

Memorandum

TO: Mr. Joe Olson, P.E., Traffic Engineer
Mr. Ward Stanford, Traffic Operations Engineer
Mr. Dave Derbes, Brinkman Partners, Inc.

FROM: Eric L. Bracke, P.E., P.T.O.E

DATE: February 13, 2010

SUBJECT: *1409 Elizabeth Apartments – Transportation Impact Memorandum*



This memorandum addresses the transportation impacts of the proposed 1409 Elizabeth Apartments Project. The project entails building a 25,924 square foot apartment building (27 dwelling units/51 beds) on the current site of the Λ TA Fraternity House. The proposed location is in an existing structure located near (1/4 miles west) the Colorado State University Campus. The project site is on the south side of Elizabeth Street directly across from the International Center Moreno House and sits between the CB & Potts restaurant and the Wendy's restaurant. A vicinity map of the new location is displayed in Figure 1 on the following page.

A scoping form was sent to the City Traffic Engineer to determine the scope of the transportation impact study. It was agreed that the project will have relatively minor (if any) impact to the surrounding street system and that a memorandum would be sufficient to address the related transportation impacts. Capacity analyses would not be required and a trip generation estimate would be required along with an alternative modes analysis. The scoping form for the transportation study can be found in **Appendix A**.

Existing Conditions

Elizabeth Street is classified as a 4-lane arterial on the City of Fort Collins *Master Street Plan*. The cross section that is currently in place is a 5-lane roadway with two through lanes in the east and west directions and a two-way-left-turn-lane in the center. There are bike lanes on the roadway that connect directly to the Colorado State University as well as to the bike system on Shields Street. Sidewalks in the area are continuous and well used by the local student population.

The City requested that impacts regarding bikes and pedestrians be briefly discussed for the intersections of City Park/Elizabeth and Shields/Elizabeth. Impacts caused by bikes and pedestrians would normally be changes in signal timings. Vehicular or pedestrians counts were not conducted as part of this study. However, the existing use was a fraternity house with approximately 40 students residing. This project is also a student housing project with 51 beds being provided. Based on the above, there should be minimal, if any impact to the intersections.

The area along Elizabeth is heavily used by students. The area is also seeing additional student housing projects come forward such as the District at Campus West located on Plum Street. The area is designated as a pedestrian district on the Master Street Plan. The City has made extensive improvements along the Elizabeth Street corridor to enhance the pedestrian and bicycle environment.

