LA-UR-05-3767

Decontamination and Decommissioning of DX Division Buildings, Technical Areas 9, 15, and 40

Historic Building Survey Report No. 245

Los Alamos National Laboratory

May 20, 2005
Survey Nos. 977, 981, and 991

Prepared for the U.S. Department of Energy
National Nuclear Security Administration
Los Alamos Site Office

prepared by

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ENV-ECO Cultural Resources Team
Environmental Stewardship Division

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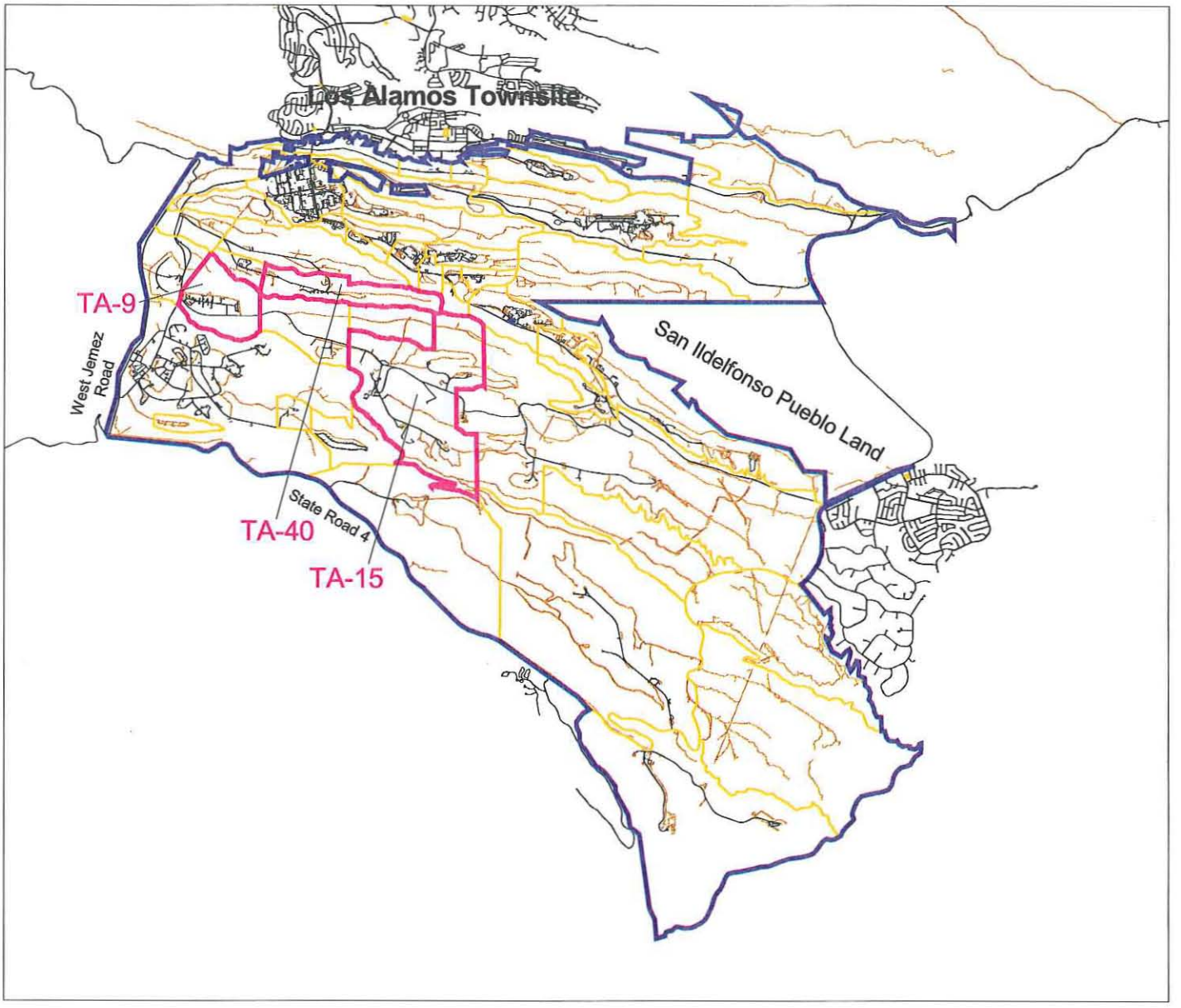
INTRODUCTION

The U.S. Department of Energy, National Nuclear Security Administration, Los Alamos Site Office proposes to decontaminate, decommission, and eventually demolish seven historic Los Alamos National Laboratory (LANL) properties located on Department of Energy (DOE) land at Technical Areas (TAs) 9, 15, and 40 (Map 1). The proposed decontamination and decommissioning (D&D) action is part of LANL's routine phasing out of aging and vacant buildings. All seven buildings were built during the Cold War years and supported various aspects of research, development, and testing related to the United States nuclear weapons program. Process buildings TA-9-35 and TA-9-43 were built in 1952, guard station TA-15-46 was built in 1951, control/blast protection buildings TA-15-138 and TA-15-141 were built in 1951 and 1961, respectively, and firing point TA-40-4 and guard station TA-40-19 were built in 1950.

The following information has been prepared as part of a notification of potential adverse effect to historic properties eligible for the National Register of Historic Places (Register). This report is intended to provide the background information necessary to initiate the Section 106 consultation process; additional documentation will follow when a treatment plan is developed and final mitigation is determined. This report contains a description of the proposed action, historical background information, brief property descriptions, integrity and contamination information, and a recommendation for Register eligibility. Selected drawings and photographs are included in the Appendix.

The State Historic Preservation Officer is requested to concur with the eligibility determinations contained in this report and to concur that the proposed D&D action will adversely affect TA-15-138 and TA-15-141.



Los Alamos
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Cultural Resources Team
ENV-ECO Ecology Group

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DX Division Tech Areas
LANL Boundary
Technical Areas
Roads
Roaddirt
Parkpave
Parkdirt

D&D of DX Division Buildings

LANL Boundary and TA-9, TA-15, and TA-40

Map 1

PROJECT DESCRIPTION

D&D activities proposed for TAs 9, 15, and 40 are part of LANL's routine phasing out of aging properties and will result in the eventual demolition of all seven properties (TA-9-35, TA-9-43, TA-15-46, TA-15-138, TA-15-141, TA-40-4, and TA-40-19).

In 2003 and 2004 historic building surveys of these Dynamic Experimentation (DX) Division properties were conducted by Shelia McCarthy, Historical Architect, Benchmark Consulting Group; John Ronquillo, Sigma Science, Inc.; Ken Towery, Site and Project Planning Group, LANL; and Kari Garcia and Ellen McGehee, Ecology Group, LANL. The building survey was accomplished by first conducting field visits to TAs 9, 15, and 40. Digital photographs and architectural and engineering notes were taken during the initial field visits. Records research at LANL was also carried out, and representative drawings were compiled (Appendix).

DX Division

Many properties under the administrative control of DX Division are located within TAs that were established during World War II's (WWII's) Manhattan Project. Historical operations included the development, fabrication, and testing of components used in the United States' first nuclear devices: the "Trinity" test and the two atomic bombs dropped on Japan during WWII ("Fat Man" and "Little Boy"). Post-WWII operations included the development of components for the Cold War nuclear stockpile and for atmospheric tests in the Pacific and at the Nevada Test Site (NTS). DX's current operations are situated in TAs that are functionally connected and share a common scientific history; however, each TA has its own unique history (see "Description of TAs" below).

Today, DX Division's primary mission is research, development, and testing in support of nuclear weapons and Department of Defense (DOD) programs (LANL 2005). Specifically, DX Division is a leader in the area of nuclear stockpile stewardship, having certification responsibility for the substantial majority of the nation's active nuclear weapons stockpile (LASO 2003). DX Division manages several key elements of LANL's nuclear weapons program: the dynamics of materials, the Joint DOD/DOE Munitions Technology program, subcritical experiments (SCEs), and weapons hydrodynamic experiments. Important programs include explosively driven pulsed-power physics and high-energy-density physics, detonator production, high explosive science, and advanced conventional munitions development for DOD programs. Principal facilities include eleven multipurpose firing sites, detonator production facilities, and the PHERMEX (Pulsed High-Energy Radiographic Machine Emitting X-rays), and DARHT (Dual-Axis Radiographic Hydrodynamic Test) facilities. At NTS, DX also coordinates SCEs and oversees activities at U1A, an underground experimental complex (LANL 2005).

HISTORICAL OVERVIEW

Manhattan Project (1942–1946)

In 1939, Albert Einstein wrote a letter to President Franklin Roosevelt warning him of a possible German atomic bomb threat (Rothman 1992). President Roosevelt, acting on Einstein's concerns, gave approval to develop the world's first atomic bomb and appointed Brigadier General Leslie Groves to head the "Manhattan Project." Groves, in turn, chose Robert Oppenheimer to coordinate the design of the bomb.

A single isolated and secret research facility was proposed. General Groves had several criteria: security, isolation, a good water supply, an adequate transportation network, a suitable climate, an available labor force, and a locale west of the Mississippi located "at least 200 miles from any international border or the West Coast" (Rothman 1992). In 1942, Oppenheimer, who had visited the Pajarito Plateau on a horseback trip, suggested the Los Alamos Ranch School. Oppenheimer and his staff moved to Los Alamos in early 1943 to begin work. The recruitment of the country's "best scientific talent" and the construction of technical buildings were top priorities (LANL 1995:8). The University of California agreed to operate the site, code name "Project Y," under contract with the government (an arrangement that has continued to this day). Although the fission bomb was conceptually attainable, many difficulties stood in the way of producing a usable weapon. Technical problems included timing the release of energy from fissionable material and overcoming engineering challenges related to producing a deliverable weapon. Nuclear material and high explosive studies were of immediate importance (LANL 1995).

Two bomb designs appeared to be the most promising: a uranium "gun" device and a plutonium "implosion" device. The gun device involved shooting one subcritical mass of uranium-235 into another at sufficient speed to avoid pre-detonation. Together, the two subcritical masses would form a supercritical mass, which would release a tremendous amount of nuclear energy (Hoddeson *et al.* 1998). This method led to the development of the "Little Boy" device. Because it was conceptually simple, "Little Boy" was never tested before its use at Hiroshima. Scientists were less confident about the implosion design, which used shaped high explosives to compress a subcritical mass of plutonium-239. The symmetrical compression would increase the density of the fissionable material and cause a critical reaction.

In 1944, the uncertainties surrounding the plutonium device necessitated a search for an appropriate test site for the implosion design, later used in the "Fat Man" device. Manhattan Project personnel chose the Alamogordo Bombing Range in south-central New Mexico for the location of the test. A trial run involving 100 tons of trinitrotolulene (TNT) was conducted at the test site ("Trinity Site") on May 7, 1945. This dress rehearsal provided measurement data and simulated the dispersal of radioactive products (LANL 1995). The Trinity test was planned for July and its objectives were "to characterize the nature of the implosion, measure the release of nuclear energy, and assess the damage" (LANL 1995:11). The world's first atomic device was successfully detonated in the early morning of July 16, 1945. Little Boy, the untested uranium gun device, was exploded over the Japanese city of Hiroshima on August 6, 1945. On August 9, 1945, Fat Man was exploded over Nagasaki, essentially ending the war with Japan.

Early Cold War Era (1946–1956)

The future of the early Laboratory was in question after the end of WWII. Many scientists and site workers left Los Alamos and went back to their pre-war existences. Norris Bradbury had been appointed director of the Laboratory following Oppenheimer's return to his pre-WWII duties (LANL 1993a). Bradbury felt that the nation needed "a laboratory for research into military applications of nuclear energy" (LANL 1993a:62). In late 1945, General Groves directed Los Alamos to begin stockpiling and developing additional atomic weapons (Gosling 2001). Post-war weapon assembly work was now tasked to Los Alamos's Z Division, which had been relocated to an airbase (now Sandia) in nearby Albuquerque, New Mexico (Gosling 2001).

In 1946, Los Alamos became involved in "Operation Crossroads," the first of many atmospheric tests in the Pacific. Later, also in 1946, the U.S. Atomic Energy Commission (AEC) was established to act as a civilian steward for the new atomic technology born of WWII. The AEC formally took over the Laboratory in 1947, making a commitment to retain Los Alamos as a permanent weapons facility.

With the beginning of the Cold War—the term "Cold War" was first coined in 1947—weapons research once again became a national priority. Weapons research at Los Alamos, spearheaded by Edward Teller and Stanislaw Ulam, focused on the development of the hydrogen bomb, the feasibility of which had been discussed seriously at Los Alamos as early as 1946. The simmering Cold War came to a full boil in late 1949 with the successful test of "Joe I," the Soviet Union's first atomic bomb. In January 1950, President Truman approved the development of the hydrogen bomb; Truman's decision led to the remobilization of the country's weapons laboratories and production plants. The year 1950 also marked the first meeting of Los Alamos's "Family Committee"—a committee tasked with developing the first two thermonuclear devices (LANL 2001). In 1951, the Nevada Proving Ground (now the NTS) was established and the first Nevada atmospheric test, "Able," was conducted. In the same year, Los Alamos directed "Operation Greenhouse" in the Pacific and successfully conducted both the first thermonuclear test, "George," and the first thermonuclear "boosted" test, "Item." In 1952, the first thermonuclear bomb, known as "Mike," was detonated at Enewetak Atoll[1] in the Pacific (LANL 1993a). In short order, the Soviet Union responded with a successful demonstration of the use of fusion in August 1953, followed by a test of a hydrogen bomb in 1955. The arms race was on. By 1956, Los Alamos had successfully tested a new generation of high explosives (plastic-bonded explosives) and had begun to make improvements to the primary stage of a nuclear weapon (LANL 2001).

Although weapons research and development has always played a major role in the history of LANL, other key themes for the years 1942–1956 include supercomputing advancements, fundamental biomedical and health physics research, high explosives research and development, reactor research and development, pioneering physics research, and the development of the field of high-speed photography (McGehee and Garcia 1999). The Early Cold War era at Los Alamos ended in 1956, a date that marks the completion of all basic nuclear weapons design at LANL;

[1] A better understanding of the Marshall Islands language has permitted a more accurate transliteration of Marshall Island names into English. Enewetak is now the preferred spelling (formerly Eniwetok).

later research at Los Alamos focused on the engineering of nuclear weapons to fit specific delivery systems. The year 1956 was also the last year that Los Alamos was a closed facility—the gates into the Los Alamos town site came down in 1957.

Late Cold War Era (1956–1990)

The Late Cold War era saw Los Alamos's continued support of the atmospheric testing programs in the Pacific and at NTS. In 1957, the first of many underground tests at NTS was conducted. Other defense mission undertakings during this time included treaty and test ban verification programs (such as using satellite sensors to detect nuclear explosions), research and development of space-based weapons, and continued involvement with stockpile stewardship issues. Non-weapons undertakings supported nuclear medicine, genetic studies, National Aeronautics and Space Administration collaborations, superconducting research, contained fusion reaction research, and other types of energy research (McGehee and Garcia 1999).

DESCRIPTION OF TECHNICAL AREAS

TA-9

Current Function

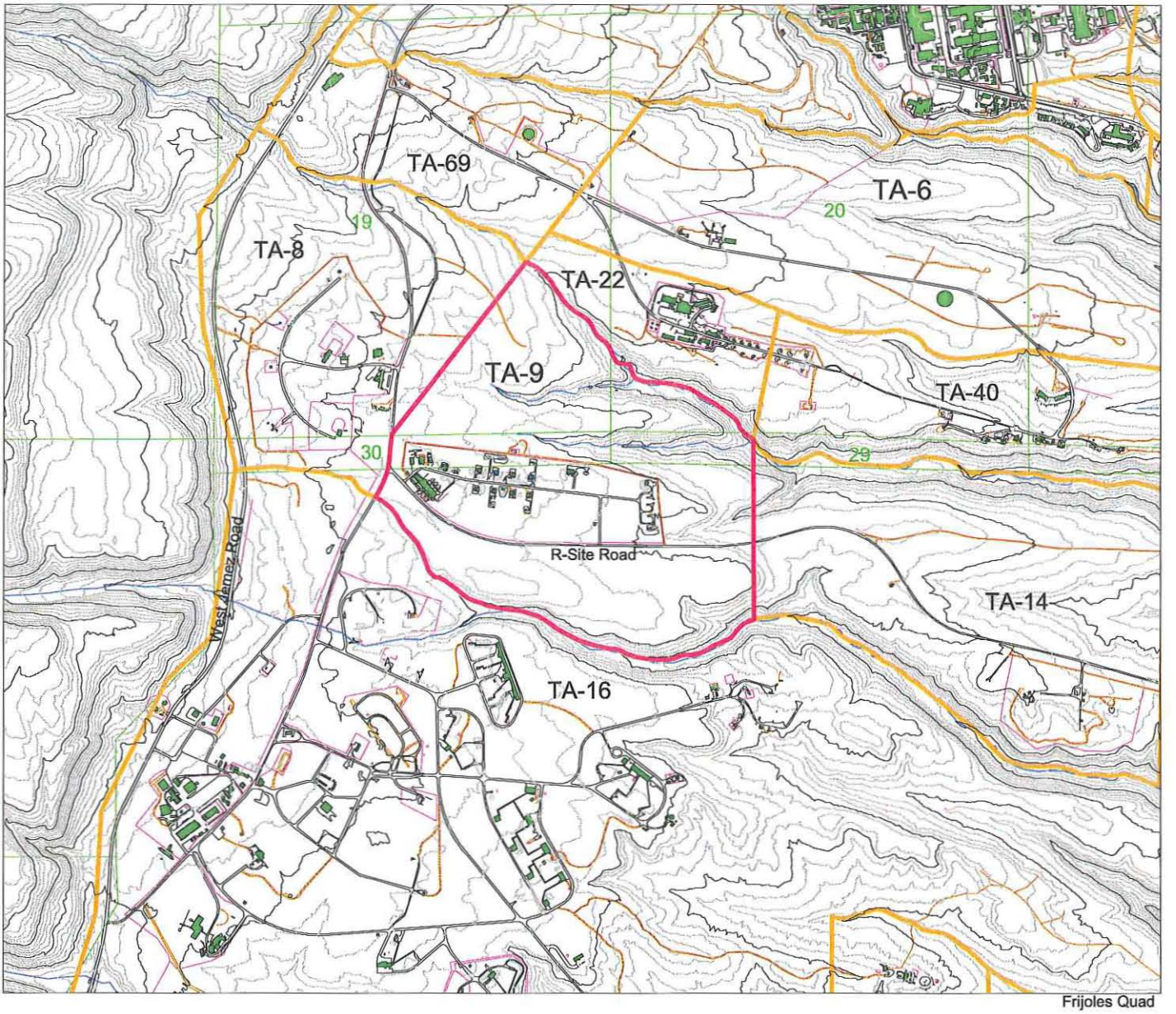
TA-9, located east of Anchor Ranch Road, encompasses three Manhattan Project sites known as old Anchor East, the Far Detonation Point (Far Point) and Nu Site (also known as TA-23). Explosive testing operations at TA-9 are now located south of old Anchor East Site at a facility known as new Anchor East (Figure 1) (Maps 2 and 3). Generally, the site has been used for the development, production, and testing of explosives (LANL 1993b).

Figure 1. 1991 Aerial of TA-9

Historical Background

Old TA-9

TA-9 (old Anchor East Site; Figure 2) was established in 1943 to house X-ray work and explosives development, production, and testing activities. Firing areas at wartime TA-9 were used by group X-8 for field-testing explosive charges. The main explosive manufacturing and X-ray facilities were located east and north across Anchor Ranch Road from the Gun Firing Site. There were eight major structures; a covered walkway connected three of the major structures. Some of the structures housed firing chambers and were shielded with earthen berms or covered with mounds of dirt. Facilities included an X-ray facility (TA-9-1) to study implosions of spherical explosive charges. A high-speed, rotating prism camera was also used at TA-9-1 for implosion studies. The building had both a closed and an open firing chamber. In September 1944, some of the rotating prism chamber work was moved to TA-14.



Frijoles Quad

Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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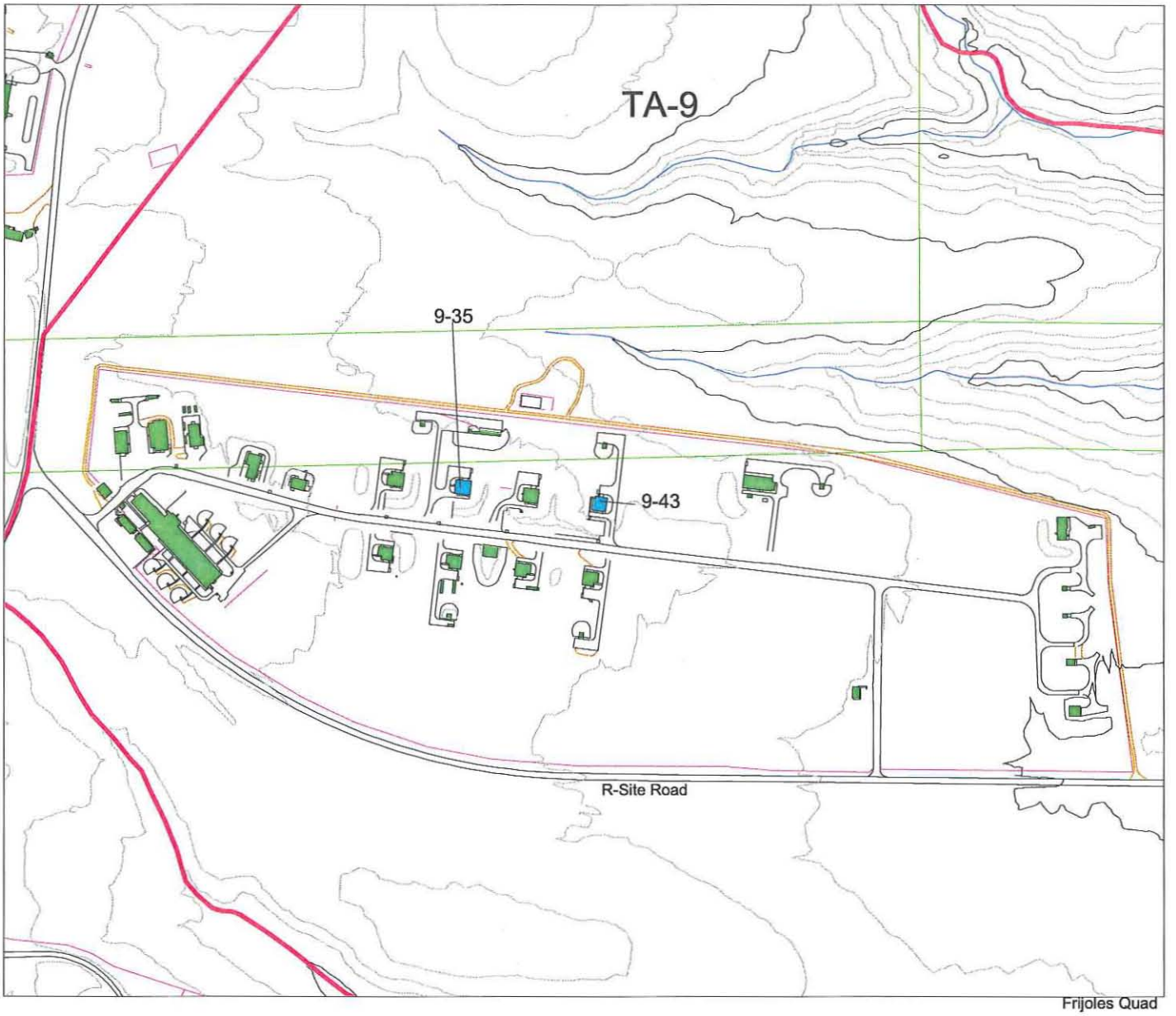
- DX Division Bldgs Currently Being Evaluated
- DX Division Tech Areas
- 20 Foot Contours
- 100 Foot Contours
- Technical Areas
- LANL Boundary
- Drainage
- Township, Section, Range
- USGS 7.5 Minute Quad
- Roads
- Roaddirt
- Parkpave
- Parkdirt
- Fences
- Buildings/Structures

D&D of DX Division Buildings

TA-9-35 and TA-9-43

Map 2



Los Alamos
National Laboratory
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ENV-ECO Ecology Group

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DX Division Bldgs Currently Being Evaluated
DX Division Tech Areas
20 Foot Contours
100 Foot Contours
LANL Boundary
Technical Areas
Drainage
Township, Section, Range
USGS 7.5 Minute Quad
Roads
Roaddirt
Parkpave
Parkdirt
Fences
Buildings/Structures

D&D of DX Division Buildings

TA-9-35 and TA-43 Closeup

Map 3

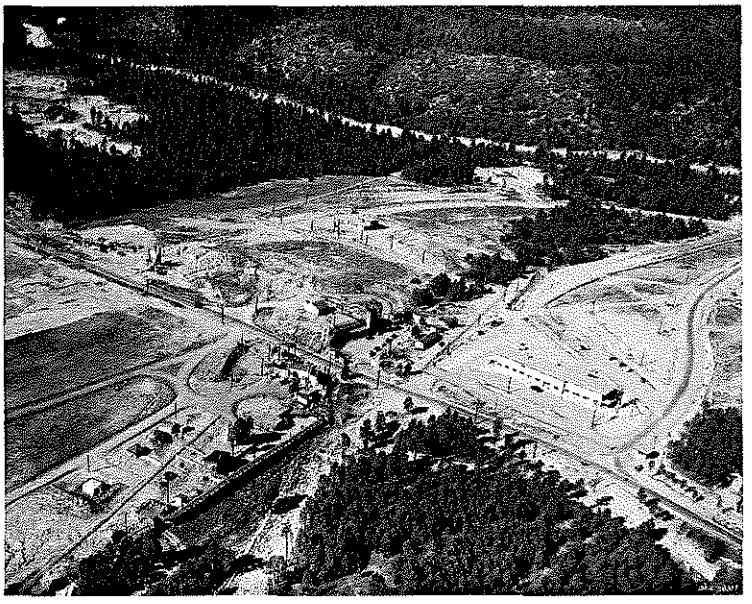


Figure 2. Old TA-9, below road in lower half of photo

TA-9-3 was a WWII-era high-explosive casting facility located at TA-9. It had magazines, solvent storage, explosives machining, explosive processing, and chemical pilot plants. In early 1945, the TA-9 casting operations were replaced by the large-scale casting operations taking place at the newly completed S Site high explosives facilities (Hawkins *et al.* 1988). Other activities at old TA-9 included flash photography and explosive lens system research. Groups X-2 and X-6 also made use of the wartime facilities at TA-9 during the late 1940s. Group X-2 was responsible for developing and producing new explosives. Group X-6 was responsible for studies in detonation physics. The buildings at old TA-9 were removed between 1960 and 1965 (U.S. DOE 1986, LANL 1993b).

