

CRATER LAKE NATIONAL PARK
HISTORIC HEADQUARTERS LANDSCAPE
RESTORATION & MANAGEMENT



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ACKNOWLEDGMENTS

This study was initially intended to take the form of a series of straightforward planting plans to restore portions of Crater Lake National Park's Historic District landscape that had been damaged by visitor traffic and building restoration work. It evolved into something else: a report providing more comprehensive guidelines for restoring and managing a dynamic, historic, landscape in a magnificent, geologically-tortured, setting with a climate that fluctuates from deep, snowy winters to intensely hot and arid summers. Simple planting plans were insufficient to deal with these needs and conditions. Thus the report developed into a manual of practical, and often very simple, landscape work that could be done by Park staff as time and resources allowed and that would preserve and restore the historic setting. The practical work is supplemented by brief descriptions of the underlying cultural and ecological philosophies.

Students from the Department of Landscape Architecture, Jerry Watson, Elizabeth Umbanhowar and Patrick McCleary, assisted with the work, providing advice that ranged from information on typical NPS practices to the practicalities of producing a report using 21st century technology. I am especially indebted to Patrick McCleary for clearing paths through the innumerable virtual thickets in which I found myself entangled. Park Service staff, listed in the credits below, generously assisted during visits to the site. More than anything else, however, I am grateful to Steve Mark for his steady hand, thoughtful advice and infinite patience with my innumerable delays, all three perhaps only achievable by adopting the historian's long perspective. I hope that, by employing the long perspectives of the historian and ecologist, the landscape restoration and management recommendations in this report appropriately integrate cultural and ecological considerations to manage this magnificent resource for years to come.

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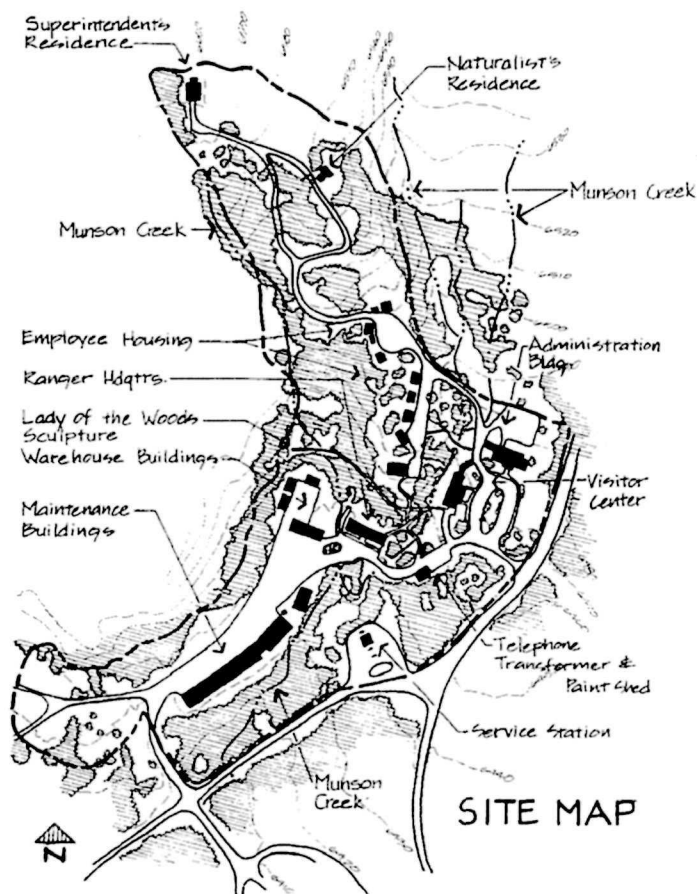
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Historic Fig. 1: Munson Valley Historic District Site Map From: Cultural Landscape Recommendations at Munson Valley (1991)

INTRODUCTION

The initial scope of work for the Munson Valley Historic District planting plan was confined to making specific replanting recommendations for areas around historic buildings that had been disturbed by recent building restoration work. However, a survey of the historic district made it clear that several areas require additional modest treatments, such as finish grading, prior to replanting. The survey also revealed that other areas, although not impacted by restoration work such as the surrounding forest, also required work to preserve or restore the historic landscape character through vegetation management. Thus the project's scope shifted to become a more comprehensive landscape and vegetation management plan. This change in approach to landscape preservation attempts to balance and integrate aesthetic, historic and ecological considerations in the report's vegetation management and planting recommendations. Although the historic district is small relative to the size of Crater Lake National Park, it contains distinctly different environments thus applying a uniform approach to replanting throughout the historic district is inappropriate.

The historic district is located in the narrow, steep-sided, north-south oriented Munson Creek valley. Environmental factors such as proximity to Munson Creek, slopes, aspect, soil conditions and vegetation cover result in distinctly different growing conditions. Environmental conditions are also seasonally dynamic ranging from deep winter snows to hot dry summers and dynamic with respect to long-term growth and decay of the forest plant communities. Thus to maximize successes planting should respond to specific site conditions rather than use the same species throughout the district. The principal structures—Visitor Information Center, Administration Building and Ranger Station—are located in the flat valley bottom, where soils are frequently much moister than the parched, free-draining soils typical of more elevated areas where the smaller historic structures are located. With the exception of the Superintendent's Residence, located on the edge of an open, dry meadow, these structures occur in small clearings within the fir hemlock forest where soil moisture conditions vary from dry to locally-wet due to small depressions, seeps or streams.

Because growing conditions vary significantly throughout the historic district it is imperative to select plants suited to local conditions not use the same species throughout. For example, micro-environmental conditions change significantly from one side of a building to another as a result of different sun and shade patterns and local concentration of roof runoff. To remain true to the historic landscape character, replanting and subsequent vegetation management must find a

balance among replicating historic planting, responding to specific environmental conditions, and respecting functional needs and visual relationships between buildings, vegetation masses, and open space configurations.

This report makes general and specific landscape recommendations intended to replant and manage the vegetation of the Munson Valley historic district at the same standard of excellence established during the recent building restoration. These recommendations are designed to create a landscape setting that complements the restored rustic architecture in ways that are faithful or sensitive to the original goals of this design style and historic period and to integrate these buildings into their landscape settings. The report's detailed recommendations address specific areas throughout the historic district. Most, but not all, are simple to implement; modest fine tunings that result in significant improvements. Most require hand-work in small areas using local, on-site materials rather than expensive imported materials and heavy equipment. Much of this work is best done by the Park's skilled maintenance staff who possess an intimate familiarity with the Park's environmental conditions. A few recommendations require significant investment in imported materials and require larger changes to the historic fabric. In comparison with building restoration costs these landscape and vegetation proposals are inexpensive. They will, however, significantly improve the landscape character and the integrity of the historic district. The recommendations assume a series of phased efforts as time, resources and labor are available.

The report describes the assumptions underlying the grading, planting and other landscape recommendations so that their appropriateness in maintaining or enhancing the district's historic character can be discussed. The recommendations are based on practical design considerations such as ensuring slope stability and guiding pedestrian circulation; on aesthetic considerations such as screening or reducing the visibility of incompatible features like electricity meters; and ecological considerations of planting species suited to site conditions. The report's goals are: providing for contemporary functional needs and use patterns; preserving and enhancing the integrity of the cultural/historical context; and preserving and enhancing the environment's ecological health. Thus the recommendations balance functional, aesthetic/cultural preservation, and ecological considerations.

A sign of success will be the degree to which the work is 'invisible', or rather passes unnoticed, when completed because it successfully matches the character of the natural landscape and merges imperceptibly with it. Wherever possible National Park Service (NPS) staff should



Photo 1 Wet, lush meadow adjacent to the Administration Building in the flat bottom of Munson valley.



Photo 2 Old-growth Hemlock Fir forest: Dry soils and shade create a sparse understory and a forest with an open character.



Photo 3 View across the dry meadow from the Superintendent's Residence to Garfield Ridge. Forest trees invading thin herbaceous cover.



Photo 4 Superintendent's Residence: removal of grout debris, filling around base of walls and pipes, and removal of unnecessary erosion control matting will integrate the building into the surrounding landscape.

undertake this work as they have an 'eye' for the character and form of the local landscape. Much grading work covers small areas and only slight changes to ground level and should be done by hand or with small equipment. It should be completed prior to planting to avoid damage to vegetation. Larger grading recommendations typically focus on roads as they typically require greater changes than do buildings. Grading includes smoothing off steep road cut banks and removing unneeded paving (with the goal of reducing the obtrusiveness of roads in the historic district). Although completed work may not be noticed by visitors to the district its overall impact will be significant in terms of eliminating or diverting attention away from unresolved transitions or incompatible features thus increasing the integrity of the historic district landscape.

Finally, many long-term management recommendations are based on an understanding of the landscape as a dynamic living cultural, ecological and experiential resource. Thus the recommendations attempt to reconcile the sometimes-competing contemporary functional needs and preservation of an authentic cultural and historic landscape within changing ecological and environmental conditions.

Before presenting the report's analysis and recommendations it is necessary to step back and consider the historic district's larger context, Crater Lake National Park, because this unique environment is so different from 'typical' landscapes that it challenges many commonly-held assumptions about appropriate landscape and planting techniques and desirable landscape characters. The following section provides a brief description of the landscape setting and considerations that affect landscape character and planting recommendations.

THE CRATER LAKE NATIONAL PARK SETTING

Crater Lake—smooth, flat, and hydrous blue—lies in marked juxtaposition to the surrounding desolation, a landscape of rugged vertical geology and arid forests. The landscape consequences of the volcanic eruption of 7,700 years ago that gave birth to this luminous aquatic jewel remain unfinished—geologic time moves at an invisible pace, and biological time, too, ticks away on a slower timetable than humans' frantic consciousness. Productive, fertile soils have not yet formed from the sterile pumice ejecta that was strewn over thousands of acres. Fractured and shattered rocks have yet to be smoothed and rounded by weathering processes. Thus massive, rough-hewn monoliths lie where they fell, randomly scattered throughout the historic district as in other parts of the park.

Contrary to what a brief glance might suggest, the open forests and patchy groundcover of Munson Valley historic district are not a barren landscape. Though certainly not lush like the fertile pastures of the Willamette Valley, Munson Valley, even at 6,450 feet in elevation, is moist and verdant relative to the lake's rim, pumice fields and dry forest landscapes. The valley's richness is easily missed by day visitors who typically speed through the park stopping only to view its "highlights" and rarely slowing down to the walking or sitting pace necessary to take in richer, multi-sensory experiences.

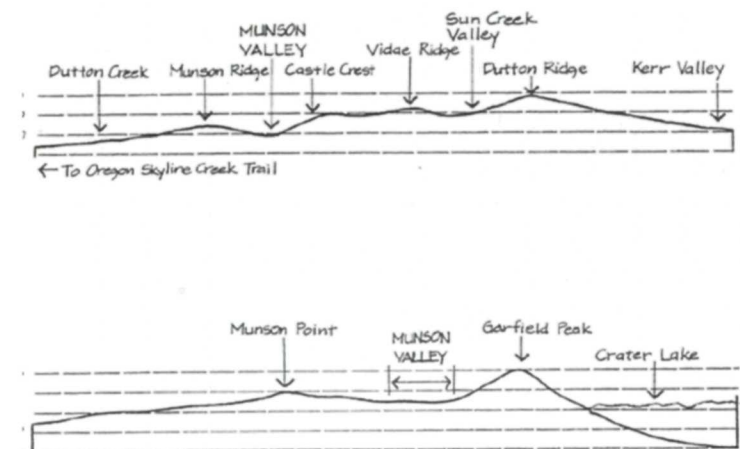
While summers are hot and dry, winters bring heavy snows (annual average 533 inches) and frigid temperatures. Micro-climates and elevation play integral roles in determining the shape and distribution of the Park's vegetation. Although the Park's original designers and landscape engineer, Thomas Vint never intended Munson Valley facilities to be used during winter months, nonetheless, traffic now passes through the Park year round. As a result snow-plowing is necessary and regular, sometimes resulting in conflicts between landscape decisions and winter accessibility. As the spring melts begin, open, unforested areas become clear sooner than more densely vegetated locations. At the site scale, shade from buildings and trees preserves snow for longer as do areas with moister and cooler soil temperatures, such as along creeks. The seasonal climate cycles may be augmented or diminished by larger natural "disturbances" such as fire, volcanic activity and human activity.

THE MUNSON VALLEY SETTING

Ecological restoration practitioners use "reference sites" against which to measure the success of restoration of "native" plant communities. "Historic restoration" may replant or reinterpret historic planting plans. This report's recommendations combine information from historic plans and information about the character and botanical compositions of adjacent plant communities. For example, along the valley bottom's wet bogs and creek the greens of willows, Elderberry (*Sambucus*), and herbaceous plants contrast sharply with the surrounding desolation. Recommendations consider these different growing conditions and plant community characteristics. It is not clear to what extent awareness of contrasting micro-ecosystems were a consideration in historic planting plans or the extent to which planting decisions were made in the field as the work proceeded. This raises the question of whether the original plans were sufficiently location-specific in their recommendations or merely selected species native to Munson Valley for all sites in the historic district. The use of species appropriate to different environmental conditions within the historic district is important for the success of plants. It is,



Photo 5 Crater Lake: the majesty of the stark landscape setting pervades even the intimate scale of the Historic District and should dictate approaches to landscape restoration.



Historic Fig.2: Munson Valley Cross Sections Munson Valley is located in lower left center (CLR 1991)



Photo 6 Dense, light green and luscious riparian vegetation on Munson Creek behind the Visitor Information Center at the low end of the Historic District



Photo 7 Riparian vegetation contrasts sharply with the thin aridity of meadow vegetation at the upper end of the District.

for example, surprising how similar the historic plant lists were for the dramatically different environments at Rim Village and Munson Valley. To what degree did historic plans anticipate and respond to the intensity of contemporary foot traffic and use patterns at the Rim, in the campground, and in Munson Valley?

GENERAL LANDSCAPE OBSERVATIONS

General landscape observations include the following:

- * geological formations
- * architectural characteristics
- * topography and grading
- * forest aesthetic--role of ecological succession in a dynamic landscape
- * site-sensitive planting palettes and placement
- * maintenance and materials.

These topics affect the historic integrity of the landscape and visitors' experiences. Human use patterns can be effectively managed by design decisions about plant selection and massing, grading, erosion control, hardscape materials palette, and placement of site furniture, to create a historically-sensitive, low-maintenance, attractive and ecological functional landscaping.

Geological Formations

Mount Mazama's explosion randomly scattered blocks of stone of varying sizes throughout the Park and within the Munson Valley Historic District. The "spatial logic" that can be discerned in rock formations of sedimentary, metamorphic, or even some volcanic/igneous geologic processes is not apparent in the chaotic and seemingly-random distribution of stones resulting from this explosive process. The untrained eye discerns no order or "reason" for where, and why, stones are located or how they relate to each other. Patterns caused by geologic processes, such as the law of superposition, are not evident and, as a result, there is no replicable "reasoning" for their placement that can guide landscape design decisions. Further, many rocks appear to sit on top of the ground rather than nestled into it as is typical in wetter landscapes and is common practice for most landscape design traditions. Whilst this aesthetic may possess an unusual power and drama in undisturbed natural settings, replicating it in intentionally designed landscapes by placing stones in seemingly-random locations is less likely to succeed. "Randomly" placed stones are likely to be perceived as haphazard and aesthetically and functionally ineffectual. Along Rim Drive, stone walls effectively direct and control circulation and enhance designed landscape areas but this is a consciously cultural use of stone that is

carefully cut and placed rather than randomly scattered boulders and stones. How can stone be placed in the historic district landscape in ways that are true to indigenous, i.e. explosive, geologic processes while also conveying some sense of order and purpose: scattershot and heterogeneous, i.e. "natural" or sparing and homogenous, i.e. "designed"? Typical aesthetic/functional landscape design logic and preferences are at odds with the patterns resulting from the landscape's chaotic, explosive geologic origin.

Architectural Characteristics and the "Rustic" Aesthetic

Rock size and type, as well as masonry placement methods vary significantly among the historic district's buildings depending on when they were built. All, however, fall comfortably within the term "rustic architecture", also known as "parkitecture", which describes a specific aesthetic perpetuated and advanced by the National Park Service in the early 20th century coinciding with the Arts and Crafts Movement. Structures utilize large hand finished timbers, often native wood, as well as river, or rusticated stone. Rustic architecture was driven by the belief that park structures should harmonize and blend in with nature.

Cottages constructed in the late 20s and early 30s, typically use larger, more rounded stones and boulders than the smaller, more closely-fitted and sometimes cut stones of earlier, smaller cottages. Larger structures tend to use big rocks or boulders, particularly across large wall faces uninterrupted by window or doors. Some of the largest rocks are on the Superintendent's and Naturalist's Residences which have far smaller and more intricate facades than the Ranger Station and Administrative Building. The decision to use particularly large rocks on these buildings presumably reflects the relative importance of their users as does their placement at the highest elevations in the historic district. Rock sizes vary among the cottages on the row, buildings 24, 25, 28. In the three cottages from the earlier period (30, 31, 32) nearer to the Naturalist's Residence there is no coursing and the stone is uniformly smaller.

Topography and Grading

In Munson Valley, the rustic building aesthetic consists of walls of large, uncut stones, or rounded boulders, that splay out at corners and at the base of walls "softening" the right angles that usually occur where building walls meet ground surfaces. This is intended to 'merge' the buildings with the surrounding land. Other characteristics, such as steeply pitched roofs and overhangs without gutters, are also important features of this architectural style. To complete the "merging" of buildings into the landscape it is important that the grade sweeps gently away



Photo 8 Rocks along cottage row where road width was reduced. Seemingly randomly placed rocks tend to attract attention and thwart attempts to have rustic buildings merge into the landscape setting.

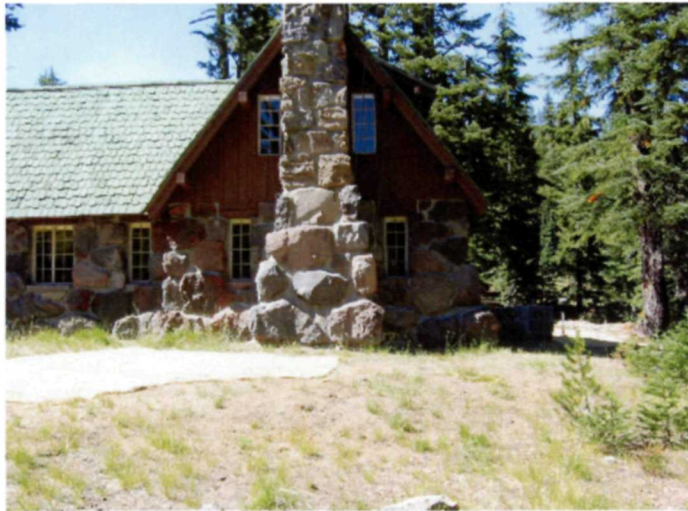


Photo 9 Despite dramatic differences in rock sizes, the goal is to allow these Rustic-styled cottages to merge into their surrounding landscape.



