Summary of Findings:

Parking Demand for Multiplex Theaters

Submitted to:
Karen Aspelin, P.E., P.T.O.E.
ITE District 6 Technical Chair
Parsons Brinckerhoff
Albuquerque, New Mexico
Phone (505) 350 6972
Fax (505) 881 7602
aspelin@pbworld.com

Submitted by:
PSU ITE Student Chapter
Portland State University
Department of Civil & Environmental Engineering
Portland, OR 97207
Phone (503) 725-4285
Fax (503) 725-5950
Contact:
Steven Boice
boicest@cecs.pdx.edu

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PORTLAND STATE UNIVERSITY
ITE Student Chapter

1.0 Introduction

The objective of this project is to contribute to the lack of detailed parking generation for multiplex theaters. In fulfillment of the project's objectives, parking counts were collected at three multiplex theaters in the Portland, Oregon metropolitan area, once per hour, on the hour, on three traditional peak theater attendance days. The ITE parking generation methodology for data collection was followed for all theater parking counts[1]. The data collection program consisted of collecting general information about the theater sites (parking geometry, access locations, and adjacent land use), counting the total number of parking spaces available at each site, and counting the number (and percent of the total) of parking spaces that were occupied by vehicles every hour. In addition, the number of screens and total seats at each theater site was determined, as well as theater building gross square footage and the number of tickets sold on the days of data collection. Parking counts were collected by traversing the theater parking facility using a hand-held counting device after discussion with theater management and personnel. This data collection is hoped to contribute to the lack of surveys at multiplex theater sites.

2.0 Summary of Findings

The Portland State University ITE student chapter collected parking counts at three multiplex theaters in the Portland metropolitan area listed below.

- *Site 1:*
  Wilsonville Stadium 9 (Regal)
  29300 SW Town Center Loop
  Wilsonville, OR 97070
  503-682-8575
- *Site 2:*
  Tigard 11 Cinemas (Regal)
  11626 SW Pacific Highway.
  Tigard, OR 97223
  503-684-6348
- *Site 3:*
  Movies On TV Stadium 16 (Regal)
  2929 SW 234th Avenue
  Hillsboro, OR 97123
  503-259-9226

[1] *Parking Generation*, 3rd Edition, Institute of Transportation Engineers, 2004.

