U12t Tunnel Cultural Features

The project area for the U12t Tunnel Complex consists of a discontinuous area on the east slope and on top of Aqueduct Mesa (Figure 53). For recording and discussion purposes, the project area was divided into seven areas based on function. The areas are the Portal Terrace, Ventilation Terrace, Water Supply Terrace, Pond Area, U12t Tunnel Mesa Trailer Park, Midas Myth/Milagro Trailer Park, and Drill Hole Locations. The Portal Terrace, Ventilation Terrace, Water Supply Terrace, and Pond Area are in close proximity to each other (0.5 mi) on the east slope of Aqueduct Mesa. The U12t Tunnel Mesa Trailer Park is 0.6 mile (1,000 m) northwest (linear distance), the Midas Myth/Milagro Trailer Park is 0.9 mile (1,400 m) northwest, and the Drill Hole Locations are up to 1.5 miles (2,400 m) northwest of the portal on the top of Aqueduct Mesa. Access to the U12t Tunnel Portal Terrace is by the North Mesa Road. At the end of the paved section (barricade), the road forks right to the U12t Tunnel Terrace and is accessed through a locked gate. A sinuous dirt road provides access from the Portal Terrace to the Ventilation Terrace, Water Supply Terrace, and Pond Area. Access to the U12t Tunnel Mesa Trailer Park, Midas Myth/Milagro Trailer Park, and Drill Hole Locations is by Rainier Mesa Road, Stockade Wash Road, Holmes Road, North Mesa Road, and several unnamed dirt roads (road names from Figure 13). A total of 89 features were recorded, mapped, and photographed.

The U12t Tunnel Portal Terrace is a large dirt and gravel pad used as a staging area for construction of the U12t Tunnel and testing activities within the tunnel. It is generally rectangular in shape with a sinuous boundary (Figure 54). It was constructed along the edge of a southeast trending drainage system (canyon) on the lower southeast facing slope of Aqueduct Mesa. The terrace is at an elevation of 5,600 ft (1,707 m) and is 1,033 ft (315 m) east-west by 755 ft (230 m) north-south encompassing 10.4 acres (4.2 hectares). The south, west, and north edges abut the steep slope of the mesa face and the east edge slopes abruptly into the drainage system. The terrace is centrally located between the Ventilation Terrace, Water Supply Terrace, and Pond Area. Thirty-eight features were recorded on the Portal Terrace. The features include the U12t Tunnel Portal, concrete foundations for buildings, communication equipment, and electrical supply equipment associated with construction and testing activities.

Adjacent to the northwest edge and above the Portal Terrace is a smaller linear Ventilation Terrace (Figure 54). The terrace contains(ed) equipment that supplied air to the U12t Tunnel during construction and testing activities. It is a dirt pad cut into the steep face of Aqueduct Mesa at an elevation of 5,620 ft (1,713 m) and is 380 ft (115 m) east-west and 100 ft (30 m) north-south encompassing 0.75 acres (0.3 hectares). The north edge of the terrace is defined by the steep slope that extends up to the Water Supply Terrace and south edge is a near 90 degree drop to the Portal Terrace below. Crossing the terrace east-west is a dirt road that provides access from the Portal Terrace to the Ventilation Terrace and to the Water Supply Terrace. Twelve features were recorded on the Ventilation Terrace and include electrical and ventilation equipment.

Above the Ventilation Terrace is a rectangular Water Supply Terrace on which four water tanks are located that suppled water to the U12t Tunnel (Figure 54). The Water Supply Terrace is a dirt pad

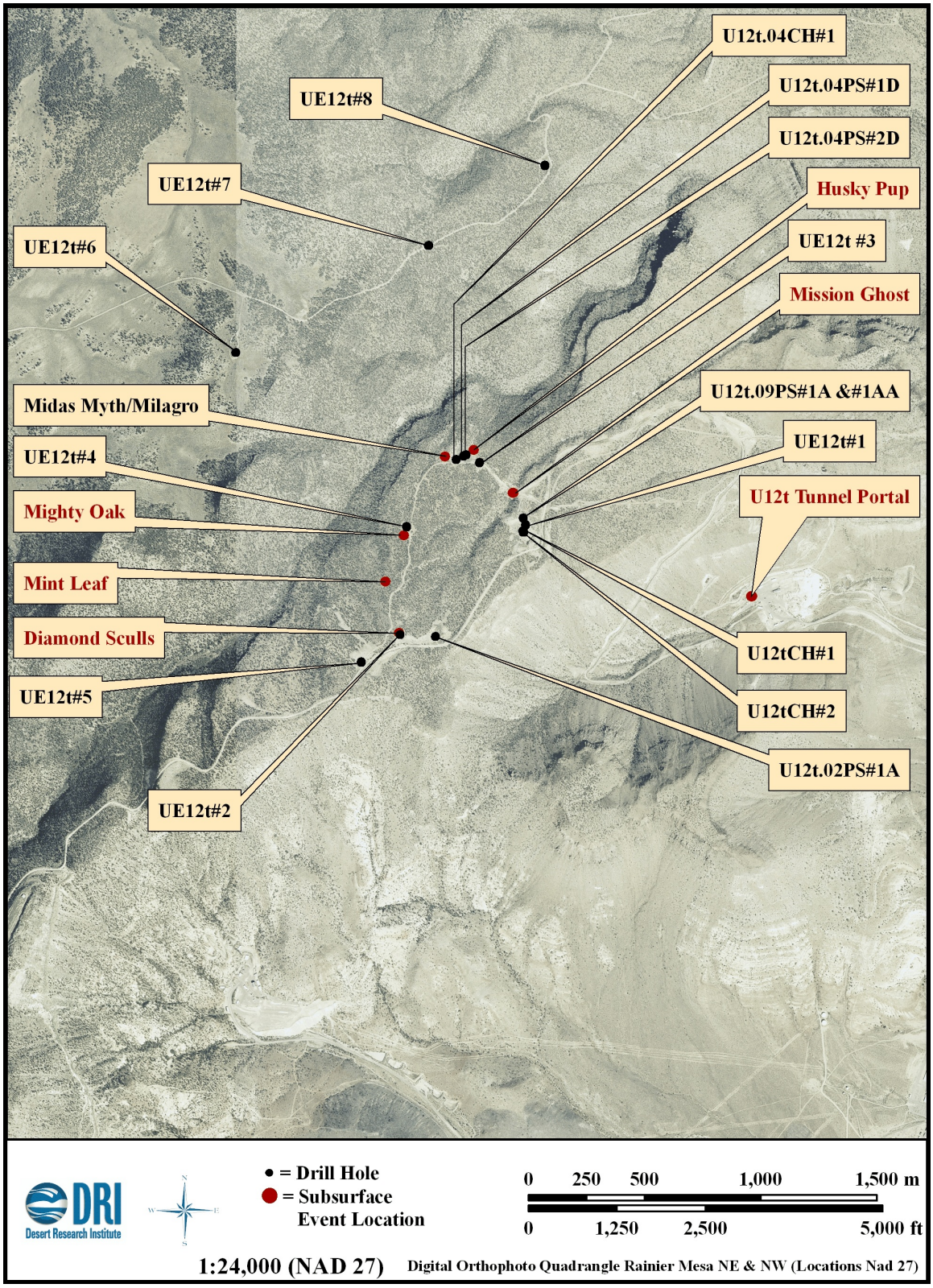

Figure 53. Location of the U12t Tunnel Portal; subsurface test locations; and postshot, exploratory, and cable holes.

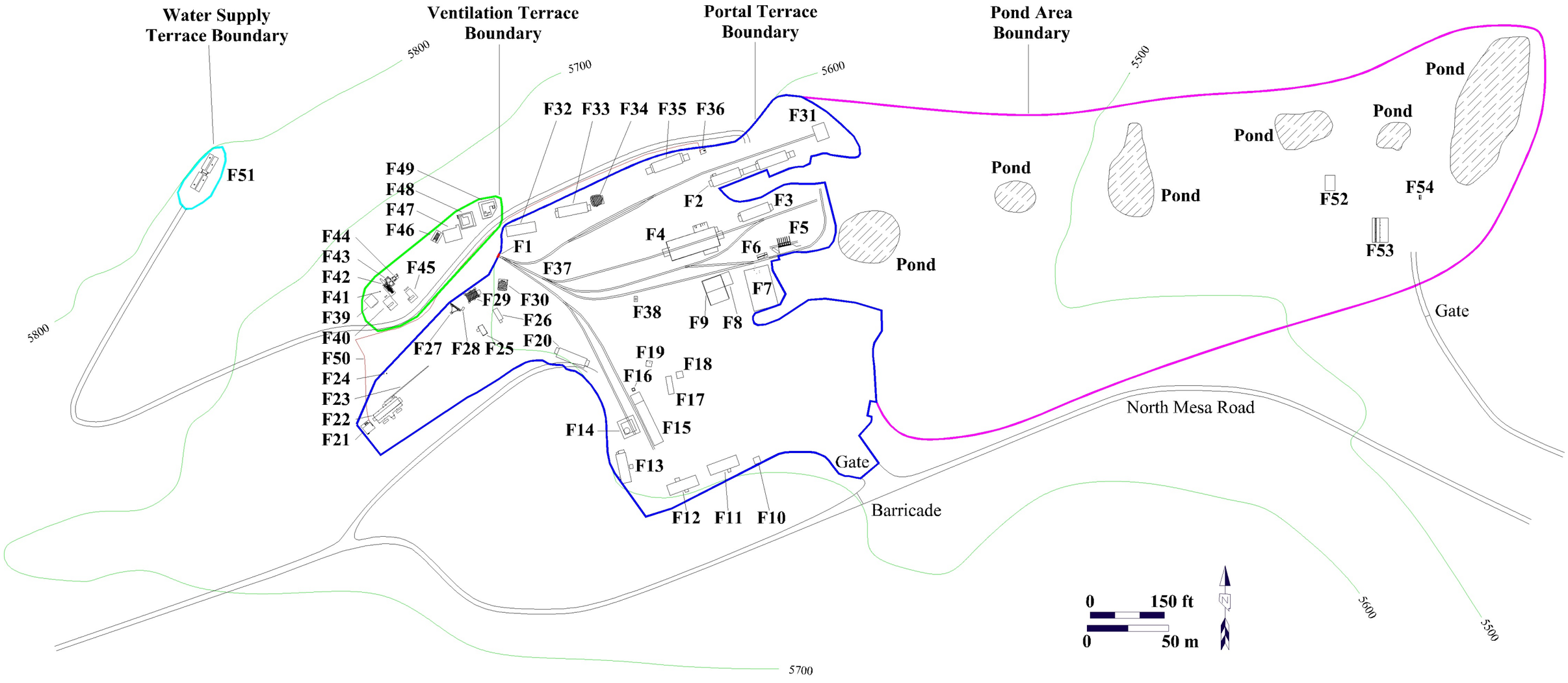

Figure 54. Location of the U12t Tunnel features on Portal, Ventilation, and Water Supply terraces and Pond Area (approximate location and size of ponds).

at an elevation of 5,800 (1,768 m). It extends from the southwest to the northeast and is 145 ft (44 m) long and 56 ft (17 m) wide encompassing 0.15 acres (0.06 hectares). It is a dirt pad cut in the steep face of Aqueduct Mesa. The west and north edge is the steep slope of the mesa and the east and south edge slope steeply to the Ventilation Terrace below. A dirt road provides access from the Ventilation Terrace to the Water Supply Terrace.

