KELLY AIR FORCE BASE, ENGINE TEST BLOCK FACILITY
(Kelly Air Force Base, Building 340)
600 Berman Road
San Antonio
Bexar County
Texas

HABS No. TX-3396-AE

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

FIELD RECORDS

HISTORIC AMERICAN BUILDING SURVEY
Southwest System Support Office
National Park Service
P.O. Box 728
Santa Fe, New Mexico 87504

HISTORIC AMERICAN BUILDINGS SURVEY

KELLY AIR FORCE BASE, ENGINE TEST BLOCK FACILITY HABS No. TX-3396-AE
(Kelly Air Force Force Base, Building 340)

Location: Approximately 8 miles southwest of downtown San Antonio, in the vicinity of San Antonio, Bexar County

600 Berman Road
Kelly Air Force Base
San Antonio
Bexar County
Texas

UTM Coordinates: Zone 14,
Northing: 563000, Easting 2135000
(San Antonio, Texas 7.5-minute USGS Quadrangle)

Date of Construction: Possibly 1934; modifications made in 1936; north addition in 1943

Present Owner: U.S. Air Force
Kelly Air Force Base
San Antonio, Texas 78241

Current Occupants: None; building demolished in February 1997.

Original Owner: U.S. Army, Duncan Air Field

Original Use: Designed for testing propeller aircraft engines; later tested gas-turbine engines.

Current Use: None; building demolished in February 1997.

Significance:

Building Number 340 was built in 1934 as one element of the overall master plan for the redevelopment of Duncan Field's inadequate World War I facilities. Built originally as the Engine Test Block Facility, Building Number 228, the building was one of the later structures completed at Duncan Field, the Air Corps Depot. The structure served as the Depot's first permanent propeller airplane engine test block and replaced the World War I-vintage open-air test stands that stood in the same general vicinity. This structure was completed as the result of a national public works relief program implemented during the Great Depression. The building was constructed and used when the Depot employed more than one-half of all personnel at the country's four continental depots. Building 340 is part of an interrelated industrial complex (the San Antonio Air Depot) that was developed between 1930 and 1946 in support of maintenance and repair of at least one-third of the Army's aircraft. The building functioned at a time when the San Antonio Air Depot overhauled twice as many engines as any other U.S. Depot. Because of the enormous need for the United States military flight-ready equipment during World War II, in 1943, the U.S. Army Corps of Engineers completed an addition onto the north end of the building that more than doubled the total square footage of the entire testing facility.

Building 340 is eligible for inclusion in the National Register of Historic Places (National Register) under Criterion A because it was constructed as part of a federal works project (Project Number 603) and because it was closely associated with the operations of the San Antonio Air Depot and other military activities during World War II. Present-day Kelly AFB was the location of one of the largest aviation depots in the world, and maintained or had control for logistics at 46 sub-depots, 24 air depot detachments, 3 air depot trainings, and 3 specialized storage depots.

Building 340 is also eligible for inclusion in the National Register under Criterion C because it embodies distinctive architectural elements found on those structures constructed at the San Antonio Air Depot during the 1930s, including Building 184 and Building 310. Architectural elements evident in Building 340 include massive, rusticated, banded corner pylons; a parapet, gabled roof; and extensive multi-paned fenestration. The structure's interior space configuration also provides three-dimensional evidence of twentieth century airplane engine technology.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of Construction:
September 7, 1934; modifications, 1936; north addition completed on February 15, 1943

2. Architect:
Office of the Quartermaster General (OQMG), Construction Division; U.S. Engineer Office, San Antonio District, Fort Sam Houston, Texas

3. Original and Subsequent Owners:
U.S. Army, U.S. Air Force

4. Builder, Contractor, Suppliers:
Builder: Unknown
Contractor: Original unknown; 1966 Shop Turbine Conversion project contractor: Ebco Construction Company, Houston, Texas
Suppliers: Alamo Brick Company and the Ferris Brick Company, both of San Antonio, Texas, produced most of the common brick that was used in the construction of the building. The Acme Load Bearing Tile Company of San Antonio, Texas, produced the majority of hollow clay tiles that were used in the building.

5. Original Plans and Construction:
Plans for the building were probably drawn by the Construction Service Division of the OQMG, San Antonio, Texas. There are no construction plans for the original 1934 building. There are no original construction plans for the constructed 1943 addition. All plans for this addition are paper copies with a plan "series" number of S.A.D. (San Antonio Depot) 248-xx (1-23). The plans for Building 340 are in fair to poor condition, and are located at the Base Civil Engineering Office, Kelly Air Force Base (AFB), San Antonio, Texas.

6. Alterations and Additions:
The exterior of Building 340 remains much as it did during World War II; only minor exterior modifications have occurred over time. The interior areas have been extensively modified.

A short chronology of major modifications, taken directly from the real property records for Building 340, is as follows:

Date of Modification:	Description
03/00/36	Canopy added
02/15/43	Addition constructed
08/01/45	Triangle baffles removed from Test Cells 1, 2, 3, 4
10/28/52	Install hoist system
10/07/53	Install radiator
08/22/55	Remove two inner doors and install four four-light fluorescent fixtures in Test Cell No. 1
07/26/56	Pour concrete slab, 1 each, 5' 6" x 14' 0"
04/23/57	Install 48 each 3-light 48" fluorescent fixtures
01/14/60	Install air conditioning units
10/12/61	Install 57 each fluorescent fixtures and 1 steam heater unit
05/25/67	Construct two each foundations for starter test stands
06/06/67	Shop Turbine Conversion-building converted to 14 test cells
06/30/67	Modify Test Cells 7 through 14
04/18/68	Make two each penetrations for exhaust ducts to Test Cells 5 and 6
11/25/68	Construct two each foundations in Test Cell 3b
01/28/70	Remove inlet baffles from 1943 addition
02/11/71	Install grilles and diffusers
08/01/72	Convert restroom in 1943 addition to test cell
02/16/82	Replace existing doors to Test Cell 1, 4, 5, 6 w/new metal doors