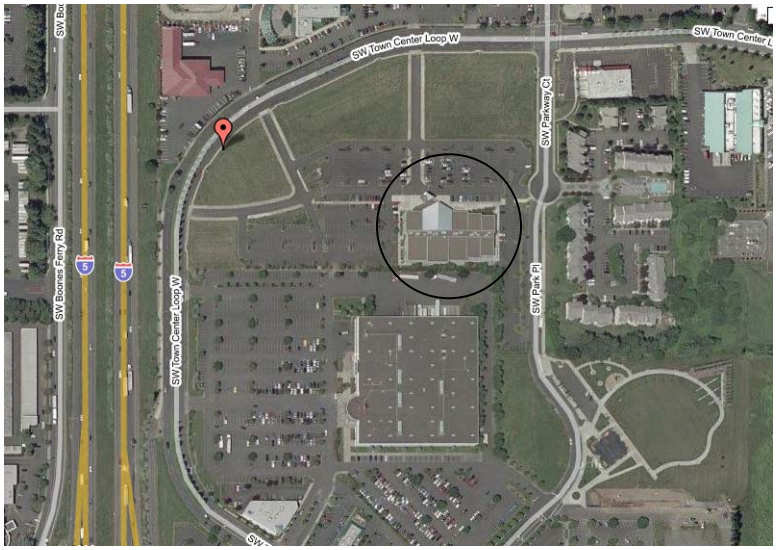

Figure 1: Site 1

Figure 2: Site 2

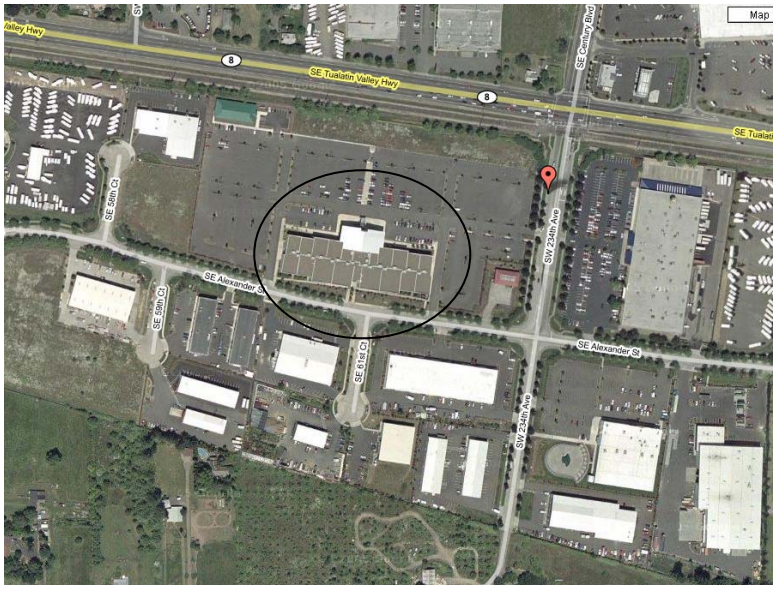

Figure 3: Site 3

The three theater sites all feature isolated parking facilities with minimal access thus making them ideal for such a data collection project. All use of the theaters' surrounding parking facilities can thus be counted as theater parking only. The data collection effort consisted of counting the total number of parked vehicles in the theater parking facility with a hand-held counting device on the top of every hour between 12:00 noon and 12:00 midnight on the days of:

- Friday - November 25, 2005
  - Friday after Thanksgiving holiday
- Monday - December 26, 2005
  - Monday after Christmas holiday
- Friday - December 30, 2005
  - Friday before New Years Eve holiday

These days were selected by the ITE District 6 data collection committee after review of historical theater ticket sales. These days surrounding the holidays have proven to be peak generators with respect to multiplex theaters. The highest peak hour demand observed at each respective theater for collection days is summarized in Table 1 along with specific theater features.

Table 1: Peak Parking Demand – Portland Metropolitan Area

Site	*Screens*	*Seats*	*GSF*	*Parking Spaces*	*Peak Parking Demand, vehicles (Hour Beginning)*		
					11/25/05	*12/26/05*	*12/30/05*
1	9	2,462	41,350	476	350 (4 PM)	311 (4 PM)	225 (8 PM)
2	11	3,054	54,000	806	475 (5 PM)	592 (6 PM)	354 (8 PM)
3	16	3,412	80,465	892	397 (4 PM)	N/A	N/A

As shown, the peak hour demand for all three respective theaters is near half the parking capacity for these three peak generating days. It was anticipated, based on historical observations at theater sites, that these three days would yield demand near parking capacity. The highest percentage fill was observed at site 1 on November 25th, where 74-percent of the parking facility was occupied. The lowest percentage fill (44-percent) was observed at site 2 on December 30th.

Note that data was not able to be collected at site 3 for all days due to unavailable staff. Figures 4-6 illustrate the parking demand by hour for sites 1, 2 and 3 respectively.

