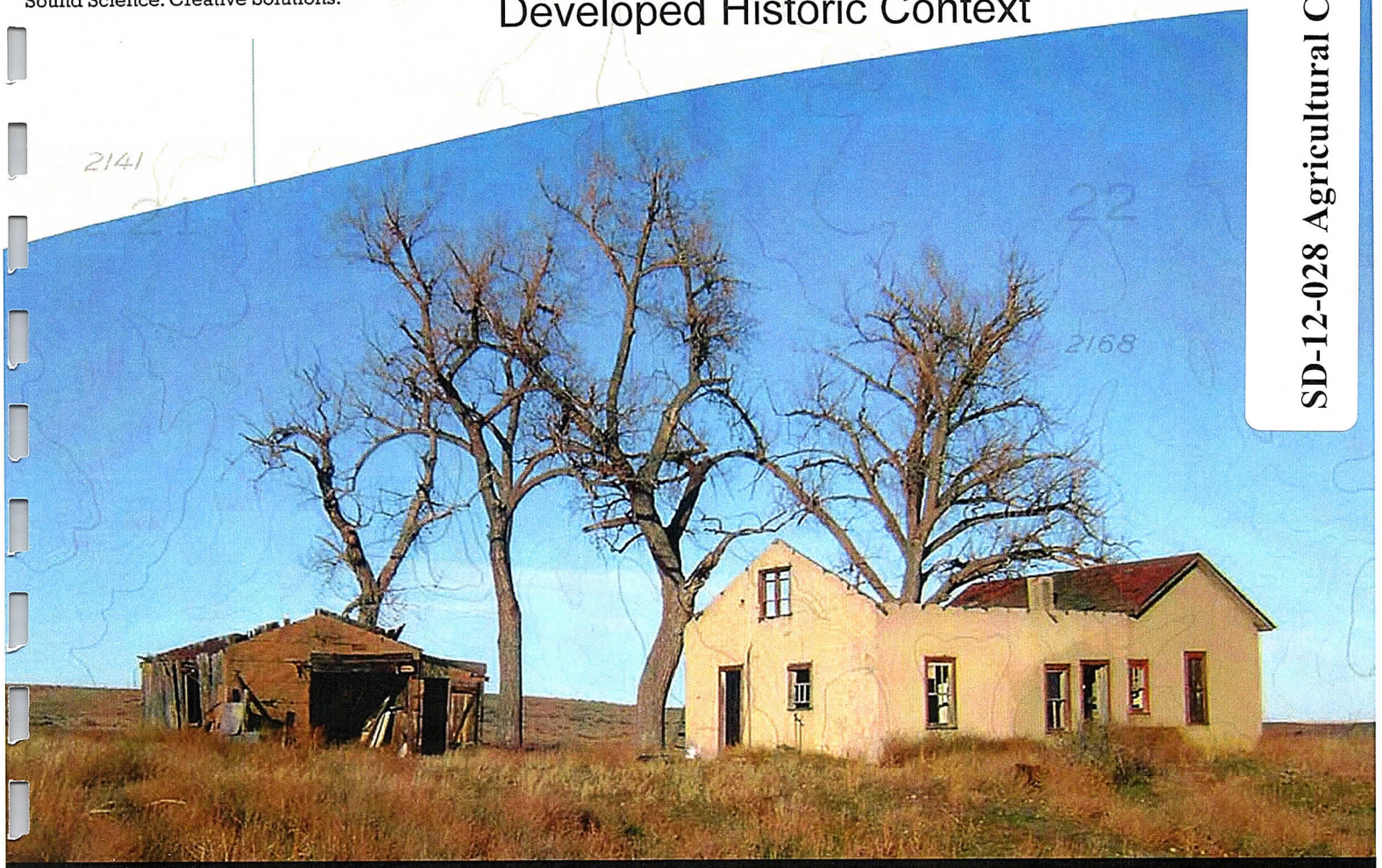
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The History of Agriculture in South Dakota: Components for a Fully Developed Historic Context

SD-12-028 Agricultural Context









Submitted to

South Dakota
State Historic Preservation Office

Prepared by

SWCA Environmental Consultants

July 2013

The History of Agriculture in South Dakota: Components for a Fully Developed Historic Context

Submitted to

South Dakota State Historic Preservation Office

Prepared for

Department of Tourism
South Dakota State Historical Society
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INTRODUCTION

The history of agricultural development in South Dakota is intrinsically connected to the broader history of agriculture across the Great Plains. However, specific distinctions are unique to South Dakota, or have expressed themselves in distinctive ways, as compared to neighboring states. *A History of Agriculture in South Dakota: Components for a Fully Developed Historic Context* provides background for the development of agricultural practices as well as social, economic, and political life in the state since 1850. The South Dakota State Historical Society first issued *Homesteading and Agricultural Development Context* (Brooks and Jacon 1994) to address these issues. These newly updated Historic Context (2013) components focus on the landscape and built environment related to agricultural activities and are meant to provide a guide for archaeologists, historians, and other professionals seeking to understand and interpret sites and cultural landscapes.

The 1994 context excluded in-depth discussions of German-Russian settlements and Native American agriculture, based on the scale of these themes. Similarly, this Historic Context update only briefly addresses properties associated with those two themes. Further, irrigation systems, which were vital to the operation of farms, warrant their own contexts and therefore are only discussed within the context of irrigated farming. Themes and property types associated with statewide irrigation, German-Russian settlements, and historic Native American resources should be discussed under separate contexts.

Ranching properties were given some attention in the 1994 context, but at the time it was noted that many of these resources share distinct similarities with farming properties. In many parts of South Dakota, smaller farms existed in a place between farming and ranching driven by meeting subsistence needs with production of some surplus for sale. As a result, the anchor buildings associated with farming and ranching will have many similarities. Differences in Ranching can be seen in the more specialized ranch buildings and structures that are addressed in detail in the 1994 context with some revision to existing site types provided in this document.

Other broad property types, such as government and institutional resources, and fairgrounds, were given a basic description in the 1994 context. These resources are not yet well documented in South Dakota, and research for the current project did not find any substantial documentary evidence that would provide more refined property types than those already identified.

GEOGRAPHY AND CLIMATE

South Dakota is on the Missouri Plateau in the central part of the continent, and is dominated by three primary topographic areas. The easternmost one-third of the state is characterized as the Central Lowlands, a glacially sculpted landscape of gently rolling hills interspersed with north- to south-trending rivers including the James, Vermillion, and Big Sioux Rivers. This area is further dominated by mid-height to tall grasses. The western two-thirds of the state are characterized by the Great Plains with its short grasses, while the third topographic area is the Black Hills, which were created contemporaneously with the Rocky Mountains. The Black Hills are dominated by conifer forests.

These three geographic regions are further subdivided into six agricultural regions and sub-regions. These include the Grazing region (Area 1) which takes up most of the state west of the Missouri River. This area is dominated by stock grazing, with pockets of wheat production. The north central portion of the state, between the Missouri and Big Sioux Rivers (Areas 2a and 2b), are dominated by cash grain farming. The south central portion of the state, on both sides of the Missouri River (Area 3a), is a transitional area between feed grain farming and stock raising, and immediately to the east (Area 3b) is an area more intensively utilized for crop farming (primarily corn). The final agricultural region is in the upper northeast of the state (Area 4A) which is dominated by intensive livestock feeding, including hogs, dairy, and poultry production. These regions, defined by the dominant crop type and land use are generally governed by natural factors including climate, rainfall and vegetation community, with some influence of population concentrations and access to transportation (Brooks and Jacon 1994; Schell 1975).

The state's climate is "continental climate," and South Dakota has some of the most variable weather in the contiguous 48 states. The general climate is conditioned by four distinct seasons, and varies between semi-arid in the northwestern part of the state to semi-humid in the southeastern part of the state. Winters are generally mild and punctuated by extreme-cold events; springtime is transitional with thunderstorms; and the hot summers are characterized by the threat of tornadoes. South Dakota is further characterized by high winds across the plains throughout the year, which historically in times of drought, such as the "dust bowl" era of the 1930s, created dust storms sometimes called "black blizzards."

GOVERNMENTAL ACTIONS: TREATIES AND LEGAL AUTHORITIES FOR LAND ACQUISITION

The following treaties and legislative acts by the U.S. Government were instrumental in the settlement of early South Dakota.

- The Yankton Treaty of 1858. This treaty with the Yankton Sioux people is generally acknowledged to be the act that opened the East River country of South Dakota to farm settlement. The Yankton's ancestral land claim, which consisted of more than 11 million acres between the Big Sioux and Missouri Rivers, was transferred to the public domain and the Yankton people were relocated to a 400,000-acre reservation in what is now Charles Mix County.

- The Pre-Emption Act of 1841. This act allowed settlers who already occupied public lands to purchase the land upon which they had settled before it was offered for public sale. Settlers could purchase 160 acres of land for $1.25 per acre, with the stipulation that the land be occupied by the purchaser for a period of 6 months. Congress repealed the Pre-Emption Act in 1891.

- The Homestead Act, 1862. The Homestead Act, signed by Abraham Lincoln in 1862, provided that any adult man or unmarried adult woman who was a citizen of the United States or declared their intention to become one, and who had never borne arms against the U.S. Government (a stipulation meant to exclude southerners) could claim 160 acres of land from the public domain. Homesteaders were required to

occupy and cultivate the land, with no absences longer than 6 months, for a period of 5 years, and to build a dwelling. After the 5-year period, the homesteader owned the land free and clear, except for a small registration fee. Title could also be purchased after 6 months provided the claimant paid the government $1.25 per acre and had built the requisite improvements. After the Civil War, Union soldiers could deduct the time they had served from the residency requirements.

- The Treaty of Fort Laramie, 1868. This treaty between the United States and the Lakota people established the Great Sioux Reservation, which included all of the West River country of South Dakota, including the Black Hills.

- The Timber Culture Act, 1873. Intended to stimulate settlement in the treeless areas of the West, this act allowed homesteaders to claim, or add to an existing claim, another 160 acres, provided that 40 of those acres were planted with trees and tended for 8 years. This act did not have a residency requirement. In 1878, the number of acres required to be planted was reduced to 10. Congress repealed the Timber Culture Act in 1891.

- The Dawes Act, 1877. The Dawes Act divided tribal land into individually owned tracts. Lands not claimed by tribe members were opened up to homesteading. The law was responsible for removing about 90 million acres of land from Native American ownership and was in effect until 1934.

- The Desert Land Act, 1877. This law was devised to encourage settlement in arid areas of the West, and allowed settlers in certain arid regions to acquire up to 640 acres of public lands by purchase if they irrigated the land.

- The Reclamation Act, 1902. This act created the Bureau of Reclamation, a federal agency in charge of bringing water to dry areas, after which homesteading could occur.

- The Enlarged Homestead Act, 1909. Passed to encourage dry farming, this act increased the allowable number of homestead acres to 320 in the more arid and non-irrigable regions of the West. The resultant plowing of soils in areas not suitable for crop raising was to be the main underlying cause of the Dust Bowl era. South Dakota, along with several other western states, was initially excluded from the provisions of the Enlarged Homestead Act, and was included under a later act passed in 1915.

- Smith-Lever Act, 1914. This act created the Cooperative Extension Service, providing funding to agricultural and land-grant colleges across the country to provide educational resources to citizens.

- The Stock Raising Act, 1916. This act acknowledged the futility of crop farming in the arid West, and was passed to encourage stock raising by increasing the number of allowable homestead acres to 640, or a full section's worth of land. Unlike prior versions of the Homestead Act, it reserved subsurface mineral rights to the federal government.

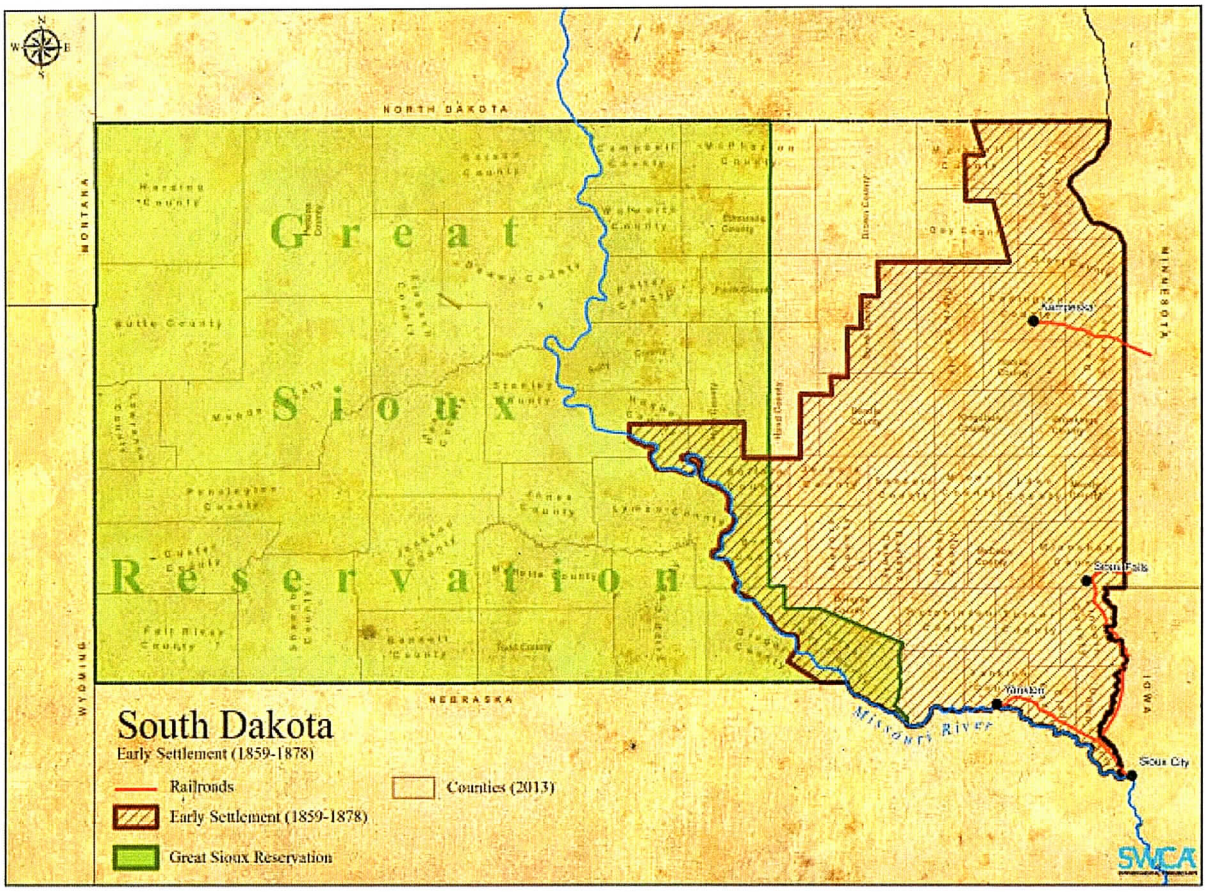
- The Agricultural Adjustment Act, 1933. This act was part of the New Deal and aimed to raise commodity prices by paying farmers to leave portions of their land fallow and to kill off excess livestock. The act created the Agricultural Adjustment Administration, which oversaw these payments. The Supreme Court found the act unconstitutional in 1936, but it was rewritten in 1938, addressing constitutionality questions, and passed again.

- Rural Electrification Act, 1936. Also one of the New Deal programs, this act brought electricity to rural areas of the United States that could not afford to pay the cost of private electrification. The project was funded through member-owned cooperatives, many of which are still in existence.

HISTORIC PERIODS

This section describes the flows and ebbs of farm settlement in South Dakota by recognizing overlapping but generally identifiable periods in the history of its agrarian settlement. Some periods saw homesteaders and other types of settlers come in overwhelming numbers, and others saw many of these same settlers pushed out by drought, insects, and financial hard times. Each period described below has its own set of confluences and patterns that both reflect and sometimes defy the general trajectories of migration, settlement, and survival in the American West. These include "pull" factors, such as the homestead acts and treaties with Native American groups, which made the vast lands of the public domain available to homesteaders. These also include "push" factors, like overcrowding and lack of available land in the northeastern United States and Europe, factors which forced large groups of immigrants to search for new homes in the American West. Also critical to consider are the forces of modernity: advances in farm machine technology and, most profoundly, the building of rail lines through the region connecting South Dakota to the rest of the country to the east (and nominally with neighbor states to the west).

EARLY SETTLEMENT, 1859–1878

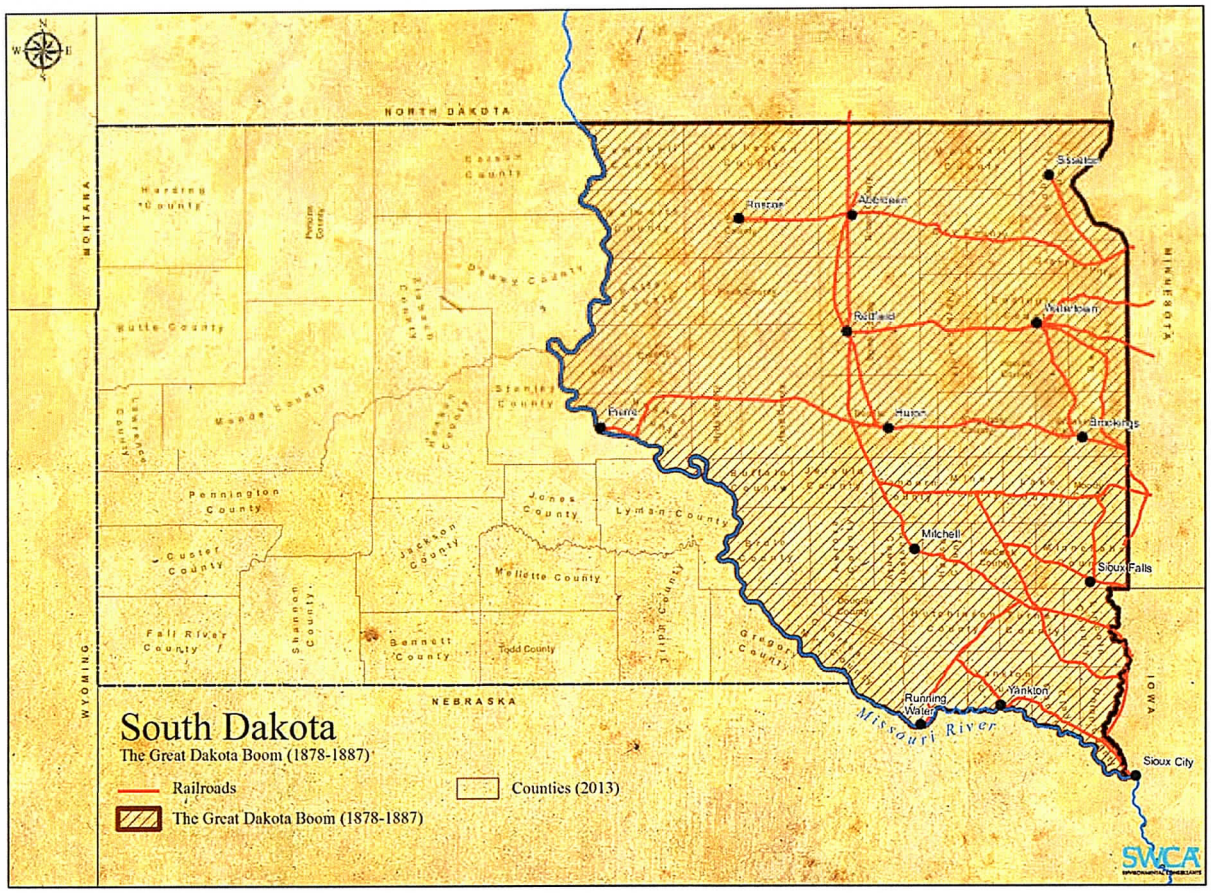


Prior to the Yankton Treaty of 1858, which made farm settlement possible in the region between the Big Sioux River on the east and the Missouri River on the west, most non-native inhabitants of the region were here because of business interests, in particular the fur trade. The Missouri Valley Culture, as the communities and connections formed by the fur trade in this region have been called, originated with interaction between traders and the Sioux and is marked by the establishment of trade-related settlements along the rivers. Through the late 1840s and into the 1850s, the U.S. Government established military posts at points throughout the territory, and these were harbingers of the expansion of Euro-American settlement that politicians and others in the East were already planning. Members of the various Sioux tribes that occupied the area when Euro-American traders first arrived worked hard to maintain their land and lifeways, but these groups were sufficiently destabilized that they were ultimately pushed to reservations. The Yankton Treaty of 1858, while it was only one of many treaties that were part of this push, is generally recognized to be the one most critical to establishing farm settlement in what was to become the state of South Dakota. The Yankton's ancestral land claim, which consisted of more than 11 million acres between the Big Sioux and Missouri Rivers, was transferred to the public domain and the Yankton people were relocated to a 400,000-acre reservation in what is now Charles Mix County. Non-Native men, many of whom had married Sioux women, were allowed under the Pre-Emption Act of 1841 to claim land they already occupied, but others had to wait until July 1859, when the Yankton tribe left and the lands were considered available for settlement.

The new settlers came overland by ox cart and by riverboat via the Missouri River, already a well-established transportation corridor and the principal artery of the Missouri Valley Culture (Thompson 2005:69; Kant 1985:5). The Dakota Territory was created in 1861, facilitating governmental oversight of settlement, but this earliest wave of farm settlement was short lived as the nation was preoccupied with the Civil War, and conflicts with the Sioux, who attempted to defend their ancestral claims, were an obstacle to settlement. Even so, with the passage of the Homestead Act of 1862, town boosters sought to draw settlement, sometimes organizing groups of hopeful farmers in the East and arranging their group passage to the Dakota Territory. The most notable of these may have been the Homestead Association of Central New York, which was comprised of 100 families (around 500 people). This group came in 1862, originally intending to establish a colony but, in the face of Native American hostilities, settled in and around Yankton. Most left soon after, but around 30 families stayed, which is noted by historians to have been a substantial increase in the non-Native population at the time (Kant 1985:6).

By 1866, hostilities between Native Americans and Euro-American settlers had quieted. Although farm settlement was still suppressed by drought and grasshoppers, stalwart populations of Yankees (Americans of English descent from the New England and the northern mid-Atlantic states) and Scandinavian immigrants, including about 1,200 Norwegians immigrants who comprised the earliest group from northern Europe to settle in the Territory, managed to make a living (Ostergren 1983). While the 1860 census showed only about 500 non-Native people living in the Dakota Territory, by 1870 the number had grown to over 14,000. Still, over the course of the next 8 years, farm immigration in the East River region was thin at best. The Panic of 1873 and more years of drought and grasshoppers (1876 was particularly plagued with the insects) found many homesteaders packing it in and leaving for parts east (Thompson 2005:125; Kant 1985:6). Soon after, however, a confluence of factors that included, most dramatically, the discovery of gold in the Black Hills in the western part of the territory would bring about the leap in population known as the "Great Dakota Boom."

THE GREAT DAKOTA BOOM, 1878–1887



The late 1870s brought a boom in Dakota farm settlement that would last nearly a decade, and would result in the occupation of nearly all arable land east of the Missouri River. Called the Great Dakota Boom or the Dakota Boom, this period is generally acknowledged by historians to include the years from 1878 to 1887.

Several factors were behind the Great Dakota Boom and are best understood as tightly interwoven. First, climatic conditions improved substantially in the last few years of the 1870s, with increased rainfall and absent grasshoppers. Under these conditions it was easy for boosters to paint the Dakotas as lush and verdant farmland in materials distributed to prospective immigrants. Improved conditions also kept earlier homesteaders in place, and these families, especially European immigrants, drew others from their families and communities overseas and farther east, in locales in the "Old Midwest."

Second, railroads and related development made it much easier for homesteaders to access the farmland. In the 1860s and 1870s, most farm settlement was found along the major rivers, in part because these were the main arteries of transportation. By 1873, only a 54-mile spur on the Dakota Southern had been constructed from Sioux City to Yankton. The Panic of 1873 stopped railroad construction for a few years, but in 1878 railroad construction into the southern part of the Territory began in earnest. The Chicago and North Western Railway completed a line from Volga to Pierre in 1880; other important lines were constructed by the

Chicago, Milwaukee, and St. Paul (aka the Milwaukee Road), which crossed the Big Sioux River at Canton and built on to Marion and then to Chamberlain, and the Dakota Central, which built from Sioux Falls to Watertown, servicing the Brookings area (Thompson 2005:126, 173–174; Hufstetler and Bedeau 2007). There were significant negotiations between settlements and railroad lines. In some cases, it was the railroad companies themselves who determined the pattern of settlement during this period by the placement of rail lines, platting nearly 50 percent of the towns that were registered between 1878 and 1887 (Hufstetler and Bedeau 2007). Rail companies also established their own immigration agencies to encourage Americans in the eastern United States and Europeans to settle in South Dakota.

Railroad advancement west of the Missouri was stopped by Native American opposition to the lines passing through the Great Sioux Reservation which at the time encompassed much of the western portion of the state. While the Black Hills remained isolated from the remainder of the state, the Homestake Mining Company financed the Black Hills & Fort Pierre line that connected the cities of Deadwood and Lead. Between 1885 and 1889 lines were established that connected the Black Hills to neighboring territories of Wyoming and Nebraska, bypassing Native American territory. Deadwood would not be connected to the eastern cities of South Dakota until 1890 (Hufstetler and Bedeau 2007:10–11).

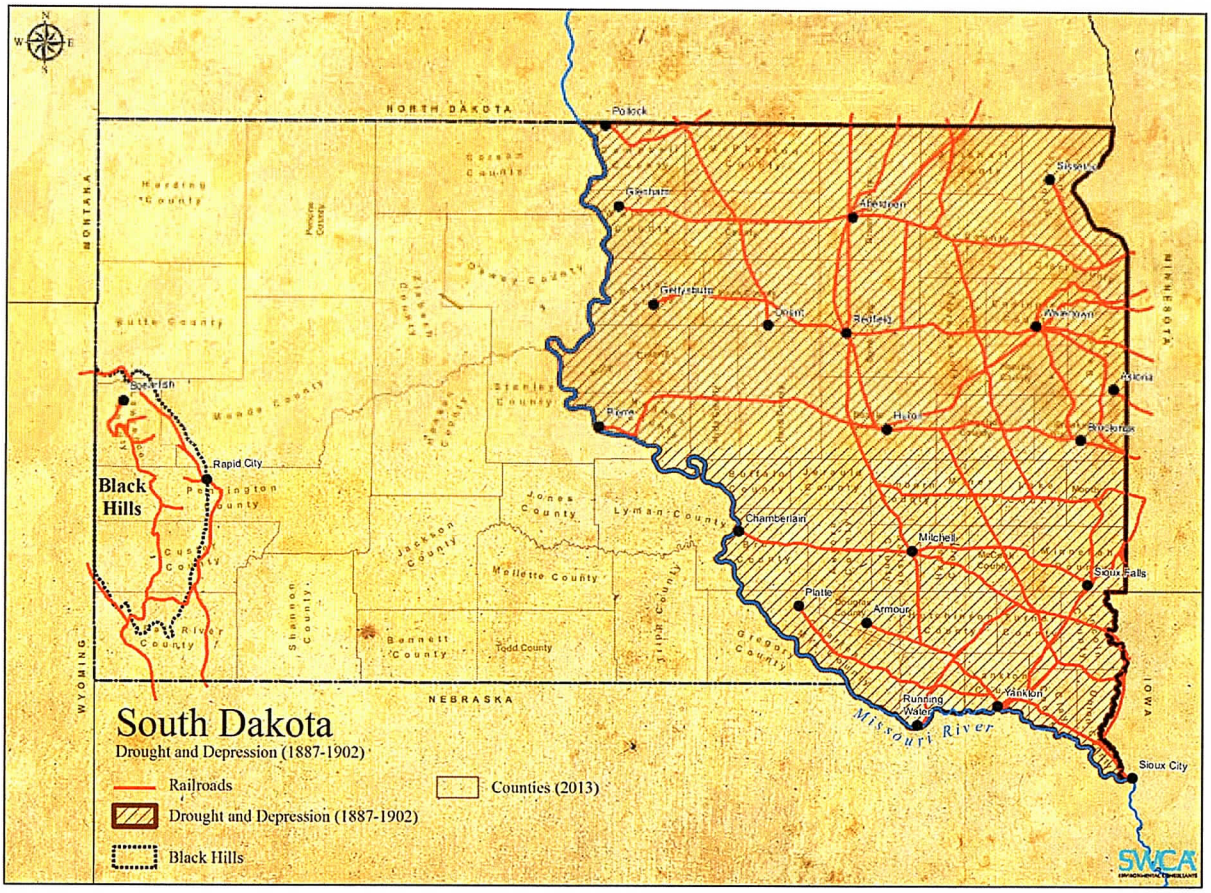
A third important factor driving the Great Dakota Boom was technological and industrial beyond transportation improvements. The 1860s and 1870s saw important advances in farm technology, with methods and equipment implemented in the United States "Old Midwest" and East spurring production and opening markets for crops, especially grain crops that could be grown in the eastern part of South Dakota. Advances in flour milling in the early 1880s led Minneapolis to become one of the important milling centers in the United States, and South Dakota wheat farmers wanted to take full advantage (Hazen 1999). In the 1860s, improvements to the combine, a machine that threshed and winnowed grain while it harvested, allowed for faster and more efficient farm production, and other important improvements to such equipment as windmills, plows, and fencing material (barbed wire was invented in 1874) supported better farming as well. As the railroads reached across the prairie, farmers were able to acquire the tools that made efficient farm production possible (Thompson 2005:226; Nelson 1986:8).

A fourth cause of the Great Dakota Boom was the arrival of large groups of European immigrants. While the Great Plains often presented eastern Americans with alien conditions, many European immigrants such as German-Russians, immigrating from arid southern Russia, are thought to have been comfortable with the already familiar plains, the bitter winters, and glacially formed soils (Hudson 1976). Many American-born settlers, including and especially the aforementioned Yankees, also homesteaded during the boom, but the European immigrant populations, who some historians feel were more inclined to stay during the drought and grasshopper years (Kant 1985:7), would exert cultural influence that would form much of the character of South Dakota for many generations, and is still felt today.

Although many European immigrants came directly to the Dakota Territory, most stopped for a time in Wisconsin, Minnesota, or other "jumping off points" in the Midwest, where groups of their countrymen had preceded them but where farmland was mostly taken (Hudson 1976).

The largest ethnic groups were the Germans followed by the Norwegians, some of whom had already come to the very southern part of the Territory prior to the boom years. Some Swedish immigrants had settled in the southeast corner of the Territory in the Early Settlement period, and during the Great Dakota Boom Swedes also moved into the northeast corner of the state. Other groups who settled in the East River part of the Territory during the Great Dakota Boom included Canadians, Danes, Dutch, Russian Germans, and Bohemians (Hudson 1976). These immigrant groups had a tendency to create their own communities complete with schools and churches, as opposed to integrating into communities that were already established. Despite the relative inclusivity of various immigrant groups, the political and economic business of the territory during this time was dominated by native-born Americans (Ostergren 1983). After statehood in 1889, South Dakota established an Immigration Office, which promoted settlement in the state overseas (Thompson 2005:226–227; Kant 1985:7–8). Hard years to come would see some homesteaders cry "uncle" (or "Onkel") and leave, but for the most part farmers, in particular European immigrants, toughed it out.

DROUGHT AND DEPRESSION, 1887–1902



The Great Dakota Boom drew to a close as nearly all of the available land east of the Missouri River had been claimed by 1887 (Thompson 2005:227). The lean years returned, caused once again by drought, grasshoppers, and depressed commodity prices for wheat and other crops. From 1887 to 1894, reduced crop yields made it difficult for farmers to pay debts on mortgaged property and equipment, debts incurred during the boom years. As matters worsened, farmers and stockmen were often exploited through fraudulent grading and weighing practices at local elevators, which were usually owned by the big milling companies in Minneapolis. Railroad companies extorted farmers who had no other means to move grain to Minneapolis and Chicago. Farmers needed credit to hang on, but affordable loans were not to be had.

