

Appendix I

Dune Walkover Guidance

This appendix contains copies of the following two publications, which provide design criteria for beach walkover structures:

Beach/Dune Walkover Guidelines, by the Florida Bureau of Beaches and Coastal Systems, Florida Department of Environmental Protection, Revised January 1998.

Beach Dune Walkover Structures, SUSF-SG-76, by Todd L. Walton, Jr., and Thomas C. Skinner. Published by the Marine Advisory Program of the Florida Cooperative Extension Service and the Florida Sea Grant, March 1983.



BUREAU OF BEACHES AND COASTAL SYSTEMS BEACH/DUNE WALKOVER GUIDELINES

INTRODUCTION

In many areas of the State, sand dunes provide a significant amount of protection to the upland property, to upland development, and to adjacent beach areas. The Department, therefore, encourages the construction of elevated walkover structures which are designed to protect the dune topography and dune vegetation from pedestrian traffic and which allow for the natural reconstruction and revegetation of damaged or eroded dunes.

PERMIT REQUIREMENTS

A permit from the Florida Department of Environmental Protection is required for construction of walkovers on most sandy beaches fronting on the open waters of the Atlantic Ocean or Gulf of Mexico. In areas where a coastal construction control line has been established pursuant to provisions of Section 161.053, Florida Statutes, a permit is required for all excavation, construction, or other activities with the potential to cause beach erosion or damage coastal vegetation. Permits for walkovers contain standard conditions which require construction to be conducted in a manner that minimizes short term disturbance to the dune system and existing vegetation. Replacement of vegetation destroyed during construction with similar plants suitable for beach and dune stabilization is required. Only limited excavation for the placement of support posts is authorized for construction of walkovers. The construction of walkovers may not occur during the marine turtle nesting season, typically May 1 through October 31, except for Brevard through Dade counties (March 1 through October 31).

GENERAL DESIGN

Walkovers to be constructed across vegetated dunes or across heavily vegetated beach berms should be post-supported and elevated a sufficient distance above the existing or proposed vegetation to allow for sand build-up and clearance above the vegetation (this may be several feet depending on the type of vegetation). Walkovers should generally be constructed perpendicular to the shoreline and extend at least to the seaward toe of the frontal dune or the existing line of vegetation but not farther than 10 feet seaward of the vegetation. Support posts should not be installed into dune slopes which are steeper than approximately 30 degrees. Whenever possible, stairways leading from the top or crest of a dune down to the beach should be designed to completely span the seaward slope of the dune.

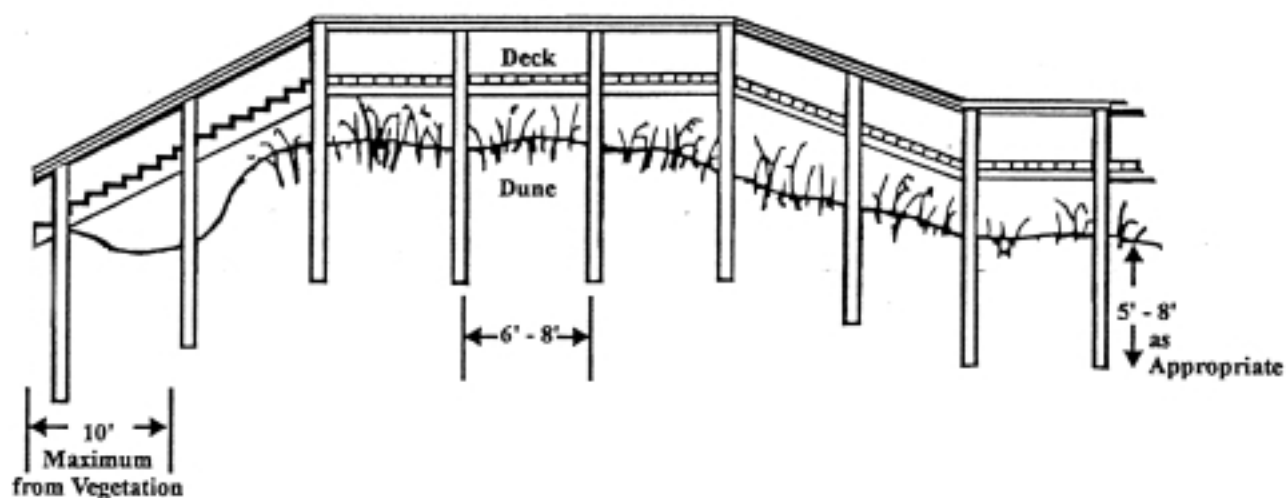
DESIGN CRITERIA FOR SINGLE FAMILY DEVELOPMENTS

Walkovers should be designed as minor structures and need not meet specific structural requirements to resist wind and wave forces, but should be designed to produce minimum scour of the beach and dune topography during a storm event and to reduce the potential for damage to upland structures as airborne or waterborne debris. The width of the walkover structure should not exceed 4 feet. The railing should be limited to a handrail and one center guard rail. The posts

for the walkover structure should be 4-inch by 4-inch (although 6-inch posts may be allowed), should be embedded deep enough to support typical live and dead loads (minimum of 5 feet.), and should not be encased in concrete. Typical spacing between post bents is 6 to 8 feet. Supporting beams, bents, and stair stringers should not be greater than 2-inch by 12-inch pressure treated lumber. Connections may be fastened with bolts or nails hotdipped galvanized or stainless steel. All lumber should be pressure treated.

