



LEE'S SUMMIT MISSOURI

DEVELOPMENT REVIEW FORM TRANSPORTATION IMPACT

DATE: October 30, 2018 **CONDUCTED BY:** Michael K Park, PE, PTOE
SUBMITTAL DATE: October 19, 2018 **PHONE:** 816.969.1800
APPLICATION #: PL2018098 **EMAIL:** Michael.Park@cityofls.net
PROJECT NAME: STREETS OF WEST PRYOR **PROJECT TYPE:** Prel Dev Plan (PDP)

SURROUNDING ENVIRONMENT (*Streets, Developments*)

The proposed preliminary development plan is located along the west side Pryor Road between Chipman Road and I-470. The property is surrounded by residential use to the west, commercial shopping center to the east, park property to the south and an interstate highway to the north.

ALLOWABLE ACCESS

Access to the site is proposed from Pryor Road and Lowenstein Drive. An extension of Summit Woods Xing, a private street serving Summit Woods Shopping Center with signal controlled access at Pryor Road, will provide full access to Pryor Road for the northern portion of the development. Lowenstein Drive will be reconstructed to commercial collector standards that accommodate multiple driveways serving the southern portion of the development. The intersection of Lowenstein Drive at Pryor Road would be improved with traffic signal control to support the development trip generation. A limited access driveway is proposed along Pryor Road between Summit Woods Xing and Lowenstein Drive.

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

Pryor Road is a four-lane, median divided, major arterial with a 35 mph speed limit in the vicinity of the proposed development. Pryor Road extends north-south across the City with major junctions at Interstate 470 and M-150 Highway. It also intersects the nearest east-west major arterial, Chipman Road. Lowenstein Drive is an unimproved two-lane collector that has full access along Pryor Road between Chipman Road and I-470. This roadway would be improved in association with the proposed development. Lowenstein Drive is stop controlled at Pryor Road and extends eastward into the adjacent Summit Woods Shopping Center as a private driveway. Lowenstein Drive also intersects Black Twig Lane, another two-lane roadway that has been partially improved to urban standards. Lowenstein Drive and Black Twig Lane have a speed limit of 25 mph. Summit Woods Xing is a private street serving the Summit Woods Shopping Center with traffic signal control at Pryor Road. The nearest major intersections along Pryor Road at Chipman Road and I-470 Ramps are also traffic signal controlled. There is adequate sight distance at the existing intersections and all required sight distances along Lowenstein Drive will be provided in association with this development and required reconstruction of Lowenstein Drive to support proposed access.

ACCESS MANAGEMENT CODE COMPLIANCE?

YES

NO

All provisions of the Access Management Code (AMC) are fully satisfied with the exceptions noted herein. The intersection spacing along Lowenstein Drive between the Lowenstein Park parking lot driveways and the commercial driveway centered in-between is slightly less than the minimum separation required. Staff supports a waiver to the spacing criteria associated with these driveways considering the proximity shown on the plans nearly meets the code requirements, involves low volumes and few turning movements in conflict. The left-turn lanes along Lowenstein Drive at the easternmost commercial driveway do not have the minimum required storage capacity or taper design noted in the AMC. The westbound left-turn lane at this location is approximately half the minimum required, or 80 feet, and is limited based on the physical space available within the roadway that has opposing eastbound left-turns at the Lowenstein Drive and Pryor Road intersection. This left-turn is not stop controlled and has reported vehicle queues less than the available 80 feet of storage. Likewise the eastbound left-turn lane at this same commercial driveway intersection is geometrically constrained and does not have a reported queue more than a few vehicles. Staff supports a waiver to the AMC for the design of these two left-turn lanes generally as depicted on the plans to such extent these turn lanes have been maximized based on practical engineering and priority of roadway space. No other design issue or waiver is requested.

TRIP GENERATION

Time Period	Total	In	Out
Weekday	21,084	10,542	10,542
A.M. Peak Hour	1,307	678	629
P.M. Peak Hour	1,781	988	793

TRANSPORTATION IMPACT STUDY REQUIRED? Yes No

The proposed development will likely generate more than 100 vehicle trips during a weekday peak hour; the minimum condition for traffic impact study requirements. A traffic impact study was completed by SKW/McClure, dated August 2018, with supplemental analysis for plan revisions dated October 2018. This study considered AM and PM Peak Hour traffic operations along Pryor Road at the intersections of Chipman Road, Lowenstein Drive, Summit Woods Xing, and I-470 Interchange as well as the intersections of Chipman Road at Black Twig Lane, Black Twig Lane at Lowenstein Drive, and all proposed commercial driveways. Analysis scenarios were completed for existing conditions and existing plus proposed development conditions with various increments of development phasing.

Level of service (LOS) is an industry accepted standard measure of performance (e.g. delay) for traffic operations rated A-F, similar to a grade card with A the best and F the worst condition. The City Council has adopted a LOS policy in which the acceptable condition is LOS C or better for traffic signal controlled intersections and where LOS D (or worse) may be acceptable for stop controlled minor street approaches and driveways at major streets.

All studied intersections exhibit adequate level of service and reasonably managed vehicle queues for existing conditions with exception of the Lowenstein Drive stop controlled movement at Pryor Road during the PM Peak Hour (a reported LOS E). Subsequent traffic analysis scenarios considering the proposed development show this intersection meets traffic signal warrant criteria. A traffic signal is recommended for the intersection of Lowenstein Drive at Pryor Road in

association with the first phase of the development project and mitigates this existing condition to an adequate LOS.

