variation was however never built.



Top: The concept of the tower crane had changed from a fixed to a flexible one. It was mounted on rails in order to reach all four gun positions. The nearly completely covered gun positions contain the ammunition niches plus the niches for the empty cartridges.

Left: One of the 105 mm Flak 39 guns in the G-Tower Arenbergpark. Stacks of shells are visible in the ammunition niches.



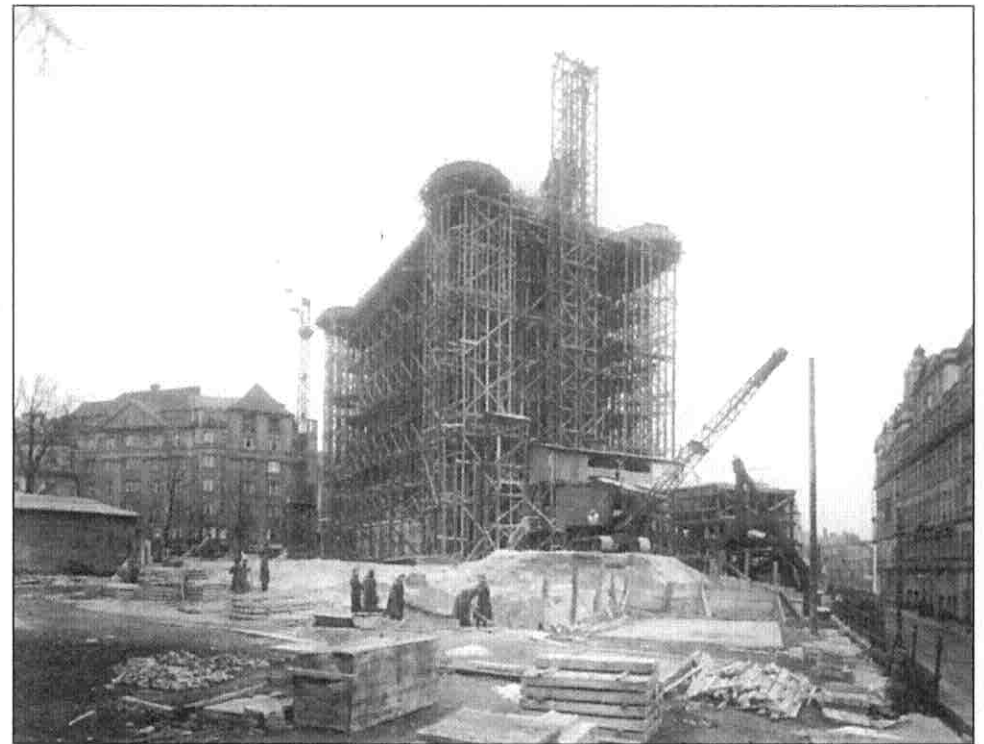
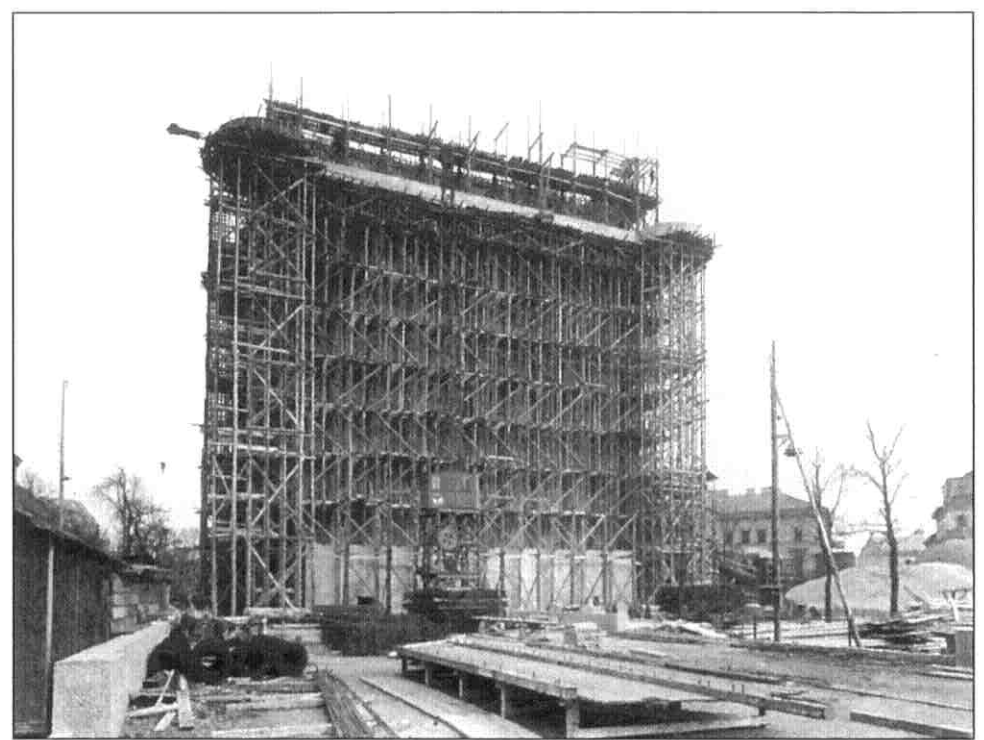
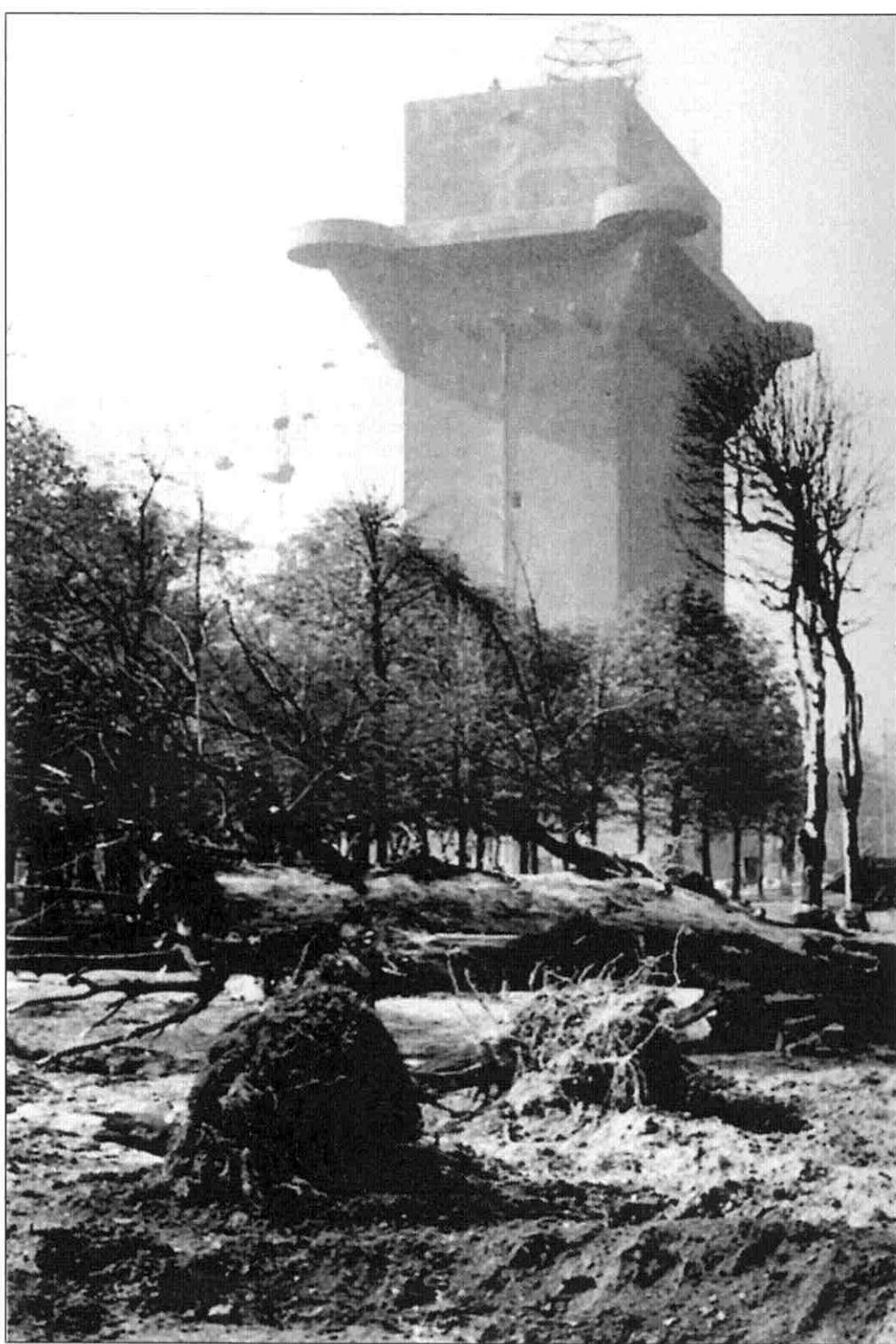
Top: Plan of the upper platform of the third generation of Flak towers from December 1943:

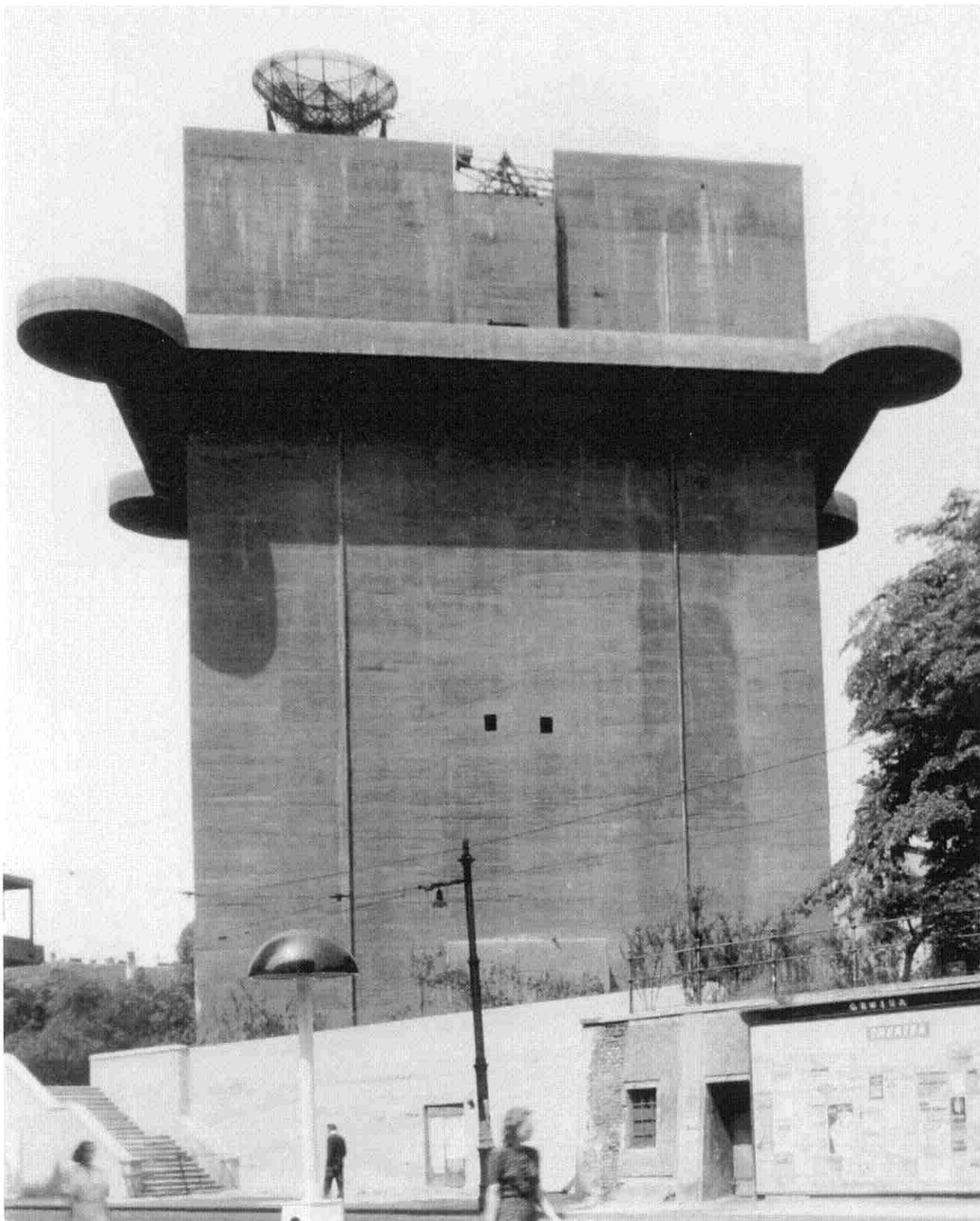
The four gun positions for the twin 128 mm Flak Mk. 40 with the ammunition niches and the recesses for the two tower cranes, which should later hoist the guns onto the tower. On the left and right are shelter rooms and machine rooms for ventilating the gun positions.

Right: The main structure of the G-Tower is finished. The concrete supports in the upper quarter became necessary after the order was given to raise the height of the tower by another ten metres, which would have caused the wooden scaffolding to collapse under its own weight. Apart from that, these concrete supports were quite helpful for the construction of the lobes directly above them.

Next page, left: After completion of the Augarten Command Tower, the "Würzburg-Giant" radar is already installed. **Right:** Views of the Esterhazypark Command Tower surrounded by scaffolding shortly before completion of the main structure.







The Esterhazy Park L-Tower in Vienna, August 1944. The "Würzburg-Giant" can be seen next to the crane. There is no light Flak on the first platform with its "Ohrwascheln", Austrian slang for "earlobes".

Flak Tower Arenbergpark

The first Flak tower erected in Vienna in mid-summer 1943 was situated in the Arenbergpark, the G and L-towers were manned by the 1st Battery of the Turmflakabteilung 184 (T). The construction was the same as its predecessor in Hamburg-Wilhelmsburg. The G-tower was at first armed with four 105 mm Flak guns (single mount), from January 1944 with four 128 mm Flak guns (single mount), later to be replaced by four twin 128 mm Flak guns. After the last shot was fired during the final battle for Vienna, the guns and all the technical equipment was blown up on the 8th floor. The tower crew left the bunker on April 8th 1945. The tower apparently never lacked for ammunition, because vast stocks of Flak shells were found in the bunker after the surrender.

Flak Towers Stiftskaserne and Esterhazypark

From May to September 1943, a G-tower was erected in the grounds of the Stiftskaserne. The 2nd Battery of the Turmflakabteilung 184 (T) was stationed in the tower. The L-tower was some 500 m away in Esterhazypark. The Stiftskaserne G-Tower had a height of only 45 m and was the smallest in Vienna. A 16-sided polygon, it was nearly round and had a diameter of 43 metres. The G-tower was equipped with four twin 128 mm Flak 44 in twin carriages. The guns' sides were protected by open steel cupolas.

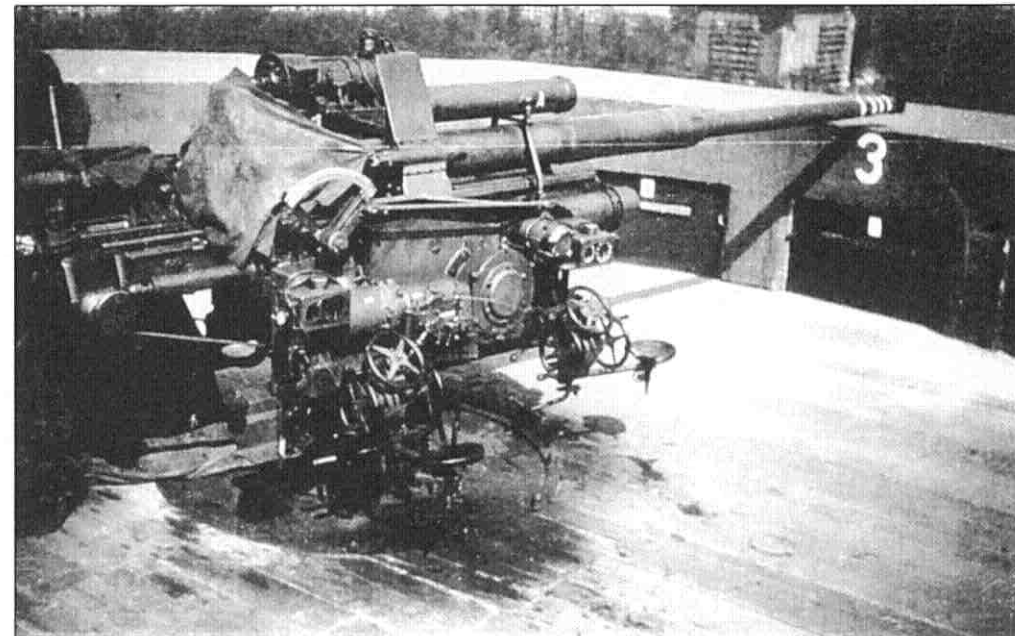
The Esterhazypark L-Tower had a basement and 13 floors. It is said that the upper platform suffered a direct hit by a bomb. It's not clear if light AA weapons were mounted on the lower platform.

Flak Tower Augarten

The last Flak tower was erected in the Augarten between summer 1944 and January 1945 and manned by the 3rd Turmflakabteilung Battery 184 (T). With a height of 50.6 m (other sources note 54 m) it was the tallest in Vienna. Also a 16-sided polygon, it was nearly round and had a diameter of 43 metres. The outer walls were 2.5 m thick. Some ten metres below the top of the tower is a 5 m-wide platform that surrounds the tower. It has some "earlobes" (swallows nests). The tower was armed with four twin 128 mm Flak 44 guns on twin carriages.

The G-tower provided accommodation for a radio-valve factory as well as the offices of the town's Mayor and his staff. A number of wooden barracks were erected between the G and L-towers to house the Luftwaffenhelfer and female auxiliary forces.

During the final fighting in April 1945, the L-tower received at least three direct hits by soviet artillery shells - all in the upper third of the tower, one of them penetrating the outer wall.



Top: The "A" gun with four kill-markings in zero position on the Friedrichshain G-Tower.

Bottom: The gun crew familiarise themselves with the 105 mm Flak Gun "Berta".

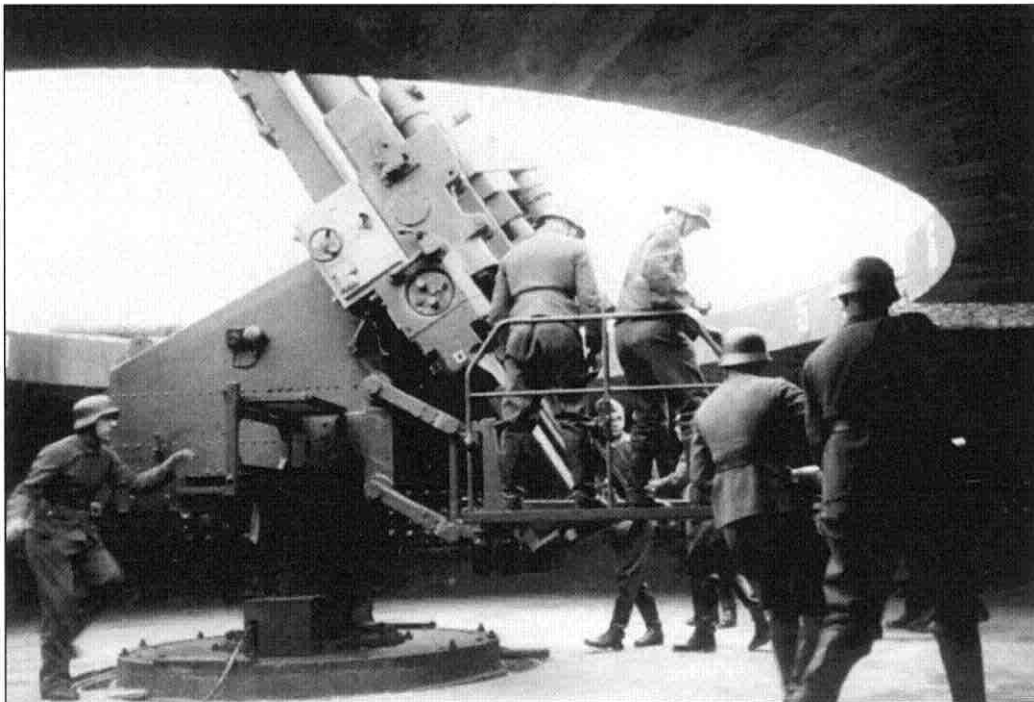
Heavy Flak

The immediate equipping of the Flak towers with the intended twin -barrelled 128mm AA guns was delayed due to manufacturing problems. Even substituting them for the 105 mm (single) Flak Mk.38 and Flak Mk.39 meant a long wait for delivery, as noted during a conference on September 20th 1940. The twin 128 mm AA gun would only be available 18 months later. The Navy was also only able to deliver a twin 105 mm AA gun 18 months years later. It was decided to install the plinths for the twin 128 mm AA in advance and to equip them in the interim with 105 mm Flak Mk.38 / 39 cannons. Several faults were noted during the trials of the 105 mm Flak Mk.38, and this model was replaced by the 105 mm Flak Mk.39. The production figures were quite small at the start of the war: in 1939 a total of 38 pieces with a stock of 64. In 1940 the figure rose to 290. In total 3,981 105 mm Flak cannons were produced during the war. The performance of the 105 mm Flak Mk. 39:

Max. ceiling: 12,800 m	Effective rate of fire: 12 – 15 rounds per min.
Max. range: 17,700 m	Weight firing: 10,240 kg
Predictor: 36 and 40	Muzzle Velocity: 880 m/sec – H.E.
Elevation: -3° to 85°	Length of barrel: 6,648 mm
Traverse: 360 degrees	Length - width - height: 8,420 – 2,450 –2,900 mm

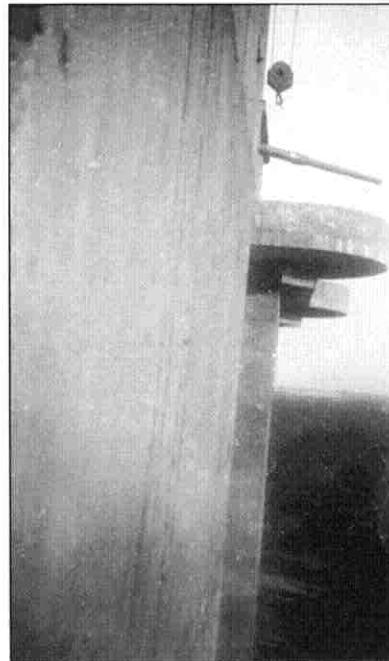
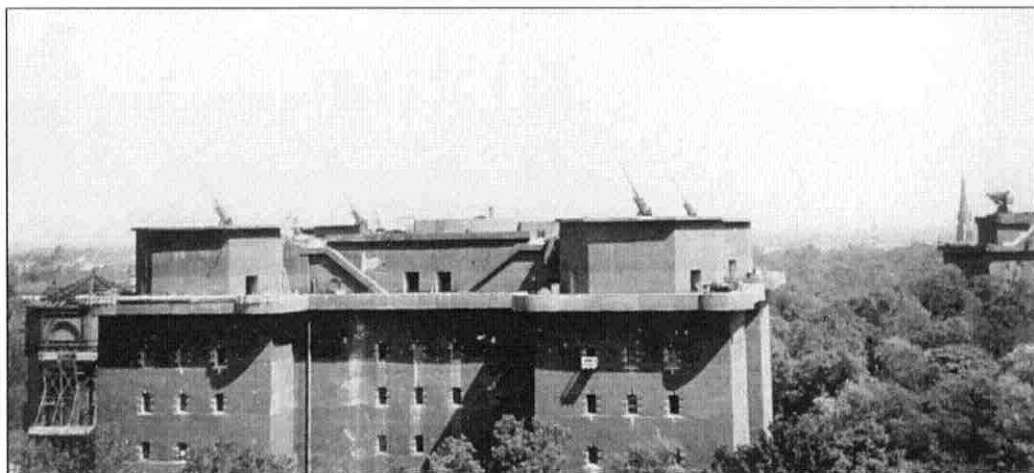
Top: Zoo G-Tower: gunners removing 105 mm shells from the armoured cupola. The shells weighed 15.1 kg and were brought to the gunnery surface of the G-Tower by ammunition elevators. The barrel of the gun "Cäsar" is already marked with two kills. Right: A battle-ready battery of 105 mm guns on outriggers in the Berlin area.





