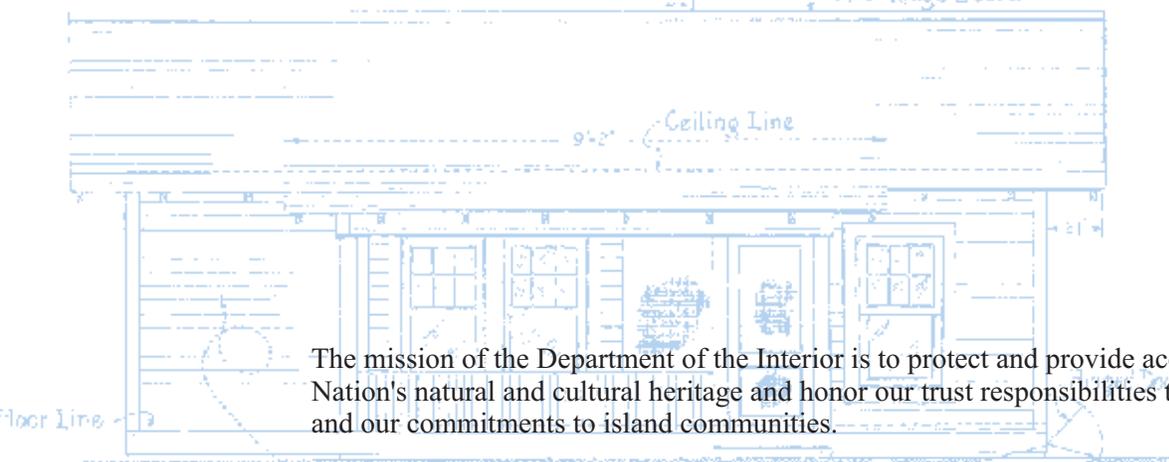
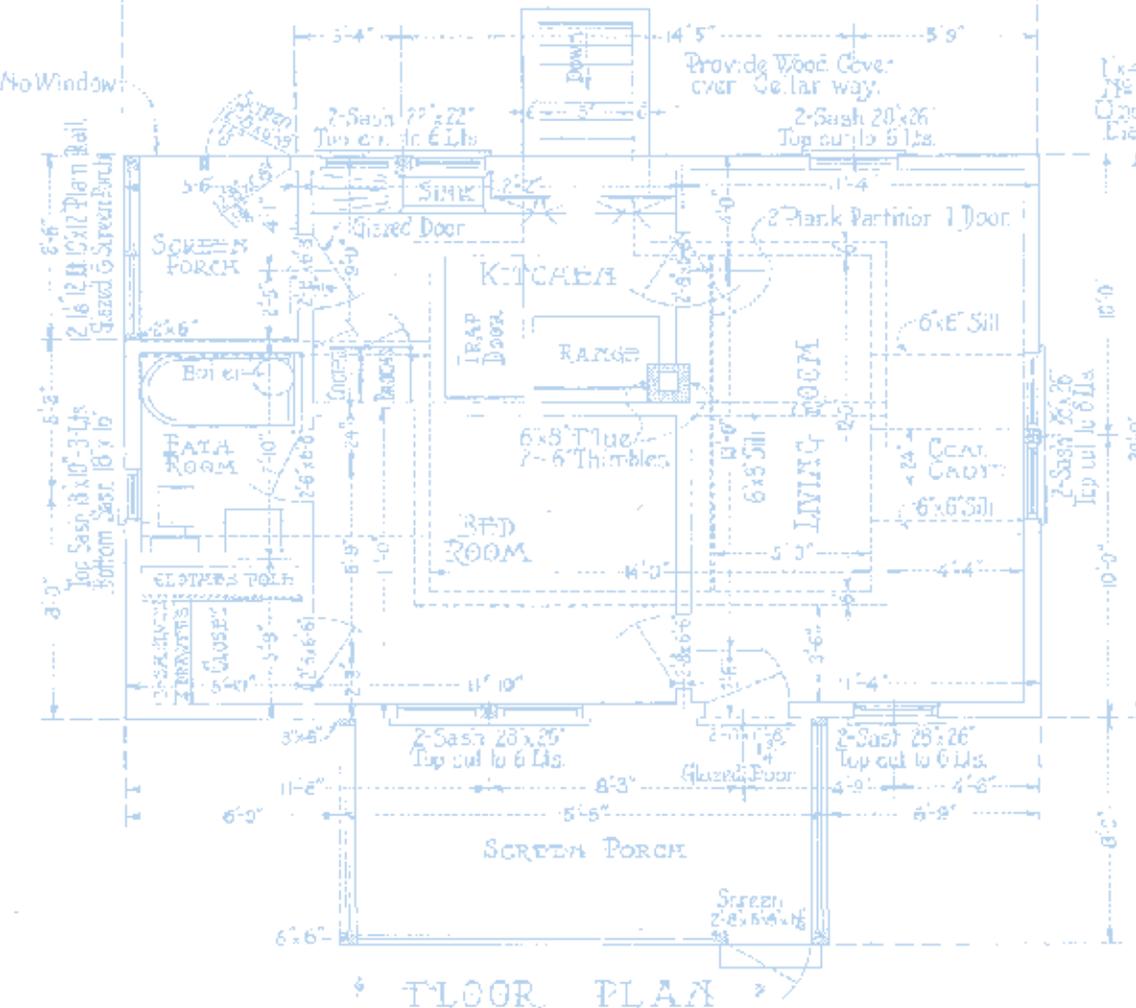


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Managing Water in the West

The Bureau of Reclamation's Architectural Legacy: 1902-1955

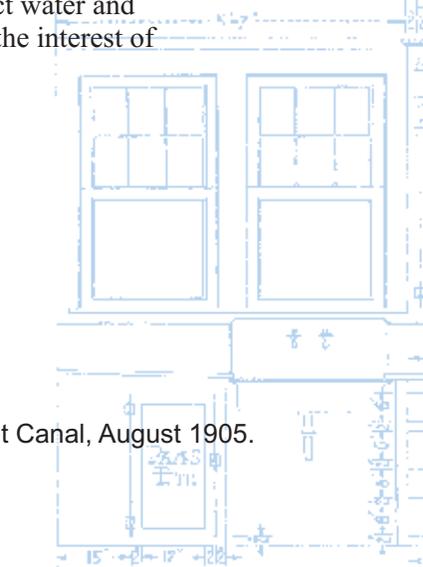
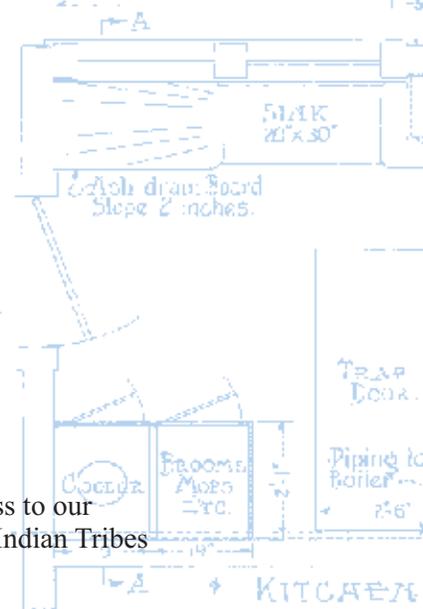
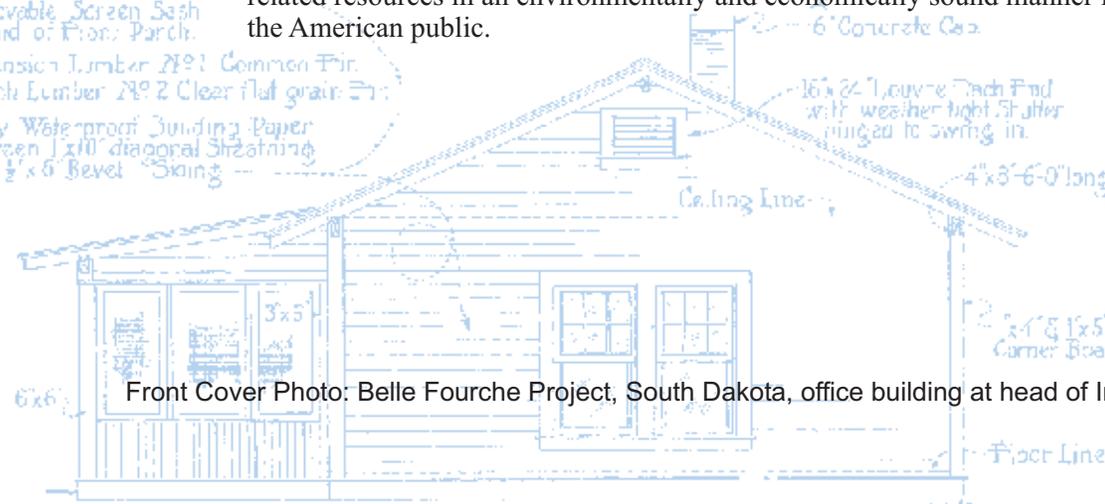




The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Removable Screen Sash at End of Front Porch.
 Dimension Lumber #91 Common Fir.
 Finish Lumber #92 Clear flat grain Fir.
 1-Ply Water proof Building Paper between 1x10 Sheathing and 1/2 x 6 Bevel Siding.



Front Cover Photo: Belle Fourche Project, South Dakota, office building at head of Inlet Canal, August 1905.

The Bureau of Reclamation's Architectural Legacy: 1902 to 1955

by

Christine E. Pfaff



**U.S. Department of the Interior
Bureau of Reclamation
Denver, Colorado**

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Introduction

The Bureau of Reclamation is widely recognized for its engineering achievements.¹ Since its establishment in June 1902, Reclamation has been at the forefront in developing solutions to complex engineering problems and has, to its credit, some of the most innovative and technologically-advanced dams in the world. Although best known for monumental works such as Hoover, Grand Coulee, and Shasta Dams, Reclamation has constructed over 500 dams and powerplants throughout the western United States. In addition, thousands of miles of Reclamation-built irrigation canals crisscross the arid lands west of the Mississippi River, providing critical water to farmers.

Unknown to most people are the several thousand buildings Reclamation constructed in the remote, largely unsettled areas selected for irrigation projects. These buildings are scattered across the western landscape from the searing deserts of the southwest to the high mountain terrain of the northern Rockies. Far less imposing and remarkable than its renowned engineering features, Reclamation's buildings are, nonetheless, an important but largely unrecognized facet of the Bureau's legacy.

Creating a vast network of water storage and delivery features required teams of engineers to conduct initial field surveys and investigations, develop designs and specifications, and supervise and inspect every detail of construction. Crews of skilled and unskilled workers, initially aided by mules and horses, labored to bring the engineers' two-dimensional drawings to three-dimensional fruition. Once this occurred, dam tenders, power plant operators, and ditchriders fulfilled the essential role of maintaining completed facilities in top condition. Without buildings to shelter employees; provide office, workshop, laboratory, and storage space; and accommodate other vital activities, Reclamation's mission of delivering water, and later power, could not have been accomplished. Beyond serving its own employees, Reclamation's buildings, camps, and even townsites established a presence in the sparsely populated West that encouraged others to put down roots.

Despite buildings being integral to Reclamation's operations, the Bureau has steadfastly remained, first and foremost, engaged in engineering. In fact, in all but a handful of cases, the early design of buildings was relegated to engineers, rather than to the architects. Whereas Reclamation engineering works represented experimentation and daring design, its buildings were, for the most part, conventional and conformist, never at the forefront of new stylistic trends or social visions. Unlike the National Park Service and, to a lesser degree the U.S. Forest Service, which prided themselves on creating a national image through their trademark Rustic style buildings that projected simplicity and harmony with nature, Reclamation never adopted its own unique architectural vocabulary. Its massive concrete and earthen dams were signature enough.

Reclamation approached the design of buildings in the same manner as they approached engineering structures. Function dominated aesthetics; efficiency took priority over elaboration. Nonetheless, out of its technological focus, ability to generate power, and facilities to deliver water, Reclamation incorporated modern principles of electricity, sanitation, and hygiene in its building practices at a time when the vast majority of rural Americans lived without these advantages. As an incentive to attract and retain quality employees in harsh and difficult work environments, Reclamation also recognized it had to offer simple, but decent housing. This is a recurring theme from the earliest Reclamation days through the 1950s.

Expense played a major factor in the appearance of Reclamation buildings. Because of the unusual relationship of Reclamation with its water users, which required them to repay project construction costs, the Bureau was careful not to incite criticism for excessive spending. Buildings were basic and devoid of all but the simplest ornamentation. As with many of its smaller irrigation features, early in its history, Reclamation developed standard plans for buildings that were used over and over again. Such uniform designs did not always lend themselves to the extremes in climate found across the West, and local modifications proved necessary.

This study evolved out of the desire to focus attention on Reclamation historic buildings. As the management of dams and irrigation systems becomes increasingly automated at centralized locations and fewer employees are needed onsite to operate facilities, the need for remote housing is waning, and Reclamation is gradually disposing of many of its buildings. The Bureau's initiative to transfer title of certain facilities out of Federal ownership is another impetus for reducing the number of historic buildings under its purview. With the passage of time, as many have been sold, abandoned, or dismantled, their history has faded into oblivion.

Federal law requires Reclamation to identify, evaluate, and protect cultural resources under its jurisdiction. To date, the emphasis has been largely on archaeological sites and engineering works. Research on Reclamation's construction record has largely overlooked its buildings. For the most part, they have been subject to documentation only when threatened with demolition or transfer out of Federal ownership. The lack of a larger context devoted to the origins, design, and construction of Reclamation buildings has made it difficult to assess the significance of surviving ones and make well-informed decisions regarding their preservation. This book is intended to assist and expedite those efforts by describing Reclamation's building design, approval, and construction process; illustrating the various types, styles, and materials employed; and providing information on extant as well as vanished examples.

Scope of Study

The vast number and types of buildings Reclamation constructed make it impossible to describe or identify them all. Across the Western States, Reclamation fabricated everything from barns to bathhouses, fire stations to fish hatcheries, schools to shop buildings, and dormitories to dwellings. In order to create a reasonable framework for this study, it was necessary to focus on a limited time period and a distinct group of buildings, and select representative examples.

This volume explores Reclamation offices and residences constructed between 1902 and 1955. Together, the two types of buildings comprised more than half of Reclamation's building inventory, with residences far outnumbering offices.² Both types can further be classified as either temporary or permanent. Due to the remote location of most Reclamation engineering works, the Bureau had to provide housing and office space for its employees during project construction. These residences and offices were, for the most part, associated with camps, and most camps were temporary. When construction concluded, buildings were moved, sold, or demolished. On larger projects and at significant project features, however, Reclamation built permanent residences and offices to serve in the ongoing operation and maintenance of its engineering assets. Sometimes, the lines between temporary and permanent buildings blurred because some temporary buildings were retained for long periods of time or indefinitely. While it was impossible to verify the current status of all buildings described in this study, notations are made where buildings are known to exist.

This study also describes the influence of architectural styles on Reclamation's offices and residences. The progression of popular national and regional styles is evident in Reclamation buildings, although full-blown expressions of those styles

are rarely found. Since design input from architects appears to have been extremely uncommon, all references found to such involvement are described.

Just as this book presents illustrative examples of various styles and designs of Reclamation buildings, it also focuses on a cross section of Reclamation projects that represent geographic diversity. The large number of buildings associated with Reclamation's first 24 projects authorized between 1903 and 1909 are emphasized, as well as buildings associated with Reclamation's later monumental endeavors, including the Boulder Canyon, Columbia Basin, Central Valley, Colorado-Big Thompson, and Missouri River Basin projects. The scale of these projects required an unprecedented need not just for housing, but for entire communities with all their associated service buildings. Particularly with the first of these massive projects, Boulder Canyon, Reclamation entered into a new arena of "model" buildings and community planning.

Sources of Information

The primary source of information for this study was the Rocky Mountain Region National Archives in Denver, where most of Reclamation's historical records are stored.³ They are housed under Record Group 115. Not surprisingly, the vast collection contains far more material on Reclamation's engineering achievements than its buildings. While the records are replete with studies, reports, correspondence, articles, and press releases regarding dams, canals, pumping plants, and power stations, there is little focus on buildings. For the most part, they are noted matter-of-factly and without much detailed description in project histories and reports. Photographs of buildings are far less frequent than those of dams, canals, pumping plants, and power stations. Correspondence relating to buildings is limited, but, nonetheless, provides rich insights and information.

In combination with historic photographs and textual records at the National Archives, Reclamation's building specifications and attached drawings provided the second main source of material for this study. Bound copies of the specifications that originated in Denver are located at the National Archives in Denver; microfiche copies are available in Reclamation's library in Building 67 at the Denver Federal Center in Lakewood, Colorado. Other information came from prior, more limited building studies conducted for Reclamation by the author and various contractors. Lastly, occasional articles in a monthly journal published by Reclamation, beginning in 1905, yielded valuable data and descriptions.⁴

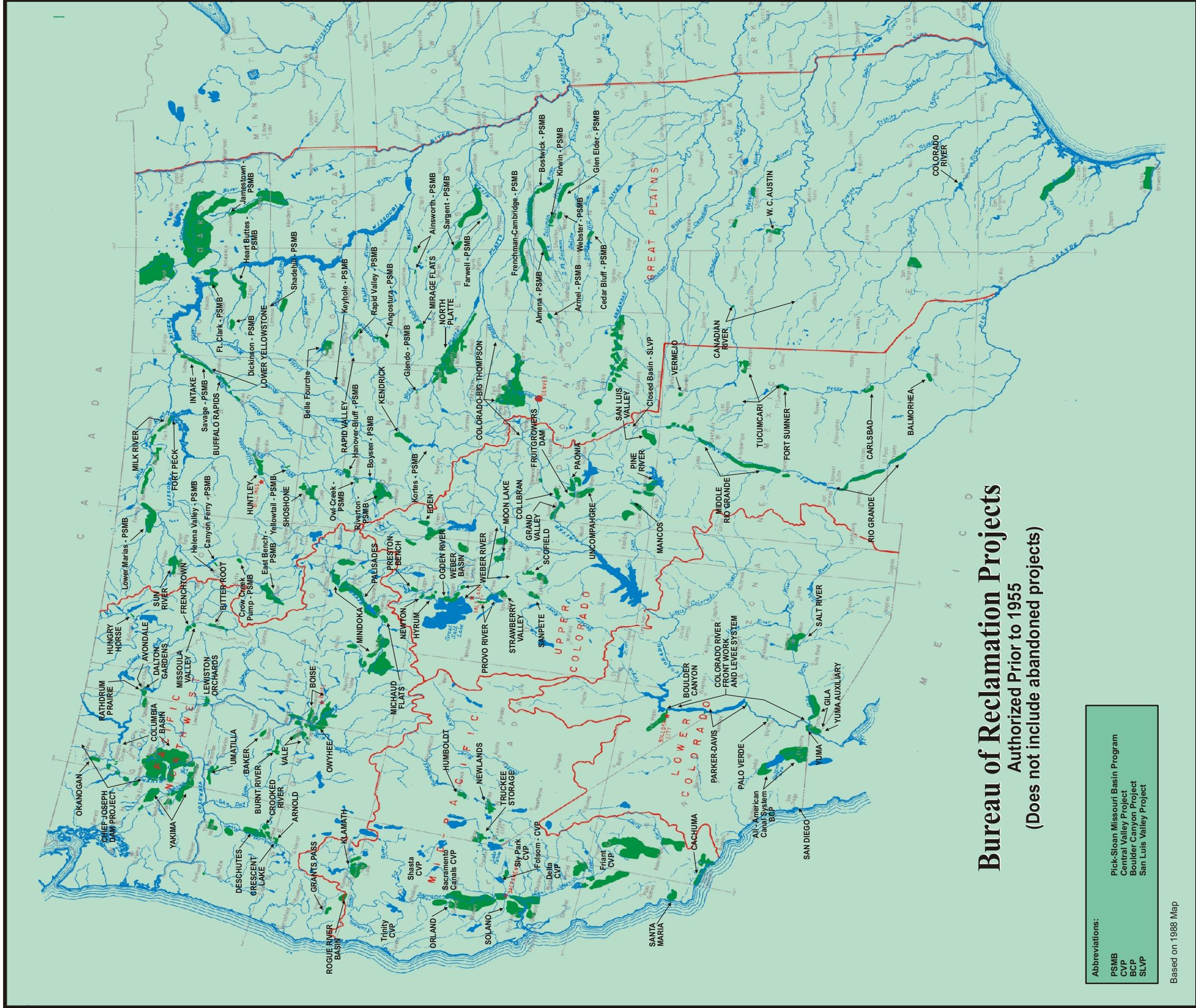
Endnotes for Introduction

¹ The U.S. Bureau of Reclamation was originally called the U.S. Reclamation Service. In 1923, the name was changed to U.S. Bureau of Reclamation. The term *Reclamation* is used interchangeably to refer to either the U.S. Reclamation Service or U.S. Bureau of Reclamation.

² In calculating numbers of buildings, pumping stations and powerplants were excluded.

³ Unless otherwise noted, all illustrations were found at the National Archives in Denver.

⁴ First published as the *Reclamation Bulletin* in 1905, Reclamation's journal was produced nearly monthly up until 1983, with only a few hiatuses. The magazine promoted Reclamation activities and provided all types of useful information to irrigators on Reclamation projects. The journal went through a number of name changes; from 1924 to 1931, it was known as the *New Reclamation Era*; thereafter, it simply became *Reclamation Era*.



Bureau of Reclamation Projects Authorized Prior to 1955 (Does not include abandoned projects)

Abbreviations:

- PSMB
- CVP
- BCP
- SLVP

Pick-Sloan Missouri Basin Program
Central Valley Project
Boulder Canyon Project
San Luis Valley Project

Based on 1988 Map

Chapter 1

The Early Years: 1902 through 1917

The June 17, 1902, passage of the Reclamation Act marked a decisive turning point in the Federal Government's role in western water development projects. The issue had been sharply debated in the years leading up to the 20th century. Many westerners opposed Federal intervention, while proponents argued that reclamation was an appropriate and necessary undertaking for the national government.

A number of factors finally convinced westerners, as well as Congress, of the need for a strong Federal program. By the late 1880s, lands most easily reached by irrigation had been settled. Although a lot of irrigable lands remained, the construction of complex and expensive systems to deliver water to them was beyond the means of individuals or private companies. It had become evident that even incentives for State development of large-scale irrigation works had been unsuccessful in yielding significant results. A series of droughts in the 1890s that threatened western farmers and ranchers catalyzed the demand for direct Federal involvement.

By 1901, support for a national reclamation program had grown among western congressmen. In September of that year, the movement received a tremendous boost when Theodore Roosevelt became President. A firm believer in Federal development of water projects, he successfully made passage of the Reclamation Act a priority.

The Act authorized the Secretary of the Interior to locate and construct irrigation works in 16 of the 17 arid States and territories west of the Mississippi River.¹ Funding for projects derived from two sources: the sale of public lands within the benefiting States and territories, and the repayment of construction costs by project settlers. A separate Reclamation Fund was established to receive monies from both sources. Project lands withdrawn from the public domain were opened to settlement in tracts no larger than 160 acres. This limitation was intended to prevent land speculation and encourage "home building" by individuals and families, an underlying philosophy of Federal reclamation supporters. Settlers

were required to reclaim at least one-half of their land for agriculture. The United States Reclamation Service was established to administer the provisions of the Act.

The first 7 years of Reclamation's existence were ambitious, optimistic, and fast paced. Engineers crisscrossed the Western United States to determine the best locations for irrigation systems and produced volumes of data, drawings, and studies to support their recommendations. Construction quickly followed suit; in 1903, the Secretary of the Interior authorized the first 5 projects, and by 1909, 24 projects had been approved in all but 1 (Oklahoma) of the original 13 States and 3 territories cited in the Reclamation Act. That summer of 1909, when Reclamation conducted its first known comprehensive building inventory, engineers enumerated an astonishing 1,000 or so buildings, indicative of the intense level of activity permeating the new Bureau.²

Following those early heyday years, the pace slowed down considerably as criticism swelled against Reclamation for failing to deliver on its exuberant promises. Making the "desert bloom" was not as easy as the Bureau had anticipated and widely proclaimed. Costs invariably exceeded estimates, settlers unfamiliar with irrigation struggled, and poor soils or drainage plagued some project lands. From 1909 until 1918, only a handful of new projects were authorized, and in those 9 years, Reclamation constructed less than a few hundred additional buildings.³

Getting Started: Creating an Organizational Structure

Reclamation faced enormous challenges getting started. First, it had to develop an organizational structure and assign responsibilities for the design and construction of all project features, including buildings. Until 1907, Reclamation was part of the United States Geological Survey under the direction of Charles D. Walcott. Frederick Haynes Newell, chief of the Division of Hydrography, held the title of chief engineer. In March 1907, Reclamation became an independent bureau within the Department of the Interior. At that time, Newell became Reclamation's Director, and his assistant chief, Arthur P. Davis, became the chief engineer.

Within its first year, Reclamation established a headquarters office in Washington, DC, and created a hierarchy of supervising, district, and resident engineers to oversee investigations, design development, and construction. Supervising engineers were essentially deputies of the chief engineer; district engineers were assigned to important river basins in the West and reported to the

chief engineer, and resident or “constructing” engineers were directly in charge of construction work on particular projects and reported to district engineers.⁴ Each Reclamation project involved the participation of all three levels of engineers. Individually and jointly, they were responsible for the successful implementation of project plans. In addition, the organization included consulting engineers who provided advice and suggestions on engineering and technical matters as needed. Sometimes, Reclamation convened boards or committees of engineers to review and provide recommendations on specific projects or to address particular engineering issues.

The majority of Reclamation employees were scattered across the West in Reclamation States and territories. Since the Bureau’s headquarters were geographically so far removed from project activities, as early as April 1903, a permanent office with a small staff of engineers and assistants was set up in Denver under the supervision of A.L. Fellows, a district engineer.⁵ Aided in their work by specialists in various aspects of design and construction, district engineers were stationed at central or convenient locations within their districts. Close to project activities, they oversaw all work within their districts, from investigations to the design of project features.

Over time, as Reclamation expanded, its organizational structure would be modified again and again. The first substantive change occurred by the end of 1907, when the number of divisions was increased from three to five, each under the direction of a supervising engineer. Project engineers, responsible for construction of individual Reclamation projects, replaced the positions of district and resident engineers. In addition, “operation and maintenance engineer” positions were created at projects where construction was fairly complete and water had actually been delivered for irrigation.⁶

By 1912, Reclamation staff had grown to 6,468 employees, of whom about 4,700 were construction laborers. The remainder were engaged in administrative, engineering, clerical, and legal activities connected with project construction, operation, or maintenance.⁷

Another major reorganization effective June 1, 1915, elevated the Denver office to an “executive office” under a chief of construction. All matters relating to the management and execution of work in the field were required to pass through that office. From then on, Denver played a greater role in the preparation and review of designs and assumed the lead on developing standard designs, including those for buildings.⁸

Early Reclamation Camps

Even before the first dirt could be excavated for a dam or canal, engineers and other employees engaged in surveys and construction needed shelter. Little in the way of housing existed in the rough, uninhabited terrain where most of the men worked. Out of necessity, Reclamation established temporary camps to provide lodging, food, and other essentials for its personnel.

Small camps, typically consisting of tents, sheltered survey parties during initial reconnaissance and project investigations. At the outset, the Army supplied Reclamation's tents, which were shipped from the nearest supply depot. Although usually in good condition, some tents were patched, worn, or partly mildewed, eliciting complaints from men in the field. To ensure quality and avoid delays in obtaining tents from the Army, Reclamation made procurement arrangements with a manufacturer in Denver. All sleeping and office tents had the added comfort of floors, and Reclamation advised its engineers that worn-out tents could be cut up and the canvas used for flooring, or new canvas could be purchased. Chief Engineer Newell instructed his engineers to arrange tents in an orderly manner and keep the spaces between them tidy. Early photographs depict the use of tents from the desert climate of Arizona to the forested mountains of Washington to the high plains of North Dakota. Although tents appear less frequently in later photographs, they continued to be used as temporary shelter at Reclamation camps (figures 1.1 through 1.4).⁹



Figure 1.1 Lower Yellowstone Project, Montana. Headquarters at Newlon, October 11, 1904. Temporary wooden buildings replaced tents in the summer of 1906.



Figure 1.2 Umatilla Project, Oregon. Cold Springs Dam survey camp, October 27, 1905. At the center of the photograph is "Blue" the dog.



Figure 1.3 Rio Grande Project, New Mexico. Camp at Leasburg Diversion Dam, March 1907.



Figure 1.4 Yakima Project, Washington. Reclamation headquarters at Sunnyside Canal, September 23, 1907.

Once project construction started, engineers responsible for daily oversight moved with their assistants from offices at some central location to camps sited close to construction activities. Smaller camps typically consisted of simple frame buildings, often in combination with tents, arranged in an orderly fashion. F.H. Newell described the common requirements for such a camp in a 1905 letter to A.P. Davis:

There should be a small group of buildings at the most convenient point for the construction of the system. The practice has been to put up an office building, costing from \$500 to \$800, also a cook house and dining room, with accommodations for cook, and small storehouse; also a dormitory, generally with a central narrow hall running the length of the building, the rooms opening from each side. In addition to these buildings there are usually two detached houses each of four rooms for the accommodation of the principal engineers and their families. The whole group of buildings should be built at a cost of about \$3000.¹⁰

Reclamation's largest camps were associated with the construction of major project features. Engineers' offices, a variety of living quarters including cottages and dormitories, and an array of other building types to accommodate diverse activities formed a veritable small community whose existence sometimes lasted for several years or beyond. Such full-blown camps were required when Reclamation relied on its own employees to accomplish project construction. When Reclamation used contractors, they were responsible for housing their own

employees and created their own camps. In such instances, Reclamation required far fewer buildings. Generally, it constructed only those needed to house and support engineering and administrative staff.

The images of many early Reclamation camps evoke that of other western frontier settlements; a combination of quickly erected buildings and tents stand out prominently against their remote surroundings. Expediency, availability of materials, and cost dictated camp construction. Even so, Reclamation recognized the need to offset rough working conditions with reasonably comfortable quarters to maintain good morale. Newell believed that this was also important to advance the personal growth of his engineers. He advised that the office or some other room at the field camp should be arranged agreeably so that during the evening hours men could gather to “read, study, or discuss engineering matters” (figures 1.5 through 1.11).¹¹



Figure 1.5 Belle Fourche Project, South Dakota. Owl Creek camp, August 1905. The simple frame buildings are arranged in an orderly fashion. Note the tent to the far right.

Newell also emphasized the need to keep up appearances “both personally and as to the camp” in order to gain support among visitors for the work of the fledgling bureau.¹² Keeping up appearances went beyond tidiness; it also meant maintaining proper sanitary conditions. Reclamation understood that construction camps where men lived in close quarters could become breeding grounds for dangerous diseases if not kept clean. The special circumstances of many Reclamation camps in arid, remote regions added to the hazards: supplies were far away and hard to get, water was scarce, and food was often inferior. To reduce the risk of the spread of disease, Reclamation instructed its engineers to

locate camps upon well-drained ground and as far away as possible from stagnant water. The importance of a source of good drinking water was stressed; it needed to be convenient to the camp, but not too close; otherwise, contamination could occur. It was equally vital to equip sleeping quarters, privies, and mess and cook houses with screens to keep out disease-carrying flies.¹³



Figure 1.6 Williston Project, North Dakota. Reclamation office building and camp, October 1906. Reclamation engineers were instructed to display a "standard flag, 3 by 5 feet in size, and also the regular survey flag over every camp during working hours."



Figure 1.7 Salt River Project, Arizona. Reclamation headquarters camp at Roosevelt Dam, January 1906. The building to the left is the administration office and still stands. The cottages are gone.



Figure 1.8 Salt River Project. Tent interior, headquarters camp, January 1906. Note the wood-burning stove with box of firewood and homey touches.

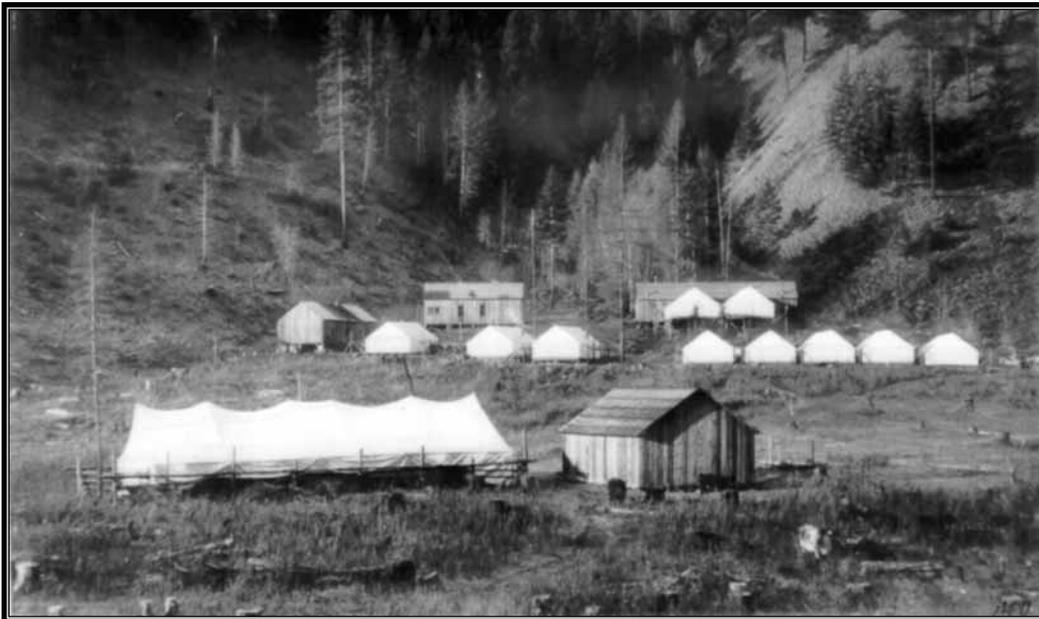


Figure 1.9 Okanogan Project, Washington. Conconully Dam site construction camp, November 8, 1907.

Figure 1.10
Uncompahgre Project,
Colorado. Stable and
living quarters at
Lujane, 1907. The
camp evokes images
of frontier settlements.

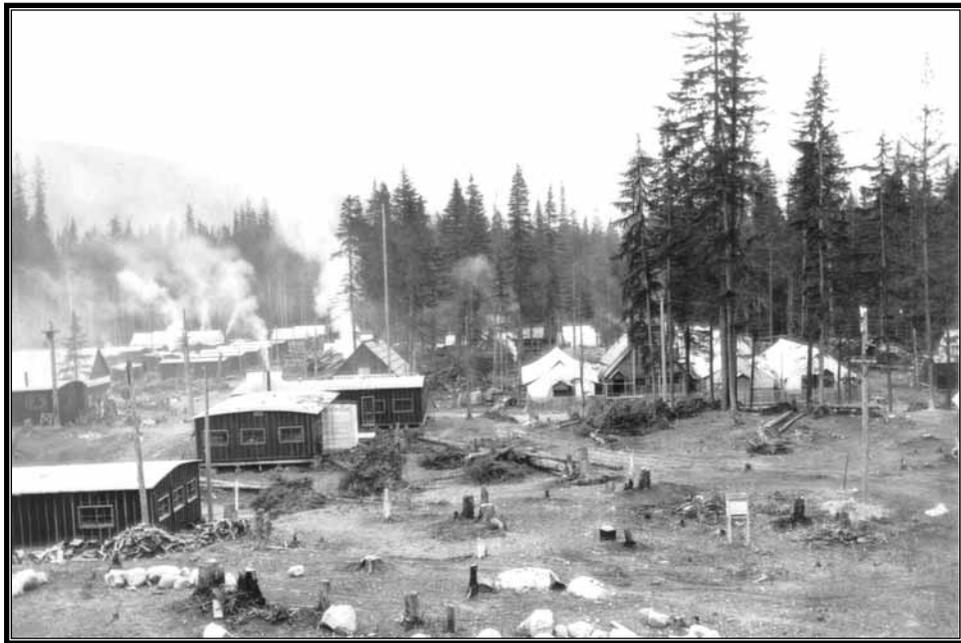


Figure 1.11 Yakima Project. Keechelus Dam construction camp, 1913-1917.

A prime example of an early construction camp that exemplified these practices was the one at Arrowrock Dam, key feature of the Boise Project in Idaho. When completed in 1915, Reclamation could claim credit for building the tallest dam in the world, at just over 348 feet above the deepest point of the foundation. Accomplishing the massive feat required a large labor force, so in the summer of 1911, Reclamation established a camp designed to accommodate 900 people. Because of its remote location 20 miles upriver from Boise, the nearest community, the camp was made as “attractive and homelike as possible.” It consisted of more than 30 buildings including not only an office, cottages, mess hall and bunkhouses, but also a hospital, hotel, recreation hall, fully stocked store, tennis court, and post office. Arrowrock Dam camp also incorporated advanced ideas in sanitation and maintenance. Features included a water-supply and



Figure 1.12 Boise Project, Idaho. Arrowrock Dam camp, September 15, 1912. A well-tended garden enhances a guest house yard. In the background is one of the camp's hipped roof cottages, which included porcelain bathtubs and toilets.

sewage system, regular garbage removal and incineration, a laundry or wash house, electric lights, a fire suppression system, and a central heating plant. At its peak, about 1,400 people, including about 200 families, lived at the camp.¹⁴ Today, none of the original buildings survive (figure 1.12).

Temporary and Portable Camp Buildings

Camp buildings fell into three types: temporary, semi-permanent, or permanent. The majority were temporary, associated with construction camps of short duration. Of the 1,000 or so buildings listed in the 1909 inventory, over half were considered temporary. They included offices, cottages, bunkhouses, mess houses, storehouses, machine shops, blacksmith and carpenter shops, bath houses, sheds, stables, granaries, and even hospitals. By definition, these buildings were not meant to endure and tended to be of inexpensive, lightweight wood framing without permanent foundations (figure 1.13). In a 1917 examination of the Grand Valley Project in Colorado, the inspector wrote, "Since the camps, corrals, etc. on the project are comprised almost entirely of tents and temporary buildings, all of which are almost worn out, I believe that this scheme has worked out very well on this particular project."¹⁵

Sometimes, when Reclamation disbanded camps, temporary buildings were disassembled and the materials used elsewhere. Such was the case in Seville,

Montana, on the Blackfeet Project, an irrigation project constructed by Reclamation for the Office of Indian Affairs.¹⁶ When no longer needed in 1912, the Seville camp buildings were taken apart and the materials reused on the Milk River Project in Montana at Camp One on the Saint Mary Storage Unit.¹⁷ On the Strawberry Valley Project in Utah, lumber from camp buildings associated with the Strawberry Tunnel was reused in 1913 during construction of two permanent watchmen's cottages at the tunnel's East Portal (see figures 1.86 and 1.87). A Reclamation engineer recommended recycling a few temporary buildings listed at two locations in the 1909 inventory of the Huntley Project in Montana. He wrote that “. . . the probability is that future conditions will make it advisable to raze them and use the construction materials in other buildings.”¹⁸



Figure 1.13 Newlands Project, Nevada. Headquarters in Fallon, 1907. This original project headquarters complex consisted of a variety of temporary buildings. The office is the hipped roof building at left. Permanent headquarters were established at a new site in Fallon in 1910.

The lightweight fabrication of temporary buildings made the fairly common practice of relocation from one construction site to another possible. A popular portable building used on numerous Reclamation projects was the “car-roof” type, so-named presumably because of its resemblance to a railroad car. Constructed of wood, the simple buildings had either vertical or horizontal siding and a slightly curved roof. Plans of car-roof buildings for a bunkhouse on the Milk River Project and a canal rider's house on the Shoshone Project in Wyoming illustrate how the compact interior space could be configured for various needs.¹⁹ The latter example consisted of three rooms—a kitchen, living room, and bedroom—all contained within a structure measuring 14 by 30 feet. “Beaverboard,” a processed wood “fiber board” product, covered the interior walls.²⁰ A small covered porch projected off the main elevation (figure 1.14). The Milk River Project bunkhouse, located at the headquarters complex in Malta, was even smaller with outside dimensions of 14 by 28 feet. Amazingly, the living quarters included five bedrooms, a living room, and a bathroom.

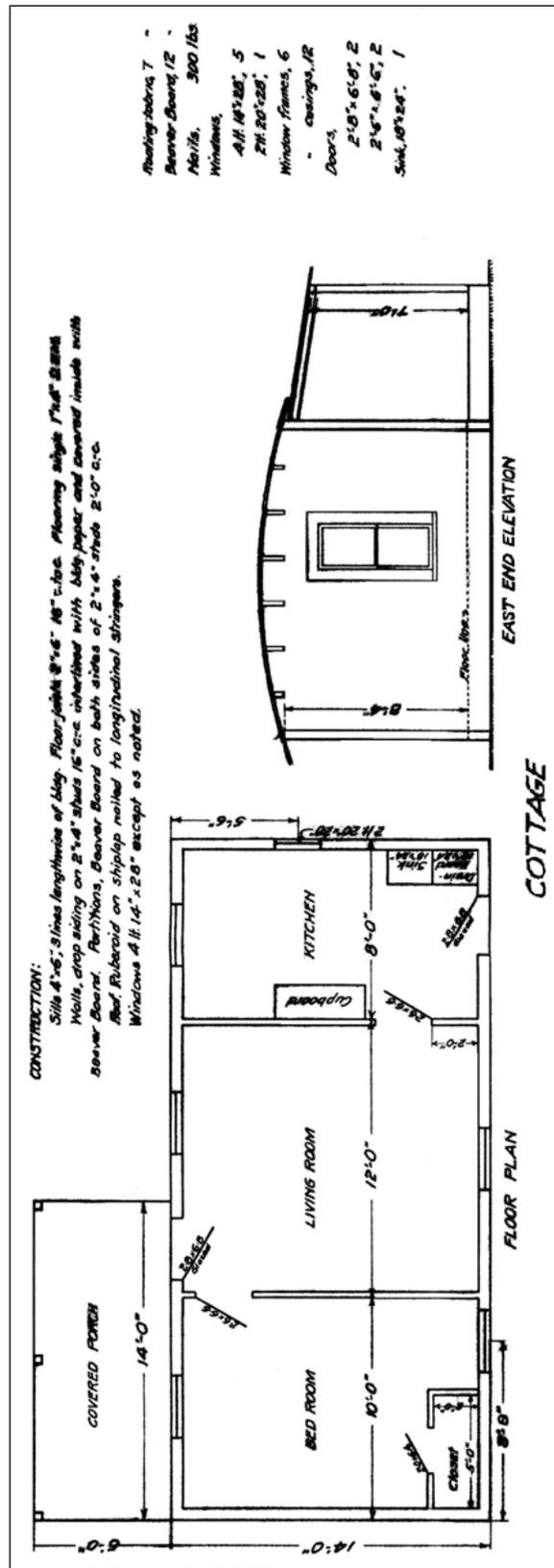


Figure 1.14 Shoshone Project, Wyoming. Plan for car-roof canal rider's house, 1916.

Project histories occasionally noted the presence of such structures (figures 1.15 through 1.18). Around 1908, a 12- by 24-foot, car-roof cabin was erected on the Buford-Trenton Project in North Dakota to provide quarters for the electrical assistant and his family. One of the cooks and his wife originally occupied a 10- by 12-foot lean-to addition.²¹ At the La Mesa, Montana, headquarters camp established in 1905 on the Lower Yellowstone Project, Reclamation moved a small car-roofed cabin twice by 1910, first to accommodate a family and then for use as a bunkhouse.²²



Figure 1.15 Belle Fourche Project. Temporary quarters for engineers, June 1905. Car-roof building with vertical board siding is at rear.



Figure 1.16 Shoshone Project. Car-roof engineer's office at Eaglenest camp, Garland Canal, April 1907. (Source: Shoshone Irrigation District, Shoshone, Wyoming)



Figure 1.17 Yakima Project. Car-roof buildings covered with tar paper, February 1911.
(Source: Upper Columbia Area Office, Bureau of Reclamation)

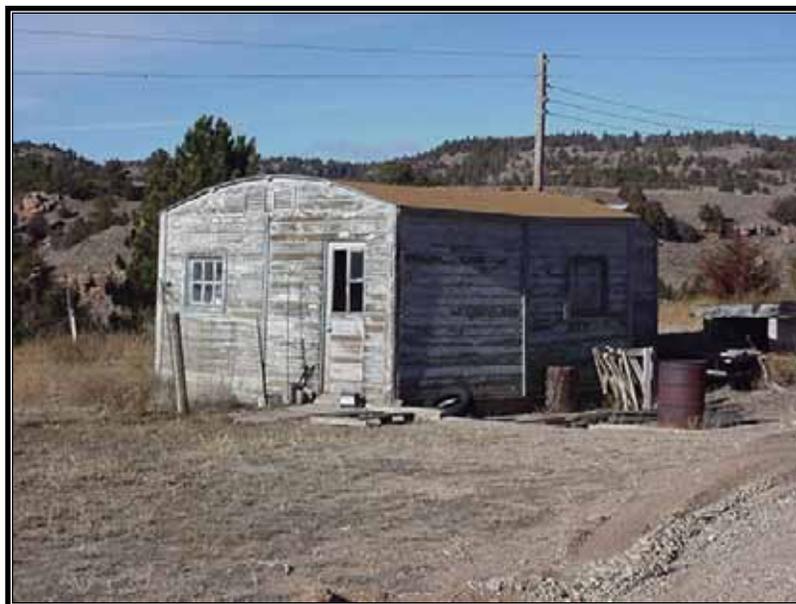


Figure 1.18 Angostura Project, South Dakota. Car-roof buildings no longer needed for housing made convenient storage sheds. Although never intended to be permanent, a few such buildings have been located, albeit in very poor condition. This one was photographed in January 2003 at former Angostura Dam camp. (Source: Jim Kangas, Bureau of Reclamation)

Manufactured portable buildings were another option, and Newell explained his preference for such buildings in 1903:

Where lumber is expensive it is practicable to purchase portable houses, of which several kinds are on the market. These can be quickly erected and moved from time to time along the line of the work. They are preferable to tents, as they are not shaken by ordinary winds, are relatively free from dust, and by their use moving is expedited and the preparation of drawings and ordinary clerical work is carried on more effectively.²³

In 1905, Reclamation acquired portable buildings for use at several locations on the North Platte Project in Wyoming and Nebraska. For about \$500 each, Reclamation purchased eight patented "M&M" portable structures from the Mershon and Morley Company of Saginaw, Michigan. The company's catalogue depicted a quaint frame cottage with Victorian style detailing in a pastoral setting (figure 1.19). The basic model came without a porch, but one could be included (figure 1.20). Engineers occupied three such structures along the route of the Interstate Canal in Nebraska and Wyoming, while five structures accommodated engineers and their assistants during construction of Pathfinder Dam in Wyoming.

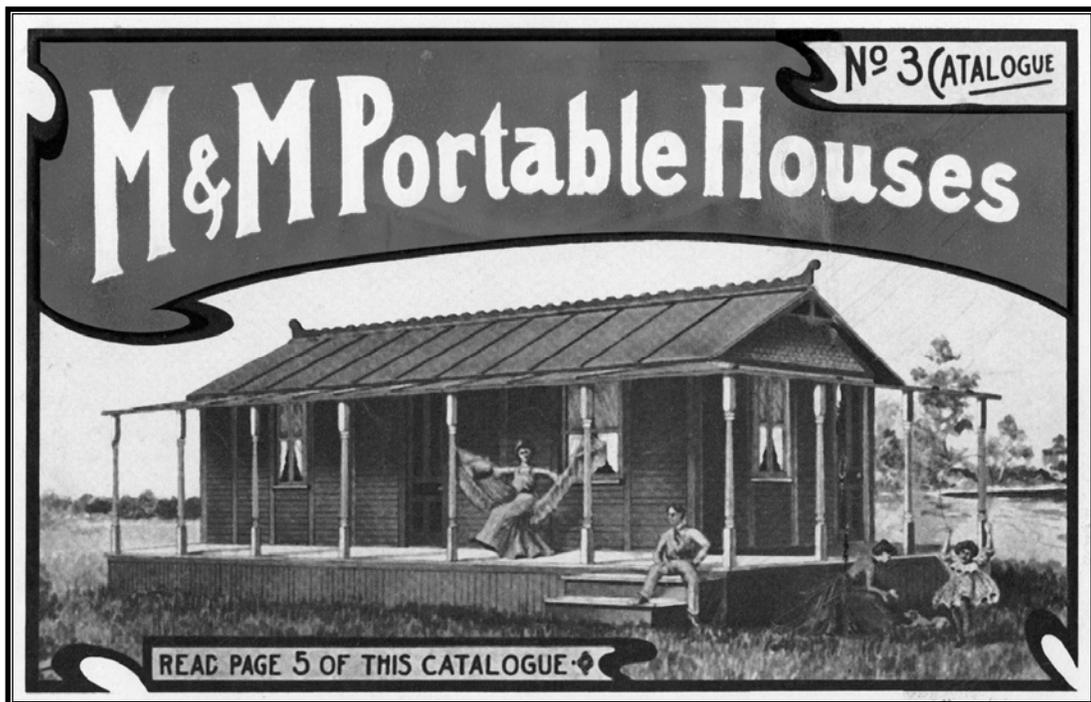


Figure 1.19 M&M portable house from the Mershon and Morley Company catalog, circa 1905.

Despite their classification, temporary buildings sometimes endured well beyond their expected lifespan. This occurred at a number of early construction camps on the Lower Yellowstone Project, where the majority of structures were considered temporary. At La Mesa camp, Reclamation built a variety of temporary structures in 1905, including an office which cost about \$1,300. Five years later, Reclamation reported that it had kept expenditures for improvements to the camp at a minimum in anticipation of establishing a more permanent headquarters elsewhere later on. When that occurred in 1912, some of the temporary La Mesa buildings were, in fact, moved and continued to be used for many years (figures 1.21 and 1.22).

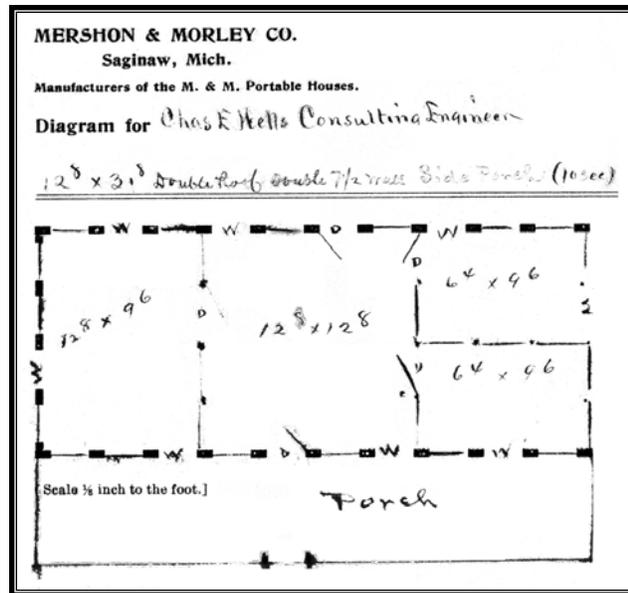


Figure 1.20 Plan for M&M portable house.



Figure 1.21 Lower Yellowstone Project. Temporary buildings at La Mesa headquarters camp, 1910.

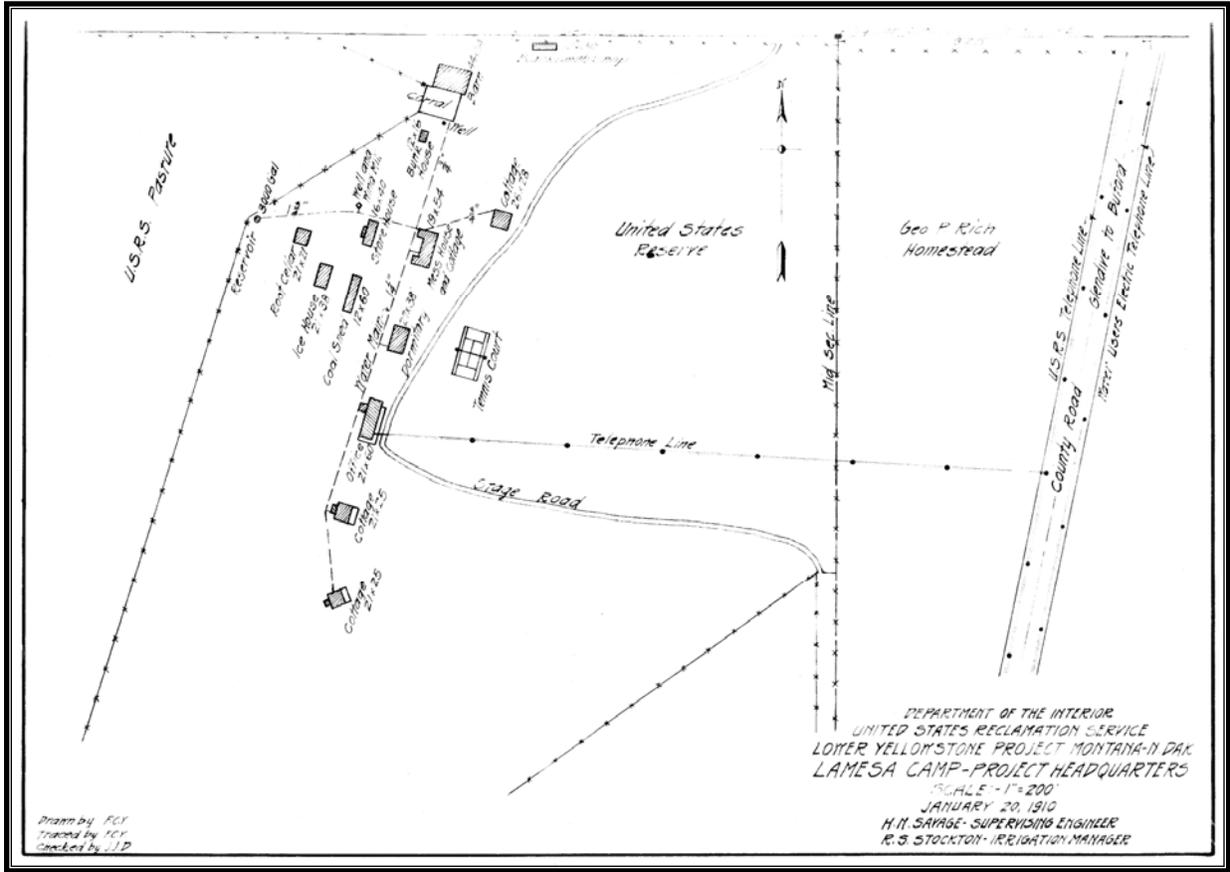


Figure 1.22 Site plan of La Mesa camp, January 1910. Main buildings are lined up in a row and connected to water main. Note the tennis court near center of drawing.

