LA-UR-05-3999

Decontamination and Decommissioning of the Cutting Building, TA-15-8

Historic Building Survey Report No. 246

Los Alamos National Laboratory

May 26, 2005
Survey No. 868

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

The World's Greatest Science Protecting America

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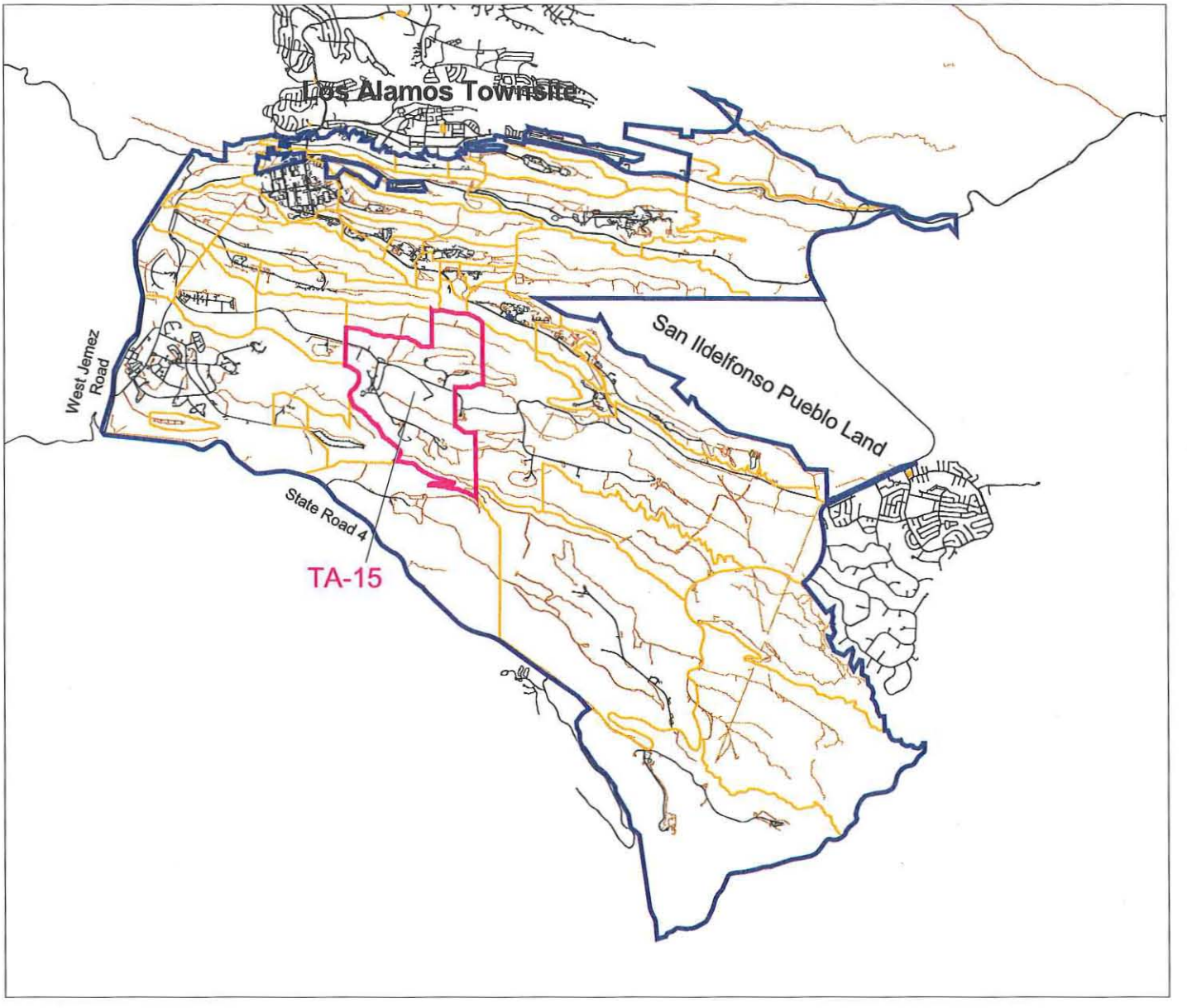
INTRODUCTION

The U.S. Department of Energy, National Nuclear Security Administration, Los Alamos Site Office proposes to decontaminate, decommission, and eventually demolish one historic Los Alamos National Laboratory (LANL) property located on Department of Energy (DOE) land at Technical Area (TA) 15 (Map 1). Building TA-15-8 was built in 1948 and supported early Cold War high explosives testing activities related to the development of post-World War II (WWII) weapons designs. The proposed decontamination and decommissioning (D&D) action is part of LANL's routine phasing out of aging and vacant buildings.

The following information has been prepared as part of a notification of potential adverse effect to a property that is 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, a brief property description, 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 determination contained in this report and to concur that the proposed D&D action will adversely affect TA-15-8.



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1:110000

4000 0 4000 8000 12000 Feet

1000 0 1000 2000 3000 4000 Meters

N
W E
S

Tech Area 15
LANL Boundary
Technical Areas
Roads
Roaddirt
Parkpave
Parkdirt

D&D of the Cutting Building, TA-15-8

LANL Boundary and TA-15

Map 1

PROJECT DESCRIPTION

D&D activities proposed for TA-15-8 are part of LANL's routine phasing out of aging properties and will result in the eventual demolition of the property. This Dynamic Experimentation (DX) Division property was originally surveyed in 2001 and 2003 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 a field visit to TA-15-8. Digital photographs and architectural and engineering notes were taken during the initial field visit. Records research at LANL was also carried out, and representative drawings were compiled (Appendix).

DX Division

Over the years, various Laboratory groups with shared scientific and organizational lineages have operated at TA-15—from G Division ("Gadget') of the 1940s and M Division of the 1940s and 1970s, to DX Division today. Many properties under the administrative control of DX Division are located within TAs that were established during 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.

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 AREA

TA-15

Current Function

TA-15 (R Site) is located on top of Threemile Mesa between Cañon de Valle and Threemile Canyon (Map 2, Figure 1). TA-15 consists of a number of firing areas used extensively since 1944 for research and explosive testing of weapon design components. Active sites include the PHERMEX and DARHT facilities where radiography is used to obtain data on the performance of an explosive assembly during detonation (Figure 2).

Figure 1. TA-15, Administrative Area (1991)

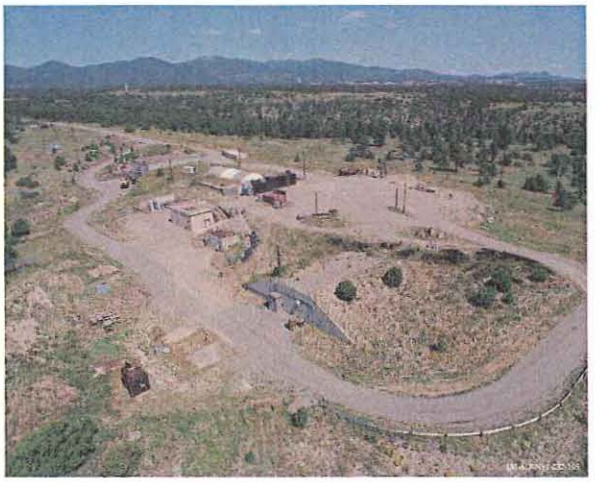
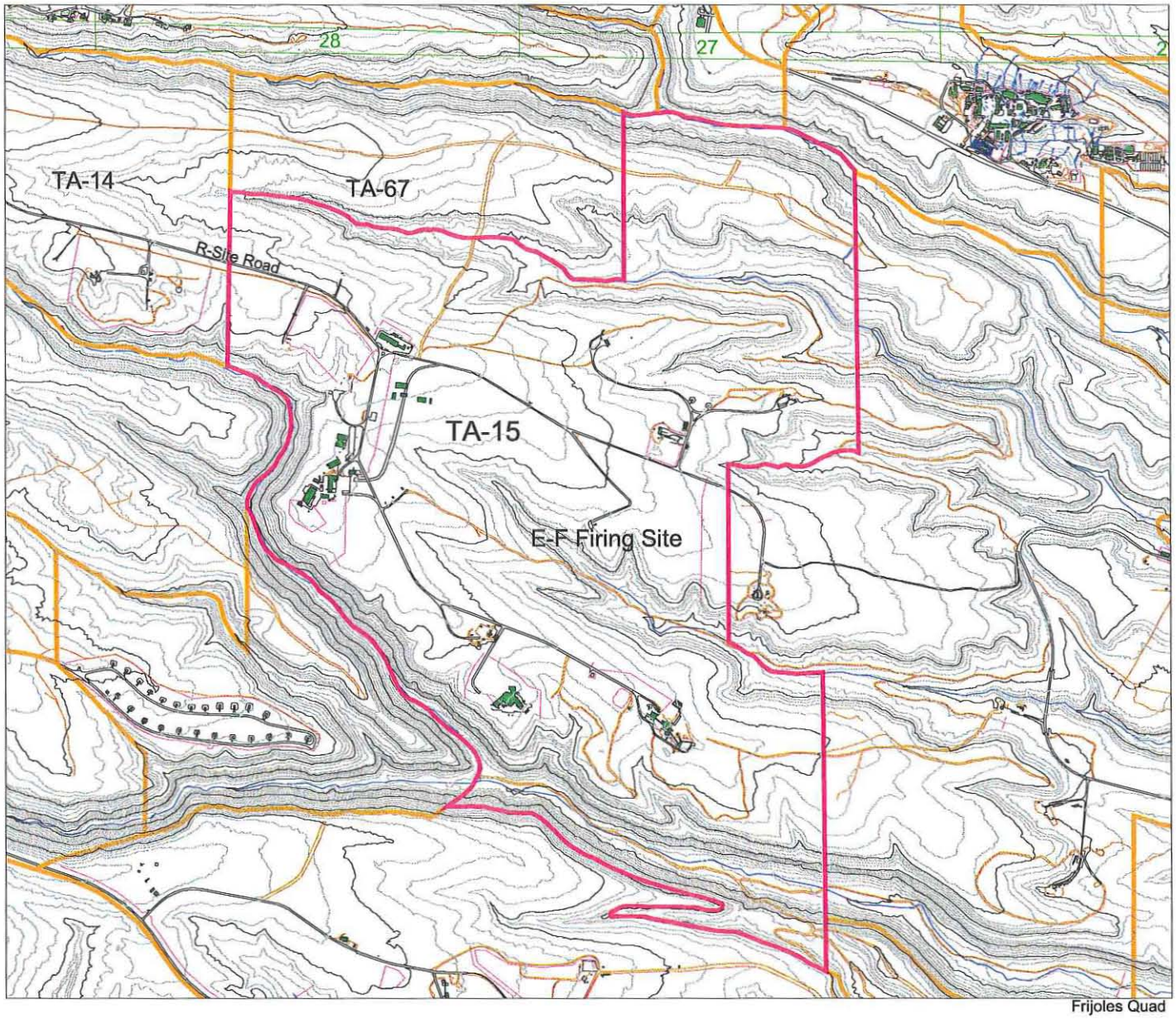


