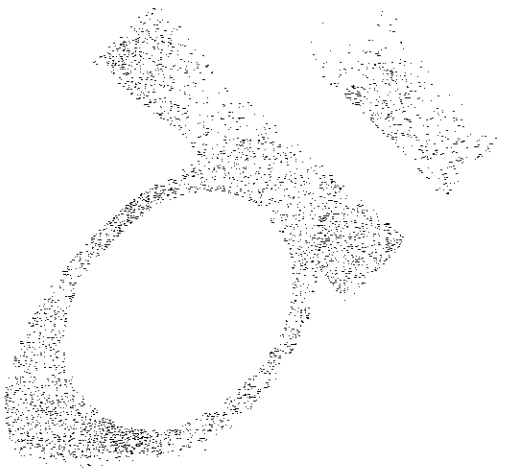
Vail Village Loading & Delivery Study

Preliminary Data Collection, Analysis, and Recommendations



Prepared for
Town of Vail

by
MK Centennial

October, 1999

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Vail Village Loading and Delivery Study

Executive Summary

Introduction

The Vail Village Loading and delivery study was researched and prepared between 11/1/97 and 11/1/99 for the purpose of analyzing and understanding all the factors surrounding people and goods movement in an out of the Vail Village commercial core. Ultimately the study and this executive summary give recommendations and supporting background to help minimize or eliminate motorized vehicle (primarily delivery trucks) from the core, for the purpose of enhancing visitor enjoyment and safety. There are several fundamental questions, which the Town of Vail must answer before determining which of these options to proceed with. These questions include:

What is our idea of a pedestrian village and how much are we willing to spend to get there?

Where does the money come from to accomplish the goal of a true pedestrian village?

Who has a voice in what the Town eventually does?

Whose interest takes priority in the process?

What is the time line to accomplish the goal?

Where are new loading facilities built and where are the trucks eventually going to unload?

The following report discusses in detail the entire range of options available to the Town and there potential costs and benefits. This Executive summary lays out two key scenarios that we believe to be feasible and would recommend as cost effective and productive towards the goal of a pedestrian village.

Short Term – Signage, Enforcement, Permitting, Other Factors

The following short-term solutions were presented to the Vail Town council for approval at the November 1998 council meeting.

Variable Message Signs

Use of Variable Message Signs (VMS) at key locations directing skiers to the parking structures, and informing them where appropriate skier drop-offs are located.

Additional - VMS signs, in the vicinity of the roundabout and adjacent to the parking structure, to get the attention of out-of-town guests and direct them clearly to the appropriate parking locations. Operate the signs only during peak periods.

Change in Parking Ticket Structure

Change the parking ticket structure. Have a ticketing structure that will penalize the repeat offender and not affect the guests of the Village.

Start with a warning ticket, then the first three parking tickets a person receives will be the standard $26, the fourth and all subsequent tickets, during that season (Nov. To April) will be $100 or more (Town of Vail Council does have the authority to increase the parking fines in the Village).

Access to the Village Commercial Core

There are several access points into the Village, only one of which is suitable for delivery traffic entry. While we found that most delivery vehicles do enter the Village through CheckPoint Charlie, many other vehicles enter from the other three access points to the Village, frequently against traffic. In reviewing traffic patterns, traffic flow, and entry access points to the Village, we discovered there might be some opportunity to further limit access to the Village for all types of vehicles. By limiting vehicle entry access to one or two enforceable points in the Village, the overall traffic volume could be reduced, thus reducing the impact of delivery vehicles.

Changes are easily instituted and are enforceable. Should reduce traffic in the Village significantly. If instituted in conjunction with improved signage, adjusted delivery hours and better enforcement would have impact on overall sight and noise pollution caused by vehicles in the Village.

Hours of Delivery

One of the issues that we believe could have a significant impact with vehicle density and dwell time in the village that would not require intensive capital investment would be restructuring the way in which the town vendors are allowed to deliver goods to individual businesses. While many of the restaurant owners in town allow delivery personnel unsupervised access to their place of business to make deliveries, or have someone available in the early morning hours to receive goods, some restaurants/bars/hotels do not allow this to happen. This causes some vendors to remain in Vail as late as 11:00AM to 1:00PM to service their customers. This equates to a significant increase in dwell time and cost as well as additional noise and sight pollution.

Earlier delivery of goods could remove the majority of larger delivery vehicles from the village during "guest" hours. This process would require cooperation and coordination between vendors and restaurants. This approach would be most effective if instituted in conjunction with improved signage and some changes in access and traffic flow in the Village. Stricter limitations could be put on Village access if delivery personnel could complete deliveries to all establishments before 7AM.

Other Factors

While delivery trucks do create a sight and noise pollution issue as well as an inconvenience in the Village, the ancillary issues should not be minimized as contributing factors. We believe they warrant further analysis.

Some of these issues include:

- Automobiles in the Village
  - Working people (remodel and remove = construction)
  - Residents
  - Business owners
- Enforcement
- Snowplows
- Small Package Delivery
  - UPS
  - USPS
  - Federal Express
  - Newspapers

Section 5 – Short-Term Analysis and Section 6 - Recommendations detail the entirety of these recommendations. Before any or in conjunction with the consideration of any major capital expenditure, these solutions should be implemented for at least one season. The estimated cost implementing all of these suggestions will range in $250,000 to $1,000,000 and should impact the total traffic in the village during visitor hours by 40-60%.

Longer Term - Construction, Warehousing and Delivery System

Over 250 scenarios were examined (see appendix E) to determine what combination of warehousing and delivery options might be the most feasible and productive in terms of both logistics and cost in removing vehicle traffic from the Village. While many of the scenarios had attractive traits, no one scenario was perfect. It is evident however, that a combination of some of the features of several of the scenarios could reduce the total vehicle volume in the Village by as much as 95%.

These include:

- Addition of several delivery doors and a delivery dock at the Land Exchange building site. To effectively service at least 1/3 to 1/2 of the Village commercial core, 6-10 doors would be required.
- Additionally, some heated sidewalks into the village, which could accommodate pallet jack size pull carts, as well as some traffic management along Vail Road would be required.
- Construction of some underground delivery tunnels with street level freight elevators under Bridge Street and Gore Creek Drive to facilitate loading and delivery at the Land Exchange site.
- Construction of a delivery dock and 4-8 delivery doors at or near the P3&J site

- Consideration of additional storage requirements per retail square foot for businesses in the village
- The consideration of a delivery dock to accommodate large and small trucks at all newly developed and redeveloped sites within the Village.

There are several examples of how and why these options could be done on a cost - effective basis and have a major impact (incremental) on the vehicle traffic in the Village Core in the attached study. There are also discussions on opportunities we believe make less sense from both an economic and vehicle impact.

1

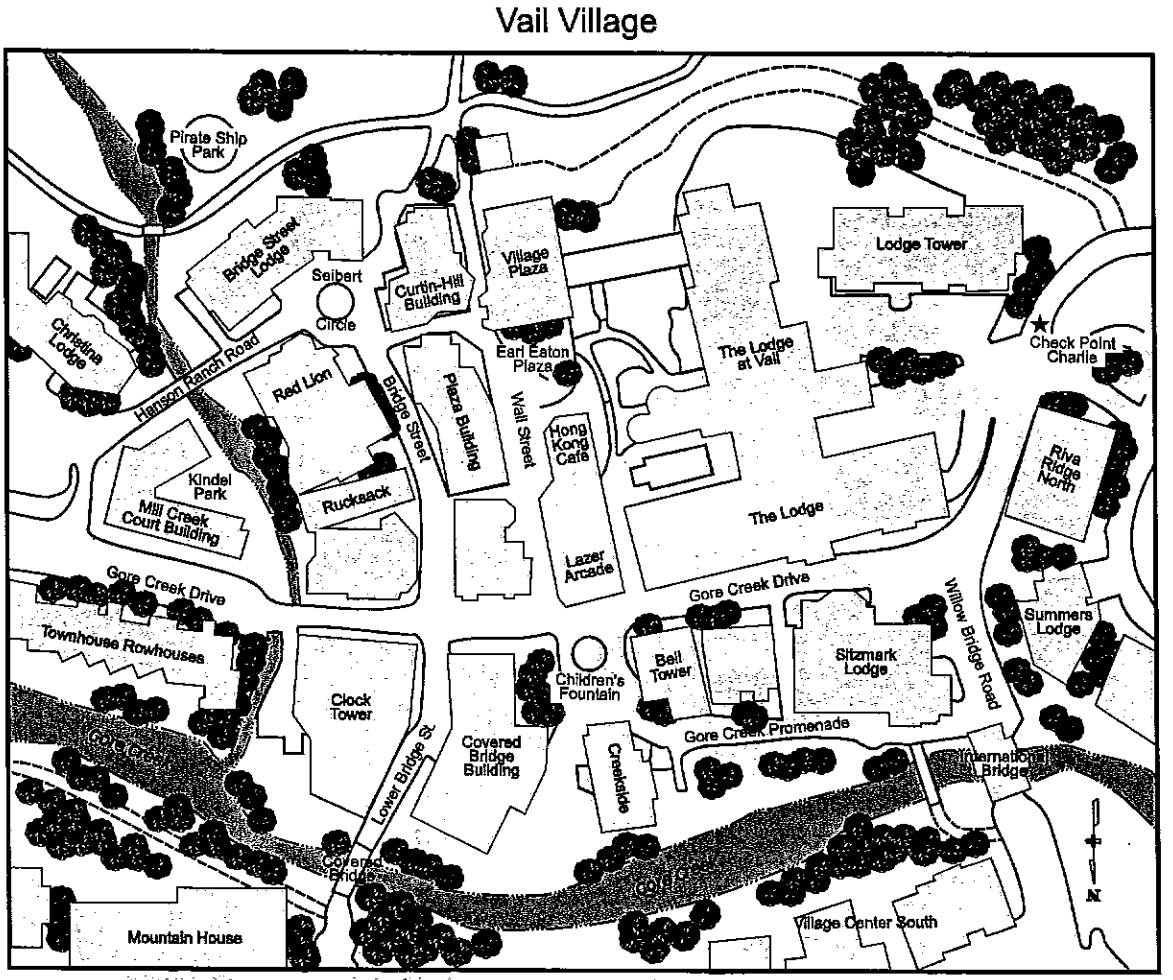
Introduction

Vail Village exists as a small specialized service center in the resort community of Vail, Colorado. The Village provides direct access to the Vail ski resort as well as a number of tourist services such as, lodging, dining, shopping, ski rentals, and entertainment. A map of the Village can be seen in Figure 1. The Village is a pedestrian zone. The streets within the Village are restricted to pedestrian traffic, Police and emergency vehicles, guests staying at lodges with parking facilities, taxis, construction and service vehicles, and loading and delivery vehicles. There are no service entrances to Vail Village lodges and shops, so it has become necessary for vehicles to utilize the same streets as the pedestrian traffic. Constituencies in the Town of Vail would like to present residents, visitors, and tourists with a true pedestrian environment therefore the desire exists to develop an alternative method of freight delivery and garbage pick-up for the Vail Village.

A study of the loading and delivery process in Vail Village was conducted by the Town of Vail and MK Centennial. The study includes: determining whether a problem existed, defining the problem, defining the existing system, data collection and analysis, and alternative solution development and analysis.

A public process was conducted throughout the study. The public process involved having individual or small group meetings with each of the affected interests, and larger group public meetings.

Figure 1 - Vail Village



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Loading and Delivery Problem Statement & Issues

Community representatives and Village constituencies perceive the need to reduce or restrict loading and delivery traffic within the Village. A public process to determine the problems or issues with the existing system began by defining the problem and identifying the affected parties and their concerns. The Town of Vail conducted preliminary public meetings with all interested parties and affected groups.

Problem Statement

A series of meetings with these groups and public meetings yielded the following problem statement

Working Problem Statement

Over the years, trucks--particularly large trucks--have become an irritation in Vail Village as these vehicles use Vail's "front door" pedestrian space to provide "back door" deliveries. This conflict occurs because Vail lacks alleyways and other alternative methods that would provide these essential services more discretely. This results in two problems: 1) the guest experience is not what we intend and; 2) business visibility and access is diminished. Instead of fully enjoying the resort's natural beauty and ambiance that attracted them in the first place, our visitors--especially those who come to enjoy our family-owned lodges--find themselves experiencing the sights and sounds of an urban environment. For businesses, Vail's ambiance is further impacted when trucks, while providing essential behind-the-scenes support for the benefit of all businesses, block and obstruct selected storefronts all too frequently and for intolerable periods of time.

With large trucks, in particular, the community has identified the following issues and concerns:

- *size*
- *unsightliness*
- *noise*
- *pollution*
- *safety risk for pedestrians*
- *frequency of deliveries*
- *length of time spent blocking businesses*

- *length of time spent blocking businesses*
- *congestion*
- *loss of tourism, revenue*

If, in fact, the presence of trucks in the pedestrian areas causes a negative impact on our visitor enjoyment and the success of our businesses, the town must immediately address the loading and delivery issue through infrastructure management and other techniques to improve the community's overall economic viability as a world class resort.

Groups Affected by Loading and Delivery practices within Vail Village

Vail Village is a mixture of many businesses, restaurants, homes, and guest lodges all of which are served by a variety of different delivery companies and types of delivery vehicles. The diverse nature of the village, and the variety of delivery needs require that a number of different groups be involved in defining and determining the effectiveness of the existing delivery system. The groups which are represented in this study and which will be impacted most by any decisions to alter the delivery system are tourists and visitors, businesses within the Village, homeowners within and adjacent to the Village, Delivery vehicles, and the Town of Vail. Each of these groups were surveyed in the summer of 1997 to determine how they perceived the loading and delivery issues within the Vail Village.

Tourists and Visitors

Concerned that the existence of delivery trucks within the Village may take away from the positive guest experience the Town of Vail conducted a survey of Vail Village guests and tourists to determine if the existing loading and delivery system had any negative reverberations on their stay in Vail. The survey was conducted by Town of Vail employees. Surveyors were stationed at various locations throughout the Village. Surveyors approached persons on the streets in the Village and asked them questions pertaining to the Village. The following is a list of questions and responses:

1. Please rate Vail Village in terms of the following:

	Extremely Dissatisfied									Extremely Satisfied	Mean	n
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**		
Street life in the summer	3	1	0	1	1	1	10	24	16	21	8.1	75
Cleanliness	0	0	0	2	3	1	6	15	32	24	8.7	83
Noise levels	0	0	2	2	6	2	8	16	22	23	8.2	81
Air quality	0	1	0	1	0	0	3	12	26	42	9.1	85
Overall appearance	0	0	0	0	2	1	4	10	29	35	9.1	81

2. Did you notice the presence of delivery trucks?

Yes	34	42%
No	47	58%

3. If yes, rate the impact the presence of trucks has had on your experience

No Problem						Big Problem				Mean	n
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**		
16	3	2	3	3	1	4	0	0	0	2.8	32

Responses to the survey are also displayed in figure 2.

Vail Village Business Owners

The Village business owners were questioned by the Town of Vail and MK Centennial in both group meetings and individual meetings. There are two distinct groups within the Vail business owners group, shop owners and restaurant owners. Both groups were met with separately and together. This allowed for the full variety of opinions to be considered when addressing the loading and delivery issues within the Village. The general perception of business owners is represented by the following statements.

- Large trucks are unsightly, and when they park in front of businesses they block the entrances and hurt business, the use of smaller trucks may help, (although smaller trucks means more traffic).
- Trucks should park in front of the establishment to which they are delivering.
- Lack of storage space at Village establishments makes it impossible to reduce number of deliveries.
- Cars parked in the village limit spaces available for truck parking.
- Trucks should be in the Village earlier, and out earlier to limit guest exposure to trucks.
- The noise made by large trucks, snow plows, and garbage pick-up is the big problem for lodges within the Village. The noise wakes guests and creates an unpleasant atmosphere.
- Garbage pick-up between 8-9am is ideal, pick-ups outside this time slot are annoying.

East Village Homeowners Associations

The official stance of the Homeowners association is that Vail Village is divided into two distinct areas, the commercial core of the Village and non-commercial areas, The zoned commercial core and surrounding areas can be seen in figure 3. It is the position of the Homeowners Association that the loading and delivery of goods intended for businesses within the commercial core of the Village should take place within the commercial core of the Village. Currently loading and delivery is allowed at three areas outside of the zoned commercial core, Hanson Ranch Road, 304 Gore Creek Drive, and Willow Bridge Road.

