# LEE'S SUMMIT
MISSOURI

## DEVELOPMENT REVIEW FORM
## TRANSPORTATION IMPACT

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| **DATE:** | February 7, 2017 | **CONDUCTED BY:** | Michael K Park, PE, PTOE |
| **SUBMITTAL DATE:** | January 3, 2017 | **PHONE:** | 816.969.1800 |
| **APPLICATION #:** | PL2016219 | **EMAIL:** | Michael.Park@cityofls.net |
| **PROJECT NAME:** | WHISPERING WOODS | **PROJECT TYPE:** | Prel Dev Plan (PDP) |

**SURROUNDING ENVIRONMENT** *(Streets, Developments)*

The proposed residential subdivision is located along the east side of SW Pryor Road, between SW Hook Road and SW Scherer Road. The surrounding area consists of undeveloped or large lot agricultural property to the north, developing single-family residential subdivisions to the west, a high school to the east and an elementary school or large lot residential property to the south.

**ALLOWABLE ACCESS**

The proposed subdivision will be accessed via SW Pryor Road at two locations, and then individual lots will be accessed from several proposed residential streets. Future access will be provided through a network of roadways north and south of the subdivision as adjacent properties develop via the proposed residential collector. An east-west collector north of the proposed subdivision between Pryor Road and Ward Road is identified in the long-range transportation plan that would further enhance the transportation network in the area. There will be no individual lot access to SW Pryor Road or to the proposed residential collector streets (with a limited exception to a collector portion of SW River Run Drive where no alternative exists). The proposed residential collectors and residential local streets will have two lanes and a 25 mph speed limit. The proposed intersections will have adequate sight distance.

**EXISTING STREET CHARACTERISTICS** *(Lanes, Speed limits, Sight Distance, Medians)*

SW Pryor Road is a two lane undivided major arterial with a 45 mph speed limit currently constructed to an interim standard with paved shoulders. Unfunded improvements to SW Pryor Road from SW Longview Road to M-150 Highway are planned within the next 10 years that would provide a five-lane divided urban road section to accommodate continued community growth based on the adopted Thoroughfare Master Plan. SW Hook Road is a two lane undivided arterial with a 35 mph speed limit currently constructed to an interim standard with turf shoulders. A City initiated capital project has been programmed to provide paved shoulders along Hook Road. The interim standard can support the proposed residential development according to the Unimproved Road Policy. SW Scherer Road is a two lane unimproved undivided major arterial with a 35 mph speed limit. The intersections of Pryor Road at Scherer Road and Pryor Road at Hook Road are controlled by all-way stop conditions. Multiple turn lanes already exist at these two intersections. There shall be no unmitigated sight distance issues related to proposed intersections along SW Pryor Road.

**ACCESS MANAGEMENT CODE COMPLIANCE?** **YES** ☒ **NO** ☐

The proposed development will incorporate all required left-turn and right-turn lanes along Pryor Road as listed in the conditions of recommendation for approval. The proposed intersection spacing along Pryor Road meets the minimum criteria in the Access Management Code, subject to

relocation of the existing school driveway along Pryor Road as depicted on the development plans. The school driveway will be relocated from Pryor Road to the nearby proposed residential street. This relocation will improve safety and traffic operations along Pryor Road, including student, faculty, visitor and bus transportation safety through the use of required turn lanes along Pryor Road that will be provided with the development at the new intersection that are otherwise currently unprotected. The relocated school driveway will also encourage interaction between the subdivision and school; better facilitate pedestrian and bicycle student commutes and create a more desirable neighborhood-school setting.

All conditions required by the Access Management Code have been satisfied.

