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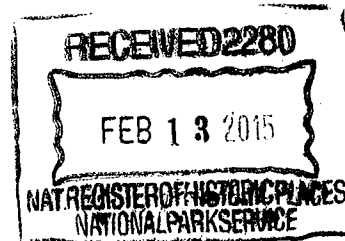
NPS Form 10-900-b

OMB No. 10024-0018

(June 1991)

United States Department of the Interior  
National Park Service

## National Register of Historic Places Multiple Property Documentation Form



This form is used for documenting multiple property groups relating to one or several historic contexts. See instructions in *How to Complete the Multiple Property Documentation Form* (National Register Bulletin 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900-a). Use a typewriter, word processor, or computer to complete all items.

☒ New Submission ☐ Amended Submission

### A. Name of Multiple Property Listing

Tennessee Division of Forestry Fire Lookout Towers, 1933 – 1975

### B. Associated Historic Contexts

Public Land Management and the Conservation Movement, ca. 1870- ca. 1907  
Tennessee Division of Forestry, 1914 – ca. 1975  
Civilian Conservation Corps, 1933-1942

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### D. Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this documentation form meets the National Register documentation standards for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. ( See continuation sheet for additional comments.)

Signature of certifying official/Title

Date

Deputy SHPO Tennessee Historical Commission

State or Federal agency and bureau

I hereby certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper

Date of Action

State or Federal agency and bureau

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## **E. Tennessee Division of Forestry Fire Lookout Towers, 1933- ca.1975**

### **Introduction**

The fire lookout towers and associated outbuildings featured in this multiple property document are surviving examples of the Tennessee Division of Forestry's (TDF) first organized attempt to develop a concerted forest fire management plan. The TDF was responsible for the construction of 208 fire lookout towers during the period between ca. 1930 and ca. 1970 (Kirksey, 2014). Although less in number today, surviving fire lookout towers serve as tangible reminders of the TDF's wildfire management practices and as icons of twentieth century fire fighting technology.

Fire lookout towers are representative of several important events in Tennessee's history during the twentieth century. First, they are the physical manifestation of federal and state conservation movements of the late nineteenth century designed to protect and restore the productivity of timber and arable lands. As a result of industrial and agricultural activity of the nineteenth century, many forested regions by the early twentieth century were characterized as barren wasteland scarred by erosion associated with extensive deforestation practices. The leftover remains of logging activity, known as "slash", serve as a wildfire propellant, further damaging the soil and preventing new growth. Although timber and mining companies, were principal contributors to large-scale deforestation, Tennessee farmers were also culpable. As the number of Tennessee farms increased during the late nineteenth century, agricultural practices routinely included the removal of trees on hill slopes and tops in an effort to maximize room for livestock grazing and crop production. In addition, routine burns designed to spur grass growth for roaming livestock also contributed to the erosion problem. As a result, these practices increased the propensity of wildfire and ultimately made once arable land useless. Secondly, Tennessee's fire lookout towers are representative of the historical development of the TDF, the agency in charge of implementing the state's first forest fire management program. Through the construction of its fire towers, the TDF developed a comprehensive surveillance and fire detection system designed to protect the state's timber reserves from damaging wildfires during a 40-year period. Fire lookout towers stemmed from specific policies for fighting fire which were implemented in the early history of the TDF and continued to 1975. Thirdly, many of TDF's fire lookout towers were erected in the 1930s in partnership with President Franklin D. Roosevelt Administration's New Deal agency, the Civilian Conservation Corps (CCC) (Mastran and Lowerre, 1983; TSLA Collection 1987). Lastly, Tennessee's fire towers (and if extant, associated outbuildings) represent a functional building type designed for and constructed in rural areas. Collectively, the fire towers formed the physical manifestation of TDF's fire detection network between 1933 and 1975.

### **Context 1: Public Land Management and the Conservation Movement (1870-1907)**

The creation of Tennessee's fire lookout network can be traced to the emergence of state and national conservation movements of the late nineteenth century, which developed largely in response to extensive deforestation and erosion linked to industrial and agricultural practices (Toplovich, 1998a; Maddox, 1916). After Reconstruction, Tennessee's vast timber reserves and untapped ore deposits (coal, copper and iron) helped to fuel a previously unprecedented industrial boom that was facilitated by improvements to the state's railroad network. Advances to Tennessee's railroad system, and that of other states, combined to accelerate the industrial growth of the nation as it not only shortened the time in which materials and products could be transported, but it also allowed for people to move more efficiently from one region to another. As a result, shifts in population, which heretofore had been largely limited by the speed of the horse and wagon or by sheer distance, were now occurring at an exceedingly faster rate. This, coupled with the arrival of millions of

European immigrants to the country, fostered the rapid growth of the American economy during the late nineteenth century, leading to an ever-increasing demand for raw materials for the production of goods.

One such raw material in high demand during this period was timber. The need for wood board, integral to the surging housing industry, led timber companies to the vast reserves within the Southern Appalachian region. For the first time in the nation's history, aided by an expanded railroad network, builders located far from major seaports were supplied with a consistent stream of mass-produced, affordable wood for construction (McAlester and McAlester, 1990). In turn, this spurred the development of balloon frame construction methods, which quickly replaced traditional techniques that relied on heavy, hand-hewn timber framing. Balloon frame construction provided builders with cheaper construction and labor costs through the use of pre-cut, lightweight lumber and machine-produced nails. In addition, advances in electricity in the manufacturing sector spurred the development of electrically-powered lathes and saws that allowed for wood to be cut in mass quantities never before realized. The increased availability and low cost of wood not only allowed for the construction of more housing units, but it served as a catalyst for the emergence of mail-order houses, such as those of famed Knoxville architect George Barber (Wheeler, 1998). The new houses popularized during this period consisted of Victorian Era styles featuring highly decorative interior and exterior ornamentation that relied heavily on the availability of large quantities of pre-cut wood board and ornamentation (McAlester and McAlester, 1990).

Consequently, numerous companies, many owned by Northern and foreign investors, purchased or leased vast tracts of land in Tennessee for timber extraction. Although logging activity in the state had occurred prior to the Civil War to support iron forges in the Western Highland Rim region and the area around Tellico Plains, logging as an industry was not made profitable until improvements were made to the state's railroad infrastructure (Brown, 1998). In Tennessee, the period between 1880 and 1920 marked the state's timber boom, which resulted in extensive deforestation in East Tennessee and the Upper Cumberland Region (Brown, 1998).

The origins of large-scale logging in Tennessee began in the 1870s as the state's bountiful timber reserves were promoted by Nashville and Memphis businessmen to lumber companies based in the Northeast. By 1881, Nashville began publication of the *Southern Lumberman*, a trade association journal that targeted Southern hardwood companies. During this period, Nashville lumber mills received the majority of their hardwood from the Upper Cumberland region. In Clay County for example, logging was the principal industry from the county's formation in 1870 until the early part of the twentieth century. In 1890, more than twenty sawmills processed millions of feet of cut board, with rafts floating great quantities of logs down the Cumberland River to Nashville sawmills. The strength of the timber industry lasted only as long as the timber stands remained. Consequently, unsustainable timber practices in Clay and other counties precipitated the industry's demise by 1930 (McLerran, 2010).

In East Tennessee, much of Cocke County was either purchased or leased by the Scottish Carolina Timber and Land Company (SCTLC). Backed by American, British and Canadian investors, the company's operations in Tennessee were managed by Canadian Alexander A. Arthur (Toplovich, 1998a). The completion of the Western North Carolina Railroad in 1882, which was largely financed by SCTLC, facilitated logging operations in East Tennessee and allowed cut timber to be transported to markets in Asheville, North Carolina and Knoxville, Tennessee. However, a major flood in 1886 destroyed much of the log booms and mills along the French Broad River, forcing SCTLC to move its operations to the Cumberland Gap area (Toplovich, 1998a). Backed by a new group of foreign investors known as the American Association, Arthur resumed SCTLC's logging operation. The successes of the SCTLC played a pivotal role in the development of the towns such as Cumberland Gap and Newport and provided jobs to many area residents (Walker III 1998).

Rivaling Arthur and SCTLC's operations was Pennsylvania timber baron Wilson B. Townsend. By the late nineteenth century, Townsend had established successful lumber operations in his home state as well as

acquiring extensive interests in clay, coal, railroad, and tile holdings in East Kentucky. In 1901, Townsend moved to Tuckaleechee Cove in Blount County, Tennessee, to expand his lumber interests (Brown, 1998). Upon his arrival, Townsend quickly constructed a railroad, mill, and company town, which assumed his namesake. Unlike his previous logging operations, which utilized circular saws, Townsend fitted his new mills with band saws that allowed for the cutting of very thick logs with minimal waste. Other technological improvements practiced by Townsend included the use of steam-powered skidders to transport fallen timber. By 1910, Townsend's operation produced 120,000 board feet of wood per day (Brown, 1998).

Other notable logging companies that operated in Tennessee during this period included the Tellico River Lumber Company, which was based in Monroe County and led by a group of Pennsylvania businessmen. The Tennessee Timber Coal and Iron Company, formed by a New York group, operated in Cumberland County. In Southeastern Tennessee, two Cincinnati-based investment groups managed the Grand View Coal and Timber Company and the Conasauga Lumber Company (Brown, 1998).

In West Tennessee and the surrounding region, logging activity was so extensive that 32 hardwood mills operated in Memphis by 1910 (Brown 1998). As a result, the city attracted furniture makers from across the nation, which led Memphis' business community to promote itself as the "Hardwood Capital of the World" (Brown, 1998).

In addition to its timber reserves, demand for coal and copper led to extensive mining activity in Tennessee during the post-Civil War era and fueled the state's economy. As with the logging industry, mining operations in the state were led largely by Northern businessmen who benefited greatly from improvements to the state's railroad network as it allowed for greater accessibility to coal deposits and the means to deliver it to various markets (Fickle, 1998). Much of the state's coal mining operations were located within the Upper Cumberland regions of East Tennessee, the Sequatchie Valley, and the Cumberland Plateau. By 1880, Tennessee's coal industry experienced a five-fold increase in production that resulted in the employment of roughly 7,400 residents. The overall value of the coal produced by 1880 reached \$2,340,000 (Fickle, 1998). By 1909, coal became the state's leading mining industry (Fickle, 1998).

In the late nineteenth century, copper competed with coal as one of Tennessee's leading mining industries. However, unlike coal, which was extracted from deposits accessible by constructing an underground mine shaft, early methods of extracting copper from ore involved an open-roasting process that required vast amounts of timber to fuel smelters (Toplovich, 1998a). As a result, copper mines vied with lumber companies for timber, leading to large tracts of deforested land. In Polk County for instance, the 40-square mile Copper Basin (NRHP, Tennessee Copper Basin MPS, 5-15-1992) was the focus of the state's copper mining industry, which was surrounded by miles of cleared forest land. Between 1890 and 1907, extensive copper mining resulted in significant destruction to the area, as sulfuric acid released in the smelting process spread throughout the region in the form of acid rain, destroying all vegetation and remaining tree stands within the immediate area. By 1908, despite advances in the smelting process, which ended the open-roasting of ore deposits, the Copper Basin region was laid bare and suffered extensive erosion from rains. As a result, the red clay hills of the region were left to deteriorate to the point that the topography of the area mimicked a lunar landscape (Toplovich, 1998a).

Exacerbating the deforestation and erosion problems in Tennessee were late-nineteenth century agricultural practices carried out by its farmers. In an effort to re-establish its shattered agricultural economy after the Civil War, Tennessee's agricultural sector worked feverishly to restore the state's position as one of the nation's leading producers of cotton and tobacco. However, as a former slave state, Tennessee's agricultural community underwent significant economic and cultural changes as a result of the elimination of slave labor (Winters, 1998). Large-scale plantations that formerly characterized much of the agricultural landscape of Middle and West Tennessee during the antebellum period were soon subdivided. The elimination of plantation-style farms

had the dual effect of reducing the average size of Tennessee's farms, while increasing the total number of individual farms in the state. This was fueled by a dramatic increase in the number of property owners, both white and black, who pursued farming as an occupation. Concurrent with increases in farm ownership were tenancy rates through sharecropping and other agricultural-related work (Winters, 1998). By the end of the nineteenth century, Tennessee once again ranked as one of the leading agricultural producing states in the nation. Between 1860 and 1900, tobacco production increased some 15 percent while cotton production doubled (Winters, 1998).

Yet, as with logging and mining operations, agriculture also led to significant erosion problems. With the increase in the number of farms in the state, forests not already felled from logging or mining activity were cut down by farmers in order to find new ground to cultivate their crops. After clearing level land of trees, farmers expanded their farms to include hillsides and ultimately hilltops in order to maximize the land for both crop production and cattle grazing (Maddox, 1916).

In reaction to the deteriorating condition of Tennessee's lands, Col. J. B. Killebrew, State Secretary of Agriculture noted in 1874:

It is apparent that some legislation is demanded for the preservation and reproduction of timber... Old fields are lying idle and unfenced in every portion of the State that could be reclaimed by being planted in trees. They are now unsightly and hideous pictures in the landscape, worthless to the owners and to the State. . . . The wealth of a State depends primarily upon its soil and timber, and it is the solemn duty of the lawmakers to look beyond the present ... by taking steps for the reclamation of the soil and the preservation of the timber [cited in Wicker, 1968: 308]

Despite Killebrew's warnings, initial conservation efforts at the state level focused on the passage of laws governing wildlife (Toplovich, 1998a). Yet, in 1901, Killebrew led the formation of the Tennessee Forest Association, which held its first meeting at the University of the South in Sewanee (Peterson, 1964: 2). Following its formation, the Tennessee Forest Association successfully lobbied the state legislature to pass a resolution in 1903, to create a three-member panel to investigate the condition of the state's forest (Peterson, 1964: 3). In stark terms, the preamble of the resolution provides a dire description of Tennessee's forest at the time:

Whereas, the forest of the State of Tennessee are rapidly disappearing from causes, many of which it is believed are wanton and unnecessary; and  
Whereas, such destruction is highly detrimental to the agricultural, lumber and timber interests of the State and to the regular flow of the streams resulting in the washing away of the soils from steep deforested slopes and the filling up of the stream beds, thereby causing great destruction by floods on all streams, a great injury to agricultural lands and to navigation on our principal rivers [cited in Peterson, 1964: 3].

The findings of the three-member panel substantiated the concerns raised by the Tennessee Forest Association and propelled the enactment of the 1907 General Forestry Law (Peterson, 1964: 4). The purpose of the General Forestry Law specifically called for the protection of public and private lands against forest fires. However, as with most early conservation measures passed by the state legislature, the act did not provide details, nor the necessary funding for implementing a fire protection program (Peterson, 1964: 4).

In 1913, the state conservation movement culminated in the first National Conservation Exposition, held in Knoxville. The event touted the need to protect the state's natural resources beyond wildlife to include forests, arable soil, and water. In addition, it addressed the role of the environment and how it relates to the public

health. The exposition was sponsored by the National Conservation Commission, which was appointed by President Theodore Roosevelt (Toplovich, 1998a).

The emergence of Tennessee's industrial and agricultural base played a significant role in the recovery of the state's economy following the Civil War by providing employment to thousands of residents and newly freed slaves. In turn, the success of the two industries expanded the availability of goods and services for Tennesseans within a broad spectrum in the areas of furniture, houses, heating coal, and foodstuffs. However, the benefit to the economy and the everyday lives of Tennesseans came at a price to the state's environment. As logging and mining activity slowed in the 1920s, the landscapes of East and West Tennessee were left scarred by large swaths of denuded hillsides and bottom lands. The aftermath of clear cutting destroyed local wildlife, and severe soil erosion precipitated major flooding events (Brown 1998). In addition, waterways located near former copper mines were left toxic by the smelting process, which emitted sulfuric dioxide. This problem was particularly acute on the Ocoee River as a result of mining in the Copper Basin (Toplovich, 1998a; Toplovich, 1998b). In West Tennessee, vast sections of once arable farmland were turned into swamps as a result of eroded hilltops that washed sand and clay into flat cultivated fields. The ensuing sediment clogged streams, which prevented rainwater from naturally running off into the river and stream network (Maddox, 1916).

The combined aftereffects of intensive deforestation from its agricultural and industrial bases exacerbated Tennessee's environmental problems through the escalation of wildfires. Although arson and natural wildfires induced by lightning strikes were responsible for many of state's forest fires, the extensive deforestation actually helped to increase the propensity of wildfires (Brown, 1998). In a speech to the Southern Forestry Congress in 1916, Rufus Sherrill (R.S.) Maddox, the first director of the TDF, characterized the adverse effects of deforestation practices:

No precautions for the protection of young growth are taken, no provision for a future stand of timber is made. This means that when rains fall the natural obstructions to run-off have been removed and the equilibrium established between erosion and the forest cover is destroyed. Incalculable damage frequently takes place before vegetation can grow to reestablish normal conditions. This state of affairs is often aggravated by fires induced by the presence of limbs, brush and other kinds of trash left from logging. The intensity of the heat from this accumulated rubbish largely if not wholly destroys the remaining vegetation and thus further prolongs the period and the force of erosion before the area can again become normal [cited in Maddox, 1916: 64-65].

Extensive deforestation and erosion problems resulting from timber and mining activity were not confined to Tennessee alone. By this time, much of the nation faced similar damage to the environment, which ultimately spurred the federal government to take its first steps toward forest management. In 1881, Congress established a Division of Forestry within the Department of Agriculture and appointed Franklin Hough as its first director (Otis et. Al, 1986: 5). An amateur botanist, Hough had no formal experience or education in forestry (Hough was a New York physician and director of the New York Census), but recognized the rapid decline of New York's timber reserves with his work with the state census office. As a result, Hough took up the cause of forest preservation, which culminated in his 1873 address to the American Association for the Advancement of Science (AAAS) calling for measures to be taken to protect the nation's timberland for economic reasons (Otis et. Al, 1986: 5).

Impressed with Hough's presentation, the AAAS lobbied Congress to fund a study to assess the condition of the nation's forest. In August 1876, Congress approved \$2,000 for the assessment and appointed Hough in charge of the study as special forestry agent, making him the first "federal expert on forestry". During the ensuing five years, Hough carried out his assessment of the nation's forests, which culminated in a four volume report

entitled *Report on Forestry* that detailed the state of the nation's forests during the height of the industrial revolution. Hough's accounts were critical of contemporary attitudes and practices effecting forestry (Forest History Society, 2014a). In addressing the condition of Tennessee's forests Hough's report states:

That though the State of Tennessee has as yet an abundant supply of timber, it is every year becoming more apparent that some legislation is demanded for its preservation and reproduction. In the neighborhood of our furnaces, especially, the consumption of timber is enormous, and many of our finest iron fields will soon be deprived of half their value unless some legislative protection is given to the young timber. The annual conflagrations that sweep like a devouring fury through the old coaling lands, destroying the young sprouts and rendering barren a large scope of county, should be checked [cited in Hough, 1878: 486].

