



FAIRFIELD FARMS WEST ADDITION NO.2
DEVELOPMENT
Proposed Zoning Category Change
Exchange Court & O'Connell Road/E 1600 Road
Lawrence, Kansas 66046
CFS Project No. 185162

7 Step Traffic Impact Analysis

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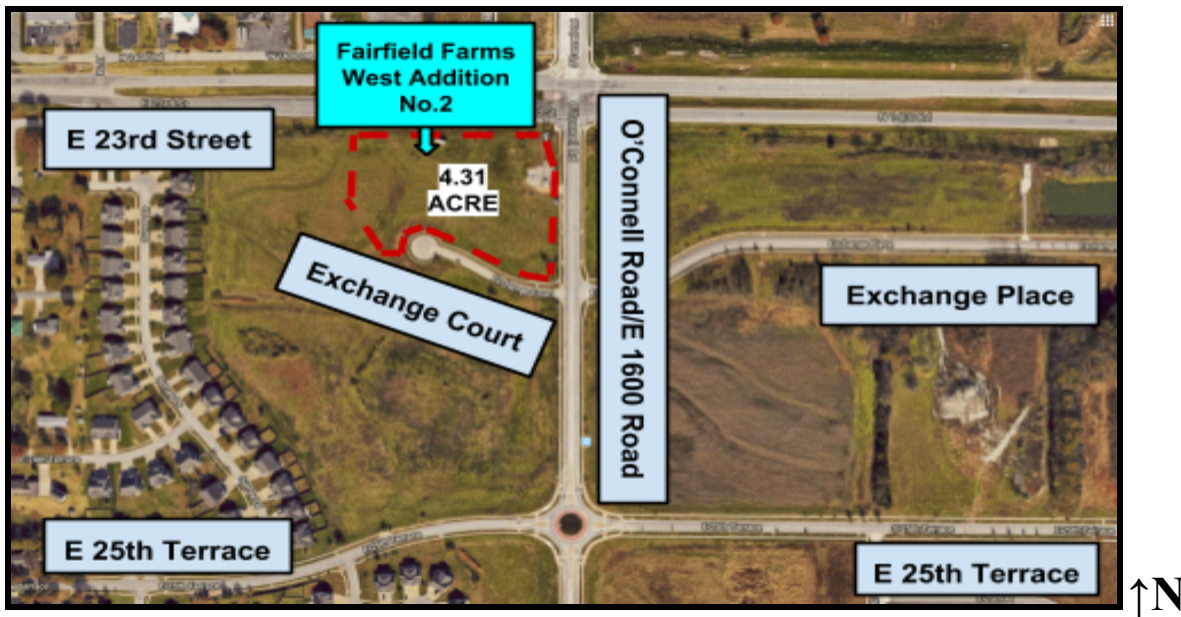
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Introduction

This 7 Step Traffic Impact Analysis has been prepared for the support of the proposed zoning change for the Fairfield Farms West Addition No.2 in Lawrence, Kansas. The study has been prepared in accordance with the City of Lawrence's Traffic Impact Study Guidelines. The zoning of the proposed 4.31 acre site will be changed from CO (office commercial) to CC200 (community commercial). This site does not currently have a proposed development plan, but it is likely to consist of a retail building with a parking lot. Once the building size and specific land use is determined, then a comprehensive traffic study will be prepared to address all necessary details relatant to accommodating traffic.