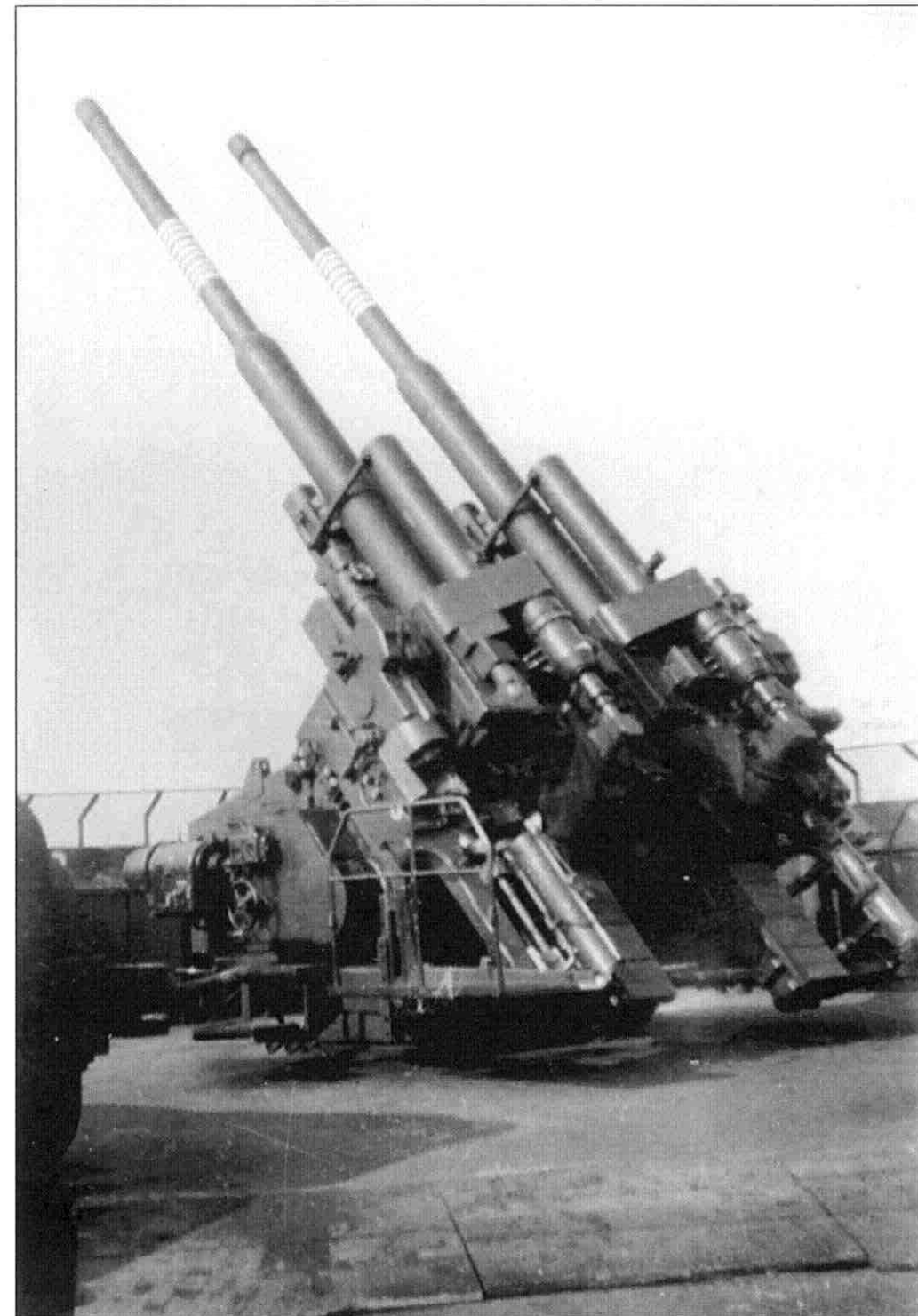
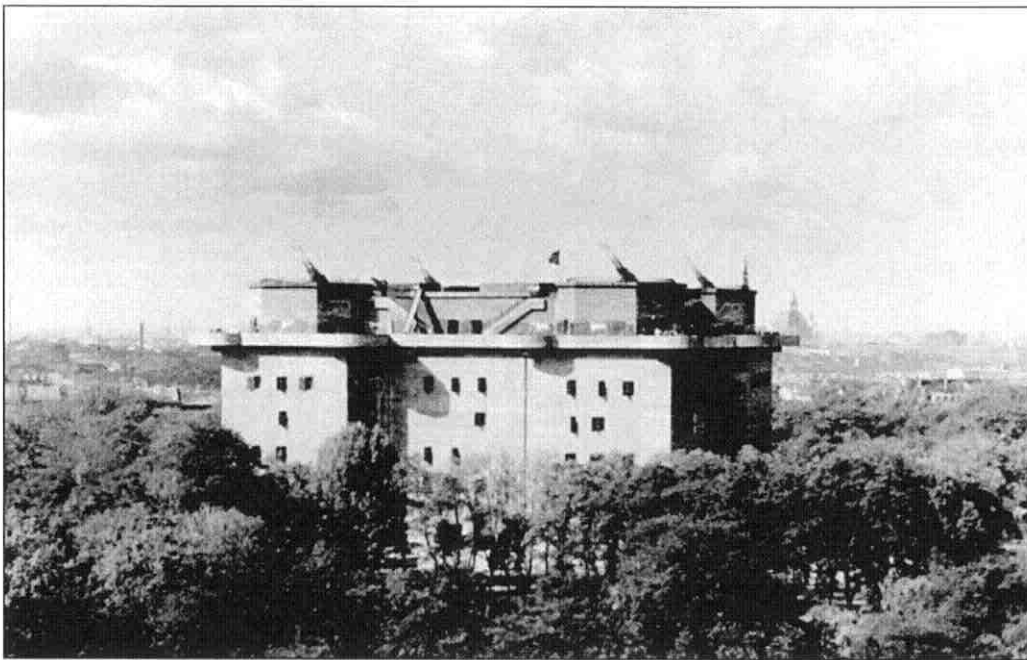
Top: In the beginning, the heavy Flak on top of the Arenbergpark G-Tower in Vienna had to make do with the 105 mm Flak mounted on pedestals. This picture shows the how the gun crews were quite well protected by the partly concrete-roofed installation.

Bottom: The complete 105 mm Flak battery on the Berlin Zoo G-Tower. On the right in the background is the L-tower with its "Würzburg-Giant" radar equipment. Interestingly, there is a little balcony under the lower platform on the right side. Right: A rare picture from the transitional phase of the Berlin-Friedrichshain G-Tower: while we can see a 105 mm Flak cannon in the background, its successor, a pre-assembled 128 mm Flak cannon is about to be installed.

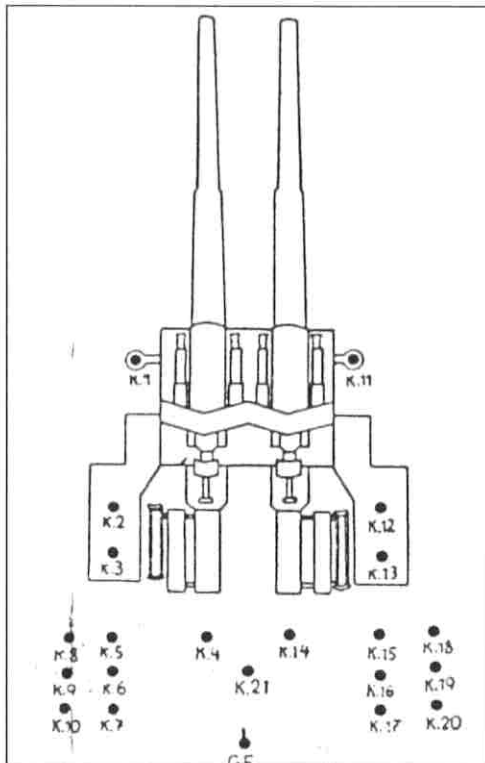


Both the tower crane as well as external cranes were used to lift the heavy 27 tonne AA-guns onto the top of the G-Tower. The guns had to be disassembled first. Top left: Each barrel was transported individually onto the top of the Friedrichshain G-Tower and stored there for a while (top right). Then the first AA-guns were assembled and mounted on their plinths.



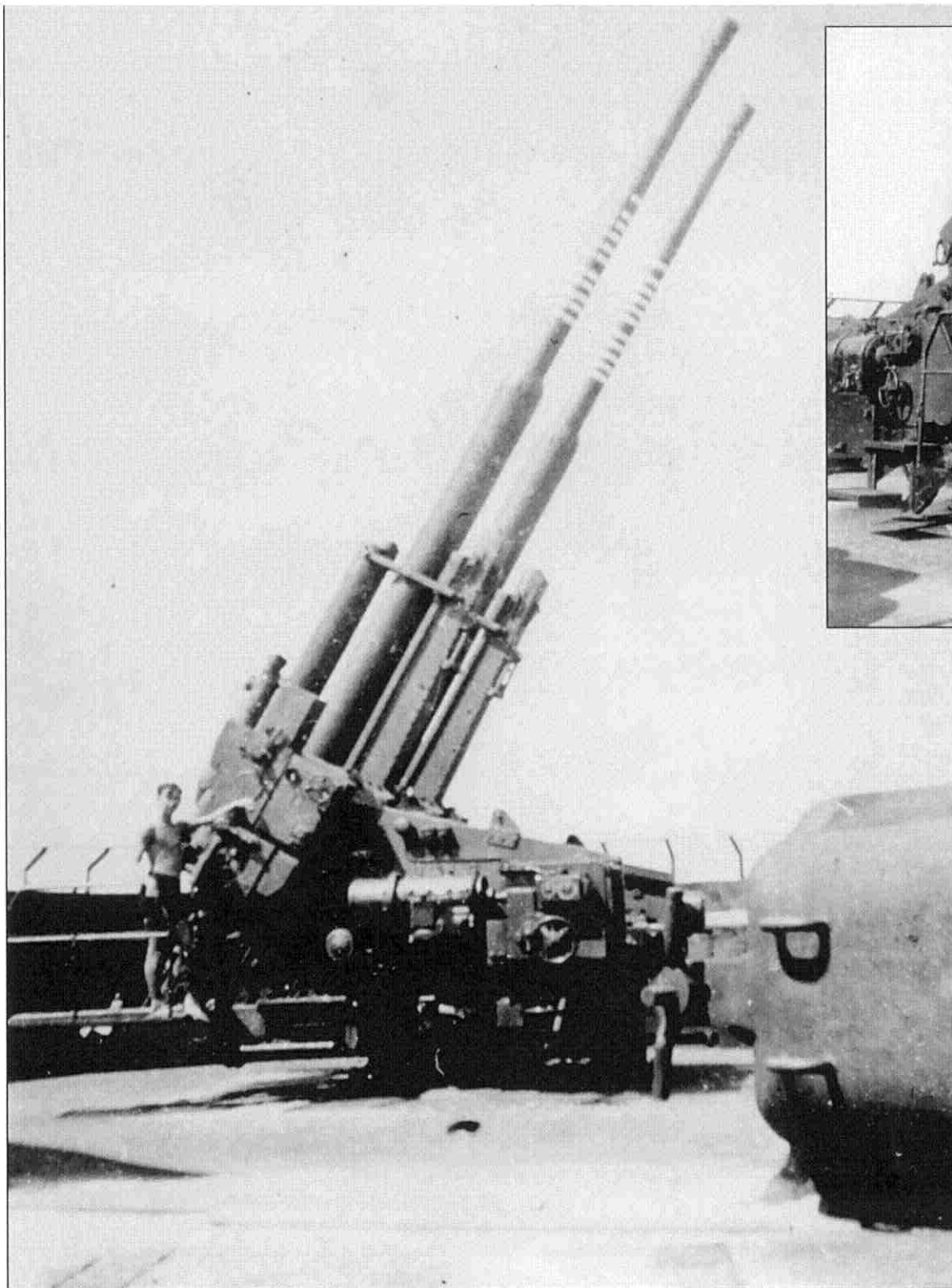


Top: After exchanging the 105 mm Flak for the twin 128 mm Flak, the Friedrichshain G-Tower is complete. Left: The positions of the 22-man gun crew of a twin 128 mm Flak cannon. Right: A twin 128 mm Flak with nine kill-rings on the Friedrichshain G-Tower.



The twin 128 mm Flak 40)

The twin 128 mm AA-gun was developed by Rheinmetall-Borsig in Düsseldorf and manufactured by Hanomag in Hannover. The twin version of the AA-gun was not only used on the eight G-towers but also to defend other objects such as the Wesermünde docks and the port of Gotenhafen. The last existing specimen in the world is US Army war booty, now situated at the Aberdeen Proving Grounds in Maryland, USA. The first G-Tower ready for combat was the Zoo bunker. Once the Berlin towers had been equipped, the G-Towers in Hamburg followed in 1943 and in September 1944 the G-Towers in Vienna were also armed. At that time a total of 32 twin guns were reported ready for combat on the G-Towers.



Left: Luftwaffenhelfer on the Zoo G-Tower in front of the 128 mm twin Flak cannon "Dora".

The 128 mm twin Flak with eleven kill-rings. In August 1942 Hitler was pleased to hear that Berlin's first gun-tower had been finally equipped with four 128mm twins. Hitler: "These double-barrelled 12.8s look fantastic. From a technical point of view, the 88 mm is the most beautiful gun ever made – apart from the 128mm."

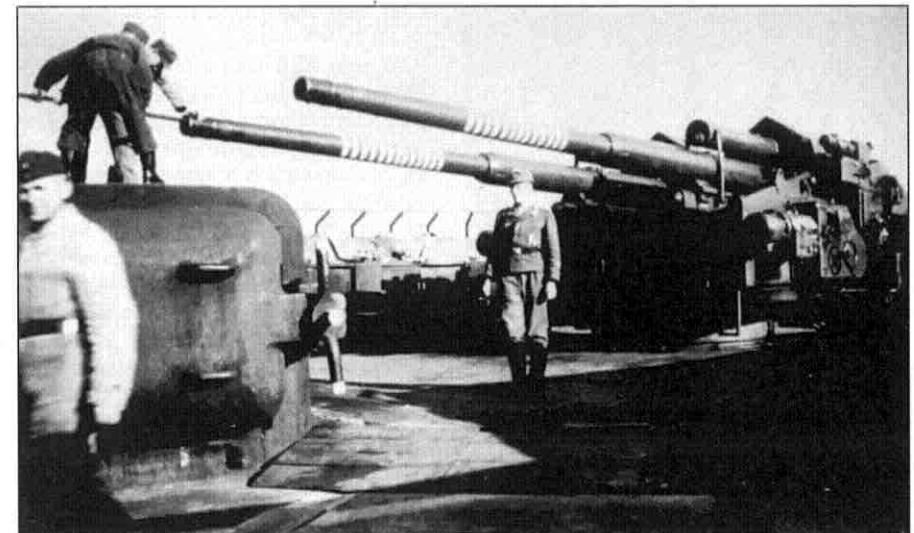
Specifications for 128 mm Flak 40:

Max. ceiling: 14,800 m
 Max. range: 20,900 m
 Effective rate of fire: rpm
 20-24

Elevation: 0° to 87°
 Predictor: 40
 Traverse: 360°

Muzzle Velocity:
 (H.E.) m/sec: 880 m
 Weight firing: 27 tonnes
 Barrel length: 7,835 mm
 Length (firing): 9,120 mm
 Breadth: 5,045 mm
 Height: 2,950 mm

Below: Cleaning the huge barrel of the 128mm twin Flak, this one already exhibiting the first successful kills in the form of white rings painted on the barrel – at this point we can already count 13.





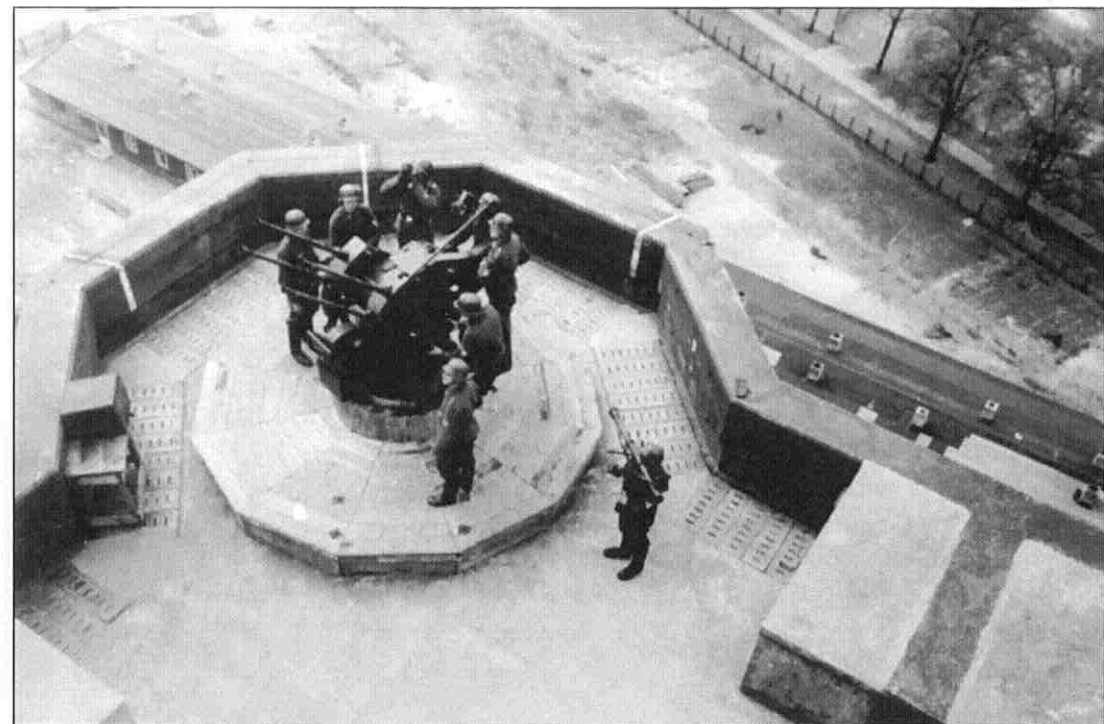
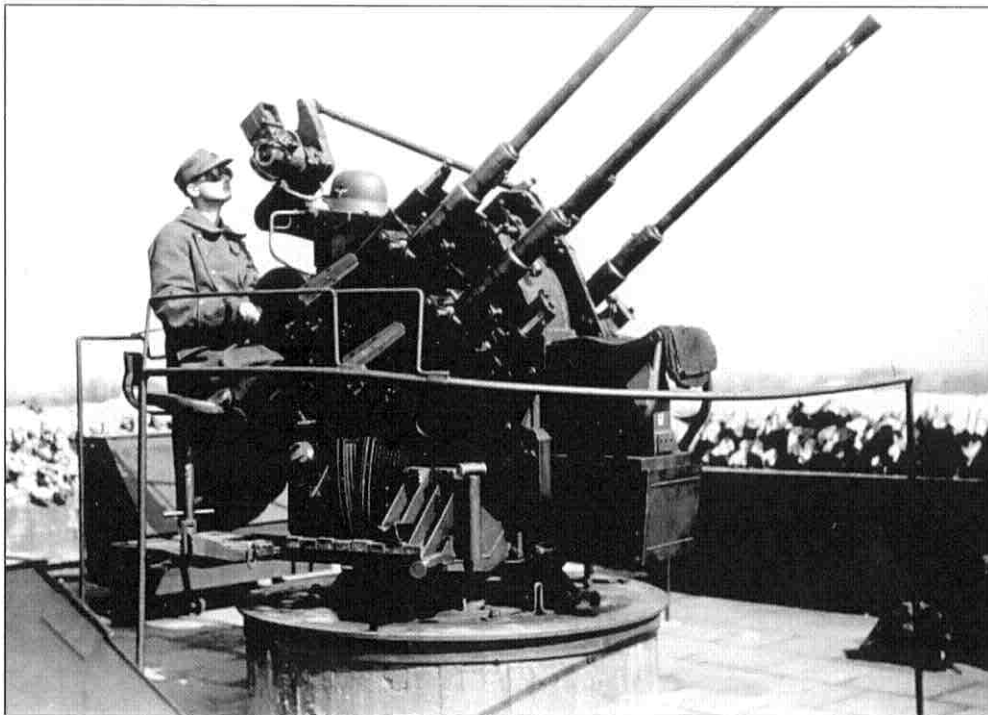
20 mm AA quad mount Mk 38

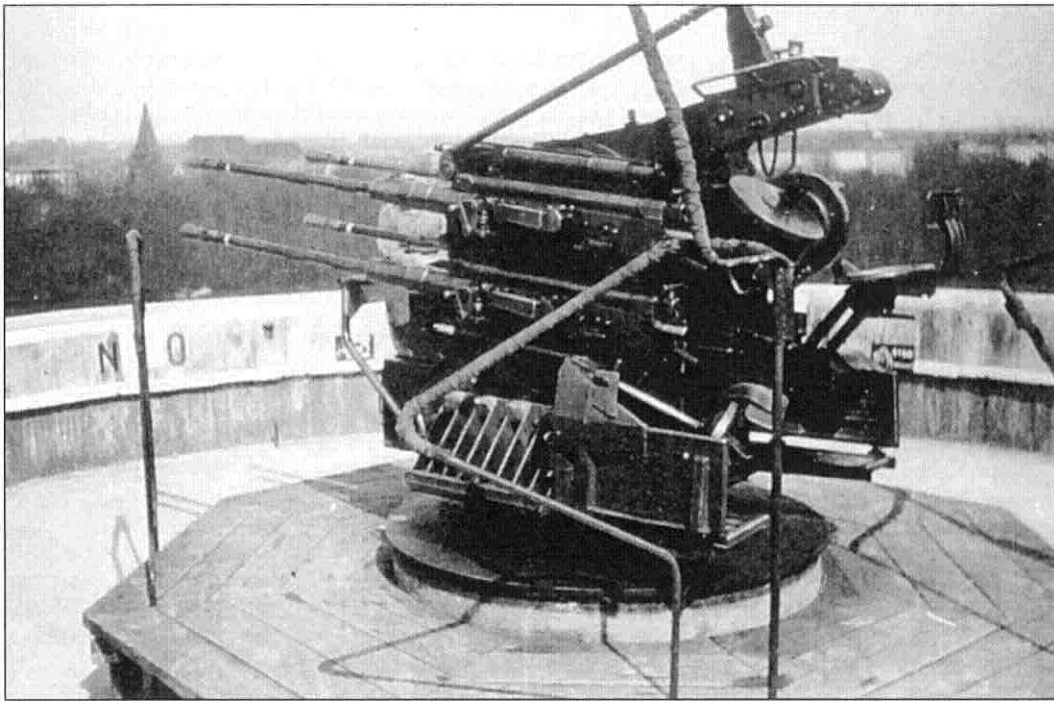
As far as we know, the light AA on the Berlin Flak towers saw action only once, when on September 12th 1944 long-range fighters of the 8th USAAF flew low between the L and G-Towers at Humboldthain and maybe also flew past the Friedrichshain L-Tower. On this occasion a building was damaged by the light Flak, normally the light Flak couldn't engage in low-level combat without endangering their comrades on the opposite towers. April 16th 1945 saw the first strafing attack on Berlin by Soviet IL-2 ground-attack planes, but by this time most of the light AA guns had already been deployed elsewhere. The Allies feared the firepower of the 20 mm quad Mk 38. Theoretically this light AA gun could fire 1,800 shots a minute, but the effective rate of fire was 900 shots a minute.

