



Figure 132. Structure 3, revetment trench, view north (2013).



Figure 133. Structure 3, revetment trench, view northeast (2013).



Figure 134. Structure 3, revetment trench, view southeast (2013).



Figure 135. Structure 3, revetment trench, view south (2013).

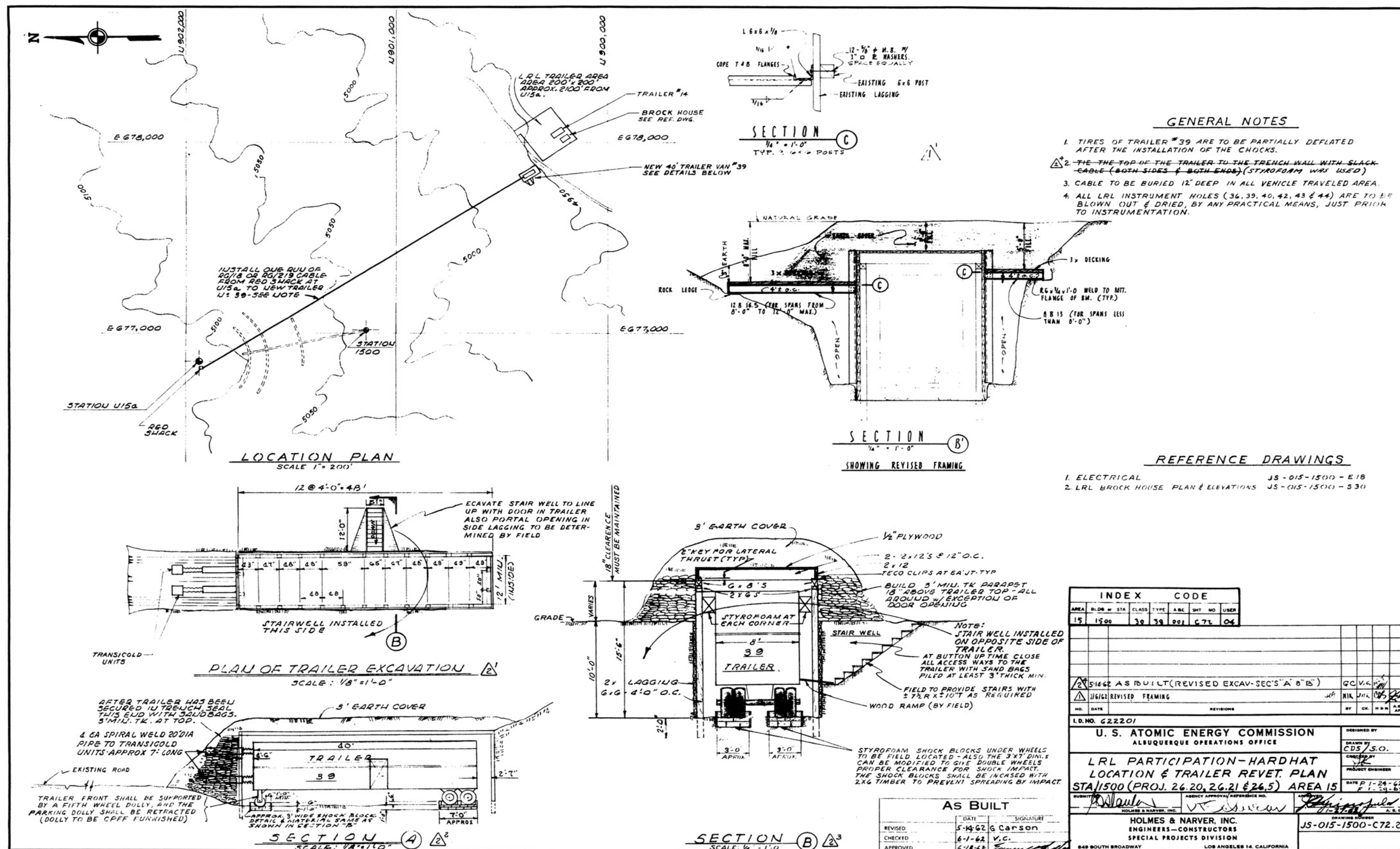


Figure 136. Plan and section of Structure 3, the revetment trench (drawing JS 015 1500 C72.2, dated 1962, on file at the Archives and Records Center, Mercury, Nevada).

The structure is located in the Trench Area and across the road northward from the northwest corner of Trailer Park #1. The south end is 18 m north of the gravel road. Shoring is on the east, north, and west sides, the south end is open, and a stair well penetrating through the shoring is on the west side toward the middle of the trench. The trench portion measures 14.6 m (48 ft) long, 3 m (10 ft) wide, and 3 m high. The stair well leading down into the trench to a side door of the trailer is 3.7 m (12 ft) long, 1.5 m (5 ft) wide, and 1.8 m (6 ft) high. Shoring for the trench and the stair well is now failing, collapsing inward, and the interior floor in both is covered with sand and gravel from the exterior. Stairs in the stair well are no longer visible. Boards around the upper rim of the shoring and for joists and rafters between the east and west sides of the trench litter the interior floor. There is no indication of a roof cover for the trench, as suggested by the rafters, but the structure was supposedly covered with plywood and 0.9 m (3 ft) of sediment during the Hard Hat test.

Support infrastructure for the trench shoring consists of metal I beams and angle irons. A series of 15.2 cm (6 inch) wide angle iron posts is on the east and west sides and north end of the trench, evenly spaced on 1.2 m (4 ft) centers the entire length of the trench. As observed at the south end of the trench on both the east and west sides, I beams, 3 m (10 ft) long, 30.5 cm (12 inches) wide, and 17.8 cm (7 inches) thick, are welded to the angle iron posts and extend outward horizontally to anchor into the surrounding matrix. Sheathing on the east and west sides are 2-x-6 boards 4.9 m (16 ft) long, stacked horizontally on edge 3 m high across the front of the angle iron posts. On the north end the 2-x-6 boards are 3 m (10 ft) long. The 2-x-6 sheathing boards are sandwiched against the metal angle posts by 6-x-6 wood posts on the exposed interior face. The wood posts are bolted through the sheathing boards to the angle iron posts the length of the wood posts. Resting on top of the wood posts is an 8-x-6 wood cross beam to which the joists and rafters were attached. A notch was cut into each end of the joists for joining to the upper cross beams. The rafters also had a bird mouth joint on one end for joining to the beams. Laid flat next to each other on top of the metal I beams attached to the angle iron posts are at least three 3-x-12 planks. Covering the planks is loose dirt and gravel, presumably the backfill from the trench excavation. Dirt and gravel fill is also present below the planks, filling this void to the excavated ground surface. Both sides at the south end are enclosed with walls composed of 4-x-6 studs, a 2-x-4 top plate, a 3-x-12 bottom plate, and sheathed with 2-x-12 boards.

The stair well is of similar construction as the trench, but minus the metal I beams and angle iron posts. It is located 6.7 m (22 ft) from the south end of the trench. The 2-x-6 sheathing for the stair well is nailed to five 6-x-6 posts evenly spaced on each side.

Structure 4 - Electric Substation (Resource No. S1063)

This electric substation is in the main area of the complex. Structure 4 has been dismantled, i.e., all electrical equipment removed, except for the metal framework and a few insulators. The framework has two sections, stacked, and separated by a metal platform made of 0.6 cm (1/4 inch) thick diamond plate sheets (Figures 137-138). The metal frame is 3.7 m (12 ft) long and 2.4 m (8 ft) wide. Total height above the ground is 4 m (13 ft). The lower section is 1.5 m (5 ft) high, the upper section is 2.4 m (8 ft) high. The bottom posts, three on each long side, are made of 10.2 cm (4 inches) wide angle iron and cross-braced on the ends and sides with 5 cm (2 inches) wide metal angle iron welded to the posts and at the cross intersections. Ringing the lower posts at the top is 10.2 cm (4 inches) wide angle iron to which the metal sheets for the platform are welded. The upper section is made of



Figure 137. Structure 4, electric substation, view south (2013).



Figure 138. Structure 4, electric substation, view west (2013).

aluminum and bolted together rather than welded. Posts, 20 cm (8 inches) wide, are bolted to the platform at each of the four corners. The posts have 7.6 cm (3 inches) wide angle bracing attached to the upper part of the posts and to the platform on both the ends and sides. Across the top on both sides are bolted double angle bars for attaching insulators.

Features

At the U15 Complex, 92 features were recorded (Table 7). These include an access shaft and hoist pad, a device emplacement shaft, a blower pad, drill holes and pads, quarries, a generator pad, electric substations, electric panels, a telephone panel, concrete pads, concrete piers, a loading dock, a leaching tank, staircases, wood-lined pits, water tanks, exploratory trenches, light poles, metal poles, wood poles, a benchmark, red cinder concentrations, and concrete experiment sections.

Feature 1 - U15e Access Shaft

Feature 1 is the U15e access shaft for the Tiny Tot nuclear test (Figures 139-140). The shaft area is defined by a fence consisting of two strands of barbed wire and metal T-posts (Figures 141-143). A gravel road is 5.5 m (18 ft) west of the feature. The fenced area is 12.8 m (42 ft) long and 8.5 m (28 ft) wide. Around the shaft is a rectangular concrete pad measuring 8.2 m (27 ft) long and 2.9 m (9.6 ft) wide. Two abutting metal plates cover the shaft. Both cover plates are welded shut. The easternmost plate measures 1.8 m (5.8 ft) by 2 m (6.75 ft). On the north side of the cover is a hinge base plate that measures 1.5 m (5 ft) by 38 cm (15 inches). The hinge itself is made of a 7.6 cm (3 inch) diameter pipe 1.6 m (6.7 ft) long, open on both ends, and welded to the cover plate. The hinge plate is bolted down to the concrete pad with four 2.5 cm (1 inch) diameter bolts and 5 cm (2 inch) diameter washers. Centered along the east and west edges of the metal cover plate are two wood posts with drilled holes, 45 cm (18 inches) tall, and set in 1.3 cm (0.5 inch) thick metal plates with three-hole patterns. The second cover plate measures 2 m (6.7 ft) by 1.3 m (4.4 ft). It is constructed of three 68.5 cm (27 inches) wide metal plates welded together. On the southeast corner of the pad is a vertical metal pole 6.35 cm (2.5 inches) in diameter with a screw cap. It is embedded into the concrete and rises 2 m (6.5 ft) above the surface. A second metal pole, also located at the southeast corner but embedded in the ground, is 5 cm (2 inches) in diameter and rises 2 m above the surface.

Along the southern side of the concrete pad are two upright bulkheads made of 15.2 cm (6 inches) wide metal I-beam posts and header, plain metal sheeting, and wood slats. The bulkheads are 2.2 m (7 ft 3 inches) in height above the current ground surface and measure 2 m (6 ft 7 inches) wide. They are aligned 1.7 m (5 ft 10 inches) apart to form an access entrance to the shaft. Framed between the I beams are 2-x-8 boards: the eastern bulkhead contains four boards and the western one has five. The lower part of the bulkheads is covered with a plain metal sheet on one side. Extending westward from the metal post on the westernmost bulkhead is a plugged 15.2 cm (6 inch) diameter pipe with a 5 cm (2 inches) wide flange.

Upper portions of two reinforced concrete footings for the front legs of the head frame are exposed next to the concrete slab and are centered on the access shaft. The two footings are spaced 5.8 m (19 ft) apart and both are 46 cm (18 inches) square, 41 cm (16 inches) high, with 1.9 cm (3/4 inch) diameter anchor bolts on each of the four sides. The westernmost footing also has a rectangular concrete footing attached for the head frame ladder. This attachment is 71 cm (28 inches) long, 21.6



Figure 139. Aerial view southwest of the U15e area for the Tiny Tot nuclear test (REECo photograph 2017-8, dated 1964, on file at the Nuclear Testing Archive, Las Vegas).

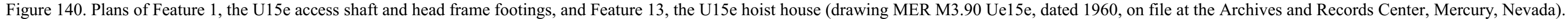




Figure 141. Feature 1, U15e access shaft for the Tiny Tot nuclear test, view southeast (2005).



Figure 142. Feature 1, U15e access shaft for the Tiny Tot nuclear test, view northwest (photograph D10-3094, dated 2010, on file at the Remote Sensing Laboratory).

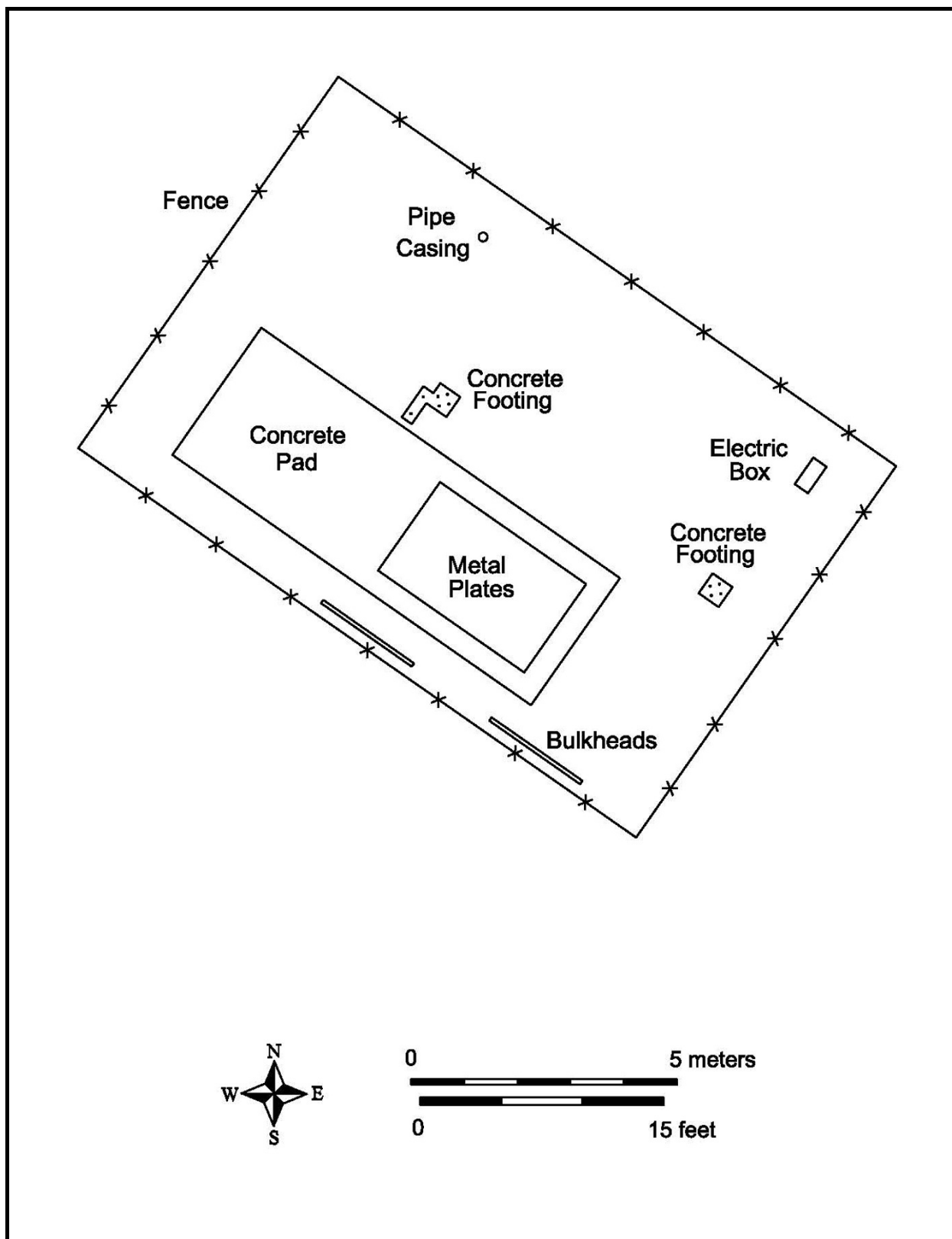


Figure 143. Plan of Feature 1, U15e access shaft for the Tiny Tot nuclear test.

cm (8 1/2 inches) wide, and has two anchor bolts for securing the ladder. The lower part of the footings is 1.2 m (4 ft) square and 30.5 cm (12 inches) thick. Combined height of the upper and lower parts of the footings is 71 cm (28 inches). The two footings for the rear legs of the head frame were 9.75 m (32 ft) from the front legs and outside the fenced area. They were not found during this investigation.

