



WPA Form 1- Request for Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. General Information

1. Applicant:

Town of Acton - Natural Resources Dept. Name	nr@acton-ma.gov E-Mail Address	
472 Main Street Mailing Address		
Acton City/Town	MA State	01720 Zip Code
978 264 9631 Phone Number	Fax Number (if applicable)	

2. Representative (if any):

Firm		
Tom Tidman, Natural Resources Director Contact Name	E-Mail Address	
Mailing Address		
City/Town	State	Zip Code
Phone Number	Fax Number (if applicable)	

B. Determinations

1. I request the ACTON make the following determination(s). Check any that apply:
Conservation Commission

- a. whether the **area** depicted on plan(s) and/or map(s) referenced below is an area subject to jurisdiction of the Wetlands Protection Act.
- b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced below are accurately delineated.
- c. whether the **work** depicted on plan(s) referenced below is subject to the Wetlands Protection Act.
- d. whether the area and/or work depicted on plan(s) referenced below is subject to the jurisdiction of any **municipal wetlands ordinance** or **bylaw** of:

TOWN OF ACTON
Name of Municipality

- e. whether the following **scope of alternatives** is adequate for work in the Riverfront Area as depicted on referenced plan(s).



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C. Project Description

1. a. Project Location (use maps and plans to identify the location of the area subject to this request):

<u>257-265 Nagog Hill Road - Nagog Hill Conservation Area</u>	<u>Acton</u>
Street Address	City/Town
<u>D-4</u>	<u>2</u>
Assessors Map/Plat Number	Parcel/Lot Number

b. Area Description (use additional paper, if necessary):

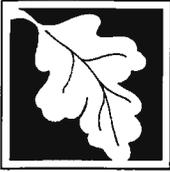
Town of Acton conservation land, forested (see attached plan)

c. Plan and/or Map Reference(s):

<u>Town of Acton Atlas & Aerial Map</u>	<u>Jan. 2007</u>
Title	Date
<u>Sketch Plan</u>	<u>2009</u>
Title	Date
<u>Boardwalk design guidelines</u>	<u>2006</u>
Title	Date

2. a. Work Description (use additional paper and/or provide plan(s) of work, if necessary):

Improvements to an existing conservation land trail and installation of 40' of elevated boardwalk.



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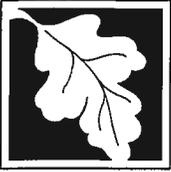
C. Project Description (cont.)

b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- Single family house on a lot recorded on or before 8/1/96
- Single family house on a lot recorded after 8/1/96
- Expansion of an existing structure on a lot recorded after 8/1/96
- Project, other than a single family house or public project, where the applicant owned the lot before 8/7/96
- New agriculture or aquaculture project
- Public project where funds were appropriated prior to 8/7/96
- Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- Residential subdivision; institutional, industrial, or commercial project
- Municipal project
- District, county, state, or federal government project
- Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)



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D. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

Name and address of the property owner:

Town of Acton
 Name
 472 Main Street
 Mailing Address
 Acton
 City/Town
 MA
 State

01720
 Zip Code

Signatures:

I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.