DESIGN CRITERIA FOR MULTI FAMILY DEVELOPMENTS

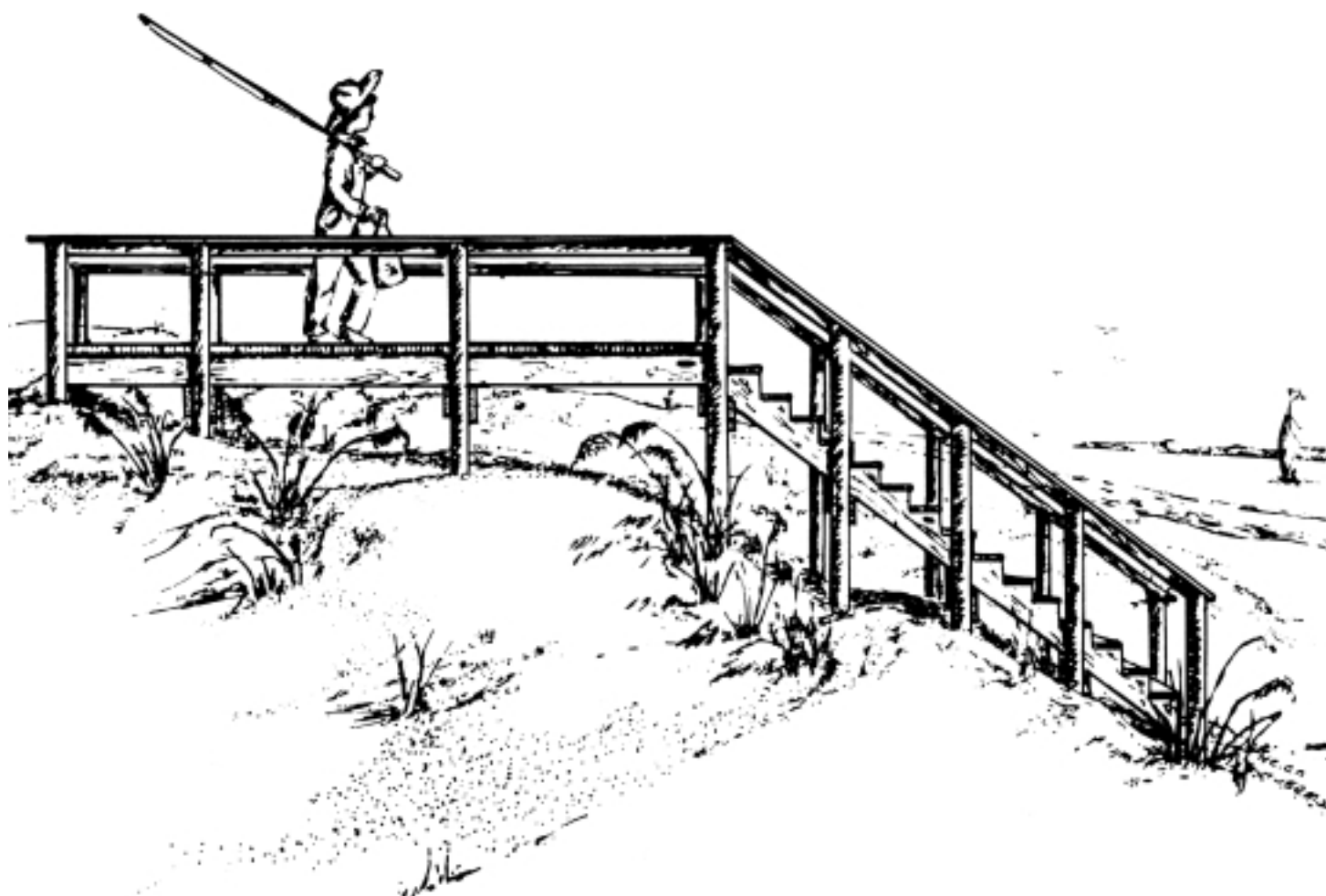
The number of walkovers within the development depends on the expected volume and type of traffic; however, the width of each walkover allowed should not exceed 6-feet. Where more than one walkover is authorized within the development, a minimum 150-foot spacing should be provided between authorized walkovers. The piles for the typical walkover are 6-inch in diameter and should be embedded approximately 8 feet to account for both structural stability and possible dune deflation losses. Since the structural design guidelines provided herein may not apply to many of these structures, designers of such structures are encouraged to consult the Bureau staff.



Revised January 1998

Beach Dune Walkover Structures

Todd L. Walton, Jr. and Thomas C. Skinner



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12/3M/76
11/1M/81
3/1.5M/83

*This publication is a reprint with revisions of Marine Advisory Bulletin SUSF-SG-76-006 originally published in 1976. The number has been changed to MAP-18.

BEACH DUNE WALKOVER STRUCTURES

by

Todd L. Walton, Jr.¹ and Thomas C. Skinner²

INTRODUCTION

The idea behind this publication originally came from the Bureau of Beaches and Shores, Department of Natural Resources, State of Florida. It was recognized that numerous dune systems within our state were undergoing destruction due to the loss of vegetation caused by unrestricted access to the beach over the dune systems. As the vegetation was lost, the wind became capable of eroding the dune and caused a progressive deterioration of the entire dune system.

In areas of high human traffic, a beach walkover structure is needed to save this vegetation. Two structure designs are presented in this publication. Figures 1 through 7 give details of a structure for use in areas of heavy foot traffic. A good example of such use might be for a condominium or a community public access ramp. The depths of pilings account for both depth necessary for structure stability and added depth to account for possible dune deflation losses.

Figures 8 and 9 give details of a smaller structure more suitable for the typical coastal land owner where only light foot traffic is expected. The depth of pilings in sand is correspondingly less which should minimize interference with the dune system in construction of the walkway. It should be noted that any construction seaward of the State Coastal Construction

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Setback Line (Reference 1) must be permitted by the Bureau of Beaches and Shores, Department of Natural Resources.

The designs are basic enough such that various alternatives can be added to the designs without altering the structures to a great degree. One such alteration would be a transverse extension of the deck section with benches for people to sit on overlooking the beach area. The addition of properly spaced skid resistant materials to the decking of the ramp section of the large walkover structure would make the deck and the deck extension accessible to handicapped people in wheelchairs. Additional features which could also be added are limited only by the planner's imagination.

The authors would like to thank both Mr. Gill Hill and Mr. William Sensabaugh of the Bureau of Beaches and Shores, Department of Natural Resources, for the ideas and suggestions used in these plans. The authors hope that this publication will lead to the building of more walkover structures in areas where dune systems are threatened by human traffic. The authors also hope to hear any suggestions, comments, or criticism which might be included in a future revision of this publication.

