

THE RATIONALE AND CONCEPTUAL PLAN FOR MOUNT WASHINGTON
SUMMIT DEVELOPMENT

Prepared by

CARTER AND WOODRUFF, ARCHITECTS

OFFICE OF DAN KILEY, SITE PLANNERS

- I. The Mountain's Value as a Tourist Attraction
- II. Existing Summit Conditions
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- XIV. Demolition Outline Specifications

Addendum Mechanical and Electrical Systems
and Construction Cost Breakdown

25 August 1969

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Addendum Mechanical and Electrical Systems
and Construction Cost Breakdown

25 August 1969

Department of Public Works and Highways
MEMORANDUM

From	Office
To	At
..... 19	

NOTE -

I ATTACHED TO BACK OF REPORT
IS REVISED PROGRAM FOR THE NEW
SUMMIT BRIDGE. DATED OCT. 15, 1969
IT ADDENDUM SITE 'D' DEC. 24, 1969

FEDERAL PARTICIPATION

The preparation of this report and the attached building designs was financially aided by a Federal Grant through the Bureau of Outdoor Recreation of the United States Department of the Interior, under provisions of the Land and Water Conservation Fund Act of 1965 (78 Stat. 897).

I Value as a Tourist Attraction

Each year about a quarter of a million people visit the Summit of Mount Washington, the highest point in the Northeastern United States and New Hampshire's primary tourist attraction. One of the nation's most beautiful landmarks, the Mountain is unique in several respects. Although its summit reaches far above the timberline of the White Mountain National Forest, it is readily accessible by road and railroad to anyone who might wish to enjoy its dramatic experience and vast panorama. From an educational and scientific point of view, its unusually severe weather and the similarity to arctic conditions provide a convenient natural laboratory for cold regions and weather research. It is the only place besides the Arctic where certain flora and fauna are to be found.

Visitors to the Mountain increase in number yearly. A 1956 study counted about 150,000 summit visitors. In 1966 a similar statistical analysis reported that 244,000 summit visitors spent about 353,000 people-nights in New Hampshire hotels and motels in conjunction with their visit to the Mountain. Almost half of these were spent within fifteen miles of the Mountain itself. These figures indicate the growing impact of tourism at the Mountain on the State's economy.

II Existing Summit Conditions

The startling facts are that neither the transportation facilities up the Mountain nor the tourist accommodations at the Summit are developed to the potential drawing power of the Mountain itself. Summit conditions are deplorable. The old, dilapidated tourist facilities serving patrons of the road and railroad are now hopelessly inadequate and must be replaced. The Mount Washington Observatory building is about to collapse around its staff. Staunch independence of purpose and lack of cooperation among the diverse interests on the Mountain have forced each to fulfill its own needs oblivious of the overall development of the Mountain or preservation of its natural condition.

III State Acquisition of the Summit Properties

Upon recommendation of Governor Dwinell's 1957 Mount Washington Study Committee and the Division of Parks, and acting under the Park Expansion Law of 1961 (Chapter 263), the State purchased the Summit properties from Dartmouth College. The Declaration of Purpose of this law states in part:

"It is the purpose of this Chapter to promote the welfare and improve the economy of the State by providing funds and authorization to:

- A. Preserve and develop unusual scenic, scientific, historical and recreational areas and facilities in the State.
- B. Develop these areas and facilities for public recreational, educational, scientific and related uses.

"To thus achieve and derive maximum benefits from increase in the value of such facilities as tourist attractions (and) in relation to the growing needs of our residents."

The coming of State ownership of the lands serving the visiting public has created the opportunity for change. Their efforts have already preserved thousands of acres of wilderness and natural beauty and have made them available to the public for its enjoyment. In early February 1966, Governor King charged the present Mount Washington Study Committee to consider the short and long range objectives for State properties on Mount Washington including what changes, improvements and modifications should be made so that the people of New Hampshire may be assured of the greatest benefit from the scenic, scientific, commercial and recreational standpoint.

IV: The Consultants - Their Objectives

The State has engaged Carter and Woodruff, Architects, in association with the Office of Dan Kiley, to establish a comprehensive development plan. The objective of this study is to determine the most appropriate and desirable development as a park, providing maximum public use and recreation potential, and bearing in mind the rights and needs of the commercial interests which also serve the public.

V Experiencing the Mountain

The experience of visiting the Mountain invariably begins on the highway when it is first seen from the distance. It disappears behind trees or other mountains, but soon appears again closer and from a different angle. Rapidly changing light and weather add new variables, and each time you glimpse the mountain you see a different aspect of it. During actual ascent by foot, by road, or railroad, the mountain continues to change. Forest at first, it becomes scrub growth near the timberline, and above, alpine fields, rough cliffs and loose boulders. One no longer sees the whole mountain, but rather its changing composition in detail, and during ascent one senses the forces of the Mountain as those changes take place. The higher one gets the more one can see of its rugged beauty, and the more one develops a sense of excitement in anticipation of reaching the Summit.

But on arrival, any excitement that may have developed during the ascent is quickly dissipated by the haphazard arrangement of unrelated buildings and tanks, the tangle of pipes and conduits, the cinders of the railroad siding, litter of picnic rubbish, and the parking lot full of shiny automobiles. Instead of the dramatic experience of arriving at the top of the White Mountains with a vista of unadulterated terrain that reaches to the Sea and the horizon, one cannot find the Summit for the buildings nor see past them to enjoy the view.

VI The Conceptual Plan

To fulfill this experience the Summit must be cleared of its present debris and confusion and returned to her natural character. However, to be accessible to the public and provide protection from the elements, there must be a structure on top. It is most important that the natural Summit be the dominant element, both in profile from the distance and when standing on the Mountain itself. The shelter must relate to the character of the Mountain and blend into it. It must not in itself create an obstacle to the panoramic experience that is such an important part of the sense of being close to nature on a mountain top.

The level area below the Summit, next to Ball Crag, is a natural position for all activities that do not have to be on the Summit. It is the logical terminus of the railroad and road; a place to view the entire Summit cone again as one first saw it from the highway. This is where all future development will occur. There is room for expansion here. This terminal becomes

a staging area for the final short trip to the Summit. In addition to the usual tourist facilities, there will be brief, but continuous audio-visual presentations, to acquaint the visitor with the historic, scientific, and commercial roles of the Mountain. A Tube will mechanically transport visitors between the two buildings underground without disturbing the natural terrain. It is also possible for visitors to hike to the Summit from Ball Crag, experiencing the final assault on foot.