Far Point Site

Far Point, which consisted of a pair of shelters each buried in a mound, was established in 1944 to conduct various explosives detonation experiments. These explosives tests were conducted in the open, west of the mounds (LANL 1993b).

Structure AE-15 at Far Point consisted of an underground steel-lined pit with a heavy roof that was used for recovery shots. This firing structure was abandoned in the spring of 1945 for similar but larger facilities at TA-12 and TA-14. At the second Anchor East firing location, also part of the former Far Point, shots were fired in the open, next to a pair of buried control rooms. Far Point was abandoned in the late 1940s because the structural integrity of the control rooms had deteriorated due to repeated shock loading and was decommissioned in 1965 (LANL 1993b).

Nu Site

Nu Site (formerly TA-23) was established in 1943 or 1944 and was used for explosives testing during WWII. The site contained one firing point and four small structures. The firing site was located just west of present day TA-9-76. Nu Site was decommissioned in 1949 or 1950 in

preparation for the construction of new Anchor East and, at that time, was incorporated into TA-9 for administrative purposes (LANL 1993b).

New TA-9

Construction of new Anchor East Site began in 1950, immediately following the completion of construction activities at TA-8 (Figure 3). Approximately 30 new structures were erected (LANL 1993b).

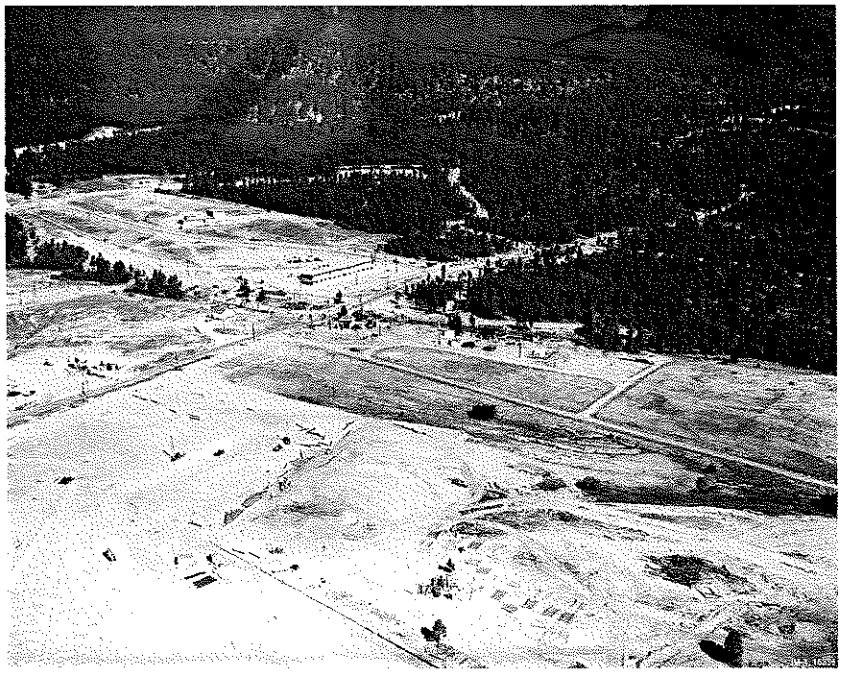


Figure 3. Old TA-9 (center of photo) and location of new TA-9 (lower third of photo)

New Anchor East consists of a collection of permanent structures that range from laboratory/office building combinations to processing and development buildings. Facilities include machining buildings, a pressing facility, a carpenter shop, compressed gas- and solvent-storage buildings, magazines for high explosives storage, and ovens. The overall mission of the present Explosive Technology Group (M-1 in 1993), which occupies the facility, has not changed significantly over the last four decades. The group synthesizes and formulates energetic materials, tests their sensitivity and performance, and monitors their compatibility with other weapons components (LANL 1993b).

Research and development efforts at new TA-9 include high explosives synthesis and laboratory testing, high explosives synthesis scale-up and processing (ball-milling and sieving), and high explosives casting and pressing. Analytical work includes mass spectroscopy and tritium analysis. Research related to compressed gas reactions and temperature compatibility studies (nuclear aging) has also been conducted at new TA-9 (LANL 1993b, Harris 1993).

TA-15

Current Function

TA-15 (R Site) is located on top of Threemile Mesa between Cañon de Valle and Threemile Canyon (Figure 4). TA-15 consists of a number of firing areas used extensively since 1944 for research and explosive testing of weapon design components (Maps 4, 5, and 6). Active sites include the PHERMEX (Figure 5) and DARHT facilities where radiography is used to obtain data on the performance of an explosive assembly during detonation.

Figure 4. **TA-15, Administrative Area (1991)**

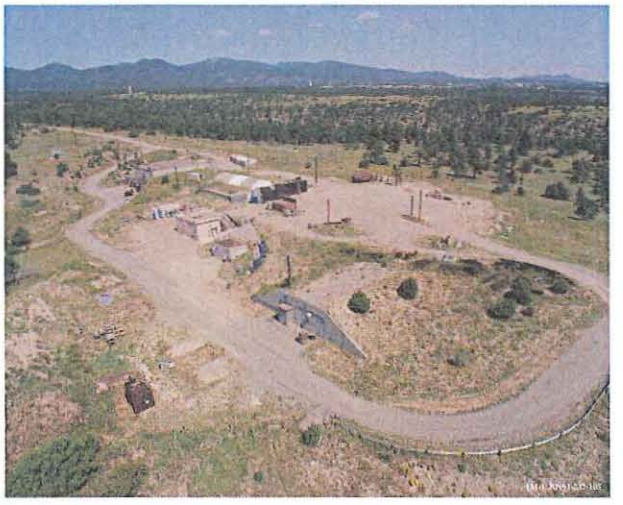
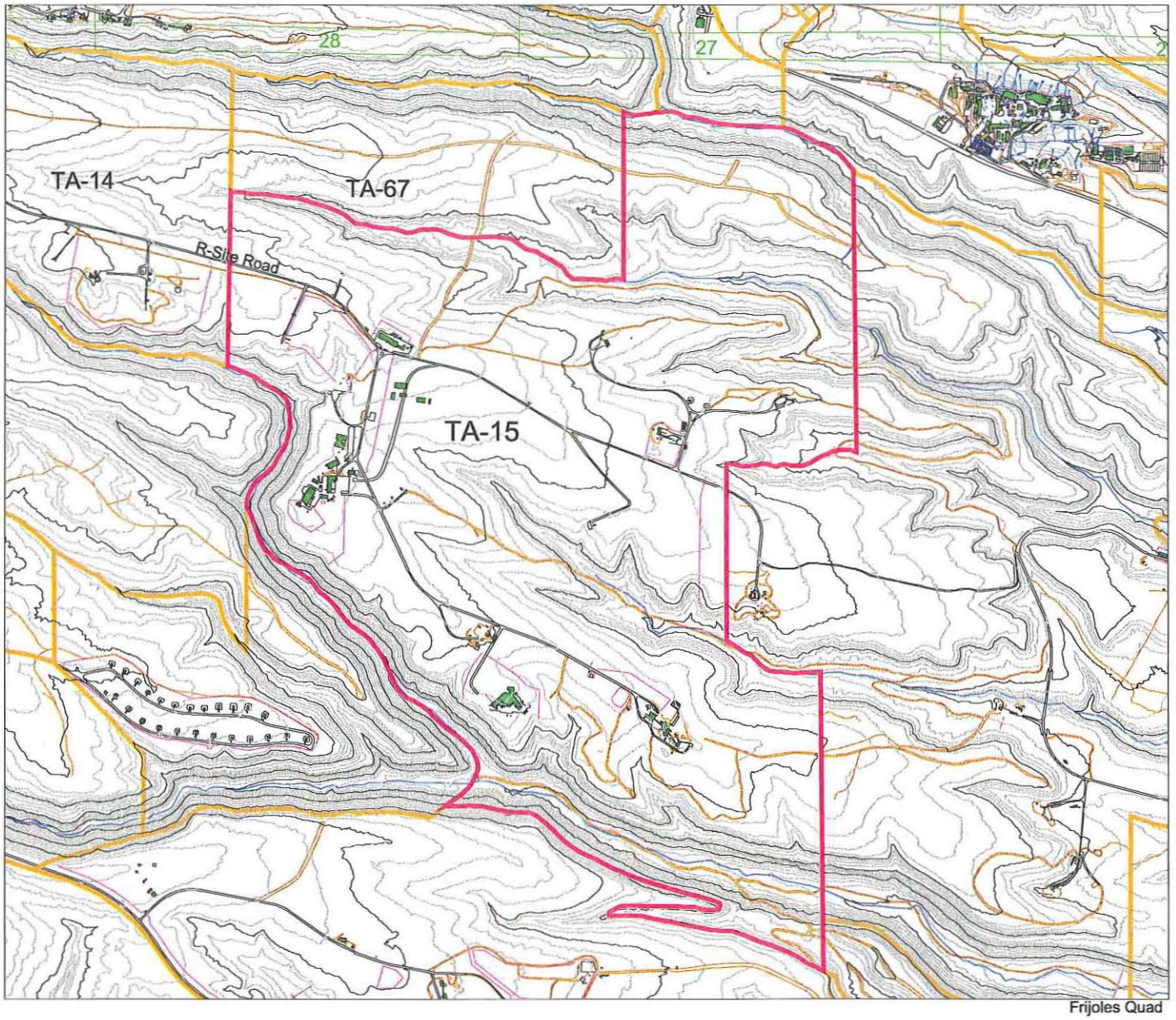


Figure 5. **PHERMEX (1991)**

Historical Background

The flash photography method was used at TA-15 to study the implosion of cylinders during WWII. Manhattan Project facilities at TA-15 included control and observation buildings as well as firing pits and other firing structures (Figure 6). Many of these early implosion-testing structures have been removed. Over TA-15's history, about twelve different firing areas have been used. The PHERMEX facility was built in the early 1960s to perform dynamic radiography of the weapon components of nuclear weapons during explosion. A second major dynamic radiographic machine named ECTOR was installed in the early 1980s for studies similar to those at PHERMEX (LANL 1993c). In 1999, the first axis of the DARHT facility was completed. In 2003, LANL completed construction of the second axis. The dual axes nature of the facility will allow scientists to obtain time-sequenced material in order to see in three dimensions what happens in a nuclear mockup (LANL 2003).

A series of connected buildings were once located in an area of TA-15 called "the Hollow." This area is located south of building TA-15-40, formerly the main office building for TA-15, and west of R Site Road. The buildings, beginning with TA-15-20 in 1949, had varied uses as assembly buildings, laboratories, and shops. The prototype for the PHERMEX accelerator and the prototype REX (Relativistic Electron Beam Experiment) of the prototype for the first axis of DARHT were developed and tested in "the Hollow" (LANL 1993c).



Frijoles Quad

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National Laboratory
Cultural Resources Team
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- DX Division Buildings Currently Being Evaluated
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- Fences
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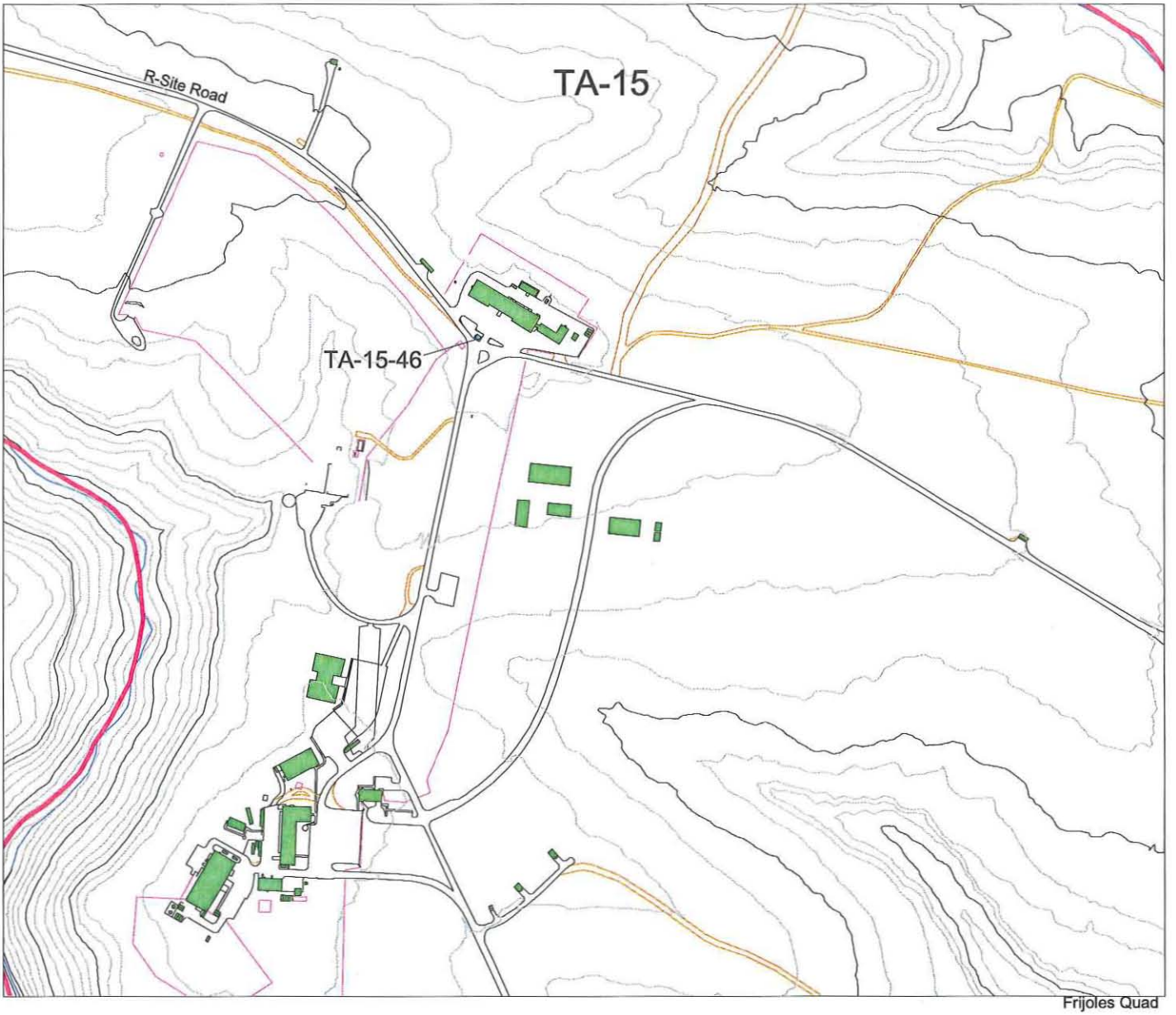
D&D of DX Division Buildings

TA-15-46, -TA-15-138, and TA-15-141

Map 4



Frijoles Quad

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DX Division Tech Areas
20 Foot Contours
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LANL Boundary
Technical Areas
Drainage
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Parkpave
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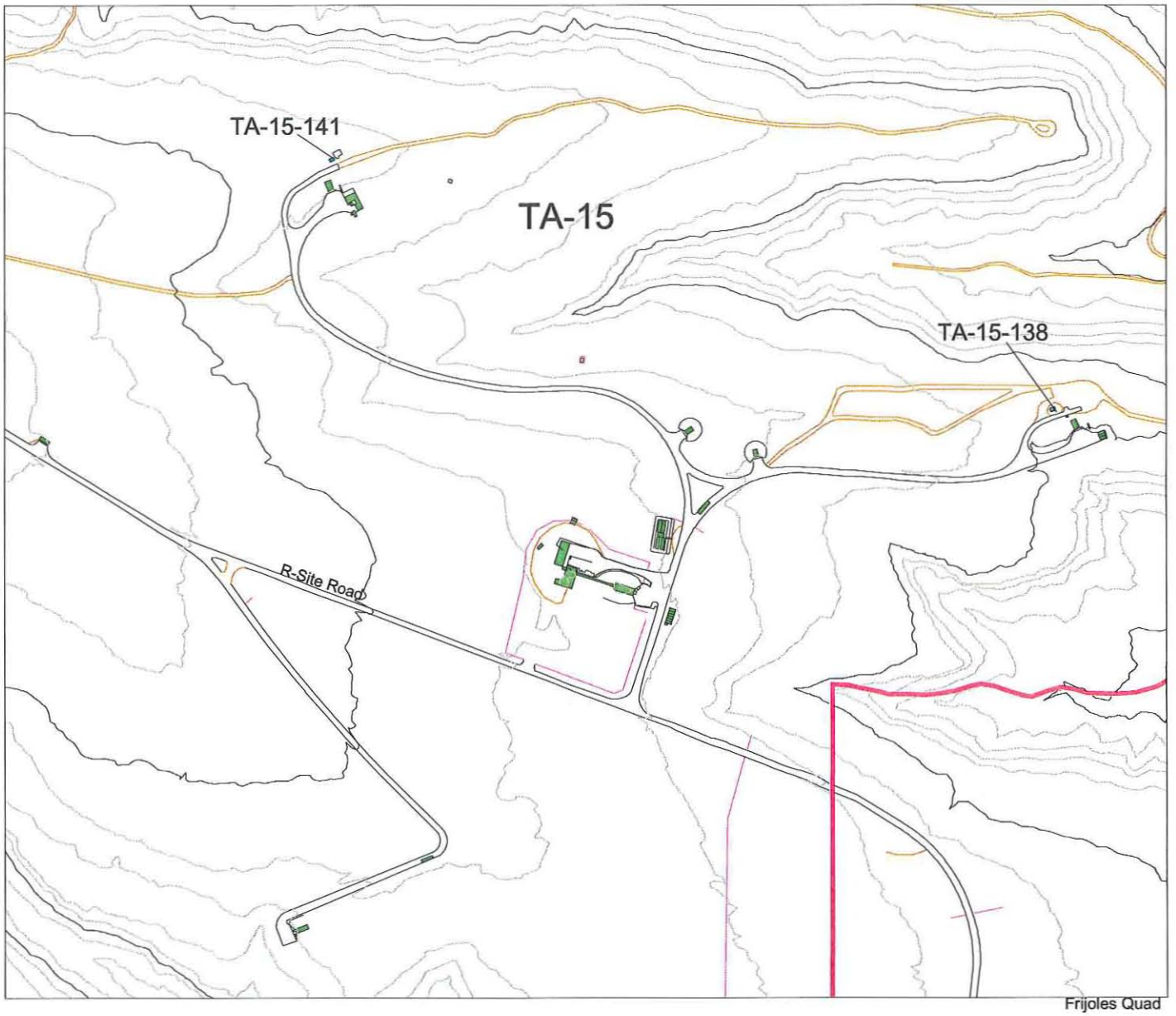
Fences
Buildings/Structures

D&D of DX Division Buildings

TA-15-46 Closeup

Map 5



Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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DX Division Buildings Currently Being Evaluated
DX Division Tech Areas
20 Foot Contours
100 Foot Contours
LANL Boundary
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Roaddirt
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Fences
Buildings/Structures

D&D of DX Division Buildings

TA-15-138 and TA-15-141 Closeup

Map 6

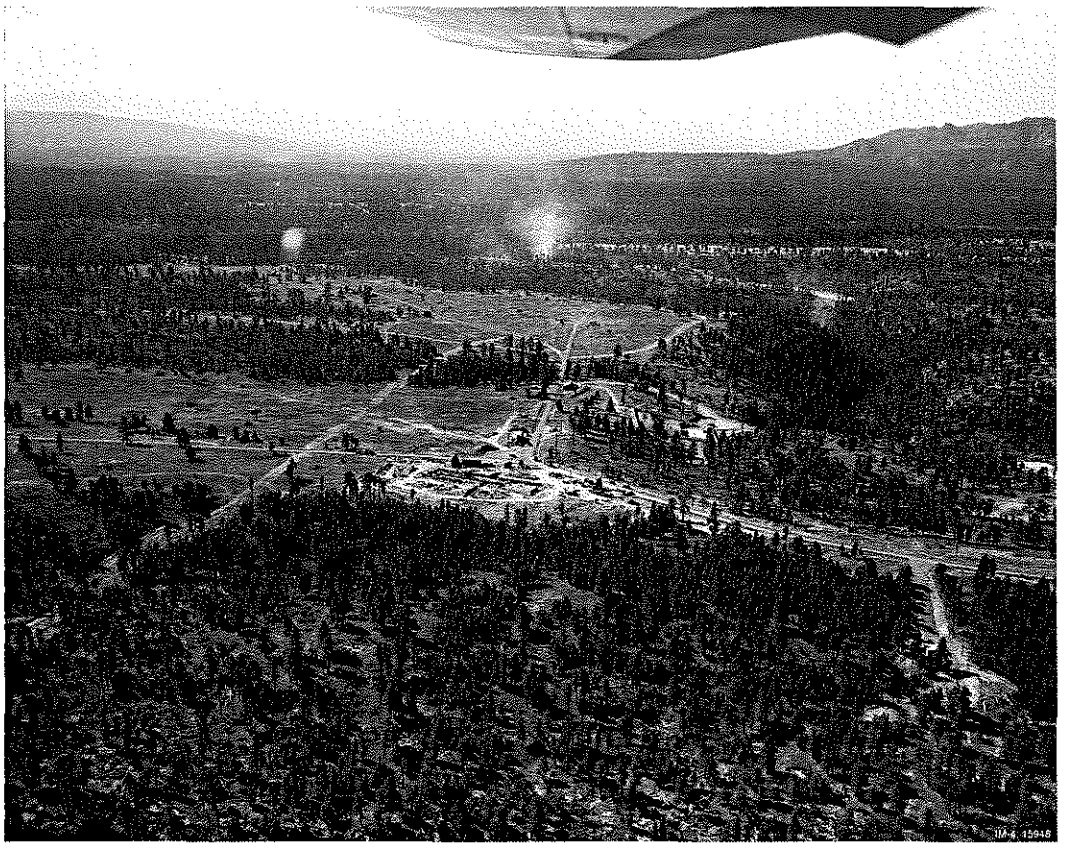


Figure 6. TA-15 (1950)
(LANL, IM-9 Photography)

TA-40

Current Function

Several groups have used TA-40 since it was built in 1950, but the bulk of the work has always centered on the physics of detonation and detonator testing. In 1986, TA-40 was occupied by the Reaction Science Group (M-9), which studied the physics of detonation, and the Detonation Systems Group (M-7). TA-40 was built to conduct detonator firing tests; these tests occur at six different firing points (Figure 7) (Maps 7 and 8). Each firing site consists of a reinforced concrete and steel building from which a shot is observed using various types of optical diagnostics (LANL 1993d). Small detonator tests are held inside rooms that have one side open to the outside. Larger tests are held on outside pads. Buildings TA-40-4 and TA-40-12 contain interior firing chambers. TA-40-9 houses a gas gun, fired by nitrogen and helium, which is used to test the effects of copper, aluminum, etc. on explosives. Magazines, preparation buildings, and a laboratory and office building (TA-40-41) all serve to support firing activities at TA-40. Darkroom facilities for photographic work are also present at the site (U.S. DOE 1986).

Figure 7. 1991 Aerial of TA-40

Historical Background

TA-40 or Detonator Firing (DF) Site was constructed in 1950 (Figure 8) to replace the detonator firing sites at Two-Mile Mesa Site South (TA-6). TA-40-9 was used for detonator tests during the 1950s and was later enclosed to contain a gas gun. In 1992, TA-40-8 was expanded, and a containment system consisting of a large vessel with a high-efficiency air particulate filtration system was installed (LANL 1993d).

