

AMERICAN FLAT MILL, COARSE CRUSHING PLANT
(Comstock Merger Mine Mills, Coarse Crushing Plant)
Gold Hill vicinity
Storey County
Nevada

HAER NV-48-B
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
PACIFIC WEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
333 Bush Street
San Francisco, CA 94104

HISTORIC AMERICAN ENGINEERING RECORD
AMERICAN FLAT MILL, COARSE CRUSHING PLANT
(Comstock Merger Mine Mills)

HAER No. NV-48-B

Location: One mile northwest of Silver City, Storey County, Nevada. The American Flat Mill Coarse Crushing Plant is located at latitude: 39.27162, longitude: -119.66215. The coordinate represents the center point of the American Flat Mill Coarse Crushing Plant. This coordinate was obtained on December 6, 2014, by plotting its location with Geoplaner V2.7 (www.geoplaner.com). The accuracy of the coordinate is +/- 1 meter. The coordinate's datum is WGS 84 (World Geodetic System 1984). There is no restriction on releasing the location to the public.

**Present Owner/
Occupant:** United States Department of Interior, Bureau of Land Management (BLM).

Present Use: Vacant.

Significance: The American Flat Mill Coarse Crushing Plant is a contributing resource of the American Flat Mill District, an eight building silver ore processing mill complex. The American Flat Mill is significant under National Register Criterion A for its historical importance as the last remaining remnant of what was once the United Comstock and the Comstock Merger mining operations. The mill and its associated mining activities represented the last large scale underground mining efforts on the Comstock. Other early twentieth century mining activities on the Comstock were either much smaller in scale, or reflected the use of alternate technologies such as open pit mining or dredging. The American Flat Mill is also a contributing element to the Virginia City National Register District under Criterion A.

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The American Flat Mill is eligible for listing on the National Register under Criterion B at the local level due to the early and active participation of Royce Hardy and Alex Wise. These two local men were mining engineers who were involved in the formation of the United Comstock Mines Company and worked with the company until its demise in 1923. Wise began developing the "middle mines" which became a key part of the Comstock Merger operation. The American Flat Mill is the largest remaining physical reflection of their actions on the Comstock.

The American Flat Mill is eligible for the National Register under Criterion C at the national level as an early representative of the International Style of architecture, which stressed the metaphor of form following function, rejection of ornament, and use of modern building materials, including reinforced concrete, structural steel, and large window panels. All of these characteristics are strongly expressed throughout the American Flat Mill.

Historian: Written historical and descriptive data and large-format photographs were prepared by David C. Berg, historian for The Ottery Group in August through December of 2014.

Project Information: HAER documentation of American Flat Mill is part of the measures to mitigate the adverse effect that will result from demolition of all buildings at the site. The BLM has proposed the demolition of the mill for public safety reasons.

PART I. HISTORICAL INFORMATION

A. Physical History

1. **Date of Erection:** 1921-22.
2. **Engineer:** Walter L. Reid, consulting milling engineer; A. J. Weinig, metallurgist; Lee L. Fillius, superintendent of construction; B. P. Little, chief draftsman in charge of engineering office; and Robert McFarland Doble, in charge of power and electrical engineering.
3. **Original and Subsequent Owners, Occupants, Uses:** United Comstock Mines Company, 1922-24; Comstock Merger Mines, Inc. (subsidiary of Gold Fields America Development Company/New Consolidated Gold Fields, Ltd., of London), 1924-26.
4. **General Contractor:** United Comstock Mines Company.
5. **Original Plans and Construction:** Although original plans of the mill are no longer extant, a basic plan and section of the Coarse Crushing Plant is shown in the *Engineering and Mining Journal*, along with photographic details showing the Garfield Rolls and conveyors.¹
6. **Alterations and Additions:** None known.

