

BROOKS AIR FORCE BASE, BUILDING NO. 538
(Brooks Air Force Base, School of Aviation Medicine)
3250 Sidney Brooks
San Antonio
Bexar County
Texas

HABS TX-3521-P
HABS TX-3521-P

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY
SOUTHWEST SYSTEM SUPPORT OFFICE
National Park Service
U.S. Department of the Interior
PO Box 728
Santa Fe, New Mexico

HISTORIC AMERICAN BUILDINGS SURVEY
BROOKS AIR FORCE BASE, BUILDING 538
(BROOKS AIR FORCE BASE, SCHOOL OF AVIATION MEDICINE)

HABS No. TX-3521-P

Location: 3520 Sidney Brooks Road
San Antonio
Bexar County
Texas

USGS Southton, Texas Quadrangle (7.5')
Universal Transverse Mercator Coordinates: 14.554518.3246511

Present Owner: Brooks Development Authority (BDA)

Present Occupant: Air Force 311th Mission Support Group Headquarters

Present Use: Administrative offices

Significance: Building 538, the original School of Aviation Medicine (SAM), was the first permanent structure to be erected at historic Brooks Field, and serves as a visual reminder of San Antonio's role in the development of aerospace medicine. Situated near the main gate on the east side of Sidney Brooks (formerly the North Road), Building 538 is located near the heart of the historic base. It was erected in 1927 to house the newly relocated School of Aviation Medicine from Mitchell Field, New York. After SAM's departure from Brooks Field in 1931, Building 538 has served as headquarters for the Army Air Forces Advanced Flying School (Observation), and later, as an administration building, a reference library, a hospital, and a museum. Presently used as headquarters for the Mission Support Group, Building 538 survives as a direct and tangible link to the history of aviation medicine and its important contributions to flight.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date(s) of erection: 1927
2. Architect: Army Air Corps
3. Original and subsequent owners: Army Air Corps/Force: 1927-48; Air Force: 1947-present.
4. Builder, contractor, suppliers: Unknown

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5. Original plans and construction: Original plans for Building 538 have not been located. Rehabilitation plans for the building are held by the BDA, 8030 Challenger Drive, Brooks City-Base, Texas.
6. Alterations and additions: Numerous alterations have been made to the interior of Building 538 since its construction in 1927. These include the modification of original finishes and spatial arrangements, especially on the second floor. A shed-roofed enclosed stair was added to the west facade in 1965, and a small stucco-clad addition was added to the east facade around the same time to connect Building 538 with Building 537, a recent addition.

B. Historical Context:

Building 538 was erected in 1927 as headquarters for the newly arrived SAM and was the first permanent facility at Brooks Field. SAM remained at Building 538 from 1926-31 when it moved to Randolph Field. In 1959, SAM returned to Brooks AFB as part of the newly established aerospace medical center. Though Building 538 was constructed in 1927, Brooks Field was already established as an important army flight and observation training center.

Establishment of Brooks Field and Early Aviation Activities, 1917-26

Established on an 873-acre tract of land in southeast San Antonio, Texas, in November 1917, Kelly Field No. 5 grew out of the increasing wartime need for cadets and trainers. In February 1918, Kelly Field No. 5 was officially renamed Brooks Field in honor of Cadet Sidney Johnson Brooks, Jr., a San Antonio native who died in a plane crash at Kelly Field No. 2 in 1917. The new commander of Brooks Field, Major Henry Conger Pratt oversaw the installation's mission of preparing up to 5,000 airmen for wartime service in Europe. In addition, Brooks trained flight officers as teachers of a new British training regimen known as the Gosport System, which utilized innovative controls and speaking tubes to improve communication between instructors and cadets while in the air. The use of the Gosport system at Brooks convinced the War Department in October 1918, to incorporate the experimental system at Brooks into all Army airfields.¹

In May 1919, the Observation School at Camp Ben Wise in San Antonio, which trained cadets in the use of aerial observation, moved to Brooks Field. As one of five national balloon observation schools, Brooks Field provided surveillance along the U.S.-Mexico border utilizing the 16th Airship Company and the 4th and 5th Balloon companies. The balloon and airship program at Brooks Field, despite the initial investment of manpower and expense, proved to be a short-lived experiment for the San Antonio region. Several accidents involving explosions forced the school to close in 1922.²

The decision to remove the Balloon and Airship Observation School was part of a 1920 Army Reorganization Bill which stipulated that all flight training for the country would take place at San Antonio air fields, including Brooks. By June 1922, Brooks was classified as the only Primary Flying School in the country as a result of the consolidation of two former flying schools in California and Florida. From 1922-31, Brooks Field earned the reputation of being one of the premier aviation training sites in the country and was responsible for developing the young Army Air Corps at a crucial period of

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its growth.