B. Historical Context:

Less than 4 years after Orville and Wilbur Wright's December 17, 1903, first flight at Kitty Hawk, North Carolina, the creation of the Aeronautical Division of the Army Signal Corps on August 1, 1907, marked the beginning of military aviation in the United States. Following tests at Fort Meyer, Virginia, the Army accepted its first airplane, the Wright Type A (renamed Army Aeroplane Number 1), on July 30, 1909. A contract was signed with the Wright brothers to train two pilots, First Lieutenants Benjamin D. Foulois and Frank P. Lahm, at a new location near the Maryland Agricultural College at College Park, Maryland. In late November 1909, the Chief of the Signal Corps, Major General James Allen, transferred the College Park operations to San Antonio, Texas, where the year-round dry and temperate climate offered more training time. He instructed Lieutenant Foulois to take Aeroplane Number 1 to San Antonio "with plenty of spare parts and to teach himself to fly." In February 1910, with only 54 minutes of training under Wilbur Wright and having never flown solo, Lieutenant Foulois arrived at Fort Sam Houston. He was the Army's only pilot

flying their only aircraft. From June 1 to June 7, 1910, he made five flights from a small hangar in the post's northwest section. In April 1911, three officers from the new Glenn H. Curtiss flying school on North Island, San Diego, California, including Lieutenant George E.M. Kelly, joined Foulois at Fort Sam Houston. On May 10, 1911, Lieutenant Kelly was killed when he crashed while trying to land a Curtiss Type IV pusher. Following that first air fatality for the Signal Corps, Fort Sam Houston's commanding general forbade any further flying at the post, and the squadron (except Lieutenant Foulois) returned to College Park. Until the establishment of Camp Kelly 6 years later, the only military aviation activity in the region was forays into Mexico against Pancho Villa in support of the Pershing Punitive Expedition (1913-15) (Office of History 1980:1-3).

Kelly Field. In August 1913, U.S. Army Chief Signal Officer Brigadier General George P. Scriven testified before the U.S. House of Representatives concerning the establishment of a military aeronautical center in San Antonio, Texas. The center was to be built for the Aeronautical Division of the U.S. Army Signal Corps. General Scriven, expressing an opinion endorsed by his subordinate officer, Captain William "Billy" Mitchell, described San Antonio as "the most important strategic position of the South." In July 1914, the Aeronautical Division was renamed the Aeronautical Section, Army Signal Corps. Two years later, when Fort Sam Houston was the primary site of the Corps' aerial equipment and personnel, the *San Antonio Light* predicted that the city would be "the most important military aviation center in the United States" (*San Antonio Light*, November 5, 1916).

In December 1916, a 677-acre site located 5 miles southwest of San Antonio was leased for a new aviation camp. On April 5, 1917, the first four aircraft landed at the new camp, officially known as The Army Aviation Post, South San Antonio, Texas. When the United States declared war against Germany on April 6, 1917, the Army had only three active flying schools: the oldest and largest at San Diego, California; a new installation at Mineola, Long Island; and a small unit at Chandler Field in Essington, Pennsylvania. One month later, on May 7, the first 53 recruits arrived at the South San Antonio Aviation Post for flight training. By June 11, 1917, when the new post was designated Camp Kelly in honor of the first American military aviator to die while piloting an aircraft, there were 4,000 recruits at the camp (Montoya 1993:1-3).

The center of military aviation that had been envisioned arrived with the establishment of Camp Kelly, designated in 1922 as the Air Service's Advanced Flying School. A proving ground for aviators during the 1920s and the location of the Air Corps Training Center, Camp Kelly coordinated all Air Corps training in the United States between 1926 and 1931. In the 1930s, Kelly provided advanced training for young American fliers and became the "Alma Mater" of nearly all the Air Corps pilots before World War II (*San Antonio Light*, November 5, 1916).

The U.S. Army Air Service was created out of the Army Signal Corps in 1918 as a separate and equal arm under the Army. In 1926, the Air Corps Act created the U.S. Army Air Corps, with representation on the General Staff of the Defense Department. The Air Service needed trained pilots and required a complex logistics network. Already a leader in the training of aviators, Camp Kelly was also prominent in the training of non-flying support crews, and in the supply and maintenance of the equipment necessary for an effective Air Corps. The ties between logistical support and combat capability were close and resulted in the location of the Air Depot on a portion of present-day Kelly AFB in 1926. Named the San Antonio Air Depot in 1927, the installation was one of three Air Service repair and supply depots in the United States that survived the post-World War I demobilization effort. It was one of four air depots in the country after 1926, and the facility where up to one-third of the Army's aircraft were maintained. By 1943, the Depot had become one of the world's largest such installations as flight training activities were shifted elsewhere.

Kelly Field, 1916-1918. The years leading up to American involvement in World War I had been innovative but frustrating ones for those who believed in the wartime potential of air power. In 1916, largely because of sporadic and insufficient funding, the United States lacked not only a cadre of trained fliers and ground crews on whom to build an aerial combat force, but also the necessary training and flying fields, airplanes, and technology. Toward the end of 1916, however, initial plans were developed to rectify that situation. San Antonio was identified as the future home station for new aero units, and a new field in south San Antonio (Kelly Field) became the nation's fourth Army training field by April 1917.

The return of Major Benjamin Foulois, one of the first military aviators and the "father of military aviation," to San Antonio in 1916 marked a first step in the development of what would become the country's largest airfield. Soon after his arrival, Foulois scouted the general area of San Antonio and identified what appeared to be an ideal tract along Leon Creek, approximately 8 miles southwest of downtown San Antonio. Chief Signal Officer General Scriven approved Foulois' choice on November 21, 1916, and the San Antonio Chamber of Commerce offered to help acquire a lease to the property (money for land purchase had not been included in earlier Congressional appropriations). The lease was signed in December 1916, and in January 1917 General Frederick Funston, Commander of the Southern Department (of the Signal Corps), received funding authorization for the first year's lease. When diplomatic relations broke off with Germany (Boden 1967:9), Foulois replaced Major William Mitchell as assistant to the Chief of the Aviation Section, Office of the Chief Signal Officer; Captain Townsend F. Dodd replaced Foulois as Chief Aviation Officer of the Southern Department (Isbell 1962:68). With Dodd's arrival in San Antonio on March 19, 1917, events moved forward rapidly at Camp Kelly (as Kelly Field was originally called). On April 5, 1917, the first airplanes from the Third Aero Squadron were flown from Fort Sam Houston to Kelly Field.

