The Ivanhoe Companies

October 13, 2014

City of Rochester Hills
Planning Commission
Ed Anzek
Sara Roediger
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Re: Barrington Park PUD
City File #14-012, Parcel No. 15-26-376-007

This letter shall serve as an update to the September 8, 2014 presentation package on the Barrington Park PUD project and the subsequent September 16, 2014 Planning Commission meeting.

Subsequent to the meeting we have continued to critique the plan per your suggestions and the various Rochester Hills consultants' suggestions. You have been in receipt of our new plans with dramatic improvements, which is dated September 22, 2014. On October 6, 2014 Rochester Hills Planning Commission and consultants provided a critique of those revisions. Enclosed please find a fully revised set of plans incorporating the Planning Commissions' meeting, second submittal, and comments received from neighbors based on a meeting with them on October 7, 2014.

Below are some of the key improvements to the plans:

- A multitude of pocket parks which improve walkability
- We have removed street parking on Barclay Circle
- In addition to the required parking spaces within the community, we have added substantial parallel parking and traffic calming parking spots in front of the buildings
- We have added additional visitor parking in various locations
- We have added decorative piers; pergola features; park benches; decorative poles and lights
- Realignment of ingress and egress points on Barclay and Auburn Roads, as well as multiple design and engineering requests in your staff report
- We have added a proposed, request for pedestrian easement connecting our sidewalks to the sidewalk on Hampton Court over the Oakland County drain easement passive park
- We have notified and had a meeting with the Hampton Association and the Edinshire Association which is adjacent to the east, to discuss the benefit of townhomes vs office, medical, commercial or mixed use
- Per neighbors comments, the sidewalk connection over the drainage/pond easement was moved from the east side to the west side of the pond close to the office complex and the connection to Hampton Circle was moved much further to the west
- Based on the homeowners meeting, we have redesigned the entire project providing an additional 15 foot greenbelt on east property line and moved the condominiums to the west
- In addition, based on the homeowners meeting, we have consulted with two of our landscape architects we work with and designed a preliminary, detailed landscape plan providing a denser

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buffer of landscaping on the east border. We have also provided a transparent, black vinyl chain link fence on the property line

- At your direction, we hired the recommended traffic consultant Hubbell, Roth & Clark (HRC) to study MDOT's plan to synchronize traffic lights at Primrose and Barclay Circle, and to weigh in on an MDOT idea to consider reconfiguring Barclay Circle to connect through Primrose Street, Wildflower Subdivision, to East Nawakwa Street along M-59 that terminates by connecting through the Country Club Village Subdivision
- HRC has also been engaged and provided an updated traffic analysis to augment the LSL Planning analysis (see LSL graph). This reiterates that four sale condominiums in the range of 149 units up to 320 units will create significantly less traffic than the current office zoning, as well as, medical urgent care, commercial, or mixed use on the site as an alternative
- We have augmented preliminary condominium documents to establish drop zones for excessive snow from extreme winters and designated areas in the pocket parks for pet waste stations

We look forward to addressing all the issues in the revised plans at the meeting on October 21, 2014.

If you have any questions or comments, please contact me or any of our appropriate consultant team members.

Sincerely,

Gary Shapiro
IAC Barclay, LLC

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Summary of Plan Changes

Planning Commission
City of Rochester Hills
1000 Rochester Hills Dr.
Rochester Hills, MI 48309

Dear Commissioners,

The following letter lists the major changes made to the Barrington Park PUD plan since meeting with the Planning Commission, receiving comments from City Staff and a meeting with the homeowners. We initially submitted a revised plan dealing with the on-street parking along Auburn Road and some other changes. Those plans were reviewed by City Staff. This list includes the changes made since the version the Planning Commission initially reviewed (i.e. changes since that plan presented to the Planning Commission and the plan reviewed by City Staff).

We also met with the City engineers, planners and MDOT staff to discuss the traffic impacts and level of analysis needed. There are separate reports in response 1) a response to the concept to realign Barclay Circle and 2) the preliminary traffic impact assessment.

On October 7th, 2014 we met with 17 homeowners from the lots adjacent to our site and the two neighborhood associations. Most of the discussion focused on the area adjacent to the rear yards of the single family homes. In response to that discussion, we have a more detailed landscape concept for the east property lines to include a fence and more extensive landscaping.

Other comments from the homeowners included concerns that our proposed off-site pathway around the pond to improve walkability would be detrimental to the neighborhood. We also had discussion about traffic flow and speeds. There were also questions on storm water, target sales prices, visitor parking, lighting and the participation in the existing homeowners and property owners associations.

Based on all of the above, the list below highlights the changes to our plan; which now includes 149 3-bedroom units along with better defined open space and amenities:

- Response to concerns over turns onto Auburn Road and left turn conflicts:
  - Relocated access points along Barclay Circle and Auburn Road to eliminate the left turn conflicts
  - Changed entrance along Auburn from a boulevard to a standard entryway
- Response to staff and commission concerns about on-street parking along Barclay:
  - A redesign of the on-street parking using a slip road that we feel will help ease some of the safety and congestion concerns
- Need to accommodate Left Turns from Barclay Circle to slip road parking:
  - Our revised plan includes a cut through the median along Barclay Circle to allow southbound travelers to turn left into the slip road parking along Barclay Circle.
- Response to homeowner concerns about buffers and setbacks:
  - Setbacks for buildings abutting residential uses are now 77' for four buildings and 67' for the end of one, up from 63'
  - East property line setback to paved drive is now a 35' wide landscaped buffer including a black vinyl fence, up from the previously submitted plan with a 20' buffer

    - A proposed landscape buffer ranging from 20' to 35' on portions of development abutting either commercial or residential properties
- Response to comments on open space and walkability:
    - A few sidewalks have been tweaked in the pocket parks
    - Multiple pet waste stations have been added along sidewalks and in open areas
    - One of two benches along the path in Hampton Park has been eliminated
    - The off-site walkway was relocated to the west side of existing detention pond
- The Rochester Hills Fire Department noted that better connections were needed to satisfy safety concerns:
    - Our revised plans include additional connections for fire access. Those safety requirements will decrease the overall footage of pocket parks throughout the development. To maintain "more green" we would like to use a grass paver or grasscrete in select areas that are assigned as fire lanes.
- Open space identification and calculation:
    - The plan now includes 2.26 acres of open space which includes several larger parks with direct views to adjacent townhomes, and one at the terminus of the main access off Barclay Circle.
    - We shifted some of the visitor parking to increase the useable area of some open space pocket parks. Our revised plan highlights the open space and calculations.
- Buildings proximity to DPS storage (back-up beepers) along east property line:
    - Our revised plan includes relocated buildings and a realigned road along the east property line to increase buffer area from the DPS yard.

PUD Standards

The following are the dimensional deviations we will be requesting under the PUD agreement along with the reasoning behind our submittal as a PUD:

Section	Element	Required	Proposed
138-6.100 – RM1	Maximum Density	6.81 units per acre (flexible under PUD Option)	9.48 units per acre
138-7.104 – RM1	Setback from Residential Uses	35'	35' driveway 67' building Greater than PUD requirements
138-6.104 – RM1	Min # parking spaces	Max. 419 spaces	688 spaces

The staff letter outlines the PUD requirements we are seeking to meet. We believe we meet the following requirements for the PUD option, as outlined in Section 138-7.102.