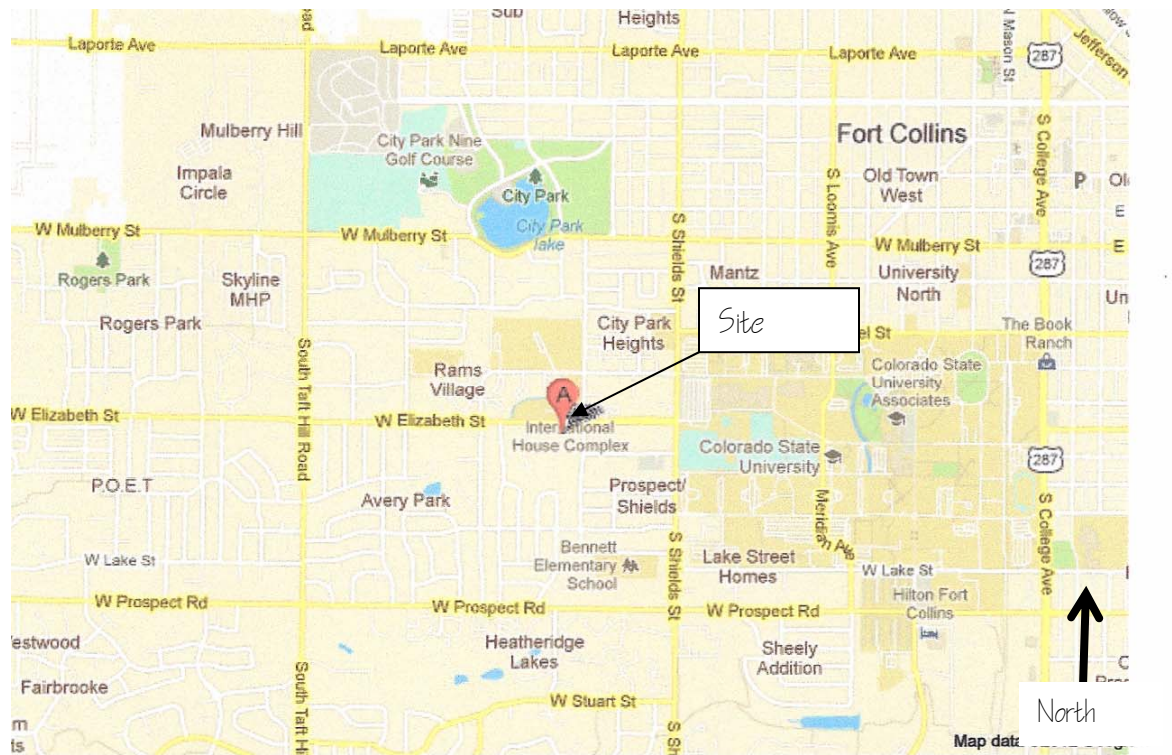


Figure 1: Vicinity Map

Elizabeth Street is posted at 30 mph and the pavement appears to be in good condition. The area surrounding the site is primarily commercial as well as student oriented housing.



Project

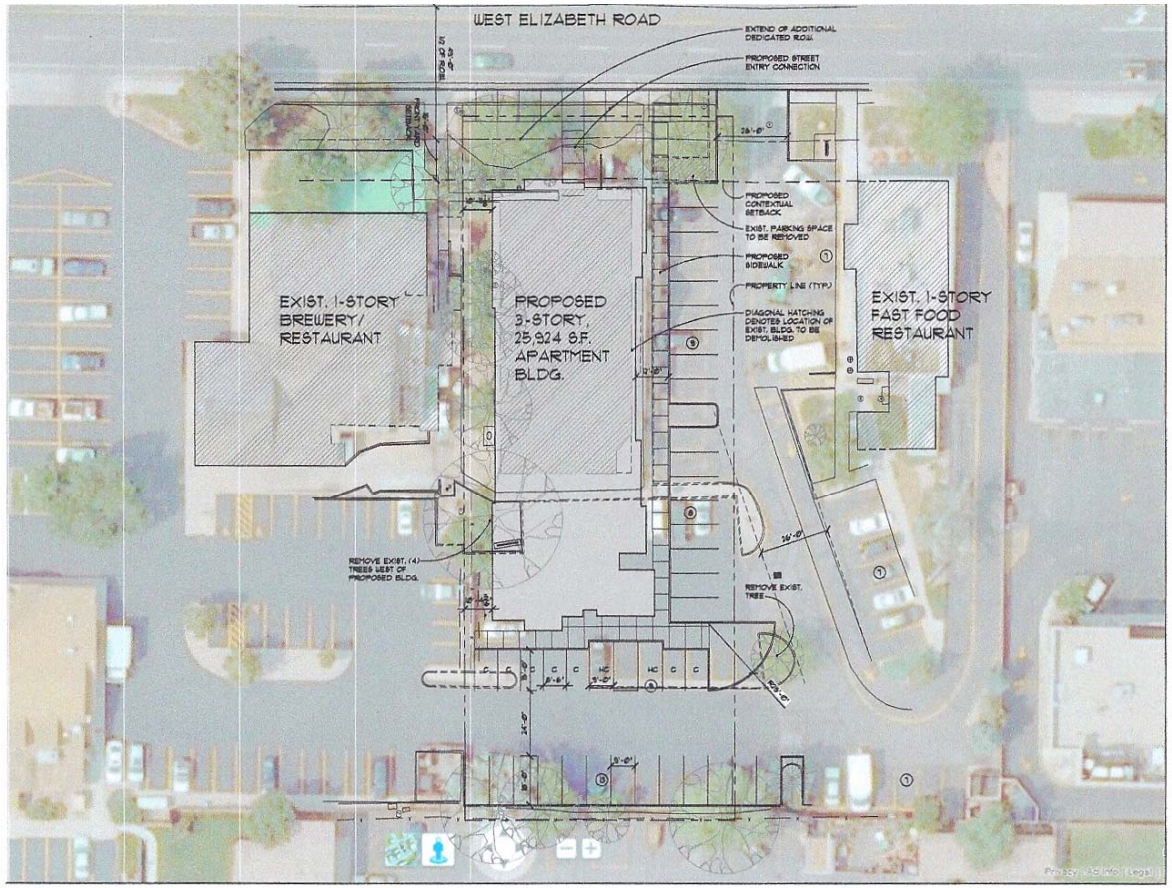
As stated earlier, the project is known as the 1409 Elizabeth Apartments Project. The project entails building a 25,924 square foot student apartment building (27 dwelling units/51 beds) on the current site of the Λ TA Fraternity House. The developers plan to raze the existing structure and construct the new apartment building. Access to the site will be through a shared drive with the Wendy's restaurant. This access is already constructed and served the previous use. There is also recirculation to the west in the southern portion of the site and vehicles can enter and exit through the CB & Potts property. The site plan is provided below in Figure 2.