Figure 2 - Vail Village Guest Survey

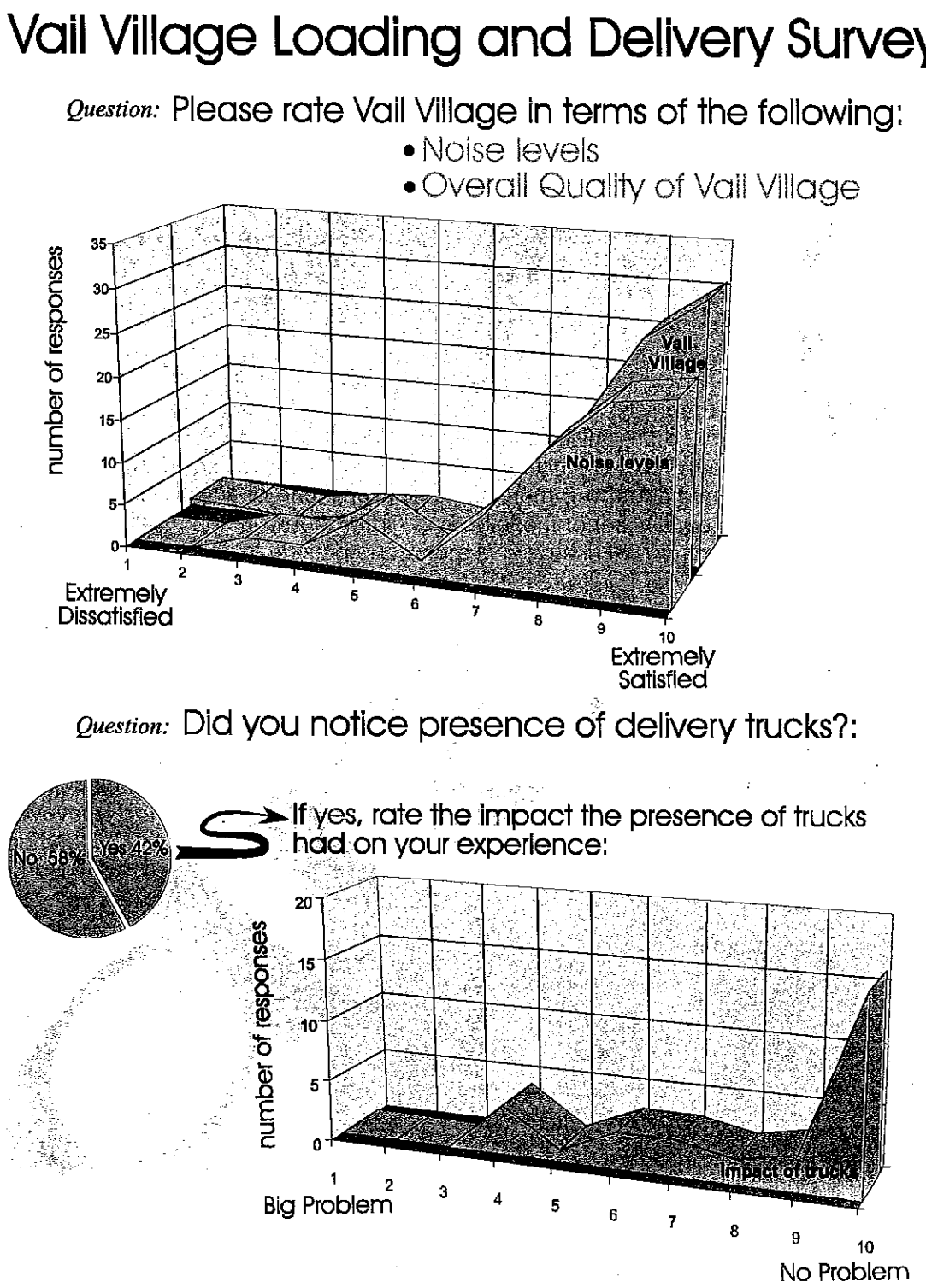
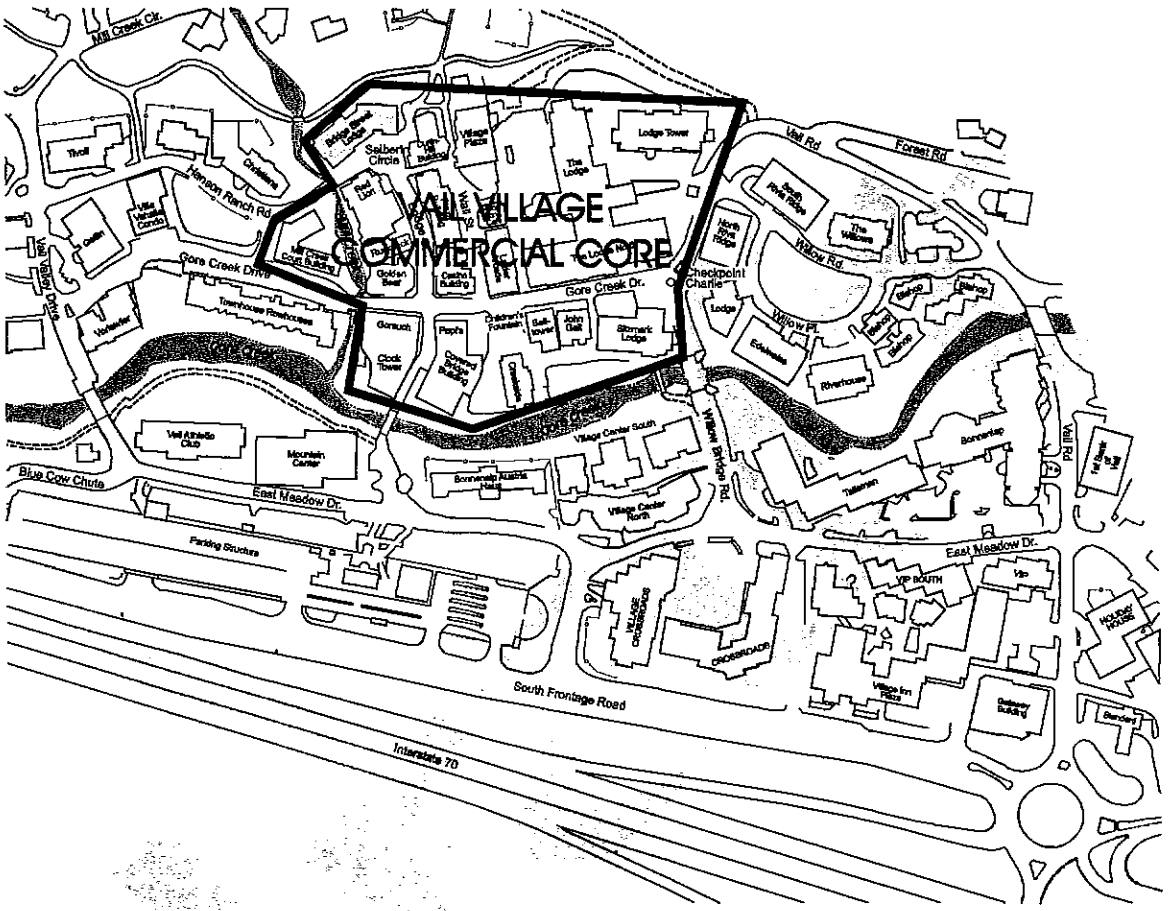


Figure 3 - Vail Village Commercial Core

Vail Village Commercial Core



Town of Vail

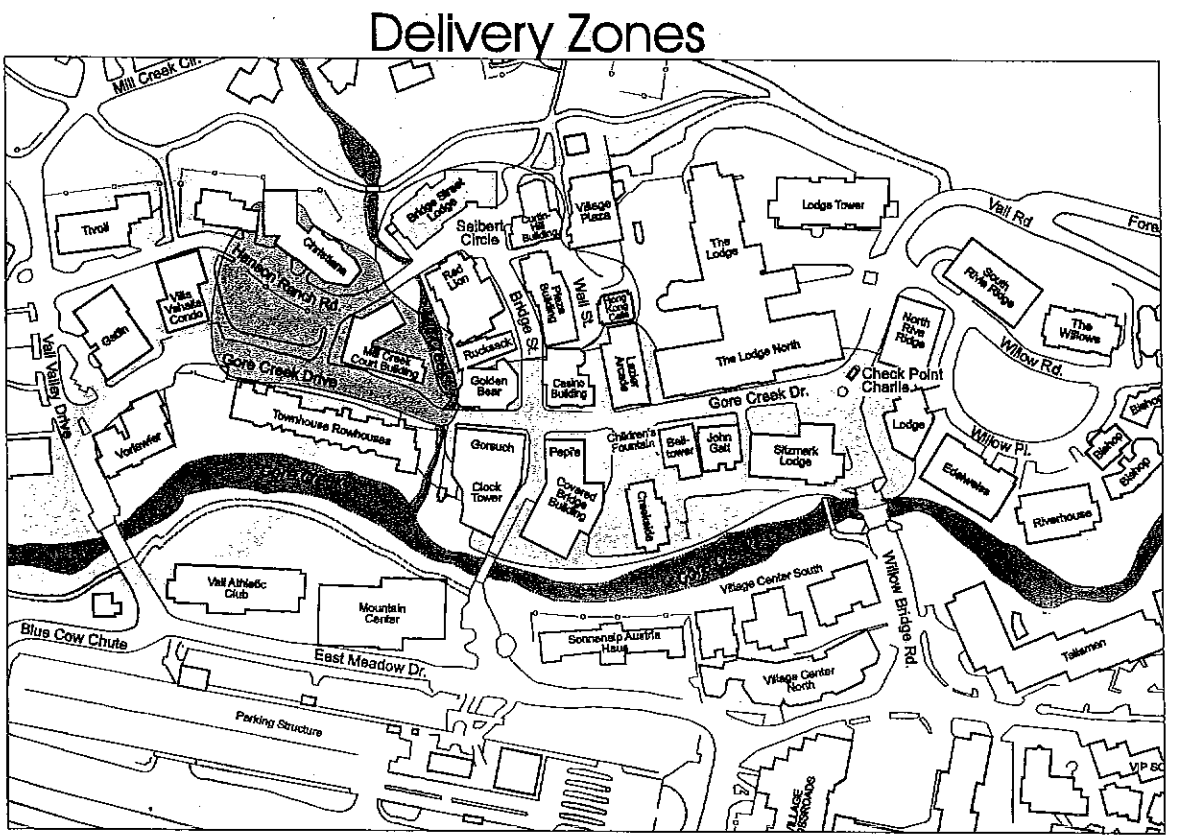
The Town of Vail's interest in the loading and delivery issues within Vail Village stems from a number of different areas. Vail Village has been struggling with the loading and delivery issue for a number of years now. At the beginning of this most recent study process, the Vail Town Council proposed the ban of "large" trucks (trucks over 55 ft.) within the Village. The Council had received complaints from business owners and residents of Vail Village, complaining about the unsightliness and noise of the large 5th wheel trucks.

The Town of Vail Police Department spends time and money enforcing parking policies within the Village. The Town also has an obligation to Vail residents and business owners to maintain safe and pleasant atmosphere throughout the Town of Vail.

Delivery Trucks

There are over 70 different companies that transport goods into Vail Village, making over 50 deliveries a day (during peak winter season, could vary between 15 - 70 depending on the day). This works out to be approximately 50 trucks per day. The current loading and delivery restrictions allow large truck deliveries prior to 8:30am on Bridge Street and prior to 11:30am within the remainder of the Village. After 11:30am the trucks must move to the parking areas adjacent to the Village, on Willow Bridge Rd, Hanson Ranch Road, and 304 Gore Creek Drive. Small trucks, package trucks, and automobiles are allowed in the Village until 6pm. Because goods are delivered by hand cart, and wheeling a hand cart limits the amount of distance a delivery person can cover, many drivers park their truck three times in three different locations within the Village and then hand cart the goods (approximately 200lbs. per trip) to each nearby establishment (approximately 300 ft.). A graphic depicting the three typical delivery zones can be found in figure 4. Drivers generally park first on Bridge Street, then move to Gore Creek Drive, then out to the Christiana to finish their deliveries.

Figure 4 - Vail Village Driver Delivery Zones



The trucking companies and drivers were in attendance at a public meeting, and interviews were also conducted with various companies to understand the loading and delivery issues concerning the delivery companies. It is the position of the truckers and delivery companies that the issues concerning the trucking firms and delivery companies are:

- A lack of adequate parking, due to unauthorized vehicles in the parking spaces
- A lack of sufficient storage space
- Some restaurants do not allow drivers to make deliveries until after 11:30, forcing drivers to wait around for hours and relocate their trucks to the adjacent, non commercial core, parking areas.

Limiting truck sizes to medium (non - 5th wheel) trucks, would create a problem for the delivery companies. Most trucks delivering to the Village are full of goods solely intended for the Village, therefore limiting access to medium sized trucks or smaller would make it necessary for delivery companies to send two trucks to the Village daily. Sending multiple trucks would substantially increase costs and also overall truck traffic in the Village.

3

Existing System

Vail Village is located within a pedestrian zone, and all vehicular access is limited to guests staying at lodges with parking facilities, taxi and limo service, construction and service vehicles, and loading and delivery of goods. Within Vail Village there are dedicated loading and delivery zones, all of which require permits. These zones are on Hanson Ranch Road, Gore Creek Drive, Checkpoint Charlie, Willow Bridge Road, and Bridge Street, represented in figure 5. The delivery zones are restricted to specific vehicle types and times of day. Table 1 details these restrictions, which includes the following:

- There are no restrictions on how early trucks are permitted in the Village given they park in designated areas to load and unload and run silent
- All traffic must be off of Bridge Street by 8:30am
- All traffic, except courier services, must be off of Gore Creek Drive (between Willow Bridge Road and Bridge Street) by 11:30am
- Courier Delivery Vehicles are permitted in Vail Village until 6pm - parked in designated areas
- Garbage trucks are permitted in the Village between 7am and 9am
- Check Point Charlie is manned from 8am until 5pm during the peak season
- After 11:30am Large trucks (36' or more) are permitted to park on Willow Bridge Road and Gore Creek Drive north of P3&J until 12pm

Access and Mobility within Vail Village

The only **legal** access point into Vail Village is Checkpoint Charlie, located at the west end of Gore Creek Drive. See access map in figure 6.

Checkpoint Charlie

All vehicles entering Vail Village are required to pass through Checkpoint Charlie on Gore Creek Drive prior to entering the Village. Checkpoint Charlie consists of a staffed and gated entry. Although Checkpoint Charlie is staffed by the Town of Vail Police Department, the staff consists of Community Safety Officers (CSO), and Code Enforcement Officers (CEO). These CSO's and CEO's are not police officers, however they do have the authority to enforce the parking regulations within Vail Village.

Figure 5

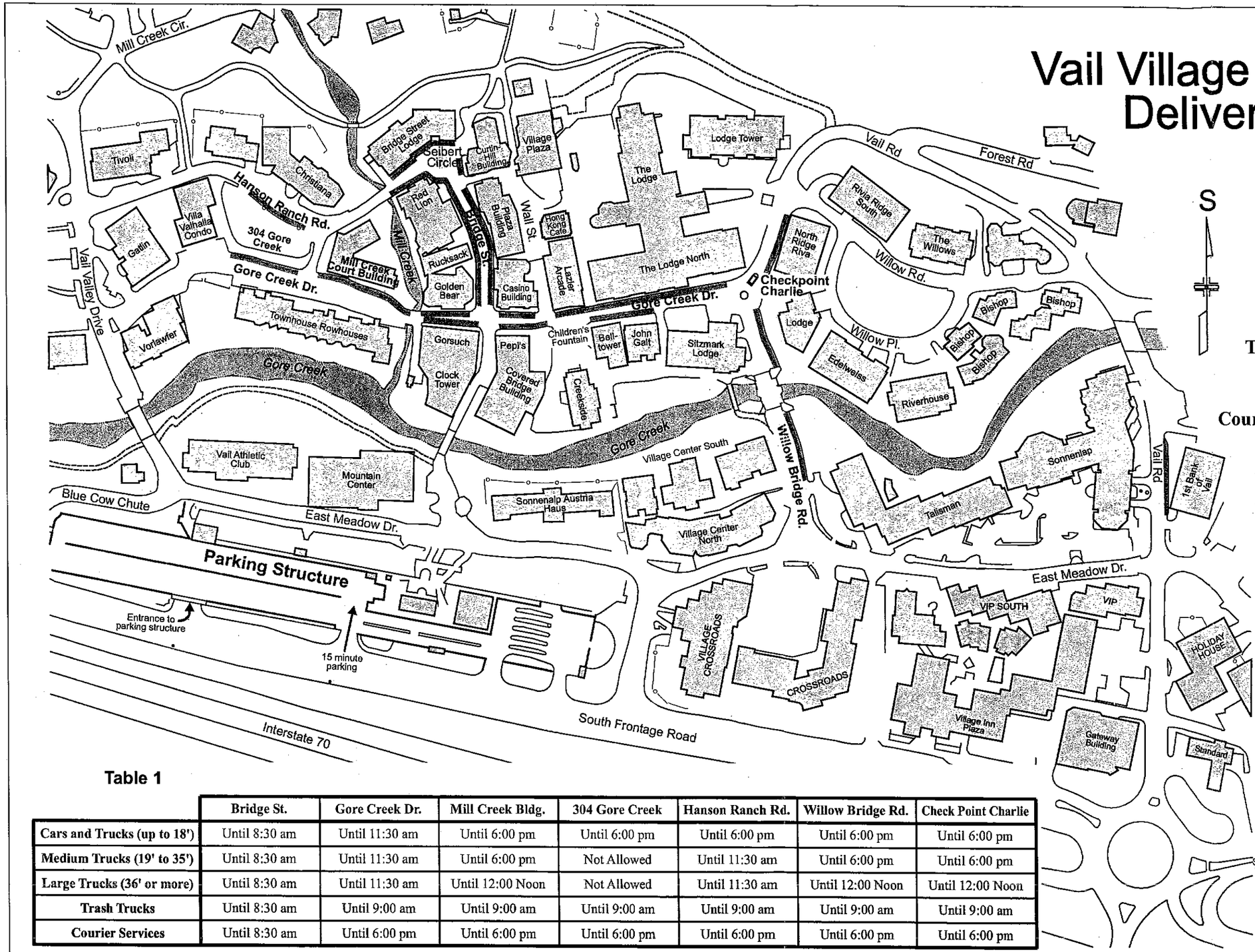


Table 1

	Bridge St.	Gore Creek Dr.	Mill Creek Bldg.	304 Gore Creek	Hanson Ranch Rd.	Willow Bridge Rd.	Check Point Charlie
Cars and Trucks (up to 18')	Until 8:30 am	Until 11:30 am	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm
Medium Trucks (19' to 35')	Until 8:30 am	Until 11:30 am	Until 6:00 pm	Not Allowed	Until 11:30 am	Until 6:00 pm	Until 6:00 pm
Large Trucks (36' or more)	Until 8:30 am	Until 11:30 am	Until 12:00 Noon	Not Allowed	Until 11:30 am	Until 12:00 Noon	Until 12:00 Noon
Trash Trucks	Until 8:30 am	Until 9:00 am	Until 9:00 am	Until 9:00 am	Until 9:00 am	Until 9:00 am	Until 9:00 am
Courier Services	Until 8:30 am	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm

All vehicles passing Checkpoint Charlie are required to have a parking or loading permit. Permits for trucking companies are issued through the Vail Police Department. Temporary permits may be obtained through Checkpoint Charlie personnel. There are a number of lodges within Vail Village that do have their own parking for guests. Guests staying at these lodges are permitted to drive into the Village and then park in the lodge lot.