Photo 10 Notice how effectively tree shadows add a beneficial camouflage effect to building facades and roads.

from the bottom of walls connecting their splayed bases into the surrounding grade in smooth, unbroken curves. Plantings around foundations are also important to merge buildings into their surrounds but this does not replace the need for careful grading around buildings. Further, the rustic style requires a landscape setting where buildings are not dominated by roads or paved surfaces. Attention to road grading--particularly when close to buildings, grading around buildings, and the extent of paved surfaces and their placement relative to buildings are essential considerations to ensure that investment in the restoration of historic structures is not thwarted by poor grading. Throughout the historic district there are numerous locations where attention to grading is necessary to ensure an appropriate fitting of buildings into the landscape. Fortunately, the amount of material to be moved is relatively small, the distance they need to be moved is modest, and cut and fill can be balanced on site. The most extensive regrading is on the steep cut bank on the road to the Superintendent's House. Cutting back this eroding bank would make it less visibly obtrusive and would improve views of the residence and the meadow. Cut material can be used to fill around utility structures to make these less obtrusive.

Forest Aesthetic

An examination of photos from the 1930s and 1940s to assess whether the forest is advancing or retreating in the historic area suggests that it is doing both—advancing in some areas and retreating in others. In other words the forest is a dynamic, changing element landscape not a feature that can be held static. The historic district's hemlock-fir forest is in a state of maturity and senescence and it is probable that the death of large, old trees will continue for the foreseeable future. Thus the relationships between forest and open spaces and the height and canopy density are continually changing and the visual character of the landscape is in constant, if slow, flux. Predicting the rates at which the forest will decline and regenerate is difficult, made more difficult by the unpredictable impacts of global climate change, which could alter rainfall patterns and distribution and render the site and the Park as a whole wetter or drier.

The historic district's main forest trees are mature to senescent hemlocks. The trees are large, relatively uniform in age, with a high, patchy canopy and lightly vegetated ground plane. The overall sensibility is one of openness. These characteristics suggest that the forest will retreat and become patchier.

By contrast, the regenerating forest in disturbed areas grows as dense "thickets" predominantly

of fir and hemlock but in several locations of lodge pole pine and fir. Thickets consist of dense blocks of closely-spaced relatively young and small trees. Unlike the mature forest, thickets block movement and views. Thickets are scattered throughout the historic district in areas where the ground has been disturbed and left bare. Thicket patches are very small in extent compared with forested areas. The largest thicket extends from the road south of the ellipse through the old gas station site. This is principally lodgepole pines next to the ellipse and a pine/fir mixture further south. Pines are larger and their regeneration seems to have preceded fir regeneration by a few years. Pines appear, in general, to be in poorer condition than firs being more broken and contorted. A smaller fir/hemlock thicket occurs at the road end adjacent to the old hospital building where the grade drops steeply into undisturbed forest. In recently disturbed areas such as where the road in front of buildings 30, 31 and 32 was reduced in width, and around the naturalist cottage following restoration, there are areas of one or two year old fir seedlings, 1-2" tall, which will become dense thickets if these areas are left undisturbed.

Natural thinning due to competition for space and light will occur over time but the visual character of these dense thickets does not appear to be an aesthetic in keeping with the district's historic landscape sensibility. General management principles suggest that rather than completely removing these thickets they should be utilized as in situ nurseries from which individuals or clumps of two or three trees can be dug. Thinning thickets would provide a ready source of fir, hemlock and pine trees of heights from below 2-3 feet to over 6 feet tall for planting needs and reduce stand density allowing remaining trees to grow more vigorously. (Similar hemlock thickets occur at Rim Village in disturbed areas between the parking lot and the old campground, now a parking/picnic area and these could be a good source of trees to revegetate around the new buildings.)

Site Sensitive Planting Palettes and Placement

Throughout the historic district earlier plantings appear fairly uniform in terms of species used, massing, and their placement around buildings. Even more surprising is the similarity of plant palettes used in the historic district and in Rim Village restoration--several hundred feet higher, far more exposed to southwest winds and on droughty, infertile pumice soils.

For example, in Munson Valley there are remnant Elderberry (*Sambucus*) around the Visitors Information Center and Naturalist's and Superintendent's Residences—although none

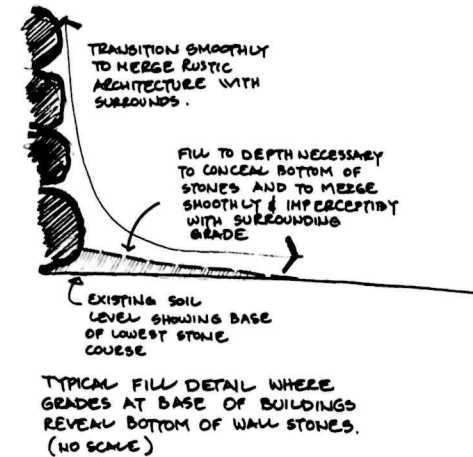


Fig. 1 Showing typical regrading around structures



Photo 11 Naturalist's residence setting. An intermixture of dead snags, dying trees, mature & youthful trees, & regeneration from saplings to and seedlings are characteristic of dynamic old-growth forests.



Photo 12 Forest thicket (predominantly lodgepole pine) south of ellipse on former road bed. Thickets of different ages and species composition are characteristic of disturbed areas throughout the Historic District.

were observed at other cottages. There are also thriving clumps of *Sorbus* at the Visitors' Center, Administration Building and around most cottages, though not at the Naturalist's and Superintendent's Residences. While these plants have clearly survived quite different environmental conditions, it would, as has been previously discussed be wiser to vary the planting in response to the district's different environmental conditions—principally soil moisture based on location in the valley bottom, proximity to the stream and degree of sun or shade from forest trees and structures. With the exception of one specimen in front of cottage 28, willows are now confined to the stream edge in keeping with more typical ecological patterns.

The preliminary site analysis suggested that a fairly uniform planting treatment should be used throughout the district to provide visual cohesion and unity. However, closer examination of local planting conditions made it clear that these vary considerably throughout the district and that choice of species should be made based on specific conditions at each planting location. (The historic plant palette may need to be expanded slightly to include plants growing on site that are clearly healthy, vigorous and well-adapted to specific conditions.) Addressing micro-environmental site conditions in this way is likely to maximize success of plantings and to minimize long-term maintenance requirements. Learning from the successes and failures of historic planting, rather than simply repeating them, will aid in striking a balance between historic veracity replication and responding to ecological conditions. Michael Murray, Park Biologist, underscored the importance of using vegetation endemic to Munson Valley rather than abiding strictly by historic planting palettes.

Different environmental conditions result in subtle changes in aesthetic character. Thus aesthetic appropriate on the dry meadow side of the Superintendent's Residence differs from the forest edge conditions at the Naturalist's House and cottages. These also differ from the flat valley bottom of the Ellipse and its surrounding buildings and the stream edge behind the Visitor Information Center. Thus tree clumps and herbaceous plants may be appropriate in some locations and shrub clumps and herbaceous plants in others. For example the Superintendent's Residence faces onto the dry meadow to east and south and forest edge trees to north and west. The former conditions are hot, dry and sunny, the latter exposures are darker and possibly moister. Planting should reflect these different conditions. Further, views from the house's principal rooms, such as the long view to Castle Crest across the meadow and contained views into the forest to the north, should be considered when planting. The Naturalist's Residence and other cottages have less open and expansive views and feel as though they are located in forest clearings.

The historic practice of locating clumps of trees or shrubs at all building corners and scattered along building facades should be reconsidered. The intent was to use tree and shrub masses to merge structures with the landscape by concealing building edges, breaking up building facades with plant masses and shadows, and fitting the scale of buildings to the scale of the landscape. These remain sound approaches for integrating rustic buildings into the landscape and may provide some benefits to plants by providing heat and shelter. However plants located directly below valley gutters may experience damage from persistent dripping of rainwater or from snow sliding off roofs than they would if located a short distance away from walls and foundations.

In open locations such as the Ellipse and around the Visitor Information Center and Administration Building, other factors might alter historic planting patterns. These include practical concerns such as damage from snow plough activity to shrubs located around the ellipse perimeter, undermining of the bank in front of the Administration building by pocket gophers, and changing pedestrian circulation patterns, and vegetation trampling, resulting from conversion of the Ranger Dormitory into a visitor center. They also include aesthetic concerns about plant placement, density and discernible patterns that are similar to issues raised in the discussion of stone placement. Should trees be planted seemingly randomly or in "natural" patterns or clumps? Should they be arranged in drifts that flow in the same direction across spaces? or should they be located to contain spaces of particular size, shape and character? "Natural" patterns imply underlying causal forces or environmental conditions that may or may not exist. Directional drifts may, for example, suggest wind/shelter patterns or soil moisture changes. Clumps with shapes that are too obviously man-made may attract attention provoking questions as to why they were shaped in this way. "Randomly scattered" plants or plant masses are unlikely to serve legitimate functional needs such as orientation, circulation or control of pedestrian movement and further are unlikely to respond to the historic aesthetic character of the landscape.



Photo 13 Sambucus stump at Superintendent's house: historic remnant shrubs should be protected with wire to discourage browsing. Avoid filling or disturbing roots.



Photo 14 Cut bank along road at upper end of Historic District. Regrading banks such as this provided fill material for use throughout the district and eases the slope to merge with surrounding grades.



Photo 15 Native bitter cherry, appears remarkably resistant to deer browsing--an excellent choice for restoration work. This specimen at the south end of the VIC is mature but the species does not appear on historic plant lists.

Maintenance and Materials

Snow Removal

Snow removal by plowing and blowing has a significant impact on vegetation, indirectly where snow is dumped on top of plants and more directly where the force of snow blown off paved areas breaks small twigs, leaving trunks or branches scored, burnished and bare. Functional snow storage and snow removal needs must be accommodated by confining shrub planting in snow storage locations to low-growing plants, typically no taller than eighteen inches.

Landscape Materials

Although most recommendations suggest using on-site materials (soil, stones, plants that are often in close proximity to the locations where they are needed) rather than importing materials, some materials may have to be purchased off site. Andesite flagstone for proposed new and restored paths is available within the park but timbers for fencing may have to be provided from elsewhere. In so far as possible, rocks, soil, trees, shrub cuttings and herbaceous seed should not be imported from off site. Plant propagules can be harvested and grown on by the Planting Materials Center in ways that either do not cause harm—from seed and cutting collection—or in ways that enhance the historic character by thinning tree thickets. The same is true of soil for finish grading removed as part of road scar slope restoration.

Planting schedules, seed and cutting collection and grading must be carefully coordinated to ensure appropriate attention to seasonal changes and vegetation needs/cycles. Seed collection guidelines mandate that no more than 50% per year should be gathered from any source. A park botanist would need to be present for cuttings of woody plants. Collection should occur in October.

Using materials available onsite is economically, ecologically and aesthetically sustainable, and thus fits the NPS's mandate because they:

- utilize heavy equipment for major work such as earthmoving but rely on the craftsmanship of park staff for finish work.
- work locally, moving soil short distances from cut to fill locations and the same for trees
- reduce the district's asphalt paved footprint of roads and parking areas which have expanded since the historic period--while recognizing the needs of snow removal equipment etc.

Pest Control

Plants in the district are detrimentally affected by browsing deer and pocket gophers, the latter particularly around the Administration Building. Addressing these problems may entail avoiding plant species, such as *Sorbus*, favored by deer, or arranging plantings to deter browsing. Because pocket gophers are active in areas that visitors do not walk across there is little chance that their burrowing will affect them. It may become necessary to control gopher numbers if their burrowing causes excessive slumping of the slope in front of the Administration building.

Erosion Control

Erosion control mats with an open mesh weave and straw filling were placed over disturbed areas around the Superintendent's and Naturalist's Residences. Many mats are on flat or gently sloping areas unlikely to experience much erosion and thus seem to serve little functional purpose other than to cover ground made bare by construction activity. Grasses, sedges, *Aster*, *Penstemon* and *Antennaria* basal leaf rosettes are currently growing through mats. Trees are also seeding areas covered by mats. Because vegetation appears to be regenerating through them there seems to be no reason to remove them--and because vegetation is already relatively dense in the few years since restoration work was complete it seems unlikely that these areas will remain bare for long. Thus there appears to be no need to plant these areas as natural regeneration, when it occurs, is always more successful than planted plants--particularly herbaceous plants.

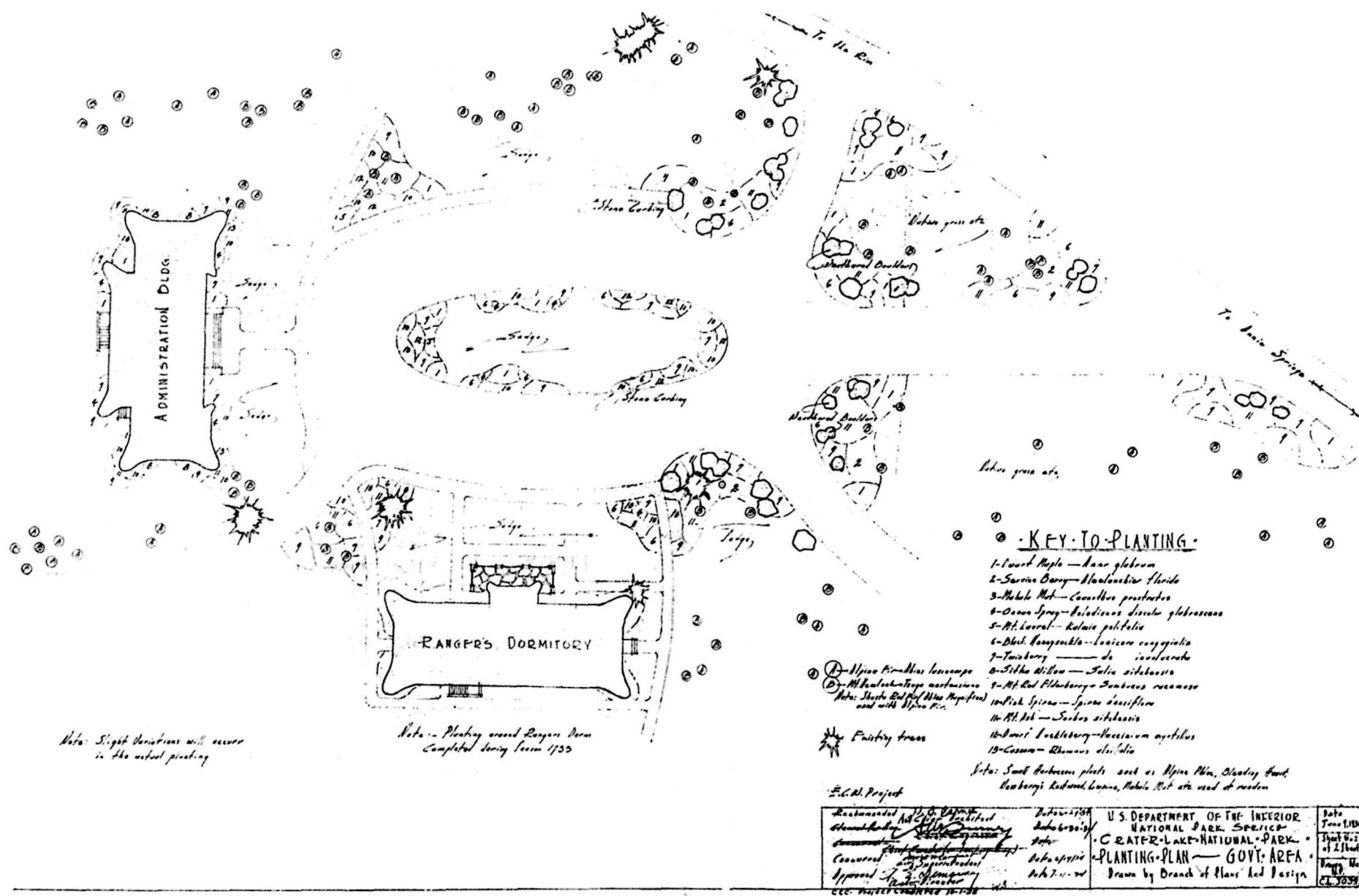
The following sections describe site conditions and recommendations for each part of the historic district that has at some time been disturbed whether by recent restoration work or many years ago.

Road Sanding Grit

The fine grit used to sand roads, and other paved surfaces, in winter possesses the same free-draining qualities as the Park's soils. When grit is blown onto landscape areas it should not pose a problem so long as annual accumulations are not thick. Where accumulations are over an inch or two they may suppress plant growth and alter the color of the ground surface. In such situations grit should be raked to merge with surrounding ground surfaces.



Photo 16 Typical straw erosion control mats on disturbed areas suppressing plant regeneration. Where there is little risk of erosion or disturbance to plants growing through them they should be removed or covered with 1-2 inches of fill material.



Historic Fig. 3: circa 1934 Planting Plan for Ellipse, Administration Building and Ranger's Dormitory.

ELLIPSE

The historic district's two principal buildings the Administration Building and the Visitor Information Center face onto a large, flat ellipse-shaped island that serves as an elegant and spacious turnaround for park visitors coming to the Center. The Administration Building is located at the head of the ellipse's long axis and is several feet above it. The Center is parallel to the long axis. These handsome and imposing buildings form two sides of a rectangle that faces Munson Valley Road. As a result of its adaptation to a Visitor Information Center, the former Ranger Dormitory receives far more vehicular and pedestrian traffic and its adjacent landscape beds suffer accordingly. Most visitor parking stalls are located across the ellipse from the entrance. As a result strong "desire lines" from either end of the parking to the Center run diagonally across the ellipse. These unpaved paths avoid small shrub and trees but trample grasses, sedges and forbs and continue to etch themselves more deeply into the ground. They provide far more convenient routes into the Center than walking around the ends of this long, narrow island. Thus it is extremely difficult to discourage visitors from taking these short cuts.

Existing Conditions Plants

Historically, woody plants were planted in loose, discontinuous drifts, or islands, around the perimeter of the ellipse with sedges, grasses and forbs in the center. A casual glance across the ellipse suggests that very few of these shrubs still remain as only a few scattered clumps are visible. However a closer examination reveals many shrubs remain in prostrate or near prostrate conditions and are thus not visible above the grasses and sedges. This condition may result from deer browsing or branch and twig breakage or compaction from snow blown onto the island to clear roads, or a combination of both. There is nothing to suggest that prostrate shrubs are caused by trampling as they are not located on desire line paths and surrounding areas show no signs of trampling so their condition is most likely a result of snow removal and piling.

Today, more remaining woody plants are at the north and west sides (where shrubs and trees are taller) rather than the ellipse's south end, possibly because groundwater is closer to the surface. Shrubs and trees include a 5'-6' *Sorbus* clump where the two paths converge at the west side and two 5' firs immediately south of this clump. Plants at the north end are typically less dense, lower and less spreading. They include a sparse 6'-8' *Sorbus* through which an *Acer glabrum* and a 5' fir grow. Adjacent to this is a 9"-18" *A. glabrum* mat. Prostrate mats of *Spiraea* are scattered around the perimeter of the ellipse: a 3"-6" mat at the north end, another of similar height at the west side, a 3" mat near the south end, and a 3"-6" mat of *Lonicera* at the east side. In addition, scattered, low clumps of *Ericameria* are located throughout the ellipse.



Photo 17 View down axis of Ellipse from Administration Building showing diagonal desire lines across the ellipse from parking on left to Visitor Information Center on right.



Photo 18 There are fewer remnant shrub and tree clumps at the south end of the ellipse and herbaceous cover is thinner too. Resolving circulation problems should reduce trampling and should encourage plant regeneration.