Main Driveway from Elizabeth



Back Access thru CB & Potts



CONCEPTUAL SITE PLAN
1"=20'-0"

Figure 2: Site Plan

Trip Generation

Trip generation rates for the proposed project are based on the *Trip Generation, 8th Edition* manual prepared by the Institute of Transportation Engineers. The manual presents data from numerous trip generation studies for a variety of land uses from across the country. ITE Code 220, apartments was used in this analysis. A trip reduction of 35% was utilized in the trip generation analysis to account for the alternative modes of transportation that will be used by the residents of this development. It is likely that the trip reduction will be significantly higher than assumed rate due to the close proximity of the project to CSU. However, the lower reduction rate will present a more conservative analysis.

Since the previous use of the site is no longer in place, it is not possible to do a trip generation comparison between the fraternity house and the student apartment building. It is likely, and therefore assumed, that the uses are similar.

Table 1 below summarizes the proposed trip generation for the project. For the entire project, during the morning peak hour, 9 trip ends can be expected and 11 trip ends can be expected from the project during the afternoon peak hours.

Table 1 – Trip Generation Estimates

| Use | ITE CODE | Size | Daily Rate | Daily Trips | AM Rate | AM Trips | AM Rate | AM Trips | PM Rate | PM Trips | PM Rate | PM Trips |
|--|----------|------|------------|-------------|---------|----------|---------|----------|---------|----------|---------|----------|
| | | | | | IN | IN | OUT | OUT | IN | IN | OUT | OUT |
| Phase I | | | | | | | | | | | | |
| Student Apartments | 220 | 27.0 | 6.72 | 181 | 0.1 | 3 | 0.41 | 11 | 0.4 | 11 | 0.22 | 6 |
| Trip Reduction due to proximity to CSU (40%) | | | | (63.50) | | (0.95) | | (3.87) | | (3.78) | | (2.08) |
| TOTAL | | | | 118 | | 2 | | 7 | | 7 | | 4 |

Alternative Modes Analysis

Section 4.5.3 (B) of the *Larimer County Urban Area Street Standards* requires that projects undergo a level of service analysis for alternative modes of transportation. The modes of transportation that must meet LOS standards are bicycles, and pedestrians. Transit service LOS must also be analyzed at the time of development review. However, transit LOS is not part of the Adequate Public Facilities test. The area of interest for the alternative modes of transportation is shown below in Figure 2.