The traffic impact of proposed development through one or more phases will require roadway improvements to address adequate LOS, vehicle queue lengths, Access Management Code requirements and Unimproved Road Policy. Those improvements recommended in the traffic study were used in the analysis of operations and are listed below:

- Traffic signal installation at Lowenstein Drive and Pryor Road (Phase 1)
- Improvements to Black Twig Lane in compliance with the Unimproved Road Policy as shown on the plans. (Phase 1)
- Improvements to Lowenstein Drive, exhibiting a three-lane urban section with two dedicated 150-foot eastbound left-turn lanes at Pryor Road as shown on the plans. (Phase 1)
- Southbound right-turn lane along Pryor Road at proposed right-in/right-out with 150 feet of storage plus 100-foot taper. (Phase 1)
- Southbound right-turn lane along Pryor Road at Lowenstein Drive with continuous storage to the right-in/right-out driveway. (Phase 1)
- Westbound right-turn lane along Lowenstein Drive at eastern driveway with 150 feet of storage plus 100-foot taper. (Phase 1)
- Southbound right-turn lane along Pryor Road at Summit Woods Xing with 150 feet of storage plus 100-foot taper. (Phase 2)
- Northbound left-turn lane along Pryor Road at Summit Woods Xing with 200 feet of storage plus 100-foot taper. (Phase 2)
- Eastbound left-turn lane(s) along Summit Woods Xing at Pryor Road with combined storage of 300 feet plus taper. (Phase 2)
- Traffic signal modifications at Summit Woods Xing and Pryor Road (Phase 2)

Improvement recommendations associated with Phase 1 and Phase 2 address the capacity needs for Phases 3-5 identified in the traffic study. A signal is not warranted at any other existing stop controlled intersection studied, including the intersection of Black Twig Lane at Chipman Road, for any development scenario studied.

Provided these recommended improvements, as amended in staff recommendations for approval, all intersections should have an overall adequate level of service (LOS) and vehicle queues should normally be contained within available storage for the AM and PM Peak periods as reported at full build of the proposed development. The conditions of staff recommendation were similar to those recommended improvements in the traffic study and only modified to more fully comply with the AMC, reflect plan changes that occurred after the traffic study had been completed and provide sufficient capacity for projected vehicle queues that may either block or spill beyond the dimensions noted.

LIVABLE STREETS (*Resolution 10-17*)

COMPLIANT

EXCEPTIONS

The proposed development 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 in full compliance with the Livable Streets Policy adopted by Resolution 10-17. The project includes additional trails/shared use paths throughout and adjacent to the site, park enhancements, recreational amenities, and promotes mixed-use development for active lifestyles.

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 conceptual development plan subject to the following off-site transportation improvement conditions:

1. Construct a southbound right-turn lane with at least 150 feet of storage, plus taper in accordance with the Access Management Code, along Pryor Road at the proposed right-in/right-out driveway between Summit Woods Xing and Lowenstein Drive.
2. Construct a southbound right-turn lane with at least 200 feet of storage, plus taper in accordance with the Access Management Code, along Pryor Road at Lowenstein Drive.
3. Construct two eastbound left-turn lanes with at least 150 feet of storage each, plus taper as generally depicted on the plans, along Lowenstein Drive at Pryor Road.
4. Construct a westbound right-turn lane with at least 150 feet of storage, plus taper in accordance with the Access Management Code, along Lowenstein Drive at the easternmost proposed driveway.
5. Reconstruct and widen Lowenstein Drive west of Pryor Road to Black Twig Lane to exhibit a three-lane commercial collector urban standard with curbs, sidewalks, medians and left-turn lanes at existing and proposed driveways in compliance with the Access Management Code (AMC) with properly designed transition to existing Lowenstein Drive west of Black Twig Lane. Any exceptions to driveway spacing or turn lane capacity is noted in the AMC Compliance Section of this report and generally depicted on the plans.
6. Widen and improve the east side of Black Twig Lane to an urban standard that complies with the City's Unimproved Road Policy to include curb and gutter and sidewalk between Lowenstein Drive and Chipman Road.
7. Traffic signal installation at the intersection of Pryor Road and Lowenstein Drive with interconnect to adjacent traffic signals.
8. Construct a southbound right-turn lane with at least 150 feet of storage plus taper along Pryor Road at Summit Woods Xing. This improvement shall not be required until such time as Summit Woods Xing is extended west of Pryor Road.
9. Construct a northbound left-turn lane with at least 250 feet of storage plus taper along Pryor Road at Summit Woods Xing. This improvement shall not be required until such time as Summit Woods Xing is extended west of Pryor Road.
10. The Summit Woods Xing extension west of Pryor Road, a private street, shall be constructed to include at least one ingress lane, one egress lane for through/right-turn traffic and two egress lanes for left-turn traffic. The two left-turn lanes shall have a combined capacity of at least 400 feet of storage plus taper. The approach shall not have access within 400 feet of Pryor Road or a raised median may be constructed along the approach to limit any access to right-in/right-out no closer than 200 feet from Pryor Road. These improvements shall not be required until such time as Summit Woods Xing is extended west of Pryor Road.

11. Traffic signal modification/improvements at the intersection of Pryor Road and Summit Woods Xing. This improvement shall not be required until such time as Summit Woods Xing. is extended west of Pryor Road

Tapers shall comply with the Access Management Code design criteria. These improvements shall be substantially completed prior to the issuance of occupancy for any building within the project area except that Conditions #8 thru #11 may be deferred to the phase of development associated with access along Pryor Road at Summit Woods Xing.