



LEE'S SUMMIT MISSOURI

DEVELOPMENT REVIEW FORM TRANSPORTATION IMPACT

DATE:	April 19, 2016	CONDUCTED BY:	Michael K Park, PE, PTOE
SUBMITTAL DATE:	April 5, 2016	PHONE:	816.969.1800
APPLICATION #:	PL2016039	EMAIL:	Michael.Park@cityofls.net
PROJECT NAME:	SUMMIT ORCHARDS	PROJECT TYPE:	Prel Dev Plan (PDP)

SURROUNDING ENVIRONMENT (*Streets, Developments*)

The proposed preliminary development plan is located between Chipman Road and Tudor Road (a new roadway under construction) and east of Ward Road. The surrounding area includes approved mixed use developments to the north of Tudor Road (i.e. Summit Place and Missouri Innovation Campus); the Union Pacific Railroad along the east boundary and the existing Summit Technology Campus to the west. There are industrial buildings and residential properties south of Chipman Road.

ALLOWABLE ACCESS

The proposed development will be accessed from a new public street (an extension of Donovan Road) that loops from Chipman Road to Ward Road. The development will also have access directly to Chipman Road, Ward Road and Tudor Road. The two proposed intersections of Donovan Road with Chipman Road and Ward Road will be full access. The proposed access along Chipman Road, Ward Road and Tudor Road will be limited to right-in/right-out driveways by raised medians along the public roads. One of these four driveways is located along Ward Road between Donovan Road and Chipman Road and another along Ward Road between Donovan Road and Tudor Road. The other two limited access driveways are proposed from Tudor Road east of Ward Road and from Chipman Road between Ward Road and Donovan Road. The proposed commercial street, Donovan Road, will have left-turn lanes at each driveway and a 25 mph speed limit. All of the proposed intersections will have adequate sight distance.

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

Ward Road is a two-lane major arterial between Chipman Road and Blue Parkway with a 35 mph speed limit. This roadway will be widened to a four-lane median divided facility as development occurs. The approved Summit Place development is conditioned on widening Ward Road to four-lanes between Blue Parkway and Tudor Road. The approved Missouri Innovation Campus development also has limitations on building square footage that require widening of Ward Road to four-lanes between Chipman Road and Tudor Road. Ward Road west of Blue Parkway has already been improved to four-lanes through the interchange at I-470. Tudor Road will be a four-lane median divided arterial with a 35 mph speed limit between Douglas Street and Ward Road with an overpass of the railroad. This roadway is under construction. The intersection of Tudor Road and Ward Road will initially be stop controlled on Tudor Road until development generates sufficient traffic to warrant traffic signal control. A traffic signal at this location and additional turn lanes along Ward Road are stipulated conditions of the aforementioned approved developments north of Tudor Road. Chipman Road is a four-lane median divided major arterial with a 45 mph

speed limit. The intersection of Chipman Road and Ward Road is traffic signal controlled with multiple turn lanes in each direction. Donovan Road is a two-lane residential street that also provides some access to industrial property south of Chipman Road. Donovan Road has a 25 mph speed limit and is generally constructed to unimproved or interim road standards (e.g. no curbing, portions of narrow pavement and lack of sidewalk). The intersection of Donovan Road and Chipman Road is full access with a stop sign on Donovan Road.

ACCESS MANAGEMENT CODE COMPLIANCE?

Yes

No

The development plan and/or staff recommendations includes required turns lane at each intersection proposed along Ward Road, Donovan Road, Chipman Road and Tudor Road (or provisions for those turn lanes to be constructed in coordination with future improvements to Ward Road). In consideration of these recommendations, the Access Management Code criteria are met. All other spacing conditions, driveway throat lengths, sight distance, connectivity and site circulation required by the Access Management Code have been satisfied too.

TRIP GENERATION

Time Period	Total	In	Out
Weekday	18,480	9,240	9,240
A.M. Peak Hour	1,335	772	563
P.M. Peak Hour	1,872	850	1,022

The trip generation above represents full development. A more detailed description of trip generation and land use based on development phases and consideration of pass-by trips (trips going to and from the development that already exist on adjacent roads for service type business) is included in the applicant's traffic impact study.

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 traffic impact study was completed by McClure Engineering Co., dated March 2016. The traffic study analyzed the impact of the proposed development during the AM and PM commuter peak hours at the intersections along Ward Road from Chipman Road to Innovation Parkway and along Chipman Road, Donovan Road and Tudor Road at site access drives.