Temporary buildings constructed in the summer of 1906 at Dore camp on the Lower Yellowstone Project were transported in 1912 to two new camp sites when a segment of the canal and lateral system between Sydney and Ferry Coulee was completed. One building, supposedly from the Dore camp, became a ditchrider's house on Lateral L near Fairview, Montana, and served the project for decades.²⁴ Although since abandoned, in 1991 the residence was determined eligible for listing in the National Register of Historic Places.²⁵

Also on the Lower Yellowstone Project, Ridgelawn camp, established in the summer of 1906 to house a small force of Reclamation engineers, consisted of a temporary office, engineer's cottage, dormitory, mess hall, and stable. After initial completion of the irrigation system in 1909, rather than abandon the camp, Reclamation continued to use it for personnel employed to maintain and operate the system. By early 1910, a few of the original buildings had been enlarged and remodeled, and several new ones had been added. Although abandoned and considerably altered, a few of the camp's original buildings, including the office, survived and were documented in 1997 (figures 1.23 and 1.24).²⁶



Figure 1.23 Lower Yellowstone Project. Ridgelawn camp, circa 1910. Recently planted trees can be seen towards foreground. Temporary office building is second from right with flag in front.



Figure 1.24 Ridgelawn office as it appeared in 1997. (Source: Mary McCormick, Renewable Technologies, Inc.)

Semi-Permanent and Permanent Camp Buildings

In addition to temporary buildings, camps sometimes included semi-permanent and even permanent ones. This occurred when Reclamation anticipated construction to be of a long or indefinite duration. Much dialogue occurred in Reclamation's early years about its responsibility to house employees for extended periods of time. Staff members debated the circumstances under which the government should provide housing beyond short-term construction, what the quality should be, who should be eligible for it, and when wives and families should be accommodated. Because of the remote and rough conditions encountered by Reclamation's field engineers, it was not easy to find skilled men eager to fill those positions. Such jobs required an adventurous bent and physical stamina, as well as an ability to withstand discomforts. To attract quality employees, Reclamation realized that inexpensive but decent housing for at least some men who had to stay on past initial construction was a necessary incentive.

The earliest correspondence found that discussed these issues dates to October 1903, when A.P. Davis, then the supervising engineer in Phoenix, wrote to F.H. Newell about housing for families of engineers on the Salt River Project in Arizona:

. . . I am of the opinion that it will be advisable for the government to erect a few small cottages for the use of principle [sic] engineers and experts who will be expected to remain in Tonto Basin, in order that their families may be with them. No government subsistence should be taken to these cottages for any purpose whatever. When the engineer is in camp, he is, of course, entitled to subsistence, but when at home, it should be at his own expense. By providing cheap cottages we remain free from any obligation to keep the engineer on the work longer than necessary for the good of the work. This plan is practically parallel with the practice of the Army, and commends itself to me as the most feasible that I can think of.²⁷

By 1905, Reclamation had established a policy to provide individual housing to employees with positions of elevated responsibility, usually the higher-graded engineers.²⁸ At a minimum, it was deemed that the engineer in charge of construction should have a suitable cottage, "in order to insure [sic] his living on the work."²⁹ While residing in such quarters, the engineer was not entitled to any subsistence or rations. Depending on the size of the project, Reclamation constructed additional cottages for assistant engineers, again with no subsistence provided.

The decision to selectively provide this type of housing was not readily accepted by all. W.N. Morrill, a topographer working on the Huntley Project in 1905,

joined Reclamation with the understanding that men with families would be given housing. When his request was rejected, and houses were built for two engineers, the disgruntled employee complained to Newell of discrimination. In a reply to Morrill, A.P. Davis, acting chief engineer, explained that:

It is manifestly impossible to furnish separate cottages for all the married men employed by the Service, and the line has to be drawn somewhere The work of the Geological Survey and of the Reclamation Service is of such character that it unavoidably involves considerable separation of men from their families, as well as other hardships and privations. Those who are able, patient and faithful will undoubtedly rise in due time to positions where they will be entitled to the special consideration which the public interest requires shall be given to those in the more responsible positions.³⁰

The above-described engineers' cottages were classified as permanent. They, along with other permanent buildings, normally consisted of more substantial construction than temporary ones. In fact, July 1905 specifications for the two Huntley Project engineers' cottages required the inclusion of water and sewer connections for one of the dwellings.

In the case of the Huntley Project, unanticipated flooding of the Yellowstone River in June 1918 led to relocation of the headquarters camp from the inundated riverbank at Huntley to a new compound on dry ground at Ballantine. A heavy steam tractor engine moved four permanent buildings to the new site, including the storehouse, office, project manager's cottage, and the chief clerk's cottage (figures 1.25 through 1.27).³¹



Figure 1.25 Huntley Project, Montana. View of permanent buildings at headquarters camp, September 7, 1905. Simple hipped roof cottages with covered porches were a common Reclamation building type.



Figure 1.26 Huntley Project. Relocated camp buildings in Ballantine, circa 1920. Left to right: partial view of storehouse, office, project manager's cottage, chief clerk's cottage.



Figure 1.27 Huntley Project office building in 2007. (Source: Bill Vincent, Bureau of Reclamation)

On the St. Mary Unit of the Milk River Project, the 1909 building inventory noted that, “Buildings classed as permanent are well-built buildings and are planned to last through construction of the project, although all will probably not be used after completion.”³² This implies that the term “permanent” did not always equate to the long-term future when used to describe buildings, just as “temporary” did not always turn out to be short term.

In the summer of 1906, when Reclamation developed a construction headquarters camp in the “immediate vicinity” of Hermiston, Oregon, for the Umatilla Project, the complex included buildings identified as both temporary and permanent. Among the latter were an office, project engineer’s cottage, and engineer’s cottage, all simple frame structures (figure 1.28).³³ It is not known how long those buildings stood, but at some point they were removed. In 1909, Reclamation purchased a lot in the town of Hermiston for a new permanent project headquarters complex and constructed several buildings there, of which a few still remain.



Figure 1.28 Umatilla Project. Reclamation headquarters camp in Hermiston, May 1907. Left to right: mess house, dormitory, cottage, and office with another hipped roof cottage to far right.

At the previously mentioned Arrowrock Dam camp, Reclamation built structures of a “comparatively permanent nature” because completion of the dam was expected to take about 5 years. The main camp included 14 frame cottages, 2 of which were duplexes. Screened porches, both front and back, extended the living space. Interiors featured plastered walls and ceilings, tongue and groove floor

boards, stained woodwork, and porcelain bathtubs and toilets. Dormitories and bunkhouses, with lesser finishes, provided accommodations for the remainder of the skilled and unskilled workers. Today, none of the original camp buildings remain.

Reclamation camps also included permanent buildings when it intended to retain one or more of them for use in the ongoing operation and maintenance of project features upon completion of construction. Typically, camps established as field headquarters for the engineering force contained some semi-permanent or permanent buildings that could be kept for future use. Newell recommended that “a convenient but relatively inexpensive office should be built and so located, if practicable, that it will serve as the permanent residence of the keeper, who will ultimately live at the headworks. Other structures could be “sufficiently permanent” to be retained for stables or other outbuildings.”³⁴

On the Lower Yellowstone Project, the Headworks camp on the west side of the Yellowstone River, near the Lower Yellowstone Diversion Dam, originated in 1905 as a small residential facility for Reclamation engineers. It was converted to the site of a large temporary camp for laborers in 1909, after Reclamation assumed direct responsibility for construction of the dam. Following completion of the dam in 1910, the camp continued to be occupied as a dam tender's complex. The original frame office building, intended to be permanent, was “constructed rather solidly, with a rubble foundation, brick chimneys and plastered interior” and later became the dam tender's house (figures 1.29 and 1.30).



Figure 1.29 Lower Yellowstone Project. Headworks camp, permanent office building in 1912. The building was described as a “complete camp in itself” because it contained an office, bedrooms, and mess quarters.



Figure 1.30 Lower Yellowstone Project. Headworks camp, office building converted to dam tender's house, 1997. The basic form remains unaltered, but the entrance and porch have been moved to the gable end. (Source: Mary McCormick, Renewable Technologies, Inc.)

In 1905, Reclamation established a “permanent” engineers’ camp at Wyncote, Wyoming, along the route of the Interstate Canal on the North Platte Project. The camp included a project engineer’s house, office building, dormitory with five sleeping rooms, cook house, and a stable, all identified as permanent. Reclamation planned to keep one residence and the stable for use by the ditch superintendent upon project completion. The other buildings would be occupied for about 2 years and “so constructed that they can be accommodated to other uses or sold to settlers in the vicinity and moved short distances.”³⁵ Even though considered permanent, the frame buildings had no excavated foundations; they simply sat on wood, 2-inch by 8-inch stringers doubled and set upon foundation blocks. This would have made relocating the structures easier. The appearance, disposition, and lifespan of the Wyncote buildings are unknown; they still show up on the 1909 building inventory, but beyond that time, no information was found.

On the Minidoka Project in central Idaho, the subject of permanent housing at Minidoka Dam and powerplant generated an unusual amount of discussion. Following the award of a contract for the dam in September 1904, District Engineer D.W. Ross proposed to F.H. Newell the construction of a 1-1/2 story, permanent structure to initially serve as headquarters for engineers involved in erecting the power house at Minidoka Dam, and, thereafter, as a residence for the chief electrician or power superintendent of the irrigation system. Ross recommended a masonry structure that would be compatible in design with the

nearby powerplant. Since the building would eventually serve as quarters for a man and his family, Ross thought it should also be comfortable and in good taste. He had plans drawn up and went so far as to send Newell a watercolor rendering of the attractive and substantial building he envisioned (figure 1.31). At an estimated cost of \$3,000, Ross realized the expense was probably “a little more than would be desirable,” but figured that cuts could be made. Due to delays in constructing the powerplant and, probably, issues associated with cost, the house was never built.³⁶



Figure 1.31 Minidoka Project, Idaho. Sketch of proposed superintendent's house at Minidoka Dam, 1904. The estimated cost of the building was about \$3,000.

In the spring of 1908, with Minidoka Dam completed and construction of the powerplant back on track, O.H. Ensign, chief electrical engineer for Reclamation, raised the issue again of permanent housing for the power superintendent. In a letter to James G. Camp, the new project engineer, he advocated that a “good substantial house modern in every detail should be constructed at the dam so as to be able to attract men of sufficient ability to take care of the plant.”³⁷ A difference in opinion over the standard of housing for engineers led to friction between Camp and Ensign, and A.P. Davis, by then Reclamation's chief engineer, was brought into the disagreement. He informed Camp that it was common practice to provide “substantial” housing for electrical engineers on other projects. “Mr. Ensign's reasons (for requesting housing on the Minidoka Project) are the same as those given for (the) Garden City project, that is, the necessity of having a man of ability and training to take care of the plant, and this sort of a man would not stay unless he had comfortable quarters.” A one-story, lava rock building, of a much simpler Bungalow design than the original proposed one, was completed in 1910 (figure 1.32).³⁸ By then, Reclamation had converted the original

construction camp to a housing camp for its employees in charge of operating the irrigation works and powerplant. Expansion of the camp with additional dwellings ensued over the next decade.

In 1909, Reclamation established a large construction camp on the Tieton Division of the Yakima Project in Washington that became the site for the permanent operation and maintenance headquarters of that division the following year. The construction engineer's office was retained, and an irrigation manager's residence, watermaster's residence, and an office with a vault were added in 1910 (figures 1.33 and 1.34).

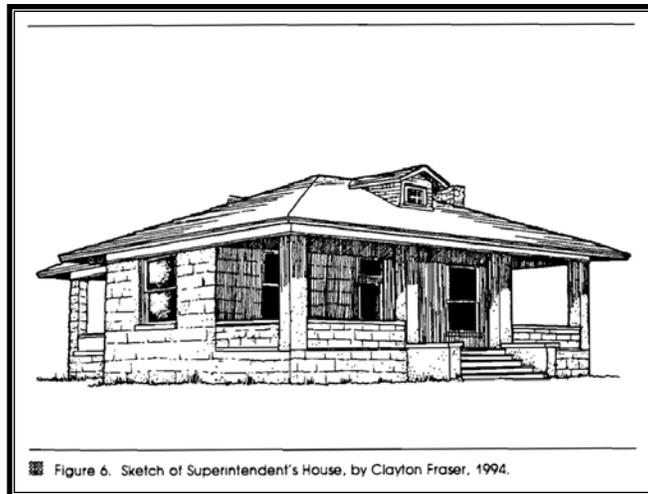


Figure 1.32 Minidoka Project. A much simpler superintendent's house was built in 1910. (Source: FRASER Design, Walcott Park, Historic American Buildings Survey)

In 1947, the Yakima-Tieton Irrigation District assumed use of the property as its administrative headquarters; in recent years, Reclamation transferred ownership to the district. Only one building, the bunkhouse, remains intact today.



Figure 1.33 Yakima Project. Newly established headquarters for Tieton Unit on Naches Ridge, August 1911. The permanent hipped roof cottages with flared eaves, dormers, and simple columned porches are a more elaborate version of Reclamation's plain hipped box cottages. (Source: Upper Columbia Area Office, Bureau of Reclamation)

Elsewhere, Reclamation created permanent operation and maintenance facilities on sites not associated with earlier construction camps. On the Milk River Project, Camp Nine, located near St. Mary Crossing Bridge over the St. Mary Canal, in Fletcher, Montana, is a good example. Construction of the camp began

in October 1912 and concluded in 1913. In addition to four cottages and two dormitories, buildings included an office, warehouse, mess house, blacksmith shop, stables, and three bunkhouses. During the early days, the complex resembled a miniature village complete with a mercantile store, root cellar, storehouse, corral, and blacksmith shop. The camp continued to operate throughout the years as a residential and maintenance facility; today, a handful of original buildings still survive (figures 1.35 and 1.36). On the Grand Valley Project in Colorado, in 1917, Reclamation established a maintenance camp along the Main Canal, 7 miles north of Loma. Known as Camp 7, it was the operation headquarters for an area covered on horseback by three ditchriders. The camp included a number of permanent cottages, a bunkhouse, and outbuildings (figure 1.37).³⁹



Figure 1.34. Yakima Project. Irrigation manager's house at Tieton Unit headquarters nearing completion, July 1910. Projecting eaves and exposed rafter ends show transition to Bungalow form. (Source: Upper Columbia Area Office, Bureau of Reclamation)



Figure 1.35 Milk River Project, Montana. Plain hipped roof cottages at Camp Nine in Fletcher. Date unknown.



Figure 1.36 Milk River Project. Camp Nine residence as it appeared in 1989. (Source: Montana Area Office, Bureau of Reclamation)



Figure 1.37 Grand Valley Project, Colorado. Permanent buildings at Maintenance Camp 7, 1919.

Another category of permanent Reclamation residences was not necessarily associated with either construction or operation and maintenance camps. Dam tenders, ditchriders, and powerplant operators lived in Reclamation housing alongside isolated canals and at remote dams and powerplants. Closest to the irrigation works, these employees kept Reclamation facilities in good condition, conducted regular inspections and routine maintenance, communicated with irrigators, and were first on hand in case of emergencies. Although not awarded the recognition of the prominent design engineers, dam tenders and ditchriders were integral to Reclamation's success. Attracting competent and responsible men to fill these positions was essential, and offering good housing was an

incentive. At isolated Pathfinder Dam, Reclamation built a comfortable residence “as an inducement to keep a satisfactory and capable man so far from town and neighbors to look after the government property. . . .”⁴⁰ The simple home still exists and has been open during the summer months as an interpretive site since 1980 (figure 1.38).



Figure 1.38 North Platte Project, Wyoming. Pathfinder dam tender's house built of local stone, 1909.

In South Dakota, just east of Nisland, another extant Reclamation ditchrider's house is listed in the National Register of Historic Places for the important role it played in the operations of the Belle Fourche Project (figure 1.39). Constructed in 1916, the simple, frame cottage originally contained four rooms: a kitchen, living room, and two bedrooms. A bathroom was added at a later date. Eleven ditchrider houses could once be found at convenient locations along the irrigation canals and laterals of the Belle Fourche Project; as of 2002, only five existed and four left Federal control decades ago. No two were exactly alike, but they shared stylistic characteristics. Each one exhibited exposed rafters, metal ridge caps with finial balls, rough finished interior plaster work, and similar built-in interior cabinetry.⁴¹



Figure 1.39 Belle Fourche Project. Ditchrider's house is listed in the National Register of Historic Places. Although abandoned, the house retains historic integrity. Reclamation realizes the high interpretive potential of the site. (Source: Jim Kangas, Bureau of Reclamation)

Building Designs

Whether temporary, semi-permanent, or permanent, most early Reclamation buildings lacked any formal architectural style. Like a vast number of utilitarian buildings constructed throughout the West in the 19th and early 20th centuries, they were simply “vernacular.” Absent of distinctive features and ornamentation, these basic structures can best be described according to materials and shape. As can be seen from the numerous photographs already viewed in this chapter, Reclamation dwellings and even most field offices were one story and simple in form, with either a square or rectangular ground plan. They can best be classified according to their roof types, which were predominantly side gabled or hipped (figures 1.40 through 1.51). Front-gabled roofs were far less common. Porches, either open or enclosed, often projected off one or more elevations. These forms were in popular use at the time, and Reclamation engineers could easily have found plans for such buildings in a multitude of pattern books, catalogs, or magazines. It is possible that Reclamation also borrowed vernacular design concepts from other Federal agencies constructing buildings in the West. For example, some U.S. Forest Service buildings of the same era exhibit similarities.



Figure 1.40 Lower Yellowstone Project. Newly completed office building at La Mesa camp in September 1905, prior to extension added the same year. In the drafting room, 2-inch by 8-inch floor joists were used rather than 2-inch by 6-inch joists to lessen vibration for men engaged in drafting.

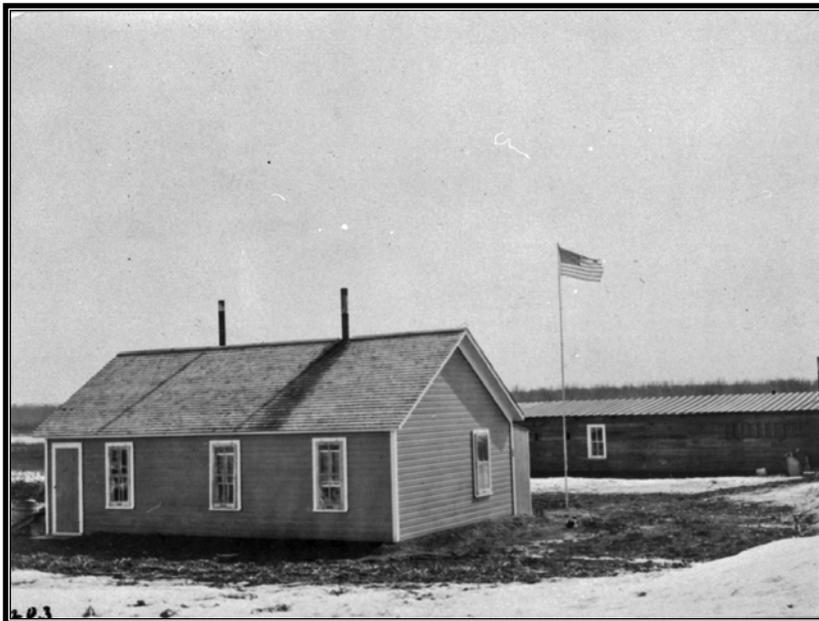


Figure 1.41 Williston Project, Buford-Trenton Unit, Buford, North Dakota. March 1907. Permanent combination office and mess house were completed in November 1906.

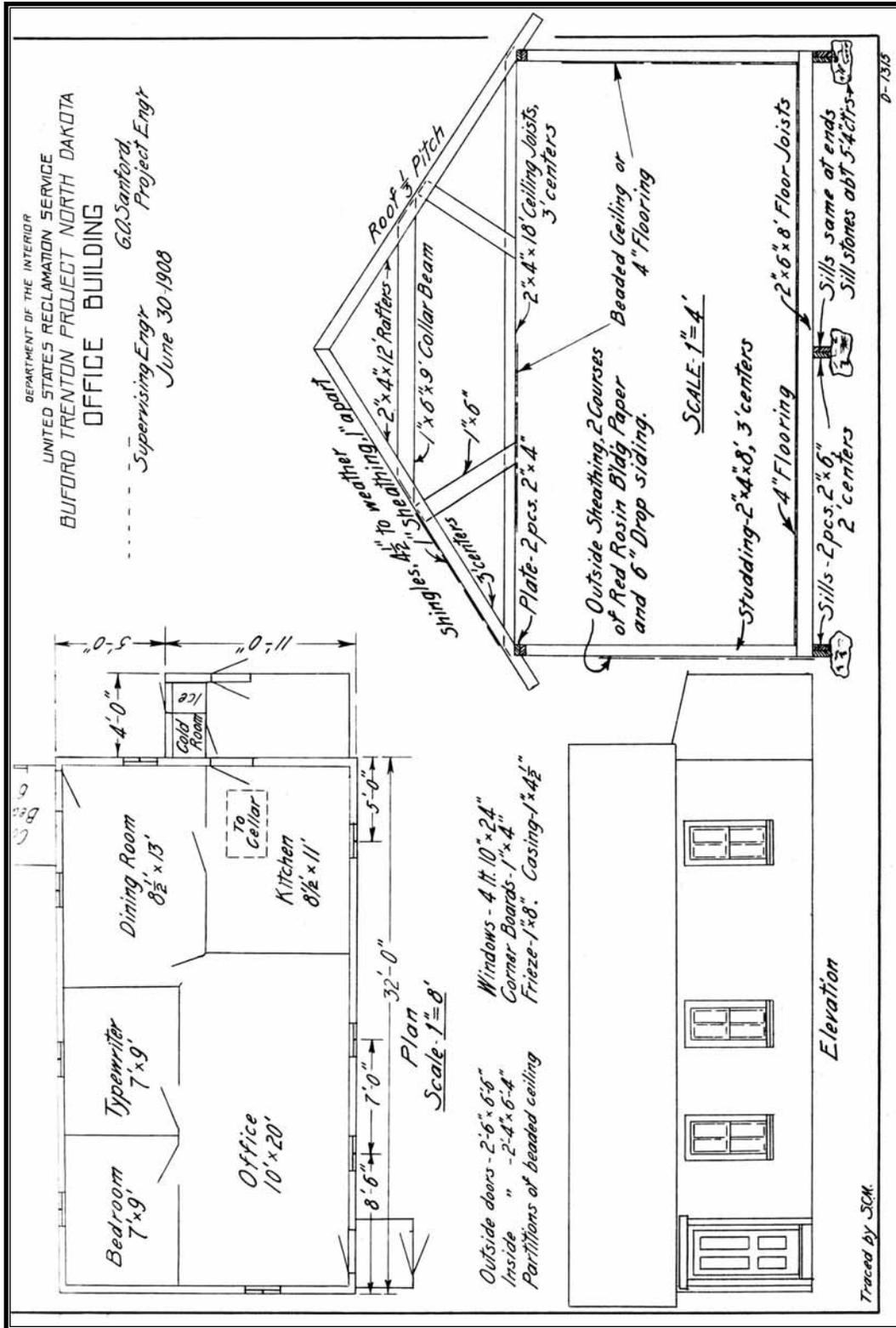


Figure 1.42 Williston Project, Buford-Trenton Unit. Plan of combined office and mess hall drawn in 1908. The plan is slightly different than the office building shown in figure 1.41.



Figure 1.43 Shoshone Project. Office at Camp Colter, headquarters for work on Garland Flat, April 1907. (Source: Shoshone Irrigation District)



Figure 1.44 Shoshone Project. Interior of office at Camp Colter, April 1907. Note the phone, variety of kerosene lamps, and boards covering walls and ceiling. Field offices were equipped with desks, drawing tables, chairs, bookcases and filing cases. (Source: Shoshone Irrigation District)



Figure 1.45 Shoshone Project. Project manager Sanford and family, September 1914. This simple residence features a side porch rather than the more typical front porch.



Figure 1.46 Grand Valley Project, Colorado. Ditchrider's quarters, Little Salt Wash, 1919. Built in 1916, the house has screened porches off the front and rear elevations.



Figure 1.47 Yakima Project. Patrol house number 5 at South Fork Crossing, Tieton Unit, May 1911. The use of front-gabled roofs was far less common than side gables on Reclamation buildings. Shingles along building foundation contrast with the horizontal siding. (Source: Upper Columbia Area Office, Bureau of Reclamation)



Figure 1.48 Salt River Project. Mr. Smith's cottage, November 1905. The moderately pitched hipped roof incorporates a wraparound porch. The cottage probably was occupied by Chester Smith, Reclamation construction engineer, and his family.



Figure 1.49 Belle Fourche Project. Engineer Walter Patch's cottage, January 1906. A modified form of a hipped roof cottage features a chimney protruding at the center.



Figure 1.50 Strawberry Valley Project, Utah. October 1909. Cottages with steeply pitched hipped roofs at Reclamation headquarters at Thistle Junction.



Figure 1.51 Orland Project, California. Reclamation headquarters at East Park Dam, May 1910.

Project Headquarters Offices

Without doubt, Reclamation's most prominent class of buildings consisted of project administrative headquarters, which were the hub of operations upon completion of project construction. Sometimes two stories, these permanent buildings were, in general, more substantial than others and commonly included concrete or brick vaults for storage of important records. In a few instances, vaults were attached to the exterior of buildings rather than incorporated inside. Headquarters offices typically also incorporated space for a project or supervising engineer's office, drafting room, clerk's office, bookkeeper's office, stenographer's office, and other engineers' offices. Modern amenities such as bathrooms and electric lights appeared in the earliest specifications for headquarters buildings.⁴² Even so, their designs are restrained and not elaborate, conveying function over architectural expression.

Among early Reclamation project headquarters offices, two of the most substantial ones shared similarities in design. Located in Montrose, Colorado, on the Uncompahgre Project, and in Klamath Falls, Oregon, on the Klamath Project, the boxy, two-story frame buildings reflected basic elements of the American Foursquare type, most commonly associated with residential architecture (figures 1.52 through 1.54). First appearing in the 1890s and lining entire streets across America by 1910, Foursquare homes were distinguished by simple rectangular or square plans, hipped or pyramidal roofs, central dormers, and one-story, full-width front porches typically supported by round columns. The overall effect of the straightforward form and massing was one of symmetry and stability, and suited Reclamation's utilitarian and economical design approach.

Although not project headquarters, two other Reclamation office structures exhibit the Foursquare form and, therefore, also deserve mention. One was located at the head of the Inlet Canal on the Belle Fourche Project; the other was near Deerfield, Kansas, on the short-lived Garden City Project. At the latter site, Reclamation erected a building in 1906 for use as an office during the construction phase, to be occupied afterwards as a dwelling by the superintendent of the new powerplant. When the project failed, the office building, along with a barn and several outbuildings, were sold at public auction in September 1917 (figures 1.55 and 1.56).⁴³



Figure 1.52 Klamath Project, Oregon. Early photo of project headquarters office in Klamath Falls, no date. This building, constructed prior to 1909, is similar in many respects to the one in Montrose, although the partial-width porch features turned posts rather than columns. Awnings on both buildings shaded the windows. (Source: Klamath County Museum)



Figure 1.53 Uncompahgre Project. Early photo of project headquarters office in Montrose, Colorado, no date. The 1905 building expresses elements of the American Foursquare.



Figure 1.54 The Uncompahgre Project office following rehabilitation in the mid-1990s. Concrete vault on left side of building was added between 1910 and 1912. The Uncompahgre Valley Water Users Association still occupies the building, which is listed in the National Register of Historic Places. (Source: Denver Office, Bureau of Reclamation)

Figure 1.55 Belle Fourche Project. Newly completed office building at the head of the Inlet Canal, August 1905. Reclamation mixed architectural motifs: a Victorian porch graces the front of this early Foursquare.



Figure 1.56 Garden City Project, Kansas. Office and residence near Deerfield, circa 1910. The building contained nine rooms and a bath and ultimately cost about \$3,500.



Other two-story Reclamation headquarters offices were side-gabled vernacular structures, resembling homes sometimes found on American farms. Similar to their common one-story counterparts, these boxy-shaped office buildings had flat, symmetrical front elevations with either a partial- or full-length porch. Examples include the Milk River Project office in Malta constructed in 1912 and the Shoshone Project office in Powell, apparently completed in 1908 (figures 1.57 through 1.59).⁴⁴ Elsewhere, one-story project headquarters offices displayed a variety of stylistic influences, including Classical and Craftsman (figures 1.60 through 1.63).



Figure 1.57 Milk River Project. Headquarters building in Malta, Montana. Just visible to the left side is a two-story concrete vault original to the building. Deviations in construction from the original blueprints were numerous and included Doric columns rather than turned porch posts, a reference to the Colonial Revival style.



Figure 1.58 Milk River Project office as it appeared in early 1990s. The building still stands.



Figure 1.59 Shoshone Project. Headquarters office in Powell, Wyoming, shown in 1915. This vernacular building displays an unusual mixture of window types. (Source: Shoshone Irrigation District)



Figure 1.60 North Platte Project. Reclamation project office in Mitchell, Nebraska, is festooned for a celebration in 1910. Note the flared hipped roof and columned wrap-around porch.



Figure 1.61 Orland Project, California. Headquarters complex in Orland with office in foreground, May 1910. Constructed around 1908, the office incorporates a corner porch under the flared hipped roof.

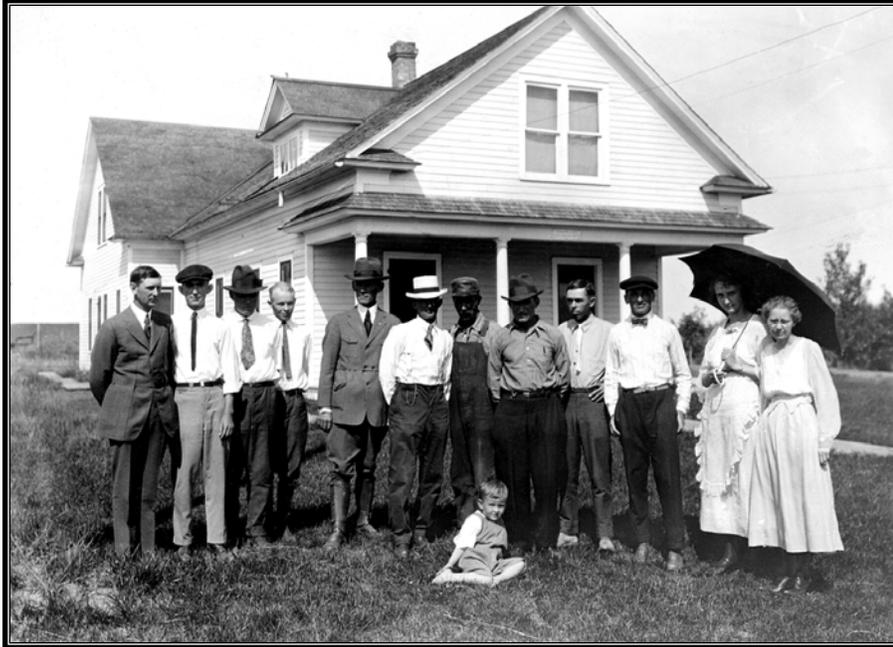


Figure 1.62 Belle Fourche Project. Project personnel stand in front of office in Newell, South Dakota, in 1921. A small office established around 1912 was expanded in 1915 to three rooms, a washroom, finished attic and basement, and vault. It appears to have had later additions. The building burned down in 1954.



Figure 1.63 Minidoka Project. Reclamation office in Rupert, Idaho, 1909. Craftsman style influences are clearly seen in the kneebraces under the extended eaves and the multi-paned over single-paned windows.

Unlike the field headquarter camps, Reclamation usually established project headquarters in towns, where it could exhibit an ongoing presence and offices would be more accessible. In some cases, Reclamation selected existing towns. Such was the case on the Uncompahgre Project, the Milk River Project, the North Platte Project, the Yakima Project, and the Boise Project, among others. While Reclamation sometimes rented office space prior to constructing a permanent headquarters building, there were also instances where Reclamation continued to either lease space or acquired an existing building. This occurred on the Carlsbad Project with headquarters in Carlsbad, New Mexico; the Grand Valley Project with headquarters in Grand Junction, Colorado; the Rio Grande Project with headquarter in Las Cruces, New Mexico; and the Yuma Project with headquarters in Yuma, Arizona (figure 1.64).



Figure 1.64 Carlsbad Project, New Mexico. May 1923. Reclamation purchased its headquarters building in Carlsbad from the Pecos Irrigation Company.

When warehouses, barns or garages, and other outbuildings were part of a headquarters complex, ample lots and easy access for vehicles and other heavy equipment were required. This tended to preclude a site in the heart of the business district. The Milk River, Yakima, Klamath, Umatilla, Boise, and Uncompahgre Projects headquarters complexes were all located outside the central commercial area (figure 1.65). In deliberating the best site for the Boise Project office building in 1908, Newell opined that it was not necessary to have a lot in the best part of town from a business standpoint, but, preferably, a little to the side from the main commercial center. When selecting a site for a new

headquarters office complex in Fallon, Nevada, for the Newlands Project a year later, Supervising Engineer E.G. Hobson expressed a different viewpoint for selecting a downtown site (figure 1.66). He wrote:

1. It is desirable to place our office at a point where business is usually conducted, viz., on a business street in the middle of town thereby saving the general public the serious inconvenience of having to go at least a mile outside the city limits, as at present.
2. It is desirable to place the office at a location whereby the convenience of the employees receives reasonable consideration.
3. It is desirable to locate so as to take advantage of city waterworks and lighting.⁴⁵

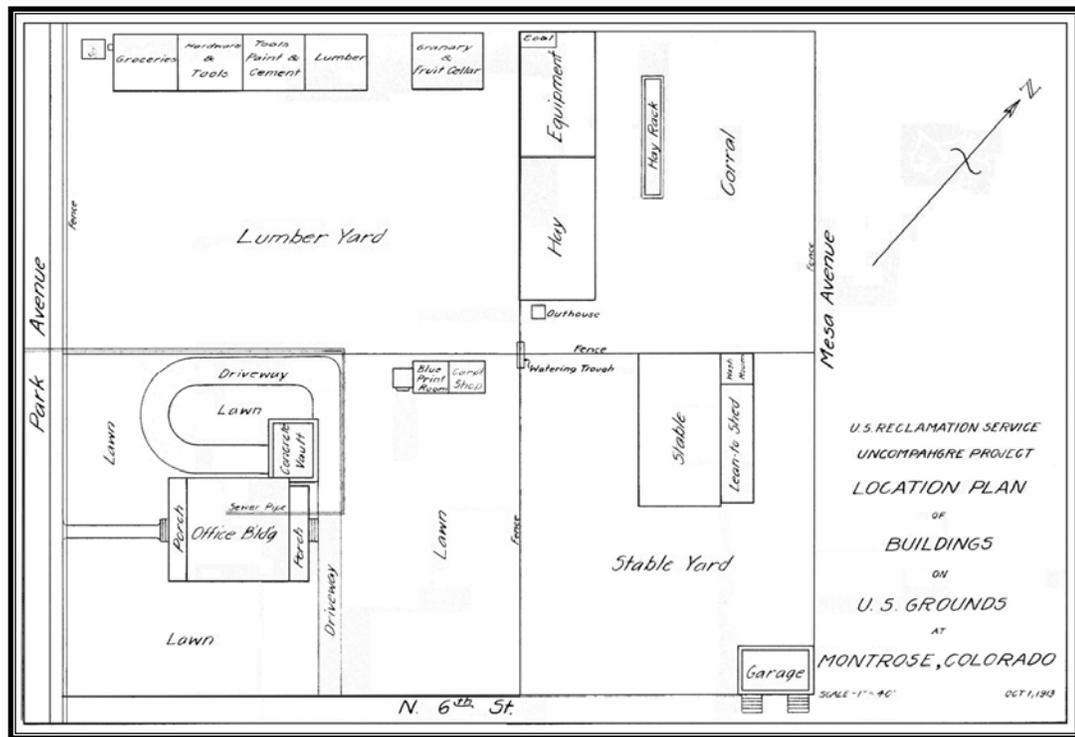


Figure 1.65 Uncompahgre Project. Site plan of headquarters complex outside business district in Montrose, 1913.

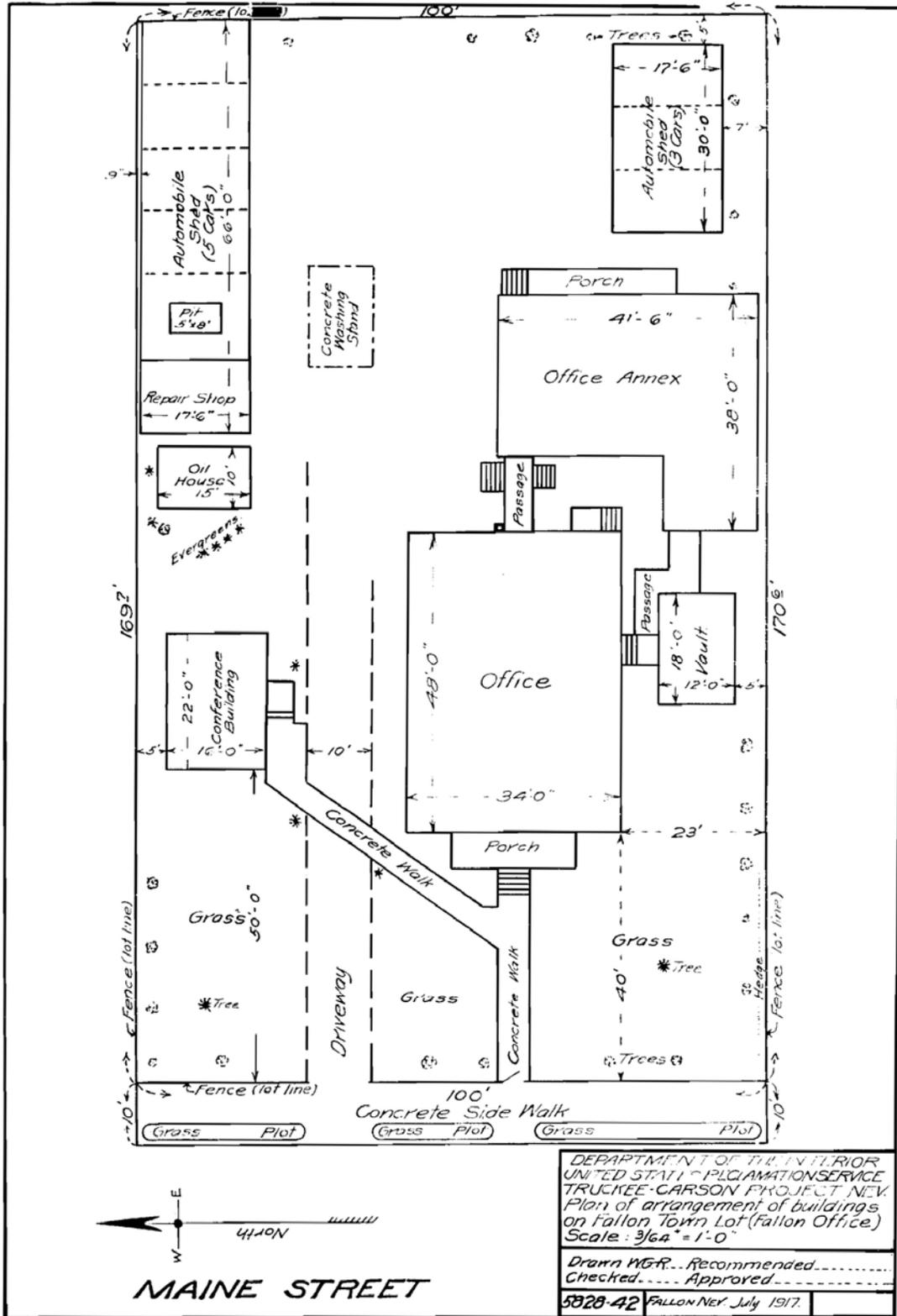


Figure 1.66 Newlands Project. Project headquarters complex in downtown Fallon, Nevada, 1917. Original headquarters were moved to this location in 1910.

Reclamation Townsites

Elsewhere, Reclamation built project headquarters in towns that it established and platted, and in which land was set aside for its own use. Two laws that were passed in 1906 (34 Stat. 116 and 34 Stat. 519) granted authority for Reclamation to create towns not exceeding 160 acres on public land and to then sell lots. In a memorandum on rural settlements written by F.H. Newell on May 21, 1906, he explained that the intent of Congress in passing the legislation was to encourage the concentration of irrigators in numerous small villages. Newell believed that such towns would be “conducive to the prosperity, culture, and happiness of the irrigators under Reclamation Projects, by enabling them to enjoy material and social advantages incident to village residence, combined with the health and freedom of rural life.”⁴⁶ This sentiment captures the ideal of agrarian “homemaking” that propelled passage of the Reclamation Act a few years earlier.

Reclamation engineers produced suggested plats for towns that could be modified to suit local conditions. A “Plan for Rural Settlements,” published in May 1906, consisted of a symmetrical townsite with school grounds at the center and four main 60-foot-wide avenues radiating out diagonally from it (figures 1.67 and 1.68). The plan represented a departure from the typical, unimaginative grid often laid out irrespective of topography in towns across the West. Farmers and settlers objected to Reclamation’s attempt at innovation, and the result was adoption, in general, of the “good, old-fashioned, checkerboard system of streets and squares.”⁴⁷

In 1912, when the American Civic Association suggested to the Department of the Interior that Reclamation’s townsites would benefit greatly from the application of modern planning principles, both Newell and Secretary of the Interior Walter L. Fisher expressed interest and welcomed any proposals. J. Horace McFarland, president of the American Civic Association, arranged for a group of five experts to submit a set of general recommendations at no cost. He also suggested that Reclamation hire a town planning professional. Secretary Fisher responded that, regretfully, Congress opposed expenditure of any portion of the Reclamation Fund on townsite planning, which meant that authorization to employ a planner was questionable.⁴⁸

By November 1918, 19 Reclamation townsites existed where lots had been platted and placed on sale.⁴⁹ Of those, the following six townsites had also become project headquarters: Fort Shaw, Montana (1907) on the Sun River Project; Huntley, Montana (1906), and then Ballantine, Montana, on the Huntley Project; Newell, South Dakota (1910) on the Belle Fourche Project; Powell, Wyoming (1909) on the Shoshone Project; and Rupert, Idaho (1910) on the Minidoka Project (figures 1.69 and 1.70).

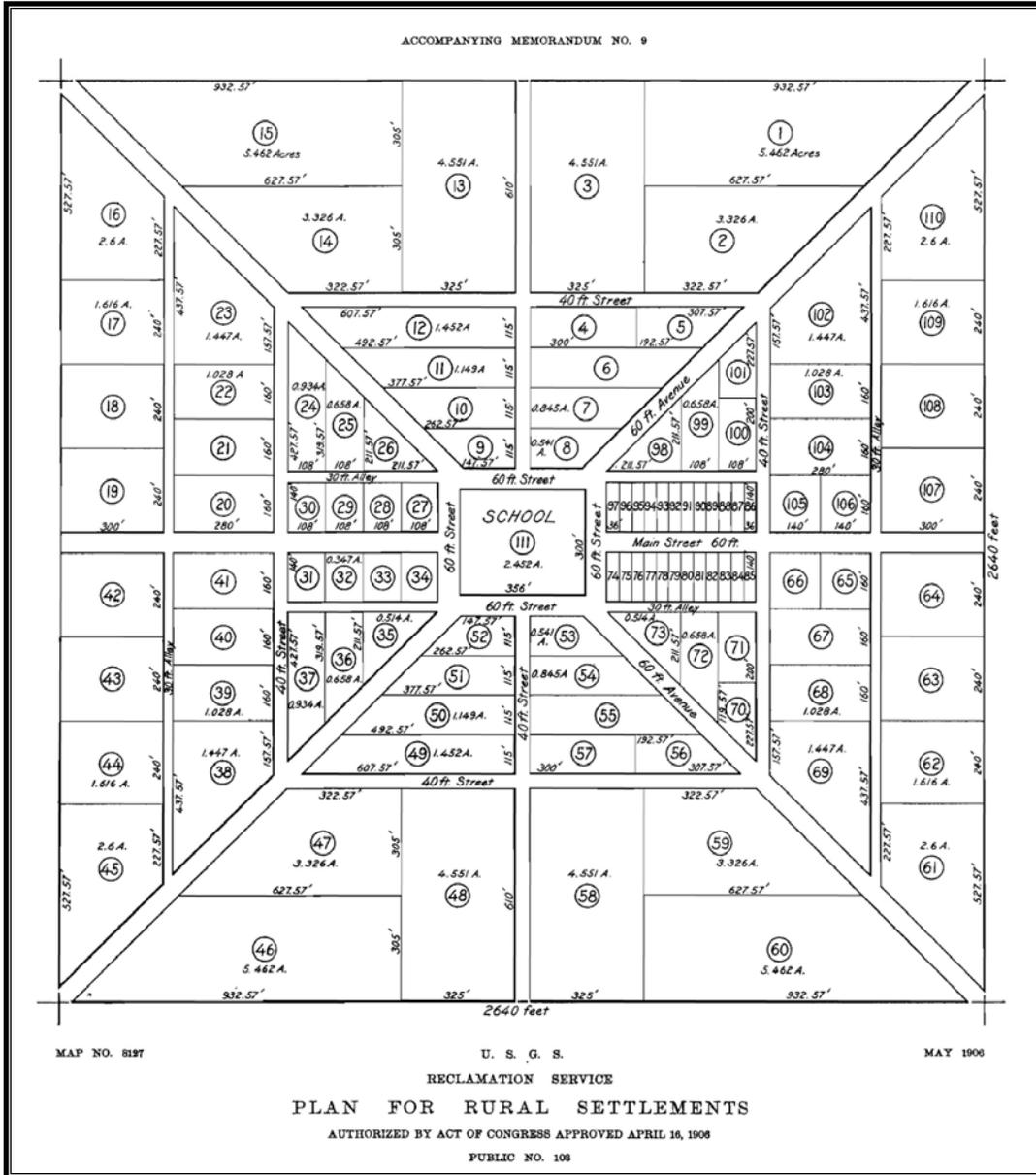


Figure 1.67 1906 Reclamation model townsite plan.



Figure 1.69 Minidoka Project. Main street in early days of Rupert, Idaho.

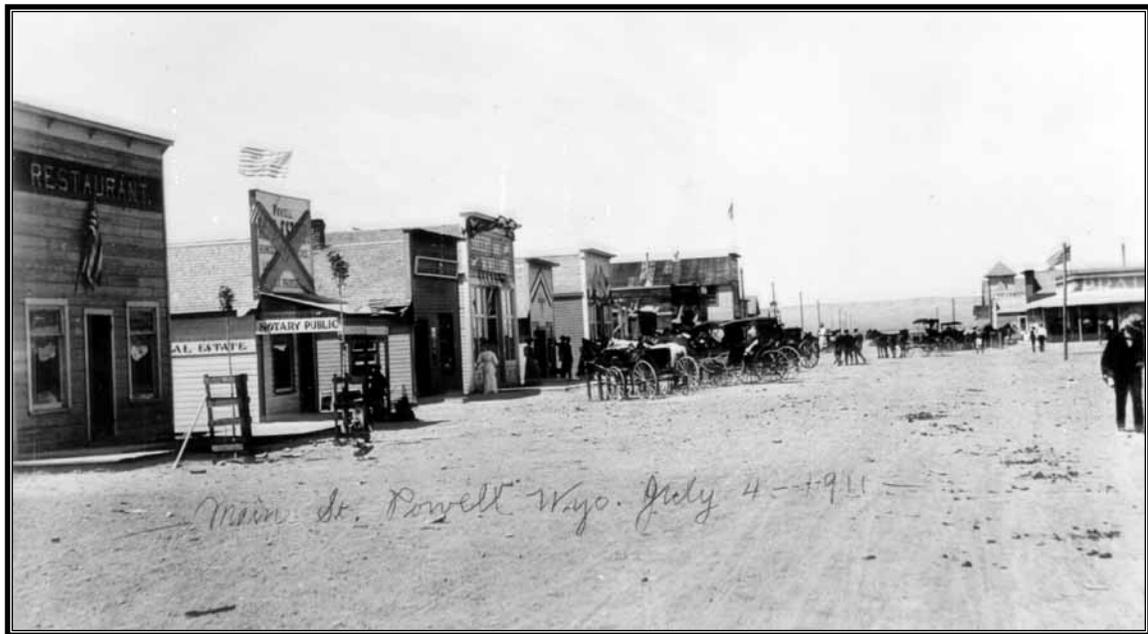


Figure 1.70 Shoshone Project. Main Street in Powell, Wyoming, July 4, 1911.

The Role of Architects

With few exceptions, Reclamation designed its early buildings without the participation of professional architects. No evidence was found suggesting that the expertise existed within the Bureau. This reflects Reclamation's engineering focus and attitude that buildings were clearly ancillary features intended to be functional, often temporary, and not subject matter for creativity and time-

consuming innovation. Presumably, Reclamation believed that engineers capable of mastering structures as complex as dams and powerplants also had the necessary skills to craft buildings. Perhaps Reclamation leadership was also under the impression, or had been instructed, that authority to use the Reclamation Fund to hire architects was prohibited. Although not specifically articulated in Reclamation instructions or manuals, district engineers and, later on, project engineers were apparently responsible for determining the need for, and even the design of, buildings in addition to irrigation features. Reference to this can be found in early project correspondence and plans.

For example, on the North Platte Project, John Field, the district engineer, wrote to Newell in April 1905 that he had drawn up plans for buildings needed at an engineers' headquarters camp to be established in Wyncote, Wyoming. On the Lower Yellowstone Project, the original buildings at the main headquarters in La Mesa, Montana, were constructed in the spring of 1905 according to plans devised in the Denver office.⁵⁰ Frank E. Weymouth, the project engineer, found the completed buildings inadequate in terms of size, number, and quality of construction. In August 1905, he showed sketches of proposed modifications and new buildings to his supervising engineer, Hiram N. Savage. Weymouth's plans met with approval, and the improvements were made. The June 30, 1908, drawing for the permanent office building on the Buford-Trenton Unit of the Williston Project bears the name of G.O. Sanford, project engineer, and has a signature line for the supervising engineer (figure 1.42). In other cases, supervising engineers apparently provided building design assistance; plans for the Milk River Project headquarters office in Malta, Montana, were developed in 1912 in the supervising engineer's office in Helena.

Not surprisingly, the rare documented references to architects were, in almost all cases, found in association with permanent office buildings. In a few instances, Reclamation sought the advice of an architect; in even fewer cases, Reclamation actually hired one to produce a building design. The earliest reference to architects occurs in correspondence relating to the Uncompahgre Project headquarters office. Because this was the first permanent Reclamation headquarters, A.L. Fellows, district engineer, may have felt that the design of such a substantial structure was beyond his abilities, causing him to seek the expertise of an architect. On October 1, 1904, Fellows sent proposed specifications to Newell and noted that they had been revised by a "competent architect." There is no mention as to whether the building plans themselves received any input from the architect, and the drawings bear no such signature.

At about the same time, D.W. Ross, district engineer in Idaho, conferred with an unnamed architect to design the previously mentioned permanent building for initial use as quarters for engineers on the Minidoka Project, and for later

occupancy by the power superintendent at Minidoka Dam. When Ross sent Newell the preliminary watercolor sketch of the attractive Bungalow, presumably executed by the architect, he wrote: "I think we should construct this of rubble masonry throughout in a style which will present a substantial appearance, the essential features of construction furnishing the ornamentation and finish."⁵¹ Ross then submitted plans and specifications prepared by the architect to the Washington office for staff review. The assignment was given to C.R. Olberg, an engineer who had previously worked as a structural steel draftsman in the Treasury Department's Office of the Supervising Architect. Because of his experience, Olberg was considered "more familiar with this kind of work than anyone else we have at hand." This remark provides further evidence of the lack of architects among Reclamation's ranks.⁵² Olberg prefaced his critique of the plans and specifications with the statement: "I am not an architect—only an engineer—and while it is hard to design, it is easy to criticize; this fact should be kept in mind." In the end, Olberg's comments on the design were inconsequential because the plans were never executed.

In 1906, when District Engineer Joseph Jacobs proposed a new headquarters office for the Yakima Project, he also deferred to an architect (figure 1.71). Plans for the handsome Foursquare building bear the name of a local architect, W.W. DeVeaux, and exhibit a more fully developed stylistic treatment than Reclamation's engineer-crafted buildings. The design originally lacked the front porch which, to Jacobs, presented too severe an appearance. Supervising engineer David C. Henny agreed and recommended to Newell "that the design is somewhat barren by reason of the absence of a porch, the cost of which was estimated at \$100.00, and (I) believe that this additional expense might well be incurred for the architectural effect."⁵³ Final plans included the porch, which did indeed enhance the building and brought the total construction cost to about \$6,500.

