



LEE'S SUMMIT MISSOURI

DEVELOPMENT REVIEW FORM TRANSPORTATION IMPACT

DATE:	November 9, 2016	CONDUCTED BY:	Michael K Park, PE, PTOE
SUBMITTAL DATE:	October 4, 2016	PHONE:	816.969.1800
APPLICATION #:	PL2016165	EMAIL:	Michael.Park@cityofls.net
PROJECT NAME:	THE GROVE	PROJECT TYPE:	Prel Dev Plan (PDP)

SURROUNDING ENVIRONMENT (*Streets, Developments*)

The proposed mixed-use development is generally located north and south of Bailey Road, east of M-291 Highway. The development is bordered by M-291 Highway to the west, UPRR to the east, undeveloped property to the north (and US 50 beyond) and industrial mixed-use property towards the immediate south.

ALLOWABLE ACCESS

The proposed development will be accessed by M-291, Bailey Road, 16th Street and a network of new public streets; including Decker Street, Summit Street, and Oldham Parkway.

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

M-291 is a four-lane divided highway owned and maintained by MoDOT. M-291 has an interchange at US 50 Highway just north of the project area. There is a current interchange improvement project underway at US 50 and M-291 South Junction, voted in favor by the citizens of Lee's Summit, fully funded and nearing final design. Construction of the interchange project is scheduled to begin in 2017 and conclude by the end of 2018. This project will provide a new diverging diamond interchange, the relocation of Oldham Parkway (a MoDOT highway frontage road), and other improvements along M-291 south of US 50 positively impacting capacity, safety and opportunity for economic development. Bailey Road is a two-lane undivided minor arterial with a 35 mph speed limit extending east of M-291 to Ranson Road (a MoDOT roadway) with an overpass of the UPRR. This is a recently completed roadway connection. It also provides an alternate route to US 50 via Hamblen Road. West of M-291, Persels Road is an extension of Bailey Road to Ward Road, another major arterial. Proposed Oldham Parkway is an extension of the relocated Oldham Parkway included in the interchange project. Oldham Parkway is a commercial/industrial collector. Proposed Decker Street is also a commercial/industrial street and aligns with existing Decker Street south of the development. Decker Street was recently connected between 16th Street and Thompson Drive. The development has appropriately planned for the future extension of proposed Decker Street to 16th Street, further connecting the road network. Thompson Drive has an intersection with M-291 and continues west across Lee's Summit as Scherer Road. Proposed Summit Street too is an extension of existing road from the south of 16th Street. 16th Street is a two-lane unimproved (narrow) industrial road. In consideration of the City's adopted Unimproved Road Policy, 16th Street should be improved to at least an interim standard (a minimum of two 12-foot paved lanes) when the development extends Summit Street causing new/additional use (i.e. Phase 1). The improvement of 16th Street may be limited to the areas of potential impact by development generated trips, extending only from M-

291 to Summit Street. Sight distance should be adequate at all existing and proposed intersections.

ACCESS MANAGEMENT CODE COMPLIANCE?

Yes

No

Criteria in the Access Management Code has been met in consideration of improvements planned in the US 50 and M-291 South Junction Interchange Project, improvements shown on the preliminary development plan and improvements listed as a stipulation of recommendation herein.

TRIP GENERATION

Time Period	Total	In	Out
Weekday	18,228	9,114	9,114
A.M. Peak Hour	1,313	996	317
P.M. Peak Hour	1,799	657	1,142

The trip generation tabulated above represents full development of the preliminary development plan.

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 study was completed by TranSystems Corp., dated September 2016. This study was submitted to the City and MoDOT for review and approval.

The traffic study considered the following scenarios to assess the development impact and required improvements to mitigate inadequate infrastructure/operations: Existing Conditions and Existing Plus Proposed Development Conditions. The proposed development scenario was considered in four construction phases; the first phase (separated into 1a and 1b) is located south of Bailey Road. The second phase and third phase is located north of Bailey Road. Phase 4 includes properties beyond the scope of the preliminary development plan. Each analysis scenario was evaluated for AM and PM peak hours at nearby intersections along Bailey Road and M-291 Highway. Since interchange improvements at US 50 and M-291 have been designed in consideration of development on adjacent undeveloped or underutilized properties with mixed-use densities consistent with the proposed preliminary plan, the interchange was not operationally analyzed and interchange improvements were considered in-place for all analysis scenarios. The study also included an assessment of site circulation, design, and compliance with access management codes/criteria.

The City of Lee's Summit has adopted a level of service goal C or better for traffic signal controlled intersections. Stop controlled approaches with a level of service D or below may be acceptable. MoDOT has similar LOS goals, but LOS D and E for some traffic signal locations are considered acceptable. Level of service is a measure of acceptable vehicle delay reported at A-F; with A being the optimal operation and F representing failed operations.

