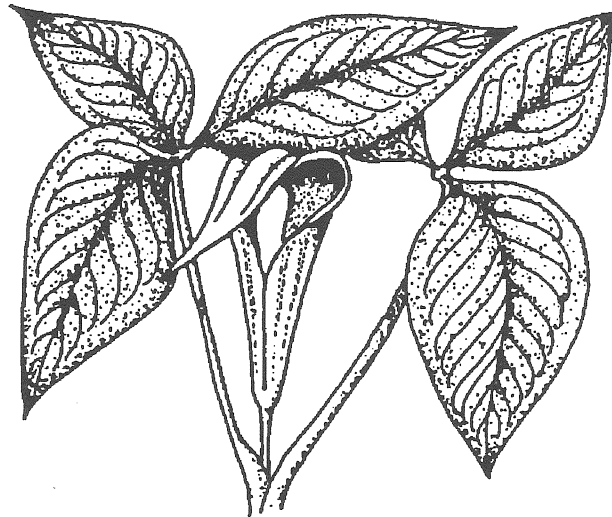


# Churchill Park Nature Trail



Newington, Connecticut  
August 1991

*EASTERN CONNECTICUT  
ENVIRONMENTAL REVIEW TEAM  
REPORT*

*Eastern Connecticut  
Resource Conservation and Development Area, Inc.*

***Eastern Connecticut Environmental Review Team on***  
**CHURCHILL PARK NATURE TRAIL**  
**NEWINGTON, CONNECTICUT**

This report is an outgrowth of a request from the Newington Superintendent of Parks and Recreation to the Hartford Soil and Water Conservation District (SWCD). The SWCD referred this request to the Eastern Connecticut Resource Conservation and Development Area (RC&D) Executive Council for their consideration and approval. The request was approved and the measure reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The ERT met and field checked the site on Thursday, May 30, 1991. Prior to the review day each Team member received a summary of the proposed project, a list of the town's concerns, a location map, topographic map and a soils map. During the field review the Team members were given maps and additional information. The Team met with and were accompanied by the Newington Superintendent of Parks and Recreation, the Town Engineer, the Director and an employee of the Newington Health Department, a member of the Board of Parks and Recreation. Following the review, reports from each Team member were submitted to the ERT Coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site designs or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the town and landowner. This report identifies the existing resource base and evaluates its significance to the proposed development, and also suggests considerations that should be of concern to the developer and the town. The results of this Team action are oriented toward the development of better environmental quality and the long-term economics of land use.

The Eastern Connecticut RC&D Executive Council hopes you will find this report of value and assistance in making your decisions on this proposed nature trail/open space/recreation area.

If you require further additional information, please contact:

**Elaine Sych, ERT Coordinator**  
**Eastern Connecticut Environmental Review Team**  
**P.O. Box 70, Haddam, Connecticut 06438**  
**Telephone: (203) 345-3977**

Churchill Park Nature Trail  
 Newington, Connecticut

Review Date: May 30, 1991

Report Date: August 19, 1991

**Environmental Review Team**  
**Report #494**

Eastern Connecticut Resource  
 Conservation & Development Area, Inc.  
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 Storrs, CT 06268  
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## INTRODUCTION

**Elaine Sych, ERT Coordinator  
Eastern Connecticut RC&D Area, Inc.  
Telephone: 345-3977**

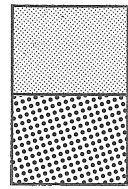
This report is in response to a request from the Newington Superintendent of Parks and Recreation for assistance in assessing the feasibility of constructing a nature trail to connect two separate areas of Churchill Park. A large wetland complex separates the two areas. Additionally, two adjacent state owned parcels are under consideration for town acquisition. These pieces are mostly wetlands and are under the jurisdiction of the CT Department of Transportation.

The following sections of this report respond to questions concerning feasibility and design of the nature trail and the desirability of acquiring the adjacent ConnDOT properties. Additional background information may be obtained from the 1983 King's Mark ERT Report *Churchill Park Expansion*.



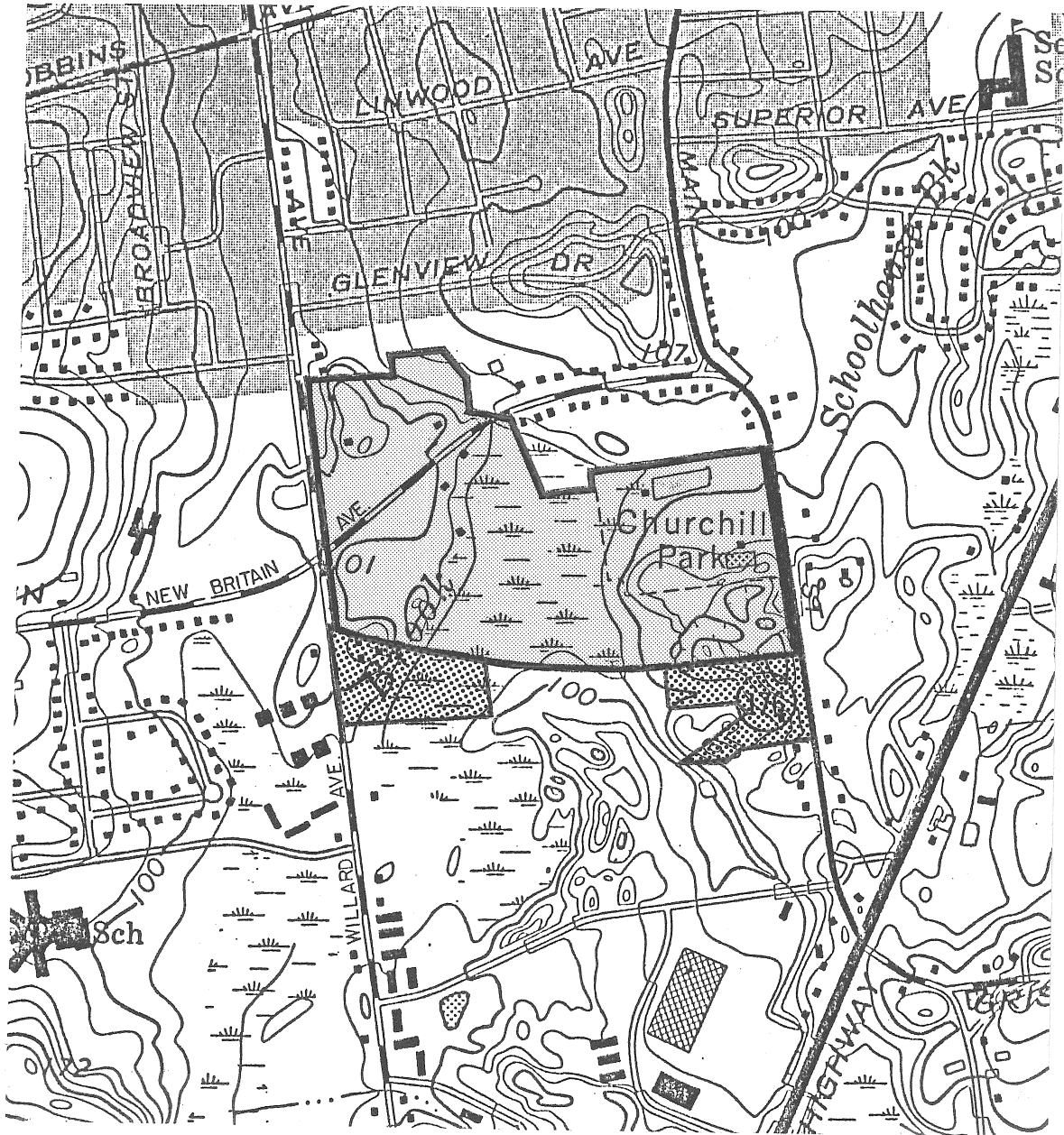
# LOCATION MAP

Scale 1" = 1000'