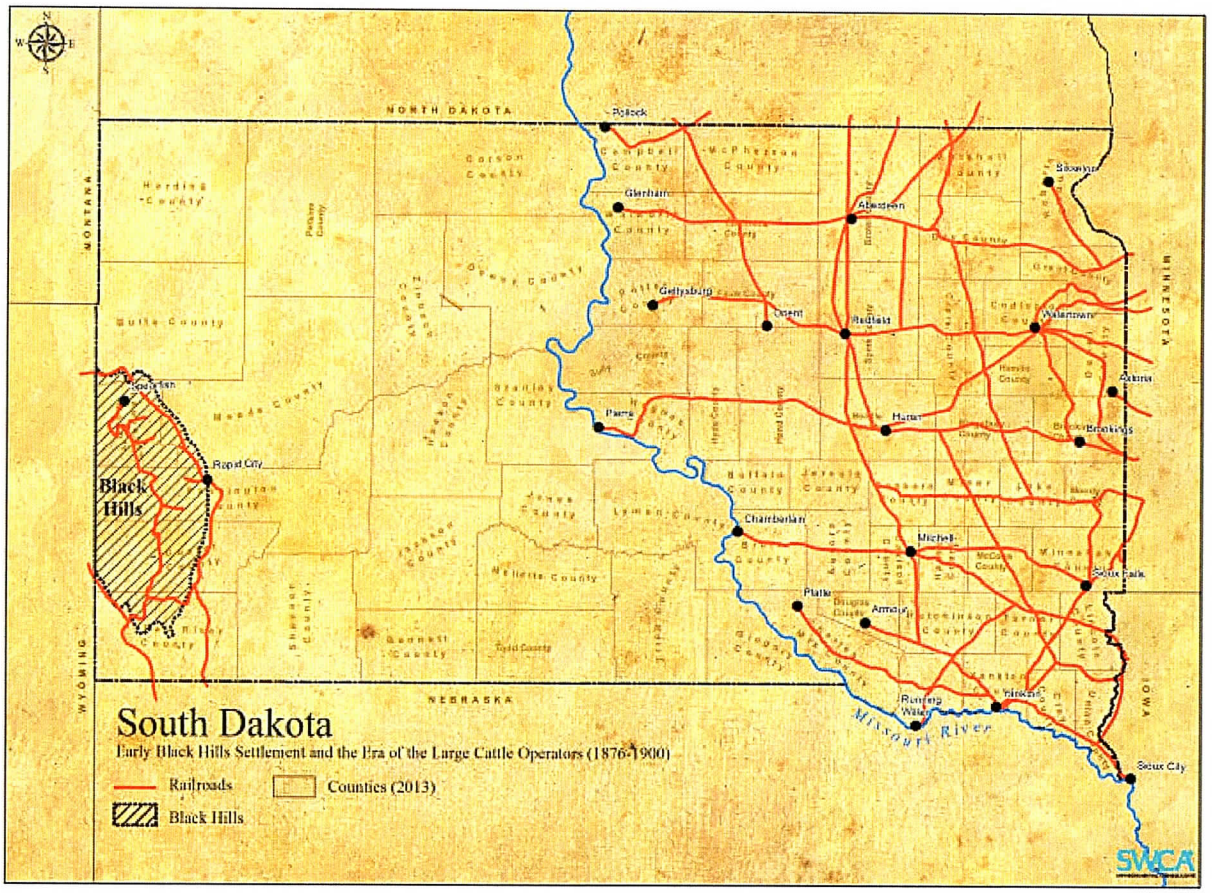
In the face of declining and non-existent profits and ongoing exploitation by money lenders, railroad companies, and milling magnates, farmers undertook to organize and populism became a dominant theme of South Dakota politics. Early attempts at meeting the problems of high interest and difficult conditions through collective action were only temporarily successful. While the National Grange first made in-roads with South Dakota farmers in the 1870s, their membership was nearly invisible and did not carry the political or economic weight felt in neighboring states and were eventually absorbed by the Minnesota State Grange (Hoover 1983:127; Schell 2004:123–124). With the hardships brought on by the drought of

the 1890s, Grange membership had a small resurgence of popularity experiencing its zenith in 1908 (Hoover 1983).

Other organizations followed suit. The Greenback Party, which grew out of post-Civil War labor organization, served as an "ideological bridge between the granger and populist movements" in 1874 through 1884 (Hoover 1983:131). In particular, the Greenbacks were interested in halting economic fluctuations and easing debt for urban and rural laborers alike. It was the lack of engagement with economic issues that was seen by contemporaries and historians as the reason for the failure of the Grangers in South Dakota. The Farmer's Alliance, formed nationally in 1880 and establishing its first South Dakota chapter soon after in 1881, took up the mantel of economic justice for the farmer. By 1887 chapters of the Alliance functioned as a cooperative, with stores selling farm supplies and member prices on insurance. Leaders in the movement realized that farmers, as a group, had little influence over the political leaders, and after statehood in 1889, some moved toward greater participation in the state government, trying first to influence the Republican Party, but swiftly changing alliance to Independent and then Democratic parties as conditions dictated.

While some inclination towards cooperative farmers' organization was influenced by ethnicity, the trend was not as clear-cut as political rhetoric of the time proclaimed (Dibbern 1982). Populism was also strongest among financially and socially stable farmers, as opposed to those on the edge of economic collapse. Growing out of the agricultural political organizations, the Populist Party, and then the South Dakota People's Party, each concerned with wresting political and economic power from the "Eastern Establishment" comprised of bankers, railroads, and industrial tycoons (Hoover 1983) who dictated costs to the western farmer. In particular the railroads suffered from the stress of the drought and depression, as well as from political pressure by the Populist movement.

EARLY BLACK HILLS SETTLEMENT AND THE ERA OF THE LARGE CATTLE OPERATORS, 1876–1900



Non-Native settlement in the Black Hills region of South Dakota can be attributed to the thirst for gold. While gold was discovered in the Black Hills in 1874, even prior to that, gold discoveries in other parts of the West, including the Pikes Peak Gold Rush in Colorado in 1858 and gold discoveries in Montana, put indirect pressure on the West River region. Thousands of miners, merchants, and others swarmed the central plains of the American West, opening supply lines and demanding government protection from Native Americans whose territorial rights were increasingly violated. The Lakota, whose lands included all of the area west of the Missouri under the terms of the 1868 Treaty of Fort Laramie, defended their lands with vehemence. In 1874, the federal government sent the Custer Expedition into the reservation with the intention of locating a military post there. But there was another motive as well: on the heels of the Panic of 1873, investors believed that more gold in circulation would alleviate the national recession, and so gold prospectors were allowed to accompany the expedition, already 1,000 men strong. On August 2, 1874, these prospectors discovered gold on French Creek in the Black Hills, and by the following summer more than 1,000 prospectors had invaded the area, mostly by way of Cheyenne.

By the end of 1875, gold strikes had given rise to settlements at Hilyo, Sheridan, Pactola, and most notably Deadwood. Along with town and other mining settlement came the cattle herds, driven in from the neighboring territories like Wyoming and Nebraska to meet local demand

for beef. In 1876, cattle could be purchased elsewhere for around $15 a head, then sold to butchers in the Black Hills for upwards of $100. But the hefty profit margin had a price; cattlemen and their drovers sometimes paid with their lives. Violent clashes with the Lakota were frequent, and the U.S. Government, at a loss to control the miners, instead determined to contain the Lakota. By the following summer, when General Custer was defeated and killed at the Battle of the Little Big Horn, the population of the Black Hills had increased to around 15,000. News of Custer's defeat reached terrified Black Hills settlers, who built stockades at the new towns of Rapid City and Spearfish. In response, Congress halted food and rations to the Lakota until they gave up their claim to the Black Hills, lands that were sacred to them and other Native Americans for centuries. The Lakota, faced with starvation, had no choice but to concede (Thompson 2005:260–265).

The Sioux Agreement of 1877 opened the region surrounding the Black Hills to settlement, although most of the West River country was still part of the Lakota Reservation. Although a few small ranches preceded them, with the cessation of hostilities, cattle operators moved into the territory in earnest, coming from Wyoming, New Mexico, and Texas. This era of open range ranching in the Black Hills region saw large ranches sharing the range with a few smaller family ranches that began to dot the grassy valleys in the area. But even in the early days, cattle ranching was not isolated to the West River country. Some Euro-American settlers east of the Missouri were raising small herds of 50 to 100 head of cattle (Thompson 2005:259). Besides selling beef to local residents, most found ready markets with the steamboat companies, which bought beef to feed passengers. Additionally, in the late 1860s cattle were driven north from Texas for sale to the Indian agencies and military forts. Under the provision of the Fort Laramie Treaty of 1868, the government had to provide 1 pound of meat per day for every Sioux over 4 years of age. This meant a purchase of between 30,000 and 40,000 head of beef annually, and East River cattlemen, although their operations were far smaller than the Texans, helped meet the demand (Thompson 2005:260; Means 2007).

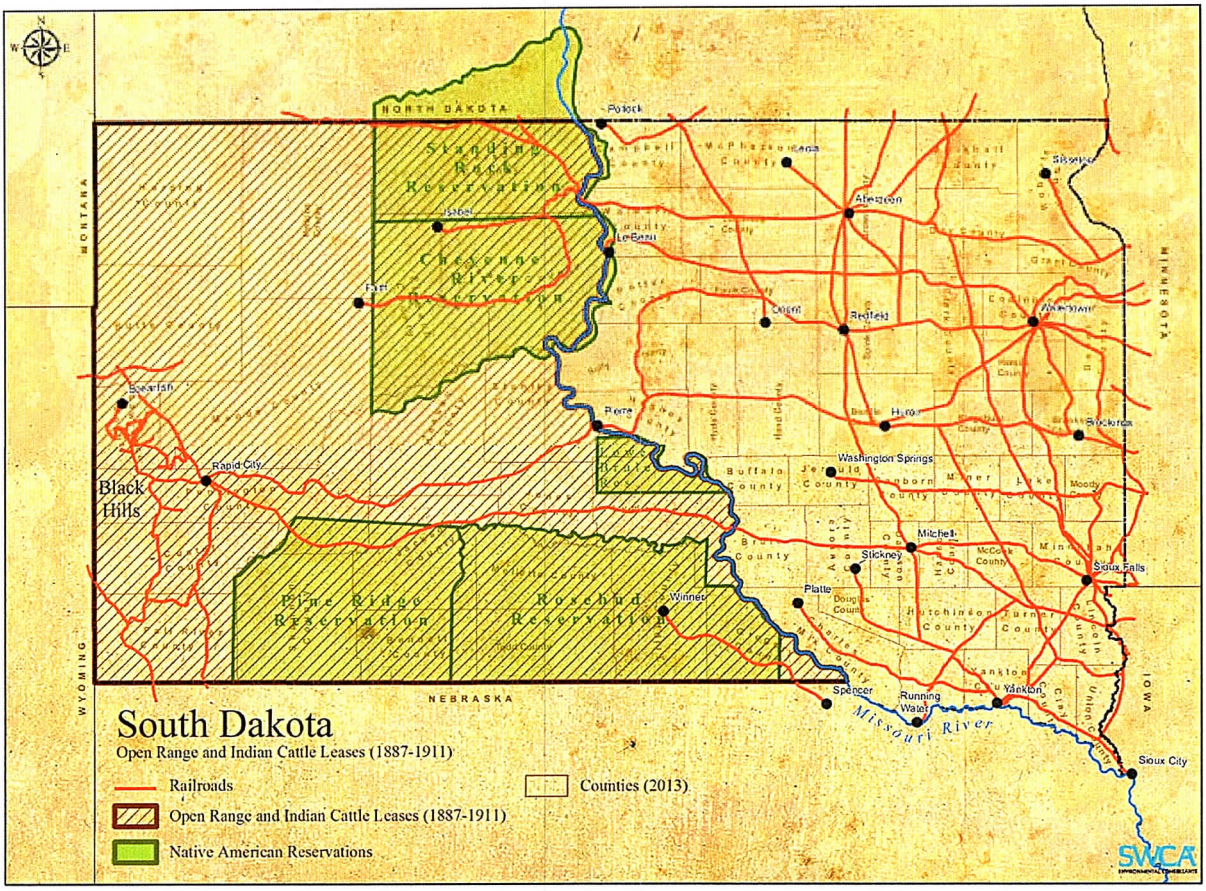
By the early 1880s, the area around the Black Hills was well-stocked cattle range, with large herds owned by cattle companies that were oftentimes based elsewhere. As with other parts of the West, English and Scottish interests had substantial control over open range ranching, and were adept at procuring government contracts to supply the reservations. Other companies, locally owned and not, shipped beef from the Black Hills country to eastern markets. Cattle were not the only livestock in the area: a few early ranchers, sensing the likely demise of bison as they dwindled in numbers, established privately owned buffalo herds (Schell 2004:247–248; Thompson 2005:267). Despite tensions with cattlemen, who were unwilling to share their range, some ranchers in the area of the Black Hills herded sheep, and the sheep ranching took hold in the area in the mid-1880s.

The cessation of Indian lands allowed not only for the expansion of cattle ranging and sheep herding, but for the expansion of the rail lines as well, allowing the Black Hills to be directly connected to the towns and cities east of the Missouri. The increasing distance of the rail lines resulted in local, mini-booms which in turn increased pressure to open even more Indian land to Euro-American settlement (Hufstetler and Bedeau 2007).

Throughout the early and mid-1880s, the weather in Dakota cattle country was welcoming and mild, storms were not severe, and stock losses were few. The winter of 1886–1887,

however, took on an entirely different character. Hard blizzards began in November, and continued almost until spring. Snow froze on the faces of cattle, blinding and stranding them. Smaller ranchers, who kept their cattle closer to the ranch headquarters and had fewer cattle to maintain, did not suffer the extensive losses that the big operators, who were accustomed to overwintering their cattle unattended on the open range, suffered. With losses as high as 90 percent, and a poor calf crop the following spring, many of the larger operations were driven out of business (Thompson 2005:270). Stockmen learned the hard lesson that grass alone could not sustain herds through the winter, and hay would be needed to supplement. Smaller ranches recovered more quickly, and began to diversify breeds, importing Hereford and Angus cattle to the region. Alfalfa also became an increasingly important commodity to diversify feed and sustain and fatten cattle over the long winters.

OPEN RANGE AND INDIAN CATTLE LEASES, 1887–1911

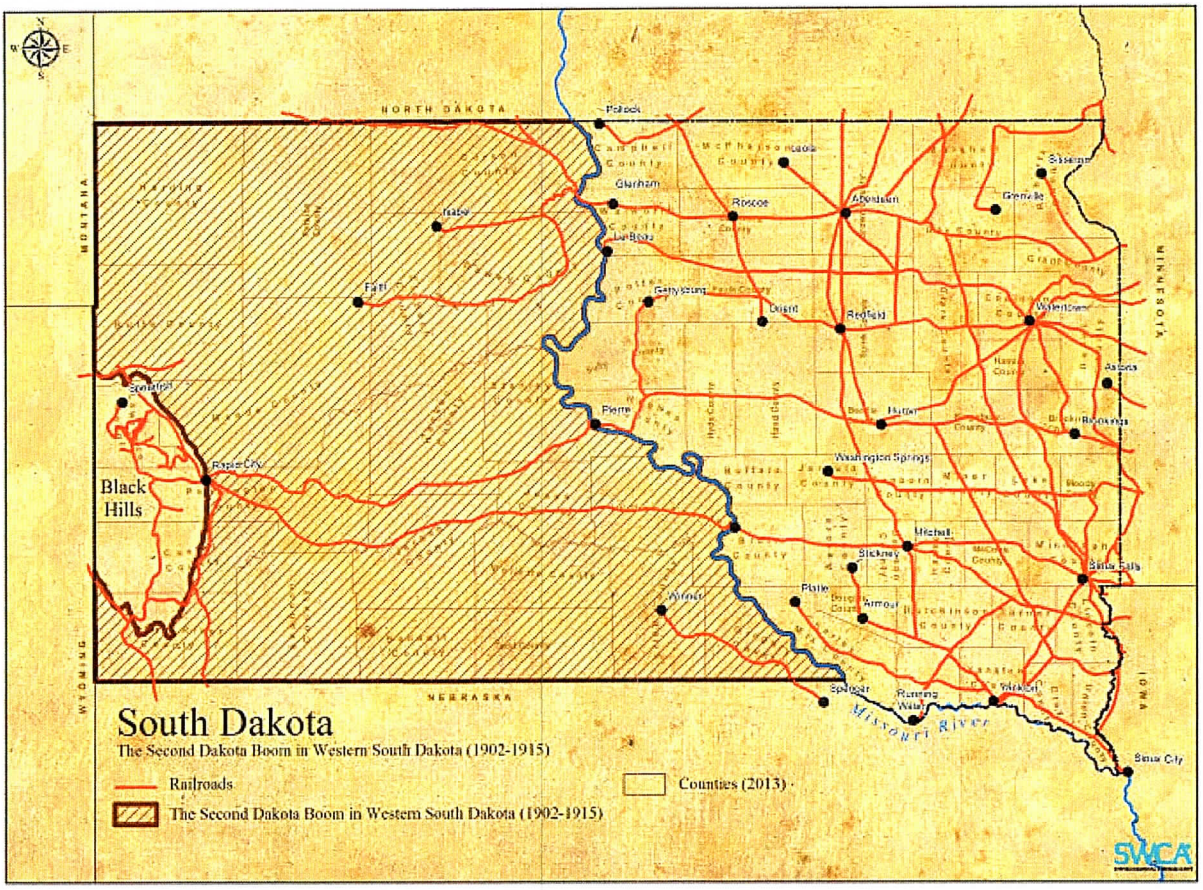


Cattlemen had long lobbied for access to the Lakota lands, and finally were successful in 1889. That year, also the year South Dakota achieved statehood, the Lakota agreed to the breakup of the Great Sioux Reservation into six smaller reservations, reducing their lands by nine million acres, which was then opened to settlement and ranching. The Dawes Act, written with the intention of imposing sedentary, agricultural lifeways on the Lakota tribes, had passed in 1887, and the cession of Indian land was part of a deal that broke up the Indian land into allotments granted to tribal individuals, providing them with cattle. A system of individual land ownership and the drastic alteration of what had been a somewhat stable land base, as well as coercing the Lakota to take up an agricultural economy that was utterly foreign to their way of life and contradictory to their relationship with the land (Jewell 2006:129), resulted in profound poverty and the erosion of the Lakota social structure.

With the West River country opened for non-Native settlement, the railroads, which had been slow to come to the West River country due in large part to difficulty forging agreements with the Sioux to build across their lands, now set about traversing the west half of the new state. The first line into the Black Hills area had come from the south, a Chicago and North Western line built north from Chadron, Nebraska, to Rapid City in 1885–1886, and in 1889 the Chicago, Burlington & Quincy crossed the Missouri from the east into the West River country. In 1900, cattlemen negotiated with the railroads and the Indian Agency to secure a 6-mile-wide, 87-mile long cattle-drive right-of-way through the Cheyenne River Reservation to

reach the stockyards built by the Milwaukee Road at the newly platted Evarts, on the east side of the Missouri from the Cheyenne River Reservation. Here, South Dakota cattle were shipped to Chicago and other eastern markets and Texas cattle were received to restock the West River range. In 1906, the Milwaukee Road crossed the Missouri at Mobridge, 8 miles to the north of Evarts, and the stockyards were relocated there, effectively ending Evarts' short life as a railroad town. At the turn of the twentieth century, cattle companies were increasingly successful in acquiring Sioux lands for grazing. By 1902, large cattle companies were leasing more than 1.5 million acres on the Cheyenne River Reservation and 865,000 acres on the Standing Rock Reservation. By 1904, the whole of the Cheyenne River Reservation was under lease to large cattle companies (Schell 2004:250–252). Although in other parts of the American West, open range cattle ranching is generally acknowledged to have ended with the tragically hard winters of 1885–1886 and 1886–1887, the ranchers in South Dakota managed to forestall the end until a few years after the turn of the century, when a second great boom in homesteading brought about the end of the open range cattle ranching in the West River country, its death knell rung by the enforcement of fence laws in all localities (Schell 2004:252–257).

THE SECOND DAKOTA BOOM IN WESTERN SOUTH DAKOTA, 1902–1915



Historian Paula Nelson notes that by 1900, the transformation of the United States from a nation of farmers to a nation of urban industry was well underway (Nelson 1986:14). A rapidly growing number of Americans lived and worked in cities. Industrial workers lived in tenements and slums, and the gap between rich and poor was widening. For many who were captive to the ills of urban life, the nobility inherent in the farmer's life was a redemptive ideal. Moreover, the myth of the frontier still had a strong hold on Americans, who had fallen in love with the popular culture ideal of the Wild West. These socio-cultural factors, combined with more practical reasons like the rising cost of farmland in the Midwest and even in the East River country and the increasingly promoted idea that dry farming was sustainable, led to a land rush in the West River with the ongoing opening of Indian lands after the turn of the twentieth century.

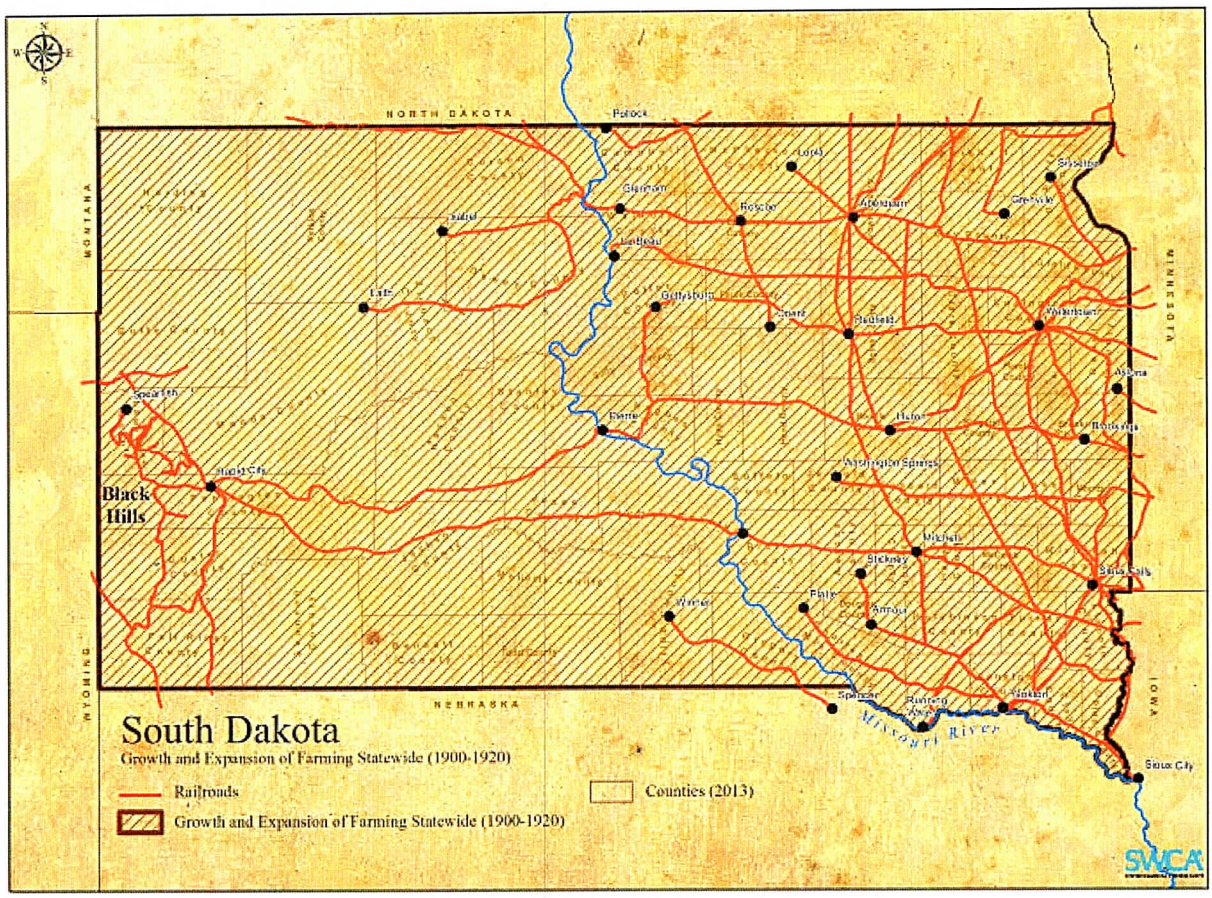
The rush began when the federal government opened unclaimed allotments on the Rosebud Reservation in 1904 for non-Native American settlement. About the same time, the Chicago and North Western and the Chicago, Milwaukee, St. Paul and Pacific (expanded name for the Milwaukee Road) railroad companies set out to extend their lines from Pierre and Chamberlain to Rapid City, further facilitating new settlers' abilities to move into the region. Over the next decade, lands on the Lower Brule, Pine Ridge, Cheyenne River, and Standing Rock Reservations were offered by the government to non-Native American settlers. At first these lands were taken after some negotiation with the tribes, but following a court decision

that Indian lands were part of the public domain and could be sold or homesteaded under applicable laws, they were simply sold, with proceeds placed in a trust fund (Schell 2004:253).

To avoid a stampede, the government offered the lands by lottery. Applications far exceeded the number of allotments available: in 1908, 4,000 claims in Tripp County had 114,769 applicants (Nelson 1986:19). The landscape, which had been wide, treeless expanses of short grass prairie, became dotted with soddies and claim shacks, and barbed wire fences enclosed claims, forcing cattlemen, particularly the big operations with large herds, to downsize or liquidate. New farm towns sprang up along the rail lines, and census figures show the population of the West River country rose 214 percent in the years from 1900 to 1910 (Schell 2004:256). The boom peaked in 1911, when a drought brought it to a swift halt. Unlike the Native Americans and ranchers that preceded them, whose economies had relied on the natural landscape and the gramma grasses of the prairie, the farmers had a more complex economy. In particular, it relied on steady precipitation, which had not been a problem in the first years of the boom. In 1911 this changed. Many homesteaders abandoned their claims and, as Nelson has noted, "the optimism and energy of the boom years vanished" (Nelson 1986:121). Newspapers implored settlers to stay, and settlers who did stay organized and pooled resources for some relief, and counties issued bonds to help them make it through. Homesteaders looked to the future, believing next year would be better, although dry years continued until 1915.

The railroads not only encouraged immigration, but actively participated in the political theatre of choosing a permanent capital for the state. The contest was between the Chicago and North Western and their chosen city of Pierre, and their rivals being the Milwaukee Road based in Mitchell, with Pierre ultimately victorious. The railroad companies also tried to influence legislation concerning rail rates and passenger tariffs. The various railroad companies continued to put down track throughout this period, until the industry was nationalized for World War I in 1917 (Hufstetler and Bedeau 2007:20–21).

GROWTH AND EXPANSION OF FARMING STATEWIDE, 1900–1920

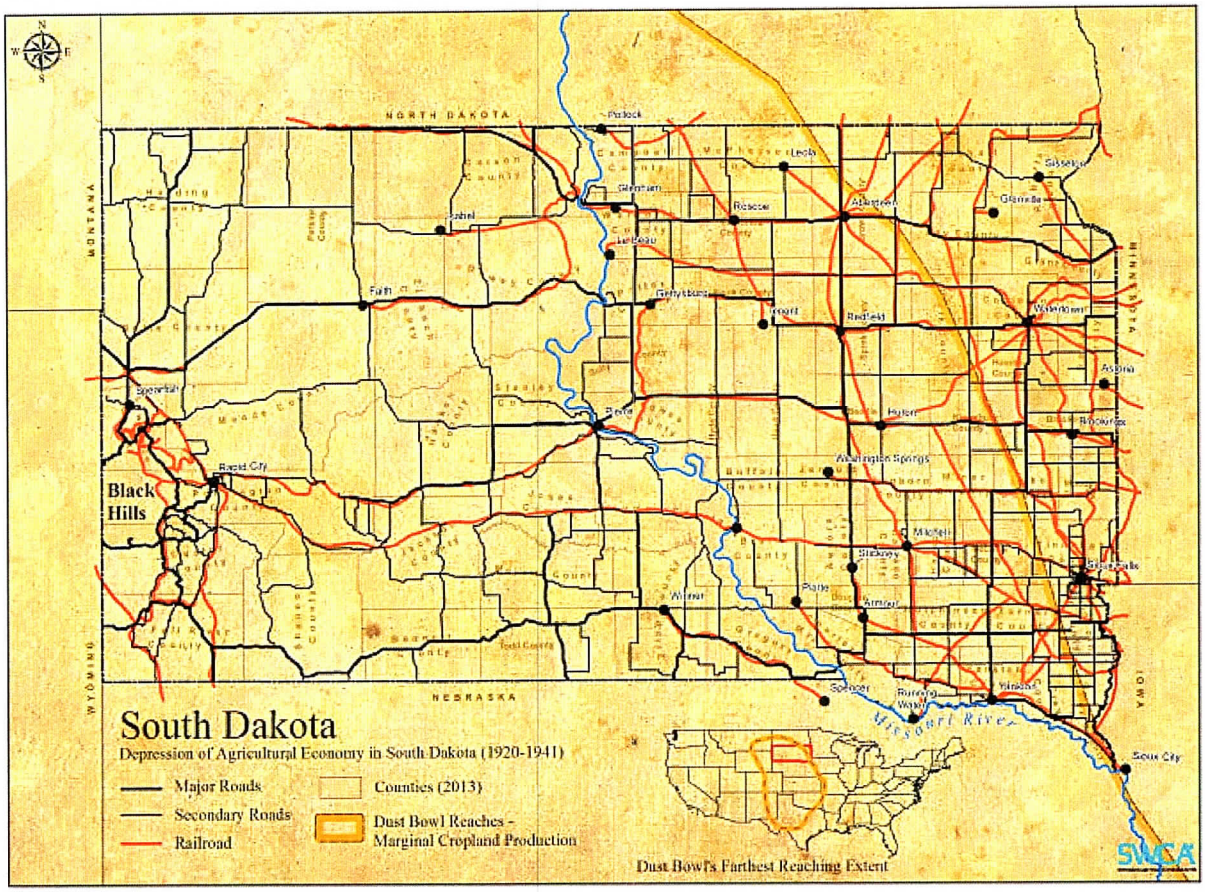


While the western part of the state was experiencing a new boom, the eastern part was expanding its previously established agricultural practices. Many of the most influential forces shaping farming in the first decades of the twentieth century were nationwide progressive movements related to economic and social reforms that resulted in on-the-ground attempts at agricultural efficiency and modernization. For progressive reformers, the emphasis was on education and the instillation of scientific principles into all areas of life (Bowers 1971). For rural South Dakotans, this education took the form of catalogs and governmental pamphlets that informed the reader on the proper techniques for activities from animal husbandry to structuring family leisure time. Farmers used publications to identify new machines to increase farm efficiency, such as the automobile and household appliances, and increasingly constructed buildings suited to specific functions on the farm. Progressive era reformers were also interested in the efficiency of farm layouts, which was sometimes measured on the number of steps taken between buildings. Entwined with the progressive approach to agriculture was a progressive political movement in South Dakota that built off the Populist movement of the preceding decades and lasted well into the 1920s. Driven by agricultural prices and expenditures related to farming set largely outside the state, many farmers joined cooperative groups such as the Grange or the Farmers' Union which organized and lobbied on behalf of farmers. Like the populists that preceded them, the members of these progressive organizations tended to be economically stable, middle-class males with families and ties to the community (Dibbern 1982).

In the eastern part of the state immigration continued, driven by European settlement. In particular, Scandinavian groups continued to establish strong communities in the state. Throughout this time period, foreign-language newspapers were established, as were churches and fraternal orders structured around Old-World identities. Much of the immigration was driven by the immigration boards of railroads who were looking for settlers to stabilize towns and bring a return on the investment. For instance, Tabor, a largely Czech community, grew substantially after the construction of a railroad depot in 1900 (Johansen 1937:24).

With the onset of war in Europe, demand for American wheat and other agricultural products was at an all-time high. In 1915 and 1916 respectively, the Enlarged Homestead Act and the Stock raising Act were adopted in South Dakota, allowing farmers and ranchers in the state to increase their holdings, particularly in the western portion of the state where arid conditions were becoming increasingly problematic. Farmers across the state took advantage, optimizing profits as much as they could. In the more arid West River country, farmers plowed and planted as much of the grassland as they could, and the soil, which was marginal to begin with, was to become over-plowed and exhausted. Productivity soared, and farmers mortgaged their lands and equipment to buy more land and equipment. Interest was usurious, and in 1920, the bubble burst (Thompson 2005:230).

DEPRESSION OF AGRICULTURAL ECONOMY IN SOUTH DAKOTA, 1920–1941



In the 1920s, as the afterglow of wartime prosperity ended, the U.S. Government incrementally withdrew support of wheat prices and overseas production resumed. Domestic wheat prices plummeted, while taxes and prices of consumer goods rose. Although improved mechanization made farming more efficient, and farmers were able to place more acres were under production, many of the farmers who had bought land during the war-time boom were still unable to keep up with payments. South Dakota and the rural Midwest plunged into economic depression "a full nine years before the rest of the country" (Hufstetler and Bedeau 2007:22). In South Dakota alone 174 banks failed by 1925 (Thompson 2005:230). Midwestern congressional representatives made unsuccessful attempts to pass legislation aimed at helping farmers, and bad went to worse after the stock market collapse in October 1929. Commodity prices again plunged, falling, as one historian noted, "faster and further than at any other period in the history of American agriculture" (Thompson 2005:231). During this time railroads also constricted, hit hard by the economy and the growing popularity of automobiles, which threatened the railroad's monopoly on transportation. However, by 1935, South Dakota only had 2,000 miles of hard surface roads, and twice as many miles of gravel roads, many of which were built and maintained by local groups of farmers (Longfellow 2011).

The stock market crash was accompanied by the onset of regional drought and the consequences of decades of environmental degradation. The summer of 1930, which was the

second driest in the history of the state, was characterized by baked-hardpan fields that were impenetrable by the little moisture that managed to reach the ground. By 1933, dust storms, "black blizzards," raged with now-legendary intensity, with the Dakotas forming the northernmost edge of the Dust Bowl.