The traffic study shows adequate traffic operations for the existing conditions except at the intersection of M-291 and Bailey Road during the PM peak hour (LOS D) and the stop controlled movements along M-291 at 16th Street (LOS F) and Thompson Drive/Scherer Road (LOS F) during

both peak hours. The intersection of M-291 and Bailey Road has several capacity enhancements planned with the nearby interchange project that will improve its operations. The stop controlled movements at 16th Street and Thompson/Scherer Road can reasonably be mitigated with access restrictions and/or traffic signal control. 16th Street could be limited to right-in/right-out traffic to address the poor operations and increase safety, but a traffic signal would be required at the intersection of Thompson/Scherer Road to handle diverted trips via Decker Street. At the time of study, a traffic signal was determined not warranted at Thompson/Scherer Road by the consultant.

The analysis of Phase 1 (1a and 1b) development shows additional traffic delay, but relatively unchanged levels of service designations. The only degradation of levels of service noted occurs for the yielding northbound left-turn movement (LOS D) at the intersection of 16th Street and M-291 and the stop controlled northbound left-turn movement (LOS E) at the intersection of Bailey Road and Decker Street, both during the PM peak hour. The delay and mitigation strategy (limited access) associated with 16th Street is previously discussed. A traffic signal is likely warranted at Thompson/Scherer Road and M-291 based on the combined impact of Phase 1 development and would not only mitigate the delay at Thompson/Scherer Road, but also allow the median construction at 16th Street to address congestion and safety at both locations. Consequently, staff and MoDOT recommend a traffic signal installation at the intersection of Thompson/Scherer Road and M-291 and median construction at 16th Street along M-291 in association with Phase 1 development. Staff and MoDOT also concur with the other recommendations noted in the traffic study. This scenario assumes the roadways proposed south of Bailey Road, with turn lanes and traffic controls shown on the preliminary plan are constructed in support of the development (e.g. medians along Bailey, Decker Street, Summit Street, Decker Street and Summit Street roundabout). The reported traffic operations for Phase 1 development include other roadway improvements recommended in the traffic study:

1. US 50 and M-291 South Junction Interchange Project
2. Construct dual southbound left-turn lanes with a minimum 300 feet of storage plus taper at the intersection of Bailey Road and M-291.
3. Construct dual westbound left-turn lanes with a minimum 250 feet of storage plus taper at the intersection of Bailey Road and M-291.
4. Lengthen the northbound right-turn lane to provide a minimum 350 feet of storage plus taper at the intersection of Bailey Road and M-291.
5. Construct a second eastbound through lane on Bailey Road east of M-291 to terminate as a right-turn lane at the Decker Street intersection.

Since review of this study and recommendations, Improvements #3 and #4 have been incorporated in the US 50 and M-291 South Junction Interchange Project. Improvement #3 requires substantial intersection modifications and traffic signal replacement at the intersection of M-291 and Bailey Road. This too has been incorporated in the interchange project to prepare for development and better coordinate construction activities.

The traffic impact of Phase 2 development moves the level of service from C to D at M-291 and Bailey during the AM peak hour and multiple stop controlled movements at the intersection of Bailey Road and Decker Street degrade to LOS E or F during both peak hours. A traffic signal at the intersection of Bailey Road and Decker Street would mitigate the reported delay. However, a traffic signal may not be warranted based on the impact of Phase 2 development. Reported peak hour traffic volumes at the intersection indicate a signal could be warranted or near warrants and further study is recommended at such time Phase 2 occurs. Since no warrant is met for traffic

signal installation in this projection, a traffic signal is not recommended as a condition of development for Phase 2. All other intersection operations incur some additional delay, but no overall change in LOS from the previous scenario (Phase 1). This scenario assumes all roadways, turn lanes and traffic controls shown on the preliminary plan north of Bailey Road have been constructed. To accommodate Phase 2 development and produce the reported levels of service, several additional improvements are identified and recommended:

6. Construct an eastbound left-turn lane to provide a minimum 300 feet of storage plus taper at the intersection of Bailey Road and Decker Street.
7. Construct a second westbound through lane on Bailey Road to terminate as a right-turn lane at the M-291 intersection.
8. Monitor the intersection of Bailey Road and Decker Street for traffic signal control.

The impact of Phase 3 development is relatively the same as Phase 2 with similar trends of increasing delay, but no changes in levels of service. Considering improvements recommended in the traffic study and by staff (and MoDOT) for Phase 1, Phase 2 and in association with Phase 3, only the intersection of M-291 and Bailey Road would exhibit substandard during both peak hours based on City performance goals. It should be noted the reported LOS D at this intersection would meet MoDOT's performance target. This scenario considers all roadways (e.g. Decker Street, Holloway Lane, and Oldham Parkway) as shown on the preliminary plan with various turn lanes north of Bailey Road are constructed. Other recommended improvements considered for Phase 3 include:

9. Construct a northbound right-turn lane to provide a minimum 350 feet of storage plus taper at the intersection of M-291 and Holloway Lane.
10. Construct a westbound right-turn lane to provide a minimum 350 feet of storage plus taper at the intersection of M-291 and Oldham Pkwy.
11. Construct a westbound shared right-turn/through lane to provide dual-right-turn movements at the intersection of M-291 and Oldham Pkwy.
12. Construct dual westbound left-turn lanes to provide a minimum 250 feet of storage plus taper at the intersection of M-291 and Oldham Pkwy.