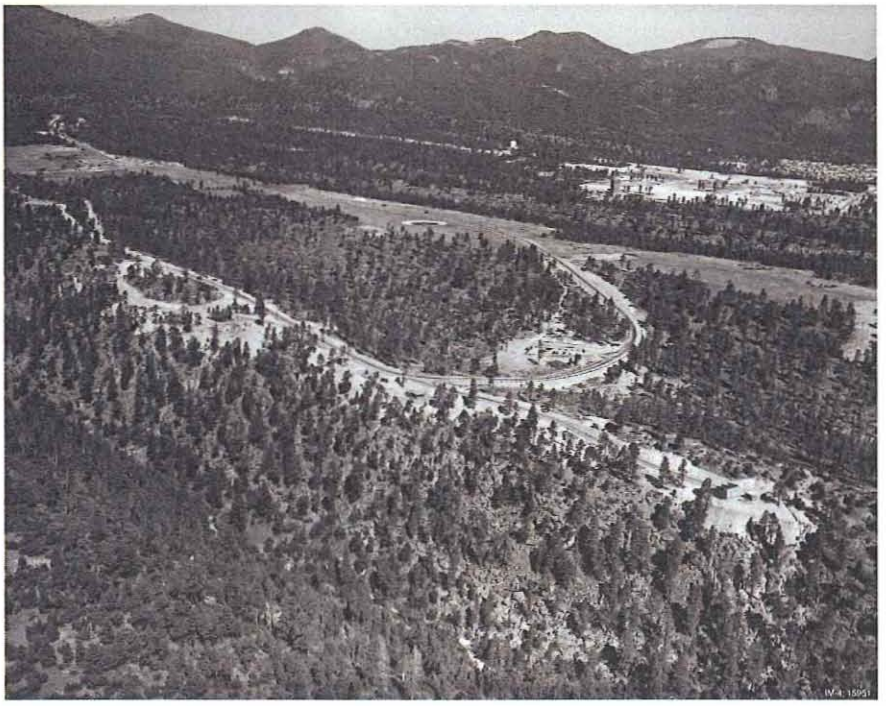
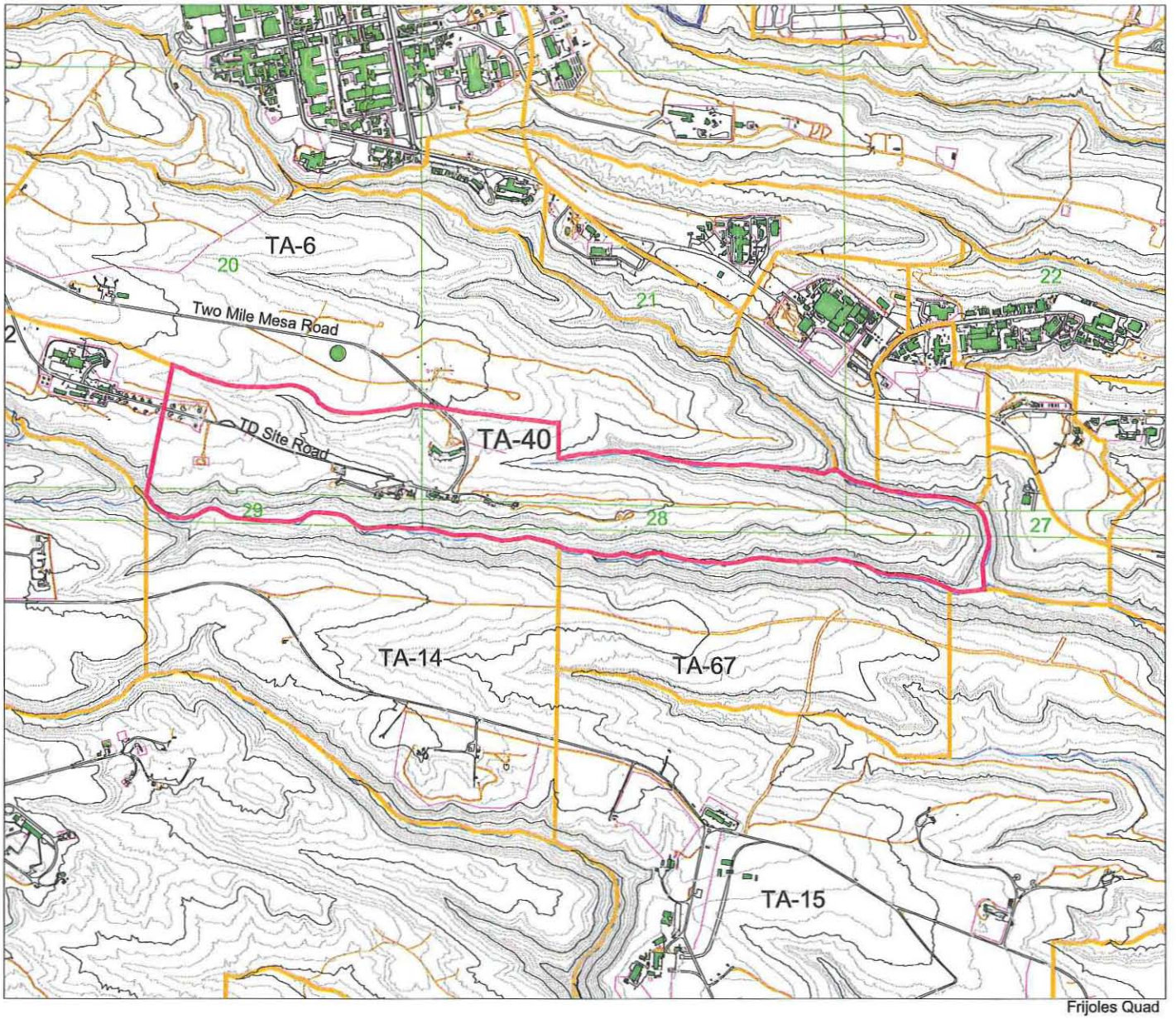


Figure 8. TA-40 (1950)



Frijoles Quad

Los Alamos
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1:24000

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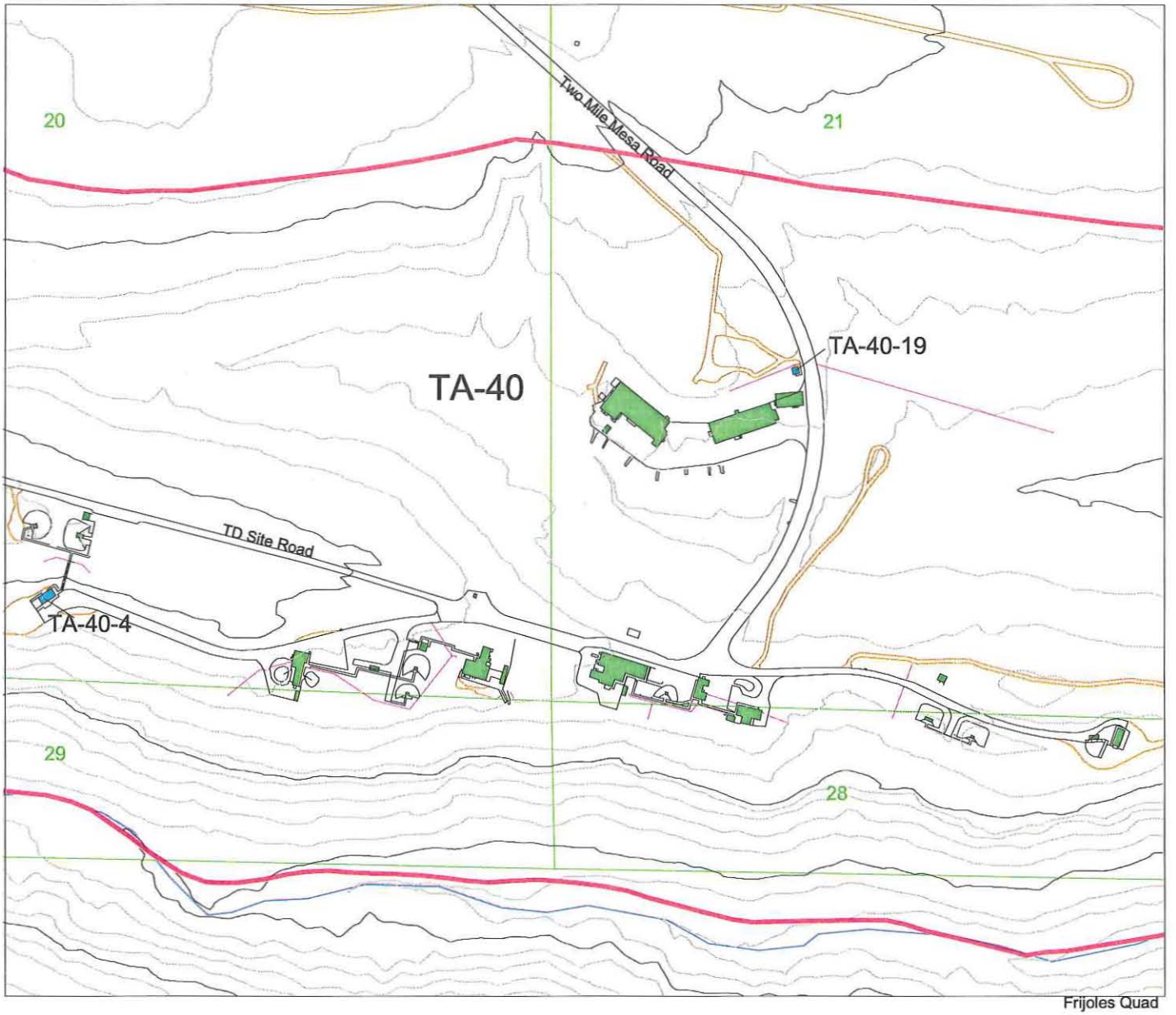
D&D of DX Division Buildings

TA-40-4 and TA-40-19

Map 7



Frijoles Quad

Los Alamos
National Laboratory
Cultural Resources Team
ENV-ECO Ecology Group

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D&D of DX Division Buildings

TA-40-4 and TA-40-19 Closeup

Map 8

PROPERTY DESCRIPTIONS

The properties located at TAs 9, 15, and 40 are identified using the current LANL system of placing the TA prefix before the building number. Historically, however, the "AE" prefix (for Anchor East Site) was used as the TA designator for TA-9; the "R" prefix (for R Site) was used for TA-15; and the "DF" prefix (for Detonator Firing Site) was used for TA-40. Some of the drawings included in this report may use the old system of building identification. For example, the term "AE-35" may be used in place of TA-9-35 (Photos 1a–c).

TA-9-35 and TA-9-43

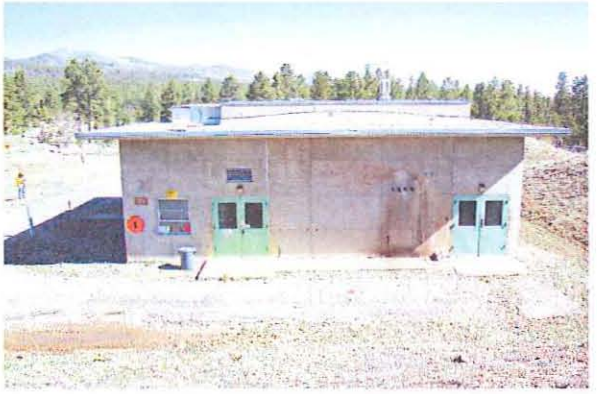

Photo 1a. View of south side of TA-9-35

Photo 1b. Oblique view of west and south sides of TA-9-35. (Note addition at northwest corner.)

Photo 1c. View of north side of TA-9-35

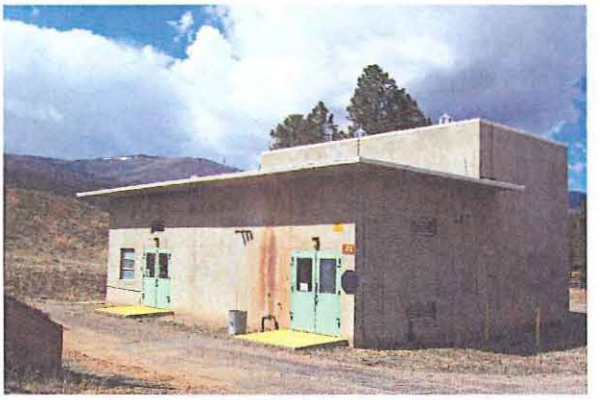

Photo 1d. View of south and east sides of TA-9-43

Buildings TA-9-35 and TA-9-43 (Photo 1d) were constructed in 1952 as 1½-story, L-shaped structures measuring 42 ft by 45 ft 4 in., for a total of 1,557 ft^2 net. These Cold War era properties are explosives processing buildings. They both have a reinforced concrete slab foundation, reinforced concrete walls, and a flat roof with cantilevered eaves on three sides. New *hypalon* membrane roofs have replaced the original roofs. The highbay areas, located on the north side of the buildings, are approximately 3 ft taller than the equipment rooms and are constructed with flat roofs without cantilevered eaves. A concrete masonry unit addition was constructed at the northwest corner of building TA-9-35 and painted white (see Photo 1b). The

height of the addition matches the height of the highbay. A single metal door is set within the west wall of this addition.

These buildings have surface-mounted light fixtures, surface-mounted piping on the south sides, alarm warning lights, and metal through-the-wall louvers on both the south and west sides. The roofs contain lightning rods, roof ventilators, and vent stacks. TA-9-43's roof contains two vent stacks. The south-side equipment areas contain two pairs of metal and ½ glass doors. Adjacent to the east doors are a three-light aluminum frame awning style window with obscure glass.

The exposed north walls of the highbays have a reinforced concrete frame with an aluminum panel infill. The aluminum panels (also known as an over-pressure wall) were designed to blow outward in the event of an explosion on the inside of the building to eliminate total destruction of the building as well as to partially control and direct the force of the explosion. A pair of aluminum doors is set within the blast wall for both personnel and equipment access. The interior of the main portion of each building is divided into two rooms by a full-height concrete wall. Set within the wall is an 8-in.-diameter porthole window. Each of the two rooms had multiple sump pits that emptied into wash-down trenches and an adjacent sump pit. TA-9-43's wash-down trenches and the adjacent sump pit are located to the east side of the building instead of to the rear.

Buildings TA-9-35 and TA-9-43 have the same floorplan as buildings TA-9-34 (Photos 2 and 3), -37, -38, -42, -45, and -46. These similar buildings were also assessed for historical significance in 2005 but are discussed in a separate report (McGehee *et al.* n.d).

Photo 2. View of west and south sides of TA-9-34

Photo 3. View of north side of TA-9-34

Historical Background

TA-9-35 activities have included the large-scale pressing of high explosives. This building also had a remote can opener for containers holding weapons components. Activities at TA-9-43 have included high explosives pressing. In general, activities conducted in both buildings supported the Laboratory's high explosives research and development program.

TA-15-46

TA-15-46, a former guard station, is a one-story, square-in-plan structure measuring 13 ft 9 in. by 13 ft 9 in., with a total interior floor space of 144 ft^2 (Photos 4a–d). The building, built in 1951, was constructed with a poured reinforced concrete foundation, floor slab, and exterior walls, and has a concrete apron on the east, south, and west sides. Reinforced concrete was also used to construct the building's flat roof and 4-ft-deep cantilevered overhangs. The single painted metal and ½-glass entry door is located on the south side and has a wire glass window in the upper half. Three-light, steel frame awning style windows were installed on the east, south and west sides of the building. A two-light steel framed awning style window is on the north side of the building. A second awning window was removed and replaced with an exhaust vent. Exterior building elements include pendant-style, incandescent light fixtures, loudspeaker, fire extinguisher, wall-mounted conduit, and lightning rods and an antenna on the roof. The guard building was constructed primarily as a single open room with a small restroom located in the northwest corner of the building.

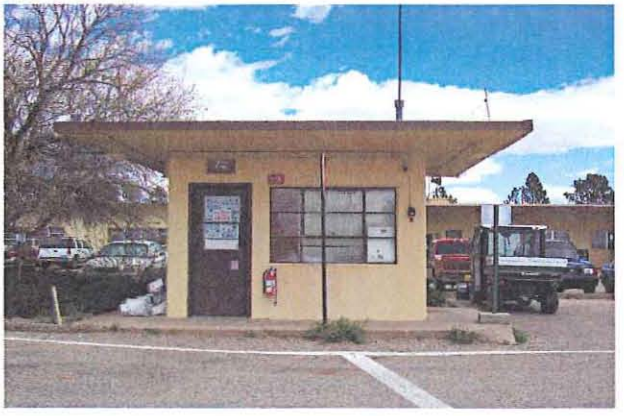

Photo 4a. View of south side of TA-15-46

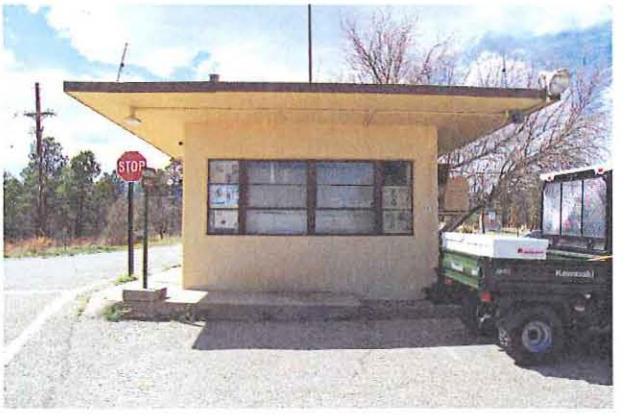

Photo 4b. View of east side of TA-15-46

Photo 4c. View of north side of TA-15-46

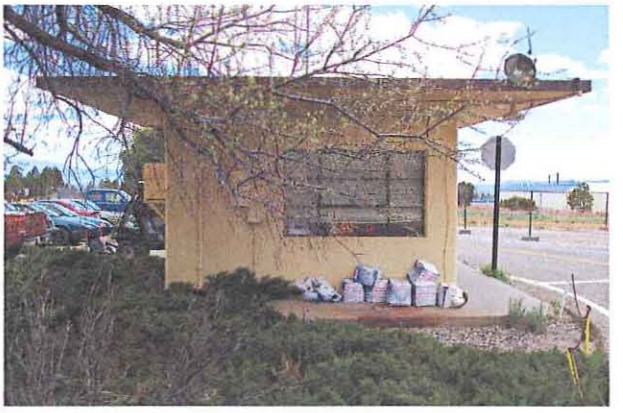

Photo 4d. View of west side of TA-15-46

Historical Background

The building was constructed as a security access control point into TA-15. This building played a support role in the Laboratory's mission of high explosives research and development.

TA-15-138 and TA-15-141

TA-15-138 (Photos 5a–c) was built in 1951 and TA-15-141 (Photo 5d) was built in 1961. These control/blast protection structures are virtually identical with only minor differences.

Photo 5a. Oblique view of west and south sides of TA-15-138

Photo 5b. Oblique view of east and north sides of TA-15-138

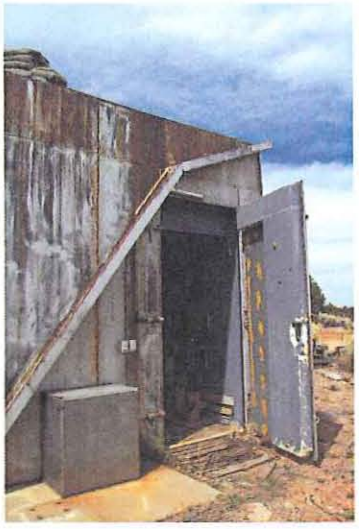

Photo 5c. Detail of door

Photo 5d. Oblique view of west and south sides of TA-15-141

The two properties are oversized one-story structures measuring 10 ft by 14 ft, with an interior floor space of 96 ft^2. These structures were constructed with a reinforced concrete foundation and floor slab. The walls were constructed with ½ in. steel plates over 12WR40 steel framing. The flat roof had ¾ in. welded steel plates over 12WR40 I joists. Also located on top of the roof is a wall constructed of concrete-filled burlap bags (see Photo 5a). A single steel door is located at the southeast corner of each building. A dropped ceiling was installed inside the structure and fabricated with ¼ in. diameter threaded rods attached to 10 gauge "T" runners. Four-inch-thick polystyrene foam hung from the "T" runners.

TA-15-138 has two oversized steel gutters to channel water from the flat roof to the ground (see Photos 5a and c). Located on the north side of the structures are cable access tunnels protruding from the wall at an angle. The tunnel is also lined with insulation. TA-15-138's single interior

room was finished with 4-in.-thick polystyrene foam applied on all four walls, the ceiling, and the inside of door. TA-15-141 does not have interior insulation. The west side of TA-15-141 is equipped with two steel sleeves/portals. The north side of TA-15-138 appears to have one steel sleeve/portal.

Historical Background

These structures supported the Laboratory in its high explosives research and development program. They functioned as control/blast protection for electronic equipment utilized during high explosive tests. These two structures appear to be unique at LANL.

TA-40-4

TA-40-4, a firing point facility, was built in 1950 and is a one-story rectangular-in-plan structure measuring 16 ft by 34 ft 6 in., with a 16-ft concrete apron. The structure was constructed with a reinforced concrete foundation, 2-ft-thick reinforced concrete floor slab, 1-ft-thick reinforced concrete walls, and a 1-ft-thick flat reinforced concrete roof covered with tar and gravel.

The structure is divided into two areas: the main control room (located on the northeast end; Photo 6a) and the firing chamber (located at the southwest end; Photo 6b). The main control room contains the only access into the structure and consists of a single heavily reinforced steel door. The main control room is further divided into two rooms separated by a stud wall. Combined, both rooms contain 364 ft^2. A 3-ft-wide by 11-ft-long by 2-ft-high concrete pier is at the southwest end of the control room. A portal with an explosion proof window and shutters is located at the end of the concrete pier and penetrates the southwest wall.

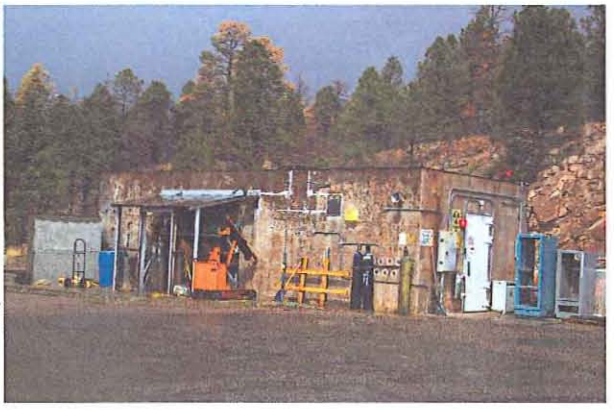

Photo 6a. Oblique view of southeast and northeast sides of TA-40-4

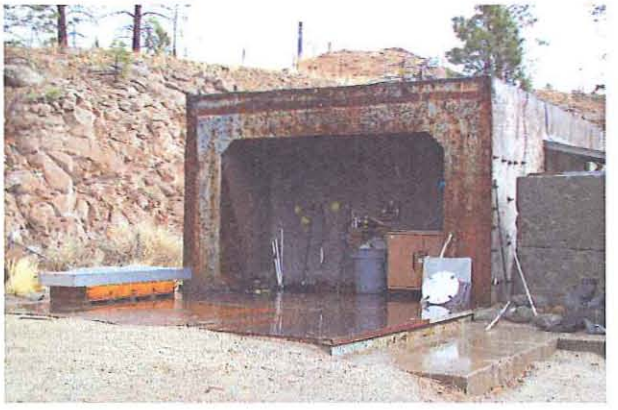

Photo 6b. Southwest end of structure showing firing chamber of TA-40-4

The firing chamber is a 6-ft-deep alcove spanning the width of the structure with 2-ft-thick side walls and roofs. The alcove walls and floor slab are reinforced with 2-in. steel plates. The walls dividing the control room from the firing chamber are 2 ft thick and lined on the inside with ½-in. bituminous impregnated cork.

The exterior of the structure also has loud speakers, lights, signage, and surface-mounted conduit. Cement-filled burlap bags, located adjacent to the north end of TA-40-4, provided additional blast protection from the firing chamber. Over time, the burlap bags disintegrated

leaving the hardened cement mixture in place. A small storage area for tanks was added to the southeast side of building TA-40-4. The open lean-to was constructed with steel columns supporting a low-pitched steel canopy.

TA-40-4 has the same original floorplan as nearby building TA-40-15. However, TA-40-15 has better physical integrity. This virtually identical firing point facility was assessed for historical significance in 2005 and was recommended for Register eligibility (McGehee *et al.* n.d.).

Historical Background

Both TA-40-4 and TA-40-15 are similar in layout and function to several Manhattan Project era structures formerly located at TA-6 (TA-6-7, -8 and -9). This is not surprising, however, because the firing activities at TA-40 are a Cold War continuation of detonator research and development that was originated at Los Alamos during WWII.

TA-40-19

TA-40-19, built in 1950, served as a guard station for access control into TA-40 (Photos 7a–d). This building was constructed as a one-story square-in-plan structure measuring 13 ft 8 in. by 13 ft 8 in. The building has a 6-in.-thick reinforced concrete foundation and floor slab, 8-in.-thick concrete walls, and a flat roof with 3-ply tar and gravel roofing over 2-in. rigid insulation and steel roof deck. The cantilevered overhangs are 4 ft deep and finished on the underside with a 10-in.-square metal pan ceiling.

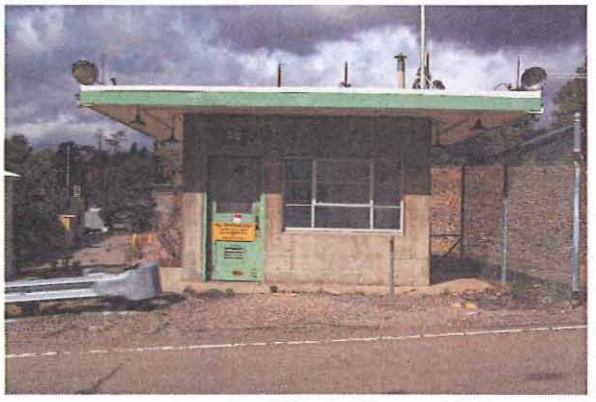

Photo 7a. View of east side

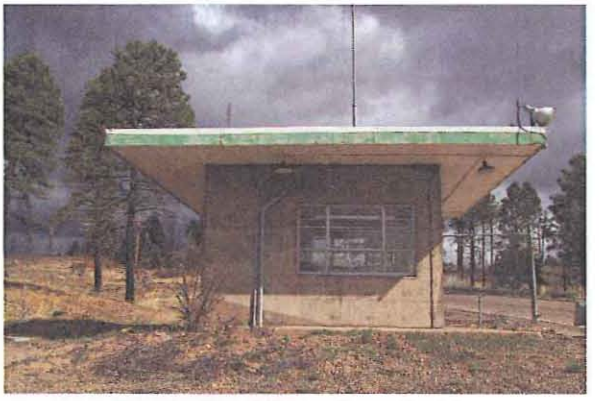

Photo 7b. View of south side

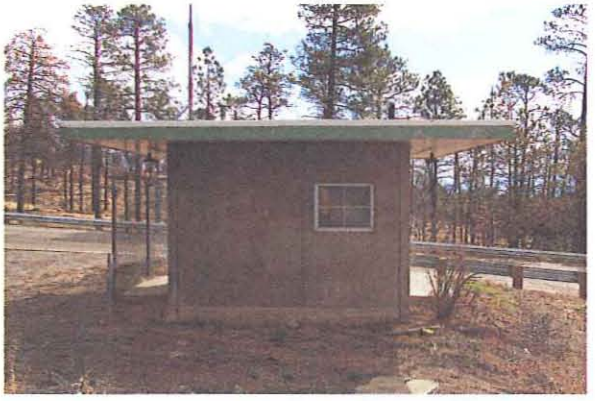

Photo 7c. View of west side

Photo 7d. View of north side

The single painted metal and ½-glass entry door is located on the building's east side (see Photo 7a). Three-light, awning style windows are installed on the east, south, and north sides while the west side contains a 4-light, hopper style window. Additional exterior building elements include pendant-style incandescent light fixtures, signage, a thru-the-wall ventilator, and conduit. The roof was originally covered with tar and gravel. However, this has been removed and a new *hypalon* roofing membrane has been installed. The roof is equipped with lightning rods, high-powered lights, a loud speaker, and an antenna.