When Reclamation decided to move out of rented office space on the Boise Project in 1911, it hired a local architectural firm by the name of Wayland and Fennel to design a project headquarters building in Boise, Idaho. The substantial two-story, L-shaped brick structure with hipped roof is unique to Reclamation and stands apart from its engineered buildings (figure 1.72). Decorative elements typical of the period included segmental arch window openings and brick string courses. The interior featured wainscoting, corniced headers over door and window openings, and a centrally located open stairway. In addition to electric lighting, the building was wired for telephone. Completed at a cost of around \$18,000, the building was the most expensive one yet constructed by Reclamation and remained so for the next 20 years. Although recently transferred out of Reclamation ownership, the building survives and is due to be renovated (figure 1.73).



Figure 1.71 Yakima Project. Headquarters building in Yakima, Washington. September 1910. The architect-designed building represents a fine example of the American Foursquare. Unfortunately, the building no longer exists.

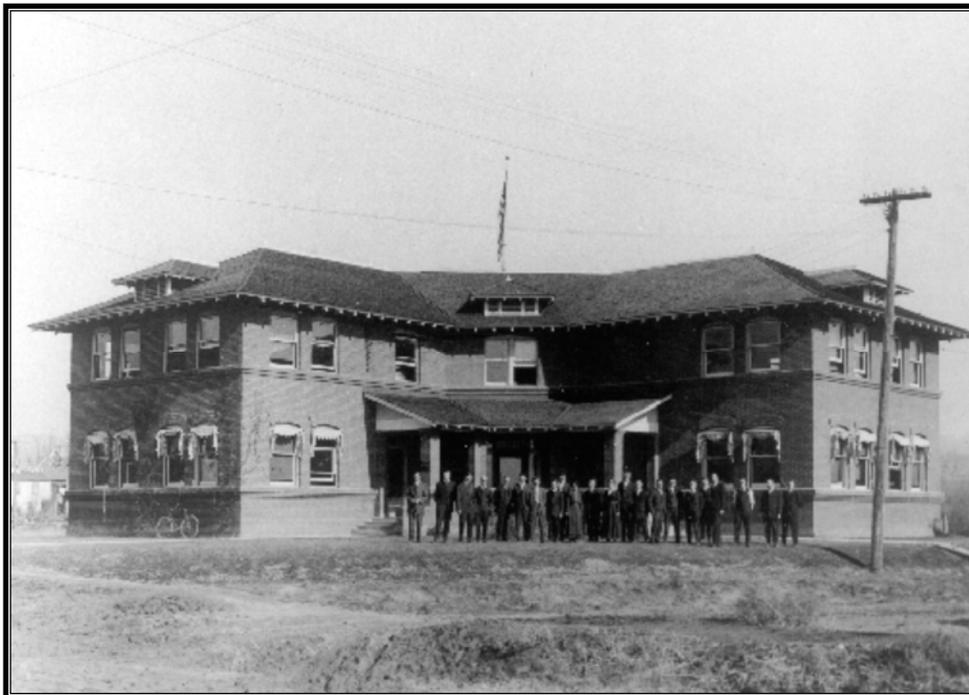


Figure 1.72 Boise Project. Headquarters office in Boise with clerical and engineering force in foreground, February 1916.

Figure 1.73 Boise Project office in 2007. In 2006, Reclamation transferred the building to the Idaho Historical Society. (Source: David Walsh, Bureau of Reclamation)



The last example found of an early building involving the hand of an architect is the extant headquarters office at the second Umatilla Project complex constructed in Hermiston, Oregon (figure 1.74). Edward A. Miller, a Portland, Oregon, architect whom little is known about, created the design.⁵⁴ His preliminary undated sketch shows an elaborate eclectic style building with Italian Renaissance elements. Miller's blueprint drawings of the structure, dated May 1914, depict a much simpler design (figure 1.75). Presumably because of cost, Reclamation requested the modifications. The surviving two-story, "stripped down," rectangular plan building is of wood-frame construction with stucco cladding. It has a flat roof and deeply overhanging eaves (figure 1.76).⁵⁵



Figure 1.74 Umatilla Project. Hermiston, Oregon, headquarters office in 1920. The architect's original elaborate design for this building was considerably simplified.

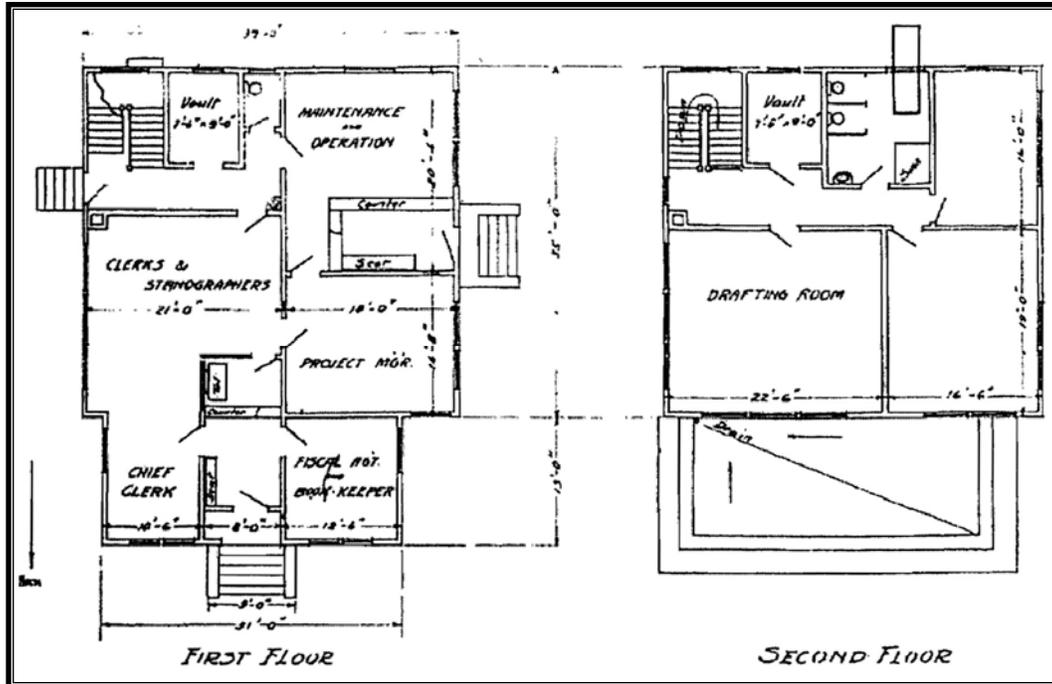


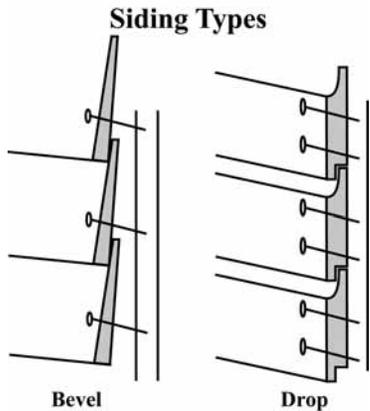
Figure 1.75 Umatilla Project. Headquarters office plans, 1914. (Source: Stephen Emerson, Umatilla Project Headquarters Buildings, Historic American Engineering Record No. OR-173)



Figure 1.76 The Umatilla Project office has been occupied by the Hermiston Irrigation District since 1926. The building is still owned by Reclamation. (Source: Mark DeLeon, Bureau of Reclamation)

Building Materials

The majority of Reclamation buildings were of wood. Unlike early frontiersmen who initially built log structures where source material was readily available, from the outset, Reclamation primarily used finished lumber. Reclamation's frame buildings exhibited a variety of exterior wood cladding. The type selected depended, to a certain extent, on whether buildings were to be temporary or permanent. The most common exterior wall covering on permanent frame buildings was either horizontal bevel or drop siding. For example, drop siding was used on the "permanent" Wyncote camp buildings in 1905 and on the Buford-Trenton Project office building. Plans for the latter, dated June 30, 1908, show 6-inch drop siding applied over outside sheathing and two courses of "red rosin building paper." The 1906 plans for the Garden City Project combined office building and residence specified the use of redwood clapboards laid 4 inches to the weather, "neatly fitted and sawed."



Sometimes bevel or drop siding was also used in temporary construction. Reclamation engineers, not necessarily that familiar with building construction, soon found that the two types of horizontal siding performed differently in harsh climates. At the previously discussed La Mesa camp on the Lower Yellowstone Project, one of the design modifications made in the summer of 1905 was the choice of siding.

In summarizing the construction, J.S. Conway, a project field assistant, wrote:

. . . On account of the rigor of the climate in these latitudes, it has been necessary to adopt a much heavier and more substantial type of construction than would at first seem economical for buildings of a temporary nature. . . In the first set of buildings the siding was placed directly on the studs, with an intervening layer of building paper. It was found, however, that the shrinkage of the lumber opened up many cracks, so that in the later buildings a sheathing of rough boards was provided next (sic) the studs, covered with building paper and then sided. Bevel siding has been found to be preferable to drop siding, as it gives a greater lap and insures tightness after a large amount of shrinkage.⁵⁶

The siding applied to other temporary buildings was more rudimentary and consisted of boards. In his 1905 letter to A.P. Davis, describing field camps for engineers, F.H. Newell wrote that: "The buildings are usually constructed of two thicknesses of board with paper between, painted on the outside, and with a paper

or metal roof.”⁵⁷ Another type of temporary frame construction consisted of wood board sheathing covered on the exterior with heavy building paper. Sometimes, vertical battens were installed to secure the wall cladding (figures 1.77 and 1.78).

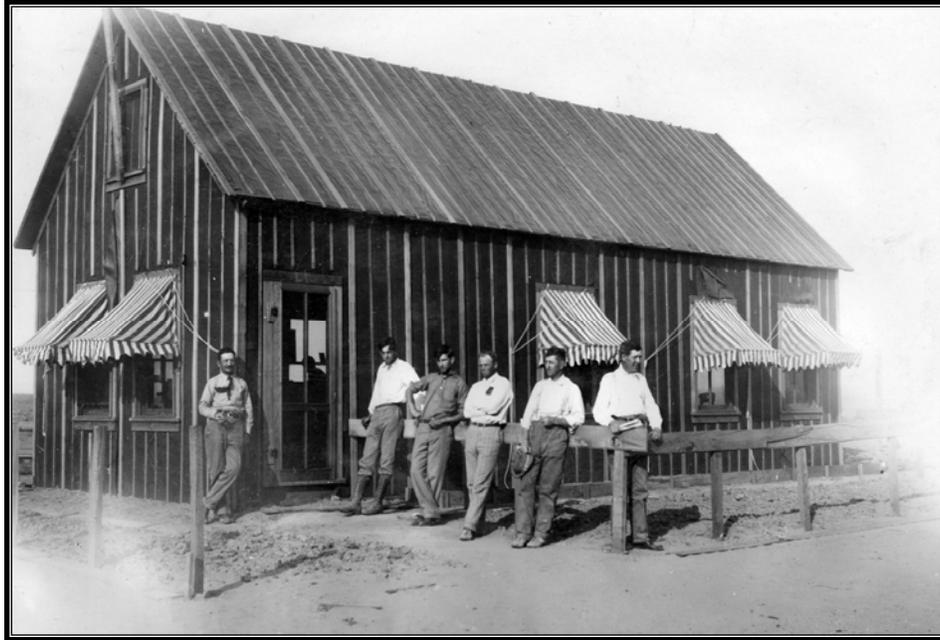


Figure 1.77 Umatilla Project. Office building with executive force at Cold Springs Dam, June 1907. Wood battens secure the heavy paper siding.



Figure 1.78 Uncompahgre Project. Office at River Portal, Colorado, 1907. Siding appears to be sheet metal or building paper. Pigs feed in the foreground.

In rare instances, Reclamation constructed permanent buildings of stone or brick. In addition to previously cited examples, on the Strawberry Valley Project, two brick dwellings were erected in 1908 at the power house near Spanish Fork, Utah, to accommodate mechanics. On the Minidoka Project, Reclamation opted to use brick for a one-story office building in Burley constructed in 1911, now in private ownership (figure 1.79). For the still extant office structure at Elephant Butte Dam in 1911, Reclamation employed the local tradition of adobe construction. Walls are of adobe brick covered with two layers of cement plaster. Unlike more common Spanish or pueblo-influenced adobe structures, the walls are protected from contact with rain by an overhanging roof.

Masonry was occasionally used where it was readily available. This occurred at the previously discussed dam tender's cottage at Pathfinder Dam. Since the nearest railroad connection was 45 miles away and all supplies to the remote site had to be hauled in by horse or mule train,



Figure 1.79 Minidoka Project. 1911 brick office in Burley, Idaho, as it appeared in 1959. Tile roofing is unusual for Reclamation buildings of the period.

Reclamation opted to use the same granite as for the dam, only in smaller blocks. Three locations, all within one-quarter mile of the dam site, provided stone for the project. No original drawings of the house have been located, leading to the conclusion that informal plans may have been developed onsite. Even more unusual than masonry construction was the use of concrete block. The only known example is the dam tender's house, constructed in about 1905, at Granite Reef Dam on the Salt River Project (figure 1.80).

For roofing, the most common material for permanent buildings was sawn wood shingles, and early specifications called for the use of redwood or cedar. In at least several instances, specifications required that shingles be treated with a creosote stain, commonly employed as a preservative and also applied for aesthetic reasons.⁵⁸ Even on temporary buildings, wood shingles were sometimes installed where other materials proved less than satisfactory. J.S. Conway described such a situation at the La Mesa camp in the same letter in which he discussed wood siding. "At (sic) was at first intended to use a heavy paraffined

roofing felt instead of shingles, but the examples of buildings so covered in the neighborhood showed it could not be depended upon in this dry climate.”⁵⁹ Elsewhere, inexpensive tar paper laid over roofing boards proved sufficient for temporary structures.



Figure 1.80 Salt River Project. Granite Reef dam tender's house, April 1910. This is the only known early Reclamation example of concrete block building construction. The house still stands.

Interior finishes also varied, depending on the nature of the building. Rough boards, tongue and groove boards, “beaver board,” beaded boarding, or, in rarer instances, plaster was applied to walls and ceilings of temporary buildings. For permanent structures, plaster was the preferred choice for walls and ceilings, although examples of tongue and groove boarding were also found. Wood boards covered the floors (figure 1.81).



Figure 1.81 Uncompahgre Project. Temporary office building at Lujane, Colorado, 1907. Unpainted boards cover walls and ceiling.

Access to Building Materials

Most of the finished lumber used in Reclamation buildings was purchased rather than milled onsite. Lumber yards existed in more populous areas; by 1903, major railroad lines and smaller spurs delivered goods to cities and towns throughout the West. Nonetheless, the logistics of getting construction materials to faraway construction sites often proved to be a challenge. Where possible, Reclamation located its buildings near railroad lines to reduce the distance that lumber and other supplies would have to be hauled. It was also common for Reclamation to locate storage yards near railroad sidings so that purchased materials could be unloaded from train cars and warehoused until needed. Such was the case on the Newlands Project, where Reclamation established a storage yard in Fallon within the first few years of the project.⁶⁰

In preparing for construction of the Wyncote, Wyoming, camp in 1905, John Field hoped to purchase property close to the railroad station in Wyncote, in spite of an offer of free land about 3 miles away. Ultimately, Reclamation selected a site about one-half mile from the railroad station, also donated by local residents.⁶¹

In 1912, when the Northern Pacific Railway completed a branch railroad line between Glendive and Sidney, Montana, that did not pass directly by the La Mesa camp, Reclamation decided to establish new headquarters alongside the railroad so that goods and equipment could be easily shipped. Reclamation proceeded to relocate most of the buildings at La Mesa to a small tract of Federal land adjacent to a siding of the railroad at the fledgling town of Savage, about 22 miles south of Sidney.⁶²

The Milk River Project headquarters building in Malta was constructed near the railroad line. Project histories relay an incident involving a carload of windows, and window and door frames that had been ordered by Reclamation for the building and shipped from Stillwater, Minnesota. While standing on the side-track at Malta, the carload of material was set on fire by a tramp and completely destroyed. Rather than wait for a new shipment, Reclamation purchased the material locally and had the frames made by hand.⁶³

In Boise, Reclamation selected a site close to a rail line for its Boise Project headquarters office. This prompted Newell to suggest a few changes after reviewing the building plans, especially with regard to better fire protection. He wrote, "It would seem, however, in view of the close proximity of railroad yards and passing engines that some less inflammable [sic] form of roof construction would be desirable." He recommended that the wood shingles be treated with creosote prior to laying them, rather than after.⁶⁴

To transport materials and equipment from the nearest railroad siding to a construction site, Reclamation initially relied on horse- or mule-drawn wagons. The difficulties in hauling supplies to the Pathfinder Dam location were described earlier. On the Huntley Project, July 1905 specifications for the two engineers' cottages that provoked W.N. Morrill's disgruntlement included the following instructions for bidders: "The Contractor will furnish all material required for construction and deliver same at his expense to nearest railroad siding or spur tributary to location of buildings, and will see that cars are set out at convenient and suitable points accessible to wagons and teams to allow rapid unloading." Reclamation assumed responsibility for hauling materials from the railroad yard to the building sites.⁶⁵

Sometimes, Reclamation constructed railroad spurs off of established lines to facilitate the movement of goods. Before construction of Arrowrock Dam could begin, Reclamation had to develop a transportation system. The only existing access to the site was an old wagon road that was inadequate to support a high volume of traffic and heavy loads. To solve the problem, Reclamation decided to improve the existing road and construct a railroad to the dam from Barber, the end of the rail spur from Boise. Reclamation began construction of the 17-mile railroad in late May 1911, and the tracks reached Arrowrock Dam in early November of that year. On the Yakima Project in Washington, Reclamation built a 700-foot-long spur track off of the Chicago, Milwaukee, and St. Paul Railroad to transport materials to the site of the Keechelus Dam construction camp in 1912.

Occasionally, where access to a building site was exceedingly difficult and trees were plentiful, Reclamation found it more expedient to use wood found and cut onsite. Such was the case during construction of the Gunnison Tunnel on the Uncompahgre Project. A cabin of unpeeled logs, presumably erected by Reclamation, served as an engineer's office at the east end of the tunnel, which was located in a steep forested canyon (figure 1.82). At Bumping Lake Dam camp on the Yakima Project, buildings were made of lumber that was harvested and milled onsite. Horse teams hauled the sawmill and other equipment up a rough wagon road constructed by Reclamation between 1906 and 1908 to the previously unreachable location. On the Milk River Project, Reclamation established a sawmill operation as early as 1906 on the St. Mary Storage Unit because of the distance from major railroad sidings (figure 1.83). Lumber furnished by the government sawmill was used in the construction of several temporary camps as well as at Camp Nine. Special permission was granted on August 10, 1912, by the acting Secretary of the Interior, Clement Ucker, to cut timber in Glacier National Park for use on the project.

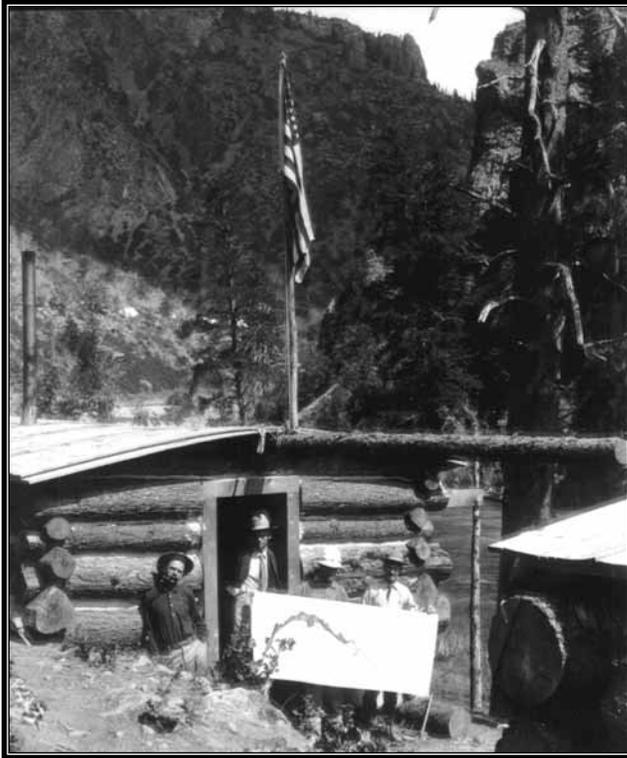


Figure 1.82. Uncompahgre Project. Crude log cabin serves as office at east end of Gunnison Tunnel in Colorado. Men pose with project map.



Figure 1.83 Milk River Project. Reclamation sawmill buildings at foot of St. Mary Lake, Montana, October 1906.

Construction Methods: Contract or Government Forces

Reclamation employed two methods to accomplish construction of buildings: contracts or government forces. The expression “force account” was often substituted for the latter, but created confusion, as it had no standard definition. Initially, “force account” meant “. . . by the tools and appliances furnished by the reclamation service and by men employed by the day or by ordinary contract.” Very early on, the term was also used to describe labor performed by Reclamation directly through its own employees. Although this became the more common definition, it was not consistently applied, and the 1938 Reclamation Manual instructed that the phrase “work by government forces” should be used rather than “force account.”⁶⁶

Even though the government’s intent was to contract for most work, and in particular costlier investments, it often proved easier and less expensive on modest buildings to hire laborers directly. In a July 12, 1905, letter from Newell to A.P. Davis regarding the construction of small buildings for construction engineers, he explained that “Experience has shown that these buildings can be most economically erected by purchasing lumber the ordinary way by competitive informal bids, putting the buildings up by day labor. Advertising for buildings to be erected by contract is unsatisfactory and dilatory.”⁶⁷

In contemplating the construction of the rubble masonry engineers’ quarters at Minidoka Dam in the fall of 1904, D.W. Ross suggested the use of Reclamation forces. He wrote to Newell that during the winter months, both men and horse teams at the site would not be fully engaged and could be spared for building construction. “In this way,” he stated, “we believe the building can be erected at a minimum cost.”⁶⁸

When Reclamation did solicit construction bids for buildings, it sometimes required that the contractor provide all the materials; in other instances, it specified that the government would supply certain or all materials. Examples of the former include the specifications for the Uncompahgre Project office in Montrose and the two 1908 brick dwellings on the Strawberry Valley Project. In the case of the 1906 office building on the Williston Project, the government furnished all materials. For the two 1905 engineers’ cottages on the Huntley Project, Reclamation specified that it would provide the stones for the foundations, and the contractor would furnish all the rest of the building materials. It was not unusual for Reclamation to supply the cement for concrete and require the contractor to procure everything else. This is hardly surprising given Reclamation’s use of vast amounts of cement in its dam construction. In some cases, Reclamation further specified that it would build the concrete foundations.

Sometimes, even when Reclamation initially planned to contract for construction of a building, it requested approval from the Secretary of the Interior to use government forces when bids came in too high. This occurred on the Milk River Project when bids for the office building in Malta were all rejected and government forces were used instead for all but the plaster work, interior finishing, and exterior painting. On the Garden City Project, acting Secretary of the Interior Thomas Ryan approved the use of force account for all aspects of the combined residence and office building when bids exceeded Reclamation estimates in July 1906. On the North Platte Project, when bids for six frame buildings at the Wyncote camp came in high, Newell determined that it would be more advantageous to purchase the lumber and materials by competitive bids and then hire the labor. "In fact," he wrote, "I think this will prove to be the most economical way in the future."⁶⁹

The Deciding Factor: Cost

Ultimately, the underlying factor dictating the design of all Reclamation buildings boiled down to cost. A unique aspect of Reclamation, established in the Reclamation Act of 1902, was the clause requiring project settlers to repay project construction costs over a specified period of time. This included expenses for project buildings.⁷⁰ While legislation modified the details of repayment at various times, the principle did not change.

Because of the repayment provision, Reclamation took great care from the outset not to invoke criticism for excessive spending. In Newell's introductory remarks at the First Conference of Engineers of the Reclamation Service, held in Ogden, Utah, in September 1903, he referred to the challenge facing the attendees when discussing field offices: "The district engineers must bear in mind that much of the future efficiency of the service depends on creating a good opinion in the minds of the public, particularly in a farming community. If there is apparent extravagance, even in small matters, this will reflect unfavorably."⁷¹ Newell reiterated the same theme at the Second Conference of Engineers of the Reclamation Service in 1904 when he stated: "As employees of the government, we have no excuse for not doing good work and completing permanent structures; but the credit which is properly attached to these is largely modified by consideration of their cost. Extravagance can not be tolerated."⁷²

A Reclamation engineer articulated this sensitivity in an August 1914 article about Elephant Butte Dam on the Rio Grande Project in New Mexico. E.H. Baldwin wrote:

Arriving at the upper camp the visitor is taken to Quarterhouse No. 1, which is a commodious, comfortably equipped, modern building, the home of many of those connected with the engineering or clerical force, and containing a number of rooms served for guests. After registering, he is free to gaze about and express admiration or condemnation at finding such comfortable quarters for the men who are working night and day to impound water for the thirsty lands of New Mexico and Texas.⁷³

Building plans ultimately had to be submitted by district and, later, by project engineers to Reclamation headquarters in Washington, DC, for approval. There, plans were carefully scrutinized for cost; if it appeared high, Newell required adequate justification before authorization to proceed further was granted. If headquarters considered the justification insufficient, project engineers were advised to modify plans to reduce the building expense. A few examples illustrate the type of dialogue that occurred between requesting engineers and Newell. When Charles Gordon, district engineer on the Garden City Project, presented a cost estimate of between \$2,000 to \$3,000 for the previously mentioned office and, later, pumping plant superintendent's residence, the acting chief engineer informed him that the cost seemed a little high given the total project cost. In a letter to Newell, Gordon argued that cost was not the only factor to be considered; it was important to offer enough conveniences to retain quality employees. He wrote: "The writer does not believe that the total cost of a project should be the criterion in this case, but rather the provision for a superintendent that can be retained, who is sufficiently learned in mechanics and electricians as to render the possibility of extensive damage to this machinery to a minimum."⁷⁴ Newell accepted Gordon's justification and recommended construction approval.

In December 1906, Joseph Jacobs sent three designs for the proposed new Yakima Project headquarters office in Yakima to his supervising engineer, David C. Henny, with a recommendation to construct the most expensive one at \$8,300. In discussions with Jacobs, Henny unsuccessfully attempted to reduce the costs down to \$5,000 maximum. He forwarded the three designs to Newell and asked for approval of the least expensive one, which had an estimated cost of \$5,300. Henny realized that even this was high and wrote in defense that "in view of the large amount of money which will gradually be spent in the Yakima Valley and the fact that this office will constitute a central point upon which three, four or even five projects may center, the present expenditure of \$6,000 or less for an office building would be justifiable. . . ."⁷⁵ Once again, the justification satisfied Newell and he approved the expenditure.

In the case of a proposed concrete or brick office building at the new headquarters complex in Fallon on the Newlands Project in 1909, Newell was not so acquiescent. He deemed the estimate of about \$5,600 excessive and instructed that the building should cost no more than \$4,000, if possible, and in no event

more than \$4,500. E.G. Hopson, the supervising engineer, wrote back that he had spent a lot of time deliberating the expense and had initially intended to restrict it to about \$4,000. He went on to say:

I find, however, that a building of the size and character required by the Service, being situated on the main business street in Fallon, would cost not less than the amount estimated. A cheaper or smaller building can, of course, be erected, and there is no question about our being able to build an office building for \$4,000. Experience has shown, however, that it is most economical for us to build of full size at first. We built an office building at Klamath for about \$4,500 and are now extending it in order to obtain the necessary accommodation.⁷⁶

Subsequently, plans were revised, and 5 months later, Reclamation headquarters recommended approval for a frame building costing \$4,431.

Secretary of the Interior Approval

Newell's intense scrutiny of building costs was understandable given that ultimate authorization had to be obtained from the Secretary of the Interior. At the First Conference of Engineers of the Reclamation Service, Newell advised those present that, "Authority to purchase materials and execute work by contract or otherwise, in the manner most economical and advantageous to the United States, must be granted by the Secretary of the Interior in one of various forms."⁷⁷ Because the Reclamation Act established that disposition of the Reclamation Fund belonged to the Secretary, authorization had to be obtained for specific purchases or, more generally, for the construction of particular units or portions of projects.

No description was found detailing the requirements for obtaining Secretarial approval for individual Reclamation buildings. While Reclamation inferred that authorization of project construction by the Secretary also included broad approval of its associated buildings, it appears that the basis for requesting permission from the Secretary for specific buildings was, to some extent, tied to cost. Reclamation requested authorization for larger buildings or groups of buildings with an estimated expense over several thousand dollars. It is unclear when plans for residences and outbuildings typically costing several hundred dollars or less were also subject to individual review and approval by the Secretary. For example, on the North Platte Project, Newell wrote to Secretary Ethan Allen Hitchcock on May 31, 1905, requesting permission to purchase five portable houses for engineers and their assistants at a total cost of \$3,000. The Secretary responded that he granted authority to purchase the houses at a price not to exceed \$3,000, using monies from the Reclamation Fund.⁷⁸ By contrast, on the

Umatilla Project, Newell approved the construction of six buildings totaling \$2,725, apparently without requesting permission from the Secretary. Likewise, on the Huntley Project, when H.N. Savage, supervising engineer, sent a request to Newell to erect a storage building not to exceed \$400, the latter gave approval.⁷⁹

Given the sheer volume of requests sent to the Secretary for all types of matters, it might seem that the construction of individual, rather insignificant buildings would not have received much attention. While some of Reclamation's requests were approved without question, others required detailed explanations. For instance, when U.S. Geological Survey Director Charles Walcott submitted the draft advertisement, proposal, and specifications for the Garden City Project office building, Secretary Hitchcock responded that he wanted to be informed "specifically with respect to the necessity for the construction of this building and the uses to which it will be put, coupled with your recommendation in the premises." In his lengthy response, Walcott wrote:

By constructing the building at the present time the cost of a temporary structure which would otherwise be necessary during construction will be saved and the building will serve for the permanent quarters of the men who are to operate the plant. The estimated cost is between \$2,000 and \$3,000 and is regarded as reasonable for a building of the character required. . . The building being an integral part of the project the authority given to construct the project included the building just as it did the electrical and pumping machinery and the plans and specifications were submitted for the approval of the Department in the same manner as the plans and specifications for the electrical and pumping machinery.

Walcott's explanation satisfied Hitchcock, and he granted approval of the draft documents. When the construction bids came in above the authorized amount of between \$2,000 to \$3,000, Reclamation again requested approval from the Secretary, only this time to reject the bids and construct the building by force account. Acting Secretary Thomas Ryan concurred with the request.⁸⁰

Similarly, on the Newlands Project, when the preferred bid, albeit not the lowest, for the office building in Fallon came in at \$4,431 and was submitted to Secretary Richard A. Ballinger for approval, the latter questioned whether necessary office accommodations could be located in Fallon for less money. Reclamation's acting Director A.P. Davis responded that the Department had, in fact, already approved the expenditure of not more than \$4,500 and that "a smaller or cheaper building would not answer the purpose." Just two days later, Secretary Ballinger approved the construction.⁸¹

Not surprisingly, project engineers anxious to move ahead with construction sought ways to expedite the involved review process, which entailed intense

scrutiny of drawings, specifications, and costs. During the design phase for the Boise Project office building in June 1911, Supervising Engineer F.E. Weymouth wrote to Newell asking for permission to revise the architect's plans and advertise locally for the construction of the building without obtaining his approval of the plans and specifications. Weymouth expressed concern that at least a month, and possibly two, would be lost, and he was anxious to start construction before the fall. He also noted that the Secretary had already approved the purchase of the lot and construction of the building.

Newell responded to Weymouth that under Service Order 171, when the estimated value of a contract exceeded \$10,000, and when special nonstandard features were included in specifications, they had to be submitted to Reclamation's director for approval. Since the Boise Project office plans and specifications met both of those criteria, Weymouth would have to submit them for review. In closing, Newell wrote that he was unaware of any instances where such a critique had taken his office 2 months to perform. Indeed, the Washington office reviewed the plans and specifications in less than 2 weeks and requested a number of changes.⁸²

When the architect billed Reclamation for services rendered, Weymouth received a letter from A.P. Davis, acting Director, criticizing him for not noting the use of an outside firm in the request for authority to construct the building. Davis wrote: "It is not the necessity for this employment, but the method thereof, which is questioned. There seems to be a general tendency in the field to disregard Department regulations, throwing on the approving officer in the Washington office the responsibility for making explanations to the Auditor or the Secretary's office, for just this class of unauthorized expenditures."⁸³

Aside from issues of cost, another cause for delay in getting permission from the Secretary to construct a building was proof of land title. Under section 355 of the Revised Statutes of the United States, no public money could be spent on land purchased by the United States for a public building until the Attorney General had validated the title and the consent of the legislature of the State had been obtained. In some cases, Reclamation acquired private land for buildings; elsewhere, citizens eager to entice Reclamation to their community offered land for buildings at no cost. Either scenario could impede the building approval process, due to the necessity of first getting clear title. Secretary Hitchcock rejected the initial advertisement and notice to bidders for the Uncompahgre office building because Reclamation had not yet obtained clear title to a parcel being purchased. He instructed Charles Walcott to amend the notice to bidders with a disclosure to that effect. A number of minor defects in the title were, in fact, identified by the U.S. District Attorney that had to be cleared before final construction approval was granted.⁸⁴

Development Of Standardized Designs

With a far-flung cadre of engineers designing everything from canal turnouts to bridges to buildings, Reclamation staff discussed and debated the need for some uniformity in specifications and designs for constructed works from the very beginning. Opinions differed on everything from what types of structures warranted standardized plans, to what size paper and how many folds should be used for drawings and specifications, to what language should be required in all specifications.

When Newell convened his First Conference of Engineers of the Reclamation Service for a 4-day meeting in September 1903, his goal was to bring together Reclamation's principal engineers to become better acquainted with each other and to discuss the new organization and various aspects of the work being performed. Among the many topics addressed was the need for standard designs. Before the meeting adjourned, Newell appointed a Committee on Standard Plans and Specifications to develop a proposal for the preparation of standard designs. He recognized that standardization would lend a degree of uniformity to Reclamation works and save expense by preventing the redesign of the same features over and over again.

The committee consisted of three consulting engineers, John H. Quinton, George Y. Wisner, and Hiram N. Savage. It is unclear how often the committee met or whether they issued a report, but over the following year, Newell corresponded with at least one member, Quinton, on matters relating to the committee. In a May 10, 1904, letter to Quinton, Newell emphasized the immediate need for a general uniformity in plans. He suggested two possible options for facilitating this—assigning men with the appropriate skills to specific projects and keeping them there for months at a time, or assembling them at some central point from which they would make short trips to project localities.⁸⁵ Although Quinton's response was not found, it is clear the issue was far from settled.

Newell expanded the Committee on Standard Plans and Specifications at the Second Conference of Engineers of the Reclamation Service held in El Paso, Texas, from November 14-18, 1904. The new committee consisted of four members, including two original ones, Quinton and Wisner, and two new members, A.P. Davis, and L.H. Taylor, district engineer in charge of Nevada work. Quinton served as the chairman.

The conference adjourned to Washington, DC, for a 12-day session in January 1905, at the end of which the committee members presented a written set of recommendations to Newell. Although the suggestions were directed at

engineering features, they also applied in principle to buildings. It is worth quoting from that letter report, and other correspondence, to gain an understanding of the earliest thinking within Reclamation on standardized designs. The committee concluded that:

. . . plans of some of the smaller structures might be standardized. For the present-however, it is recommended that no effort be made to standardize the plans for the larger and more important structures. . . Every structure has a purpose to fulfill, and the design must be influenced more or less by local condition. . . A great deal must be left to the judgment of the engineer designing the works, and it may be noted that there is a vast difference in men's ideas. . . No two leaves on any tree, or on any number of trees, are exactly alike; no two dam sites, no two bridge sites, and no two headworks sites are exactly alike. . . So the standardizing of our plans must be a matter of growth. Many of the structures which we think are about perfect on paper, may, upon trial, develop weakness which must be provided against in future. We, therefore, recommend that a beginning be made on the standardization of smaller structures by selecting from the drawings of the different project engineers now in the Washington office, such as appear most suitable for types, and that one of the assistant engineers now in the Washington office be given charge of the work. His duty will be to examine and compare all the drawings now in the office bearing on each structure, and design a type of this structure which can be easily modified to suit a particular locality.⁸⁶

Newell reacted right away to the committee's report. On January 19, 1905, he appointed Washington office engineer C.R. Olberg to begin the standardization process. A few days later, Newell wrote to Quinton asking the committee to consider the use of competitions both within and outside Reclamation for the design of important structures. Newell felt that this might spur creativity and innovation. The committee did not agree and responded:

. . . to ask outsiders for competitive design for any important structure in the Reclamation Service, would simply be a confession of weakness on our part, and would be so considered by the profession generally. We see no objection, however, to having two or more plans made for the same structure by different designers in the Reclamation Service, so that the Project Board can make the designers give a reason for any departure from well recognized principles⁸⁷

The first indication found that Newell was also considering standardization of building designs occurs in a letter he wrote to A.P. Davis on July 12, 1905. In discussing the matter of small buildings for field engineers, he wrote, "We should have some standard plan, and bill of lumber, so that other buildings can be erected

on the basis of the experience gained. I suggest that you write to each Project Engineer who has put up such buildings, asking for a statement of the lumber and other material used in each building, approximate cost, and a drawing of each building showing principal features.”⁸⁸ Unfortunately, it is unknown whether Davis pursued this recommendation; no followup correspondence was found.

In 1906, Reclamation headquarters issued its first standardized designs for small structures: a set of plans for highway bridges. Three years later, when the preliminary edition of the *Manual Relating to the Work of the United States Reclamation Service* was published, standardized plans were available for highway bridge abutments, turnouts, drainage culverts, wooden drops, concrete flumes, wooden flumes, cast-iron gates, reinforced concrete retaining walls, concrete spillways, and buildings.

First Standardized Building Plans

Newell announced the completion of standard plans for a variety of building types in a memo dated June 8, 1907.⁸⁹ He enclosed standard plans for a lodging house, storehouse, engineer’s residence, office building, small mess house and mess house for 100 men, concrete vault, and a stable and wagon shed. He also included lists of required materials for all of the foregoing structures. Newell recognized that the designs would not suit every situation and instructed his engineers to “use these designs for all cases to which they are applicable. In special cases where cheaper or more expensive buildings are required by the nature of the use to which they are to be put, designs should be prepared as usual.” In closing, Newell solicited criticisms and suggestions for improving the designs (figures 1.84 and 1.85).

These first standardized building plans, dated May 1907, were designed by the Technical Section in the Washington office.⁹⁰ No initials or signatures exist on the drawings. It is unknown whether an architect provided any input or whether engineers alone drafted the designs. In any case, the drawings depict a series of simple, nondescript, one-story frame buildings clad with 6-inch bevel siding and enclosed by moderately pitched gable roofs. The latter are covered with cedar shingles laid 4-1/2 inches to the weather over sheathing and building paper. Windows are singly arranged, double-hung wood frame with multi-paned upper and lower sashes. The drawings show no permanent foundations; the buildings sit on wood sills. A partial cellar exists only on the plan for the engineer’s residence. For all but the storehouse and stable, inside wall and ceiling finishes consist of 4-inch bead boards, and finished floors are 4-inch-wide boards. The residential, office, and mess house structures all have porches extending across the front elevations.

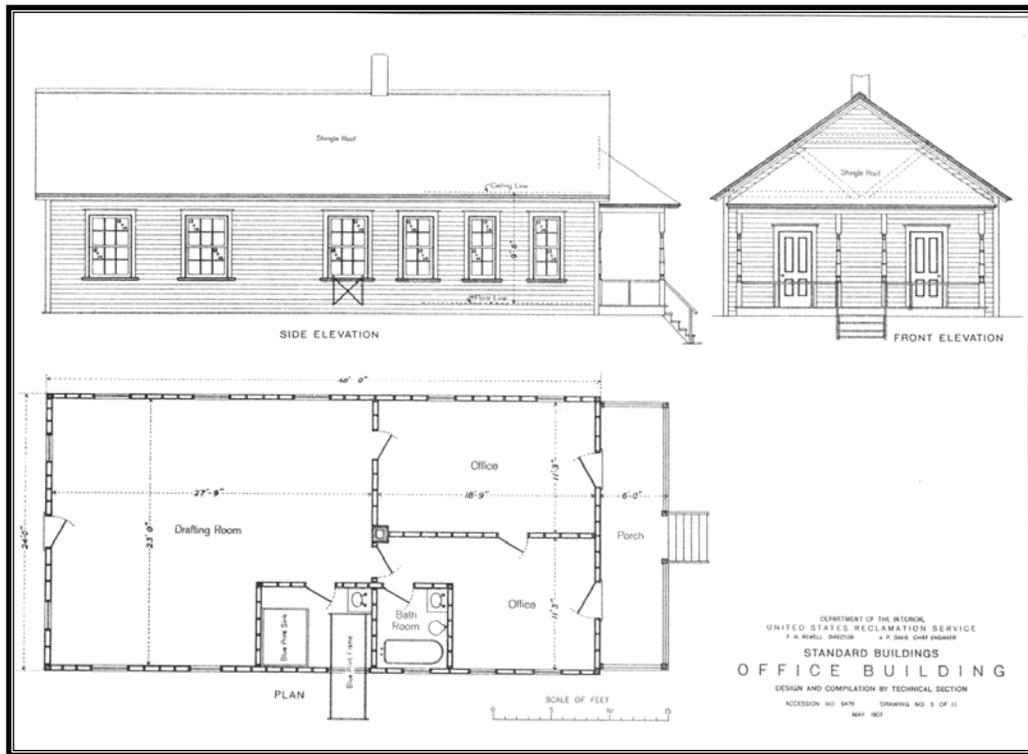


Figure 1.84 1907 Reclamation standard design for office building.

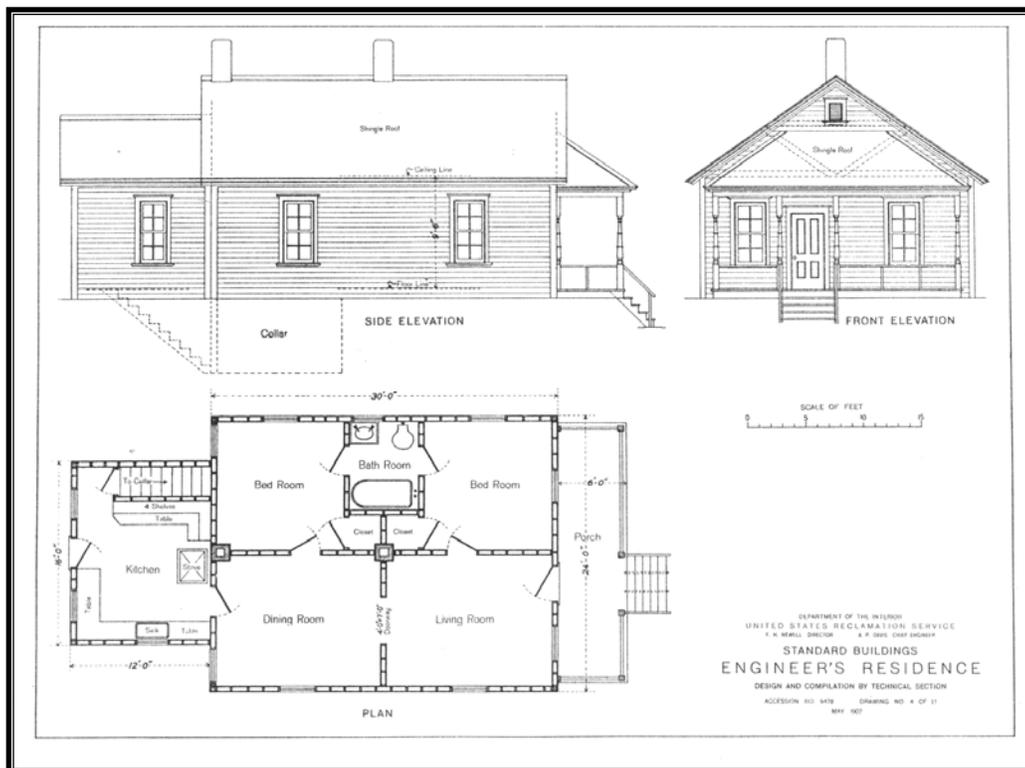


Figure 1.85 1907 Reclamation standard design for engineer's residence.

In spite of their simplicity, the buildings incorporated modern indoor plumbing; the lodging house, engineer's residence, and office building include bathrooms with tubs, sinks, and toilets. Kitchens equipped with stoves, sinks, tables, and shelves are present on the plans for the two mess houses and engineer's residence. The latter contains five rooms, including two bedrooms, each with closets. Total square footage of the residence is 910. The office, measuring 48 by 24 feet, contains a large drafting room, two offices, and a small blueprint room in addition to the bathroom. Chimneys and flues on the drawings, without fireplaces, indicate heating, presumably through individual coal or wood-burning stoves hooked into the flues. Wiring is not shown, so the intent to include electricity is unknown. The only reference to any decorative treatment is in the turned porch posts, a holdover from late Victorian designs. While residences and offices similar in design to those in the 1907 standardized plans were found, no exact duplicates were located. In reality, project engineers easily modified the simple building forms to meet their particular needs.

In fact, by the time Reclamation produced its first standard building designs, the Bungalow was rapidly gaining popularity across the country and was evident in cities and towns throughout the West. Hailed as "quintessentially American creations, the wave of the future," Bungalows emphasized simplicity, utility, and the use of natural materials.⁹¹ A type of house, rather than a style, the versatile and affordable Bungalow became the prevailing choice for smaller houses throughout the United States from about 1905 until 1930. Common elements included shallow-pitched gabled roofs with overhanging eaves, exposed rafter ends, and windows with divided panes in the upper sashes and single panes in the lower ones. Wide front porches, often incorporated under the main gabled roofs, extended living space to the outdoors. Interiors displayed built-in cabinets and bookcases, as well as closets. Decorative elements applied to Bungalows referenced other architectural styles, from Colonial to Craftsman, and added variety to neighborhood streets lined with the popular dwellings.

A flood of pattern books offered plans for modest and inexpensive Bungalows, and, not surprisingly, Reclamation engineers began to adopt its features for their own buildings beginning around 1909. One of the first applications of the Bungalow form can be seen on several frame residences constructed in 1910 on the Tieton Unit of the Yakima Project; the 1910 superintendent's house at Minidoka Dam, built of lava rock; and two stuccoed watchmen's cottages at the East Portal of the Strawberry Tunnel on the Strawberry Valley Project (figures 1.86 and 1.87). Three permanent cottages built for employees at the Minidoka Dam camp in 1914 exemplified the Bungalow (figures 1.88 and 1.89). Features of the often associated Craftsman style are evident on the Minidoka Project office buildings in Rupert and Burley, which are more residential than commercial in character (figures 1.63 and 1.79). Before long, the Bungalow

influence prevailed in Reclamation, and when it produced its second set of standard building plans 11 years after the first, the Bungalow, in a simplified form, was officially adopted.



Figure 1.86 Strawberry Valley Project, Utah. Watchmen's cottages at East Portal of Strawberry Tunnel, 1914. Frame Bungalow houses with stuccoed exterior walls and metal shingle roofs.

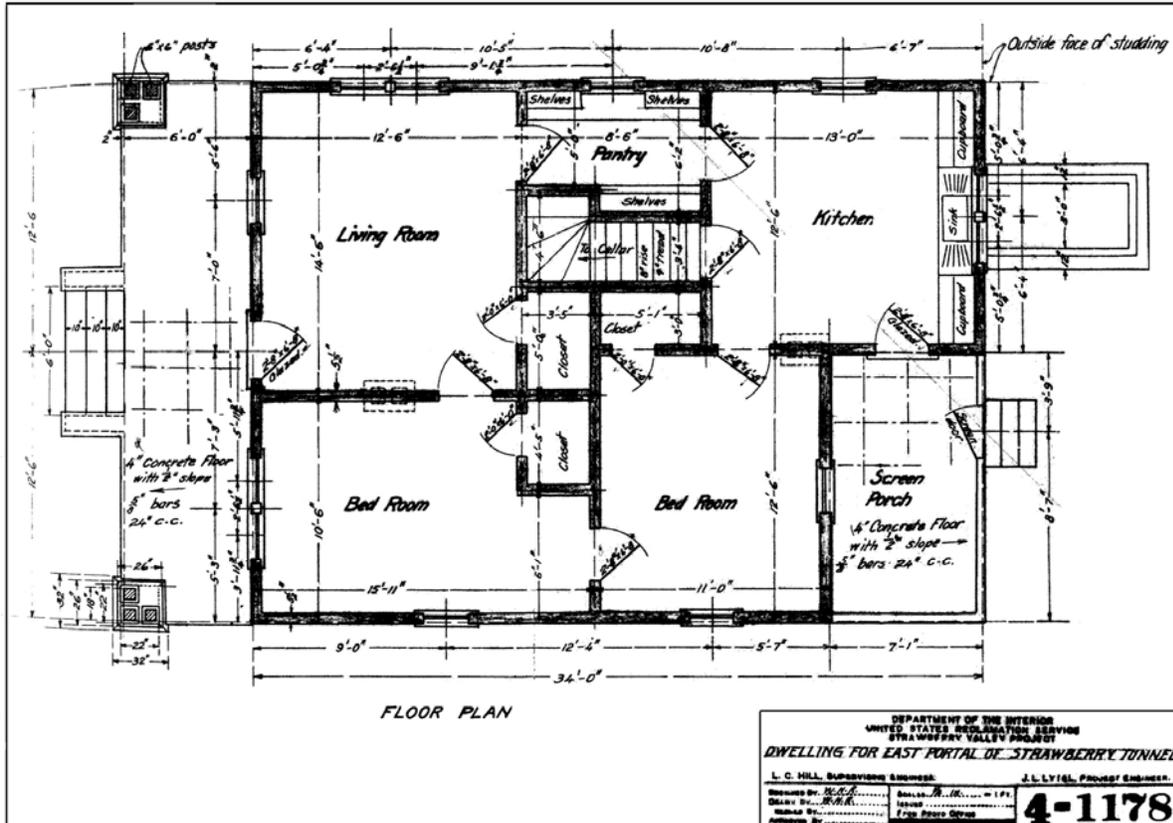


Figure 1.87 Strawberry Valley Project. Plan for East Portal watchmen's cottages, circa 1913. Plans originated in Provo office.



Figure 1.88 Minidoka Project. Three-room permanent Bungalow cottage built at Minidoka Dam camp in 1914. Three identical cottages were built at a total cost of \$5,298.



Figure 1.89 Rear view of 1914 cottage at Minidoka Dam camp showing screened sleeping porch. Each cottage contained a living room, dining room, kitchen, bathroom, and one bedroom.

Development of Standardized Specifications

In addition to addressing the topic of standard designs at the First Conference of Engineers, Newell described the need for consistent and thorough design specifications so that anyone bidding on Reclamation work would have clear and irrefutable directions. He did not distinguish between irrigation works or buildings when he stated that, "In all cases where advertisements are to be issued inviting proposals for material or labor, for works of repair or construction, or other like works of the Reclamation Service, it is required that full and detailed specifications be prepared and printed. . . ." ⁹² By then, standard "boilerplate" language for inclusion in specifications for most types of work had already been instituted. The language covered general requirements and relations between the contractor and government.

Newell reminded his engineers that in addition to the boilerplate text, specifications needed to include detailed language relevant to the particular work being advertised. This responsibility rested with engineers in the field, assisted by consulting and other engineers. Final approval for specifications had to be granted by the chief engineer or his delegate in Washington, but only after they had been reviewed and critiqued by a board of engineers. ⁹³

Following the First Conference of Engineers, Newell sent a letter to Quinton, requesting his opinion on the optimal paper size for Reclamation-issued specifications. In his response, Quinton wrote that he had conferred with A.P. Davis, assistant chief engineer, and they recommended regular pamphlet size (5-1/2 inches by 9 inches). ⁹⁴ The discussion did not end there, nor was the matter settled; correspondence over the next several years among various Reclamation employees reveals much diversity of opinion on the subject of standard sizes for drawings and specifications. Debate centered on preferred paper sizes, number of folds, and method of binding that would be most convenient for filing, handling in the field, and transporting. By 1909, guidance had been established; instructions provided in the preliminary edition of Reclamation's Manual Relating to the Work of the United States Reclamation Service, state: "Publisht [sic] maps, drawings and plans accompanying printed specifications are as far as possible issued with a uniform height of 10 1/2 inches. No definite limit is placed on the length, which may extend to any reasonable number of folds." ⁹⁵

Concurrent with the deliberations on optimal paper sizes, Reclamation's top engineers continued to make suggestions for improving the content of specifications, which exhibited considerable disparity in quality and level of detail. This occurred, in part, because of the multi-layered and sometimes slow-going review process; in order to move ahead with construction, specifications were often approved that did not meet the highest standards. To

address this situation, on May 28, 1906, Reclamation headquarters issued a Circular Letter on specifications that included proposed modifications to portions of the standard language, as well as notes relating to the preparation of detailed specifications. The intent was to establish more uniformity in the important technical details and in the verbiage so that there would be no misunderstandings on the part of contractors bidding for work. The Circular Letter noted that to further improve the quality of specifications, standard ones for various types of work would be developed and occasionally sent out to the field for evaluation and critique.⁹⁶

A review of some early building specifications provides examples of the differences in format and level of detail that generated such concern at headquarters. The earliest specifications found for a Reclamation building are those for the Uncompahgre Project office in Montrose, Colorado. Assigned Number 21, they were prepared in the Denver office, presumably by A.L. Fellows, the district engineer in charge of Colorado projects. As described earlier, the specifications were reviewed by a “competent architect” and then submitted to Newell for review and approval on October 1, 1904.⁹⁷ They were issued on November 28, 1904, and followed the prescribed format of general conditions followed by detailed, project-specific specifications. The thorough document includes 34 numbered sections under General Conditions and another 87 numbered sections under the Detail Specifications.