Churchill Park

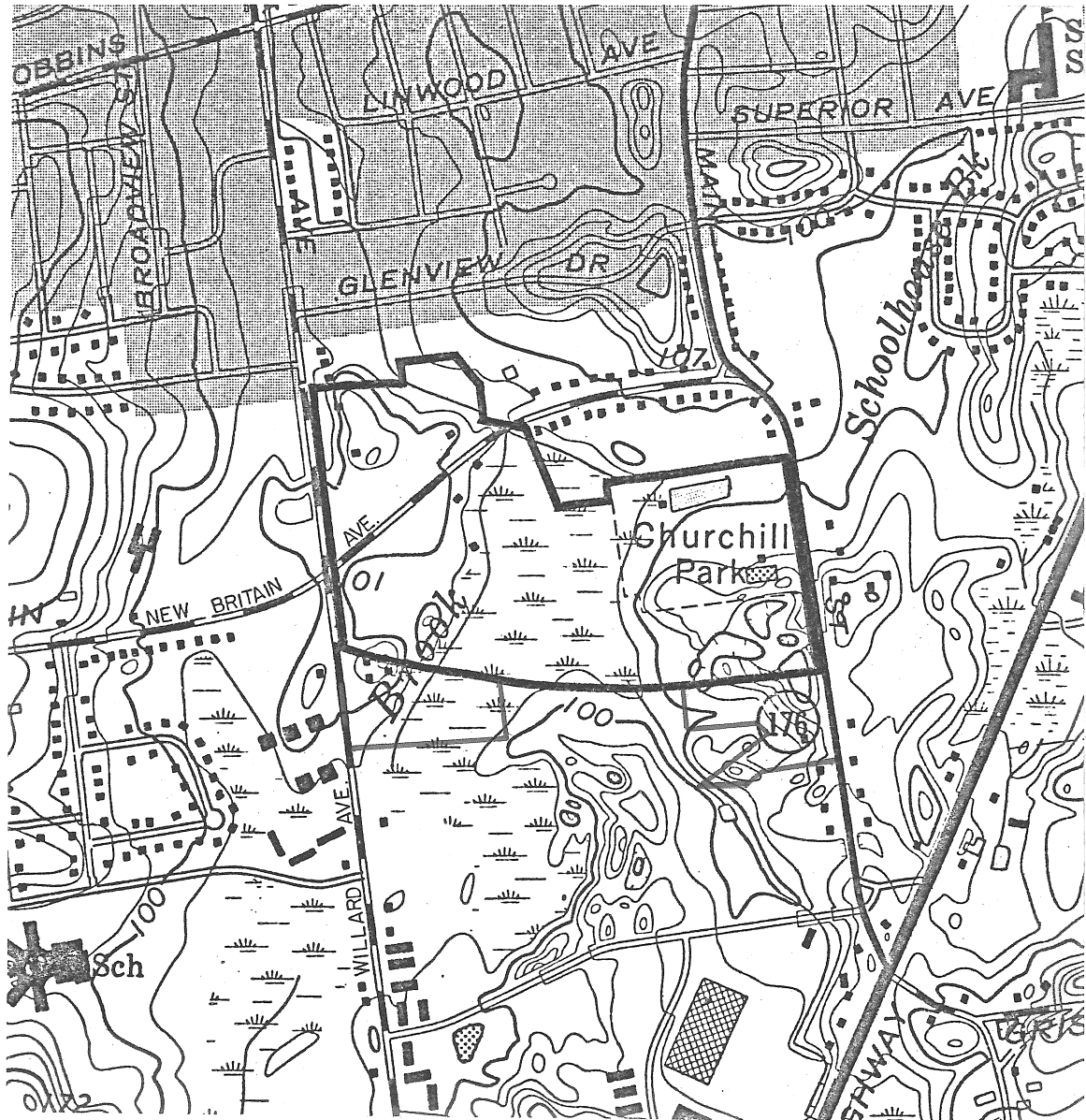
ConnDOT Properties





# TOPOGRAPHIC MAP

Scale 1" = 1000'



## SOIL RESOURCES

Denise Conkling, District Manager  
Hartford County Soil & Water Conservation District  
Telephone: 688-7725

### Soils and Erosion Control

A detailed soils report was presented as part of the original ERT done in April 1983. Additional filling has taken place on the property since that time. Approximate areas of fill are sketched on the soil map. The two state owned pieces are dominated by SeA (Scarboro loam) and Tg (terrace escarpments, sand and gravel). Both of these soil types are present on the town-owned land and are described in the previous report.

The town requested this follow-up ERT to assist them in the development of a nature trail system in the park. Presently the park is divided by a wetland system. Recreation areas are accessed either on Main Street (east park) or New Britain Ave (west park). It is not possible to walk from the east park to the west park directly. The wetland soil is Scarboro loam (SeA), a very poorly drained soil. The wetland system has a fluctuating surface water table with braided channels that would make it costly to fill for a crossing. A filled walkway would disrupt the wetland system and would not be in keeping with the development of a nature trail. However, Scarboro loam has a sandy and gravelly substrata that should provide support for pilings for a boardwalk. The large area of fill that appears to be highway bedding, has narrowed the wetland system. If a walkway is developed this narrow would be the most appropriate crossing. The wetland system has already been impacted by construction activities. It is recommended that no further encroachment into the wetland system, with the exception of nature trails, take place. Several agencies have developed boardwalks through wetlands including the DEP, Audubon Society, and the Nature Conservancy. The town may want to contact these agencies for recommendations on boardwalk construction. The *Appalachian Mountain Club's Trail Building and Maintenance Guide* is recommended for information on bridges as well as trail development and erosion control devices.

The park has several areas of concern in regards to erosion and sediment control. During the field walk of the site it was evident that the fill placed in the wetlands for the construction of the playing fields in the west park need to be stabilized. The sideslopes need to be dressed and seeded. The planting of shrubs such as red-osier dogwood would provide wildlife habitat as wells as a more aesthetic look to the park. The highway fill in the east park appears to be stabilized and is establishing itself well. There is, however, a sharp break between wetland and filled area. There may be areas that need to be stabilized. Again planting some transitional plants for wildlife habitat and soil stabilization could be used. This could be accomplished as part of trail establishment. The Hartford County Soil and Water Conservation District (688-7725) offers technical assistance in this area.

The second area of concern is the establishment of trails on steep slopes. The terrace escarpment (Tg) soils are steep and are highly erodible. Both for safety and trail maintenance, it is recommended that trails not be designed straight up and down the slope with no breaks. Picnic areas and high use areas should be set back from top of slope on the terrace escarpments. The AMC guidebook has good illustrations for trail signs and makers and erosion control practices.

The filled area in the east park provides easy access to the wetland area. Trails established along the edge of the fill will provide for excellent viewing of wetland habitat. Care should be taken not to disrupt the entire edge of this transitional area. It is evident that dirt bikes have been used in the past in this area. Trails established along the edge of the wetland should be designed as walking trails only.

### Other

The town is interested in acquiring two pieces of land that are presently owned by the Connecticut Department of Transportation. It has been made known that because this land was acquired with federal monies it must be sold at land value. The areas in question are predominantly wetland areas and are protected by the state's inland wetland law. The town may want to approach DOT with a plan whereby the DOT gives the town the wetlands as protected open space as a wetlands mitigation site for work DOT is performing in other wetlands.

SOILS MAP

Scale 1" = 1667'







# SOILS MAP

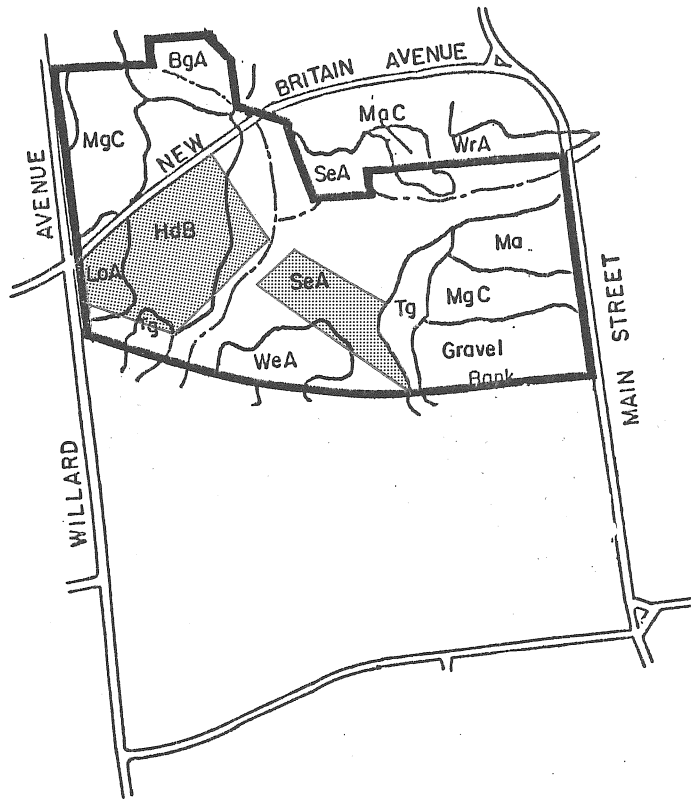
7

Scale 1" = 1000'

Soil boundary lines derived from smaller scale map (1" = 1320') and should not be viewed as precise boundaries but rather as a guide to the distribution of soils on the property.

Adapted from the Hartford County Soil Survey, USDA-SCS.