The interior of the building is divided into three rooms: an office area, a restroom, and a closet.

Historical Background

This building was constructed as an interior (non-perimeter) security access control point into TA-40. This building supported the Laboratory's detonator research and development program.

Property Summary Table

Property Number	Original Use	Date Built	Construction Type	Property Type	Integrity	Eligibility
9-35	Process Laboratory	1952	Reinforced concrete structure with aluminum panel infill (over-pressure wall)	Lab/Processing (1st Tier)	Fair	N
9-43	Process Laboratory	1952	Reinforced concrete structure with aluminum panel infill (over-pressure wall)	Lab/Processing (1st Tier)	Fair	N
15-46	Guard Station	1951	Reinforced concrete construction	Security	Good	N
15-138	Control/Blast Protection	1951	Reinforced concrete construction	Lab/Processing (2nd Tier)	Fair	Y, Criteria A and C
15-141	Control/Blast Protection	1961	Reinforced concrete construction	Lab/Processing (2nd Tier)	Fair	Y, Criteria A and C
40-4	Firing Point	1950	Reinforced concrete construction and steel plates	Lab/Processing (1st Tier)	Good	N
40-19	Guard Station	1950	Reinforced concrete construction	Security	Good	N
Total number of eligible properties	**2**					

INTEGRITY ISSUES AND POTENTIAL FOR CONTAMINATION

Integrity

The LANL Cultural Resources Team has developed four integrity codes to assess potentially eligible properties. The integrity requirements for properties eligible under Criterion A are less stringent than for those properties eligible under Criterion C. For example, a historically significant property with a level 3 integrity could still be eligible, especially if an element of historic uniqueness is involved. Properties eligible solely under Criterion C should have no lower than a level 2 integrity. Level 4 integrity properties are not eligible for the Register.

1. Excellent Integrity – the property is still closely associated with its primary context and retains integrity of location, design, setting, workmanship, materials, feeling, and association. Little or no remodeling has occurred to the property and all remodeling is in keeping with its associated historic context/significant use periods.
2. Good Integrity – the property's interior and exterior retain historic feeling and character but some of the original significant equipment may be gone. The property may have had minor remodeling.
3. Fair Integrity – a property in this category should retain original location, setting, association, and exterior design. All associated interior machinery/equipment may be absent but the essential question is "Is this property still recognizable to a contemporary of the building's historic period?"
4. Poor Integrity – the property has no connection with the historically significant setting, feeling, and context. Major changes to the property have occurred. The property would be unrecognizable to a contemporary.

Contamination

Based on the activities conducted at TAs 9, 15, and 40, high explosives contamination is likely to be present at these technical areas. Of the buildings discussed in this report, high explosive contamination could be present at the process buildings, control/blast protection buildings, and the firing site building. There is no known high explosives contamination at the guard stations.

NATIONAL REGISTER ELIGIBILITY

Eligibility Criteria

Laboratory-Processing, Administration, and Security Properties

Laboratory-processing buildings, administration buildings, and security buildings and structures do not need to possess an integrity of both exterior and interior features in order to be eligible for the National Register under Criterion A. In cases where original equipment has been removed, a property can still be considered significant for its historical associations. Laboratory-processing,

administration, and security properties need only retain original location, setting, association, feeling, and exterior design to maintain significant historical integrity under Criterion A. Properties eligible under Criterion C have to meet a more stringent standard of physical integrity. Additions and remodeling that reflect changing scientific missions are acceptable under Criterion C (Hanford Site 1999).

Support Buildings and Structures

In order to be eligible under Criterion A, support buildings and structures must have functioned as significant support facilities within an associated historical context (Hanford Site 1999). "First tier" support properties, if linked to a historically significant context and 50 years old or older, may be eligible for the Register. If less than 50 years old, support properties must be exceptionally significant. "Second tier" support and laboratory-processing properties, primarily structures, are usually not eligible for the Register (even if they are 50 years old or older) because of the minor role they played in history.

Eligibility Recommendations

Explosive process buildings TA-9-35 and TA-9-45 have level 3 integrity. Even though they would be recognizable to a former worker, they are not eligible for the Register because they are identical in floorplan to six other buildings that are currently being used. Neither TA-9-35 nor TA-9-45 are "best of type"— all original equipment has been removed and the functions of the buildings have changed since their Cold War "period of significance."

Guard stations TA-15-46 and TA-40-19 have level 2 integrity and are identical in floorplan. They are also the same design as TA-16-1451 (the "Back Gate Guard Station"). TA-16-1451 is on the list of LANL buildings scheduled for permanent retention and serves as a symbol of the "closed city" of Los Alamos (WWII to 1957). The two guard stations discussed in this report are not eligible for the Register because they are identical to the "Back Gate," which is a better example of type.

Control/blast protection structures TA-15-138 and TA-15-141 have level 3 integrity. These structures supported the Laboratory's Cold War high explosives research and development program. Both structures are deemed eligible for the Register under Criterion A for their unique function in association with Cold War nuclear weapons development and under Criterion C for their unique design.

Firing point structure TA-40-4 has level 2 integrity. However, it is not considered eligible for the Register because it is almost identical to a nearby firing point structure that is in better physical condition and is a better example of type. TA-40-15, the other structure, is still in use and, when assessed in 2005, was recommended for Register eligibility (McGehee *et al.* n.d.).

The State Historic Preservation Office is requested to concur with the eligibility determinations contained in this report. As a result of this historic building survey, this project complies with the National Historic Preservation Act of 1966 (as amended).

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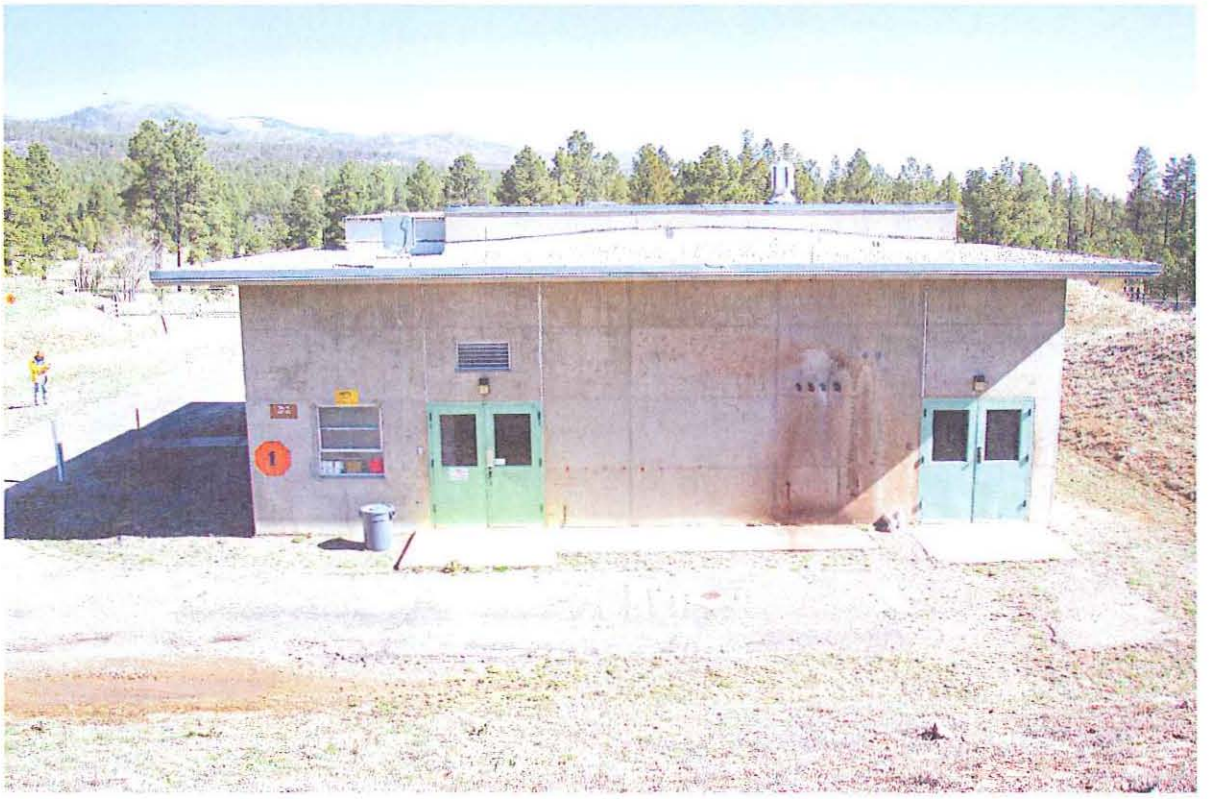
APPENDIX

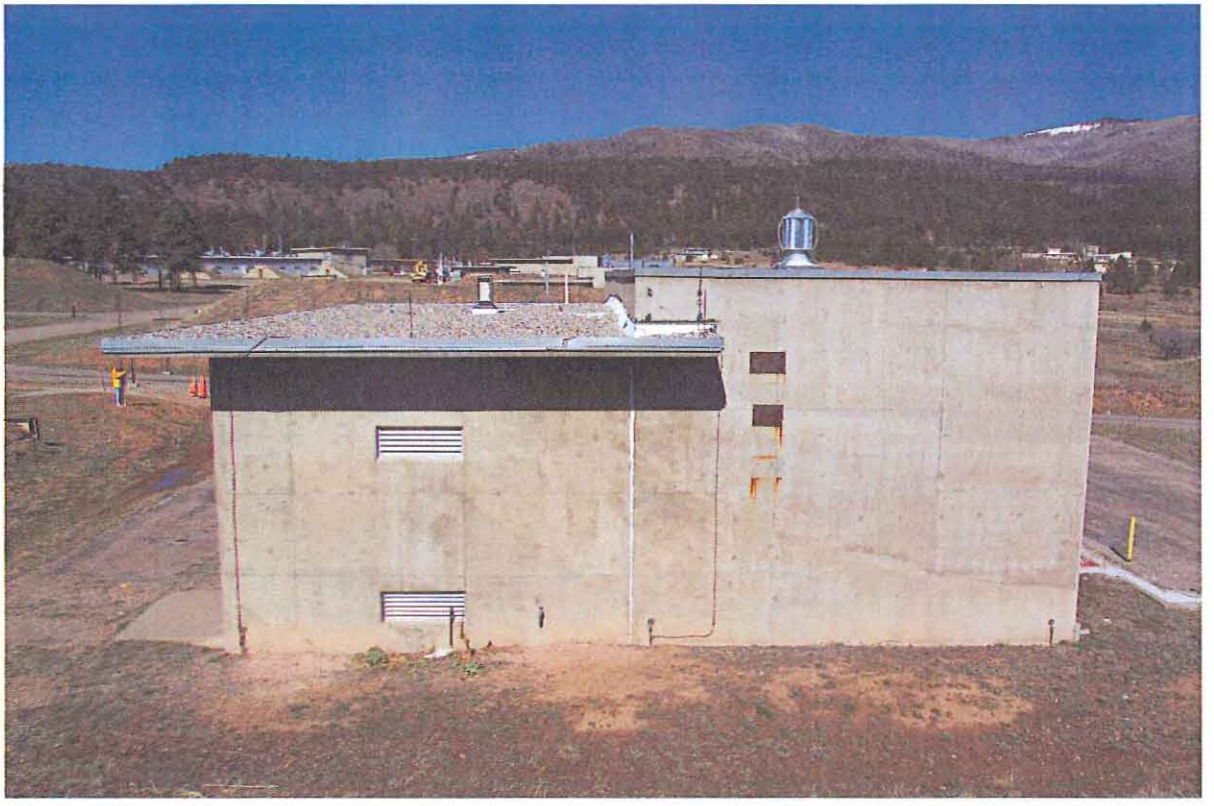
Selected Photographs and Drawings:
TA-9-35, TA-9-43, TA-15-46, TA-15-138, TA-15-141, TA-40-4, and TA-40-19



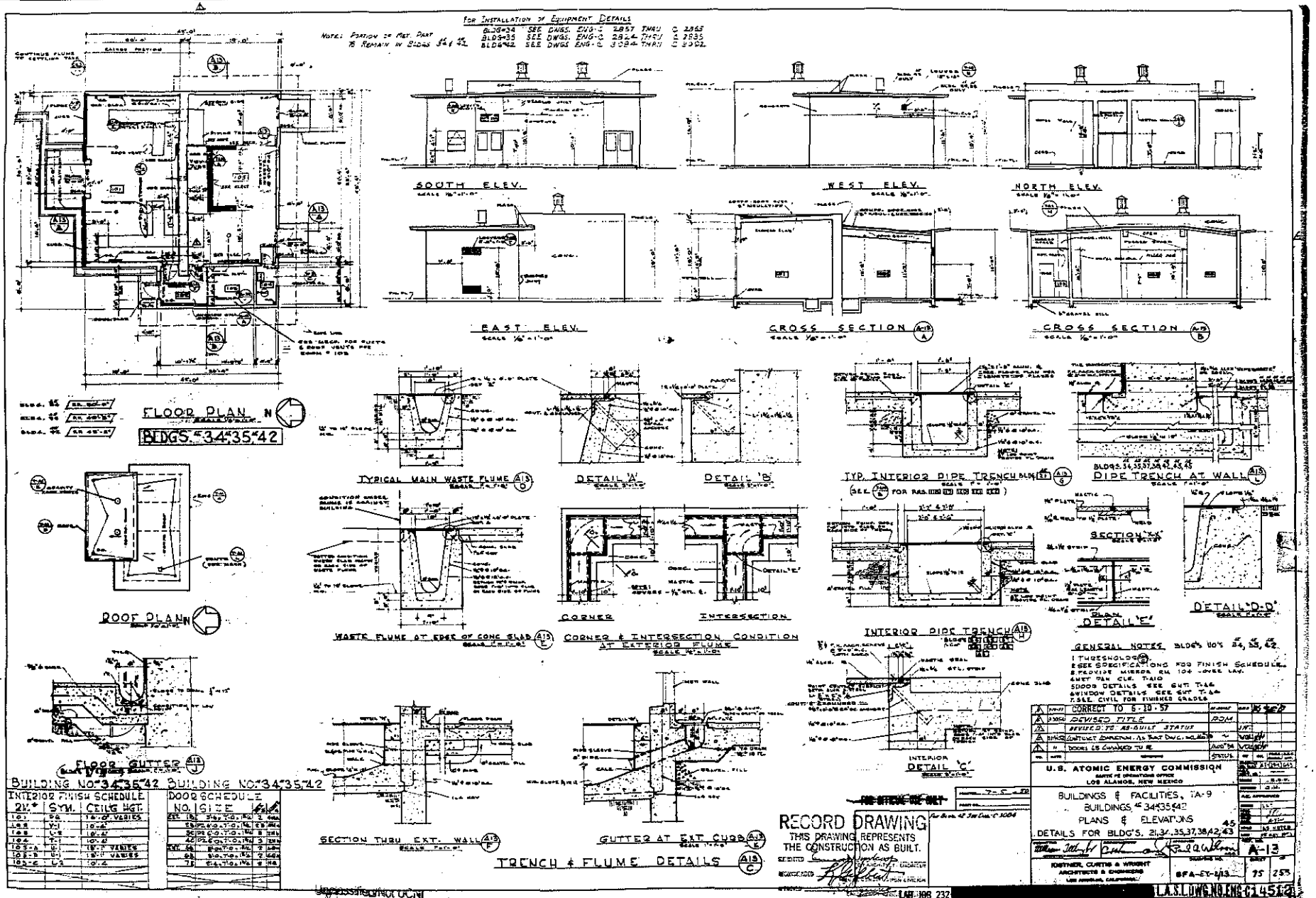
TA-9-35, south side

TA-9-35, west side

TA-9-35, north side



TA-9-35, east side



BUILDING NO. 34-35-42 BUILDING NO. 34-35-42

INTERIOR FINISH SCHEDULE			DOOR SCHEDULE			
NO.	SYM.	CEILING HGT.	NO.	SIZE		
101	P-1	10'-0" VARIES	EXT.	3'0"x7'0"	1¾	HM
102	V-1	10'-0"	33	SINGLE DOOR	1¾	HM
103	C-1	10'-0"	34	DOUBLE DOOR	1¾	HM
104	T-1	10'-0"	42	DOUBLE DOOR	1¾	HM
105-A	W	10'-0" VARIES	EXT.	6'0"x7'0"	2	HM
105-B	W-1	10'-0" VARIES	64	6'0"x7'0"	2	HM
105-C	L-3	10'-0"	75	6'0"x7'0"	2	HM

GENERAL NOTES BLDGS NOS 34, 35, 42

1 THRESHOLDS
2 SEE SPECIFICATIONS FOR FINISH SCHEDULE.
3 PROVIDE MIRROR AT 104 JANES LAV.
4 WET RM CLG. T-410
5 DOOR DETAILS SEE SHT T-46
6 WINDOW DETAILS SEE SHT T-46
7 S.E. CIVIL FOR FIXTURES GRADES

A	5-10-57	CORRECT TO	
A	3-1958	REVISED TITLE	RDM
A		REVISED TO AS-BUILT STATUS	
A	8-1962	CONTRACT CORRECTION - AS BUILT DWG. NO.	
A		DOORS TO BE CHANGED TO HC	

U.S. ATOMIC ENERGY COMMISSION
SANTA FE OPERATIONS OFFICE
LOS ALAMOS, NEW MEXICO

BUILDINGS & FACILITIES, TA-9
BUILDINGS, 34-35-42
PLANS & ELEVATIONS
DETAILS FOR BLDG'S. 21, 34, 35, 37, 38, 42, 43

KASTNER, CURTIS & WRIGHT
ARCHITECTS & ENGINEERS
LOS ANGELES, CALIFORNIA

DRAWING NO. A-13
SFA-EY-513
SHEET 75
SHTS 255

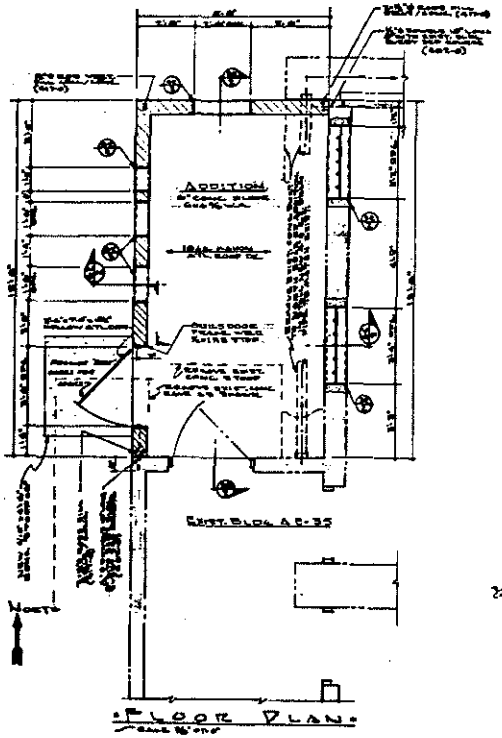
RECORD DRAWING
THIS DRAWING REPRESENTS THE CONSTRUCTION AS BUILT.

L.A.S.L. DWG. NO. ENG-C 1451-2

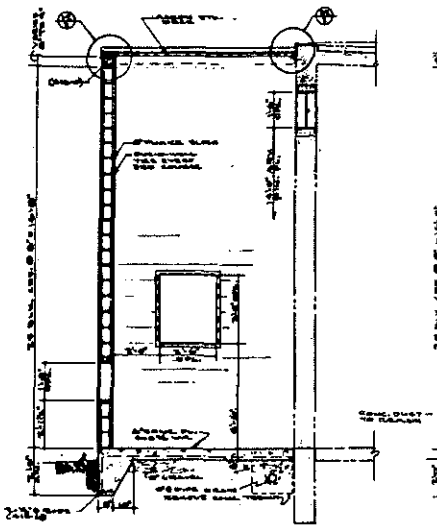
SUBMIT THIS DRAWING AS A RECORD OF THE CONSTRUCTION AT THE TIME OF ACCEPTANCE BY THE A. E. C., AND ASSUME NO RESPONSIBILITY FOR ALTERATIONS OR CHANGES IN THE STRUCTURE BY OTHER AGENCIES SUBSEQUENT TO THAT DATE.

BLDGS. NOS. 34-35-42
PLANS & ELEVATIONS
DWG. NO. A-13

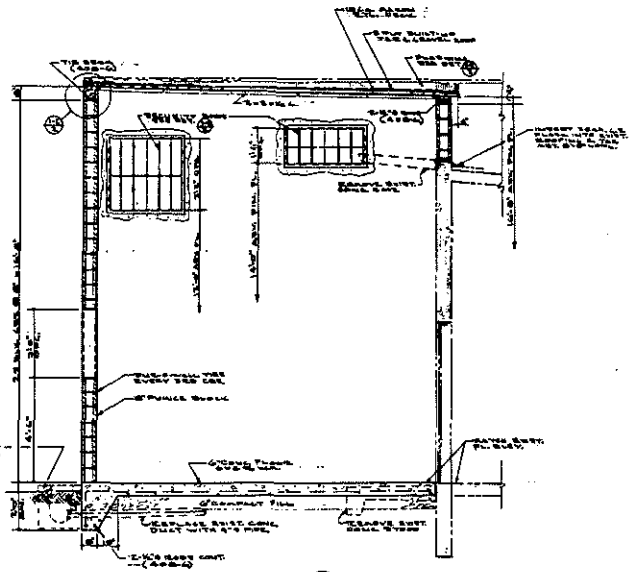
Declassified DOE/NV
DOE Class. Group



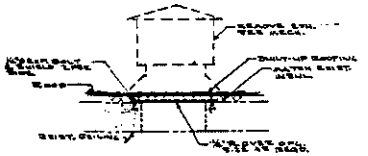
FLOOR PLAN



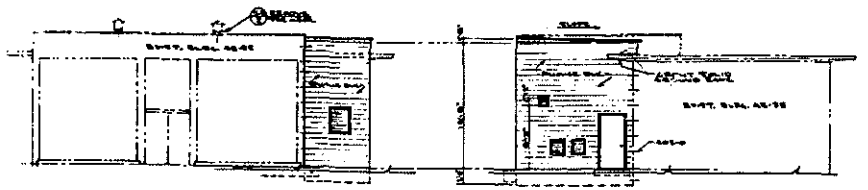
SECTION A2/2



SECTION A2/2

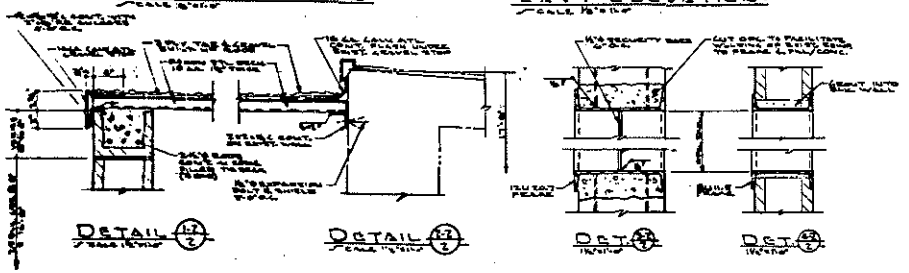


DETAIL A2/2



NORTH ELEVATION

EAST ELEVATION



DETAIL A2/2

DETAIL A2/2

DET A2/2

DET A2/2

BAR SCHEDULE

CODE	LOCATION	TYPE	SIZE	AMT.	LENGTH
408-6	FOOTING		½"	2	8'-0"
415-6	"		½"	2	18'-6"
408-6	TIE BARS NORTH & SOUTH WALL		½"	4	8'-0"
416-0	" "		½"	2	10'-10"
401-0	DOWELS (WALL)		½"	18	2'-0"
411-0	VERT. WALL BAR		½"	5	17'-0"