Performance: 20 mm AA quad mount Mk 38:

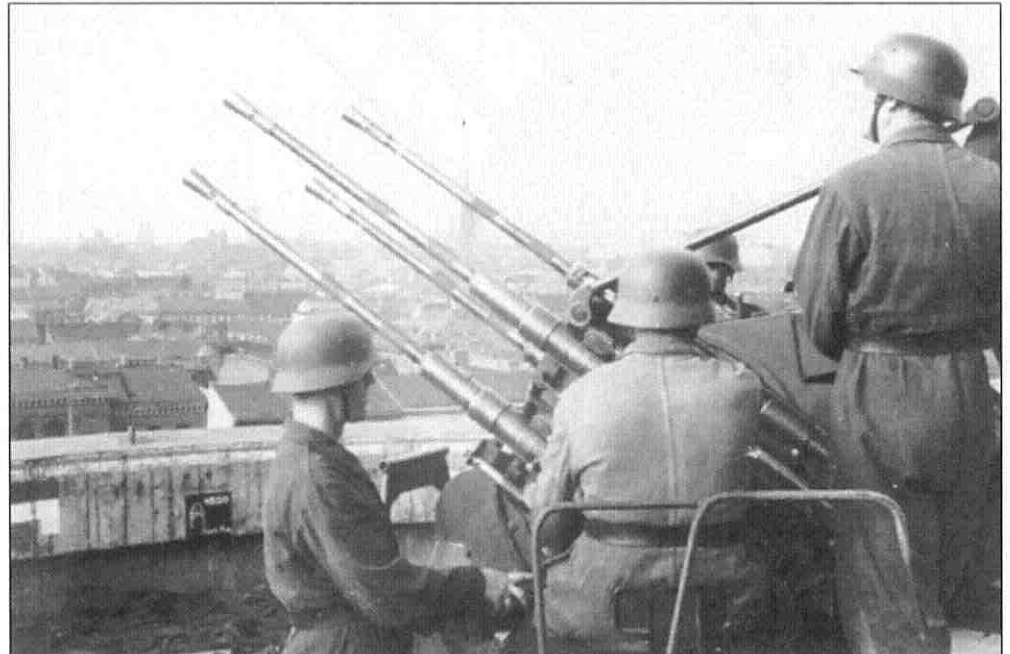
Length in firing pos.:	4,330 mm	Costs:	about 20,000 RM
Width:	2,420 mm	Weight fire position:	1,514 kg
Height:	2,166 mm	Elevation:	360°
Length of barrel:	2,252.5 mm	Effective rate of fire:	900 rounds/min
Calibre:	20 mm	Muzzle Velocity:	900 m/sec
Max. range:	4,800 m		
Max. ceiling:	3,700 m		

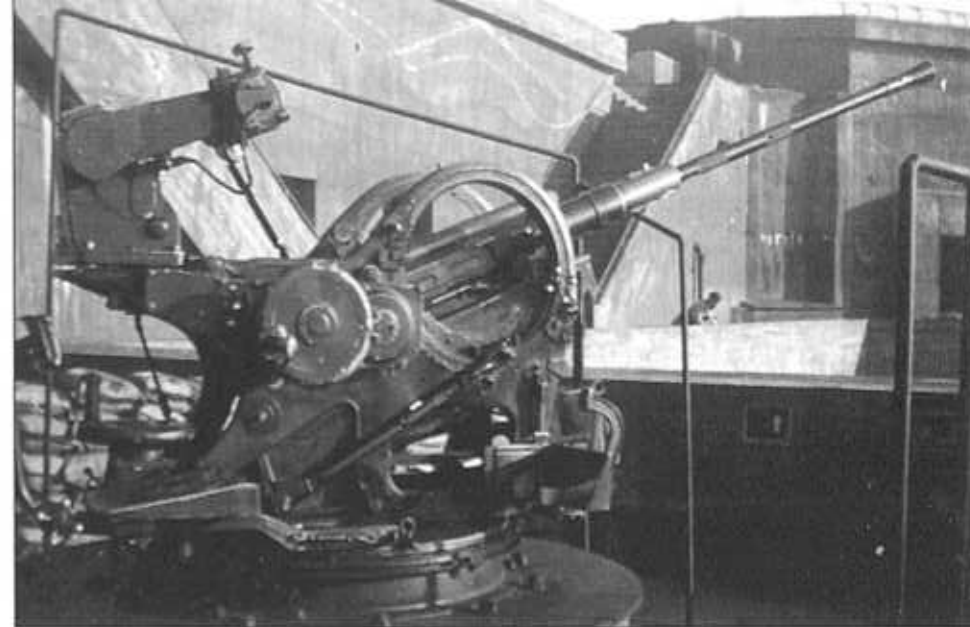
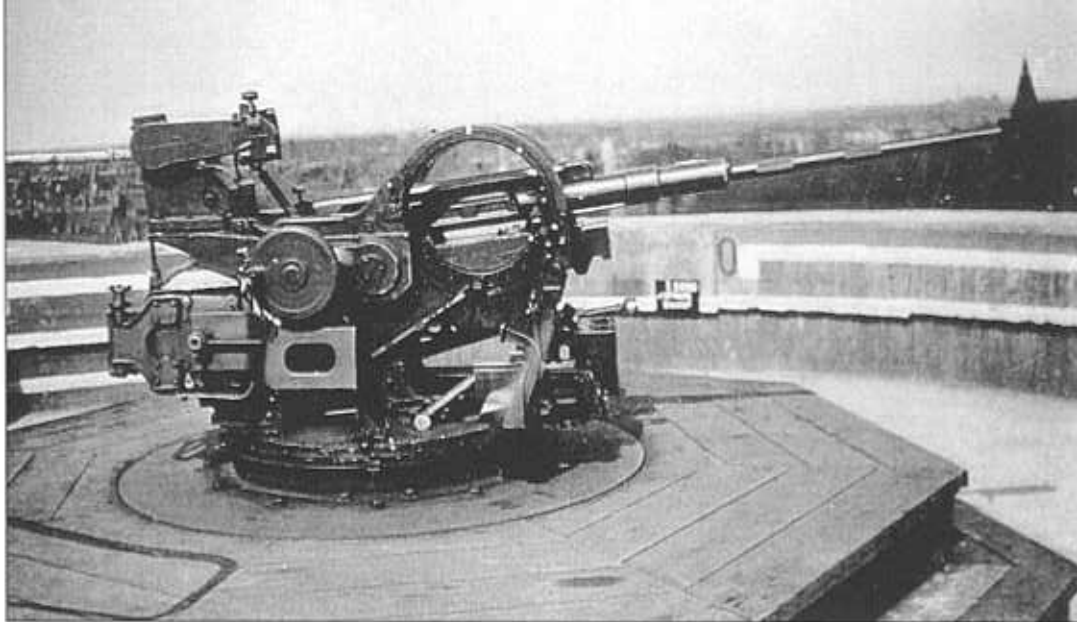
Left: Luftwaffenhelfer, provisionally shielded by sandbags on the Friedrichshain L-Tower, in the background is the G-Tower. Bottom left: Luftwaffenhelfer Alfred Knop with sun glasses at a 20 mm quad Mk 38 mounted on the Humboldthain Flak Tower. The young man survived the war and later became a presenter for Berlin Radio and the official GDR state TV news show "Aktuelle Kamera". Bottom: Gun crew on a 20 mm AA quad Mk 38 on the L-Tower at Heiligengeistfeld, Hamburg.





The L-Towers and the lower platforms of the G-Towers were equipped with light AA guns to combat fighter planes. The most effective weapon was the 20 mm four-barrelled Mk 38 gun, originally mounted on wooden pedestals, which would later be replaced due to the fire risk. Top right: A concrete plinth with a 20 mm quad mounted on the Heiligengeistfeld G-Tower, Hamburg. Markings were painted on the inside of the balustrade to help with direction finding and calculating range. The wavy lines painted (bottom left) on Flak towers in Berlin were intended as tracking indicators for the light AA. Bottom: Luftwaffenhelfer in fatigues: gun crews of the 20 mm Mk 38 quads mounted on the Friedrichshain L and G-Towers (left and right).





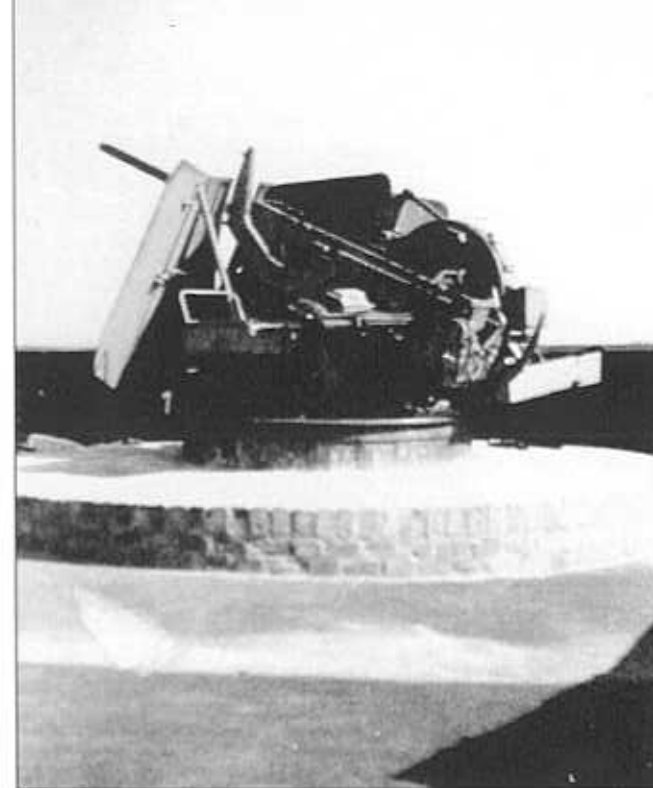
Top: a 20 mm AA gun Mk 38 (single mount). Top right: a 20 mm AA gun Mk 38 on the Zoo G-Tower with metal piping to limit the field of fire in the heat of combat. Bottom right: Luftwaffenhelfer on a 20 mm AA Mk 38 (single mount) on the Humboldthain Flak Tower in 1943. Some of the pupils wear armbands with the swastika of the "Hitler Youth" (HJ), this was not very popular, because the teenagers wanted to be accepted as soldiers. On the right is the range finder with the 1 m R 36 with shoulder support.

The mass-produced 20 mm AA gun Mk 30 and Mk 38 were developed by Rheinmetall, by the end of the war they had manufactured 121,687 units in total, plus the 6,072 guns that already existed on September 1st 1939. The costs amounted to 6,500 RM for a 20 mm AA gun Mk 38. Its successor, developed by Mauser, was delivered to the armed forces from 1940 on. The gun was fed with ammunition in 20-shell magazines. The 20 mm shell weighed 300 gr.

Performance: 20 mm AA Mk 30 / 38 (single mount)

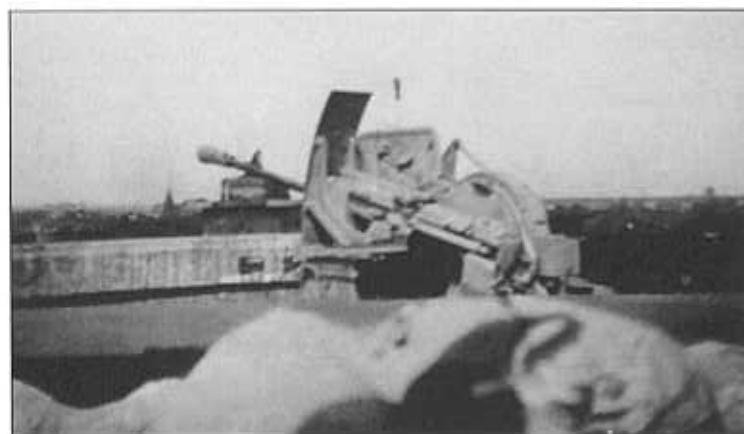
Length in firing position:	4,080 / 4,000 mm
Width:	1,810 / 1,810 mm
Height:	1,600 / 1,700 mm
Length of barrel:	2,300 / 2,252.5 mm
Weight in firing position:	450 / 420 kg
Muzzle Velocity (H.E.).	900 / 900 m / sec
Max. range:	4,800 / 4,800 m
Max. ceiling:	3,700 / 3,700 m
Effective rate of fire:	120 / 220 rounds/min
Traverse:	360 °
Elevation:	-12° to +90° / -20° to +90°





Performance 37 mm AA gun Mk 43:

Length in firing position:	3.493 mm
Width:	1.780 mm
Height:	1.619 mm
Length of barrel:	3.300 mm
Weight in firing position:	1.250 kg
Muzzle Velocity (H.E.)	820 m/sec
Max. ceiling:	4.800 m
Max. range:	6.500 m
Effective rate of fire:	150 shots/sec
Traverse:	360°
Elevation:	-7,5° - +90°



Neither the 20 mm AA gun Mk 38 (single mount) nor the 20 mm AA gun Mk 38 (quad mount) had protective shields. Only the 37 mm AA gun Mk 43 gave a certain protection to the gun crew. The delivery started in 1943 with 54 pieces by Rheinmetall, the flak - towers in Berlin were fitted with this weapon first, and they had two digit production numbers. The man hours could be reduced from 4.320 (predecessor model) to 1.000. In the period 1943 - 1945 over 5.918 AA guns of this mark were produced. Top row: The wooden pedestals were replaced with layed bricks. 37 mm AA gun Mk 43 on G-tower Humboldthain in 1944. Lower row: 37 mm AA gun Mk 43 on G- tower Friedrichshain, In the background the C - tower. The change from 20 mm weapons to 37 mm ones were finished on July 14th 1944 on the flak - tower Friedrichshain. Next day they were brought into position. In 1945 most of the 37 mm AA guns Mk 43 were stripped off and replaced by machine weapons as the three barreled machine gun MG 151/20 . Right: 37 mm AA gun without barrel.



MG 151 / 20

1944 the light AA guns on the Flak towers in Berlin were replaced or supplemented by the MG 151 / 20. Actually intended for arming patrol boats of the Kriegsmarine, the triplet machine gun MG 151/20 produced by the Mauser arms plant with a calibre of 20 mm (also used on the Sd.Kfz. 251/21 Half-Track and Caterpillar Tractor Ost – RSO) was used on the Flak towers. The triplet machine gun was really an aircraft weapon, which was replaced by the 30 mm aircraft cannon MK 103 and Mk 108. It was now available for other engagements. There is no detailed information concerning the decision to put triplet weapons on the Flak towers. Later, all the light AA weapons disappeared from the towers.

Top: Luftwaffenhelfer from the Friedrichshain G-Tower transporting the triplet machine gun MG 151/20 to the L-Tower, in the background the G-Tower.

Left: The triplet machine gun was pushed in front of the main entrance and hoisted up to the lower platform of the L-Tower.

Right: The triplet machine gun on its way to the lower platform. The gun crew amounted to six men, the rate of fire was 780 rounds per minute. It's not known if this weapon ever came to be fired in anger or achieved kills.





Left: While the fixed cross carriage 151/7 has already been hoisted onto the lower platform, the triplet machine gun (the centre barrel has been temporary removed) is being installed by a crane. Top: Setting up the triplet machine gun 151/20 on its pedestal and carriage. Around the plinth are the ammunition boxes, containing the ammunition belts to feed the three-barrelled gun. The weight of the MG 151/20 (barrel and breech) was 42 kg, the muzzle velocity 790 m/sec. elevation -10° to $+60^{\circ}$. Bottom: Two MG 151/20s with missing middle barrels. Bottom left one can see 128 mm barrels.





Left: On the ground of the lower platform of the Friedrichshain G-Tower are many 20 mm cartridges for the triplet machine gun MG 151/20 (in the background). The barrel in the middle is temporary removed. Clearly visible are the outer slanted blast pipes to reduce the torque caused by the recoil of the outer barrels. Without the ammunition cases, the bracket is visible. On the bottom left is the rounded shoulder support.

Top: Luftwaffenhelfer dressed in fatigue uniforms are loading an ammunition belt with cartridges.



Left: The triplet machine gun MG 151/20 on the lower platform of the Friedrichshain G-Tower with ammunition belts fed from the ammunition boxes in the middle and on both sides, but without a protective shield. The outer belts have 240 rounds each, the inner 500 rounds. Middle: Loaded ammunition belts with 20 mm rounds for the triplet MG 151/20. The shell types were explosive-tracers, with or without fragmentation. Right: The weapon was operated without any range finder and was aimed manually! The gunner simply stood behind the weapon. The three ammunition boxes aren't set up yet.



View to the south of Humboldthain L-Tower, taken from the G-Tower. The "Würzburg-Giant" is clearly visible as well as the "Mannheim" radar unit next to it. On the right is the range-finder 10 m Base R43, with which it was possible to observe air-battles over Spandau. In the background is the AEG factory on Gustav-Meyer-Allee. The radar FuSE "Würzburg-Giant" was the standard equipment for ranges of up to 80 km. When Allied bomber squadrons reached the city area, the radar was sunk completely into a 12 metre-deep shaft and covered by a steel shutter. The crew of the "Würzburg-Giant" on the Humboldthain L-Tower consisted solely of female Luftwaffe auxiliaries, the so-called "Blitzmädchen" (Lightning Girls). During one carpet-bombing air raid they panicked and fled the Operations Room, leaving the gun crews with no radar-data to aim with. The Radar-Detection Squad (Funkmeßstaffel) consisted mainly of the E1 (ranging), E2 (lateral positioning) and E3 (altitude positioning) teams. The radar detection was accurate to within 15 to 20 metres. The apparatus consisted of a parabolic dish with a diameter of 7.5 m, the tilting device driven by the AEG Leonard control system, and the control station. The rotatable dish weighed 11 tonnes and the complete device had a total weight of 18 tonnes. It seems that this 12 m base apparatus on the L-Tower was the only one active in the whole German Reich. The FuMG 64 "Mannheim" radar was first tested in summer 1942. Telefunken had developed the "Mannheim" set, which started serial production for the Flak in 1942. The tracking accuracy at a distance of 25 to 35 km was ± 10 to 15 m. During the war, technicians and engineers were at work in the Flak towers, and experimented with captured radar devices on top of the Humboldthain L-Tower. They were especially interested in the British H2S device, which the Germans called the "Rotterdam Device". A Short Stirling had been shot down near Rotterdam during a raid on Cologne on the night of the 2nd - 3rd February 1943 and the Germans managed to salvage parts of this latest Allied radar unit. Experts from the Luftwaffe, Telefunken and Lorenz investigated the (incomplete) captured device, which worked on centimetre frequencies. This radar set was destroyed during an air raid on Berlin on March 1st 1943, but on the same night, a second H2S set was found in a crashed Halifax, but once again only the analytical unit of the device was salvaged. The Germans reconstructed the set using their own replacement parts. Shortly before Whitsun 1943 the radar was mounted on the L-Tower Humboldthain and tested.



Telefunken had been developing short-range radar since 1937, leading to the FuMG 39 T/D ("Würzburg D"), which went into service in 1942. 4,000 units of the type FuMG 62 were produced in total, becoming the standard equipment for the AA artillery. Top left: The B2 at the controls in the "sidecar" of the FuMG 62 watches the range and side direction finder indicators. The B3 stands behind him on the viewing tube of the altitude direction finding indicator and operates the altitude-tracking wheel on the unit's control panel. The B2 wears headphones, which indicates he is trying to filter the interference caused by "windows" dropped by the English (radar-jamming chaff) using the "Nürnberg" anti radio-interference system. He is sitting with leg guards and a foot heater. Top middle: FuMG 64 "Mannheim" on Friedrichshain L-Tower. Top right: Predictor 40 on the Humboldthain Flak Tower, used for the 105 mm AA gun (single mount), 128 mm AA gun Mk 40 (single mount) and twin 128 mm AA gun Mk 40. Right: Radar FuSE 65 "Würzburg Giant" on the Humboldthain L-Tower. During an air raid the radar could be lowered into a 12 m deep protection shaft. Then the FuMG 39 T "Würzburg" took over the tracking. The range of the FuMG 65 was about 60 km, bomber formations could be spotted at a distance of 80 km. The precision of the range-finding was ± 1520 metres. Later, at the end of 1943 an additional anti-jamming device - code named "Würzlaus" - was used against the chaff "windows" (German: "Düppel").