Despite Hough's warnings, he was largely ignored by Congress and the public, which did not immediately embrace his forest management ideas and calls for curtailing the logging of the nation's remaining timber stands (Forest History Society, 2014a). Eventually, Hough was demoted back to forest agent and replaced by Nathaniel Eggleston, who was subsequently succeeded by Bernhard Fernow. Despite Hough's demotion, he remained with the Division of Forestry and is widely regarded as the "the father of American forestry" (Forest History Society, 2014a).

The appointment of Fernow as chief of the Division of Forestry proved a watershed moment for the agency and its position toward forest management. Born in Prussia, Fernow was trained at the Forest Academy of Muenden and worked seven years with the Prussian Forest Service before immigrating to the United States in 1876 (Forest History Society, 2014b). In 1886, Fernow was appointed chief of the Division of Forestry, a position he held for twelve years. In addition, Fernow served as the executive secretary of the American Forestry Association. Until 1891, Fernow was the nation's only trained forester; as a result, he wielded considerable influence and authority, which he used to shift the focus of the conservation movement from forest preservation toward forest management. Although Fernow and his division did not have any forests lands to manage, as this was under the purview of the Department of the Interior, he was instrumental in raising public awareness of forest management from a scientific standpoint through the conduction of experiments and encouraging experts throughout the nation to contribute to the literature of forest management practices. During his tenure as director, Fernow provided the first college lectures on forestry and recommended that colleges establish degrees in forestry education. In addition, Fernow produced over 6,000 pages of bulletins, circulars, and reports through which he highlighted the condition of the nation's forests, discussed his research, and more significantly, provided a blueprint for a federal forest system and the means to manage it (Forest History Society, 2014b).

In the early 1890s, Fernow worked with Congress to draft both the Forest Reserve Act of 1891 and the Forest Management Act of 1897 (Forest History Society, 2014b). Through the enactment of these two pieces of legislation, public land laws were amended that led to the creation of vast forest reserves administered by the General Land Office within the Department of the Interior (West, 1992a; Otis et. Al, 1986: 5). Passed by the United States Congress under Benjamin Harrison's administration, 17 forest reserves were created within three years, transforming approximately 13 million acres of land into National Forests. This was followed by subsequent administrations, most notably Theodore Roosevelt, who dedicated 150 million acres, followed by Grover Cleveland and William McKinley, who dedicated 25 million acres and 7 million acres, respectively (West, 1992a). The passage of the Forest Reserve Act reversed Congress' long standing tradition of gradually transferring public-domain lands to private ownership. With the passage of the act, the forest reserves would be retained by the public domain (Otis et. al, 1986: 5). The overriding purpose of the act was to protect the nation's timber reserves from over-exploitation and to protect watersheds from erosion and flooding. However, the act

also prohibited livestock grazing, homesteading, hunting and fishing, and even tourism within the reserves (Arnold, 1992).

The period between 1898 and 1910 witnessed significant advances within the Division of Forestry. In 1898, President McKinley appointed Gifford Pinchot as the fourth chief of the Division of Forestry. A native of Simsbury, Connecticut, Pinchot received his forestry education in Nancy, France, after which he worked three years on George Vanderbilt's Biltmore Forest Estate. Later, he worked with the National Forest Commission to survey potential forest reserves in the West following the passage of the Forest Reserve Act. After McKinley's assassination in 1901, Pinchot worked with long-time political confidant, President Roosevelt, to popularize conservation of the nation's natural resources as both a concept and a national goal (Forest History Society, 2014c; Frantz, 2009). With the assistance of the Roosevelt administration, the Division of Forestry was elevated to the more prominent status of bureau in 1901. Later, in 1905, oversight of the forest reserves established under the Forest Reserve Act was transferred from the Department of the Interior to the Department of Agriculture. Having finally achieved the responsibility of managing the forest reserves, the Bureau of Forestry became the United States Forest Service (USFS) at which time Pinchot became the first Chief of the USFS from 1905-1910. By 1907, the forest reserves created under the Forest Reserve Act were officially designated as national forests (Otis et. al, 1986: 5).

The emergence of the conservation movements of the late nineteenth century led to not only significant strides in federal legislation designed to protect the nation's forests, but it also injected the philosophy of conservation into the public conscience. In Tennessee, these two components served as a catalyst in the development of the TDF and the ultimate construction of its fire tower network. As historian Peter Steere stated:

The fire lookouts...can perhaps best be viewed as a physical outcome of the conservation movement that developed in the United States in the last three decades of the nineteenth century. The important connection between the conservation movement and fire lookouts is that fire lookouts represent an actual physical manifestation of the movement's philosophy, namely the protection of resources. By providing early detection of fires that threatened forests, fire lookouts fill this role in a clear and concise manner [cited in Steere, 1987: 18].

## **Context 2: Historical Development of the Tennessee Division of Forestry 1914- ca. 1975**

Central to the growing conservation movement surrounding the protection of forest lands was the ability to manage wildfires. By the early twentieth century the nation had grown to fear the specter of uncontrolled forest fires following a series of infamous blazes that resulted in horrific costs in both human life and property. In 1871, the worst loss of life in United States history due to a wildfire occurred when the Peshtigo Fire swept through Wisconsin. Fueled by leftover slash by logging companies, the fire resulted in the death of more than 1,152 people (National Fire Protection Association [NFPA], 2013c). Later, on September 1, 1894, a wildfire destroyed the town of Hinckley, Minnesota, resulting in the destruction of 160,000 acres, and the death of 418 people (Brown, 2006; NFPA, 2013c).

In particular, the Great Fire of 1910 in Montana and Idaho contributed greatly to the philosophy that fire was a danger that needed to be suppressed, rather than allowed to burn itself out, and led to a lasting impact on the USFS's approach to fire management (Galvin, 2007; Ingle, 2011; Petersen, 1994). The Great Fire of 1910 burned 3,000,000 acres, destroyed a number of communities, and killed 86 people (Galvin, 2007; NFPA, 2013a; Petersen, 1994). The fire was so large that smoke was reportedly seen as far away as Watertown, New York. Also referred to as the Big Burn or the Big Blowup, the 1910 fire is believed to be the largest forest fire in recorded U.S. history. For many decades, it was the deadliest incident for firefighters in the U.S. until the September 11, 2001 terrorist attacks (Petersen, 1994; NFPA, 2013a).

Together, these fires ravaged large swaths of timberland and generated great fear among the public (Ingle, 2011). Only five years old at the time of the 1910 conflagration, the USFS was wholly unprepared to meet the challenges posed by uncontrolled forest fires (Grosvenor, 1999). As such, federal officials were motivated to search for cooperative solutions with the states to develop effective fire management programs. Working together with state appointed foresters (Tennessee would not have a state appointed forester until 1914), the USFS, along with Massachusetts Republican Representative John Weeks, drafted legislation that ultimately became known as the Weeks Act (Zimmerman, 1976: 21). Initially introduced in 1907, the bill was defeated by strong Western opposition in the Senate who feared further land claims by the federal government. However, following the large-scale destruction wrought by the 1910 Big Burn fire, opposition from the Western states waned and Weeks reintroduced the bill, which eventually passed Congress and was signed into law by President Howard Taft in 1911 (Zimmerman, 1976: 21).

The Weeks Act has been called one of the most significant pieces of legislation affecting the USFS' fire management practices as it established a cooperative fire protection plan with the states, whereby federal matching funds would be provided for forest protection (Zimmerman, 1976: 22). In order to qualify for federal funds, contributing states were required to have not only a state appointed forester, but "...some semblance of a fire protection organization and reasonable cooperation from private forest landowners..." (Zimmerman, 1976: 23). Thus, the enactment of the Weeks Act came at time when fire management of nationally and privately owned forest lands were either non-existent or consisted of struggling state protection programs (Zimmerman, 1976: 22). As Henry Clepper noted in *Professional Forestry in the United States*:

Although the Weeks Law of 1911 offered the states financial inducement to cooperate with the Federal government and among themselves to reduce forest fire losses, state accomplishment was sporadic and inconsistent for another decade. Some states were making steady progress in state forest administration as well as in fire control; others were lagging. In the political traditions of the times, each state was apt to view its forestry problems from purely local consideration and to go its own way with little attention to what other, even adjacent states, were doing. Such counsel and guidance as the Forest Service could induce the states to accept had to be offered with utmost tact because the states were jealous of their rights and prestige [cited in Zimmerman, 1976: 22].

Equally significant, the Weeks Act also authorized funds for the USFS to purchase forest lands in order to protect navigable streams and watersheds. Unlike the 1891 Forest Reserve Act, which established forest reserves primarily from public-domain lands out West, the Weeks Act allowed for the purchase of land in the East. Accordingly, two types of national forests emerged: those created from lands from the public domain in the West, and those that were created from the acquisition of land from private owners in the East (Otis et. al, 1986: 5). In Tennessee, this led to the creation of Cherokee and Unaka National Forests in 1920 and Pisgah National Forest in 1936 (Otis et. al, 1986: 52).

At the time of the enactment of the Weeks Act, Tennessee did not have an appointed state forester, let alone a comprehensive fire management plan. However, the state did manage to pass an "Act for a General Forestry Law" in 1907, yet no funds were provided to carry out its implementation. Later, in 1909, the state legislature passed an act calling for the investigation of the state's forest, streams, and waterways. The ensuing report ultimately persuaded the state legislature to direct the State Geological Commission to establish a Forestry Division and to appoint a state forester. On September 1, 1914, Dr. A. H. Purdue, the director of the State Geological Commission, appointed R.S. Maddox as the first State Forester, thus marking the beginning of organized forestry work in Tennessee (TDF, n.d.).

Originally from Lincoln County, Tennessee, Maddox received his education from the Yale School of Forestry, after which he taught forestry at Pennsylvania State University before accepting the position as state forester (TDF, n.d.). As an initial assignment, the Geological Commission assigned Maddox the task of addressing the state's soil erosion problems, particularly in East and West Tennessee, and to conduct general assessments of forests lands, which, until 1920, were all privately owned. For Maddox, these problems, coupled with the lack of an effective fire management policy, meant loss revenue for the state. As Maddox bluntly stated in an essay to the Tennessee Academy of Science, "Lack of forests, then means lack of lumber and losses amounting to thousands of dollars." (Maddox, 1915: 39). Maddox's approach to forest management was to restore the "waste lands" in the state into economically viable land for both agricultural and timber production (Maddox, 1915: 40; Maddox, 1916: 62). Although Maddox framed the Tennessee Forestry Division's conservation efforts as a means to enhance the state's economy, he did acknowledge the virtues of protecting forested lands for their simple beauty. For Maddox, this side of the conservation issue was obvious. As Maddox stated in his address to the Tennessee Academy of Sciences:

It will be noted that I have not mentioned our need of the beauty of trees. But this is a phase of the question that I believe needs no emphasis here, for what would be our lives without our shade trees, our forested mountain slopes and our wood-rimmed lakes? We scarcely can estimate the importance and value of the tree's influence on our higher natures in teaching us beauty of tree form, beauty of color, beauty of God's universe [cited in Maddox, 1915: 39].

In promoting his conservation program, Maddox called for the re-stocking of the state's timber reserves through a combination of re-seeding and the establishment of nurseries. In addition, he suggested that certain tracts of forested land should be retained "...in a state of permanent preservation..." (Maddox, 1915: 39). Concurrently, Maddox argued that land best suited for agricultural purposes should be free of trees and used only for agricultural production. In order to stem the damage to arable lands from erosion, Maddox called for farmers to stop the practice of clear cutting trees from hill tops and slopes. In addition, he placed blame on farmers for expediting the state's erosion problems through the practice of deliberate burnings in order to burn off leaf litter in an effort to encourage grass to grow for livestock grazing. According to Maddox, this had the dual negative effect of initiating wildfires and destroying the permeability of soil, thus leading to erosion. As such, the initial goal of the Tennessee Forestry Division was to establish a conservation plan that would allow for the regular supply of timber stock and the end of destructive soil erosion practices that threatened the productivity of agricultural lands. Consequently, in order to effectively carry out his conservation plan, Maddox, highlighted the need to counter the continuing threat of wildfires with a comprehensive fire management plan that called for the construction of fire towers (Maddox, 1915: 38-39).

Following its inception, the Forestry Division looked to other states in which to model its own fire detection program. As early as 1915, Maddox called for the creation of a system in Tennessee featuring a network of "...stationed men called lookouts..." positioned on top of high mountain tops to watch for forest fires (Maddox, 1915: 39). As an example, Maddox referred to the system established at the Plumas National Forest in northern California in which the "lookout" would, through the assistance of binoculars and maps, relay calls to a central forest service office via telephone to notify a district ranger of a fire (Maddox, 1915: 39). This approach formed the basis by which all states developed their fire detection programs. Yet, as dedicated as Maddox appeared to be in developing a comprehensive fire detection program, the Forestry Division was limited from reaching its goals due to several factors mainly as a result of the lack of state funding, personnel, and state-owned forest land. Further hampering the Forestry Division was the fact that Tennessee did not become a cooperating state as required by the Weeks Act until 1921 (Zimmerman, 1976: 28). As a result, the Forestry Division received no federal assistance, either financial or through formalized plans from the USFS in establishing a type or kind of structure that would accommodate the lookout men during this period. Consequently, up until the 1930s, the lookout watchmen employed by the Forestry Division resorted to camping in tents below designated vantage

points and then making daily hikes to a crude “station” consisting of a tree platform or a pile of rocks (Krafft, 1986: 1; Kirksey, 2014).

Once Tennessee became a cooperating state in 1921, financial assistance stemming from the Weeks Act helped the Forestry Division create a forest fire control organization by the end of 1922 that oversaw the protection of 5,000,000 acres of forest land (Zimmerman, 1976: 41-42; Marckworth, 1922; Peterson, 1964: 5). This organization divided the state into a network of six districts, each featuring a district patrolmen who directed fire patrolmen and lookout watchmen stationed throughout the state (Marckworth, 1922: 4-5). According to the 1922 *Tennessee Forest Fire Manual*, the lookout watchman reported for duty at the start of the fire season and worked on days when fires were likely to occur, such when weather conditions called for high temperatures and no rain. The manual also indicated that district patrolmen were to “secure the co-operation of the rural and star route mail carriers in reporting fires” as directed by the United States Postmaster General (Marckworth, 1922: 3 and 16). While on duty, lookout watchmen were to be on “...a constant lookout for fires”, which, once spotted, were to be immediately reported to the district patrolman or fire patrolman (Marckworth, 1922: 4). Fires were then extinguished by forest personnel, and if need be, with the assistance local citizens (Marckworth, 1922: 3).

During the 1920s, the Tennessee legislature enacted a series of laws designed to enhance the Division of Forestry and promote public knowledge of the discipline of Forestry. In 1921, the legislature upgraded the Division of Forestry to the “Bureau of Forestry” and re-appointed Maddox as State Forester. This bill assigned the State Forester the responsibility of directing the conservation and protection of the state’s forest lands. Specifically, the law directed the State Forester to cooperate with the federal government, state agencies, and private landowners to “...carry on the reclamation of gullied and similar waste lands of the state” resulting from the deforestation and burning practices of farmers and timber companies in the nineteenth century. The act called for these lands to either revert to agricultural purposes or to be reforested by means of tree planting and prohibitions on cutting (Marckworth, 1922: 12). Other responsibilities tasked to the State Forester included the printing of circulars to public schools highlighting the importance of forest protection and soil reclamation. This responsibility was later passed over to public schools in the same year with the passage of an act that required the study of Forestry in public schools (Marckworth, 1922: 14). In 1923, the Bureau of Forestry became the Division of Forestry under the Tennessee Department of Agriculture (Peterson, 1964: 5).

In 1924, the relationship between the federal government and individual state forest divisions was further solidified with the passage of the Clarke-McNary Act. As the Senate sponsor of the legislation, Senator Charles E. McNary of Oregon, declared that the act was designed to “to provide for the protection of forest lands, for the reforestation of denuded areas, for the extension of National Forests and for other purposes” (Forest History Society, 2014d). The act strengthened and expanded cooperative programs sponsored by the USFS relative to fire protection and tree planting. For Tennessee’s Division of Forestry, the act stimulated the state legislature to match federal funds earmarked for forest fire control (Peterson, 1964: 6). Combined with the Weeks Act, the Clarke-McNary Act provided the basis of federal financial support to states to advance their respective fire protection programs during the next fifty years (Cleeland, 1990).

In addition, the Clarke-McNary Act broadened the ability of the USFS to purchase private lands, which heretofore had been restricted to the purchase of land associated with watershed protection. With the passage of the Clarke-McNary Act, the federal government could now purchase large swaths of forest land either through purchase or land exchanges (Otis et. al, 1986: 5). As such, the acts provided the legal means for the eventual creation of the Great Smoky Mountains National Park in 1934.

For the TDF, the start of the 1930s began with the appointment of J. O. Hazard as State Forester, thus replacing R.S. Maddox’s 15 year reign. Hazard himself would hold the position of State Forester until 1951 (Peterson, 1964: 5) (see *Figure 1*). During Hazard’s tenure, the TDF transferred from the Tennessee Department of

Agriculture to the Tennessee Department of Conservation in 1937. Also in that year, Tennessee established its state park system, and with the assistance of the CCC, created 17 state parks (Nichols, 1998).

According to the TDF, the development and construction of specialized lookout structures in Tennessee began in the early 1930s following the formation of the CCC (Kirksey, 2014). Despite gains made in the 1920s with its forest fire control organization and increased public awareness campaign of the dangers of forest fires, the TDF still lacked a comprehensive network of fire lookout towers (TDF, n.d.). The creation of the CCC came at an opportune time for the TDF as it injected the necessary financial support that the agency desperately needed to construct a fire tower network envisioned by State Forester Maddox over fifteen years earlier. For the TDF, the period of the 1930s witnessed a dramatic improvement to its fire detection facilities as original lookout stations comprised of trees, crude wooden platforms, and makeshift rock structures were replaced with standardized towers composed mainly of steel.

