FINAL REPORT

Proposed Improvements for the Mt. Sunapee State Park Base Area

Prepared for
Department of Resources and Economic Development

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MT. SUNAPEE STATE PARK BASE AREA

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INTRODUCTION

On December 26, 1948, Mt. Sunapee opened with a 3200-foot single chair lift, three main ski trails and two rope tows. Two years later, the State acquired land on the lakeshore and opened the bathing beach.

By 1961, Chapter 263 of the Laws provided $9 million to promote tourism with $2 million funding capital improvements to Mt. Sunapee including new lifts, the Summit Lodge, Ski Shop and Shelter Building, and wastewater improvements. Thus the summer and winter income potential for Mt. Sunapee and Cannon Mountains was established. Since then improvements have centered on ski trail expansion, increased snowmaking capacity, and additional lifts.

Eriksen Associates wrote the Mt. Sunapee Ski Area Conceptual Plan Report (dated March 20, 1986) which formed the basis for planning activities and improvements in 1987. In November 1988 the Department of Resources and Economic Development (DRED) retained The Cavendish Partnership and Dufresne-Henry to complete the study recommendations as set forth in the Eriksen study.

This final report summarizes the findings of the consultants and presents further recommendations intended to optimize the Mt. Sunapee Base Area as a year-round state park recreational facility.

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Mt. Sunapee Base Area Improvements

The Problem

Mt. Sunapee State Park is a rare treasure in the world of ski areas. Rather than going the way of many of its contemporaries and seeking to capture an upscale market, Mt. Sunapee has remained true to its legacy as a park "to be preserved for the enjoyment of future generations," the original mission of the nation's public parks. Its greatest appeal, visitors agree, is its rustic simplicity and its natural recreational opportunities.

The ski area is attractive to families in particular because of its unpretentious, informal surroundings. Most Sunapee skiers--about 93%--travel from throughout New Hampshire for the day to ski in a friendly atmosphere with short lift lines.

But market surveys tell us that these **skiing families also want modern amenities and state-of-the-art equipment** as part of their ski experience.

The base lodge must therefore be more than a place for warm-up breaks and eating sandwiches. It must be equipped to handle specialized user groups such as racing teams and disabled skiers. It has to provide user-friendly rental areas for the first-time skier as well as sophisticated ski tuning and repairs for the seasoned skier. And it must function as a comfortable gathering place for apres-ski socializing or a summer concert.

To survive into the future as a viable ski area, Mt. Sunapee must function in a 1990's mode, while retaining the environmental qualities of a classic 1940's state park. The challenge then is to strike a balance between preserving the base area's down-to-earth atmosphere and updating and streamlining its operational features.

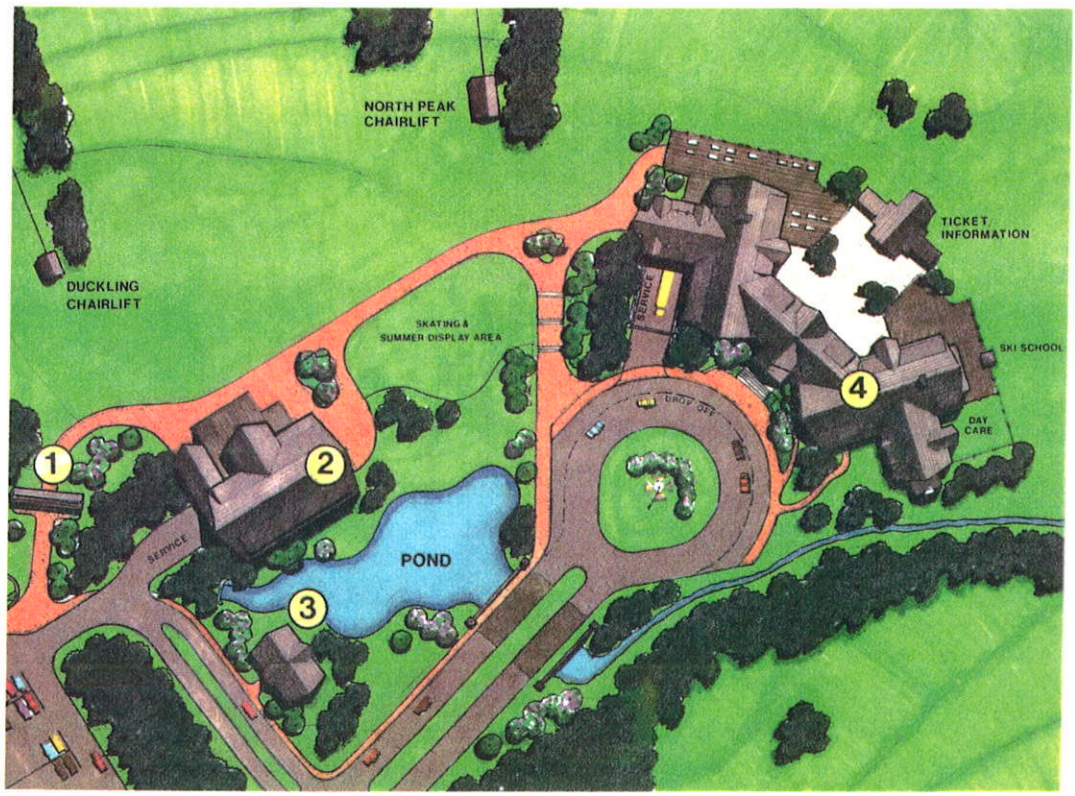
Approach

In order to hear directly from the people who are most familiar with Mt. Sunapee and to build consensus among them about the ski area's future, The Cavendish Partnership facilitated a participatory workshop on January 26, 1989. The format for the workshop was structured to identify the big problem, brainstorm issues and problems, and generate potential solutions.

Representatives of the following groups and organizations were invited to participate in the planning process:

. Mt. Sunapee State Park employees
. New England Handicapped Sportsmen Association
. Lake Sunapee Business Association
. Mt. Sunapee Ski Area Association
. Members of the New Hampshire Legislature
. Local planning commissioners
. Local town councilors
. Executive councilors

The group identified hundreds of issues and problems, and worked on potential solutions to be integrated in to the conceptual designs. The consensus of the day's session was that **whatever changes are made** to the ski area, **they should be done well or not at all**, and the **character of the park should not be compromised**.



Solutions

On March 3, the group reconvened to review conceptual architectural and site designs for the new base area prepared by The Cavendish Partnership. The drawings in the appendix of this report depict the workshop group's ideas for immediate solutions to base area problems as well as visions for long-range improvements to the park.

- A new 59,000 square-foot lodge in the traditional park architectural style of natural timbers and native stone becomes the focal point of the base area. The lodge features a cafeteria, pub lounge, ski school, administration offices, equipment rental, child care center, disabled skier center, Lake Sunapee Business Association booth, locker rooms, and an outdoor natural amphitheater.

- Spaces in the new Base Lodge are designed to work as smaller units that can be rented out for functions and conferences. For example, during periods of reduced occupancy either wing of the new base lodge can be isolated from the other wing. In addition, the larger assembly areas can be subdivided into smaller spaces through the use of movable partitions. It is anticipated that by designing the Mt. Sunapee State Park Base Area as a four season facility the State could entice user groups for short periods of time. Examples of such uses could be: retreats for public and private sector groups, crafts fairs, weddings and other large functions, art festivals and performing arts.

- The Lodge's courtyards and decks take advantage of sunny days with south and southwest exposures.

- Old portions of the existing Main Lodge are removed and remaining spaces are renovated into a lodge for employee and support services, Ski Patrol, First Aid, usage by special groups, storage, and an employee lounge. Reorganized circulation and space make the lodge relate better to the ski area.

- The base area becomes a well-defined staging area to give users adequate room to get organized with their equipment before heading for the slopes.

- Delivery and emergency vehicle access is removed from pedestrian areas.

- A pond serves the dual purpose of stormwater retention and could be expanded in winter for skating and summer for a reflecting pool in the pedestrian plaza.

- To eliminate the conflict between pedestrian and automobile circulation and the visual impact of a large, disorganized parking area, convenient transportation is provided to and from remote lots where skiers leave their cars for the day.

- To create options for additional future uses in all seasons, camping facilities are upgraded so skiers can ski to the Sun Bowl after camping out, and improvements are made to the trail system for hiking, cross-country skiing and horseback riding.

- To strengthen the link between the lake and the park, an interpretive nature trail is proposed between the two areas for lake-goers and park visitors to walk to either recreation area. It will be important to further study the pedestrian/vehicular conflict at Route 103 and provide either a pedestrian overpass or tunnel.

The net result of the planning workshops and design work of The Cavendish Partnership and Dufresne-Henry, is a cohesive architectural and landscape design concept in which interior and exterior spaces have been given a new and more logical order to enhance the visitor experience.

Finally, the proposed buildings and landscapes are designed to be compatible with the park environment, respectful of their historical context, and cognizant of modern market needs.

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ENGINEERING

Building and Site Utilities Investigation

This report is an on-site review of the existing buildings and utilities at the Mt. Sunapee Ski Area and of those utilities provided by an off-site source (i.e. electricity). The purpose of this document is to summarize the existing conditions, as we observed them, and as described by the Mt. Sunapee maintenance staff (through personal interviews) and to provide recommendations for their upgrade and/or expansion, should a major buildings improvement project be implemented.

Our review was prefatory in that we did not provide a detailed engineering investigation of each system. For instance, with the Base Lodge: No roof loading calculations were made to see if it was adequately designed, however, we checked the condition of the existing exposed elements, found them in good shape, noted any unusual conditions (e.g. tie rods), and concluded from outward appearances that the structure had been well maintained and was in good shape. Similarly, site utilities such as water and sewer lines were not tested for leakage, however, general conclusions were assumed based on known system age and construction.

The following are our observations of the Mt. Sunapee Ski Area's buildings and site utilities:

A. BASE LODGE
(Constructed 1955 and 1962)

1. Electrical

   a) The fusible main switch, rated 400 Amps, is mounted on an outside corner of the building. Service is 208Y/120 volts, 3 phase underground from pad-mounted transformer.

   b) Service equipment in storage area consists of another main switch that is sub-fed from the exterior main. The GE fusible distribution switchboard is too small for the present electrical system. Individual fused switches have been added over the years, to feed various equipment items.

c) Feeders are provided to various loads:

1) Fused switch, rated 200 amps, for summer Craftsmen Fair
2) Kitchen panel
3) Serving line
4) Front area
5) Boiler room
6) Upstairs administrative offices (2)

d) The Ski Shop is fed seperately from the main transformer.

e) Most of the wiring, including branch circuits, is in EMT conduit. A small amount of non-metallic cable is reportedly used in the administrative area.

2. Mechanical

a) An H.B. Smith 2500 series, oil fired boiler, is located in the boiler room. Fuel storage is a 6,000 gallon underground tank, adjacent to the boiler room. Tank was reportedly installed in 1962.

b) Two floor mounted air handling units, located in equipment areas, provide heating to the cafeteria. Suspended unit heaters are used in the front area, in addition to some baseboard radiation throughout the building.

3. Structural

a) Two level structure. First level consists of slab on grade with internal ramping. Second level is accessed by two concrete filled steel pan stairs at one end and wood frame stairs at other.

b) Second level floor consists of steel and wood frame and appears to be sound.

c) Roof construction over main portion of building consists of three hinged Glucam timber arch. Some structural movement

has been noticed at the second level and steel tie rods have been installed to alleviate the movement. Timber sections vary in depth and are spaced about 14 feet on center. Tongue and groove timber decking span the frames. Other portions of the roof construction are wood frame. Condition of the exposed elements is good to very good.

d) Roofing on this building consists of roll roofing of approximately 3 years of age. Condition of roofing appears good.

e) Exterior Walls - Wood frame with shake siding.
Condition - Excellent.

4. Recommendations

a) If major renovations are to be made to the building, complete replacement of the electrical and heating systems is recommended.

b) If minor renovations are to be made to the building, the existing systems should be evaluated to determine extent of renovations or replacement, based on occupancy and equipment condition. The main power distribution panel and related wiring must be replaced and updated.

c) The existing fuel tank probably does not meet current underground tank regulations and will require replacement.

d) The existing building appears to be in very good condition. Renovations to the existing building can be made provided code requirements and complete structural review of the existing facility is addressed.

B. SPORT HOUSE - RENTAL SHOP (Constructed 1962)

1. Electrical

   a) An underground electrical service, rated 200 Amps at 120/208 volts, supplies the light and power panel. The main breaker is rated 200 Amps.

   b) Branch circuit wiring is non-metallic cable.

2. Mechanical

   a) An Armstrong hot air furnace is located in a small boiler room at the rear of the building. Duct work is run above the ceiling throughout the building.

   b) A 1,000 gallon underground fuel oil tank is located near the front right corner of the building. Tank was reportedly installed about 1983.

3. Structural

   a) Small one level wood frame structure supported on concrete piers. Floor construction consists of wood framing and appears to be sound. Access to the crawl space was unattainable.

   b) Roof construction consists of heavy timber trusses at about 7'-3" on center. Heavy timber decking spans between the trusses which appear to be sound.

   c) Roofing consists of adhered membrane roof on 6" rigid insulation installed in 1988.

   d) Exterior walls are of wood frame with wood siding. General maintenance and repair is excellent.

4. Recommendations

   a) The mechanical, electrical, and structural systems are designed for present occupancy. They should be evaluated to

determine suitability, if building is to be renovated.

b) The fuel oil tank should be evaluated to determine compliance with current regulations.

C. NORTH PEAK BASE LODGE (Constructed 1948)

1. Electrical

a) A single phase 200 Amp underground service, rated 120/240 volts, extends to the lodge from a 50 KVA single phase transformer located in the adjacent snowmaking building.

b) A sub-panel, fed from this service, is located in the boiler room.

c) Branch circuit wiring is non-metallic cable.

d) In the 1987 snack bar addition, there is a new three phase panel with 400 Amp main breaker for the kitchen equipment. This panel is connected for 120/208 volt, single phase use (not three phase). The main breaker seems oversized for this application and we assume that the panel has been reused from some other location. Power to this panel comes from the 50 KVA single phase transformer in the snowmaking building.

2. Mechanical

a) An oil-fired boiler is located in the boiler room. Heating piping is bare copper, with no insulation. The 1,000 gallon underground fuel oil storage tank was, reportedly, installed in 1948.

3. Structural

a) This building is a two level building with a portion of the building being 1 level slab on grade.

b) Foundation walls consist of concrete. Some minor cracking and leaking was noted. General condition of elements exposed: good.

c) Floor construction is of steel beam (10" deep at approx. 1'-0" on center) supporting concrete slab. Condition of exposed structure is good.

d) Exterior walls are of wood frame. Exterior skin is of wood siding. Interior finish is gypsum board.

e) Roof construction is of wood frame. Roofing consists of tar and gravel built up roof and a small portion of roll roofing.

f) General maintenance and repair: very good.

4. Recommendations

a) The mechanical and electrical systems are marginal for present use, and should be upgraded and replaced as part of any renovation.

b) The power panel for the snack bar should be properly sized and fed for its current use.

c) This site may be better suited for a new base lodge building to accommodate both winter and summer recreational activities.

d) The underground fuel oil tank should be replaced, because of age. The new tank should meet all current regulations.

D. SNOWMAKING BUILDING (Constructed 1982)

1. Electrical

a) An underground electrical service feeds a new motor control center at 480 volts, 3 phase. The main breaker is rated 1,600

Amps. This MCC supplies 3 compressors rated 350 HP each, along with miscellaneous snowmaking loads.

b) A 30 KVA dry-type transformer supplies a 208Y/120 volts, 3 phase, panel for building light and power uses.

c) A completely separate 480 volt, 3 phase service extends to a weatherproof 1,200 Amp fused switch adjacent to the snowmaking building. This is connected to 2 snowmaking compressors in a temporary trailer with their own 1,000 KVA transformer.

2. Mechanical

a) The building is heated with electric heaters. When the snowmaking equipment is in operation, waste heat is used to warm the building.

3. Structural

a) One level pre-engineered building on concrete foundation walls. Floor in this building consists of concrete slab on grade with sump pits and piping galleries. Condition is good.

b) Interior skin of wall consists of metal panel and exterior consists of painted wood siding. Condition is very good.

c) Roofing consists of shingles. Some roof leaks were noted.

4. Recommendations

a) This building is relatively new and contains compressors, air piping and high capacity electrical systems. Relocation of this building and systems could be expensive however, for the proper operation of the new base facility we would recommend that it be moved.

E. SNOWBALL HALL
(Snowmaking crew break and locker room)

1. Electrical

   a) A small panel board is sub-fed from the snowmaking building. This provides for building light and heat.

2. Mechanical

   a) Electric heat is used in this small building.

3. Structural

   a) Small wood framed structure. Exterior walls are of wood frame with wood siding. Roofing consists of shingle. Condition of building is sound.

4. Recommendations

   a) This building is small in size, yet necessary as a place for snowmakers to warm themselves and it is isolated from the equipment noise in the snowmaking building. It should not be removed until similar quarters are operational in another location.

   b) The mechanical and electrical systems appear adequate for present use, We recommend ultimate replacement of the building.