Below the Portal Terrace is an irregular shaped Pond Area containing six sediment ponds, concrete foundations, and electrical equipment (Figure 54). The area was used during the operation of the U12t Tunnel as a water catchment for mining and construction activities and for groundwater from the tunnel. The Pond Area is at an elevation of 5,440 ft (1,658) and is 1,690 ft (515 m) east-west, 749 ft (225 m) north-south (16 acres). This area is a natural drainage originating from the slope of Aqueduct Mesa and emptying onto the northern end of Yucca Flat. Estimated size of individual ponds range from 0.07 to 0.7 acres (0.03 to 0.3 hectares). The area around the ponds is fenced and entry into this area for in-depth recording was not attempted. However, east of the fenced area on a dirt and gravel pad are three features that were recorded. The features are accessed by a dirt road and through a locked gate.

On top of Aqueduct Mesa is the U12t Tunnel Mesa Trailer Park utilized during testing within the U12t Tunnel (Figure 55). Multiple trailers were placed at the location and contained various types of recording instruments for experiments associated with tests within the U12t Tunnel. The trailer park is a large dirt and gravel pad at elevation of 6,740 ft (2,054 m) and is 590 ft (180 m) east-west and 395 ft (120 m) north-south encompassing 4 acres (1.6 hectares). It is bounded by small ridges on the south and east, a deep drainage on the west, and on the north by the gradual slope of the existing terrain. Nineteen features were recorded at the trailer park and include concrete pads, electrical equipment, and cable holes U12tCH#1 and U12tCH#2, post-shot drill holes U12t.09PS#1A, U12t.09PS#1AA, and exploratory drill hole UE-12t#1. North Mesa Road provides access to the location.

The Midas Myth/Milagro Trailer Park is 720 ft (220 m) northwest of the U12t Tunnel Mesa Trailer Park (Figure 56). It is at an elevation of 6,780 ft (2,066 m) and is 330 ft (100 m) east-west and 245 ft (75 m) north-south (1.5 acres). The south edge of the trailer park is bonded by a rocky slope with the north, west, and south edges sloping gradually along the existing terrain. A dirt road provides access to the trailer park from North Mesa Road and from the U12t Tunnel Mesa Trailer Park. Equipment and debris is stored at the trailer park and within the subsidence area around U12t.04 CH#1. Entry into the area around the cable hole for in-depth recording was not allowed due to the subsidence. Nine features were recorded at the trailer park and include miscellaneous equipment from construction and recording activities. Additionally, post-shot drill holes U12t.04 PS#1D and #U12t.04 PS#2D, and exploratory drill hole UE-12t#3 are at the trailer park.

The remaining seven features are drill holes on Aqueduct Mesa (Figure 53). Generally, the drill holes are on dirt pads less than 200 x 200 ft (60 x 60 m). Visually, the most prominent feature at a drill hole is a vertical pipe (usually 6 inches in diameter) that is between 4 ft (1.2 m) and 6 ft (1.8 m) in height. Signs and stanchions are sometimes associated with the pipe. Three types of drill holes were

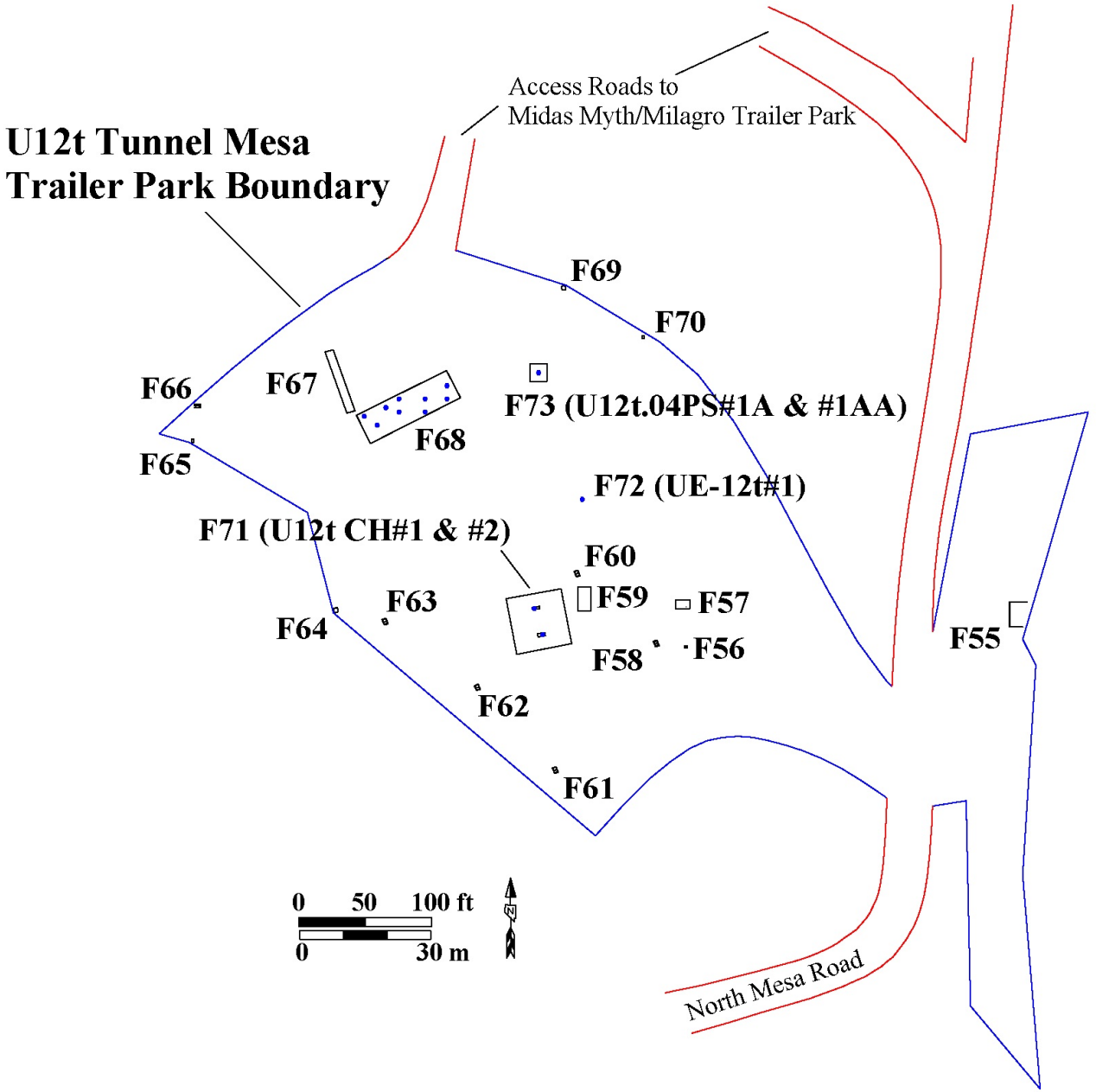

Figure 55. Location of features at the U12t Tunnel Mesa Trailer Park on Aqueduct Mesa.

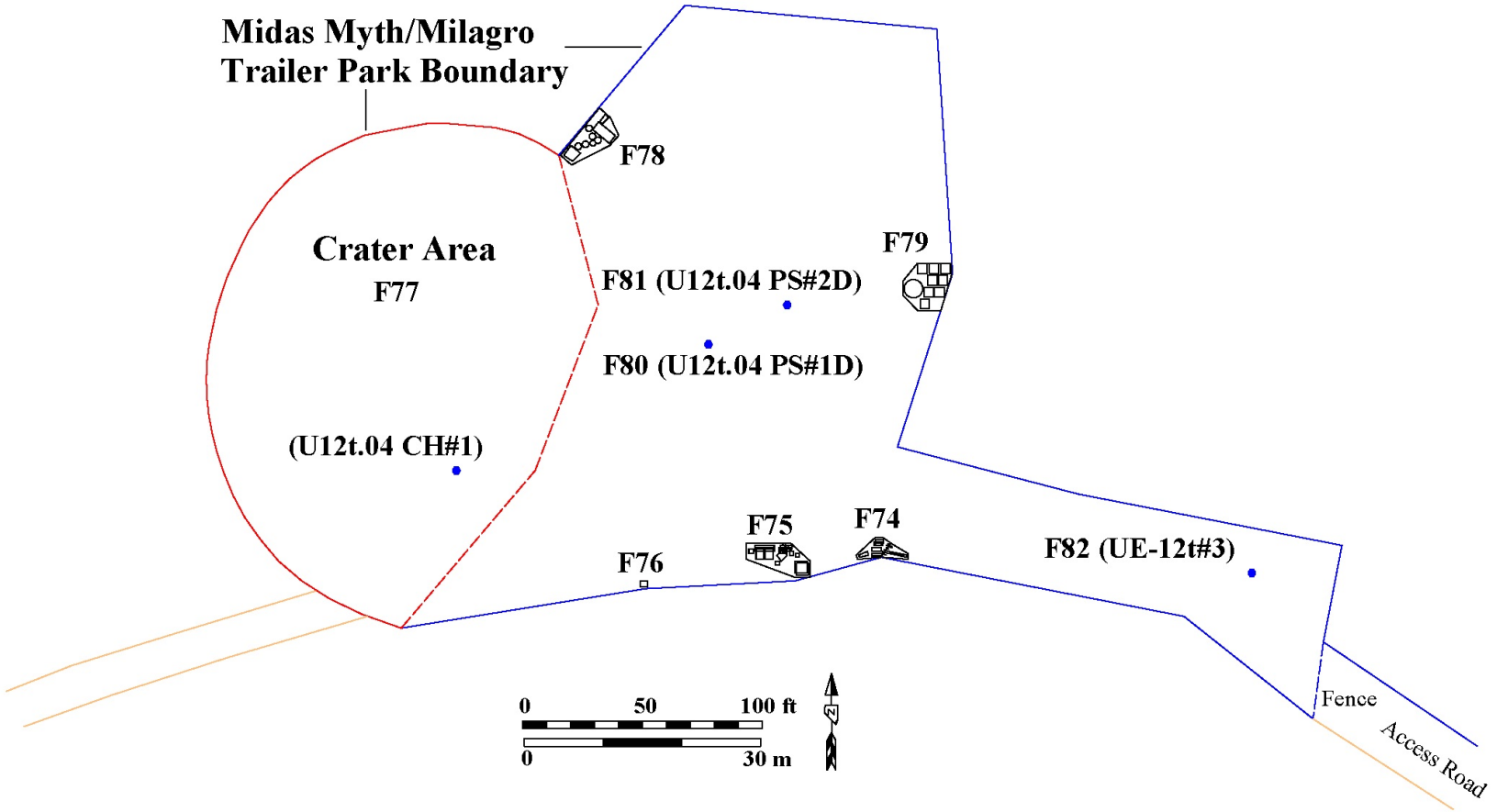

Figure 56. Location of features at the Midas Myth/Milagro Trailer Park on Aqueduct Mesa.

recorded during this project: Exploratory, Cable, and Postshot. Exploratory holes are drilled to test the subsurface geology in an area. Cable holes are drilled to place equipment in the subsurface near or within a tunnel. Postshot drill holes are for after the test to recover samples of the subsurface environment.