The initial compilation of fire towers constructed under the direction of the TDF were at first erected in high risk fire-prone areas of the heavily forested regions of East Tennessee and the western areas of the Cumberland Plateau (Kirksey, 2014). Due to the scarcity of surviving records associated with the construction of TDF's fire lookout towers, the exact quantity and location of the fire towers constructed in the 1930s is unknown. However, it is reported that the CCC was responsible for the construction of 98 lookout houses and towers in Tennessee during this period (University of Tennessee Knoxville, 2013). Although the vast majority of fire lookout towers constructed in Tennessee during the 1930s were of steel-frame construction, the TDF states that its first fire tower was the ca. 1933 wood-frame Cagle Fire Lookout Tower (not extant) atop Wolfpen Mountain in Sequatchie County (TDF, n.d.; University of Tennessee Knoxville, 2013). Constructed by the CCC in the early 1930s, the Cagle Fire Lookout Tower stood 50 feet tall and appeared to follow a variation of the USFS' L-6 fire lookout plan, which featured an 8 x 8 foot, flat-roof pre-cut cab on top of a wood frame tower (Starr et. al, 2014) (*see Figure 2*). The Cagle Fire Lookout Tower was later demolished and replaced with the Wolfpen Mountain Fire Lookout Tower (an Aeromotor steel-frame Model LS-40), at an unknown date.

One notable fire lookout tower constructed of wood that still survives is the Mount Cammerer Fire Lookout Tower located in Cocke County within the Great Smoky Mountains National Park. Constructed by the CCC between 1937 and 1939, Mount Cammerer, is distinct with its octagonal stone-and-timber construction (Simmons, 2012). It is a design which was commonly used in western national parks and is said to be one of two surviving examples of a stone fire lookout tower in the eastern United States (Ingle, 2014: 59). A *Great Smoky Mountains National Park Historic Resource Study* is currently being prepared, which has recommended Mount Cammerer eligible for listing under NRHP Criterion C for its significance as a distinguished example of rustic architecture designed by the National Park Service (Ingle, 2014: 59). In addition, it has been recommended eligible for listing under Criterion A for its association with the New Deal and the conservation efforts carried out by the CCC (Ingle, 2014: 59). The CCC workmen used native materials and quarried the stone for the tower foundation from a source a short distance away. Mount Cammerer is the highest site for a standing fire lookout tower in Tennessee at an elevation of 4,928 ft. (University of Tennessee-Knoxville, 2013). Other known fire lookout towers constructed of wood included: Moore's Switch and Cobel Fire Lookout Towers. Both of these fire towers were located in Hickman County and were later replaced by steel towers in the 1940s or 1950s (TDF, n.d.).

Although construction of Tennessee's fire lookout tower network had been initiated during the 1930s, not all 95 counties in the state had received one. By 1940, as tensions escalated in Europe with the onset of World War II, direct federal assistance to the TDF and through programs such as the CCC began to wane. In order to defray the cost of maintaining its growing fire detection program, the state passed legislation that created a cooperative relationship between individual counties and the state, whereby each county voted whether or not they wanted to contribute funds to the state's forest fire control program (Peterson, 1964: 7). According to Peterson, very

few counties participated in the program due to the lack of funds and pressing financial obligations primarily associated with education (Peterson, 1964: 7). Consequently, the construction of fire lookout towers slowed during the period between 1940 and 1947.

After 1947, fire tower construction accelerated following the passage of a state sales tax that provided funding for education to the counties (Peterson, 1964: 7). As a result, counties that could not previously participate in the cooperative forest fire control program were now in a financial position to allocate contributing funds, which led to the construction of additional fire lookout towers. As a result, the majority of the TDF's fire lookout towers were constructed during the period between the late 1940s and ca. 1960 (TDF, n.d.). Many of the latter fire towers, such as Ripley and Leach Fire Lookout Towers were constructed in less fire-prone counties of West Tennessee between the late 1950s and 1970. By 1964, 82 of Tennessee's 95 counties had joined TDF's forest fire control program that had grown to include a network of 153 fire lookout towers (Peterson, 1964: 7). At its peak in the late 1960s, the TDF oversaw the operation of 208 fire lookout towers, of which 142 are extant as of March 2014 (TDF, n.d.; University of Tennessee-Knoxville, 2013).

As the number of fire lookout towers increased, the TDF's ability to detect and suppress wildfires improved. Assisting in this effort was the passage of the state-wide ban on open grazing known as the "No fence law" of 1947. Previous to its passage, 14 heavily wood counties in Tennessee continued the practice of allowing their livestock to graze openly and not within a fenced-in range. At the complete disregard for adjoining property owners, livestock grazers routinely burned surrounding grasslands and forested areas to stimulate the growth of grasses to feed their roaming livestock. The end of open grazing practices dramatically reduced the number of wildfires in the state (Peterson, 1964: 7).

Concurrent with the improvements made to the TDF's fire control program following the end of World War II were changes in the agency's philosophy toward forest management. By the mid-1960s, the TDF expanded its responsibilities beyond simply suppressing wildfires to promote a forest conservation program that embraced modern forest management and reforestation practices (Peterson, 1964: 9). Facilitating this shift in philosophy was the growth of the pine pulp industry in Tennessee in the 1950s to meet the burgeoning national demand for paper products. With the opening of paper mills, such as the Bowaters plant in McMinn County in the early 1950s, the price of forested land in Tennessee soared. However, unlike the timber companies of the nineteenth and early twentieth centuries, who practiced irresponsible deforestation practices; paper companies and private owners of forested land sought council from the TDF in forest management practices that would provide sustained yields (Peterson, 1964: 8). As former State Forester Peterson stated in 1964, the purpose of the TDF's forest conservation program, "...is designed to correct the mistaken uses or abuses of our forests and our land in general" (Peterson, 1964: 8).

Affecting changes to TDF's forest management philosophy over time were advances in technology that improved fire detection and suppression. By the late 1960s, TDF firefighters employed the use of mechanized tractor plows to create fire control lines, thus reducing both the number of men and time it took to extinguish wildfires. Additionally, the TDF was aided by its own fleet of patrol aircraft and the advent of a state-wide answering and receiving shortwave radio communication network. These advances in fire detection technology led the National Park Service to abandoned its use of fire lookout towers within the Great Smoky Mountains National Park by 1968 (Ingle, 2011: 87). In the mid-1970s, TDF fire lookout towers were no longer the mainstay of Tennessee fire control program, having been replaced by quicker and more accurate detection methods. The gradual abandonment of fire lookout towers in Tennessee reflected nationwide changes in fire management that no longer placed an emphasis on the principle that all fires needed to be immediately suppressed upon detection. In 1974, the official USFS policy (which the TDF follows) regarding fires changed from "fire control" to "fire management" (Ingle, 2011: 19). This policy shift recognized that some wildfires were necessary to maintain a healthy ecosystem. As a result, prescribed burns were later incorporated within

TDF's fire management program. According to TDF files, the Ripley Fire Lookout Tower in Lauderdale County was constructed in 1970 and represents one of the last towers constructed under its direction (TDF, n.d.).

With airplanes, helicopters, and satellite imagery playing a greater role in spotting fires, only a handful of TDF fire lookout towers remain in active service (Kirksey, 2014). With the advent and ubiquitous use of mobile cell phones, today's TDF fire detection program relies primarily on private individuals to call Emergency 911 to report wildfires (Kirksey, 2014). Many of the 208 fire lookout towers once part of TDF's fire detection network have been removed or are awaiting demolition as a result of disuse or the expiration of lease agreements with private property owners. Visitors are often warned of the dangers in climbing the surviving fire lookout towers, which are often in disrepair. Other towers have been repurposed into wildlife viewing platforms, weather stations, and cell towers, or are points of interest for the occasional visitor. Even though lookout towers today are not always used for their original purpose, their stories continue to hold the public's interest and a place in our collective imagination. They survive as tangible reminders of the TDF's twentieth century fire control program.

### **Context 3: Civilian Conservation Corps, 1933-1942**

On March 31, 1933, Congress passed the Unemployment Relief Act which created the Emergency Conservation Work Program for a period of two years, authorizing the establishment of the CCC. The new agency was part of President Franklin D. Roosevelt's New Deal initiative designed to provide unskilled manual labor jobs related to the conservation and development of natural resources in rural lands owned by federal, state and local governments. The CCC served the dual purpose of providing much needed jobs for young men, to relieve families who had difficulty finding jobs during the Great Depression while at the same time providing much needed manpower to state forestry agencies such as the TDF. An initial call went out for 250,000 men between 18 and 25 years old, who were unmarried, unemployed, and from families on relief (TSLA, 1987). Tennessee, along with portions of western North Carolina, northern Georgia, Alabama, and Mississippi comprised the CCC's Fourth Corps, District C. CCC activity in the state reached its peak in July 1937, resulting in the construction of 46 work camps scattered throughout the state and the enrollment of approximately 70,000 Tennesseans (Nichols, 1994). The CCC was extended twice, in 1937 and 1940, until Congress terminated the program in 1942 shortly following America's entry into World War II (TSLA, 1987).

Although the USFS was not the sole employer of CCC enrollees, the camps in Tennessee responsible for the construction of fire lookout towers worked in coordination with the TDF in site selection and afterwards in operating and firefighting (Zimmerman 1976: 52). The first CCC camp in Tennessee was established in 1933 at Camp Cordell Hull in Unicoi County (TSLA, 1987). The U.S. Army, experienced in handling recruits, was given the job of processing the CCC applicants in addition to operating and maintaining the camps. There was no drill or military training, but Army Reserve officers had to maintain discipline, arrange leisure-time activities, and provide suitable food, clothing, and shelter (Mastran and Lowerre, 1983).

The TDF, which for years was short of funds and manpower, responded quickly and eagerly to the opportunity of increased federal assistance to improve its fire control program (CCC, 1939: 2; Peterson, 1964: 6). According to former State Forester Carl I. Peterson, the CCC "...provided a foundation for much of the later accomplishments in [Tennessee's] forest conservation" (Peterson, 1964: 6). Although the CCC was assigned an array of conservation duties, its primary objective was the protection of forests from fires (Otis et. al, 1986: 9-10). In fact, after the attack on Pearl Harbor, the CCC transferred its personnel from all conservation projects to the war effort with one exception – forest fire fighting (Ingle, 2011: 13). For its contribution to the TDF fire control program, the CCC is credited with the construction of 98 fire lookout towers in Tennessee (University of Tennessee Knoxville, 2013). In addition, CCC personnel assisted the TDF with other forest management

tasks such as, tree planting, timber stand improvement, recreation development, building telephone lines, and road and trail building (CCC, 1939: 2).

By August of 1933, Tennessee hosted 33 CCC camps, with 6,600 workers (Otis et. al, 1986: 11). At its peak, in 1935, the state employed 77 companies. This number would drop off to ten by the start of 1942, when many men joined the war effort (Nichols, 1994: 71). Of the ten fire lookout towers that are included in this multiple property document, five were constructed by the CCC. These include Chuck Swan Fire Lookout Tower in Union County constructed in 1934; Kettlefoot Fire Lookout Tower in Johnson County constructed in 1936; English Mountain Fire Lookout Tower in Cocke County constructed in 1934; Sewanee Fire Lookout Tower in Franklin County constructed in 1933; and Twinton Fire Lookout Tower in Overton County constructed in 1933. TDF fire lookout towers were erected on both public and privately owned land. For those towers constructed on private land, the state and the property owner typically entered into a lease arrangement that contained a reversionary clause that would return the property back to the owner at the expiration of the lease (TDF, n.d.). The terms of the lease arrangement ranged from 40 to 99 years after which the owner could either keep the tower or ask the TDF to dismantle it (TDF, n.d.).

The method of selecting and constructing fire lookout towers by the CCC is described by former CCC enrollee, Hobart Parish, who served with Company 1474, Camp Motgomery, in Clarksville:

The location of a Tower Site was picked based upon the most useful location. It was usually on the highest (sic) elevation in the wooded areas that were to be observed. It was placed on a high hill, so observations may be made from the deck. The Towers would be 20 to 30 miles apart as the crow flies.

Usually a very little clearing of the site was needed to allow for construction of a Forest Fire Tower. Then construction of the Tower started with a concrete foundation with each leg of the tower mounted on a level concrete base. The towers came unassembled but they were in a broken down state that allowed you to assemble them as you do now with kids toys except on a much larger scale. You put up one section or lift at a time.

The Forest Fire Tower was a steel and wood tower were about 100' tall. I don't know that we were smart enough to be scared then, at the height we were working at. I don't remember scaffolding but what ever you needed and had you used to get the pieces up - ladders, rope slings etc. The construction of the Tower was of steel framing of steel angles with wood steps going up about 8 to 10 steps and turning so that you balanced all corners of the tower. At the top there was a room with glass on all sides. When completed, there was usually a small house constructed out of logs, rock or lumber at the foot of the tower where a (sic) attendant could live. The CCC Blacksmith made the hinges, fasteners and other parts for this building. Our Company I believe built four towers [cited in Justin, 2003].

CCC personnel built fire observation towers and manned them, under the auspices of the USFS and in coordination with the TDF, during the months of high fire danger typically from May to September, during daylight hours. However, the length of the season, as well as a lookout's workday could vary considerably depending on weather and forest conditions (Miller and Potaracke, 2008).

A common misconception surrounding the selection of fire lookout tower sites, is that they were always placed at the highest points of a given area (Ingle, 2011: 32). Instead, fire towers were placed in carefully chosen locations that could accommodate the tower, its auxiliary buildings, and an access road which would also serve

as a firebreak. In high elevation regions such as in East Tennessee within the Great Smoky Mountains, it was unadvisable to erect fire lookout towers at the highest points as fog and cloud cover would block visibility (Ingle, 2011: 33). Tower locations were chosen to provide maximum visual coverage of fire danger areas, with unobstructed visibility being of the utmost importance (Good, 1938: 155). Ideally, fire lookout towers were placed in such a way that the viewshed of multiple lookout spotters would overlap, thereby ensuring visual coverage in high fire-prone areas (Ingle, 2011: 33). An efficient range of visibility was considered to be from 10 to 15 miles, before factors such as haze would limit the lookout operator's vision. Towers made it possible to spot fires quickly and send in a fire suppression crew before the fires became large enough to cause serious destruction. Once smoke was detected and assessed, lookouts notified dispatchers at their CCC camp, whereupon spotters from nearby observation towers would be called upon to help determine the fire's precise location. Firefighters, consisting of teams from either the closest CCC camp, TDF personnel, or local firefighting units, would then be called into action as needed (Miller and Potaracke, 2008; TDF, n.d.).

As previously mentioned, one of the biggest jobs undertaken by the CCC in assisting the TDF with its fire control program was road and trail construction. In some instances, high-quality roads were built to access forests for timber harvesting or recreation, but many of the roads constructed by the CCC were simply known as truck trails or "fire roads" needed to combat fires reported via fire lookout towers or other means. These single-lane dirt roads served as firebreaks, and as a means to bring truckloads of men and equipment quickly to the site of a forest fire (CCC, 1939; Mastran and Lowerre, 1983). In Tennessee, CCC workers built 1,469 miles of these "minor" roads (TSLA, 1983). With recent advances in fire-control techniques, many of the old "fire roads" have been abandoned (Mastran and Lowerre, 1983).

While each lookout tower included such essential items as binoculars, instruction booklets, log book, diary, and first-aid kit, perhaps the single most important instrument used by fire lookout personnel was the Osborne Firefinder, which was the commercially produced version of a tool known as the "alidade." Invented in 1911 by William Bushnell "Bush" Osborne, Jr., the alidade facilitated the accurate location of fires through the use of an indicator or sighting apparatus on a plane table (Grace et. al, 1956:137-153; Kresek, n.d.) (see Figure 3). The most popular model of the Osborne Firefinder was introduced in 1934 (Kresek, n.d.). The device consists of a circular table of 3 to 4 feet in diameter, upon which is placed a United States Geological Survey (USGS) topographical map of the surrounding area. Sighting mechanisms are aligned with the location of detected smoke along an outer ring graduated into 360 degrees similar to compass readings and with true north set to zero. The outer ring, called the azimuth circle, determines the horizontal angle. The vertical angle is determined from reading a scale on the rear of the sighting mechanism (Grace et. al, 1956:143). Through the process of triangulation, tower attendants would coordinate their readings with those derived from nearby towers to accurately pinpoint the location of a fire to within a few hundred yards (P.A.C. Spero and Company, 1996).

Fire spotters were trained with specific, detailed methods of how to look for and identify smoke. Lookouts were instructed to observe the entire area under observation in a systematic scanning manner, rather than staring at a particular point for a long period of time. High risk areas, such as locations associated with logging operations, camping, fishing streams, and highways were given more scanning time. At particular intervals, the fire lookout conducted more intensive observations by dividing the entire seen area into units or sectors. Binoculars could be used, with caution to avoid eyestrain, as well as colored glasses (Grace et. al, 1956:131-33).

In addition to simply spotting smoke, a trained fire lookout also knew how to classify smoke. "Legitimate smokes," the first category, were those fires authorized by permit or law and were under control. These fires could be associated with trains, sawmills, industry, or campfires. A second class of smoke was known as "false smokes." Such sightings were not associated with fires. False smokes were attributed to observations of distant rock slides, fog, dust from vehicles or livestock, or areas of dead timber. The last category, "illegitimate smokes," described any fire not authorized by law or a fire that was out of control. The proper procedure for the

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sighting of an illegitimate smoke was to immediately report it to the dispatcher, but the lookout was also cautioned to report all possible false smokes if there were any doubt about its nature (Grace et. al, 1956:133-134). Fire lookout towers were used until the mid-1960s when most were replaced by light patrol planes for observation (Grosvenor, 1999; Mastrand and Lowerre, 1983).

The effect of the work performed by the CCC in connection with fire lookout construction and management was not limited to firefighting alone. Fire towers had telephone connections to district ranger offices used to report fires. The construction of telephone lines was another important CCC task (Mastran and Lowerre, 1983). The telephone lines not only made reporting fires quicker, they also made possible the rapid assembly of firefighting crews where needed. USFS telephones were also available for use by local people in emergencies. This was much appreciated in areas where few people had private telephones. Lines for private telephones were even installed on telephone poles put up by CCC workers in some areas providing a line of communication to the wider world for isolated communities (Mastran and Lowerre, 1983). In Tennessee, 3,959 miles of forest telephone lines were installed by the CCC (TSLA, 1987).

The creation of the CCC provided the TDF with a source of manpower that could not only be trained to spot fires from lookout towers, but also to fight fires. The final report prepared when the CCC was disbanded concluded, "During the nine and one quarter years of the Corps, CCC enrollees became the first line of fire defense" (Mastran and Lowerre, 1983). All were given basic firefighting instructions and indoctrinated in the USFS dictum that fires should be prevented. As Eliot Zimmerman concluded in *A Historical Summary of State and Private Forestry in the U.S. Forest Service*, "...the most striking contribution of the CCC was that it provided trained and well-equipped fire fighting crews. Many states owe a large part of their fire protection improvements to the CCC" (Zimmerman, 1976: 53).

