

1941

# She "Floats" Thru the Air: With The Greatest of Ease

American Steel & Wire Company

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She "FLOATS" thru the Air....





*With the Greatest  
of Ease*



Published By  
American Steel & Wire Company



# AMERICAN AERIAL CHAIR TRAMWAYS and Passenger Tramways



**AMERICAN STEEL & WIRE COMPANY**





THE WORLD takes on a new and thrilling beauty—viewed from a mountain top. Each season of the year changes the panorama, but the thrill of a mountain view transcends all seasons. Summer's carpet of forest green—patterned with silver ribbons of reflected light from crystal streams—provides a fitting setting for mountain lakes sparkling like jewels far below. When powder snow wraps the landscape in a mantle of white the world glistens in a pristine beauty reserved for those who look down from high places. No wonder skiers have climbed mountains. But, now, "mountain climbing" is no longer reserved for a relatively few hardy young adventurers. American Aerial Chair Tramways and Passenger Tramways make it possible for all America to travel in comfort to a mountain top—enjoying the scenery during the effortless ride.





UNION PACIFIC RAILROAD COMPANY  
OMAHA, NEBRASKA

W. M. JEFFERS,  
PRESIDENT

February 22, 1941

Mr. Gordon H. Bannerman,  
Chief Bridge and Tramway Engineer,  
American Steel & Wire Company,  
New Haven, Conn.

Dear Mr. Bannerman:

I believe it will be very interesting to you, your associates in the American Steel & Wire Company and your patrons, to have some authoritative expression from the Union Pacific with reference to our experience with the system of Aerial Chair Tramways which we now have in operation on the several ski runs at our winter sports resort at Sun Valley, Idaho. The successful development of these several Tramways, and especially the Bald Mountain lift, having a length of approximately 11,500 feet, with a vertical lift of 3,200 feet in that distance, conceived and perfected by our own engineering experts in collaboration with the staff of American Steel & Wire, has produced an achievement in engineering genius and practical construction ingenuity which I believe is unique, and I am sure is exceptional among the similar types of tramway operations on the North American continent. The availability of these facilities has added substantially to the attractions for the winter sports enthusiast at Sun Valley, and the part which American Steel & Wire has played in the development is recognized and heartily appreciated.

Very truly yours,

*Wm Jeffers*

# Chairway to the Stars



"Chairway to the Stars" is the name of this Aerial Chair Tramway at Sun Valley, Idaho. Courtesy "Look" magazine.



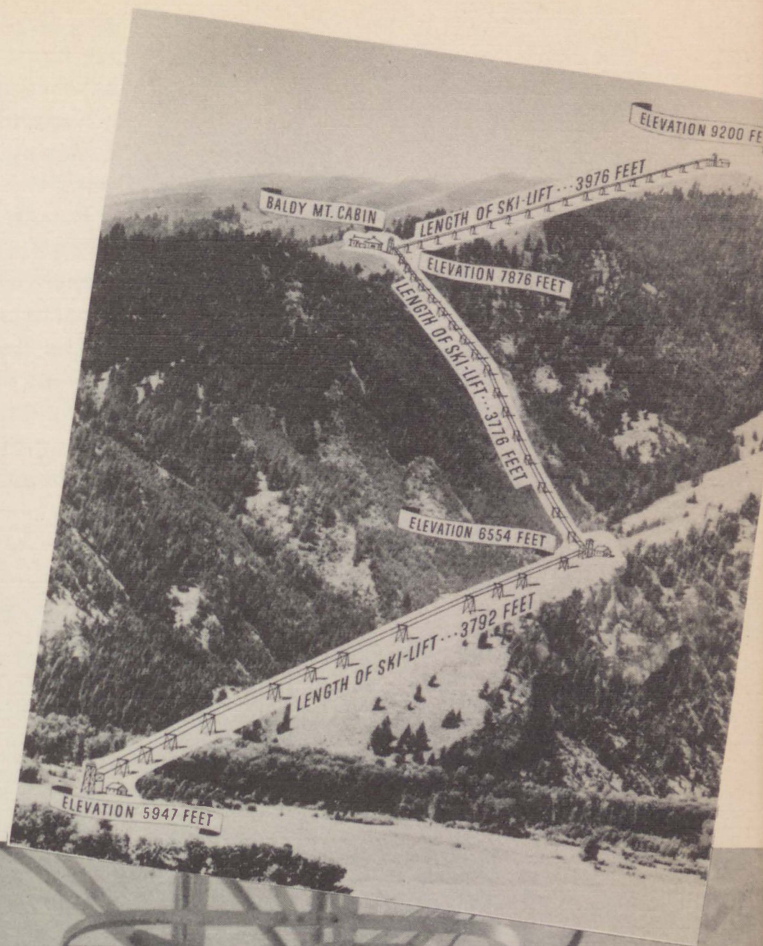


The development of mechanical means for the easy ascent of mountains was fostered by the increasingly widespread interest in skiing combined with the desire of the average person to observe the view from a mountain top.

Featured by leading resorts, American Aerial Chair Tramways and Passenger Tramways have proved tremendous drawing cards for these resorts. They have brought greatly increased numbers of tourists and skiers and have justified their existence by showing substantial profits.

The American Aerial Chair Tramway was developed by the American Steel & Wire Company to provide safe and adequate equipment for the transportation of skiers from the foot of a slope to the upper levels. It is considered the most modern and de luxe type of equipment for this purpose.