Photo 19 Shrubs around the perimeter of the ellipse damaged by abrasive action of snow removal. Replanting of shrubs in these areas is inappropriate. Fir trees in the ellipse seem more resistant to damage.



Photo 20 The Visitor Information Center faces an expansive, uncluttered open space and has a tall forest backdrop behind.

The density of herbaceous plants varies slightly across the ellipse. In the center, between the two paths, plants cover no more than 50% of the ground surface of scattered gravel with thin clumps of grasses, Penstemon, Erigeron and possibly some Phlox. Penstemon and grasses dominate the southern end of the ellipse, again covering the ground sparsely. While desirable as an idea, a smooth, continuous meadow sward is not viable given the evident differences in soil conditions and the effects of snow being plied in places by snow plows. The stone curbs around the ellipse show strong signs being scraped and damaged by snow plow blades but, because of snow poles, no vehicle tire tracks were seen along the edge of the ellipse.

Environmental conditions (both natural and resulting from maintenance practices of snow blowing and piling) clearly suggest that successfully growing tall shrubs, as individual plants or in clumps, in this area would be difficult. It does not appear to be a question of finding the 'right' species of plants for these conditions, however, plants in areas surrounding the ellipse suggest that trees may do better than shrubs in these conditions.

Deterring visitors from taking short cuts across the ellipse to establish an unbroken swath of sedges and grasses would require physical structures that would be more obtrusive than the paths themselves. Such structures would compromise the appearance and historic character of the landscape more than the paths. Structures could include low fences and signs but these are usually knocked down or stepped over if the destination remains visible. Screen planting to concealing the destination would have to consist of dense, continuous shrub masses above eye level. These would alter the ellipse's historically-open character and would, in any case, be unlikely to thrive. Altering pedestrian circulation patterns by relocating parking adjacent to the Center would completely change the sizes and locations of historic paving and landscaped beds and is unacceptable. The only viable alternative is to accept pedestrian desire lines, pave them appropriately, contain them to prevent further widening, and integrate them as invisibly as possible into the setting. Preventing the further spread of foot traffic across the ellipse is more important to preserving the landscape's historic integrity than attempting to increase the density of herbaceous vegetation. Since handicapped stalls are located next to the Center it would not be necessary to have curb cuts on paths across the ellipse.

RECOMMENDATIONS

- * Pave the two desire line trails with flagstone to match that in the Visitor Information Center entry path and terrace, or asphalt, similar to paths at the Rim.
- * Set flagstones with a irregular edge rather than forming a uniformly-wide path with straight edges. Path width should be determined by the sizes and arrangement of flagstones but typically should be from 4' to 6' wide.
- * Retain handicapped parking adjacent to the Visitor Information Center entrance so paths do not need to be ADA accessible. Walking surfaces can be rougher than required for ADA.
- * Ellipse curbs at both ends of paths should not be replaced with curb cuts.
- * Set paths 2-3 inches below surrounding grade to make them less obtrusive
- * Place large stones or boulders to protect existing shrubs at ends of path.
- * Following paving, plant 50 Foxtail grass (or grass and sedge mix from seed gathered locally) and 50 Penstemon along edge of path
- * Plant 6 small 3'-5' firs, from thicket at south end of ellipse, next to prostrate shrub mats at north and west sides of ellipse to provide cover for shrubs to grow.

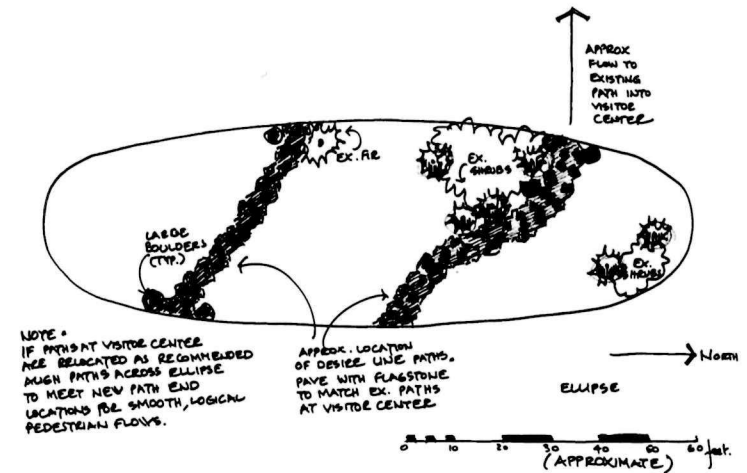


Fig. 2

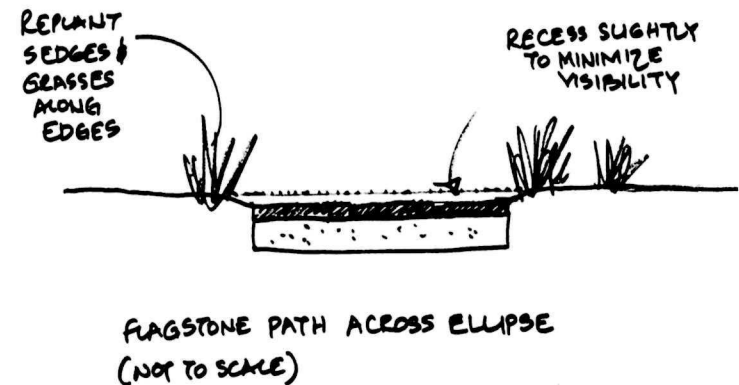
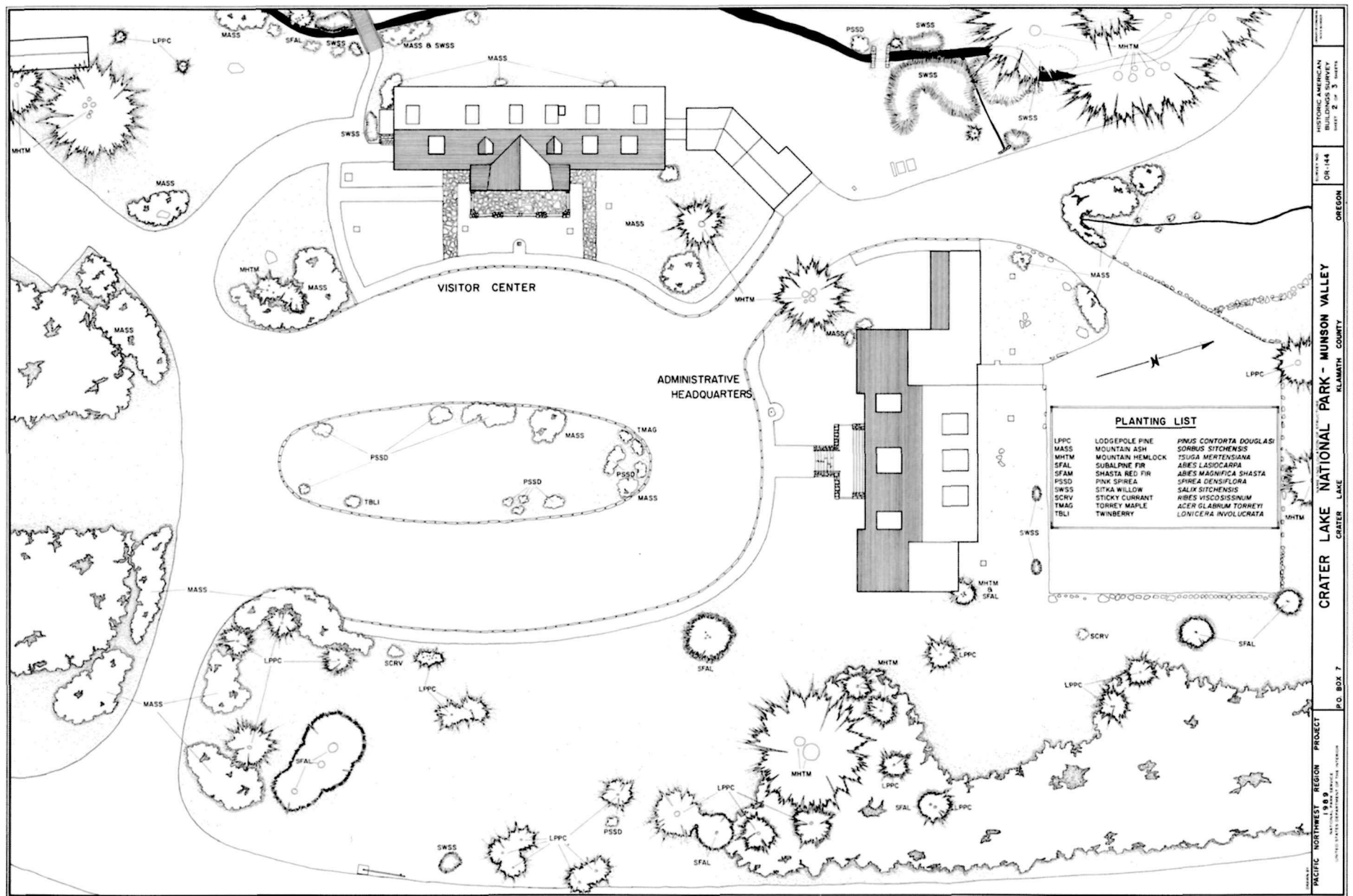


Fig. 3



Historic Fig. 4. Plant List, Elipse, Visitors Center, Administrative Headquarters.

VISITOR INFORMATION CENTER

The Visitor Information Center (the Center) provides Park visitors with a delightful entry experience. The two imposing Rustic-architecture style buildings are set in an open, spacious landscape that elegantly suggests the vast grandeur of Crater Lake National Park. The bold, large-grained rustic architecture of the Center and Administration Building contributes to this expansive experience but equally important is the simple, open, flat, uncluttered ground plane of the space between them. This space is large enough to comfortably accommodate these two imposing buildings (and the parking lot) without being dominated by them. Its simplicity, derived from being uncluttered, is a key factor of its success and should guide replanting decisions. The relative openness of the area appears to be in keeping with historic building siting decisions and subsequent planting decisions. The space contained by the Center and Administration Buildings is located in the flat bottom of Munson Creek valley which is itself contained by the rugged, craggy Garfield Ridge to the east and by the forest backdrop to the west. The ridge and valley provide a spacious setting for the historic district and, again, suggest the grandeur and spaciousness of Crater Lake and views of the surrounding region seen from Rim Drive.

Changes to the physical infrastructure and planting that begin to 'fill-up', clutter or block the relative openness of this space are undesirable. Such changes tend to happen slowly by accretion of one 'essential' sign, trash can, barrier, or signpost at a time. Even 'innocuous' plant masses and large boulders could contribute to visual clutter if not thoughtfully sited and used with restraint. Thus a balance needs to be reached between adding boulders to direct circulation and trees and shrubs to meld the buildings into the landscape without adding so many that the area becomes cluttered or visually opaque. This has happened to the south of the oval where dense, natural forest regeneration has occurred following abandonment of use of that area. In this context it is desirable as the regenerating forest blocks views of the large work area beyond and provides an edge to the space in front of the Center which can be thought of as the Park's 'entry courtyard'. Plants help integrate rustic buildings into their landscape contexts in two important ways: foreground plants partially block views of buildings making their masses less clearly distinct while taller, denser forest backdrops prevent the buildings from dominating because of their size. The forest backdrop is often taken for granted and not recognized as a crucial component in integrating rustic buildings into their settings. Without forest backdrops buildings would appear more separate, and thus distinct, from their contexts. That said, there is a clear need to repair damage to vegetation caused by pedestrian paths across the ellipse and at the



Photos 21-23 Leaning bicycles against the terrace post and rail fence or simply cutting the corner: irresistible desire lines for visitors.



Photo 22

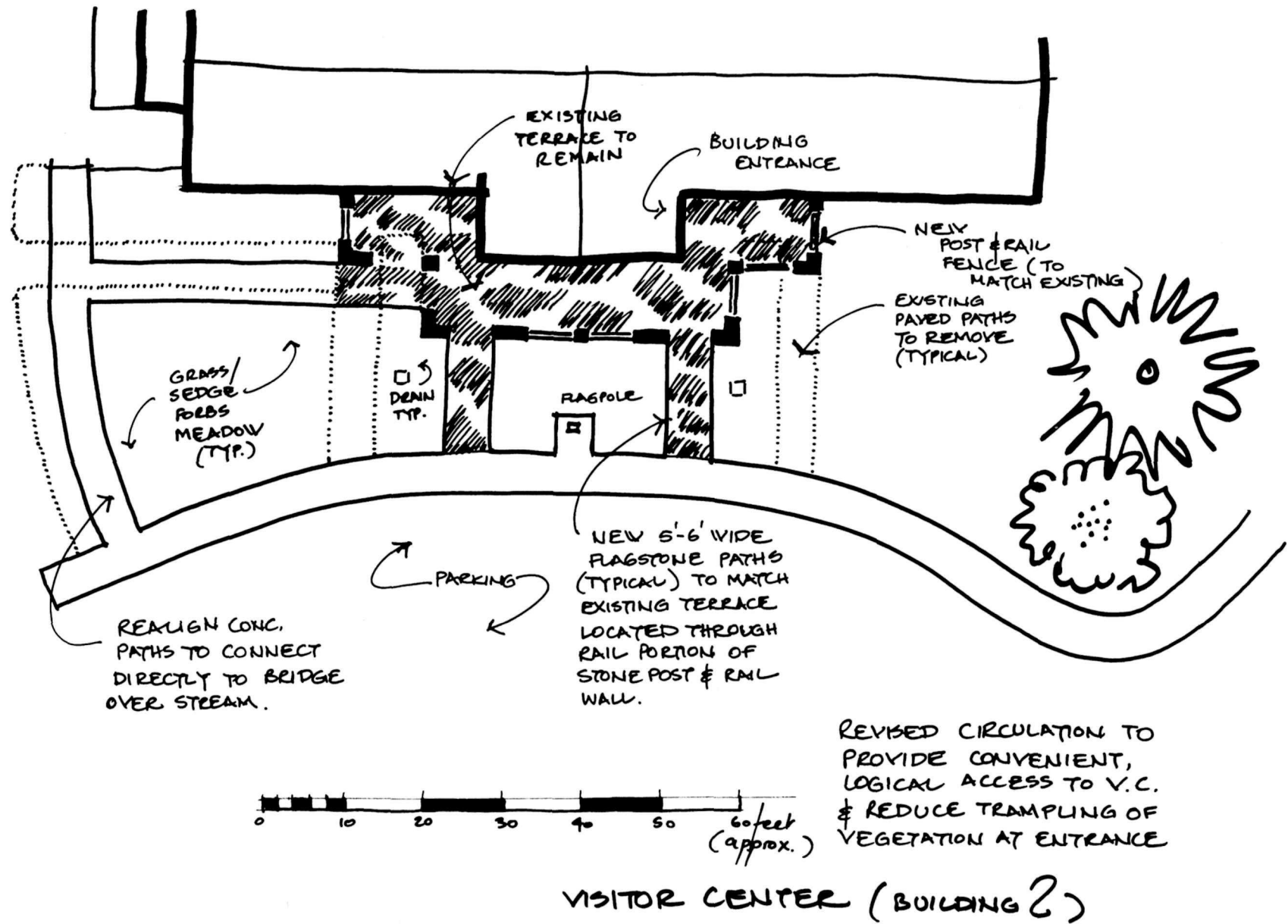


Fig. 4. Revised Pedestrian Circulation
at Visitor Information Center

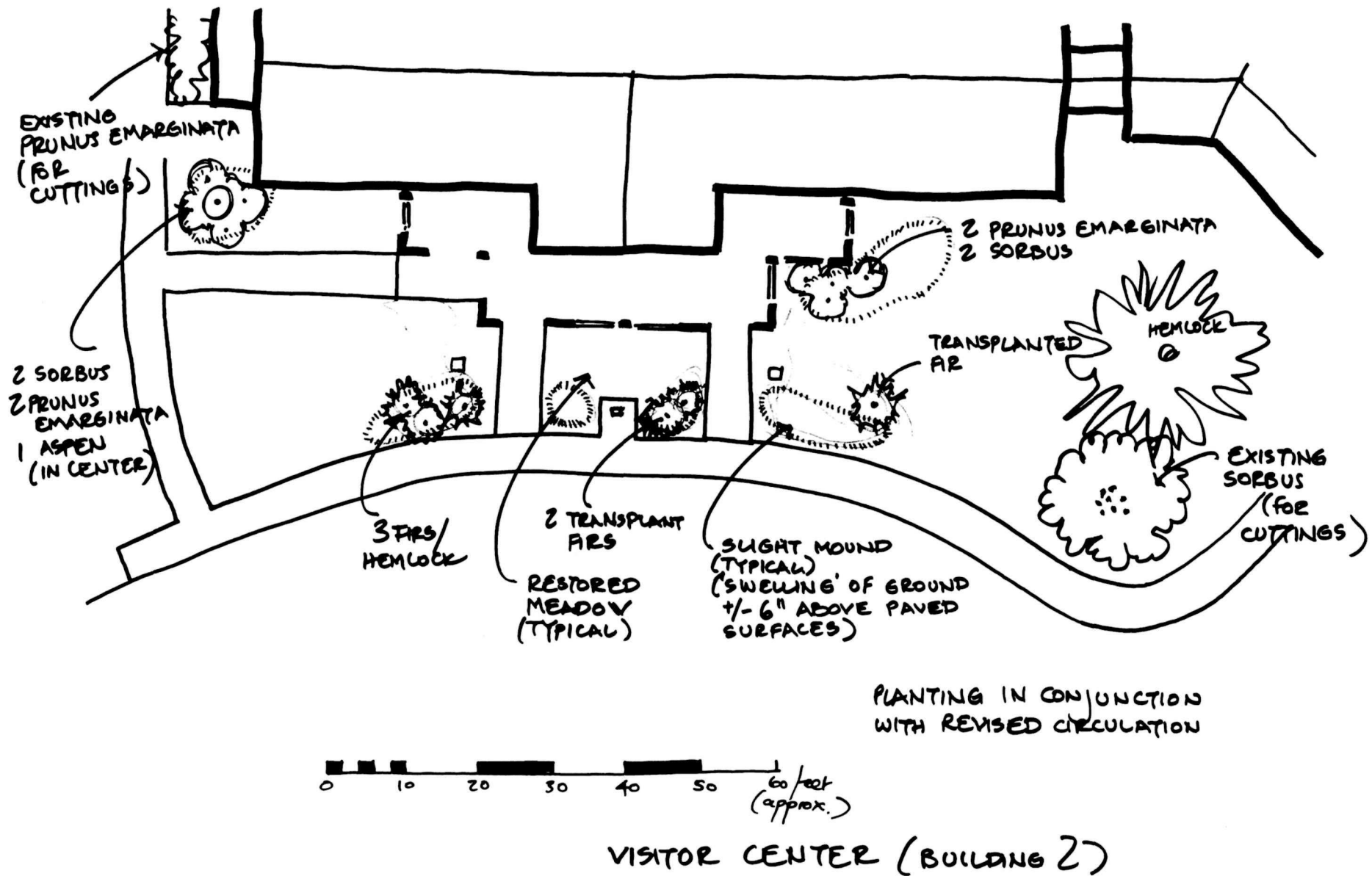


Fig. 5. Planting at Visitor Information Center



Photo 23 Slight mounding and planting of a small clump of firs would encourage visitors to keep to the path. Better still relocate the path to conform to desire line to front door.



