



Smith Innovation Hub Infrastructure Master Plan

CIP 6710099

Smith Innovation Hub

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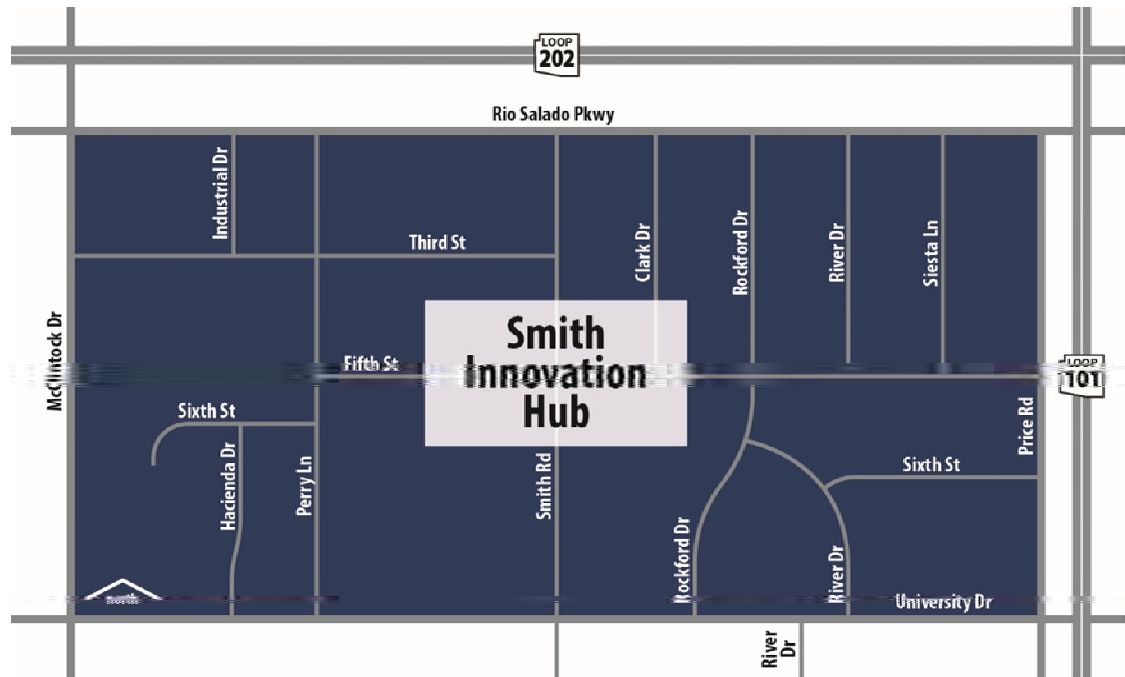
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1 Introduction

The Smith Innovation Hub (“the Smith Hub”) is an approximately ½-square-mile (302-acre) area in Tempe, Arizona, bounded by Rio Salado Parkway, Price Road/Loop 101, University Drive, and McClintock Drive (Figure 1). It is envisioned as an employment corridor to promote new investment, job creation, and placemaking.

Figure 1. Smith Innovation Hub



1.1 Project Purpose

The Smith Innovation Hub (SIH) Infrastructure Master Plan (the Plan) will guide the infrastructure development of the SIH, consistent with the City of Tempe *Smith Industrial Innovation Hub Development Guidelines (2020)* and other relevant City adopted plans and policy guidance. The Plan identifies and prioritizes infrastructure needs for the short- and long-term timeframes, taking into consideration the recently adopted land use plans for the area.

The Plan provides a planning-level look at infrastructure needs, including streetscape, drainage, water, sewer, lighting, landscaping, active transportation (walking and bicycling), and transit amenities. Alternative concepts were presented at a virtual public meeting for input, with a second in-person public meeting held to present the recommended alternatives for implementation. The public involvement summaries for the June 2021 virtual public meeting and the July 2021 in-person meeting may be found in Appendix A and Appendix B, respectively.

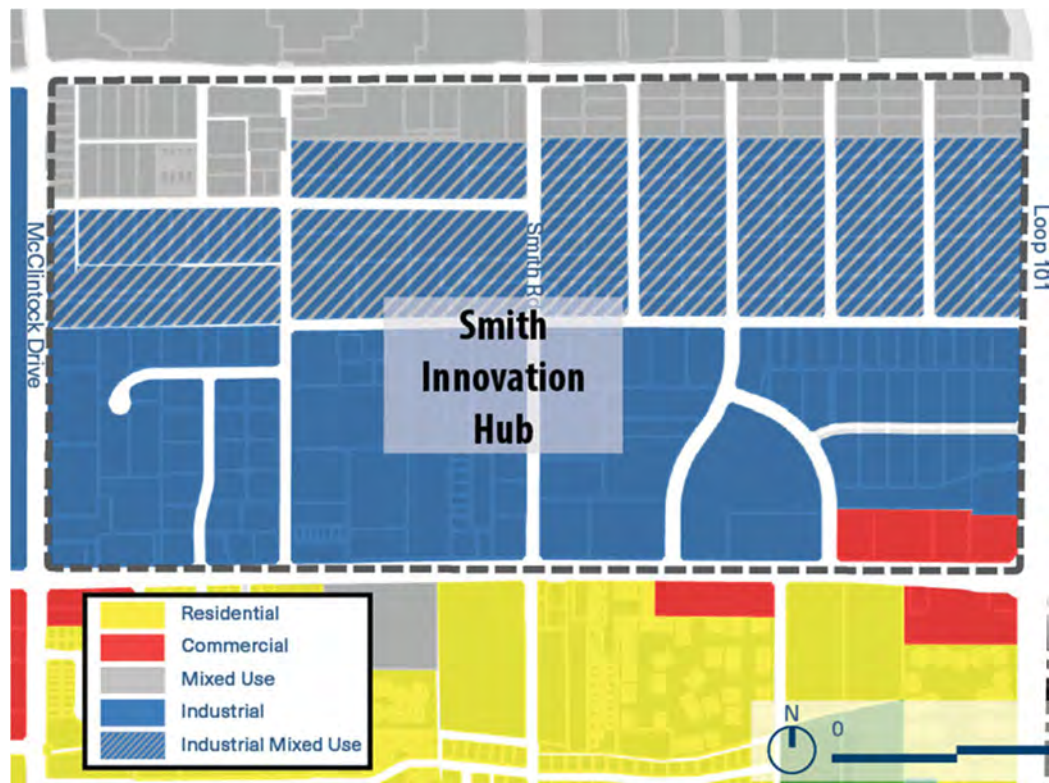


1.2 Planning Context

In 2020, the Tempe City Council amended the General Plan 2040 to reflect approximately 124 acres for land use changes and 139 acres for density map changes in the Smith Industrial Innovation Hub (currently referred to as the “Smith Innovation Hub” and, in the context of this study, “the Smith Hub”).

The land use changes allow for more density and a broader mix of uses in specific portions of the Smith Hub north of 5th Street (Figure 2).

Figure 2. Smith Industrial Innovation Hub land use map (excerpt from Smith Industrial Innovation Hub Development Guidelines)



Source: *Smith Industrial Innovation Hub Development Guidelines* (October 2020)

The *Smith Industrial Innovation Hub Development Guidelines* were adopted in 2020. The new land uses, proximity to the proposed extension of the Tempe Streetcar along Rio Salado Parkway, proximity to Tempe Marketplace, and the existing area of multifamily residences immediately south of University Drive necessitate additional infrastructure investment in the Smith Hub.

The adoption of these new guidelines support numerous initiatives and strategies that the City has worked through (or, in the case of the Urban Land Institute AzTAP assistance, has engaged with the broader community to gather input and recommendations). The relevant planning and policy guidance is summarized in the following section, and the City’s website hosts the original documents.



1.2.1 Planning and Policy Guidance

The City's plans and policies provide guidance to aid decision making on infrastructure investment. In addition to the *Smith Industrial Innovation Hub Development Guidelines*, other City policy and guidance documents were reviewed to provide direction for the Plan. These documents are listed here, along with reference to specific guidance or strategies, to help achieve the vision for the Smith Hub.

Figure 3. Fifth Street



Tempe General Plan 2040 – Major General Plan Amendment

A General Plan Amendment was adopted by the Tempe City Council in 2020, modifying the General Plan 2040 Projected Land Use and Density Maps to allow for more density and a broader mix of uses in specific portions of the northern area of the Smith Hub (refer to Figure 2), north of Fifth Street.

Smith Industrial Innovation Hub Development Guidelines

The development guidelines are a policy document providing strategies to enhance connectivity, attract employment growth and development, and help the area maintain its relevance over time. The guidelines promote the City's 20-minute city goal (a goal to improve accessibility by bicycle, foot, and transit, with trips taking 20 minutes or less), encourage a broader mix of uses, and improve the area's visual quality and functionality. The development guidelines set goals to direct the area's development as new businesses establish and the area transitions from existing primarily industrial uses to mixed commercial, office, and retail uses.

Apache Character Area Plan

Character area plans were prepared for specific areas in Tempe as encouraged by the General Plan 2040. Character areas recognize areas or groups of neighborhoods that have a common design, land uses, and commercial characteristics distinct from neighboring areas.

The *Apache Placemaking Principles + Design Guidelines Character Area Plan* (2016) provides guidance to ensure that any development in the area is consistent with the area's existing character and supports the preferences of the community on design, land use patterns, and commercial characteristics. The Smith Hub is included in the area plan.



Principles of the area plan relevant to the Smith Hub include:

Shade [Natural + Structural] – Shade of all types and textures everywhere.

Mobility: Tempe’s Vision as a 20-minute City – Design and maintain a network of “Complete Streets” that are safe, accessible, convenient, and comfortable for all ages, abilities, and transportation modes at all times.

Streetscapes: Streets as Open Space – Embrace the “Streets as Open Space” concept to balance existing open space as Tempe grows. Embellish with abundant shade, trees, landscape elements, street furniture, engaging storefronts, art, etc.

Crossings: Safe, Convenient, Comfortable – Enhance safe routes to school, Universal Design [ADA], Union Pacific Railroad pedestrian/bike crossings, neighborhood access, shade at intersections, signalized crossings [HAWKs] where appropriate, bulb-outs, signal timing.

Within this principle, the following guidance specific to the Smith Hub is noted, “Create strong north-south pedestrian connection on Smith Road from Town Lake/Tempe Marketplace to Smith-Martin LRT Station.”

Live/Work/Innovate: The Creative, Entrepreneurial City – Retain brains. Foster access to innovation/enterprise districts. Encourage collaborative work spaces and small business/start-up incubators in tandem with neighborhood-based goods/services, live-work options.

Pedestrian Scale – Foster Apache as a premier pedestrian environment and destination. Provide human-scaled experiences by layering interests and maintaining a walkable rhythm of building entries. Superblocks contradict a walkable pedestrian scale.

Green Infrastructure – Utilize the efficiency of natural systems where possible. These include Low Impact Development (LID) practices such as rainwater harvesting, permeable paving, stormwater redirects to landscaped areas, solar shade, cool roofs, green roofs, etc.

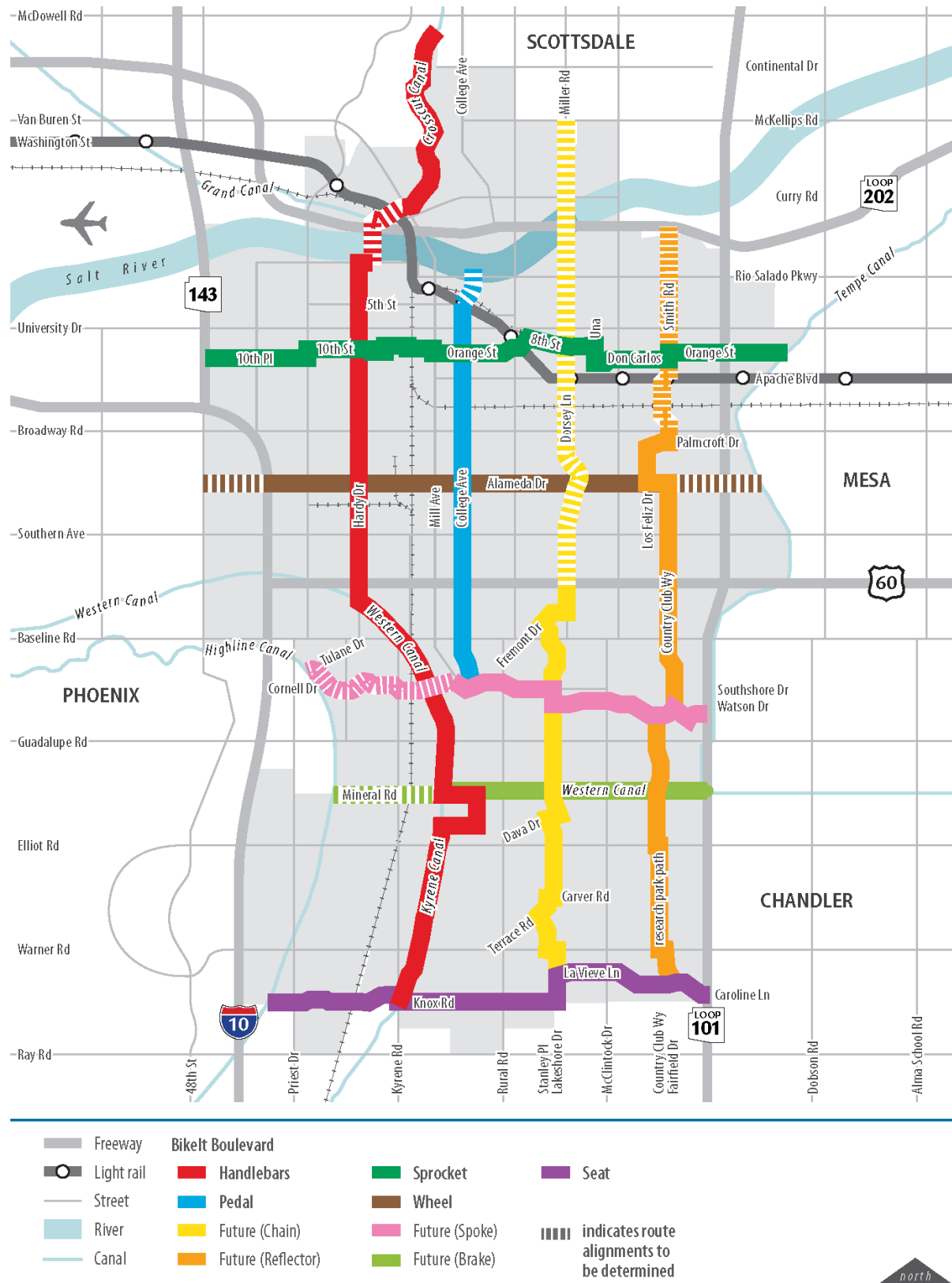
Tempe Transportation Master Plan

The *Tempe Transportation Master Plan* (2015) is incorporated as the Circulation Chapter of the General Plan 2040. It guides the further development of a city-wide multimodal transportation system integrated with the City’s land use plans. The Circulation Chapter highlights the ability to provide a more direct link between transportation and quality of life. An important theme includes “enhancing connections for pedestrian, bike and transit to produce a 20-minute city.”

Another element of the plan is the bicycle boulevard system, referred to as “BIKEiT” (see Figure 4). Bike boulevards are off-street pathways and streets with low traffic volumes and lower speeds to allow for more comfortable and convenient bicycling.



Figure 4. Tempe Transportation Master Plan, BIKEit Routes



Source: Tempe Transportation Master Plan (2015)



Bike boulevards can be created by using signs and pavement markings or by adding landscape and hardscape. Smith Road through the Smith Hub is the northernmost segment of the future “Reflector” route, which follows the Country Club Way/Smith Road/Martin Lane roadway alignment, connecting from the Rio Salado Southbank Path to the Knox Road/Chandler border. BIKEiT routes are meant to connect bicyclists to all major parts of the community.

A number of people commented throughout the process on the BIKEiT route element as it relates to the Smith Hub; more information on public input may be found in Appendix A and Appendix B.

Tempe Water and Wastewater Master Plan

Water demand and wastewater flow projections in the City’s 2015 *Water and Wastewater Infrastructure Master Plan Update* characterized changes in water use and growth forecasts included in the General Plan 2040. The Plan reports that Tempe’s water and wastewater capacity is adequate to support the growth projected in the General Plan 2040.

Ongoing investments include the replacement of cast-iron pipes and upgrades from 6-inch to 8- or 12-inch pipes (where required) to accommodate additional demand. The City also negotiates upgrades to water and wastewater capacity with large site developers as proposals are made.

Innovation Hubs

The Tempe City Council identified nine proposed Innovation Hubs to attract employment, redevelopment, and reinvention opportunities. As noted in the Tempe City Council Innovate Tempe presentation, as a pilot project, the Smith Hub is a redevelopment and public infrastructure improvement opportunity. See Section 4.4 for more information about innovative technologies to be considered for implementation in the Smith Hub.

The Smith Hub is within the “last mile” of the light rail corridor, which is on Apache Boulevard, ½ mile south of University Drive. Just to the northwest is the Arizona State University Novus Innovation Corridor, which will have over 10 million square feet of offices, residences, hotels, retail stores, and restaurants throughout its 355 acres.

Urban Land Institute Technical Assistance Panel Report (2019)

The Urban Land Institute (ULI) Arizona Technical Assistance Panel (AzTAP) Program is a service offered by ULI Arizona to assist Arizona entities in preliminary studies of complex land use planning, development, and redevelopment issues. AzTAPs provide objective and responsible guidance on a variety of land use and real estate strategic decisions, ranging from site-specific projects to public policy questions.



This AzTAP “focused on the long-term (re) development prospects of the Smith Industrial Innovation Hub without compromising industrial land uses.” The primary recommendations and findings of the ULI’s AzTAP report are:

- Seek additional community and partner engagement to define what is working and to solidify a vision.
- Add a mix of compatible uses—to include residential and more retail.
- Note the ramifications of increased residential, and the balance that is sought to meet City goals.
- Curate a creative experience and vibe—rename/brand the area; add color, art, etc.
- Activate public life—create activated gathering spaces, add landscaping, create a food truck hub, and organize community events. Note how these can be either public or private (in a business community, problems often find solutions).
- Build market potential—study the right mix of uses, pay attention to uses bringing the area down, add context-sensitive residential (townhouses/live-work units/etc.), and brand the area.
- Promote better connectivity and transportation—finish the sidewalks, promote transit, manage travel demand and traffic congestion, make walkable shaded quadrants, address alleys, promote carpool apps, consider water taxis/ferry.
- Finance and incentives—lead with vision; streamline entitlements; incentivize investment in Opportunity Zones by including sites in bonus programs.
- Change the General Plan 2040 Land Use Map to allow for more uses including residential [the City adopted these changes in 2020] and change requirements to enable food truck hubs.
- Add placemaking infrastructure—focus on public space; continuous, detached sidewalks; lighting; shade structures and trees; comfortable, inviting seating areas; landscaping; and programmed open space and building façades.
- Reroute heavy trucks to routes that make sense; direct traffic so that some streets function better for trucks, and others focus on pedestrians and bicycles.
- Construct a bike boulevard along Smith in a few years—will be a valuable improvement.
- Use right-of-way (ROW) differently—leverage ROW to create linear parks, “street parks,” and add shade, perhaps on Perry Lane and Smith since they need to be improved anyway. Even just adding a bench, places to sit, will help.
- In some places, use ROW to narrow the streets using a street park.
- Focus on fine-grained improvements and connectivity—streets, sidewalks, shade, greenery, and lights, especially at entrances off Smith and Perry.