*Photo-diagram of the new, 3-section aerial chair tramway to Baldy Mountain, Sun Valley, Idaho.*



*Near the top of the third section on Baldy Mountain looking down toward the "Round House" on Little Baldy.*



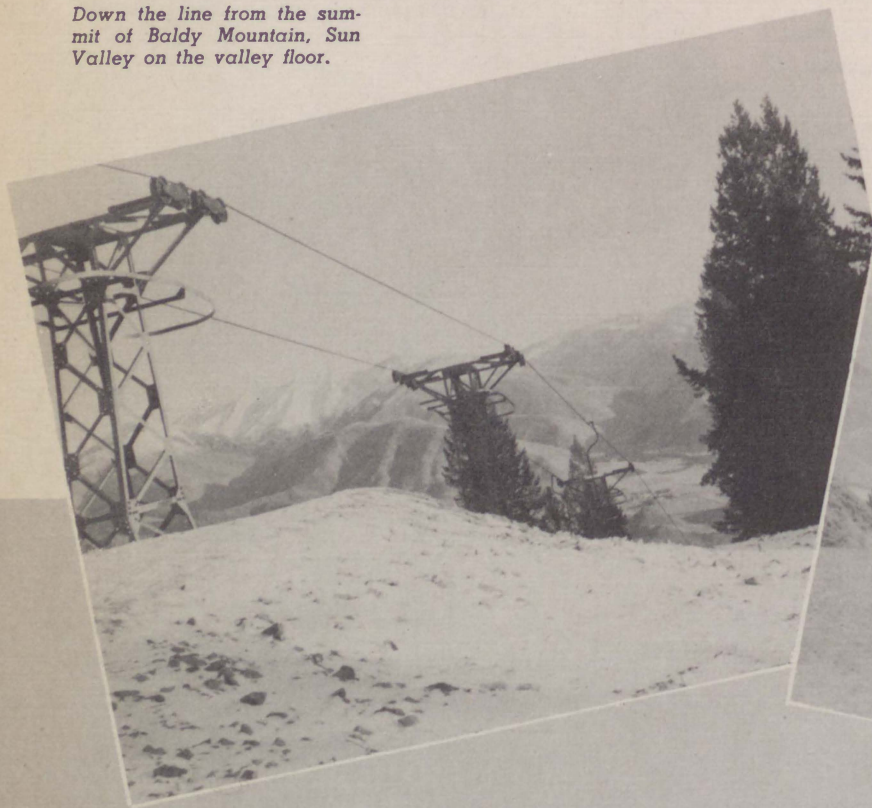


The skier today does not waste his energy in the useless and unnecessary effort of climbing, but is carried by Aerial Chair Tramways to the ski fields, nearly inaccessible only a few years ago. There, unexhausted, he can enjoy the sport on "practice" or "expert" slopes in accordance with his experience and ability. The Aerial Chair Tramway has, therefore, made possible more runs per day and made week-end skiing a far more satisfying and enjoyable outing.

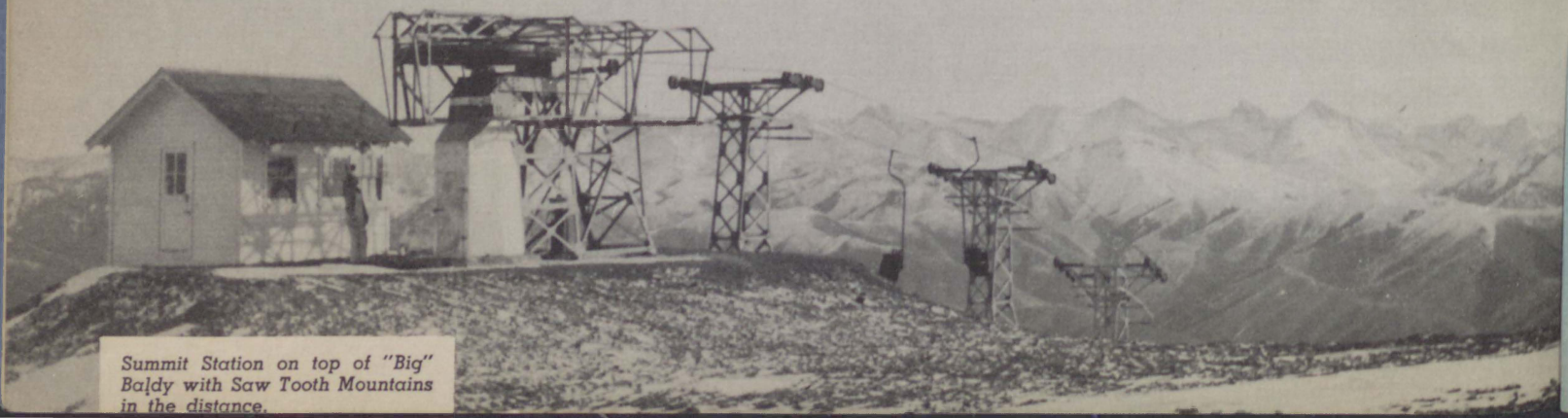
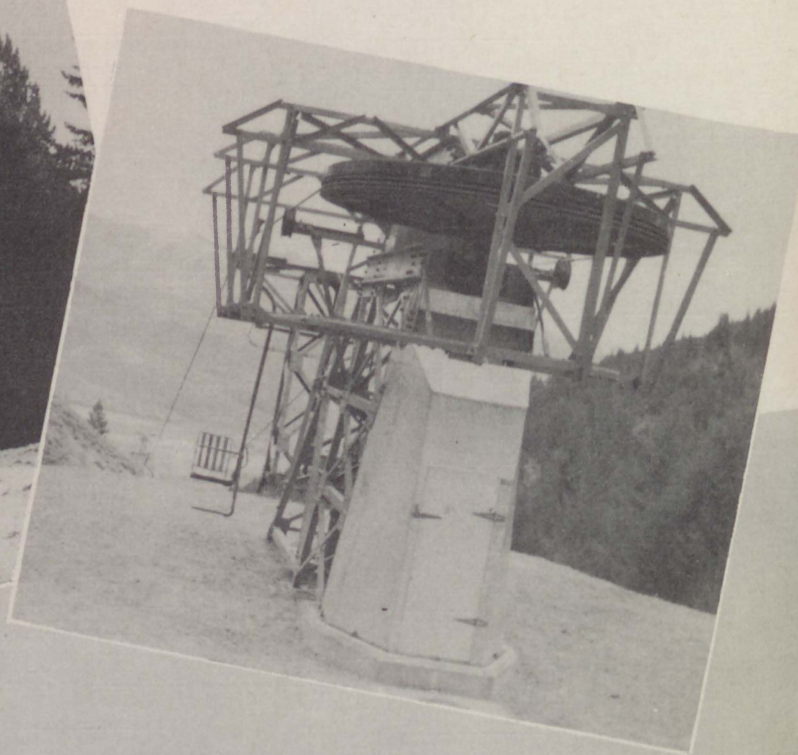
People who would never be able to make the arduous climb to a mountain top on foot can, now, by means of the Aerial Chair Tramway, witness one of the grandest sights in all nature—the miraculous beauty of mountain snow formations.