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## F. Associated Property Types

### 1. Name of Property Type

Property Type: Tennessee Division of Forestry Fire Lookout Tower

Subtypes: Aermotor Model MC-39/International Derrick Model 1933 Fire Lookout Tower  
Aermotor Model LS-40 Fire Lookout Tower  
Late nineteenth century observation tower converted to a fire tower  
Associated Structures

### 2. Description

This nomination focuses on a single basic property type: the steel-frame fire lookout tower. In general, these structures are four-legged towers that support an enclosed observation room, or cab. The first observation-only towers were constructed between the late 1910s and the 1920s, and there was little standardization in design. Construction materials, usually consisting of wood or stone, reflected what was available in the region and easily transportable to the site. Later experimentation with construction techniques and materials led to more uniform designs, and the standard steel tower commonly found today and represented in this multiple property document (Starr et. al, 2014). Many of the steel-frame towers featured an X-brace design that stabilized the tower legs, while a few used a Z-brace design. The use of steel as a primary material also served a functional purpose as it improved the longevity of the structure and made it resistant to the damaging effects of weather and fire. As a result maintenance of the steel-frame fire towers was minimal. Towers built between 1933 and 1942 were primarily constructed and staffed by members of the CCC in coordination with the TDF. While the majority of towers were manned for continuous seasonal use, some were only manned during times of high fire danger or during a specific project which may result in fire danger.

Beginning in 1933, TDF fire lookout towers were constructed according to USFS specifications for the primary purpose of providing a high location for fire detection and observance. In the construction of the towers, form followed function, and architectural variation of lookout towers was minimal. However, lookout towers have been constructed of differing materials such as wood, steel, and stone. In addition, fire towers have been designed in a variety of forms ranging from simple high, rocky viewing spots from which to survey vast areas of forest canopy, to wooden huts on high ridges, to high-rising steel towers (Grosvenor, 1999). Yet, no matter their form or location, all lookout towers had the same requirement and purpose, a high, unobscured lookout to spot and report forest fires. The tower would have included such fire-finding equipment as binoculars and an alidade, as well as a radio or telephone for communication. The fire lookout tower was typically accompanied by a simple cabin or house to provide lodging for staff, as well as a storage shed and privy.

In 1935, the USFS created a detailed set of specifications that were to be met by the manufacturer, who were required to submit a bid for the work, and were often suppliers of other industrial structures (Fickes, 1935: 286). The towers were ordered by the Procurement Division and were not to deviate from the designs provided by the USFS (*see Figures 4-10*). In addition, the tower would be delivered in completely fabricated parts to the appropriate site, to prevent the need for any additional cutting, drilling, or other manipulation of the steel (Fickes 1935: 287). Lookout towers varied in height, which was determined by terrain and ground cover at each particular site. Where terrain was relatively flat, with little tree coverage, lookout towers could be one- to two-stories in height; with more rugged terrain, and dense tree coverage, towers needed to be much higher to provide a clear viewshed for the observer. Observation cabs utilized plate glass and narrow corner posts to provide unobstructed visibility. A number of safety appurtenances were included on the structure, including

railings on stairways and landings. "Landings are desirable to break a monotonous and strenuous climb to the top of a high tower" (Good, 1938: 156).

The premier manufacturers of steel fire towers in the early twentieth century were the Aermotor Company based out of Chicago, Illinois, and the International Derrick Company (Starr, 2011: 3). Originally a windmill manufacturer, Aermotor re-tooled their existing designs into steel fire lookout towers topped with a small, 7-foot by 7-foot square cab (Grosvenor, 1999). In early models, access to the observation cab was achieved via an exterior ladder, but this dangerous method of tower ascension grew quickly unpopular (*see Figure 4*). By 1929, Aermotor offered a stairway kit that could replace the exterior ladders (Starr, 2011: 2). By 1933, the International Derrick Company introduced an all steel-construction design developed collaboratively with the Aermotor Company and the USFS, based on USFS specifications. This 1933 International Derrick model featured an interior dogleg steel-frame staircase that provided access to a trap door on the cab floor, and was identical to the Aermotor MC-39 (Starr, 2011: 3). These towers were particularly popular in the Northeastern, Midwestern and Southern states (Grosvenor, 1999). The International Derrick 1933 Model/Aermotor MC-39 was determined to also be dangerous, due to its small landings, and Aermotor sought to improve on old designs with their LS-40 model, featuring more substantial landings. This model became Aermotor's most popular, and was widely used by the TDF until the mid-1970s, when the fire lookout tower faded from prominence as an instrument of fire detection.

***Subtype: Aermotor Model MC-39/International Derrick Model 1933 Fire Lookout Tower***

Of the ten fire lookout towers presented in this MPDF, five are Aermotor Model MC-39/International Derrick Model 1933 observation-only towers; they are: Big Hill, English Mountain, Kettlefoot, Sewanee, and Twinton. Aermotor Model MC-39 and the International Derrick Model 1933 towers were nearly identical in design and construction, and in fact, the International Derrick Model was developed through collaboration between Aermotor and the USFS. Towers of this type vary in height from 33 feet to 176 feet, and are constructed of hurricane-proof galvanized steel (Starr et. al, 2014). Steel X-bracing is affixed to the structural frame at each of the tower's six levels, spanning the distance between every level of the tower with diagonal support members on each face. The lower portion of each section of X-bracing is further reinforced by T-bracing, which traverses the distance between each leg and is bisected by a single steel member at center. Additional steel bracing is installed at the juncture of each level of the tower. Oriented on a horizontal plane, the bracing extends from each of the staircase's five landings to the opposing section of the tower, thereby forming a rectangular figure. The observation tower tapers in width from the base to its apex and is ascended via an open steel staircase with metal handrails. Each staircase rises diagonally across the interior of the tower to a triangular landing, also constructed of wood planks. Each elevation contains two, nine-light, pivot windows with metal sashes. The windows are oriented side-by-side and encompass the entirety of the width of each elevation, thereby forming an unobstructed 360° view of the surrounding terrain.

This tower type faded from popularity towards the early 1940s, due to safety concerns regarding their small, triangular platforms. Additionally, their long, alternating dogleg staircases tended to sway in the wind, and bounce with movement (Starr, 2011: 3-4). For this reason, the Aermotor Model LS-40 would later become the most popular tower type for the TDF and the USFS. Schematics for the Aermotor Model MC-39 are not available, but plans for the International Derrick Model 1933 were located (*see Figure 11*).

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***Subtype: Aermotor Model LS-40 Fire Lookout Tower***

Of the ten fire lookout towers presented in this MPDF, four are Aermotor Model LS-40 observation-only towers; they are: Black Creek, Chuck Swan, Leach, and Ripley. The LS-40 design was one of the most popular steel designs by the Aermotor Company, and was first introduced in 1917, although they would reach peak popularity in the 1940s-1970s (Starr, 2011: 2). The tower design was based on the USFS specifications, and standardized plans adapted from Aermotor windmills (*see Figures 12 and 13*). The LS-40 was available in a number of heights, ranging from 22 feet to 100 feet. The LS-40 is characterized by a 7-foot by 7-foot steel cab, and an internal stairway that runs back and forth between two elevations of the tower. Each run of stairs terminates at a large wood plank platform, which was considered to be safer than the landings of the MC-39 model, and lead to the increased popularity of the LS-40 in the 1940s and 1950s (Starr et. al, 2014).

Steel X-bracing is affixed to the structural frame at each of the tower's eight levels, spanning the distance between every level of the tower with diagonal support members on each face. The lower portion of each section of X-bracing is further reinforced by T-bracing, which traverses the distance between each leg and is bisected by a single steel member at center. Additional steel bracing is installed at the juncture of each level of the tower. Oriented on a horizontal plane, the bracing extends from each of the staircase's landings to the opposing section of the tower, thereby forming a rectangular figure. The observation room is steel-framed, clad with metal sheeting, and topped with a hipped metal roof. Each elevation contains two, nine-light, pivot windows with metal sashes. The windows are oriented side-by-side and encompass the entirety of the width of each elevation, thereby forming an unobstructed 360° view of the surrounding terrain. This model became Aermotor's most popular, and was widely used by the TDF until the mid-1970s, when the fire lookout tower was replaced by other fire observation methods.

***Subtype: Late nineteenth century observation tower converted to a fire tower***

Of the ten fire lookout towers presented in this MPDF, only the Fall Creek Falls Fire Lookout Tower is a late-nineteenth century observation tower, converted later to a fire lookout tower. The tower is similar in form to the others, with a four-legged steel frame topped by an observation cab. The tower's original form was later adapted for its new function as a fire detection tower, and thus its once-open cab was enclosed to provide shelter for forestry personnel. The newly-enclosed square cab was marked by a ribbon of windows which provided the observer a 360° panoramic view of the surrounding terrain. The steel tower with bolted connections is supported by four, angle section legs secured to ground-level concrete footers. X-bracing, consisting of turnbuckle tensioners affixed to each face of the structural frame by bolts, is employed on four of the tower's five levels, with additional lattice bracing incorporated into the five landing levels. The lowest level of the tower is approximately half the height of the other levels and includes horizontal cross bracing spanning the distance between each leg. Additional cross bracing is similarly installed at the juncture of the other four levels of the tower. This subtype is unusual in that it represents the adaptive reuse of non-standardized structures for the TDF.

***Subtype: Associated Structures***

Property containing a TDF fire lookout tower typically includes an array of buildings and structures that supported fire detection activities, these may include: lookout operators' cabins, crew houses, storage sheds, outhouses, and utility buildings. Like the lookout towers, associated structures were also often built from plans developed by architectural consultants for the National Park Service, and considered vital structures within the fire observation complex. The 1935 handbook for construction and maintenance of forest improvements in

USFS Region One, indicates that while certain building materials and techniques were recommended, building plans should be customized based on the particular site's terrain and personnel needs (Fickes, 1935: 515).

Lookout operator's cabins were of log construction and served as residential space for lookout operators, and were often present when the lookout tower featured a seven-foot by seven-foot observation-only cab. These one-story, single-room, rectangular plan buildings provided temporary shelter for fire observers. The cabins often feature an exterior end chimney, of stone, brick, or concrete blocks, which disperses fumes from a wood-burning stove (*see Figures 14 and 15*). Cladding consisted of a layer of tar paper for insulation, and a form of board siding to be decided upon by the individual (Fickes, 1935: 55). According to the Region One Handbook, it was not always necessary for a building that would be used on a short-term basis to have a chimney; in fact, a metal safety flue would be sufficient (Fickes, 1935: 27).

Crew Houses were more substantial buildings that would provide lodging for forestry personnel, as well as office and storage space (*see Figures 16 and 17*). These one-story, rectangular plan buildings were of wood frame construction, and typically rest upon a stone or a poured concrete foundation. All crew houses feature a gable roof, which was the simplest form to construct. Cladding consisted of a layer of tar paper for insulation, and a form of board siding to be decided upon by the individual (Fickes, 1935: 55). According to framing specifications, rafters were to be spaced 16, 18, or 24 inches apart, depending on the roof span, and the size of the beams (*see Figure 18*). The standard roof-pitch was one-third (Fickes, 1935: 52). Interior finishes include wood flooring, walls clad with wood paneling, and wood-paneled ceilings. Some renovated crew houses have drywall-covered ceilings and/or linoleum floor tiling, and have been altered with vinyl siding, and modern additions.

The storage sheds were one-room, one-story buildings that functioned as storage space (*see Figure 20*). In general, the rectangular plan buildings featured a gable or shed roof, and sat on a concrete block or concrete slab foundation. Comprised of a wood frame, cladding typically consisted of vertical wood boards, or board-and-batten siding. Some sheds have been altered with the addition of vinyl siding.

Outhouses were typically one-room wood frame constructions, although the Chuck Swan Fire Lookout Tower facility featured a two-room outhouse. The outhouses usually rest on stone piers or concrete slabs, and are comprised of a wood bench with an attached toilet seat atop a pit. The buildings are clad with a form of wood siding. No specifications for the outhouses were identified, however, they are often positioned along the slope of a hill to facilitate drainage of waste.

Utility Buildings functioned as vehicular and equipment storage and repair spaces (*see Figures 21 and 22*). These buildings feature at least one open bay, or overhead door, that provides vehicular access. Typically wood-framed, one-story structures, they were subjected to the same building material and construction technique requirements as the crew houses. However, their individual plans were customizable based on the terrain and needs of each specific site.

### **3. Significance**

The fire lookout towers and associated structures that comprise this multiple property document were constructed under the direction of the TDF between 1933 and 1970, and retain physical and architectural integrity. The TDF fire lookout towers nominated under this document are unified by three principal historic contexts: public land management and the conservation movement of the late nineteenth and early twentieth centuries; the development of the TDF and its fire lookout tower network between 1933 and ca. 1975; and the significance that the Depression-era CCC program had on the initial construction of TDF fire lookout towers.

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Each TDF fire lookout tower in this multiple property document embodies the distinctive characteristics of a uniquely functional building type designed for and constructed throughout the state of Tennessee under the direction of the TDF between 1933 and 1970.

### Architecture

Fire lookout towers in Tennessee are significant under NRHP Criterion C at a statewide and/or local level in that they are representative of a distinct structure type reflecting specific functional requirements associated with the fire detection practices of the TDF from 1933 to 1975. Individual fire lookout towers and their support structures in this thematic group represent two of the most widely constructed fire lookout tower types utilized by the TDF: the Aermotor Model LS-40 and the Aermotor Model MC-39. The latter model was also produced by International Derrick Company and is indistinguishable from the Aermotor line, save for the manufacturer's plaque. In cooperation with the CCC, these two models formed the backbone of TDF's initial efforts to standardize its fire detection network in the 1930s. Following the end of World War II, the TDF resumed construction of fire lookout towers utilizing both the Aermotor LS-40 and MC-39 models until ca. 1970. An additional fire lookout style represented includes a rare surviving example of a late-nineteenth observation tower from Chattanooga that was re-purposed into a fire lookout tower at Fall Creek Falls State Park. The architecture reflective in these fire lookout towers and their associated outbuildings represent the functional needs of the TDF in its fire control program between 1933 and 1975. As such, they are the most widely recognizable symbols of the history of the TDF's twentieth century fire control program.

### Conservation

TDF fire lookout towers are significant under NRHP Criterion A for their association with the state conservation movement of the late nineteenth and early twentieth centuries. The fire lookout towers and their associated outbuildings represent a distinct group within the historical context of Tennessee's approach to land management. The surviving fire lookout towers represent the physical manifestation of the conservation movement's philosophy of protecting the state's timber and arable lands from wildfires. The effort to reduce the propensity of wildfires was part of a larger plan promoted by state conservationists to restore lands previously damaged by deforestation and erosion as a result of nineteenth century agricultural and industrial practices. The broader goal of the state conservation movement led to the establishment of the TDF in 1914, which initiated a fire control program that eventually resulted in the construction of its fire lookout tower network starting in 1933. In addition, TDF fire lookout towers are significant for their association with federal and state legislative acts of the early twentieth century that facilitated cooperative programs between the TDF and the USFS related to fire management policies. As a result, this cooperative relationship paved the way for the smooth implementation of President Roosevelt's New Deal program, the CCC, to assist the TDF in the construction and operation of its fire lookout tower network. The CCC provided the TDF with the labor necessary to initiate the development of a state-wide systematic fire detection network which had been advocated by Tennessee's first State Forester, R.S. Maddox, in 1915. Individually and collectively, TDF fire lookout towers were instrumental in providing early detection warnings to TDF and CCC firefighting crews, thus increasing the chances of suppressing fires before they became unmanageable.

#### **4. Registration Requirements**

To be eligible for listing under the *Tennessee Division of Forestry Fire Lookout Towers, 1933 to 1975* multiple property document, a fire lookout tower must retain its historic character in both its physical appearance and association within the historical contexts outlined in this document. In addition, documentary evidence is required to prove that a fire lookout tower was constructed under the direction of the TDF and utilized as part of its fire detection network during the period between 1933 and 1975. The lack of associated outbuildings will not preclude a fire lookout tower from eligibility, as the lookout tower itself serves as the defining feature of this multiple property document. Conversely, a collection of outbuildings located on the property that once contained a fire lookout tower will not be eligible under this document as the central structure representative of both the architectural type and historic associations addressed in this document no longer exists. Individual outbuildings on a former fire lookout site may be eligible under their own merits as prescribed in National Register Bulletin 15 *How to Apply the National Register Criteria for Evaluation*.

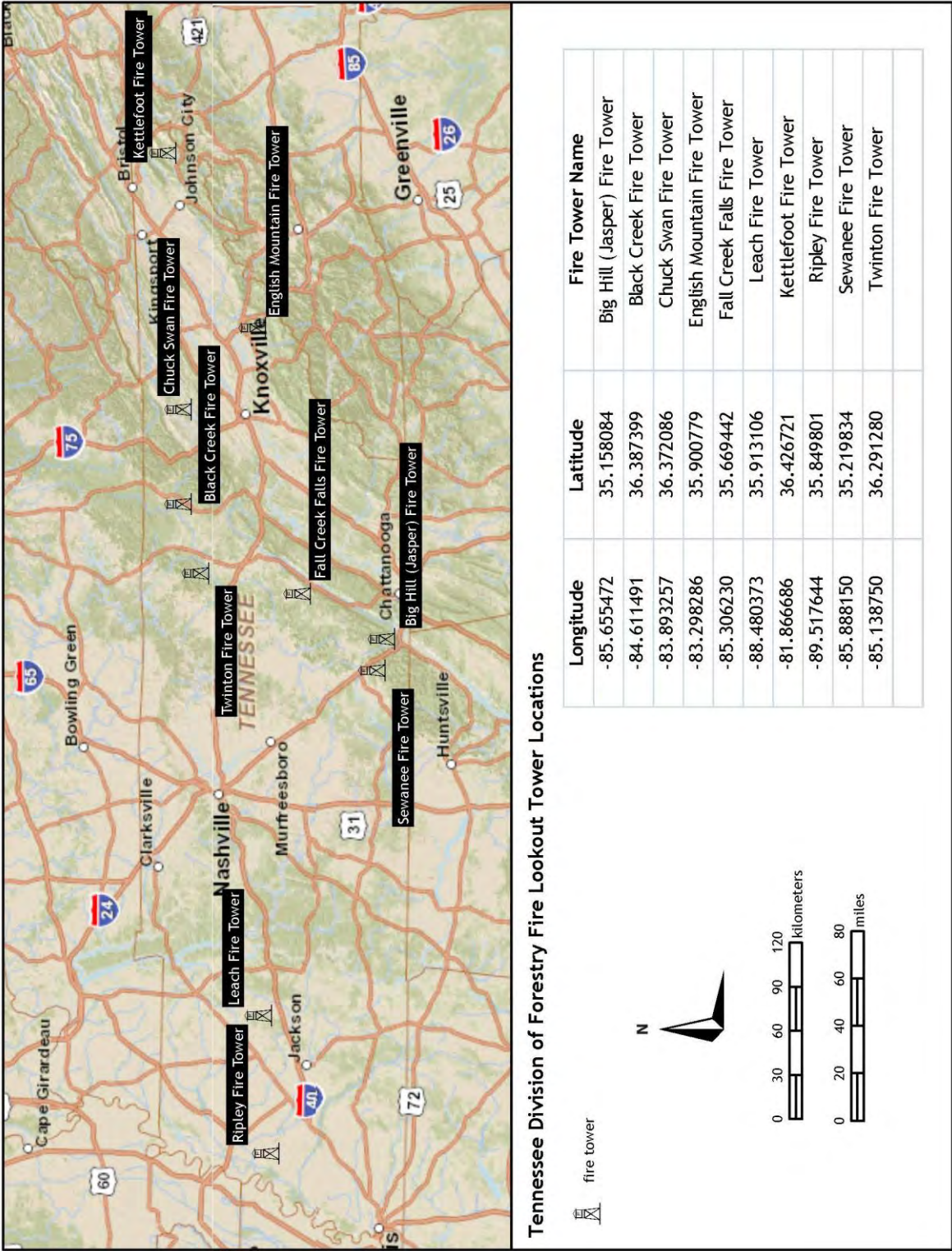
It is recommended that fire lookout towers retain integrity of design, materials, workmanship, and feeling associated with their exterior and interior appearance. Considering that many of these resources are no longer used by the TDF and are often located in remote environments, generous latitude should be afforded to fire lookout towers that have been altered as a result of vandalism and through simple neglect. The degree of acceptable alterations will vary from tower to tower; however, missing window panes, graffiti, stolen alidades (sight-viewing apparatus), should not immediately disqualify a lookout tower from NRHP eligibility. Alterations that would render a fire lookout tower ineligible under this multiple document include those towers that have been truncated and moved to a new location; towers that remain on their original site, but have collapsed, and those towers that have been extensively altered to the degree that they no longer convey their original appearance and are not readily recognized as a historic fire lookout tower.