Photo 24 The bare and trampled bed in front of the Center conveys inappropriate messages about Crater Lake National Park, right on the Park's front doorstep.

Center entrance and but this should not be done simply by filling these areas with masses shrubs or trees. (Proposals for the ellipse are covered in that section.)

A large percentage of Center users cut across the corners of the plant bed between it and the sidewalk to enter the building. Bicyclists were observed walking bicycles across the bed and resting them along the railing around the paved terrace rather than walking them round and leaving them on the terrace. The current paths configuration of paths makes these visitor circulation patterns 'sensible'. The hope that by installing plants we can change these circulation patterns and make visitors use existing paths is unrealistic. A decision must be made about where maintaining the 'historic integrity' of the paths and terrace needs to give place to the dictates of current circulation patterns.

Visitor Information Center Entrance

The Center is a largely-symmetrical building with visitor entrance at either end of a projecting extension at the center of its front, or east, face. A flagstone terrace enclosed by a low log rail wraps around the extension. Flagstone paths run at right angles from the building to the sidewalk at both ends of the terrace. There is an approximately 25' wide plant bed between the terrace and the sidewalk with narrow 6'-8' wide arms between the paths and the terrace. Only the north entrance is in use so almost all visitors use the more direct and convenient northern path. Visitors using the southern path must jog inconveniently around the building extension to reach the entrance. Parking along the sidewalk and across the ellipse cause desire lines that cut across the corner of the plant bed which as a result of heavy foot traffic is bare and dusty. Visitors leaving the building are expected to walk a short distance along the face of the building before making a right angle turn onto the path to the sidewalk. This is neither convenient nor a 'natural' way of circulating, and so, naturally, visitors cut corners and walk behind or in front of two trash cans located in the plant bed at the building entrance. This area, too, is bare and dust-dry in summer.

Realigned Paths

The goal is to restore the plants in the beds around the Center and to prevent trampling. The trampling problem may be addressed in two ways one of which may be perceived as compromising the district's historic integrity by realigning paths to conform to circulation patterns. However, from a design perspective relocating paths to where visitors naturally want to walk is the most desirable way to resolve the problem as it eliminates the tendency, or temptation, to cut corners and thus to trample plants. This would mean constructing a new path at the north end of

the building from the sidewalk straight through the north end of the terrace to the door, removing one of the log railings but retaining the stone posts, to provide direct, convenient, logical access. It is likely that this path would encourage use of the terrace which at present is not easily reached from the building or parking lot and, as a result, appears to be relatively little used in comparison with the number of visitors using the building. It is not necessary to remove the northern path to install the new one but this may be desirable to minimize clutter on the ground plane. Also not necessary, but possibly desirable to retain the symmetry that may be part of the historic character, would be to relocate the southern path to match the northern one. These paving and railing changes would alter the historic fabric but would reduce trampling of plants, would create much more convenient building access, and would likely make the terrace a more vibrant and useful space.

Raised Beds & Boulders

Alternatively, trampling may be controlled by locating objects where they discourage visitors from stepping off paths. The flagpole, located adjacent to the sidewalk and on the building's central axis requires visitors to either keep to the sidewalk or walk behind it through the middle of the plant bed. Most visitors keep to the sidewalk, but as soon as they pass the pole, they tend to cut across the corner of the bed. A partial deterrent would be to mound the bed above paved surfaces--it is currently 3"-6" lower. Adding one or more large boulders at the corner, where the temptation to cut through the bed is highest, would also encourage visitors to stay on paths. To be effective boulders would have to be large and may therefore begin to 'clutter' the ground plane adversely affecting the simple historic character. Large boulders would most likely attract uses becoming play objects for children, objects to lean bicycles against or seats for visitors. Such activities could increase rather than decrease trampling around boulders.

Trash Cans as Barriers

The two trash/recycle cans at the Center's entrance are set 2' into the plant bed from the path to the front door requiring users to step into the plant bed to use them. Not surprisingly the ground around them is bare. There is a 3' gap between the back of the cans and the log railing enclosing the terrace. Exiting visitors are tempted to walk to the sidewalk behind the cans and straight across the plant bed rather than continue 8'-9' beyond the cans to the path to the sidewalk. Turning the cans through a right angle will make them a more effective barrier and moving them closer to the entrance path will also discourage, but is unlikely to completely deter, visitors from cutting across the plant bed. This change would not affect the site's historic integrity as it would consist of repositioning the recently-added garbage cans. However, solving the circulation problem in this way leaves aside the larger question of whether trash cans at



Photo 25 The view from the terrace to the start of the Historic District trail suggests that "you can't get there from here" rather than extends an invitation.



Photo 26 Turning the two trash cans through a right angles might make travel between them and the terrace wall slightly less 'desirable' but is unlikely to resolve the trampling problem.



Photo 27 Existing paths provide direct, convenient, logical access to the Center from the Administration Building



Photo 28 The large, heavily browsed Sorbus shrub blocks views but is less effective at integrating the rustic style building into its surrounding landscape than the tall hemlock tree which mirrors the forest backdrop and casts 'camouflage' shadows across the building's facade and roof.

the front door of the Visitor Information Center are appropriate.

Seat Walls as Barriers

Seating is always appreciated and well-used in locations like this. Thus another alternative would be to construct an 18" stone seat wall along the edge of the walkway from the door to the path. A seat wall would be a significant addition to the historic fabric but would more effectively control circulation than moving the cans and would be much-appreciated and well-used. This solution however raises other problems. Visitors are likely to sit on both sides of the wall, no doubt preferring to face out into the open space rather than face the building wall. This would require paving the ground on both sides which, in turn, would encourage cutting across the plant bed from the sidewalk to the seat wall. Circulation desire lines are hard to control. If the design goal is seen as thwarting rather than accommodating obvious and convenient routes to a destination users are likely to fight back, feet first.

Thus relocating the path to the Center through the north end of the terrace makes a great deal of sense. Relative to the size of the Center building and its surrounding space the necessary changes to the historic fabric are minor: removal of one (or two) section(s) of log railing; relocating one, or both, paths; and removal of one or both existing paths. This solution is more likely than other alternatives to fully resolve trampling and circulation problems. If existing paths are retained a seat wall should also be built extending the stone column of the terrace wall

Railings as Barriers

Circulation could also be controlled by extending the post and log railing across the plant bed from one path to the other (cutting off the two extensions of the bed) and continuing it along the paths toward the sidewalk. This would create a larger 'U' shaped railing around the plant bed in place of the current smaller one around the terrace. It would more effectively protect the plant bed from trampling than the current railing does. Paving the beds between the terrace and the paths would expand the terrace and make it more accessible. The logic of this alternative is that it is the plant bed rather than the terrace that requires protection and it is the terrace that we wish to encourage use of rather than the plant bed.

Large 2' x 2' approx. grated drains are located near the center of the north and south ends of the plant bed. Inlet elevations are approximately 6" below the adjacent paved areas and

3"- 4" below surrounding soil levels. If these inlet elevations are necessary to prevent flooding during snowmelt they should remain unchanged but if not they should be raised 3"- 4" and the ground level of the surrounding bed, which is about 2" below paths, should be raised to slightly mound the bed above paved surfaces. Mounding beds reduces the desire to cut across them. Replanting the bare plant bed outside the Visitor Center should only occur after the drainage, grading and circulation problems that cause trampling have been addressed.

SHRUBS

Sorbus (Mountain Ash) clumps are amongst the most successful shrubs remaining from the original planting and there are tall, dense and vigorous clumps of them around the Visitor Information Center, Administration Building and cottages. However, they appear to be popular as deer browse the clumps being composed of many long, slender, stems, arising and spreading out from a common base. Most are almost bare of foliage for several feet above ground level--typically leggy rather than leafy except at the ends of stems. Other shrubs, Spiraea, Amelanchier, Sambucus and Lonicera, are typically much lower than the Sorbus and this may be due to them being even more favored as browse. Evergreen trees, fir, hemlock and pine, appear to escape the intense browsing that shrubs experience. Shrubs that appear unpalatable to deer include the sticky Ribes and a large Prunus emarginata at the southeast corner of the Center. This plant is one of the tallest, densest shrubs in the historic district. Although native to the park it does not appear on the original planting plans, which is surprising in view of its vigor and success. Although the plant has a low-key character and is not particularly obtrusive its foliage and twigs are elegant when looked at closely. These characteristics make it an ideal plant for replanting areas where taller and denser screens are desired.

CENTRAL PLANT BED

The central bed at the Center is the most severely and extensively trampled area in the historic district and large parts of it are bare and dusty. It should be replanted with a mix of grass (Bromus and squirrel-tail), sedge, and Penstemon with two clumps of 2 to 3 firs and hemlocks to break up facade and tie the building into the adjacent forest. Shrubs are not appropriate in this bed as they would either grow large like the Sorbus and Prunus and block views of the entrance or would be prostrate and ineffective. The southern end of the bed has scattered grasses and a few sedge clumps with one patch of Penstemon.



Photo 29 The less trampled south end of the central plant bed has a 'desire line' along the terrace wall. Patchy grass and forbs cannot be restored until desire lines are eliminated. The two large drains may contribute to vegetation sparsity by making the bed drier.



Photo 30 Moving garbage cans at end of bed could reduce cutting across bed but make cans more obtrusive.



Photo 31 Penstemon is one of the native forbs growing successfully in front of the Visitor Information Center



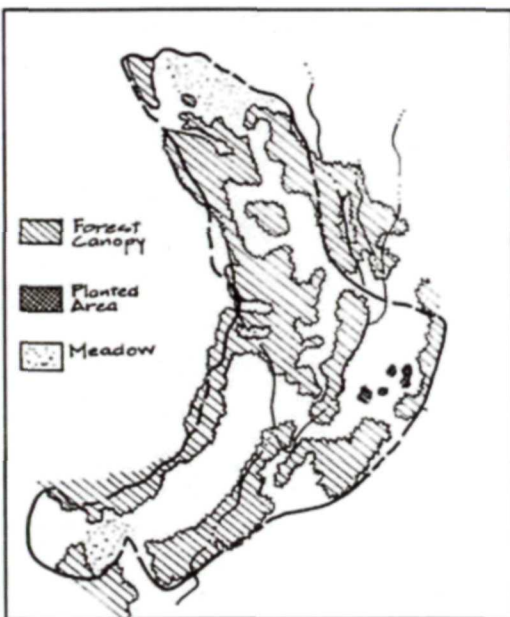
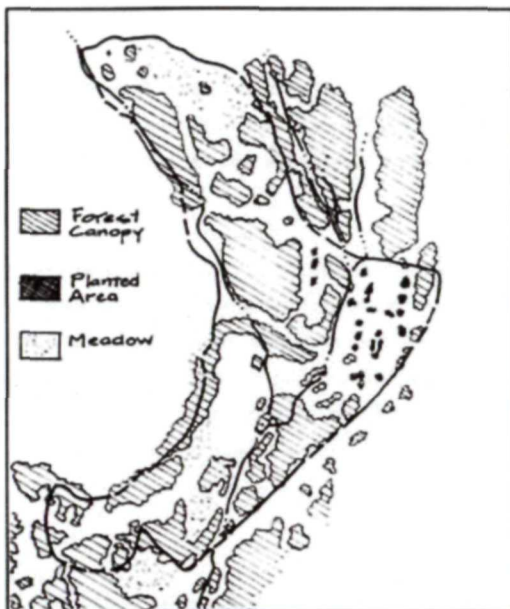
Photo 32 The *Prunus emarginata* on the south end of the Visitor Information Center shows no signs of deer browse and is thus a better choice for replanting than *Sorbus* or *Sambucus*.

The bed at the north end of the Center appears drier and vegetation is sparse. It contains a very large, old hemlock that must predate the building. Shrubs, including *Sorbus* and *Ribes*, are scattered through the area but the herbaceous layer is thin and the ground visible between plant clumps.

The beds to the south of the terrace appear to have moister soils that support a denser cover of more vigorous sedges and grasses. These beds are less subject to trampling because they are not on a direct route to the Center's door. However the layout of paths leading to the Lady of the Woods, the loop trail, and the picnic area behind the building are confusing and do not provide convenient access around the south end of the building. If paths to the Visitor Center are relocated then these paths should also be realigned to improve orientation and facilitate movement.

RECOMMENDATIONS

For restoration of the beds at the entrance of the Center gather seed sufficient to supply 200 grasses and sedges, 50 *Penstemons*, and 25 each *Solidago* and *Erigeron*.



Historic Fig. 5. Changes in forest canopy, planted areas and meadows, Government Camp 1939. Park Headquarters 1941-1990. (CLR report, 1991)



Photos 33-34 The corridor-shaped space at the back of the Visitor center is flanked by the rustic building wall on one side and riparian vegetation on the other.



Photo 35 The poorly-defined path disperses users and increases trampling throughout the area between the VIC and Munson Creek.



Photos 36-37 Extensive regrading and clearing of construction debris is required throughout the area particularly at the north end in the vicinity of the snow tunnel.



Photo 37 Holes remaining from earlier utility work should be capped or filled. Orange cones are not a long-term nor aesthetically pleasing solution.

VISITOR INFORMATION CENTER REAR AND RIPARIAN CORRIDOR

The back of the Center is architecturally distinct from its front face and its spatial, experiential and environmental conditions are also very different--shady and enclosed in contrast to sunny and open. Instead of the bright, expansive and 'public' feel of the front, with its finely articulated building forms and clearly articulated (if not followed!!) terrace and circulation paths, the space at the back is long, and narrow and feels more secluded and private. This corridor-like space is contained between the long, straight building wall (which lacks doors) and the creek's fairly dense, riparian shrub edge and the tall forest beyond. The path through the area is poorly defined and uninviting, suggesting to visitors that they should keep out, although the experience of the shade and sound of water make the location very welcoming on hot days.

At the snow tunnel extension at the north end of the building the space bends and meets the road between the Center and Administration Building. Throughout this area, but particularly near the snow tunnel, there are places where considerable grading work is needed to smooth off rough ground left by construction and underground utility work. Road debris and rough grades from utility work convey the feeling that this is a neglected, uncared-for place where visitors should not be.

Fill is needed in some locations along the building wall to conceal the base of boulders. Because the back is shadier and moister, vegetation tends to be more vigorous behind the Center than in front of it. Riparian vegetation along the stream bank consists of *Salix* clumps that range from 4' high at the south end to 5'- 6' further upstream. *Sambucus* clumps along the stream have been grazed to 2' - 3'.

If the goal is to encourage visitors to use this space then it needs a better trail. While the form the trail takes will depend on budget constraints and how closely we wish to adhere to historic precedent, its proximity to the building suggests that an informal, rough-graded, stone-lined trail, like the loop trail through the woods, would not be appropriate. Alternatively, a flagstone path may be too formal and expensive. A concrete or gravel-surfaced trail (with or without timber edges) may be appropriate, particularly if surrounding disturbed areas are restored with herbaceous plants. Picnic tables would be appropriate in this secluded location but not at the front of the Center.

The creek bed is approximately 5-6 feet below surrounding grades with fairly steep banks. Riparian vegetation should not be so dense as to completely obscure the creek but should discourage visitors from going down to the water.

The area around snow tunnel at the north end of the Center is in particularly poor condition and in need of more fill than at the center or south end of the space. Building shadows make the space next to (north of) the snow tunnel particularly dark and inhospitable to plants. Snow is likely to remain in this location long after it has melted in other parts of the historic district. The area between the manhole and snow tunnel should be filled and graded away from the building wall to avoid it becoming a low spot when grading around the manhole is completed.

Bare areas will revegetate naturally if surfaces are regarded and foot traffic confined to a defined path and there seems less need to plant these areas than to plant the bed in front of the Center.

RECOMMENDATIONS

- * Fine grade the entire area where vegetation is not well-established to remove irregular dips and hummocks in the ground surface.
- * Fill to the rim of manholes--the one at the north end requiring 12" of fill around it graded out to make it level with surrounding grades filling as necessary between the manhole and snow tunnel but ensuring positive drainage away from the building wall.
- * Remove or bury asphalt and concrete road construction debris.
- * Hand-place approximately 6" to 9" fill along wall base where the bottoms of boulders are visible. Avoid filling over grasses, sedges and Sambucus clumps along the wall.
- * Construct a straight 3' to 4' wide path approximately on the alignment of the existing rough trail and parallel to the building face. Widen the existing path toward the building rather than toward the creek.
- * Plant willow cuttings or pegs low on the creek bank where soil is moist to promote rooting.



Photo 38 Firs at the corner of the Administration building effectively integrate it with the adjacent hemlock fir forest. Lodgepole pines in front of the building appear to be self-sown. Much of the bare ground is the result of gopher activity.



Photo 39 Maintaining the Administration Building's uncluttered openness is desirable. However a few clumps of firs and hemlocks would provide future 'camouflage' shadows.

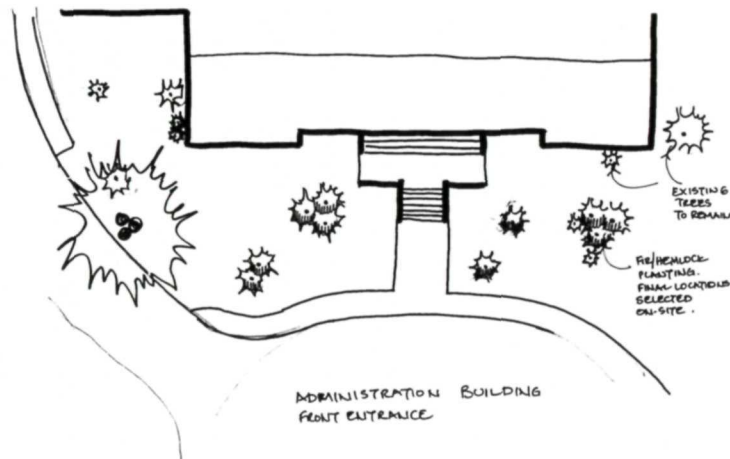


Fig. 6 Administration Building Front Entrance

ADMINISTRATION BUILDING FRONT

The Administration Building sits on a rise above the parking lot at the head of the ellipse's long axis and this, in addition to its architectural design, make it more prominent than the Center. Its prominence is accentuated by the fact that the entrance to the Center is not immediately visible to arriving visitors (indeed this entrance could hardly be less visible) while the steps up to the Administration Building's front door are very visible and might suggest, to the unwary, that that is where Park visitor services are located. Neither building has experienced erosion at the base of walls exposing the undersides of the lowest course of boulders. Thus neither needs grading along walls (except at the rear of the Center) such as is necessary at the Naturalist's and Superintendent's Residences. Construction debris should be removed around the base of the Administration Building and small stones should be added to break the force of water dripping off the roof and eroding soil. To prevent snow accumulation on roofs, neither building has gutters and downspouts. The effects of copper flashing on vegetation is discussed below.

The Administration Building's narrow terrace and the bank down to the road contain a range of woody plants. 1936 photographs suggest that the only plants installed around it were a clump of firs at each end and two more clumps on either side of the building's entrance. (A 1934 photograph of the ellipse shows no trees or shrubs around the building.) A large, old hemlock at the southwest corner (adjacent to the road from the ellipse to the cottages) predates construction of the building. There are now many more woody plants between the building and road than in 1936. On the building's west face are a 12' fir, and a clump of 7 firs ranging from 1.5 to 3.5' tall. Along the adjacent road edge are two 3' and 4' pines and another 9' to 10' one under the hemlock canopy. Next to the fir clump is a heavily browsed 9"- 12" *Lonicera* shrub.