The Aerial Chair Tramway has proved itself adaptable for use in all seasons of the year—which is not true of any type of tow. As riders can be accommodated with or without ski equipment, considerable traffic during the summer tourist season will use such an installation to reach the higher elevations and obtain a view of the surrounding country.

*Down the line from the summit of Baldy Mountain, Sun Valley on the valley floor.*



*Drive station, first section, on the way up to Little Baldy at Sun Valley, Idaho.*

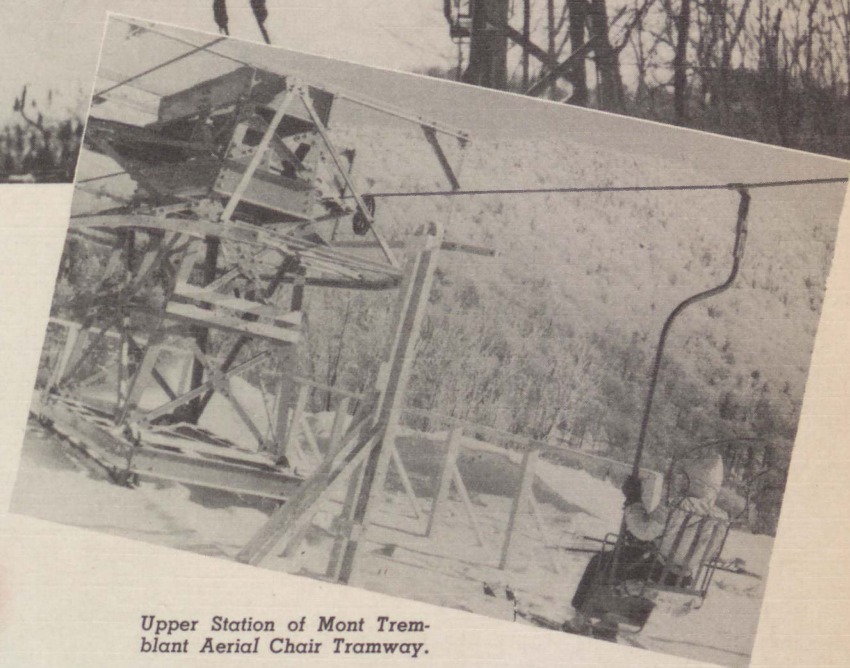


*Summit Station on top of "Big" Baldy with Saw Tooth Mountains in the distance.*





*Aerial Chair Tramway at Mont Tremblant, P.Q., Canada, with Lac Tremblant below and Laurentian Mountains in the background.*



*Upper Station of Mont Tremblant Aerial Chair Tramway.*

The American Aerial Chair Tramway is of the monocable type, which, next to the bona fide passenger tramway, is considered the safest form of aerial tramway transportation. It consists essentially of a wire rope spliced endless and supported at intervals by overhead vertical rubber filled rollers, attached to substantial light weight intermediate structures or towers, and at the terminals passes around large diameter horizontal sheaves. Individual and comfortably large chairs, equipped with windbreak blankets and special brackets on which to rest skis, are suspended from the wire rope at uniform intervals by means of a hanger that is permanently fixed to the rope. The tramway is operated at such a speed that riders can seat themselves or leave the chairs easily at the terminals while the chairs are in motion. The longest, single, continuous American Aerial Chair Tramway that has been erected to date has a length of 6351 ft. with a vertical rise of 2034 ft. However, this is by no means the limit. It is apparent that the Aerial Chair Tramway can be adapted to locations where grade, length and contours would be prohibitive for a tow.

Some locations would require considerable excavating and grading to secure smooth operation of a tow. This does not apply to Aerial Chair Tramways as the rider travels above ground between terminals. The location and height of the intermediate structures depend upon the terrain to be crossed. Often a customer desires to have the chair close to the ground. The Aerial Chair Tramway particularly lends itself to this feature and also permits the use of inexpensive terminal structures.