VII Implementation

The total development outlined above looks to the future when the numbers of people, trains and automobiles coming up the Mountain cannot physically be accommodated at the very Summit. It looks to the day when the WMTW-TV lease has expired (or before, if the usefulness of their facilities terminates) and those buildings can be removed. The development plan projects a large tourist center at Ball Crag with overnight visitor accommodations which can be operated over a longer season if the demand so indicates.

For the near term however, the most pressing problems relate to accommodation of the visiting public at the Summit. The wasted condition of the public shelters and inadequacy of water supply and sewage disposal systems are of primary concern.

In addition to development of an overall conceptual plan, the purpose of this study has been to present recommendations for the immediate needs of the public at the Summit. The Architects have prepared a preliminary design for the Summit Shelter and renovation of Tip Top House, the only existing building which will not ultimately be razed. Drawings of these buildings and a site plan are attached to this report.

An analysis of the mechanical systems required to complement the buildings proposed herein is attached as an Addendum to this report. Also attached hereto, as a separate Addendum, is an alternative site study for a Summit Shelter attached to the east end of Tip Top House.

VIII The Summit Shelter

The new Summit Shelter will be built into the east side of the Summit plateau in a location which provides the most convenient access for patrons of the road and railroad without itself creating a visual obstruction on the Mountain's profile or of the view from the Summit. In order to utilize this optimum site for a new building, it is necessary to relocate the last portion of the auto road at the Summit. The old road becomes a footpath to the building from the parking lots for Auto Road patrons, and the new road provides a more favorable grade for vehicular travel.

The structure is conceived as an intrusion-grouted stone masonry fortress growing out of the rock of the Mountain itself. On the outside, it is a series of decks integrated with the pedestrian circulation routes of the Summit area and providing viewing points of varying orientations at several levels. One may move freely around the structure or enter it at either level.

The upper level of the Shelter containing the Park Administrative Office and First Aid Station in addition to approximately 25% of the public space that is provided, is accessible at grade for both auto road and railroad patrons. An elevator is provided to permit aged or handicapped visitors to reach the Snack Bar and public toilets on the lower level. The entire interior space is ordered to provide integration of museum and display functions with waiting, lounging and eating areas. Built in benches as well as tables and chairs are freely located in a tightly integrated sequence of spaces. On the walls of the Shelter will be mounted photographs and charts depicting the life of the Mountain in all seasons and high points in its history. Two rear-screen projection displays will supplement the photographic exhibit with automatically sequenced color slides of life on the Mountain. The Architectural goal is to provide a high degree of spatial variety and visual interest to stimulate the visitor's curiosity about the unique environment he is visiting.

IX. The Tip Top House Observatory

Tip Top House, constructed in 1853, is the oldest structure on the Summit and has been judged by the most recent Citizens' Mount Washington Study Committee as the only building of any historical significance on the Mountain. The Study Committee and the Division of Parks have charged the Architects with the responsibility of finding a suitable use for the restoration of Tip Top House, and accordingly we have recommended that it shall house the living accommodations for the crew of the Mount Washington Observatory. Originally it was built on a single level with a practically flat roof. The upper level of the decaying structure should be removed and replaced by a flat roof which can serve as an elevated outdoor public observation deck. To provide sufficient work space and a radome platform at the proper elevation, a new tower of architecturally compatible design will be constructed contiguous to Tip Top House. The well known profile of the original stone structure will again be visible and the tower will allow the building to accommodate an occupancy of permanent nature and important significance, scientifically and historically. The lowest level of the tower will be linked to the lower public level of the Summit Shelter by an underground tunnel also serving as the mechanical umbilical cord for the Tip Top complex.

X Summary

The long range objectives and goals are clear. This plan not only restores the Summit to the most natural condition possible, but provides for growth, comfort, safety, and therefore, complete enjoyment of all aspects of the area. It establishes a guiding philosophy for thoughtful development of the Park over the coming years. The necessity to build additional structures in the Summit area is obviated by providing adequate accommodation for all interests. It creates a complete and meaningful experience on the Mountain for maximum enjoyment by visitors to and residents of the State of New Hampshire.

XI Architectural Program

SUMMIT SHELTER

Public Lounging, Eating and Exhibition Space	5,500 s.f.
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Public Toilets	600
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Snack Bar	250
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First Aid Station	150
-------------------	-----

Information and Administration	200
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20% circulation, walls, etc.	6,700
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	1,300
	<u>8,000</u>

Mechanical equipment	2,000
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Storage and emergency supplies	300
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Gross Building Area	10,300 s.f.
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TIP TOP OBSERVATORY (per MWO requirements dated 4/28/69)

Living space in Tip Top House	1,260 s.f.
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Working space and storage in Tower	1,620
	<u>2,880</u>

Public Observation and circulation	955
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	3,835 s.f.
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XII General Cost Estimates

1. Building Construction		\$1,730,000.00
Summit Shelter	\$1,240,000	
Link to Tip Top	106,500	
Tip Top Renovation and Tower	383,500	
2. Site Work		50,000.00
3. New water supply and storage		300,000.00
4. New sewage disposal system		81,000.00
5. Demolition and site clearing		<u>25,000.00</u>
Sub-total		\$2,186,000.00
10% Engineering and Contingency		<u>218,600.00</u>
		\$2,404,600.00
6. Furnishings and Equipment, etc.		75,000.00
7. Power generators		57,000.00
8. Engineering survey of Summit for construction purposes		<u>10,000.00</u>
Project cost - based on receipt of bids Spring 1970. If bidding is delayed, add 15% for each year of delay		\$2,546,600.00
Not included: Cost of Real Estate and easements in connection with water supply		
Professional fees		

XIII Furnishings and Equipment Lists and Budget

Summit Shelter - Upper Level - Furnishings

1. Administrative Office \$ 1,800.00
 - 3 desks, desk chairs and files
 - 3 side chairs
 - 1 work table
 - 2 stools at Information Counter
2. First-Aid Room 1,000.00
 - 1 desk and desk chair
 - 2 side chairs
 - 2 rolling first-aid tables
 - first-aid equipment table and storage cabinet
3. Public Lounge 3,500.00
 - built-in bench seating with 54 lineal feet
 - of locked storage under for 27 units of
 - emergency bedding
 - 27 units of emergency bedding, including
 - folding cot, blankets and pillow
 - 6 heavy lounge chairs
 - Free standing museum-type display rack