2 Existing and Future Conditions

The Smith Hub infrastructure has been built out over time, as the area developed. The existing and future conditions of the Smith Hub business environment, surrounding neighborhoods, streetscape, drainage, water/wastewater, pavement, public transportation, and active transportation are discussed in the following sections.

2.1 Built Environment

Buildings in the Smith Hub were largely constructed after 1950, and by the 1980s the area was largely built out. Figure 5 shows a 1986 aerial photograph of the area that reveals the extent of construction within the Smith Hub at that time.

Figure 5. 1986 aerial photograph of the Smith Hub (from Maricopa County Assessor)



Source: Maricopa County Assessor historic aerial photography (2020)

Most buildings in the Smith Hub were originally built for industrial and manufacturing uses. Many of the buildings are single-story with limited transportation access. Today, the design features of these buildings are more consistent with newer uses such as mixed commercial, office, and retail. Modern industrial and manufacturing businesses often require higher ceilings, wider and taller shipping bays, wider turning radiuses on site, and larger lots. As a result, the Smith Hub is experiencing changes in the use of buildings, resulting in greater occupancy and evolving uses.

2.1.1 Business Environment

Approximately 250 unique employers reside in the Smith Hub, employing well over 5,000 people (Maricopa Association of Governments, 2019).



Currently, more than 40 percent of businesses feature office or retail uses (*Smith Industrial Innovation Hub Development Guidelines*, 2020). Examples of adaptive reuse in the Smith Hub include CIRCA 78 (1803 E. Rio Salado Parkway) and Circuit (615 S. River Drive).

The largest employment sector is construction, with almost 25 percent of the employees in the Smith Hub. Today, just under 20 percent of employment in the Smith Hub is related to manufacturing uses, followed by business services (nearly 17 percent) and finance, insurance, and real estate (15 percent).

2.1.2 Surrounding Neighborhoods

The Alegre Park and Escalante Park neighborhoods are immediately south of the Smith Hub in the area bounded by McClintock Road to the west, Price Road to the east, University Drive to the north, and Apache Boulevard to the south. Residents of these neighborhoods routinely pass through the Smith Hub to access Tempe Marketplace, and they will benefit from efforts to enhance connectivity in the area.

These neighborhoods represent nearly 4 percent of Tempe’s population. They have higher shares of demographic categories known to contribute to transit dependency when compared with the city overall. These include a poverty rate more than double that of the city (45.2 percent versus 19.8 percent) and minority population and zero auto household rates of nearly one and a half times that of the entire city.

Alegre Park and Escalante Park neighborhood residents use alternative modes of travel to get to work at higher rates than the city population at large; as a result, the “transit” and “bike to work” rates are roughly one and a half times that of the entire city. However, the area’s “walk to work” rate is half the rate of the city.

The Alegre Park and Escalante Park neighborhoods would uniquely benefit from enhanced connectivity treatments throughout the Smith Hub. With higher proportions of transit-dependent populations and higher transit and bicycle rates, such treatments would facilitate the safe travel of residents passing through the Smith Hub to access goods and services at Tempe Marketplace (American Community Survey, 2019).

2.1.3 Street Infrastructure

The Smith Hub includes a dozen streets in total, varying in length from one-eighth of a mile to three-quarters of a mile. The primary routes through the Smith Hub—based on the volume of traffic, commercial truck activity, and prevalence of pedestrians and bicyclists—include Perry Lane, Smith Road, Fifth Street, Rockford Drive, River Drive south of Fifth Street, and Third Street. The other routes in the Smith Hub all contribute to the connectivity and site access of the Smith Hub and are discussed more generally in the “Secondary Streets” section following the discussion of the primary routes.



Smith Road

Smith Road traverses the Smith Hub north-to-south through its center. The street continues north of the Smith Hub into Tempe Marketplace as a driveway and continues south through the Escalante Park and Alegre Park neighborhoods. Smith Road has an existing 48-foot curb-to-curb width and a three-lane configuration: one through-lane in each direction and one center two-way left-turn lane. Smith Road has continuous existing sidewalks, curbs, and gutters throughout the Smith Hub (Figure 6).

Figure 6. Smith Road



Traffic on Smith Road through the Smith Hub is free-flowing between University Drive and Rio Salado Parkway. Side-street traffic is stop-controlled at Fifth Street (an east-to-west through street) and Third Street (which extends from Smith to the west). On-street parking is authorized along the segment south of Fifth Street, and a portion of Smith Road north of Third Street (east side of the street only).

Fifth Street

Fifth Street is an east-to-west route that traverses the center of the Smith Hub. At its western end, Fifth Street ends at a one-way stop-controlled intersection with Perry Lane (Perry Lane traffic is free-flowing); at its eastern end, Fifth Street ends at a one-way stop-controlled intersection with Price Road. Adjacent to the Smith Hub, Price Road is a one-way, southbound frontage road to the Loop 101 freeway, which is free-flowing and is managed by the Arizona Department of Transportation (ADOT). Fifth Street has an existing 40-foot curb-to-curb width, with curbs and gutters throughout the Smith Hub, and several disconnected segments of sidewalk.

Traffic on Fifth Street through the Smith Hub is two-way stop-controlled at Smith Road (Smith Road is free-flowing) and Rockford Drive (four-way stop). Clark Drive, River Drive, and Siesta Lane, the remaining north-to-south side streets along Fifth Street, all originating at Rio Salado Parkway, are one-way stop-controlled where they end at Fifth Street. Parking is authorized along select sections of Fifth Street, as shown in Figure 7.

Figure 7. Fifth Street





Perry Lane

Like Smith Road, Perry Lane is a through route in the Smith Hub, and it continues north of the Smith Hub into Tempe Marketplace as a driveway. The southern end of Perry Lane is a T-junction with University Drive aligned with the entrance to the Papago Park Village II residential multifamily complex.

Traffic on Perry Lane through the Smith Hub is free-flowing between University Drive and Rio Salado Parkway, with side-street stop-controlled traffic intersections with Sixth Street (to the west), Fifth Street (to the east), and Third Street (a through street). Authorized on-street parking is allowed on portions of Perry Lane south of Fifth Street.

South of Fifth Street, Perry Lane has an existing 40-foot curb-to-curb width with continuous curbs, gutters, and sidewalks (Figure 8).

North of Fifth Street, to Rio Salado Parkway, Perry Lane becomes an unimproved street, lacking curbs, gutters, and sidewalks (Figure 9). In this section, between Fifth and Third Streets, parking is uncontrolled due to the lack of curbs and gutters. For an approximately 180-foot segment of this roadway, the ROW is limited to a 30-foot width, half of the ROW width of the remainder of the route (60 feet) from University Drive to Rio Salado Parkway. Additional details about this segment of right-of-way can be found in Appendix C.

Figure 8. Perry Lane (south of Fifth Street)



Figure 9. Perry Lane (north of Fifth Street)





Rockford Drive (North and South of Fifth Street)

Rockford Drive is a north-to-south route through the Smith Hub. At its northern end, Rockford Drive continues north into the Rio 2100 development as a private street, where it ends along the southern bank of the Salt River (there is an existing multiuse pathway connection to the Rio Salado multiuse path). A very limited area of on-street parking is authorized on the segment north of Fifth Street. Rockford Drive has existing continuous curbs and gutters throughout the Smith Hub but lacks sidewalks for much of its length (see Figure 10).

Figure 10. Rockford Drive (north of Fifth Street)



South of Fifth Street, Rockford Drive has an existing 48-foot curb-to-curb width, with an 80-foot ROW (wider than the 60-foot ROW that is typical of many streets in the Smith Hub). The street curves from its north-to-south orientation at Fifth Street to a southwest-to-northeast orientation before ending with a perpendicular one-way stop-controlled intersection with University Drive. On-street parking is prohibited along the east side of the street through this segment; recent property improvements in this area have installed detached sidewalks and landscaping with street trees (see Figure 11).

Figure 11. Rockford Drive (south of Fifth Street)



North of Fifth Street, Rockford Drive has an existing 40-foot curb-to-curb width, with a 60-foot ROW (typical of many streets in the Smith Hub). The street has a traffic signal at its intersection with Rio Salado Parkway. On-street parking is prohibited along most of this segment of the street.



River Drive (South of Fifth Street)

River Drive begins at University Drive, continuing north it merges with Sixth Street (which originates as the entrance to the Circuit Tempe development off Price Road), then continues as Sixth Street, ending at a one-way stop-controlled intersection with Rockford Drive. On-street parking is prohibited on the west side of River Drive and on a large portion of the east side of the street. River Drive south of Fifth Street has an existing 48-foot curb-to-curb width and continuous curbs and gutters, and short, discontinuous segments of sidewalks (Figure 12).

Figure 12. River Drive (south of Fifth Street)



River Drive (North of Fifth Street)

River Drive (north of Fifth Street) extends from Fifth Street to Rio Salado Parkway, where it continues north as a private drive within the Rio 2100 development. The street has a traffic signal at its intersection with Rio Salado Parkway. River Drive north of Fifth Street has an existing 40-foot curb-to-curb width, continuous curbs and gutters, and a short segment of sidewalk (Figure 13).

Figure 13. River Drive (north of Fifth Street)



Third Street

In the northwestern quadrant of the Smith Hub, Third Street divides the area north-to-south, originating at McClintock and ending at Smith Road. This roadway segment is ½-mile long with an existing 40-foot curb-to-curb width. It is the only route into the Smith Hub from McClintock Drive. Third Street is stop-controlled at Perry Lane and Smith Road, with on-street parking limited to portions of the eastern end of this segment. Third Street east of Perry Lane has continuous curbs and gutters, but only short, discontinuous segments of sidewalks. Third Street west of Perry lane has a rolled curb/gutter and no sidewalk, and on-street parking is not allowed for much of this segment (Figure 14).

Figure 14. Third Street





Secondary Streets

In addition to the primary streets noted, a number of secondary streets in the Smith Hub provide site access and contribute to the area's connectivity internally and to the arterial streets that border the area.

In the northeastern quadrant of the Smith Hub, four ¼-mile-long, north-to-south streets connect between Rio Salado Parkway to the north and Fifth Street to the south: Clark Drive, Rockford Drive, River Drive, and Siesta Lane. Of these, only Rockford Drive continues south of Fifth Street.

All of these streets have continuous curbs and gutters, but only short, discontinuous segments of sidewalks. Parking is authorized on most of these streets, with the exception of much of Rockford Drive and portions of Clark Drive. The curb-to-curb width of the streets is 40 feet (Rockford Drive has a 48-foot curb-to-curb width south of Fifth Street).

In the northwestern quadrant of the Smith Hub, Industrial Drive extends between Rio Salado Parkway and Third Street, a 1/8-mile segment with rolled curb/gutter and no sidewalks (see Figure 15).

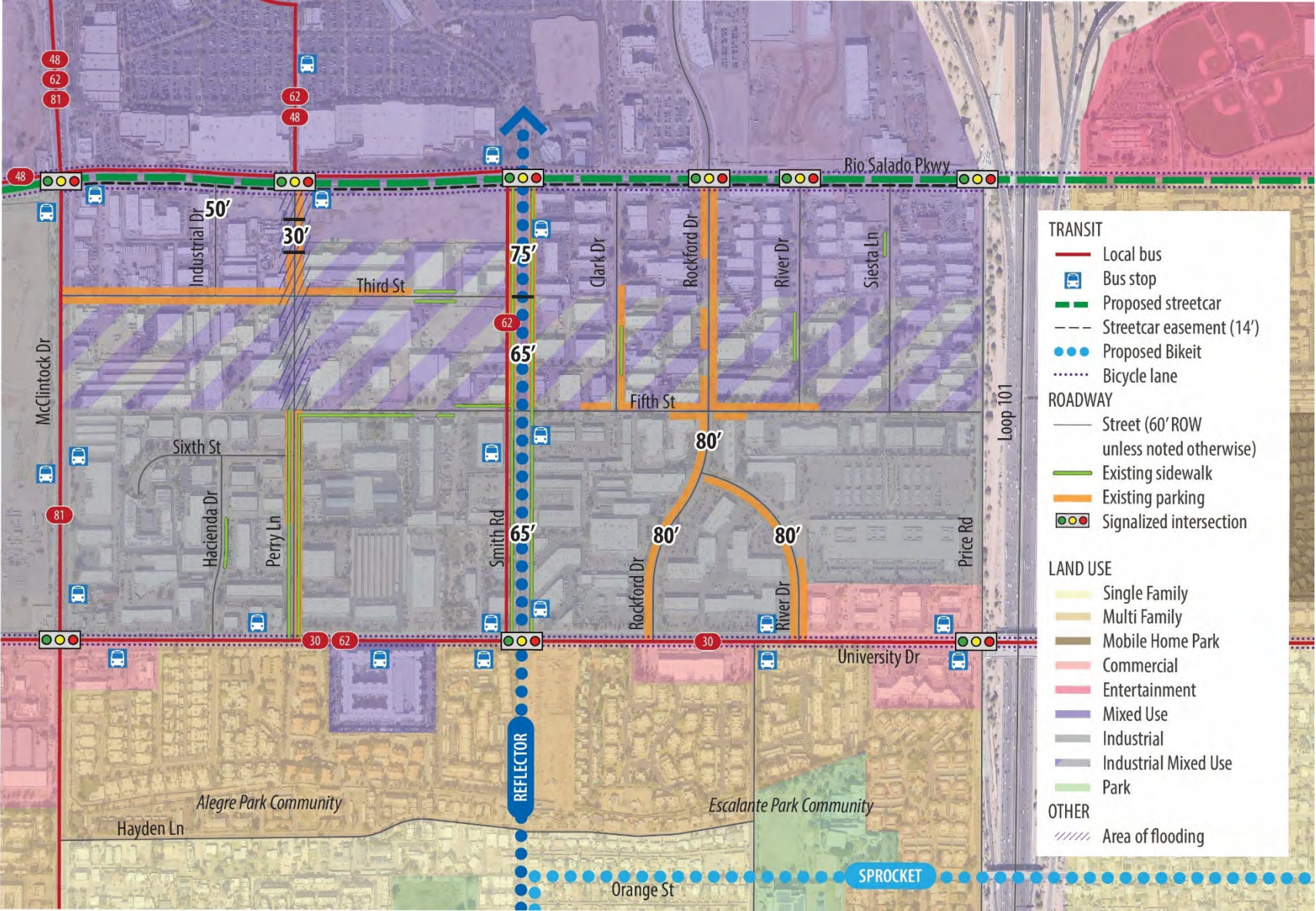
In the southwestern quadrant of the Smith Hub, Sixth Street extends as a 1/6-mile-long street to the west of Perry Lane, where it curves southwest-to-northeast to a cul-de-sac end. Sixth Street has continuous existing curbs and gutters, but no sidewalks. Hacienda Drive is a 1/5-mile street segment extending north-to-south between University Drive and its terminus at Sixth Street. Hacienda Drive has continuous curbs and gutters, but only short, discontinuous segments of sidewalks.

Figure 16 shows streetscape elements overlaid on the land use plan for the Smith Hub.

Figure 15. Industrial Drive



Figure 16. Streetscape existing conditions





Street Lights

Existing sidewalks and roadway lighting are limited throughout the area. The existing lighting does not meet current spacing standards, according to the City's Public Works Department *Engineering Design Criteria*. The existing lighting is inconsistently spaced and inconsistent in pole/luminaire type.

Lighting concerns in the Smith Hub were raised during outreach conducted with business owners and stakeholders during the adoption of the General Plan 2040 amendment and development guidelines. While the development guidelines specifically recommend lighting improvements along Perry Lane to promote safety and walkability through the area, lighting has been identified as an area in need of improvement throughout the Smith Hub.

In preparing this Plan, business and property owners in the Smith Hub were asked what they would like to see more of in the Smith Hub, and the largest response (17%) indicated more lighting. Additional information about lighting conditions can be found in Appendix D.

2.1.4 Drainage Conditions

Drainage concerns were identified along Perry Lane during initial study observations and through earlier communications with area business and property owners. Figure 17 shows street ponding on Perry Lane after a storm in August 2021.

Figure 17. Street ponding on Perry Lane





Drainage in the Smith Hub was evaluated to assess the capacity of the current drainage system and the impacts resulting from proposed improvements to infrastructure in this area.

Within the Smith Hub, on- and off-site flow is captured using a combination of on-site drywells and inlets connecting to the storm drain trunk lines on Rio Salado Parkway and McClintock Drive through an 18-inch line (see Figure 18). The excess flows not captured on site at each property are conveyed along the streets until reaching the nearest inlet. Appendix E details the locations of drainage facilities throughout the Smith Hub and surrounding arterial streets.

The Flood Control District of Maricopa County's Flo-2D Web Viewer (FCDMC Viewer) for the 100-year, 24-hour storm model shows that large flows from the vicinity of Rockford Drive and Sixth Street proceed to the west along Fifth Street until reaching the Fifth Street and Perry Lane intersection.

Perry Lane north of 5th Street currently lacks curbs and gutters, with roadway runoff sheet flowing to the unpaved ground on either side of the roadway. This leads to ponding on the roadway and shoulders after storms. Additional information regarding the drainage analysis may be found in Appendix E.

Figure 18. Stormwater inlets and slotted drains on Third Street at McClintock Drive



2.1.5 Pavement Conditions

In Tempe, pavement project planning and prioritization is accomplished by assigning priority based on condition, traffic, and deterioration rate. Pavement evaluations are performed every 3 years by a specialized survey vehicle equipped with imaging technology and sensors that scan the pavement and analyze multiple types of pavement distress.

Tempe measures the quality and condition of its roadways using a Pavement Quality Index. This measure is used by the City to plan maintenance and repairs and to allocate resources in the most efficient way.

No Pavement Quality Index capital improvement projects are planned for the Smith Hub for fiscal years 2022 to 2026; however, locations that are or are not currently scheduled for resurfacing are subject to being delayed or advanced if future funding allocations are revised, material availability is affected, or utility/agency coordination issues arise.



Planning recommendations from the Smith Hub will provide guidance for consideration of future pavement preservation projects, and the pavement condition (Pavement Quality Index) and the next recommended pavement treatments proposed for the Smith Hub streets were considered for the recommendations of this Plan.