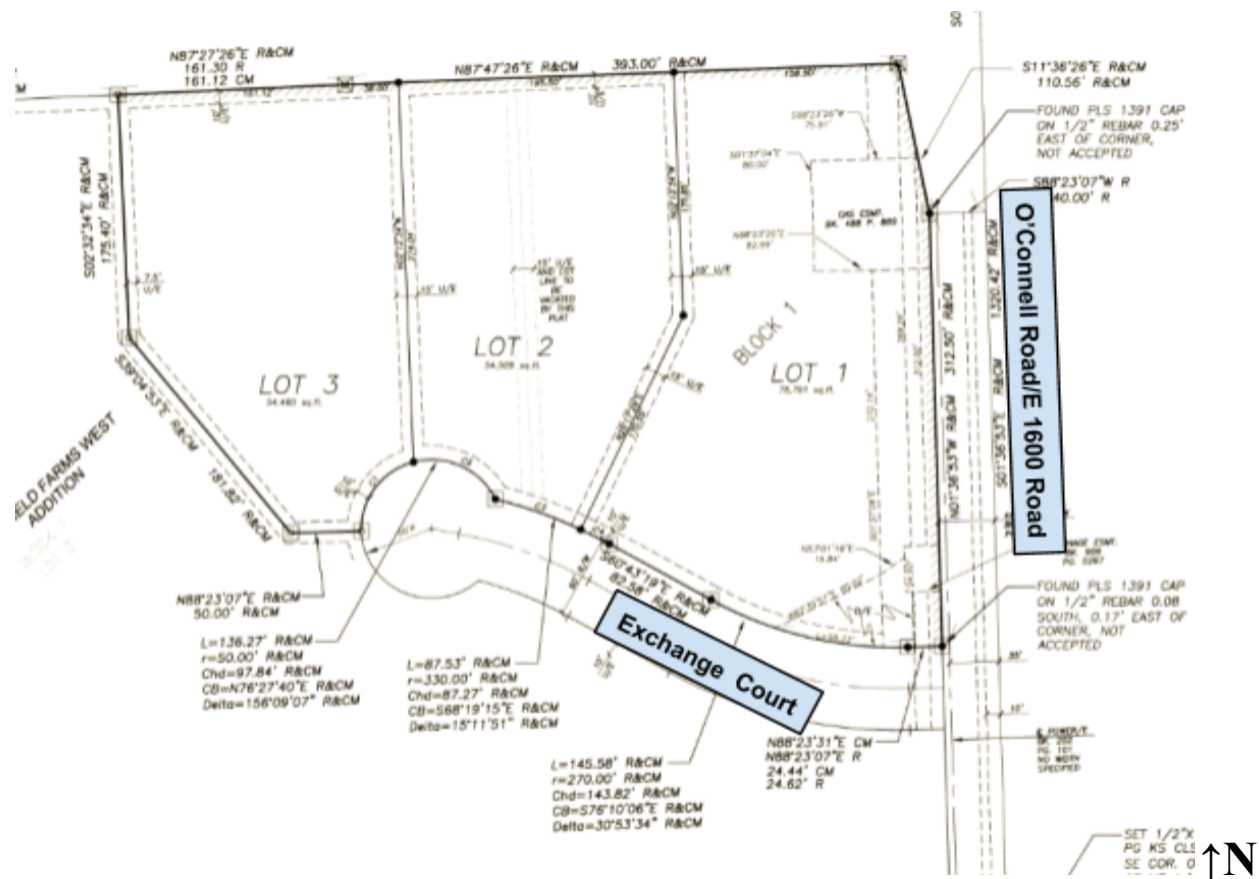
The changes in traffic generated by changing the zoning category revealed that a full traffic study could be warranted in the future depending on the proposed size of the development. Given the space available, if more than 14% of available land would be used as the footprint for a building, then a full traffic study would be warranted. Using an example building size of 13.5% of the available land (approximately 25,348 sq ft), then the AM peak hour would yield 24 vehicles per hour (vph) while the PM peak hour would yield 97 vph. Since the maximum volume of site generated traffic during a peak hour, 97 vph, is less than 100 vph, this 7 Step Analysis would satisfy the City of Lawrence's Development Code. The new access driveway will potentially connect to the cul-de-sac on Exchange Court. The analysis of the proposed development does not indicate that there would be any appreciable change in traffic volumes as a result of this project.