Toward the northernmost corner of the fenced area approximately 80 cm (31.5 inches) inside the fence is a 15 cm (6 inch) diameter Victaulic pipe. The pipe rises 53 cm (21 inches) above the ground surface and has a metal plate welded to the top. A Victaulic pipe clamp is 15 cm from the top. The pipe is similar to exposed casing at drill holes in the area, but there is no record of a drill hole at this particular location.

In the easternmost corner of the fenced area is an electrical box with a total height of 1.8 m (6 ft) above the ground surface. The box measures 76 cm (30 inches) tall, 60 cm (24 inches) wide, and 30 cm (12 inches) deep. The box rests on five metal 10 cm (4 inch) diameter, one 3.8 cm (1 1/2 inch) diameter, and one 2.5 cm (1 inch) diameter conduit. The conduit extend 107 cm (42 inches) from the ground surface and contain coated electrical wires.

Feature 2 - Drill Hole U15a #34

Feature 2 is the U15a #34 instrument drill hole, located north of the U15a Area (Figure 144). A 20.3 m (8 inch) diameter casing pipe extends 17.7 cm (7 inches) above the surface. The edges of the pipe curve outward, forming a 2.5 cm (1 inch) lip, and are painted blue. The pipe is covered with a welded metal plate of the same diameter. Embossed by welding on the metal plate is “U-15a #34.”

Feature 3 - Drill Hole U15.01 PS #1 Vertical

Feature 3 is the U15.01 vertical post shot drill hole, east of the U15a Area (Figure 145). The pipe casing is 15 cm (6 inches) in diameter with a 7.6 cm (3 inch) metal flange welded to the edge making the total diameter 22.8 cm (9 inches). The metal flange has “U15.01 PS #1V” embossed by welding on it. The pipe is filled with concrete and the top is flush with the surface and surrounded by pea gravel. The drill hole pad is 92 m (302 ft) long and 45 m (148 ft) wide. The pad area is 0.3 hectare (0.8 acres).

Feature 4 - Drill Hole U15 GZ #24

Feature 4 is the U15 GZ #24 drill hole, toward the southeast corner of the U15 Complex (Figure 146). At the surface the drill hole casing consists of a 30.5 cm (12 inch) diameter pipe extending 39.3 cm (15.5 inches) above the ground surface. A 7.6 cm (3 inch) wide metal flange is welded around the edge of the pipe casing. The flange has a 5.1 cm (2 inch) wide cut and is embossed “U-15 GZ #24” by welding rod. The casing is filled with concrete. The pad is irregular shaped, 46 m north-south and east-west, spanning a 0.15 hectare (0.36 acre) area. The pad is built up on the south side to be level with the north side.



Figure 144. Feature 2, U15a #34 drill hole (2011).



Figure 145. Feature 3, U15.01 PS #1 V drill hole (2011).



Figure 146. Feature 4, U15 GZ #24 drill hole, view east (2011).

Feature 5 - Drill Hole U15 GZ #25

This drill hole feature, at the southeast corner of the U15 Complex, consists of a 30.4 cm (12 inch) diameter casing rising 39.3 cm (15 1/2 inches) above the ground surface and a rectangular drill pad (Figure 147). The casing has a 7.6 cm (3 inches) wide metal flange welded around the edge of the pipe. The flange has a 2.5 cm (1 inch) wide cut, adjacent to the embossed welded letters “U-15 GZ#25.” Directly below the letters, partially buried is a 5.1 cm (2 inch) diameter pipe welded to the casing extending outward from the base of the casing approximately 7.6 cm (3 inches). A 0.63 cm (0.25 inch) piece of braided cable is wrapped around the base of the pipe. The pad measures 58 m (190 ft) north-south and 28 m (92) east-west. It spans a 0.15 hectare (0.36 acre) area. The south and west sides of the pad are built up to be level with the other parts of the pad.

Feature 6 - Drill Hole GZ #15 S2

Feature 6 is the U15 GZ #15 S2 drill hole, at the northeast corner of the U15 Complex (Figure 148). The feature is represented by a 20.3 cm (8 inch) diameter casing extending 20.3 cm (8 inches) from the ground surface in the middle of a rectangular drill pad. Welded to the south edge of the casing is an upright metal sign measuring 30.5 cm (12 inches) x 15.2 cm (6 inches) and is embossed by welding rod with “U-15 GZ #15 S2” text on the flange face of the pipe. Opposite the sign is a 5 cm (2 inch) cut in the casing. The casing has been filled with concrete. The drill pad is 55 m (180 ft) north-south, 26 m (85 ft) east-west, and encompasses 0.16 hectare (0.4 acre). It is built up on the south and west sides.

Feature 7 - Drill Hole U15 GZ #14

Feature 7 is the U15 GZ #14 drill hole, toward the northeast corner of the U15 Complex (Figure 149). In the middle of the drill pad is a 20.3 cm (8 inch) diameter metal pipe casing extending 20.3 cm (8 inches) above the ground surface. Welded to the base of the casing, extending east is a 5 cm (2 inch) diameter pipe. Embossed by welding on the top edge of the casing is “U-15 GZ#14” text. The casing is filled with concrete and the area surrounding it is covered with pea gravel. The rectangular drill pad is 63 m (207 ft) long and 30 m (98 ft) wide. The area of the pad is 0.16 hectare (0.4 acre). A high berm is along the south edge. Approximately 25 m (82 ft) south of the drill pad is a sump or reserve pit to contain water and drilling mud to evaporate and dry out. The sump is in a drainage, narrow at the north end and expands at the south end, following the topography of the drainage. The south side of the sump consists of an estimated 6 m (20 ft) high berm. The sump measures 43 m (141 ft) long, 29 m (95 ft) at the widest, and has an area of 706 sq m (7,599 sq ft).

Feature 8 - Drill Hole U15a #28 RC

Feature 8 is the U15a #28 RC (radiochemical) drill hole and is 4 m (13 ft) west of the U15a device emplacement shaft (Figure 150). Rising 15.2 cm (6 inches) from the ground surface is a 20.3 cm (8 inch) diameter metal casing. Welded to the south side is a metal plate embossed by welding with “U15a #28 RC” text. The drill hole is filled with concrete. Adjacent to the casing is a 1.2 m (4 ft) tall, 10.1 cm (4 inch) diameter pipe with a T-post inserted inside to mark the location of the feature.



Figure 147. Feature 5, U15 GZ #25 drill hole, view west (2011).



Figure 148. Feature 6, U15 GZ #15 S2 drill hole, view north (2011).



Figure 149. Feature 7, U15 GZ #14 drill hole, view east (2011).



Figure 150. Feature 8, U15a #28 RC (Rad Chem) drill hole, view east (2011).

Feature 9 - Drill Hole U15a #28 S PS

Feature 9 is the U15a #28 S PS (post shot) drill hole marked by a 20.3 cm (8 inch) diameter metal casing extending 15.2 cm (6 inches) from the ground surface (Figure 151). It is 4.5 m (14 ft 9 inches) southwest of the U15a device emplacement shaft. Welded to the casing is a metal plate with “U-15a-PS#28 S” text embossed by welding rod. The casing is filled with concrete. A concrete pad surrounds the casing and it is not known if the pad was built before or after the drill hole.

Feature 10 - Drill Hole U15a 29 S

Feature 10 is the U15a 29 S drill hole 7 m east of the U15a shaft (Figure 152). The feature is a 20.3 cm (8 inches) diameter metal casing extending 15.2 cm (6 inches) above the ground surface. Welded to the base of the casing is a metal plate with “U-15a 29S” embossed by welding on it. Adjacent to the casing is a T-post. The casing is filled with concrete.

Feature 11 - U15a Device Emplacement Shaft

Feature 11 is the U15a device emplacement shaft, 294 m (963 ft) deep and 112 cm (44 inches) in diameter, for the Hard Hat nuclear test (Figures 153-154). At the surface is a reinforced concrete collar for the shaft, 2.1 m (7 ft) in diameter, that sits on a concrete pad, 5.6 m (18 ft 6 inches) north-south and 5.7 m (18 ft 9 inches) east-west (Figure 155). The cased shaft is 91 cm (36 inches) in diameter. The concrete collar is 61 cm (24 inches) from the north edge of the pad and is eroding on the east and west sides to expose the rebar reinforcement. The rebar is 3.8 cm (1 1/2 inches) and 1.2 cm (1/2 inch) in diameter. On top of the collar is a 1.2 m (4 ft) square metal plate propped up at one corner by two small rocks. The concrete pad has also eroded and is now covered with dirt in some areas.

On the east side of the pad towards the middle is another smaller concrete pad, 1.8 m (6 ft) square. Another separate concrete pad is 1.7 m southeast of the main large pad. It is 1.2 m (4 ft) square and in the middle are two anchor bolts. At the southwest corner is a third smaller concrete pad, 3 m (10 ft) square. North of the pad 1.5 m (5 ft) and 0.9 m (3 ft) west is a fourth concrete pad that measures 3 m (10 ft) north-south and 1.2 m (4 ft) east-west.

The head frame and hoist were located north of the emplacement shaft (Figure 156). Just north of the main pad are two 41 cm (16 inches) square concrete footings, with 2 cm (3/4 inch) diameter anchor bolts, for the front legs of the head frame. The western one also consists of the footing for the ladder on the head frame. The underlying base of the footings, not exposed, measures 1.2 m (4 ft) north-south, 91 cm (36 inches) east-west, and 71 cm (28 inches) high. The two footings for the rear legs of the head frame were not discovered due to excessive soil covering, but are of similar size. They are 19 ft north of the two exposed footings. A concrete wall is 8.7 m (28.5 ft) north of the main pad and behind it was stationed the hoist for the shaft. The wall is 4 m (13 ft) long, 31 cm (12 inches) wide at the base, and 91 cm (36 inches) high. Also not exposed due to excessive soil covering is a concrete pad, with anchor points for the hoist, that was connected to and behind the wall. This concrete pad measured 6 m (20 ft) long and 4 m (13 ft) wide.



Figure 151. Feature 9, U15a PS #28S post shot drill hole, view northeast (2011).



Figure 152. Feature 10, U15a 29S drill hole, view northeast (2011).



Figure 153. Feature 11, concrete collar for the U15a device emplacement shaft, view west (2011).



Figure 154. Feature 11, device emplacement shaft, concrete collar, concrete pads, and concrete wall, view northwest (2013).

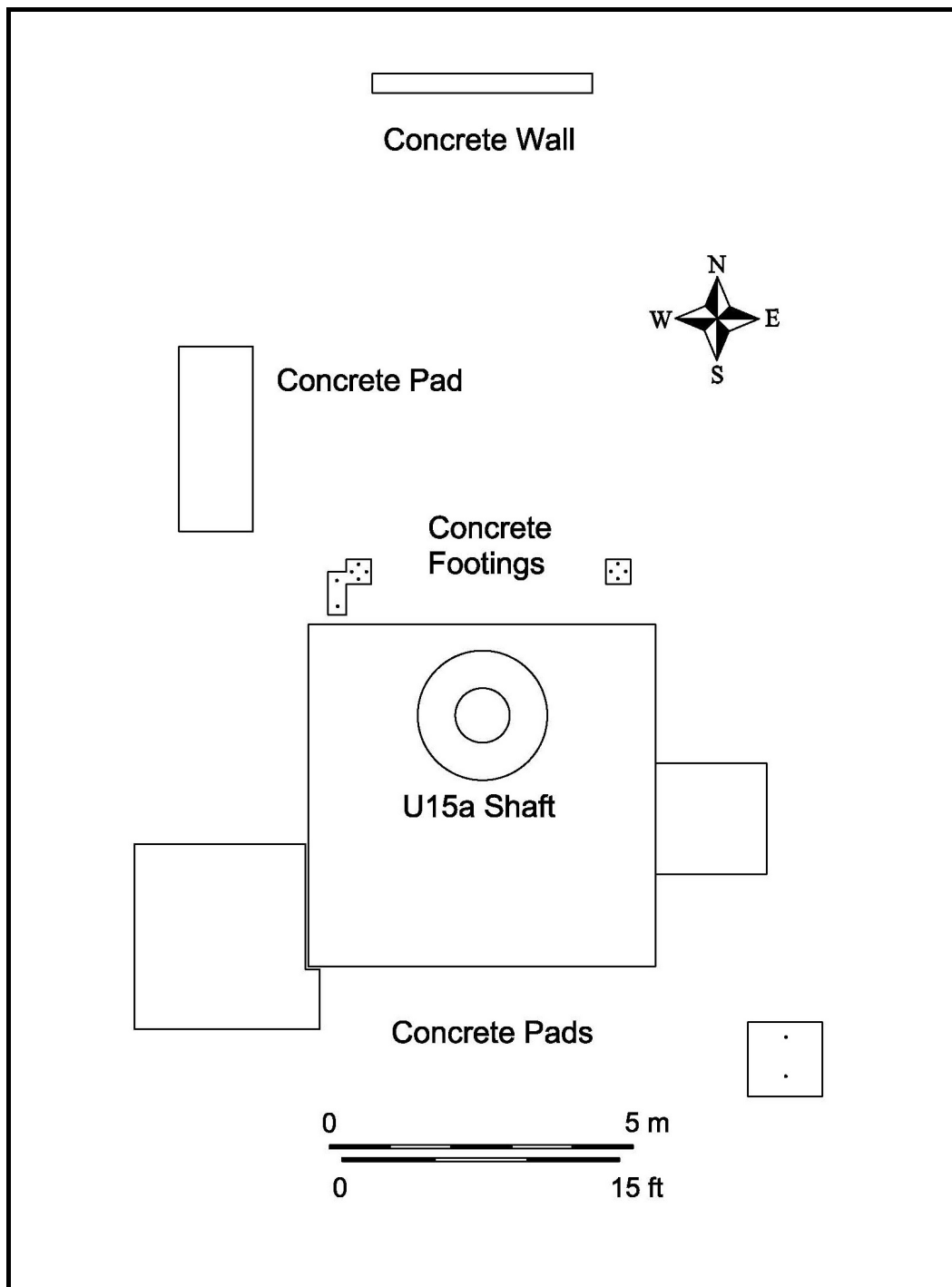


Figure 155. Plan of Feature 11, U15a device emplacement shaft.