There are no other legal access points into the Village other than through Checkpoint Charlie.

Access and Sign Inventory

All entrances to Vail Village are signed with "Pedestrian Zone" - no vehicle access signs, see figure 7. Hanson Ranch road and Gore Creek Drive are signed with One Way, and Do Not Enter signs directing traffic around the loop, and a No Left Turn sign on the ramp as it approaches Gore Creek Drive. These signs, attempt to prohibit vehicles from entering the Village on Gore Creek Drive or Hanson Ranch Road. However, during observation periods when loading and delivery practices were observed, there were always several vehicles observed disregarding the One Way sign on Gore Creek Drive and entering the Village without passing Checkpoint Charlie.

One Way and Do Not Enter signs at the north end of Willow Bridge Road also restrict vehicular access into the Village.

Figure 7 - Vail Village Pedestrian Zone Signs

Access to loading and delivery parking adjacent to the Village is accessible without passing Checkpoint Charlie. These loading and delivery sites are accessed through Hanson Ranch Road.

Parking signs - The parking area on Gore Creek drive is signed with the following restrictions: permit parking only between the hours of, 7am-12pm, see figure 8. This sign does not actually reflect the parking regulations in affect on Gore Creek Drive, there is no restriction on how early a vehicle can park on Gore Creek Drive, and permit parking is allowed until 11:30am for large and medium trucks. Any vehicle parking within the Village must be permitted and therefore the driver is or should be aware of the actual regulations, regardless of the posted signs. Cars and package trucks are allowed on Gore Creek Drive until 6pm. The parking signs on Hanson Ranch Road, Willow Bridge Road, and 304 Gore Creek Drive east of the Village allow permit parking between 6am and 6pm for any size vehicle, see figure 9. There are no parking signs on Bridge Street.

Figure 8 - Gore creek Permit Parking Signs

Figure 9 - Outlying Parking Signs

Skier Drop-off Activity

Skier drop-off and pick-up activity takes place along Hanson Ranch Road just south of the P3 & J lot. Approximately 15 -20 vehicles are involved in skier drop off activity during each daily peak (am & pm). There are a number of other vehicles, mainly cars that use the Hanson Ranch Road illegal access into the Village on this segment.

Loading and Delivery Activity

There are approximately 50 - 70 truck deliveries per day in Vail Village. Trucks delivering goods to the Village originate from a variety of sources and deliver a variety of goods. A list of delivery trucks, their size, and type of goods delivered is found in Appendix A. There are so many different types of businesses being served by the delivery trucks that it is not possible to define typical delivery patterns. Through interviews with trucking firms, and observations it is estimated that approximately 65% of the truck deliveries are unique to the restaurants. Table 2 documents establishments in the village and their corresponding square footage.

Table 2 - Vail Village restaurants and lodges and their corresponding square footage

Business Name	Sq. Ft.	# seats	# rooms
Blu's Restaurant	1224	76	
Bridge Street Charlie's	900		
Christiania Lodge			46
Club Chelsea	2400	130	
Club, The	2000	75	
Gartons Saloon	6000	160	
Gasthof Granshammer, Inc.			28
Gorsuch Ltd.	10000		
Lancelot Inn, Inc.	4000	125	
Left Bank Restaurant	3000	90	
Lodge @ Vail Food/Bev.			
Lodge @ Vail Other			
Lodge @ Vail Retail			
Lodge @ Vail, The			116
Los Amigos	1400	112	83
May Palace Restaurant	3000	120	
Moguls		94	
Nick's	2800	59	
Ore House	3800	114	
Pepi's Restaurant & Bar		157	
Red Lion, The	6700	232	
Russell's	2700	110	
Sarah's Lounge		60	
Sitzmark Lodge, The			35
Sweet Basil		100	
Tivoli Lodge, The			50
Up the Creek Bar & Grill	1600	70	
Vail Village Club	11620	116	
Vandetta's	6200	120	

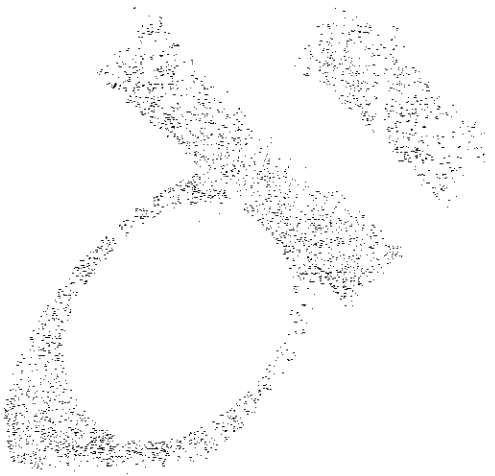
All delivery trucks are required to shut off their engines and turn refrigeration units off when parked and delivering in the Village. Through observations and meetings with drivers it is clear drivers follow these regulations.

Permitting

Trucks making regular deliveries into the Village are granted permits by the Vail Police Department. Anyone making a delivery to the Village that does not do so on a regular basis may get a temporary permit for 30 minutes at Checkpoint Charlie. If the delivery is going to take longer than 30 minutes, the driver must get a permit from the Police Department. The Town of Vail also issues permits to each of the merchants whose shops are located in the Village. These permits are for 30 minutes loading and delivery purposes. These permits are not intended for use as permits to drive into the Village for any other purpose than loading and delivery.

Loading and Delivery Parking Outside of, and Adjacent to Vail Village

The Vail Parking Structure, located just north of Vail Village, is primarily used by visiting guests and tourists staying in the Village or skiing at the Vail Resort. However there are 7 spaces on the top of the structure dedicated to 15 minute loading and delivery. These spaces are available for the loading and delivery of small items such as documents. Virtually any item small and light enough to be delivered by car should be delivered or loaded utilizing the space at the parking structure. During observations, these spaces were rarely all occupied, and never were they all occupied for long periods of time.



4

Loading and Delivery Data Collection

After determining the issues concerning the loading and delivery of goods for Vail Village, additional data collection was necessary to determine probable solutions. Additional data was collected concerning noise, delivery procedures and practices, traffic, parking availability, and permitting.

Noise

Noise can be measured for short duration sounds, such as a door slamming shut, or the "average" noise over a defined time period can be calculated. The latter is the chosen method by traffic engineering professionals and the Federal Highway Administration (FHWA) for defining traffic impacts, where numerous instantaneous noise levels are averaged to characterize the average noise at a location. This noise level is defined as a decibel level (dB) in Leq and is the most common unit used for describing traffic noise. When studying noise levels the highest regularly observed Leq, generally during the busiest traffic period of the day, is used to define noise impacts.

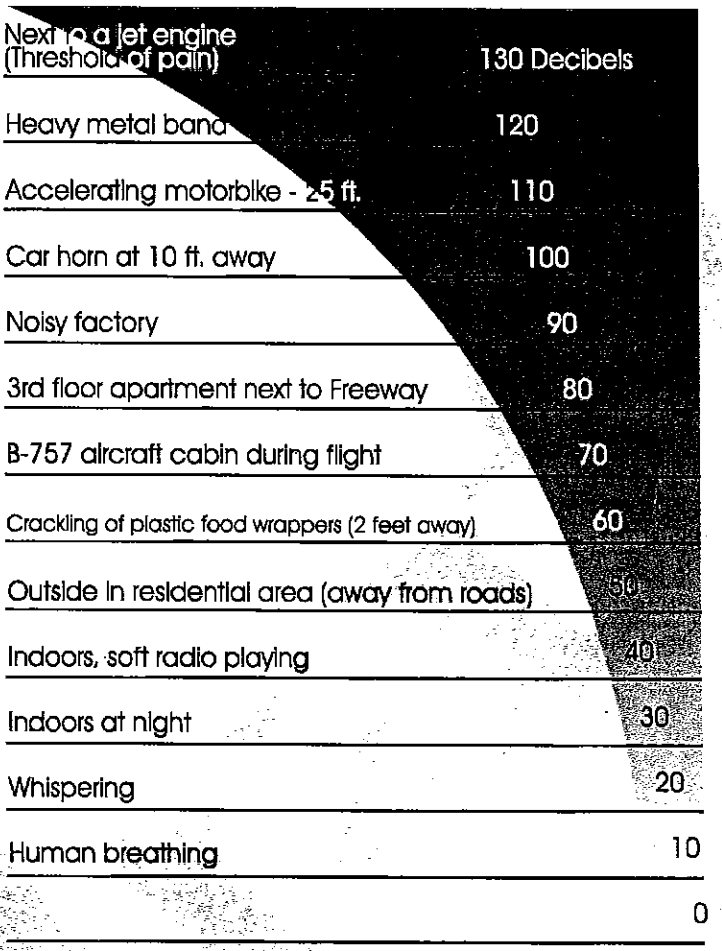
The Town of Vail has noise regulations for Vail Village that prohibit noise levels over 60 dB before 7am, table 2 lists the noise regulations for the Town of Vail.

Table 2 - Town of Vail Noise Regulations

Time	7am - 11pm	11pm-7am
Acceptable Noise levels		
Residential	55 dB	50 dB
Commercial	65 dB	60 dB
Industrial	80 dB	75 dB

In order to understand the potential impacts and decibel levels referred to in this study, the following information concerning typical noise is presented in figure 10.

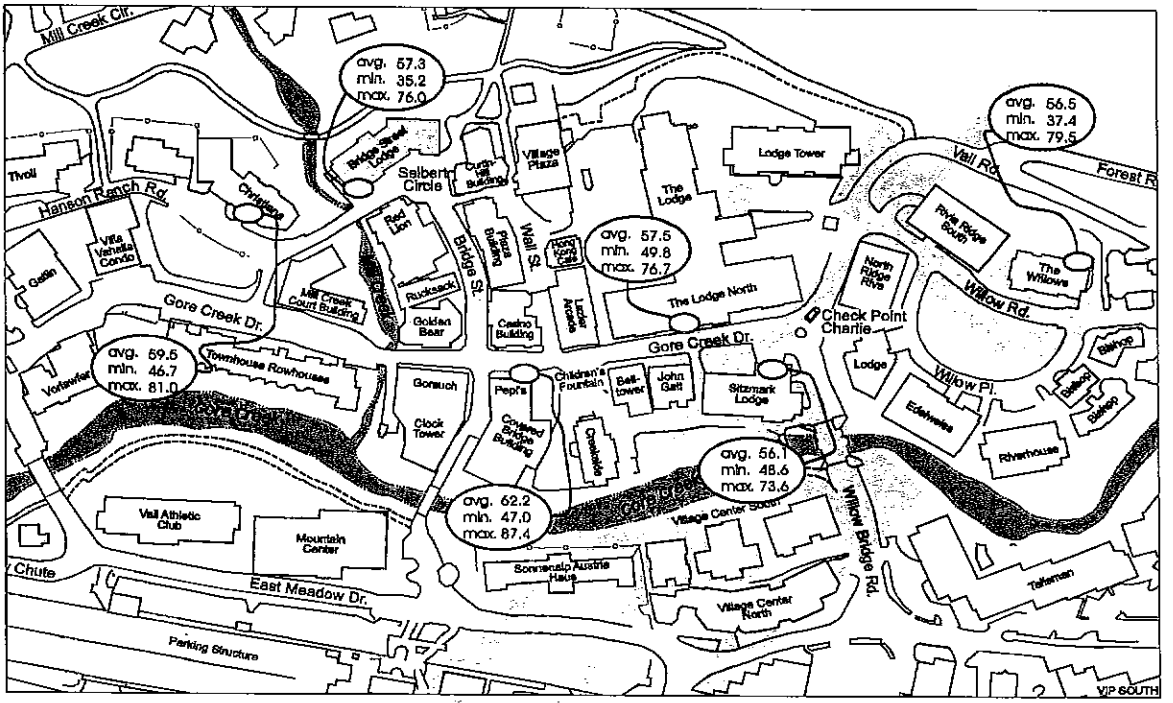
Figure 10 - Typical Noise Levels



Noise from the loading and delivery of goods in the Village was recorded at six locations within the Village (Sitzmark Lodge, Pepi's, Christiania, Bridge Street Lodge, The Willows, The Lodge North) during two time periods, early morning (6am-8:30am) and late morning (9am - 10:30am). A map and chart of the peak noise data collected is found in figure 11. A detailed chart of all noise data collected can be found in Appendix B.

Figure 11 - Vail Village AM Peak Noise Levels

AM PEAK NOISE LEVELS



The noise levels measured within Vail Village basically peaked between 9am - 11am, with the exception of the Willows and the Bridge Street Lodge locations. The Willows and Bridge Street Lodge locations had their peak noise levels between 7am - 9am. Through observations, the reason for the different peak noise times appears to be early morning truck delivery traffic on Bridge street. Because all traffic must be off of Bridge Street by 8:30am, delivery trucks make Bridge Street their first stop and conduct deliveries prior to 8:30 so as not to violate the 8:30 restriction time. The traffic affecting the Willows is primarily early morning delivery trucks and snow plows that need to be in the Village to clear the streets.

Town noise regulations permit only noise levels below 65 dB between 7am and 11pm within the Village. The Pepi's location recorded the highest noise levels (greater than 60 dB) during both early and late morning time periods. Pepi's is centrally located within Vail Village and is adjacent to a great deal of loading and delivery activity. In order to keep within the town of Vail Noise Code, Checkpoint Charlie personnel should make efforts to direct delivery traffic to locations other than near Pepi's whenever possible.

Delivery Procedures and Practices

Vail Village is serviced by a variety of suppliers providing goods and services to restaurants, lodges and retail establishments. Each of these suppliers transports their goods into the Village in a unique way (frequency, type of vehicle, time of day). Due to the competitive nature of business, there are several suppliers of beverages, food, linen, as well as several small package delivery companies who are in the Village on a daily basis. In fact, it is likely that an individual business in the Village may have several suppliers supplying the same product. All these competing suppliers result in increased truck traffic in the Village.

Most suppliers operate on set schedules with set route drivers into the Village. The Village Commercial Core (VCC) is large enough to warrant a separate truck from each supplier. In most cases trucks coming to the VCC are full of goods to be delivered solely within the Village. If the VCC does not support a full truck from an individual supplier, the truck might have additional stops in Lionshead, Avon, or further down-valley.

The drivers who transport the goods into the VCC are generally route drivers who have been delivering Vail for some time. They understand the permitting, parking and noise ordinances and adhere to them. A typical day for a driver delivering food into the Village would begin at 2am in Denver, Grand Junction, or Glenwood Springs. They would typically make three stops in the VCC. At each stop they would deliver 2-5 establishments, making around 70 total trips from their truck. Each load weighs approximately 200 lbs. And is wheeled anywhere from 150 - 350 ft. On an average day, a driver would spend 6 hours in the Village and deliver 14,000 - 18,000 lbs. of goods.

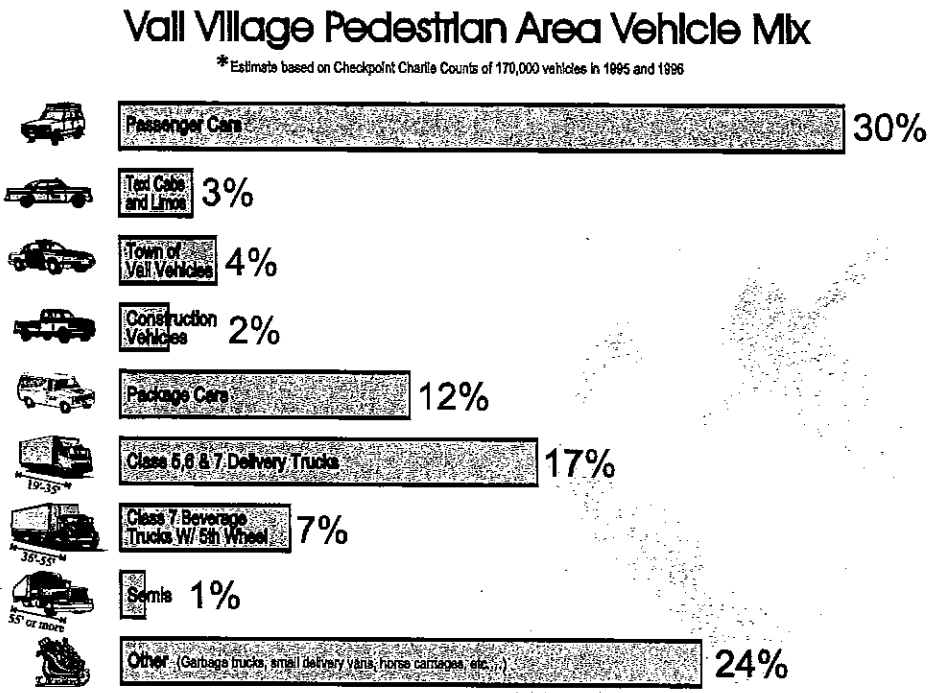
Most suppliers operate on a three, five or six day delivery schedule, depending on the demand for their goods. All suppliers expressed a need to be in the Village on at least two days between Thursday and Saturday.