There is a heavily grazed 3' -5' tall *Amelanchier* clump within which grow a 12"- 18" *Spiraea*, a 9"- 12" *Lonicera*, and another small *Sorbus* clump at the building's southwest corner. The growth of shrubs in dense clumps suggests that the plants may derive mutual protection from grazing, and possibly wind and snow-loading, by growing closely together. Also on the front façade is a 12"- 15" *Spiraea* clump with a 6" *Lonicera* growing inside it. In the west corner of the terrace wall is a heavily grazed 2"- 2.5" *Amelanchier* clump. There is evidence of extensive pocket gopher burrowing to the east side of the stairs and the bank is crumbly and unstable when walked on. Trees on this side of the building include a 6' fir at the corner and two 5' pines in the middle of the bed. A heavily-grazed 2.5' Douglas maple is tucked into the corner of the building. Shrubs include a number of sticky *Ribes* and a 12"- 18" *Lonicera* with a six foot

spread. There is a large fir clump on the SE corner of the bed adjacent to the road. In view of the heavy grazing of shrubs in this area and gophers who eat all plant parts, it is unlikely that new shrub or herbaceous plants (whether of the same or different species) would fare better than existing plants, with the possible exception of the *Prunus emarginata* and fir and hemlock trees. Pines might also be successful, but they have less elegant forms and characters than the firs and hemlocks, and do not seem appropriate in this setting.

When the Administration Building roof was replaced copper flashing was used and this appears to be poisoning herbaceous plants growing in the roof's drip line where dissolved copper drips onto plants. Foliage damage was noted on *Maianthemum* among other herbaceous plants although some of this could simply be physical damage from persistent dripping. Where water does not flow over flashings, herbaceous plants are densest and most successful along the base of the building where they receive extra moisture from the roof not just from rain but from condensation on cold nights running off the following mornings.

SORBUS CLUMP REGENERATION

Deer browsing or gopher burrowing are part of the dynamic of the Park's ecosystems and it appears inappropriate, and impossible, to control these activities. To regenerate *Sorbus* shrubs that have become tall and rangy clumps composed of many thin branches shooting up from a basal clump, experiments should be conducted on clumps in relatively unobtrusive locations. These would try different ways to regenerate the plants and encourage new shoots from the base of clumps. This form of regeneration appears likely to be successful in view of the way in which clumps grow and spread. Branches from the center of clumps should be cut out at the plant's base leaving a 'ring' of tall branches around the perimeter to protect any regenerating shoots from deer.

RECOMMENDATIONS

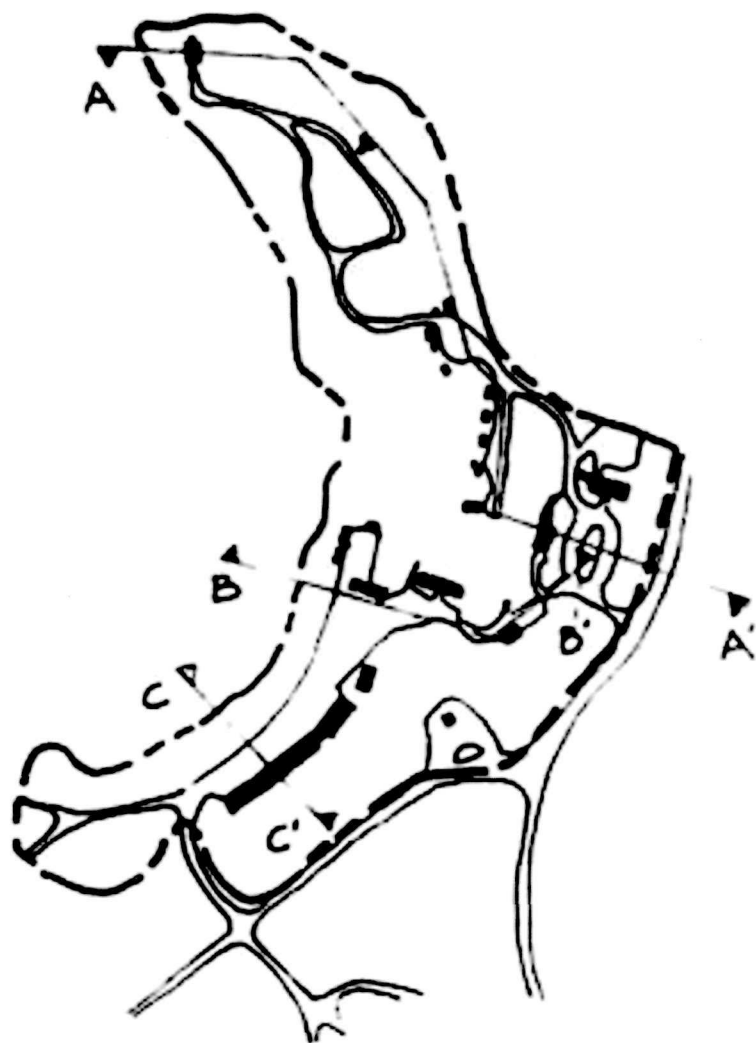
- * Rake and hand pick construction debris scattered along the face of the Building.
- * Add bands or patches of small 2"-3" diameter stones where drips from roof are concentrated to break their impact and minimize erosion.
- * Plant 8 to 10 small firs and hemlocks, dug from thickets in the historic district, throughout the center of the plant beds but not adjacent to the building face. Select locations where plant growth is sparse on either side of the staircase. Locate these trees close to existing shrubs to see if they will provide protection from grazing as they grow through each other.



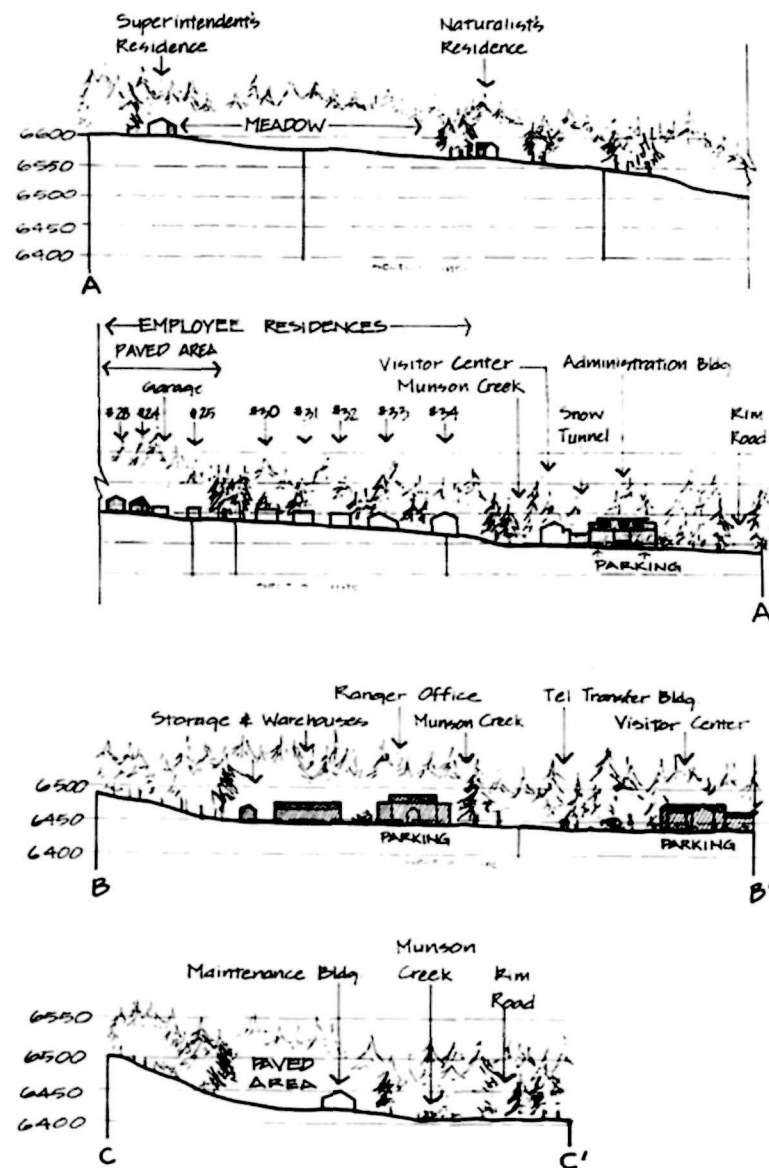
Photos 40-41 Plant small clumps of firs and hemlocks around the large staff parking lot and in the bed between it and the Building.



Photo 41 Thin vegetation behind the Administration Building probably resulting from vehicle damage. Planted clumps of firs should not obscure views from windows or be located close to the wall.



ELEVATION IN FEET



Historic Fig. 6. Four cross sections through Munson Valley
Historic District and key plan. (CLR 1991)

ADMINISTRATION BUILDING REAR AND PARKING LOT

The largest parking lot in the historic district is located behind (north) the Administration Building on a gently sloping area adjacent to wet meadows along the Creek. The lot has been leveled to leave a steep and eroding cut slope at its northwest corner and a steep drop at the east into the meadows. Both cut and fill slopes are poorly vegetated. The land slopes relatively gently from the south edge of the lot down to the Building's back face, a dry slope that is fairly loosely covered with plants. Plant regeneration in this area may have been adversely affected by the use of bulldozers to remove snow during heavy winters.

The parking lot's historic configuration included a large central island. Restoration of the island would reduce the paved area, which is desirable if it is not needed for parking. However, if the lot is larger than necessary it would be even more desirable to reduce its overall dimensions, particularly by cutting back the east end and removing the fill material in the low area that was formerly a wet meadow along the valley bottom of Munson Creek. Reducing the size of the parking lot in the latter way seems more desirable than reestablishing the central island as it would reduce the impact of paving on the adjacent wet meadow.

RECOMMENDATIONS

- * Grade all cut and fill slopes around the parking lot to more smoothly transitions into surrounding undisturbed areas.
- * During regrading operations, retrieve large rocks and stones from the bank at the NW corner of the lot for use in other locations.
- * Plant 12-15 clumps of fir and hemlock on the slope between the building and parking lot to screen the lot from the building and from views looking up the valley from the parking areas on the east side of the ellipse. Locate tree clumps where they will not block views of the creek's wet meadows. Transplant trees from the thicket to the south of the ellipse.



Photo 42 Active management of the thicket south of the ellipse should encourage regeneration of a fir hemlock forest. The thicket is an excellent source of fir and hemlock trees for replanting throughout the historic district.



Photos 43-44 Typical “filtered” views of rustic cottages in mature fir hemlock forest with relatively open understory. Note how tall trees dominate the landscape and partially conceal structures.



Photo 44

THICKET SOUTH OF ELLIPSE

This area provides an important screen between the historic district and the large equipment and materials storage and work yard south of the district. Part of the thicket area was formerly an access road up the valley and part was the site of an old gas station. Adjacent to the ellipse, the vegetation consists of closely spaced pines, firs and hemlocks of similar ages and sizes which are beginning to compete for space which will thin the stand through increasing mortality. Further south, on the gas station site, the stand consists of a much lower and patchier growth of firs. The ecological value and aesthetic character of the thicket is low in comparison with undisturbed forest areas. The thicket needs active forest management to develop a forest stand similar in character to the undisturbed forest while maintaining it as a screen.

RECOMMENDATIONS

- * Management should begin with thinning where trees are densest, saving firs and hemlocks in preference to lodgepole pines.
- * Firs and hemlocks needed for replanting other places in the historic district should be collected from thinner parts of the thicket where their forms are less likely to be compromised by competition and they can be dug with substantial root balls.

INTEGRATING RUSTIC STYLE BUILDINGS INTO AN OPEN MATURE FIR HEMLOCK FOREST SETTING

With the exception of the Superintendent's House which overlooks an expansive meadow, the historic district's cottages are located in clearings within an open, dry fir hemlock forest. This old growth forest consists of trees whose ages range from seedlings and young trees to large, mature trees of great age, some in excellent conditions some beginning their long senescent decline to death. As is typical of old growth forests, the canopy is rough and patchy, small clearings being interspersed among areas of denser tree growth. Light levels vary tremendously within the forest, some areas are deeply shaded others bright and sunny. Changeability rather than uniformity characterizes the forest environment. Except in small wet hollows, the understory is sparse making the forest a visually open and this, with the height of trees, give it a spacious feeling.

Forest areas in which the soil has been disturbed by human activities exhibit tree regeneration in dense 'thickets' of closely-spaced, young fir, pine, and hemlock. The time that has elapsed since disturbance can be inferred from the size of trees: small thickets of relatively young trees occur along recently disturbed sections of the loop road and larger trees line fill banks on the main road where it was disturbed decades ago. The large, dense thicket south of the ellipse covers an area abandoned several decades ago. Its trees vary in height from 2-3 feet to well over 12 feet. Areas around the Naturalist's Residence disturbed 2-3 years ago are covered with one or two year old fir seedlings. Different aged thickets suggest how disturbed areas will develop and how the character of the historic district's forest will change unless a management plan is developed and implemented. Changes are likely to cause the forest to become less visually open and light.

Dry portions of the forest have widely-spaced trees, sparse shrub layers and relatively bare ground planes--thus view obstruction is slight. Thickets, by contrast, are dense, blocking views into and through them. In this respect they are similar to the vegetation density along creeks where riparian shrub masses are full, continuous and tall. The experiential differences between riparian shrub vegetation and thickets on the one hand and the open dry forest on the other



Photo 45 Forest regeneration is evident along road edges where there is more light and moisture and the ground has been disturbed. Managing the density of regenerating thickets is essential to maintain the historic landscape's open character.

HAZARD TREES, SNAGS AND DOWNED LOGS

The public trails through Munson Valley's historic district take visitors through mature hemlock-fir forests, clearings, and dry and wet meadows as they visit the historic structures. Many old trees throughout the district are in decline, a typical state for trees in mature forests that may persist for many decades before they eventually fall. Falling trees are clearly hazards not just in the historic district but in forests of similar age and structure throughout the park. The mandate of the NPS does not include extensive forest management to ensure visitor safety by removing all old or potentially hazardous trees from forests. However areas around public buildings that are extensively used by visitors may require more proactive tree management, that may include removal of upper portions of dead trees.

The management goal should be to make the scene appear as natural as possible rather than manicured or the product of human action. Thus we should accept that the historic district's forest will comprise a mixed-age stand of seedlings, young, mature and old trees along with dead snags, downed logs and stumps. This is a 'natural' state for forests of this type at this point in their development. We should also recognize that this is a dynamic rather than a static state and falling trees are part of the natural cycle. Disturbance events such as severe storms, droughts, fires and insect/disease damage may, of course, alter the forest in unpredictable ways.

Although the goal should be to minimize human intervention as far as possible it may on occasion be necessary to top a large, old dead tree, or cut one off at its base. In such cases it is desirable to do so in ways that suggest that it was caused by natural forces rather than human actions. Thus it is undesirable to do so with a clean cut as these are clearly the result of human actions. In the past, the tops of dangerous trees were blown off, giving the appearance of their having been torn or broken off in a storm, but this practice--or 'special effect'--no matter how quick and effective it may be, is unlikely to find favor today. An effective way to giving a stump or standing snag the appearance of having been broken by natural forces would be to attach a cable to the top of the tree, drive wedges or cut deeply into it at points around its perimeter at different heights and then pull the top off leaving a jagged and broken end. Downed logs should be left in situ.



Photo 46 Typical rustic cottage (House 30) with low wall enclosing small terrace. Note heavily browsed historic *Sorbus* clump and dying surrounding forest trees.

SIX SEASONAL WORKER COTTAGES

IN FOREST SETTING

Scattered in the woods between the large public buildings, the Visitor Information Center (building 2) and the Administration Building (building 1) that are located in the flat valley bottom, and the Naturalist's (building 20) and Superintendent's Residences (building 19) that are located higher up the hill, are two groups of cottages used by seasonal workers. Individual cottage footprints and characters are very similar but some have dormer windows in their pitched roofs while others do not. Such facade differences are less significant for our purposes than where the cottages are located relative to the topography and adjacent roads, i.e., how they fit into the surrounding landscape. The upper three cottages (buildings 24, 25, 28) are arranged on two sides of a large, sloping asphalt rectangle, (approximately 80 by 100 feet). The road to the Superintendent's and Naturalist's Residences cuts diagonally across this area. Historically, there was a circular plant bed at the center of the asphalt but this was paved over in 1962 to facilitate snowplowing.

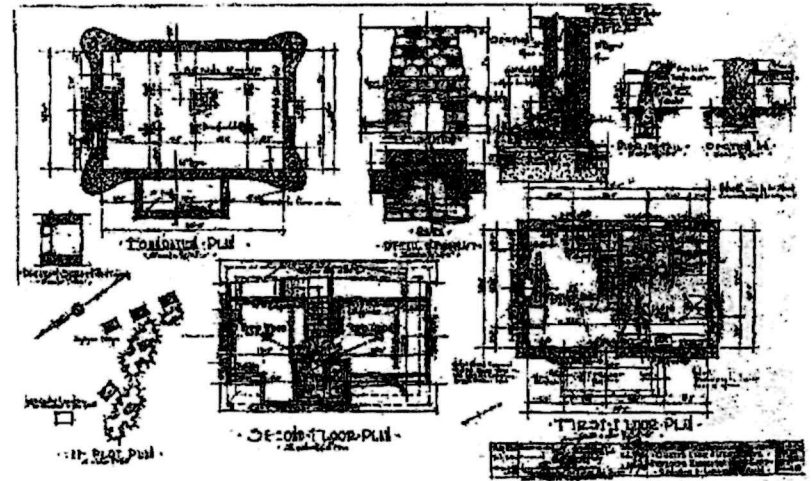
Lower on the hillside, on a dead-end spur road running along the contours, are three more cottages (buildings 30, 31, 32) in a straight line parallel to the road. The road passes a free-standing garage (building 33) and ends with an abrupt bank at the entrance to the old hospital building, now used as a dormitory (building 34).

Although located in forest clearings, the cottages face onto roads or large paved expanses that dominate their settings. Cottages on the spur road have small flagstone-paved terraces enclosed by 1.5 to 2 feet high stone walls similar to the cottages between front doors and the road. These provide important spatial and functional intermediate spaces between private front doors and the larger public natural landscape. They are often filled with objects of domestic or social use like bicycles.

Although the historic district possesses a coherent, unified character and all cottages are similar in size, form, materials and detailing, the stones they are made of are larger in cottages further up the hillside. The cottages along the road are made of smallest rocks and the rocks in the walls of the cottage closest to the Naturalist's and Superintendent's Residences (which are made of very large boulders) are larger than the other two cottages. Smaller rocks are typically quarried andesite which fractures along smoother, flatter faces than the larger, rounded rocks

and boulders. As a result, the forms of the lower cottages are more crisply rectilinear and less pronouncedly 'rustic'.