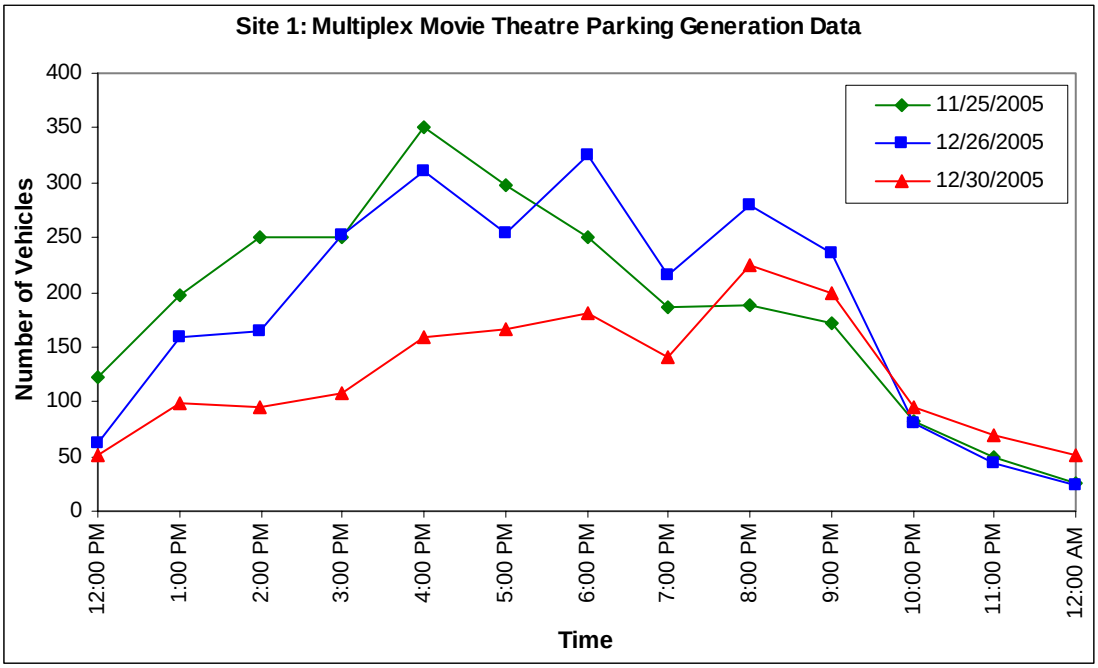

Figure 4: Parking Demand - Site 1

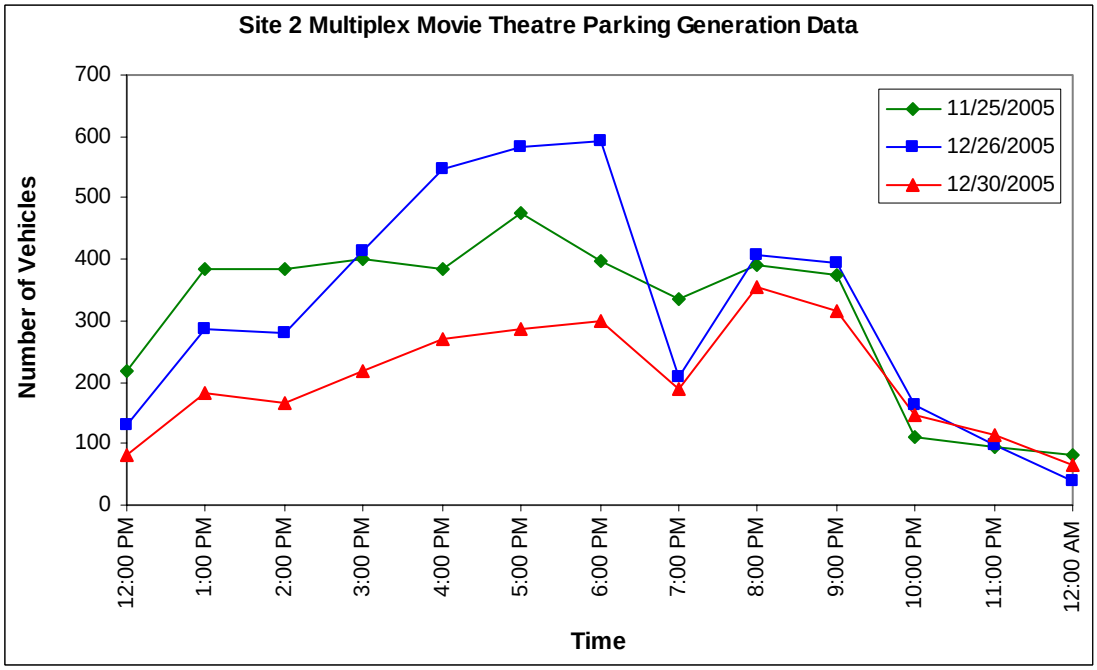

Figure 5: Parking Demand – Site 2

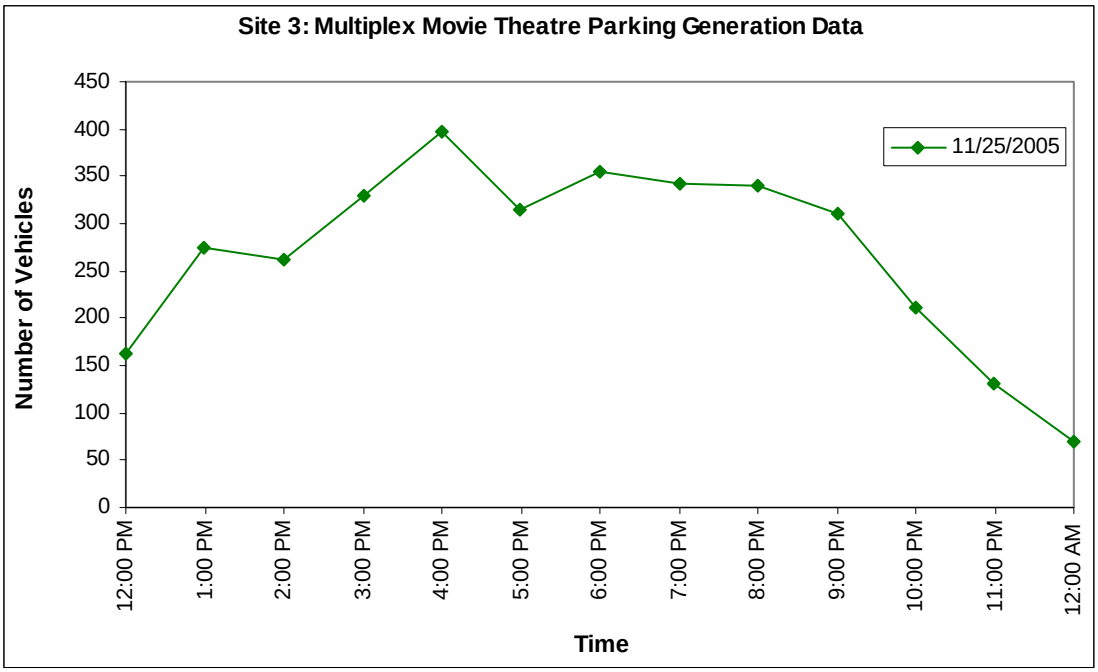

Figure 6: Parking Demand – Site 3

Note that there is a concave trend with peaking of parking occurring during the afternoon (4-6 PM) which also happens to be the matinee time. There is a slight peaking during the evening period (7-8 PM), but generally one would anticipate this peaking to be higher as indicated in ITE's Parking Generation Manual[2]. Demand appears to be much lower on December 30th than other days. Demand is highest on December 26th, 2005. The parking trend at sites 1 and 2 tend to follow the same distribution throughout the day for all three days surveyed.

With parking demand and theater features known, peak parking demand ratios were estimated for each respective theater site and are revealed in Table 2.

Table 2: Peak Parking Demand Ratios

Supply Ratios			*Peak Demand Ratios (vehicles/seat)*		
Site	***Spaces/Seat***	***Spaces/Screen***	***11/25/05***	***12/26/05***	***12/30/05***
1	0.19	53	0.14	0.13	0.09
2	0.26	73	0.16	0.19	0.12
3	0.26	56	0.12	0.12	0.12

The three theaters in question yielded an average of 0.24 parking spaces per seat and an average of 61 parking spaces per screen. Looking at average parked vehicles per seat for study days, averages of 0.14, 0.15, and 0.11 were observed. Importantly, data published in ITE's 3rd edition of Parking Generation indicates an average ratio of 0.26 vehicles per seat and an 85th percentile ratio of 0.36 vehicles per seat, which is determined from sites with 10 or fewer screens. The observed ratios are thus much lower than would be anticipated for these generally high attendance days.

[2] IBID

