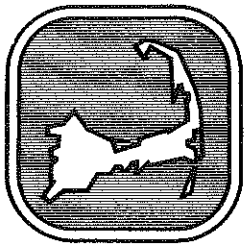

CAPE COD PLANNING AND ECONOMIC DEVELOPMENT COMMISSION
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EAST ORLEANS/NAUSET BEACH

PARKING AND TRAFFIC STUDY

March, 1987

by

The Cape Cod Planning and
Economic Development Commission

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The preparation of this report has been financed in part through a grant from the United States Department of Transportation, under Contract #87022 with the Massachusetts Department of Public Works and with the cooperation of the Federal Highway Administration.

East Orleans/Nauset Beach Parking & Traffic Study

Introduction

Summer traffic congestion in the East Orleans/Nauset Beach area has increased considerably in recent years. Visitors to Nauset Beach often block one lane of Beach Road while waiting to gain access to the beach parking lot. The majority of vehicles traveling to and from Nauset Beach travel through East Orleans center, increasing congestion in this busy area. The cause of this traffic congestion is primarily the popularity of the Beach itself with its limited parking facilities combined with the increase in residences in the area.

On summer weekends, traffic congestion sometimes reaches unacceptable levels. Beach bound traffic occasionally backs up "bumper to bumper" from Cedar Land Road, where an officer turns traffic when the parking lot is full, to the center of East Orleans. Not only does this present an inconvenience to residents and visitors but it has dire consequences for emergency vehicle accessibility to this section of Orleans.

The Town of Orleans requested that the Cape Cod Planning and Economic Development Commission (CCPEDC) study the traffic conditions in this area and identify measures to mitigate the situation. This work was made possible through the CCPEDC contract with the Massachusetts Department of Public Works (MDPW) as a technical assistance task.

Data Collection

Most of the data, including traffic volumes were gathered during peak days ("beach weather" weekends during July and August). This was somewhat difficult, however, due to the unusually consistent rainy weekends during the summer of 1986.

Data collection included placing traffic counters on area roads, observing the procedures of the Orleans Park Department staff as the parking lot was filled and reached capacity, obtaining parking lot geometrics and conducting an inventory of parking spaces. Several staff members were also interviewed informally.

Nauset Beach Parking Facilities

Nauset Beach has a single, large paved lot with approximately 670 parking spaces, including 5 handicapped spaces and 10 short-term spaces. Adjacent to this main lot are two dirt ones, on the North and South ends, that can accommodate approximately 70 cars each. There is also a "Beach Buggy Parking Lot" off the south end that can hold forty vehicles. This is a holding area for 4WD vehicles heading out to the beach. It is an area for inspections, adjusting tire pressure, and queuing up to go through the check point.

In total, the parking areas can accommodate approximately 850 vehicles. When necessary, this is supplemented by parking vehicles in the paved lot outside of the marked parking spaces.

Parking spaces in the paved lot are clearly delineated and set at angles. There are four main aisles. Traveling within the parking lot and entering the parking spaces is somewhat difficult because of the narrow widths of the aisles and the parking spaces.

Adjacent Street Network

The most direct access to the public parking area at Nauset Beach is via Main Street from the center of town, to Beach Road, a distance of approximately 3 miles. Although this is the most direct route, a knowledgeable driver can avoid the eastbound lanes of these roads up to Cedar Land Road. This would result in travelling only a half mile on Beach Road. This factor is important because this is where a police officer is stationed when the parking lot is full. Therefore, if traffic congestion is particularly severe near the East Orleans town center and on Beach Road, a driver familiar with the area (such as a resident of Nauset Heights Road) can use a much less traveled route to get to the police officer. This would result in much less time to get past this "checkpoint".

Traffic Volumes

On what might be considered a typical summer Saturday, traffic volumes on Beach Road are approximately 9,000 vehicles per day east of Pochet Road with a peak hour volume of 800 vehicles between 9 and 10 AM.

An important road off of Beach Road is Nauset Heights Road. This road carries a peak volume of about 3,000 vehicles on a summer day. It provides access to the north end of Nauset Beach for residents with 4WD's. During the peak hour of traffic on Beach Road, 15% of the traffic are vehicles heading to Nauset Heights Road. Since there is currently no limit to the number of vehicles that can use the northern part of the beach, the peak hour on Nauset Heights Road is between 11-12 noon, reflecting the preferential time for 4WD users to go to the beach, unhindered by the parking lot traffic. This peak hour time may also reflect the fact that residents of Nauset Heights wait until beach bound traffic has subsided before travelling to or from their homes.

Traffic volumes and data are included at the end of this report.

Analysis

Essentially, there appear to be two separate traffic problems in the East Orleans/Nauset Beach area. The first occurs before the parking lot is full. There is a large influx of vehicles between 9 AM and noon. Congestion occurs at the tollbooth and in the parking lot. Many vehicles require change or ask questions that the tollbooth attendants answer. The slowdown in the parking lot occurs as the vehicles are channelled into the parking spaces. Doors open and occupants exiting vehicles often interfere with the next vehicle.

The duration of these delays are very similar - it is difficult to determine which has the greater impact. At times the longer delay is at the tollbooth; at other times it is caused by the parking maneuvers and occupants exiting their vehicles . Also, during peak times a second tollbooth attendant is often used, which speeds up this part of the process. As the parking lot becomes full and spaces become more difficult to find, the parking procedure is quite obviously the limiting factor.

After the parking lot is filled, the second, and possibly more severe, traffic problem occurs. A police officer is stationed at Cedar Land Road to reroute beachbound traffic back towards Orleans by turning traffic right onto Cedar Land Road and then right onto Pochet Road. The back up at this point is often quite lengthy, sometimes as much as a mile long, and people often are reluctant to turn away from the beach, instead asking questions, pleading or searching for excuses to pass.

Alternatives

There are no obvious solutions to the Nauset Beach parking problem and its impact on traffic in East Orleans. The Park Department staff and the Police Department do an excellent job of controlling and parking traffic. The popularity of Nauset Beach combined with the constraints of limited parking and access roads are the reasons congestion occurs. The following are potential ways of improving the situation. It is understood that many of these may not be desirable or possible.