F. MAINTENANCE BUILDING

1. Electrical

   a) A 200 Amp, 120/208 volt three phase electric service supplies the main panel. A sub-panel is located in the boiler room. Both panels are full and there is a need for more branch breakers.

   b) A 100 Amp sub-feed extends to the pole barn, where grooming vehicles are stored.

2. Mechanical

   a) An oil fired boiler, with underground fuel oil tank, is used for building space heating.

3. Structural

   a) This building is a one level wood framed structure. Floor in this building is concrete slab on grade. Exterior walls are of wood frame and are covered with wood siding on the exterior.

   b) Roofing construction consists of wood trusses spanning to exterior bearing walls. Roofing consists of metal corrugated roofing.

   c) General condition of the building is good. Areas of distress were not noted.

4. Recommendations

   a) We recommend addition of at least one additional panel board, to provide sufficient spare circuits for new equipment.

F.1 LIFT MAINTENANCE SHOP

1. Structural

   a) This building is a two level building with one wall constructed as a retaining wall. The retaining wall is of concrete construction and is in good condition.

   b) The remainder of the building is of wood frame construction and consists of 2 x 8's and wood trusses for roof support.

   c) The second level of this building consists of wood framing on steel supports.

   d) General maintenance and repair: good to very good.

G. SITE ELECTRICAL POWER DISTRIBUTION

1. Description

a) The utility company serving this site is the Public Service Company of New Hampshire.

b) Incoming primary distribution voltage is 35 KV, 3 phase, extending overhead from Route 103 toward the maintenance area. Two riser poles serve as the transition point to underground cable construction, which extends into the main portion of the ski area. Underground construction is used in the base area to comply with Federal recreation area policy.

c) System reliability is improved through the use of a looped primary system, capable of maintaining service even if one underground cable fails. Each switch provides a connection point to the individual pad mounted transformers that supply power to each building and lift. Switch SD feeds another loop system for the Main Base Lodge, North Peak, Spruce and Duckling Lifts. Switch SB supplies a loop system for the Snowmaking Building, Summit, Province and Pony Lifts. These two loops provide additional reliability against cable failure.

d) One transformer reduces the 35 KV incoming voltage to 12.5 KV feeding the summit area via a buried cable. At the summit, separate transformers supply the building and top drive of the Sunbowl Lift.

e) A transformer, in the maintenance area, also reduces the distribution voltage to 12.5 KV. Underground cable extends to a riser pole which supplies a localized overhead distribution system for the Maintenance Building, Pole Barn and

Paint Shop. This system also extends to the base of the Sunbowl. A second underground cable rises to an overhead system serving the sewage lagoons.

f) All transformers in the base area are pad mounted, with underground wiring to each building and lift.

2. Summary

a) The entire power distribution system is of relatively recent construction, with the capability to provide 3 phase power to any new construction in this area. Primary power can be extended from the existing switches, as required. The only limiting factor for future expansion appears to be the need for upgrading of the Public Service sub-station to provide adequate power for proposed electrical equipment additions.

3. Recommendations

a) We recommend construction of an additional primary 3 phase loop from the maintenance area, through the base of the Sunbowl and up to the summit. Replacement of the existing summit cable to the snowmaking area will complete this loop. The result will be full power availability, with added reliability. This would permit installation of a bottom drive lift in the Sunbowl.

H. SITE SEWER SYSTEM DISTRIBUTION

1. Description

a) The sewage disposal system generally consists of building discharges to individual septic tanks and dosing siphons, an 8-inch asbestos cement collection sewer, three stabilization lagoons, and effluent spray disposal field.

b) The North Peak Base Lodge sewer service exits the building to the north through a 1500 gallon septic tank, then through a dosing siphon, and finally

into a 4-foot diameter manhole just west of the handicap ski association trailers.

c) Similarly, wastewater from the existing Snow Making Building exits from the east through a septic tank and into the same collection manhole as the North Peak Lodge.

d) Note that the Handicap Ski Association's trailers, "Snowball Hall" and the Ski Rental Buildings do not have water or sewer.

e) From there, the wastewater flows by gravity via an 8"-A.C. sewer line east towards the main Base Lodge and roughly along the center line of Parking Lot No. 1, and connects into the septic tank just north of the Main Lodge.

f) Wastewater from the Main Lodge is discharged into the gravity collection system from three locations. The nursery sewage gravities to a sub-mersible pump station and then is pumped, via a 2" PVC force main, into the septic tank on the north side of the building. Flows from the kitchen also go through this septic tank, by way of a gravity sewer line exiting to the north. All other discharges go through a septic tank and dosing siphon located at the southeast corner of the building. The kitchen septic tank connects to this siphon, via a gravity line running along the east side of the lodge. The combined flows are then discharged into a common manhole located in the northwest corner of Parking Lot No. 2.

g) The gravity 8"-sewer runs east-west through parking lot numbers 2 and 3, then turns north roughly at the northeast corner of Lot 3, crosses the main access road and discharges into a distribution chamber and then into the stabilization lagoons.

h) Sewage from the Maintenance Building exits through a septic tank, into a simplex submersible pump station, and is pumped through a 2"-PVC force main to the gravity sewer manhole in the northeast corner of Lot 3.

i) The Equipment Garage has its own, on-site, leach field located just south of the building.

2. Summary

a) The overall wastewater collection system is adequately sized, for the existing flows and proposed expansion at the Base Area. It is a relatively old system having been built in 1971, but functions adequately.

b) The septic tank and dosing siphon concept works well with the overall system design, however, they require constant maintenance.

c) The maintenance staff at Mt. Sunapee has expressed some concern as to the condition of the existing sewer. A thorough inspection was not made because of snow cover.

3. Recommendations

a) The existing sewer collection system has an expected useful life of 30-40 years or longer after installation, depending on the constituency of the waste stream and soils. We would recommend that a thorough inspection be made of the system this spring and that the pipe and manholes condition be evaluated. Infiltration/Inflow should be closely watched. If the existing system is in disrepair, the logical time to replace it would be during proposed major renovation.

b) The wastewater discharge from the existing Base Lodge should be consolidated into one gravity line, when

that building is renovated. Also, the metal septic tank should be replaced with a concrete tank.

c) The simplex submersible pump station and wet well at the Maintenance Building should be upgraded to a duplex station, for better reliability.

I. WASTEWATER SPRAY IRRIGATION SYSTEM

1. Description: (Taken directly from Hoyle, Tanner & Associates, Inc., February 1988 Draft Report.)

   a) All wastewater generated at the ski area flows through septic tanks and a dosing siphon, and then into treatment pond number 2. From pond number 2, wastewater flows into pond number 3 and is diverted into pond number 1, as the level within the ponds rise during the winter ski season.

   b) All wastewater generated during the winter is stored in the ponds. The stabilization ponds provide initial treatment of the wastewater, including solids removal, nitrification and phosphorus removal. Precipitation and runoff inputs to the ponds also tend to dilute the wastewater.

   c) Wastewater is withdrawn from lagoon number 1 beginning in early summer each year, is chlorinated, and then disposed of on the forested spray areas. Wastewater is diverted into lagoon number 1 from lagoons 2 and 3 throughout the summer until the 3 lagoons are drawn down to their minimum storage levels.

   d) Wastewater is pumped to the 3 spray application areas by duplex 100 gallons per minute (gpm) pumps located in the pump house shown in Figure 2. The

pump house also contains the Sodium Hypochlorite metering pump system, timers, and valves to regulate spray application sequencing and distribution.

e) Wastewater is delivered to each of the three spray areas by separate 4 inch diameter aluminum irrigation piping. Three inch diameter aluminum piping is used within the three spray areas to deliver flow to the sprinkler heads.

f) The three spray areas are designated A, B, and C. Spray line A is nearest the lagoons and spray line C is farthest from the lagoons, uphill from lines A and B. The Rainbird impact type sprinkler heads on each spray line are equipped with varying nozzle sizes to maintain even spray distribution at the different spray area elevations.

2. Summary

a) Based on Hoyle, Tanner & Associates' 2/88 Report, the total lagoon storage capacity is 4.5 million gallons. However, after seasonal rainfall inputs have been subtracted from this volume, there is only 2.2 million gallons available for wastewater storage.

b) At a spray application rate of 2 inches per week over the 12 week summer spray season, the capacity of the existing 4.5 acre spray irrigation system is 3.0 Million gallons.

c) The existing lagoons and spray irrigation system are presently at their limits and could not accommodate increased flows from the proposed expansion without providing additional storage and disposal.

3. Recommendations

a) Probably the least expensive option for expansion and the one that would require the least amount of operator

effort would be to add an additional storage lagoon(s) and to expand the spray fields. We recommend this option.

b) We would also recommend that the existing lagoons be lined to reduced volume lost due to infiltration inflow. This would help to maximize the existing storage and reduce, or even possibly eliminate, the volume of new storage.

c) Hoyle/Tanner has suggested at least an additional 1.0 MG of lagoon storage and adding 4.5 acres of spray area (I.E. doubling existing spray system).

d) There appears to be sufficient area for a lagoon expansion at the existing site, however, this is probably not true for the spray lines.

e) Recommended spray area expansion sites are the land between the existing lagoons and the lake; or the area north and east of the existing spray lines; or the area south of the Maintenance Buildings, west of the Sunbowl access road, and east of the ski trails. Any of these options would require extensive soil investigation by a hydrogeologist before the sites acceptability could be determined, as well as site specific constraints such as slopes, offsets, and streams.

f) A second lagoon option would be to increase the depth of the existing lagoons to increase their volume. With this modification, aeration would have to be added to the lagoons to keep the effluent from turning anaerobic and producing noxious odors. Diffused air adds to the cost of the system, both in capital equipment and in operation and maintenance.

J. DOMESTIC WATER SYSTEM (AND PROPOSED FIRE PROTECTION)

1. Description

a) The primary water supply comes from a drilled well located in the vicinity of the Duckling Ski Lift and produces approximately 70 GPM. Water is pumped from this well to a 2200 gallon pressure tank located adjacent to the Duckling Lift Building, and then is distributed to the various buildings via copper and PVC water lines.

b) A secondary water system also located near the Duckling Lift consists of perforated plastic pipe laid in stone lined ditches. These lines pick up surface runoff which is then stored in two 5000 gallon buried tanks and pumped to the same 2200 gallon pressure tank by pumps at the Duckling Lift. The system is controlled by a pressure switch and has an approximate yield of 5-10 GPM.

c) A third water source, a gravel pack well with an approximate yield of 5 GPM, is located up slope from the North Peak Lodge and back feeds that building.

d) The final sources are one drilled well and one dug well, one south of the Maintenance Building and one south of the garage, both of which serve only those buildings and have a yield of roughly 5 GPM total.

e) From the Duckling Lift pressure tank, water is run to the Main Lodge in a 2" copper line, to the North Peak Lodge in a 3" PVC line, and the Snowmaking Building is fed from the North Peak Lodge with a 1" copper line.

f) The Rental Shop Building and Handicap Trailers do <u>not</u> have a water service.

g) The well south of Maintenance Building has a 1" PVC service to that building and the well south of the garage has a 2" PVC service to that building.

2. Summary

a) The existing wells at the Base Area do not meet current regulations for required water source based upon the existing estimated use and therefore are not adequate for the projected expansion.

b) The drilled well at the Duckling Lift appears to be a reliable supply, however, the well's sustained yield would have to be verified.

c) The existing "surface water" supply at the Duckling Lift is not reliable, according to the Sunapee staff and has dried up in previous years.

d) The gravel pack well west of the North Peak Lodge is an unreliable source and is no longer used.

e) The wells at the maintenance area, although technically too small, have historically provided adequate supply for the maintenance area buildings.

f) Adequate storage for domestic water supply is not provided in this system and no storage is provided for fire protection.

g) Currently, partial fire protection water is supplied through the snowmaking system, however, the pumps at the lake pump house must be operating for this system to run.

h) There is inadequate chlorination/ disinfection for the water supply.

3. Recommendations

a) Additional water supply should be provided through site wells (drilled or gravel pack) if available. Availability would have to be determined through a test well drilling and testing program. Wells yielding roughly 30-50 GPM would be required.

b) Storage for peak domestic water demand should be provided by building a storage tank. This tank could be increased in size to accommodate fire flows as well. One proposed location would be on the mountain between the Base Area and the Sunbowl along the Sunbowl access road. We would recommend a .3-.5 MG tank.

c) Should on site wells be unavailable, a second much more expensive option would be to bring water from Lake Sunapee. This would require a water treatment plant and a water supply line. We do not recommend this option if at all possible.

d) Water for fire prevention, if not provided in a new storage tank, could be pumped from the proposed pond north of the existing Base Lodge. This pond would have to be large enough to provide roughly .2 MG-.4 MG of fire water storage. This is not our recommended option.

e) An adequate disinfection system (i.e. a chlorinator) should be provided for the domestic water system.

f) The existing Base Area distribution system should be upgraded, to accommodate proposed domestic and fire flows. We would recommend that new force mains be run from existing and proposed wells to the storage tank and from there distributed, by gravity, in a 12-inch water main. Building services would be 6-inch lines for fire flows.

g) Site fire hydrants should be run off the new water main and their quantity and location coordinated with the local fire department.

K. SNOWMAKING SYSTEM

1. Description

   a) Water for snowmaking is taken from Lake Sunapee and is pumped to the mountain by 2 - 400 HP multi stage pumps located in the pump building adjacent to the lake. Each pump puts out 500 GPM and provides 300 psi of pressure at the system's high point.

   b) The distribution system consists of a 10-inch force main that runs from the lake, up the center of the new access road, past the snowmaking building where parallel air lines join it, and then is distributed in an 8-inch header to the various 6-inch trail supply lines.

2. Summary

   a) The existing snow making system works at the current operating conditions.

   b) Indications are that this system should be expanded to better service the mountain's trails.

   c) Expansion could be limited by the existing 10-inch force main from the lake.

3. Recommendations

   a) Before a definite recommendation could be made, the mountain must define its snowmaking goals which was beyond the scope of this contract.

   b) From a site planning point of view, we would recommend moving the existing Snowmaking Building from its present

location to the area south of Parking Lot No. 2. This move would free the vacated site for skier traffic and improve distribution. Also, the building should be enlarged to provide for current crowding problems and future expansion. We recommend 5000 S.F. of floor space.

L. SUNBOWL SITE

1. Description

   a) The Sunbowl site is remote from the Base Area and accessed either by taking a chair lift to the summit and skiing down to it, or by driving over the existing two-lane access road (currently for summer use only).

   b) The only utility serving this area is a single-phase overhead power line for lighting and receptacles in the lift building.

2. Summary

   a) It is anticipated that sometime in the future this area will be expanded and that possibly a small Base Lodge and Housing Units will be built.

   b) The maintenance staff would like to see the existing top drive chair lift converted to a bottom drive lift. This would require a 3-phase power service.

   c) Limited expansion only would probably involve just the camp site.

3. Recommendations

   a) If major building is planned for this site, we would recommend that a thorough survey be made for possible water sources and sewage disposal sites.

   b) Sewer: Two of the most likely alternatives for sewage disposal would be to either pump wastewater over the

mountain into a gravity sewer line and ultimately to the existing treatment lagoons, or pump it to a subsurface disposal field in the vicinity of the existing camping area. We would recommend going to the lagoons.

c) Water: Domestic water is best obtained from on site wells which either pump to a storage tank or to pressure tanks, depending on yields and system loading.

A second option is to bring water from the Base Area; however, this alternative would be costly.

d) Water storage becomes more of an issue if fire protection for the new buildings is anticipated. We would recommend that fire protection be provided and that the storage for it be provided in a water storage tank (steel or concrete).

e) One suggested option for water storage tankage is to build only one tank along the Sunbowl access road, in a location that would allow a gravity water feed to both the Sunbowl and the Base Area. This is an attractive option, contingent upon available well sites in the area.

f) Three phase power should be brought to the site both for expected building use and for proposed chair lift expansion.

g) Although planned development is somewhat sketchy at this time, we do have a rough idea of utility requirements for this site should expansion be pursued. We would recommend on site wells for water with an output of 30-70 GPM, a water storage tank with a volume of .2 MG-.35 MG, a sewage pump station, a 4"-6" sewage force main, and a 6"-8" gravity sewer line. Heating should be oil from buried tanks.

M. STORM WATER COLLECTION

1. Description

   a) Storm water from the majority of the Base Area site flows by way of existing grading into Beck Brook which originates on the mountain west of the summit chair lift, passes to the west of the Snowmaking Building, heads east on the south side of Lot No. 1, crosses between the Base Lodge and Rental Building to the south side of Lot 2, down to the Maintenance Building, back across the access road to the lagoons, then northeasterly to Lake Sunapee. Tributary brooks also feed into this brook.

   b) A man-made collection system is also in place at the Base Area. The pond west of the North Peak chair lift has an overflow into a catch basin to a 24" culvert. This culvert parallels Lot No. 1 running west to east, runs north parallel to the Main Lodge, then empties into the existing brook just west of the Rental Building. Roughly, six catch basins are distributed along this line.

   c) Many of the existing culverts are undersized and/or in disrepair. A coordinated drainage study has not been done to evaluate the adequacy of the entire system, however, interviews with the maintenance personnel indicate that certain areas do not drain adequately.