South Dakota farmers were devastated. Farmers fed thistles to cattle, and watched helplessly as grasshoppers devoured anything that grew—not just crops and gardens, but even the leaves and bark from the trees. Chickens remained a somewhat reliable food source, but dust storms killed them, too. Journalist Lorena Hickok, working for the Federal Emergency Relief Administration (FERA) in 1933, wrote of South Dakota, "A more hopeless place I never saw" (Thompson 2005:233). Held hostage by egregiously high interest rates and the consequences of their own mistreatment of the natural environment, farmers threatened to strike, signing on to the Farmers' Holiday Movement, which in combination with other organizations like the South Dakota Farmer's Union, brought farmers together in an attempt to secure control of production (Thompson 2005:233; Wunder et al. 1999:325–340). This period is acknowledged by some historians to be the last important farm revolt on the Great Plains, although the Farmer's Holiday Association in South Dakota was short-lived, with New Deal farm programs providing sufficient relief to farmers to quell the rumblings of revolt.

Two key pieces of New Deal legislation, the Agricultural Adjustment Act and the Farm Credit Act, both enacted in 1933, aimed to raise commodity prices by paying farmers to curtail production and to allow farmers to refinance mortgages at low interest. The Agricultural Adjustment Act was declared unconstitutional in 1936 and was reborn as the Soil Conservation and Domestic Allotment Act, which paid benefits to farmers who practiced soil conservation methods. These included eschewing soil depleting crops like corn, wheat, and oats, and using planting methods that mitigated erosion and helped restore organic materials to soils.

While soil survey work began in the state as early as 1919 (Natural Resources Conservation Service 2010), in 1935 the Soil Conservation Service was established as a permanent agency within the U.S. Department of Agriculture. Devised to respond to local conditions, the Soil Conservation Service established soil conservation districts across the state and began to institute various methods to combat erosion and the loss of soil moisture, including wind strip cropping, rough tillage, field windbreaks, contour furrowing and pitting (Martens et al. 1969:6). Assisting soil conservation efforts in the state were four Civilian Conservation Corps (CCC) camps at Alcester, Huron, Chamberlain, and Sturgis with smaller side camps located at Vermillion, Miller, and Presho. The Alcester camp was tasked primarily with the cultivation on an 80-acre nursery and the rehabilitation of woodland areas in the eastern portion of the state through the construction of dams, sod waterways, grade stabilization structures, and terraces. The Chamberlain camp focused on the construction of an earth dam on Crow Creek, and assisted farms and ranches in Brule, Buffalo, and Lyman Counties to implement soil conservation practices. The Huron camp also was involved in dam construction on the James River. The first was a rubble masonry dam at Third Street, and the second was the Spink County Dam, also rubble-masonry, 25 miles north of Huron. Men from the Huron camp also worked in Presho and Miller on an earthen flood-control dam. The Fort Meade camp at Sturgis focused solely on conservation work on private farms and forested areas (Martens et al. 1969).

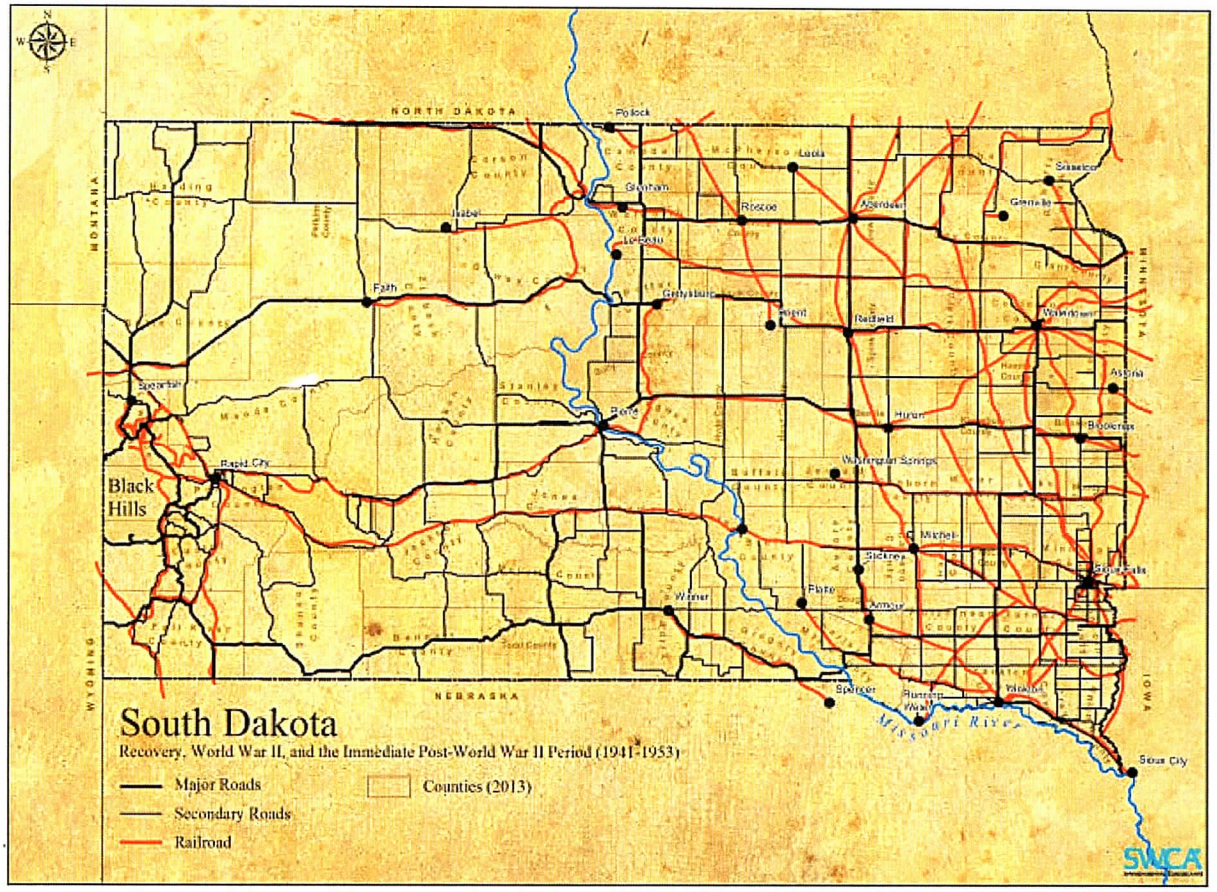
During this time various local conservation districts and groups were established, which were united in 1941 under the umbrella of the South Dakota Association of Conservation Districts (SDACD) to promote communication and exchange between the various local districts (Natural Resources Conservation Service 2010).

New Deal programs were not singularly responsible for ending the Great Depression, but they did much to help people survive it. In addition to the aforementioned programs, the Works Progress Administration (WPA) gave work to farmers in the winter, enlisting their help on road paving and other local projects. Younger men and veterans of World War I worked for the CCC, and the CCC in turn designed and taught terrace farming, and installed shelterbelts of the Prairie States Forestry Project, both part of national soil conservation efforts for maximum soil retention (Dennis 1998:78–79; Martens et al. 1969).

During the 1930s, Subsistence Homestead programs were developed through the federal government for rural agricultural support. These included individual and communal-type farmsteads. In South Dakota, Federal Relief Housing programs were administered by several agencies, including the Rural Rehabilitation Division of FERA, the WPA, and local agencies with funding and oversight from the state Division of Subsistence Homes. The Subsistence Homestead program completed three known communities, including the Sioux Falls Farms Project and the Eastern South Dakota Farms Project near Brookings (Conklin 1959; Dennis 1998).

Government programs and assistance aside, however, many farmers could not hang on through the Great Depression years. Farm families who left generally migrated to the West Coast, where farming enterprise had a very different character, but where the land was still productive. The number of farms in South Dakota dropped from roughly 83,000 in 1930 to 72,500 in 1940, with the number of acres per farm rising, on average, from 439 acres to 545 acres, indicating that those farmers who did stay were adding acreage to their own holdings when they could (Thompson 2005:247).

RECOVERY, WORLD WAR II, AND THE IMMEDIATE POST-WORLD WAR II PERIOD, 1941–1953



The Great Depression finally gave way in the late 1930s, as the threat of war in Europe spurred arms production and other defense-related industry in the United States. After the entry of the United States into the war following Pearl Harbor, farm production and commodity prices rose again. Farmers were encouraged by the federal government to maximize production, and wet years from 1940 to 1944 enhanced the farmers' ability to do just that. Widespread enlistment in the military and attraction of faraway factory jobs caused a labor shortage, but advances in farm technology went far to make up for it, as wartime prosperity enabled many farmers to acquire new equipment, when it could be had. Farm machinery manufacturers were given limited priority for raw materials, but fuel shortages and the difficulty of finding parts resulted in considerable creativity on the part of farmers who needed to keep older machines functional (Thompson 2005:237).

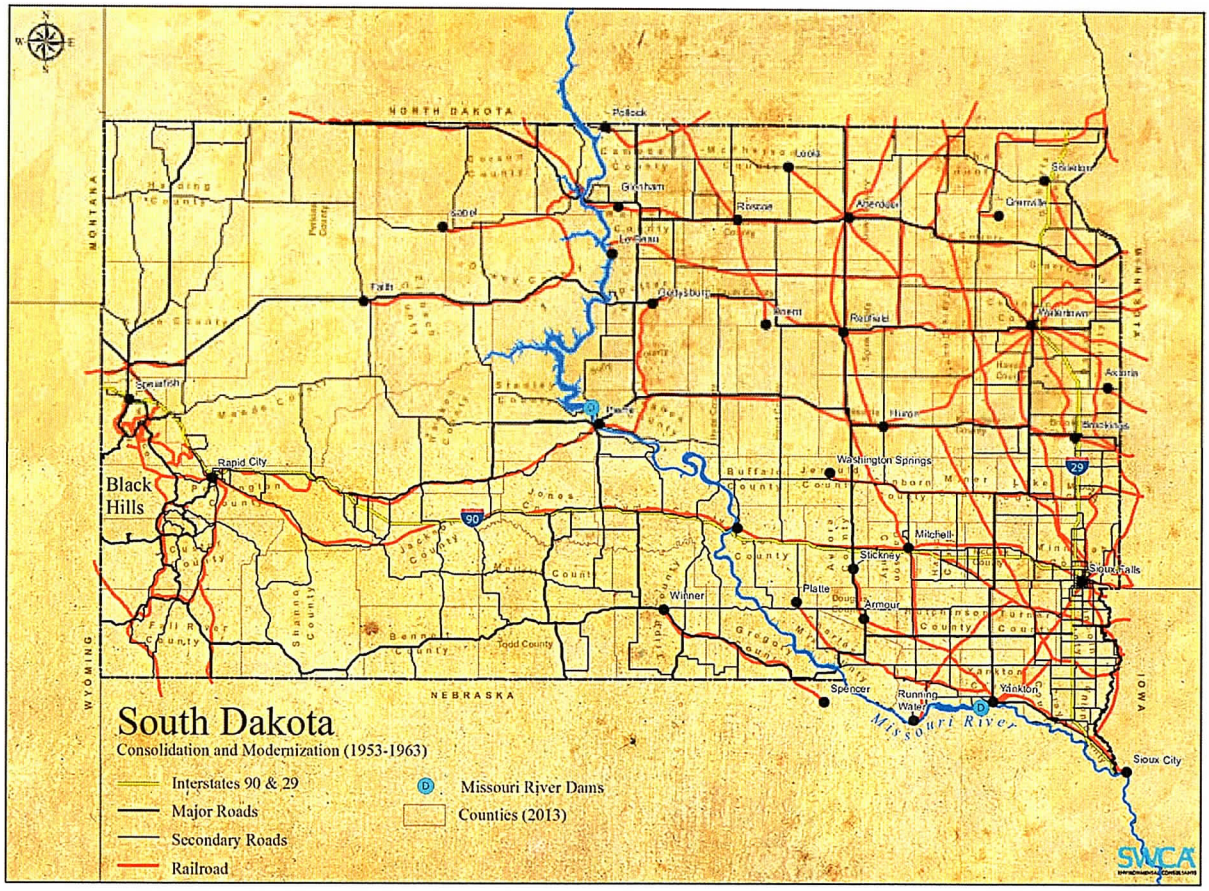
Farmers also relied on cooperative farming techniques to offset the loss of equipment, such as the "Harvest Brigade," a mobile unit of self-propelled combines that harvested American crops across the Great Plains in the final years of the war (personal communication from Carrie Van Buren and Dawn Stephens, South Dakota State University Agricultural Heritage Museum, Ganzel, North Dakota, 15 August 2012). The Harvest Brigade was developed by the Massey-Harris harvester company and presented to the Department of War as a way to meet the demand for farm labor, machines, and the challenge of steel shortages. Five hundred

Model 21 self-propelled combines, which required less man-power to run than traditional pull-behind combines, were sold at a discounted price to farmers who were required to harvest at least 2,000 acres each. Many of the participants in the Brigade started in Texas and Oklahoma before making their way through South Dakota and ending the season in North Dakota.

After the war, farm sizes continued to increase, as larger farms absorbed smaller farms around them. In 1950, the number of farms in the state had dropped again to 67,000, with the average acreage increasing to 669 acres per farm (Thompson 2005:247). With more and/or larger fields to farm, farmers invested in newer equipment that incorporated refinements made possible with wartime technologies. Larger tractors, vastly improved combines, and harvesters with greatly increased capacities contributed mightily to this picture.

Over the remainder of the post-World War II period, better machines, with ever-larger capacities, resulted in patterns of surplus and weakened commodity prices. Prices had been high during the Korean War (1950–1953), but with peacetime they fell, and farmers were again squeezed. Livestock raising in the East River country, which had taken hold in the early twentieth century with the end of the open range, gained ground in the 1950s, eventually accounting for a bigger share of the agricultural lands than crop farming, with the vast majority of cattle in South Dakota being raised on smaller acreages, in herds of less than 500 head (Thompson 2005:286). Over time, the gap between small operation and large-scale farms has widened, and the landscapes of farming today are very different than they were even 50 years ago.

CONSOLIDATION AND MODERNIZATION, 1953–1963



Following the Great Depression, new demands for power, irrigation, economic development, and flood control in the northern Great Plains focused greater attention on the Missouri River. Starting in the early 1940s, a series of legislative measures and agency plans was developed to address the difficult task of harnessing the Missouri River. Initial efforts were directed towards establishing a Missouri Valley Authority (MVA), similar to the successful Tennessee Valley Authority (TVA) which had created dams that provided rural electrification for southern states. While the Rural Electrification Act, passed in 1936, was supposed to bring electricity to farms and homes in rural areas of the country, in South Dakota, private utilities were reluctant to construct lines to rural areas, as the predicted profits for this undertaking could not offset the costs. The Rural Electrification Act did have some impact as it codified the 1935 Rural Electrification Administration, which over the course of the late 1930s, 1940s, and 1950s—the latter decade when South Dakota participated broadly—did much to encourage cooperatives that delivered power to some remote farms and ranches. Up to and through the early 1950s, many rural farms and ranches depended on their own power generation for electricity from windmills and gas- or gasoline-powered generators.

Centralized electricity was finally available statewide by the massive federal undertaking named the Pick-Sloan Missouri Basin River Program. Pick-Sloan was a combination of two early proposals, one by Lewis Pick of the U.S. Army Corps of Engineers that focused on flood control and improvements to navigation, and the other by William Sloan of the U.S.

Bureau of Reclamation that emphasized irrigation and hydroelectric power. In 1944 the two plans were combined through intense negotiations, resulting in a series of six dams, three of which were in South Dakota: the Oahe, Big Bend, and Fort Randall. Construction of the dams began in the late 1940s and generators at the dams finally went on-line in the early 1960s, providing reliable electricity to the state's rural areas (Billington et al. 2005). The Pick-Sloan project was not only responsible for cheap power; it created massive reservoirs that swallowed what had previously been some of the state's most desirable farm land, and drastically altered the natural and agricultural landscapes of South Dakota.

Railroad decline that had started during the Great Depression accelerated through this period. While economical diesel locomotives began to replace labor-intensive steam engines in South Dakota in the 1940s, steam did not completely disappear from the state until 1960. Surviving companies dismantled large shops, terminals, and redundant and unprofitable mainline extensions, as well as smaller service-oriented segments of the state's railroad infrastructure, including seasonal grain-hauling branchlines. And yet, even while the traditional rail companies and services adjusted to new economics and government regulations, they retained an important position in the agricultural life of South Dakota by hauling commodities such as grain more efficiently than highway trucks (Hufstetler and Bedeau 2007).

Much of this rail downsizing was due to the increasing importance of the federal-primary (U.S. highways), state-secondary (farm-to-market), and after 1956 Interstate Highway (in South Dakota, east-west IH90 and eventually north-south IH29) road systems in South Dakota. After widespread and sustained construction from the 1930s through 1960s, the state highway department declared the all-weather and limited-access road systems "complete" by 1982, with 83,000 miles of hard-surface road (Longfellow 2011).

PROPERTY TYPES

CLAIM ERA HOUSING

Families and individuals attempting to "prove up" claims to small parcels under the 1862 Homestead Act and subsequent land granting legislation often resorted to expedient houses of various types. These housing types corresponded to the raw materials available to the homesteader, and often were determined by simple geography. The most iconic homesteading house was the "Soddie" or sod house, a small dwelling constructed of bricks of matted grass roots in earth cut from the plains. These houses were most expedient for the earliest homesteaders living on the open prairie without access to materials from a nearby town or railroad. Expensive and difficult to obtain, finished lumber was saved for door jambs and window lintels.

Related to the soddie was the dugout, a space carved out of a bank or hill. Dugouts were reportedly snug and dry, when created correctly, and served as habitation spaces, and later for root cellar or other storage space. Sod houses and dugouts did not have a set design or style; in their creativity early homesteaders often employed various combinations of sod, dugout, and wood-framed structures to meet their needs.

Eastern South Dakota and the plains also saw the use of tar paper and other wood-framed claim shacks. These generally lacked a foundation or prepared floor, and were reportedly not as comfortable as the soddies or dugouts. Some wood-framed structures were reinforced with sod bricks or banked earth up the walls. The wood for such buildings was either brought with the homesteader on their initial move to the location, or was acquired from local mills or through access to goods brought in by rail.

In the Black Hills and along the eastern waterways where timber was more plentiful, homesteaders often chose to construct log cabins as their houses. Log cabins could be as expedient as the soddies and dugouts, and could be cobbled from a variety of materials. Sometimes these initial log structures were incorporated into larger, more permanent housing or adapted for use as outbuildings.

Some stone houses were also constructed during the claim era. These were often constructed in the Black Hills region or in the east.

Previously Identified Types:

- Dugout
- Log Shack
- Sod House
- Stone House
- Wood Frame Shack

NEW/UPDATED CLAIM ERA HOUSING SUBTYPES

Sod House

Descriptive Features:

- Often constructed on the open prairie where there were few building resources such as timber.
- Sizes varied from 12 by 14 feet to 16 by 20 feet.
- Needed 0.5 to 1.0 acre of land to acquire enough sod for construction.
- Sod "blocks" were usually 2 by 3 feet or 2 by 4 feet.
- Roofing shapes and materials varied.
- Reinforcements such as wood or iron poles were sometimes used to support the corners, as well as wooden lintels for door and window openings.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Drought and Depression (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).

Variations:

- Sod was also used for other structures such as chicken coops and outbuildings. Similarly, sod houses could have been converted to these uses when other dwellings were constructed.
- While less common, two-story sod houses have been documented.
- "Rammed earth" buildings were constructed by German-Russians, with notable examples in Hutchinson County. Rammed earth houses had two to three rooms with a central fireplace, also of rammed earth. These buildings had resurgence in popularity in the 1930s, with an extant example on the South Dakota State University (SDSU) campus.

Archaeological Considerations:

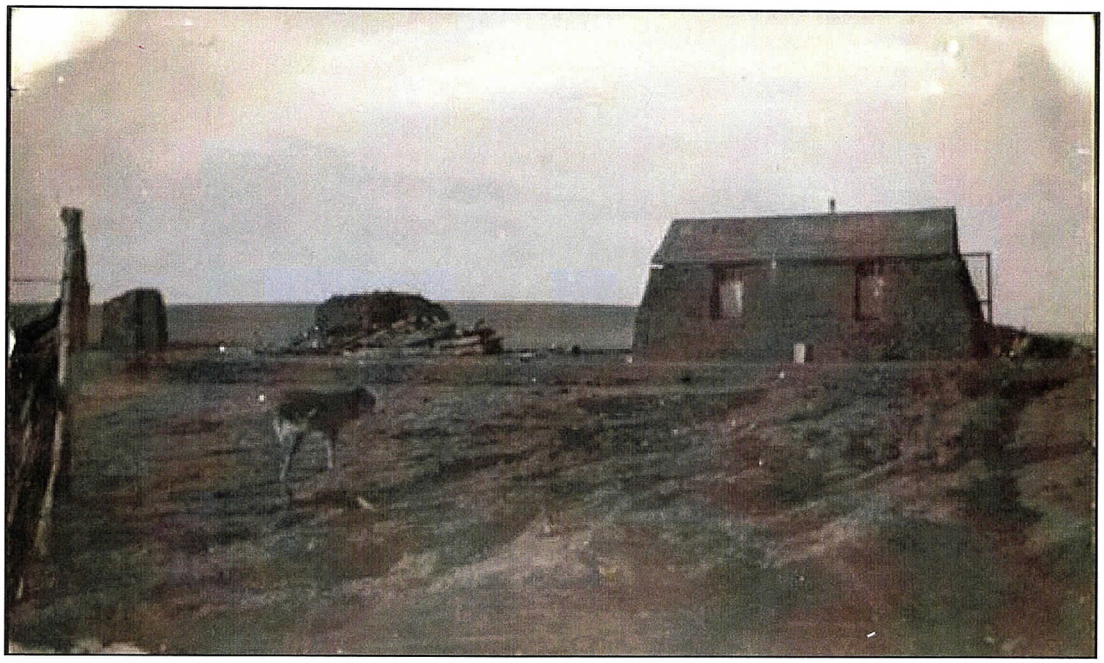
- A deteriorated sod house or building may be difficult to distinguish from the surrounding landscape. Floors were usually packed and swept earth. Expect a mound, as with an internally collapsed structure, or a berm surrounding a packed floor feature.
- Two archaeological surveys in South Dakota have identified rubble foundations for the sod; this may consist of a shallow trench with field stone and pebbles.
- May have associated borrow pits from sod harvesting for construction.

Sources:

McKay, Joyce (1976) Rammed Earth Houses were Economical and Ecological. *South Dakota High Liner* September 28.

Murphy, D. (1984) *Building in Clay on the Central Plains: Time, Place, Ethnicity*. Missouri Valley Historical Conference, Omaha.

Yost, Josie (1983) A Summary of House Types in South Dakota, 1860–1910. Unpublished Manuscript, on file at the South Dakota State University Agricultural Museum.



SD State Agricultural Heritage Museum photograph collection; photographer unknown; Sod Claim House; photograph 93:139:29.



Standing sod house. Photograph by Kathleen Corbett, 2012. South Dakota.

Dug Out

Descriptive Features:

- An expedient, partially subterranean house dug into a hillside.
- Construction sites were chosen with regard to wind and water tables.
- Measured anywhere from 10 feet square to 14 feet square.
- Materials for roofing, walls, and interior supports were used to complete the dugout structure.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–887); Drought and Depression (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations:* Euro-American and Native American.

Variations:

- Norwegians often utilized the larger, 14-square-foot, dugouts called "cellars."
- Sometimes dugouts were later re-purposed for storage, although some small dugouts were excavated with the purpose of storage in mind.

Archaeological Considerations:

- The footprint of smaller dugouts is typically key-hole shaped, with a narrow neck at the entrance and either a square or rounded interior.
- Typically incorporated framed or masonry components including doorways, windows, and roof structures.
- Surveys in South Dakota have identified associated features such as burn layers from cooking fires and food middens.
- Some dugouts have stone foundations or partial foundations.
- Dugouts utilized packed earth swept floors.
- Collapsed dugouts with earthen roof structures can result in archaeologically sterile soils overlying the hard packed floor of the habitation.
- Archaeological surveys in South Dakota have had difficulty distinguishing between Native American and Euro-American dugouts when they both date to the Historic period.

Sources:

Yost, Josie Lee (1983) A Summary of Homestead House Types in South Dakota 1860-1910. Unpublished Manuscript on File at the South Dakota State University Agricultural Museum.



Oklahoma Historical Society. Digital.library.okstate.edu.



SD State Agricultural Heritage Museum Photograph Collection; Photographer Josie Yost; Yost Dugout.

Wood Frame Shack

Descriptive Features:

- Timber-framed claim shanties were meant to be impermanent structures; just how impermanent varied in the construction methods and materials. Timber-framed structures could be clad in boards and/or tar paper.
- Often lacked foundations, or used simple foundations such as stone footers.
- 12 by 14 feet was the minimum requirement for a claim. While not all claim houses met these minimum requirements, buildings of these dimensions are a good indicator of a claim-era dwelling.
- Tar paper was often affixed to the exterior with small pieces of tin, sometimes called "bombazines."
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Early Black Hills Settlement (1876–1900); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.

Variations:

- Roofs could be gable, shed, or curved. The latter was an innovation against high prairie winds.
- Claim shacks could be incorporated into larger, more permanent dwellings or combined with other building types such as sod bricks or banked earth.

Archaeological Considerations:

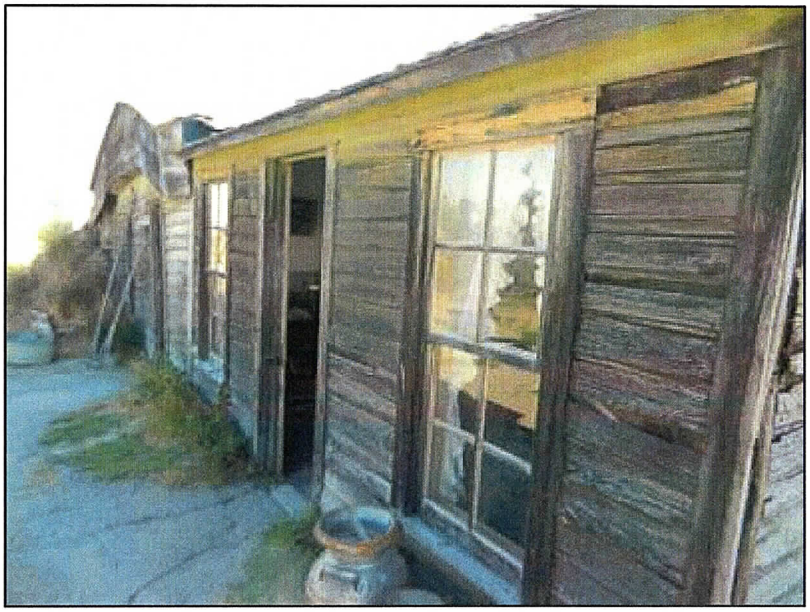
- Leveled platforms, building pads, or leveled areas banked into hill slopes may represent former claim shack locations.
- Buildings were sometimes moved from location to location.
- Because of the impermanence of the structures and lack of foundations, there may be little in the way of archaeological signature left. Hearths or fire pits for cooking located outside of the shack area may be visible. Other archaeological signatures may include domestic debris such as glass and ceramics.

Sources:

Yost, Josie (1983) A Summary of House Types in South Dakota, 1860-1910. Unpublished Manuscript, on file at the South Dakota State University Agricultural Museum.



SD State Agricultural Heritage Museum Photograph Collection; photographer unknown; Sylvia Matousek and Her Claim House, 1910; photograph 93:139:19.



Claim shack attached to a dugout. Photograph by Kathleen Corbett 2012, South Dakota.

Log Cabin/Log Claim Shack

Descriptive Features:

- Generally constructed along rivers where trees were more plentiful.
- Sizes varied.
- May sit directly on grade or supported by a raised platform of stone or earth.
- Materials for roofing could include sod, wooden shingles, tar paper, and any combination of these.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Early Black Hills Settlement (1876–1900); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any. The ways that logs were shaped or joined may indicate ethnicity or regional affiliation for the original builder.

Variations:

- Czech housing often relied on log cabins, and can be differentiated by the use of dove-tail joints and chinking between the logs.
- Finish architecture often used double-plank logs met with vertical double-notches.

Archaeological Considerations:

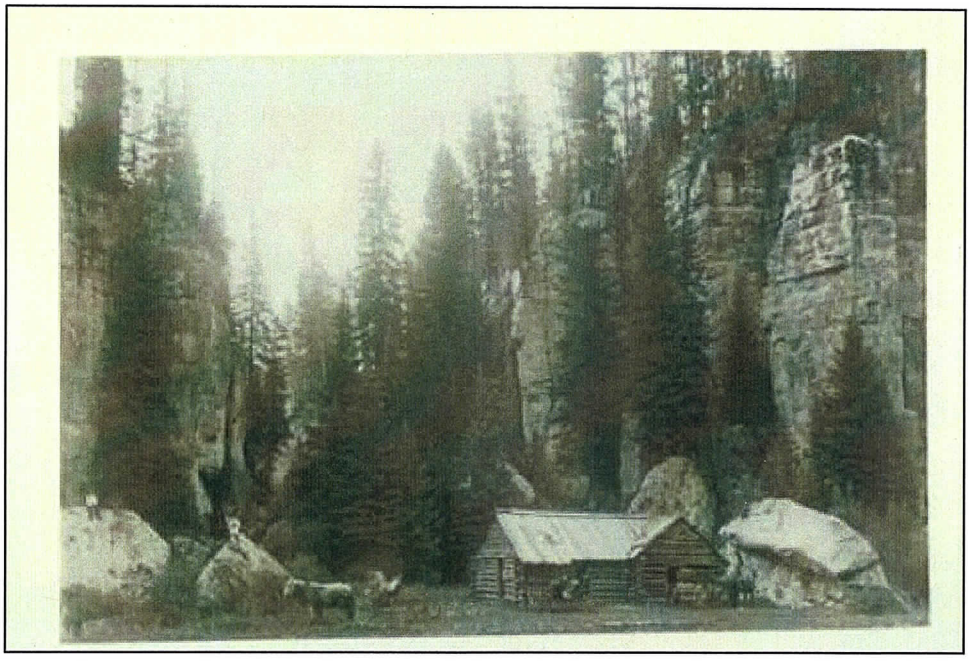
- Where buildings are no longer standing, notched logs or timbers may still be present.
- Remnants of chinking and daubing material.

Sources:

Jordan, Terry, Jon Kilpinen, and Charles Gritzner (1997) *The Mountain West: Interpreting the Folk Landscape*. Baltimore: Johns Hopkins University Press.

Upton, Dell (1986) *America's Architectural Roots: Ethnic Groups that Built America*. Washington D.C.: Preservation Press.

Yost, Josie Lee (1983) A Summary of Homestead House Types in South Dakota 1860-1910. Unpublished Manuscript on File at the South Dakota State University Agricultural Museum.



South Dakota State Historical Society Archive; photographer unknown; Black Hills Cabin; photograph SH82-115.



Pearson Cabin, Black Hills, South Dakota. Photograph by South Dakota National Register of Historic Places.

FARMS

Farm and Ranch Yards

Traditionally, farms were laid out according to the "strewn landscape pattern" (Groover 2008:24), a haphazard arrangement of farmstead outbuildings that were placed organically as needed by the farmer. By the time that South Dakota was settled, this tradition was changing, with farm organizations and government agencies emphasizing planned layouts that maximized efficiency and productivity, akin very much to the organization of the factory floor.

The layout of the farm or the ranch was envisioned through a number of ways. Immigrants, particularly Europeans with a specific tradition of farming, often brought their own criteria for constructing a farm complex. Through the progressive era, plans for farm layout that emphasized efficiency and productivity were encouraged among farmers.

Previously Identified Types:

- Farm & Ranch Yard
- Barns
- Brooder Barn
- Chicken Coops
- Cisterns
- Corn Cribs
- Farmhouses/Ranch Houses
- Farrowing Barn
- Fencing, Corrals and Chutes
- Garage/Carriage Houses
- Granary/Grain Bins
- Horse Barn
- Ice House
- Irrigation Systems
- Laundries/Summer Kitchens
- Livestock Dip
- Machinery Storage Building
- Milk House
- Power/Battery Plant House
- Privies
- Root/Storm Cellars
- Shops/Storage Sheds
- Silos
- Slaughterhouses
- Smokehouses
- Springhouse/Wash House/Springbox
- Swine Barn
- Tank House
- Well/Well Pit
- Windmills
- Woodshed

NEW UPDATED FARM SUBTYPES

Progressive Farms

Progressive ideologies began to influence farms across the country as early as the mid-nineteenth century, but came into prominence in the late nineteenth and early twentieth century. Views on the economic organization of farms, the use of improving technology, specialization on farms, and improvements to farm life that moved away from more traditional practices changed more vernacular building forms and farm layouts in favor of those that had been heavily analyzed for their efficiency. Agricultural extension services, government agencies, and academics were providing a wealth of information through government publications and periodicals advocating for changes to building designs and farm layouts constructed around factory conceptions of time management. In addition to efficiency (which was sometimes measured in the number of steps between buildings and a methodical, unvarying daily routine) progressive farms had to take topography and natural resources such as water locations into account when laying out the ideal farm. Further considerations were the types of farms, as well as threats such as fire.

Descriptive Features:

- Farms featuring specialized farm equipment and farm buildings.
- Ideally farms would be built around a central courtyard for efficient access to buildings, and so that there was no crossing of fences and gates.
- In addition to the built environment of outbuildings and structures, the ideal farm would also have strategically placed trees and shrubs, called a "shelter belt," as a weather break.
- Electrification of the household through local generators or access to area power supplies.
- *Associated Time Periods*: Growth and Expansion of Farming (1900–1920).