THIS JOB MUST BE INSPECTED AND ANY CHANGES APPROVED BY ENG-4 STALLINGS PHONE 7-4888

AUTHORIZED FOR: HEALTH, SAFETY, FIRE PROT., ENG-4, ENG-8

NO.	DATE	REVISIONS	BY	CHKD	ENG	ARCH

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

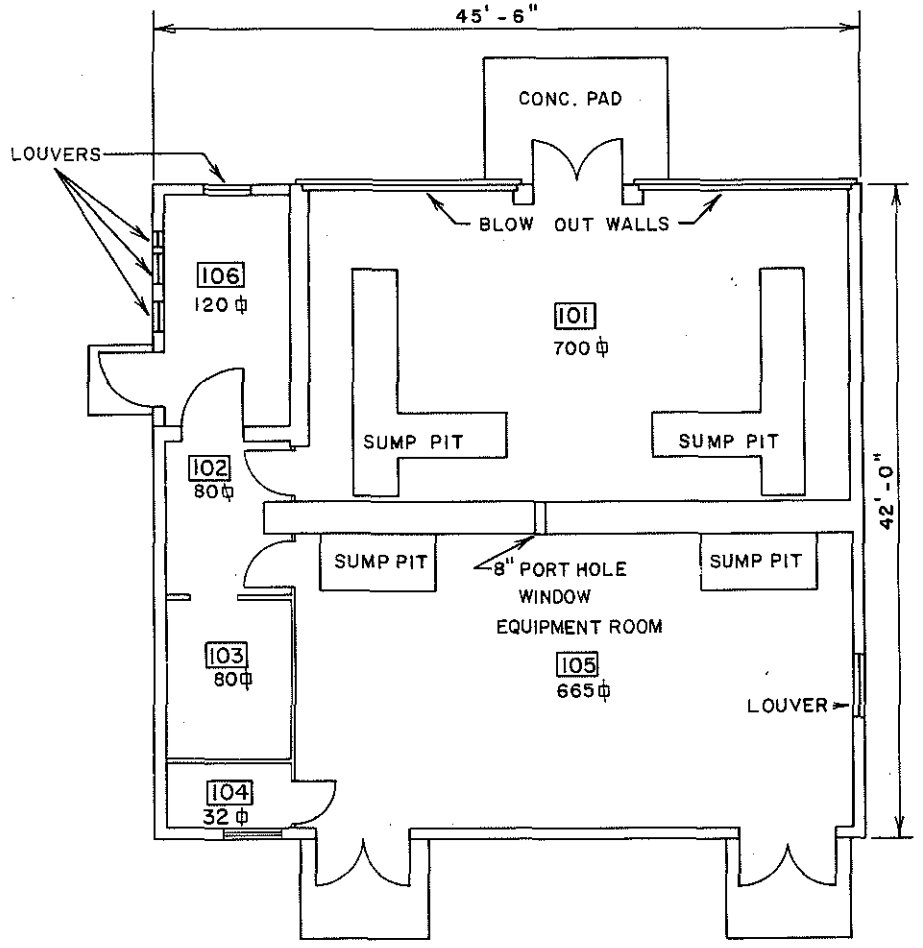
TEMPERATURE CONTROL

ARCH. - SECTIONS & DETAILS

BLDG. AE-35 TA-9

CHECKED STZ.	RECOMMENDED G.T. McDonald GROUP LEADER	APPROVED ENG. DEPT. OFFICE	
DRAWN E.W.S.	DATE 9-18-59	DRAWING NO. ENG-C 22778	
TRACED	SHEET 2 OF 7		
SCALE AS SHOWN			

L.A. NO. _____ LAB. JOB NO. 2256



1/8" = 1'-0" 0 5 10 15 20

GRAPHIC SCALE

TOTAL SQ FT 1,677

MF

REV.	DATE	REVISION	BY	CKD.	APP.
3	8-23-83	REDRAWN AND REVISED TO STATUS OF 8-23-83	HEN		

UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

PROCESS LABORATORY

FLOOR PLAN

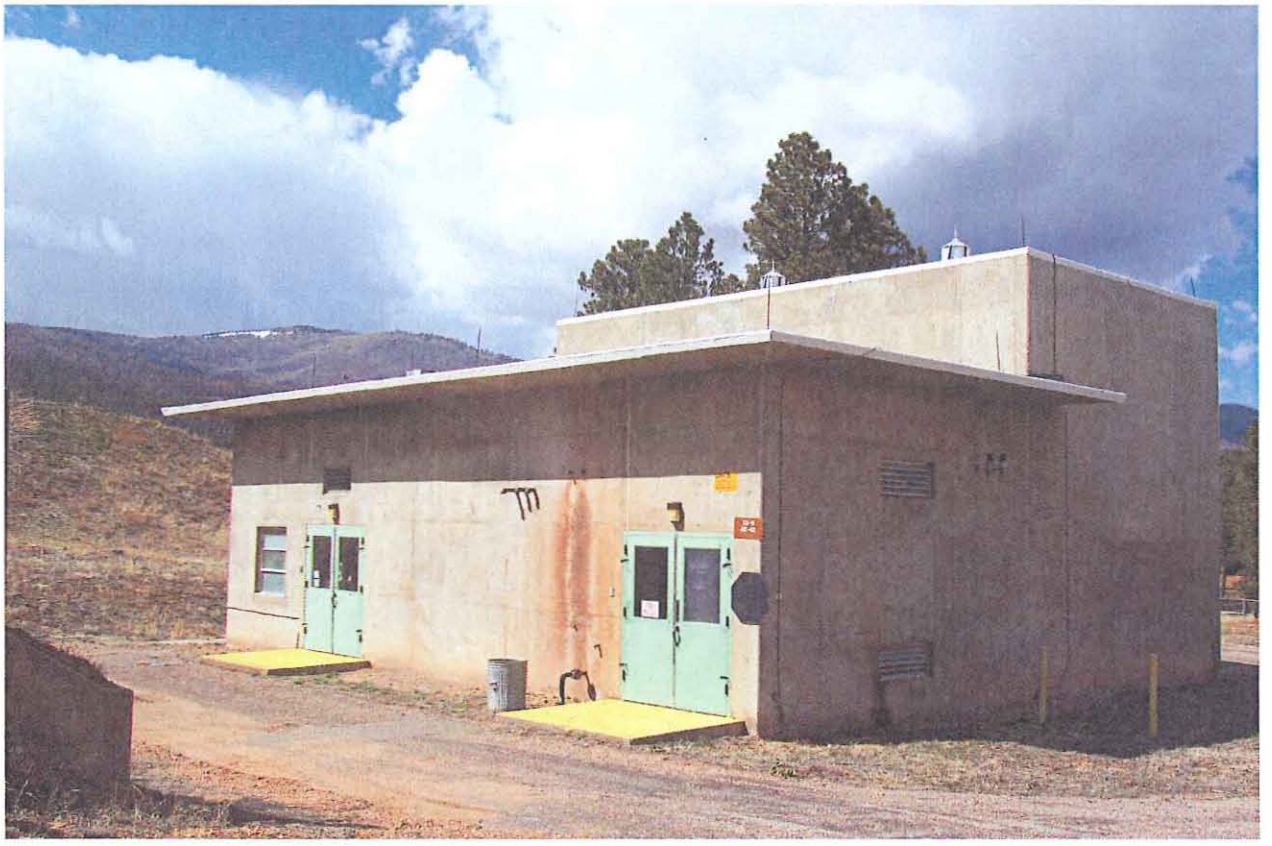
BLDG. AE-35 TA-9

SEC. CLASSIFICATION
CLASS. U
REVIEWER
DATE 8-6-84

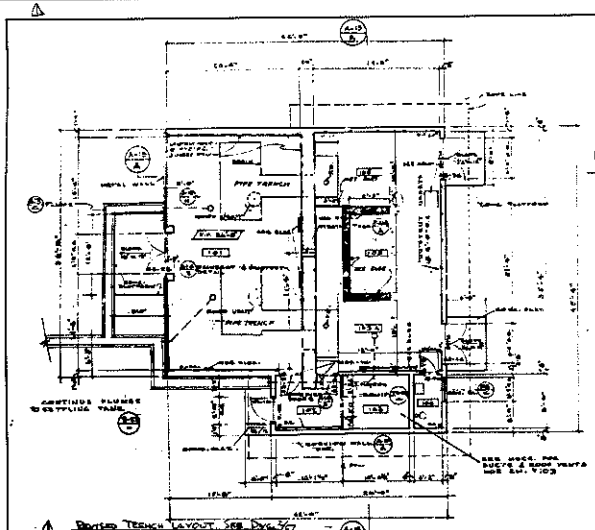
SUBMITTED	RECOMMENDED	APPROVED
E. Trujillo		W. F. Elmore

DRAWN	CHECKED	DATE	SHEET NO.	DRAWING NO.
K.A.K.-HEN	HEN	8-23-83	1 OF 1	ENG-R2648

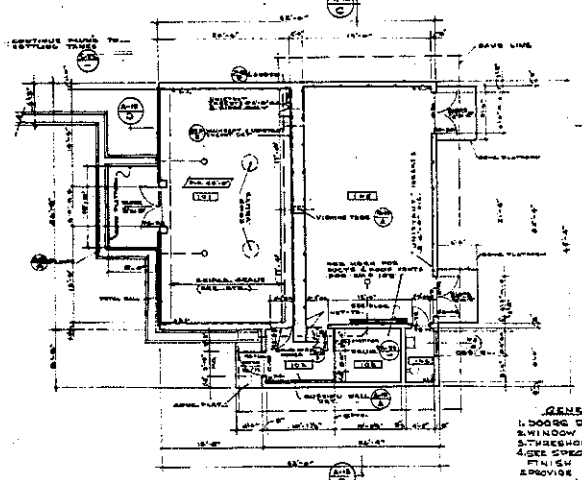
3/30/84



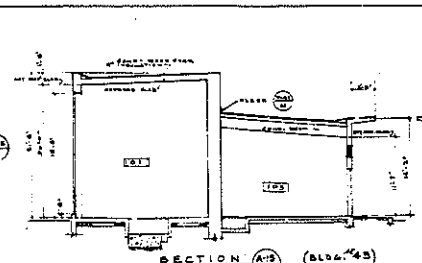
TA-9-43, south and east sides



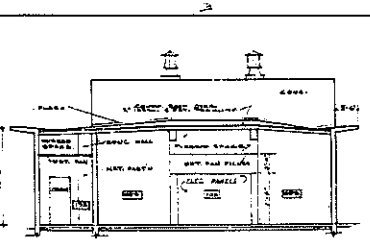
FLOOR PLAN BLDG.#43



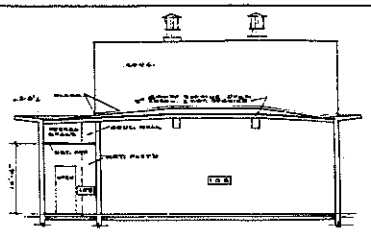
FLOOR PLAN BLDG.#46



SECTION (BLDG.#43)



SECTION (BLDG.#43)



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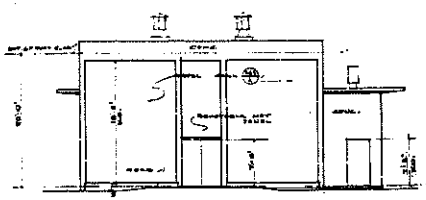
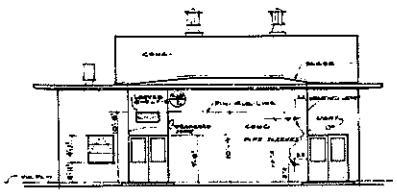
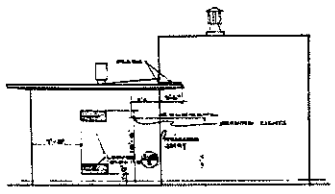


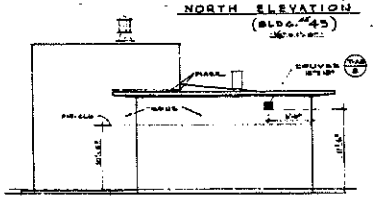
NORTH ELEVATION (BLDG.#43)



SOUTH ELEV. (BLDG.#43)



EAST ELEVATION (BLDG.#43)



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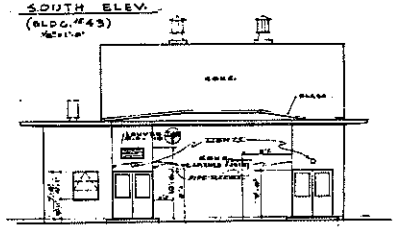
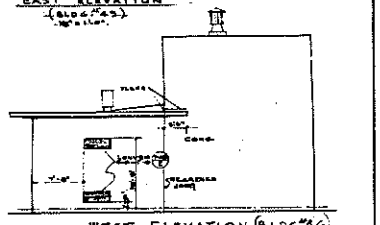


NORTH ELEV. (BLDG.#46)



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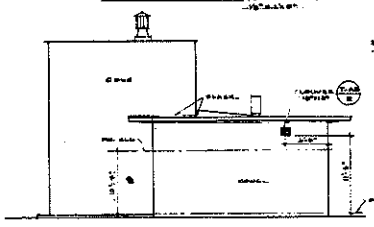
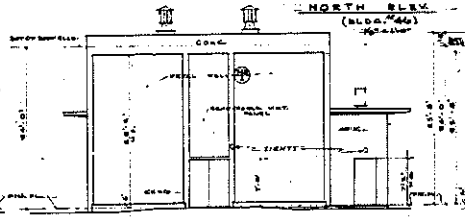
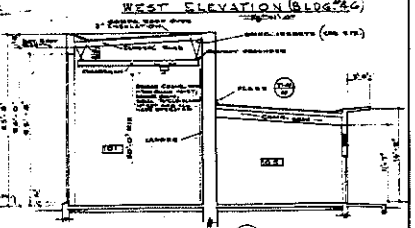


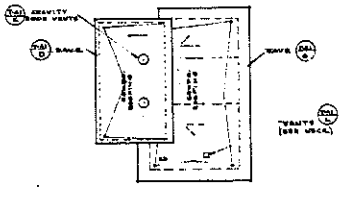
EAST ELEVATION (BLDG.#46)



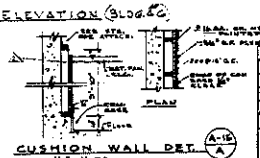
SOUTH ELEVATION (BLDG.#46)



SECTION (BLDG.#46)



ROOF PLAN



CUSHION WALL DET.

GENERAL NOTES

1. DOORS DET. SEE SHT. 134
2. WINDOW DET. SEE SHT. 147
3. THRESHOLDS SEE
4. SEE SPECIFICATIONS FOR FINISH SCHEDULE.

PROVIDE MIRROR 30" I.C. & 4" OVER LAV.

EXHAUST FAN CLG. TYPE

TERRAZZO ONLY FLOOR TRENCH LOCATION

BLACK CAST IRON REINFORCED CONCRETE OVER BLACK CAST IRON REINFORCED CONCRETE

BUILDING NO.#43
INTERIOR FINISH SCHEDULE

NO.	SYM.	CEIL'G HGT.
101		8'-0" VARIES
102	V	10'-4"
103	V-1	10'-4"
104	V-1	10'-4"
105	V-1	8'-1" VARIES
105A	V-1	8'-1" VARIES
105B	V-1	8'-1" VARIES
105C	V-1	8'-1"

BUILDING NO.#46
INTERIOR FINISH SCHEDULE

NO.	SYM.	CEILG HGT.
101		8'-0" VARIES
102	V-1	10'-4"
103	V-1	10'-4"
104	V-1	10'-4"
105	V-1	8'-1" VARIES

BUILDING NO.#43
DOOR SCHEDULE

NO.	SIZE	
EXT. 1B	3'-0"x7'-0"	1¾
2B	2'-6"x7'-0"	1¾
3C	2'-6"x7'-0"	1¾
4C	2'-6"x7'-0"	1¾
EXT. 5B	3'-0"x7'-0"	1¾
6B	3'-0"x7'-0"	1¾
7B	3'-0"x7'-0"	1¾
8B	3'-0"x7'-0"	1¾

BUILDING NO.#46
DOOR SCHEDULE

NO.	SIZE	
EXT. 1B	3'-0"x7'-0"	1¾
2B	2'-6"x7'-0"	1¾
3C	2'-6"x7'-0"	1¾
4C	2'-6"x7'-0"	1¾
EXT. 5B	3'-0"x7'-0"	1¾
6B	3'-0"x7'-0"	1¾
7B	3'-0"x7'-0"	1¾

CORRECT TO 8-10-57

U.S. ATOMIC ENERGY COMMISSION
LOS ALAMOS, NEW MEXICO

BUILDINGS & FACILITIES, TA-9
BUILDINGS #43 & #46
PLANS & ELEVATIONS

A-15

KETHER, CURTIS & WRIGHT
ARCHITECTS & ENGINEERS
LOS ALAMOS, CALIFORNIA

SFA-FY-2/15

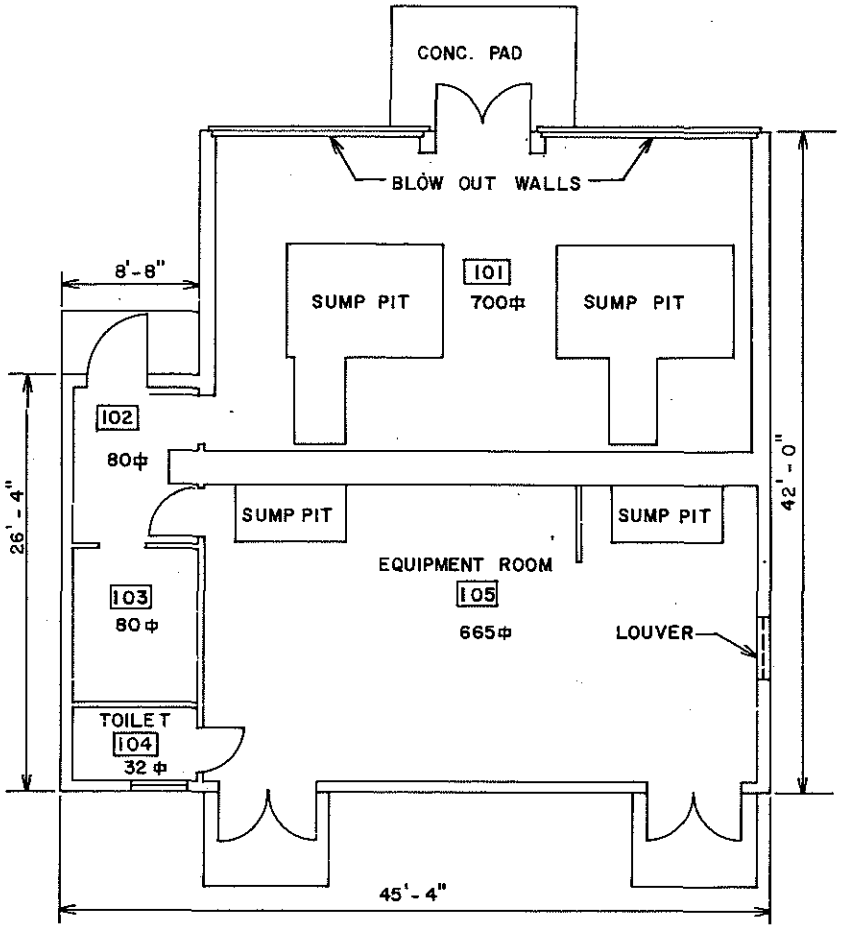
RECORD DRAWING
THIS DRAWING REPRESENTS THE CONSTRUCTION AS BUILT.

LAB-JOB. 232

A.S.L. DWG. NO. ENG-C 14514

Unclassified/NOUO/NI
LANL Class. Group 5/13/65
date

REF. No. A-15



1/8" = 1'-0"

0' 4' 8' 16'

GRAPHIC SCALE

TOTAL $\frac{ft^2.}{1557}$

MF

REV.	DATE	REVISION	BY	CKD.	APP.
4	2-7-84	REVISED TO STATUS OF 2-7-84	H&N		
3	8-26-83	REDRAWN & REVISED TO STATUS OF 8-26-83	H&N		

UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

PROCESS LABORATORY

FLOOR PLAN

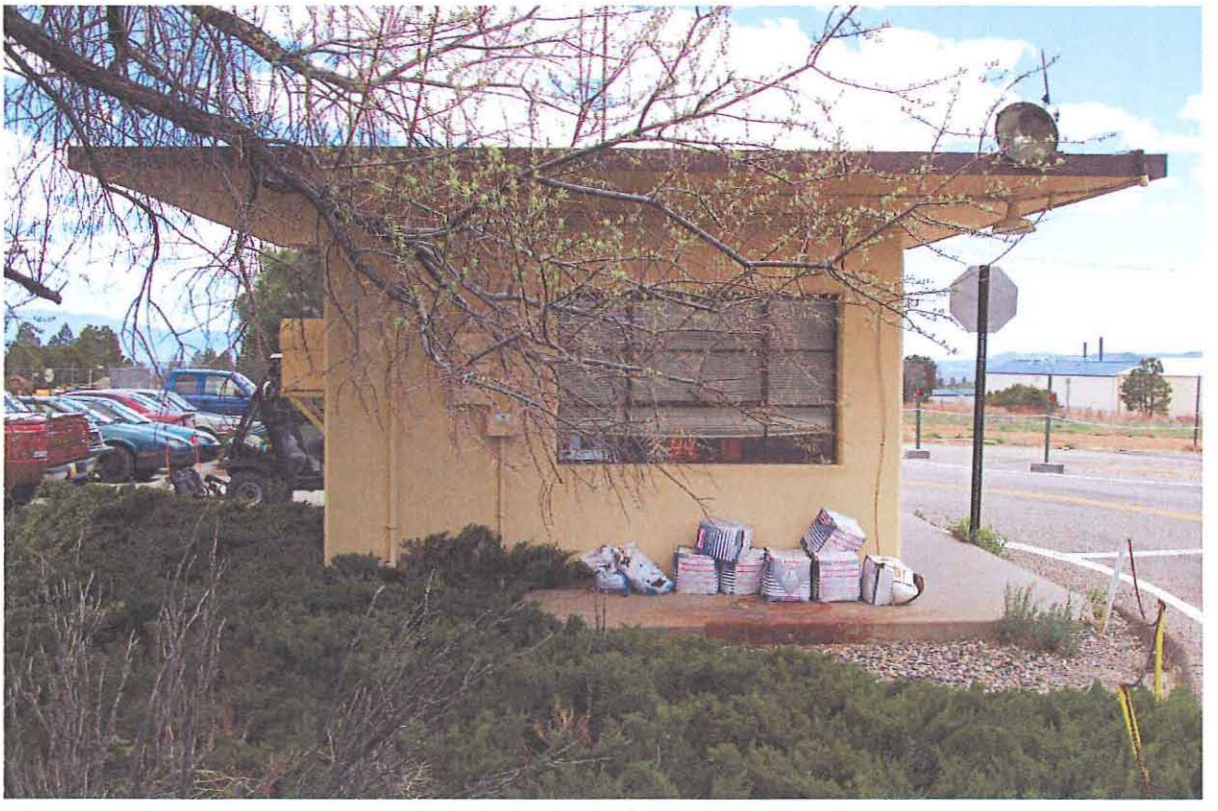
BLDG. AE-43 TA-9

SEC. CLASSIFICATION
CLASS. U
REVIEWED
DATE 9-12-84

SUBMITTED	RECOMMENDED	APPROVED
G. Trujillo	Darwin Poppe	R.W. Reinhardt

DRAWN	CHECKED	DATE	SHEET NO.	DRAWING NO.
G. MARTINEZ	H&N	8-26-83	1 OF 1	ENG-R 2656

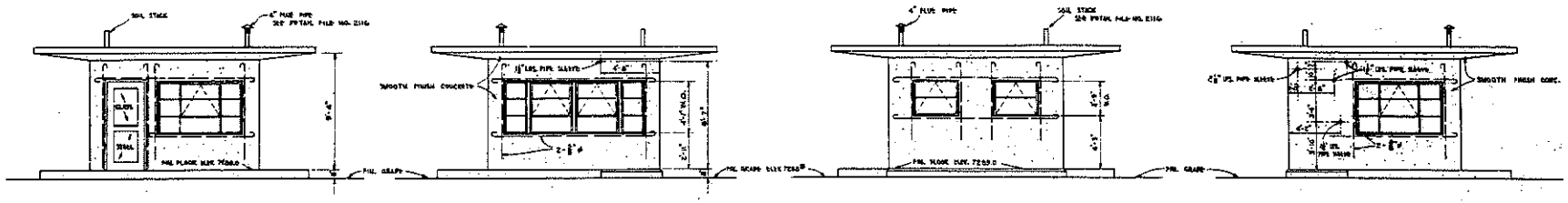
TA-15-46, south side



TA-15-46, west side

TA-15-46, north side

TA-15-46, east side

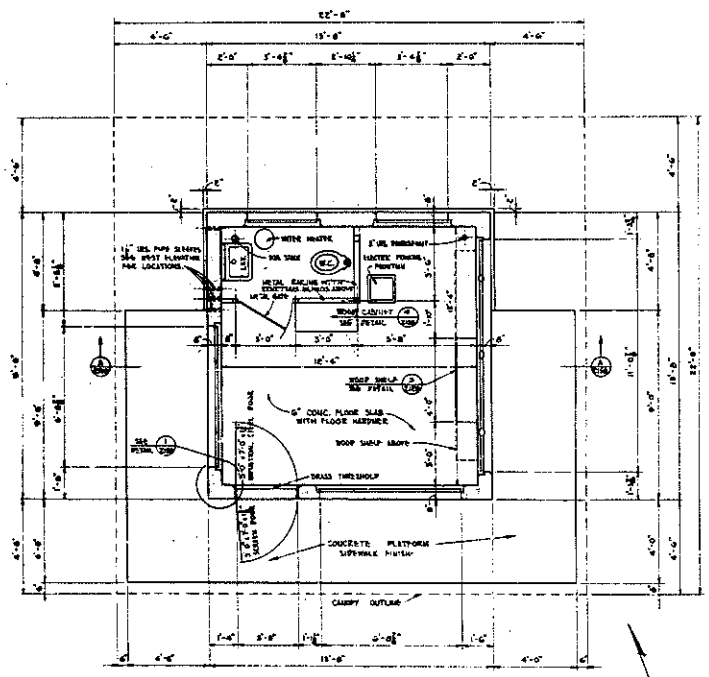


SOUTH ELEVATION
SCALE 1/4" = 1'-0"

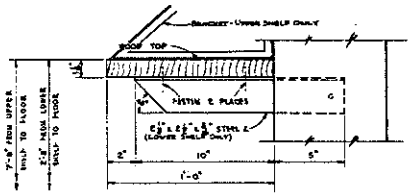
EAST ELEVATION
SCALE 1/4" = 1'-0"

NORTH ELEVATION
SCALE 1/4" = 1'-0"

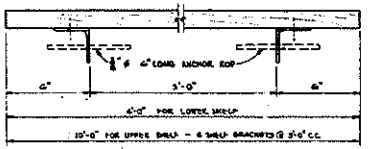
WEST ELEVATION
SCALE 1/4" = 1'-0"

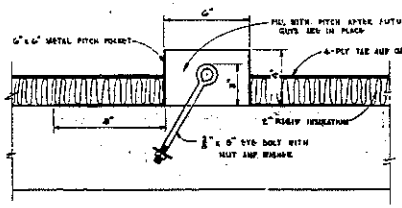


FLOOR PLAN
SCALE 3/8"-1'-0"

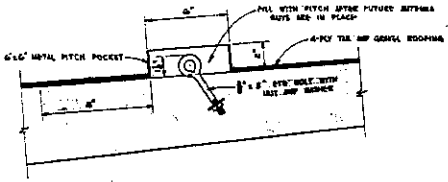


DETAIL
SCALE 3"=1'-0"





DETAIL
SCALE 3"=1'-0"



DETAIL
SCALE 3"=1'-0"

NOTES:

FOR ALL TOILET FIXTURES, PLUMBING, & HEATING DETAILS SEE FILE NO. 2116.

