

March Air Force Base, Strategic Air Command
Utility Building for Combat Operations Center
(Building 2606)
5220 Riverside Drive
Moreno Valley
Riverside County
California

HABS No. CA-2788-B

HABS
CA 2788-B

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
National Park Service
Department of the Interior
Oakland, California

**HISTORIC AMERICAN BUILDINGS SURVEY
MARCH AIR FORCE BASE, STRATEGIC AIR COMMAND
COMBAT OPERATIONS CENTER, UTILITY BUILDING
(BUILDING 2606)**

HABS No. CA-2788-B

- Location:** Located within March Air Force Base, 5220 Riverside Drive, Moreno Valley, Riverside County, California
- U.S.G.S.: Riverside East and Sunnymead, CA, 7.5' Topographic Quadrangle, 1967, photoinspected 1973, photorevised 1980.
UTM Coordinates (NAD 27): Zone 11 477384 E, 3752253 N
- Present Owner:** United States Department of the Air Force, AFBCA/DB March, 3430 Bundy Avenue, Building 3408, March Air Force Base, CA 92518-1504
- Present Occupant:** United States Department of the Army, United States Army Reserve 63D Regional Readiness Command, 4235 Yorktown Avenue, Los Alamitos, CA 90720-5002
- Present Use:** 63D Regional Readiness Command (RRC) Army Reserve Training Facility (administrative offices and classrooms)
- Significance:** Building 2605 (HABS No. CA-2788-A), with its support Building 2606, was determined eligible for inclusion in the National Register of Historic Places on November 27, 1995 under Criterion Consideration G as a significant Cold War-era structure. The Combat Operations Center building has strong associations with the Cold War-era Strategic Air Command (SAC) operations as the command center for 10 SAC bases and controller of assets constituting 80 percent of the nation's Intercontinental Ballistic Missile (ICBM) force. In addition, the Center also controlled all of SAC's reconnaissance aircraft (U-2, RC-15, SR-71) and 30 percent of the SAC's bombers and tankers. Building 2605's architecture reflects the designer's intention to provide a secure environment against attack or surveillance from the nation's Cold War-era enemies and is literally "self-contained" with its own supplies of water and air purification systems housed in Building 2606.

PART I. HISTORICAL INFORMATION

A. Physical History:

- 1. Date of erection:* 1962-1964
- 2. Architect:* United States Army Corps of Engineers, Los Angeles District/Moffatt & Nichol, Engineers, Long Beach, CA.
- 3. Original and subsequent owners:* United States Department of the Air Force
- 4. Builder, contractor, suppliers:* Unknown
- 5. Original plans and construction:* US Army Corps of Engineers
- 6. Alterations and additions:* Few alterations have occurred in this building. A workbench, two "Joy" air compressors, a third chilled water pump, a bank of batteries and a battery charger were added to the main floor. Switchgear equipment and related alarm panel were added to the Mezzanine level.

B. Historical Context:

March Air Force Base was established in 1918 as a World War I army airfield. The base was substantially expanded after the war under the United States Air Corps Act of 1926, becoming the key air base in California. Between 1928 and 1943, the base became the primary aviation post on the West Coast. The base more than doubled in size during this period with the acquisition of 920 acres of land and the construction of major runways and numerous buildings. It became the largest field in the western United States and home to its largest air fleet (JRP 1992:64-65).

With the onset of World War II and America's entry into the war, the 15th Air Force was created in October 1943. This strategic air force was heavily involved with bombardment during these war years. With the end of the war and the evolution of a new world order, the American military restructured its forces, creating three new commands based on function. The new Strategic Air Command (SAC) was created to conduct long-range offensive operations and reconnaissance. The command's headquarters were established at March Air Force Base. The 15th grew with reorganizations and continued activities and by the start of the Korean conflict in 1950 could count more than 20,000 personnel chiefly when the command became largely involved with bombardment and refueling (Harley 1980:9-11).

By the mid-1950s, new thermonuclear technology, the creation of the B-52 bomber, the development of aerial refueling, and yet another new world strategic order led the Eisenhower administration to create the "New Look" defense policy that used SAC bombers loaded with

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nuclear weapons to create a threat and deterrence to the Russian conventional ground forces (Harley 1980:16).

Aerial refueling allowed jet bombers stationed in the United States to carry out nuclear strikes anywhere in the world. This new nuclear deterrent allowed the military response to be faster and lighter since it was then less reliant on overseas unit-size deployments (Harley 1980:16).