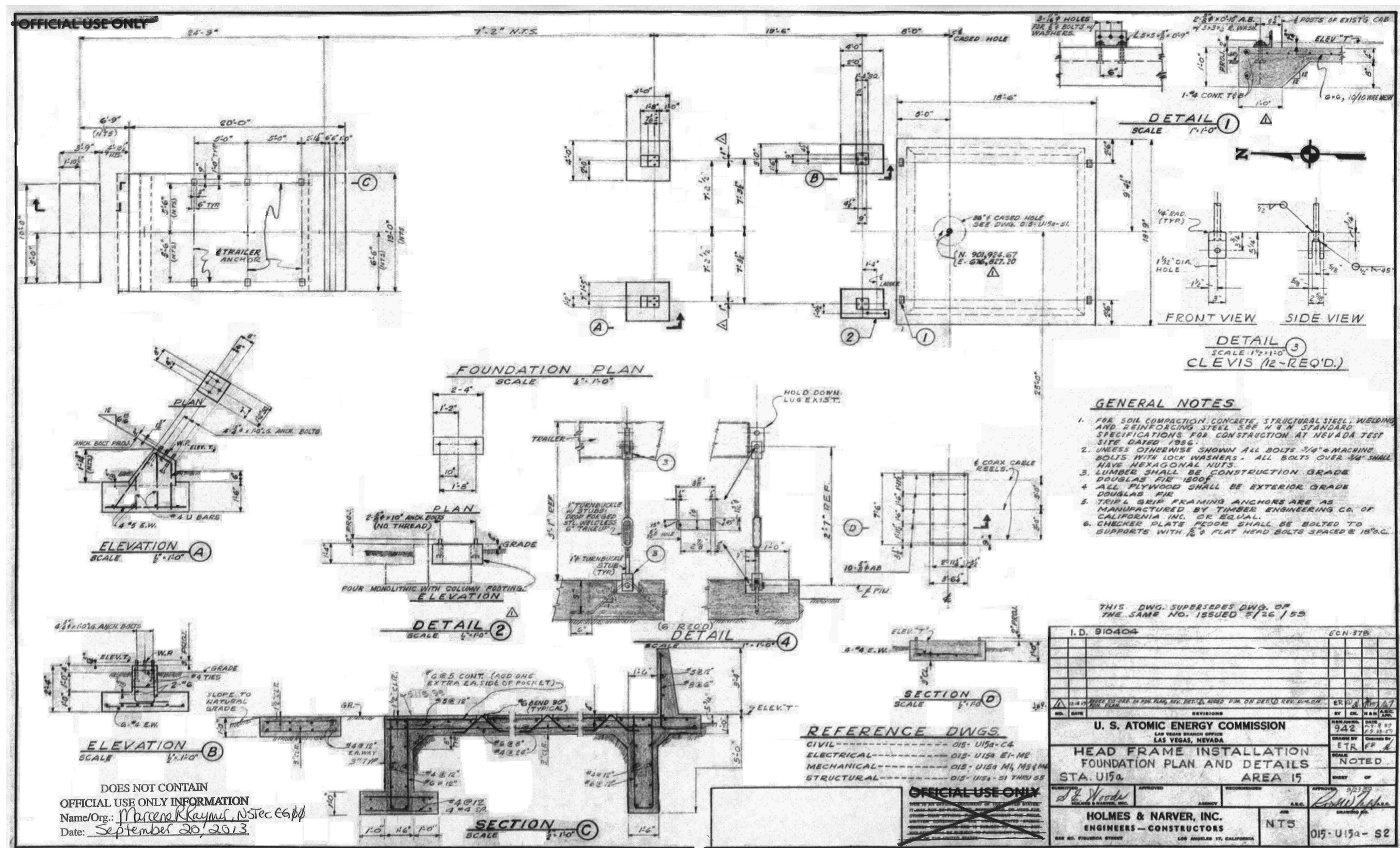


Figure 156. Plan and sections of Feature 11, U15a device emplacement shaft (drawing 015 U15a S2, dated 1959, on file at the Archives and Records Center, Mercury, Nevada).

Feature 12 - Drill Holes U15.01 RTH, U15.01 RTH #1, and U15.01 RTH #2

Feature 12 consists of the U15.01 RTH, U15.01 RTH #1, and U15.01 RTH #2 drill holes, in the main area 7 m (23 ft) southwest of the head frame for the main access shaft (Figure 157). All three are in the same drill hole. At the surface the feature consists of a 33 cm (13 inch) diameter metal pipe casing flush with the ground surface. The hole is covered by a hinged metal plate welded to the top with a surrounding 14 cm (5.5 inch) wide flange. The flange has ten 1.2 cm (0.5 inch) holes around the edge and was once painted blue. “U15.01 RTH #1” text is embossed on the hinged plate by welding rod. The immediate surface surrounding the drill hole is covered with pea gravel and red cinders.

Feature 13 - Concrete Pad

This concrete feature is the foundation of the U15e hoist and hoist house for the Tiny Tot nuclear test (Figures 140, 158). Feature 13 is 20 m (66 ft) eastward of the U15e access shaft, Feature 1, and consists of a central reinforced concrete pad for the hoist, noted by anchor bolts, and a surrounding concrete pad for the hoist house. Length is 8.8 m (29 ft) and width is 6.4 m (21 ft). The central pad measures 6.4 m (21 ft) long, 4.7 m (15 ft 7 inches) wide, and 61 cm (24 inches) thick. It contains 26 anchor bolts that are 2.5 cm (1 inch) in diameter with 3.1 cm (1 1/4 inch) diameter nuts. Nine anchor bolts are on each of the long sides and four are on each of the short sides. At the base of the bolts are 5 cm (2 inch) diameter washers. Surrounding the central pad is a concrete pad measuring 80 cm (32 inches) wide on the west side, 1.2 m (4 ft) on the north and south sides, and 1.5 m (5 ft) on the east side. It has not been reinforced with rebar and is 15 cm (6 inches) thick. Toward the southeast corner is a vertical 10.7 cm (4 1/4 inch) diameter metal conduit with electric cable inside, extending above the surface 8.8 cm (3 1/2 inches). The surface of the pad is finished, but eroding away, and it is partially overgrown with vegetation. Surrounding artifacts include lock nuts, nails, metal fragments, concrete fragments, rubber grommets, communication wire, corrugated metal fragments, springs, screws, and bolts.

Feature 14 - Drill Holes U15e #1 and U15e Postshot #1 Vertical

This feature has a single 16.5 cm (6 1/2 inch) diameter metal pipe casing that extends 30.4 cm (12 inches) above the ground surface (Figure 159). The drill hole is near the U15e area, 63 m (207 ft) east of the U15e shaft, and has been filled with concrete. Welded to the base of the casing is a 30.1 cm (12 inches) long and 15.2 cm (6 inches) wide metal plate with “U15e #1 V” embossed by welding on it. On the south side of the casing approximately 5 cm (2 inches) above the ground surface is a 2.5 (1 inch) x 5.0 cm (2 inch) hole. Artifacts nearby include metal fragments, wood, a can lid, rubber hose, communication wire, and a pipe elbow. The drill pad area covers 0.1 hectare (0.3 acre), spanning 48 m (158 ft) north-south and 32 m (105 ft) east-west.

Feature 15 - Loading Ramp

Feature 15 is a loading ramp built into the east side of the main muck pile (Figure 160). It is midway between the main area and the U15e area. The front bulkhead of the ramp is constructed of four 6-x-8 wood beams 6 m (20 ft) long placed horizontally across four vertically embedded 20 cm (8 inch) wide metal I beams. On top of the wood beams and placed end-to-end are five horizontal 4-x-6 wood



Figure 157. Feature 12, U15.01 RTH #1 drill hole, view northwest (2011).



Figure 158. Feature 13, concrete pad for the U15e hoist house, view southeast (2011).



Figure 159. Feature 14, U15e PS #1 V drill hole (2011).



Figure 160. Feature 15, loading ramp, view northwest (photograph D10-2882, dated 2010, on file at the Remote Sensing Laboratory).

beams that are 1.2 m (4 ft) long. Across the top of the vertical I beams is a channel iron, 32 cm (13 inches) wide and the length of the bulkhead. The bulkhead is 91 cm (36 inches) tall and 6 m (20 ft) long. The ramp portion behind the bulkhead is overgrown with vegetation and measures 14 m (46 ft) east-west and 7.6 m (26 ft) north-south, with an area of 100 sq m (1,076 sq ft). Surrounding surface artifacts include pieces of wood, communication wire, screws, and metal fragments.

Feature 16 - Leach Tank

Feature 16 is a buried metal leach tank used for the Tiny Tot nuclear test (Figure 161). It abuts Feature 15 on the north. A conical dome is at the surface, capping the buried rectangular tank (Figure 162). The dome measures 4.6 m (8.5 ft) in diameter and extends above the surface 0.6 m (2 ft) at the center point. The dome is constructed of three smooth sheet metal pieces riveted together. The dome has a 0.47 m (1 ft 7 inch) friction lid opening on the west side and a 8.8 cm (3.5 inch) diameter pipe, with an elbow fitting, to the east of the larger opening and extends upward 9.6 cm (3.8 inches). Directly south of the larger opening is a second 8.8 cm diameter pipe with an elbow and pipe that extends out 50 cm (20 inches) then bends at a second elbow and continues subsurface. The floor is dirt with some pea gravel. The interior is not accessible. The bottom part of the feature, covered by sediment, is rectangular and measures 9m (30 ft) long, 4.6 m (15 ft) wide, and 3 m (10 ft) high. The earthen mound covering the bottom part measures 16 m (52.5 ft) north-south and 11 m (36 ft) east-west. The mound has an area of 146 sq m (1,571 sq ft)

Feature 17 - Concrete Experiment Section

Feature 17 is a practice concrete experiment section for either the Hard Hat or Pile Driver nuclear tests (Figure 163). Accordingly, a few concrete experiment sections were first constructed at the surface in order to perfect the method of construction before they were built underground in the test drifts. This concrete experiment section, Feature 17, is circular and laying horizontally and probably relocated or discarded in its current location next to the muck pile and across the road from Feature 1, the U15e access shaft. It measures 4.9 m (16 ft) long, 2.5 m (8.2 ft) in diameter, and the walls are 15.2 cm (6 inches) thick. The north end of the section is enclosed, 30.5 cm (12 inches) thick, gravel and medium size rocks exposed on the exterior, and the interior side is smooth. In the immediate area are wood fragments, communication wire, metal fragments, and nuts and bolts.

Features 18, 19, 20, 21, 22, and 23 - Trenches

These six features are trenches excavated by the U.S. Geological Survey and the Lawrence Livermore National Laboratory to explore the geology of the Boundary Fault in preparation for the Midnight Blue nuclear test, which was never conducted. The trenches are along the north side of a gravel road (see Figure 85). All six trenches are oriented north-south, have been excavated into the side of the fault escarpment by a bulldozer, and the spoil dirt from the excavation is deposited south of each trench and, except for Feature 18, on the opposite side of the gravel road.

Feature 18, across the road northward from Trailer Park #1, is the westernmost trench and measures 28 m (92 ft) long and 4.9 m (16 ft) wide (Figure 164). The excavated spoil has been deposited immediately south of the trench and along the north side of the road. The spoil pile measures 11 m (36 ft) north-south and 30.5 m (100 ft) east-west.

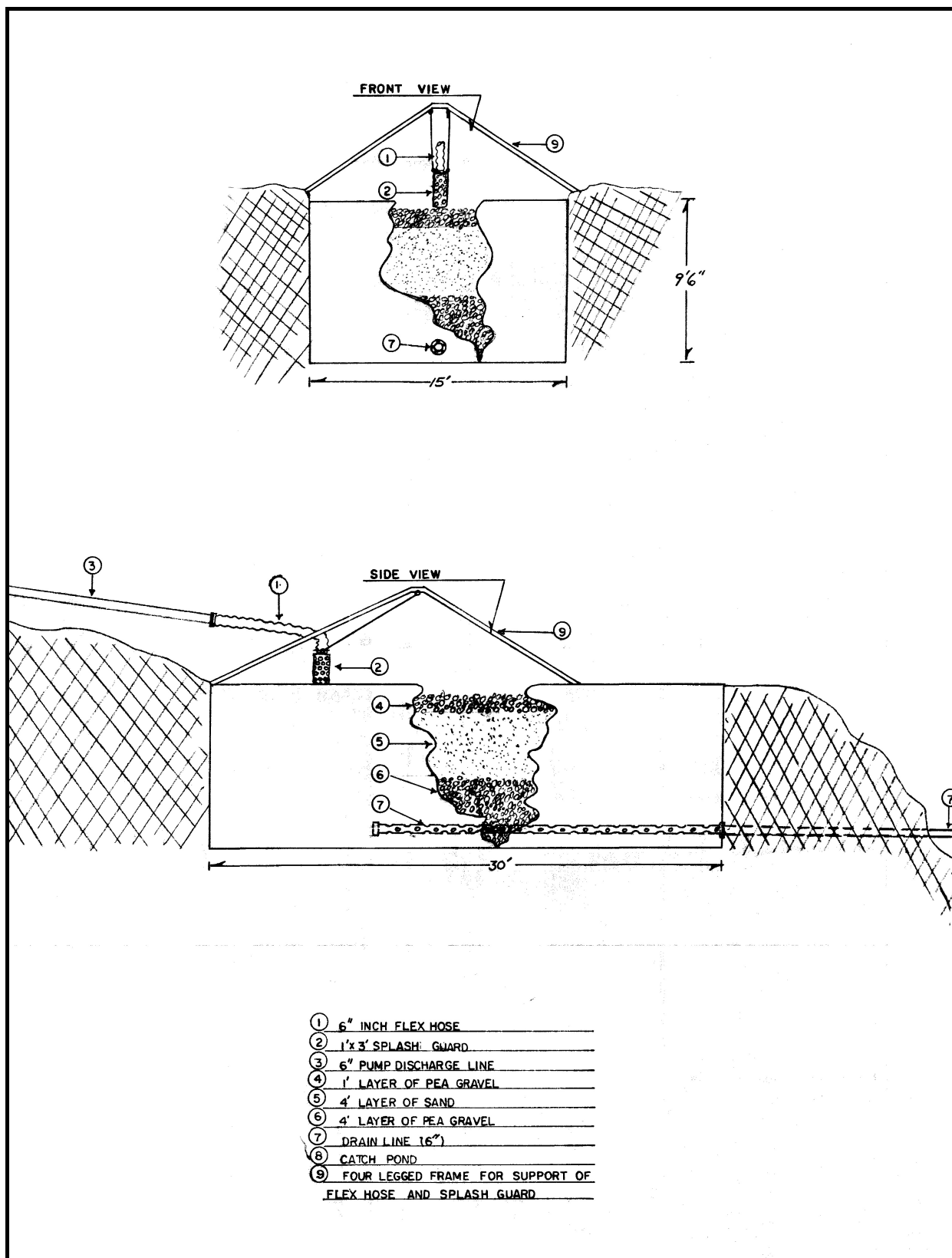


Figure 161. Diagram of Feature 16, leaching tank (modified from drawing SEC.7 41, no date, on file at the Archives and Records Center, Mercury, Nevada).



Figure 162. Feature 16, leaching tank for the Tiny Tot nuclear test, view northeast (2011).



Figure 163. Feature 17, concrete experiment section, view southwest (2013).



Figure 164. Feature 18, trench, view north (2013).

Feature 19 measures 57 m (188 ft) long and 9.7 m (32 ft) wide (Figure 165). The spoil pile south of the road measures 23 m (75 ft) north-south and 20 m (65 ft) east-west. The trench was once surrounded by a fence as evidenced by remaining T-posts.

Feature 20 is 27 m (90 ft) long and 6 m (20 ft) wide (Figure 166). The spoil pile measures 18 m (60 ft) north-south and 15 m (50 ft) east-west.

Feature 21 measures 27 m (90 ft) long and 6 m (20 ft) wide and the spoil pile is 22 m (72 ft) north-south and 15 m (50 ft) east-west (Figure 167).

Feature 22 is 39 m (128 ft) long and 8 m (27 ft) wide (Figure 168). The spoil pile measures 35 m (115 ft) north-south and 14.6 m (48 ft) east-west. This trench also has T-posts along the sides to suggest a surrounding fence at one time.

Feature 23 is the easternmost trench and measures 30.5 m (100 ft) long and 6.7 m (22 ft) wide (Figure 169). The spoil pile spans 23 m (75 ft) north-south and 12 m (40 ft) east-west.

Feature 24 - Metal Poles

Feature 24, between trench Features 20 and 21, consists of two metal poles embedded in rough-poured circular concrete footings (Figures 170-171). The poles are 7.6 cm (3 inches) in diameter and have been placed 6 m (20 ft) north and 1.8 m (6 ft) south of an existing gravel road. The north metal pole is 1.8 m (6 ft) tall above the ground surface and sits at a higher elevation on the landscape. The southern pole is taller, at a lower elevation but level at the top with the northern pole, and is approximately 4 m (13 ft 7 inches) tall above the surface. Remnants of communication wire and braided cable hang from both poles. The poles allowed the communication wire to extend above and across the road, while the cable served as guy wire to anchor the poles. Etched in the concrete footing of the south metal pole are the names of Frank Urban, Marvin Gro??, and Harold Gallagher.