In May 1917, with the aviation camp rapidly filling with new arrivals, General James Parker, Commander of the Southern Department, officially designated the site "Camp Kelly." Named in honor of Second Lieutenant George E.M. Kelly, who had died in an airplane crash at Fort Sam Houston on May 10, 1911 (Isbell 1962:75; Office of History 1980:9), the camp soon became a tent city. Thousands of recruits arrived by train and disembarked, were processed, and, at least initially, were put to work constructing wooden barracks and completing the water and sewer system (Loeblien 1966: p. L-24). With standardized plans not yet available, crews erected 57 barracks along Frio City Road (present day Duncan Drive) and the ground was cleared for a 403-acre flying field (Isbell 1962:73). By June 1917, Camp Kelly had become the main construction and mobilization center for nonflying personnel in the Air Service. It was quickly apparent that the land acquired for Camp Kelly was insufficient to accommodate new facilities and the growing numbers of recruits. In a repeat of their December 1916 actions, the San Antonio Chamber of Commerce worked to obtain leases for additional land, which it then sublet to the government. These numerous property parcels, adjacent to Camp Kelly and extending west and south to Leon Creek, became known as Kelly Field No. 2. Formalities with the military government were completed by mid-July 1917, and a double-unit flying school was scheduled to be built and called Kelly Field No. 2. Simultaneously, complementary programs took shape at Camp Kelly.

On July 30, 1917, the name "Camp Kelly," which had been applied to the aviation camp southeast of Frio Road, was changed to "Kelly Field." Thereafter, the older, original portion of the base was known as "Kelly Field No. 1" and the more recent portion (north and west of Frio Road) was referred to as "Kelly Field No. 2."

Kelly Field, 1918-1926. The signing of the Armistice in 1918 was followed by demobilization efforts throughout the United States. Strong isolationist tendencies asserted themselves in America, and Congress cut military appropriations dramatically. With decreased funding, the Air Service experienced cutbacks in personnel and equipment. Rapid changes in the status of the Air Service after 1918 and the effects of years of debate concerning air policy were reflected in the development of Kelly Field. The hectic pace of World War I activities at Kelly Field halted abruptly as demobilization and cuts in funding reduced the facility's population and brought most new construction to a halt. However, several idle years at the Kelly Field No. 2 flying school were followed by the centralization of all Air Service flight training in San Antonio and the designation of Kelly Field as the nation's Advanced Flying School in 1922. After 1922, Kelly Field was the location of a nationally significant training program. Kelly Field No. 1 became home to a supply and maintenance depot in 1921 when the Aviation Repair Depot was moved from Lone Field in Dallas to Kelly Field, where it was combined with the existing Aviation General Supply Depot to form one of the three national air intermediate depots.

Although it would be another year before the combination of the Lassiter and Morrow Boards' reports, lobbying by Air Service leaders, and a congressional investigation would result in the passage of the Air Corps Act of 1926, the Air Service was already concerned with the need to develop an organization that would separate flying and support activities. Thus, in March 1925, Kelly Field No. 1, the site of the depot, was renamed Duncan Field, formally separating the location of the supply and maintenance functions from those of the flyers on Kelly Field No. 2, which retained the designation Kelly Field. Creation of the Air Corps Materiel Division a year later (as part of the reorganization called for by the Air Corps Act) confirmed this separate command structure of the Army's air arm.

Duncan Field 1926-1943. The Air Corps Act of 1926 changed the name of the Air Service to the Air Corps and required the Chief of the Air Corps, two Brigadier Generals, and 90 percent of the other officers to be rated as pilots. The Act allowed for an increase in regular Army officers and enlisted men, and for the purchase and replacement of airplanes, balloons, and airships. It funded a 5-year expansion program that significantly impacted flying fields and the air depots that serviced and maintained Air Corps equipment.

The air depots experienced pressure to expand after 1926 because of an increase in personnel and program scope; they also were faced with the need to construct new facilities to replace obsolete World War I stock. A considerable amount of Congressional funding had gone into the design and production of larger, faster aircraft built of metal, rather than wood and fabric. In many cases, the planes outgrew the physical facilities necessary to keep them well maintained. In other cases, technological changes called for new repair and supply facilities that could respond to those changes.

The San Antonio Air Intermediate Depot (1921-1927) (predecessor to the San Antonio Air Depot [1927-1943]) was especially hard pressed after 1926 because it was responsible for the supply and maintenance services for the entire Eighth Corps Area, where more than 50 percent of all Air Corps flying schools in the nation occurred. As the Depot responded to the needs of the Air Corps' two great flying schools at Brooks Field and Kelly Field between 1926 and 1931, and then at Kelly Field and Randolph Field after 1931, the Depot at Duncan Field was continually developing innovative methods of dealing with inadequate storage and repair facilities.

There were two major divisions within the San Antonio Depot--the Depot Supply Department and the Engineering Department--and a number of small, complementary departments. The Depot Supply Department was responsible for handling the receiving, storage, and issue of all of the Air Corps equipment (material that was worth approximately $80 million). Hundreds of airplane wings had to be placed on their leading edges in racks, and hundreds of propellers had to be turned, sprayed, and rotated every 3 months.

The second major division at Duncan Field, the Engineering Department, repaired, overhauled, rebuilt, and remodeled all airplanes, engines, and equipment for the Air Corps. Because almost all of the flying stock dated to World War I, workmen were constantly building and rebuilding airplanes from the ground up, overhauling and repairing parachutes, testing engines on the test blocks, and flight testing the airplanes before they were turned over for instructional purposes to Kelly and Brooks fields (Lackland 1926:4-5).

Complementary departments at Duncan Field included the Station Supply Department, which was responsible for approximately $30 million worth of machinery, supplies, and equipment in the Engineering Department in 1926; the Station Cost Accounting Department; the Inspection Department, which inspected incoming and outgoing shipments; and the Flying Department, which consisted of personnel responsible for flight testing each plane after repair. All departments worked together in an interdependent and interconnected fashion with one another and with the flying schools as well.