Figure 19 shows the Pavement Quality Index for streets within the Smith Hub; additional information on the quality and condition of Tempe’s roadways may be found on the City’s Performance Measures webpage.

Figure 19. Pavement Quality Index for the streets within the Smith Hub



Source: City of Tempe Performance Measures; Pavement Quality Index (PQI), accessed at [Performance Measures \(tempe.gov\)](https://www.tempe.gov/performance-measures) on August 12, 2021.

Figure 20 shows Perry Lane just north of University Drive. The Pavement Quality Index score for this segment of Perry Lane is “good” (72.2); the good rating is representative of 60 percent of the Smith Hub streets. Notable exceptions to the good rating exist, and approximately one-third of the Smith Hub streets are rated as poor or fair.

Figure 20. Perry Lane (south of Sixth Street)





2.2 Circulation and Access Conditions

2.2.1 Vehicular Conditions

Traffic

Traffic volumes in the Smith Hub are relatively low. As part of the Plan, 24-hour traffic counts were conducted at six locations along Smith Road, Perry Lane, and Fifth Street. Figure 21 shows the traffic count locations, and Table 1 shows the traffic counts (see also Appendix F).

Figure 21. Traffic count locations





Table 1. Traffic count information

	Smith Road				Perry Lane				5th Street			
	South of Rio Salado Parkway		North of University Drive		South of Rio Salado Parkway		North of University Drive		West of Price Road		East of Perry Lane	
East/North	2,045		2,374		837		1,064		1,260		714	
West/South	1,812		2,155		1,032		1,322		257		427	
Average daily traffic	3,857		4,529		1,869		2,386		1,517		1,141	
Percentage truck traffic ^a	11		16		14		17		19		20	
Peak hour	North	South	East	West	North	South	North	South	East	West	East	West
AM	11	11	11	10	11	11	8	11	11	10	11	11
PM	14	12	16	12	15	12	13	15	16	12	15	14
Bicycles ^b	2	7	15	2	5	8	1	4	15	2	—	1

^a Trucks are defined as vehicles with six or more tires or three or more axles.

^b Bicycles are the count of bicycles operated in the street (no sidewalk counts).



For those streets bordering the Smith Hub, traffic volumes are consistent with arterial street volumes. Table 2 shows the average annual daily traffic counts and peak-hour traffic volumes.

Table 2. Smith bordering arterial street traffic volumes

	McClintock Drive	Rio Salado Parkway	Price Road ^a	University Drive
Average annual daily traffic	30,000	31,000	12,000	38,000
AM peak	7–8 AM	7–8 AM	7–8 AM	7–8 AM
PM peak	4–5 PM	4–5 PM	5–6 PM	5–6 PM

Source: City of Tempe (McClintock Drive and Price Road, 2019; University Drive and Rio Salado Parkway, 2018)

^a Price Road is a southbound-only frontage road adjacent to the Smith Hub.

Some streets within the Smith Hub have occasional periods of congestion. On-street parking and semi-tractor-trailer trucks serving businesses throughout the Smith Hub contribute to areas and periods of minor congestion. When surveyed about challenges facing businesses in the Smith Hub, stakeholders cited traffic as a concern (tied for #3 with crime), but less of a concern than the condition of sidewalks (#1) and lack of amenities (tied for #2).

It is notable that peak-hour volumes internal to the Smith Hub are later in the morning (AM) and earlier in the afternoon (PM) than the surrounding arterial streets. Where most of the vehicular activity in the Smith Hub is occurring in the late morning and early afternoon, the surrounding arterial streets exhibit AM peak-hour traffic during morning commute times (before 9 AM) and afternoon rush hour (after 4 PM).

One observation from these data is that the percentage of commercial truck traffic is generally high, with commercial traffic contributing as much as 20 percent of the overall traffic on Fifth Street. However, the actual number of trucks is low, as a result of the low overall vehicular volume on Fifth Street.

2.2.2 Public Transportation and Pedestrian and Bicycle Facilities

Transit Service

Several transit routes are within and adjacent to the Smith Hub. As shown on Figure 16, bus Route 62 travels through the center of the Smith Hub, resulting in all employers in the Smith Hub being within ½ mile of a transit stop. Bus service is also located on McClintock Drive and on Rio Salado Parkway west of Smith Road, where the Tempe Marketplace is served by Route 62, Route 81 (McClintock Drive), and Route 48 (Rio Salado Parkway). It is notable that the adjacent Tempe Marketplace transit stop is in the top 3 busiest stops in Tempe, per City staff.



Valley Metro Rail operates light rail from northwest Phoenix through Tempe to east Mesa. This high-capacity transit system operates ½ mile south of the Smith Hub along Apache Boulevard, with a transit stop at Smith Road and Apache Boulevard. The Tempe Streetcar, which extends to within 1½ miles of the Smith Hub today, has been proposed to extend along Rio Salado Parkway to the Smith Hub.

Within the Smith Hub, four transit stops for Route 62 are found along Smith Road; they lack bus shelters, other amenities, and shade. The bus stop on Smith Road just south of Rio Salado Parkway will be improved as part of the adjacent Tempe Station development.

Sidewalks

A consistent concern raised by stakeholders in the Smith Hub is the lack of sidewalks and discontinuity of sidewalks in the area. In the business survey, the condition of sidewalks was the number one response to the question of “What is the most significant challenge(s) facing businesses in the Smith Hub Innovation Hub?” In the survey following the first public meeting, in response to the question, “What area(s) do you feel should be addressed to improve the Smith Innovation Hub?”, the number one response was “sidewalks.”

Figure 16 shows the existing sidewalk segments, revealing the significant gaps throughout the Smith Hub. Existing sidewalks are typically 5 or 6 feet in width.

Complete 8-foot sidewalk sections are present on most segments of the arterial streets bordering the Smith Hub. An exception to this is McClintock Drive, where several sidewalk gaps occur along the east side of the street. A sidewalk improvement project was recently designed, and construction will begin in 2022.

The west side of McClintock Drive includes a 12-foot multiuse path along the entire frontage of the Arizona Public Service substation. However, there are currently no pedestrian crossing opportunities between Rio Salado Parkway and University Drive to access the path from the Smith Hub.

Smith Road is the only street within the Smith Hub with continuous sidewalk along its entire length. The sidewalk along Smith Road is attached to the curb, and sidewalk shade is limited to those areas with mature trees. Still, gaps exist with regard to Americans with Disabilities Act (ADA) requirements for sidewalk ramps and, in some areas, for driveway cross slopes.

Perry Lane south of Fifth Street also has continuous sidewalk. The sidewalk along Perry Lane south of Fifth Street is attached to the curb, and sidewalk shade is limited to those areas with mature trees. As with Smith Road, gaps exist with regard to ADA requirements for sidewalk ramps and driveway cross slopes.

Fifth Street, which serves as the primary east-to-west connector through the Smith Hub, lacks continuous sidewalks. Where segments do exist, there are still ADA deficiencies at sidewalk ramps and, in some areas, where driveways exceed cross-slope requirements.



The remaining streets in the Smith Hub, with the exception of properties where development has incorporated segments of sidewalk, lack sidewalks. Figure 22 shows where existing driveways may not meet ADA requirements for cross-slope grades.

Figure 22. Driveway locations in the Smith Hub



Bicycle Facilities

There are no dedicated bicycle facilities within the Smith Hub. Figure 16 shows existing bicycle facilities on arterial streets bordering the Smith Hub, which include striped bicycle lanes on Rio Salado Parkway and University Drive. While these facilities exist, there are gaps in the bicycle lanes approaching McClintock on both these routes. The Rio Salado bicycle lane on the westbound approach to McClintock Drive ends prior to the intersection, and the University Drive eastbound approach to McClintock Drive ends prior to the intersection.

Less than ½ mile north of the Smith Hub, the Rio Salado multiuse path extends along the southern and northern bank of the Salt River, and in 2020 the pathway was completed under McClintock Drive, connecting east to Mesa Riverview park.

2.2.3 Crash Data

Crash data for the most recent 5 years (2015 to 2019) for the Smith Hub was collected to evaluate and identify any crash factors that may be addressed through improvements in the Smith Hub.

Within the Smith Hub, Smith Road had the most crashes, with 31 crashes over the 5-year period. Analysis of the crash data internal to the Smith Hub did not determine any crash causes that can be simply remedied by countermeasures.

Additional safety information may be found in Appendix G.



2.3 Water and Wastewater Infrastructure

No known water or wastewater deficiencies occur today in the Smith Hub. The *Tempe Water and Wastewater Master Plan* (2016) modeled the system demand based on land uses from the adopted General Plan 2040.

The 2020 General Plan Amendment allows for more density and a broader mix of uses in specific portions of the northern area of the Smith Hub (refer to Figure 2). As part of the planning for the Smith Hub, the assumptions regarding future water and wastewater demand in the Smith Hub have changed as a result of the changing land use patterns. The Plan considered these changes in the land uses allowed under the amended General Plan.

2.3.1 Water

To assess future water demand, the amended land uses for the Smith Hub (mixed use) were assigned to the City's InfoWater hydraulic model. Design parameters for mixed use are 33 percent greater than industrial (the land use category that was changed with the General Plan amendment), which would result in greater water demand for the area.

The applicable evaluation criteria used to complete the analysis were reviewed and adopted from the City's current *Water and Sewer Master Plan*, dated 2016, and the *City's Engineering Design Criteria*.

This approach did not make projections about where and when redevelopment may occur in the Smith Hub; rather, it considered the ultimate build-out conditions of the Smith Hub. It is expected that development will occur over time and incrementally, so the approach considers the demand at build-out conditions.

Compared with the existing land uses, the proposed land uses will not cause any significant change in pressure or velocity in the system under build-out conditions. Accordingly, all criteria imposed by the City regarding pipe pressure and velocity can be met under build-out conditions.

In addition, a fire flow analysis was conducted during the maximum day demand scenario (the build-out mentioned previously) to investigate whether the mixed-use development would meet the City's non-residential fire flow requirement (3,500-gallon-per-minute flow for 3 hours) with the existing water infrastructure.

The fire flow analysis concluded that under existing conditions, several of the fire hydrants cannot meet the city's non-residential fire flow requirement, most of which are in the northwestern quadrant of the Smith Hub.

Increasing the size of the identified existing 6- and 8-inch lines that supply water to the fire hydrants that are unable to meet non-residential fire flow to 8- and 12-inch lines, respectively, will allow all fire hydrants in the area to meet the City's fire flow



requirement. As development occurs, developers will be responsible for upsizing lines as needed to meet required demand and fire flow requirements.

Additional information regarding the water system analysis may be found in Appendix H.

2.3.2 Wastewater

To evaluate the impact of proposed land use changes on the City's existing sewer infrastructure, a planning-level analysis was completed. To perform the analysis, the City's hydraulic model (InfoSWMM) was used. The applicable evaluation criteria used to complete the analysis were reviewed and adopted from the City's current *Water and Sewer Master Plan*, 2016, and the City's *Engineering Design Criteria*, 2015.

The Smith Hub is served by a trunk sewer that generally runs along Rio Salado Parkway (27-inch), Perry Lane (21-inch), 5th Street (21-inch), and Smith Road (21-inch).

The InfoSWMM model results indicate that the sewer collection system downstream of the Smith Hub is projected to satisfy the evaluation criteria under existing conditions, and with the addition of the development flow loading under build-out peak wet weather flow conditions.

Given the proximity of the development to trunkline wastewater mains and high-capacity infrastructure, the addition of the development flows would not result in a significant sewer flow increase relative to the existing capacity of the trunk mains.¹

As with the water analysis, this approach considered the ultimate build-out condition of the Smith Hub, whereas the increase in demand will occur incrementally, as new development is completed.

Additional information regarding the wastewater system analysis may be found in Appendix I.

¹ It should be noted that the collection system downstream of the development includes a siphon; refer to Appendix I, *Wastewater Memo*.



3 Observations

Field observations and conclusions drawn from the existing conditions analysis are compiled in this section. This includes responses to some of the questions posed online as part of the outreach conducted with business and property owners, as well as two public meetings held as part of this effort.

3.1 General Observations

From field observation, it is apparent that lighting improvements are needed throughout the Smith Hub. Street lighting is a concern of business and property owners, as well as those navigating the Smith Hub on foot, bicycle, transit, or automobile. Prioritization of lighting needs in the Smith Hub should be based on the greatest need today, with long-term consideration for residents anticipated to reside in the Smith Hub in the future.

With most streets in the Smith Hub having 60-foot ROW widths, with 40-foot curb-to-curb street dimensions, the existing ROW is adequate to incorporate sidewalks and street lighting without requiring additional ROW.

Commercial truck traffic is an integral component of the Smith Hub because of the existing business activity and the land uses planned under the General Plan, which include mixed use and greater commercial activity. As a result, the design vehicle for any street improvements should be WB-50, which has a minimum 20-foot turning radius. Special consideration should be given for trucks during design, given the prevalence of truck activity in the area. All curb ramp designs should conform to the latest Maricopa Association of Governments and City standards.

The Smith Hub is in relatively close proximity (approximately 1 mile) to the Smith-Martin/ Apache Boulevard light rail high-capacity transit line station. Following the second public meeting, over 40 percent of commenters (48 of 117) suggested extending the proposed bicycle improvements on Smith Road to Apache Boulevard, with many of them also referencing transit, light rail, or the Culdesac development (the Culdesac is described as a car-free neighborhood).

The Smith Hub is within ½-mile of the Rio Salado multiuse pathway system and the underpass at McClintock Drive (completed in 2020). The Rio Salado multiuse pathway system provides access to open space and recreation areas and provides a route for bicycle commuters to Downtown Tempe and Arizona State University. Active transportation connections can be made from here to the surrounding cities of Mesa, Scottsdale, and Phoenix.



3.2 Smith Road Observations

Smith Road carries the greatest traffic volume through the Smith Hub. Smith Road is the only continuous through street in the Smith Hub that continues south to Apache Boulevard. The two-way left-turn lane on Smith Road allows for improved access and safety for vehicles and commercial truck traffic traveling the corridor.

Smith Road is also the transit route (Route 62) through the Smith Hub, providing access to Tempe Marketplace to the north and neighborhoods to the south.

The proposed BIKEiT route along Smith Road was called out in the *Tempe Transportation Master Plan*. Since that document was released, segments have been designed for future construction. Making improvements through the Smith Hub addresses an important segment of this last mile—connecting the light rail at Apache Boulevard and Smith Road with Tempe Marketplace. With the recommended improvements along Smith Road in the Smith Hub, consideration of improvements to the section of Smith Road from the light rail at Apache Boulevard to University Drive would complete this last mile connection. The Rio Salado multiuse path through Tempe will likely benefit from any improvements to active transportation in the corridor, improving access to employment, shopping, services, and recreation.

Completing the BIKEiT route through the Smith Hub makes a bicycle boulevard connection on Tempe's east side that allows users to avoid arterial street travel and make the connection to the north to the Rio Salado multiuse path (in 2020, the City completed the Rio Salado multiuse path connection under McClintock Drive, providing important connections to established pathways to and from Scottsdale, Mesa, Tempe Marketplace, and housing and recreational centers).

Smith Road's existing wide pavement between curbs can accommodate all modes of road users while providing overall user safety.

Field observations of Smith Road included semi-tractor-trailers (large 18-wheel trucks) throughout the day using the two-way left turn lane for staging and deliveries. This condition is not desirable from an access and operator perspective, and more appropriate delivery/staging accommodation should be considered (refer to recommendations in Section 4.4.1).

3.3 Perry Lane Observations

Perry Lane north of Fifth Street does not have curb and gutter, and an approximately 180-foot-long segment (see Figure 8) lacks adequate ROW to complete the street (consistent with the segment south of Fifth Street to University Drive), although it is the second-busiest route through the Smith Hub by vehicular volume.

Pedestrians were observed walking in the roadway because of the lack of sidewalks.

Various factors contribute to the occasional on-street water ponding that may occur after a storm on Perry Lane at and north of the intersection with Fifth Street. The



drainage memo (Appendix E) recommends an approach to address this drainage issue and install curbs and gutters along both sides of Perry Lane from Fifth Street north to Rio Salado Parkway.

Low-impact development concepts such as bioswales, bioretention cells, and tree filter boxes are recommended to be installed along Perry Lane to capture, treat, and infiltrate runoff. Low-impact features can treat and reduce runoff from the point source all the way to the traditional storm drain outfall. These would work in conjunction with the more traditional drain and culvert approach to drainage. The application of low-impact development would also provide opportunities for additional shade along Perry Lane in the form of street trees, which would improve the route's walkability.

With Perry Lane ending at University Drive (and the entrance to the Papago Park Village II residential multifamily complex), most northbound active transportation traffic from the neighborhoods to the south of the Smith Hub originates on Smith Road and continues south of University Drive to residential neighborhoods, Apache Boulevard, and the light rail transit station at Smith Road and Apache Boulevard.

3.4 Fifth Street Observations

Fifth Street serves as the east-to-west connector central to the Smith Hub. In the northeastern quadrant of the Smith Hub, the streets connect only to Fifth Street, which offers a mid-block connection between Perry Lane and Smith Road.

With the arterial streets north and south of the Smith Hub including sidewalks and bicycle lanes, the Rio Salado multiuse path to the north, and the east-to-west barriers to the Smith Hub (the Price Road/Loop 101 freeway and Arizona Public Service substation, respectively), east-to-west active transportation through the Smith Hub is limited. However, internal to the Smith Hub, Fifth Street will have increased importance for future residential and business activity.

In the long term, increased density could benefit from active transportation connections through the “super” blocks (¼-mile-long blocks) that make up the northeastern quadrant today (Clark Drive, Rockford Drive, River Drive, and Siesta Lane). These long blocks have no through-connections for pedestrian or bicyclists. As land uses change and residential uses are introduced, these connections will become increasingly important to encourage walking and bicycle trips while avoiding additional vehicle trips that contribute to local traffic congestion. ROW would have to be dedicated by developers to accommodate public paths.

Transit users traveling on Route 81 (McClintock Drive) must navigate gaps in the sidewalk on the eastern side of McClintock Drive and have no sidewalk connections along Third Street (the only entrance to the Smith Hub from McClintock Drive) to access the Smith Hub. Additional field observation information can be found in Appendix J.



4 Recommended Improvements

In response to the policy guidance and recommendations discussed in Section 1, *Introduction*, the existing conditions and future needs for the Smith Hub, and the stakeholder and public outreach conducted as part of this study, recommendations for infrastructure improvements were developed.

The recommendations were initially presented as alternatives during the first virtual public meeting for the Plan (held on June 4, 2021).

4.1 Evaluation Criteria

As part of the evaluation of alternatives, criteria were developed to consider the impact of any proposed streetscape improvements and to compare the alternatives. It should be noted that safety is a primary consideration in any action that the City undertakes. All of the alternatives are intended to improve safety for all users of the street network in the Smith Hub. However, it is recognized that different modes have different needs, and the City would like the Smith Hub to continue serving existing business uses while also accommodating active transportation users (the people traveling to and from the Smith Hub, and those who pass through the Smith Hub) and the evolving needs of the Smith Hub.