Feature 25 - Quarry

Feature 25 is in the southwest corner of the U15 Complex and 30 m (98 ft) north of Trailer Park #2. The quarry was formed by the partial excavation of a low fan, removing only the western half, and is oblong with a straight east edge (Figure 172). Fill from the quarry may have been used to construct the trailer park, particularly the berm at the trailer park. The quarry measures 72 m (236 ft) north-south, 23 m (75 ft) east-west at the widest extent, and approximately 1.5 m (5 ft) deep. The bottom of the quarry is level with the bottom of the shallow drainage located alongside the west side of the fan.

Feature 26 - Quarry

Feature 26 is another shallow quarry in the southwest corner of the U15 Complex and 30 m northeast of Feature 90, the generator pad. The sediment and gravel excavated from the quarry may have been used to construct the southern and lower half of the generator pad. The quarry is oval, 75 m long and 26 m wide (Figure 173). It is approximately 1.5 m (5 ft) deep and excavated into a southeast oriented fan.



Figure 165. Feature 19, trench and spoil pile, view south (2013).



Figure 166. Feature 20, trench, view southeast (2013).



Figure 167. Feature 21, trench, view north (2011).



Figure 168. Feature 22, trench, view south (2013).



Figure 169. Feature 23, trench, view north (2011).



Figure 170. Feature 24, metal poles, view southeast (2013).



Figure 171. Feature 24, north metal pole, Feature 21 trench spoil pile in background, view east (2013).



Figure 172. Feature 25, quarry, with Trailer Park #1 and trenches in background, view northeast (photograph D10-03080, dated 2010, on file at the Remote Sensing Laboratory).



Figure 173. Feature 26, quarry, view north (2013).

Feature 27 - Wood-lined Pit

Feature 27 is one of three wood-lined pits and is approximately 15 m (49 ft) northeast of Feature 11, the U15a device emplacement shaft. Feature 27 is constructed of 1-x-4, 2-x-2, and 2-x-4 milled lumber, and measures 2.1 m (7 ft) long, 1.34 m (4 ft 5 inches) wide, and 1.6 m (5 ft 3 inches) deep (Figure 174). The west edge is flush with the ground surface and the north, south, and east edges are raised 17.8 cm (7 inches) above the surface. The exterior is constructed of 1-x-4 and 2-x-2 boards and nailed together with flat, round head nails. The interior frame on all four sides consists of three vertical 2-x-4 boards and several 2-x-4 boards placed horizontally behind the uprights. A 20.3 cm (8 inch) diameter hole is drilled in the center of the south wall and a 17.8 cm diameter Victaulic pipe protrudes 17.8 cm through the hole into the interior. Near the west wall are two vertical 2.5 cm (1 inch) diameter capped pipes that rise 1.6 m (5 ft 3 inches) above the surface.

Feature 28 - Wood-lined Pit

Feature 28 is the second wood-lined pit and 1.1 m (45 inches) east of Feature 27. It measures 1.5 m (5 ft) square and is constructed of 1-x-4, 2-x-2, and 2-x-4 lumber (Figure 175). The west edge is flush with the surface while the north, south, and east edges are 15.2 to 20.3 cm (6 to 8 inches) above the surface. Along the south wall are four 2.5 cm (1 inch) diameter capped pipes rising 1.57 m (5 ft 3 inches) above the surface. Cut into the east corner of the south wall is a 20.3 cm (8 inch) diameter hole containing a 17.7 cm (7 inch) diameter Victaulic pipe 43 cm (17 inches) long that extends 12.7 cm (5 inches) inside and 30 cm (12 inches) outside the wood frame. The exterior end of the pipe is capped.

Feature 29 - Wood-lined Pit

Feature 29 is the third wood-lined pit (Figure 176). It is constructed in similar fashion as Features 27 and 28 and measures 2.1 m (7 ft) long, 1.33 m (4 ft 5 inches) wide, and 1.57 m (5 ft 3 inches) deep. It is located 7.3 m (24 ft) northeast and in line with Feature 27. All four sides extend above the surface 15.2 to 20.3 cm (6 to 8 inches). The south wall of the feature is eroding away exposing a 17.7cm (7 inch) diameter Victaulic pipe.

Feature 30 - Drill Hole U15a #37

The U15a #37 drill hole is in the main area of the complex and just south of Feature 39, a concrete pad. It is represented by a 30 cm (12 inch) diameter metal pipe casing that rises 60 cm (24 inches) above the ground surface (Figure 177). The top of the pipe is rolled, forming a 2.5 cm (1 inch) lip. Welded to the northwest edge is a 35 cm (14 inches) long and 10 cm (4 inches) wide metal sign with "U15a # 37" embossed by welding rod on the face. The casing is plugged with concrete.

Feature 31 - Concrete Pad

This concrete pad is in the main area near the wooden stairs and west of the main head frame (Figure 178). According to an engineering drawing (Figure 61), it was built for the Spent Fuel Test - Climax experiment. It is not labeled in the drawing and the function of the pad is unknown. It measures 4.6 m (15 ft) square and 30.5 cm (12 inches) thick. On top is a second thinner concrete pad centered on



Figure 174. Feature 27, wood-lined pit, view southeast (2011).



Figure 175. Feature 28, wood-lined pit, view southwest (2011).



Figure 176. Feature 29, wood-lined pit, view west (2011).



Figure 177. Feature 30, U15a #37 drill hole, view southwest (2011).

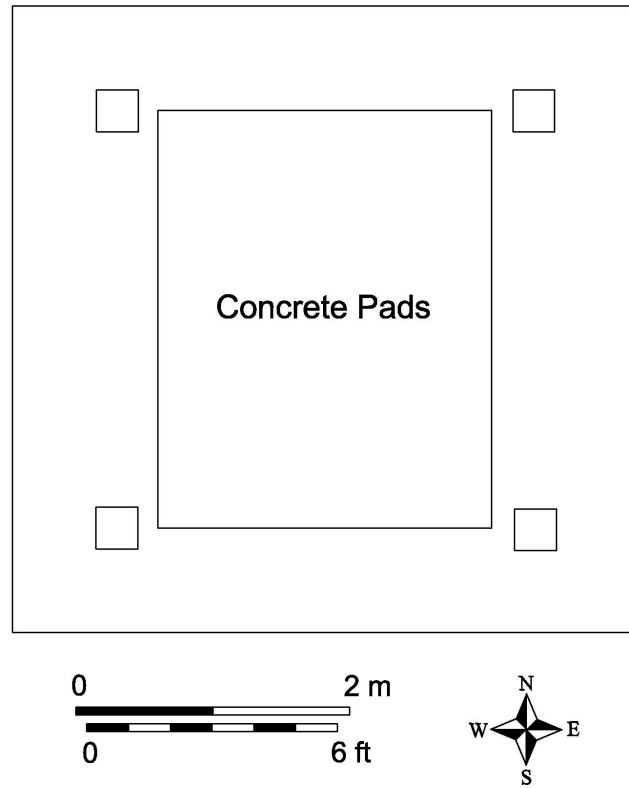


Figure 178. Feature 31, concrete pads, view northeast (2013).

the lower pad and measures 3 m (10 ft) long, 2.4 m (8 ft) wide, and 5 cm (2 inches) thick. Near each corner of the thinner pad is a shallow indentation, 30.5 cm (12 inches) square and about 1 cm (0.5 inch) deep into the lower pad.

Feature 32 - Rail Lines

Feature 32 consists of four rail lines oriented east-west just behind Structure 1, the head frame for the main access shaft (Figure 179). Presumably, muck excavated from the tunnel was deposited into rail cars stationed behind the head frame, carried away, and then dumped onto the muck pile. The two middle rail lines are 8 m (26.5 ft) in length, while the rail line nearest the head frame is 9 m (30 ft) in length, and the outside rail is 8.8 m (29 ft) long. All four are 6.3 cm (2.5 inches) wide. The first rail is spaced 1.5 m (5 ft) away from the head frame, the second rail is 0.9 m (3 ft) from the first, the third is 1.2 m (4 ft) from the second, and the fourth is 1.2 m from the third rail.

Feature 33 - Concrete Pad

Feature 33 is a concrete pad, 3.7 m (12 ft) long and 3 m (10 ft) wide (Figure 180). It was used during the Spent Fuel Test - Climax experiment for a water storage building and is located north of the main hoist house, Building 1. On the pad is a locally-built metal stand with 110 and 220 volt outlets attached. The outlets face inward to the pad. The stand is 30 cm (12 inches) from the southwest corner and measures 20 cm (8 inches) wide and 1.2 m (4 ft) high. Extending eastward 2 m (6.8 ft) from the stand to the east edge of the pad is a conduit pipe for electric wire to power the outlets. The conduit dips underground at the pad edge. Items observed at the pad include a rubber hose, pieces of angle iron, decayed sand bags, bolts, and metal plate.

Feature 34 - Electric Substation

Feature 34 is an electric substation, designated Substation #2 (Figure 181-183). Cable in a buried metal conduit from Substation #1 was connected to this substation to provide it power for further distribution. Feature 34 is east and next to the north-south oriented overhead vent pipe for the main access shaft and to Feature 35, a concrete pad. Feature 34 consists of a concrete pad, fencing, fence posts, a metal channel for fence posts, and metal conduit for electric cables. All electrical equipment has been removed. The pad measures 4.8 m (16 ft) long and 2.4 m (8 ft) wide. Surrounding the concrete pad on the western half is a 12.7 cm (5 inches) wide metal channel in which metal pipe on the west end has been welded to inset fence posts. The two middle posts on the long sides are inset into the ground and the channel is welded to them. Fence posts in the eastern half are inset into the ground, although the ones in the southeast corner could not be found and may have been pulled out when the substation was dismantled. Fencing comprised of chain link, metal posts, rails, and bracing is stacked in a pile southeast of the pad. The posts and fencing are 2.4 m (8 ft) in length, indicating the height of the feature. Around the top of the fence was strands of barbed wire on outward angled bars for security. A metal conduit with electric cables inside is toward the northeast corner of the pad. The conduit has been cut off close to the ground. A sign on the ground between the pad and the fencing reads "Danger High Voltage." The gate for the enclosure was on the east end; outside the fence along the south side were a series of switch boxes of various sizes.



Figure 179. Feature 32, rail lines on north side of Structure 1, view east (2013).

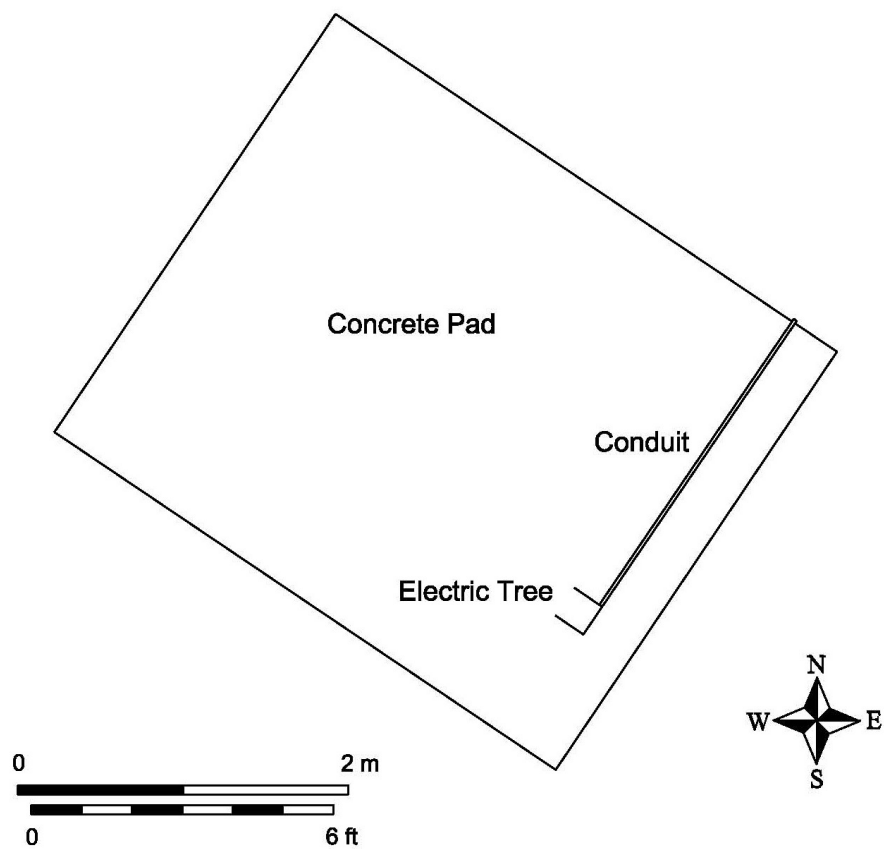


Figure 180. Feature 33, concrete pad, view southwest (2013).

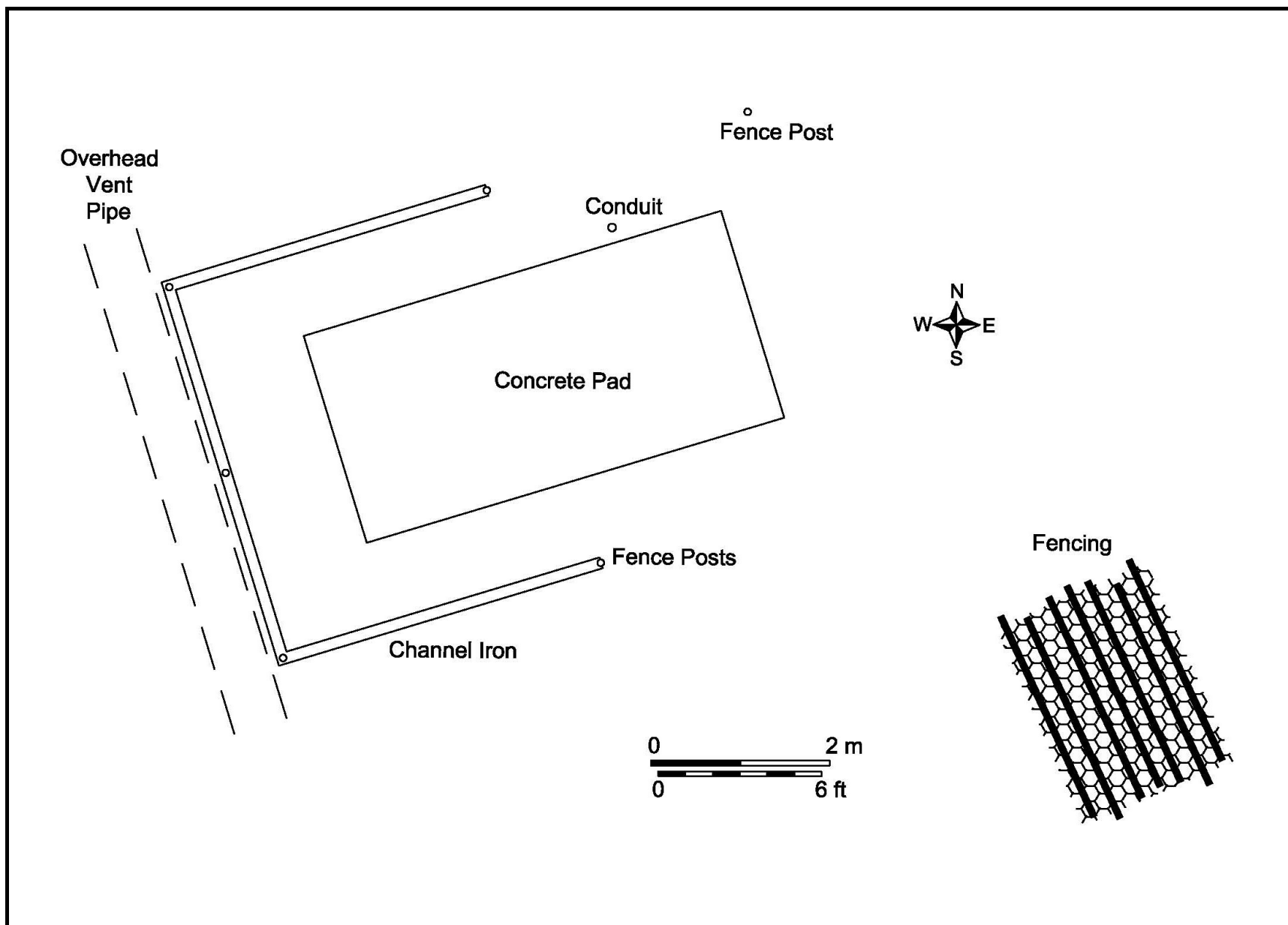


Figure 181. Plan of Feature 34, electric substation.