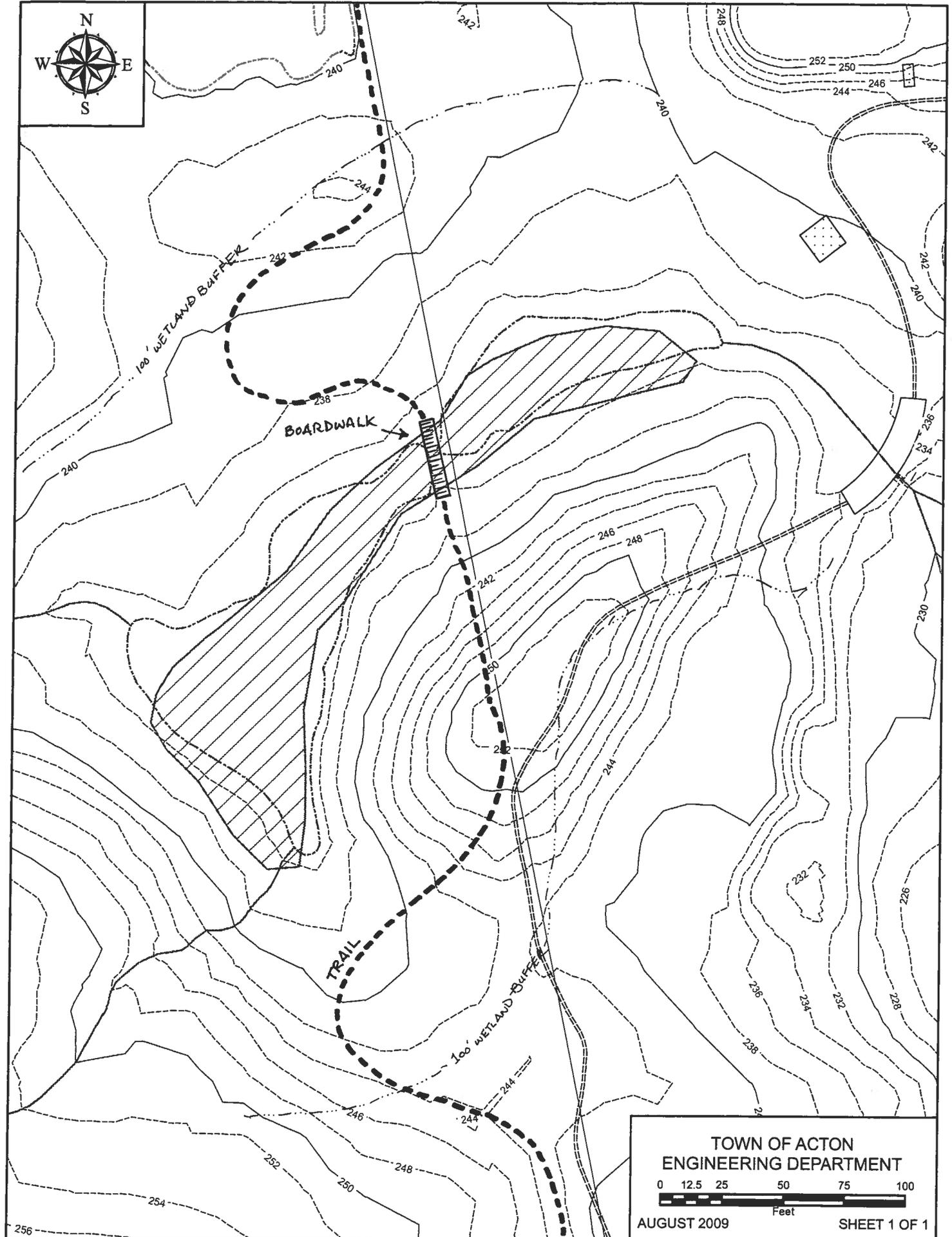
Signature of Applicant

8.19.09

Date

Signature of Representative (if any)

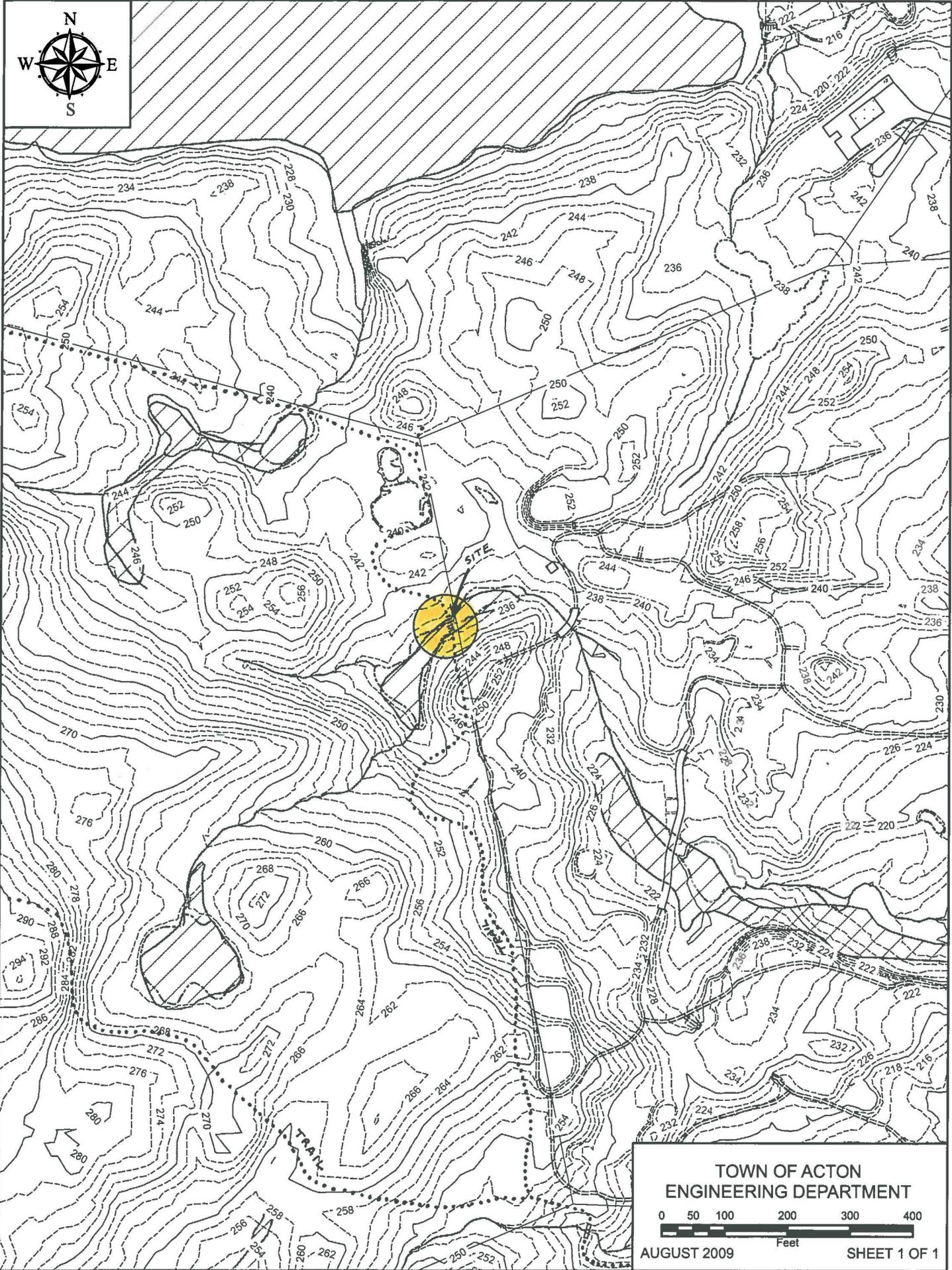
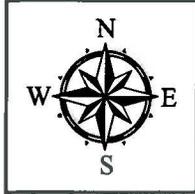
Date



