MEMORANDUM

Date:	April 9, 2008	**TG:**	07365.00
To:	Keith Maehlum, Columbia Plaza Development LLC		
From:	Dan McKinney, Jr., The Transpo Group Scott Lee, The Transpo Group		
Subject:	Site Access Analysis Memorandum – Columbia Plaza		

The purpose of this memorandum is to evaluate the site access operations for the proposed Columbia Plaza Project. This includes providing a project description, calculating the trip generation and distribution, and evaluating the operations of the parking garage access.

Project Description

The Columbia Plaza project site is located to the northwest corner of the Rainier Avenue S/S Edmunds Street intersection, in Seattle, Washington. The proposed project would construct 14 townhouses and 298 mid-rise apartments with approximately 10,200 gsf of retail space. The project site is currently occupied by 18,000 sf grocery store. The horizon year for the full development of the project is anticipated to be 2010.

The proposed project will also include a below grade parking garage with approximately 330 parking stalls. The project includes frontage along S Edmunds Street and Rainier Avenue South; however, vehicular access to the parking garage will be from S Edmunds Street as this provides for a safer and more efficient access location.

Site access via Rainier Avenue S was also considered but several factors made this less desirable from a traffic operations and safety aspect, including:

- The site access would be off-set from S Angeline Street creating the potential for conflicts between left-turning vehicles onto Rainier Avenue S.
- Rainier Avenue S has a higher roadway classification (Rainier Avenue S is classified as a principal arterial and S Edmunds Street is classified as an access street) where access management is desired. Limiting the number of driveways, increasing spacing between driveways, and consolidating driveways is desired on principal arterials. With two adjacent driveways located in close proximity (bank access and dentist access), the spacing of driveways on a principal arterial would be less than ideal.
- High volumes of traffic on Rainier Avenue S result in limited gaps for left turning vehicles to safely and efficiently enter or exit the site. In addition, Rainier Avenue S is a 4-lane roadway with no center turn lane. Crossing a high

volume multiple lane roadway with no left turn lane would make it difficult for vehicles to make left turns into and out of site. Entering vehicles from the south would be required to decelerate and often stop in the center through travel lane to make a left into the site, which would increase the risk for rear end collisions and added congestion along the corridor. Exiting left turning vehicles crossing a multiple lane roadway without a center refuge lane have multiple conflict points that also increase the risk for collisions.

Trip Generation

Project traffic impacts are measured using trip generation and distribution. In order to estimate the proposed project's trip generation, daily, AM and PM peak hour vehicle trip rates for the residential and retail components were developed. Vehicle trip rates were based on information from the ITE *Trip Generation*, 7th Edition (2004). Specifically, the average rates for Rental Townhouse (LU 224), Mid-Rise Apartment (LU 223), and Specialty Retail (LU 814) land uses were used, which best represent the proposed projects uses. Table 1 summarizes the resulting vehicle trip generation estimates.

Table 1. Net New Vehicle Trip Generation

Land Use	Size	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Rental Townhouse (LU 224)	14 DU	80[1]	3	7	10	5	5	10
Mid-Rise Apartment (LU 223)	298 DU	1250	28	61	89	60	44	104
Specialty Retail (LU 850)	10,200 sf	450	34	36	70	12	16	28
Total		**1,780**	**65**	**104**	**169**	**77**	**65**	**142**

1. Daily rate not available for ITE LU #224 so ITE LU #230 Residential Condominium/Townhouse was used for calculating daily trip generation.

The proposed project is expected to generate approximately 1,780 trips per weekday, 169 AM peak hour trips, and 142 PM peak hour trips.

Trip Distribution

Project traffic generated by the proposed project was distributed to the surrounding local and regional street system based on information published by the Department of Planning and Development. This includes approximately 50 percent traveling to/from the north, 35 percent to/from the south, 5 percent to/from the east, and 10 percent to/from the west.

Traffic Volumes

Existing weekday PM peak hour traffic volumes were collected in March of 2008 at the intersection of Rainier Avenue S / S Edmunds Street. A one percent annual growth rate was used to increase traffic volumes to a 2010 horizon year. This growth rate is based on historical count data near the project site.

Entering and exiting volumes from the Rainier Avenue S / S Edmunds Street intersection were used to determine the volume of vehicles adjacent to the site.

Site Access Analysis

A level of service (LOS) analysis was conducted for the proposed site access driveway on S Edmunds Street for the weekday PM peak hour condition.

The LOS analyses methodology was based on procedures identified in the Highway Capacity Manual (TRB, 2000), and was evaluated using the Synchro 6 analysis software. Traffic operations for an intersection are described alphabetically with a range of levels of service (LOS A through LOS F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. LOS is measured in terms of total vehicle delay by lane group for unsignalized intersections. Table 2 shows the LOS at the site access during the weekday PM peak hour.

Table 2. Weekday PM Peak Hour LOS

	2010 With Project	
Intersection	**LOS[1]**	**Delay[2]**
S Edmunds Street / Site Access		
Southbound	B	10.1
Eastbound	A	1.5
Westbound	A	0.0

1. Level of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. WM = Worst Movement.

As shown in Table 2, the with-project LOS is anticipated to operate at LOS B.

The anticipated driveway spacing between the proposed driveway location and Rainier Avenue S / S Edmunds Street intersection is approximately 175 feet for the S Edmunds Street access. Intersection analysis at Rainier Avenue S / S Edmunds Street was conducted during 2010 with project conditions to determine if intersection queues would extend beyond the proposed driveway location. The queue length analysis reports the 95th percentile queue at the eastbound approach extend less than 100 feet. Based on this analysis, queuing from the adjacent signalized intersection would not impede operations of the site access.