A description of the 89 features associated with the U12t Tunnel follows. Coordinates defining the limits of divisions for the U12t Tunnel are in Table 3 and cultural feature coordinates are listed in Table 4. Locational information is UTM coordinate system NAD 27, Zone 11. Information about the use of the features at the U12t Tunnel Portal area is from a 1984 engineering drawing (JS-012-U12t-C29.10) obtained from the NNSA/NSO Archives and Records Center (Figure 21). Fifty-eight features were recorded on the Portal Terrace, Ventilation Terrace, Water Supply Terrace, and Pond Area; nineteen features were recorded on the U12t Tunnel Mesa Trailer Park; nine features were recorded on the Midas Myth/Milagro Trailer Park; and seven recorded features were drill hole locations on Aqueduct Mesa not within the previous divisions.

Portal Terrace

The Portal Terrace contains features related to construction and testing activities at the U12t Tunnel. It is a dirt and gravel pad used as the staging area for construction of the U12t Tunnel and the test conducted. Thirty-eight features were recorded on the Portal Terrace (Figure 54). In the following, if the pad is described as being constructed separately from the foundation, it indicates that the concrete units are not a continuous surface but poured as two separate units (with break between). Also, a concrete pad at a personnel entrance will be called a stoop.

Feature 1

Feature 1 is the U12t Tunnel Portal (Figure 57). The portal has been excavated into a southeast-facing exposure of tuff on the slope of Aqueduct Mesa at an elevation of 5,600 ft (1,707 m). Visually, the opening is arched with a steel set placed flush with the mesa face. The set is approximately 17 ft (5.2 m) wide (inside) and 20 ft (6.1 m) from the surface to the top (outside) of the arch. The sides of the set are not parallel with the bottom slightly wider than the top. Steel sets are placed at intervals along the tunnel with wood lagging between the sets to support the surrounding rock. A 37 ft wide (11.3 m) by 21 ft (6.4 m) tall steel frame secures the entrance of the portal. The center section of the frame houses two 9 ft 3 inch (2.8 m) wide by 15 ft 8 inch (4.77 m) tall gates covered with expanded metal. Between the gates is a 6 to 8 inch gap possibly due to the supporting frame settling unevenly. The frame extends 9 ft on each side of the gates and holds wood lagging to shore the surrounding slope. Attached to the lagging are electrical panel boxes, electrical conduit, and signage. Above the frame and along the west side, the slope has been covered with chain-link fencing and attached with rock bolts to help secure rocks and sediment on the slope. Inside the tunnel are rails for the train, various sized pipes, cables, and lights. Approximately 100 ft (30 m) within the tunnel is a concrete plug that seals the tunnel.

Figure 57. Feature 1, U12t Tunnel Portal, view northeast (2007).

Table 3. Location of U12t Tunnel Divisions.

Name	Northing	Easting	Elevation (ft-m)
Portal Terrace			5,600-1,707
Northwest Corner	573929	4118888	
Northeast Corner	574751	4119038	
Southeast Corner	574200	418876	
Southwest Corner	574058	4118793	
Ventilation Terrace			5,620-1,713
Northwest Corner	573884	4118924	
Northeast Corner	573970	4118987	
Southeast Corner	573973	4118978	
Southwest Corner	573907	4118910	
Water Supply Terrace			5,800-1,768
Northwest Corner	573763	4118994	
Northeast Corner	573816	4119037	
Southeast Corner	573839	4119021	
Southwest Corner	573785	4118966	
Pond Area			5,440-1,658
Northwest Corner	574261	4119040	
Northeast Corner	574615	4119025	
Southeast Corner	574610	4118931	
Southwest Corner	574254	4118797	
U12t Tunnel Mesa Trailer Park			6,740-2,054
Northwest Corner	572904	4119262	
Northeast Corner	573118	4119265	
Southeast Corner	573108	4119113	
Southwest Corner	573004	4119169	

Continued

Table 3. Location of U12t Tunnel Divisions (continued).

Name	Northing	Easting	Elevation (ft-m)
Midas Myth/Milagro Trailer Park			6,780-2,067
Northwest Corner	572690	4119571	
Northeast Corner	572763	4119582	
Southeast Corner	572757	4119515	
Southwest Corner	572681	4119509	

Feature 2

Feature 2 was originally two buildings constructed separately (Figure 21) but later connected by a concrete pad. The west section of the feature is the concrete foundation for a Dry Storage Building (Figures 58 and 59). The foundation measures 60 ft (18.3 m) east-west by 20 (6.1 m) ft north-south by 1 ft (30 cm) thick. The surface of the concrete was finished by brushing with a broom which produced a coarse texture. Attached to the concrete along the north edge are remnants of the metal bottom plate of the building. Metal screws in the bottom plate once secured the metal siding of the building. On the west end near the north corner is a 36-inch (91.4 cm) aluminum threshold for a personnel door. Along the west edge, 2 ft (0.6 m) from the northwest corner, is a 6 ft east-west (1.8 m) by 12 ft north-south (3.7 m) concrete ramp that slopes to the west. Adjacent to and north of the ramp is a 4 ft 8 inch (1.4 m) north-south by 4 ft (1.2 m) east-west stoop. Along the east edge, 2 ft from the northeast corner, is a 6 ft east-west by 12 ft north-south concrete ramp that slopes to the east. At the east end of the ramp is a 10 ft east-west by 12 ft north-south concrete pad. The ramps, pad, and stoop were constructed separately from the main pad.

The east section of the feature is a foundation for a second Dry Storage Building (Figures 58 and 60). The foundation measures 60 ft east-west by 20 ft north-south by 1 ft thick. The surface of the concrete was finished by brushing which produced a coarse texture. Also, the foundation has been modified in three areas by cutting trenches in the concrete for the placement of electrical conduit. Along the west edge, 2 ft from the northwest corner, is a 6 ft east-west by 12 ft north-south concrete ramp that slopes to the west. Along the east edge, 2 ft from the northeast corner, is a 6 ft east-west by 12 ft north-south concrete ramp that slopes to the east. Along the north edge is a 36 inch (91.4 cm) north-south by 48 inch (1.2 m) east-west concrete stoop, 2 ft from the northwest corner. Adjacent to the stoop is a 54 inch (137 cm) north-south by 84 inch (213 cm) east-west concrete pad. The ramps, pad, and stoop were constructed separately from the foundation.

A 12 x 28 ft (3.7 x 8.5 m) concrete pad was constructed post 1984 that connects the two ramps. The ramps and connecting pad were possibly for equipment transfer between the buildings. Feature 2 is 9 ft (2.7 m) south of existing rail lines that extend from the U12t portal. Artifacts near the feature

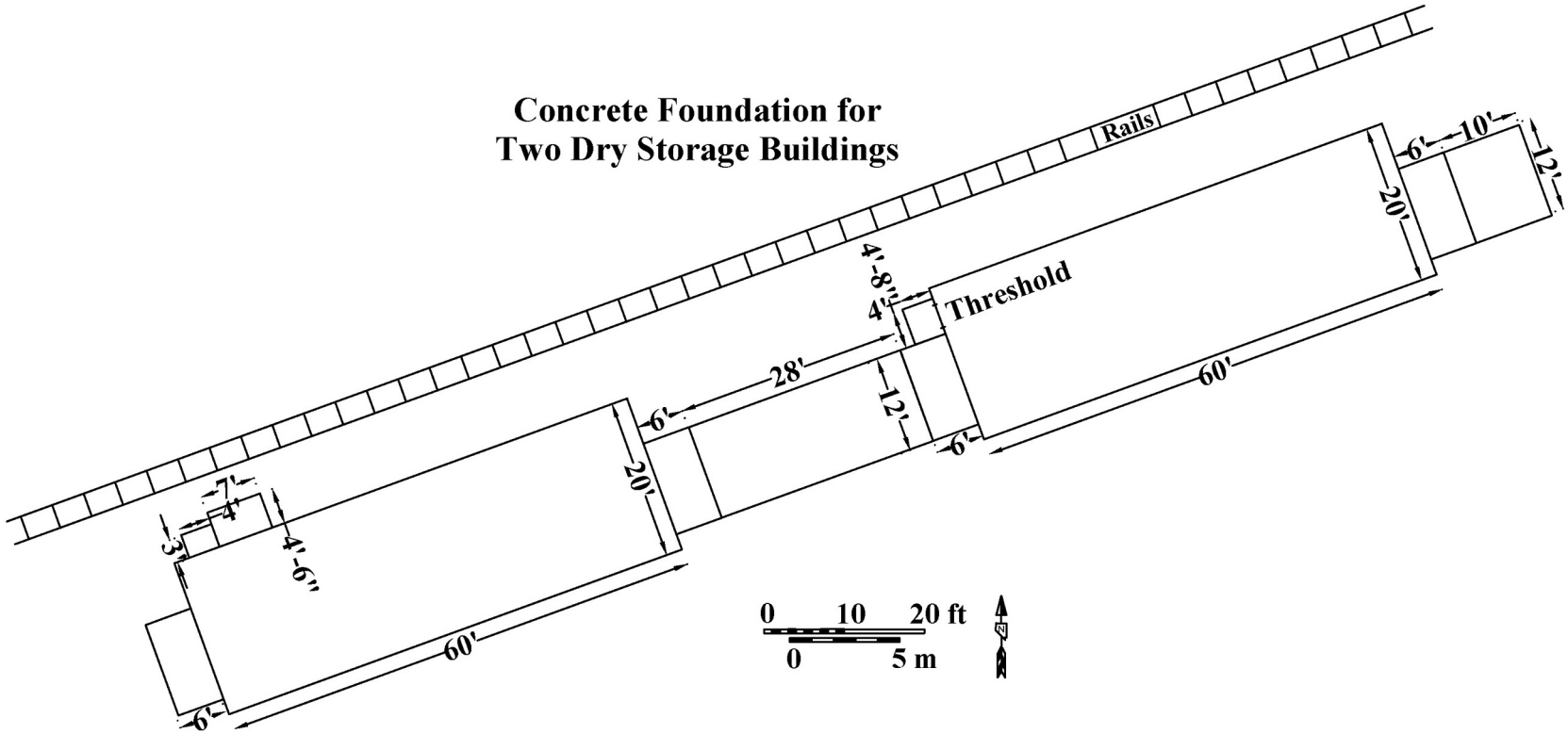

Figure 58. Plan map of Feature 2, U12t Tunnel.