Figure 2. PHERMEX (1991)

Historical Background

TA-15 Firing Sites

The first facilities at R Site were built in 1944. Early buildings and structures included a control building, a laboratory building, a trimming building, several explosives magazines and hutments, and a few firing points with barricades and subsurface instrument rooms. Through time, more firing sites, firing points, and underground test chambers were built to support experiments incorporating both radioactive materials and high explosives. These experiments included wartime research using flash photography to study the implosion of cylinders. In 1946, R Site became a permanent testing location for firing large-scale tests involving explosive charges up to 2 tons. In addition to high explosive shots, weapon components were also tested, without their fissionable materials, to determine whether actual performance would match design calculations. These components sometimes contained multi-kilogram quantities of natural metal, depleted uranium metal, and lesser quantities of beryllium and other metals. In most cases, the tests were carried out aboveground, which resulted in the test materials being scattered over areas with radii up to several hundreds of meters (U.S. Department of Energy 1986).



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1:24000

1000 0 1000 2000 Feet

300 0 300 600 900 Meters

N
W E
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DX Division Building Currently Being Evaluated
Tech Area 15
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 the Cutting Building, TA-15-8

TA-15-8

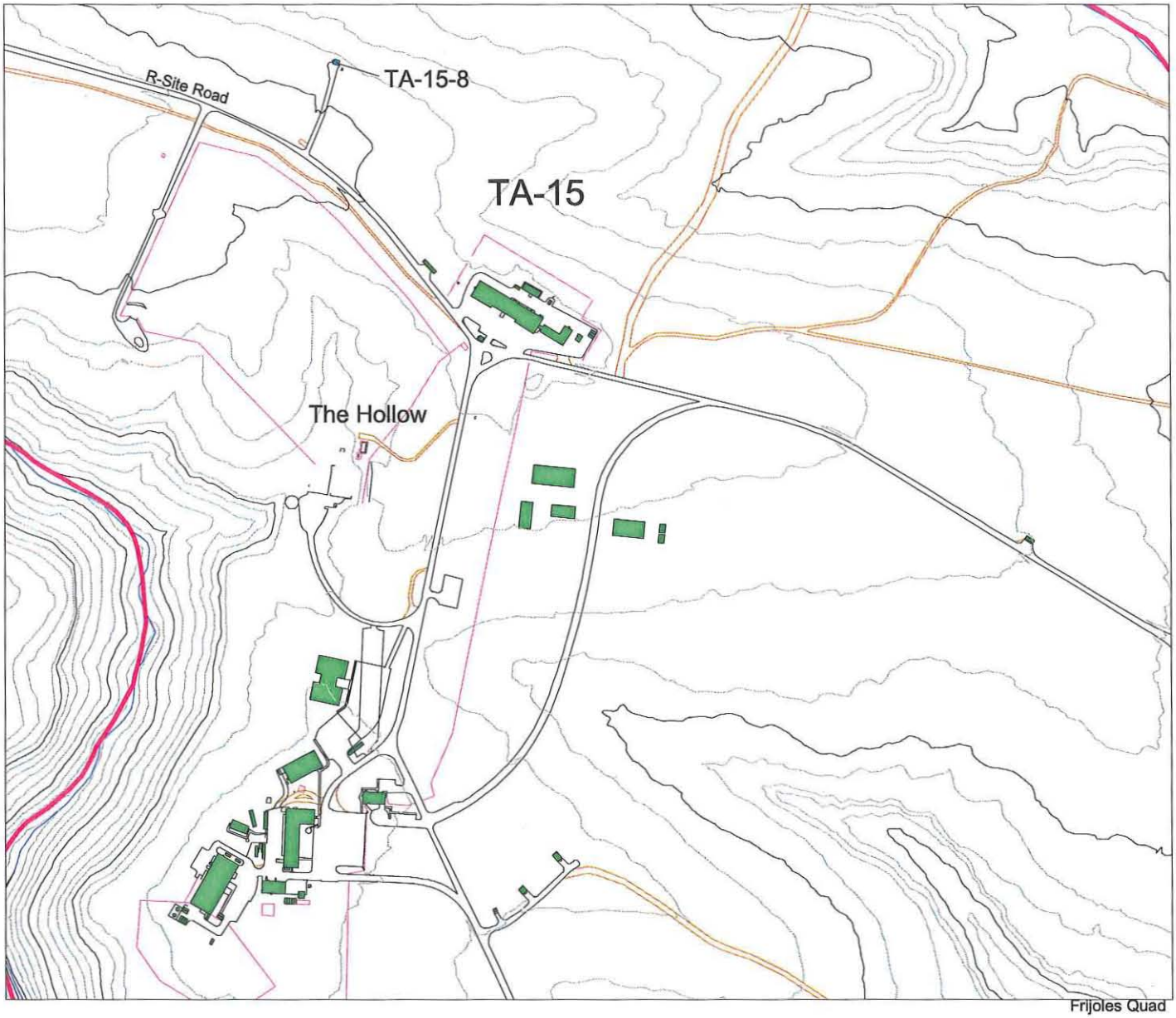
Map 2

Early firing points were given alphabetical identifiers. In 1947, Group M-6 was using firing points A through F. By 1949, M Division had added two more firing areas, Points G and H. Firing point H, built in 1948, had a camera chamber for diagnostic purposes and was used until the 1950s. Explosions at Point H were typically larger than those set off at Firing Point A. In use for less than 10 years, firing points A through D were abandoned by the mid to late 1950s. Firing points E and F share a central control building and are known collectively as "E-F Site." E-F has been one of the main firing areas at TA-15 since the mid 1940s. Many types of explosives and hazardous materials have been fired at E-F including uranium, mercury, beryllium, and lead (U.S. Department of Energy 1986).

The Hollow

A series of connected buildings were once located in an area of TA-15 called "the Hollow." This area is located southeast of the Cutting Building (TA-15-8) and west of R Site Road (Figure 3, Map 3). The buildings had varied uses as assembly buildings, laboratories, and shops. Built in 1949, TA-15-20 at the Hollow was Group M-4's first assembly building. Researchers used the building to prepare experiments being fired at E-F Site (Rasmussen 2000). The prototype for the PHERMEX accelerator and the prototype REX (Relativistic Electron Beam Experiment) of the prototype for the first axis of DARHT were also developed and tested in "the Hollow" (LANL 1993b).