With respect to integrity of setting of fire lookout towers, not all of TDF's fire lookout towers were constructed in isolated mountain environments. Many towers, especially those in West Tennessee, are easily accessible by county roads and are located near rural communities that have grown considerably as a result of either industrial or residential development within the past 40 years. As a result, integrity of setting should not be overly weighed, provided that a fire lookout tower retains its character-defining form and continues to convey its historic significance in both physical and associative ways.

Fire lookout towers that are documented to be less than 50 years old may be eligible for the NRHP under Criteria Consideration G, provided that they meet the registration requirements outlined in this document. Fire lookout towers that are less than 50 years old are representative of the latter stages of TDF's initial fire control program and the final stage of fire lookout construction in Tennessee.

G. Geographical Data

This MPDF covers TDF fire lookout tower sites spread across the entire state of Tennessee, as shown in the map titled "Tennessee Division of Forestry Fire Lookout Tower Locations".



## **H. Summary of Identification and Evaluation Methods**

This multiple property listing, "Tennessee Division of Forestry Fire Lookout Towers, 1933 to 1975", was prepared as a mitigation measure for the planned construction of a series of public safety communication towers by the Tennessee Department of Safety and Homeland Security (TDSHS) throughout the State. Subsequent research determined the presence of a NRHP eligible fire lookout tower, which will be adversely affected by the proposed tower construction. The TDSHS has determined there to be no feasible alternative to the construction of the proposed communications tower, and proposed to mitigate project related adverse effects to the historic property through the execution of a Memorandum of Agreement (MOA). Based upon information established in the MOA between the Federal Communications Commission, the Tennessee State Historic Preservation Office, and the TDSHS, ten USFS fire lookout towers were selected for nomination to the NRHP under the MPDF. The towers were selected to represent a broad sampling of typical fire tower construction found throughout each of the Grand Divisions of Tennessee.

Historical research and field work were completed by Tennessee Valley Archaeological Research (TVAR) between February 2013 and June 2014. The historic contexts developed in this multiple property document include: Public Land Management and the Conservation Movement, ca. 1870-1907; Tennessee Division of Forestry, 1914- ca. 1975; the Civilian Conservation Corps, 1933-1942. Primary and secondary source material were obtained from the TDF's main office in Nashville, personal communication with the TDF's current Fire Management Unit Leader, John Kirksey; and the Tennessee State Library and Archives in Nashville. In addition, various internet websites dedicated to state and national fire lookout towers and historic photographs were consulted as part of this research as well. The preliminary goal of field work was to assess whether or not each of the ten candidate sites were extant. Originally, Pilot Fire Lookout Tower in Overton County and Sullivan Ridge Lookout Tower in Davidson County were to be included in this multiple property submission. However, TVAR's field survey revealed that they were ruinous condition, and were subsequently replaced by . Further, field work included photo documentation and descriptive notes of each tower and other associated buildings, if any. The final ten TDF fire lookout towers that comprise this multiple property submission include: Big Hill, Black Creek, Chuck Swan, English Mountain, Fall Creek Falls, Kettlefoot, Leach, Ripley, Sewanee, and Twinton. These fire lookout towers are representative of TDF's fire detection network, which operated from 1933 to 1975.

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## **Figures**

### **Section E**



**Figure 1. State Forester J.O. Hazard planting loblolly pine seedlings in celebration of the planting of 10,000,000 forest trees, date unknown. Photo courtesy of the Tennessee State Library and Archives.**



**Figure 2. Tennessee's first fire lookout tower, the Wolf Pen tower in Sequatchie County, unknown date.  
Photo courtesy of Tennessee State Library and Archives.**



**Figure 3. A TDF ranger demonstrating use of the alidade in a fire lookout tower on Hemlock Mountain, ca. 1938.  
Photo courtesy of the Tennessee State Library and Archives.**



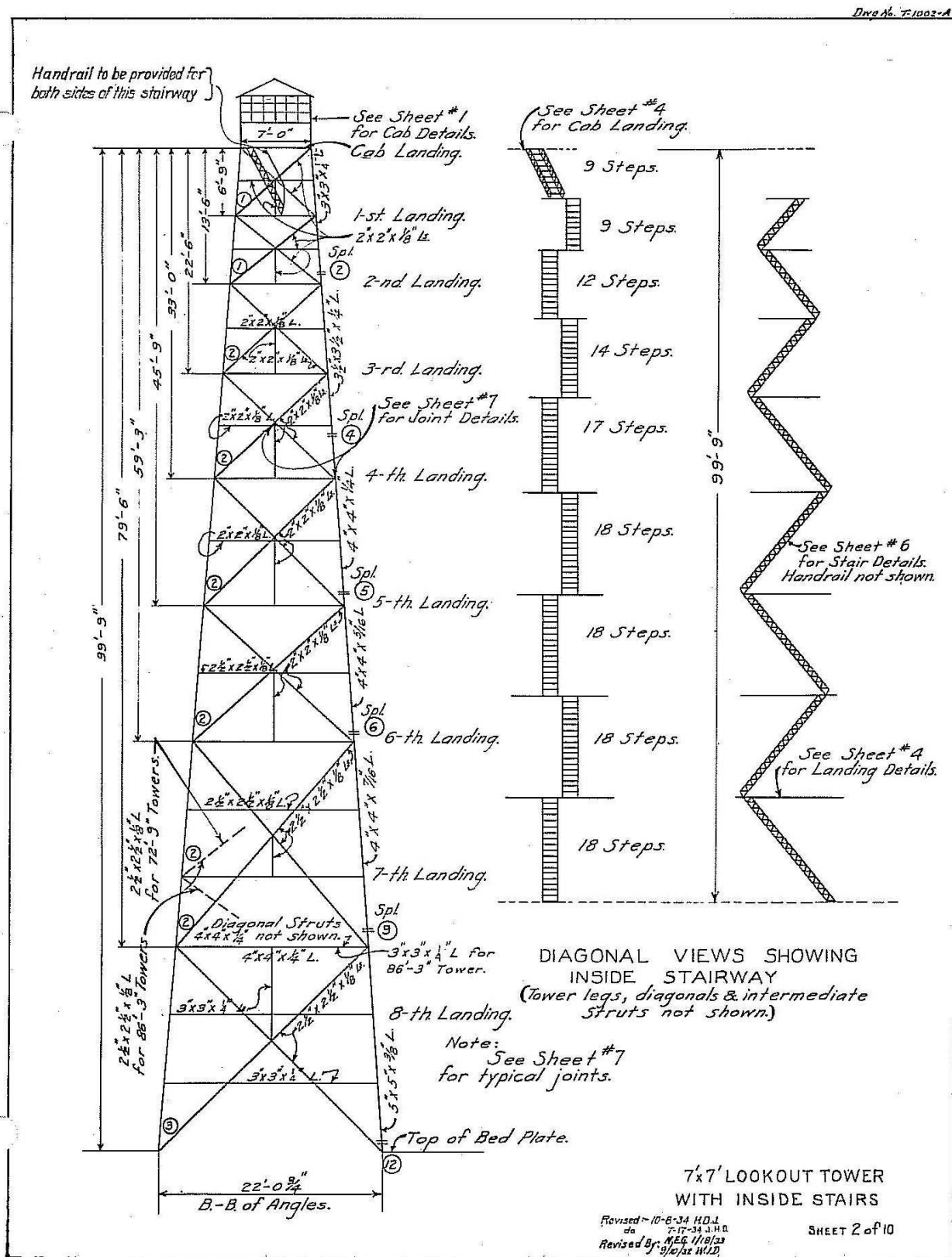


Figure 5. USFS specifications for a steel fire lookout tower with internal stairs (Fickes, 1935: 295).

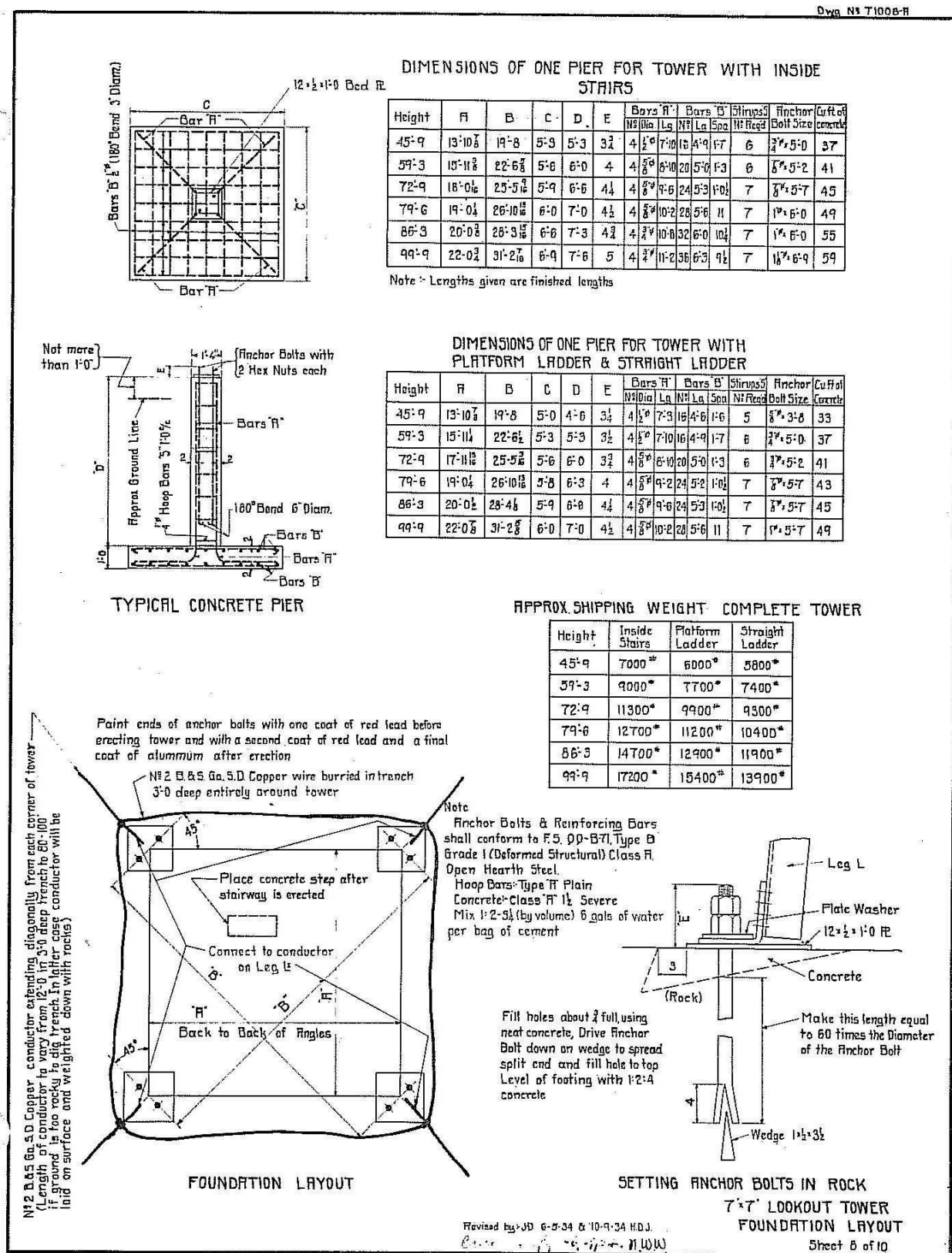
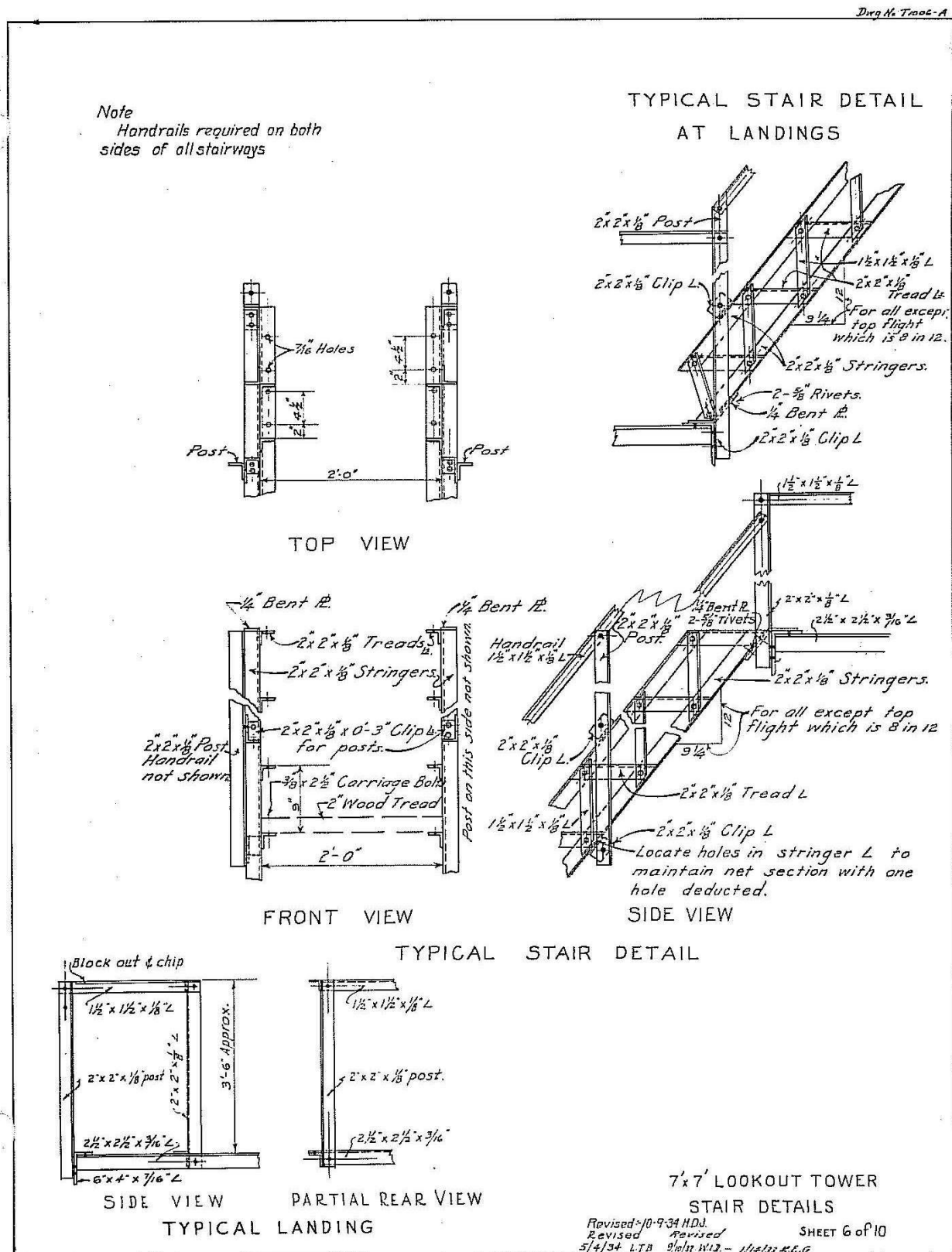


Figure 6. USFS specifications for steel fire lookout tower foundations and concrete footers (Fickes, 1935: 307).