Figure 59. Photograph of Feature 2, U12t Tunnel, view southwest (2007).

Figure 60. Photograph of Feature 2, U12t Tunnel, view northeast (2007).

Table 4. Location of U12t Tunnel Features.

Feature # and Type	Northing	Easting	Division
1 - U12t Tunnel Portal	573967	4118953	Portal Terrace
2 - Concrete Foundation - Dry Storage Building	574143	4119017	Portal Terrace
3 - Concrete Foundation - Dry Storage Building - 12-883	574132	4118986	Portal Terrace
4 - Concrete Foundation - General Purpose Building - 12-875	574099	4118971	Portal Terrace
5 - Camel Back and Dump Area	574146	4118962	Portal Terrace
6 - Concrete Pad	574132	4118955	Portal Terrace
7 - Concrete Pad - Storage	574133	4118947	Portal Terrace
8 - Concrete Foundation - Mobile Batch Plant	574109	4118943	Portal Terrace
9 - Gravel Ramp	574104	4118942	Portal Terrace
10 - Concrete Foundation - Miner's Storage Building	574127	4118830	Portal Terrace
11 - Concrete Foundation - T Office Building - 12-889	574113	4118830	Portal Terrace
12 - Concrete Foundation -New Office Building - 12-897	574088	4118818	Portal Terrace
13 - Concrete Foundation - Assembly Building - 12-902	574045	4118832	Portal Terrace
14 - Fence, Concrete Pad, and Metal Tank	574051	4118853	Portal Terrace
15 - Concrete Foundation -Experimenters Handling and Dry Storage Building 12-899	574055	4118869	Portal Terrace
16 - Concrete and Metal Underground Access - Drainage	574052	4118871	Portal Terrace
17 - Concrete Foundation - LIN Cooling System and Haliburton Yard	574073	4118879	Portal Terrace
18 - Concrete Foundation - LIN Cooling System and Haliburton Yard	574080	4118882	Portal Terrace
19 - Concrete Pad - Electrical Substation	574062	4118888	Portal Terrace
20 - Concrete Foundation - Craft Building - 12-887 (Mechanics Shop)	574022	4118889	Portal Terrace
21 - Electrical Substation - 12-8-47-1	573896	4118849	Portal Terrace

Continued

Table 4. Location of U12t Tunnel Features (continued).

Feature # and Type	Northing	Easting	Division
22 - Concrete Foundation - Portal Recording Facility - 12-890	573906	4118869	Portal Terrace
23 - Metal Cable Trough	573924	4118885	Portal Terrace
24 - Anemometer	573899	4118881	Portal Terrace
25 - Concrete Foundation - RC/MC Building - 12-894	573960	4118905	Portal Terrace
26 - Concrete Foundation - HP Trailer (Reentry Control)	573970	4118914	Portal Terrace
27 - Microwave Tower	573943	4118920	Portal Terrace
28 - Concrete Pad	573947	4118920	Portal Terrace
29 - Power Control Station	573955	4118928	Portal Terrace
30 - Portal Substation 1	573958	4118932	Portal Terrace
31 - Concrete Pad	574167	4119035	Portal Terrace
32 - Concrete Foundation - Walker Shack and Lamp House	573991	4118968	Portal Terrace
33 - Concrete Foundation - Dry Storage Building	574021	4118986	Portal Terrace
34 - Concrete Pad	574031	4118990	Portal Terrace
35 - Concrete Foundation - Electrical Office and Shop	574079	4119015	Portal Terrace
36 - Concrete Foundation - Transformer Station	574094	4119019	Portal Terrace
37 - Rail Lines	573967	4118953	Portal Terrace
38 - Fenced Metal Underground Access Plate	574053	4118928	Portal Terrace
39 - Electrical Substation	573893	4118925	Ventilation Terrace
40 - Concrete Foundation - Buffalo Blower	573906	4118923	Ventilation Terrace
41 - Metal, Wood Frame, and High Voltage Panel	573894	4118931	Ventilation Terrace
42 - Buffalo Blower	573904	4118930	Ventilation Terrace
43 - Cooling System	573904	4118935	Ventilation Terrace
44 - Pump Station	573906	4118939	Ventilation Terrace
45 - Concrete Foundation - Buffalo Blower	573918	4118927	Ventilation Terrace

Continued

Table 4. Location of U12t Tunnel Features (continued).

Feature #	Northing	Easting	Division
46 - Concrete Pad - Vent Raise - Plug	573933	4118966	Ventilation Terrace
47 - Comp Slab	573943	4118972	Ventilation Terrace
48 - Electrical Substation 12-8	573951	4118980	Ventilation Terrace
49 - Emergency Generator and Transfer Switch Compound	573965	4118987	Ventilation Terrace
50 - High Voltage Supply Conduit	574092	4119016	Ventilation Terrace
51 - Metal Water Tanks	573795	4119013	Water Supply Terrace
52 - Concrete Foundation	574481	4119002	Pond Area
53 - Concrete Foundation	574514	4118976	Pond Area
54 - Electrical Panel Backboard	574560	4118974	Pond Area
55 - Loading Ramp	573100	4119220	U12t Tunnel Mesa Trailer Park
56 - Concrete Pad	573026	4119212	U12t Tunnel Mesa Trailer Park
57 - Concrete Pad	573025	4119212	U12t Tunnel Mesa Trailer Park
58 - Metal and Concrete Underground Junction Box	573019	4119213	U12t Tunnel Mesa Trailer Park
59 - Concrete Pad	573004	4119226	U12t Tunnel Mesa Trailer Park
60 - Metal and Concrete Underground Junction Box	573001	4119229	U12t Tunnel Mesa Trailer Park
61 - Metal and Concrete Underground Junction Box	572996	4119184	U12t Tunnel Mesa Trailer Park
62 - Metal and Concrete Underground Junction Box	572978	4119203	U12t Tunnel Mesa Trailer Park
63 - Metal and Concrete Underground Junction Box	572957	4119218	U12t Tunnel Mesa Trailer Park
64 - Concrete Block	572945	4119220	U12t Tunnel Mesa Trailer Park
65 - Concrete Block	572912	4119259	U12t Tunnel Mesa Trailer Park
66 - Electrical Panel	572913	4119268	U12t Tunnel Mesa Trailer Park
67 - Trench	572944	4119280	U12t Tunnel Mesa Trailer Park
68 - Core Holes	572966	4119269	U12t Tunnel Mesa Trailer Park
69 - Concrete Block	572998	4119295	U12t Tunnel Mesa Trailer Park

Continued

Table 4. Location of U12t Tunnel Features (continued).

Feature #	Northing	Easting	Division
70 - Wood Box - Air Monitor	573016	4119283	U12t Tunnel Mesa Trailer Park
71 - Concrete Foundation, U12tCH#1 and U12tCH#2	572991	4119221	U12t Tunnel Mesa Trailer Park
72 - UE12t#1	573002	4119246	U12t Tunnel Mesa Trailer Park
73 - Concrete Pad, U12t.04PS#1A, and U12t.04PS#1AA	572992	4119275	U12t Tunnel Mesa Trailer Park
74 - Equipment	572463	4119513	Midas Myth/Milagro Trailer Park
75 - Equipment	572746	4119513	Midas Myth/Milagro Trailer Park
76 - Electrical Junction Box	572727	4119512	Midas Myth/Milagro Trailer Park
77 - Crater Area and U12t.04 CH#1	4119527	572703	Midas Myth/Milagro Trailer Park
78 - Equipment	572716	4119567	Midas Myth/Milagro Trailer Park
79 - Metal Plate and Stands	572766	4119552	Midas Myth/Milagro Trailer Park
80 - U12t.04PS#1D	572735	4119543	Midas Myth/Milagro Trailer Park
81 - U12t.04PS#2D	572745	4119548	Midas Myth/Milagro Trailer Park
82 - UE12t #3	572804	4119514	Midas Myth/Milagro Trailer Park
83 - U12t.02PS#1A	572614	4118766	Aqueduct Mesa
84 - UE12t#2	572461	4118774	Aqueduct Mesa
85 - UE12t#5	572295	4118655	Aqueduct Mesa
86- UE12t#4	572490	4119238	Aqueduct Mesa
87 - UE12t#6	571754	4119989	Aqueduct Mesa
88 - UE12t#7	572584	4120794	Aqueduct Mesa
89 - UE12t#8	573085	4120794	Aqueduct Mesa

are milled lumber, insulated cable and wire, PVC pipe fragments, metal strapping, metal rods, and bolts.