Summit Shelter - Lower Level - Furnishings

4. Public Lounge and Display Area 3,400.00
 - built-in bench seating with 66 lineal feet
 - of locked storage under for 33 units of
 - emergency bedding
 - 33 units of emergency bedding including
 - folding cot, blankets and pillow
 - 6 heavy lounge chairs
5. Public Eating Areas 8,400.00
 - 14 tables 3'-6" diameter with 1-1/4"
 - butcher block tops with cast iron base
 - 70 heavy oak armchairs
 - built-in bench seating with 60 lineal feet
 - of locked storage under for 30 units of
 - emergency bedding
 - 30 units of emergency bedding including
 - folding cot, 2 blankets and pillow

Summit Shelter Equipment

6.	Radio-telephone communications network with base stations of railroad, auto road, AMC and USFS	9,500.00
7.	Public address system	1,500.00
8.	First-Aid equipment	2,000.00
9.	Cafeteria Equipment (based on Mt. Sunapee State Park Summit House)	15,000.00
	Refrigerator 17 cubic foot	
	Freezer 25 cubic foot	
	Hot Dog Grille	
	Bun Steamer	
	Frialator	
	Hot Chocolate Unit - 8 quart	
	Coffee Urn - 10 gallon	
	Silex Units - 2-3 element units	
	Ice Cream Cabinet	
	Dry Heat Serving Unit	
	Cold Serving Unit	
	Milk Dispenser	
	Cold Drink Dispenser	
	Stainless Steel counters	
	2 compartment sink	
	exhaust hood, fan and filters	
	cash register	
10.	2 automatic rear screen projection display units	4,000.00
11.	Wall mountings for permanent exhibition throughout public areas of Summit Shelter	2,000.00
12.	Design and production of the Historical, Educational and Scientific Exhibition	20,000.00
	Total Estimated Cost of Furnishings and Equipment	72,100.00
	Budgeted Figure	\$75,000.00

XIV Demolition Outline Specifications

The following existing buildings shall be demolished at such times during the course of the project as shall most expeditiously accommodate progress of construction without limiting public or private use of the facilities contained there:

1. The Stage Office
2. The Summit House
3. The Observatory Building
4. The upper level, roof and interior of Tip Top House, leaving only the original stone walls
5. The link between Summit House and Tip Top House

The structures shall be completely demolished (except as noted) and the sites cleared of all debris and left in as natural condition as possible. In addition, all existing tanks, piping and conduit shall be removed at such time during construction as determination can be made that they are no longer useful or alternative systems can be installed out of view, or buried underground. Further, approximately 75 feet of Cog Railroad track and trestle shall be removed starting from the end of the Railroad line and moving northward to a point which shall be agreed upon with the Cog Railroad Company.

MT. WASHINGTON SUMMIT DEVELOPMENT

ARCHITECTURAL REPORT

ADDENDUM - MECHANICAL AND ELECTRICAL SYSTEMS

22 August 1969

This analysis of the mechanical systems required by the proposed Summit Development was made by the firm of Rollins, King and McKone, Consulting Engineers, Manchester, New Hampshire. With respect to the water supply and sewage disposal systems, this report is based on observations and statistical data obtained from a report prepared by the Dufresne-Henry Engineering Corp., and subsequent reports by Mr. Malcolm Wilkins, PE, supplied to the Architects by the Division of Parks. All reports were reviewed by Rollins, King and McKone and were found to complement each other in basic recommendations. The reports were also found to be very detailed and specific and the engineers concurred with the logic of the conclusions contained in them.

A specific breakdown of equipment and construction costs for all systems and the summit building is attached to this report. With respect to water supply and sewage it is deemed prudent to provide now for the ultimate projected capacity.

I WATER SUPPLY

(All consumption requirements are taken from the Dufresne-Henry report)

The existing Franklin Brook source will continue to be utilized and work related to maintaining or improving collection systems

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at the source will have to be determined by an on site engineering survey when definitive system design is undertaken. A new pumping station shall be constructed at or near the location of the existing pump house to house two 50 horsepower reciprocating pumps, electric motor driven, and one 125 KVA electric generator, diesel motor driven. This equipment shall be automatically controlled with remote monitoring systems at the Summit, and will require only periodic inspection and maintenance. Pumping will be at the rate of 30 gallons per minute on a demand basis as measured at the Summit storage tanks. Daily draw-down will be made up on off-peak hours.

The existing force main shall be replaced by approximately 3-1/4 miles of new 2" heavy wall steel pipe supported, if possible, on the railroad trestle. (Alternative support is independent of the trestle at considerable additional expense.) At the Summit, the force main shall leave the trestle at an appropriate point and proceed underground to the storage tanks.

There shall be two 40,000 gallon steel storage tanks buried underground near the site of the existing Summit House. Each tank shall be equipped with a well-pump to pump water to a concrete tank built into the cellar of the new Summit Shelter.

This additional tank shall be of 20,000 gallon capacity (sufficient alone for a peak summer day at present, or an average

-3-

day 20 years hence as projected in the Dufresne-Henry Report) and is sized to supply the projected 8-man resident Observatory staff for the winter period. This tank shall be protected against freezing and will supply water through a hydro-pneumatic system to all fixtures and equipment in the buildings. There will be a period of time after pumping operations have stopped due to cold weather before water temperature in the 40,000 gallon storage tanks drops and those tanks have to be drained. During this period, the tanks can continue to be used by Summit crews. Built in thermometers will monitor the water temperature in the tanks.

Although we concur with the basic recommendations of the Dufresne-Henry Report, we feel that modification to the water systems should be made to adapt it to this particular project both in function and esthetics.

1. The Dufresne-Henry Report recommended a wood stave storage tank on a concrete pad. We are using buried steel tanks for esthetic reasons.
2. The Dufresne-Henry Report stated that the 3-1/4 miles of force water main had not been inspected and that it was assumed that the major portion of this main would have to be replaced. It has been our experience that when an attempt is made to replace sections of old water main, usually the final result is replacement of the whole system.
3. The Dufresne-Henry Report also recommended that the existing force main be relocated from the trestle to the ground adjacent to the railroad. This would seem to pose a problem since the relocation and construction must be performed during climatic periods that coincide with high water use on top of the mountain.

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Due to the above mentioned reasons, Rollins, King and McKone felt that a new separate force water main fastened to the trestle is the most logical solution and is the one used in preparing the budget estimate.