Variations:

- Building designs and farm layouts still varied farm to farm, but documentation presented to farmers during the early twentieth century recommended the following specifications:
  - For small family farms, it was advised that poultry houses be closest to the house. For larger, more commercially focused farms, the industry that was most valued (i.e., dairy) should be the outbuilding closest to the house.
  - It was recommended that certain buildings be grouped: Hog house, corn crib, and feeding floor; garage, farm shop, and machine shed; granary/elevator, farm scales, and seed house; scales, feed lot, corn-crib, and stock yard; house, garden, and lawn grouped and fenced against chickens + root cellar, ice-house, and fuel house.
  - Hog buildings were recommended at least 200 feet from the house, or placed in a recessed area.
  - The ability to survey the entire farm from the house, specifically the kitchen window, was advocated.

Archaeological Considerations

- Specialized farm buildings will have distinctive characteristics evident in their design. For collapsed structures, the floor plan and foundation layout may provide details about building function.

- Oil cans, gas cans, motor components, car and tractor parts provide evidence of mechanized equipment in use.
- Insulators, electrical hardware, generator pads, utility poles, or other evidence of electrification.
- Garages or barns with poured concrete slab floors and access ramps used for storing mechanized equipment.

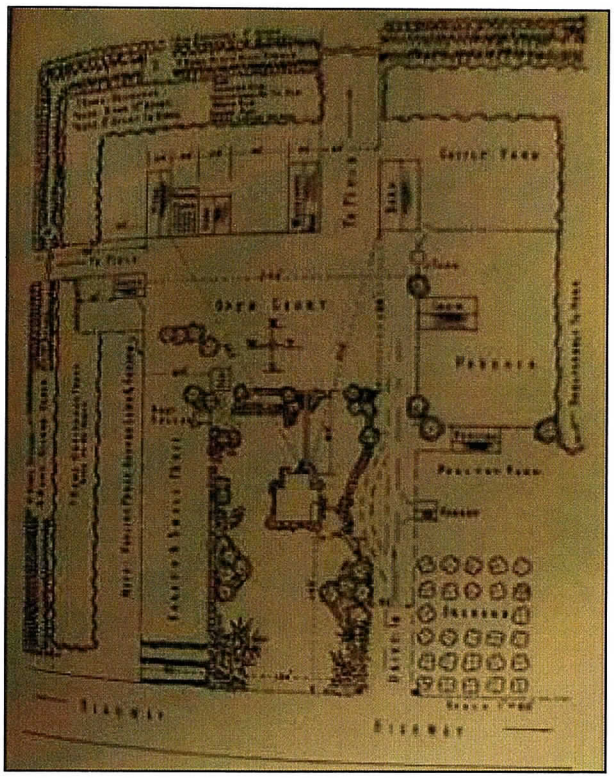
Sources:

South Dakota State College Extension Service (1937) *Arranging the Buildings on a Farmstead.* South Dakota State College Extension Service, Bulletin 363.

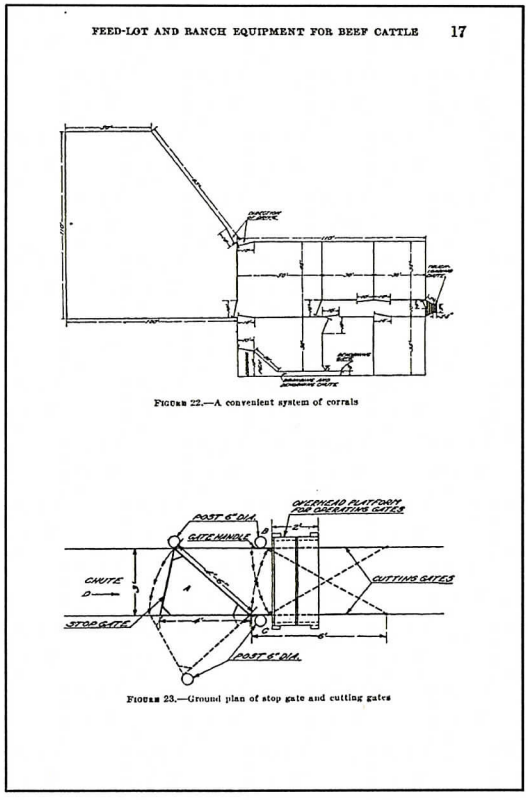
Ekblaw, K. J. T. (1914) *Farm Structures*. Fredonia Books, The Netherlands.

Seymour, E. L. D (ed.) (1919) *Farm Implements and Construction*. Fredonia Books, the Netherlands.

Smith, Mark, and James Boyle (2003) Analyzing Farm Layout and Farmstead Architecture. *Northeast Historical Archaeology* 32(1).



The Ideal Farm Layout. SDSC Extension Service (1937) Bulletin 363.



FEED-LOT AND RANCH EQUIPMENT FOR BEEF CATTLE 17

FIGURE 22.—A convenient system of corrals

FIGURE 23.—Ground plan of stop gate and cutting gates

Corral layout, 1929.

Native American Agricultural Housing

The federal government implemented various programs to encourage the use of Euro-American style agricultural on Native American reservations in South Dakota. In the early years, these programs were less organized, relying on local agencies to support home construction. Native Americans were not always receptive to adopting western style housing and in some cases families lived in traditional structures using their agency built homes for storage.

Beginning in the 1930s, booklets of floor plans and property plans for "appropriate" buildings were made available to Native Americans. In 1926, the Office of Indian Affairs developed a series of plans for local contractors to use in the construction of Native American housing. These plans were updated in 1930 to include several designs and a variety of outbuildings and infrastructure such as water and sewer systems. Although designs were in place, specific funding was not made available to build these homes until the Great Depression when New Deal Programs began to work on construction projects within Native American communities. Following World War II, additional funding was made available through state and federal program, in particular the Public Housing Administration, to improve the living conditions of reservation communities. Funding for house construction was also provided to Native American families relocated as a result of the Pick-Sloan Missouri River Basin Development Plan.

Descriptive Features:

- Sites built prior to New Deal programs will be almost indistinguishable from other rural farm sites, except for potential similarities between house designs within a community, typically the result of similar home builders or designs being used.
- Buildings constructed through New Deal programs, or after World War II followed the designs established by the Bureau of Indian Affairs, and may include additional infrastructure such as septic tanks, sewer lines, water lines, or cisterns.
- *Associated Time Periods*: Drought and Depression of the 1890s (1887–1902); Open Range and Indian Cattle Leases (1887–1911); Growth and Expansion of Farming (1900–1920); World War II and Immediate Post-World War II Era (1941–1953).
- *Geographic Locations*: Native American reservations and surrounding communities.

Variations:

- Early designs for allotment housing (pre-1926) followed designs determined by local agency offices, agricultural schools, or local carpenters.
- Later designs (post-1926) followed a series of floor plans developed by the Office of Indian Affairs.
    - All wood-framed buildings
    - Five designs initially presented
    - Included bath, toilet, water, and sewer systems
    - Also prepared designs for outbuildings including poultry houses, outhouses and at least 12 different barn floor plans.
- New plans developed in 1930 presented different designs including wood framed, brick veneer, tile and brick veneer, log house, and adobe construction.

- New plans also included details such as fireplaces, basements, concrete walks, colonnades, ironing boards, kitchen and medicine cabinets, French doors and side lights.
- Expanded designs for outbuildings and infrastructure.

Archaeological Considerations:

- Foundations and collapsed buildings may still reflect some of the designs established by the Office of Indian Affairs.
- Evidence of traditional native built homes and structures contemporaneous with houses and outbuildings of Euro-American design.

Sources:

Dennis, Michelle (1998) *Federal Relief Construction in South Dakota, 1929-1941*. Prepared for the South Dakota State Historic Preservation Office.

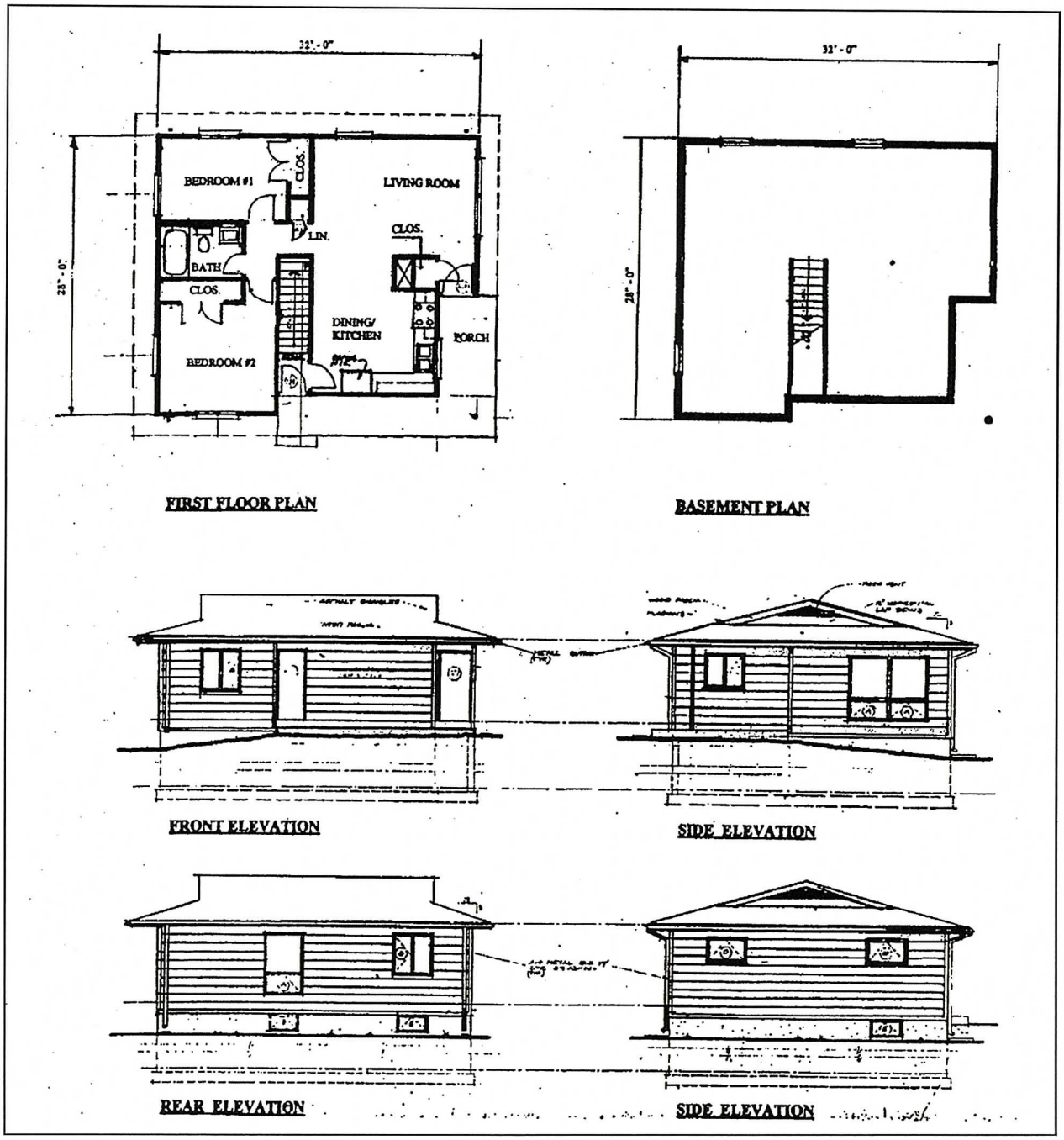
U.S. West Research, Inc. (2000) *Indian Housing in South Dakota: 1946-1975*. Prepared for the South Dakota State Preservation Office.



Barn of Native American Tenant Farmer, 1939, McIntosh County, Oklahoma. Photograph by Lee Russell. Library of Congress LC-USF34- 033558-D.



Native American Cabin and Stock Shelter, 1940. Todd County, South Dakota. Photograph by John Vachon, Library of Congress LC-USF34-061740-D.



Two Bedroom Low Cost Housing, c. 1960, Yankton Reservation (Adapted from *Indian Housing in South Dakota*, U.S. West Research, Inc. 2000).

The Electrified Farmstead

South Dakota was slow in developing rural electrification; in 1950, the state ranked 47th in the nation for grid power. However, many individual farms had home power plants that had been established during the previous four decades. This included gasoline-powered plants and windmills. South Dakota farmers also depended heavily on electric cooperatives.

Descriptive Features

- Different technologies were introduced at various times. The most progressive of farmers with the appropriate resources would have transitioned from one type to another, although the transition would rarely be seamless.
    - 1900: gasoline generated power plants
    - 1915: 32-volt battery set gasoline engine power plants
    - 1930s: 32-volt battery set windmill driven power plants
    - 1935: Rural Electrification Administration
    - 1940s: 1500- and 3000-watt gasoline power plants
    - 1940s: 110-volt DC wind-electric plant with battery
- By mid-twentieth century rural electrification was increasingly important to farm layout.
- Earliest uses included pumping water, as well as improvements in the farm kitchen and domestic related activities.
- May be seen on dairy farms prior to other types of farms for milking and for coolant systems for milk.
- *Associated Time Periods*: Second Dakota Boom (1902–1915); Depression of Agricultural Economy in South Dakota (1920–1941); Recovery, World War II, and the Immediate Post War Period (1941–1953).
- *Geographic Locations*: Rural areas state-wide, away from urban centers with established power grids.

Archaeological Considerations:

- Prior to centrally dispersed power grids, individual farms producing their own power would have required a power house, usually with the generating apparatus and banks of batteries for storage of power.
- Power houses would have had a prepared floor, most likely of cement, and shelves or raised areas to minimize flooding potential of equipment.
- The presence of ceramic or glass insulators, and implements such as electrical lights or machinery.
- Not all windmills supplied electrical power. Windmills that did were all metal and specially manufactured, not widely available until 1920s (see *Windmills*).

Sources:

Agricultural Engineering Department (1929) *Cost and Uses of Electricity on South Dakota Farms*. South Dakota State College Agricultural Experiment Station.

Delong, H. H. (1950) *Electric Light and Power Systems for Your Home*. South Dakota State College Agricultural Experiment Station, Bulletin 402.

South Dakota State College Extension Service (1937). *Arranging the Buildings on a Farmstead.* South Dakota State College Extension Service, Bulletin 363.



Battery storage for windmill generated electricity. Delong (1950).



Variety of porcelain insulators. Lag screw (upper left) and five varieties of electric fence insulators (center).



Ceramic tube insulators for carrying wiring through building joists and studs.

ETHNIC PATTERNING

Many Old World groups who immigrated to South Dakota brought with them ideal ways in which to manage their built environment. These included early immigrants settling along the eastern portion of the state and along the Missouri River, to the flood of immigrants who came during the late nineteenth and early twentieth centuries. Some immigrants came in large groups settling ethnically homogenous farming communities, while others settled on individual farms in mixed communities within ever expanding networks of homesteads and railroads.

Descriptive Features:

- Descriptive features vary based on the ethnic backgrounds of the settlers.

Variations:

- Finnish immigrants and Finnish-Americans were likely to construct a farmstead around a loose conception of a central courtyard. Finnish farmers also employed connecting barns built in different stages.
- Scandinavian homesteads sometimes had a sauna in addition to the typical outbuildings found on non-Scandinavian farms.
- German-Russian folk architecture is characterized as low roofed, rectangular plan, central chimney structures constructed of "indigenous materials;" early examples are of sod, rammed earth, and "batsa" bricks (puddle clay dried in the sun), while later examples are of commercially available milled lumber.
- German-Russian folk architecture often employs house-barns as a single, connected structure.
- Hutterites have historically formed cohesive and tight-knit social communities that are reflected in their construction paradigms. This includes close grouping of living quarters and farm buildings for all members of the community, as well as churches, schools, and other community areas.

Archaeological Considerations

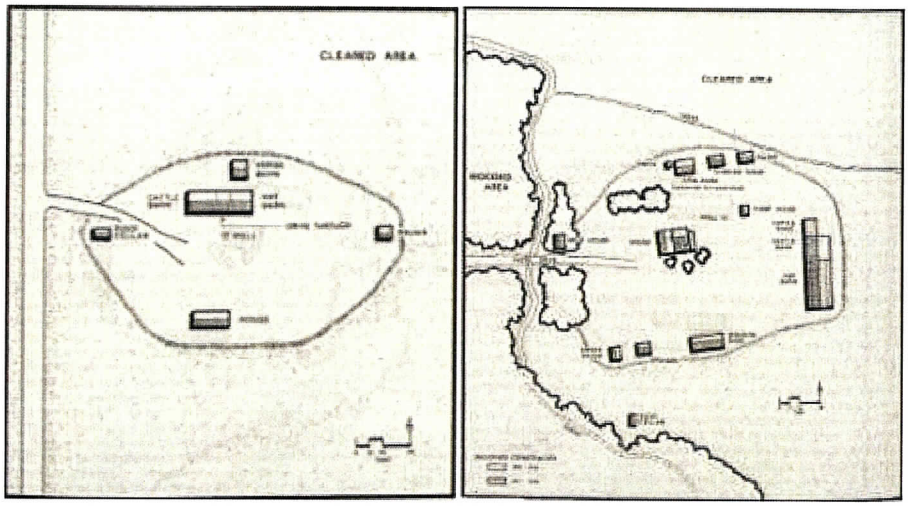
- Although difficult to identify on sites, artifacts with specific ethnic or religious origins can provide evidence of ethnic identity.
- Farm layouts and remnants of building materials such as batsa, scribbed logs, or specific types of notching for structural timbers may provide evidence of specific ethnicities.
- Historical documentation including homestead and census records provides some of the best evidence for the presence of ethnic groups.

Sources:

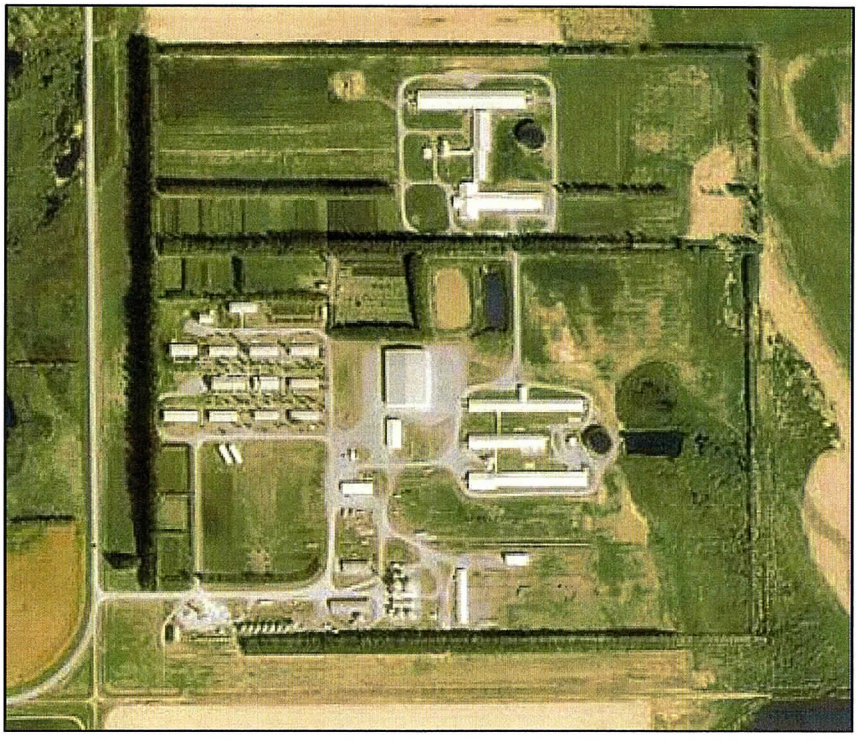
Alenan, Arnold, and William Tishler (1980) Finnish Farmstead Organization in Old and New World Settings. *Journal of Cultural Geography* 1(1):66–81.

Koop, Michael, and Stephen Ludwig (1984) *German-Russian Folk Architecture in Southeastern Dakota*. South Dakota State Historic Preservation Office.

Stewart, James (1979) "Historic Hutterite Colonies Thematic Resources" National Register of Historic Places Inventory–Nomination Form.



Models of Finnish farmstead arrangement. Alenan & Tishler (1980).



Aerial photo of South Dakota Hutterite Colony. Photo by Microsoft Terraserver, 1998. Colorized by Judd Spittler, 2002.

ETHNIC ARCHITECTURE

Czechs

Descriptive Features:

- Czech architecture in South Dakota was dominated primarily by single-story, gable-roofed buildings constructed of rubble-stone or dressed chalkrock, a local stone found along the Missouri River.
- Timber-framed buildings feature dove-tailed corners, and often clay or daub and straw chinking between logs or rough boards.
- Bohemian settlers did not incorporate Old World patterns of farm layout which were based on maximizing utility on limited acreages. Instead most employed a more organic organization that utilized the open landscape.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920)
- *Geographic Location*: Southeastern South Dakota.

Variations:

- While the single-pen building predominates in South Dakota, Czech architecture in the United States also featured 3-bay buildings which were either linear or L-shaped plans.
- Ell-additions were often added with shed-roofs.
- Long, narrow, shed-type barns common in South Dakota.

Sources:

Rau, John E. (1987) "Czech Folk Architecture of Southeastern South Dakota," National Register of Historic Places Inventory–Nomination Form.

Johansen, John (1937) *Immigrant Settlements and Social Organization in South Dakota*. South Dakota State University Agricultural Experiment Station, Bulletin 313.

Upton, Dell (1986) *America's Architectural Roots: Ethnic Groups that Built America*. Washington D.C.: Preservation Press.



Joseph Noll Chalkrock Barn, Bon Homme County, South Dakota. Photograph by South Dakota National Register of Historic Places.



Martin Honner Chalkrock House, Bonne Homme County, South Dakota. Photograph by South Dakota National Register of Historic Places.

German-Russians

Descriptive Features:

- German-Russian buildings are most easily characterized by the use of puddled clay, rammed earth, or "batsa" (adobe-like baked earth brick) construction methods. These single-story, rectangular, gable-roofed houses usually were built with a loft in the gable and have distinct plans of two, three, or four bays with internal wall construction that further separated rooms.
- Central to traditional house plans were large centralized furnaces/bake-ovens. A hole in the upper portions of the chimney served as a place to smoke meat.
- Wall corners and window wells were rounded.
- According to Koop and Ludwig (1984), "There seems to have been little intentional arrangement of buildings into a courtyard plan" although in South Dakota many outbuildings have been removed so this bears further, probably archaeological, study.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Geographic Location*: Bonn Homme, Yankton, Turner, Douglas, McPherson, Campbell, Edmunds, Walworth, Corson, Dewey, Tripp, and Gregory Counties.

Variations:

- Some houses have attached barns.
- Foundations were often laid at grade.
- Outbuildings were often rubble masonry, and often had vaulted roofs.

Sources:

Rau, John E. (1987) "Czech Folk Architecture of Southeastern South Dakota," National Register of Historic Places Inventory–Nomination Form.

Johansen, John (1937) *Immigrant Settlements and Social Organization in South Dakota.* SDSU Agricultural Experiment Station, Bulletin 313.

Koop, Michael, and Stephen Ludwig (1984) *German-Russian Folk Architecture in Southeastern Dakota.* South Dakota State Historic Preservation Office.

Upton, Dell (1986) *America's Architectural Roots: Ethnic Groups that Built America.* Washington D.C.: Preservation Press.



German-Russian settlers making batsa bricks, ca. 1900. North Dakota. (http://www.ndstudies.org/articles/germans_from_russia_now_second_largest_immigrant_group. Accessed March 15, 2013)

Finns

Descriptive Features:

- Finnish buildings are most easily characterized by the log construction methods. These single-story, rectangular, gable-roofed houses usually were built with double-planked logs laid horizontally with vertical notches creating a tight fit for the logs.
- Roofing material was often birch bark overlaid with wooden poles notched at the roof line and laid vertically on the roof.
- A significant feature of Finnish and Finnish-American farmsteads is the sauna. Also constructed of hewn logs, it was often built with green wood to create an environment for maximum heat retention. These single-story buildings were often built on dry field stone foundations, were chimney-less, and had a large hearth or stove on the interior.
- Finnish farmyards were laid out according to plans around a central courtyard, or in an L-shape.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy in South Dakota (1920–1941).
- *Geographic Location*: Brown, Butte, Harding, and Lawrence Counties.

Variations:

- Finns also used scribing of logs as an additional and distinctive construction method.

Sources:

Torma, Carolyn (1984) "The Architecture of Finnish Settlement in South Dakota," National Register of Historic Places Inventory–Nomination Form.

Johansen, John (1937) *Immigrant Settlements and Social Organization in South Dakota.* SDSU Agricultural Experiment Station, Bulletin 313.

Upton, Dell (1986) *America's Architectural Roots: Ethnic Groups that Built America.* Washington D.C.: Preservation Press.



Hand scribed logs, detail.



Finnish-American Cabin in Long Valley, Idaho. Photographer and date unknown, National Park Service. http://www.oercommons.org/courses/log-cabins-in-america-the-finnish-experience/view Accessed March 12, 2013.

Swedes

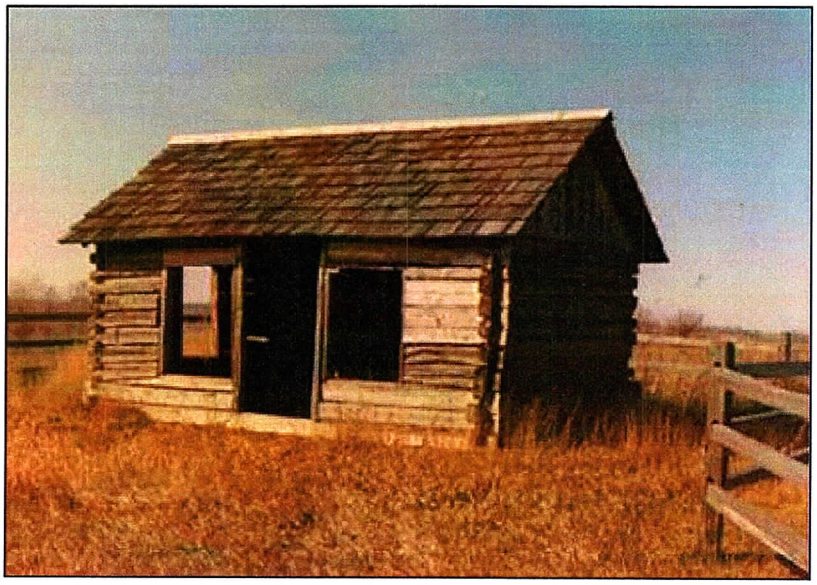
Descriptive Features:

- Swedish architecture could best be characterized by symmetry.
- Early Swedish buildings were often single-room, one-story log cabins joined by traditional corner timbering. The size of the house was dictated by the length of the logs, which retained their rough, circular shape.
- Swedish entrances often had protruding, enclosed porches.
- Later forms retained symmetry, but were T- or L-shaped houses using American materials. These houses became increasingly difficult to distinguish from the other Euro-American houses.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy in South Dakota (1920–1941).
- *Geographic Location*: State-wide.

Sources:

Johansen, John (1937) *Immigrant Settlements and Social Organization in South Dakota*. SDSU Agricultural Experiment Station, Bulletin 313.

Upton, Dell (1986) *America's Architectural Roots: Ethnic Groups that Built America*. Washington D.C.: Preservation Press.



Reverend Brown's Cabin, Clay County, South Dakota. Photograph by Clay County Historical Society.

BARNS

Arguably, the single most important building on the farm was the barn. Barns were used for a number of activities, including animal husbandry; procurement of the raw materials from dairy, poultry, or other livestock; and storing equipment and feed. As time went on, particularly as progressive notions of efficiency and specialization came into practice, barns became more specialized, designed for a specific task or type of livestock. However, barns were often converted or adopted as is for the changing needs of the farm without being rebuilt or renovated.

Barns were also built according to cultural preferences and tradition. By the twentieth century, farmers were increasingly acquiring both plans and kits for barns from various mail-order catalogs such as *Sears and Roebuck.*

As lumber became increasingly expensive, barn construction transitioned from timber-framed with mortise and tenon joints to light truss framing.



Detail of light truss framing in twentieth century gambrel roofed barn. Photograph by Sean Doyle, 2012.

Previously Identified Types:

- Bank Barns
- Catalog Barns
- Dairy Barns
- English/Three Bay
- Ethnic
- Light Truss
- Gothic Arch
- Loafing
- Midwest/Transverse Frame
- Pole Barn
- Quonset
- Round/Polygonal Barn

NEW UPDATED BARN SUBTYPES

Swine Barn

Descriptive Features:

- Swine barns are built with regards to light, ventilation, cleanliness, and warmth for the hogs. A swine barn will have several pens and rooms for feed and other related activities around a central drive or alley, with the possibility that each of the individual pens will also have exits both internally and externally. The roofs are often half-monitor for light and ventilation. Hog barns were usually constructed with cement floors with drains, and located on higher ground to avoid flooding.
- *Associated Time Periods:* Drought and Depression of the 1890s (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide.

Variations:

- Portable hog pens were sometimes used for smaller herds.
- Barns originally built for another purpose may have been modified for pigs.

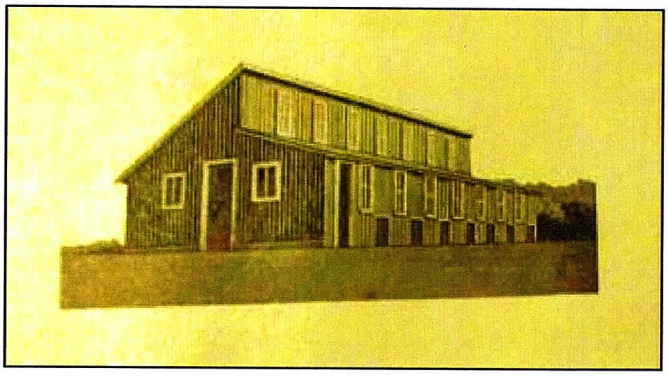
Archaeological Considerations:

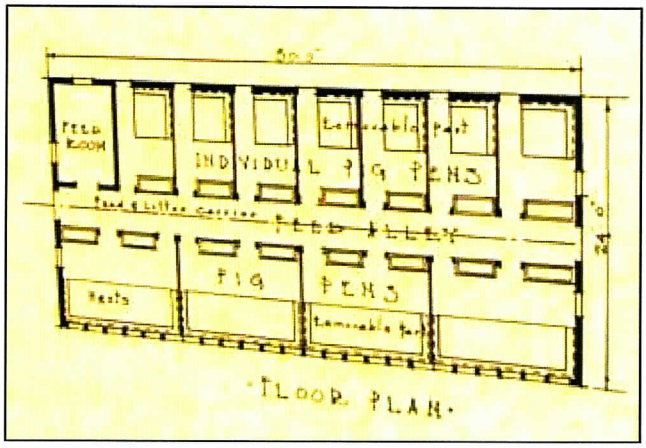
- The primary foot print of a hog barn might resemble a transverse barn. However, a hog barn will have more pens and stalls on average than a transverse barn. Due to the large amounts of waste generated by hogs, swine barns are usually the farthest outbuilding from a house.

Sources:

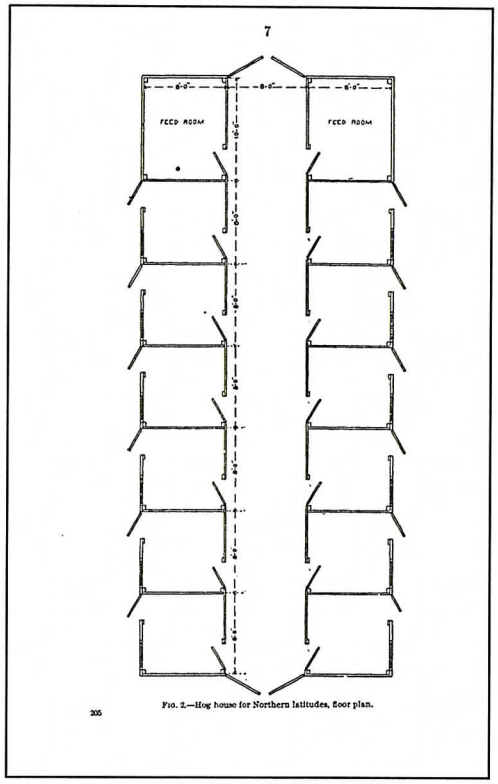
Rommel, George (1904) *Pig Management*. United States Department of Agriculture, Farmer's Bulletin No. 205.

Seymore, E. L. D. (1919) *Farm Implements and Construction*. Fredonial Books, Amsterdam, The Netherlands.





Hog Barn Plans. South Dakota State University Agricultural Museum.



Swine House for Northern Latitutes, Rommel (1904).

Sheep Barn

Descriptive Features:

- May be one or two stories; the second story often used as a hay loft.
- Characterized by large, open spaces (no stalls), good ventilation.
- Ideal sheep barns had a "grain alley" for feeding during inclement weather.
- Barn furniture such as hay and grain racks may be present.
- *Associated Time Periods*: Drought and Depression of the 1890s (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: Western South Dakota, short-grass lands.

