

Recreation, Preservation, and Repair: Architecture of the U.S. National Forest System

ANDREA ALBERTO DUTTO

University of Idaho

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An inventory of U.S. Department of Agriculture Forest Service architecture, conducted in the late 1990s, reveals a diverse array of predominantly wooden structures designed to serve and monitor areas designated as National Forests. The defining characteristic of these structures, particularly those located in the most remote regions of the forest system, such as lookout towers for fire spotting, lies in their dialectical relationship between standardization and customization. While originally conceived according to strict functional criteria, these buildings became the focus of ongoing repair and maintenance efforts carried out by the on-site staff, often with limited resources and in challenging conditions exacerbated by rugged terrain and wildlife presence.

These structures began to decline in the 1960s, when the introduction of automated surveillance systems led to a policy of reducing personnel and abandoning many sites. The concern that this architectural heritage might disappear has prompted various volunteer groups to dedicate themselves to its preservation and to promoting a culture of maintenance.

This paper presents the results of a collaborative project between students and volunteers, conducted within the framework of a design studio focused on several National Forests in Idaho and Montana. The students analyzed and cataloged some of the most representative examples of USDA Forest Service architecture, aided by volunteers who provided access to firsthand accounts and archival materials. Following a four-phase methodology—inventory, investigation, improvement, and innovation—the students developed an in-depth understanding of these structures. This understanding informed their proposals for repair and enhancement, as well as new designs aimed at preserving the legacy of USDA Forest Service architecture.

INTRODUCTION

Recreation and preservation are the two cornerstones on which the American forestry system is founded. These two concepts emerged during a debate between 1870 and 1890, sparked by Franklin B. Hough's concerns over the damage caused by the logging industry,¹ which ultimately led to the *Land Revision Act* of 1891.² This legislation allowed the President of the United States to set aside forest reserves from public lands, immediately placing 18 million acres of forests under the control of the Department of the Interior. The aim was to protect forests and safeguard them from the uncontrolled exploitation undertaken by logging entrepreneurs in previous years. This act of 'repairing' damage marked a turning point in forest management, establishing rational resource management (preservation) and adapting forests for public use (recreation) as key principles.³

Repair was not confined to a legislative context. It primarily took on the form of a practical activity that mobilized the resources, equipment, and logistical structures of a branch of the U.S. Department of Agriculture (henceforth referred to by the acronym USDA) called Forest Service, established in 1905 under President Theodore Roosevelt.⁴ In addition to fieldwork activities—such as trail mapping, maintenance, and forest management—a significant portion of the USDA Forest Service's efforts involved constructing facilities and infrastructure for forest protection and recreational use,⁵ many of which remain in service today.

The analysis of this architectural heritage was the focus of the design studio ARCH454/554, conducted at the University of Idaho over two consecutive semesters (spring and fall 2024).⁶ After an initial analytical phase, where students explored the typological characteristics of USDA Forest Service architecture, the design phase followed, during which they developed structures inspired by technological, aesthetic, and ethical considerations. The following paragraphs outline the different stages of this design studio's development, including building a research corpus, defining a field of analysis, collaborating with volunteers from various associations committed to preserving USDA Forest Service heritage, and conducting both analytical studies and design proposals.

The preparation for this design studio began with an initial phase of bibliographic research. Particularly useful in this regard was a report on USDA Forest Service architecture written by John R. Grosvenor (an architect employed by the Engineering Staff of the Pacific Southwest Region), published in 1999.⁷ The report outlines the historical development and various ideological orientations of USDA Forest Service architecture.⁸ What stands out in Grosvenor's report is the originality of the USDA Forest Service architectural approach, which merges aesthetic considerations (harmonization with the natural environment), logistical factors (optimal location and circulation of buildings within the landscape), and functional requirements (addressing the living needs of staff in terms of work, family, and social life). According to Grosvenor, USDA Forest Service architecture is rooted in a systemic and holistic vision carried out by certain Forest Service architects, who combined technical expertise with theoretical aspirations.⁹ These ambitions were sometimes driven by stylistic preferences (as seen in the case of architect William Fox),¹⁰ and in other instances, by analytical methodologies reflecting contemporary professional or academic trends (such as architect Ellis Groben's use of functionalist analysis techniques).¹¹

In addition to these observations, Grosvenor's report proposes a typological classification system that groups all USDA Forest Service architectural production into three categories (or types).¹² The first typology is Recreation Buildings, which includes service facilities for park use and small service buildings (various types of outhouses), lodges, and visitor centers.¹³ The second category is Research Buildings, which encompasses forest experiment stations and laboratories that began to take shape gradually from the 1940s onward.¹⁴