Figure 182. Feature 34, electric substation, view west (2013).



Figure 183. Feature 34, electric substation, view north (photograph on file).

Feature 35 - Concrete Pad

Feature 35 is a concrete pad in the main area and north of the main access shaft (Figure 184). Its position matches the location of the hoist house for the Hard Hat nuclear test (see Figure 80). The hoist house was a small wood-framed building 6.7 m (22 ft) long and 4.9 m (16 ft) wide (Figure 185). The concrete pad measures 9.3 m (30 ft 7 inches) along the east and west sides, 15.3 m (50 ft 5 inches) along the north side, and 14.6 m (47 ft 11 inches) along the south side. At the northwest corner is an extension that measures 2.9 m (9 ft 6 inches) long and 79 cm (31 inches) wide. Red cinders, Feature 62, surround the pad on the south and west sides. Attached to the concrete pad in the southeast corner are two sets of 10 cm (4 inches) wide angle iron posts spaced 1.8 m (6 ft) apart for supporting the overhead vent pipe. Attached next and to the west of the angle posts are two sets of I beam posts spaced 5.8 m (19 ft 4 inches) apart for supporting an overhead platform for the vent pipe system. The I beam posts are set into channel iron at the base and flat bar is welded to the posts at an angle from the channel for bracing. A metal ladder built of flat and round bar extends up to the platform. Along the east edge of the pad is a 20.3 cm (8 inch) diameter pipe connected to a 15.2 cm (6 inch) diameter pipe that delivered water to the access shaft. The smaller diameter pipe bends 90 degrees with a pipe joint around the northeast corner of the pad and connects to a flexible hose that was connected to the water tanks. The water pipes are resting on 6-x-8 beams of various lengths and elevated off the ground approximately 15 cm (6 inches). Along the northern edge of the pad are three electric distribution boxes which provided power to compressors set on the concrete pad during the Pile Driver test (see Figure 81). A tall light pole, Feature 59, is located north of the electric boxes. Lights once connected at the top of the pole are now laying at its base and next to the pad.

Feature 36 - Concrete Pad

Feature 36 is a concrete pad used during the Spent Fuel Test - Climax experiment for air conditioning and fan units at the end of an instrumentation trailer (Figures 186). The pad is north of the main hoist house, Building 1, and measures 5.8 m (19 ft) long by 2 m (6 ft 7 inches) wide. A buried telephone cable is along the northern edge. Located in the center and across the pad is a 3.8 cm (1 1/2 inch) diameter electric conduit. The conduit is broken on the south end after leaving the pad. Behind the pad to the east are four small displaced concrete footings. The footings are 40.6 cm (16 inches) square and 10 cm (4 inches) thick.

Feature 37 - Concrete Pad

Feature 37 is a concrete pad northwest of the main hoist house, Building 1, and measures 6.7 m (22 ft) long, 2.7 m (9 ft) wide, and 13.9 cm (5 1/2 inches) thick (Figure 187). Located 51 cm (20 inches) north of the southeastern corner are three 5 cm (2 inch) diameter electrical conduits that have been cut flush with the pad. The pad may have been used for an uninterruptible power supply unit connected to the instrumentation trailer for the Spent Fuel Test - Climax experiment.

Feature 38 - Blower Pad

Feature 38 is the blower pad for the tunnel ventilation system (Figures 188-190). The feature is in the main area north of the main access shaft and consists of a concrete pad with anchor bolts and conduit, a blower and support frame, an electric panel, and vent pipe. The concrete pad measures 4.2

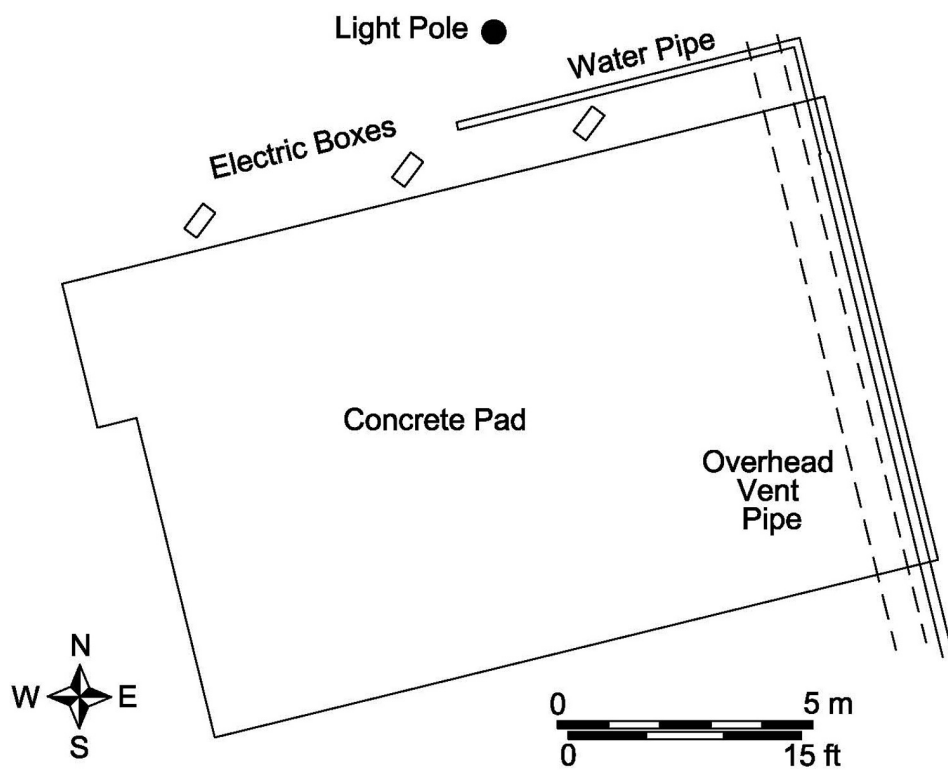


Figure 184. Feature 35, concrete pad, view west (2013).

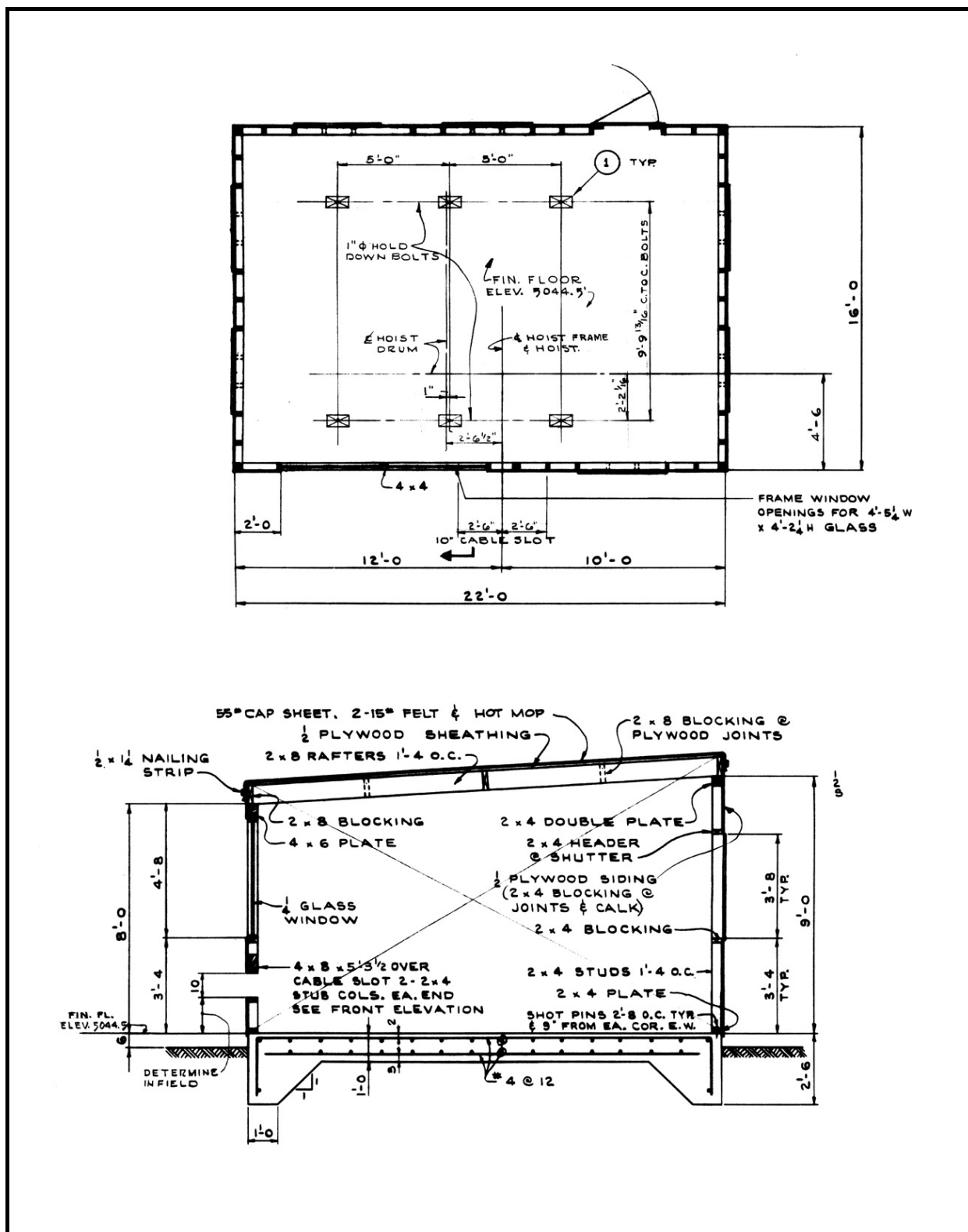


Figure 185. Plan and section of the hoist house for the Hard Hat nuclear test (modified from drawing 015 1500 S12, dated 1959, on file at the Archives and Records Center, Mercury, Nevada).

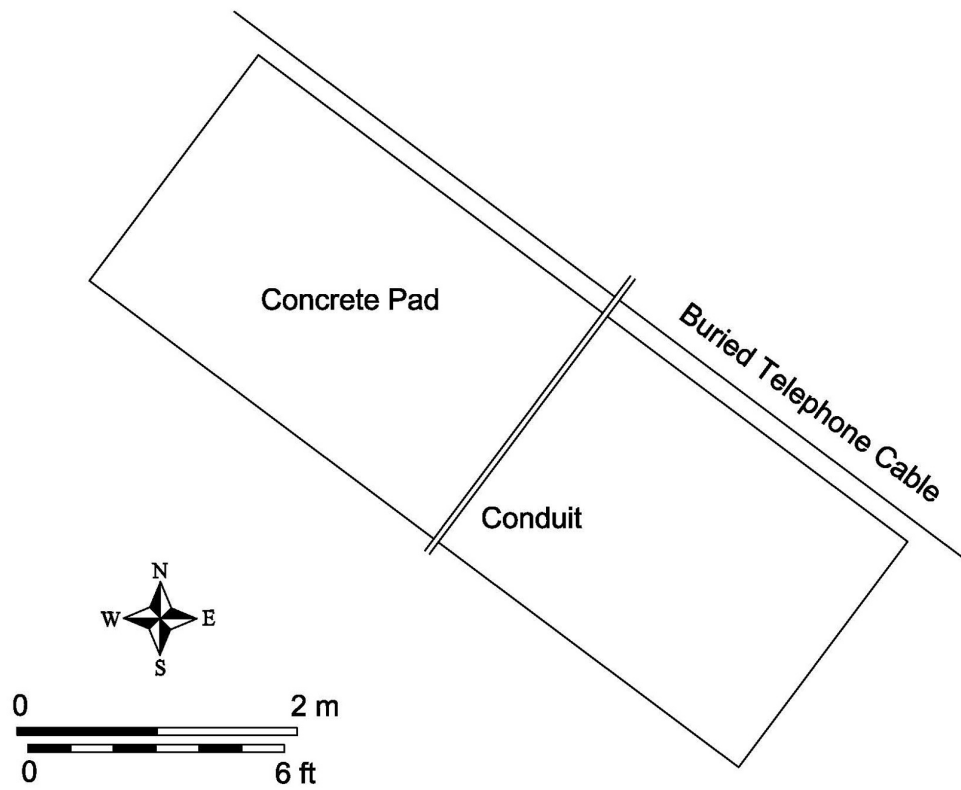


Figure 186. Feature 36, concrete pad, view north (2013).

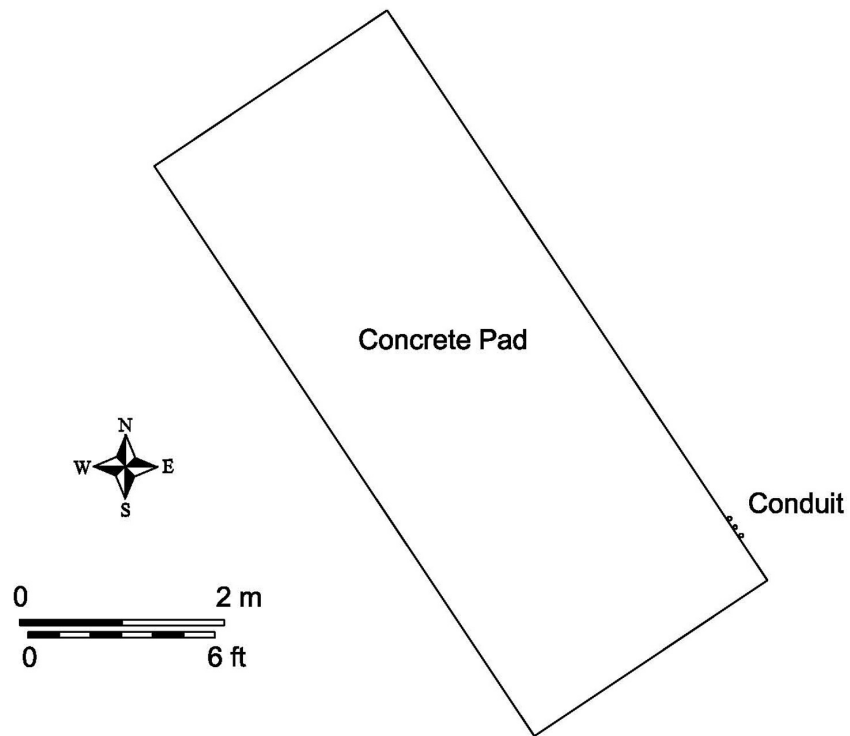


Figure 187. Feature 37, concrete pad, view southeast (2013).