Variations:

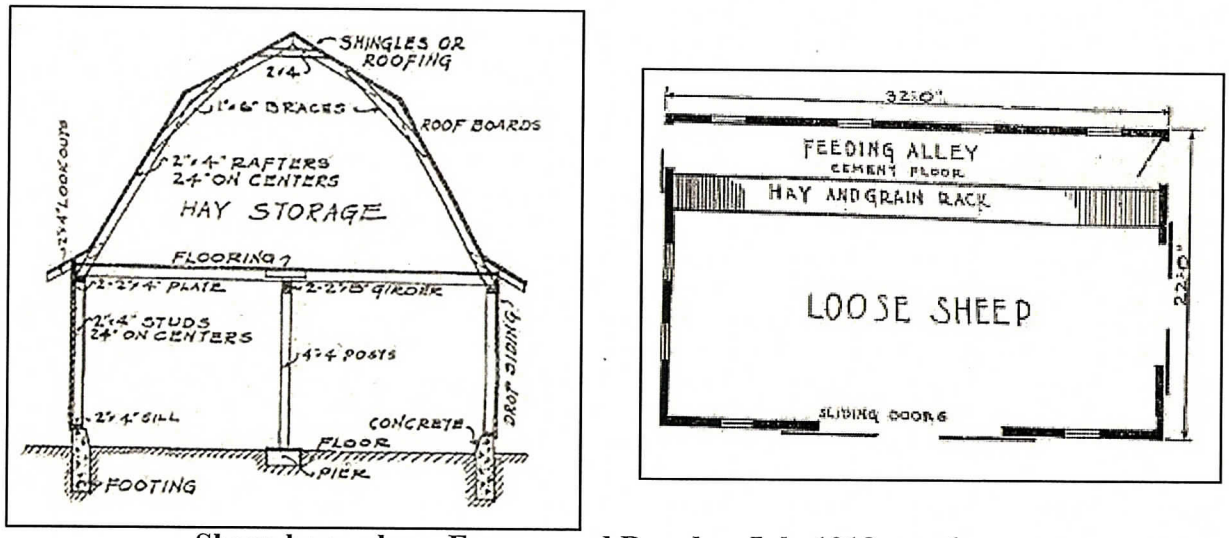
- Roof styles varied across sheep barns and may have been determined by cultural preferences.

Archaeological Considerations:

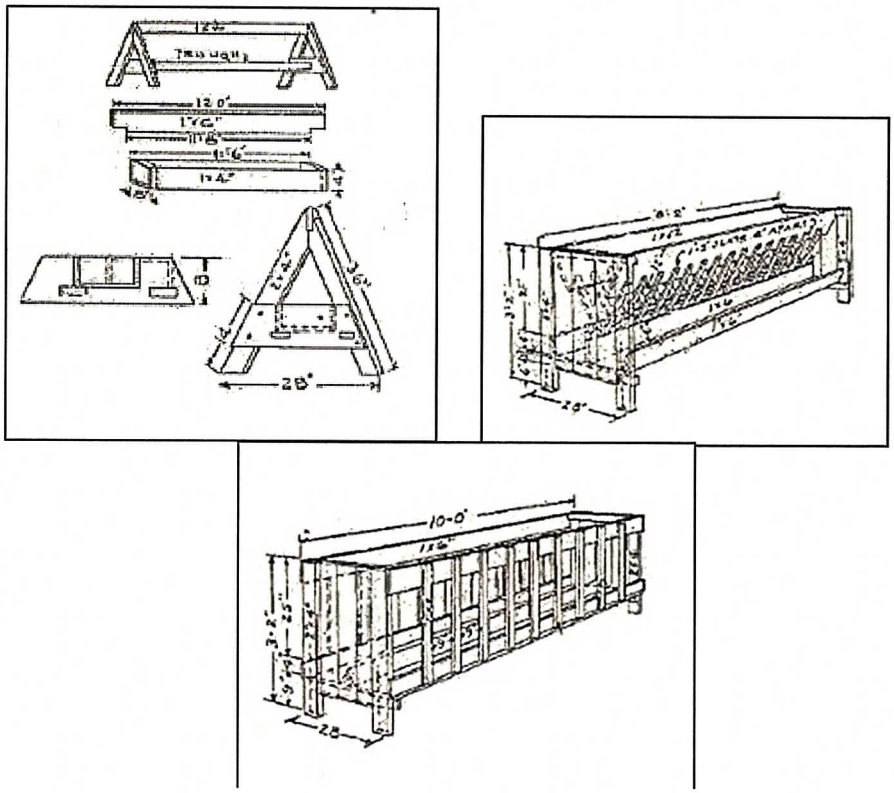
- The lack of stalls or interior bays/rooms may help distinguish a sheep barn from other types of livestock barns.

Sources:

Farmer and Breeder (1918) *Inexpensive Buildings for Sheep*. July 6.



Sheep barn plans. Farmer and Breeder, July 1918, pg. 6.



Examples of hay and grain troughs for sheep. Farmer and Breeder, July 1918, pg. 6.

Bank Barn

Descriptive Features:

- Bank barns are barns of various sorts that were built into a hill side or had a human-made bank constructed. These barns were usually two-story or higher, with the bank allowing for two separate floors to be accessed from the ground.
- *Associated Time Periods:* Date to all periods of Euro-American settlement, but occurred most frequently in Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations:* Any, with an emphasis on bridge barns (see below) with ethnically Scandinavian groups.
- *Geographic Location*: Most common in eastern portion of the state.

Variations:

- Could be used with a variety of styles of barns.
- Bridge barns were sometimes associated with Scandinavian groups. These barns had a raised foundation equal to the height of the first floor, with the door of the second floor connected to a human-made hill via a bridge. This provided ground level access to two floors of the barn. Norwegians in particular often enclosed the bridge.

Archaeological Considerations:

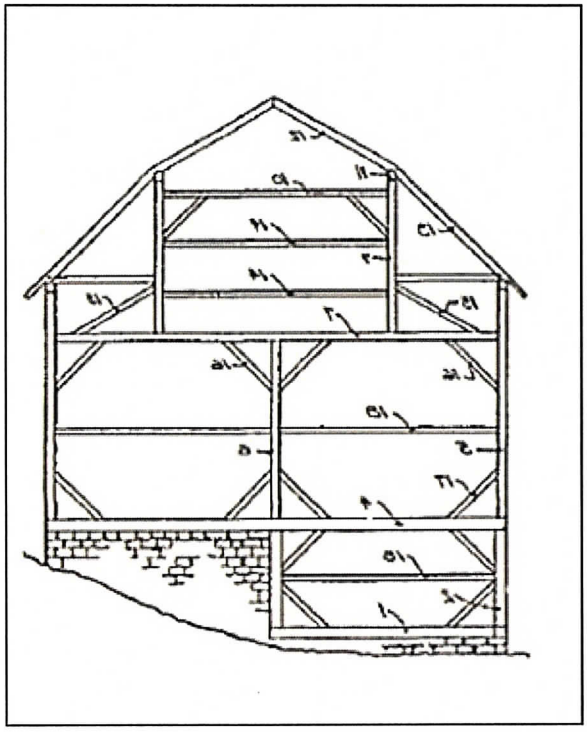
- Bank barns may be archaeological distinguished by the presence of a raised foundation or rock wall against a prepared bank.
- Evidence of a loading ramp, or road on top of the natural or prepared slope for loading and unloading the upper story of the barn.
- Bank barn foundations sometimes deteriorate at a faster rate than other types of barns due to the heaving of the bank soils in the freeze/thaw cycle.

Sources:

Noble, Allen, and Richard Cleek (2006) *The Old Barn Book: A Field Guide to North American Barns and Other Farm Structures*. New Brunswick: Rutgers University.



Norwegian-American bridge barn Winnishiek County, Iowa. Photograph by Iowa Barn Foundation. http://www.iowabarnfoundation.org/netour_picnic.htm.



Timber-framed bank barn, sectional view. Seymour (2004).

Chicken Coops and Yards

Chickens are an easy animal to keep in any building as long as the fowl are protected from cross-breeze while providing for adequate ventilation as well as sufficient light for regular egg production. Specific designs for poultry houses maximized light and ventilation with minimal materials, but defunct outbuildings (claim shacks, etc.) could also be used for the purpose.

Descriptive Features:

- Stock building generally located closest to house.
- Proper light and ventilation important for raising poultry.
    - Windows hinged on the top or the side of the frame to provide light and help with ventilation.
- Floors could be made of earth, wood, or concrete.
- Features may include a dust bath, "creeps" for the birds to enter and exit, interior perches and nesting or brooder boxes. Sometimes a brooder stove for heat.
- *Associated Time Periods:* South Dakota Poultry House will be found in contexts dating to Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1941); and Recovery, World War II and Immediate Post-World War II Period (1941–1953). However, chicken coops of various styles will be found from all eras of Euro-American settlement
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide.

Variations:

- The South Dakota poultry house is built in multiples of 16 by 16 feet.
    - Concrete foundation and floor, although rammed-earth floors were also utilized.
    - Combination roof with shutter ventilator in gable.
    - Set east/west with long way facing south for light.
- Open-front varieties featured a large opening on the south side of the building covered only by a wire mesh or a cloth curtain. Open-front houses provided good ventilation with low maintenance, but provided less protection against bad weather.
- SDSC extension service (1930) suggested ways that old buildings could be converted to coops; all had the interior roosting alcove.

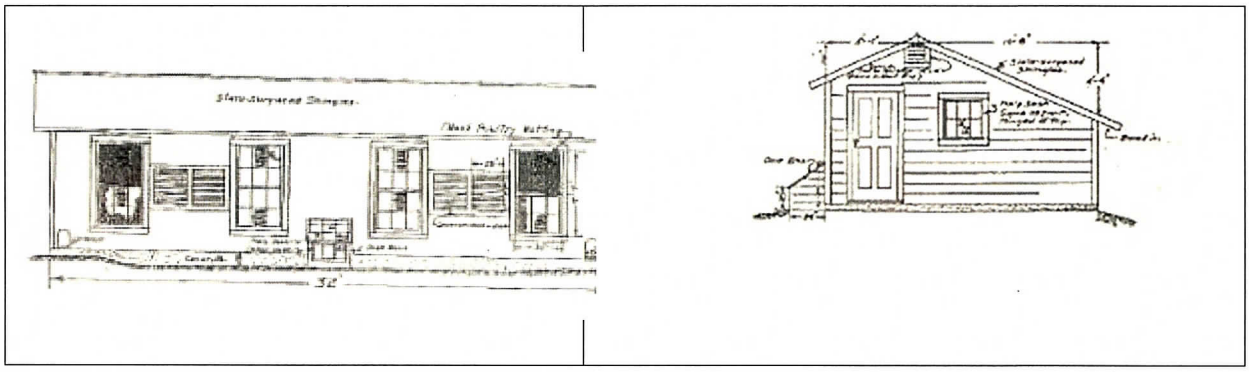
Archaeological Considerations:

- Chicken coops may be nearly indistinguishable from other small out buildings. An important consideration are remnants of furniture such as nesting and brooding boxes, small doors for egg collection, and feeders and waterers.

Sources:

Patty, Ralph (1930) *The South Dakota Poultry House*. South Dakota State College Extension Service. Brookings, South Dakota.

Seymore, E. L. D. (1919) *Farm Implements and Construction*. Fredonial Books, Amsterdam, The Netherlands.



South Dakota poultry house. Patty (1930).



Brooder boxes, South Dakota. Photograph by Kathleen Corbett 2012.

GRAIN ELEVATOR

Farmstead Granary

Descriptive Features:

- A 1 ½ to 2-story structure for the storage of grain, built around a central driveway for efficient loading/unloading with grain storage on either side. Grain elevators have conveyors to move the grain vertically.
- *Associated Time Periods:* Great Dakota Boom (1878–1887); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy in South Dakota (1920–1941).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide.

Variations:

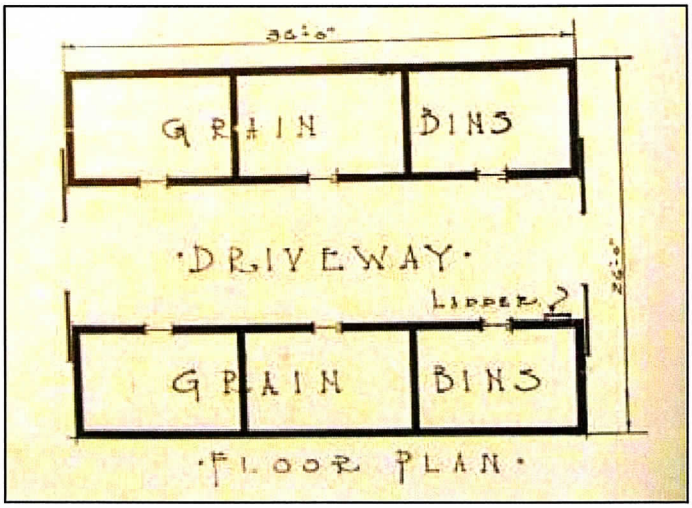
- Granaries and grain bins could be built in a variety of styles to suit the needs of the farmer.

Archaeological Considerations:

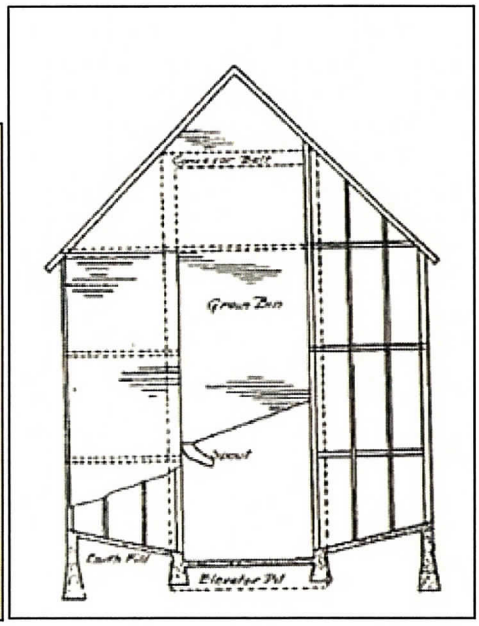
- Grain elevators on private farms were often constructed with smooth, sloped floors of concrete.
- Foundations will be especially robust compared to other types of farm buildings.

Sources:

Ekblaw, K. J. T (2004 [1914]) *Farm Structures*. Fredonial Books, Amsterdam, The Netherlands.



Grain elevator plans. Building Service Catalog, SDSU Agricultural Museum Archives.



Elevation view of granary. Ekblaw (2004) Farm Structures. Fredonia Books.



FA-020-00009, granary, Fall River County, South Dakota. Photography by SWCA, 2008.

Haystackers

Descriptive Features:

- Haystackers are used to save labor by making hay stacking and baling more efficient.
- Often built on a tilting platform for the loading of farm vehicles.

Variations:

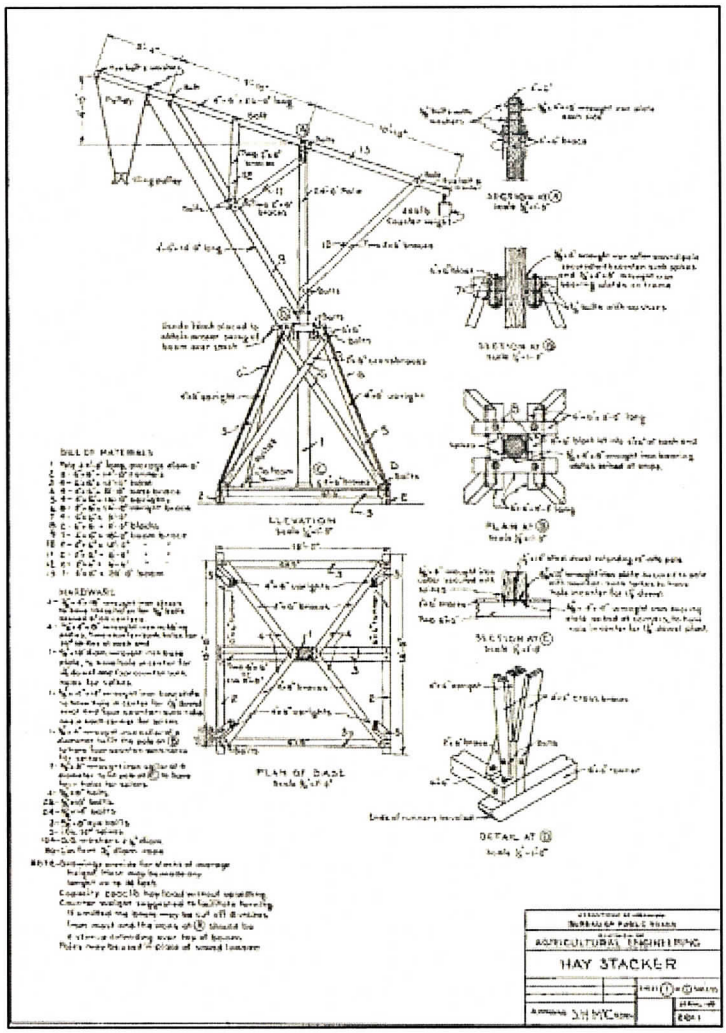
- Haystackers have changed substantially over time.
- Can be found in isolated fields or associated with barns or hay-storage structures.
- Both fixed and mobile haystackers were constructed.

Archaeological Considerations:

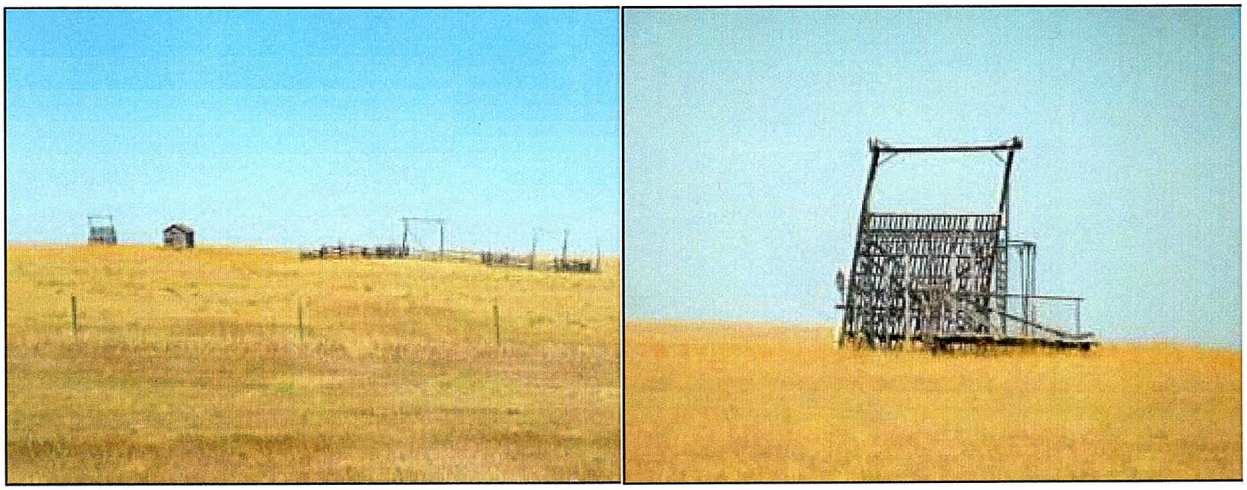
- Fixed stay haystackers located in fields may be associated with drying pens, or barn foundations.

Sources:

Reynoldson, Leroy (1938) *Haystackers and Their Use*. United States Department of Agriculture Farmers' Bulletin Number 1615.



1925 Haystacker plans. North Dakota State University Digital Archives- USDA Building Plans.



Haystacker ca. 1970s, South Dakota. Photograph by Kathleen Corbett, 2012.

Irrigation

Descriptive Features:

- South Dakota follows the Doctrine of Prior Appropriation which allows people to appropriate and transport water from where it is available to where it is needed, following a priority structure of "first in time, first in right." This requires a system of establishing and documenting water appropriation, which was managed at the state level, currently by the South Dakota Department of Environment and Natural Resources.
- A system of wells, reservoirs, and ditches using gravity and grade for the irrigating of crops and livestock. Irrigation systems were developed on the basis of the water sources available, slope of land, types of crops, soil characteristics, labor requirements of establishing irrigation, and cultivation requirements after irrigation.
- Types of irrigation methods included free flooding, contour check flooding, rectangular check flooding, depressed beds and raised ditches, ridge irrigation, furrow flooding and raised beds, and sub-irrigation.
- Irrigation ditches will have distinct U- or V-shaped cross sections, often with a berm on one or both sides.
- Irrigation ditches commonly follow existing contours to maintain a slow but steady flow that allowed the movement of water with little damage from erosion.
- Ditches and canals used for irrigation typically associated with one or more field drains used to divert water from a main ditch to the fields for irrigation.
- *Associated Time Periods*: Drought and Depression of the 1880s (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); Recovery, World War II and the Immediate Post-World War II Period (1936–1953).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide, but played a more important role in the settlement in the arid regions west of the Missouri River.

Variations:

- There were various methods of irrigation depending on water sources
  - Stream diversion
  - Subsurface flow
  - Bogholes and springs
  - Horizontal wells
  - Vertical wells
  - Storm water storage
- Irrigation apparatus
  - Head gates (stream diversion)
  - V-board flumes
  - Cloth dams
  - Metal dams or "tappoons"
  - Wooden board dams
  - Submerged dams (subsurface flow regulation associated with dry creek beds)

Archaeological Considerations:

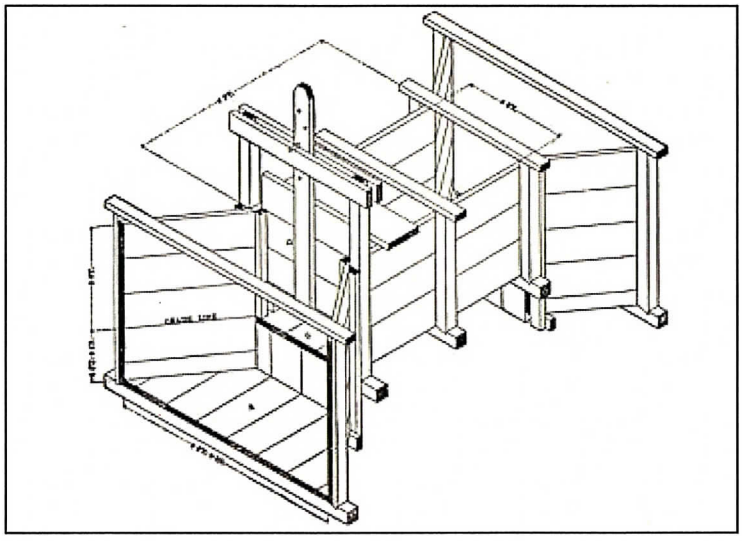
- Identifying irrigation features will require knowledge of water resources in the locality.
- Irrigation ditches required a slow and steady grade and typically follow along existing contours.
- Post-Dust Bowl era irrigation techniques shifted to ones that minimized erosion, as well as large-scale water-control projects such as contour terracing, and large-scale dam projects like Oahe Dam and others along the Missouri River.

Sources:

Shepard, James (1897) *Irrigation in South Dakota*. United States Experiment Station, South Dakota. Bulletin 52.

Wickson, E. J. (1909) *Irrigation in Field and Garden*. United States Department of Agriculture, Farmer's Bulletin No. 138.

South Dakota Department of Environment and Natural Resources (2013) Water Rights Program. Available online at http://denr.sd.gov/des/wr/wr.aspx.



Head Gate Plans. Wickson (1909).

Livestock Dip

Descriptive Features:

- A deep, narrow reservoir for the delousing of livestock. Often partially built underground, with a ramp or low platform for easy entry by the animal, as well as an exit ramp on the opposite side of the chute.
- A variety of parasiticides were used, including coal-tar and crude oil at the turn of the twentieth century.
- *Associated Time Periods*: Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); Recovery, World War II and the Immediate Post-World War II Period (1936–1953).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide, more common western portion of state.

Variations:

- The cage vat, which employed a cage where the animal was put then lowered into the pool of solution. This was favorable on smaller farms and ranches with fewer animals that needed to be treated. The "swimming" vat or dip, described above, was more favorable on larger operations.
- Portable vats were sometimes used, particularly for smaller animals such as sheep.
- Historic photographs indicate a large percentage of cattle dips were roofed.

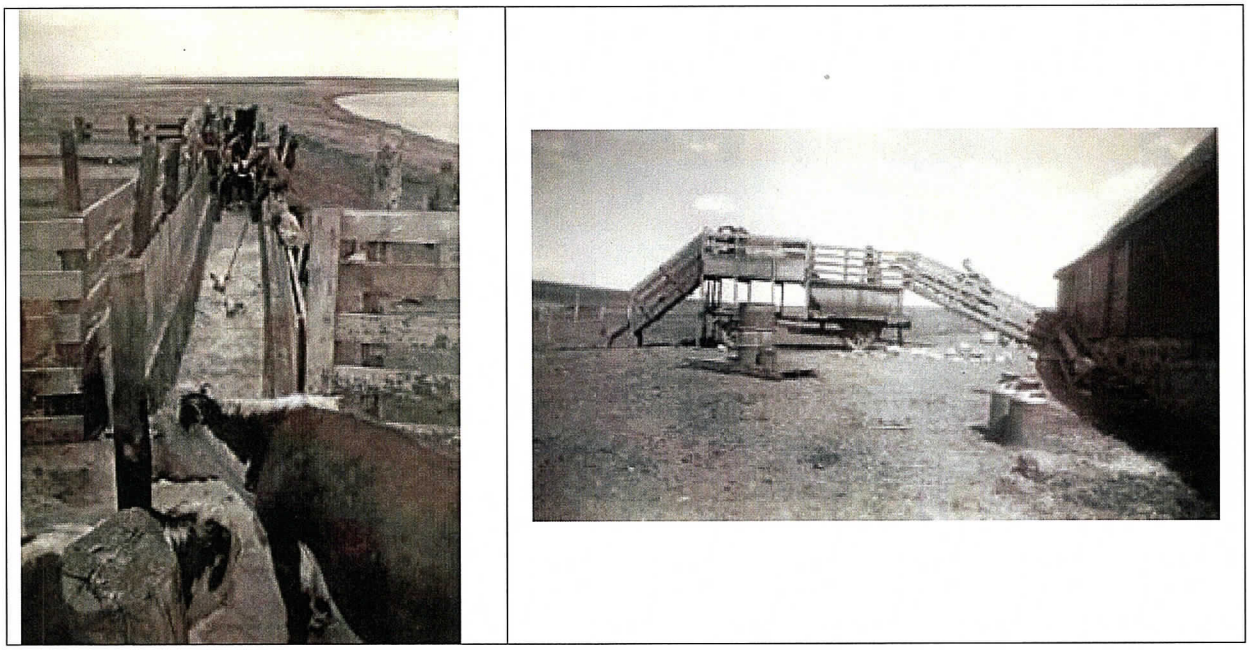
Archaeological Considerations:

- Cattle dips may be distinguished from irrigation structures by isolation from water sources, and relatively rapidly increasing depth of structure over a short distance.
- Extant posts or post molds indicating a roofed structure.
- Extant posts or post molds indicating fencing used as cattle chute and/or corral associated with the dip.
- Possible residues in the cattle dip from solutions used.

Sources:

Barnes, C. L. (1907) *Dipping Livestock.* Kansas State Agricultural College Experiment Station, Bulletin 154.

Black, W. H. (1929) *Feed-Lot and Ranch Equipment for Beef Cattle.* United States Department of Agriculture Farmers' Bulletin Number 1584.



Cattle delousing (left) and a portable sheep dip (right). Kidder County Cooperative Extension, North Dakota.

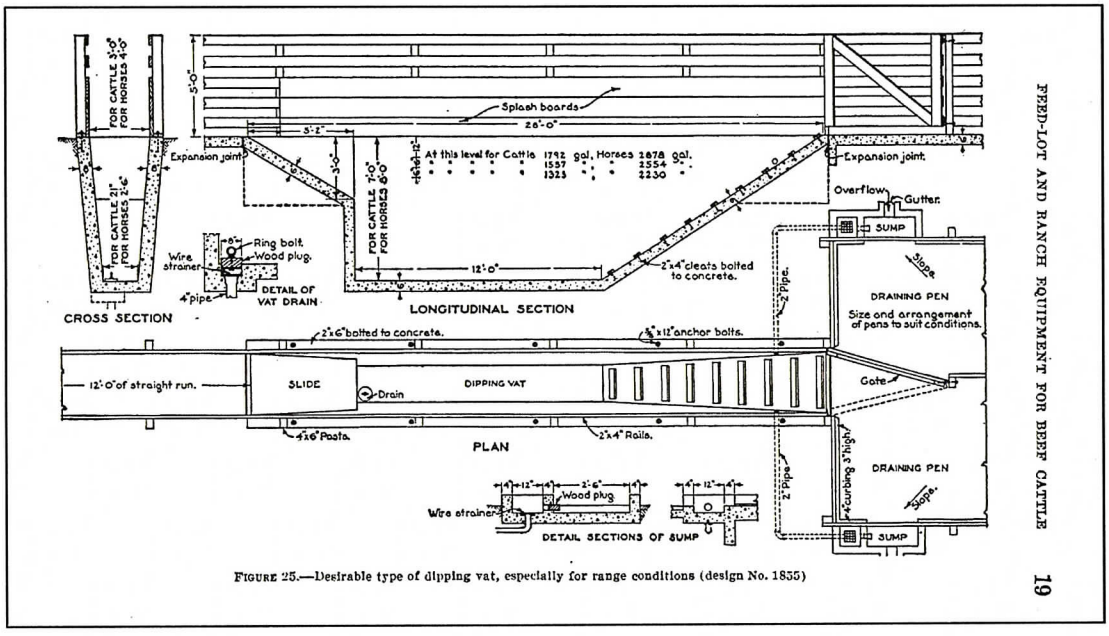


FIGURE 25.—Desirable type of dipping vat, especially for range conditions (design No. 1835)

Desirable type of dipping vat, especially for range conditions.

Milk House

The separation of milk houses from dairy barns occurred as early as the 1910s, but was practiced in earnest with the passing of state and federal legislation in the 1920s. A milk house was usually a small structure attached to the main dairy barn where milk and other dairy products could be stored in sanitary conditions.

Descriptive Features:

- Size depends on the size of the operation, but typically is small compared to other farm buildings.
- Usually included a washroom/washing vats/large sink, a separator, a storage room, and a water/cooling tank.
- After the adoption of electricity, milk and dairy products would be cooled with electrical appliances.
- *Associated Time Periods*: Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); and Recovery, World War II and the Post-World War II Era (1936–1953).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide.

Variations:

- Could be attached to a barn or a completely separate building. In the case of a separate building would have been relatively close to the barn where cows were milked/kept.
- Built in a variety of architectural styles in keeping with the overall characteristics of the specific farm.

Archaeological Considerations:

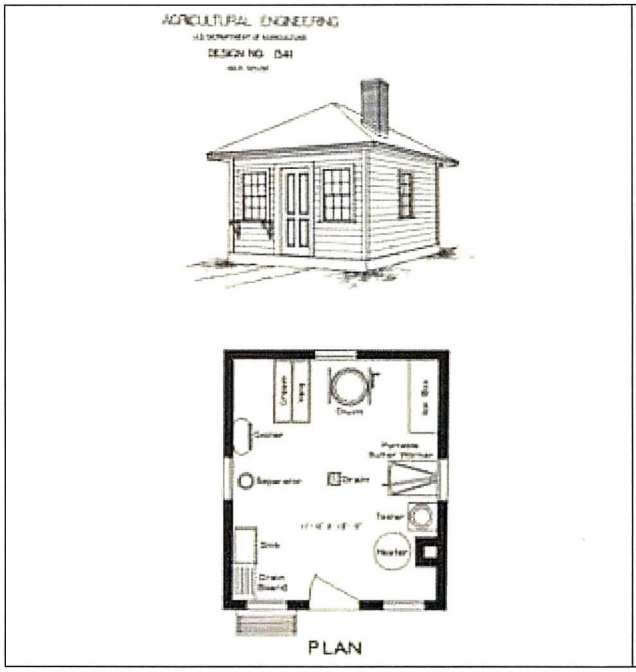
- Because of the necessity to keep dairy products cool, the buildings had thick walls and water-tank features.
- Features that may be visible on foundation remains include anchor bolts for mounting a boiler and a drain for waste material removal.

Sources:

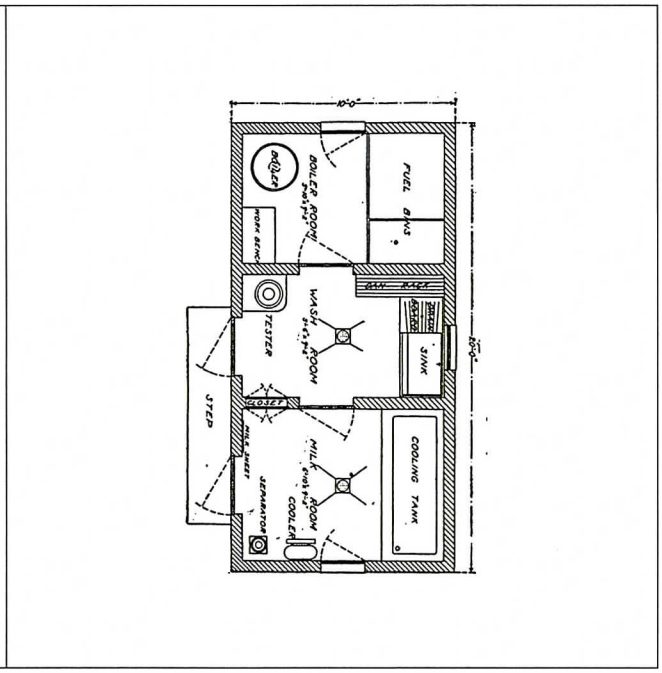
Kelly, Ernest, and Karl Parks (1915) *A Plan for a Small Dairy House*. United States Department of Agriculture Farmer's Bulletin Number 689.