Figure 3. TA-15 (1950)
(LANL, IM-9 Photography)



Frijoles Quad

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1:6500

400 0 400 800 Feet

90 0 90 180 270 Meters

N
W E
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D&D of the Cutting Building, TA-15-8

TA-15-8 Closeup

- DX Division Building Currently Being Evaluated
- Tech Area 15
- 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

Map 3

PROPERTY DESCRIPTION

Properties located at TA 15 are identified using the current LANL system of placing the TA prefix before the building number. Historically, however, the "R" prefix (for R Site) was used as the TA designator for TA-15. Some of the drawings included in this report may use the old system of building identification. For example, the term "R-8" may be used in place of TA-15-8 (Photos 1a–d).

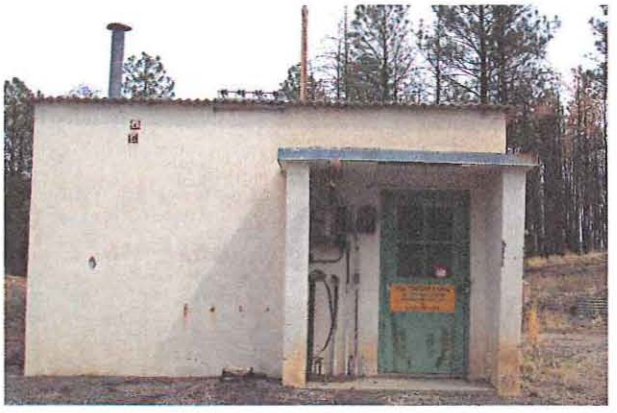

Photo 1a. View of west side

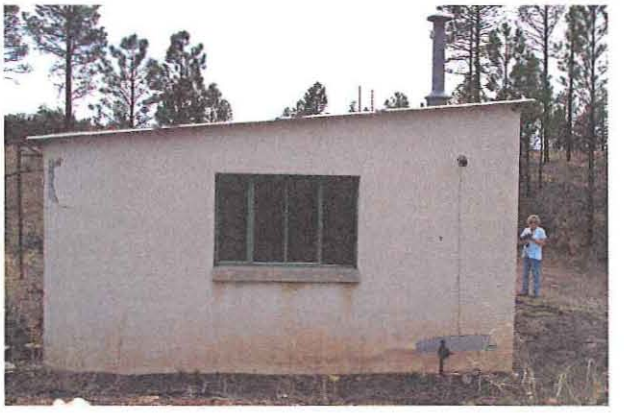

Photo 1b. View of north side

Photo 1c. View of east side

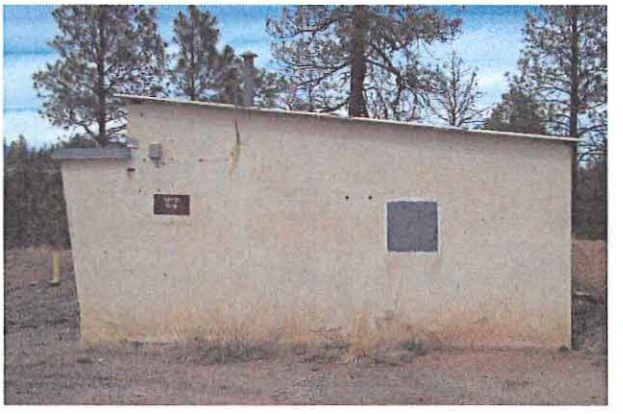

Photo 1d. View of south side

TA-15-8

Architectural Description

TA-15-8 is a one-story, square-in-plan building measuring 17 ft 6 in. by 17 ft 6 in. with an interior floor space of 189 ft^2. The building was constructed in 1948 with a reinforced concrete foundation, 4-in.-thick reinforced concrete floor slab, and 8 in. by 8 in. by 16 in. concrete block walls parged with a layer of ¾ in. stucco. The low-pitched shed roof was constructed with steel channel beams covered with corrugated asbestos roofing.

Access into the building is limited to a single, 3-ft-wide painted metal and ½-glass door set within a projecting vestibule. Both the north and east sides of the building have 3-light steel framed casement windows with concrete sills. A small air intake vent was installed on the south wall. Additional exterior building equipment includes wall surface-mounted conduit, signage, a roof vent stack, and lightning rods. The interior of the building is an open floor plan that was originally equipped with a workbench spanning the full width of the east side. As originally designed, a workbench was also located adjacent to the entry door on the west side. Historically, the saw was located in the center of the room. Both workbenches and the saw were removed sometime after cutting operations were discontinued. Open metal shelving was added to the building's interior when TA-15-8 was later used for storage, its last function prior to abandonment.

Historical Background

The "Cutting Building" at TA-15 supported the Laboratory's early nuclear weapons research and development program. Activities conducted at TA-15-8 included the use of a saw to section experimental high explosive assemblies. The cutting saw was operated remotely from an open, weatherproof switch (later enclosed in a three-sided, wooden control shelter) that was located north of TA-15-8. A protective earthen barricade was constructed between the Cutting Building and the saw motor switch, which was accessed via a gravel walkway and concrete stairway. During its active period, TA-15-8 probably supported early M-Division activities, such as the assembly work carried out at "the Hollow" and also supported the various high explosives operations conducted at TA-15's nearby firing points.

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 TA 15, high explosives contamination is likely to be present at TA-15-8.

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 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 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

TA-15-8 has level 2 integrity. This laboratory-processing building supported the Laboratory's Cold War high explosives testing activities and is deemed eligible for the Register under Criterion A for its association with early Cold War nuclear weapons development. Although most of the original equipment associated with the cutting operations has been removed, TA-15-8 has not been remodeled, has excellent physical integrity, and has retained its original Cold War setting, feeling, and design.