The system established in 1922 required all military aviators to begin their basic flying training at Brooks Field, with the graduating class moving on to the Air Service Advanced Flying School at Kelly Field. The early graduating classes at Brooks later formed the nucleus of the Army Air Corps officer ranks for decades to come. The school graduated numerous important aviators including Charles Lindbergh, Frank M. Hawks, Nathan Twining, Jimmy Doolittle, and Barney Giles. Instructors at Brooks were among the most experienced and talented aviators in the country, including Claire Chennault of the famed “Flying Tigers,” Russell Maughan and Elwood Quesada.³

Four years after Brooks received the Primary Flying School in 1922, SAM was relocated from Mitchel Field, New York to Brooks Field in an effort to improve pilot performance. SAM grew out of concerns during World War I about pilot fatalities and the relatively unfamiliar practice of flight and its effects on fliers. Early experiments by European physicians on the effects of flight on blood pressure, and ways to fight airsickness marked the first attempts to understand the important intersection of flight and medicine. Influenced in particular by the British Army’s investigations into flight medicine, Lieutenant Colonel Theodore Charles Lyster, Chief Surgeon of the Aviation Section, Army Signal Corps appointed an Aviation Medical Research Board to “investigate all conditions affecting the physical efficiency of pilots to carry out experiments and tests at different flying schools, to provide suitable apparatus for the supply of oxygen.”⁴ Lyster also advocated the teaching of physicians, known as “flight surgeons,” in the new field of aviation medicine.

In 1918, the Air Service Medical Research Laboratory was established at Hazelhurst Field, New York. The laboratory, under the command of Colonel William H. Wilmer consisted of six concentrations of medical research: psychology, physiology, otology, ophthalmology, neuropsychiatry, and cardiovascular.⁵ The diversity of departments illustrated the unique and holistic nature of aviation medicine—flight surgeons had to consider the atmosphere’s effects upon the entire body. The Hazelhurst facility conducted early experiments including altitude classification pilot tests, low-pressure chamber tests, and psychology profile tests, all of which furthered the laboratory’s goal of isolating the medical factors that contributed or detracted from the overall effectiveness of pilots.

The Medical Research Laboratory moved to Mitchel Field, New York in 1919 at a time when the war’s end signaled a decline in medical research related to aviation. However, commercial and military interest in aviation medical research gradually increased as both depended heavily on a pilot’s physical performance. In 1922, the Laboratory changed its title to the School of Aviation Medicine (SAM), a change that alluded to its new emphasis: the education of physicians in the area of flight medicine.⁶

Flight training occurring at Brooks and Kelly Fields in the 1920s began to demonstrate to Air Service leaders the high level of cadets who could not meet the requirements of the rigorous training programs. As a result, discussion within the military began to shift the pursuit of aviation medicine in a “more practical and less theoretical” direction in order to decrease the number of students unable to progress in flight training.⁷ Such insight resulted in the transfer of SAM to Brooks Field in August 1926; flight surgeons, it was argued, were of much greater use when located at an active base of training, as a close relationship between physician and pilot would produce more results than a strictly academic environment.

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School of Aviation Medicine (SAM), 1926-31

Despite the arrival of SAM, Brooks lacked appropriate facilities to house the school; instead, they resided in the balloon and dirigible hangar, which was left vacant after the cessation of the Balloon and Airship School. Shortly after its arrival, the school proceeded with plans to build a new headquarters for SAM (Building 538), making it the first permanent, non-wood structure at Brooks Field. Construction of Building 538 was completed in May 1927 and supervised by the Army Air Corps, incorporating standard War Department plans. The Spanish Colonial-style of Building 538 was likely influenced by contemporary constructions at the Army's Fort Sam Houston on the northeast side of San Antonio. The two-story building incorporated offices, lecture halls, a library, and examination rooms, all of which greatly aided the clinical and research work of SAM flight surgeons. From 1926-31, flight surgeons at SAM primarily acted as physicians first and teachers second; their main responsibility being to direct physical examinations and determine the condition of cadets for flying. In addition to this role, department heads at SAM carried out experiments in two key areas of aviation research: instrument flying and the development of a Complex Coordinator.⁸

