NMCRIS No. 133277

Archaeological Monitoring of an Erosion Control Project at LA 126142, in Madrid, Santa Fe County, New Mexico

Susan M. Moga

Office of Archaeological Studies Museum of New Mexico

AN 471 • 2016

NMCRIS Activity No.: 133277

MUSEUM OF NEW MEXICO
OFFICE OF ARCHAEOLOGICAL STUDIES

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Susan M. Moga

PRINCIPAL INVESTIGATOR
Eric Blinman, Ph.D.

NMCRIS Activity No. 133277
MNM Project No. 41.1008
State Permit No. NM-15-027-M

ARCHAEOLOGY NOTES 471
SANTA FE 2016 NEW MEXICO

NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)

1. NMCRIS Activity No.: 133277	**2a. Lead (Sponsoring) Agency:** New Mexico Energy, Minerals and Natural Resources Department's Abandoned Mine Land Program	**2b. Other Permitting Agency(ies):**	**3. Lead Agency Report No.:**

4. Title of Report: Archaeological Monitoring of an Erosion Control Project at LA 126142 in Madrid, Santa Fe County New Mexico **Author(s):** Susan M. Moga

5. Type of Report ☐ **Negative** ☒ **Positive**

6. Investigation Type

☐ Research Design ☐ Survey/Inventory ☐ Test Excavation ☐ Excavation ☐Collections/Non-Field Study
☐ Overview/Lit Review ☒ Monitoring ☐Ethnographic study ☐ Site specific visit ☐Other

7. Description of Undertaking (what does the project entail?):
The Office of Archaeological Studies (OAS) monitored an erosion and stabilization project in Madrid Historic District, New Mexico (National Register of Historic Places, NRHP #77000928) for the Abandoned Mine Land (AML) program. An historic concrete box culvert (Feature 12), 495 ft in length, was rehabilitated with a new slip liner.

During Phase 2, Hannah V. Mattson served as Marron's principal investigator and field supervisor for the archaeological monitoring phase of LA 117776 and LA 117777. Activities included the safeguarding of three mining adits, recording features (n = 31), and the excavation of a newly discovered cobble foundation and machine mount (Feature 11). The monitoring results can be found in *Archaeological Monitoring and Discovery Report Madrid Historic District, Santa Fe County, New Mexico* by Hannah V. Mattson.

8. Dates of Investigation: (from: 2/15/15 **to:** 4/20/15**)**

9. Report Date: 03/2016

10. Performing Agency/Consultant:
Office of Archaeological Studies (OAS)
Principal Investigator: Eric Blinman, Ph.D.
Field Supervisor: Susan M. Moga
Field Personnel Names: Isaiah Coan and C. Dean Wilson

11. Performing Agency/Consultant Report No.:
Archaeology Notes 471

12. Applicable Cultural Resource Permit No(s):

13. Client/Customer (project proponent): EMNRD
Contact: Lloyd Moiola
Address: 1220 South St. Francis Drive, Santa Fe, NM, 87505
Phone: (505) 476-3429

14. Client/Customer Project No.: 12-521-0620-0134

15. Land Ownership Status ***(Must be indicated on project map):***

Land Owner	Acres Surveyed	Acres in APE
Private		
TOTALS		

16 Records Search(es):

Date(s) of ARMS File Review	**Name of Reviewer(s)**	
Date(s) of NR/SR File Review	**Name of Reviewer(s)**	
Date(s) of Other Agency File Review	**Name of Reviewer(s)**	**Agency**

17. Survey Data:

a. Source Graphics ☐ **NAD 27** X☐ **NAD 83**

☒ **USGS 7.5' (1:24,000) topo map** ☐ **Other topo map, Scale:**

☒ **GPS Unit** **Accuracy** ☐**<1.0m** ☒ **1-10m** ☐ **10-100m** ☐**>100m**

b. USGS 7.5' Topographic Map Name **USGS Quad Code**

Madrid	35106-D2

c. County(ies):

17. Survey Data (continued):

d. Nearest City or Town: Madrid

e. Legal Description:

Township (N/S)	Range (E/W)	Section	¼ ¼ ¼
			, , .
			, , .
			, , .
			, , .
			, , .
			, , .
			, , .
			, , .
			, , .

Projected legal description? Yes [ ] , No [ ] **Unplatted [ ]**

f. Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.):

18. Survey Field Methods:

Intensity: ☐ 100% coverage ☐ <100% coverage

Configuration: ☐ block survey units ☐ linear survey units (l x w): ☐ other survey units (specify):

Scope: ☐ non-selective (all sites recorded) ☐ selective/thematic (selected sites recorded)

Coverage Method: ☐ systematic pedestrian coverage ☐ other method (describe)

Survey Interval (m): **Crew Size:** **Fieldwork Dates:**

Survey Person Hours: **Recording Person Hours:** **Total Hours:**

Additional Narrative:

19. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.): Madrid is situated within the Cerrillos Coal Field, on the northwest flank of the Galisteo Basin. The Sangre de Cristo Mountains are north of the Galisteo Basin, the Ortiz Mountains to the south, and Glorieta Mesa to the west. The project area is located within the Cerrillos Coal Field is at the northern foothills of the Ortiz Mountains. Three forks of the Galisteo River merge nearby and flow northwest into the Rio Grande. Soils in the lower hills are a cobbly, sandy loam of the Puertecito-Paraje complex. Kech-Cerrapelon-Rock outcrops of sandstone and shale formed on the shoulders and summits of benches and decomposed into a clayey loam and loamy fine sand. Vegetation includes pinon, juniper, various grasses, snakeweed, serviceberry, Gambel oak, cholla, prickly pear, narrow leaf yucca, and seasonal wild flowers. Fauna found in the project area includes lizards, rattlesnakes, crows, jays, doves, quail, hawks, owls, bats, mice, rabbits, prairie dogs, raccoons, bobcats, coyotes, mountain lions, mule deer, and elk. Elevation ranges from 6,000 feet (1,828 meters) to 6,100 feet (1,859 meters).

20. a. Percent Ground Visibility: NA b. Condition of Survey Area (grazed, bladed, undisturbed, etc.):

21. CULTURAL RESOURCE FINDINGS ☒ **Yes, See Page 3** ☐**No, Discuss Why:**

22. Required Attachments (check all appropriate boxes):	23. Other Attachments:
☒ USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn ☐ Copy of NMCRIS Mapserver Map Check ☐ LA Site Forms - new sites (*with sketch map & topographic map)* ☒ LA Site Forms (update) - previously recorded & un-relocated sites (*first 2 pages minimum)* ☐ Historic Cultural Property Inventory Forms ☐ List and Description of isolates, if applicable ☐ List and Description of Collections, if applicable	☐ Photographs and Log ☐ Other Attachments *(Describe)*:

24. I certify the information provided above is correct and accurate and meets all applicable agency standards.

Principal Investigator/Responsible Archaeologist: Eric Blinman

Signature _____ **Date: 10/27/2015** **Title (if not PI):**

25. Reviewing Agency: Reviewer's Name/Date	26. SHPO Reviewer's Name/Date:
Accepted ( ) Rejected ( ) Tribal Consultation (if applicable): ☐ Yes ☐ No	HPD Log #: SHPO File Location: Date sent to ARMS:

CULTURAL RESOURCE FINDINGS

[fill in appropriate section(s)]

1. NMCRIS Activity No.:	2. Lead (Sponsoring) Agency:	3. Lead Agency Report No.:
133277	EMNRD	

SURVEY RESULTS:

Sites discovered and registered: 0
Sites discovered and NOT registered: 0
Previously recorded sites revisited (*site update form required*): **1**
Previously recorded sites not relocated ***(site update form required):*** **0**
TOTAL SITES VISITED: 1
Total isolates recorded: 0 **Non-selective isolate recording?** ☐
Total structures recorded (*new and previously recorded, including acequias*): **0**

MANAGEMENT SUMMARY: At the request of the Abandoned Mine Land (AML) program of the New Mexico Energy, Minerals, and Natural Resources Department, the Office of Archaeological Studies (OAS) completed archaeological monitoring for the AML Erosion Control Maintenance and Stabilization project in Madrid, Santa Fe County, New Mexico.

Phase I of the project occurred between February 15, 2015 and April 20, 2015. The construction activities included the rehabilitation of a historic concrete box culvert that was fitted with a slip lining. The culvert was previously recorded as Feature 12 by Marron & Associates during Phase II of the project, which took place from June to September 2014.

The box culvert (Feature 12) extends from slightly east of the Mine Shaft Tavern porch and beneath the tavern, continues upslope below the Theatre Walkway and Old Engine House Theatre and proceeds upslope to the large upper drop inlet. A metal culvert previously installed by the New Mexico Department of Transportation extended from the porch of the Tavern to the drop inlet adjacent to NM 14 was replaced with a larger culvert.

During construction activities, only one feature was encountered at LA 126142 and was exposed and documented by OAS. Feature 34 consisted of several wooden railroad ties probably forming a switch to the north–south railroad. The ties were lying above the ceiling of the concrete culvert (Feature 12) located between the Old West Saloon and the Engine House Theatre. The feature was recorded according to OAS protocol.

IF REPORT IS NEGATIVE YOU ARE DONE AT THIS POINT.

SURVEY LA NUMBER LOG

Sites Discovered:

LA No.	Field/Agency No.	Eligible? (Y/N, applicable criteria)

Previously recorded revisited sites:

LA No.	Field/Agency No.	Eligible? (Y/N, applicable criteria)
126142	126142	Y, Criteria A, D

MONITORING LA NUMBER LOG *(site form required)*

Sites Discovered (*site form required*) **:** **Previously recorded sites** ***(Site update form required):***

LA No.	Field/Agency No.	LA No.	Field/Agency No.

Areas outside known nearby site boundaries monitored? Yes ☐, No ☐ If no explain why:

TESTING & EXCAVATION LA NUMBER LOG (*site form required)*

Tested LA number(s)	Excavated LA number(s)

Administrative Summary

At the request of the New Mexico Abandoned Mine Land Program (AML) of the New Mexico Energy, Minerals and Natural Resources Department, the Office of Archaeological Studies (OAS) performed archaeological monitoring for the AML Erosion Control Maintenance and Stabilization Project in Madrid, Santa Fe County, New Mexico. AML proposed a comprehensive plan to manage storm water runoff in the Madrid Historic District (NRHP #77000928).

Monitoring included the rehabilitation of a historic concrete box culvert (Feature 12) and Feature 34, the railroad switch, at LA 126142, both associated with mining operations that occurred in Madrid between 1893 and 1950. Monitoring of Phase I of the project was conducted by OAS archaeologists between February 15, 2015, and April 20, 2015.

Construction activities took place on Mine Shaft Tavern property, which is privately owned by Lori Lindsey, and were subject to New Mexico's Historic Preservation Division regulations and provisions of Section 106 of the National Historic Preservation Act (NHPA) of 1966.

MNM Project No. 41.1008
NMCRIS Activity No. 133277
State Permit No. NM-15-027-M

Acknowledgments

Appreciation is extended to John Kretzmann, Lloyd Moiola, Steve Lakatos, and Raymond Rodarte of AML; Steve Carson of Rangeland Hands; and the crew and supervisors of AUI, with special thanks to Lori Lindsey, the proprietor of the Mine Shaft Tavern, and Eric Blinman, director of the Office of Archaeological Studies. Artistic appreciation is extended to Robert Turner, at the OAS Production Department, who meticulously organized photo documentation of this report, and editor Melissa Martinez. Thanks also to OAS GIS specialist Isaiah Coan for producing the maps for this report.