1. *"To preserve, dictate or set aside open space or natural features due to their exceptional characteristics or their environmental or ecological significance in order to provide a permanent transition or buffer between two land uses, or to require open space or other desirable features of a site beyond what is otherwise required in this ordinance."*
    - The Barrington Park plan contains off-site improvements and a sidewalk connecting the development to Hampton Circle along the detention pond to the north of the parcel. Those off-site improvements will improve walkability in the area and are beyond what the ordinance typically requires. The development also provides ample open park space along with many walkable amenities.

2. *"To promote the goals and objectives of the master land use plan and other applicable long range plans such as the master thoroughfare plan."*
    - The owner occupied condominiums at the moderate density shown on the plan achieves the same objectives of the city's Master Plan designation for office use. That designation was probably influenced by Crittenton's intent for office development at the time the plan was prepared. Barrington Park will provide a similar land use transition between the residential and non-residential uses. As noted, the development will also provide residential options to meet the need for a more diverse and denser housing stock, which is also an objective in the City's Master Plan.

3. *"To permanently establish land use patterns that are compatible with or will protect existing or planned use."*
    - The Barrington Park development will be consistent and harmonious with surrounding uses. The site serves as a buffer between commercial and business uses to the west and residential uses to the east and south. The existing multiple family residential northeast of the site provides a similar transition. Additional residential can also help support the existing commercial land uses nearby along Rochester Road.

4. *"To provide alternative uses for parcels that can provide transition or buffers to residential areas and to encourage redevelopment of sites where an orderly transition or change of use is desirable."*
    - The site is centered amongst a wide variety of uses – commercial, institutional, office, higher density multiple family and single family. The moderate density attached condominiums will serve as a buffer between the more intense land uses to the west and single family uses to the east and south.

5. *"To enhance the aesthetic appearance of the City through quality building design and site development."*
    - Ivanhoe has won awards for the quality of its developments, not only from builder associations but also the Michigan Association of Planning. Barrington Park will include an amenity package similar to our other developments, as illustrated in the packet provided. Elevations will use quality materials. Landscaping throughout the site will create pleasing views from surrounding streets. In addition, there will be amenities such as pathways, benches, attractive streetscape details and entryway features. We will continue to work with city officials and the Planning Commission to ensure our development aligns with the architectural standards of Rochester Hills.

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October 13, 2014

Ms. Sara Roediger, AICP
City of Rochester Hills
Planning and Economic Development
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Re: Barrington Park PUD
City File 14-012
Engineering Review

Dear Ms. Roediger,

We have received comments from the Engineering Department dated October 6, 2014 regarding the Conceptual PUD for Barrington Park. The PUD plans have been revised per those comments. In response, we offer the following:

General

1. The City File number has been added to the bottom right corner of the plan sheets.
2. The existing recorded easements are shown on the Boundary Survey. The sanitary and watermain easements shall be vacated on the site since the utilities were never constructed.
   The proposed easements are shown on Sheet CP-4.
3. Two on-site benchmarks are provided along Barclay Circle.
4. The plans have been revised to provide 10' separation between utilities.
5. Please see the utility notes on Sheet CP-4 which provide additional information on sizes and materials.

Sanitary Sewer

1. The existing sanitary manhole near the Auburn Road entrance has been added. The existing sewer to the south of the connection manhole has been added.
2. A sanitary basis of design has been added on CP-4.

Watermain

1. The proposed connection on the south side of Auburn Road has been shifted to the east to reduce impacts to the existing school entrance.

Storm Sewer

1. The northerly inlet to the basin has been removed to provide a greater distance to the outlet. The proposed fountain has been removed from the basin.
2. The nearest soil boring to the basin is shown on Sheet CP-6.
3. The runoff calculation has been revised to include the permanent water in the basin. Note that this did not affect the overall runoff from the site. The sidewalks and patio areas are included in the pavement area.
4. A new sedimentation basin shall be constructed at the southeast corner of the site capable of storing the first ½" of runoff. The basin outlet shall be restricted such that the stormwater is stored in the basin for 48 hours to allow for infiltration and settling of the

fines. If additional stormwater management practices are required, they will be added in the ensuing submissions of construction documents.

5. The inline catch basins have been revised. Kindly note that storm sewer design calculation have not been done at this point of the review process. Therefore, it is not known which pipe runs will be 18" and under. If during the final design, it is found that some of the runs are larger than 18", the catch basins will be taken offline per the City Standards.
6. Noted.

Traffic

Please refer to the response letter prepared by LSL Planning and the traffic impact study prepared by HRC.

Pathway/Sidewalk

1. The sidewalk at the Barclay Circle entrance has been revised to reduce the distance from the edge of Barclay Circle.

A LIP application will be submitted prior to the start of final construction plan review.

If you have any further questions or comments, please contact us.

Thank you for your assistance with this project.

Sincerely,

Shawn Blaszczyk, PE

Pc: Gary Shapiro
Brad Strader
Felino Pascual

13178 Engineering Response 10-13-14

LSL Planning
A SAFEbuilt Company

Planning Commission
City of Rochester Hills
1000 Rochester Hills Dr.
Rochester Hills, MI 48309

Subject: Response to MDOT Concept to align Barclay Circle with Primrose Drive

Dear Commissioners:

After our discussion and our preliminary submittal, we were alerted by City Staff that the City Engineers and MDOT had discussed traffic issues at the intersection of Auburn Road and Primrose Drive near the Barclay Circle and Auburn Road intersection. In particular, motorists turning left out of Primrose Drive have long delays due to the high volumes along Auburn and few gaps to allow left turns. In response to this situation, MDOT installed signs (see photo) informing drivers when the signal is red to stop well in advance of the traffic signal near the Primrose Drive intersection. The intent is that this gap will make it easier for vehicles turning left out of Primrose. This change may have helped improve the situation but there are still problems.

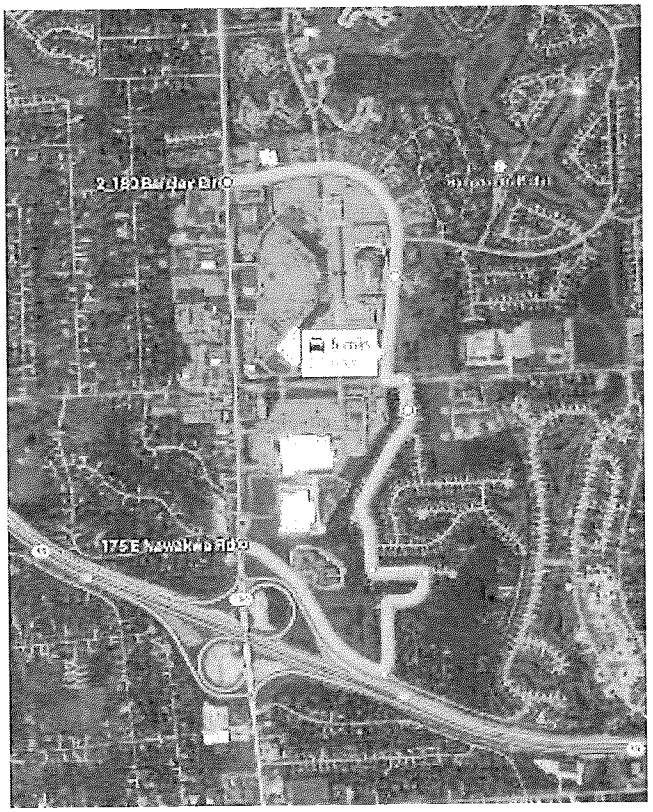
We were informed that MDOT has been studying this segment of Auburn Road. There is committed funding to add another westbound lane in 2015. As part of their design process, MDOT will be evaluating the potential of adding another 3-way traffic signal at Primrose Drive. Because the short signal spacing between Primrose Drive and Barclay Circle is less than ideal, MDOT has explored other ideas. At our meeting, we were informed that one MDOT unofficial proposal involves re-routing Barclay Circle to align with Primrose Drive. This would create a four way signal at that intersection.