The three criteria are general in nature. The evaluation scale includes three steps—low, medium, and high—meant to provide a qualitative evaluation of the alternatives.

1. **Level of Comfort.** This criterion focused on the active transportation modes (pedestrian and bicycle). Not every street in the Smith Hub can be a complete street, and it is necessary to balance the needs in a way that provides mobility options for all users.

For this criterion, the pedestrian and bicycle level of comfort is based on the separation of the users from vehicular traffic. In this case, “high” means that both pedestrians and bicyclists are provided a buffer from vehicular traffic. A “medium” is assigned when pedestrians are afforded a buffer from vehicular traffic, and a “low” indicates that there is no buffer from vehicular traffic.

2. **Curb Access.** The curb is an important community asset; access to the curb is necessary for parking, drop-offs and pick-ups, and transit service. A “high” score indicates that curbside parking is available. When parking is replaced with a bicycle lane running along the curb, the value is “low” (in this instance, no “medium” value is assigned).
3. **Access and Mobility.** This criterion focused on access from a business use perspective, although in all instances with the alternatives presented, the outcome is the same as the result of curb access, and no further distinction for each street section is made by applying this criterion to the alternatives (that is, in all alternatives presented, access and mobility is equivalent to curb access).



The criteria and results were shown on the alternatives presented at the public meetings for the Smith Hub.

Input from the public meeting was considered while developing the Plan recommendations, which were presented during an in-person public meeting on July 30, 2021. The presentation was also filmed in advance and the video was posted on the study webpage the day of the public meeting. Comments on the Plan recommendations and overall project were requested following each of the meetings, and the comments received were considered in the development of the Plan recommendations (the public meeting summary reports are included in Appendix A and Appendix B).

This section presents the recommended improvements for the short (approximately 5 year)- and long (approximately 20 year)-term timeframes. It is important to note that the Plan is at the concept level, with recommendations guiding the eventual implementation of improvements. At the time of design, refinements will be made to address conditions on the ground, including utility conflicts, ROW needs, and design considerations.

Recommendations are made for both the short- and long-term timeframes. This incremental approach allows the City to prioritize the most pressing needs now, and thus greatly improve the accessibility of the Smith Hub while minimizing the work that may be considered “rework” when the ultimate (long-term) improvements are implemented. In the interim, it will be important to monitor shifts in circulation within the Smith Hub resulting from changes in land use, use of emerging transportation technology, increases in urban and workforce populations, and potential high-capacity transit investment.

4.2 Streets

Streetscape improvements to several primary routes are prioritized because of the existing multimodal circulation needs. These include:

Perry Lane north of Fifth Street, where on-street ponding and lack of curbs, gutters, and sidewalks make for an undesirable pedestrian environment, is a priority. It is proposed that ROW should be acquired to address recommended safety and mobility improvements.

Fifth Street serves as the east-to-west connector through the Smith Hub, and on-street parking is actively used today. Although it serves as an important connecting route, only portions of the street have sidewalks today, and no continuous segment of sidewalk exists between Perry Lane and Smith Road.

Smith Road serves as an important multimodal connection through the center of the Smith Hub from the neighborhoods south of University Drive to the Tempe Marketplace and Rio Salado multiuse path north of Rio Salado Parkway. Identified as a future BIKEiT bicycle route in the General Plan 2040, hosting an existing transit route



(bus Route 62), and serving as a busy roadway with a substantial portion of truck traffic today, Smith Road improvements need to accommodate and balance these needs.

The primary routes of Perry Lane, Fifth Street, and Smith Road serve as the connecting routes through the Smith Hub (refer to Section 2.1.3, *Street Infrastructure*, for information regarding primary routes). While also a primary route, Rockford Drive property improvements south of Fifth Street have already begun implementing the type of streetscape envisioned for the Smith Hub, with detached sidewalks and street trees for shade.

4.2.1 Lighting

The short-term recommendation for lighting is to incorporate street lighting on the primary routes of Perry Lane, Fifth Street, and Smith Road. Lighting was included with all the short-term alternatives, given the interest in improved lighting and the safety benefits it offers all users of the Smith Hub.

Lighting on Perry Lane is a strategy recommendation of the Smith Hub development guidelines. Fifth Street is proposed as a key truck route through the Smith Hub, and lighting along this route from Perry Lane to Price Road would improve safety for truck route recommendations (see traffic recommendations below). Lighting installed along Fifth Street would provide lighting at 6 of the 13 intersections within the Smith Hub. Smith Road from Rio Salado Parkway to University Drive carries the most traffic through the Smith Hub today. As an existing transit line and proposed bicycle route (consistent with the *Tempe Transportation Master Plan*), lighting along this route will greatly improve visibility for pedestrians and bicyclists.

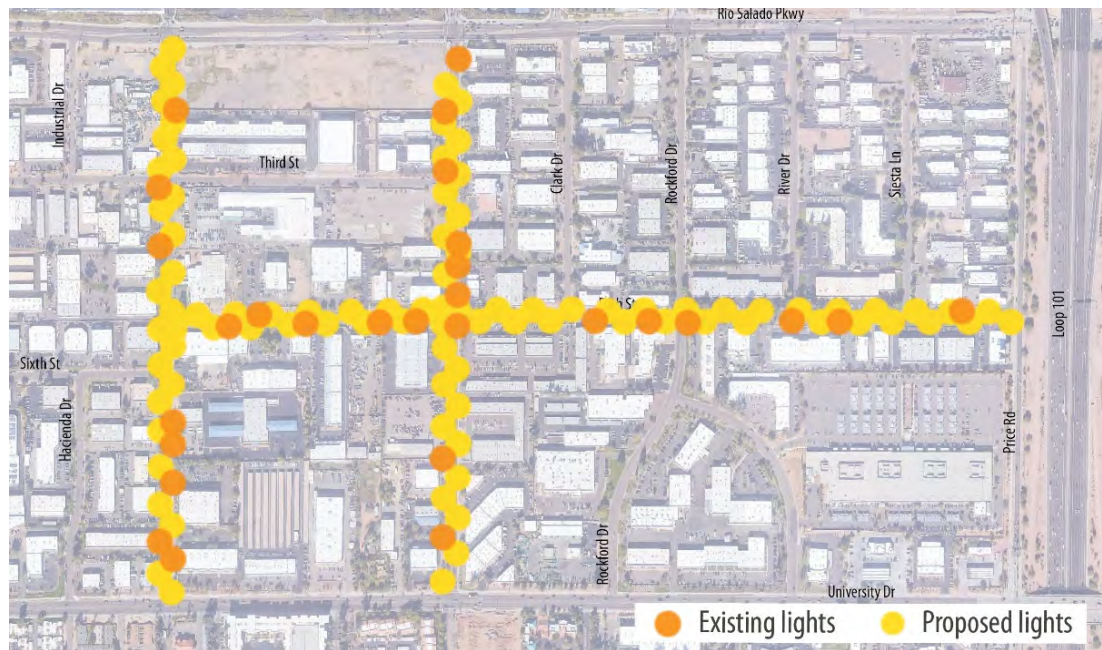
Given the spacing of the existing luminaires, it was assumed that all existing luminaires would be removed and new luminaires would be installed in accordance with City illumination standards.

The recommended locations for lighting service in this area are the intersection of Perry Lane and Fifth Street, with a second service at Smith Road and Fifth Street. The Perry Lane and Fifth Street service can serve the extents of Perry Lane and Fifth Street from Perry Lane to Smith Road. The service location at Smith Road and Fifth Street can serve the extents of both Smith Road and Fifth Street.

Figure 23 shows the recommended short-term lighting locations. Appendix D provides further information on lighting. See Section 4.4.2 for information about the opportunity to incorporate smart street lighting technology within the Smith Hub.



Figure 23. Proposed short-term lighting improvements



In the long term, as development in the Smith Hub intensifies, it is recommended that street lighting be extended to bring all of the remaining streets in the Smith Hub up to City standards.

4.2.2 Smith Road

Alternatives presented for Smith Road address sidewalk gaps and ADA deficiencies, implement the Tempe BIKEiT route from University Drive to Rio Salado Parkway, and add bus shelters for shade at each of the four bus stops internal to the Smith Hub.²

Two alternatives were identified for the streetscape section of Smith Road.

Alternative A maintains the existing two-way left-turn lane and introduces a buffered bicycle lane in each direction. Buffer treatments are not specified at the planning level and would be determined at the time of project design.

The bike lane implements the Tempe BIKEiT route from University Drive to Rio Salado Parkway.

Alternative A's two-way left-turn lane facilitates travel for all modes by allowing left-turning traffic to exit the travel lane before awaiting an opening in the opposing traffic to turn into any of the drives along Smith Road. Taking turning traffic out of the through lane allows through traffic and transit vehicles to continue without unnecessary stops and reduces the potential of vehicles swerving around turning vehicles and into the shoulder or bike lane.

² The City of Tempe small- and micro-shelter bus shelter prototype designs were considered; however, the actual shelter size and design would be determined by Tempe Transit.



As indicated in Section 3.2, *Smith Road Observations*, trucks were observed using the two-way left-turn lane for staging and deliveries. To emphasize the proper use of the two-way left-turn lane, the *Manual on Uniform Traffic Control Devices* (2009) suggests the option of installing additional left-turn arrows within the two-way left-turn lane. These pavement markings should be used in conjunction with R3-9b “Center Lane Left Turn Only” signs for regulatory enforcement.

Eliminating on-street parking on Smith Road would result in the loss of approximately 90 existing on-street parking spaces, according to an analysis of existing and proposed on-street parking in the Smith Hub. While the parking on Smith Road was not specifically called out in public comments, 38 percent of business and property owners noted that on-street parking in general was either important or very important to their business.

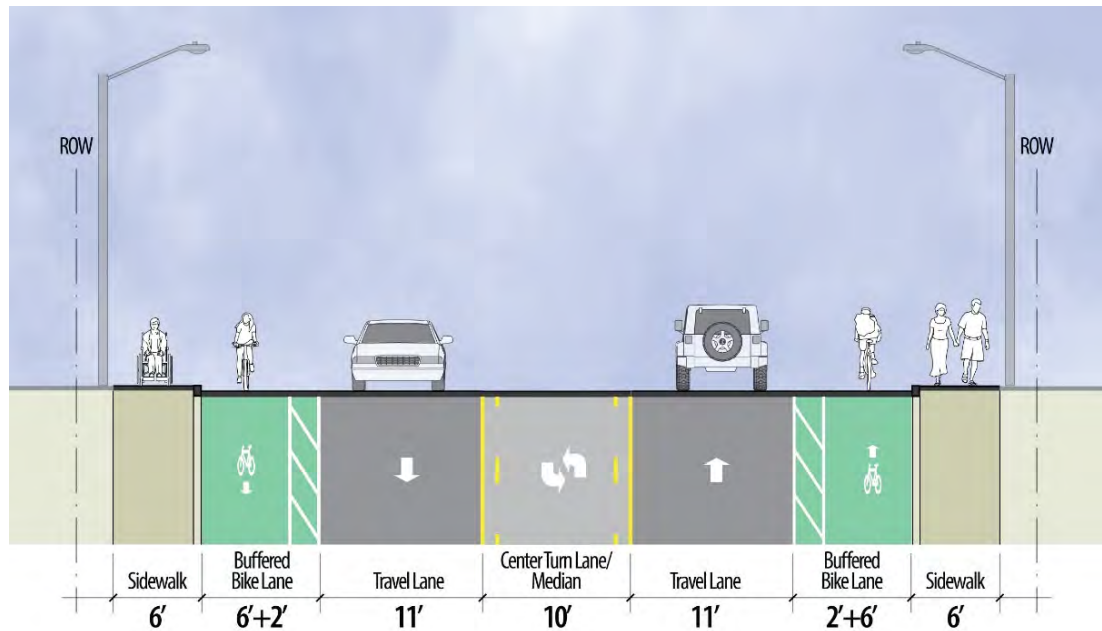
Alternative B replaces the two-way left-turn lane with a buffered bicycle lane in each direction as well as parking on the east side of Smith Road, which accounts for approximately two-thirds of the on-street parking available on Smith Road today.

Concerns were raised by business owners about the loss of business access that would result from eliminating the two-way left-turn lane. Without the two-way left-turn lane, periodic congestion could occur as vehicles wait for openings in oncoming traffic to make left turns and access business entrances. Commenters on the study also worried that on-street parking, even along just one side of Smith Road, would pose a risk to bicyclists.

Recognizing the multimodal nature of Smith Road, with vehicles, commercial truck traffic, pedestrians, and transit vehicles all sharing the road, Alternative A is recommended, with the two-way left-turn lane and protected bicycle lanes. Figure 24 shows the recommended alternative for Smith Road.



Figure 24. Proposed short-term improvements for Smith Road



It is notable that of the 117 comments received following the second public meeting, 83 percent supported the bicycle lane, and 62 percent of respondents recommended that the bicycle lane be a protected bicycle lane.

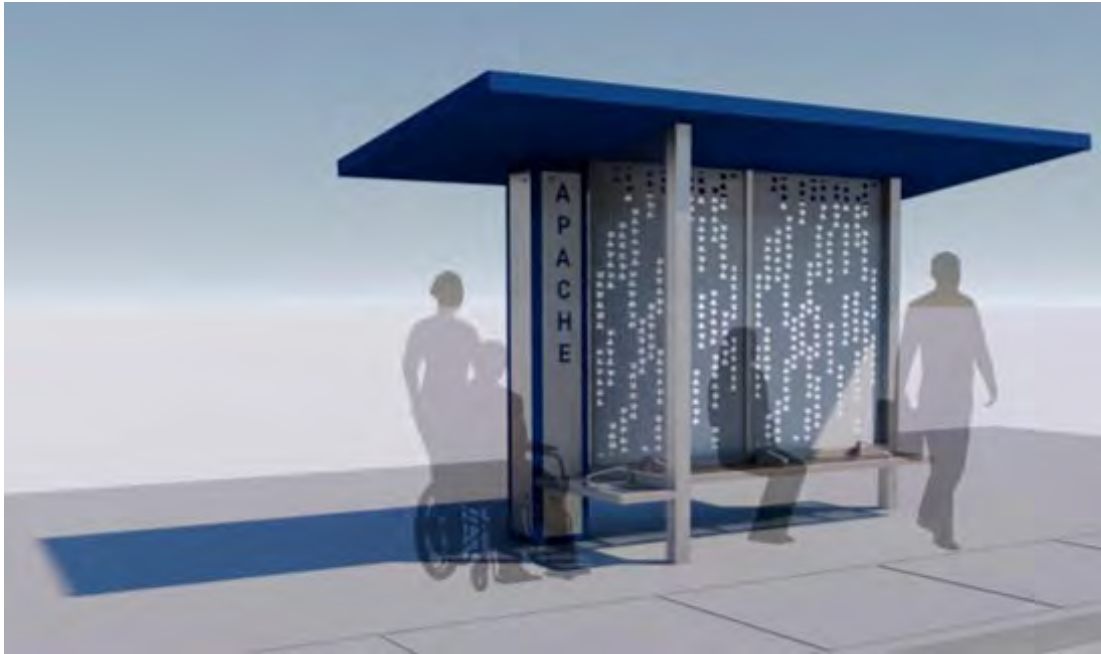
In addition to the streetscape improvements shown in Figure 16, bus shelters are recommended at the four bus stops along Smith Road. Bus shelter improvements would include a bench, shade structure, and trash receptacle.

The bus stops may be accommodated with a marked mixing zone on the pavement; a mixing zone is indicated by pavement markings to address the weave created when a bus pulls across a bike lane to the curb. A break would be created in the buffer showing transitional striping (similar to striping for right-turn lane transitions). The bus pulling to the side would take over the bike/buffer as well as a portion of the travel lane due to typical bus widths of 8.5 feet plus mirrors (the bus must pull adjacent to the curb for the ADA bus ramp). One way to avoid blocking the travel lane is to create a bus boarding island in which the bike lane goes behind or shares the boarding area. With limited ROW, it is common to have a shared boarding island above grade where the bike uses ramps on either side of the boarding area. The preferred solution would be chosen during the design process.

Figure 25 shows the Tempe prototype bus shelter. The actual size and location of shelters would be determined by Tempe Transit. Depending on site conditions, ROW impacts may occur as a result of bus shelter installation. See Section 4.4.3 for information about innovative technologies to be considered with the incorporation of bus shelters.



Figure 25. Proposed improvements: Smith Road bus shelter



4.2.3 Fifth Street: Perry Lane to Smith Road

Alternatives presented for this segment completed the sidewalk network by addressing gaps in the existing sidewalk and ADA deficiencies while maintaining on-street parking (to varying degrees with each of the two alternatives).

Alternative A includes low-impact development techniques—replacing areas of parking on the north side of the street with curb bulb-outs. Both alternatives would involve drainage improvements to intercept stormwater flows that contribute to Perry Lane ponding following substantial storms.

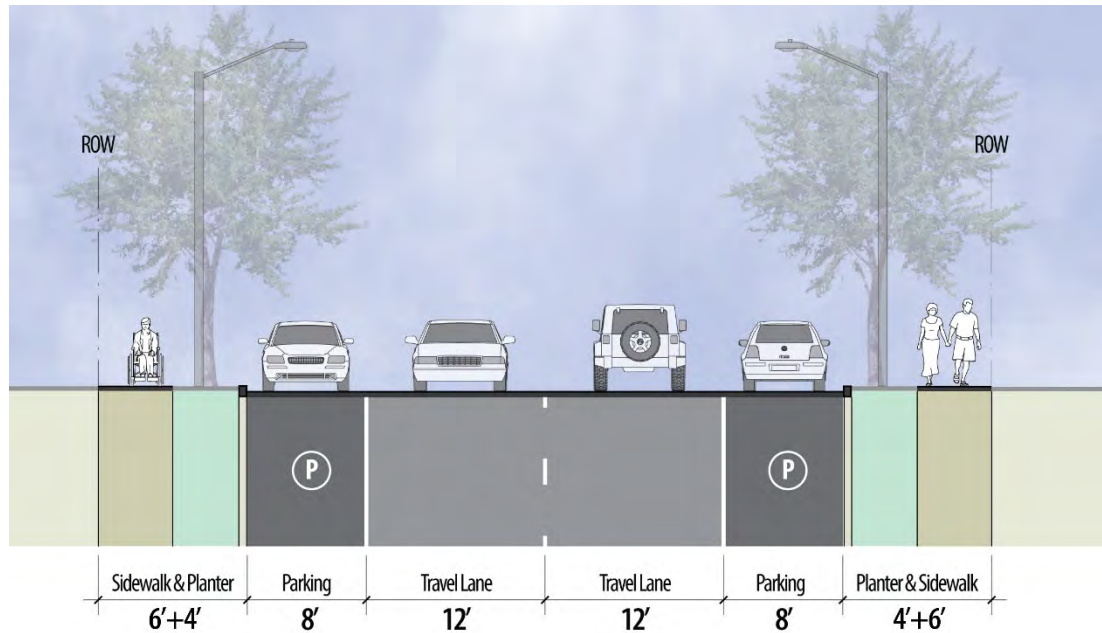
Alternative B maintains all of the existing on-street parking for this segment of Fifth Street. Based on input following the public meeting, Alternative B was preferred by a narrow margin.