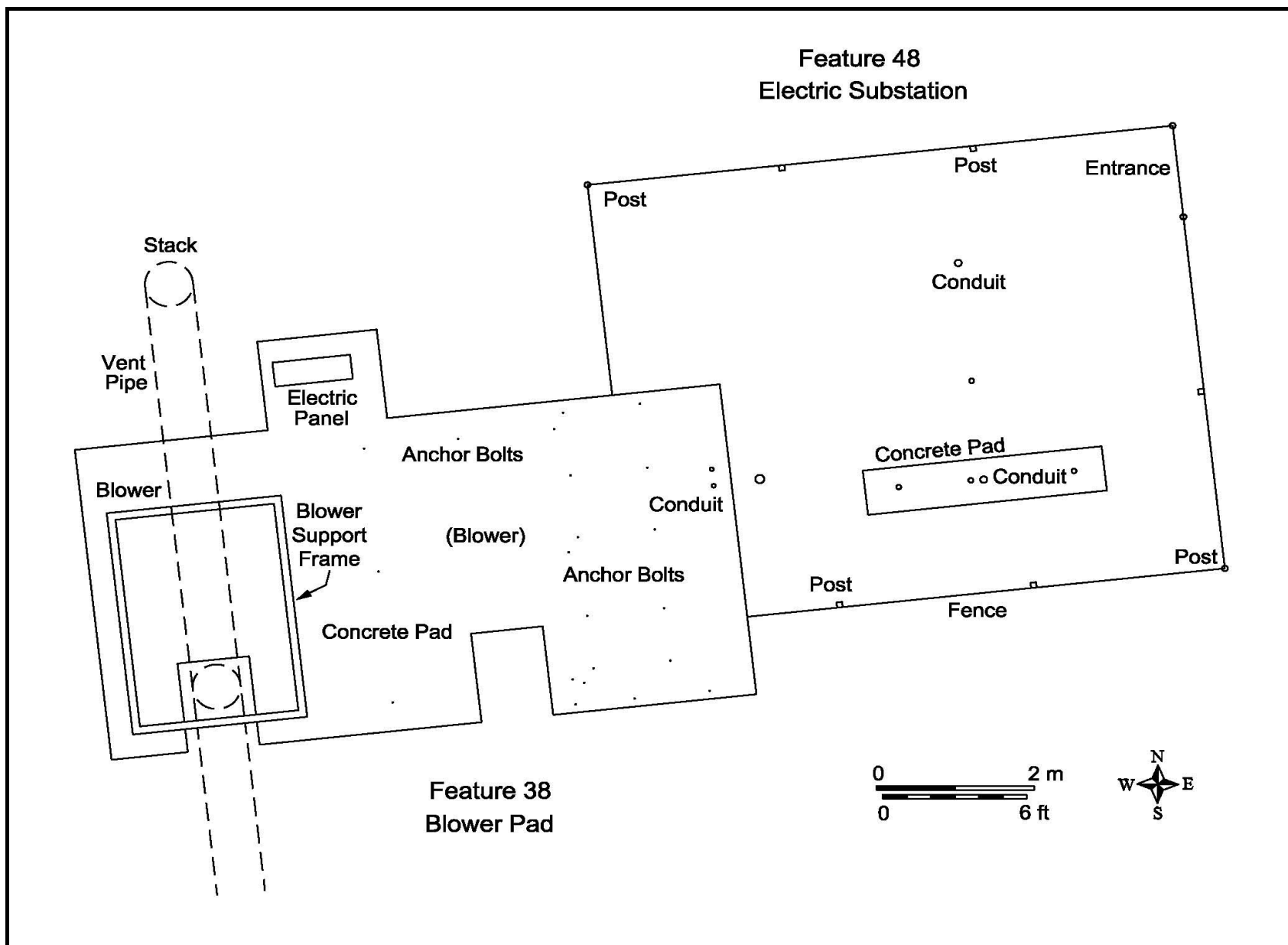


Figure 188. Plan of Feature 38, blower pad, and Feature 48, electric substation.



Figure 189. Feature 38, blower pad, view southeast (2013).



Figure 190. Feature 38, blower pad, view northwest (2013).

m (14 ft) north-south by 8.2 m (27 ft) east-west. The northern edge of the pad has a 1.5 x 1.5 m (5 x 5 ft) extension for a control panel to a Sutorbilt blower. The southern edge contains two 0.91 m (3 ft) wide notches for the vent pipe to enter the blowers from underneath. In the west notch is a 60 cm (24 inch) diameter vent pipe that is partially subsurface and emerges in the center of the notch to connect with the blower. The second notch, as well as on the pad behind it, is void of equipment. The blower here has been removed. The west blower that still remains has vent pipe rising from the top of it to extend northward to a stack for venting. The blower is supported by a heavy duty metal frame made of 25 cm (10 inch) wide I beams welded together. The frame measures 3 m (10 ft) long and 2.2 m (7 ft 4 inches) wide. A wooden structure once enclosed the blower pad, but has been removed. On the concrete pad are a series of embedded anchor bolts and conduit. One series of anchor bolts for the second blower have been cut off close to the surface. The other anchor bolt series along the east edge rise approximately 41 cm (16 inches) above the surface of the pad and are associated with an unknown piece of equipment that has since been removed as well. Abutting to the east side of the blower pad is Feature 48, an electric substation.

Feature 39 - Concrete Pads

Located in the main area and north of the main access shaft, Feature 39 consists of two contiguous concrete pads (Figure 191). Together the pads measure 3 m (10 ft) wide by 6.6 m (22 ft) long. Separated, concrete pad #1 to the east measures 4.9 m (16 ft) long and 3 m wide, while concrete pad #2 to the west is 1.8 m (6 ft) by 3 m. Thickness of pad #1 varies from 26.6 cm (10 1/2 inches) at the east end to 14 cm (5 1/2 inches) at the west end. Pad #2 is 21.6 cm (8 1/2 inches) thick. The east end of pad #1 has a 1.45 m (4 ft 9 inches) long and 0.9 m (3 ft) wide notch similar as the blower pad, Feature 38. Toward the north corner where the two pads meet are two pieces of conduit in pad #2 that are cut off near the surface. The eastern pad contains four anchor bolts at various distances from the east edge.

Feature 40 - Electric Cable Vault

Feature 40 is an underground electric cable vault (Figure 192). The vault is concrete, nearly flush with the ground, and measures 2.1 m (7 ft) north-south by 1.2 m (4 ft) east-west. Two metal plates of equal size, 105 cm (41 1/2 inches) by 98 cm (38 1/2 inches), cover the vault leaving a 7.6 cm (3 inch) concrete edge framing the metal plates. A metal sign in the southwestern corner of the vault cautions about underground electric cables and that Nevada Power Company should be notified before digging in the area.

Feature 41 - Wood Staircase

Feature 41 is a wooden staircase with an upper landing in the main area and northwest of Structure 1, the main head frame and 5.5 m (18 ft) west of Feature 35, a concrete pad (Figure 193). The staircase is oriented north-south, constructed of 2-x-4, 2-x-6, and 4-x-4 lumber, and measures 3.9 m (12 ft 9 inches) in total length and 1 m (3 ft 4 inches) wide. The landing measures 1.3 m (4 ft 3 inches) long and consists of eight horizontally-placed 2-x-6 slats. At both north corners of the landing are 4-x-4 railing support posts and at each corner where the landing meets the stairs are two sets of 2-x-4 boards joined together for railing support posts. The stairs consist of seven steps, but only six are exposed, with the lowest step covered by red cinders, Feature 62. The steps are

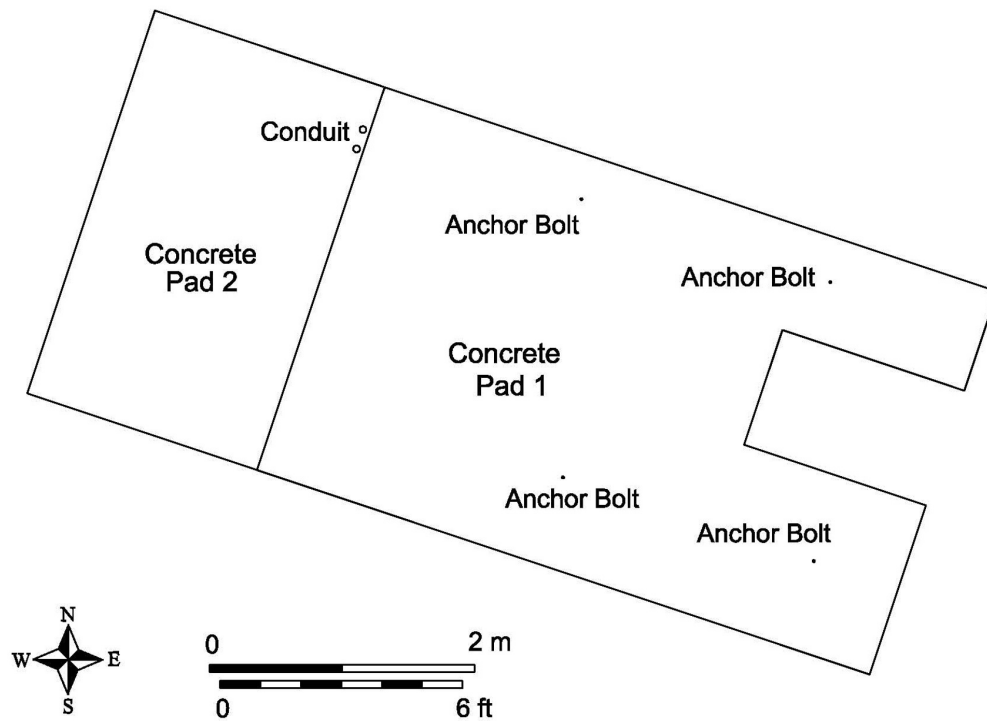


Figure 191. Feature 39, concrete pads, view southwest (2013).

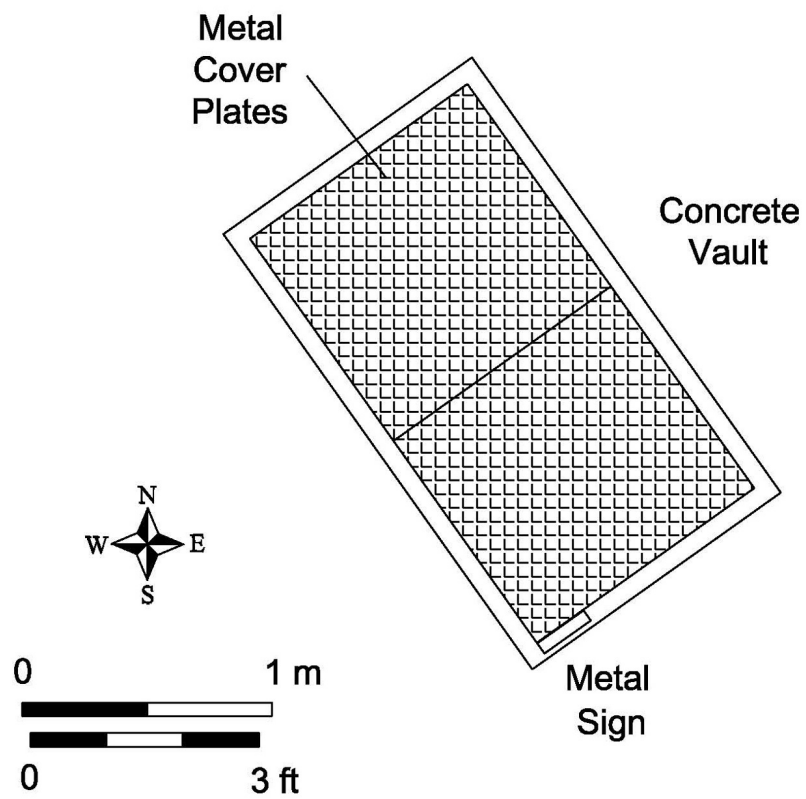


Figure 192. Feature 40, electric cable vault, view northwest (2013).



Figure 193. Feature 41, wooden stairs, view southwest (2013).

constructed of 2-x-6 boards and are 19 cm (7 1/2 inches) high and 29.2 cm (11 1/2 inches) deep. The railing is constructed of 2-x-4 boards and extends along both sides of the landing and down each side of the stairway. The staircase is quite deteriorated. The lower treads and risers are badly weathered and the railing elements are separating from each other.

Feature 42 - Concrete Staircase

Feature 42 is a reinforced-concrete staircase with metal pipe railings painted yellow (Figure 194). It ascends from the ground level of Building 1, the hoist house for the main access shaft, to the level of the muck pile surface and the main head frame. This concrete staircase replaced an existing wood staircase. It consists of an upper landing, 0.91 m (3 ft) by 1.8 m (6 ft) wide in size, and a 2.8 (9 ft 5 inches) long by 1.8 m (6 ft) wide lower staircase. Overall length is 3.8 m (12 ft 5 inches). The staircase contains nine 29.2 cm (11 1/2 inch) deep by 16.5 cm (6 1/2 inch) high steps with 7.6 cm (3 inches) wide checkered metal plate nosing. Metal railings are along both sides of the stairs. The railings are constructed of two horizontal and three vertical 3.2 cm (1 1/4 inch) diameter metal pipes welded together.

Feature 43 - Telephone Panel

Feature 43 is a panel for telephone communication and in the main area north of the main hoist house and east of Features 38 and 40 (Figure 195). It was used during the Spent Fuel Test - Climax experiment to send data from the recording trailer parked nearby to offsite computer stations. The plywood backboard is 1.2 cm (1/2 inch) thick, measures 1.2 m (4 ft) square, and is bolted to two 4-x-4 posts inset into the ground. The posts are approximately 1.6 m (5 ft 3 inches) high. Bolted to the plywood back are six metal boxes, four on top and two smaller ones on the bottom in the lower right corner. Shadow lines on the plywood indicate that four of the smaller boxes on the bottom row have been removed. Various cables enter and exit the boxes and are stapled to the plywood. Directly behind and centered on the plywood panel is a pole set in concrete. The pole is 15.2 cm (6 inches) in diameter and 2.3 m (7 ft 8 inches) tall. The pole, designated 19L-1, marks the route of an underground telephone cable that connects to the panel.

Feature 44 - Concrete Pad

This concrete pad represents what is left of the crafts shop building in the main area and southwest of the main head frame. The pad measures 10.4 m (34 ft) in length and 9.5 m (31 ft) wide (Figure 196). On top of it along the north edge and 2.4 m (8 ft) from the west edge is a second, small pad 79 cm (93 inches) square and 18 cm (7 inches) thick. Three metal plates, 1.8 m (6 ft) long, 15 cm (6 inches) wide, and 0.6 cm (1/4 inch) thick, are bolted to the surface of the small pad with 2.5 cm (1 inch) diameter anchor bolts.

Feature 45 - Concrete Pad and Electrical Equipment

This feature fronts Building 3, the hoist house for the canister access hole, and consists of a concrete pad, electrical boxes, and surrounding wheel stops (Figure 197). The concrete pad is 3.7 m (12 ft) east-west by 3 m (10 ft) north-south. Two electrical breaker boxes and two transformer boxes labeled "High Voltage" are mounted to the pad. The breaker box in the northwest corner measures 86 cm



Figure 194. Feature 42, concrete stairs, view west (2013).



Figure 195. Feature 43, telephone panel, view north (2013).

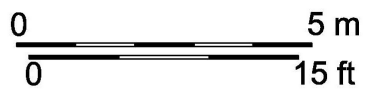
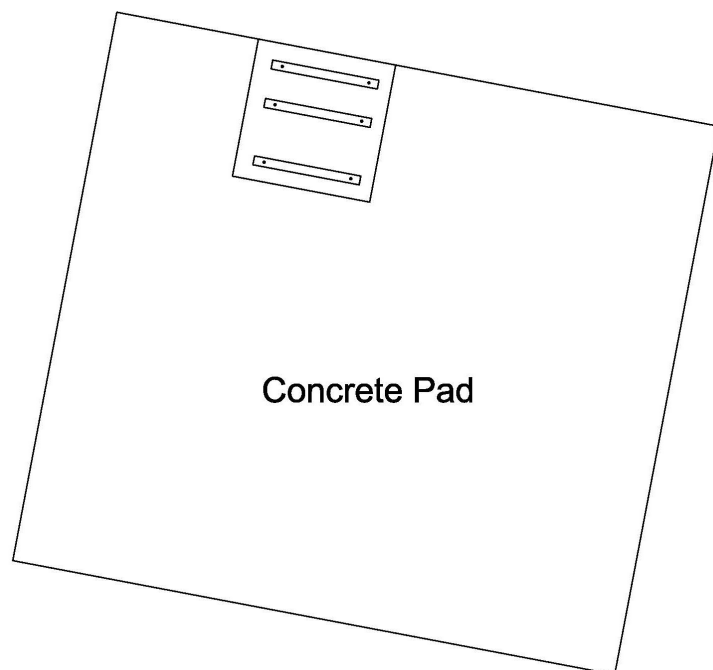


Figure 196. Feature 44, concrete pad, view west (2013).