The next numbered building specifications found were number 44, dated June 15, 1905, for the construction of frame buildings at Wyncote, Wyoming, in connection with the North Platte Project. These specifications were apparently produced by John Field, district engineer for the project, who was also stationed in Denver. The document includes boilerplate General Conditions followed by extensive Detail Specifications.

A year passed before the issuance of the next numbered building specifications. Specifications number 99 for the office at Garden City, Kansas, are dated June 14, 1906. The development of these specifications perfectly illustrates the various steps involved. Charles E. Gordon, Reclamation engineer in Garden City, initiated the building plans and specifications. A consulting engineer, Charles Slichter, located in Madison, Wisconsin, was involved with drafting the latter. Following his work, Gordon submitted the draft specifications to Washington headquarters, where a considerable number of minor changes were made for clarity. The acting chief engineer then returned the revised specifications to Slichter for his concurrence or suggestions for additional changes. Despite the number of steps involved, all reviews and revisions occurred within a few months.⁹⁸

Examples of other early building specifications include those for the two engineers' cottages at Huntley and Ballantine on the Huntley Project in Montana, and for an office building at Williston, North Dakota, on the Williston Project.⁹⁹ Apparently, both specifications originated in the field, since they were not assigned numbers. The Huntley specifications are dated July 1905, and those for the Williston building are dated June 1906. Although both documents contain general and detailed sections, a comparison of the language reveals a lack of consistency that was apparently typical. One small example is the clause on workmanship. In the Huntley specifications, this appears under the Detailed Specifications and includes the following: "Intelligent, careful and good workmanship will be expected and the Contractor shall discharge from his service any incompetent or otherwise objectionable person employed, upon request of the engineer. The use of intoxicating liquor will be prohibited upon the work and premises."¹⁰⁰ In the Williston specifications, this clause is included under the General Conditions and simply states: "The workmanship shall be of good quality throughout and satisfactory to the inspecting engineer in charge. The builder shall lay out his work and be responsible for any mistakes he makes."¹⁰¹

Efforts to standardize continued, and the 1909 *Manual Relating to the Work of the United States Reclamation Service* included the following on the overall format for specifications:

A general outline to be followed in preparing specifications for publication has been developed [sic] and includes general divisions arranged as follows: Advertisement, notice to bidders, proposal, including guaranty of bond and schedules, general conditions and detail specifications. Model forms for wording and arrangement are embodied in a pamphlet entitled "Standard Specification Paragraphs" published [sic] by the Reclamation Service.¹⁰²

Reclamation also progressed on developing model specifications for commonly used construction materials and minor features. This work was conducted primarily in the Washington office. In 1914, it issued a compilation of Standard Specifications for concrete, earthwork, timber piles, steel pipe, metal flumes, telephone systems, and paving, among other subjects. A 1922 price list of publications available from Reclamation includes additional standard specifications, although none intended just for buildings.¹⁰³

Endnotes for Chapter 1

¹ The States included California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. The territories consisted of Arizona, New Mexico, and Oklahoma. Texas was subsequently added in 1906.

² In a letter dated June 15, 1909, Frederick H. Newell requested information from his project engineers on the number, type, location, and cost of temporary and permanent buildings on each project. Although Newell's letter was not found, responses from the project engineers reference his original request. See Record Group [hereafter cited as RG] 115, Entry 3, General Correspondence Files, Box 246.

³ By 1919, 26 Reclamation projects had been authorized. Four of those projects, King Hill, Hondo, Williston, and Lawton, were abandoned or dissolved. Institute for Government Research, *The U.S. Reclamation Service, Its History, Activities and Organization* (New York: D. Appleton and Company, 1919), 81-82. See Appendix A for a list of Reclamation projects authorized before 1955 and their locations. By June 1918, Reclamation had constructed 1,168 buildings including offices, residences, barns, storehouses etc. The number excludes powerplants and pumping stations. Annual information on numbers of Reclamation buildings was found in "Summaries of construction results" contained in Reclamation's Annual Reports. U.S. Department of the Interior, U.S. Reclamation Service, *Seventeenth Annual Report of the Reclamation Service, 1917-1918* (Washington, DC: Government Printing Office, 1918), 14.

⁴ U.S. Department of the Interior, U.S. Geological Survey, Water-Supply and Irrigation Paper No. 93, *Proceedings of First Conference of Engineers of the Reclamation Service With Accompanying Papers*, Compiled by F.H. Newell (Washington, DC: Government Printing Office, 1904), 29-32.

⁵ U.S. Department of the Interior, U.S. Geological Survey, *Proceedings of First Conference of Engineers of the Reclamation Service*, 162. Other engineers included H.A. Storrs, electrical engineer; John E. Field, district engineer, North Platte, Wyoming, and Nebraska; Raymond F. Walter, engineer for Black Hills Region; and M.C. Hinderlider.

⁶ U.S. Department of the Interior, U.S. Bureau of Reclamation, *Bureau of Reclamation Historical Organizational Structure* (Denver, Colorado, Bureau of Reclamation History Program: 1997), 42. See also U.S. Department of the Interior, U.S. Reclamation Service, *Manual Relating to the Work of the United States Reclamation Service, Preliminary Edition* (Washington, DC: 1909) 39-42. RG 115, Entry 3, General Correspondence Files, Box 127.

⁷ U.S. Department of the Interior, Bureau of Reclamation, *Reclamation Handbook, Conservation Bulletin No. 32* (Washington, DC: Government Printing Office, 1942), 31.

⁸ U.S. Department of the Interior, *Bureau of Reclamation Historical Organizational Structure*, 52. Amid another flurry of reorganizations between 1920 and 1924, the Chief of Construction assumed the title of Chief Engineer.

⁹ The *1938 Manual of the Bureau of Reclamation* still contains a section on tents, with instructions for keeping them clean and dry.

¹⁰ Letter from F.H. Newell to A.P. Davis, RG 115, Entry 3, General Correspondence, Box 287.

¹¹ U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service With Accompanying Papers*, 85-87.

¹² U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service With Accompanying Papers*, 85-87.

¹³ U.S. Department of the Interior. U.S. Geological Survey, M.O. Leighton, "Sanitary Regulations Governing Construction Camps," Water Supply and Irrigation Paper No. 146, *Proceedings of Second Conference of Engineers of the Reclamation Service with Accompanying Papers*, Compiled by F.H. Newell (Washington, DC: Government Printing Office, 1905), 90-93.

¹⁴ Alfred B. Mayhew, "Construction Camp at Arrowrock Dam," *Engineering Record* 68 (August 2, 1913), 116.

¹⁵ U.S. Department of the Interior, U.S. Reclamation Service, *Examination of Grand Valley Project, November 13 to 30, 1917*, report by C.E. Piatt, RG 115, Entry 3, Box 164.

¹⁶ In the early 20th century, Congress offered the Reclamation Act on a selective basis to Indian reservations under authority of the Dawes Allotment Act of 1887, which permitted the conversion of reservation lands into private lands for individual Indian farmers. Between 1907 and 1924, Reclamation was involved in four Indian Irrigation Projects—Blackfeet, Flathead, Crow and Fort Peck, all in Montana. See U.S. Department of the Interior, U.S. Bureau of Reclamation, *The Bureau of Reclamation: Origins and Growth to 1945*, by William D. Rowley (Washington, DC: Government Printing Office, 2006), 140-142.

¹⁷ U.S. Department of the Interior, U.S. Bureau of Reclamation, *The Historic Cultural Resources of the Milk River Project, Volume 2, Feature Research Records*, by Roy Wingate (Denver, Colorado: 1991) See feature record SM-33, p. 226.

¹⁸ Letter from M.E. Reed, Superintendent of Irrigation, to F.H. Newell, July 14, 1909, RG 115, Entry 3, Box 246.

¹⁹ An example of an early car-roof building has recently been restored and is on display at the Homesteader Museum in Powell, Wyoming. It is uncertain whether the structure was built by Reclamation in association with the Shoshone Project, but it is very possible.

²⁰ U.S. Department of the Interior, National Park Service, *Administering the National Forests of Colorado, An Assessment of the Architectural and Cultural Significance of Historical Administrative Properties*, prepared for the U.S. Forest Service, Rocky Mountain Region, (Lincoln, Nebraska, 1996), 52. Beaverboard was originally a trademark, according to YourDictionary.com.

²¹ The history of the Buford-Trenton Project is confusing. The original Buford-Trenton Project was authorized on November 18, 1904, by the Secretary of the Interior. In 1906, the Buford-Trenton Project became one of two units of the Williston Project, the other being the Williston Unit. The Buford-Trenton Unit was located 25 miles west of Williston, along the banks of the Missouri River in North Dakota. In 1912, the Williston Project became known as the North Dakota Pumping Project. The Williston Project, including the Buford-Trenton Unit, was abandoned by Act of May 26, 1926, due to poor soil qualities in the lands to be irrigated and a series of wet years that caused landowners to lose interest in the project. Construction of the present Buford-Trenton Project was approved in 1939.

²² The Lower Yellowstone Project is located in east-central Montana and western North Dakota. At the outset of project construction in 1905, Reclamation established its headquarters camp about 15 miles below the intake to the Main Canal at a site named “La Mesa.”

²³ U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service*, Francis H. Newell, “Address by the Chief Engineer,” 84-85.

²⁴ Ditchriders maintain project canals and associated features such as headgates, turnouts, and canal roads, to ensure that water flows unobstructed. Another responsibility is to measure the amount of water in project canals and distribute the allotted amount to farmers’ ditches. Prior to current automated systems, the work was physically strenuous and involved long hours.

²⁵ Cynthia Kordecki, et al., *Lower Yellowstone Irrigation Project, 1996 and 1997, Cultural Resources Inventory*, 5.101. When last visited by Reclamation cultural resources staff several years ago, the house was still standing. Current status is unknown.

²⁶ Kordecki, et al., *Lower Yellowstone Irrigation Project, 1996 and 1997, Cultural Resources Inventory, Dawson and Richland Counties, Montana, and McKenzie County, North Dakota*, report prepared by University of North Dakota and Renewable Technologies, Inc., for the Bureau of Reclamation (April 2000), 5.91-5.98.

²⁷ Letter from A.P. Davis, Supervising Engineer, to F.H. Newell, October 31, 1903, Entry 3, Box 116, File 190-B.

²⁸ Huntley Project correspondence, see letter from A.P. Davis, Acting Chief Engineer, to W.N. Morrill, September 6, 1905, RG 115, Entry 3, Project Correspondence, Box 522.

- ²⁹ Letter from F.H. Newell to D.C. Henny, Supervising Engineer, regarding quarters on the Umatilla Project, April 11, 1906, RG 115, Entry 3, Project Correspondence, Box 958.
- ³⁰ Huntley Project correspondence, see letter from A.P. Davis, Acting Chief Engineer, to W.N. Morrill, September 6, 1905, RG 115, Entry 3, Project Correspondence, Box 522.
- ³¹ U.S. Department of the Interior, U.S. Bureau of Reclamation, *Inventory and Assessment of a Residential Property Located on the Huntley Project, Huntley, Montana*, by Rolla Queen (Denver, Colorado: July 1994), 6.
- ³² Letter from Cyrus Babb to F.H. Newell, July 29, 1909, RG 115, Entry 3, General Correspondence, Box 246.
- ³³ Letter from Herbert Newell, Project Engineer, to F.H. Newell, June 23, 1909, RG 115, Entry 3, General Correspondence, Box 246.
- ³⁴ U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service*, Francis H. Newell, "Address by the Chief Engineer," 84.
- ³⁵ Letter from John E. Field, Engineer, to F.H. Newell, May 20, 1905, RG 115, Entry 3, Box 765, File 780.
- ³⁶ For correspondence relating to the proposed permanent residence, see RG 115, Entry 3, Project Correspondence, Box 671, File "office building."
- ³⁷ This quote is included in a detailed discussion of government housing at Minidoka Dam in Fraser Design and Hess, Roise and Company, *Historic American Buildings Survey*, Walcott Park, March 1998, p. 23-34. Reported in letter from J.G. Camp to A.P. Davis, May 30, 1908, RG 115, Entry 3, Box 646.
- ³⁸ See Fraser Design and Hess, Roise and Company, *Historic American Buildings Survey*, reported in letter from A.P. Davis to J.G. Camp, June 5, 1908, RG 115, Entry 3, Box 646. The permanent building was demolished sometime after 1960.
- ³⁹ U.S. Department of the Interior, U.S. Reclamation Service, *1919 Grand Valley Project History*, 200-201, RG 115, Entry 10, Box 188.
- ⁴⁰ L.V. Branch, *Historical Sketch of the North Platte (Pathfinder) Project* (Pathfinder Wyoming, March 19, 1910) (typewritten), 32.
- ⁴¹ Good, Sarah. *Ditchrider House, National Register of Historic Places Registration Form*. Prepared for the Bureau of Reclamation, September 2000.
- ⁴² For the Garden City office building, C.E. Gordon suggested to Newell that "the electric lights are included in the plans for the reason that the electric energy can be obtained very easily from the powerplant." Letter from C.E. Gordon to F.H. Newell, May 12, 1906, RG 115, Entry 3, Project Correspondence, Box 481.
- ⁴³ U.S. Department of the Interior, U.S. Reclamation Service, *Advertisement and Schedule of Sale by Public Auction to be held at 2 p.m., September 29, 1917, at the Power House Plant of the Garden City Project Near Deerfield, Kansas, of Land, Buildings, Water Right, Canals, Machinery and Equipment, Specifications No. 103-D* (Denver, Colorado: August 18, 1917). The Garden City Project was abandoned by Act of June 5, 1920.
- ⁴⁴ Information from Lora Nordland, Secretary/Treasurer, Shoshone Irrigation District, Powell, Wyoming.
- ⁴⁵ Letter from E.G. Hobson to F.H. Newell, October 21, 1909, RG 115, Entry 3, Project Correspondence, Box 714.
- ⁴⁶ Memorandum No. 9 from F.H. Newell, May 21, 1906, RG 115, Entry 3, General Administrative Correspondence, Box 137. The two townsite acts referred to were passed on April 16, 1906 (34 Stat. 116) and June 27, 1906 (34 Stat. 519). Beyond the scope of this report, Reclamation's townsites are an interesting subject for a separate research study.
- ⁴⁷ Letter from Secretary Walter Fisher to J. Horace McFarland, December 18, 1912, RG 115, Entry 3, Box 137.

⁴⁸ There is a series of correspondence between the American Civic Association (ACA) and Reclamation dating to late 1912 and early 1913. Five members of the ACA submitted a report with recommendations for improving townsite plans to Secretary Walter Fisher on January 8, 1913. Among the five planning experts was Frederick Law Olmsted. Unfortunately, Congress did not support Reclamation's interest in improving townsite planning; in addition to opposing funds for such activities, it failed to authorize expenditure of funds for municipal improvements such as streets. No information found suggested that Reclamation engaged a planning expert. See RG 115, Entry 3, General Administrative Correspondence, Box 137.

⁴⁹ On March 2, 1929, an act was passed (45 Stat. 1522) authorizing the Secretary of the Interior to sell at public auction any or all of the unplatted portions of government townsites created under the Act of April 16, 1906. Lands not disposed of at auction could afterwards be sold at not less than appraised value at private sale.

⁵⁰ Letter from J.S. Conway, Field Assistant, to F.E. Weymouth, Project Engineer, December 12, 1905, RG 115, Entry 3, Project Correspondence, Box 591.

⁵¹ Letter from D.W. Ross, Engineer, to F.H. Newell, Chief Engineer, September 22, 1904, RG 115, Entry 3, Project Correspondence, Box 671.

⁵² Letter from Acting Chief Engineer to D.W. Ross, November 10, 1904, RG 115, Entry 3, Project Correspondence, Box 671.

⁵³ Letter from D.C. Henny, Supervising Engineer, to Chief Engineer, December 18, 1906, RG 115, Entry 3, Project Correspondence, Box 1015.

⁵⁴ In about 1909, Edward Miller came to Portland, where he practiced as a draftsman and architect. He established his own office in 1919 or 1920 and maintained it until about 1941. See Ritz, Richard Ellison, *Architects of Oregon*, Portland, Oregon, Lair Hill Publishing, 2002.

⁵⁵ Emerson, Stephen et al., *Former Umatilla Project Headquarters Buildings*, HABS Number OR-173. Archaeological and Historical Services, Eastern Washington University, January 2002.

⁵⁶ Letter from J.S. Conway, Field Assistant, to F.E. Weymouth, Project Engineer, December 12, 1905, RG 115, Entry 3, Project Correspondence, Box 591. Interestingly, early U.S. Forest Service buildings in Colorado of this same time period also proved "not warm enough to be habitable." Consequently, designs were made more substantial incorporating roofing paper and thicker sheathing. See U.S. Department of the Interior, National Park Service, *Administering the National Forests of Colorado, An Assessment of the Architectural and Cultural Significance of Historical Administrative Properties*, 42.

⁵⁷ Letter from F.H. Newell to A.P. Davis, Acting Chief Engineer, July 12, 1905, RG 115, Entry 3, General Correspondence, Box 287.

⁵⁸ Examples where creosote stain was specified include the office buildings in Malta, MT, and Montrose, CO, and the engineers headquarters building at the Minidoka powerplant.

⁵⁹ Letter from J.S. Conway, Field Assistant, to F.E. Weymouth, Project Engineer, December 12, 1905, RG 115, Entry 3, Project Correspondence, Box 591.

⁶⁰ Letter from E.G. Hopson, Supervising Engineer, to F.H. Newell, October 21, 1909, RG 115, Entry 3, Project Correspondence, Box 714.

⁶¹ See letters from John E. Field, Engineer, to F.H. Newell dated April 25, 1905, and May 20, 1905, RG 115, Entry 3, Project Correspondence, Box 765.

⁶² Kordecki, et al., *Lower Yellowstone Irrigation Project, 1996 and 1997, Cultural Resources Inventory*, 5.83. According to Kordecki, the camp at Savage appears to have remained the project headquarters until the early 1930s, when Reclamation turned operational control of the project over to the local irrigation districts. As part of the transfer, the irrigation districts constructed a new headquarters building in Sidney, Montana. However, the Savage camp continued to serve as a residential facility for the project manager and other personnel. In the late 1940s, the Savage camp became the operation and maintenance center for the Savage Irrigation Project, a new pumping and irrigation unit developed by Reclamation on the Lower Yellowstone Project.

- ⁶³ Malta Irrigation District Records, Vol. 3, 1913, 190-194. Included as Appendix 5 in J.F. Sato, *Headquarters Office, Milk River Project, Malta, Montana, Historic Structure Report* prepared for the Bureau of Reclamation, Montana Projects Office, October 1993.
- ⁶⁴ Letter from F.H. Newell, Director, to F.E. Weymouth, Supervising Engineer, July 14, 1911, RG 115, Entry 3, Project Correspondence, Box 386.
- ⁶⁵ U.S. Department of the Interior, U.S. Reclamation Service, *Huntley Project Montana, Buildings for Engineers Quarters, Specifications*, July 1905, RG 115, Entry 3, Project Correspondence, Box 522.
- ⁶⁶ U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service With Accompanying Papers*, 92. In *The U.S. Reclamation Service, Its History, Activities, and Organization* (New York: Appleton and Company, 1919), force account is described on page 52 as follows: "Upon the authorization to proceed with construction, determination is made as to whether the several sections of the work can be constructed more economically by contract or by the Service directly through its own forces. . . . The reasons for the adoption of this policy of direct employment by the Service were well stated by the Service in a hearing before the Committee on Arid Lands in 1910."
- ⁶⁷ Letter from F.H. Newell to A.P. Davis, July 12, 1905, RG 115, Entry 3, General Correspondence, Box 287.
- ⁶⁸ Letter from D.W. Ross to F.H. Newell, November 3, 1904, RG 115, Entry 3, Project Correspondence, Box 671.
- ⁶⁹ Letter from F.H. Newell to A.P. Davis, July 14, 1905, RG 115, Entry 3, Project Correspondence, Box 765.
- ⁷⁰ The author found no formal policy/guidance specifically stating that the cost of buildings had to be repaid by water users. References were found in correspondence. For example, in a letter dated October 29, 1904, from Newell to the Secretary of the Interior, relating to the Uncompahgre office building in Montrose, he wrote that "The money paid for this site and for the building will be repaid by the water users under this project. . ." RG 115, Entry 3, Project Correspondence, Box 1002.
- ⁷¹ U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service With Accompanying Papers*, 85.
- ⁷² U.S. Department of the Interior, *Proceedings of Second Conference of Engineers of the Reclamation Service with Accompanying Paper*, 21.
- ⁷³ E.H. Baldwin, Construction Engineer, "The Construction of Elephant Butte Dam," *Reclamation Record* (July-August 1914), 263.
- ⁷⁴ Letter from Charles E. Gordon to Newell, May 12, 1906, RG 115, Entry 3, Project Correspondence, Box 481.
- ⁷⁵ Letter from D.C. Henny, Supervising Engineer, to Chief Engineer, December 18, 1906, RG 115, Entry 3, Project Correspondence, Box 1015.
- ⁷⁶ Letter from E.G. Hopson, Supervising Engineer, to F.H. Newell, June 28, 1909, RG 115, Entry 3, Project Correspondence, Box 714.
- ⁷⁷ U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service With Accompanying Papers*, 93.
- ⁷⁸ Letter from E.A. Hitchcock to Walcott, June 5, 1905, RG 115, Entry 3, Project Correspondence, Box 765.
- ⁷⁹ Letter from F.H. Newell to H.N. Savage, September 18, 1905, RG 115, Entry 3, Project Correspondence, Box 522.
- ⁸⁰ See correspondence between E.A. Hitchcock and C.D. Walcott dated June 2, 1906, June 7, 1906, and June 13, 1906, and letter from Thomas Ryan to C.D. Walcott, July 24, 1906, RG 115, Entry 3, Project Correspondence, Box 481.

- ⁸¹ Letter from A.P. Davis to R.A. Ballinger, November 20, 1909, RG 115, Entry 3, Project Correspondence, Box 714. See also letter from Morris Bien, Acting Director, Reclamation Service, to R.A. Ballinger, November 15, 1909, with concurrence line for approval signed by Ballinger on November 22, 1909, RG 115, Entry 3, Project Correspondence, Box 714.
- ⁸² See correspondence between F.E. Weymouth and F.H. Newell dated July 8, 1911, June 13, 1911, and July 14, 1911, RG 115, Entry 3, Project Correspondence, Box 386.
- ⁸³ Letter from A.P. Davis, Acting Director, to F.E. Weymouth, November 22, 1911, RG 115, Entry 3, Project Correspondence, Box 386.
- ⁸⁴ See letters from E.A. Hitchcock to Walcott, October 26, 1904, and from A.L. Fellows, District Engineer, to F.H. Newell, December 15, 1904, RG 115, Entry 3, Project Correspondence, Box 1002.
- ⁸⁵ Memo from F.H. Newell to J.H. Quinton, May 10, 1904, RG 115, Entry 3, General Correspondence, Box 188.
- ⁸⁶ Letter report from Committee on Standard Plans and Specifications to F.H. Newell, January 18, 1905, RG 115, Entry 3, General Correspondence, Box 287.
- ⁸⁷ Letter from Committee on Standard Plans and Specifications to F.H. Newell, February 3, 1905, RG 115, Entry 3, General Correspondence, Box 287.
- ⁸⁸ Letter from F.H. Newell to A.P. Davis, July 12, 1905, RG 115, Entry 3, General Correspondence, Box 287.
- ⁸⁹ Memo from F.H. Newell, recipients not identified, RG 115, Entry 3, General Correspondence, Box 287.
- ⁹⁰ Interestingly, Reclamation's set of standardized building plans preceded those of the U.S. Forest Service by a year. U.S. Department of Agriculture, Forest Service, *Within A Day's Ride, Forest Service Administrative Sites in Region 4, 1891-1960*, by Richa Wilson, Intermountain Region (Ogden, Utah, June 2004), 55-56.
- ⁹¹ Gowans, Alan, *The Comfortable House, North American Suburban Architecture 1890-1930* (Cambridge, Massachusetts: MIT Press, 1986), 74.
- ⁹² U.S. Department of the Interior, *Proceedings of First Conference of Engineers of the Reclamation Service With Accompanying Papers*, 80.
- ⁹³ Circular Letter on specifications from F.H. Newell, May 28, 1906, RG 115, Entry 3, General Correspondence, Box 188. First three pages; the rest are missing.
- ⁹⁴ See correspondence between J.H. Quinton and F.H. Newell, March 26, 1904, and April 5, 1904, RG 115, Entry 3, General Correspondence, Box 188.
- ⁹⁵ U.S. Department of the Interior, *Manual Relating to the Work of the United States Reclamation Service*, 72.
- ⁹⁶ Circular Letter on specifications from F.H. Newell, May 28, 1906, RG 115, Entry 3, General Correspondence, Box 188.
- ⁹⁷ Letter from A.L. Fellows to F.H. Newell, October 1, 1904, RG 115, Entry 3, Project Correspondence, Box 1002. The numbering system for specifications changed several times and is confusing. The first set of numbered specifications issued by Reclamation begins in 1903, with number 1 assigned to the construction of the Main Canal and other structures on the Newlands Project. Bidders were required to submit proposals to the Washington office. Another set of numbered specifications begins in 1915 with number 1D. Bidders were required to submit proposals to the Denver office. The D stands for Denver, and this series was issued out of the Denver office.
- ⁹⁸ See letters dated May 12, 1906 (C.E. Gordon to F.H. Newell), May 24, 1906 (Acting Chief Engineer to Charles S. Slichter), RG 115, Entry 3, Project Correspondence, Box 481.
- ⁹⁹ Originally known as the Williston Unit of the North Dakota Pumping Project, it was later abandoned by Act of May 26, 1926.
- ¹⁰⁰ U.S. Geological Survey Reclamation Service, Huntley Project, Montana, *Buildings for Engineers Quarters*, general and detailed specifications, July 1905, RG 115, Entry 3, Project Correspondence, Box 522.

¹⁰¹ Specifications included in U.S. Department of the Interior, Bureau of Reclamation, *Williston Project, Annual Project History, 1909-1910, Vol. 3*, 180-187, RG 115, Accession No. 8NN-115-90-011, Box 213.

¹⁰² U.S. Department of the Interior, *Manual Relating to the Work of the United States Reclamation Service*, 80.

¹⁰³ See U.S. Department of the Interior, Reclamation Service, *Standard Specifications*, 1914, RG 115, Entry 3, General Correspondence, Box 188, and U.S. Department of the Interior, Reclamation Service, *Publications of the Reclamation Service*, circa 1922, RG 115, Entry 7, Box 288. The development of the standard specifications in the Washington office is mentioned in the Institute for Government Research, *The U.S. Reclamation Service, Its History, Activities, and Organization* (New York: Appleton and Company, 1919), 50.

Chapter 2

A New Era of Standard Building Designs: 1918 through 1928

The considerable slowdown in Reclamation project approvals after 1909 continued in the decade spanning 1918 through 1928. Only a handful of new projects were launched during those years, and only 18 office buildings and 141 residences were erected. In the early 1920s, Reclamation continued to face severe criticism, from both the private and public sectors, for undertaking too many projects while severely underestimating their costs and ignoring problems of drainage and poor soils. Project settlers complained incessantly about the burden of construction repayment schedules, and operation and maintenance costs. Reclamation's fortunes began to change favorably with the appointment of Commissioner Elwood Mead in 1924.¹ He set about tackling many of the operational and financial problems that plagued the agency, and, in his 12-year tenure as Commissioner, successfully established a new course for Reclamation. Under Mead's direction, the struggling agency emerged as a leader and innovator in monumental dam design and hydropower development.

A New Set of Standard Building Designs

From a building standpoint, the predominance of the Bungalow form characterized the decade. In the summer of 1918, Reclamation issued a new set of standard plans that conveyed the agency's overwhelming preference for the Bungalow so much in vogue throughout the country. By that time, the Denver office had primary responsibility for design standardization work, and, although the focus was on minor engineering features, it included the preparation of building plans.

A formal process for numbering drawings and signing off on them had also been instituted by 1918. The standard building designs issued in Denver that summer all began with the number and letter 40-C followed by a unique number for the individual drawing (table 2.1).² Plans included a permanent three-room cottage, a permanent four-room cottage, and a permanent five-room cottage. A separate sheet provided wall and mill details for all three types of permanent cottages

(figures 2.1 through 2.5). In November of the same year, Reclamation produced additional standard plans for a farm barn, with and without hay storage, and a permanent three-car garage. It is unknown whether an architect had any input into the designs, but with the vast array of published building plans available, it would not have been necessary. In the title block, the drawings all contain four signature lines: Drawn, Checked, Recommended, and Approved. Next to "Drawn" are the initials "M.J. Mc." Unfortunately, the owner of these initials remains anonymous; no information that reveals the full name has been found.

Table 2.1. 1918 Standard Building Drawings

Drawing Title	Drawing Number
Permanent Three Room Cottage: Plan - Section & Elevations	40-C-75
Permanent Three Room Cottage: Kitchen Details	40-C-76
Permanent Four Room Cottage: Plan - Sections & Elevations	40-C-89
Permanent Four Room Cottage: Kitchen Details	40-C-90
Permanent Five Room Cottage: Plan - Section & Elevations	40-C-78
Permanent Five Room Cottage: Interior Details	40-C-79
Permanent Five Room Cottage: Basement Plan & Furnace Layout	40-C-95
Permanent Cottages: Wall and Mill Details	40-C-77
Farm Barn with Hay Storage	40-C-97
Farm Barn without Hay Storage	40-C-98
Permanent Three Car Garage: Elevations	40-C-100

All three permanent cottages are one-story, gable-roof, frame buildings with rectangular plans. They range in size from 580 square feet for the three-room cottage (one bedroom) to about 900 square feet for the four-room version (two bedrooms) to about 1,100 square feet for the five-room type (two bedrooms). The houses all have projecting, screened front porches. Secondary smaller screened porches are incorporated under the gable roofs at the back of all three dwelling types. While the four- and five-room cottages have front-gabled roofs with off-center gabled porches on the primary elevation, the three-room cottage is side-gabled with a shed-roof porch in the center of the front facade.

Outside walls consist of 6-inch drop siding applied over waterproof building paper and diagonal sheathing. Cedar shingles laid 4 inches to the weather are specified for the roofs. Overhanging open eaves with exposed rafter ends, multi-paned over single-paned double-hung windows, and simple corner boards complete the simple exterior Bungalow detailing. Paint colors are not specified; it was left to the engineer in charge to make the selection.

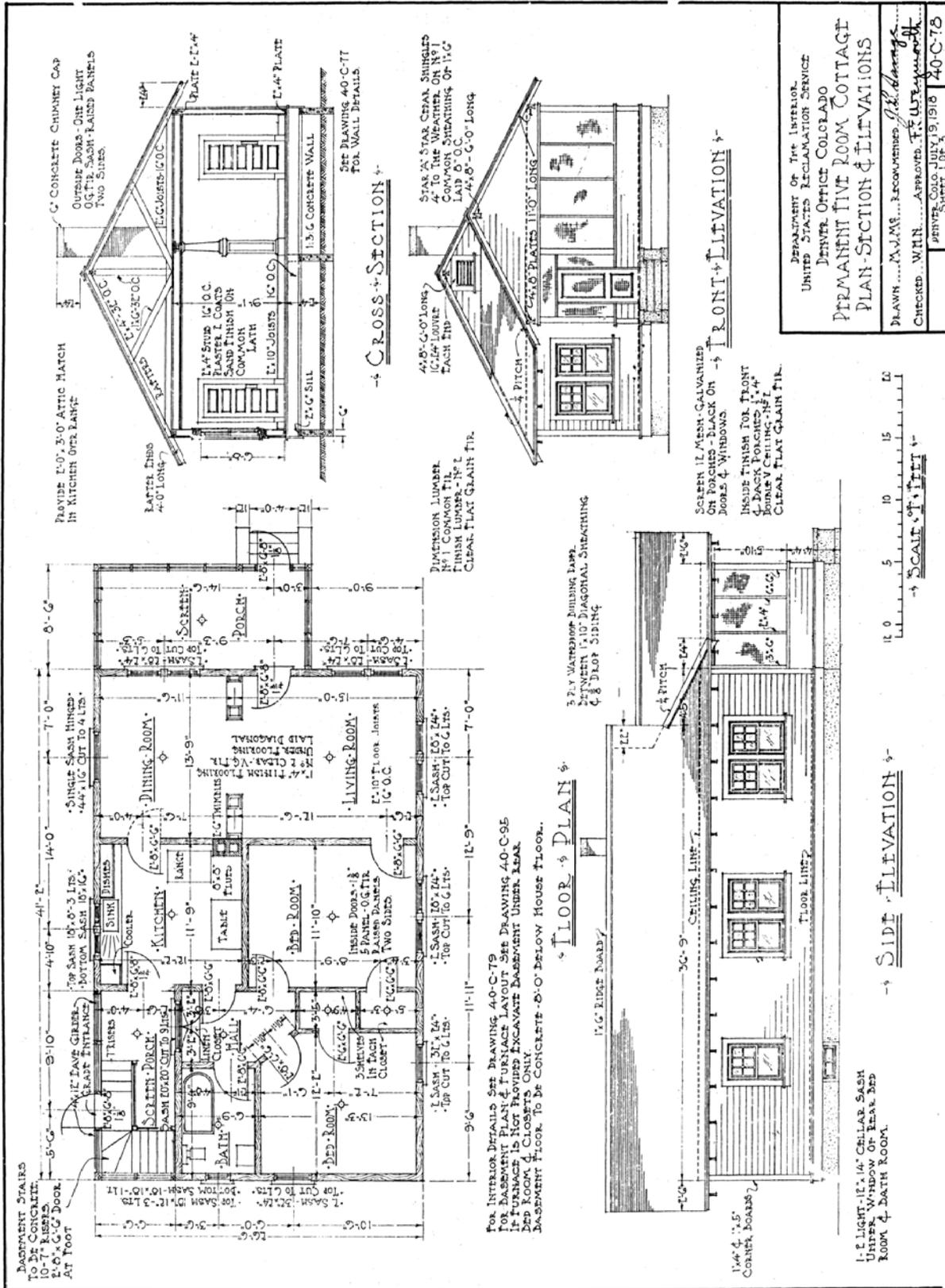


Figure 2.4 1918 standardized design for five-room cottage, drawing number 40-C-78.

Interior walls and ceilings are shown as plastered with a smooth surface, and finish floors are 1-inch by 4-inch fir boards. The use of wood trim, multiple-paneled wood doors, and built-in cabinetry convey the Bungalow preference. Although modest in size, all of the homes included kitchens equipped with ranges, coolers, and sinks, and bathrooms with tubs, toilets and sinks. Locations for hanging light fixtures are shown in the designs. Only the five-room cottage provides for the option of a fully excavated basement with a coal-fired furnace and central heating system. The three- and four-room cottage plans show basement areas under the kitchens; furnaces are not included. Chimneys and central flues indicate that individual stoves connected to the flues must have provided heat.

The use of these standard building designs became widespread throughout Reclamation projects in the 1920s and even into the early 1930s; apparently, no others were issued during that time.³ Similar Bungalows can be found from Montana to Arizona and from Washington to Wyoming. Reclamation often specified the standard drawings with no changes or only minor modifications. In other instances, Reclamation engineers adapted the designs for use in office buildings. Floor plans were rearranged to accommodate various work spaces instead of living areas. When the Denver office issued such site-specific drawings, they were assigned different numbers from the standard plans. A fairly common practice was to specify the standard Permanent Cottage Wall and Mill Details (figure 2.5) in conjunction with a slightly modified standard floor plan.

At the same time that the new standard plans became available in the summer of 1918, Reclamation renewed internal discussions about the need to build more residences for its employees.⁴ Ironically, as projects became more established and attracted new settlers, Reclamation employees had a harder time finding affordable housing. On the Minidoka Project, the project manager, Barry Dibble, recommended to F.E. Weymouth, by then Chief of Construction in Denver, that the standard plans for three- or four-room cottages be used to build permanent cottages for married employees stationed in Burley. Dibble estimated the cost of a three-room cottage at about \$2,000 and a four-room cottage at \$2,500, and figured that the houses could easily be rented at about \$25 per month. It would be a fairly short time, he asserted, before the government recouped its construction costs. Both Weymouth and Reclamation Director A.P. Davis agreed with Dibble "that the Reclamation Service should be somewhat more liberal than we have been in the past in the matter of building homes for married government employees in order that we may be able to obtain and retain services of high grade men on the various projects."⁵

Reclamation's request to the Secretary of the Interior to construct six dwellings in Burley was approved in September 1918.⁶ Completed the following year after a

delay in securing title to the lots, the three- and four-room cottages conformed to the standard designs with slight modifications. The back porches of the three-room cottages were enclosed rather than screened, and the front porches had gable roofs instead of shed roofs. All of the cottages were equipped with electrical fixtures and connected with the Burley sewer and water system.⁷

A similar shortage of housing for married employees existed on the Newlands Project. John Richardson, the manager, reiterated the sentiments of Dibble and others when he wrote to Weymouth: "I am of the opinion that it would greatly improve the living conditions and attractiveness of employment on this project if some cottages could be built for the use of married employees." They had been forced to buy houses in Fallon in order to get "reasonably comfortable quarters." Richardson feared that the employees' housing investments would pay off poorly because of high purchase prices and the potential difficulty of selling property.⁸ Reclamation received approval from the Secretary of the Interior's office to construct three cottages on the Truckee-Carson Project for not more than \$2,500 each, including the purchase of lots, at the same time as the Burley cottages. At least one of the Fallon dwellings is known to have been built according to the three-room standard plan.

In August 1918, Reclamation released a bid proposal for the construction of a standard four-room cottage on the Flathead Project. A month later, Reclamation issued a request for bids for three dwellings on another Indian project, the Blackfeet, using the three- and four-room cottage standard plans. By the close of 1918, Reclamation had built four additional homes at Minidoka Dam of "thoroughly modern and up-to-date design" using the three-room cottage standard plans (figure 2.6). The centrifugal pump in the power house supplied water, and cesspools located in sand and lined with lava rock received the waste water. Interestingly, four female surveyors and one female power house operator were the first occupants of one of the cottages. The shortage of men during World War I opened up employment opportunities for women (figure 2.7).⁹

In Montana, Reclamation employed the standard designs repeatedly over the next few years. A variation of the four-room cottage design was used in 1920 to construct an office and lodging house in Saco, Montana, the operation and maintenance headquarters for the Glasgow Division of the Milk River Project (figures 2.8 and 2.9). On the same project, Reclamation built standard three-room cottages for dam tenders' housing at Vandalia Dam in 1920 and at Dodson Dam in 1921. A variation of that plan was developed for a 384-square-foot, two-room lodging house also built at Dodson Dam.



Figure 2.6 Minidoka Project. Minidoka Dam camp, standard three-room cottages constructed in 1918. Note the car-roof building between the two cottages.



Figure 2.7 Female surveyors who occupied one of the Minidoka Dam cottages during World War I.



Figure 2.8 Milk River Project. A variation on the 1918 standard four-room cottage design was used for an office and lodging house in Saco, Montana. Photo taken in 1922.

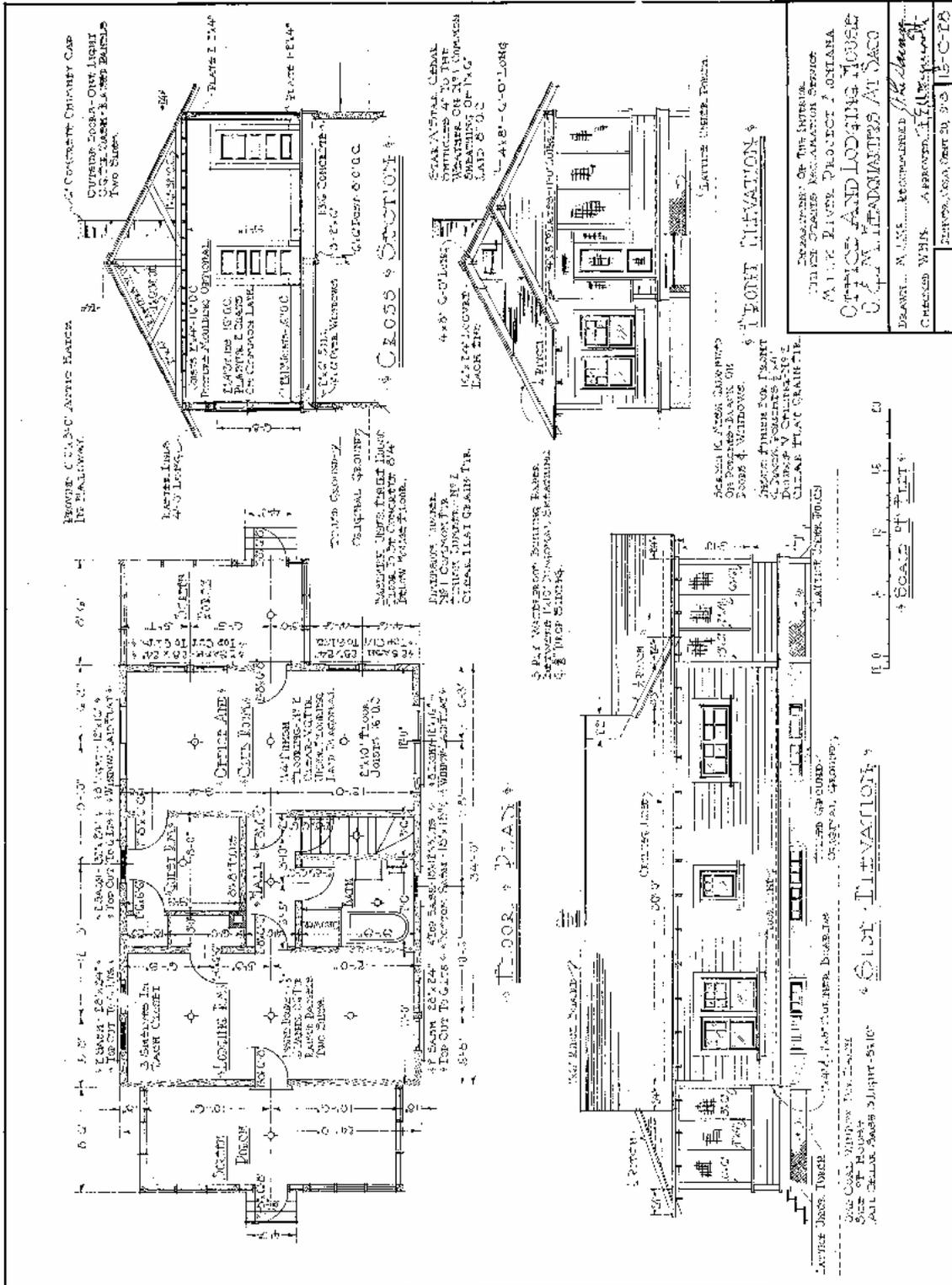


Figure 2.9. Milk River Project. Drawings for office and lodging house at Saco, Montana, dated September 20, 1918. Similar in exterior appearance to the standard four-room cottage, the building's interior layout is different. The overall dimensions are also slightly smaller.

On the Sun River Project in Montana, Reclamation moved its headquarters from Fort Shaw to Fairfield around 1920, after a brief stint in downtown Great Falls. The new complex of one-story frame buildings included an office and lodging house, both variations of the three-room cottage form; a five-room standard design cottage; a standard design three-car garage; and a stable (figure 2.10). Specifications accompanying a request for bids for constructing the buildings issued on March 1, 1919, stated that all of the materials would be furnished by the United States and, additionally, that the government would construct the concrete cellar and foundation walls, and concrete garage floor.¹⁰ A number of original buildings still exist in Fairfield, although altered.



Figure 2.10. Sun River Project. Headquarters complex in Fairfield, Montana, in 1930. The building at right appears to be the office, a variation on the 1918 standard three-room cottage form.

The list of buildings using the 1918 standard cottage plans, or variation thereof, continued to expand in the 1920s. In table 2.2, the known buildings are identified.

In southeast Oregon, at the Owyhee Dam site on the project of the same name, Reclamation established a construction camp in 1927, which included a five-room frame cottage and seven temporary, three-room frame cottages. The five-room cottage was an adaptation of the standard plan and appears nearly identical to a dwelling built for the gate tender at American Falls Dam on the Minidoka Project in 1927 (figures 2.11 and 2.12). At Guernsey Dam construction camp in Wyoming on the North Platte Project, Reclamation constructed a number of Bungalow cottages, some following the standard plans and others following variations thereof (figures 2.13 and 2.14). On the Yuma Project, a power operator's house built in 1926 at the Siphon Drop Powerplant in Imperial County, California, conformed almost exactly to the standard four-room cottage plan (figure 2.15).

Table 2.2. Known Buildings Using the 1918 Standard Cottage Plans: 1918-1928

Project/Location	State	Cottage Type	Specification Number	Construction Date
Minidoka (Minidoka Dam)	ID	Three-room (four total)	Unknown	1918
Flathead	MT	Four-room	159-D	1918
Blackfeet	MT	Three- and four-room (three total)	165-D	1918
Minidoka (Burley)	ID	Three- and four-room (six total)	Unknown	1919
Newlands (Fallon)	NV	Three-room	181-D	1919
Sun River (Fairfield)	MT	Variation on three-room for an office and a lodging house; five-room cottage	186-D	1919
Riverton (Riverton)	WY	Five-room (two total)	190-D	1919
Flathead	MT	Four-room	231-D	1920
Milk River (Saco)	MT	Variation on five-room for a combined office/lodging house	240-D	1920
Milk River (Vandalia Dam)	MT	Three-room	241-D	1920
Milk River (Dodson Dam)	MT	Three-room	266-D	1921
North Platte (Lingle Powerplant and Whalen Dam)	WY	Three-room (two at Lingle and one at Whalen)	316-D	1923
Yuma (Siphon Drop Powerplant)	CA	Four-room	395-D	1926
Orland (Stony Gorge Dam)	CA	Four-room	400-D	1926
Minidoka (American Falls Dam)	ID	Five-room variation	412-D	1927
North Platte (Guernsey Dam)	WY	Three-room (two total)	418-D	1927
Owyhee (Owyhee Dam)	ID	Five-room variation (same as American Falls Dam cottage)	419-D	1927
Belle Fourche (Newell)	SD	Five-room plan adapted for six-room cottage (two total)	437-D	1928
Klamath (Gerber Dam)	OR	Three-room variation	Unknown	1920s



Figure 2.11 Standard plan cottage at Owyhee Dam is still being used in 2007. (Source: Jennifer Huang, Bureau of Reclamation)



Figure 2.12 Minidoka Project. American Falls Dam, Idaho, newly completed dam tender's house, 1927. The house is still standing and in use by the Falls Irrigation District. (Source: Snake River Area Office, Bureau of Reclamation)



Figure 2.13 North Platte Project. Bungalow cottages at the Guernsey Dam construction camp, 1928.



Figure 2.14 Bungalow cottages at Guernsey Dam still retain their historic character. Photo taken in 2000. (Source: Dale Austin, Bureau of Reclamation)



Figure 2.15 Yuma Project. New Siphon Drop Powerplant operator's house shown in 1926 photo. Nearly identical to the 1918 standard four-room cottage plan, this house featured a large roof ventilator rather than chimneys.

To be expected, not all residences of this period adhered to the standard designs. A permanent ditchrider's house on the Valley Division of the Yuma Project was specifically designed to help insulate occupants from the intense heat. Special adaptations for the desert climate included a double roof and an air space beneath the house (figure 2.16). Other variations of the Bungalow form can be found in the Shoshone Project superintendent's residence, whose construction date is unknown. A 1927 photograph of the property depicts a neatly maintained front-gabled house with broad overhanging eaves supported by large brackets. A combination of exterior lap siding and shingled gable ends produces a variety of textures. No information was found on the residence, so it is possible that it was privately built (figure 2.17).

Office Buildings of the Period

Reclamation apparently did not produce a standard office design in 1918. In fact, the few office buildings of this period that were located exhibit considerable differences. Some structures appeared residential in character, while others conveyed their intended use. At the Owyhee Dam site, plans for a 1927 one-story, "temporary" office building that still exists consist of a simple frame, front-gabled structure with a wraparound porch on two elevations (figures 2.18 through 2.20). At Guernsey Dam camp, a 1925 photograph of the engineer's office depicts a basic one-story, rectangular plan frame building enclosed by a moderately pitched hipped roof with extended eaves and exposed rafter ends (figure 2.21). The office, as well as four of the cottages, still survive at Guernsey Dam and are contributing elements to the Guernsey Lake State Park National Historic Landmark designated in September 1997.



Figure 2.16 Yuma Project. Permanent ditchrider's house on the Valley Division of the Yuma Project, 1921. Construction history is unknown, although it likely dates from mid- to late teens.



Figure 2.17 Shoshone Project. Home of L.H. Mitchell, project superintendent, in Powell, Wyoming, August 1927. (Source: Shoshone Irrigation District)



Figure 2.19 Owyhee Project. Office at Owyhee Dam site, 1928. (Source: Fred Quivik, Owyhee Dam, Historic American Engineering Record No. OR-17)



Figure 2.20 The office at Owyhee Dam currently serves as a visitor center and retains much of its original appearance. (Source: Jennifer Huang, Bureau of Reclamation)



Figure 2.21 North Platte Project. Guernsey Dam office building in Wyoming, 1925.

In Mitchell, Nebraska, Reclamation constructed a two-story frame office building as its headquarters for the North Platte Project, probably after 1918 but prior to 1923 (figure 2.22). No information on the building was found, except for a note in the 1918 Annual Project History stating that work had started on enlarging the Mitchell office building. It is unclear whether Reclamation expanded the one-story, pre-1906 office building seen in earlier photographs or if the enlarged building is an entirely different structure. In any event, the building depicted in the 1923 photograph was one of Reclamation's more substantial offices at that time. The rectangular plan building had a hipped roof and a projecting, two-story bay covered by a gable roof on the front façade. Clapboard siding covered exterior walls. Extended eaves with exposed rafter ends and large brackets reference the Craftsman style, as do the contrasting shingles in the front gable.

Reclamation produced its grandest design of the period for an office building, though it never advanced beyond paper. A set of drawings dated September 18, 1920, located at the National Archives, depicts a new office structure for the Shoshone Project headquarters in Powell (figure 2.23). The substantial, two-story brick building with a hipped tile roof featured restrained Colonial Revival detailing and a symmetrical front facade with a center entrance sheltered by a small portico. The estimated cost for the structure was \$49,000, a sum that far exceeded any other Reclamation building to that time. Unfortunately, no correspondence relating to the plans was found, but likely because of expense, the designs remained someone's pipe dream.



Figure 2.22 North Platte Project. Headquarters office in Mitchell, Nebraska, in 1923. No construction information was found for this building.

Costs collected in the mid-1920s for Reclamation project offices reveal that the most expensive office built by the agency was still the Boise Project office constructed in 1911 for around \$18,000. Next in order of value were the Mitchell office on the North Platte Project (\$17,447), the Fallon office on the Newlands Project (\$12,000), the Malta office on the Milk River Project (\$9,500), and the Powell office on the Shoshone Project (\$9,500). Of these buildings, all except the two-story frame office in Mitchell had been constructed prior to 1912.¹¹

Another Reclamation office that the agency apparently purchased rather than built exceeded the costs of all others and was occupied only a short time. It served as the construction office for American Falls Dam, a feature of the Minidoka Project. The two-story brick commercial block in American Falls, Idaho, contained 8,000 square feet, of which only half was used for offices and storage space. It was located within the American Falls Reservoir site and was 1 of 329 properties within the town that Reclamation purchased prior to its inundation in 1926. Reclamation moved many of the buildings to higher ground, but those of brick and stone that could not be relocated were torn down for salvage (figure 2.24).¹²



Figure 2.23 Shoshone Project. Front elevation for an elaborate office building in Powell, Wyoming, that was never built.

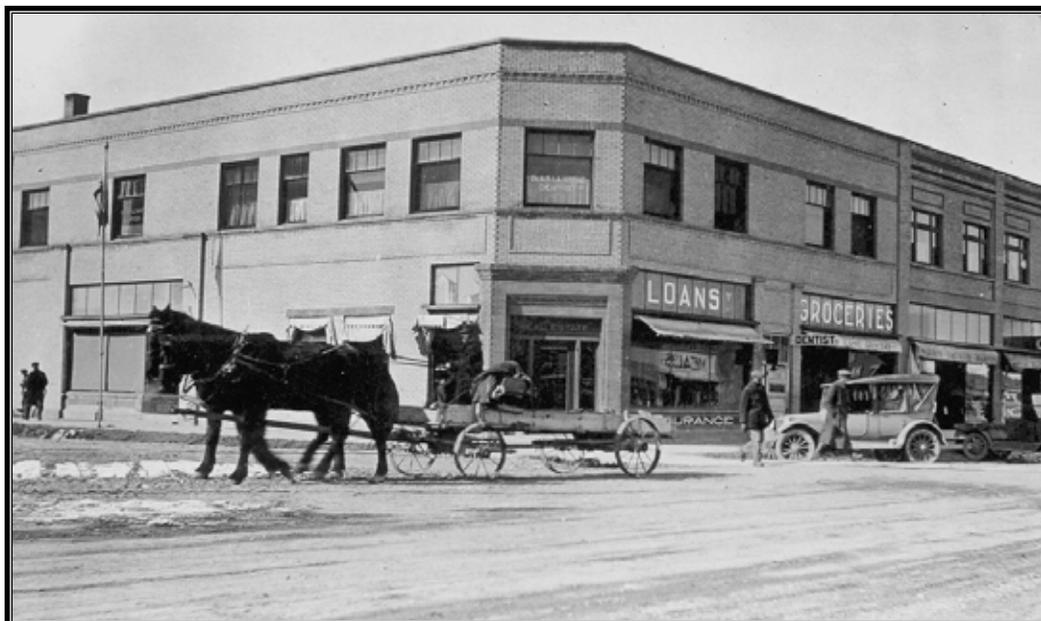


Figure 2.24 Minidoka Project. Reclamation's office building in American Falls, Idaho.