Top left: Flak soldiers in the Humboldt-thain L-Tower operating the Malsi Device, pictured probably 1945.

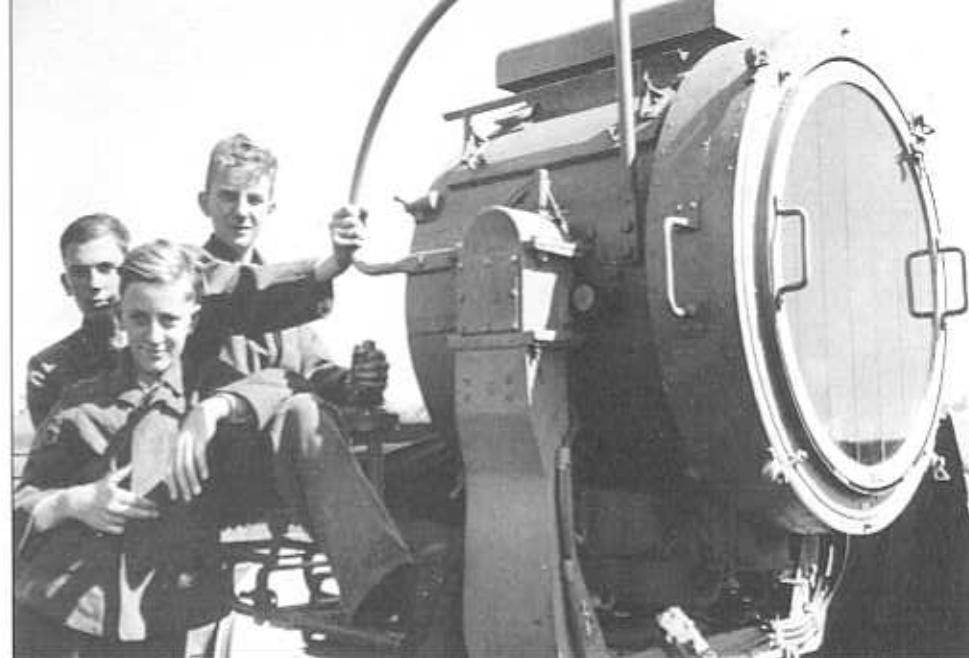
Top: The Malsi Table.

Far left: The Malsi Device Mk 41, next to it on the left is a model Mk 43. The measurement-data was entered, and the indicator on the Malsi Table pinpointed the combat target, important for the later confirmation of kill claims.

Left: Flak transmitter and a grid-map for locating and tracking enemy bomber units.



A searchlight detachment of the 82nd Searchlight Regiment belonged to the 5th Battery AA- Detachment 123 (T) 't' standing for Tower (Turm). After the erection of the Humboldthain Flak Tower the AA positions in the surrounding area were abandoned, only four of them were used as searchlight emplacements. The searchlights were isolated and installed in public parks, sometimes mounted on wooden towers (top). The "Dora" searchlight emplacement existed until 1942 and was situated on the drill ground between the Sonnenburger Strasse and the goods station of the Nordbahn. The area is adjacent to a foreign workers camp. The searchlight emplacements for the Humboldthain Flak Tower were active until 1944. Some 3,000 searchlights were ready for combat in 1939. The most common models were the 600 mm searchlight, (designated by the diameter of the reflector) 1,500 mm und 2,000 mm searchlights.



Top: searchlight emplacement "Anton", Luftwaffenhelfer being trained to operate the 600 mm searchlight in the Wedding district of Berlin in 1943. Bottom: Searchlight crew of the "Dora" emplacement, the searchlights became unnecessary when radar was brought into service.





The Flak towers in Berlin were crewed by six officers and 100 soldiers for each L-tower and six officers and 160 soldiers for per G-tower. Later this figure was increased by the addition of young Luftwaffenhelfer (LH), female auxiliaries ("Blitzmädchen") and foreign volunteers including Russians and Ukrainians. So the crew of the Zoo Flak Tower pair amounted to a total of 500, 200 of them for the L-tower. With increasing conscription to the combat forces and the general lack of manpower, secondary school classes in Berlin and Saxony were ordered to the 123rd AA-Detachment (T) in February 1943. These Luftwaffenhelfer were aged between 15-18 and were strictly speaking only children, but they were highly motivated and wanted to show the older soldiers "how to fight" and indeed, many kills of RAF and USAAF bombers were credited to their tally. School lessons were still taught by their old teachers as well as possible. Senior NCOs looked after the youngsters and reassured their worried parents that their sons and daughters wouldn't be sent into action at dangerous positions in the air defence system. The 123rd AA-Detachment (T) was under the command of the 1st Flak Division, which set up their the HQ in the Zoo L-Tower. Top left: Lieutenant-General Erich Kressmann, Commanding Officer of the 1st Flak Division from 10.2.1944 to 5.11.1944, who died in a car accident near Küstrin on January 24th 1945. Top middle left: Living quarters for the gunners (Luftwaffenhelfer) in the Friedrichshain G-Tower. Top middle right: the swearing-in of the Luftwaffenhelfer in Friedrichshain Park on March 2nd 1944. The quad AA gun was transported from the tower for the ceremony. Right: The complete crew of the L-Tower Friedrichshain with 161 men.



Far left: Luftwaffenhelfer on the Friedrichshain Flak Tower wearing coats which are too big for them. Pictured after an air raid on March 22nd 1944.

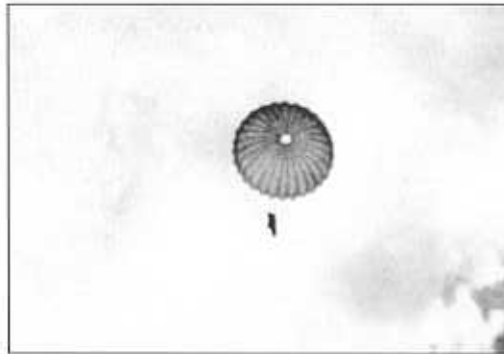
Left: One B-17 that was shot down by Luftwaffenhelfer in the Leuna-Merseburg area. Kills by the Flak towers are not documented, but it's estimated that the Humboldthain G-Tower tallied 32 kills. There are statements regarding the G-Tower at Friedrichshain that cite 16-20 kills, among them one Mosquito. The Zoo G-Tower had at least 13 kills.



Secondary school pupils had been in action on the Flak towers since 1943. Left: the 128 mm AA gun (double mount) "Anton" on tower #1 of Friedrichshain Flak tower: First Gunner (K1) J. D. Themel on the traversing drive assembly. Middle: Side tribune of the twin 128 mm AA gun "Dora" on tower #4 of Flak tower Friedrichshain. On the right is Luftwaffenhelfer Dieter Caanitz, who was killed while manning his gun on March 18th 1945, only days after this picture was taken. Right: Dieter Borkowski's identity card. Borkowski was engaged on Flak Tower Friedrichshain from August 1st 1944. He survived a direct hit on his gun on March 18th 1945 only because he had a dentist's appointment on that day. He wrote in his diary: "As a Luftwaffenhelfer, I have been a member of the German Wehrmacht since 8 am this morning. School children who were born in 1928 have been recruited to defend the air-space of the Reich, I am a Luftwaffenhelfer of the 1st Battery Flak Tower Detachment 123 and will serve on the gun 'Cäsar' as a Loader... Our huge, grey and green-painted concrete tower stands in the middle of Friedrichshain... Close to us to the north, the steel barrels of the heavy 128 mm battery on the Humboldthain Flak Tower are raised, in the west, there is the Zoo Flak Tower battery. We Luftwaffenhelfer are 15 or 16 years old, only the First Gunner, NCO Ullrich, is an experienced artilleryman..." Borkowski also described combat: "It was unbearable for us on those nights when the enemy mounted two bombing raids. Often it's the English high-speed 'Mosquito' bombers, they fly so high that we can hardly reach them - this means at over ten thousand metres altitude. Then it makes no sense when the order comes over the headphones: 'Barricade fire forward!' Very often, our 'Würzburg-Giant' or 'Mannheim-Dwarf' radar units (these are the military code names for those electronic radio-locating devices) were rendered ineffective when the enemy dropped chaff. "Düppelstörung!" the chief roars over his throat-microphone. The direction-finding squad, which now can't calculate the real data, is no longer any help. The Battery Commander gives the order: "Fire at will on visual contact with the enemy!" The gunners manning gun 'Cäsar' from K1 to K9 are listening to the First Gunner, who gets the order to open fire over his headphones from 'B1', the Battery Commander's command post. Before the order to fire, the alarm bell rings, signalling K3 to load the gun. We are standing around the twin gun, full of expectation (and I have to confess, full of trepidation too). When the order comes 'Group fire - Group!' the eight heavy barrels thunder so loud, that we are deafened for minutes. The Flak Tower seems to tremble, although it is made out of reinforced concrete. Even below, where the civilians who have sought shelter in the first, second, third and fourth floors are cowering, they jump nervously with every salvo."



Left: Horst Hirche wearing Flakhelfer uniform.
Right: more than 50 years later in 2005: Hirche survived a direct hit on the G-Tower at Humboldthain in March 18th 1945 and was badly wounded. He lost his left eye.



Left: During an air raid by the RAF on 22nd/23rd of November 1943, a 20 mm AA gun suffered a direct hit by a bomb and was blown some 400m away, landing in the area of the nearby AEG factory. **Right: The Americans had losses too. A rare picture from 1943 shows the parachute of an African-American airman whose bomber had been shot down, sailing in the direction of the L-Tower at Humboldthain, finally to land on top of the bunker.** **Bottom: damage to the upper platform of the Humboldthain G-Tower after direct hits during a US daylight air raid on March 18th 1945.** **Bottom right: From 1944 onwards, Berlin was attacked both day and night. The burning city was clearly visible at night (pictured from Zoo Flak Tower), during the day clouds of smoke were visible over the Weissensee district of Berlin, here photographed from the Friedrichshain Flak Tower.** **Top right: A near-hit on the Friedrichshain G-Tower on March 22nd 1944.**

Hits

Peter Schmidt, an ex-Luftwaffenhelfer on the Zoo G-Tower recounts a tragic fatality. Schmidt was on the Flak tower from January 12th 1944 to February 4th 1945: "One of our gun-aimers died while manning his gun. An incendiary bomb had hit the rim of his helmet and knocked it askew. He tried to get rid of his helmet because it wasn't sitting right, but contrary to orders, he had buckled the chinstrap under his chin. He ended up throwing himself out of the aiming-seat - he fell and broke his neck..."

Eyewitnesses state that the Friedrichshain Flak Tower suffered at least three direct hits: one on February 26th 1945 on Tower #3 (Gun "Cäsar") with eleven dead; on March 18th 1945 a direct hit by an incendiary (one dead) and on April 11th 1945, when the platform under Tower #1 (Gun "Anton") was hit by a "Cookie" during a harassing raid, causing three deaths.



A pupil at the Friedrich Werdersche Oberschule secondary school, Karl-Heinz Schirmer was sent to serve as a Luftwaffenhelfer at the Humboldthain L-Tower. There was a direct hit there on November 22nd 1943, very close to a 105 mm gun (single mount). The force of the explosion tore the gun from its mounting and it was blasted over 400 metres away into the yard of the AEG plant in the Gustav-Meyer-Allee. The bomb crater was some 15 cm deep and rainwater flowed through the cracks into the rooms below.

The gun crew were extremely lucky, because the Battery Commander had given the order to "Take cover" and the gunners were inside the tower, they survived unharmed.

The Flak batteries achieved some kills, shooting down several planes, but they also suffered numerous direct hits with significant loss of life amongst the Flak-helfers. Flakhelfer Horst Hirche, a pupil at a secondary school in Berlin was a K11 (lateral direction), one of the 22-man crew of the 128 mm twin gun "Dora", Turmflakbatterie 123 and survived two direct hits, probably two H.E. 500lb bombs. On March 18th 1945, there was a massive air raid by the 8th USAAF. At 10:57 the air raid warning was sounded, the attacking bomber squadrons came from the west and southwest.

The heavy Flak on the G-tower were laying a continuous barrage of fire. *"The empty shell-cases were piling up in our gun position. The stock of ammunition in the niches was getting very low. We reverted to targeted collective fire. The "Dora" gun had suffered from several jammed shells and bent fuses, and these had been piled up just outside the gun position. In the meantime, the barrels had become blazingly hot... I look up at the bombers for a moment. On the other side of the S-Bahn railway there is a large gap in the clouds and I can see many flashes (falling bombs). Just at the moment I check my instruments again, there is a terrifying explosion. The shockwave throws me against the ammunition shelters and I find myself lying on the ground. At this moment, I didn't know what had happened. I took a look at Command Post #2 and I saw fire - then I remembered the shells that had refused to be fired, still piled in the entrance area of the gun position. I thought: you have to make myself scarce, if they explode, everything will be over. I struggled to my feet, climbed over the rubble in the gun emplacement and went to the staircase leading to the lower platform. When I arrived downstairs I wanted to go into the tower, but I wasn't strong enough to open the heavy steel door, something that had been easy to do before. I rested against the tower wall and waited until the first soldiers came out of the tower. Two soldiers took me between them and brought me to the hospital in the second floor... When we left the military area in the 5th floor and arrived in the 4th floor, civilians who had sought shelter from the raid were sitting on the steps and in the passageways. Some of them screamed. My thought in this moment was: I must look terrible. This happened again and again until we reached the second floor. When we arrived in the field hospital area, I saw our 1st Gunner sitting on a chair, his left arm was missing. We only glanced at each other..."* Hirche himself had lost his right eye and had 14 splinters from the bomb lodged in his body.

In total, the Flak tower was hit three times by bombs during the war, the heaviest losses occurring on March 18th 1945, when the guns "Anton" and "Dora" both failed. There were seven dead and 21 severely wounded on that day.

The Flak tower itself showed hardly any signs of these hits, neither structural damage nor cracks in ceilings or walls were recorded. The damaged guns were repaired and took part in the final battle, shelling ground-targets in May 1945.



The ammunition chamber of Gun "Cäsar" of the G-tower Friedrichshain received a direct hit on February 3rd 1945, causing the explosion of 400 calibre 128 mm shells. Nine Luftwaffenhelfer from Berlin died. More serious were the two direct hits on March 18th 1945 on tower A and D (bottom) of the Humboldthain G-tower. The damaged 128 mm guns could be repaired and used again. It is lucky the direct hits didn't trigger the 128 mm grenades stored in the ammunition niches, otherwise the whole Flak tower wouldn't have survived.





Aerial picture of the Wedding district of Berlin, with the Humboldtflak tower in the centre. The G-tower is visible below the curve of the S-Bahn railway surrounded by numerous bomb craters, especially to the west. The L-tower is in the lower part of the picture, on the north side of the Gustav-Meyer-Allee opposite the AEG factory.

Final Battles

Once the Soviet assault on Berlin began on the river Oder on April 16th 1945, Berlin's days were numbered. The Flak towers became part of the city's ground-defence system. On 21.4.1945 the heavy guns on the Flak towers fired 400 shells into Red Army tank forces concentrated in the Marzahn district. The Flak towers, which were now also being used as secure bases for staff units commanding ground-fighting troops, came under increased Soviet artillery fire. Marshal Zhukov confirmed that the Flak towers were immense obstacles. On April 25th 1945 General Weidling, leading the defence of Berlin, visited the commander of the 1st Flak Division in the Zoo L-Tower, which was attacked shortly afterwards by Soviet bombers.

In the last days of April, the OKW Headquarters in Rheinsberg maintained radio contact with the Zoo Flak Tower by raising an antenna attached to a balloon. This was the last connection to the outside world, since all communications to and from the Führerbunker no longer functioned. This was the eye of the needle, through which Hitler transmitted the question: "Where is Wenck?" - the General who was supposed to relieve Berlin. More than 2,000 soldiers and some 30,000 civilians were still in the G-tower. There were 500 dead that couldn't be buried, 1,500 wounded were lying on beds or on the floor. Just before the Flak tower surrendered, there was a wave of suicides inside the bunker. The G-tower surrendered to the Russians on May 2nd 1945 at 00:30 after a long siege and continuous heavy shelling. The L-tower, under the command of Colonel Wöhlermann surrendered the same day at 05:00.

Before noon on the same day, a doctor from the field hospital surrendered both Friedrichshain Flak towers to the Soviets, after a pre-dawn attempt to escape by the tower crew and other soldiers, led by Lieutenant-Colonel Hoffmann.

The last two Flak towers were still fighting in Humboldthain. The staff of Defence Zone 'G' under Colonel Schäfer were based here. Both towers were totally overcrowded with soldiers and civilians and hundreds of wounded were struggling to survive there. Combat units of the Soviet 12th Guards Corps were halted. Russian heavy artillery was systematically shelling the G-Tower, heavy tanks such as the JS II and T-34 were also shelling the bunker. Local residents were forced to help the Soviets put long-barrelled guns into position. German raiding parties were operating from the G-tower and there was heavy fighting in the gardens of Humboldthain. Russian snipers took up positions in the burned-out roofs of nearby buildings. Suicide was rife in the bunker, young "Blitzmädchen" girls jumped to their deaths in the stairwells. The plan to blow up the twin 128 mm guns had already been prepared on April 23rd 1945, but it was May 3rd at 12.00 when the crew of the Humboldthain Flak Tower surrendered. Nurse Klara Bräuer: *"Handing over the bunker happened under fairly good conditions. The German Colonel led some high-ranking Soviet officers through all the rooms. The Russians were quite affable, distributing cigarettes and so on and we were allowed to continue our work. Nothing was taken from the wounded - apart from their weapons of course."* But after this polite elite unit had left, the common foot soldiers arrived, robbing the people and looting uninhibitedly. But the war was over.



Top: The southern outer wall of the Humboldthain G-Tower shows heavy battle damage. Some sections of the outer walls were riddled with direct hits by artillery shells. Above: the Friedrichshain L-Tower. The Soviet artillery tried to penetrate the outer walls with permanent shelling. Perhaps they succeeded on the front side near the second window under the lower platform. They aimed specifically at the transoms. Left: The last battle has finally come to an end. The heavy Flak has fallen silent. 13 kills were painted on the left barrel.



Post-war period

Chapter 2



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Previous page: A broken giant, the flak tower Friedrichshain

Right side: The mighty detonation of the Zoo Gun Tower in Berlin, when the Royal Engineers blew up the biggest bunker in the world. 66 tonnes of explosive was used in three attempts to destroy the Gun Tower. The last attempt on 30th July 1948 was successful, but it caused some 100,000 Reichsmarks worth of damage to the Zoo itself. In the picture on the left side is the smaller Radar Tower, which was blown up on 28th of July 1947.

Top left: OXYGEN's Company emblem. Top right: Enblem of the Berlin Underworlds' Association

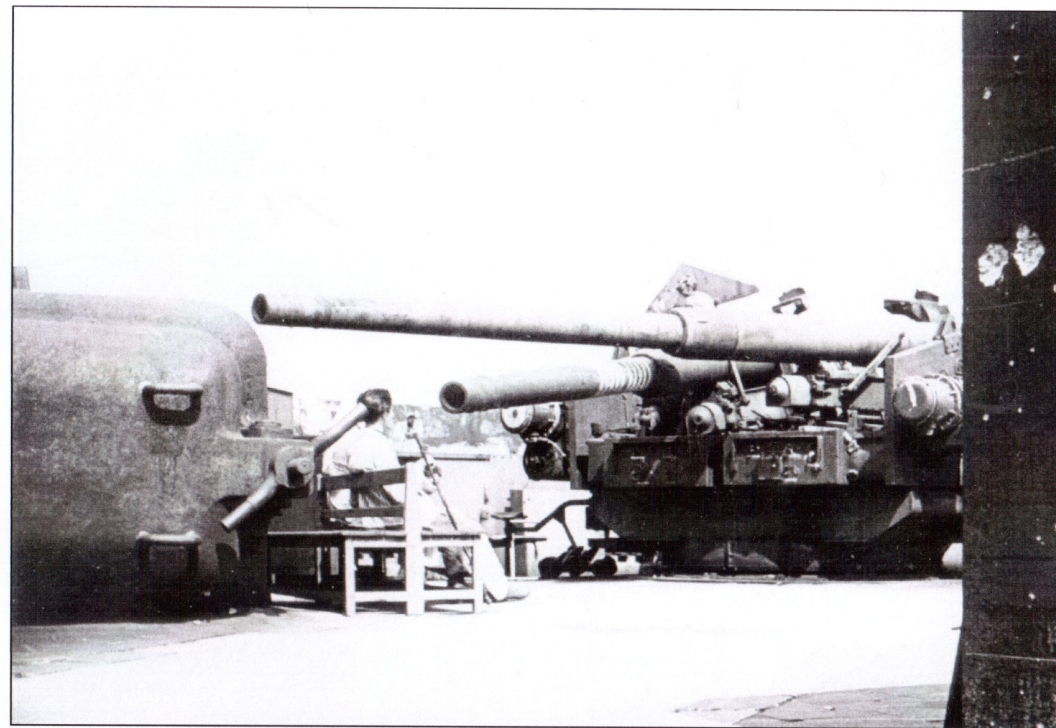
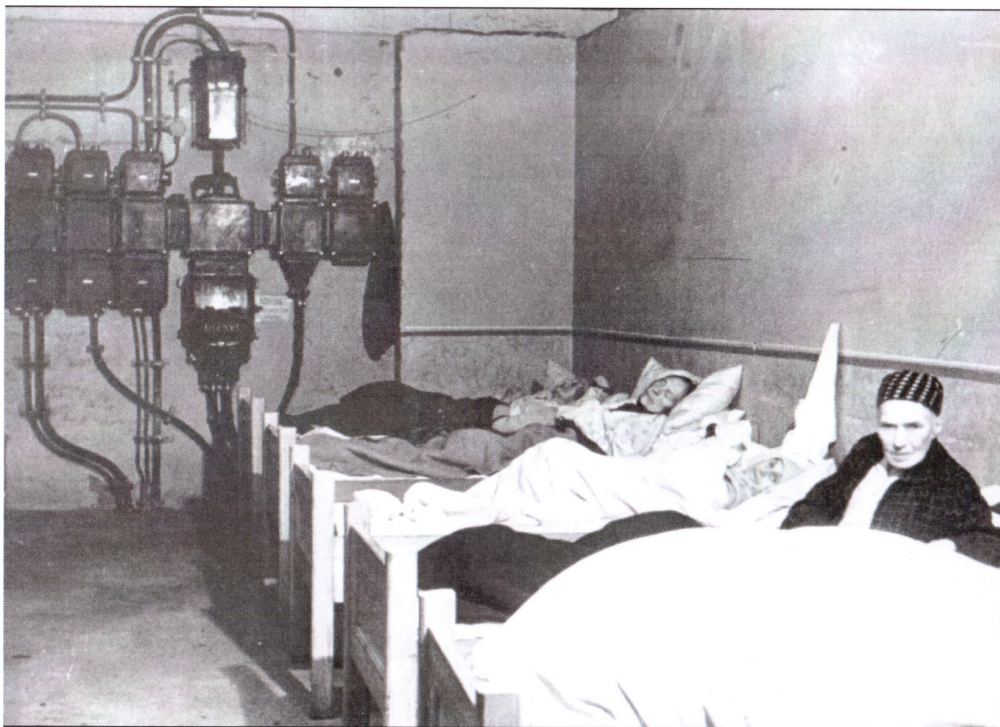




Far left: Between the G-Tower and the Planetarium a small cemetery existed still in autumn 1946. During the final fighting 1,148 corpses were buried hurriedly here near the Zoo Flak Tower. From the 11th to 22nd of August 1947 some 342 bodies were exhumed and re-interred in other cemeteries in Berlin. Left: A cross and a small cemetery in front of the Zoo G-Tower. On the left side the partially built natural stone façade can be seen.