Traffic

Along with the delivery trucks, there is a considerable amount of automobile traffic occurring within the Village. The automobile traffic consists of construction and service vehicles, taxis, Town of Vail vehicles, shop owners, and visitors who are unfamiliar with the area and do not know where to park in Vail. Figure 12 documents the vehicle mix and corresponding percentage of traffic each vehicle represents.

Automobiles (cars) clearly make up the majority (30%)of the traffic entering the Village. Although delivery trucks are noted in the problem statement, the problem in terms of volume is actually with cars. Removing cars, that are not essential for loading and delivery, from the Village would make substantially more room available for large trucks to park closer to the establishments they need to deliver to, therefor needing less time to complete their deliveries.

Figure 12 - Vail Village Vehicle Mix



Deliveries to Vail Village vary by season and day of the week as well as by type of vehicles. Table 3, presents the Vail Village delivery activity by day of the week.

Table 3 - Daily Delivery Activity

Total trips into the Village				
Day of the week	All Vehicles		Delivery trucks	
Sunday	599	*9%*	29	*2%*
Monday	815	12%	176	12%
Tuesday	715	10%	178	12%
Wednesday	1170	17%	306	21%
Thursday	1176	17%	288	20%
Friday	**1279**	**19%**	**308**	**22%**
Saturday	1223	18%	151	11%
Total	6858	100%	1430	100%

Total trips to the Village tend to be heaviest during Friday and Saturday, and lightest on Sunday. However, delivery trips are light on Saturday and heaviest during Wednesday, Thursday, and Friday. These numbers indicate that limiting deliveries on Saturday and/or Sunday might be possible. Each trip is an in or out event at an entry of exit point in the Village.

Parking

Parking in Vail Village is only for permitted vehicles. Vehicles without the correct permit or vehicles who exceed the limits of their permit will be ticked. During a three week period MK Centennial observed the permitted parking zones within Vail Village and found the following occupancy rates presented in table 4.

Table 4 - Vail Village Parking Study

Street Name	Peak Hour 6:00	7:00	8:00	9:00	10:00	11:00	Total Number Of Spaces*
Gore Creek Dr.							
# of Trucks Parked	5	5	6	6	7	6	
# of Cars Parked	4	6	7	5	2	6	18
# of Spaces Available	9	7	5	7	9	6	
Willow Bridge Rd.							
# of Trucks Parked	1	2	2	3	1	1	
# of Cars Parked	4	6	6	3	3	4	10
# of Spaces Available	5	0	0	2	4	3	
Hanson Ranch Rd.							
# of Trucks Parked	0	0	2	2	2	2	
# of Cars Parked	1	2	1	1	0	2	3
# of Spaces Available	2	1	0	0	1	0	
Bridge St.							
# of Trucks Parked	3	2	2	3	1	1	
# of Cars Parked	4	6	6	3	3	4	N/A
# of Spaces Available	1	0	0	2	4	3	
304 Gore Creek Dr.							
# of Trucks Parked	0	0	0	1	1	2	
# of Cars Parked	1	1	3	3	2	2	4
# of Spaces Available	3	3	1	0	1	0	

* Actual number of spaces varies due to differentiation in vehicle sizes.

The town of Vail provides no free parking within Vail Village. There is a parking structure north of the Village for visitors, with 7 - 15 min. spaces for loading and delivery purposes. The rates for parking in the Vail Village structure are presented in table 5.

Table 5 - Vail Parking Structure Rates

Time Parked in Structure				Rate
0	to	1-1/2	hours	Free
1-1/2	to	2	hours	$2
2	to	3	hours	$5
3	to	4	hours	$6
4	to	5	hours	$7
5	to	6	hours	$8
6	to	7	hours	$9
7	to	8	hours	$10
8	to	9	hours	$11
9	to	11	hours	$12
11	to	15	hours	$13
15	to	24	hours	$14
Lost Ticket				$14
Entry and exit between 3pm - 3am				Free

All parking regulations are enforced by the Town of Vail Police Department. Checkpoint Charlie is currently staffed by the Town of Vail Police Department during peak visitors seasons, winter and summer, from 7am - 4pm and is staffed as personnel are available during the off-seasons. The Town of Vail Police Department also provides for CSO and CEO patrols within the Village as staff is available. These patrols walk or drive through the Village and insure that parking procedures and time limits are adhered to. The coat of a ticket for parking illegally in the Village was recently raised from $12 to $26.

Permitting Procedures

The Town of Vail currently issues 5 different types of permits for parking in Vail Village, these permits are:

1) Annual permits for shippers
2) Merchant permits for shop owners
3) Temporary daily permits for 30 minute loading and delivering
4) 15 minute temporary permit
5) Special permit for a one time delivery that will take longer than 30 minutes

These permits are issued by the Town of Vail Police Department. It is possible to receive a temporary permit from Checkpoint Charlie personnel as you enter the Village. All other permits must be applied for at the Police Department headquarters, 75 S. Frontage Road.

The permits are to be displayed on the driver-side dashboard. Times and/or dates for which the permit is valid written on the face of the permit. Examples of the existing permits are found in Appendix C.

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Alternative Short-term Solution Development and Analysis

After conducting the initial data collection, a set of short-term solutions were implemented and evaluated by the Vail Town Council for implementation during the 1997 Christmas season. No follow-up was done after the initial evaluation of these solutions.

These short-term solutions are designed to improve operational deficiencies in the current system. These are recommendations that can and should be implemented immediately and permanently, as they are cost effective and will have an impact on the existing system.

Evaluated Short-term Solutions

The following short-term solutions were presented to the Vail Town council for approval at the November 1997 City Council meeting.

Variable Message Signs

Use of **Variable Message Signs (VMS) at key locations directing skiers to the parking structures**, and informing them where appropriate skier drop-offs are located. Additional - VMS signs, in the vicinity of the roundabout and adjacent to the parking structure, to get the attention of out-of-town guests and direct them clearly to the appropriate parking locations. Operate the signs only during peak periods.

Change in Parking Ticket Structure

Change the parking ticket structure. Have a ticketing structure that will penalize the repeat offender and not affect the guests of the Village. Start with a warning ticket, then the first three parking tickets a person receives will be the standard $26, the fourth and all subsequent tickets, during that season (Nov. To April) will be $100 or more.**

**Town of Vail Council does have the authority to increase the parking fines in the Village.

Informational Brochure

Create an informational brochure of existing loading and delivery practices for all people who utilize Vail Village - give Check Point personnel informational maps they can hand out to people directing them to the correct loading and delivery areas or the parking structure. The brochure will contain the overall guidelines for the policy decisions of the Town Council. A draft of the brochure is presented in figure 13.a and 13.b.

Figure 13.a - Informational Brochure (Front)

LOADING DELIVERY

VAIL VILLAGE

ⓘ information on the transportation and loading & delivery system in Vail Village

TOWN OF VAIL

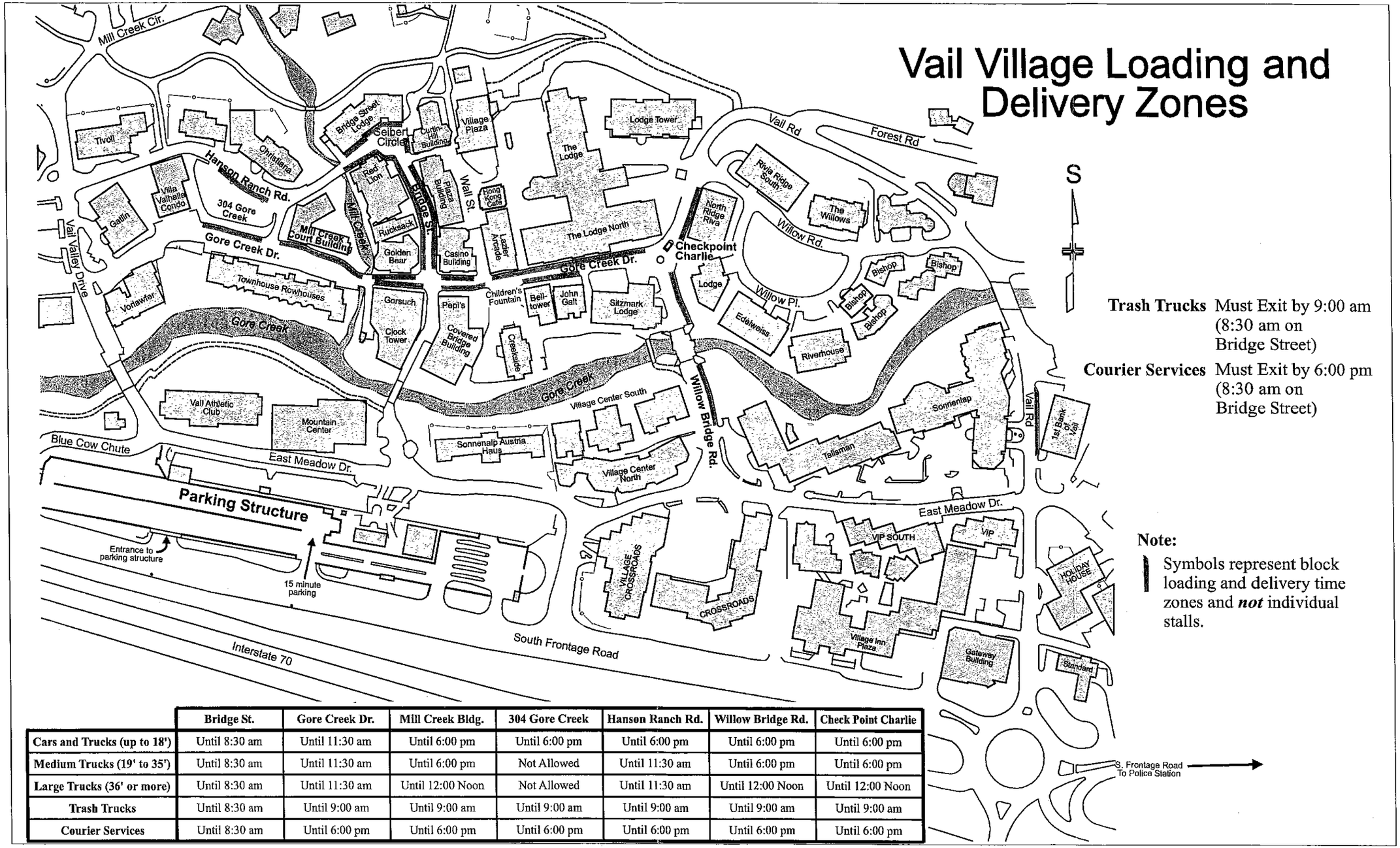
Policies

- All parking areas are for commercial loading & delivery purposes only
- The delivery of small items and people who just need to run into the village for a moment are not permittted within the Village. These needs may be accommodated by parking in the parking structure
- 7 - 15 minute parking spaces are available on the top level of the parking structure
- Parking in the structure for under 1 hour and 30 minutes is free
- No parking in fire lanes or no parking zones at any time
- All traffic must be off of Bridge Street by 8:30 a.m.
- There are no restrictions on how early delivery trucks are permitted in the Village, given they park in designated areas (see map)
- Special parking permits may be obtained at Checkpoint Charlie or the police station (75 S. Frontage Road)
- All traffic, except courier delivery vehicles, must be off Gore Creek Drive (between Willow Bridge road and Bridge Street) by 11:30 a.m.
- Courier delivery vehicles are permitted in Vail Village until 6 p.m. parked in designated areas
- Garbage trucks are only permitted in the Village between the hours of 7 a.m. and 9 a.m.
- All trucks, vans, and cars must turn off engines and refrigeration units while parked in Vail Village.
- Code Enforcement and Safety Officers from the Town of Vail Police Department are available to enforce these policies and assist Vail Village visitors with parking concerns

Violators of these policies will be ticketed, resulting in a fine of $26

A map depicting Vail Village and all of the proper loading and delivery zones can be found on the reverse side of this pamphlet

Figure 13.b - Informational Brochure (Back)



	Bridge St.	Gore Creek Dr.	Mill Creek Bldg.	304 Gore Creek	Hanson Ranch Rd.	Willow Bridge Rd.	Check Point Charlie
Cars and Trucks (up to 18')	Until 8:30 am	Until 11:30 am	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm
Medium Trucks (19' to 35')	Until 8:30 am	Until 11:30 am	Until 6:00 pm	Not Allowed	Until 11:30 am	Until 6:00 pm	Until 6:00 pm
Large Trucks (36' or more)	Until 8:30 am	Until 11:30 am	Until 12:00 Noon	Not Allowed	Until 11:30 am	Until 12:00 Noon	Until 12:00 Noon
Trash Trucks	Until 8:30 am	Until 9:00 am	Until 9:00 am	Until 9:00 am	Until 9:00 am	Until 9:00 am	Until 9:00 am
Courier Services	Until 8:30 am	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm	Until 6:00 pm

Limited Access at Hanson Ranch Road

Create a check point at Hanson Ranch road at Vail Village Drive between the hours of 8-10am and 2-4pm to limit people from using Hanson Ranch road as a skier drop-off and pick-up.

This option will involve having a check point placed across Hanson Ranch road - the barricade will not block the entrance to the roadway entirely, this will permit access to guests who are allowed to park in the P-3&J lot and area residents on Gore Creek Drive.

The check point will be clearly marked directing other traffic (skiers etc.) to the appropriate locations, Gold Peak skier drop-off or Check Point Charlie.

There will need to be a Code Enforcement Officer or Code Security Officer available to police the area and direct those who are not permitted to park there to the correct locations.

There may not be adequate personnel available for this task, and concerns have been raised about large back-ups of vehicles. Due to these concerns it was proposed that this solution be tested during a two week trial period before it is implemented for the entire ski season.

Analysis of Implemented Short-Term Solutions

Both the use of VMS signs and the Hanson Ranch Road barricade were implemented during the 1997 Christmas season. The brochure is currently in the process of being finalized.

VMS Sign Analysis

VMS signs were placed at the Main Vail Roundabouts to direct traffic to the parking structures. During observations of time periods with and without the VMS signs, it appeared that fewer vehicles drove towards Checkpoint Charlie in search of parking. However traffic counts taken during this time period were inconclusive in demonstrating any difference in driver behavior.

Hanson Ranch Road Barricade Analysis

The barricade at Hanson Ranch Road, consisted of a sawhorse barricade and a CSO during the AM and PM peaks. MK Centennial conducted traffic counts on Hanson Ranch Road both with and without the barricade. The results of these traffic counts are found in table 6.

Because the traffic levels during the two time periods recorded (Christmas and after Christmas) differ, the volumes had to be factored in order to have an accurate comparison. After factoring the volumes, traffic counts indicate that traffic on Hanson ranch Road was reduced by approximately 30% when the barricade was in place.

The Police Department reportedly spent $100/day maintaining the barricade and keeping Checkpoint Charlie staffed during the two week trial period. Observations also indicated that traffic utilized other nearby skier drop-off locations in residential neighborhoods, simply

moving the problem.

Table 6 - Hanson Ranch Road Barricade

With Barricade		Day of Week	Without Barricade				
Date	No. of Vehicles		Date	No. of Vehicles	No. of vehicles Factored for an accurate Comparison to Xmas week data	Affect of Barricade	
26-Dec	724	F	9-Jan	705	902	Traffic reduced by:	178
27-Dec	736	S	10-Jan	760	973	Traffic reduced by:	237
28-Dec	500	Su	11-Jan	520	666	Traffic reduced by:	166
Totals	1960			1985	2541	Traffic reduced by:	581
						Traffic reduced by:	30%

These are meaningless

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Recommended Short-Term Solutions

Based on the existing system, the analysis and testing done during the 1997-98 season, the following items should be implemented as soon as is feasible. The implementation of these recommendations will have a significant impact on traffic in the Village.

Improvement Actions

Signs

Signs regarding loading and delivery zones should be uniform either "6am-6pm permit parking only" or "Permit parking only at all times."

Having signs posted at the entrance to the village that state "Parking by permit only in designated areas", would eliminate the need for additional signs denoting the loading and delivery zones within the village.

The signs on Vail Road adjacent to the bank need to be changed to include 2 hour parking on Sundays.

The "Do Not Enter" sign at Willow Bridge Road needs to be double posted. This sign is ignored by many drivers.

The "No Parking" sign on Gore Creek in front of the Lancelot needs to be removed and replaced with a fire hydrant sign.

Fire Zones

Fire hydrant signs need to be posted at all fire hydrants and water pipes. The areas around water pipes will not be designated as fire zones, however loading and delivery should not take place 7 feet on either side of a designated water pipe.

Permit Process

A formal permit program should be instituted. Denoting specific permits by size shape or color. The program should make provisions for new permits each year. Electronic permitting is recommended, such as the Smart Card, which would restrict entry by time of day and the specifics of the permit

holders permit.