**TOWN OF ACTON
ENGINEERING DEPARTMENT**

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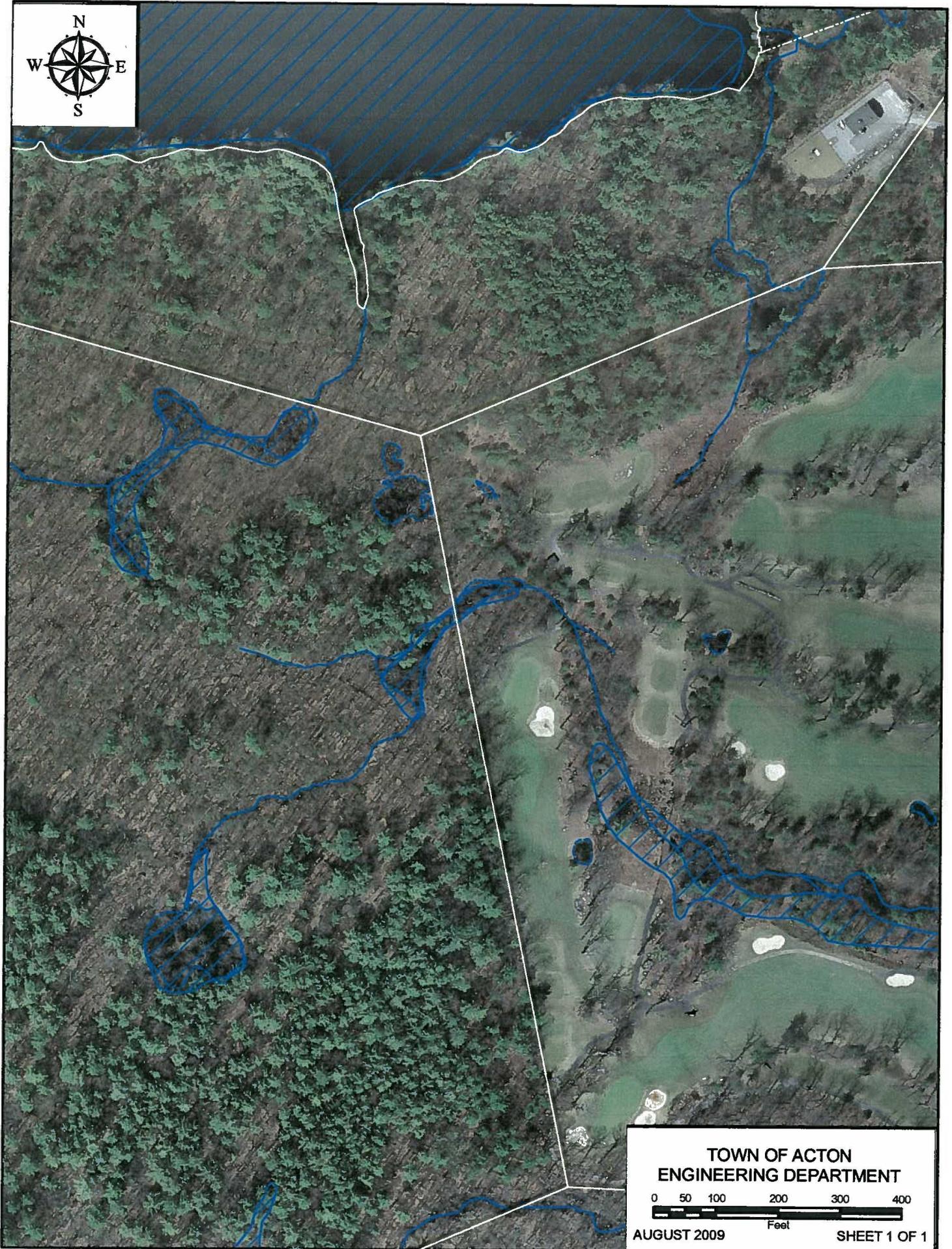
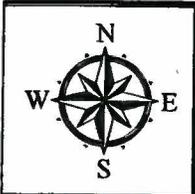
AUGUST 2009 SHEET 1 OF 1



**TOWN OF ACTON
ENGINEERING DEPARTMENT**

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**TOWN OF ACTON
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AUGUST 2009 SHEET 1 OF 1

Boardwalk Construction Guidelines

Acton Conservation Commission / Land Stewardship Committee

Bob Guba – Construction Coordinator

The Land Stewardship Committee developed these guidelines for boardwalk construction after it was formed in 1996 to manage the conservation lands of the town of Acton, Massachusetts. Failure analysis of earlier constructed boardwalks led to corrective construction procedures that are presented here to assure the following qualities: level and stable surface, strength, ease of disassembly and/or repair, non-polluting, and less susceptibility to vandalism.

Site Survey – The first step is a careful survey of the site where a boardwalk is required, as this will govern the type, quantity, and cost of the materials needed in the construction phase. For locales where maximum water depth rarely exceeds 1 foot the ground is usually firm enough to support horizontally placed sills to support the boardwalk. Those locales where the water depth is typically over 1 foot the soil is usually soft and steel pipe with auger attached is driven through the soft soil and rotated securely into the clay or gravel sub-soil. Stakes are placed along the centerline of the trail where the boardwalk is to be located at an interval equal to the stringer length, typically 8 feet when using 4"x4"s, 2"x6"s, or 10 feet when using 2"x8"s. The first stake is placed at the historical high water point at the edge of the wetland. If there are no natural barriers such as large trees and rocks to meander the boardwalk then slight curves should be designed in for an esthetic experience.