Feature 3

Feature 3 is the concrete foundation for Building 12-883, a Dry Storage Building (Figure 61). The foundation measures 60 ft east-west by 20 ft north-south by 1 ft thick. The concrete is reinforced with 1/2 inch (1.3 cm) rebar and 6 x 6 inch (15.2 x 15.2 cm) wire mesh that is visible in areas where

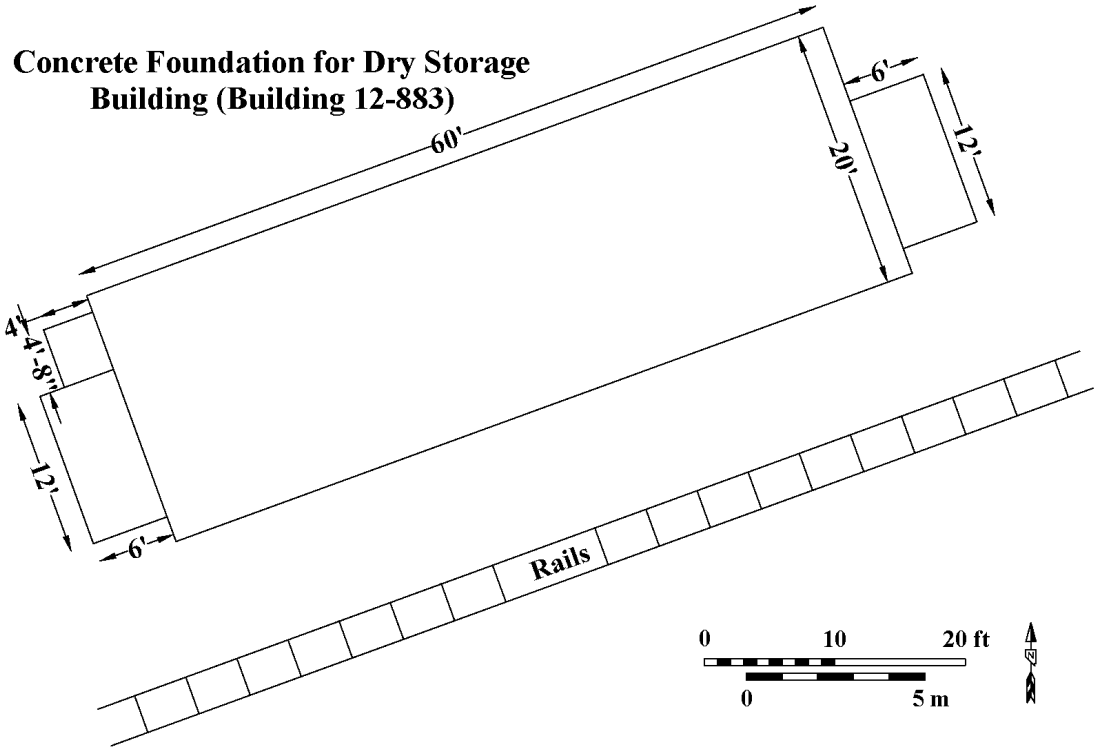

Figure 61. Plan map and photograph of Feature 3, U12t Tunnel, view southwest (2007).

the concrete has been broken. The surface of the concrete was finished by brushing which produced a coarse texture which helped prevent slipping. Along the perimeter edge of the surface of the foundation, 3/4 inch (1.9 cm) bolts that attached the metal building to the pad have been cut flush with the surface. Along the foundations east edge, 2 ft from the southeast corner, is a 6 ft east-west by 12 ft north-south concrete ramp that slopes to the east. Along the foundations west edge, 2 ft from the southwest corner, is a 6 ft east-west by 12 ft north-south concrete ramp that slopes to the west. The ramps were possibly associated with doors for equipment transfer and were constructed separately from the main pad. At the west end of the foundation and north of and adjacent to the west ramp is a 56 inch (142.2 cm) north-south by 48 inch east-west concrete stoop. Feature 3 is 10 ft (3 m) north of existing rail lines that extend from the U12t portal. Artifacts near the foundation are bolts, nuts and metal plates (possibly part of the building framing).

Feature 4

Feature 4 is the concrete foundation for a General Purpose Building (Building 12-875) (Figure 62). The feature consists of the main concrete foundation and five small ancillary concrete pads. The five small pads were constructed separately from the main foundation. The foundation measures 102 ft (31.1 m) east-west by 40 ft (12.2 m) north-south by 8 inches (20.3 cm) thick. Four inch (10.2 cm) angle iron rims the top perimeter edge.

Near the northwest corner of the foundation are two pieces of conduit that extend through the surface. A 7-inch diameter conduit is centered inside of a 13-inch (33 cm) diameter conduit. Rails from the U12t Tunnel Portal cross the pad from east to west. Along the north edge of the foundation is a 29 ft 4 inch (8.9 m) by 13 ft 8 inch (4.2) concrete pad. It is 12 ft 4 inches (3.75 m) west of the northeast corner of the main foundation. Embedded north-south in the concrete are five 1 1/2 inch (3.8 cm) metal straps. Along the east edge of the foundation are two concrete pads. The southern pad is centered along the east edge of the foundation. It measures 12 ft (3.7 m) east-west by 15 ft (4.6 m) north-south. Adjacent to and north of the previous pad is a 5 ft east-west (1.5 m) and 10 ft 4 inches (3.1 m) north-south concrete pad (possibly a stoop). Along the south edge and 7 ft (2.1 m) from the southeast corner of the foundation is a 29 ft (8.8 m) east-west by 9 ft 4 inch (2.8 m) north-south concrete pad. A 12 ft east-west by 15 ft north-south concrete pad is centered along the west edge of the main pad. Artifacts near the foundation are metal straps, milled lumber, and insulated cable.

Feature 5

Feature 5 is a camel back and dump area with a pit (Figure 63).The camel back is a metal arched structure 25 ft (7.6 m) east-west and 5 ft 4 inches (1.6 m) in height (middle point) that has been constructed on site. The structure was used to automatically dump muck cars into the nearby pit. The structure consists of a horizontal arched rail of 8 inch (20.3 cm) channel iron that is braced with vertical 8 inch channel iron posts spaced 18 inches (45.7 cm) on center. The posts vary in height (1 to 5 ft) forming and supporting the arched shape. The arched section and posts are welded to two 8 inch I beams that extend horizontally the length of the structure and form the base. Supporting the

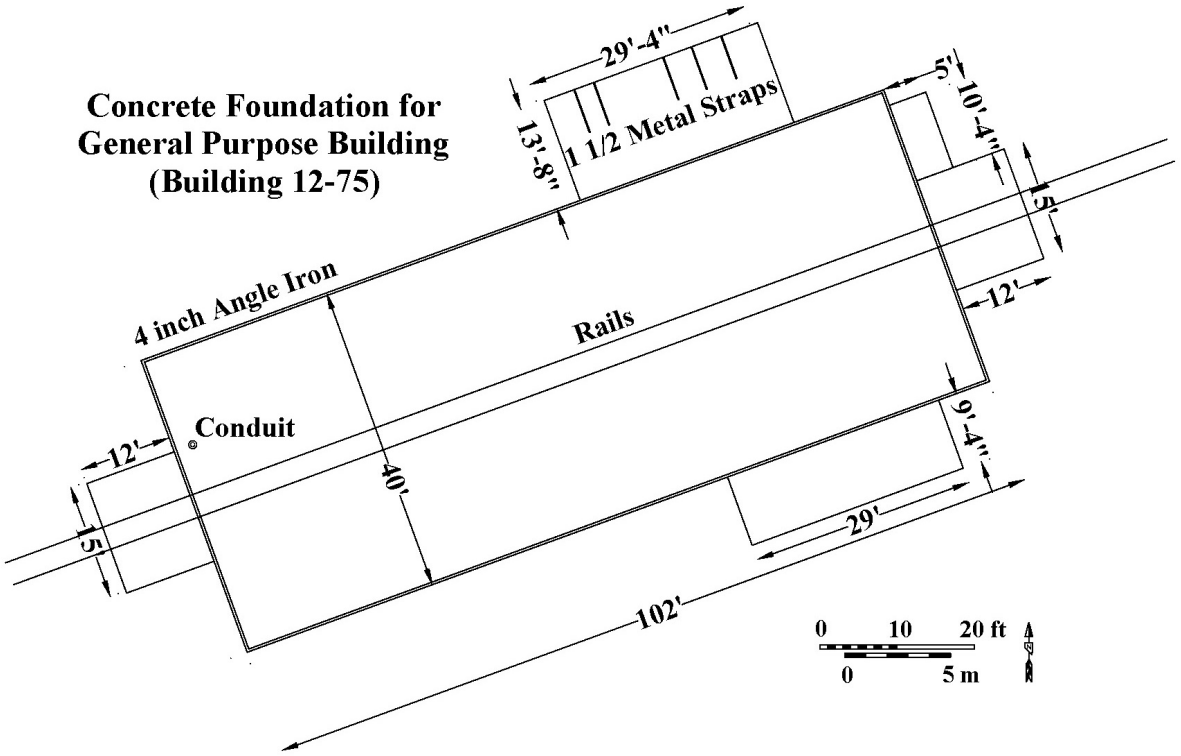

Figure 62. Plan map and photograph of Feature 4, U12t Tunnel, view northeast (2007).

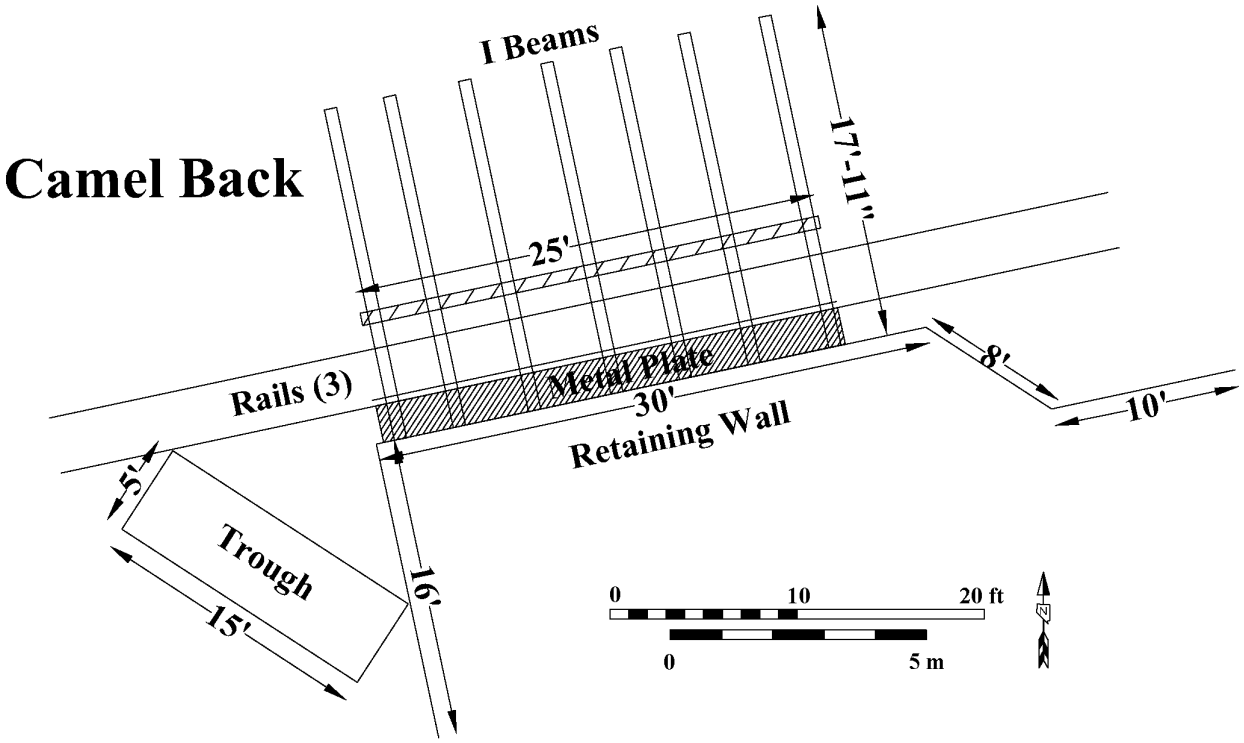

Figure 63. Plan map and photograph of Feature 5, U12t Tunnel, view west (2007).