1) Pave the dirt parking lots.

This would probably not increase the capacity of these two lots because the attendants currently do an excellent job of maximizing the parking in them. It would, however, reduce the time needed to fill the lots, allowing the line to move faster.

2) Increase parking lot capacity by expanding the parking lot.

Traffic tie-ups occur as the parking lot reaches and exceeds capacity. Increasing the parking lot size would reduce the number of vehicles turned away. Still, it is possible that demand would increase and the problem of turning away vehicles would occur again. Additionally, the problems involved with increasing the number of beach users (more people to watch, more congestion on the beach, septic system capacity) and paved area (environmental) may make this undesirable.

3) Buses/Carpools.

Instead of increasing parking capacity, this alternative would reduce parking demand. Reduced prices for cars with more than four occupants may reduce the total parking demand. Buses from satellite lots (such as the high school) may have a similar effect. Still, the question of whether it is desirable to increase the number of beach goers needs to be addressed.

4) Widen a portion of Beach Road.

From available information, it appears that the Right-of-Way for Beach Road is wide enough to allow for the addition of a third lane and a bicycle path. The third lane could be used as a "queuing lane" for vehicles waiting for parking to become

available at the Nauset Beach parking lot. Local traffic and emergency vehicles could then use the other lanes of Beach Road for travel. A bike path should be considered as part of this improvement to provide safer access for pedestrians and bicyclists. Currently, a dangerous condition exists for bicyclists passing waiting vehicles because passengers often open their doors without warning. A turn-around area for motorists who are dropping off or picking up people should also be considered in this design.

By widening Beach Road from the toll booth to Nauset Heights Road, a queuing area would be created for approximately 60 cars which would probably be sufficient most of the time. The length of the wait would probably discourage many drivers. Police officer control would still be desirable at peak times to ensure safety for turning vehicles and to ensure the lane's use for waiting, not parking. Signs and striping may also be necessary to prevent driveways from being blocked.

Two other advantages of this improvement would be to realign Beach Road near Nauset Heights Road to improve sight distances at the intersection and to place the utilities underground in this area. This alternative would require further study by engineers to determine the proper layout, feasibility, cost and potential environmental consequences.

5) Restripe the parking lot.

Restriping the parking lot would not increase its capacity and would actually reduce the amount of parking if the spaces or aisles were enlarged. The advantage to this would be that cars would probably take less time to park.

6) Pay as you leave.

One characteristic of the traffic patterns at Nauset Beach is that the morning peak hour volume (arriving) exceeds the afternoon peak (departing). Furthermore, all vehicles pay the same amount regardless of length of stay. These two conditions are ideal for a pay as you leave situation. However, the largest traffic tie-ups occur as people wait to park, not wait to pay. Therefore, changing this policy would not improve traffic congestion significantly.

7) Increase parking rates.

Since this is essentially a situation where the demand for parking exceeds the supply of parking spaces, an obvious solution is to balance this equation by increasing parking fees, at least on peak days, or during certain times on peak days.

This is not only the cheapest and easiest way to solve the area parking and traffic problem, it would probably increase revenues. The only question is arriving at a fee structure that would place supply and demand in equilibrium.

8) Use a "satellite waiting area"

A large part of the traffic congestion occurs at Cedar Land Road after the parking lot is full. A police officer is stationed there to inform people that the parking lot is full and redirect them off of Beach Road, onto Cedar Land Road and back to Barley Neck Road. Residents of East Orleans display a sticker and are allowed to pass, as are others that say they have a destination other than the beach parking lot.

Although there are signs before the Main Street/Tonset Road intersection that inform motorists when the parking lot is full, people either do not believe them or try to go to the beach anyway, thinking that a space will open up. Many people are persistent in asking to be let through. One driver, when told by an officer that she was interfering with traffic, made a U-turn, travelled back down Beach Road a short distance, U-turned again and queued up at the checkpoint again. Unfortunately, this determination paid off on her third try as spaces did open (informed via radio) and several vehicles were allowed through.

Allowing this to happen undermines the entire "parking lot full" policy. As word spreads about how to gain entrance, congestion at this point can only worsen and spread further back towards East Orleans center. Furthermore, even drivers that do abide by the officers directions when stopped at Cedar Land Road add two unnecessary vehicle trips to the already congested East Orleans center.

One way to alleviate some of the congestion near Cedar Land Road and near East Orleans center would be to establish a waiting area for beach bound vehicles between Orleans center and East Orleans center. Signs would direct vehicles to this area when the parking lot is full. If people desire to wait for a parking space, they should be allowed to, but at an area that does not interfere with other vehicles.

Under this policy, when the parking lot is almost full, an attendant would be directed to an area that has sufficient unused space to allow vehicles to queue up. Meanwhile, parking lot full signs would be uncovered near Tonset Road and Main Street. Vehicles would wait at the designated area and as space became available, tickets would be sold and the vehicles would proceed to the beach. A second attendent would check the tickets at the beach tollbooth. This procedure would continue until sufficient spaces were available at the beach so waiting was no longer necessary.

The difficulty in implementing this policy is informing persons of where they must go when this procedure is in effect, and in doing so in a timely and effective manner. Ideally, motorists should be directed to this point without first travelling through East Orleans. A logical queuing area would need to be identified. Possibilities include the Town Hall parking lot, the Legion Hall parking lot or a school parking lot.

The "parking lot full policy" would require a public information campaign. A description of the procedure could be made available at area businesses and in newspapers and at the toll booth. The parking lot full signs on Main Street and Tonset Road could have an additional message "go to Legion Hall waiting area". Hopefully, the majority of beach traffic would understand and expect this policy. It would result in a more equitable wait for parking as the "chance of being at the front of the line at Cedar Land" would be eliminated. If the program worked effectively, beach bound vehicles would only pass through the center of East Orleans when they are assured a parking space.