Facilities such as the Air Depot, like the flying equipment the staff worked with daily, were outmoded and rapidly becoming obsolete. The Supply Department was located in a large, frame, U-shaped warehouse with concrete floors; brick fire walls and fire doors divided the building into sections. This warehouse was supplemented by eight steel storage hangars with concrete floors that brought the tool available Supply Department storage space to approximately 331,320 square feet of enclosed space and 26,856 square feet of open storage (Lackland 1926:4).

The Engineering Department at Duncan Field was located in nine World War I-vintage hangers, two of which were all steel and concrete floors and seven of which had wooden sides, steel ends and roofs, and concrete floors. Total space available was approximately 240,000 square feet which could accommodate 80 airplanes and 150 engines per month and the storage of 160 dismantled airplanes.

Commander Major Frank D. Lackland and his successors, Major J.H. Pirie, Lieutenant Colonel James A. Mars, and Major A.W. Robins continued to press for improvements at Duncan Field as buildings deteriorated; flying activities at Kelly, Brooks, and Randolph fields increased; and airplane technology and design were changed. On January 5, 1931, the *San Antonio Light,* the local newspaper, reported that an appropriation of $1 million dollars had been allotted for construction in the Eighth Corps Area at Fort Sam Houston, Randolph Field, Brooks Field, and Duncan Field; the latter was to receive $393,500.

Although no plans for the redevelopment of Duncan Field have been located, it appears that the construction of major new facilities at the Depot between 1931 and 1936 may have been part of a cohesive building program. The architectural similarities among the different structures, including Building 340, suggest that they were individual components within a

larger plan. Colonel A.J. Fisher, the commanding officer, wrote in 1933 of the need for additional funding to complete the layout of the Depot.

The first structure completed as part of the upgrade of the Depot facilities was a hollow clay tile and stucco oil reclamation building (Building 184) that was located adjacent to the railroad tracks and completed by August 1, 1931. Approximately 6 months later, two new concrete and glass airplane hangars were completed (Building 310). Twelve more buildings were constructed by August 1933. Materials used included concrete, hollow tile, and steel sash, and an architectural design in which massive articulated corners visually terminated the long expanses of metal windows creating light, almost transparent walls. The majority of new buildings at Duncan Field were completed by 1933. The following year, construction began on an airplane engine test block facility (Building 228, now 340). Designated Federal Works Project Number 603, the test block was intended to replace a number of the World War I-vintage open-air test stands that stood in the vicinity of the old airplane hangars. Its completion brought to a conclusion the Air Corps attempt to upgrade the Duncan Field Depot facilities where the staff, by the mid-1930s, included more than half of all personnel employed at the four continental depots. The San Antonio Air Depot also continued to overhaul more than double the number of engines than any other U.S. depot (Army Air Force Historical Office n.d.:7). Such efficiency would stand the Depot in good stead by the 1940s when a twenty-fold expansion changed the face of the facility yet once again.

In the late 1930s, commanding Depot officers Major A.W. Robins, Lieutenant Colonel A.G. Fisher, and Colonel John H. Howard continued to lobby, with difficulty, for funding to maintain ongoing rebuilding and upgrading efforts targeted at key depot facilities. When political and military events in Europe and Asia made the inevitability of war apparent, the United States began to consider how to best prepare itself. German displays of a superior air force at the Munich meetings of 1938 convinced American military and political leaders that air power would be an important strategic tool. As a result, the War Department became increasingly open to members of the Air Corps whose opinions had been shunned a short time before. Military strategists realized that they would be wise to build and train an effective air force. A 1937 visit by the Office of the U.S. Inspector General found that, although facilities and equipment at Kelly Field No. 2 were inadequate and obsolete, Kelly Field was one of the foundation stones of the Air Corps. In 1938-1939, President Franklin D. Roosevelt proposed spending $300 million on Air Corps expansion. The proposal allocated $130 million for training personnel and $170 million for new planes, air bases, and new construction at existing air bases (Office of History 1980:64).

By 1941, when the Army Air Forces was established, the organization had expanded enormously. In particular, the War Department had formulated new goals for the production of combat aircraft, and for the training of thousands of enlisted and officer aircrew members. These new goals necessitated creation of new flying schools and upgrading facilities at

established schools. It also required upgrading existing facilities, such as depots, that supported the war effort through maintenance, repair, supply, and testing of equipment.

As two of the Air Corps' most important facilities, Kelly and Duncan Fields experienced unprecedented growth and change between 1936 and 1946. Expansion of personnel and facilities at Kelly Field was paralleled by expansion at Duncan Field. The pressure created from this expansion at Duncan Field, and the demands of its multiple state control area including the four airfields within the San Antonio area, further emphasized the dominance of Duncan Field and the importance of its mission.

Kelly and Duncan Fields: 1943-1945. Depot commander Lieutenant Colonel Clements McMullen wrote the Chief of the Maintenance Command in July 1941, recommending that some of the pressure on Duncan Field could be alleviated if all of Kelly Field east of Leon Creek was allotted to the Depot. In October 1941, McMullen wrote again, pointing out that another site for an advanced training school was more easily obtained than a depot site, which depended upon specific, well developed transportation facilities, which Kelly Field possessed (Kirkland 1943:14-15,18). However, McMullen's idea did not prevail, and construction of new facilities at Duncan Field continued until after the Japanese attack on Pearl Harbor. In fall 1942, a board of officers studied the situation at Duncan and Kelly fields, and decided to transfer Kelly Field to the Air Service Command, thereby relieving the physical limitations of Duncan Field and alleviating the physical limitations inherent to the operation of four bases in close proximity (Kelly, Brooks, Duncan, and Stinson).

In 1943, Kelly and Duncan fields were merged under the name of Kelly Field. Maintenance and supply became the sole function of Kelly Field, and flight training was moved elsewhere. World War II operations at Kelly Field demanded a huge industrial complex in which a work force of more than 30,000 people overhauled equipment. The complex utilized the buildings on the consolidated base, and the base headquarters was moved into Building No. 1680, where Colonel Wilkins oversaw operations of what one source called "the world's largest aviation depot" (Office of History 1980:90). Because merging the two fields caused duplications in the building numbering scheme, the Engine Test Block Facility, Building 228, received a new number designation of Building 340, which it retains today.