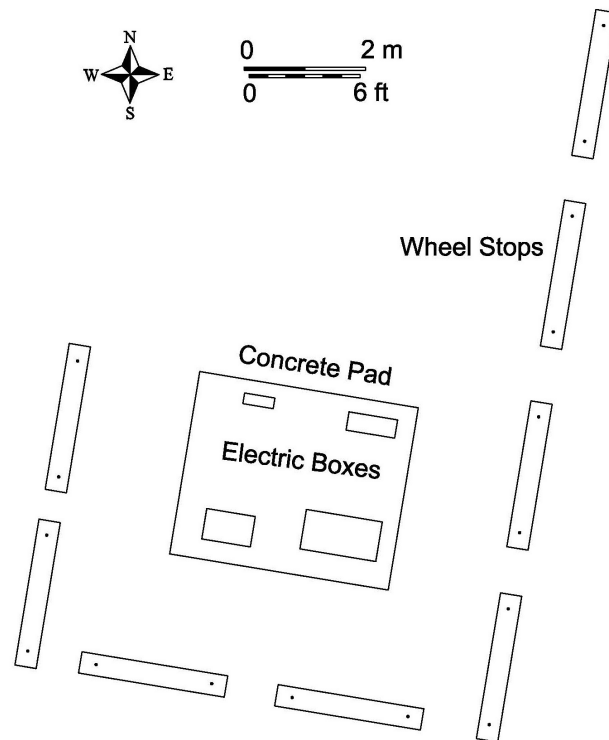


Figure 197. Feature 45, electrical equipment, view northeast (2013).

(34 inches) tall, 51 cm (20 inches) wide, and 18 cm (7 inches) deep. It is supported on six metal conduits extending subsurface below the pad and rises to a total height of 1.5 m (5 ft) above the pad. The breaker box in the northeast corner also rises to a total height of 1.5 m and is supported by 10 metal conduits extending below the pad. This box measures 119 cm (47 inches) tall, 81 cm (32 inches) wide, and 31 cm (12 inches) deep. The transformer box in the southwest corner of the pad measures 92 cm (36 inches) tall, 81 cm (32 inches) wide, and 51 cm (20 inches) deep and has a total height of 100 cm (40 inches). It is supported by two metal conduits extending below the pad. An attached metal tag reads “MGM Transformer Company, City of Commerce, Calif., 480 Voltage, 75 kva.” The transformer box in the southeast corner of the pad is 1.5 m (5 ft) tall, 127 cm (50 inches) wide, and 66 cm (26 inches) deep. It rises to a total height of 1.65 m (5.4 ft) and is supported by two metal conduits extending below the pad. Eight concrete wheel stops surround the concrete pad on three sides and are secured to the ground with rebar at each end. The wheel stops are 1.8 m (6 ft) away from the pad, 2.4 m (8 ft) long, 36 cm (14 inches) wide, and 18 cm (7 inches) high. They are triangular in section with beveled edges. Three additional concrete wheel stops, badly deteriorated, lie between the hoist building and the head frame.

Feature 46 - Electric Panel

Feature 45 is an electrical panel with electrical boxes on both sides of a plywood backboard (Figure 198-199). It is next to the muck pile edge and 5.5 m (18 ft) west of Feature 44, a concrete pad for the crafts building. The panel backboard is a full 1.2 m (4 ft) x 2.4 m (8 ft) plywood sheet. The plywood sheet is 2.5 cm (1 inch) thick. Three support posts, driven into the ground, on which the plywood is bolted consist of 4.5 cm (1 3/4 inches) wide electric channel struts. Total height of the panel is 1.9 m (6 ft 6 inches) above the ground surface. Mounted on both sides of the plywood sheet are electrical switch boxes. On the western side of the panel are six electric boxes each of a different size. Two of the larger boxes appear to have been used for transformers, at least of 480 volts. The transformer box, measuring 61 cm (24 inches) long and 38 cm (15 inches) wide, at the north end of the panel is directly connected to a transformer located at the surface just north of the panel. One switch box, 46 cm (18 inches) long and 24 cm (9 1/2 inches) wide, was for the welding machine in the mechanic shop; a smaller one, 23 cm (9 inches) long and 15 cm (6 inches) wide, was for turning a pole light on or off; another was a switch box, 25 cm (10 inches) long and 19 cm (7 1/2 inches) wide, connected to the pole light switch; and the last appears to be a distribution box, rectangular in shape, 1.2 m (4 ft) long and 20 cm (8 inches) wide, at the top edge of the plywood panel. On the eastern side are nine electric boxes: two distribution boxes and seven switch boxes. Two are rectangular distribution boxes of the same size, 1.2 m long and 20 cm wide, and are located at the top of the plywood panel. A large switch box, 56 cm (22 inches) long and 38 cm (15 inches) wide, on the north end served as the main disconnect from the transformer located at the surface just north of the panel. Next to it was a switch box, 46 cm (18 inches) long and 28 cm (11 inches) wide, marked as a spare. The remaining five electric boxes are of similar size, 31 cm (12 inches) long and about 10 cm (4 inches) wide. Three of the boxes were spares, one box was for the air sampler, and one box was for the mechanic shop and lamp house.

Feature 47 - Electric Substation

Feature 47 is the main electric substation (Figures 200-202). It is in the main area at the end of an overhead electric transmission line and between two large wooden poles. The poles are 38 cm (15



Figure 198. Feature 46, electric panel, east side, view southwest (2013).



Figure 199. Feature 46, electric panel, west side, view east (2013).

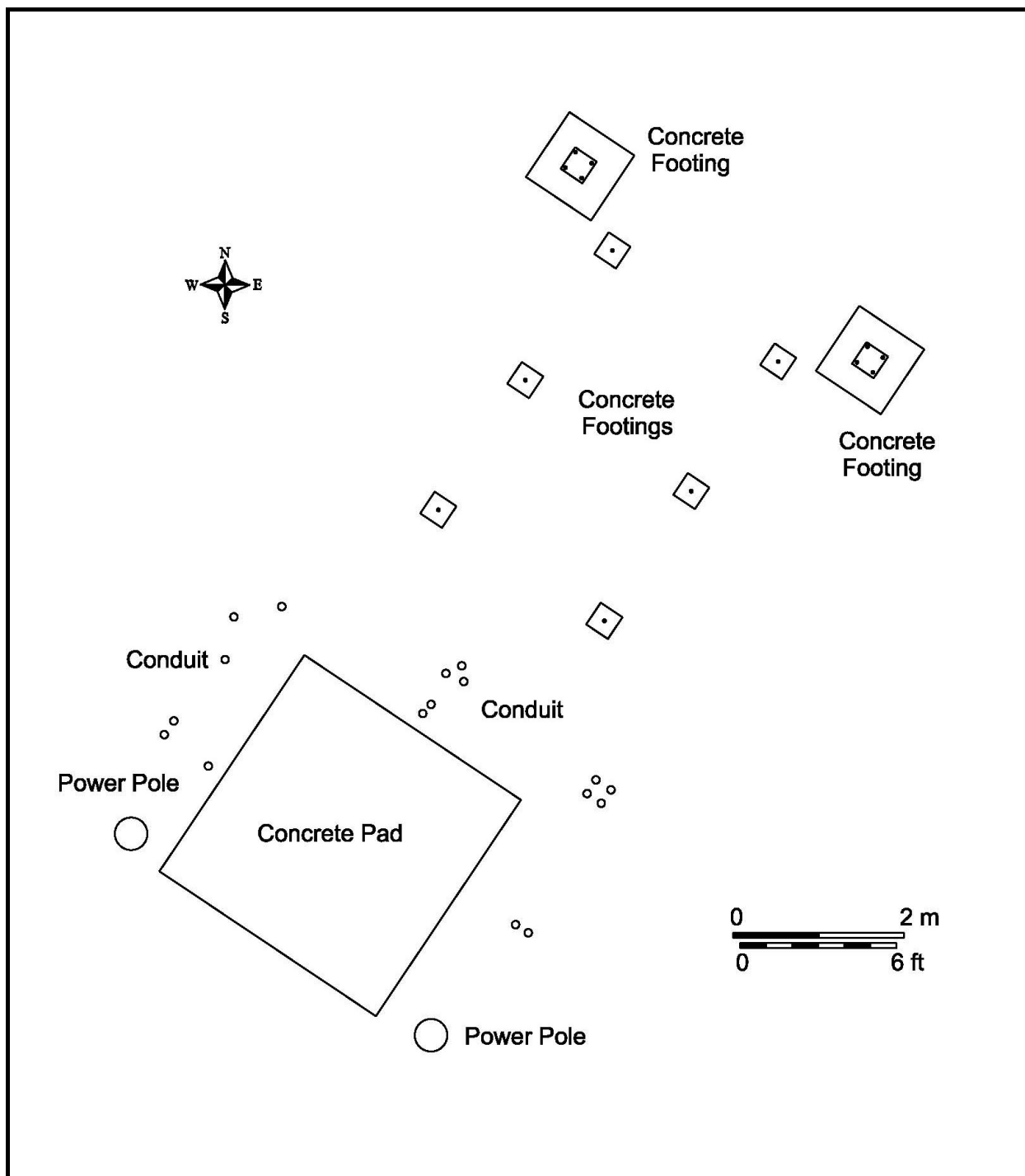


Figure 200. Plan of Feature 47, main electric substation.



Figure 201. Feature 47, main electric substation, view southwest (2013).



Figure 202. Feature 47, main electric substation, view northwest (photograph on file).

inches) in diameter. The west pole is labeled DDA 49 A and the east pole is DDA 49 B. At the base of the poles and extending northward is a concrete pad, 3 m (10 ft) square, and arranged on three sides around it are 17 metal conduit ranging in size from 6.4 cm (2 1/2 inches) to 10 cm (4 inches) in diameter. The conduit has electric cable inside, cut off near the ground surface. The conduit supported panel and switch boxes and lead underground to secondary distribution points at the site. North of the concrete pad are concrete footings. Arranged three on each side, beginning 2.1 m (7 ft) from the concrete pad, are 30.5 cm (12 inches) square footings with a single 1.9 cm (3/4 inch) diameter anchor bolt in the center. The footings are spaced 1.5 m (5 ft) apart and the top edges are beveled. At the end of these footings are two 0.9 m (3 ft) square footings and metal I beam posts which are aligned and connected by cable to the two wooden transmission line poles in order to support them. A metal plate, 30.5 cm (12 inches) square, is welded to the bottom of the I beams and is bolted to the concrete footings with four 1.9 cm (3/4 inch) diameter anchor bolts. The I beams in turn are anchored to the ground by 1 cm (3/8 inch) diameter twisted cable and metal tie-downs located 4.6 m (15 ft) from the beams northward.

Feature 48 - Electric Substation

Feature 48, an electric substation, abuts to the east side of Feature 38, the blower pad. This substation (Figures 188, 203), defined by a surrounding chain link fence, measures 7.5 m (24 ft 6 inches) east-west and 6 m (20 ft) north-south. The fence wrapped around the northeast corner of the blower pad. The blower pad was enclosed within a wood structure that has since been dismantled and removed. The west and south side sections of the substation fencing have also been taken down and the two corner posts that abutted to the blower pad have been uprooted. All electric equipment has been removed from the substation. The chain link fence is supported by 7.6 cm (3 inch) diameter posts at the corners and 5 cm (2 inch) square I beam posts between the corner posts. The posts are set in concrete at the base. Entrance into the substation was at the northeast corner. The fence is 2.1 m (7 ft) high. Within the fence are a narrow concrete pad and conduit rising from the pad and from the ground. The concrete pad is 3 m (10 ft) long and 0.6 m (2 ft) wide. One 8.9 cm (3 1/2 inch) diameter and three 6.4 cm (2 1/2 inch) diameter conduit rise from the center line of the pad. North of the narrow pad and rising from the subsurface are one 8.9 cm diameter and one 6.4 cm diameter aligned conduit. One 11.4 cm (4 1/2 inch) diameter conduit rises from subsurface west of the narrow pad and next to the blower pad.

Feature 49 - Electric Cable Vault

Feature 49 is a concrete electric cable vault identical to Feature 40 and is between the Feature 47 and Structure 4 electric substations. It measures 2.1 m (7 ft) long by 1.2 m (4 ft) wide (Figure 204). A 7.6 cm (3 inches) wide raised edge is around the top of the vault for two metal cover plates. The cover plates are of equal size, 105 cm (41 1/2 inches) by 98 cm (38 1/5 inches). No metal cautionary sign is present as in the other cable vault to warn about buried electric cable.

Feature 50 - Concrete Experiment Section

Feature 50 is a circular concrete experiment section in the main area and laying horizontally alongside a road leading to the U15a area. Similar in size to Feature 17, another experiment section, this experiment section is 4.9 m (16 ft) long, 2.4 m (8 ft) in diameter, and has 15.2 cm (6 inches)



Figure 203. Feature 48, electric substation, view south (2013).

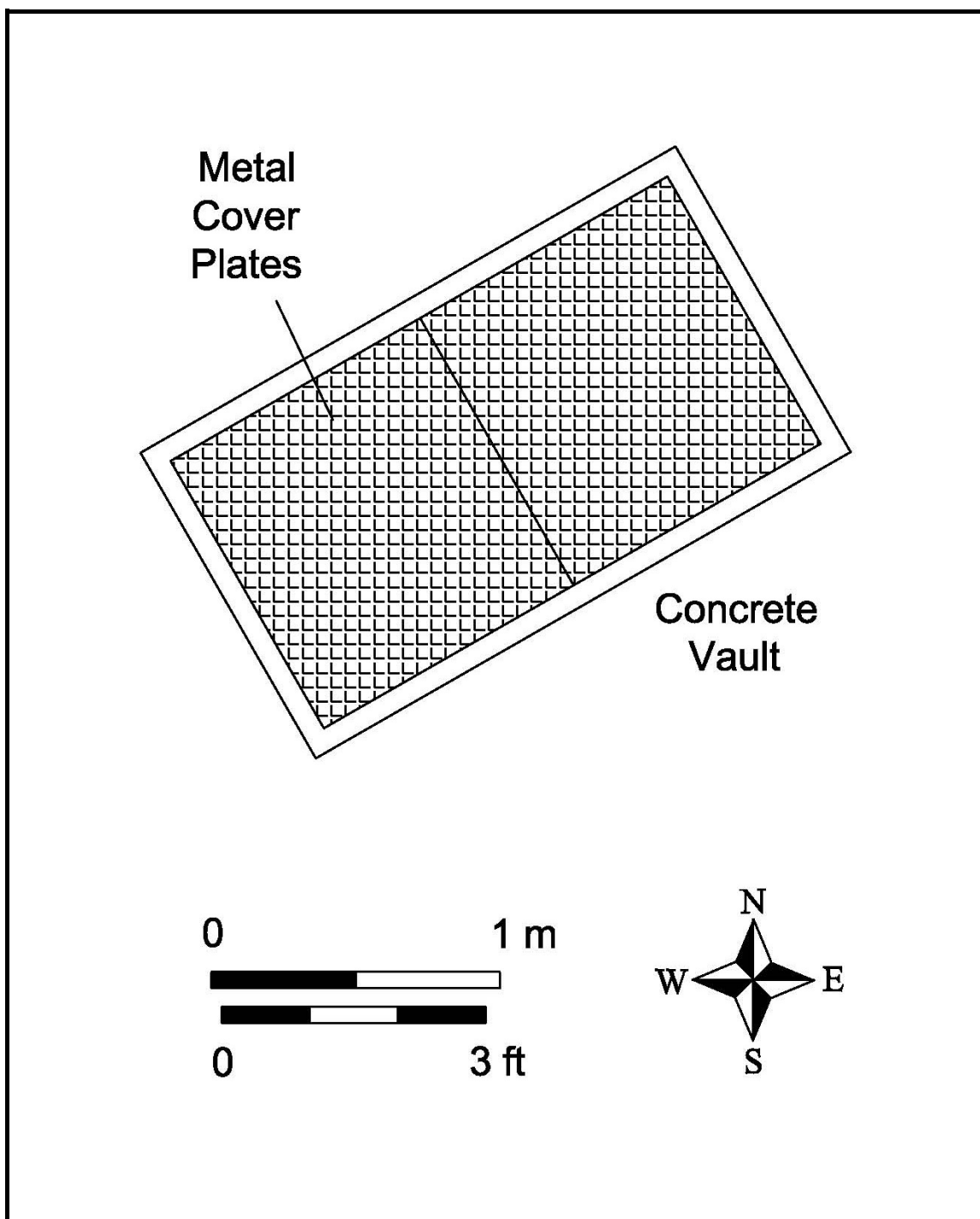


Figure 204. Feature 49, cable vault.

thick walls (Figure 205). It is open on both ends. As stated earlier, these experiment sections were first built at the surface before constructing them underground in the drifts for the Hard Hat and Pile Driver nuclear weapons tests. On the inside of the experiment section are outlines of the plywood forms, consisting of two stacked end-to-end sections. Each section, 2.4 m (8 ft) long, was composed of eight sheets of plywood bent to form the circumference.

