MT. SUNAPEE

NEW HAMPSHIRE

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** M T S U N A P E E S K I A R E A **

CONCEPTUAL PLAN REPORT

March 20, 1986

Prepared for

The STATE of NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION
ON BEHALF OF
DEPARTMENT OF RESOURCES AND ECONOMIC DEVELOPMENT

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March 30, 1986

Mr. Wallace E. Stickney, P.E.
Commissioner
Department of Public Works
and Highways
John O. Morton Building
Concord, NH 03301

Dear Commissioner Stickney:

Attached to this letter are five copies of our final report on alpine facilities improvements for Sunapee State Park, entitled "Mt. Sunapee Ski Area Conceptual Report". We will be happy to furnish any additional copies you may require.

Thank you for selecting Ericksen Associates to assist with what has been a very interesting project. Sel, Bill and I have enjoyed working with everyone in the Public Works and Parks Divisions and especially appreciate the help and professionalism of Rick Antonia, Bob Barry, Bill Ulinski, Don Sorento and many others too numerous to mention. We look forward to the opportunity of continuing our involvement as Mt. Sunapee begins to realize its full potential.

Respectfully submitted,
ERICKSEN ASSOCIATES, INC.

Nils Ericksen, P.E.

Sel Hannah

Bill Malcolm (Malcolm Associates)

NE/p

MOUNT SUNAPEE SKI AREA

CONCEPTUAL PLAN REPORT

** I N D E X **

INTRODUCTION

As part of an on-going improvements program at both Cannon and Sunapee State Parks, the Department of Public Works and Highways solicited proposals from three consulting firms to assist with developing the required programs. Following interviews with the firms on November 19, 1984, the Department selected Ericksen Associates to provide the needed engineering services. A formal agreement was issued in January, 1985.

During the interview process, it became apparent to all in attendance that some sort of basic plan for both Ski Areas should be prepared to assist in future decision-making. Thus, in addition to preparing specifications for: painting certain lifts, repairs to North Peak, Province and Peabody lifts, replacement of the Duckling, Summit and Upper T-bar (Cannon) lifts, Ericksen Associates was authorized to prepare a "study" of Sunapee. At this point Sel Hannah, of Franconia, and Malcolm Associates of Lyme, joined the effort in preparing a "conceptual plan" and map of proposed improvements to the alpine facilities at Sunapee State Park. Our initial "concept" was submitted in March, 1985 and a supplement on the "Phasing of Improvements" in the end of May.

During the preparation of this report and a preliminary eval-

uation of Cannon Mountain, the need for reliable and detailed mapping became very apparent. Thus, an aerial mapping program for both areas was begun in April and completed in the later part of July. The new maps were very important not only in preparation of an area plan, but also in assisting with final design of snowmaking capabilities in the Province and beginners Tow areas. Installation of snowmaking on Province slopes began in late November, 1985 and was operational in late January 1986.

During the early spring of 1985 specifications were prepared for an aggressive lift replacement/improvement program at Sunapee and funding was approved for contract work beginning in July of 1985. Bids were solicited for the replacement of three chairlifts, and the renovation of two others at Mount Sunapee, with a contract award being executed October 4, 1985.

During the lift re-bidding process, most of the planning work was set aside and not continued until late September. In December, a draft copy of the final "Conceptual Plan" was submitted to the two Departments involved: Public Works, and Resources and Economic Development. After review by the key personnel involved, including those at Sunapee, the final report and maps were revised and are now presented. While reviewing this report, it is important to note that a great deal of field work remains to be done to verify many of the assumptions that were necessary to expedite this study. In the near future, additional professionals must be involved in

the project to provide design services for snowmaking, buildings and summer program facilities.

I. SUMMARY

As a result of the initial Concept Analysis of Sunapee Ski Area completed in the spring of 1985, bids were solicited and contracts awarded for the replacement of three chair lifts, renovation of two others and installation of snowmaking to cover two novice ski slopes. As of March 15, 1986 the first chairlift is under construction and the snowmaking expansion is completed and operating. A contract for new trail work has been awarded for this season.

As of the start of the 1985 ski season, Sunapee Ski Area consisted of 130 acres of skiing terrain of which 51 acres (40%) had snowmaking coverage. The trail system was serviced by (5) double chairlifts and one (1) surface lift providing a total uphill capacity of 5000 skiers per hour. The comfortable area capacity which may be defined as the number of patrons present within the complex who can expect to have a pleasurable and relatively unhasseled experience is approximately 2800 skiers.*

When <u>all</u> of the proposed trail work is completed, the existing 130 acres of skiing will be increased to 195 and snowmaking coverage from 51 acres (40%) to 139 acres (71%). Lift capacity will increase from a <u>minimum</u> of 5000 skiers per

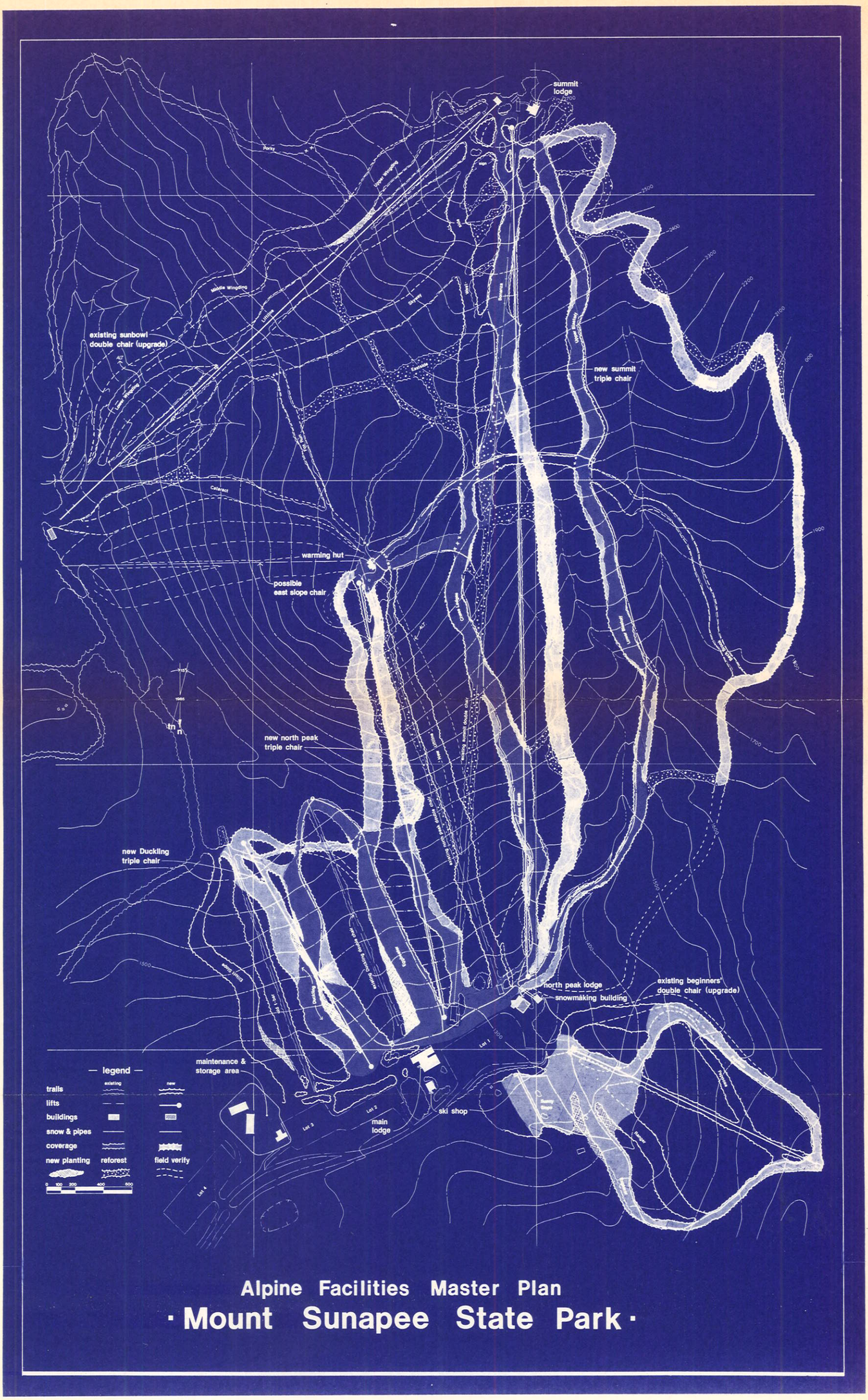
hour to 8500. With the addition of 5000 square feet minimum (7900 sf budgeted) in Base Lodge facilities, relocation of the ski rental operation and Ski Patrol, addition of three more grooming vehicles and development of a shuttle bus system from the parking lots, the comfortable area capacity will approach 4000* skiers per day.

*These figures may be exceeded by up to 15% during peak demand periods because of ideal operational and climatological conditions and a lowering of patron expectations due to the specific time frame involved - (vacation week, holiday, ideal snow conditions).

Based upon the above capacities, we estimate trail improvements will cost 1.6 million dollars. New snowmaking coverage will be extremely critical in realizing the projected area capacity and will cost 2.8 million dollars. Three new grooming vehicles for 400 thousand dollars, building expansion at 1.2 million dollars (including furnishings) total lifts for 2.6 million dollars and power distribution improvements for 0.6 million, yields a total capital improvements package of at least 9.2 million dollars. To

this figure should be added a design, field engineering and construction, inflation contingency of 20% for a total budget of 11.0 million dollars. Of this total 2.5 million has been encumbered for lifts, trail and snowmaking improvements to date.