MATERIALS SPECIFICATION SHEET

(1) Wood

All wood to be pressure treated in accordance with American Wood Preservers Association Standard C-2. The preservative used should be a waterborne preservative such as Type B or C or equivalent as covered in Federal Specification TT-W-535 and AWP Standards P5, C2, and C-14. The type wood to be used depends on the quality of the construction desired. A suitable inexpensive wood for construction would be southern pine. Higher grade and more expensive woods would be the heartwood of Bald Cypress, Redwood, or Eastern Red Cedar. Very expensive but extremely durable and decay resistant woods would be Greenheart or Basra Locus. "Rough cut" lumber can be used on all lumber in the substructure while "dressed" (i.e. surfaced) lumber should be used on the flooring and hand-rails. Further information on the specifications for buying lumber can be found in Reference 2.

(2) Hardware

All bolts and other hardware to be hot dipped galvanized.

(3) Nails

All nails to be galvanized.

GENERAL NOTES

(1) Bolts in handrails shall have nut end toward post. Countersink so that bolt does not project beyond post. Trim excess of projecting bolts after fastening.

(2) Use bolts for all connections to posts.

(3) Do not encase bottoms of pilings in concrete. This would be termed objectionable construction in obtaining a permit from the Bureau of Beaches and Shores.

(4) Some may find the pitch of the steps (8 on 10) too steep; likewise the ramp slope (20%) is too steep for handicap access (8.33% recommended). The design may be modified accordingly.

(5) Check with local building officials to make sure the design contained herein, or as modified, conforms to local codes and ordinances.

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1. Coastal Construction Setback Line by J. A. Purpura and W.M. Sensabaugh, Marine Advisory Bulletin, SUSF-SG-74-002, Florida Cooperative Extension Service, 1974. (Out-of-Print).
 2. Wood Handbook: Wood as an Engineering Material, U.S.D.A., Forest Products Laboratory, 1974.
 3. Timber Design and Construction Handbook, McGraw Hill Publishing Co., 1956.
 4. Wood Engineering, G. Gurfinkel, Southern Forest Products Association, 1973.

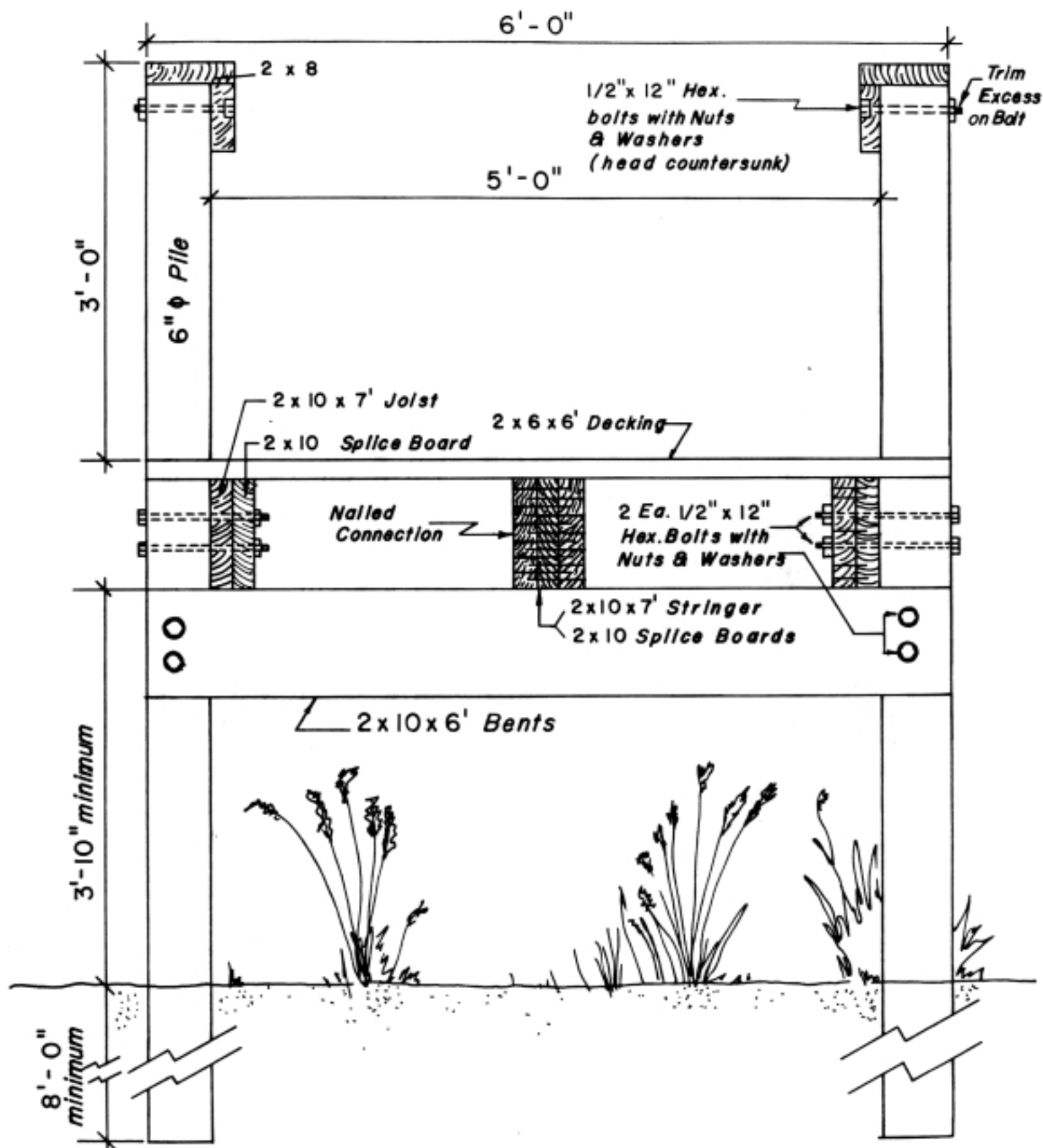


Fig.3 TYPICAL SECTION I-B DECK
Scale: 1" = 1' - 0"

