

# Sixth at Campbell Planned Area Development



TP-ENT-1122-00003

April 2023

<p>REZONING Preliminary Development Plan TP-ENT- 1122-00003 Date April 6, 2023 Planning &amp; Development Services</p>
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## Project Team:

Black 1838, LLC

323 East 8<sup>th</sup> Street

Tucson, Arizona 85705

Lazarus & Silvyn, P.C.

5983 East Grant Road, Suite 290

Tucson, Arizona 85712

FORS architecture + interiors

2020 East Broadway Boulevard

Tucson, Arizona 85719

PSOMAS

333 East Wetmore Road

Tucson, Arizona 85705

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## I. Introduction

### A. Overview

The proposed Sixth at Campbell PAD is +/- 2.36 acres of property (the “Property”) located at the southwest corner of N. Campbell Avenue at E. Sixth Street as shown on Exhibit 1: PAD Location Map. Current zoning on and adjacent to the site is shown on Exhibit 2: Current Zoning.

This PAD submittal originated from a prior rezoning request for the Property that was denied in 2020 (Case No. C9-20-12). The Project Team has continued its work with the community, and this PAD reflects the commitments made to the community through both the previous and current public processes. A statement outlining the changes to the PAD between the prior case and this new proposal is included as *Appendix A*.

The PAD is comprised of 14 parcels, 12 of which are owned by Scott Cummings or his entity Black 1838 LLC (the “Applicant”). The two other properties are owned by a private entity and the Arizona Board of Regents (“ABOR”). Both are agreeable to their parcels being included in the rezoning and have written letters in general support of the proposal to create a PAD at this location. These letters can be found at Appendices 1 and 2.

The PAD is located within the University Area Plan (“UAP”) as shown on Exhibit 1: PAD Location Map. The UAP states as a goal, in Section 7, supporting “the importance of the University of Arizona and its immediate environs as a ‘regional activity center’”, defined as “a relatively compact area of residential, commercial, educational, and recreational uses”.

The PAD location is also included in “Precinct 4” of the University of Arizona (“UArizona”) Comprehensive Campus Plan Update of 2009 (“Campus Plan”), also indicated on Exhibit 1. An inset in the same exhibit shows a portion of the UArizona Precinct 4 map which indicates UArizona’s desired uses for this particular location as mixed-use storefront retail with housing or offices above. While the Campus Plan does not give policy direction to City of Tucson (“City”) projects, it clearly shows the UArizona has contemplated this PAD location for a mixed used development.

The goal of the Sixth at Campbell PAD is a mixed-use development comprised of storefront retail with a market, and multi-family dwelling units above (the “Project”). If market conditions are favorable, travelers accommodation (hotel) is also an allowed use. The intent is a high-visibility “regional activity center”, “campus edge” and “gateway” to the University as supported by the UAP and the Campus Plan. This PAD will represent UArizona to the community with the goal of attracting Tucson and Greater Arizona residents, athletics fans and alumni to urban, transit-oriented housing options, shopping, culture and entertainment.

The overall PAD parameters can be found at Exhibit 7: PAD Concept and Circulation Plan. The westernmost Section A of the PAD will be developed to a maximum building height of 80 ft. (See *Appendix E* for a diagram of the proposed building height at Section A.) Intentional placement of the highest building mass to the north of the parking structure substantially mitigates views of this portion of the new development from the neighborhood to the south.

The Section B building volume steps down to 70 ft. in height and Section C to 50 ft., to provide variety of form as well as diminishing heights toward Campbell Avenue. A parking structure is sited at Section D at southeast corner of the PAD. This structure, lower in scale than the massing along Sixth Street, is located adjacent to existing residential use to the south. It provides a buffer between the residential neighborhood and the higher, more dense development purposefully located along Sixth Street.

In addition to Exhibit 7, Building Massing & Schematic Design plans have been provided as Exhibit 9 of the PAD document to describe possible development that could occur in the various sections of the PAD, based on the uses and development standards prescribed by the PAD document. These plans provide visual understanding of the PAD parameters. Final plans will be fully vetted by the Design Review Committee as prescribed in this PAD document, as well as the submitted to the City of Tucson for development review.

The Project's post-development vehicle circulation has been thoughtfully designed to accommodate the Project traffic and improve circulation in the area. This vehicle circulation is shown at Exhibit 7 and detailed at Section III.4. Connection of the Sixth at Campbell PAD to adjacent bicycle and roadways, available transit, bike routes and to the UArizona itself will be crucial to its success. Parking facilities and drop-off locations are designed to connect with on-site pedestrian circulation and improved sidewalks that are continuous with the adjacent residential neighborhood. This will allow visitors, students, residents and neighbors access to retail shops, art, culture, and entertainment experiences without reliance on individual vehicles.

#### Martin Avenue ROW

While not a PAD requirement, the Applicant desires to collaborate with the City, UArizona, RHNA, and other affected neighbors on the potential to close Martin Avenue and convert it to a landscaped area with a bicycle and pedestrian path. The design intent will be to segment and improve vehicle circulation in the area while creating a neighborhood greenspace amenity, with desired elements to include shade trees and a path for pedestrian and bicycle circulation. If the Martin Avenue ROW can be acquired or converted to a non-vehicular area, the Applicant is agreeable to being responsible for landscape upkeep and other maintenance of the amenity.



**PROJECT**  
6th &  
Campbell

Exhibit 1: PAD Location Map



1,000 FT





## B. PAD Rationale and Benefits to the Community

The PAD is the best vehicle available in the Unified Development Code (“UDC”) for planning and design of a mixed-use commercial/residential site in support of the UArizona “regional activity center”, as identified by the UAP. Entitlements for projects having multiple zoning designations, multiple properties and nuanced goals requiring flexible design parameters is difficult (1) for developers who must address economic and schedule pressures brought by complicated and lengthy regulatory procedures and (2) for Planning and Development Services Department (“PDSD”) officials and staff who are required to enforce development standards consistently across a spectrum of projects. The PAD streamlines the planning portion of the entitlements process, providing regulatory flexibility and clarity for complex urban developments such as this one.

The PAD process provides the benefit of comprehensive and simultaneous review by the applicant, PDSD and other agencies, and the public, of such planning parameters and constraints as:

- Integration of compatible building uses;
- Build-to lines, setbacks and building heights;
- Vehicular and bicycle access, circulation and parking;
- Convenient, inviting and safe pedestrian circulation;
- Infrastructure and utility development with shared access;
- Open space, landscape and stormwater management approach.

Such comprehensive up-front review allows early discovery of both problems and solutions, resulting in well-conceived, successful growth that addresses public health and safety along with the aesthetics and functionality of the building solutions. Required public meetings with neighbors provide valuable insights into the needs of the community and unexpected solutions to issues often arise.

Infill development on complicated sites can be discouraged by the lack of clarity and direction that comes with a cohesive planning process. The PAD vehicle encourages infill projects like this one by simplifying the entitlement process, and thereby costs, for potential developers. While the fine-grained detail of the development is not completed by the PAD document, basic parameters are established that allow the future developer/applicant to avoid the necessity of “starting from scratch.”

The PAD allows pursuit of creative planning and design solutions that reach beyond conventional zoning constraints. The conventional approach in this particular location would likely result in a scale and form of development that would be

inconsistent with the “urban form” of the UArizona and its environs. Sensible transitioning away from the existing, anachronous zoning at this site to the will allow for a “smart growth” development form that accepts higher density, compact building patterns, concentration of population and services, walkability, shared infrastructure and utilities.

The plan for the Sixth at Campbell PAD is to combine multiple parcels into a single district with an overarching concept plan based on the OCR-1 zone. (For current zoning at the PAD location see Exhibit 2: Current Zoning.) Changes in land development technologies have made multiple-parcel projects with smaller, independent buildings cost-prohibitive and their construction unsustainable, especially for infill projects in urban centers. Higher density, carefully planned projects allow for construction efficiencies, energy savings, use of existing utilities and infrastructure and therefore more efficacious use of the properties and frontage along Sixth Street. This PAD encourages development densities and building massing similar to those found on the UArizona campus. (See Exhibits 9A and 9B: Building Massing.) High- and medium-density city-center housing concepts such as “live-work-play” and “active living”, coupled with a variety of convenient transit options will support retail, entertainment, recreation uses adjacent to the UArizona and support this regional activity center.

Well-planned circulation within and around the PAD connect the various uses and appurtenant parking. Piecemeal development of individual properties at this site under current zoning would not offer a comprehensive approach to traffic-related design or optimization of circulation around and within this site. The PAD consolidates vehicular and pedestrian access to businesses, parking and loading areas, fire vehicle clearances, and solid waste disposal, efficiencies difficult to achieve under conventional development practices.

## C. Conformance with City Land Use Plans and Overlays

The Sixth at Campbell PAD lies within the City of Tucson Ward 6 and is subject to planning policy direction from Plan Tucson 2013 - City of Tucson General & Sustainability Plan (Plan Tucson 2013) and the University Area Plan (UAP). By the following specific examples, this PAD conforms to plan policies in effect.

### 1. Plan Tucson

The Plan Tucson 2013 Future Growth Scenario Map (Exhibit LT-7) identifies this PAD location as part of the UArizona Campus Area Building Block, defined as follows:

Campus areas include and surround large master-planned educational, medical, or business facilities. A fully realized campus area serves the local workforce and student population and includes a range of housing

options, a variety of retail opportunities, and convenient transit options. Campus areas often accommodate businesses that are the spin-off of economic development opportunities generated by the primary employers.

*The stated goal of this PAD as a mixed-use development comprised of storefront retail with multi-family dwelling units and/or offices above provides for all of the opportunities in the Building Block description above. The PAD is well-positioned to support and enhance the UArizona regional activity center with employee housing and off-campus businesses within walking and transit distance.*

### **Land Use, Transportation and Urban Design Policies**

**LT1:** Integrate land use, transportation, and urban design to achieve an urban form that supports more effective use of resources, mobility options, more aesthetically pleasing and active public spaces.

*This PAD takes its cue from the urban form of the UArizona, with its high-density, large-scale and high-quality architecture. The scale and planning of the PAD create the opportunity for it to serve as a fresh landmark and “campus edge-identifying” development, reflecting “the future of Tucson’s built environment and the smart growth of the community as a whole”. Plan Tucson 2013 states “a person’s overall impression of a city is often in part an unconscious reaction to its urban design”. The PAD has the opportunity to create a bold statement about the longevity, significance and flavor of the Tucson community.*

**LT3:** Support development opportunities where:

- a. residential, commercial, employment uses are located or could be located and integrated
- b. there is close proximity to transit
- c. multi-modal transportation choices exist or can be accommodated
- d. there is potential to develop moderate to higher density development
- e. existing public facilities and infrastructure provide required levels of service
- f. parking management and pricing can encourage the use of transit, bicycling, and walking

*This PAD consists of integrated residential, commercial, and employment uses and opportunities. Its location at Campbell Avenue and Sixth Street, a substantial intersection at the urban core of Tucson, is adjacent to a variety of campus and public transit options already in existence (See Exhibit 5: Existing Circulation), including bicycles and pedestrian connections. Parking is calculated based on*

*Transit Oriented Development and supports the entirety of the buildout. Use of existing public facilities and infrastructure provides a basis for the development. Existing infrastructure - power, water, wastewater, stormwater management and fiber – will be evaluated and addressed in a comprehensive manner to ensure that the development consolidates services and supports coordinated cost-effective service delivery for current and future residents and commercial tenants. The directing of new growth to areas of Tucson with existing infrastructure not only discourages urban sprawl but also improves the long-neglected infrastructure in the urban core.*

**LT28.1.9:** Support strategically located mixed-use activity centers and activity nodes in order to increase transit use, reduce air pollution, improve delivery of public and private services, and create inviting places to live, work, and play.

*The PAD's location adjacent to UArizona and multiple residential neighborhoods will allow it to be a mixed-use activity center, and therefore the PAD fulfills this policy goal.*

**LT28.5.1:** Support development in or adjacent to existing regional and community-level activity centers that will:

- a. Integrate residential and nonresidential land uses and the mix of private and public land uses, including entertainment, recreation, retail, restaurants, offices, libraries, hotels, public meeting facilities, child care, transit facilities, and other services into mixed-use activity centers;
- c. Support alternate modes of transportation;
- d. Encourage infilling vacant or underutilized parcels adjacent to existing regional and community-level activity centers;
- f. Support pedestrian and bicycle use by providing clearly marked pathways from adjacent bike routes and public sidewalks and walkways

*The PAD's location adjacent to UArizona and multiple residential neighborhoods will allow it to serve a major activity center within the City, and therefore the PAD fulfills these policy goals.*

**LT28.5.2:** Consider redevelopment, including the demolition of substandard structures, which encourages the assemblage of larger parcels for activity center or node development.

*This PAD results in demolition of substandard, under-utilized structures and consolidation of the disparate parcels along Sixth Street and Campbell Avenue to make way for a vibrant mixed-use activity center.*

## 2. University Area Plan

### **Section 2: Neighborhood Conservation/Historic Preservation**

Goal: Preserve and enhance the historic character and residential quality of life in University Area Neighborhoods

4.1 Encourage the preservation of properties undergoing historic survey until final eligibility is determined.

*There are three buildings within the PAD boundaries that the City of Tucson considers to be eligible for preservation. Such evaluation will take place prior to demolition of the structures. See also Part III Section 8.*

### **Section 3.D: Land Use and Development, Mixed Use Development**

Subgoal: Support carefully designed and located mixed-use development as a means to integrate housing, employment, shopping and related activities in a relatively compact pedestrian-oriented area.

(1) ...vehicular traffic directed away from the interior of residential areas;

*As a result of this PAD, Martin Avenue likely will no longer be a through street to the Rincon Heights Neighborhood. As an amenity for the neighborhood, the abandoned portion of Martin Avenue south to Seventh Street could become a landscaped bicycle and pedestrian amenity for Rincon Heights Neighborhood use, with pathways and linkages between the neighborhood and the new development.*

(2) Commercial activity located at street level and connected to the public sidewalk system;

*Commercial activity within the Sixth at Campbell PAD will be located at street level along Sixth Street and Campbell Avenue, adjacent to the public sidewalk system which will also be enhanced.*

(3) Development includes a well-defined pedestrian system linked to the public sidewalk system, convenient access to transit facilities, and secure bicycle parking areas.

*Additional walkways and bicycle facilities are incorporated into this PAD.*

#### Section 4: Transportation

Goal: Encourage the development of a multi-modal transportation system which is sensitive to neighborhood and regional concerns.

- (7) Mitigate the impacts of non-resident parking demand in neighborhoods...

*The parking needs of the PAD will be completely met on site.*

- (8) Design and locate public parking facilities so as to mitigate traffic and visual impacts on surrounding areas.

*No traffic will be directed through the Rincon Heights Neighborhood. High quality finish materials that complement adjacent development as well as planting will be used to minimize visual impacts of parking facilities within the PAD. See Exhibit 8: Screening Concepts*

#### Section 7: University of Arizona

Goal: Recognize the importance of the University of Arizona and its immediate environs as a regional activity center and support cooperative efforts in the development of this activity center in a manner that protects and enhances University Area neighborhoods

*This PAD supports the continuing growth of the UArizona by providing adjacent development suitable for “spin-off” businesses and functions. The PAD protects Rincon Heights Neighborhood by locating the more intensive development along Sixth Street in order to minimize noise, lighting and other visual impacts to the residential neighborhood to the south. The tallest building heights are proposed at the western edge of the development, substantially screened from the neighborhood to the south by the UArizona five-story parking garage. The proposed heights taper down to the east – from 80 ft to 70 ft and then 50 ft – so that the scale of the development along Campbell Avenue is similar to the scale of Sam Hughes Place (51 ft.) located on the southeast corner of Campbell Avenue and Sixth Street.*

#### Section 8: General Design Guidelines

- (1) Complement surrounding development – utilize...setbacks, step backs and variations in building heights or mass to complement the scale and character of surrounding development and reduce the appearance of excessive height and bulk.

*The PAD complements the urban heights, high-density and large-scale massing of the UArizona campus architecture. As can be seen in Exhibits 9A and 9B: Building Massing, the highest building is positioned closest to the new indoor practice facility and the football stadium itself.*

*Building heights step down, moving west to east, as they approach the lower-height developments along Campbell Avenue in order to meet and complement the existing character of that neighborhood.*

- (2) Buffer adjacent uses – utilize appropriate screening techniques to mitigate the impacts of new development on adjacent uses.

*The Concept Plan (see Exhibit 7) shows a new parking structure intentionally placed at the south of the PAD. The structure will be a maximum of 28 ft. in height (the shortest of the proposed structures on the PAD). The setback from the residences on the south side of the existing alley, taken from their north property lines, will be a minimum of 24 ft. The present R-2 zoning would allow a 25 ft high non-residential building with a setback of 18'-9", substantially closer than what is proposed by this PAD. The parking structure will be thoroughly screened, since it will be adjacent to rear lot lines of the residences to the south of the PAD. See Exhibit 8: Screening Concepts for examples. Screening is required to mitigate the appearance of vehicles as well as lighting from the neighboring properties.*

- (3) Coordinate pathways and linkages – coordinate private pedestrian walkways and bicycle paths with public pedestrian and bicycle facilities.

*The success of the PAD development relies on the coordination of private pedestrian walkways and bicycle paths with public pedestrian and bicycle facilities and have been included in its overall design. See Exhibit 7: PAD Concept and Circulation Plan.*

### **The University of Arizona Comprehensive Campus Plan Update 2009 (Campus Plan)**

One of the concerns most cited by surveyed community members for the Campus Plan document is that the UArizona is lacking in campus identity at its edges and gateways. The Campus Plan also states: "routes into campus (Sixth Street specifically identified) were frequently identified as potential locations for better quality development." The Sixth at Campbell PAD will serve as a strong edge and gateway to the UArizona campus. Drawing from the vocabulary of campus development further west along Sixth Street, the PAD district encourages high-quality development with an "emphasis [being] placed on

connectivity, improving edges, gateways, pedestrian paths...to benefit the campus and surrounding community” (pg. 11 of the Campus Plan). Current development along Sixth Street is non-descript, outdated and ill-suited to serve as the UArizona’s introduction to the community as an edge or gateway. Recent UArizona construction of the five-story South Campus Warren Avenue Parking Garage (South Campus Garage) west of the PAD (fulfilling another goal for Precinct 4) and an indoor athletic practice facility have introduced a new scale and quality of development to this portion of Sixth Street. A bold and dynamic high-density, mixed-use development will conform to UArizona’s vision of a suitable “handshake” to the campus. This PAD addresses these urban planning concepts through comprehensive Development Standards and conceptual plans.

The Building Uses: Housing Map in the Campus Plan indicates the UArizona desire for mixed-use housing development at the location of this PAD district. The South Campus – Precinct 4 plan describes mixed-use buildings at the east end of Sixth Street with storefront retail, housing, student recreational facilities and structured parking, as well as faculty-staff housing facing the neighborhood on Seventh and Eighth Streets. The UArizona acknowledges that future planning to accommodate projected growth will require increasing density of main campus developments as well as functions not critical to the academic core mission being located off campus. It is clear that the UArizona is supportive of the type of development proposed by this PAD.

This PAD is subject to the UAP which “recognizes the importance of the [Campus Plan] and seeks to enhance coordination between policies of the two plans in the best interests of the University area neighborhoods and the community of Tucson.” Sixth at Campbell PAD concept plan therefore attempts to address the interests of both plans as well as the Plan Tucson 2013.

Plan Tucson 2013 echoes the Campus Plan by designating this particular part of Sixth Street a “Campus Area”. A high caliber edge/gateway development, though not UArizona owned, will acknowledge the value that the university holds for the community as a whole.

#### **Neighborhood Association – Not Applicable**

The Sixth at Campbell PAD district is not in a City neighborhood association. It was specifically excluded from the Rincon Heights Neighborhood Association boundaries by a Memorandum of Understanding between the City and UArizona in 1996.



II. Site Analysis

A. Existing Site Conditions: On and Adjacent to the PAD District

1. Onsite Development/Conditions/Constraints

There are 14 parcels within the PAD boundaries; 12 are owned by the Applicant, one by ABOR and one by a private individual.

a. Existing Parcel Information and On-Site Development

Existing conditions at and around the Sixth at Campbell PAD district can be found on Exhibit 3: PAD Existing On-Site Conditions and Adjacent Development.

Parcels 12403173B, 12403175A, 124031880, 124031890 and 124031900 are presently surfaced with asphalt.

The buildings on parcels 124031670, 124031680 and 12403169A have been removed, pursuant to demolition permits T20BU00450, T22BU00164 and T22BU00165, respectively. These parcels are currently vacant.

There are currently six buildings, along with appurtenant storage structures, located within the PAD boundaries. The following are buildings are currently being used for commercial purposes:

Parcel Number	Address	Year of Construction
124031700	1832 East 6th Street	1945
12403171B	1838 East 6th Street	1959

Residential buildings (rental properties) are located on the following parcels:

Parcel Number	Address	Year of Construction
124031860	1718 East 6th Street	1927
124031870	1722 East 6th Street*	1927
124031660	1802 East 6th Street	1960
12403174A	417/419 North Campbell	1981

\* Not owned by Applicant

b. Eligibility Status of Historic Structures

The two buildings highlighted in bold text above are considered by the City of Tucson Historic Preservation Office staff to be potentially eligible. Policy direction within Plan Tucson 2013, Chapter 3: The Built Environment: Historic Preservation Policy HP7, recommends that the developer evaluate the benefits of new development relative to historic preservation. See Part III Section 8. Approach to Potentially Historic Structures.

c. Adjacent Streets, Routes and Alleys

The PAD is bounded to the north by Sixth Street. Per the official COT Major Streets and Routes Map, Sixth Street is a Collector (90' planned width) that provides for traffic movement between local streets and arterial streets. Collector streets also provide access to abutting land uses. There is no parking allowed on collector streets. Adequate bicycling space is provided in each 17-foot travel lane.

The PAD is bounded to the east by Campbell Avenue. Campbell is a Gateway Arterial (120' planned width) on the official COT Major Streets and Routes Map. It is a bike route with striped shoulder, with white edge line, approximately 4' to 10' wide paved shoulder.

North/south running Martin Avenue bisects the PAD. Martin Avenue is accessed from Sixth Street from the west and from the east (via turn lane) traveling south to the Rincon Heights Neighborhood as well as to the east entrance / exit of the UArizona South Stadium parking garage. Vehicles can enter the garage from Martin; vehicles exiting the garage onto Martin can only proceed north on Martin, except on football game days when access to the neighborhood to the south is currently allowed.

There is a public 20' wide, unpaved, east-west running alley, owned by the COT, that bisects the site and provides access from both Martin and Campbell Avenues to the parcels available for parking described above, as well as to available parking south of the commercial properties to the north of this alley.

Adjacent to the south PAD boundary on the east side there is a public 20' wide, unpaved, east/west running alley, owned by the COT and currently accessed by both Martin and Campbell Avenues. This alley provides access to existing residences to the south. There is also a 20' wide, paved, east/west running alley adjacent to the south PAD boundary to the west of Martin Avenue that is owned by ABOR. This is currently a two-way alley; ABOR provides access easements to the owners of the parcels to the north of this alley.

d. Existing Infrastructure

The Property is located within the Tucson Electric Power (TEP) service territory. TEP has both overhead and underground lines within the PAD boundaries that may need to be moved depending on the final development plan.

Pima County Regional Wastewater Reclamation Department (PCRWRD) has been monitoring the sewer capacity demands of new development in and around the UArizona Campus for several years with respect to downstream capacity. Prior to final approval of development plans, the applicant will be required to work with PCRWRD to fully analyze impacts to the downstream sewer capacity.

This property is located within the Tucson Water service territory. Prior to final approval of development plans, the applicant will be required to work with Tucson Water to fully analyze water demands to serve this project and the overall water service infrastructure available within and around this PAD district.

## 2. Offsite Development/Conditions/Constraints

a. Davis-Monthan AFB

The Davis-Monthan AFB Civil Engineer Flight reviewed the re-zoning Pre-PAD plans and has found that this PAD as presented should not have any negative impact on the AMAFB mission.

For more information on Off-Site Development / Conditions / Constraints see Exhibit 3: PAD Existing On-Site Conditions and Adjacent Development.

b. Tucson Airport Authority (TAA)

This PAD district is within Federal Airport Authority (FAA) Part 77 airspace and is in close proximity to an active hospital heliport located at Banner-University Medical Center. For mitigation requirements prescribed by the TAA see PART III Section 12.

## B. Existing Zoning and Land Use

### 1. Onsite Zoning

Onsite zoning includes:

- C-1 Zone
- R-2 Zone

- P Zone

There are no COT Overlays within the PAD boundaries. (Refer to *Exhibit 2: Current Zoning* for delineations.)

## 2. Onsite Land Uses

Onsite land uses include:

- Restaurant/Bar
- Surface parking (Stabilized, unpaved surface parking to remain in use until such time as approved PAD development construction commences.)
- Retail/Commercial/Service
- Residential (Rental Housing)

## 3. Adjacent Zoning

Zoning designations on adjacent properties include:

- C-1 Zone
- R-2 Zone
- OCR-1 Zone

There are no COT Overlays within the PAD boundaries. (Refer to *Exhibit 2: Current Zoning* for delineations.)

## 4. Adjacent Land Uses

Land Uses on adjacent properties include:

- UArizona Indoor Practice Facility
- South Campus Warren Avenue Parking Garage
- UArizona Surface Parking
- Fraternity
- Sam Hughes Place – Retail/Commercial/Service, Restaurant/Bar, Residential
- Residential

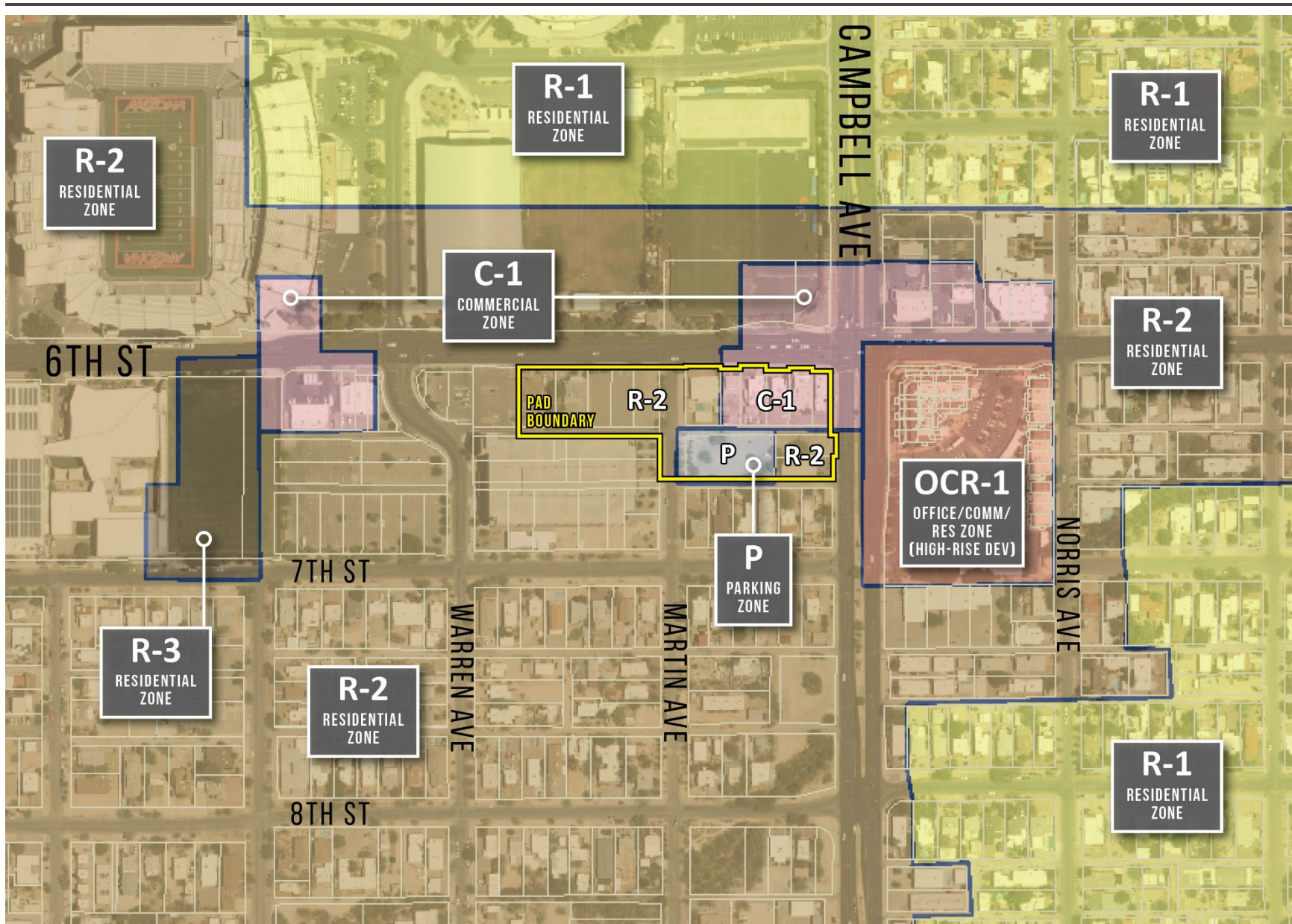


Exhibit 2: Existing Zoning



1,000 FT



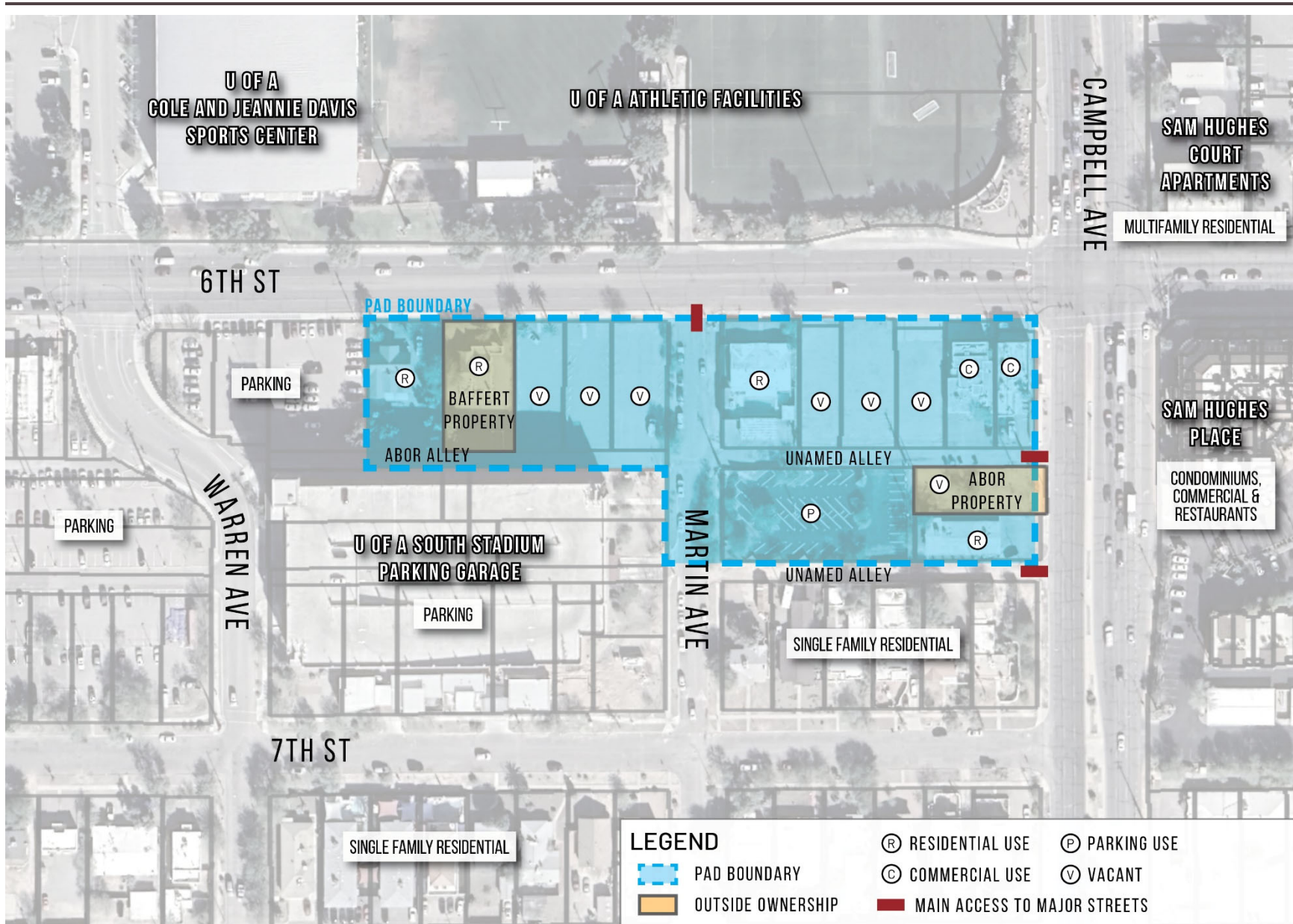


Exhibit 3: Existing Onsite Conditions & Adjacent Development



## C. Public, Educational, Community Facilities

Refer to *Exhibit 4: Community Facilities*. No existing or proposed Tucson Parks and Recreation facilities, schools, libraries, or fire/police stations will be affected by this PAD.