 Ma - Man made (filled or disturbed land)



SOILS LIMITATION CHART  
CHURCHILL PARK, NEWINGTON, CT

Limitation Rating For:

MAP SYMBOL	SOIL NAME	LAWNS/ LANDSCAPING	PICNIC AREAS	PLAYGROUNDS	PATHS & TRAILS
MgC	Manchester gravelly sandy loam, 3 to 15% slopes	Severe; Small stones, droughty	Moderate; Small stones, slope	Severe; Small stones, slope	Moderate; Small stones, slope
BgA	Biddeford silt loam, reddish variant, 0 to 3% slopes	Severe; Wetness, excess humus	Severe; Wetness	Severe; Wetness	Severe; Wetness
SdA	Scantic silt loam, reddish variant, 0 to 3% slopes	Severe; Wet frost action	Severe; Wet	Severe; Wet percs slowly	Severe; Wet
HdB	Hartford fine sandy loam, 3 to 5 to 8% slopes	Moderate; Droughty	Slight	Slight	Slight
LoA	Ludlow loam, 0 to 3% slopes	Slight	Slight	Moderate; Percs slowly	Slight
Tg	Terrace escarpments, sand & gravel	Severe; Droughty, slopes	Severe; Droughty, slopes	Severe; Droughty, slopes	Severe; Droughty, slopes
SeA	Scarboro loam, 0 to 3% slopes	Severe; Wetness	Severe; Wetness	Severe; Wetness	Severe; Wetness
WcA	Walpole loam, 0 to 3% slopes	Severe; Wetness	Severe; Wetness	Severe; Wetness	Severe; Wetness

SOILS LIMITATION CHART (Cont'd)

Limitation Rating For:

MAP SYMBOL	SOIL NAME	LAWNS/ LANDSCAPING	PICNIC AREAS	PLAYGROUNDS	PATHS & TRAILS
HfB	Hartford sandy loam, 3 to 8% slopes	Moderate; Droughty	Slight	Slight	Slight
Ma	Made land	----- On-Site Investigation Required -----			

SLIGHT LIMITATION: indicates that any property of the soil affecting use of the soil is relatively unimportant and can be overcome at little expense.

MODERATE LIMITATION: indicates that any property of the soil affecting use can be overcome at a somewhat higher expense.

SEVERE LIMITATION: indicates that the use of the soil is seriously limited by hazards or restrictions that require extensive and costly measures to overcome.

EXPLANATION OF RATING SYSTEM:

## WETLAND REVIEW

**Carla Guerra, Environmental Analyst III  
DEP, Bureau of Water Management  
Inland Water Resources Division  
Telephone: 566-7160**

The existing 15 acre park is separated from the newly constructed ball fields by a large wetland complex which consists of several different wetland types. A large shrub/meadow wetland is located to the east of the existing softball and new Little League fields. This mid-successional wetland system contains an assemblage of rushes and sedges in addition to dense stands of Phragmites and isolated saplings interspersed. Pockets of emergent marshes are also scattered throughout the shrub/meadow wetland. An area of forested swamp exists to the south of the of the shrub/meadow wetland. On the west side of the wetlands, directly across from the softball field, there is a small pond that is developing into an open water/marsh system. Another smaller pond is located approximately 100 feet southeast of the first pond. This pond is extremely eutrophied and is covered with a layer of green algae. It does not appear that the two ponds are connected. Two large ponds are located off the town property on lands owned by the Connecticut Department of Transportation.

Generally, wildlife diversity is directly related to vegetative diversity. Because of the variety of wetland (and upland) vegetative types, the degree of edge between habitat types, the fact that a watercourse connects the wetlands on this property to wetlands off site, the large size of the wetland complex, and the relative proportion of open water to forested areas, the town park property provides excellent habitat for the area's population of both resident and migratory wildlife.

This wetland also provides flood storage during times of heavy precipitation, providing flood protection to downstream developments. The wetland system on this site also functions to filter pollutants from runoff waters, serving to maintain, if not improve, water quality.

The town is proposing a plan to install a network of walking trails through the wetlands to connect the existing park with the new ballfields, as well as to provide access for educational nature walks. This could be accomplished

without a significant amount of disturbance to the wetlands themselves or the functions they provide.

It is recommended that any trails through the shrub/meadow wetland be constructed in a manner which would not interrupt water flows or animal passage through the wetlands. A boardwalk would accomplish this, however, temporary disturbance would be involved for piling installation. A floating walkway constructed from telephone poles and planks was an alternative which was discussed. The concern with this concept is one of safety. A floating walkway, which is not anchored to the ground could be unstable and difficult to walk upon during periods of inundation. Additionally, during a large flood event, the possibility of the walkway dislodging and being carried downstream could endanger downstream residents. It is felt that the temporary disturbance resulting from the placement of a boardwalk bridge would not be significant when considering the potential safety issues. In the more forested areas, we would suggest a mulched trail, or something similar, that would be pervious and allow water to infiltrate. If the town wishes to take advantage of the wetland's education potential, a portion of the walkway should be directed through the forested wetland to allow for a better viewing range. The viewing is limited through the shrub/meadow wetland because of the density and height of the vegetation as well as its monotypic nature. The potential for enhancement of the wetlands for aesthetic purposes exists in the vicinity of the smaller, eutrophied pond. This pond could be cleaned out and enlarged to encourage the development of another open water/marsh habitat. An existing trail already provides access for educational walks and the enhancement would be more attractive for wildlife.

The off-site, state-owned lands would be an excellent acquisition if open space is desired. The parcel connected to the south contains a continuation of the wetland system, which should be protected in its entirety from further filling or development.

## **THE NATURAL DIVERSITY DATA BASE**

**Nancy Murray, Senior Environmental Analyst  
DEP, Natural Resources Center  
The Natural Diversity Data Base  
Telephone: 566-3540**

The Natural Diversity Data Base maps and files regarding the project area have been reviewed. According to the information, there are no known extant populations of Federally Endangered and Threatened species or Connecticut "Species of Special Concern" occurring at the site in question.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultation with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

## VEGETATION

Larry Rosseau, Forester  
DEP, Division of Forestry  
Telephone: 379-7085

The study area includes two parcels of property currently owned by The Department of Transportation and a proposed trail linking new playing fields in the west with the older portion of Churchill Park. The vegetation cover types on these parcels are similar to those described in the Churchill Park Expansion ERT Report, April 1983. The present commercial value of the forested land is low due to the size and quality of the predominant sawtimber-sized trees, and the presence of wetland soils and watercourses. The aesthetics, watershed, diversified wildlife habitat and passive recreation potentials of the parcels are of much greater value.

The forest management potential of the D.O.T. parcels is limited to establishing a property line maintenance program. The proposed trail could highlight tree identification and forest ecology.

### Vegetation Type Description

This is a breakdown of the vegetative cover types found on the D.O.T. properties. The types are directly influenced by either or both soil conditions and past management. Soil types often dictate the moisture availability which can limit or restrict plant growth. Historical use of the land also influences the present vegetation types and condition.

Parcel A is located south of the soccer field on the corner of New Britain and Willard Avenues. Parcel B is located south of the town landfill on Main Street (see Map ).

**1. Mixed Hardwood :** This vegetation type is made up of areas which now or at one time contained structures. Tree species present are apple, white ash, red cedar, black cherry, pin cherry, box elder, elm, Norway maple, red maple, red oak, scarlet oak, Norway spruce, and weeping willow. Shrub species present are multiflora rose and yews. Bittersweet, poison ivy, jewelweed and Virginia creeper are also present. The trees range in size from sapling to large

sawtimber. The majority of the sawtimber trees have large spreading cross and short boles.

**2. Red Maple Swamp:** a high water table and poorly drained soils limit the growth of vegetation to species which are well adapted to wet conditions. Beside the predominant red maple, ash, elm, scarlet oak, and weeping willow are also present. Spicebush is the most common shrub found on the sites.

**3. Open Field:** An area in Parcel B containing less than one-half acre of mowed field.

**4. Old Field:** This is an area where cleared and filled land is reverting to forest land. Species that occupy the site include apple, ash, aspen, cottonwood, red cedar, catalpa, dogwood, black locust, Norway maple, red maple, autumn olive, honeysuckle, staghorn sumac, and weeping willow. Sapling and poles are the dominant tree size.

### **Limiting Conditions, Potential Hazards and Management Considerations**

The location and extent of wetland soils and watercourses restricts forest management activities to the maintenance of property lines (see section below). Wetland soils, with high water tables and poor drainage, allow for shallow root penetration and as a result, windthrow is a potential hazard. Openings in and along side wetlands should be avoided. Though the economic potential of the forest land is low, the educational opportunity for the study of forest ecology is great. The diversity of plant growth in the area of the proposed trail lends itself to the establishment of a nature trail. Tree identification and forest succession should be highlighted.

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## **CONNECTICUT DIVISION OF FORESTRY FOREST PRACTICE DESCRIPTION**

### **Boundary Lines**

The adage, "Good fences make good neighbors", can be expanded to include boundary lines. Connecticut is a state with a high population density and generally small, fragmented ownership patterns. Boundaries can be, at times, a maze with no discernable identifying features on the ground.