Most notably, in 1930, the staff of SAM assisted Colonel William C. Ocker, an aviation pioneer known as the Father of Instrument Flying, in his experiments in blind flying at Brooks Field. In 1929, Ocker joined the Brooks Field staff as an experienced flyer; his greatest contribution, however, was the invention of the Ocker box, a device allowing pilots to fly "blind" with the use of instruments inside the cockpit. Prior to Ocker's device, pilots relied on their natural senses to determine the orientation of the plane in relation to the ground below. However, in cloudy or night conditions, pilots were unable to adequately gauge the position of their plane, resulting in numerous pilot fatalities. Ocker's solution was a box that contained a bank and turn indicator, a compass and a flashlight, all of which aided the pilot in determining his correct orientation regardless of outside conditions. Ocker, along with Lieutenant Carl J. Crane, began to train Brooks Field's cadets in the use of instrument flying. To demonstrate the effectiveness of "instrument flying," Ocker flew 900 miles from Brooks Field to Scott Field in 1930 using only instruments.

Ocker's development of instrument flying was aided in large part by the efforts of two SAM department heads, Captain Frederick H. Thorne, director of Ophthalmology-Otology, and Captain Robert K. Simpson, director of Aviation Medicine. Because of studies conducted by Thorne and Simpson at SAM, the innovations developed by Ocker were confirmed, leading to a recommendation by the two men for Ocker to organize training in instrument flying at Kelly Field. In the mid-1930s, the Army Air Corps began experimenting with Ocker's instrument box and by World War II instrument flying was an established element of aircraft design and pilot training.⁹

Another important contribution developed at SAM was the Complex Coordinator, a machine capable of measuring reflex aptitude by measuring a pilot's reaction time. Both Captain Thorne and Captain Neely C. Mashburn, of the Department of Psychology, provided important contributions to the device that by 1931, enabled physicians to better gauge the chances of a student in becoming a pilot. The results from these and other tests conducted by SAM were published in articles by the school, which greatly contributed to the field of aviation medicine.¹⁰

Building 538 housed the Army Air Corps' SAM from 1926-31 when it was relocated (along with the

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Primary Flying School) to the newly created Randolph Field in San Antonio, Texas.

From 1942-43 the Army Air Forces Advanced Flying School (Observation) used the building as its headquarters. Building 538 has since served as an administration building, a reference library, a hospital, and a museum. It currently serves as headquarters for the Mission Support Group.

Though SAM left Brooks Field in 1931, it returned to brand new facilities at Brooks AFB in 1959, where the newly-renamed School of Aerospace Medicine (SAM) would have an important impact on the growth of aerospace medicine as a scientific discipline. SAM played an essential role in the manned space flight initiative of the 1960s and remains an active research facility at Brooks City-Base. Brooks AFB's place in the history of modern aviation has been assured by the important role of SAM in the Space Program and the development of research and technology vital to modern flight and weapons systems.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: Building 538, erected in 1927, is a two-story, load-bearing masonry building. Originally a rectangular-plan detached building, Building 538 is attached to Building 537 by a one-story, side-gabled, enclosed breezeway. The building exhibits a modest Spanish Colonial stylistic influence, displayed in the building's arched front and rear facade porches, symmetrical primary facade, low-pitched red clay tile roof, and stucco exterior walls. Remodelings in 1967 and 1982 replaced much of the building's historic fabric.
2. Condition of fabric: Building 538 is in good condition.

B. Description of Exterior:

1. Overall dimensions: 72'-0" x 36'-0" (excluding porches)
2. Foundation: Concrete slab-on-grade.
3. Walls: Exterior walls are stucco on masonry. Windows have brick sills and lintels.
4. Structural system, framing: The building is constructed of load-bearing masonry.
5. Porches, stoops, balconies, bulkheads: Building 538 has exterior structures on its north, south, and west facades. Entrances on the north and south facades are protected by shed-roofed porches with clay tile roofing. Round-headed arched openings pierce the stucco facades of the porches. A metal exterior stair is on the west facade.
 - North facade: The north porch has three arched openings on its north wall and two arched openings on the east and west walls.

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- South facade: The 37'-0" x 10'-0" porch has five arched openings on its south wall and single arched openings on the east and west walls.
- West facade: A metal fire stair is enclosed in a stucco-covered masonry structure. The design of the stair is similar to the porches.