Shortly after the two fields were consolidated on January 7,1943, Colonel Wilkins requested permission for construction of an additional 1.92 million square feet of warehouse space to accommodate a 500-percent increase in the number of items shipped to the Depot. In February 1943, the Depot was renamed San Antonio Air Depot Control Area Command and given responsibility for 46 sub-depots, 24 depot detachments, 3 air depot training centers, and 3 specialized storage depots (McGaffey 1955:10).

By March 1943, the Depot had been renamed again, this time as the San Antonio Air Service Command. This name was used until 1944, when it was renamed yet again as the San Antonio Air Technical Service Command, a name that was retained until 1946. Programs and services continued to grow throughout the duration of the war. The installation probably reached its peak activity level in late 1944, when air combat declined or ceased in part of the North African, European, and Mediterranean theaters, and aircraft were shipped back to the United States for repair and storage (Office of History 1980:92;102). Kelly Field expanded in size once again in 1945, when Normoyle Ordnance Depot, a depot for Fort Sam Houston during World War I, was annexed and incorporated as part of Kelly Field. With the 1943 expansion and the acquisition of Normoyle in 1945, the Air Depot at Kelly (Duncan) Field became the largest in the United States.

Kelly Air Force Base: Post World War II-era. Demobilization began in August 1945 after the end of World War II. Thousands of civilian workers retired or resigned, and the remaining Kelly Field staff turned increasingly from repair to storage occupations. During this time, Building 340 continued to play an instrumental role as even larger, more powerful turbine engines were tested there. In 1948, when the Air Force was established as a separate arm of the Department of Defense (DOD), Kelly Field was renamed Kelly AFB.

A Brief History of U.S. Military Base Closure. Due to the changing international political scene and the resultant shift toward a reduction in defense spending, DOD must realign and reduce its military forces pursuant to the Defense Base Closure and Realignment Act (DBCRA) of 1990 (Public Law 101-510, Title XXIX). The Act established new procedures for closing military installations in the United States.

DBCRA also established an independent Defense Base Closure and Realignment Commission (Commission) to review the base closure and realignment recommendations. After reviewing those recommendations, the Commission forwarded its list of base closures and realignments to the President, who accepted the recommendations and submitted them to Congress. Since Congress did not disapprove the recommendations within the time period provided under DBCRA, the recommendations have become law. Among those bases recommended for realignment was Kelly AFB, Texas.

The National Environmental Policy Act of 1969 (NEPA) requires the analysis and documentation of potential environmental effects associated with all major federal decisions. NEPA ensures that environmental factors are considered equally with the technological and economic components of a decision, and that the public is fully informed and appropriately involved in the environmental analysis process. Decisions related to BRAC actions are subject to NEPA compliance, and include the timing of impacts, disposal and reuse of property, and all other activities associated with carrying out the BRAC mandate. Although compliance with many other environmental laws is also part of this process, NEPA provides

a valuable framework for both integrating environmental compliance requirements and providing necessary information to the decision maker, other agencies, and the public.

Because of this realignment, Kelly AFB is currently undergoing extensive modifications and redevelopment. Demolition of the Engine Test Block, Building 340, was planned for 1996, and began in January 1997.

Engine Test Block, Building No. 340. Building 340 was built in 1934 as one element of the overall master plan for the redevelopment of Duncan Field's inadequate World War I facilities. Built originally as the Engine Test Block Facility, Building Number 228, the building was one of the later structures completed at Duncan Field, the Air Corps Depot, at a cost of approximately $50,593. Minor modifications were made to the structure in 1936, at a cost of $2,000. It served as the Depot's first permanent airplane engine test block and replaced the World War I-vintage open-air test stands that stood in the general vicinity. In response to war-time demands, the U.S. Army Corps of Engineers completed a large addition onto the north end of the building on February 15, 1943, at a cost of $274,428. This addition more than doubled the square footage of the testing facility. Within the engine test block facility (also called hush houses), aircraft engines, with their propellers mounted, were placed in insulated testing cell chambers, secured onto concrete blocks, and tested and observed for an average of 3 to 4 hours each.

The original portion of present-day Building 340 is a one-story, rectangular-shaped parapeted masonry structure, with the extensive fenestration and massive rusticated corner pylons that distinguished much of the construction at the San Antonio Air Depot during the 1930s. Completed in September 1934, the building had been part of a federal works project (Project Number 603). The addition in 1943 was also designed with similar corner pylons and fenestration.

In 1966, a Shop Turbine Conversion project provided for the conversion of the building into a Test Cell Facility. This conversion provided for six air turbine starter cells and ten gas turbine engine cells. The contract was awarded to Ebco Construction Company of Houston, Texas, at a cost of approximately $305,000. The building has since primarily been used for testing engines and turbine starters.

PART II. ARCHITECTURAL INFORMATION:

A. General Information

Note: Kelly AFB is currently undergoing extensive redevelopment. Although the Engine Test Block Facility, Building 340, was demolished, for ease of describing and documenting the exterior and interior of the Engine Test Block Facility, this HABS narrative is written as though the building is extant.

1. Architectural Character:
Building 340 is a utilitarian designed industrial building and does not fit into any established architectural style classification. Prior to demolition, the building was an intact, nonstandardized Engine Test Block Facility. Unique to engine test block buildings, this building was designed with multiple engine test cell chambers, observation rooms, and air intake towers. Within Building 340, both propeller and gas turbine aircraft engines were tested and observed for several hours at a time.

2. Condition of the Fabric:
The building has been demolished.

3. Summary Description:
Building 340 is a 42,898-square-foot, one-story, industrial-style building built on a concrete slab foundation. The structure consists of the original 1934 building (south end) and a 1943 addition (north end). The 1934 building is capped with a corrugated metal gable roof with projecting two-story square air intake towers. The roof is supported by 13 steel trusses on steel I-beams bolted into the floor of the structure. Set between these steel I-beams are hollow clay tile infill walls and expanses of multi-paned, industrial sash, glazed curtain walls. The gabled roof is shielded behind a sloping parapet with concrete coping. Massive rusticated concrete pylons anchor the corners of the 1934 building. The parapeted, stuccoed gable end walls and the massive corner pylons emphasize the transparency of the large glass and steel sash walls of the building. The 1943 addition is capped with a flat roof with projecting two-story curved air intake towers. The walls of the addition are smooth monolithic concrete poured between a framing system of steel I-beams. Massive rusticated concrete pylons also anchor the corners of the addition. Expanses of multi-paned, industrial sash windows dominate the facade of the addition. The doors of the structure are metal accordion, metal roll-up, or metal clad wood with multi-paned upper panels.