Endnotes for Chapter 2

¹ On June 23, 1923, when the name of the Reclamation Service was changed to the Bureau of Reclamation, the position of Commissioner of Reclamation was established.

² Drawings produced in the Denver office beginning with the number “40” designated “standard and typical designs.” According to Regina Magno-Judd, Denver drawings manager, the “C” originally was used to designate construction drawings, whereas an “E,” for example, was used on electrical drawings. Beginning in around 1919, the letter “D” was used for all Denver office drawings.

³ The 1922 price list of Reclamation publications referred to in chapter 1 lists the 1918 building plans, but none subsequently. In a series of correspondence to the Bureau of Standards through the 1920s, identifying Reclamation standard designs, the only ones enumerated are those for minor engineering features. The building plans were apparently not considered important enough or appropriate to even mention.

⁴ Managers on the King Hill Project in Idaho and the Yuma Project in Arizona had expressed a similar need for housing earlier in 1918 and had received construction approval for nine and three cottages, respectively. The King Hill Project was a Carey Act Project rehabilitated by Reclamation. The project was dissolved by the Act of June 18, 1934.

⁵ Memo from A.P. Davis to F.E. Weymouth, July 26, 1918, RG 115, Entry 3, Box 116.

⁶ Letter from Morris Bien, Acting Director to Secretary Franklin Lane, September 5, 1912, RG 115, Entry 3, Box 116. An approval line was included in the letter and signed by the Assistant to the Secretary on September 10, 1918.

⁷ U.S. Department of the Interior, Reclamation Service, Annual Project History, Minidoka Project, Idaho, Volume XIII, Calendar Year 1919, 68-70, RG 115, Accession No. 8NN-115-90-011, Box 80. The cottages were located three blocks from the business center and one block from Reclamation’s office.

⁸ Memo from John F. Richardson to F.E. Weymouth, August 5, 1918, RG 115, Entry 3, General Correspondence, Box 116.

⁹ U.S. Department of the Interior, Reclamation Service, Annual Project History, Minidoka Project, Idaho, Volume XII, Calendar Year 1918, 55-59, RG 115, Accession No. 8NN-115-90-011, Box 80.

¹⁰ U.S. Department of the Interior, Reclamation Service, Specifications 186-D, March 1, 1919. On microfiche at Reclamation library, Building 67, Denver Federal Center.

¹¹ Chart titled “Summary of Report on Relief of Congestion in Public Buildings and Reductions in Rentals for Commercial Space - General Order No. 414,” April 1926, RG 115, Entry 7, General Correspondence, Box 130.

¹² Memo from Chief Engineer to Commissioner, April 28, 1926, RG 115, Entry 7, General Correspondence, Box 130.

Chapter 3

The Great Depression and New Deal Era: 1929 through 1941

The Great Depression marked a turning point in the fortunes of Reclamation. Ironically, this dark period of American history characterized by despair and drought rejuvenated the struggling engineering agency. Beginning in 1933, President Franklin D. Roosevelt's New Deal Administration vowed to put unemployed Americans back to work and, partly to this end, supported dam building projects of unprecedented scale. Not only were Reclamation's dams higher and more massive than ever before, the vast numbers of workers required to build them necessitated the construction of entire communities of a size unequalled by earlier camps, thereby creating even more jobs. This transformational era of Reclamation history also coincided with changes in American architectural tastes that are reflected in Reclamation's buildings.

In the early 1930s, however, Reclamation clung to the Bungalow form, even as its popularity waned across the country. Engineers still relied on the 1918 Denver office standard designs, or variations thereof, at a number of locations (table 3.1). On the Yakima Project, four residences carried on the Bungalow tradition. The July 17, 1930, Denver office design for a permanent five-room cottage at Easton Dam was nearly an exact copy of the 1918 standard drawing for a five-room cottage, except that the roof was at a 1 to 3 pitch rather than a 1 to 4 pitch. The interior layout was also nearly identical. For the interior details, Reclamation stipulated the 1918 standard drawing numbers 40-C-77 and 40-C-79. The following year, the exact same plan as the Easton Dam house was reissued by the Denver office with a different number (40-D-2013) and used for constructing a cottage at the Yakima River Pressure Tunnel (figure 3.1). Again, the interior layout and details relied on the 1918 designs. Two dam tenders' houses located at Tieton Dam and Cle Elum Dam also mimicked the 1918 five-room cottage standard design with some variation. At both sites, Denver office plan number 32-D-153 dated August 21, 1928, and revised in July 1930, was specified. While the overall dimensions, floor plan, and exterior configuration nearly matched the 1918 standard design, the roof had been raised to a 1 to 2 pitch to allow space for an attic (figure 3.2).

Table 3.1. Reclamation's Bungalow Variations: 1929-1941

Project	Location	Type	Drawing Number (Elevations/ Plan)	Drawing Date	Specification Number
Yakima	Tieton Dam	Five-Room Cottage	32-D-153	Revised July 8, 1930	487-D
Yakima	Cle Elum Dam	Five-Room Cottage	32-D-153	Revised July 8, 1930	Unknown
Yakima	Easton Dam	Five-Room Cottage	33-D-577	July 17, 1930	488-D
Shoshone	Willwood Division	Office	26-D-291	November 8, 1930	525-D
Minidoka	Milner-Gooding Canal	Four-Room Cottage	Gd-1-1	January 5, 1931	511-D
Yakima	Yakima Pressure Tunnel	Five-Room Cottage	40-D-2013	August 10, 1931	536-D
Boulder Canyon	Boulder City	Three-and Four- Room Residences	45-D-1509 45-D-1511	November 5, 1931	545-D
Boulder Canyon	Boulder City	Five-Room Residence	45-D-1524	December 1, 1931	553-D
Vale Project	Agency Valley Dam	Five-Room Residence	40-C-78 or similar	Unknown	Unknown

An office on the Willwood Division of the Shoshone Project, constructed in 1931, bears similarities to the 1918 three-room cottage plan with its side-gabled roof and porch at the center of the front façade (figure 3.3). As late as 1934, the Denver office produced a standard office design for a basic, one-story Bungalow type building (drawings 40-D-2138 and 40-D-2139) that was more characteristic of residential architecture (figure 3.4). The familiar overhanging eaves with exposed rafter ends, and multi-paned over single-paned double-hung windows appear on the drawings. One side of the small building served as a drafting and engineering room, while the other half was divided into an office, clerical room, and bathroom.

Elsewhere, on the Minidoka Project, Reclamation solicited bids for five identical four-room cottages along the Milner-Gooding Canal in early 1931. While the simple design did not conform to the 1918 standard plans, the exposed rafter ends faintly referenced the Bungalow form. The elevations for the compact frame dwelling depict a front-gabled roof, a porch supported by simple columns that extends across most of the primary elevation, and a center doorway. Windows are one-over-one double-hung. On the interior, two bedrooms, a living room, and kitchen fit within an approximate 640-square-foot space. Other than specifying the standard 1918 “Wall and Mill Details” drawing, Reclamation staff at the local office in Eden, Idaho, drafted the rest of the plans, an unusual occurrence for the time.



Figure 3.2 Yakima Project. Current view of the Cle Elum dam tender's house built in 1931. The front porch has been enclosed among other modifications. The house is slated for demolition. (Source: Ward Tonsfeldt, Ward Tonsfeldt Consulting, Bend, Oregon)



Figure 3.3 Shoshone Project. The 1931 Willwood Division office building designed in the Denver office bears similarities to the 1918 standard three-room cottage plan. The 1918 standard drawing for wall and mill details (40-C-77) was specified for the interior. Photo taken on April 30, 1932. (Source: Shoshone Irrigation District)

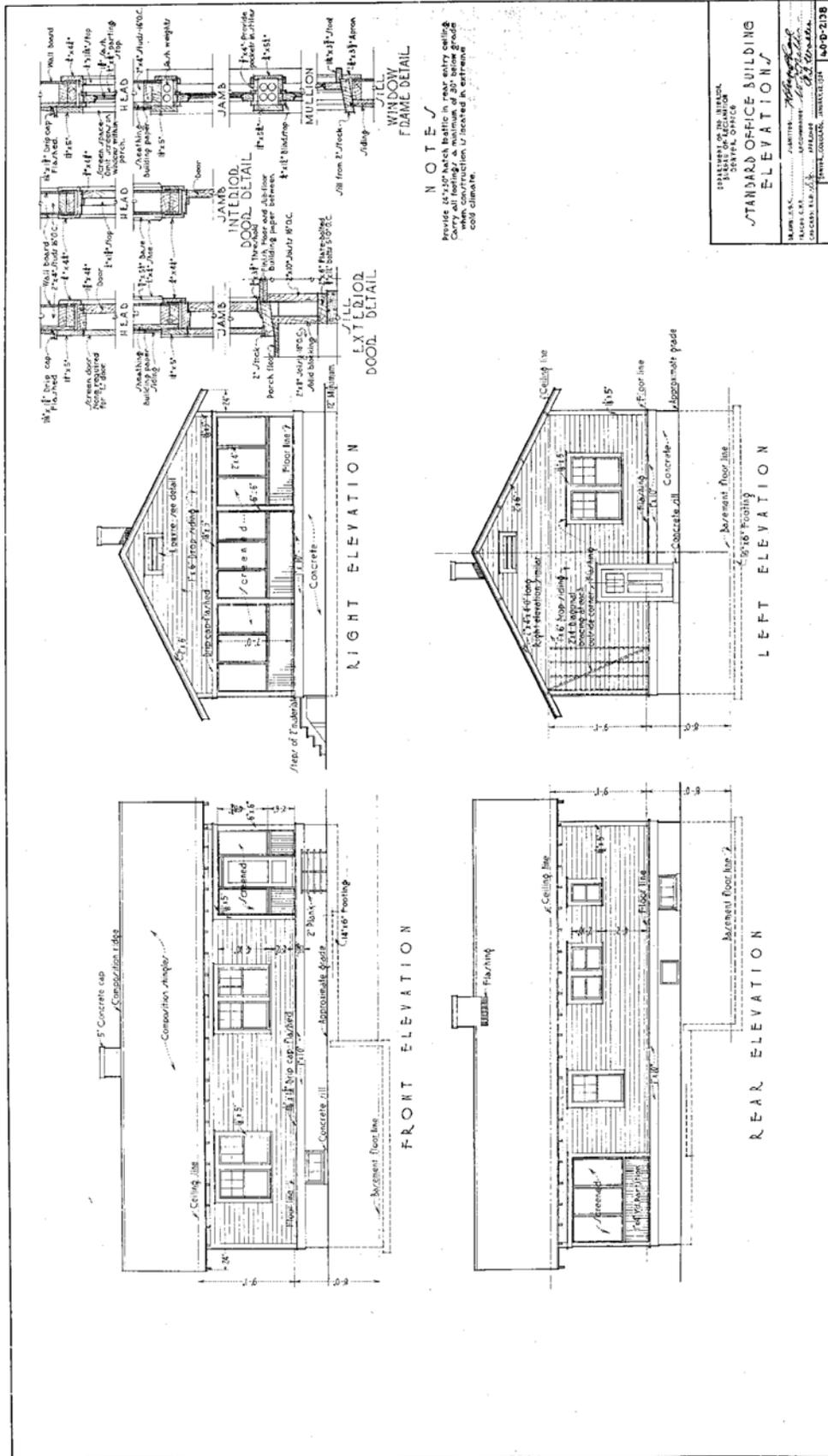


Figure 3.4 1934 Denver office standard design for a Bungalow office building.

Central Role of Denver Office in Standard Designs

Throughout this era, the Denver office developed scores of “standard and typical designs,” which were used throughout Reclamation and begin with the descriptor “40-D.” The 1938 *Manual of the Bureau of Reclamation* clearly described the central role of the Denver office in the design development process: “Designs shall be prepared in the Denver office for all major structures, for all minor structures of special or unusual design, and for all other structures, designs for which may be requested by field offices, for which standard designs or previously approved types of designs are not available.” Standard designs fell into two categories: (1) tentative standard designs, also called Denver office designs; and (2) final approved standard designs, called Denver office standard designs. Tentative standard designs that had been used for some time and found satisfactory in all respects could be reissued as final standard designs.

The design function in field offices was very limited. It included the adaptation of Denver office standard designs, provided that the latter office approved the changes.¹ The same Denver office standard designs for three-, four-, and five-room residences were, in fact, modified again and again for different projects. Common variations to basic building types occurred in the selection of siding, or window and door designs and placement.

No documentation was found that Reclamation employed any professional architects on its permanent staff during this time period, although information is scarce and obscure. Apparently, the design of buildings was assigned to the Structural Designs Group within the Electrical Engineering Division. This configuration is shown on a 1930 Denver office organizational chart, and again on a circa 1939 organizational chart, although on the latter, the Electrical Engineering Division had been expanded to include Mechanical Engineering.² A description of the division states that its responsibilities include the preparation of designs and specifications for camps and buildings. A July 1940 article on “Designs and Specifications” in *Reclamation Era* refers to an architectural group “charged with the preparation of all building designs and details and with the rendering of architectural treatments for large dams, power- and pumping-plant buildings and other structures.”³ This is the first specific reference found to an architectural group in Reclamation literature, but there is no evidence that the staff actually consisted of professional architects. Rather, it appears more likely that the group consisted of engineers tasked with the design of buildings.

A New Era in Building Designs: Boulder City

Even though Bungalow motifs persisted in Reclamation's design vocabulary, the Bureau began exploring other architectural styles in the early 1930s. The impetus for this was construction by Reclamation of the world's tallest dam of its time. Spanning the Colorado River near Las Vegas, Nevada, Hoover Dam was authorized under the Boulder Canyon Project Act passed in 1928.⁴ President Herbert Hoover approved funding for the record-setting project in 1930. Construction of the massive concrete barrier proceeded at full speed once Reclamation awarded the contract in March 1931 to the newly formed conglomerate called Six Companies, Inc. When the last bucket of concrete was placed on May 29, 1935, the dam's staggering 660-foot-thick base almost equaled its soaring height of 726 feet. The monumental civil engineering work captured the nation's attention and became the subject of enormous publicity. Amidst the grim realities of the Depression, the project symbolized America's indomitable spirit and ability to overcome extreme adversity with technical ingenuity.

In building the unprecedented dam, Reclamation determined that it also needed to fashion a construction camp unlike any it had created before. No housing existed in the barren, inhospitable desert for the thousands of men required to bring the project to fruition. Quarters would also be needed for permanent employees after the dam's completion. The matter received consideration even before Reclamation awarded the construction contract. To his credit, Commissioner Elwood Mead advocated for a new government-owned town that would be a model of community planning. In a January 4, 1930, letter to R.F. Walter, Chief Engineer, he wrote:

We must make some pretty extensive planning about the layout of the new townsite at Boulder Canyon and the character of the houses to be built there. There are housing divisions in the Department of Labor and the Department of Commerce, and I am running down what they may have, as well as what may be available in the Indian Service and in the War Department, in the way of plans for houses under climatic conditions similar to what would be met at the Boulder townsite. . . .I assume we will have to employ a town planner to lay out the townsite properly, although you may have other plans in mind.⁵

Contributions of Saco R. DeBoer and Gordon B. Kaufmann

In this instance, Reclamation did resort to professional input. Saco R. DeBoer, the City of Denver's progressive planner and landscape architect, was hired under contract to apply modern principles to the new community of Boulder City.⁶ Within its boundaries, space would be allotted to accommodate Reclamation employees, as well as the Six Companies, Inc., camp, and various business enterprises on leased lots.⁷ At first, Reclamation considered establishing the

townsite three miles from the dam in a V-shaped draw, but after DeBoer and Reclamation engineers evaluated temperature records, the Bureau selected a higher site on a ridge further from the dam where temperatures measured a significant 13 degrees lower. In a September 8, 1930, press release announcing the decision, Reclamation stated:

When construction of Boulder Dam is fully under way, this is likely to prove to be a most interesting community since its establishment will be on a very unusual basis. In the first place it will be planned by the best experts obtainable, as a model town. An outstanding peculiarity will be the fact that all the land in the town will be owned by the Federal government.⁸

As DeBoer proceeded with preliminary plans for the layout of the new community over the next few months, Reclamation hired noted Los Angeles architect Gordon B. Kaufmann as a design consultant. Born and educated in England, Kaufmann arrived on the West Coast of the United States in 1914 after working for several years in Canada. In California, he struck out on his own 3 years after establishing a firm with partners Reginald D. Johnson and Roland E. Coate.

Kaufmann's highly successful career was remarkable for the extensive array and variety of buildings he designed. His portfolio encompassed everything from mansions to educational campuses to offices to commercial centers. Some of his best known works include the Scripps College Campus in Claremont, California (1926), the Athenaeum at California Institute of Technology (1928), several buildings at the Santa Anita racetrack (opened in 1934), and the Los Angeles Times Building (1934).

Among Kaufmann's most unusual architectural achievements was the significant role he played in the design of Hoover Dam. Reclamation hired him to add aesthetic elements to the structure to counterbalance the monolithic engineering aspects. The bold, streamlined Art Deco appearance of the dam, most visible in the powerplant, dam crest, intake towers, and spillway, can be credited to him.⁹ In contrast to his work on Hoover Dam, Kaufmann's contribution to the design of Boulder City is relatively unknown. In mid-October 1930, Reclamation requested Kaufmann to submit a report containing recommendations on the general style of architecture that he considered best suited to the new settlement that would rise from the desert. He was also asked to include general plans and elevations for the major buildings, such as the administration building and dormitory, as well as a few typical floor plans and elevations for four-, five-, and six-room residences.

Kaufmann was a leading practitioner of the "California style" of architecture, an eclectic, freely interpreted Mediterranean style well adapted to the climate and

lifestyle of Southern California.¹⁰ Not surprisingly, the two designs Kaufmann submitted to Reclamation in early November for the smaller residences consisted of a “modified Spanish type of architecture.” He was busily engaged on similar designs for the larger residences and other buildings. Reclamation anxiously awaited receipt of these drawings so it could move forward with preparing detailed plans and specifications, and advertise for the construction of the initial group of buildings.¹¹

By the end of January 1931, significant progress had been made on the plans for the town and its buildings. Reclamation estimated construction costs for all of the government facilities deemed necessary for Boulder City at an aggregate of \$1,818,092. This included an administration building, dormitory, municipal building, auditorium, and school; 90 dwellings and 50 garages for Reclamation employees; civic improvements such as playgrounds, streets, sidewalks, and landscaping; the electrical distribution system; and a water and sewage system. As always, Reclamation had to defend its proposed expenditures to demonstrate they were not excessive. It pointed out that the estimate represented less than 2 percent of the \$125,000,000 projected cost of building Hoover Dam and its associated facilities. Furthermore, Reclamation expected that revenues generated from leasing lots in town, and collected for the use of government services such as water and electricity, would make Boulder City self-supporting and eventually recoup the government’s investment. Should this not occur, any remaining costs would be recovered through the sale of Hoover Dam’s power and water.¹² As so often expressed in preceding years, Reclamation once again justified the need to provide more than just basic housing in such a desolate environment:

No argument should be required to demonstrate the wisdom of providing comfortable quarters and living conditions for employees of the Government and of the contractor. This is believed to be indispensable in order to forestall rapid employment turnover with its attendant disadvantages. In a desert country of extreme heat with other conditions not naturally attractive and conducive to comfort and contentment, a temporary construction camp operated on a plan which might be feasible elsewhere, would be entirely inadequate at this point. On large construction work, particularly in the West, where natural conditions are not alluring, the necessity of providing comfortable quarters and other conveniences for bodily comfort and enjoyment, not neglecting recreational and entertainment facilities, is now well recognized, . . .¹³

Reclamation proposed an estimated cost of between \$3,700 and \$7,700 for each of the 90 dwellings, and of \$400 for free-standing garages.

Over the next few months, more press releases and articles appeared about the municipality that Reclamation touted as the first to be “consciously planned in

advance of its development to be laid out with all the exigencies of an automobile age in mind.”¹⁴ In the February 1931 issue of *American City*, DeBoer described the difficulty of designing a community intended to house a maximum number of people during the dam construction, but whose population would be significantly reduced after only permanent employees remained. His solution was to develop two distinct areas for residential use separated by a forested beltway. The inner area would comprise the permanent housing if the population was not large enough after the completion of construction to require both areas. The illustrations accompanying the article show a triangular-shaped plan with three formal boulevards converging at a Reclamation headquarters complex consisting of an administration building, auditorium, and guest (or club) house, all overlooking a park (figure 3.5). The three buildings, together with a combined city hall and post office, would form a civic center.¹⁵

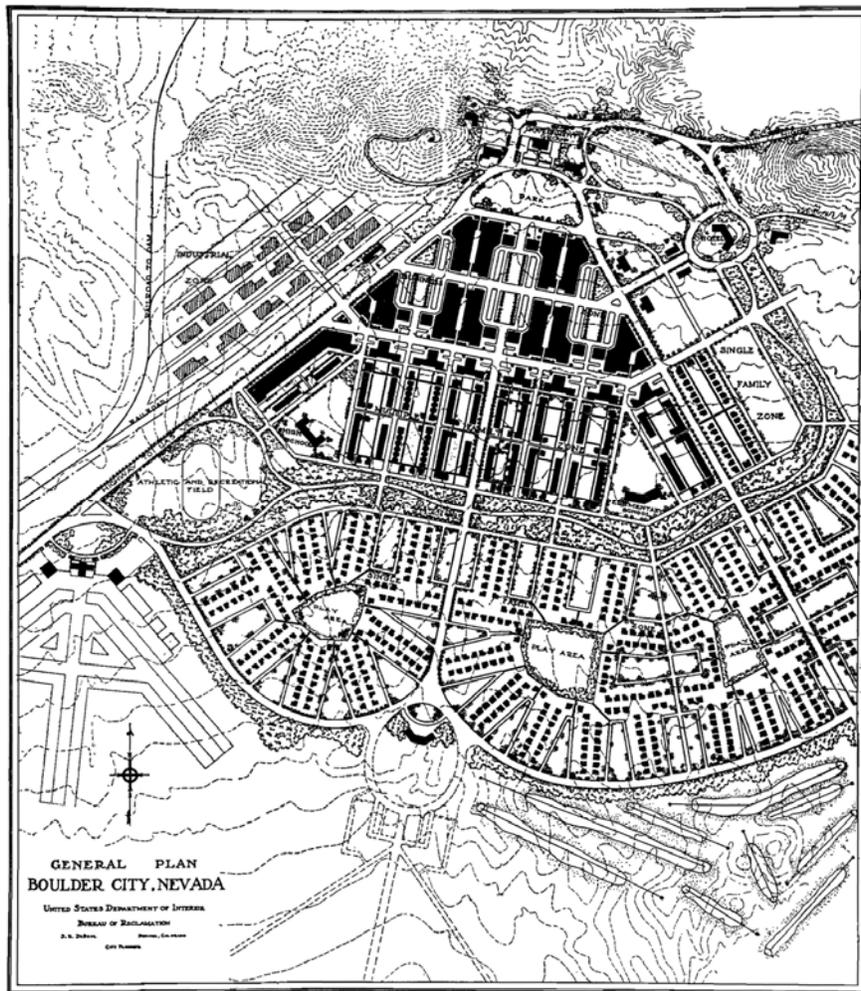


Figure 3.5 Saco DeBoer's progressive plan for Boulder City shows the government administration complex at the apex of the triangle. A forested beltway in the center separates the multiple family housing from the single-family dwellings. (Source: *American City*, February 1931.)

Construction of these prominent buildings required the Secretary of the Interior's approval, and in a March 17, 1931, letter to R.F. Walter, Commissioner Mead cautioned that Secretary Ray Wilbur was "being watched for extravagance in the building program." In this regard, Mead asked, "Could we not safeguard ourselves by dropping the term "club house"? Will not "dormitory" answer for the present? Also, the term "city hall" rather hits some of our people in the eye. In other words, just now some of the members of Congress are pretty finicky about this part of the expenditure."¹⁶ The suggested name changes were made, and on April 7, Reclamation's concerns eased when Secretary Wilbur approved Kaufmann's preliminary sketches of the administration building, municipal building, and dormitory (figure 3.6).

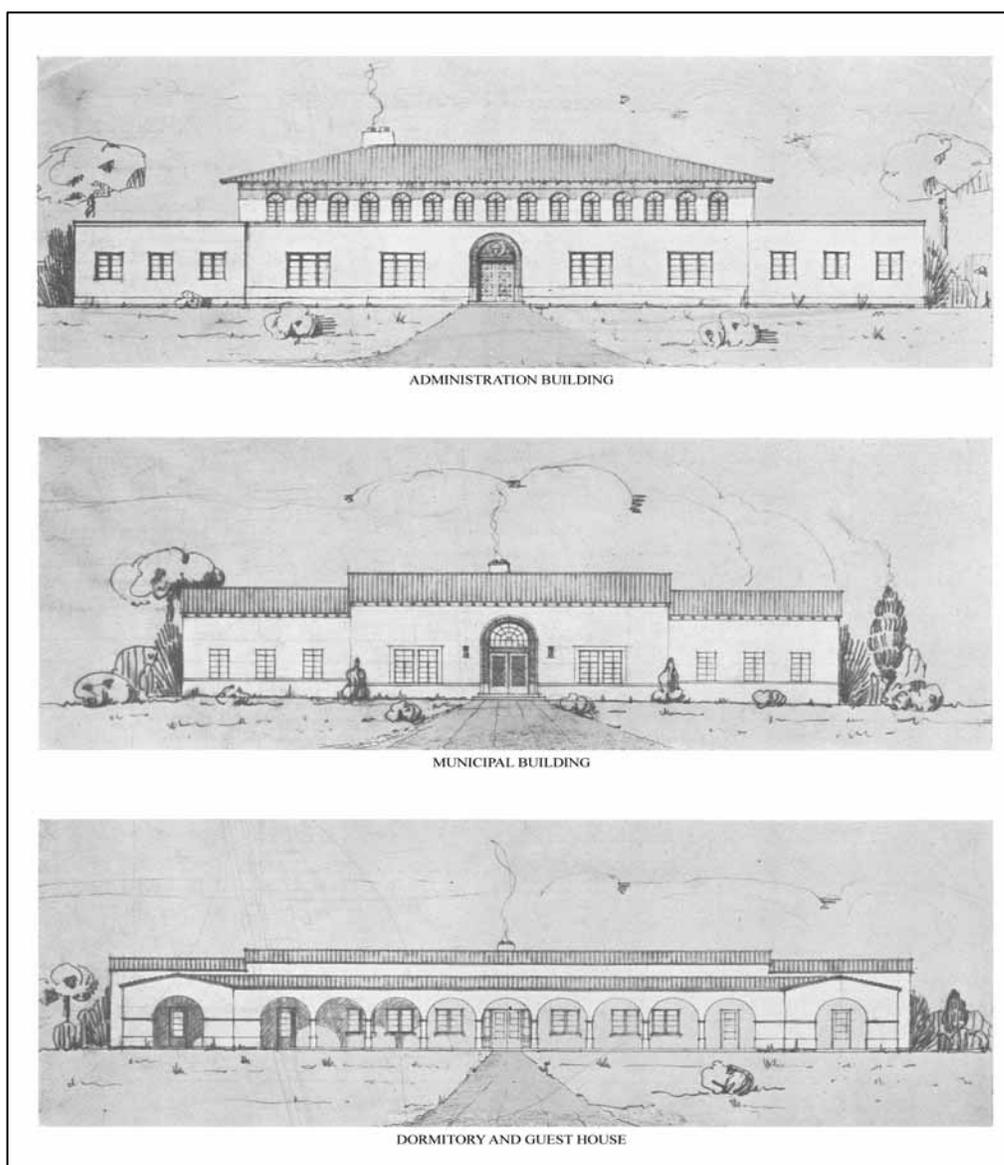


Figure 3.6 Gordon B. Kaufmann's sketches for Boulder City buildings. (Source: *Reclamation Era*, May 1931)

Two months later, Mead requested permission from Secretary Wilbur to issue the advertisement and specifications for the three buildings upon completion of the plans. It took only a week for approval to be granted. A bid opening occurred in Las Vegas, Nevada, on August 10, and the contract was awarded to B.O. Siegfus of Salt Lake City for \$46,253. The price did not include materials and equipment, which were to be provided by the government.¹⁷ Construction proceeded rapidly thereafter.

Following Kaufmann's recommendations, the buildings were all of a "modified Spanish style" featuring stuccoed exterior walls and tile roofs. The three buildings also shared a type of construction known as "hollow wall." Exterior walls were of brick with a 4-inch air space between the outer and inner faces. Research indicated that this building method had a 35 percent better insulating quality than solid brick walls.¹⁸

At an estimated cost of \$50,000, Reclamation's project headquarters (or administration building) comprised the focal point of DeBoer's plan (figure 3.7). A two-story center portion covered by a low hipped roof with extending eaves was flanked at either end by flat-roofed, one-story wings. A series of closely spaced, round-arched windows ran nearly the length of the second floor in the central section, and classical detailing highlighted the prominent main entrance. The building had a full basement incorporating a garage, storage rooms, and mechanical systems. The first floor contained offices for the construction engineer, office engineer, field engineer, chief clerk, and rooms for drafting, stenographic, and clerical forces. The second floor was designed to accommodate the district counsel, visiting engineers, and consultation and drafting rooms.¹⁹ A noteworthy feature of the structure was the early use of air-conditioning, approved 2 years before it was installed in the White House. When finished, the Boulder City building became Reclamation's most substantial and imposing project headquarters. It continues to serve as Reclamation's headquarters for the Lower Colorado Region (figure 3.8).

The adjacent, U-shaped, one-story dormitory is one of the best examples of Spanish Colonial Revival influenced architecture in Boulder City (figure 3.9). Stuccoed surfaces, low-pitched tile roofs, an arcaded façade with round-arched openings, and an internal courtyard all contribute to its aesthetic appeal. To compensate for the lack of air-conditioning, the design included slatted doors and large windows to improve ventilation. This building also remains in use by Reclamation, although now for office space (figure 3.10).

Figure 3.7 Boulder City administration building in October 1933. The lush green lawn presented a stark contrast to the surrounding desert landscape. (Source: Reclamation photograph database)



Figure 3.8 Boulder City administration building in 2007 with desert landscaping. (Source: Andy Pernick, Bureau of Reclamation)



Figure 3.9 Boulder City dormitory in April 1932. Landscaping being installed adds the finishing touches. (Source: Reclamation photograph database)



Figure 3.10 Boulder City dormitory now serves as office space and is called the Annex. (Source: Andy Pernick, Bureau of Reclamation)

The one-story municipal building continues the theme of Spanish Colonial design with its stuccoed walls and low-pitched tile roofs (figure 3.11). The L-shaped structure has a symmetrical main façade with a central section flanked by lower wings at either end. A prominent, round-arched, center entrance serves as the visual focal point. Originally, the main floor contained

the post office, a court room, and quarters for the U.S. Marshal, city clerk, city engineer, and city manager. Today, the building serves as a senior center and police station.



Figure 3.11 The Boulder City municipal building and post office in October 1933. (Source: Reclamation photograph database)

Kaufmann's name or initials do not appear on the Boulder City building drawings issued with specifications, but Reclamation used the designs he presented in late fall 1930 as the basis for its own. Final plans for the Boulder City buildings were executed in the Denver office and assigned numbers beginning with 45-D, with "45" signifying the Boulder Canyon Project (table 3.2). Of the initials that appear on the drawings, only a few full names could be tracked down. One in particular provides further clues that no architects were employed within Reclamation. The initials "H.G.K." appear next to "Drawn" on a number of drawings, including some of the administration building. The full name was most likely Harold G. Kennedy. He moved to Denver from Iowa in 1930 and began working for Reclamation that year. Originally, he worked within the Electrical Division; later, when a Structural and Architectural Branch was formed within that division, he became part of that group. Eventually he became a "supervisory architect." Although he bore the title of architect, nothing found in biographical information indicates that he had formal training in the profession.²⁰

Table 3.2. Boulder City Building Specifications Referred to in Document

Number	Name	Bid Due Date
528-D	Administration Building, Dormitory and Municipal Building	August 10, 1931
507-D	Six Three-Room and Six Four-Room Residences	March 13, 1931
527-D	Six Three-Room and Six Four-Room Residences	July 15, 1931
540-D	One Seven-Room and Three Six-Room Residences	October 20, 1931
543-D	Nine Five-Room Residences	November 10, 1931
545-D	Seventeen Three-Room and Twelve Four-Room Residences	December 4, 1931
553-D	Four Five-Room Residences	December 30, 1931

Residential Construction

As work on the administration building, dormitory, and municipal building progressed, major activity associated with residential construction occurred nearby. In February 1931, Reclamation announced plans for the first 12 houses to be built in Boulder City. Located along Park Street and on alternating lots on the north side of Denver Street near the administration complex, the residences would be permanent buildings. Like other construction camps, the new community would include both permanent and temporary structures. Reclamation intended the former for occupancy by higher graded engineers and inspectors during construction and for the operating force upon project completion. Temporary dwellings would accommodate lower graded employees such as rodmen, clerks, laborers, and mechanics who could not afford the rent charged for the more substantial permanent houses.²¹

An article in the *Las Vegas Review* exclaimed that the proposed 12 permanent Spanish style houses, consisting of either three or four rooms, would be “complete in every detail, even to a place in the kitchen for the laundry tubs.” Other features incorporated in the new homes included space for an electric refrigerator, a built-in ironing board, a broom and linen closet, a fireplace in the living room, and a breakfast nook in the kitchen.²² One thing noticeably absent in all the houses was air-conditioning, due to the cost. To help protect occupants from the intense summer heat, permanent and temporary houses shared a common feature, namely insulated roofs.

Reclamation requested costs for both frame and brick construction of the 12 houses when it solicited bids on specifications number 507-D. In comparing the bids received, Reclamation considered the extra maintenance costs that would need to be added to frame construction and concluded that, in the long run, brick hollow-wall construction would be cheaper.²³ Hollow wall construction consisted

of laying common brick in a Flemish bond, with a 4-inch air space between the outer and inner faces. It would be the first and only time that Reclamation constructed its permanent residential camp buildings of brick, indicative of the unique status of Boulder City.

To convey the Spanish style of architecture, exterior walls were stuccoed and roofs covered with tile (figures 3.12 and 3.13). Other features included multi-paned wood casement windows, often paired or in triplets; plastered interior walls; and a variety of exterior doors that reinforced the Spanish or Mediterranean motif. Some variations in the floor plans and façade treatments of the 12 houses added to the architectural character of the streetscape. Although modest in size, the residences were dramatically different in appearance than any constructed by Reclamation previously or in the future.

By mid-November 1931, construction of the above-described 12 houses had been completed, and another 12 on the north side of Colorado Street were close to being finished (figures 3.14 and 3.15). Reclamation built the latter three- and four-room permanent houses in accordance with specifications number 527-D to accommodate engineers and government employees. All featured hollow brick walls, either plain or stuccoed on the exterior, with tile or asphalt composition roofs. To create interest, Reclamation varied the massing, floor plans, façade treatments, and roof types. Standard interior elements included plastered walls and ceilings, and fireplaces. Despite the extreme heat of summer, winter nights were often chilly.

Reclamation had also awarded a contract for the four grandest residences in Boulder City, which would be built in a matter of months at an estimated total cost of \$18,000. These comparatively large homes occupied prominent lots along Denver, Nevada, and Park Streets, in close proximity to the administration complex. Reclamation built the permanent dwellings for the chief construction engineer, office engineer, field engineer, and district counsel for the Boulder Canyon Project.²⁴ The specifications (number 540-D) called for one seven-room and three six-room residences. The latter one-story dwellings were similar in a number of aspects to the three- and four-room residences; they had tile roofs, casement windows, and unstuccoed exterior walls (figure 3.16). Plans featured a central living room flanked on one side with a three-bedroom wing and on the other side with a kitchen and dining wing. “Extras” included covered porches on the front elevation and rear patios accessed by French doors. The third bedroom facing the rear patio was denoted as an “open air bedroom” due to its multiple windows. The dining room even featured a “telephone niche.”

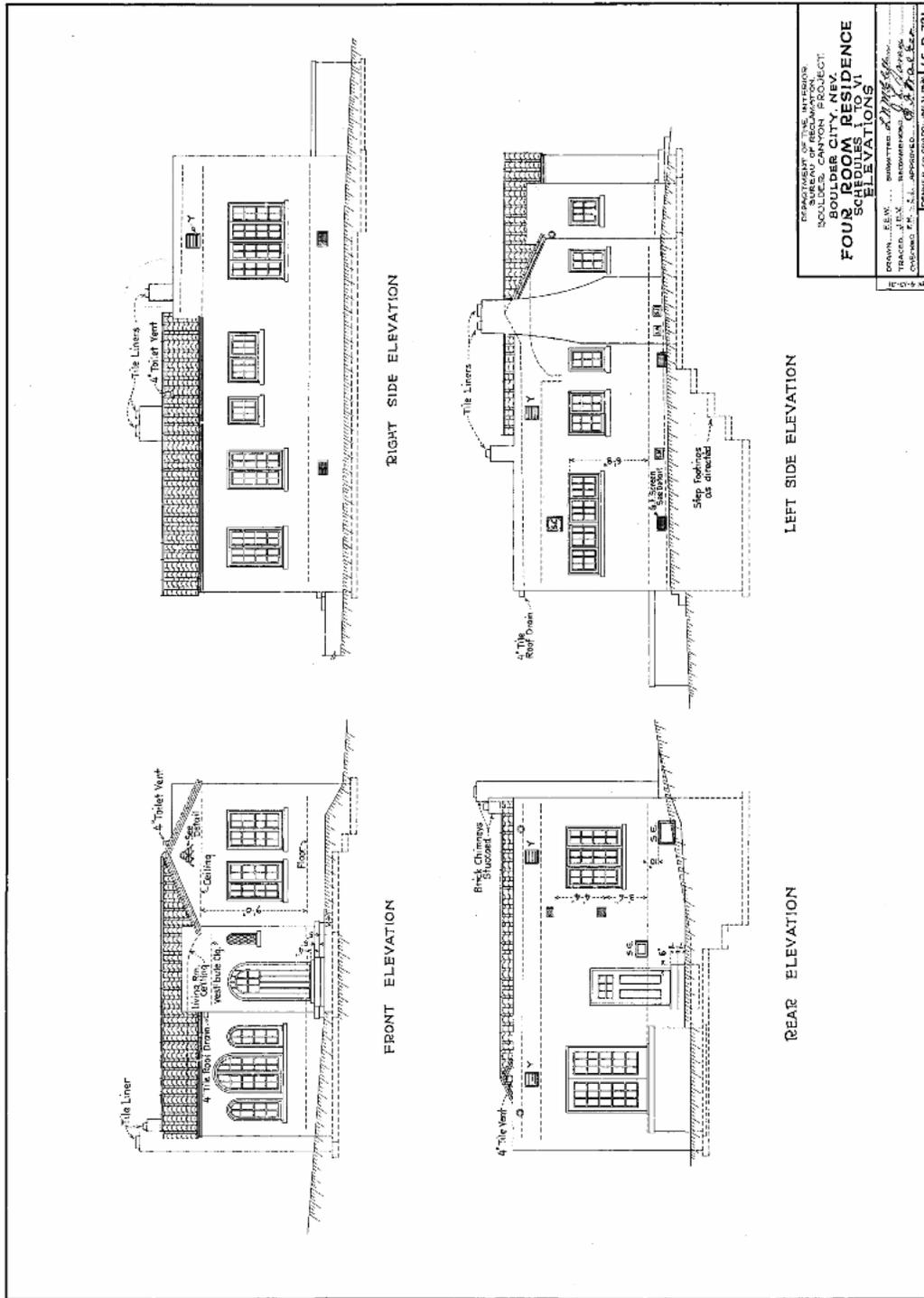


Figure 3.12 Drawing number 45-D-721 depicts elevations for one of the four-room residences that were among the first 12 houses constructed in Boulder City under specifications number 507-D.

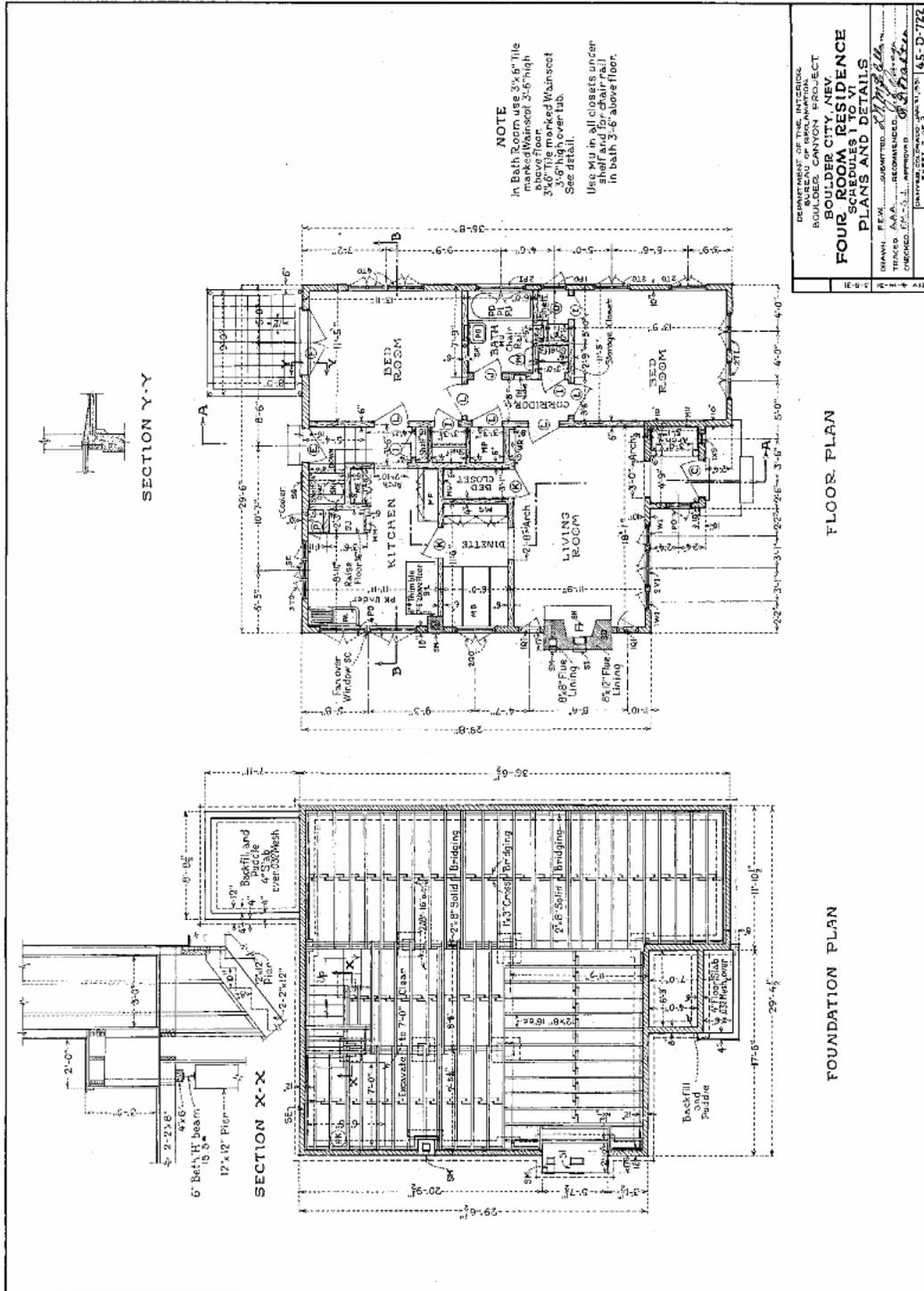


Figure 3.13 Floor plans for the four-room residence shown in drawing number 45-D-721.



Figure 3.14 Three- and four-room Reclamation houses along Colorado Street under construction in early December 1931.



Figure 3.15 Newly completed Reclamation houses in December 1931. Built according to specification number 527-D, both dwellings are of the four-room type. The water tank in the background is on "Water Tank Hill."



Figure 3.16 Six-room house built for construction engineer Walker Young, shown in October 1933. The comparatively spacious house included over 2,000 square feet.

The seven-room, side-gabled house, which included four bedrooms, was a departure from any of the other residences; it was the only two-story, single-family home to be designed. It also appeared markedly different in style, as it lacked the Spanish elements (figure 3.17). In fact, the exterior was very plain. A second-story cantilevered balcony on the front elevation, carved detailing of the porch eaves, and shutters on some of the windows provided the only decorative relief. One detail in which all four homes built under specifications number 540-D differed from those previously constructed was in the use of steel sash rather than wood. In fact, this may be the first time Reclamation specified them for use in residences.

In December 1931, Reclamation opened bids on 29 temporary, three- and four-room houses (specifications number 545-D) to be scattered at various locations. The modest dwellings were “constructed as cheaply as possible,” and the government furnished almost all of the building materials to the contractor. The dwellings were of frame, with drop siding over sheathing, and asphalt shingle roofing (figure 3.18). Reclamation specified concrete foundations and footings, and foundation sills of redwood.²⁵ Since the houses were assumed to be temporary, no attempt was made to vary their appearance. They all had side-gabled roofs with screened sleeping porches off the front elevation. Elements such as the exposed rafter ends and multi-paned over single-paned windows faintly referenced the Bungalow form. Floor plans consisted of a living room, one bedroom, and a kitchen. Plaster board covered interior walls, and the flooring was fir. The houses had bathrooms with shower baths, but electric ranges and electric refrigerators were not standard.²⁶

In January 1932, construction started on four five-room temporary houses on Denver and Utah Streets for “low salaried employees with large families” (specifications number 553-D).²⁷ Like the 29 temporary dwellings, these were of frame with drop siding, screened front porches, and side-gabled roofs. Bungalow detailing included exposed rafter ends, broad overhangs, and multi-paned over single-paned double-hung windows (figure 3.19).

In April 1932, another group of permanent brick residences with tile roofs was ready for occupancy by ranking Reclamation staff, most notably Sims Ely, Boulder City’s manager. The nine houses along Utah and Denver Streets, and Nevada Highway, each contained two bedrooms, a kitchen, a living and dining room, and small enclosed porches. Round-arched openings, recessed in projecting gable walls, or simpler canopied openings, recessed in rectangular brick surrounds, highlighted the entrances (specifications number 543-D).



Figure 3.18 Identical three- and four-room temporary houses being built on Utah Street in April 1932.



Figure 3.19 Five-room temporary frame residence shown in October 1933.

By July 1932, the U.S. Daily News declared the “City for Workers at Hoover Dam Now Nearing Completion.” The model city with a population of nearly 5,000 was “no longer a construction camp” and, in fact, had quickly become the third largest community in Nevada. In less than a year, 900 buildings had been completed, and another 100 were under construction. Residences comprised 90 percent of the buildings, and 93 percent of them boasted electric refrigeration. Of the finished buildings, the government owned 109 (figures 3.20 and 3.21).²⁸



Figure 3.20 View from Water Tank Hill showing houses along Denver Street in the foreground. At center left is the administration building overlooking the park. Photo taken July 27, 1934.



Figure 3.21 Boulder City as seen from the air in December 1934. Water Tank Hill can be seen to the left in the background.

Following completion of Hoover Dam in 1935, a year ahead of schedule, Boulder City underwent another transformation. By fall 1938, the population had dropped to about 2,500, a sharp decline from its peak of about 6,000. Reclamation had constructed a total of 100 homes for its officials and employees, all of which remained in use. Contractors had built more than 600 inexpensive cottages, most of which had been removed. The desert community had evolved into a “green oasis” occupying a site where a mere 7 years earlier “water flowed only during cloudbursts, and life held sway in the insensitive bodies of rattlesnake and scorpion.”²⁹

The remarkable history of Boulder City was recognized with listing of the Boulder City Historic District on the National Register of Historic Places in August 1983. The nomination ascribed national significance to the district for being at the forefront of progressive American city planning and for its role in the beginnings of Federal involvement in national housing and planning policy. The significance of Boulder City was further attributed to the architectural integrity of its historic buildings. Of the 514 buildings and structures within the district, 408 were constructed between 1931 and 1942. Among the contributing properties are the administration building and dormitory, still owned and occupied by Reclamation.

There would be a lull in construction of government housing at Boulder City until the early 1940s. In the meantime, Reclamation turned its attention to other projects of enormous magnitude, which, like Hoover Dam, dramatically altered river and landscapes and further established Reclamation’s reputation as a builder of great dams.

Another Model Community: “Coulee Dam”

In Washington State, the mighty Columbia River became the site of another Reclamation dam of massive proportions. When completed, Grand Coulee Dam was the largest manmade structure on earth and hailed as the “eighth wonder of the world.”³⁰ It was the key feature of the Columbia Basin Project, designated Public Works Project No. 9 on November 1, 1933, by Secretary Harold Ickes. The appropriation of emergency funds to begin work occurred immediately thereafter. Reclamation quickly moved ahead with plans. On July 13, 1934, Secretary Ickes officially awarded a construction contract for the first phase of the dam and powerplant. For the next 7 years, thousands of workers labored to raise the dam from foundation to crest. Upon completion in late 1941, Grand Coulee played a critical role during World War II as the source of electricity for war-related industries in the Pacific Northwest such as aluminum plants, airplane factories, and expanded shipyards.³¹

As with Hoover Dam, Reclamation selected a remote and uninhabited site for Grand Coulee Dam, land which had been “the stamping grounds for jackrabbits and coyotes since time immemorial.”³² Camps to house employees and provide all types of services were an immediate necessity. Reclamation designated a large, gently sloping tract of land on the east side of the Columbia River for the camp built by the contractor for its employees. Ground was broken on August 14, 1934, and by the end of the year, a community capable of housing 3,000 people had transformed the vacant bench lands. Known as Mason City, the camp cost more than \$1,000,000 to build and included about 300 wood frame houses, several dormitories, a 1,000-seat cookhouse, and a 33-bed hospital. It boasted the distinction of being the “first city in the world to be entirely electrically heated.”³³

Directly across the river from Mason City, Reclamation established “Coulee Dam,” otherwise known as Engineers’ Town, as the permanent project headquarters to provide living quarters, administrative offices, and other services for its personnel. Reclamation anticipated that the town would be occupied by about 500 people during the construction phase and, thereafter, by a reduced operation and maintenance staff. Like Boulder City, Reclamation created “Coulee Dam” as a tightly controlled, contemporary model community. Also similar to Boulder City, the town’s plan consisted of a triangular or fan shape with the administration complex at the highest elevation. Roadways converged at this focal point (figures 3.22 and 3.23). Lots within the “triangle” were reserved for permanent houses, while a tract of land at the north end of the community outside the “triangle” was set aside for temporary housing, expected to be in use for a maximum of 10 years.

Similarities between Coulee Dam and Boulder City layouts do not extend to the building designs. Permanent residences at Coulee Dam differ greatly in appearance from those in Boulder City. Rather than a Spanish style appropriate for the Southwest, Reclamation employed a loosely adapted English Colonial style as the primary architectural motif. The style was very popular in the United States during the first half of the 20th century and is suggested at Coulee Dam in the simple and traditional building forms, multi-paned windows, multi-paneled doors, and lap siding. Decorative detailing is absent, except for exterior shutters. Roof pitches are intermediate and eaves project only slightly, rather than overhanging as in the earlier Bungalows designs.



Figure 3.23 April 1936 aerial view of Coulee Dam with temporary "court-type" houses in the foreground.

While Reclamation relied on simplified Colonial motifs for many of its buildings during the height of the Great Depression, the National Park Service (NPS) became renowned for its hallmark "high style" Rustic architecture developed during the late 1920s and 1930s. To a lesser extent, the U.S. Forest Service also adopted the style for some of its structures. Superbly crafted of log and stone, Rustic style structures epitomized harmony with the surrounding natural environment. They also embodied the values of the NPS and U.S. Forest Service, and projected an image suggestive of their natural resources missions. For this reason, the finest examples of Rustic style buildings constructed by both agencies were those intended for high visibility and public use, such as lodges and picnic shelters. Reclamation's adoption of the English Colonial style reflects its reliance on engineering works, rather than buildings to convey its mission, and perhaps the traditional values of a conservative engineering agency. Equally important, Reclamation's design choice also lent itself far better to expedient construction than the Rustic style, which promoted hand-crafted pioneer methods. In fact, much of the NPS's Rustic architecture was completed under New Deal Programs such as the Works Progress Administration and Civilian Conservation Corps, which were intended to be labor intensive with an emphasis on handmade craftsmanship.

Initially, detailed planning and design work for the Coulee Dam government camp buildings occurred at a temporary project office established in Almira,

Washington, in August 1933. An engineering staff that grew to 16 by the end of 1934 was divided into four activities including “architecture.” The six men assigned to the latter group assumed the design of buildings for the proposed government camp. In addition to developing plans and specifications for the first 60 residences, the men also began design work on five larger dwellings, an administration building, and a school. Due to the increasingly heavy workload, Reclamation transferred the “architectural” group and building design function to the Denver office on May 21, 1934.³⁴ Apparently, Coulee Dam was a town completely designed by Reclamation engineers from the sewers to the streets to the homes. Unlike Boulder City, no evidence was found that advice or input was sought from outside architectural consultants.

Also unlike the designs for Boulder City buildings, those for Coulee Dam would be used repeatedly by Reclamation on various other projects. Drawings developed for Coulee Dam and assigned numbers beginning with “222-D” to designate the project were reissued either identically or with slight variations as standard Denver office drawings with the designator “40-D” (table 3.3).