* All costs are based on 1985 construction dollars. Estimates are based on June-December 1985 bid prices experienced by the State for similar type work.


summit lodge
new summit triple chair
existing sunbowl double chair (upgrade)
warming hut
possible east slope chair
new north peak triple chair
new Duckling triple chair
north peak lodge
snowmaking building
existing beginners' double chair (upgrade)
maintenance & storage area
ski shop
main lodge
legend
existing
new
trails
lifts
buildings
snow & pipes
coverage
new planting
reforest
field verify
Alpine Facilities Master Plan
· Mount Sunapee State Park ·

** MOUNT SUNAPEE STATE PARK **

PROPOSED PHASING of IMPROVEMENTS

March 20, 1986

Y E A R 1:

LIFTS:

-Install New Duckling Triple Chair	Note 1

TRAILS:

-New "Liftline" top half above Duckling	Note 2
-Unload @ Duckling Chair to Elliot and Eggbeater	" "
-Cut return trail at base of Elliot to new chair	Note 3

SNOWMAKING:

-Run return loop down new Duckling Liftline trail

-Install air, water and electric on:

1. Province	Note 3
2. Explorer	" "
3. Tow Slope	" "
-Add moisture separator to air system in Compressor House	" "
-Install new valving in Compressor House for Province	" "

SNOW GROOMING:

-Purchase "Power Tiller" for existing machine	Note 4

BASE FACILITIES:

-Study primary power supply upgrade for construction in year 2.

Y E A R 2:

LIFTS:

-Install new North Peak Triple Chair	Note 5
-Install new Summit Triple Chair	" "

-Remove existing N. Peak and Summit double chairs

TRAILS:

-Cut two new liftlines (N. Peak & Summit) Note 2
-New Upper Flying Goose " "
-Confluence of Summit trails at Base " "
-Complete Duckling "Liftline" trail " "
-Blast "Chase Ledges"
-Blast cross-over to top of Ridge trail
-Rebuild Ridge trail to intersection with Beck Brook
-Final design remainder of main mountain trails
-Field inventory of Bowl complex and preliminary design

SNOWMAKING:

-Entire length of Flying Goose
-Final design of all snowmaking improvements
-Increase available water at Compressor House

SNOWGROOMING:

-Purchase new 200 HP grooming vehicle w/ attachments
-Purchase new tractor-type vehicle for snowmaking

BASE FACILITIES:

-Install new primary power into Base Area
-Select architect for Base Building improvements

YEAR 3:

LIFTS:

-Rebuild Sun Bowl chair with new terminals and line equipment. Reuse towers and cross-arms if possible.
-Rebuild Province chair

TRAILS:

-Finish Ridge extension
-Widen trails on Province complex
-Rebuild "Bonanza/Chipmunk" top to bottom
-Rebuild West Side to Hansen Chase juncture
-Rebuild "Blastoff" top to bottom
-Finish lower Hansen Chase
-Construct new "Lynx" trail

SNOWMAKING:
-Install new systems on:
1. Ridge
2. Chipmunk
3. Lynx
4. Upper West Side
-Double water volume supplied to hill network
-Add one air compressor - electric

SNOW GROOMING:
-Purchase second 200 hp grooming vehicle w/ attachments

BASE FACILITIES:
-Construct minimum 5000 sf of Base Lodge facilities
-Establish "shuttle bus" system for parking lots

Y E A R 4:

LIFTS:
-No work planned for this year

TRAILS:
-Build "Eggbeater Extension"
-Rebuild trail system in Sun Bowl complex:
1. Skyway
2. Liftline
3. Winding
4. Porky
5. Cataract
-Build new "Lift line" trail @ Duckling T-bar site

SNOWMAKING:
-Expand pumping capacity to handle Sun Bowl complex
-Add electric or diesel air compressors and Fan units
-Install new systems on:
1. Liftline
2. Wingding
3. Porky (optional)

SNOW GROOMING:
-Replace oldest grooming tractor

BASE FACILITIES:

-Complete base area improvements (summer/winter)

Note 1: Under Construction
Note 2: Under Contract Spring 1986
Note 3: Constructed Winter 1985
Note 4: Purchased Fall 1985
Note 5: Under Contract for Summer 1986

II. AREA CAPACITY

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The determination of realistic ski area winter capacity, although not extremely complicated, is somewhat tedious. In this report we have utilized four methods of determination and found a very close correlation between all methods. The methods used are as follows:

1. Round trip interval or RTI which is simply the addition of waiting time in line, riding time on the lift and return skiing time to the base of the lift. The total of these figures yields the desired round trip interval of the individual skier for that particular lift/trail complex.
2. Capacity based upon vertical transport feet is a function of the amount of vertical each level of skier would desire to ski in a certain period of time, usually a six hour day.
3. A rule-of-thumb based upon a certain percentage of the uphill lift capacity. For an area the size, configuration and location of Sunapee, we used 40 percent.
4. After these three calculations have been completed they are compared to the final and most reliable figure: what the facility has actually experienced in the past.

We have determined that the existing **Comfortable Carrying Capacity** of the lifts and trails alone is approximately 2100 skiers. When an additional 30 percent is added for the

remainder of the resort complex, a maximum comfortable area capacity of approximately 2800 is arrived at. This compares very favorably to past operating experience at Sunapee.

Following completion of the new lifts and supporting trail systems we calculated the comfortable area capacity to be approximately 4000 skiers. This allows for an average wait in line of 5 minutes on the smaller lifts and a maximum of 10 minutes on the larger. At this capacity, existing Base Lodge facilities will be the major constraint.

While developing the capacity figures, the capacity of each lift complex was adjusted depending upon the amount of time a particular lift would be used for accessing another. A prime example of this situation is the North Peak lift which, based upon previous history, and our projections, will provide much of the access to the Sun Bowl complex: the remainder being supplied by the Summit Chair.

III. TRAILS

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Determination of reliable data on existing and proposed trail acreage was greatly enhanced by the aerial mapping developed for this project. The new topographic mapping was plotted at a scale of 1"=400' with a 10' contour interval based upon photography done April 25, 1985. We provided the control-survey for the mapping process and then enlarged the map to 1"=200" showing only existing facilities without any contour information. We then added the proposed lift locations, 50 foot contour intervals, proposed trail realignments, new and existing snowmaking coverage, and proposed building changes.

All trail acreages were scaled from this map. The total existing skiable acreage which is maintained, is approx-mately 130 acres. Following completion of our recom-endations, the proposed skiable acreage will be approximately 195 acres: a 50% increase. The proposed trail realignments for the Sun Bowl Complex have yet to be field verified due to time and monetary constraints. However we feel the proposed acreages are within reason at this level of investigation.

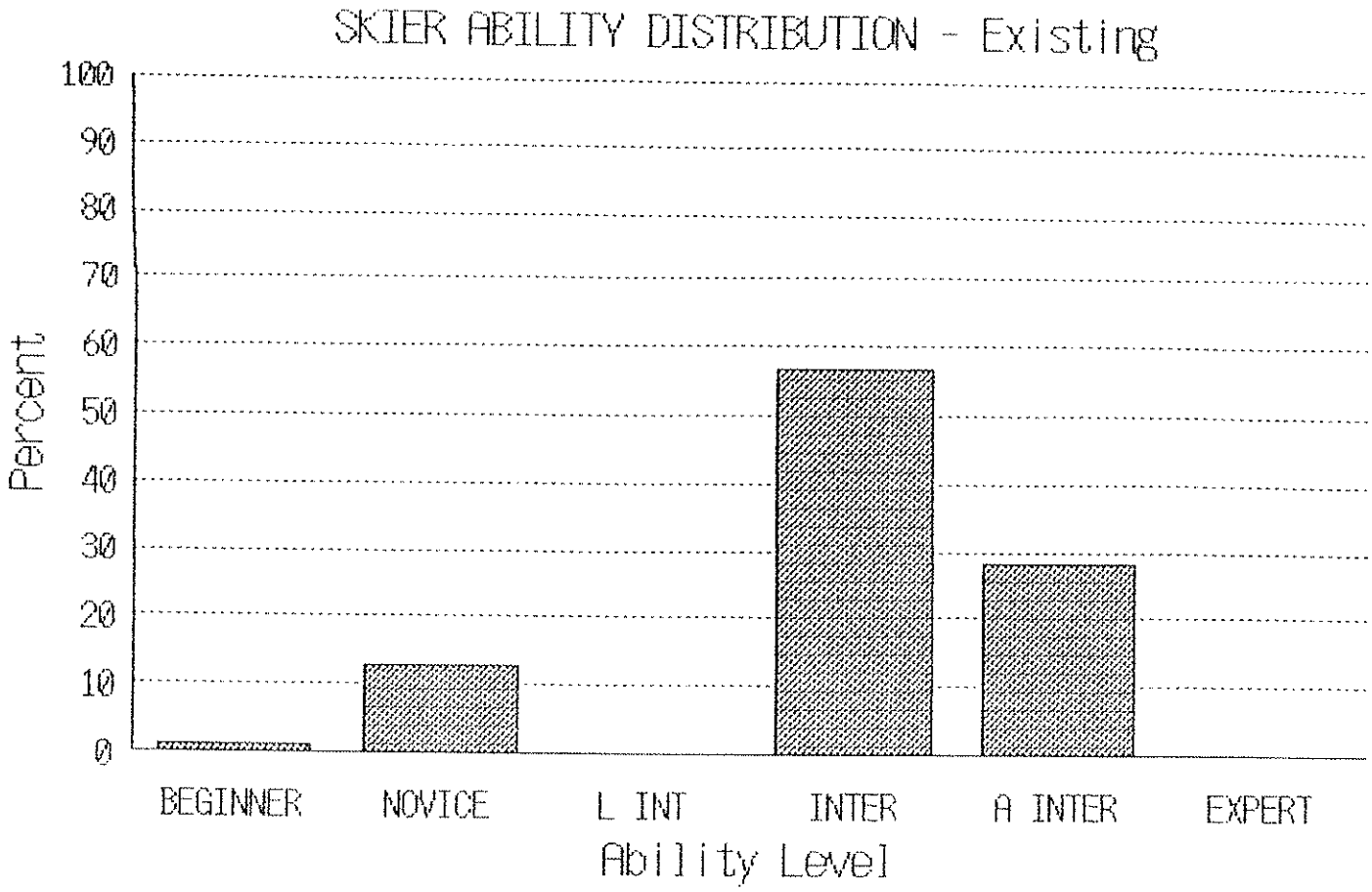
During the process of calculating existing and proposed acreage, we made allowances for actual trail use. In our trail summaries (Tables 1 & 2) you will note that