The drive equipment of the tramway may be located at either terminal, depending upon the conditions of each individual project and the customer's specifications. The chairs are guided smoothly around the terminal sheaves which are rubber filled as are sheaves and rollers on all intermediate structures—to minimize wear on the wire rope. Horsepower required is dependent upon length, slope, speed and spacing of chairs.

Proper tension is applied to the wire rope and maintained by a well designed counterweight system. This system assures smooth movement of the chairs along the line, with the proper safety factor of the rope constant at all times, irrespective of stretch and temperature changes.

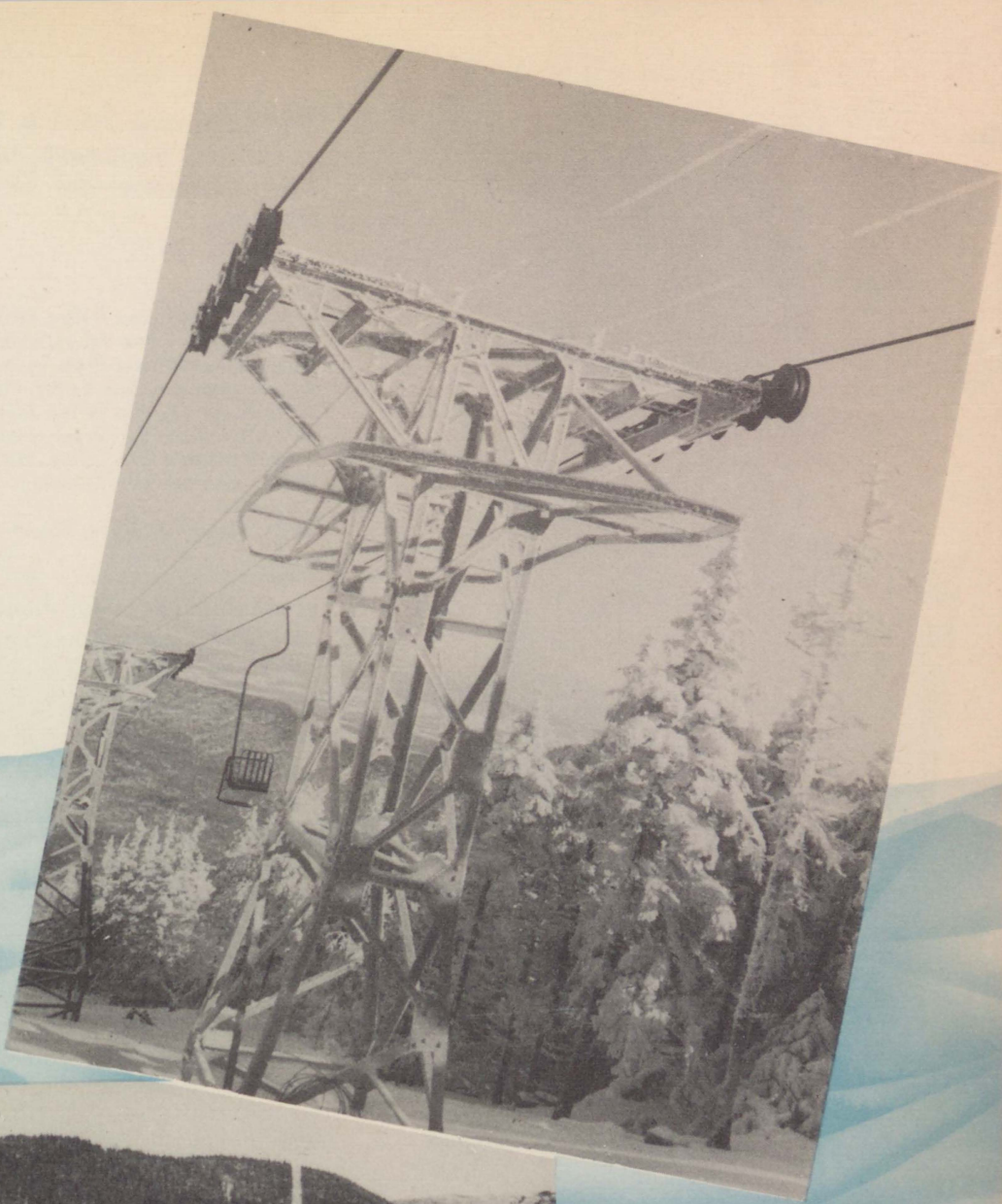


Looking up the line toward upper station on Mount Mansfield, Stowe, Vermont.

Looking down the aerial chair tramway at Mount Mansfield, Stowe, Vermont.



The background and experience of the American Steel & Wire Company qualifies this organization to offer the finest possible design, material and construction facilities for aerial chair tramways and passenger tramways. For more than 100 years the American Steel & Wire Company and its affiliates have been manufacturing items related to rope haulage systems. During this period it has established recognized standards for quality, developed production facilities that are models for the world, and built an engineering, sales and service organization which covers the continent.



Breakover structures near upper station on Mount Mansfield Aerial Chair Tramway.



Drive Terminal and view looking up Aerial Chair Tramway on Mount Mansfield.