This distinction between larger, rough-textured, rounded-shaped boulders and the smooth surfaces, and broken angular shapes of smaller rocks is subtle but evident. Should there be correspondingly different planting responses? Different approaches to planting may also be suggested by different relationships of cottages to slopes, proximity to roads, and the density or openness of the surrounding forest. The lower cottages line the road in a straight row giving them have a more suburban feel than the higher cottages which appear more scattered in the woods. Two wooden storage/garage structures are located between the upper cottages but these have no historic value and may be removed in the future.



Historic Fig. 8. Employees' Residences #24 & 28 Floor plans and details. Francis G. Lauger (HABS)



Photo 47 Cottage row along spur road note green roof of Dormitory building (old Hospital) at end.



Photo 48 Cottage row showing heavily grazed Sorbus clumps at building corners and haphazardly scattered rocks where road was narrowed. Addition of fir and hemlock trees in this location and between cottages will integrate them into the forest setting.

THREE COTTAGES ALONG SPUR ROAD

The width of the 16-foot spur road serving these cottages was reduced several years ago removing unnecessary asphalt and relocating its centerline away from the cottage terraces. The spur road terminates in a pile of boulders and a steep drop into undisturbed forest next to the historic hospital which is now used for staff housing. The poorly graded bank is an eyesore in the historic landscape and the building is unrestored and in dilapidated condition.

The area between the road and cottage terraces is covered by sparse grass. Large boulders were placed along the road to deter parking next to cottages. The relatively uniform spacing of boulders and their placement in a straight line creates an undesirably-obtrusive pattern. Areas around cottage corners and between cottages were not disturbed by roadwork and retain much of the original shrub planting--principally *Sorbus*--and show signs of forest regeneration in small clumps of fir, hemlock and pine.

The straight spur road ends abruptly, and without warning, a short distance before the entrance to the hospital building where an informal, unpaved pullout has developed at right angles to the road to allow vehicles to turn around. A bank with large boulders scattered along its top is located a short distance beyond the end of the road. The bank drops steeply into the forest below. A thicket of trees is growing at the top of and down the bank. A pile of soil has been dumped between the parking lot and the end of the road. The pile shows signs of plant regeneration as well as signs of being driven onto for parking. Plants include sparse grass and *Asters* and 2-3 inch tall hemlock seedlings. These roadworks require cleanup, regrading and resolution of the unworkable road end.

Historic shrubs are located adjacent to all three cottages. These include: an 8' *Sorbus* clump on the east end of the first cottage (building) and an 18" *Sambucus* stump on the west end; a *Sorbus* remnant between this cottage and the next; a 6' - 8' *Sorbus* clump on the east end of the middle cottage (building) and a 6' *Salix* clump at the other end; a large, but thin, of 8' - 9' *Sorbus* clump between this and the last cottage (building); another thin 8' - 9' *Sorbus* clump at east end of last cottage. In addition to historic shrub remnants, forest regeneration has scattered a 4' - 8' clump of fir, pine hemlock at the east end of the cottages and two 4' - 6' firs toward west end of row.

RECOMMENDATIONS

- * Construct a paved Y-shaped turnaround at the end of the road to permit turnaround, to provide drop-off parking, and to clearly establish the end of the road. This could happen in conjunction with much-needed restoration of the hospital/dormitory building.
- * Grading is needed to remove piles of material left at the road-side and on the steep bank at its end.
- * Grade the pile of roadwork material into a rounded, 18" mound running along the road to blend the road into its surroundings. Place the larger rocks at the back of the pile along the road edge to deter parking.
- (If more parking is needed next to the dormitory expand the current parking area.)
- * Pull the steep bank back to a gentler slope and realign and reconstruct the well-used, but eroding, pedestrian path between the road end and the Ranger Station, adding informal steps where necessary.
- * Dig and replant the small to medium-sized trees along the road where clumps are recommended. (Depending on spacing, trees may be dug as individuals or in clumps of 2 or 3 trees. At least 20 trees from 4 to 6 feet tall (15 firs, 5 hemlocks approximately) are available in this area.)
- * If, as is desirable, the bank is pulled back further than its current top, two large 15' - 18' firs and two 20' hemlocks could be dug for use.
- * Plant clumps of 4 to 6 firs and hemlocks between the cottages to extend the forest between the cottages.
- * Extend shrub masses and tree clumps toward the road in the still-awkward transition zone between the road and terrace walls. Shrubs should include Sorbus, Sambucus, and Salix. Large Sorbus clumps can be divided and replanted.
- * Relocate large boulders to break up obtrusive pattern while deterring off-street parking.

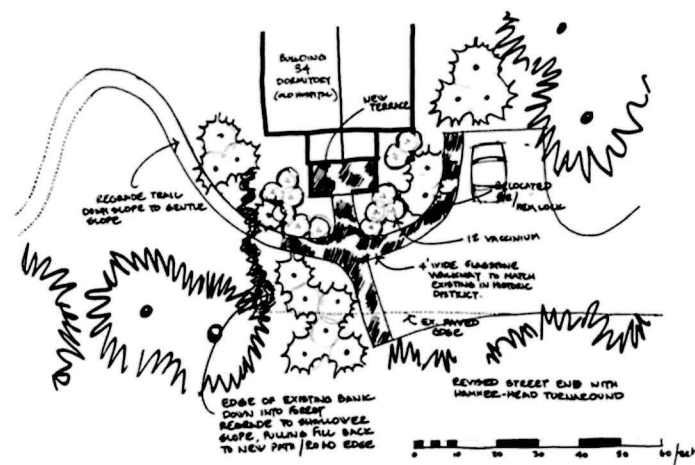


Fig. 7 revised street end with hammer-head turnaround at dormitory

to large asphalt expanses. The majority of the paving is unneeded and could be removed retaining the road alignment diagonally across this paved area and small areas next to cottages for parking. Restoring the historic plant bed in the center of the asphalt is another possibility but this would bring through traffic closer to cottage front doors and would not resolve the problem of asphalt adjacent to terraces and cottages.

RECOMMENDATIONS

- * Reducing the expanse of asphalt, retaining a road alignment through the center of the space with clearly defined, safe parking areas convenient to cottage entrances (either at right angles or parallel to the road).
- * Plant areas from which asphalt is removed with clumps of 4-8 trees of fir and hemlock to break up the expanse of the open space and integrate cottages into the forest setting. Place clumps to extend forest 'fingers' between cottages and into the open space and on the grass bank at the south end.
- * Small shrub masses may be desirable in a few areas close to cottage terraces and are needed along the road embankment above the cottage as it would be unwise to plant this steep bank with trees that could undermine the roadbed.
- * Replace asphalt removed in the vicinity of cottages with flagstone paths from parking to terraces matching terrace stone.

RANGER STATION

The Ranger Station (building) faces south over a large paved work area with a narrow, sunny plant bed in front of it. It is backed by a dense fir hemlock forest. The open south face provides excellent growing conditions while the north face is very shady presenting problems for growing understory plants. The south face contains some of the densest and most botanically-diverse plant masses in the historic district while the north face has amongst the sparsest understory vegetation. Plant diversity includes species not observed (but possibly present) in other parts of the historic district such as Aspen, snowberry and honeysuckle vines.

Woody plants at the west end of the building include a 12' - 15' tall dense stand of 3 hemlocks and one pine with Sorbus and shrubby and Lonicera vines beneath. An aspen thicket grows at the eastern end providing protection for Lonicera shrubs and vines, Arctostaphylos, and Symphoricarpos. In addition to the clumps at building ends there is a heavily grazed 1' Amelanchier, a 4' pine, a 3' fir and a dense continuous meadow turf of grasses sedges, asters and Anaphalis margaritacea. The largest aspen tree appears to have been pushed over by snow sliding off the building's steep shed roof. Soil seems moister and richer in organic matter than in other parts of the historic district, with the exception of riparian meadows.

The area is a good a model for revegetation of open areas with adequate soil moisture such as along the creek behind the Visitor Center. Using aspen to provide protective cover for other woody plants is an intriguing idea although this would depart from replicating historic planting plans.

The trail through the woods, connecting the back of the Ranger Station to the cottages and Dormitory, crosses relatively rough terrain before descending a short flight of stone steps to the flat area where the Ranger Station is located. The steps have been planted with a Lonicera shrub, Sorbus and Spiraea all of which are heavily grazed. The steps down to the building's back entrance appear less heavily used than a rough ungraded and unpaved trail that skirts around the steps and building to the front door. The ground at the rear of the building is essentially bare as a result of the dense forest canopy and shade from the tall building.

NATURALIST'S RESIDENCE

The Naturalist's Residence sits in a high, dry section of open forest looking toward Garfield ridge over a rocky bank that drops precipitously to Munson Creek. Because the proposed garage and driveway were never constructed, the house's front door, facing Garfield Ridge, is for all practical purposes inaccessible and unused while its two back doors, a short distance from the road edge, provide daily access. This awkward building to road juxtaposition needs resolution to successfully integrate the house with its setting. In its current state this house has the most awkward relationships to adjacent road, and to surrounding site conditions of all buildings in the historic district (with the possible exception of the Hospital/Dormitory.)

INTEGRATING RUSTIC STYLE BUILDINGS WITH ROADS

The historic district's largest buildings, the Administration Building and Visitor Information Center, are set well back from roads but the Naturalist's Residence and several other cottages are not. The Naturalist's Residence is 10 to 12 feet from the service loop road provoking a sharp, incongruous and inappropriate relationship between road and rustic architecture: a forest setting but with an extensive foreground of crumbling asphalt. Resolving this dilemma is not easy but important to the integrity of the historic district's landscape. The width of the loop road varies from 15 to 20 feet and is about 2 feet above the small flagstone patio (8 by 10-12 feet) at the back doors. Because it slopes, the road is well above the house to the north and below it to the south. The road and crushed rock parking pull out, added during the 1958 construction work, dominate the entrance.

The narrowing of the spur road past the three cottages created opportunities to fit those cottages into their landscape setting. A similar approach is possible and desirable at the Naturalist's Residence (and in the expanse of asphalt adjacent to the other cottages). Narrowing the road past the Naturalist's Residence, possibly also making it a one way loop, and moving it away from the building could increase the width of the plant bed making it a more effective buffer. Interposing an effective plant buffer between the house and road does not mean a solid shrub mass that tries to 'screen' or hide the road. This is impracticable and a dense shrub mass would strike a discordant rather than integrative note in the open forest setting.

The Naturalist's Residence is used as a bunkhouse and requires considerable parking. However, the road's obtrusiveness is exacerbated by the crushed rock pull out located north of, and above, its small back patio. It would be hard to imagine how parking spaces could be made



Photo 49 From a distance the Naturalist's House appears to be well-integrated into its rugged landscape and forest setting



Photo 50 Arriving at the house it appears isolated from the forest and dominated by the proximity of the road and gravel parking area.



Photo 51 It is unsurprising that the access path, inconvenient, illogical and with a dangerous step is unused and users of the house walk straight cross the gravel and erosion matting to the door.



Photo 52 A 'sea' of erosion matting surrounds the building much of it on flat areas where erosion is unlikely. It appears to suppress rather than encourage natural tree, forb and grass regeneration.

above, its small back patio. It would be hard to imagine how parking spaces could be made more visually obtrusive and a greater physical imposition on the house than this pull out.

The flagstone patio is connected to the road by a tortuous flagstone path with two right angle turns where a straight path from the door across the patio to the road is the obvious desire line and the route that residents take to reach the road. A single step up to the road from the level flagstone path adds potential injury to insult, the path could simply slope gently up to the road from the patio. Before any work is done replanting around the Naturalist House it is imperative that road, parking, pullout and path connections first be resolved.

The Naturalist's Residence is located in an opening in the fir hemlock forest with views of Garfield ridge to the east and to the Superintendent's Residence up the road to the north. Small clumps of mature trees are scattered in the vicinity of the house and there are several mature firs and hemlocks on the steep bank, particularly to the north. There are also several dead stumps or dying trees along the road, particularly next to the pullout.

The free draining soils between the house and the drop off to the east produce a sparse understory of thin wiry grasses and skeletal herbaceous plants and scattered small trees. Extensive areas around the house were disturbed during restoration work and these were covered with erosion matting. One of the most surprising discoveries made while surveying site conditions was the number of one year old tree seedlings that had sprouted throughout these disturbed areas. Mortality from drought and competition is likely to be high amongst seedlings, nevertheless they suggest that forest regeneration is robust and active.

Wide swaths of ground on all sides of the house have been disturbed and are covered with erosion matting. Revegetation through this matting is thin and skimpy. Much of the matting may be unnecessary for erosion control and may be blanketing, rather than encouraging, natural regeneration. (See Superintendent's House recommendations for discussion of erosion matting.)

Scattered construction debris--wire, wood lath, concrete chips and patches, etc. remains along the bottom of walls. A metal utility access pipe projects 3" above ground near the steps on the East side.

Soil erosion occurs at the roof drip line along most building faces.

The 12-15 feet of ground between the east side of the house and the bank is lumpy and rolling. Where water is channeled over the bank it causes considerable erosion. Most of this rough ground is covered by a 12 foot wide band of erosion matting through which grasses, sedges and a few asters sprout sporadically. The ground north and south of the matting shows considerable fir regeneration.

Regrading on the north side of the house is rough. Shoddy concrete pointing occurs all along the bottom of the north wall and a curb around a vent has projects 6" - 9" above grade. A 1" diameter galv. upstand pipe protrudes from another hole at the base of the wall.

The only vegetation on the house's west face is a remnant Sorbus stump and some sedges at the base of the huge corner boulder at its north corner. Vegetation regeneration through the 18-20 feet width of erosion matting on the north side of the house is sparse: some grasses, sedges, herbaceous rosettes, Asters, one trailing strawberry and a few one year old fir seedlings. The south side of the house is the most open and extensively disturbed area. Grades along the base of the wall show the bottom of rustic boulders, particularly around the chimney where roof runoff has eroded the ground. There are two resprouting Sambucus stumps in the middle of the south wall, west of the chimney. The erosion matting over the flat ground to the south shows very sparse revegetation a few herbaceous rosettes, some Asters and Epilobium and very few one year old fir seedlings. Scattered approximately 10 to 20 feet to the south and southeast of the house in undisturbed areas are two dozen firs and hemlocks and a single pine ranging in height from 1 to 3 feet. These have the potential to grow into a continuous thicket in time.

To the south of the house adjacent to the road is a large partially underground concrete vault, approximately 10' x 20' which is covered by a thin layer of soil supporting very little vegetation.

The planting goal is to ensure that the entire house should never be completely visible (nor screened entirely) from view from any point along the loop road coming from either direction. A 'broken' or partial view of the house through clumps of trees located at varying distance from the building should be the long term goal. Tree clumps, or single trees, provide the same sort of integration into the forest context that shrubs located along building faces do in more open areas.



Photos 53-54 Extensive regrading, fill and asphalt removal is needed between the Naturalist's Residence and road. The gravel parking area should be removed, the road narrowed and moved away from the building, the flagstone path straightened and step removed, and the ground mounded and planted between building and road.



Photo 54



Photo 55 Fill is necessary particularly along the base of the chimney to prevent the large boulders from appearing to 'float' above surrounding grade.

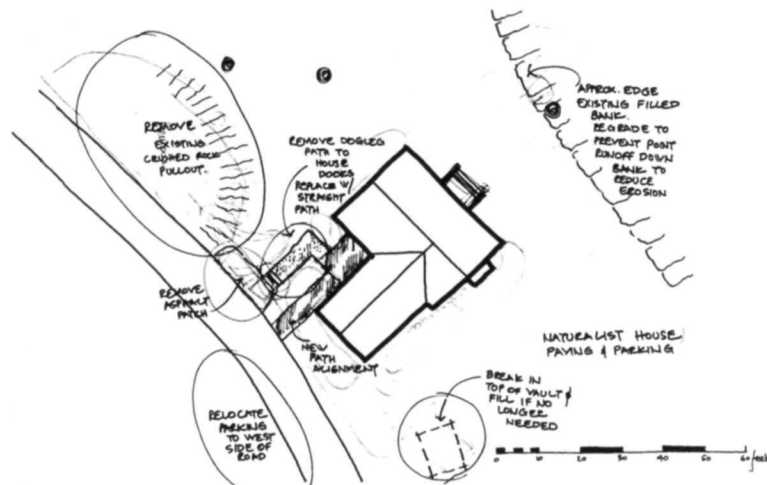


Fig. 10 Naturalist's residence paving & parking

RECOMMENDATIONS

- * When the badly eroding asphalt road is resurfaced it should be narrowed to the minimum necessary for snow plows. (This may make it a one-way loop.) Next to the Naturalist's House locate the new road on the far side of the current road maximizing the distance between the road and house.
- * Completely remove the crushed rock parking pullout providing parallel parking along the road above and below, but not next to the house, and in the flat area across the road from the house. Use material removed from the pullout to raise and smooth out the disturbed ground surface on the north side of the house and on other sides of house where needed.
- * If no longer needed, break the concrete vault's walls and roof into vault adding fill for a slight mound which could merge with the mound along the west face of the house.
- * Considerable filling is needed around all sides of the house, particularly on the south and west sides before planting.
- * Raise the grade along the east side of the house and around the steps by a minimum of 6" and 8" to 9" at the north end. Slope gently away from building face but avoid concentrating runoff over the steep bank. Consider forming a shallow swale along the top of the steep bank to deflect runoff away from it to the south. (Follow recommendations for adding coarser rocks, stones and gravel along drip line to absorb the energy of roof runoff.)
- * Identify purposes of holes and vents on the north wall. Raise grade 6" - 9" along entire wall to cover exposed base. Fill to lip of basement well wall. Extend fill out in a gentle slope to smoothly merge with rising grade.
- * Raise the grade on the south face 12" around the chimney and smaller amounts along the entire wall. Place large rocks from fire ring along the drip line along this face prior to regarding, leaving the tops of rocks flush with new grade. Slope fill gently away from wall to merge with surrounding grade. (Fill may come from the road cut by the meadow or from the pullout above the house.) Follow recommendations for adding coarser material where erosion from roof runoff is concentrated.

- * Realign the flagstone path from the patio to the road in a straight line from the edge of the patio eliminating unnecessary turns, step and difficult planting corners. Regrade the path to slope uniformly to the road.
- * Fill along face of house between it and the road edge to form a slight swelling or mound. This should not be visually prominent but should cover the gravel shoulder and slope gently down to road surface.
- * Place large boulders near the corner of the realigned path and road and one near the south end of the house to discourage parking on the shoulder.
- * Extend the mound round corner of house to fill the small planting area at the patio.
- * Repair work on houses and other built features throughout the historic district should use a mortar mix that matches historic work rather than pre-mixed mortars.