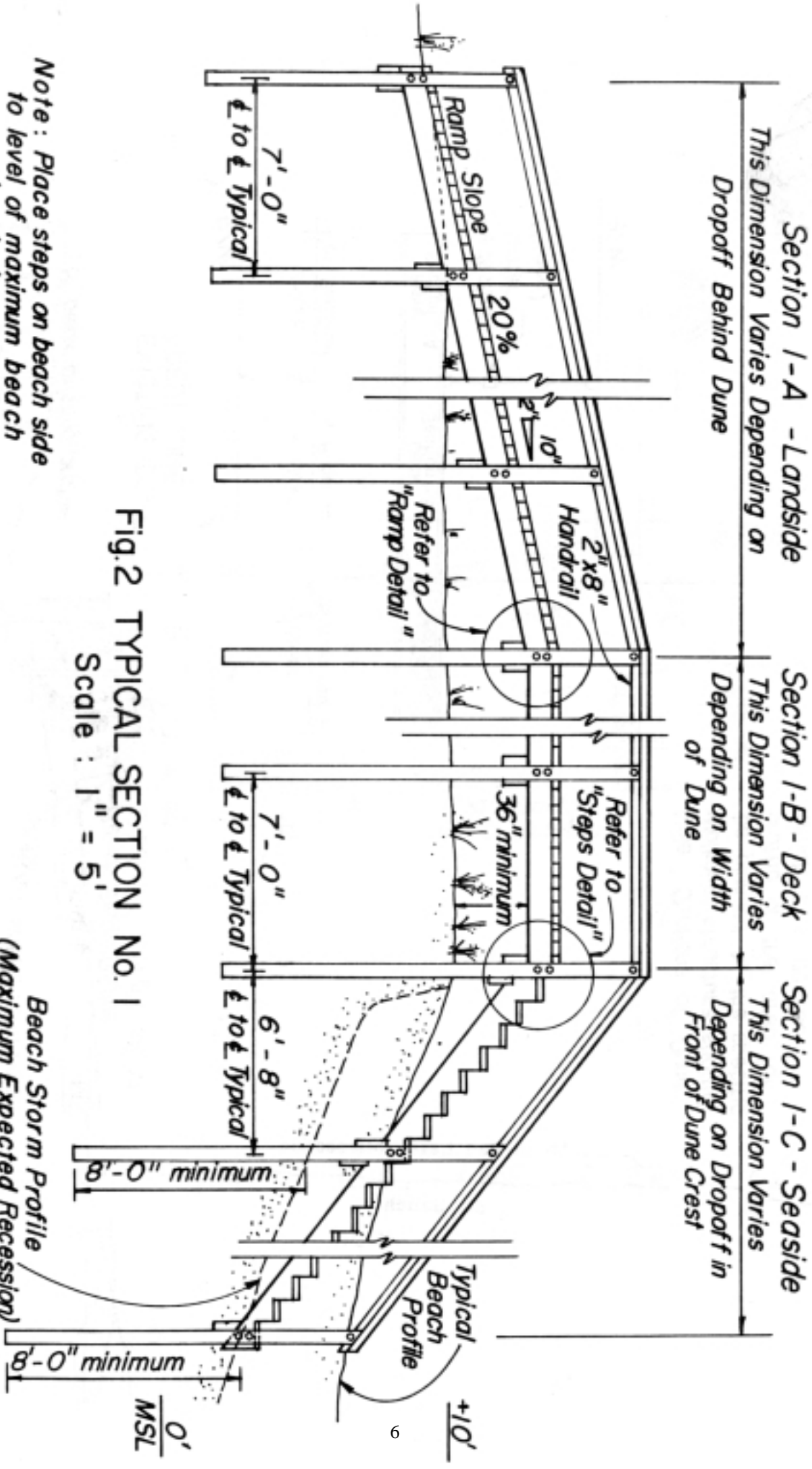


Fig.2 TYPICAL SECTION No. 1
 Scale : 1" = 5'

Note : Place steps on beach side to level of maximum beach recession during a severe storm or tropical hurricane