Aerial View of Fairfield Farms West Addition No.2, Lawrence, Kansas

STEP 1: Specific Development Plan and Land Uses

This site does not currently have a proposed development plan but is likely to consist of a retail building with a parking lot. Once the building size and specific building type is determined, then a subsequent traffic study will include all necessary details relatant to accommodating traffic. The parking lot will include the required amount of typical vehicle spaces as well as an appropriate number of accessible and bicycle spaces. The site will include new curb, new landscaping, dumpster enclosure, and ADA accessibility. Below is an image of the site's layout area without any structures. To the west of the site is Fairfield Farms Apartments which are currently in design process. To the west of Fairfield Farms Apartments is Fairfield Farms West which is currently undeveloped. To the south, across Exchange Court, is Bethel Estates which is currently undeveloped. To the east, across O'Connell Road/E 1600 Road, is Fairfield East Addition No.1. To the north, across E 23rd Street/N 1400 Road, is Venture Park which includes a variety of commercial developments.



Proposed Fairfield Farms West Addition No.2, Lawrence, Kansas

STEP 2: Land Uses Shown in Horizon 2020 for the Proposed Development

As shown in the Horizon 2020, The Comprehensive Plan for Lawrence and Unincorporated Douglas County Amendment 8-8-2017, the zoning category for the site will change from CO (office commercial) to CC200 (community commercial). The current land use is vacant, and the proposed land use is undecided at this time; therefore, a shopping center land use was used as an example for the analysis. This area is within the incorporated city limits. The flood map for the selected area is number 20045C0179E, effective on 09/02/2015, showed that the site was located outside of the 500 year flood zone.

STEP 3: Functional Classification of the Public Streets Bordering the Site

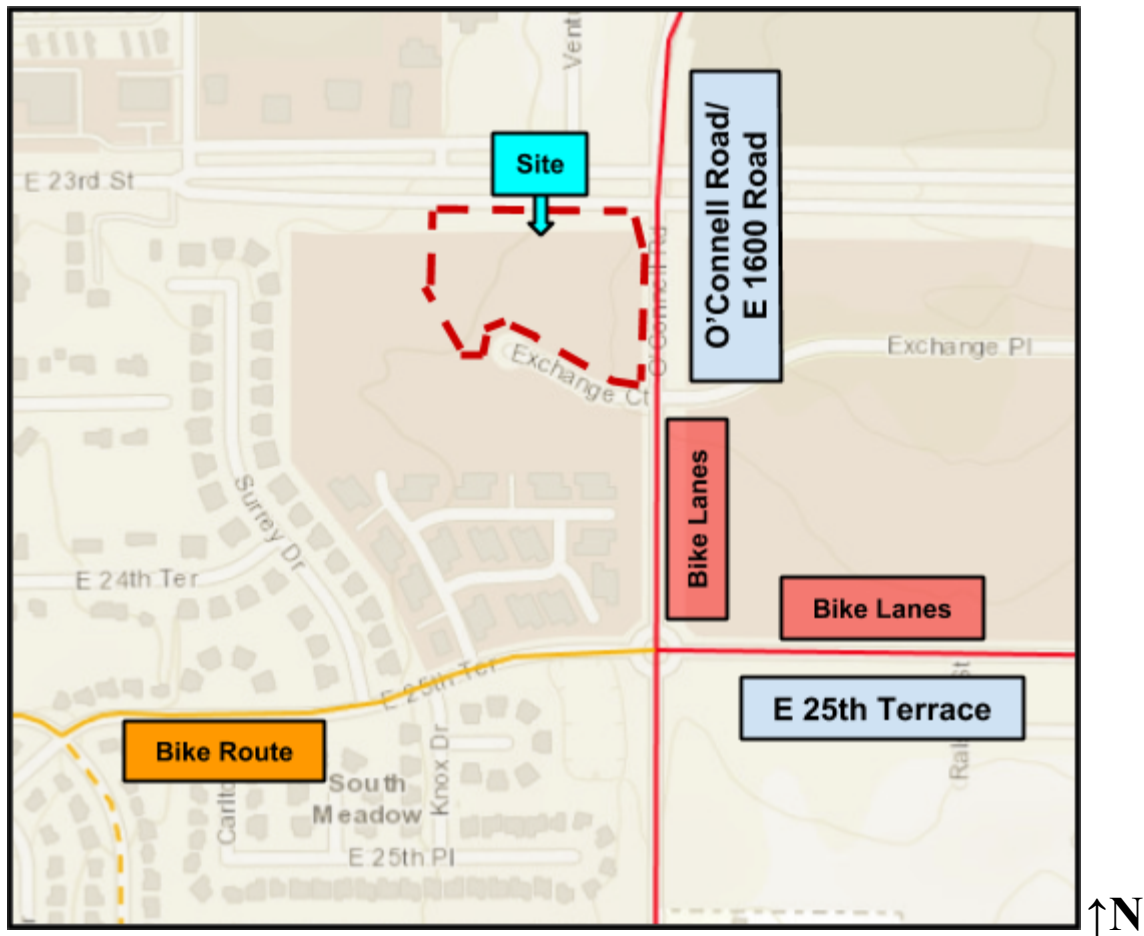
As shown in the Transportation 2040 developed by the Metropolitan Transportation Plan of Lawrence and Douglas County, the functional classification of the surrounding streets are as follows:

- E 23rd Street/N 1400 Road - Minor Arterial
 - Speed limit of 55 mph to the east of O'Connell Road/E 1600 Road
 - Speed limit of 45 mph to the west of O'Connell Road/E 1600 Road
 - Average daily volume was 31,100 vehicles in 2012
- O'Connell Road/E 1600 Road - Major Collector
 - Speed limit of 35 mph
- E 25th Terrace - Local Road
 - Speed limit of 35 mph
- Exchange Place - Local Road
 - Speed limit of 35 mph
- Exchange Court - Local Road
 - Speed limit of 30 mph

There are no known programmed improvements or future planned improvements for any of the roadways listed above in the region directly surrounding the Fairfield Farms West Addition No.2 development site.

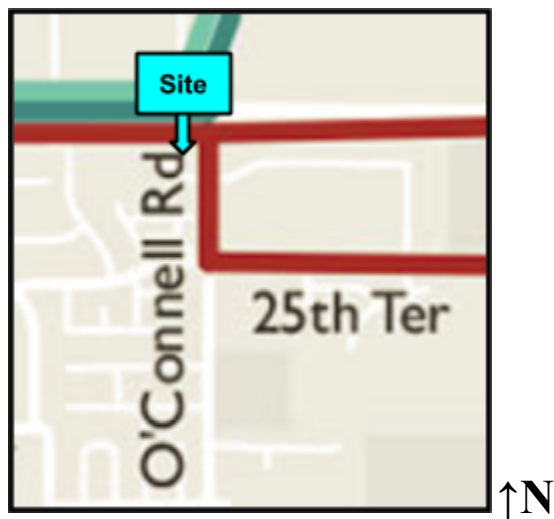
STEP 4: Allowable Access to the Development

Most of the traffic headed to the site will most likely arrive and depart via E 23rd Street/N 1400 Road and O'Connell Road/E 1600 Road since the land to the east of the site is largely undeveloped. O'Connell Road/E 1600 Road and 25th Terrace to the east both have bike lanes (shown in red), and 25th Terrace to the west of O'Connell Road/E 1600 Road is designated as a bike route (shown in orange). The surrounding bike network provides accessibility to the site, and bicycle parking is proposed at the site to encourage ridership.



Bike Facilities near Fairfield Farms West Addition No.2, Lawrence, Kansas

The City of Lawrence Bus Route 1 (shown in maroon), Downtown to East Lawrence, includes O'Connell Road/E 1600 Road and already provides access to the site.