By the late 1950s and early 1960s, the United States feared the Soviet Union had developed long-range bombardment and missile capabilities that created a real and present danger to homeland defense. This new quiet conflict had been dubbed the constant state of eminent threat of destruction between the world's two superpowers as the "Cold War." To enhance long-range deterrence, American military contractors had developed Atlas and Titan, intercontinental ballistic missiles (ICBM) capable of striking the Soviet Union from missile silos in the United States (Harley 1980:16-19; Manley and Earth Tech 1995: 4-2).

As a further deterrence, the 15th Air Force kept one-third of its bombers on "alert," loaded with nuclear weapons and ready to fly at any time as a means of avoiding destruction on the runway by sudden enemy attack. To further reduce their vulnerability, the force was dispersed to numerous bases throughout the United States. To keep their resources organized, March Air Force Base became increasingly important as the Strategic Air Command center. Its mission focused on nuclear deterrence, dispersal, centralized initial combat crew training, and strategic alert (Harley 1980:16). By the end of 1965, the 15th Air Force was responsible for over 600 Atlas, Titan and Minuteman ICBMs, nearly all the missile units located in the western United States. Its jurisdiction included both armed planes and missiles (Manley and Earth Tech: 1995:4-2).

Building 2605 (the main structure supported by Building 2606) was constructed in 1962-1963 at the peak of the Cold War to serve as the Combat Operations Center (COC). This building became the control center for air force bases throughout the United States. These included Lamar, Altus, McConnell, March, Beale, Minot, Dyess, Castle, McClellan, Kadena, Eielson, Offutt, Fairchild, Mather, Malstrom, and FE Warren. These bases would report their status to March, which was also capable of providing them with direction. In other words, it became the nerve center of the SAC, aware of its functional condition and able to provide orders. Because the center was clearly a strategic target for the enemy, it was constructed with features that could sustain an operational crew in case of even nuclear attack (Gricius 2003). The COC controlled 80 percent of America's ICBM force, all of Strategic Air Command (SAC) reconnaissance aircraft (U-2, RC-135, and SR-71), and 30 percent of SAC's bombers and tankers.

Building 2606 was designed jointly by Moffatt & Nichol, Engineers, Long Beach, and the Los Angeles District of the Army Corps of Engineers as a support structure for Building 2605. Building 2605 (CA-HABS-2788-A) utilized engineering techniques intended to protect

and ensure the operation of the COC, even during intensive attack. The windowless exterior walls consist of a 2' thickness of reinforced concrete. The building was designed to be virtually self-contained, with independent air-purification systems (generated in Building 2606), food, and water. Half of the building is underground for protection from nuclear attack. To provide constant communication with its command bases, the command room was manned twenty-four hours a day, seven days a week by specially trained personnel. One wall was covered with video screens that provided detailed data such as the status of SAC forces, reconnaissance information, global weather reports, and political updates to the command staff who worked in a glass-walled balcony above the main floor. The SAC Automated Command Control System managed data from around the world and transmitted it onto the large screens on the wall. Because of this, the building, its support facility (Building 2606) and its mission have been recognized as one of the most important military centers in the nation (*The Beacon* 1/23/1976; Manley and Earth Tech 1995:4-2).

PART II. ARCHITECTURAL INFORMATION

A. General Statement

Building 2606, constructed in 1962-1964, is the utility plant building associated with the Combat Operations Center at March Air Force Base (CA-2788-B-1-7). This small support facility housed the electrical, water and cooling systems for the main building and was a crucial element in maintaining the self-sufficient status of Building 2605.

Building 2606 is a one-story reinforced concrete building of functional design. It is located within March Air Force Base. Building 2606 was constructed at the peak of the Cold War to serve as support to the Combat Operations Center for the Strategic Air Command. Building 2605 was designed as a self-contained unit independent from the rest of the base. Building 2606 made that design possible. Much of the facility was designed to improve survivability in case of an attack.

The design of the facility clearly reflects the intention of the military to provide a highly secured environment. Exterior walls are of thick reinforced concrete. There are no windows and doors are solid.

2. Condition of the Fabric:

The building's exterior is in good condition, with few modifications.

B. Description of Exterior:

1. Overall Dimensions:

The building measures 69'4" north-south x 66'10" east-west x 24'10" high.

2. Foundations:

The building rests on a reinforced concrete foundation. The perimeter walls are set on concrete footings and within the perimeter walls is a 6"-thick concrete slab floor. One-foot, 10-inch-deep trenches are set into the concrete slab floor; the metal checker plate-covered trenches measure between 2' and 4' wide, depending on location, and are mainly associated with the building's generator units. There is also an approximately 3 and 1/2'-deep sump pit that extends off the 4'-wide, east-west aligned trench.