**TRIP GENERATION**

| Time Period | Total | In | Out |
|---|---|---|---|
| Weekday | 1656 | 828 | 828 |
| A.M. Peak Hour | 124 | 31 | 93 |
| P.M. Peak Hour | 164 | 103 | 61 |

**TRANSPORTATION IMPACT STUDY REQUIRED?** **YES** ☒ **NO** ☐

The proposed development will likely generate more than 100 vehicle trips to the surrounding street system during any given peak hour; a typical condition that requires a traffic impact study. A traffic impact study was completed by Priority Engineers, Inc. dated January 3, 2017. A supplemental analysis for traffic signal considerations at the intersections of Pryor Road and Scherer Road and Pryor Road at Hook Road was completed by Priority Engineers, Inc. dated January 10, 2017.

The traffic study provided an evaluation for the impact of proposed development generated trips on the surrounding streets for the AM Peak Hour and PM Peak Hour. Analysis scenarios included existing conditions, existing plus proposed development conditions and a future 20-year horizon. Intersections reviewed included Pryor Road at Scherer Road, Pryor Road at Hook Road and the proposed intersections along Pryor Road.

Traffic operations are reported using an industry standard level of service measure of delay represented similar to a school grade card from A to F, with A the best and F the worst. The City of Lee's Summit has adopted a level of service goal C.

Reported traffic operations at all studied intersections for existing conditions are mostly adequate; areas of poor operation are specifically described herein. The southbound movement at the intersection of Pryor Road and Scherer Road has a level of service F during the AM Peak Hour with a reported vehicle queue of approximately 475 feet. The same southbound movement and the northbound movement at this intersection experience a level of service F in the PM Peak Hour with reported vehicle queues of about 325 feet and 545 feet, respectively. The southbound movement at the intersection of Pryor Road and Hook Road has a reported level of service D with an approximate 160-foot queue during the PM Peak Hour. These poor operations and long vehicle queues are manageable, but a result of increasing traffic volume at an all-way stop that should be further evaluated for near-term improvement. These conditions tend to indicate a need for more restrictive intersection control, such as traffic signal installation, as mitigation for adequate level of service.

A traffic signal warrant analysis was included in the traffic study to better evaluate existing conditions and reported levels of service. Traffic signal warrants are established in the Manual on Uniform Traffic Control Devices, a federally legislated manual and industry reference adopted by the City of Lee's Summit. Absent any warranting conditions, a traffic signal should not be installed. Traffic signals should only be considered if one or more warrants are satisfied, but a met warrant is not a mandate for traffic signal installation.

Based on existing traffic volumes, at least two traffic signal warrants (i.e. the peak hour warrant for AM and PM periods and the four-hour warrant) are likely met at the intersection of Pryor Road and Scherer Road. Consequently, Staff recommends a traffic signal be imminently pursued for the intersection of Pryor Road and Scherer Road. Current operations at the intersection of Pryor Road and Scherer Road do not meet the City's level of service goal, but are considered acceptable for the very near term. Considering this experience a traffic signal should be planned to improve operations and support continued community growth and development. A traffic signal at this intersection would provide adequate level of service for all movements. A temporary (span wire) traffic signal would be appropriate while the intersection of Pryor Road and Scherer Road remains built to an interim road standard.

Based on existing traffic volumes, the intersection of Pryor Road and Hook Road did not meet any more than one peak hour warrant (only the PM peak hour). Typically, a traffic signal is not required or recommended when only one peak hour warrant is met. Furthermore, the delay and queues reported for the intersection of Pryor Road and Hook Road indicate sufficient capacity remains for measureable increases in traffic throughout the day. The PM peak hour southbound level of service D should not require mitigation at this time.