base and buried beneath the structure are seven 8 inch by 18 ft (5.5 m) horizontal I beams set perpendicular to and welded to the base. Concrete has been poured in the spaces between the I beams for extra support and stabilization. A set of rails that extend from the portal are 16 inches (40.6 cm) south of the camel back. They are welded to the I beam that supports the camel back base and have concrete poured between the rails for additional support. A third rail that extends the length of the camel back is 4 inches (10.2 cm) inside of the south rail. Attached to the south rail is a 25 ft long metal plate that slopes down and over the edge and into the pit forming part of a retaining wall.

Along the south side of the rails, the north wall of the pit is partially shored with concrete for the dumping of muck from the tunnel. The northwest corner of the pit has been shored with concrete and metal plates. The metal plates are 1/4 inch (0.6 cm) in thickness and extend 10 ft from the bottom of the pit to the top edge at the rails. The metal plates extend 16 ft (4.9 m) north-south forming the west end of the lined section. The plates then extend east-west for 30 ft (9.1 m), turn 45 degrees southeast for 4 ft (1.2 ft), then turn east-west at 45 degrees for 10 ft. Also, the west end of the pit appears to have been lined, at least partially, with canvas. The south bank of the pit has concrete poured on the surface for lining and shoring.

Near the west end of the camel back is a 5 ft wide by 15 ft long trough. It extends from the rails to the northwest edge of the pit. It appears that muck cars may have been washed at this location and the trough transported liquid waste into the pit. This is supported by the presence of high pressure hoses near the trough. Artifacts near the pit are hoses, metal plates and fragments, fiberglass and PVC pipe, and wood pallets and milled lumber.

Feature 6

Feature 6 is a concrete pad that measures 8 ft 6 inches (2.6 m) north-south and 20 ft 4 inches (6.2 m) east-west and is 8 inches thick (Figure 64). An 11 inch (27.9 cm) wide trough, filled with gravel, extends across the pad to within 6 inches of the east and west edges. A large crack crosses the pad from north to south near the east end. No rebar or wire mesh reinforcement can be seen in the crack. Feature 6 is 6 ft north of the rails that extend from the U12t Tunnel portal and 18 ft north of Feature 5. Artifacts in the area are insulated cable, metal pipe, and milled lumber. Use of the pad is undetermined at this time.

Feature 7

Feature 7 is a concrete pad that measures 84 ft (25.6 m) north-south and 50 ft (15.2 m) east-west and is 10 inches (25.4 cm) thick (Figure 65). The surface of the concrete was finished by brushing which produced a coarse texture. The only modifications visible are 14 metal posts, 10 embedded in the north end of the pad and 4 set 42 inches (106.7 cm) north of the pad. The 4 1/2 inch (11.4 cm) posts are 48 inches in height, filled with concrete, and painted yellow. The posts are set in a 15 ft north-south and 9 ft 6 inches (2.9 m) east-west rectangular pattern and are 16 ft from the northeast corner of the pad. The pad was used for storage of construction materials (Wayne Griffin, Larry Ashbaugh, and Byron Ristvet 2007, personal communications) and never supported a building. The area within

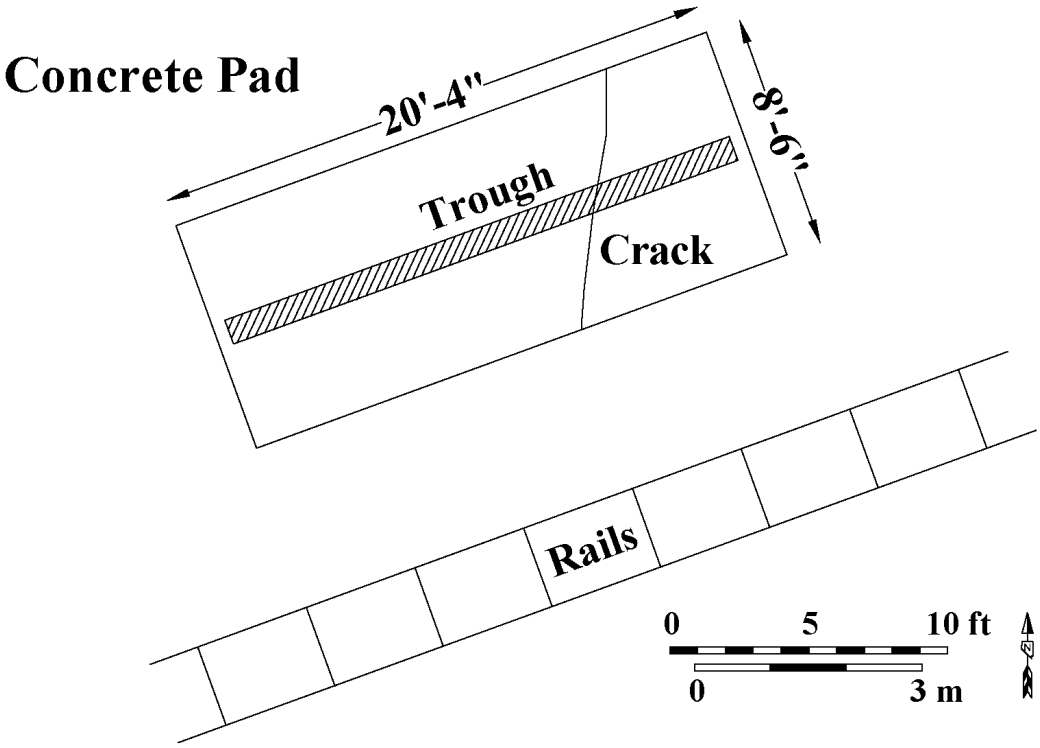

Figure 64. Plan map and photograph of Feature 6, U12t Tunnel, view southeast (2007).

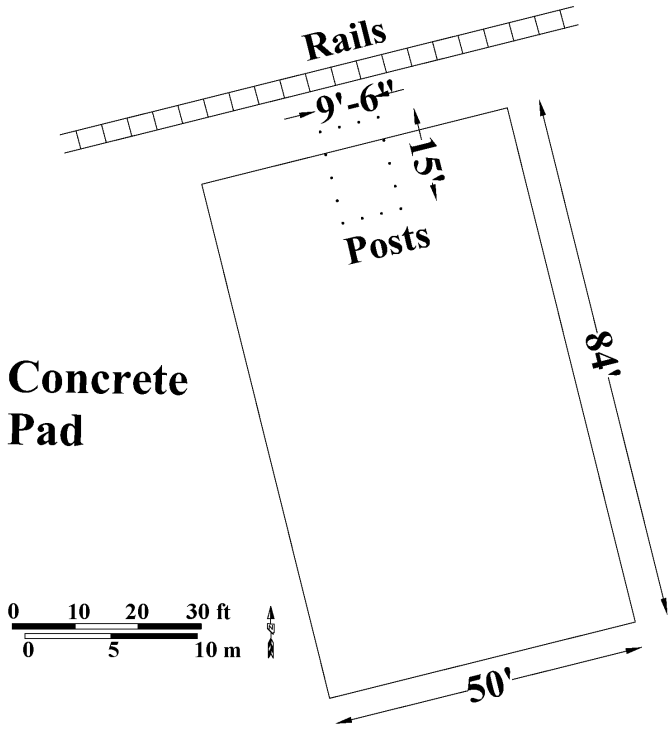

Figure 65. Plan map and photograph of Feature 7, U12t Tunnel, view northeast (2007).

the posts may have been used for the storage of gas cylinders as indicated by artifacts found in the area. Feature 7 is 10 ft south of rails that extend from the U12t Tunnel portal and 11 ft (3.4 m) east of the pit associated with the camel back (Feature 5). Artifacts near the feature are electrical cable, bolts, metal straps, plastic sheeting, and hoses for compressed gas cylinders.

Feature 8

Feature 8 is a concrete foundation for the Mobile Concrete Batch Plant (Figures 66 and 67). The feature is adjacent to the gravel ramp (Feature 9). The foundation measures 18 ft east-west and 26 ft (7.9 m) north-south and is 10 inches thick. Rust stains on the pad surface suggest that 8 inch I beam supported the batch plant structure. Feature 8 is 30 ft south of the rails that extend from the U12t Tunnel portal to the camel back (Feature 5). Artifacts near the feature are electrical cable, bolts, metal straps, plastic sheeting, and hoses for compressed gas cylinders.

Feature 9

Feature 9 is a gravel ramp (Figures 66 and 68). It measures 40 ft east-west by 46 ft (14 m) north-south (26 ft flat and 20 ft slope). The ramp slopes up from south to north and is formed with compacted sand and gravel. The ramp is framed on three sides with 8-inch horizontal I beams (around the north, east and west edges) and supported by 2 x 12 inch (5.1 x 30.1 cm) vertical milled lumber lagging. Along the northwest and northeast corners are various sized pipe that supplied air or water used at the batch plant (Feature 8) east of the ramp. Feature 9 is 30 ft south of rails that extend from the U12t Tunnel portal to the camel back (Feature 5). Artifacts at the feature are a pick, star tool drills, chain, cable, and milled lumber.

Feature 10

Feature 10 is the concrete foundation for a Miner's Storage Building (Figure 69). The foundation is 13 x 13 ft (4 x 4 m) and 8 inches thick. No fasteners or impressions were found on the surface of the concrete. Artifacts near the feature are metal pipe, insulated cable and various metal signs.