II SEWAGE SYSTEM

Any sewage system must be designed for maximum anticipated flow of 40,000 gallons per day, the Dufresne-Henry estimate of peak day water consumption 20 years hence. The system which seems best suited to the proposed Summit Development is described by the Dufresne-Henry Report as Alternate 3, Section B-5 on Page 21 of that report.

Generally, this system includes an underground sewer line connected to all existing sewers at the Summit, with drop-manholes as required, leading to two buried 7,500 gallon septic tanks and a dosing chamber near the site of the former USAF Dormitory. The effluent line will continue through a distribution box to the existing sand filter bed which shall be enlarged and rebuilt as required by on-site observation and percolation rates. Outfall from the filter bed will occur at about elevation 5,997 feet.

Again, while the engineers concurred with the basic recommendations of the Dufresne-Henry Report, they feel that slight modifications to the sewage system would better suit the requirements of this project.

The Dufresne-Henry Report recommended that the septic tank and associated pipe line from the facility could be lowered and insulated

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so that one of the 7500 gallon septic tanks could be used as a holding tank for winter operation.

We suggest that electric or chemical toilets be used for the winter inhabitants and that a small holding tank be installed in the cellar of the new summit shelter for collection of other waste water during the winter period. This holding tank could then be pumped into the normal sanitary system when climatic conditions were favorable. A system such as this would greatly reduce the probability of freeze-up.

III POWER SUPPLY

The cellar of the new Summit Shelter shall house two 125 KVA diesel engine driven electric generators to provide the power required by the State buildings. There shall be underground storage for 40,000 gallons of number 2 fuel oil for these generators near the site of the existing Summit House.

IV MECHANICAL AND ELECTRICAL SYSTEMS FOR THE PROPOSED STATE BUILDINGS

1. Heating in the new Summit Shelter and the Tip Top Observatory and Tower shall be of electric resistance type. The portions of the Shelter unused in winter shall be heated to a low level to protect against freezing and frost damage. Heat shall be available on demand throughout the year.
2. Domestic hot water shall be electrically heated in the Summit Shelter and in the Observatory.

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3. Electric lighting shall be designed to complement the Architectural requirements of the facilities.
4. A public address system and such other communications or information display systems as may be desired shall be installed in the buildings.
5. Mechanical ventilation shall be provided of adequate size for all toilet and kitchen areas.
6. Plumbing fixtures in public toilet rooms shall accommodate a maximum of 300 people per hour. Water closets shall be of type requiring a minimum of water. Electric or chemical toilets shall be provided for winter use by resident staffs.
7. Snack bar and Observatory kitchen shall be provided with adequate sinks.
8. The Observatory shall be provided with adequate bathroom accommodations for the resident staff.
9. The Mechanical link between the Summit Shelter and the Observatory spaces shall consist of a 1" diameter water supply pipe, metered electric service and a sanitary waste line. These services shall run in the ceiling of the tunnel connecting the two buildings.

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V ESTIMATED CONSTRUCTION COSTS PREPARED BY
ROLLINS, KING AND MCKONE, CONSULTING ENGINEERS, MANCHESTER, N. H.

SUMMARY SHEET

I WATER SUPPLY

1.1 Pump House \$ 95,000

1.2 Force Main 140,000

1.3 Summit Storage 65,000

\$300,000

Total \$300,000

II SEWAGE DISPOSAL

2.1 Piping, Manholes

2.2 Filter Bed Septic
& Dosing Tank

Total 81,000

III POWER SUPPLY

3.1 Generators 57,000

Total 57,000

IV SUMMIT BUILDINGS

4.1 Ventilation 13,000

4.2 Plumbing 65,000

4.3 Electrical 52,000

\$130,000

Total 130,000

Grand Total \$568,000

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I

Water Supply

1.1 Pump House

Structure 400 ft.² @ \$30.00 \$12,000

Pumps and Piping 25,000

Engine Generator (125 KVA)
(including oil storage tanks
and all accessories) 19,000

Electrical 2,000

Miscellaneous 5%
3,000
61,00025% Sub Contractors O.H.&Profit 15,000
\$76,000

Site Adjustment 1.25 x 76,000 \$ 95,000

1.2 Force Main

(3-1/4 miles) 16,800 ft. pipe
@ \$5.00 84,000Miscellaneous 2-1/2%
2,100
86,10030% Sub Contractors O.H.&Profit 26,000
\$112,100

Site Adjustment 1.25 x \$112,000 140,000

1.3 Summit Storage

80,000 Gal. Steel Tank 25,000

Miscellaneous Piping 7,000

Miscellaneous 5%
1,600
\$ 33,60020% Sub Contractors O.H.&Profit 10,000
\$ 43,600

Site Adjustment 1.50 x \$43,600 65,000

95,000
25
70,00

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II Sewage & Disposal

2.1	Sewer Lines & Manholes	\$22,000	
	Miscellaneous 10%	2,200	
2.2	Septic Tank & Dosing Chamber	10,900	
	Modifications to Filter Bed	6,100	
	Miscellaneous 10%	<u>1,700</u>	
		42,900	
	25% Sub Contractors O.H.&Profit	<u>10,700</u>	
		\$53,600	
	Site Adjustment 1.50 x \$53,600		\$ 81,000

III Power Supply3.1 Power Generator

	2-125 KVA Generators (including oil storage tanks and all accessories)	\$37,700	
	Miscellaneous 5%	<u>1,900</u>	
		\$39,600	
	15% Sub Contractors O.H.&Profit	<u>5,940</u>	
		\$45,540	
	Site Adjustment 1.25 x \$45,540		57,000