Sill Supported Boardwalk - A string is secured to the first stake at a height equal to the top of the first sill and continued to the next stake using a string level to determine where the string is to be tied off. This process is continued until high ground is reached at the far end equal in elevation to the start point. Now the boardwalk length is known. Referring to Figure 1, the height dimension of each sill can now be recorded by measuring the string height above ground at each proposed sill location.

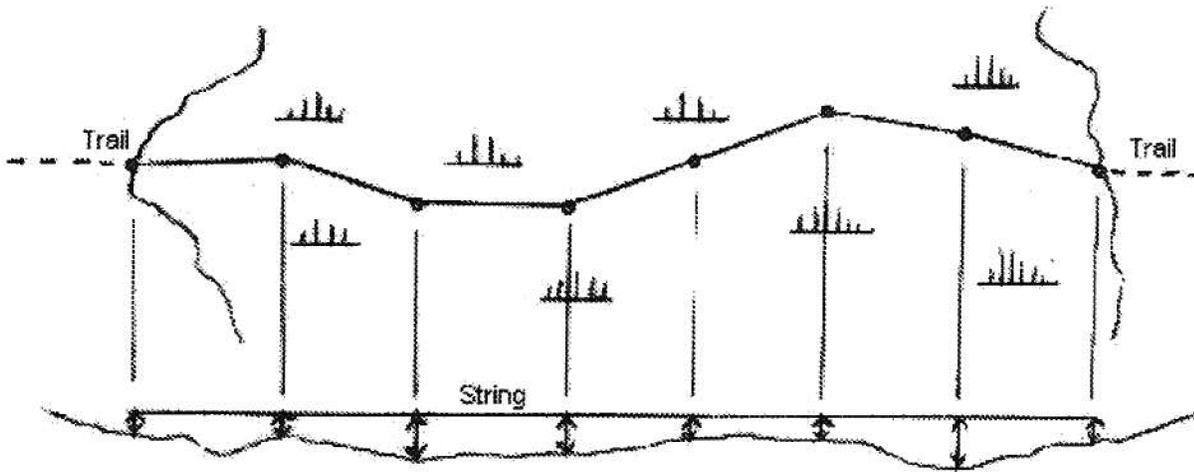


Figure 1 - Determining sill height and location.

Pipe Supported Boardwalk – The path of the boardwalk must be probed at 10-foot intervals through the soft soil to the firm sub-soil with fiberglass wands or 3/8" dia. re-bar to determine the depth of the sub-soil below the historical high water level of the wetland. This measurement is needed to calculate the required pipe lengths supporting the boardwalk.

Sills – The type of material for the sills and their installation is the most important phase of the boardwalk project. As in all good construction the boardwalk must have a solid, stable base physically secured to the remaining structure for long-term stability. Earlier boardwalks relied on heavy, polluting sections of utility poles. Three materials that won't harm the environment are environmentally safe types of pressure treated wood (AlkalineCopperQuat), fiberglass reinforced plastic (FRP) lumber, and polyethylene corrugated pipe. Figure 2 depicts a side view of an 8-foot boardwalk section using these materials.

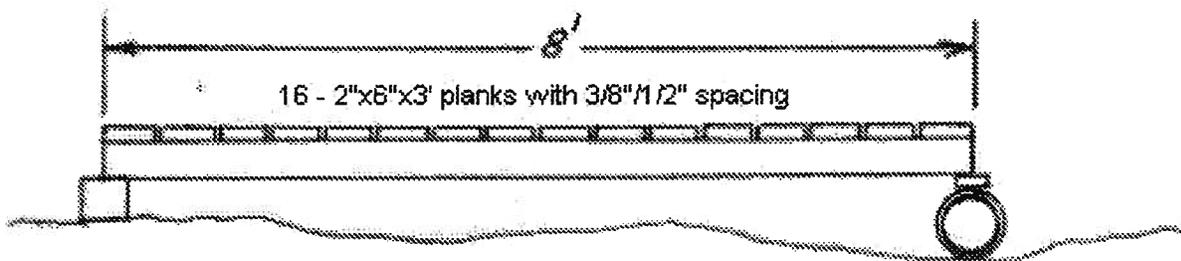


Figure 2 - Side view of 8 ft. section depicting sill options

Since most boardwalk locations are remote it helps to fabricate and assemble the sills offsite where power and tools are available. Figure 3 illustrates the fabrication and hardware assembly of two types of sills. The Simpson "T" ties are bent (Figure 5) by placing them in a vise and bending them with a hammer (see Figure 5). The lowest cost PVC piping is sewer pipe, which is available in a wide range of

diameters. Its one disadvantage is its thinner wall thickness, which produces some flexing of the pipe under load. To offset this, 1.5" square PT stiffeners are press fit inside the pipe under the point where the stringers are placed and secured by galvanized nails driven through predrilled holes. The current preference is to use lightweight, easily cut polyethylene annular ring pipe which doesn't require any stiffening due to its high strength.