2. Summary

   a) Existing site drainage is marginal for the current site.

3. Recommendations

   a) We would recommend that grading and grassy swales continue to be used to direct stormwater flows into the existing brook. Overland flow reduces

stormwater velocities, vegetation provides solids reductions and, overall, the adverse affects to the brook are minimized.

b) Culverts should be minimized whenever possible and so too should collection systems.

c) A comprehensive drainage plan should be incorporated into the final design.

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Process

Our approach to developing a solution for Mt. Sunapee's base area blended research with observation and participatory problem solving. We began by reviewing existing documentation to determine actual space allocations. We also spent time observing the facilities in operation with regard to employees and users, and the circulation patterns of skiers as they used the base facilities and ski area.

We talked with management at comparable ski areas to determine if problems experienced by Mt. Sunapee were unique to the mountain or typical of the industry. We researched past projects and historic ski industry data to determine minimum standards for projected skier capacity at Mt. Sunapee.

Observation and Research

According to surveys conducted by Mt. Sunapee staff, 60% of the skiers who come here are from Massachusetts; 30% are from New Hampshire; and 5% are from Connecticut. The fact that the majority of visitors are day trippers is born out by the chronic surplus of lodging in the area during ski season. It is therefore our opinion that development should encourage the continued use by the day tripper and activities added which will broaden its base.

DRED studies show that the mountain's future comfortable carrying capacity (CCC) will be 4200 to 4400 skiers per day. The current base facility can comfortably handle 1500 skiers at any one time. The Eriksen study states that the current 1250 parking spaces are sufficient, but users feel they are incorrectly placed.

Mountain managers feel that there should be a minimum of six to eight ticket booths with outside access and some means of access to the business office.

Problem Solving

The goal of the planning process was to hear directly from the people most familiar with Mt. Sunapee and to build consensus about the ski area's future. To that end we held a fact finding session with Mt. Sunapee staff on January 5, 1989 to chart a course for a participatory planning process.

Workshops were held on January 26, 1989 and March 3, 1989 at the Mt. Sunapee Base Lodge. In the January session we defined the problem and proposed a route toward finding a solution that would be acceptable to the broadest number of participants. The March meeting was held to review the concepts prepared by the consultants based on the outcome of the January meeting. Participants received meeting notes and were given access to the design team between meetings.

The following issues were raised in the first workshop:

- There are too many people on the mountain for the existing facilities.
- The mountain has always maintained a rural character and should continue to do so.
- Skiers choose Sunapee over the more commercialized ski areas because of its rustic environment and ambience.
- There is a real need to keep Mt. Sunapee a *family* mountain and provide services that encourage it to remain that way.
- Daycare at the mountain is inadequate.
- In order to keep it a *family* mountain there needs to be a way to attract the 11-19 year old. A *Rascals Lounge* with video games and activities oriented to teenagers would help maintain their interest in the mountain.
- Visitors in general and non-skiers in particular want other types of recreational experiences.
- A large function hall is needed for private groups.
- There is inadequate storage for all users.
- There is no *front door* to the base facilities and no *welcome center* to the mountain.
- There is a need for dining facilities that work with function facilities; a soup and sandwich public cafeteria; and a lounge which serves meals after skiing and before people go home.

- The Ski Club is without a real home on the mountain.
- The rental program does not function. Renters cannot be processed quickly enough, retail and rental are not separated, and the ski school is isolated from the rental area.
- Handicapped skiers must be integrated into the skier experience and given equal facilities in the base lodge proper.
- Maintenance is in an ideal location.
- Circulation from daycare to the beginning ski area is dangerous.
- Parking on the Access Road should be eliminated.
- A single base lodge is more desireable than two from a convenience and economic standpoint.
- While administrative functions should be accessible to the public, staff privacy should also be accommodated.
- A separate employee entrance and parking area should be defined.
- Delivery and handicapped parking should be close to the base facility.
- Public lockers and changing rooms should be provided along with public storage.
- The Sun Bowl area should be explored for future expansion.
- Summer facilities should be strengthened (and publicized) with activities such as picnicking, interpretive trails, hiking, conferences, rotating exhibits and art shows.
- Nighttime security is needed in parking and circulation areas.

- Day trippers need more space than other user groups ie. larger restrooms, locker rooms, storage areas, and a lost and found area with a full-time manager. (There is a feeling that the State does not understand the difference between day trippers and other skier and user groups as at commercial areas).

- Ski Patrol and related activities need to be removed from the main Base Lodge to a satellite building accessible to emergency vehicles, with facilities for up to 40 employees, medical facilities, and equipment storage for toboggans, evacuation gear, and litters.

- Service vehicles need room and easy access to the base lodge and first aid area.

- The mountain must function while improvements are being made.

- Office space is needed for the New Hampshire Ski Area Director.

- Office space is needed for the Marketing Director.

- Space is needed for the Ski Wee program.

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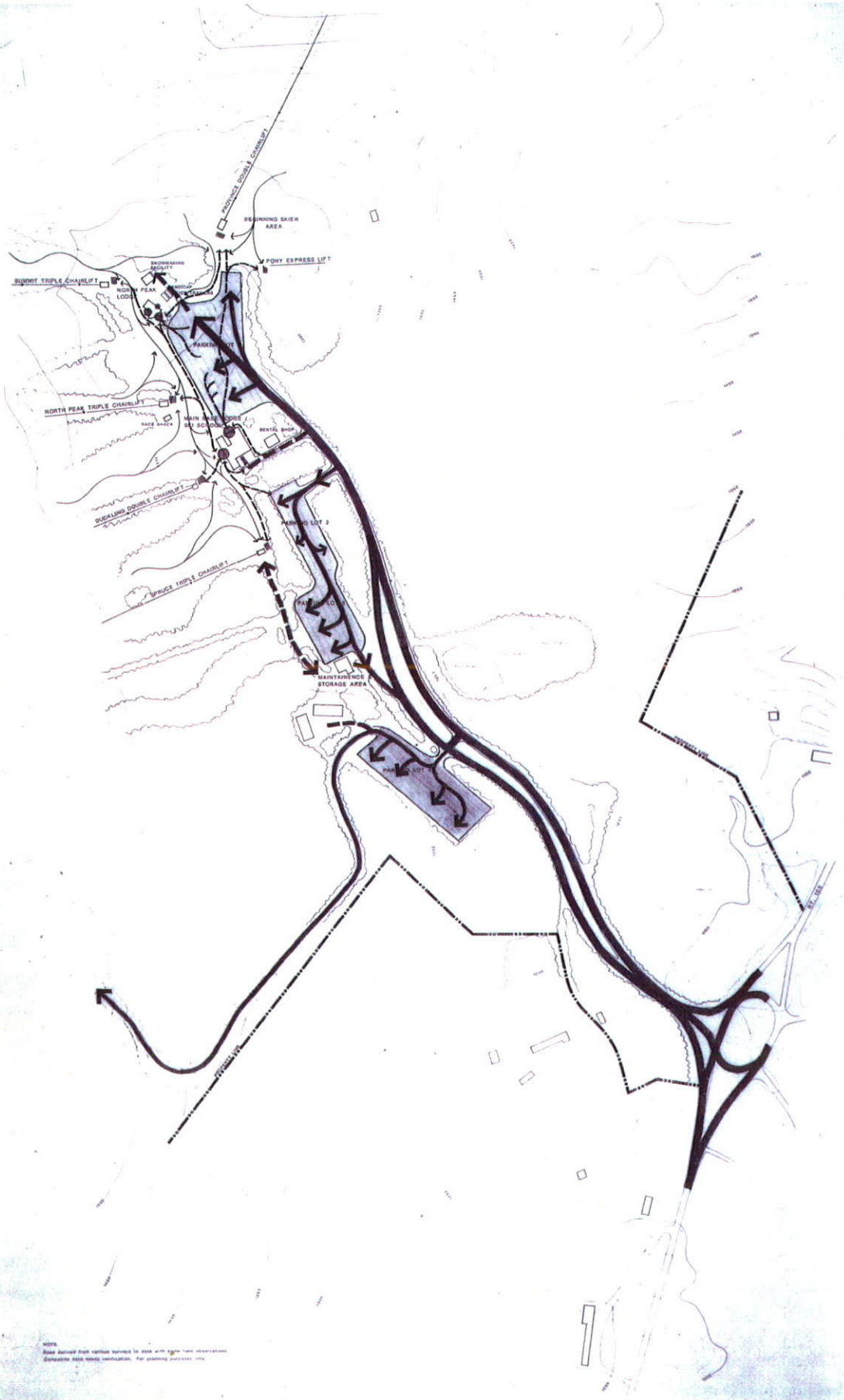


NOTE:
Base derived from various surveys to date with some new observations. Considerable more needs verification. For planning purposes only.

MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE
Department of Resources and Economic Development

Prepared by
The Cavendish Partnership
Planning Architecture Landscape Architecture Communications
Boston, Vermont

Dufresne - Henry
Engineering
Springfield, Vermont

Boston, Vermont
SCALE: 1" = 400'
NORTH

EXISTING CIRCULATION

LEGEND

- MAJOR VEHICULAR CIRCULATION
- PARKING AREAS AND DIRECTION OF TRAFFIC FLOW INTO LOTS
- SERVICE & MAINTAINENCE CIRCULATION
- PEDESTRIAN CIRCULATION
- SKIER CIRCULATION
- LIFT LINE AREAS

PLANNING/LANDSCAPE ARCHITECTURE

The development of the Mt. Sunapee base area master plan was a two-phase process. The first step was to analyze existing site conditions; the second was to create a master plan that took into account the existing deficiencies and needs as well as the projected growth and expansion of the mountain.

Site Analysis

An analysis was conducted with an emphasis on the existing base area, however a cursory evaluation was also made of the Sun Bowl area. The analysis criteria included: Slope, Vegetation, Visual Resources, Drainage, Vehicular Circulation, Pedestrian Circulation and Parking.

Slope A slope map was prepared with a focus on those areas conducive to particular base area functions, specifically buildings, skier/pedestrian areas and parking. We found that most large areas of buildable slopes, those that are 0 to 10%, are currently occupied by parking or structures.

In addition, some unbuilt areas of buildable slopes were identified: A large area adjacent to and north of the access road near its intersection with Route 103; an area below the existing parking lot furthest from the base area; and a hillside area above the sewage lagoons currently used for spray irrigation.

Vegetation The vegetation of the valley is mixed hardwoods and soft woods. Eastern white pine and red spruce predominate with some northern hardwoods (beech, birch, and maple) interspersed.

Visual resources The base area is virtually unseen from off the site and remains concealed until the visitor reaches the large parking lot closest to the lodges. The entrance sequence from the Route 103 traffic circle to the base area is significant. It sets the stage for the visitor by leading along the curving boulevard entrance road. It also gives a sense of being removed from the traffic of Route 103 and creates a strong feeling of a space of its own. Views are enclosed by the hillsides so the visual focus becomes the mountains and ski area. This entrance is visually important and efforts should be made during the planning process to preserve it.

When the visitor reaches the main parking area at the base lodge there is very little definition of where to go. The view is a vast parking area with the main base lodge tucked way off to the viewer's left. There is no central focus and nothing other than signage to direct the visitor.

The views from the base lodges are directly up the ski slopes south of the lodges. The best views from the Main Lodge are from the foyer at the south entrance. Views from the lower cafeteria are obscured by the nursery wing. Views from the lounge and upstairs seating are directed at the lower ski slopes and lifts.

The best views from the North Peak Lodge are from the slopeside room with the large stone fireplace. This room offers the best views from an indoor location in the base area. The best opportunity for views from the base area are from a location in the center to western end of the main parking lot.

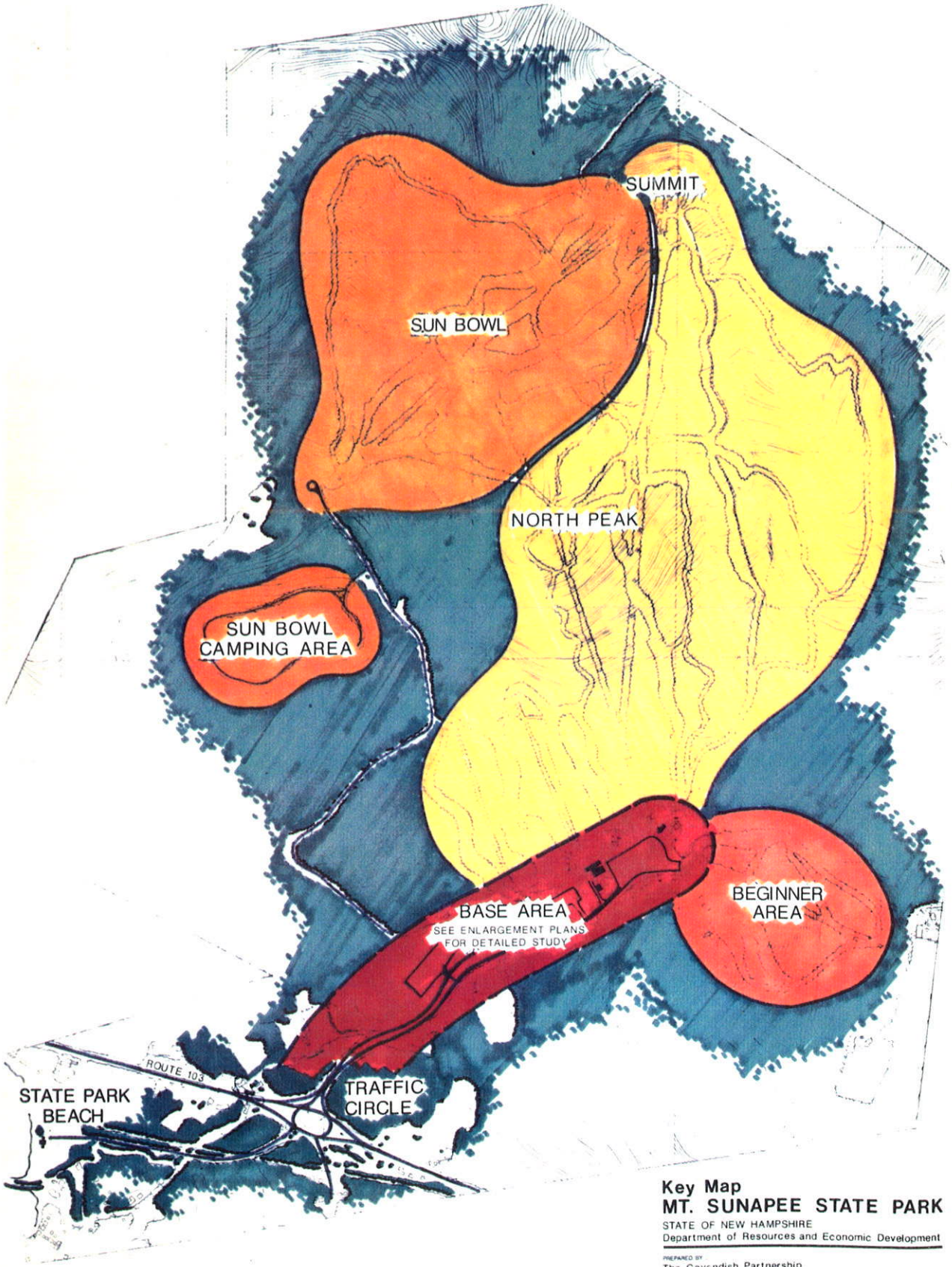
Drainage The drainage of the entire base area is concentrated in one major brook that flows along the north side of the main parking lot and across to the south side of the access road adjacent to the base lodge. The stream, which appears to have limited value as a fisheries resource in the base area, then follows the south side of the valley and flows to Lake Sunapee.

Vehicular circulation The entrance to Mt. Sunapee is well defined on Route 103 with a high-capacity, two-lane boulevard. Two lower parking areas are not well defined; the main parking area is well defined but directions within the parking area are poor.

The drop-off area for the Main Lodge is neither distinct nor adequately separated from the parking lot. Conflicts between emergency vehicles and service vehicles occur at the service access to the base lodge.

Pedestrian/Skier circulation Some users go to the main base lodge while others go directly to the North Peak Lodge. The distance to the Summit chair and North Peak Lodge from the main lodge is long and uphill for skiers carrying their equipment. Access to the Summit chair from the North Peak Lodge is much more direct.

Skiers going to the Province chair (beginner area) must travel through the main parking lot, an extremely awkward route for any skier much less a beginner. A shuttle operates between the base lodge and the Province area.