This procedure would take a fair amount of coordination but can work effectively. Other details, such as police officer control at the waiting area, a refreshments stand and relief station would need to be considered as well.

9) Fine tune parking procedures.

Getting the cars from the toll booth into the parking spaces generally does not cause vehicles to back up beyond the toll, except when the parking lot is approaching capacity. At this time, the dirt lot adjacent to the toll booth is being filled. The problem appears to be the proximity of Beach Road to this lot. Cars simply cannot enter the parking area until a vehicle parks, causing a back up on Beach Road. Since parking spaces are not defined in this area, the parking maneuver takes much more time.

An improvement to this situation might be to fill this dirt lot before the main lot reaches capacity. One way to do this may be to alternate vehicles into the dirt lot and into the main lot until the dirt lot fills. Filling the other dirt lot earlier in the day may also be desirable, as the beach buggy traffic to the south beach sometimes interferes with this area. The last part to fill should be the southeast corner of the main lot, which takes the remaining traffic well away from Beach Road.

This raises the obvious question of whether "early beach goers" are willing to put up with a longer walk and greater inconvenience than "late beach goers". A second issue would be whether pedestrians from the dirt lot would interfere with other traffic.

10) Develop the Smith Neck Road access

Smith Neck Road at the present time is a dead end road off of Beach Road between Nauset Heights Road and the tollbooth. The dead end is located behind the road to the beach buggy parking lot. At one time this road was used as an access to the beach by 4WD vehicles. It may be worthwhile to reopen this road again for all types of vehicles, in order to fill the parking lot faster and to provide a queuing area for vehicles waiting to get into the lot. Alternatively, it could be reopened for 4WD vehicles only, to provide a more direct access to the Outer Beach and to remove them from the regular beach traffic before the toll booth and consequently, keep them from interfering with vehicles trying to park in the lot.

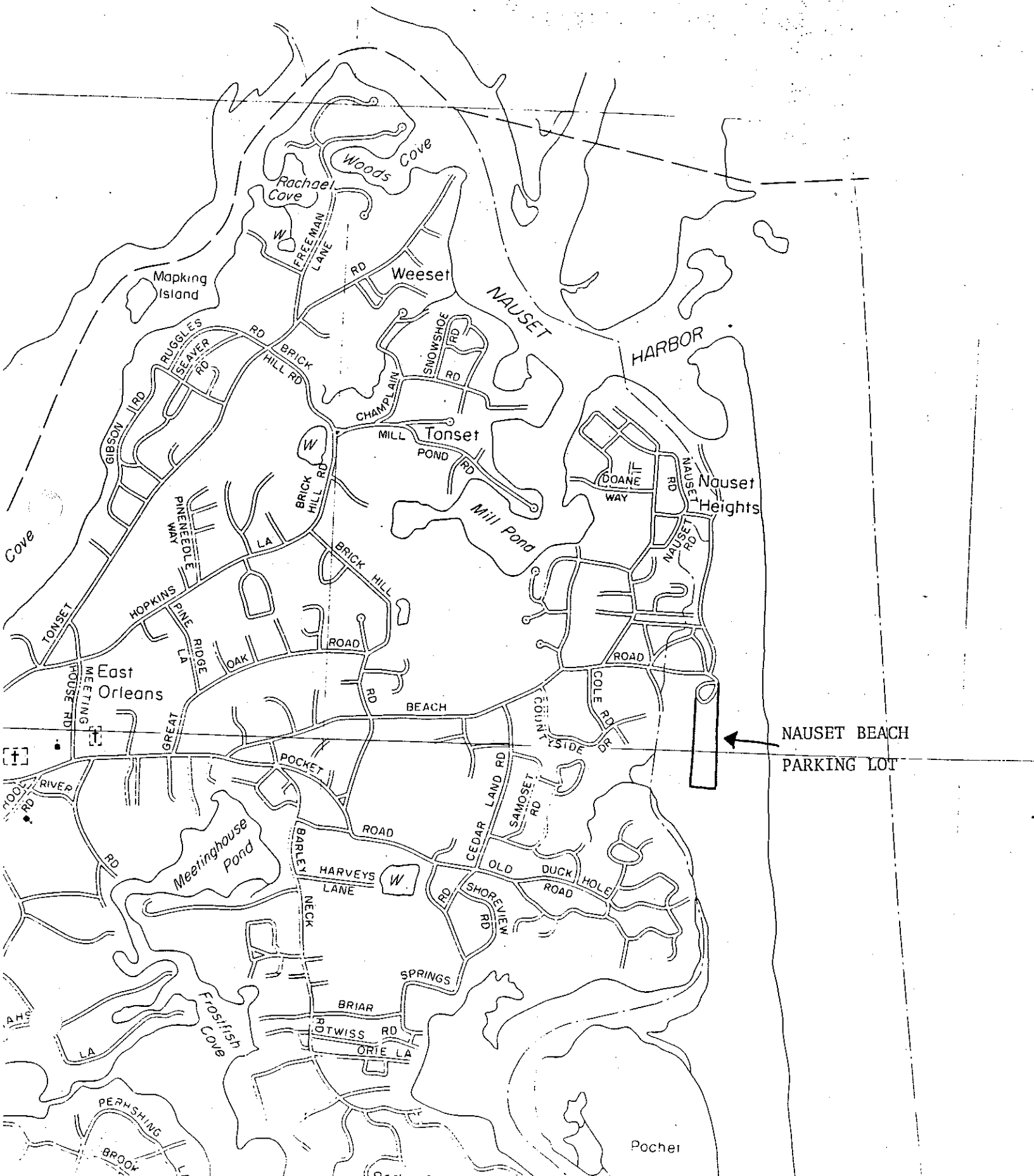
Conclusions and Recommendations

The CCPEDC transportation staff, after analyzing and assessing the various alternatives, has decided that one short-term and one long-term alternative should be considered. The best short-term plan is to utilize a satellite waiting area. If enough publicity and information is made available to the beach-going public so that there is not a great deal of confusion about how the plan works, than it could be very successful in eliminating the congestion at Cedar Land Road. The satellite waiting area must be large enough to accommodate every waiting vehicle or else a traffic problem will be created at the site. Implementation of this policy will require careful planning for it to work effectively, and there can be no exceptions to the policy.