Sill and Stringer Placement –Useful tools for preparing the ground surface where the sills are to be located are the cutter mattock, axe, sledge, crowbar, chainsaw and carpenter's level. It is important to anchor the first and last sill with approximately 3 feet of re-bar as shown in Figure 3 to prevent shift from user impact when landing on the first plank. The re-bar should extend above the sill to the underside of the decking as shown. If the wet area experiences high flooding, anchor the other sills with re-bar to prevent the boardwalk from shifting off its footprint. The clearance holes in the sills must be slightly oversize so the boardwalk can freely ride up on the re-bar. After the first sill is in place and level then the stringers can be placed across the span to the second sill and with the use of a carpenter level determine if the second sill has to be dug in more or shimmed up. Shimming is accomplished with an assortment of spacers made from 5/4", 1", and 2" PT boards as depicted in Figure 4 that are placed between the "T" straps and the sill. Once the second sill is in place and leveled then the stringers can be bolted to the "T" straps. The use of bolts to secure the joint not only strengthens it but also facilitates removal of the boardwalk sections if damaged or needing relocation. This process is repeated until the last sill is reached. Figure 4 shows the attachment detail of the stringers. Maintain a 1/2" gap between stringers at the junction point to allow for vertical flexing in case the ground is (or becomes) spongy. A common failure mechanism of earlier constructed boardwalks where the stringers were spiked or toe nailed to the sills was splitting of the stringer ends when flexed due to the rigidity of this joint.

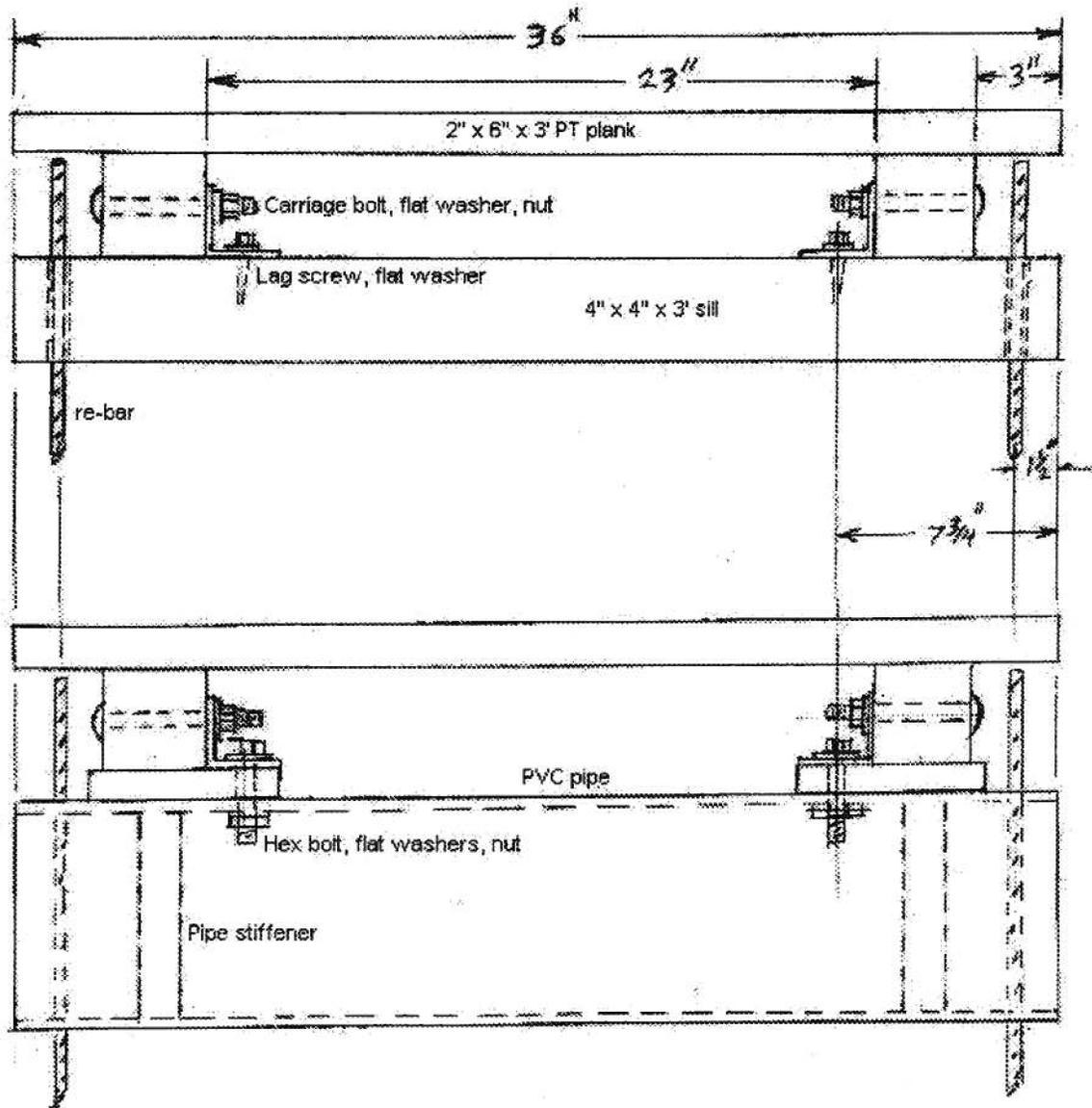


Figure 3 - Detail of stringer/sill assembly for two types of sills.