Key Map
MT. SUNAPEE STATE PARK
STATE OF NEW HAMPSHIRE
Department of Resources and Economic Development

PREPARED BY
The Cavendish Partnership
Planning, Architecture, Landscape Architecture, Communications
Ludlow, Vermont

Dufresne – Henry
Engineering
Springfield, Vermont

0 200 400 1000 2000

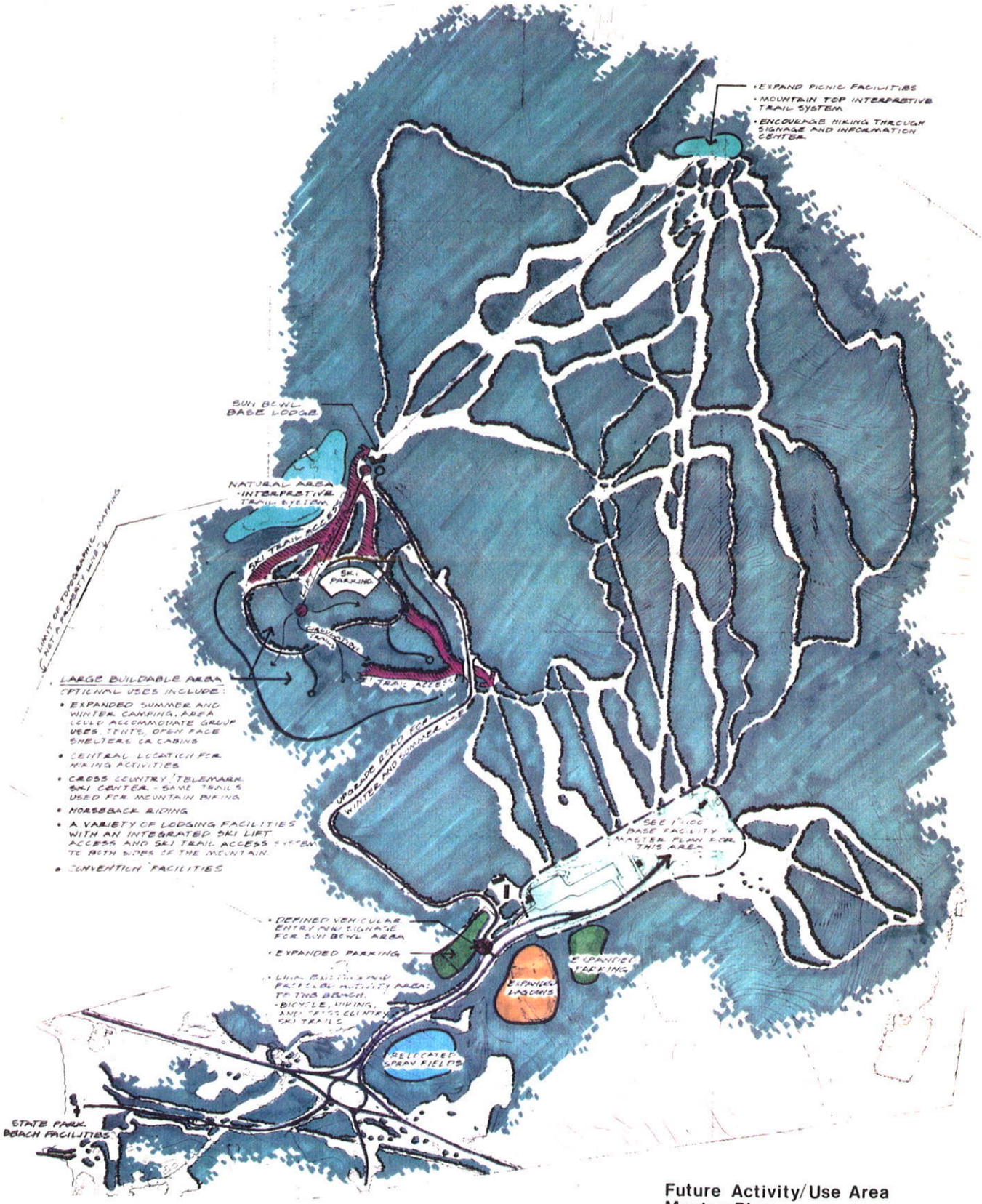
Skiers going from the North Peak Lodge to the Province area must cross a service road that accesses the snow-making building, an undesirable situation from a security and safety standpoint.

There is adequate circulation space along the base of the slopes to accommodate the movement of skiers coming off the slopes. A minor conflict exists at the Summit lift where skiers are coming down the trail adjacent to the lift while others are moving uphill to access the lift line.

The following are distances that a skier might walk or ski around the ski area:

Base Lodge to beginner area 1150' level
Base Lodge to North Peak Lodge 650' uphill
North Peak Lodge to beginner area 500' level
Base Lodge to Summit chair 900' uphill
Base Lodge to North Peak chair 300' uphill
Base Lodge to Duckling chair 200' level
Base Lodge to Spruce 400' downhill

Parking There are three lots, two of which give relatively easy access to Main Lodge, and one lower lot that requires shuttling. Parking capacity is approximately 1275 cars on 10.6 acres, or 120 cars per acre. Parking lots have overflowed on peak days with approximately 100 cars parking along the access road.



Future Activity/Use Area Master Plan
MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE
Department of Resources and Economic Development

PREPARED BY
The Cavendish Partnership
Planning Architecture Landscape Architecture Communications
Ludlow Vermont

Dufresne - Henry
Engineering
Springfield Vermont

North

March 31, 1989

Master Plan

One dimension of Mt. Sunapee emphasized in the new master plan is: *This is a place where every skier can have a positive experience as well as get an introduction to the New Hampshire park system.* More intensive year-round use must be encouraged and the area must serve both summer and winter needs. The proposed master plan also addresses circulation problems and enhances the natural and positive aspects of the site and ski area.

The new Base Lodge will be located at the west end of the existing upper parking lot which has been removed. This location was selected because it is central to the skiing activities and affords convenient skier movement to all lifts, particularly to the beginner area. The site is easy to access and conducive to drop-off, and is oriented to the south with views up the mountain, especially traveling up the Summit chair. In addition, because of its central location, the site can serve as a prominent focal point--a cornerstone of the base area--that will be easily identifiable to the user.

In terms of access and vehicular circulation, the boulevard is retained and enhanced by extending it to the new lodge location. This was designed to reinforce the state park atmosphere.

A forecourt for the new Base Lodge is created where the upper parking lot was, and a half-acre pond has been added to create a new visual experience.

The drop-off area for skiers is moved directly in front of the new Base Lodge. Skiers can proceed either to the drop-off and then to the parking area, or directly to the parking area before walking to the lodges and slopes.

Service access to the new lodge is provided at the east end of the new structure. Emergency vehicles access the renovated base lodge where First Aid and Ski Patrol are located. This resolves the conflict between lodge service vehicles and emergency vehicles.

Snowmaking is relocated to the existing maintenance complex thereby eliminating the
need for snowmaking service traffic through the base area.

Skier circulation is improved to make the skier experience as trouble-free and direct as possible. Easy walking access is designated between the parking lot southwest of the renovated lodge to the base area.

The entrance gateway containing ticket sales and information are created at the point where skiers walk from this lot to the renovated lodge. A shuttle following the south side of major parking lots provides transportation from the lower lot and new lot along the north side of the access road to the drop-off area for the new lodge and drop-off at the renovated lodge.

Skier circulation within the base area becomes more convenient between the two lodges thanks to significant open space (1.9 acres) designated for circulation, skating, a summer outdoor display space, and unobstructed access to all lifts. Access from the lodge to the Province area for the beginner becomes much easier as well.

To improve the parking dilemma, the lot by the existing base lodge is been eliminated, two other lots are expanded, and a new lot is created on the north side of the access road in the location of the current spray-site.

Parking capacity is increased from 1275 to 1865 car total; 10.6 acres to 17.4 acres. This equals one car for every 2.3 skiers while the current ratio is one car for every 2.7 skiers. The net result is ample parking for the projected CCC of 4400 skiers.

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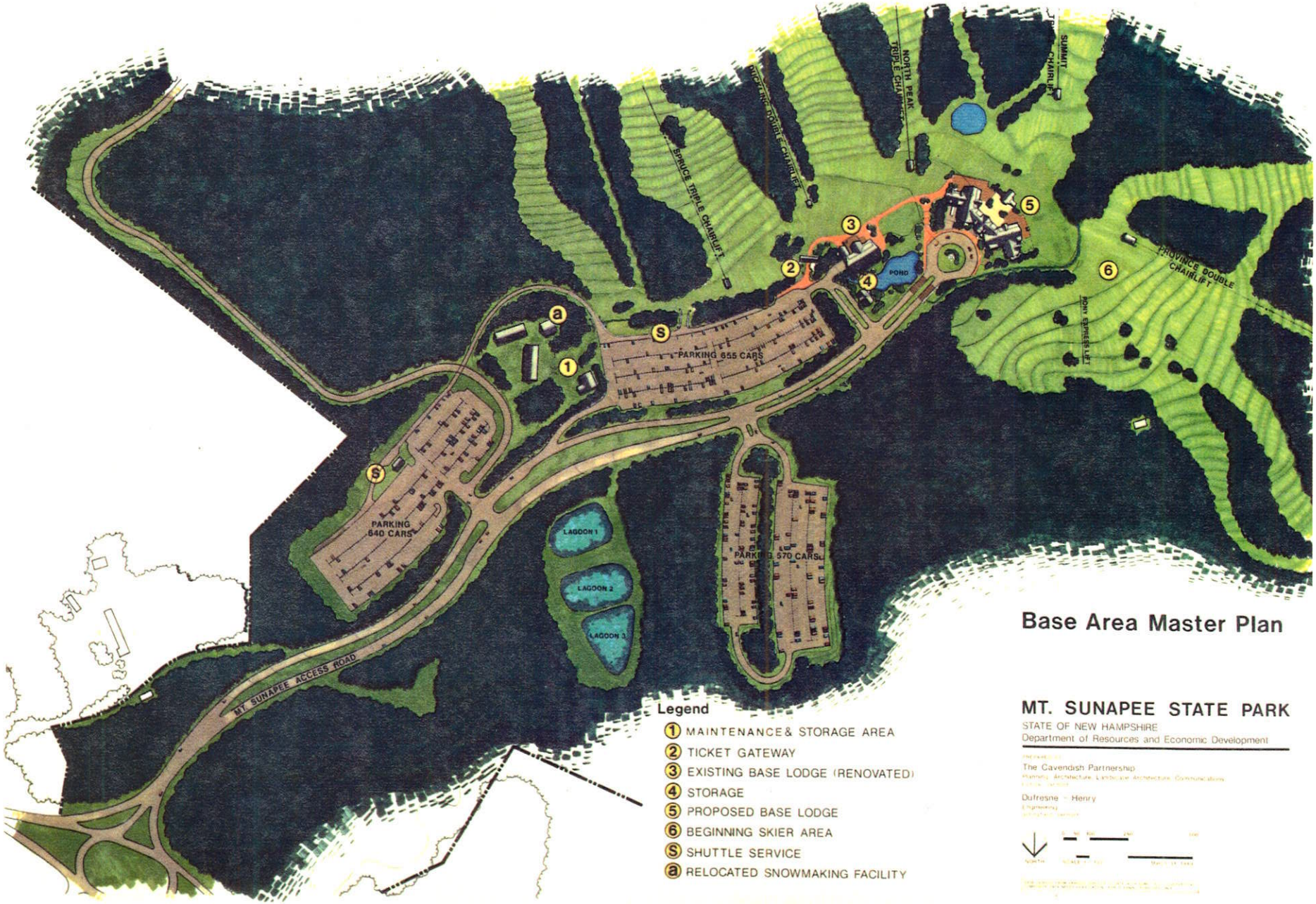

Base Area Master Plan

Legend

1. MAINTENANCE & STORAGE AREA
2. TICKET GATEWAY
3. EXISTING BASE LODGE (RENOVATED)
4. STORAGE
5. PROPOSED BASE LODGE
6. BEGINNING SKIER AREA

S. SHUTTLE SERVICE

a. RELOCATED SNOWMAKING FACILITY

MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE
Department of Resources and Economic Development

The Cavendish Partnership
Planning, Architecture, Landscape Architecture, Communications

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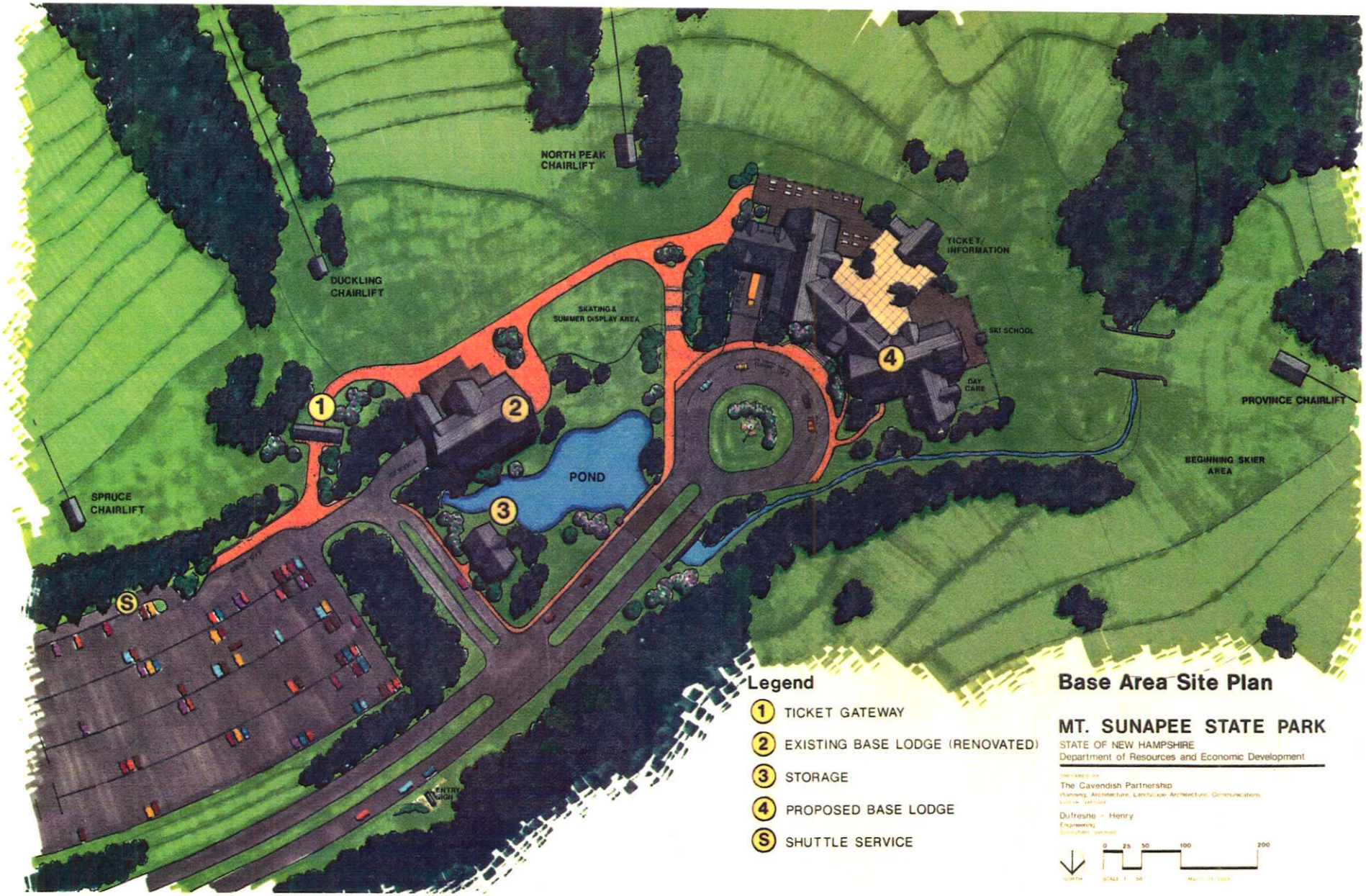


Legend

1. TICKET GATEWAY
2. EXISTING BASE LODGE (RENOVATED)
3. STORAGE
4. PROPOSED BASE LODGE
S. SHUTTLE SERVICE

Base Area Site Plan

MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE
Department of Resources and Economic Development

The Cavendish Partnership
Planning, Architecture, Landscape Architecture, Communications

Dufresne - Henry
Engineering

0 25 50 100 200

ARCHITECTURE

Building Inventory

To determine how certain functional requirements are satisfied by existing resources, we inventoried the buildings in the park. Those structures included the following:

- The existing Base Lodge was built in 1955 with a two-story addition added in 1962. The Lodge serves as the main assembly area with facilities for ticket purchase, a main cafeteria, restrooms, meeting areas, a lounge, and administrative offices.

- A rental and ski shop are located in an adjacent wood frame building that was also constructed in 1962.

- The North Peak Base Lodge was built in 1948 as Mt. Sunapee's original base facility. Today it serves as an auxiliary base lodge and assembly area. It is also rented during non-ski periods to outside groups.

- Snowball Hall serves as a break room and locker room for the mountain employees.

- Two mobil trailers north of the North Peak Lodge serve as a base for the New England Handicapped Sportsmen's Association.