**Figure 7. USFS specifications for steel fire lookout tower stairs (Fickes, 1935: 303).**

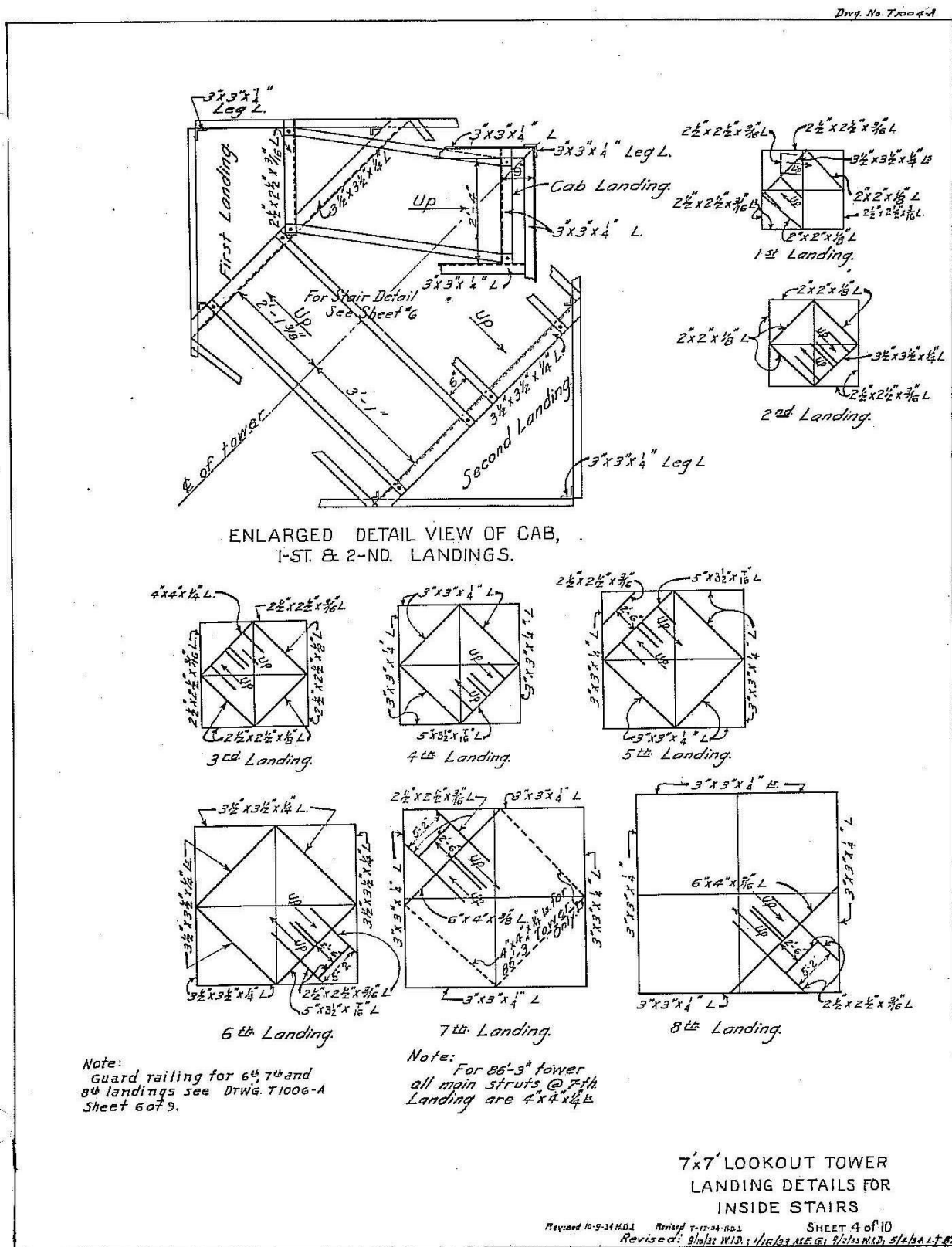


Figure 8. USFS specifications for steel fire lookout tower landings (Fickes, 1935: 299).

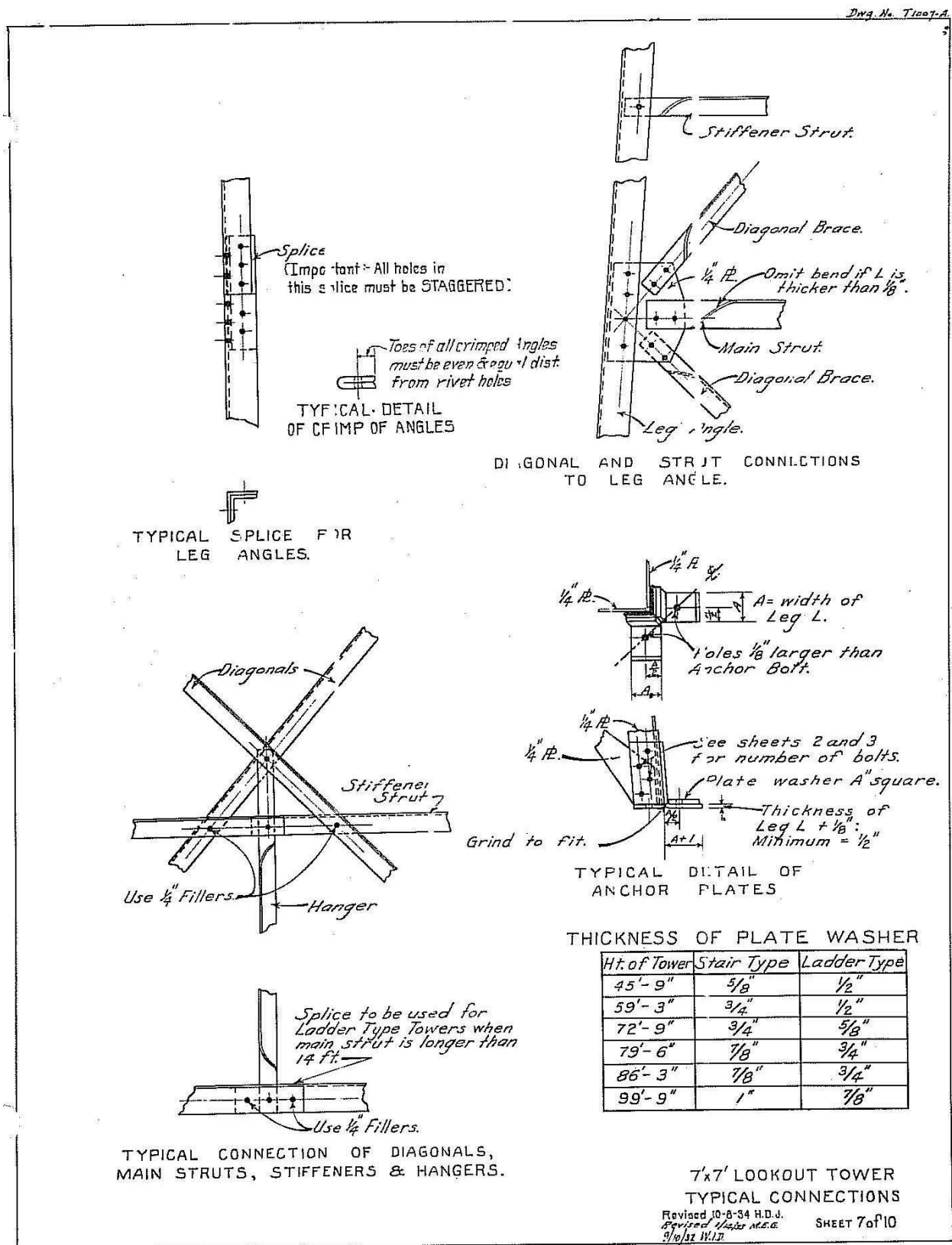
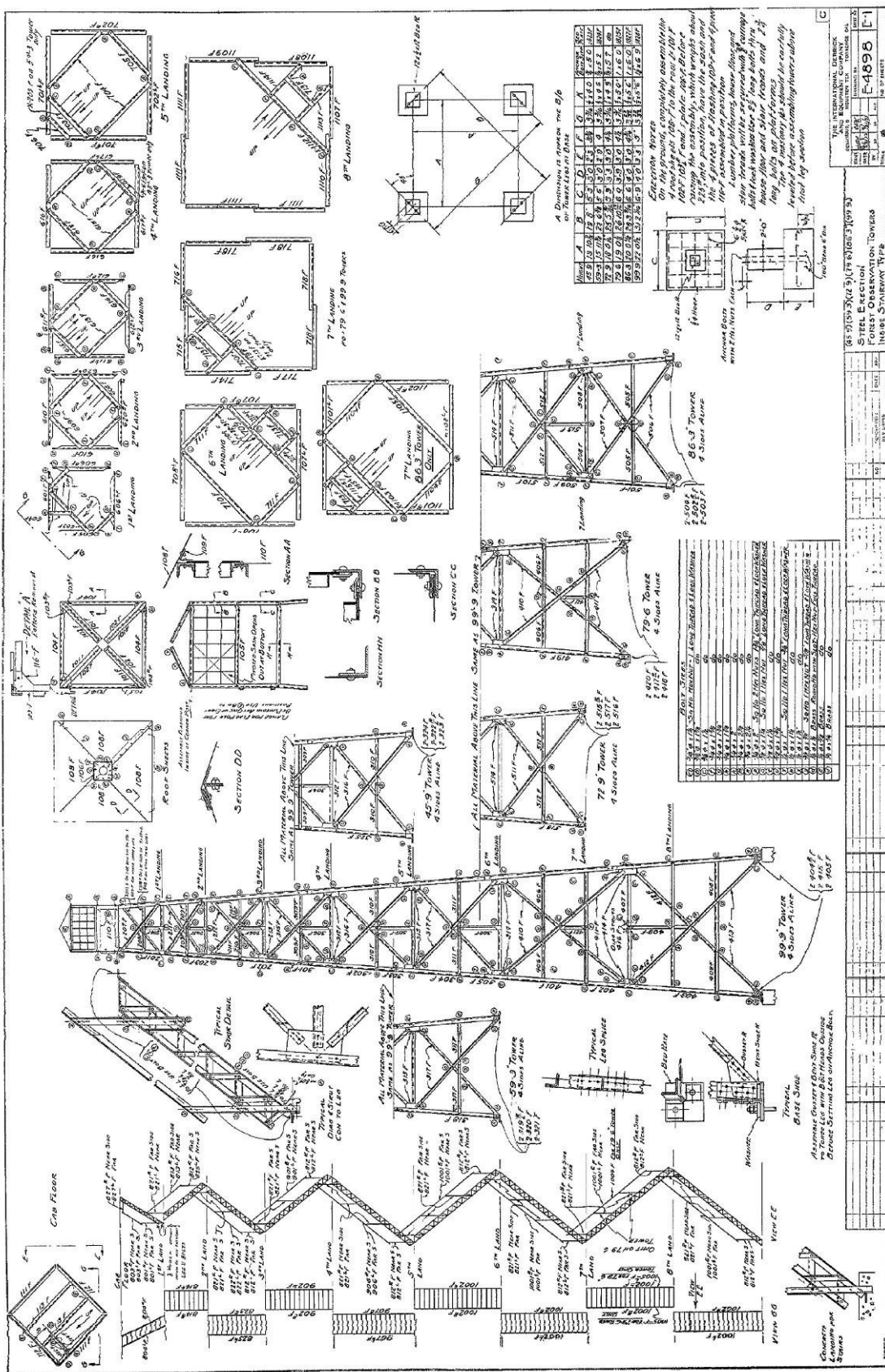
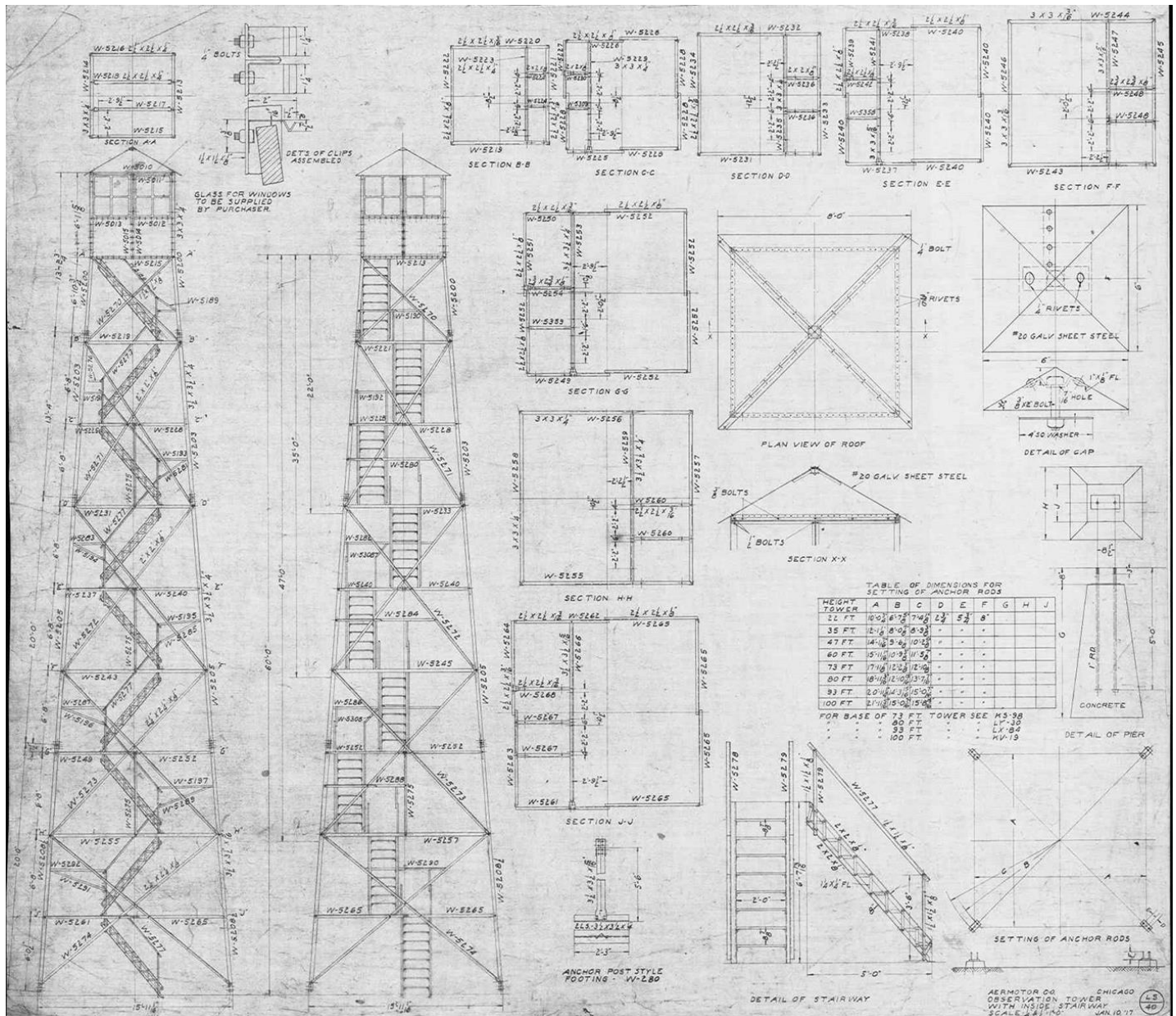


Figure 9. USFS specifications for steel fire lookout tower bracing connections (Fickes, 1935: 305).