Cover image by Isadore Posoff, 1937, WPA Federal Art Project, Pennsylvania (Library of Congress Prints and Photographs Division, Washington, DC, 20540)

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1 ⇓ Introduction

At the request of the New Mexico Abandoned Mine Land (AML) Program of the New Mexico Energy, Minerals and Natural Resources Department, the Office of Archaeological Studies (OAS) performed archaeological monitoring for the AML Erosion Control Maintenance and Stabilization Project in Madrid Historic District (NRHP #77000928), Santa Fe County, New Mexico (Fig. 1.1).

Phase I of the project occurred between February 15, 2015, and April 20, 2015. Construction included the rehabilitation of a historic concrete box culvert (Feature 12, LA 126142), which was to be fitted with a new slip lining, a 91.4 cm (36 in) metal culvert. The historic concrete box culvert was previously recorded as Feature 12 by Marron and Associates, an environmental consulting firm, during Phase II of the project that took place between June 18, 2014, and Sept. 18, 2014 (Fig. 1.2). The monitoring results can be found in *Archaeological Monitoring and Discovery Report, Madrid Historic District, Santa Fe County, New Mexico* by Hannah V. Mattson.

The historic box culvert extends slightly east of the Mine Shaft Tavern (New Mexico Historic Building Inventory [HBI] ID Number [No.] 35106-00011) porch, rests below the tavern and continues upslope below the theatre walkway and the Old Engine House Theatre (New Mexico Historic Building Inventory [HBI] ID Number [No.] 35106-00010). The theatre walkway proceeds upslope to a large, upper drop inlet (Fig. 1.3).

During the project, a 60 cm (24 in) metal culvert originally installed by the New Mexico Department of Transportation (NMDOT) in 2002 was extended from the porch of the tavern to the drop inlet at NM 14 and was replaced with a larger culvert. OAS archaeologists Susan M. Moga, C. Dean Wilson, and Isaiah Coan monitored construction activities during the project. Eric Blinman served as principal investigator.

Only one new feature was uncovered during construction. Feature 34 at LA 126142 consisted of several wooden railroad ties forming a swtich adjacent to the upper north–south railroad track still present in Madrid. Feature 34 was recorded according to OAS protocol.

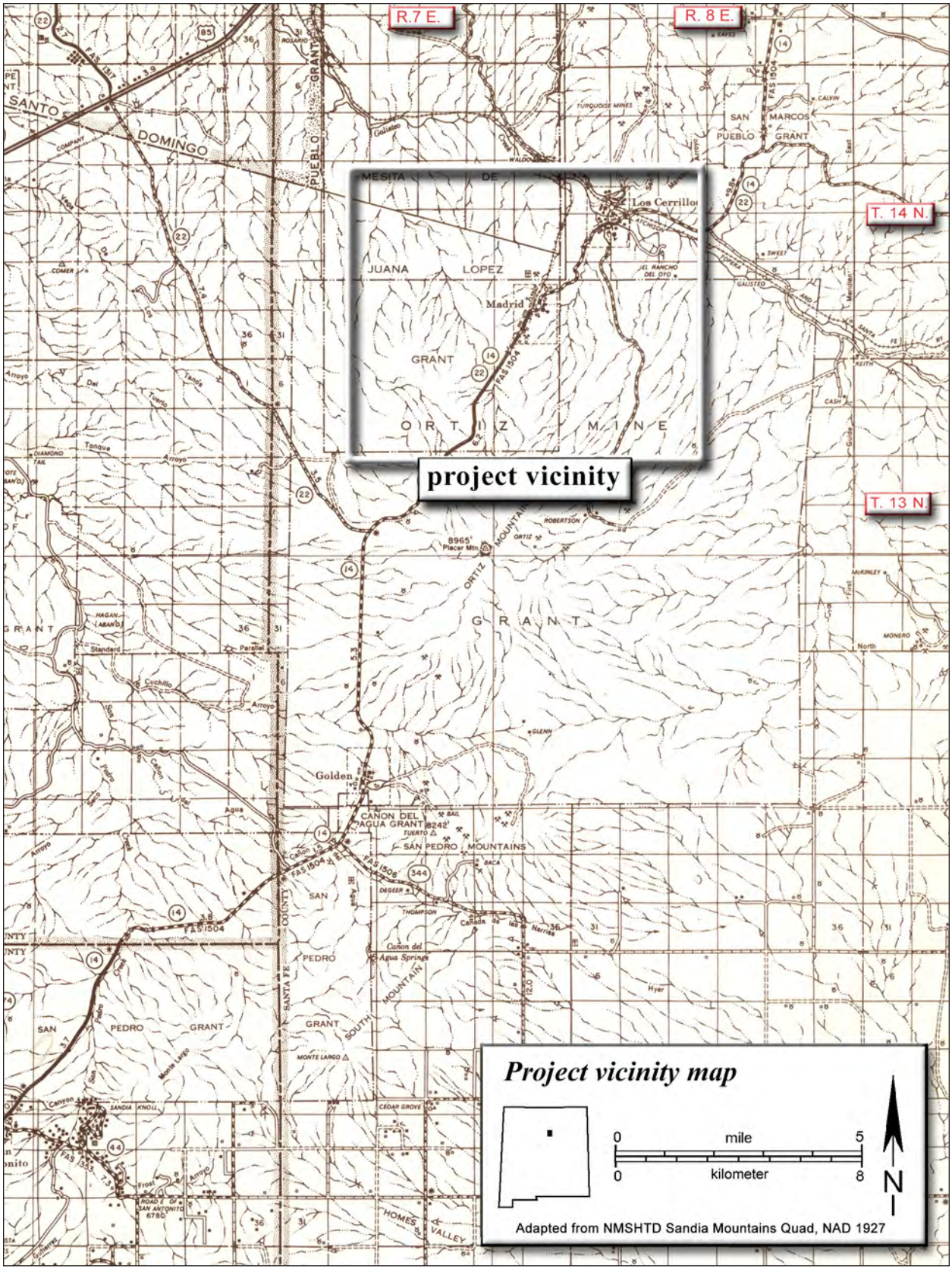

Figure 1.1. Project vicinity map.

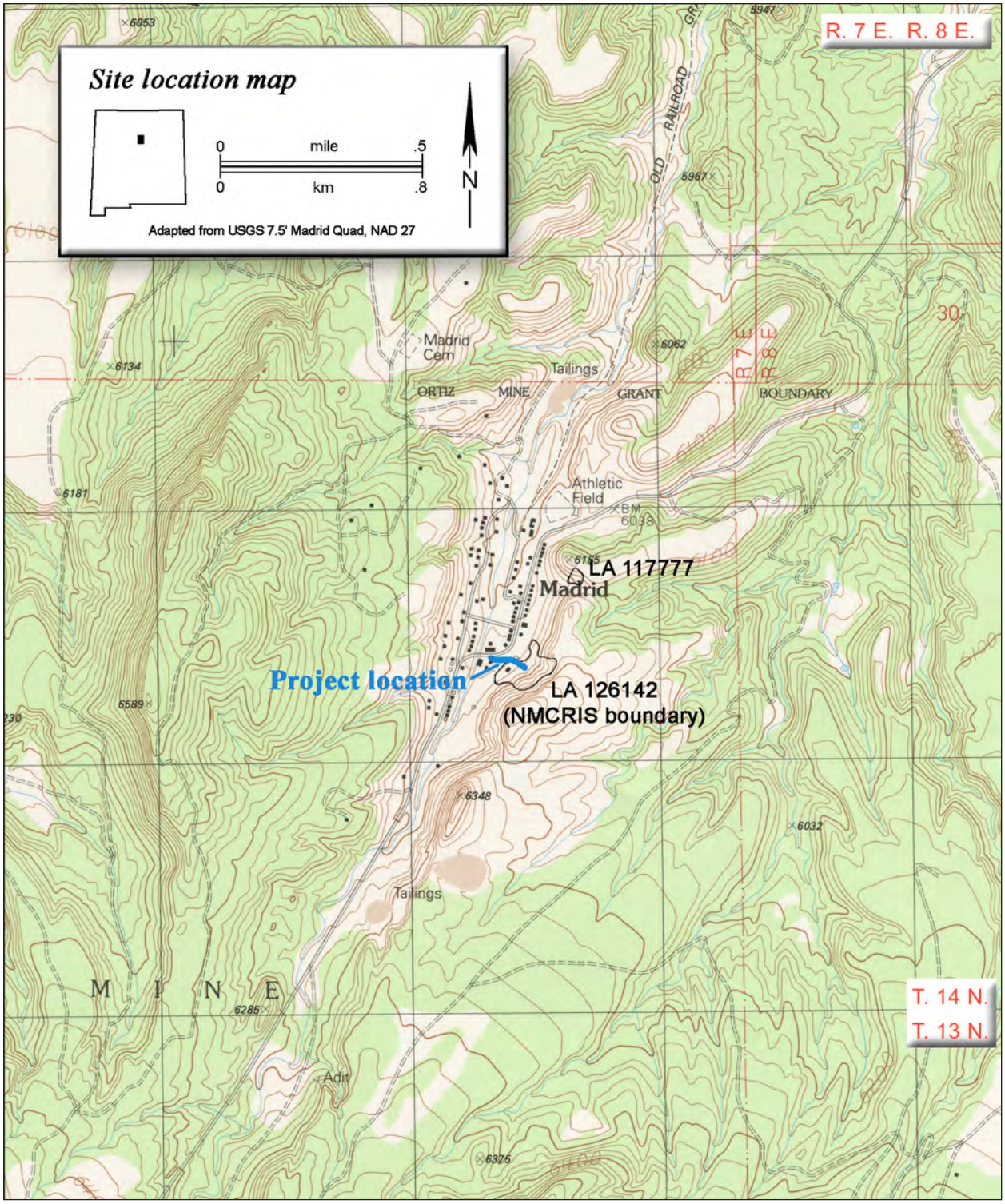

Figure 1.2. Site location map.