The traffic study assesses existing conditions and considers the impact of the proposed development in multiple phases of construction. Existing conditions includes projected trips to/from the Missouri Innovation Building (Phase 1 of Missouri Innovation Campus) that is under construction. All scenarios assume the improvements to Tudor Road from Ward Road to Douglas Street are completed as planned by the City. Those improvements to Tudor Road include left-turn and right-turn lanes at the intersection of Ward Road and the intersection of Innovation Parkway. The traffic conditions for various scenarios also consider approved but unbuilt development in the immediate vicinity (e.g. Summit Place and Missouri Innovation Campus). The traffic study assumes multiple phases of construction; the apartments in phase one, the mixed-use commercial portion in phase two and the remaining office uses in later phases. City staff has conducted analysis and recommendations based on the traffic study and preliminary development phasing of construction in consideration of approved developments and associated development activity.

The traffic study finds all the existing intersections with exception of the intersection at Donovan Road and Chipman Road during the PM commuter peak hour are operating at acceptable levels of service. Level of service (LOS) is an industry standard performance measure from A to F similar to a school grade card with A the best and F the worst representation of vehicle delay. The City has adopted a LOS C goal. The intersection of Chipman Road and Donovan Road has a peak hour level of service E, slightly above the LOS D threshold for stop controlled movements. The intersection has turn lanes in each direction along Chipman Road and exhibits delay on the minor street approach due to the significant volume of through traffic along Chipman Road that cannot be improved without traffic signal control. This improvement is not warranted based on the existing traffic volume on Donovan Road. All of the vehicle queues are contained within the existing turn lanes for all peak hours at all the study intersections. There are no additional improvements or signals warranted for existing conditions at the studied intersections and roadways.

The resulting traffic operations upon completion of Phase 1 of the proposed development (apartments) show adequate level of service at all studied intersections with exception of the AM and PM Peak Hour stop controlled condition on Donovan Road at Chipman Road in consideration of the Donovan Road improvements and required turn lanes at each intersection. The stop controlled movements on Donovan Road at Chipman Road exhibit a poor level of service, but the volume is too low for traffic signal control and alternative routes for access are available during periods of congestion. The impact of Phase 1 does not require any new traffic signal installations (no signal is warranted at Donovan Road and Chipman Road intersection or the intersections along Ward Road). The impact of Phase 1 also does not require the widening of Ward Road to four-lanes north of Chipman Road. In consideration of approved development and assuming that development is constructed, Phase 1 could still occur without widening of Ward Road to four-lanes south of Tudor Road and maintain an adequate, but somewhat congested condition. The approved Summit Place development is required to widen Ward Road to four-lanes north of Tudor Road among other transportation improvements along Ward Road north of Tudor Road upon build. The approved Missouri Innovation Campus is required to widen Ward Road to four-lanes south of Tudor Road upon any additional phases beyond the phase in construction (plus hotel) if Summit Place construction has started and Ward Road shall be widened to four-lanes from Chipman to Blue Parkway before full build of the Missouri Innovation Campus can be completed. The improvements recommended for Phase 1 to provide an adequate level of service and comply with the Access Management Code include:

- (1) A 150' plus taper westbound right-turn lane along Chipman Road at Donovan Road.
- (2) A 200' plus taper eastbound left-turn lane along Chipman Road at Donovan Road.
- (3) A 150' plus taper northbound right-turn lane along Ward Road at Donovan Road.
- (4) A 200' plus taper southbound left-turn lane along Ward Road at Donovan Road.

Phase 1 also includes the construction of Donovan Road between Chipman Road and Ward Road, a 3-lane commercial roadway with a 25 mph design speed.

The required northbound right-turn lane along Ward Road at Donovan Road may be deferred until Ward Road is widened to four-lanes (a pending development improvement) so as to avoid its construction, removal and replacement within a short time. As such, an escrow deposit (or similar instrument) for the design and construction of a northbound right-turn lane is recommended by staff and its construction may be scheduled in coordination with future Ward Road widening.

Staff has reviewed the impact of Phase 2 development and development Phases 3 thru 5 (which were analyzed in the traffic study as a commercial phase and office phase) in combination due the consistency of improvement needs and timing of such improvements associated with Phase 2 and

the remaining phases. Staff review of development beyond Phase 1 was also done in consideration of projected traffic from approved development nearby, its current activity and its associated conditions of approval. Staff's considerations of approved developments attempts to capture the compounding impact of development that has been incrementally planned knowing those approved developments will use roadway capacity assumed available for the proposed project (but may not be available) and those approved developments cannot be conditioned to perform additional mitigations. The only improvements remaining after Phase 1 of the proposed development that could be sequenced with the associated phase are the right-turn lanes for the area identified as Phase 5. These right-turn lanes may be deferred until access for Phase 5 is constructed. With the following improvements, all of the study intersections should have adequate level of service and manageable vehicle queues:

- (5) Widen Ward Road to four lanes from Chipman Road to Tudor Road.
- (6) Traffic signal installation at the intersection of Chipman Road and Donovan Road with an integrated and interconnected operational system used along Chipman Road at Ward Road.
- (7) Traffic signal installation at the intersection of Ward Road and Tudor Road with interconnect to adjacent traffic signals.
- (8) A 150' plus taper northbound right-turn lane along Ward Road at Tudor Road.
- (9) A 150' plus taper northbound right-turn lane along Ward Road at the southern right-in/right-out driveway.
- (10) A 150' plus taper westbound right-turn lane along Chipman Road at the right-in/right-out driveway.
- (11) A 200' plus taper westbound left-turn lane along Chipman Road at Donovan Road.
- (12) A 150' plus taper northbound right-turn lane along Ward Road at the northern right-in/right-out driveway.
- (13) A 150' plus taper eastbound right-turn lane along Tudor Road at the right-in/right-out driveway.

The aforementioned staff recommendations are generally consistent with the traffic study for full build of the development except the right-turn lanes associated with the right-in/right-out access points along Ward Road, Chipman Road and Tudor Road. These right-turn lanes associated with right-in/right-out access were omitted in the study, but are otherwise required by the Access Management Code. Additionally, a westbound left-turn lane along Chipman Road at Donovan Road was omitted in the study, but is necessary to accommodate the projected queues with an increase in intersection volume generated by the development and change to traffic signal control. The right-turn lane required at the northern right-in/right-out driveway along Ward Road can be deferred with an escrow deposit (or similar instrument) for future construction until the driveway is constructed and Ward Road is widened to four lanes. Likewise, the right-turn lane on Tudor Road at the right-in/right-out may be deferred until the driveway is constructed.

LIVABLE STREETS (*Resolution 10-17*)

COMPLIANT

EXCEPTIONS

The proposed preliminary 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, street connectivity and accessibility. A shared-use path "Greenway" is included along Ward Road, but such improvement would be deferred until Ward Road is widened. A shared-use path is also required along Chipman Road in accordance with the approved Greenway Master Plan. Additional livability elements, such as bike racks within the development and landscaping, medians and traffic calming along Donovan Road are supported at the

developer's option as an integrated design for the mixed-use development. 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:

Prior to the issuance of any occupancy permit within Phase I (Apartments) these items shall be substantially completed:

1. Construct a minimum 150-foot long plus taper westbound right-turn lane along Chipman Road at Donovan Road. The improvements shall include a 10' shared-use path along the north side of Chipman Road between Donovan Road and the UPRR.
2. Construct a minimum 200-foot long plus taper eastbound left-turn lane along Chipman Road at Donovan Road.
3. Construct a minimum 150-foot plus taper northbound right-turn lane along Ward Road at Donovan Road. This improvement may be deferred with an escrow deposit to the City for the design and construction to coordinate with future Ward Road widening if not already four-lanes.
4. Construct a minimum 200-foot long plus taper southbound left-turn lane along Ward Road at Donovan Road.

Prior to the issuance of occupancy permits within Phase 2, Phase 3 or Phase 4 these items shall be substantially completed:

5. Widen Ward Road from Tudor Road to Chipman Road to a four-lane median divided facility with a 10' shared-use path along the east side of the road.
6. Traffic signal installation at the intersection of Chipman Road and Donovan Road. The traffic signal shall have an operational system consistent with and interconnected to the intersection at Ward Road and Chipman Road.
7. Traffic signal installation at the intersection of Ward Road and Tudor Road or provide an escrow deposit to the City for the design and construction of such improvement and defer completion to coordinate with future Ward Road widening north of Tudor Road if not already four-lanes. The traffic signal shall be interconnected to adjacent traffic signals.
8. Construct a minimum 150-foot long plus taper northbound right-turn lane along Ward Road at Tudor Road.
9. Construct a minimum 150-foot long plus taper northbound right-turn lane along Ward Road at the proposed right-in/right-out driveway located between Donovan Road and Chipman Road.
10. Construct a minimum 150-foot long plus taper westbound right-turn lane along Chipman Road at the proposed right-in/right-out driveway located between Donovan Road and Chipman Road.

The improvements shall include a 10' shared-use path along the north side of Chipman Road between Ward Road and Donovan Road.

11. Construct a minimum 200-foot long plus taper westbound left-turn lane along Chipman Road at Donovan Road.

Prior to the issuance of occupancy permits within portions of Phase 5 these items shall be substantially completed:

12. Construct a minimum 150-foot northbound right-turn lane along Ward Road at the proposed right-in/right-out driveway associated with Phase 5.

13. Construct a minimum 150-foot eastbound right-turn lane along Tudor Road at the proposed right-in/right-out driveway associated with Phase 5.