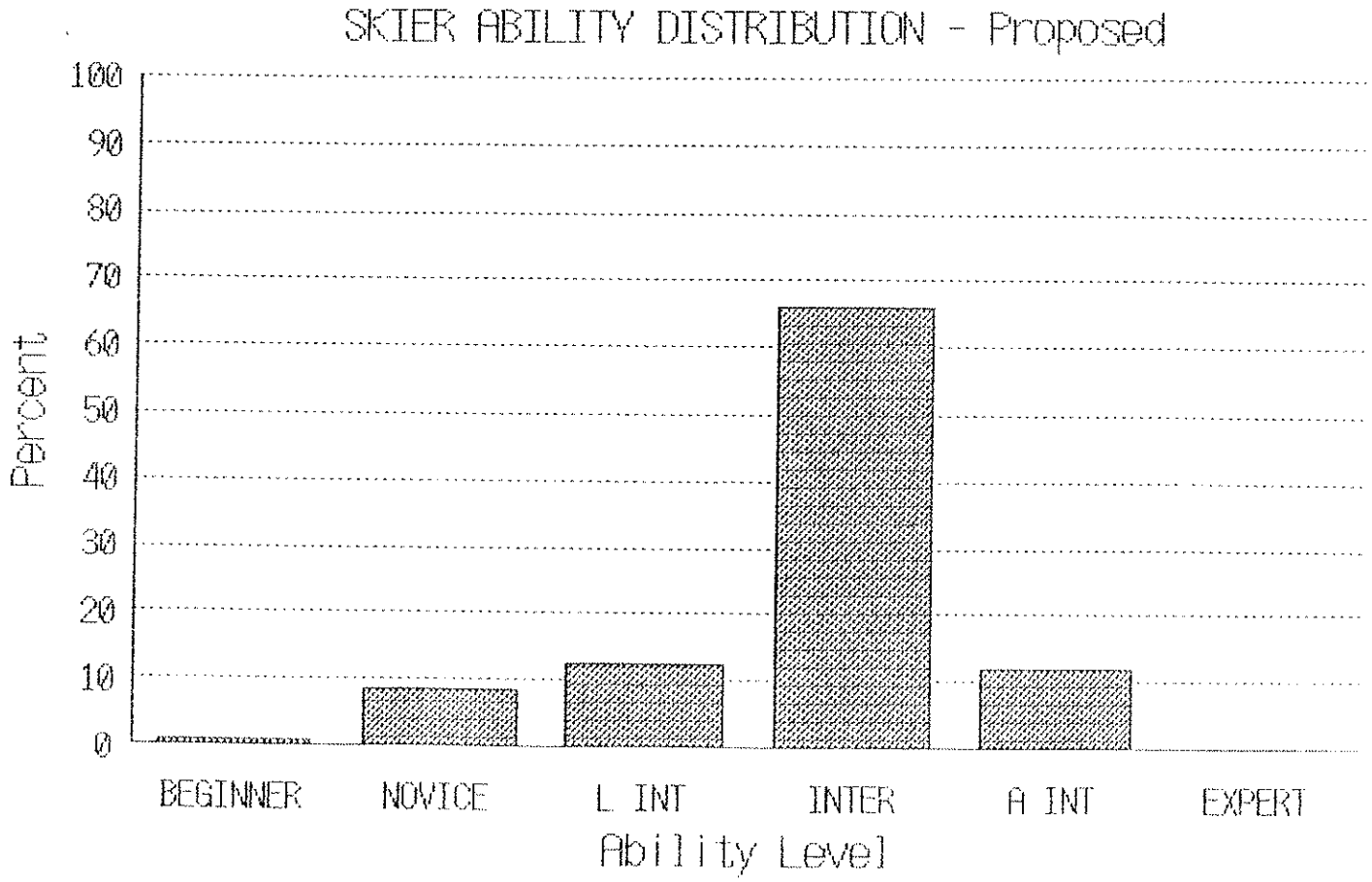
certain trail lengths are shorter than what they measure on the map. We counted only the trail length that is involved in each lift complex. Therefore, in the case of the West Side Trail for example, we calculated it once as a part of the Hanson Chase Trail, but did not include it as part of Skyway. In the detailed trail analysis, 50% of West side acres were allocated to Skyway and Hansen Chase.

In addition to acreage, a skier ability level was assigned to each trail based upon width, average grade, and maximum grades. These assignments are very important in the final analysis of the entire complex since they relate to the normal distribution of skier abilities experienced in this geographic area. For example: Let us assume that of the total 130 acres, 35 acres were allocated each for beginner and intermediate and 60 acres for experts. It is fairly well established that beginners only require somewhat less than 5 percent of the entire area (in this region) as do true expert skiers. The remaining percentages must be or should be allocated to the novice, low intermediate, intermediate, and advanced intermediate skier where the major portion of the market exists. Thus as the trail complex is revised and updated, every effort must be made to either maintain or improve upon this distribution. This is the main reason the Ridge Trail from the summit must be dramatically improved to create more skiing for the advanced novice/low intermediate skier in addition to providing a way off the summit for this

lower level skier. The final balance of the trail network at Sunapee achieves the desired distribution of ability levels expected at Sunapee.

Following completion of all trail improvements, beginner acreage is unchanged, novice increases 120%, intermediate (all levels) increases by 70% while advanced skiing is reduced 41%. Much of what we classify as "advanced" in the existing trail network is done because of narrowness, cross-slopes and rock outcrops which will be corrected in the proposed Plan.


SKIER ABILITY DISTRIBUTION - Existing
Percent
100
90
80
70
60
50
40
30
20
10
0
BEGINNER
NOVICE
L INT
INTER
A INTER
EXPERT
Ability Level


SKIER ABILITY DISTRIBUTION - Proposed
Percent
100
90
80
70
60
50
40
30
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10
0
BEGINNER
NOVICE
L INT
INTER
A INT
EXPERT
Ability Level

TABLE 1:

EXISTING TRAILS

Trail #	Trail Name	Length	Vert	Av Width	Ac	Rank	Snow
PROVINCE:							
20	Explorer	2600	350	75	4.5	Nov	N*
21	Ranger	1400	250	125	4.0	Nov	N
22	Papoose	1850	250	75	3.2	Nov	N
23	Province	2300	350	75	4.0	Nov	N*
					15.7		0.0
WIRE TOW:							
19	Sunny Slope	600	70	125	1.8	Beg	N*
					1.8		0.0
*	INSTALLED 85-86						10.3
DUCKLING:							
15	Elliot	1950	400	100	3.4	Int	N
16	Duckling	1560	350	125	4.5	Int	Y
17	Eggbeater	1560	350	175	6.3	Int	Y
18	Lwr Goose(>)	1500	350	100	1.6	Int	N
					15.8		10.8
	Connectors				1.0		1.0
NORTH PEAK:							
18	Upper Goose	2050	600	75	3.6	A-Int	N
18	Lwr Goose(>)	1500	350	100	1.6	Int	N
13	Han-Chase(>)	3700	925	100	4.2	Int	Y
12	Beck Brk(>)	3000	500	75	2.6	Int	N
13a	Connectors:	700		75	1.2	Int	Y
		800		50	0.9	Nov	Y
					14.1		6.3

Trail #	Trail Name	Length	Vert	Av Width	Ac	Rank	Snow
SUMMIT:							
8	Westside(>)	2500	575	75	2.2	A-Int	N
9	Bonan/Chip	2400	625	100	5.5	A-Int	Y
10	Blastoff	6200	1350	100	14.2	A-Int	Y
11	Ridge	6700	1050	50	7.8	Int	N
12	Beck Brk(>)	2300	300	75	2.0	Int	N
13	Han-Chase(>)	3600	925	100	4.1	A-Int	Y
14	Chipmunk	3500	725	50	3.9	A-Int	N
					39.7		23.8
SUN BOWL:							
1	Porky	6000	1050	50	6.9	Int	N
2	Wingding	4650	1050	150	16.0	Int	N
3	Liftline	1500	450	125	4.3	Int	N
4	Cataract	1400	550	100	3.2	A-Int	N
5	Fox Run	1400	150	50		Nov	N
6	East Side	1600	850	100	3.6	Int	N
7	Skyway	1600	850	150	5.5	Int	N
8	Westside(>)	1500	325	75	2.6	Int	N
					42.1		0.0
		84-85					10.3
	All Trails Total				130.2 Ac		51.0 Ac

- 40% of trail acreage covered with snowmaking -

- (>) : Partial allocations

PROPOSED IMPROVEMENTS

A summary description of each existing and new trail that is involved in the Plan follows:

A. PROVINCE AREA

There are no immediate plans for making any major changes in this area. Aside from the snowmaking being installed this year and minor trail widening we recommend realignment of the Province and Papoose to provide two separate and distinct trails.

B. DUCKLING AREA

This area was studied and redesigned during the winter of 1984-85. A new lift line was located and four ski routes established. A major portion of the proposed cutting was sidelined and the remainder studied and marked in the field.

1. New Duckling:

The existing uppper Duckling slope will be retained and stay to the westerly side of the new lift. It will tie in (at approximately the mid point above the island) to the westerly side of the Duckling which was improved for last season. By using selective

plantings along the new lift line this traffic will be directed toward the west. Anyone wishing to return to the base lodge complex by the most direct route will use this trail.

2. **New Lift Line:**

The upper half of this trail is through entirely new terrain and lies east of the new chairlift line. It joins the lower slope of the existing Duckling trail on the flat opposite the island.

3. **T-bar Lift Line:**

There is no immediate rush to build this trail, but once completed it will provide excellent downhill skiing for race practice and some course setting. It will start out as part of the upper Duckling trail and shortly thereafter follow the fall-line of the old T-bar lift line. Immediately above the old T-bar drive terminal a cross over trail will be constructed on the old work road to come out at the base of the new Duckling slope. This will be a narrow trail at minimal grades only to provide access back to the new lift.

4. **Elliott Slope:**

There are no plans to make any major changes in this

trail at any time other than to reforest certain portions of the westerly side on the lower end which are not skiable due to the extreme cross slope. The base of this trail will connect with a short cross-over back to the base of the Duckling chair.