Lastly, the category of Administrative Buildings is the one that presents «the greatest number and most diverse types»¹⁵ among the three. Administrative Buildings include fire lookouts, ranger stations, and service structures (specialized fire suppression facilities, nursery buildings, warehouse and storage facilities). Strongly promoted by Gifford Pinchot (the first USDA Forest Service Chief Forester), ranger stations and lookouts became the most important USDA Forest Service buildings, not only from a utilitarian standpoint but also symbolically.¹⁶ These structures, which play a critical support role for rangers, embody the most representative forms through which USDA Forest Service architecture achieved its distinct identity.¹⁷

An important point highlighted in Grosvenor's report is that a project for standardized building design, incorporating prefabricated components, has been present since the early development of USDA Forest Service architecture. This is evidenced by a series of design and construction manuals, beginning with the *Standard Plans for Buildings on Ranger Stations*,¹⁸ published in 1908. Created to address the temporary nature of makeshift structures built by rangers, this manual introduced the first set of standard buildings designed by the

USDA Forest Service. It included 29 standard building plans of varying sizes and types, ranging from a two-stall stable to a four-room ranger station.¹⁹

With the hiring of the first USDA Forest Service architect, William Fox, in 1917, the standardization process was enriched by stylistic elements inspired by regional patterns.²⁰ These enhancements were mainly applied to larger administrative and research buildings located in valley areas near main communication routes.²¹ These architectural principles were reflected in the *Forest Service National Manual of Regulation* (1928)²² and later in the publication of *Acceptable Plans, Forest Service Administrative Buildings* (1938),²³ a true manifesto of standardized functional design (concerning issues of circulation, ventilation, and efficient room distribution) developed by Ellis W. Groben.

Despite the emphasis on functionality and style in the most representative buildings (which has always been a priority for the architects leading the construction sector), improvisation and bricolage remain defining characteristics of the majority of buildings constructed by the USDA Forest Service.²⁴ As highlighted in a 2005 report on USDA Forest Service architecture in the Pacific Northwest region, self-building and, above all, repair skills have played a crucial role in staff selection since the founding of the USDA Forest Service. One example of this is the *Use Book*,²⁵ a manual issued to staff starting in 1905, which lists the wide range of skills that each member was required to have in order to carry out their duties independently at remote, isolated sites within the forest system.²⁶ The layering, patchwork, and mosaic-like assembly of old and new elements, sometimes placed in stark contrast with one another, are among the most recurring stylistic features of the building interventions carried out by the staff during their service. An aesthetic of impermanence combined with an ethic of repair coexists in USDA Forest Service architecture alongside standardized building types.

Paradoxically, this duality (customization and standardization) embodies two contrasting architectural trends. On one hand, there are typological codification manuals aimed at building standardization, exemplified by Ernst Neufert's *Bauentwurfslehre*.²⁷ On the other hand, there are the bricolage and self-build practices popularized in the 1960s counterculture,²⁸ led by figures like Lloyd Kahn²⁹ and other contributors to the *Whole Earth Catalog* (1968).³⁰ However, unlike the emphasis on improvisation as a creative act, as described by Charles Jencks and Nathan Silver in their book *Adhocism: The Case for Improvisation* (1972),³¹ USDA Forest Service architecture demonstrates improvisation within the constraints of a structured framework: improvisation is not a matter of style but serves as a dialectical counterpoint to standardization.

This dialectical relationship between improvisation (or customization) and standardization, was identified as an initial hypothesis about USDA Forest Service architecture, as well as a foundation for launching the design studio.

DEFINING THE PROBLEM AND PROJECT SCOPE: THE CASE OF ADMINISTRATIVE BUILDINGS IN THE NORTHWESTERN REGIONS

After the bibliographic research, the design studio initiated the definition of a specific area of investigation within the broad scope of USDA Forest Service architecture. This was guided by three key criteria:

- Viewing forest architecture as a systemic network of relationships between buildings, rather than focusing on individual buildings in isolation.
- Identifying a typological framework that reflects the forest system as both a (seasonal) living and working space for staff, rather than limiting it solely to a working space.
- Recognizing the coexistence of standardized and customized building components (as highlighted during the bibliographic research discussed in the previous section).

The most convincing response to these three criteria was found in the administrative buildings type,³² for the following reasons:

- Administrative buildings include structures situated in valleys (ranger stations) and on elevated points (lookouts), which, while architecturally distinct, are logistically interconnected within a unified territorial system.
- Administrative buildings serve as dispersed living spaces within the territorial system, combining office functions with housing (seasonal staff housing in higher-altitude sites).
- Administrative buildings balance standardized and customized components in response to varying factors, such as specific climatic conditions and seasonal accessibility.