Table 3.3 Some Coulee Dam Designs Reissued as Denver Standard Designs

Coulee Dam Drawing Number (Elevation)	Denver Standard Drawing Number	Type of Residence	Date of Denver Drawing
222-D-667	40-D-2238	Five-Room, Type 1	August 4, 1938
222-D-977	40-D-2267	Four-Room, Type 1	December 1, 1935
222-D-1032	40-D-2270	Four-Room, Type 2	November 29, 1935
222-D-1034	40-D-2272	Five-Room, Type 2	November 27, 1935
222-D-393	40-D-2770	Three-Room, Type 5	August 4, 1938
222-D-394	40-D-2771	Three-Room, Type 5A	August 4, 1938
222-D-396	40-D-2773	Four-Room, Type 6	August 4, 1938
222-D-398	40-D-2775	Four-Room, Type 7	August 4, 1938
222-D-399	40-D-2776	Four-Room, Type 7A	August 4, 1938

The government awarded the first two housing contracts, each for 30 permanent residences, in August and November 1934. Contractors executed all of the work, except for interior painting, which was accomplished by government forces. The first 30 houses were completed in February 1935 and the second 30 in April 1935. Reclamation held a drawing to assign the brand new dwellings to employees anxious to relocate from temporary accommodations in nearby towns (figures 3.24 and 3.25).³⁵

The initial group of 30 houses was constructed under specifications number 576 and consisted of one-story frame houses of five similar types. Reclamation located the buildings on scattered lots in the central part of town and paid particular attention to mixing the various types to avoid monotony. Gabled or gable-on-hip roofs covered with wood shingles, siding and shingles used alternately

for exterior cladding, and different color schemes added interest. Wooden multi-paned casement windows used singly or in groups and front entrances that were either slightly recessed or protected by porch hoods also contributed variety.



Figure 3.24 First permanent residences at Coulee Dam under construction in 1934. On the left is a four-room house with a gable-on-hip roof (drawing number 222-D-396). On the right is either a three- or four-room house with side-gabled roof. Both house types in this photograph would be built on other Reclamation projects.

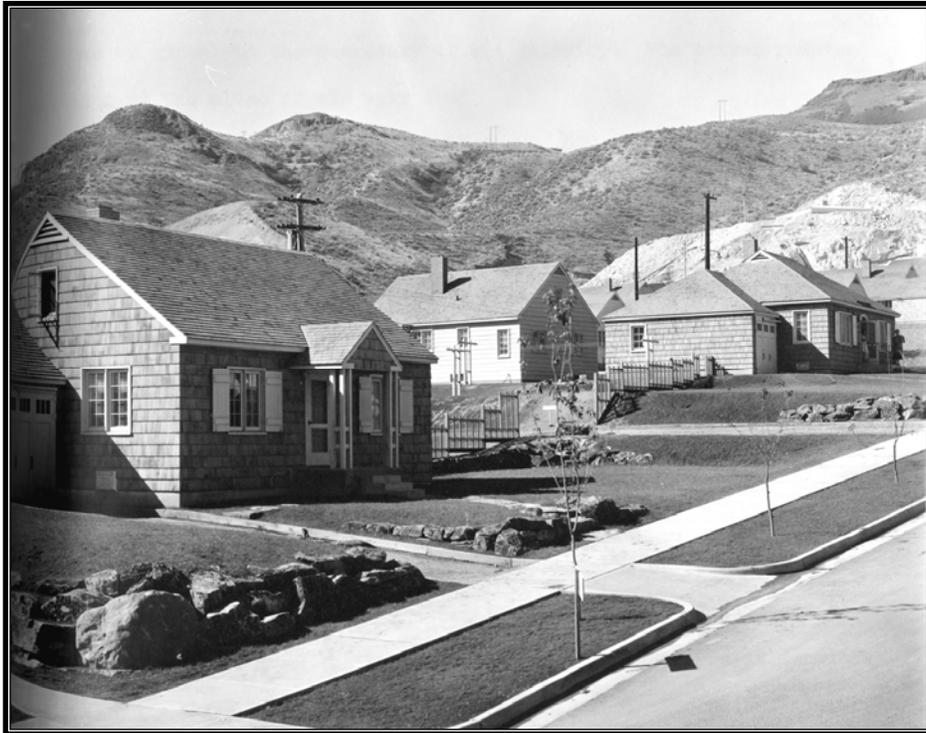


Figure 3.25 Permanent houses at Coulee Dam in September 1935. At left is a four-room residence (drawing number 222-D-399). House designs were varied to create interest.

The houses contained either one or two bedrooms, a living room, kitchen, dinette, bathroom, and basement. One bedroom houses contained about 647 square feet on the main floor; two bedroom homes contained an additional 174 square feet. Interiors had plastered walls and ceilings, and fir floors. A new feature shared by all of the residences, and indicative of the increasing importance of the automobile, was the attached garage. In Boulder City, only the larger homes reserved for the top-graded employees offered this convenience.

The second 30 houses, built in accordance with specifications number 599, were very similar to the first ones. In fact, Reclamation specified the same drawings. Some minor details differed and some of the dwellings had full rather than partial basements (figures 3.26 and 3.27).

In the summer of 1935, Reclamation constructed five residences under specifications number 615 for the construction engineer and four other higher-ranking officials. These larger homes commanded corner lots along Douglas Avenue, the central boulevard (figures 3.28 and 3.29). The houses consisted of two plan



Figure 3.26 Permanent houses at Coulee Dam in 2004.
(Source: Clay Fraser, Fraser Design)

types, nearly identical except for some cosmetic details. All of the houses were 1-1/2 stories high, with L-shaped plans and intersecting hipped roofs. Ten-inch “Dolly Varden” siding, a type of bevel siding with a rabbeted edge, covered exterior walls. Each house had a full basement with furnace, laundry area, fruit storage, and a garage. The first floor contained a living room, kitchen, dining room, full bathroom, and two bedrooms with connecting hallways. The attic space contained two bedrooms with closets and a partial bath. A small porch extended off the rear entrance, and on the front elevation, a simple doorway served as the main entrance. Upgrades in the three fancier houses included a breakfast alcove, oak hardwood floors, living room fireplace, bathroom tile, shutters, and granite rock facing around the garage entrance.³⁶

Mention was previously made of the area reserved at the north end of the government camp for temporary housing. At the close of 1934, Reclamation had plans underway for constructing four dormitories there, as well as a group of residences identified as “court-type” residences (figure 3.30). These consisted of attached one-story dwellings, with three residences constituting one unit. Although simple and economical, the buildings harmonized with the permanent housing. Standardized plans for all of the units permitted the prefabrication of wood wall panels and floors. The dwellings did not include basements and full concrete foundations, and insulating wallboard rather than plaster covered interior walls.³⁷

A garage, entered at the back elevation and concealed at the front by a screened entry porch, separated each residence in a unit. “Dolly Varden” siding clad the exterior walls and composition roofing covered the gable roofs. Gable ends on the two outer residences contained board and batten siding.

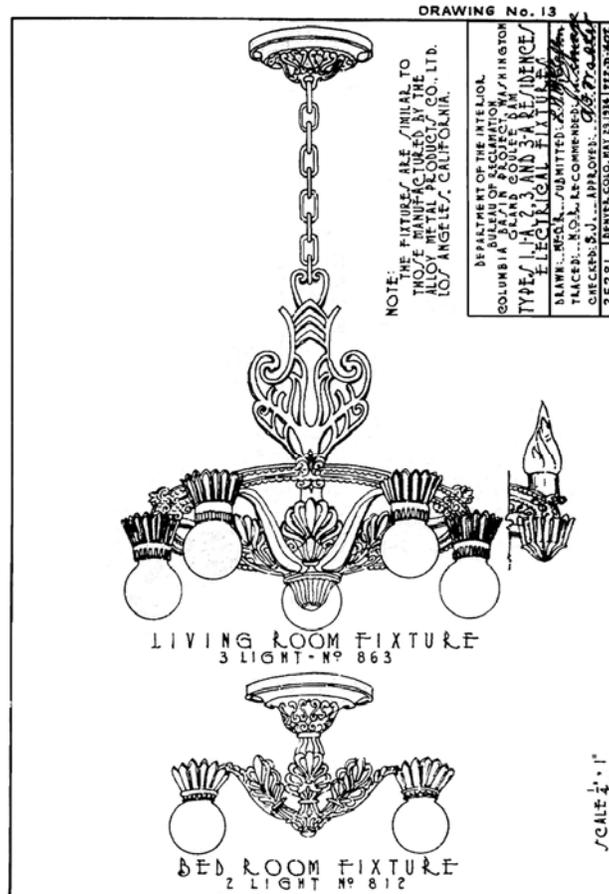


Figure 3.27 Design for light fixture included in specifications number 599. Such drawings are unusual.

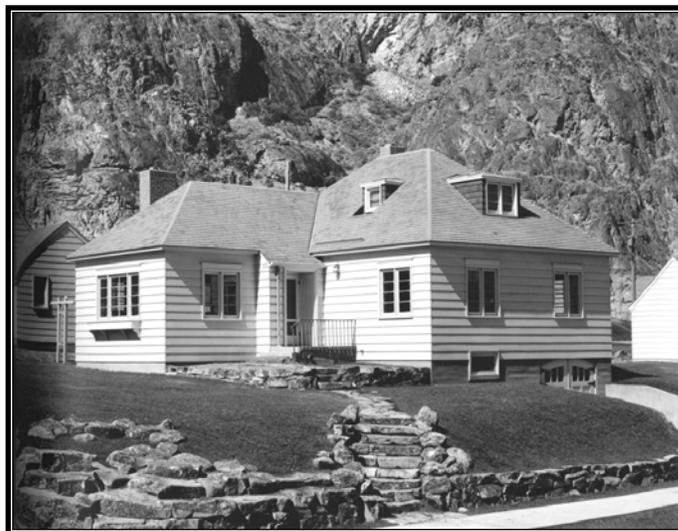


Figure 3.28 A five-room residence at Coulee Dam built in accordance with specifications number 615 (drawing number 222-D-667). Photo was taken on September 17, 1935.

Multi-paned, double-hung wood windows and paneled doors enclosed openings. Initially, Reclamation constructed 8 units in the spring of 1935, but a housing shortage soon led to the addition of 11 more units the following year. Government forces quickly erected the dwellings, with the first eight units completed within a matter of about 6 weeks.³⁸



Figure 3.29 View of five-room residence at Coulee Dam in 2004. (Source: Clay Fraser, Fraser Design)



Figure 3.30 Temporary court-type housing built in the mid-1930s still existed in 1952, as seen in this photo.

consisting of a center section with a slightly lower wing flanking each end. Both buildings also included basements with garage space.

The most prominent and elaborate building erected by Reclamation in 1935 was the permanent administration building (specifications number 603), perched at the focal point of the government community and overlooking the river valley below. Like the surrounding buildings, Reclamation selected Colonial motifs for the structure, and it became the first and grandest in a series of similar style office buildings constructed on various projects (figures 3.31 and 3.32). Although decorative treatment of the Coulee Dam administration building differed from the one in Boulder City, the two shared similarities in their overall form and massing. Both had a symmetrical rectangular footprint



Figure 3.31 At bottom of photograph is a rear view of the administration building in 1935, still under construction.

At Coulee Dam, both the center block and end wings of the administration building are covered by side-gabled roofs. The building is of frame construction, with the center section covered by smooth siding and the wings clad in contrasting lap siding. Windows throughout the building are multi-paned casements, but those in the center section are round arched to enclose a fanlight. The accentuated main entrance features double multi-paned doors with a fanlight above and pilasters on either side.

On the interior, plaster covered the walls and ceilings, and wood trim was used throughout. Reclamation selected concrete flooring for the basement, oak for the stairways and main floor, and terrazzo for the restrooms and main entry vestibule. The main floor contained offices for supervisory engineers, two large drafting rooms, clerical space, bathrooms, and a vault. The full basement contained storage rooms, a dark room, and a blue print and copy room, in addition to the garage. Boilers located in the North Dormitory across the street supplied steam heat via pipes carried through a tunnel joining the two buildings.³⁹ Today, the building continues to play a prominent role in Coulee Dam as its city hall (figure 3.33).

By the beginning of 1936, Coulee Dam was well established; 145 buildings supplied the administration and housing requirements for Reclamation's project personnel. Within a matter of 18 months, a fully fledged town had been built and

occupied. Paved streets, concrete sidewalks, attractively landscaped lawns and parks, and water, sewer, and electric power systems provided amenities and the utility needs of the community. Many of these enhancements resulted from the work of young men assigned to Civilian Conservation Corps camp BR-48 at Coulee Dam. Between August 1935 and June 1938, the enrollees planted over 15,000 trees, constructed over 3,000 linear feet of walkways and 9 miles of roads, and landscaped 54 acres of grounds. The men also built tennis courts and a swimming pool.



Figure 3.32 Main façade of the Coulee Dam administration building in a 1947 photo.



Figure 3.33 The administration building still exists, although it is no longer owned by Reclamation. (Source: John Flowers, Bureau of Reclamation)

Additional improvements to Coulee Dam in 1936 included the construction of 12 residences in accordance with specifications number 655. All residences had attached garages and full basements. Five dwellings contained four rooms, and seven contained five rooms, with the additional room being a separate dining area. One home, larger than the others, also contained an attic space large enough for two ample rooms.

Like many homes in the government community, the 12 constructed under specifications number 655 consisted of one-story frame buildings with gable or hipped roofs, multi-paned windows, and attached garages. Beyond that, marked differences distinguished the later group of houses. More steeply pitched gable roofs were called for, and exterior treatments departed from the Colonial style (figures 3.34 and 3.35). The combined use of vertical and horizontal “Dolly Varden” siding, along with flush front entrance doors with round “porthole” type windows gave the homes a decidedly more modern appearance. Reclamation employees eagerly awaited the completion of the 12 houses; when finished in the summer of 1936, they were immediately occupied. By then, the total number of permanent houses in Coulee Dam had reached 77.⁴⁰

Table 3.4 Coulee Dam Specifications Referred to in Chapter 3

Number	Name	Bid Due Date
576	Fourteen Three-Room and Sixteen Four-Room Residences at Government Camp at Grand Coulee Dam	July 23, 1934
599	Fourteen Three-Room and Sixteen Four-Room Residences at Government Camp at Grand Coulee Dam	November 8, 1934
603	Administration Building at Government Camp at Grand Coulee Dam	December 21, 1934
615	One Seven-Room and Four Five-Room Residences at Government Camp at Grand Coulee Dam	March 22, 1935
655	One Five-Room and Eleven Four-Room Residences at Government Camp at Grand Coulee Dam	December 2, 1935

That same year, the first concrete was poured in the foundation of the dam. Construction proceeded at a dizzying pace until the structure's completion in 1941. Accomplishment of the dam was only the first step, however, in Reclamation's development of the Columbia Basin. To bring the more than 1 million acres of proposed project land into production would require an ambitious program that called for the construction of several storage and equalizing reservoirs, dozens of pumping plants, and hundreds of miles of primary and secondary canals with associated wasteways, turnouts, siphons, and control structures. Construction of the distribution system would prove to be no less daunting than that of the dam itself and would require the addition of many more housing units for employees. World War II intervened, however, and advancement on the project was delayed until its conclusion.

Colorado-Big Thompson Project

The record-shattering engineering feats accomplished by Reclamation at Hoover and Grand Coulee Dams continued with construction of one of the largest and most complex water delivery systems ever pursued by the Bureau. In 1935, Reclamation engineers began surveys for a project that would eventually deliver water collected on the West Slope of the Rocky Mountains in Colorado to the State's dry and thirsty East Slope. When completed, the vast, interrelated assemblage of engineering works extended over hundreds of miles and spanned some of Colorado's most rugged terrain. The massive transmountain diversion project, known as the Colorado-Big Thompson Project (C-BT), became the largest in the State and, perhaps, in the country. In excess of 100 major project features were built across an area 150 miles east to west and 65 miles north to south. Among those features was Green Mountain Dam, the highest and largest earthfill dam built to that time by Reclamation, and the Alva B. Adams Tunnel, the world's longest irrigation tunnel. The project also included a power component with about 700 miles of transmission lines.

In addition to the enormous engineering challenges that the project presented to Reclamation, the Bureau also had to resolve disputes with other Federal agencies, protests over the preservation of Rocky Mountain National Park, disagreements between West Slope and East Slope Coloradans, labor disputes, and water rights wrangles. Material and manpower shortages, and delays resulting from World War II compounded the difficulties. From Reclamation's preliminary engineering surveys in 1935, it would be another 2 years before President Franklin Roosevelt granted project approval, and yet another 24 years before the last major feature of the C-BT was completed.

As with Hoover and Grand Coulee Dams, the remote location of project features of the C-BT Project required the creation of camps to house construction crews, project engineers, and administrative staff. In 1938, Reclamation established permanent administrative headquarters for the entire project at scenic Estes Park, Colorado, near the eventual eastern portal of the Alva B. Adams Tunnel. The town sold Reclamation a 23-acre tract after a special election was held on July 19, 1938. Reclamation anticipated that the administration structure, outbuildings, and housing for the 35 to 70 engineers would cost around \$350,000.⁴¹

Reclamation used the familiar triangular plan of Boulder City and Coulee Dam once again at Estes Park, although on a smaller scale (figure 3.36). As with the earlier two communities, Reclamation placed the headquarters office at the apex of the triangle overlooking the camp. The one-story, rectangular plan, wood-frame structure was of a "colonial type" design, but a more modest rendition than the one developed for the Coulee Dam administration building (figure 3.37).



Figure 3.36 September 1940 overview of the Colorado-Big Thompson Project headquarters camp in Estes Park, Colorado. The administration building can be seen on the left side of the photo.



Figure 3.37 Façade of headquarters building in Estes Park shows some resemblance to George Washington's Mount Vernon estate on September 25, 1940.

A side-gabled roof enclosed the building and supported a decorative cupola placed at the center of the roof ridge. Horizontal lap siding covered the exterior walls and gable ends. A portico held up by evenly spaced, square wood posts ran nearly the full length of the front elevation. At the center of the symmetrical façade was the main entrance to the building. This consisted of double doors flanked by pilasters and topped by a multi-light transom. On either side of the main entry, three pairs of 12-over-12, double-hung wood windows punctuated the wall. Similar pairs of windows were installed on other elevations.⁴² Although somewhat altered, the headquarters building still exists and is now owned by the American Legion (figure 3.38).



Figure 3.38 Current view of the Estes Park headquarters building. Reclamation employed the same design for offices on the Central Valley and Hungry Horse Projects. (Source: Christine Pfaff, Bureau of Reclamation)

The headquarters office was completed by the end of 1939, along with most other camp buildings including a dormitory, garage, 24 permanent residences, and six temporary duplex cottages. The permanent residences, which were of the “colonial or semi-colonial type” and all painted white, included six three-room, twelve four-room, and six five-room structures, all included in specifications number 820 (figures 3.39 through 3.41). The one-story, wood-frame houses followed Denver office standard designs and nearly replicated those at Coulee

Dam built under specification numbers 576, 599, 615, and 655. One difference was in the roofing material: instead of requiring wood shingles, Reclamation specified the use of red, green, or gray cement-asbestos shingles on the C-BT residences. A 1940 article described the newly-minted camp as follows: "The charming simplicity of these homes, each of which has a fireplace, adds much to the beauty of the camp which will be seeded to grass in the spring. The landscaping, in many places terraced along the contours of the slope has been finished."⁴³



Figure 3.39 Current view of Estes Park headquarters housing: three-room house, type 5A, June 2007. (Source: Christine Pfaff, Bureau of Reclamation)



Figure 3.40 Current view of Estes Park headquarters housing: Four-room house, type 7A, June 2007. (Source: Christine Pfaff, Bureau of Reclamation)



Figure 3.41 Current view of Estes Park headquarters housing: five-room house, type 2. (Source: Christine Pfaff, Bureau of Reclamation)

Reclamation built two other camps containing permanent residences in association with the C-BT prior to 1941: Green Mountain and Shadow Mountain. The camps, both located on the West Slope of the Colorado Rocky Mountains, accommodated construction workers and administrative staff during project construction, and, thereafter, provided housing for maintenance personnel. Reclamation created a uniform appearance among the camps by specifying the same standard designs for the single family houses as were used at the Estes Park headquarters.

Reclamation situated its Green Mountain camp just below the Green Mountain dam site. Government forces constructed the buildings, which proved to be challenging due to the presence of large boulders and cobbles. Before foundations could be excavated, workers had to blast through the rock. By October 1939, a compact camp laid out along a single street included an office and laboratory building; a 12-stall garage and shop building; a large warehouse; a 12-man dormitory; 10 permanent three-room, four-room, and five-room residences; and four duplex units. Eleven small portable dwellings, later moved to Shadow Mountain camp, also existed at the site (figure 3.42). A water-supply system and sewer system were part of the construction. Today, four of the permanent camp buildings still stand, including one of the duplexes (figure 3.43).

On the shores of future Shadow Mountain Lake, Reclamation established Shadow Mountain camp to serve as headquarters for the Granby Division and other activities of the C-BT Project in the vicinity of Grand Lake and Granby, Colorado. Homes were laid out with uneven setbacks on gently sloping terrain along a single street which terminated in a cul-de-sac. James



Figure 3.42 Green Mountain camp on the Colorado-Big Thompson Project in November 1939. Four of the permanent camp buildings still stand.

Ogilvie, writing for Reclamation Era at the time, felt that this created “a very pleasing effect, making it appear that the residences are in little individual settings of their own. Because many pine trees, rocks, and other natural features have been left and incorporated into the landscaping, the yards blend smoothly into the background provided by nature.”⁴⁴

Construction of the first eight buildings, at a total cost of \$42,055, began in October 1939 and consisted of two duplexes, two three-room, two four-room, and two five-room cottages (figures 3.44 and 3.45). As at Estes Park, Reclamation specified white paint for the exterior of all cottages. Asbestos roof shingles of three standard colors, dark red, weathered black, and olive green, added variety. Just one color of composition roofing, green, was installed on the duplexes. James Ogilvie provided the following unusually detailed description of the camp buildings:



Figure 3.43 Green Mountain camp duplex as it appeared in 2004.

A fireplace of pleasing design has been built into each single residence. Floors in the residences consist of oak flooring laid over a sub-floor of pine with an insulating layer of paper placed between. Floors in the kitchens and bathrooms are covered with varying patterns of inlaid linoleum with a contrasting border, and all corners and angles have been rounded to facilitate cleaning....Inside walls are of plaster applied over wood lath. Insulation has been placed in all of the outside walls and ceilings, an item which will reduce materially the cost of heating during the winter months. Many built-in features have been incorporated into the residences, some of which are broom closets, clothes chutes, linen closets, and cupboards.⁴⁵

The eight permanent residences still exist and are now owned by the U.S. Forest Service.



Figure 3.44 A three-room residence at Shadow Mountain camp, with a duplex cottage to the left. The trees were left in place during construction of the camp. House is very similar to ones at Coulee Dam. Photo taken October 15, 1940.



Figure 3.45 Duplexes at Shadow Mountain camp in October 1940. Each unit within a duplex contained a living room, kitchen, bedroom, bath, large glassed porch at the rear, and a garage.

Central Valley Project

The fourth New Deal Era Reclamation project of unprecedented magnitude garnered additional accolades for the Bureau's engineering acumen. In 1935, Reclamation received authorization to begin construction in California on one of the world's largest water storage and transport systems. Known as the Central Valley Project (CVP), its 22 reservoirs have a combined storage capacity of 11 million acre-feet and provide water to irrigate more than 3 million acres of farmland.⁴⁶ The CVP was planned, though, to accomplish far more than provide water for irrigation and municipal purposes. It also addressed problems of flood control, river navigability, and saltwater intrusion into freshwater areas. The largest project feature is Shasta Dam, a massive concrete structure on the Sacramento River in Northern California. Work on Shasta Dam began in 1937, but World War II interrupted progress. Officially completed in 1950, the towering dam stands 602 feet high and is second in mass in the United States to Grand Coulee Dam.

Unlike the Boulder Canyon, Columbia Basin, and C-BT projects, Reclamation did not establish a permanent headquarters camp for the CVP. The main headquarters for the project existed in a portion of the Old Post Office Building in Sacramento. The government camp associated with construction of Shasta Dam was located 3 miles east of the dam site in a wooded glen. Originally called Kennett, Reclamation renamed the camp Toyon. The site plan was a departure from the "model" wedge-shaped one selected for Boulder City, Coulee Dam, and, later, Estes Park. The layout of Toyon consisted of a typical grid with the street pattern adapted to the sloping topography and arranged around a 2-1/2 acre park. Reclamation sited the project office building near the entrance to the camp, across from the fire station, where it did not occupy a prominent focal point. Toyon included space for 15 five- and six-room residences, 27 four-room residences, 22 three-room residences, 20 two-room residences, and 70 duplexes.

Reclamation initiated construction of the camp buildings in 1937 under various contracts. By the end of that year, progress had been made on two dormitories; 46 two-, three-, four-, five-, and six-room residences; 27 duplex cottages; an office building; a concrete laboratory; and a combined garage and fire station. The first house was occupied on August 20, 1938. About a week later, staff moved into the new office building, which was identical to the one built at Estes Park (figure 3.46). At the year's end, employees resided in 90 houses and another 56 employees were living in the dormitories. The camp had quickly grown to a population of about 340.⁴⁷

The dwellings at Toyon were of standard designs and all looked similar. Unlike the previously described “Spanish,” “Colonial,” or “Semi-Colonial” type permanent residences constructed at Boulder City, Coulee Dam, and Estes Park, those at Toyon were temporary and lacked any specific style. The basic, economical wood-frame buildings sat

on concrete piers, rather than full foundations. Single-family houses ranged in size from 400 square feet to about 976 square feet. They had front- or side-gabled roofs with extended eaves, casement windows, and horizontal wood siding. Attached garages were not included; paired detached garages were located at the rear of the houses. Insulated building board covered interior walls and ceilings. Ample-sized, enclosed porches on all the dwellings added to the living space. On the two-, three- and four-room residences, enclosed porches were located on the side (figures 3.47 and 3.48). The five and six-room residences had screened porches that extended across the front elevation. The duplexes were nearly identical to those constructed at Shadow Mountain camp, and included rear sleeping porches (figure 3.49).



Figure 3.46 Reclamation’s air-conditioned office building at Toyon, California, served as headquarters for the Kennett Division of the Central Valley Project. Civilian Conservation Corps enrollees completed the landscaping. Photo taken in 1939.



Figure 3.47 Four-room residence at Toyon built according to standard Denver drawing number 40-D-2412 for a type 5, four-room residence. Photo taken June 1938. (Source: Northern California Area Office, Bureau of Reclamation)



Figure 3.48 Street in Toyon Camp with three-room residence in foreground. Photo taken in 1939. (Source: Northern California Area Office, Bureau of Reclamation)



Figure 3.49 Duplex at Toyon is very similar to those built at Shadow Mountain camp on the Colorado-Big Thompson Project. The covered area in the center is a carport. Photo taken in June 1938. (Source: Northern California Area Office, Bureau of Reclamation)

Although accommodations at Toyon were simple, residents found them comfortable and enjoyed the attractive surroundings. As many trees as possible were saved during construction of the government camp, and young men stationed at two nearby Reclamation Civilian Conservation Corps camps completed landscaping of the grounds. The enrollees planted trees and shrubs,

seeded lawns, constructed sidewalks, and built fences and rock walls. Regulations forbade residents from changing the CCC landscaping or adding rooms onto their homes. There was more latitude in the back yards, where residents had the option of building brick grills and establishing gardens.⁴⁸ Today, the only building still standing at Toyon is an abandoned warehouse.

Contemporary with the construction of Toyon, Reclamation established a government camp in association with Friant Dam, another feature of the CVP located in central California on the San Joaquin River. Smaller than Toyon, the Friant camp was laid out in a grid east of the town of Friant. Houses consisted of two-, four-, five-, or six-room, single-family dwellings and duplexes (figures 3.50 and 3.51). By the end of 1937, the camp was basically completed. It included an office building and two dormitories, 25 duplexes, and 28 single-family residences.



Figure 3.50 Nearly completed four-room, single-family residence at Friant Camp in October 1937.

The one-story, wood-frame office building at Friant camp resembled the one at Toyon in terms of its rectangular plan, side-gabled roof, grouped window openings, and symmetrical front façade (figure 3.52). The temporary Friant building, however, lacked the “colonial type” details. An open porch supported by simple posts wrapped around the front and both ends. Outside walls were covered below the eave lines with building board and above the eave lines with vertical boards and battens. Wallboard covered the interior walls and ceilings,

except for the restrooms. Many residences at Friant camp were similar in design to those at Toyon, except for exterior wall coverings, which matched the Friant camp office building.⁴⁹

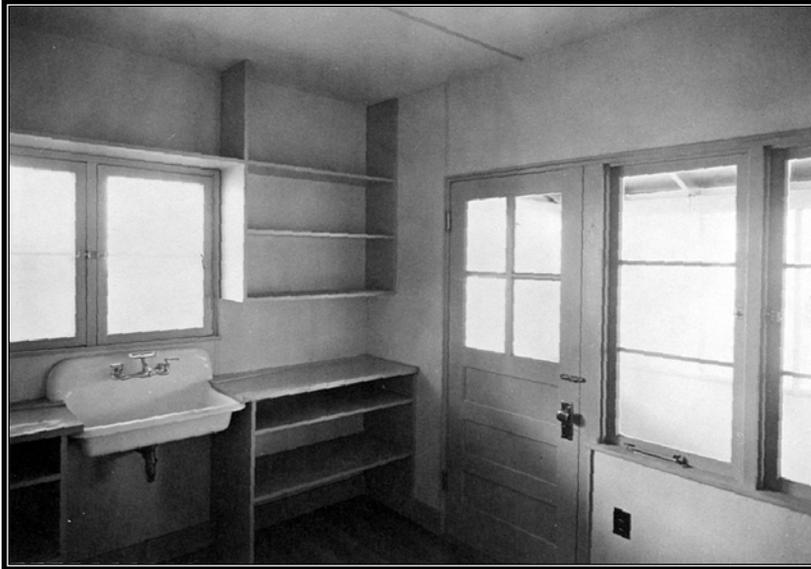


Figure 3.51
Kitchen interior
of typical duplex
cottage at Friant
camp, October
1937. Walls
were covered
with insulated
building board.



Figure 3.52
Reclamation office
building at Friant camp
in 1938.

Anderson Ranch Dam Camp

Reclamation initiated plans for yet another record-breaking dam in the late 1930s as the end of the New Deal Era approached. Bureau engineers began investigating ways to furnish additional water to lands on the Boise Project that often suffered from an insufficient supply during dry years. After conducting surveys and studies, Reclamation selected a site for a dam at Anderson Ranch on

the South Fork of the Boise River. The Secretary of the Interior approved construction of Anderson Ranch Dam on August 25, 1940, and the following summer, a construction contract was awarded. When completed in 1950, the earthen embankment dam rose over 450 feet above the deepest point of the foundation, becoming the tallest dam of its type in the world.

In contrast to the unprecedented scale of the dam, the government camp established about 2-1/2 miles downstream from it was relatively small. In the fall and winter of 1941, government forces built 16 temporary, wood-frame, three- and four-room dwellings and 10 two-room cabins. The camp increased in size in 1942 with the completion under contract of a dormitory, office building, garage and machine shop, and 11 residences, all of permanent construction and intended for use in the ongoing maintenance of the dam and power house.⁵⁰ A curved street with permanent buildings on one side and temporary ones on the other comprised the camp (figure 3.53).



Figure 3.53 Anderson Ranch Dam camp in January 1943. Large building in foreground is a dormitory. Permanent buildings are to the left of the street in front of the dormitory.

The one-story, wood-frame office building with full basement was residential in character (figure 3.54). It featured a steeply pitched, gable-on-hip roof; horizontal wood siding; and a combination of multi-paned double-hung and casement windows, set in pairs or along the front elevation, in a group of four on either side of the main entrance.

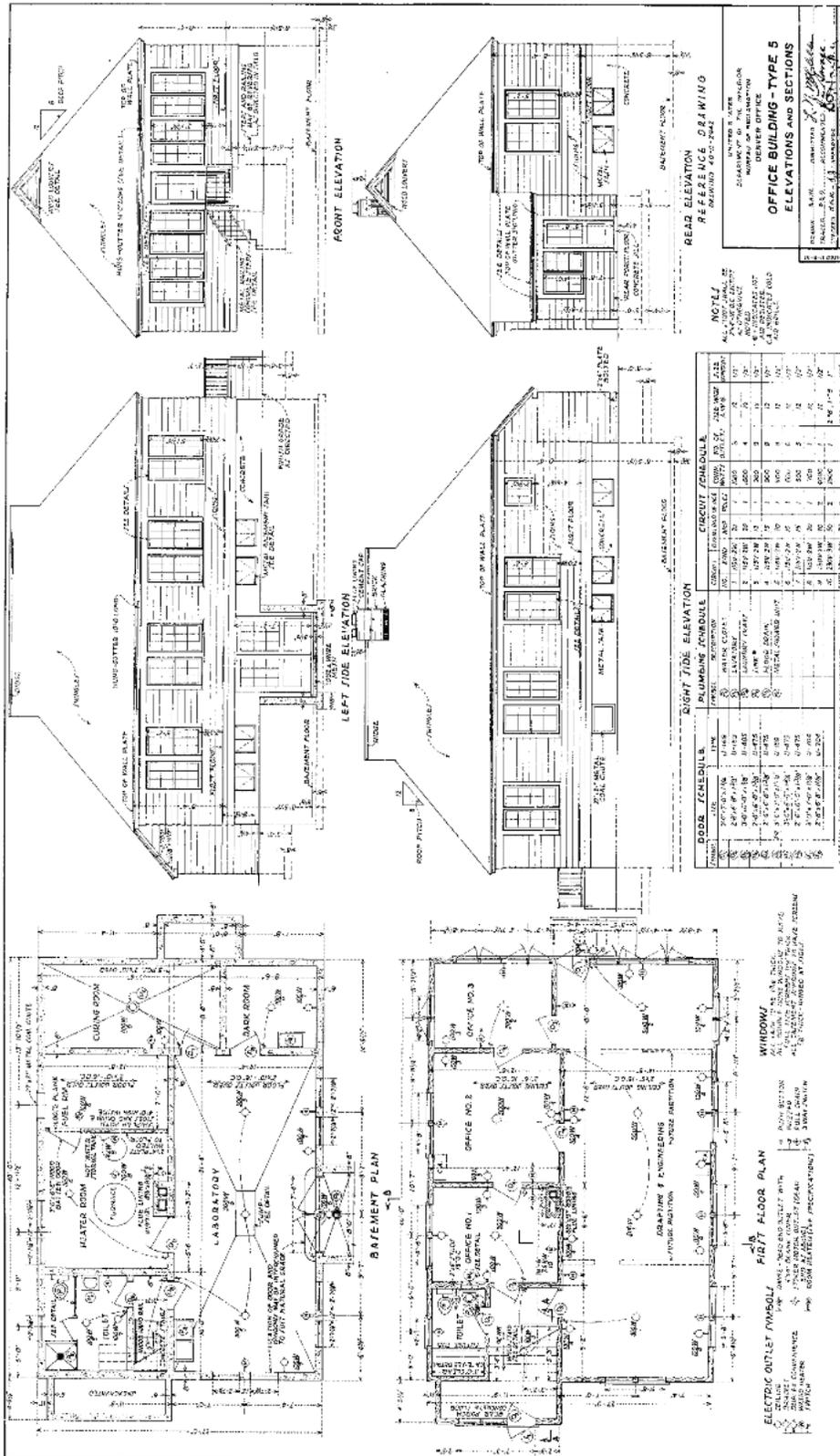


Figure 3.54 Drawing number 40-D-2941. Office building design used at Anderson Ranch Dam camp.

The permanent houses consisted of two six-room and nine four-room, wood-frame dwellings (specifications number 1024). All had basements, cement-asbestos shingle roofing, plastered interior walls, insulated and plastered ceilings, oak flooring on the main level, and a gravity warm-air heating system. Both six-room residences were identical, but Reclamation specified three different types of four-room plans. One of the four-room designs, a side-gabled “colonial” type, had been specified earlier at Coulee Dam (drawing number 222-D-398) and for the C-BT Project.

The second four-room design, identified as “type 8A,” shared similarities in form and massing with the gable-on-hip roof plan seen earlier at Coulee Dam. However, at Anderson Ranch Dam, a lower-pitched roof, flush exterior siding accented by some horizontal bands, a curved metal front railing, and flush front door with square glass panel are evidence of Reclamation’s attempt to use a more contemporary design vocabulary by applying simple “streamline” decorative detailing (figure 3.55). The smooth surfaces, metal balustrade, and horizontal emphasis are typical of the Art Moderne Style, which by then was already on the wane. This same standard Denver design had been used the previous year to construct a house on the Roza Division of the Yakima Project (figure 3.56) and would be selected later in the decade for camp housing at Canyon Ferry Dam on the Missouri River Basin Project.⁵¹

The design of the third four-room residence was unique from any at camps previously described. It had a front-gabled roof with a matching gable-roofed front porch supported by two pairs of square posts. The front entrance consisted of a multi-paned door with sidelights. Other window openings were multi-paned, double-hung or paired multi-paned casements.

Reclamation designers experimented with elements of a contemporary design vocabulary in the six-room residence. They merged details of the side-gabled “colonial” design with more modern components to create a disjointed appearance (figure 3.57). Single multi-paned, double-hung windows were combined with pairs or bands of smaller single-paned, double-hung windows. A “streamlined” curved metal front railing led to a traditional paneled front door.

Reclamation demolished most of the buildings at Anderson Ranch Dam camp; the few that survived were transferred to the U.S. Forest Service in 2001. Buildings still standing include a residence, carpenter shop, and pump house.

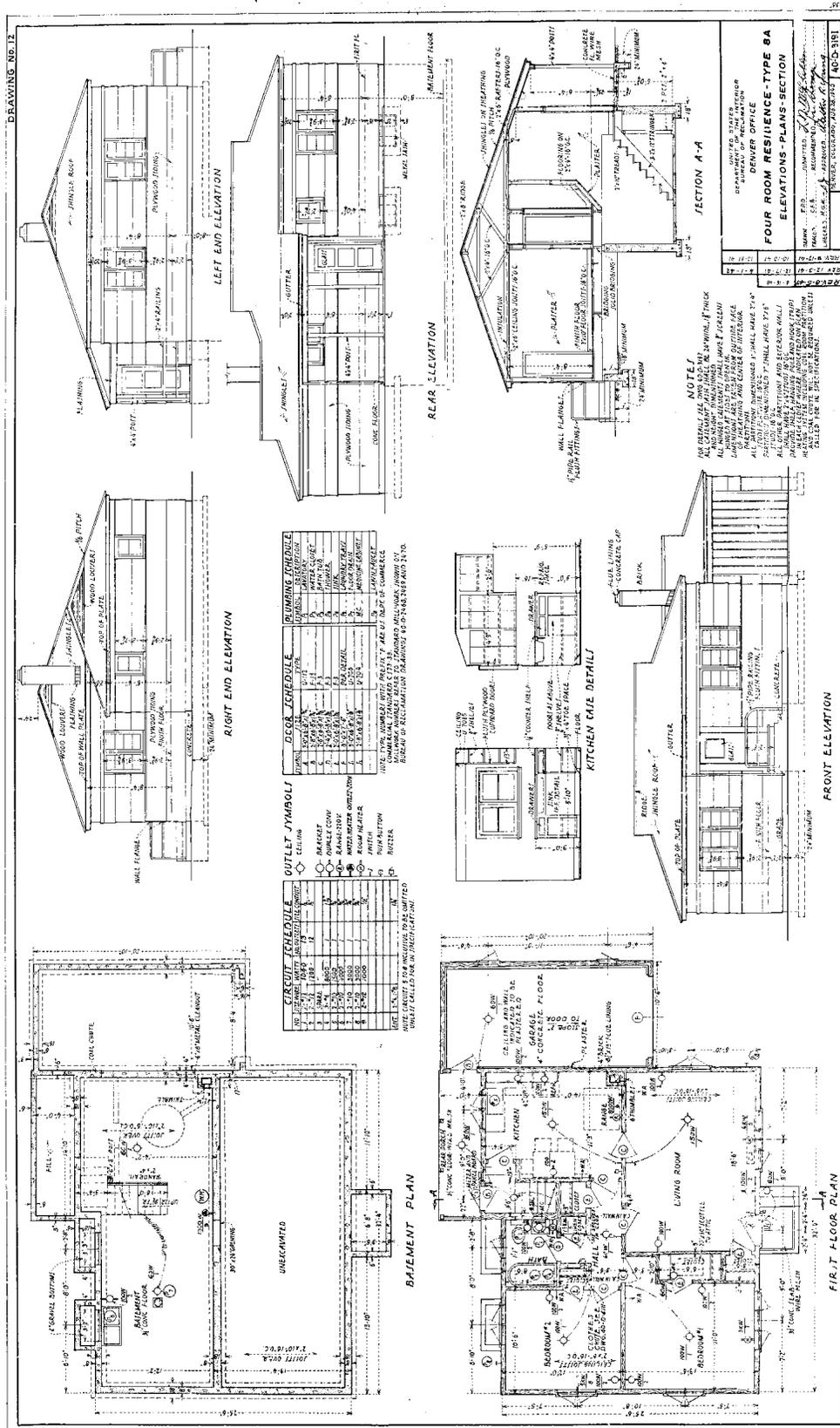


Figure 3.55 Drawing number 40-D-3191 was specified for a four-room residence at Anderson Ranch Dam camp.

Figure 3.56 This house on the Roza Division of the Yakima Project was built in 1941, also using Denver standard drawing number 40-D-3191. Photo taken shortly after completion.

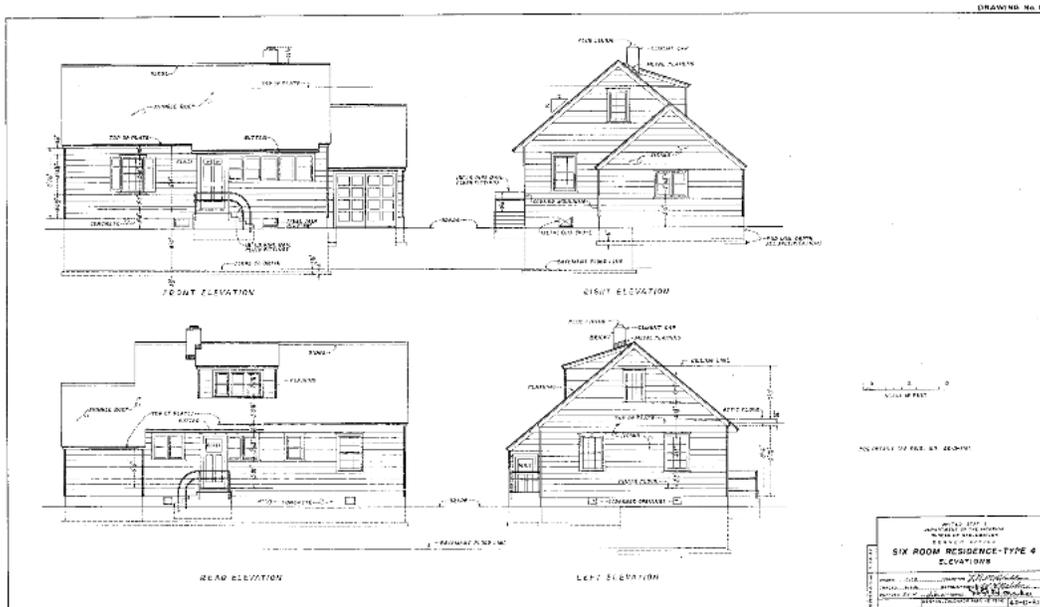


Figure 3.57 Drawing number 40-D-3160 was specified for a six-room residence at Anderson Ranch Dam camp.

Parker Dam Camp

While the majority of new buildings dating to the Depression years were associated with massive dam projects, other less monumental Reclamation endeavors also resulted in new temporary and permanent buildings. As plans proceeded for the construction of Hoover Dam, the City of Los Angeles recognized that another dam would be needed on the Colorado River to provide water to the rapidly expanding population of southern California. The Los Angeles Metropolitan Water District (MWD) was formed in 1928, the same week

that Congress approved the Boulder Canyon Project. The newly created public corporation proposed a dam 150 miles downstream from Hoover Dam. Constructed by Reclamation and paid for by the MWD, Parker Dam created Lake Havasu, from which the MWD pumps water into its 242-mile-long Colorado River Aqueduct. Amidst contentious objections from the State of Arizona over the diversion of water to competing California, Reclamation began work on the dam in October 1934 and established a government camp about three-quarters of a mile downstream from the isolated damsite.⁵²

By the spring of 1935, the orderly camp included, among other buildings, a combination of 12 wood-frame, temporary duplexes and residences. Outside walls were covered with insulating wall board or, in the gable ends, board and batten siding. Other design elements included screened porches and multiple casement windows. These same features were used at Friant Dam camp.

Parker Dam government camp evolved over the ensuing years with the addition of a powerplant in the late 1930s and the need for permanent housing to accommodate operations and maintenance staff. Beginning in 1939, the camp underwent a substantial rehabilitation, and a variety of new buildings were constructed. In 1940, government forces built three identical permanent residences according to drawing number PR-151. Assigned numbers 5, 24, and 25, the wood-frame houses with side-gable roofs, symmetrical front facades, drop siding, paired or triple casement windows, rear screened porches, and attached garages are an eclectic combination of features seen on various Reclamation designs (figure 3.58). The shade-producing extended eaves with large brackets under the gable ends harken back to Bungalow motifs, the symmetrical side-gabled form with attached garage and grouped casement windows mimics Colonial type Coulee Dam houses, and the metal pipe railing and flush front door evoke the contemporary streamlined elements found in the Roza Division and Anderson Ranch Dam houses.⁵³



Figure 3.58 Parker Dam camp, building number 25. Undated photograph.

Imperial Dam Camp

Between 1936 and 1938, Reclamation constructed yet another dam on the lower Colorado River as part of the Boulder Canyon Project. Located about 18 miles north of Yuma, Arizona, Imperial Dam diverts water into the 80-mile-long All-American Canal on the California side and the Gila Gravity Main Canal on the Arizona side. To house its employees during dam construction, Reclamation built a government camp between September 1935 and July 1936 on a flat gravel bench about 1-1/2 miles below the damsite. Government forces completed all work on the buildings, except for installing air-conditioning in the office and dormitory, which was done under contract. When finished, the camp consisted of 28 structures including the field office, a 28-man dormitory, 4 two-room and 4 four-room residences, 6 three-room residences, and 7 two-car garages. A complete water supply and sewage disposal system were also installed (figure 3.59).



Figure 3.59 Imperial Dam camp in August 1936.

Although Reclamation intended the camp to be temporary, and buildings were basic, substantial construction was employed to provide reasonable protection against the severe summer heat. All buildings featured concrete floors, insulated walls, overhanging eaves, and composition shingles. Sleeping porches afforded residents some relief at night, while the office and dormitory had the added benefit of air-conditioning. Upon completion of the dam, rather than demolishing the camp, Reclamation retained it for operation and maintenance personnel. Today, while some of the residences are occupied by employees of the Imperial Irrigation District, others are vacant and in poor condition.

Other Building Examples

On the Vale Project in Oregon, a small headquarters camp was constructed by government forces at the Agency Valley dam site over a period of 9 months beginning in December 1933. The buildings consisted of a permanent, five-room, standard design house of Bungalow derivation; four three-room temporary cottages; an office building; a bunk house; a laboratory; two garages; and a tool house. Equipped with electricity and running water, the buildings were described as “modern.”⁵⁴ The permanent house, although significantly altered, still exists as well as two of the outbuildings (figures 3.60 and 3.61).



Figure 3.60 Vale Project, Oregon. Camp at Agency Valley Dam in August 1934 with permanent five-room house at right.



Figure 3.61 View of house in September 2006. (Source: Snake River Area Office, Bureau of Reclamation)

On the same project, a 1937 photograph of a ditchrider's cottage at Bully Creek east bench depicts a solitary frame building set in a sparse landscape, evoking a sense of isolation and spartan living (figure 3.62). The basic rectangular plan, gable-roofed residence lacks even an entry hood or porch. An outhouse can be seen a short distance away. What appears to be a large swamp cooler on the roof is evidence of at least some "modern" comforts. That same year, on the Uncompaghre Project, a very similar building was constructed for use as a section house at the FL Headgate. A step above the Bully Creek house in amenities, the section house included a "garage, coal house, and toilet."⁵⁵ A 1941 side-gabled, frame ditchrider's house constructed on the Payette Division of the Boise Project harkened back to earlier simple Reclamation Bungalows with its bracketed porch hood and three-over-one pane windows (figure 3.63).



Figure 3.62 Vale Project. Ditchrider's house at Bully Creek, September 1937.



Figure 3.63 Boise Project. Ditchrider's house on the Payette Division, 1941.

On the Klamath Project, Reclamation issued specifications number 1039-D in 1938 for a permanent four-room residence to be located on the Tule Lake Division in the vicinity of the overflow from the “D” Canal into the “J” Canal. The standard Denver office elevation drawing (40-D-2710) depicts a wood-frame house with a gable-on-hip roof that is a reworking of a design used 2 years earlier at Coulee Dam (figure 3.64). In place of a garage, the Klamath Project residence incorporated a screened porch under the roof. “Dolly Varden” siding covered the exterior walls, and wood shingles enclosed the roof. Inside finishes included fir flooring and either gypsum board or plaster walls and ceilings, left to the contractor’s discretion.

In contrast to the standard frame buildings typically found on all but a few Reclamation projects throughout the West, it is worth noting a number of structures from this time period for their atypical designs and construction. Among these structures are log buildings erected at Deadwood Dam on the Payette Division of the Boise Project and at Taylor Park Dam on the Uncompahgre Project. Reclamation constructed the former buildings in 1929 on forested slopes just above Deadwood Dam’s high water line, about 300 yards from its east end. The rustic log cabins were part of a permanent engineer’s camp that consisted of a log office, combined garage and laboratory, one five-room log cabin, three three-room log cabins, and three one-room frame cabins connected by garage space (figures 3.65 and 3.66). Even though timber was abundant, Reclamation had difficulty finding men skilled enough with an axe to do quality log work and construction took longer than expected.⁵⁶ Three of the cabins still exist.

In Colorado, Reclamation erected two permanent log buildings in association with the construction of Taylor Park Dam in late 1934. Located near the spillway, the buildings consisted of a cottage and a combined dormitory and office (figures 3.67 through 3.69). The latter was converted to a storehouse upon project completion. Reclamation preferred the use of log in this case for a number of reasons: many of the residences in the vicinity were built of the same material, suitable finished lumber would have to be purchased out of State, and, in keeping with the spirit of New Deal employment programs, this type of construction would create jobs for a greater number of local people. A good supply of lodgepole pine, located about 7 miles from the dam site, provided the building material. Workmen incorporated local rocks including white quartzite, granite, gold lead ores, and a piece of petrified wood in a large fireplace in the cottage.⁵⁷

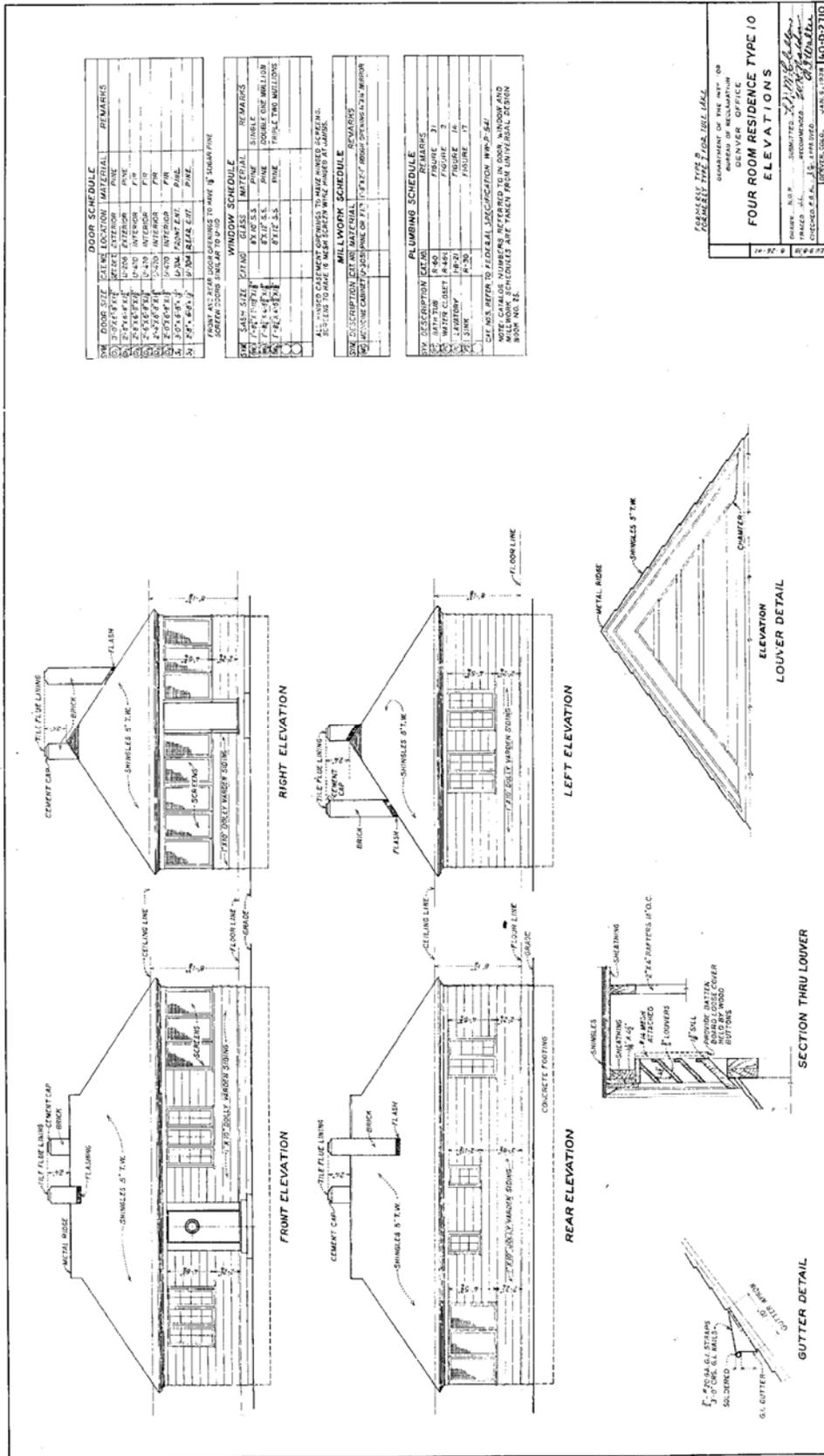


Figure 3.64 Drawing number 40-D-2710 for house on Klamath Project, Tule Lake Division.