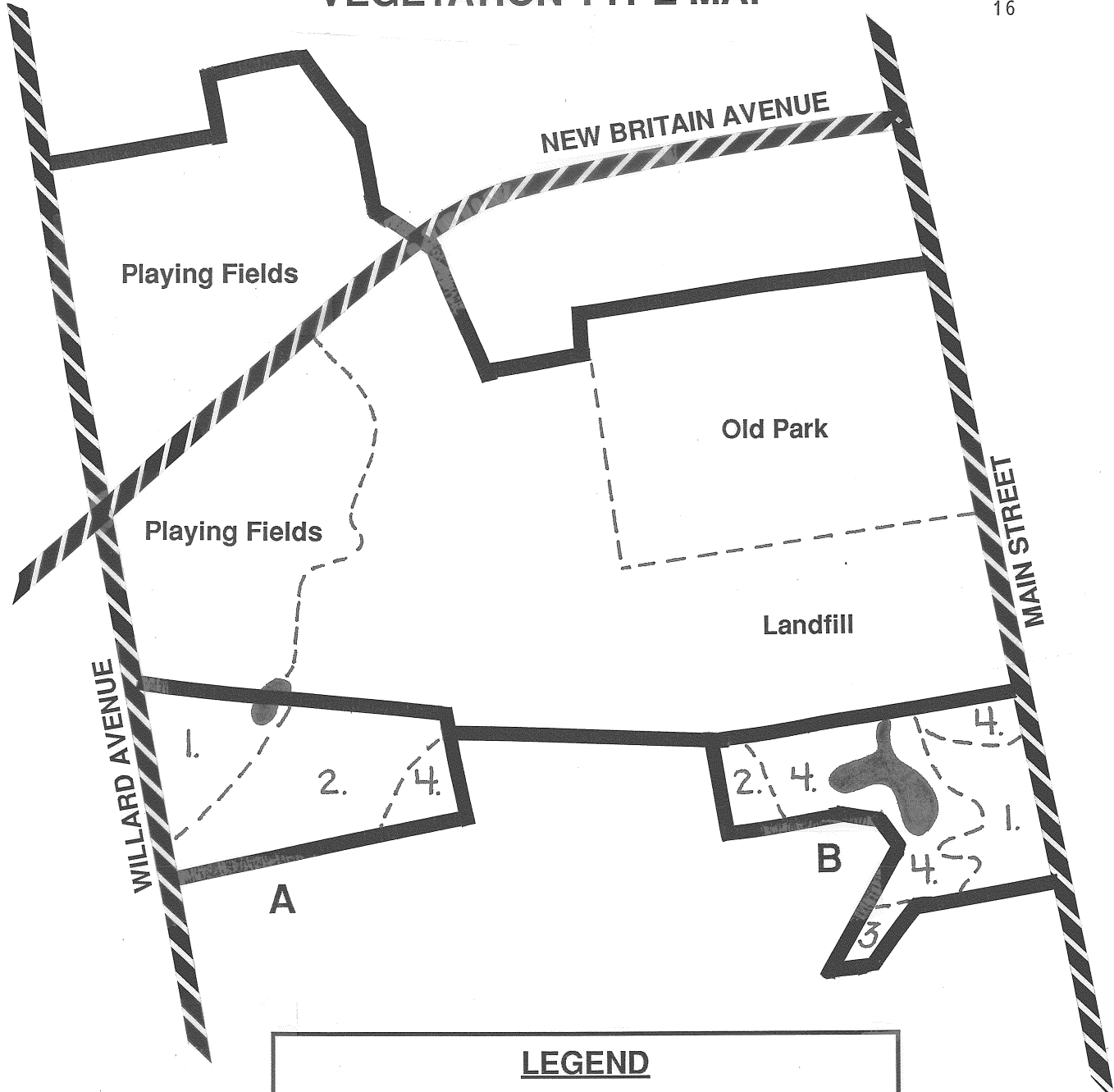


Boundary lines can be the first line of defense against trespass problems, both accidental and malicious. Well maintained and highly visible boundaries can minimize accidental trespass and, since the possibility of accidental trespass is alleviated, only the most callous timber poacher would chance being caught 'over the line'.





Landowners should consciously allocate sufficient time annually to perform necessary maintenance. Each fall and winter a landowner should locate, brush out, blaze, and paint enough of the boundaries to be able to cover all of them over a 3 or 4 year period.

In general, woodland boundaries should be clear of brush. Trees along the line should be blazed, (a chunk of bark removed with an axe to reveal solid wood), and the blazes painted with a long-lasting latex exterior paint, preferably white. Corners should be prominently identified by locating 3 'witness' trees surrounding the corner and then cutting 3 blazes on each tree, facing the corner point. Again, these blazes should be painted. It probably is not a good idea to blaze and paint your neighbor's trees.


# VEGETATION TYPE MAP



**LEGEND**

-  Parcel Boundaries
-  Roads
-  Type Boundary
-  Water

Scale 1" = 450'



## PARK PLANNER COMMENTS

Joseph Hickey, State Park Planner  
DEP, Bureau of Parks and Forests  
Telephone: 566-2304

In the Team Park Planner's opinion the Town of Newington has done a good job to date in developing the park, whose focal point has been the original Northeastern acreage. This section contains a pool, fishing pond, several tennis courts, and several picnic areas in a wooded area. These are all well located in an attractive portion of the park which can be effectively gated for security purposes. The second developed node of the park is its northwestern section within which a number of ballfields have been built on level, well drained soils. Also, the pedestrian safety problem posed by New Britain Ave. bisecting the ballfield complex will be solved by its planned relocation north of the football field.

The remainder of the park has various development constraints affecting its use or reuse. The most significant clearly is the wetland character of the entire center of the park. Secondly the brush dump and leaf composting area occupying the South Eastern corner seen likely to remain in place for the foreseeable future and pose an aesthetic impact on abutting portions of the park as well as reuse constraints because of expected settling action over time. Finally the park segment west of the brush dump which was filled over for the I-291 project has limited soil potential (traprock fill, no topsoil) and only scrub vegetation recolonizing the site. Thus the rate and quality of revegetation should be below normal for the region and intensive park development probably would require expensive importation of topsoil.

With these background comments in mind, specific Newington questions can be addressed as follows:

**1. Desirability of purchasing DOT land south of brush dump.** This tract is handicapped by being isolated from the rest of the park by the dump and is partially wetland. However it does contain a small pond and some handsome woodland and thus could be useful for environmental education and/or part of a nature trail routing. It probably should be acquired if not prohibitively expensive.

**2. Desirability of purchasing DOT land at southwest corner of park on Willard Avenue.** The tract is largely unbuildable wetland with a corner of high, dry land along the road. It would be useful only as bulk open space or buffer for the park. Acquisition is whole or part optional, as wetland regulation will protect the bulk of it. Thus, it should be purchased only if a bargain price is offered.

**3. Nature trail connecting the two developed nodes of the park.** The broad wetland bisecting the park poses a serious obstacle requiring a structural solution and probable permitting approval. The type of structure will depend on the nature of the subsurface conditions and the hydrologic character of the watershed. A positive feature here is that the Scarboro and Walpole soils reportedly underlying the wetland consist of sand rather than peat. On the other hand, the water level in the wetland does rise substantially after heavy rains.

Design options could include:

1. Elevated boardwalk, with the advantage of being above flood level at all times. However, considerable cost and hand labor would be involved. See sample boardwalk design included in the Appendix.
2. Surface walkway in various forms (and names (bob bridge, puncheon, corduroy, etc.). An inexpensive approach which should suffice on a firm, sandy base which apparently exists in this location. However, it would be subject to flooding and resulting damage unless staked in place. Also would therefore be unusable intermittently. See excerpts from Appalachian Mountain Club's "Trail Design, Construction, and Maintenance" plus sample State Park surface boardwalk design in the Appendix.
3. A variant on #2 above, suggested by the town engineer as an idea of the town public works director. Chain utility poles together to use as base for trail and nail cross pieces to them for treadway. If staked, should probably not be subject to serious flood damage although would be under water occasionally and thus unusable at such times. However should be a relatively inexpensive, simple, and durable solution. (See **WETLAND REVIEW** section for additional comments on wetland crossing proposals)

## TRANSPORTATION PLANNER REVIEW

Harry Geysen, Transportation Planner  
DOT, Bureau of Policy and Planning  
Telephone: 566-4628

The field review held at Churchill Park, focused on a possible location for a proposed nature trail to connect the older park area to the new ball fields. Also, a natural resource inventory of two adjacent State owned parcels. A third item involved the Route 174 project which includes a partial relocation to accommodate expansion of the park.

Comments with these items from a transportation point of view, include the following information and suggestions:

1. Development of a nature trail that would provide a convenient access between two separate parts of the park, which would also give the public access to portions of the Park heretofore not readily accessible. It is suggested the trail closely follow the path taken by the Team. The path traversed an area rich with various types of vegetation, through a stand of hardwood trees and followed along the edge of 2 small ponds. Some parts of the trail are dependent upon the purchase of the State owned land. Since a wetland area must be crossed to connect the 2 park areas, it should be made at the narrowest point, keeping any impacts to a minimum. Construction of the actual crossing, as suggested by Mr. Peter Arburr, by laying telephone poles connected by chains across the wetlands, appears to be feasible. There is a noticeable flow during high water periods, and an anchor system would have to be devised to prevent downstream movement of the structure. This could probably be done with chains or wire cable anchored to the bottom of the wetland, and allowing just enough slack for the structure to rise with the water.