The City's engineers report requested that we respond to this concept. We understand that this would ease left turns from Primrose Drive. But changing the alignment of Barclay Circle to directly align with Primrose Drive would have numerous severe consequences. Such redesign would not only impact the viability of our project, but it could severely impact the Wildflower subdivision to the south of Auburn Road. Our specific concerns are as follows:

- Realigning Barclay Circle to five (5) lanes through the western portion of our intended development site would make it an undesirable location for for-sale condominiums. The Planning Commission noted the "high speed" traffic and volumes were not appropriate for on-street parking. Running this street through the middle of our residential development would create a much more severe condition.

LSL Planning
A SAFEbuilt Company

- The remaining triangular shaped area of land to the west of the realigned Barclay Circle would be rendered essentially useless. During our previous discussions with the Planning Commission we outlined some of the market reasons why commercial or office uses are not suitable along this segment of Auburn Road. Being located on the other side of the berm along the west side of Barclay Circle further isolates this remnant piece from other commercial uses along Rochester Road. This change would have severe impacts on the value of the site.
- We believe that the Wildflower subdivision south of the Barrington Park site would be dramatically impacted by the realignment of Barclay Circle to Primrose Drive. By connecting Barclay Circle, a commercial road, to Primrose Drive, a neighborhood street, it would create unwanted traffic within the subdivision. Since this route connects with Rochester Road near the M-59 interchange, drivers could be induced to this route to bypass the congested intersection of Rochester Road at Auburn Road (See map to right). It is our belief that residents in the quaint very low traffic volume streets in the Wildflower subdivision would be negatively impacted by facilitating use of this route as a cut through.



Our position is that the traffic situation at Primrose Drive is an existing one, and that since the development would generate significantly less traffic than permitted under current zoning, we are not contributing to that problem. Still, we are interested in efforts to improve traffic operations and safety along Auburn Road. At the City's request, our traffic engineering consultant will evaluate the potential to add a traffic signal at Primrose Drive that would be coordinated with the light at Barclay Circle so they ultimately serve as one signal. This would ease the difficulty for vehicles turning left on Auburn Road. The final decision, however, rests with MDOT and their own study.

We look forward to hearing comments on alternative solutions to the volume and safety concerns near the Barclay Circle and Auburn Road intersection. We hope to find a reasonable solution that minimizes the impact on our proposed project and the Wildflower subdivision.

Respectfully submitted,
LSL PLANNING, INC.

Bradley K. Strader

Bradley K. Strader, AICP

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October 10, 2014

City of Rochester Hills
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Attn: Sara Roediger, AICP, Manager of Planning

Re: Barrington Park PUD
Traffic Impact Study

HRC Job No. 20140745

Dear Ms. Roediger:

Hubbell, Roth & Clark, Inc. (HRC) has been retained by IAC Barclay, LLC to prepare the Traffic Impact Study required by the City's site plan review process. This letter represents a partial review of the items for the Traffic Impact Study required by your review letter of October 6, 2014. We are providing the information and analysis we have collected by your deadline of October 13, 2014. A complete report with full analysis will follow.

For the Traffic Impact Study, HRC in conjunction with LSL Planning (LSL) have undertaken the following tasks to complete the traffic study:

- Provide a description of the adjacent roadway system
- Collect 24 hour traffic volumes on Barclay Circle
- Collect turning movement counts (TMC) from 7:00 AM to 9:15 AM and 3:30 PM to 6:00 PM at the following locations:
  - Auburn Road/Barclay Circle
  - Auburn Road/Primrose Drive
  - Auburn Road/Brooklands Elementary west driveway
- Distribute site generated traffic to the adjacent roadway network
- Evaluate the realignment of Barclay Circle to align with Primrose Drive
- Conduct a peak hour capacity analyses during AM and PM peak hours using Synchro 8 Software using the techniques outlined in the Transportation Research Board Highway Capacity Manual
- Conduct a turning lane warrant study to determine if a taper and/or turning lane are required at the site driveways
- Conduct a traffic crash analysis for the Auburn Road from Barclay Circle to the proposed site driveway
- Prepare a report with our findings and recommendations

Roadway Description

Auburn Road is an urban minor arterial with a posted speed limit of 45 MPH. Auburn is under the jurisdiction of the Michigan Department of Transportation (MDOT). Barclay Circle is a city collector road with a posted speed limit of 35 MPH. No on-street parking is allowed on either street. The intersection of Auburn Road and Barclay Circle is signalized. The geometry of the three-leg intersection is as follows:

- Eastbound Auburn has two through lanes, a center left-turn lane, and two receiving lanes
- Westbound Auburn has one shared through and right turn lane and two

receiving lanes; the stop bar for this approach is located just east of Primrose Drive to leave a gap for vehicles turning out of the side street.

- Southbound Barclay is a boulevard approach; there are two lanes -one dedicated left-turn and one right-turn lane.

We understand that MDOT is currently studying this area for a proposed 2016 project to add a through and right turn lane to the westbound Auburn Road approach at Barclay Circle. MDOT is also evaluating the realignment of Barclay Circle with Primrose Drive. These improvements/options will be evaluated in the final study as traffic counts were not available from MDOT for this preliminary letter.

Existing Traffic Volumes

24 Hour Counts

HRC collected two-way 24-hour traffic counts on Barclay Circle on Wednesday and Thursday, October 8-9, 2014 as shown in Table 1 (Attachment A). According to the counts, the AM peak occurs from 8:00 to 9:00 AM and the PM peak occurs from 5:00 to 6:00 PM. The peak hours are highlighted.

Table 1: 24 Hour Traffic Counts on Barclay Circle

Start Time	North	South	Total
0:00	7	11	18
1:00	2	9	11
2:00	4	6	10
3:00	5	2	7
4:00	10	2	12
5:00	29	17	46
6:00	72	65	137
7:00	130	138	268
8:00	202	252	454
9:00	167	179	346
10:00	174	166	340
11:00	191	163	354
12:00	218	209	427
13:00	248	209	457
14:00	287	246	533
15:00	267	228	495
16:00	244	272	516
17:00	263	353	616
18:00	211	267	478
19:00	199	185	384
20:00	152	148	300
21:00	65	87	152
22:00	50	51	101
23:00	23	25	48
Total	3220	3290	6510

Turning Movement Counts

HRC and LSL collected turning movement counts on Thursday, October 9, 2014 from 7:00 – 9:15 AM and from 3:30 – 6:00 PM. The count periods were adjusted to reflect the start and end times of Brooklands Elementary School, which is located less than 1,000 feet east of Barclay Circle. Counts were taken at three locations: Auburn and Barclay, Auburn and Primrose, and Auburn and the west drive to Brooklands Elementary School.