The development scenario shows a worsening condition at the aforementioned two intersections during the AM and PM Peak Hours. However, the only identified change in level of service to exceed the City goal occurs for the northbound movement at the intersection of Pryor Road and Scherer Road during the AM Peak Hour; a change from LOS C to LOS D. Vehicle queues generally get longer with the anticipated impact of development. The supplemental traffic analysis assesses the incremental impact on delay and vehicle queues associated with a phased development approach to determine when a traffic signal is recommended to support the development. The traffic study recommends Phase 1 and Phase 2 (a total of 68 lots) be permitted within the proposed development absent traffic signal control at the intersection of Pryor Road and Scherer Road. Staff concurs with the traffic study recommendation. Trips generated by Phase 1 and Phase 2 of the development should not have a significant impact to delay or queue at this intersection not already experienced and managed. The trips from Phase 1 and Phase 2 represent less than 5 percent of the total peak hour traffic currently traveling through the intersection. Additional trips generated by the development after Phase 1 and Phase 2 likely surpass the acceptable threshold of adequate infrastructure and will require traffic signal control at the intersection of Pryor Road and Scherer Road. There are no other traffic signals warranted in support of the proposed development. Several right-turn and left-turn lanes are recommended in the traffic impact study along Pryor Road in support of the development and compliance with the Access Management Code. These turn lanes are associated with proposed roadways serving the development. Staff concurs with the turn lane recommendations. These recommendations are listed as stipulations for approval.

A 2035 scenario was also completed in the traffic study. This scenario assures adequate right-of-way for future road improvements are not in conflict with the proposed development. It justifies

the future need for traffic signals at both major intersections along Pryor Road and resulting adequate levels of service. The development will not inhibit plans for future widening of Pryor Road and any required right-of-way for left-turn and right-turn lanes in consideration of the future 5-lane section for Pryor Road adjacent to the development would be provided through the platting process.

**LIVABLE STREETS** *(Resolution 10-17)* **COMPLIANT** ☒ **EXCEPTIONS** ☐

The proposed development plan includes all Livable Streets elements identified in the City's adopted Comprehensive Plan, associated Greenway Master Plan and Bicycle Transportation Plan attachments, and elements otherwise required by ordinances and standards, including but not limited to sidewalk, Greenway paths, street connectivity and accessibility. The development will enhance access to the adjacent elementary school, and walking and biking to school. The development will extend the Greenway Master Plan. No exceptions to the Livable Streets Policy adopted by Resolution 10-17 have been proposed.

**RECOMMENDATION:** **APPROVAL** ☒ **DENIAL** ☐ **N/A** ☐ **STIPULATIONS** ☒
*Recommendations for Approval refer only to the transportation impact and do not constitute an endorsement from City Staff.*

Staff recommends approval of the proposed preliminary development plan subject to the following conditions:

1. Relocate the existing elementary school driveway located along SW Pryor Road to SW River Run Drive as depicted on the preliminary development plan prior to the issuance of building permits for any lot within the development.
2. Construct a northbound right-turn lane along SW Pryor Road at the proposed intersection of SW River Run Drive prior to the issuance of building permits for any lot within the development. The right-turn lane shall be at least 150 feet in length plus taper.
3. Construct a southbound left-turn lane along SW Pryor Road at the proposed intersection of SW River Run Drive prior to the issuance of building permits for any lot within the development. The left-turn lane shall be at least 200 feet in length plus taper.
4. Construct a northbound right-turn lane along SW Pryor Road at the proposed intersection of SW 26th Terrace. The right-turn lane shall be at least 150 feet in length plus taper. Timing of construction noted below.
5. Construct a southbound left-turn lane along SW Pryor Road at the proposed intersection of SW 26th Terrace. The left-turn lane shall be at least 200 feet in length plus taper. Timing of construction noted below.
6. Install a temporary traffic signal at the intersection of SW Pryor Road and SW Scherer Road. The traffic signal shall be substantially completed prior to the issuance of building permits for any lot beyond those lots contained in Phase 1 or Phase 2 (not to exceed a combined 68 lots).

Conditions #4 and #5 shall require substantial completion prior to the issuance of building permits for any lot within the phase of development which the roadway in the condition serves. Conditions #4 and #5 may be coordinated with City capital improvements to Pryor Road adjacent to the development in lieu of substantial completion only if an escrow is provided to the City in an amount equivalent to the improvement cost associated with each condition and the roadway associated with the condition is not yet open for public use and construction of the City project adjacent to the improvement listed in the condition is either underway, completed or within 12 months of letting.