5. **Eggbeater:**

To maintain maximum flexibility for future operations the connector between the summit of the new Duckling chair and the lower Eggbeater should be maintained. There is already snowmaking at the top of the old Duckling chair, which could cover this connector. Once the Eggbeater extension is completed for advanced skiing from the Northpeak chair, the lower portion of the Eggbeater will have to be closed off to any access from the Duckling lift system. The lower 1/3rd of the existing Eggbeater on the east side should be reforested due to excess width and cross-slope.

The new Duckling and Liftline slopes have natural rolls and reasonable grades satisfactory for use by the intermediate skier.

C. NORTHPEAK COMPLEX:

The terrain serviced by the <u>new</u> North Peak lift is some-

what limited in diversity but will support three excellent ski routes in spite of several natural constraints.

1. **Eggbeater Extension:**

This trail, when tied into the lower Eggbeater, will provide the most easterly of three downhill routes without which the lift would be difficult to justify. It connects with the existing Eggbeater at a major change in grades crossing an existing flat. This will be one of the more difficult trails to build because of the steepness and ledge outcrops, but it is certainly within the scope of the project. Although it need not be built first, it is an important part of this three trail system.

2. Flying Goose:

The lower portion of this trail has been widened and straightened in the past several years and has improved the skiing in that area dramatically. This kind of design will be carried to the summit of the North Peak chair following mostly the old narrow serpentine path of this trail. It will parallel the new North Peak triple chair and provide excellent skiing.

3. **New Trail:**

Initial discussions relative to utilizing the old lift line of the North Peak chair as a downhill trail quickly proved that it would not allow adequate space for the three trails required to service this lift. The new trail will run to the west of and more or less parallel to the old lift line, cutting back into the lift line at the bottom, and covering the same terrain as the old Lynx. Again, this trail will provide mostly fall-line skiing and will be the easiest of the three trails serviced by this lift. It is accessed at the top from the Hansen Chase connector to reduce the extreme wind problems experienced so often in this area. Almost the entire existing North Peak lift line must be replanted or let grow up to brush.

The new Eggbeater and Flying Goose are advanced trails with some sections exceeding 50% grades. They satisfy a definite need at Sunapee where presently there are no quality advanced ski routes. The new Lynx will be slightly less difficult and should appeal to the strong intermediate skier. When the Hansen-Chase is rebuilt, it will provide a much more enjoyable intermediate route than now exists when the main mountain is not open.

D. THE SUMMIT COMPLEX

Four essentially uninterrupted ski routes have been developed on the main mountain. Three are classified advanced intermediate and one, the Ridge, is low intermediate.

1. West Side/Chase:

By reworking the upper Westside trail, it can easily be tied into the Chase Ledges and Hansen Chase for a beautiful run top to bottom. The biggest single difficulty on this complex is of course the Chase Ledges, which need extensive work regardless of how this trail is used. Traffic from the North Peak Complex will be discouraged from entering onto the Hansen Chase trail since it will be a major downhill route for the new triple chair to the Summit. The top portion of the West Side trail will also feed into the East Bowl. Some major work will have to be done at the base of this trail as it comes back through the steep brook valley at the base of the new triple.

2. Bonanza - Chipmunk:

Both Bonanza and Chipmunk trails are very popular even as they exist today. By straightening, widening and correcting some off-slope situations, this will provide another excellent top-to-bottom run from the Summit

chairlift. The only real problem that needs to be corrected is the ledge near the top. Except for one steep section on top it should provide an excellent intermediate skiing experience.

3. **Blastoff:**

The existing Blastoff trail (which is more or less continuous top to bottom until it ties into the Lower Ridge) will be straightened, widened and generally tuned up. It will share the same access on top as the Ridge Trail, which will require some major work to handle the traffic and also provide for wind protection through fencing. The lower section below the Ridge Trail connector tie-in is somewhat constrained on the east by the brook valley and on the west by a steep cut. There are some areas that should be widened to make this trail more skiable. Surface water is a problem also.

4. **Ridge Trail:**

Potentially the most important trail on the mountain is the Ridge Trail. Without a means for the lower level skier to utilize the upper mountain, the Summit Chair and restaurant will not benefit from their use of these services. Although this trail will not be wide (on the average 65 to 75 feet) it will require extensive work in the upper reaches to provide a reasonable grade for the

lower level skiers. We expect that the cost of improvement and difficulty of design is the reason the trail has not been changed prior to this project. As can be seen on the Plan, major changes must be accomplished which will require substantial cuts, fills and blasting. The money spent on this trail will contribute substantially to the overall acceptance of the new Sunapee. A great deal of time was spent determining the best access to this trail. In order not to mix high speed and low speed skiers the trail entrance will be at the top of Blastoff. The lower portion of the Ridge Trail, where it now connects into the lower Blastoff, will be relocated so that once a skier enters the Ridge Trail at the top, there will be no cross traffic until reaching the base of the new Summit triple. This will be the most aesthetically pleasing and enjoyable novice-low intermediate route on the mountain (and possibly New England) and should greatly aid ticket sales.

When the new Summit lift is in operation and the Sun Bowl lift is at full capacity (1800 pph), the area between the two terminals will develop traffic congestion unless the unload station for the Bowl lift is relocated downhill to provide clear access to the upper West Side trail from the Summit Chair. As mentioned, access to the Blastoff and Ridge trails will require considerable re-

shaping to develop the proper grades and widths.

E. EAST BOWL (SUN BOWL) COMPLEX:

Little time has been spent cruising this terrain. Therefore, all of our recommendations are based upon map study and discussions with personnel at Sunapee. We do feel confident however, that the recommendations that follow are realistic.

1. Porky:

As is the case for the Ridge Trail, there is also good reason for improving and realigning segments of this trail to make it more skiable and provide better drainage control, especially on the lower third of the trail. With an average overall grade of 14% it has the potential (with snowmaking) to be an advanced novice trail. Whether or not this trail can be made acceptable is a question that can't be answered until field work is conducted in this area.

2. Wingding (Upper, Middle and Lower):

This trail provides the greatest design challenge in the East Bowl, relative to rock out-crops, poor drainage and, at the base, space problems. If these problems can be

reasonably corrected, we visualize the alignment of this trail staying essentially as-is (on the upper half) with widening at various locations to improve the skiing. The lower portion of the trail as it approaches the base area becomes very critical due to the combined traffic from it and the Lift Line trail and also the drainage valley that constrains it on the east side. Realignment here will require expensive reshaping.

3. Lift Line:

The so called Lift Line trail, which really is not on the lift line, will likely require modifications near the entrance to provide better access. With the unloading point downhill from where it is currently located, and using bullwheel unloading, this problem could be diminished. Through revegetation and additional clearing, traffic could be directed onto the existing lower Wingding providing a more positive skiing experience.

4. Skyway:

Access to Skyway is from the West Side trail and could continue to be so but it will require further study. Again, as with Lift Line, minor realignment, revegetation and selective clearing could improve the skiing and reduce maintainence of this trail. There are also some

rather serious constraints near the base of the lift. It is possible that an old work road may be utilized to relieve some of the expected congestion.

The improved traffic flow through the West Side route to the Hansen/Chase will also carry traffic destined for the Sun Bowl. Thus, the Bowl lift unload station should be relocated downhill to accomodate this situation. The terrain allows for such a change which would however, negatively impact access to the Summit Lodge facilities due to a longer walk. The downhill traffic flow should take precedence. With the large increase in uphill capacity of both the Summit and Bowl lifts, consideration should be given to building a small lodge at the base of the Bowl lift.

5. East Side:

The East Side Trail is of little consequence and by itself provides very minimal use and a rather questionable skiing experience. We recommend closing this trial.

6. Fox Run (Connector):

This narrow 11% trail provides access onto the Sky-Way from the North Peak trail complex. However a false sense

of security is generated prior to hitting the steep trails that exist at the base of the Bowl lift. Better access for lower level skiers must be found if this trail is to stay open.

7. **Cataract:**

One of the more popular trails with the better skier at Sunapee is the Cataract. Unfortunately it is not easily accessed since it essentially provides downhill skiing only as a connector between the North Peak and the Sun Bowl complexes. This trail should be widened at the top to improve the overall skiing experience.

It is <u>possible</u> that Cataract, when combined with two new trails, could support an entirely separate lift complex. This is <u>very</u> preliminary in nature and must be studied before any further recommendations can be made. Although excellent downhill skiing could be provided for the very advanced skier, serious problems exist at the base relative to drainage. In addition, this extra lift would create more loss in uphill capacity from the North Peak chair to feed this new complex.

The terrain study of the Sun Bowl is not completed. This area requires three major intermediate routes and, if possible, one easier route. The present Bowl skiing has

areas of excellence and also frustration due to outcrops, bottlenecks, off-slopes and poor drainage. Reshaping these areas will be expensive but worthwhile.

F. TEACHING AREA (Tow):

We see no major changes in this area aside from perhaps the addition of some conifers to break up the wide slopes into at least one trail type experience. Skiing on both sides of this lift will continue.

TABLE 2:

PROPOSED TRAILS

Trail #	Trail Name	Length	Vert	Av Width	Ac	Rank	Snow
PROVINCE:							
20	Explorer	2600	350	75	4.5	Nov	Y
21	Ranger	1400	250	125	4.0	Nov	N
22	Papoose	2250	300	75	3.9	Nov	N
23	Province	2500	350	75	4.3	Nov	Y
					16.7		8.8
WIRE TOW:							
19	Sunny Slope	600	70	125	1.8	Beg	Y
					1.8		1.8
DUCKLING:							
15	Elliot	1950	425	100	4.5	Int	N
16	Duckling	2000	425	125	5.4	Int	Y
NEW	Lift Line	1900	425	125	5.4	Int	Y
NEW	Old T Line	1450	425	100	3.3	A-Int	N
					19.7		10.8
NORTH PEAK:							
17	Eggbeater	3450	1000	150	11.9	A-Int	Y
18	Flying Gs	3400	1000	125	9.8	A-Int	Y
NEW	Lift Line	3200	1000	150	11.0	Int	N
13	Han-Chase	3600	1000	125	5.2	Int	Y
12	Beck Brk	1800	300	75	3.1	Int	N
					41.0		26.9
SUMMIT:							
9-14	Bonan/Chip	6000	1325	125	17.2	Int	Y
10	Blastoff	6200	1350	125	17.8	Int	Y
11	Ridge	9100	1400	75	17.8	Nov+	Y
8-13	W Side/Chas	6100	1400	125	10.5	Int	Y
					63.3		63.3

EAST BOWL:

1	Porky	6000	1050	50	6.9	Int	N
2	Wingding	4650	1050	150	16.0	Int	Y
3	Liftline	3700	675	125	9.5	Int	Y
4	Cataract	2300	550	150	7.9	A-Int	N
5*	Fox Run	1400	150	50		Nov	-
6	East Side	-- c l o s e --					
7	Skyway	3300	850	150	11.4	Int	N
	Connectors				1.4		Y
	* Feeder Trail (not counted)				53.1		26.9
	All Trails Total				194.8 Ac		138.5 Ac

IV. LIFTS

IV. LIFTS

During the summer and fall of 1985, bids were solicited for three new lifts (Duckling, North Peak, Summit) and renovation of the two remaining aerial lifts (Sun Bowl and Province). The reasons for considering replacement of the lifts were numerous.