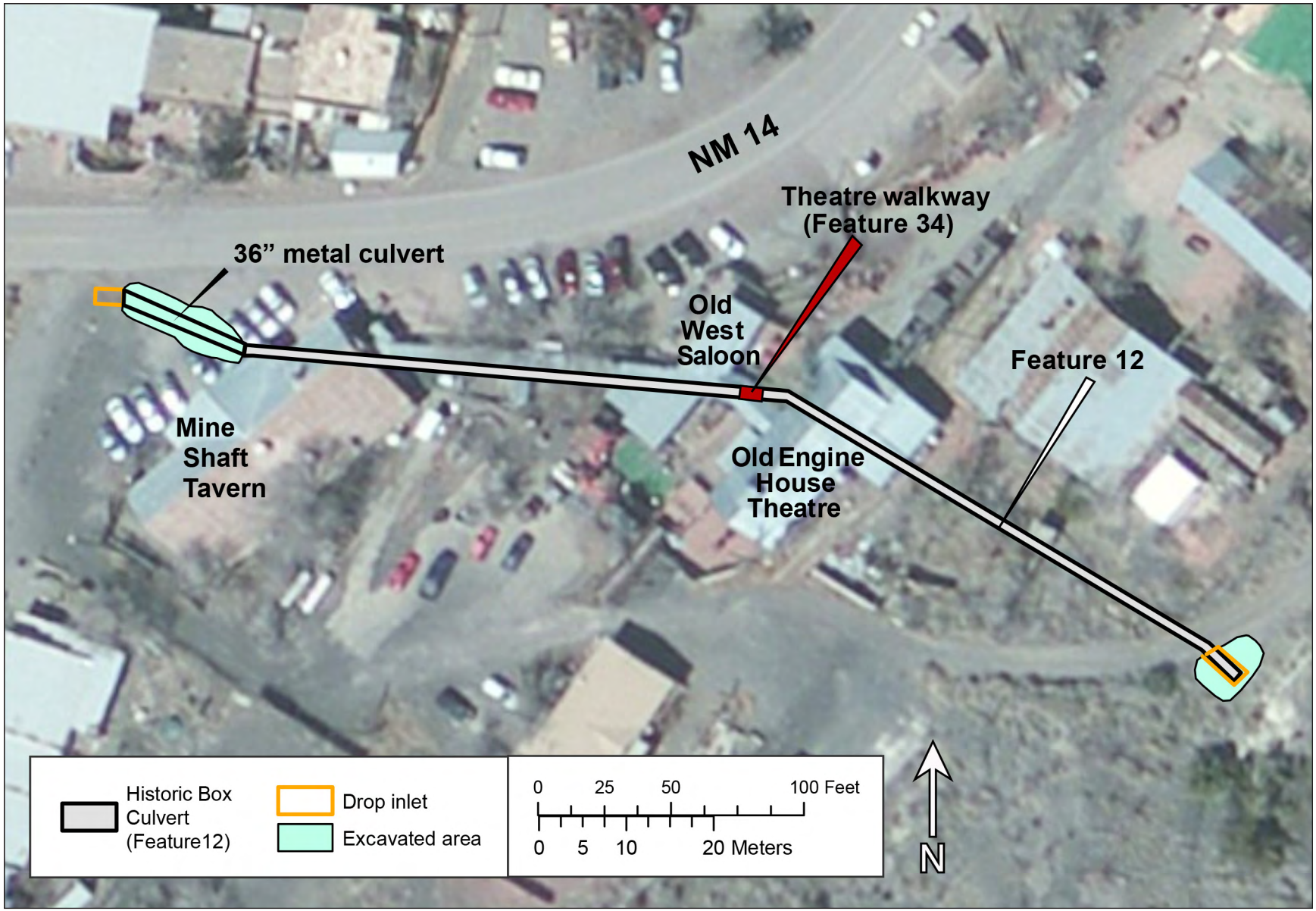

Figure 1.3. Aerial view of project area.

2 ⸸ Environmental Setting

Madrid is situated in the Cerrillos coal field about 40 km (25 miles) south of Santa Fe, New Mexico, on the northwestern flank of the Galisteo Basin (Fig. 2.1).

Both anthracite (hard coal) and bituminous coal (soft coal) have been mined at Madrid. The area is one of the oldest producers of coal west of the Mississippi River (Beaumont 1979:269; Huber 1963:3). Eastern Pennsylvania and Madrid, New Mexico are the only two places in the world where both types of coal have been found together (Genealogical Society of Pennsylvania; Huber 1963:3).

The Galisteo Basin is bordered by the Sangre de Cristo Mountains to the north, the Ortiz Mountains to the south, and the Glorieta Mesa to the west. The project area is located in the Cerrillos coal field in the northern foothills of the Ortiz Mountains. Three forks of the Galisteo River merge near the town of Galisteo and flow northwest to the Rio Grande (Mattson 2015:5).

The soils in the lower hills consist of the cobbly, sandy loam of the Puertecito-Paraje complex. The Kech-Cerra Pelon rock outcrops, made of sandstone and shale, formed on the shoulders and summits of benches and later decomposed into clayey loam and loamy, fine grained sand (Mattson 2015:5).

Vegetation in the area includes piñon, juniper, grama grasses, snakeweed, serviceberry, Gambel oak, cholla, prickly pear, narrow leaf yucca, and seasonal wildflowers (Levine 2010:4). A variety of fauna can be found in the project area and includes lizards, rattlesnakes, crows, jays, doves, quail, hawks and owls. Bats, mice, rabbits, prairie dogs, raccoons, bobcats, coyotes, mountain lions, mule deer, and elk also are common (www.bison-m.org).

Elevation ranges from 1,828 m (6,000 ft) to 1,859 m (6,100 ft). Annual precipitation is 41 cm (16 in), with 40 percent of all moisture occurring during the late summer monsoon season, between July and September. Temperature ranges from 1.6° C (34.8° F) to 19° C (66.2° F) with approximately 150 frost-free days (Mattson 2015:5).

It would be appropriate to mention in this chapter the massive flood that nearly destroyed Madrid in 1925. Another flood washed through the town in 2013.

Figure 2.1. Overview Madrid, view south.

3 ⇓ Cultural Overview

Most of the cultural history of Madrid is focused on the town's mining era, during the nineteenth and twentieth centuries. A brief overview will be presented in this chapter since in-depth accounts of the region were previously investigated by Milford in 1992, Deyloff and Vickland in 1997, Moiola in 1999, and Mattson in 2015.

The earliest prehistoric mining in the Cerrillos Hills occurred at Mount Chalchihuitl around AD 950. A vast, open pit on the western side of Mount Chalchihuitl suggests the removal of between 30,000 and 50,000 tons of rock (Levine 2010:5). According to Moiola (1999), turquoise and lead were mined extensively here by ancestral Puebloans. Galena lead, also found in the area, was used as a pottery glaze by members of the Rio Grande Pueblos from AD 1350–1700.

In the sixteenth century, the Spanish came to the area in search of gold. Prospecting in the region continued through the nineteenth century, and the discovery of gold in the Ortiz Mountains in 1828 ignited the first gold-rush frenzy in the United States (Deyloff and Viklund 1997:8; Levine 2009:5).

By 1835, coal had been discovered in Madrid and full-scale mining operations had begun. The Atchison, Topeka and Santa Fe Railway came to New Mexico in 1880. Madrid's seemingly endless supply of bituminous coal, used to power steam engines, inspired ATSF to construct a 6 ½ mile rail line from Miller Gulch at Waldo, southeast of Madrid, to Madrid (Huber 1963:5).

In 1896, ATSF leased its Madrid holdings to the Colorado Fuel and Iron Company of Pueblo, Colorado. The company blended coal from Miller Gulch with coal from Trinidad, Colorado to produce a high-grade coke used for domestic fuel. This high-grade coke also was used at the El Paso smelter. Following a large mine fire, the company shut down the mine and relinquished their rights to the property in 1906.

Banker and businessman George Kaseman, who had been selling Madrid coal at retail through the Hahn Coal Company in Albuquerque, took a lease on the Madrid property from Colorado Fuel and Iron and started his own mining business.

This is when Oscar Huber entered the picture. Huber had moved to Albuquerque from Kansas for health reasons and began selling coal for George Kaseman in the early 1910s. After six months working for Kaseman, Huber was named superintendent of the Albuquerque and Cerrillos Coal Company and moved his family to Madrid in 1919.

Kaseman was killed in an oil explosion in Hobbs, New Mexico in 1938. Huber stayed on as superintendent and continued the Madrid operation on his own. He leased the property until 1947, when he purchased the coal operation and its adjoining land from the Kaseman estate and ATSF (Huber 1963:5).

During World War II, the Madrid mines supplied coal to Los Alamos while U.S. government scientists worked on the atomic bomb. This supply-and-demand style economy came to a screeching halt in 1949 when natural gas was piped into Los Alamos and railroads converted from steam power to diesel. With the demand for coal dwindling, Madrid shut down all mining operations in 1954 (Huber 1963:8).

Huber responded by putting the entire town—200 houses, a school, a store, a tavern, a power plant, the town's mineral rights, and another 9,000 acres—up for sale in The Wall Street Journal for $250,000 (Deyloff and Viklund 1997:22; Levine 2009:7). There were no takers.

In the early 1970s, Huber's son, Joe, began selling individual company houses and plots to artisans, craftsmen, and gallery owners. Several small businesses were established and people moved back to the former ghost town. Today, Madrid is one of New Mexico's most unusual tourist destinations (Weiser 2011:2).

4 ⇓ Previous Archaeological Work in the Area

The AML project was previously divided into three phases and included two archaeological sites—LA 117777 and LA 126142—in the Madrid historic district.

The environmental consulting firm Marron and Associates and OAS archaeologists monitored AML construction activities at the sites between June 18, 2014, and September 18, 2014. An in-depth description of features recorded at both sites during this time appears in Marron and Associates' report to the AML (Matteson 2015:2–5, 18–52).

Phase II activities were monitored between June 18, 2014 and September 18, 2014, with the exception of the rehabilitation of Feature 12, a historic concrete box culvert at LA 126142. The rehabilitation of this culvert was independently monitored by OAS between February 15, 2015, and April 20, 2015. Feature 12 will be fully discussed in this text.

In 1999, Lloyd Moiola, of AML, conducted a cultural resource survey in the town of Madrid. This survey is an excellent resource when studying the history of Madrid and includes references to previous surveys performed in the vicinity. Moiola also refers to the Madrid mining survey performed by Deyloff and Viklund in 1997, when one of the sites appearing in the Marron and Associates' report, LA 117777, was initially assigned (Moiola 1999:24–25).

5 ⇓ Methodology

During monitoring, OAS archaeologists visually inspected the entire 150.8 m (495 ft) length of Feature 12, the historic concrete box culvert, on a daily basis. All activities were recorded, and the entire construction process was photo documented.

Only one new feature—Feature 34—was identified during the monitoring phase. At this time, all construction activities were stopped, and the feature was cleared of soil and documented. Feature 34, which was made of railroad ties, was photographed, measured, mapped, and systematically removed to better understand construction methods and function.

Artifacts encountered during monitoring were pulled from the back dirt, recorded in the daily log, and photographed. Artifact frequencies were minimal, and unique items were set aside to be curated in the Madrid Mining Museum.

6 ⇓ Results of Monitoring Activities

The following is a description of construction and archaeological monitoring activities that occurred during Phase I of the project at LA 126142. The major focus of Phase I was the monitoring of Feature 12—the historic concrete box culvert—and the discovery of Feature 34, several railroad ties that were probably part of a railroad switch adjacent to the upper north–south railroad track.

Feature 12

Feature 12 is an intact, historic concrete box culvert (Fig. 6.1) in the north-central portion of LA 126142. The culvert was originally constructed by Atchison, Topeka & Santa Fe Mining Company to transport wastewater and nuisance storm water from the company's power plant to the Madrid Gulch. The historic concrete box culvert was kept intact and used as a frame for the new slip lining—a 91.4 cm (36 in) metal culvert—installed during the project.

The eastern and western ends of the historic concrete box culvert connect to drop inlets; the middle section of the historic concrete box culvert rests below Madrid's Mine Shaft Tavern and Engine House Theatre. Early on, the eastern portion of the historic concrete box culvert was probably open to the surface and was not covered. At some point, wooden railroad ties from the now-defunct rail line were placed side by side to cover the historic concrete box culvert opening (Fig. 6.2). A thick layer of black gob and a thinner layer of red dog were spread over the ties to fill out and level the area between the saloon and the theatre.