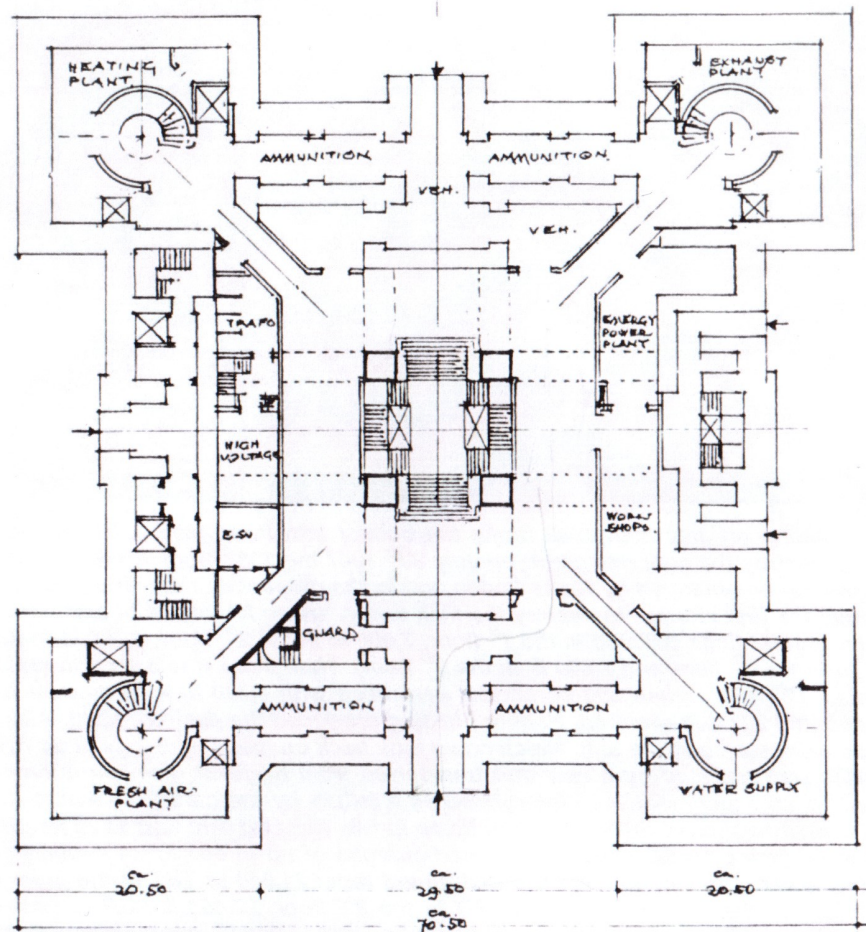
After the ceasefire, some sections of the Robert Koch Hospital moved into the Zoo Flak Tower. Bottom right: On the upper platform convalescents could find some relaxation in the sunshine, pictured summer 1945. On the left is the massive steel cupola with its huge latching lock, on the right are the crossed barrels of a demilitarized twin 128 mm Flak. Bottom left: in the "Hungerwinter" of 1946/47, when some 31,000 inhabitants died in Berlin alone, the municipal authorities opened former public air raid shelters to offer "those threatened by cold" a bed and a hot soup to give these people the chance to survive for another day. The Flak Tower gave shelter to the distressed.

There was however no longer any heating in the Flak Tower, so people went to bed with their clothes on.



~ BERLIN ~ FLAK-TURM I. ~

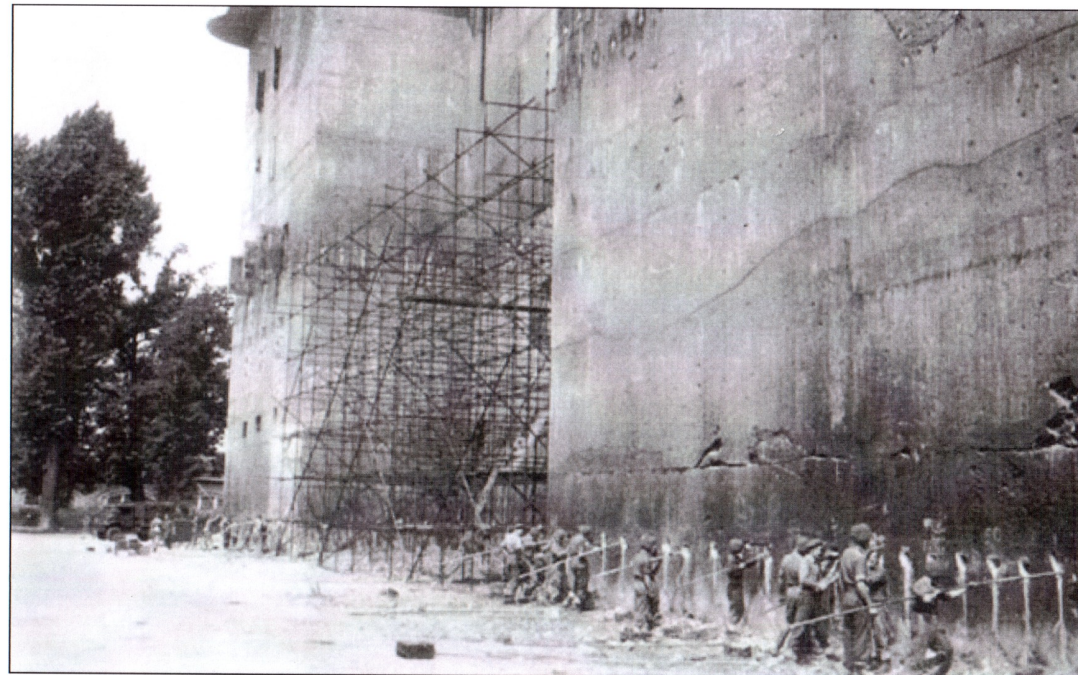
"ZOO BUNKER"



ALL EXTERNAL WALLS
IN CONCRETE 2.50M. THICK
UP TO HEIGHT OF APPROX. 4.0M.
ABOVE GROUND FLOOR LEVEL
AND THENCE 2.0M. THICK

ALL MAIN INTERNAL WALLS
IN CONCRETE 2.0M THICK.
CENTRAL INTERNAL PIER IN
CONCRETE 2.80M X 2.90M.

GROUND FLOOR PLAN.



British ground floor plan of the Zoo Gun-Tower shows the distribution of the ammunition. Top right: In August 1947 British insert charges into the bore-holes. Right: On July 30th 1948 the G-Tower was blown up with 35 tonnes of explosives and finally destroyed after several attempts had failed.



Top right: The blasting on July 30th 1948 broke the bunker into three pieces. There were three attempts to destroy the concrete giant: on July 30th 1947 the 338th Construction Battalion (Royal Engineers) commanded by Major Soden and in the presence of the British C-in-C in Germany made the first attempt to destroy the Flak tower, using 25 tonnes of explosives (22,500 lb on the ground floor, 3,800 lb in the 1st floor, 7,800 lb in the 2nd floor, 4,300 lb in the 3rd floor, 4,000 lb in the 4th floor and 7,600 lb in the 5th floor). Then there was a second blasting on September 27th 1947, when 380 boreholes were filled with 4,200 lb – an amount far short of the estimated 9,500 lb required. Neither blasting produced the desired result. Allegedly, Soden was dismissed and the unit, which could look back on many blastings of air raid shelters in Berlin, was replaced by a new unit transferred from England. The last attempt, which was seen as an experiment, was interpreted as a failure by the media, including the BBC. Now the British engineers drilled 435 boreholes in two rows (at 1 m and 12 m height) into the outer walls with thermal lances and placed charges of up to 600 lb on supporting pillars inside the tower. The explosives were distributed thus: 21,046 lb TNT in the ground floor, 17,892 lb TNT in the 1st floor, 16,532 lb TNT in the 2nd floor, 22,463 lb “GP explosive 852” in the boreholes in the ground and second floors, in total 77,933 lb or approximately 35 tonnes. After four months of preparation the blasting was successfully carried out at 12:24 pm on July 30th 1948. After a thunderous explosion, four great columns of smoke shot vertically upwards. The Flak tower was destroyed, but the buildings of the zoo were affected too. All the animals had been evacuated before the blast, but on their return, numerous pens and buildings were severely damaged. Burying the Flak towers with rubble and earth began on November 1st 1950 and made speedy progress, by December 29th 1950, 250,000 m³ of debris had been moved. Once over 400,000 tons of debris had been dumped over the Flak towers, new plans required them to be uncovered again. Top left: The Zoo L-Tower after the blast on July 28th 1947. Left: After excavation, the L-tower ruins were destroyed in several blastings, the one pictured was on November 22nd 1952.





Flak Towers in Berlin after 1945

Flak Tower Zoo

After the surrender, the Soviets salvaged the store of cultural treasures in the Zoo G-Tower and transported them to Moscow. On August 10th 1945 Control of Epidemics departments of the Robert Koch Hospital moved into the Zoo Flak tower, where the Luftwaffe's XII/3 Military Hospital already existed. The Zoo bunker could accommodate 330 patients and a capacity of 500 was planned. But then came the catastrophe of the "Winter of Hunger" 1946/47 and people whose lives were endangered by starvation and cold moved into the Flak tower. But the British authorities announced that they would blow up the Flak tower before April 15th 1947 - which succeeded only on the third attempt. From spring 1949 (other sources say since November 1950) the ruins of the blown up Flak towers would be covered with debris, as in Humboldthain and Friedrichshain. The Berlin Senate agreed to remove the "Bunker Mound" and work started in September 1952. The L-tower was destroyed by the end 1954 with some 800 blastings. The demolition produced 12,000 m³ of concrete rubble plus 200 tonnes of reinforcement bars. Because of the planned new underground Line 9 (in former times Line G), the Berlin Senat decided on April 18th 1955, to also unearth the G-tower and demolish it completely. The OXYGEN Company from Hamburg was hired for this task, they removed the G-tower with the services of some 130 workers over a three year period until 1958. Over 412,000 m³ of debris were pulverized and used for rail and road building. The proceeds covered the four million DM demolition costs. In 1969/70 the 17,600 m³ of the reinforced concrete base-plate was also removed. Today, there is a bird sanctuary island where the L-tower once stood. The place where the G-tower had been is now the Hippopotamus House of the Tiergarten Zoo.

Flak Tower Friedrichshain

Shortly after the end of the war, there were some unexplained fires between May 5th and 18th 1945, and many priceless art collections were apparently completely destroyed. Plans to incorporate a hospital into the G-tower failed. The Soviets blew up the G-tower on April 29th 1946 for the first time, and (using considerably more explosives) again on May 2nd 1946. From 1947 to 1950 relief workers poured rubble and debris over the G-tower, supported by a narrow gauge railway. The 79 m high hill was planted and only Base A and a fragment of the western wall can be seen today. Later, paths were built up both bunker mounds. On top of the large bunker mound visitors can find a vantage point with a plaque explaining the silhouettes of the cityscape.

Flak Tower Humboldthain

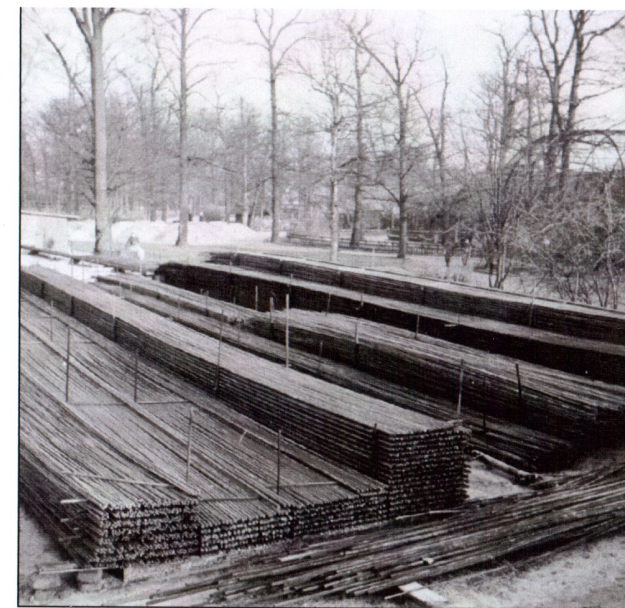
After the surrender of the German armed forces, Soviet soldiers moved into the Flak towers and the existing military reserve hospital carried on working for the present. Later, rooms were rented out. On October 25th 1947 the French Occupation Authorities attempted the first blasting. On December 13th the French blew up the L-tower with 16 tonnes of dynamite. On February 28th 1948 a further attempt was made to blow up the G-tower, and although one part of the outer wall was destroyed, the Flak tower was still standing. On March 13th 1948 the southern part of the G-tower was totally destroyed with 25 tons of explosives. Both northern towers remained unharmed. Both Flak towers had been covered with debris and earth by 1950. Since 1950, this northern outer wall was used as a "Practice-Matterhorn" by climbers of the Alpine Association's Berlin Section. There were plans to pull down the ruin even as late as 1986. But the sculpture "Reunification" was mounted and inaugurated on Tower III on August 12th 1967. Later the G-tower was secured against accidents and suicides, on the upper platform a two and a half metre-high steel fence was erected, loop-holes were closed and parts of the walls that were rough due to enemy shelling were smoothed. In 1990 a new viewing platform was opened to the public. In 2003 the Berlin Underground Association secured Tower III of the Flak tower (Tower II accommodates several species of bats in the winter time) and they organise sightseeing tours through the ruin of the bunker for tourists from April to October.

Top left: From November 1950 the Zoo G-Tower was being covered with debris and earth. The G-tower was completely covered by April 1951 (bottom)



The Zoo G-Tower had to be cleared of ammunition before blasting could take place. Soviet artillery shells were lodged in the outer walls (top left) and some slabs of British explosives which had failed to detonate during earlier blasting attempts were found inside the Flak tower (top). In total 800 blastings were carried out (top right). To avoid damage caused by flying concrete fragments and other debris, huge torpedo-nets were brought from Hamburg and stretched over the building's area (bottom). For a while, the Technical Support Organisation (THW) in Berlin used thermal lances to cut the concrete walls (bottom right).





There were severe shortages of raw materials in the Fifties and therefore steel was a valuable commodity. The huge amount of steel reinforcement was salvaged and the bars straightened on special workbenches (see the picture in the middle) and piled up in huge dumps to await transportation.



Left. The concrete was recycled too. The Oelting Company from Pinneberg built concrete silos for the recovered gravel, and the ground-up building materials of the former Flak tower was loaded from the silos onto trucks via chutes. The ground concrete was used for the underground railway as well as for road building. Right: The destruction of the Zoo Flak tower is nearly complete on March 15th 1958. Only the massive foundation with some 17,600 m³ of reinforced concrete still lay in the ground until it was finally removed in 1969-70.



On December 6th 1945, the Allied Decree No. 22 vowed to destroy all military buildings and installations as part of the demilitarisation of Germany. Of course the huge buildings of the Luftwaffe such as the Flak towers were affected by this law and in divided Berlin, the French (Flak-Tower Humboldthain) the British (Flak-Tower Zoo) and the Soviets (Flak-Tower Friedrichshain) were very keen to demonstrate their skills in carrying out this task. The Soviets must have started their own blasting measures immediately after this decree, because already in January there were complaints about damage to windows and buildings in that area. But the Germans succeeded in persuading the Soviets to delay their major blastings, citing the approaching winter. In Vienna - another divided city - the Allies also left these towers untouched because they were situated in the middle of, or close to residential districts, except for the Augarten Flak tower pair, where the Soviets conducted some blasting tests. The first blasting of the Friedrichshain L-Tower in Berlin took place as early as April 20th 1946, but clearly with little success. At the second attempt, the outer walls burst outwards as if hit by a steam-hammer. The first Soviet attempt to blow up the Friedrichshain G-Tower was on April 29th 1946. During the subsequent blasting on May 2nd 1946, they used sufficient explosives and the tower was split down the middle. Unfortunately, no information has ever been discovered regarding the details of the blasting or the amount of explosives that were used.



Friedrichshain Bunker Mound

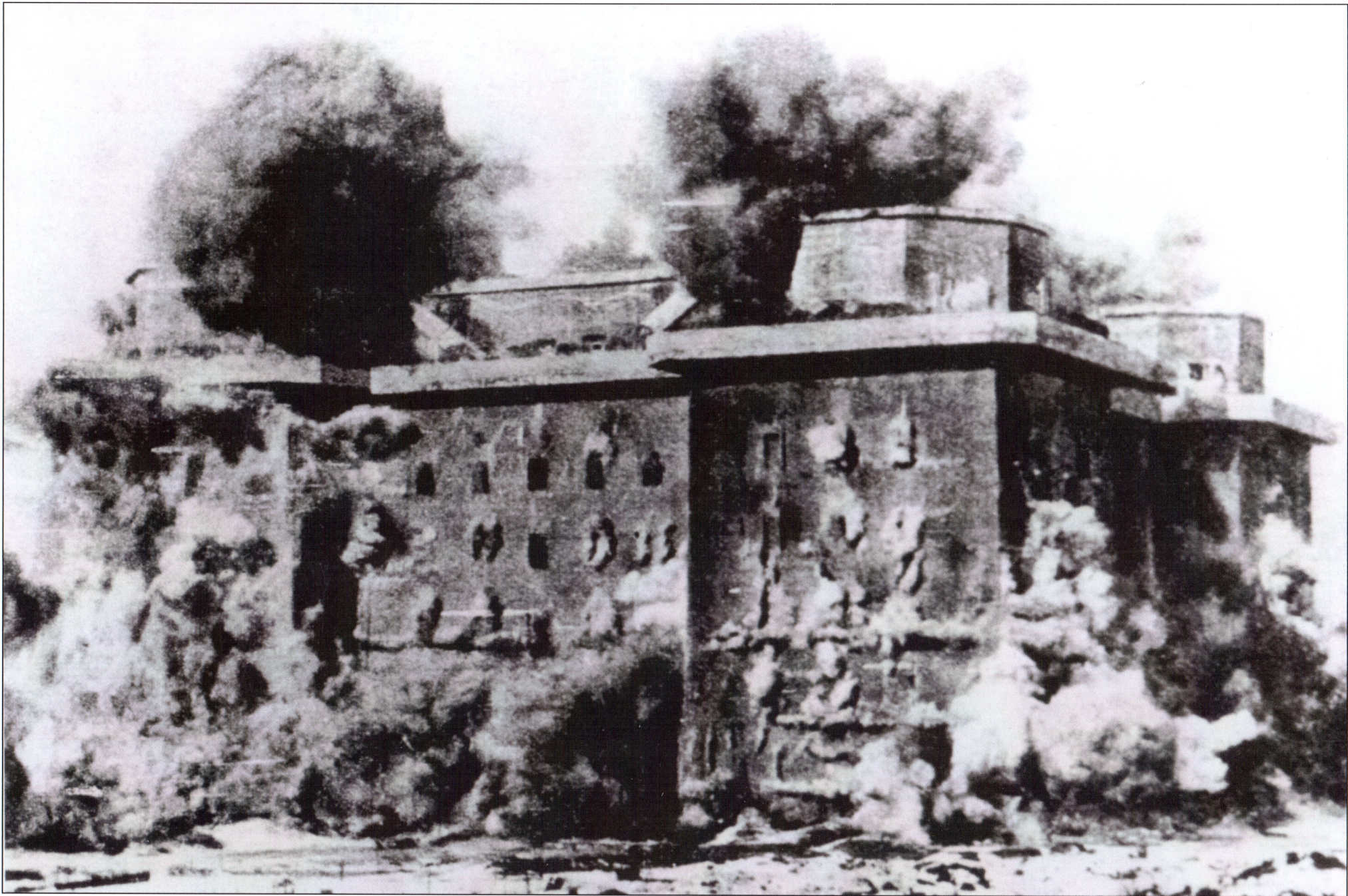
From 1946 until 1950 "relief" workers (unemployed people, whom the Labour Exchange could conscript as labourers on public building projects) supported by a narrow-gauge railway, poured rubble and debris onto the G-tower, so that a small hill gradually grew. Today it is called the "Great Bunker Mound" as opposed to the "Small Bunker Mound", which entombs the L-Tower at Friedrichshain. But there are a few fragments of the G-tower poking out of the "Great Bunker Mound".

Photos taken on December 17th 1946: Top left: The heavy Flak is gone, but parts of the tower crane and the steel cupola protection for the ammunition shaft can still be seen. Left: The "Rubble Women" became legendary in Berlin, they were also busy as relief workers on the Flak tower mound. The job meant hard, gruelling work in wind and rain, snow and ice. Equipped with very primitive tools, these women helped to solve the gigantic problem of turning a city of chaos into a habitable space. By spring 1950 2.1 million cubic meters were already piled on top of both Flak towers. Top: The rails of the narrow-gauge railway were laid in the Friedrichshain public park in summer 1946, small steam engines pulled trains of tipping wagons. For the railway workers this was a dangerous workplace, engines could slide downhill when it rained, wagons were often derailed and there were even incidents of whole trains overturning. One train of wagons filled with debris on its way to the rubble hill, which would later be known as the "Great Bunker Mound".