The two lift manufacturers of the five aerial lifts are no longer in business. Parts are still available for the Heron lifts (Province and Bowl) but not for the Roebling units.

The lifts are between 20 and 23 years old except for the North Peak lift which was originally installed in 1948 as a single chair.

Because of their age, the lifts have limited uphill capacity which in turn limits any future expansion of the ski area and resultant area capacity and ticket sales.

Advanced technology and changes in the Standards governing design and operation of the lifts have changed a great deal since these units were put in service.

The Summit and North Peak lifts are in the wrong location to best serve the downhill ski traffic. This severely limits best utilization of existing terrain.

Painting and upgrading (brakes) is overdue on three of the lifts.

The new lifts and renovations under contract will eliminate the above problems. The only work not in the original contract, due to phasing considerations, is the replacement of the Sun Bowl terminals. This work is required to provide the 1800 skiers per hour capacity necessary to utilize the proposed trail improvements in the Bowl and to realize the full potential of the area.

When the new lifts are placed in service (contracted to be completed by November 15, 1986) they will be only marginally effective without the recommended improvements to trails and additions to snowmaking.

TABLE 3:

EXISTING LIFTS

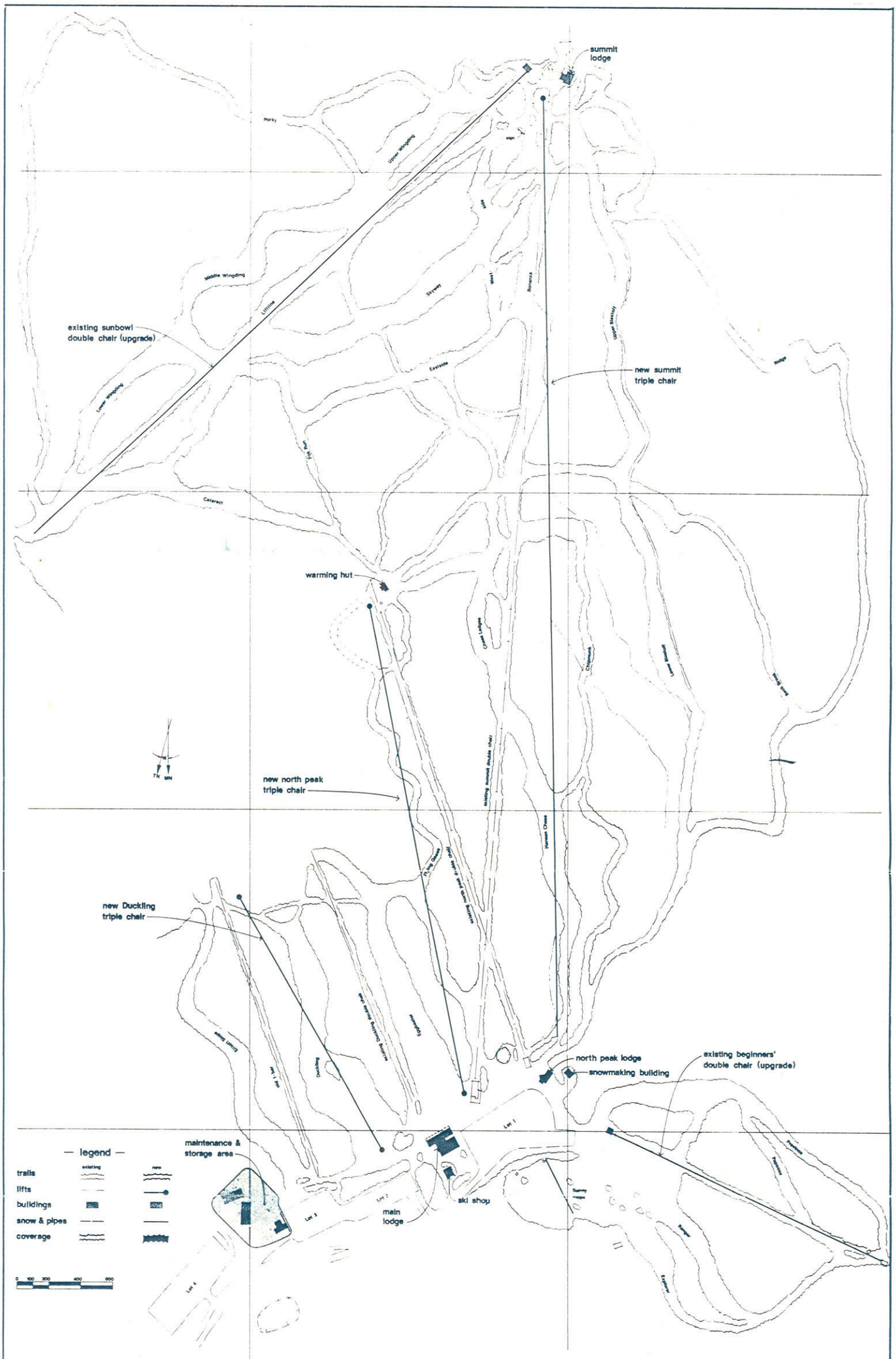
Lift Name	Slope	Vert	Cap	Speed	CCC	Yr	
TOW	350	70	300	300	55	84	B
PROVINCE	1850	375	800	400	325	65	H
DUCKLING	1850	400	900	450	375	62	R
NORTH PEAK	3050	950	900	450	325	48*	R
SUMMIT	6300	1450	900	0500	600	62	R
EAST BOWL	4350	1050	1200	500	565	67	H
		Totals	5000		2225		

* Rebuilt from single to double in 1962
B = Bohrer H = Heron R = Roebling

TABLE 4:

PROPOSED LIFTS

Lift Name	Slope	Vert	Capacity	Speed	CCC	Cost
TOW #	350	70	300	300	55	
PROVINCE *	1850	375	1000	400	330	
DUCKLING	1900	420	1800	400	450	
NORTH PEAK	3240	970	1800	450	560	
SUMMIT	6225	1420	1800	500	1200	
SUN BOWL *	4200	1025	1500^	500	575	
		Totals	8200		3170	
* Rebuild						
# No Change						
^ 1800 Ultimate			8500^		3275^	



EXISTING AREA WITH NEW LIFTS

Alpine Facilities Master Plan

· Mount Sunapee State Park ·

V. SNOWMAKING

V. SNOWMAKING

After many years without a snowmaking system of any type, Sunapee benefitted greatly when a major financial committment was made for snowmaking during the '82-'83 season which became fully operational for '83-'84. When compared to Cannon Mountain, which has had snowmaking for many years, Sunapee showed approximately 32,000 skier visits in '80-'81 to 104,000 for Cannon. In '83'-84, when the snowmaking system was fully functional at Sunapee, they realised almost a 3-fold increase in skier visits to 90,000 as compared to Cannon which showed essentially no increase. Although it would be difficult to say that snowmaking was the only reason for the differences it certainly was a major contributor to the improved number of skier visits.

A description of the existing system follows:

The water supply for the existing (and future) snowmaking system is inexhaustable since the water is pumped from Lake Sunapee, the only limitation being the 10"diameter pipe. There is no question that an adequate supply of water is one of the most important aspects of a modern snowmaking system.

There are two pumps at Lake Sunapee, each rated at 500 gallon per minute with a TDH of 2450 feet(to top of mountain) which supply water through a 10 inch pipeline across NH Route 103 and along the park access road to the new compressor building

behind the lodge at the base of the North Peak chair. From there the water is distributed in an 8-inch main and 6-inch lateral to the Duckling, Eggbeater Hansen/Chase, Bonanza and Blast-off Trails. Temporary 1 1/2" pipelines through the woods also service the lower Flying Goose. Up to 300 gpm of water is removed from the available supply of 1000 gpm for intercooling the air compressors and aftercooling the air. Thus, up to 30 percent of the available water is utilized for operational purposes and is unavailable for making snow.

Until this season, all of the machine-made snow at Sunapee was manufactured with water and compressed air. There are three air compressors in the snowmaking building that operate at 100 lbs./sq.in. and supply an air volume of 4500 cu.ft./min. These compressors are electrically driven and are installed in series. They can be operated in 1500 cfm increments as required. The whole air and water system in the snowmaking building was designed to be monitored by a computer installed as part of the original package.

Existing snowmaking units, which are usually called "snow-guns" were all of the compressed air type until this season when "fan-type" units were purchased as recommended in one of our interim reports. All of these units are fairly well known for efficient snowmaking through various temperature ranges.

The computerized monitoring system mentioned before has not performed up to expectations over the past two seasons due to software problems. It must be said that this sophisticated approach of collecting information has merit and can produce meaningful operating data for the use of management. Area personel have done an excellent job in utilizing this new technology. If the information provided by the computer during the last season of operation can be relied upon, there is a very strong indication that the snowmaking system is not performing as efficiently as it could be; which is indicated by high "air-water" ratios. If this is actually the case, we expect the problem may exist in two areas.

1. The inlet for the water supply in Lake Sunapee is very near the bottom of the lake. This may be the cause for higher than desired water temperatures which should be as close to 34 degrees as possible. Thus we have proposed that the inlet pipe be raised as close to the surface as possible still allowing for ice accumulation and variations in water level. This work won't be accomplished until next spring.