FOR SCREEN LAYOUT " SEE FILE NO. 2215.

FOR ELECTRICAL DETAILS SEE FILE NO. 2155.

FOR ROOF PLAN, SECTION, & DETAILS SEE FILE NO. 2130.

ALL WINDOWS TO BE STEEL ARCHITECTURAL PROJECTED TYPE WITH CORTENE SCREENS (LOUVRE). ALL VENTILATORS TO OPEN OUT. ALL GLASS TO BE CLEAR, FULL. SEE SPECIFICATIONS FOR SCREENING AND HARDWARE.

CAULK ALL SLEEVES WITH LEAD WOOL

PROVIDE ESCALLON COVERS FOR ALL ESCALLONS IN SHUTTER DOORS.

ALL CONCRETE SHALL BE TYPE 'A'

Unclassified/Not UCNI
LANL Class. Group
date

3-20-63	REVISED TITLE		

U. S. ATOMIC ENERGY COMMISSION
SANTA FE OPERATIONS OFFICE
LOS ALAMOS, NEW MEXICO

ARCHITECTURAL
BUILDING NO R-46
FLOOR PLAN AND ELEVATIONS
TA-15 PROJECT "B"

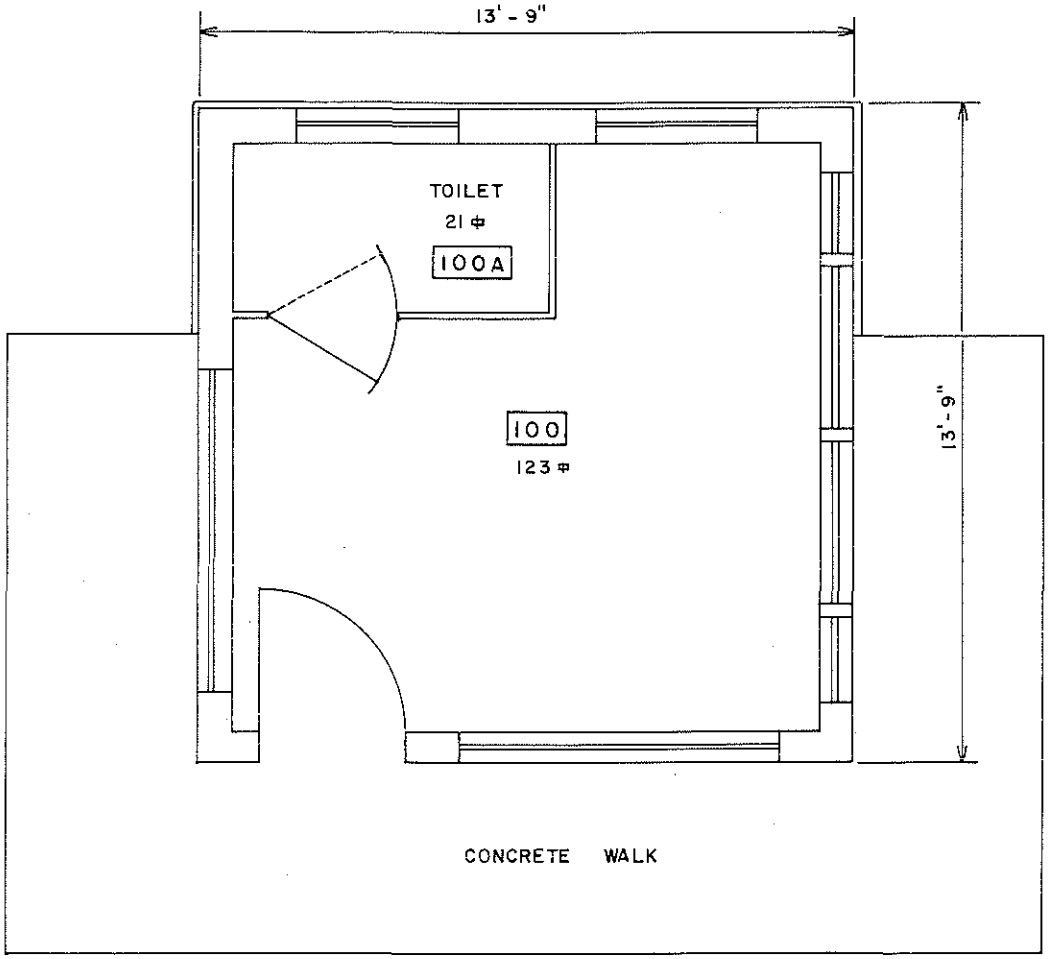
BLACK & VEATCH
CONSULTING ENGINEERS

SFA-FY 37

FILE NO. 2120

AS CONSTRUCTED DRAWING
CONSTRUCTION CONTRACT NO AT(29-1)-914
SUBMITTED
RECOMMENDED
APPROVED

LAB JOB 401 LASL DWG NO ENG-C 12919 FOR OFFICIAL USE ONLY



(3/16"= 1'-0")

0 1' 5' 10'

GRAPHIC SCALE

TOTAL $\frac{ft^2}{144}$

MF

REV.	DATE	REVISION	BY	CKD.	APP.
2	9-2-83	REDRAWN & REVISED TO STATUS OF 9-2-83	H&N		DR

UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

LABORATORY BUILDING
FLOOR PLAN

BLDG. R-46 TA-15

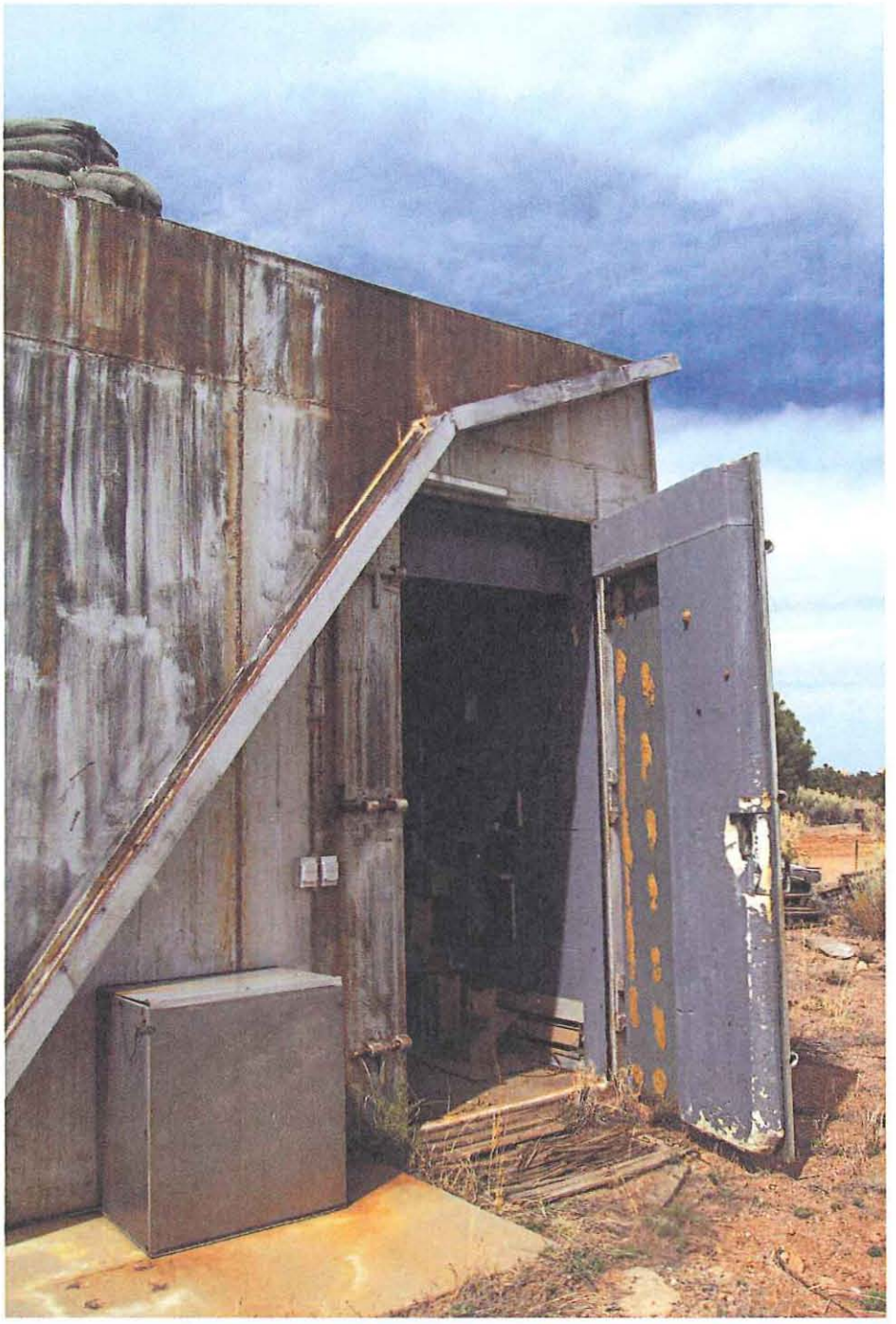
SEC. CLASSIFICATION
CLASS. U
REVIEWER Unclassified
DATE 10-17-83

SUBMITTED	RECOMMENDED	APPROVED
G. Trujillo	Donna Ruge	W. F. Clinton

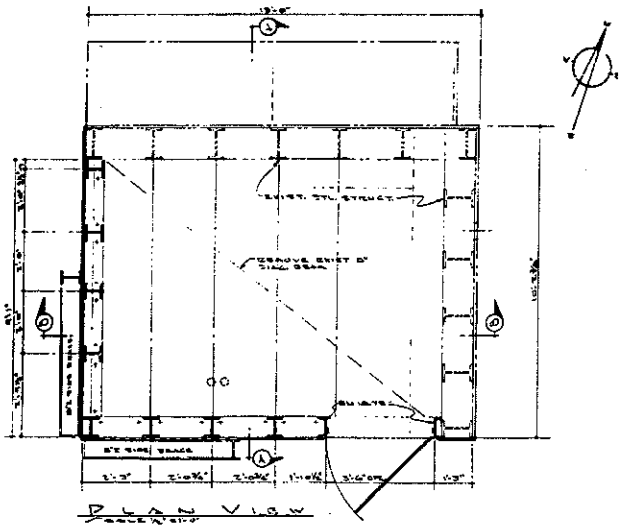
DRAWN	CHECKED	DATE	SHEET NO.	DRAWING NO.
G. MARTINEZ	Humble H&N	9-2-83	1 OF 1	ENG-R2725

TA-15-138, west and south sides

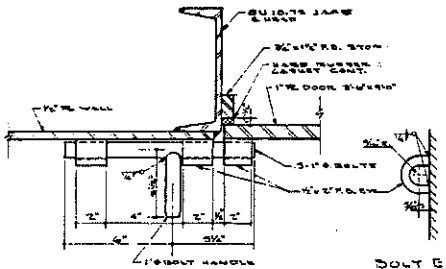
TA-15-138, east and north sides



TA-15-138, door detail

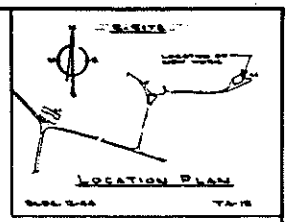


PLAN VIEW



TYP DOOR JAMB & BOLT HEAD SIMILAR

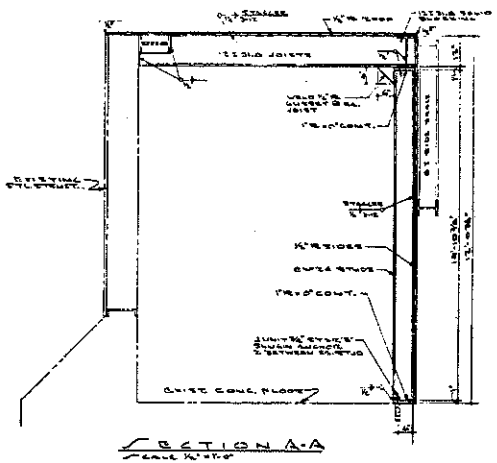
BOLT EYE



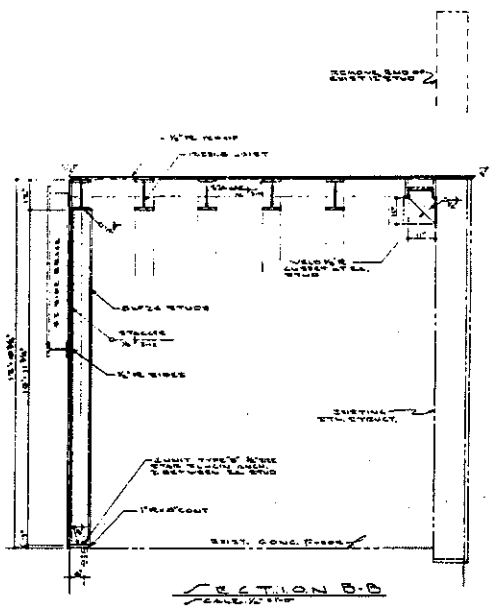
LOCATION PLAN

GENERAL NOTES:

1. ALL DIMENSIONS TO BE VERIFIED ON JOB.
2. ALL NEW STEEL TO BE FURNISHED BY L.A.S.L.
3. ALL WELDED JOINTS IN STEEL TO BE SEALED. SLOTS DUE TO BE ON CENTERLINE UNLESS NOTED.



SECTION A-A



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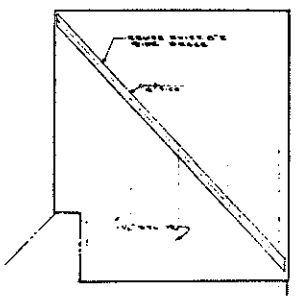

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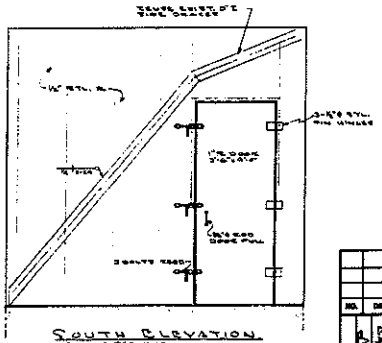


SOUTH ELEVATION

LEGEND

EXIST. CONSTR.

NEW CONSTR.

THIS JOB MUST BE INSPECTED, AND ITS CLEARANCE APPROVED BY [illegible] STALLINGS PHONE 7-6886

NO.	DATE	REVISIONS	BY	CHKD	APPD

AUTHORIZED FOR CONSTRUCTION: HEALTH & SAFETY: FIRE PROT.: MECH. ENGR.: ELEC. ENGR.: PROJECT ENGR.: DIVISION LEADER: GROUP LEADER:

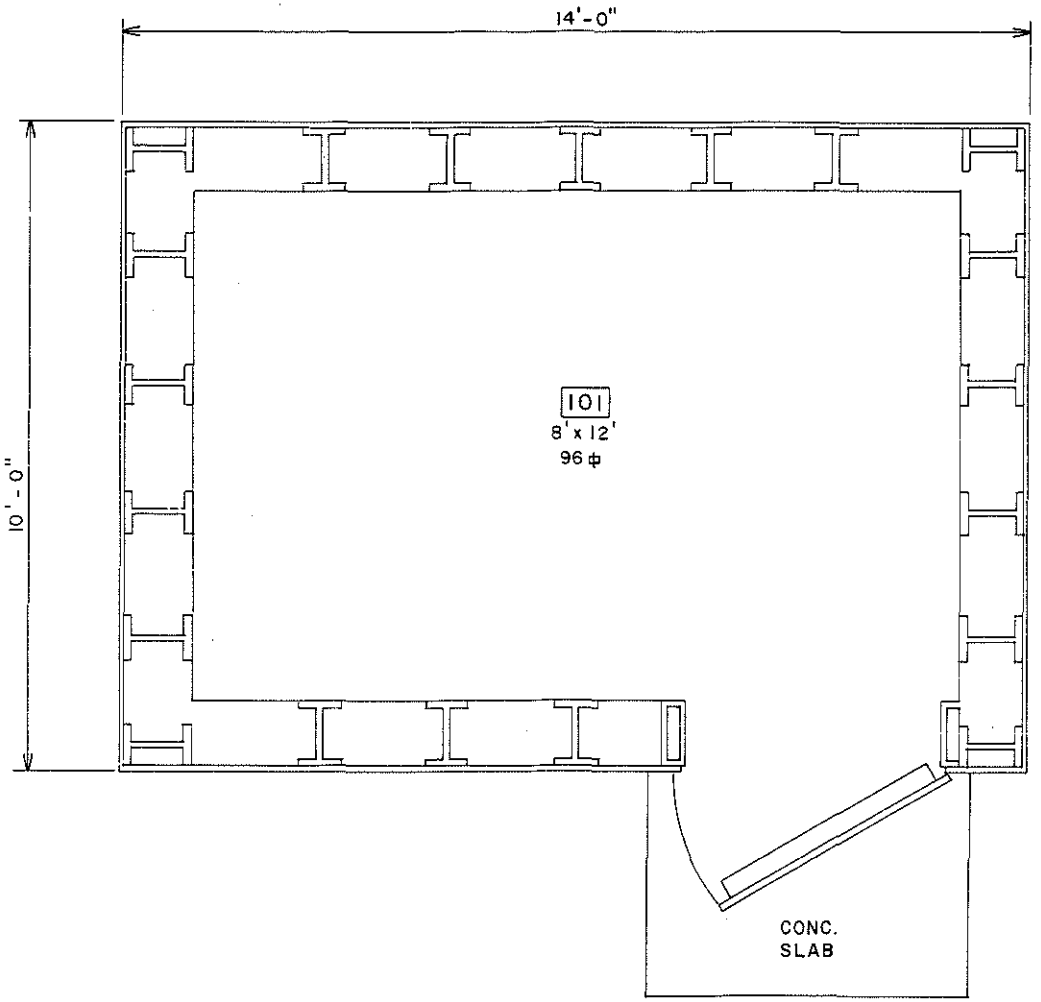
LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

TEMPORARY INSTRUMENT SHELTER
STRUCTURAL

BLDG. TA-18-44 TA-18

DESIGNED	JFZ	RECOMMENDED	APPROVED
DRAWN	JFZ	GROUP LEADER	ENG. DEPT. OFFICE
TRACED		DATE	DRAWING NO.
CHECKED	JFZ	Nov. 2, 1959	ENG-C 18911
SCALE	As Shown	SHEET 1 of 1	

B.A. NO. _____ LAB. JOB NO. 2334



1/2" = 1'-0"

0 1 2 3 4 5

GRAPHIC SCALE

TOTAL $\frac{ft^2}{96}$

MF

REV.	DATE	REVISION	BY	CKD.	APP.
1	9-2-83	REDRAWN & REVISED TO STATUS OF 9-2-83	H&N		DB

UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

PULSER SHELTER BUILDING
FLOOR PLAN

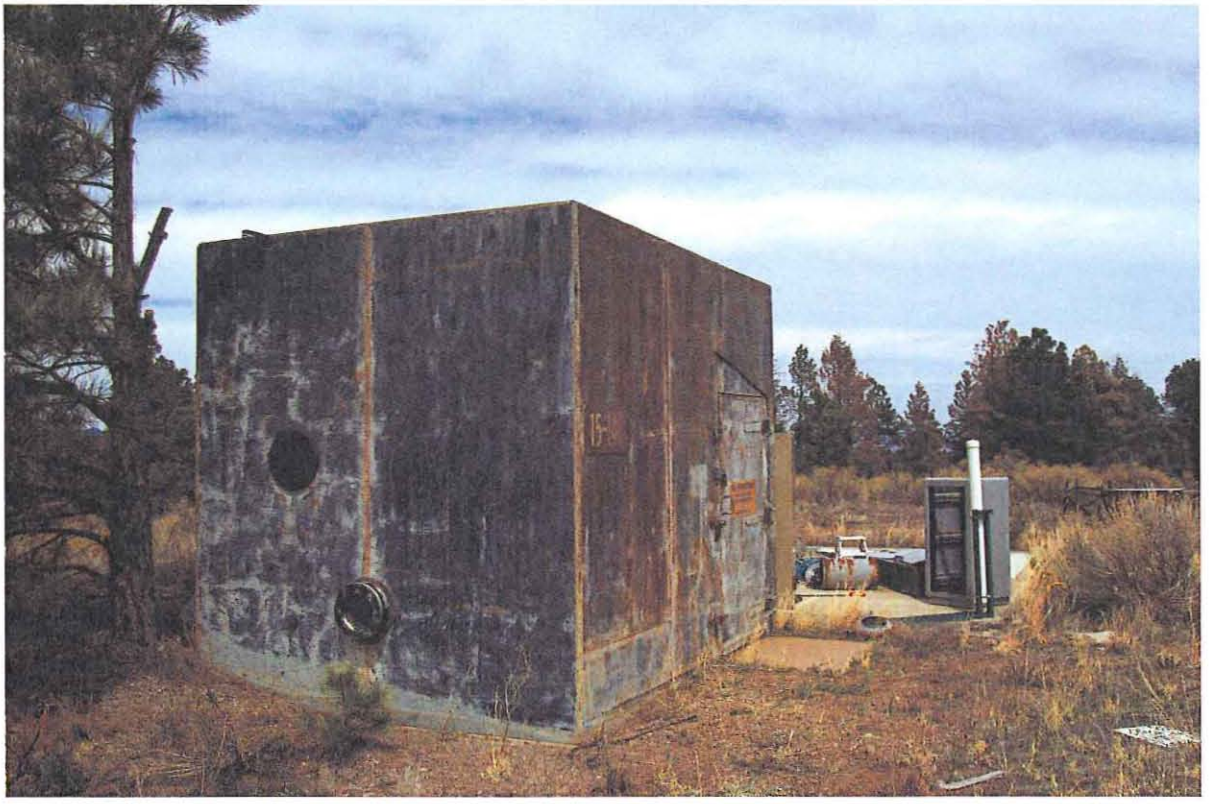
BLDG. R-138 TA-15

SEC. CLASSIFICATION
CLASS. U
REVIEWER Madrid
DATE 10-17-83

SUBMITTED	RECOMMENDED	APPROVED
G. Trujillo	Dan Roy	

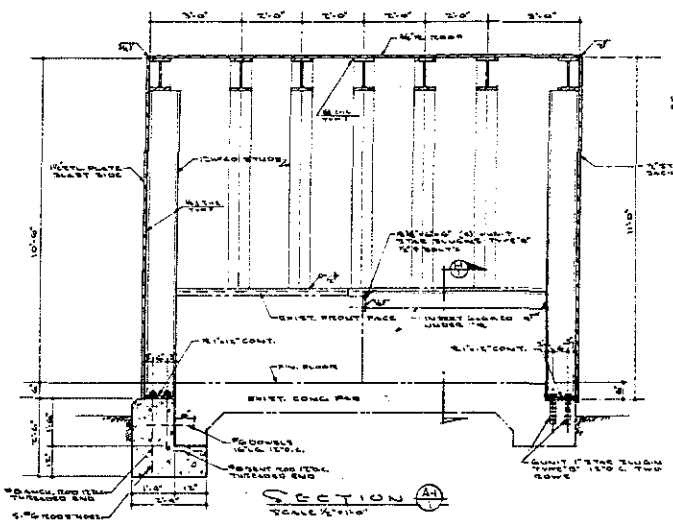
DRAWN	CHECKED	DATE	SHEET NO.	DRAWING NO.
G. MARTINEZ	H&N	9-2-83	1 OF 1	ENG-R5345

11-23-83



TA-15-141, west and south sides

TA-15-141, east and north sides



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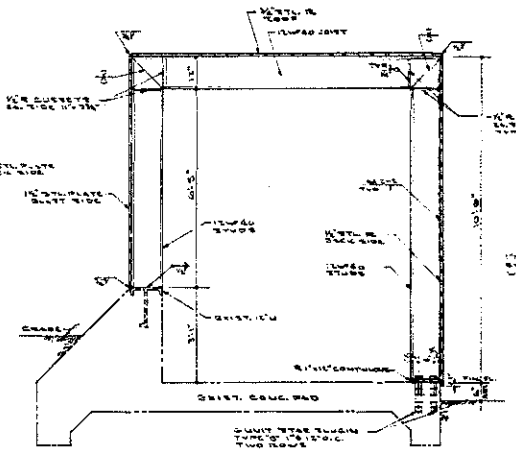

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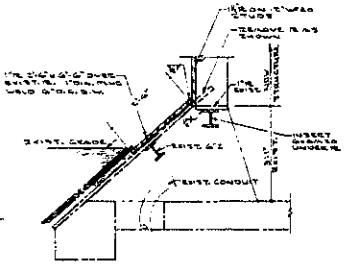
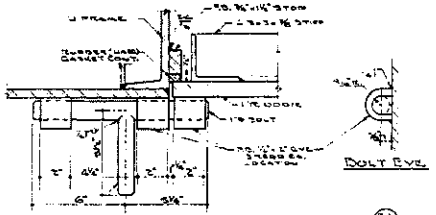
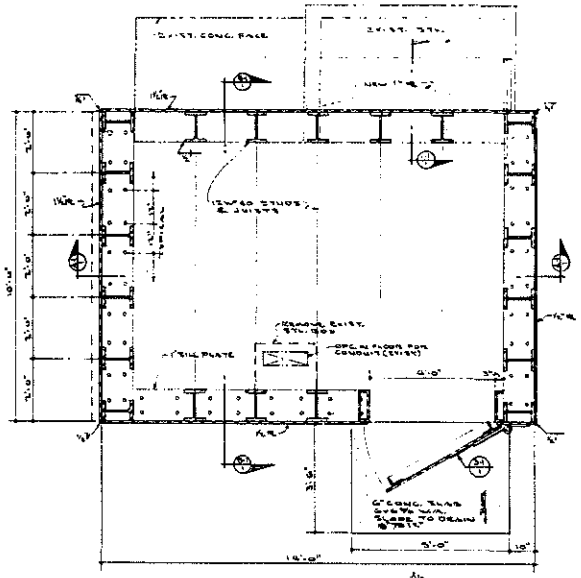


DETAIL

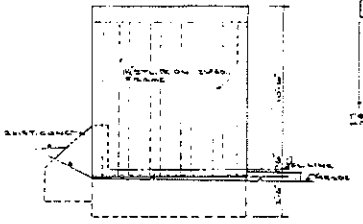


DOLT DTL.