The State Historic Preservation Office is requested to concur with the eligibility determination 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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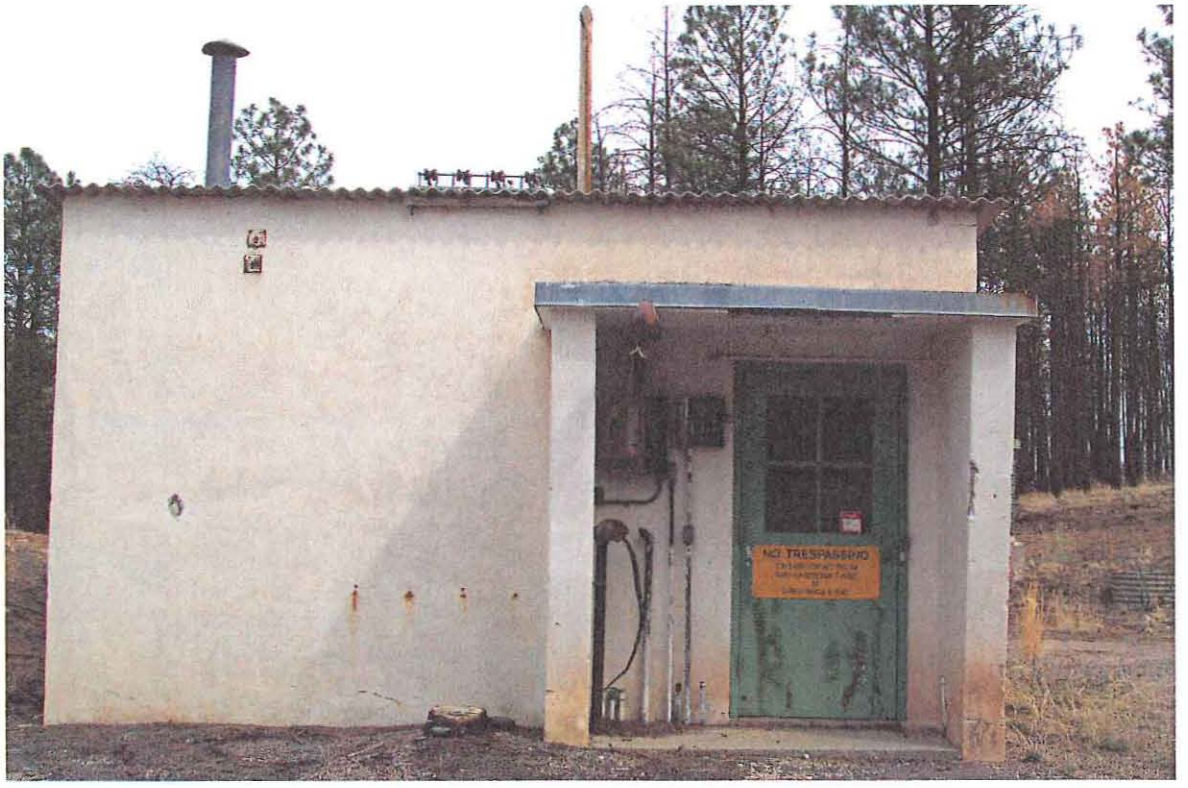
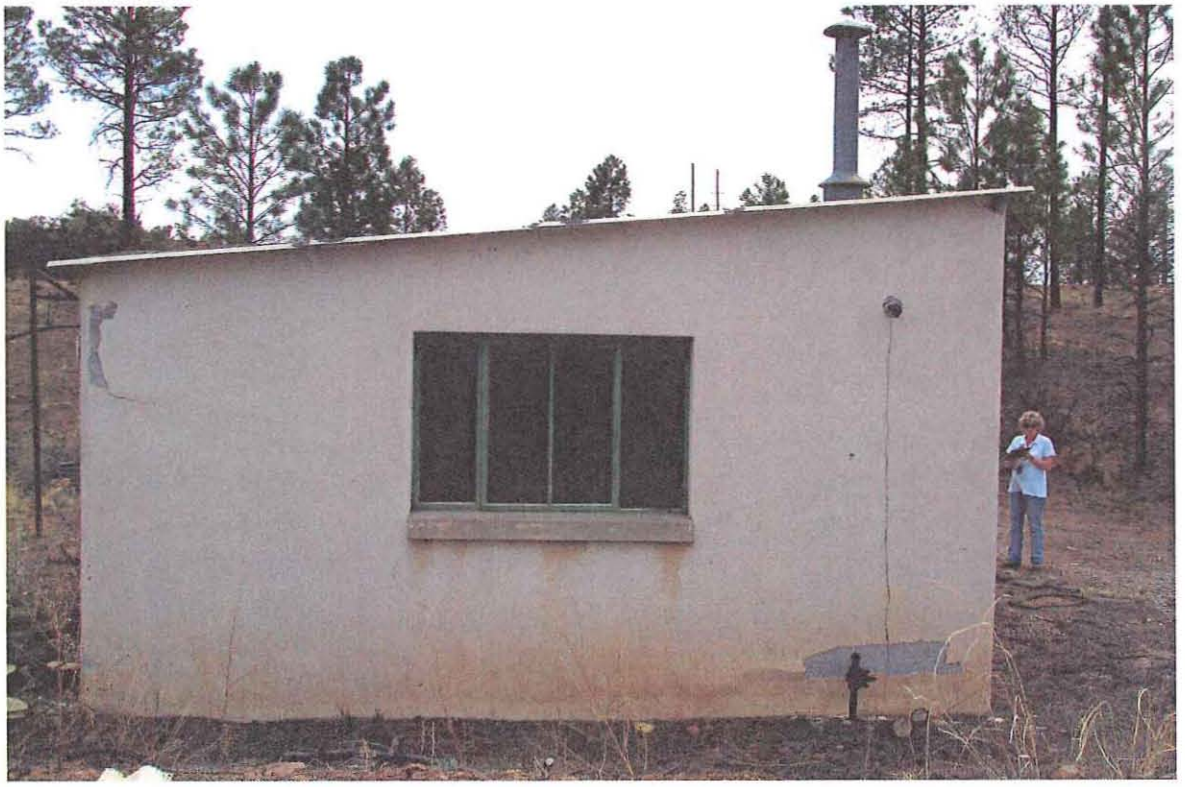
APPENDIX