3. Walls:

The exterior parapet walls of the building are 10" -thick reinforced concrete with 2'-wide x 8'-deep brick-faced pilasters and metal parapet copings to match the main COC building 2605. The exterior pilasters are spaced 17'2" on center on the west side; 16'6.5" inches on center at the north side; about 18' on center at the east side; 16'7" at the west end of the south side; and 15'10" at the east end of the north side.

4. Structural System:

The floor framing is 2'2" x approximately 1'6"-wide concrete girders spaced at 30' on center east-west. Between the girders are concrete bridging joists that measure about 1'2" vertically x about 6" wide spaced at 2' on center in the north-south direction and at about 10' on center east-west. The base flooring above the framing is 6" reinforced concrete slab.

5. Porches and Stoops: None.

6. Chimneys: None.

7. Openings:

The north elevation of the building (CA-2788-B-2) includes a 12'-high x 12'-wide steel roll-up loading bay door, a 7'2"-high x 3'4"-wide steel pedestrian door, and six metal louver exhaust fan vents located along the top of the wall that each measure 5'2" square. The east elevation includes two fixed metal louvered vents (CA-2788-B-3). The south elevation (CA-2788-B-4) has a 12'-high x 12'-wide steel roll-up loading bay door, a covered-over fixed louvered vent, and originally had three sections of adjustable metal louvered openings, each section measuring 7'8" high x 13' wide and including six square louvered panels. At least two panels of the existing westernmost louvered section were removed and/or covered over to accept ventilation pipes.

Original as-built plans from the early 1960s (Figure 3) depict the roof as including a metal scuttle entry (that is accessed from an interior ladder) and a wooden catwalk to a cooling tower resting on a platform measuring 48' north-south x 18' east-west. The wood deck

platform is depicted as being framed with 6"-diameter steel pipe columns (fixed to the roof girders below) and 10" and 12" steel I-beams. This cooling tower and platform have been removed.

There is a later-added chain-link-fenced enclosure at the east portion of the south elevation that obstructs the other louvered sections from view; the enclosure includes a red clay tile-surfaced shed roof supported by corner posts. This area provides a covered, outdoor work and storage space. The west elevation (CA-2788-B-5-6) includes one fixed metal louvered vent at the north end and a covered-over original vent opening at the south end.

8. Roof:

The building has a roof that is very slightly pitched with a west side and east side that slope 1/8" downward for every horizontal foot. The roof framing includes tapered steel I-beam girders that measure about 3'8" vertically topped by steel I-beam purlins that measure 1' vertically. The roof framing is first surfaced with corrugated metal decking and then topped by a five-ply built-up roof with gravel.

C. Description of the Interior

1. Floor Plans

a. First Floor:

The interior of Building 2606 is largely a two-story-high open space for utility and operations equipment (Figure 3). There is a second story mezzanine along the east side of the building and a narrow catwalk along the west side of the building. The interior perimeter walls are unfinished concrete and include structural pilasters that measure 12" or 15" wide. There are six exhaust fans along the north walls (associated with the adjustable louvers at the exterior). As mentioned in the foundation discussion above, the floors are concrete slab except for the steel checker plate covers over the trench and sump areas of the floor. The main interior ceiling is open to the steel roof framing.

There are several raised concrete pad equipment foundations set onto the main floor of the building. Four Westinghouse DT3 transformers and two switchgear panels (one includes an automation system added in 1994) are located beneath the mezzanine (CA-2788-B-13). Four identically-size electric generators (CA-2788-B-10-11) and a larger diesel generator known as "Big Bertha" (CA-2788-B-12) are aligned north-south within the eastern half of the building, just west of the mezzanine area. The four smaller synchronous generators are made by Electric Machinery Manufacturing Company (Minneapolis, Minnesota) and are labeled on original plans as uninterruptible power units. "Big Bertha" consists of a 10 kw D.C. generator and turbine equipment supplied by Electric Products Co. (Cleveland, Ohio) and a 600 kw

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governor manufactured by Enterprise Engine & Machinery Co. (San Francisco, California) and was an emergency diesel-fueled generator.

Utility equipment within the west half of the building includes, from north to south: two boilers made by Rite Engineering & Manufacturing Corp (Downey, California) and run by Baldor Industrial Motors, two chillers made by Carrier Air Conditioning Co. (Syracuse, New York); two condenser water pumps with Electric Motor Company engines; four chilled distilled water pumps run by General Electric engines (northern two are original; the other two were added at an unknown date); two Joy-brand air compressor units (not original), a Reznor blower on the steel roof above the compressors (not original), and an air compressor switchbox (not original) manufactured by Westinghouse. Dates of equipment additions are not known but likely occurred in the 1970s when the switchgear was added (Figure 4).