2. The temperature and moisture content of the compressed air as it leaves the compressor house is of great concern. Although there is a tube-type air-to-water aftercooler installed in the snowmaking building, it has no moisture separator which is considered to be

standard equipment on the discharge end of the after-cooler. This moisture is supposedly removed and the temperature lowered by inclined cooling units installed external to the building. However, since monitoring equipment was not installed on the discharge pipes from this equipment, it has not been possible to determine what the efficiency of these units actually is. As part of an upgrade this fall, with the installation of piping on the province slope, a "cyclone" type moisture separator has been purchased and will be installed on the aftercooler inside the building.

Future improvements will include scavenging cooling water from all the systems and recirculating it into a new "wet sump". This sump will, in turn, supply low pressure pumps which will provide water for the Province and Duckling areas. Preliminary calculations, which must be verified by the pump supplier, indicate that the flow characteristics of the existing pumps at the lake will allow for increased output by reducing the high discharge pressure required to reach the top of the mountain.

A major area of efficiency improvement has been addressed for this season with the lease-purchase of fan-type snowmaking units to be used on the Duckling and Province trail complexes. Historically, this type of unit, utilizing electricity to operate, will produce the

same amount of snow for about 1/3rd the energy required with compressed air. Since Sunapee can only convert less than half of their available water to snow at about 20 degrees due to limitations in air volume, the purchase and use of these units which do not require additional compressed air will greatly increase the early season snowmaking capability at Sunapee.

The total calculated acreage covered by the existing snowmaking system is about 51 acres or 40 percent of the skiable terrain. Ultimate build-out includes full coverage of the four Summit trails and two trails each serviced by the remaining lifts. Total new acreage will be 89, plus 10 acres that are being added on the Province complex this year. This yields a grand total of 139 acres of snowmaking or 71% of all skiable terrain. This amout of coverage should be considered a **minimum** in any future planning.

To achieve the snowmaking acreages proposed, the rate of snow production (measured as acre inches per hour) must be increased at least two-fold (2000 gpm) or the maximum possible amount allowed by the main 10" supply line from Lake Sunapee. Increased capacity is mandatory in realizing maximum utilization of the proposed improvements.

VI. PARKING

VI. PARKING

There are no plans to expand current parking facilities at Sunapee in the immediate future. Approximately ten acres of paved and unpaved parking are currently available which are known to handle 1250 to 1275 cars. Overflow parking of another 75 cars is handled on the main access road. Due to the family nature of Mt. Sunapee patrons, we have allowed three passengers per car, on an average, which yields a peak parking capacity of about 4000-4100 people, which equals the design area capacity. The above figures are conservative in that they do not account for the numerous dropoffs of local area skiers nor the usual small number of buses that frequent the area. Thus we feel parking will not be a constraint on future development nor require major expansion. Currently, lot #3 is only being used at half capacity, mostly since skiers are allowed to park on the access road prior to filling that lot. The only change we recommend which will require capital expenditures, is the purchase and operation of a shuttle type vehicle between parking lots 2 & 3, and the two base lodges.

VII. POWER

VII. POWER

Based upon the current power requirements for the pumps, compressors, lifts and buildings, the "primary" high voltage system supplying the area is near or at its maximum capacity. Since time and funding did not allow for any upgrade in 1985, some trade-offs will have to take place until this situation is corrected. Upgrading of the primary system is planned for the summer of 1986. Since the "fan-type" snowmaking units have been purchased for this season (85-86), a new philosophy of operation and power use has been established at Sunapee which will provide benefits on a continuing basis.

A complete study of the entire power distribution system and future power demands is being conducted by others and is not a part of this report.

VIII. BUILDINGS

VIII. BUILDINGS

In order to project space use requirements, it is necessary to calculate the existing and anticipated comfortable carrying capacity of the ski area. Based on industry design standards, the comfortable carrying capacity (CCC) of the existing and the ultimate ski area and the day lodges associated with each lift and trail system is as follows:

	Existing Ski Area	Ultimate Ski Area
Total CCC	2,270	4,065
Main Lodge Area	769	1,321
N. Peak Area	769	1,562
Summit Area	733	1,182

Although it is assumed that the ski area will be built in accordance with the conceptual Master Plan, the specific time frame for each phase has not been finalized. Therefore, the space use analysis has not attempted to deal with any particular requirements for the existing and the ultimate ski area capacity and configuration.

Based on capacities noted above, it is assumed that on an average day skiers will require approximately 30 square feet per skier in the Main and North Peak base lodges and approximately 20 square feet per skier in the Summit Building. Normally, skiers "turn over"their seats three times in base lodge (s) and five times in a summit lodge.

The recommendations for space allocation* by function and by building is predicated on consolidation of various functions for increased operational efficiency and to utilize existing space that is not fully utilized currently.

Depending on the particular architectural solution which provides the recommended allocation of space, it may be necessary to adjust the total space required in order to account for hallways, stairs, circulation, etc..
The cost of building and equipping the facility is budgeted at $150.00 per square foot.

* The space allocation relates only to ski needs and does not address needs due to summer operation which were beyond the scope of this work.

— APPENDIX —

EXHIBIT A
SUNAPEE NH

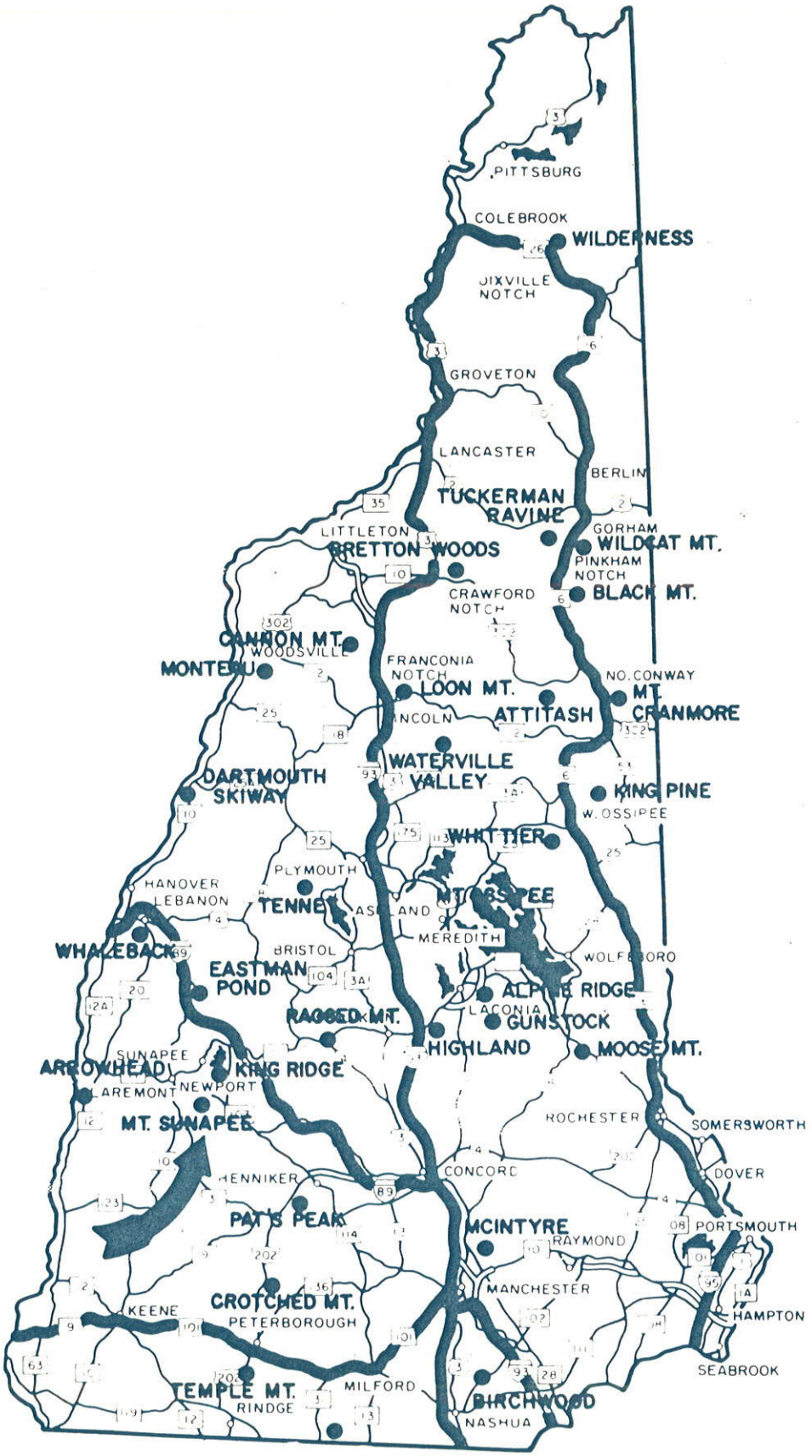
	Existing CCC	Ultimate Development CCC	
		Additional	Total
Total Comfortable Carrying Capacity	2,270	1,795	4,065
Main Lodge CCC	769	553	1,321
N. Peak Lodge CCC	769	794	1,562
Summit Lodge CCC	733	449	1,182

Main Lodge	Actual Existing	Required for Existing Capacity	Construction Reqired for Existing Cap.	Required for Ultimate Capacity	Total Ultimate Construction	Total Construction All Phases
Food Service, Storage & Preparation	11,700	1,832	0	9,023	0	0
Pub	6,000	1,082	0	1,938	0	0
Toilets	900	293	0	1,007	107	107
Nursery	800	433	0	775	0	0
Ski Shop	960	649	0	1,163	203	203
Rental	2,100	2,164	64	0	0	64
Administrative & Ticketing	450	433	0	775	325	325
Lockers	0	433	433	775	342	775
Ski School	940	649	0	0	0	0
First Aid & Ski Patrol	480	698	218	1,280	582	800
Square Footage Subtotal	24,330	8,666	715	16,735	1,559	2,274
Cost of Construction Main Lodge			$53,610		$116,936	$170,545