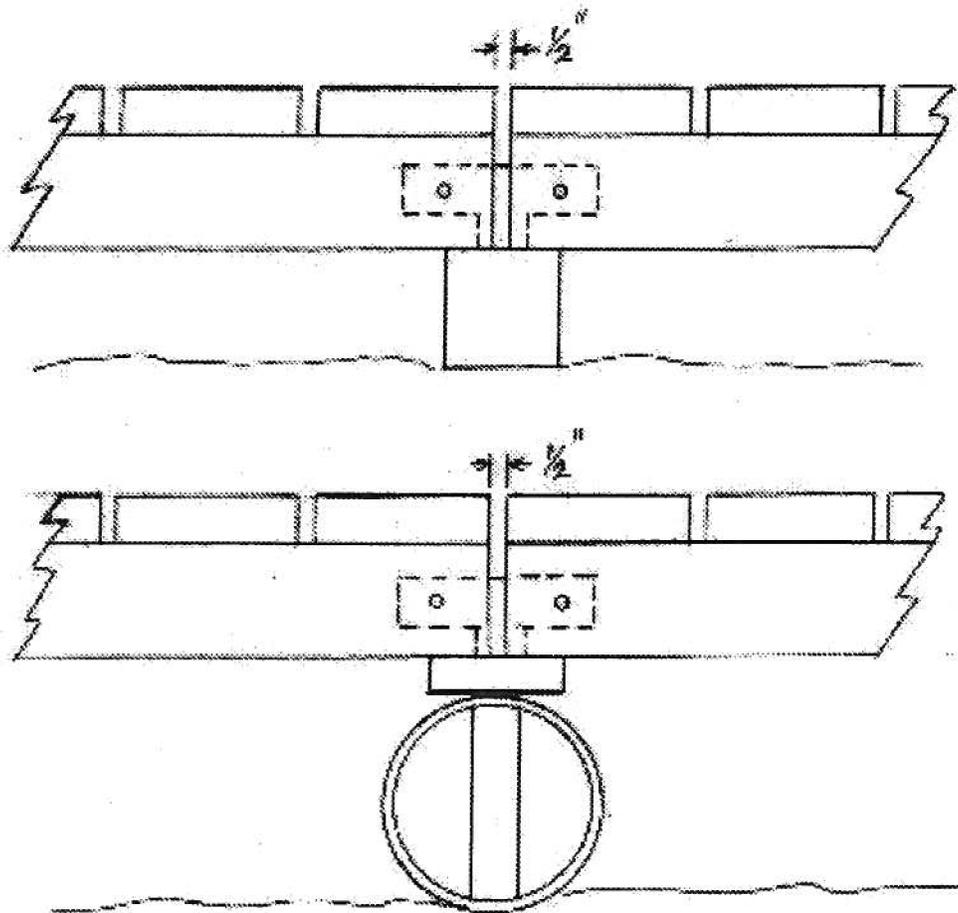
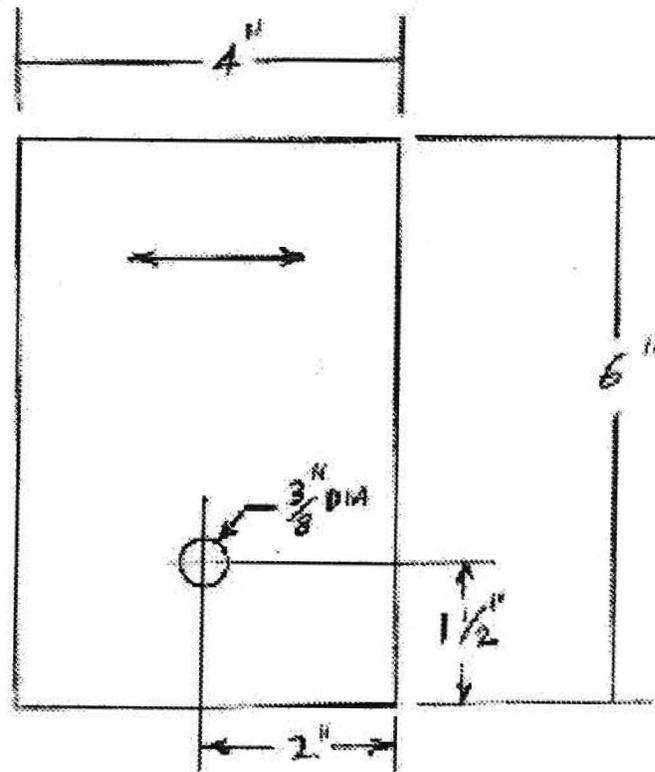
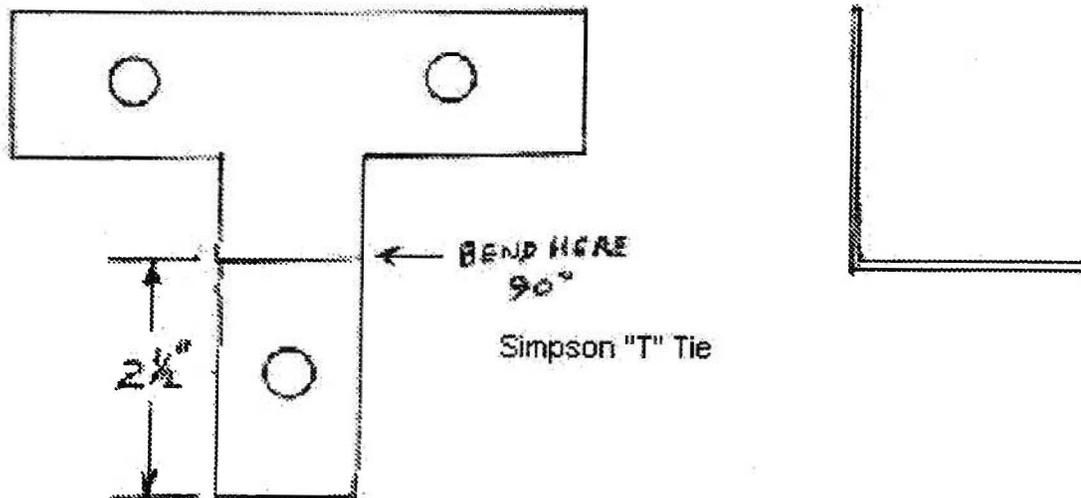