At the northeast stairway that leads to the mezzanine level, there is a gas-fired water heater beneath the mid-landing of the stairway. A restroom neighbors the stairwell to the south and includes a porcelain wall-mounted sink, a toilet area wood partition (with a metal door), and a porcelain toilet. The walls and ceiling of the restroom are wood-framed and surfaced first with gypsum wallboard and then plaster. The exterior walls of the restroom are surfaced with gypsum wallboard that is covered with plywood wainscoting below and plaster above. All fabric and furnishings are original.

Mezzanine Level. The Mezzanine extends north-south along the east wall of the building and is a narrow strip of space that contains and switchgear equipment (Figures 3 and 4). The mezzanine level is supported above the main floor on four-inch-diameter pipe columns that support a floor frame of rolled steel members, including channel beams. At the time of original completion, the mezzanine was about 20' wide at the northern two-thirds and about 10' wide at the southern third. This area was expanded in 1971, adding about five extra feet of width to the southern third of the mezzanine. The main flooring material of the mezzanine is metal grating. The west side of the mezzanine includes metal pipe railings and provides a view over the main room below (CA-2788-B-8, CA-2788-B-11).

The north end of the Mezzanine includes a stairwell landing that accesses a office/alarm regulator panel room (CA-2788-B-14). The wood-framed regulator alarm panel room has a metal door (with single light glazing) at the north and south walls, two fixed single pane viewing windows on the west wall, and a grey asphalt tile floor. Walls are covered with acoustical tile and lighting is provided by two-tube fluorescent suspended fixtures. The regulator alarm panel unit has a central metal plaque with the 15th Air Force emblem; above the emblem reads "COMBAT OPERATIONS CENTER/MARCH AIR/FORCE BASE" and below reads "INSTALLED BY/MINNEAPOLIS - HONEYWELL/REGULATOR COMPANY/CONSTRUCTED BY/PETERSMITH CONTROLS, INC."

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The south door of the regulator panel room leads to a later-added wood-framed office. This room has a single pane fixed window on the west wall, and a three paneled wood door (with four-pane upper glazed area) at the south wall that leads to the south end of the mezzanine. To the west of the enclosed rooms are four low-voltage power circuit breakers for the generators below; the circuit breaker were made by I-T-E Circuit Breaker Company (Philadelphia, Pennsylvania). The south end of the mezzanine includes a Westinghouse control center/distribution panel (CA-2788-B-15).

Other equipment on the Mezzanine was added in the 1970s and include a system monitoring panel, motor control center, and a main power panel that has a voltmeter switch, synchronizer switch, governor control switch, exciter voltage rheostat, remote control transfer switch, frequency meter, direct current ammeter, breaker control switch and a 600 v generator. All equipment are labeled as switchgear on the 2004 plans (Figure 4).

Catwalk. The louvers at the upper levels of the building are partially accessed by a catwalk that extends north-south along the west wall of the building. The catwalk along the west side of the building interior is supported above the main floor by 3"-diameter pipe columns that support a walkway floor frame that includes steel I-beams and channel beams. The catwalk floor is surface with metal grating and is sided by metal pipe railings. The catwalk is accessed from the main floor by a metal ladder located at the north central point of the walkway. The catwalk is about 4' wide.

2. Stairways:

There is a second story mezzanine along the east side of the building and a pipe rack/catwalk along the west side of the building. At the northeast corner of the building, beneath the mezzanine, is a half-turn stairway that leads to the mezzanine level. The metal stairway includes metal checker plate treads, metal pipe railings and concrete-surfaced landings. The catwalk is accessed by a vertical metal ladder.

3: Flooring:

Typical original elements of the Building 2606's interior include approximately 6"-thick reinforced concrete slab base flooring and metal grating (mezzanine and catwalk).

4. Wall and Ceiling Finishes:

The walls of the main building are concrete. The small office located on the mezzanine is wood-framed and surfaced with gypsum wallboard. The small restroom has gypsum wallboard or concrete walls. The stairway is concrete. Ceilings have exposed steel truss framing. The bathroom and closets are all plaster ceilings.

5: Openings:

a. Doorways: Original doors include hollow metal doors and solid core wood doors. Metal doors may include single light glazing, louvers (restrooms), or metal kick plates and a peephole. Wood doors may include single light glazing and/or metal kick plates.