Improvements noted at the intersection of M-291 and Oldham Pkwy (#10, #11, and #12) have been shown on the preliminary plan for Oldham Parkway and will be coordinated to some extent with the US 50 and M-291 South Junction interchange project. The recommended shared through/right-turn lane is a consideration that can be implemented as needed, but is otherwise not supported by MoDOT and consequently not a staff recommendation for project approval. The traffic study did not recommend a traffic signal at the intersection of Bailey Road and Decker Street for Phase 3, but suggests continued monitoring. Staff recommends traffic signal control at this intersection to address the reported congestion and in consideration of peak hour traffic signal warranting projections when Phases 1, 2 and 3 are generating trips.

The traffic study also included future development scenarios (Phase 4) for properties not included in the preliminary development plan. This information may be referenced whenever a development application is presented in that area and has been a resource for traffic planning associated with the US 50 and M-291 South Junction Interchange Project. There are no other transportation improvement recommendations listed in the traffic study for the subject preliminary development plan.

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, shared-use path, network connectivity, landscaping, and accessibility. 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. The interchange project at US 50 and M-291 South Junction shall be substantially completed prior to the issuance of occupancy permits for any building within the proposed development unless otherwise waived in writing by MoDOT.
2. 16th Street shall be (re)constructed from the proposed intersection of Summit Street to M-291 Highway such that a pavement width of at least 24 feet is available and designed to carry industrial traffic. This improvement shall be substantially completed prior to the issuance of substantial completion for portions of Summit Street that extend to 16th Street (related to Improvement Condition #10).
3. A raised median shall be constructed along M-291 Highway across the intersection of 16th Street to only allow right-in/right-out access to/from 16th Street. This improvement shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 1 of the proposed development.
4. A traffic signal shall be installed at the intersection of M-291 Highway and Thompson Drive/Scherer Road with interconnect to the traffic signal located at M-291 Highway and Persels Road/Bailey Road. Additional intersection geometric improvements at this intersection may be required to accommodate traffic signal control as determined by MoDOT. This improvement shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 1 of the proposed development.
5. Construct a second southbound left-turn lane with a minimum length of 300 feet, plus taper, at the intersection of M-291 and Bailey Road. This improvement shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 1 or Phase 2 of the proposed development.
6. Construct a second eastbound through lane along Bailey Road and a raised median along Bailey Road east of M-291 to the proposed Decker Street intersection. The raised median shall provide for an extension of the eastbound left-turn lane at Decker Street such that a minimum length of 300 feet, plus taper, is provided. The additional eastbound through lane should terminate as an eastbound right-turn lane at the intersection of Decker Street. This improvement shall be

substantially completed prior to the issuance of occupancy permits for any building within Phase 1 or Phase 2 of the proposed development.

7. Construct a second westbound through lane along Bailey Road from the proposed Decker Street intersection to M-291. The additional westbound through lane should terminate as a westbound right-turn lane at the intersection of M-291. This improvement shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 2 of the proposed development.

8. Construct a northbound right-turn lane with a minimum length of 350 feet, plus taper, along M-291 at the proposed intersection of Holloway Lane. If the intersection of Holloway Lane at M-291 is not granted by MoDOT, this improvement shall not be required. Otherwise, this improvement shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 3 of the proposed development.

9. Construct a traffic signal; with interconnect to adjacent traffic signals, at the intersection of Bailey Road and Decker Street. This improvement shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 3. If Phase 1 and Phase 2 have not been constructed, an escrow deposit to the City for the full cost of this improvement may be accepted in lieu of this improvement being substantially completed.

10. Public roadways Decker Street and Summit Street as generally shown on the development plan south of Bailey Road to 16th Street, except as noted herein, shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 1 of the proposed development. A portion of Summit Street construction connecting to 16th Street may be deferred only until such time the total building square-footage in consideration with or without appropriate fire suppression systems require a second access to meet Fire Department development criteria; then Summit Street shall connect to 16th Street as originally stated without exception and remaining applicability to occupancy permits in Phase 1.

11. Public roadways Decker Street and Oldham Parkway as generally shown on the development plan north of Bailey Road to M-291, with exception that all turn lanes be revised to meet or exceed minimum standards in the Access Management Code or otherwise recommended lane configurations in the applicants traffic impact study and other geometric revisions to the proposed roundabout, shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 2 or Phase 3 of the proposed development.

12. Public roadway Holloway Lane as generally shown on the development plan north of Bailey Road, with exception that access at M-291 is permitted at the discretion of MoDOT, shall be substantially completed prior to the issuance of occupancy permits for any building within Phase 3 of the proposed development.