North Peak Lodge	Actual Existing	Required for Existing Capacity	Construction Reqired for Existing Cap.	Required for Ultimate Capacity	Total Ultimate Construction	Total Construction All Phases
Food Service, Storage & Preparation	4,720	1,832	0	4,720	0	0
Toilets	540	293	0	1,191	651	651
Rental & Repair	0	0	0	3,875	3,875	3,875
Ski School	0	0	0	1,163	1,163	1,163
Square Footage Subtotal	5,260	2,125	0	10,949	5,689	5,689
Cost of Construction North Peak Lodge			$0		$426,688	$426,688

Summit Building	Actual Existing	Required for Existing Capacity	Construction Reqired for Existing Cap.	Required for Ultimate Capacity	Total Ultimate Construction	Total Construction All Phases
Food Service, Storage & Preparation	2,785	2,096	0	3,381	596	596
Toilets	540	335	0	541	1	1
First Aid & Ski Patrol	224	168	0	270	46	46
Storage	1,600	0	0	0	0	0
Square Footage Subtotal	5,149	2,600	0	4,192	643	643
Cost of Construction Summit Building			$0		$48,213	$48,213

Total Lodge Requirement	Actual Existing	Required for Existing Capacity	Construction Reqired for Existing Cap.	Required for Ultimate Capacity	Total Ultimate Construction	Total Construction All Phases
Food Service, Storage & Preparation	19,205	5,760	0	17,123	596	596
Pub	6,000	1,082	0	1,938	0	0
Toilets	1,980	922	0	2,740	760	760
Nursery	800	433	0	775	0	0
Ski Shop	960	649	0	1,163	203	203
Rental	2,100	2,164	64	3,875	3,875	3,939
Administrative & Ticketing	450	433	0	775	325	325
Lockers	0	433	433	775	342	775
Ski School	940	649	0	1,163	1,163	1,163
First Aid & Ski Patrol	704	866	218	1,550	628	846
Storage	1,600	0	0	0	0	0
Square Footage Subtotal	34,739	13,390	715	31,876	7,891	8,606
Total Cost of Construction			$53,610		$591,832	645,447


PITTSBURG
COLEBROOK
WILDERNESS
DIXVILLE NOTCH
GROVETON
LANCASTER
BERLIN
TUCKERMAN RAVINE
LITTLETON
BRETTON WOODS
GORHAM
WILDCAT MT.
PINKHAM NOTCH
CRAWFORD NOTCH
BLACK MT.
CANNON MT.
WOODSVILLE
MONTEBU
FRANCONIA NOTCH
LOON MT.
NO. CONWAY
MT. CRANMORE
ATTITASH
LINCOLN
WATERVILLE VALLEY
DARTMOUTH SKIWAY
KING PINE
W. OSSIPEE
WHITTIER
PLYMOUTH
HANOVER
LEBANON
TENNEY
ASHLAND
MT. SUNAPEE
MEREDITH
WHALEBACK
BRISTOL
EASTMAN POND
WOLFEBORO
ALPINE RIDGE
LACONIA
RAGGED MT.
GUNSTOCK
HIGHLAND
MOOSE MT.
SUNAPEE
ARROWHEAD
KING RIDGE
NEWPORT
LAREMONT
MT. SUNAPEE
ROCHESTER
SOMERSWORTH
HENNIKER
CONCORD
DOVER
PAT'S PEAK
MCINTYRE
RAYMOND
PORTSMOUTH
MANCHESTER
CROTCHED MT.
KEENE
PETERBOROUGH
HAMPTON
SEABROOK
TEMPLE MT.
RINDGE
MILFORD
BIRCHWOOD
NASHUA

MT. SUNAPEE

A Choice Of Exciting Trails

Want challenge? There's plenty of it on our large trail network. For the novice, Sunapee offers a good variety of trails. The Province Bowl is designed to improve your skills quickly, with its own free Pony Lift and Double Chair.

Moderate skiers will enjoy ten special slopes just for them. And experts will be challenged by the Flying Goose and Middle Wingding trails.

Lifts

A Sun Bowl Double Chairlift
C Duckling Double Chairlift
D Summit Double Chairlift
E North Peak Double Chairlift

Province Bowl

F Pony Express Lift
G Double Chairlift

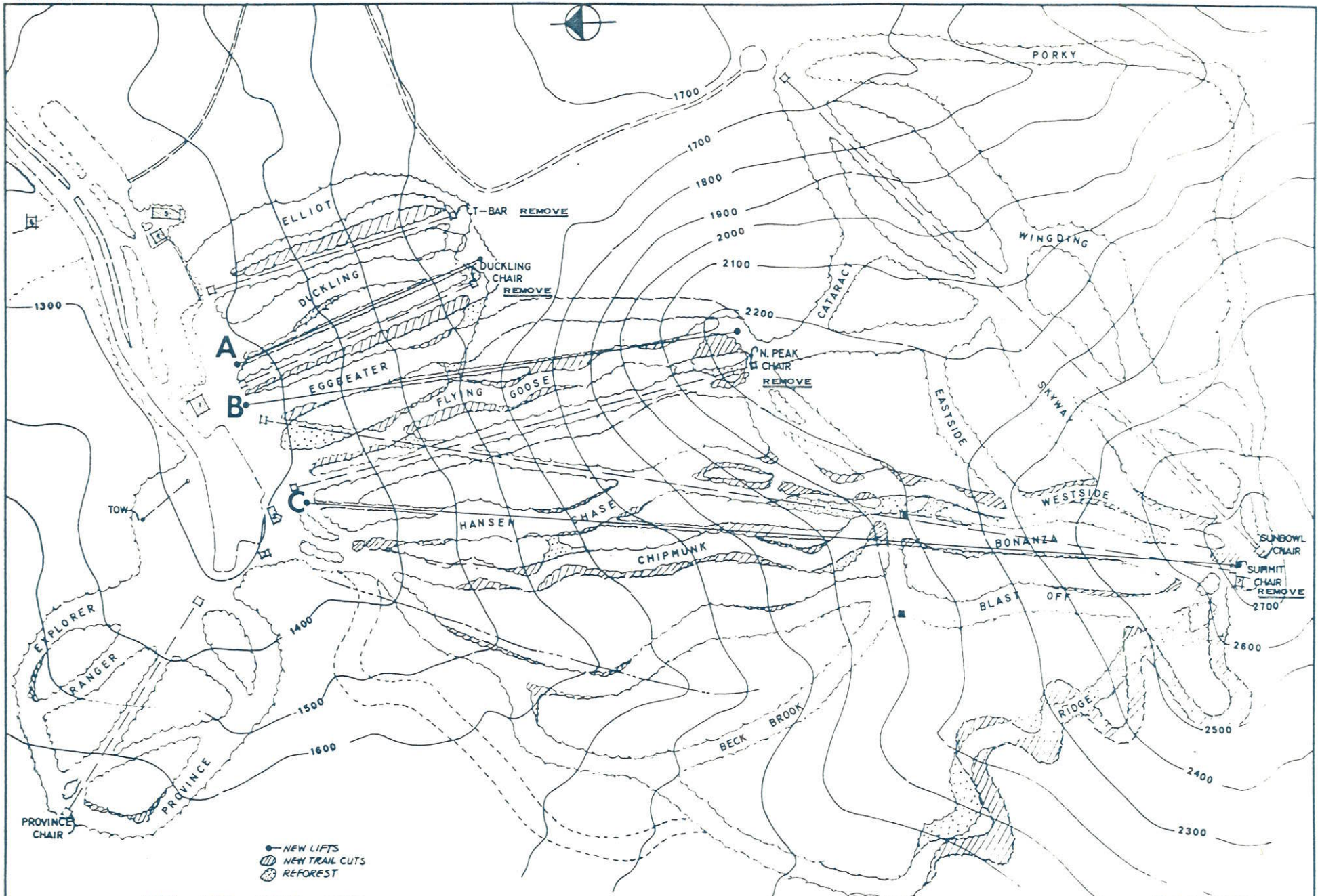
Facilities

H Main Base Lodge
I Rental Shop
J Summit Lodge
K North Peak Lodge

Trails

1 Porky
1.5 miles
(Stan Williamson Trail)
2 Upper Wingding
.3 mile
2 Middle Wingding
.4 mile
2 Lower Wingding
.3 mile
3 Liftline
.4 mile
4 Cataract
.75 mile
5 Fox Run
.3 mile
6 Eastside
.5 mile
7 Skyway
1 mile
8 Westside
.5 mile
9 Bonanza
1.25 miles
10 Upper Blast-Off
.4 mile
10 Lower Blast-Off
.6 mile
11 Ridge
1 mile
12 Beck Brook
1.5 miles
13 Chase Ledges
.2 mile
13 Hansen Chase
.6 mile
14 Chipmunk
1 mile
15 Elliott Slope
.66 mile
16 Duckling Slope
.4 mile
17 Eggbeater
.4 mile
18 Flying Goose
.75 mile
19 Sunny Slope
.2 mile
20 Explorer
.5 mile
21 Ranger
.5 mile
22 Papoose
.5 mile
23 Province
.5 mile

