



DEVELOPMENT REVIEW FORM
TRANSPORTATION IMPACT

DATE:	May 27, 2021	CONDUCTED BY:	Brad Cooley, PE
SUBMITTAL DATE:	May 27, 2021	PHONE:	816.969.1800
APPLICATION #:	PL2021105	EMAIL:	Brad.Cooley@cityofls.net
PROJECT NAME:	BAILEY FARM	PROJECT TYPE:	Prel Dev Plan (PDP)

SURROUNDING ENVIRONMENT (*Streets, Developments*)

The proposed development is located on the southwest quadrant of the SE Bailey Road and SE Ranson Road intersection. The property is surrounded by single family residential to the north (north of Bailey), an approved middle school to the west, City Limits to the east (with Conservation Area beyond the City Limits) and agriculture/undeveloped property to the south. The development proposes 219 single-family lots and 32 multi-family lots (64 units) across 90 acres connected through a residential road network. The development is split, north and south, by an existing stream with 116 single-family lots and all of the multi-family lots proposed north of the stream.

ALLOWABLE ACCESS

Access to the site is planned through two proposed connections; one connecting to SE Bailey Road running north/south (SE Brownfield Drive) and one connecting to SE Ranson Road running east/west (SE Cape Drive). The proposed connection to Bailey Road is approximately 625 feet west of Ranson Road and the proposed connection to Ranson Road is approximately 1,650 feet south of Bailey. Both proposed roadways closely align with the Thoroughfare Master Plan as residential collectors.

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

Bailey Road is a two-lane, undivided, 35 mph minor arterial with on-road bicycle accommodations that aligns in an east-west direction between Ranson Road/Route RA and M291 Highway with a grade separated railroad overpass just west of Hamblen Road. The roadway then continues westward to Ward Road as Persels Road. The intersections of Bailey Road at Hamblen Road and at M291 Highway are both traffic signal controlled. The intersections of Bailey Road at Hamblen/Century Drive and at Ranson/Route RA will be signal controlled in association with the middle school project completion. There are various turn lanes at the intersections of M291 Highway, Hamblen Road, and Hamblen Road/Century Drive. Intersections along Bailey Road, except as described herein, are otherwise one-way or two-way stop controlled with Bailey Road having the assigned right-of-way. Bailey Road is also a designated Greenway and Bike Route.

Ranson Road/Route RA is a north-south MoDOT facility from US50 Highway to the southern driveway at James A. Reed Wildlife Conservation Area. It has a grade separated diamond interchange at US50 Highway approximately 1/2-mile north of Bailey Road with traffic signal control on the highway ramps. Ranson Road/Route RA continues north of US50 Highway as Todd George Parkway; a four-lane City major arterial. Otherwise, south of US50 Highway Ranson Road/Route RA is generally a two-lane, undivided, 40 mph/45 mph, minor arterial that continues to Greenwood. Multiple turn lanes exist at the intersections of Ranson Road/Route RA/Todd George Parkway with US50 Highway, Blue Parkway (North Highway Frontage Road), Oldham

Parkway (South Highway Frontage Road), and several residential street intersections. The interchange at US50 Highway, including Blue Parkway and Oldham Parkway are traffic signal controlled. The intersection of Bailey Road at Ranson Road/Route RA is a "T" configuration with Bailey Road currently stop controlled. A traffic signal at this intersection is forthcoming in association with the middle school project. All other intersections along the corridor are also one-way or two-way stop controlled; Ranson Road/Route RA with assigned right-of-way. Ranson Road/Route RA is also an identified link in the City's Greenway Master Plan and Bicycle Transportation Plan.

Hamblen Road is a north-south, undivided, two-lane minor arterial that extends from US50 Highway to Bailey Road. Hamblen Road to the north of Bailey Road becomes M291 Highway, a MoDOT facility, at the grade separated, traffic signal controlled, diamond interchange with US50 Highway. Hamblen Road is then offset to the east at Bailey Road where it aligns with Century Drive and continues south into Greenwood, MO. The speed limit on Hamblen Road varies from 35 mph to 40 mph. Turn lanes exist at several intersections. The eastern intersection of Hamblen Road/Century Drive and Bailey Road is currently an all-way stop, but planned to have traffic signal control in association with the middle school project.