Tables 2 - 4 summarize the existing turning movement counts peak hours. The complete turning movement counts are provided in Attachment B.

Table 2: Turning Movement Counts at Auburn & Barclay

Peak Hour	EB Auburn		WB Auburn		SB Barclay	
	LT	TH	TH	RT	LT	RT
AM	114	244	767	97	80	119
PM	200	596	552	133	131	121

Table 3: Turning Movement Counts at Auburn & Primrose

Peak Hour	EB Auburn		WB Auburn		NB Primrose	
	TH	RT	LT	TH	LT	RT
AM	321	16	12	846	46	26
PM	749	39	37	618	26	35

Table 4: Turning Movement Counts at Auburn & W. Drive to Brooklands ES

Peak Hour	EB Auburn		WB Auburn		NB ES Driveway	
	TH	RT	LT	TH	LT	RT
AM	313	24	23	835	19	10
PM	743	45	17	638	59	29

Trip Generation

One of the most critical elements of a traffic study is estimating the amount of traffic to be generated by a proposed development. This is usually done by using trip generation rates or equations to provide an estimate of all future trips generated by a proposed development.

Rates are commonly expressed in trips per unit of development. For example, trips per dwelling unit are commonly used for residential developments, while trips per 1,000 square feet of gross floor area are used for offices and retail. Equations provide a direct estimate of trips based upon development units being multiplied in a

mathematical relationship.

Trips are defined as a single or one directional movement with either the origin or destination of the trip inside the study site. Thus, a car entering and leaving a site would be recorded as generating two trips. Trip generation estimates are often the most critical factors in assessing impacts and needs of a proposed development.

There are several sources for trip generation rates and equations, which are based on data collected from locations in the United States and Canada. These are compilations of data that have been gathered over many years for various land uses. National data sources are starting points in estimating the amount of traffic that may be generated by a specific building or land use. Whenever possible, the National rates should be adjusted to reflect local or forecasted conditions. These National sources are not intended to be used without question, deviation or sound judgment. They often reflect what are supposed to be the average or typical conditions. Data collected from local sites may be more representative than National averages of other developments within the area.

The most widely used source of national trip generation data is the Trip Generation Manual, published by the Institute of Transportation Engineers (ITE). The information in this report is almost solely derived from suburban and urban sites. Data included in trip generation was obtained from actual driveway counts of vehicular traffic entering and exiting the site. The ninth edition contains more than 4,800 data sets from individual trip generation studies. The report also includes discussions on the application and use of trip generation rates and equations; descriptions of the characteristics of each land use; maximum/minimum average rates for weekdays, weekends and peak hours of the generator and adjacent street traffic; and additional statistical data regarding data variability.

LSL selected ITE Land Use Code *230 – Residential Condominiums* as the most appropriate for this study. Table 5 shows the number of trips expected during the AM and PM peak hour of the road and an average weekday.

Table 5: Trip Generation for Barrington Park

ITE Land Use Code	Variable: # of Units	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
			IB 17%	OB 83%	IB 67%	OB 33%
230 Residential Condominiums	149	866	66		77	
			11	55	52	25

As the City is aware, the Barrington Park PUD site was originally proposed to be developed as an urgent care clinic. According to ITE Trip Generation Manual, there is a comparable land use code: *630 – Clinic*. The proposed clinic was to be 120,000 Square Feet which could result in a total of 3,774 daily trips.

Trip generation data for other allowable land uses under the PUD were also reviewed. The following table shows that the proposed land use will generate considerably fewer trips than other allowable uses.

Table 6: Trip Generation for Other Allowable Uses

ITE Land Use Code	Variable: # of units or S.F.	Daily Trips	AM Peak Hour Trips	PM Peak Hour Trips
492 Health/Fitness Club *(per 1,000 s.f. of GFA)*	45,000	1,482	63	159
720 Medical Office *(per 1,000 s.f. of GFA)*	120,000	4,336	287	428
820 Shopping Center *(per 1,000 s.f. of GFA)*	120,000	5,124	115	445
220 Apartments *(per unit)*	342	2,274	76	92
230 Residential Condominiums *(per unit)*	320	1,859	141	166

Crash Analysis

A traffic crash analysis was prepared for the segment of Auburn from 200 feet west of Barclay to 500 feet west of Graham/Bendelow. Three years (2011 through 2013) of traffic crash data was obtained from Traffic Improvement Association TCAT website for this analysis. One notable fact is that the frequency of crashes has been decreasing annually. The data was organized so it would be clear where the crash occurred.

A summary of the crash severity and types are shown in the following table. There was no fatality and two Type A (serious injury) crashes. Both Type A crashes involved a vehicle rear-ending a vehicle stopped for the red light at Barclay. The drivers of the vehicle that was struck sustained Type A injuries and were transported to an area hospital.

Table 7: Crash Summary for Auburn & Barclay Intersection

Crash Characteristics		2011	2012	2013	Total	Percent
Crash Severity	Type A	1		1	2	6%
	Type B	1			1	3%
	Type C	4	1	1	6	17%
	PDO	13	10	4	27	75%
	Total	**19**	**11**	**6**	**36**	**100%**
Crash Type	Rear end, Barclay	4	2	3	9	25%
	Rear end, Primrose	2	2		4	11%
	Rear end, other		2		2	6%
	Angle, Barclay		1		1	3%
	Angle, ES School	1			1	3%
	Angle, Driveway	1		1	2	6%
	HO-LT, Barclay	1	1		2	6%
	HO-LT, Primrose	2			2	6%
	HO-LT, Driveway		1		1	3%
	Side Swipe - same	2		1	3	8%
	Side Swipe - opp	1			1	3%
	Single	4	2	1	7	19%
	Other	1			1	3%
	Total	**19**	**11**	**6**	**36**	**100%**
Road Surface	Dry	14	6	6	26	72%
	Wet	4	4		8	22%
	Icy/Snowy	1	1		2	6%
	Total	**19**	**11**	**6**	**36**	**100%**

The most frequent crash type was read-end crashes which totaled 9 crashes or 42% of all crashes. The only crash attributable to the Brooklands Elementary School was an angle crash which involved a school bus turning left out the school's west driveway and striking a vehicle eastbound on Auburn. There were no students on the bus.

Many of the rear end crashes are westbound near Primrose Drive and Barclay Circle, this situation will be helped by the proposed through and right turn lane to be constructed by MDOT in 2016.

The final report with analysis will be completed in the next week or so and submitted to Planning and Engineering for review.