After identifying a typological framework for the design studio, the second objective was to focus on a specific geographic area of investigation within the forest system. The selection criteria prioritized areas of the forest system where administrative buildings had historically been constructed in the greatest numbers (including records on abandoned or destroyed buildings). This selection resulted in seven national forests located in the mountainous regions straddling Idaho and Montana: Bitterroot, Nez Perce-Clearwater, Kootenai, Lolo, Payette, Salmon-Challis, and Idaho Panhandle. A few case studies from adjacent state forests were incorporated to aid in the analysis (fig. 1).

The high incidence of wildfires in these areas, including the Great Fire of 1910,³³ explains the significant amount of records documented since 1902, the year Bertha Hill Lookout became the first established lookout in the western United States.³⁴ Initially constructed as a platform atop a hemlock snag, Bertha Hill Lookout was later expanded into a 14x14-foot guard cabin in 1933, the year the Civilian Conservation Corps was established, marking the beginning of typological codification and the standardized construction of lookouts.³⁵ A set of lookout cabin types identified by the codes of their respective forest regions and illustrated in the manual *Standard Lookout Structure*

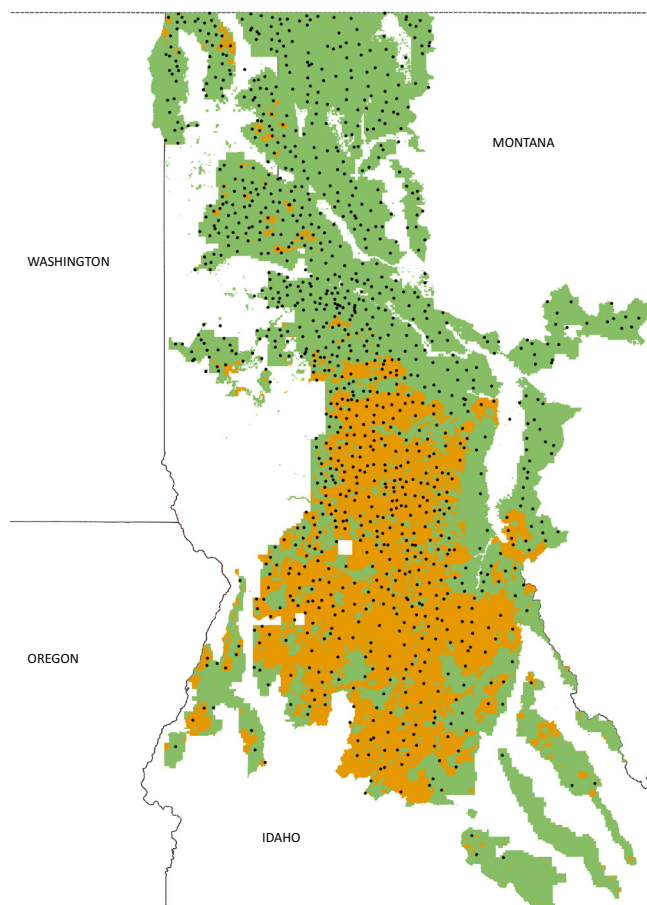


Figure 1. Map showing the areas of national forests (in green) considered by the design studio. The portions of forests affected by fires since the beginning of the last century are highlighted in orange. The black dots indicate records (currently in service, abandoned, or collapsed) of structures built by the USDAFS.

Plans (1938), formed the structural backbone that gave USDA Forest Service architecture its standardized character (this was later complemented by ongoing maintenance undertaken by the staff in service).³⁶ Trails were also developed to establish efficient connections between valley ranger stations and the fire lookouts to ensure maintenance. As observed by Ray Kresiek in his monumental study *Fire Lookouts of the Northwest* (1984),³⁷ repair interventions became the medium through which each lookout acquired its unique, customized character.³⁸

The maintenance of lookouts sharply declined during the 1960s due to two concurrent factors: the adoption of modern aerial surveillance by the USDA Forest Service and inflation, which made both the construction and upkeep of these structures prohibitively expensive.³⁹ These factors led to a phase of decline and gradual abandonment of lookout towers, whose active service was reduced by over 80% throughout the entire forest system. In the context of the seven national forests analyzed in this design studio, 47% of the lookouts were abandoned starting in the 1960, and many have since deteriorated

into ruins or become structurally unsound. The same trend of decline has also affected ranger stations, although to a lesser extent, because their more accessible locations have allowed for easier and more consistent maintenance compared to the more remote lookouts.

This state of abandonment, exacerbated by the USDA Forest Service's neglect in launching conservation projects, became the central problem addressed by the design studio. The urgency of this issue has been underscored by warnings from institutions and associations dedicated to preserving this heritage, including the Forest Fire Lookout Association, the National Woodland Owners Association, and the National Forestry Association, with increasing intensity since the early 1990s.⁴⁰ Additionally, the work of bloggers documenting testimonials and interviews with firewatchers and rangers not only highlights the ongoing interest in these structures but also significantly aided the design studio by providing valuable insights and perspectives on their historical significance and the experiences of those who maintain them.⁴¹

With the collaboration of representatives from the Pacific and Intermountain Northwest areas of the Forest Fire Lookout Association, we gathered updated information on the preservation status of lookouts, as well as guidance on public archives where historical photographs could be consulted. A significant contribution also came from conversations with former rangers and firewatchers, most of whom were eager to share their memories of past events and technical details about the buildings. Additionally, reading books and diaries authored by those who had worked for the USDA Forest Service while staying seasonally at remote high-mountain sites as firewatchers provided important insights.⁴² Some of these authors were also invited to join discussion sessions held as part of the design studio.