The eastern and western portions of the historic concrete box culvert ceiling was covered using poured cement with a 2.5 cm (1 in) twisted steel cable running through the ceiling for reinforcement (Fig. 6.3). Metal supports and wooden beams also were visible in some portions of the concrete walls and ceiling.

The culvert measured 150.8 m (495 ft) east–west by 1.2 m (4 ft) north–south by 1.2 m (4 ft) high. Feature 12 was originally recorded by Marron and Associates during Phase II. At that time, only the eastern end of the culvert had been cleared of debris. Complete rehabilitation of the culvert took place during Phase I in 2015.

Figure 6.1. Opening to upper inlet of the historic concrete box culvert, view west.

Excavation began on February 10, 2015, in the western front parking lot of the Mine Shaft Tavern. A hydraulic hose was set inside the excavated western end of the historic concrete box culvert to jet-vacuum water into the culvert and remove approximately .6 m (2 ft) of black gob and sediment (Fig. 6.4) that had gushed in during the flood of September 2013. Occasional medium-sized rocks and wood fragments also were vacuumed out of the historic concrete box culvert. Old iron pipes, wires, and brass valve handles, which were attached to the culvert ceiling and walls, also were removed from the culvert (Fig. 6.5). One brass swing-check valve was embossed with the words "Jenkins Bros." Jenkins Bros., a New York company, began producing valves around 1844; the company is still in business today.

The process of clearing sludge and debris from the interior of the historic concrete box culvert took

Figure 6.2. Feature 12, the railroad tie ceiling, on historic concrete box culvert. Feature 34 railroad ties in north face, view north.

Figure 6.3. Feature 12, cement ceiling of box culvert, with cable reinforcement, view east.

Figure 6.4. Jet-vacuuming the western end of Feature 12 box culvert, view east.

Figure 6.5. Box inlet interior with gob, sediment, and valves, view east.

approximately two weeks. While clearing continued, another excavation started upslope, behind the tavern and within the theatre walkway (Fig. 6.6). Approximately .5 cm (.19 in) of black gob and a 10 cm (4 in) lens of red dog had been removed from the walkway when railroad ties were encountered. The wooden railroad ties had been set side by side to create a cover over the surface of the cement box culvert.

The box culvert railroad ties were covered with black gob, red dog, and flagstone. This created a level walkway between the saloon and the theatre. As the excavation progressed, 2½ railroad ties were found situated east–west starting on the northern edge of the historic concrete box culvert surface (Fig. 6.7). These were evenly spaced and were approximately 23 cm (9 in) apart. There was .20 cm (.08 in) of black gob between the base of the ties and the surface of the ceiling.

These railroad ties (Feature 34) were part of a switch for the old upper railroad track that ran north–south to the breaker. A section of the original track has remained intact and runs along the aisle inside the theatre. The front portion of an old locomotive butts up against the northern exterior wall of the theatre.

The railroad ties were removed—as were 10 horizontal ties that made up a portion of the ceiling of the historic concrete box culvert—in order to gain access to the location where the new slip lining, a 91.4 cm (36 in) metal culvert, was to be installed. At the end of each day, the open space was covered with thick metal plates and fenced off with orange plastic mesh. If construction activities were taking place elsewhere at the site, the area remained covered to keep Mine Shaft Tavern customers from becoming too curious about construction activities.

The AUI crew moved downslope to the drop inlet adjacent to NM 14 to remove the upper steel grates (Fig. 6.8) that had been installed by the NMDOT. NMDOT had previously connected a 60 cm (24 in) steel culvert to the historic concrete box culvert under the porch of the Mine Shaft Tavern. The steel culvert was packed with black gob and sediment from the 2013 flood, and water flow through the culvert was virtually nonexistent (Fig. 6.9).

The AUI crew jackhammered the northern and southern cement walls encasing the old metal culvert and cut through the rebar reinforcements. While this tedious activity was taking place, another

Figure 6.6. Walkway cleared of debris, view west.

AUI crew returned to the open culvert area (Feature 12) under the Mine Shaft Tavern porch. The historic concrete box culvert was cleared of gob and debris, and AUI crew members removed the old 60 cm (24 in) steel culvert connected to the NM 14 drop inlet (Fig. 6.10).

The interior of the old steel culvert was packed with black gob and sediment from the 2013 flood. The immense weight made it nearly impossible for the backhoe to remove the culvert. AUI crew members sawed the old culvert into sections, cleared any remaining debris, and recycled the old metal culvert (Fig. 6.11). After the old culvert had been removed from the trench, excavation west of the Mine Shaft Tavern porch continued and the trench was widened for installation of the new slip lining. During trench excavation, several iron artifacts were retrieved from the back dirt, including: 15 cm (6 in) railroad spikes; a section of thick, copper wire; and several solid iron bars measuring 31.7 by 1.2 cm, or 12 by ½ in (Fig. 6.12).

While jet vacuuming was taking place near the porch of the tavern at the western end of Feature 12, it became evident that the walls of the historic concrete box culvert were no longer made of poured

Figure 6.7. Feature 34, railroad tie in north face of excavation, view north.

Figure 6.8. Removal of lower drop inlet cover near NM 14, view north.

Figure 6.9. Clearing interior of lower box inlet, view west.

Figure 6.10. Old 60 cm (24 in) culvert at the western end of Feature 12, filled with sediment and gob, view east.

Figure 6.11. Removal of old culvert filled with gob and sediment, view southwest.

Figure 6.12. Artifacts recovered from the Mine Shaft Tavern trench.

Figure 6.13. Feature 12, western end of cobble walls, view east.

Figure 6.14. Feature 12, western end excavated cobble walls, view east.

Figure 6.15. Cobble walls of Feature 12 box inlet, view east.

cement. Instead, two separate walls consisting of cobble, limestone, and sandstone slabs were held in place with Linfield mortar (Fig. 6.13). A flagstone floor ran between the walls and continued approximately 4.5 m (15 ft) east with a 30 cm (1 ft) drop-off to the original poured-concrete floor. The drop-off was so severe it seemed to have been intentionally designed to slow water flowing through the box culvert from upslope. It is not known when, or by whom, this cobblestone addition was installed.

A few of the locals told OAS archaeologists that they had dug the trench to the NM 14 drop inlet by hand for NMDOT approximately 15 years ago. At that time, the locals were told that the cobble walls (Fig. 6.14) had been built by miners. This addition was not considered a new feature but a continuation of Feature 12.

OAS archaeologists cleared the walls of debris and mapped the northern and southern walls below the edge of the existing cement sidewalk at the Mine Shaft Tavern. An exploratory window was created between the two walls, directly west of the flagstone floor, to investigate the base of the walls.

Fill initially consisted of black gob; then fragments of white mortar appeared mixed in with the gob. It is possible that the mortar for the cobble walls was mixed directly west of the flagstone floor between the two cobble walls. No artifacts were found in the excavated window, but two lower cobble layers were discovered on both walls. The northern and southern cobble walls extended 2.4 m (8 ft) west

Figure 6.16. Slip lining installed between box inlet cobble walls, view east.

Figure 6.17. Artifacts found in fill below flagstone floor of Feature 12.

Figure 6.18. Demolition of cobblestone walls, view northeast.

of the sidewalk edge. Both were .90 m (3 ft) high and .44 cm (1½ ft) wide.

The interior and exterior cobblestone walls of the historic concrete box culvert were photographed (Fig. 6.15). The illusion that the cobble walls would be covered up and preserved faded when it was found that the new slip lining would not fit into the opening between the cobble walls (Fig. 6.16).

The Historic Preservation Division agreed to the removal of portions of the cobble walls and sandstone floor. After the floor was completely removed, the height issue was resolved. Artifacts from the floor fill included 10 cm (4 in) railroad spikes, 15.2 cm (6 in) railroad spikes, an iron plumbing elbow, a metal-end spray nozzle, and a possible section of track for small ore carts (Fig. 6.17).

A slight curve in the cobblestone wall prevented the new 91.4 cm (36 in) metal culvert from being pushed into the historic concrete box culvert from the lower entryway. The AUI crew began demolition of the southern wall with the intention of preserving the northern wall (Fig. 6.18).

A few protruding cobbles on the northern interior wall prevented the metal culvert from sliding past the curve. Once the cobbles were extracted, the new metal culvert was inserted into the historic concrete box culvert (Fig. 6.19), and workers discovered that the western end of the new metal culvert did not line up with the drop inlet adjacent to NM 14.

A short metal elbow was inserted between the cobble walls (Fig. 6.20) and was connected to a 6 m (20 ft) section of the metal culvert. Before this section could be redirected toward the drop inlet (Fig. 6.21), an additional 1.1 m (4 ft) was trenched to the south.

The stratigraphy in the excavated area remained consistent, with 5 cm (2 in) of surficial base course, 10 cm (4 in) of red dog, and 45 cm (18 in) of black gob to the base of the trench. The stratigraphy had been previously mixed and redeposited due to the presence of a leach field in the tavern's parking lot.

During excavation, the filtration caps were broken off the leach lines by the backhoe. Sewage gushed out, filling a portion of the trench (Fig. 6.22). Atlas Pumping was called to remove the sewage.

A small section of Orangeburg pipe also was pulled up by the backhoe (Fig. 6.23). Orangeburg pipe, made from wood pulp and sealed with hot pitch, was used between the 1860s and the 1970s. The pipe found at the site was no longer functional,

Figure 6.19. Additional section of the recently installed slip liner, view northeast.

Figure 6.20. Elbow installed on slip liner, view east.

as the owner had five new septic tanks and filters installed at the restaurant just a few years ago.

After the sewage was pumped from the trench and saturated sewage soils had been removed from the site, the installation of the new slip lining continued. The new metal culvert was set into the northern face of the old concrete drop inlet adjacent to NM 14 (Fig. 6.24). Base course was mechanically

Figure 6.21. Widening the trench for slip liner, view southwest.

Figure 6.22. Broken sewage lines, view northeast.

Figure 6.23. Section of Orangeburg pipe, view northeast.

pushed over the new metal culvert and watered down. The soils were machined tamped (Fig. 6.25).

One section—between the historic culvert elbow and the western portion of the new metal culvert—was reserved for construction of an upright manhole. A rebar grid was placed at the base of the trench (Fig. 6.26), where the concrete manhole rim would rest (Fig. 6.27). Seven yards of concrete was poured over the grid and between the new culvert and the historic concrete box culvert. The base of the manhole opening was hand formed (Fig. 6.28).

Steve Carson of Rangeland Hands was on site and approved the manhole construction. John Kretzmann of AML visited the site that afternoon to check on the project.

The next morning, a 7,000 pound pre-made concrete lid and a metal manhole cover arrived from Albuquerque. The AUI crew attached the rim to the manhole opening with grout (Figs. 6.29 and 6.30). The lid measured 213 by 213 by 20.3 cm (7 ft by 7 ft by 8 in).

The Moriarty Concrete truck arrived to pour concrete into the form at the lower drop inlet adjacent to NM 14 (Fig. 6.31). The new metal culvert

Figure 6.24. Slip liner connected to lower drop inlet at NM 14, view southwest.

was inserted into the drop inlet. Afterward, cement was poured into the drop inlet and hand-bladed, creating a smooth swale for water to flow westward, under NM 14 and into the Madrid Gulch (Fig. 6.32).