6. Chimneys: The building has a central interior brick chimney.

7. Openings:

- a. Doorways and doors: Building 538's primary entrance, located in the center of the south facade consists of paired aluminum-and-glass doors with full-length vision panels and single-pane sidelights. An additional exterior entrance, located on the building's north facade, is a single metal frame door with a full-length vision panel.
- b. Windows and shutters: Windows are single-hung, aluminum sash units.

8. Roof:

- a. Shape, covering: Building 538 has a hipped roof with red clay tile roofing.
- b. Cornice, eaves: The building has open, slightly overhanging eaves.
- c. Dormers, cupolas, towers: None

C. Description of Interior:

1. Floor plans:

- a. First floor: The primary entrance on the north facade opens into a corridor that connects with the main corridor and the south entrance. The centrally located main corridor extends the entire length of the building and connects to Building 537 on the east. A secondary entrance is located at the west end of the main corridor. The first floor contains offices, and an open stairwell in the main entry corridor leads to the building's second story.
- b. Second floor: A central east/west corridor extends the western half of the second floor, which is currently partitioned into offices for the 311th ABG. An open stair in the center of floor leads to the first floor. A door at the west end of the corridor leads to an exterior fire stair.

2. Stairways: An open 180-degree-return stair with landing is in the north-south corridor just inside the main entrance.

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3. Flooring: Building 538 originally had asphalt tile in all areas, which was replaced with vinyl asbestos tile during a 1967 renovation. The building currently has carpet in most areas.
4. Walls and ceiling finishes: Original textured plaster partition walls remain throughout the building. The original plaster ceilings were replaced in 1967 with adhesive applied acoustical tiles. The ceilings are currently suspended 2' x 4' acoustical panels.
5. Openings:
 - a. Doorways and doors: Some original five-panel wood doors still exist on the first floor of Building 538. Other doors have been replaced by flush hollow-core wood doors and aluminum and glass storefront units.
 - b. Windows: The current one-over-one dark bronze anodized aluminum windows are replacements for the original wood windows.
6. Decorative features and trim: Original wood baseboards have been replaced by vinyl.
7. Hardware: Original hardware has been replaced with commercial-grade brushed-chrome hardware throughout the building.
8. Mechanical Equipment:
 - a. Heating, air conditioning, ventilation: Building 538 is equipped with central air and heat.
 - b. Lighting: Typical lighting consists of new recessed florescent troffers.
 - c. Plumbing: While the building originally contained men's toilets on both the first and second floors, and a women's toilet was added to the second floor in 1967, today only one remains. The only existing toilet is the ABG Commander's private facility at the east end of the second floor. It contains a single water closet and single lavatory.

D. Site:

1. General setting and orientation: Building 538 is on the northeast corner of Sidney Brooks and 2nd Street in the northeastern portion of Brooks City-Base. The building faces north toward Sidney Brooks. A parking lot is immediately adjacent to the building on the north; Building 537 abuts Building 538 on the east; and a grass lawn extends to the west and south of the building.
2. Historic landscape design: Historic photos from the late 1920s show crepe myrtle and oak saplings on the north lawn of the building near the entrance, and climbing vines (young

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ivy or ficus) on the exterior wall of the north porch. No other landscape information has been found.

PART III. SOURCES OF INFORMATION

- A. Original architectural drawings: Original plans for Building 538 have not been located. Rehabilitation plans for the building are archived by the Brooks Development Authority, 8030 Challenger Drive, Brooks City-Base, Texas.
- B. Early views: Many early views of Building 538 are held in the archives of the Edward H. White II Museum of Aerospace Medicine at Hangar 9, Brooks City-Base, Texas.
- C. Interviews: N/A
- D. NOTES

¹ Martha Freeman, "Appendix L: Historic Context: Brooks Air Force Base, An American Flying Field, 1917-1946." in *Brooks Air Force Base – Historic Preservation Plan* by D.E. Peter, M.B. Cliff, J. Freeman and K.L. Kane. Geo-Marine, Inc., Plano, Texas, L-3.

² Brooks Air Force Base, *The First Seventy-Five Years*, (n.p., 1992).

³ Brooks Air Force Base, *Commemorative Program, Pride in the Past, Faith in the Future – Brooks Air Force Base, 1917-1992*, (San Antonio Press, 1992), p. 9.

⁴ Edward B. Alcott, *Aerospace Medical Division: Twenty-Five Years of Excellence, 1961-1986*, (Brooks Air Force Base, History Office, 1986), p. 4.

⁵ Ibid.

⁶ Ibid., p. 5.

⁷ Freeman, "Historical Context," L-25.