If you have any questions on this preliminary data collection and analysis, please do not hesitate to contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

Colleen Hill-Stramsak, P.E., PTOE
Transportation Department Head

CH-S/bjl
Attachments
A- 24 Hour Counts
B- Turning Movement Counts

pc: HRC; File

Hubbell, Roth & Clark, Inc.
555 Hulet Drive
Bloomfield Hills, MI 48303
(248) 454-6300

Site Code: BARCLAY
Station ID:

Latitude: 0' 0.000 South

Start Time	06-Oct-14 SB	06-Oct-14 NB	07-Oct-14 SB	07-Oct-14 NB	08-Oct-14 SB	08-Oct-14 NB	09-Oct-14 SB	09-Oct-14 NB	10-Oct-14 SB	10-Oct-14 NB	Weekday Average SB	Weekday Average NB	11-Oct-14 SB	11-Oct-14 NB	12-Oct-14 SB	12-Oct-14 NB
12:00 AM	*	*	*	*	*	*	7	11	*	*	7	11	*	*	*	*
01:00	*	*	*	*	*	*	2	9	*	*	2	9	*	*	*	*
02:00	*	*	*	*	*	*	4	6	*	*	4	6	*	*	*	*
03:00	*	*	*	*	*	*	5	2	*	*	5	2	*	*	*	*
04:00	*	*	*	*	*	*	10	2	*	*	10	2	*	*	*	*
05:00	*	*	*	*	*	*	29	17	*	*	29	17	*	*	*	*
06:00	*	*	*	*	*	*	72	65	*	*	72	65	*	*	*	*
07:00	*	*	*	*	*	*	130	138	*	*	130	138	*	*	*	*
08:00	*	*	*	*	*	*	**202**	**252**	*	*	**202**	**252**	*	*	*	*
09:00	*	*	*	*	*	*	167	179	*	*	167	179	*	*	*	*
10:00	*	*	*	*	*	*	174	166	*	*	174	166	*	*	*	*
11:00	*	*	*	*	*	*	191	163	*	*	191	163	*	*	*	*
12:00 PM	*	*	*	*	*	*	218	209	*	*	218	209	*	*	*	*
01:00	*	*	*	*	*	*	248	209	*	*	248	209	*	*	*	*
02:00	*	*	*	*	*	*	**287**	**246**	*	*	**287**	246	*	*	*	*
03:00	*	*	*	*	**267**	228	0	0	*	*	134	114	*	*	*	*
04:00	*	*	*	*	244	272	*	*	*	*	244	272	*	*	*	*
05:00	*	*	*	*	263	**353**	*	*	*	*	263	**353**	*	*	*	*
06:00	*	*	*	*	211	267	*	*	*	*	211	267	*	*	*	*
07:00	*	*	*	*	199	185	*	*	*	*	199	185	*	*	*	*
08:00	*	*	*	*	152	148	*	*	*	*	152	148	*	*	*	*
09:00	*	*	*	*	65	87	*	*	*	*	65	87	*	*	*	*
10:00	*	*	*	*	50	51	*	*	*	*	50	51	*	*	*	*
11:00	*	*	*	*	23	25	*	*	*	*	23	25	*	*	*	*
Total	0	0	0	0	1474	1616	1746	1674	0	0	3087	3176	0	0	0	0
Day	0		0		3090		3420		0		6263		0		0	
AM Peak							08:00	08:00			08:00	08:00				
Vol.							202	252			202	252				
PM Peak					15:00	17:00	14:00	14:00			14:00	17:00				
Vol.					267	353	287	246			287	353				

Comb. Total	0		0		3090		3420		0		6263		0		0	
ADT	Not Calculated											

Attachment A

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

Default Job Number: 20140745
Counted by : COB / PG
Weather: Clear
Location: Auburn Road and Barclay Circle

File Name : Auburn_Barclay
Site Code : 00000000
Start Date : 10/9/2014
Page No : 1

Groups Printed- Unshifted - Bank 1

	BARCLAY Southbound					AUBURN Westbound					BARCLAY Northbound					AUBURN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	15	0	7	0	22	19	109	0	1	129	0	0	0	0	0	0	35	6	0	41	192
07:15 AM	22	0	10	0	32	13	156	0	0	169	0	0	0	0	0	0	50	17	0	67	268
07:30 AM	28	0	10	0	38	22	194	0	0	216	0	0	0	0	0	0	42	15	1	58	312
07:45 AM	35	0	9	0	44	18	201	0	0	219	0	0	0	0	0	0	60	22	0	82	345
Total	100	0	36	0	136	72	660	0	1	733	0	0	0	0	0	0	187	60	1	248	1117
08:00 AM	37	0	13	0	50	26	195	0	0	221	0	0	0	0	0	0	52	21	0	73	344
08:15 AM	28	0	17	0	45	31	177	1	0	209	0	0	0	0	0	0	59	29	0	88	342
08:30 AM	29	0	20	0	49	42	135	0	2	179	0	0	0	0	0	0	67	30	1	98	326
08:45 AM	23	0	30	2	55	37	124	0	0	161	0	0	0	0	0	0	59	33	0	92	308
Total	117	0	80	2	199	136	631	1	2	770	0	0	0	0	0	0	237	113	1	351	1320
09:00 AM	23	0	15	0	38	24	98	0	0	122	0	0	0	0	0	0	50	20	0	70	230
*** BREAK ***																					
Total	23	0	15	0	38	24	98	0	0	122	0	0	0	0	0	0	50	20	0	70	230
*** BREAK ***																					
03:30 PM	25	0	43	1	69	43	140	0	0	183	0	0	0	0	0	0	165	31	1	197	449
03:45 PM	26	0	50	3	79	23	131	0	0	154	0	0	0	1	1	0	146	32	0	178	412
Total	51	0	93	4	148	66	271	0	0	337	0	0	0	1	1	0	311	63	1	375	861
04:00 PM	44	0	36	0	80	42	146	0	0	188	0	0	0	0	0	0	153	28	0	181	449
04:15 PM	20	0	37	0	57	25	135	0	0	160	0	0	0	1	1	0	148	38	0	186	404
04:30 PM	23	0	44	0	67	24	114	3	0	141	0	0	0	0	0	0	132	26	0	158	366
04:45 PM	25	0	42	2	69	32	118	0	0	150	0	0	0	1	1	0	147	28	0	175	395
Total	112	0	159	2	273	123	513	3	0	639	0	0	0	2	2	0	580	120	0	700	1614
05:00 PM	34	0	41	0	75	31	132	0	2	165	0	0	0	2	2	0	127	49	3	179	421
05:15 PM	29	0	27	1	57	26	127	0	0	153	0	0	0	0	0	0	150	50	1	201	411
05:30 PM	27	0	26	0	53	36	107	0	0	143	0	0	0	1	1	0	150	54	1	205	402
05:45 PM	31	0	37	1	69	35	130	0	2	167	0	0	0	1	1	0	166	47	1	214	451
Total	121	0	131	2	254	128	496	0	4	628	0	0	0	4	4	0	593	200	6	799	1685
Grand Total	524	0	514	10	1048	549	2669	4	7	3229	0	0	0	7	7	0	1958	576	9	2543	6827
Apprch %	50	0	49	1		17	82.7	0.1	0.2		0	0	0	100		0	77	22.7	0.4		
Total %	7.7	0	7.5	0.1	15.4	8	39.1	0.1	0.1	47.3	0	0	0	0.1	0.1	0	28.7	8.4	0.1	37.2	
Unshifted	524	0	514	10	1048	544	2616	4	7	3171	0	0	0	7	7	0	1958	576	9	2543	6769
% Unshifted	100	0	100	100	100	99.1	98	100	100	98.2	0	0	0	100	100	0	100	100	100	100	99.2
Bank 1	0	0	0	0	0	5	53	0	0	58	0	0	0	0	0	0	0	0	0	0	58
% Bank 1	0	0	0	0	0	0.9	2	0	0	1.8	0	0	0	0	0	0	0	0	0	0	0.8