Informational Brochure

The informational brochure needs to be finalized and approved as a hand-out for all drivers, business owners, and visitors to Vail Village.

Restricted Entry to Hanson Ranch Road

The Hanson Ranch Road Barricade, did relieve the strain of traffic entering the Village through an illegal access, however the decision as to whether or not to continue or make permanent the barricade needs to be made by the Town of Vail City Council and Vail Police Department.

VMS Signs

VMS signs should continue to be placed at the Main Vail roundabouts where they can direct drivers to the correct parking areas.

Other short-term suggestions to enhance the existing loading and delivery that could be done on a voluntary basis include the following:

Immediately on a <u>voluntary</u> basis:

- Work with individual restaurants that are not accepting early deliveries and try to work out a way for them to take early (prior to 11:30) deliveries and get the trucks out of the Village.
- Recommend that all shops, distributors, and restaurants in the Village attempt to limit their weekend deliveries.
- Have trucking companies to alter their routes into and out of Vail Village to more evenly distribute the truck traffic on the roadways into and out of the Village.
- Work with garbage companies (BFI and Honeywagon) to restrict Vail Village pick-up times to between 8am-9am.

Continue to work with the Vail Village merchants, restaurants, and residences to enhance the existing system.

- Work with trucking companies and try to get trucks in and out of Vail Village as quickly as possible - this may mean changing routes slightly etc.
- Encourage all Vail Village shops and restaurants to maintain enough storage for more than one day's supply.

Vail Town Council approved the use of VMS signs, an informational brochure, and the Hanson Ranch Road barricade for implementation as short term solutions. The increase in parking fines was not approved because the Town of Vail parking ticketing system is not

7

Analysis of Operational Characteristics of Long-Term Solutions

The purpose of this section is to outline and detail the pros, cons, costs and benefits of the various opportunities to improve the loading and delivery system long-term. This is not a "fatal flaw" analysis but rather an operational look at all the opportunities on the table. The intent is to use this analysis to narrow down the scope of options and to identify feasible or likely options for further development and operation.

While many of these options are aimed specifically at the loading and delivery problem in the village, it is important to note that in many cases the "truck" problem is merely a symptom of other issues directly or indirectly related to loading and delivery. This analysis identifies those issues as well, offering suggestions intended to positively impact the Village loading and delivery challenges.

We have attempted to outline these issues in a way designed to communicate the benefits and costs of each opportunity. Additionally, we have organized these "solutions" so that the most productive (i.e. the biggest bang for the buck) opportunities are explored first.

Finally, short of large capital investment by the town or the business owners or both, we believe the first four options outlined in this report will produce the most improvement in safety, noise and sight pollution for the dollar spent. This along with some modifications in how the Village addresses and enforces procedures for pedestrians, buses, snow plows, taxis, garbage trucks and automobiles could have a meaningful impact on the Village atmosphere.

In order to better understand the consequences of the sum of the alternatives which are available to Vail, it is important to clarify the two basic characteristics of any goods and services delivery system which fully or partially fulfill the previously state objectives. These characteristics are:

- Surface vs. Subsurface Operations
- Direct Service or Decentralization vs. Non-Direct or centralized Operations

Subsurface (or underground) delivery systems may be applicable when (as is the case in Vail) insufficient space is available on the surface level to separate incompatible delivery functions from other activities. The primary factors affecting the feasibility of subsurface

delivery systems are constructability, liability, and costs. If these factors can be overcome, the primary objective can be satisfied.

Direct service delivery refers to the situation which individual merchants order their products from multiple vendors who are responsible for bringing the product directly to the merchant. This type of delivery system emphasizes a high level of service to the merchant and can, therefore, result in excessive truck volumes in the core area due to multiple product types and varying delivery times. The entire product delivery effort, however, is the responsibility of the merchant and vendor.

By contrast, the application of a centralized delivery system in Vail Village would be done in order to :

- Transfer less-than-truck-load (LTL) deliveries to smaller vehicles, and
- Consolidate small deliveries onto fewer vehicles

To accomplish the objective of smaller or fewer trucks in the Village core, service to the customer is typically reduced primarily in terms of delivery times and frequency or eliminated all together. This is due almost solely to the fact that a third party is involved in the product delivery system. Construction of a warehouse facility, purchase of down-sized delivery vehicles, personnel to operate and maintain facilities, insurance, and product replacement are all third party responsibilities. In most instances, this third party would be the Town of Vail or a private business under contract to the Town. In any case, the Town would be responsibly involved in the product distribution system.

Time restrictions on goods delivery is a means by which competing uses of limited physical space can be monitored and allocated to priority functions. As such it is a compromise which is imposed on the area in order to avoid excessive capital expenditures while retaining a certain level of convenience and efficiency for delivery operations. In addition, the Town's involvement is restricted to its typical regulatory and police powers. The town currently has time restrictions for product delivery and plans to continue these restrictions.[1]

A complete analysis of all possible long-term solutions is presented in Appendix E.

Permitting/Enforcement

One of the biggest opportunities which would have immediate impact would be tighter enforcement of current rules and an updated permitting process. As the system currently exists, too many exceptions are made for all types of vehicles in the Village.

Total delivery (large and small truck)and service parking spaces needed is 25 to 30 spaces.

Modify policies at Checkpoint Charlie.

- Eliminate 30% of the traffic (cars) accessing the Core for small deliveries and minor tasks through the use of the 1-1/2 hours of free parking in the Vail Parking Structure for this type of need.
- Designate a desirable area of the Vail Parking Structure for short-term parking only.

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[1] Taken from Town of Vail Transportation Master Plan

There are currently spaces available within the structure for short-term parking that are unused, enforcement officials will need to be proactive and direct small delivery vehicles to these parking spaces.

- Enforcement of this issue would be key to its success. Educate the users that the Town is providing convenient short-term spots in the Vail Parking Structure, however, abuse of these spots will result in strict enforcement.

Develop written policies concerning vehicles requiring access to the Village including:

- Cars without large amounts of goods to be delivered will not be allowed in the Village or in the loading zones. Use of the parking structure would be required for these trips.
- Trucks and cars that are making deliveries of large quantities of goods will be allowed access to the Village loading zones and will be given priority for these zones. Time will be limited to only what is needed to load or unload these goods.
- The towing of vehicles for violation of loading zone restrictions will be strictly enforced.
- Construction work requiring parking will need to be planned and approved in advance by the Town of Vail's Community Development, Public Works, Fire and Police Departments.
- Service vehicles will be allowed limited access to some loading zones for emergency work only. Non-emergency service work should be scheduled for non-peak traffic hours in the Village. All service vehicles will need to contact the Police Department for a parking permit for both the emergency and non-emergency work.
- Investigate the possibility of locating "drop boxes" in designated places for overnight couriers.

Input new electronic permitting procedures

- using a Smart Card System, or AVI tags, institute a parking permitting process that would effectively restrict delivery times and types automatically throughout the day and week. Vail Village parking permits would no longer be just a piece of paper, but a coded card with a magnetic strip. These cards could be coded to allow different types of access to different vehicles. The cards could also be restrictive as to dates, and could expire, eliminating problems of drivers using outdated permits. Access to the village would be through an electronic gate, and a properly coded card would be necessary to raise the gate. Cards would also need to be displayed within the vehicle by placing them on rearview mirror tags.
- The cards could also maintain information on all vehicles entering the Village, their times of delivery, and frequency of visits.
- Fees could be assessed to obtain the permits, offsetting the cost of the system.
- Emergency vehicles could be equipped with opticom interface to override the gate, or they could simply run through the gate.
- The cost of implimenting an electronic permitting system would be approximately $200,000. Costs vary depending on the technology, Smart Card, AVI, or magnetic strip.

Pros

Reduce automobile, work person and various other traffic, will help reduce the impact of the delivery vehicles that must enter the Village. An updated permitting process could also provide for a means of better tracking delivery, and other vehicular activity within the Vail

Village.

Cons
Other than initial ill-will towards enforcement officers there are no cons. If all codes and rules are applied and enforced and backed by the Village community and Town Council, this action will have positive long-term results. This system does necessitate equal treatment for everyone in the Village.

Cost
Cost of training and enforcing. Cost of getting buy-in from all parties involved to stay out of the Village.

Feasibility
Do-able, but politically uncomfortable.

Alternatives
Recognize that a "pedestrian village" is not feasible.

Altering the Delivery practices of the Trucking Firms Serving the Village

Add Drivers/Delivery Personnel
One alternative that has been suggested frequently to reduce dwell time is to mandate two delivery personnel in all vehicles entering the Village. While this initially seems to make some sense, further analysis indicates that the one delivery driver in the vehicle is constrained by factors (primarily a restaurant not being open to make a delivery) other than his or her ability to offload a truck.

In most cases, additional delivery personnel could be added to the delivery vehicles. Cost for this can range between $300 and $600 per day per vehicle. This assumes the ability to hire and retain the labor necessary to meet the new demands. Given the current job markets locally as well as in Denver and the Western Slope, it is unlikely enough labor could be hired and retained to meet the additional demand. Most if not all delivery companies are continually looking for drivers and run 5-25% below demand.

Pros
10-30% increase in efficiency which could reduce dwell times if implemented with a change in delivery hours.

Cons
Would not have significant impact on dwell time without ability to make all deliveries before 6:00 a.m. Increases in cost probably not proportional with increased benefits and efficiency. Not easy or cheap to get additional delivery drivers.

Cost
10-15% increase in cost of goods to Village establishments and therefore to consumers.

Feasibility
May not be feasible if it is too difficult to hire additional drivers. Easily mandated, harder

to enforce and get buy-in from delivery companies.

Alternatives
Hours, signage and enforcement.

Centralized Dispatch
Delivery laws could be changed or scheduled via a centralized dispatch. The cost to do this would eventually be passed on to the businesses in the Town in the form of price increases. While these costs are difficult to quantify in terms of raw dollars, the variables are easily identifiable. Not all of the vendors who deliver to the Village would incur all of the expenses; however, all would incur some of them.

Pros
Dispatching the trucks into the Village could ensure that only a certain number of trucks would be delivering to the village at one time. This could limit the visibility of large trucks for guests.

Cons
Lasting Expenses. Trucks that deliver to the Village are typically loaded the prior night. Allowing late afternoon cutoff for orders as the delivery schedule changes impacts all "upstream" functions of the business including:

- Loading
- Shift Schedules
- Sales/Order Cutoffs - Driver Schedules
- Vehicle Maintenance

Cost
The exact cost in dollars is not a known quantity, but In any case, whatever changes the businesses make, any financial costs would be passed on to the businesses in the Village.

Feasibility
While it is reasonable to assume that there may be some flexibility by individual vendors, there is a limit to what individual business may be able to do to accommodate changes in delivery requirements in the Village.

Centralized Warehouse/Retrieval

Centralization (Close-In)
This alternative consists of a central receiving area at which delivery trucks would transfer product to smaller vehicles or hand-carte the goods to their final destination. The idea is to replace larger trucks currently being used in Vail Village with smaller vehicles, such as Cushmans. To make this feasible, a warehouse should be within close proximity of the Village; preferably 1/4 mile or less, and in no instance greater than ½ mile. A delivery system of this type would require a fleet of approximately 10-15 small delivery vehicles.

The centralization alternative utilizing a close-in receiving area (within one-quarter to one-half mile of the Village) would make use of smaller vehicles in lieu of larger trucks within the Village to complete the delivery. Delivery trucks would unload their cargo onto smaller vehicles (such as Cushmans or tractor units similar to airport luggage trains) and then

transport it to Village destinations. Operators of the vehicles could either be the truck driver himself or a third party employee. Delivery vehicles within the pedestrian area would be smaller in size, and the number of vehicles required to deliver the same volume of goods would increase by approximately 30% over the existing system.

A possibility if a site or sites could be found. This option would require additional study including how business owners would get goods into the Village, site plans, and many operational issues. There is currently no one site that could accommodate the loading and delivery needs of the entire Vail Village, however, there are a number of possible smaller sites, such as the P3&J and the Land Exchange site, to be considered at this time. This solution would require that each time a piece of property becomes available as a possible loading and delivery site, the site is evaluated to determine if it could provide any parking opportunities for loading and delivery vehicles. If this is done for every site as it becomes available this process would eventually result in the provision of multiple close-in centralized warehouse/retrieval sites.

The land exchange site was identified as a possible site for an underground loading and delivery site. If it is possible to extend the boundaries of the site, the site would be useable for a close-in delivery site. Sheets showing the footprint of three possible alternative configurations of delivery bays are shown in Appendix D.

Pros
would probably eliminate most big trucks from the Village.

Cons
High cost-benefit trade off, significantly increasing cost of goods to hotels and restaurants, and thus to visitors. Also, legal and practical issues involving liquor, constructive receipt of goods, food quality, etc. Many issues involving how business owners would transport their own goods in the Village. The town could make vehicles available for the business owners to use require business owners to purchase their own vehicles for transporting goods from the warehouse to their place of business. Could significantly increase frequency of traffic in the Village.

- Land acquisition costs would be extremely high for a close-in receiving area and a warehouse operation may not be considered a compatible land use with adjacent properties.
- Heated sidewalks, or short tunnels, may be necessary to transport the goods from the centralized site to the final destination.
- All delivered goods would need to be "double-handled," that is they would need to be unloaded at the receiving area and reloaded onto another vehicle before delivered to an establishment.
- The Town of Vail or some other operating entity would likely become financially and legally involved in the goods delivery business. Maintaining the loading facility; purchase, operation, and insurance of vehicles; and product liability would all be additional elements of the Town's involvement.
- This alternative may not be appropriate for all types of deliveries, and therefore may

only be a partial solution. For example, special arrangements would likely be required for liquor deliveries, since the law requires liquor to be delivered directly to the liquor-licensed establishments.[2] This may be resolved if, in securing the liquor license, the establishment also obtains a license for an optional premises, such as a warehouse.

Cost
Warehouse. $5-$75 million, depending on site, size and specs. Ongoing operation $1-$4 million per year.

Feasibility
Could be accomplished in 4 to 7 years. Would need additional study of available sites. Finding a suitable site would be an issue.

Alternatives
Centralized warehouse with centralized delivery system would increase costs but simplify the process.

Centralization (Remote)
This alternative is identical to close-in centralization except that the warehouse receiving area would be located away form the Village area where land prices would be more feasible. The idea is to consolidate goods so that fewer delivery trucks would be needed.

Pros
Allows for consolidation of goods prior to delivery to the Village, and would probably reduce the number of total vehicle trips to the Village.

Cons
High cost-benefit trade off, significantly increasing cost of goods to hotels and restaurants, and thus to visitors. Also, legal and practical issues involving liquor, constructive receipt of goods, food quality, etc. Many issues involving how business owners would transport their own goods in the Village. The town could make vehicles available for the business owners to use require business owners to purchase their own vehicles for transporting goods from the warehouse to their place of business. Could possibly even increase frequency of traffic in the Village.

- All delivered goods would need to be "double-handled," that is they would need to be unloaded at the receiving area and reloaded onto another vehicle before delivered to an establishment.

- The Town of Vail or some other operating entity would likely become financially and legally involved in the goods delivery business. Maintaining the loading facility; purchase, operation, and insurance of vehicles; and product liability would all be additional elements of the Town's involvement.

- This alternative may not be appropriate for all types of deliveries, and therefore may only be a partial solution. For example, special arrangements would likely be required

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[2] Conversation with the Colorado Department of Revenue, Liquor Enforcement Division, March 23, 1990.

for liquor deliveries, since the law requires liquor to be delivered directly to the liquor-licensed establishments.[3] This may be resolved if, in securing the liquor license, the establishment also obtains a license for an optional premises, such as a warehouse.

- It is unlikely that small vehicles would have sufficient torque and gearing to pull the larger loads over the longer distances inherent in this alternative. Thus, while the number of trucks would be less, the size of the typical delivery vehicle would be relatively large.

Cost
Warehouse. $5-$50 million, depending on site, size and specs. Ongoing operation $2-$6 million per year.

Feasibility
Could be accomplished in 4 to 7 years. Would need additional study of available sites. Finding a suitable site would be an issue.

Alternatives
Centralized warehouse with centralized delivery system would increase costs but simplify the process.

Underground Delivery System

While this is an attractive alternative that could potentially eliminate 80-90% of truck traffic in the Village, it has an extremely high cost/benefit ratio. Much additional study and planning would need to be done on this alternative.

Subsurface Tunnel System
The subsurface tunnel system would be a major undertaking involving three major issues:

- Constructability
- Liability
- Costs

The construction of such a project would require the excavation of approximately 32,000 cubic yards of material, and 58,000 square feet of new support structure for the pedestrian areas above. All utilities and other infrastructure that are currently below the surface such as storm and sanitation sewers, water, gas, telephone, and electric would need to be relocated. Construction would take a minimum of two years and more likely three to four years. Portion s of the Village would be entirely closed off to pedestrian traffic, and businesses would be required to shut down during certain critical periods of the excavation process.

This alternative consists of tunnels directly below Gore Creek Drive, Bridge Street and Hanson Ranch Road. The tunnels would be large enough to accommodate full-size trucks

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[3] Conversation with the Colorado Department of Revenue, Liquor Enforcement Division, March 23, 1990.

such that direct service to all merchants is retained. The tunnel entrance would be located north of the current site of Check Point Charlie and exits would occur in the vicinity of Mill creek, with underground traffic oriented one-way in the eastbound direction. Underground access to buildings would be provided via installing basement doors, staircases, and service elevators to the surface level.

Pros
A complete system could eliminate most traffic from the Village.