Feature 51 - Concrete Experiment Section

This circular concrete experiment section is between the main area and the U15a area. It is 4.6 m (15 ft) east of the road and positioned vertically rather than horizontally (Figures 206-207). This experiment section is 2.4 m (8 ft) in diameter, has 15.2 cm (6 inches) thick walls, and is 1.8 m (6 ft) high above the ground surface. Two exterior plywood forms, 1.2 m (4 ft) in width, are still attached. Metal clamps or tie rods, consisting of a round bar threaded on both ends, hold the forms in place. The screw cap for the bar is embossed with "Burke," a construction company, and "2126251," a U.S. patent number that was filed in 1937 by George Gaetke of San Francisco, California. The experiment section has also deteriorated in a couple small areas to expose the reinforcing wire and two layers of rebar.

Feature 52 - Water Tanks

Two water tanks are positioned at a higher elevation just north and above Feature 38, the blower pad. Water lines from the tanks reached to the main access shaft via flexible hose and metal pipes and then underground into the tunnel. The smaller tank to the south is 2.4 m (8 ft) in diameter and 8.5 m (28 ft) long and the larger tank to the north is 3 m (10 ft) in diameter and 11 m (36 ft) long (Figures 208-209). The two tanks are separated by 2.7 m (9 ft). The smaller tank was in place originally for the Hard Hat nuclear test and the larger tank was added later behind it. Both tanks are attached to metal skid platforms. The smaller tank has one fill hole on top and one valve at the bottom of the south end, whereas the larger tank has two fill holes on top and a valve at the bottom of each end. The smaller tank has lettering on both sides, stating "Allen & Son, Inc., San Bernardino, Calif." According to a metal tag on the larger tank, it was built in February 1965, serial number W-1573, by the Western Tank Company of Odessa, Texas, and that it holds 562 barrels.

Feature 53 - Concrete Pads

Feature 53 consists of three abutting concrete pads between Feature 52, the water tanks, and Feature 11, the U15a shaft and on a narrow ridge overlooking the main area (Figures 210-212). The concrete pads are oriented with the ridge in a northwest-southeast direction. The function of the pads is unclear and they do not appear on any engineering drawings. None have anchor bolts to suggest a building or some type of structure. All three pads are minimally leveled, somewhat undulating, and exhibit a broom finish. About 2.7 m (9 ft) east of the pads is the escarpment edge of the ridge and at the base of the escarpment are pull tab beer cans, beer bottles, bottles, coffee cans, and a peanut butter jar.

Concrete pad #1 is 6 m (20 ft) square and 5 cm (2 inches) higher in elevation than pad #2. The 2-x-6 wood forms and rebar stakes are still present around the outside edges. The outer edges have also been lined with granite rock placed vertically. The rocks appear to be fresh, i.e., fresh breaks and no



Figure 205. Feature 50, concrete experiment section, view northwest (2013).



Figure 206. Feature 51, concrete experiment section, view northeast (2013).



Figure 207. Feature 51, concrete experiment section, view southwest (2013).



Figure 208. Feature 52, south water tank, view southwest (2013).



Figure 209. Feature 52, north water tank, view northeast (2013).

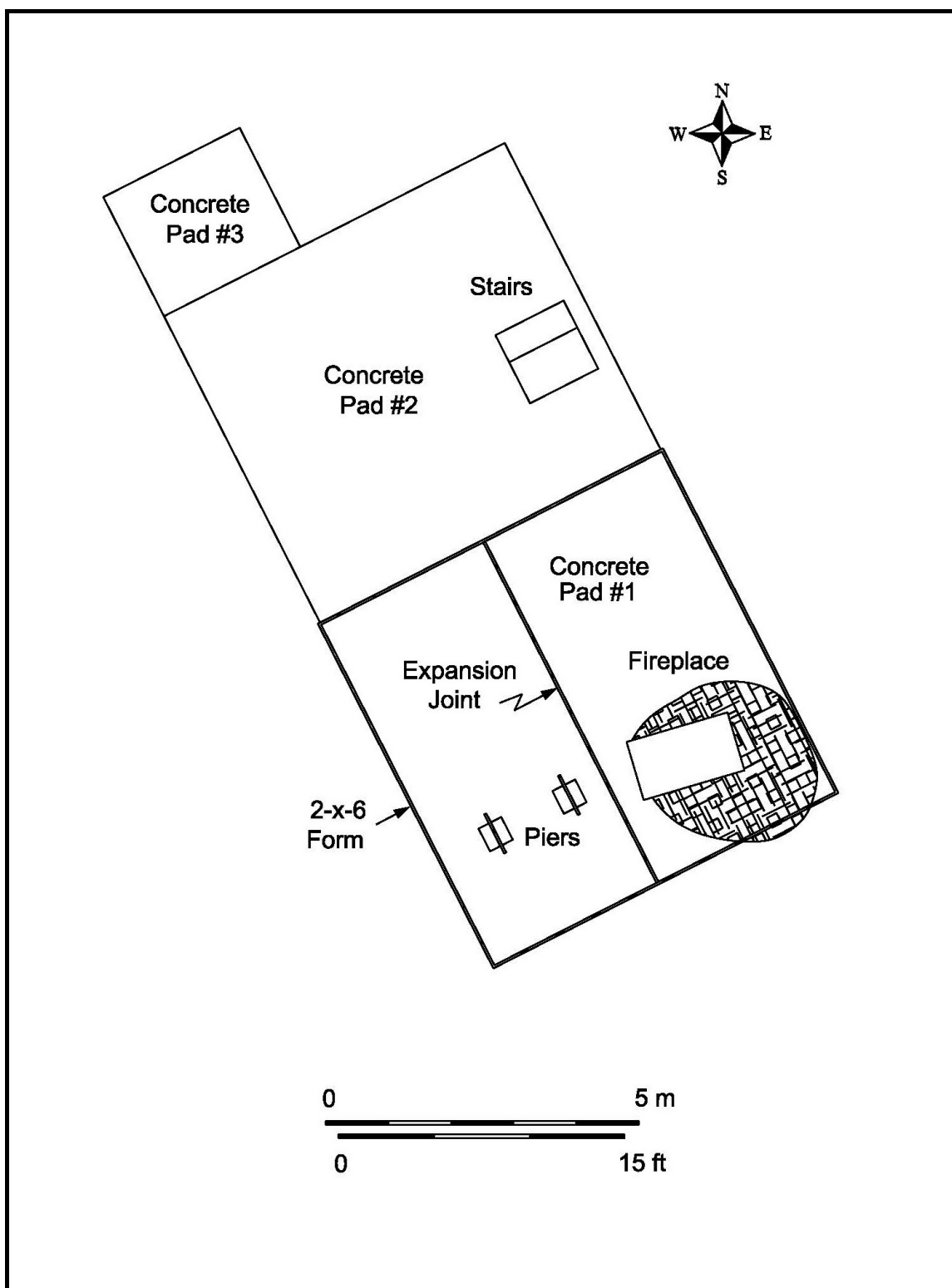


Figure 210. Plan of Feature 53, concrete pads.



Figure 211. Feature 53, concrete pads, view southeast (2013).



Figure 212. Feature 53, concrete pads, view northwest (2013).

weathering, and possibly collected from excavated muck within the tunnel. Toward the middle of the pad is a 3.8 cm (1.5 inch) wide expansion joint or void once occupied by a 2-x-4 board as part of the forms. In the western half toward the south end are two concrete piers with a notch on top for holding a 2-x-6 board. The piers are in situ, 40.6 cm (16 inches) square, and 71 cm (28 inches) tall, and rest directly on top of the pad. They are 91 cm (36 inches) apart. A homemade fireplace or barbeque is in the eastern half, partially destroyed due to some type of impact delivered from the north side. It was constructed of local rock, fire brick, and mortar. The outside was covered with cement stucco. A 10.2 cm (4 inches) diameter pipe was used for a vent within the chimney. The fireplace measures 1.7 m (5 ft 6 inches) long and 97 cm (38 inches) wide. The base is 91 cm (36 inches) high and the chimney is 66 cm (26 inches) high for a total height of 1.6 m (5 ft 2 1/2 inches). It too was built directly on top of the pad.

Concrete pad #2 was constructed first, based on the height difference and wood forms around pad #1. It measures 6.1 m (20 ft) east-west and 5.5 m (18 ft) north-south. No wood forms or rocks line the edges as pad #1, nor is an expansion joint present. Along the east edge is a stair with two steps and made of mortar and local rock, similar to the construction of the fireplace on pad #1. Constructed in situ, it rests directly on top of the pad. The exterior on three sides is covered with cement stucco. The back end of the stair has not been covered with stucco, exposing the interior rock, and suggests the stair was probably constructed against a trailer for an entryway. The trailer was parked lengthwise along the north edge of the pad. The stair is 1.2 m (4 ft) square. The first step is 28 cm (11 inches) high and 74 cm (29 inches) deep, while the second step is 18 cm (7 inches) high and 48 cm (19 inches) deep. On the first step are etched the initials of GHM and FVT.

Concrete pad #3 appears to have been made of excess concrete, approximately 2.5 cm (1 inch) thick, level with and probably built when pad #2 was constructed. It is located at the northwest corner of pad #2, measures 2.4 m (8 ft) east-west and 2.1 m (7 ft) north-south, and may have functioned as an entry porch to pad #2. It is totally broken apart now and starting to disintegrate.

Feature 54 - Electric Substation

This electric substation is about 22 m (72 ft) northwest of the U15a shaft and the enclosure was constructed with wood posts and rails, including the double entrance gates (Figure 213). Nearly all of the fencing and the gates have fallen outward, however, leaving only the posts set into the ground to define the original space, which is 4.9 m (16 ft) long and 3.7 m (12 ft) wide. The fence was about 1.8 m (6 ft) high. The fencing was constructed of 4-x-4 posts at the four corners and two gate posts, three 2-x-4 rails with 1-x-12 rails between on all sides, and three strands of barbed wire all around except for on the gates. The bottom 2-x-4 rail is 45.7 cm (18 inches) above the ground. The gates are made of 1-x-6 boards and each gate is 1.5 m (5 ft) wide and 1.4 m (4.5 ft) tall. Near the northwest corner are two concrete footings, 71 cm (28 inches) by 61 cm (24 inches), and 10.2 cm (4 inches) thick, with 7.6 cm (3 inches) diameter metal conduit extending outside to a switch box mounted on two 4-x-4 posts, now broken. The switch box is approximately 3 m (10 ft) from the fence and measures 69 cm (27 inches) long, 48 cm (19 inches) wide, and 20 cm (8 inches) deep. Next to the two gate posts on each side of the entrance are electric connection boxes from the Appleton Electric Company.



Figure 213. Feature 54, electric substation in U15a area, view southwest (2013).

Feature 55 - Metal Plug

This object appears to be a metal plug for the U15a device emplacement shaft (Figure 214). It is approximately 20 m (66 ft) west of the shaft. Total length is 1.7 m (5.5 ft) counting the upper rim. The lower part is 1.5 m (5 ft) long and 0.9 m (3 ft) in diameter. The diameter matches that of the casing for the shaft. The rim is 15.2 cm (6 inches) thick, 1.2 m (3.75 ft) in diameter, has about 20 bolt holes, 3.8 cm (1.5 inches) in diameter, around the circumference, and welded to the top are three stubs with holes for lifting the plug. The stubs are 20 cm (8 inches) long and high, 5 cm (2 inches) wide, and have a 10.2 cm (4 inch) diameter hole through the center. A 5 cm diameter hole is in the center of the plug and along one side is a half circle void the length of the plug, possibly for cables or for venting the shaft.

Feature 56 - Concrete Piers

Four concrete piers are 22 m (72 ft) west of the U15a shaft and may have been used to support some type of instrument for the Hard Hat test. The piers are in situ, 45.7 cm (18 inches) square, 61 cm (24 inches) high, and spaced 1.4 m (4.5 ft) equidistant from one another (Figure 215). Wood forms made of 2-x-4 and 2-x-6 lumber still surround the piers. On top in the middle of the piers are four anchor bolts 0.6 cm (1/4 inch) in diameter. An indentation in the top surface of the piers measures 20 cm (8 inches) square and about 1.9 cm (3/4 inch) deep. The indentation results from a piece of plywood, with four drilled holes, to hold and suspend the anchor bolts in place when pouring the concrete.

Feature 57 - Concrete Pad

Feature 57 is a concrete pad in a small drainage approximately 15 m west of the U15a shaft (Figure 216). The pad is slanted and does not appear to be in its original location. The pad measures 2.3 m (7.5 ft) long, 1 m (3.5 ft) wide, and 23 cm (9 inches) thick. Five anchor bolts, 1.3 cm (1/2 inch) in diameter, are equally-spaced along each of the long sides.

Feature 58 - Benchmark

This feature is a U.S. Coast & Geodetic Survey benchmark made of brass and set into concrete (Figure 217). It is located approximately 28 m (92 ft) west of the U15a shaft. The benchmark has a warning of a \$250.00 fine or imprisonment for disturbing it and to contact in writing the Director in Washington, D.C. for information. In the center are two crossed lines, one longer than the other.

Features 59, 60, and 61 - Light Poles

These three light poles are toward the outer reaches of the main area. All three poles are 35.6 cm (14 inches) in diameter at the base and taper upward. Feature 59 is located 3 m (9.8 ft) north of Feature 35, a concrete pad (Figure 218). It is 9.8 m (32 ft) in height. Lights on this pole pointed eastward. Feature 60 is located in the southwest part of the main area and next to the west edge of the muck pile (Figure 219). Lights on this pole pointed eastward. It is 12.8 m (42 ft) in height. Feature 61 is located in the southeast part of the main area and the lights pointed westward. This pole is 9.9 m (32 ft 6 inches) in height.



Figure 214. Feature 55, metal plug for shaft, view northwest (2013).



Figure 215. Feature 56, concrete piers, view northwest (2013).