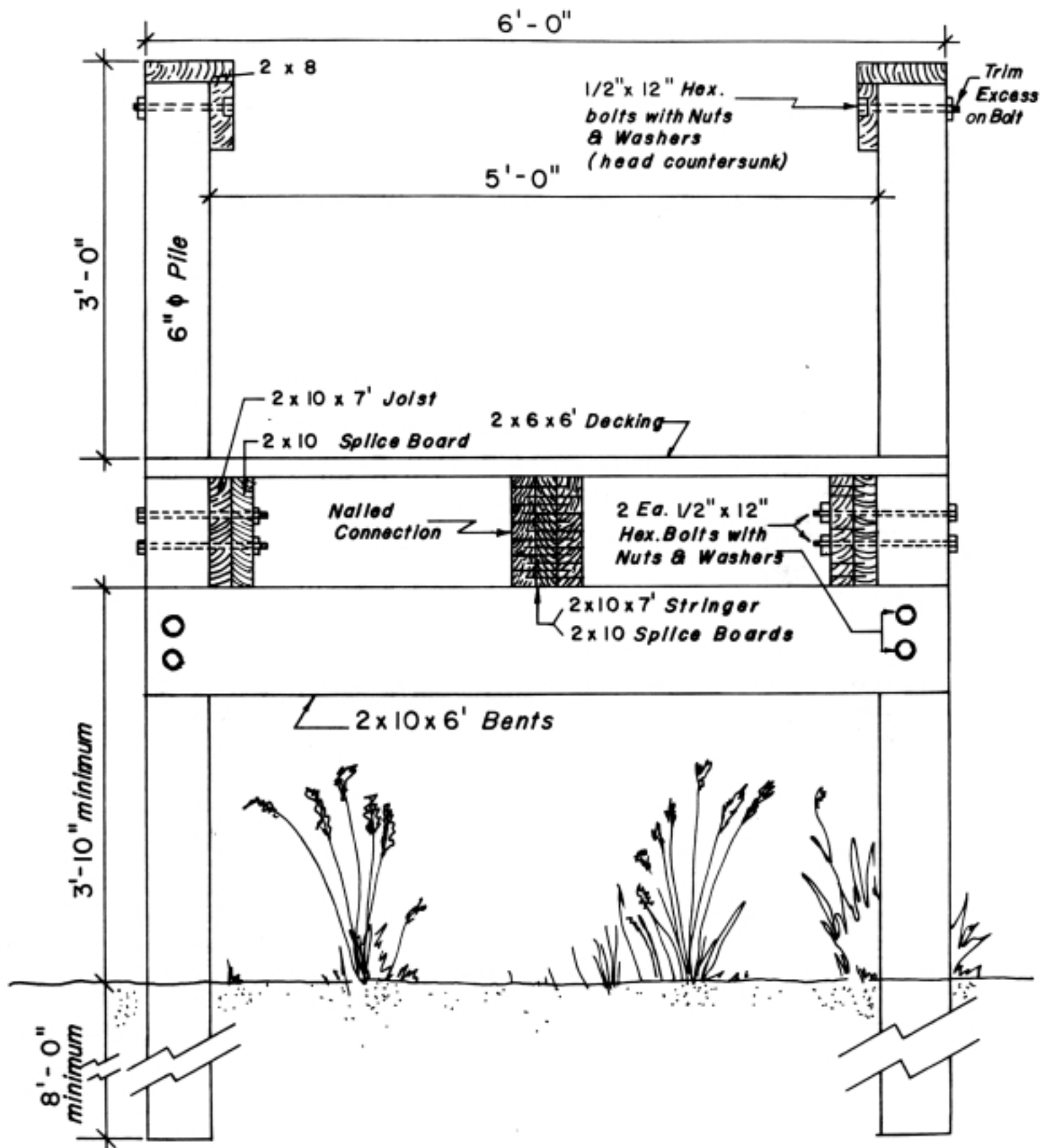


Fig.3 TYPICAL SECTION I-B DECK
Scale: 1" = 1'-0"

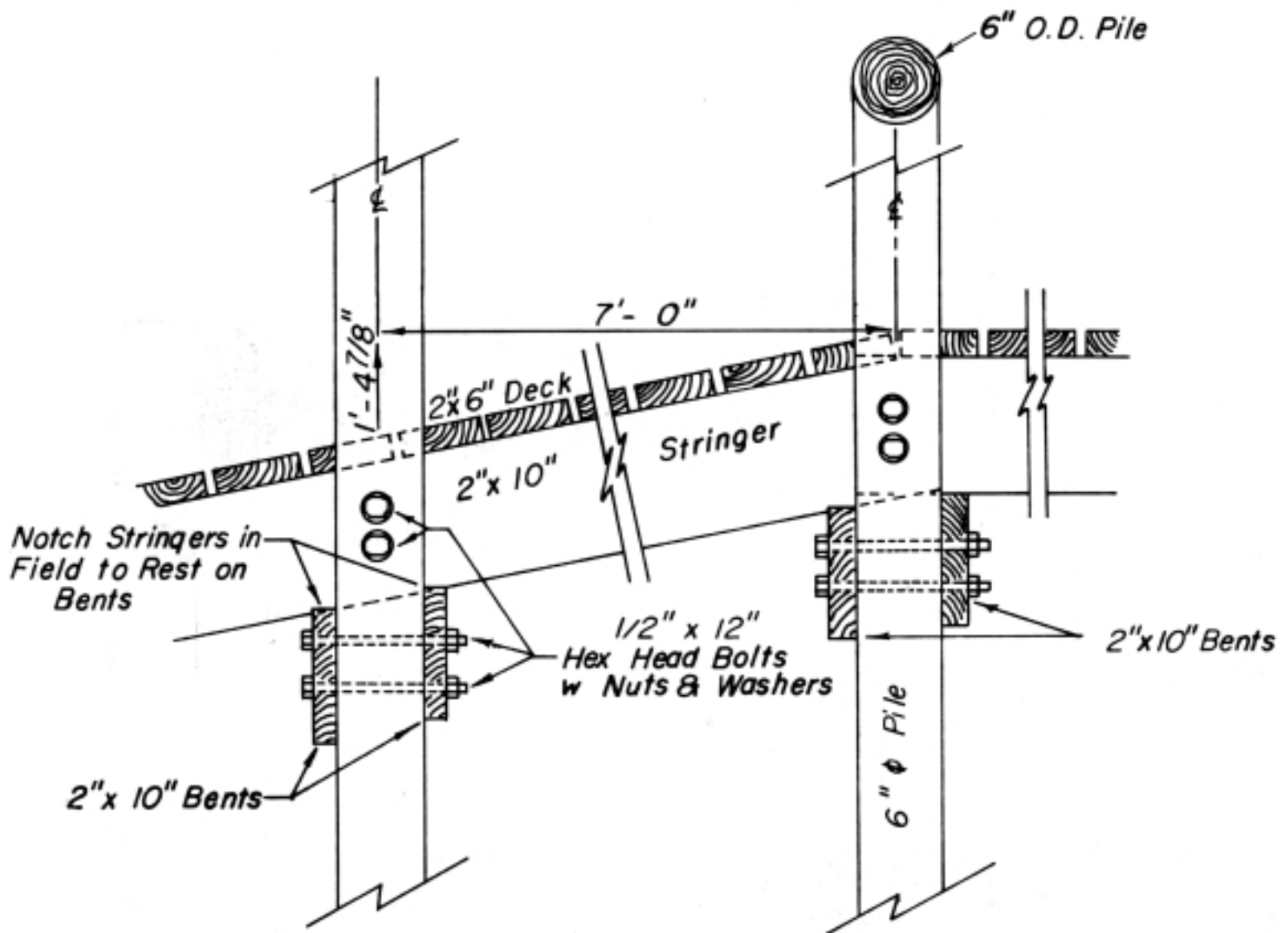


Fig. 4 TYPICAL RAMP DETAIL

Scale: 1" = 1'-0"