Feature 11

Feature 11 is the concrete foundation for the T Office Building (Building 12-889) (Figure 70). It consists of a concrete foundation and smaller concrete pad. The foundation is 62 ft (18.9 m) east-west by 21 ft (6.4 m) north-south and is 12 inches thick. The surface was covered with 12 x 12 inch vinyl floor tiles. Only about 50 percent of the tile remains and they are deteriorated and many are broken. The smaller pad (possibly a stoop) is along the south edge of the foundation and 20-ft west of the southeast corner. It measures 6 ft east-west by 21 ft north-south and was constructed separately from the foundation. No intact tile or indication that tile once covered the pad was found. Artifacts near the feature are vinyl tiles, metal fragments, and clear glass fragments.

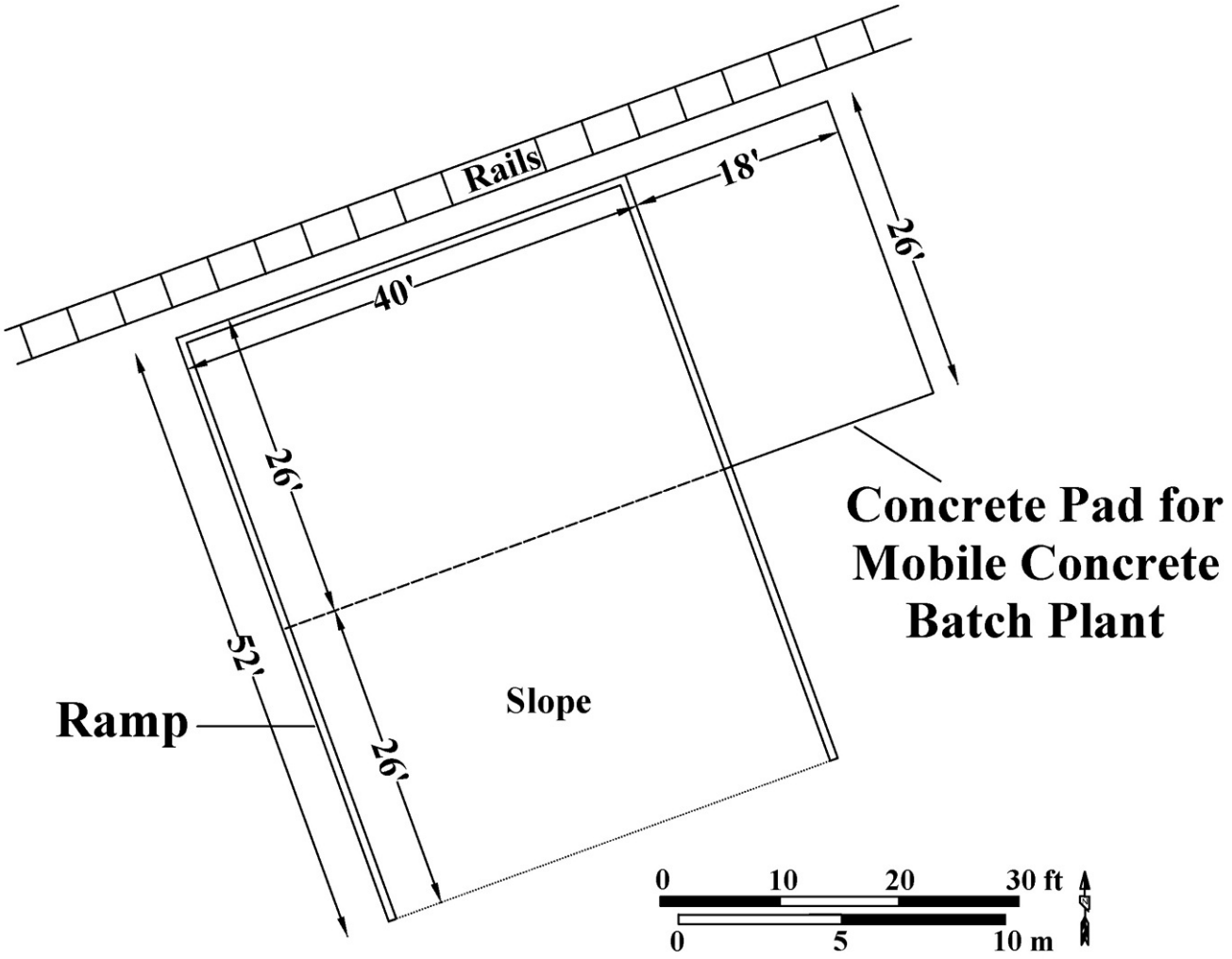

Figure 66. Plan map of Features 8 and 9, U12t Tunnel.

Figure 67. Photograph of Feature 8, U12t Tunnel, view north (2007).

Figure 68. Photograph of Feature 9, U12t Tunnel, view northeast (2007).

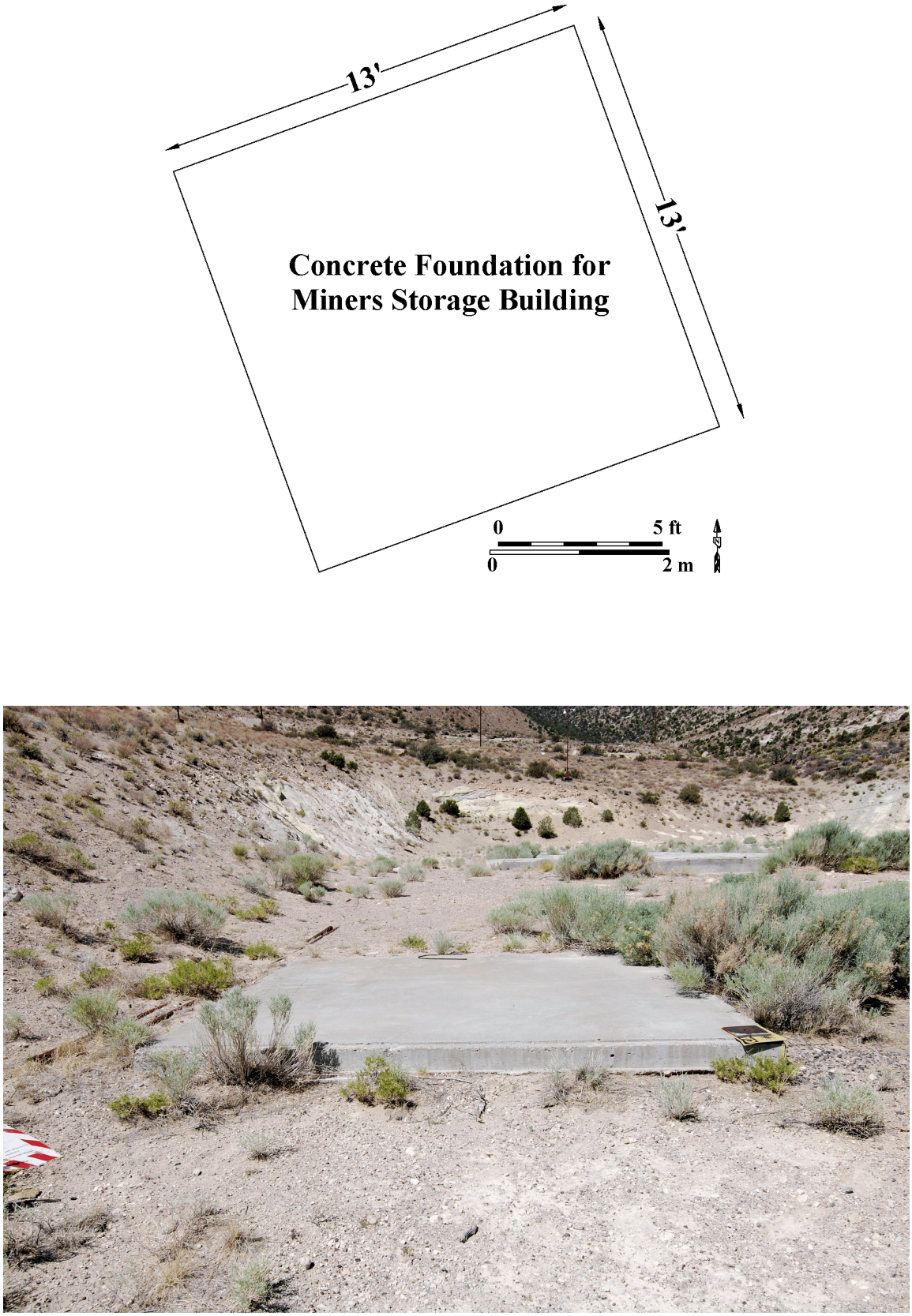

Figure 69. Plan map and photograph of Feature 10, U12t Tunnel, view southwest (2007).

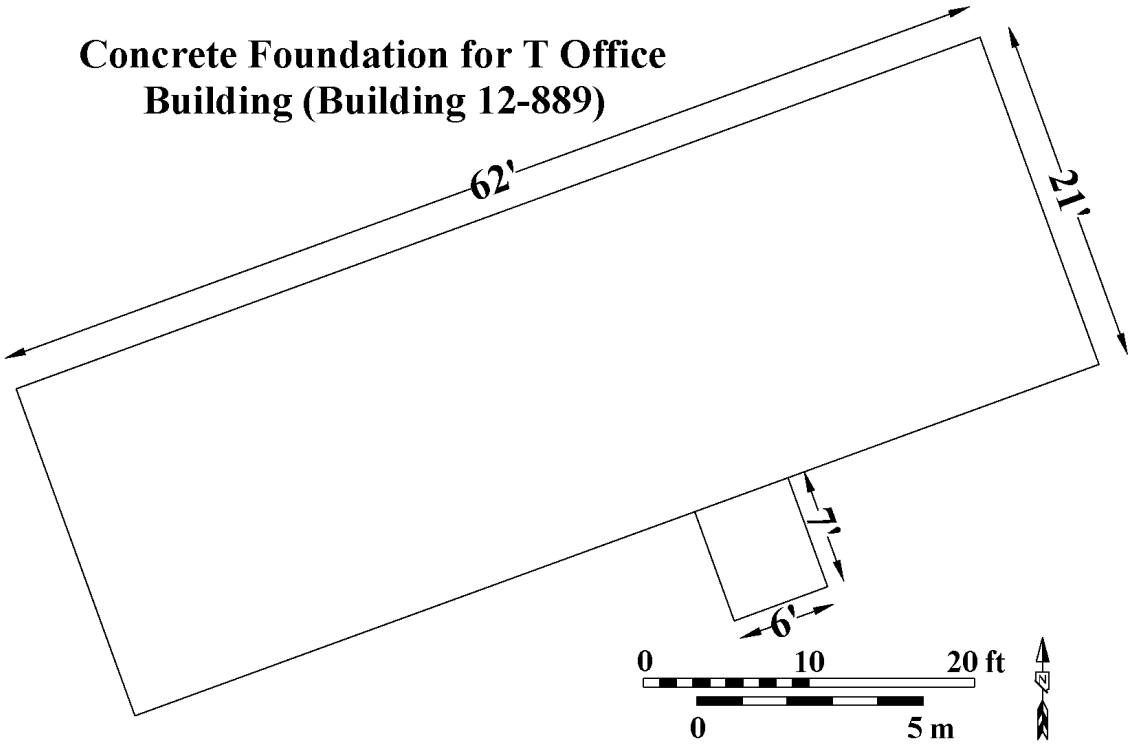

Figure 70. Plan map and photograph of Feature 11, U12t Tunnel, view northwest (2007).