PART II. STRUCTURAL/DESIGN/EQUIPMENT INFORMATION

A. General Description

1. **Character:** The Coarse Crushing Plant is a roughly rectangular building oriented northeast to southwest. It is located directly southwest of the Ore Bin. Presently, only the reinforced concrete floors and walls remain, however, originally it was clad with corrugated metal on both walls and roof. It was a gabled structure with no

¹ George Young. "New Treatment Plant of United Comstock Mines Co.," *Engineering and Mining Journal* 114 (1922): 849-850.

ornamentation, having regularly spaced large window openings on both sides.

At the southwest end of the building was the plate shop that attached to the west corner and the machine shop, which was attached to the south corner of the building. These formed a T-shaped plan at the southwest end of the plant. These buildings had large expanses of metal sash Fenestra windows. Adjacent to this side of the building was a 30" gauge railroad spur that served the entire supply yard and repair shop area.

- 2. Condition of Fabric:** The Coarse Crushing Plant is presently in near ruins. Time and vandalism have played their part. However, as part of salvage efforts soon after the mill's close in 1926, all machinery and metal was removed from site. This included the railroad tracks and ties, structural members, roof materials and even any useable wood. All that remains are the decaying foundations and reinforced concrete walls. A small section of the plate shop still stands, but as the shop was basically a concrete skeleton clad with steel and windows, it does not appear as much today. The extant northwest gable end wall is the most visible reminder of the plate shop today. Only the concrete foundation of the machine shop remains.

B. Description of Exterior

- 1. Overall Dimensions:** Approximately 192' long and 49' wide excluding plate and machine shop. Height from foundation to original metal roof was approximately 89'. The machine shop was 70' long and 50' wide. The plate, or blacksmith shop, was 35' long and 30' wide. Both plate and machine shop were approximately 32' high.
- 2. Foundations:** Reinforced concrete.
- 3. Walls:** Originally corrugated metal which is now removed.
- 4. Structural System, Framing:** Reinforced concrete with structural steel supports for corrugated metal walls and roof.

- 5. Openings:** The original openings in the Coarse Crushing Plant were regularly spaced Fenestra steel sashes between expanses of corrugated steel on the three upper stories.

C. Description of Interior

- 1. Floor Plan:** The building was originally three stories high above grade with two basement levels and was designed simply to accommodate its necessary machinery. Largely symmetrical, concrete floors consisted of areas for machinery mounting, holes in the floors for ground ore to drop through to ore sorting screens on either end of the building, and holes near the center of each floor for the passing through of the belt conveyors. The northeast end of the building has a partial upper level deck that differed from the rest of the floor plan as this was the end that the ore was conveyed from the Ore Bin. The Southwest end is comprised of a cross-gabled section creating a T-plan that housed the plate and machine shops.
- 2. Flooring:** Reinforced concrete.
- 3. Wall and Ceiling Finish:** None.
- 4. Openings:** Since the steel walls and windows have been removed, the building walls have no openings as such, but consist of a matrix of reinforced concrete posts and beams. Floor openings consist of holes for the movement of ore through the various stages of crushing and grading.
- 5. Conveyors:** All conveyors were removed during salvage in 1926. A 48" wide pan conveyor brought ore from the ore pocket up into the Coarse Crushing Plant through an underground connection between the buildings. Other conveyors consisted of three 30" belt conveyors that moved ore between floors.
- 6. Machinery:** All machinery has been removed. The building originally housed six 48" x 60" Mitchell vibrating screens, two Allis Chalmers No. 7-1/2 Gates gyratory crushers, three sets of Garfield rolls (one 72" x 20" and two 54" x 20"), a bucket sampler, Vezin samplers, and

various motors. A locker room occupied part of the southwest side of the building. A 20 ton traveling crane ran the length of the building and continued out through and slightly beyond the roofed bay at the southwest end of the building.

D. Site Layout

The Coarse Crushing Plant is oriented northeast to southwest within the northeast area of the mill complex. It is directly southwest of the Ore Bin, being connected to it by a below-grade conveyor tunnel.