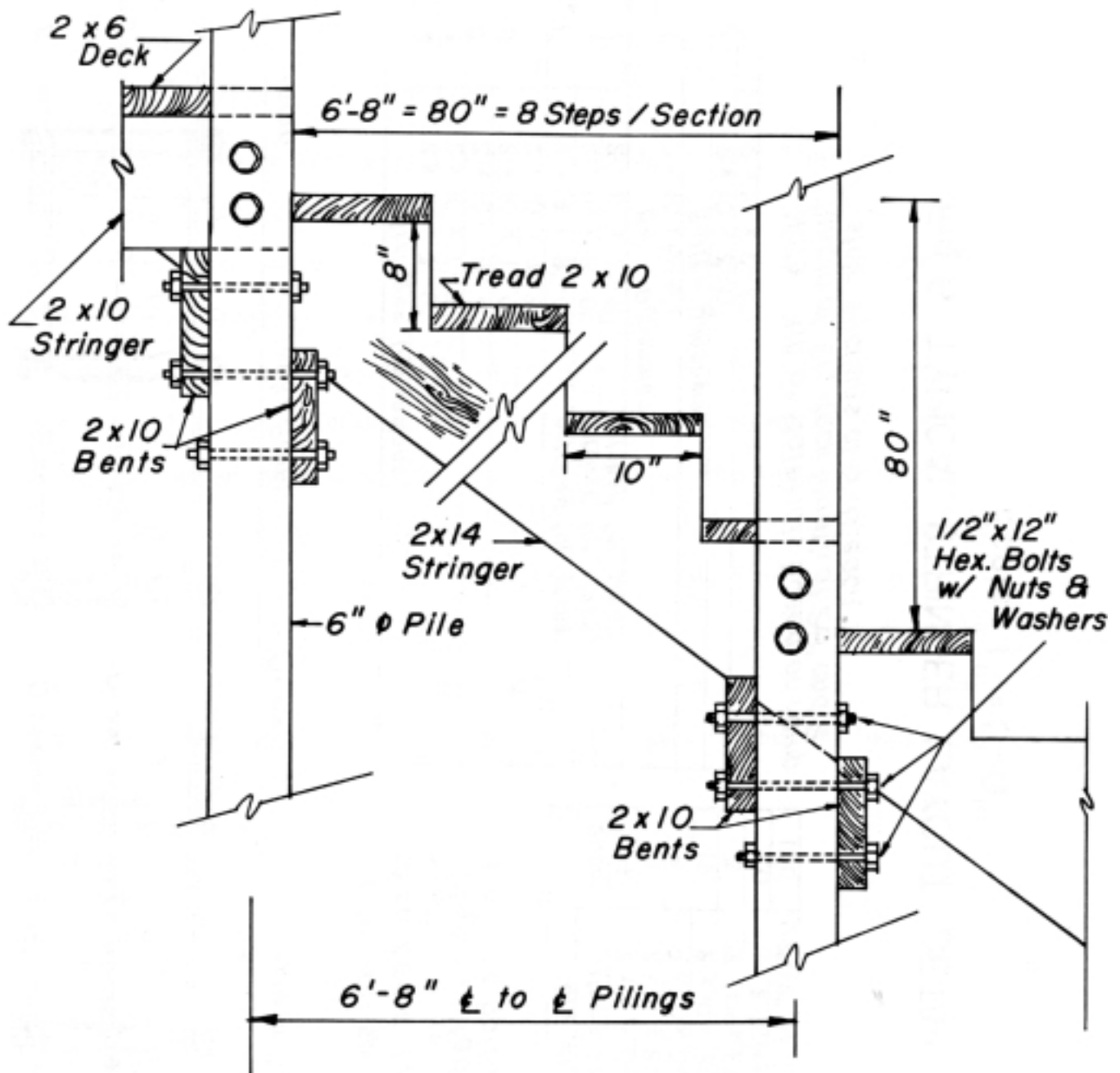


Fig.5 TYPICAL STEPS DETAIL
Scale : 1" = 1'-0"

