



Date: September 9, 2011
To: University Heights Mayor & City Council
From: Kent Ralston; Assistant Transportation Planner
Re: Shive-Hattery Technical Memorandum

At your request, MPO staff has worked with Brian Willham (Shive-Hattery) to update the traffic review associated with the proposed One University Place Planned Unit Development (PUD). The attached technical memorandum provides an updated review of the traffic operations at both the Sunset Street / Melrose Avenue intersection and main entrance to the proposed PUD. The traffic review uses the most recent information available regarding the commercial and residential portions of the development, including: a reduction in the overall square footage of commercial space, a reduced number of residential units, and the inclusion of a community center. The memorandum also assumes a realignment of the north leg of Sunset Street and construction of a dedicated left-turn lane for eastbound traffic as instructed by the City Council. The model did *not* assume that the main entrance to the development (off Melrose) would be signalized immediately upon construction.

Summary of results:

- The realignment of the north leg of Sunset Street and construction of a dedicated left-turn lane for eastbound motorists at the Melrose/Sunset intersection remains beneficial for overall traffic operations adjacent to the proposed development.
- Upon build-out, traffic exiting the main entrance to the proposed PUD will experience delays in the peak periods.
- An additional 80 vehicles exiting the proposed PUD in the PM peak hour would result in a traffic signal being warranted at the main entrance. As such, it is recommended that the intersection be designed for future signalization and that the operation of the intersection be monitored for operation and safety issues that would warrant signalization.

Attachment:

TECHNICAL MEMORANDUM

TO: John Yapp, MPOJC
Kent Ralston, MPOJC

FROM: Brian Willham, PE, PTOE

DATE: September 2, 2011

RE: One University Place
University Heights, Iowa
Traffic Review

This memorandum includes an update of traffic operations at the Melrose Avenue and Sunset Street intersection and the Melrose Avenue and Main Entrance intersection in conjunction with the proposed One University Place development. The current proposed development includes an un-signalized full access entrance on Melrose and a right-out-only exit onto Sunset Street, north of Melrose Avenue. **Table 1** includes the modified land uses as currently proposed.

Table 1: Estimated Trip Generation

Land use (ITE Code)	Gross Floor or Leasable Area (1,000 SF)	Dwelling Units (EA)	Average Rate	Vehicle Trips
Residential Condominium / Townhouse (ITE Code 230)				
Average Daily Traffic (50% in / 50% out)	--	69	5.81	200 in / 200 out
AM Peak Hour (17% in / 83% out)	--	69	0.44	6 in / 25 out
PM Peak Hour (67% in / 33% out)	--	69	0.52	25 in / 11 out
Quality Restaurant (ITE Code 931)				
Average Daily Traffic (50% in / 50% out)	4.0	--	89.95	180 in / 180 out
AM Peak Hour (50% in / 50% out)	4.0	--	0.81	5 in / 5 out
PM Peak Hour (67% in / 33% out)	4.0	--	7.49	20 in / 10 out
Specialty Retail Center (ITE Code 814)				
Average Daily Traffic (50% in / 50% out)	9.1	--	44.32	205 in / 205 out
AM Peak Hour (48% in / 52% out)	9.1	--	6.84	30 in / 33 out
PM Peak Hour (44% in / 56% out)	9.1	--	2.71	11 in / 14 out
Recreational Community Center (ITE Code 495)				
Average Daily Traffic (50% in / 50% out)	2.5	--	22.88	30 in / 30 out
AM Peak Hour (61% in / 39% out)	2.5	--	1.62	5 in / 5 out
PM Peak Hour (37% in / 63% out)	2.5	--	1.45	5 in / 5 out

The estimated traffic generated by the proposed development was added to the existing peak hour traffic for the AM and PM Peak Hour traffic models. Peak hour traffic volumes for existing and proposed conditions are found in **Figure 1** and **Figure 2**. The proposed traffic distribution assumes that approximately 50% of the traffic travels from/to the east on Melrose Avenue, 10% travels to/from the south on Sunset Street, and 40% travels to/from the west on Melrose Avenue. Because of the lengthy delay that SB left turning vehicles would encounter during peak hours, it was assumed that 75% of the traffic exiting to the east of the site would use the right-out-only exit on Sunset Street and that 25% of the eastbound exiting traffic would continue to use the main entrance on Melrose Avenue, particularly those that aren't familiar with the site operations.