Workers poured concrete around the manhole opening and into wooden forms that had been constructed by AUI (Fig. 6.33). An immaculate job, at both the manhole opening (Fig. 6.34) and the lower drop inlet (Fig. 6.35), was executed.

Thirty-two sections of metal culvert, each 2.4 m (8 ft) long, were pushed downslope from the upper

Figure 6.25. Base course is hosed down to cover the slip liner, view southwest.

Figure 6.26. Rebar grid is installed at base of manhole, view west.

Figure 6.27. Concrete is poured for manhole, view east.

Figure 6.28. Hand-formed concrete manhole base, view northeast.

Figure 6.29. Pre-made lid is set on manhole base, view east.

Figure 6.30. Manhole cover in place, view east.

Figure 6.31. Crew prepares concrete forms at lower inlet, view southwest.

Figure 6.32. Crew builds a concrete swale inside lower drop inlet, view west.

Figure 6.33. Concrete is poured into the manhole cover base, view north.

Figure 6.34. Completed manhole, west of the tavern porch, view east.

Figure 6.35. Slip liner in new concrete wall at lower drop inlet, view southwest.

Figure 6.36. Sections of culvert are inserted through upper inlet of Feature 12, view south.

drop inlet to the historic box culvert (Fig. 6.36). The final section of culvert was set in place at the eastern opening of the historic concrete box culvert. At this point, all 150.8 m (495 ft) of the new metal culvert had been installed.

Four 7.6 cm (3 in) Lok bolts were set into the base of each 2.4 m (8 ft) section of the new metal culvert to secure the culvert to the floor of the old concrete box culvert. A total of 100 bolts were set in all. In order to maintain adequate air circulation during the process, a generator was used to pump oxygen into the culvert (Fig. 6.37).

After the pins were set, the AUI crew assembled rebar frames and wooden forms for the two concrete walls and two concrete aprons that were to be installed on each side of the upper drop inlet. The walls were intended to enclose the new metal culvert in the eastern exterior wall (Figs. 6.38, 6.39, and 6.40). Cement was poured into the forms, and the forms were removed shortly after to allow the cement to cure (Figs. 6.41 and 6.42).

Once work on the upper inlet was complete, the AUI crew moved to the theatre walkway, where they installed wooden forms for a new northern wall and for an addition to the southern concrete wall at the Old West Saloon doorway (Fig. 6.43).

Figure 6.37. Oxygen is pumped to crew bolting slip liner to box culvert, view north.

Before the forming process began, a flagstone sidewalk and an old concrete pad were removed from the location (Figs. 6.44 and 6.45). The north-

Figure 6.38. Rebar and wood forms are installed at the upper inlet of Feature 12, view southeast.

Figure 6.39. Completed wall and apron forms upper inlet, view southeast.

Figure 6.40. John Kretzmann, of AML, observes as cement is poured at the upper inlet of Feature 12, view southeast.

Figure 6.41. Concrete walls with slip liner at upper inlet, view southeast.

central portion of the walkway was expanded, creating a beveled concrete surface that would allow water to flow directly into the new manholes.

Soils in the northern area extended 4 m (13 ft) east–west by 4 m (13 ft) north–south and were 1 m (3½ ft) deep. The area contained a redeposited mix of tan base course, red dog, and black gob. Very large tree roots were present throughout the fill. One very determined root had grown at a 90 degree angle around the corner of the cement pad.

A few artifacts were retrieved from the fill and included a 18 cm (7 in) railroad spike; a small rubber gasket, 10 cm (4 in) in diameter; a wide, metal bicycle fender; a 30 cm (12½ in) long, solid iron rod, 4 cm (1½ in) in diameter; and a very large piece of slag that measured 25 by 18 by 15 cm (10 by 7 by 6 in). These items were collected for Madrid's mining museum (Fig. 6.46). A white PVC pipe, 10 cm (4 in) in diameter, transected the walkway from north–south. The pipe was determined to be part of a non-functional water line and was cut out and removed.

The new concrete wall (8½ ft by 30 in by 6 in) was constructed on the northwestern edge of the trench near the saloon door (Fig. 6.47). Another concrete wall—this one located south of the saloon door—had been installed previously by the owner to support the corrugated-tin roof between the saloon and the theatre. This wall extended east another 1.3 m (4½ ft) (Fig. 6.48). While excavating the trench to support the new portion of the southern

Figure 6.42. Completed upper drop inlet, view southeast.

Figure 6.43. Theatre walkway prior to reconstruction, view north.

Figure 6.44. Crew removes the cement pad at the theatre walkway, view south.

Figure 6.45. Debris removed from the theatre walkway, view north.

wall, another east–west railroad tie was encountered and removed.

It appeared that, wherever the historic box culvert was covered with railroad ties, the railroad ties had been situated either north–south (side by side) or east–west (lengthwise, end to end) along the upper edge of the concrete box culvert. After the two cement walls had been poured, the forms were removed, and the concrete was left to cure (Fig. 6.49).

The next task for the AUI crew was to excavate directly below the front of the saloon door in order to install an upright culvert, 60.9 cm (24 in) diameter, in the newly installed horizontal culvert (Fig. 6.50). Once again, the crew encountered railroad ties lying north–south over the box culvert covering associated with Feature 12. Removal was tedious this time since the railroad ties had been nailed together from below and each end had to be sawed off before the ties could be removed from between the two walls (Fig. 6.51).

The soils below the doorway were a mixture of black gob and red dog that had been redeposited on the railroad-tie ceiling of the old box culvert. Several artifacts associated with the railroad were collected from the fill. Artifacts included two heavily rusted railroad spikes 15 cm (6 in) in length; a red brick, 20 by 10 by 6 cm (8 by 4 by 2½ in) in size, that was lacking a manufacturer's stamp; a thin sheet of tin; and two iron railroad-tie plates, 23 by 10 by .6 cm (9 by 4 by ½ in) in size, with four square holes in each corner.

Figure 6.46. Slag and metal pipe.

Figure 6.47. Crew pours concrete into north wall forms, view northwest.

Tie plates are attached to wooden railroad ties with railroad spikes, and the plates found at the site were a double-shoulder type that fit against the bottom edge of the rail (Fig. 6.52). Tie plates were first used around 1900 and created a more stable track, with better load distribution. Tie-plate use increased the lifespan of wooden railroad ties (Fig. 6.53) and held the rail to correct gauge (Encyclopedia Britannica).

After the saloon's upright culvert (60.9 cm, or 24 in, diameter) was installed, the AUI crew moved to the middle of the theatre walkway to install another upright culvert. This upright culvert was much larger, about 91.4 cm (36 in) diameter, and had to support an iron manhole cover. A large circular cut was made in the horizontal culvert, and an upright section of culvert, with an attached metal skirt, was set on the surface. This upright section was cut, bolted down, and grouted to the horizontal culvert (Fig. 6.54).

The AUI crew was notified by project engineers to construct two walls inside the historic box culvert. Walls were built on each side of the horizontal metal culvert, which was attached to the wall of the historic box culvert (Fig. 6.55). The engineers argued that, if the force of the grouting process pushed through the box culvert from upslope, the upright section of the manhole opening might not be stable enough, and the additional walls would support the pressure of the grout.

Figure 6.48. Poured south wall in the theatre walkway, view west.

The initial pour was left to cure before another

Figure 6.49. Forms removed from walls near the theatre walkway, view southeast.

Figure 6.50. Upright drainage pipe installed into Feature 12 slip liner, view west.

Figure 6.51. AUI crew removes railroad ties from the saloon doorway, view west.

Figure 6.52. Artifacts from railroad tie removal, view west.

grouting session took place (Fig. 6.56). The second and third grouting sessions are intended to flow over the surface of the walls and stabilize the upright vertical culvert (Fig. 6.57).

The final excavation area along the theatre walkway was in the eastern section, directly in front of the theatre doorway. The soil here is a mixture of black coal crushed fine and black gob. The AUI crew removed 48 cm (19 in) of soil in the eastern section and leveled it with the saloon walkway. Eventually, forms would be set for the new concrete walkway, but the grouting process was top priority.

A large tree trunk was encountered during excavation and had to be sawed to pieces before removal. One rusted railroad spike (10.16 cm, or 4 in, long) was collected. A railroad tie (8 ft by 8 in by 6 in) transected the doorway entrance east–west (Fig. 6.58). According to Steve Carson, of Rangeland Hands, the railroad tie had to be removed because the area had to reach specific elevations for the concrete pour. The railroad tie was removed and examined. One end of the railroad tie had "AHS.42" stamped into it. A letter nail (6 cm, or 2½ in, long and 1 cm, ½ in, in diameter) with an "X" embossed on the head was removed from the surface of the tie (Fig. 6.59). Whether, AHS represents the name of a railroad company or the number 42 refers to the year 1942 is not known, since this information could not be tracked down. Letters can represent three separate things: the type of treatment the railroad tie received, the quality of the railroad tie, or the type of timber from which the railroad tie was made (www.rta.org).

Figure 6.53. Metal tie plate attached to railroad tie with spikes, view east.

Jeff Oaks described the "X" nail as being an ATSF symbol for sub-standard railroad ties (Oaks 1999:86). No specific dates were associated with this information, but letter nail usage could range from 1899, when the nails were first used, to 1969, when the railroads stopped using nails and computerized record-keeping first began.

On March 26, 2015, the Con Deck Corporation arrived on site to begin grouting activities (Fig. 6.60). Plans included filling the entire 150.8 m (495 ft) space surrounding the metal culvert. The grouting process would stabilize the metal culvert

Figure 6.54. AUI crew attaches upright culvert to horizontal slip liner, view north.

Figure 6.55. AUI crew installs side walls in Feature 12 slip liner, view west.

Figure 6.56. Initial grout pour at the theatre walkway manhole, view east.

Figure 6.58. Isolated railroad tie embedded in Old Engine House walkway, view north.

Figure 6.57. Grout-covered slip liner, view north.

Figure 6.59. Stamped end of railroad tie.

Figure 6.60. Con Deck crew sets up grouting operation, view west.

during times of substantial water flow through the culvert..

This massive operation included one semi-trailer truck, containing the grout powder; one water truck; two pickup trucks, both hauling equipment; one mixer; and immense lengths of hose in separate utility vans. The crew set up the operation in the upper parking lot behind the Mine Shaft Tavern. Getting the semi-trailer truck up the very slim driveway, backing it up, and parking it in a workable position, while leaving space for the mixer and water truck, was quite an ordeal.

Eventually, all was accomplished, and the grouting process began. The crew began by pumping grout into the opening of the small drop inlet at the saloon doorway (Fig. 6.61). A thin, soupy, 15.2 cm (6 in) layer of grout was poured and began to flow downslope to the opening of the large manhole in front of the Mine Shaft Tavern. If a large portion of wet grout had been poured against the walls and floor of the historic concrete box, the concrete would have sucked the water out of the grout and made the grout dry faster. This would have led to cracking. It was a slow process, but the thin layer of grout needed time to cure before another pour could begin.

The Con Deck crew returned the next day for another pour and ran out of dry powder. The crew did not return that weekend, as anticipated. Instead, Con Deck returned Wednesday, April 1, 2015 (Fig. 6.62) to pump grout around the center manhole opening in the theatre walkway (Fig. 6.63). After 35 yards of grout had been poured, this portion of the box inlet was 50 percent full. At this point, AUI checked the interior of the new slip lining for grout leakage. An AUI crew member surveyed the culvert interior and discovered a few leaks. Epoxy was applied immediately to seal the pinholes.