### 1. Schools

Nearby schools include:

- UArizona
- Tucson High Magnet School
- Howenstine Magnet High School
- Mansfeld Middle Magnet School
- Sam Hughes Elementary School
- Miles Exploratory Learning Center
- Teenage Parent High School

### 2. Libraries

Nearby libraries include:

- Himmel Park Library
- UArizona Main Library

### 3. Fire/Police Stations

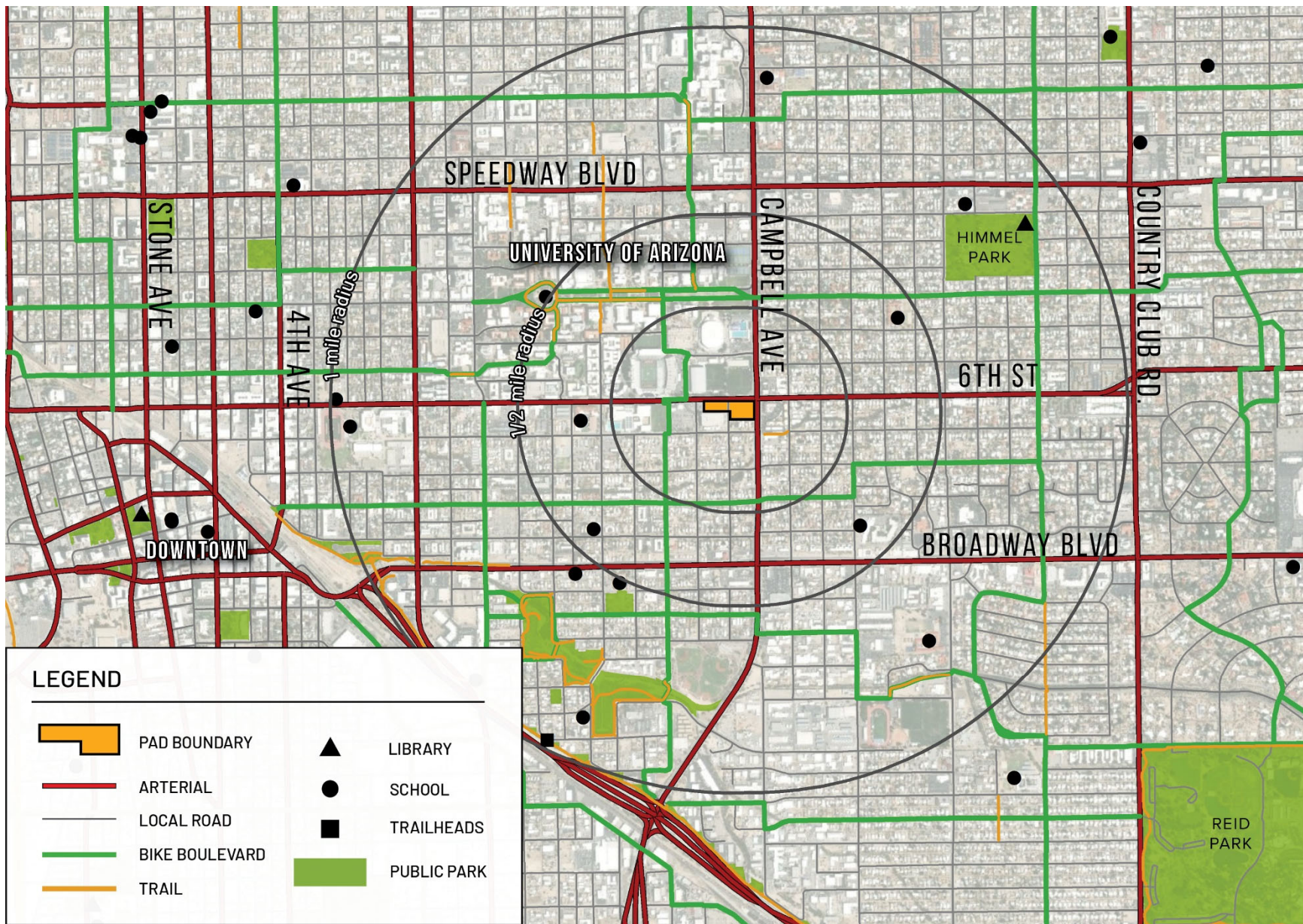
Fire and police stations near the Property include:

- Tucson Fire Department Station #3
- UArizona Police Department




### 4. Public Parks

Public parks near the Property include:

- Himmel Park Iron Horse Park San Antonio Park
- Arroyo Chico Greenway
- Pima County Cherry Baseball Fields
- Rincon Vista Sports Complex



**LEGEND**

- |   |                |   |             |
|---|----------------|---|-------------|
|  | PAD BOUNDARY   |  | LIBRARY     |
|  | ARTERIAL       |  | SCHOOL      |
|  | LOCAL ROAD     |  | TRAILHEADS  |
|  | BIKE BOULEVARD |  | PUBLIC PARK |
|  | TRAIL          |   |             |

**Exhibit 4: Community Facilities Map**



1 Mile





D. Existing Transportation and Circulation

Please reference Exhibit 5: Existing Circulation as well as the attached draft Traffic Impact Analysis (TIA) for current vehicular access points, bike routes, bus lines and stops / shelters, etc.

There are a variety of existing and future multi-modal transportation opportunities adjacent to the Sixth at Campbell PAD district, including:

1. Tucson Modern Streetcar

This PAD is located on a Planned Streetcar line that runs in 6th Street and along Campbell Avenue down to Broadway according to Plan Tucson 2013.

2. UArizona Cat Tran

The UArizona Cat Tran Red Route has a stop at Warren Avenue adjacent to the S. Stadium Garage.

3. Sun Tran Transit

Adjacent bus routes include:

- Bus Route 3 has E and W stops at 6th and Campbell
- Bus Route 15 has S and N stops at 6th and Campbell

The Property is within the RTA Sun Shuttle Complementary Service Area and the Sun Van Complementary ADA Service Area.

4. Bike Route Access

Campbell Avenue has a striped bike route that links with:

- 7th Street, a residential (“bikeable”) street, joins a striped bike route at Highland Avenue to the west linking bicycle traffic to the UArizona.
- 9th Street (non-striped bike route)

E. Existing Hydrology

No portion of the site is within a FEMA Flood Plain A or X Zone. This PAD site lies within the Tucson Arroyo Watershed. This PAD is located within the Tucson Arroyo Watershed. The Flood Control District and Army Corps of Engineers have completed a significant flood control project on parts of this watershed.

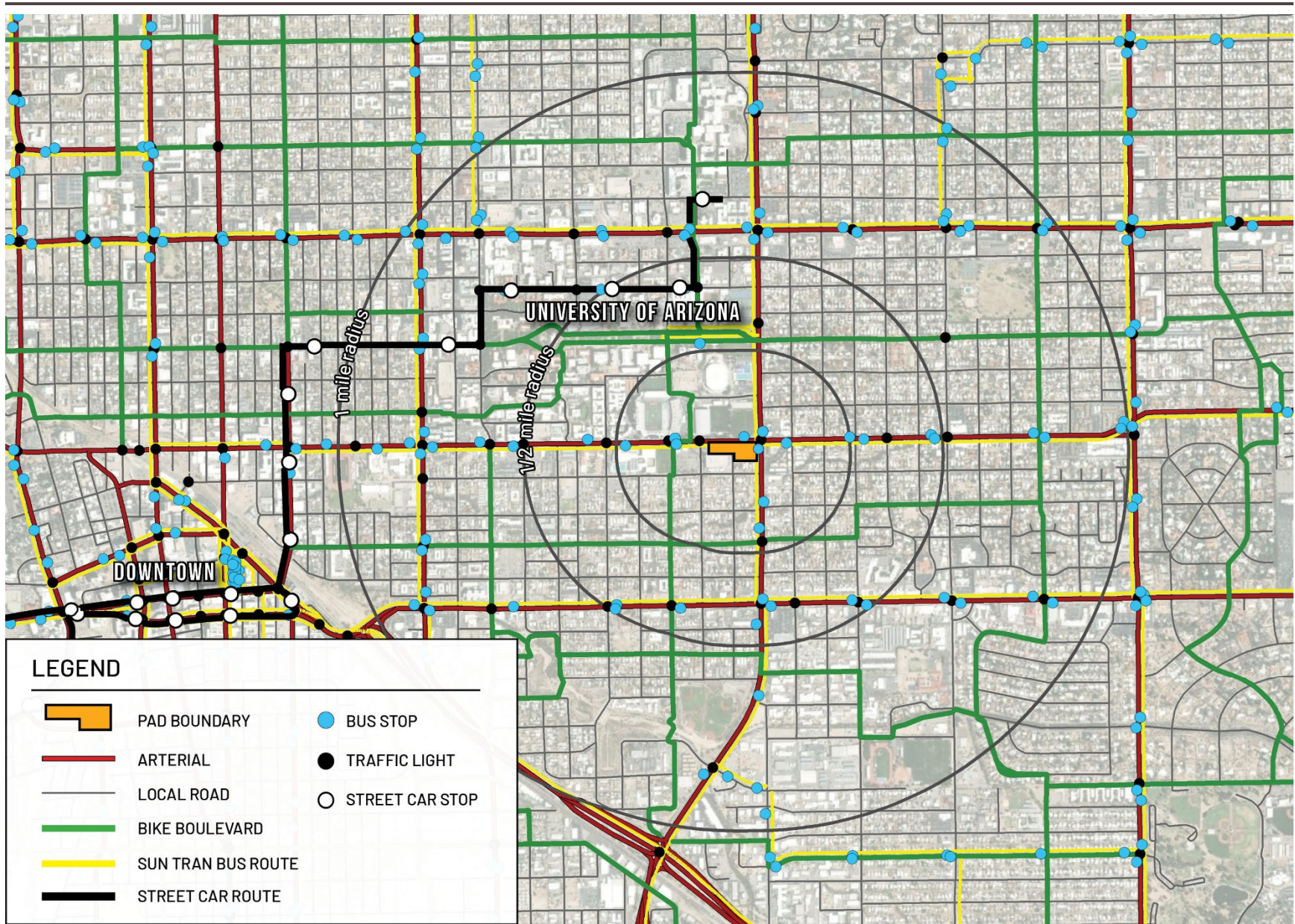


Exhibit 5: Circulation Map



1 Mile



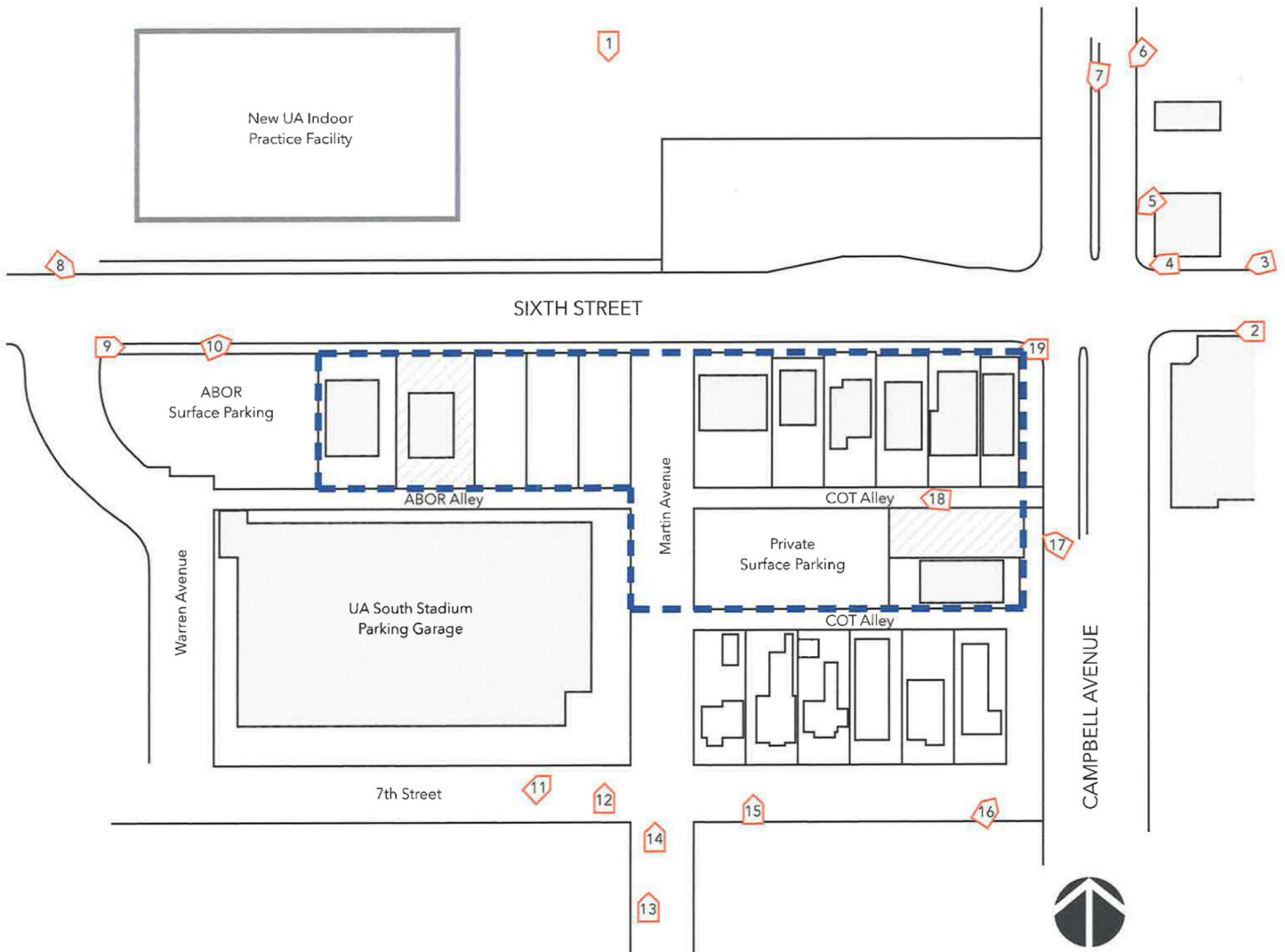
F. Views

The urban character of the Sixth at Campbell PAD district relates to the scale and density of the adjacent UArizona development to the west along Sixth Street.

*Exhibit 6: Photo Location Key Plan* identifies the locations where the photos below were taken, showing the existing site relative to the following landmarks:

- Sam Hughes Place, developed under OCR-1 Zoning, Mixed Use, 51 ft in height (three stories)
- UArizona South Stadium Parking Garage height of 65 to 85 ft.
- UArizona Football Stadium with scoreboard height of 169 ft.
- UArizona Football Stadium height of +/- 200 ft

Exhibit 6: Photo Location Key Plan



# Sixth at Campbell PAD









### III. PAD Proposal

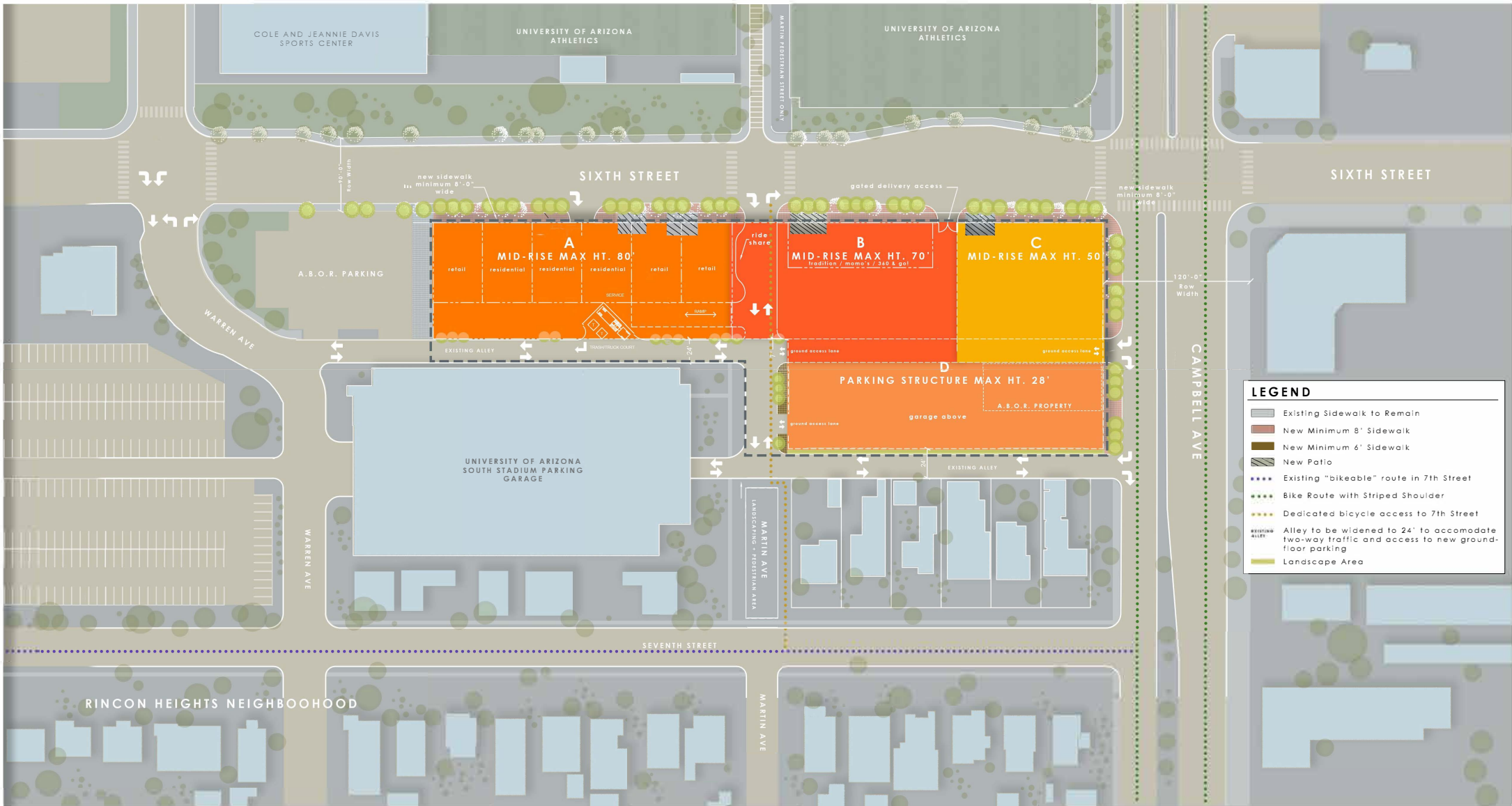
#### A. Planning Considerations

The Sixth at Campbell PAD proposes a PAD zoning district, based on modified provisions of the OCR-1 zone, to allow for development in accordance with urban planning documents for the area as described in this document.

*Exhibit 7: PAD Concept and Circulation Plan* depicts the boundaries of the new Sixth at Campbell PAD district. The PAD shall be considered a single parcel for the purposes of setbacks, building placement and other development standards. There are four sections each having its own specific development standards as indicated in Exhibit 7 and Part III Section 3. All new development, redevelopment and associated vehicular use and open areas located within these boundaries shall conform to the regulations and standards contained within this PAD document. Where the PAD is silent, the COT UDC provisions for the OCR-1 zone shall control. All development must be in compliance with this PAD document at the completion of construction of the total Sixth at Campbell PAD district.

New development on the PAD site shall provide for the safe and continued use and operation of the existing businesses and parking on this block. This shall include adequate public and employee access and all service deliveries and solid waste pickup services currently being used by the existing businesses on this block.





**EXHIBIT 7:  
PAD Concept &  
Circulation Plan**

FORSarchitecture+interiors

**SJCummings  
Properties**

## B. Permitted/Excluded Uses

### 1. PAD Permitted Uses – P

The following is the list of the Project’s permitted uses. The applicable Use Specific Standards noted in the table are found in the following section of this PAD (Section III.B.2: Use-Specific Standards). This list of uses may be supplemented by the permitted uses in the OCR-1 Zoning District (and applicable UDC Use Specific Standards), except for those specifically prohibited by the PAD.

Land Use Type	Use Standards
<b>Civic Use Group</b>	
Civic Assembly	P
Cultural Use	P
Membership Organization	P
Religious Use	P
<b>Commercial Services Group</b>	
Administrative and Professional Office	P
Alcoholic Beverage Sales (Excluding Large Bar)	P (l)
Communications	P (o)
Entertainment (Excluding Large Dance Hall)	P (a, b)
Financial Services	P (c)
Food Service - Restaurant	P (d, k)
Medical Services - Outpatient	P (e)
Parking	P
Personal Services	P
Research and Product Development	P (f)
Travelers Accommodations, Lodging (Hotel)	P (d, g, n)
<b>Retail Use Group</b>	
Food and Beverage Sales (Excluding Large Retail Establishment)	P (l)
General Merchandise Sales (Excluding Large Retail Establishment, Gun or Ammunition Sales)	P (h)
<b>Residential Use Group</b>	
Multi-Family Dwelling	P (m)
Artist Studio/Residence	P (i, m)
Home Occupation – Live/Work	P (j, m)
<b>Industrial Use Group</b>	
Craftwork	P (i)

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## 2. Use-Specific Standards

- a. Large recreational facilities of more than 25,000 sq. ft. of floor area (including gross floor area and any outside areas providing service to the public) are not allowed.
- b. All entertainment uses shall occur indoors.
- c. Non-chartered financial institution facilities, such as payday loan facilities are not allowed.
- d. Outdoor dining located in adjacent right of way is permitted, subject to obtaining requisite legal access from City of Tucson. Soup kitchens are not permitted.
- e. Blood donation centers are not allowed.
- f. Only scientific, non-industrial type of research and development is allowed.
- g. Travelers Accommodations, Lodging may not provide individual room access from the exterior of the building.
- h. Display or storage of fertilizer, manure or other odorous material is not allowed.
- i. Adequate measures required to assure the health, safety and welfare of the occupants or adjacent residents' property in relation to any industrial process, use or storage. The use may not create any nuisance, hazard or other offensive condition, such as that resulting from noise, smoke, dust, odors or other noxious emissions. Additionally, appropriate building code occupancy separation must be ensured. On-site sale of the artists' products, including occasional shows of the *artist's* works are permitted secondary uses.
- j. Permitted as an accessory use to a Family Dwelling. Excluding Day Care and Traveler's Accommodation Lodging. The use may not create any nuisance, hazard or other offensive condition, such as that resulting from noise, smoke, dust, odors or other noxious emissions. Additionally, appropriate building code occupancy separation must be ensured.
- k. Permit Microbrewery as an accessory use to a Restaurant.
- l. No stand-alone bars and only in conjunction with a Food Service/Restaurant Use.
- m. Residential units within the PAD shall be limited to three bedrooms or less.
- n. Travelers Accommodation use shall be limited solely to Section A of the PAD.
- o. Apply all Use Specific Standards noted in UDC Table 4.8-4 for OCR-1.

### 3. Excluded Uses

<b>Prohibited Land Use</b>
<b>Agricultural Land Use Group:</b> All uses prohibited
<b>Civic Land Use Group:</b> All uses prohibited except those permitted by the PAD
<b>Commercial Services Group</b>
Alcoholic Beverage Service – Bar, operating solely without Restaurant
Alcoholic Beverage Service – Large Bar
Animal Services
Automotive: All uses
Billboard
Commercial Recreation
Construction Services
Large Dance Hall
Technical Service
Trade Service and Repair
Transportation Service
<b>Industrial Land Use Group:</b> All uses prohibited except those permitted by the PAD
<b>Residential Use Group</b>
Group Dwelling
Manufactured Housing/Mobile Home Dwelling
Single-family, Detached
All Residential Care Services uses
<b>Restricted Adult Activities Use Group:</b> All uses prohibited
<b>Retail Trade Use Group</b>
Vehicle Rental and Sales
<b>Industrial Use Group:</b> All uses prohibited except those permitted by the PAD

C. Development Standards

1. Building Placement and Setback Standards

Entire PAD		
Building Placement Standards		Specific Requirements
Build-To Line (Distance from Property Line)	0 feet	Build-To-Lines and Setbacks indicated are subject to future right-of-way widths along Sixth Street and Campbell Avenue, as determined by the Department of Transportation and Mobility in relation to the City’s adopted Major Streets and Routes Plan (MS&R). Additional right-of-way dedication at intersection applies per the MS&R map detail.
Setback – Street, Side & Rear Yards (Distance from Property Line)	0 feet	

2. Building Height Standards

See also *Appendix E*, Building Height Diagram, for an illustrative building height concept.

Section A	
Building Height Standard	Specific Requirements
Maximum Building Height: 80 feet	<ol style="list-style-type: none"> <li>For section location see Exhibit 7: Concept and Circulation Plan.</li> <li>See also Exhibits 9A and 9B: Building Massing</li> </ol>

Section B	
Building Height Standard	Specific Requirements
Maximum Building Height: 70 feet	<ol style="list-style-type: none"> <li>For section location see Exhibit 7: Concept and Circulation Plan.</li> <li>See also Exhibits 9A and 9B: Building Massing</li> </ol>

Section C	
Building Height Standard	Specific Requirements
Maximum Building Height: 50 feet	<ol style="list-style-type: none"> <li>1. For section location see Exhibit 7: Concept and Circulation Plan.</li> <li>2. See also Exhibits 9A and 9B: Building Massing</li> </ol>

Section D – Parking Structure	
Building Height Standard	Specific Requirements
Maximum Building Height: 28 feet	<ol style="list-style-type: none"> <li>1. For section location see Exhibit 7: Concept and Circulation Plan.</li> <li>2. See also Exhibits 9A and 9B: Building Massing</li> <li>3. Height for parking structure is the vertical distance from design grade at the base of the structure to the top of the structure. For structures within 6' of a property line, the design grade is the lower of the two grades on each side of that property line.</li> </ol>

Building Height Measurement	
Building Heights will be regulated pursuant to UDC § 6.4.4, except as noted herein.	<ol style="list-style-type: none"> <li>1. <b>Measurement of Building Height:</b> Building Height is the vertical distance measured from the Average Grade elevation to the highest point of a flat roof; to the deck of a mansard roof, or to the middle of the highest gable of a pitched roof.</li> <li>2. <b>Average Grade</b> is the average of the finished ground level taken at the center of all exterior walls of a building. In instances where an exterior wall of the building is within five feet of a sidewalk adjacent to a street, the sidewalk shall be considered the finished ground level.</li> </ol>

	<ol style="list-style-type: none"> <li>3. Vehicle parking shade structures with solar energy equipment shall be exempt from the PAD’s maximum height regulations.</li> </ol>
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### 3. Programming by Floor

Section A	
Floor Uses	Specific Requirements
<p>Ground Floor</p> <ul style="list-style-type: none"> <li>• Parking (2)</li> <li>• Commercial Services and Retail Uses, to occupy 50% or more of the Sixth Street building frontage (total frontage of Sections A, B, &amp; C)</li> </ul> <p>Upper Floors</p> <ul style="list-style-type: none"> <li>• Uses as permitted in the PAD</li> </ul>	<ol style="list-style-type: none"> <li>1. For section location see Exhibit 7: Concept and Circulation Plan.</li> <li>2. Any ground floor parking will be located on the south side of the building and not along Sixth Street.</li> <li>3. Parking at upper floors to be screened in a manner to conceal the parking use from the adjacent public street. See Exhibit 8: Screening Concepts.</li> </ol>

Section B & C	
Floor Uses	Specific Requirements
<p>Ground Floor</p> <ul style="list-style-type: none"> <li>• Parking (2)</li> <li>• Commercial Services and Retail Uses, to occupy 50% or more of the Sixth Street building frontage (total frontage of Sections A, B, &amp; C) (4)</li> </ul> <p>Upper Floors</p> <ul style="list-style-type: none"> <li>• Uses as permitted in the PAD</li> </ul>	<ol style="list-style-type: none"> <li>1. For section location see Exhibit 7: Concept and Circulation Plan.</li> <li>2. Parking within the buildings will not be visible along Sixth Street.</li> <li>3. Parking at upper floors to be screened in a manner to conceal the parking use from adjacent Residential Uses. See Exhibit 8: Screening Concepts.</li> <li>4. Travelers Accommodation/Lodging Excluded from Sections B and C.</li> </ol>

Section D – Parking Structure	
Floor Uses	Specific Requirements
All Floors <ul style="list-style-type: none"> <li>• Parking (2, 3)</li> </ul>	<ol style="list-style-type: none"> <li>1. For section location see Exhibit 7: Concept and Circulation Plan.</li> <li>2. Parking to be screened in a manner to conceal the parking use from adjacent Residential Uses. See Exhibit 8: Screening Concepts</li> </ol>

#### 4. Lot Coverage

Entire PAD	
Lot Coverage	Specific Requirements
No maximum lot coverage limits. (1)	<ol style="list-style-type: none"> <li>1. Area covered by impervious surfaces such as, but not limited to, buildings, drives or parking.</li> </ol>



## 5. Vehicle Parking

### a. Vehicle Parking Spaces

Based on the variety of multi-modal transportation opportunities available at this location, especially the pedestrian-friendly aspects of the Property, the Sixth at Campbell PAD is considered by the TIA as a Transit-Oriented Development (TOD). The goals of discouraging motor vehicle use with associated parking and encouraging bicycle, pedestrian, and public and university transit use are reflected in the parking requirements for this PAD.