Cons
Current restaurant and hotel configuration (basements, storage, elevators) need to be redone. Would require many streets in the Village to be torn up for some period of time. Does not address automobile, snowplow, or other vehicle traffic. High cost.

Town liability would be significantly affected. Tunneling in close proximity to existing development would have to be done utilizing special procedures to minimize potential damage or weakening a building's structural integrity. Even upon completion of the project, it is possible that structural damage to adjacent buildings may not be evident for 10 to 20 years or more after project completion. The liability consequences of this alternative would continue indefinitely.

Cost
Multi-million dollar outlay for system. Still need an "entrance" facility into the system. The cost of the tunnel project can only be grossly estimated at this time. Basic excavation, structural components, and utility relocation would be approximately $30 to $40 million. Costs associated with building access modifications, insurance, material disposition, and portal treatments would increase total project costs to $60 million or more

Feasibility
Not feasible in the short term without considerable investment ($1 to $2 million) in study, planning, etc. Funding would be and issue.

Alternatives
Centralized warehousing and delivery, smaller scale walking tunnels to allow for delivery of around 50% of goods.

Although this alternative achieves the primary objective, its construction, liability, and cost implications make it impractical. Therefore, this alternative is recommended to be eliminated from further consideration.

Small vehicle Subsurface Tunnel System
This alternative is similar to the subsurface tunnel system except that the underground tunnels would be sized to accommodate smaller vehicles (such as Cushmans) to reduce costs. Such an operation would require centralization of deliveries where goods would be transferred to third party vehicles.

The smaller subsurface tunnel system involves the same basic issues of constructability and liability but at a reduced project cost of approximately $12 to $20 million. In addition, this alternative would involve maintaining a central receiving area where goods would be consolidated and transferred to smaller vehicles for ultimate access to the customer. Given

the fact consolidated loads would be carried by small vehicles, this kind of delivery centralization would be just as appropriate on the surface. As a consequence, tunnel excavation would not be financially necessary if delivery centralization was to occur.

Therefore, this alternative is recommended to be eliminated.

8

Recommended Long-Term Solutions

Planning a course of action is recommended. The Village will be undergoing some redevelopment in the future and the uses of the P3&J and Land Exchange properties are uncertain. In preparation for these eventualities it is recommended that the Town of Vail have a plan of action prepared, pro-actively approaching the loading and delivery issues of the future.

It is not feasible to service the loading and delivery needs of the entire Vail Village with one central close-in site. The size of the village, requires that trucks must be parked in multiple locations throughout the Village to facilitate efficient delivery to the Vail Village. These locations can be divided into four basic quadrants, see Figure 14 - Delivery Quadrants. It will be necessary to have centralized sites in each of these quadrants for the delivery system to work.

Since there are no existing loading and delivery sites, all sites will have to be future sites, and they may not all begin operations during the same season. The process of developing and constructing these sites will be iterative, and may take many years. As existing sites within the each of the four quadrants applies for redevelopment permits, they will be required to determine the number of loading and delivery bays the site may be able to provide.

It is recommended that the following guidelines be used in determining future loading and delivery sites. There are four quadrants within the Village and each quadrant needs a minimum of 5 large truck bays and 4 small truck or car bays.

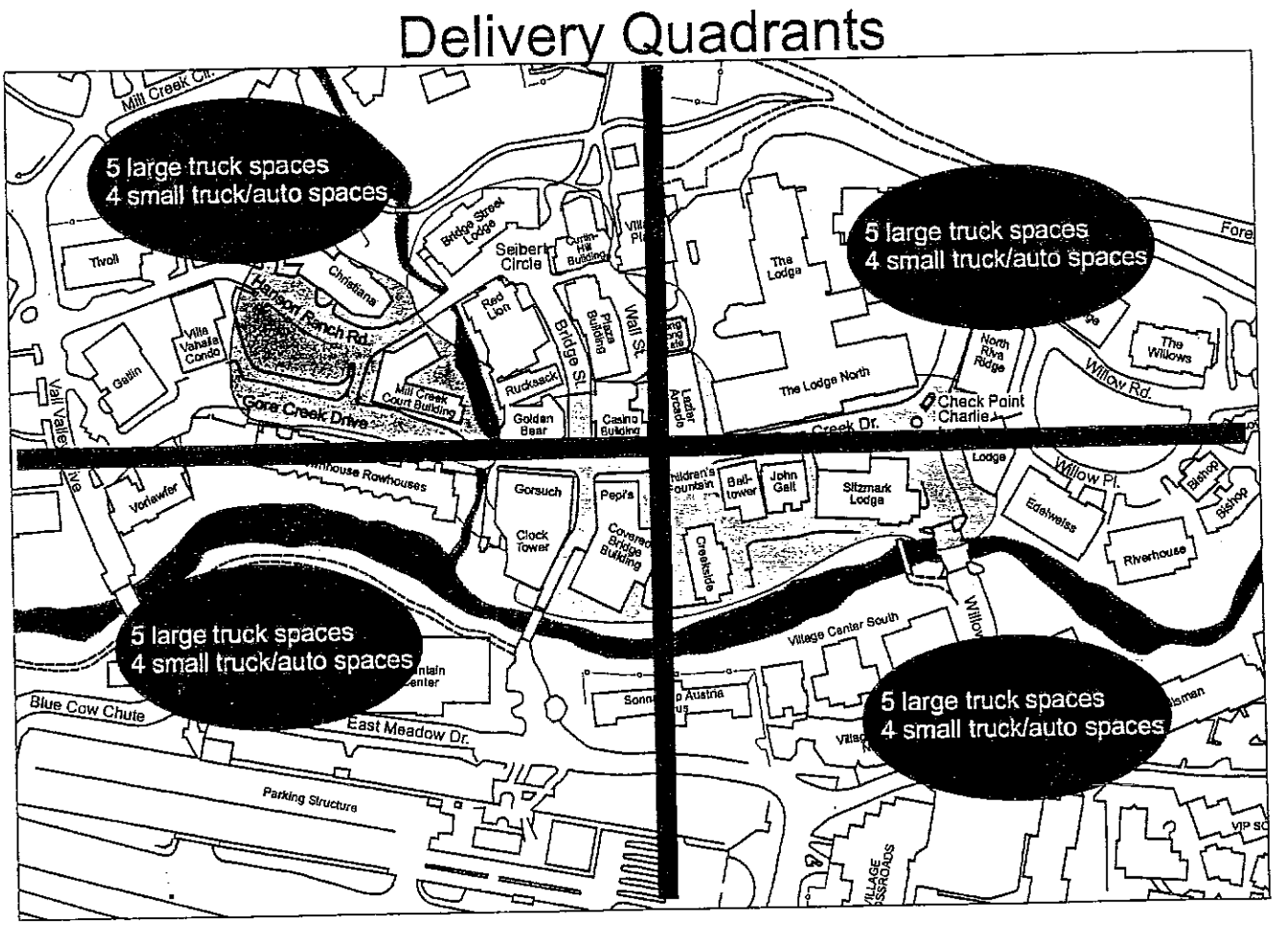
Possible future sites

The P3&J site also known as, the Christiania parking lot site, would need to be constructed with the dock area below the Christiania guest parking area. The grade difference between Hanson Ranch Road and Gore Creek Drive lends itself to construct a two-level structure on this site in which the lower level would be used for unloading and the upper level would be used to replace the parking the at currently exists on that site. Access to the lower level would be on Gore Creek Drive and access to the upper level would be provided via Hanson Ranch Road. The limited size of this site limits the size of the trucks which could use it for loading and deliveries. Smaller delivery trucks, such as Federal Express and UPS could utilize this site, however it is unlikely that a large 5th wheel truck could use the site.

The Land Exchange site, ~~Vail Road site,~~ is currently owned by Vail Associates and is planned to be developed as a hotel. The key with this site would be to use the underground portion of any newly constructed site to house loading and delivery bays for large trucks. Large trucks could be accommodated within the size limits of the site. While the site is located within the Village it is not ideally located to facilitate loading and delivering from the site. Overall distances for which drivers would have to hand cart goods would be increased. This increase in delivery distances would increase the overall time each truck spends delivering to the Village. Because of this the number of bays would need to be approximately 10-15 in order to accommodate all of the large trucks serving the Village. Delivery times would also need to be extended past 11:30am. The increase in distance which drivers must haul goods through the Village may require the use of motorized carts or dollies as well.

As these two sites, and others are being developed within the Village apply to the Town of Vail for permitting, it is recommended that the a requirement of the permitting process be to evaluate the sites potential for accommodating loading and delivery vehicles.

Figure 14 - Delivery Quadrants



Post-it® Fax Note 7671	Date	# of pages ▶
To Nicole	From Greg H
Co./Dept.	Co.
Phone #	Phone #
Fax # (970) 928-8526	Fax #

The Land Exchange site, Vail Road site, is currently owned by Vail Associates and is planned to be developed as a hotel. The key with this site would be to use the underground portion of any newly constructed site to house loading and delivery bays for large trucks. Large trucks could be accommodated within the size limits of the site. While the site is located within the Village it is not ideally located to facilitate loading and delivering from the site. Overall distances for which drivers would have to hand cart goods would be increased. This increase in delivery distances would increase the overall time each truck spends delivering to the Village. Because of this the number of bays would need to be approximately 10-15 in order to accommodate all of the large trucks serving the Village. Delivery times would also need to be extended past 11:30am. The increase in distance which drivers must haul goods through the Village may require the use of motorized carts or dollies as well.

As these two sites, and others are being developed within the Village apply to the Town of Vail for permitting, it is recommended that the a requirement of the permitting process be to evaluate the sites potential for accommodating loading and delivery vehicles.

Figure 14 - Delivery Quadrants

Appendix A

Company	Phone #	Truck Type	Notes
Airborne Express	800-247-2676	Step Delivery Van	In village at least twice a day
Alliant Foodservice	303-792-9230	Class 8 Reefer	Restaurant
Allied Linen		Step Delivery Van	Lodges and Restaurants
Alpine News Distributors		Class 5 Dry Van	Lodges and Restaurants and Retail
American Linen	303-399-7393	Step Delivery van	Lodges and Restaurants
BFI	970-926-3396	Waste Removal	Many locations 2-3 days per week
City Express	1-888-CITYEXP		
Coca-Cola	303-292-2653	5th wheel	Restaurant
Coors -- Carbondale/Glenwood Spgs.	303-297-6565	5th wheel	Restaurant
Corporate Express	303-373-2800	Class & Dry Van	Business
Dawn Industries	303-296-4041	5th wheel	Villager
Entenmann's Inc.-Oroweat Foods	303-691-6398	Step Delivery Van	Market
FedEx	800-463-3339	Step Delivery Van	In village at least twice a day
Gorsuch Ltd.	970-949-6575	Class 5 Dry Van	Gorsuch only
Holsum Bread/Interstate Brands	970-328-4572	Class 7 Dry Van	Restaurant
Honeywagon	970-476-3511	Waste Removal	Many Locations 2-3 days per week
Intalco Food Products Inc.	303-722-1882	Class 7 Reefer	Restaurant
K&M Meat Co.		Class 6 reefer	Restaurant
Lombardi Bros. Meat Packers Inc.	303-628-5510	Class 5 Reefer	Restaurant
Meadow Gold - Delta	303-761-2210	Class 8 Reefer	Restaurant
Mercury Warehouse & Delivery	303-371-0324		Restaurant
Michel's Bakery Ltd.	970-845-8038	Class 5 Dry Van	Restaurant
Mountain Seafood		Pickup Truck	Specialty
Murray -- Glenwood Spgs.		5th wheel	Restaurant
Nobel Sysco	800-366-3345	Class 8 Reefer	Restaurant
Orrison -- Carbondale		5th wheel	Restaurant
RAC		28' pup	LTL Delivery
Robinson Dairy, Inc.	303-825-2990	Class 8 Reefer	Restaurant
Rocky Mountain Fresh & Natural	303-292-5527	Class 8 Reefer	Restaurant
Rocky Mountain Provision (Boarshead)	303-534-3440	Class 8 Reefer	Restaurant
Shamrock Foods - Dave Easton	800-289-3595 x271	Class 8 Reefer	Restaurant
Sinton Dairy	970-328-4366		Restaurant
Slifer Designs	970-926-8200		Construction
Snow white Linen	970-625-1873	Step delivery Van	2 in village
Steamboat Seafood		Class 7 Reefer	
UPS		Step Delivery Van	
USPS	800-ASK-USPS	Step Delivery Van	
Western Murray Distributors	303-298-1632	28' pup	Liquor

Vail Village Business List
2/1/96

Business Name	Mailing address	Mailing city, zip code	Street Address	Phone number	Contact Person	Sq. Ft.	# seats	# rooms
Blu's Restaurant	193 E. Gore Creek Drive	Vail, CO 81657	same as mailing	(303) 476-3113	Tom Armstrong	1224	76	
Bridge Street Charlie's	641 Lionshead Mall	Vail, CO 81657	304 Bridge Street	(303) 476-1655	Bob Walsh	900		
Christiania Lodge	356 E. Hanson Ranch Road	Vail, CO 81657	same as mailing	(303) 476-5641	John Everly			46
Club Chelsea	304 Bridge Street, Unit C-1	Vail, CO 81657	same as mailing	(970) 476-5600	Betsy Bradley	2400	130	
Club, The	c/o Act Professionals, P.O. Drawer X	Edwards, CO 81632	304 E. Bridge Street	(303) 479-0556	Todd P. Milner	2000	75	
Garton's Saloon	PO Box 1057	Vail, CO 81658	143 E. Meadow Drive	(970) 479-0607	Steve Olson	6000	160	
Gasthof Granshammer, Inc.	231 E. Gore Creek Drive	Vail, CO 81657	same as mailing	(970) 476-5626	Pepi Gramshammer			28
Gorsuch Ltd.	263 E. Gore Creek Drive	Vail, CO 80657	same as mailing	(303) 476-2294	Renie K. Gorsuch	10000		
Lancelot Inn, Inc.	P.O. Box 5000	Vail, CO 81658	205 Gore Creek Drive	(303) 476-5828	Herman Staufer	4000	125	
Left Bank Restaurant	Box 176	Vail, CO 81658	183 Gore Creek Drive	(970) 476-3696	Luc H. Meyer	3000	90	
Lodge @ Vail Food/Bev.		Vail, CO 81657					0	
Lodge @ Vail Other		Vail, CO 81657				N/A		
Lodge @ Vail Retail		Vail, CO 81657						116
Lodge @ Vail, The	Attn:Gary Hartley, 174 E. Gore Creek Dr.	Vail, CO 81657	same as mailing	(970) 476-5011	John Volponi			83
Lodge Tower, The	200 Vail Road	Vail, CO 81657	same as mailing	(303) 476-9530	Stan Cope			
Los Amigos	228 Bridge Street	Vail, CO 81657	318 Hanson Ranch Road	(303) 476-5847	Tim Curran	1400	112	
May Palace Restaurant	c/o Choi's Acct. & Consult. 1601 S. Federal #270	Denver, CO 80219	223 E. Gore Creek Drive	(970) 476-1657	Emma Woo	3000	120	
Moguls	P.O. Box 5770	Avon, CO 81620	333 Bridge Street	(970) 476-7100	David K. Besnette		94	
Nick's	228 Bridge Street	Vail, CO 81657	same as mailing	(303) 476-3433	Tim Goff	2800	59	
Ore House	232 Bridge Street	Vail, CO 81657	same as mailing	(303) 476-5100	Larry Anderson	3800	114	
Pepi's Restaurant & Bar	231 E. Gore Creek Drive	Vail, CO 81657	same as mailing	(970) 476-5626	Pepi Gramshammer		157	
Red Lion, The	5825 S.W. 29th, #202	Topeka, KS 66614	304 Bridge Street	(303) 476-7676	Rodney Johnson	6700	232	
Russell's	228 Bridge Street	Vail, CO 81657	same as mailing	(303) 476-0080	Mick Warth	2700	110	
Sarah's Lounge	356 E. Hanson Ranch Road	Vail, CO 81657	same as mailing	(303) 476-5641	John Everly		60	
Sitzmark Lodge, The	183 Gore Creek Drive	Vail, CO 81657	same as mailing	(303) 476-5001	Robert F. Fritch			35
Sweet Basil	193 Gore Creek Drive	Vail, CO 81657	same as mailing	(303) 476-0125	Kevin Clair		100	
Tivoli Lodge, The	Attn: Ed Mountol, 386 Hanson Ranch Road	Vail, CO 81657	same as mailing	(303) 476-5615	Ed Moulton			50
Up the Creek Bar & Grill	223 Gore Creek Drive	Vail, CO 81657	same as mailing	(303) 476-8141	Peter Stadler	1600	70	
Vail Village Clube	P.O. Box 5770	Avon, CO 81620	333 Bridge Street	(970) 476-7100	David K. Besnette	11620	116	
Vendetta's	291 Bridge Street	Vail, CO 81657	same as mailing	(303) 476-5070	John Brennen	6200	120	

Where are the rest of the estabs?