⁸ Green Peyton, *Fifty Years of Aerospace Medicine (1918-1968)*, (AFSC Historical Publications, 1968), p. 68-70.

⁹ Freeman, "Historical Context," L-23.

¹⁰ Ibid., p. 71-72.

BIBLIOGRAPHY

1. Primary and unpublished sources:

Brooks Air Force Base, *Commemorative Program, Pride in the Past, Faith in the Future, Brooks Air Force Base, 1917-1992*. San Antonio Press, 1992.

Brooks Air Force Base, *The First Seventy-Five Years*. N.p., 1992. Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City Base.

2. Secondary and published sources:

Alcott, Edward B. *Aerospace Medical Division: Twenty-Five Years of Excellence, 1961-1986*. N.p., 1986. Courtesy of the Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base.

Freeman, Martha. "Appendix L: Historic Context: Brooks Air Force Base, An American Flying Field, 1917-46." Geo-Marine, Inc., Plano, Texas, 1995.

Peyton, Green. *Fifty Years of Aerospace Medicine (1918-1968)*. AFSC Historical Publications, 1968.

E. Likely sources not yet investigated: The archives at the Edward H. White II Museum of Aerospace Medicine in Hangar 9 at Brooks City-Base contain a wealth of documentation that merits further exploration.

F. Supplemental Materials:

LIST OF ACRONYMS

AFB	Air Force Base
AFRL	Air Force Research Laboratory
AMC	Aerospace Medical Center
AMD	Aerospace Medical Division
AMRL	Aerospace Medical Research Laboratory
ARL	Aeromedical Research Laboratory
BDA	Brooks Development Authority
BHF	Brooks Heritage Foundation
BRAC	Base Realignment and Closure
DOD	Department of Defense
HSD	Human Systems Division
ICBM	Intercontinental Ballistic Missile
MISS	Man in Space Soonest
MOA	Memorandum of Agreement

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MOL	Manned Orbiting Laboratory
NASA	National Aeronautics and Space Administration
NHPA	National Historic Preservation Act
NPS	National Park Service
SACS	San Antonio Conservation Society
SAM	School of Aviation (Aerospace) Medicine
SHPO	State Historic Preservation Office
USAFSAM	U.S. Air Force School of Aerospace Medicine
WAC	Womens Air Corps

PART IV. PROJECT INFORMATION

- A. Federal Agency:
Air Force
311th Human Systems Wing
Brooks City-Base
San Antonio, Texas.
- B. Project Causing Adverse Effect: The Brooks City-Base project is a cooperative partnership between the Air Force and the non-federal community in which the physical assets of the former Brooks AFB have been transferred from the Air Force to BDA, a local municipality under Texas statute. Under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its enabling regulations 36 CFR 800, the transfer of Federal property is an adverse effect that must be mitigated via a Memorandum of Agreement (MOA) between the lead federal agency, the State Historic Preservation Officer (SHPO) and other consulting parties invited to participate in the consultation.

In consultation with the Texas SHPO, the Air Force determined that seventeen buildings at Brooks City-Base were eligible for inclusion in the National Register of Historic Places. The Air Force developed an MOA in consultation with the Texas SHPO, City of San Antonio and BDA to mitigate the adverse impact that transfer would have on the seventeen historic properties at the former Brooks AFB. The MOA was also signed by two concurring parties, the San Antonio Conservation Society (SACS) and the Brooks Heritage Foundation (BHF). The MOA stipulated multiple measures, including preparation of a Historic American Buildings Survey (HABS) Level II documentation report. The Air Force, through the 311th Human Systems Wing, hired Earth Tech, Inc. to oversee the preparation of HABS documentation. Under contract to Earth Tech, HHM Inc. of Austin, Texas, gathered historical and architectural information and prepared a historic context and the HABS forms.

The following individuals contributed to this report:
Julia Cantrell, Environmental Protection Specialist, Air Force Center for Environmental Excellence;
Hamid Kamalpour, Cultural Resources Manager, 311th Human Systems Wing;
Juvencio Lopez, Construction Manager, Grubb & Ellis Management Services, Inc.;
Allison Rachleff, Architectural Historian, Earth Tech/TAMS;

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David W. Moore, Jr., Project Director, HHM Inc.;
Thomas P. Eisenhour, RA, Project Manager and Photographer, HHM Inc;
Justin B. Edgington, Historian, HHM Inc;
Olivia L. Fagerberg, Architectural Historian, HHM Inc.;
Jennifer R. Ross, Architectural Historian, HHM Inc.