Most doors are hollow metal. Doors with a 100-square-inch vision glass with wire are used in stairwells and secured areas.

6. Decorative Trim: None.

7. Hardware: Interior door hardware consists of standard metal knobs.

8. Mechanical Equipment:

a. Heating: None.

b. Kitchen Appliances: None.

c. Ventilation: Self-contained air conditioning fan system provides ventilation.

d. Lighting: The interior of the building is lit by suspended 200 watt fluorescent lights. They are hung 19' above the floor. The mezzanine level has 100 watt fluorescents. The exterior of the building has corner floodlights on the roof parapet.

e. Plumbing: The bathroom contains one original porcelain wall-mounted sink with chrome faucets and a porcelain toilet. Additional bathroom fixtures include chrome soap holder, a mirror, and a chrome toilet paper holder.

9. Original Furnishings:

None.

D. Site:

Building 2606 is located on the east side of palm tree-lined Riverside Drive, approximately 500 feet north of the Riverside Drive/Escholtzia Avenue intersection within March Air Force Base. The building is accessed from an asphalt-paved arched driveway; the west side of the driveway includes an alignment of palm trees (Figures 1 and 2).

a. General Setting and Orientation: The building is oriented east/west with a front entry on the north façade. It is within a military base but is surrounded by trees and lawn. There is a full-width approximately 21'-deep fenced-in area along the west side of Building

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2606 (CA-2788-B-59, B-60). The approximately 7'-high fencing is chain-link and is topped by three rows of barbed wire. Within this area are four tanks. From south to north they include a chilled water tank, diesel fuel day tank, and low pressure isometric air receiver tank and a high pressure isometric air receiver tank (Figure 2). There are also various pipes and ducts that extend from the building to the tank or below grade (south of the tanks).

b. *Historical Landscape Design:* Building 2606 (COC Utility Building), along with associated diesel and chilled water tanks, is located east of Building 2605 (CA-2788-A-8).

c. *Accessory Buildings:*

The utility building 2606 is itself an accessory building to Building 2605 and contains the generators and equipment needed to keep that structure operating as a self-sustained unit. A small transformer station and air conditioning cooling tower are also a part of the accessory buildings associated with 2605. The station is located on the east side of Building 2606 and the air conditioner cooling tower is to the north. Both worked in tandem with the support utility building. The tower is recorded as HABS No. CA-2788-C. The transformer station is described below.

Transformer Station. Adjacent to the east side of Building 2606 is a transformer station that was completed in 1964 (CA-2788-B-1, CA-2788-B-3, CA-2788-B-7). The station is sited in a rectangular area, 30' east-west x 40' north-south, that is enclosed by 7'-high chain-link fencing topped with three rows of barbed wire on a 45 degree slant that adds another foot to the fence height. There is a 12'-wide double gate at the east side fencing and a 4'-wide gate at the north side fencing.

Within the fenced area is a 2,000 KVA transformer with a latticed steel buss structure (with buss tubing, ceramic insulators and light fixtures) to the south and buss ducts to the west and north (CA-2788-B-3). The western buss duct is suspended on brackets attached to Building 2606 (CA-2788-B-7). All of the transformer structures are set on reinforced concrete foundations that extend about six inches above grade. Just outside of the fenced substation area's south side is an electrical transmission pole (CA-2788-B-57) that is part of the transmission line that feeds the electrical power to the station.

The station has a 15 kv lightning arrester in the yard and a copper clad grounding rod. The grounding rod is 20' tall and 3/4"-inch diameter and is set in a grounding well filled with a mixture of rock salt, pea gravel, charcoal and earth.

PART III. Sources:

A. Architectural Drawings:

Over 200 original architectural drawings, either ink on linen or pencil on paper are available for Building 2605 and Building 2606. These include floor plans, mechanical, electrical and plumbing detail, landscaping, equipment locations, and other data. Plans reflect the early design of the building and subsequent modifications. They are on file at the 63D RRC Los Alamitos facility map room and at the Air Force BRAC office at the former McClellan Air Force Base, Sacramento.

B. Historic Maps and Views:

Not Available

C. Interviews

George Gricius, conference call phone interview, May 14, 2003, with Mary L. Maniery and Cindy Baker, PAR Environmental Services, Inc.

D. Bibliography

Harley, R. *The Heritage of Fifteenth Air Force: 1943-1980*, 1980. Directorate of Public Affairs, Headquarters Fifteenth Air Force, March Air Force Base, California.