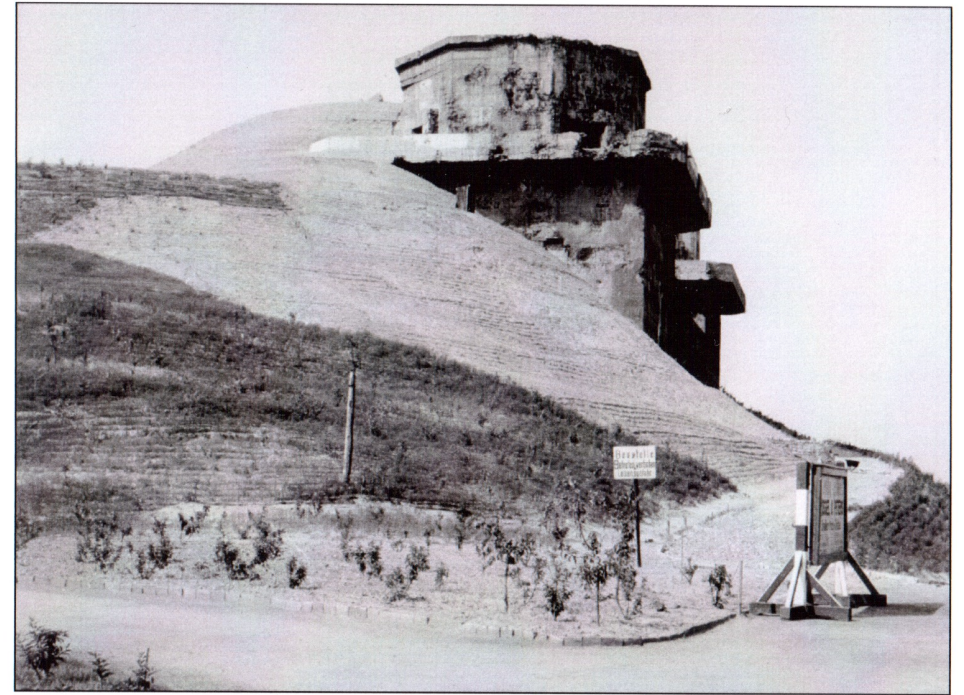


Next page: Aerial picture of the centre of Berlin (background) and the Friedrichshain public park with the blown up ruins of the Flak towers, on top the G-tower, below the L-tower.





After the first blast failed on October 25th 1947, French engineers carried out a second attempt on February 28th 1948. There were immense clouds of smoke, but only some parts of the outer walls were damaged.



Top: Both southern towers and the outer wall between them collapsed after the third blasting on March 13th 1948, using 25 tonnes of explosives. Right: Relief workers are covering the Humboldt G-Tower with the debris of 4,000 dwellings or 1.6 million cubic meters of rubble. In 1950 some 1,300 relief workers were employed on the "Rubble Mountain" site. Bottom left: The L-Tower after the blast on December 13th 1947 which used 16 tonnes of explosives. The upper row of windows and the wall fragment can still be seen today. The bunker has disappeared under earth and rubble up to this height. In the background on the right is the G-tower. Bottom right: The L-tower on Gustav-Meyer-Allee after being buried.



The remains of the Berlin Flak towers today...



Left: The Bunker Mound in Volkspark Friedrichshain, 2005. Right: Only the top balustrade of one corner tower rises above the artificial hill.

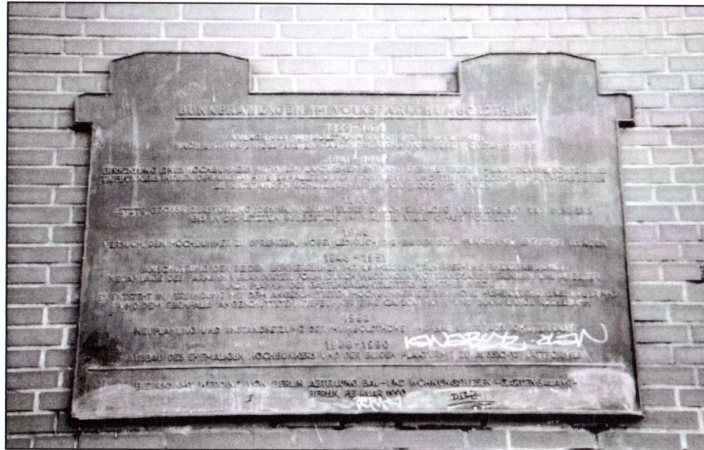


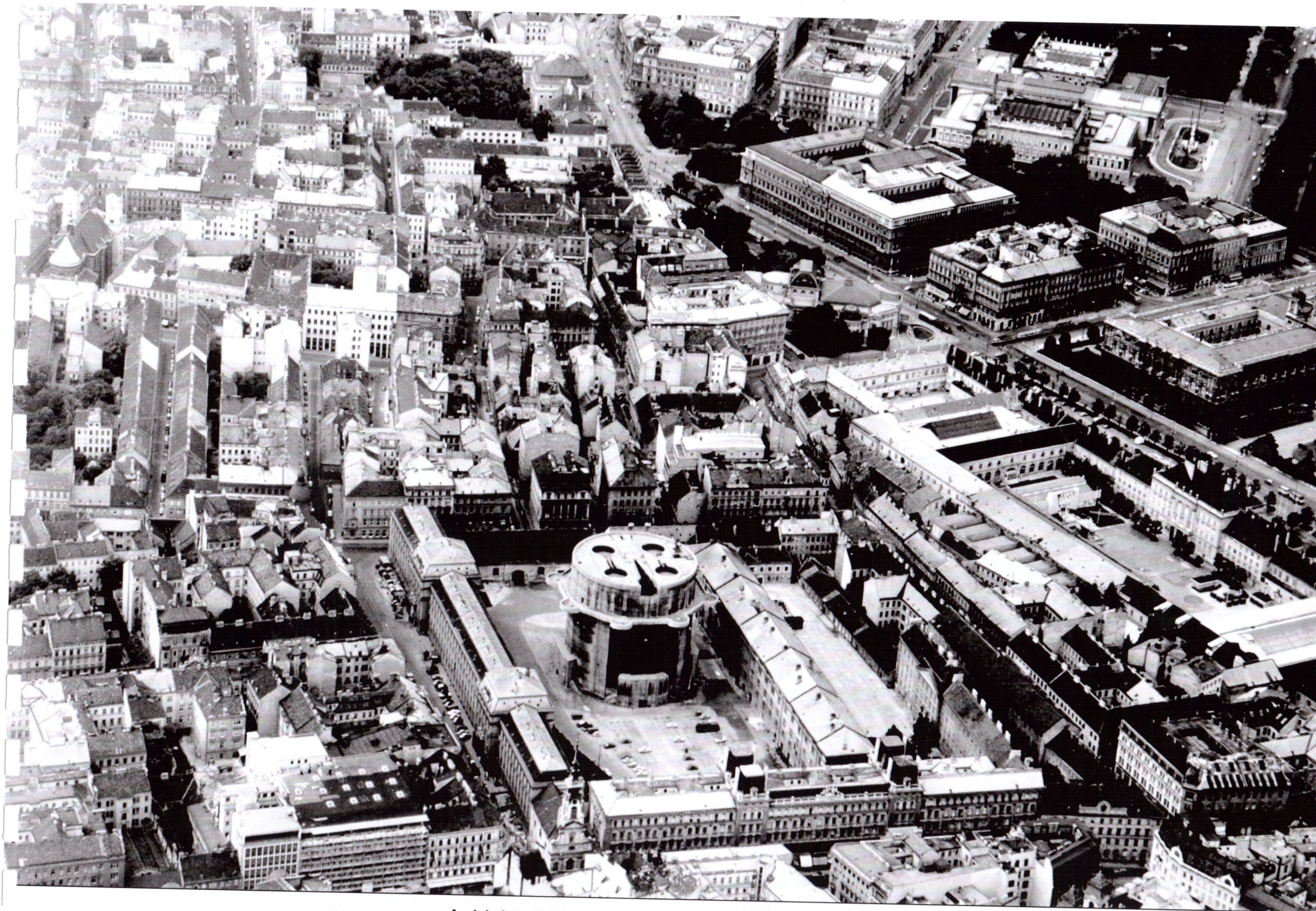
Far left: the last large fragment of the Friedrichshain G-Tower still visible above the surface.

Left: View of the small Friedrichshain Bunker Mound, inside the ruin of the Radar Tower.

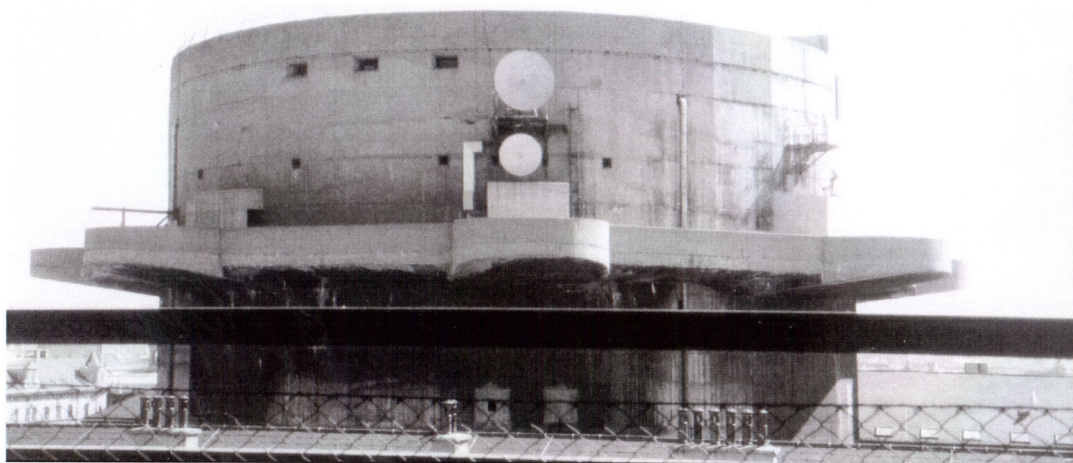


Far left: Even today the enormous dimensions of the Flak towers are stunning. The last preserved large fragment of the Humboldthain Radar Tower with bricked up windows on the southern outer wall. The three huge hinges had to support the 6 cm-thick steel shutters, each of which weighed over a tonne. Left: Remains of the Humboldthain Gun Tower. Far left middle: This plaque was erected in February 1990, it tells the story of the Humboldthain public park. Bottom far left: Already in 1950 the Berlin section of the Alpine Association asked for permission to use the northern wall of the Gun Tower between towers II and III for climbing exercises. Under the lower platform of the tower on the right side we can see a climber like Spider Man on the concrete wall. Bottom: The place where the Zoo Radar Tower was situated is nowadays part of the zoo area.



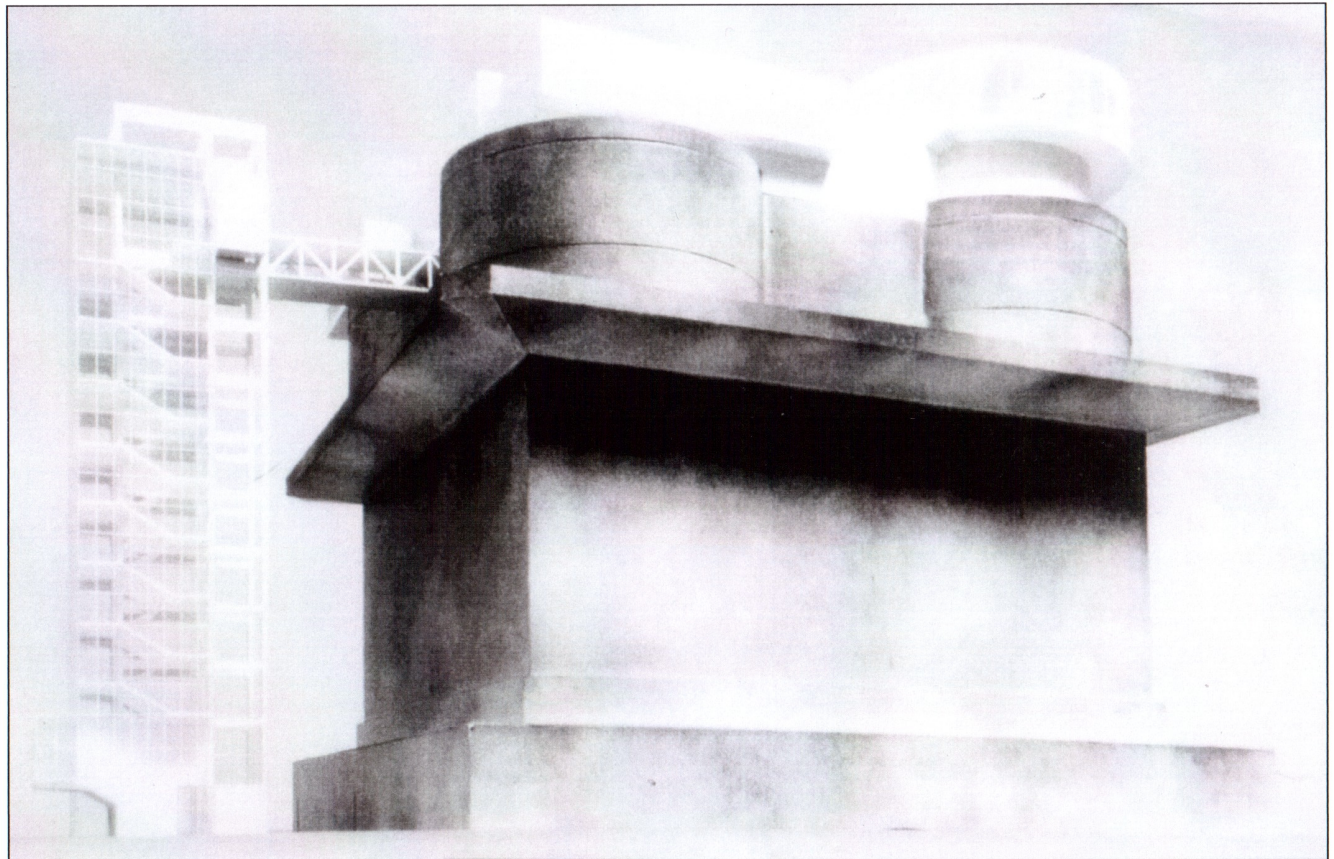
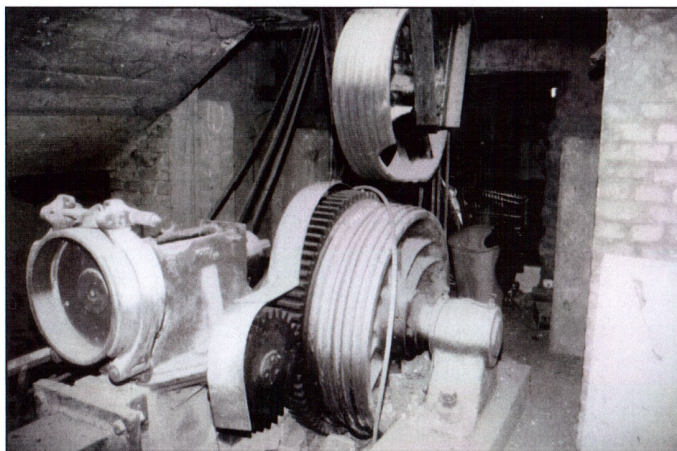


Aerial view of the Stiftskaserne G-Tower in the Fifties.



Top: This picture was taken in 1995 from a nearby multi-storey car park. The first platform shows the lobes with splinter-proof entrances. The camouflage paint on the top of the tower is completely gone. Since the Austrian Armed Forces were running this bunker, some radar dishes were fitted to the reinforced concrete wall. Right: Several years later: rain and snow have already washed the camouflage paint away. On the top of the G-Tower, the recesses for the 128 mm Flak and for the crane, when not in operational position. The three entrances are protected by bombproof constructions, built in 1944. Bottom: After the war the Stiftskaserne G-Tower became a US ordnance base. The G-Tower is still painted with camouflage colours, only the lower part was painted white to make orientation easier during the Blackout.





Vienna undoubtedly possesses one of the most extraordinary and surprising post-war bunker conversions. Because of its remarkable structural strength and the immense thickness of the reinforced concrete walls, the Esterhazypark Radar Tower became a deep-sea aquarium in 1958 - the 'House of the Sea'. Visitors can see a fully grown shark, which a Viennese woman returning from a Pacific trip tried to smuggle into the country. The shark was discovered and confiscated by the Customs officers at the Wien-Schwechat airport. There are crocodiles and snakes here too. Later, in 1999, there was a plan to build an "event restaurant" on the top of the Flak tower and renowned designers were engaged for this project, but nothing has come of it to date. In 1961 a tragic and fatal accident occurred when a young man fell into a twelve-metre deep ventilation shaft. The fire brigade had to cut a hole into the wall in order to recover his body. Top left: Entrance to the 'House of the Sea' in the former Esterhazypark Radar Tower. There is not a single sign in the public area that indicates why this building was erected and for what purpose it was dedicated, but in the basement one can still find the drive motor for the lift (bottom left) and on the upper platform, where the radar equipment was situated, there are still traces of the past: the tower crane with its counterweight made of concrete plates.

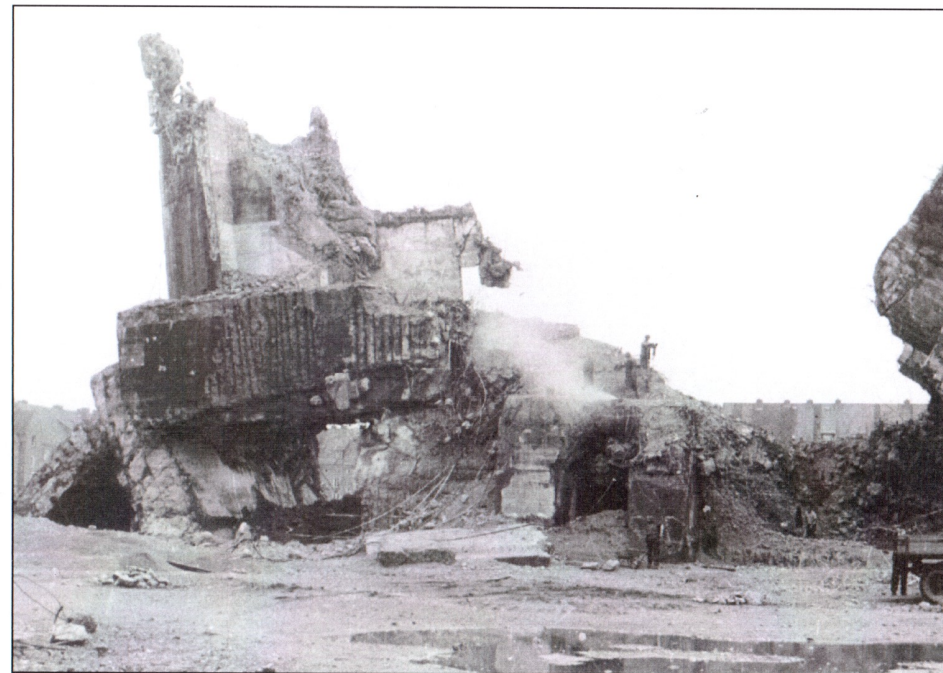
Over the years there have been many intriguing plans for the building, for instance to build a cable car to the top of the Flak tower. Even the famous "packaging artist" Christo wanted to wrap this building up in 1995 but he failed to get permission to carry that out. Top: One of the many examples for conversions of the Flak towers in Vienna, for instance the Arenbergpark Gun Tower, which is used as an art depot and by a theatre company. The Arenbergpark Radar Tower is vacant and unused. Formerly owned by the Austrian Republic, the Flak towers were given to the city of Vienna in 1990.



Aerial picture of the Augarten, taken in the Fifties. It's clear to see how the Gun Tower dominates the surrounding built-up area.



Top left: The Augarten Gun Tower, pictured in 2005. Left: Nothing had changed inside the Gun tower since the Russian efforts to blow it up. Today thousands of pigeons are living inside the bunker and it's not possible to enter without breathing masks. There have been many proposals for new usages of the building, but none have been realized to date. Top: The Radar Tower was penetrated above the lower platform by a Soviet shell. In contrast to the Esterhazypark Radar Tower, the lobes are supported by mighty buttresses. Precipitation has also washed away the camouflage paint from the Vienna Flak Towers.



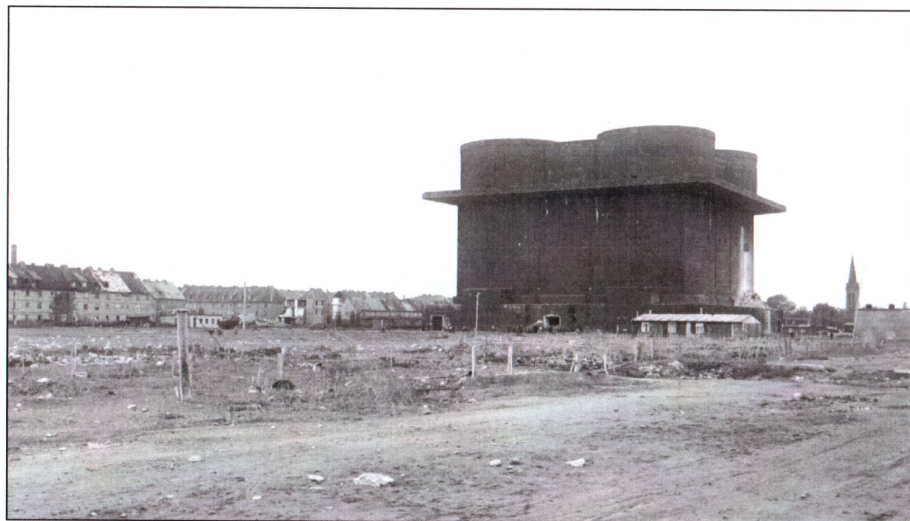
Flak Tower Hamburg - Wilhelmsburg

Top left: After the blasting of the Wilhelmsburg L-Tower on October 10th 1947. An eyewitness reported: "At the stroke of 11 a.m. a powerful detonation shook the Wilhelmsburg district. A dark cloud of smoke covered the bunker for several minutes. The 44 m high and 38 m long giant had changed shape enormously. The 3.5 metre thick outer walls couldn't withstand the shock wave of the 8,500 kg explosion, but they limited the results of the blast in such a way that neighbouring dwellings suffered no significant damage. The bunker had turned into a pile of rubble, which would pose a headache for the Clearing Department, increasing the mass of rubble in Hamburg to a considerable degree."