Appendix B

VAIL VILLAGE NOISE STUDY

SITZMARK LODGE 6:10:AM :		PEPI'S 6:30		CHRISTIANIA 8:00		BRIDGE STREET LODGE 7:30		THE WILLOWS 7:00		THE LODGE NORTH 8:25	
Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ
1:00	56.7	1:00	52.5	1:00	58.1	1:00	54.3	1:00	45.1	1:00	53.2
2:00	55.9	2:00	52.8	2:00	57.4	2:00	58.2	2:00	47.2	2:00	55.0
3:00	55.8	3:00	54.3	3:00	55.1	3:00	57.9	3:00	48.1	3:00	54.9
4:00	55.9	4:00	53.9	4:00	53.4	4:00	60.1	4:00	49.1	4:00	54.9
5:00	56.2	5:00	54.6	5:00	55.3	5:00	63.2	5:00	48.6	5:00	57.5
6:00	56.2	6:00	54.8	6:00	56.9	6:00	59.1	6:00	48.3	6:00	57.3
7:00	56.3	7:00	54.7	7:00	56.4	7:00	60.0	7:00	48.1	7:00	57.3
8:00	57.2	8:00	56.5	8:00	56.1	8:00	59.2	Snow Plov 8:00	61.9	8:00	56.9
9:00	57.3	9:00	56.3	9:00	56.6	9:00	59.0	9:00	61.7	9:00	56.9
10:00	57.1	10:00	57.5	10:00	55.9	10:00	58.7	10:00	61.3	10:00	57.0
11:00	56.7	11:00	58.8	11:00	57.3	11:00	58.2	11:00	59.8	11:00	58.0
12:00	56.4	12:00	59.2	12:00	56.8	12:00	58.0	12:00	58.9	12:00	57.5
13:00	56.4	13:00	59.3	13:00	56.6	13:00	57.6	13:00	58.7	13:00	57.2
14:00	56.9	14:00	59.8	14:00	56.6	14:00	58.0	14:00	57.2	14:00	57.1
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19:00	55.7	19:00	59.9	19:00	56.3	19:00	57.4	19:00	56.6	19:00	57.1
20:00	55.8	20:00	60.1	20:00	56.7	20:00	57.3	20:00	56.5	20:00	56.9
avg.	55.8	avg.	60.1	avg.	56.7	avg.	57.3	avg.	56.5	avg.	56.9
min	42.9	min	45.7	min	35.2	min	35.2	min	37.4	min	39.2
max	71.5	max	79.9	max	63.9	max	76.0	max	79.5	max	75.8

VAIL VILLAGE NOISE STUDY

SITZMARK LODGE 9:10		PEPI'S 9:40		CHRISTIANIA 10:20		BRIDGE STREET LODGE 9:00		THE WILLOWS 9:50		THE LODGE NORTH 9:25	
Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ	Time Frame	LEQ
1:00	59.8	1:00	54.2	1:00	60.8	1:00	51.9	1:00	53.9	1:00	54.2
2:00	61.6	2:00	53.8	2:00	58.8	2:00	52.3	2:00	57.2	2:00	54.6
3:00	60.3	3:00	53.6	3:00	59.1	3:00	52.4	3:00	55.6	3:00	55.4
4:00	59.9	4:00	54.1	4:00	58.8	4:00	52.2	4:00	54.6	4:00	55.2
5:00	59.5	5:00	55.1	5:00	59.9	5:00	52.3	5:00	53.8	5:00	57.5
6:00	58.9	6:00	56.9	6:00	60.4	6:00	52.1	6:00	53.5	6:00	57.5
7:00	58.4	7:00	57.6	7:00	61.5	7:00	52.1	7:00	53.8	7:00	57.8
8:00	58.0	8:00	57.3	8:00	61.6	8:00	52.2	8:00	54.1	8:00	57.6
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10:00	57.2	10:00	64.4	10:00	61.0	10:00	52.2	10:00	53.3	10:00	56.9
11:00	56.9	11:00	64.1	11:00	60.7	11:00	52.2	11:00	53.1	11:00	57.8
12:00	56.6	12:00	63.9	12:00	60.6	12:00	52.0	12:00	53.0	12:00	57.6
13:00	56.8	13:00	63.6	13:00	60.3	13:00	52.0	13:00	53.0	13:00	57.4
14:00	56.9	14:00	63.4	14:00	60.1	14:00	51.9	14:00	53.0	14:00	57.2
15:00	56.9	15:00	63.2	15:00	60.2	15:00	51.9	15:00	52.9	15:00	57.2
16:00	56.6	16:00	62.9	16:00	60.0	16:00	52.0	16:00	53.8	16:00	57.3
17:00	56.4	17:00	62.7	17:00	59.8	17:00	51.9	17:00	54.2	17:00	57.3
18:00	56.3	18:00	62.5	18:00	59.8	18:00	51.8	18:00	54.4	18:00	57.2
19:00	56.2	19:00	65.3	19:00	59.6	19:00	51.8	19:00	54.2	19:00	57.1
20:00	56.1	20:00	62.2	20:00	59.5	20:00	51.7	20:00	54.0	20:00	57.5
avg.	56.1	avg.	62.2	avg.	59.5	avg.	51.7	avg.	54.0	avg.	57.5
min	48.6	min	47.0	min	46.7	min	49.1	min	39.5	min	49.8
max	73.6	max	87.4	max	81.0	max	61.0	max	70.3	max	76.7

Appendix C

75 South Frontage Road
Vail, Colorado 81657

Department of Police

VAIL VILLAGE MERCHANT PERMIT

MUST BE DISPLAYED ON DRIVER'S SIDE DASHBOARD

ISSUING OFFICER_____

EFFECTIVE DATES_____

DELIVERING TO_____

VALID FOR BRIDGE STREET / 6:30-8:30 AM / 15 MINUTE LIMIT
ALL OTHER LOADING ZONES / 6:30 AM-6:00 PM / 30 MINUTES
(PERMIT IS TRANSFERABLE, BUT MAY NOT BE PHOTOCOPIED)

75 South Frontage Road
Vail, Colorado 81657

Department of Police

TOWN OF VAIL DAILY PERMIT

ALL ZONES HAVE A 30 MINUTE LIMIT/PERMIT MUST BE DISPLAYED ON DASH

ISSUING OFFICER_____DATE/TIME_____

VEHICLE DESCRIPTION_____

DELIVERING TO_____

PARKING LOCATION_____

TOWN OF VAIL
75 South Frontage Road
Vail, Colorado 81657
Department of Police

TOWN OF VAIL
15 MINUTE PERMIT

PERMIT MUST BE DISPLAYED ON DRIVER'S SIDE DASHBOARD

ISSUING OFFICER_____ DATE/TIME_____

VEHICLE DESCRIPTION_____

DELIVERING TO_____

PARKING LOCATION_____

TOWN OF VAIL
P.O. Box 567
Vail, Colorado 81658
(303) 479-2200

SPECIAL PERMIT

MUST BE DISPLAYED ON DRIVER'S SIDE DASH BOARD

Department of Police

PERMIT NUMBER

_____

License Plate:_____ Effective Time/Date:_____

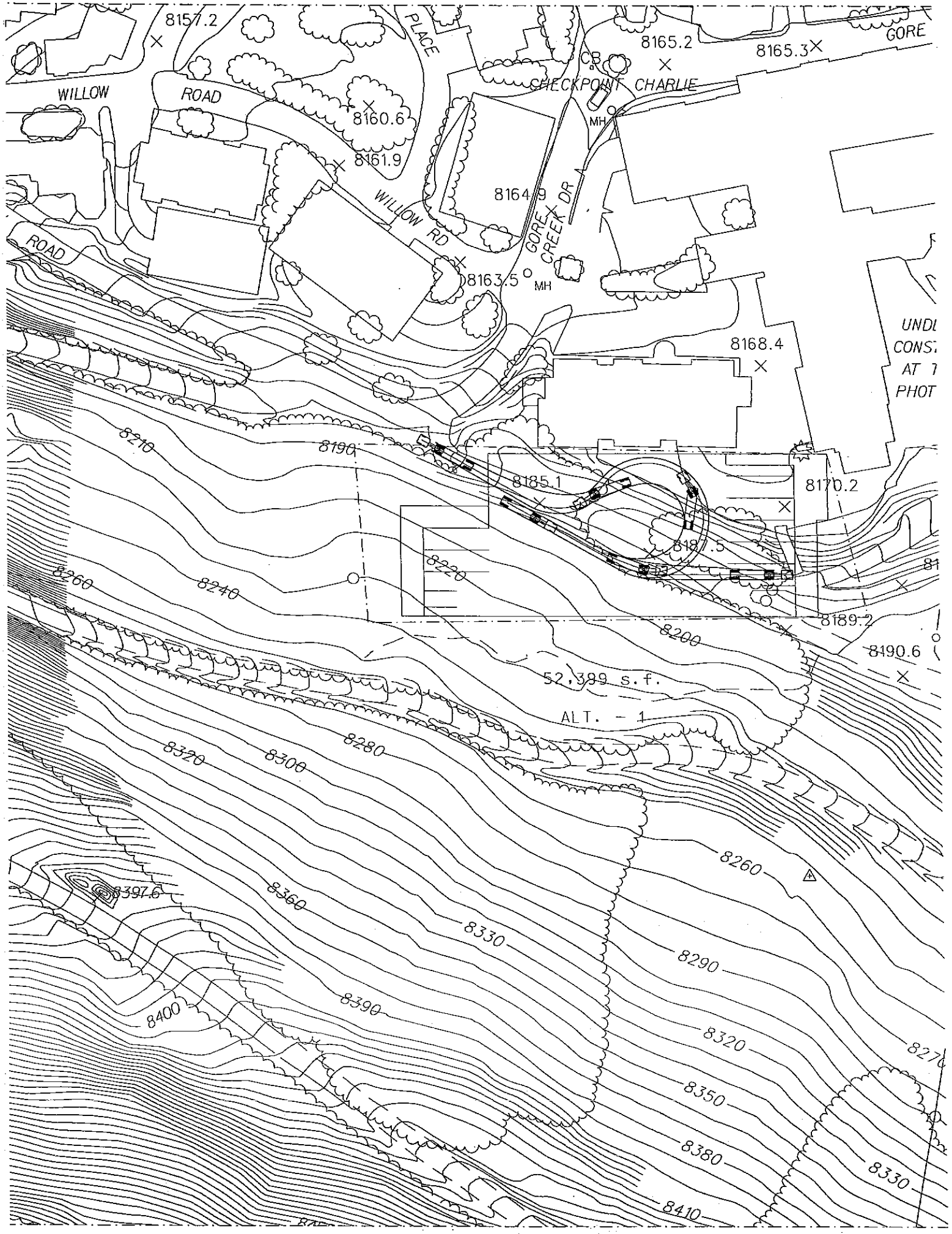
Vehicle Description: _____

Parking Location:_____

Delivering To:_____

NOTES/CONDITIONS

Appendix D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ROAD
8163.5
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UNDI
CONS
AT 1
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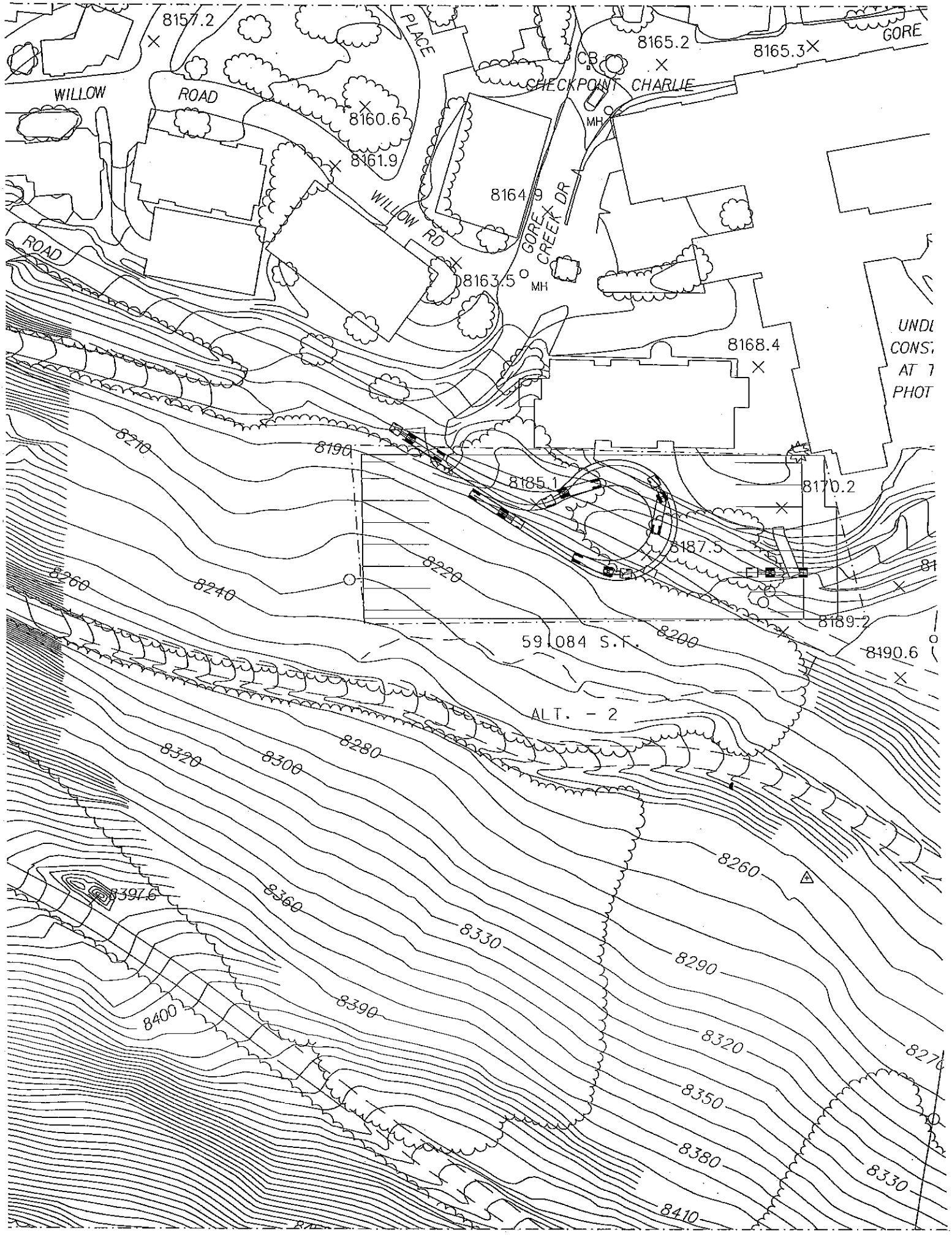
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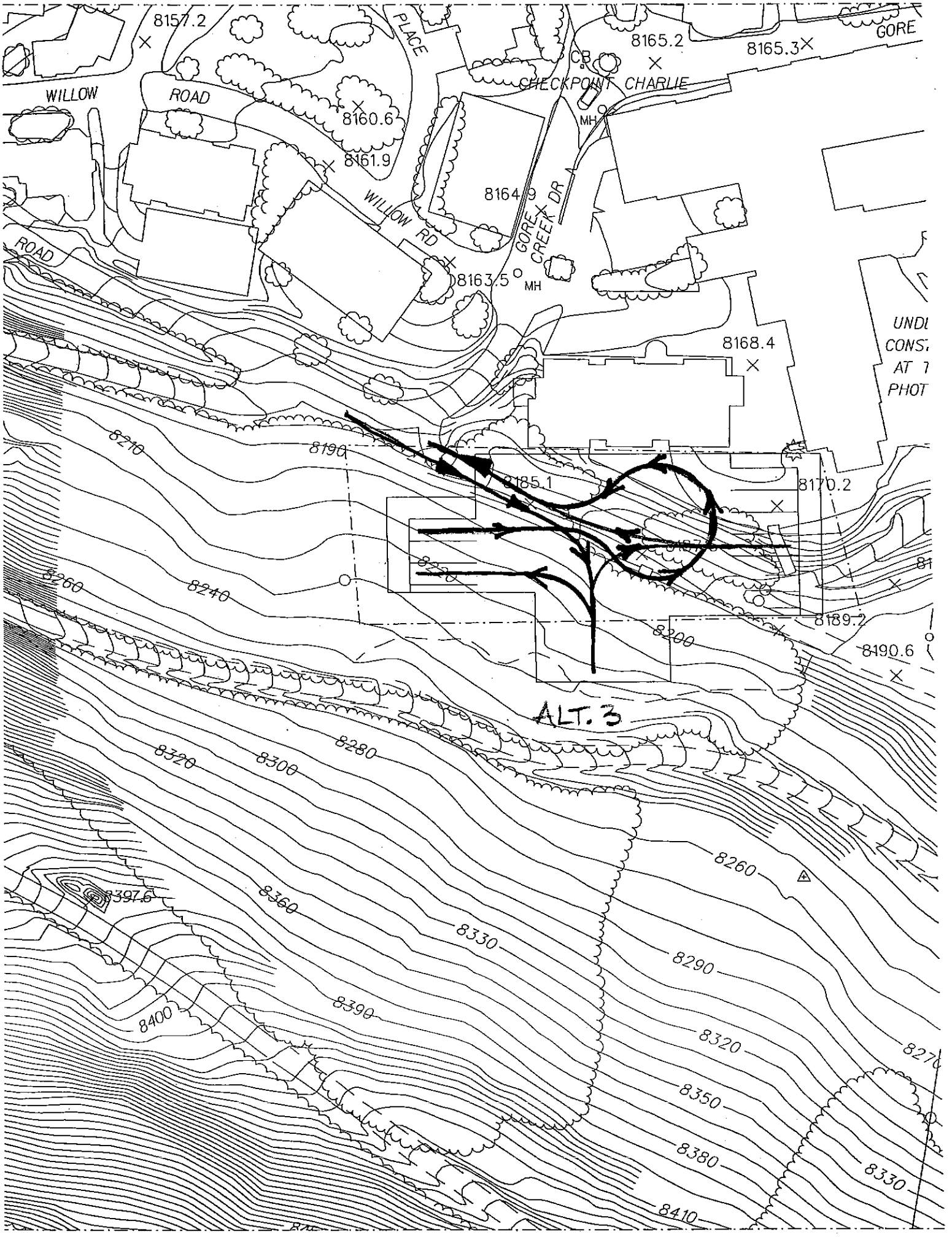
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Appendix E

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Remote
Final Delivery Operator:	Suppliers
Final Delivery Method:	Supplier Trucks (current method)

CURRENT METHOD

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Remote
Final Delivery Operator:	Suppliers
Final Delivery Method:	Supplier Trucks with Size and Type Limitations

Limit Truck Size

This option is essentially how goods are being delivered to the village today. The difference would be that a size restriction would be put on delivery vehicles. This option would not solve and would in fact exacerbate congestion in the village. By reducing vehicle size, additional vehicles or trips would be required to deliver the current volume of goods resulting in smaller but more vehicles in the village.