The interior space of Building 340 consists of a single, long, open shop area in the southern half of the building, and individual rooms of varying shapes and sizes along the northern half. These rooms include 14 separate engine test cell chambers, each with projecting two-story air intake towers; 7 control/observation rooms (some of them elevated); 3 restrooms; and various storage and office spaces. The air intake towers of the 1934 building are square in design and project 4 feet above the 35-foot apex of the gable roof. The air intake towers of the 1943 addition are curved and extend approximately 22 feet above the flat roof top. Each test cell chamber and air intake tower is lined with several inches of insulation material and contains an intricate, sound-absorbing baffle system. Over time, the entire interior space of the structure has been extensively modified, but the original exterior and interior wall configuration remains intact.

B. Description of Exterior

1. Overall Dimensions:

The overall dimensions of the structure are approximately 460 feet by 92 feet, 2 inches. The original 1934 structure measures approximately 237 feet by 83 feet, 10 inches, and is 35 feet high; its rectangular air intake towers project up from the gable roof an additional 4 feet. The 1943 addition measures 223 feet, 4 inches, by 92 feet, 2 inches, and is 20 feet high; the curved air intake towers on the roof project up an additional 22 feet. The overall square footage of the structure is approximately 42,898.

2. Foundations:

The foundation consists of 6-inch-thick concrete slabs on a layer of gravel infill. The foundation blocks for the motor mounts (located in each test cell chamber) are approximately 4 feet thick.

3. Wall Construction:

The walls consist of concrete, brick laid in American common bond, glazed curtain walls, and large hollow clay tiles laid between a series of steel I-beam frames.

4. Structural Systems, Framing:

The framing system is based upon a long series of steel I-beam columns bolted to the concrete foundation. The open trusswork is bolted to the I-beam columns and purlins. Steel girders attached to the I-beam columns are anchored into the masonry of the framing ends (front and rear elevations) for additional support.

5. Openings:

5a. Doorways & Doors:

The west elevation of the 1934 building retains its original door configuration of five openings, including two metal accordion doors that open into the shop area and a single standard paneled door that opens into a small shop office. The west elevation of the 1943 addition consists of a recessed main entrance set between monolithic concrete piers and entablature, and a large steel roll-up door. The monumental main entrance retains the original metal tube double doors with upper multi-paned glazing, a multi-paned metal transom, and projected signage that reads "Engine Test" over the entryway.

The south elevation retains its original door configuration and materials. Along the south elevation is one set of rolled-tube metal accordion doors, with a pilot door and a single standard metal panel door with multi-paned glazing.

The east (rear) elevation has been extensively modified with the removal and installation of doors and door openings. The east elevation of the 1943 addition originally contained one steel-paneled, double door with multi-paned glazing. This door was removed and the doorway infilled. In the mid-1960s, standard single metal doors were installed at the back of each test cell along the entire rear elevation.

The original door openings and doors are intact along the north elevation. Set between massive rusticated pylons are two pairs of metal accordion doors each with a single pilot door. There is also one standard single paneled door on the far left side of this elevation.

Each of the original 16 rolling curtain door housing units on the 1943 addition's flat roof (8) and curved air intake towers (8) contains one metal covered wood door; these doors are intact. The air intake towers of the 1934 building contain no exterior doors.

5b. Windows:

Large double (1934 building) and single (1943 addition) rows of continuous-repeat steel industrial sash curtain walls with horizontal pivoting, awning-type sashes, and cast concrete sills are the dominating features of the building's front facade. Each steel sash is a 3/3/3 nine-light panel set in a repeat pattern of five across and two down. This fenestration pattern forms a translucent glass curtain wall between each bay of the front elevation. Much of the front facade glazing has been painted over or replaced with steel panes.

6. Stairs:
There are no exterior stairs located on the 1934 building. The 1943 addition contains four metal ladders set in concrete on the south side of each curved air intake tower, leading from the flat roof to each rolling door motor housing unit atop the towers. An exterior metal staircase leading to the roof was added to the north facade in the mid-1960s.

7. Detailing:
The building is accentuated by massive rusticated pylons. The large Moderne-style lettering, "Engine Test," above the main entrance into the building is constructed of concrete and measures approximately 1 foot, 4 inches high. The width of each letter varies.

8. Roof:

8a. Shape, Covering:
The 1934 structure is capped with a moderately pitched, parapet gabled roof covered with corrugated "Y" type metal and composition asbestos roll. The 1943 addition is crowned by a flat parapet roof covered with a corrugated asbestos roof roll. The tall, curved air intake towers are sheathed with membrane waterproofing. Both buildings are accentuated by massive, rusticated corner pylons.

C. Description of Interior:

1. Floor Plans:
Building 340 retains most of its original interior configuration. It is long and rectangular in shape, and is open along the entire west half (called the shop area). The east half is enclosed with over a dozen individual test cell chambers, restrooms, and storage spaces (see attached floor plan for details).

2. Flooring:
The interior flooring is the foundation flooring that consists of a 6-inch-thick concrete slab reinforced with No. 6 wire mesh.

3. Wall and Ceiling Finishes:
The interior walls of the original 1934 section are constructed of hollow clay tiles set between bays of steel I-beams. The west elevation wall is composed of rows of continuous industrial steel sash curtain walls set between steel I-beams. The walls of the 1943 addition are composed of poured concrete set between bays of steel I-beams.

The test cell chamber walls and control rooms of the original 1934 building are constructed of approximately 12 inches of masonry brick and concrete. The test cell chamber walls and control rooms of the 1943 addition are constructed of 11 inches of insulated concrete with an 8-inch hollow core.

The ceiling of the original 1934 shop area is open with the unaltered steel trusswork, purlins, and cords exposed, and the corrugated metal roofing material visible. The ceiling in the 1943 addition is reinforced concrete.