The recommended alternative combines elements of both Alternatives A and B: maintaining the on-street parking and adding a detached sidewalk.

Figure 26 shows the recommended alternative for Fifth Street between Perry Lane and Smith Road.



Figure 26. Proposed short-term improvements for Fifth Street between Perry Lane and Smith Road



The City's Pavement Management Program lists the segment of Fifth Street from Perry Lane to Smith Road as having poor pavement quality. This segment, which is recommended for reconstruction in the next cycle of pavement preservation treatment, could be combined with the sidewalk improvements in the segment to minimize the disruption and maximize the efficiencies of completing the projects concurrently.

In the long-term, the remaining portion of Fifth Street (from Smith Road to Price Road) could be improved to match the short-term recommendation for the segment of Fifth Street between Perry Lane and Smith Road. At that time, the landscaped areas³ introduced with the detached sidewalks could be augmented with occasional curb bulb-outs to accommodate additional area for trees to improve pedestrian shade (reducing available area for on-street parking). These curb bulb-outs would also have a traffic calming effect.

³ The driver of a vehicle approaching or departing an intersection should have an unobstructed view of the intersection, including any traffic control devices, and sufficient lengths along the intersecting street to permit the driver to anticipate and avoid potential collisions. Wherever landscaping is introduced in the streetscape, care should be taken to provide adequate sight distance sufficient for a stopped driver to depart from the intersection and enter or cross the major road.



4.2.4 Perry Lane

The goal of the alternatives proposed for Perry Lane included:

- ensuring sidewalks and ramps are ADA-compliant
- completing the full 40-foot curb-to-curb street section north of Fifth Street
- mitigating stormwater runoff and on-street ponding

Perry Lane North of Fifth Street

Alternatives presented for this segment require acquisition of the additional ROW to complete the 40-foot curb-to-curb street section (consistent with the segment south of Fifth Street to University Drive). Alternative A continues the existing street segment from University Drive to Fifth Street, with attached sidewalks, although all driveways and street crossings would be designed to accommodate ADA requirements. Stormwater drainage would be accommodated through an underground stormwater drainage system with a typical collection and conveyance system, sending all street drainage into the existing stormwater collection system for eventual outfall into the Salt River north of the Smith Hub.

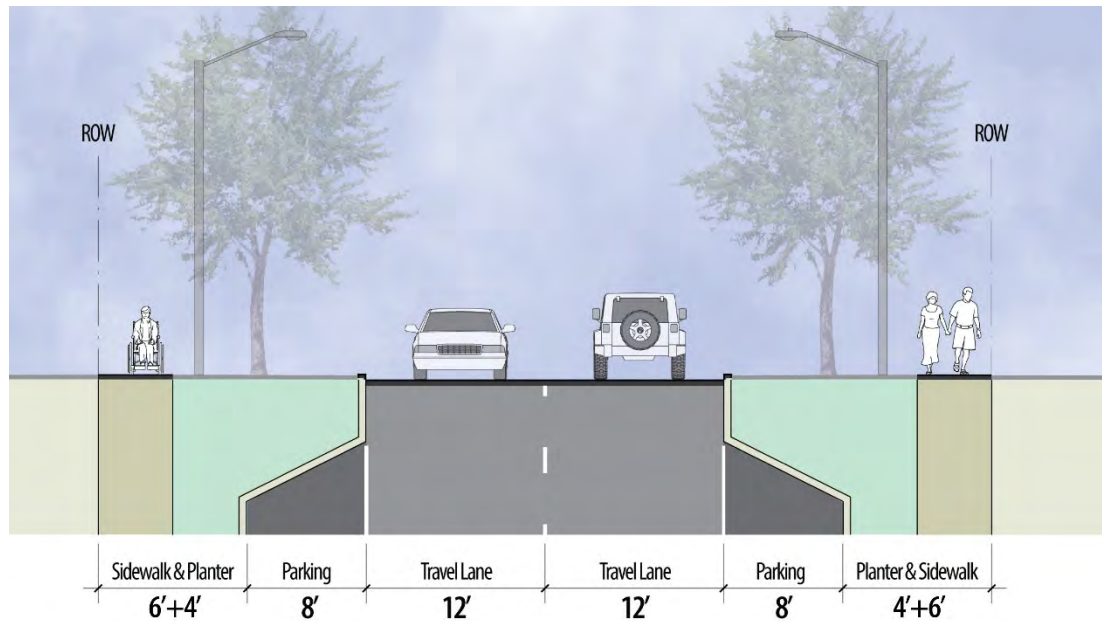
Alternative B, the recommended alternative, accomplishes all of the identified goals while introducing street shade through the implementation of low-impact development techniques that would replace some areas of on-street parking with curb bulb-outs to accommodate trees and other bio-retention methods to retain a portion of stormwater for landscaping needs. See Section 4.4.2 for information about innovative technologies to be considered with the addition of curb bulb-outs in areas of on-street parking.

Additional inlets are recommended to be installed on the southern side of the Rio Salado Parkway and Perry Lane intersection and the Third Street and Perry Lane intersection. Three inlets are recommended to be placed at the northwestern, northeastern, and southeastern corners of the Perry Lane and Fifth Street intersection. These new inlets will connect to an existing 36-inch lateral at Rio Salado through an 18- and 24-inch reinforced concrete pipe.

Figure 27 shows the recommended alternative for Perry Lane north of Fifth Street.



Figure 27. Proposed short-term improvements for Perry Lane north of Fifth Street



Perry Lane South of Fifth Street

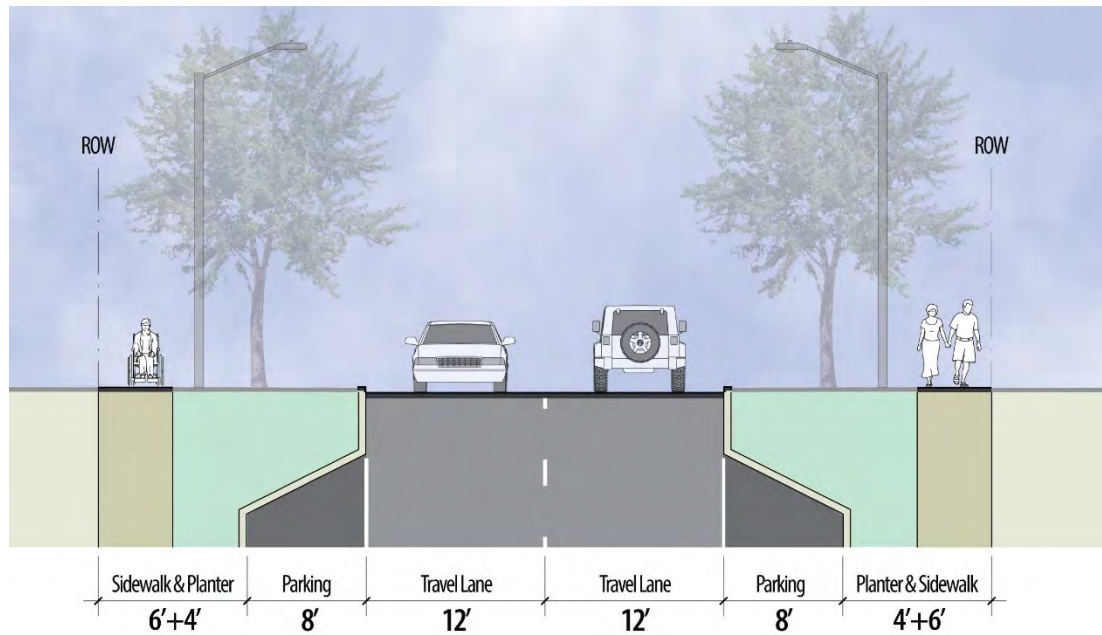
Short-term improvements for Perry Lane south of Fifth Street would include ADA improvements for the existing attached sidewalks (at driveways and intersections) and pavement markings and signs to permit on-street parking. The on-street parking pavement markings better define the travel lanes and may help to calm traffic along the route by narrowing the through lanes.

In the long-term, Perry Lane south of Fifth Street could be improved to match the short-term street section recommendation for the segment of Perry Lane to the north of Fifth Street. The landscaped areas introduced with the detached sidewalks could be augmented with occasional curb bulb-outs to accommodate additional area for trees to improve pedestrian shade. These curb bulb-outs would also have a traffic calming effect.

The segment of Perry Lane from Fifth Street to Sixth Street has the poorest pavement quality of the Smith Hub streets, according to the City's Pavement Management Program. This segment, which is recommended for reconstruction in the next cycle of pavement preservation treatment, could be combined with the street reconstruction proposed for the segment north of Fifth Street. At that time, implementing the long-term section (shown in Figure 28) for this section of Perry Lane could be considered.



Figure 28. Proposed long-term improvements for Perry Lane south of Fifth Street



4.2.5 Rockford Drive and River Drive

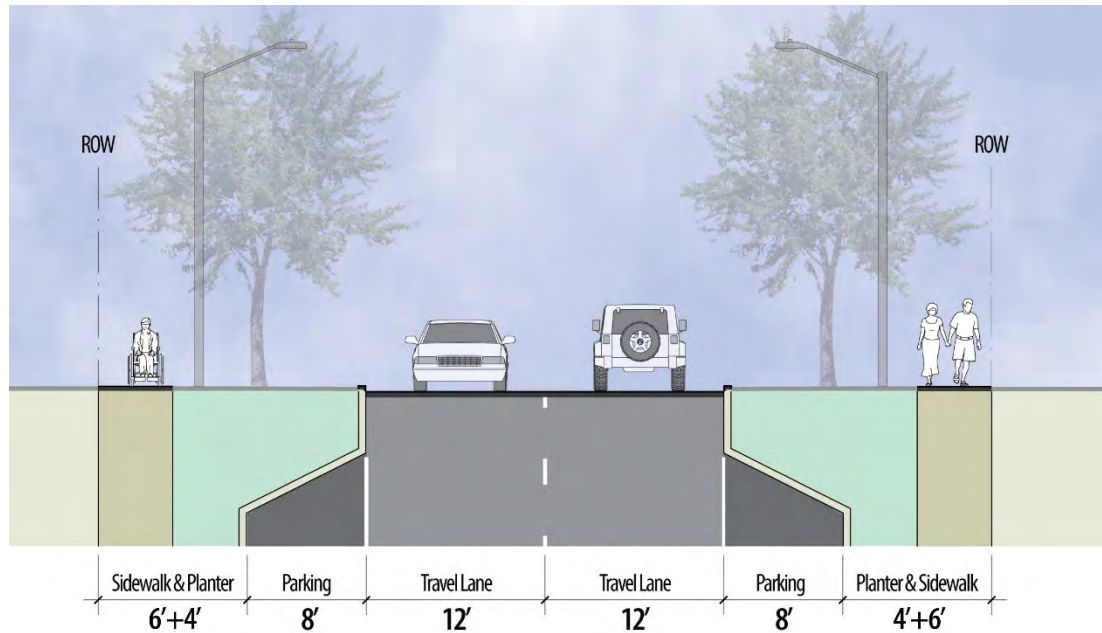
No short-term recommendations were made for Rockford Drive through the Smith Hub. A very limited area of on-street parking is allowed on the segment north of Fifth Street.

South of Fifth Street, in the long term, it is recommended that Rockford and River Drives continue the street section currently being installed by development at Rockford Drive and University Drive, where a landscaped strip with street trees is provided for shade and to separate the sidewalk from the back of curb.

Figure 29 shows the long-term recommended streetscape for Rockford and River Drives, north of Fifth Street.



Figure 29. Proposed long-term improvements for Rockford and River Drives north of Fifth Street

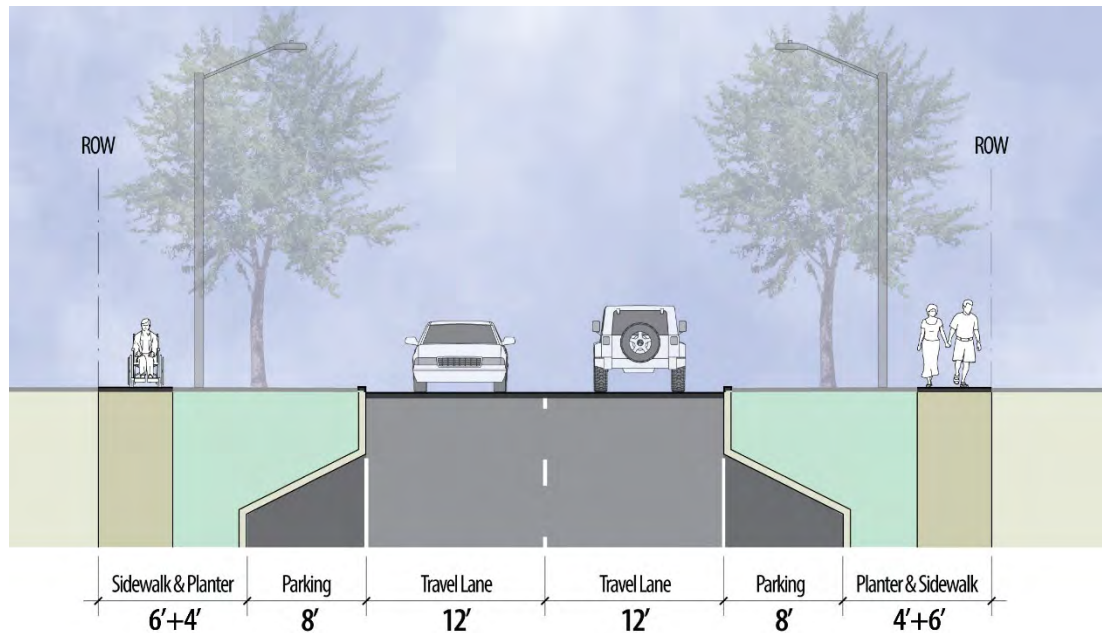


4.2.6 Third Street

No short-term improvements were identified for Third Street, although long-term improvements should be prioritized for this street because it serves as an important gateway into the Smith Hub from McClintock Drive. Figure 30 shows the recommended long-term improvement section for Third Street, which incorporates detached sidewalks and occasional curb bulb-outs, replacing areas of parking and providing for increased landscaped areas and trees. The curb bulb-outs will also help calm traffic entering from the higher-speed arterial, McClintock Drive.



Figure 30. Proposed long-term improvements for Third Street



The segment of Third Street between McClintock Drive and Industrial Drive is listed as having poor pavement quality, according to the City's Pavement Management Program, and is recommended for a mill and overlay in the next cycle of pavement preservation treatment. Depending on funding and the completion of short-term recommendations, long-term improvements for this segment of street could be accomplished at that time.

4.2.7 Secondary Streets

In the short-term, there are no recommended improvements to the secondary streets in the Smith Hub.

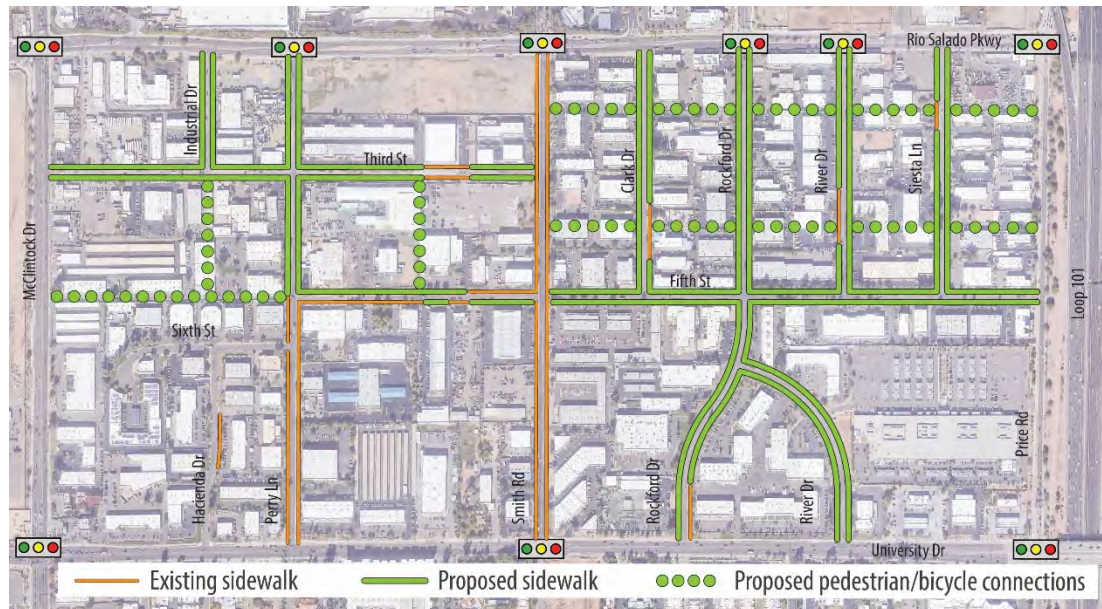
The Pavement Quality Index rating for Sixth Street (west of Perry Lane), Hacienda Drive, and Industrial Drive are poor or fair, with recommendations for mill and overlay treatment. These streets will continue to be monitored for deteriorating pavement condition and will be addressed as necessary.

Long-term recommendations include expanding the lighting improvements to address all of the Smith Hub streets.

Long-term recommendations also include incorporating sidewalks for most of the Smith Hub streets. Figure 31 shows the ultimate pedestrian network proposed for the Smith Hub.



Figure 31. Ultimate pedestrian network



In addition to the sidewalks, Figure 31 shows conceptual pedestrian/bicycle connections proposed to break up the ¼-mile-long blocks in the northern portion of the Smith Hub. This is the area designated in the General Plan as mixed use or mixed use industrial (refer to Figure 2).

These pedestrian/bicycle connections are proposed for consideration if these areas are ever proposed for redevelopment. By encouraging connections through these streets, the walkability of the Smith Hub would be enhanced. This idea is only conceptual; developments aggregating parcels for redevelopment would work with the City to obtain the necessary zoning and building approvals based on any development agreements.

4.3 Water and Wastewater

4.3.1 Water System Recommendations

Based on the approach to water and wastewater modeling established with the City's *Water and Wastewater Master Plan*, the updated General Plan 2040 land use plan does not note any significant shortcomings in the City's water services for the Smith Hub.

It is noted that even without incorporating the new land uses adopted with the General Plan amendment for the Smith Hub, several of the existing fire hydrants currently cannot meet the city's non-residential fire flow requirement.