Figure 4 - Detail of joining stringers for two types of sills,



Stringer Sill Plate



Simpson "T" Tie

Figure 5 - Detail of Stringer Sill Plate & Simpson "T" Tie Modification

Pipes – An auger is permanently attached to 2" galvanized steel water pipe (see Figure 6) and rotated into the firm sub-soil with a pipe wrench. The assembly of a boardwalk section is illustrated in Figure 6.



Figure 6 – Pipe with auger and dock fitting attached.

Stringer Frame – The design of a 10' stringer frame is shown in Figure 7.

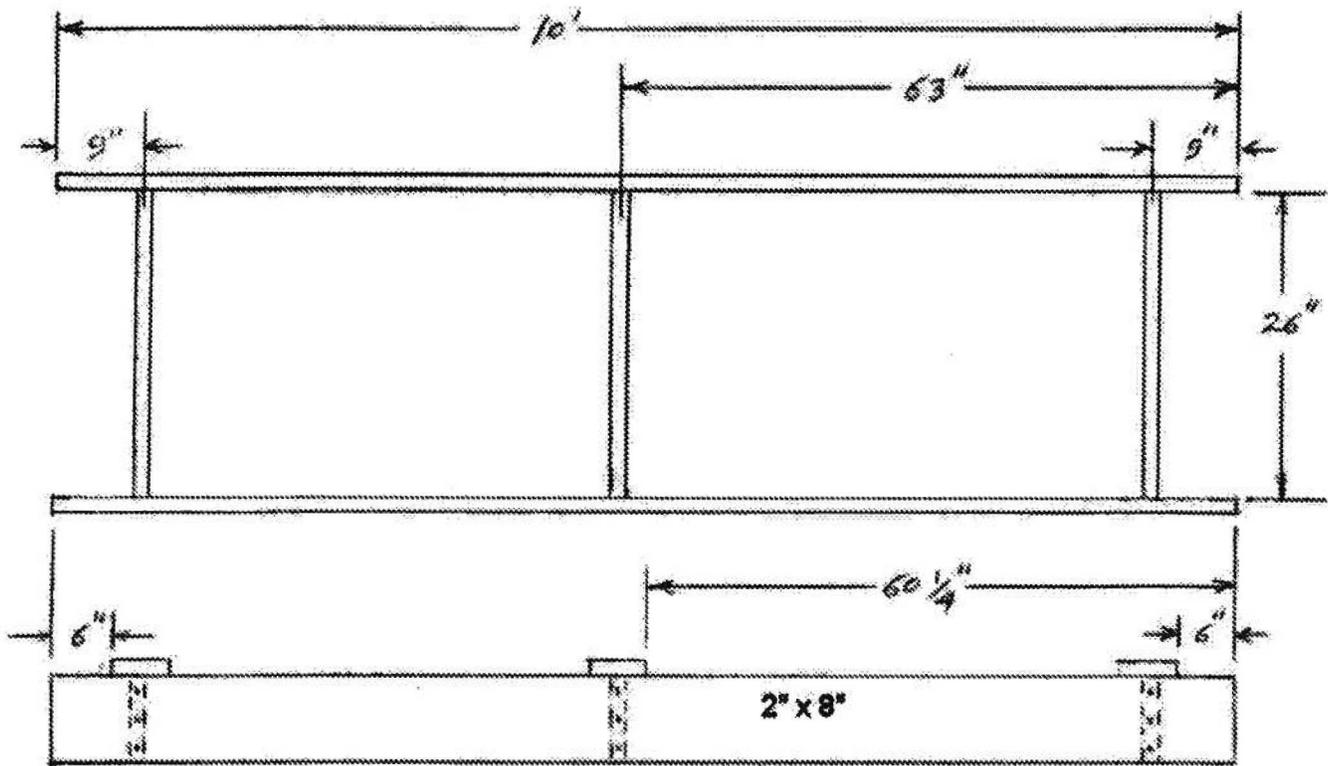


Figure 7 Stringer Frame

Decking – Planks for decking are 2"x6"x3' PT boards which are much stronger than the 5/4" PT boards used earlier which experienced breakage from falling limbs and vandalism. An 10' boardwalk section uses 20 planks nailed with 16d hot galvanized nails at a spacing of 3/8" to 1/2". A carpenter's square is useful to periodically check the alignment of the planks with respect to the stringers. Also, having pairs of 3/8", 7/16", and 1/2" thick wood gauges are helpful in spacing the planks when nailing. Figure 8 illustrates two methods for decking at bends in the boardwalk. Fanning the planks as shown in 7(a) is useful for shallow bends while sharper bends use tapered planks cut as shown in 7(b) with equal spacing.