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IV

Summit Buildings

4.1 Ventilation

Ventilation 6000 CFM @ \$.80 4,800

Miscellaneous 5% 200
5,00030% Sub Contractor O.H.&Profit 1,500
6,500

Site Adjustment 2.0 x \$6,500 \$13,000

4.2 Plumbing

30 Fixtures @ \$500 15,000

First Aid 4 Fixt. @ \$500 2,000

Snack Bar 1,000

Water Storage 20,000 Gals. 5,000

Hydro-pneumatic System 3,000

Miscellaneous 10% 2,600
28,60030% Sub Contractors O.H.&Profit 8,600
37,200

Site Adjustment 1.75 x \$37,200 \$65,000

4.3 Electrical (with electric heating)

Service 2,000

Lighting 9,900

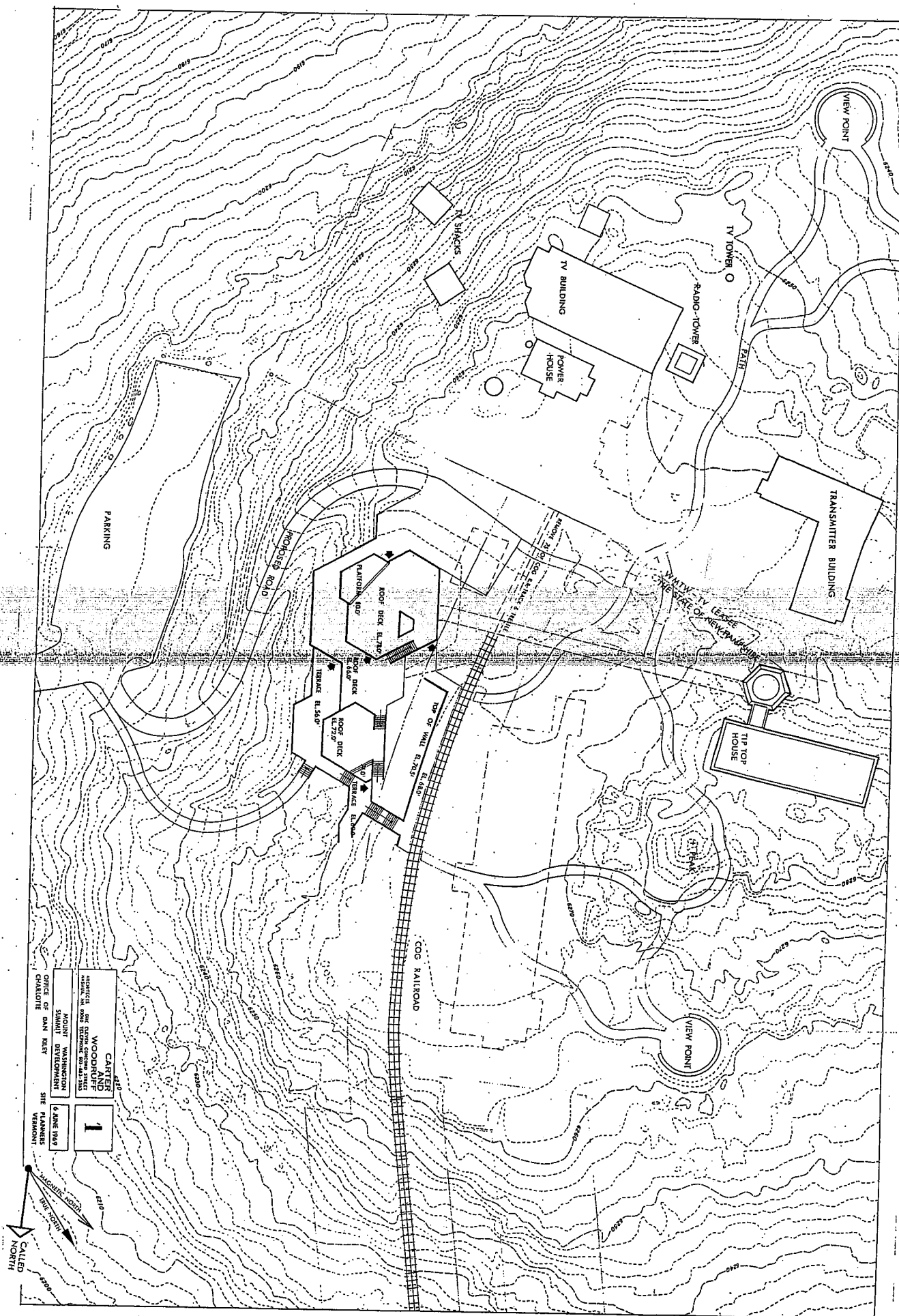
Power Distribution 3,600

Public Address 2,000

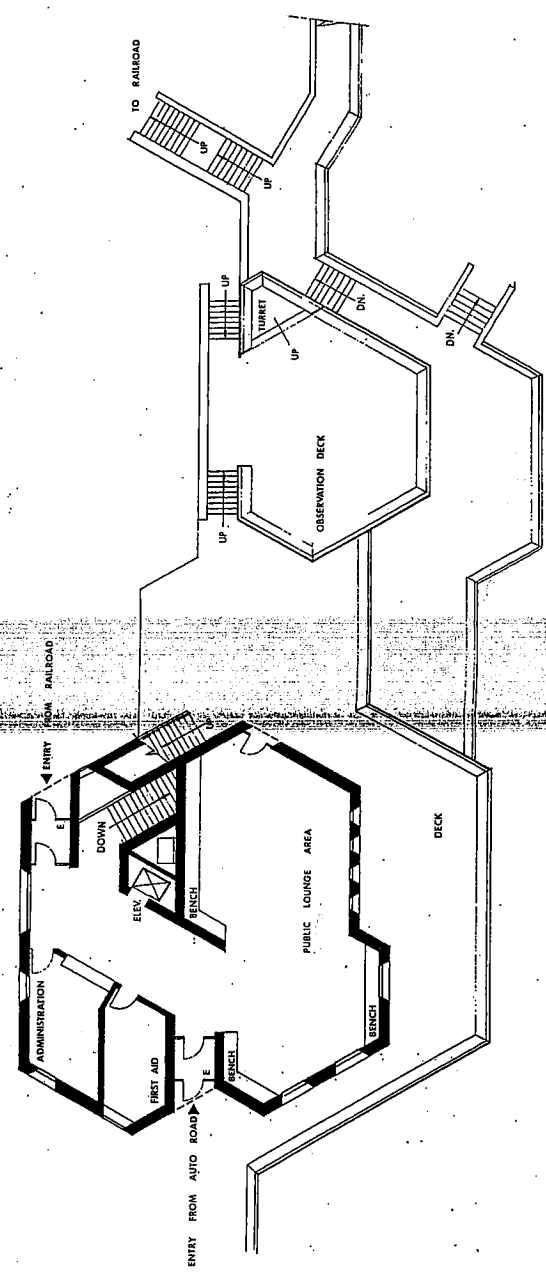
Duplex Recept (20) 500

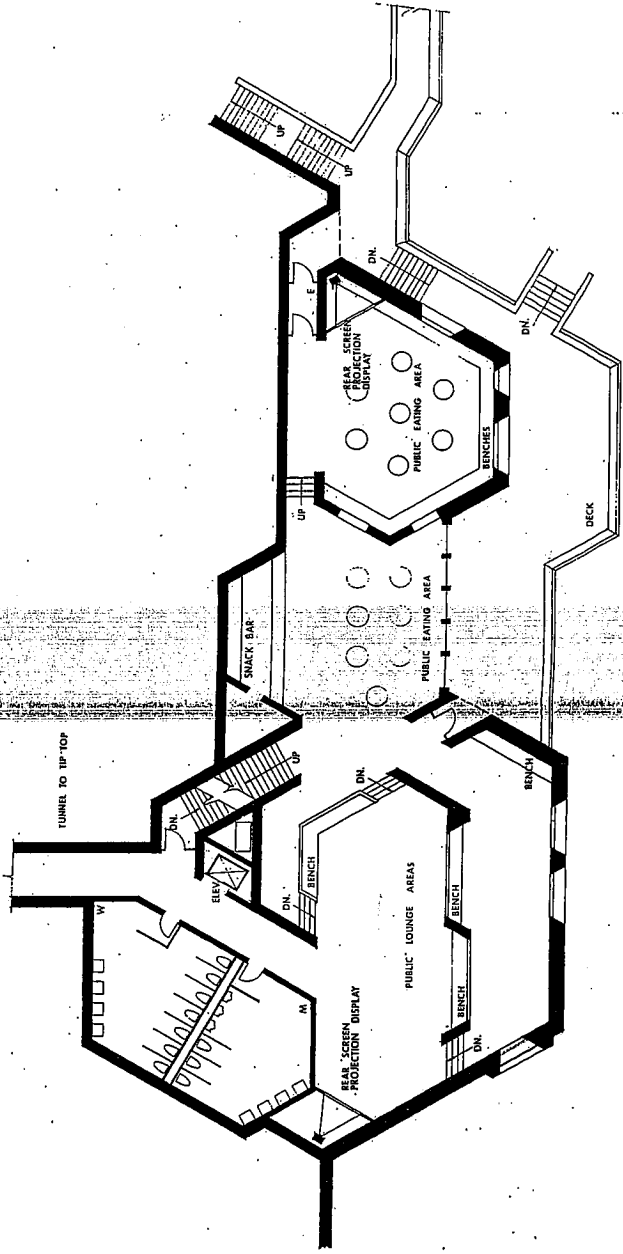
-11-

Electric Heating (75 KW)	<u>3,800</u>	
Miscellaneous	<u>1,100</u>	
	22,900	
30% Sub-Contractors O.H.&Profit	<u>6,900</u>	