This deficiency would be remedied by increasing the size of the 6- and 8-inch lines (supplying water to the fire hydrants that are unable to meet non-residential fire flow) to 8- and 12-inch lines, respectively.



As a result, to supply the required fire flow, the following pipes should be replaced with larger-diameter pipes:

- The existing 8-inch main on McClintock Drive and any 6-inch looped mains off McClintock should be replaced with a 12-inch line and 8-inch lines, respectively. These lines serve users east of McClintock Drive, between Third and Fifth Streets.
- Individual dead-end hydrant lines will need to be evaluated as the area densifies to ensure that fire flow requirements will be met.
- The existing 6-inch pipe should be replaced with minimum 8-inch pipe on Third Street between Perry Lane and Smith Road.
- The two 8-inch lines on River Drive and Siesta Lane should be replaced with 12-inch mains between Rio Salado Parkway and Fifth Street.
- According to the City, the existing 8-inch pipe on Fifth Street between Perry Lane and Smith Road has a history of breaks. Thus, any project that would include significant street work on Fifth Street between Perry Lane and Smith Road should include replacement of this existing 8-inch water line.
- Similarly, any City project that would include significant street work on Perry between Third and Fifth Streets should replace the water line with an 8-inch minimum pipe. If private development projects occur along this area prior to a City project, replacement should also be required.

4.3.2 Wastewater System Recommendations

Based on the approach to water and wastewater modeling established with the City's *Water and Wastewater Master Plan*, the updated General Plan 2040 land use plan does not indicate system deficiencies for the collection system conveying development flows under either existing or build-out conditions.

Model results indicate that the sewer collection system downstream of the development location is projected to satisfy the evaluation criteria with the addition of the development flow loading under existing and build-out conditions.

The Smith Hub is served by a trunk sewer that generally runs southeast to northwest along Rio Salado Parkway (27-inch), Perry Lane (21-inch), 5th Street (21-inch) and Smith Road (21-inch). Given the proximity of the development to this high-capacity infrastructure, the addition of the development flows would not result in a significant sewer flow increase relative to the capacity of the large-diameter trunk mains.



4.4 Broadband and Technology

4.4.1 Background

The City is implementing an Innovation Hub Initiative involving nine key employment corridors where the City will facilitate employment growth and development, enhance connectivity, and bring businesses and educators together to enhance their talent pipeline. The Smith Innovation Hub is the pilot area for the initiative and was selected based on four key factors – 1) Proximity to major redevelopment to the north and west, 2) Adjacency to the proposed future transit opportunities, such as the street car extension on Rio Salado Parkway 3) Recent interest in the area including designation as a federal Opportunity Zone and 4) Identification as a growth area in General Plan 2040.

HDR presented the draft Tempe Smith Innovation Hub Infrastructure Master Plan at the January 6, 2022, at Tempe City Council meeting. At that meeting, Mayor Woods and Councilmembers challenged the team preparing the Plan to identify and expand on the opportunities to incorporate innovation into the Smith Innovation Hub. These innovative technologies could contribute to the other future Innovation Hubs in the City, and to the City's identity as a leader in innovation.

4.4.2 Elements

Broadband

Broadband connectivity has practically become a necessity in the modern world, and is increasingly viewed as a public utility, just as important as providing water, sewer, and power services. High-speed broadband capabilities are critical to becoming a “Smart City”, facilitating innovation, and enhancing the lives of everyday users. The City has expressed interest in developing reliable high-speed connections to the people and businesses, and implementing ‘Internet of Things’ (IoT) throughout the entirety of the Smith Innovation Hub. According to a review of existing conditions per the FCC (Federal Communications Commission) website, the Smith Hub area has a choice of 3 or more broadband providers in the area.

The City currently recommends that any arterial street reconstruction project consider the addition of fiber conduit to future-ready the City for existing and anticipated broadband capabilities. However, there is not a Citywide inventory of this infrastructure to guide projects, nor is there a comprehensive broadband master plan to help guide this process. To ensure the City is prepared to keep up with increasing broadband demand in the future, the City may wish to undertake an intentional and in-depth planning effort to ensure the desired level of connectivity, both within the Smith Hub and in other areas of the City, as appropriate. Potential steps to accomplish this include but not limited to:



- Enact policies to encourage or require the installation of communications infrastructure (conduit, fiber optics, wireless equipment, etc.) as a requirement of property development standards;
- Engage partnerships between public and private sector stakeholders;
- Invest in publicly owned open access network(s).

A broadband master plan could be used to establish goals and a vision for what the City wishes to accomplish with broadband implementation. This process would involve reviewing the current regulatory environment to ensure any proposed changes are consistent with current regulations. A broadband master plan would also establish existing conditions relating to existing infrastructure and define who are the stakeholders involved in the decision-making process. Further, a broadband master plan would propose the desired future conditions and develop a high-level design to accomplish that. Finally, the broadband master plan would identify next steps for implementing the plan and an outline the ongoing management responsibilities of the program.

The City currently has many assets that could be utilized to enable the establishment of broadband connectivity, including existing physical infrastructure (e.g., public right-of-way, as well as staff and staff expertise, existing relationships with key stakeholders, and the ability to set public policy to compel action). New broadband innerduct and flexible conduits are capable of holding multiple conduits for multiple services; after meeting the City's need, the spare conduits may be leased, and the system could potentially turn into a revenue source with private demand for broadband connectivity. Information identifying stakeholders and next steps for a broadband master plan are included in Appendix L.

Public Wi-Fi

Public Wi-Fi could be implemented with new development requirements for open public spaces to provide public Wi-Fi as part of their public amenities. Tempe Marketplace would be a prime location for public Wi-Fi because of the active retail community there, however, the addition of public Wi-Fi within the Tempe Marketplace would be a private decision. It is recommended to include this concept for new private developments with a publicly accessible component.

Smart Street Lighting

Smart street lighting may be implemented as a component of the street lighting recommendation for the Smith Hub. Smart street lighting is a versatile technology with many practical applications. The use of 7-pin photocells lighting technology allows the ability to control each luminaire individually and dim the light levels as needed. This technology may be used in conjunction with smart devices such as cameras, motion detectors, and gunshot detectors. When used in combination, these devices together can be programmed so that when a car turns onto a street segment the entire street



segment light levels increase. Along with energy-efficient LEDs, this strategy of increasing light levels when needed and reducing light levels when it is not as needed contributes to improving the lighting energy efficiency. Gunshot detection devices could increase lighting where a gunshot sound is detected, aiding law enforcement personnel and emergency responders responding to incidents. Another related technology that could be implemented is the use of cameras mounted on street light poles to allow for surveillance and improved safety in the Smith Hub. The cost of the 7-pin photocells should be minimal to install initially with the new light fixtures.

Furthermore, the installation of 5G-capable luminaire poles could be considered, to allow for greater internet connectivity for public Wi-Fi users throughout the Smith Hub. Many of these smart street lighting technologies could be implemented in the Smith Hub along with the installation of the proposed short-term lighting improvements identified in section 4.2.1. Requirements for inclusion of 5G-enabled street light poles, or requirements for the appearance and location/spacing of telecommunications equipment could be addressed in the proposed broadband master plan. This could help to minimize excessive 5G infrastructure installation by telecommunications companies and avoid street clutter by sharing 5G capability with street lighting. The implementation of smart street light technologies as part of the street lighting improvements in the Smith Hub align with many of the City's goals of improving safety and comfort on City streetscapes and implementing green infrastructure.

Electric Vehicle Supply Equipment (EVSE)

Electric Vehicle Supply Equipment (EVSE) are the infrastructure, such as the equipment used to charge electric vehicles (EVs). EVSE is an increasingly important element as demand for such infrastructure grows. EVSE can be integrated into new development and new infrastructure to enable and expand the use of EVs. Two ways this technology could be implemented throughout the Smith Hub:

1. Updating the building code to require new development, or significantly improved development, update the power supply to be ready for Level 2 EVSE installation.
2. New development in the Smith Hub could also be required to include dedicated EV charging spaces and EVSE if the number of parking spaces exceeds an established threshold.

The City also has the ability to incorporate EVSE with the on-street parking in the Smith Hub. This could include the installation of an identified number of Level 2 and/or direct current (DC) fast chargers along key corridors or as part of mobility hubs. Level 2 charging stations are typically used over a half-day time period to charge an EV while someone is at work, so these types of charging stations could be implemented in parking lots with a large number of employees. Level 3 direct current (fast chargers), on the other hand, are meant to provide a quick charge, for example, while a customer is visiting a shop. These types of chargers could be installed in strategic on-street parking locations near areas with retail activity. The specific requirements of types and



number of chargers could be included in new development agreements. To enable this technology when new infrastructure, such as streetlighting is added, the power supply and required metering should be included in the project design to support charging needs. Additionally, ducts can be included in street light poles to enable the addition of EVSE on the poles with the charging power separated from the lighting power.

The City is in initial stages of planning for private-public partnerships to deploy a number of level 3 chargers using the City's Chargepoint software for metering and billing purposes. These are being considered on City controlled property, such as the Escalante Multi-Generational Center.

Local electric service providers are supporting greater deployment of EVSE. Changes to the City building code and the development of a master plan may be considered to account for the anticipated need for additional private development charging stations.

The installation of electric vehicle charging stations aligns with the City's goal of implementing green infrastructure. The Smith Hub would benefit from the incorporation of EVSE technology within the Smith Hub.

4.4.3 Future Considerations

Communications Corridor/Ducts

The City may consider installing communications ducts as part of currently proposed construction projects to make the Smith Hub ready for future communications infrastructure. With appropriate planning and excess capacity built into the design, the communications infrastructure, such as conduit and pull boxes, could be used in the future for making broadband or electrical connections. This is a cost-effective method of implementing these future improvements, since at the time of implementation, the fiber or wiring could be pulled through the conduit that has already been placed in the ground, rather than having to retrofit a street segment that has already been improved.

Currently, the only proposed major street reconstruction is the segment of Perry Lane north of 5th Street. Sidewalk reconstruction is proposed on several segments throughout the Smith Hub, however, the City prefers not to install conduits during sidewalk reconstruction, as the depth of digging required is typically not deep enough for the depths needed for conduit installation. The City prefers to install conduit during waterline or other major street reconstruction where trenching is occurring. Therefore, the City may consider implementing these future communications corridors on arterial streets bordering the Smith Hub, such as Rio Salado Parkway.

In the future, the technology implemented as a result of proactively installing communications corridors could be used for applications such as connected and autonomous vehicles. This also aligns with the City's goal to promote better connectivity and transportation for the Smith Hub.



Mobility Hub

A mobility hub is a location where people can access and transfer between modes, such as bus to micro-mobility devices like scooters or e-bikes. Bus stops in the Smith Hub could be considered to be mobility points and could include additional facilities, such as space for scooters and bikes, interactive kiosks for information, IoT devices for smart trash cans that provide alerts when they are becoming filled, real-time map showing the locations of next bus and expected time of arrival by connecting the bus automatic vehicle location, and Wi-Fi so people can use mobile apps such as the Valley Metro app or to book a TNC (Transportation Network Company) like Uber or Lyft. This feature is helpful for those concerned with using plans with limited cellular data service.

The City may consider implementing micro mobility hubs in the future, as redevelopment and mixed-use occurs. Another opportunity for implementing mobility hubs in the Smith Hub could be by reallocating private or public parking areas. As of January 2022, the City was actively studying and requesting input from the public regarding Transportation Demand Strategies (TDS), such as mobility hubs. Implementation of mobility hubs may be initiated with Community Centers or Parks to other locations. It is recognized that other locations in the City may be higher priority locations for implementing mobility hubs, such as in City parks in neighborhoods where the transit and bike to work rates are higher than the City-wide rate and there likely would be greater benefit to structurally underserved populations.

Micromobility hubs, consisting of several elements of a mobility hub (such as a limited number of scooters or bicycles collocated at a transit stop or use of an on-street parking space) may be located in the Smith Hub, and would increase mobility options and potentially reduce personal vehicle trips within the Smith Hub.

The mobility hub concept would contribute to advancing Tempe's vision to be a 20-minute City. Mobility hubs may also promote equity, because they provide access to transportation and potentially public Wi-Fi as well. This also will support the Public Transportation and Pedestrian and Bicycle Facilities discussed in section 2.2.2 and the recommendations for Smith Road transit stops in section 4.2.2.

Community Scale Street Design

Community scale street design applies different design criteria to streets, such as varying cross sections and curb radii, that make them more to scale with their intended use. These uses include bike and pedestrian routes, bus/transit routes, or truck routes. The recommended improvements are community scale street designs to accommodate the transit, and active transportation including bike and pedestrian corridors in the Smith Hub, as well as accommodating the truck activity today supporting Smith Hub businesses.



Current streetscape recommendations for the Smith Hub call for retaining the existing curb-to-curb street width. However, it is recommended that further community scale street design considerations be considered as part of any new development proposals. Future street projects in the Smith Hub could be an opportunity for modifications to be made to the street cross sections or curb radii. Enhancements such as smart street lighting, public Wi-Fi, and mobility hubs should be prioritized along corridors identified as being multimodal.

Passive Pedestrian Detection

Passive pedestrian detection uses technology such as artificial intelligence cameras and LiDAR to detect and track pedestrians crossing roads. This technology may be used at signalized intersections or at mid-block crossings with HAWKS, smart street lighting, or other actuated crossing devices. These technologies can also be used to track near misses and this information used to identify operational and other improvements that may be beneficial to pedestrian safety.

Currently, due to low traffic volumes, there are no signalized intersections or crossings proposed internal to the Smith Hub. However, this technology may be considered as crossings are identified as being necessary and passive pedestrian detection may be implemented at that time. This technology should be considered for inclusion with future development, so improvements can be made as development occurs. This concept advances the City's goal to have safe, convenient, and comfortable crossings.

Positive Pedestrian Guidance

Positive pedestrian guidance is the use of landscaping, street furniture, pedestrian scale signing and pavement markings to enhance pedestrian access and help guide pedestrians to safe areas. These improvements are human scaled (as opposed to vehicle scaled) and enhance the walkable environment. This concept could be implemented in the Smith Hub in the short-term by adding wayfinding signage at intersections, mobility points, and gateways. Along with making pedestrians aware of the locations of various amenities throughout the Smith Hub, the design and color scheme of wayfinding signage could contribute to the branding within the Smith Hub.

Another example of how the concept of positive pedestrian guidance could be implemented in the future is to add planters to channel people to future street crossing locations. It is also recommended to include this concept as a consideration for future mixed-use development proposals, as this concept advances the City's goal of providing pedestrian scaled walkable environments.



Digital Twin

A smart cities digital twin is an emerging idea where agencies create a digital replica of an area, such as the Smith Hub, in 3D or 4D (which would include simulation). A digital twin can integrate various data sources, such as building information modeling (BIM), civil information modeling (CIM), traffic modeling, photos, LiDAR and other data sources to create a virtual representation of the physical environment. A digital twin can be used for a variety of planning, design, and project development elements. By developing proposed improvements and development in a digital twin, planners, designers, decision makers, and the public can virtually experience proposed changes, which can help identify potential issues and build support for the improvements—ultimately resulting in new infrastructure and development that will meet community needs. This experience can be made more immersive by incorporating virtual reality (VR) and augmented reality (AR). There is an opportunity for the early deployment of digital twins of the City’s Innovation Hubs, which could potentially later be scaled to include other parts of the City.

This technology could be used by developers as a planning tool, or by the City as a visual aid during public meetings. It would allow the public and decision makers to experience proposed recommendations during the planning process, which may result in more informed input during the planning process, and ultimately better designs. Furthermore, with creation of this urban modeling platform, new developments could be required to develop files that could be incorporated into the digital twin. The development and management of digital twins could be done through a cooperative research project/partnership with a college or university (ASU), contracting, hiring/appointing City staff, or some combination of these. This will advance the City’s Live/Work/Innovate: The Creative, Entrepreneurial City principle.

Big Data

Aggregating, analyzing, and applying Big Data can provide valuable insights. For example, INRIX is developing a safety module that overlays various data sources to better understand crash hot spots and crash factors. It is noted that ADOT currently has a subscription to INRIX data which is available to all Arizona cities to use free of cost. This type of information could be used to help identify opportunities to enhance the Smith Hub and better understand Crash Data (section 2.2.3) and other data. Furthermore, big data on vehicular speeds in the Smith Hub could be collected and analyzed.



As was noted in the Field Observations Memo, vehicles were observed speeding throughout the Smith Hub. Big Data analysis of vehicular speeds throughout the Smith Hub could be used to help identify where speeding is occurring and how fast vehicles are going. As discussed in the crash data section of this report, the vast majority of crashes in the area are occurring external to the Smith Hub, on the arterial roadways. There were no conditions identified as causing the crashes that can be mitigated by countermeasures. Therefore, it is likely that big data analysis of crash data would be more useful on arterial roadways surrounding the Smith Hub, or in other areas of the City. But it is recommended that big data technology be a future consideration, as traffic volumes may increase over time as a result of increased activity in the Smith Hub.

The Regional Achieved Data System (RADS) developed and hosted in Maricopa County and maintained by AzTech could be used for Big Data hosting and computing through regional collaboration agreement which eliminate the initial investments. AzTech is currently planning on subscribing cloud-based storage which would provide more flexibility to the City in near future.

Variable/Smart Curb Space

Variable or smart curb space is a designated area for commercial vehicles, food trucks, TNCs (Transportation Network Companies) like Uber or Lyft, to use parking spaces. For example, a delivery truck could book a space to load or unload a delivery for the time they plan to be there.

Variable or smart curb space could be implemented using a small fraction of the current proposed on-street parking areas within the Smith Hub, by adding pavement markings, signage, and smart metering devices. With increasing demand for on-street parking, the addition of solar smart metering for on-street parking will become more applicable once the proposed short-term improvements are made. The concept of variable or smart curb space could be incorporated to address current needs, as well as future needs as increased mixed-use development occurs. It is recommended that variable and smart curb space be considered for inclusion in future mixed-use development plans.



4.5 Additional Recommendations

4.5.1 Truck Routing

Commercial truck traffic is an indication of the Smith Hub’s business vitality. The existing businesses benefit from the safe and convenient access the Smith Hub offers with its low-volume streets.

It is important for businesses in the Smith Hub and planned development to maintain safe and efficient access, with a logical and reasonable approach to handling truck traffic that continues to support the area’s businesses.

The City does not designate truck routes. The arterial streets—with their multiple travel lanes, turn lanes, and increased mobility—accommodate truck traffic within the city. Throughout the Smith Hub, one travel lane is shared by vehicular traffic, bicycles, and in the case of Smith Road, transit vehicles. To accommodate all mode users on Smith Road it is recommended that on-street parking be eliminated, bicycle lanes be added, and left-turn arrows pavement markings within the two-way left-turn lane along with “Center Lane Left Turn Only” signs be installed to discourage misuse of the two-way left-turn lane (refer to recommendations in Section 4.2.2).