What emerged from these contributions was not only a call for legislative strategies to preserve this heritage but also a desire to inspire young students to revitalize these structures as a response to the growing issue of vandalism.⁴³ Volunteers emphasized the unique relationship with the forest environment fostered by living in structures like fire lookout towers, and how the loss of these buildings would threaten that connection. Thus, repairing these structures is more than a physical task; it is a social act of repair, reestablishing our bond with the forest and preserving the personal histories of those involved, which are at risk of being forgotten.

Interestingly, this shift in focus reflects a broader evolution in the concept of repair. While the USDA Forest Service once concentrated on addressing the environmental damage caused by reckless logging, today the priority has shifted to restoring its own architectural heritage, which has endured decades of neglect and vandalism.

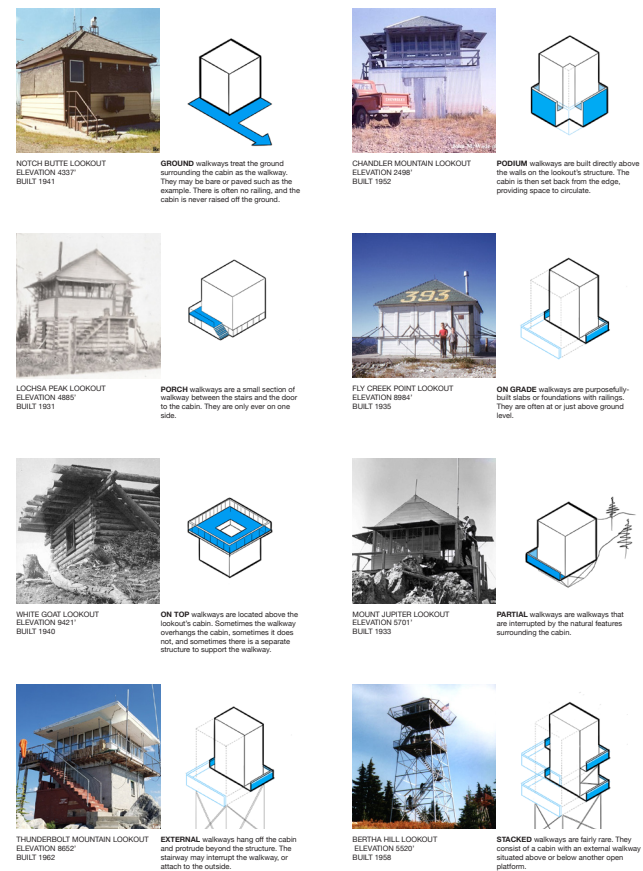


Figure 2. Analytical board of walkways showing the different configurations recorded in the cases of structures built within the national forests analyzed. In addition to this board, five others were created (podium, stairs, floors, windows, roofs), each related to a specific building component. Students: A. Shearman, B. Jones.

METHODOLOGY AND PROJECT DEVELOPMENT: TYPES AND PROTOTYPES OF USDA FOREST SERVICE ARCHITECTURE

An ethic of responsibility, coupled with the practice of repair, formed the two essential ingredients for our design studio. The methodology and project development reflected this ethic, progressing gradually through small steps of knowledge acquisition, beginning with an in-depth understanding of USDA Forest Service architecture (specifically the lookouts) and culminating in several design proposals for innovative structures. The evolution of the design studio followed four distinct phases: the creation of a component inventory (1st phase: inventory), the detailed study of exemplary cases for specific characteristics (2nd phase: investigation), exploration of restoration and maintenance techniques related to individual case studies (3rd phase: improvements), and the design of new prototypes as an evolution of the previous ones (4th phase: innovation).

1st PHASE: INVENTORY

The USDA Forest Service lookouts feature a recognizable set of architectural components, namely: podium, stairs, floors, windows, walkways, and roofs. This pattern serves as the foundation for standardized construction while also providing a framework for the customizations made over time by the staff on duty.⁴⁴

The cataloging parameters for these standardized components were drawn from the 1938 manual for the construction of lookout towers⁴⁵ and were expanded through observations made on the documentation and photographs provided by the Forest Fire Lookout Association (FFLA). Each architectural component (podium, stairs, floors, windows, walkways, roof) was examined for each record, and its variations were sampled, then illustrated and described in dedicated analytical boards (fig. 2).