The long-term alternative that warrants further study is to widen Beach Road by adding another lane and a bike path. If the town decides to pursue this avenue, the various objectives that the Town should consider including in the engineering scope of work are:

(1) Develop a queuing lane from Nauset Heights Road to the Nauset Beach parking lot,
(2) provide two travel lanes for regular traffic,
(3) improve the entrance and exit of the parking lot,
(4) design a turn-around area for vehicles dropping off and picking up passengers,
(5) design a safe walking and biking path from Nauset Heights Road to the beach
(6) realign Beach Road to ensure adequate sight distance for vehicles turning at Nauset Heights Road.

If it is also desired by the town, the engineering work could also include the design of access from Smith Neck Road to the parking lot or Outer Beach as part of the overall concept.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Rachael Cove
FREEMAN LANE
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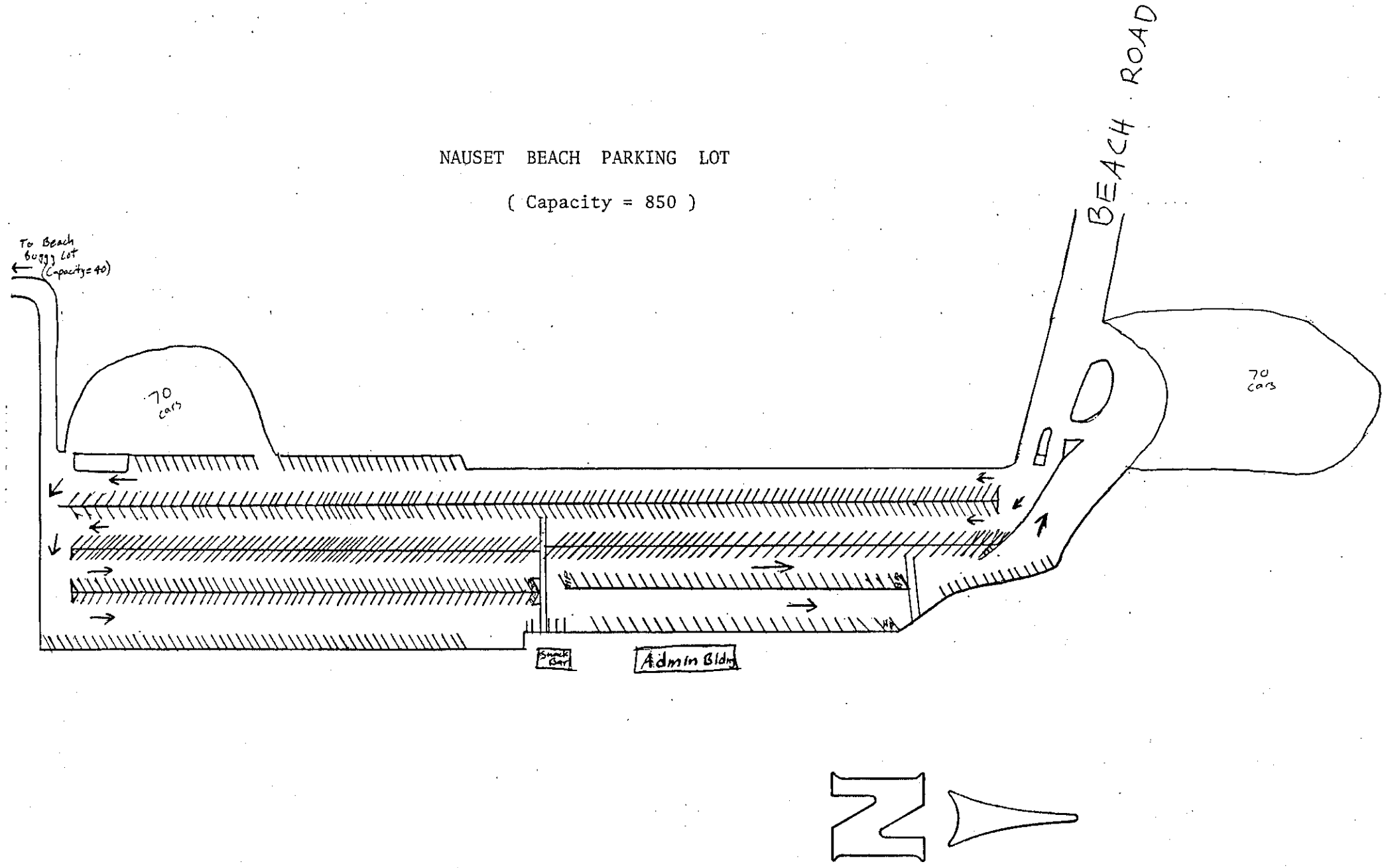
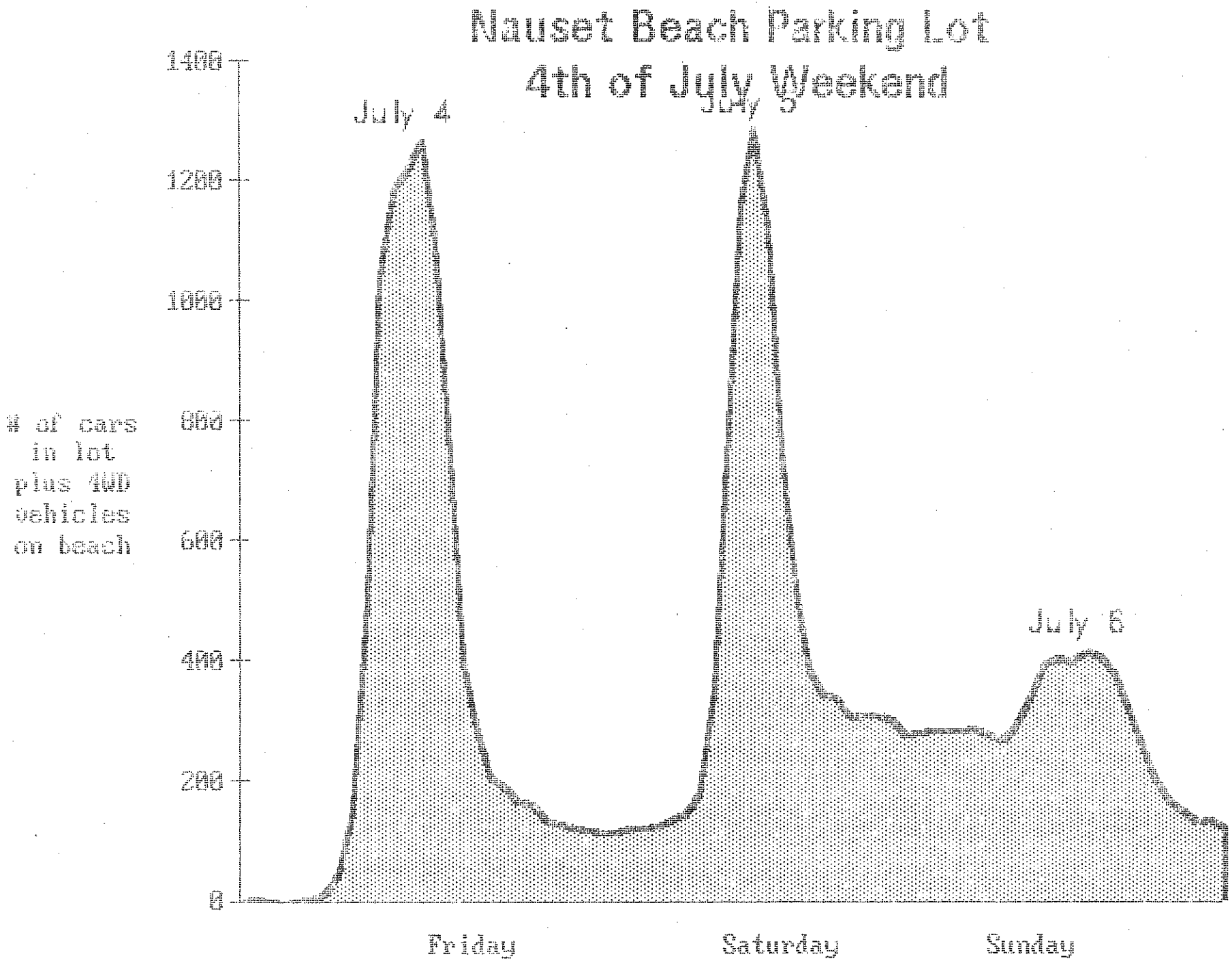
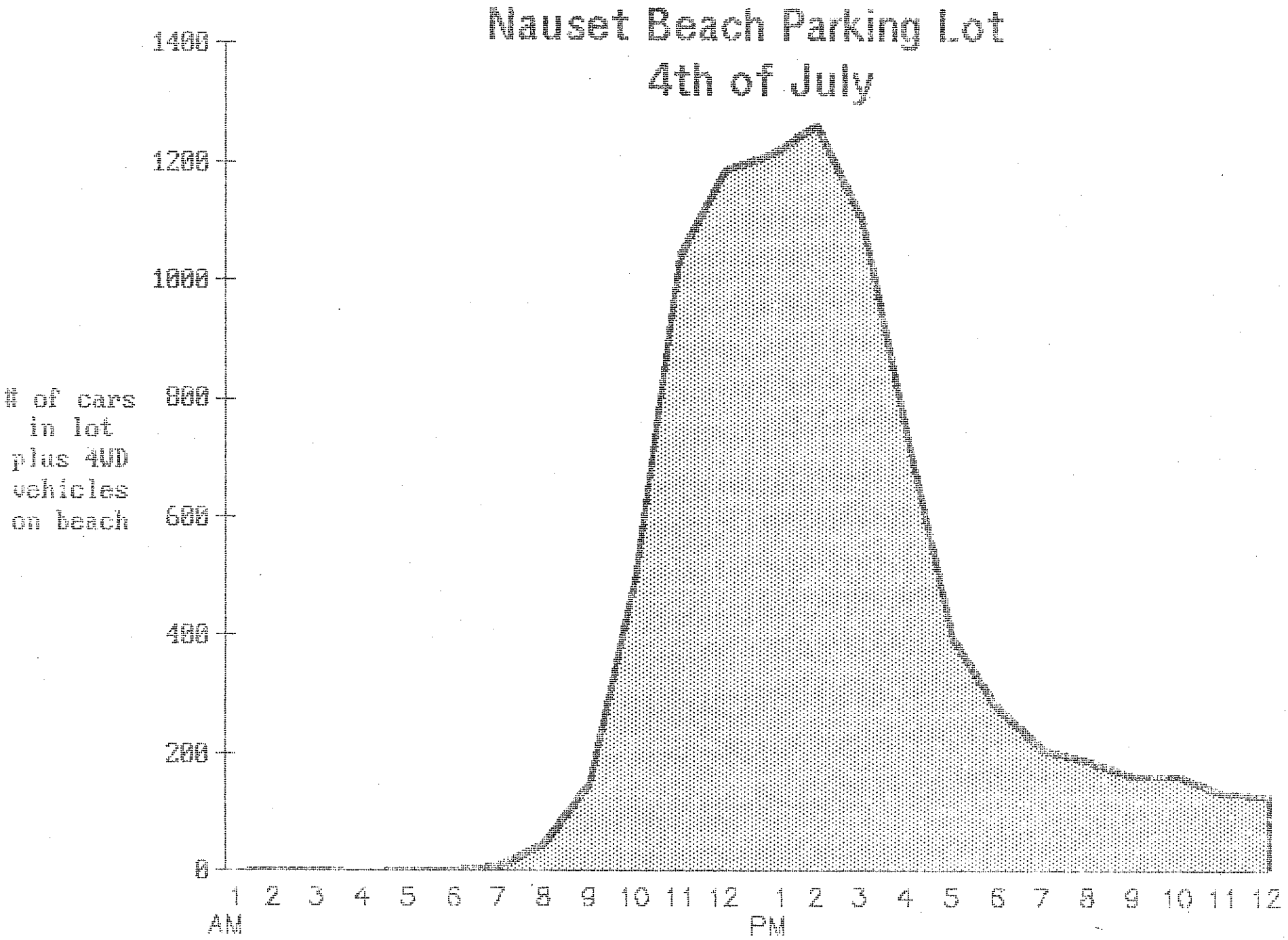
BRICK HILL RD
SNOWSHOE RD
CHAMPLAIN
MILL POND RD
Tonset
Mill Pond
DOANE WAY
NAUSET RD
Nauset Heights
GIBSON RD
PINEEDLE WAY
LA
BRICK HILL RD
BRICK HILL ROAD
HOPKINS
TONSET
PINE RIDGE LA
OAK
East Orleans
MEETING HOUSE RD
GREAT POCKET
BEACH
COLE RD
COUNTY SIDE DR
NAUSET BEACH
PARKING LOT
RIVER RD
Meetinghouse Pond
BARLEY NECK
HARVEYS LANE
CEDAR LAND RD
SAMOSET RD
OLD DUCK HOLE ROAD
SHOREVIEW RD
SPRINGS
BRIAR
ROTWISS RD
ORIE LA
Frostfish Cove
PERHSHING
BROOK
Pochet