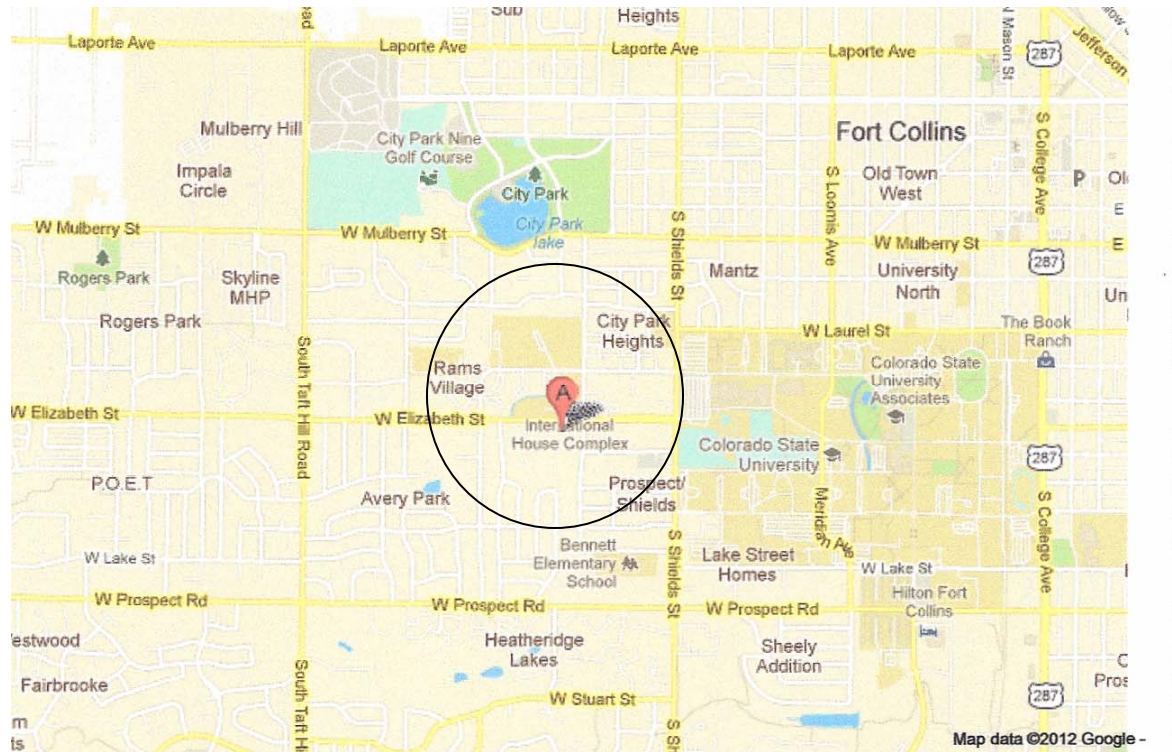


Figure 3: Multi-modal Evaluation Area (AM/PM)

Pedestrian Level of Service

The project area was evaluated for compliance with the pedestrian level of service standards. The site is within walking distance to CSU and the commercial area located on Elizabeth Street. Sidewalks also exist on City Park Ave. to the east of the project as well as the on Bryan to the West. Connectivity in the area from a pedestrian perspective is achieved.

The sidewalks in front of the site meet the current standards and are in good condition. As stated earlier, a recent project by the City improved the bike and pedestrian opportunities along the Elizabeth Street Corridor. The sidewalks in the neighborhoods to the north and south of the project were constructed to an older standard.

Directness – There will be direct sidewalk connections to the commercial area to the east and directly to CSU.

Continuity – The sidewalk system that will be in place has continuity to all surrounding areas.

Street Crossings – The intersection of Shields/Elizabeth and Elizabeth City Park both have crosswalks and pedestrian phases. Crosswalks and pavement markings at the intersection are consistent with City Standards. There are five lanes of traffic to cross.

Visual Interest and Amenity – The area is an improved commercial area and the landscaping is maturing. The area is considered visually appealing.

Security – The sidewalks in the area are lit and good sight distances are available.

Bicycles Level of Service

The project will meet the bicycle level of service standards for both north/south and east/west connections. There are currently bike lanes on Elizabeth Street and connect into the city-wide system.

Transit Level of Service

According to the *LUCASS Multimodal Level of Service Manual*, transit level of service for the City of Fort Collins is based on the routes and service levels planned for the year 2015. However, the Manual was written in 1997 and is significantly outdated and no longer considered valid. The transit LOS analyses are therefore based on the 2010 Transfort Strategic Plan. The analysis is based on 4 factors – hours of weekday service, weekday frequency of service, travel time factor, and peak load factor.

The 2010 transit plan and current service shows that the site has immediate access to routes 2, 3, and 11. These routes have excellent connectivity to the University as well as to downtown.

Hours of Weekday Service: Since Route 2, 3, and 11 take folks directly to CSU, it is assumed that the site will be served by 18 hours of service on an average weekday. The standard can be assumed to be met.

Weekday Frequency of Service: Since the site is relatively close to an identified route of high frequency transit service, the minimum of 15-minute service is met.

Travel Time Factor: The travel time factor is portal-to-portal travel time divided by auto travel time (peak hour). The standard for the criteria is for the travel time in bus to be no more than two times that of the automobile. This standard is met.

Table 2
Transit Travel Time Comparisons

| Destination | Mode | Distance (miles) | Travel Speed (mph) | Travel Time (hours) | Walk/Park Time (hours) | Transfer/Wait Time (hours) | Total Travel Time (hours) | Time Differential (bus/auto) | LOS Standard Met? |
|----------------|------------|------------------|--------------------|---------------------|------------------------|----------------------------|---------------------------|------------------------------|-------------------|
| Downtown | Bus | 2 | 20 | 0.10 | 0.05 | 0.15 | 0.30 | 1.88 | Yes |
| | automobile | 2 | 25 | 0.08 | 0.08 | | 0.16 | | |
| Foothills Mall | Bus | 4.5 | 20 | 0.23 | 0.08 | 0.15 | 0.46 | 1.75 | Yes |
| | automobile | 4.5 | 25 | 0.18 | 0.08 | | 0.26 | | |
| FC High School | Bus | 5 | 20 | 0.25 | 0.10 | 0.15 | 0.50 | 1.79 | Yes |
| | automobile | 5 | 25 | 0.20 | 0.08 | | 0.28 | | |
| CSU Campus | Bus | 0.3 | 20 | 0.02 | 0.01 | 0.10 | 0.13 | 1.36 | Yes |
| | automobile | 0.3 | 25 | 0.01 | 0.08 | | 0.09 | | |