These analytical boards were conceived in view of compiling a GIS inventory of the lookouts. This was implemented by assigning each lookout attributes based on the sampled components, supplemented with additional notes. This process resulted in detailed knowledge of the maintenance status of each lookout listed as a record by the FFLA in the seven national forests that the design studio focused on.

2nd PHASE: INVESTIGATION

The GIS inventory (1st phase) informed the subsequent phase of identifying areas where recent maintenance interventions might serve as fertile ground for new design initiatives.

Lookouts were examined in terms of their mutual visual connection, their respective viewshed (the visual coverage of the surrounding areas), and their road connection to the valley's ranger station, which serves as the central control hub for the entire cluster. This allowed us to understand how the forest system operates, as well as to identify critical points caused by errors (or risks) in location choices (limited viewshed or poor road connectivity), which may have led to the malfunctioning, abandonment, or demolition of a lookout.

Students critically examined the relationship between the cluster of USDA Forest Service buildings and the mountainous landforms (ridges, slopes, alluvial fans, crests, peaks). These investigations guided them to conduct in-depth studies of specific lookouts within the cluster, focusing on those considered particularly significant for either their historical longevity or the preservation of unique characteristics. The features of these lookouts were analyzed through drawings and reconstructions of their historical evolution, from the initial design to their current form.

Intermediate phases of transformation, carried out by USDA Forest Service staff during seasonal operations over the decades, were also investigated.⁴⁶ What became evident by the end of this investigation phase was the crucial role that communication routes play in keeping lookouts functional

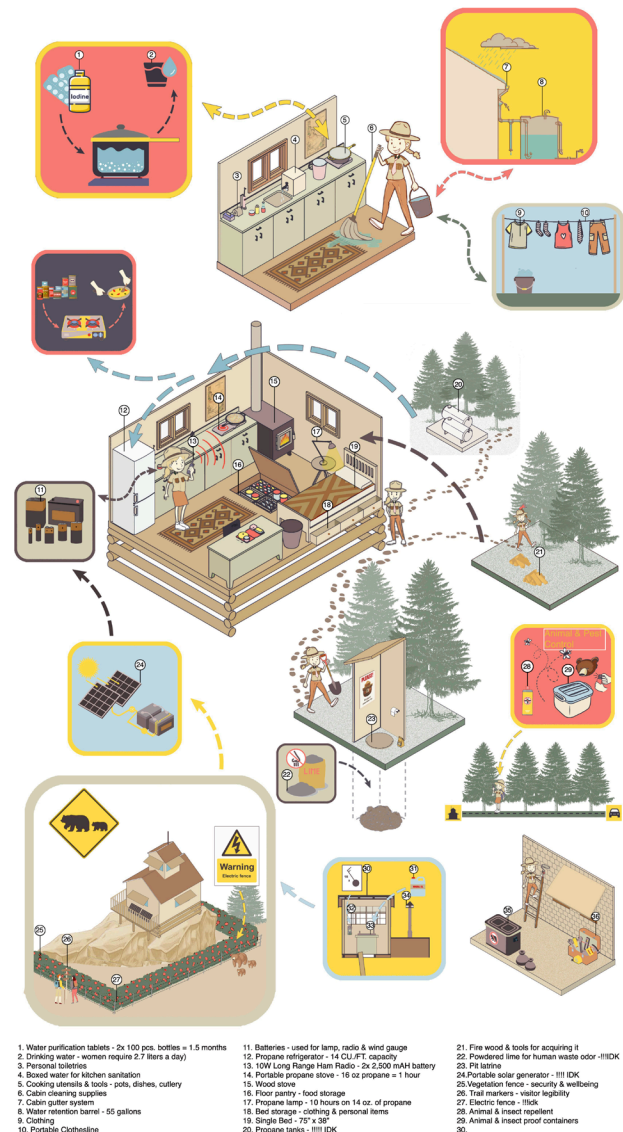


Figure 3. Analysis of environmental adaptation interventions, supply plans, furniture, and equipment aimed at the restoration of Grassy Point Lookout, St. Joe National Forest. Student: J. Bruggeman.

and ensuring their longevity. Lookouts built with the same techniques but in locations without access roads experienced more rapid deterioration. Once again, the systemic conception of architecture proved key to understanding its functionality.

3rd PHASE: IMPROVEMENTS

The knowledge gained during the investigation phase (2nd phase) was directed towards developing technological and architectural improvement projects for the previously analyzed clusters. The term “improvement” referred to three main areas of intervention.

- The first area focused on technological repairs, such as fixing damaged walls or floors, and upgrading the original lookout’s furnishings with new energy supply systems and sanitation devices.



Figure 4. Board showing the intervention on Chicken Peak Lookout, with a three-phase construction sequence illustrated at the top of the image. Student: J. Nelson.