The American Steel & Wire Company furnished the rope, mechanical equipment, and design for the following Aerial Chair Tramways—the majority of such installations on this continent:

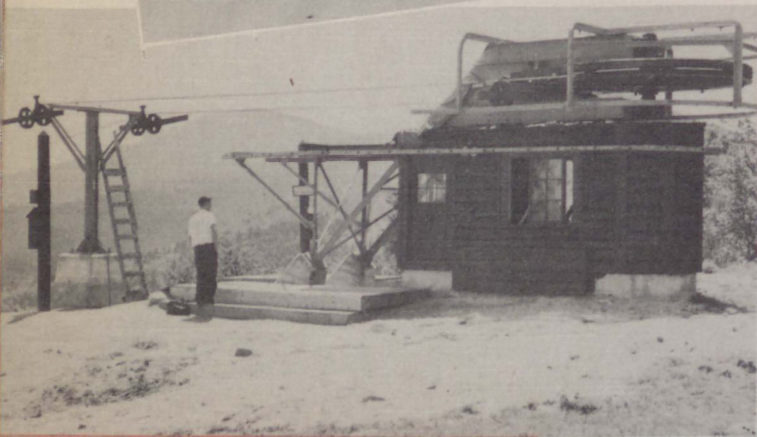
Location	Length in feet	Rise in feet	Capacity— Persons per hour in one direction
Dollar Mountain, Sun Valley, Idaho	2360	710	216
Ruud Mountain, Sun Valley, Idaho	1860	600	216
Belknap Recreational Area, Laconia, N.H.	3217	715	200
Proctor Mountain, Sun Valley, Idaho	3540	1150	216
Baldy Mountain, Sun Valley, Idaho (Sec. No. 1)	3792	607	205
Baldy Mountain, Sun Valley, Idaho (Sec. No. 2)	3776	1322	206
Baldy Mountain, Sun Valley, Idaho (Sec. No. 3)	3976	1324	206
Mont Tremblant, Lac Tremblant, P.Q., Canada	4174	1091	251
Mount Mansfield, Stowe, Vermont	6351	2034	203

Many other resorts and sports centers are in a position to profit from the installation of an American Aerial Chair Tramway. Such installations normally yield a profit on their operations and bring added profits by increasing the popularity of the resort. The principal requisite for a profitable installation is location—one which is accessible by motor road and near a community with sufficient tourist accommodation. Railroad service to the town is also desirable, though not essential. For success in interesting skiers the location should afford a desirable slope at sufficient altitude to maintain good snow conditions throughout the winter. For the greatest popularity, sufficient open slopes are of first importance. A variety of downhill runs for the intermediate and expert skiers are also necessary.

A certain amount of engineering data is necessary to determine a price for a specific installation. A questionnaire at the back of this book outlines the various items which should be covered in order that an estimate can be prepared.

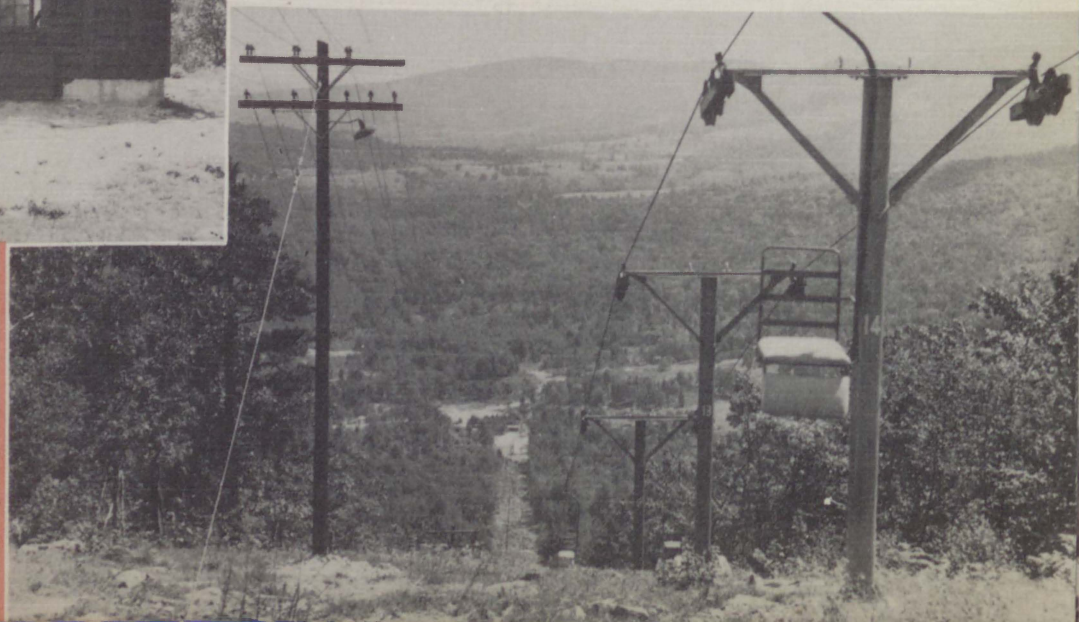


*Left above—Latest type of Aerial Tramway Chair showing safety guard and ski rest bracket in closed position.*



*Above—Upper and drive terminal of Aerial Chair Tramway in Belknap Mountain Recreational Area, Giltford-Laonia, N. H.*

*Right—Looking down the Belknap Mountain Aerial Chair Tramway with the foothills of the White Mountains in the distance.*







American Aerial Passenger Tramways provide a safe and reliable means of carrying groups to beauty points otherwise inaccessible. This system transports passengers in a direct line from valley to mountain summit, independent of grades, intervening valleys or ridges.