◆ Most Difficult
■ More Difficult
● Easiest
● Snowmaking
••• Easiest Descent



LIFT	VERT	HORIZ	SPEED	CAP	DR/TEN
A	400	1900	400	1800	BOT
B	1000	3400	450	1800	BOT
C	1375	6000	500	1800	BOT

NO	BUILDING
1	MAIN LODGE
2	N. PEAK LODGE
3	SNOWMAKING
4/5	MAINTENANCE
7	SUMMIT LODGE

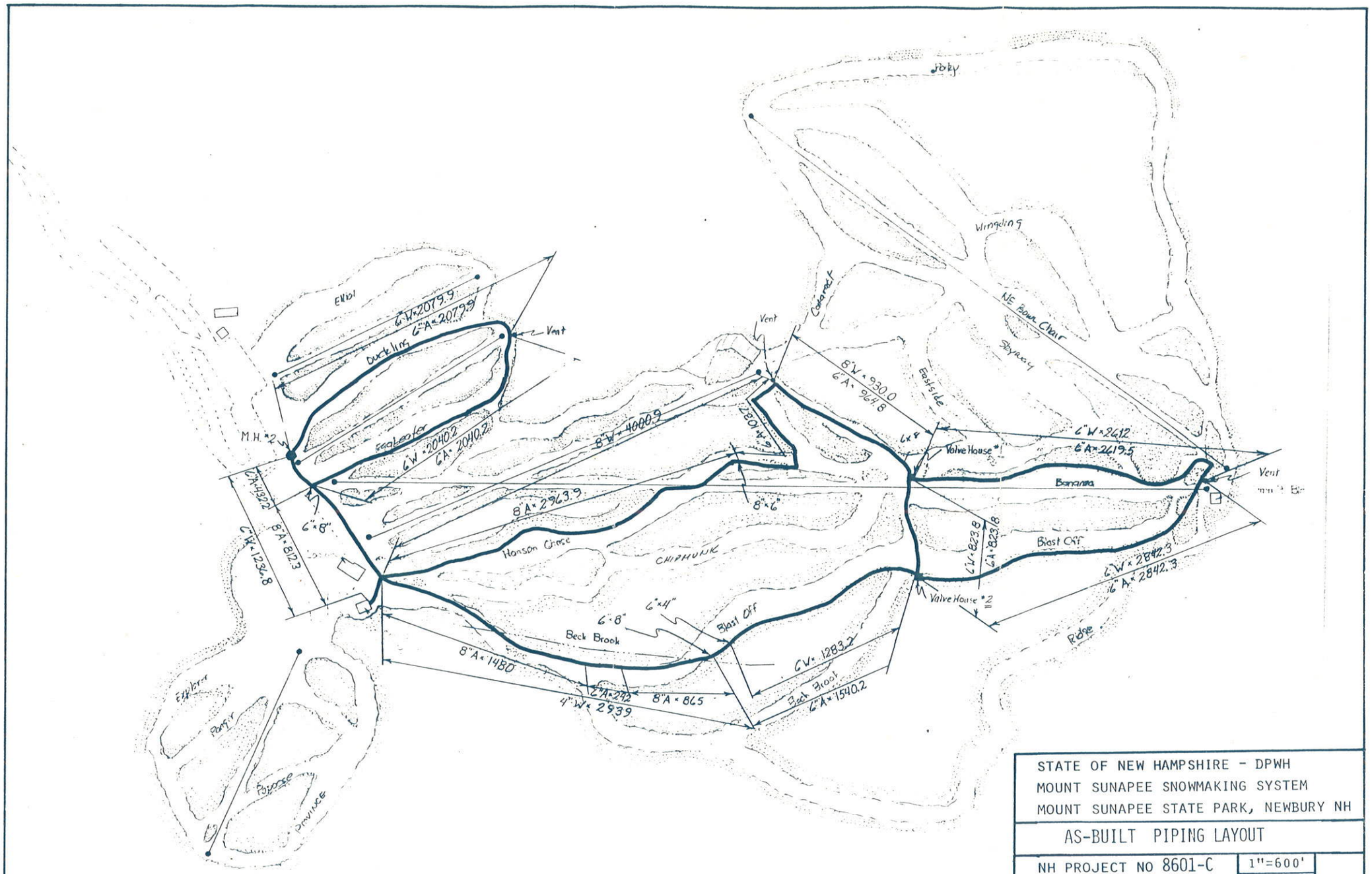
EAI

MOUNT SUNAPEE

CONCEPT PLAN 3/85

SCALE: 1" = 400 | DWN SH/MC | C-85231.1-0

DATE: 3-20-85 | CKD



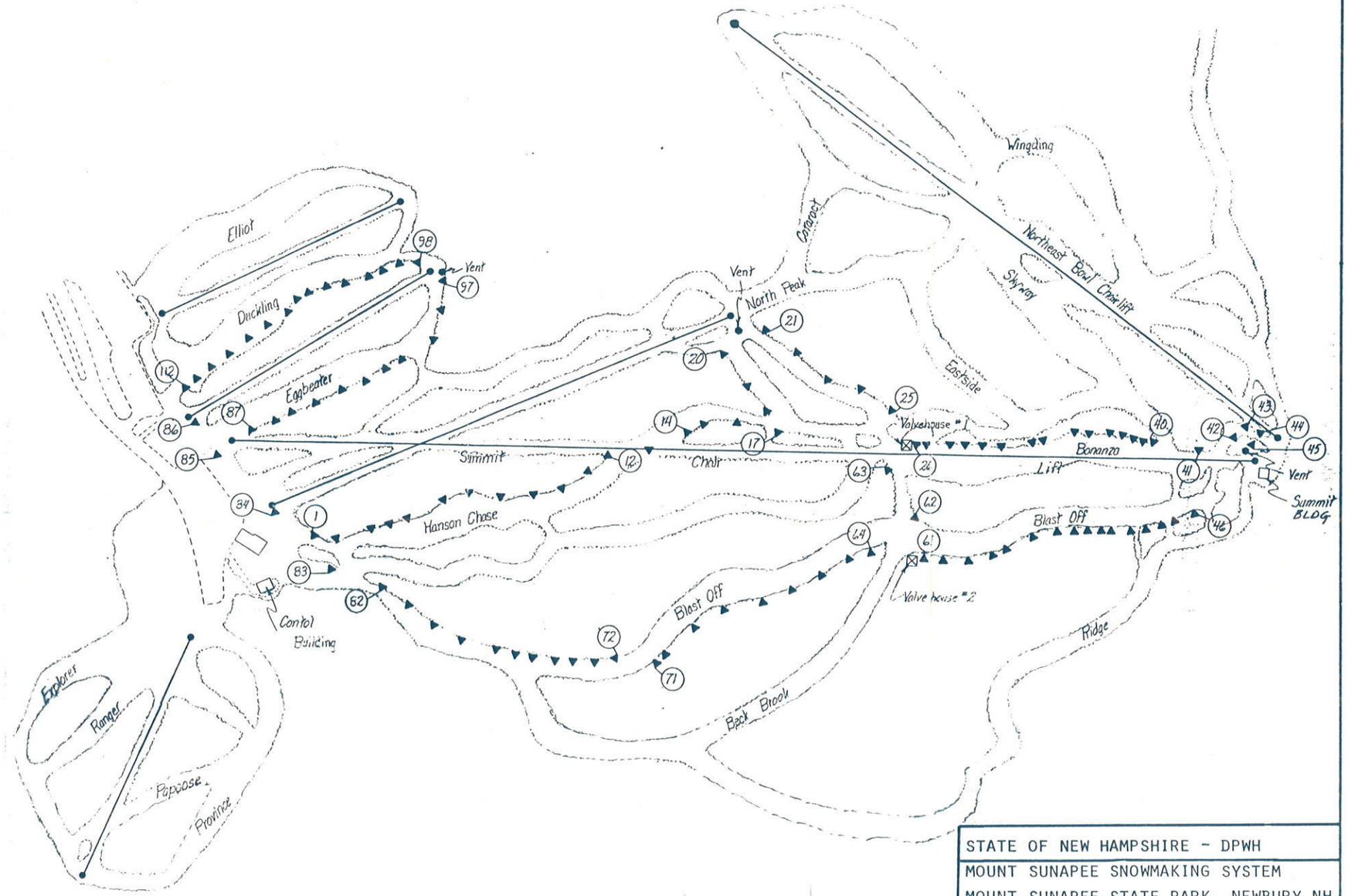
STATE OF NEW HAMPSHIRE - DPWH
MOUNT SUNAPEE SNOWMAKING SYSTEM
MOUNT SUNAPEE STATE PARK, NEWBURY NH

AS-BUILT PIPING LAYOUT

NH PROJECT NO 8601-C | 1"=600' | 6·13·85

Hydrant Summary					
Hydrant No	Type	Height	Hydrant No	Type	Height
1	FF	7'	69	V	5'
2	FF	7'	70	V	5'
3	FF	7'	71	V	5'
4	FF	7'	72	V	5'
5	FF	7'	73	R	7'
6	R	5'	74	R	7'
7	R	5'	75	R	7'
8	FF	7'	76	R	7'
9	FF	7'	77	R	7'
10	FF	7'	78	R	7'
11	R	5'	79	R	7'
12	R	5'	80	R	7'
13	R	5'	81	V	7'
14	FF	7'	82	V	7'
15	V	5'	83	FF	7'
16	R	7'	84	FF	7'
17	R	5'	85*	FF	7'
18	R	5	86*	FF	7'
19	R	5'	87	FF	7'
20	R	5	88	FF	7'
21	R	5	89	FF	7
22	R	5	90	FF	7'
23	R	5	91	FF	7
24	R	5	92	FF	7'
25	R	5'	93	FF	7'
26	V	5'	94	FF	7'
27	V	5'	95	FF	7
28	V	5'	96	FF	7
29	V	5'	97	FF	7
30	V	5'	98	FF	7
31	V	5'	99	FF	7
32	V	5'	100	FF	7'
33	V	5'	101	FF	7'
34	V	5'	102	FF	7'
35	V	5'	103	FF	7'
36	V	5'	104	FF	7'
37	V	5'	105	FF	7'
38	V	2	106	FF	7'
39	V	5'	107	V	7'
40	V	5'	108	V	7'
41	R	7'	109	V	7'
42	V	5'	110	FF	7'
43	V	5'	111*	FF	7
44*	V	7'	112*	FF	7
45*	V	7'			
46	V	5			
47	V	5			
48	V	5'			
49	V	5			
50	V	5			
51*	V	5'			
52	V	5'			
53	V	5'			
54	V	2			
55	V	5'			
56	V	5'			
57	V	5'			
58	V	5'			
59	V	5			
60	V	5			
61	V	5			
62	V	5'			
63	FF	7			
64	V	5			
65	V	5			
66	V	5			
67	V	5			
68	V	5			

Legend:
FF = Frost Free
V = Vertical
R = Recirculating
44* = Fire Hydrant



STATE OF NEW HAMPSHIRE - DPWH	
MOUNT SUNAPEE SNOWMAKING SYSTEM	
MOUNT SUNAPEE STATE PARK, NEWBURY NH	
AS-BUILT HYDRANT LAYOUT	
NH PROJECT NO 8601-C	1"=600'

6-13-85