Bus Route 1 near Fairfield Farms West Addition No.2, Lawrence, Kansas

STEP 5: Current Public Street Characteristics Adjacent to the Site

The three roadways adjacent to the site are O'Connell Road/E 1600 Road, Exchange Court, and E 23rd Street/N 1400 Road. O'Connell Road/E 1600 Road is a three-lane roadway with one thru lane each direction, a two-way left-turn lane, and bike lanes for each direction with a posted speed limit of 35 mph. It is 44 ft wide between the edges of pavement, has a curb and gutter system, has sidewalks on both sides of the street, and has "No Parking" signs along both sides of the street. Exchange Court is a two-lane local roadway with a 30 mph speed limit that connects to O'Connell Road/E 1600 Road. It is 22 ft wide between the edges of pavement and has a curb and gutter system and a sidewalk on the northern side of the street. The intersection of O'Connell Road/E 1600 Road & Exchange Court is 500 ft away from the nearest arterial which is E 23rd Street/N 1400 Road, and there are no sight obstructions or sight distance issues at the intersection. The E 23rd Street/N 1400 Road is four-lane divided minor arterial roadway. The signalized intersection of E 23rd Street/N 1400 Road & O'Connell Road/E 1600 Road has 6 street lights and video detection cameras to monitor each approach. ADA accessible pedestrian crosswalks and pedestrian signals have also been installed at this intersection.

STEP 6: Proposed Access Compared with AASHTO Criteria

Once the building size and specific land use for the Fairfield Farms West Addition No.2 final development have been determined, at least one new access driveway will be proposed on Exchange Court with the main access driveway most likely connecting to the existing cul-de-sac. The proposed access point(s) to the site will meet AASHTO criteria and the City of Lawrence Access Management Guidelines. The distance between the proposed access point and the intersection of O'Connell Road/E 1600 Road & Exchange Court will exceed the 50 ft minimum requirement. The driveway width will be 24 ft and the throat length will exceed 50 ft which also meets the requirements of Access Management Guidelines. The access points are not likely to require a left-turn or right-turn auxiliary lane. There are no sight obstructions or sight distance issues at the driveway intersections.

STEP 7: Estimate of Trips Generated by Existing and Proposed Development

The existing site is a vacant area of land with no traffic. For evaluating traffic impacts from new land developments, transportation engineers typically utilize the Trip Generation Manual (10th Edition) published by the Institute of Transportation Engineers (ITE). The 10th Edition is the most current manual and covers a diverse assortment of commercial, residential, industrial and specialty types of land developments. An example ITE category was used for this study. For the zoning change from CO (office commercial) to CC200 (community commercial), it was assumed that the ITE Code 710 (General Office Building) would be a good comparison for office commercial, and ITE Code 820 (Shopping Center) would be a good comparison for the community commercial zoning category. Given the space available, if more than 14% of available land would be used as the footprint for a building, then a full traffic study would be warranted. Using an example building size of 13.5% of the available land (approximately 25,348 sq ft), the building size was multiplied by the ITE Average Trip Generation Rates to determine the increased traffic volumes. Volumes were calculated as follows for the daily total and the AM and PM Peak Hours on a typical weekday:

ITE Trip Generation Manual (10th Edition) Generation Rates and Directional Distributions

Assumed Land-Use		Average Trip Generation Rate	Total Traffic	Traffic Entering	Traffic Exiting
ITE Land Use 710 (General Office Building)	Weekday Total	9.74 vpd/ksf	246	123 (50%)	123 (50%)
	AM Peak Hour	1.16 vph/ksf	30	26 (86%)	4 (14%)
	PM Peak Hour	1.15 vph/ksf	29	4 (16%)	25 (84%)
ITE Land Use 820 (Shopping Center)	Weekday Total	37.75 vpd/ksf	956	478 (50%)	478 (50%)
	AM Peak Hour	0.94 vph/ksf	24	15 (62%)	9 (38%)
	PM Peak Hour	3.81 vph/ksf	97	47 (48%)	50 (52%)

These estimated volumes are relatively small and are not anticipated to significantly change the traffic patterns of the local street network. Pass-by traffic was not estimated for the assumed land use category.

Summary

Depending on the land-use type and size of building for the final development, the associated change in zoning category and site generated traffic volumes could warrant further investigation. Estimating a 13.5% usage of the available land and a shopping center land-use, the generated trips would be as follows: the AM peak hour yields approximately 24 vehicles per hour (vph) while the PM peak hour yields approximately 97 vph. As the maximum volume is less than 100 vph, this 7 Step Analysis satisfies the City of Lawrence's Development Code. The analysis of the proposed development does not indicate that there would be any appreciable increase in traffic volumes as a result of the proposed change in zoning category.