All aforementioned roadways directly impacted by the proposed development are built to urban standards with exception of Ranson Road/Route RA; which has portions of interim standard without shoulders particularly south of Bailey Road. However, Ranson Road/Route RA is a MoDOT facility and the City's Unimproved Road Policy is not applicable to MoDOT rights-of-ways.

Sight distance is adequate all the aforementioned street intersections.

ACCESS MANAGEMENT CODE COMPLIANCE? YES NO

All intersection spacing, turn lanes and other applicable criteria required by the Access Management Code have been satisfied and/or will be compliant as shown on the PDP. Access to both Bailey and Ranson closely align with the Thoroughfare Mater Plan and satisfy the intent of the planned road network. Cape Drive, a residential collector, will be extended in coordination with the middle school project from the existing neighborhood to Ranson Road/Route RA in compliance with the comprehensive plan.

TRIP GENERATION

Time Period	Total	In	Out
Weekday	2603	1302	1301
A.M. Peak Hour	194	48	146
P.M. Peak Hour	253	159	94

The trip generation information provided above was a sum of the following proposed uses; Single-Family Detached (ITE Code 210) - used for the 219 single-family lots and Multi-Family Housing Low-Rise (ITE Code 220) - used for the 64 attached villa units.

TRANSPORTATION IMPACT STUDY REQUIRED? YES NO

The proposed development will likely generate more than 100 peak hour trips along the adjacent street network during a weekday peak hour, meeting the minimum requirement for a traffic impact study in the Access Management Code.

A traffic impact study was completed for the preliminary development plan by TranSystems, dated February 2021. The study considered the traffic impact of the proposed development, 219 single-family homes and 64 attached villa units, during the A.M. and P.M. peak hours of adjacent street traffic. The traffic study considered all dwelling units as single-family, a conservative estimate for trip generation. The traffic impact study was concurrently submitted to MoDOT and the City for review. The City and MoDOT have completed a review of the traffic study and concur with the study findings and recommendations.

The traffic study evaluated two scenarios associated with the subject property; existing plus approved development conditions, and existing plus approved development conditions and proposed development conditions. Existing plus approved development conditions considered active development in the general vicinity (i.e. Princeton Retirement Living, Culver's along Oldham Road and Lee's Summit Middle School #4), as well as any improvements conditioned upon those developments approved. Intersections analyzed with this report were; Ranson Road at US-50 Highway, Ranson Road at Oldham Parkway, Ranson Road at Bailey Road, Ranson Road at James A. Reed driveway, Bailey Road at Brownfield Drive, and Bailey Road at Hamblen Road/Century Drive.

Intersection analysis compares proposed development conditions to existing conditions and all operations based on City and MoDOT established performance goals for measuring adequate infrastructure. The City has adopted a level of service (LOS) standard "C" for overall traffic signal operations; where individual traffic movements may be at LOS D or worse. Level of Service for stop controlled movements should be at least "D", but LOS E and LOS F may be acceptable. MoDOT has a similar performance standard, but LOS D is an acceptable benchmark for signal operations on their system. These performance goals, or minimum conditions of adequate infrastructure, help to identify public improvement needs associated with development for safer and efficient travel. Level of Service is an industry accepted standard measure of traffic performance based on experienced or calculated delay and driver/user comfort rated on a scale from A to F, where A represents the best and F the worst. Other improvement needs may be identified based on vehicle queuing and minimum code criteria, guidelines and standards that address transportation operations and safety (e.g. turn lanes, sight distance, intersection spacing, alignment, etc.).

An assessment of existing plus approved plus proposed development conditions indicate acceptable levels of service for all studied intersections except for the stop controlled movements as noted below:

- Westbound ramp on US-50 at Ranson Road, LOS D - A.M. Peak Hour
- Northbound left-turn at the Bailey Road and Brownfield Drive intersection, LOS D - A.M. and P.M. Peak Hour.