2. The two parcels of State owned land, which the Park Department is interested in buying, were purchased by the State for the construction of Interstate 291 using 90% Federal money. Current policy requires that when land purchased with the aid of Federal money is sold, it must be done so at fair market value and 90% of the sale price must be returned to the Federal government. Any questions on these parcels of land may be directed to Mr.

David L. Labassiere, at 258-3407, at the Department's Bureau of Rights-of-Way.

3. The section of Route 174 (New Britain Avenue) just east of Willard Avenue, will be relocated to the north of the park area which includes new ball fields. This will facilitate safe movement between the ball parks, which are currently separated by the highway. This work will be done as part of a larger project, (Number 93-108) calling for improvement to Route 174 from John Downey Drive in New Britain to 1,500 feet east of Willard Avenue in Newington. The project is scheduled to be advertised in October, 1991.

## ARCHAEOLOGICAL REVIEW

**Nicholas Bellantoni, State Archaeologist**  
**The Connecticut Museum of Natural History**  
**The University of Connecticut**  
**Telephone: 486-5248**

The area of Churchill Park around the Willard Street and New Britain Avenue intersection was previously owned by the State of Connecticut. The state had proposed the site for the I-291 corridor. In compliance with federal Environmental Impact Statement regulations for the highway, the Department of Transportation conducted an archaeological survey during which the remnants of prehistoric stone tool manufacturing activities were discovered. However, the lithic debitage was recovered from fill cuts approximately four feet deep. In 1984, when the Town of Newington obtained the property and proposed playing fields, another archaeological survey was unable to relocate the prehistoric Native American campsite.

The archaeological surveys indicate that the elevated areas of well-drained soils west of the wetlands near Willard Street and New Britain Avenue were occupied by Indians, probably as hunting and gathering campsites during some unknown period in the past. Unfortunately, the surveys also indicate that the sites have been destroyed prior to the town's acquisition of the property. Though the park could be further tested, it is unlikely that any other Indian sites remain undisturbed in the project area.

Nonetheless, what appears lost in physical evidence can be made up for in public awareness. The Churchill park has an interesting history. The property was initially owned by Capt. Charles Churchill, who served in the Revolutionary War and operated a flax farm at the site. Later the Raleigh family ran a dairy farm on the property into this century. The Office of State Archaeology recommends that the Newington Superintendent of Parks coordinate with the Newington Historical Society and Trust, Inc. in developing educational markers along the proposed nature trail that briefly discuss aspects of the park's history. From Indian hunters-gatherers to historic farmers, an encapsulated history of the town could be easily designed within the trail system.

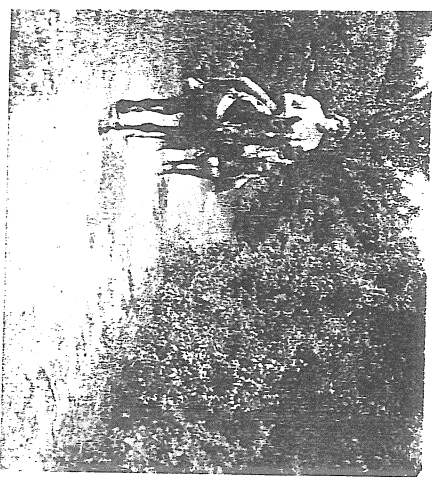
This could be a wonderful educational opportunity to learn about natural and cultural resources. We recommend the town contact Betty Baxter, Newington Municipal Historian, and Marina Mozzi, Director, Newington Historical Society and Trust, Inc. on this matter.

In summary, archaeological evidence for a prehistoric Indian camp was located in Churchill Park during the survey for I-291. The site cannot be relocated and appears to have been destroyed. During the history period, the park was a working flax and dairy farm. It is recommended that a series of educational trail markers highlighting the history of the park area be established and that the town coordinate this effort with the local historical society.



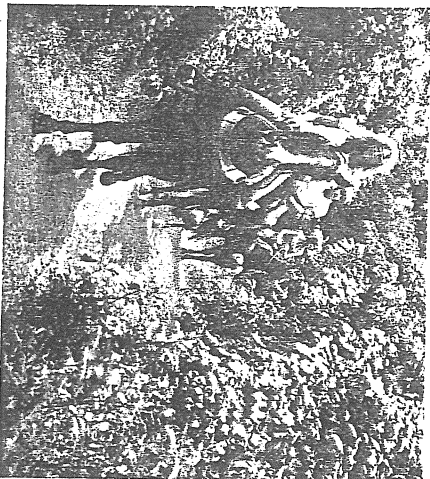
**APPENDIX**  
**TRAIL BUILDING AND MAINTENANCE**

# MAINTENANCE TIPS FOR — RECREATION TRAILS and WALKWAYS



Trails and walkways provide access to recreation facilities or offer opportunities for visitors to view nature as well as experience hiking, biking, or horseback riding. These pathways must be kept in good and safe condition.

Maintenance depends to a large extent on use. Maintenance can be reduced by providing materials to accommodate intensive use. Damages from heavy rainfall and frost action need to be repaired. Also fallen trees and branches need to be removed.

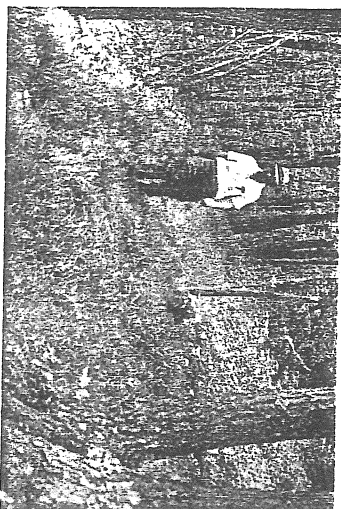


*Trees need pruning on this trail  
(V-578-3)*

## KEY MAINTENANCE TIPS

### 1. PRUNING

In areas where tree and shrub growth is rapid, overhanging or projecting branches must be trimmed annually to protect the trail user. Generally, horse trails are cleared to a height of 12 to 15 feet and a width of 10 feet. Bike, motorcycle, and foot trails should be cleared to a height of 8 feet and a width of 10 feet.



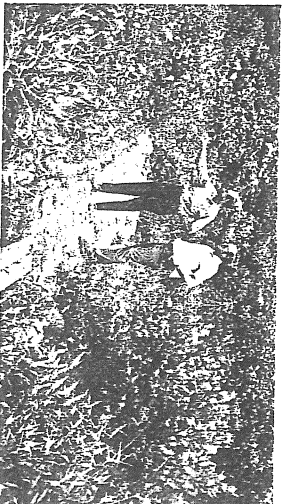
*A well vegetated forest trail  
(WV-1403-7)*

### 2. SURFACE MATERIAL

Constant trail use by foot, horse, motorcycle, etc., tears up the surface, destroys the crown, impairs drainage, and causes the surfacing materials to be absorbed into the soil base. Consequently, the major maintenance item is regrading and resurfacing.

✓ Trails with wood chips and sawdust must have excellent drainage or runoff will float away surface material.

✓ Gravel should not be placed on a trail where grade exceeds 9 percent. Numerous breaks in grade, water bars, and dips are necessary to divert water from trails and to reduce trail maintenance costs.



*A wooden footbridge in need of repair  
(WV-2700-9)*

### 3. DRAINAGE

✓ Ditches, culverts, and surface water inlets need to be cleaned out and repaired after major storms.

✓ If runoff has eroded ditches excessively, stabilization measures should be installed.



*An open top box culvert made from logs*

More specific recommendations for trails and walkways can be obtained from your local SCS district conservationist.



U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

August 1976

# Recreation Trails

## I. TRAIL LOCATION:

1. General Layout - Design trails around trees and large boulders. A curbed trail is much more interesting than a straight one. It saves trees too.
2. Marking the Route - Mark trails in the spring or fall when leaves are off. Tie red flagging securely to living trees along the trail centerline. (Space flags every 100 feet.)
3. Trail Slope - We suggest that you follow the recommendations below when laying out the slope of the trail:



0-4% slopes-recommended for most recreation trails where possible.

5-8% slopes- limit sections of trail on these slopes to no more than 500'.

9-15% slopes- if it is necessary to run sections of trail on these slopes, limit to distances under 200'.

16% or greater- steps and handrails suggested.

(A 5% slope indicates that the trail rises 5' for every 100' in distance traveled.)

## II. TRAIL CLEARING

1. We suggest spring or early fall for trail clearing.
2. Clear brush at ground level, 2 feet on each side of trail centerline. Clear overhead branches to well above head level (8'). Cut branches off flush with main stem.
3. Use a herbicide on cut stems on ground the same day to help prevent sprouting. Contact the Hartford County Extension Service for recommendations.
4. Stack cut brush in piles 3 feet high and 5 - 7 feet square some distance back from the trail. These will serve as wildlife cover.