Upslope, halfway between the theatre walkway and the upper inlet, was a small structure made of wooden planks and covered with corrugated tin. The building was adjacent to the historic box culvert and had been recorded by Marron and Associates as a pump house (Feature 26, HCPI #32480) during Phase II of the project.

Below the pump house was a low, open con-

Figure 6.61. Con Deck crew pours grout into the Old West Saloon's drop inlet, view west.

Figure 6.62. Con Deck powder truck arrives on site, view west.

crete culvert (Fig. 6.64). The culvert extended south to below the upper driveway (Fig. 6.65). It is still there. The new metal culvert was visible from the pump house basement. Con Deck pumped grout into the floor of the pump house to fill the space surrounding the culvert (Figs. 6.66 and 6.67).

When the area was considered full, Con Deck workers pulled their massive hoses upslope to the upper inlet of Feature 12 and pumped grout into the inlet's western face, where the new metal culvert had been inserted into the concrete wall. The Con Deck crew poured 25 yards of grout on both sides of the culvert (Fig. 6.68) and returned to the saloon doorway, where they poured another 10 yards. After pouring a total of 140 yards of grout that day, the crew ran out.

The next day, the Con Deck crew pumped another layer of grout into the saloon doorway inlet and the center manhole opening of the theatre walkway. Both areas sunk 15.2 cm (6 in) in half an hour. The crew left the site with plans to finish grouting on Monday, April 6, 2015. The grout set over the weekend, and on Monday another layer of grout was pumped into the saloon doorway inlet (Fig. 6.69) and the center manhole opening of the theatre walkway (Fig. 6.70).

While grouting was in progress upslope, JC Septic crew members went to work in the front parking lot of the Mine Shaft Tavern, trenching and reducing the length of the leach field infiltrators (Fig. 6.71).

According to health regulations, the infiltration system had to be 3 m (10 ft) from the newly installed culvert. Following the previous sewage episode, the parking lot was filled in and leveled by AUI crews, making it difficult to relocate the infiltrators with the backhoe and detect leakage.

After excavation of the first trench, the infiltrators were cracked by the backhoe. JC Septic called for their pumping truck and removed the sewage overflow from the site (Fig. 6.72). The infiltrators were plugged with HardieBacker cement board, which was tarred and screwed into place (Fig. 6.73).

The stratigraphy of the trench was a redeposited mix of base course, red dog, and black gob. The trenches were filled in and packed down. The parking lot was leveled by JC Septic by the end of the day (Fig. 6.74). Construction work in the front parking lot of the Mine Shaft Tavern was complete.

Figure 6.63. Grout is pumped into manhole in the theatre walkway, view north.

Figure 6.64. LA 126142, Feature 26, concrete culvert under old pump house, view north.

Figure 6.65. Pump house with concrete culvert, view north.

Figure 6.66. Con Deck crew member pumps grout below pump house into Feature 12 box culvert, view southwest.

Figure 6.67. Con Deck crew member pumps grout below pump house into Feature 12 box culvert, view southwest.

Figure 6.68. Con Deck crew member pumps grout into upper inlet, view east.

Figure 6.69. Inlet, with grout, at the saloon's doorway, view southwest.

The Jersey barriers were removed and the parking lot was opened again, much to the owner's delight.

With the grouting process complete, the AUI crew returned to the theatre walkway to set up wooden forms for the concrete pad, fill the outside area of the upper manhole opening with base course (Fig. 6.75), and pour concrete (Fig. 6.76). The walkway was beveled slightly downward toward the center manhole and the saloon's drop inlet (Fig. 6.77).

A tinted concrete had been selected for the walkway. Once dried, the concrete became a beautiful Southwestern, reddish-brown hue. Crew members stamped a subtle design into the concrete surface prior to drying (Fig. 6.78). Once completed, the Old West Saloon walkway was 2.7 m (9 ft) in length. The Engine House walkway was 3.6 m (12 ft) in length. Both walkways were connected to the central pad 3.5 by 3.5 m (11½ by 11½ ft). The new manhole was centrally located .9 m (3 ft) from the northern edge of the central pad (Fig. 6.79).

The AUI crew brought in a flatbed trailer to remove lumber used for cement frames and return it to their yard. A semi-trailer truck hauled away leftover

Figure 6.70. Grouting in progress at the theatre walkway manhole, view west.

Figure 6.71. JC Septic crew members trench for septic lines, view east.

Figure 6.72. A JC Septic crew member pumps sewage from trench, view southeast.

metal tubing, the old culvert, and rusted pipes from the interior of the historic box culvert (Fig. 6.80).

The final inspection of the project took place April 10, 2015, with AUI engineers, AML personnel, and Steve Carson of Rangeland Hands present. A few minor details needed to be altered, but, otherwise, the project was considered a success and was completed in a timely fashion.

On April 20, 2015, the last stretch of landscaping took place at the upper inlet. Steve Carson and an OAS archaeologist monitored mechanical activities. Several massive boulders were trucked to the site, deposited, and arranged north of the upper inlet (Figs. 6.81 and 6.82). On the southwestern end of the inlet (Fig. 6.83), large boulders were arranged in a linear fashion to channel future storm water run-off directly into the drop inlet.

The massive steel plates covering the road on the western side of the drop inlet were removed (Fig. 6.84) and replaced with brick-like Jersey barriers (Fig. 6.85). Barriers also were set up along the entire western edge of the driveway. Phase I erosion control operations at LA 126142 concluded on April 20, 2015.

Figure 6.73. Plugged infiltrator, view east.

Figure 6.74. The completed Mine Shaft Tavern parking lot, view south.

Figure 6.75. AUI crew fills manhole pit with base course, view west.

Feature 34

Feature 34 consisted of 2½ wooden railroad ties (Fig. 6.86) that were discovered during the excavation of the northern face of the theatre walkway (Fig. 6.87). The railroad ties rested on a 20 cm (8 in) portion of black gob above the railroad tie ceiling of the historic box culvert.

The railroad ties were covered with a 5 cm (2 in) layer of tan base course on the ground surface, followed by a (10 cm) 4 in layer of black coal crushed fine, 10 cm (4 in) of red dog, and 20 cm (8 in) of black gob on the surface of the ties (Fig. 6.88). The two intact wooden ties of Feature 34 measured 243 by 20 by 15 cm (8 ft by 8 in by 6 in); half of a third railroad tie was also present. The railroad ties were evenly spaced, about 22.8 cm (9 in) apart.

One railroad tie had an iron tie plate—20 by 10 by 1.3 cm, or 8 by 4 by ½ in—attached to its eastern surface with a 10–15.2 cm (4–6 in) iron railroad spike. This tie plate is a single-shoulder type, which creates a more stable track with better load distribution and increases the lifespan of the wooden

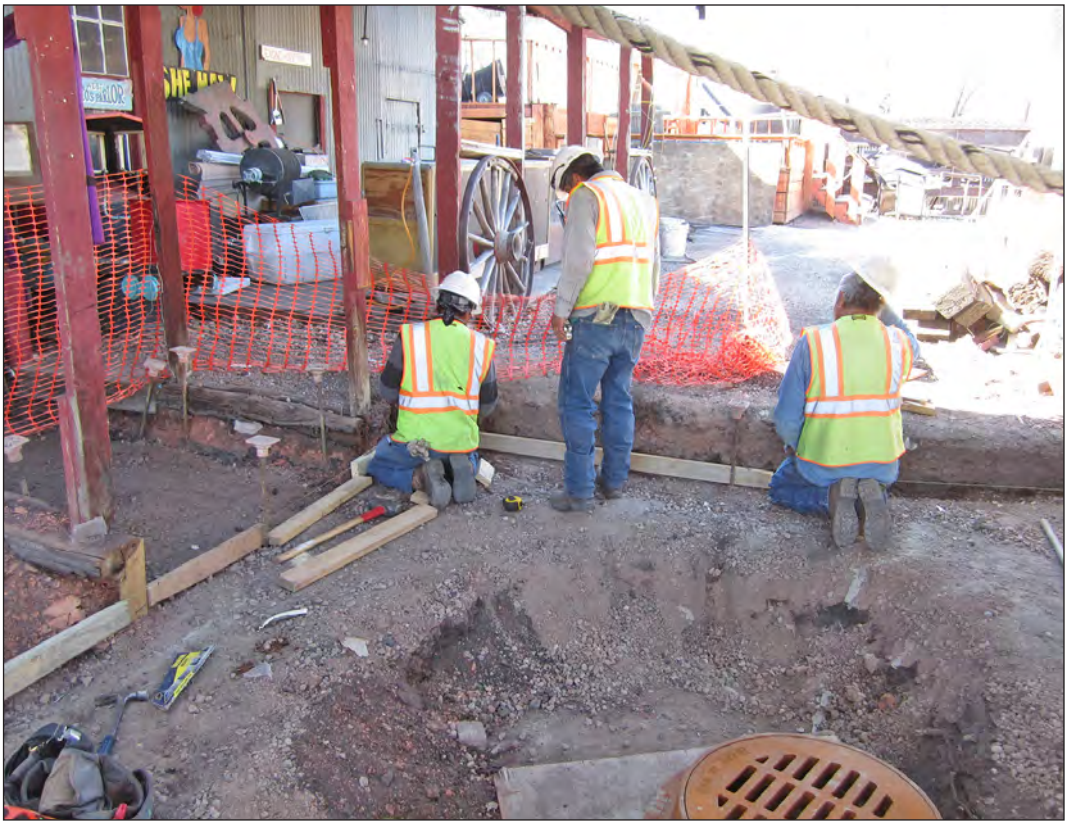

Figure 6.76. AUI crew sets concrete forms at the theatre walkway, view south.

Figure 6.77. AUI crew pours concrete pad at the theatre walkway, view west.

Figure 6.78. AUI crew member stamps a design into the uncured concrete pad, view north.

Figure 6.79. Completed entrance at Engine House Theatre, view east.

Figure 6.80. Trash is removed from the site, view northwest.

Figure 6.81. Truck with landscaping boulders for upper drop inlet, view north.

Figure 6.82. Steve Carson aligns boulders north of upper drop inlet, view north.

Figure 6.83. Steve Carson aligns boulders south of upper drop inlet, view southwest.

Figure 6.84. Landscaping work completed. Steel road plates have been removed, view south.

Figure 6.85. Jersey brick wall at upper drop inlet, view northeast.

Figure 6.86. Feature 34, railroad ties on top of Feature 12 culvert covering, view north.