Suspended from the trusswork within the shop area, and running along the length of the building, are two 8-inch metal "I" track monorail systems. These monorails were used to lift and move airplane engines throughout the Engine Test Block Facility. To further facilitate moving airplane engines in and out of the test cell chambers, the interior of each cell chamber is also equipped with a metal "I" track monorail system.

4. Openings:

4a. Doorways and Doors:
Interior doors include a pair of back-to-back, large, metal covered double doors at the front of each test cell chamber, standard metal-sheathed single doors adjoining each test cell chamber with a corresponding control room, and standard metal paneled doors with multi-paned glazing at the storage rooms, restrooms, and office areas. Within each test cell chamber of the 1943 addition is a 20-foot roll-up steel curtain door. Placed toward the rear of each test cell chamber and in front of the baffle system behind the connecting control room door, these roll-up curtain doors close off the open test cell chambers from the exterior elements when not in use. The curved air intake towers on the 1943 addition also utilize roll-up metal curtain doors. These curtain doors are recessed into each tower behind the elongated baffle system to protect the interior of the towers and test cell chambers from the elements.

4b. Windows:
The interior windows of the building primarily consist of small observation windows located on the side elevations of each control room. These windows provide viewing into the adjacent test cell chambers. The windows are composed of thick shatter-proof glass, measuring approximately 3 feet by 2 feet.

5. Stairways:
The 1934 building has one internal stairway located at the south end between the two large shop-storage rooms (originally test cell chambers). This metal stairway with iron pipe balustrades leads to an elevated storage/equipment room (originally a control room). The 1943 addition contains six metal stairways, each with 1½-inch black pipe railing and prefabricated metal treads. These stairways provide access to the front and rear of each elevated control room (4) and to the elevated storage rooms at the south end (2).

6. Mechanical Equipment:

6a. Heating, Air Conditioning, Ventilation:
Heating: The structure was originally furnished with one 3-inch steam line from a central heating plant to individual radiators. Heating was later provided by space and suspended heating units.

Air Conditioning: The building was not air conditioned originally; air conditioning units were installed in 1960.

Ventilation: Continuous (repeat) industrial steel sash curtain walls with horizontal pivoting, awning-type sashes provided ventilation for the building.

6b. Electrical:
Originally, the building was furnished with one line and four types of electrical meters: (1) General Electric type D-14, 25 amps, 230/240 volts-Service Number 14983588; (2) General Electrical type 1-16, 25 amps, 230/240 volts-Service Number 16390281; (3) General Electric type V.2, 50 amps, 240 volts-Service Number 18731098; (4) Sangamo 75 amps, 110/220 volts-Service Number 4137326. Currently, the building is furnished with one 110/220 volt line.

6c. Plumbing:
Building 340 contains one 6-inch sewer line. The 1934 building was designed with one men's restroom. The 1943 addition was designed with one women's restroom and one men's restroom. The overall restroom configuration remains intact.

D. Site

1. Orientation and General Setting:

The Engine Test Block Building (Building 340) is located on the east side of Berman Road south of Tinker Drive and adjacent to the railroad tracks on the east side of Kelly AFB. The building's main elevation faces west onto Berman Road. Parking lots flank the building on both the north and south sides. There is no landscaping.

PART III. SOURCES OF INFORMATION:

A. Original Architectural Drawings:

The construction drawings for Building 340 are currently housed in the Base Civil Engineering Office at Kelly AFB. There are no original drawings for the 1934 Engine Test Block facility. However, according to the duplicate real property record on file in the Office of History, the OQMG plan series number for the original building was 6207-162 to 171; 162-A and 162-B. There are paper copies of original construction plans for the extant 1943 Engine Test Stand addition on file. The plan series number for the 1943 addition is S.A.D. 248-1 to 23.

B. Historic Views:

Limited ephemeral material related to Building 340 is housed in the Base Historian's Office at Kelly AFB. Ephemeral material includes outdated real property records and a few photographs.

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E. Potential Sources Not Investigated:

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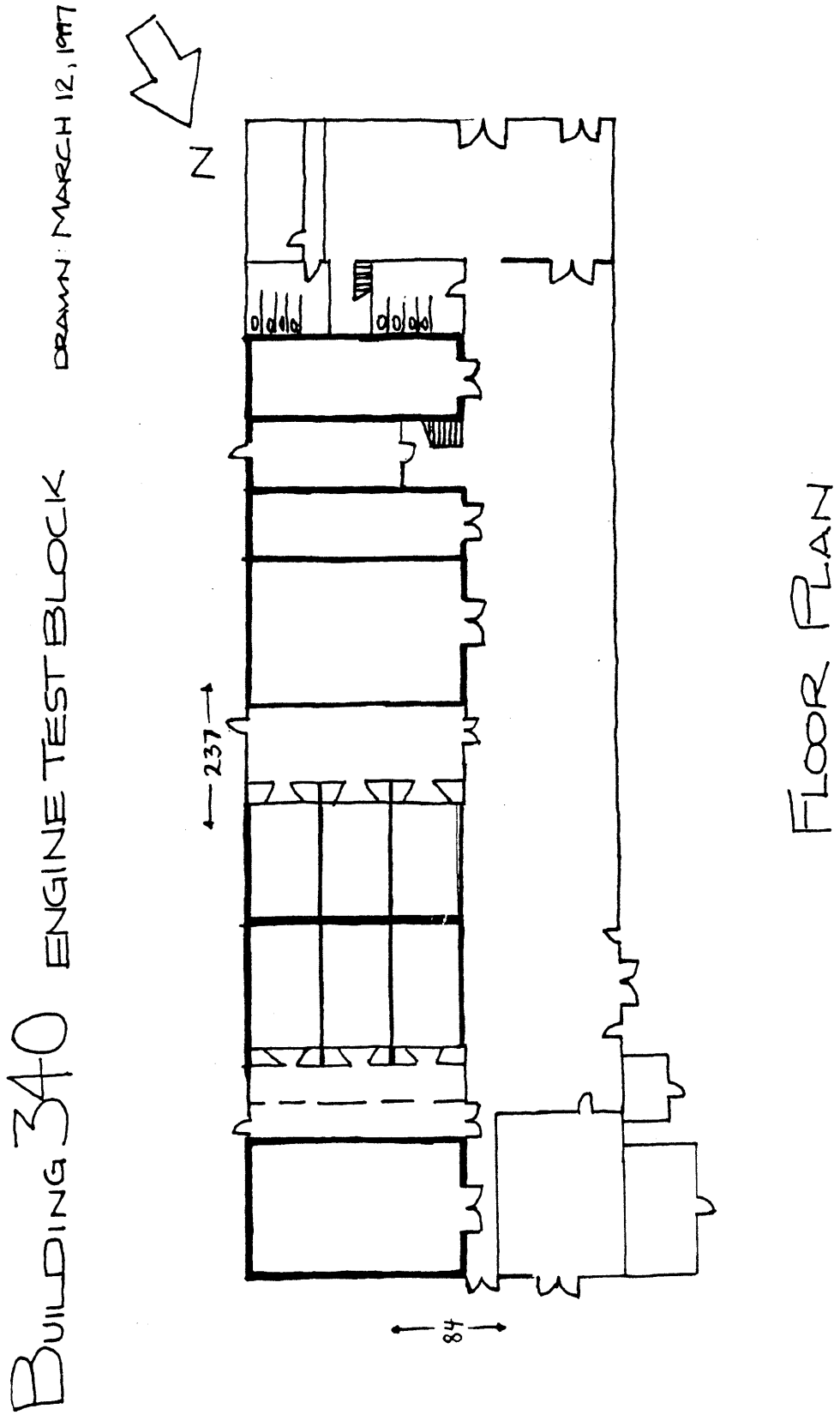
F. Other:

For information on other historic structures at Kelly AFB, see HABS No. 3396-A through 3396-DD (various buildings).

FLOOR PLAN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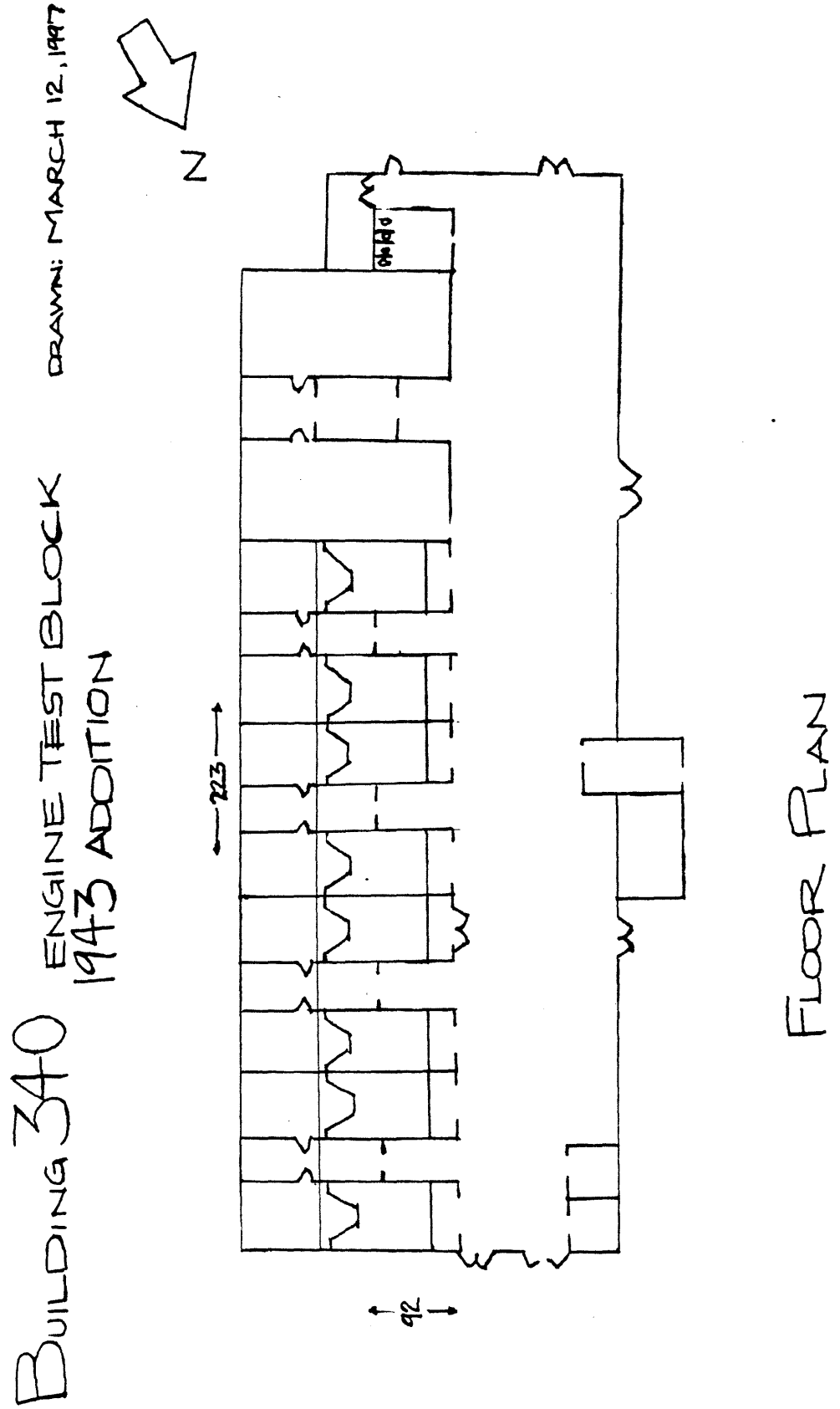
FLOOR PLAN

FLOOR PLAN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BUILDING 340 ENGINE TEST BLOCK
1943 ADDITION
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FLOOR PLAN

PART IV. PROJECT INFORMATION

This HABS, Level II documentation for Building 340, located at Kelly AFB, San Antonio, includes photo documentation, documentation of existing drawings, and written text. The recordation conforms with the standards of the HABS guidelines set forth by the National Park Service, U.S. Department of the Interior. Building 340 was demolished in February 1997.

Federal Agency: U.S. Army Corps of Engineers, Fort Worth District

Project Name: Engine Test Block, Building 340
Historic American Buildings Survey, Level II

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