Kelly, Ernest, Karl Parks, and Ralph Hortis (1938) *Farm Dairy Houses*. United States Department of Agriculture Farmer's Bulletin Number 1214.

Seymore, E. L. D. (1919) *Farm Implements and Construction*. Fredonial Books, Amsterdam, The Netherlands.



Milk house suitable for small dairies. Kelly et al (1938).



Plan for a small dairy building. Kelly and Parks (1915).

Silos

Descriptive Features:

- In the most generic sense, silos are a vertical, cylindrical structure for the storage of various grains. Next to the barn, silos are often the most iconic and visible aspects of a farm. Silos can be constructed of a variety of materials including concrete, wooden staves, metal sheeting, and hollow tile and may be built in a variety of styles depending on the needs of the farm.
- *Associated Time Periods:* Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.
- *Geographic Region*: State-wide.

Variations:

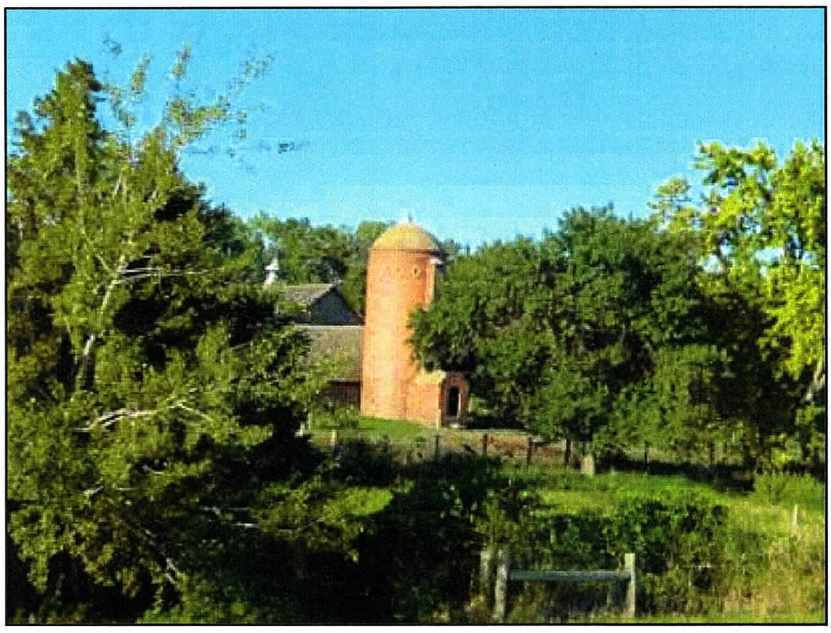
- In a round barn, the silo forms the central point of the barn and may not be immediately visible from the outside in an extant building.
- Curved concrete blocks were introduced in 1900.
- Concrete or cement staves for use in silo construction were invented in 1905.
- Clay tile was introduced in 1908.
- Metal silos were being advertised by 1910.
- Glass-lined metal silos were introduced in 1947. Can be readily identified by the iconic enameled dark blue exterior. Enameled light blue and green metal silos with glass-fused interiors were also produced.

Archaeological Considerations:

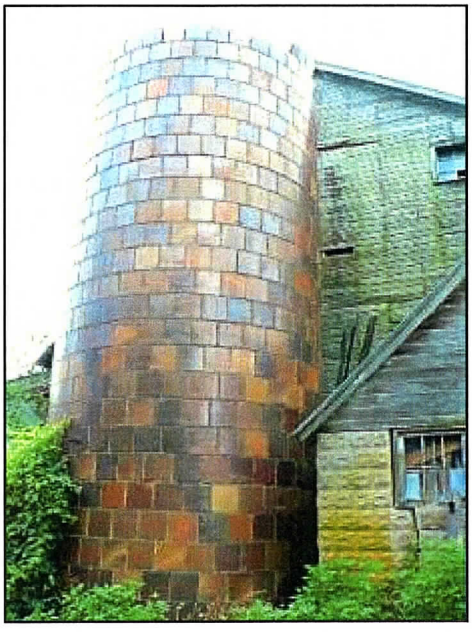
- Silos are rarely built deep below ground, or more than 4 to 6 feet, so as to avoid lifting grain.
- Silos need a significant foundation to withstand the pressure of the silage, generally measuring 10 to 12 inches thick, and often extending above grade.
- Brick silos were double-walled with a 2-inch insulating space between the walls.

Sources:

Rabild, Helmer, and K. E. Parks (1917) *Homemade Silos*. United States Department of Agriculture, Farmers' Bulletin Number 855.



Brick and cement silo, South Dakota. Photograph by Kathleen Corbett, 2012.



Hollow-tile silo. Photograph by Bill Kibbel, 2004.

Pit Silos

Descriptive Features:

- Approximately 12 feet in diameter, 5 to 8 feet deep, with a sill extending above ground 2 to 3 feet. Interior is plastered and/or faced with cement. Sometimes an associated hoist or derrick for emptying silo.
- Should be located in well-drained soils above water table.
- Advocated for corn and alfalfa silage, which became increasingly important for the growth of the cattle industry and the end of over-wintering cattle on the open range.
- *Associated Time Periods:* Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.
- *Geographic Region*: State-wide.

Variations:

- Variation where a large portion of the silo is above ground is sometimes referred to as a *semi-pit silo.*
- Variation where the silo is banked into a slope and the retaining wall serves as a chute is sometimes referred to as a *banked silo*.

Archaeological Considerations:

- Pit silos will not have points of ingress/egress with the exception of the opening at surface.
- Can be distinguished from wells or cisterns by relationship to groundwater levels and potential water sources; pit silos needed to remain dry.
- Derrick would have been set in concrete post mold with counter weights.

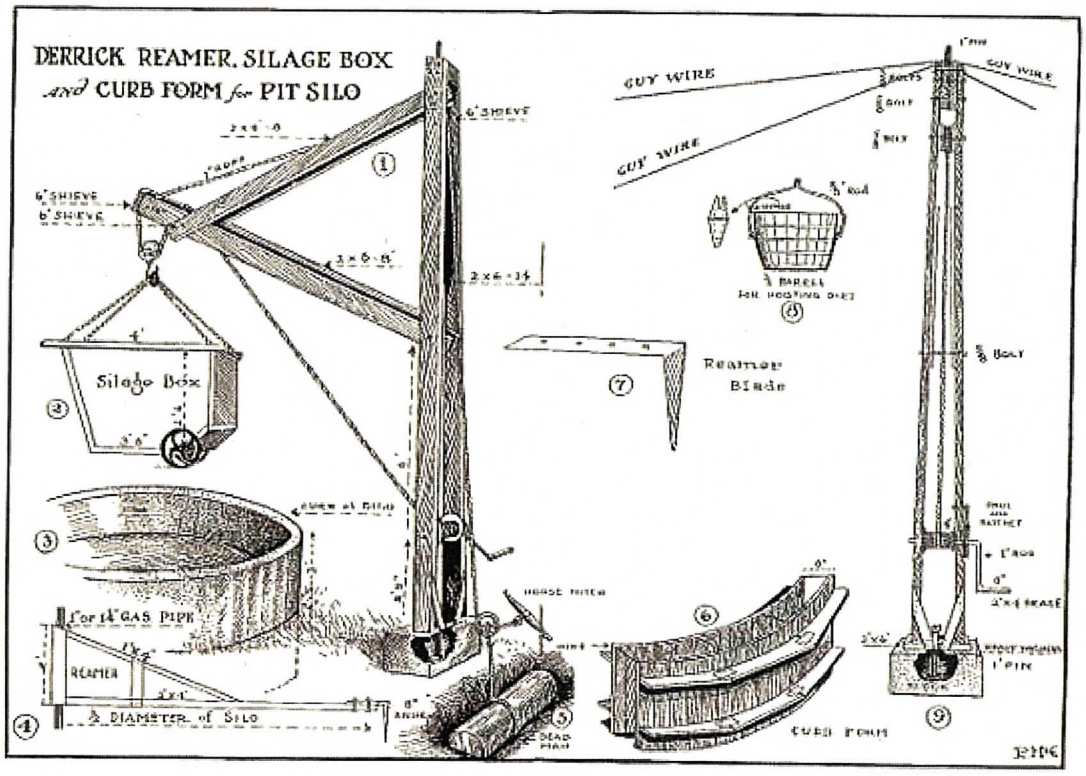
Sources:

Haney, J. G. (1916) *The Pit Silo*. Chicago: International Harvester Company, New Jersey Extension Department.

Seymore, E. L. D. (1919) *Farm Implements and Construction*. Fredonial Books, Amsterdam, The Netherlands.



Construction of a pit silo. Haney (1916).



Pit silo accoutrements. Haney (1916).

Smokehouse

Descriptive Features:

- Smokehouses are small, single-story wood-framed buildings measuring 6 to 12 feet per wall, generally without windows, and flue vents at the roof line, and with an internal or external fire-box.
- Building must be air tight, so wood-framed structures were sometimes sealed on the inside with plaster.
- Hooks or racks in the interior to suspend meat.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Drought and Depression (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide.

Variations:

- Various styles of smokehouse associated with particular ethnic groups have been identified in the eastern United States. While these are not necessarily applicable to South Dakota, these buildings should be carefully recorded to identify possible patterns.
- External firebox designs would have an adjacent external heat source with smoke piped into the bottom of the smokehouse.
- Internal fire boxes would be located in a pit on the floor, or from a small stove. Meat would often be shielded from the heat source to prevent the meat from being cooked.

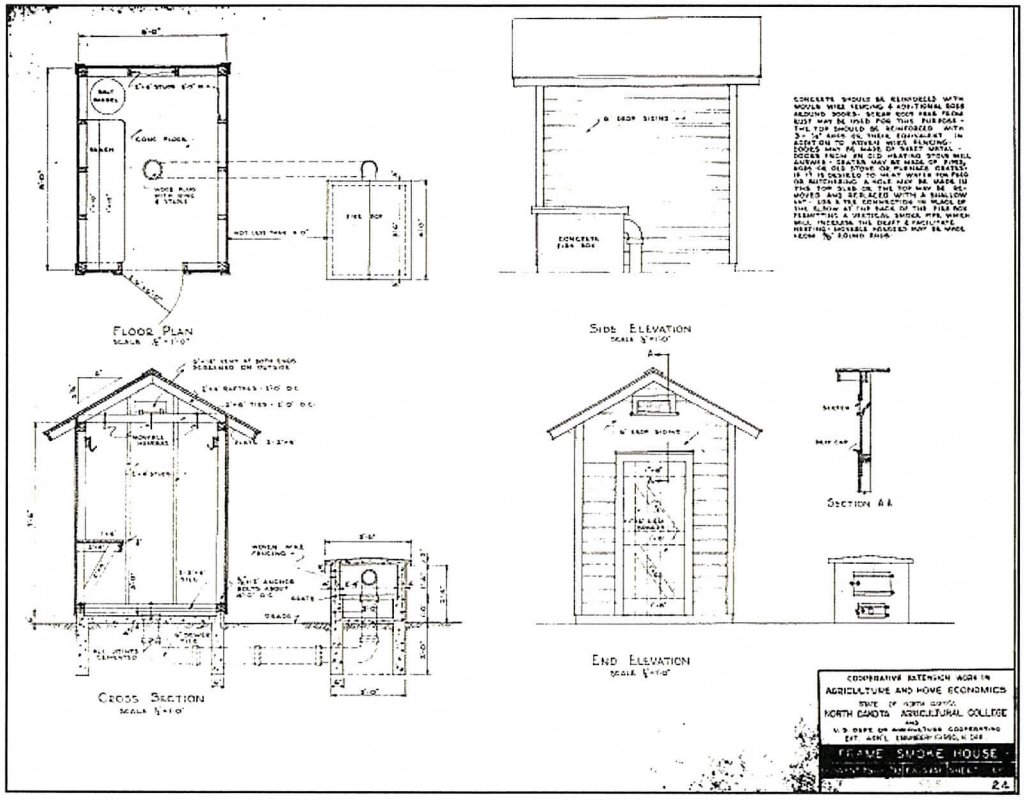
Archaeological Considerations:

- These buildings could be expedient structures that were erected seasonally and may leave little archaeological footprint.
- Archaeologically may see related hardware, as well as masonry fire-box structures, fire pits, or chimneys.

Sources:

Noble, Allen, and Richard Cleek (2006) *The Old Barn Book: A Field Guide to American Barns and Other Farm Structures*. New Brunswick: Rutgers University Press.

Halstad, Byron David, and Edwin C. Powell (1907) *Barn Plans and Outbuildings*. Orange Judd Company, New York, NY.



Smokehouse plans (1933). North Dakota State University, United States Agricultural Department Building Plans Collection.



Truman Farm smokehouse, Jackson County, Missouri. Photography by National Park Service.

Springhouse/Wash House/Springbox

Descriptive Features:

- The spring house is a small building intended to protect the farm's water source and also doubled as a place to store dairy and other items requiring cool temperatures. Often the buildings are masonry, and located at the base of or on a slope where the spring is exposed at the ground surface. On many farm sites predates the milk house.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Drought and Depression (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide.

Variations:

- Could be constructed of a variety of materials in a variety of architectural styles.
- According to Noble and Cleek (2006), spring houses often had louvers or small roof ventilators.

Archaeological Considerations:

- This building will be associated directly with a water source, and will probably have external water outlets that help to identify the building.

Sources:

Noble, Allen, and Richard Cleek (2006) *The Old Barn Book: A Field Guide to American Barns and Other Farm Structures*. New Brunswick: Rutgers University Press.



Anderson Dairy Ranch Springhouse, Lawrence, SD. HABS SD-22-C-4.

Tornado Shelters

Descriptive Features:

- Tornado shelters, or "cyclone caves" were advocated as early as the 1880s in popular publications such as "The Dakota Farmer."
- Often constructed off the cellar of the house, often with an outside exit. Composed of an underground tunnel or room.
- Served also as root cellars and other storage.
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: Open plains.

Variations:

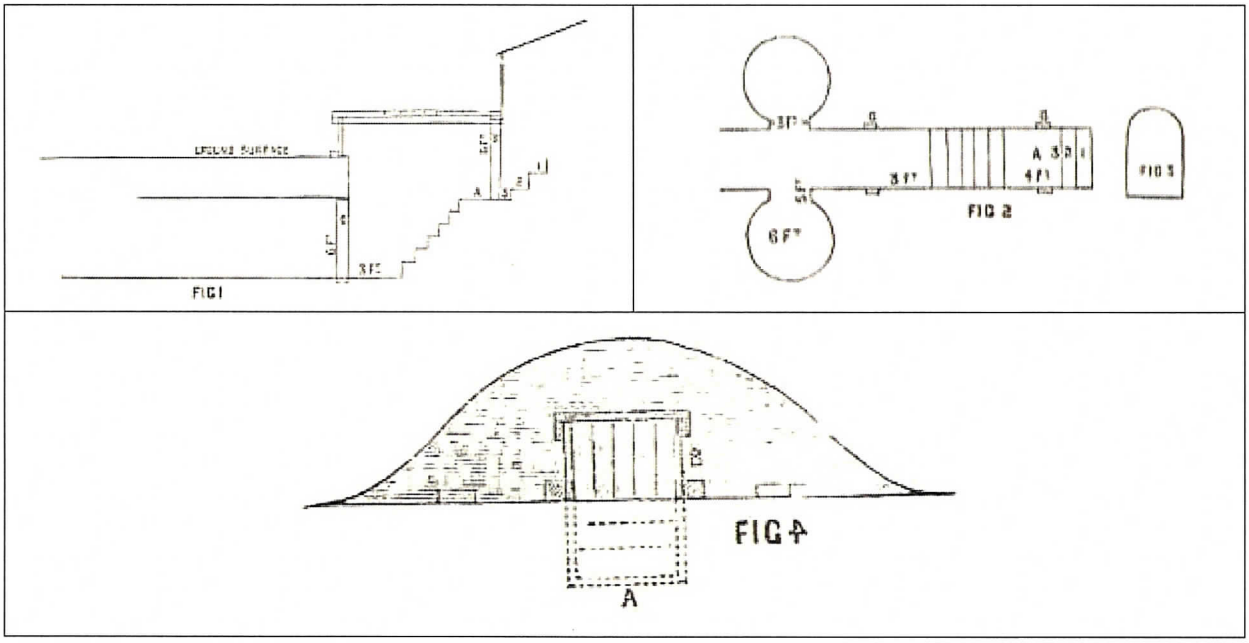
- Tornado shelters could be either attached to the house via the cellar or detached and off-set from the house.

Archaeological Considerations:

- Tornado shelters are going to be difficult to distinguish from root cellars, and often functioned as root cellars.

Sources:

Newton, R. G. (1886) A Cyclone Cave. *The Dakota Farmer* 5(12):12.



Plans for a cyclone cave. Newton (1886) Dakota Farmer 5(12):12.





Entrance and interior of tornado shelter at 31GR0171, Gregory County, South Dakota. Photograph by SWCA 2009.

Windmills

Descriptive Features:

- Windmills are vertical structures constructed of either wood or metal, or a combination of both. The primary component are the staves, or blades, mounted on a derrick which catch the wind that then converts it into electricity or mechanical energy.
- Earliest windmills on the Great Plains were used to pump water for both domestic and agricultural use, or for basic mechanical functions such as grinding corn.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Era of Large Cattle Operators (1876–1887); Open Range and Indian Cattle Leases (1887–1911); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); Recovery, World War II and Post-World War II Period (1936–1953). The "heyday" for windmills was approximately 1880–1920.
- *Cultural-Historical Associations*: Any.
- *Geographic Location:* State-wide, but more widely associated with rural homesteads as opposed to more concentrated population centers.

Variations:

- Steel windmills were available as early as 1870s, but were not used widely until 1890s.
- Wooden windmills were manufactured until 1940s.
- Self-oiling windmills were developed ca. 1912.
- Electricity-generating windmills were introduced in 1920s.
  - 1930s: 32-volt battery set wind-mill driven power plants
  - 1940s: 110-volt DC wind-electric plant with battery
- Windmills that were for mechanical functions may also be found on saw mills for sawing lumber.
- Windmills were used for watering livestock and can be found in pastures far from residential structures.

Archaeological Considerations:

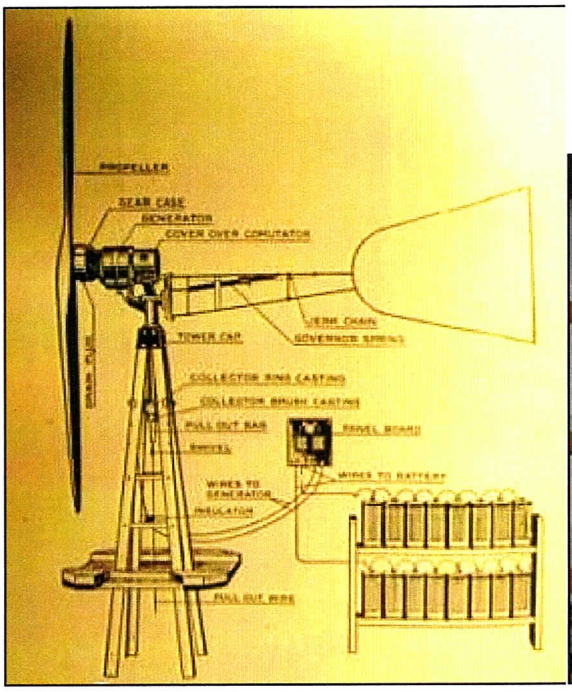
- Electricity-generating windmills required battery storage, and would have magnets and copper wire.
- A mechanical windmill would have piston-type components to change the direction of the energy.
- Windmills used to pump water will have an associated well hole, directly underneath the tower. In some cases, the pump mechanism may still be in place. Hand pumps were often modified for use with windmills.
- Water drawn from a well would need to be piped into a cistern or other water storage structure for use.
- Windmill maintenance may result in blades, pumps, and motors made by different manufacturers.

Sources:

McKibben, E. G.. and J. Brownlee Davidson (1933) *Wind Electric Power Plants*. Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts. Bulletin 297.

Baker, Lindsey (2011) *Windmills*. *The Encyclopedia of the Great Plains*. University of Nebraska-Lincoln. Available at http://plainshumanities.unl.edu/encyclopedia/doc/egp.ii.062. Accessed March 8, 2013.

Baker, T. Lindsey. *Field Guide to American Windmills*. University of Oklahoma Press, Norman, OK.



McKibben and Davidson (1933).



600-watt windmill at SDSU Agricultural Museum. Photograph by Holly Norton, 2013.



Windmill and homestead ruin, Beadle County South Dakota. Photograph by Holly Norton, 2012.



Hawkeye Valley Mill, Jerauld County, South Dakota. Photograph by South Dakota Register of Historic Places.

Woodshed

Descriptive Features:

- A small outbuilding that protected fire wood from the elements. Could be three or four sided, or an open post-supported roof structure. Could also be attached to other outbuildings such as a barn or to the house.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Era of Large Cattle Operators (1876–1887); Open Range and Indian Cattle Leases (1887–1911); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); Recovery, World War II and Post-World War II Period (1936–1953).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: Any, although will be concentrated in more heavily forested areas such as the eastern river valleys and Black Hills region.

Variations:

- Often expedient structures can have various roofs, construction method, and materials.

Archaeological Considerations:

- Archaeologically these buildings have the potential for an ephemeral presence. There may be pallet-like flooring or other raised floor to allow air flow under wood pile.

Sources:

Noble, Allen, and Richard Cleek (2006) *The Old Barn Book: A Field Guide to American Barns and Other Farm Structures*. New Brunswick: Rutgers University Press.

North Dakota State University (2013) United States Agricultural Department Building Plans Collection: Miscellaneous Buildings. Available online at http://www.ag.ndsu.edu/extension-aben/buildingplans/miscellaneous.



Zech Woodshed, 2005, Codington County, South Dakota. South Dakota National Register of Historic Places.

RANCHES

Distinct from crop farming and general farms that combined limited farming and ranching, dedicated ranches can be found across the state with larger numbers located west of the Missouri River where dry lands and rugged terrain (in the case of the Black Hills), were more favorable to raising livestock. Resource types vary between small, mobile operations with limited physical footprints to large ranching operations with numerous permanent structures.

Previously Identified Types:

- Associated Industrial (such as sawmills)
- Bunkhouses
- Cattle Barn / Sheds
- Practice Bull
- Ranch Gates / Overthrows
- Ranch Houses
- Sheep Barns
- Sheep Wagons
- Temporary/Seasonal/Moved

NEW/UPDATED RANCH SUBTYPES

Sheep Barn

Descriptive Features:

- May be one or two stories; the second story often used as a hay loft.
- Characterized by large, open spaces (no stalls), good ventilation.
- Ideal sheep barns had a "grain alley" for feeding during inclement weather.
- Barn furniture such as hay and grain racks may be present.
- *Associated Time Periods*: Drought and Depression of the 1890s (1887–1902); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: Western South Dakota, short-grass lands.

Variations:

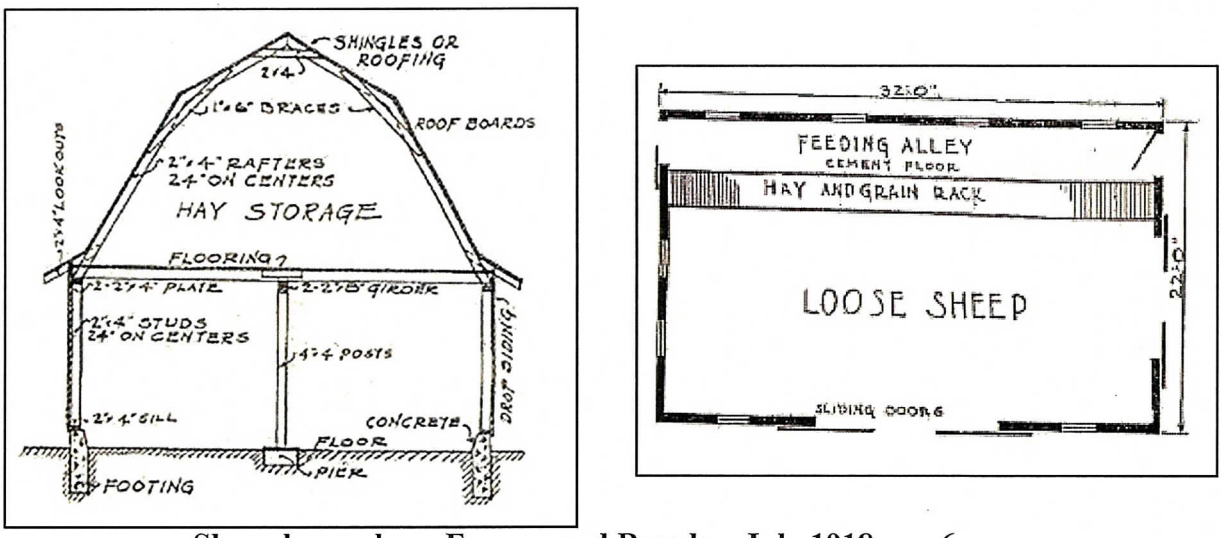
- Roof styles varied across sheep barns and may have been determined by cultural preferences.

Archaeological Considerations:

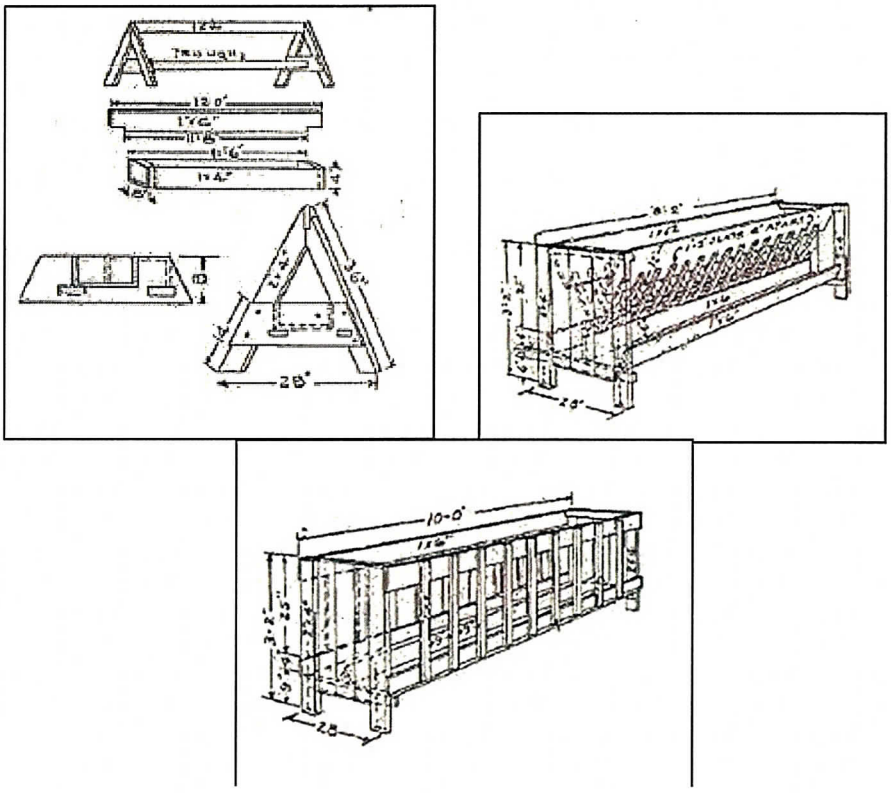
- The lack of stalls or interior bays/rooms may help distinguish a sheep barn from other types of livestock barns.

Sources:

Farmer and Breeder (1918) *Inexpensive Buildings for Sheep*. July 6.



Sheep barn plans. Farmer and Breeder, July 1918, pg. 6.



Examples of hay and grain troughs for sheep. Farmer and Breeder, July 1918, pg. 6.

FAIRGROUNDS

Nearly every county in South Dakota has some kind of fairgrounds, where regional and state-wide events are held. Fairgrounds range in size and may be limited to one or two outbuildings, corrals, and associated structures, to large complexes hosting numerous buildings, a grandstand or other facility for seating large number of patrons, and associated infrastructure. Associated with fairgrounds are the grounds themselves, which can vary in size and design.

Previously Identified Types:

- Fairgrounds
- Rodeo Grounds

NEW/UPDATES FAIRGROUNDS PROPERTY TYPES

SWCA recommends no substantive changes to the existing property types.

AGRIBUSINESS

South Dakota's economy has historically been based on agriculture ranging in scale from the private homesteading farmer, to the cooperation of farmers united by region and agricultural commodity, to state-wide and national businesses. Mostly located within urban settings, architectural styles of these buildings will vary based on the commercial styles common to the time period in which they were constructed. Since most of these industries were reliant on the railroad, they are likely to be found adjacent to, or in close proximity to, rail lines, and will likely feature loading docks, large bay door, and infrastructure for loading and off-loading raw materials or processed goods. Many of the site types associated with these agribusinesses are iconic on the landscape, but not necessarily well understood socially, culturally, historically, or archaeologically.

Previously Identified Types:

- Cream Station
- Creamery
- Farmstands, or Roadside Stands
- Flat Houses
- Grain Elevators
- Livestock Buildings
- Wool Warehouse

NEW/UPDATED AGRIBUSINESS SUBTYPES

Farmstands

Descriptive Features:

- Farmstands or roadside stands and markets were of various scales, and accommodated various types of produce and farm products. It is expected that farmstands would be along well-traveled routes and/or closer to population centers.
- Roadside stands will often have a display area with an overhanging roof to protect the produce, and possibly the seller, from the elements.
- *Associated Time Periods:* Recovery, World War II and the Immediate Post-World War II Period (1936–1953).
- *Cultural-Historical Associations*: Any.
- *Geographic Locations:* Historically Sanborn County was known for farmstands that were probably related to the melon industry, particularly around the towns of Woonsocket and Forestburg. Farmstands will also be seen state-wide, near population centers.

Variations:

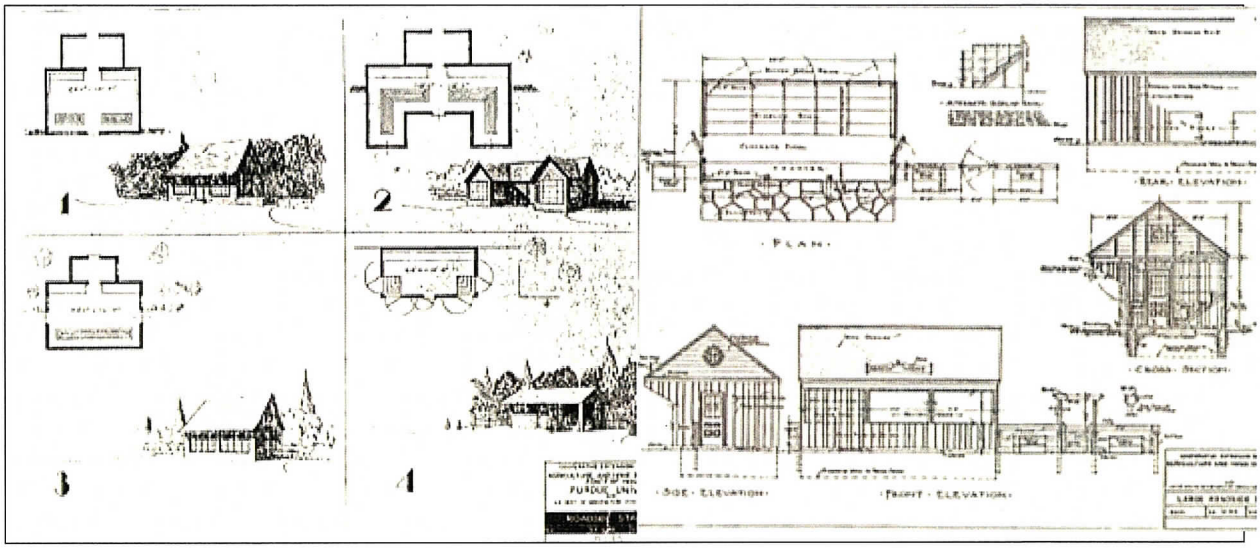
- Farmstands can be anything from a table in front of a farm house to a small, independent building.
- Some farmers utilized mobile farmstands, built into the back of a truck.

Archaeological Considerations:

- Farmstands will leave little to no footprint.
- Might be identified by proximity to road or parking area.

Sources:

North Dakota State University Digital Archives United States Department of Agriculture Building Plans. Available at http://www.ag.ndsu.edu/extension-aben/buildingplans/miscellaneous. Accessed March 13, 2013.



USDA roadside stand models, 1930.

Extension Service, large roadside stand, 1930.



Contemporary farmstand.

Wool Warehouse

Descriptive Features:

- A wool warehouse was an industrial structure where sheep farmers could bring their wool for grading and weighing. In South Dakota these were often cooperative-run businesses, and were usually located convenient to railroads.
- *Associated Time Periods*:
  - Southeastern South Dakota: Early Settlement (1859–1878)
  - Black Hills and Western South Dakota: Great Dakota Boom (1878–1887); Era of Large Cattle Operators (1876–1887); Open Range and Indian Cattle Leases (1887–1911); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); Recovery, World War II and Post-World War II Period (1936–1953).
- *Cultural-Historical Associations:* Any; many wool warehouses were associated with farmers' cooperatives.
- *Geographic Location*: Located in urban centers along rail lines, east of the Missouri River. The South Dakota Cooperative operated warehouses out of Aberdeen, Sioux Falls, Huron, Mitchell, and Belle Fourche.