Entire PAD	
Vehicle Parking	Specific Requirements
Number of Required Spaces (1, 2)  Off-street Residential = min 0.9 space per dwelling unit  Off-street Hotel = min 0.62 space per room  All Other Uses = 1 per 400 SF of space	<ol style="list-style-type: none"> <li>1. Required accessible spaces may not be reduced or eliminated and must be based on the number of motor vehicle parking spaces required per the Building Code and UDC for the uses proposed.</li> <li>2. Lease of residential parking space fees shall be decoupled from residential unit leases and/or sales.</li> </ol>
Parking which is not allocated to residents or guests in the residential portion of the project may be made available as public parking	

### b. Parking Requirement Reductions

Further parking reductions for this PAD may be requested through the City's Individual Parking Plan ("IPP") process (UDC § 7.4.5.A).

### c. Location of Vehicle Parking

(1) Street and side setbacks for parking shall be 0 ft. except to accommodate other Development Standards such as landscaping requirements and maneuverability.

(2) Parking for this PAD district may only be provided

- Onsite; and
- Within a structure or screened entirely from view.

(3) Employee parking for all uses may be provided at remote locations within 1/4 of a mile in order to maximize the availability of space for development or may be provided within the development.

d. Electric Vehicle Charging Stations

The PAD shall comply with the adopted requirements for electric vehicle charging stations ("EV") that are effective on the date of the PAD adoption.

e. Screening of Vehicle Parking

See Section J. Screening Standards below.

f. Ridesharing and Vehicle-Sharing

A vehicle-sharing program (or other transportation efficiency innovation) may be instituted as part of residential development on site.

A ride-sharing collection and drop-off point that facilitates safety and provides a minimum of disruption to public traffic circulation may [shall] be located within the PAD boundaries as part of the interior circulation. The minimum length shall be 80', based on the length of four stacking vehicles. Appropriate vehicle stacking shall be provided as well as signage. For more specific collection / drop-off point recommendations see Draft TIA Section 8.

## g. Parking Access and Circulation

Entire PAD	
Parking Access	Specific Requirements
Parking Access and Circulation	<ul style="list-style-type: none"> <li>Parking Access will be allowed to and from the parking areas within the Project as described on Exhibit 7: Concept and Circulation Plan.</li> </ul>

## h. Vacation of Martin Avenue and Existing Alley

As shown on Exhibit 7: PAD Concept Plan and Circulation, the Applicant desires that a portion of Martin Avenue, as well as the alley that runs east / west between Martin and Campbell Avenues, be vacated. The intent is to incorporate these two areas into the Project. The Applicant has applied to the City's Real Estate Division (RES 2017-060) to acquire this vacated ROW.

If the City agrees to the vacation of ROW, the closure of Martin Ave will be conditional upon (1) pedestrian and bicycle access through the closed portion of Martin Avenue being dedicated and clearly marked, and (2) a pedestrian crossing refuge island and other safety features (subject to Tucson Department of Transportation and Mobility (TDTM) approval) being installed in Sixth Street at the Martin Avenue crossing.

The location of the proposed southern terminus of Martin Avenue will allow residents to the Project's southeast to access the existing south alley, which is also planned to be widened, for rear residential parking ingress and egress. The vacations will also require, at minimum, dedication of access easements to ABOR for:

- Access to and from the UArizona South Stadium Garage from Sixth Street;
- Access to and from this UArizona garage from a new entrance into the PAD district from Campbell Avenue through the PAD;
- Access to the ABOR-owned parcel within the PAD boundaries if requested by UArizona;
- Access to the ABOR-owned alley that runs from Martin Avenue west to Warren Avenue.

The circulation pattern created as part of this PAD will create new access to and from the UArizona South Stadium Garage to Campbell Avenue and

eliminate southbound traffic through the Rincon Heights Neighborhood that is now occurring on UArizona football game days.

## 6. Bicycle Facilities

Entire PAD	
Bicycle Facilities	Specific Requirements
Number of Required Spaces <ul style="list-style-type: none"> <li>Bicycle Facilities (1, 2, 3)</li> </ul>	<ol style="list-style-type: none"> <li>Required bicycle facilities may not be reduced or eliminated and must be based on the number of motor vehicle parking spaces required as per the UDC § 7.4.8 for the proposed uses.</li> <li>The PDSO Director may allow short-term bicycle parking to be more than 50 feet from a public entrance(s) based on a finding from the City of Tucson’s Bicycle Coordinator that the proposed location is consistent with best practices pertaining to siting bicycle racks, particularly with regard to visibility, security and convenience for bicyclists or by paying the City parking in-lieu fee in accordance with UDC § 7.4.5.B.7.</li> <li>A bike share station, paid for by the developer, shall be incorporated into the final PAD development.</li> </ol>

## 7. Pedestrian Access and Circulation; Pedestrian Standards

### a. Pedestrian Access and Circulation

One of the goals of this PAD is to encourage pedestrian flow from the UArizona campus and the adjacent neighborhoods to new businesses within the Project. This PAD district will be an asset to the UArizona campus and surrounding neighborhoods because of its proximity to campus athletic and fitness venues and convenient transit options including bike lanes, Sun Tran Bus Stops, Sun Van service, and planned future streetcar access. (See Exhibit 7: PAD Concept and Circulation Plan).

Sidewalks will be designed and located so as to encourage and support an active, secure and comfortable pedestrian experience as well as accommodate internal Project uses. Sidewalk locations are identified on Exhibit 7. A “shared space” circulation node that will accommodate vehicular, bicycle and pedestrian traffic is planned for the interior of the PAD, also shown on Exhibit 7.

b. Pedestrian Standards

- (1) Sidewalks along Campbell Avenue and Sixth Street to be minimum of eight feet wide. Where feasible, and subject to final design, the sidewalk width may be increased to accommodate activities such as outdoor dining or landscaping.
- (2) Pedestrian access through the interior of the PAD, pursuant to COT Technical Standard § 7-01, is not required except where needed to meet accessibility requirements.
- (3) Sidewalks are not required inside parking structures.
- (4) Sidewalks shall be separated from vehicular and bicycle travel lanes except where design calls for shared space.
- (5) Outdoor seating, dining areas, shade structures, landscaping and public art may be located
  - (a) in the sidewalk area and
  - (b) in the Right-of-Way subject to the owner/operator obtaining and maintaining the requisite license or easement from the City.
- (6) Building primary entrances/exits shall maintain a minimum 8 ft. clear passage.

8. Signage and Wayfinding

Signage shall be used to enhance the overall function and visual quality of the existing streetscape and improve wayfinding for pedestrian connections between streets, adjacent development and new development. Same parcel, mixed commercial/residential development may utilize commercial sign area allowances, per precedent within the City of Tucson.

The Project may apply for a master signage program for overall development signage pursuant to UDC Art. 7A. Such a program may be developed and implemented without a major amendment to the PAD. The PAD DRC shall review all building signage proposed for the Sixth at Campbell PAD development and make recommendations of suitability within overall context of the master signage program prior to submittal to the City of Tucson.

Given the nature of this PAD, a mixed-use development with storefront retail at street level and multi-family dwelling and/or offices above, and its location adjacent to the UArizona regional activity center, electronic messaging and freestanding signs may be appropriate as part of this PAD district. Both 6th Street and Campbell Avenue are identified on the City of Tucson Major Streets & Routes Map and serve as substantial thoroughfares to and from the UArizona campus. The sign program may include a vertical sign to be installed at the corner of 6<sup>th</sup> Street and Martin Avenue, as well as signage incorporated onto the corners of the building facades along 6<sup>th</sup> Street.

Where facing single-family residential properties, signage shall be restricted to halo illumination or similar method of interior illumination to limit light emission through text and logos. All signage will meet curfew times of Outdoor Lighting Code.

Where the PAD is silent with regard to signage, properties shall comply with the Sign Standards of the UDC Art. 7A, subject to the underlying OCR-1 base zoning for this PAD.

## 9. Landscaping Standards

Only the following Landscape Standards, derived from UDC § 7.6, shall apply to this PAD.

- a. Use of Drought-Tolerant Vegetation: Except as otherwise provided by this section, all plant material used for landscaping must be selected from the Arizona Department of Water Resource's Low Water Use / Drought Tolerant Plant List.
- b. Oasis Allowance: An oasis is an area where non-drought tolerant landscaping designs are permitted. The following factors should be considered when determining the location of the oasis area:
  - (1) Providing optimum exposure for site users by selecting areas near main buildings, pedestrian facilities, and active use areas; and,
  - (2) Selecting areas that incorporate outdoor seating or assembly spaces.
  - (3) Plants not listed on the Arizona Department of Water Resource's Low Water Use / Drought Tolerant Plant List may be used in an oasis provided the design meets all of the UDC § 7.6 requirements.

- 
- c. Use of the Public Right-of-Way for Landscaping: Landscaping may be placed in the public right-of-way, if the following standards are met:
- (1) The landscaping is approved by the City Engineer or designee and complies with the City Engineer's standards on construction, irrigation, location, and plant type;
  - (2) All vegetation complies with the standards of UDC § 7.6.4, Landscaping Standards;
  - (3) The landscaping does not interfere with the use of the sidewalk or is incorporated into a cohesive landscape design approved by the City; and
  - (4) The property owner obtains the requisite license or easements from the City.

## 10. Screening Standards

Screening design, materials and finishes shall be reviewed and approved by the DRC. See Exhibit 8: Screening Concepts for examples of parking structure screening ideas.

The only screening standard to be applied within this PAD district shall be as follows:

- All new parking shall be designed so that vehicles are not visible from the adjoining street level, through incorporation of parking structure walls, occupied space, display space, pedestrian arcades, substantial landscape elements or a combination thereof.
  - Screening of parking structure shall include screening of lighting associated lighting.
  - Screening and Wall Maintenance
- a. Screening materials and finishes must be maintained and renewed as necessary to retain their original (approved) condition.
  - b. Any screening device that has deteriorated to the point where it does not serve as a screen must be replaced by the property owner.
  - c. Vegetation, approved for use alone or in combination with other materials shall be continuously maintained to meet the screening standards. Replacement vegetation shall meet the intent of the original approved screen, i.e., it shall be of substantial enough size and spread to achieve an immediate screen at the time of replacement, or another option for screening, such as a fence, panel or wall, shall be submitted to the DRC for approval. This standard does not apply to the occasional replacement of single plants within a vegetative screen.

Exhibit 8: Screening Concepts







North/East Pad 'C'  
Conceptual View

FORSarchitecture+interiors

SJCummings  
Properties



Streetscape Pad  
'A' East View

FORSarchitecture+interiors

SJCummings  
Properties

## 11.Solar

Solar panels shall be placed atop parking shade structures to be provided at the top floor of the parking structure located at Section D. These panels shall cover a minimum of 90% of the parking spaces on the top level of Section D. These panels will not be considered for purposes of building height limitations.

## 12.Water Conservation Measures

The following standards are intended to make the Project water efficient and promote water conservation:

- a. The Project shall incorporate EPA WaterSense fixtures in all dwelling units.
- b. Water Conservation Design: Landscape plans shall incorporate water-conserving designs, including using drought tolerant vegetation, and low-water use drip irrigation systems. A water-conserving design must take into account soil and drainage factors and microclimates, includes grouping of plants with similar water standards and use of efficient irrigation systems, and attempts to preserve on-site vegetation.
- c. The Project shall not utilize Ornamental Water Features. This section does not apply to swimming pools or spas.
- d. The Project shall not utilize natural turf grass. Artificial turf may be used to replace any areas desired to utilize natural turf.
- e. The Project shall direct drainage from pools into the sanitary sewer system.

## 13.Stormwater Runoff

- a. Refer to Part III Section F for City of Tucson Engineering Department requirements regarding stormwater management.
- b. Storm water detention/retention basins not integrated with paved vehicular use areas must be designed in accordance with the Storm Water Detention Retention Manual.
- c. The landscape plan shall indicate use of all runoff, from individual catch basins around single trees to basins accepting flow from an entire vehicular use area or roof area.
- d. If Applicant acquires the Martin Avenue ROW as contemplated by the PAD, the landscaping areas may be used to meet the City's detention and retention requirements.

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## 14. Site Amenity Restrictions

- a. No rooftop amenities are allowed on the top level of Sections A, B, or C. Rooftop amenities are allowed below the highest level of Sections A, B, or C with the following requirements:
  - i. Rooftop amenities may be allowed on the top level of any floor below the top floor, such that the top floor(s) or other screens creates a solid noise screen to the adjacent neighborhoods to the south, east, and west;
  - ii. The amenity area faces to the north;
  - iii. The amenity area(s) must be designed to prevent objects falling onto the pedestrian areas below by including design features such as, but not limited to, building edge buffers or landscape areas, enhanced screening or parapets, and/or pedestrian level canopies.
- b. No rooftop amenities are allowed on any level of Section D.
- c. Rooftop amenities include pools and terrace areas.
- d. Balconies or amenity terraces shall not be permitted on the south facade of any proposed development within the PAD.

## D. Post-Development Transportation and Circulation

Post-development transportation and circulation are shown on Exhibit 7: PAD Concept and Circulation Plan. A Traffic Impact Analysis (TIA) has been completed for this PAD and is included as *Appendix D*.

Work within the right of way will require a private improvement agreement from City of Tucson. Dedication of Right-of-Way is required in accordance with the COT MS&R (Major Streets and Routes) map. The MS&R map shows a 90' Right-of-Way along Sixth Street and 120' Right-of-Way setback along Campbell Avenue. Additional Right-of-Way dedication at intersection applies per the MS&R map detail.

Per TDOT, the Owner/Developer shall design and construct right turn deceleration lanes as needed for new development according to the findings of the TIA. Additionally, the Owner/Developer shall design and construct an extension of the eastbound right turn lane at the signalized intersection of Sixth Street and Campbell Avenue to a maximum of 225 feet. Considering the pedestrian-heavy character of campus-adjacent developments, the Owner/Developer shall negotiate with TDTM the possibility of eliminating right-turn deceleration lanes or lane extensions. Any relocation, modification, etc., of existing utilities and/or public improvements necessitated by required construction of the project, including what is required in public streets, shall be done at no expense to the Public.

The bus stop located on the Campbell / Sixth Street SW corner shall remain accessible during and after construction of any new development. If any alterations

are made to that corner, a new concrete pad shall be constructed for the bus shelter to be located behind the sidewalk, and the sidewalk shall be reconstructed along Campbell Avenue, as necessary to meet federal ADA design standards for accessibility.

Technical standard requirements will apply during the development plan process.

E. Off-Street Loading

Off-Street Loading requirements must comply with COT UDC § 7.5 for the land use group or class. Off-street loading zone standards may be reduced or waived if PDS and the Tucson Department of Transportation (TDOT) determine that no traffic safety issue is created. Such a reduction or waiver will be considered a minor amendment and shall be by PDS reviewed and approved during the development review process.

F. Post-Development Hydrology

The site is within the Tucson Arroyo Watershed. The Flood Control District and Army Corps of Engineers have completed a significant flood control project on parts of this watershed. Per the COT Engineering Department, this PAD district shall be developed in accordance with the City's first flush retention standards, and the retained volume may also be used to meet all or part of the detention volume requirements.

A Drainage Report to address onsite and offsite drainage and its impacts on proposed improvements may be required prior to site development. The report may detail provisions, in addition to those stated above, that will be required for stormwater retention and detention in accordance with the COT Stormwater Retention/Detention Manual.

Neither TDOT nor Modern Street Car has a Finished Floor Elevation requirement adjacent to the planned future Modern Street Car line at this location.

G. Solid Waste/Recycle

As part of the site development, the applicant will comply with all COT standards and regulations regarding solid waste and recycling management procedures. In particular, waste management requirements in Section 8 of the COT Technical Standards Manual will be complied with.

The Environmental & General Services Department has the ability to issue modifications to the design standards specified in Section 8 of the COT Technical

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Standards Manual depending on site- specific conditions. The applicant must provide technical justification for any proposed modifications based on the site-specific conditions. The Environmental & General Services Department has also approved joint use agreements where more than one property owner share the use of refuse and recycling containers or stationary compactors. The shared use of waste containers or compactors can be beneficial on smaller development sites or on sites where the maneuverability of refuse vehicles is difficult. The Environmental & General Services technical staff can work with the applicant during the actual site design and Development Plan review process to identify the optimum waste container or compactor design and location on the subject site. The final decisions will come as part of the Development Plan review process.

## H. Approach to Potentially Historic Structures

### 1. Eligibility Status of Historic Structures

Two existing buildings with the Property – 1718 E. 6th Street and 1722 E. 6th St. – are considered by the City of Tucson Historic Preservation Office staff to be eligible. Policy direction within Plan Tucson 2013, Chapter 3: The Built Environment: Historic Preservation Policy HP7, recommends that the developer evaluate the benefits of new development relative to historic preservation.

Based on the policy direction of Plan Tucson 2013, Chapter 3: The Built Environment: Historic Preservation Policy HP7, the developer shall provide a historic assessment for each of the three buildings. It shall also evaluate the possibility of relocation. The historic assessment for eligibility/relocation shall be completed by a consultant who meets the Secretary of the Interior’s qualifications. The results of each study shall be presented to the Tucson Historic Preservation Office, along with one of two recommendations:

- 1) relocation of the building to a property within the Rincon Heights Neighborhood or
- 2) demolition of the structure per City of Tucson established requirements.

All of the evaluations, relocations, mitigation and/or demolition measures shall be completed at no cost to the City of Tucson.

### 2. Mitigation of PAD Impacts on Adjacent Historic Neighborhoods

While multi-story development may have an impact on the Rincon Heights Neighborhood, the PAD has been thoughtfully planned to minimize those effects. The highest and densest development occurs along Sixth Street facing the UArizona, while the lowest scale development (the 25 ft. high parking

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garage portion) will occur adjacent to the Rincon Heights residences. Plantings such as vines and high-quality screening materials on the façade of the parking structure will result in a palette and vocabulary that is more residential in scale and flavor. See Exhibit 8: Screening Concepts for examples. Screening is required to mitigate the appearance of vehicles as well as lighting from the neighboring properties. Additionally, the following design constraints will be applied:

- No new construction - including buildings, driveways, parking lots, landscape improvements and other new features - will alter the historic character of any historic properties within the RHN.
- The historic setting and context of RHN properties, including the degree of open space and building density will not be impacted by this PAD. RHN has a distinctive urban character with fairly dense development as compared with suburban residential development.
- New construction will be distinct from the vernacular of the RHN and shall not attempt to replicate historic buildings on site.

Where the PAD is adjacent to the Sam Hughes Neighborhood (across Campbell Avenue), the following mitigations are incorporated:

- The massing of the development drops down to the height of Sam Hughes Place across the street to match the scale of that development and provide ample light and openness to the intersection.
- The portion of the parking structure that fronts on Campbell will be treated similarly to the edge adjacent to RHN.

#### I. Tucson Airport Authority (TAA)

This PAD district is within Federal Airport Authority (FAA) Part 77 airspace and is in close proximity to an active hospital heliport located at Banner – University Medical Center. For aviation safety, obstruction marking lights will be voluntarily installed on any building that reaches 90 ft in height.

The Tucson Airport Authority will require the following statement to be identified in the general notes section of all future PAD development plans submitted to the City of Tucson for review:

Condition of Approval:

According to the Federal Aviation Administration (FAA) Notice Criteria Tool, this project area is located in proximity to a navigation facility and could impact navigation signal reception. As the project site develops every project applicant shall file FAA Form 7460 with the FAA at least 45 days before construction

activities begin for every proposed project unless FAA staff, with the Obstruction Evaluation I Airport Airspace Analysis (OE/AAA), provides the project applicant with written communication that filing FAA Form 7460 is not required. It is highly recommended that the applicant file earlier than 45 days to provide the applicant with sufficient time to respond to any concerns which are identified by the FAA. Any cranes which are used must also be identified with Form 7460. Please file Form 7460 at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>

## J. Design Review Committee and Process

Design Review of the architectural, landscape and development plans for the Sixth at Campbell PAD shall be conducted by a Design Review Committee (DRC). This DRC is to be established by the applicant prior to submittal of project development plans. The DRC shall be composed of the following:

- The Applicant;
- A Registered Architect;
- A Registered Landscape Architect;
- A General Contractor licensed in the State of Arizona;
- A real estate developer or other person affiliated with the development industry;
- A Design Professional from the UArizona Planning Design and Construction Department;
- A Design Professional from the City of Tucson; and
- A Representative from the Rincon Heights Neighborhood Association.

DRC's purview shall include the following:

- Review all plans and materials for future development for conformance with Part III, Section 10 Design Standards of this PAD.
- Review all building signage proposed for the Sixth at Campbell PAD development and make recommendations of suitability within overall context of the master signage program prior to submittal to the City of Tucson.

Upon review of the Project development package submittal for conformance with the relevant Design Standards in Part III Section 10 of this PAD, the DRC shall provide a letter of recommendation to City PDSD to accompany Development Package submittal stating that the design conforms to the PAD Design Standards.



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## K. Design Standards

The following Design Standards are applicable to the Project, including the DRC review:

### 1. Building Articulation

- All new construction shall have scale-defining architectural elements or details at the first floor at a minimum to provide interest and variety at the pedestrian/street level.
- Ground level front doors shall be visible or identifiable from the street and visually highlighted by graphics, lighting, or similar features.
- Architectural elements such as balconies, outdoor stairs, ornaments, and surface details, such as screening, cladding and fenestration shall be used to provide variety in building façades, and introducing shade and shadow.
- Alternate approaches to building articulation shall be considered minor amendments to the PAD.

### 2. First Floor Façades Along Sixth Street

- Building(s) shall provide windows, window displays, or visible activity on the ground floor for at least 50 percent of frontage.
- A single plane of façade shall be no longer than 50 feet without architectural detail.
- Front doors shall be visible or identifiable from the street and visually highlighted by graphics, lighting, or similar features.
- Doors must be safe, secure, and universally accessible.
- Storefronts shall provide arcades, canopies or awnings for shade and color and material variation. Canopies may be used as a design element and may incorporate signage. Storefronts shall be integrated with the sidewalk design and treatment.

### 3. Building Materials

- Building materials shall be selected with the idea of localizing the architectural effect and ambiance in a method coherent with the recent UA development to the west of the PAD along Sixth Street. Details shall be carefully integrated into the concept design of the building. Materials shall take into consideration physical and stylistic longevity, proportion, texture, and color.
- Combinations of materials shall reinforce architectural scaling requirements.

- 
- Colors and materials that reflect glare shall not be used in large quantities.
  - Façades at lower floors adjacent to street frontage shall be constructed of high-quality materials such as but not limited to the following:
    - Masonry, such as brick, stone, architectural pre-cast concrete, cast stone, prefabricated brick panels, and concrete masonry units.
    - Architectural metals, such as metal panel systems, metal sheets with expressed seams, metal-framing systems, or cut, stamped or cast, ornamental metal panels.
    - Glass and/or glass block.
    - Modular panels, such as cement board systems, EIFS, and stucco.
  - Wherever applicable and possible, the building materials will incorporate features that mitigate the heat island effect, including cool-roof reflective coating, porous concrete, pervious asphalt, green or living roofs in limited application.
  - The Project will incorporate several climate sustainability measures, including rooftop solar on the parking garage, EV charging stations in the parking garage; and water conservation measures to ensure water efficiency.

#### 4. Pedestrian-Oriented Streetscape Design Standards

- Streetscape shall provide the neighborhood with a recognizable image, providing a means of orientation and context within the community.
- Streetscape design, construction and maintenance must comply with the street design standards in the UDC Technical Manual and the Streetscape Design Manual unless specifically except as described below.
- Paving and hardscape elements, on site and in right of way, shall have the opportunity to use alternative paving in lieu of UDC requirements with approval from PDSO.
- The use of plantings and shade structures in the City right-of-way shall be permitted with the approval of the Transportation Department.
- Streetscapes shall be designed:
  - to create a street environment that supports a high level of pedestrian safety and security. Creating “eyes on the street” through high levels of pedestrian activity can help to reduce vagrancy.
  - to facilitate safe, accessible, and convenient connections to businesses along Sixth Street, the residential neighborhood to the south, transit stops, ride-sharing drop off points and parking

facilities.

- to create a shaded microclimate in order to promote high levels of pedestrian activity and seating to encourage physical activity and social opportunities.
- to appeal to senses of sight, smell, and sound, and encourage a sense of ownership and civic pride that is reflected in streets' physical appearance and level of activity.
- to include (on average) one canopy tree every 33 linear feet.

## 5. Shade

Shade shall be provided for at least 50 percent of all sidewalks and pedestrian access paths as measured at 2:00 p.m. on June 21 when the sun is 82 degrees above the horizon. The shade may be provided by trees, arcades, canopies, shade structures or combination thereof.

## L. Interpretations and Amendments

### 1. Interpretations

The regulations and guidelines provided within this PAD supersede regulations within the COT UDC and Development Standards. If an issue arises regarding definitions, conditions, standards and/or situations not addressed in this PAD, those in the UDC, Development Standards or other COT regulations shall prevail, as interpreted by the COT Zoning Administrator.

### 2. Criteria for Minor Amendments and Associated Process

The following shall be considered minor changes that fall within the administrative purview of the Director of Planning and Development Services:

- Addition of new information to the PAD, Concept Plan, maps, or text that does not change the effect of any regulation, development standard, or guideline.
- Changes to the public or private infrastructure as presented herein as necessary to properly serve the intended Concept Plan and which do not significantly increase the development capacity of the presented Concept Plan nor alter the guiding goals and objectives of same.
- The addition of permitted uses that may not be specifically enumerated in Part III Section 2 of this document, but which are

determined to be sufficiently similar in type and nature to those explicitly listed as permitted.

- Adjustments to the Development Standards in Part III Section 3 of this document that are not harmful to the interests of the larger community or affected neighborhoods, or which are not explicitly stated in the PAD, but which are consistent with the guiding goals and objectives of the Sixth at Campbell PAD and which do not create any public health or safety issues.
- Adjustment to any aspect of Part III of this PAD that is required in order to comply with changes in local, state or federal safety and/or health codes.
- The following PDSO administrative procedures may be processed, as necessary, through the minor amendment process of this PAD: 1) Technical Standard Modification Requests (TSMR's); 2) Design Development Options (DDOs) for landscaping and screening requirements.

### 3. Criteria for Major Amendments

Major amendments to the PAD shall be those changes or modifications that materially alter the guiding goals and objectives as presented in the PAD. The PDSO Director will determine if a proposed amendment would result in a major change per the criteria established in COT UDC § 3.5.5.J.2.c. Major amendments to the PAD shall be processed in accordance with UDC § 3.5.3, Zoning Examiner Legislative Procedure.

## Appendix A: Summary of Changes to the PAD

April 7, 2023

Mr. John Beall  
Section Manager  
Planning & Development Services  
City of Tucson  
201 N. Stone Ave.  
Tucson, AZ 85701

Re: Sixth at Campbell PAD – 2023 Submittal and List of Changes

Dear John:

Attached is the formal submittal for the Sixth at Campbell Planned Area Development (“PAD”). The purpose of this letter is to summarize the changes we have made as compared to the prior version of the PAD submitted in 2021 (“Old PAD”), organized by the PAD Section. This letter has been updated from my November 18, 2022 letter that accompanied our PAD pre-submittal, and reflects several changes that occurred after the pre-submittal review.

The summary of changes from the Old PAD are as follows:

#### **Part I – Introduction**

- General clean-up to tighten up language, eliminate unnecessary language, and correct/provide master names.
- Removed details about vehicle circulation in the introduction section, as these are detailed on the Site Plan and in Development Standards, Sec. III.D.
- Clarified that language related to the portion of Martin Ave. south of the Property, formerly referred to as the Pocket Park. The PAD clarified that if acquired this area will be a landscaped pedestrian/bike area, and that this acquisition is not a PAD requirement. The Applicant will collaborate with various stakeholders to create the landscaped pathway, and if Applicant acquires this land it will agree to maintain the landscaping.
- Added language supporting plan conformance.

#### **Part II – Site Analysis**

- Adjust the list of buildings to reflect the recent demolitions that occurred pursuant to COT permit.
- Minor language clean-up.

#### **Part III – PAD Proposal**

In addition to general language clean-up, changes include:

### *Section III.B – Permitted Uses*

- Adjust the list of permitted uses to:
  - Note that OCR-1 uses may supplement the list of permitted uses, if that use is not on the PAD's prohibited use list.
  - Adjust list of uses to better define the permitted uses.
  - Remove some permitted uses that will likely never be part of the project.
- Adjust Use Specific Standards as follows:
  - Allow for outdoor dining in ROW.
  - Permit microbrewery as an accessory to Restaurant.
  - Prohibit stand-alone bars (in response to SHNA/RHNA concern).
  - Remove 12,000 sq. ft. limitation on single-liquor license holder, based on concerns from RHNA (we are continuing to work
- Adjust Excluded Uses as follows:
  - Fully define the list of Prohibited Uses.
  - Remove manufacturing uses that are not permitted in OCR-1 (no need to exclude a use that is not permitted in the underlying zone).
  - Add standalone bar to prohibited uses

### *Section III.C – Development Standards*

- Reduced height on Section A from 90 ft. to 80 ft. While this is slightly more height than the 75 ft. the ZE recommended, we believe the recommended height intended to allow seven stories, and the 80 ft. proposed simply ensures that seven stories will be possible.
- Increased height from 25 ft. to 28 ft. on Section D (Parking Garage) to ensure we can accommodate the additional clearance height needed for market delivery trucks.
- Modified building height measurement rule to allow base height to be measured from the Average Grade, which is how the International Building Code measures height. This will allow the zoning and building height measurements to be consistent.
- Simplified the uses permitted on each floor by removing most restrictions. Included a requirement that at least 50% of the 6<sup>th</sup> St. frontage must be commercial/retail, spread throughout all sections (A, B, and C). This will allow flexibility in the internal programming of the project.
- Replaced process to change parking requirements with the City's Individual Parking Plan.
- Added compliance with new EV ordinance.