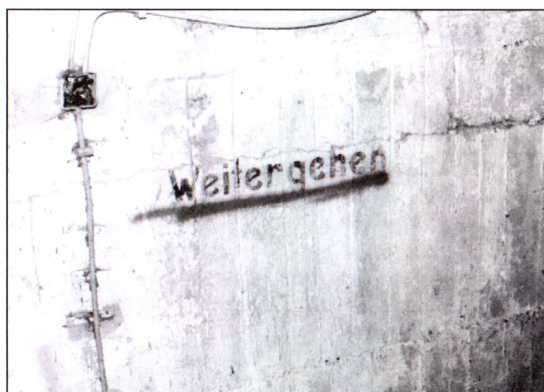
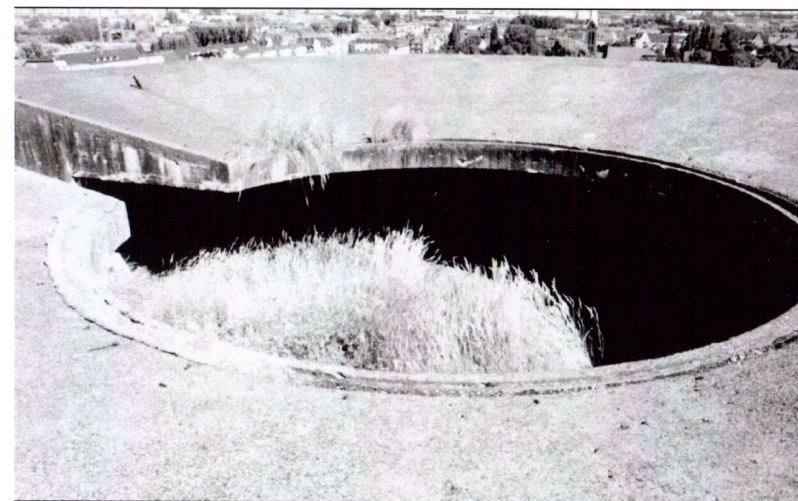
This eyewitness was right, because the rubble of the L-tower remained on the site for years to come. The photographs top and left were taken in 1952/1953. The civil engineering dept. of the Harburg District Council published a limited tender for 'relief works' until November 10th 1952 to get the rubble cleared away. The Oxygen Blasting and Building Company won the contract in December 1952. They estimated some 4,040 days work by relief workers (Unemployed) and 374 days work for Oxygen's own employees. The work was to cost 115,500 DM. 22 DM were calculated per cubic metre of rubble. 80 working days were allocated to the clearing of 5,000 cubic metres of reinforced concrete. Immediately after the war, the Wilhelmsburg G-Tower on the Rotenhäuser Feld was still in use. Because of the absolute dearth of office accommodation, which of course also affected the civic authorities, the Flak tower at Wilhelmsburg became a depot for files, the structure was good enough for this purpose. The Volksfürsorge (public welfare) in Hamburg stored some 10 million registry records here, which had to be removed again before the final blast date.



Top: Blasting of the Wilhelmsburg G-Tower on October 17th 1947

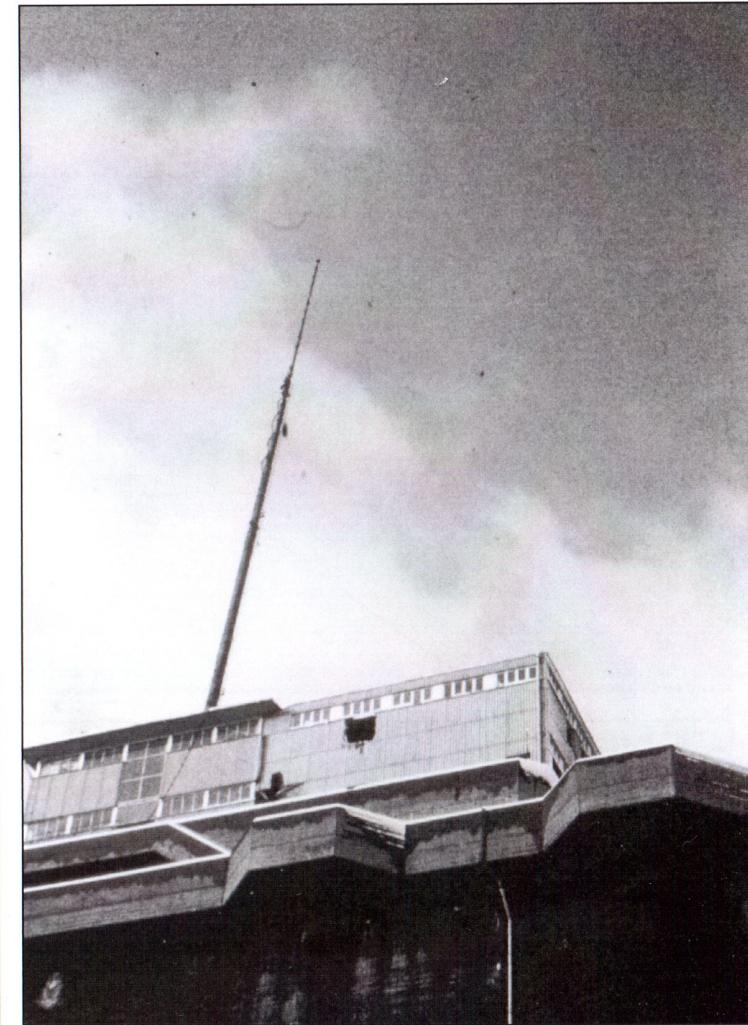


All residents living within a half-kilometre radius were evacuated before the British engineers carried out the blasting on October 17th 1947. 600 policemen were called up to cordon off the area. The following day, the "Hamburger Freie Presse" newspaper reported: "At exactly 11 a.m. the first sign of the blast was a gush of smoke and flame that shot with immense force out of the eastern side of the bunker, followed by a detonation, sinister, dull and dark... With one blow, the gigantic 65,000 cubic metre concrete block became alive..." Bottom left: After the blast. Just out of sight on the left of the picture is the area of the (already blown up) L-tower. When the smoke had cleared, people came to the site and saw that the Flak tower was intact. Reports say that the onlookers chanted: "Made in Germany! Made in Germany!" But the British had only intended to destroy the interior and they succeeded in this. Right: The long white stripe, caused by the dust of the explosion is visible under the dormer in the eastern wall.

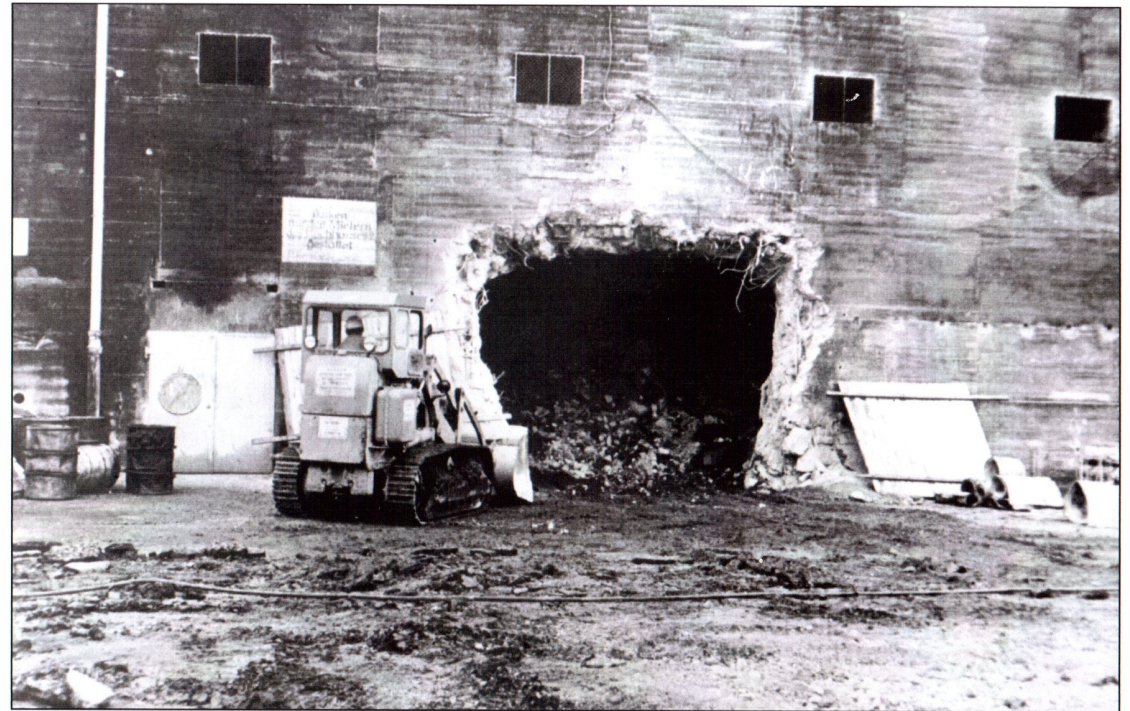
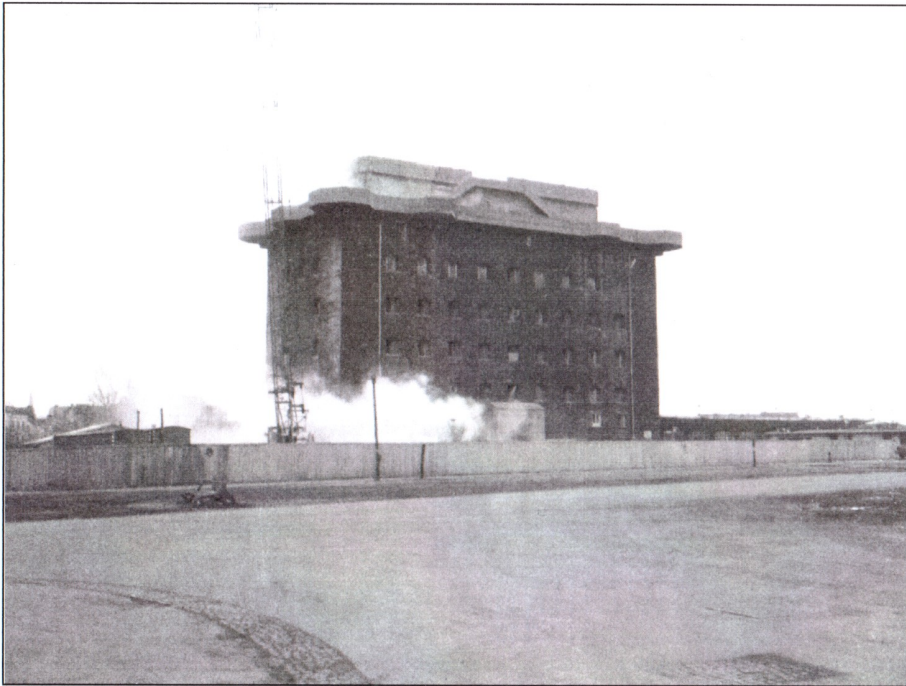


The gigantic Gun-Tower of the 2nd Generation still stands on Neuhöferstraße in Hamburg-Wilhelmsburg. Earlier plans to pull it down were doomed to failure due to the immense costs involved. A later project to plant the G-Tower with creepers was only partly successful as the picture shows. Precipitation has brought light deposits of lime and sulphur to the surface. Top right: After some decades, the twin 128 mm Flak base, partly covered by a concrete ceiling, has been conquered by Nature. German Telekom have installed some aerals. Bottom right: In the mid-Nineties the concrete building protecting the power station for the Flak tower still exists.

Far left: In the ruin of the G-Tower one can find inscriptions on the walls: 'Onwards'. Left: Nothing has changed inside the ruin of the Wilhelmsburg G-Tower since the blasting carried out by British engineers on October 17th 1947: A damaged staircase.



In 1949 the newly founded NWDR rented two floors in the Heiligengeistfeld L-Tower and established a TV studio, which started a test programme in 1950, broadcasting the first TV pictures on July 12th. The News was read from newspapers, a cultural film was screened, as well as a documentary dealing with a purification plant. The German Federal Mail used the L-Tower in Hamburg-Heiligengeistfeld as the base for radio and TV transmissions after 1945. A two-storey building was erected above the 5th floor for this purpose as well as a decimetre transmitter and a directional radio base. The height was some 45 m above ground level, built with a steel and brick frame with corrugated facing. Added to that on the lower platform was a small outbuilding, which housed the flywheel installation. The German Federation had sold the L-tower to the German Federal Post in 1973 for some 1.3 million DM. Now the Post Office planned to erect a telephone exchange with 10,000 connections on this site. After Hamburg's Post Office Divisional Administration issued a public invitation for tenders, the Oxygen Blasting and Building Company won the contract for pulling down the L-Tower. Before they could start their demolition work they had to remove all the Post Office buildings above the roof of the upper platform on the 5th floor. The transmission equipment that could be reused had been already dismantled by the Post Office itself. Over the shaft of the "Würzburg-Giant" two parabolic aerials were taken down and the shaft secured with a steel construction with a light grid cover. Right: November 30th 1947, the 30 m tall mast on the superstructure of the tower, a steel grid mast and the broadcast transmitter tube had to be blasted off. The tip of the transmission mast landed on the ground of the football Club FC St. Pauli, destroying a three-metre length of the fence in front of the stadium.



Top left: Probably one of the first blastings in December 1973 was to make an entrance for the tracked vehicle. The fifth floor with its staircases leading to the interior seems to be undamaged.

Left: First blasting of the solid roof of the 5th floor, view to the eastern side. In the foreground an excavator crane.

Top: The debris, which was tipped into the Würzburg shaft, could be removed with this small ICH Type 175 tracked vehicle once the entrance had been blown into the outer wall.

Right: A 22-tonne Liebherr type 921 LC hydraulic excavator with its rock chisel was to cut smaller walls into pieces. On February 5th 1974 the hydraulic excavator was hoisted up and mounted on the lower platform of the L-Tower





Even the volume and movement of clouds of smoke and dust were taken into consideration during the planning phase. Dampening techniques were used to try to bind the very fine concrete dust, but even so, the Oxygen Company was frequently called in to clean the numerous seats of the nearby football stadium.

Left: Shortly after an explosion, clouds of smoke and dust are drifting away. View to the western side of the Flak tower showing the already demolished platform and balustrade. Pictured on March 23rd 1974

Bottom: A concrete plinth on the lower platform, worn down by explosions. In total there were ten plinths (four on each long side and one each on the front and rear sides), which were reserved for the light machine weapons (20 mm Flak quad mount). Pictured on February 1st 1974.





Left: This aerial picture was probably taken in May 1974 and shows the progress of the demolition and blasting work. The western long side wall and the northern front wall have already been removed. Behind the southern front side is the partly-hidden shaft into which the "Würzburg-Giant" radar was lowered when faced with imminent danger from the air.

The western balustrade and the overlapping parts of the lower platform have been removed too.

This picture makes clear the kind of problems faced by Oxygen during their blasting work.

Top left in the picture is the football stadium that is the home of FC St. Pauli, top right the wagons and tents of the fairground traders, as well as their carousels and amusements.

The coordination involved in Oxygen's both blasting and keeping the fairground visitors safe was perhaps unspectacular, but it was also a masterpiece of professionalism.

On the southern side of the platform are the caterpillar-tracked vehicle and the hydraulic excavator.

Bottom left in the area of the car park, on the left side of the fence is the round emblem of the St. Pauli football club. The emblem had to be moved because of safety considerations, but in spite of this it later showed some signs of damage on the edges caused by flying fragments.



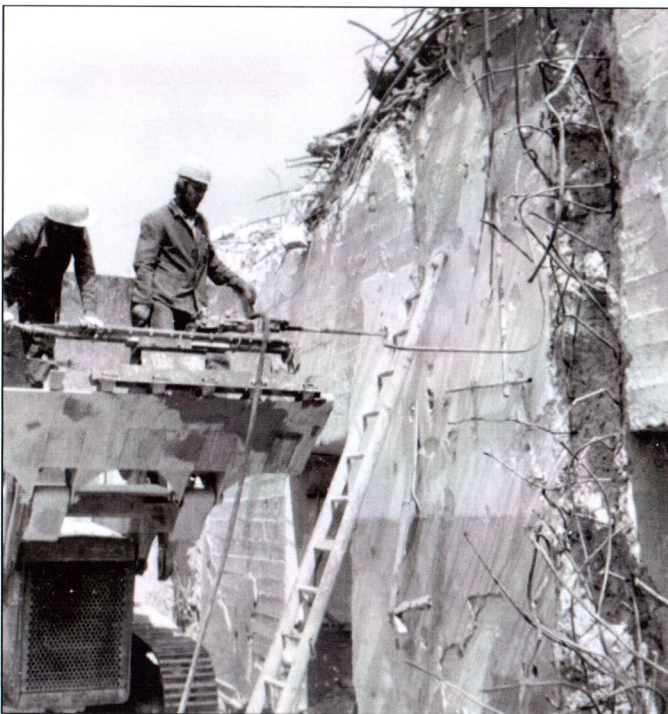
Far left: Building supervisor S. Carbow climbs down a ladder into the Würzburg shaft. This is quite risky, because pieces of concrete can fall from the reinforcement bars at any moment. Pictured on March 22nd 1974.

Below: Drilling work on the walls of the fourth floor.

Top left: To avoid fragments flying during the blasting of the balustrade of the lower platform, large, heavy tarpaulins were spread out, fixed with steel girders. The markings (black rectangles) inside the balustrade of the lower platform are still visible, they were intended to help the Flak crews with orientation and range-finding.

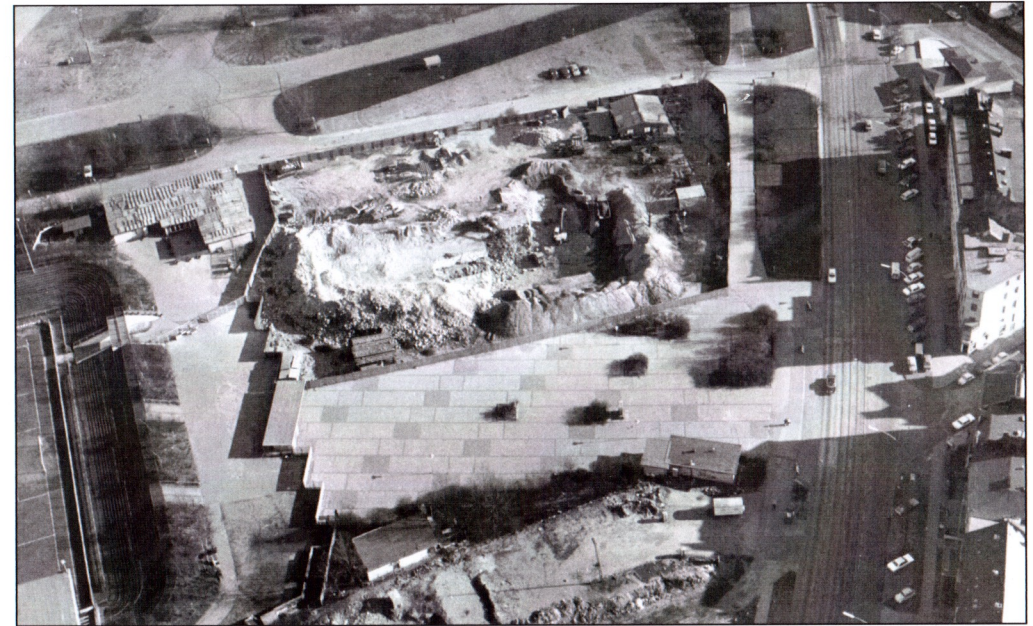
Left: Holes for the explosives were bored into the floor of the lower platform using thermal lances. Pictured on February 5th 1974.

Below: The site supervisors inspecting the work from the lower platform, a good view of the immense walls (2.9 m) and roof (5 m) of the fifth floor. In the background one can see the Würzburg shaft, because the wall in front of it has already been removed. Pictured on March 15th 1974.





Aerial photo taken on July 24th 1974, the east side of the Heiligengeistfeld L-Tower. The massive main entrance leading to the central staircase is clearly visible.



Left: Additional discussions concerning the removal of the 3.2 m thick foundation plate with its 6,152 cubic metres had calculated 55 working days. The problem of how to remove the foundations by blasting but without damaging the sewers below was solved. Photo taken on January 20th 1975. On the right: After the demolition and removal of the foundations, there was a nine-meter deep excavation, which had to be filled in by the Oxygen company. Bottom right: The Deutsche Telekom building which replaced the Heiligengeistfeld L-



Heiligengeistfeld (HGF)

On May 5th 1945 the British authorities took over the administration of the Heiligengeistfeld Flak Tower. On December 28th 1945 this duty was handed over to the architect Knaack as well as the responsibility for guarding the Flak towers. The President of the Supervising Finance Department succeeded Knaack as administrator on April 1st 1946.

At the end of 1946 the Radio Group of the former Reichspost – now the Supervising Department for the British Zone under the control of the Radio Section (Colonel Kidd) - planned to start a public TV programme. They needed to find a good position for their transmission mast and were looking for a tower block. They found it: the Heiligengeistfeld Radar Tower.

Maintaining communications with Berlin was of immense importance during the Soviet blockade of 1948-1949. The Allies expected "technical disturbances" and that the cable links would be vulnerable to sabotage or interference. So substitute radio communications were established by the military governments of the western zones by erecting 20 kW transmitters in several different locations, one of those being on the high roof of the Heiligengeistfeld Flak tower.

In 1949 the NWDR broadcasting company moved in to the 4th and 5th floors of the Radar Tower. Technical Director Werner Nestler and his specialists went to work. The studio was a 20 square metre room on the 5th floor. After the blasting of the Flak towers in Wilhelmsburg, the Reichspost was flirting with the idea of abandoning the Heiligengeistfeld L-Tower again, but the Radio Section decided differently. Even in 1950 there were fears that some unexpected demolition measures might affect the running transmissions, and perhaps make it impossible to carry on.

The Post Office Divisional Administration (OPD) pointed to the significance of "Tower Block II", in which they were investing 1.15 million DM, much of that amount being already committed: *"In order to establish a system of modern and reliable radio, telegraphy and telephony communications with Berlin, we need to build a mast on Tower Block II in Hamburg, the mast will measure about 3 metres in diameter and will rise to 60 metres above roof level. Apart from the directional connection with Berlin, we are also planning to use the mast as a transmitter for Port radio, Elbe radio, country roads radio, Elbe-ice breaker radio, decimetre radio and other public telephone services."* Apart from the major costs of giving up Tower Block II and having to create a new location, the start of the vital new radio link with Berlin would be delayed for two or even more years.

The Heiligengeistfeld G-Tower's "struggle for survival" lasted for years. The "Executive Department of the German Armed Forces" applied for the release of the Flak tower for civil use on March 13th 1946. In June 1946 the Building Administration in Hamburg expressed their fears that: *"Should the blasting actually be carried out one day, then it would be impossible to disentangle and remove the resulting masses of rubble for decades after..."*

From August 20th 1946 it was allowed to convert the Flak tower into apartments with the 176 existing windows.

In September 1946 the order was given to start with the construction of the flats immediately. In a document for a meeting of the Senate one can read: *"There is a danger of the bunker being blown up in the first half of 1947. The Mayor of Hamburg is negotiating with the Governor and trying to persuade him to cancel the blasting in view of the advanced state of the apartments being constructed there. On the 2nd of July 1947, the Governor will remind the British Military Governor that in contrast to the bunkers in Wilhelmsburg... the destruction of the Heiligengeistfeld Bunker will be postponed indefinitely, and that in the Governor's view, the bunker will be preserved as long as necessary, given the lack of living and industrial accommodation in Hamburg."*

Left: Aerial picture shortly after the ceasefire. The twin 128 mm Flak guns and the plinths on the lower platform are still visible, some of them still with mounted light AA guns. At the bottom entrances D and E of the Heiligengeistfeld G-Tower in Hamburg between the towers

On December 28th 1948, detailed plans for demilitarization were presented to the occupation authorities and were not rejected out of hand, but the Demolition Branch wanted to extend the demilitarization work in such a way that in the future it would be impossible to mount guns on the tower. They also wanted to make the upper surface more permeable to bombs.