	29,800	
Site Adjustment 1.75 x \$29,800		\$52,000



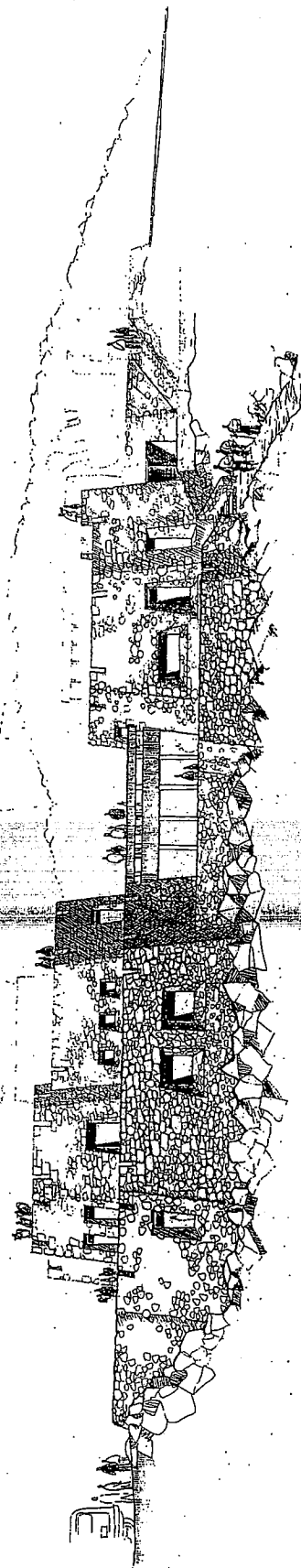
UPPER LEVEL PLAN

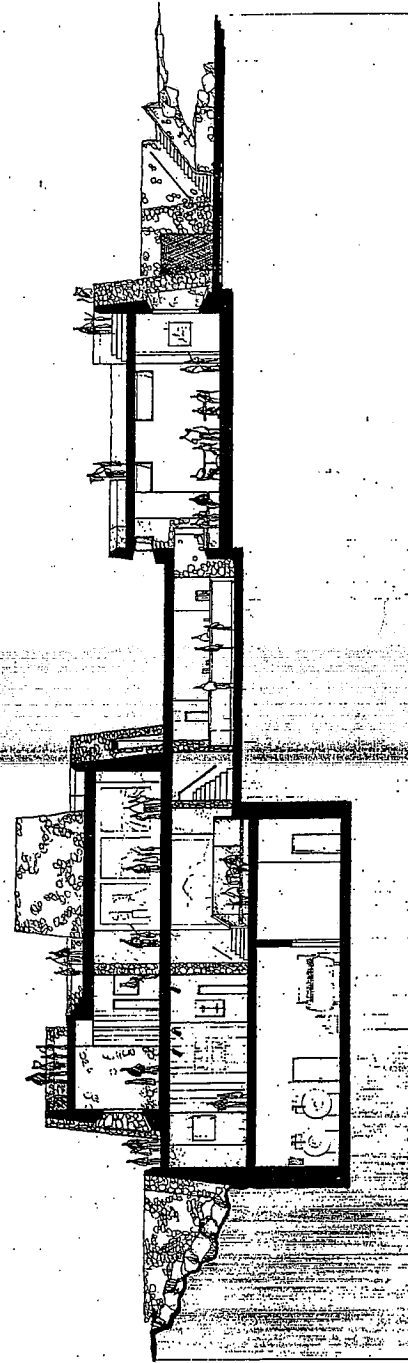




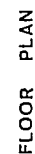
LOWER LEVEL PLAN

EAST ELEVATION





SECTION LOOKING WEST



ONE ELEVEN CONCORD STREET NASHUA NEW HAMPSHIRE 03060 TELEPHONE (603) 883-5583

JOHN A. CARTER AIA
BLISS WOODRUFF AIA
JAMES L. MITCHELL AIA
DAVID W. CHEEVER AIA
ALVIN B. CORZILIUS, JR. AIA

CARTER AND WOODRUFF ARCHITECTS

29 December 1969

Mr. Malcolm J. Chase
Special Services Division
N. H. Dept. of Public Works and Highways
John O. Morton Building
Concord, New Hampshire 03301

Re: Mt. Washington Summit Development

Dear Mal:

John asked me to forward to you (sent under separate cover) the Site D Planning and Building Scheme Studies which were made in the past couple of months. When you have finished with them, please return the originals.