Estimated trips generated by the proposed development were projected onto existing conditions and analyzed. For this scenario, no new traffic signals were recommended. However, various turn lanes are recommended in the traffic study, all LOS is acceptable post development except the intersection of Ranson Road/Route RA/Todd George Parkway at US50 Highway Westbound Ramp and the intersection of Bailey Road and Brownfield Drive northbound left-turn. Those recommended turn lanes in support of the proposed development or turn lanes in support of the proposed development include:

- Westbound left-turn lane on Bailey Road at Brownfield Drive with a minimum storage length of 200 feet plus appropriate taper. Alternatively, Bailey Road could be widened for a two-way left-turn lane from Ranson Road to the middle school site.

- Northbound left-turn lane on Brownfield Drive at Bailey Road with a minimum storage length of 100 feet plus appropriate taper.
- Southbound right-turn lane on Ranson Road at Cape Drive with a minimum storage length of 200 feet plus appropriate taper.

Staff and MoDOT concur with the study findings and recommendations. The transportation improvements recommended in the study are consistent with and included in the Staff recommended stipulations for approval listed at the end of this report. Some of the assumed improvements included in the study in association with approved development that have not yet been constructed are also requirements for this development where also warranted by the proposed development (e.g. traffic signal at Bailey/Ranson).

LIVABLE STREETS (Resolution 10-17)

COMPLIANT

EXCEPTIONS

The proposed development plan shall include 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, neighborhood connections, long-range roadway planning, bike routes, landscaping, parking, and accessibility. The plan should include a 10' wide shared-use path along both Bailey Road (south side) and Ranson Road/Route RA (west side). The plan does not show this required 10' wide shared use path along Ranson Road/Route RA. No exceptions to the Livable Streets Policy adopted by Resolution 10-17 are supported. The 10' wide shared use path shall be constructed along the west side of Ranson Road/Route RA from Bailey Road to the south property line in compliance with the Comprehensive Plan (Greenway Master Plan and Bicycle Transportation Plan amendments thereto) and Livable Streets Resolution unless specifically waived by the City Council.

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 conditions noted below:

1. Construct a westbound left-turn lane on Bailey Road at Brownfield Drive with a minimum storage length of 200 feet plus appropriate taper. Alternatively, Bailey Road could be widened for a two-way left-turn lane from Ranson Road to the middle school site where a left-turn lane is conditioned upon the middle school project. This alternative would require improvement coordination with the middle school project. Turn lane(s) shall not remove the on-road bicycle accommodations. This improvement shall be substantially completed prior to the issuance of any residential building permits associated with the plat(s) that has access to Bailey Road.
2. Construct a northbound left-turn lane on Brownfield Drive at Bailey Road with a minimum storage length of 100 feet plus appropriate taper.
3. Construct a southbound right-turn lane on Ranson Road at Cape Drive with a minimum storage length of 200 feet plus appropriate taper. This improvement shall be substantially completed prior to the issuance of any residential building permits associated with the plat(s) that has access to Ranson Road/Route RA.
4. Construct a 10-foot wide shared use path along the west side of Ranson Road/Route RA from Bailey Road to the south property line of this development. This improvement shall be

substantially completed prior to the issuance of any residential building permits associated with adjacent plat(s).

5. A traffic signal shall be installed at the intersection of Bailey Road and Ranson Road/Route RA with traffic signal interconnect to adjacent traffic signals. The signal improvements shall include pedestrian signal accommodations across Bailey Road and across Ranson Road/Route RA with necessary sidewalk/shared use path construction to connect the proposed shared use path to existing sidewalks and shared use path. This improvement shall be substantially completed prior to the issuance of any residential building permits.

Conditions of approval, including scope and timing, pertaining to improvements within state rights-of-ways (e.g. Ranson Road/Route RA) may be waived or modified or other improvements added at the discretion of MoDOT for MoDOT's approval of permitted work. The listed recommendations applicable to MoDOT ROW are based on MoDOT's review and comment of the development plan and associated traffic impact study. Any listed condition waived or modified by MoDOT, or any new condition provided by MoDOT, shall be documented to the City in substitute for the satisfaction of these conditions.