NAUSET BEACH PARKING LOT

(Capacity = 850)




Nauset Beach Parking Lot
4th of July Weekend
July 4
July 5
July 6
1400
1200
1000
800
600
400
200
0
# of cars in lot plus 4WD vehicles on beach
Friday
Saturday
Sunday


Nauset Beach Parking Lot
4th of July
# of cars in lot plus 4WD vehicles on beach
1400
1200
1000
800
600
400
200
0
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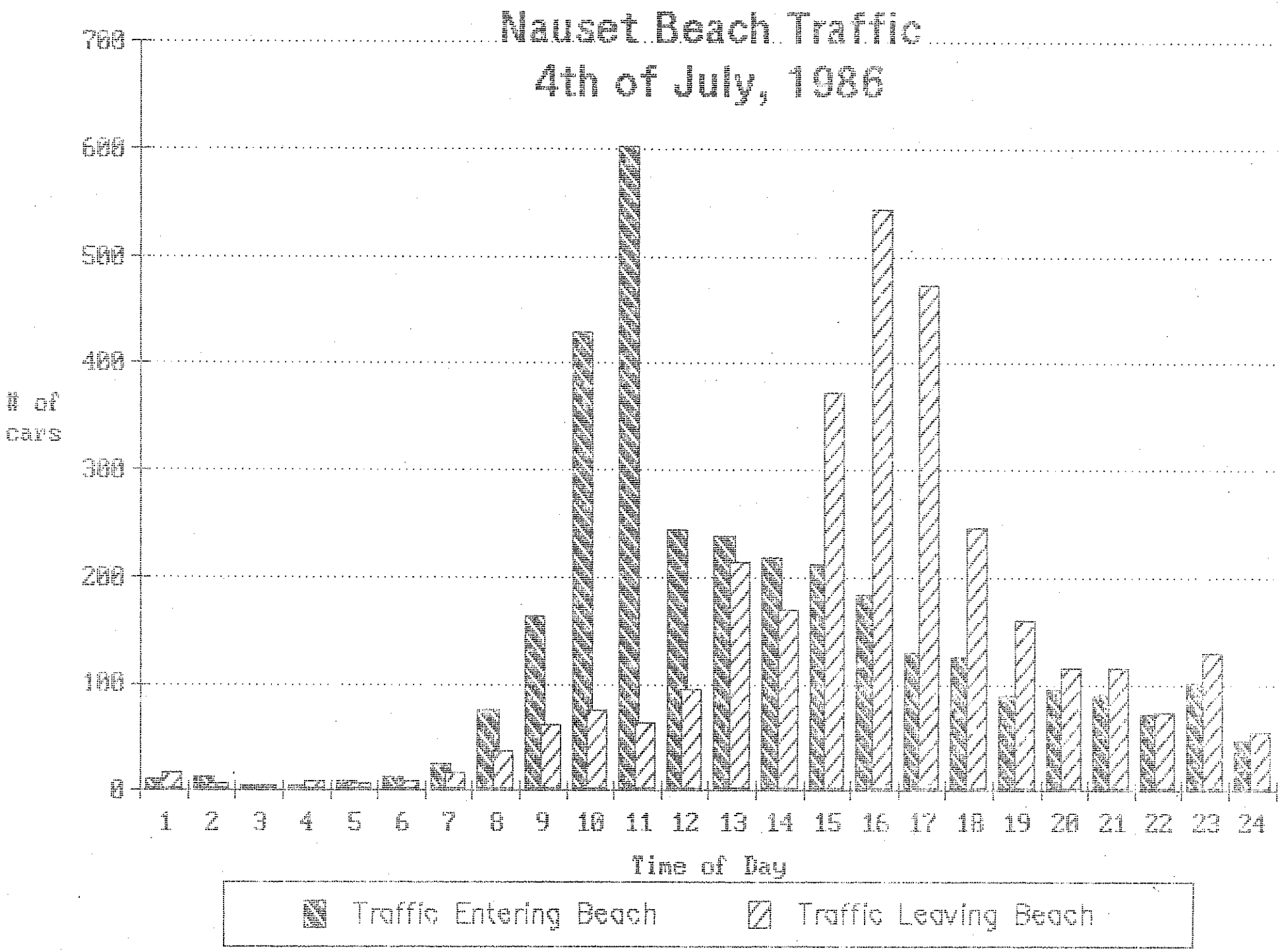
AM
PM