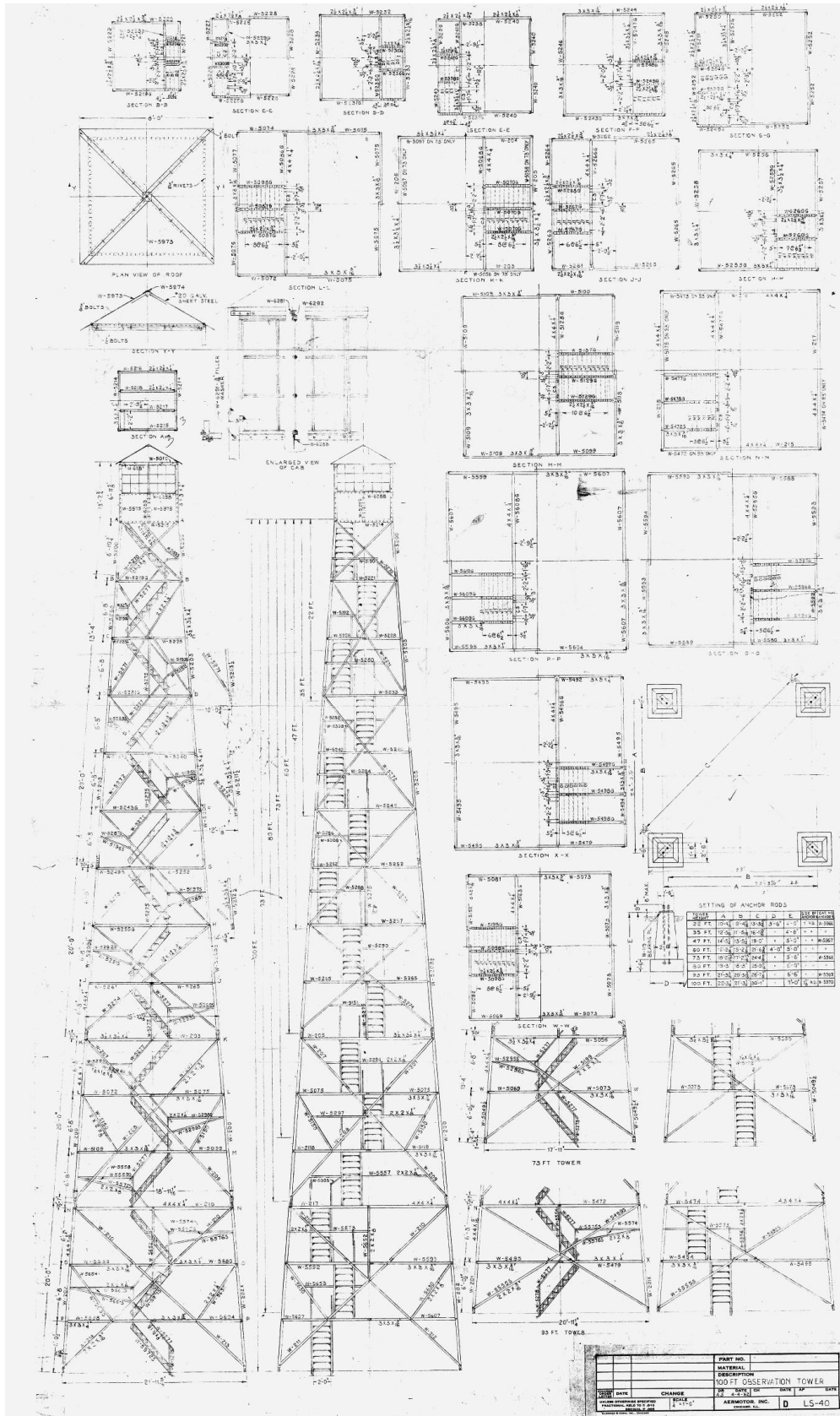




**Figure 11. International Derrick Model 1933 Schematics.**



**Figure 12. Aermotor 60-ft LS-40 Model Schematics, ca. 1917 (USFS, 2005).**



**Figure 13. Aermotor 100-ft. LS-40 Model Schematics, ca. 1962 (USFS, 2005).**

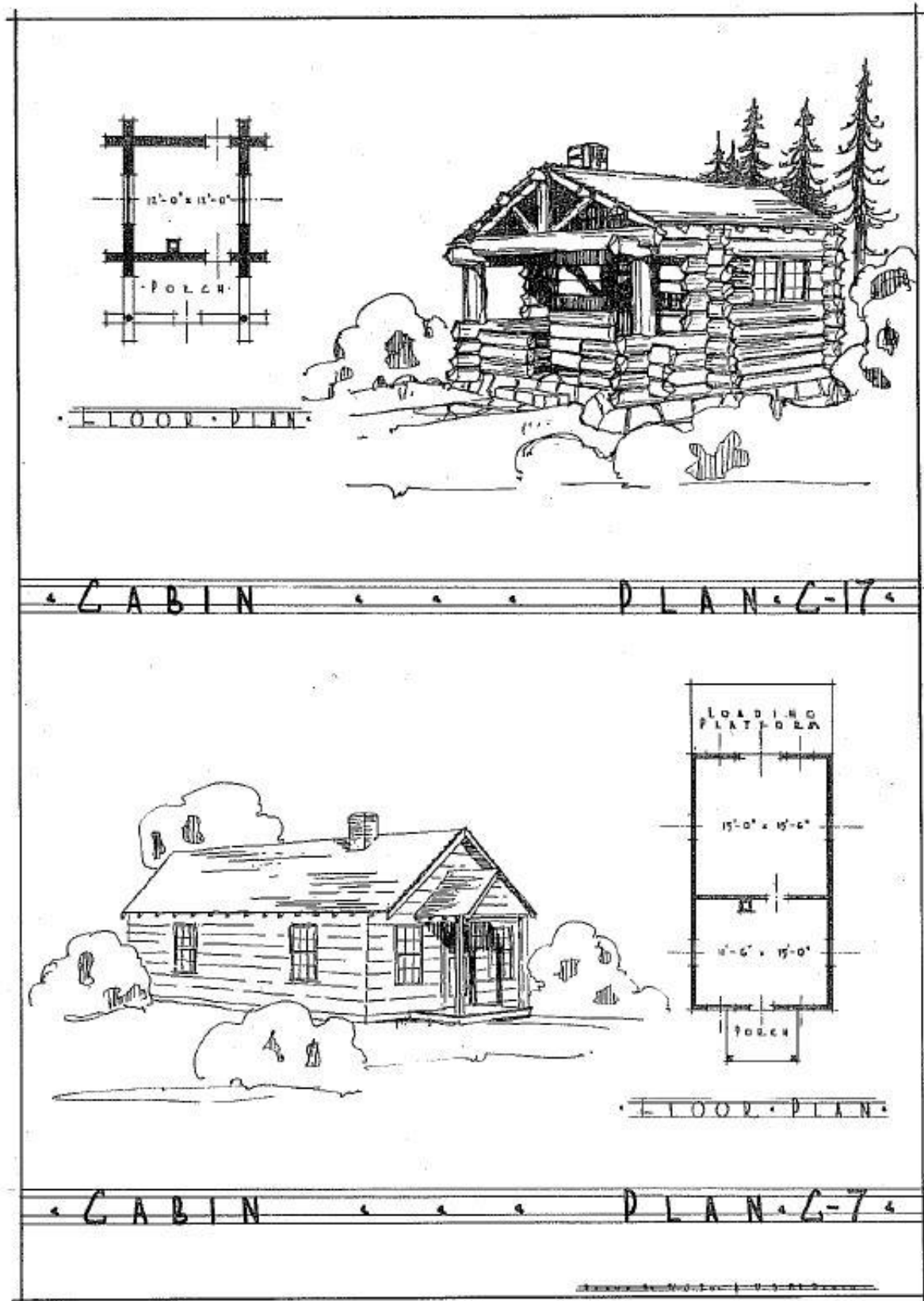


Figure 14. USFS suggested building plans for staff cabins (Fickes, 1935: 555).

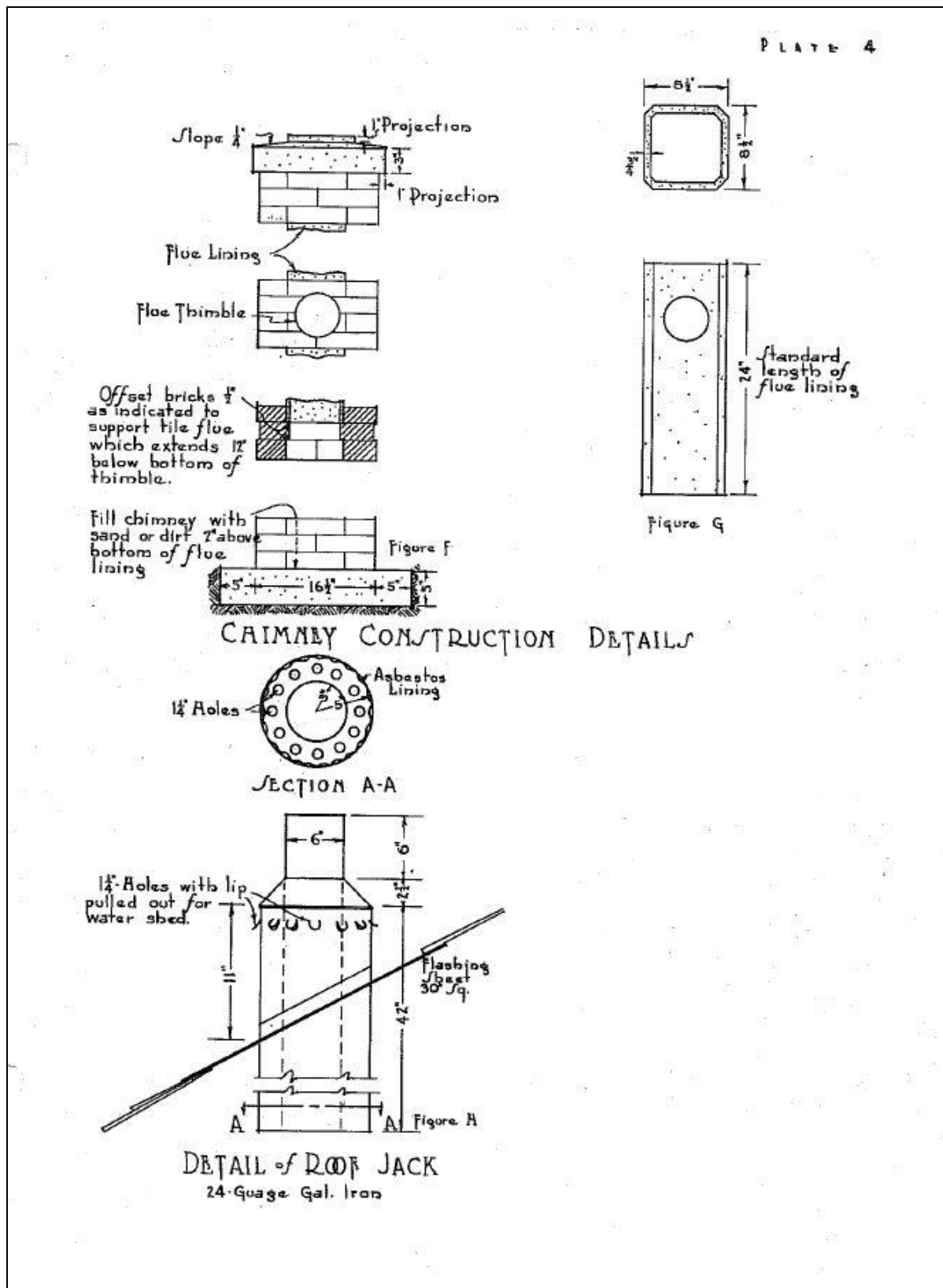


Figure 15. USFS specifications for chimneys (Fickes, 1935: 31).

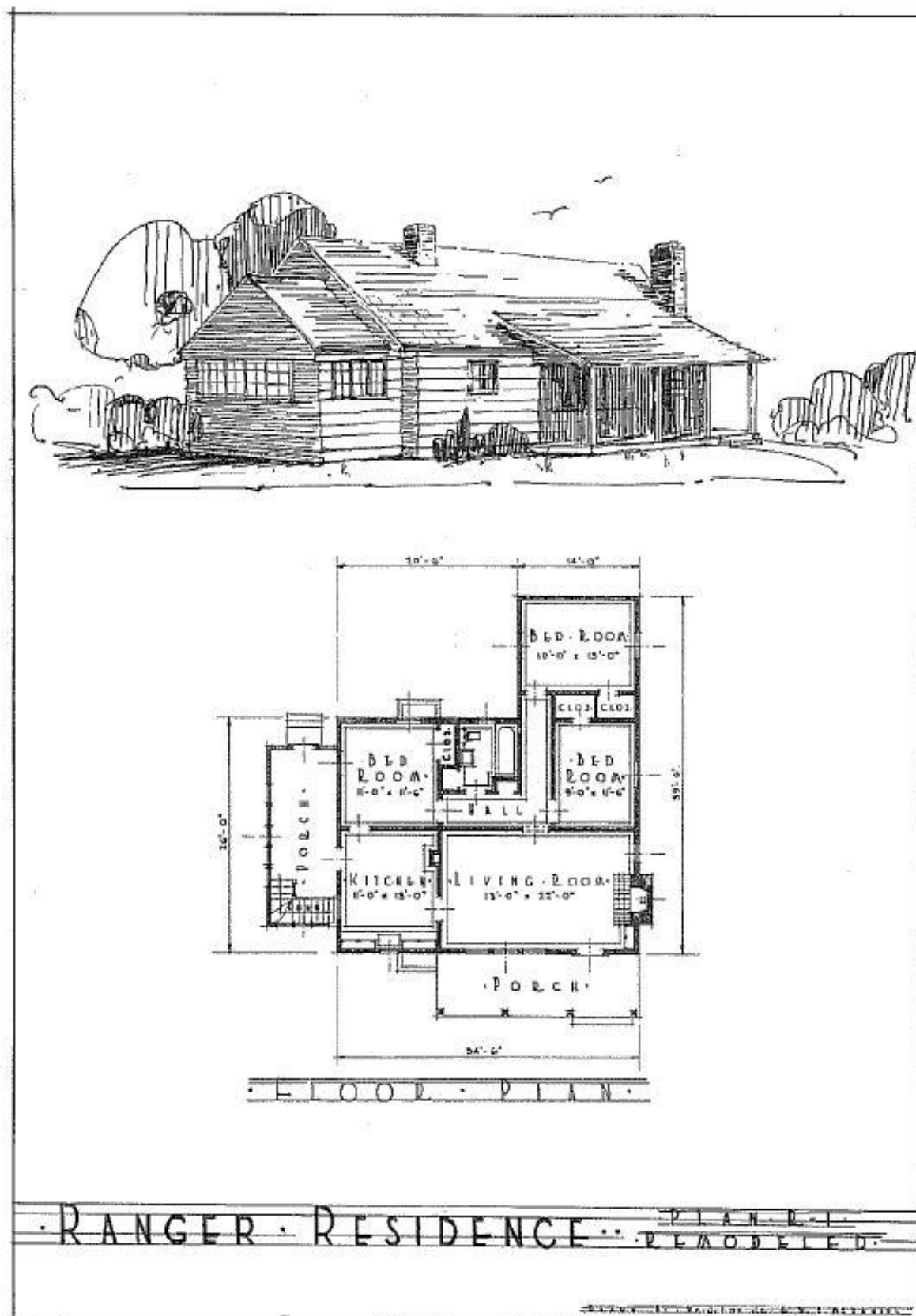


Figure 16. USFS suggested building plans for forestry personnel residences (Fickes, 1935: 519).

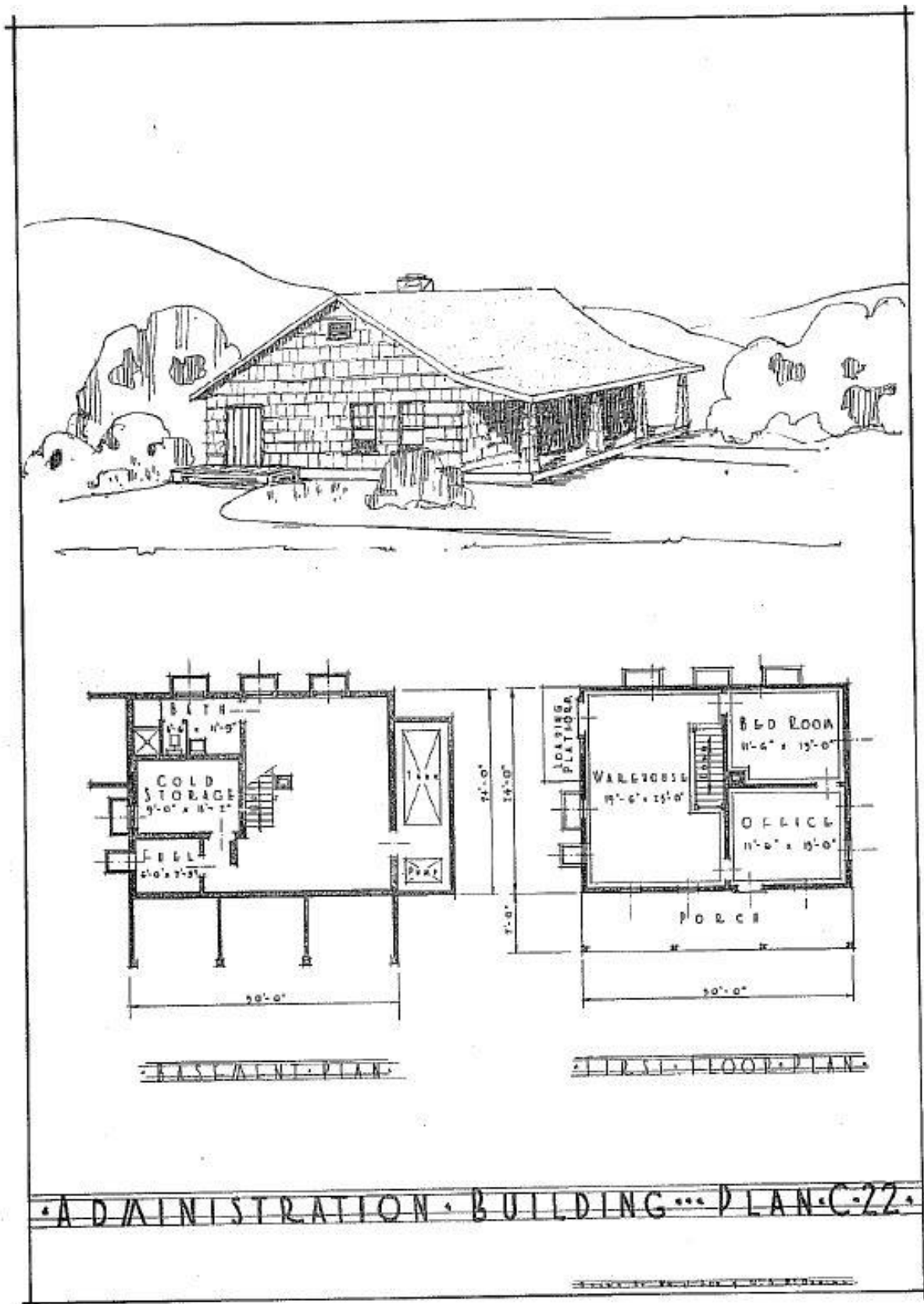


Figure 17. USFS suggested building plans for administration buildings (Fickes, 1935: 567).

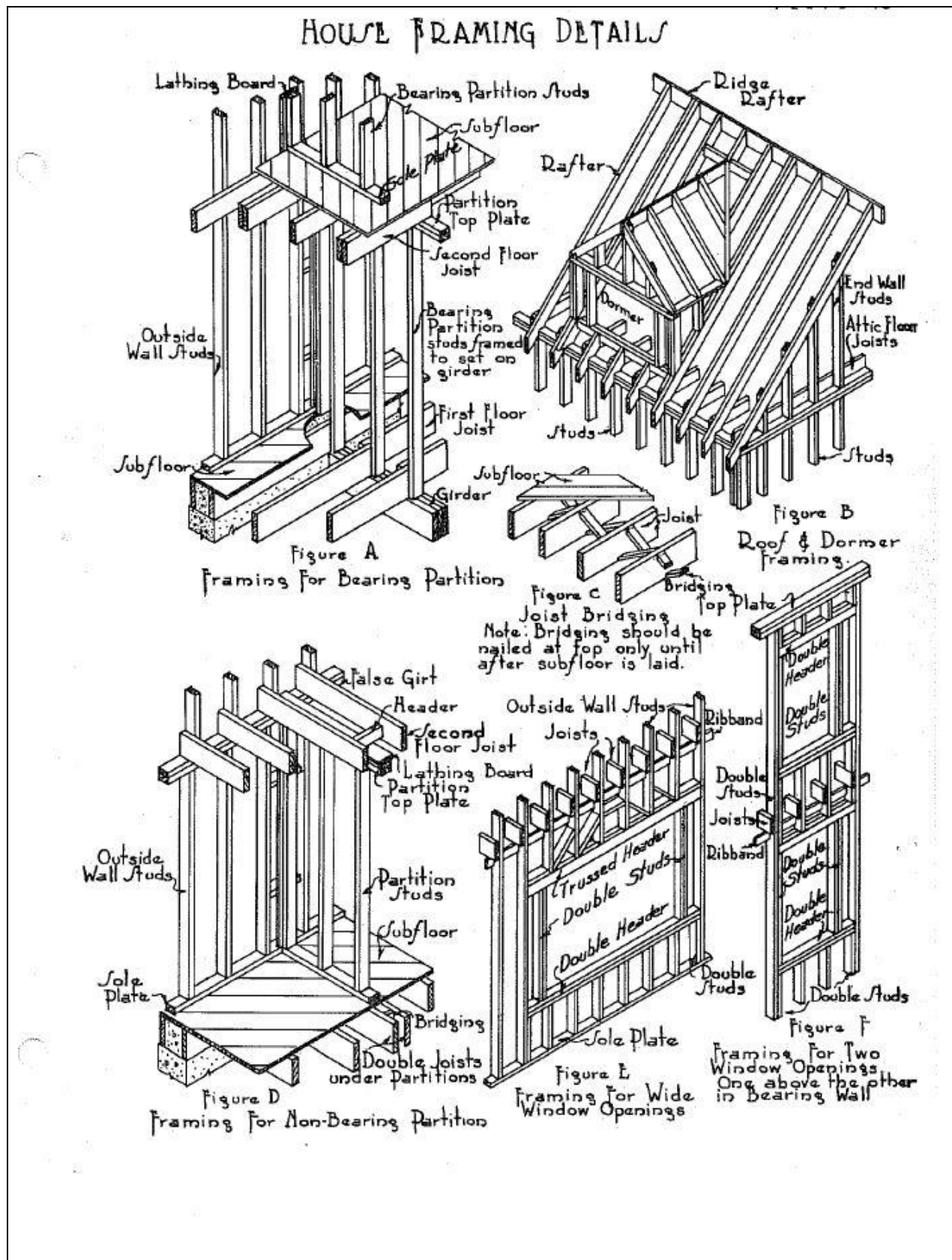


Figure 18. USFS specifications for building framing (Fickes, 1935: 47).