- The second area involved the reinforcement and replacement of deteriorated or damaged structural components.
- The third area involved expanding the cabin's space to accommodate service facilities accessible to both hikers and visitors.

Each of these three parameters was approached not only as a technical intervention but also as an opportunity for architectural design, aimed at imbuing the repair work with an expressive quality.

- The integration of new devices concerned the case of Goat (Grassy) Point Lookout, located in St. Joe National Forest, which was analyzed in detail in order to plan a set of technological devices suitable for its refunctionalization (fig. 3).
- A structural consolidation project that illustrates this approach took place at Chicken Peak Lookout, located in Payette National Forest. The sharp form of its hip roof, unique in its kind but currently in a precarious state, was

reinforced with four external structural poles placed along the roof's hip ridges (fig. 4).

- An example of functional upgrade concerned the Middle Sister Lookout (St. Joe National Forest). This structure, well-preserved with an operational cabin 35 feet off the ground, was integrated with a series of containers used as restrooms and storage, which were incorporated into the podium.

4th PHASE: INNOVATION

Following the improvements phase, the design studio shifted to the ideation of new lookout prototypes. The approaches taken during this phase can be categorized into three distinct orientations.

- The first orientation was on innovating individual components (podium, stairs, floors, windows, walkways, roof) and construction methods.
- The second orientation centered on developing new methods for assembling components to strengthen the relationship between the structures and the landform, thereby enhancing their situatedness.
- The third orientation involved enhancing the accessibility and circulation of the structures.

In this phase of design, the projects were not conceived merely as a solution to the problem but rather as a progressive specifications of it. As the design developed, new technical issues emerged, leading to an increasingly detailed understanding of the problem itself.

- Regarding the first orientation, a project on Wylies Peak, included reconstructing the legendary lookout original cabin built on a rock outcrop in 1925 and collapsed in 1983; in particular, the cupola was redesigned as a cantilevered element over the rock, incorporating a pulley system for lifting materials needed for the construction and maintenance of the cabin. (fig. 5).
- Concerning the second orientation mentioned above, a project on the site of Hunt Peak (Priest Lake State Forest) addressed the design of a ridge landform by developing a layout rule based on extending the walkway as the backbone of the assembly scheme
- Finally, the third focus was explored through a reconstruction project for Hoyt Mountain Lookout (St. Joe Forest), which examined circulation patterns and proposed a pathway for wheelchair access utilizing gentle ramps.

This phase concluded the semester-long design studio but simultaneously introduced a series of questions regarding the results obtained and the working methodology, paving the way for further design work in the following semester.

CONCLUDING NOTE

Beginning with a general overview of the historical development of USDA Forest Service architecture based on bibliographic



Figure 5. Restoration intervention of Wylies Peak Lookout, with the phases of the intervention (highlighted in red) shown at the top of the image. Student: B. Jones.

sources, the design studio progressively narrowed down and contextualized several typological and technological issues. Special emphasis was placed on the relationship between standardization and customization, which is a defining feature of administrative buildings, particularly within the subcategory of lookout towers. These structures, often situated in remote areas of the forest system for fire spotting, are characterized by repair and customization interventions carried out by seasonal staff using air and land communication routes established by the USDA Forest Service since 1905. Specifically, the research focused on seven national forests in the Pacific Northwest region, known for their high density of records due to recurrent wildfires over the past century.

The design studio began by understanding what exists (inventory), identifying exemplary case studies, improving them, and

ultimately imagining scenarios for their innovation. Gaining knowledge of the USDA Forest Service architectural heritage through research, drawings, and collaboration with staff and volunteers provided the design studio with direct experience of architecture grappling with concrete design challenges, as well as issues of environmental ethics and heritage preservation.

The architecture of the USDA Forest Service served as a valuable source of inspiration, demonstrating how challenges were transformed into opportunities for designers and builders. It illustrated how repair became a way to anchor structures more deeply in their environments, enhancing their connection to place. By recognizing the layers of memories embedded in this heritage, the studio aimed to raise awareness—especially among new generations—and encouraged future designers to engage with this legacy responsibly.