I am enclosing the original and five copies of the Addendum to our report, dated 24 December 1969.

Happy New Year.

Very truly yours,

CARTER AND WOODRUFF, ARCHITECTS

David

David N. Page
DNP:mw
Enc.

*Copy to N. Isack 12-31-69
Copy to Mr. Warr. Comm. 1-6-70*

MEMBERS OF THE AMERICAN INSTITUTE OF ARCHITECTS

MOUNT WASHINGTON SUMMIT DEVELOPMENT

ADDENDUM - SITE D STUDY

24 December 1969

At the direction of the Department of Public Works and Highways, the Architects have prepared studies of buildings at site D, located northeasterly of the existing Summit House and including an area of land presently owned by Marshfield, Inc. approximately sixty feet long by eighty feet wide. The Architects were directed that they could consider use of this portion of Marshfield land if it was deemed necessary.

The principal advantages of this site seem to be its proximity to the actual Summit and the view of the northern peaks therefrom. In order to dramatize the view and relate it to the Mountain, it is necessary to provide a foreground for reference. If one can look down the slope of the Mountain and off to the distance, not just out across the flat summit plateau, the visitor will have a far greater sense of where he is and the excitement of that place. In looking down, one will achieve a strong sense of the height at which he is. The act of moving to the edge of the plateau to achieve this end, at this site, necessitates use of Marshfield land.

A secondary advantage to Site D is the proximity to the Cog Railroad tracks and the opportunity to afford those visitors to the Mountain some shelter against prevailing winds while they disembark. Of course, this is offset by the greater distance larger numbers of auto road patrons must go from parking lots to the building, as compared with utilization of Site B on the south-east slope.

There is a difference in the size of buildings between the studies for Site D and the earlier schemes which must be identified. Earlier directions from the Division of Parks were to provide minimal public accommodations on the Summit so as to avoid a large building on the Mountain. The hope was to restore the summit area to its natural condition. The consensus of the Mount Washington Commission, on the other hand, was to build a facility large enough for the foreseeable future, and twice as large as presented on June 6, 1969 at Site B.

The result of this increase in programmed space and closer proximity to the Summit, is to begin to encircle the Summit itself. Any building on Site D will block the view in that direction from the Summit just as Tip-Top House, the existing Summit House and the link between them do now. Depressing the link to Tip-Top from the new Summit House will alleviate this condition to some extent, as will building some of the space at a lower level, cut into the hillside on the Marshfield land. In addition, lowering the existing link will open the view of the Summit from the vicinity of the State office and make direct access to it from that direction possible. Photographs and sections have been used to demonstrate that even a one story building at Site D will cut off view of all but the most distant mountain tops from the Summit.

From the point of view of the Mount Washington Observatory, Site D seems to have greater appeal than Site B for a tower location. The Architects believe that the tower location adjacent to Tip-Top House as shown on June 6, 1969 with that building renovated for Mt. Washington Observatory living quarters is a still better solution than having MWO share the main public building. In both cases, links or tunnels between the new Summit House and Tip-Top House provided access under adverse weather conditions.

The alternatives to using Tip-Top for Mt. Washington Observatory living quarters have been a museum and an open windbreak. The interior space is only seven feet high, twenty feet wide and eighty feet long. This is a poor space for a museum area being too low and narrow for proper photographic display and circulation among exhibits. In addition, if the exhibition were a part of the main public space, visitor time on the Summit could be reduced by eliminating travel among several buildings, and an integrated public assembly, eating and exhibition space would create a more exciting experience for the visitor. A strong case could also be made for removing all of Tip-Top except the old stone walls and leaving them as an outdoor windbreak at the Summit.

DNP:mw

WGR
WHO

JOHN A. CARTER	AIA
BLISS WOODRUFF	AIA
JAMES L. MITCHELL	AIA
DAVID W. CHEEVER	AIA
ALVIN B. CORZILIUS, JR.	AIA

CARTER AND WOODRUFF ARCHITECTS

15 October 1969

Mr. Malcolm J. Chase
N. H. Department of Public Works
and Highways
John O. Morton Building
Concord, New Hampshire 03301

Re: Mt. Washington Summit Development

Dear Mal:

Enclosed please find the revised program for the new Summit Building. Attached to it is a copy of the revised population data on which the program is based, and a preliminary budget estimate for the revised project.

Kindly review these figures so that we may be in agreement on the scope and content of the project.

Thank you very much.

Very truly yours,

CARTER AND WOODRUFF, ARCHITECTS

David

David N. Page

DNP:bh

cc: Governor Adams

Mt. Washington Summit Development

14 October 1969

General Cost Estimates:

1. Building Construction 24,050 sq.ft. @ \$110.	\$2,645,500.
2. Site Work	25,000.
3. Demolition and Site Clearing	30,000.
4. Power Generating Equipment	<u>57,000.</u>
	\$2,757,500.
10% Engineering and Contingency	<u>275,750.</u>
	\$3,033,250
5. Furnishings and Equipment	75,000.
6. Engineering survey of Summit for construction purposes	<u>10,000.</u>
	\$3,118,250

Not including:

Water supply and Sewage disposal systems
Real Estate costs
Professional fees

Based on bidding Spring 1970 (add 12% per year)

Mt. Washington Summit Development

Architectural Program

14 October 1969

Entry Vestibules	2 @ 100 sq.ft.	200 sq.ft.
Lobby/Exhibition Area	200 people @ 40 sq.ft.	8,000
2 Audio-Visual Presentation Projection Rooms		200
Souvenir sales, Post office and Public Telephones		500
Administrative Office and First Aid Room		250
Road Company Office		100
Railroad Office		100
Public Toilets		800
Eating Area	100 people @ 15 sq.ft.	1,500
Snack Bar	25 ft. serving counter	300
Receiving/Food Storage/Trash Room		200
Hikers' Pack Room		600
Resident Crew Quarters (adjacent M.W.O.)		
2 double bedrooms @ 140 sq.ft.		280
Bath		70
Lounge		200
Staff Eating	10 people @ 15 sq.ft.	150
Daily Staff Lockers and Toilets		
15 men, 5 women		300
A.M.C. Supply Unit		50
Emergency Supplies Storage		200
		14,000 sq.ft.
20% circulation, walls, etc.		2,800 sq.ft.
Sub-total		16,800 sq.ft. Gross