Feature 12

Feature 12 is the concrete foundation for a New Office Building (Building 12-897) (Figure 71). It consists of a concrete foundation and two smaller concrete pads. The foundation measures 60 ft east-west by 20 ft north-south and is 12 inches thick. The surface was covered with 12 x 12 inch vinyl tiles, many of which are missing or broken. Along the south edge of the foundation 24 ft (7.3 m) west of the southeast corner is a 5 ft north-south by 7 ft east-west concrete pad (possibly a stoop). Along the north edge of the foundation 20 ft from the northwest corner is a 9 ft east-west by 7 ft north-south concrete pad. Both smaller pads were poured separately from the foundation. No intact tile or indication that tile once covered the smaller pads was found. Artifacts near the feature are vinyl tile, clear glass fragments, automobile parts, wire, bolts, nuts, and metal fragments.

Feature 13

Feature 13 is the concrete foundation for the Assembly Building (Building 12-902) (Figure 72). It consists of the main concrete foundation and four smaller concrete pads. The main pad measures 60 ft east-west by 20 ft 6 inches (6.2 m) north-south and is 12 inches thick. The surface of the concrete was originally painted gray. Along the west edge of the foundation, 8 ft (2.4 m) from the southwest corner, is a 6 ft east-west by 4 ft north-south concrete stoop. On the edge of the foundation and centered on the stoop is a 36-inch wide aluminum threshold (personnel entrance). Along the north edge of the foundation, 2 ft west of the northeast corner, is a 12 ft north-south by 6 ft east-west concrete pad. Adjacent to and west of this pad is a smaller 4 x 4 ft concrete pad. Along the east edge of the foundation is an 8 ft east-west by 7 ft north-south concrete pad that is separated from the foundation. The northwest corner of the small pad is 24 inches (61 cm) and the northeast corner is 18 inches from the main pad. Artifacts near the feature are metal straps and fragments, insulated wire, milled lumber, and vinyl tiles.

Feature 14

Feature 14 consists of a fenced area, concrete pad, and metal tank (Figure 73). On the 1984 engineering drawing, the feature is labeled Electrical Shop. Indications are that the concrete pad once supported a building and was later modified to support the metal tank. The fence consists of T posts and wire and is 37 ft (11.3 m) north-south by 35 ft (10.7 m) east-west. Signage on the fence is CAUTION RADIOACTIVE MATERIAL. No attempt was made to enter the area and dimensions for the tank and concrete pad are estimates. The concrete pad is approximately 24 x 24 ft. The tank is approximately 12 ft in diameter and 15 ft in height and is near the southwest corner of the concrete pad. The tank is constructed of metal plates welded together and was used for the evaporation of water (Wayne Griffin, Larry Ashbaugh, and Byron Ristvet 2007, personal communications). Approximately 3 ft (91.4 cm) east of the tank and crossing the concrete pad are rails that extend from the U12t Tunnel portal. Artifacts near the feature are a cutting torch, hoses, metal pallets, and insulated cable.

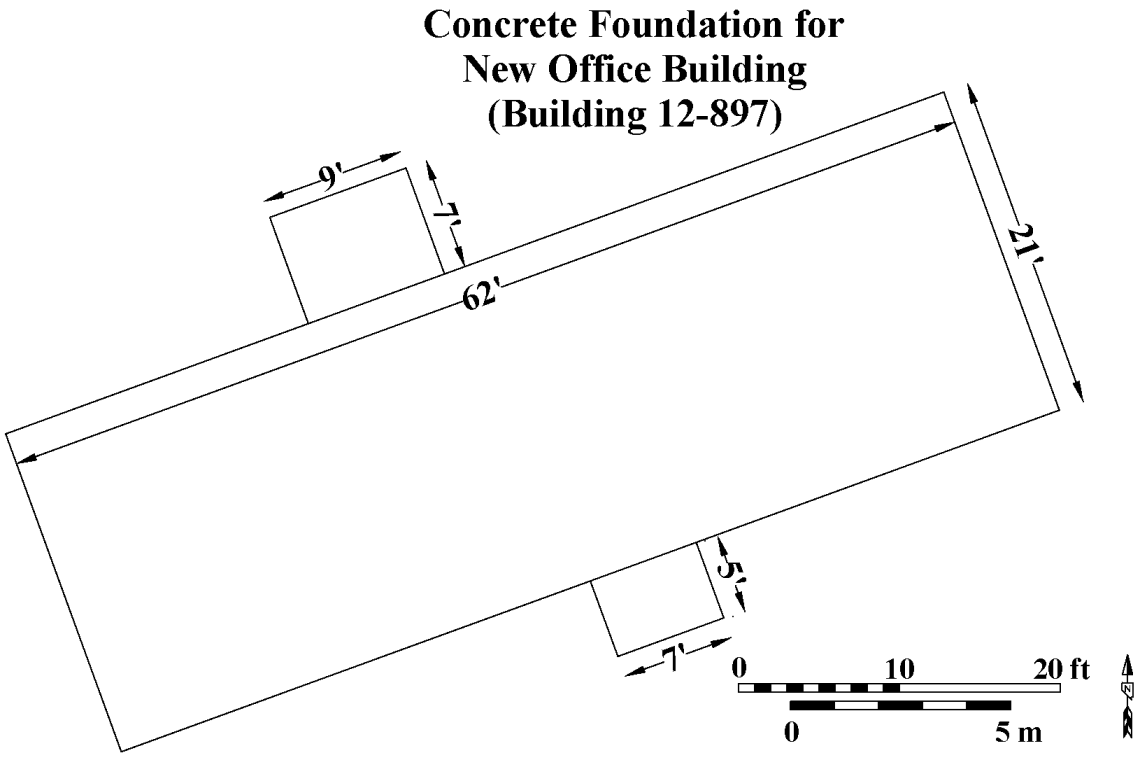

Figure 71. Plan map and photograph of Feature 12, U12t Tunnel, view southwest (2007).

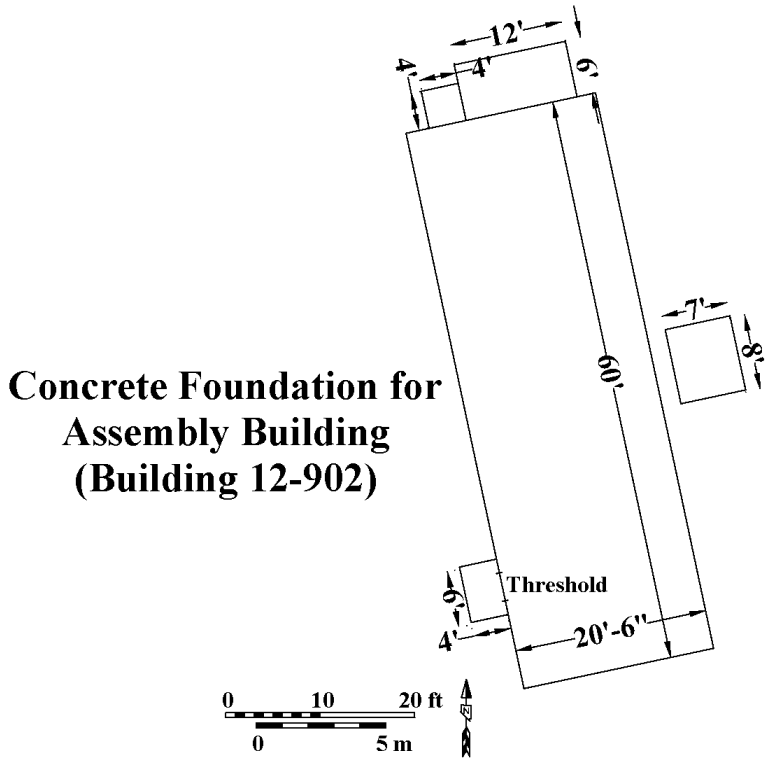

Figure 72. Plan map and photograph of Feature 13, U12t Tunnel, view southwest (2007).

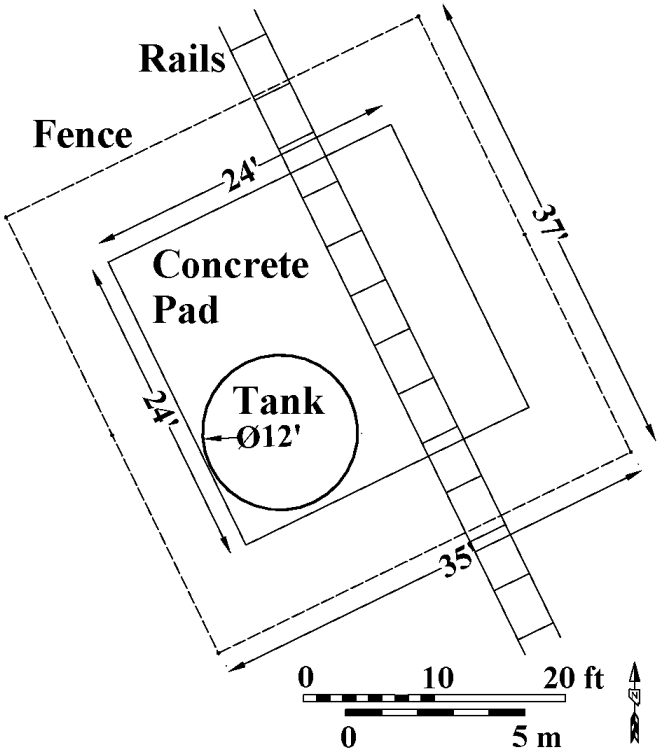

Figure 73. Plan map and photograph of Feature 14, U12t Tunnel, view southwest (2007).