Part III. OPERATIONS AND PROCESS

Mine ore was delivered to the Coarse Crushing Plant via a 48" Stephens-Adamson pan conveyor with wood-cushioned pans to two Allis Chalmers No. 7-1/2 Gates gyratory crushers. The ore fell to the lower level of the building to a 30" conveyor that brought the ore to a set of 72" Garfield rolls, driven through a countershaft by a 200 horsepower motor. After passing through two Mitchell screens, the ore then went through two sets of 54" Garfield rolls, one driven through a countershaft by a 150 horsepower motor and one by a 200 horsepower motor. Once through these Garfield roll crushers, the ore passed through four additional Mitchell vibrating screens. The product of the Mitchell screens dropped on a belt conveyor to a "weightometer" and into fine ore bins of 3,200 tons capacity at the Fine Grinding and Concentration Plant. Sampling of ore was done before it left the Coarse Crushing Plant and reject ore was fed back to the conveyors for additional crushing.

PART IV. SOURCES OF INFORMATION

A. Architectural Drawings

Selected drawings depicting process flow charts, plans and sections of buildings at the mill may be found in: George Young, "New Treatment Plant of United Comstock Mines," *Engineering and Mining Journal* 114 (1922): 846-853.

B. Early Views

Early views of the American Flat Mill are available from the Nevada

Historical Society, Special Collections and University Archives Photographs at the University of Nevada, Reno. The views during operation range in date from approximately 1922 to 1926, with some later views dating from the 1940s and 1950s, representing a total of 86 views. An additional private collection owned by Mr. Joseph Curtis of Virginia City represents approximately 50 views of the mill during its operating years. Some unique views of the building and its machinery may be found in George Young, "New Treatment Plant of United Comstock Mines," *Engineering and Mining Journal* 114 (1922): 846-853. One aerial view of the mill ruins from 1947 is available from the University of California, Davis, in the Eastman's Originals Collection, Department of Special Collections, General Library.

C. Interviews

Glass, M. *Royce Aller Hardy: Reminiscence and a Short Autobiography*. Oral History Program, University of Nevada, Reno, 1965.

D. Selected Sources

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Gavazzi, I., and R. Kendall. *American Flat: Stepchild of the Comstock*, Virginia City, Nevada: Mark Twain Bookstore, 2001.

Goin, P., and E. Raymond. *Changing Mines in America*. Santa Fe, New Mexico: The Center for American Places, 2004.

Hamilton, E. M. *Manual of Cyanidation*. New York: McGraw-Hill Book Company Inc., 1920.

Hardesty, D. *National Register Evaluation of the East Yellow Jacket Mine and the American Flat Mill Sites, Storey County, Nevada*. Report prepared by University of Nevada, Reno. Submitted to Bureau of Land Management, Carson City Field Office, 1998.

Kendall, Robert E. "American Flat: Stepchild of the Comstock Lode - Part II," *Nevada Historical Society Quarterly* 41(2): 1998.

Lincoln, Francis Church. *Mining Districts and Mineral Resources of Nevada*. Reno: Nevada Newsletter Publishing Company, 1923.

Morse Brothers Machinery and Supply Company. "Mining and Milling Machinery of The Comstock Merger Mines and Mills at Virginia City, Nevada" Catalog by the Morse Brothers Machinery and Supply Co., Denver, Virginia City, Reno, ca. 1927. Located in the Special Collections and University Archives, University of Nevada, Reno.

Reid, Walter L. "Design and Construction of United Comstock Mills," *Mining and Metallurgy* 191 (1922): 44-47.

Weinig, A. J. "A General Study of United Comstock Metallurgy," in *Papers Related to the Geology, Mining, Metallurgy and Milling of the Comstock Orebodies of the United Comstock Mines Company*, San Francisco: American Institute of Mining and Metallurgical Engineers, 1922.

Young, George. "New Treatment Plant of United Comstock Mines Co.," in *Engineering and Mining Journal* 114 (1922): 846-853.

Zeier, Charles, Michael Drews and Ron Reno. "An Architectural and Archaeological Inventory of the American Flat Mill, Storey County, Nevada." Clinton, Tennessee: Zeier and Associates, 2009.

E. Likely Sources Not Yet Investigated

Newspaper clippings on file at the Nevada Historical Society, Subject Card Index: "American Flat".