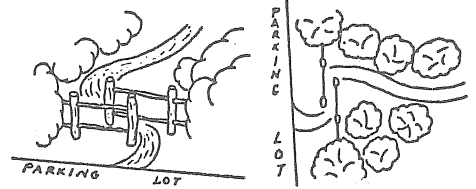
## III. TRAIL SURFACE

1. Remove stones from trail surface.
2. Where steep slopes are encountered or where small watercourses intersect the trail, we suggest that you consult the APPALACHIAN MOUNTAIN CLUB'S TRAIL BUILDING AND MAINTENANCE GUIDE. This book explains soil erosion control practices for trails.
3. The following table lists materials for the trail surface.-

SOIL CONDITIONS	NATURAL SOIL GROUPS	SUGGESTIONS FOR TRAIL SURFACE
DRY SOILS- Loamy, well drained soils	A1a, A1b, A1c, A1d, A1e, B1a, B1b, B1c, B1d, B1e, C1a, C1b, C1c, C1d, C1e, D1, D2, E1, G1	Low-Moderate Use Trails - Leave Natural Forest Litter Heavy Use Trails or Very Sandy soils - Pave Trail surface with wood chips, pave 3" deep and 30" wide. (5 cu.yds. will cover 200' of trail)
SEASONAL HIGH WATERTABLE - soils with a high watertable Fall - Spring only	A2, B2a, B2b, C2a, C2b	Pave trail surface with wood chips or other porous material. This will allow trail use during the wet seasons of the year. Pave 4" deep and 30" wide.
WETLANDS- Soils with a high water table all year long. No flooding.	A3a, B3a, C3a, G3a	Build small wooden bridges where trail crosses these soil conditions. The AMC Trail Building Guide includes some very good illustrations.
WETLANDS- Soils with a high water table all year long - Subject to Flooding	A3b, B3b, C3b, E3a, E3b, F1, F2, G3b	Elevated wooden bridges will be necessary to prevent wood from floating away when water rises. Up rights should be driven into the soil down to a solid base. These require special designs

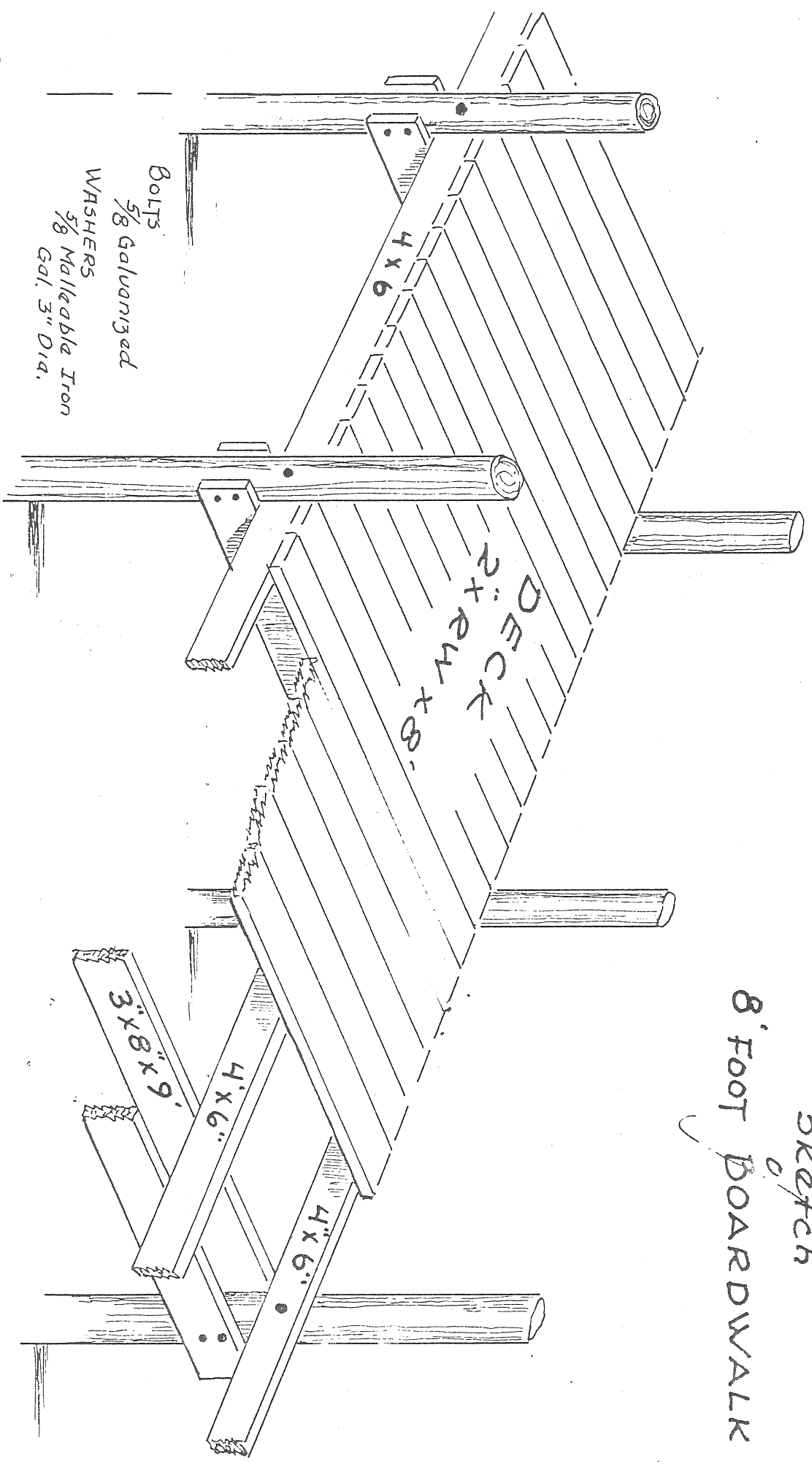
IV. TRAIL MAINTENANCE:

1. All branches within the trail walkway should be pruned annually. May suggested.
2. Place new woodchips on trail where trail shows signs of wear.
3. Check wooden walkways for damage and safety.
4. Identify and correct all soil erosion problems promptly.
5. If trail shows signs of use by motorcycles, etc., they can be excluded by using simple gates. See diagram at right.



REFERENCE: We suggest the use of the APPALACHIAN MOUNTAIN CLUB'S TRAIL BUILDING AND MAINTENANCE GUIDE. This guide book has very good illustrations for trail signs and markers and erosion control practices. It is available at most camping supply stores.

Sketch  
8' FOOT BOARDWALK



**PILING:**

Peeled W. Oak 15'-18' long  
 Max. butt Dia. 15"  
 Min. butt Dia 12"  
 Min. tip Dia 6"

**DECK:**

Selected W. Oak plank  
 Surfaced and sized  
 1 1/2" x RW x 8'

**GIRDERS:**

Hemlock  
 Surfaced and sized  
 2 1/2" x 7 1/2" x 9'

**STRINGERS:**

Hemlock  
 Surfaced and sized  
 3 1/2" x 5 1/2" x 16'

→ Penta treated by cold bath soak

The greatest problem with log steps is that when they rot and break sometimes within 10 years of installation, the Trail may rapidly gully. This is particularly true for steps installed in old gullied trails, since at the time of construction the area behind the step was filled with loose soil and rocks. When the step breaks, the unsupported material behind it often washes quickly away. Wherever wood steps are installed, monitor them closely and replace them at the first sign of weakening.

To build a log step, cut a log 6 to 12 inches in diameter. The largest diameter logs will be needed to provide adequate risers on steep slopes. Next dig a trench across the Trail about one-third the diameter of the log. Fit the log in the trench and secure it with two stakes, one at the either end, on the lower side. Fill behind the step with soil and rock. Then secure and flatten the upper surface of the log to provide a slip-free surface for walking.

In a series of log steps, set logs so the upper surface of one is slightly lower than the bottom of the next. Then pack and grade the soil between the steps. If this is done properly, water will flow off the step and not puddle behind the log.