One apparent reason for these lower than expected ratios could be due to that Christmas Eve and New Years Eve fell on a Saturday. With this, parking surveys were conducted on the Friday before Christmas Eve, the Monday following Christmas (which was holiday for many people) and the Friday before New Year's Eve. Therefore the rates observed could be lower due the holidays being on a weekend and not a typical weekday.

To further explore the low parking demand, a review of movies shown at all respective theaters was done to ensure that highly publicized movies were being shown during the data collection days. In this, at least four highly publicized and newly released movies were indeed being shown on all three days and are listed below.

- King Kong
- Fun with Dick and Jane
- Chronicles of Narnia
- Harry Potter and the Goblet of Fire

Added investigation for the causation of low observed parking rates extended to a review of ticket sales. A comparison of ticket sales for each theater site was compared to the national average for each data collection day. Review of tickets sales for North American theaters[3] on the respective data collection days concluded that the three data collection days were indeed high and are provided in Table 3. National ticket sales for these days are amongst the highest of the year as expected and are comparable with the peak days in the summer months (Table 3) which tend to be high. Thus it concludes that for the most part, moviegoers were going to theaters on these study days, just not the three in question.

Table 3: North American Ticket Sales

Survey Dates	***Ticket Sales***	***Other Peak Dates (Summer)***	***Ticket Sales***
Friday 11/25/05	$58,415,568	Saturday 7/2/05	$46,793,854
Monday 12/26/05	$43,222,893	Saturday 7/16/05	$56,469,006
Friday 12/30/05	$44,600,000	Saturday 7/23/05	$47,046,360

Looking at ticket sales for the three study theater sites reveals somewhat low ticket sales when compared to total seats and available parking as shown in Table 4.