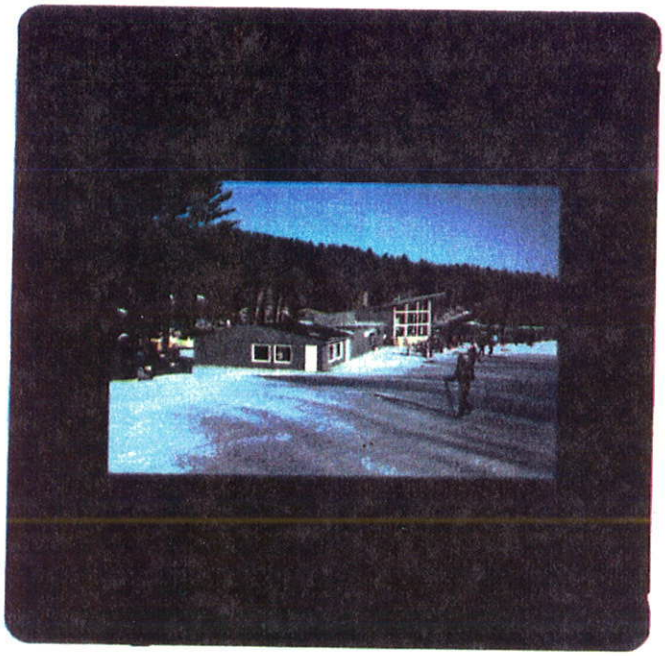
- The snowmaking building was constructed in 1982 which makes it relatively new, but it is also located in an area that is better suited to linking the beginner and advanced trails.

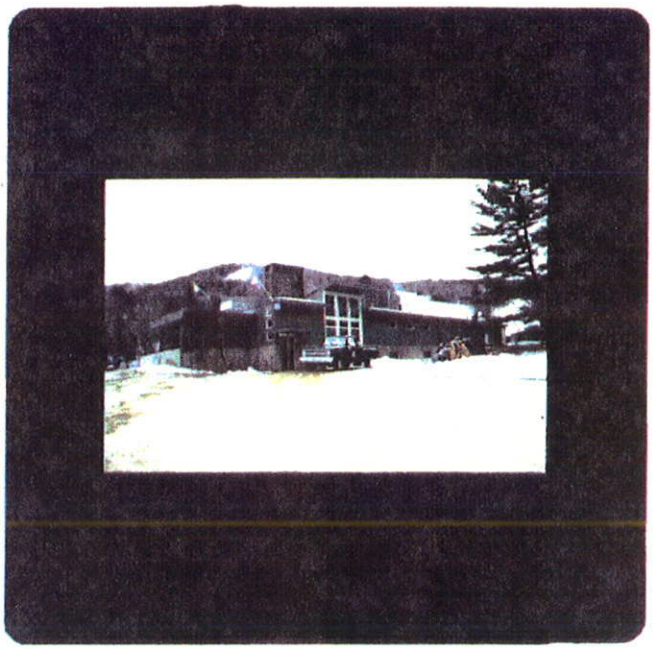
Historically, programming criteria have provided for 35 square feet of space per skier with a seat turnover ratio for ski areas with less than ideal weather conditions of three. DRED numbers indicate a CCC of 4400 which, when divided by three, equals 1467. That number becomes the basis for preliminary space programming and for calculating the number of people to be accommodated at 35 square feet per person. Therefore minimum space requirements would be 51,333 square feet.

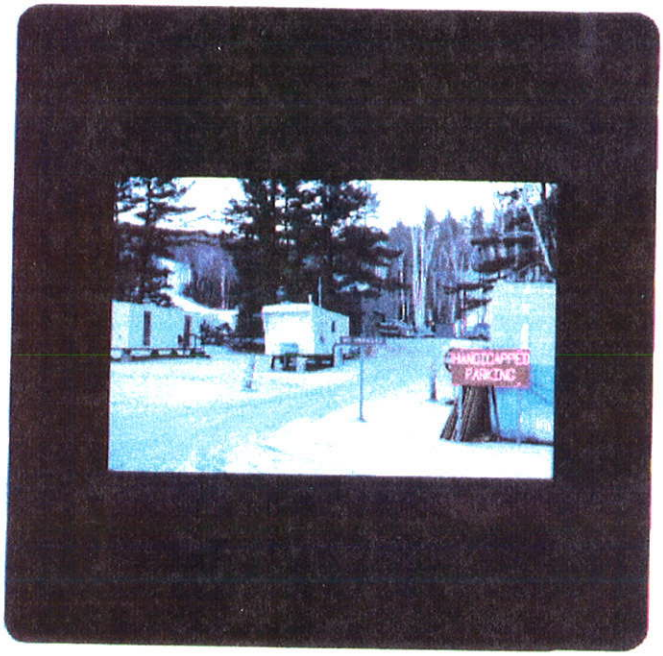
The existing base facilities have 20,324 square feet at the base lodge and 5,260 square feet at the North Peak

Lodge. The North Peak Lodge is only partially accessible to the handicapped. Both buildings need extensive mechanical, electrical, and plumbing retro-fitting as well as the need for elevators.

It is clear from discussions and site observations that much of the problem with the existing facilities stems from the inefficiency of having separate buildings and certain operations duplicated among them.






HANDICAPPED
PARKING

Architectural Concept

The new Base Lodge proposal is the product of a collaboration between the land planners and engineers. First and foremost the site must work from a user and park management standpoint. As stated in the summary of land planning issues, the circulation and use analysis indicates the optimal location for the base facility is on or near the site of the North Peak Lodge.

The North Peak Lodge has some interesting architectural significance with regard to its large fireplace and general park-like ambiance. It is grossly undersized and the cost of adding on, reconfiguring spaces, and bringing it up to current building and accessibility standards suggests replacing the structure as the most cost effective alternative.

From an aesthetics standpoint, the issue that consistently came up in workshops and conversations was the importance of preserving the park and its special ambience. Creating a new base lodge that is consistent with its surroundings and with the state park tradition was seen as paramount, for this alone sets Mt. Sunapee apart from the commercial ski areas and keeps people loyal to the mountain.

In order to articulate this special atmosphere as an architectural design, we researched the history of park buildings, the old Civilian Conservation Corps (CCC) programs of the 1930's and Adirondack-style architecture. We looked at the buildings at Yosemite, Yellowstone, Burke Mountain, Plymouth State Park, Shrewsbury Peak. The final deign concept evolved as a fusion of those classic park design elements--the heavy timbers, cobbles, large overhangs and shadow lines--and contemporary elements for a 1990's ski resort experience.

To project an outdoor feeling of natural light and air, we defined large open spaces with south-facing windows framing the mountain views. This dramatic orientation is also intended to keep visitors focused on being in the mountains so they will keep coming there for year-round recreation.

In addition to the slate of program requirements, a number of other goals were incorporated into the design concept for the new base lodge. Those included:

- Separating service functions from public access as much as possible.

- Making all facilities accessible to disabled visitors.

- Creating as much usable space as possible inside the building with the ability to divide and combine spaces for larger functions.

- Providing day care and give small children access to the mountain and mountain activities.

- Optimizing administration's accessibility to internal and external functions by locating them in an area where the majority of the mountain is within view.

- Creating an enjoyable environment for the staff.

- Allowing for reduced use in the summer or off season however the experience will remain enjoyable.

- Allowing phasing of the project by building the new Base Lodge first then renovating the existing base facility for the employee use.

Since the proposed improvements will take more than one construction season it would be prudent to keep the existing base facility as is until a new facility is completed. It also makes sense to designate this area for the ski patrol, first aid, employee services, ski teams, ski clubs and special use groups as it affords good access for service and emergency vehicles, and is remote yet close to the location of the proposed new facility.

It is important to understand that this report and the plans that are part of this report are preliminary in nature and represent only one possibility of what the facilities could be. Once funds are allocated for design development it is likely that revisions will be required to satisfy more fully the needs of the end user.

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MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE

Prepared by: THE CAVENDISH PARTNERSHIP

March 3, 1989

Proposed Base Lodge

MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE

Prepared by: THE CAVENDISH PARTNERSHIP

March 3, 1989

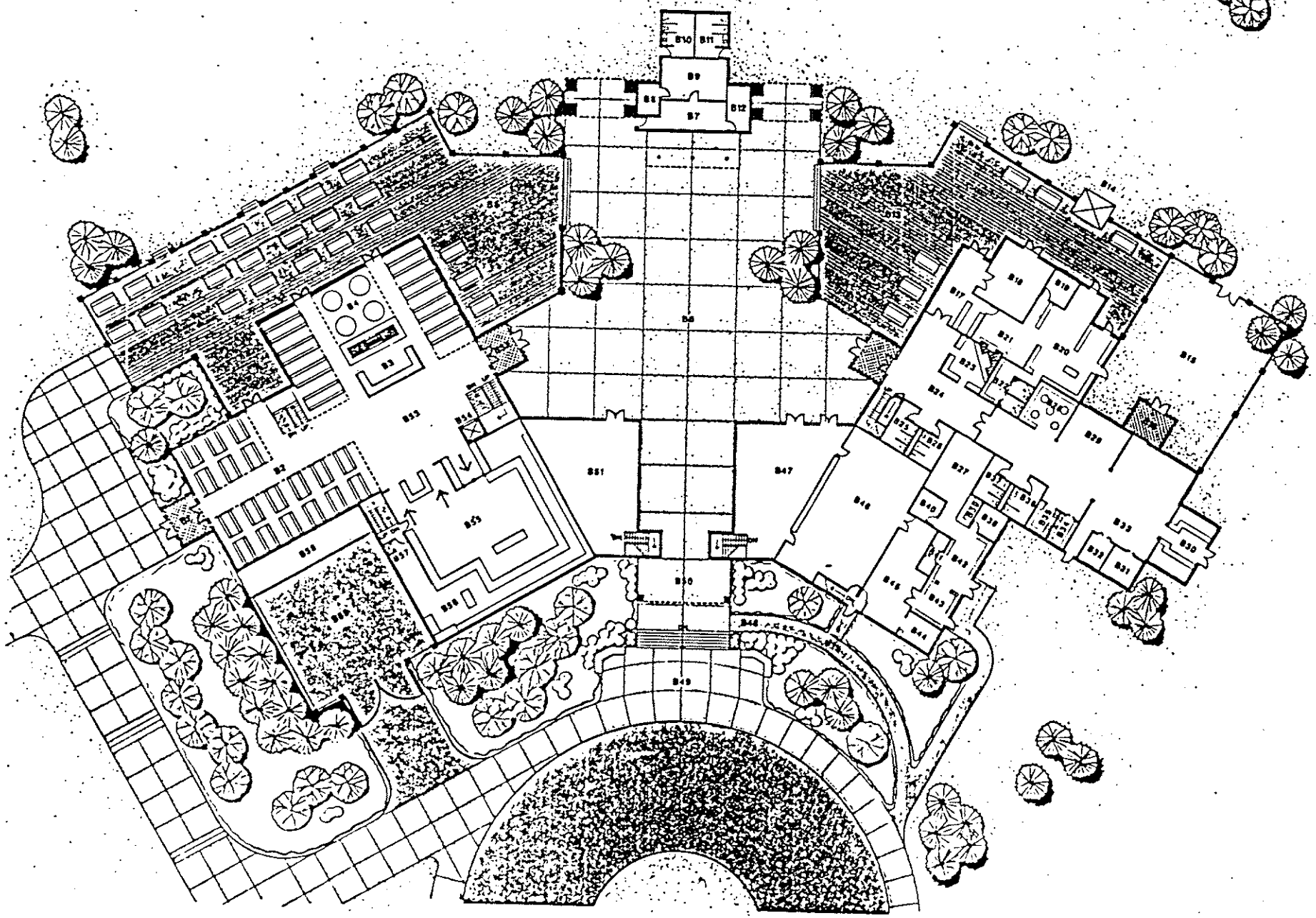
Aerial View • Proposed Base Lodge

MT. SUNAPEE STATE PARK
NEW BASE LODGE

MAIN FLOOR PLAN

B1 - Entry Vestibule
B2 - Cafeteria
B3 - Fireplace Seating Area
B4 - Cafeteria
B5 - Exterior Wood Deck
B6 - Exterior Courtyard
B7 - Ticket Windows
B8 - Safe Room
B9 - Accounting
B10- Women's Restroom
B11- Men's Restroom
B12- Ticket Storage
B13- Exterior Wood Deck
B14- Ski School Meeting Area
B15- Nursery Outside Play Area
B16- Entry Vestibule
B17- Ski School Front Desk Area
B18- Video/Instruction Room
B19- Ski School Office
B20- Ski School Lockers & Storage Area
B21- Ski School Lounge Area
B22- Ski School Lockers & Restrooms
B23- Lobby Fireplace Area
B24- Lodge Lobby - Open to Above
B25- Women's Restroom
B26- Men's Restroom
B27- Handicap Skier Greeting Area
B28- Nursery Reading Area
B29- Nursery Activity Area
B30- Nursery Play Theater Area
B31- Nursery Quiet Area
B32- Nursery Crib Area
B33- Nursery Infant Area
B34- Nursery Restroom/Changing Area
B35- Nursery Kitchen
B36- Men's Restroom
B37- Women's Restroom
B38- Handicap Skier Program Office
B39- Handicap Skier Program Reception
B40- Handicap Skier Program Office
B41- Changing Rooms
B42- Skier Storage & Loading Area
B43- Skier Storage Room
B44- Equipment Work Room
B45- Equipment Storage
B46- Ski Rental Equipment Storage
B47- Ski Equipment Rental Lobby
B48- Handicap Accessible Ramp
B49- Skier Drop-off Area
B50- Main Entry Portico
B51- Ski Shop
B52- Entry Vestibule
B53- Lodge Lobby
B54- Elevator
B55- Cafeteria Scramble Area
B56- Kitchen Food Preparation Area
B57- Dumb Waiter -Up and Down
B58- Loading Dock
B59- Loading Ramp

MT. SUNAPEE BASE LODGE
MAIN FLOOR PLAN

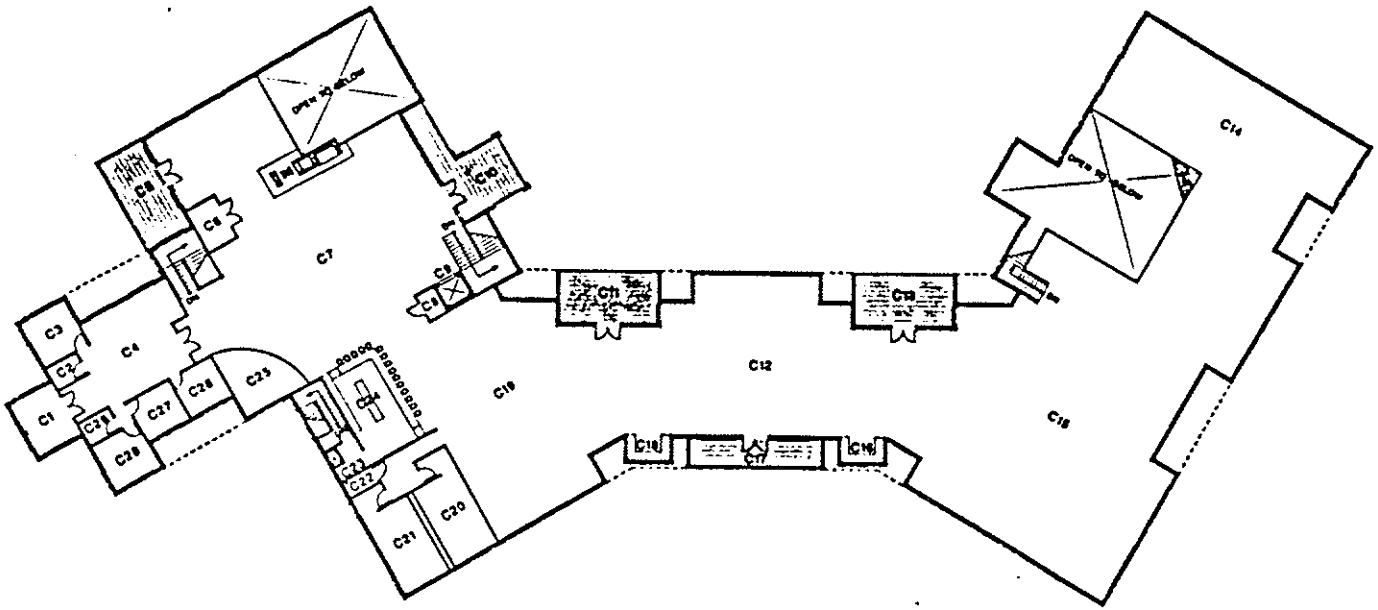


MT. SUNAPEE STATE PARK
NEW BASE LODGE

UPPER FLOOR PLAN

C1 - Conference Room
C2 - Restoom
C3 - Director's Office
C4 - Reception
C5 - Exterior Wood Deck
C6 - Storage
C7 - Upper Lodge Seating
C8 - Storage
C9 - Elevator
C10- Exterior Wood Deck
C11- Exterior Wood Deck
C12- Lodge Seating Area
C13- Exterior Wood Deck
C14- Lodge Seating
C15- Lodge Seating
C16- Seating Alcove
C17- Exterior Wood Deck
C18- Seating Alcove
C19- Seating Area
C20- Women's Restroom
C21- Men's Restroom
C22- Storage
C23- Dumb Waiter
C24- Lodge Bar
C25- Performance Stage
C26- Computer Room
C27- Office
C28- Office
C29- File Storage