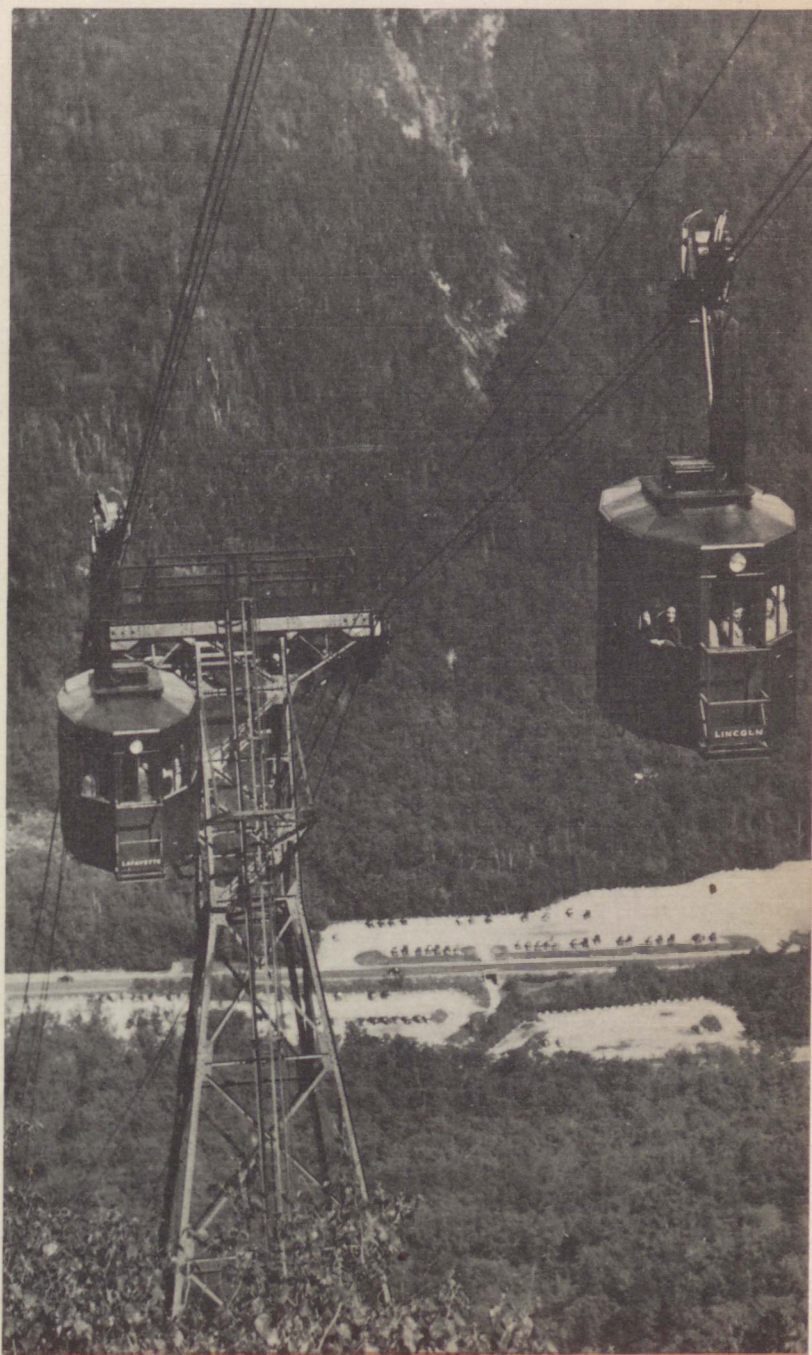
The track cables are carried by a minimum number of supports. The quiet and smooth operation of the carriers leaves the passenger free to enjoy the beauty of the scenery.

This system does not depend upon frictional contact between rail and wheels, or on the effective power of the rack and gear engine, as do most of the systems now in use for similar purposes. Rain, snow, or ice do not interfere with the operation of the aerial tramway, making it possible to operate it during the entire year. The design of this system has been so perfected that it is possible to operate at speeds varying between 11 and 16 feet per second, equivalent to  $7\frac{1}{2}$  to 11 miles per hour.

Aerial passenger tramways are usually constructed on the double reversible system with two track cables extending between terminals and one car on each cable. The cars leave the top and bottom stations, respectively, at the same time, and pass each other at a central point. The direction of travel is then reversed for the next trip. The diagram on the next page shows this operation. For light traffic, it is of course possible to erect only one cable on which one car runs back and forth.