- Included the Martin Ave. vacation of ROW language into this section, including conditions that would occur if the City agrees to the ROW vacation/abandonment.
- Remove pedestrian path requirement for the interior of the PAD, and require 8 ft. clear at all primary entrances.
- Moved water-related items from Landscaping section into its own stand-alone Water Conservation section.
- Added that pool is allowed on lower roof levels if amenity space faces north/west and is screened from adjoining neighborhoods, and crafted language based on discussions with RHNA.
- Building massing exhibits will be replaced at official submittal.

*Section III.H – Approach to Potentially Historic Structures*

- Move this section up in the document and adjust to reflect demolished house.

*Section III.I – Tucson Airport Authority*

- Added TAA language into PAD.

*Section III.9 – Design Review Committee and Process*

- Adjust membership of the DRC committee.
- Clarify responsibility of the DRC in the approval process.

*Section III.10 – Design Standards*

- Move Design Standards to follow DRC section.
- Add requirements related to building materials and sustainability.

As always, feel free to contact me if you have any questions or require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rory Juneman". The signature is stylized with a large "R" and "J".

Rory Juneman, Esq.  
Lazarus & Silvyn, PC

cc: Scott Cummings, Black 1838, LLC  
Robin Large, Lazarus & Silvyn, PC



---

## Appendix B: Letter from Baffert Property Owner

November 17, 2022

**Mr. John Beall**  
Principal Planner  
City of Tucson  
201 N. Stone Ave  
Tucson, AZ 85701

**RE:** Sixth at Campbell PAD/SJ Cummings Properties

John,

Per your request, this letter shall serve as notice that I agree to include the parcel known as #124-03-1870, also known as 1722 E. 6<sup>th</sup> Street, to the above referenced PAD request.

Sincerely,



William Baffert  
Owner

## Appendix C: Letter from ABOR

**BUSINESS AFFAIRS**

Administration Building Room 712  
PO Box 210066  
Tucson, AZ 85721-0066

Ofc: 520-621-5977  
Fax: 520-621-7714



THE UNIVERSITY OF ARIZONA  
**Business Affairs**

October 5, 2022

To Members of the Tucson City Council,

We have been informed that S. J. Cummings Properties, LLC (the “Developer”) has proposed a Planned Area Development (“PAD”) to facilitate a mixed-use development on its property located on the southwest corner of Campbell Avenue and 6th Street. The Arizona Board of Regents on behalf of the University of Arizona owns a parcel that is located within the proposed PAD, and the development area is located at one of the critical gateways to the University Campus. The University has an interest in seeing a high-quality, well-designed, and well-managed project developed at this corner.

Scott Cummings has met with University representatives to discuss the general vision for the project, as a high-quality development with serious consideration given to an appropriate mix of occupancies, including structured parking, the use of high-quality materials and design aesthetics, a welcoming pedestrian environment, and traffic flows that will minimize negative impacts to the University and surrounding neighborhoods. The PAD Concept and Circulation Plan that Mr. Cummings shared with the University is provided in Attachment “A” to this letter. Mr. Cummings has further assured the University that the development will be designed to positively reinforce this important University gateway, and that the University, surrounding neighbors and other stakeholders, will be fully integrated in the project planning and design process.

Based on the Developer’s representations noted above, and the Developer’s proposed mixed-use project illustrated in Attachment “A”, the University offers its general support of the Developer’s proposed PAD for the Campbell Avenue and 6th Street location. The University will work with the Developer to determine the most effective use of the University’s property within the PAD, and to help assure the success of the overall project as a well-planned, designed and constructed campus gateway development. The University is not agreeing that any University-owned property will be subject to the zoning that might result from the PAD, unless and until such time as the property is transferred into private ownership.

Please let us know if you have any questions regarding the University’s position on the Developer’s proposed PAD. Thank you.












Sincerely,

Ryan H. Goodell

Vice President for University Planning, Design and Operations



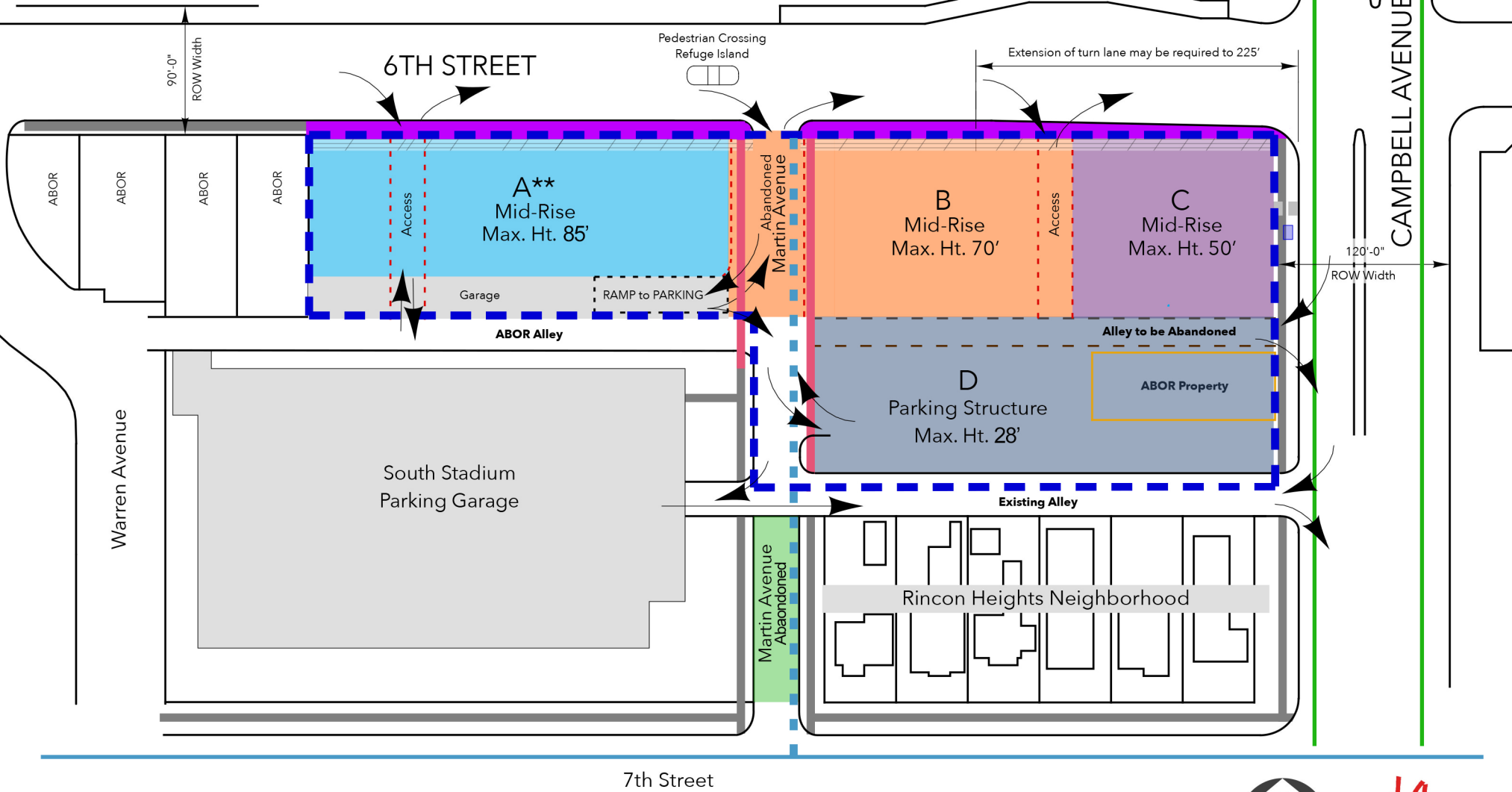
**LEGEND**

-  Existing Sidewalk to Remain or be Improved
-  New minimum 8' Sidewalk
-  New 6' min Sidewalk
-  Possible expanded Sidewalk extending beneath upper floors
-  Access route with building above
-  **ABOR Alley**
-  Alley to be widened to 24' to accommodate two-way traffic and access to new ground floor parking
-  Existing Bus Shelter to Remain
-  Dedicated bicycle access to 7th Street
-  Existing "bikable" route in 7th Street
-  Bike Route with Striped Shoulder

**EXHIBIT 7: PAD CONCEPT AND CIRCULATION PLAN\***

\*Schematic site and building plans can be found in Appendix D

\*\*See height diagram at Appendix E



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## Appendix D: Traffic Impact Analysis

# Traffic Impact Analysis for Sixth at Campbell PAD



PREPARED FOR

## SJ Cummings Properties



March 2023



Balancing the Natural and Built Environment

PSOMAS

**TRAFFIC IMPACT ANALYSIS  
FOR SIXTH AT CAMPBELL PAD  
TUCSON, ARIZONA**

**Prepared For**

**SJ Cummings Properties**

**Prepared By**

**P S O M A S**

Psomas Project No. 7SJC230101

March 2023



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# 1. INTRODUCTION

This Traffic Impact Analysis (TIA) provides an evaluation of the Sixth at Campbell Planned Area Development (PAD). The mixed-used project will be located on the southwest corner of 6th Street and Campbell Avenue as shown in Figure 1. The currently proposed land use for the development is summarized below:

- 323 multifamily dwelling units
- 12,500 SF of market use
- 5,000 SF of retail uses
- 15,000 SF of restaurant uses

**Figure 1. Project Location**



This TIA evaluates the potential traffic impacts of the proposed Sixth at Campbell PAD by discussing estimated peak hour trip generation for the project based on both Institute of Transportation Engineers (ITE) rates and on rates for Transit Oriented Development (TOD). Trip distribution for the traffic generated by the proposed PAD is also included in this report, considering the main roads in the vicinity of the project and site access locations. Further, transit routes and bike facilities in the vicinity of the PAD are identified in this study, and bicycle and pedestrian safety and connectivity are evaluated.

It should be noted that although proposed land uses and intensities are provided in this document for analysis purposes, that information is preliminary and may change in the future as the project moves into the more detailed development stages.

Traffic operations were evaluated at three existing intersections which are likely to serve a significant portion of project traffic. The study intersections are listed below:

1. 6th Street at Warren Avenue: signalized
2. 6th Street at Martin Avenue: two-way stop-controlled on Martin Avenue
3. 6th Street at Campbell Avenue: signalized

Based on the results of the analysis of traffic operations, turn lane improvements and potential off-site pedestrian improvements are recommended in this report. In addition, potential locations for a ridesharing pick-up/drop-off area are discussed as well as parking recommendations for the proposed development.

## 2. STUDY AREA EXISTING CONDITIONS

### 2.1. ROADWAY NETWORK

There are several existing roadways in the project traffic study area, as discussed below:

**Campbell Avenue** is an existing six-lane divided roadway in the project area. The roadway is classified as a gateway arterial by the City of Tucson<sup>1</sup>, and has a posted speed limit of 35 mph in the project area. There are existing bike lanes and sidewalks along both sides of the roadway.

**6th Street** is a five-lane roadway (two through lanes per direction and a two-way left turn lane) along the project frontage and is classified as a collector street by the City of Tucson. There are sidewalks along both sides of the roadway, but no bike lanes. The road has a posted speed limit of 30 mph.

**Martin Avenue** is a two-lane undivided roadway located within the project site. The roadway provides a connection between 6th Street and Broadway Boulevard, and is expected to remain as an access point for the project from 6<sup>th</sup> Street. Approximately 150 feet of the roadway immediately north of 7<sup>th</sup> Street will become a pocket park with the project. There are no marked bike lanes, but there is an existing sidewalk along the west side of the roadway through the project area. The existing sidewalk on the east side of the roadway begins one block south of 6th Street (and continues south) in the project area.

**Warren Avenue** is a two-lane undivided roadway on the west edge of the project site. The roadway was recently reconstructed to align with National Championship Drive on the north side of 6th Street, and the intersection of 6th Street/Warren Avenue/National Championship Drive is signalized. There are existing bike lanes and sidewalks along both sides of the roadway between 6th Street and 7th Street.

**7th Street** is a two-lane undivided roadway south of the project site. On-street parking is allowed for vehicles with a parking permit. There are sidewalks along both sides of the roadway. There are no striped bike lanes, which is typical for a residential street.

## **2.2. PUBLIC TRANSIT**

There are numerous Sun Tran bus stops within a ten-minute walk of the project site, as shown in Figure 2. The figure also shows the existing bus routes in the project area, three of which (3, 15, and 109X) have stops along the frontage of the project. Most of the routes shown provide access to the Ronstadt Transit Center downtown, which includes connections to 16 routes, 6 express routes, and the Sun Link streetcar<sup>2</sup>. There is also a Sun Link streetcar stop approximately half a mile from the project site; the streetcar line and stops near the project are also shown in Figure 2.

The University of Arizona also operates free Cat Tran shuttles on campus<sup>3</sup>. One route (red) includes a stop less than 500 feet from the project on Warren Avenue, and two additional routes are less than one half mile from the site. The most recent Cat Tran routes are shown in Figure 3.

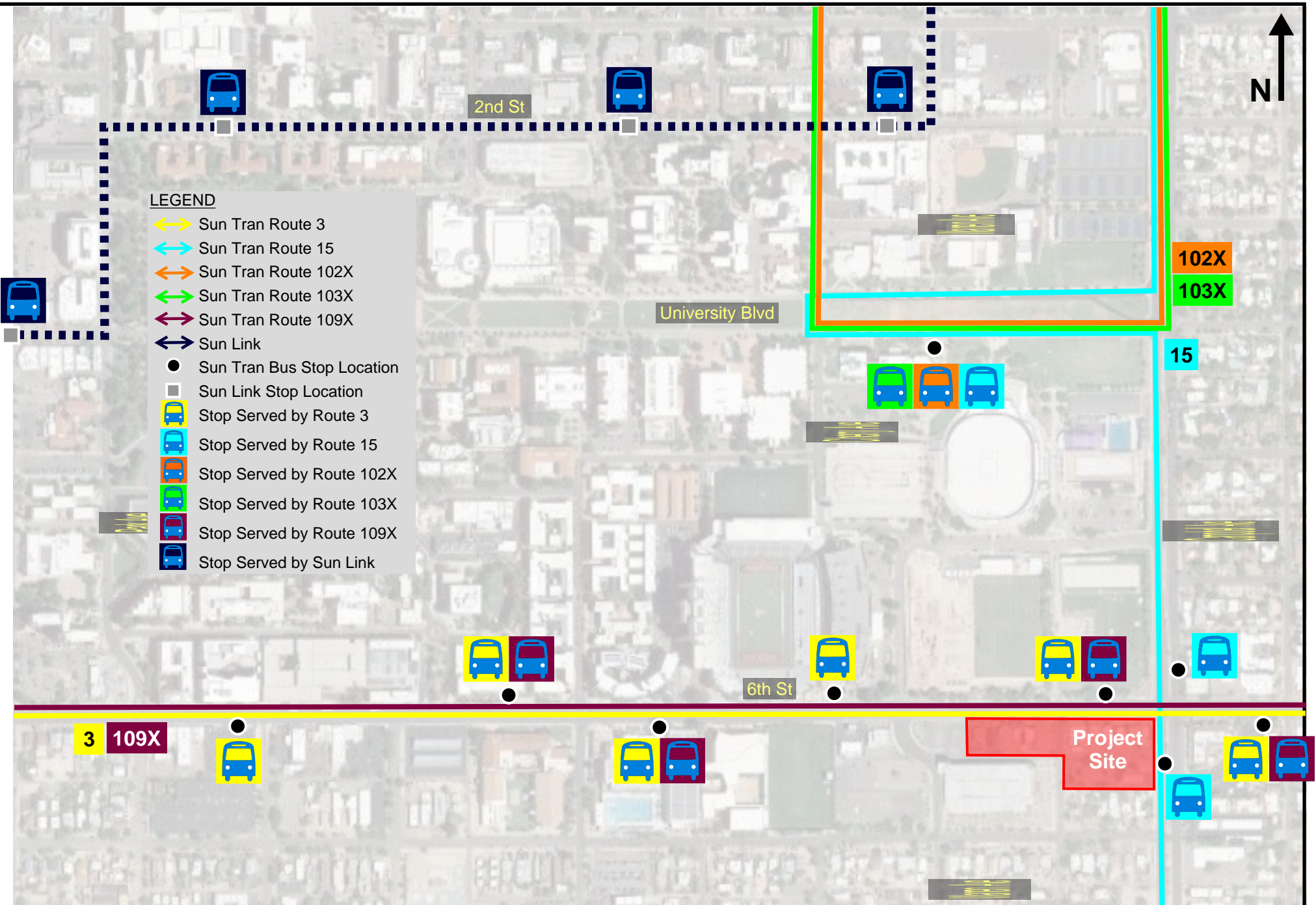
## **2.3. BICYCLES AND PEDESTRIANS**

As previously mentioned, there are existing bike lanes on both sides of Campbell Avenue. Further, there are bike lanes on both sides of Warren Avenue between 6th Street and 7th Street. There are no bike lanes on 6th Street, Martin Avenue, and 7th Street in the vicinity of the project. There is an existing Tugo bike share station on 6th Street just east of Highland Avenue, which is approximately a five-minute walk from the project site. Figure 4 shows existing bike facilities and Tugo bike share stations in the project area.

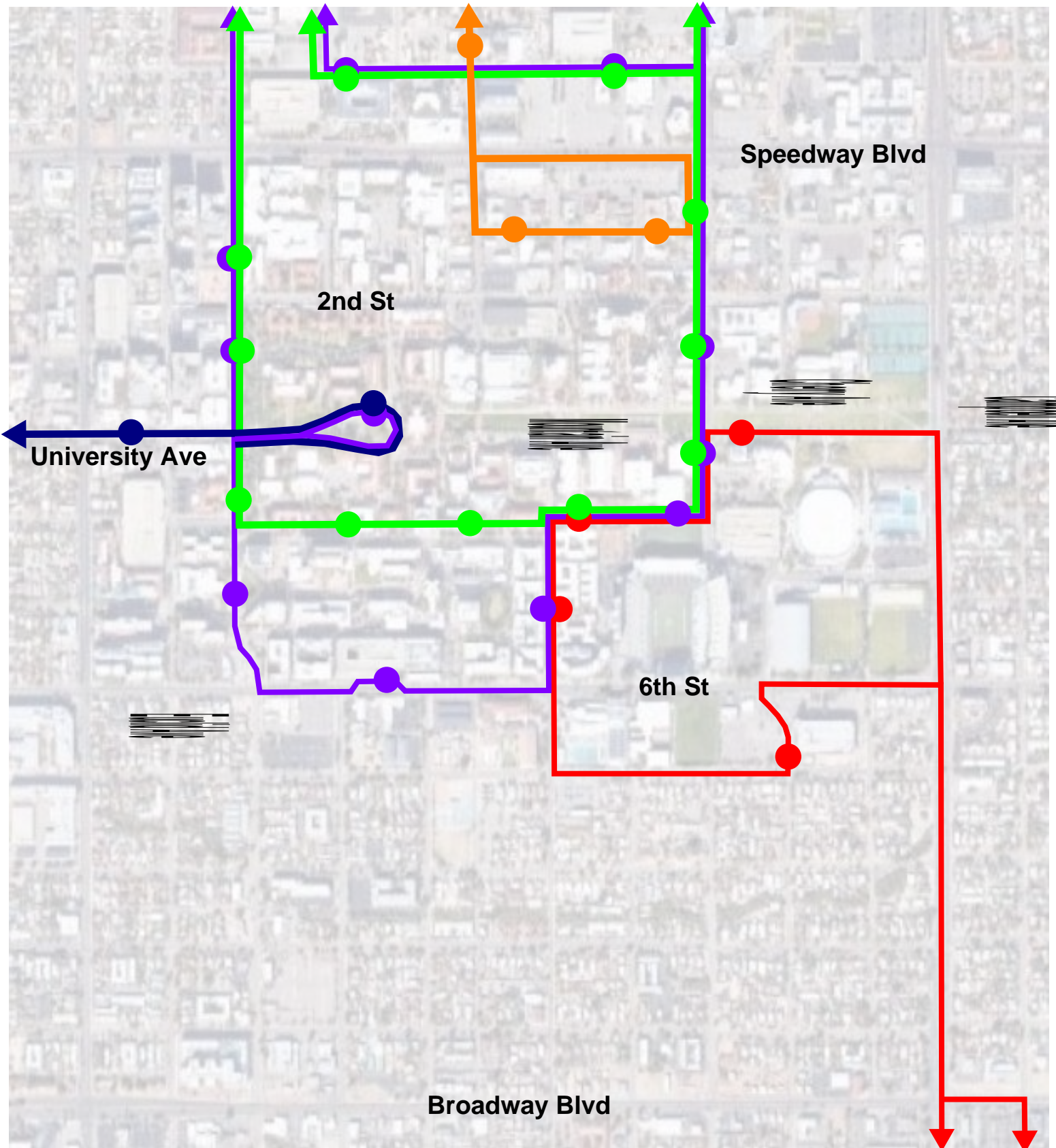
There are existing sidewalks along both sides of 6<sup>th</sup> Street, Campbell Avenue, and Warren Avenue in the project vicinity. In addition, there are sidewalks along both sides of Martin Avenue starting one block south of 6<sup>th</sup> Street to and south of 7<sup>th</sup> Street. Pedestrians have signalized crossing opportunities at the intersections of 6<sup>th</sup> Street/Warren Avenue and 6<sup>th</sup> Street/Campbell Avenue, approximately 900 feet apart.

Based on data available from the Pima Association of Governments, there were two reported pedestrian crashes along 6<sup>th</sup> Street between Warren Avenue and Campbell Avenue from 2017 to 2021.

One crash occurred at Warren Road when an eastbound driver turned right onto Warren Avenue and struck a pedestrian, resulting in a non-incapacitating injury. The second crash occurred at Campbell Avenue, when an eastbound driver making a left turn hit a pedestrian crossing westbound in the crosswalk. That crash resulted in a possible injury. There were no reported bicycle crashes between 2017 and 2021. The crash data is included in Appendix A.

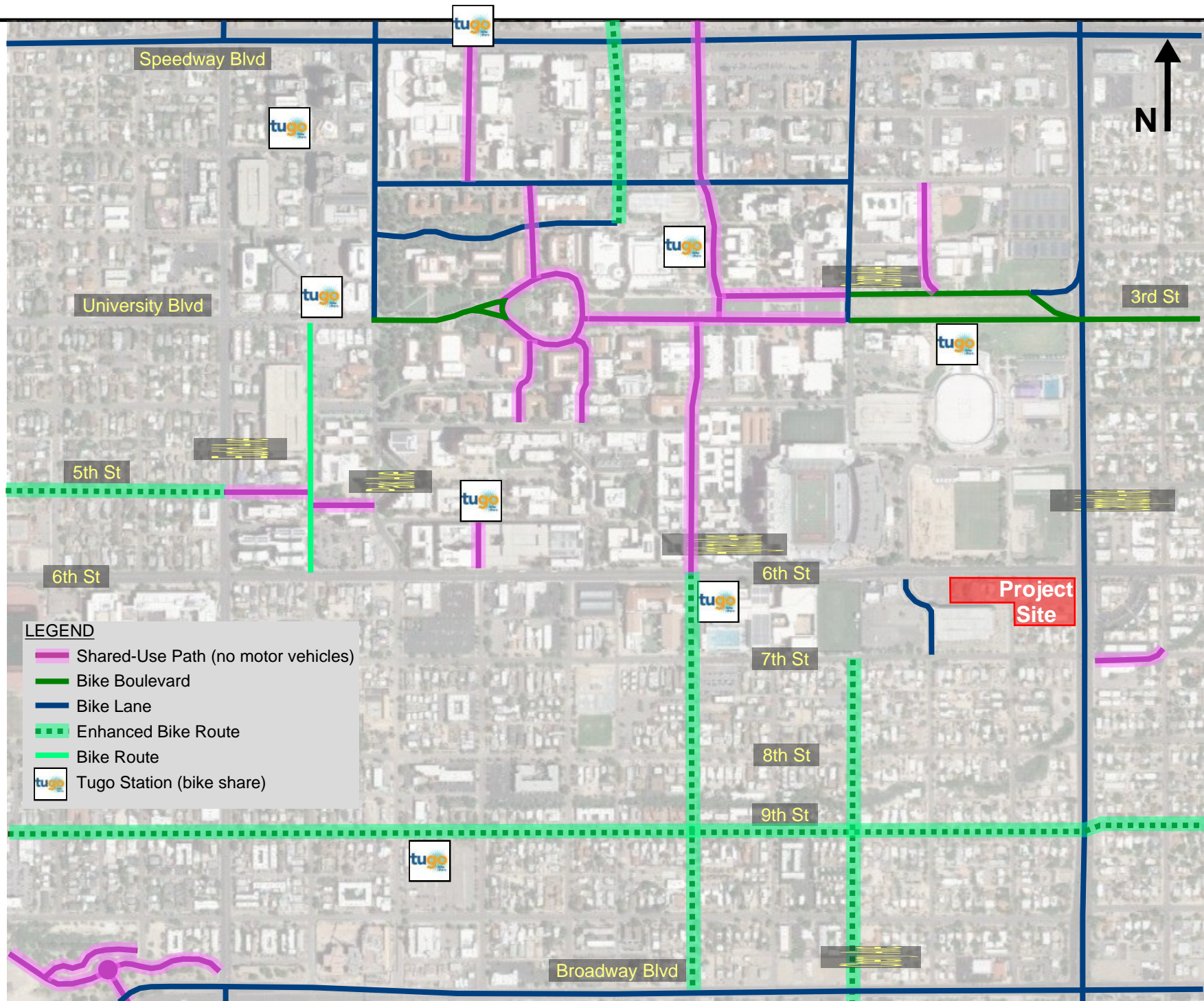






**LEGEND**

- Green Route and Stops
- Purple Route and Stops
- Blue (USA) Route and Stops
- Orange (Mountain) Route and Stops
- Red (9008) Route and Stops



## 2.4. TRAFFIC VOLUMES

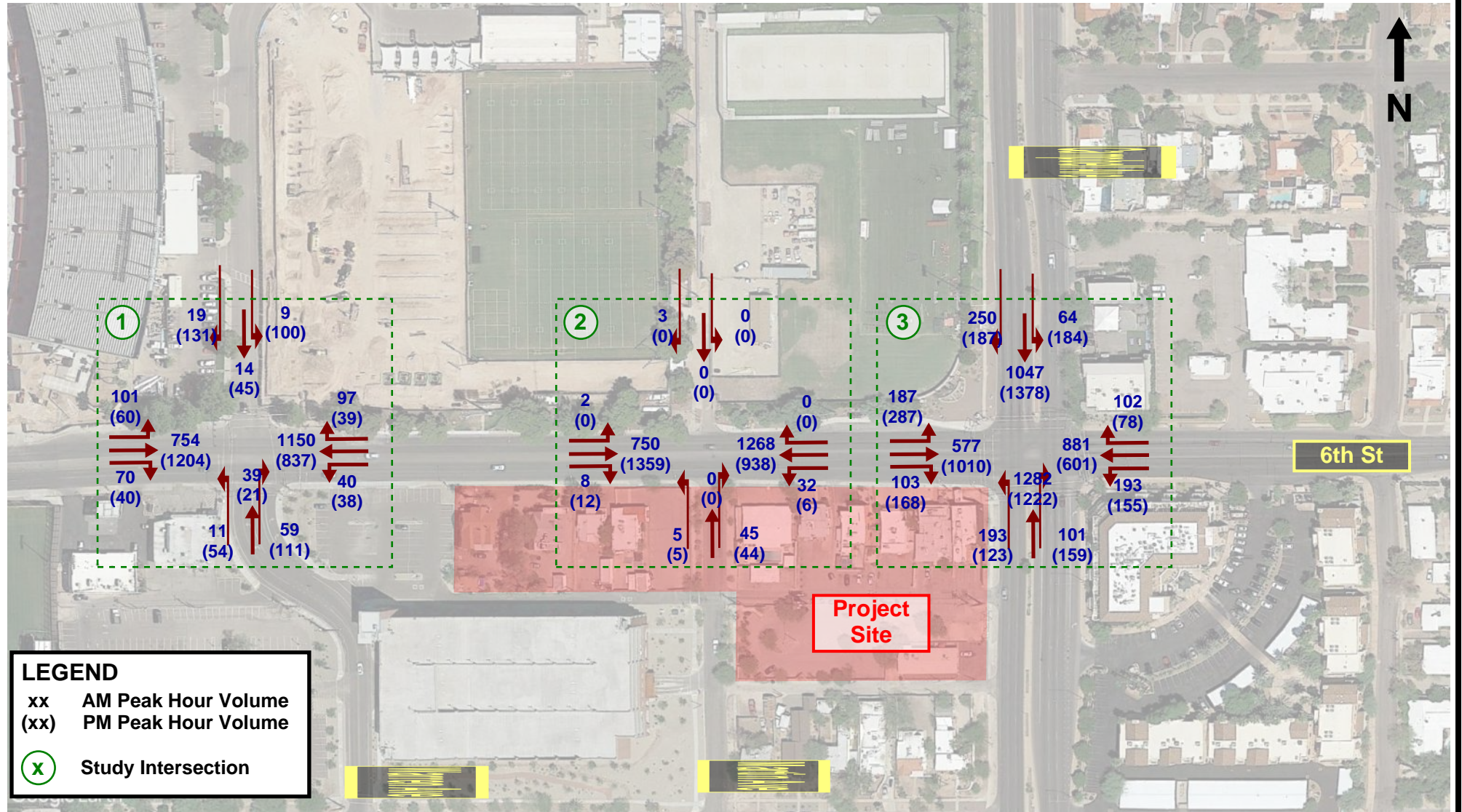
Turning movement counts were collected on Thursday, September 5, 2019, during the morning peak period (7 AM to 9 AM) and afternoon peak period (4 PM to 6 PM). Volumes were collected at three intersections within the study area, as listed below and shown in Figure 5:

1. 6th Street at Warren Avenue: signalized
2. 6th Street at Martin Avenue: two-way stop-controlled
3. 6th Street at Campbell Avenue: signalized

**Figure 5. Study Intersections**



The traffic data was collected while the University of Arizona was in session. The morning peak hour for the study intersections is from 7:15 AM to 8:15 AM, and the afternoon peak hour is from 4:30 PM to 5:30 PM. Traffic volumes collected at the intersection of 6<sup>th</sup> Street and Campbell Avenue in August 2022 are approximately 10% lower in the AM peak hour and 25% lower in the PM peak hour than the 2019 volumes. Therefore, in concurrence with City direction, the 2019 volumes were used to be conservative. No growth rate was applied since the volumes are likely higher than current (2023) volumes. The 2019 collected volume data is included in Appendix B.