Peak Load Factor: The standard for the peak load factor is calculated by dividing the number of passengers by the peak time of day by the available seats. The standard requires that this value be ≤ 1.2 . Based on the LOS Manual, for all future routes, the presumed peak load factor is 1.0 and therefore the standard is satisfied.

Based on the above, the transit LOS achieved 4 out of the 4 criteria and is therefore the LOS is calculated at “C”, which is acceptable.

Conclusion

This memorandum documented the transportation impacts associated with the 1409 Elizabeth Apartments project. The project is located on Elizabeth Street approximately 1/3 mile due west of the CSU campus. Based on the analyses, investigations, and findings documented in the various sections of this Transportation Impact Study, the following can be concluded.

- The project will not present a significant impact to the surrounding roadway system.
- The project will produce similar trips when compared to the fraternity house that is presently on the site.
- The project is expected to produce approximately 118 daily vehicular trips. During the morning peak hour, 9 trip ends can be expected and 11 trip ends can be expected from the project during the afternoon peak hours. It is likely that the trips produced by 1409 Elizabeth Apartments are nearly identical to the previous use on the site.
- Multi-modal level of service is acceptable.
- Bicycle and pedestrian impacts will be minimal, if any.

Statement of Adequacy: The transportation facilities will be adequate and available to serve this development as contained in the Larimer County Urban Area Street Standards. All applicable LOS standards will be met since all transportation facilities are in place or will be in place upon issuance of a certificate of occupancy.

APPENDIX A

**Attachment A
Transportation Impact Study
Base Assumptions**

| | | |
|---|---|--------------------------------|
| Project Information | | |
| Project Name <u>1109 Elizabeth Apts</u> | | |
| Project Location <u>1409 W. Elizabeth</u> | | |
| TIS Assumptions | | |
| Type of Study <u>(MEMO)</u> | Full: <u>MEMO</u> | Intermediate: |
| Study Area Boundaries | North: <u>Elizabeth</u> | South: <u>Elizabeth</u> |
| <u>SITE</u> | East: <u>City Park Ave</u> | West: <u>S. Bryan Ave</u> |
| Study Years <u>CURRENT</u> | Short Range: | Long Range: |
| Future Traffic Growth Rate <u>NA</u> | <u>1.5%</u> | |
| Study Intersections <u>NA</u> | 1. All access drives <input checked="" type="checkbox"/> | 5. |
| | 2. <u>City Park - Eliz.</u> | 6. |
| | 3. <u>Shields - E/12</u> | 7. <u>Ped/bike impact to</u> |
| | 4. | 8. <u>Traffic only.</u> |
| Time Period for Study <u>NA</u> | AM: <u>7:00-9:00</u> | PM: <u>4:00-6:00</u> Sat Noon: |
| Trip Generation Rates | <u>ITE</u> | |
| Trip Adjustment Factors | Passby: <u>0%</u> | Captive Market: <u>40% 0%</u> |
| Overall Trip Distribution | <u>10% W+S. - SEE ATTACHED SKETCH</u> | |
| | <u>20% N (City Park) 70% EAST</u> | |
| Mode Split Assumptions <u>35%</u> | <u>40% bike, walk, transit</u> | |
| Committed Roadway Improvements | <u>NONE</u> | |
| Other Traffic Studies | <u>General Discussion "The District" -</u> | |
| | <u>General Discussion on Access +</u> | |
| | <u>Circulation to adjoining properties.</u> | |
| Areas Requiring Special Study | <u>- CSU's shift to private, off campus housing for future student needs.</u> | |
| | <u>- Bike/ped impact @ City Park + @ Shields.</u> | |
| | <u>(Brief discussion only)</u> | |

Date: 2/7/2012

Traffic Engineer: [Signature] HE [Signature] 12/13/12

Larimer County Engineer: _____