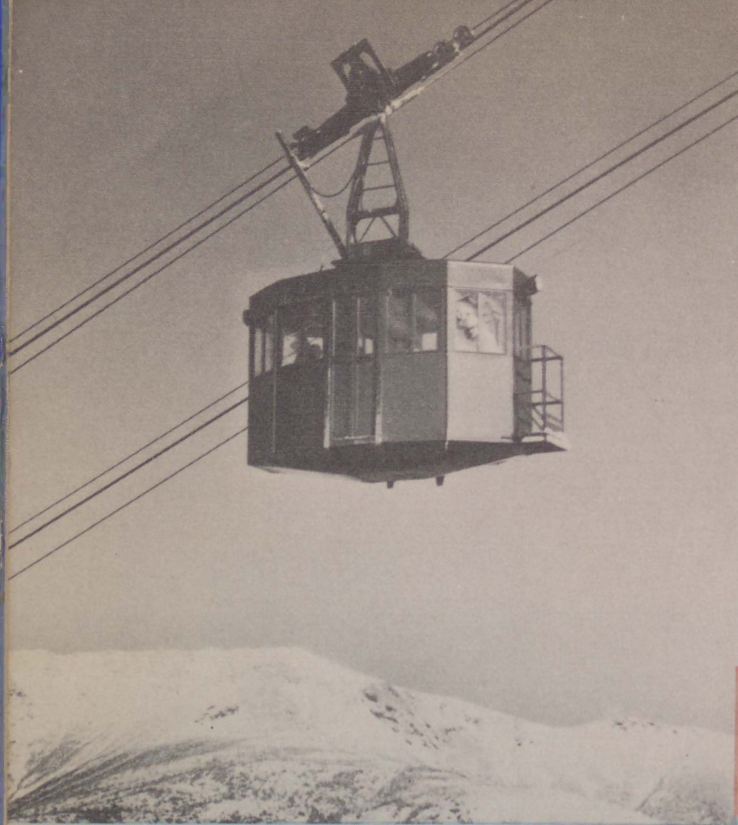
Standard cabin cars providing for 6, 10, 20, 26, and 36 passengers are supported from eight wheeled and twelve wheeled carriages. The cabins are entirely enclosed, giving necessary protection from wind and weather, and they are designed to give a maximum of window space for sight seeing purposes. The cabins are equipped with lighting equipment, signaling devices between the terminals, and telephone connection between each terminal and the other car.

Every car is equipped with a very powerful and tested braking device, which comes into action



Cars about to pass on the Cannon Mountain Aerial Passenger Tramway, Franconia Notch, N. H. ©—R. E. Peabody, 1938.





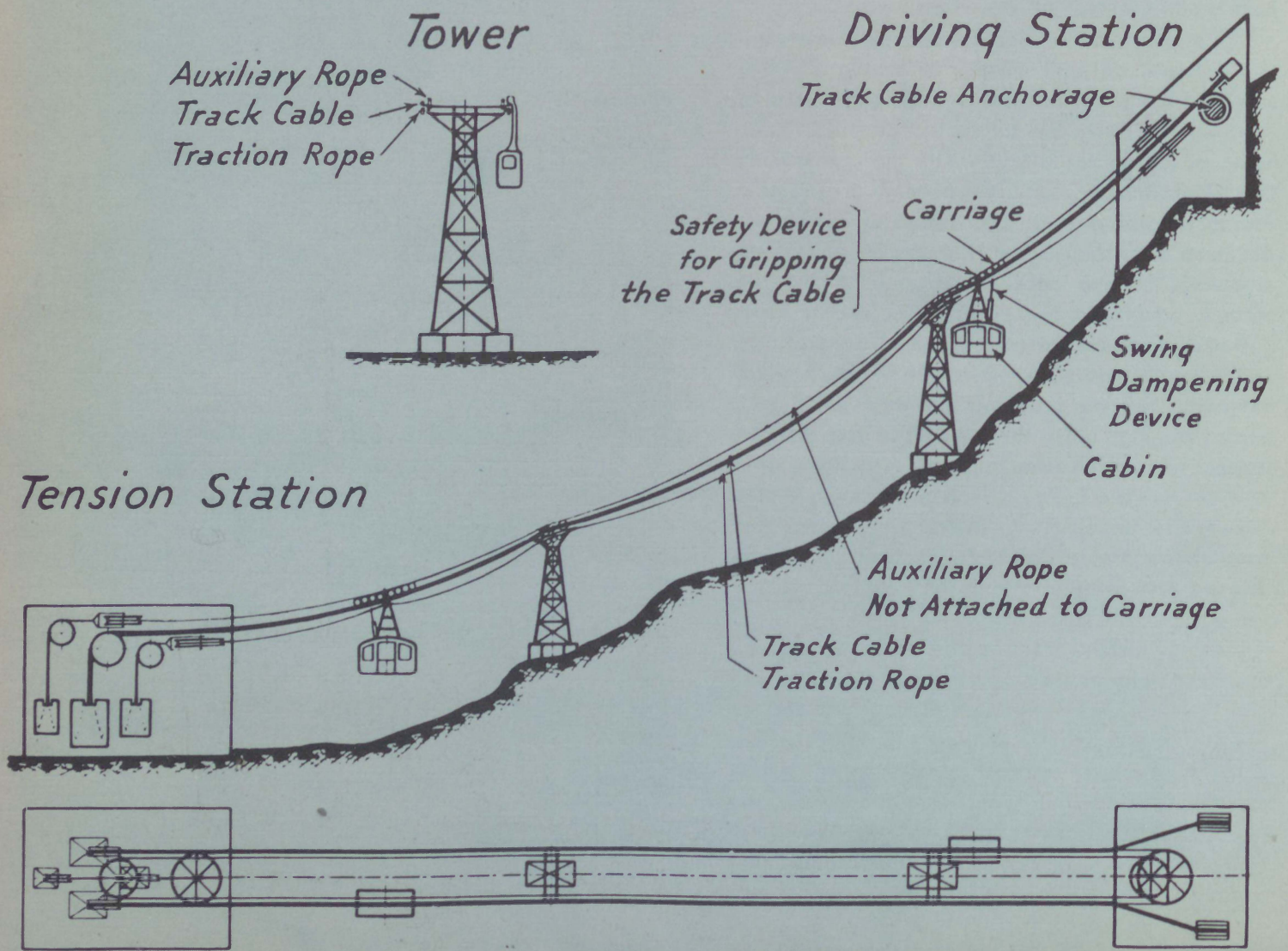
automatically and instantly if the traction rope should break. This is a remote possibility, but is provided for to insure a full measure of safety. Four other braking methods are provided for regular and emergency operation to maintain absolute safety.