Selected Photographs and Drawings:
TA-15-8

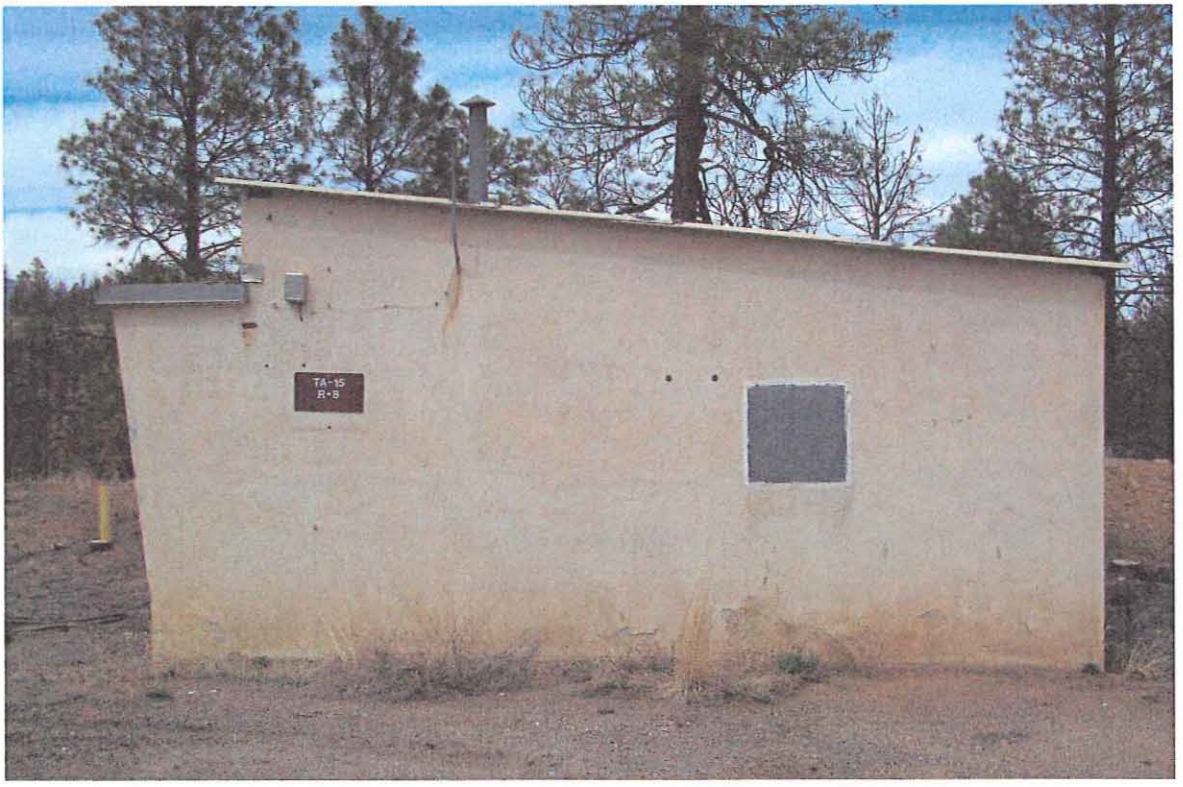


TA-15-8, west side

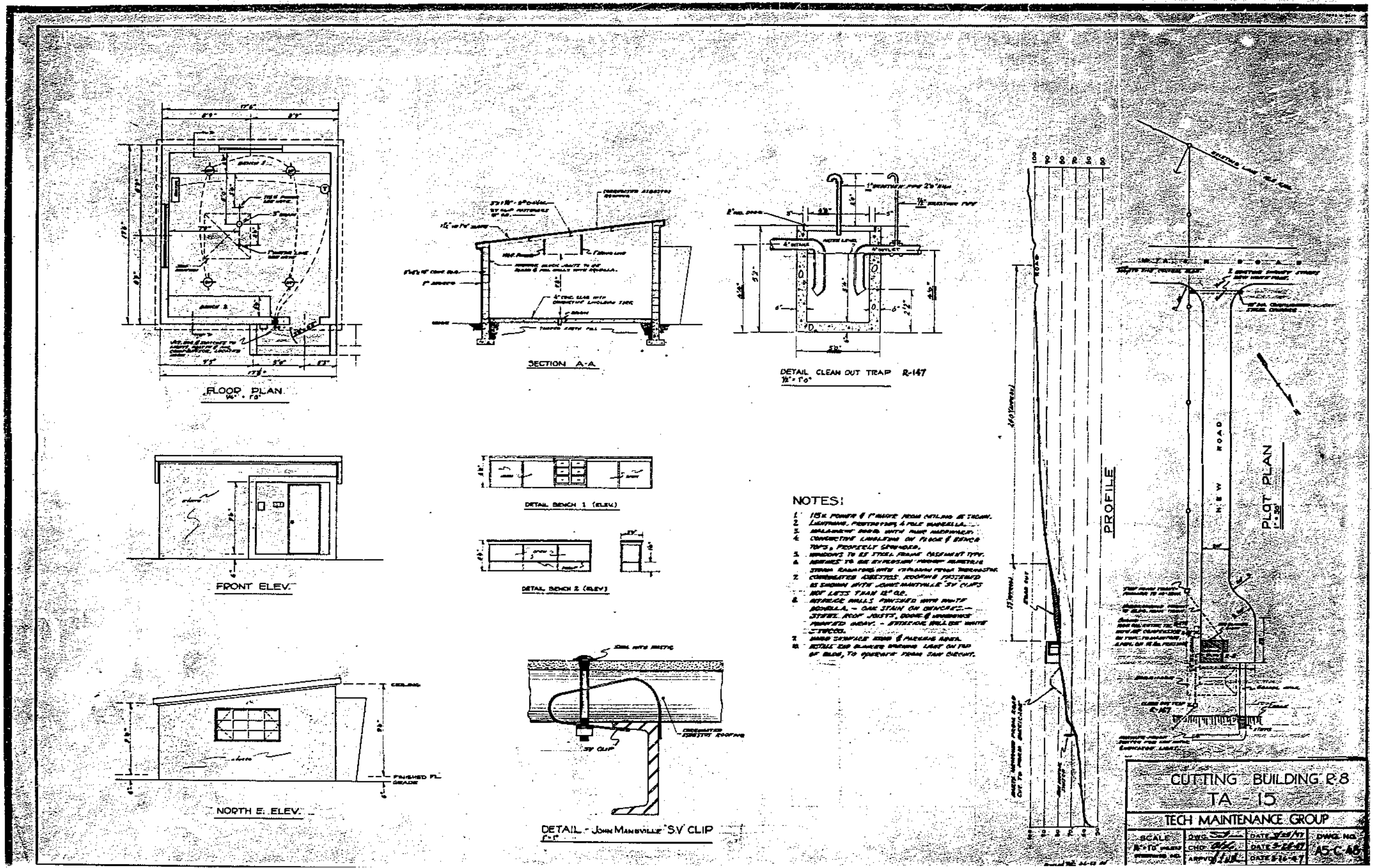
TA-15-8, east side

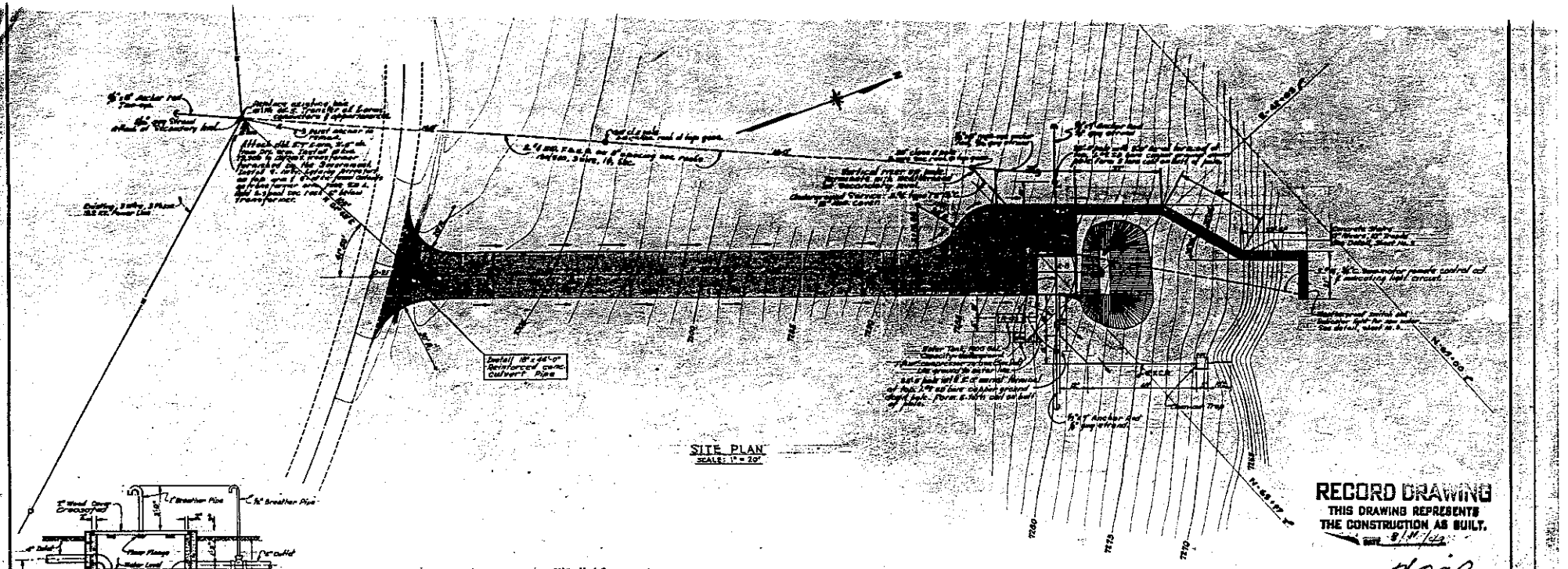


TA-15-8, north side



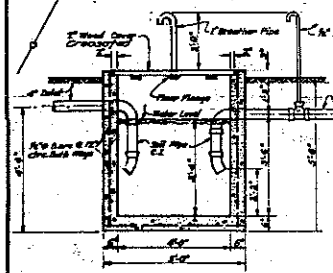
TA-15-8, south side


FLOOR PLAN
FRONT ELEV.
NORTH E. ELEV.
SECTION A-A
DETAIL BENCH 1 (ELEV.)
DETAIL BENCH 2 (ELEV.)
DETAIL - JOHN MANSVILLE "S.V" CLIP
DETAIL CLEAN OUT TRAP R-147
NOTES:
PROFILE
PLOT PLAN
NEW ROAD
CUTTING BUILDING R-8
TA - 15
TECH MAINTENANCE GROUP
SCALE
DWG.
CHD.
APPVD.
DATE
DWG. NO.
A5-C-46

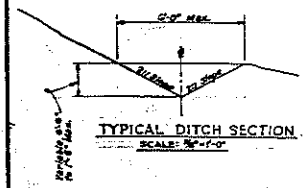


SITE PLAN
SCALE: 1" = 20'

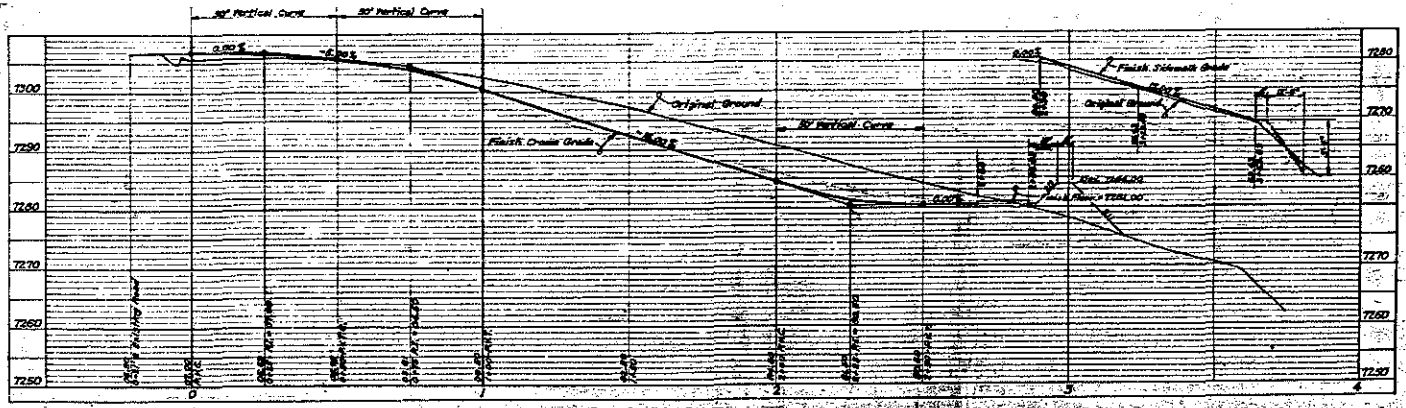
RECORD DRAWING
THIS DRAWING REPRESENTS THE CONSTRUCTION AS BUILT.
DATE 8/14/64



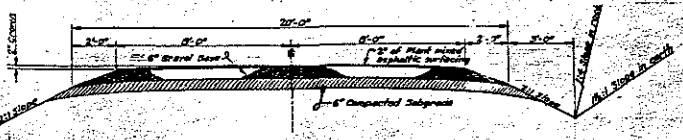
DETAIL OF CLEAN-OUT TRAP D-147
SCALE: 1/2" = 1'-0"



TYPICAL DITCH SECTION
SCALE: 3/8" = 1'-0"



ROAD PROFILE
SCALES
HORIZ. ——— 1" = 20'
VERT. ——— 1" = 10'