### 3. TRAFFIC OPERATIONS: EXISTING CONDITIONS

The capacity analysis for existing conditions was conducted as outlined in the *Transportation Access Management Guidelines for the City of Tucson*<sup>4</sup>. Level of Service (LOS) is the typical measure used to characterize the quality of traffic operations at an intersection or roadway segment. LOS A represents relatively free operating conditions, whereas LOS F has unstable flow and congestion with volumes at or near the capacity of the facility. Excessive delays and queues can occur when the LOS is not acceptable.

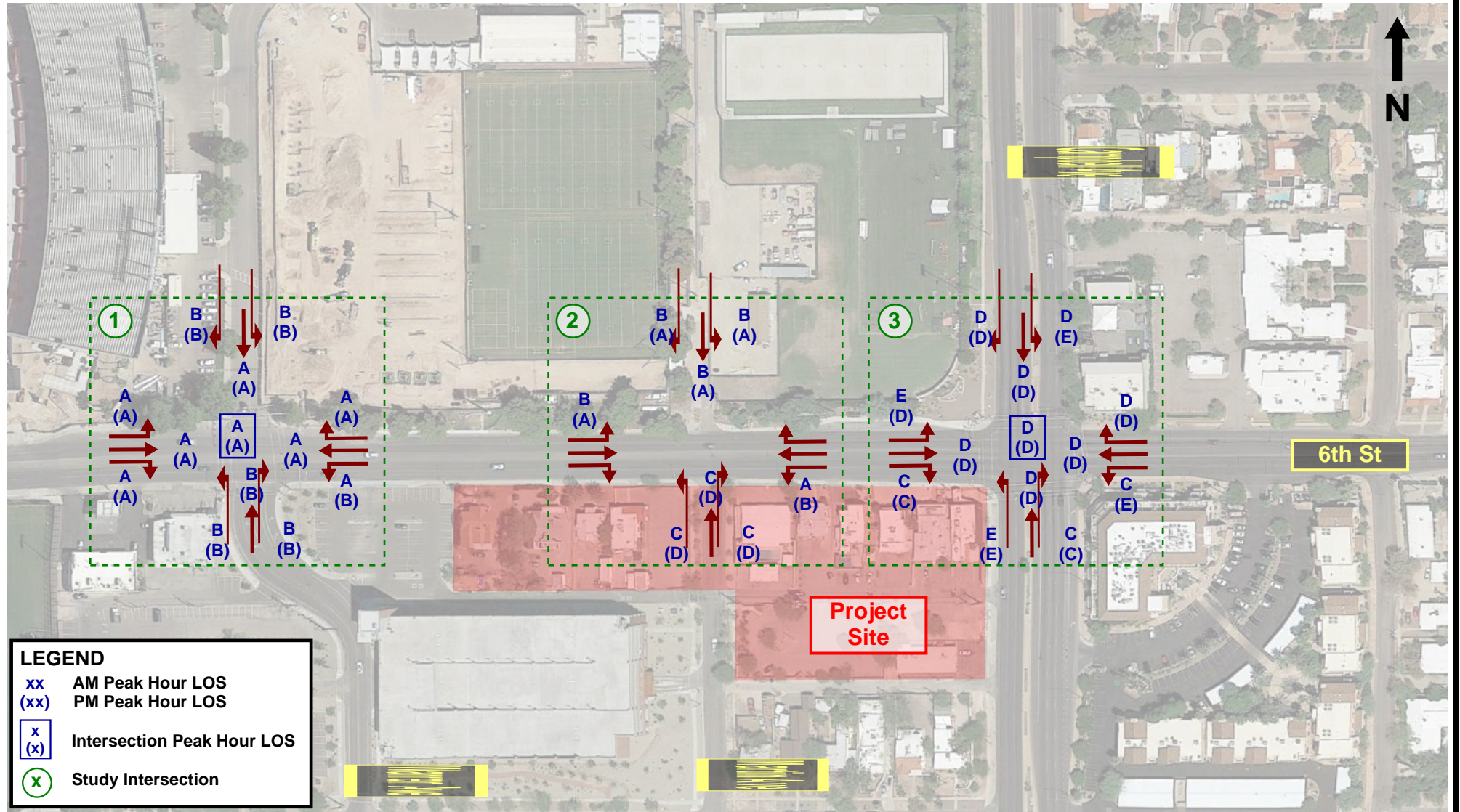
To assess the existing traffic operations, this study applied the *Highway Capacity Manual (HCM)* methodology to evaluate the existing study intersections, which defines LOS based on delay. The analysis was conducted using the software *Synchro*. The reports for existing conditions are included in Appendix C.

All three existing intersections were included in the analysis, as listed below:

1. 6th Street at Warren Avenue
2. 6th Street at Martin Avenue
3. 6th Street at Campbell Avenue

Figure 7 shows the LOS for the study intersections. The 6th Street/Martin Avenue intersection is two-way stop-controlled (TWSC), which does not have a defined intersection delay.

As shown in the figure, left turn movements at the 6th Street/Campbell Avenue intersection currently operate at LOS E during one or both peak hours, which represents unstable flow near capacity levels. Although LOS E is not ideal, it is acceptable for turning movements during peak hours. Further, all intersections operate at LOS D or better, which is considered acceptable by the City of Tucson during peak hours.



#### 4. PROJECT DESCRIPTION

The Sixth at Campbell PAD is a mixed-use project which is expected to consist of retail, restaurant, hotel, and residential uses. The project has an area of approximately 2.5 acres, and it is located on the southwest corner of 6th Street and Campbell Avenue. The proposed uses for the PAD assumed for this analysis include the following:

- 323 multifamily dwelling units
- 12,500 SF of market use
- 5,000 SF of retail uses
- 15,000 SF of restaurant uses

The project will include multistory buildings. Figure 8 shows the proposed height for the buildings in the Sixth at Campbell PAD. Appendix D includes further details for the PAD concept plan.

**Figure 8. Proposed Height of Sixth at Campbell PAD Buildings**

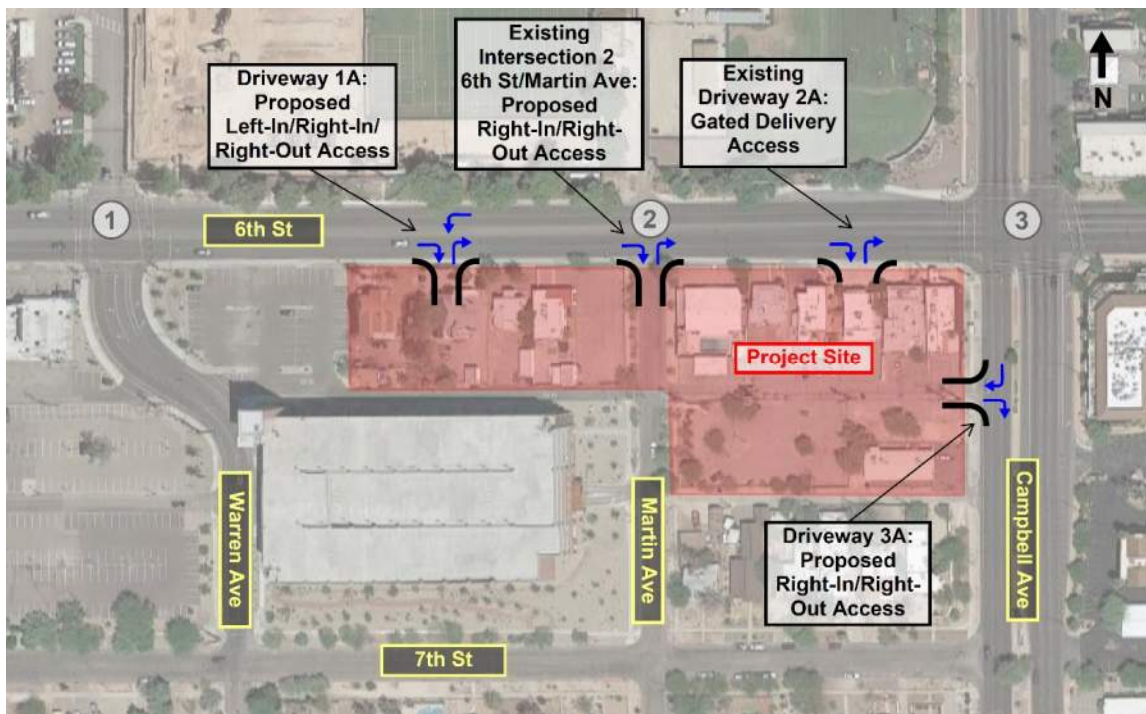


## 5. PROJECT ACCESS

Access to the project site will be provided from both 6th Street and Campbell Avenue. It is assumed that there will be three site access locations (included one gated access for deliveries only) on 6th Street and one site access location on Campbell Avenue, as shown in Figure 9. Intersection 2 (at Martin Avenue) is an existing access location to the project site. The exact location of the proposed Driveways 1A, 2A, and 3A will be determined in conjunction with the City of Tucson when the site plan for the PAD including specific land uses is finalized.

The access on Campbell Avenue will be right-in right-out only due to the existing raised median. It is also recommended that the access points at Martin Avenue and Driveway 2A on 6th Street be right-in right-out only to minimize conflicts with existing traffic and queues on 6th Street as well as minimize delays for site traffic. Left-in access can be provided at Driveway 1A, but it is assumed to be right-out only. Pedestrians and cyclists can access signalized crossings of 6<sup>th</sup> Street at Campbell Avenue or Warren Avenue to travel to/from the project. Appendix D includes further details for the PAD circulation plan.

**Figure 9. Proposed Access Locations**





## 6. PROJECT TRIPS

The estimated amount of traffic anticipated to be generated by a site development project is typically calculated using the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*<sup>5</sup>. Until recently, trip generation in the ITE Manual has been based on suburban sites with minimal/limited access to transit, cycling or other transportation alternatives. However, projects in urbanized or downtown areas, with a greater-than-average percentage of trips being taken via transit, bicycle, or on foot, have been shown to produce reduced vehicular trip generation in relation to suburban sites.

Developments located in walkable areas that include multiple land uses near high quality transit systems (rail or bus) are commonly called Transit Oriented Developments (TODs). The location and development principles being used for the Sixth at Campbell project make the site a Transit Oriented Development (TOD) with access to a variety of transportation alternatives (refer to Section 2).

While the definition of TOD is somewhat general, some jurisdictions have established more specific definitions of what constitutes a TOD. As an example, for traffic impact purposes, California<sup>6</sup> considers any project within ½ mile of an existing major transit stop (defined as a major rail stop or the intersection of two or more bus routes with service intervals of 15 minutes or less during peak hours) or an existing stop along a high quality transit corridor (defined as a corridor with a fixed bus route with service intervals of 15 minutes or less during peak commute hours) to be a TOD. Projects meeting those criteria are considered to have no significant impact on traffic, as it is expected that those projects would add a significantly lower number of vehicle trips to the roadway network than comparable projects in suburban areas.

The Sixth at Campbell PAD meets the criteria listed above (see Section 2.2) and includes a commitment to multi-modal access. Therefore, the project can be considered as a TOD and is likely to generate fewer vehicle trips than a similar suburban site. Trip generation for the proposed project was estimated for both the morning and evening peak hours based on rates from the ITE *Trip Generation Manual* as well as rates from the Transit Cooperative Research Program (TCRP) *Report 128: Effects of TOD on Housing, Parking, and Travel*<sup>7</sup>.

## 6.1. ITE TRIP GENERATION RATES

Although the *ITE Trip Generation Manual* still lacks trip generation data for most land uses in multi-use urban and center city core locations, some data is available for uses applicable to this site. In addition, some data is available for multifamily developments which are located close to rail transit (within ½ mile of a transit stop). As shown in Table 1, multifamily mid-rise (4 to 10 stories) residential units located in a dense multi-use urban area would generate 35%-58% fewer daily trips than a similar development located in a general urban/suburban area and would generate considerably fewer peak hour trips.

**Table 1. Comparison of ITE Trip Generation Rates for Urban and Suburban Areas**

Land Use	Unit	Period	Trips per Unit		
			General Urban/ Suburban	Dense Multi- Use Urban	Center City Core
Multifamily Housing (ITE Land Use 221) - Not Close to Rail Transit	Unit	AM Peak	0.37	0.28	0.24
		PM Peak	0.39	0.26	0.23
		Daily	4.54	2.93*	N/A
Multifamily Housing (ITE Land Use 221) - Close to Rail Transit	Unit	AM Peak	0.32	0.25	0.18
		PM Peak	0.29	0.25	0.19
		Daily	4.75*	2.01*	1.94*

Because the data in an urban center/city core is somewhat limited, this study will be based on the general urban/suburban trip generation rates. This approach was also used because it provides conservative estimates of trip generation and allows all uses to be evaluated based on the same type of location.

Based on information in the *ITE Trip Generation Handbook*<sup>8</sup>, it was estimated that approximately 15% of the residential trips would be internal to the project (i.e. to/from the retail, supermarket, and restaurant areas). In addition, 40% of the retail trips, 24% of the supermarket trips, and 43% of the restaurant trips are assumed to be pass-by trips, based on information in the *ITE Trip Generation Manual*. A pass-by (or diverted link) trip is one which is already on the network but will divert to the retail uses before continuing to their original destination. Therefore, pass-by trips do not add to the total traffic on the adjacent roadway network but do influence the turning movements into and out of the site.

The resulting trip generation for the project using ITE rates is shown in Table 2 on the following page. As seen in the table, the Sixth at Campbell PAD would generate 3,499 new external daily trips, including 226 new external peak hour trips in the AM peak hour and 316 new external trips in the PM peak hour.

## 6.2. TCRP TRIP GENERATION RATES

TODs often produce less vehicular traffic than what is generated by a conventional development because of their walkability and proximity to transit facilities. The Transit Cooperative Research Program (TCRP) developed trip generation models to better estimate trip generation of TODs. Based on the number of dwelling units in a residential building ( $X$ ), trips ( $T$ ) for the morning and afternoon peak hours can be estimated as follows:

$$T = -16.774 + 0.327X \quad (\text{AM Peak})$$

$$T = -31.757 + 0.436X \quad (\text{PM Peak})$$

The TCRP report does not provide trip generation rates for commercial land uses. To be conservative, the TCRP estimate of trips generated by the commercial uses (market, retail, and restaurant) will include 100% of the trips estimated in the ITE manual.

Based on the TCRP calculations and assumptions, Table 3 summarizes total trips generated by the project. As seen in the table, using the TCRP trip generation estimates for residential uses, the project would be expected to generate approximately 193 trips in the AM peak hour and 277 trips in the PM peak hour. These totals are lower than the estimated trip generation based on ITE rates. To provide conservative estimates of trip generation, ITE rates are considered in this report.

**Table 2. Project Trip Generation – ITE Rates**

Sixth at Campbell						
ITE Land Use Code 221 - Multifamily Housing (Mid-Rise)						
Number of Units			323			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	0.37	120	23%	77%	27	92
PM Peak	0.39	126	61%	39%	77	49
Daily	4.54	1,466	50%	50%	733	733
ITE Land Use Code 822 - Strip Retail Plaza (<40k)						
1,000 Square Feet			5.0			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	2.36	12	60%	40%	7	5
PM Peak	6.59	33	50%	50%	16	16
Daily	54.45	272	50%	50%	136	136
ITE Land Use Code 850 - Supermarket						
1,000 Square Feet			12.5			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	2.86	36	59%	41%	21	15
PM Peak	8.95	112	50%	50%	56	56
Daily	93.84	1,173	50%	50%	587	587
ITE Land Use Code 932 - High-Turnover (Sit-Down) Restaurant						
1,000 Square Feet			15.0			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	9.57	144	55%	45%	79	65
PM Peak	9.05	136	61%	39%	83	53
Daily	107.20	1,608	50%	50%	804	804
Internal Capture - Residential						
Period	Total Trips	Trips In	Trips Out			
AM Peak	18	4	14			
PM Peak	19	12	7			
Daily	220	110	110			
Pass-By Trips - Retail and Restaurant						
Period	Total Trips	Trips In	Trips Out			
AM Peak	75	42	33			
PM Peak	98	56	43			
Daily	1,082	541	541			
TOTAL NET TRIPS						
Period	Total Trips	Trips In	Trips Out			
AM Peak	226	94	133			
PM Peak	316	178	138			
Daily	3,499	1,750	1,750			

**Table 3. Project Trip Generation – TCRP Rates**

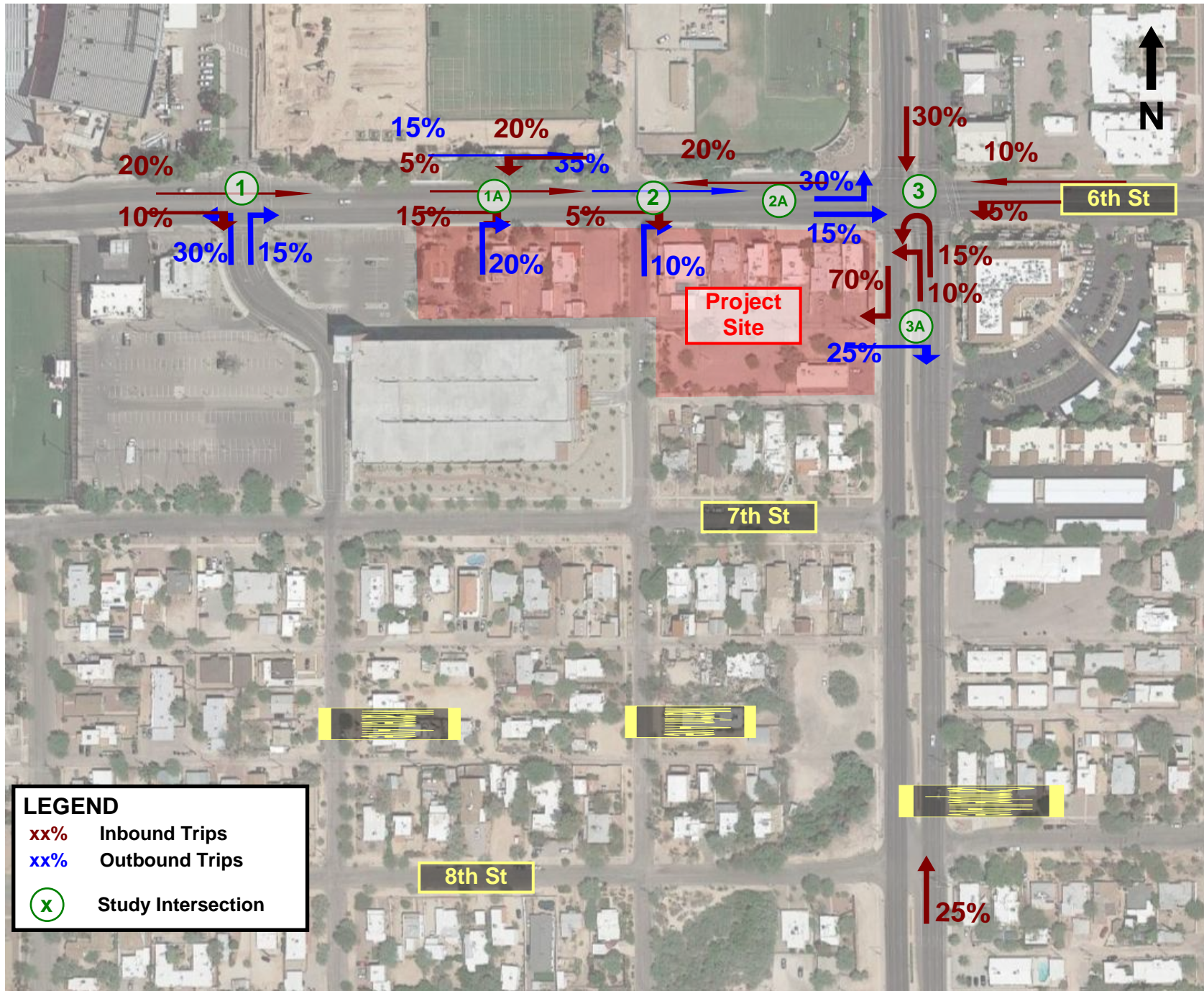
Sixth at Campbell						
ITE Land Use Code 221 - Multifamily Housing (Mid-Rise)						
Number of Units			323			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	0.28	89	23%	77%	20	68
PM Peak	0.34	109	61%	39%	67	43
Daily	4.54	1,466	50%	50%	733	733
ITE Land Use Code 822 - Strip Retail Plaza (<40k)						
1,000 Square Feet			5.0			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	2.36	12	60%	40%	7	5
PM Peak	6.59	33	50%	50%	16	16
Daily	54.45	272	50%	50%	136	136
ITE Land Use Code 850 - Supermarket						
1,000 Square Feet			12.5			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	2.86	36	59%	41%	21	15
PM Peak	8.95	112	50%	50%	56	56
Daily	93.84	1,173	50%	50%	587	587
ITE Land Use Code 932 - High-Turnover (Sit-Down) Restaurant						
1,000 Square Feet			15.0			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	9.57	144	55%	45%	79	65
PM Peak	9.05	136	61%	39%	83	53
Daily	107.20	1,608	50%	50%	804	804
Internal Capture - Residential						
Period	Total Trips	Trips In	Trips Out			
AM Peak	13	3	10			
PM Peak	16	10	6			
Daily	220	110	110			
Pass-By Trips - Retail and Restaurant						
Period	Total Trips	Trips In	Trips Out			
AM Peak	74	41	33			
PM Peak	96	55	42			
Daily	1,090	545	545			
TOTAL NET TRIPS						
Period	Total Trips	Trips In	Trips Out			
AM Peak	193	83	109			
PM Peak	277	157	120			
Daily	3,209	1,605	1,605			

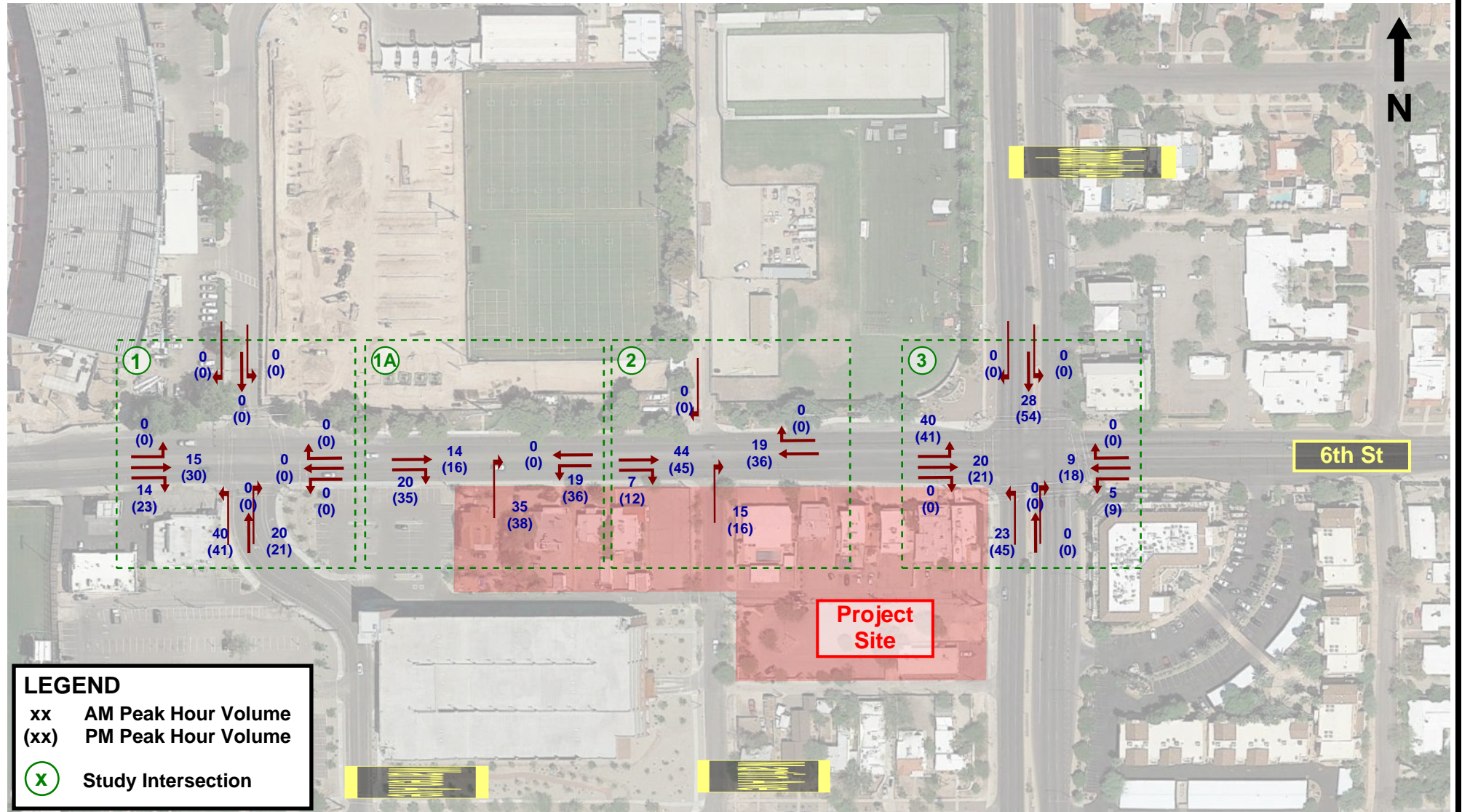
### **6.3. TRIP DISTRIBUTION**

Although there will be four access locations for the PAD (three access locations on 6th Street and one on Campbell Avenue), only three will be used on a regular basis. As discussed in Section 5, Driveway 2A will be gated and used for deliveries only. Therefore, this study did not include Driveway 2A in the project trip distribution.

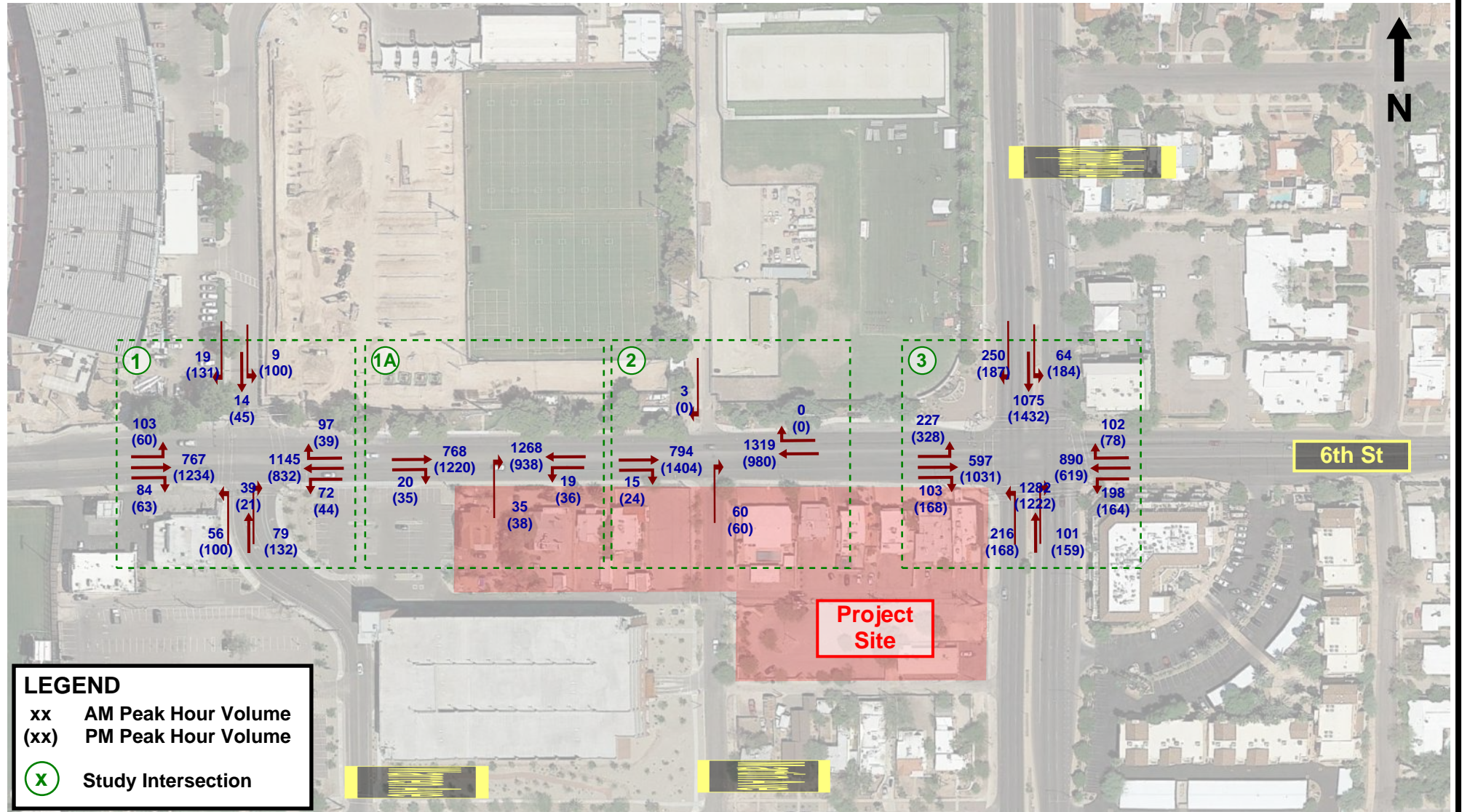
Figure 10 shows the anticipated trip distribution percentages for the project, and Figure 11 shows the estimated project peak hour traffic volumes on 6th Street based on that distribution. Note that both may change as the project moves into more detailed design based on the land uses, intensities, and site layout. Total traffic volumes at all study intersections along 6th Street are shown in Figure 12.

As discussed in Section 2.2, the availability of the modern streetcar, buses, and Tugo bicycles adjacent to the site will help reduce reliance on single occupant auto trips. Further, most trips to and from the University of Arizona are expected to use modes other than a personal vehicle (including Cat Tran) due to the proximity of campus. Therefore, the vehicular traffic volumes after the project is completed are likely to be lower than what is shown in Figure 12.