MT. SUNAPEE BASE LODGE
UPPER FLOOR PLAN

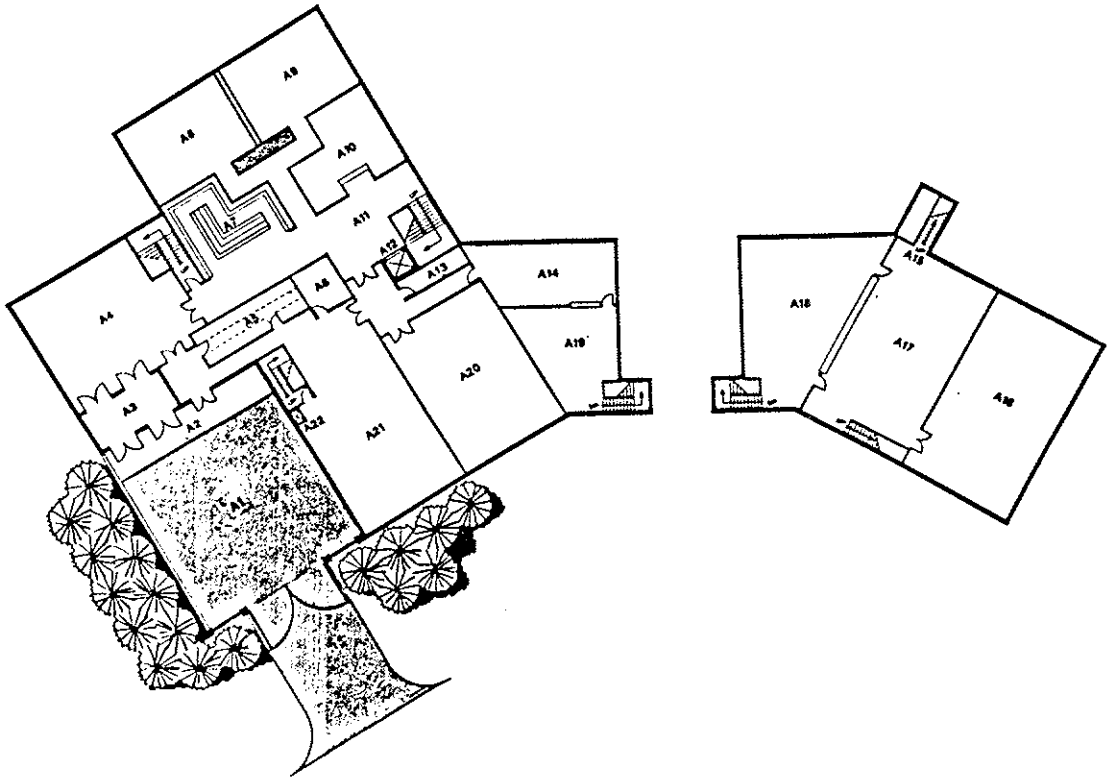


MT. SUNAPEE STATE PARK
NEW BASE LODGE

LOWER FLOOR PLAN

A1 - Loading Ramp
A2 - Loading Dock
A3 - Trash Room
A4 - Storage
A5 - Kitchen Supply Storage
A6 - Kitchen Office
A7 - Lockers
A8 - Men's Restroom
A9 - Women's Restroom
A10- Basket Storage
A11- Lower Level Lobby
A12- Elevator
A13- Elevator Mechanical Room
A14- Ski Repair Shop
A15- Emergency Exit Stairs
A16- Storage Room
A17- Ski Equipment Rental Storage
A18- Ski Equipment Rental Area
A19- Ski Equipment Shop
A20- Mechanical Room
A21- Kitchen
A22- Dumb Waiter to Upstairs

MT. SUNAPEE BASE LODGE
LOWER FLOOR PLAN



MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE

Prepared by: THE CAVENDISH PARTNERSHIP

March 3, 1989

Renovated Existing Base Lodge

MT. SUNAPEE STATE PARK

STATE OF NEW HAMPSHIRE

Prepared by: THE CAVENDISH PARTNERSHIP

Aerial View • Renovated Existing Base Lodge

MT. SUNAPEE STATE PARK
RENOVATED EXISTING BASE LODGE

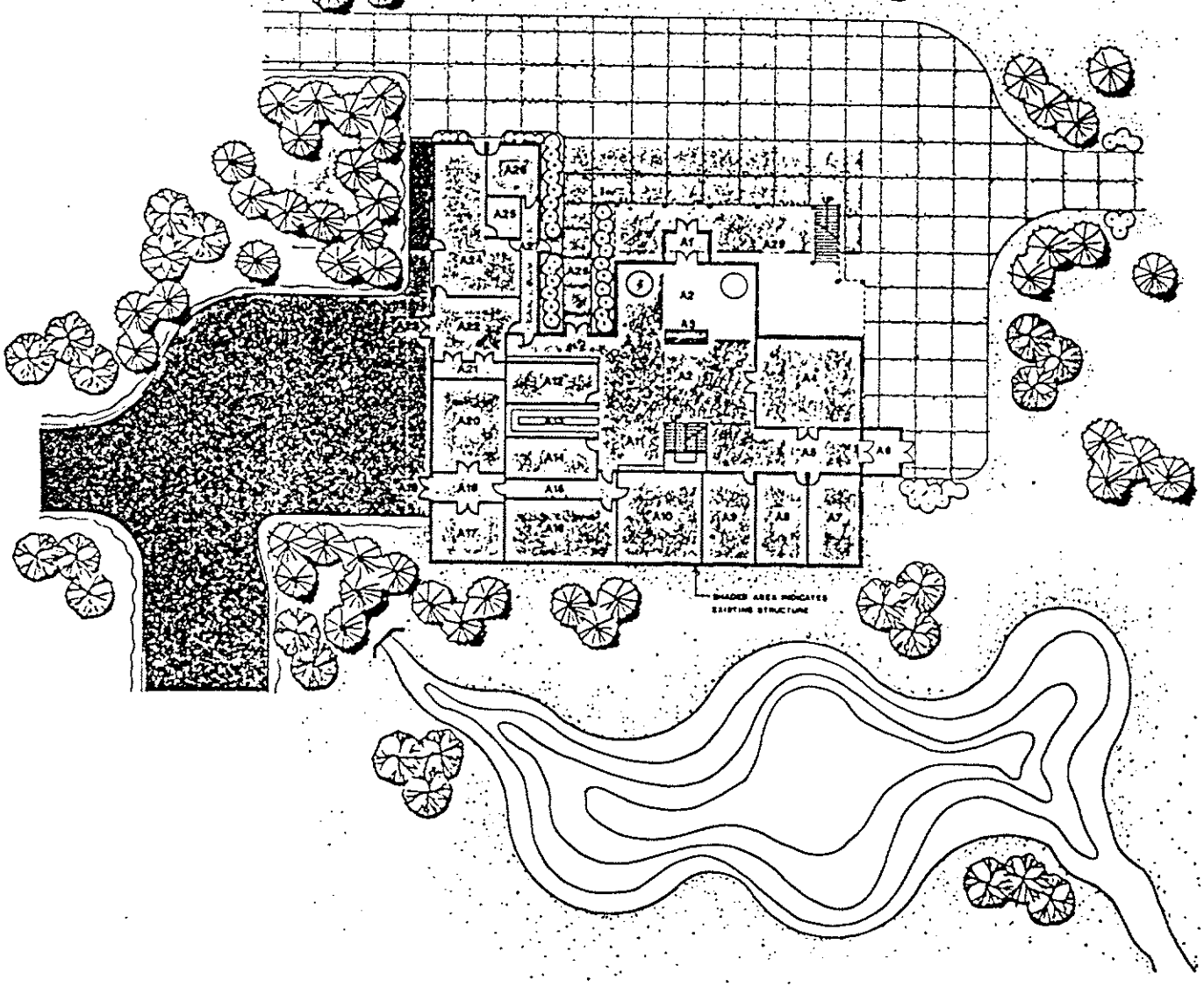
MAIN FLOOR PLAN

A1 - Vestibule
A2 - Lobby
A3 - Fireplace & Location of Skier Information
A4 - Ski Shop & Minor Ski Equipment Repair
A5 - Entry Hall
A6 - Vestibule
A7 - Office for Special Use Groups
A8 - Office for Special Use Groups
A9 - Office for Special Use Groups
A10- Employee Lounge
A11- Telephones and Concession Machine Service
A12- Women's Restroom
A13- Locker Area
A14- Men's Restroom
A15- Hallway
A16- General Storage
A17- General Storage
A18- Hallway
A19- Storage, Service and Employee Access
A20- Ski Patrol Storage
A21- Medical Supply Storage
A22- Medical Examination and First Aid
A23- Emergency and Ambulance Access
A24- Ski Patrol Room
A25- Ski Patrol Office
A26- Ski Patrol Reception and Waiting Area
A27- Hallway
A28- Exterior Courtyard
A29- Area Beneath Wood Deck Above

MT. SUNAPEE

RENOVATED EXISTING BASE LODGE

MAIN FLOOR PLAN

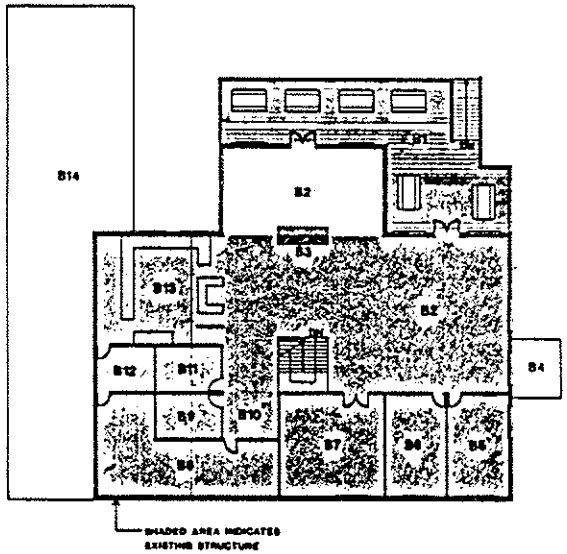


MT. SUNAPEE STATE PARK
RENOVATED EXISTING BASE LODGE

UPPER FLOOR PLAN

B1 - Exterior Wood Deck
B2 - Lodge Seating
B3 - Fireplace
B4 - Roof of Vestibule Below
B5 - Office for Special Use Groups
B6 - Office for Special Use Groups
B7 - Meeting/Conference Room
B8 - General Storage
B9 - Men's Restroom
B10- Telephone, Lockers & Concession Machine Service Foyer
B11- Women's Restrooms
B12- Food Service Storage and Preparation Area
B13- Limited Food Service Area
B14- Roof of Main Level Wing Below

MT. SUNAPEE
RENOVATED EXISTING BASE LODGE
UPPER FLOOR PLAN



SITE UTILITY OPTIONS & COST RANGES

A. Water System:

1. The simplest and most cost effective option for obtaining additional water source is to drill on-site wells at both the base area and the sun bowl.

Typical well cost:	$25,000.00 - $45,000.00 (each)
Typical well yield:	10 gpm - 30 gpm
Number of wells required:	2 - 4
Cost:	**$50,000.00 - $180,000.00**

2. Should there be no suitable well locations, a second more expensive option would be to bring water from the lake either through the existing snowmaking line or to build a new domestic water line. Both options would require a water treatment plant somewhere on the site.

   a. Utilize existing snowmaking line:

Cost of pressure or open basin plant:	$350,000.00 - $500,000.00
Cost of utility modifications to the plant:	$30,000.00 - $50,000.00
Cost:	**$380,000.00 - $550,000.00**

   b. Construct a sperate system:

Cost of new 10" water line: (6000 LF to Maint. Bldg. site)	$300,000.00 - $600,000.00
Cost of pump house:	$300,000.00 - $500,000.00
Cost of treatment (per above):	$380,000.00 - $550,000.00
Cost:	**$980,000.00 - $1,650,000.00**

3. Regardless of which option is chosen for water supply, the new system must be able to accommodate peak demands and daily water storage requirements.

An easy way to do this is with a water storage tank (which can also be used for fire storage - see item no. 4).

Storage required:	80,000 - 100,000 gal (domestic)
Fire storage:	180,000 - 360,000 gal (fire)
Cost per gallon:	$0.50 - $1.00
Cost:	**$130,000.00 - $460,000.00 ***

* **Note:** Reducing the tank size does not proportionally reduce the tank cost since a large portion of the price includes mobilization and erection and these are required for which ever tank you build.

4. Fire protection for new buildings is a code requirement and could be accomplished either by the above mentioned storage tank or by a fire pump: (not including storage pond - existing)

   a. Storage tank (see #3 above)

   b. Fire pump (in a small building): $75,000.00 - $100,000.00

   * **Note:** This cost would be reduced by 25% if the pump was installed in the new base lodge.

5. Water from wells with required chlorination for disinfection:

Well building (12'x12'):	$7,000.00 - $10,000.00
Controls & equipment:	$10,000.00 - $20,000.00
Cost:	**$17,000.00 - $30,000.00**

6. Water to service the Sun Bowl area would either require drilling on site wells or bringing water over the mountain from the base area.

SITE UTILITY OPTIONS & COST RANGES
(con't)

a. On site wells:	$25,000.00 - $45,000.00 (ea.)
Wells required:	1 - 2 (depending on yield)
Chlorination Bldg.:	$17,000.00 - $30,000.00
Cost:	**$42,000.00 - $120,000.00**
b. Storage tank for fire and domestic water supply:	
Volume required:	180,000 - 360,000 gal
cost per gallon:	$0.50 - $1.00
Cost:	**$90,000.00 - $360,000.00**
c. Cost to bring water from the base area:	
New water line (7600 LF): (tied to 10" snowmaking)	$228,000.00 - $380,000.00
Pump station:	$5,000.00 - $10,000.00
Cost:	**$233,000.00 - $390,000.00 ***

* **Note:** This price does <u>not</u> include the cost of a treatment plant nor storage (see items 6b. & 2).

7. Miscellaneous:

- Water taken from the snowmaking system obviously reduces snowmaking capabilities.
- Several treatment plant options are available yet, costs are fairly consistent with pervious numbers.
- The cost to operate the snowmaking pumps for domestic water would be costly.

SITE UTILITY OPTIONS & COST RANGES (con't)

B. Sewer System:

1. For the base area sewer system there does not seem to be any reasonable options except to expand the existing spray disposal system.

   Hoyle-Tanner conducted a study of the existing utilities and projected required expansion needs. They estimated that an additional 1.5 MG of lagoon storage was required and 4.5 acres of spray irrigation.

   a. Lagoons and spray fields:
      Cost: **$500,000.00 - $1,200,000.00**

   b. Disposal in Lake Sunapee *
      Effluent line to lake: $400,000.00 - $600,000.00
      Waste water treatment plant: $1,500,000.00 - $2,500,000.00
      Cost: **$1,900,000.00 - $3,100,000.00**

   * **Note:** It is very unlikely that the state would approve a discharge to the lake at this time.

2. The Sun Bowl area has a few options depending on the amount of expansion aimed at that area:

   a. Pump sewage to existing lagoons:

      Pump Station: $30,000.00 - $60,000.00
      Sewer line: $240,000.00 - $400,000.00
      Cost: **$270,000.00 - $460,000.00**

   b. On site Disposal: (large)

      - Pump to area adjacent to camping: *

SITE UTILITY OPTIONS & COST RANGES
(con't)

Cost of pump station:	$30,000.00 - $60,000.00
Cost of force main:	$36,000.00 - $60,000.00
Cost of disposal fields:	$100,000.00 - $200,000.00
$5.00 - $10.00/gal)	
Cost:	**$166,000.00 - $320,000.00**

* **Note:** Before on site disposal could be considered, a subsurface investigation by a hydrogeologist would have to be conducted. There are not guarantees that this type of system would be supported.

c. For a very small on site disposal system similar to that for a three (3) bedroom house you would expect to pay:
Cost: **$5,000.00 - $7,000.00 ***

* **Note:** Water would come from a on-site well presumably.

C. Snowmaking:

1. The existing system which can supply 1000 GPM cost $627,000.00 in 1982.

   a. Double the existing capacity using the existing facilities and force main:

      New pumps & controls: $500,000.00 - $700,000.00

   b. Add a new facility and force main:

      Bldg., controls, pump, pipeline: $800,000.00 - $1,500,000.00

D. Site Electrical:

1. The existing power distribution system is in relatively good condition and does not require any major upgrades.

2. In order to extend three-phase power to the Sun Bowl you would have two options:

   a. Underground conduit system:

Cost of conduit & conductor: (7000 LF)	$350,000.00 - $420,000.00
Power equipment: (transformers)	$30,000.00 - $50,000.00
Cost:	**$380,000.00 - $470,000.00**

   b. Overhead conductor:

Cost of conductor:	$105,000.00 - $140,000.00
Power equipment:	$30,000.00 - $50,000.00
Cost:	**$135,000.00 - $190,000.00**

3. The proposed buildings at the base area are all reasonably close to the existing electrical distribution system.

   a. Cost to supply power to the two (2) proposed buildings: $75,000.00 - $150,000.00

E. Maintenance Buildings:

1. The maintenance are at present operates much like an independent site with its own water, sewer, and power. No major changes are needed.