Figure 1: Existing Traffic

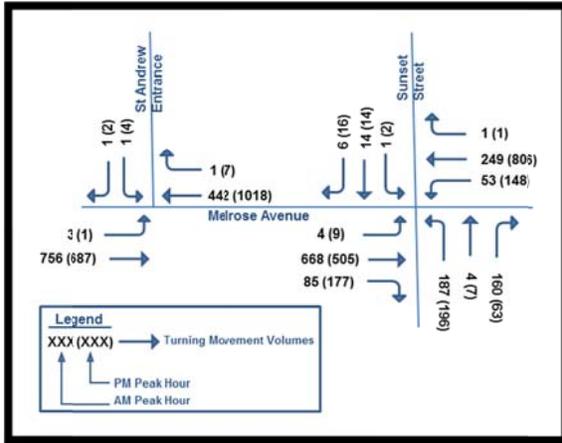
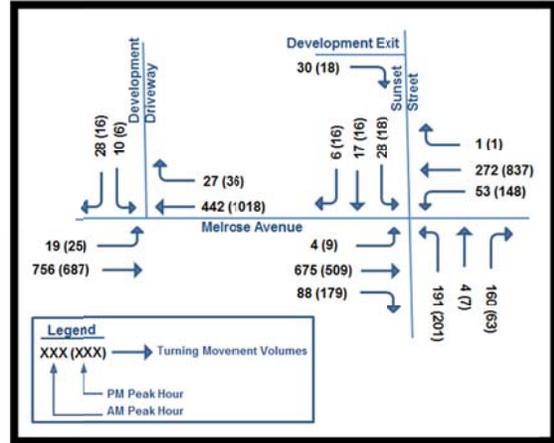


Figure 2: Proposed Traffic



The *Synchro* traffic modeling that was completed resulted in the values for delay and Level of Service that are presented in **Table 2**. Included in the analysis was the existing conditions, re-aligned Melrose/Sunset geometry with no change in land use at the St Andrew property (including the elimination of the current north/south split phasing as well as the all-way pedestrian phase), and re-aligned Sunset/Melrose geometry with the addition of the proposed development traffic.

Table 2: Intersection Delay and LOS

Scenario	Melrose Avenue / Main Entrance* (Un-signalized)				Melrose Avenue / Sunset Street (Signalized)			
	AM		PM		AM		PM	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Existing Conditions	29	D	>120	F	23	C	79	E
Geometric Improvements Only	29	D	>120	F	19	B	20	C
Geometric Improvements w/ Development Traffic	38	E	>120	F	19	B	22	C

*The Melrose Avenue / Main Entrance intersection results are the SB left turn movement

The following summarizes the current traffic modeling results:

- Traffic exiting the proposed Main Entrance on Melrose Avenue will experience lengthy delays during the AM and PM peak hours of the day. This is true for existing conditions as well, but very few vehicles currently exit the Church site. With the additional proposed traffic turning left onto Melrose Avenue during peak hours, a potential safety issue exists due to the eastbound queues from the Sunset Street intersection.
- It is recommended to re-align the Melrose Avenue and Sunset Street intersection, including the addition of an eastbound left turn lane, in conjunction with the proposed development.
- An additional 80 vehicles per hour during the PM peak hour would result in traffic signals being warranted at the Main Entrance intersection. Although not warranted based on traffic volumes alone, it is recommended to monitor the operation of the main entrance on Melrose Avenue for operation and safety issues after the proposed development is in place. If a safety issue develops as a result of the additional development traffic, the addition of traffic signalization should be considered.

Please let me know if you have any questions on the information included in this memorandum.