## 7. TRAFFIC OPERATIONS: EXISTING PLUS PROJECT CONDITIONS

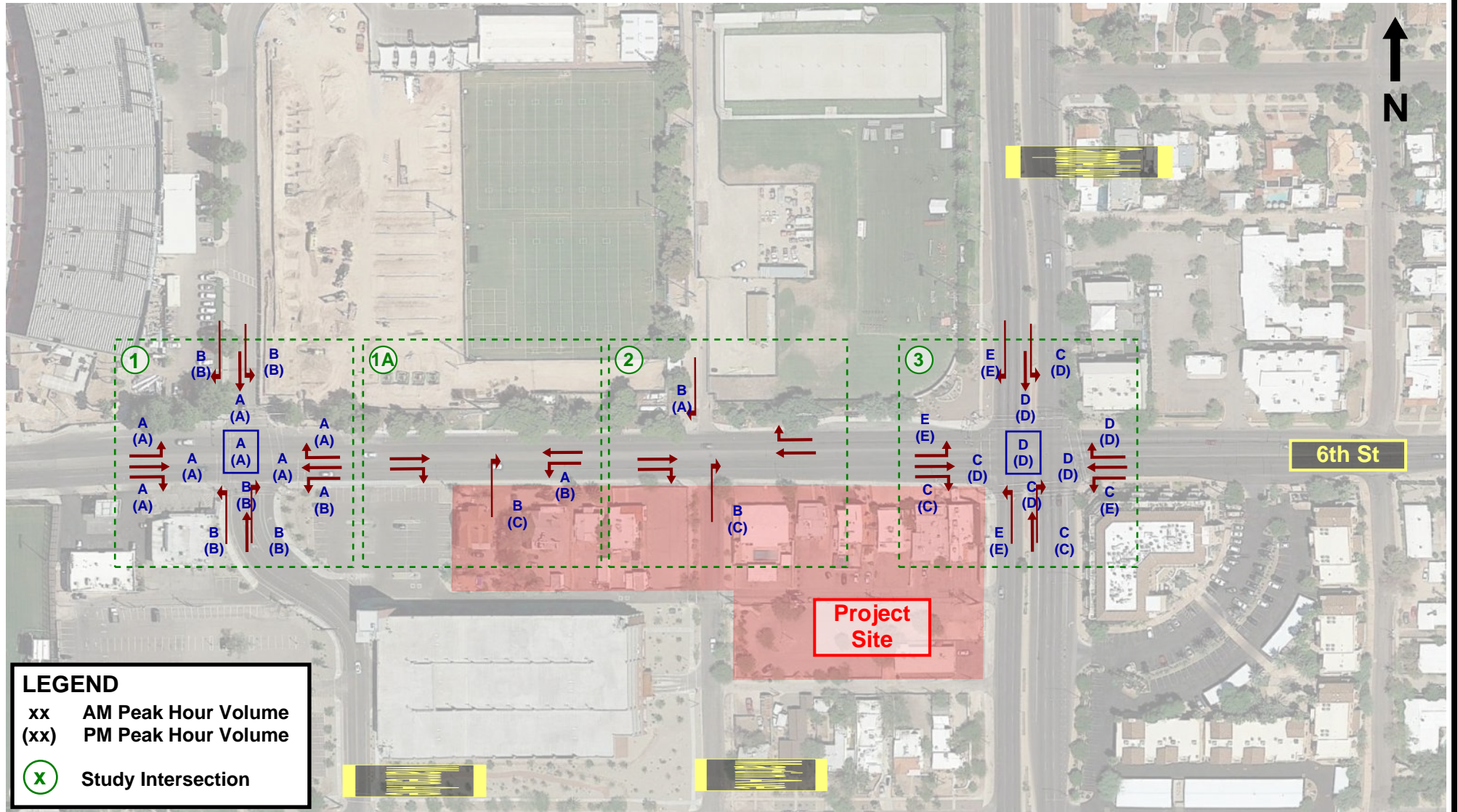
As previously mentioned, Level of Service (LOS) is the typical measure used to characterize the quality of traffic operations at an intersection or roadway segment. LOS A represents relatively free operating conditions, whereas LOS F has unstable flow and congestion with volumes at or near the capacity of the facility. Excessive delays and queues can occur when the LOS is not acceptable.

To assess the potential traffic impacts due to the project, this study applied the *Highway Capacity Manual (HCM)* methodology to evaluate the study intersections, which defines LOS based on delay. The analysis was conducted using the software *Synchro*. The reports for existing plus project conditions are included in Appendix E.

As previously discussed, Driveway 2A will be gated and used for deliveries only. Therefore, it was assumed that no project traffic would access the project site via Driveway 2A. As a result, traffic operations were evaluated at the intersections listed below:

1. 6th Street at Warren Avenue
- 1A. 6th Street at Proposed Driveway 1A
2. 6th Street at Martin Avenue
3. 6th Street at Campbell Avenue

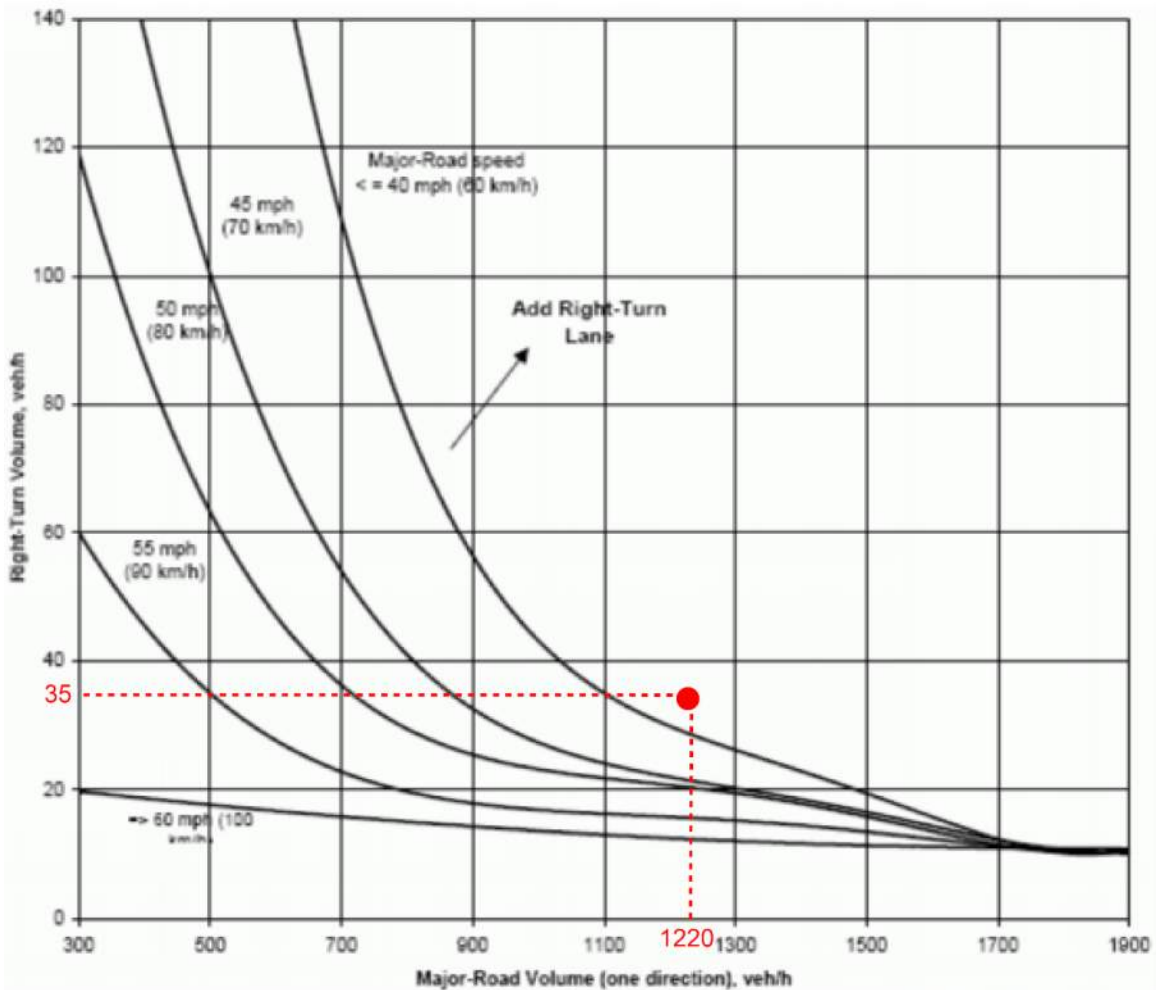
Figure 13 shows LOS for the study intersections for existing conditions with the project. Recall that the 6th Street/Martin Avenue and 6<sup>th</sup> Street/Driveway 1A intersections are two-way stop controlled (TWSC) and therefore do not have a defined intersection delay. As shown in the figure, eastbound, westbound, and northbound left turn movements and the southbound right turn movement at the 6th Street/Campbell Avenue intersection are expected to operate at LOS E, which represents unstable flow near capacity levels. Although LOS E is not ideal, it is acceptable for turning movements during peak hours. In addition, the left turn movements at the intersection already operate at LOS E under existing conditions. Further, all intersections operate at LOS D or better, which is considered acceptable for the City of Tucson during peak hours.



## 7.1. TURN LANES

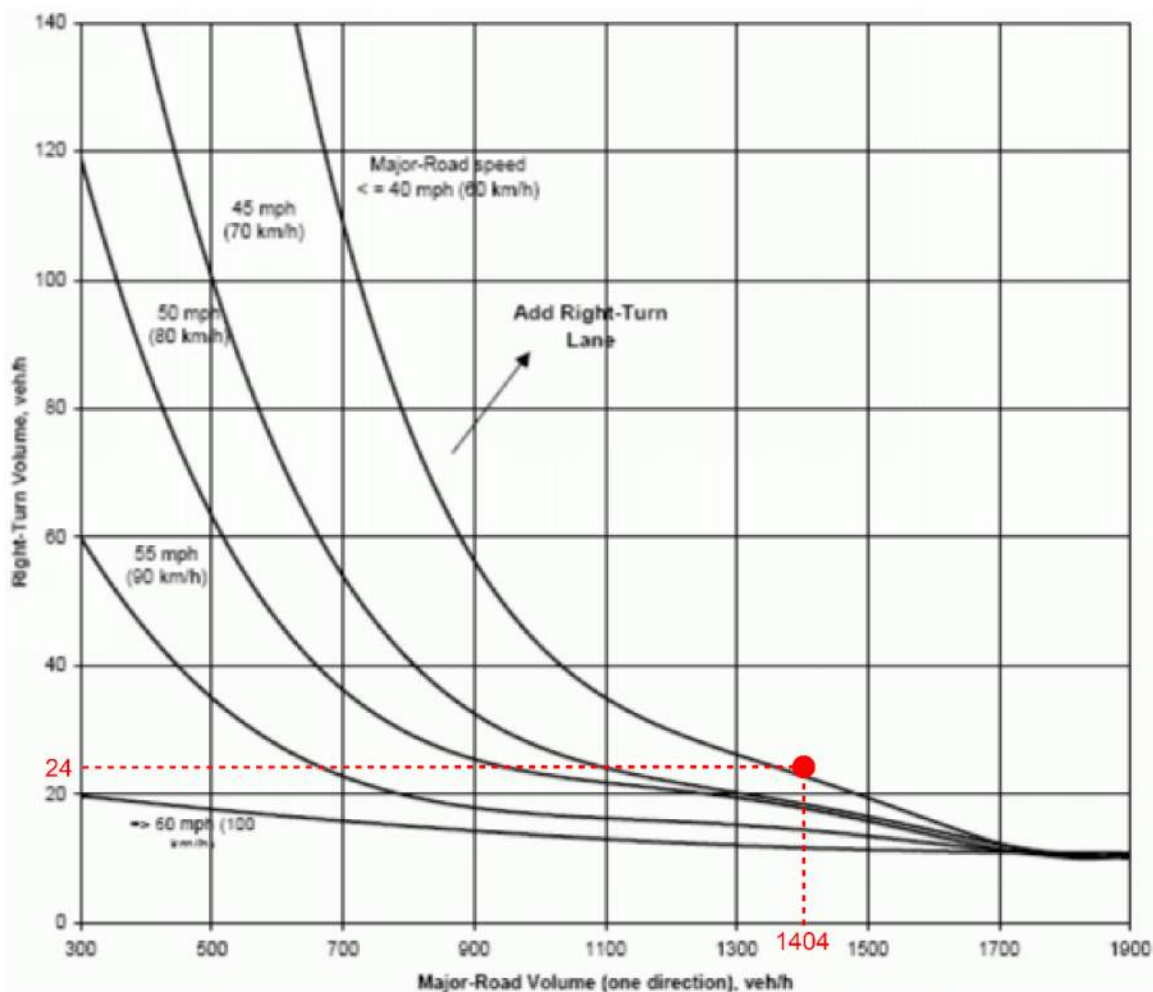
To determine if right turn lanes would be required on 6th Street at any of the project access points, the right turn lane warrants outlined in the Pima County Department of Transportation and City of Tucson Department of Transportation's *Pavement Marking Design Manual*<sup>9</sup> were evaluated. The turn lane warrants are shown in Figure 14 for the 6th Street/Driveway 1A intersection and in Figure 15 for the 6th Street/Martin Avenue intersection. A right turn lane meets the warrant if the combination of total major road volume in one direction and the corresponding right turn volume falls above the line for the major road speed limit.

**Figure 14. Right Turn Lane Warrant: 6th Street/Driveway 1A**



Note: Existing roadway constraints may restrict the ability or need to install turning lanes. Traffic Engineering may require a traffic engineering analysis to support alternative recommendations for the installation of turning lanes.

**Figure 15. Right Turn Lane Warrant: 6th Street/Martin Avenue**



Note: Existing roadway constraints may restrict the ability or need to install turning lanes. Traffic Engineering may require a traffic engineering analysis to support alternative recommendations for the installation of turning lanes.

The posted speed limit on 6th Street is 30 mph. As shown in the figures, the point for both intersections falls slightly above the line for major road speeds lower than or equal to 40 mph. Based on this preliminary evaluation for the proposed Sixth at Campbell PAD, a right turn lane may be warranted at the 6th Street/Driveway 1A intersection and/or at the 6th Street/Martin Avenue intersection. It is recommended that the need for right turn lanes be re-evaluated when the final site plan, including specific land uses and intensities of the proposed development, is finalized.

## 7.2. QUEUE ANALYSIS

In addition to the LOS analysis, the queues at the 6th Street/Campbell Avenue intersection were evaluated. Table 4 shows estimated queues for existing conditions with the project as well as the existing storage for turn lanes. The queue reports for existing plus project conditions are included in Appendix F.

**Table 4. Estimated Queues at the 6th Street/Campbell Avenue Intersection**

3	6th Street					Campbell Avenue				
	Eastbound			Westbound		Northbound			Southbound	
	L	T	R	L	TR	L	T	R	L	TR
AM	203	397	127	309	443	345	370	57	296	532
PM	188	382	360	320	702	511	841	128	389	531
Storage	TWLT		65	155		290		170	185	

The queues highlighted in orange in Table 4 are expected to exceed the existing storage. However, as shown in Table 5 (for the PM peak hour), the existing queues for several of the same movements exceed the available storage. The queue reports for existing conditions are included in Appendix G.

**Table 5. Comparison Between Existing Queues and Existing + Project Queues**

3	6th Street					Campbell Avenue				
	Eastbound			Westbound		Northbound			Southbound	
	L	T	R	L	TR	L	T	R	L	TR
Existing	209	368	374	261	326	199	389	114	364	481
Existing + Project	188	382	360	320	702	511	841	128	389	531
Storage	TWLT		65	155		290		170	185	

As shown in Table 5, long queues at the 6th Street/Campbell Avenue intersection are an existing issue. Based on the constraints at the intersection, improvements to the northbound, southbound, and westbound approaches are not feasible. However, it is recommended that the eastbound right turn lane, which currently has 65 feet of storage, be extended to 225 feet (the maximum available based on the space limitations).

### **7.3. BICYCLE AND PEDESTRIAN ACCESS**

As previously discussed, pedestrians and cyclists can access signalized crossings of 6<sup>th</sup> Street (between the development and the University of Arizona) at either Campbell Avenue or Warren Avenue, located approximately 900 feet apart. Once on 6<sup>th</sup> Street, pedestrians will have to walk no further than 525 feet to reach a signalized crossing. Cyclists can use the bike lanes on Warren Avenue south of 6<sup>th</sup> Street to access the site and can also make use of other low-speed facilities in the project area (i.e. Martin Avenue and 7<sup>th</sup> Street). The project will also include sidewalk improvements along the frontage of the property and will provide internal pedestrian connections to the public system.

Area residents have expressed interest in the addition of a protected median refuge for crossing 6<sup>th</sup> Street at Martin Avenue. An unsignalized crosswalk was located on 6<sup>th</sup> Street on the west side of the Martin Avenue intersection through 2015. As the City of Tucson moved through road resurfacing projects, unsignalized crosswalks were reevaluated and any which did not meet a minimum threshold of pedestrians crossing in the peak hour were not reinstalled. The crosswalk at Martin Avenue did not meet the minimum pedestrian crossing threshold and was therefore not reinstalled after 6<sup>th</sup> Street was resurfaced. However, if the crossing is found to meet warrants today for an unsignalized crosswalk, a crosswalk and refuge island can be installed. Pending approval from the City, a median island could also be installed for use as a refuge when traffic control is present during large events at the University of Arizona.

## 8. SITE RECOMMENDATIONS

### 8.1. RIDESHARE PICK-UP/DROP-OFF

Because ride share (i.e Uber, Lyft) is a popular and convenient method of travel for many, an efficient pick-up/drop-off area (or areas) is essential for this project. Although the location and size of the pick-up/drop-off area(s) will be defined as the site plan and land uses are finalized, it is recommended that the potential pick-up/drop-off area be located along Martin Road (as shown in the general site layout in Appendix D), within or adjacent to the parking garage, or along the south side of the site. Pick-up/drop-off should be prohibited immediately adjacent to or along 6th Street and Campbell Avenue.

### 8.2. PARKING

The proposed Sixth at Campbell PAD will be a high-density, mixed-used development in the proximity of the University of Arizona. Similar to what was previously mentioned for trip generation and distribution, the availability of the modern streetcar, buses, shuttles, and Tugo bike share near the project site are expected to reduce reliance on single occupant auto trips. Further, many trips between the site and the University of Arizona are likely to use modes other than an automobile due to the proximity of campus.

In addition, the characteristics of the proposed PAD are comparable to the City of Tucson Infill Incentive District (IID). Therefore, the parking generation ratios recommended in this study consider IID ratios as well as the ratios recommended in the Institute of Transportation Engineers (ITE) *Parking Generation Manual*<sup>10</sup>, both of which are well-suited to the PAD's mixed-use program. As shown in Table 6, approximately 378 parking spaces would be needed for the project given the proposed land uses and intensities.

**Table 6. Recommended Parking for the Proposed PAD**

Land Use	Units		Recommended Parking			
			Source	Land Use	Ratio	Spaces
Retail/ Restaurant	20,000	SF	Tucson IID	Mixed-Use	1 per 400 SF	50
Market	12,500	SF	ITE Parking Generation 5th Edition	850 - Supermarket	2.93 per 1,000 SF	37
Residential	323	Apartments	ITE Parking Generation 5th Edition	221 - Multifamily Housing	0.9 per unit	291
<b>TOTAL SPACES</b>						<b>378</b>



## 9. SUMMARY AND CONCLUSIONS

This Traffic Impact Analysis (TIA) provided an evaluation of the Sixth at Campbell Planned Area Development (PAD), a mixed-used project that will be located on the southwest corner of 6th Street and Campbell Avenue. The project will include approximately 323 residential units, 188 hotel rooms, 12,500 SF of market, 5,000 SF of retail uses, and 15,000 SF of restaurant uses.

To assess the potential traffic impacts of the proposed project, this report evaluated traffic operations using the software *Synchro* at three intersections on 6th Avenue: at Warren Avenue, at Martin Avenue, and at Campbell Avenue. All intersections currently operate at LOS D or better, which is considered acceptable by the City of Tucson during peak hours.

Project trip generation for both the morning and evening peak hours was estimated based on rates from the ITE *Trip Generation Manual* as well as rates from the Transit Cooperative Research Program (TCRP) for transit-oriented development (TOD). TODs typically generate less vehicle traffic than non-TODs, so in order to provide conservative estimates of trip generation, ITE rates were considered in this report. The Sixth at Campbell PAD is expected to generate 3,499 daily trips, including 226 trips in the AM peak hour and 316 trips in the PM peak hour.

It was assumed that there will be four access locations for the PAD, including three on 6th Street and one on Campbell Avenue. However, the easternmost driveway on 6<sup>th</sup> Street (Driveway 2A) will be gated and used for deliveries only. Therefore, this study did not include Driveway 2A in the peak hour project trip distribution.

It is important to note that the availability of the modern streetcar, buses, and Tugo bicycles near the site will help reduce reliance on single occupant auto trips. Further, many trips between the University of Arizona and the project will likely be expected to use non-vehicle modes due to the proximity of campus, including the Cat Tran shuttle service. Therefore, the traffic volumes after the project is completed may be lower than what was calculated for this study.

An analysis of traffic operations was also conditions with the project. The eastbound, westbound, and northbound left turn movements and the southbound right turn movement at the 6th Street/Campbell Avenue intersection are expected operate at LOS E, which is acceptable for turning movements during peak hours. In addition, all the left turn movements at the intersection also operate at LOS E under existing conditions. Further, all intersections are expected to operate at LOS D or better with the project, which is considered acceptable for the City of Tucson during peak hours.

An evaluation of the right turn lane warrant showed that an eastbound right turn lane may be warranted at Driveway 1A and/or at Martin Avenue with the project. Because this analysis is based on a preliminary site plan and land uses, it is recommended that the need for right turn lanes be re-evaluated when the final site plan, including specific land uses and intensities of the proposed development, is finalized.

A queue analysis also showed that the queues with the project are expected to exceed the available storage for several turning movements at the 6th Street/Campbell Avenue intersection. However, this is also the case for existing conditions. It is recommended that the eastbound right turn lane storage be extended from 65 feet to 225 feet. Additional improvements are not feasible due to existing constraints.

The location and size of the ridesharing pick-up/drop-off area(s) at the proposed PAD will be defined as the site plan and land uses are finalized. It is recommended that potential pick-up/drop-off areas be located along Martin Avenue, within or adjacent to the parking garage, or along the south side of the site. There should not be pick-up/drop-off locations immediately adjacent to or along 6th Street or Campbell Avenue. In addition, based on the mixed-use characteristics of the Sixth at Campbell PAD, the development is expected to require 378 parking spaces (given the estimated land uses and intensities used in this analysis).

Lastly, if the crossing of 6<sup>th</sup> Street at Martin Avenue meets the warrants for an unsignalized crosswalk, a crosswalk with a raised median refuge can be installed. Otherwise, a raised median refuge can be considered for use when traffic control is present during large events.

## 10. REFERENCES

- 
- <sup>1</sup> *Major Streets and Routes*. City of Tucson, January 2016.
  - <sup>2</sup> Sun Tran. <https://suntran.com/routes.php>, accessed September 2019.
  - <sup>3</sup> The University of Arizona Cat Tran Shuttle. <https://parking.arizona.edu/campus-services/cattran/>, accessed September 2019.
  - <sup>4</sup> Transportation Access Management Guidelines for the City of Tucson. City of Tucson, 2011. <[https://www.tucsonaz.gov/files/transportation/access\\_management\\_guidelines\\_update\\_december\\_2011\\_final.pdf](https://www.tucsonaz.gov/files/transportation/access_management_guidelines_update_december_2011_final.pdf)>, accessed October 2019.
  - <sup>5</sup> *Trip Generation Manual 10<sup>th</sup> Edition*. Institute of Transportation Engineers, Washington D.C., 2017.
  - <sup>6</sup> *Technical Advisory on Evaluating Transportation Impacts in CEQA*. State of California, 2017. <[http://opr.ca.gov/docs/20171127\\_Transportation\\_Analysis\\_TA\\_Nov\\_2017.pdf](http://opr.ca.gov/docs/20171127_Transportation_Analysis_TA_Nov_2017.pdf)>, accessed September 2019.
  - <sup>7</sup> *TCRP Report 128: Effects of TOD on Housing, Parking, and Travel. Major Streets and Scenic Routes Plan*. Transit Cooperative Research Program, Transportation Research Board, Washington D.C., 2008.
  - <sup>8</sup> *Trip Generation Handbook, 3<sup>rd</sup> Edition*. Institute of Transportation Engineers, Washington D.C., 2017.
  - <sup>9</sup> *Pavement Marking Design Manual*. Pima County Department of Transportation and City of Tucson Department of Transportation, 2008. <[https://www.tucsonaz.gov/files/transportation/PvmtMarkingsManual\\_8-21-08\\_rev.pdf](https://www.tucsonaz.gov/files/transportation/PvmtMarkingsManual_8-21-08_rev.pdf)>, accessed September, 2019.
  - <sup>10</sup> *Parking Generation Manual 5<sup>th</sup> Edition*. Institute of Transportation Engineers, Washington D.C., 2019.

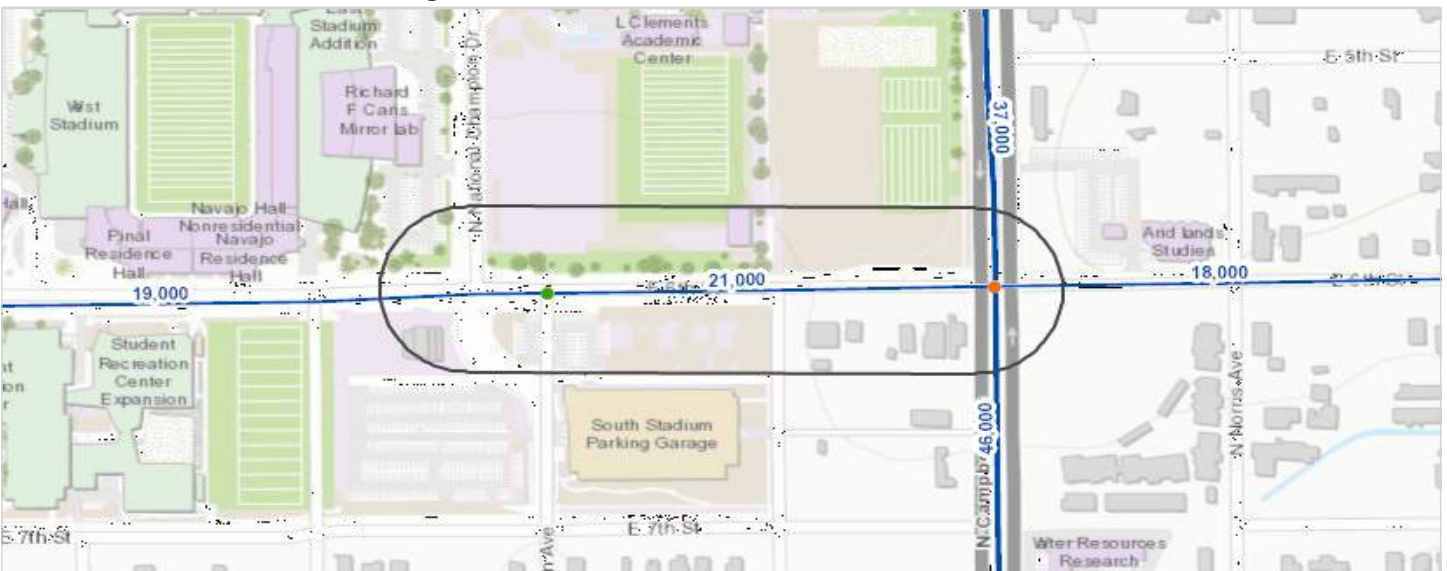
## APPENDIX A – CRASH DATA

# Safety Analysis Report

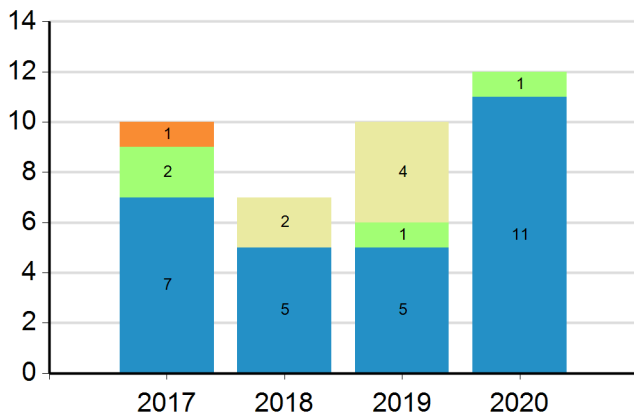
## All Incidents by Severity



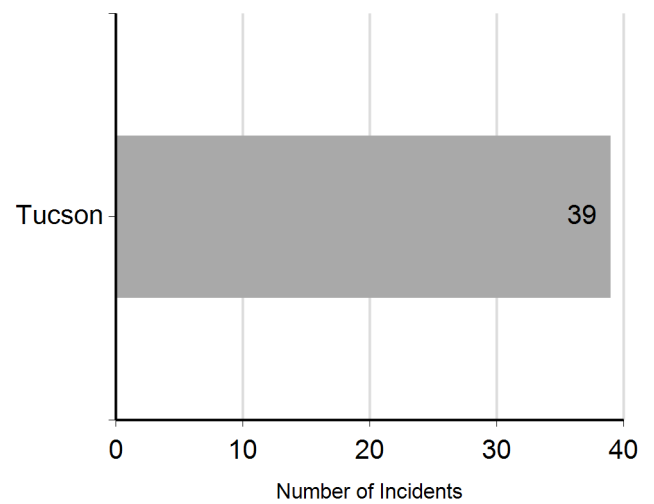
## Current Traffic Volumes and Congestion



## Injury Severity by Year



## Incidents by Jurisdiction



**Collision Manner by Incident Injury Severity**

Collision Manner	Fatal	Incap.	Non-Incap.	Possible Injury	No Injury	Total
Angle (Front To Side)(Other Than Left Turn)	0	1	2	0	4	7
Left Turn	0	0	1	1	13	15
Rear End	0	0	1	2	7	10
Head On	0	0	0	0	2	2
Rear To Rear	0	0	1	0	0	1
Other	0	0	1	1	0	2
Single Vehicle	0	0	0	0	2	2
<b>Total</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>4</b>	<b>28</b>	<b>39</b>

Number of Incidents

**Collision Manner by Tavel Direction**

Collision Manner	North	South	East	West	Northwest	Northeast	Southwest	Southeast	Unknown	Not Reported	Total
Left Turn	17%	27%	17%	20%	7%	10%	0%	3%	0%	0%	30
Rear End	0%	35%	46%	19%	0%	0%	0%	0%	0%	0%	26
Angle (Front To Side)(Other Than Left Turn)	29%	36%	14%	14%	0%	0%	0%	7%	0%	0%	14
Other	25%	0%	0%	25%	0%	25%	0%	25%	0%	0%	4
Head On	0%	0%	50%	50%	0%	0%	0%	0%	0%	0%	4
Rear To Rear	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	3
Single Vehicle	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	2
<b>Total</b>											<b>83</b>

Number of Units

**Person Type by Person Injury Severity**

Person Type	Fatal	Incap	Non-Incap	Possible Injury	No Injury	Unknown	Total
Driver	0	1	5	3	69	3	81
Passenger	0	0	1	1	34	0	36
Pedestrian	0	0	1	1	0	0	2
<b>Total</b>	<b>0</b>	<b>1</b>	<b>7</b>	<b>5</b>	<b>103</b>	<b>3</b>	<b>119</b>

Number of People

### Physical Condition (Operator)

Physical Condition	Count
No Apparent Influence	74
Unknown	6
Fell Asleep Fatigued	2
Illness Or Physical Impairment	1
<b>Total</b>	<b>83</b>

Number of People

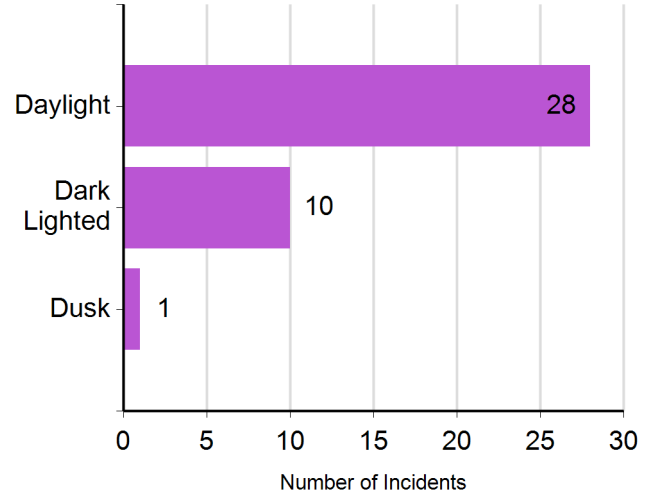
### Physical Condition (Fatal Injury Status)

No fatalities reported in this area.