4.5.2 Open Space

All of the property in the Smith Hub is privately owned. The only public space is the street ROW, which is managed by the City (with the exception of Price Road, a frontage to the Loop 101 freeway, which is managed by ADOT).

The *Apache Character Plan* includes a principle to “embrace the streets as Open Space.”

Recommendation: *Encourage private developers to provide publicly accessible open spaces, especially in larger developments.*

4.5.3 Art

Public art plays an essential and prominent role in placemaking and the Apache Area Plan identity. An *Apache Character Plan* principle is to “Promote outdoor art as community infrastructure in transportation, neighborhoods, parks, and commercial / office / mixed-use projects.”

Several businesses in the Smith Hub display sculptures on their property, and this art contributes to the Smith Hub identity. Design guidelines developed for the Smith Hub should encourage the continued use of private art to enhance the identity of the area.

Figure 32. Private art on display in the Smith





Businesses should be encouraged to work with staff to seek Art in Private Development opportunities in the area that bolster the creative placemaking efforts being made by the City. Public art in the Smith Hub may also be integrated into the street ROW; an example includes the use of bus shelters that incorporate public art. With the comments received following the second public meeting, thirteen responders suggested that a barrier to protect the bicycle lane on Smith could be conceived as an art installation.

4.5.4 Design Guidelines

A goal of the *Smith Industrial Innovation Hub Development Guidelines* is to establish a sense of place for the Smith Hub. Examples of how this can be achieved include gateway signage, branding, theming, and creation of locally appropriate design standards. In 2022, the City is planning to develop design guidelines for the Smith Innovation Hub and Tempe Maker District (the area bound by Broadway Road, Southern Avenue, Priest Drive, and the railroad), and information from the Plan will help to inform that process.

Recommendations:

- *Develop Planning and Design Guidelines for the Smith Innovation Hub and Maker District (initiated by the City in September 2021) to direct new buildings, sites, and related public realm development to support mixed-use development (including residential uses) and walkable streets.*
- *Encourage the use of a rustic exterior such as exposed concrete, brick, and metal façades in buildings.*
- *Encourage vertical and horizontal mixed-use projects that include buildings that are up to three to four stories in the interior of the Smith Hub.*
- *Achieve a Smith that is identified as a unique area by using a similar and compatible color scheme, building materials, plant palette (derived from the Apache Character Plan), art, and signage.*
- *Implement low-impact development for existing infrastructure and for newly developed commercial sites. Reference the Greater Phoenix Metro Green Infrastructure Handbook for details on alternative stormwater management that could be incorporated into the Smith Hub development and the greater Tempe region.*



4.5.5 Gateways

Following the first public meeting, the public was asked how the Smith Hub could help build its identity, and the number one response was to define gateway entrances.

Gateway features were called out in the ULI AzTAP, the *Smith Industrial Innovation Hub Development Guidelines*, and the Innovate Tempe presentation as a method of establishing an identity for the Smith Hub. These features were recommended on Smith Road at both Rio Salado Parkway and University Drive (with secondary features identified along Rockford and River Drive at University Drive and Rockford Drive at Rio Salado Parkway).

The development guidelines recommend enhancing streetscapes and adding gateway features on Smith Road to encourage people to connect north and south through the Smith Hub.

While gateways should be unique to the Smith Hub, establishing a theme is also an important component of community placemaking, and local community members may have opinions on how they would like the area to look.

Establishing the outer limits of a space through the use of gateway features lets users know they have entered a unique space. Architectural elements, such as columns or decorative fencing, are often used to help define a space. Using cohesive materials and colors throughout the Smith Hub will foster continuity and help define boundaries. Stainless steel, metal panels, concrete, and LED lighting are often used for a more contemporary feel and connect with the Smith Hub's industrial aesthetic.



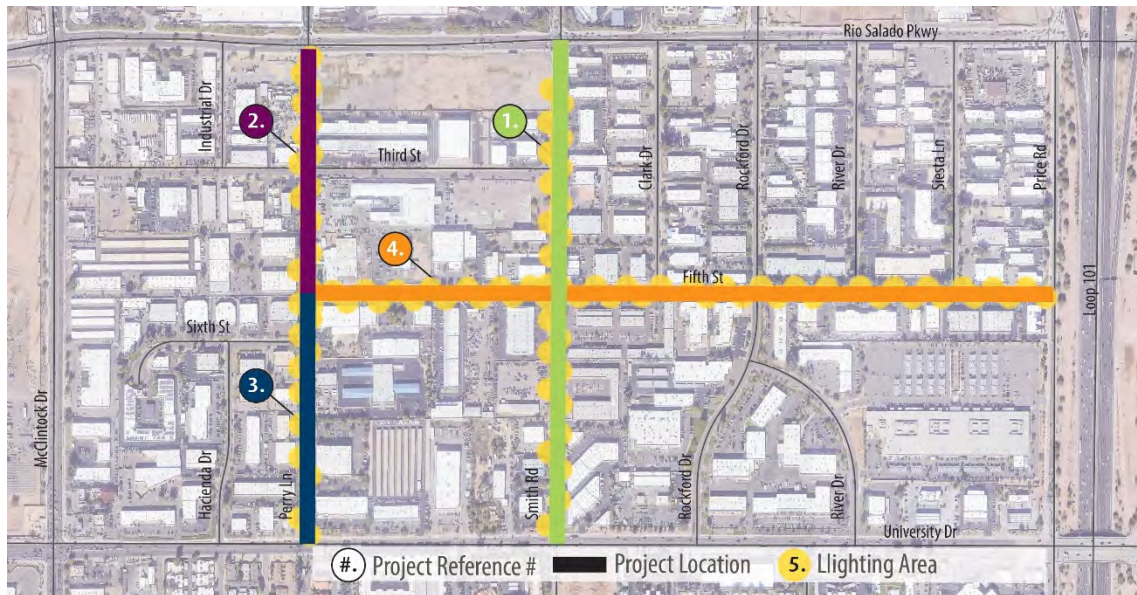
4.6 Summary of Recommended Improvements

Tables 3 and 4 summarize the recommendations in the short and long term, respectively. Figure 33 shows the project locations.

The Plan does not identify funding sources. However, there are strategies for implementation that could demonstrate greater efficiencies in construction and phasing of the project. For example, improvements on Perry Lane to address the street ROW may also incorporate the water line replacement noted in Section 4.3.1, *Water System Recommendations*.

The short-term project phase is described as up to 5 years; however, the timing of the improvements depends on many factors, including access to funding, design process, ROW acquisition, maintenance of traffic, and business access, all of which may affect when any particular project is implemented or constructed.

Figure 33. Short-term recommendations (refer to Table 3 for descriptions)



**Table 3. Short-term recommendations**

	Project	Extents	Pavement marking/signs	ADA ramp/driveway improvements	Street lights	Landscaping/trees	Full sidewalk reconstruction	Pavement reconstruction	Curb/gutter/drainage improvements	Curb bulb-outs	Bus shelters
1.	Smith Road Streetscape	University Drive to Rio Salado Parkway	✓	✓	✓						✓
2.	Perry Lane (north) Streetscape	Fifth Street to Rio Salado Parkway	✓	✓	✓	✓	✓	✓	✓	✓	
3.	Perry Lane (south) Streetscape	Fifth Street to University Drive	✓	✓	✓						
4.	Fifth Street Streetscape	Perry Lane to Smith Road	✓	✓	✓	✓	✓				
5.	Lighting, short-term recommendation	Various; see Figure 33			✓						

**Table 4. Long-term recommendations**

	Project	Extents	Pavement marking/signs	ADA ramp/driveway improvements	Street lights	Landscaping/trees	Full sidewalk reconstruction	Pavement reconstruction	Curb/gutter/drainage improvements	Curb bulb-outs	Other
1.	Perry Lane (south)	Fifth Street to University Drive				✓	✓	✓	✓	✓	
2.	Fifth Street	Smith Road to Price Road	✓	✓	✓	✓	✓			✓	
3.	Rockford Drive and River Drive	South of Fifth Street	✓	✓	✓	✓	✓				
4.	Third Street	McClintock Drive to Smith Road	✓	✓	✓	✓	✓		✓	✓	
5.	Secondary streets	Throughout the Smith Hub	✓	✓	✓		✓				



Where there may be a potential benefit to combining projects for the recommended improvements, they are noted. For example, there is an opportunity to replace a segment of water line concurrently with the improvements proposed for the section of Perry Lane north of Fifth Street to minimize traffic impacts that may occur if the projects were done separately.

4.7 Cost

Additional information about project planning-level cost estimates can be found in Appendix K.

4.8 Next Steps

The Plan will be presented to the Tempe City Council in the March 2022 timeframe. City staff will request funds to implement projects recommended in the Plan through the Capital Improvement Program budget process over the next several years. The goal is to complete most of the recommended improvements over the next 10 years. During this same period, staff will actively negotiate with private developers to fund recommended projects as appropriate as private development projects in the area arise.



Appendix A. Public Meeting #1 Summary Report



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Tempe Smith Innovation Hub

Public Involvement Summary for June 2021 Virtual Public Meeting

June 2021

Prepared by:

HDR
20 E. Thomas Rd.
Phoenix, AZ 85012

In cooperation with:

City of Tempe



Contents

1	Introduction	3
1.1.	Smith Innovation Hub Infrastructure Master Plan.....	3
2	Virtual Public Meeting	4
2.1.	Virtual Public Meeting Notification.....	4
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3.2.	Business Survey.....	6
3.3.	Alternatives Survey	6

Appendices

Appendix A: Meeting Notifications

Appendix B: Meeting Materials

Appendix C: Summary of Public Questions/Comments and Responses



1 Introduction

The Innovation Hub Initiative was approved by Tempe City Council on March 1, 2018. It is an economic development initiative to enhance key employment corridors to promote new investment, job creation and placemaking that attracts and retains a quality workforce. Eight hubs were identified, and the Smith Innovation Hub (SIH) was selected for the pilot project.

The SIH is approximately 302 acres (1/2 square mile) with mostly light industrial and office uses. It is bounded by Rio Salado Parkway, Loop 101, University Drive and McClintock Drive. It was selected for the pilot area due to its unique innovation ecosystem near current and planned transit investments, adjacency to the ASU Novus Innovation Corridor and other amenities and variety of uses already in place.

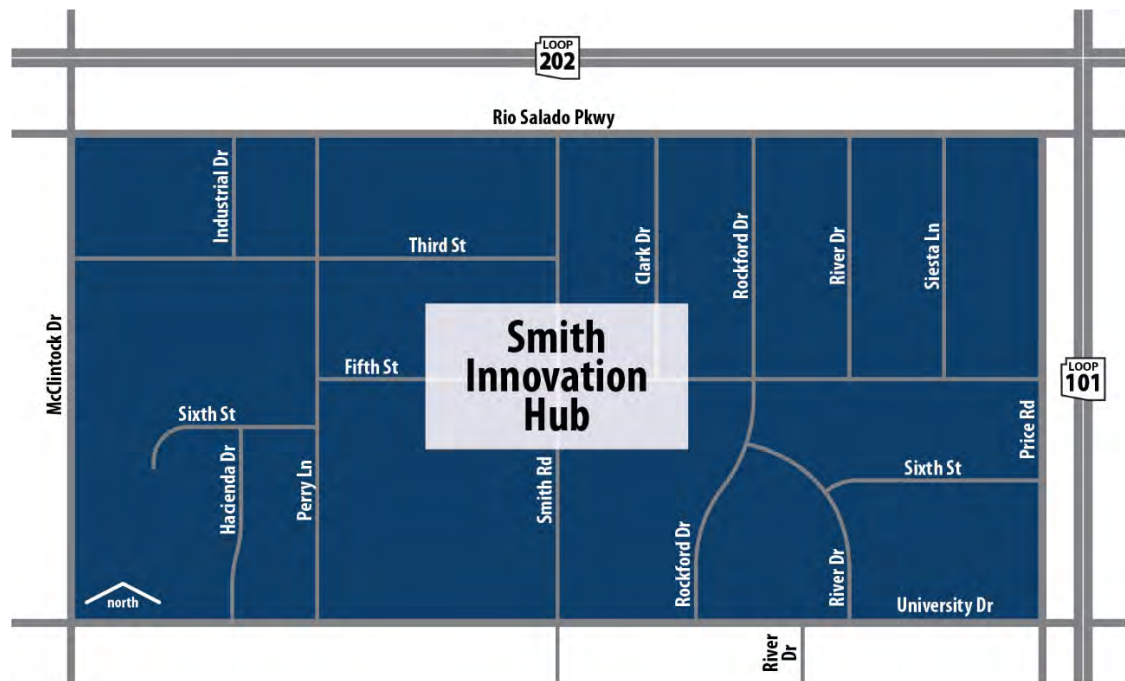
1.2. Smith Innovation Hub Infrastructure Master Plan

The SIH Infrastructure Master Plan (Plan) is planned to help guide the redevelopment of the SIH, consistent with the *Tempe Smith Industrial Innovation Hub Development Guidelines* (2020) and other relevant City of Tempe land use plans and policy guidance.

The purpose of the Plan is to help guide the redevelopment of the SIH by identifying and prioritizing infrastructure needs for both short- and long-term planning for the area. The Plan will look at infrastructure needs including streetscape, water, sewer, freight mobility, vehicle circulation, lighting, active transportation, and transit amenities.



Figure 1. Smith Innovation Hub



2 Virtual Public Meeting

The study team, in collaboration with the City of Tempe, held a virtual public meeting on Friday, June 4, 2021 at 9 a.m. In order to participate, the public could either join through the Webex application or call-in by phone. The meeting focused on an overview of the SIH, the study process, and the potential alternatives within the study area. Following the presentation, there was an opportunity for the public to ask questions or provide verbal comments.

2.1. Virtual Public Meeting Notification

2.1.1. Direct Mailer

The City of Tempe developed a direct mailer that was sent to all businesses and residents near the SIH. The mailing zone parameters were Tempe Town Lake to the north, Apache Boulevard to the south, Price Road to the west, and McClintock Drive to the east. The direct mailer, which was distributed on May 25, 2021, included a brief overview of the study and details on how to attend the virtual public meeting and provide comments. A copy of this mailer can be found in Appendix A.



2.1.2. Study Webpage

The study webpage, tempe.gov/smithhub, was updated on May 24, 2021, and included information about the study and the date and access information for the public meeting.

2.1.3. Nextdoor

Two Nextdoor posts were published on the City of Tempe’s account. The first post on May 27, 2021 shared study and public meeting information and included a link to the eblast that was distributed for more information. The post had a total of 59 views. The second post on June 14, 2021 served as a survey reminder and had a total of 47 views. A copy of the posts can be found in Appendix A.

2.1.4. City of Tempe Eblast

The City of Tempe sent an eblast on May 25, 2021. The eblast included project information and details on how to attend the virtual public meeting, as well as how to comment. This eblast was sent to over 3,000 contacts. A copy of the eblast can be found in Appendix A.

2.2. Virtual Public Meeting Format

The virtual public meeting provided an opportunity for people to listen to and/or view a presentation on the study, make comments and ask questions.

Attendees could join the virtual public meetings in Webex through the application in their internet browser, the Webex iPhone or Android application, the Webex computer application or by calling in to the meeting. Attendees who joined using one of the Webex applications could view the presentation and could raise their hand by selecting the “raise hand” icon to verbally ask a question or use the question and answer function to type in a question. Those who joined by calling in to the meeting could listen to the presentation and “raise their hand” to make a comment or ask a question by pressing star three on their phone. All questions were responded to by the project team during the virtual public meeting.

2.3. Public Meeting Materials

A copy of the presentation was made available to the public through the study webpage. In addition to the PDF of the presentation, a recording of the virtual public meeting was uploaded to the study webpage on June 7, 2021. A copy of the presentation is available in Appendix B.



3 Public Comments

3.1. Virtual Meeting Questions/Comments

Twelve questions/comments were submitted by members of the public during the virtual public meeting and were responded to by the project team on June 4, 2021. A summary of those questions and answers can be found in Appendix C.

3.2. Business Survey

Because the area is currently comprised of commercial uses only, prior to the launch of the virtual public meeting, the study developed a targeted survey that was distributed to businesses and property owners within the SIH. This survey included questions related to business access, business and property owner needs within the hub, and common issues/concerns for business and property owners. The survey was launched on May 11, 2021 and closed on May 25, 2021. A total of 19 responses were received. A summary of those survey responses can be found in Appendix C.

3.3. Alternatives Survey

Following the virtual public meeting, the study team launched a survey to the general public to solicit input on potential infrastructure improvement alternatives for the SIH. The survey was launched on June 4, 2021 and closed on June 17, 2021. A total of 17 survey responses were received during that time. A summary of the responses can be found in Appendix C.



Appendix A – Meeting Notifications



**Smith Innovation Hub Infrastructure Plan
Virtual Public Meeting**

**Friday, June 4, 9 a.m.
tempe.webex.com**

Event number: 187 207 7257

Event password: Smith

To join by phone, call 1-408-418-9388

Access code: 187 207 7257

A recording of the meeting will be available afterwards and online comment will be open June 4-17 at tempe.gov/SmithHub.

Smith Innovation Hub Infrastructure Master Plan

Your input is needed to help the City of Tempe develop an infrastructure plan for the Smith Innovation Hub. The plan will guide future city and private development infrastructure investment in the area. A virtual public meeting will take place to discuss existing conditions and gather feedback on potential improvements, including lighting, sidewalk or road improvements, bike lanes, landscaping and water/sewer upgrades.



tempe.gov/SmithHub

Contact:

Jill Buschbacher, Economic Development Program
Manager at jill_buschbacher@tempe.gov or
480-350-8812.

For a hard copy of the meeting materials and the
survey mailed to you, contact Shauna Warner,
Neighborhood Services, 480-350-8883.



City of Tempe
Neighborhood Services
21 E. 6th Street, 2nd Floor
Tempe, Arizona 85281

The Smith Innovation Hub Infrastructure Master Plan will identify infrastructure needs for the area, ensuring it aligns with the community's vision, and will include specific projects, cost estimates and a prioritized list of infrastructure improvements. A draft plan will be available in July for input with the final plan anticipated by early fall 2021.

Las juntas serán en inglés. Para información en español, por favor llama a 480-350-4311. Para participar y ver los materiales del proyecto, visite tempe.gov/SmithHub. Puede compartir sus comentarios por internet del 4 al 17 de junio.