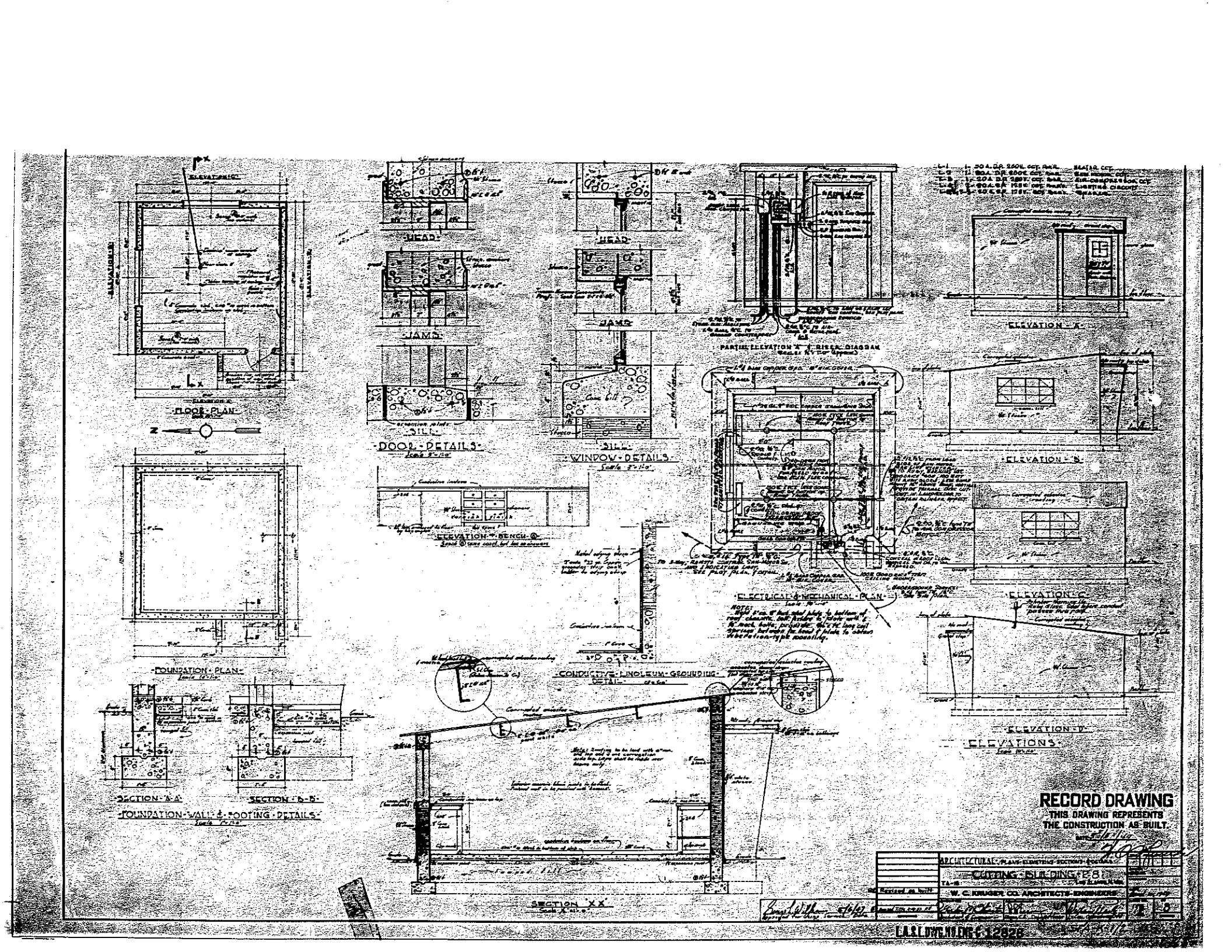
TYPICAL ROAD SECTION
SCALE: 3/8" = 1'-0"

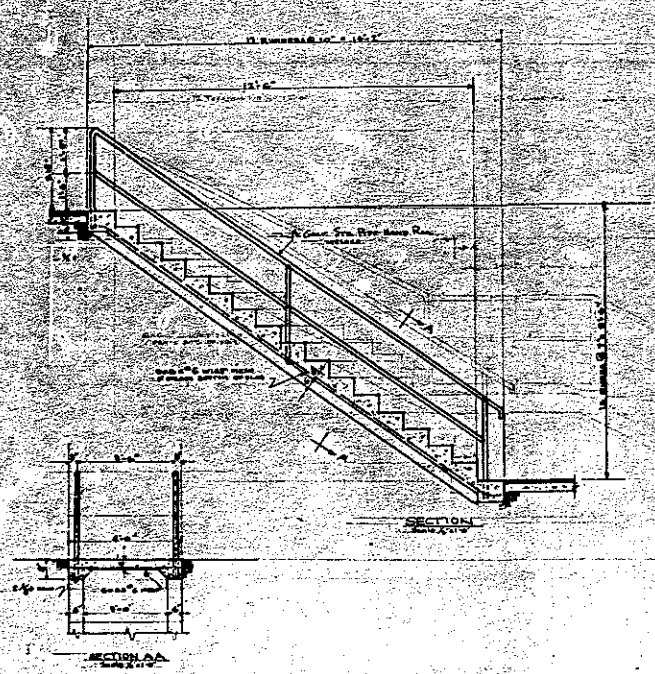
TYPICAL SIDEWALK SECTION
SCALE: 3/4" = 1'-0"

SITE PLAN & UTILITIES
CUTTING BUILDING P.S. T.A.-15
LOS ALAMOS NEW MEXICO
W. C. KRUEGER CO. ARCHITECTS-ENGINEERS
APPROVED FOR USING AGENCY
APRIL 30, 1957

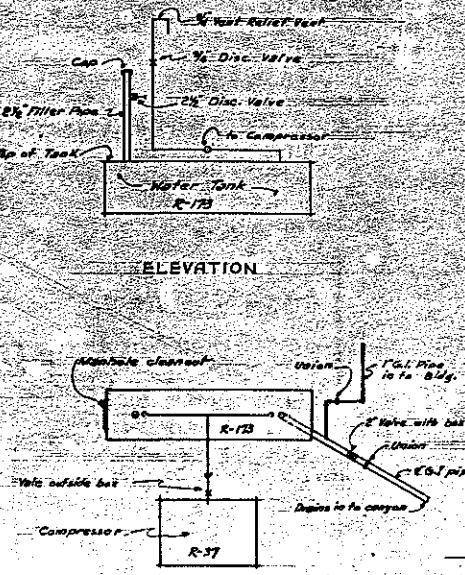
SEA K-1171

L.A.S.L. DWG. NO. ENG-C 12827

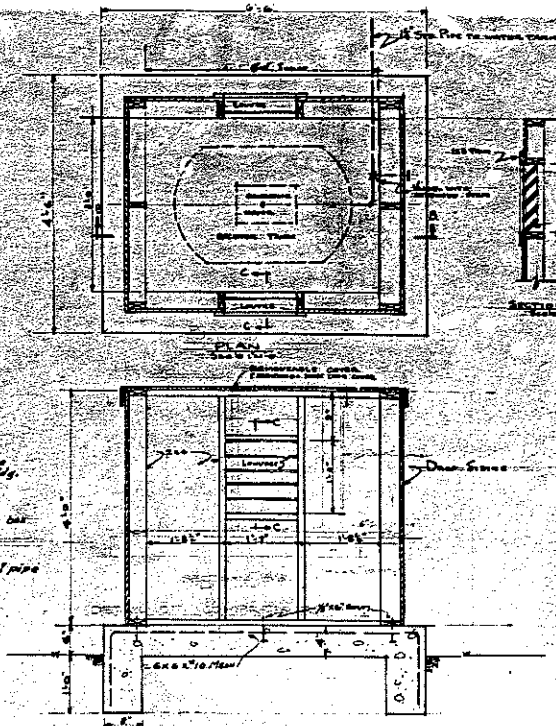

FLOOR PLAN
DOOR DETAILS
WINDOW DETAILS
ELEVATION "A"
ELEVATION "B"
ELEVATION "C"
ELEVATION "D"
ELEVATIONS
ELECTRICAL & MECHANICAL PLAN
FOUNDATION PLAN
SECTION A-A
SECTION B-B
FOUNDATION WALL & FOOTING DETAILS
SECTION X-X
RECORD DRAWING
THIS DRAWING REPRESENTS THE CONSTRUCTION AS BUILT.
CUTTING BUILDING
W. C. KRUEGER CO. ARCHITECTS-ENGINEERS

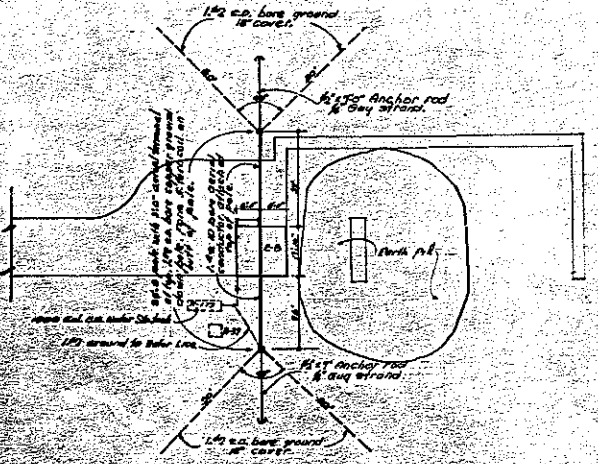


WALK STAIRWAY DETAIL
Scale ½" = 1'-0"