### Safety Device (Fatal Injury Status)

No fatalities reported in this area.

### Light Condition

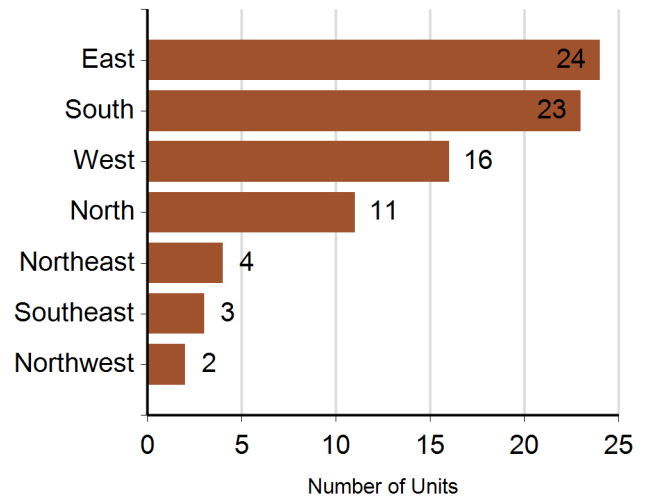


### Road Surface Conditions

Road Surface Condition	Count
Dry	79
Wet	4
<b>Total</b>	<b>83</b>

Number of Units

### Unit Travel Direction



**Violation (Operator)**

<b>Violation</b>	<b>Count</b>
No Improper Action	41
Failed To Yield Right Of Way	15
Speed Too Fast For Conditions	10
Other	4
Made Improper Turn	3
Unknown	3
Drove Left Of Center Line	2
Unsafe Lane Change	2
Disregarded Traffic Signal	1
Followed Too Closely	1
Knowingly Operated With Faulty Missing Equipment	1
<b>Total</b>	<b>83</b>

Number of People

**Traffic Control Device**

<b>Traffic Control Device</b>	<b>Count</b>
Signal	54
No Controls	28
Other	1
<b>Total</b>	<b>83</b>

Number of Units

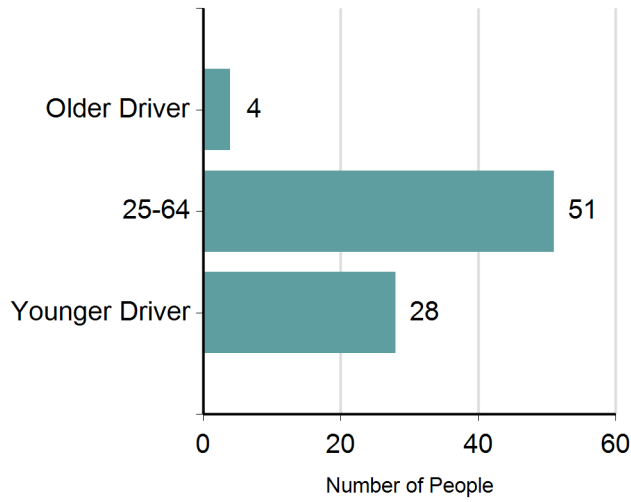
**Unit Action by Unit Type**

<b>Unit Action</b>	<b>Driver</b>	<b>Pedestrian</b>	<b>Pedalcyclist</b>	<b>Driverless</b>	<b>Total</b>
Going Straight Ahead	44	0	0	0	44
Making Left Turn	17	0	0	0	17
Stopped In Trafficway	13	0	0	0	13
Backing	2	0	0	0	2
Making Right Turn	2	0	0	0	2
Slowing In Trafficway	2	0	0	0	2
Avoiding Vehicle Object Pedestrian	1	0	0	0	1
Crossing Road	0	1	0	0	1
Walking With Traffic	0	1	0	0	1
<b>Total</b>	<b>81</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>83</b>

Number of Units



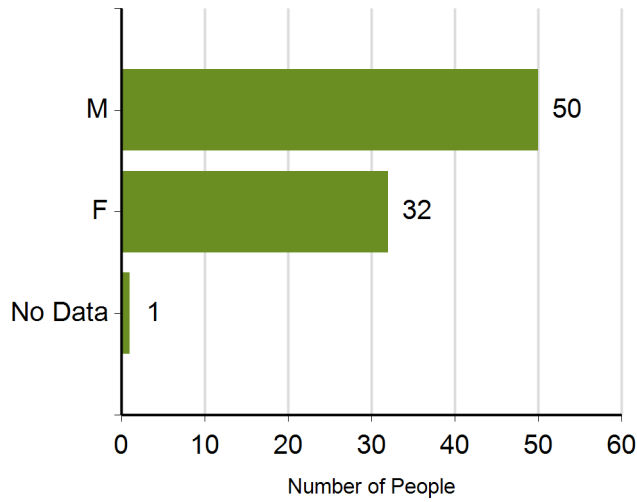
**Age Group (Operator)**



**Age Group (Fatal Injury Status)**

No fatalities reported in this area.

**Gender (Operator)**



**Gender (Fatal Injury Status)**

No fatalities reported in this area.

**First Harmful Event**

First Harmful Event	Count
Motor Vehicle In Transport	35
Other Fixed Object	2
Pedestrian	2
<b>Total</b>	<b>39</b>

Number of Incidents

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## APPENDIX B – TRAFFIC VOLUME DATA

## Intersection Turning Movement Prepared by:



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



**veracitytrafficgroup**

N-S STREET: Warren Ave.      DATE: 09/05/19      LOCATION: Tucson  
 E-W STREET: 6th St.      DAY: THURSDAY      PROJECT#: 19-1410-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	1	1	0	1	0	0	2	0	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	3	3	4	2	7	12	11	105	13	13	196	14	383
7:15 AM	3	7	7	2	5	2	33	161	25	16	275	28	564
7:30 AM	3	15	27	1	2	8	32	185	19	10	314	29	645
7:45 AM	4	12	14	2	3	7	16	208	12	9	313	22	622
8:00 AM	1	5	11	4	4	2	20	200	14	5	248	18	532
8:15 AM	4	10	6	3	4	3	29	143	17	7	238	16	480
8:30 AM	2	11	10	3	6	11	30	173	22	11	219	18	516
8:45 AM	4	16	5	4	7	8	33	130	40	21	249	22	539
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	24	79	84	21	38	53	204	1305	162	92	2052	167	4281
Approach %	12.83	42.25	44.92	18.75	33.93	47.32	12.21	78.10	9.69	3.98	88.79	7.23	
App/Depart	187	/	450	112	/	292	1671	/	1410	2311	/	2129	

AM Peak Hr Begins at: 7:15 AM

PEAK													
Volumes	11	39	59	9	14	19	101	754	70	40	1150	97	2363
Approach %	10.09	35.78	54.13	21.43	33.33	45.24	10.92	81.51	7.57	3.11	89.36	7.54	

PEAK HR.													
FACTOR:		0.606		0.875		0.980		0.911		0.916			

CONTROL: Signal  
 COMMENT 1:  
 GPS: 32.227863, -110.947123

# Intersection Turning Movement



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



**veracitytrafficgroup**

N-S STREET: Warren Ave.      DATE: 09/05/19      LOCATION: Tucson  
 E-W STREET: 6th St.      DAY: THURSDAY      PROJECT# 19-1410-001

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	1	1	0	1	0	0	2	0	0	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	9	2	16	14	4	13	9	261	7	5	178	5	523
4:15 PM	14	4	11	12	5	26	7	254	9	8	198	11	559
4:30 PM	14	4	24	24	8	35	21	280	5	3	215	9	642
4:45 PM	16	8	42	32	13	43	14	310	10	17	236	9	750
5:00 PM	17	3	25	33	15	29	13	330	11	9	205	11	701
5:15 PM	7	6	20	11	9	24	12	284	14	9	181	10	587
5:30 PM	8	2	18	7	7	27	15	232	9	12	187	7	531
5:45 PM	5	7	18	10	5	22	5	215	5	2	174	5	473
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	90	36	174	143	66	219	96	2166	70	65	1574	67	4766
Approach %	30.00	12.00	58.00	33.41	15.42	51.17	4.12	92.88	3.00	3.81	92.26	3.93	
App/Depart	300	/	199	428	/	201	2332	/	2483	1706	/	1883	

PM Peak Hr Begins at: 430 PM

**PEAK**

Volumes	54	21	111	100	45	131	60	1204	40	38	837	39	2680
Approach %	29.03	11.29	59.68	36.23	16.30	47.46	4.60	92.33	3.07	4.16	91.58	4.27	

**PEAK HR.**

FACTOR:	0.705	0.784	0.921	0.872	0.893
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CONTROL: Signal  
 COMMENT 1: 0  
 GPS: 32.227863, -110.947123

## Intersection Turning Movement Prepared by:



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



N-S STREET: **Martin Ave.**      DATE: **09/05/19**      LOCATION: **Tucson**  
 E-W STREET: **6th St.**      DAY: **THURSDAY**      PROJECT# **19-1410-002**

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	2	0	0	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	4	0	0	0	0	103	0	5	139	0	251
7:15 AM	3	0	6	0	0	0	0	142	2	4	269	0	426
7:30 AM	1	0	13	0	0	1	0	175	0	14	355	0	559
7:45 AM	1	0	13	0	0	1	0	214	3	9	367	0	608
8:00 AM	0	0	13	0	0	1	2	219	3	5	277	0	520
8:15 AM	1	0	17	0	0	1	1	191	0	5	261	0	477
8:30 AM	0	0	5	1	0	1	0	153	2	16	269	1	448
8:45 AM	2	0	6	0	1	0	0	162	1	14	273	0	459
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	8	0	77	1	1	5	3	1359	11	72	2210	1	3748
Approach %	9.41	0.00	90.59	14.29	14.29	71.43	0.22	98.98	0.80	3.15	96.80	0.04	
App/Depart	85	/	4	7	/	84	1373	/	1437	2283	/	2223	

AM Peak Hr Begins at: 730 AM

**PEAK**

Volumes	3	0	56	0	0	4	3	799	6	33	1260	0	2164
Approach %	5.08	0.00	94.92	0.00	0.00	100.00	0.37	98.89	0.74	2.55	97.45	0.00	

**PEAK HR.**

FACTOR:	0.819	1.000	0.902	0.860	0.890
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CONTROL: **2-Way Stop (NB & SB)**  
 COMMENT 1:  
 GPS: **32.227845, -110.945211**

# Intersection Turning Movement



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



N-S STREET: Martin Ave.      DATE: 09/05/19      LOCATION: Tucson  
 E-W STREET: 6th St.      DAY: THURSDAY      PROJECT# 19-1410-002

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	1	0	0	1	0	0	2	0	0	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	9	0	0	0	0	295	0	0	198	1	503
4:15 PM	0	0	14	0	0	0	0	270	3	0	188	0	475
4:30 PM	0	0	5	0	0	0	0	279	1	3	223	0	511
4:45 PM	1	0	13	0	0	0	0	348	2	3	242	0	609
5:00 PM	2	0	16	0	0	0	0	366	3	0	244	0	631
5:15 PM	2	0	10	0	0	0	0	366	6	0	229	0	613
5:30 PM	1	0	11	0	0	0	0	309	4	1	185	0	511
5:45 PM	3	0	9	0	0	0	0	232	0	2	182	0	428
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	9	0	87	0	0	0	0	2465	19	9	1691	1	4281
Approach %	9.38	0.00	90.63	####	####	####	0.00	99.24	0.76	0.53	99.41	0.06	
App/Depart	96	/	1	0	/	28	2484	/	2552	1701	/	1700	

PM Peak Hr Begins at: 445 PM

**PEAK**

Volumes	6	0	50	0	0	0	0	1389	15	4	900	0	2364
Approach %	10.71	0.00	89.29	####	####	####	0.00	98.93	1.07	0.44	99.56	0.00	

**PEAK HR.**

FACTOR:	0.778	0.000	0.944	0.922	0.937
---------	-------	-------	-------	-------	-------

CONTROL: 2-Way Stop (NB & SB)  
 COMMENT 1: 0  
 GPS: 32.227845, -110.945211

## Intersection Turning Movement Prepared by:



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



N-S STREET: **Campbell Ave.**      DATE: **09/05/19**      LOCATION: **Tucson**  
 E-W STREET: **6th St.**      DAY: **THURSDAY**      PROJECT# **19-1410-003**

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	3	1	1	3	0	1	2	1	1	2	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	48	316	13	23	206	41	19	90	11	28	135	16	946
7:15 AM	52	330	21	10	247	77	49	111	22	49	221	20	1209
7:30 AM	51	314	21	14	289	71	41	163	20	46	264	31	1325
7:45 AM	47	319	22	16	287	44	53	145	27	52	224	30	1266
8:00 AM	43	319	37	24	224	58	44	158	34	46	172	21	1180
8:15 AM	42	306	34	14	215	50	41	92	25	35	192	19	1065
8:30 AM	43	288	21	11	184	54	42	116	35	38	163	32	1027
8:45 AM	49	281	25	19	175	77	24	101	23	24	177	17	992
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	375	2473	194	131	1827	472	313	976	197	318	1548	186	9010
Approach %	12.33	81.30	6.38	5.39	75.19	19.42	21.06	65.68	13.26	15.50	75.44	9.06	
App/Depart	3042	/	2972	2430	/	2342	1486	/	1301	2052	/	2395	

AM Peak Hr Begins at: 715 AM

**PEAK**

Volumes	193	1282	101	64	1047	250	187	577	103	193	881	102	4980
Approach %	12.25	81.35	6.41	4.70	76.93	18.37	21.57	66.55	11.88	16.41	74.91	8.67	

**PEAK HR.**

FACTOR:	0.978	0.910	0.918	0.862	0.940
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CONTROL: **Signal**  
 COMMENT 1:  
 GPS: **32.227839, -110.943873**



# Intersection Turning Movement



**FIELD DATA SERVICES OF ARIZONA, INC.**  
520.316.6745



**veracitytrafficgroup**

N-S STREET: **Campbell Ave.**      DATE: **09/05/19**      LOCATION: **Tucson**  
 E-W STREET: **6th St.**      DAY: **THURSDAY**      PROJECT# **19-1410-003**

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	1	3	1	1	3	0	1	2	1	1	2	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	21	252	31	38	308	45	56	198	38	26	120	14	1147
4:15 PM	29	289	22	39	320	43	61	184	40	29	149	29	1234
4:30 PM	36	315	40	39	326	56	67	208	35	32	137	24	1315
4:45 PM	30	325	47	48	348	46	68	271	47	40	179	24	1473
5:00 PM	27	293	36	49	346	44	79	278	46	42	160	14	1414
5:15 PM	30	289	36	48	358	41	73	253	40	41	125	16	1350
5:30 PM	31	263	24	40	340	54	67	160	42	36	116	22	1195
5:45 PM	31	225	25	40	256	43	69	135	46	35	119	8	1032
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	235	2251	261	341	2602	372	540	1687	334	281	1105	151	10160
Approach %	8.55	81.94	9.50	10.29	78.49	11.22	21.09	65.87	13.04	18.28	71.89	9.82	
App/Depart	2747	/	2942	3315	/	3217	2561	/	2289	1537	/	1712	

PM Peak Hr Begins at: 430 PM

**PEAK**

Volumes	123	1222	159	184	1378	187	287	1010	168	155	601	78	5552
Approach %	8.18	81.25	10.57	10.52	78.79	10.69	19.59	68.94	11.47	18.59	72.06	9.35	

**PEAK HR.**

FACTOR:	0.935	0.978	0.909	0.858	0.942
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CONTROL: **Signal**  
 COMMENT 1: **0**  
 GPS: **32.227839, -110.943873**

## APPENDIX C – SYNCHRO REPORTS: EXISTING CONDITIONS LOS

# HCM 6th Signalized Intersection Summary

## 1: Warren Ave & 6th St

03/16/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	754	70	40	1150	97	11	39	59	9	14	19
Future Volume (veh/h)	101	754	70	40	1150	97	11	39	59	9	14	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	110	820	76	43	1250	105	12	42	64	10	15	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	378	2134	198	524	2306	1029	327	205	174	180	140	174
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	402	3288	305	621	3554	1585	1372	1870	1585	411	1273	1585
Grp Volume(v), veh/h	110	443	453	43	1250	105	12	42	64	25	0	21
Grp Sat Flow(s),veh/h/ln	402	1777	1816	621	1777	1585	1372	1870	1585	1684	0	1585
Q Serve(g_s), s	7.6	4.3	4.3	1.3	7.1	0.9	0.3	0.8	1.4	0.0	0.0	0.4
Cycle Q Clear(g_c), s	14.7	4.3	4.3	5.6	7.1	0.9	0.7	0.8	1.4	0.4	0.0	0.4
Prop In Lane	1.00		0.17	1.00		1.00	1.00		1.00	0.40		1.00
Lane Grp Cap(c), veh/h	378	1153	1178	524	2306	1029	327	205	174	320	0	174
V/C Ratio(X)	0.29	0.38	0.38	0.08	0.54	0.10	0.04	0.20	0.37	0.08	0.00	0.12
Avail Cap(c_a), veh/h	499	1692	1729	712	3384	1509	747	778	659	805	0	659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.5	3.1	3.1	4.4	3.5	2.5	15.3	15.1	15.4	15.0	0.0	15.0
Incr Delay (d2), s/veh	0.4	0.2	0.2	0.1	0.2	0.0	0.0	0.5	1.3	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.5	0.5	0.1	0.8	0.1	0.1	0.3	0.5	0.2	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	3.3	3.3	4.4	3.7	2.5	15.4	15.6	16.7	15.1	0.0	15.3
LnGrp LOS	A	A	A	A	A	A	B	B	B	B	A	B
Approach Vol, veh/h		1006			1398			118				46
Approach Delay, s/veh		3.8			3.7			16.2				15.2
Approach LOS		A			A			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		8.6		28.7		8.6		28.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		15.5		35.5		15.5		35.5				
Max Q Clear Time (g_c+l1), s		3.4		16.7		2.4		9.1				
Green Ext Time (p_c), s		0.3		7.5		0.1		11.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.5								
HCM 6th LOS				A								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	750	8	32	1268	0	5	0	45	0	0	3
Future Vol, veh/h	2	750	8	32	1268	0	5	0	45	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	815	9	35	1378	0	5	0	49	0	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1378	0	0	689
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	3.32
Pot Cap-1 Maneuver	493	-	-	388
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	493	-	-	388
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
































Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	18.6	14.4
HCM LOS			C	B

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)		318	493	-	-	802	-	388
HCM Lane V/C Ratio		0.171	0.004	-	-	0.043	-	0.008
HCM Control Delay (s)		18.6	12.3	0	-	9.7	-	14.4
HCM Lane LOS		C	B	A	-	A	-	B
HCM 95th %tile Q(veh)		0.6	0	-	-	0.1	-	0

# HCM 6th Signalized Intersection Summary

## 3: Campbell Ave & 6th St























03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	  
Traffic Volume (veh/h)	187	577	103	193	881	102	193	1282	101	64	1047	250
Future Volume (veh/h)	187	577	103	193	881	102	193	1282	101	64	1047	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	203	627	112	210	958	111	210	1393	110	70	1138	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	807	360	459	1076	125	243	1594	495	244	1287	307
Arrive On Green	0.09	0.23	0.23	0.20	0.34	0.34	0.09	0.31	0.31	0.09	0.31	0.31
Sat Flow, veh/h	1781	3554	1585	1781	3209	372	1781	5106	1585	1781	4114	983
Grp Volume(v), veh/h	203	627	112	210	530	539	210	1393	110	70	942	468
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1803	1781	1702	1585	1781	1702	1693
Q Serve(g_s), s	7.8	17.6	6.2	4.6	30.0	30.0	7.1	27.4	5.4	0.0	27.9	27.9
Cycle Q Clear(g_c), s	7.8	17.6	6.2	4.6	30.0	30.0	7.1	27.4	5.4	0.0	27.9	27.9
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	236	807	360	459	596	605	243	1594	495	244	1065	530
V/C Ratio(X)	0.86	0.78	0.31	0.46	0.89	0.89	0.86	0.87	0.22	0.29	0.88	0.88
Avail Cap(c_a), veh/h	311	1289	575	459	645	654	330	1660	515	330	1107	551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	38.5	34.1	34.2	33.4	33.4	45.7	34.5	27.0	43.3	34.6	34.6
Incr Delay (d2), s/veh	16.9	1.6	0.5	0.7	13.8	13.7	15.9	5.4	0.2	0.6	8.5	15.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	7.8	2.4	4.6	14.9	15.1	6.4	11.7	2.1	1.7	12.4	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.7	40.1	34.6	34.9	47.2	47.1	61.6	39.9	27.2	43.9	43.2	50.0
LnGrp LOS	E	D	C	C	D	D	E	D	C	D	D	D
Approach Vol, veh/h		942			1279			1713			1480	
Approach Delay, s/veh		44.3			45.1			41.7			45.4	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	37.6	26.0	28.6	13.8	37.7	14.5	40.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax),s	45	34.5	14.5	38.5	14.5	34.5	14.5	38.5				
Max Q Clear Time (g_c+l1),s	29	29.4	6.6	19.6	9.1	29.9	9.8	32.0				
Green Ext Time (p_c), s	0.1	3.7	0.4	4.5	0.3	3.3	0.2	3.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			44.0									
HCM 6th LOS			D									

# HCM 6th Signalized Intersection Summary

## 1: Warren Ave & 6th St

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1204	40	38	837	39	54	12	111	100	45	131
Future Volume (veh/h)	60	1204	40	38	837	39	54	12	111	100	45	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	1309	43	41	910	42	59	13	121	109	49	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	434	2034	67	311	2059	918	303	371	314	320	118	314
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	589	3511	115	403	3554	1585	1192	1870	1585	857	593	1585
Grp Volume(v), veh/h	65	662	690	41	910	42	59	13	121	158	0	142
Grp Sat Flow(s),veh/h/ln	589	1777	1850	403	1777	1585	1192	1870	1585	1451	0	1585
Q Serve(g_s), s	2.8	10.1	10.1	3.1	5.9	0.5	1.9	0.2	2.7	2.9	0.0	3.2
Cycle Q Clear(g_c), s	8.7	10.1	10.1	13.2	5.9	0.5	5.7	0.2	2.7	3.8	0.0	3.2
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	0.69		1.00
Lane Grp Cap(c), veh/h	434	1029	1071	311	2059	918	303	371	314	438	0	314
V/C Ratio(X)	0.15	0.64	0.64	0.13	0.44	0.05	0.20	0.04	0.38	0.36	0.00	0.45
Avail Cap(c_a), veh/h	610	1559	1623	431	3117	1390	523	716	607	696	0	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.3	5.7	5.7	10.1	4.8	3.7	17.1	13.1	14.1	14.4	0.0	14.3
Incr Delay (d2), s/veh	0.2	0.7	0.7	0.2	0.1	0.0	0.3	0.0	0.8	0.5	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.1	2.2	0.2	1.2	0.1	0.5	0.1	0.9	1.2	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	6.4	6.4	10.3	5.0	3.7	17.4	13.1	14.9	14.9	0.0	15.3
LnGrp LOS	A	A	A	B	A	A	B	B	B	B	A	B
Approach Vol, veh/h		1417			993			193			300	
Approach Delay, s/veh		6.4			5.1			15.5			15.1	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.5		27.9		12.5		27.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		15.5		35.5		15.5		35.5				
Max Q Clear Time (g_c+l1), s		7.7		12.1		5.8		15.2				
Green Ext Time (p_c), s		0.4		11.3		1.0		7.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				7.5								
HCM 6th LOS				A								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Traffic Vol, veh/h	0	1359	12	6	938	0	5	0	44	0	0	0
Future Vol, veh/h	0	1359	12	6	938	0	5	0	44	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1477	13	7	1020	0	5	0	48	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1020	0	0	1490
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	676	-	-	447
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	676	-	-	447
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
































Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	33	0
HCM LOS			D	A

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)		181	676	-	-	447	-	-
HCM Lane V/C Ratio		0.294	-	-	-	0.015	-	-
HCM Control Delay (s)		33	0	-	-	13.2	-	0
HCM Lane LOS		D	A	-	-	B	-	A
HCM 95th %tile Q(veh)		1.2	0	-	-	0	-	-

# HCM 6th Signalized Intersection Summary

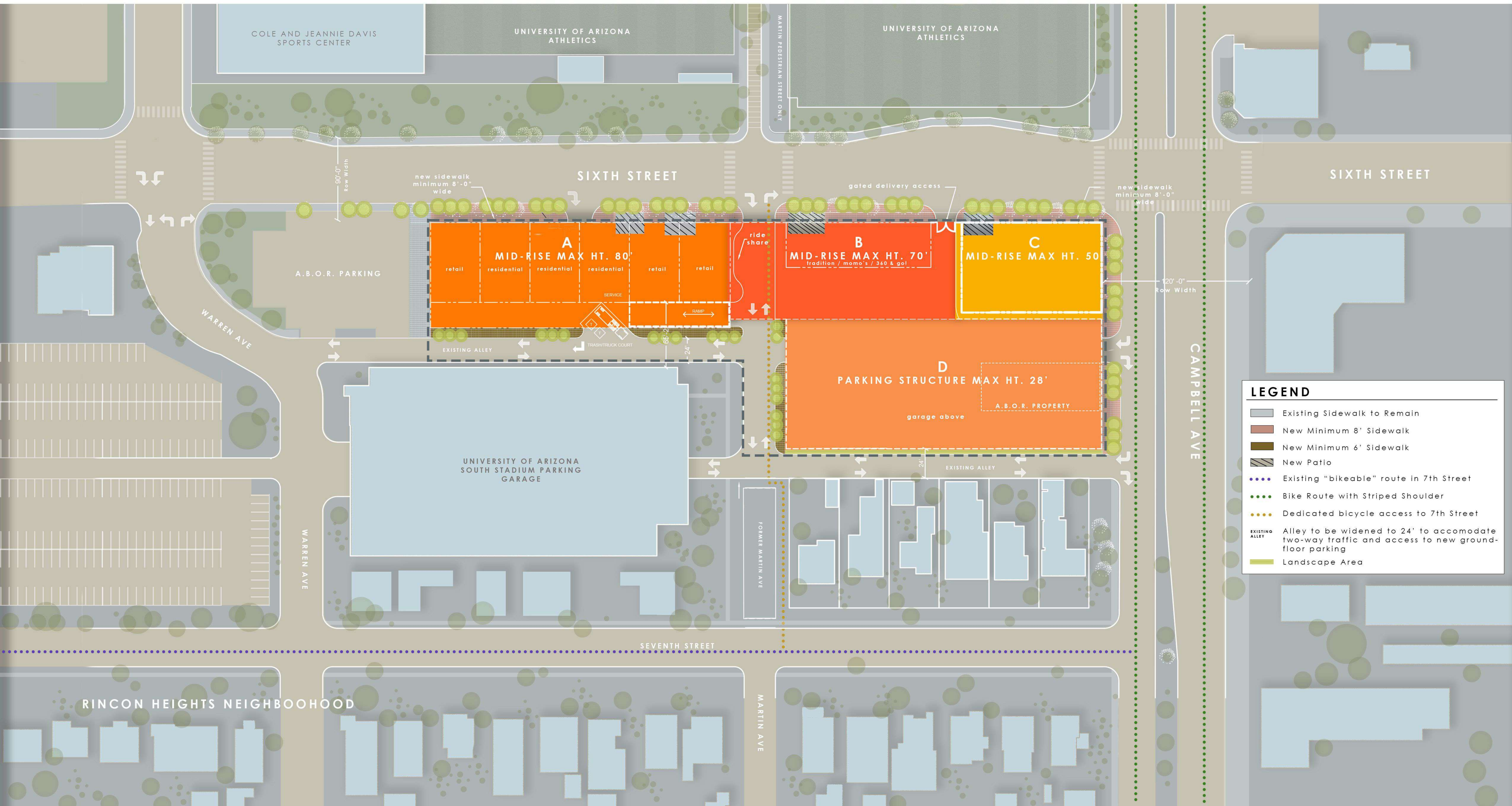
## 3: Campbell Ave & 6th St

03/16/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	  
Traffic Volume (veh/h)	287	1010	168	155	601	78	123	1222	159	184	1378	187
Future Volume (veh/h)	287	1010	168	155	601	78	123	1222	159	184	1378	187
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	312	1098	183	168	653	85	134	1328	173	200	1498	203
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	1217	543	198	796	103	164	1666	517	257	1667	226
Arrive On Green	0.17	0.34	0.34	0.07	0.25	0.25	0.05	0.33	0.33	0.09	0.37	0.37
Sat Flow, veh/h	1781	3554	1585	1781	3162	411	1781	5106	1585	1781	4548	616
Grp Volume(v), veh/h	312	1098	183	168	367	371	134	1328	173	200	1121	580
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1796	1781	1702	1585	1781	1702	1760
Q Serve(g_s), s	12.6	32.4	9.5	6.2	21.4	21.5	3.8	26.1	9.1	6.3	34.3	34.4
Cycle Q Clear(g_c), s	12.6	32.4	9.5	6.2	21.4	21.5	3.8	26.1	9.1	6.3	34.3	34.4
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	387	1217	543	198	447	452	164	1666	517	257	1248	645
V/C Ratio(X)	0.81	0.90	0.34	0.85	0.82	0.82	0.82	0.80	0.33	0.78	0.90	0.90
Avail Cap(c_a), veh/h	387	1273	568	235	636	643	239	1921	596	260	1281	662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	34.5	26.9	48.9	38.9	38.9	50.2	33.8	28.1	46.3	33.0	33.0
Incr Delay (d2), s/veh	11.8	8.9	0.4	21.5	5.7	5.8	13.0	2.1	0.4	13.8	8.6	15.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	15.2	3.6	5.7	10.0	10.1	4.2	10.8	3.5	6.2	15.1	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	43.4	27.3	70.3	44.6	44.7	63.3	36.0	28.5	60.1	41.6	48.1
LnGrp LOS	D	D	C	E	D	D	E	D	C	E	D	D
Approach Vol, veh/h		1593			906			1635			1901	
Approach Delay, s/veh		43.5			49.4			37.4			45.5	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.8	40.5	12.7	42.3	10.4	44.9	22.7	32.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax),s	10.5	41.5	10.5	39.5	10.5	41.5	10.5	39.5				
Max Q Clear Time (g_c+l1),s	8.5	28.1	8.2	34.4	5.8	36.4	14.6	23.5				
Green Ext Time (p_c), s	0.1	7.9	0.1	3.4	0.1	4.1	0.0	4.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			43.4									
HCM 6th LOS			D									