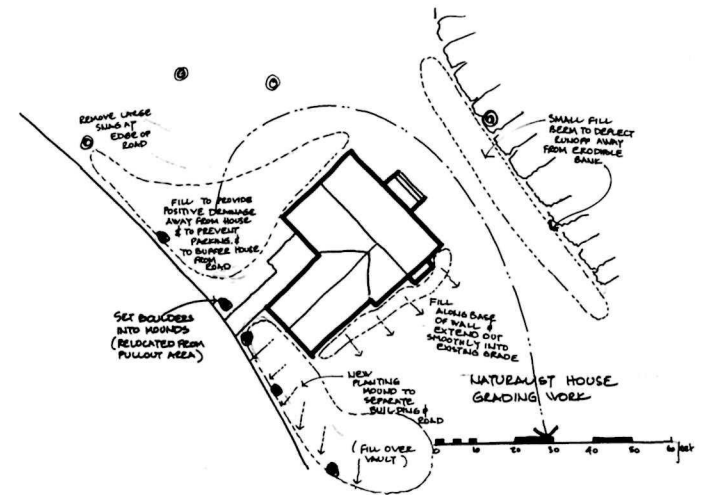


Fig. 11 Naturalist's residence grading work

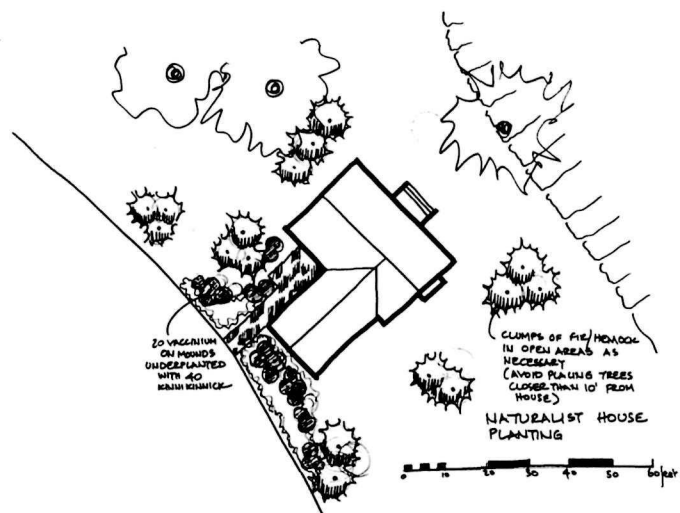


Fig. 12 Naturalist's residence planting

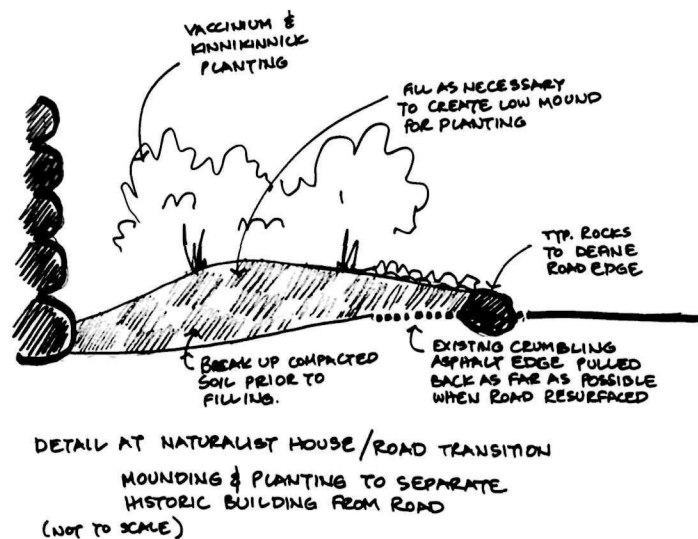


Fig. 13 Detail at Naturalist's residence/road transition
Mounding & planting to separate historic building from road

PLANTING

(Because of its forest setting, tree clumps are more appropriate than shrub masses to integrate the Naturalist House into its surrounds. Thus with one exception planting proposals are confined to tree planting.)

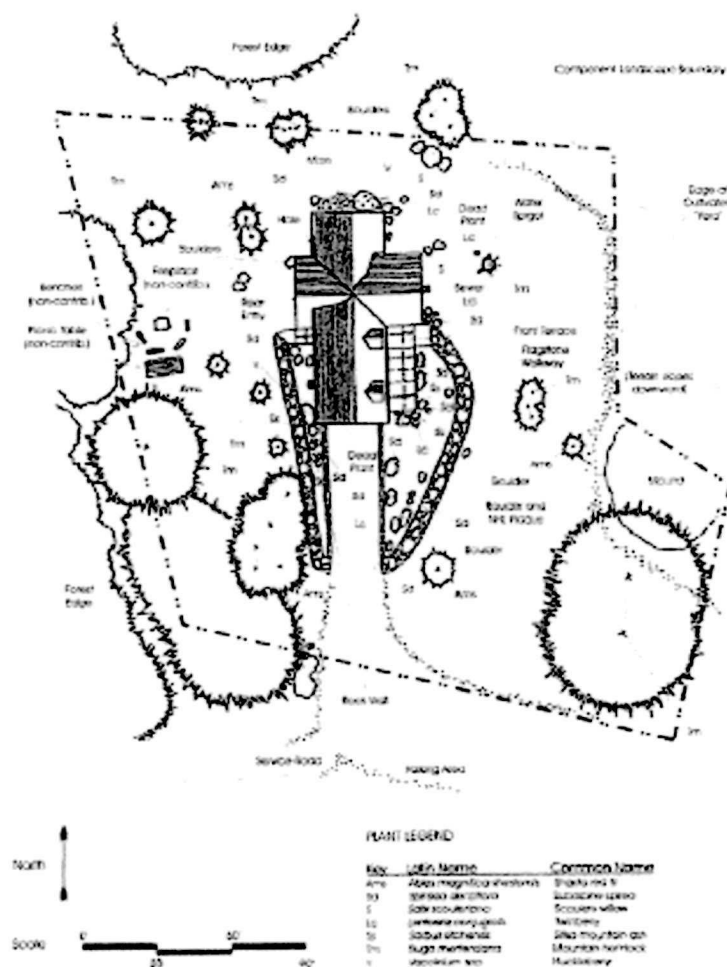
- * Protect shrub stumps with chicken wire or other material to prevent deer browsing them until strongly reestablished.
- * Plant a clump of three large firs and hemlocks on the north corner next to the path to the patio and another clump of three trees at the southwest corner of the house.
- * Plant 10 Vacciniums and 20 kinnikinnicks (*Arctostaphylos uva ursi*) on the mound between tree clumps. With the exception of the kinnikinnick which should be propagated from vegetative cuttings taken from plants in the historic district, all shrubs and trees should be collected on site.
- * The open south face requires more planting. Plant two clumps of 4 firs and hemlocks in locations that will provide staggered views and blocks when the house is viewed coming up the road. These should be a minimum of 15 feet from the building face.
- * Plant three clumps of 4 hemlocks and firs on the north side to for similar screening and view framing coming down the road. These trees may best be planted in shallow depressions that will collect and hold water longer than on level surfaces.
- * As they grow, it will be necessary to thin the small trees around the southeast corner of the house and if the fir seedlings survive it will be necessary to thin these to maintain a balance of openness and screening for the house and to avoid the development of dense thickets that detract from the open forest character.
- * Planting herbaceous plants is unnecessary as the site will slowly regenerate. Treatment of erosion matting as described for the Superintendent's House should be applied here too. In many locations the site is flat enough to require no matting at all and if there is little revegetation coming through it, mat removal may be the best policy.

SUPERINTENDENT'S RESIDENCE

The Superintendent's Residence is located at the historic district's high point with its main door, terrace and principal windows facing east across a large dry meadow to Garfield Ridge. The expansive, east/west-running meadow is bordered by hemlock-fir forests from which scattered small clumps of trees, of various ages and heights, punctuate and visually enrich the meadow. The forest-open space boundary is a transition rather than a sharply delineated edge: space merging into forest and forest extending out, often in the form of young 'pioneer' trees, into the meadow. Meadow vegetation is discontinuous consisting of small clumps of herbaceous species among the Park's typical gravelly/rocky/sandy pumice soil. Sub-shrub and herbaceous plants include sedges, grasses (foxtail, etc.) phlox, aster and buckwheat (*Eriogonum* sp.) or *Polygonum*. A single mat of kinnikinnick was observed. Herbaceous plants are typically ankle to knee-high leaving the view and feel of the meadow quite open. Vegetation density varies across the meadow, tending to be sparse on dry, often elevated, locations and more continuous where soils are moister, often in low areas. The meadow slopes gently to the east away from the house (which is located at its highest corner) in a rough, disjointed manner rather than smoothly and uniformly. Large rocks are scattered randomly where Mazama flung them, their locations bearing no relation to underlying geology, different ecosystems or site topography.

A clump of mostly young firs and hemlocks grows approximately 40' from the northeast corner of the building and a 20' - 25' hemlock grows about 25' - 30' from the building's southeast corner. These provide loose, open and rugged scrims that partially conceal the building when seen from the meadow trail and access road helping to blend it into the forest and meadow landscape.

The hemlock fir forest nestles closer to the building's other faces providing a tall, dense and continuous backdrop (aided by steeply rising ground to the north) when seen from the approach road or across the meadow. The close proximity of the forest makes the building's relationship to the landscape very different on these faces than on its meadow face. In the latter, the design should allow the meadow to sweep up to the terrace and building walls relatively unimpeded, while in the former, which tend to be cooler and darker faces because of their orientation and shade provided by the forest, shrubby vegetation or trees are appropriate.



Historic Fig. 9. Site Plan Superintendent's Residence existing conditions 2000 (Cultural Landscapes Inventory)



Photo 56 The Superintendent's Residence faces onto an expansive meadow to the east (not in view) but the forest comes closer to it on other faces such as this view to the north.

The building's south face contains the entrance to a below-grade garage with retaining walls flanking the driveway down to its door. This relationship of rustic building structure to land surface is quite out of character for this style of architecture and strikes a discordant note in the scene.

Considerable evidence of building restoration activities still remain around the House. A 12' to 20' swath of the meadow that provided vehicle access is covered with erosion matting through which revegetation is occurring erratically and sporadically. Although revegetation through the matting is not extensive it is surprising that it is occurring at all and suggests that even without any planting the sites will become fully revegetated in time. Because of the soil conditions found in the meadow, soil compaction, which can be a major problem following construction, appears to be relatively unimportant as a deterrent to revegetation. There are similar expanses of matting on the building's north and west sides.

The bottoms of large boulders at the base of the building are exposed in several locations and were, in some places, underpinned with poorly placed rock and cement shims presumably during restoration activities. These need to be buried and the ground surface (around this and other structure) regarded to conceal the bottom of boulders and nestle the walls into the land's surface in a smoothly flowing curve from their outward splaying bases to the surrounding undisturbed ground surface. The goal is to allow the eye to flow smoothly from ground surface up walls with the minimum visual or perceptual interruption, thus making buildings appear to be integral parts of the landscape not distinct, alien objects set down upon the landscape.

Covers for service vaults are located in the meadow including a concrete pipe with cast iron cover and a plastic irrigation box. The rim of the former is several inches above grade and the latter is 6' - 8' below grade making them unnecessarily obtrusive and detracting from the rustic style. They should be reset or filled around to make them as close to grade, and thus invisible, as possible.

There are remnants of historic shrubs, include *Spiraea*, around the base of the building. Most are severely trampled or were cut back to provide access to walls for grouting, etc. Many have been reduced to stumps nestled against the base of the wall. In all cases stumps show signs of regrowth attesting to their deep-rootedness and the heartening tenacity of plant life in the face of human disturbance. Nothing should be done to disturb their regeneration as they are far more likely to flourish than attempting to plant new shrubs.

Although the straw and plastic mesh erosion matting is not thick or dense, it is possible that it may reduce plant regeneration by covering/smothering the ground surface. It would be desirable to know whether revegetation is best accomplished by encouraging natural regeneration from seed in the soil bank or planting or seeding disturbed areas. Tests could determine the best way of encouraging natural revegetation by:

- * complete removal of large sections of erosion matting;
- * cutting or removing small sections within mats;
- * covering of mats with 1" - 2" of on-site soil

(to reduce its visibility; assist decomposition and incorporation into the ground; and encourage plant regeneration from in soil or wind blown seed.)

RECOMMENDATIONS FOR MEADOW FACE OF RESIDENCE

* Hand grade fill along the base of the wall to conceal shims and to slope land gently away from building face.

(Fill is not needed throughout the area. Depth of fill necessary depends on how much of the wall's underpinnings are visible or ground erosion where roof runoff is concentrated. Most filling is needed on the projecting end of the wing wall on the south side of the steps. Considerable fill is needed in the inside corner at the north end of the building where roof runoff has eroded the ground.)

* Hand grade fill around utility pipes as necessary to leave covers flush with surrounding grade, or lower pipes to grade where this is possible and would be less disruptive.

* Raise Irrigation box (approx. 6" - 8") to flush with ground surface and fill as necessary to smooth ground surface.

* Use fill material from the cut slope along the access road where regarding work is necessary. (There is enough material in this location for all regarding work at this and the Naturalist's Residence as the bank can be cut back as necessary to provide fill material. This material is essentially identical to that around the house so no additional preparation or additives are necessary.)

* Where roof runoff is concentrated and causing erosion, fill should be surfaced with a 6 inch layer of larger stones and gravel, hand-picked or raked off the road cut slope, to break the

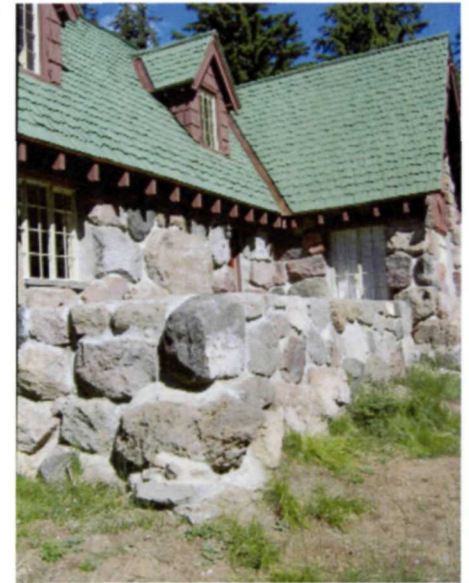


Photo 57 The boulders at the base of the terrace wall and adjacent to the steps indicate the need for extensive filling along the meadow and other faces to integrate the building into the surrounding grade.



Photo 58 Detail of concrete shim holding up boulder at steps. Fill material should completely cover concrete so that boulder appears to merge into ground.

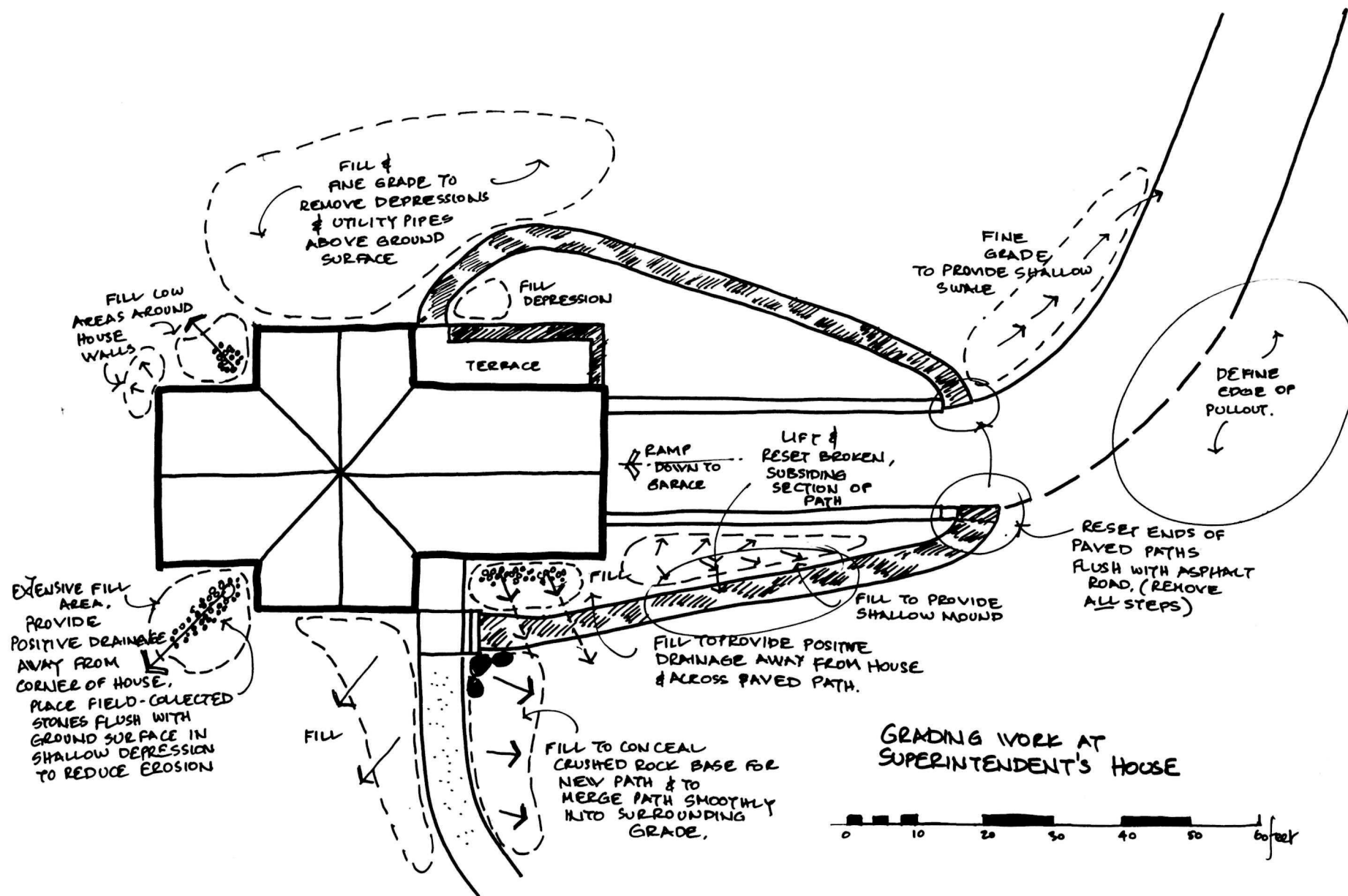


Fig. 14 Grading work at Superintendent's residence

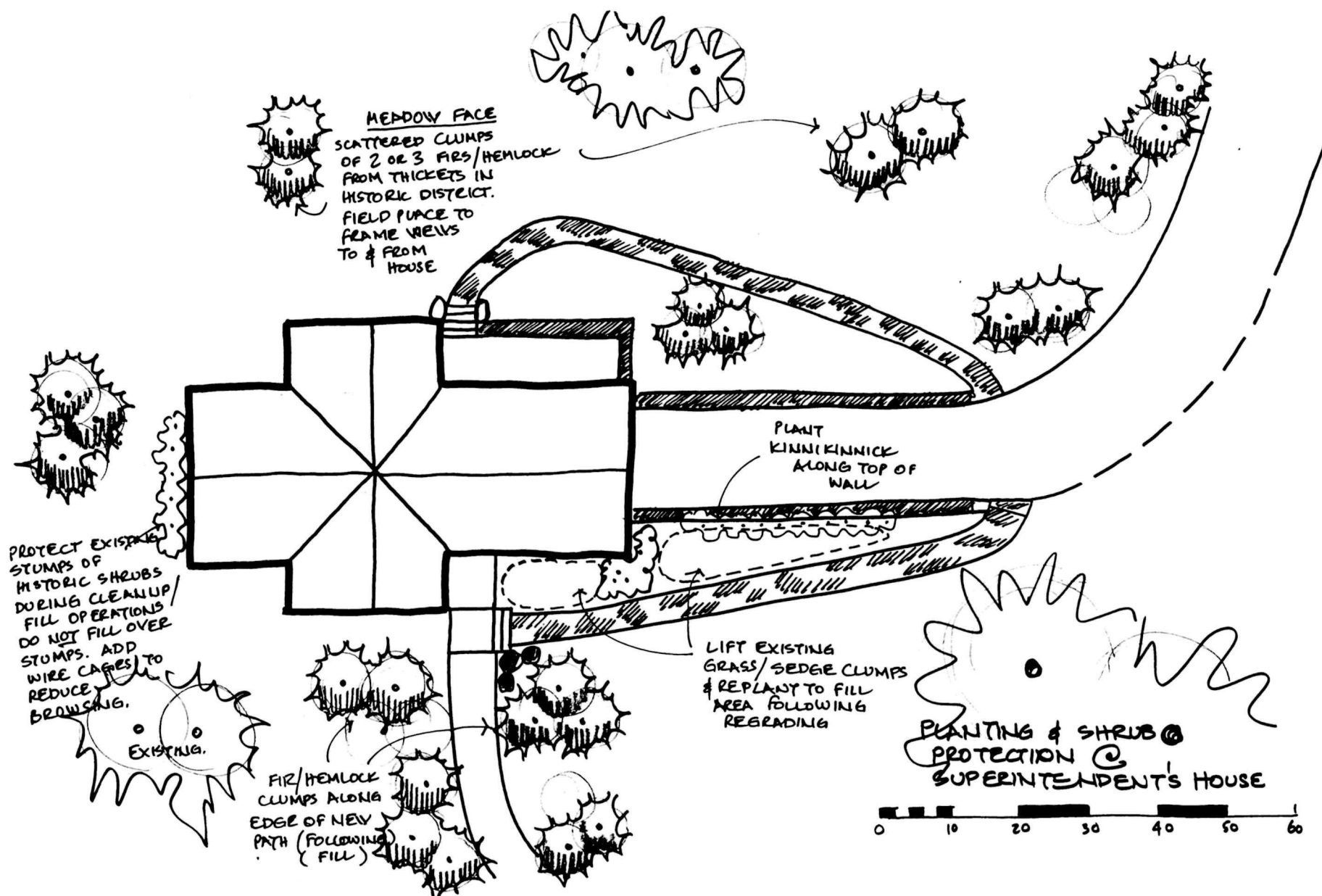
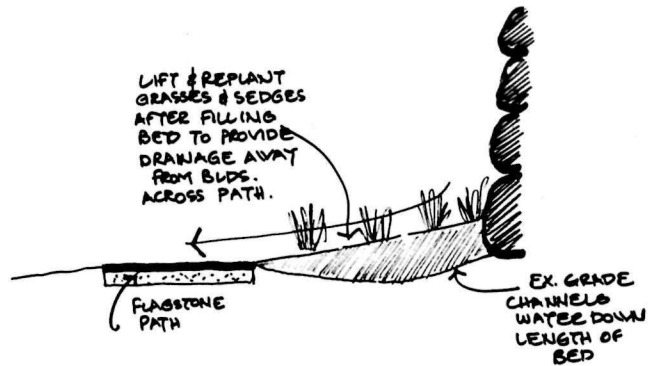