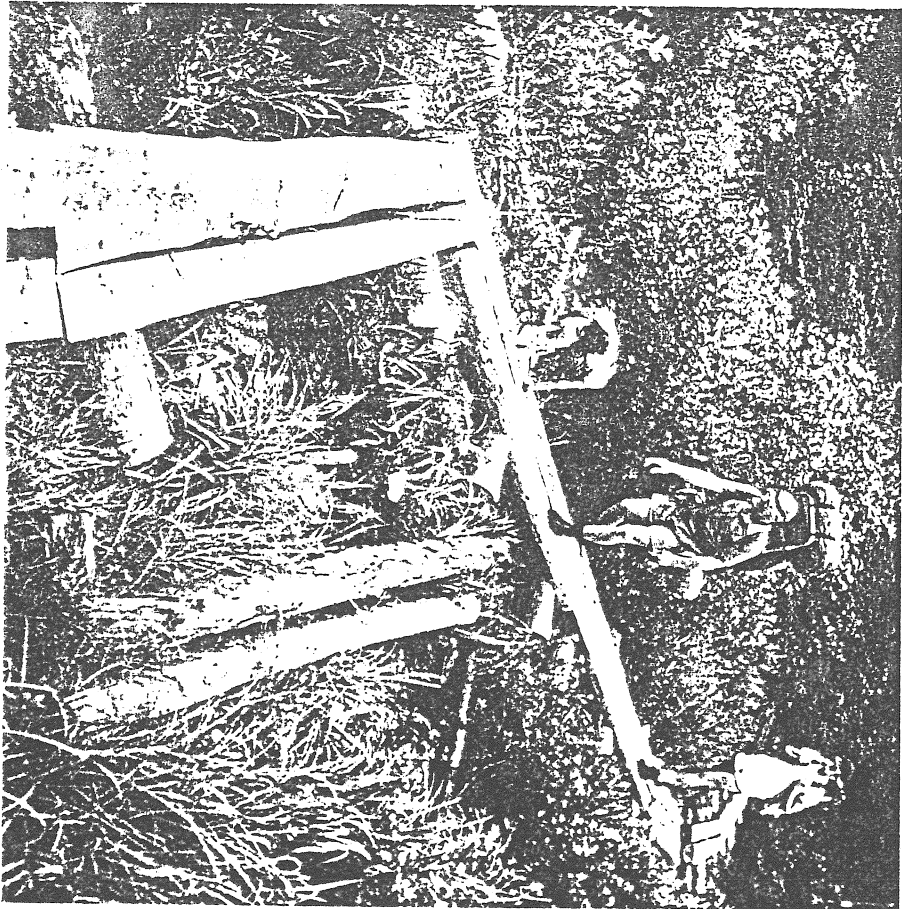


*On very steep slopes, either one or both ends of log steps can be secured to a notch in a log, called a stringer. This forms a single stable unit often called a log ladder. The steps are backfilled with rocks and soil and the joints are nailed.*

Sometimes hikers bypass even well-placed steps, as walking is often easier on a slope than on a hardened surface. To keep hikers on the steps, place a yard wood or unstable rocks to each side of the treadway. Mark straying from the Trail difficult or uncomfortable and in this way contain traffic to the hardened treadway.

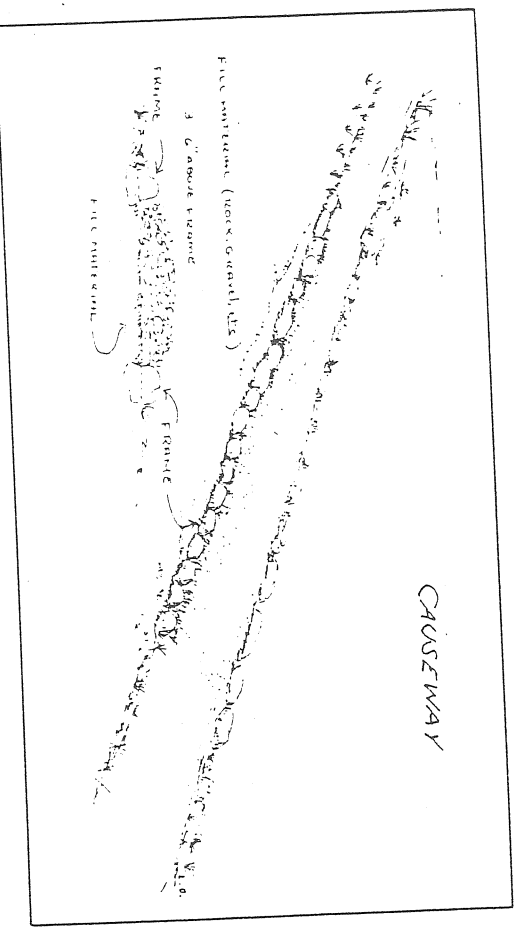
### **DRAINAGE AND HARDENING OF TRAILS IN WET TERRAIN**

If a new trail must be routed through wet areas, steps must be taken to harden the treadway before it deteriorates. On older trails, the wet areas must be hardened to allow damaged areas to regrow. Trail building techniques used for these purposes include drainage ditches, step stones, causeway, puncheon, and corduroy.

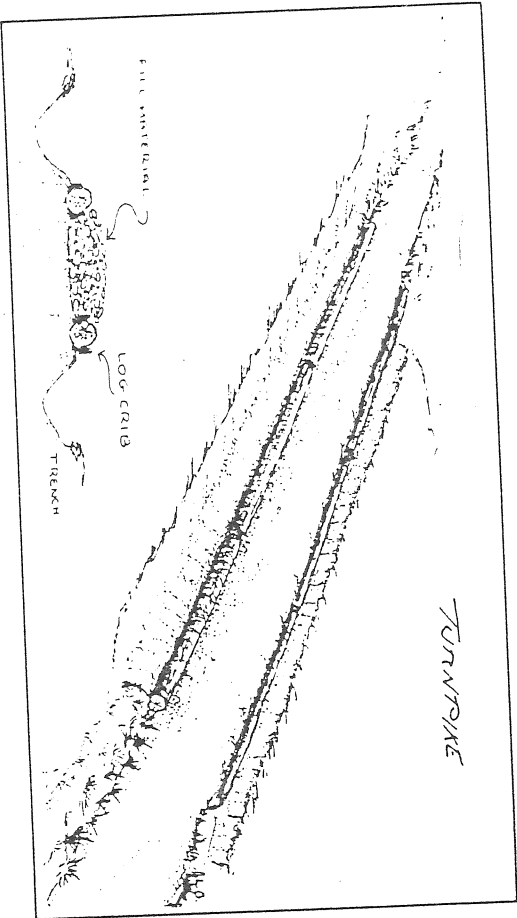


*Hikers cross log bridges or puncheon, which is constructed to prevent damage to fragile, wet terrain and provide a dry treadway.*

**Drainage Ditches** — By creating a clear channel for water to flow, drainage ditches help dry the treadway by enhancing natural drainage. They should be dug at the lowest points along the trail, and be one foot wide, one foot deep, and anywhere from three to 20 feet in length. They should also be clear of roots and rocks, have sloping sides that prevent their collapse, and be placed on a firm, stable surface.



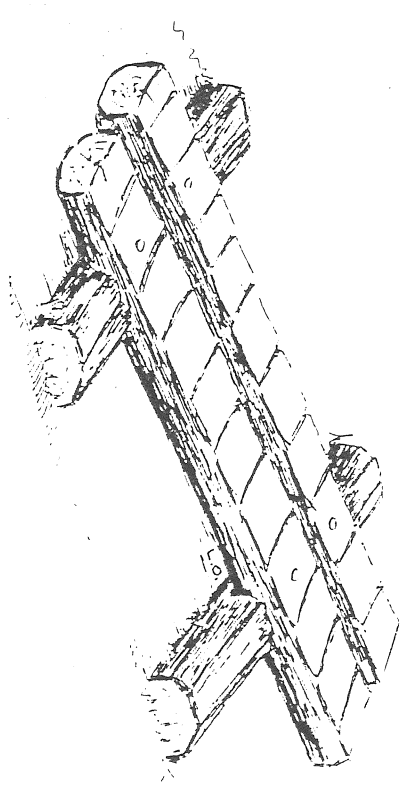
To improve the drainage of causeways dig a trench parallel to and on both sides of the elevated treadway. (This variation is sometimes called a "turnpike.") In areas where ample dirt and rock are not available to build a causeway, the material excavated from trenches may be used to build the elevated footway.



**Punchcoon** — In bogs, mud flats, and marshy areas there is frequently very little rock and the underlying soil is mucky or peaty. Consequently, there often is not sufficient material to construct enough step stones or a causeway to cover the wet area. In such cases one may have to resort to building a footway of punchcoon (bog bridges or wooden walkways). The punchcoon provides a stable, hardened treadway, although the wood lasts only about 10 years. The use of punchcoon is widespread in the North, where the Trail frequently traverses bogs.

Sometimes using punchcoon is unadvisable. In areas prone to flooding, such as along streams or in areas of beaver activity, punchcoon may float completely away or at least out of position. In such areas use punchcoon with discretion or consider relocating the Trail.

There are several types of punchcoon. Some require native materials, others filled lumber. The simplest is topped-log punchcoon, made with two stringers milled lumber. The simplest is topped-log punchcoon, made with two stringers milled lumber. The simplest is topped-log punchcoon, made with two stringers milled lumber. The simplest is topped-log punchcoon, made with two stringers milled lumber. The simplest is topped-log punchcoon, made with two stringers milled lumber.



Topped-log punchcoon requires two stringers 8- to 10-foot long and at least 8 inches in diameter at the small end and two sill logs about three feet long and at least 10 inches in diameter. Usually each piece of punchcoon requires two trees: one stringer and one base log can be cut from each tree, the base log being cut from the butt end.