Mount Washington Observatory (as submitted 4/28/69)

Living Areas

4 double bunk rooms @ 10' x 12'	480 sq.ft.
Bathroom	50
Kitchen/Dining 10' x 20'	200
Lounge/Recreation Area 15' x 20'	300
Entry/Gear Storage	80

Work Areas

Instrument Platform	250
Sheltered Gallery	150
Radar Room	40
Instrument System Room	300
Chief Observer's Office	120
Records and Research Room	160
Communication Equipment Room	100
Emergency Shop	100
Project Rooms	200
Photography Darkroom	100

Service and Storage Areas

Food Storage	150
Emergency Materials Storage	100

2,880 sq.ft.

30% circulation, walls, etc.

870 sq.ft.

3,750 sq.ft.

Mechanical Equipment

3,500 Gross

including power supply and fuel storage
water storage (20,000 gallons) and
pressure system
incinerator
hot water heating

Total Building Area

24,050 sq.ft. Gross

4.

MT. WASHINGTON SUMMIT DEVELOPMENT

SUMMATION OF POPULATION DESIGN CRITERIA as interpolated from 1967 Report by William F. Henry to The Governor's Mt. Washington Study Committee. Data revised and corrected 10 October 1969.

1956 Boston University Survey (est.)	150,000 Visitors
1966 University of New Hampshire (est.)	245,000 Visitors

	<u>1956</u>	<u>1966</u>	<u>1966 Ratio</u>
Cog Railroad	48,000	48,000	2
Auto Road	50,000	73,000	3
Hikers	52,000	124,000	5
Total	<u>150,000</u>	<u>245,000</u>	

1966 Population - Summit Visits

Average day of peak week	(9 hours)	450 people per hour
Average day of July and August	(9 hours)	320 people per hour
Average day of Season	(9 hours)	174 people per hour

Cog Railway:	Maximum capacity at Summit	3 trains/168 people
Auto Road:	Maximum capacity at Summit	200 cars/680 people

Cog Railway:	Average capacity at Summit	68 people per hour
Auto Road:	Average capacity at Summit (July and August)	84 people per hour

Based on the above population averages it seemed appropriate to plan new accommodations for 400 people inside at one time in combined Ball Crag and Summit Buildings. This figure represents a 25% increase over the hourly population of the average day of July and August, the months during which 72% of the seasonal visits are made.

Subsequently, upon direction from Division of Parks that only a Summit Shelter should be designed now, it was concluded that this new Summit Shelter should replace existing facilities with minor additions, but not greatly increase the interior public space available.

It was determined that in accordance with the Conceptual Plan, such expansion would be provided at Ball Crag, if, as, and when it seemed necessary and appropriate.

Revised and corrected 10/10/69

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Revised and corrected 10/10/69.

THESE FIGURES ARE BASIS FOR NEW PROGRAM ATTACHED

SUPERSEDED

XIV Demolition Outline Specifications

The following existing buildings shall be demolished at such times during the course of the project as shall most expeditiously accommodate progress of construction without limiting public or private use of the facilities contained there:

1. The Stage Office
2. The Summit House
3. The Observatory Building
4. The upper level, roof and interior of Tip Top House, leaving only the original stone walls.
5. The link between Summit House and Tip Top House

The structures shall be completely demolished (except as noted) and the sites cleared of all debris and left in as natural condition as possible. It shall be noted that portions of the cellar and crawl under Summit House are intended to be used to contain buried water and oil storage tanks for the new buildings and demolition in these areas shall be coordinated with the future requirements.

In addition all existing tanks, piping and conduit shall be removed at such time during construction as determination can be made that they are no longer useful or alternative systems can be installed out of view, or buried underground. Further, approximately 75 feet of Cog Railroad track and trestle shall be removed starting from the end of the Railroad line and moving northward to a point which shall be agreed upon with the Cog Railroad Company.

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at the source will have to be determined by an on site engineering survey when definitive system design is undertaken. A new pumping station shall be constructed at or near the location of the existing pump house to house two 50 horsepower reciprocating pumps, electric motor driven, and one 125 KVA electric generator, diesel motor driven. This equipment shall be automatically controlled with remote monitoring systems at the Summit, and will require only periodic inspection and maintenance. Pumping will be at the rate of 30 gallons per minute on a demand basis as measured at the Summit storage tanks. Daily draw-down will be made up on off-peak hours.

The existing force main shall be replaced by approximately 3-1/4 miles of new 2" heavy wall steel pipe supported, if possible, on the railroad trestle. (Alternative support is independent of the trestle at considerable additional expense.) At the Summit, the force main shall leave the trestle at an appropriate point and proceed underground to the storage tanks.

There shall be two 40,000 gallon steel storage tanks buried in the cellar hole of the present Summit House after that building is demolished. Each tank shall be equipped with a well-pump to pump water to a concrete tank built into the cellar of the new Summit Shelter. This additional tank shall be of 20,000 gallon capacity (sufficient alone for a peak summer day at present, or an average

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so that one of the 7500 gallon septic tanks could be used as a holding tank for winter operation.

We suggest that electric or chemical toilets be used for the winter inhabitants and that a small holding tank be installed in the cellar of the new summit shelter for collection of other waste water during the winter period. This holding tank could then be pumped into the normal sanitary system when climatic conditions were favorable. A system such as this would greatly reduce the probability of freeze-up.

III POWER SUPPLY

The cellar of the new Summit Shelter shall house two 125 KVA diesel engine driven electric generators to provide the power required by the State buildings. There shall be underground storage for

~~40,000 gallons of number 2 fuel oil for these generators, possibly~~
at the site of the excavated area under the existing Summit House when it is demolished.

IV MECHANICAL AND ELECTRICAL SYSTEMS FOR THE PROPOSED STATE BUILDINGS

1. Heating in the new Summit Shelter and the Tip Top Observatory and Tower shall be of electric resistance type. The portions of the Shelter unused in winter shall be heated to a low level to protect against freezing and frost damage. Heat shall be available on demand throughout the year.
2. Domestic hot water shall be electrically heated in the Summit Shelter and in the Observatory.