Fig. 15 Planting and shrub protection at Superintendent's residence



DETAIL AT WEST SIDE SUPERINTENDENT'S HOUSE

Fig. 16 Detail at west side of Superintendent's residence

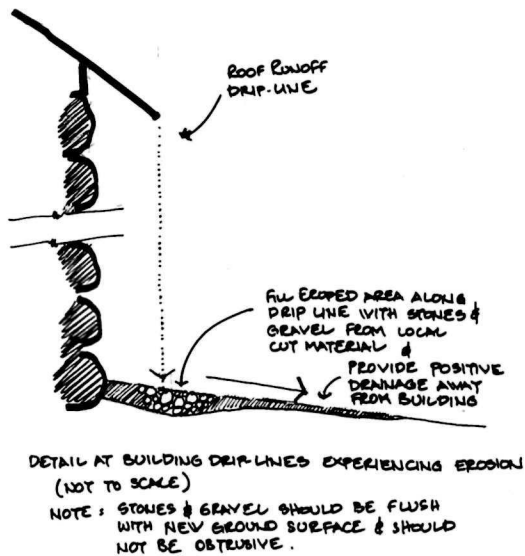


Fig. 17 Detail at building dripline

This material is essentially identical to that around the house so no additional preparation or additives are necessary.)

- * Where roof runoff is concentrated and causing erosion, fill should be surfaced with a 6 inch layer of larger stones and gravel, hand-picked or raked off the road cut slope, to break the force of falling water and reduce erosion. Incorporate the stones into the sloping ground surface. Do NOT pile them on top of ground surface.

- * Protect of historic shrub remnants with balls of chicken wire or other material to discourage deer browse until new growth is established.

- * Avoid extensive filling over shrub stumps even if located deeply eroded areas--fill a maximum of 3" - 4".

- * Where mats are located on flat or gently sloping areas with little chance of erosion, cut out or remove some sections of matting and lightly cover other sections with fill to assist in their decomposition. Avoid disturbing areas where revegetation is already successfully occurring.

EXISTING CONDITIONS--NORTH FACE

Grades are good along this face of the building and approximately eight original *Vaccinium* stumps and one *Sorbus* stump are regenerating beneath the window. With the exception of sedges and grasses in its northwest corner, a 12' wide swath of erosion matting shows no revegetation through it. The hemlock forest edge begins, erratically and patchily, about 30' from the house's north face. There are small amounts of construction debris along the bottom of the wall.

RECOMMENDATIONS FOR NORTH FACE

- * Hand rake or pick construction debris, cement, nails, flashing, etc. from around the base of the house.
- * Protect regenerating shrubs with chicken wire or other material
- * Remove or cover portions of erosion matting showing no signs of plant regeneration coming through it.

EXISTING CONDITIONS--WEST FACE, NORTH OF ENTRY

The building's shadow makes this location relatively dark. It shows considerable erosion from roof runoff concentrated in a steep valley gutter. There is a hole in the wall at the base of the house next to a *Sorbus* stump.

No important windows look out onto the landscape on this building face. Because there are no important views to block, this side of the building should be planted with forest trees to merge it into the adjacent forest.

A clump of two 10' - 12' old, gnarled firs (much-abused by the hand of man) are located about 20' from the building's northeast corner. A single 6' pine is close to the new handicapped access trail. A small *Sorbus* stump is located in a corner of the building wall. Other than this there is little vegetation in the area and none on the swath of erosion matting that covers much of the area extending out from the building face.



Photo 59 Erosion where roof runoff is concentrated requires extensive fill and small stones at drip line to break force of water.



Photo 60 Erosion along west side of house requires fill to divert water away from building.



Photos 61-64 Extensive fill, in some locations several feet deep, and carefully placed large boulders adjacent to steps are needed to resolve the raw grading around the new steps and handicapped access ramp.



Photo 62 Fill to reduce the obtrusiveness of the awkward steps

RECOMMENDATIONS

- * Add 12" of rock/stones/gravel from road cut, at the northeast corner where roof runoff is concentrated and erosion has occurred.
- * Fill as necessary to provide positive surface drainage away from the building face for at least 6 feet.
- * Extend fill over erosion matting as necessary.
- * Inspect hole at base of wall. If it is a vent, place rocks around it to keep it open, if not seal it.
- * Fill as necessary along edge of new concrete platform at back door and along asphalt handicapped access path to raise ground surface to the level of paved surfaces; to conceal crushed rock base; and to provide positive drainage away from building.
- * * Plant a mix of 8 small firs, hemlocks or pines throughout this area in erosion matting maintaining a ten foot clearance from building face. Collect plants from thickets in the historic district or from adjacent forest.

EXISTING CONDITIONS--NORTH FACE, SOUTH OF ENTRY

This area consists of a long tapering wedge between the building (and its extension as the garage entrance retaining wall) and a narrow flagstone and concrete path from the road to the back door. The path meets the road with an awkward kink where the retaining wall dies into the grade. This has been made all the more perilous by the addition, during restoration, of a single shallow step where path and road meet, but fail to greet. The path angles gently away from the retaining wall and building before awkwardly abutting, in a Titanic-meets-iceberg manner, a flight of 3 steps up to the back door concrete patio. At its top, next to the patio, the wedge of ground is approximately ten feet wide, about a quarter of the way down the path, where the retaining wall meets the building corner; it is approximately five feet wide.

The upper section of the wedge receives sheet runoff from the roof but, because the path is higher than the ground surface, this runoff flows down the eroded center of the wedge and over the retaining wall into a drain by the garage door. At the building corner an approximately 5 foot wide by 6 foot long area is full of 2" - 3" *Vaccinium* sprouts. Adjacent to this and on top of the retaining wall is a resprouting *Sambucus* stump and further down the wedge are a few *Spiraea* stumps. The upper end of the wedge contains healthy bunches of grasses and sedges showing signs of vigorous regeneration.

RECOMMENDATIONS

- * Fill as necessary to bring surrounding grades up to the level of the new ramp surface. This may need to be several feet thick at the steps so that these do not stand out.
 - * Place three or four large boulders (3, 4, 5 foot diameter) to resolve awkward grade transitions, particularly around the steps and along steepest bank of new trail and integrate steps and trail into the surrounds.
 - * Fill the entire upper end of the wedge to provide positive drainage away from building face and across the path.
- Lift sedges and grasses before and replant following filling.
- Reduce depth of fill around *Vaccinium* sprouts placing fill by hand to avoid damaging or burying them deeply.
- * Safety and aesthetic reasons require removal of the single step at bottom of path.
 - * Regrade the slope of lower section of the path to meet road grade smoothly without a step.
- (Because the path has a solid concrete foundation it may be necessary to lift and excavate below a section of it so that it can settle to road grade when replaced.)
- * Plant 20 rooted cuttings from kinnikinnick clump in meadow along top of retaining walls to cover and make them less visible.
 - * Flagstone patios and paths around the house should be repointed in a manner consistent with the patio at the Visitor information Center, raking grout half an inch below the surface of flagstones rather than flush with their surfaces.
 - * Remove all erosion control matting on flat or gently sloping surfaces except where this might disturb regenerating seedling plants. In the latter locations, cut matting around plants and remove without disturbing plants.



Photos 63 Extensive fill, in some locations several feet deep, and carefully placed large boulders adjacent to steps are needed to resolve the raw grading around the new steps and handicapped access ramp.



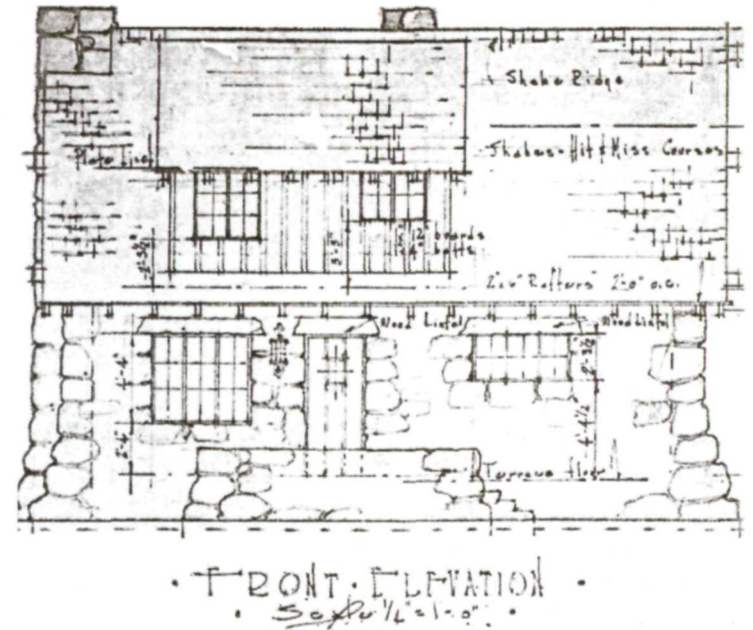
Photo 64 Dangerous tripping hazard step at end of path should be removed.



Photo 65 Mound along length of bed to redirect runoff across path and away from retaining wall.



Photo 66 Erosion matting on flat surfaces is unnecessary. In this location on the meadow face, fill is needed to conceal pipes and to remove the hummocky ground surface.



Historic Fig. 10. Front elevation
Naturalist's House



Photo 67 Road through forest shows well-graded profile of shoulders.



Photo 68 Steep and eroding cut bank needs to be cut back to merge with meadow surface.



Photo 69 Steep bank dominates the view looking up to Superintendent's Residence



Photo 70 Fill and smooth transitions to conceal trail edge, utility vaults and concrete foundation of electricity meter.

UTILITY STRUCTURES, ROADS, BANKS & DITCHES

The visual prominence of utility posts, hydrants, power transformers, manhole covers, signs and cut banks along the road leading to the Superintendent's Residence at the meadow is one of the most jarringly-discordant scenes in the Historic District landscape. Not only are these structures visually obtrusive but they are located where they are very visible from the road. Moving such facilities is prohibitively expensive and many of them, such as the transformer and fire hydrant, must be visible and accessible for safety reasons.

Although it is impossible to make these structure invisible, several things can, however, be done to subtly merge them into the landscape while not compromising their functional utility and accessibility from the road.

RECOMMENDATIONS

- * In some cases it may be possible to plant trees adjacent to structures, (but, presumably, not between them and access from the road) but these should be thought of as masses backing the structures rather than masses trying to conceal them as the latter form of planting often is more out of character and thus more obtrusive than the object it tries to conceal.
- * The same may be true of rocks, if these are poorly placed as they may draw attention to structures rather than subtly deflect the eye away from them. Under no circumstances should concrete blocks, such as at the base of the power transformer structure, be surfaced with stone as this tends to catch the eye and attention rather than fitting into the landscape.
- * More effective than planting is working the grades around these structures and along the road. All along this section of the road, in contrast to its grading through the forest where it fits in seamlessly with the surrounding grade, the grading is awkward and obtrusive. Steep banks near the Superintendent's residence should be cut back a long distance not at a uniform slope but in gentle undulations.
- * Ideally, the grading should be cut back sufficiently to allow users of the road to see onto the meadow's surface rather than blocking views of its surface. This would draw attention away from the bank and utility structures to Superintendent's Residence and the view of the meadow landscape and forest beyond. It may be desirable to mound cut material behind utility structures to make them less obtrusive by reducing their profile against the sky.

* Regarded surfaces should be planted with the same woody and herbaceous species found on the meadow.

* Relocating the walking trail away from the utility structures, rather than through the middle of them, would greatly diminish their impact on visitors walking the trail.

* Small scale grading can also be beneficial. For example, a small amount of fill is all that is necessary to conceal the rim of the manhole making this merge into the ground surface rather than protrude above it.

* Rock and gravel across the road near the Superintendent's Residence indicates where a shallow ditch, added to the uphill side of the road during the building restoration, spills water across the road. It is unfortunate that a pipe was not installed under the road when it was resurfaced to direct this water off the road surface. However, a wider, but still shallow ditch, a 'swale', in this location might be able to retain runoff long enough to allow infiltration. This would also be desirable to reduce the unnecessarily and undesirably visually obtrusive ditch along the road edge and merge it into the surrounding grade.

* Wherever imported crushed rock is visible it should either be covered with native soil if this works with surrounding grades or it should be raked to mix it with the surrounding soil.

* The loop trail should be the most obtrusive feature in this area. Regrading, widening and adding large 'marker' boulders where it meets the road are techniques for drawing attention to the trail and away from utilities. A larger trail sign following historic precedents would also direct visitors' attention to the trail rather than utilities.



Photo 71 Exposed rim of manhole and crushed rock attract attention to an object that should be as unobtrusive as possible



Photo 72 remove step from path to Superintendent's house and regrade swale.

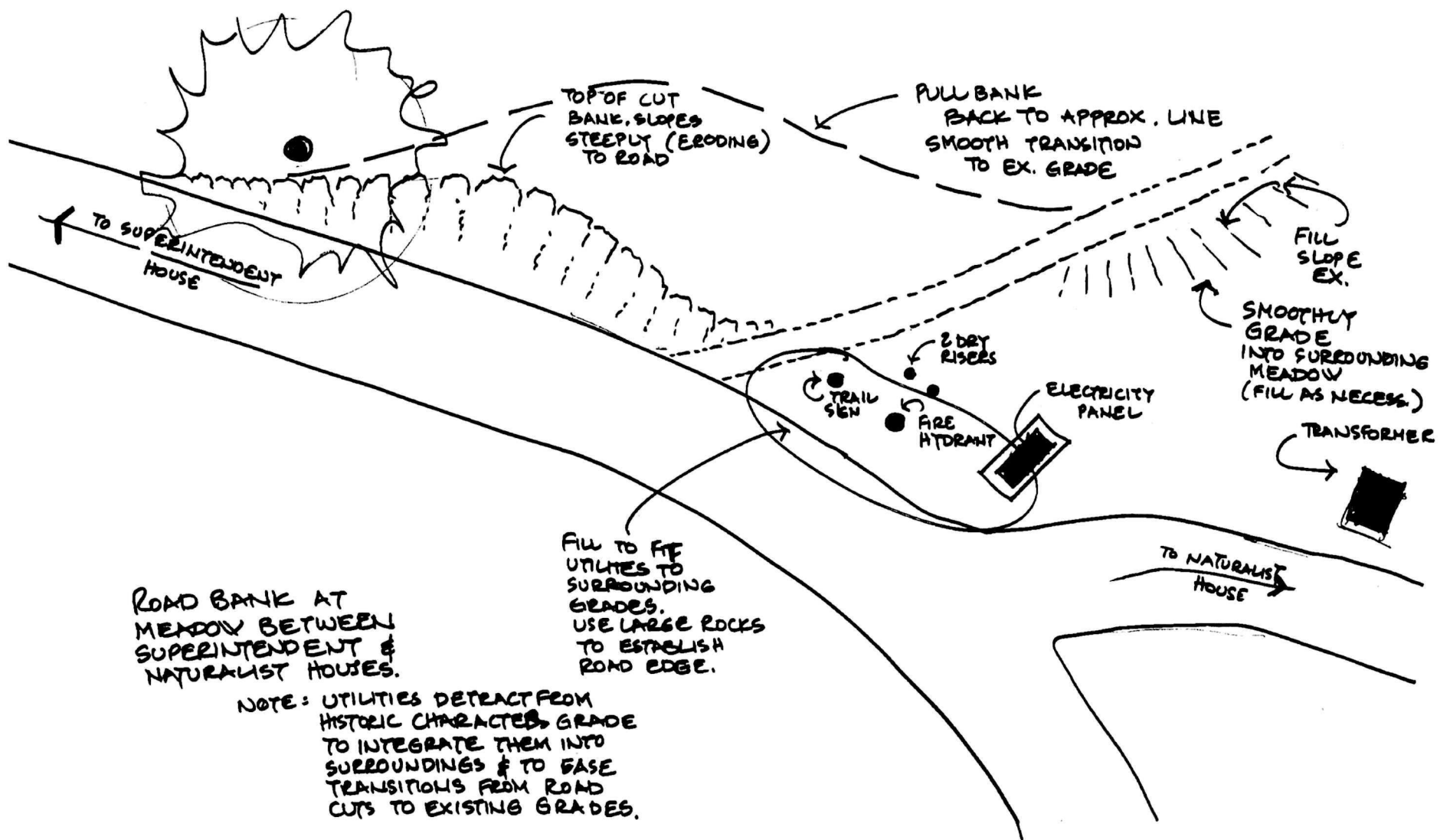


Fig. 18 Plan of grading along road edge & around utilities

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