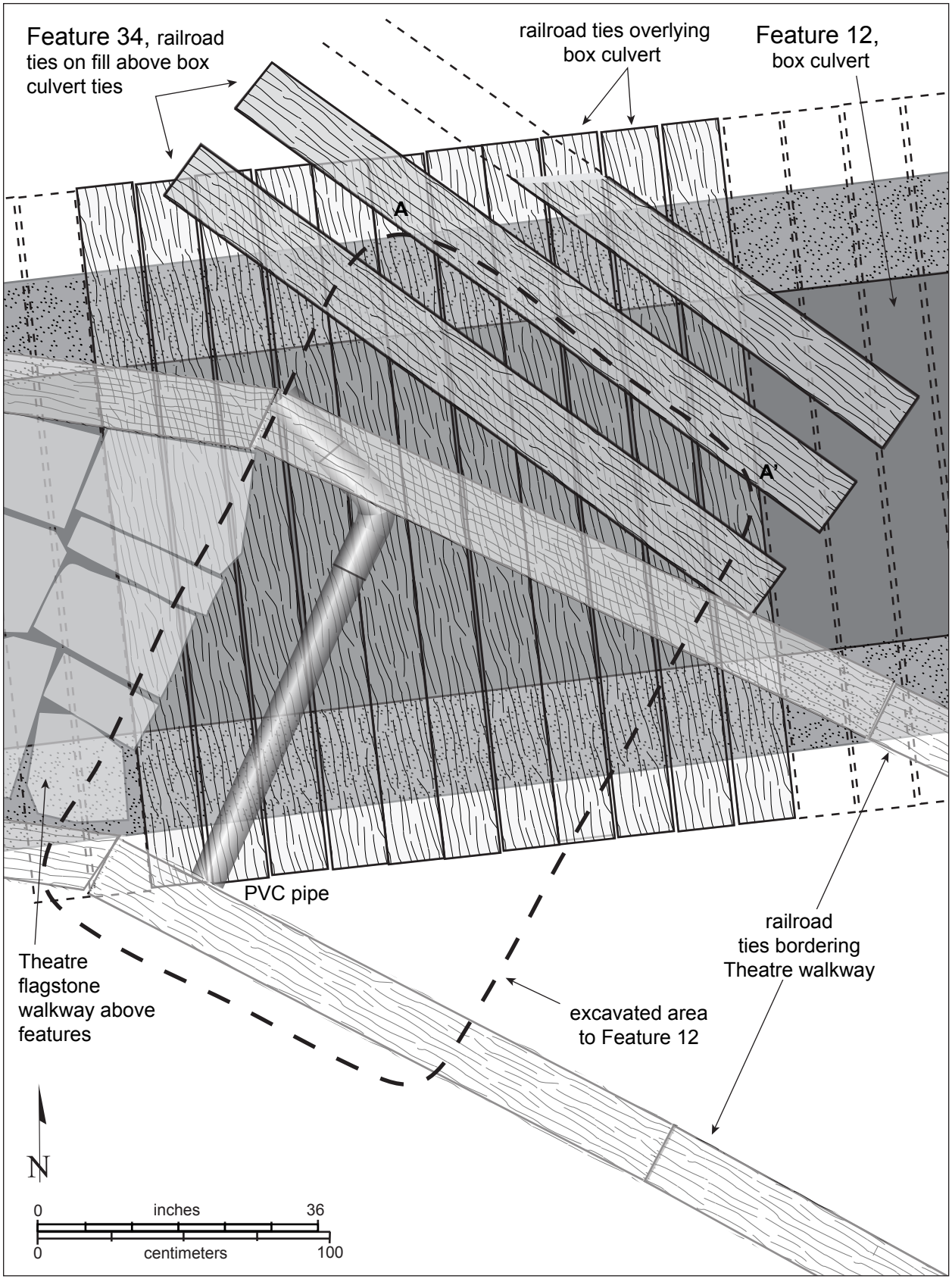

Figure 6.87. Feature 34, plan view.

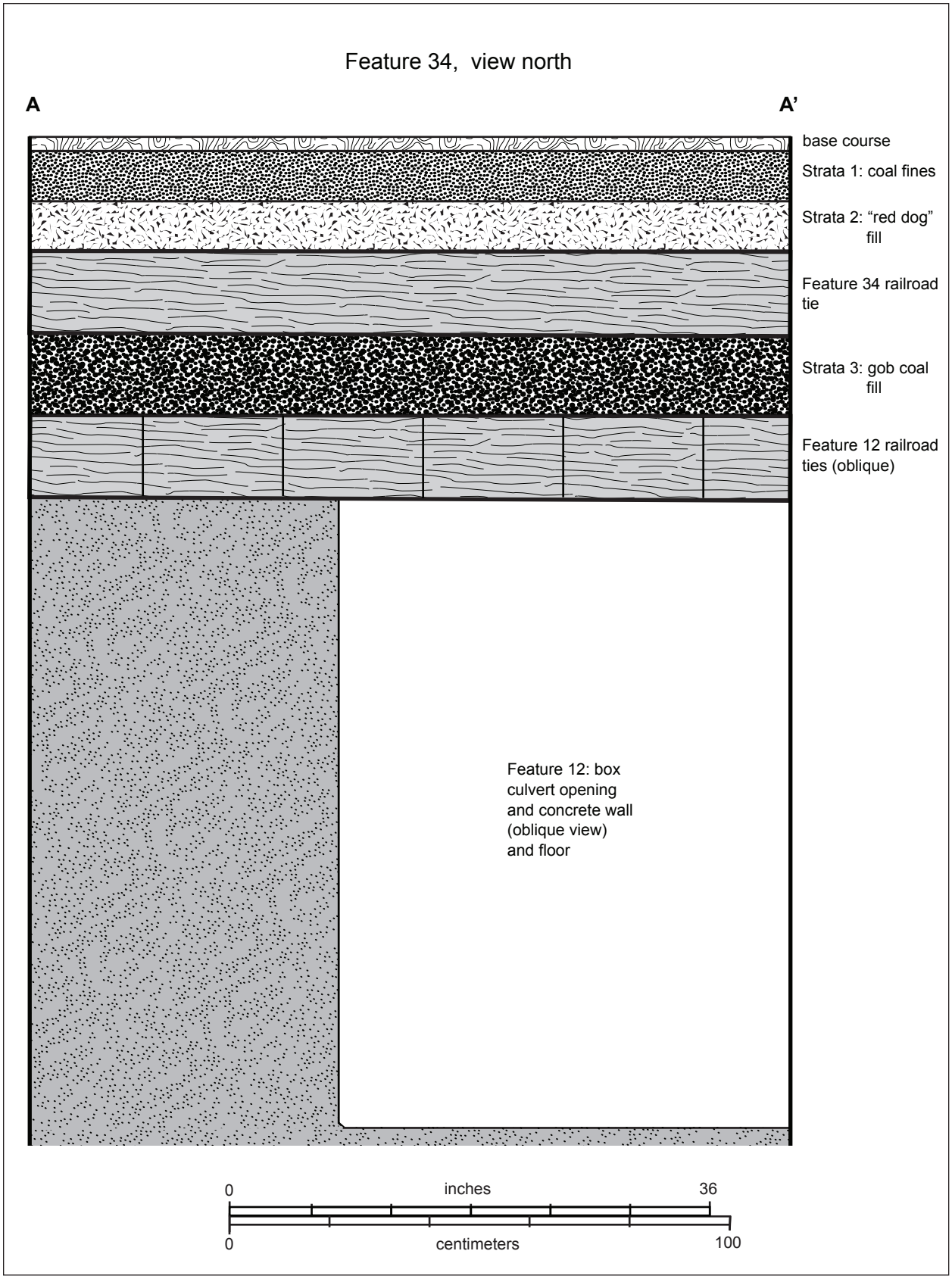

Figure 6.88. Feature 34, profile, north face.

Figure 6.89. Railroad tie with metal tie plate and railroad spike removed from Feature 34.

railroad tie. Tie plates also held the rails to correct gauge (Encyclopedia Britannica) (Fig. 6.89).

The presence of the tie plate on the surface of the railroad tie suggested that this section of track had been in use before it was covered with red dog and black gob. The Feature 34 railroad ties were found at a switch in the track just west of the north–south track that ran to the breaker. The switch is visible from the air and can be seen on the project location map.

A section of the original north–south track has remained intact and runs along the aisles inside the theatre. An old locomotive still sits on the tracks with the front of the engine butting up against the northern wall of the theatre.

Originally, five repair stations were situated below the old engine house. When trains were in need of repair, they may have waited on the switch until they were taken into the engine house. The presence of the switch revealed the reasoning behind covering the surface of the concrete box culvert with railroad ties: In order for the area west of the engine house to be effectively utilized for railroad purposes, the concrete box culvert had to be covered. Layers of black gob and red dog were mechanically spread across the surface of the railroad ties and also spread throughout other areas of the project. It is not known when the culvert was covered or when the switch in the track was built.

The Feature 34 railroad ties were removed from the theatre walkway. The 10 horizontal railroad ties (Feature 12), which created the ceiling over the culvert, area were also removed (Fig. 6.90). Removal was necessary to gain access to the concrete box culvert below, where the new slip liner was installed. When Feature 34 was discovered, the concrete box culvert was full of black gob and sediment from the 2013 flood (Fig. 6.91). This area was jet vacuumed and cleared of debris (Fig. 6.92).

The culvert pit was covered with heavy metal plates and surrounded with orange mesh fencing at the end of every day. The pit below the plates will remain open until the grouting process is complete.

Figure 6.90. AUI crew removes railroad ties from box culvert ceiling, view north.

Figure 8.91. Feature 12, box culvert filled with gob and sediment, view north.

Figure 6.92. AUI crew jet-vacuums box culvert at the theatre walkway, view southeast.

7 ⇓ Recommendations

The Phase I erosion control project, in the town of Madrid (LA 126142), initiated by the New Mexico Abandoned Mine Land Program, was completed in April 2015.

Removal of sediment and black gob that filled the historic concrete box culvert, and the adjacent NMDOT metal culvert, during the 2013 flood was accomplished. The new, 150.8 m (495 ft) metal slip liner was successfully installed into the historic concrete box culvert and a larger metal culvert replaced the NMDOT culvert connected to a lower drop inlet adjacent to NM 14.

The Madrid Historic District was approved by the *National Register of Historic Places* in 1977. The district includes LA 126142, which was established as an archaeological site. Several surveys and excavations have been conducted in the district over the years.

Changes to the condition and integrity of LA 126142 are mostly visible between the Old West Saloon and the Engine House Theatre. New concrete walls were constructed by the saloon doorway and a new concrete pad between the two structures. Two new manholes will effectively drain the monsoon rainwater from the walkway. As a tourist attraction, the Engine House Theatre is well-utilized and these constructural changes have improved the integrity of the Madrid Historic District.

Future unsupervised construction activities could impact undiscovered cultural materials or architectural features. Great caution should be taken during any subsurface exploration within the entire Madrid Historic District.

Madrid and LA 126142 have great potential for research and discovery. This former company town has gone through numerous owners, mining operations, and environmental disasters. Eventually, this ghost town was reinvented and became one of New Mexico's favorite tourist destinations.