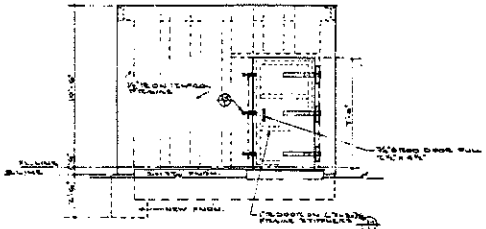
FRONT - TYP DOOR BOLT DET



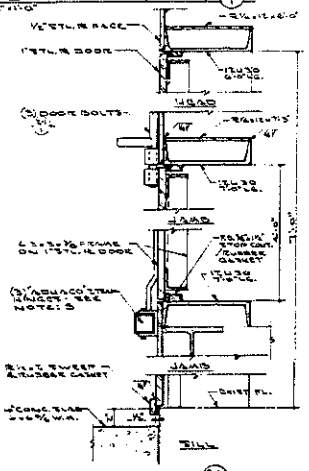
PLAN VIEW



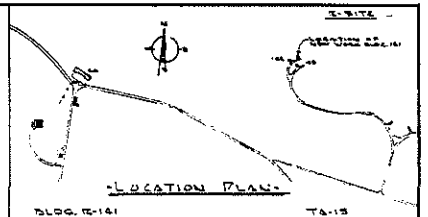
WEST ELEVATION



SOUTH ELEVATION



DETAIL



LOCATION PLAN

BLDG. R-141 TA-15

GENERAL NOTES:

1. CONCRETE TO BE CLASS "A" MIN. COMPRESSIVE STRENGTH OF 3,000 P.S.I. @ 28 DAYS.
2. ALL DIMENSIONS OF EXIST. STRUCTURE TO BE VERIFIED ON THE JOB.
3. ALL WELDED JOINTS IN STL. PLATE TO BE SOLID BUTT AND TO BE AT SUPPORTS WHERE POSSIBLE.
4. PAINT EXTERIOR OF BLDG. T-COATS OR STEEL GREY TO MATCH EXIST.
5. SAFETY DOOR & HARDWARE TO BE CONSTRUCTED AS DETAILED FOR A 6'-11" STL. R. DOOR - TO WITHSTAND A BLAST OVER PRESSURE OF 15 P.S.I. MAX. FOR A DURATION OF 6 MILLISECONDS & A REBOUND FORCE OF 50% OF BLAST FORCE. "ALUMACO" STEAM HINGES AT APCO. BY "FINEGAN DOOR DIVISION" RYERSON PRODUCTS CO. CHICAGO, ILLINOIS, OR APPROVED EQUAL.

THIS JOB MUST BE INSPECTED AND ANY CHANGES APPROVED BY ENG-4 OVERTIME PHONE 7-6666

NO.	DATE	REVISIONS	BY	CHKD	PROJ. LDR.	ENG. G. L.

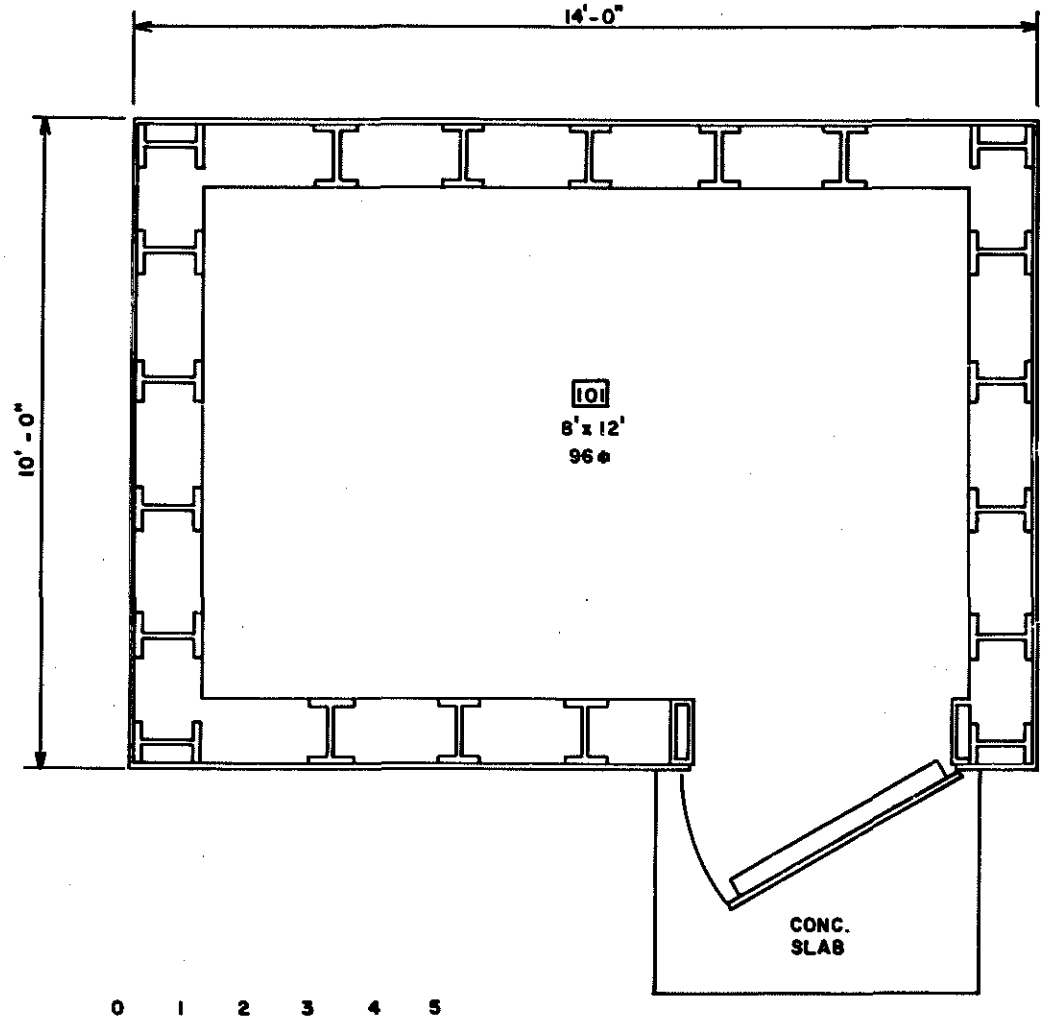
AUTHORIZED FOR HEALTH, SAFETY, FIRE PROT., REC. — CHECKED BY J. SMALL

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

PULSER SHELTER
LOCATION PLAN & STRUCT DETS.
BLDG. R-141 TA-15

CHECKED	J.F.E.	RECOMMENDED GROUP LEADER	APPROVED ENG. DEPT. OFFICE
PROJ. ENG.	J.F.E.	DATE	DRAWING NO.
DESIGNER	J.F.E.	MARCH 28, 1961	ENG-C 18533
DRAWN	TECHNICIAN	SHEET	
SCALE	AS SHOWN	1 OF 1	

LAS JOB NO. 2500-113



0 1 2 3 4 5

1/2" = 1'-0"

GRAPHIC SCALE

TOTAL $\frac{ft^2}{96}$

REV.	DATE	REVISION	BY	CKD.	APR.
1	9-1-83	REDRAWN & REVISED TO STATUS OF 9-1-83	HBM		

UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

PULSER SHELTER BLDG.
PLAN

BLDG. R-141 TA-15

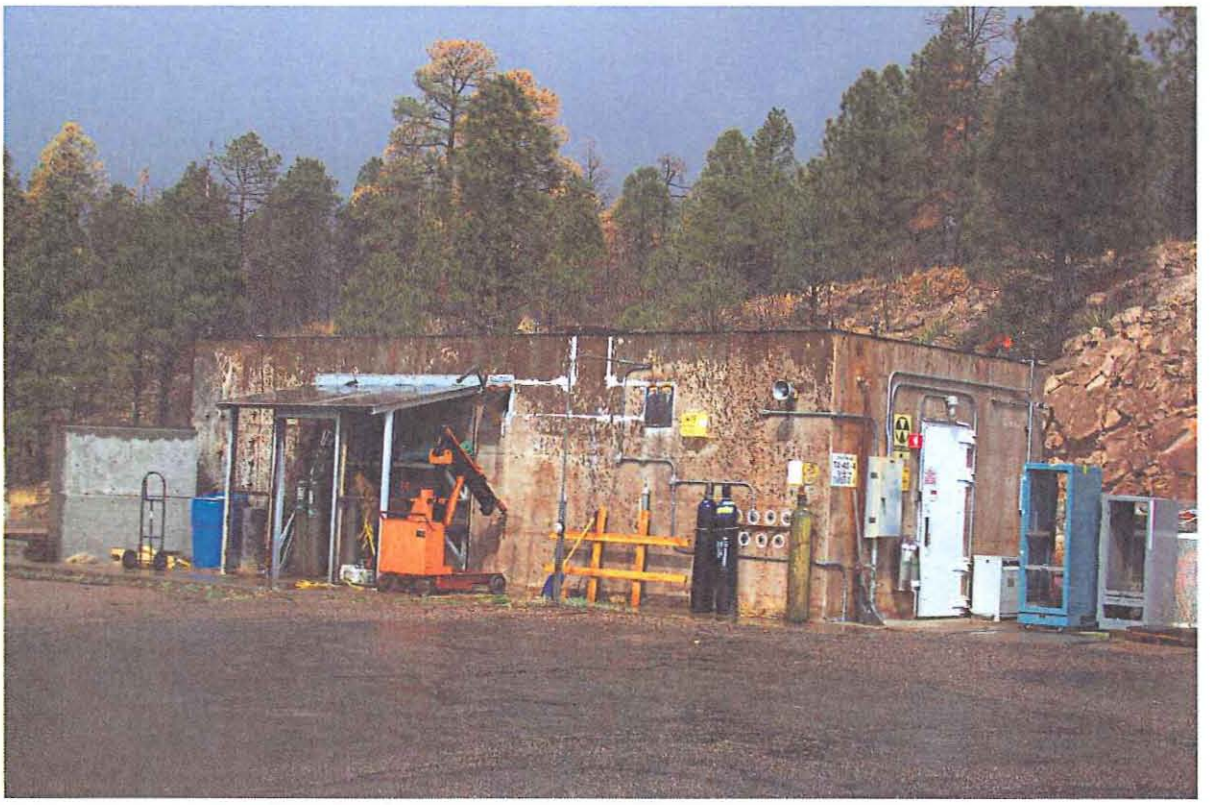
SEC. CLASSIFICATION: CLASS. U

REVIEWER

DATE 10-17-83

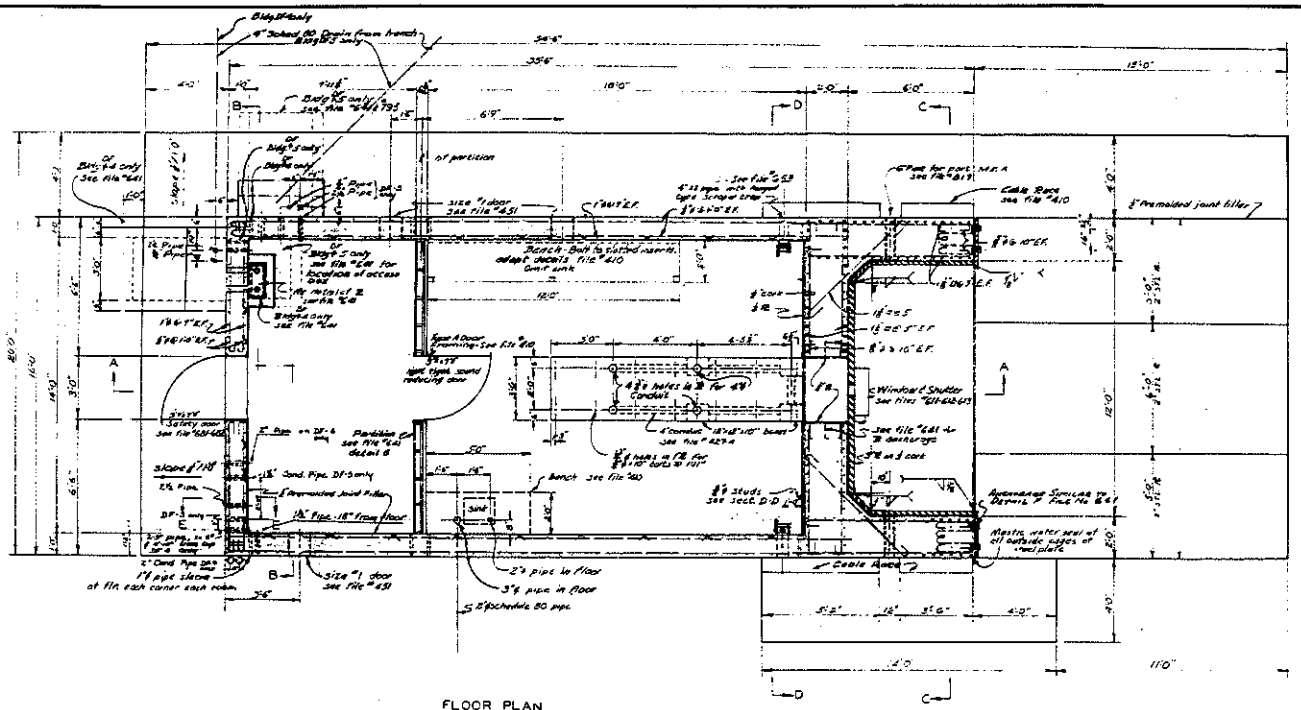
SUBMITTED	RECOMMENDED	APPROVED
V. Trujillo	Donna Rapp	W. T. Love

DRAWN	CHECKED	DATE	SHEET NO.	DRAWING NO.
G. MARTINEZ	HBM	9-1-83	1 of 1	ENG-R2815



TA-40-4, southeast and northeast sides

TA-40-4, southwest side



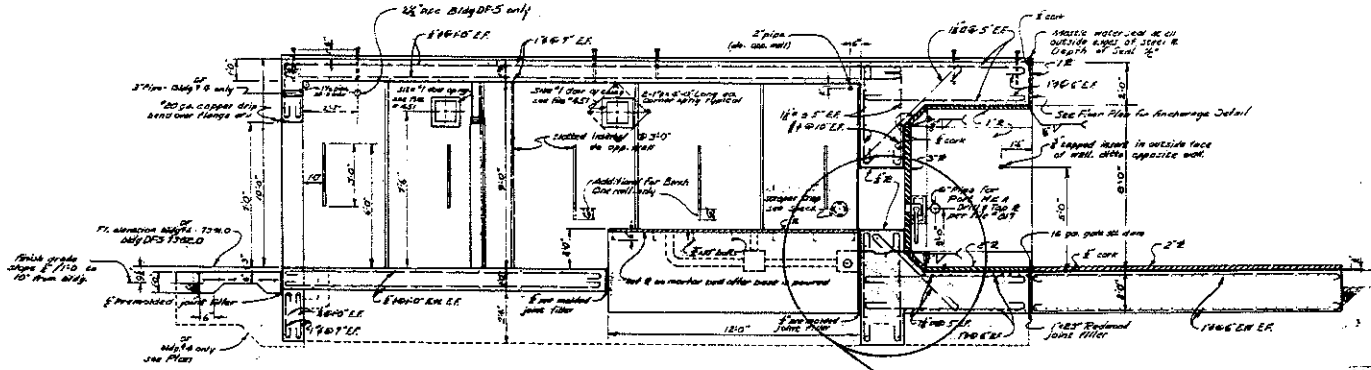
FLOOR PLAN
SCALE 1/4"=1'-0"
See File "418 for Bldg. Orientations

Reference Drawings

Plot Plan: General Layout (west)	File "414
Heating & Plumbing	File "385
Safety Door Details	File "609-688
Sound Reducing Door Details	File "410
Window & Shutter Details	File "611-612-613
Bench Details	File "410
Cable Race Details	File "410
Electrical Layout	File "427
Antenna Support & Lightning Rod Installation	File "560
Structural Layout Bldg. 1 of 5 sht 2 of 3	File "640-641
Ventilation Opening Details	File "451
Details Pipe Part Mk. "A"	File "817
Water, gas, air, & drain layout	File "687

GENERAL NOTES

1. All concrete shall develop a strength of 3000 p.s.i. at 28 days.
2. Use 1/2 lb. cement dispenser with each sack of cement used.
3. Reinforcement shall be intermediate grade deformed steel and all bars shall be bonded.
4. All steel plates, nuts, and bolts shall conform to specification Sec VIII-09
5. Interior wall forms shall be of plywood and walls shall be finished smooth. Exterior walls may be left rough. Steel plate liners on walls, ceiling, and fillets shall be cast in place as part of the forms.
6. All interior walls, ceilings, and exposed metal shall be given three coats of lead and oil paint.
7. Exterior walls and roof shall be coated with metallic waterproofing.
8. Bond reinforcing steel by welding at 5'0" intervals in each direction. Bond all other metal to reinforcing steel by direct weld or suitable metal strap.
9. Connect reinforcement to grounding system with #1/0 bare copper cable.
10. Floors shall be given a smooth integral cement finish.
11. All cork shall be bituminous impregnated.
12. All foundations shall be carried to solid bearing with a minimum excavation of 12" into rock (Tuff).
13. See applicable section of General Specifications for detailed information
14. Foundation walls below fin. grade may be poured without forming provided trenches are cut to sizes shown.



SECTION A-A
SCALE 1/4"=1'-0"

See Detail F' File No 641 For Anchorage or Plate

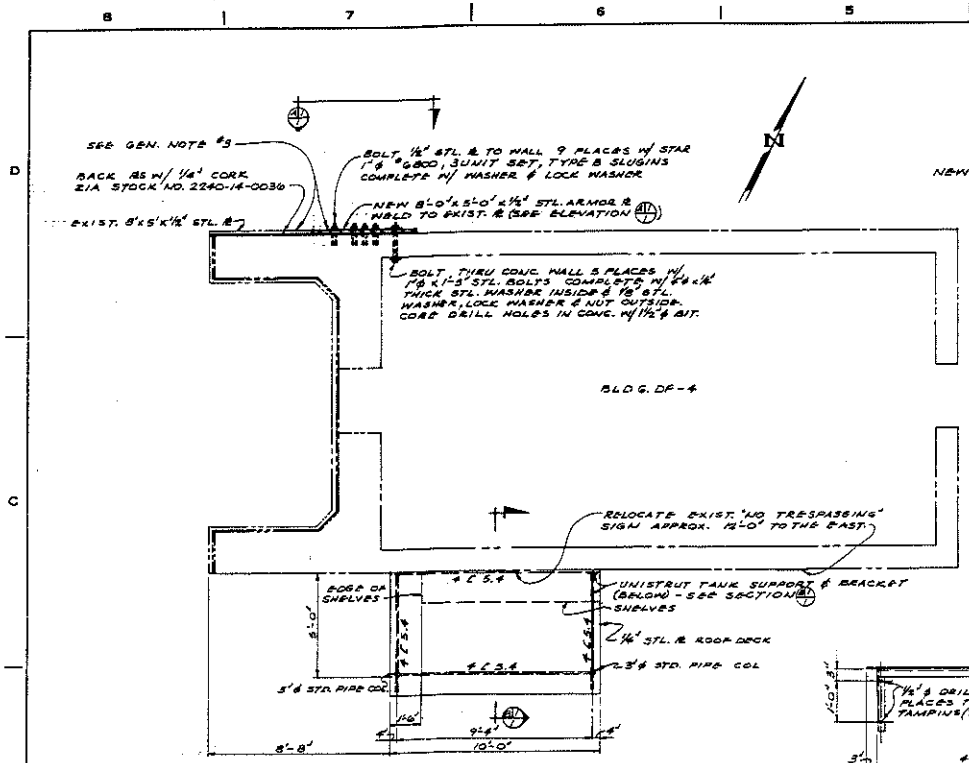
AS CONSTRUCTED
AT-(26-1)-710

AUTHORIZED FOR
HEALTH
FS. STF
DEPT. OF TPT.
GMX

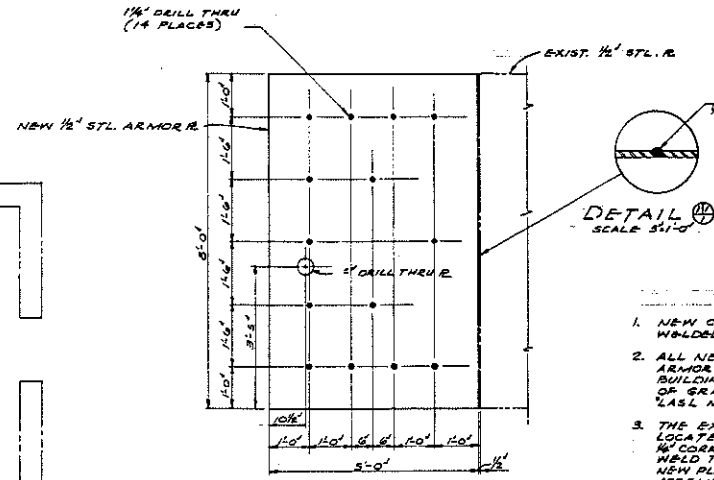
AS CONSTRUCTED
SCALE 1/4"=1'-0"
See also File "660 (641

	STRUCTURAL LAYOUT BLDG. OF 4 & 5 FLOOR PLAN & LONGITUDINAL SECTION	FILE NO. 639
J	LOS ALAMOS TA-40 NEW MEXICO	
	BLACK & VEATCH — CONSULTING ENGINEERS	DATE 5-7-49
		SHEET 30 OF 132

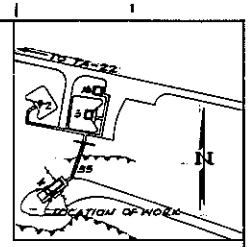
CAB JOB 201 LASL DWG. NO. E-12199 SPA-JK-1/30



PLAN - BLDG. 4
SCALE 3/16"=1'-0"



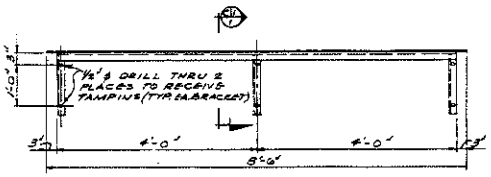
ELEVATION
SCALE 3/4"=1'-0"



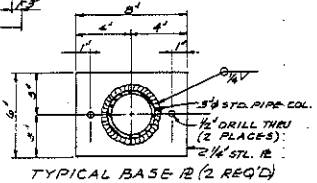
BLDG. DF-4 AREA TA-40
LOCATION PLAN

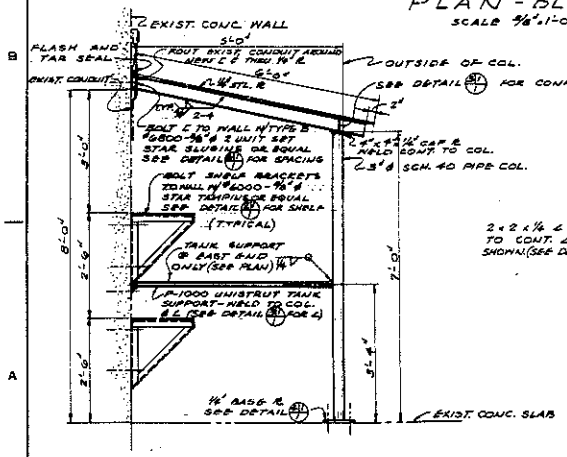
GENERAL NOTES

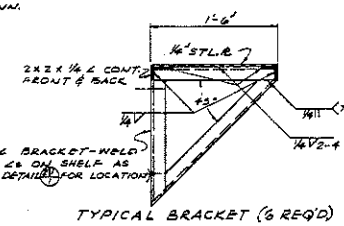
1. NEW CANOPY STRUCTURE SHALL HAVE ALL WELDED CONNECTIONS.
2. ALL NEW STEEL SURFACES (EXCLUDING ARMOR PLATE AT NORTH WEST CORNER OF BUILDING) SHALL BE PAINTED WITH ONE COAT OF GRAY TOTRUST #51. NUMBER REFERS TO "LASL MANUAL OF PAINT AND SIGN STANDARDS."
3. THE EXISTING 8'x5'x1/2" STEEL PLATE IS LOCATED ADJACENT TO THE BUILDING. INSTALL 1/4" CORK BACKING ON THE BUILDING AS SHOWN. WELD THE EXISTING 1/2" STEEL PLATE TO THE NEW PLATE. INSTALL THE WELDED PLATE ASSEMBLY ON THE WALL OF THE BUILDING USING EXISTING ANCHOR BOLTS AND NEW ANCHOR BOLTS AS SHOWN.