Attachment B

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

	BARCLAY Southbound					AUBURN Westbound					BARCLAY Northbound					AUBURN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	35	0	9	0	44	18	**201**	0	0	219	0	0	0	0	0	0	60	22	0	82	**345**
08:00 AM	**37**	0	13	0	**50**	26	195	0	0	**221**	0	0	0	0	0	0	52	21	0	73	344
08:15 AM	28	0	17	0	45	31	177	**1**	0	209	0	0	0	0	0	0	59	29	0	88	342
08:30 AM	29	0	**20**	0	49	**42**	135	0	**2**	179	0	0	0	0	0	0	**67**	**30**	**1**	**98**	326
Total Volume	129	0	59	0	188	117	708	1	2	828	0	0	0	0	0	0	238	102	1	341	1357
% App. Total	68.6	0	31.4	0		14.1	85.5	0.1	0.2		0	0	0	0		0	69.8	29.9	0.3		
PHF	.872	.000	.738	.000	.940	.696	.881	.250	.250	.937	.000	.000	.000	.000	.000	.000	.888	.850	.250	.870	.983
Unshifted	129	0	59	0	188	114	690	1	2	807	0	0	0	0	0	0	238	102	1	341	1336
% Unshifted	100	0	100	0	100	97.4	97.5	100	100	97.5	0	0	0	0	0	0	100	100	100	100	98.5
Bank 1	0	0	0	0	0	3	18	0	0	21	0	0	0	0	0	0	0	0	0	0	21
% Bank 1	0	0	0	0	0	2.6	2.5	0	0	2.5	0	0	0	0	0	0	0	0	0	0	1.5
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	25	0	43	1	69	**43**	140	0	0	183	0	0	0	0	0	0	**165**	31	**1**	**197**	**449**
03:45 PM	26	0	**50**	**3**	79	23	131	0	0	154	0	0	0	1	**1**	0	146	32	0	178	412
04:00 PM	**44**	0	36	0	**80**	42	**146**	0	0	**188**	0	0	0	0	0	0	153	28	0	181	449
04:15 PM	20	0	37	0	57	25	135	0	0	160	0	0	0	1	1	0	148	**38**	0	186	404
Total Volume	115	0	166	4	285	133	552	0	0	685	0	0	0	2	2	0	612	129	1	742	1714
% App. Total	40.4	0	58.2	1.4		19.4	80.6	0	0		0	0	0	100		0	82.5	17.4	0.1		
PHF	.653	.000	.830	.333	.891	.773	.945	.000	.000	.911	.000	.000	.000	.500	.500	.000	.927	.849	.250	.942	.954
Unshifted	115	0	166	4	285	133	544	0	0	677	0	0	0	2	2	0	612	129	1	742	1706
% Unshifted	100	0	100	100	100	100	98.6	0	0	98.8	0	0	0	100	100	0	100	100	100	100	99.5
Bank 1	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	8
% Bank 1	0	0	0	0	0	0	1.4	0	0	1.2	0	0	0	0	0	0	0	0	0	0	0.5

Attachment B

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

Default Job Number: 20140745
Counted by : LSL
Weather: Clear
Location: Auburn and Primrose

File Name : Primrose
Site Code : 00000000
Start Date : 10/9/2014
Page No : 1

Groups Printed- Unshifted - Bank 1

	PRIMROSE Southbound					AUBURN Westbound					PRIMROSE Northbound					AUBURN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	5	0	5	10	0	21	1	32	3	36	0	0	39	76
07:15 AM	0	0	0	0	0	0	0	2	0	2	10	0	5	0	15	3	53	0	0	56	73
07:30 AM	0	0	0	0	0	0	0	2	0	2	10	0	12	0	22	3	54	0	1	58	82
07:45 AM	0	0	0	0	0	0	0	3	0	3	9	0	15	0	24	4	70	0	0	74	101
Total	0	0	0	0	0	0	0	12	0	12	39	0	53	1	93	13	213	0	1	227	332
08:00 AM	0	0	0	0	0	0	0	1	0	1	6	0	12	0	18	1	72	0	0	73	92
08:15 AM	0	0	0	0	0	0	0	2	0	2	1	0	10	0	11	4	75	0	1	80	93
08:30 AM	0	0	0	0	0	0	0	2	0	2	11	0	17	1	29	5	87	0	0	92	123
08:45 AM	0	0	0	0	0	0	0	7	0	7	8	0	7	0	15	6	87	0	0	93	115
Total	0	0	0	0	0	0	0	12	0	12	26	0	46	1	73	16	321	0	1	338	423
09:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	8	0	13	7	65	0	0	72	85
*** BREAK ***																					
Total	0	0	0	0	0	0	0	0	0	0	5	0	8	0	13	7	65	0	0	72	85
*** BREAK ***																					
03:30 PM	0	0	0	0	0	0	0	8	0	8	8	0	7	0	15	7	205	0	1	213	236
03:45 PM	0	0	0	0	0	0	0	9	0	9	14	0	2	0	16	6	190	0	2	198	223
Total	0	0	0	0	0	0	0	17	0	17	22	0	9	0	31	13	395	0	3	411	459
04:00 PM	0	0	0	0	0	0	0	11	0	11	5	0	13	0	18	13	176	0	0	189	218
04:15 PM	0	0	0	0	0	0	0	9	0	9	8	0	4	1	13	13	178	0	0	191	213
04:30 PM	0	0	0	0	0	0	0	7	0	7	6	0	9	0	15	12	171	0	0	183	205
04:45 PM	0	0	0	0	0	0	0	2	1	3	9	0	11	0	20	15	175	0	0	190	213
Total	0	0	0	0	0	0	0	29	1	30	28	0	37	1	66	53	700	0	0	753	849
05:00 PM	0	0	0	0	0	0	0	9	1	10	7	0	12	1	20	11	168	0	2	181	211
05:15 PM	0	0	0	0	0	0	0	4	0	4	4	0	8	0	12	13	154	0	2	169	185
05:30 PM	0	0	0	0	0	0	0	6	0	6	1	0	19	0	20	18	166	0	0	184	210
05:45 PM	0	0	0	0	0	0	0	5	3	8	3	0	9	0	12	11	192	0	3	206	226
Total	0	0	0	0	0	0	0	24	4	28	15	0	48	1	64	53	680	0	7	740	832
Grand Total	0	0	0	0	0	0	0	94	5	99	135	0	201	4	340	155	2374	0	12	2541	2980
Apprch %	0	0	0	0		0	0	94.9	5.1		39.7	0	59.1	1.2		6.1	93.4	0	0.5		
Total %	0	0	0	0	0	0	0	3.2	0.2	3.3	4.5	0	6.7	0.1	11.4	5.2	79.7	0	0.4	85.3	
Unshifted	0	0	0	0	0	0	0	94	5	99	133	0	201	4	338	154	2321	0	12	2487	2924
% Unshifted	0	0	0	0	0	0	0	100	100	100	98.5	0	100	100	99.4	99.4	97.8	0	100	97.9	98.1
Bank 1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	53	0	0	54	56
% Bank 1	0	0	0	0	0	0	0	0	0	0	1.5	0	0	0	0.6	0.6	2.2	0	0	2.1	1.9