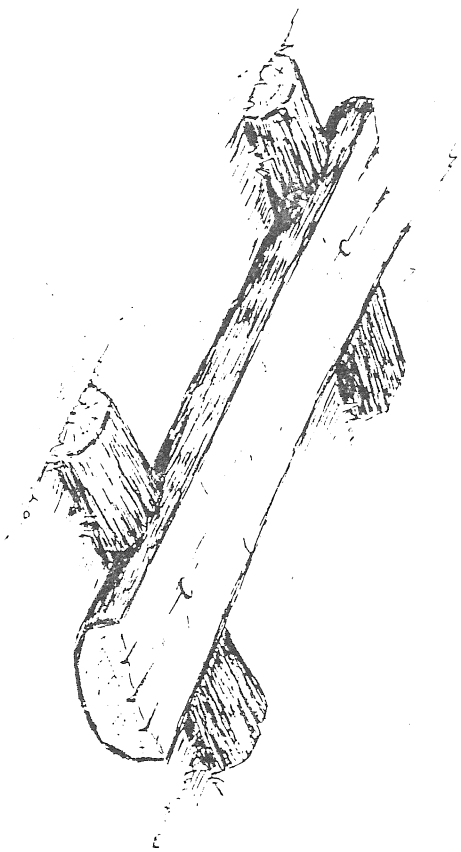
After felling and limbing a tree for punchcoon, but before severing the top part of the tree, hew the timber to provide a flat walking surface. Score the log with an axe at frequent intervals and then chip away the scored surface. During this process the unsevered treetop branches stabilize the timber. After hewing, cut the stringer from the treetop, and then carry both stringers and base logs to the Trail.

If desired, use a chain saw to hew the stringers. Score the log to one-third its diameter with the saw. Then chip it with an axe or adze. Scoring with a saw requires less practice than with an axe.

To assemble the punchcoon, dig a trench that will seat each sill log solidly and deeply in the treadway. The punchcoon must be low to the ground and not split or rock. Then cut two notches in each sill to accept the rounded stringers. Place the notches close enough together to be sure there will be no more than a three-inch space between the stringers. This will prevent hikers' feet from slipping and catching between the logs. Next, place the stringers flat side up and nail them to the sill logs with four 10-inch-by-3/8-inch spikes. Before driving the spikes, cut a notch in the top of each end of the stringers to remove

a plug of wood about two inches square by two inches deep to accept the spike. Drive the spikes at an angle, not perpendicular, to the bridge stringer to make the spiked joint stronger and the stringer more stable. Spike the stringers with the hewed surface absolutely level — the surface must be easy to walk or hikers will not use the puncheon.

Depending on time, money, and building materials, there are a number of other ways to build puncheon. If trees of adequate size are in short supply, you can make split-log puncheon. This is similar to topped-log except the two stringers are obtained by splitting a 10- to 12-inch tree lengthwise. Using a light sledge, four steel splitting wedges, and a single-bit axe to guide the split, a 10-foot timber can be cleaved in two. The split surface forms the treadway.

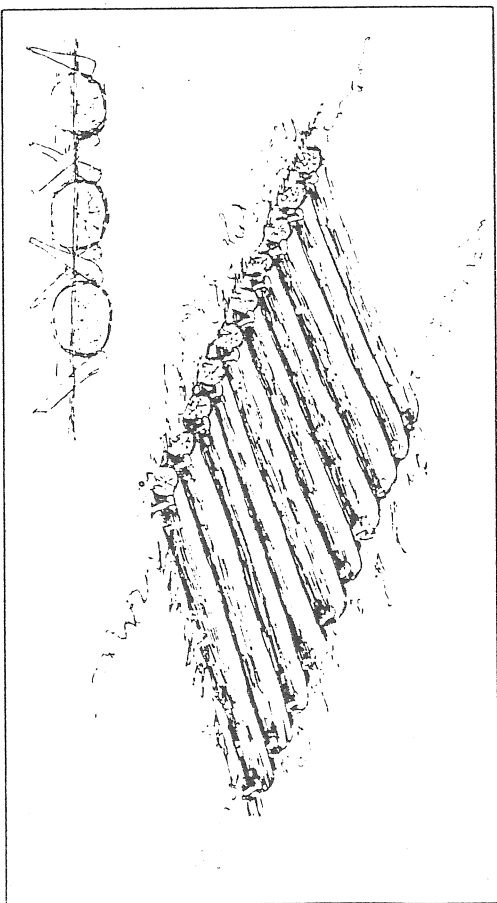


To further save wood, the puncheon may be constructed using one stringer rather than two. The bridges are assembled in a manner identical to topped-log puncheon. The shortcomings of split-log bridges are that they are somewhat weaker and rot faster than the topped-log variety, because the trees' wood fibers are ripped apart during splitting.

Puncheon may also be made with milled lumber by simply nailing rough-milled boards to sill logs. Use milled boards only as a last resort, since they may clash with the Trail's surroundings. If wider, less rustic puncheon is desired, place log stringers two to three feet apart, and then nail planks perpendicular to the stringers to make a flat deck. Although decking is costly, on high-use trails it can allow hikers to pass each other without stepping off the puncheon.

When using puncheon, place it end to end to cover the wet area. To make stepping from one piece to the next easy, leave no more than six inches between pieces. Be sure that the treadway at both ends of the puncheon section is solid; otherwise the step-off point may become soft and muddy. If necessary place several step stones at the end of the puncheon to help the soil withstand the pounding footsteps of hikers stepping down from the elevated puncheon surface.

**Corduroy** — Corduroy is another method of hardening the treadway in bogs and wet meadows. Basically, it is a flat log mat that distributes the weight of the hikers' footsteps over a wide area. It resists directly on the ground and prevents foot traffic from trampling soft and boggy soil into mud. Today corduroy is used infrequently, since it is time consuming to install and requires a large quantity of brush and wood, far more than is needed for puncheon.



To construct corduroy, lay a six-inch mat of green brush on the Trail. Willow and other hardwood saplings are best. Secure the mat of brush with stakes. Cover this mat with a layer of four- to six-inch-diameter logs laid side by side, perpendicular to the Trail. Finally, drive a stake between each log to hold the corduroy in place. Since the wood remains wet, it rots slowly. Constructed in this fashion, corduroy will last many years.

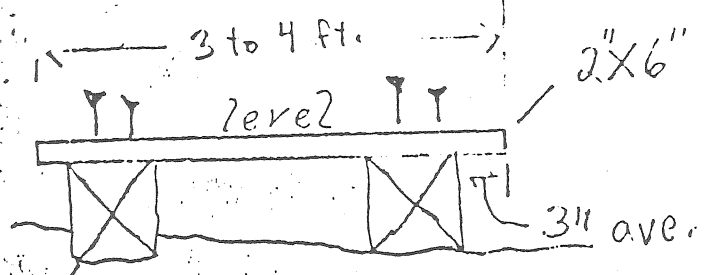
### RECONSTRUCTING ERODED TRAILS

Once a piece of Trail is built, monitor it closely for deterioration. Where vegetation becomes trampled, where the pathway begins to gully, or where the footway begins to widen, make repairs promptly to forestall further damage. If permanent repairs cannot be made quickly, do some temporary work to slow deterioration. Once deterioration begins, once the beauty of the Trail is lost, it is nearly impossible to restore the original unspoiled setting.

There are many sections of the Appalachian Trail that have deteriorated drastically. Built on steep slopes, often plunging directly down mountain sides, parts of the Trail in each of the 14 states through which it passes have eroded and widened. In places the treadway has gullied to a depth of five feet and, above treeline, widened to as much as 50 to 60 feet!

In most cases it is advisable to reconstruct these deteriorated parts of the footway. The reconstruction can end further vegetation trampling, soil compaction, erosion, and widening. Ideally, the reconstruction should restore the



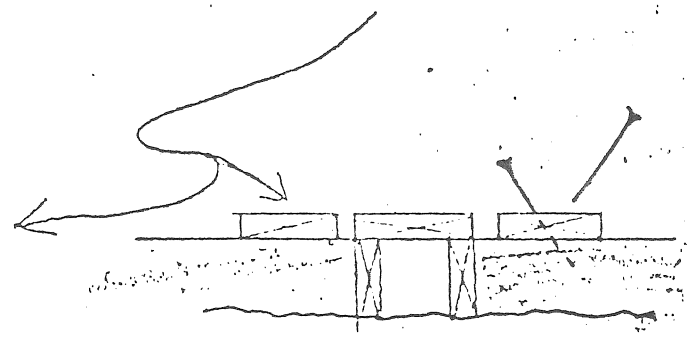


RR ties or utility poles (used, if possible)

Rip on tight curves

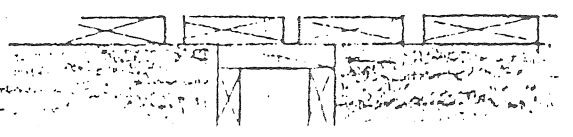
Fan on broad curves

Box Culverts



or

Surface Boardwalk



# ABOUT THE TEAM

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, foresters, soil specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area — an 86 town region.

**The services of the Team are available as a public service  
at no cost to Connecticut towns.**

## PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, landfills, commercial and industrial developments, sand and gravel excavations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

## REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the chairman of your local Soil and Water Conservation District and the ERT Coordinator. A request form should be completely filled out and should include the required materials. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information and request forms regarding the Environmental Review Team please contact the ERT Coordinator: 203-345-3977, Eastern Connecticut RC&D Area, P.O. Box 70, Haddam, Connecticut 06438.