Mikesell, Stephen, and Stephen Wee (JRP Historical Consulting) *National Register of Historic Places Registration Form for March Field Historic District*, 1992. JRP Historical Consulting Services. On file, United States Department of the Interior, National Park Service, Washington, D. C.

Manley, Wm. Consulting, and Earth Tech. *Historic Building Inventory and Evaluation: March Air Force Base, Riverside County, California*, 1995. On file, United States Department of the Air Force, Air Force Center for Environmental Excellence, Brooks Air Force Base, Texas.

PART IV. PROJECT INFORMATION:

The 63D RRC is leasing this facility from the United States Air Force and is the responsible agency for Section 106 compliance. Prior to remodeling non-significant portions of the building for use as a training center, the 63D RRC developed a Finding of No Adverse Effect pursuant to 36 CFR Part 800, and regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f). The State Historic Preservation Officer in 2001, Dr. Knox Mellon, concurred with the Finding of No Adverse Effect (FNAE) in a letter dated

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October 3, 2001. While the FNAE did not require a HABS recordation of the building, the 63D RRC has voluntarily prepared this HABS as a means of documenting the condition of the building prior to remodeling efforts and prior to blocking access to the significant Combat Operations Center portion of the building.

Prepared By: This report was prepared by Mary L. Maniery, Cultural Resources Specialist, and Cindy Baker, Senior Historian, both with PAR Environmental Services, Inc., Sacramento, California. Photography and the associated photographic index were prepared by David DeVries, Mesa Technical, Berkeley, California.

Submitted By: 63D RRC U.S. Army Regional Readiness Command Headquarters, 4235 Yorktown Avenue, Los Alamitos, CA 90720-5002

Inventory Date: March 2004 (updated October 2006)