Attachment B

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

	PRIMROSE Southbound					AUBURN Westbound					PRIMROSE Northbound					AUBURN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	0	1	0	1	6	0	12	0	18	1	72	0	0	73	92
08:15 AM	0	0	0	0	0	0	0	2	0	2	1	0	10	0	11	4	75	0	1	80	93
08:30 AM	0	0	0	0	0	0	0	2	0	2	11	0	17	1	29	5	87	0	0	92	123
08:45 AM	0	0	0	0	0	0	0	7	0	7	8	0	7	0	15	6	87	0	0	93	115
Total Volume	0	0	0	0	0	0	0	12	0	12	26	0	46	1	73	16	321	0	1	338	423
% App. Total	0	0	0	0		0	0	100	0		35.6	0	63	1.4		4.7	95	0	0.3		
PHF	.000	.000	.000	.000	.000	.000	.000	.429	.000	.429	.591	.000	.676	.250	.629	.667	.922	.000	.250	.909	.860
Unshifted	0	0	0	0	0	0	0	12	0	12	26	0	46	1	73	16	310	0	1	327	412
% Unshifted	0	0	0	0	0	0	0	100	0	100	100	0	100	100	100	100	96.6	0	100	96.7	97.4
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	11
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4	0	0	3.3	2.6
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	0	0	0	0	0	0	0	8	0	8	8	0	7	0	15	7	205	0	1	213	236
03:45 PM	0	0	0	0	0	0	0	9	0	9	14	0	2	0	16	6	190	0	2	198	223
04:00 PM	0	0	0	0	0	0	0	11	0	11	5	0	13	0	18	13	176	0	0	189	218
04:15 PM	0	0	0	0	0	0	0	9	0	9	8	0	4	1	13	13	178	0	0	191	213
Total Volume	0	0	0	0	0	0	0	37	0	37	35	0	26	1	62	39	749	0	3	791	890
% App. Total	0	0	0	0		0	0	100	0		56.5	0	41.9	1.6		4.9	94.7	0	0.4		
PHF	.000	.000	.000	.000	.000	.000	.000	.841	.000	.841	.625	.000	.500	.250	.861	.750	.913	.000	.375	.928	.943
Unshifted	0	0	0	0	0	0	0	37	0	37	34	0	26	1	61	39	732	0	3	774	872
% Unshifted	0	0	0	0	0	0	0	100	0	100	97.1	0	100	100	98.4	100	97.7	0	100	97.9	98.0
Bank 1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	17	0	0	17	18
% Bank 1	0	0	0	0	0	0	0	0	0	0	2.9	0	0	0	1.6	0	2.3	0	0	2.1	2.0

Attachment B

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

Default Job Number: 20140745
Counted by : LSL
Weather: Clear
Location: WB Auburn and school driveway

File Name : School_Driveway
Site Code : 00000000
Start Date : 10/9/2014
Page No : 1

Groups Printed- Unshifted - Bank 1

	SCHOOL Southbound					AUBURN Westbound					SCHOOL Northbound					AUBURN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	112	1	1	114	3	0	3	1	7	3	0	0	0	3	124
07:15 AM	0	0	0	0	0	0	174	4	0	178	1	0	3	0	4	5	0	0	0	5	187
07:30 AM	0	0	0	0	0	0	207	6	0	213	2	0	5	0	7	5	0	0	0	5	225
07:45 AM	0	0	0	0	0	0	207	8	0	215	4	0	6	0	10	9	0	0	0	9	234
Total	0	0	0	0	0	0	700	19	1	720	10	0	17	1	28	22	0	0	0	22	770
08:00 AM	0	0	0	0	0	0	220	4	0	224	1	0	5	0	6	5	0	0	0	5	235
08:15 AM	0	0	0	0	0	0	201	5	0	206	3	0	3	0	6	5	0	0	0	5	217
08:30 AM	0	0	0	0	0	0	144	7	0	151	1	0	9	1	11	14	0	0	0	14	176
08:45 AM	0	0	0	0	0	0	119	16	0	135	8	0	41	0	49	17	0	0	0	17	201
Total	0	0	0	0	0	0	684	32	0	716	13	0	58	1	72	41	0	0	0	41	829
09:00 AM	0	0	0	0	0	0	101	2	0	103	3	0	5	0	8	2	0	0	0	2	113
*** BREAK ***																					
Total	0	0	0	0	0	0	101	2	0	103	3	0	5	0	8	2	0	0	0	2	113
*** BREAK ***																					
03:30 PM	0	0	0	0	0	0	184	9	0	193	1	0	4	1	6	18	0	0	1	19	218
03:45 PM	0	0	0	0	0	0	165	2	0	167	8	0	3	1	12	17	0	0	0	17	196
Total	0	0	0	0	0	0	349	11	0	360	9	0	7	2	18	35	0	0	1	36	414
04:00 PM	0	0	0	0	0	0	140	3	0	143	16	0	43	1	60	7	0	0	0	7	210
04:15 PM	0	0	0	0	0	0	149	3	0	152	4	0	9	0	13	3	0	0	0	3	168
04:30 PM	0	0	0	0	0	0	141	1	0	142	4	0	6	0	10	1	0	0	0	1	153
04:45 PM	0	0	0	0	0	0	146	4	0	150	1	0	3	1	5	6	0	0	0	6	161
Total	0	0	0	0	0	0	576	11	0	587	25	0	61	2	88	17	0	0	0	17	692
05:00 PM	0	0	0	0	0	0	150	3	0	153	9	0	7	1	17	3	0	0	0	3	173
05:15 PM	0	0	0	0	0	0	146	3	0	149	6	0	5	3	14	5	0	0	0	5	168
05:30 PM	0	0	0	0	0	0	127	2	0	129	1	0	9	0	10	8	0	0	0	8	147
05:45 PM	0	0	0	0	0	0	154	5	0	159	1	0	6	4	11	8	0	0	0	8	178
Total	0	0	0	0	0	0	577	13	0	590	17	0	27	8	52	24	0	0	0	24	666
Grand Total	0	0	0	0	0	0	2987	88	1	3076	77	0	175	14	266	141	0	0	1	142	3484
Apprch %	0	0	0	0		0	97.1	2.9	0		28.9	0	65.8	5.3		99.3	0	0	0.7		
Total %	0	0	0	0	0	0	85.7	2.5	0	88.3	2.2	0	5	0.4	7.6	4	0	0	0	4.1	
Unshifted	0	0	0	0	0	0	2967	88	1	3056	77	0	175	14	266	141	0	0	1	142	3464
% Unshifted	0	0	0	0	0	0	99.3	100	100	99.3	100	0	100	100	100	100	0	0	100	100	99.4
Bank 1	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	0	0	0	0	0	20
% Bank 1	0	0	0	0	0	0	0.7	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0.6