At the end of 1949 the financial situation of the Hanseatic city became clear and a motion was passed by city's Senat on January 21st 1950 requesting a limitation of the demolition measures.

The additional costs compared with the planned 2.67 million DM would amount to 8.91 million DM. There were two proposed demolition measures: one was an *"unpretentious slitting-open of the four front walls, no demolition of the AA gun bases and upper roof."* The costs were estimated at 250,000 DM. Combined with the original plan, costs were to be about 2.6 million DM.

Full of hope, the document went on to state: *"Because all air raid shelters by this time can be seen as the property of the Federation, the Finance Dept. has made contact with the Minister of Finance with the agreement with the other Länder (German States) in the British Zone. The Minister of Finance informs us that he has already raised the question of ceasing all demolition measures with the Allied High Commission's liaison office. We can take it from the Minister of Finance's comments, that talks on this subject will be prepared between the Chancellor and the High Commissioner."*

So the problem of blasting the G-tower was solved. On May 24th 1954 City Mayor Max Brauer informed the State Commissioner that the Federal Government had stated that no demolition plans could be discussed on the level of the Länder without the Federal Government taking part.

Regarding "Tower Block II", in which the Federal Post Office had occupied the 4th and 5th floors, a sensitive point was raised and thereby also a good reason why demolition shouldn't take place, in other words, Berlin: *"Apart from this, the Post-Office Divisional Administration intends to erect a 60 m high transmitter mast on the tower for ultra-shortwave telephone traffic. Apart from the local significance of this telephone traffic for Hamburg this transmission mast is necessary for the reliable establishment of telephone traffic on a decimetre wavelength with Berlin. According to communications from the Post-Office Divisional Administration the Control Commission had also requested that the communication lines to Berlin be secured."*

The financial cost of the demolition measures were mentioned over and over again. For the Heiligengeistfeld G-Tower 8,910,000 DM and for the L-Tower 2,400,000 DM, in total 11,310,000 DM.

Senator Nevermann suggested speeding up the construction of dwellings in the Heiligengeistfeld G-Tower to provide an important argument against blasting. Even the Communist Party had a great interest in these bunkers and was quite helpful in dealings with the Russians.

Up to January 10th 1948, some 160 new windows were blasted into the G-tower. The Oxygen Company moved into 150 square metres of the former ammunition chambers situated in the south-west corner of the G-tower. There were plans to establish a cinema for 600 visitors in the ground floor, Oxygen therefore moved out. The "Scala" cabaret & theatre-restaurant moved into the second floor in 1948, run by the "St. Pauli Turm-Betriebs GmbH, which was founded by the architect Erwin Knaack. In 1948 the 3rd floor housed the Christian Welfare Society and the 'youth village' of the YMCA.

In this time after 1945 several things had happened: The German Red Cross, The German Workers Society, and the Cronmen building company had moved into the G-tower. The German Red Cross was supplying the population with food and hot meals. The State Opera had its props store here and as well as that, there were the valuable art collections of the former Minister of Foreign Affairs, Reichsaußenminister v. Ribbentrop, which were designated as "stolen goods" by Hamburg's Housing Dept. II.

Right: Corner tower of the Heiligengeistfeld G-Tower, Hamburg. Some windows are already cut into the outer wall. On the walls of the AA gun bases are advertisements for the

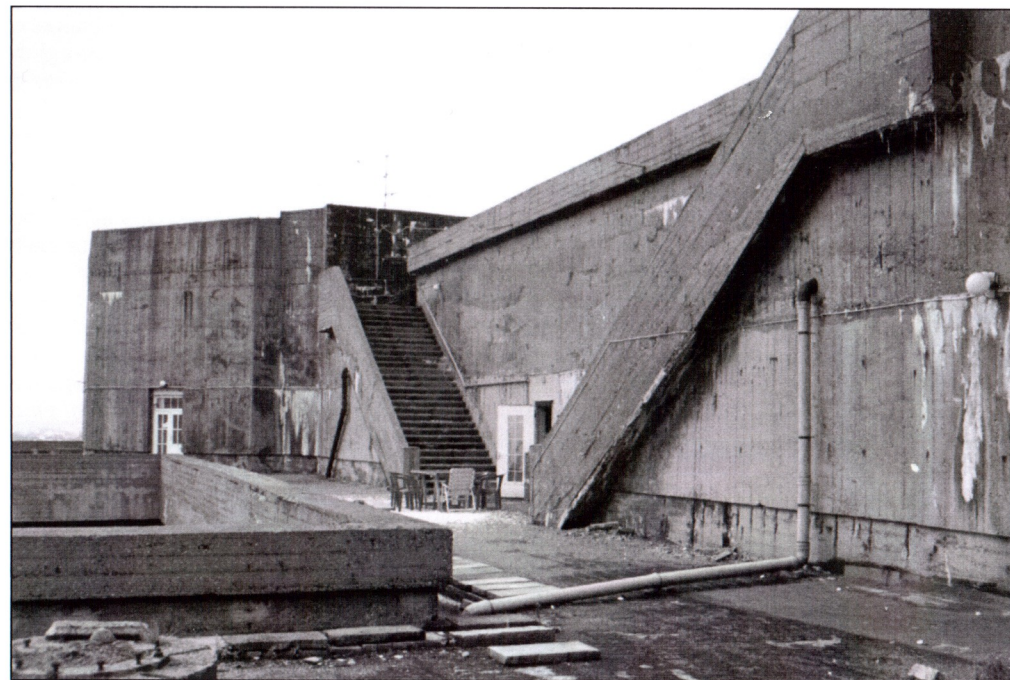


April several companies had moved in the bunker: (as of April 17th 1946)
 Heiligengeistfeld G-Tower: ground floor: Penzo & Ölschläger, building materials dealers;
 corner tower: German Naval Observatory; 1st, 2nd, 3rd corner tower floors: Cultural Ad-
 aptation, Paintings Collection; 1st floor: Public Health Service, vaccination station; 5th floor:
 Opera and Thalia Theatre, Wardrobe & Props. depts.; 3rd floor: proposed for the German
 Airy Union; 4th floor not occupied.

Heiligengeistfeld L- tower: ground floor: the P.B. Müller Company; upper floors: German Auxiliary
 1st floor: German Auxiliary Union. At the end of the year a theatre was established in the
 or; one floor was unoccupied.

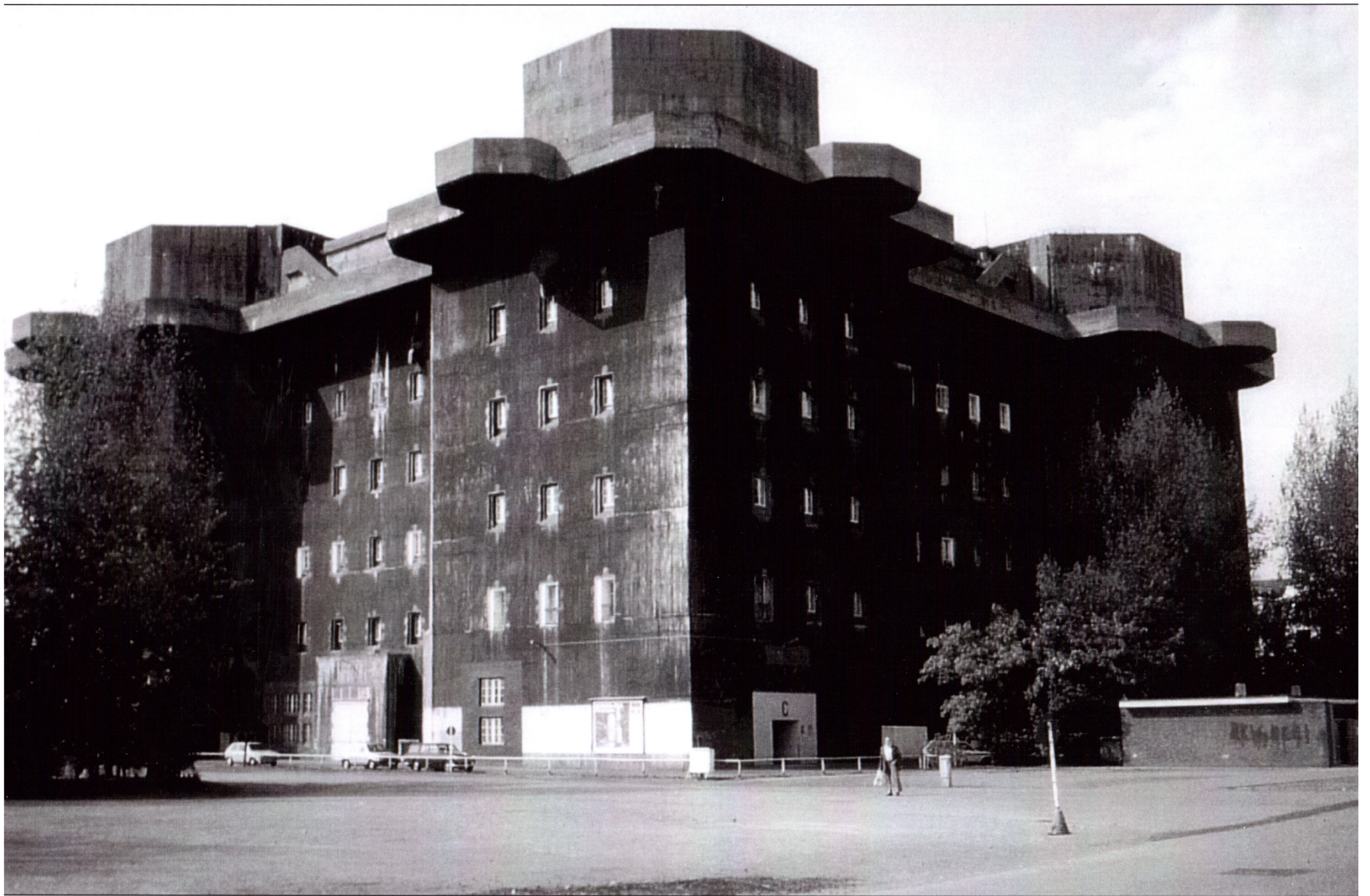
May 12th 1948 a VIP arrived to "inspect" the Flak tower: Princess Mary, sister of King George
 of England visited the G-tower in the company of high ranking officers between 12.30 and
 p.m.

6 Tower Block I became the "creative bunker", when the world famous fashion photogra-
 pher C. Gundlach established his studio and workrooms there. In 1975, 15 companies were
 moved in the G-tower, mainly belonging to the photo and advertising branch. In 1986, 25 com-
 panies already occupied 13,000 m² in the Flak tower. Later the bunker changed its outfit: the last
 traces of the camouflage paint disappeared under a sandblasting gun.

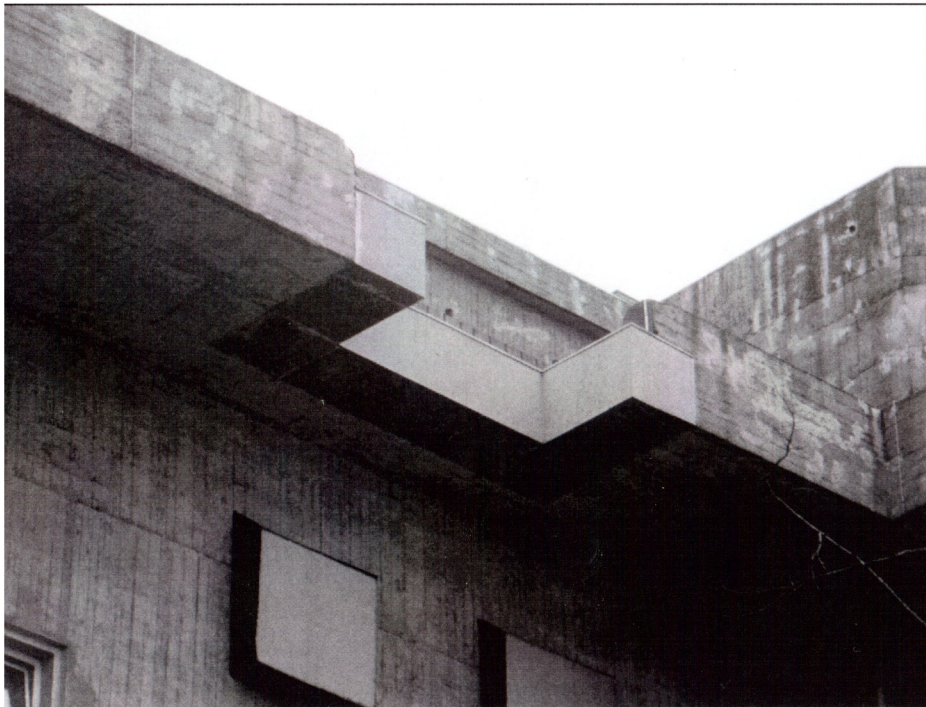
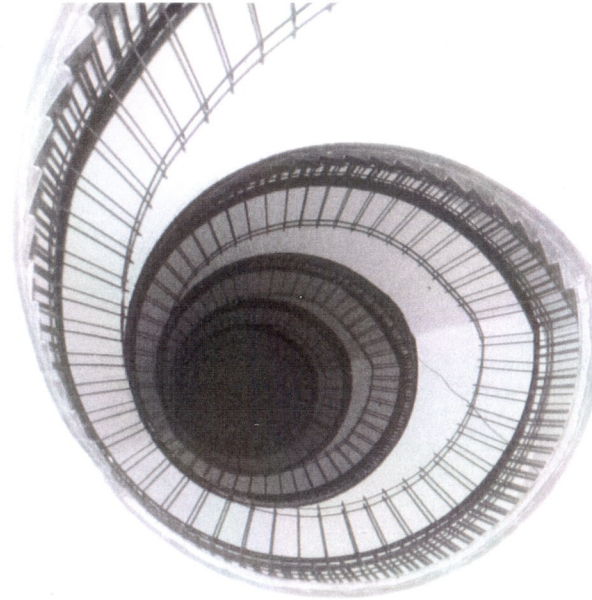


*The demilitarized Heiligengeistfeld Flak tower in the Fifties. The rubble has been re-
 used in the mean time. Top right: On the lower platform in the foreground on the left is a
 paved plinth for a light AA gun. Right: brickwork in a room with a view to the corner
 as it was in the nineties.*





Post-war view of the Heiligengeistfeld Gun Tower in Hamburg showing the main entrance. Only the camouflage paint and the marking of the entrance "C" recall the war.



left: View from 1996: in the Nineties, the last spot of camouflage paint has been sandblasted off the Heiligengeistfeld G-Tower in Hamburg. Today countless companies and
ice organisations have settled in the bunker. Bottom left: A recess, perhaps caused by a direct hit in summer 1944. Top right: the renovated spiral staircase in one of the corner



Entering the Humboldthain Gun Tower.

After extensive preparations, the Berlin Underground Worlds' expedition team advanced into the lower floors of the Humboldthain Gun Tower in 2001. The somewhat dangerous descent led to the lowest basement level. It was discovered that there are some differences to the layout of rooms compared with other Flak towers of the "Berlin Program" and some eyewitness statements had to be corrected. The inspection of the lower floors allows a sectional view, important because the original plans have never been found. Left: Remains of the ammunition lift. Bottom: Between towers II and III the smashed ceiling of the 4th floor. Below: Inscriptions on a wall near the eastern entrance.

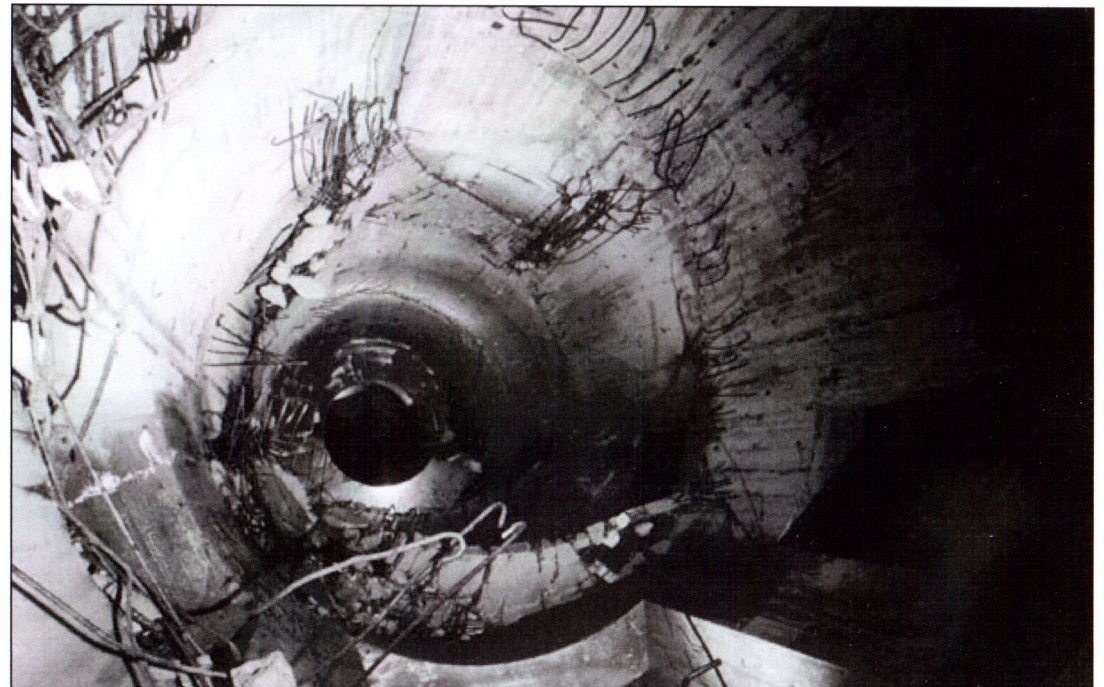




Mounds of debris and rubble in the Humboldtsein G-Tower. The ceiling is crushed on the right side after the blasting carried out by French engineers in March 1949, when the



Left: Huge hinges for the doors of an ammunition chamber. Top: View into an ammunition chamber. Below: Blown up southern main entrance for lorries



Left top: Surveying in the area of tower 3, on the left hand side the spiral staircase, on the right the shaft for the goods lift. Right: View into the 20 m p spiral staircase, which steps were destroyed during the blast in March, 8. Top: Shaft of the goods lift, becoming a paradise for rats, when soviet liers in 1945 dumped all the food stored in the Flak – Tower.



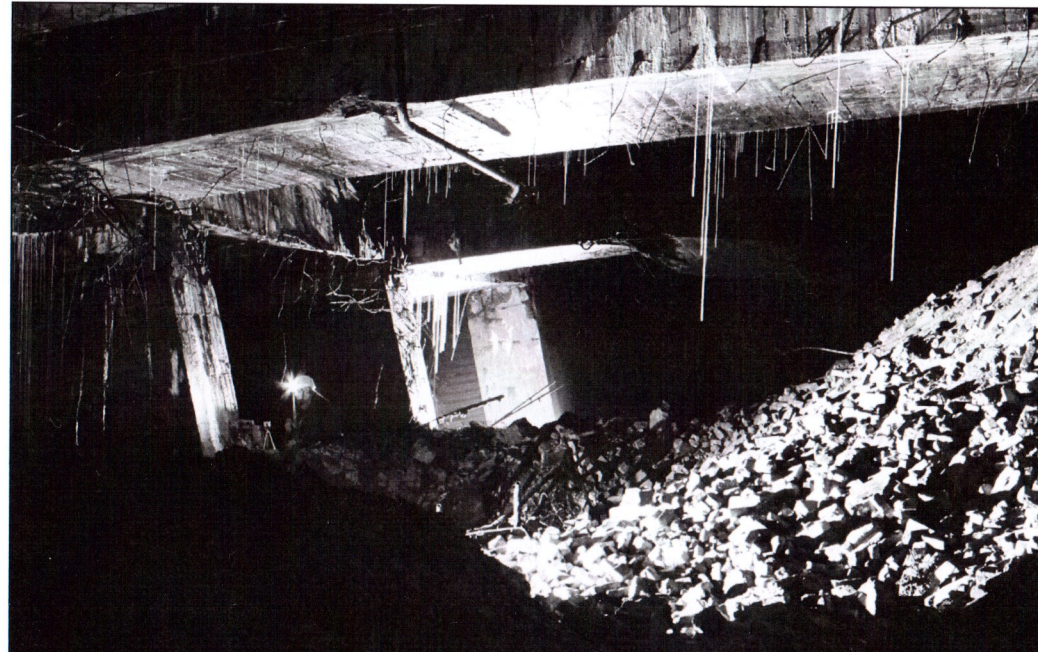
Entering the Friedrichshain Gun Tower

Left: Entering in the Friedrichshain G-Tower in 2005. With the help of a mechanical digger, access was gained to the ammunition shaft and from here it was possible to get into the 4th floor of the tower. **Top middle:** The first to enter is a cameraman from ZDF Television. **Top right:** Rusty remains inside the ruin of the Flak tower. **Middle left:** All surfaces in the Flak tower are sloping. When the Friedrichshain G-Tower was blown up, it broke down the middle, the sides leaning inwards. **Middle right:** Rusty wall brackets for a field telephone.





Left: He's not drunk and not on a ship, the stairway is slanting at an angle. Top: The dense reinforcement in the ceiling holds the concrete together. Bottom: Piles of rubble from the shattered interior constructions, which were built of bricks and mortar



remains



Because the Flak towers were covered with rubble and earth, it's still possible to find traces from past times in the hollow space of the bunker ruin. This broken Luftwaffe plate (Left) from 1941 was found inside the Friedrichshain G-Tower, which was covered by debris from the Berlin Castle, which had been blown up by the Communists in the early fifties. Top: A typical toy of that time: a little tank made of tin. The camouflage painting corresponds with the colours of the surrounding bricks... Even the Flak tower's equipment survived, but is now rusted. Next page top left: An alarm bell made by Siemens & Halske. Top right: An air raid shelter door. Bottom left and right: A practice 128 mm Flak shell and the staircase of tower III in the Friedrichshain G-Tower.





In 2003, the Berlin Underground Worlds' started extensive construction and clearing work to make the G-tower safe for tourists and visitors. Left: concreting the ceiling over the connecting staircase between the 4th and 5th floor. Top: Clearing the steps of the connecting staircase. Bottom: The Berlin Underground Worlds' have been running sightseeing tours since April 2004. From October to April the Humboldthain G-tower is closed to allow colonies of protected bats to hibernate the winter sleep undisturbed.