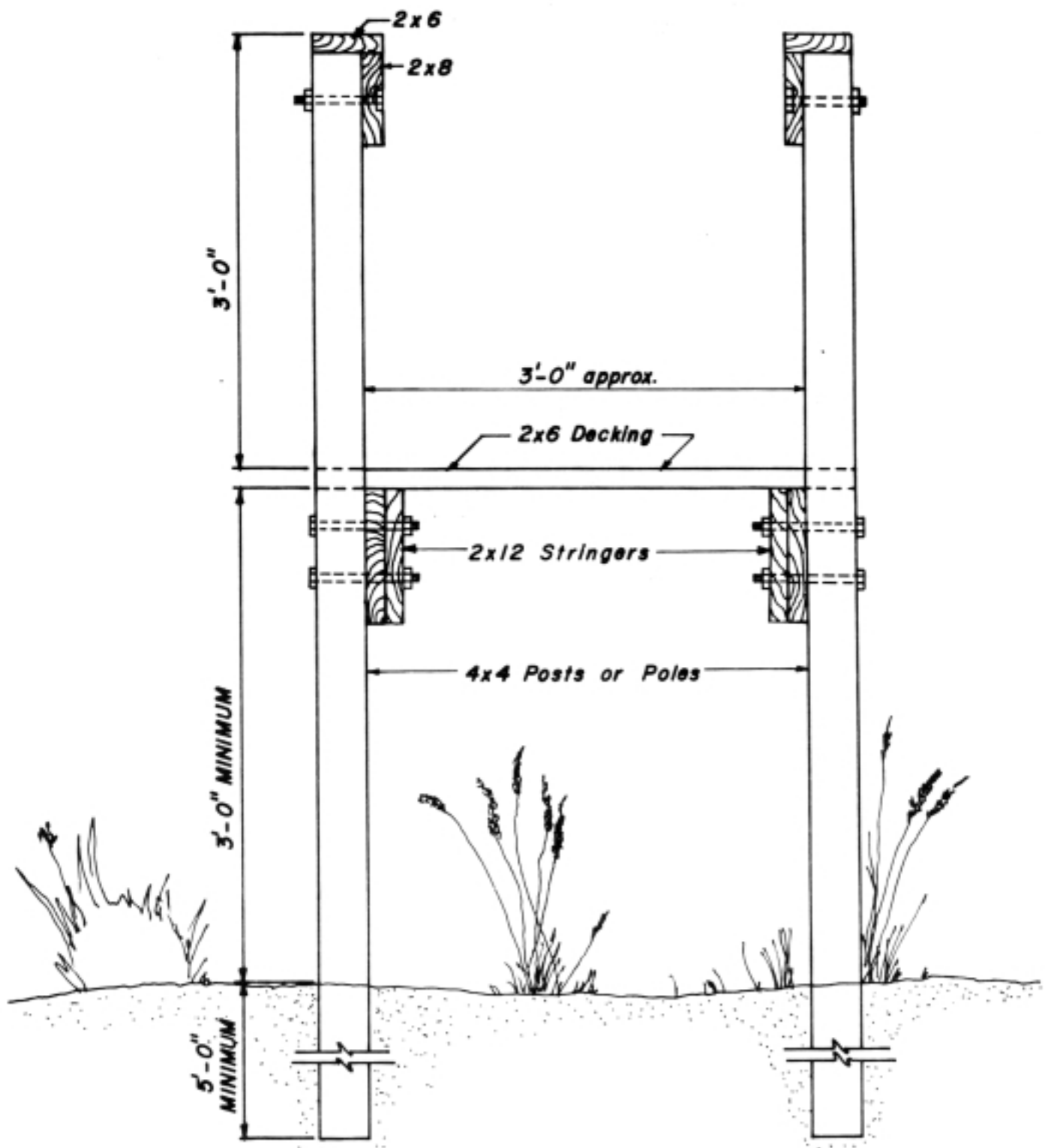


FIG.8 TYPICAL SECTION scale: 1"=1'-0"

Include as many step sections as necessary to grade from top of dune + 3 feet to base of rear dune.

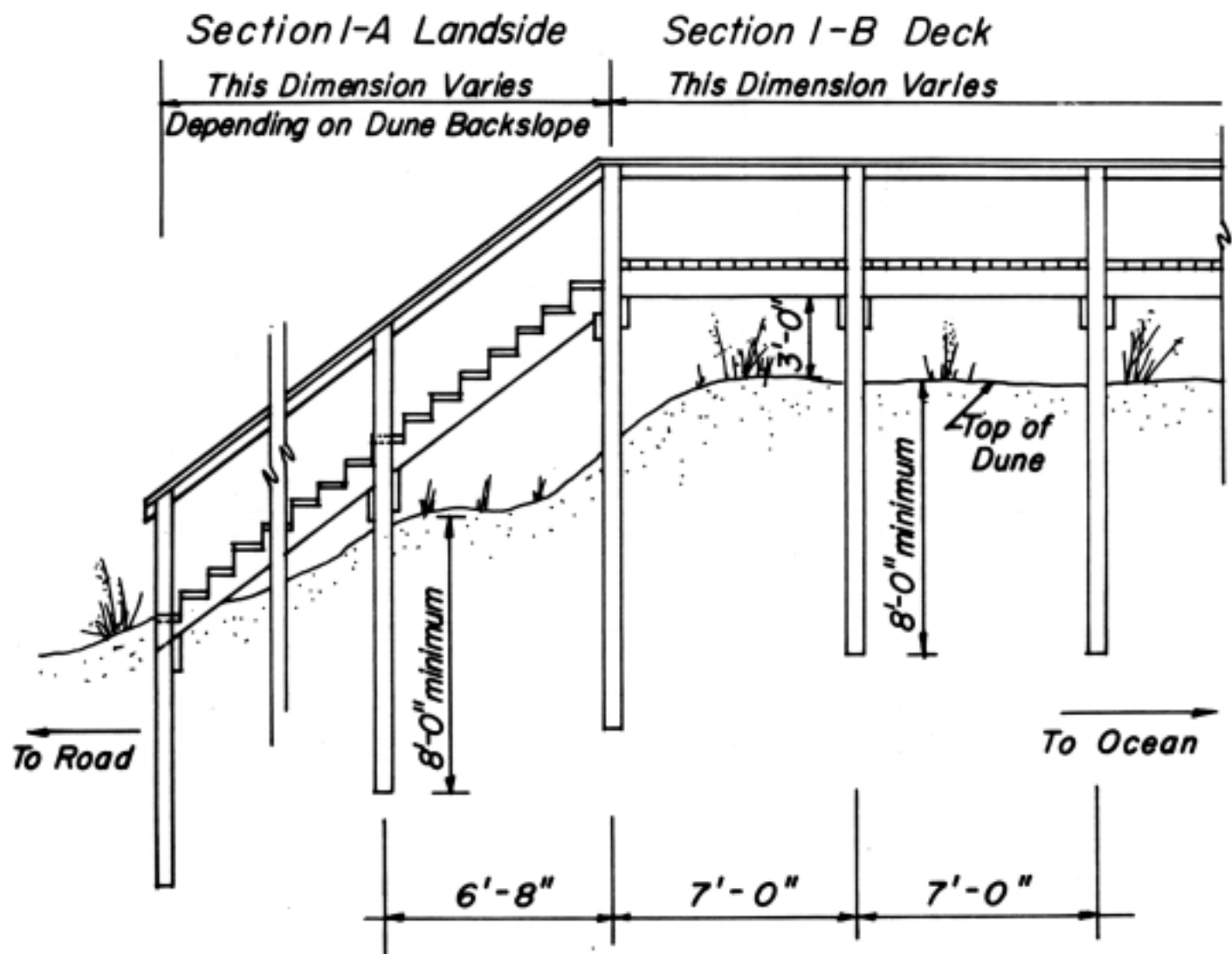


Fig.7 ALTERNATE SECTION No.1

Scale : 1" = 5'-0"

(Refer to details as per Figure 2)