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Appendix 1 ⇊ AML Drainage Infrastructure Plans

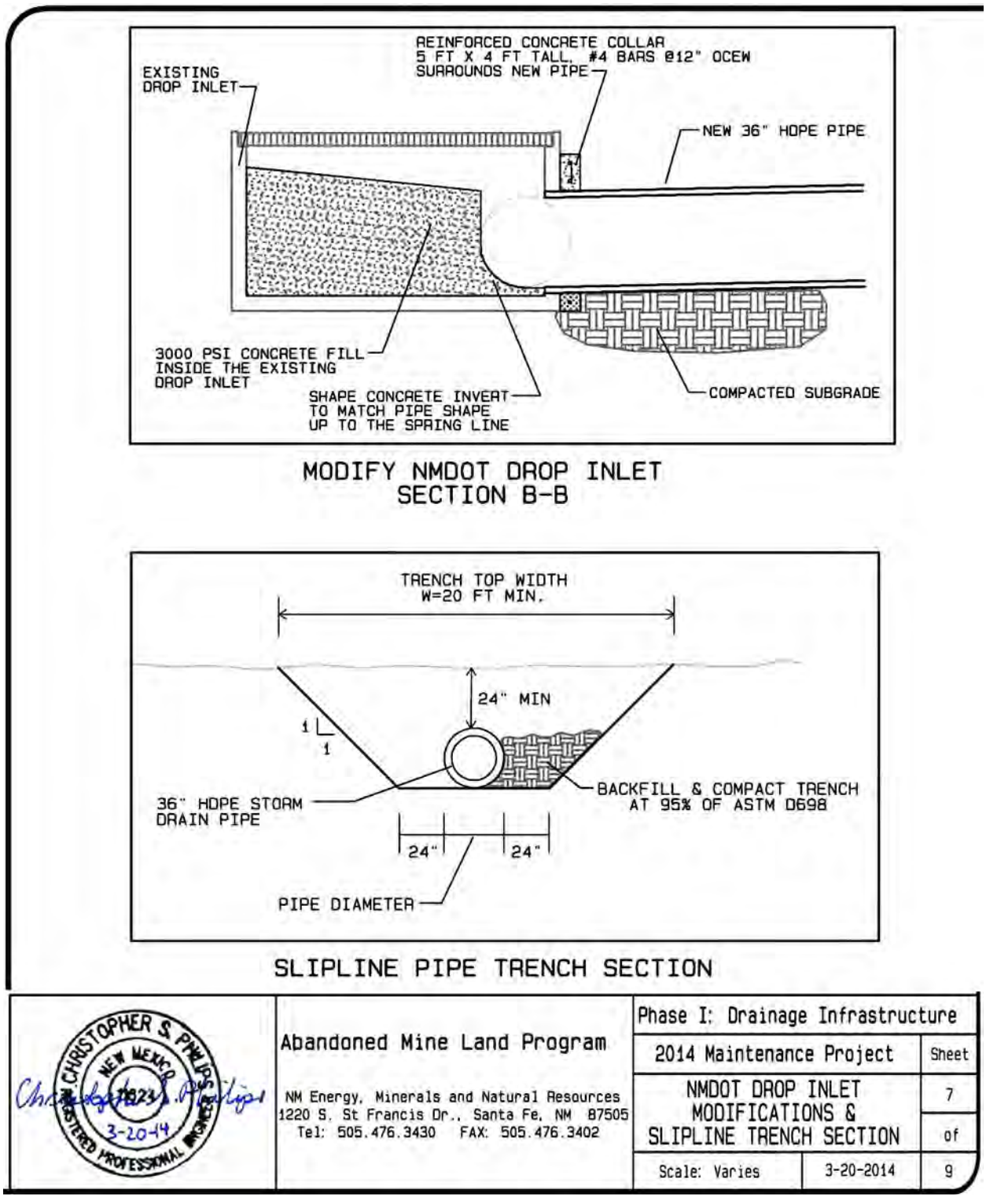
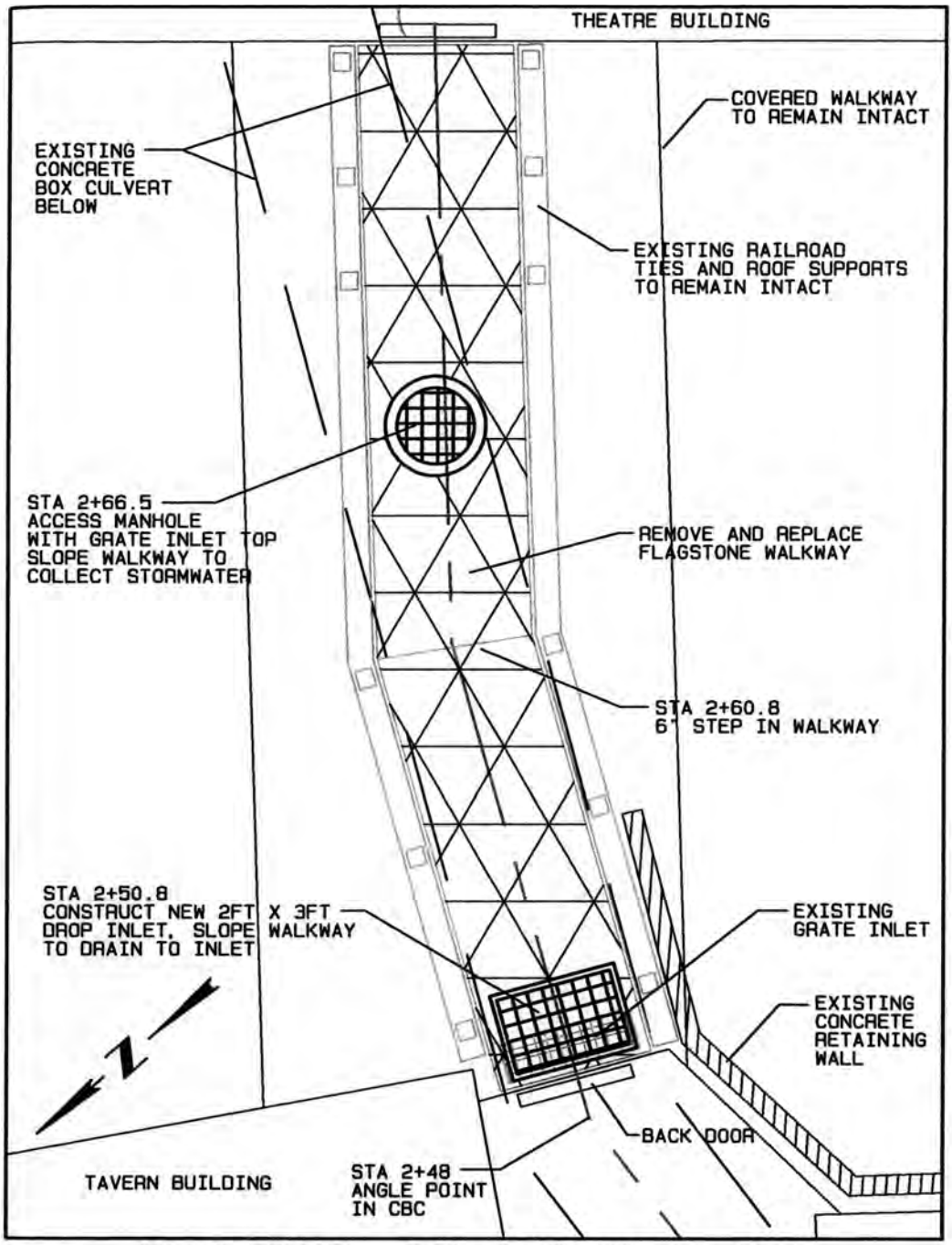


Figure A1.1. Lower drop inlet.



PLAN DETAIL, STA 2+40 TO STA 2+80

ed Mine Land Program	Phase I: Drainage Infrastructure	
	2014 Maintenance Project	Sheet
Minerals and Natural Resources Francis Dr., Santa Fe, NM 87505 476.3430 FAX: 505.476.3402	MISCELLANEOUS DETAILS	10
		of
	Scale: Varies 12-17-2014	10

Figure A1.2. Theatre walkway, manhole, and drop inlet.

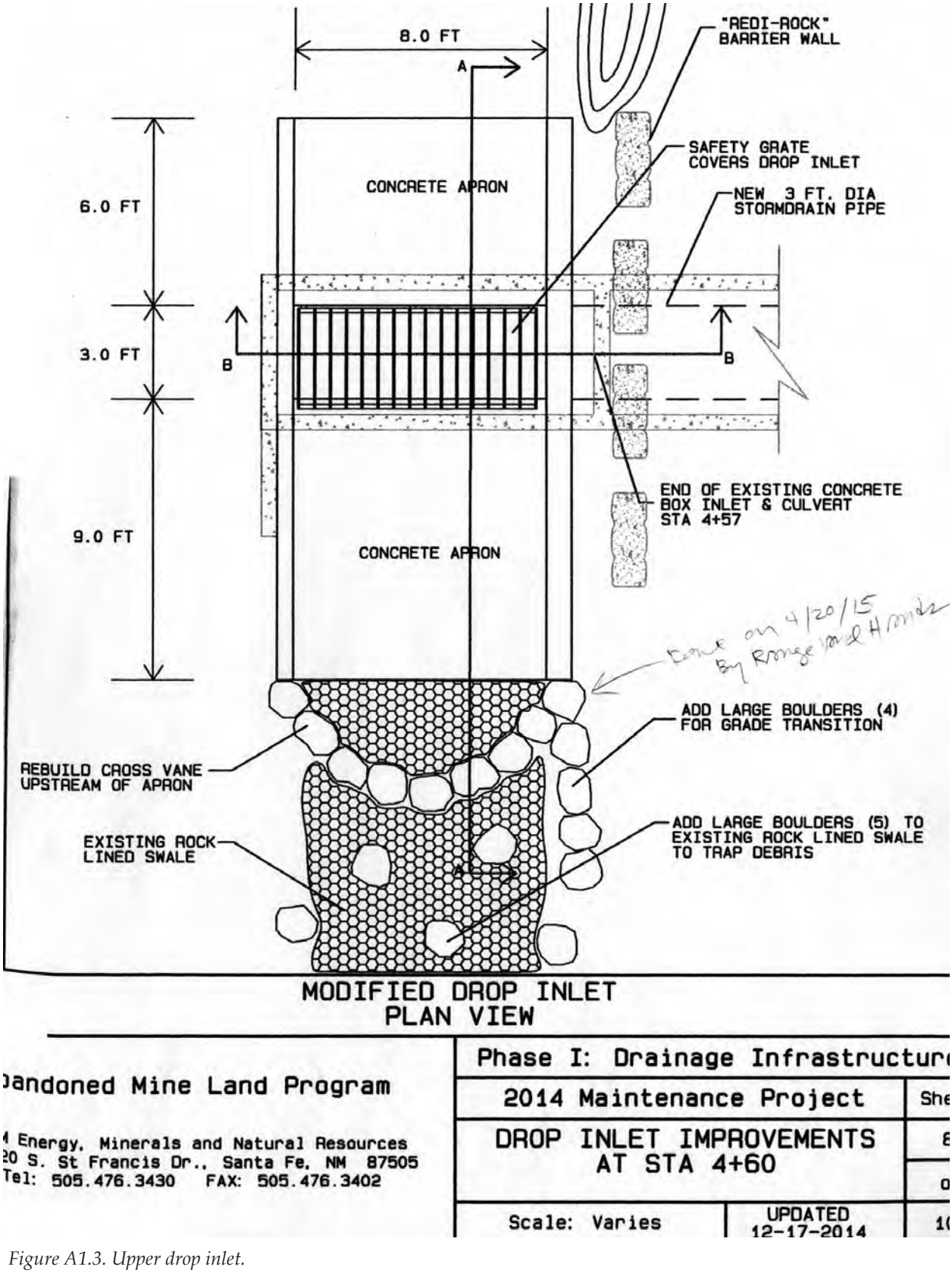


Figure A1.3. Upper drop inlet.

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