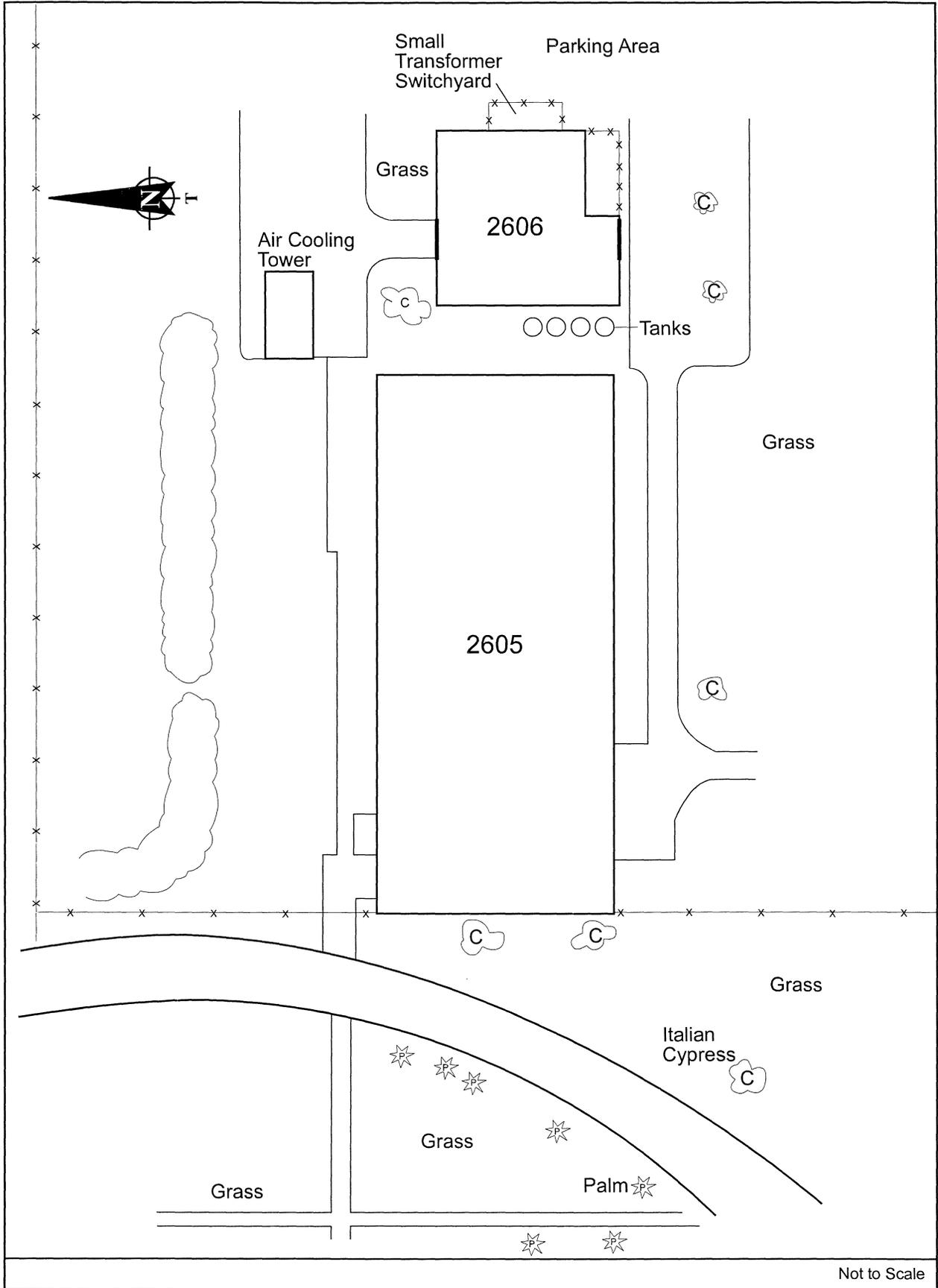


Figure 2. United States Army Reserve, March Air Force Base Site Plan, Building 2606