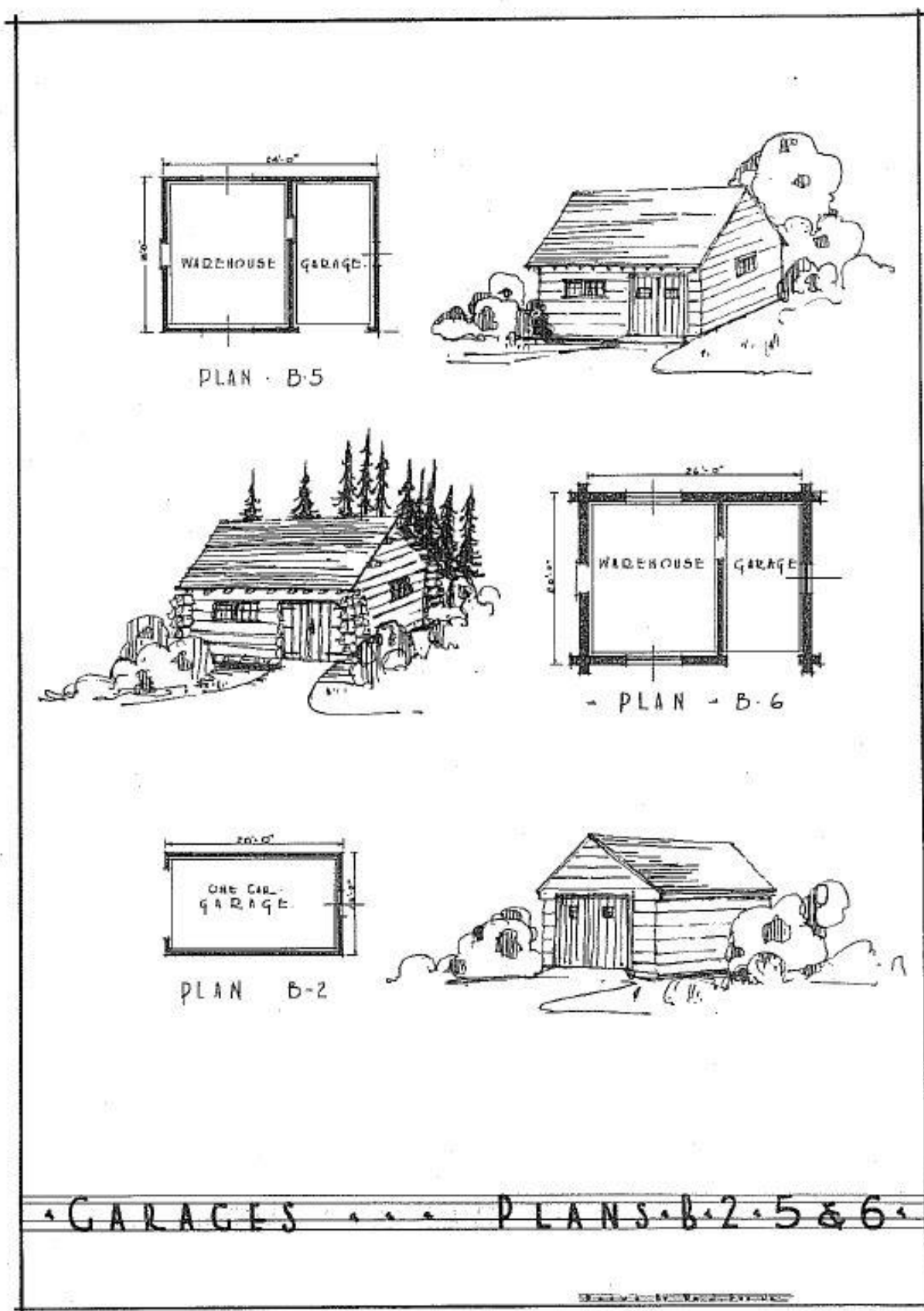


Figure 19. USFS suggested building plans for garages/storage sheds (Fickes, 1935: 541).

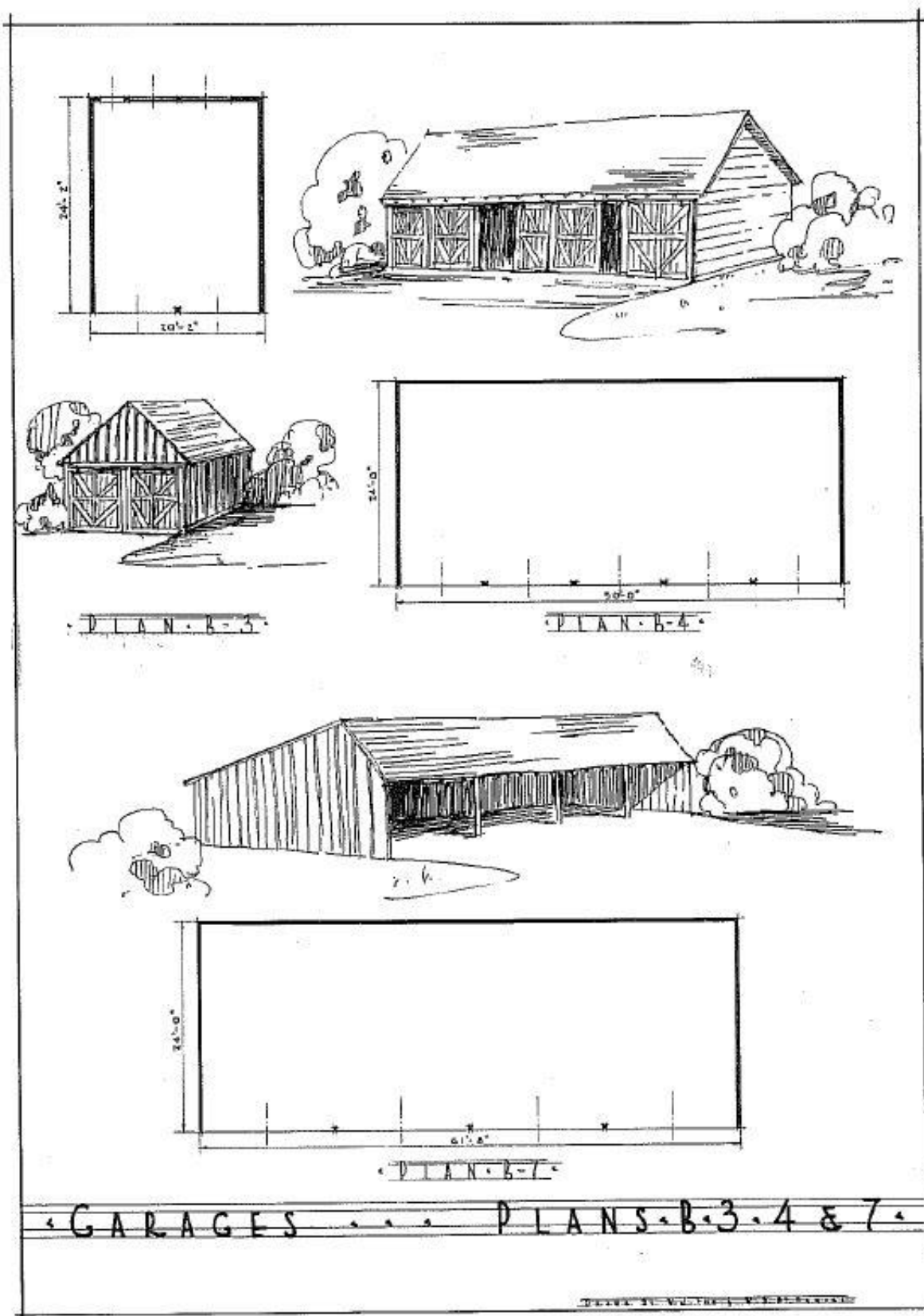


Figure 20. USFS suggested building plans for garages/utility buildings (Fickes, 1935: 543).

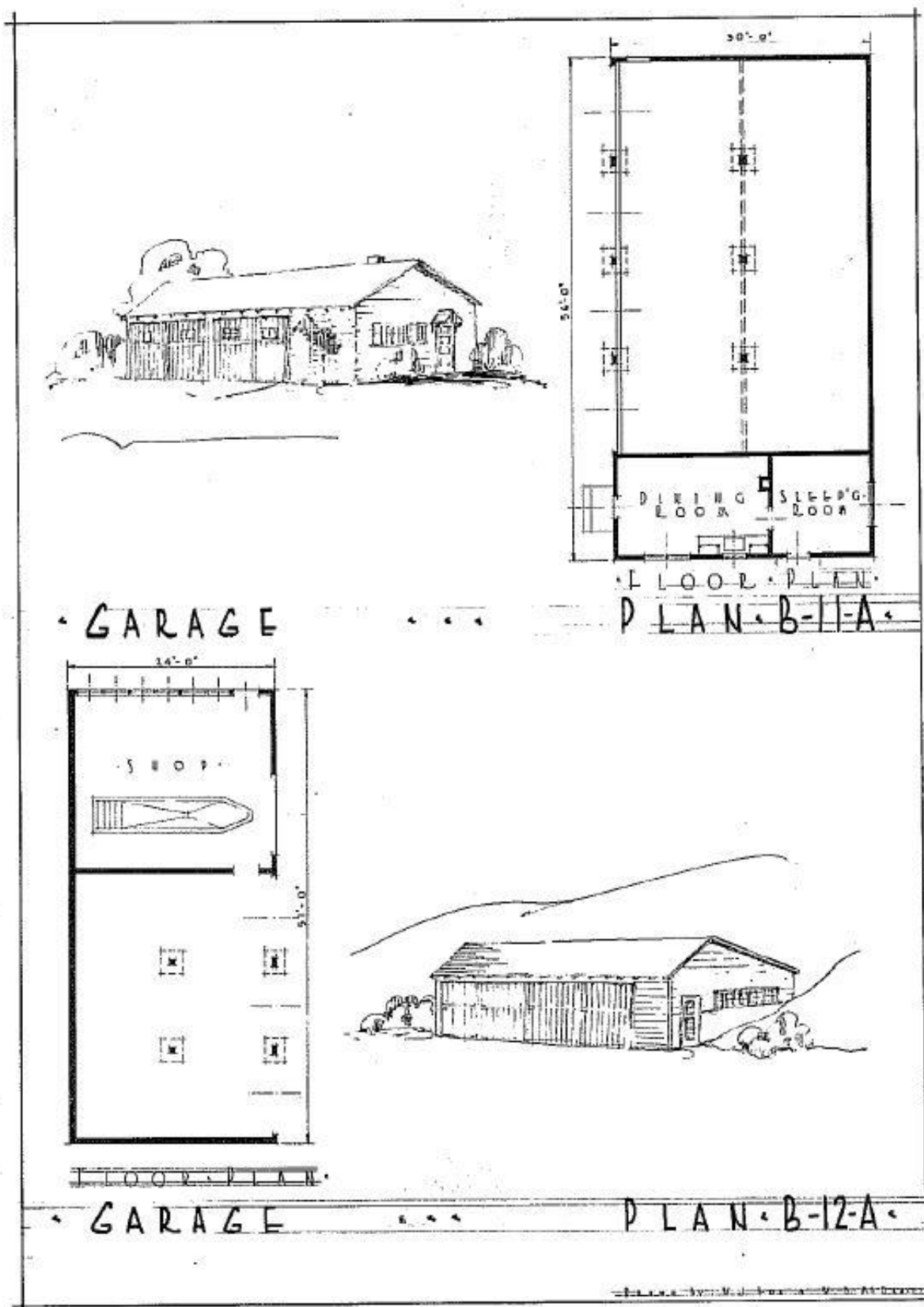


Figure 21. USFS suggested building plans for garages/utility buildings (Fickes, 1935: 549).

**Extant Tennessee Fire Towers as of March 26, 2014**

<b>Tower Name</b>	<b>County</b>	<b>Tower Name</b>	<b>County</b>	<b>Tower Name</b>	<b>County</b>
Bluebird	Anderson	Rich Mountain	Greene	Mt Peter	McNairy
Laurel Grove	Anderson	Altamont	Grundy	Ramer	McNairy
Camden	Benton	Braggs	Hamilton	Madisonville	Monroe
Bradden Knob	Bledsoe	DeLong	Hamilton	Cunningham	Montgomery
Hendon	Bledsoe	Montlake	Hamilton	Dotsonville	Montgomery
Meyers	Bledsoe	Clinch Mountain	Hancock	Oakwood	Montgomery
Summer City	Bledsoe	Sneedville	Hancock	Hurricane	Moore
Worthington Knob	Bledsoe	Hickory Valley	Hardeman	Burrville	Morgan
Look Rock	Blount	Hornsby	Hardeman	Catoosa	Morgan
Millstone Gap	Blount	Kennedy	Hardeman	Jones Knob	Morgan
N4AOW Tower	Bradley	Bee Rock	Hardin	Pilot Mountain	Morgan
Cove Creek	Campbell	Olive Hill	Hardin	Windswept	Morgan
Lafollette	Campbell	Turkey Knob	Hardin	Standing Stone	Overton
Walnut Mountain	Campbell	Bays Mountain	Hawkins	Twinton	Overton
Parker Hill	Cannon	Bulls Gap	Hawkins	Linden	Perry
Short Mountain	Cannon	Chimneytop	Hawkins	Lobelville	Perry
Leach	Carroll	Garden Mountain	Hawkins	Regan Knob	Pickett
Maple Creek	Carroll	War	Hawkins	Cookeville	Putnam
Holston High Knob	Carter	Natchez Trace	Henderson	Grandview	Rhea
Stony Creek	Carter	Paris	Henry	Smyrna	Rhea
Petway	Cheatham	Hornertown	Hickman	Mt Roosevelt	Roane
Cabo	Chester	Moore's Switch	Hickman	Adams	Robertson
Chickasaw	Chester	Weatherly	Hickman	Black Creek	Scott
Springdale	Claiborne	Towerview	Houston	Slaven Knob	Scott
Pilot Knob	Clay	Haydenburg Ridge	Jackson	Smith Knob	Scott
English Mountain	Cocke	Jefferson City	Jefferson	Bennett	Sequatchie
Hall Top	Cocke	Kettlefoot	Johnson	Jakes Mountain	Sequatchie
Meadow Creek	Cocke	Sharps Ridge	Knox	Wolfpen Mountain	Sequatchie
Mount Cammerer	Cocke	Ripley	Lauderdale	Bluff Mountain	Sevier
The Barrens	Coffee	New Prospect	Lawrence	Cove Mountain	Sevier
Homestead	Cumberland	Westpoint	Lawrence	Gordonsville	Smith
Lantana	Cumberland	Hohenwald	Lewis	Barrow	Stewart
Pilot Knob	Cumberland	Summertown	Lewis	Dover	Stewart
Smithville	DeKalb	Kelso	Lincoln	White House	Sumner
Bell	Dickson	Lenoir City	Loudon	Hartsville	Trousdale
Tenn City	Dickson	Lafayette	Macon	Pinnacle Mountain	Unicoi
Millsfield	Dyer	Big Hill	Marion	Chuck Swan	Union
Ebenezer	Fayette	Cave Spring	Marion	Maynardville	Union
Allardt	Fentress	Prentice Cooper	Marion	Spencer	Van Buren
Pickett	Fentress	Gill Chapel	Marshall	Viola	Warren
Wright Mountain	Fentress	Flanigan Hill	Maury	Flat Woods	Wayne
Rowe Gap	Franklin	Theta	Maury	Hardins Creek	Wayne
Sewanee	Franklin	McMinn Ridge	McMinn	Lutts	Wayne

Tennessee Division of Forestry Fire Lookout Towers, 1933 to 1975Tennessee

Name of Multiple Property Listing

State

Milan	Gibson			Starr Mountain	McMinn			McGlamerys	Wayne
<b>Tower Name</b>	<b>County</b>			<b>Tower Name</b>	<b>County</b>			<b>Tower Name</b>	<b>County</b>
Anthony Hill	Giles			Bethel Springs	McNairy			Waynesboro	Wayne
Avondale	Grainger			Big Hill Pond	McNairy			Hyndsver	Weakley
Camp Creek Bald	Greene			Michie	McNairy			Hurricane	Wilson
								Jennings Knob	Wilson

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES  
EVALUATION/RETURN SHEET

REQUESTED ACTION: COVER DOCUMENTATION

MULTIPLE NAME: Tennessee Division of Forestry Fire Lookout Towers MPS

STATE & COUNTY: TENNESSEE, Multiple Counties

DATE RECEIVED: 02/13/15

DATE OF 45<sup>th</sup> DAY: 03/31/15

REFERENCE NUMBER: 64501237

☒ ACCEPT ☐ RETURN ☐ REJECT 3.31.15 DATE

ABSTRACT/SUMMARY COMMENTS:

RECOM. / CRITERIA Accept

REVIEWER Edson Beall

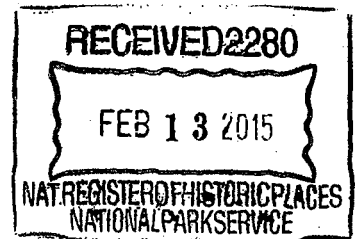
DISCIPLINE History

DATE \_\_\_\_\_

DOCUMENTATION see attsched comments Y/N



**TENNESSEE HISTORICAL COMMISSION**  
STATE HISTORIC PRESERVATION OFFICE  
2941 LEBANON ROAD  
NASHVILLE, TENNESSEE 37243-0442  
OFFICE: (615) 532-1550  
E-mail: [Claudette.Stager@tn.gov](mailto:Claudette.Stager@tn.gov)  
(615) 770-1089  
[www.tnhistoricalcommission.org](http://www.tnhistoricalcommission.org)



February 6, 2015

J. Paul Loether  
Deputy Keeper and Chief,  
National Register and National Historic Landmark Programs  
National Register of Historic Places  
1201 Eye Street NW, 8<sup>th</sup> floor  
Washington, DC 20005

Dear Mr. Loether:

Enclosed please find the documentation for the *Tennessee Division of Forestry Fire Lookout Towers, 1933-1975 Multiple Property Document* along with the associated documentation to nominate the *Sewanee Fire Lookout Tower* to the National Register of Historic Places. The enclosed disk contains the true and correct nominations for listing of the *Tennessee Division of Forestry Fire Lookout Towers, 1933-1975 Multiple Property Document* and its associated *Sewanee Fire Lookout Tower* to the National Register of Historic Places.

If you have any questions or if more information is needed, contact Peggy Nickell at 615/770-1087 or [Peggy.Nickell@tn.gov](mailto:Peggy.Nickell@tn.gov).

Sincerely,

Claudette Stager  
Deputy State Historic Preservation Officer

CS:pn

Enclosures(5)