Attachment B

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

	SCHOOL Southbound					AUBURN Westbound					SCHOOL Northbound					AUBURN Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	0	207	6	0	213	2	0	5	0	7	5	0	0	0	5	225
07:45 AM	0	0	0	0	0	0	207	**8**	0	215	**4**	0	**6**	0	**10**	**9**	0	0	0	**9**	234
08:00 AM	0	0	0	0	0	0	**220**	4	0	**224**	1	0	5	0	6	5	0	0	0	5	**235**
08:15 AM	0	0	0	0	0	0	201	5	0	206	3	0	3	0	6	5	0	0	0	5	217
Total Volume	0	0	0	0	0	0	835	23	0	858	10	0	19	0	29	24	0	0	0	24	911
% App. Total	0	0	0	0		0	97.3	2.7	0		34.5	0	65.5	0		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.949	.719	.000	.958	.625	.000	.792	.000	.725	.667	.000	.000	.000	.667	.969
Unshifted	0	0	0	0	0	0	823	23	0	846	10	0	19	0	29	24	0	0	0	24	899
% Unshifted	0	0	0	0	0	0	98.6	100	0	98.6	100	0	100	0	100	100	0	0	0	100	98.7
Bank 1	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	0	0	0	0	0	12
% Bank 1	0	0	0	0	0	0	1.4	0	0	1.4	0	0	0	0	0	0	0	0	0	0	1.3
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	0	0	0	0	0	0	**184**	**9**	0	**193**	1	0	4	**1**	6	**18**	0	0	**1**	**19**	**218**
03:45 PM	0	0	0	0	0	0	165	2	0	167	8	0	3	1	12	17	0	0	0	17	196
04:00 PM	0	0	0	0	0	0	140	3	0	143	**16**	0	**43**	1	**60**	7	0	0	0	7	210
04:15 PM	0	0	0	0	0	0	149	3	0	152	4	0	9	0	13	3	0	0	0	3	168
Total Volume	0	0	0	0	0	0	638	17	0	655	29	0	59	3	91	45	0	0	1	46	792
% App. Total	0	0	0	0		0	97.4	2.6	0		31.9	0	64.8	3.3		97.8	0	0	2.2		
PHF	.000	.000	.000	.000	.000	.000	.867	.472	.000	.848	.453	.000	.343	.750	.379	.625	.000	.000	.250	.605	.908
Unshifted	0	0	0	0	0	0	635	17	0	652	29	0	59	3	91	45	0	0	1	46	789
% Unshifted	0	0	0	0	0	0	99.5	100	0	99.5	100	0	100	100	100	100	0	0	100	100	99.6
Bank 1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
% Bank 1	0	0	0	0	0	0	0.5	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0.4

Attachment B

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
55800 Grand River Avenue, Suite 100
New Hudson, Michigan 48165-9318
248.437.5099 · 248.437.5222 fax
www.zeimetwozniak.com

October 13, 2014

Ms. Sara Roediger, AICP
City of Rochester Hills
Planning and Economic Development
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Re: Barrington Park PUD
City File 14-012
Fire Department Review

Dear Ms. Roediger,

We have received comments from the Fire Department dated October 2, 2014 regarding the Conceptual PUD for Barrington Park. The PUD plans have been revised per those comments. In response, we offer the following:

1. The buildings will not be automatic sprinklered. Please see the note on Sheet CP-4,
2. Since the buildings are not spriklered, no FDC locations are shown.
3. Since this is only a Conceptual PUD submittal, the building construction type has not yet been finalized. Upon the Site Plan/PUD Agreement submission, the type of construction shall be noted and the appropriate number of hydrants and calculations shall be provided.
4. The minimum fire apparatus road width is 26'. See Sheet CP-2.
5. The fire hydrant near Building 13 has been revised.
6. Dead end roads have been eliminated or a turn around has been provided. See Sheet CP-4.
7. Noted.
8. Floor plans for the proposed buildings are not available at this time. They will be provided with the Site Plan/PUD Agreement submission.
9. The width of the drives to Barclay Circle are on Sheet CP-4.

If you have any further questions or comments, please contact us.

Thank you for your assistance with this project.

Sincerely,

Shawn Blaszczyk, PE

Pc: Gary Shapiro
Brad Strader
Felino Pascual

13178 Fire Dept Response 10-13-14

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
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www.zeimetwozniak.com

October 13, 2014

Ms. Sara Roediger, AICP
City of Rochester Hills
Planning and Economic Development
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Re: Barrington Park PUD
City File 14-012
Building Department Review

Dear Ms. Roediger,

We have received comments from the Building Department dated September 23, 2014 regarding the Conceptual PUD for Barrington Park. We appreciate their approval recommendation. Plot plans shall be submitted for each building along with the building permit application for their review of code compliance.

If you have any further questions or comments, please contact us.

Thank you for your assistance with this project.

Sincerely,

Shawn Blaszczyk, PE

Pc: Gary Shapiro
Brad Strader
Felino Pascual

13178 Building Dept Response 10-13-14

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
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October 13, 2014

Ms. Sara Roediger, AICP
City of Rochester Hills
Planning and Economic Development
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Re: Barrington Park PUD
City File 14-012
Planning Street name Review

Dear Ms. Roediger,

We have received comments from the Planning Department dated October 6, 2014 regarding the Conceptual PUD for Barrington Park. In response to those comments, we offer the following:

Auburn Road has been revised to E. Auburn Road.

The proposed interior street names are provided on the plans and will require approval by the street name committee.

If you have any further questions or comments, please contact us.

Thank you for your assistance with this project.

Sincerely,

Shawn Blaszczyk, PE

Pc: Gary Shapiro
Brad Strader
Felino Pascual

13178 Planning Response 10-13-14

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October 13, 2014

Ms. Sara Roediger, AICP
City of Rochester Hills
Planning and Economic Development
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Re: Barrington Park PUD
City File 14-012
DPS Legal Description Review

Dear Ms. Roediger,

We have received comments from the DPS dated September 26, 2014 regarding the Conceptual PUD for Barrington Park. In response to those comments, we offer the following:

Sheet CP-1

Spalding DeDecker spelling has been revised.

Sheet CP-2

Noted

Sheet CP-3

A note has been added on Sheet CP-4 under the "Storm Sewer Notes" regarding submittal of the Stormwater Maintenance Agreement.

A second benchmark has been added.

The benchmark datum and source are indicated in the "Grading Notes".

Sheet CP-4

The sanitary sewer shall be public centered in a 20' wide easement and is noted in the "Sanitary Sewer Notes".

There is an existing watermain easement on the adjacent site for the connection to be made. See Sheet CP-4 and CP-7.

Sheet CP-5

Noted

If you have any further questions or comments, please contact us.

Thank you for your assistance with this project.

Sincerely,

Shawn Blaszczyk, PE

Pc: Gary Shapiro
Brad Strader
Felino Pascual

13178 DPS Response 10-13-14