ENDNOTES

1. Harold K. Steen, *The U.S. Forest Service: A History* (Seattle: University of Washington Press, 1976), 9–21.
2. Michael Williams, 'Preservation and Management, 1870-1910', in *Americans and Their Forests: A Historical Geography* (New York: Cambridge University Press, 1989), 393–424; Alfred Runte, *Public Lands, Public Heritage: The National Forest Idea* (Niwot, Co.: Roberts Rinehart Publishers, 1991), 11–20; Harold K. Steen, *The Beginning of The National Forest System* (Washington D.C.: United States Department of Agriculture, 1991), 18–23.
3. Robert W. Douglass, *Forest Recreation*, 3rd ed (Saint Louis: Elsevier Science, 2014).
4. Some of the intentions guiding President Roosevelt in dealing with the USDAFS are collected in Theodore Roosevelt, 'Our Forest Policy', *The Plant World* 7, no. 1 (1904): 8–11.
5. The debate surrounding recreation issues within the USDAFS is outlined in Steen, *The U.S. Forest Service: A History*, 152–62.
6. Fifteen undergraduate students took part in the semester-long design studio.
7. John R. Grosvenor, *A History of the Architecture of the USDA Forest Service* (Washington D.C.: U.S. Government Printing Office, 1999).
8. The report is divided into three chapters, the first of which is historical and includes observations on ideological orientations (*Chapter 1: Eras*), the second is typological and extensively illustrated with black-and-white photographs (*Chapter 2: Building Types*), and the third is biographical (*Chapter 3: People: Leaders and Implementers*).
9. This orientation of Grosvenor emerges when reading the third part of the report. See Grosvenor, *A History of the Architecture of the USDA Forest Service*, 169–266.
10. «William Fox designed the buildings for Ninemile in the Cape Cod style of architecture. The site plan was devised to look like a Kentucky horse farm, with clean white buildings, corrals, and tree and grass landscaping. The reasons for selecting this type of architectural style are unclear.» Grosvenor, 15.
11. See the similarities between the graphic techniques for analysing circulation in interiors adopted by Groben and the graphic studies carried out by Alexander Klein. See Grosvenor, 24; Christoph Lueder, 'Evaluator, Choreographer, Ideologue, Catalyst: The Disparate Reception Histories of Alexander Klein's Graphical Method', *Journal of the Society of Architectural Historians* 76, no. 1 (1 March 2017): 82–106.
12. See the second part of Grosvenor's report entitled "Building Types". Grosvenor, *A History of the Architecture of the USDA Forest Service*, 55–168.
13. In particular, the case of the Timberline Lodge built on Mount Hood in Oregon's Cascade Range between 1936 and 1938 is highlighted. See Grosvenor, 125–30.
14. See Grosvenor, 153–68.
15. Grosvenor, 57.
16. Regarding the ranger stations, Pinchot states: «National Forests could neither be protected nor utilized without Rangers, and the Rangers could neither live near their work nor maintain their saddle and pack horses unless Ranger stations, which must include pasture for the stock, were reserved for their use.» Gifford Pinchot, *Breaking New Ground* (Washington, D.C.: Island Press, 1998).
17. This feature is highlighted by Les Joslin, a former USDAFS firefighter, in a visitor's guidebook to seventy-five historic ranger stations, complete with addresses and short descriptive texts enriched with curious anecdotes. See Les Joslin, *Uncle Sam's Cabins: A Visitor's Guide to Historic U.S. Forest Service Ranger Stations of the West* (Bend, Or.: Wilderness Associates, 1995).
18. USDA Forest Service, *Bills for Material Accompanying Standard Plans for Buildings on Ranger Stations* (Washington D.C.: US Government Printing Office, 1908).
19. «[This] guidebook provided a materials list for each plan specifying the amount of dimensional lumber, shingles, nails, doors, bricks, windows and doors, and interior finishes, and even citing the number of screws and nails needed. This marks the first overarching effort to provide standardized plans for Rangers to use.» Kay Atwood et al., *Utility and Service Combined with Beauty: A Contextual and Architectural History of USDA Forest Service Region 6: 1905-1960* (Washington D.C.: U.S. Government Printing Office, 2005), 42.
20. «"Rustic style" became associated with these Depression-Era structures that were locally designed by trained architects and constructed by local carpenters.» Atwood et al., 53; Grosvenor, *A History of the Architecture of the USDA Forest Service*, 13–20.
21. «A significant innovation was the development of the Ninemile Remount Depot on the Lolo National Forest». Grosvenor, *A History of the Architecture of the USDA Forest Service*, 14.
22. USDA Forest Service, *Forest Service National Manual of Regulation* (Washington D.C.: U.S. Government Printing Office, 1928).
23. USDA Forest Service, *Acceptable Plans for Forest Service Administrative Buildings* (Washington D.C.: U.S. Government Printing Office, 1938).
24. Atwood et al., *Utility and Service Combined with Beauty: A Contextual and Architectural History of USDA Forest Service Region 6: 1905-1960*, 12–14.