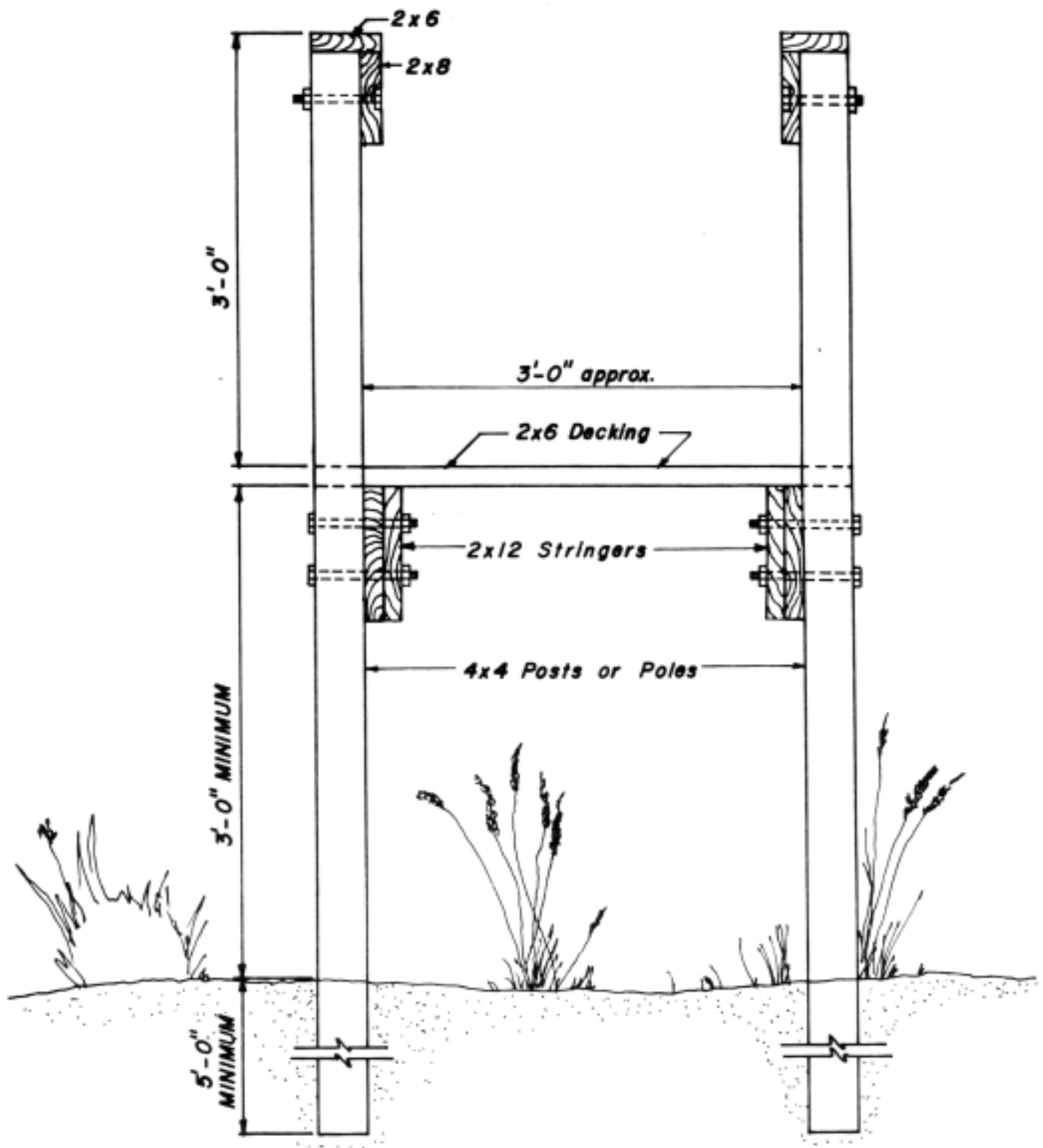
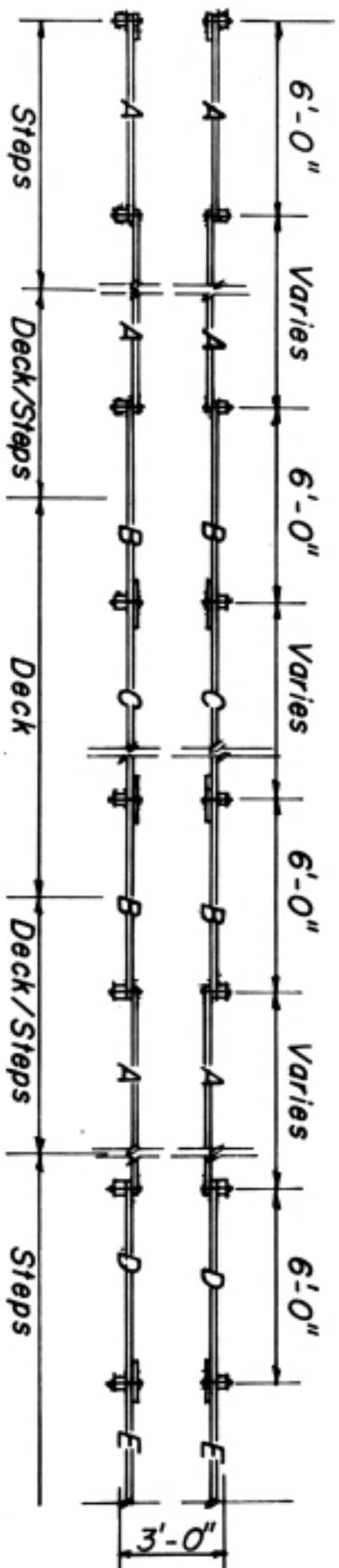


FIG.8 TYPICAL SECTION scale: 1"=1'-0"



STRINGER DIMENSION	
A	2 x 12 x 8" notched for steps
B	2 x 12 x 7'-9"
C	2 x 12 x 6'
D	2 x 12 x 7'-8" notched for steps
E	2 x 12 x 7'-6" notched for steps
SPICE BLOCK DIMENSION	
F	2 x 12 x 1'-6"

Note: All splice blocks to be nailed to stringers to provide both lateral and bearing support at joints. All pile bolted connections to be 1/2" x 12" hex bolt with nut and washers.

Bill of Materials based on 24' deck and step lengths, 6' and 12'.

BILL OF MATERIALS	
QUANT.	ITEM DESCRIPTION
108'	2x12 Stringers & Splice blocks
16	4"x4" Posts or Poles
66	1/2"x12" Hex bolt w/ nut and washers
36	2x6x20' dressed
28	2x8x20' dressed
4	2x10x20' dressed

FIG. 9 TYPICAL STRINGER LAYOUT
scale: 1" = 5'