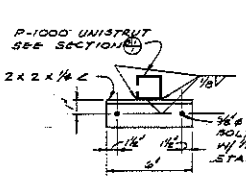


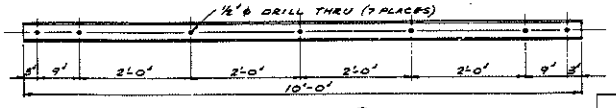
TYPICAL SHELF-DETAIL
SCALE - NONE

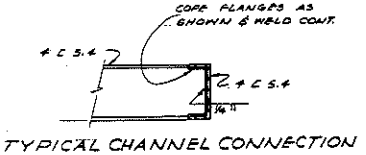












LEGEND
NEW
EXISTING
CONCEALED

THIS JOB WORK BY [illegible] AND ALL [illegible] IS LOCATED BY STALLINGS [illegible] 7-8411

AUTHORIZED FOR
HEALTH N.A.
SAFETY C.H.B.
FIRE PROT. N.A.
ENG. N.A.
GMX-7 ADMIN
GMX-20 [illegible]

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

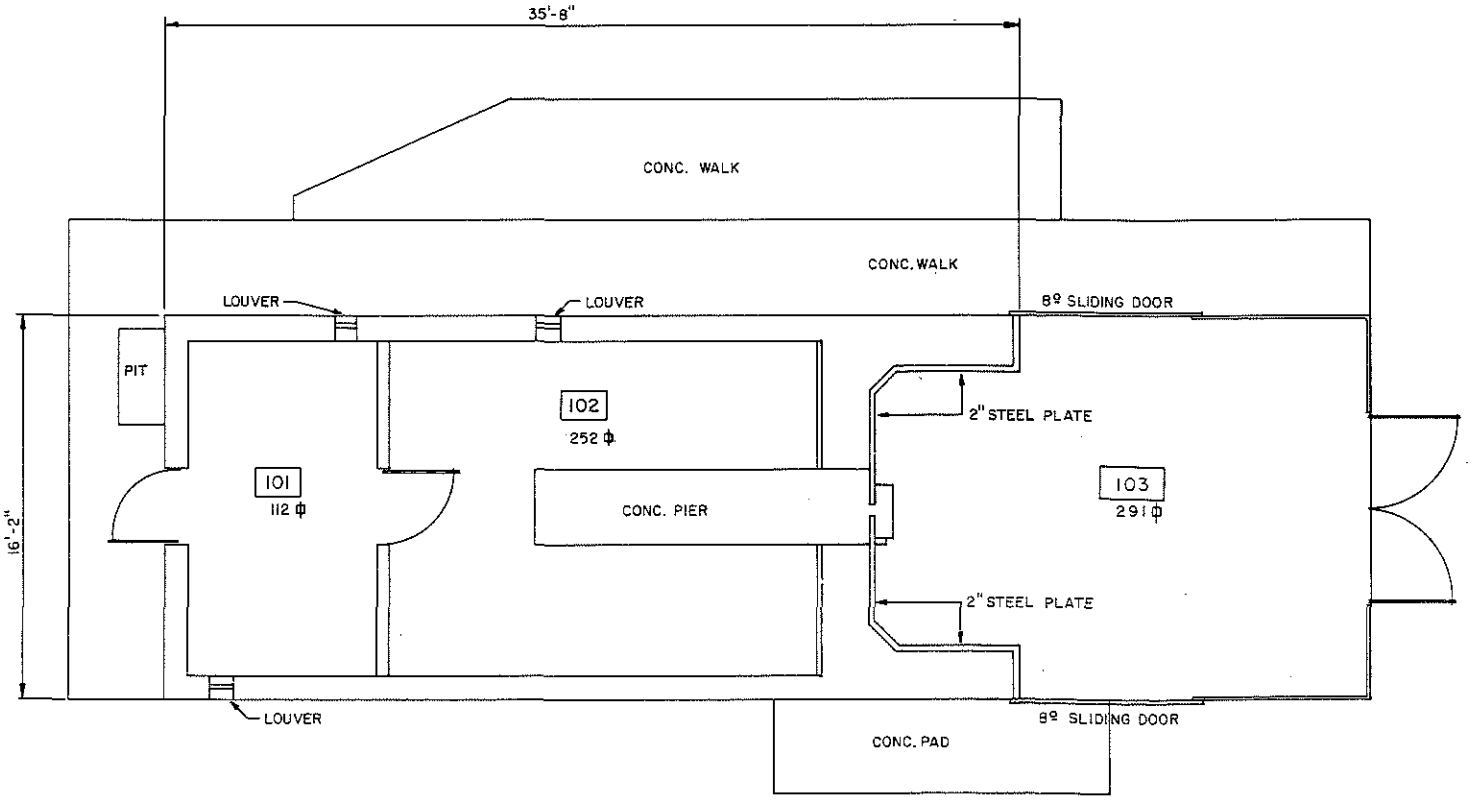
FIRING CHAMBER MODIFICATIONS

BLDG. DF-4 TA-40

CHECKED J. Elliott	RECOMMENDED [illegible] GROUP LEADER	APPROVED [illegible] ENG. DEPT. SECTION	
DESIGNED	DATE		
DRAWN V.T.W.	APR. 2 [illegible]	SHEET 1 OF 1	ENG-C 32402
SCALE NOTED			
C.A. NO.	B. A. NO.		L. J. NO. 2402-40

REVISIONS

REC'D [illegible] LOGGED [illegible] TO VAULT [illegible]



3/16"=1'-0"

0' 5' 10'

GRAPHIC SCALE

BLDG. TOTAL 655 ϕ

REV.	DATE	REVISION	BY	CKD.	APP.
3	2-2-84	REVISED TO STATUS OF 2-2-84	H&N		DB
2	9-16-83	REDRAWN & REVISED TO STATUS OF 9-16-83	H&N	H&N	DB

UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

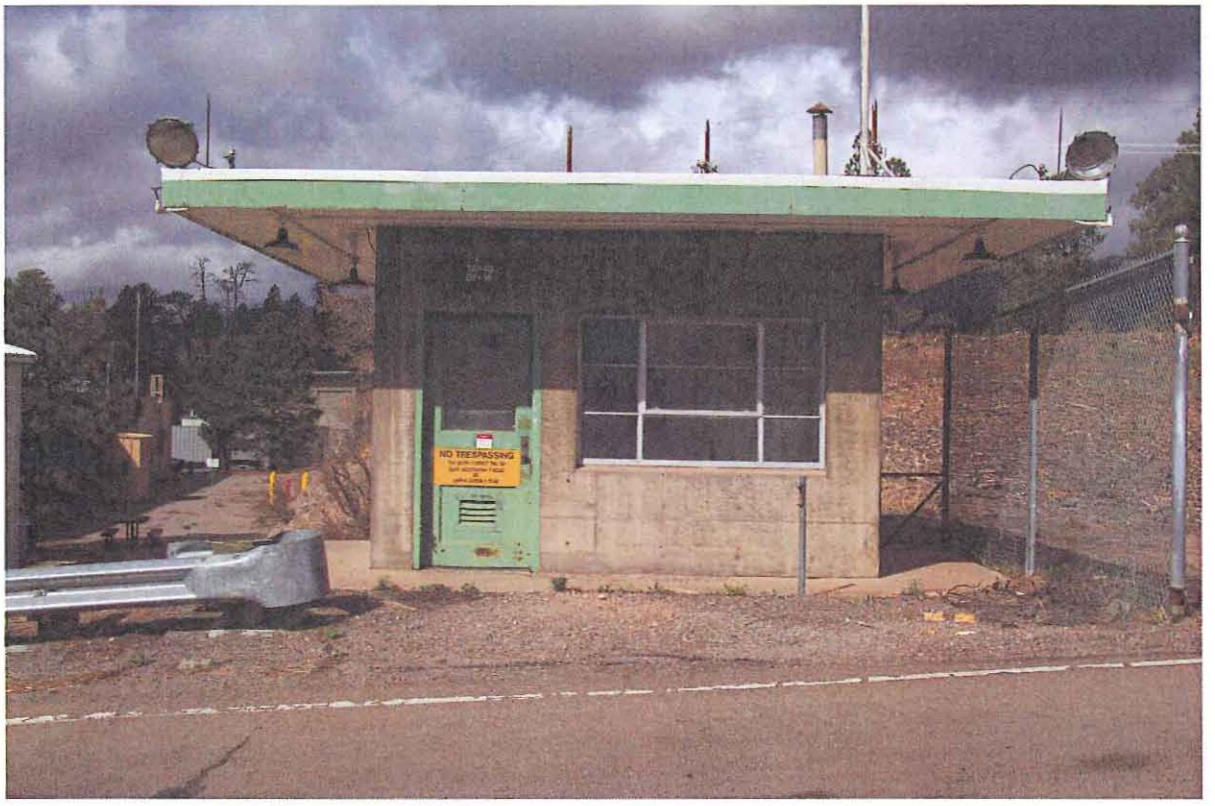
FIRING POINT
FLOOR PLAN

SEC. CLASSIFICATION: CLASS. U
REVIEWER: Shaeffer
DATE: 5-6-84

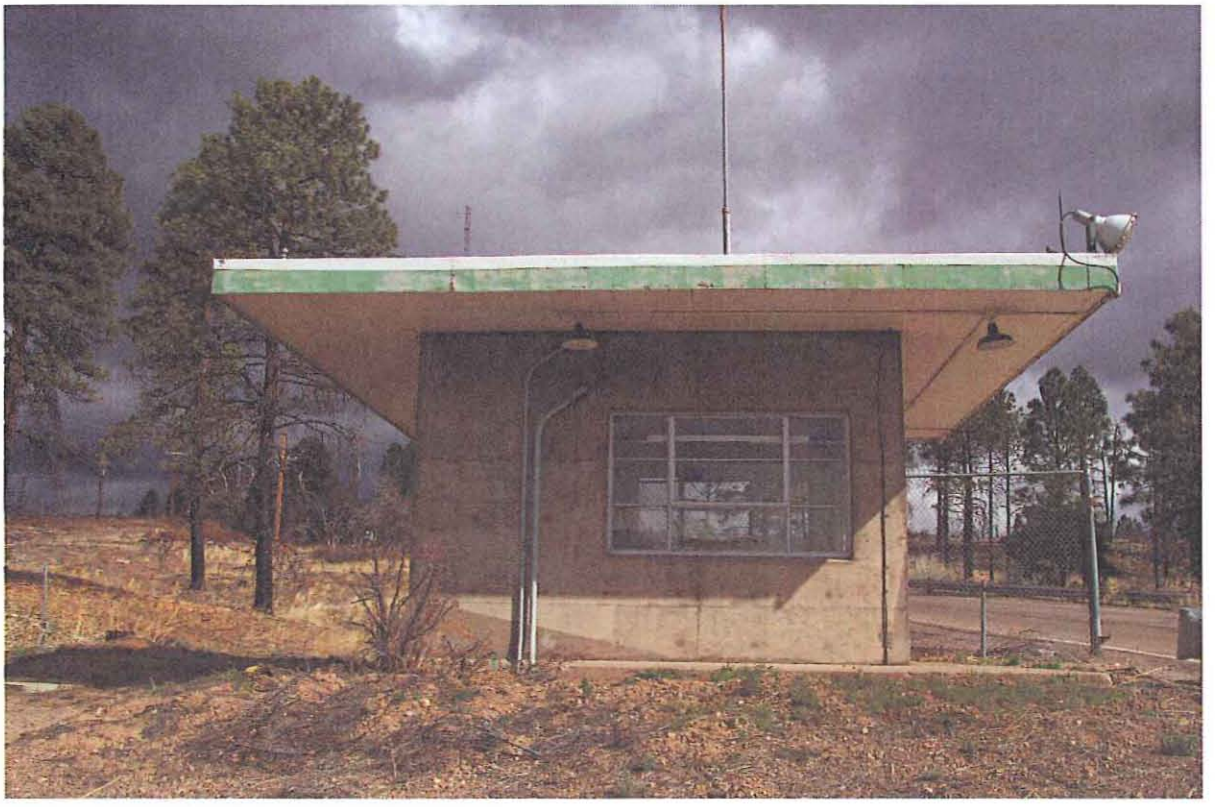
BLDG. DF-4 TA-40

SUBMITTED	RECOMMENDED	APPROVED
E Trujillo	Dennis Knox	W T Sumner

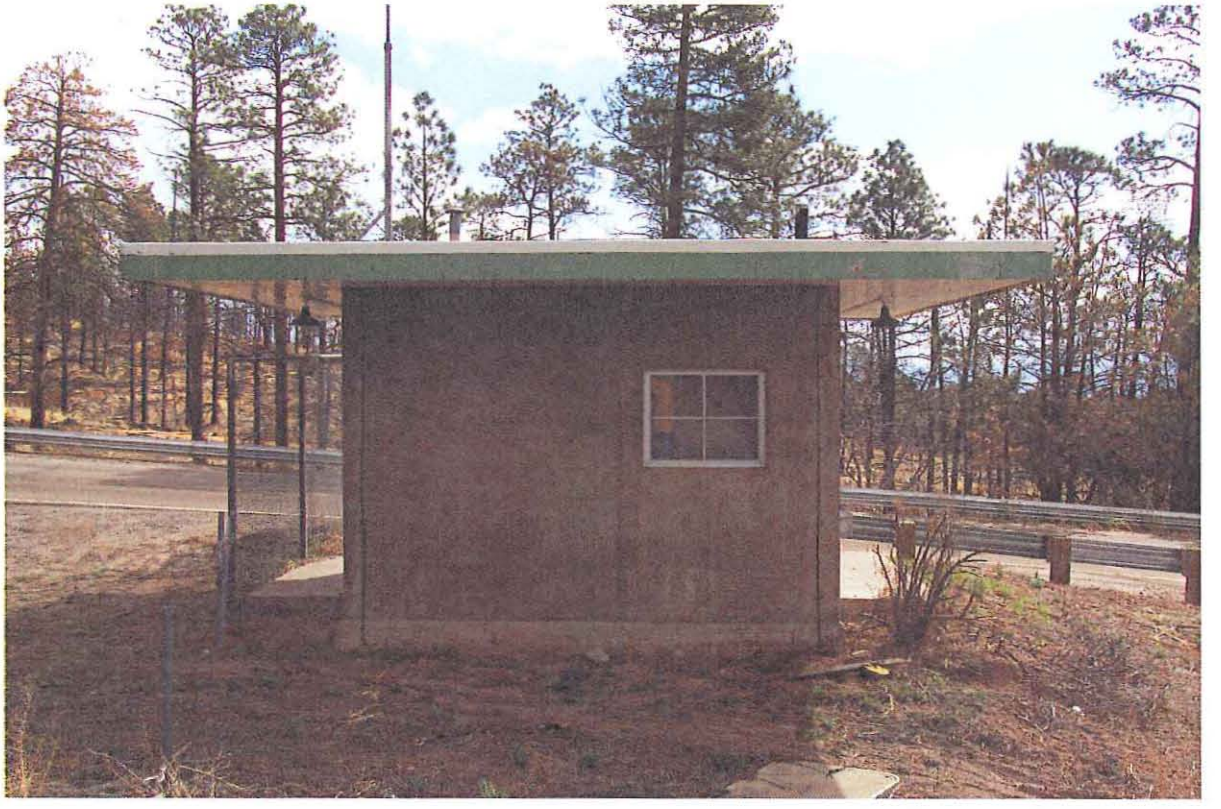
DRAWN	CHECKED	DATE	SHEET NO.	DRAWING NO.
H&N	Humble H&N	9-16-83	1 OF 1	ENG-R 3119



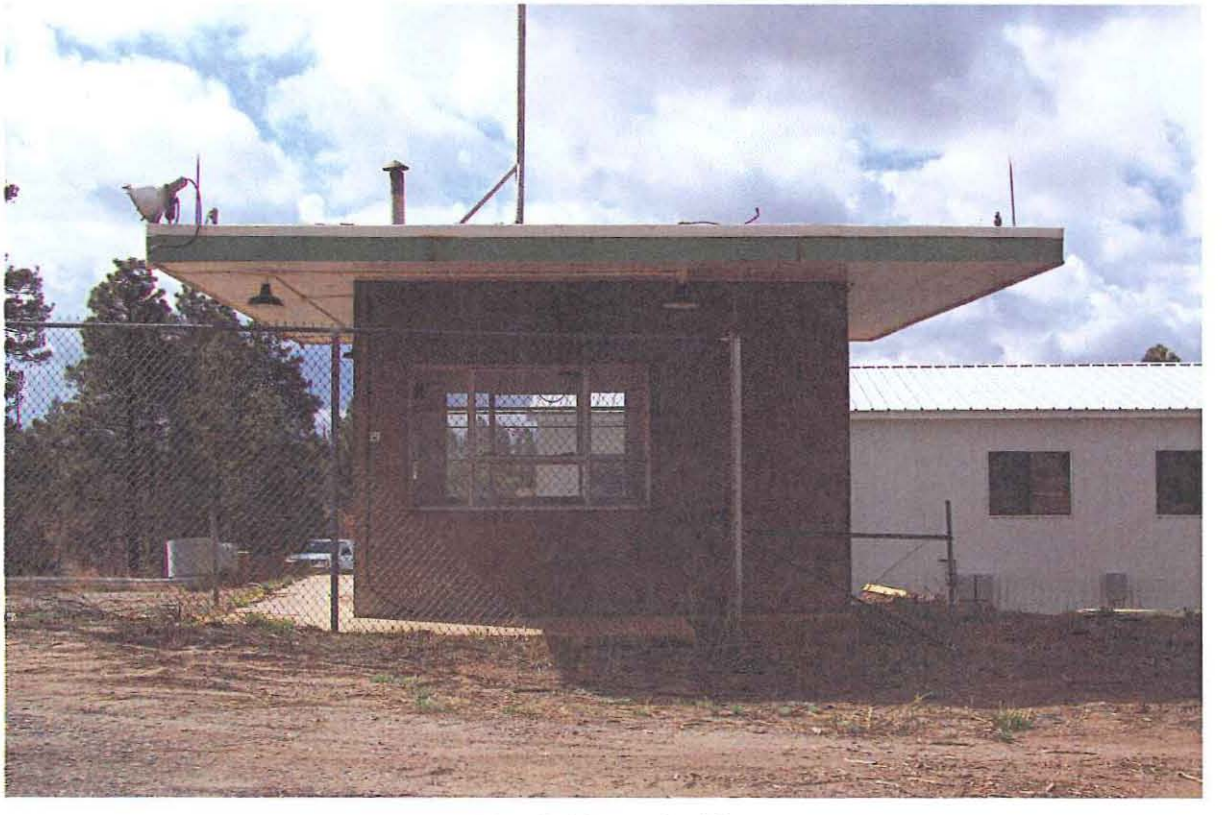
TA-40-19, east side



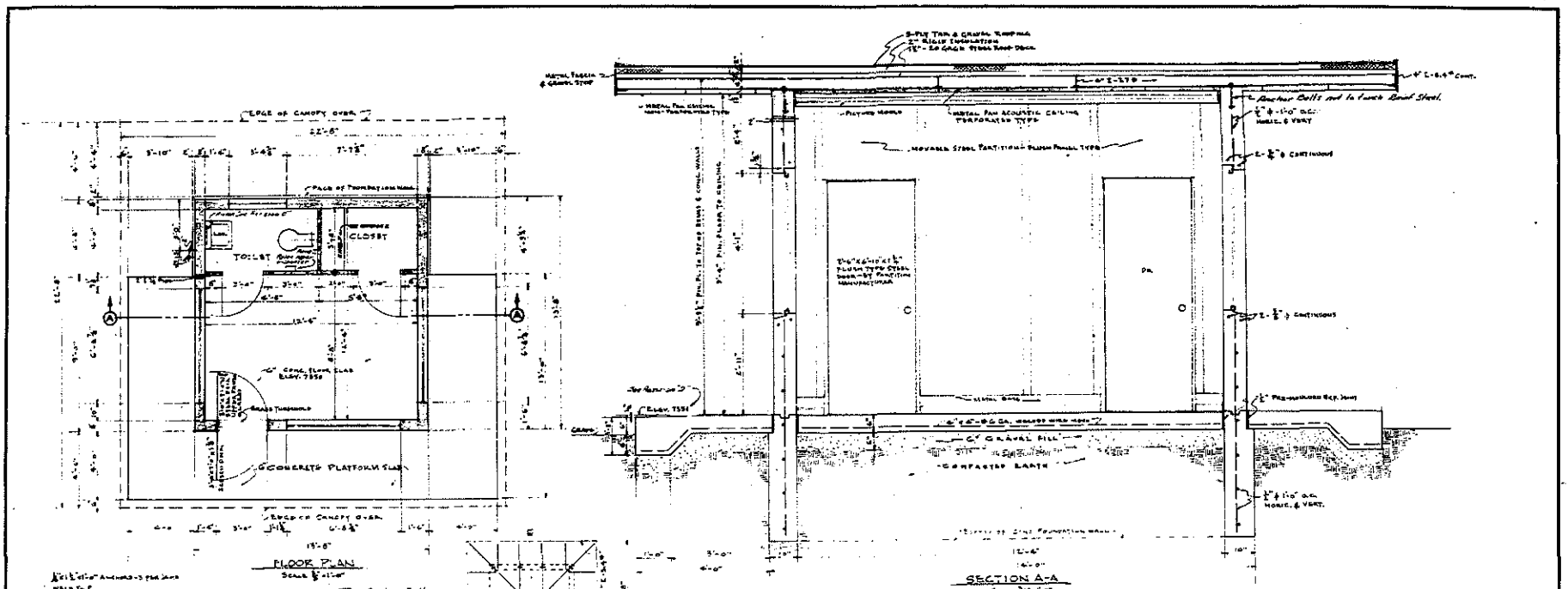
TA-40-19, south side



TA-40-19, west side



TA-40-19, north side



REFERENCE DWGS.	
FILE NO.	TITLE
456 -	GENERAL LAYOUT (FOR LOCATION)
572 -	PLUMBING & HEATING
736 -	ELECTRICAL LAYOUT
648 -	WATER & GAS SERVICE LAYOUT
806 -	GRADES

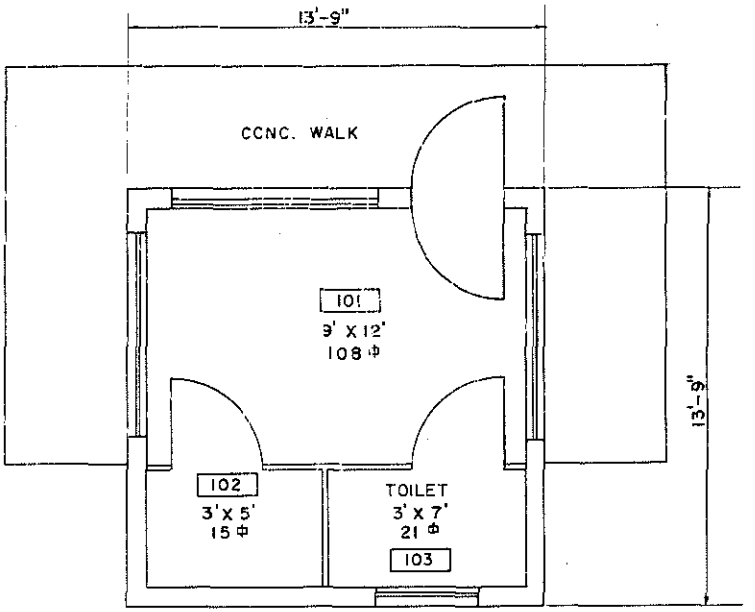
AS CONSTRUCTED AT-(29-1)-710

AUTHORIZED FOR
STRUCTURE
SAFETY
TANK TEST
TANK TREATMENT
FABRICATING
SPECIALTY
REPT. OF MDL.
ACT. CHMX.

ARCHITECTURAL LAYOUT - BLDG. DF-19 PLAN & DETAILS		FILE NO. 772
LOS ALAMOS TA-40 NEW MEXICO		DRAWN W.B.C. CHECKED J.S.P. APPROVED R.E.E.
BLACK & VEATCH — CONSULTING ENGINEERS		DATE 3-11-49
J.S.Parker 3-11-49	W.A.Smith	SHEET 51 OF 132

LAB JOB 201 | A.E.C. DWG. NO. ENG-11-2220 SFA-JK-1/51

NO.	DATE	REVISIONS	BY	CHKD	GRP LDR	ENG. D. O.
1	8-16-65	REVISED TO STATUS OF 8-12-65	DRK			



1/4"=1'-0"

0' 2' 4' 8'

GRAPHIC SCALE

TOTAL SQ. FT. 144

REV.	DATE	REVISION	BY	CKD.	APP.
2	6-8-84	REVISED TO STATUS OF 6-8-84	H&N		

UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

GUARD HOUSE
FLOOR PLAN

SEC. CLASSIFICATION: CLASS. U
REVIEWER
DATE 6-11-84

BLDG. DF-19 TA-40

	SUBMITTED	RECOMMENDED	APPROVED
	E Truyello	Dan Rugg	W. T. Fleharty
DRAWN	WIMBERLEY	DATE 6-29-64	SHEET NO. 1 OF 1
CHECKED	Humble H&N		DRAWING NO. ENG-R 3134

7/9/84