25. USDA Forest Service, *The Use of the National Forest Reserves: Regulations and Instructions* (Washington D.C.: U.S. Government Printing Office, 1905).
26. «The Rangers are the men who carry out the work on the ground. They must thoroughly know the country, its conditions, and its people. They live in the forests, often in locations far from settlement and sources of supply. The Ranger must be able to take care of himself and his horses under very trying conditions; build trails and cabins, ride all day and all night; pack, shoot, and fight fire.» USDA Forest Service.
27. The reference to Neufert's manual as an epistemological paradigm of standardisation is taken from Nader Vossoughian, 'Standardization Reconsidered: Normierung in and after Ernst Neufert's Bauentwurfslehre (1936)', *Grey Room* 54 (Winter 2014): 34–55.
28. In particular, I am referring to the Californian counterculture. See Felicity Dale Elliston Scott, 'Bulldozers in Utopia: Open Land, Outlaw Territory, and the Code Wars', in *West of Eden: Communes and Utopia in Northern California*, ed. Iain A. Boal et al. (Oakland (Ca.): PM Press, Retort, 2012), 57–71.
29. I refer in particular to the series of books on alternative architecture, edited by Kahn, which began with Lloyd Kahn, *Shelter* (Bolin (Ca.): Shelter Publications, 1973).
30. For an overview of the Whole Earth Catalog consider Caroline Maniaque Benton and Meredith Gaglio, eds., *Whole Earth Field Guide* (Cambridge (Ma.): MIT Press, 2016).
31. Charles Jencks and Nathan Silver, *Adhocism: The Case for Improvisation* (Cambridge, Massachusetts: MIT Press, 1972).
32. The typological notion of an administrative building is taken from the classification and definition proposed by Grosvenor in his report. See Grosvenor, *A History of the Architecture of the USDA Forest Service*, 55–168.
33. See Stan Cohen and Donald C. Miller, *The Big Burn: The Northwest's Great Forest Fires of 1910* (Missoula: Pictorial Histories Pub. Co., 2010).
34. The historical evolution of the Bertha Hill lookout is outlined in Albert B. Curtis, *White Pines and Fires: Cooperative Forestry in Idaho* (Moscow, Id.: University Press of Idaho, 1983).
35. «The CCC had a very strong commitment to building as a part of the conservation work, constructing administrative and recreational structures for national forests, national parks, state parks, and other public agencies throughout the west. [...] The CCC built modest frame structures that were often portable so that the buildings could be disassembled and re-assembled as the camps moved.» Atwood et al., *Utility and Service Combined with Beauty: A Contextual and Architectural History of USDA Forest Service Region 6: 1905-1960*, 29; Steen, *The U.S. Forest Service: A History*, 213–21.
36. See Grosvenor, *A History of the Architecture of the USDA Forest Service*, 96.
37. Ray Kressek, *Fire Lookouts of the Northwest* (Spokane: Historic Lookout Project, 1984).
38. Kressek's book recounts the events faced by the staff of some of the most iconic lookouts and how customization has intervened in the face of adversity.
39. Kressek, *Fire Lookouts of the Northwest*, 12.
40. To these must be added the National Historic Lookout Register maintained by the US Department of the Interior. The list provides some general information, including the construction date, geographical location, elevation, managing entity, photographs, and a brief description.
41. These are some of the most recent articles highlighting the tourism role of lookouts: Seaborn Larson, 'Former Fire Lookouts a Tool for Tourism', *The Western News*, 6 December 2016; Nathan Rott, 'A Fire Lookout On What's Lost In A Transition To Technology', *National Public Radio*, 15 September 2019; Leina Seeley, 'What You Need to Know About Spending the Night in a Fire Lookout', *Washington Trails Magazine*, 2022; Raymond Zhong, 'America's Fire Spotters Aren't Ready to Fade Away Just Yet', *The New York Times*, 9 June 2023.
42. See Byron Fish and Ira Spring, *Lookouts: Firewatchers of the Cascades and Olympics* (Seattle: The Mountaineers, 1981); Nancy Sule Hammond, *The Last Lookout on Dunn Peak: Fire Spotting in Idaho's St. Joe National Forest* (Pullman, Washington: Basalt Books, 2023); Don Scheese, *Mountains of Memory: A Fire Lookout's Life in the River of No Return Wilderness* (Iowa City: University of Iowa Press, 2001); Sharon Stratton, *Between Forest and Sky a Fire-Tower Journal* (Surrey, C.-B.: Heritage House Pub., 2008).
43. See John R. Grosvenor, 'Control of Vandalism: An Architectural Design Approach', in *A History of the Architecture of the USDA Forest Service* (Washington D.C.: U.S. Government Printing Office, 1999), 279–81; La V. V. Kennow, *Fire Lookouts: Vandals, Thieves and Firebugs* (Missoula: Mountain West Publishing, 2018).
44. See Kressek, *Fire Lookouts of the Northwest*, 11–12.
45. T.W. Norcross, *Standard Lookout Structure Plans* (Washington D.C.: U.S. Department of Agriculture, 1938).
46. Crucial in this phase was the collection of testimonies from staff (contacted through the support of the *Forest Fire Lookout Association* and also by word of mouth) invited to telephone conversations.