Variations:

- Variations are currently unknown. Research questions may include the differences between cooperative and other types of warehouses, as well as possible regional differences.

Archaeological Considerations:

- Located mostly in urban centers, most of the warehouses likely remain standing but repurposed for other commercial uses.
- Historical documentation including city directories and Sanborn Fire Insurance Maps are likely to provide the best tools for identifying wool warehouses.

Sources:

Robinson, Doane (1904) *History of South Dakota.* B.F. Bowen and Company.

Sanborn Fire Insurance Maps (1867–1970) Digital Sanborn Map Collection available online and at the South Dakota State Library, Pierre, SD.

The Wool Sack (1931–1987) *The Wool Sack.* Periodical produced by the Cooperative Wool Growers of South Dakota. Available at South Dakota State University.



Wool warehouse in Dubuqe County, Iowa. Photograph by Clayton Fraser, 1987. Built in America, photograph number IA-160-BG-1.

Creamery

Descriptive Features:

- A repository for milk and cream produced on various farms within a region or area that can be processed into dairy products, usually butter. Creameries have multiple rooms for processing. Early creameries had cold spring water or ice available for keeping the milk cool, while later creameries relied on electricity. Walls are double thickness, and there was often sawdust or other insulator material in the roof.
- *Associated Time Periods:* Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy in South Dakota (1920–1936); Recovery, World War II and the Immediate Post-World War II Period (1936–1953).
- *Cultural-Historical Associations:* Any. Many creameries were associated with farmers' cooperatives.
- *Geographic Location*: State-wide, located along rail lines and in population centers.

Variations:

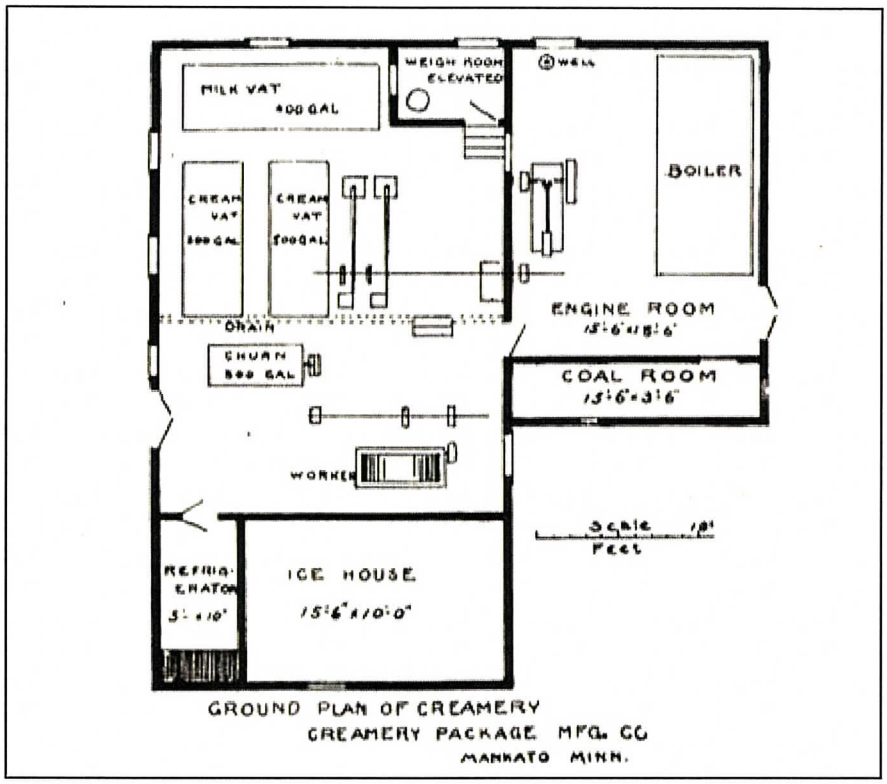
- Closely related to cheese factories.

Archaeological Considerations:

- Large, cooperative creameries were dependent on the necessity for shipment of whole milk and separated cream to the creameries. Relationships of farms to major thoroughfares, and specialized equipment such as refrigerated trucks may indicate a dairy was part of a cooperative.
- Creameries will have very specialized spaces for processing, machinery for churning, and cold storage.

Sources:

Croman, E. A. (1903) Co-operative Creameries. In *Wisconsin Farmers' Institutes: A Hand-Book of Agriculture*. Bulletin Number 17.



Plan for creamery. Government Agricultural Experiment Station (1896).



Webster Creamery, 2012, Day County, South Dakota. Photograph by Jimmy Emerson.

Flour Mills

Descriptive Features:

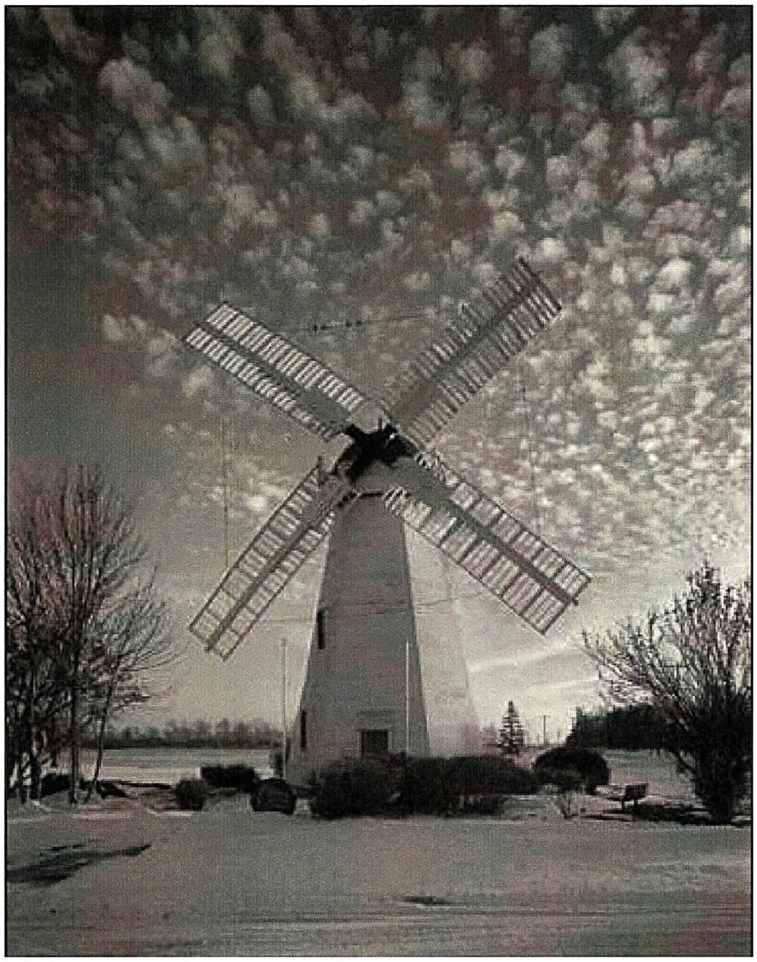
- Flour mills were large commercial structures, usually three or more stories tall, resembling warehouses with an internal grain elevator and grinding mechanisms for processing wheat.
- Earliest mills usually required water power to operate the grinding mechanisms, while later mills adopted steam and other engine power.
- Flour mills in South Dakota may have been operated by cooperatives.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Era of Large Cattle Operators (1876–1887); Open Range and Indian Cattle Leases (1887–1911); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); Recovery, World War II and Post-World War II Period (1936–1953).
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: Northern South Dakota along the grain belt, located along railroads and in population centers.

Archaeological Considerations:

- Flour mills will best be characterized by a grinding apparatus, such as a stone wheel for early mills or metal rollers for later models. In lieu of such objects, places where they would have been mounted and operated might be visible.
- Flour mills will also often have scales and loading docks.

Sources:

South Dakota Historical Society (1954) *The Flour Mill*. Wi-Iyohi: Bulletin of the South Dakota Historical Society Vol. 8(7).



Gristmill in Millbank, South Dakota, 1981. Photograph by South Dakota National Register of Historic Places.

Seed House

Descriptive Features:

- Large commercial building which served as a location for buying seeds, nursery plants, and gardening and farming tools.
- Many seed houses also operated a mail order or catalog business to service rural patrons.
- *Associated Time Periods*: Early Settlement (1859–1878); Great Dakota Boom (1878–1887); Era of Large Cattle Operators (1876–1887); Open Range and Indian Cattle Leases (1887–1911); Second Dakota Boom (1902–1915); Growth and Expansion of Farming (1900–1920); Depression of Agricultural Economy (1920–1936); Recovery, World War II and Post-World War II Period (1936–1953).
- *Cultural-Historical Associations*: Any.
- *Geographic Locations*: Population centers.

Variations:

- May have associated greenhouses and nurseries.

Archaeological Considerations:

- This site type is not well defined archaeologically and requires further study.
- Buildings with associated greenhouses or lots that may have served as nurseries.
- Botanical analysis, particularly for seed houses with related nurseries, may be useful in identifying popular plant types in South Dakota.

Sources:

Johnson, Brenda (2009) The Last Nurseryman. In *The South Dakota Magazine*, July/August. Available at http://southdakotamagazine.com/last-nurseryman. Accessed March 15, 2013.



Gurney Seed House, 2012, Yankton County. South Dakota National Register of Historic Places.

Commercial Grain Elevators

Description:

- Grain elevators are large, vertically oriented, multiple-story buildings that served as collection points for grain meant for external markets. There are three types of commercial or large-scale grain elevators: country elevators, receiving elevators, and terminal elevators.
- Commercial grain elevators utilized complicated pulley equipment to move and sort grain in the bins of the elevator for storage before transport.
- Many grain elevators were run as cooperative ventures.
- *Associated Time Periods*: Any.
- *Cultural-Historical Associations*: Any.
- *Geographic Location*: State-wide, generally located along rail lines.

Variations:

- Country elevators are smaller than their urban counterparts, and are often constructed in a geographically convenient place for local access from area farms.
- Receiving elevators were often attached to businesses that directly used the grain stored inside, and so may be part of a larger complex.
- Terminal elevators are actually a complex of several elevators to store different types of grain for shipment simultaneously.

Archaeological Considerations:

- Grain elevators, particularly early wooden elevators, were subject to catching on fire. Remains of such structures may be indicated by evidence of burning.

Sources:

Stark, William (2007) Vanishing Giants: The Grain Elevators of Minneapolis and their Legacy. *Hennepin History* 66(2):15.



Grain elevators along the old Milwaukee line, Pukwana, South Dakota. Photograph by Melissa Earwood, 2006.



Grain elevator in Ortley, South Dakota. Photographer unknown, 2012.

GOVERNMENT/INSTITUTIONAL/COMMUNAL FARMS

Not all farms were operated independently by single families or businesses. Farms run by groups or institutions both public and private played an important role in the history of South Dakota agriculture. These property types include communal farms such as Hutterite Communities, prison farms, experimental farms run by agricultural schools, as well as government programs established to assist in the development and recovery of farms.

Previously Identified Types:

- Communal Agricultural Operations
- Agricultural Experiment Stations
- Government/Private Institutional Buildings
- Relief Programs

NEW/UPDATED GOVERNMENT/COMMUNAL/INSTITUTIONAL SUBTYPES

Federal Relief Rural Farmsteads

During the 1930s New Deal, Subsistence Homestead programs were developed through the federal government for rural agricultural support. These included individual and communal-type farmsteads. In South Dakota, Federal Relief Housing programs were administered by several agencies, including the Rural Rehabilitation Division of the Federal Emergency Relief Administration, the Works Progress Administration, and local agencies with funding and oversight from the New Deal's Division of Subsistence Homesteads. The Subsistence Homesteads program launched three South Dakota communities, with two successes: the Sioux Falls Farms Project and the Eastern South Dakota Farms Project near Brookings.

Descriptive Features:

- In the Sioux Falls project, at least two of the houses were remodeled while others were built from scratch, along with chicken coops, barns, hog houses, and other outbuildings. Much of this community has been destroyed by more recent urban development.
- The Eastern South Dakota Farms project consisted of around 39 scattered "units" on a farm complex, only one of which has been positively identified in survey.
- All the communities planned in South Dakota were rural, agricultural communities.
- While the exact number of communities is not known, many were small, "as low as ten units" according to Conkin (1959).
- The USDA provided over 40 plans in a 1935 pamphlet, as well as plans for additions to existing building.
- *Associated Time Periods*: Depression of Agricultural Economy in South Dakota (1920–1936).
- *Geographic Location*: Known sites in eastern South Dakota, specifically Brookings, Moody, and Lawrence Counties.

Variations:

- FERA and the Subsistence Homesteads Program also planned similar projects on Native American reservations in South Dakota.

Archaeological Considerations:

- These buildings are not well defined archaeologically, and can best be identified through historical research, or identifying building floor plans that match one of the USDA plans.

Sources:

Ashby, Wallace (1935) *Farmhouse Plans*. U.S. Department of Agriculture, Farmer's Bulletin No. 1738.

Dennis, Michelle (1998) *Federal Relief Construction in South Dakota, 1929-1941*. Prepared for the South Dakota State Historic Preservation Office.

Conkin, Paul (1959) *Tomorrow a New World: The New Deal Community Program*. ACLS Humanities e-Book. Available at humanitiesebook.org. Accessed March 27, 2013.

U.S. West Research, Inc. (2000) *Indian Housing in South Dakota: 1946-1975*. Prepared for the South Dakota State Preservation Office.



Federal Relief house and barn at Irwinville Farms Rural Relief Resettlement Project, 1936, Irwin County, Georgia. Photograph by Carl Mydans. Library of Congress, LC-USF34- 006695-D.

ARTIFACT SCATTER/CONCENTRATION

Artifact scatters can, and often will be found in association with other property types, or can be found in isolated contexts. A wide variety of day to day activities on agricultural properties will result in the distribution of artifacts. These can be directly associated with the farm itself, representing waste and dump piles of household debris, or be in more isolated contexts, resulting from activities in the field including equipment maintenance, care of livestock, or the remains of outlying ancillary buildings no longer present. Artifact scatters found in isolated contexts can be difficult to associate with agricultural activities, except for the presence of specific artifacts or implements associated with farm work.

Descriptive Features:

- Broad scatters or concentrations of cultural material lacking distinctive features that can be clearly associated with another property type.
- May include farm machinery or equipment, medicine bottles for cattle inoculations, collapsed structural material, or domestic debris.

Variations:

- General artifact scatters can contain artifacts associated with a variety of activities.
- Concentrations of materials associated with specific activities such as concentrations of vaccine bottles, building debris, or farm machinery.

Archaeological Considerations:

- Identification and classification of artifacts can provide an associated time period, and may indicate specific activities associated with the site.
- It is important to understand the context in which archaeological material is deposited to determine if the material is in a primary context, associated with the location in which it is found, or secondary, having been re-deposited at the site from another location.
- Archaeological scatters and concentrations may represent the only remains of ephemeral sites such as early settlements where all of the former structural elements have been removed.

Raw Material Concentrations

A raw material concentration can be described as a specific type of artifact concentration representing areas where a farmer or rancher stockpiles equipment and materials for future use. These may include materials removed by farmers as new fields are acquired and put under cultivation in an effort to clear a field of obstructions, a collection of equipment and material the farmer had no means to dispose of, or intentional stockpiling of raw materials such as machine parts, lumber, and sheet metal.

Descriptive Features:

- Artifact concentrations of specific types of materials including farm equipment, lumber, railroad ties, corrugated steel, fence posts, barrels, and car and tractor parts.
- Often like material types are piled or grouped together.

Variations:

- Concentrations of farm machinery only may be indicative of clearing farm fields and not storage for spare parts or materials.

Archaeological Considerations:

- Materials are located in a secondary context, and may have been acquired from neighbors or neighboring farms.
- The specific purpose of acquiring this material is re-use (railroad ties used as fence posts), so identification of function should consider possible future functions for material.



Raw Material Concentration from 39PE0402, showing farm equipment in the foreground and stacked pallets, tires, and miscellaneous material in the background.

ANNOTATED BIBLIOGRAPHY

Agricultural Engineering Department

1929 *Cost and Uses of Electricity on South Dakota Farms*. South Dakota State College Agricultural Experiment Station.

This publication by the South Dakota State College Agriculture Experiment Station sought to inform farmers in South Dakota how electricity could be used on the farm and how much electrical production of various tasks cost. This was based on an experimental line that was run to a farm and measurements of electricity taken over a 3-year period. The pamphlet then breaks down the cost of various domestic and agricultural activities such as washing clothes, milking cows, and hatching chickens, among others. The conclusion was that farms that were primarily dairy or cattle, and that were specifically planned around electrical lines were in the best position to benefit from electricity. Part of this planning, as far as the agricultural station was concerned, involved the cooperation between farms of sharing a transformer and distributing power.

Alenan, Arnold, and William Tishler

1980 Finnish Farmstead Organization in Old and New World Settings. *Journal of Cultural Geography* 1(1):66–81.

"During recent years an increasing amount of scholarly attention has focused upon the assessment of ordinary people, conventional places and common events. Most studies of material culture, however, have been directed toward vernacular and ethnic architecture and artifacts, with relatively little attention given to the physical organization of rural enclaves or entire farmstead units. Undoubtedly studies of farmsteads have been limited in number because of the substantial amount of field survey work that is required, and what is perceived as a lack of primary research materials, both archival and structural. Despite these apparent problems, an assessment of extant rural building groupings and remnants in a Wisconsin Finnish-American community and a perusal of various reference materials revealed sufficient evidence to undertake an in-depth study of farmsteads and their spatial organization. By comparing farmsteads developed by Finnish immigrants in Wisconsin with prototypical examples from Finland, it was possible to determine both differences and similarities in functional and morphological characteristics on both sides of the Atlantic."

Anderson, William

2006 *The Story of the Ingalls Family: A Biography of the Family from the "Little House" Books*. William Anderson, Self-Published.

Andersen's biography of the Ingalls family provides context for the children's series "Little House on the Prairie." In many ways the Ingalls were the personification of the American experience. Anderson recounts how Laura Ingalls Wilder's ancestors came to America when it was a collection of colonies. In turn, her grandparents and then parents followed the frontier of America, with De Smet, South Dakota, being a significant stop along the way. Anderson's work is very interesting in illustrating the evolution of a homestead from tar-shack to farm complex. While this publication chronicles the life of the Ingalls family, it also provides details on the development of railroads through the view of "Pa" Ingalls, who worked as a railroad clerk as a way to supplement his homesteading income.

Ashby, Wallace
1935 *Farmhouse Plans*. U.S. Department of Agriculture, Farmer's Bulletin Number 1738.

In this pamphlet the USDA provided farmers, homesteaders, and citizens with plans for more than 40 different houses, varying in style and size. The bulletin also included plans for future building additions and expansions.

Baker, T. Lindsey
2013 *Windmills. The Encyclopedia of the Great Plains*. University of Nebraska-Lincoln. Available at http://plainshumanities.unl.edu/encyclopedia/doc/egp.ii.062. Accessed March 8, 2013.

Dr. Baker, a longtime scholar of historic technology and publisher of a historic-windmills newsletter, provides a brief discussion of the importance of windmills to the agricultural development of the Great Plains, as well as their technological development.

Baltensperger, Bradley
1983 Agricultural Change Among Great Plains Russian Germans. *Annals of the Association of American Geographers* 73(1):75–88.

"Russian German farmers who concentrated on the Great Plains in the late nineteenth century brought with them agricultural experience in a sub humid environment. Their diversified operations and use of small grains contrasted sharply with the humid-land agricultural system, emphasizing corn and livestock, dominant among settlers from the Midwest. The need to adopt strategies appropriate to the climate of the Great Plains conflicted with the pressures of acculturation. The immigrants quickly accepted some of the components of the Midwestern system in order to compete in the marketplace, but they also retained a number of elements from their Russian experience. In their continued use of certain adaptive practices, particularly a highly diversified cropping system, the Russian Germans remained unique among immigrant groups and distinctive among Great Plains Farmers."

Barnes, C. L.
1907 *Dipping Livestock*. Kansas State Agricultural College Experiment Station, Bulletin 154.

This pamphlet describes the procedures that a cattle rancher or livestock farmer should employ to successfully kill parasites on their livestock.

Bates, Carlos
1936 *The Windbreak as a Farm Asset*. United States Department of Agriculture Farmers' Bulletin Number 1405.

Bates discusses the necessity of natural windbreaks from planted trees on the Great Plains, to crops, soils, and the built environment of farmsteads. The pamphlet also provides detail about how best to plant and orient a windbreak for maximum effectiveness.

Bernstein, Rebecca Sample, and Carolyn Torma
1989 Using Oral History to Explore the Role of Women in the Creation of Architecture. Paper to be delivered at the Vernacular Architecture Forum Annual Meeting, St. Louis.

Bernstein and Torma provide an all-too-brief discussion of the role that women played in bearing architectural knowledge and the active roles in erecting various agricultural structures on the Great Plains, including South Dakota. While much of the evidence is scant, the authors identified historic accounts and conducted oral histories that illustrated individual instances of women being the primary decision makers for house and outbuilding construction. The authors further challenge supposition of gender roles on the frontier posited by Riley (1983) [see below]. Finally, the authors call for changes in how oral histories are conducted and how NRHP nominations are identified to allow for broader access to information regarding women's roles in the creation of vernacular architecture.

Bernstein, Rebecca Sample, and Carolyn Torma
1991 Exploring the Role of Women in the Creation of Vernacular Architecture. *Perspectives in Vernacular Architecture* 4:64–72.

Using data collected from oral interviews conducted with farming and homestead women in South Dakota, Bernstein and Torma investigate the level of influence that women had on vernacular architecture, particularly outside the traditional area of influence, namely the house. The small sample does not allow the authors to come to any hard conclusions, but they do provide compelling challenge to the usual perception that men were solely responsible for construction activities, and call for greater investigation into questions of gender in regards to vernacular architecture.

Billington, David, Donald Jackson, and Martin Melosi
2005 *The History of Large Federal Dams: Planning, Design and Construction*. United States Department of the Interior, Bureau of Reclamation.

Billington et al. provide an in-depth social, political, and economic history of twentieth century dam construction, including the Pick-Sloan project.

Black, W. H.
1929 *Feed-Lot and Ranch Equipment for Beef Cattle*. United States Department of Agriculture, Farmers' Bulletin Number 1584.

Black provides an instructional pamphlet on how to construct various structures needed for the efficient management of cattle.

Bowers, William
1971 Country-Life Reform, 1900-1920: A Neglected Aspect of Progressive Era History. *Agricultural History* 45(3):211–221.

Bowers discusses the Country-Life Reform movement, the idea that America was shifting from a rural to an urban population because of a deficiency in rural life. This coincided with concerns about the changing character of America as well as practical concerns about the collapse of the nation's food supply. The reform movement, therefore, focused on encouraging development of farm life and technologies through the same progressive ideals that were being applied to factory and urban

lifestyles. This article focuses on the country-life reformers themselves, and is drawn from biographical data.

Breitbach, Carrie

2006 Changing Landscapes of Social Reproduction in South Dakota: Restructuring the Cattle Beef Industry. Unpublished Ph.D. Dissertation, Department of Geography, Syracuse University.

Breitbach analyzes the 1980 farm-crisis and the impact of shifting capitalist foci on the South Dakota cattle industry. Looking particularly at small farmers, and other individuals involved with different businesses related to cattle and cattle production, the author seeks to understand the social reproduction of food production on the Great Plains.

Brooks, Allyson, and Steph Jacon

1994 *Homesteading and Agricultural Development Context*. South Dakota State Historical Preservation Center.

The SDSHS-staff authors provide a broad context for identifying historic agricultural resources and determining their eligibility for the National Register of Historic Places. This fully developed Historic Context addresses broad themes and includes popular architectural construction during decade-increments of South Dakota history. The authors provide valuable guidance on how to determine NRHP eligibility under Criterion D for agricultural properties, plus how to interpret all applicable Criteria, and ways to develop research questions based on households and community units of analysis, a foundational paradigm in American historic archaeology.

Cerney, Jan

2004 *Mitchell's Corn Palace*. Charleston: Arcadia Publishing.

This is a compilation of historic photographs of the Corn Palace in Mitchell, offering a visual chronological record of the building's evolution from an advertisement for agricultural settlement to popular culture icon.

Conkin, Paul

1959 *Tomorrow a New World: The New Deal Community Program*. ACLS Humanities e-Book. Available at humanitiesebook.org.

Conkin's text offers a thorough analysis of the New Deal Community Program. While focusing on the larger and better known communities that were established in the southeastern United States, the author briefly mentions the establishment of rural community programs—Subsistence Homesteads—in the Great Plains region, including South Dakota.

Croman, E. A.

1903 Co-operative Creameries. In *Wisconsin Farmers' Institutes: A Handbook of Agriculture*. Bulletin number 17.

In an article reading more like a propaganda pamphlet than an informative bulletin, Croman extolls the virtues of cooperative creameries. This article suggests ways in which a coop might be structured, how much it costs to establish and maintain, and the return participating farmers might expect.

Cutler, Phoebe
1985 *The Public Landscape of the New Deal.* Yale University Press.

Cutler's groundbreaking work examines national construction initiatives of the 1933–1943 New Deal in terms of planning and infrastructure development, including a chapter on soil conservation and the Prairie States Forestry Project, which encompassed South Dakota's part of the Great Plains and relief for its Dust Bowl damage in the 1930s.

The Dakota Farmer
Date Unknown. *Story of the Empire of the Dakotas*. On file at the South Dakota State Archives, Mss Kerr Box 2 Folder 6.

A pamphlet distributed by the publishers of the serial The Dakota Farmer, this was a brochure enticing people to buy farmland in the Dakotas.

Deer and Company
1975 *Machines of Agriculture*. Deer and Company.

This is a pictorial history of agricultural machinery published by John Deere. It provides a visual timeline of the technological developments in agriculture.

Delong, H. H.
1950 *Electric Light and Power Systems for Your Home*. South Dakota State College Agricultural Experiment Station, Bulletin 402.

This pamphlet discusses that while South Dakota ranked 47th in the nation for rural electrification in 1950, that figure was based solely on the number of properties that received their energy from a power company. Instead, most South Dakota farms received their energy from home power plants. In 1915 32-volt battery set gasoline engine power plants were adopted in South Dakota. This was followed in the 1930s by the wind-mill driven power plants with their associated 32-volt batteries. Rural electric cooperatives were started in the state in 1939, prompted by the National Emergency Act of 1935 and the establishment of the Rural Electrification Administration by congressional acts in 1936-37. By 1950, despite the fact that many South Dakota farms were still without access to power plant generated electricity, they were acquiring 110-volt windmill generated power plants and utilizing the modern equipment that was available to urban consumers. This pamphlet goes on to discuss the individual power plants that are available to the farmer. This pamphlet also includes the results of a 1949 ranch survey conducted to determine the uses and needs of farmers for electrification.

Dennis, Michelle
1998 *Federal Relief Construction in South Dakota, 1929-1941*. Prepared for the South Dakota State Historic Preservation Office.

Dennis provides a fully developed Historic Context, analysis for identifying and evaluating public works projects constructed with federal relief funds during the Great Depression, just before and during the New Deal, leading to World War II. Agency descriptions—RFC, FERA, CWA, CCC, WPA and others are presented in national and South Dakota applications and examples. Highway planning, funding, and construction are treated lightly here, and the critical role of USDA's Bureau of Public Roads—source of federal funding and standards for the state highway department—is not explained, thus omitting a significant transformation for rural life and agricultural practices.

Dibbern, John
1982 Who Were the Populists? A Study of Grass-Roots Alliancemen in Dakota. *Agricultural History* 56(4):677–691.

Dibbern's concern is in identifying who the people were who took part in the populist movement as rank-and-file members so as to understand the impetus behind the agrarian populist movement in the Dakotas. The author does this by identifying the members of the South Dakota Farmer's Alliance and comparing demographic and economic data about them to profile of a non-affiliated farmer. Dibbern's conclusion is that Alliance and non-Alliance farmers were very similar, leading the choice to join a populist movement to individual taste. Many of those that did choose to join the Farmer's alliance were foreign born propertied men who lived on the margins of economic collapse. Most of these political movements were directly related to hardships brought on by natural disasters and nation-wide economic downturns, such as the Great Depression. As these eras also saw huge numbers of foreclosures and abandonments, this article provides context for interpreting archaeological sites, particularly in regards to terminus ante quem history.

Dovring, Folke
1962 European Reactions to the Homestead Act. *The Journal of Economic History* 22(4):461–472.

Dovring's study looks at the information available to prospective European migrants regarding the Homestead Act, including newspaper publications, advisory booklets, and the letters written by previous migrants about their experiences. Dovring hypothesizes that there was actually little interest in the free land being offered by the United States, as is evidenced by the aggressive marketing tactics of the railroads and other groups with an interest in settling the plains. Dovring also looks at the economic impact of the rise of agriculture in the American west on the rest of the world, particularly Europe, which suffered an economic recession due to the low-cost grains being grown and exported out of the United States.

Edaes, Megan
2002 *Churches in South Dakota*. South Dakota Historic Preservation Office.

Edaes' study emphasizes churches in South Dakota from 1870 to 1950, and is meant primarily as a guide to determining NRHP eligibility. The author also provides a history of missionary work and religious institutions. Churches were integral to communities and are part of a broader rural landscape context.

Ekblaw, K. J. T.
2004 [1914] *Farm Structures*. Amsterdam: Fredonia Books.

This re-issue of a 1914 guide provides farmers with detailed instructions on how to construct a number of useful farm buildings, structures, and equipment.

Elliot, Mark, and Melissa Dirr
1998 *Schools in South Dakota: An Educational Development*. South Dakota State Historic Preservation Office.

This publication focuses on the development of public education in South Dakota, emphasizing theoretical trends in education that drove national movements, of which South Dakota was a part. There is some discussion of building types and property resources.

Farmer and Breeder
1918 *Inexpensive Buildings for Sheep.* Farmer and Breeder July 6.

This article provides plans for building "modern" sheep barns as well as feeding furniture. There are two types of barns, one a single-story front gable and the other a two-story gambrel roof that also provides storage space for hay. Included are simple plans for a simple feeding trough, and a combination trough that allows sheep access to both hay and grain. The plans for the combination feeder emphasize the design to keep chaff out of the animals' fleece.

Federal Writers' Project of the Works Progress Administration (WPA)
1938 *South Dakota Guide.* South Dakota Guide Commission for the State of South Dakota. Pierre. Reprinted 2004 as *The WPA Guide to South Dakota.* Minnesota Historical Society Press. St. Paul.

This classic volume, part of the national American Guide Series that covered all 48 states plus several metropolitan areas and special automobile tours including western trails, presents a highly detailed snapshot of South Dakota at the end of the Great Depression and just prior to World War II. These WPA guides presented a balance of urban and rural life and culture, and encouraged automobile touring throughout the state on its newly improved New Deal highways; the South Dakota volume offers 15 comprehensive driving tours and local information for travelers along the way.

Ganzel, Bill
No Date. Self-Propelled Combines and the Harvest Brigade. Farming in the 1940s, Wessel's Living History Farm. Available at http://www.livinghistoryfarm.org/farminginthe40s/machines_05.html. Accessed March 27, 2013.

Ganzel provides a brief history of the short-lived "Harvest Brigade" that was seen as a major boon to the agricultural economy and the war effort in the final years of World War II. The Harvest Brigade was an "army" of newly designed combines that brought in the harvest despite the ongoing labor shortages on American farms.

Gates, Paul Wallace
1968 *A History of Public Land Law Development.* U.S. Public Land Law Review Commission.

This book provides an exhaustive review of the history of public land law in the United States, offering analysis of the various legal engines of homestead settlement.

General Land Office
1909 Suggestions to Homesteaders and Persons Desiring to Make Homestead Entries. Available at http://sddigitalarchives.contentdm.oclc.org/cdm/compoundobject/collection/manuscript/id/420.

The General Land Office provided practical advice on how to make homestead claims, as well as how to establish a small-scale farming unit.

Gerber, Phillip, ed.
1990 *Bachelor Bess: The Homesteading Letters of Elizabeth Corey, 1909-1919.* Iowa City: University of Iowa Press.

The letters home of a 21-year-old schoolteacher who staked a claim in South Dakota in 1909. Strong contributor to the body of research on women and homesteading.

Government Agricultural Experiment Station for North Dakota.
1896 *The Creamery Industry*. Bulletin No. 22. Fargo, North Dakota. Available at http://babel.hathitrust.org/cgi/pt?id=uc1.b2707478;num=1;seq=1;view=1up.

Provides detailed information on proper dairying techniques, as well as how-to instructions for establishing a Dairy cooperative and building a "modern" creamery.

Granger and Kelly
2005 *Historic Context Study of Minnesota Farms, 1820-1960*. Prepared for the Minnesota Department of Transportation.