## APPENDIX D – PAD CONCEPT AND CIRCULATION PLAN



LEGEND	
	Existing Sidewalk to Remain
	New Minimum 8' Sidewalk
	New Minimum 6' Sidewalk
	New Patio
	Existing "bikeable" route in 7th Street
	Bike Route with Striped Shoulder
	Dedicated bicycle access to 7th Street
	EXISTING ALLEY
	Alley to be widened to 24' to accomodate two-way traffic and access to new ground-floor parking
	Landscape Area

**Exhibit 7: PAD Concept & Circulation Plan**

**APPENDIX E – SYNCHRO REPORTS: EXISTING PLUS PROJECT  
CONDITIONS LOS**

# HCM 6th Signalized Intersection Summary

## 1: Warren Ave & 6th St

03/17/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	769	84	40	1150	97	56	39	79	9	14	19
Future Volume (veh/h)	101	769	84	40	1150	97	56	39	79	9	14	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	110	836	91	43	1250	105	61	42	86	10	15	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	370	2090	228	503	2298	1025	335	223	189	176	157	189
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	402	3232	352	603	3554	1585	1372	1870	1585	375	1315	1585
Grp Volume(v), veh/h	110	460	467	43	1250	105	61	42	86	25	0	21
Grp Sat Flow(s),veh/h/ln	402	1777	1807	603	1777	1585	1372	1870	1585	1690	0	1585
Q Serve(g_s), s	7.9	4.7	4.7	1.4	7.4	1.0	1.6	0.8	1.9	0.0	0.0	0.5
Cycle Q Clear(g_c), s	15.3	4.7	4.7	6.2	7.4	1.0	2.1	0.8	1.9	0.5	0.0	0.5
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	0.40		1.00
Lane Grp Cap(c), veh/h	370	1149	1169	503	2298	1025	335	223	189	333	0	189
V/C Ratio(X)	0.30	0.40	0.40	0.09	0.54	0.10	0.18	0.19	0.45	0.08	0.00	0.11
Avail Cap(c_a), veh/h	481	1639	1667	669	3278	1462	723	753	638	777	0	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.9	3.2	3.2	4.7	3.7	2.6	16.0	15.3	15.8	15.1	0.0	15.1
Incr Delay (d2), s/veh	0.4	0.2	0.2	0.1	0.2	0.0	0.3	0.4	1.7	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.6	0.6	0.1	0.9	0.1	0.5	0.3	0.7	0.2	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	3.5	3.5	4.8	3.9	2.6	16.3	15.7	17.5	15.2	0.0	15.4
LnGrp LOS	A	A	A	A	A	A	B	B	B	B	A	B
Approach Vol, veh/h		1037			1398			189				46
Approach Delay, s/veh		4.0			3.8			16.7				15.3
Approach LOS		A			A			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.1		29.4		9.1		29.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		15.5		35.5		15.5		35.5				
Max Q Clear Time (g_c+l1), s		4.1		17.3		2.5		9.4				
Green Ext Time (p_c), s		0.5		7.6		0.1		11.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.0								
HCM 6th LOS				A								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓			↑↓			↓			↓	
Traffic Vol, veh/h	0	794	15	0	1287	0	5	0	60	0	0	3
Future Vol, veh/h	0	794	15	0	1287	0	5	0	60	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	863	16	0	1399	0	5	0	65	0	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	- 0	0 -	- 0	1571 2270
Stage 1	- -	- -	- -	871 871
Stage 2	- -	- -	- -	700 1399
Critical Hdwy	- -	- -	- -	7.54 6.54 6.94
Critical Hdwy Stg 1	- -	- -	- -	6.54 5.54
Critical Hdwy Stg 2	- -	- -	- -	6.54 5.54
Follow-up Hdwy	- -	- -	- -	3.52 4.02 3.32
Pot Cap-1 Maneuver	0 -	- 0	- -	75 40 565
Stage 1	0 -	- 0	- -	312 367
Stage 2	0 -	- 0	- -	396 206
Platoon blocked, %	- -	- -	- -	
Mov Cap-1 Maneuver	- -	- -	- -	74 40 565
Mov Cap-2 Maneuver	- -	- -	- -	192 137
Stage 1	- -	- -	- -	312 367
Stage 2	- -	- -	- -	393 206

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	12.2	14.5
HCM LOS			B	B

Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	565	-	-	-	-	382
HCM Lane V/C Ratio	0.115	-	-	-	-	-0.009
HCM Control Delay (s)	12.2	-	-	-	-	14.5
HCM Lane LOS	B	-	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	-	0

# HCM 6th Signalized Intersection Summary

## 3: Campbell Ave & 6th St

03/17/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	227	597	103	198	890	102	216	1282	101	64	1075	250
Future Volume (veh/h)	227	597	103	198	890	102	216	1282	101	64	1075	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	247	649	112	215	967	111	235	1393	110	70	1168	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	1217	543	374	1070	123	250	1870	580	177	1271	296
Arrive On Green	0.11	0.34	0.34	0.10	0.33	0.33	0.10	0.37	0.37	0.04	0.31	0.31
Sat Flow, veh/h	1781	3554	1585	1781	3212	369	1781	5106	1585	1781	4137	964
Grp Volume(v), veh/h	247	649	112	215	535	543	235	1393	110	70	961	479
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1804	1781	1702	1585	1781	1702	1697
Q Serve(g_s), s	10.5	17.2	5.8	9.1	33.5	33.5	10.4	27.8	5.5	3.1	31.8	31.8
Cycle Q Clear(g_c), s	10.5	17.2	5.8	9.1	33.5	33.5	10.4	27.8	5.5	3.1	31.8	31.8
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	276	1217	543	374	592	601	250	1870	580	177	1045	521
V/C Ratio(X)	0.89	0.53	0.21	0.58	0.90	0.90	0.94	0.74	0.19	0.40	0.92	0.92
Avail Cap(c_a), veh/h	276	1217	543	466	631	641	250	1870	580	190	1064	530
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	30.9	27.2	23.1	37.1	37.1	29.0	32.3	25.2	28.3	39.1	39.1
Incr Delay (d2), s/veh	28.6	0.5	0.2	1.4	15.8	15.7	40.9	1.7	0.2	1.4	12.4	21.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	7.4	2.2	3.9	16.9	17.2	7.1	11.4	2.1	1.4	14.8	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.0	31.3	27.4	24.5	53.0	52.8	69.9	33.9	25.4	29.7	51.5	60.2
LnGrp LOS	E	C	C	C	D	D	E	C	C	C	D	E
Approach Vol, veh/h		1008			1293			1738			1510	
Approach Delay, s/veh		36.9			48.2			38.2			53.2	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	47.3	15.9	44.5	16.0	40.4	17.0	43.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax),s	5	42.5	17.5	36.5	11.5	36.5	12.5	41.5				
Max Q Clear Time (g_c+l1),s	5	29.8	11.1	19.2	12.4	33.8	12.5	35.5				
Green Ext Time (p_c), s	0.0	7.8	0.3	4.5	0.0	2.0	0.0	3.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				44.4								
HCM 6th LOS				D								

**Intersection**

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑		↘
Traffic Vol, veh/h	768	20	19	1268	0	35
Future Vol, veh/h	768	20	19	1268	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	-	0
Veh in Median Storage0#	-	-	0	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	835	22	21	1378	0	38

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	857
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.22	-
Pot Cap-1 Maneuver	-	779	0
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	779	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-























Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.7
HCM LOS			B

Minor Lane/Major MvmNBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	574	-	779	-
HCM Lane V/C Ratio	0.066	-	0.027	-
HCM Control Delay (s)	11.7	-	9.7	-
HCM Lane LOS	B	-	A	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-

# HCM 6th Signalized Intersection Summary

## 1: Warren Ave & 6th St

03/17/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1234	63	44	832	39	100	21	132	100	45	131
Future Volume (veh/h)	60	1234	63	44	832	39	100	21	132	100	45	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	1341	68	48	904	42	109	23	143	109	49	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	409	1960	99	271	2024	903	326	435	369	334	127	369
Arrive On Green	0.57	0.57	0.57	0.57	0.57	0.57	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	593	3442	174	382	3554	1585	1192	1870	1585	863	547	1585
Grp Volume(v), veh/h	65	691	718	48	904	42	109	23	143	158	0	142
Grp Sat Flow(s),veh/h/ln	593	1777	1839	382	1777	1585	1192	1870	1585	1410	0	1585
Q Serve(g_s), s	3.2	12.5	12.5	4.6	6.7	0.5	3.9	0.4	3.5	3.3	0.0	3.4
Cycle Q Clear(g_c), s	9.9	12.5	12.5	17.2	6.7	0.5	8.1	0.4	3.5	4.2	0.0	3.4
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	0.69		1.00
Lane Grp Cap(c), veh/h	409	1012	1048	271	2024	903	326	435	369	462	0	369
V/C Ratio(X)	0.16	0.68	0.69	0.18	0.45	0.05	0.33	0.05	0.39	0.34	0.00	0.39
Avail Cap(c_a), veh/h	533	1386	1434	351	2772	1236	454	637	540	609	0	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	6.9	6.9	13.0	5.7	4.3	18.5	13.6	14.7	14.9	0.0	14.7
Incr Delay (d2), s/veh	0.2	0.8	0.8	0.3	0.2	0.0	0.6	0.0	0.7	0.4	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.1	3.2	0.4	1.6	0.1	1.0	0.2	1.2	1.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.7	7.7	7.7	13.3	5.8	4.4	19.1	13.6	15.4	15.3	0.0	15.4
LnGrp LOS	A	A	A	B	A	A	B	B	B	B	A	B
Approach Vol, veh/h		1474			994			275			300	
Approach Delay, s/veh		7.8			6.1			16.7			15.4	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.1		30.4		15.1		30.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		15.5		35.5		15.5		35.5				
Max Q Clear Time (g_c+l1), s		10.1		14.5		6.2		19.2				
Green Ext Time (p_c), s		0.5		11.2		1.0		6.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				8.8								
HCM 6th LOS				A								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓			↑↓			↓			↓	
Traffic Vol, veh/h	0	1404	24	0	980	0	0	0	60	0	0	0
Future Vol, veh/h	0	1404	24	0	980	0	0	0	60	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1526	26	0	1065	0	0	0	65	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	- 0	0 -	- 0	- 2604 776
Stage 1	- -	- -	- -	- 1539 -
Stage 2	- -	- -	- -	- 1065 -
Critical Hdwy	- -	- -	- -	- 6.54 6.94
Critical Hdwy Stg 1	- -	- -	- -	- 5.54 -
Critical Hdwy Stg 2	- -	- -	- -	- 5.54 -
Follow-up Hdwy	- -	- -	- -	- 4.02 3.32
Pot Cap-1 Maneuver	0 -	- 0	- 0	24 340 0 24 491
Stage 1	0 -	- 0	- 0	176 - 0 297 -
Stage 2	0 -	- 0	- 0	297 - 0 173 -
Platoon blocked, %	- -	- -	- -	- -
Mov Cap-1 Maneuver	- -	- -	- -	- 24 340 -
Mov Cap-2 Maneuver	- -	- -	- -	- 111 -
Stage 1	- -	- -	- -	- 176 -
Stage 2	- -	- -	- -	- 297 -






























Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	18.1	0
HCM LOS			C	A

Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	340	-	-	-	-	-
HCM Lane V/C Ratio	0.192	-	-	-	-	-
HCM Control Delay (s)	18.1	-	-	-	-	0
HCM Lane LOS	C	-	-	-	-	A
HCM 95th %tile Q(veh)	0.7	-	-	-	-	-

# HCM 6th Signalized Intersection Summary

## 3: Campbell Ave & 6th St

03/17/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  			  	
Traffic Volume (veh/h)	328	1031	168	164	619	78	168	1222	159	184	1432	187
Future Volume (veh/h)	328	1031	168	164	619	78	168	1222	159	184	1432	187
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	357	1121	183	178	673	85	183	1328	173	200	1557	203
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	383	1190	531	214	808	102	208	1764	547	260	1624	211
Arrive On Green	0.16	0.33	0.33	0.08	0.25	0.25	0.08	0.35	0.35	0.09	0.36	0.36
Sat Flow, veh/h	1781	3554	1585	1781	3175	401	1781	5106	1585	1781	4572	595
Grp Volume(v), veh/h	357	1121	183	178	376	382	183	1328	173	200	1158	602
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1798	1781	1702	1585	1781	1702	1763
Q Serve(g_s), s	17.0	36.6	10.4	8.8	23.9	24.0	7.9	27.5	9.6	8.5	39.7	39.9
Cycle Q Clear(g_c), s	17.0	36.6	10.4	8.8	23.9	24.0	7.9	27.5	9.6	8.5	39.7	39.9
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	383	1190	531	214	452	458	208	1764	547	260	1209	626
V/C Ratio(X)	0.93	0.94	0.34	0.83	0.83	0.83	0.88	0.75	0.32	0.77	0.96	0.96
Avail Cap(c_a), veh/h	389	1205	538	214	454	459	208	1764	547	302	1211	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	38.6	29.9	33.2	42.1	42.1	29.1	34.6	28.7	27.2	37.6	37.7
Incr Delay (d2), s/veh	28.8	14.2	0.4	23.4	12.4	12.4	32.4	1.9	0.3	9.9	16.8	26.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	18.0	4.0	5.2	12.0	12.2	5.1	11.4	3.7	4.2	18.9	21.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.0	52.7	30.2	56.6	54.5	54.5	61.5	36.5	29.0	37.2	54.4	64.0
LnGrp LOS	E	D	C	E	D	D	E	D	C	D	D	E
Approach Vol, veh/h		1661			936			1684			1960	
Approach Delay, s/veh		51.2			54.9			38.4			55.6	
Approach LOS		D			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	45.7	14.0	44.5	14.0	46.9	23.6	34.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax),s	35	38.5	9.5	40.5	9.5	42.5	19.5	30.5				
Max Q Clear Time (g_c+l1),s	10.5	29.5	10.8	38.6	9.9	41.9	19.0	26.0				
Green Ext Time (p_c), s	0.2	5.9	0.0	1.4	0.0	0.6	0.1	1.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			49.7									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑		↗
Traffic Vol, veh/h	1220	35	36	938	0	38
Future Vol, veh/h	1220	35	36	938	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	50	-	-	0
Veh in Median Storage#	-	-	0	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1326	38	39	1020	0	41

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	682
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.14	6.94
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.22	3.32
Pot Cap-1 Maneuver	-	500	392
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	500	392
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	15.3
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	392	-	-	500	-
HCM Lane V/C Ratio	0.105	-	-	0.078	-
HCM Control Delay (s)	15.3	-	-	12.8	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.4	-	-	0.3	-

**APPENDIX F – SIMTRAFFIC REPORTS: EXISTING PLUS PROJECT  
QUEUES**

Queuing and Blocking Report  
Existing + Project - AM Peak

03/17/2023

Intersection: 1: Warren Ave & 6th St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	LT	R
Maximum Queue (ft)	118	243	204	86	190	231	120	70	69	68	52	32
Average Queue (ft)	56	79	57	21	73	89	21	32	23	32	13	9
95th Queue (ft)	108	199	164	54	152	174	78	63	56	60	38	27
Link Distance (ft)		687	687		246	246			808		532	532
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (ft)	100			100			40	76		65		
Storage Blk Time (%)	2	5		0	2	12	0	0	1	1		
Queuing Penalty (veh)	9	5		0	1	11	1	0	1	1		

Intersection: 2: Martin Ave & 6th St

Movement	EB	EB	NB	SB
Directions Served	T	TR	LTR	TR
Maximum Queue (ft)	195	174	337	33
Average Queue (ft)	96	60	139	4
95th Queue (ft)	250	194	426	20
Link Distance (ft)	208	208	751	277
Upstream Blk Time (%)	12	0	0	
Queuing Penalty (veh)	47	1	0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Campbell Ave & 6th St

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	TR	L	T	T	T	R
Maximum Queue (ft)	175	337	329	211	256	497	473	366	497	441	283	70
Average Queue (ft)	166	282	230	44	171	303	288	189	294	253	180	26
95th Queue (ft)	203	397	349	127	309	443	415	345	426	370	265	57
Link Distance (ft)		316	316			940	940		746	746	746	
Upstream Blk Time (%)		37	1						0			
Queuing Penalty (veh)		158	3						0			
Storage Bay Dist (ft)	105			65	156			290				170
Storage Blk Time (%)	80	15	48	1	3	37		8	6		5	
Queuing Penalty (veh)	237	35	49	2	14	74		34	12		5	

Intersection: 3: Campbell Ave & 6th St

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	329	565	544	469
Average Queue (ft)	109	361	322	267
95th Queue (ft)	296	532	488	430
Link Distance (ft)		779	779	779
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	185			
Storage Blk Time (%)	0	48		
Queuing Penalty (veh)	0	31		

Intersection: 12: 6th St

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	R
Maximum Queue (ft)	118	100	36	16	35	66
Average Queue (ft)	35	19	9	1	1	23
95th Queue (ft)	160	117	32	11	17	63
Link Distance (ft)	246	246		208	208	105
Upstream Blk Time (%)	3	0				2
Queuing Penalty (veh)	15	0				0
Storage Bay Dist (ft)			50			
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			0	0		

Network Summary

Network wide Queuing Penalty: 748

Intersection: 1: Warren Ave & 6th St

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	LT	R
Maximum Queue (ft)	119	341	317	103	179	201	104	124	134	114	136	89
Average Queue (ft)	37	149	120	31	71	85	10	50	20	51	62	38
95th Queue (ft)	96	313	287	75	154	173	53	93	75	94	115	73
Link Distance (ft)		687	687		246	246			808		532	532
Upstream Blk Time (%)		0	0		0	0						
Queuing Penalty (veh)		0	0		0	0						
Storage Bay Dist (ft)	100			100			40	76		65		
Storage Blk Time (%)	0	14		0	2	12	0	3	0	5		
Queuing Penalty (veh)	1	8		2	1	5	0	5	1	6		

Intersection: 2: Martin Ave & 6th St

Movement	EB	EB	NB
Directions Served	T	TR	TR
Maximum Queue (ft)	232	247	543
Average Queue (ft)	175	164	262
95th Queue (ft)	292	296	657
Link Distance (ft)	208	208	751
Upstream Blk Time (%)	19	11	8
Queuing Penalty (veh)	118	70	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Campbell Ave & 6th St

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	TR	L	T	T	T	R
Maximum Queue (ft)	175	348	373	285	256	675	643	415	777	742	474	169
Average Queue (ft)	172	323	321	169	212	381	345	319	498	437	214	52
95th Queue (ft)	188	365	382	360	320	702	651	511	841	778	356	128
Link Distance (ft)		316	316			940	940		746	746	746	
Upstream Blk Time (%)		42	24			2	0		17	0		
Queuing Penalty (veh)		306	176			0	0		0	0		
Storage Bay Dist (ft)	105			65	156			290				170
Storage Blk Time (%)	69	44	60	5	64	31		59	7		10	0
Queuing Penalty (veh)	358	143	101	27	197	51		240	11		16	0

Intersection: 3: Campbell Ave & 6th St

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	330	576	529	407
Average Queue (ft)	206	387	349	284
95th Queue (ft)	389	531	483	390
Link Distance (ft)		779	779	779
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	185			
Storage Blk Time (%)	3	43		
Queuing Penalty (veh)	15	79		

Intersection: 12: 6th St

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	R
Maximum Queue (ft)	240	244	59	46	26	90
Average Queue (ft)	97	87	21	2	1	35
95th Queue (ft)	263	246	51	31	21	87
Link Distance (ft)	246	246		208	208	105
Upstream Blk Time (%)	4	2			0	9
Queuing Penalty (veh)	29	13			0	0
Storage Bay Dist (ft)			50			
Storage Blk Time (%)			2	0		
Queuing Penalty (veh)			9	0		

Network Summary

Network wide Queuing Penalty: 1987



## APPENDIX G – SIMTRAFFIC REPORTS: EXISTING QUEUES

Intersection: 1: Warren Ave & 6th St

Movement	EB	EB	EB	WB	WB	WB	WB	B12	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	T	L	T	R	LT
Maximum Queue (ft)	109	142	96	76	166	190	117	5	40	63	67	36
Average Queue (ft)	46	52	36	20	64	79	15	0	9	23	28	12
95th Queue (ft)	89	106	79	53	133	149	62	5	32	54	55	33
Link Distance (ft)		687	687		244	244		212		808		532
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100			100			40		76		65	
Storage Blk Time (%)	1	0			1	10	0			0	0	
Queuing Penalty (veh)	3	0			0	9	1			0	0	

Intersection: 1: Warren Ave & 6th St

Movement	SB
Directions Served	R
Maximum Queue (ft)	29
Average Queue (ft)	9
95th Queue (ft)	27
Link Distance (ft)	532
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Martin Ave & 6th St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (ft)	67	37	111	78	55	35
Average Queue (ft)	4	1	22	4	27	3
95th Queue (ft)	29	17	74	40	54	20
Link Distance (ft)	212	212	316	316	751	277
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Campbell Ave & 6th St

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	TR	L	T	T	T	R
Maximum Queue (ft)	174	311	306	239	256	516	546	384	455	410	331	69
Average Queue (ft)	140	190	178	52	170	317	301	159	304	269	201	25
95th Queue (ft)	208	284	268	139	307	471	455	299	415	370	304	54
Link Distance (ft)		316	316			940	940		746	746	746	
Upstream Blk Time (%)		0	0				0					
Queuing Penalty (veh)		1	0				0					
Storage Bay Dist (ft)	105			65	156			290				170
Storage Blk Time (%)	25	27	48	1	4	39		0	11		7	
Queuing Penalty (veh)	73	51	50	3	18	76		2	21		7	

Intersection: 3: Campbell Ave & 6th St

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	310	451	402	339
Average Queue (ft)	72	303	265	212
95th Queue (ft)	210	404	367	308
Link Distance (ft)		779	779	779
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	185			
Storage Blk Time (%)	0	36		
Queuing Penalty (veh)	0	23		

Network Summary

Network wide Queuing Penalty: 340

Intersection: 1: Warren Ave & 6th St

Movement	EB	EB	EB	WB	WB	WB	WB	B12	B12	NB	NB	NB
Directions Served	L	T	TR	L	T	T	R	T	T	L	T	R
Maximum Queue (ft)	120	320	299	106	206	214	95	5	4	91	94	99
Average Queue (ft)	40	158	126	30	72	87	10	0	0	35	13	46
95th Queue (ft)	105	394	361	76	159	179	53	5	4	75	58	82
Link Distance (ft)		687	687		244	244		212	212		808	
Upstream Blk Time (%)		2	2		0	0						
Queuing Penalty (veh)		0	0		0	0						
Storage Bay Dist (ft)	100			100			40			76		65
Storage Blk Time (%)	0	14		1	2	11	0			1	0	3
Queuing Penalty (veh)	0	8		2	1	4	0			2	1	2

Intersection: 1: Warren Ave & 6th St

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	141	96
Average Queue (ft)	64	37
95th Queue (ft)	116	73
Link Distance (ft)	532	532
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Martin Ave & 6th St

Movement	EB	EB	B12	B12	WB	WB	NB
Directions Served	LT	TR	T	T	LT	TR	LTR
Maximum Queue (ft)	301	307	303	285	121	103	534
Average Queue (ft)	226	218	106	95	13	7	289
95th Queue (ft)	372	367	315	290	73	55	702
Link Distance (ft)	212	212	244	244	316	316	751
Upstream Blk Time (%)	30	26	7	5			7
Queuing Penalty (veh)	209	183	46	36			0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Campbell Ave & 6th St

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	TR	L	T	T	T	R
Maximum Queue (ft)	174	346	376	285	256	375	329	270	412	368	290	143
Average Queue (ft)	165	323	328	192	149	221	201	102	294	256	176	58
95th Queue (ft)	209	351	368	374	261	326	297	199	389	342	268	114
Link Distance (ft)		316	316			940	940		746	746	746	
Upstream Blk Time (%)		37	34									
Queuing Penalty (veh)		261	241									
Storage Bay Dist (ft)	105			65	156			290				170
Storage Blk Time (%)	41	55	62	9	19	22		0	7		3	0
Queuing Penalty (veh)	206	159	104	45	58	35		0	9		5	0

Intersection: 3: Campbell Ave & 6th St

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	330	532	476	382
Average Queue (ft)	209	345	311	250
95th Queue (ft)	364	481	438	353
Link Distance (ft)		779	779	779
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	185			
Storage Blk Time (%)	15	37		
Queuing Penalty (veh)	68	68		

Network Summary

Network wide Queuing Penalty: 1755

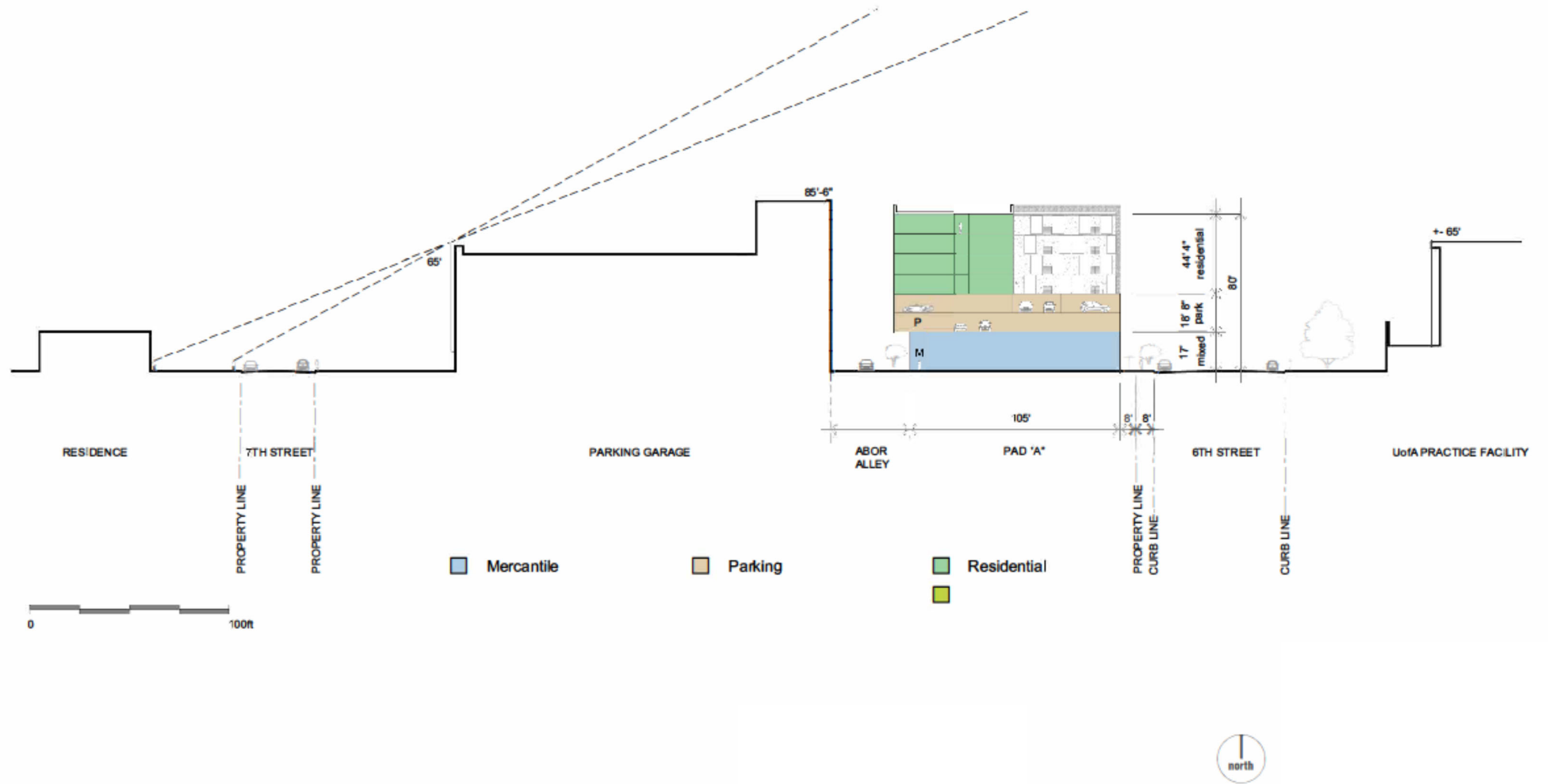


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## Appendix E: Building Height Diagram



Height Diagram PAD 'A'  
north/south section