Additionally, more vehicles or trips would require capital investment by the delivery companies as well as additional cost to hire drivers. These costs would undoubtedly be passed along to the village businesses and ultimately the consumers.

Finally, costs aside, there is an extreme driver shortage in the industry and along the Front Range and Vail Valley specifically. It would be unlikely that delivery companies would be able to consistently staff to meet the needs additional vehicles or trips would require.

This is a difficult option at best for the delivery companies and would not accomplish any significant improvement in the pedestrian village without changes in parking, restaurant receiving hours and storage capacity.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Golf Cart or Tug Type

Use smaller non street licensed vehicles

This option is essentially how goods are being delivered to the village today. The difference would be that a size and type restriction would be put on delivery vehicles. This option would require several sites (possibly the lodge, p3&j, covered bridge area) where larger trucks could be unloaded onto smaller vehicles. This option would also require that suppliers/delivery companies purchase, store and maintain these "tugs".

This system may work with a centralized operation and some party other than the delivery companies operating the system. This is not a viable option for suppliers to operate.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Hand Carts (motorized)

Handcarts, motorized

This option is essentially how goods are being delivered to the village today. The difference would be that a size and type restriction would be put on final delivery vehicles to the extent that small **motorized** hand carts or pallet jacks would be the only "delivery" vehicles allowed in the village. This option would require several sites (possibly the lodge, p3&j, covered bridge area) where larger trucks could be unloaded onto moterized dollies. This option would also require that suppliers/delivery companies purchase, store and maintain these "dollies".

This option would require clear pathways to delivery destinations and would not solve the issue of where to put the larger primary delivery vehicles in and around the Village. It also does not solve the issue of delivery personnel in the village for long hours.

The return on investment, i.e. efficiencies that might be achieved over current hand cart method or truck delivery method, would be virtually negligible relative to the cost of purchasing and maintaining **motorized** hand carts.

CURRENT METHOD

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Hand Carts (non motorized)

Blended

This option is essentially how goods are being delivered to the village today. Tweaks in this blended system, including changes in signage, parking hours, locations and enforcement, increased storage requirements, and requirements on when business receive goods could have a significant impact on the congestion in the village. This would require buy in from all parties involved and would have the greatest incremental benefit per dollar.

This approach could include one or two main delivery areas in the village, hand or motorized cart restrictions and size restrictions on some vehicles during some hours. It would also require changes in restaurant receiving hours and storage facilities. The town should also look at improving signage and enforcement.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Golf Cart or Tug Type

Use smaller non street licensed vehicles

This option is essentially how goods are being delivered to the village today (surface). The difference would be that a size and type restriction would be put on delivery vehicles. This option would require several sites (possibly the lodge, p3&j, covered bridge area) where larger trucks could be unloaded onto smaller vehicles. This option would also require that the Town of Vail purchase, store and maintain these "tugs" as well as operate the final leg of the delivery system.

This system may work with a centralized operation and. To attempt this system in a decentralized environment could be costly and confusing to operate. Additionally, for the Town to operate, there are liability issues involved with the re-handling of goods, including liquor. Finally, in this system (in either a centralized or decentralized environment) changes regarding receiving hours, parking and movement of larger trucks around the village, and enforcement would still need to be addressed.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Hand Carts (motorized)

Handcarts, motorized

This option is essentially how goods are being delivered to the village today. The difference would be that a size and type restriction would be put on final delivery vehicles to the extent that small **motorized** hand carts or pallet jacks would be the only "delivery" vehicles allowed in the village. This option would require several sites (possibly the lodge, p3&j, covered bridge area) where larger trucks could be unloaded onto motorized dollies. This option would also require that the town of Vail purchase, store and maintain these "dollies".

This option would require clear pathways to delivery destinations and would not solve the issue of where to put the larger primary delivery vehicles in and around the Village. While taking the burden of final delivery from the delivery companies it adds unneeded complexity and expense to the system.

The return on investment, i.e. efficiencies that might be achieved over current hand cart method or truck delivery method, would be virtually negligible relative to the cost of purchasing and maintaining **motorized** hand carts. The additional liability the town would be exposed to under this scenario would not be worth the small returns that might be realized in terms of delivery efficiencies.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Blended System

Blended

While a blended, decentralized approach with the suppliers continuing to make final delivery on goods makes sense with some tweaks to operations in the town, this type of system would not be effective with the town making final deliveries. The liability and cost the town would incur in a decentralized environment would never cover the economic cost or exposure. Additionally, there would essentially be no efficiencies or reduction in truck traffic under this scenario.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Surface

Automated Surface System

Much like the blended, decentralized approach with the suppliers continuing to make final delivery on goods makes sense with some tweaks to operations in the town, this type of system would not be effective with the town making final deliveries. The liability and cost the town would incur in a decentralized environment would never cover the economic cost or exposure. Additionally, there would essentially be no efficiencies or reduction in truck traffic under this scenario.

Any automated or semi-automated surface system that is not run from a centralized location would be expensive for the potential returns. There would also be very little opportunity to reduce truck traffic into the village under this scenario, as vehicles would still need to enter the village in at least three zones.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Semi-Surface

Automated Semi-Surface System

Much like the blended, decentralized approach with the suppliers continuing to make final delivery on goods makes sense with some tweaks to operations in the town, this type of system would not be effective with the town making final deliveries. The liability and cost the town would incur in a decentralized environment would never cover the economic cost or exposure. Additionally, there would essentially be no efficiencies or reduction in truck traffic under this scenario.

Any automated or semi-automated semi -surface system that is not run from a centralized location would be expensive for the potential returns. There would also be very little opportunity to reduce truck traffic into the village under this scenario, as vehicles would still need to enter the village in at least three zones.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Blended System

Blended

While a blended, decentralized approach with the suppliers continuing to make final delivery on goods makes sense with some tweaks to operations in the town, this type of system would not be effective with the town making final deliveries. The liability and cost the town would incur in a decentralized environment would never cover the economic cost or exposure. Additionally, there would essentially be no efficiencies or reduction in truck traffic under this scenario.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Automated System - Surface

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Small Powered Vehicles)
- Final Delivery Operator: Third Party
- Final Delivery Method: Automated System - Surface

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Surface

Automated Surface System

Much like the blended, centralized approach, this approach makes more sense with suppliers making final deliveries. The liability and cost the town would incur in a centralized environment could cover the economic costs if a proper site could be found and if the automated system were built in conjunction with other projects in the Village. There would essentially be no efficiencies or reduction in truck traffic under this scenario, just a change in the traffic patterns to a centralized location, which could create its' own set of issues.

Any automated or semi-automated surface system that is run from a centralized location would be the only economically viable way to operate a system such as this. Much design work and cost estimates would need to be done to truly understand the economics of this option.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Automated System - Semi-Surface

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Small Powered Vehicles)
- Final Delivery Operator: Third Party
- Final Delivery Method: Automated System - Semi-Surface

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Semi-Surface

Automated Semi - Surface System

Much like the Automated Surface System, centralized approach, this approach makes more sense with suppliers making final deliveries. The liability and cost the town would incur in a centralized environment could cover the economic costs if a proper site could be found and if the automated system were built in conjunction with other projects in the Village. There would essentially be no efficiencies or reduction in truck traffic under this scenario, just a change in the traffic patterns to a centralized location, which could create its' own set of issues.

Any automated or semi-automated surface system that is run from a centralized location would be the only economically viable way to operate a system such as this. Much design work and cost estimates would need to be done to truly understand the economics of this option.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Automated System - Sub-Surface

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Small Powered Vehicles)
- Final Delivery Operator: Third Party
- Final Delivery Method: Automated System - Sub-Surface

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Sub-Surface

Automated Sub - Surface System

Much like the Automated Surface System, centralized approach, this approach makes more sense with suppliers making final deliveries. The liability and cost the town would incur in a centralized environment could cover the economic costs if a proper site could be found and if the automated system were built in conjunction with other projects in the Village. There would essentially be no efficiencies or reduction in truck traffic under this scenario, just a change in the traffic patterns to a centralized location, which could create its' own set of issues.

Any automated or semi-automated surface system that is run from a centralized location would be the only economically viable way to operate a system such as this. Much design work and cost estimates would need to be done to truly understand the economics of this option.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Blended System

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Small Powered Vehicles)
- Final Delivery Operator: Third Party
- Final Delivery Method: Blended System

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Blended System

Blended System

Unlike the blended, decentralized approach, this approach makes more sense with suppliers making final deliveries. The liability and cost the town would incur in a centralized environment could cover the economic costs if a proper site could be found and if the blended system were built in conjunction with other projects in the Village. There could be efficiencies or reduction in truck traffic under this scenario if the mix of systems were laid out to maximize efficiencies for the town, suppliers and businesses in the town.

Any automated or semi-automated surface system that is run from a centralized location would be the only economically viable way to operate a system such as this. Much design work and cost estimates would need to be done to truly understand the economics of this option.

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Remote
- Final Delivery Operator: Third Party
- Final Delivery Method: Golf Cart or Tug Type

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Remote
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Golf Cart or Tug Type

Use smaller non street licensed vehicles

This option is essentially how goods are being delivered to the village today (surface). The difference would be that a size and type restriction would be put on delivery vehicles. This option would require several sites (possibly the lodge, p3&j, covered bridge area) where larger trucks could be unloaded onto smaller vehicles. This option would also require that the Town of Vail contract to a third party who would purchase, store and maintain these "tugs" as well as operate the final leg of the delivery system.

This system may work with a centralized operation. For the Town to hire a third party to run this type of operation, there are liability issues involved with the re-handling of goods, including liquor. Finally, in this scenario, changes regarding receiving hours, parking and movement of larger trucks around the village, and enforcement would still need to be addressed.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Golf Cart or Tug Type

Use smaller non street licensed vehicles

This option is essentially how goods are being delivered to the village today (surface). The difference would be that a size and type restriction would be put on delivery vehicles. This option would require one central site where larger trucks could be unloaded onto smaller vehicles. This option would also require that the Town of Vail contract to a third party, who would purchase, store and maintain these "tugs" for the suppliers to use for final delivery. This is the least desirable of the centralized small vehicle options because it would still require a third party or the town to outlay capital and maintenance expense for equipment to be used by the suppliers.

This system may work with a centralized operation. For the Town or a third party to run this type of operation, there are liability issues involved with the re-handling of goods, including liquor. Finally, in this scenario, changes regarding receiving hours, parking and movement of larger trucks around the village, and enforcement would still need to be addressed.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Hand Carts (motorized)

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Small Powered Vehicles)
- Final Delivery Operator: Third Party
- Final Delivery Method: Hand Carts (motorized)

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Hand Carts (motorized)

Handcarts, Motorized

This option is essentially how goods are being delivered to the village today (surface). The difference would be that larger trucks would off load their goods at a central facility as opposed to throughout the Village. This option would require one central site where larger trucks could be unloaded onto smaller vehicles. This option would also require that suppliers, or the Town provide and maintain smaller motorized handcarts for delivery. This system could work effectively with suppliers, the Town or a Third Party doing the final delivery with the caveat that if the Town or a Third Party is performing the final delivery function, there are liability issues involved with the re-handling of goods, including liquor.

There would also be some capital investment involved in addition to the building of the centralized facility, namely some type of heated pathways into the various sections of the village. These would be necessary due to the fact that the walking distance from a centralized facility could be as far as 3000 feet.

If the suppliers or drivers were to do final delivery, study as to delivery times and distances walked would have to be completed and we would need to get buy in from the drivers and their employers to make this an effective option. This option does not solve the issue of delivery personnel in the village for long hours.

The return on investment, i.e. efficiencies that might be achieved over current hand cart method or truck delivery method, would be virtually negligible relative to the cost of purchasing and maintaining **motorized** hand carts and the investment required to build and maintain a centralized facility.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Hand Carts (non motorized)

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Hand Delivery)
- Final Delivery Operator: Third Party
- Final Delivery Method: Hand Carts (non motorized)

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Hand Carts (non motorized)

Handcarts, Non-Motorized

This option is essentially how goods are being delivered to the village today (surface). The difference would be that larger trucks would off load their goods at a central facility as opposed to throughout the Village. This option would require one central site where all trucks would be offloaded. Given the size of the village and the layout, on centralized point where all goods would be hand trucked from would not be feasible for the suppliers' delivery personnel. The time required and the distances walked would make Vail a very unattractive route for any driver. This operation is not practical facility.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Automated System - Surface

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Hand Delivery)
- Final Delivery Operator: Third Party
- Final Delivery Method: Automated System - Surface

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Surface

Automated Surface System

This type of system could be effective with the suppliers making final deliveries. It would require substantial investment by the town in the way of initial capital to build the centralized facility and the automated delivery system, and significant ongoing expense to operate the facility and the system even if the suppliers were to actually walk the goods into the doors of the towns businesses. The ongoing expense of running a system like this is more conducive to the town or a third party running the system and making the final deliveries, which has its' own set of issues as discussed earlier.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Automated System - Semi-Surface

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Hand Delivery)
- Final Delivery Operator: Third Party
- Final Delivery Method: Automated System - Semi-Surface

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Semi-Surface

Automated Semi-Surface System

This type of system could be effective with the suppliers making final deliveries. It would require substantial investment by the town in the way of initial capital to build the centralized facility and the automated delivery system, and significant ongoing expense to operate the facility and the system even if the suppliers were to actually walk the goods into the doors of the towns businesses. The ongoing expense of running a system like this is more conducive to the town or a third party running the system and making the final deliveries, which has its' own set of issues as discussed earlier.

Automated Sub-Surface System

This type of system could be effective with the suppliers making final deliveries. It would require substantial investment by the town in the way of initial capital to build the centralized facility and the automated delivery system, and significant ongoing expense to operate the facility and the system even if the suppliers were to actually walk the goods into the doors of the towns businesses. The ongoing expense of running a system like this is more conducive to the town or a third party running the system and making the final deliveries, which has its' own set of issues as discussed earlier.

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Automated System - Sub-Surface

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Hand Delivery)
- Final Delivery Operator: Third Party
- Final Delivery Method: Automated System - Sub-Surface

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Automated System - Sub-Surface

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Suppliers
Final Delivery Method:	Blended System

Vail Loading and Delivery

- Type of Operation: Centralized
- Location: Closer In (Hand Delivery)
- Final Delivery Operator: Third Party
- Final Delivery Method: Blended System

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Town of Vail
Final Delivery Method:	Blended System

Blended

A blended centralized approach makes the most sense if the Town is going to invest in a centralized facility that is " close in". In most cases, having the Town or a Third Party operate the facility and any automated delivery component or motorized vehicles, while allowing the suppliers to still make final handoff to the business is ideal. As is the case with all centralized options, capital and ongoing operating expendatures could be substantial.

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Remote
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Private Vehicles with Size and Type Restrictions

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Golf Cart or Tug Type

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Hand Carts (motorized)

Vail Loading and Delivery

Type of Operation:	Decentralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Hand Carts (non motorized)

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Remote
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Private Vehicles with Size and Type Restrictions

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Remote
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Golf Cart or Tug Type

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Small Powered Vehicles)
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Hand Carts (motorized)

Vail Loading and Delivery

Type of Operation:	Centralized
Location:	Closer In (Hand Delivery)
Final Delivery Operator:	Vail Shopkeepers and Restaurateurs (retrieval)
Final Delivery Method:	Hand Carts (non motorized)

Shopkeeper/Restaurateurs - Retrieval

The final option to consider is a hybrid of prior options where the recipient would make final delivery. That is the delivery companies would deliver to a centralized or several semi-centralized "warehouse or storage areas" for retrieval by the final recipient, much like a Post Office Box system. While a system such as this presents unique centralization opportunities, it also presents some challenges.

Whatever final method is used, automated, golf carts, private trucks, surface or sub surface, you still have the issue of traffic in the Village. In fact, with business owners having to operate, own and maintain their own delivery vehicles, the congestion problem could be exasperated. Additionally, there would be issues involving the time and expense "pick-up" would add to the equation. Having said that, in relation to the other options, this one has viability. A centralized or a few decentralized "warehouse" locations could absorb some storage problems that individual businesses have. If a large enough facility were constructed, it may in fact reduce total truck traffic into the valley.

The issues that would need to be considered further if this option were to seriously pursued would include:

Types of vehicles allowed in the Village for delivery purposes
Ownership of those vehicles
Maintenance of those vehicles
Type and volume of goods that could be effectively retrieved in this manner
Location and building expense of centralized or smaller decentralized storage facilities
Operation and expense of operating centralized or decentralized facilities.