Table 4: Study Theater Ticket Sales

		Ticket Sales		
Site	***Seats***	***11/25/06***	***12/26/06***	***12/30/06***
1	2462	2462	2399	1459
2	3054	3608	3588	2207
3	3412	3251	N/A	N/A

Average ticket sales over all three days appear to be about 4 times the total number of parking spaces. This implies that over a 12 hour period, each parking space had a turnover rate of 4 (4 vehicles/12 hours) assuming every attendee drove his/her private vehicle which is not likely. Assuming, an average occupancy of 1.5, yields an average turnover rate of 3. Assuming each movie showing lasts 1.5 hours, this indicates that each parking space was unoccupied for 7.5

[3] www.the-numbers.com

hours between 12 PM and 12 AM. Thus it appears based on observed parking demand on these three high attendance days that all three parking facilities are over-sized.

3.0 Conclusion

It was discovered that two new multiplex theaters have opened in the Portland metropolitan region within the last year. These two theaters are:

- Bridgeport 18 (Regal)
  7329 SW Bridgeport Road
  Tigard, OR 97224
- Cedar Hills Crossing 16 (Century)
  3200 SW Hocken Avenue
  Beaverton, OR 97005
  503-672-7469

These two new theaters are larger than the three study theater sites and are also located centrally between study theaters. Figure 7 displays the three study theater sites as smaller blue markers and the additional two new theater sites as larger red markers. Note that the new Cedar Hills Crossing theater is centrally located between theater sites 2 and 3. Additionally, the new Bridgeport theater site is centrally located between theater sites 1 and 2. These two new theaters may be attracting a portion of the trips that may have otherwise traveled to study theaters. To support this, an effort to collect ticket sales for the two new theaters was made. Ticket sales for Bridgeport 18 were able to be collected, but efforts failed for Cedar Hills Crossing. These ticket sales are also noted in Table 5. Interestingly, ticket sales for Bridgeport are double those for each respective study theater site. Additionally, management at the three study theaters acknowledged the fact that ticket sales had decreased after the opening of these two new theaters.

Table 5: Ticket Sales – New Theaters

	Ticket Sales		
Theater Site	***11/25/06***	***12/26/06***	***12/30/06***
Bridgeport 18	7062	7725	5981
Cedar Hills Crossing 16	N/A	N/A	N/A

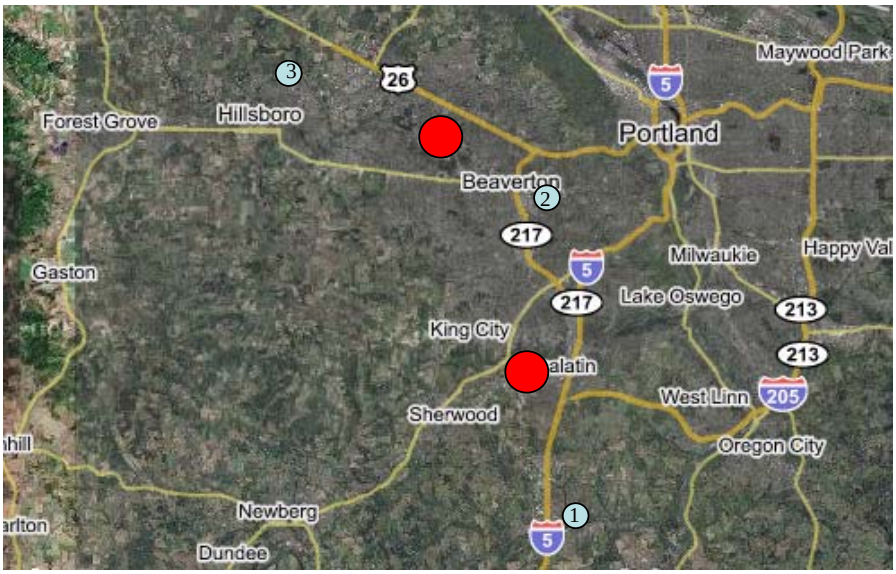

Figure 7: Site Map

A student on our data collection team attended a showing at Cedar Hills Crossing on December 26, 2005 and reported that the parking facility was completely full.

This data collection has hinted that due to the addition of two new large multiplex theaters located near study theaters, parking demand ratios observed were found to be lower than expected. It is believed that based on general observations of these two new theaters, that the parking demand on analysis days at these theaters would be near that indicated in ITE's Parking Generation Manual. Based on actual data collected from three theater sites on high attendance days, it has been shown that the parking facilities are twice as large as they need be.

4.0 Acknowledgements

The PSU ITE Student Chapter would like to recognize the remarkable efforts of the individuals who participated in the data collection. Thanks also go to Randy McCourt, P.E., of DKS Associates, Chris Maciejewski, P.E., of DKS Associates, and PSU faculty Professors Chris Monsere and Robert Bertini.