SITE UTILITIES BUDGET COSTS

A. Sun Bowl Site

- Assume a small base lodge and area housing: (100 seat lodge plus 100 housing units)

Sewer:	$400,000.00 (pump sta. to existing lagoons)
Water:	$250,000.00 (drilled well plus storage)
Electric:	$400,000.00 (underground in conduit)
	(overhead $175,000.00)
Cost:	**$1,050,000.00**

- Other options exist, however they do not reduce the cost:

  On site sewer disposal (requires much more investigation)

  Water from snowmaking system (requires pre-treatment)

  much smaller development goals

- Road upgrade:

$60.00/ft x 7000': **$420,000.00**

B. Base Area Site:

- Assume new base lodge, renovate lodge, and future hotel:

Sewer:	$150,000.00 (revamp existing distribution)
Water:	$500,000.00 (new wells and storage)
Electric	$150,000.00 (rework existing distribution)
Cost:	**$800,000.00**

SITE UTILITIES BUDGET COSTS (con't)

C. Lagoons & Spray Fields:

- Lagoon expansion work is being done by Hoyle-Tanner, however for a 1.5 MG earthen lagoon and 4.5 acres of spray fields we'd estimate a cost of: **$500,000.00 - $1,000,000.00 ***

  * Note: Exact cost is being done under separate contract with Hoyle-Tanner.

D. Relocate the Snowmaking Building:

- Assuming demolishing the existing building and constructing a new building in the vicinity of the maintenance buildings:

New buildings (2000 SF):	$150,000.00
Relocate existing equipment:	$30,000.00
Rework site utilities:	$100,000.00
Rework building utilities:	50,000.00
New Equipment:	70,000.00
Cost:	**$400,000.00**

- We suspect some of the existing fuel tanks would need to be replaced:

New tank:	$2.00/gal
Remove old tank:	$2,000.00 - $5,000.00

Example: 6000 gal tank replacement $12,000.00 - $15,000.00

- Relocating Transformers:

New pad:	$200.00
Electrician:	$500.00
Truck w/ winch:	$250.00
Cost:	approx. **$1,000.00**
	(plus cost of conductor to the new location at $25.00 - $30.00/ft.)

Note: Screening w/ trees, a fence, or shrubs is preferred to relocating.

E. <u>Snowmaking:</u>

- Assume 40-50 GPM required per snowmaking gun. With the existing 500 GPM pumps (2) the mountain can operate roughly 18-20 guns.

- Guns are typically at 100 ft intervals.

- Cost to upgrade (dependent on size of new system).

- existing system built in 1982:

Pumps & controls:	$205,000.00
Pump house, suction line, feeder line, electrical, controls, mech., site util.:	$422,000.00
Cost:	**$627,000.00**

- A completely new system would cost: **$800,000.00 - $1,500,000.00**

- Replacing the existing pumps w/ 1000 GPM pumps or adding two (2) new 500 GPM pumps would cost: **$500,000.00 - $700,000.00**

- With roughly a 100 psi head loss, you could double the design flows in the 10" pipe to 2000 GPM.

1.	Building Demolition:		
2.	Parking Lot Demolition: 32,000 SY (existing paved lot) x 1-1/2":		$52,640.00
3.	Parking Lots A & C:		
	- Clear and Grub: (9 acres)		$14,625.00
	- Excavation: (82,814 CY)		$192,956.00
	- Spread and fill (82,814 CY)		$96,064.00
	- Prepare and roll subbase:		$36,168.00
	- 6" crushed gravel:		$260,093.00
	Subtotal Cost Lots A & C:		$599,906.00
	3" Bituminous concrete pavement:	Add	$305,831.00
4.	Parking Lot B:		
	- Remove existing bituminous concrete: (29,444 SY)		$48,288.00
	- Excavation: (5,277 CY)		$12,295.00
	- Rough grade:		$6,121.00
	- Prepare and roll subbase: (15,831 SY)		$10,765.00
	- 6" crushed gravel:		$143,983.00
	Subtotal Cost Lot B:		$221,452.00
	3" Bituminous concrete pavement:	Add	$169,303.00
5.	Access Road Improvement:		
	- Remove bituminous concrete:		$32,168.00
	- Fine grade:		$7,782.00
	- Bituminous concrete pavement:		$159,090.00
	- Granite curb: (350 LF)		$12,040.00
	Subtotal Cost Access Road:		$211,030.00
6.	Walking & Plaza Paving		
	Option A:		
	- Concrete pavement - gravel base: (47,420 SF)		$130,879.00
	- Brick paving: (4,250 SF)		$30,982.00
	- Bituminous concrete walk: (6,800 SF)		$5,576.00
	Subtotal Cost Option A:		$167,437.00
	Option B:		
	- Concrete pavement: (13,220 SF)		$33,578.00
	- Brick paving: (4,250 SF)		$33,982.00

- Gravel walk: (4,555 SY)	$12,391.00
Subtotal Cost Option B:	$79,951.00
7. Excavate Pond:	
- 6,518 CY:	$15,186.00
- Grade with bulldozer:	$7,000.00
Subtotal Cost Pond:	22,186.00
8. Lighting (10 fixtures):	
- 20' Wood pole, 400 watt bulb:	$16,350.00
9. Fencing (Play Area):	
- 110 LF:	$2,117.00
10. Landscaping:	
- Planting (existing pines on site to be relocated):	
- Seed lawn areas:	
- Deciduous tree planting:	
- Flowering tree planting	
- Shrub planting:	
- Entry sign:	
- Stone walls: (1470 face ft)	
Subtotal Cost Landscaping:	$105,000.00
11. Wood Deck:	
- 12,228 SF:	$95,622.00
12. Stone Wall:	$35,256.00
13. Mobilization:	$17,445.00
Total:	$1,626,392.00
Contingency (15%):	$243,958.80
Grand Total:	$1,870,350.80

MT. SUNAPEE STATE PARK
STATE OF NEW HAMPSHIRE

FOR:
CAVENDISH PARTNERSHIP
LUDLOW, VERMONT

PREPARED BY:
JOHN H.M. CLARK
SHERWOOD PARK
MENDON, VERMONT 05701
802/ 773-7886

DATE: MAY 15, 1989

BUDGET ESTIMATE FOR :
SKI LODGE AND TICKET BOOTH

DESCRIPTION		SUB TOTAL	TOTAL
SITE WORK			
CLEARING AND GRUBBING	IN SITE PRICE	0	
EXCAVATING AND BACKFILL		40,165	
GRAVEL UNDER SLABS (COMPACTED)		11,640	
PERIMETER DRAINS		6,250	
PAVERS	IN SITE PRICE	0	
TOPSOIL	IN SITE PRICE	0	
SEEDING AND SPREAD TOPSOIL	IN SITE PRICE	0	
LANDSCAPING	IN SITE PRICE	0	
ALL SITEWORK	IN SITE PRICE	0	
ASPHALT	IN SITE PRICE	0	
TOTAL SITE WORK			58,055
CONCRETE			
FOOTINGS W/RE ROD		27,200	
WALLS W/RE ROD 12' HIGH		157,725	
WALLS W/RE ROD 5' HIGH		35,150	
SLABS ON GRADE W/MESH & VAPOR BAR.		45,750	
THICKENED SLABS		17,500	
POSTS OUTSIDE AT DECKS	IN SITE PRICE	0	
COLUMNS AT TICKET BUILDING		24,000	
SIDEWALKS	IN SITE WORK	0	
MISC PADS		3,500	
CONCRETE UNDER ENTRANCE	IN SITE WORK	0	
CONCRETE STAIRS	IN SITE WORK	0	
CONCRETE UNDER TOWER ENTRANCE	IN SITE WORK	0	
PAN FILLED STAIRS AND LANDINGS		1,750	
PERIMETER INSULATION		6,936	
DAMP PROOFING		8,242	
TOTAL CONCRETE			327,753

DESCRIPTION		SUB TOTAL	TOTAL
MASONRY			
PAINT		11,430	
BLOCK WALLS 8X8X16 (INTERIOR)		182,880	
PAINT		11,430	
STONE PIERS AT DECK			
STONE	IN SITE WORK	0	
CONCRETE	IN SITE WORK	0	
FIRE PLACE #1		25,000	
FIRE PLACE #2		25,000	
TOTAL MASONRY			255,740
		0	
STEEL			
MISC STEEL & HARDWARE		12,000	
LENTILS		8,175	
STEEL FENCE	IN SITE WORK	0	
FENCE GATE 12' EA	IN SITE WORK	0	
RAILINGS AT OPENING INSIDE		5,600	
WOOD TRIM FOR TOP OF RAILING		784	
ENTRANCE GRIDS ON FLOOR		6,000	
STAIRS WITH LANDINGS		21,400	
TOTAL STEEL			53,959
WALL SYSTEMS (STONE) EXTERIOR			
STONE		170,520	
TIVAC		1,827	
SHEATHING		12,789	
2X6 STUDS (16" OC)		15,834	
6" INSULATION		6,212	
VAPOR BARRIER		1,218	
5/8 SHEETROCK		9,744	
PAINT		6,090	
BASE, FINISHED		1,827	
TRIM AT CEILING, FINISHED		1,827	
TICKET BUILDING (STONE) EXTERIOR			
STONE		22,848	
TIVAC		245	
SHEATHING		1,714	
2X6 STUDS (16" OC)		2,122	
6" INSULATION		832	
VAPOR BARRIER		163	
5/8 SHEETROCK		1,306	
PAINT		816	
BASE, FINISHED		245	
TRIM AT CEILING, FINISHED		245	

DESCRIPTION	SUB TOTAL	TOTAL
WALL SYSTEMS (WOOD) EXTERIOR		
STAIN	4,872	
CEDAR CLAPBORDS	30,450	
TIVAC	1,827	
SHEATHING	12,789	
2X6 STUDS (16" OC)	15,834	
6" INSULATION	6,212	
VAPOR BARRIER	1,218	
5/8 SHEETROCK	9,744	
PAINT	6,090	
BASE, FINISHED	1,827	
TRIM AT CEILING, FINISHED	1,827	
TICKET BUILDING (WOOD) EXTERIOR		
STAIN	438	
CEDAR CLAPBORDS	2,740	
TIVAC	164	
SHEATHING	1,151	
2X6 STUDS (16" OC)	1,425	
6" INSULATION	559	
VAPOR BARRIER	110	
5/8 SHEETROCK	877	
PAINT	548	
BASE, FINISHED	164	
TRIM AT CEILING, FINISHED	164	
TOTAL EXTERIOR WALL SYSTEMS		359,453
WALLS SYSTEM (INTERIOR WALLS)		
BASE, FINISHED	3,089	
TRIM AT CEILING, FINISHED	3,089	
PAINT	10,296	
5/8 SHEET ROCK	16,474	
2X4 16 OC (W/PLATES & BRAC)	23,681	
5/8 SHEET ROCK	16,474	
PAINT	10,296	
BASE, FINISHED	3,089	
TRIM AT CEILING, FINISHED	3,089	
SOUND INSULATION	6,912	
TOTAL INTERIOR WALLS		96,487
STRUCTUAL WOOD SYSTEM	615,979	
EQUIPMENT (FORK LIFT & CRANE)	76,800	
TOTAL STRUCTUAL WOOD & EQUIP.		692,779

DESCRIPTION		SUB TOTAL	TOTAL
STAIN		24,743	
T&G PLANK		112,333	
RAFTERS W/RIDGE,TIES,CEIL JOST	SEE STR. WD.	0	
VAPOR BARRIER		5,443	
INSULATION R-38		46,022	
SHEATHING 3/4	SEE STR. WD.	0	
ROOFING SYSTEM			
SHINGLES (SHAKES)		92,077	
BUILDING PAPER		3,475	
W/DRIP,SOFF & FACIA,TRIM		20,850	
VALLEY FLASHING		9,200	
FLASHING & CAULKING		10,000	
STANDING SEAM ROOF		31,325	
METAL 4, ICE GUARD (STANDING SEAM)		9,210	
BITUTHENE		5,024	
TOTAL ROOF SYSTEMS			369,702
FLOOR FRAMING SYSTEM (BETWEEN BASEMENT AND 1ST FLOOR)			
PAINT		5,951	
CORE DECK 10" WITH 2" TOPPING		71,406	
FLOOR FRAMING SYSTEM (BETWEEN 1ST FLOOR AND 2ND FLOOR)			
STAIN		12,492	
2X12 16 OC WOOD JOISTS	SEE STR. WD.	0	
W/BRIDG, SILLS,FURRING	SEE STR. WD.	0	
T&G PLANKING		102,430	
TOTAL FLOOR SYSTEMS			192,278
WINDOWS			
WINDOW, CLAD, (6'X8'), INS GLASS		90,816	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH		0	
WINDOW, CLAD, (4'X6'), INS GLASS		14,144	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH		0	
WINDOW, CLAD, (6'X12'), INS GLASS		5,184	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH		0	
WINDOW, CLAD, (6'X6'), INS GLASS		7,344	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH		0	
WINDOW, CLAD, (8'X8'), INS GLASS		11,008	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH		0	
WINDOW, CLAD, (8'X8'), INS GLASS		9,216	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH		0	

DESCRIPTION	SUB TOTAL	TOTAL
WINDOW, CLAD, (2'X4'), INS GLASS	980	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH	700	
WINDOW, CLAD, (2'X6'), INS GLASS	2,160	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH	1,400	
WINDOW, CLAD, (6'X10'), INS GLASS	2,496	
W/TRIM IN T,PAINT IN & OUT,CAULK, FLASH	0	
INTERIOR WINDOWS	1,000	
HOLLOW METAL FRAMES, PAINTED	300	
TOTAL WINDOWS		146,748
EXTERIOR DOOR SYSTEM		
HOLLOW METAL DOOR (INSULATED)	14,500	
W/FRAME ALL CASE,SILL,HW,PT,STRIP	4,000	
W/DBL FRAMES	3,600	
INTERIOR DOOR SYSTEM		
HOLLOW METAL DOOR	11,600	
W/FRAME,TRIM,HW,PAINT, ALL BOTH SIDES	12,000	
BIFOLDING DOOR	4,500	
W/FRAME,HW, TRIM, AND PAINT, ALL SIDES	6,000	
TOTAL DOORS		56,200
CEILING SYSTEMS		
5/8 SHEETROCK W/SUPPORT SYSTEM	8,838	
PAINT	289	
EPOXY PAINT	1,658	
SUSPENDED CEILING SYSTEM		
2X2 GRID SUSPENDED CEILING	3,241	
TOTAL CEILING SYSTEMS		14,026
FLOOR SYSTEMS		
SEALING OF CONCRETE SLABS	1,957	
VINYL FLOOR COVERING (VFC)	1,600	
BASE	260	
CARPET	83,780	
CARPET (INDOOR-OUTDOOR)	253,785	
CERAMIC TILE AND BASE	12,798	

DESCRIPTION		SUB TOTAL	TOTAL
CERAMIC TILE WALLS		22,960	
QUARY TILE AND BASE		138,296	
SLATE		15,950	
TOTAL FLOOR SYSTEMS			531,386
DECKS AND BALCONIES			
DECKS WOOD (PRESSURE TREATED)	IN SITE WORK	0	
CONCRETE PIERS	IN SITE WORK		
STONE	IN SITE WORK		
WOOD PIERS	IN SITE WORK		
FLOOR JOISTS	IN SITE WORK		
5/4 DECKING	IN SITE WORK		
RAILING-BENCH	IN SITE WORK		
BALCONIES (OUTSIDE) (PRESSURE TREATED)		11,385	
FRAMING	SEE STR. WD.		
FLOOR JOISTS	ABOVE		
5/4 DECKING	ABOVE		
RAILING/BENCH	ABOVE		
TOTAL DECKS AND BALCONIES			11,385
MILLWORK			
WOOD SEATING AT FIREPLACE, FINISHEI	ALLOWANCE	5,000	
WOOD RAILINGS, FINISHED	SEE STEEL	0	
CASHIERS BOOTH, FINISHED	ALLOWANCE	2,000	
BAR	ALLOWANCE	12,000	
SHELVING	ALLOWANCE	2,500	
KITCHENETE CABINETS UPPER		3,250	
KITCHENETE CABINETS BASE		3,250	
COUNTER TOPS WITH:		1,300	
VANITIES AND TOPS		875	
SHELVING AT OPENINGS		1,500	
TOTAL MILLWORK			31,675
SPECIALITIES			
FIRE EXTINGUISHERS & CABINETS		2,340	
SIGNS	ALLOWANCE	3,000	
LOCKERS	BY OTHERS	0	
SKI RACKS	BY OTHERS	0	
SKI BASKETS	BY OTHERS	0	
TOTAL SPECIALITIES			5,340
TOILET ROOM ACCESSORIES			
GRAB BARS		600	
ELECTRIC HAND DRYER		9,975	
MIRROR		5,780	