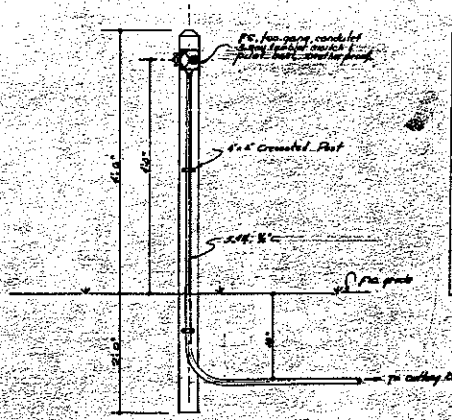


WATER TANK DETAIL
No Scale

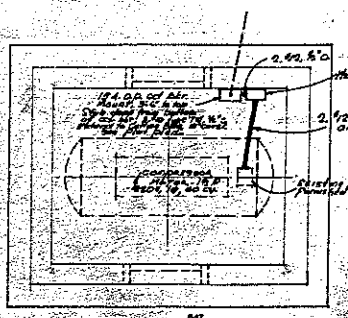




LIGHTNING PROTECTION PLAN
Scale: 1" = 20'



DETAILS - REMOTE CONTROL SWITCH, SAW MOTOR
Scale: 1"=1'-0"



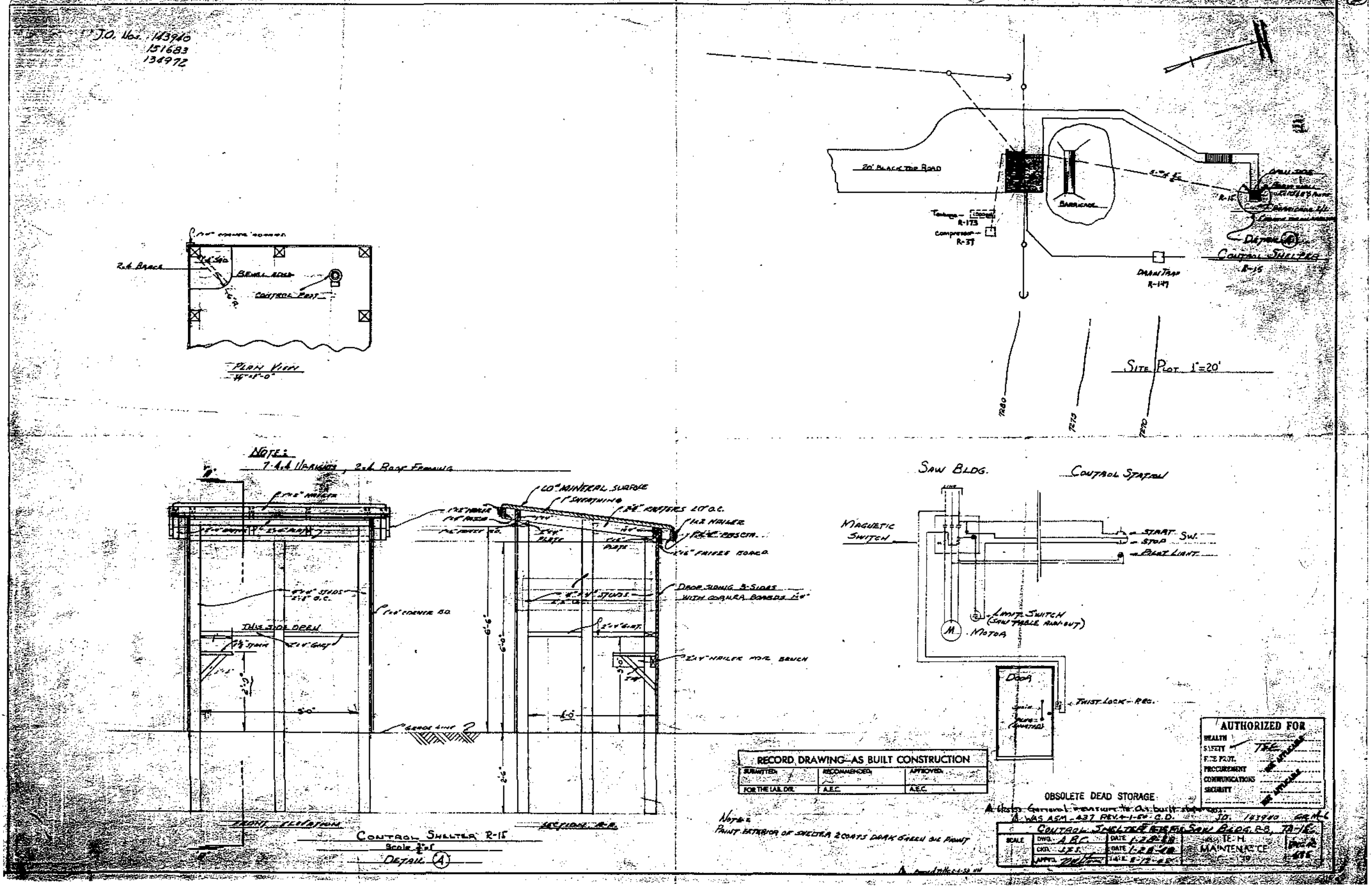
COMPRESSOR BLDG. ELECTRICAL PLAN
Scale: 1"= 1'-0"

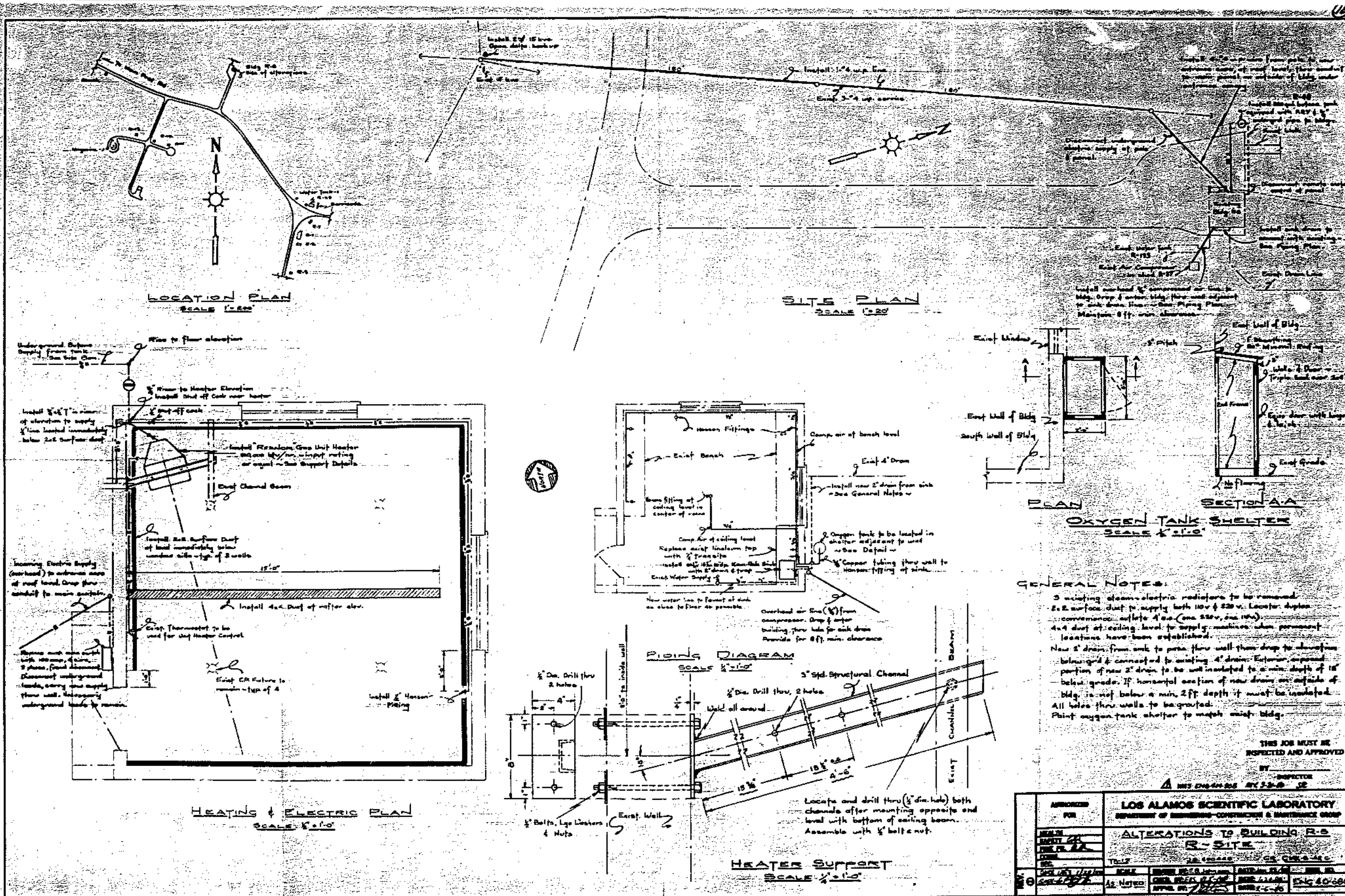
RECORD DRAWING
THIS DRAWING REPRESENTS THE CONSTRUCTION AS BUILT.
Date 3-15-43
W. O. Reuter

GENERAL NOTE:
INTEGRAL WATER TANK & PUMP UNIT OF SAME CAPACITY WILL BE ACCEPTABLE IN PLACE OF WATER TANK WITH SEPARATE COMPRESSOR AS SHOWN ON THIS DRAWING.