The American Aerial Passenger Tramway is not a glorified freight tramway. It is a carefully developed system with the most minute detail designed for the sole object of providing safe and reliable transportation for passengers.

We shall be pleased to submit estimates of cost to interested parties. A questionnaire on the last page of this book provides an outline of the information we need to prepare such an estimate.

Passenger car in winter operation on the Cannon Mountain Aerial Passenger Tramway, Franconia Notch, N. H.

Diagram showing operation of double reversible system American Aerial Passenger Tramway.





The questionnaires on this and the following page are designed to provide an outline of the necessary information from which we can supply an estimate on a particular installation. We solicit the opportunity of submitting such an estimate to prospective users of either American Aerial Chair Tramways or Passenger Tramways.

# QUESTIONNAIRE ON AERIAL CHAIR TRAMWAYS

1. Customer's name \_\_\_\_\_
2. Mail Address \_\_\_\_\_
3. Location of proposed chair tramway \_\_\_\_\_
4. What is the length between terminals?
  - (a) Horizontal \_\_\_\_\_
  - (b) Slope \_\_\_\_\_
5. What is the vertical difference in elevation of terminals? \_\_\_\_\_
6. What is the maximum number of persons to be handled per hour? \_\_\_\_\_
7. Is electrical power available? If so, state which terminal.  
Give its characteristics \_\_\_\_\_
8. What is the character of the ground at the terminals?  
Is it rock, sand, clay, loam, etc.? \_\_\_\_\_
9. What is the general character of the ground along the line?
  - (a) Indicate road, trail, power line, etc. crossings \_\_\_\_\_
10. What is the direction and velocity of prevailing wind? \_\_\_\_\_
11. What is the maximum depth of snow at terminal sites and along line? \_\_\_\_\_
12. Is the line accessible to existing roads or trails? \_\_\_\_\_  
If so, indicate location \_\_\_\_\_
13. Are steel or timber structures desired? \_\_\_\_\_  
(We strongly recommend structures of steel construction on concrete foundations).
14. Our proposal will be more accurate and complete if you furnish a profile of the ground prepared from an actual survey. If this cannot be done, please send us a sketch of the ground profile drawn as nearly to scale as possible. The ground profile dictates the design.

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**AMERICAN STEEL & WIRE COMPANY**  
Rockefeller Building  
CLEVELAND, OHIO



# QUESTIONNAIRE ON

## PASSENGER TRAMWAYS

1. Customer's name \_\_\_\_\_
2. Address \_\_\_\_\_
3. Location of proposed tramway \_\_\_\_\_
4. What is the length between terminals? (a) Horizontal \_\_\_\_\_  
(b) Slope \_\_\_\_\_
5. What is the vertical difference in elevation of terminals? \_\_\_\_\_
6. Give elevation and location of high points on the profile between terminals \_\_\_\_\_
7. A passenger tramway must be built in a straight line. An intermediate angle necessitates two tramway units with transfer of passengers from one car to another. Is your proposed line straight between terminals? \_\_\_\_\_
8. If possible, submit a contour map with locations of terminals indicated thereon. Show also any adjacent roads, railways, or transmission lines. Enlarged contours of the ground, or photographs, at terminals are helpful. \_\_\_\_\_
9. What is the nature of the ground at the terminals? \_\_\_\_\_  
At intermediate high points? \_\_\_\_\_ Is it solid rock, boulders, sand, clay, loam, etc.? \_\_\_\_\_
10. Depth of snow: Level \_\_\_\_\_ Drifts \_\_\_\_\_
11. Is the site bare or wooded? \_\_\_\_\_ If wooded, how high are the trees? \_\_\_\_\_  
Are there any restrictions on cutting trees? \_\_\_\_\_
12. If the line runs through a forest, a saving may be effected by cutting a lane through the trees to permit the use of lower towers. Is such economy more important than having the cars travel at all times above the tree tops so that the passengers may enjoy the view? \_\_\_\_\_
13. After the location is determined, the required capacity in passengers per hour dictates the size of equipment and structures, and therefore, the cost. This should receive careful study. What is the anticipated travel on the tramway for the different seasons of the year? \_\_\_\_\_  
For different times of the day? \_\_\_\_\_ What is the gross number of passengers to be handled yearly? \_\_\_\_\_
14. What is the maximum number to be handled per hour? \_\_\_\_\_
15. Is electric power available? \_\_\_\_\_ How far from the Lower Terminal is the nearest power line? \_\_\_\_\_ Give characteristics \_\_\_\_\_  
If the power line is some distance away, what are the prospects of having an extension installed to the tramway? \_\_\_\_\_
16. What is the cost of electric current? \_\_\_\_\_
17. What are the hourly wages of carpenters, mechanics, steelworkers, and common labor? \_\_\_\_\_
18. If tramway must cross roads, railways, or transmission lines, give required clearances \_\_\_\_\_
19. Will the tramway be operated in connection with an existing hotel or camp? \_\_\_\_\_
20. How will traffic reach the lower terminal? \_\_\_\_\_
21. Describe the objectives at the upper terminal \_\_\_\_\_  
Will winter sports be promoted? \_\_\_\_\_ What amusements or diversions will be available? \_\_\_\_\_ These factors influence the design of the terminal buildings.
22. Name of nearest R.R. Station \_\_\_\_\_
23. Name of Railroad \_\_\_\_\_
24. Distance R.R. Station—Site of Lower Terminal \_\_\_\_\_

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