Nauset Beach Traffic
4th of July, 1986
700
600
500
400
300
200
100
0
# of cars
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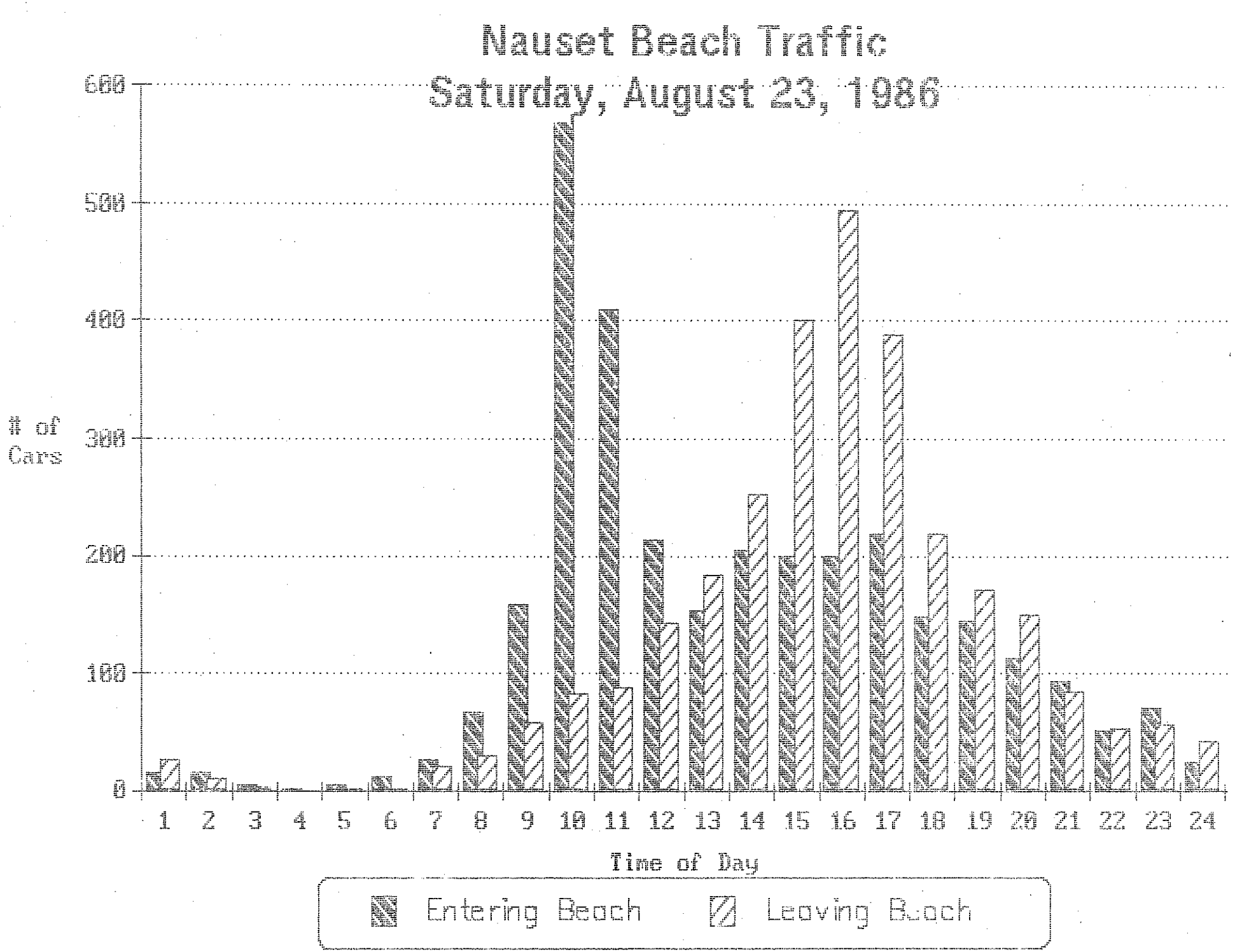
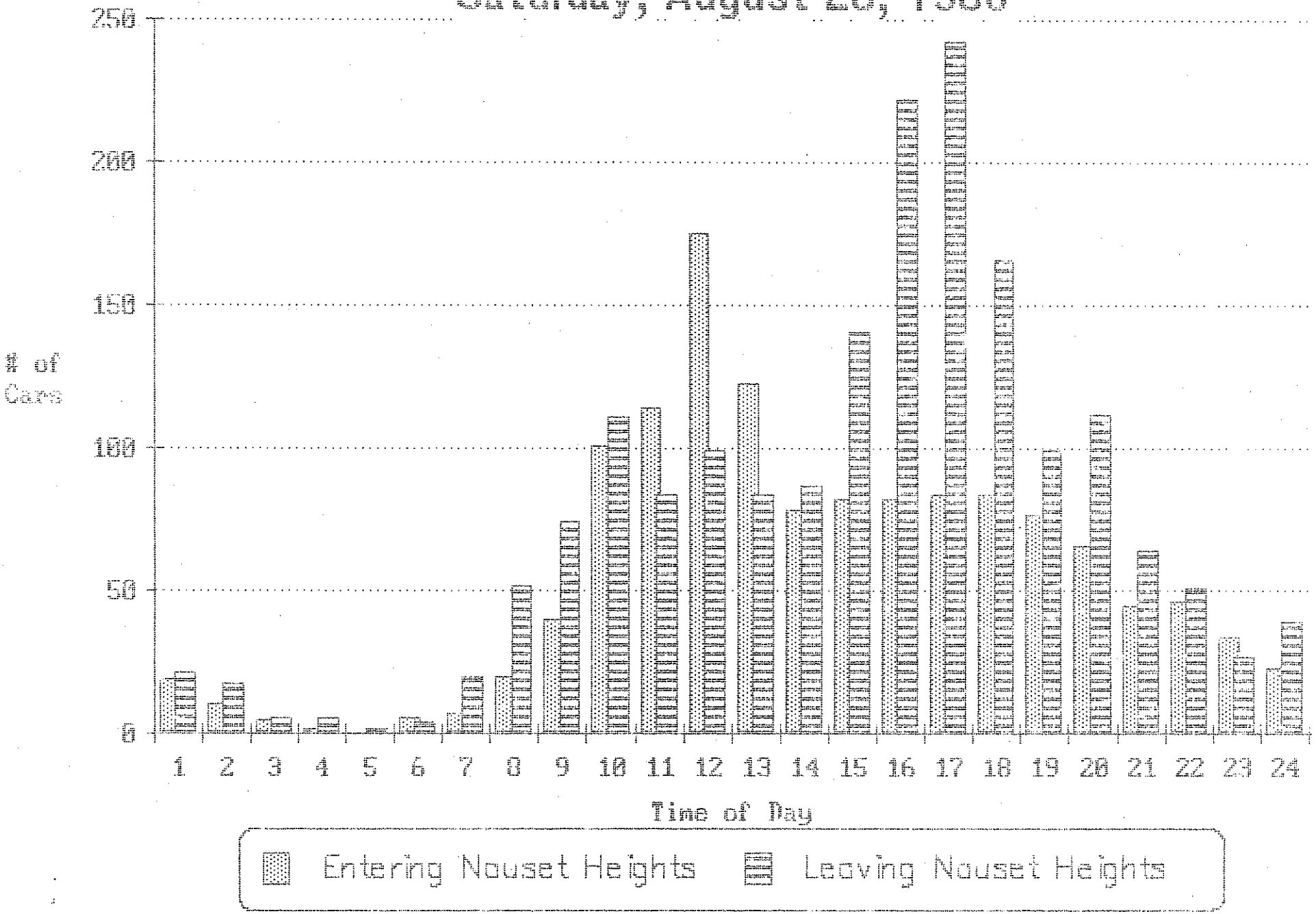
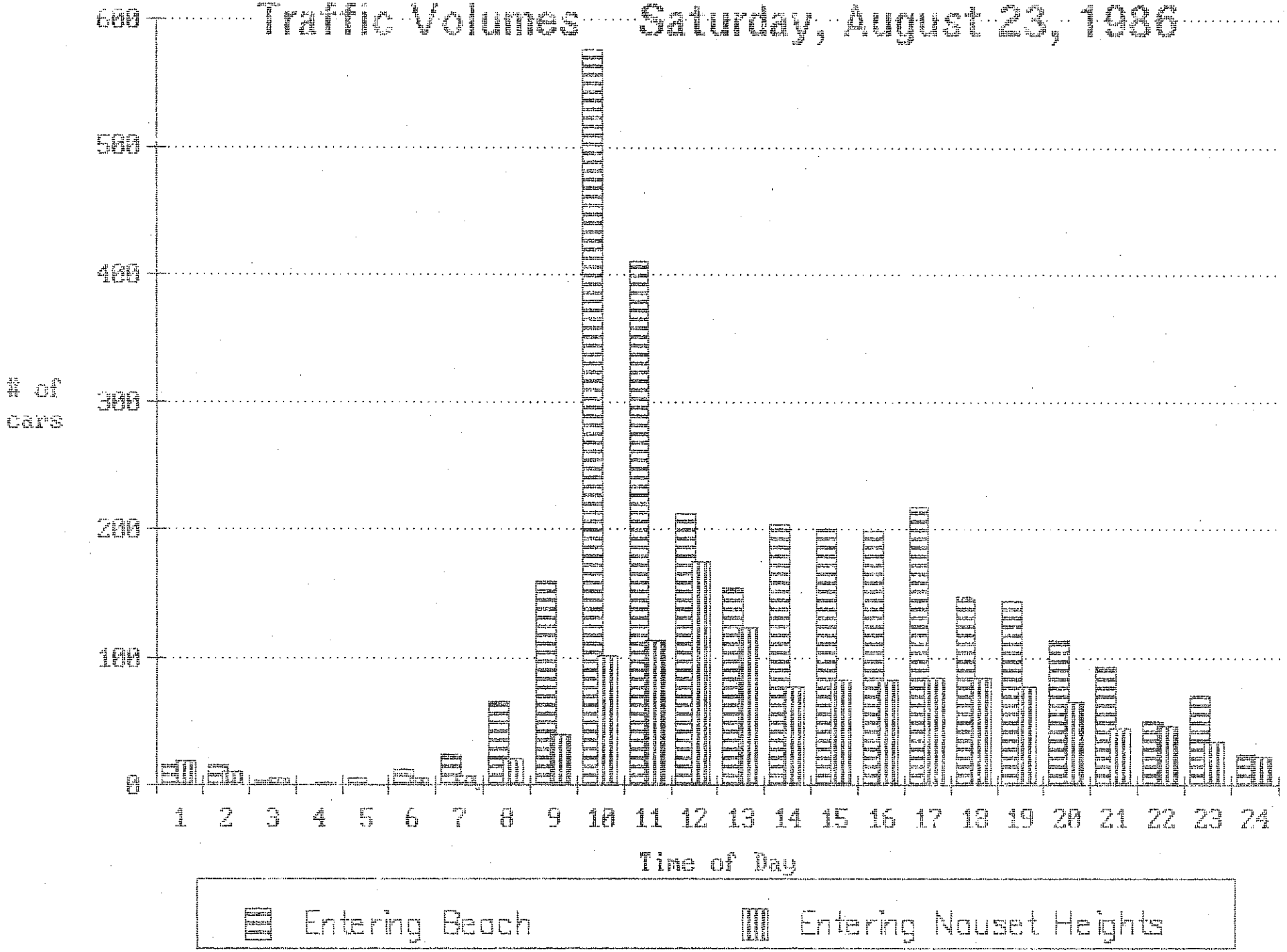
Time of Day
Traffic Entering Beach
Traffic Leaving Beach


Nauset Beach Traffic
Saturday, August 23, 1986
600
500
400
300
200
100
0
# of Cars
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time of Day
Entering Beach
Leaving Beach

Nauset Heights Traffic
Saturday, August 23, 1986




Traffic Volumes Saturday, August 23, 1986
600
500
400
300
200
100
0
# of Cars
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time of Day
Entering Beach
Entering Nauset Heights