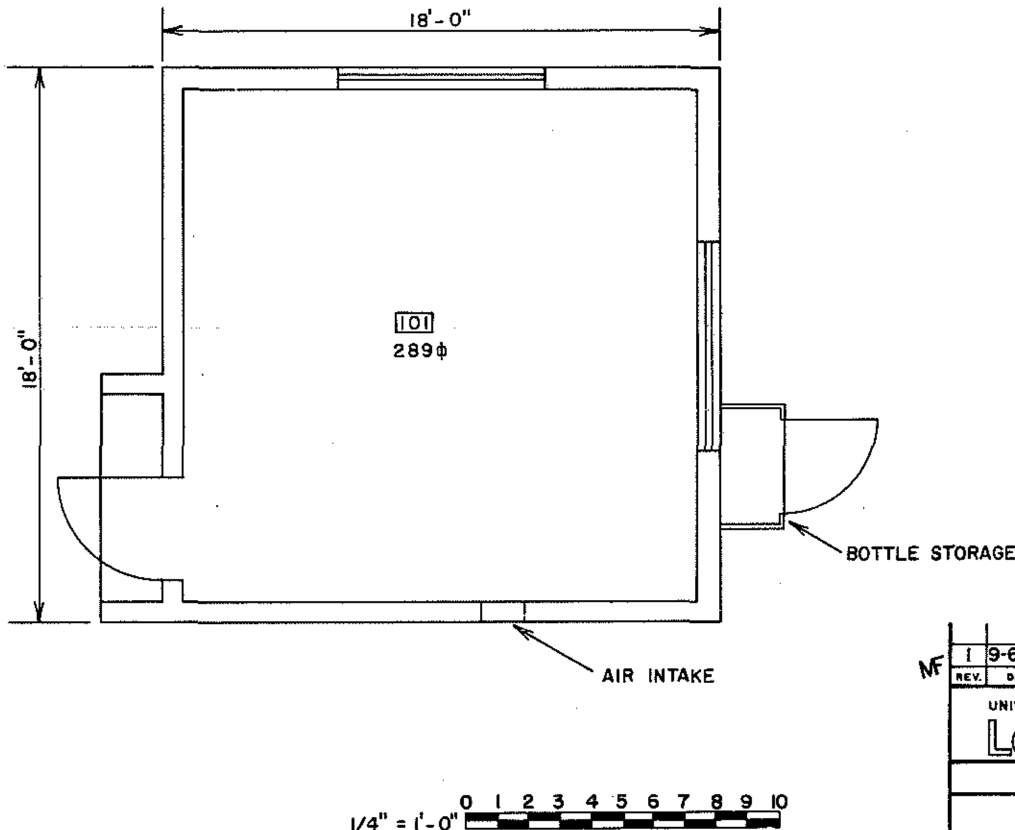
MISCELLANEOUS DETAILS	
CUTTING BUILDING TA-15	
W. C. KRUGER CO. ARCHITECTS-ENGINEERS	
Revised as built	3-15-43

L.A.S.L. DWG. NO. ENG-C 12829


J.O. Nos. 143940
151683
134972
20' Black Top Road
Barricade
R-15
Detail (A)
Control Shelter
R-15
Drain Trap
R-149
R-173
Compressor
R-37
Site Plot 1"=20'
7280
7275
7270
2x4 Brace
Bevel Edge
Control Post
Plan View
Note:
Saw Bldg.
Control Station
Magnetic Switch
Start Sw.
Stop
Pilot Light
Limit Switch
(Saw Table Run-out)
Motor
Door
Twist Lock Rec.
Drop Siding 3-Sides
With Corner Boards
Grade Line
Front Elevation
Section A-A
Control Shelter R-15
Detail (A)
RECORD DRAWING-AS BUILT CONSTRUCTION
SUBMITTED:
RECOMMENDED:
APPROVED:
FOR THE LAB. DIR.
A.E.C.
A.E.C.
OBSOLETE DEAD STORAGE
Note:
Paint exterior of shelter 2 coats dark green oil paint
AUTHORIZED FOR
HEALTH
SAFETY
FIRE PROT.
PROCUREMENT
COMMUNICATIONS
SECURITY
Control Shelter & Saw Bldg. R-8, TA-16
J.O. 143940
SCALE
DWG.
CKD.
APPD.
DATE
TE-H
MAINTENANCE



LOCATION PLAN
SCALE 1"=200'
SITE PLAN
SCALE 1"=20'
Install 1#4 w.p. line
Exist. 3-#4 w.p. service
HEATING & ELECTRIC PLAN
SCALE 1/4"=1'-0"
Install "Reznor" Gas Unit Heater
Exist. Channel Beam
Install 4x4 Duct at rafter elev.
Exist. Thermostat to be used for Unit Heater Control
Exist. CR Fixture to remain - typ. of 4
Install 1/4" Hanson Piping
15'-0"
Rise to floor elevation
PIPING DIAGRAM
SCALE 1/4"=1'-0"
Hanson Fittings
Exist. Bench
Comp. air at bench level
Exist. 4" Drain
Install new 2" drain from sink ~ See General Notes ~
Oxygen tank to be located in shelter adjacent to wall ~ See Detail ~
1/4" Copper tubing thru wall to Hanson fitting at sink
Exist. Water Supply
HEATER SUPPORT
SCALE 1/2"=1'-0"
3" Std. Structural Channel
1/2" Dia. Drill thru, 2 holes
Weld all around
1/2" Dia. Drill thru 2 holes
1/2" Bolts, Lge Washers & Nuts
Exist. Wall
Locate and drill thru (1/2" dia. hole) both channels after mounting opposite and level with bottom of ceiling beam. Assemble with 1/2" bolt & nut.
PLAN
SECTION A-A
OXYGEN TANK SHELTER
SCALE 1/4"=1'-0"
Exist. Window
East Wall of Bldg
South Wall of Bldg
Exist. Grade
GENERAL NOTES:
3 existing steam-electric radiators to be removed.
2x2 surface duct to supply both 110v & 220v. Locate duplex convenience outlets 4' o.c. (one 220v, one 110v).
4x4 duct at ceiling level to supply machines when permanent locations have been established.
New 2" drain from sink to pass thru wall then drop to elevation below grade & connected to existing 4" drain. Exterior exposed portion of new 2" drain to be well insulated to a min. depth of 18" below grade. If horizontal section of new drain on outside of bldg. is not below a min. 2ft depth it must be insulated.
All holes thru walls to be grouted.
Paint oxygen tank shelter to match exist. bldg.
THIS JOB MUST BE INSPECTED AND APPROVED
BY ______ INSPECTOR
LOS ALAMOS SCIENTIFIC LABORATORY
ALTERATIONS TO BUILDING R-6
R-SITE
As Noted
ENG 40-680
Job# 447



TOTAL $\frac{ft^2}{289}$

REV.	DATE	REVISION	BY	CKD.	APP.
1	9-6-83	REDRAWN TO STATUS OF 9-6-83	H&N		

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

FACILITIES ENGINEERING DIVISION

SHOP BUILDING
FLOOR PLAN
BLDG. R-8 TA-15

SEC. CLASSIFICATION
CLASS. u
REVIEWER
DATE 10-17-85

SUBMITTED | RECOMMENDED | APPROVED

DRAWN K.A.K. H&N
CHECKED H&N
DATE 9-6-83
SHEET NO. 1 OF 1
DRAWING NO. ENG-R2702

REC'D ...... LOGGED ...... TO VAULT 11-- 83