Figure 3.65 Boise Project. Deadwood Dam office during construction in October 1929. Building still exists today.



Figure 3.66 View of cabin number 2 at Deadwood Dam under construction in September 1929.



Figure 3.67 Uncompahgre Project. Log cottage at Taylor Park Dam in August 1936.



Figure 3.68 Fireplace in log cottage made of rock gathered in the vicinity. Note the rather ornate light fixture.



Figure 3.69 Uncompahgre Project. Log dormitory and office at Taylor Park Dam in August 1936.

In 1940, far from mountain forests, Reclamation constructed a building altogether different in character from the log ones at Taylor Park. In keeping with the local architectural tradition, Reclamation selected the Pueblo Revival style for the administration building on the Tucumcari Project in Tucumcari, New Mexico. The structure was a combined effort of skilled labor supplied by Reclamation and a Works Progress Administration workforce. Unskilled laborers manufactured the concrete-cinder blocks, which were then laid by local masons familiar with similar adobe-brick construction. The unadorned, one-story building with a flat roof and front portico supported by peeled log posts cost about \$17,000, two-thirds of which was paid by the Works Progress Administration (figures 3.70 and 3.71). Upon completion, the 1940 Tucumcari Project History noted that “the building is a source of pride not only to the Bureau and the Arch Hurley Conservancy District, but also to the city of Tucumcari.”⁵⁸ The administration building, which is still owned by Reclamation but has been occupied by the Arch Hurley Conservancy District since 1954, was listed in the National Register of Historic Places in 1994.



Figure 3.70 Tucumcari Project, New Mexico. Office building constructed by Works Progress Administration and Reclamation forces. Photo taken in 1940 or 1941.

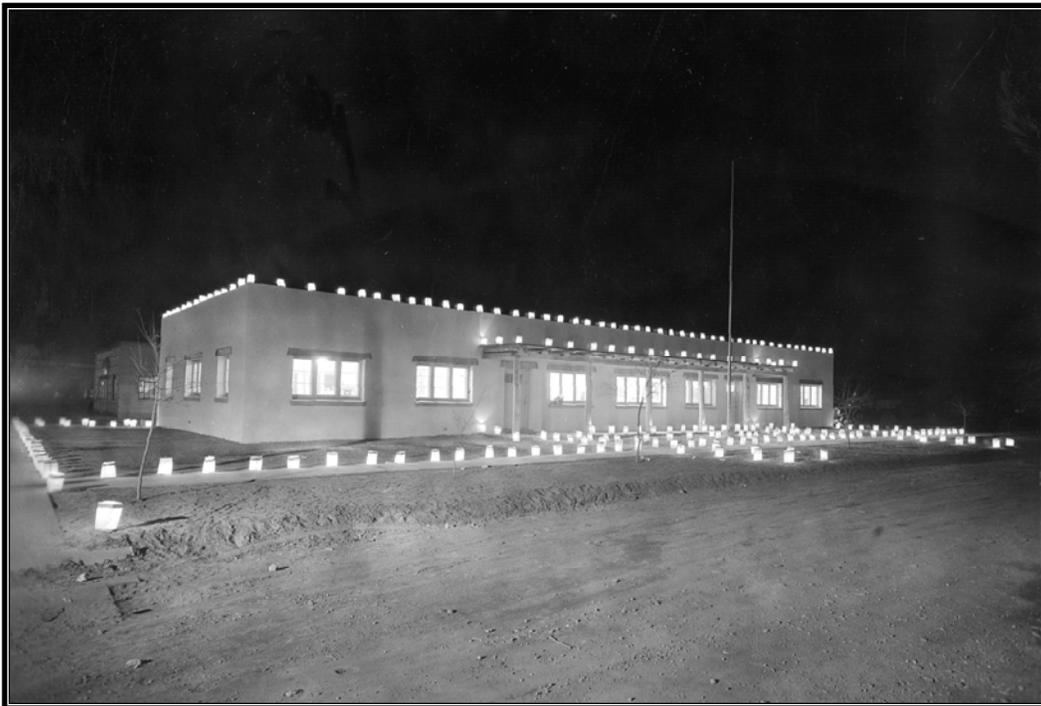


Figure 3.71 Night view of Tucumcari Project office building outlined by "luminarios," a Spanish custom. Photo taken in 1940 or 1941.

Civilian Conservation Corps, 1934-1942

One cannot write about Reclamation buildings of the Depression era without discussing the contributions of the Civilian Conservation Corps, commonly known as the CCC. Reclamation's participation in this New Deal program resulted in a number of buildings noteworthy for their original and unusual designs. Although they are not all offices or residences, they are significant enough to deserve inclusion in this study. CCC enrollees also accomplished major landscaping improvements at numerous project camps and facilities. As already noted, the CCC planted thousands of trees and shrubs, installed lawns, and built rock retaining walls.

In March 1933, President Roosevelt created the Civilian Conservation Corps to provide jobs for unemployed youth and to conserve the Nation's depleted natural resources. Within a short time, CCC camps had been established across the country to house young men recruited to work on a myriad of conservation projects overseen by various Federal agencies, including Reclamation. Although the number of camps assigned to Reclamation was small compared to other agencies, the CCC made significant contributions in rehabilitating, improving, and expanding Reclamation irrigation systems.

Reclamation was allotted its first nine CCC camps during the third period of the program's existence, which extended from April 1, 1934, through September 30, 1934. Following that, Reclamation's program expanded to a peak of 46 camps during the summer of 1935 at the height of the CCC program. From then on, the number of Reclamation camps operating fluctuated between 34 and 44 until May 1941. Thereafter, camps were closed in response to the national defense needs associated with World War II. By June 30, 1942, only seven camps remained on Reclamation projects. These were quickly disbanded with the termination of the national program at that time. Over the life of the CCC program, a total of 83 camps operated at 83 locations on 45 Reclamation projects in 15 western States.

CCC camps normally housed about 200 enrollees. The camps were under the general charge of the Army, which was also responsible for their construction. Not surprisingly, typical camp layouts resembled military installations. The various building types, such as barracks, mess halls and kitchens, officers' quarters, maintenance shops, lavatories, and educational buildings conformed to a variety of standard plans developed by the Army and adapted to meet local needs. Mass-produced, portable, wood-frame buildings assembled from panels became the norm in 1936. In 1940 and 1941, Reclamation's Denver office produced standard drawings and specifications for prefabricated CCC camp buildings (specifications number 1515-D), which presumably mirrored those developed by the Army (figure 3.72).

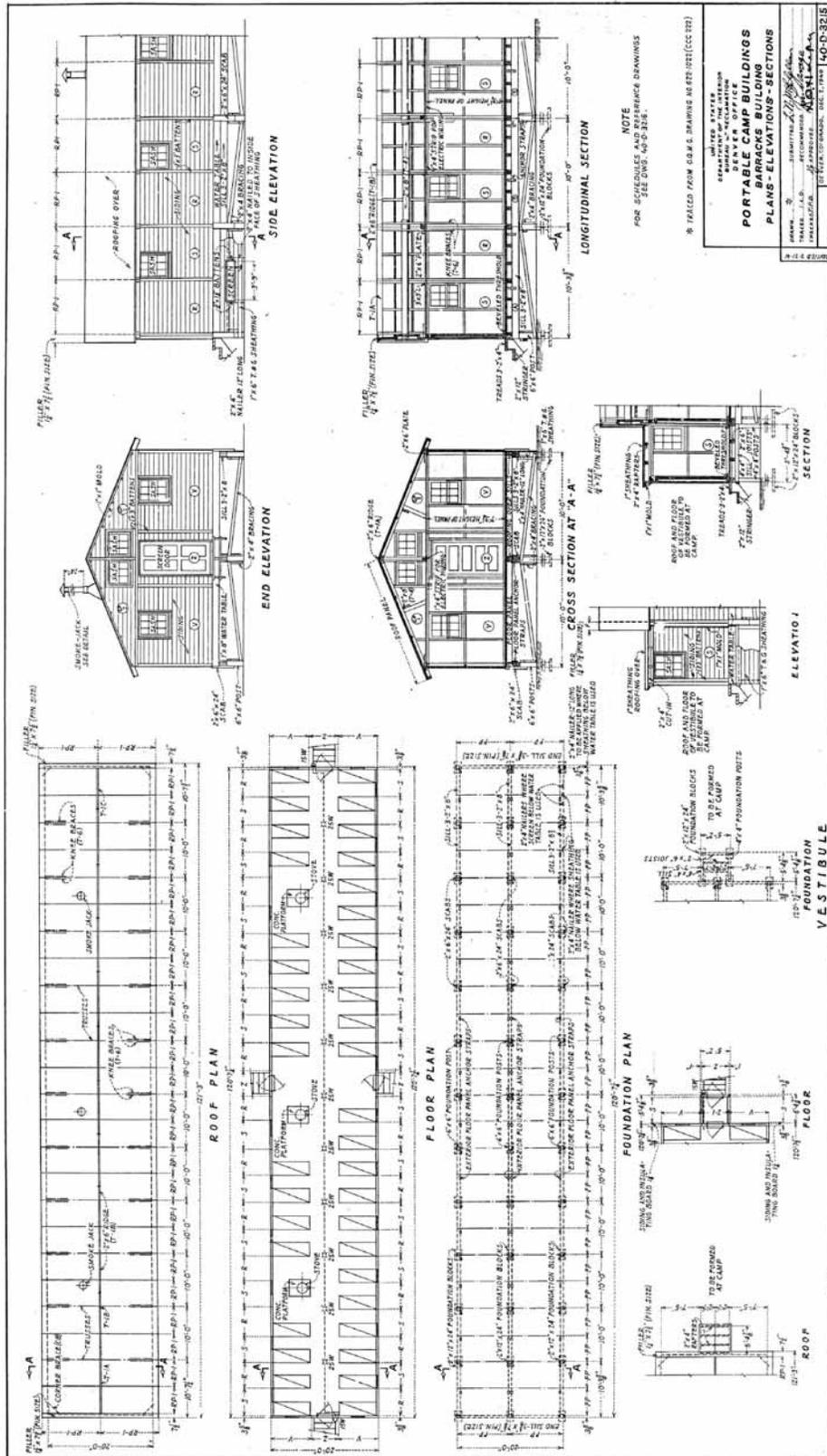


Figure 3.72 Reclamation plans for CCC camp portable barracks. Standard Denver drawing number 40-D-3215.

Today, very few CCC camp buildings exist nationwide; only a handful survive from Reclamation camps. At the site of Camp BR-91 in Pleasant Grove, Utah, the CCC mess hall and doctor's office, both on Reclamation land, have been partially rehabilitated by the Provo River Water Users Association. This effort provided mitigation for the demolition of four other CCC buildings to make way for new construction by the Provo River Water Users Association (figure 3.73).

Although Reclamation CCC activities focused on irrigation features, the program afforded the Bureau an opportunity to develop recreational amenities at a number of its reservoirs. The work accomplished by the CCC at Lake Guernsey, on the North Platte Project in Wyoming, beginning in May 1934, is an outstanding

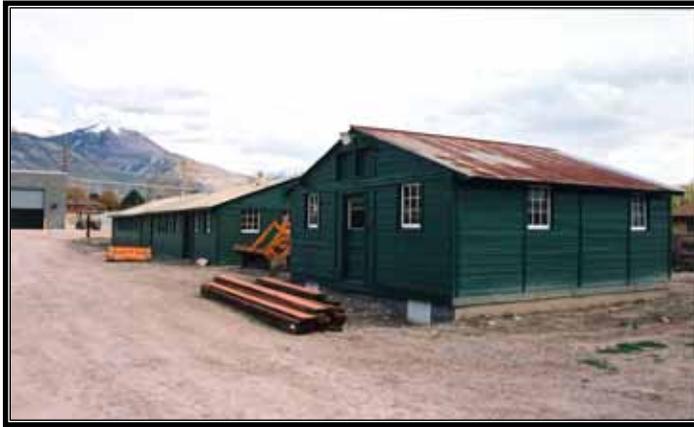


Figure 3.73 Pleasant Grove CCC buildings following partial rehabilitation. (Source: Barbara Boyer, Bureau of Reclamation)

example. Camp BR-9 was the first of six CCC camps that existed on the North Platte Project and was the first Reclamation CCC camp to open. It operated under a cooperative agreement with the NPS. Lake Guernsey, a Reclamation reservoir created behind Guernsey Dam, was initially filled in 1927. Lake Guernsey State Park was developed at the reservoir beginning in 1934 on Federal land that had been purchased for the North Platte Project. One of the first two Reclamation/NPS/CCC projects initiated, the park soon became a showplace of State park design in Wyoming. It also became the most important early example of recreational development around a Reclamation reservoir in the West. NPS landscape architects created the site plan for the park, which included a lakeshore drive and skyline drive, an exceptional group of rustic stone and log picnic shelters and overlooks, and an extensive trail system.

At the center of the more developed public area, CCC enrollees constructed a park museum designed early in 1935 by one of the resident NPS architects, Roland Pray (figure 3.74). The site selected for the museum was the summit of a hill overlooking Guernsey Lake, and the main entrance faced west. This gave visitors leaving the building a fine view of Laramie Peak. Built entirely by CCC crews (with guidance from "local experienced men") out of locally quarried buff and white sandstones, the museum was enclosed by a roof framed of heavy, hand-hewn timbers covered with 2-inch planks and split cedar shingles. Inside,

the building contained two windowless exhibition halls, a library room, a small office, and a store room. CCC enrollees crafted the wrought-iron hardware door hinges, latches, lamps, chandeliers, and sconces. Upon completion, the structure was praised as one of the most beautiful small museums in the West. The outstanding contributions made by the CCC at Lake Guernsey State Park resulted in its designation as a National Historic Landmark. The museum, a major contributing element, still operates today during the summer season.

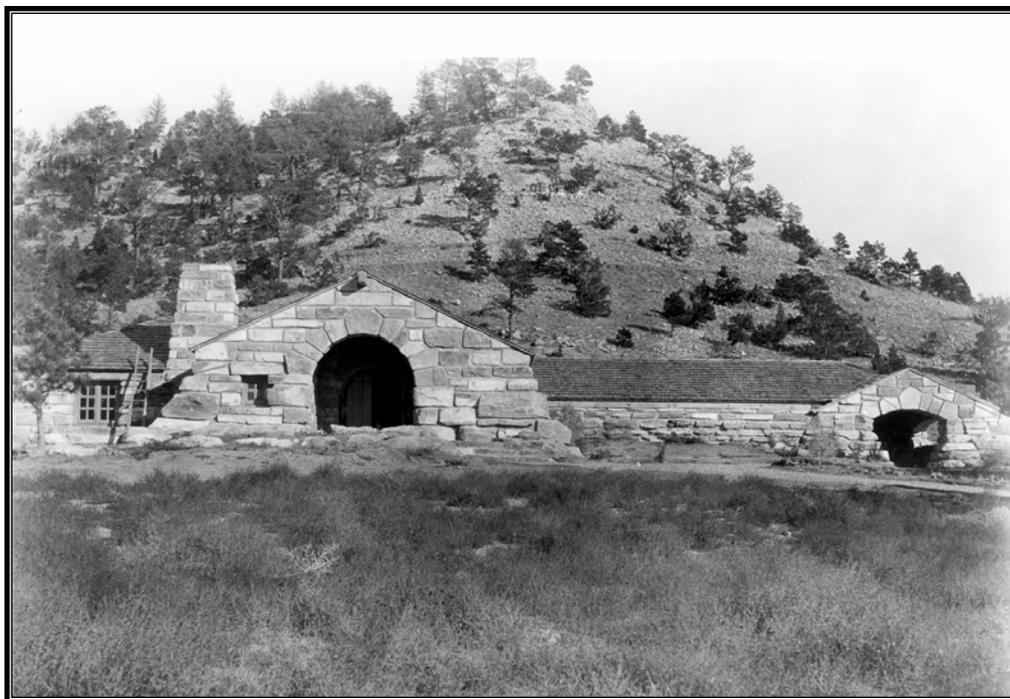


Figure 3.74 North Platte Project. Museum at Lake Guernsey constructed by CCC forces. Photo taken in circa 1936.

At Camp BR-1, also on the North Platte Project, CCC youth built the most unique and interesting of all Reclamation CCC edifices. Established in July 1934, Camp BR-1 was located in northwest Nebraska at Lake Minatare, a fairly small irrigation storage reservoir. In addition to the major task of upgrading irrigation features, the CCC enrollees spent time constructing recreational facilities. The most ambitious accomplishment was the observation tower constructed on a point extending into the lake (figure 3.75). The 55-foot-high tower consists of native rock that was quarried, cut, and placed by the enrollees. A circular, reinforced concrete staircase leads to an observation deck at the top. At the base, four wings in the form of a cross include two bathhouses and two semi-open picnic shelters. The newly created park attracted visitors immediately and continues to do so.



Figure 3.75 North Platte Project. CCC observation tower at Lake Minatare, Nebraska, resembles a lighthouse.

The third site of permanent building construction associated with the CCC was Elephant Butte Dam and Reservoir, principal features of the Rio Grande Project in New Mexico. Enrollees assigned to the two Reclamation camps established there in 1934 and 1935 (BR-8 and BR-54) focused on improving facilities for the operation, maintenance, and administration of the dam and reservoir, and on providing enhancements to the inadequate recreation facilities. Like Camp BR-9 at Lake Guernsey, Camp BR-8 was operated cooperatively with the NPS and New Mexico State Parks. In addition to major improvements to roads, landscaping, and camping facilities, a building program was inaugurated to enhance the recreational experience at the reservoir (figures 3.76 and 3.77). The CCC constructed a large, Spanish Colonial style concession building, which incorporated restrooms, a store, restaurant, confectionary, pavilion or lounge room, and attendants' quarters. The rambling building was situated at one side of the parking area, at the head of a combination stone stairway and trail, which led down to the boat docks and diving platform. At the other side of the parking area, the CCC fabricated a connected group of service buildings to support the recreation activities. Following the closure of Camp BR-8 in August 1939, Camp BR-54 enrollees continued with the improvements already well underway. Since overnight accommodations for tourists visiting Elephant Butte Reservoir were seriously lacking, CCC workers built 15 cabins in the "New Mexican" style of architecture. Constructed of masonry with concrete floors, each cabin was equipped with a bathroom, kitchenette, and a bedroom large enough for two beds. The structures also had running water, electricity, and sewer connections.

The Elephant Butte National Register Historic District, listed in February 1997, encompasses Elephant Butte Dam and surrounding historic buildings, structures, and archaeological sites. One of the significant themes associated with the district is the impact of the New Deal, represented by the CCC-constructed tourist facilities, fish hatchery buildings, and extensive landscaping. Another New Deal structure, a power station built by the Works Progress Administration at the base of the dam, also contributes to the historic district.



Figure 3.76 CCC tourist cabins at Elephant Butte Reservoir, 2007. (Source: Christine Pfaff, Bureau of Reclamation)



Figure 3.77 CCC insignia on one of the Elephant Butte tourist cabins. (Source: Christine Pfaff, Bureau of Reclamation)

One last small complex of buildings constructed by the CCC is located on a glacial knob at Pishkun Dam in Montana on the Sun River Project (figure 3.78). Utilizing locally available materials, the CCC enrollees built a dam tender's house, garage, and outbuilding out of large cobblestones interrupted by a continuous concrete belt course at window sill level. Cobblestone chimneys project above the low hipped roofs that enclose the residence and garage. No other Reclamation cobblestone dwelling is known to exist.



Figure 3.78 Sun River Project. Recent view of cobblestone CCC buildings at Pishkun Reservoir. (Source: Montana Area Office, Bureau of Reclamation)

Endnotes for Chapter 3

¹ U.S. Department of the Interior, Bureau of Reclamation, *Manual of the Bureau of Reclamation, Edition of 1938* (Washington, D.C.: Government Printing Office, 1939), 208-209.

² RG 115, Entry 7, Box 133.

³ “Designs and Specifications,” *The Reclamation Era* (July 1940), 192.

⁴ Both the names Hoover and Boulder have been used for the dam. In April 1947, an act of Congress signed by President Truman officially confirmed the name as Hoover Dam.

⁵ Letter from Elwood Mead to R.F. Walter, RG 115, Entry 7, Colorado River Project, Box 342.

⁶ Saco DeBoer, born in the Netherlands in 1883, moved to America in 1908. He studied botany and horticulture in Europe and was appointed landscape architect for the City of Denver in 1910. In 1922, after studying for a few months in Europe with city planner, Thomas Mawson, DeBoer returned to Denver convinced of the need for city planning to deal not only with parks, but also with the impacts of the automobile. He became Denver’s first city planner in 1926.

⁷ Commissioner Mead must be given credit for his progressive thinking in advocating for a model town employing current planning principles, an approach he had long advocated. His decision was significant because it preceded by three years the first Federal programs which authorized government support for the construction of New Towns in America, Source: Janus Associates. *Boulder City Historic District, National Register Nomination Form*, April 1983.

⁸ Department of the Interior Memorandum for the Press, September 8, 1930, RG 115, Entry 7, Colorado River Project Correspondence, Box 342.

⁹ Kaufmann’s work on Hoover Dam established his reputation as an authority on dam design. He also contributed to the appearance of Reclamation’s Parker Dam, Grand Coulee Dam, Keswick Dam, and Shasta Dam. Scripps College, *Johnson, Kaufmann, Coate: Partners in the California Style* (Santa Barbara, California: Capra Press, 1992), 71-80.

¹⁰ See www.its.caltech.edu/~ath/Kaufmann.html.

¹¹ Letter from R.F. Walter, Chief Engineer to Elwood Mead, November 5, 1930, RG 115, Entry 7, Colorado River Project Correspondence, Box 342.

¹² *Memorandum Relating to H.R. 16422 and S. 5797* from Porter W. Dent, January 31, 1931, RG 115, Entry 7, Colorado River Project Correspondence, Box 346.

¹³ *Ibid.*

¹⁴ Department Of the Interior Memorandum for the Press, November 6, 1930, RG 115, Entry 7, Colorado River Project Correspondence, Box 342.

¹⁵ Much to DeBoer’s regret, certain features of his plan were changed due to cost, although the basic elements were retained. One of the most expensive suggestions of the DeBoer plan, and one that was unrealized, was the installation of all utility lines underground. Other concepts that were dropped were playgrounds in the backs of homes, and two belts of trees surrounding the city.

¹⁶ Letter from Elwood Mead to R.F. Walter, March 17, 1931, RG 115, Entry 7, Colorado River Project Correspondence, Box 346. The discussion of what to call the “city hall” continued, but was resolved with the designation of it as the “municipal building.” The original guest house became a dormitory for bachelor employees and also contained rooms for visitors.

¹⁷ “Boulder City Building Activities,” *New Reclamation Era* (October 1931), 216.

¹⁸ Memo from R.F. Walter to Elwood Mead, March 31, 1931, RG 115, Entry 7, Colorado River Correspondence 1930-45, Box 346.

¹⁹ *Ibid.*

²⁰ Obituaries for Harold G. Kennedy, see *Denver Post*, Tuesday, May 14, 1985, page 18A, column 4, and *Rocky Mountain News*, Friday, May 24, 1985, page 200, column 7-8. Kennedy’s retirement notice in the December 27, 1960, Reclamation Staff Information Letter is just two sentences and states his title as Supervisory Architect.

²¹ Letter from R.F. Walter to Elwood Mead, November 14, 1931, RG 115, Entry 7, Colorado River Project Correspondence 1930-45, Box 346.

²² Clipping entitled “Boulder City Homes to be Modern Ones,” *Las Vegas Review* (February 12, 1931), n.p.

²³ Memo from R.F. Walter to Elwood Mead, March 31, 1931, RG 115, Entry 7, Colorado River Project Correspondence 1930-45, Box 346.

²⁴ Letter from Elwood Mead to Secretary of the Interior, October 6, 1931, RG 115, Entry 7, Colorado River Project Correspondence 1930-45, Box 346.

²⁵ Since it was assumed that the buildings would be relocated within a short time to other construction projects, timber sills were used. Only a few of the homes were moved, and the timber sills soon began to deteriorate. They were replaced in 1939 with concrete masonry unit foundations. See U.S. Department of the Interior, Bureau of Reclamation, *Comparative Study of Government Communities at Page, Arizona, Glen Canyon Unit, Colorado River Storage Project; Dutch John, Flaming Gorge Unit, Colorado River Storage Project; and Trinity Community, Trinity Division, Central Valley Project* (February 1959) no page number.

²⁶ Letter from R.F. Walter to Elwood Mead, November 14, 1931, RG 115, Entry 7, Colorado River Project Correspondence 1930-45, Box 346.

²⁷ Ibid.

²⁸ "City for Workers at Hoover Dam Now Nearing Completion," *U.S. Daily* (July 30, 1932), clipping with no page number; "Boulder Canyon Project Notes," *The Reclamation Era* (September 1932), 160.

²⁹ Sims Ely, "Boulder Dam and Boulder City Post Construction Period," *The Reclamation Era* (October 1938), 199; E.H. Heinemann, "Building of Boulder City," *The Reclamation Era* (May 1936), 110.

³⁰ Gresko, Marcia, *Building America, The Grand Coulee Dam* (Woodbridge, Connecticut: Blackbirch Press Book), 6.

³¹ U.S. Department of the Interior, Bureau of Reclamation, *The Bureau of Reclamation, Origins and Growth to 1945* (Washington, D.C.: Government Printing Office, 2006), 25, 328-334.

³² "Unnamed Town Rises at Site of Giant Dam," Clipping from *The Omak Chronicle* (October 13, 1933), no page number.

³³ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Columbia Basin Project, Volume II* (1934), 85; See also Bureau of Reclamation, Project Dataweb, Columbia Basin Project history, <http://www.usbr.gov/dataweb/projects/washington/columbiabasin>.

³⁴ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Columbia Basin Project, Volume II* (1934), 45-46, RG 115, Entry 10, Box 131.

³⁵ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Columbia Basin Project, Volume III* (1935), 265, RG 115, Entry 10, Box 131.

³⁶ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Columbia Basin Project, Volume III* (1935), 271, RG 115, Entry 10, Box 131.

³⁷ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Columbia Basin Project, Volume III* (1935), 274, RG 115, Entry 10, Box 131.

³⁸ Ibid.

³⁹ Ibid, 279.

⁴⁰ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Columbia Basin Project, Volume IV* (1936), 318-319, RG 115, Entry 10, Box 132.

⁴¹ Gheda Gayou, Colorado State Register of Historic Properties Nomination Form for the Colorado-Big Thompson Project Administration Building (February 19, 1998), 5.

⁴² Although later modified by the addition of a rear wing and some other alterations, the building retains a sufficient degree of integrity, and is listed on the Colorado Register of Historic Places. In 1954, the project headquarters were moved to the Dispatch Building at Reclamation's complex west of Loveland.

⁴³ Goldie Bezold, "Colorado Big Thompson Project Headquarters Camp Vacation Land," *The Reclamation Era* (March 1940), 82.

⁴⁴ James Ogilvie, "Shadow Mountain Camp, Colorado-Big Thompson Project, Colorado," *The Reclamation Era* (April 1941), 95-97.

⁴⁵ Ibid.

⁴⁶ See <http://www.publicaffairs.water.ca.gov/swp/cvp.cfm>.

⁴⁷ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Central Valley Project, Volume III* (1938), 39-40, RG 115, Entry 10, Box 92.

⁴⁸ Al Rocca, *Shasta Lake: Boomtowns and the Building of Shasta Dam* (Arcadia Publishing, 2002), 54.

⁴⁹ See Specifications Number 707 for drawings of office building and residences at Friant Dam camp.

⁵⁰ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Boise Project* (1941), 39, RG 115, Entry 10, Box 40.

⁵¹ Historic American Building Survey, *Ditch Rider's House at Wasteway No. 2, Building 50, Roza Division, Yakima Irrigation Project* prepared for the Bureau of Reclamation by Ward Tonsfeldt Consulting, (February 21, 2005), 2.

⁵² Matt Bischoff, *Parker Dam Government Camp Historic Context and Evaluation, Technical Report 98-28* (Tucson, Arizona: Statistical Research Inc., 1998), 21-23.

⁵³ U.S. Department of the Interior, Bureau of Reclamation, *Parker Dam Government Camp: Building Descriptions and Photographs, Amendment to Historic Context and Evaluation*, by Christine Pfaff (Denver, September 1999).

⁵⁴ U.S. Department of the Interior, Bureau of Reclamation, *Project History of Vale Project, Oregon* (1934), 28, RG 115, Entry 10, Box 596.

⁵⁵ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History and Operation and Maintenance Report, Uncompahgre Valley Project, Volume XXIX*, (1937), 84, RG 115, Entry 10, Box 583.

⁵⁶ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History and Operation and Maintenance Report of the Boise Project, Idaho, for 192.(1929)*, 46, RG 115, Entry 10, Box 37.

⁵⁷ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Uncompahgre Valley Project, Construction of Taylor Park Reservoir and Rehabilitation Program, 1934-1935, Volume XXVII* (1935), 63, RG 115, Entry 10, Box 583.

⁵⁸ U.S. Department of the Interior, Bureau of Reclamation, *Annual Project History, Tucumcari Project, Calendar Year 1940* (1940), 59, RG 115, Entry 10, Box 565.

Chapter 4

The War Years and Beyond: 1942 through 1955

The entry of the United States into World War II quickly diverted funds, manpower, and building materials from dams to national defense. As the fighting escalated, Reclamation's construction activities temporarily ceased or slowed down. Only the most important projects deemed critical in supporting the war effort through food or power production could move forward. In fact, Reclamation expanded its generating facilities during the war and quadrupled its output of electricity. By 1945, the Bureau touted its predominant position as the world's largest single power producer.¹

Nature, not war, provided the impetus for a vast project authorized during World War II that expanded the Federal Government's role in developing the nation's water resources. Recurring costly droughts and flooding along the Missouri River resulted in the last major river project approved by Congress prior to 1945. Both Reclamation and the U.S. Army Corps of Engineers vied fiercely for a leading position in the multiple purpose development of the Missouri River Basin, and the competing agencies each produced a comprehensive basin-wide study in 1944 that represented their own interests. To ward off President Roosevelt's proposed creation of a new regional authority (similar to the Tennessee Valley Authority) to oversee the project, Reclamation and the Corps worked out a compromise in October 1944, known as the Pick-Sloan Plan. It was incorporated into the Flood Control Act signed by President Roosevelt in December 1944. The legislation approved a general comprehensive plan for the conservation, control, and use of water resources in the entire Missouri River Basin. Initially called the Missouri River Basin Project, it became known as the Pick-Sloan Missouri Basin Program. Although some controversial components of the project have never been built, both Reclamation and the Corps have constructed a vast network of facilities in association with it.

For Reclamation, the end of World War II signaled new prospects for congressional spending on its facilities. Indeed, during the late 1940s and early 1950s, favorable appropriations allowed for completion of numerous unfinished projects and initiation of new ones. A change in fiscal policies with the 1952

election of Dwight Eisenhower as President, however, once again curtailed Reclamation's activities. The conservative, anti-New Deal Administration espoused a reduction in Federal resource development programs. Although work on existing Reclamation projects continued and some new projects were authorized, the Bureau's annual budget, which stood at \$364 million in 1950, fell to \$165 million by 1955.²

Not surprisingly, the construction of buildings and dams diminished during the war and immediately thereafter. As thousands of soldiers returned to civilian life, the scarcity and high cost of building materials created an acute housing shortage across the West, not only for veterans ready to settle down, but also for personnel on Reclamation projects. To help solve the crisis, Reclamation was specifically requested to use surplus government war property to the greatest extent possible. Excess military and Civilian Conservation Corps barracks, trailers, quonset huts, and inexpensive, prefabricated dwellings all filled the critical need for temporary employee housing. Congress came to Reclamation's assistance by turning over to it three abandoned Japanese War Relocation Authority camps operated on Reclamation lands and a former German prisoner-of-war camp in Indianola, Nebraska.³ An article in *The Reclamation Era* proclaimed, "If there is an abandoned war surplus camp or building left unwanted, uninhabited and unclaimed in the reclamation area, it is there only because the Bureau hasn't found it yet and worked out some way of using it to beat the housing shortage."⁴

Reclamation even experimented with creating its own low-cost temporary and mobile housing and, in 1950, came up with an innovative solution at Platoro Dam camp on the San Luis Valley Project in Colorado. For families exceeding two in number, Reclamation placed two custom-made trailers side by side, offset by about 10 feet, with connecting doors. The trailers came equipped with gas heaters, electric water heaters, kitchens with appliances, and house furniture "of a quality not less than normally encountered in average American homes." The Trailer Coach Manufacturer's Association and over a dozen companies contacted had never attempted the dual trailers, but "all showed keen interest in its outcome."⁵

West of Denver, adjacent to the foothills, a sprawling government-owned surplus munitions plant was converted to a Federal office complex after the war. In time, it became home to the largest concentration of Federal agencies outside of Washington, DC. Reclamation was among the first agencies to move onto the site in 1947 when it relocated its engineering headquarters from downtown Denver and consolidated its testing laboratories. Converting the drafty, factory-type structures into office space presented some difficulties, but for employees, obtaining housing in close proximity was also challenging. The area surrounding the Federal complex remained largely rural and undeveloped. To help alleviate

the situation, a group of 100 Reclamation workers took matters into their own hands by banding together and purchasing 160 acres of land close to their new offices. Some of the Reclamation engineers who were involved used their professional knowledge to plot home sites. The employees proudly named their new residential development “Glennon Heights” and “expounded the advantages of their cooperative plan which enables the employees to own their own homes, have a gorgeous view of the Rocky Mountains, grow fresh fruits and vegetables in their own gardens, and have space for their children to grow and play.”⁶

By the time availability of building materials increased and construction accelerated in the late 1940s, architectural tastes had changed in the country. The use of historical motifs was largely out of fashion, replaced by simplified modern styles that had begun to flourish in the pre-war years. Reclamation followed suit; it continued to adapt its early 1940s “moderne” residential design featuring a low-pitched gable-on-hip roof, but gradually transitioned to Ranch style houses.

The earliest of the post-war styles, sometimes referred to as “Minimal Traditional,” loosely suggested the Tudor style cottages favored in the 1920s and 1930s, although greatly simplified. Houses typically featured moderately pitched side-gabled roofs with projecting front-facing gables. Traditional detailing was limited or absent. These dwellings first became popular in the late 1930s and dominated residential construction in the late 1940s and early 1950s.⁷

By the mid 1950s, the popularity of the Ranch style house exploded. Across the country, builders churned out one-story, low-slung, sprawling residences in subdivisions that seemed to spring up overnight. Hipped roofs with overhanging eaves, a combination of ribbon and picture windows, decorative shutters, and wrought-iron railing and porch-roof supports epitomized the Ranch style.

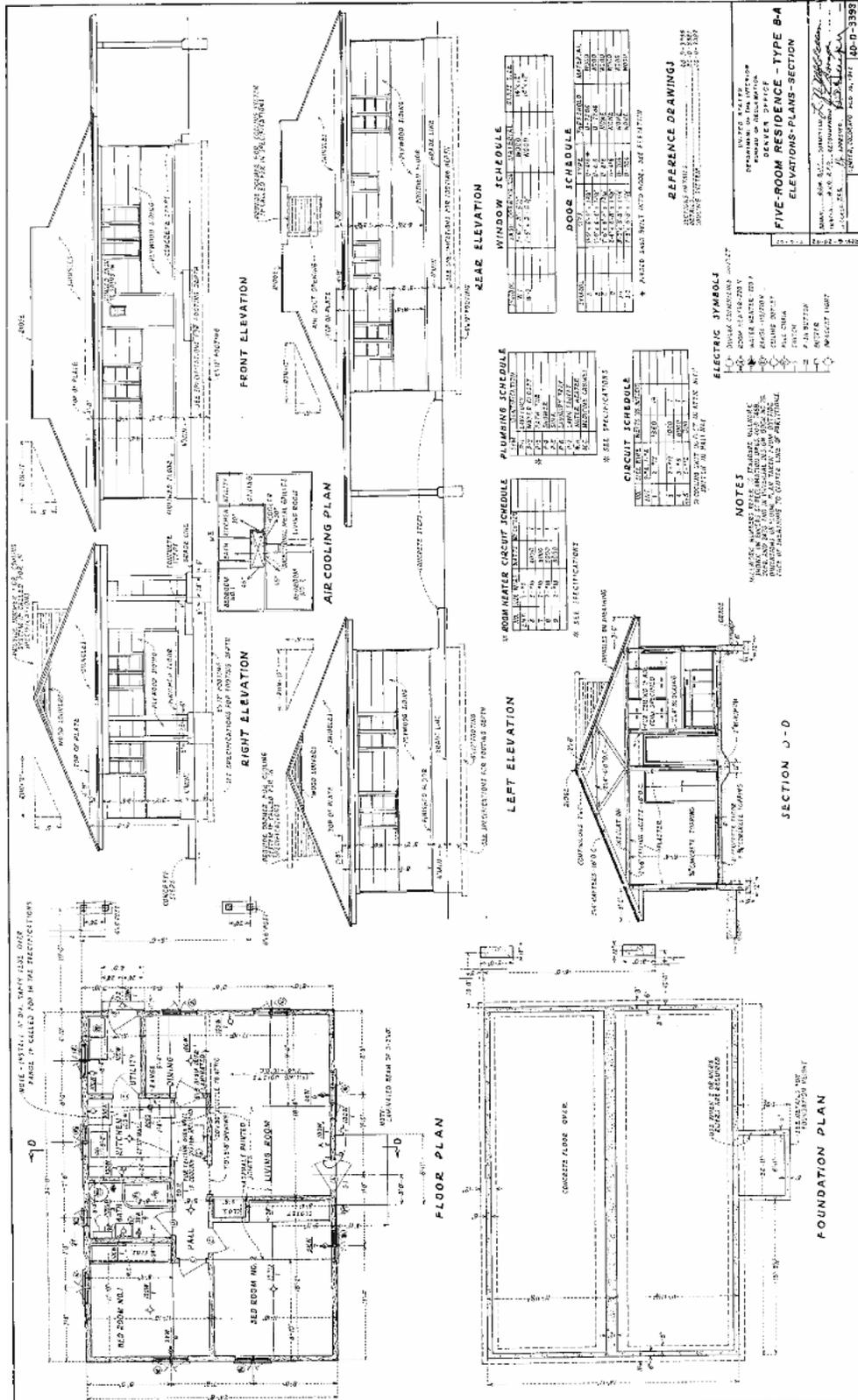
Boulder City Expansion

By the early 1940s, a critical housing shortage existed in Boulder City and Reclamation made plans to build additional units. Just over a month after the bombing of Pearl Harbor, Walker Young, the acting Chief Engineer, proposed the construction of a number of new homes. Rather than suggesting the use of brick to match earlier permanent housing, Young recommended inexpensive wood-frame duplexes, and three- and five-room single-family residences, all to standard plans. He did propose the additional cost of evaporative cooling systems, an added comfort not included in the majority of existing government houses. Upon funding approval in 1942, Reclamation built 15 duplexes and 10 residences (specifications number 1613-D) that were occupied by year end.⁸

The duplexes were similar to those built at Toyon camp, except for the use of concrete rather than wood flooring. The five-room dwellings resembled the previously described four-room dwellings with modified hipped roofs that were built about the same time at Anderson Ranch Dam camp and a year earlier on the Roza Division of the Yakima Project (figure 4.1). Variations consisted of extended eaves and an open carport on the side elevation, rather than a garage. The basic three-room residences featured side-gabled roofs, center entrances, and casement windows. A new design motif, which would be used repeatedly in the future on Ranch style houses, was the wraparound corner window. Finishes in dwellings of both sizes included plastered interior walls, linoleum countertops in the kitchens, wood casement windows, and composition shingle roofing. Like the duplexes, they also featured concrete floors, a deviation on the standard designs.

The additional housing helped alleviate the shortage but did not eliminate it. Assistant Commissioner Henry Bashore suggested purchasing trailers, but as an alternative, Chief Engineer S.O. Harper recommended standard design portable houses, such as those erected earlier at Green Mountain Dam. In proposing the latter, Harper considered the visual impact on Boulder City, reflecting his desire to retain its appearance as a model community: "While the portable houses are far from being pretentious, they would provide space and comfort not to be attained in a trailer. Whereas a trailer camp would be bound to create an unsightly feature in Boulder City, a group of small houses of the inexpensive, portable type could be made quite attractive."⁹ By September 1942, contracts had been awarded for 100 portable houses, but construction was bogged down by lack of sufficient building materials. In order to obtain needed lumber, Reclamation appealed to the National Housing Authority for an endorsement of the project and a blanket release for lumber. The request was granted and construction proceeded.

Interestingly, during this era, Gordon B. Kaufmann once again contributed to the architectural palette of Boulder City with the design of several buildings. Unlike his earlier work for Reclamation, however, the new commissions did not conform to the "Spanish style." The Visitors Bureau/Bank of Nevada/Nevada Drugstore building, junior/senior high school, and private home on 550 California Street all displayed Kaufmann's adoption of the modernist movement.



Irrigation Development on the Columbia Basin Project

While Grand Coulee Dam became widely recognized during the war for its enormous power-generating capabilities, the fact that it was built to irrigate the nation's most extensive reclamation project was largely overlooked.¹⁰ With the restoration of peace, attention turned to the development of the agricultural component. Much of the vast irrigation network was built during the late 1940s and early 1950s, and consists of several hundred miles of main canals, accompanied by many more miles of laterals and drainages. Upon completion, the Columbia Basin Project (CBP) delivered water to about 500,000 acres of land. Although the full scope of the irrigation system was never realized, the project transformed much of the Columbia Basin landscape from grassland and sage to cultivated fields.¹¹

The multiple and widespread components of the CBP irrigation system required that numerous contractors work simultaneously on different aspects of the project. Housing proved to be a major obstacle. Even at Coulee Dam, an insufficient number of dwellings for prospective workers slowed down resumption of construction at the end of World War II. Early in 1945, and again in 1946, Reclamation requested funds for additional permanent housing at Coulee Dam. Congress refused the appropriations, making it necessary for Reclamation to resort to a variety of temporary accommodations.¹² Unlike Boulder City, Reclamation turned to trailers, and in 1945 and 1946, over 200 of them arrived at Coulee Dam and were parked in four camps: one for single men and three for families of Bureau personnel. The Hanford atomic energy project in Richland, Washington, supplied 23 small, second-hand, prefabricated dwellings (figure 4.2). In January 1946, Reclamation purchased 150 "demountable" War Housing Project homes formerly used by war workers in Vancouver, Washington. The two-, three-, and four-bedroom dwellings were dismantled and trucked more than 300 miles to Coulee Dam.¹³ In 1947, additional prefabricated "demountable houses" acquired from the Federal Public Housing Authority were also moved from Vancouver, Washington. Still short on housing, Reclamation purchased nearly 200 more trailers in 1950, including some called "Transa-Houses," which neatly unfolded into five-room residences (figures 4.3 and 4.4).

In addition to adding housing units at Coulee Dam, Reclamation remodeled existing ones. The one-bedroom dwellings proved to be cramped and unsatisfactory for permanent family residences; therefore, in 1950, most of the original 25 one-bedroom houses were enlarged to incorporate second bedrooms.¹⁴

Beyond the community of Coulee Dam, much of the area to be irrigated still remained remote and sparsely populated. Original planning studies for the CBP irrigation component had envisioned a model reclamation project, including the

creation of model agricultural communities. This grandiose objective was never realized. When Reclamation announced the impending establishment of the first new CBP town, Burke, in 1950, it did not anticipate the negative response that followed. Local merchants, fearing competition from the new town, protested vehemently. Two years later, Reclamation shelved its plans for Burke. One subsequent attempt to create a model community in 1957 also failed.¹⁵



Figure 4.2 Columbia Basin Project. Some of the prefabricated houses that helped alleviate the housing shortage in 1946.

To address the housing deficiency for the many employees needed to first build, and then maintain, remote CBP project features, Reclamation constructed camps at central locations and single residences at dispersed sites. For the most part, camp buildings were laid out in unimaginative rows for efficiency, as well as to facilitate access and group similar functions. As at Coulee Dam, Reclamation initially relied on surplus war buildings to meet much of the demand for temporary housing.

Project officials successfully negotiated with the Army, and later with the War Assets Administration, for several hundred vacant buildings at the Ephrata Air Force Base in Washington. Reclamation used some of the structures on location, while others were moved and converted to habitable dwellings. Hospital wards were transformed into apartments for 150 families of Bureau employees, and former bachelor officer quarters were adapted into more apartments.¹⁶

The Ephrata air base headquarters building served as initial offices for the CBP irrigation project. Apparently, much of the engineering work was accomplished there, rather than in Denver. The 1946 CBP Annual Project History for the Irrigation Division also refers to architectural design work being conducted at the Ephrata office. The report describes the formation of a General Engineering Unit to handle general office engineering work including “architectural engineering,” which was performed by an “architectural group.” Indeed, CBP Irrigation



Figure 4.3 Portable Transa-Home as it appeared upon arrival at Coulee Dam in 1950.

Division building plans of the period indicate Ephrata, Washington, as the originating office in the title block. As in Denver, the Ephrata architectural group presumably consisted of engineers.¹⁷

Among the first tasks of the Ephrata architectural group was the preparation of detailed drawings for camp buildings at the Potholes Dam site.

Reclamation made use of surplus quonset huts to create a government camp there, very much like an army installation in appearance (figure 4.5). In fact, the structures were named for Quonset Point, Rhode Island, where they were first developed on a wide scale and manufactured for military use. Families living in the converted, arched, steel-ribbed units each had a 16-foot by 20-foot living room, a combination kitchen and dinette, a utility room, two bedrooms, and a bath. In all, 200 recycled quonset huts provided shelter at various locations on the CBP project.



Figure 4.4 Transa-Home after being unfolded and opened into a five-room house. Photo taken April 25, 1950.

Reclamation began constructing permanent residences for the CBP irrigation component in 1950 and built most of them prior to 1957. As with other Reclamation dwellings, those for the CBP were basic and devoid of much decorative detailing. Houses built between 1950 and 1955 consisted of about a half dozen standard designs. Oftentimes, the plans were reversed in mirror image during drafting or construction to create some visual variety. Designs reflected the Minimal Traditional style and transition to the Ranch style.



Figure 4.5 Columbia Basin Project. Aerial view of Potholes Dam camps resembles military installation in July 1948. Quonset hut residences are at left and center behind water tower.

In late 1949, at Othello, Washington, Reclamation established a government complex consisting of both temporary and permanent buildings. Located a quarter of a mile east of town on 20 acres, the camp served government engineering forces during construction of the irrigation system, and thereafter provided housing for Reclamation operation and maintenance personnel. In October 1949, a contract was awarded to Modern Home Builders to erect 10 permanent residences with detached garages (specifications number R1-CB-30). Laid out in a row, the frame houses alternated between two- and three-bedroom types (figure 4.6). The two-bedroom residences were rectangular in plan with moderately pitched, side-gabled roofs and center main entries flanked on either side by a window. The three-bedroom type featured a prominent, front-gabled extension off the main facade, reflecting the Minimal Traditional style. All of the dwellings were of insulated dry-wall construction and featured asphalt shingled roofs, exposed rafter ends, cement-asbestos shingled siding combined with vertical siding in the gable ends, full concrete foundations, a combination of large multi-paned windows and double-hung windows, and oak flooring.¹⁸



Figure 4.6 Columbia Basin Project. Newly completed row of two- and three-bedroom permanent houses at Othello, Washington, in 1950.

In 1950, Reclamation built permanent houses similar to those at Othello at operation and maintenance headquarter complexes at Adco, Eltopia, and Quincy and the following year at Mesa, Moses Lake, and Warden, all in Washington (figure 4.7). A different design was used in 1953 for three residences at the Ringold Pumping Plant. In this case, temporary two-bedroom residences were moved from elsewhere within the CBP to the site, set on raised concrete basements, and converted to permanent three-bedroom residences (figure 4.8). The frame buildings covered with asbestos shingles retained their original rectangular plans and side-gabled roofs but were modified with shed-roofed extensions across a portion of the front façade. The extension contained a staircase leading down to the basement, which contained the additional bedroom, along with a storage and utility room. Ditchriders' houses scattered across the project employed the same standard plans as those used at the operation and maintenance complexes (figures 4.9 and 4.10).

In addition to providing necessary housing, Reclamation also erected office structures at a number of locations on the CBP between 1950 and 1955. Architectural drawings indicate that these buildings were constructed using standard Reclamation plans drafted in the Ephrata project office, with the exception of a new main headquarters building in Ephrata, which was designed in Denver (specifications number 2629). Two- and three-story office buildings on the CBP exhibit the Modernist architectural style: simple geometric forms emphasize horizontal lines and are devoid of traditional architectural detailing.

The designs of smaller one-story office buildings are more closely allied with period residential architecture. These structures are brick or frame transitional Ranch style forms, adapted for use as offices. They all have low-pitched hipped roofs with extending eaves and a variety of window sizes divided into multiple horizontal panes.¹⁹



Figure 4.7 Columbia Basin Project. View of completed permanent houses at Eltopia operation and maintenance headquarters. Photo taken April 25, 1952.



Figure 4.8 Columbia Basin Project. Completed houses at Ringold Pumping Plant sit on raised concrete foundations. Photo taken September 23, 1953.



Figure 4.9 New ditchrider's house near Gloyd, Washington. Photo taken June 6, 1951.



Figure 4.10 View of kitchen in ditchrider's house on Columbia Basin Project, August 12, 1951. Cupboards were prefabricated.

The Ephrata office building, still occupied by Reclamation, was constructed between 1950 and 1951. The utilitarian three-story structure has a U-shaped plan, flat roof, and smooth exterior walls (figure 4.11). The use of alternating bands of different colored brick accentuates the building's horizontal lines and serves as

the only decorative treatment. Evenly spaced multi-pan metal windows, appearing flush with the walls, interrupt the bands of lighter colored brick.

Two other office buildings, also examples of the Modernist style, were completed in 1951 and still exist today. Nearly identical to each other, the Othello divisional office building and the Quincy divisional office building are two-story, rectangular-plan, flat-roofed structures (figures 4.12 and 4.13).

Exterior walls are concrete block covered with a brick veneer. Windows are multi-pan metal sash. A

slightly projecting central bay on the main façade divides the building visually into three sections. The extension of the bay above the roofline creates a vertical element, which contrasts to the horizontal lines of the rest of the building. For the smaller one-story offices, three different standard designs were used. Examples of these designs can be found at the following operation and maintenance headquarters, all in Washington: Winchester, in Quincy (brick, 1951); Moses Lake (brick, 1951); Warden (brick, 1951); Mesa (1951, brick); and Eltopia (brick, 1952).²⁰



Figure 4.11 Columbia Basin Project. New irrigation division headquarters office in Ephrata, Washington. Photo taken July 10, 1951.



Figure 4.12 Columbia Basin Project. New division office building in Othello, Washington. Photo taken March 30, 1951.



Figure 4.13 Current view of Othello office still owned by Reclamation.
(Source: Mark DeLeon, Bureau of Reclamation)

Expansion of Colorado-Big Thompson Facilities

Following World War II, Reclamation continued construction on the extensive system of canals, tunnels, dams and reservoirs associated with the C-BT. To accommodate additional construction and maintenance workers, Reclamation also expanded both its permanent and temporary housing facilities.

In 1946, Reclamation developed plans to construct 100 “Two-bedroom Prefabricated Portable, and Demountable Houses for Estes Park, Fort Collins, and Shadow Mountain Government Camps.” Specifications number 1169 called for the delivery, in panels or sections, of 35 houses to both Estes Park and Fort Collins government camps, and 30 houses to the Shadow Mountain government camp. The specifications further required that the houses be of wood-frame construction with no less than 640 square feet and contain two bedrooms, closets, a bathroom, and living, dining, and kitchen areas. Exterior walls were to be finished with wood siding, and interior walls could be either one-half-inch wallboard or a similar material. It was left up to the bidders to provide drawings. Reclamation later modified the specifications to stipulate the use of less expensive, second-hand lumber. Government forces erected all of the houses onsite (figure 4.14).



Figure 4.14 Colorado-Big Thompson Project. Example of Reclamation prefabricated house still exists at Estes Park. See figure 4.21 for similar type constructed at Canyon Ferry. Photo taken June 2007. (Source: Christine Pfaff, Bureau of Reclamation)

Reclamation established the Fort Collins government camp in 1946 to provide temporary housing for its employees and officials. By early 1947, the completed complex, known as “Reclamation Village,” consisted of 48 two- and three-bedroom, prefabricated houses, an administration building, laboratory, garage, and a number of other structures. Apparently, sheet metal drop siding was substituted for the wood siding called for in the specifications.²¹

At Shadow Mountain camp, a new street was constructed parallel to, and north of, the original one. Government forces laid concrete foundations and extended camp utilities in preparation for the arrival of the prefabricated houses. Reclamation also added five quonset type dwellings, an unusual two-story quonset office building, and a laboratory building in 1946. Thirty more temporary houses augmented the camp by August 1947.²² At Estes Park, the prefabricated houses were nearly all in place by the end of 1946.

With the majority of C-BT features completed by 1952, much of the housing constructed by Reclamation was no longer needed, and it sold or transferred many of its holdings. While the majority of buildings were auctioned to private

individuals, businesses, or civic organizations, Reclamation transferred most of Shadow Mountain camp to the National Park Service in 1952 or 1953, for use as headquarters for the newly created "Shadow Mountain National Recreation Area."²³ At Estes Park, Reclamation declared the entire camp excess in 1953 and turned it over to the General Services Administration for disposal. Some buildings were moved to other locations or sold to the public; a number of them, including two permanent houses which still exist, became the property of the U.S. Forest Service. The project headquarters office was acquired by the American Legion.