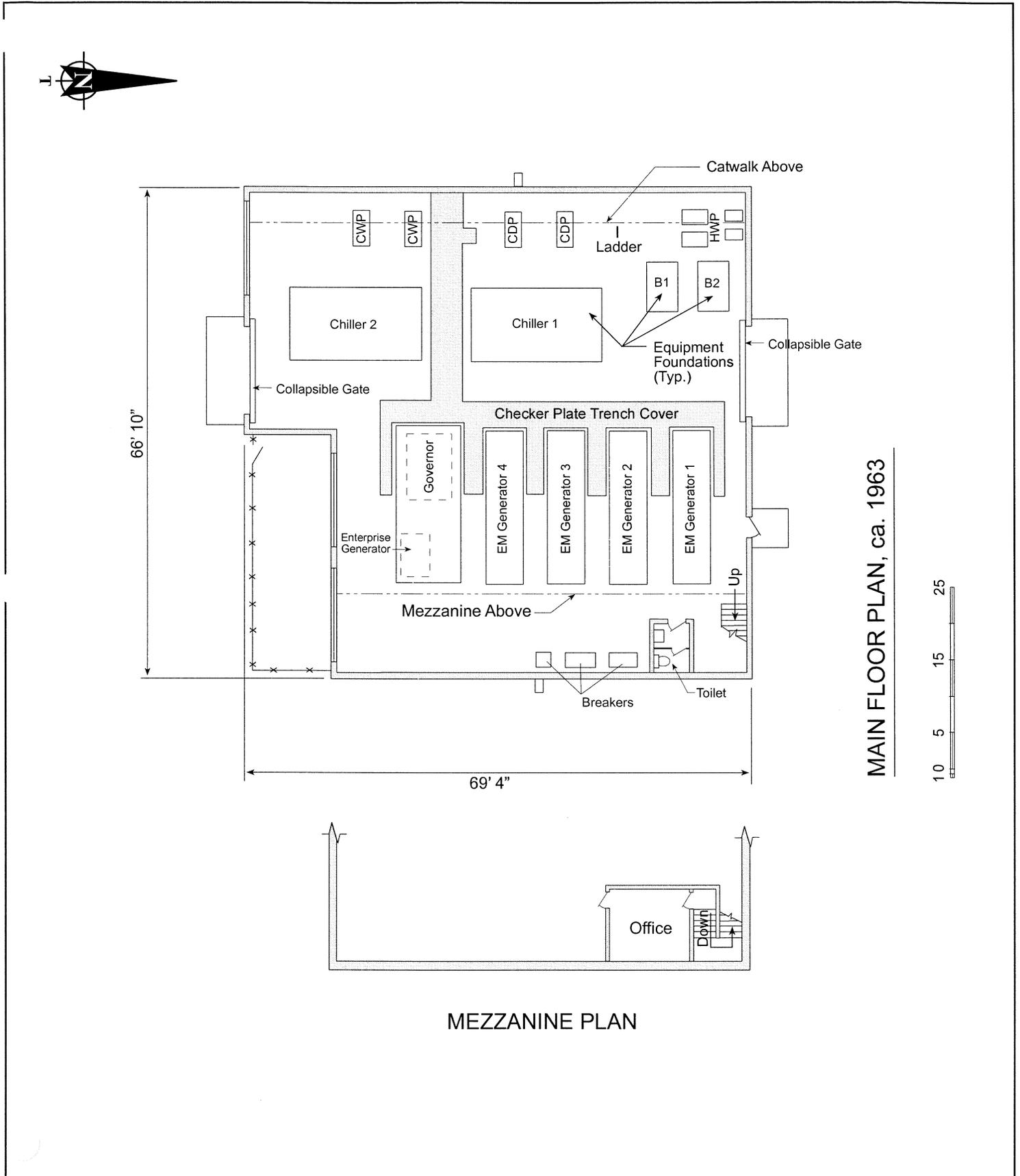


Figure 3. Building 2606, Floor Plan with Equipment Layout, circa 1963

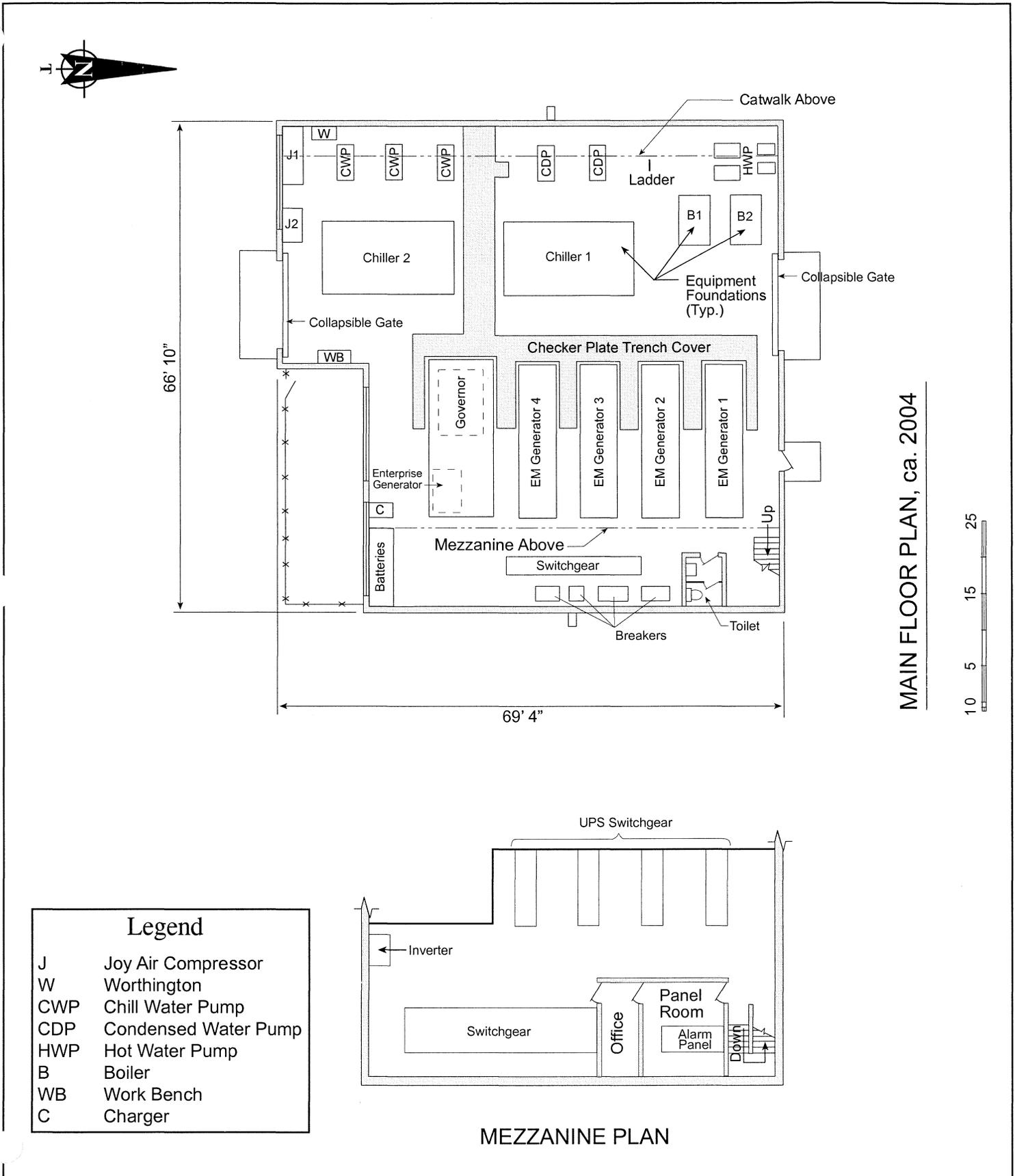


Figure 4. Building 2606, Floor Plan with Equipment Layout, circa 2004