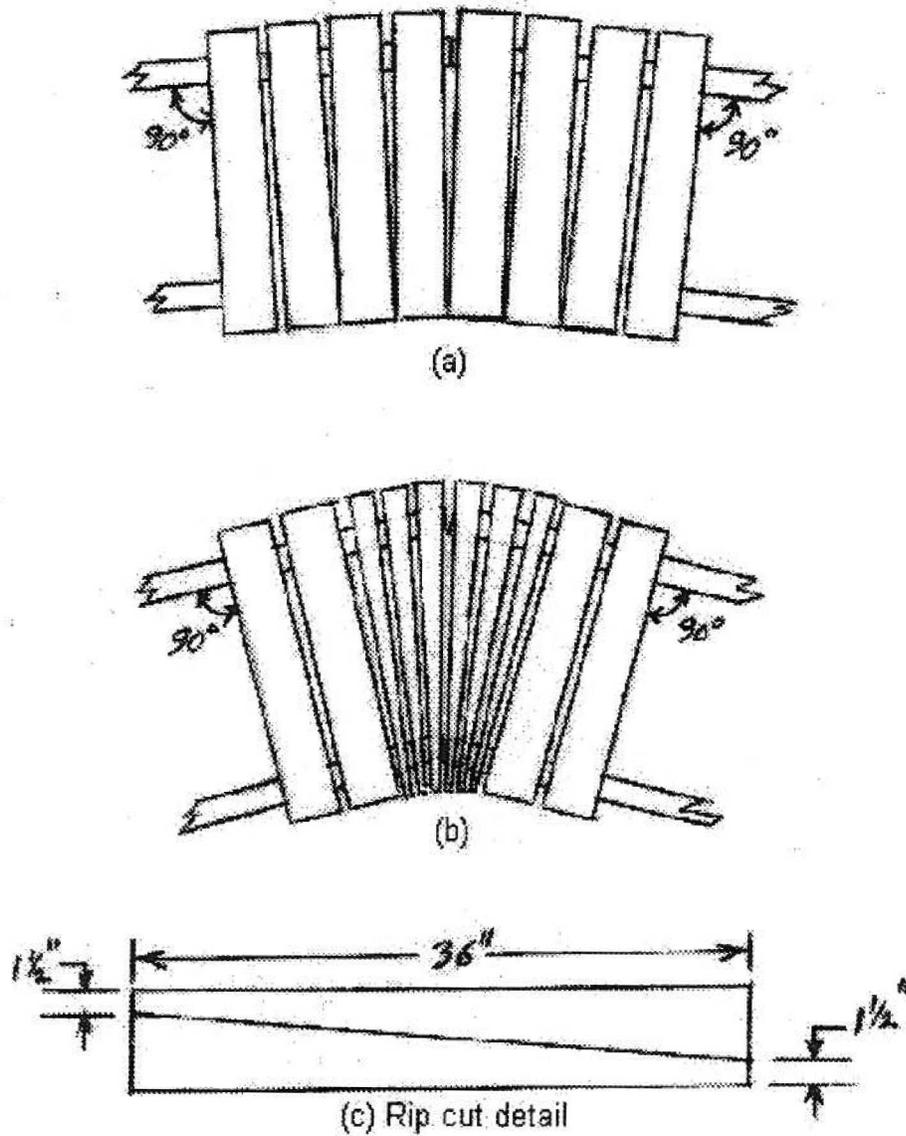


Figure 8 – Decking Detail at Bends

Ramps – The final step in installing a boardwalk is the addition of ramps at each end to facilitate access whether on foot, cross-country skis, or mountain bike. Earlier boardwalks had high ends, which made it difficult if on skis and bicycle cranks would often scar the first plank. The ramp stringers are tapered and bolted to the Simpson “T” ties as shown in Figure 8.

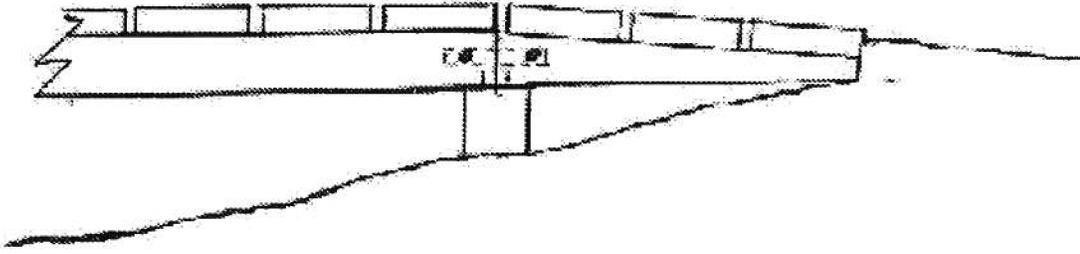


Figure 9 – Ramp Detail

Materials List

Sills

4"x4" or 6"x6" environmentally safe pressure treated wood Chemical Specialties*

4"x4" or 6"x6" fiberglass reinforced plastic lumber U.S. Plastic Lumber Ltd.
TriMax *

PVC pipe National Pipe & Plastics Inc. *

Polyethylene corrugated pipe Advanced Drainage Systems N-12 pipe *

Hardware

"T" Strap Simpson Strong-Tie Co. Model 66T

Dock hardware Triangle Industries - PermaDock Marine Products

2" galvanized steel water pipe – schedule 40

3/8" zinc plated lag screws**

3/8"x4" zinc plated carriage bolts

3/8"-16 zinc plated hex head bolts**

3/8" zinc plated flat washers

3/8"-16 zinc plated hex nuts

16d hot galvanized common nails

* typical companies

** length determined by design