DESCRIPTION		SUB TOTAL	TOTAL
TOILET PAPER DISPENSER		1,178	
SANITARY NAPKIN DISPENSER		1,650	
SOAP DISPENSER		2,100	
SANITARY NAPKIN DISPOSAL		1,500	
TOILET PARTITIONS (HALF)		2,108	
TOILET PARTITIONS (FULL)		3,000	
TOTAL TOILET ACCESSORIES			27,891
EQUIPMENT			
KITCHENETE EQUIPMENT			
STOVE		450	
REFRIGATOR		600	
DISPOSAL		200	
HOOD FAN		150	
KITCHEN EQUIPMENT (MAIN KITCHEN)	ALLOWANCE	250,000	
SERVING EQUIPMENT (MAIN)	ABOVE	0	
KITCHEN HOOD IN MAIN KITCHEN	ABOVE	0	
WALK IN EQUIPMENT	ABOVE	0	
TOTAL EQUIPMENT		0	251,400
CONVEYING EQUIPMENT			
ELEVATOR 3 STOPS		65,000	
DUMB WAITER 3 STOPS		35,000	
TOTAL CONVEYING EQUIPMENT			100,000
MECHANICAL SYSTEM			
PLUMBING		257,293	
HEATING		340,290	
SITE UTILITIES	IN SITE PRICE	0	
SPRINKLER		97,226	
TOTAL MECHANICAL			694,808
ELECTRICAL SYSTEM			
ENTRANCE	IN SITE PRICE	0	
SITE LIGHTING	IN SITE PRICE	0	
ELECTRICAL		298,791	
FIRE SYSTEM	ABOVE		
SECURITY SYSTEM	ABOVE		
INTERCOM	ABOVE		
TOTAL ELECTRICAL			298,791
TOTAL			4,575,858
GENERAL CONDITIONS (7%)			320,310
BOND COST	BY OTHERS		0
CONTRACTORS OVERHEAD (3%)			146,885
CONTRACTORS FEE (8%)			403,444
TOTAL CONSTRUCTION COST			5,446,497
CONTINGENCY (10%) OF THE TOTAL			544,650
GRAND TOTAL			5,991,146

MT. SUNAPEE STATE PARK
STATE OF NEW HAMPSHIRE

FOR:
CAVENDISH PARTNERSHIP
LUDLOW, VERMONT

PREPARED BY:
JOHN H.M. CLARK
SHERWOOD PARK
MENDON, VERMONT 05701
802/ 773-7886

DATE: MAY 16, 1989

BUDGET ESTIMATE FOR :
ADDITIONS AND ALTERATIONS TO
SHELTER BUILDING

DESCRIPTION		SUB TOTAL	TOTAL
SITE WORK			
EXCAVATION AND LEVELING	IN SITE PRICE	0	
EXCAVATING AND BACKFILL		3,038	
TOPSOIL	IN SITE PRICE	0	
SEEDING AND SPREAD TOPSOIL	IN SITE PRICE	0	
LANDSCAPING	IN SITE PRICE	0	
ALL SITEWORK	IN SITE PRICE	0	
TOTAL SITE WORK			3,038
DEMOLITION			
BUILLDING DEMOLITION		10,562	
DUMPING FEES	BY OTHERS		
DEMOLITION TO OLD BUILDING		3,800	
PATCH TO MATCH		2,400	
ELECTRICAL & MECHANICAL DEMOLITION		19,899	
TOTAL DEMOLITION			36,661
CONCRETE			
FOOTINGS W/RE ROD		4,000	
WALLS W/RE ROD FOR STONE		20,400	
POSTS OUTSIDE AT DECKS	IN SITE WORK	0	
SIDEWALKS	IN SITE WORK	0	
FIRE PLACE PADS		3,520	
TOTAL CONCRETE			27,920

DESCRIPTION	SUB TOTAL	TOTAL
MASONRY		
FIRE PLACE #1	20,000	
FIRE PLACE #2	20,000	
TOTAL MASONRY		40,000
STEEL		
MISC STEEL & HARDWARE	1,500	
LENTILS	3,600	
TOTAL STEEL		5,100
WALL SYSTEMS (STONE) EXTERIOR		
STONE	30,408	
TIES INTO OLD BUILLDING	326	
WALL SYSTEMS (WOOD) EXTERIOR		
STAIN	486	
CEDAR CLAPBORDS	3,040	
TIVAC	182	
SHEATHING	1,277	
2X6 STUDS (16" OC)	1,581	
6" INSULATION	620	
VAPOR BARRIER	122	
5/8 SHEETROCK	973	
PAINT	730	
BASE, FINISHED	182	
TRIM AT CEILING, FINISHED	182	
TOTAL EXTERIOR WALL SYSTEMS		40,109
WALLS SYSTEM (INTERIOR WALLS)		
BASE, FINISHED	348	
TRIM AT CEILING, FINISHED	348	
PAINT	1,160	
5/8 SHEET ROCK	1,856	
2X4 16 OC (W/PLATES & BRAC)	2,668	
5/8 SHEET ROCK	1,856	
PAINT	1,160	
BASE, FINISHED	348	
TRIM AT CEILING, FINISHED	348	
SOUND INSULATION	225	
TOTAL INTERIOR WALLS		10,317

DESCRIPTION		SUB TOTAL	TOTAL
ROOF FRAMING SYSTEM			
AT NEW ADDITION			
STAIN		625	
T&G PLANK		2,838	
RAFTERS W/RIDGE,TIES,CEIL JOST	SEE STR. WD.	6,513	
VAPPER BARRIER		138	
INSULATION R-38		1,163	
SHEATHING 3/4	SEE STR. WD.	0	
ROOF FRAMING BALANCE OF THE ROOF			
RAFTERS W/RIDGE,TIES,CEIL JOST	SEE STR. WD.	54,226	
ROOFING SYSTEM			
SHINGLES		11,658	
BUILDING PAPER		1,166	
W/DRIP,SOFF & FACIA,TRIM		3,563	
VALLEY FLASHING		3,350	
FLASHING & CAULKING		4,000	
STANDING SEAM ROOF		6,520	
BITUTHANE		870	
TOTAL ROOF SYSTEMS			96,627
FLOOR FRAMING SYSTEM			
FLOOR FRAMING SYSTEM (AT NEW ADDITION)			
2X12 16 OC WOOD JOISTS		921	
W/BRIDG, SILLS,FURRING	ABOVE	0	
T&G PLANKING		1,148	
INSULATION R-38		260	
MDO PLYWOOD		585	
TOTAL FLOOR SYSTEMS			2,915
WINDOWS			
WINDOW, CLAD, (4'X6'), INS GLASS		3,264	
W/TRIM IN T,PAINT IN & OUT,CALK, FLAS	ABOVE	0	
WINDOW, CLAD, (6'X6'), INS GLASS		24,480	
W/TRIM IN T,PAINT IN & OUT,CALK, FLAS	ABOVE	0	
WINDOW, INTERIOR GLASS		500	
W/TRIM IN T,PAINT IN & OUT,CALK, FLASH		150	
TOTAL WINDOWS			28,394

DESCRIPTION		SUB TOTAL	TOTAL
EXTERIOR DOOR SYSTEM			
HOLLOW METAL DOOR (INSULATED)		3,000	
W/FRAME ALL CASE,SILL,HW,PT,STRIP		3,200	
W/DBL FRAMES		600	
INTERIOR DOOR SYSTEM			
HOLLOW METAL DOOR		2,600	
W/FRAME,TRIM,HW,PAINT, ALL BOTH SIDES		3,200	
W/DBL FRAMES		750	
TOTAL DOORS			13,350
FLOOR FINISHES			
QUARY TILE AND BASE		2,240	
TOTAL FLOOR SYSTEMS			2,240
DECKS AND BALCONIES			
DECKS WOOD (PRESSURE TREATED)		7,302	
TOTAL DECKS AND BALCONIES			7,302
MILLWORK			
WOOD SEATING AT FIREPLACE, FINISHE	NONE	0	
BAR	NONE	0	
SHELVING	NONE	0	
SPECIALITIES			
FIRE EXTINGUSHERS & CABINETS		1,260	
SIGNS	ALLOWANCE	2,500	
TOTAL SPECIALITIES			3,760
TOILET ROOM ACCESSORIES			
GRAB BARS	ALLOWANCE	5,000	
ELECTRIC HAND DRYER	ALLOWANCE	0	
MIRROR	ALLOWANCE	0	
TOILET PAPER DISPENSER	ALLOWANCE	0	
SANITARY NAPKIN DISPENSER	ALLOWANCE	0	
SOAP DISPENSER	ALLOWANCE	0	
SANITARY NAPKIN DISPOSAL	ALLOWANCE	0	
TOILET PARTITIONS (HALF)	ALLOWANCE	0	
TOILET PARTITIONS (FULL)	ALLOWANCE	0	
TOTAL TOILET ACCESSORIES			5,000

DESCRIPTION			SUB TOTAL	TOTAL
CONVAYING EQUIPMENT	NONE	NONE		
ELEVATOR (TWO STOPS)			45,000	
TOOTAL CONVAYING EQUIPMENT				45000
MECHANICAL SYSTEM				
PLUMBING			38,383	
HEATING			50,765	
SITE UTILITIES	IN SITE PRICE		0	
SPRINKLER			14,504	
TOTAL MECHANICAL				103,652
ELECTRICAL SYSTEM				
ENTRANCE	IN SITE PRICE		0	
SITE LIGHTING	IN SITE PRICE		0	
ELECTRICAL			44,574	
FIRE SYSTEM	ABOVE			
SECURITY SYSTEM	ABOVE			
INTERCOM	ABOVE			
TOTAL ELECTRICAL				44,574
TOTAL		58.34		515,959
GENERAL CONDITIONS (10%)		5.83		51,596
BOND COST	BY OTHERS	0.00		
CONTRACTORS OVERHEAD (3%)		1.93		17,027
CONTRACTORS FEE (10%)		6.61		58,458
TOTAL CONSTRUCTION COST		72.71		643,040
CONTINGENCY (10%) FO THE TOTAL		7.27		64,304
GRAND TOTAL		**79.98**		**707,344**

MT. SUNAPEE STATE PARK
STATE OF NEW HAMPSHIRE

FOR:
CAVENDISH PARTNERSHIP
LUDLOW, VERMONT

PREPARED BY:
JOHN H.M. CLARK
SHERWOOD PARK
MENDON, VERMONT 05701
802/ 773-7886

DATE: MAY 15, 1989

ROOM FINISH SCHEDULE
SKI LODGE AND TICKET BOOTH

DESCRIPTION AND ROOM NUMBER	FLOOR FINISH	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING TYPE	CEILING FINISH
1 YARD	ASPHALT	BLOCK/PT	CON	FENCE	CON/ST		
2 LOADING DOCK	CON	"	BLOCK/PT	"	"		
3 TRASH ROOM	S/CON	"	"	"	CON/PT	CON	PT
4 ENTRANCE	QT	"	"	BLOCK/PT	BLOCK/PT	S/R	"
5 STORAGE	S/CON	CON/PT	"	"	CON/PT	CON	"
6 LOCKER ROOM	S/CON	BLOCK/PT	BLOCK/PT	BLOCK/PT	BLOCK/PT	"	"
7 PANTRY	QT	QT	QT	QT	QT	S/R	"
8 KITCHEN	"	"	"	"	"	"	"
9 MECHANICAL ROOM	S/CON	BLOCK/PT	BLOCK/PT	BLOCK/PT	BLOCK/PT	CON	"
10 HALL	"	"	"	BLOCK/PT	"	CON	"
11 ELEVATOR MECH RM	S/CON	"	"	"	"	CON	"
12 OFFICE	VFC	"	"	"	"	ACC	
13 SKI STORAGE	S/CON	"	CON/PT	"	"	CON	PT

DESCRIPTION AND ROOM NUMBER	FLOOR FINISH	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING TYPE	CEILING FINISH	
14 MENS TOILET	CT	CT	CT	CT	CT	CON	"	
15 WOMENS TOILET	CT	"	"	"	"	CON	"	
16 SKI RENTAL	S/CON	CON/PT	CON/PT	BLOCK/PT	BLOCK/PT	CON	"	
17 SKI RENTAL	CP (ID OD)	BLOCK/PT	CON/PT	CON/PT	"	CON	"	
SECOND FLOOR								
201 SERVING AREA	QT	SR/V	SR/V	SR/V	SR/V	WOOD	STANED	
202 LOUNGE & EATING	WOOD	"	"	"	"	"	"	
203 SKI SHOP	"	SR/PT	SR/PT	SR/PT	SR/PT	"	"	
204 SKI RENTAL	"	"	"	"	"	"	"	
205 SKI RENTAL	"	"	"	"	"	"	"	
206 SKI STORAGE	"	"	"	"	"	"	"	
207 SKI STORAGE	"	"	"	"	"	"	"	
208 LOCKERS	"	"	"	"	"	"	"	
209 CLOSET	"	"	"	"	"	"	"	
210 OFFICE	"	"	"	"	"	"	"	
211 WOMENS TOILET	CT	CT	CT	CT	CT	ACC		
212 MENS TOILET	"	"	"	"	"	"		
213 WOMENS TOILET	"	"	"	"	"	"		
214 MENS TOILET	"	"	"	"	"	"		
215 KITCHENETE	QT	SR/PT	SR/PT	SR/PT	SR/PT	"		
216 TOILET	CT	CT	CT	CT	CT	"		
217 QUIET ROOM	CARP	SR/PT	SR/PT	SR/PT	SR/PT	WOOD	STANED	
218 QUIET ROOM	"	"	"	"	"	"	"	
219 ENTRANCE	SLATE	"	"	"	"	"	"	
220 NURSERY	CARP	"	"	"	"	"	"	
221 NURSERY	"	"	"	"	"	"	"	
222 LOBBY	SLATE	"	"	"	"	"	"	
223 LOCKER ROOM	CT	SR/V	SR/V	SR/V	SR/V	SR	EPOX	
224 TOILET	"	"	"	"	"	SR	EPOX	

DESCRIPTION AND ROOM NUMBER	FLOOR FINISH	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING TYPE	CEILING FINISH	
225 TOILET	"	"	"	"	"	SR	EPOX	
226 NURSERY	CARP	SR/PT	SR/PT	SR/PT	SR/PT	WOOD	STANED	
227 NURSERY	"	"	"	"	"	"	"	
228 NURSERY	"	"	"	"	"	"	"	
229 SKI SCHOOL LOUNGE	QT	"	"	"	"	"	"	
230 SKI SCHOOL OFFICE	QT	"	"	"	"	"	"	
231 SKI SCHOOL LOBBY	QT	"	"	"	"	"	"	
232 ENTRANCE	CARP	"	"	"	"	"	"	
ENTRANCE 4 EA	GRATE							
STAIR A		BLOCK/PT	BLOCK/PT	BLOCK/PT	BLOCK/PT	STEEL	PT	
STAIR B		BLOCK/PT	BLOCK/PT	BLOCK/PT	BLOCK/PT	STEEL	PT	
STAIR C		SR/PT	SR/PT	BLOCK/PT	BLOCK/PT	STEEL	PT	
STAIR D		SR/PT	SR/PT	BLOCK/PT	BLOCK/PT	STEEL	PT	
STAIR E		BLOCK/PT	BLOCK/PT	BLOCK/PT	BLOCK/PT	STEEL	PT	
STAIR F		SR/PT	SR/PT	BLOCK/PT	BLOCK/PT	STEEL	PT	
STAIR G		SR/PT	SR/PT	BLOCK/PT	BLOCK/PT	STEEL	PT	
ELEVATOR	3 STOP							
DUMB WAITER	3 STOP							
THIRD FLOOR								
301 OFFICE	CARP	SR/PT	SR/PT	SR/PT	SR/PT	WOOD	STANED	
302 OFFICE	"	"	"	"	"	"	"	
303 OFFICE	"	"	"	"	"	"	"	
304 OFFICE	"	"	"	"	"	"	"	
305 OFFICE	"	"	"	"	"	"	"	
306 OFFICE	"	"	"	"	"	"	"	

DESCRIPTION AND ROOM NUMBER	FLOOR FINISH	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING TYPE	CEILING FINISH	
307 OFFICE	"	"	"	"	"	"	"	
308 OFFICE	"	"	"	"	"	"	"	
309 LOUNGE	CARP (ID OD)	"	"	"	"	"	"	
310 CLOSET	"	"	"	"	"	"	"	
311 CLOSET	"	"	"	"	"	"	"	
312 BAR	QT	"	"	"	"	"	"	
313 LOUNGE	WOOD	"	"	"	"	"	"	
314 ENTRY HALL	"	"	"	"	"	"	"	
315 TOILET	CT	CT	CT	CT	CT	SR	SR	
316 TOILET	"	"	"	"	"	SR	SR	
TICKET OFFICE								
401TICKET WINDOWS	S/CON	BLOCK/PT	BLOCK/PT	SR/PT	BLOCK/PT	SR	PT	
402 OFFICE	VFT	SR/PT	SR/PT	SR/PT	"	ACC		
403 OFFICE	"	BLOCK/PT	SR/BL/PT	BLOCK/PT	SR/BL/PT	"		
404 TOILET	S/CON	SR/PT	SDR/PT	"	BLOCK/PT	SR	PT	
405 TOILET	"	"	BLOCK/PT	"	SR/PT	"	"	
406 OFFICE VAULT	VFT	"	"	"	"	CONC	"	