At the Fort Collins government camp, 11 prefabricated, portable houses were sold to the general public in 1953 for removal to other locations. The General Services Administration announced the sale of the remaining houses and lots at the camp in July 1954, and, by 1955, they had all passed into private ownership. Although city officials anticipated the removal of all the structures because they did not meet city code, this did not occur. Houses that once formed the temporary camp survived and became a permanent neighborhood in north Fort Collins.

Central Valley Project, Davis Dam, and All-American Canal Camps

At about the same time that Denver issued specifications for prefabricated houses on the C-BT Project, it requested bids for nearly 300 prefabricated frame houses at various camps on the Central Valley Project (specifications number 1256). The 211 two-bedroom and 74 three-bedroom houses to be delivered by the contractor would be erected by government forces. The specifications spelled out the fabrication details and materials, but the bidder was required to submit detailed drawings along with his bid by May 1, 1946. The two-bedroom houses were to contain no less than 500 square feet, and the three-bedroom houses no less than 580 square feet. Alternative finishes for the exterior walls consisted of wood siding, metal siding, waterproof plywood, or insulating board surfaced with asbestos-cement sheets. Roofing could be either asphalt or metal.

Elsewhere, prefabricated buildings populated part of Davis Dam camp. In 1942, about 67 miles downstream from Hoover Dam on the Colorado River, Reclamation began construction of another concrete barrier to regulate its flows. The war delayed progress, and Davis Dam was not completed until 1953. Housing was needed at the remote site, and Reclamation responded by creating a government camp on the Arizona side of the river about 3 miles downstream from the dam. Since the camp would continue to be occupied by operation and maintenance personnel upon completion of the dam, Reclamation incorporated paved streets, sidewalks, and other utilities. Both temporary and permanent

residences were constructed. Prefabricated dwellings, cottages made of salvaged materials, and surplus buildings dismantled and transferred from the Yucca Army Base provided temporary accommodations.²⁴

In February 1946, Reclamation solicited bids for 7 six-room and 13 five-room standard plan, wood-frame permanent residences (specifications number 1206). The designs for both were variations of the familiar low-pitched, modified hipped roof, rectangular plan, standard type used elsewhere. At Davis Dam camp, both the five- and six-room houses had screened porches extending off rear elevations. To add variety, the siding types and patterns differed, and certain residences also had an extra feature: either a bay window or fireplace. Evaporative cooling systems were standard in all of the buildings. The residential camp still exists, although now it is part of Davis Camp Park, administered by Mohave County, Arizona.

Reclamation had employed almost the same five-room house design in another desert environment in 1944 (specifications number 1070). Bids were solicited in April of that year for the construction of 13 six-room and 12 five-room houses in association with the All-American Canal outside of Coachella, California. The screened porch of the five-room residence extended off the side rather than the rear elevation as at Davis Dam camp, and, in addition to an evaporative cooling system, continuous vents at the eaves and vents along the foundation helped circulate air. Like the Davis Dam camp houses, Reclamation specified wood casement windows, plastered interior walls, and oak flooring in all but the kitchen.

Hungry Horse Dam Camp

Reclamation borrowed building designs from earlier projects yet again when it built Hungry Horse Dam government camp in the remote wilderness of northwestern Montana. Standing in the shadow of the magnificent peaks of Glacier National Park, Hungry Horse Dam is located on the South Fork of the Flathead River. The multiple purpose Hungry Horse Project, authorized in June 1944, included irrigation, flood control, streamflow regulation, navigation, and power generation among its benefits. When finally completed in 1953, the towering structure ranked as the fourth largest concrete dam in mass, and third tallest concrete dam in America.²⁵

Construction of the dam was delayed until World War II ended, when both labor and materials became available again. Veterans and their families flocked to the site in hopes of finding jobs and prospects for a bright future. Housing close by was virtually nonexistent, and before work on the dam could begin, Reclamation

had to carve out a camp in the forest. The plan included areas for prefabricated houses, duplexes, and permanent dwellings, as well as a dormitory, garage, warehouse, and office. Among the first buildings completed were wood-frame duplexes like those at Shadow Mountain camp and an administration headquarters like the ones at Estes Park and Toyon (figures 4.15 and 4.16).



Figure 4.15 Hungry Horse Project. Administration building repeats design of offices in Estes Park, Colorado, and Toyon, California. Photo taken on November 14, 1947.



Figure 4.16 Hungry Horse Project duplexes on Montana Street. Photo taken September 12, 1947.

In 1948, the same year construction of the dam started, Reclamation awarded contracts for an office annex; 46 two- and three-bedroom, prefabricated houses; and 20 permanent, wood-frame houses on concrete foundations. The latter consisted of five-room and six-room floor plans (specifications number 2219). The designs were yet another variation of the familiar modified hipped roof scheme. In this case, the window placement was changed considerably, and the attached gable-roofed garage projected off the front elevation and included the main entrance. Reclamation specified single-paned, double-hung windows rather than multi-paned casements, as in previous models. To vary the appearance, Reclamation required wood siding on half of the houses and wood shingles on the other half. Initially, due to a Presidential Order restricting the use of oil for space and water heating, coal-fired furnaces were installed. The fuel had to be hauled from 500 miles away, and no storage facilities existed. After the order was rescinded late in 1948, Reclamation converted to the use of oil.²⁶

The Missouri River Basin Project

The expansive Missouri River Basin Project not only created vast numbers of jobs after World War II but also spawned construction of government housing camps in diverse terrain in multiple States. At many of the complexes, contractors quickly erected wood-frame prefabricated houses needed during construction of project features. Specifications issued by the Denver office prescribed such housing at locations including Enders camp in Nebraska, Kortess Dam and Keyhole Dam camps in Wyoming, Canyon Ferry Dam camp in Montana, Bixby Dam camp in South Dakota, and Cannonball camp in North Dakota. On the controversial Narrows Unit in Colorado, where a massive dam was planned and never built despite decades of studies, Reclamation constructed a camp in 1948 of simple, frame, side-gabled, prefabricated houses neatly lining a block in the city of Fort Morgan. Nearby, Reclamation established an office in what looks like a either a prefabricated structure or former CCC or army barracks (figures 4.17 and 4.18).

At Chester, Montana, in the north central part of the State, Reclamation established a temporary camp in 1950, called Chester Square, and constructed basic, temporary, wood-frame, two-bedroom dwellings with side-gabled roofs. Lap siding covered the exterior, a simple porch hood shielded the off-center front entry door, and single-paned double-hung windows, singly or in pairs, punctuated the walls. In 1951, Reclamation relocated the buildings to Tiber Dam camp, a distance of less than 15 miles away. That same year, Reclamation awarded contracts for the construction of 19 other fairly similar temporary residences, two permanent five-room residences, and an office at Tiber Dam camp. The latter

building was a sprawling, one-story wood-frame building enclosed by a gabled roof (figures 4.19 and 4.20).



Figure 4.17 Missouri River Basin Project, Narrows Unit. View of identical prefabricated residences on Lincoln Street in Fort Morgan, Colorado. Photo taken September 21, 1948.



Figure 4.18 Missouri River Basin Project, Narrows Unit. Office in Fort Morgan. Photo taken September 21, 1948.



Figure 4.19 Missouri River Basin Project, Tiber Dam government camp, Lower Marias Unit, Montana. One of the two five-room permanent houses under construction. The temporary two- and three-bedroom houses were similar but smaller and lacked attached garages. Photo taken September 12, 1952.



Figure 4.20 Tiber Dam government camp. Reclamation construction field office. Photo taken September 12, 1952.

Missouri River Basin Project, Canyon Ferry Unit

At the Canyon Ferry Dam site near Helena, Montana, in addition to temporary houses that resembled the ones at Tiber Dam camp and prefabricated units nearly identical to those at Davis Dam camp, Reclamation built permanent dwellings for the employees who would later operate and maintain the dam and reservoir

(figure 4.21). The site selected for the permanent residences was a scenic bluff overlooking Canyon Ferry Reservoir, about .8 miles northeast of the dam. Most of the buildings were constructed under one contract that was awarded in March 1948. The contract included eight four-room residences, four five-room residences, and three six-room residences, as well as an office, dormitory, and combined shop/garage. Construction took place between April 1948 and May 1949, and, by the end of that year, almost all of the residences were occupied.

The permanent residential section consisted of 15 one-story wood-frame houses located in pairs (except for one) along a paved curvilinear street (figure 4.22). Each pair of houses was identical, except that the plans were reversed (specifications number 2008). They all featured low-pitched hipped roofs, basements, and attached garages.

Interior finishes included plastered walls and hardwood floors. For the four-room dwellings, Reclamation engineers selected standard plans originally devised in 1940 and modified a number of times thereafter. The same "streamlined" design had been used earlier for houses on the Roza Division of the Yakima Project and at Anderson Ranch Dam camp (figure 4.23).

Reclamation engineers relied on Denver office standard drawings, dating to 1946 and modified in July 1947, to build the five- and six-room houses. The plans reflected the transition to the Ranch style with the elongated rectangular plan, asymmetrical front elevation incorporating an attached garage, and grouped windows (figures 4.24 and 4.25). For the office building, Reclamation specified the same design as that used at Anderson Ranch Dam camp, with a few adjustments.



Figure 4-21. Missouri River Basin Project, Canyon Ferry Unit. Temporary prefabricated house is similar to ones installed at Davis Dam camp. Photo taken November 4, 1948.



Figure 4.22 Canyon Ferry Unit. Partial view of permanent houses laid out in pairs on curving street. Photo taken December 12, 1949.

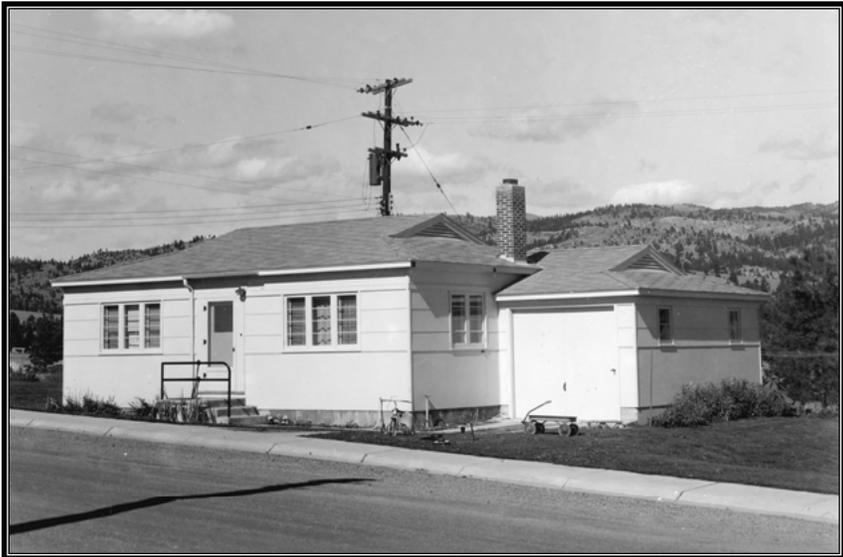


Figure 4.23 Canyon Ferry Unit, newly completed four-room permanent house. Photo taken September 9, 1949.

Figure 4.24 Canyon Ferry Unit. Five-room permanent house shows transition to Ranch style. Photo taken September 12, 1949.

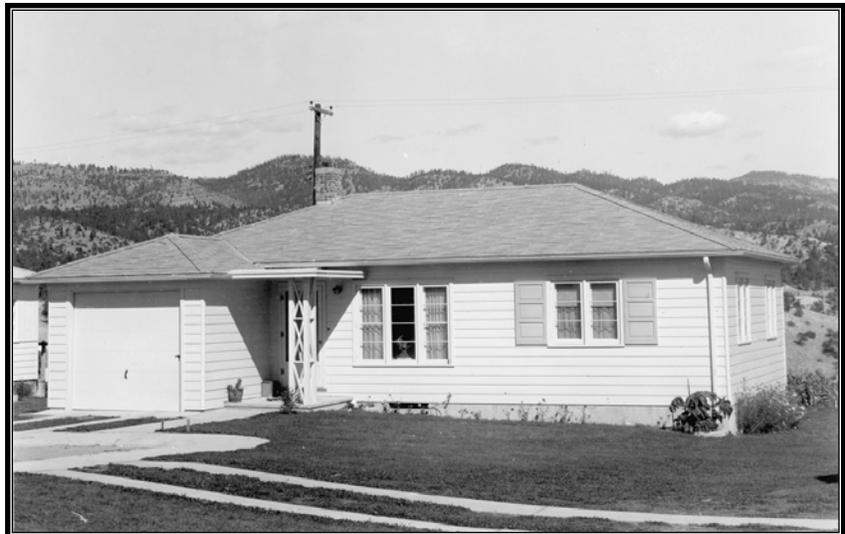




Figure 4.25 Canyon Ferry Unit. Six-room permanent house. Photo taken September 12, 1949.

A final report on the permanent camp, prepared by Reclamation engineer W.C. Chubbuck, provides the most in-depth evaluation of Reclamation buildings found during research for this study. In his 1950 document, Chubbuck bluntly criticized many aspects of the designs that were selected and the lack of professional architectural input. He asserted that the plans used were initially developed for a warm, dry climate and, although certain modifications had been made, a number of features were not optimally suited for the harsh Montana weather. These included the low-pitched roofs inappropriate for heavy snow and ice loads; the large attic louvers designed for hot desert climates; the broad eave overhangs intended to provide shade; the lack of storm windows and installation of unhandy casement windows; and the use of plywood and “Dolly Varden” horizontal pine siding. Chubbuck also criticized the poorly arranged kitchens with the range and sink placed at opposite ends of the room, a concept that “went out of style prior to 1914 in the better house designs.” Chubbuck concluded that:

Designing dwellings is a specialized field and it is believed that the Bureau of Reclamation would do well to stop trying to cover it. The work of the Bureau covers such a wide variety of topography and climate that one or even a half-dozen types of construction cannot be modified enough to fit the various conditions. This type of design work together with attendant specifications should be delegated to private companies, who can do it better because it is their specialty. We keep making certain mistakes over and over in our various camps, and always we look at cost, not at the subsequent upkeep.²⁷

These words echo back to those iterated by C.R. Olberg nearly 50 years earlier upon his review of plans for the superintendent's house on the Minidoka Project in Idaho.

The permanent Canyon Ferry residences still exist, although they have been altered to varying degrees over time and no longer belong to Reclamation. Elsewhere on the Missouri River Basin Project, most camp buildings, especially temporary ones, have been removed. A few buildings associated with construction of the project remain at the Boysen Dam, Pilot Butte, and Keyhole Dam camps.

Completion of Parker Dam Camp

By 1945, Reclamation recognized that Parker Dam government camp was in poor condition and needed attention. A shortage of materials during the war prevented the Bureau from upgrading the temporary housing built in the 1930s, and it definitely showed signs of deterioration. In 1946, Reclamation decided to improve the camp and meet the growing housing need by embarking on a new phase of construction to gradually replace temporary residences with permanent ones. Two permanent dwellings were completed in 1948, 8 in 1949, 18 in 1950, and 13 more in 1952. A group of 10 dwellings added to the Parker Dam camp between 1953 and 1954 completed the complex. Based on the title blocks located on the plans, it appears that almost all of them originated in Reclamation's Phoenix office.

In conjunction with the design and construction of the residences, Reclamation enhanced the camp with landscaping. A variety of trees and bushes were planted that contributed to the park-like setting. A plan dated May 16, 1952, shows 10 varieties of palm trees at the center of the camp. Orange, fig, palo verde, tamarisk, mesquite, cottonwood, and oleander shrubs and trees adorned the yards and created fragrant and welcome shade. Elm trees bordered the properties along the sidewalk edge.

With one curious exception, all of the post-World War II residences at Parker Dam embraced the Ranch style. The latter were one-story wood-frame buildings enclosed by low- to moderately pitched hipped roofs with broad eaves (figures 4.26, 4.27, and 4.28). Multi-paned steel casement windows in a variety of sizes, including picture windows that sometimes wrapped building corners, were common elements. Houses contained either two or three bedrooms painted in colors such as California Peach, Jonquil Yellow, Ashes of Roses, Dusty Blue, or Ice Green. Square footage ranged between 850 and 950 for the two-bedroom plans and 1,050 and 1,250 for the three-bedroom plans, which was average for that time. All of the houses had detached garages and evaporative coolers installed on the roof.

The one anomaly to the Ranch style was Residence Number 55, built in 1948 by government forces (figure 4.29). The one-story, wood-frame, nearly square plan house had a side-gabled roof with extended eaves and exposed rafter ends. Gable ends were decorated with large wood knee braces. An intersecting gable roof centered on the main elevation enclosed a screened porch. Other than the use of steel casement windows, the house evoked earlier Bungalow designs and looked out of context with the other dwellings.



Figure 4.26 Parker Dam camp. Three-bedroom Ranch style residence. Photo date unknown.

By 1968, the thriving and scrupulously maintained camp contained 55 residences serving 170 Reclamation employees. In the late 1990s, Reclamation determined that Parker Dam camp was no longer needed for its project activities and proceeded with demolition of the residences after evaluating other alternatives.

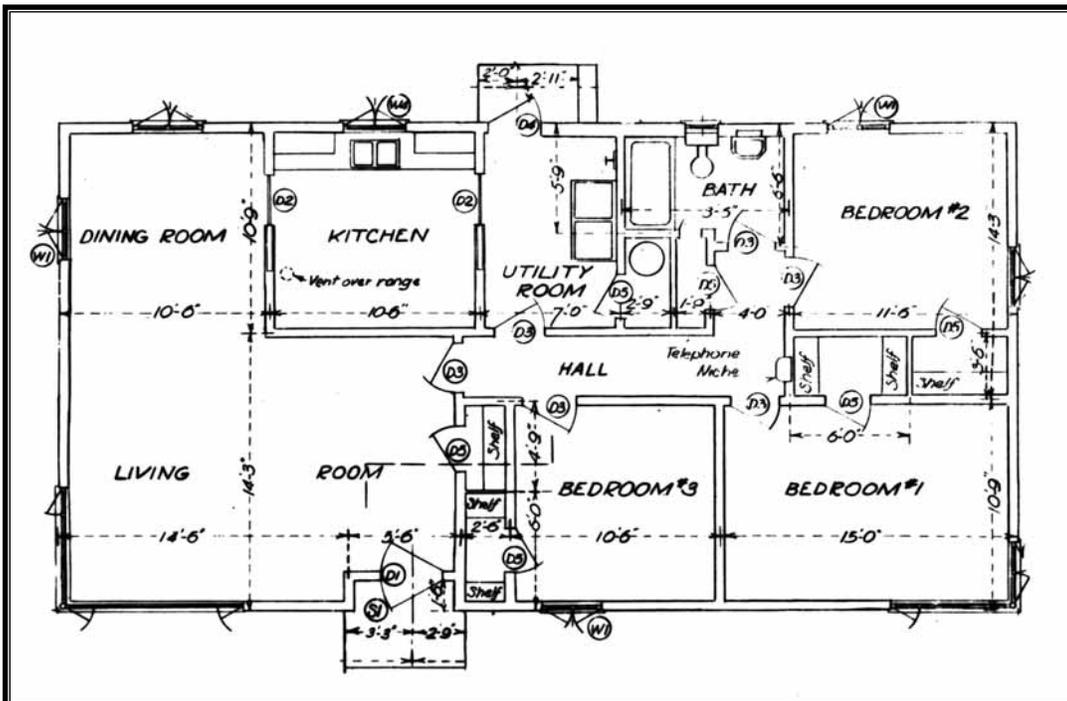


Figure 4.27 Parker Dam Camp. Plan of three-bedroom residence shown above.



Figure 4.28 Parker Dam Camp. Permanent residence. Note broad overhanging eaves for sun protection. Photo date unknown.



Figure 4.29 Parker Dam Camp. House number 55, built in 1948, evokes the earlier Bungalow form. Photo date unknown.

Gila Project: Wellton Camp

Another Reclamation development southeast of Parker Dam brought Colorado River water to lands in the Arizona desert near those already irrigated by the Yuma Project. Originally approved in 1937, the Gila Project was reauthorized at a reduced size in 1947. Although construction of the first division, the Yuma-Mesa, started in 1936, work on the larger Wellton-Mohawk Division did not begin until August 1949. The following year, Reclamation solicited bids for a camp near Wellton. The government awarded a contract in June 1950, and all work was completed in March 1951. Housing consisted of both new permanent residences and relocated and remodeled World War II barracks arranged in an elongated horseshoe shape around a center drive containing three “parkways” (figures 4.30 and 4.31). The new wood-frame houses were simple Ranch style with either side-gabled or hipped roofs, stucco exterior walls, and multi-paned steel casement windows. Front facades featured “picture” size windows and corner windows that wrapped around to the side elevation.

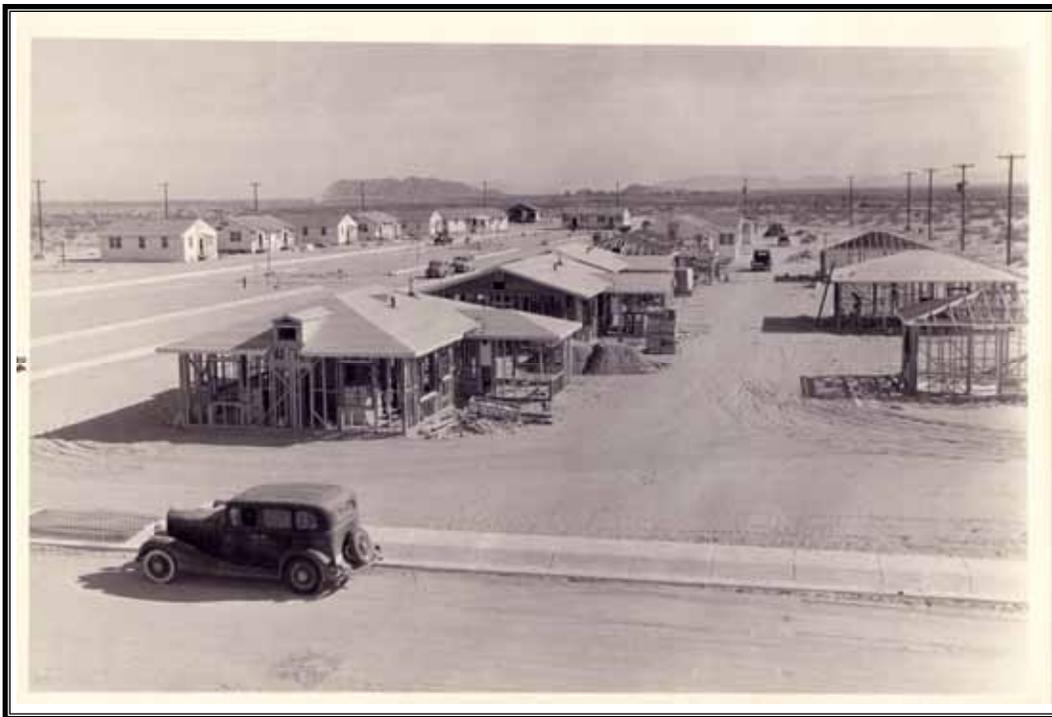


Figure 4.30 Gila Project. Residences at Wellton Camp under construction.

Additional work at the camp occurred under a December 30, 1954, contract which called for “removing, remodeling, rehabilitating and improving” buildings. Apparently, some of them were relocated for use as ditchriders’ houses elsewhere on the project. Remaining structures at Wellton camp are maintained by the Wellton-Mohawk Irrigation District, although demolition is currently underway to

replace at least 11 of them with modern housing. To mitigate the loss of the historic dwellings, Reclamation completed documentation of the camp.



Figure 4.31 New Wellton Camp with residences laid out in a horseshoe plan around a center drive with parkways. Storage buildings in foreground.

New Residences at Elephant Butte Dam

At Elephant Butte Dam in 1950, Reclamation constructed a group of identical three-bedroom residences in the weather station area (specifications number R5-20). The simple rectangular plan houses with low-pitched hipped roofs share similarities with those at other Reclamation camps of the same time period. Photographs of the newly completed dwellings show smooth stuccoed surfaces probably applied over concrete block, steel casement windows with a wraparound one on the front elevation, and an off-center main entrance (figures 4.32 and 4.33). Concrete steps lead up to the plain concrete landing at the front entry. Unlike other Ranch style houses, these have exposed rafter ends, suggesting a more southwestern appearance. Still in existence, the three structures are considered noncontributing to the Elephant Butte National Register Historic District due to their late construction date. Under the same specifications, Reclamation also built a pair of two-bedroom cottages in “Hospital Canyon,” one of which remains. Similar in appearance to the three-bedroom residences in the use of stuccoed exteriors and steel casement windows, the two-bedroom types featured flat roofs (figures 4.34 and 4.35).

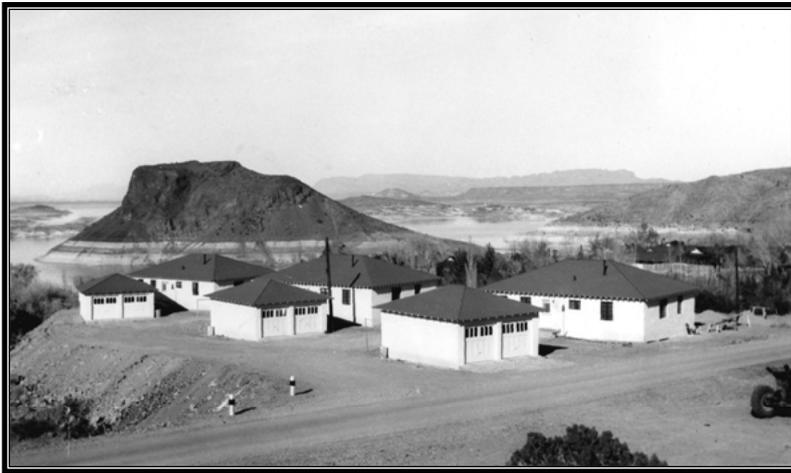


Figure 4.32 Rio Grande Project, Elephant Butte Dam. Identical three-bedroom residences and garages. Photo taken December 13, 1950.



Figure 4.33 Elephant Butte Dam. Front elevations of stuccoed residences. Photo taken December 13, 1950.

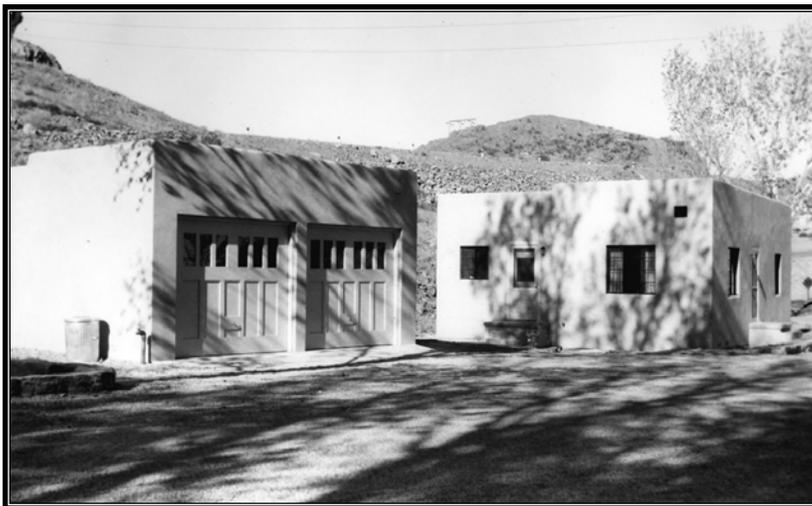


Figure 4.34 Elephant Butte Dam. Two-bedroom cottage in Hospital Canyon has southwestern flavor. Photo taken December 13, 1950.



Figure 4.35 Current view of cottage in Hospital Canyon. (Source: Christine Pfaff, Bureau of Reclamation)

Palisades Project

In the early 1950s, Reclamation constructed a camp composed of permanent and temporary residences and relocated trailers near the site of Palisades Dam and Powerplant in southeast Idaho, close to the Wyoming border. After a decade of delays, Reclamation was finally ready to begin construction of a massive earthfill dam that would provide storage for irrigation water, electricity, and flood control for residents of the Snake River Valley. The Secretary of the Interior initially authorized the Palisades Project on December 9, 1941, but World War II intervened. At the end of hostilities, Reclamation began site preparations that included moving more than 50 miles of roads and building a transmission line to carry electricity from the dam to the users. A supplemental report issued in 1949 led to reauthorization of the project by Congress in September 1950, with increased flood protection and improved powerplant designs.

Reclamation located the construction camp about 1-1/2 miles from Palisades Dam, which spans the south fork of the Snake River about 11 miles west of the Idaho-Wyoming border. The plan for the camp included separate areas for trailers, temporary residences, permanent residences, an administration building and dormitory, and warehouses, garages, and a laboratory. By the end of 1952, living quarters at the camp consisted of a dormitory, 40 temporary two-bedroom houses, 12 temporary three-bedroom houses, 30 two-bedroom trailers transferred from Coulee Dam, and 14 permanent three-bedroom residences (figure 4.36). The latter, constructed in 1952 under specifications number 100C-145, consisted of simple, rectangular plan, wood-frame Ranch style structures with asbestos

shake siding enclosing the exterior walls and plasterboard covering interior walls. The temporary administration building, also constructed in 1952, resembled the earlier ones at Toyon and Estes Park in its rectangular plan, side-gabled roof, center main entrance design. Unlike the latter Colonial types, however, the Palisades building had exterior walls covered with prefabricated, 4-inch-thick log panels, giving it a rustic appearance (figure 4.37).



Figure 4.36 Palisades Project, Idaho. Newly completed Reclamation camp with permanent houses in left center of photograph. Photo taken March 27, 1953.



Figure 4.37 Palisades Project. Administration building with log panels on the exterior. Photo taken December 30, 1952.

A New Construction Era Begins

With authorization of the Colorado River Storage Project (CRSP) and 11 participating projects under the Act of April 11, 1956 (Public Law 485, 84th Cong., 70 Stat. 105), Reclamation embarked on a new era of major construction. Over the next 5 years, Reclamation would once again dramatically alter the course of nature and the character of the Colorado River by building monumental and controversial Glen Canyon Dam, the key feature of the CRSP. As Reclamation continued to assert its position as a major dam builder of the West, with Glen Canyon Dam and others, it was also still obliged to erect housing for employees at remote construction sites. Interestingly, in the late 1950s, Reclamation engineers expressed the same familiar justifications for providing decent housing as they had a half century earlier when they first tackled the issue.

The Government can not offer its employees in isolated areas the added inducements that private enterprise does. Bureau engineers and staff members are generally career employees, trained for the work they perform. Also, the majority of Government employees on projects such as Flaming Gorge and Glen Canyon are considered key employees. It is expensive and sometimes difficult to replace employees in such positions if the turnover is large. It is therefore, double necessary that the Government provide adequate housing and service facilities for its employees assigned long term work in remote localities in order to secure and retain the class of employee needed for the work.²⁸

It remains for a separate study to explore Reclamation's architecture of the second half of the 20th century.

Endnotes for Chapter 4

¹ See excerpt from 1945 Annual Report of the Secretary of the Interior in U.S Department of the Interior, Bureau of Reclamation, *The Bureau of Reclamation: Origins and Growth to 1945*, 397.

² Michael Robinson, *Water for the West, The Bureau of Reclamation 1902-1977* (Chicago: Public Works Historical Society, 1979), 79-81.

³ The three relocation camps were located on the Minidoka, Klamath, and Shoshone projects. The Minidoka Relocation Center was designated a National Monument in January 2001 and transferred to the National Park Service. Tule Lake (Klamath project) and Heart Mountain (Shoshone project) have both been declared National Historic Landmarks. Reclamation remains a partial owner of both properties.

⁴ "Reclamation and the Housing Shortage," *The Reclamation Era* (June 1947), 133.

⁵ David Cervin, "Platoro Housing-Portable and Economical," *The Reclamation Era* (January 1950), 5-6.

⁶ "Reclamation and the Housing Shortage," *The Reclamation Era* (June 1947), 136.

⁷ Virginia and Lee McAlester, *A Field Guide to American Houses* (New York: Alfred A. Knopf, 1984), 477.

⁸ Memo from Acting Chief Engineer to Director of Power, Boulder City, January 17, 1942, Entry 7, Colorado River Project Correspondence, Box 345.

⁹ Memo from Chief Engineer S.O. Harper to Commissioner, April 14, 1942, Entry 7, Colorado River Project Correspondence, Box 345.

¹⁰ U.S Department of the Interior, Bureau of Reclamation, *The Bureau of Reclamation: Origins and Growth to 1945*, 390.

¹¹ Stephen Emerson and Ann Sharley, Archaeological and Historical Services, National Register of Historic Places, Multiple Property Documentation Form. *Administrative Facilities of the Columbia Basin Federal Reclamation Project, Grant, Adams, Franklin, Benton, and Walla Walla Counties, Washington*, Draft (April 2006).

¹² U.S. Department of the Interior, Bureau of Reclamation, *Columbia Basin Project, Annual Project History, Volume XIV, 1946, Coulee Dam Division*, 282. RG 115, Entry 10, Box 137.

¹³ "Reclamation and the Housing Shortage." *The Reclamation Era* (June 1947), 133-134.

¹⁴ U.S. Department of the Interior, Bureau of Reclamation, *Columbia Basin Project, Annual Project History, Volume XVIII, 1950, Coulee Dam Division*, 177. RG 115, Entry 10, Box 141.

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¹⁶ "Reclamation and the Housing Shortage." *The Reclamation Era* (June 1947), 134.

¹⁷ U.S. Department of the Interior, Bureau of Reclamation, *Columbia Basin Project, Annual Project History for Calendar Year 1946, Irrigation Division, Volume 1* (Ephrata, Washington: August 1, 1947), 49. See Emerson and Sharley draft National Register Multiple Property documentation form for more information.

¹⁸ U.S. Department of the Interior, Bureau of Reclamation, *Final Construction Report, Specifications R1-CB-30, Contract No. 174r-1185, Construction of Residences and Utilities for Government Camp at Othello, Washington*, compiled and written by Gerald J. Hoag. No date: circa October 1950?, 2-3. RG 115, Accession Number 8NN-115-85-019, Project Reports 1910-55, Box 339.

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²⁰ Stephen Emerson and Ann Sharley, National Register of Historic Places, Multiple Property Documentation Form. *Administrative Facilities of the Columbia Basin Federal Reclamation Project, Grant, Adams, Franklin, Benton, and Walla Walla Counties, Washington*, 12, 16.

²¹ U.S. Department of the Interior, Bureau of Reclamation, *Reclamation Village Site Form*, Recorded by Wm. Joe Simonds/Christine Pfaff, Denver Office, February 1998.

²² R. Hartley and J. Schneck, *Colorado Historical Society Historic Architectural Building/Structure Form for Shadow Mountain Camp*, State Site Number 5GA1893, July 20, 1993.

²³ Administration of the Shadow Mountain National Recreation Area was transferred to the U.S. Forest Service in 1978, at which time the Forest Service also acquired Shadow Mountain camp. The recreation area's name was changed to the Arapaho National Recreation Area.

²⁴ In 1947, Reclamation utilized dismantled surplus buildings from the Yucca Army Base to fabricate 20 dwellings, a garage and fire station, dormitory, and a guest house. See "Reclamation and the Housing Shortage," *The Reclamation Era* (June 1947), 134. See Reclamation specifications number 1408 (bids due July 22, 1946) for details on 25 two-bedroom prefabricated or precut residences and number 1961 (bids due October 21, 1947) for details on 20 two- and three-bedroom prefabricated residences.

²⁵ In mass, Hungry Horse ranked behind Grand Coulee, Shasta, and Hoover; in height, it ranked behind Hoover and Shasta.

²⁶ For information on the construction of Hungry Horse Dam Camp, see Hungry Horse Project *Annual Project Histories* for 1947, 1948, and 1949; Reclamation specifications number 2219, and Lyle Nelson, "Hungry Horse," *The Reclamation Era* (September 1947), 35, 38.

²⁷ U.S. Department of the Interior, Bureau of Reclamation, W.C. Chubbock, *History of the Construction of Canyon Ferry Permanent Camp, Specifications Number 2008*, c. 1950. RG115, Project Reports, Box 133.

²⁸ U.S. Department of the Interior, Bureau of Reclamation, *Comparative Study of Government Communities at Page, Arizona, Colorado River Storage Project; Dutch John, Utah, Colorado River Storage Project; and Trinity Community, Central Valley Project*, 1959, 1.

Chapter 5

Conclusions and Recommendations

Today, the Bureau of Reclamation's architectural legacy is perhaps best preserved and conveyed in historic photographs. Images of simple, utilitarian buildings set against harsh and remote landscapes vividly evoke the larger impact of Reclamation's far-reaching construction activities in unsettled areas of the West. The building photographs also reveal an intimate human scale and dimension of Reclamation's endeavors lacking in its formidable engineering achievements. Basic but comfortable housing and work space were essential ingredients to attracting and retaining high-quality employees laboring under difficult conditions. To a certain extent, Reclamation's success depended on its buildings.

Even so, whereas the Bureau's engineering works were designed and built to last, efficiency and economy dictated Reclamation's architecture. The majority of buildings were intended to exist for just a short time. As a result, only a relatively small percentage still stand, and, of those, many have been sold, transferred to water districts, or abandoned. For this reason, surviving buildings should be inventoried, and thoughtful consideration should be given to their historic significance. With tightened Federal budgets and the increased emphasis on disposal of properties that no longer support mission critical needs or are no longer cost effective to maintain, it is important to identify buildings that are worthy of preservation in accordance with requirements of the National Historic Preservation Act of 1966, as amended. More recently, Executive Order 13287, "Preserve America," reasserted the Federal Government's role as a leader in preserving America's heritage and charged Federal agencies with identifying the management needs of its historic properties. The lack of a comprehensive inventory and history of Reclamation buildings has made the task difficult. While this study does not comprise an inventory, it does provide a context to assist in making determinations of significance for residences and offices in accordance with the National Register of Historic Places criteria.

Determining Significance

Clearly, buildings have played an instrumental role in Reclamation's ability to accomplish its mission. Project office headquarters served as a central hub during

construction and subsequent project management. They also established a strong Reclamation presence in the surrounding community and encouraged settlement. Division or field offices did so to a lesser degree, but were vital to the oversight of construction and, in some cases, operation and maintenance activities. Residential camps close to project construction sites were required due to the remote locations of most engineering features. Although usually temporary, camps sometimes included a number of permanent buildings to house workers needed for the constant and extensive upkeep of project facilities and equipment. At other locations, such as Boulder City and Coulee Dam, Reclamation constructed full-fledged permanent communities. Elsewhere, residences occurred singly to accommodate isolated dam tenders and ditchriders essential to the successful operation of Reclamation's engineering investments.

A number of areas of significance for which properties may qualify for the National Register of Historic Places are represented in Reclamation offices and residences constructed between 1902 and 1955. As defined in National Register Bulletin 16A, areas of significance "relate to a property's contributions to the broader patterns of American history, architecture, archeology, engineering, and culture." The areas relevant to this study include: (1) architecture, (2) politics/government, (3) social history, (4) community planning and development, (5) landscape architecture, and (6) engineering.

Architecture

Although most Reclamation buildings were vernacular and lacked any formal architectural style, they demonstrate a clear evolution of building designs reflecting national tastes and trends. In some cases, consideration was given to local influences, such as the Pueblo Revival design of the Tucumcari project office building in New Mexico. Standard building designs developed by Reclamation engineers and adapted, with varying degrees of success, to a range of local conditions represent another important component of Reclamation's architectural legacy. Modifications such as double roofs to improve air circulation, broad overhanging eaves, sleeping porches, and swamp coolers provided some comfort in scorching desert locales, while insulation and fireplaces offered additional warmth in colder climates. Reclamation's policy from the outset of providing modest but comfortable housing equipped with modern conveniences lacking in many rural homes of the time is another significant aspect of its building history. Lastly, Reclamation buildings designed by architectural professionals are rare and primarily limited to project headquarters. The work of the well-known architect, Gordon B. Kaufmann, is unique to Reclamation for the multiple buildings, residential and civic, he designed for Boulder City.

Politics/Government

Reclamation's residences and offices were constructed in direct association with a Federal program to settle the arid West through the construction of large-scale irrigation projects. Office buildings in particular represent government institutions.

Social History

Reclamation directly impacted the social history of the arid American West. Settlement and agricultural patterns were largely influenced by the location of Reclamation's water delivery systems and, to some extent, its buildings. Permanent camps and headquarters projected stability, attracted settlers to remote areas, and encouraged development of townsites. This is especially noteworthy where Reclamation built project headquarters in towns that it established and platted. As times have changed, and construction sites are no longer inaccessible, the need for Reclamation to build entire camps and communities has disappeared. As a result, surviving examples take on more significance. The same is true for dam tenders' and ditchriders' housing, which once were important elements of Reclamation projects but now are becoming increasingly rare. As small isolated microcosms, Reclamation camps themselves provide interesting glimpses into social history. Subjects for research encompass the backgrounds, interactions, and daily lives of the workers who lived there, as well as the facilities and services Reclamation provided.

Community Planning and Development

Reclamation purposefully conceived and laid out residential camps, especially the larger ones. While most were based on a typical linear grid, in the 1930s, Reclamation experimented with non-traditional designs. The creation of Boulder City, in particular, represents an important contribution in community development with national significance. Reclamation hired a progressive planner, Saco DeBoer, to design a model government town incorporating modern planning principles. The subsequent design of Coulee Dam government community on the Columbia Basin Project and the Estes Park headquarters camp on the Colorado-Big Thompson Project were simplified versions of the Boulder City plan. Reclamation's early townsite plans are another significant aspect of community planning and development.

Landscape Architecture

From early on, Reclamation undertook some landscaping at its camps and building sites to enhance the grounds. This applied particularly to permanent

buildings where Reclamation wished to create a more attractive appearance to the public. Photographs depict neatly planted saplings in front of brand new structures. In hot, barren climates, trees also provided welcome shade. The availability of New Deal funds and labor during the Great Depression resulted in the attractive landscaping of a number of Reclamation camps. Civilian Conservation Corps crews planted thousands of trees, shrubs, and flowerbeds and constructed rock retaining walls, pathways, and garden berms. Some of these may merit consideration as historic designed landscapes.

Engineering

Reclamation's buildings would not exist but for their association with engineering works. In some instances, individual buildings such as dam tenders' and ditchriders' houses are part of a larger assemblage that includes a dam, powerplant, or canal, and should be evaluated as significant contributing resources to the engineering works rather than in isolation. Even camps and individual buildings not in direct proximity to engineering features bear a link to them.

To qualify for listing in the National Register of Historic Places, Reclamation residences and offices must meet at least one of the following four criteria of historic significance listed below.

A. Be associated with events that have made a significant contribution to the broad patterns of our history.

Buildings associated with the significant themes of *Politics/Government, Social History, Engineering, or Community Development* may qualify under this criterion. This is particularly true for buildings that are not individually eligible but contribute to a larger National Register eligible district. For example, a dam tender's house associated with a Reclamation dam important to local or regional history may contribute to a National Register district that includes both resources. Likewise, a residence in a Reclamation camp may lack individual significance, but if it is part of a larger camp that still survives, it may contribute to a National Register district significant for the role it played in the construction or operation of a Reclamation project.

This criterion would apply to individual buildings associated with an important event in Reclamation or even American history, such as the signing of a major water compact or treaty, or to buildings that serve a unique and significant function related to a principal Reclamation project, such as the administrative headquarters.

B. Be associated with the lives of persons significant in our past.

It is least likely that buildings will be eligible under this criterion. Significant Reclamation engineers would be better represented by their engineering achievements than by Reclamation buildings where they lived or worked. The same holds true for Reclamation employees other than engineers who are recognized for important contributions in their field (such as hydrology, soil science, or geology). Those accomplishments are probably associated with buildings other than Reclamation residences or offices, such as a laboratory.

C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

Although few of Reclamation's buildings possess high artistic value or are the work of a master architect or builder, they embody prevailing vernacular traditions and simplified popular styles. Good representative examples may qualify individually under this criterion. Even though Reclamation did not develop its own unique architectural style, residences representative of the Bureau's "utilitarian but comfortable" approach to design exemplify an important aspect of Reclamation's building history. Similar in outward appearance to many homes being built by project settlers, Reclamation residences usually incorporated modern conveniences such as electricity and indoor plumbing, which often were lacking in rural private houses.

The use of standardized designs is another noteworthy characteristic of Reclamation building history, and good examples of the application of such designs are potentially eligible. Conversely, Reclamation buildings that are unique in design or construction methods may be eligible under this criterion. Examples include the limited number of buildings that stand apart as having been the work of architects. The cobblestone buildings at Pishkun Reservoir and the early concrete block dam tender's house at Granite Reef Dam are examples of construction methods not used elsewhere by Reclamation. Reclamation's finely crafted Civilian Conservation Corps buildings embody distinctive characteristics associated with the New Deal program. Intact historic landscaping associated with buildings significant under this criterion may contribute to that significance.

If further studies reveal that an architect-designed Reclamation building represents an important achievement in the life of a significant architect, this criterion would be relevant.

D. Have yielded or may be likely to yield, information important in prehistory or history.

Although this criterion is not relevant to buildings themselves, it may apply to associated features such as trash dumps or outhouse pits. Sometimes they contain discarded artifacts that reveal a better understanding of the lives and ethnicity of the building inhabitants.

Determining Integrity

In addition to meeting at least one of the four criteria of historic significance, buildings must retain integrity to qualify for the National Register of Historic Places. Integrity is defined as “the ability of a property to convey its significance” and consists of the following seven qualities or aspects: location, design, setting, materials, workmanship, feeling, and association. Usually, most (but not necessarily all) of these qualities need to be present for a building to be eligible for listing in the National Register. In order to be listed, it is essential that enough aspects of integrity remain for a building to convey why it is significant (themes and criteria) and when it was significant (period of significance). For example, if a Reclamation field office is significant for its association with the construction of a particular project, it is important for it to look much like it did when the project was being built. The evaluation of integrity is somewhat subjective, but it must be based on an understanding of a property's physical features and how they relate to its significance.

Some aspects of integrity are generally more important than others, depending upon which of the previously described National Register criteria a building meets.

For a building to qualify under **Criterion A or B**, integrity of location, setting, feeling, and association are essential, in most cases. The sole surviving building of a construction camp may not be eligible under Criterion A because alone it may not adequately convey the historic event with which it was associated. A dam tender's house with significance directly linked with a particular dam would probably not be eligible under criterion A if it had been moved off the site and lost its integrity of location and association. Similarly, in the unlikely instance that a Reclamation office or residence best represents the historic contributions of an important person, the location and setting of the building are particularly important. While integrity of design, materials, and workmanship may not be as critical for buildings eligible under Criterion A or B as under

Criterion C, a building still must retain the essential physical features that made up its historic character or appearance during the period of its association with an important event or person.

For a building to be eligible under **Criterion C**, integrity of design, workmanship, and materials are normally the most important qualities necessary. A building must retain the physical features that convey the distinctive characteristics of a type, period, or method of construction. The same qualities must be present in buildings considered significant for being the work of a master or of high artistic value. Setting and feeling may be less critical but are relevant if the design of a building is a reflection of its environment. An example may be a log structure constructed from nearby forest trees, whose setting is now an urbanized area. Buildings rarely qualify for the National Register if they have been moved, but Reclamation's portable buildings represent an important building type. They were not intended to be tied to a specific site and, therefore, original location and setting do not need to be present. Integrity of association also may not be as critical to this criterion. The sole surviving camp building that may not qualify under Criterion A may still be eligible under Criterion C if it has architectural significance. Likewise, a dam tender's house that has been moved from its original setting may be eligible if it is significant primarily for architectural value.

In addition to evaluating individual eligibility of buildings, consideration should be given to buildings that are contributing features to potential districts. Oftentimes, dams, powerplants, and canals have been determined eligible for listing in the National Register of Historic Places independently from closely associated historic buildings that are important to the construction and operation of the engineering works. This applies to dam tender and ditchrider housing, as well as residential construction camps.

It is hoped that this document will serve to stimulate further interest in Reclamation's historic buildings. By identifying those of special significance and exploring creative approaches to their preservation through partnerships, intergovernmental cooperation, and other means, Reclamation has the opportunity to foster a greater appreciation and understanding of its history. Undeniably, the story of Reclamation's enduring legacy in the West is, in part, told through its buildings.

The most difficult part of this study was ending it. Research continued to raise new questions, which, in turn, led to tracking down more information. A number of themes and topics emerged that are worthy of examination but could not be fully dealt with here. Hopefully, future work will delve into some of these subjects and bring to light other important aspects of Reclamation's history.

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Interviews

Neil Butler, architect with the Bureau of Reclamation from 1963 to 1996.

Appendix A

Bureau of Reclamation Projects Authorized Before 1955

Year	Project	State(s)
1903	Milk River	Montana
	Newlands	Nevada
	North Platte (Sweetwater)	Nebraska/Wyoming
	Salt River	Arizona
	Uncompahgre	Colorado
	Hondo*	New Mexico
1904	Belle Fourche	South Dakota
	Buford-Trenton	North Dakota
	Lower Yellowstone	Montana/North Dakota
	Minidoka	Idaho
	Shoshone	Montana/Wyoming
	Yuma	Arizona
1905	Boise	Idaho
	Carlsbad	New Mexico
	Garden City*	Kansas
	Huntley	Montana
	Klamath	Oregon/California
	Okanogan	Washington
	Rio Grande	New Mexico/Texas
	Strawberry Valley	Utah
	Umatilla	Oregon
	Yakima	Washington
1906	Sun River	Montana
	Williston*	ND
1907	Orland	California
1911	Grand Valley	Colorado
1917	Yuma Auxiliary	Arizona
	King Hill*	Idaho
1918	Riverton	Wyoming
1925	Colorado River Front Work and Levee System	Arizona
1926	Owyhee	Idaho
	Vale	Oregon
1927	Weber River	Utah
1928	Boulder Canyon (All American Canal)	California
	Boulder Canyon (Hoover)	Arizona/Nevada
1930	Bitter Root	Montana
1931	Baker	Oregon
1933	Hyrum	Utah
1935	Burnt River	Oregon
	Central Valley	California
	Columbia Basin	Washington

Reclamation Projects Authorized Before 1955

	Frenchtown	Montana
	Humboldt	Nevada
	Kendrick (Casper-Alcova)	Wyoming
	Moon Lake	Utah
	Ogden River	Utah
	Parker-Davis	Arizona, California
	Provo River	Utah
	Sanpete	Utah
	Truckee Storage	California, Nevada
1937	Arnold	Oregon
	Buffalo Rapids	Montana
	Colorado-Big Thompson	Colorado
	Colorado River	Texas
	Deschutes	Oregon
	Gila	Arizona
	Pine River	Colorado
1938	Fort Peck	Montana, North Dakota
	Fruitgrowers Dam Project	Colorado
	Tucumcari	New Mexico
	W.C. Austin	Oklahoma
1939	Paonia	Colorado
	Rapid Valley	South Dakota
1940	Eden	Wyoming
	Mancos	Colorado
	Mirage Flats	Nebraska
	Newton	Utah
	San Luis Valley	Colorado
1941	Palisades	Idaho, Wyoming
1943	Scotfield	Utah
1944	Balmorhea	Texas
	Hungry Horse	Montana
	Intake	Montana
	Missoula Valley	Montana
	Pick-Sloan Missouri Basin	Colorado, Kansas, Montana, Nebraska, South Dakota, North Dakota, Wyoming
	Rathdrum Prairie	Idaho
	San Diego	California
1946	Lewiston Orchards	Idaho
1947	Boulder Canyon, Coachella Distribution System	California
	Fort Sumner	New Mexico
1948	Cachuma	California
	Crooked River	Oregon
	Middle Rio Grande	New Mexico
	Preston Bench	Idaho
	Solano	California
1949	Grants Pass	Oregon
	Weber Basin	Utah
1950	Canadian River	Texas
	Vermejo	New Mexico
1952	Collbran	Colorado

Reclamation Projects Authorized Before 1955

1953	Avondale	Idaho
	Dalton Gardens	Idaho
1954	Chief Joseph Dam	Washington
	Crescent Lake Dam	Oregon
	Michaud Flats	Idaho
	Palo Verde Diversion	California, Arizona
	Rogue River Basin	Oregon
	Santa Maria	California

Note: An asterisk (*) means project was abandoned. Yellow highlighting indicates projects included in text and/or photographs within document.

Sources: Bureau of Reclamation Dataweb (<http://www.usbr.gov/dataweb/projects/index.html>), Department of the Interior, Bureau of Reclamation, *Repayment of Reclamation Projects*, Washington: Government Printing Office, 1972.

Appendix B

Buildings Constructed and Owned By Reclamation — Listed in the National Register of Historic Places*

Arizona

Theodore Roosevelt Dam National Register District, shore of Lake Roosevelt near Roosevelt Dam (Government Hill Administration Building a contributing feature)

Colorado

U.S. Bureau of Reclamation Project Office Building, 601 N. Park Avenue, Montrose

Nevada

Boulder City Historic District, Boulder City, (Administration Building and Annex Building are contributing features)

New Mexico

Arch Hurley Conservancy District Office Building, 101 High Street, Tucumcari

Elephant Butte Historic District, Elephant Butte Dam and vicinity (30 contributing buildings)

Elephant Butte Irrigation District (Leasburg Dam Tender's Residence Complex at Leasburg Dam a contributing feature)

South Dakota

Belle Fourche Ditchrider's House, 2 miles east of Nisland, South Dakota

Wyoming

Guernsey Lake Park, 14 contributing buildings, 1 mile northwest of Guernsey

* Does not include powerplants



Far less imposing and remarkable than its renowned engineering features, the Bureau of Reclamation's buildings are, nonetheless, an important but largely unrecognized facet of Reclamation's legacy.