"A cultural resources investigation of pre-1960 farms in Minnesota was conducted in 2003-2005 by Gemini Research for the Minnesota Department of Transportation (Mn/DOT). A primary goal was to create a tool that will help Mn/DOT evaluate the significance of historic farm resources as it carries out its responsibilities to take significant cultural resources into consideration during project planning...The study resulted in a new statewide historic context entitled 'Euro-American Farms in Minnesota, 1820-1960.' In addition to providing background information on farms and farm structures throughout the state, the historic context includes evaluative guidelines to help stream-line the process by which farm resources are evaluated for their eligibility to the National Register of Historic Places."

Gries, John Paul
1996 *Roadside Geology of South Dakota*. Missoula: Mountain Press Publishing.

Gries provides a detailed geologic history of South Dakota, illustrated with locations where the unique local formations can be seen. The geology had direct impacts on the places where agriculture took hold in the state, and what kind of agriculture was most successful.

Haney, J. G.
1916 *The Pit Silo*. International Harvester Company, Agricultural Extension Department, Chicago.

This pamphlet is part of the International Harvester educational series. It directs the farmer in how to build a pit silo for corn silage as cattle feed. Published in 1917, this pamphlet provides information on the emphasis of diversifying farmsteads through farmers growing their own feed, a theme that many publications in the late nineteenth and early twentieth centuries emphasized. The publication further claims that the pit silo was in general use in the Dakotas and throughout the Great Plains. It provides detailed directions on where such a structure should be built (what soils are best, etc.), as well as how it should be built and illustrating the furniture that such a structure would need to operate, all of which can provide an archaeologist with valuable material signatures to identify a pit silo.

Hasselstrom, Linda
1994 *Roadside History of South Dakota.* Missoula: Montana Press Publishing Company.

Hasselstrom approaches her history of South Dakota by eschewing traditional historical narrative and methodologies. Concerned with identifying the "character" of the state, Hasselstrom incorporates folk myth as history. This hodge-podge history is organized loosely along geographic groupings of communities, and more broadly along the highways that connect them. Hasselstrom's unorthodox organization provides a different viewpoint to the development of rural population centers. The author also discusses well-known homesteads, farms, and ranches, and relates details of how basic tasks were accomplished in the rural areas of the state. This information can provide valuable insights into identifying archaeological resources.

Hazen, Theodore
1999 The History of Flour Milling in Early America. Available at http://www.angelfire.com/journal/millrestoration/history.html. Accessed March 14, 2013.

Focusing on the New England region, Hazen provides a comprehensive overview of flour milling in the United States, including types of mills and construction details.

Hibbard, Benjamin
1939 *A History of Public Land Policies.* Madison: University of Wisconsin Press.

A broad but still valuable tool for researching homestead law. Pertinent sections consist of a shorter synthesis than Gates' review of public land policies.

Hoelscher, Steven
1995 The Invention of Ethnic Place: Creating and Commemorating Heritage in an Old World Wisconsin Community, 1850-1995. Unpublished Ph.D. Dissertation, Department of History, University of Wisconsin-Madison.

Hoelsher discusses the historical construct of identity for a Swiss-descended agricultural community in Wisconsin, New Glarus. Hoelsher discusses this construction against a backdrop of immigrant American experiences, as well as contemporary historic attitudes towards assimilation.

Hone, E. Wade
2008 *Land and Property Research in the United States.* Salt Lake City: Ancestry Publishing.

A comprehensive review of land and property research, with maps of land office boundaries by state and a discussion of women and homestead law.

Hoover, Herbert
1983 Arikara, Sioux, and Government Farmers: Three American Indian Agricultural Legacies. *South Dakota History* 13(1&2):23–48.

Hoover describes the history of Native American agricultural practice beginning with the Protohistoric, roughly 1700, but also drawing on earlier indigenous practices that had developed prior to contact with European-descended populations. Going into detail, he describes gardens and habitation sites as described in the historic record. Hoover also discusses social aspects of

agriculture, including gender division of labor and the political economic motivations of United States federal programs aimed at assimilating Native Americans. The article falls short in resorting to a historical narrative that focuses on the experience of the largely Euro-American farmers and agents who were hired to "instruct" the reservations on proper farming techniques. The article covers the time period through World War II.

Hoover, Herbert

1983 Farmer's Fight Back: A Survey of Rural Political Organizations, 1873-1983. *South Dakota History* 13(1&2):122–157.

Hoover paints an eloquent picture of the extreme physical, social, economic, and psychological hardships faced by early South Dakotan settlers. According to Hoover, the farmers and ranchers who endured turned to collective action and social movements to ensure that their needs were met by an often unresponsive state and federal government. These social movements manifested as farmer's groups, such as the Patrons of Husbandry, or Grange Society, the Greenback Party, Farmer's Alliance and the Farmer's Union. Hoover briefly describes their history in the state and how such movements intersected with the political and social life of Dakota farmers.

Howe, Jenika

2012 Power in the Pasture: Energy and the History of Ranching in Western South Dakota. Unpublished Master's Thesis, Department of History, Colorado State University.

"Transitions in the use of energy transformed the landscape, labor, and domestic life of cattle ranching in western South Dakota from the late-nineteenth to the middle of the twentieth centuries. The introduction of new energy sources to the Black Hills spurred the expansion of European Americans into the region, while helping to displace native peoples like the Lakotas. Changing energy use also intensified ranch labor in the pastures and in the household, drawing individual ranches into new connections with their surroundings." Grounding the thesis in environmental history theory, Howe uses the experiences of a single South Dakota ranch as a case study for the use of energy, most notably the transition from "solar-powered" and horse industries to fossil-fuels and the emergence of gasoline-powered engines.

Hudson, John

1973 Two Dakota Homestead Frontiers. *Annals of the Association of American Geographers* 63(4):442–462.

The author discusses the external forces that shaped the frontier communities of Sanborn County, South Dakota, and Bowman County, North Dakota, between 1870 and 1910. Hudson asserts that the differences between the two locales can be traced directly to the federal government land grant and Indian policies, each of which directly affected railroad expansion.

Hudson, John

1976 Migration to an American Frontier. *Annals of the Association of American Geographers* 66(2):242–265.

"A sample of one thousand autobiographies written by North Dakota pioneers during the late 1930s reveals a complex pattern of migration and earning a living on the western frontier from 1875 to 1915. North Dakota was [in part] settled by eastern Canadians as part of a general westward trend of settlement across the prairies. German, German Russian, and Scandinavian-born settlers moved

within discrete information-migration networks which were strengthened by a strong tendency toward marriage within the group that was preserved in the migration process. American stock settlers came from diverse origins and often worked at a succession of farm and nonfarm jobs as they moved westward. Population turnover and labor mobility resulted from the rapid growth of a specialized economic system which offered many opportunities. Seasonal labor migration was common in the early years before transition to a more stable system. The cultural geography of the northern plains emerged from diverse ethnic origins and a common orientation to the market economy."

Hufstetler, Mark, and Michael Bedeau

2007 *South Dakota's Railroads: A Historic Context*. South Dakota State Historic Preservation Office.

This study looks at the history of railroads in South Dakota. Significantly, it provides a discussion of "property types" associated with railroads, including various types of buildings such as depots, engine houses, and passenger terminals. Successive maps provide an overview of the evolution of the state's sprawling rail system, leading and following the state's rural population from east to west.

The Independent

1879 *Creameries*. July 10, 1879, 31(159):30.

This newspaper article discusses the rise of creameries as an important agri-business for the west.

Jewell, Benjamin

2006 Lakota Struggles for Survival: History, Health and Reservation Life. *Nebraska Anthropologist.* Paper 19. Available at http://digitalcommons.unl.edu/nebanthro/19. Accessed March 16, 2013.

Jewell provides a longitudinal analysis of the Lakota economic system particularly as it has been historically effected by U.S. Government intervention. The thrust of the analysis is on current socio-economic conditions on the Pine Ridge Reservation in South Dakota.

Johansen, John

1937 *Immigrant Settlements and Social Organization in South Dakota*. SDSU Agricultural Experiment Station. Bulletin 313.

This rather lengthy study provides in-depth information regarding the various ethnic groups that settled in South Dakota, focusing on the "historical, social and cultural aspects of immigration...[and] the historical circumstances that led to the establishment of immigrant settlements..." Johansen discusses the particulars of settlements and farming practices as related to the cultural characteristics of various groups.

Johnson, Brenda

2009 The Last Nurseryman. In *The South Dakota Magazine*, July/August. Available at http://southdakotamagazine.com/last-nurseryman. Accessed March 15, 2013.

Johnson profiles Jay Gurney, the great-grandson of the famous South Dakota seed-house man C.W. Gurney. Johnson provides information on how seed-houses and nurseries were run, and the connection to South Dakota.

Jordan, Terry, Jon Kilpinen, and Charles Gritzner
1997 *The Mountain West: Interpreting the Folk Landscape*. Baltimore: Johns Hopkins University Press.

Jordan et al. focus on log cabin vernacular architecture in the American west. The authors delineate styles of construction associated with particular immigrant groups and geographic areas, illustrating the history with extant examples of the architecture on the landscape.

Kant, Joanna
1985 *A History of South Dakota Century Farms*. Sioux Falls: Century Farms Book Committee.

This small-press history provides a good overview of the history of European-American settlement in South Dakota, and is well illustrated with historic photographs. Capsule first-person accounts are also illustrative of the details of farm and ranch life in the days of early settlement.

Karolevitz, Robert
1975 *Challenge: The South Dakota Story*. Sioux Falls: Brevet Press.

Karolevitz's monograph is a social history of South Dakota united around a single theme of the challenges faced by those who lived in the territory and then the state, and by those who wished to live there. The author attempts to balance the romantic notions of settling the frontier with the realities of conflict between Euro-Americans and Native Americans.

Kelly, Ernest, and Karl Parks
1915 *A Plan for a Small Dairy House*. United States Department of Agriculture, Farmer's Bulletin Number 689.

Responding to increasing pressures for national sanitation standards, dairy farmers had to construct specialized buildings for the separating and storage of milk products. This pamphlet provides simple instruction on how to create such a building. It was re-issued in 1938 with variations on the original plan: Kelly, Ernest, Karl Parks, and Ralph Hortis (1938) Farm Dairy Houses. United States Department of Agriculture Farmer's Bulletin Number 1214.

Kohl, Edith Eudora
1986 *Land of the Burnt Thigh*. St. Paul: Minnesota Historical Society Press.

The autobiographical story of the Ammons sisters, who filed a claim south of Pierre in 1907. Contains detailed information on processes, expenses, and statistics regarding women homesteaders in South Dakota.

Koop, Michael, and Carolyn Torma
1984 German-Russian Folk Architecture in South Dakota. National Register of Historic Places Inventory–Nomination Form.

This nomination for a group of thematic resources provides historic, cultural, geographic, and architectural details of German-Russian sites in the state of South Dakota.

Koop, Michael, and Stephen Ludwig
1984 *German-Russian Folk Architecture in Southeastern Dakota*. South Dakota State Historic Preservation Office.

Koop and Ludwig identify the "low-roofed, rectangular, central chimney house" as a unique vernacular style attributable to Russian-Germans in South Dakota. This study describes this vernacular form in detail, and provides descriptions of extant structures in South Dakota.

Lee, Bob, and Dick Williams
1964 *Last Grass Frontier: The Stock Growers Heritage of South Dakota*. Sturgis: Black Hills Publishers, Inc.

A mid-twentieth-century perspective on the history of stock raising in South Dakota. An "insider view" sponsored by the South Dakota Stock Growers Association.

Lindell, Lisa
2009 "So Long as I Can Read": Farm Women's Reading Experiences in Depression-Era South Dakota. *Agricultural History* 83(4):503–527.

Lindell discusses the barriers rural farm families overcame to gain access to reading materials during the Great Depression. In particular, rural mobile libraries were established to serve such communities.

Longfellow, Rickie
2011 South Dakota's Black Hills to the Badlands Road History. U.S. Department of Transportation, Federal Highway Administration. Available at http://www.fhwa.dot.gov/infrastructure/back1004.cfm. Accessed March 26, 2013.

Longfellow provides a very brief history of highway development in South Dakota including information of the Highway "Courtesy" Patrol.

Lundy, Gabriel
1949 *Graphic Views of Changes in South Dakota Agriculture*. South Dakota State College Agricultural Experiment Station.

Lundy provides a plethora of data on farmsteads in South Dakota, including, but not limited to, information on types of farms, crop and livestock yields, soils, precipitation, and the tenure of operators. Lundy provides the bulk of his data in single-variate graphs.

Lyons Press
1999 Series reprints of how-to books for homesteaders in the late nineteenth and early twentieth centuries.

These are informative guides to farm equipment, methods, and farm building construction, with sufficient illustration to allow for identification of material remains of farm equipment at homestead sites, in most instances.

- Davidson and Chase. 1908. *Farm Machinery: Practical Hints for Handy-men.*
- Deere, John. 1937. *The Operation, Care, and Repair of Farm Machinery*. 2nd ed.
- Dwyer, C. P. 1872. *The Homestead Builder: Practical Hints for Handymen.*

- Martin, George A. 1887. *Farm Appliances and How to Make them.*
- Martin, George A. 1900. *Fences, Gates and Bridges and how to build them.*

Macintire, William

2009 *A Survey of Historic Sites in Rural Marion and Washington Counties, Kentucky.* Kentucky Heritage Council, The State Historic Preservation Office.

Macintire presents the results of a state-wide historic sites survey in Kentucky. This resource is especially valuable for the information presented on barns and other domestic outbuildings.

Marsh, C. W.

1886 Reapers: Their Invention and Development. *The Dakota Farmer*, February, March, April.

This serial provided the farmer with an in-depth history of reaping grains, going back to ancient times. Block-cut illustrated, the Dakota Farmer ultimately served as an advertisement for agricultural companies. The various illustrations of machines as well as the detailed narrative can help in the identification of artifacts observed in fields and homesteads.

Martens, Harry, Ed Bailey, and Roland Leonhardt

1969 *History of South Dakota's Conservation District.* Prepared by the History Committee of the South Dakota Association of Soil and Water Conservation Districts.

Martens et al discuss the creation of South Dakotas' individual conservation districts beginning with the establishment of the soil conservation service and the help of the Civilian Conservation Corps in the mid-1930s. A great state history of the conservation efforts in South Dakota in response to the dust bowl drought of the preceding years.

Matthews, Allan

1973 Agrarian Radicals: The United Farmers League of South Dakota. *South Dakota History* 3:408–421.

Matthews discusses the devastating effects of the drought, subsequently known as the "dust-bowl," on South Dakota farmers. While a large percentage of farmers and ranchers lost their properties, those that did survive turned to radical political organizations that fought farm foreclosures and lobbied for increased aid from the government. This article provides contextual information for understanding the abandonment and adaptations of dust-bowl era farms and ranches.

McCurry, Michael

2008 A Study of Recent Hutterite Outmigration in South Dakota. Unpublished Ph.D Dissertation, Department of Sociology, South Dakota State University.

While focusing on recent phenomena of Hutterite out-migration in South Dakota, McCurry looks at the social and economic history of Hutterite settlements in the state which is tied closely to agriculture.

McKay, Joyce
1976 Rammed Earth Houses were Economical and Ecological. *South Dakota High Liner* September: 28.

McKay describes the Russian immigrant tradition of constructing rammed-earth houses in historic South Dakota, and identifies individual structures which were still standing when the newspaper article was published in 1976. A distant cousin of the prairie sod-house, rammed-earth buildings were popular in the literature of the SDSC Agricultural Extension bulletins during the 1930s; SDSU still has a rammed-earth residence that is currently used as a machine shed (Norton personal communication Agricultural Museum 2012).

McKibben, E. G., and J. Brownlee Davidson
1933 *Wind Electric Power Plants*. Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts. Bulletin 297.

This pamphlet provides practical information on the proper installation and use of a windmill. It specifically addresses the windmill as generator and the use of batteries for electrical storage when wind is low. The agricultural extension service tested a windmill for continuous use for a year, measuring watt-hours during various wind conditions.

Means, Jeffrey
2007 From Buffalo to Beeves: Cattle and the Political Economy of the Oglala Lakota, 1750-1920. Unpublished Ph.D Dissertation, Department of History, University of Oklahoma.

Means discusses the political-economic history of the Oglala Lakota on the Pine Ridge Reservation in western South Dakota in terms of the tribe's attempts to create a sustainable economy by transitioning from nomadic buffalo hunting to communally owned beef-cattle herds. The Oglala's attempts were thwarted by federal policies that sought to assimilate the tribe through dependency measures, as well as internal political shifts between individuals who sought to maximize opportunities for their families versus the tribe as a whole. According to the author, by 1920 the communal cattle herd had completely collapsed and the Oglala Lakota were forced again to transition to other forms of subsistence.

Miller, John
1985 Restrained, Respectable Radicals: The South Dakota Farm Holiday. *Agricultural History* 59(3):429–447.

Miller discusses the course that the Farm Holiday took in South Dakota in the early 1930s. A movement to counter-act the low prices being received at market for farm products, the Holiday movement sought to withhold agricultural products until "cost of production" was achieved. Miller argues that the movement acquired a different, more moderate character in South Dakota than in some neighboring states such as Minnesota and Wisconsin, due in part to geography, more conservative political organizations and leadership, and the historical trajectory of the state. Miller discusses how the Holiday also sought to alleviate farm foreclosures.

Murphy, D.
1984 *Building in Clay on the Central Plains: Time, Place, Ethnicity*. Missouri Valley Historical Conference, Omaha.

Murphy emphasizes the need for researchers in the state to recognize the presence of rammed-earth structures, particularly in regards to German-Russian and Czech settlements. Murphy provides specific examples of rammed-earth, puddled-clay and clay-brick buildings, both extant and extinct. This may be most significant in thinking about an archaeological signature for such structures. Murphy discusses that many such structures began to "melt back into the earth" as soon as they were abandoned. He also discusses similar types of construction such as the known use of wattle-and-daub. This may prove most valuable for archaeologists in that it is possible for such structures to be mistaken for Native American habitations. Murphy also provides a specific time period in which these types of earthen structures were built on the Great Plains.

National Preservation Program for Agricultural Literature
2012 Harvest: Access to Historical Agricultural Collections. Available at http://harvest.mannlib.cornell.edu/node/33.

This database, hosted by Cornell University, provides access to a number of historic documents related to agriculture in the United States.

Natural Resources Conservation Service
2010 *South Dakota Conservation History Timeline*. United States Department of Agriculture.

A temporal history of the legislative and political events impacting soil and water resources in the state of South Dakota, beginning with the westward expansion and the Homestead Act of 1863 through the 2009 American Investment and Recovery Act.

Nelson, Paula
1986 *After the West was Won: Homesteaders and Town-Builders in Western South Dakota, 1900-1917*. Iowa City: University of Iowa Press.

Nelson focuses on the daily experience of South Dakota homesteaders, providing the reader with details about what it took to settle a claim on the frontier and survive the harsh conditions of the environment. Nelson provides a romantic image of the tenacious homesteader by identifying real individuals and vignettes of their experiences.

Nelson, Terry
2001 An Examination of Roles and Identities of the Farm Population within Beadle, Brookings, Hamlin, Lake and McCook Counties of South Dakota. Unpublished Ph.D. Dissertation, Department of Sociology, South Dakota State University.

Nelson investigated the motivations behind males and females seeking employment off the farm in rural counties in South Dakota. Nelson concluded that men who strongly identified as farmers sought employment off the farm in an effort to garner resources to hold on to the "family farm," while women often sought to supplement family incomes through social networks. This thesis provides contextual information that informs how networks between farmers and farmsteads developed and how various institutions outside of agriculture may have affected the farm environment.

Newton, R. G.
1886 A Cyclone Cave. *The Dakota Farmer* 5(12):12.

Newton provides a simple plan and instructions for constructing a tornado shelter, which he also advocates as being used for root storage.

Noble, Allen, and Richard Cleek
2006 *The Old Barn Book: A Field Guide to North American Barns and Other Farm Structures*. New Brunswick: Rutgers University.

Allen and Cleek discuss various farm structures that are found nation-wide. As well as focusing geographically, the authors provide insightful information on how to identify various farm buildings as well as cultural and historical information relevant to the various types.

North Dakota State University Digital Archives United States Department of Agriculture Building Plans. Available at http://www.ag.ndsu.edu/extension-aben/buildingplans/miscellaneous.

This digital resource provides plans for various buildings and structures put out by the USDA between the 1920s and the 1990s for use on farms, ranches, and private homes.

Olsen, Gene, Alice Olsen, and Jan Cerney
2012 *Around Chamberlain*. Charleston: Arcadia Publishing.

On the Missouri River, Chamberlain played a key role in westward expansion and agricultural settlement on both sides of the river. This collection of historic photographs includes a chapter on farm and ranch settlement.

Ostergren, Robert
1983 European Settlement and the Ethnicity Patterns on the Agricultural Frontiers of South Dakota. *South Dakota History* 13(1&2):49–82.

"The aim of this study is to provide background information on the temporal and spatial patterns of ethnic settlements in South Dakota and on the role played by ethnic groups in the molding the state's distinctive agrarian society. For organizational purposes, the body of the essay is divided into three sections. The first discusses the general processes that brought all of South Dakota into the settles ecumene [sic] of the Upper Midwest, for the settlement patterns of South Dakota, or any other state, cannot be treated in isolation. The second section describes the ethnic pattern that developed over time, focusing on the formation of communities and regional consciousness within the boundaries of the state. The last section deals with ethnic culture and its relationship to the agrarian society that emerged in South Dakota by the early part of the twentieth century."

Patty, Ralph
1930 *The South Dakota Poultry House*. South Dakota State College, Extension Service, Circular 295.

Provides plans for a poultry house that is specifically designed with harsh South Dakota winters in mind, as well as keeping the cost of constructing it reasonable for the average farmer. Along with building plans, Patty also provides information on the best location for a poultry house.

Patty, Ralph
1931 *A Septic Tank for Farm Sewage Disposal*. South Dakota State College, Extension Service, Circular 307.

Patty provides extensive information on the necessity for proper sewage disposal as well as detailed plans on how to construct a modern septic tank on the South Dakota farmstead.

Putz, Paul, ed.
1989 *Historic Contexts for Historic and Architectural Resources in South Dakota*. South Dakota Historical Preservation Center.

This document provides a broad history of the state of South Dakota, with a particular emphasis on providing context for identifying significant historic resources in the state. This document also provides the 1989 update of the SHPO's statewide preservation plan. This document informed the new periods of significance developed by the 2013 agricultural-context update.

Rau, John E.
1987 Czech Folk Architecture of Southeastern South Dakota. National Register of Historic Places, Inventory–Nomination Form.

SDSHS staff historian Rau wrote: "All [22] sites contained here relate to the settlement history of Czechs in the state and to their construction of folk buildings." The successfully nominated property forms are accompanied by maps, floor plans, photographs, and contextual information.

Rabild, Helmer, and K. E. Parks
1917 *Homemade Silos*. United States Department of Agriculture, Farmers' Bulletin Number 855.

Rabild and Parks describe the various types of silos that were in use at the time on private farms, and provide instructions for building them on the farmstead. The types of silos discussed include concrete, stave, and wooden hoop.

Reynoldson, Leroy
1938 *Haystackers and Their Use*. United States Department of Agriculture, Farmers' Bulletin Number 1615.

Focusing on farmsteads that were still largely reliant on horses for harvesting and transportation, this pamphlet explained how haystackers provided a desirable level of efficiency for the small family farm. In addition, the USDA also provided several plans for constructing a haystacker, many of which post-date this initial publication.

Riley, Glenda
1983 Farm Women's Roles in the Development of Agriculture in South Dakota. *South Dakota History* 13(1&2):83–121.

Riley proposes that the unique difficulties associated with the homesteading in the Dakotas presented a unique set of challenges to Victorian women on the frontier. For these women, there were often tensions about providing stable domestic homes and the instability of homesteading, as well as the requirements of pitching in and doing traditional, male labor. Riley also discusses the opportunity afforded to single and unattached women by the Homesteading Act.

Robinson, Doane
1904 *History of South Dakota*. B.F. Bowen and Company.

Robinson wrote about the economic condition of South Dakota up to the turn on the century, focusing on the development of agricultural commodities. Breaking down his analysis geographically, Robinson provides information about dominant industries in various counties and cities, including the wool industry and sheep herding.

Rogers, Stephen, and Lynda Schwan
2000 *Architectural History in South Dakota*. South Dakota State Historic Preservation Office.

A guide to examples of architectural styles found in South Dakota, with photographs and brief narrative descriptions. Many of the houses are "recent," urban, and more affluent. There are a few examples of barns and agricultural buildings.

Rommel, George
1904 *Pig Management*. United States Department of Agriculture, Farmer's Bulletin Number 205.

Rommel describes the economic benefits of raising and selling swine, as well as providing farmers with basic instruction on the proper care and keeping of the animals.

Schell, Herbert
1931 Drought and Agriculture in Eastern South Dakota during the Eighteen Nineties. *Agricultural History* 5(4):162–180.

Schell looks at the period of drought that devastated South Dakota from 1886 to 1897. The author asserts that the more established communities, those established in the 1860s and 1870s, were more likely to survive the drought because these communities had already diversified their farming practices. Those communities and homesteads that were established in the 1880s were the most devastated in the drought. South Dakota officials turned to irrigation and exploitation of artesian wells as an answer to the drought problem, which became a political issue in the state.

Schell, Herbert
2004 *History of South Dakota*. Fourth Edition, Revised. Pierre: South Dakota State Historical Society Press.

First published in 1975 but updated in 2004, Schell's history of South Dakota spans the time period of the pre-European Native Americans to the end of the twentieth century. Schell intertwines state political and economic history with national trends affecting the trajectory of the state.

Seymour, E. L. D., ed.
1919 *Farm Implements and Construction*. The Netherlands: Fredonia Books.

This book provided information to the farmer on how to construct buildings and structures, and described various objects and tools that were useful on a modern and efficient farm.

Shepard, James
1897 *Irrigation in South Dakota*. United States Experiment Station, South Dakota. Bulletin 52.

This publication focuses on the potential uses of artesian wells in the James River Valley of South Dakota. To understand the costs and needs of such a well, in 1895 the experiment station established a test farm that consisted of a "complete irrigation plant, consisting of a 6-inch well, a 5-acre reservoir, and upwards of 5 miles of ditches." This document provides valuable information on a complex irrigation landscape.

Smith, Mark, and James Boyle
2003 Analyzing Farm Layout and Farmstead Architecture. *Northeast Historical Archaeology* 32(1)5. Available at http://digitalcommons.buffalostate.edu/neha/vol32/iss1/5.

Smith and Boyle use GIS to interpret evolving patterns in the built landscape nineteenth-century farmsteads in upstate New York. The authors identify the various influences of traditional agrarian concepts of proper farm layout with the increasing influence of progressivism.

South Dakota State College Extension Service
1937 *Arranging the Buildings on a Farmstead*. South Dakota State College Extension Service, Bulletin 363.

This pamphlet, which advises a farmer on how to arrange the built environment of the farmstead for maximum efficiency, is based on a study of farms in which data were collected on the number of individual steps required to complete all chores by the farmer in a single day. Likening the farm to a factory, the pamphlet urges modernization in spatial use and equipment as valuable labor saving devices.

South Dakota State Historic Preservation Office
1882–1883 GLO Land Survey Field Notes. South Dakota State Historic Preservation Office Digital Archives. Available at http://sddigitalarchives.contentdm.oclc.org/cdm/landingpage/collection/p15914coll1.

"This collection contains the original land survey field notes created by the Bureau of Land Management General Land Office in the late 19th and early 20th centuries. Currently, only a few of the books of subdivision field notes are available, but more will be added as the books are digitized. Field notes are searchable by township and range numbers. Images have been taken directly from the original microfilm, and the best available, though some pages may have poor contrast, bleed-through, light text, etc."

South Dakota Historical Society
1954 Flour Mill. *Wi-Iyohi: Bulletin of the South Dakota Historical Society* Vol 8(7).

This pamphlet provides a brief history of flour mills in South Dakota, beginning with Native American style mano and matates. This is more similar to an annotated bibliography than an analysis of a property type, but provides valuable information on property types and geographic locations. In doing so, it also provides other information on settlement and movements of people through the state.

South Dakota Historical Society
1965 Steam boating on the Upper Missouri. *Wi-Iyohi: Bulletin of the South Dakota Historical Society* 14(6).

A list of steam boat arrivals at various South Dakota cities on the Missouri.

South Dakota State University Agriculture Museum
Unknown Date. *Building Service*. On file at the South Dakota State University Agriculture Museum.

This publication consists of a series of cards with photographs of agricultural buildings and associated floor plans, including barns, hog houses, and granaries. The cards are glossy paper, bound in a leather binder with multiple rings. Located in the archives of the South Dakota State University Agricultural Museum, it lacks any identifying information as to publisher or author. Presumably it was used for the Agricultural school or the extension service. The final four pages are the plans for a round barn taken from another published source with full citation.

Stark, William
2007 Vanishing Giants: The Grain Elevators of Minneapolis and their Legacy. *Hennepin History* 66(2):15.

Stark focuses on the history of the grain elevators that defined Minneapolis industry, but provides valuable information on the socio-economic importance of grain elevators to American agricultural industry.

Stewart, James
1981 Historic Hutterite Colonies Thematic Resources. National Register of Historic Places Inventory–Nomination Form.

Author Stewart, of the University of South Dakota, Department of Social Behavior, wrote, "This nomination includes the historic core of [14] colonies which were settled prior to 1918, when the[im] migration to Canada began.... The Hutterites are composed of three groups: the Schmiedeleut who settled Bon Homme Colony; the Dariusleut who established themselves at Silver Lake and are best known by their second colony at Wolf Creek; and finally, the Lehrerleut whose origins are the Old Elmsprings Colony." The nominated-properties details include site plans, genealogical charts, and contextual information.

Thompson, Harry F., ed.
2005 *A New South Dakota History.* Sioux Falls: The Center for Western Studies.

A strong thematic look at the state's history, with primary contributions by Herbert T. Hoover and John E. Miller.

Torma, Carolyn
1984 The Architecture of Finnish Settlement in South Dakota. National Register of Historic Places, Inventory–Nomination Form.

SDSHS staff historian Torma wrote: "The...nomination consists of ten sites, all of which were built during the years of settlement, 1878 to 1920. The sites include five farms, two ranches, one hall, one

store and a cemetery." These accompanying nominations include informative site plans, photographs, and contextual information.

Upton, Dell
1986 *America's Architectural Roots: Ethnic Groups that Built America*. Washington, D.C.: Preservation Press.

Upton describes the architectural history of various groups of settlers in the United States. Particularly important for South Dakota, Upton provides great detail about the unique characteristics of Hutterite, Finnish, Swedish, and German-Russian ethnic groups.

U.S. Army Corps of Engineers
2009 *Projects, Products, and Services: Celebrating 75 Years of Excellence*. U.S. Army Corps of Engineers, Omaha District.

This publication is a photo-history of the dams built along the Missouri River in the years 1937 through 1957, including three in South Dakota. The history touches on the economic development of larger urban communities as well as practical considerations such as flood control. It also briefly discusses the agency's often tense relationship with Native American groups within its region. Binders of extensive archeological and land surveys conducted by the Corps for these projects are available at the South Dakota State Historical Society Archaeological Resource Center in Rapid City.

U.S. Department of the Interior, Bureau of Land Management
2012 Homesteading Timeline. Available at http://www.blm.gov/wo/st/en/res/Education_in_BLM/homestead_act/homesteading_timeline.html. Accessed March 16, 2013.

The BLM provides information on the important legislative milestones that allowed for the development of frontier homesteading in the American West.

U.S. West Research, Inc.
2000 *Indian Housing in South Dakota: 1946-1975*. Prepared for the South Dakota State Historic Preservation Office.

This study looks at the history of post-World War II Native American housing, emphasizing the federally funded and regulated structures built on reservations in South Dakota.

Wickson, E. J.
1901 *Irrigation in Field and Garden*. United States Department of Agriculture, Farmer's Bulletin Number 138.

Wickson provides a comprehensive review of various types of irrigation and the best conditions under which to use them. At the turn of the century this pamphlet would have been as useful to the farmer as to the domestic gardener.

Wiese, Mike, and Tom Hayes
2004 *South Dakota Railroads*. Charleston: Arcadia Publishing.

This is a collection of historic photographs of depots, trains, grain elevators, and related features from 1907 to 1920, offering a visual record of the critical role rail lines played in agrarian settlement in South Dakota.

Winham, R. Peter, and L. Adrien Hannus
1990–1991 *South Dakota State Plan for Archaeological Resources*. State Historic Preservation Office.

This draft document provides a history of the state that is seemingly pertinent to the identification of historic archaeological resources, including their relationships to ethnic groups, property types, and time periods. This document also provides information on previously recorded archaeological sites.

Wunder, John R., Frances W. Kaye, and Vernon Carstensen, eds.
1999 *Americans View Their Dust Bowl Experience.* Boulder: University Press of Colorado.

First-person accounts with accompanying historical analysis of the Dust Bowl years in the Heartland, including information on South Dakota's role in Depression-era politics, the South Dakota Farm Holiday movement, and other related historic events and factors.

Yost, Josie Lee
1983 A Summary of Homestead House Types in South Dakota 1860-1910. Unpublished Manuscript, on file at the South Dakota State University Agriculture Museum.

In this unpublished manuscript Yost describes in intimate detail the establishing of a homestead. His descriptions are not only related to the exterior construction of a house, ranging from soddies to cabins, but also how the interior would be organized and furnished. Yost illustrates her narrative with vivid anecdotes and folk histories about homesteading in South Dakota.