Shepherd, Kristi

From: Shepherd, Kristi
Sent: Thursday, June 24, 2021 10:45 AM
To: Shepherd, Kristi
Subject: Tempe plans improvements for the Smith Innovation Hub

From: City of Tempe <webmaster@tempe.gov>
Sent: Tuesday, May 25, 2021 11:59:43 AM
To: Yee, TaiAnna <TaiAnna.Yee@tempe.gov>
Subject: Tempe plans improvements for the Smith Innovation Hub



Virtual Public Meeting
Friday, June 4, 9 a.m.
Comment online: June 4-17

tempe.gov/SmithHub

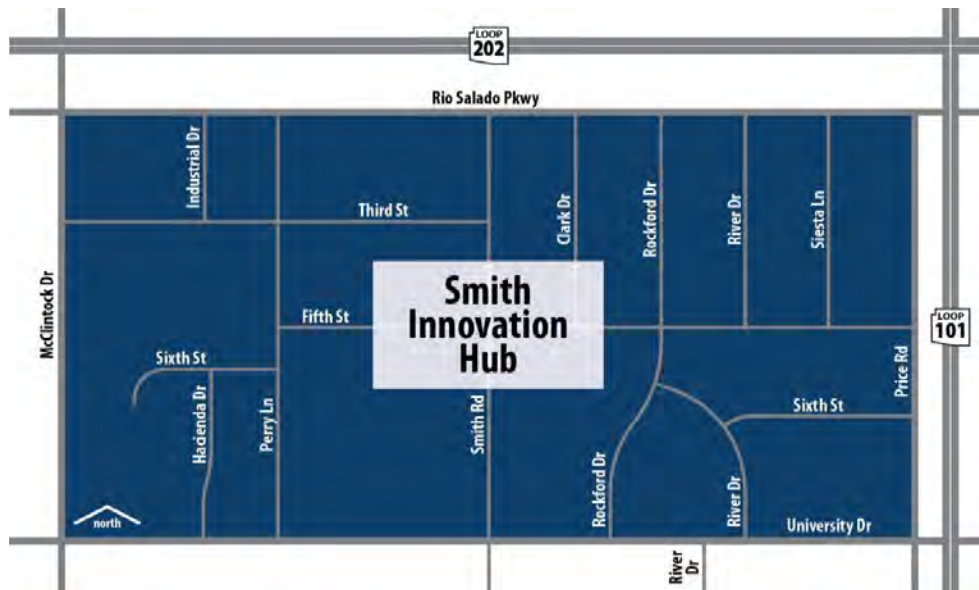
Tempe plans improvements for the Smith Innovation Hub

Virtual public meeting on June 4 at 9 a.m.

Post Date: 05/21/2021

Tempe is developing an infrastructure master plan for the Smith Innovation Hub that will identify potential needs for the area, including lighting, sidewalk or road improvements, bike lanes, landscaping and water/sewer upgrades.

Located between Rio Salado Parkway and University Drive to the north and south and McClintock Drive and Loop 101 to the west and east, the Smith Innovation Hub is made up of mostly light industrial and office uses.



The goal of the Innovation Hub is to enhance the employment corridor to promote new investment, job creation and placemaking that attracts and retains a quality workforce.

Your input is needed to help shape the future of the Smith Innovation Hub. A public meeting to discuss existing conditions and gather feedback on potential improvements will be held:

Friday, June 4
9 a.m.

WebEx - Join
Password: Smith

The master plan will help identify area needs, ensuring it aligns with the community's vision, and will include specific projects, cost estimates and a prioritized list of infrastructure improvements.

A draft plan will be available in July for input with the final plan anticipated by early fall 2021. The plan will guide future city and private development infrastructure investment in the area.

The master plan will address several Tempe City Council priorities, including reducing traffic delays, creating a 20-minute city, and increasing right of way landscaping and tree/shade canopy coverage. The plan also aligns with the city's economic development goals of retaining and attracting jobs and business investment in our community.

To find project information, or to comment online June 4-17, please visit tempe.gov/SmithHub. The virtual meeting will be recorded and posted to the project website.

La junta serán en inglés. Para información en español, por favor llama a 480-350-4311. Para participar y ver los materiales del proyecto, visite tempe.gov/SmithHub. Puede compartir sus comentarios por internet del 4 al 17 de junio.



Sign up to get the latest information in your inbox.

Tempe makes waves as a technology and business magnet, an inclusive, caring community and a hub for recreation and adventure.

Contact: TaiAnna Yee

City of Tempe

Public Information Officer

TaiAnna_Yee@tempe.gov

480-350-8551





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City of Tempe
21 E 6th St
Tempe, AZ 85281-3679

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This email was sent to Taianna_yee@tempe.gov
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City of Tempe · 21 E 6th St · Tempe, AZ 85281-3679 · USA



City of Tempe

Public Information Officer TaiAnna Yee • 27 May



Virtual Public Meeting

Friday, June 4, 9 a.m.
Comment online: June 4-17

tempe.gov/SmithHub

June 4 at 9 a.m.: **Smith Innovation Hub public meeting.** Tempe is developing a master plan for the Smith Innovation Hub that will identify potential needs for the area, including lighting, sidewalk or road improvements, bike lanes, landscaping and water/sewer upgrades. Help us shape the future of the Smith Innovation Hub - attend a virtual public meeting to discuss existing conditions and gather feedback on potential improvements on Friday, June 4 at 9 a.m. Details:

<https://mailchi.mp/tempe/smithhub0521>



Tempe plans improvements for the Smith Innovation Hub

mailchi.mp

Search Nextdoor



City of Tempe

Public Information Officer TaiAnna Yee • 14 Jun



Provide input on the Smith Innovation Hub by June 17. Tempe is developing a master plan for the Smith Innovation Hub that will identify potential needs for the area, including lighting, sidewalk or road improvements, bike lanes and landscaping. Help us shape the future - take a survey by this Thursday, June 17. Details: <https://mailchi.mp/tempe/smithhub0521>



Tempe plans improvements for the Smith Innovation Hub

mailchi.mp



Posted to Subscribers of City of Tempe in 14 neighborhoods



Appendix B – Meeting Materials

Smith Innovation Hub Infrastructure Master Plan

Public Meeting #1

June 4, 2021



Tempe

Making waves in the desert

Welcome

- All participants **have been muted** to avoid background noise
- Technical difficulties?
 - Call Webex at **866.229.3239**
- Following the meeting presentation, we will **take comments and questions** online and by phone
 - Instructions will be provided

LOOP
202

Rio Salado Pkwy

Industrial Dr

Third St

Clark Dr

Rockford Dr

River Dr

Siesta Ln

McClintock Dr

Fifth St

Smith
Innovation
Hub

Sixth St

Hacienda Dr

Perry Ln

Smith Rd

Rockford Dr

River Dr

Sixth St

Price Rd

LOOP
101



University Dr

Purpose



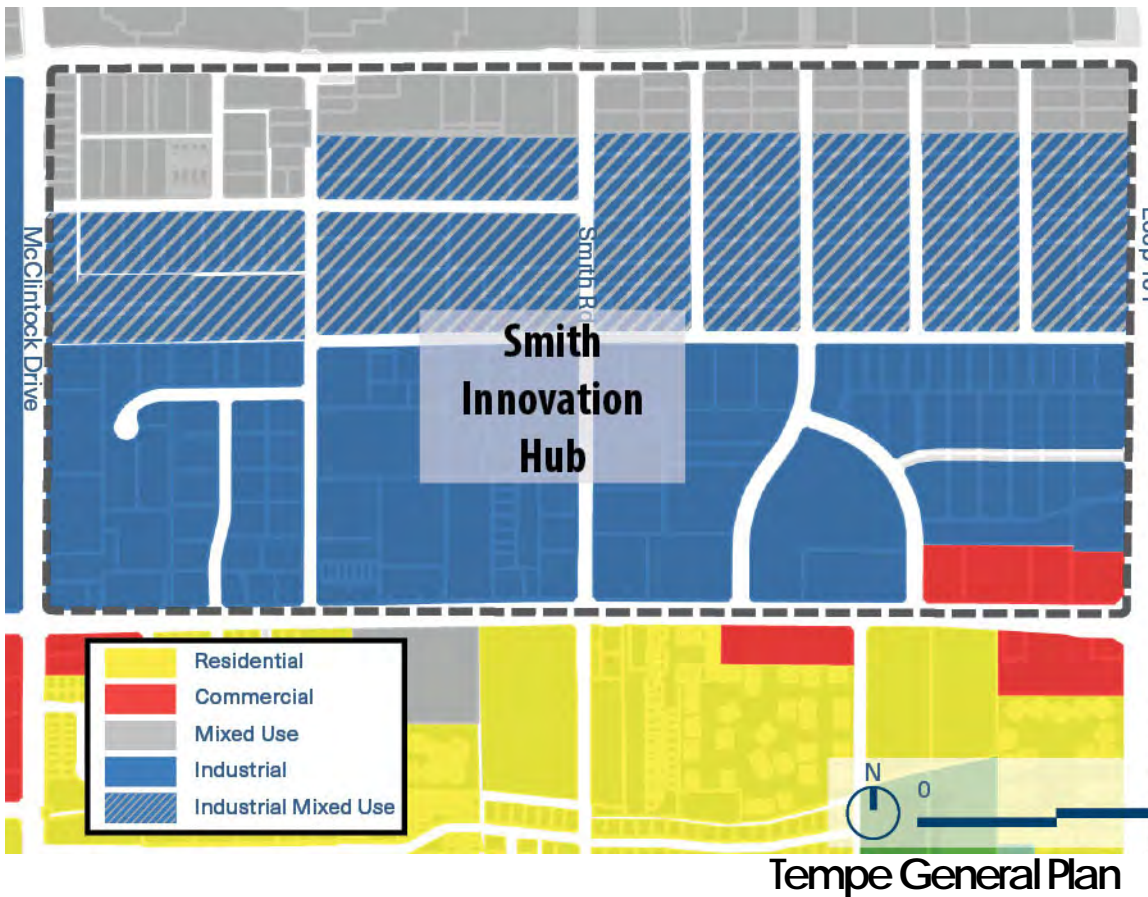
- Guide public and private infrastructure improvements
- Identify and prioritize infrastructure needs for short- and long-term timeframes
- Provide planning-level costs and prepare an implementation plan

Define 'Infrastructure'



- Streetscape
- Lighting
- Pedestrian and bicycle facilities
- Water and wastewater
- Vehicle and freight network
- Transit amenities

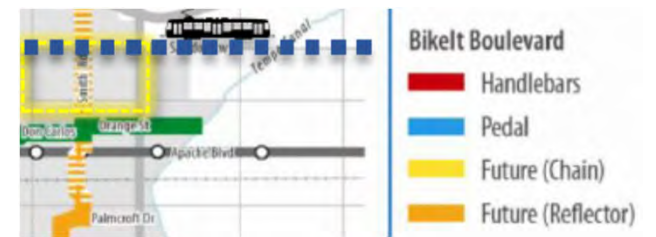
Background



SMITH INNOVATION HUB POTENTIAL LAND USES



Note: "Mixed use" may be either vertical or horizontal mixed use.



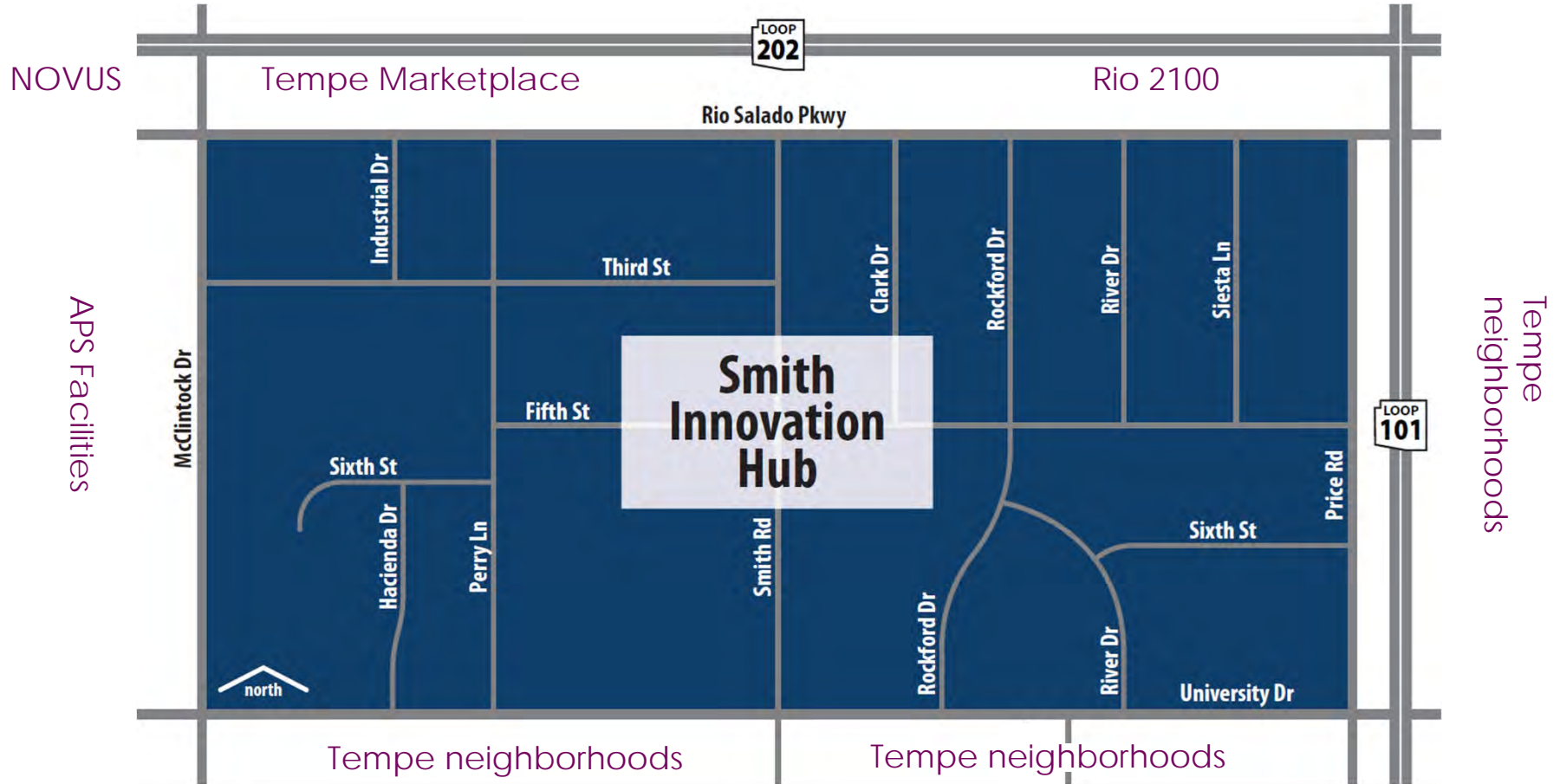
Excerpt from Bikelt map showing Smith Road as future bicycle boulevard through SIH.

Existing Conditions



- Approximately 250 unique employers with over 5,000 employees
- Majority single-story buildings
- Adaptive reuse occurring (Circuit Tempe, Circa '78)

Surrounding Community

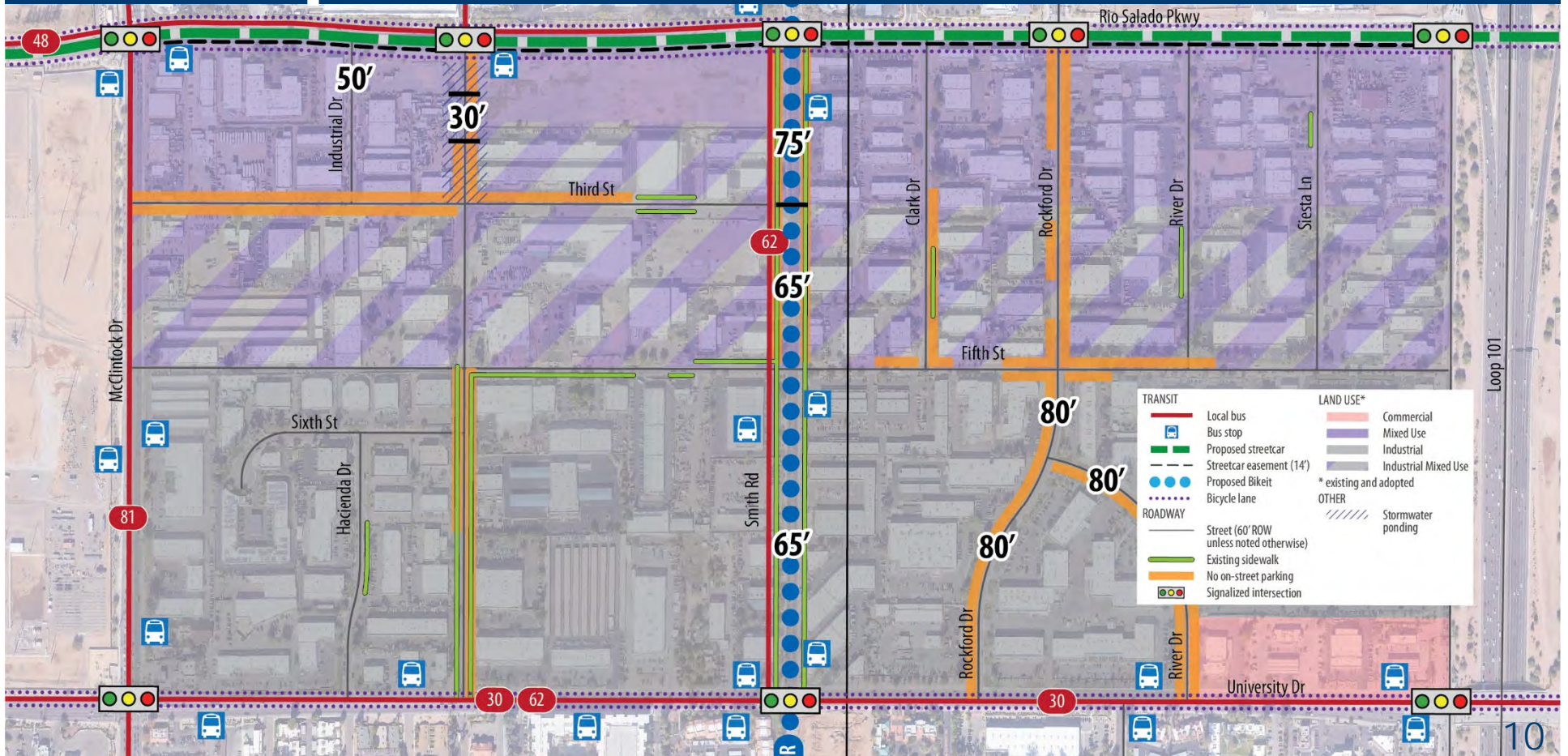


Adjacent Neighborhoods



- Escalante and Alegre parks communities
- Population nearly 9,000
- Transit and bike to work at 1 ½ times the City's rate
- Walk less than City's rate

Transportation Overview



Short-term Focus



- Next five years (2026)
- Planning-level information to begin budgeting and implementing improvements
- Current (and future) users



General criteria for comparison of alternatives

Criteria	User Groups	Rating
Level of comfort	Bicyclist and pedestrian	L, M, H
Curb access (parking, p/u, transit)	All	L, M, H
Access and mobility	Business	L, M, H

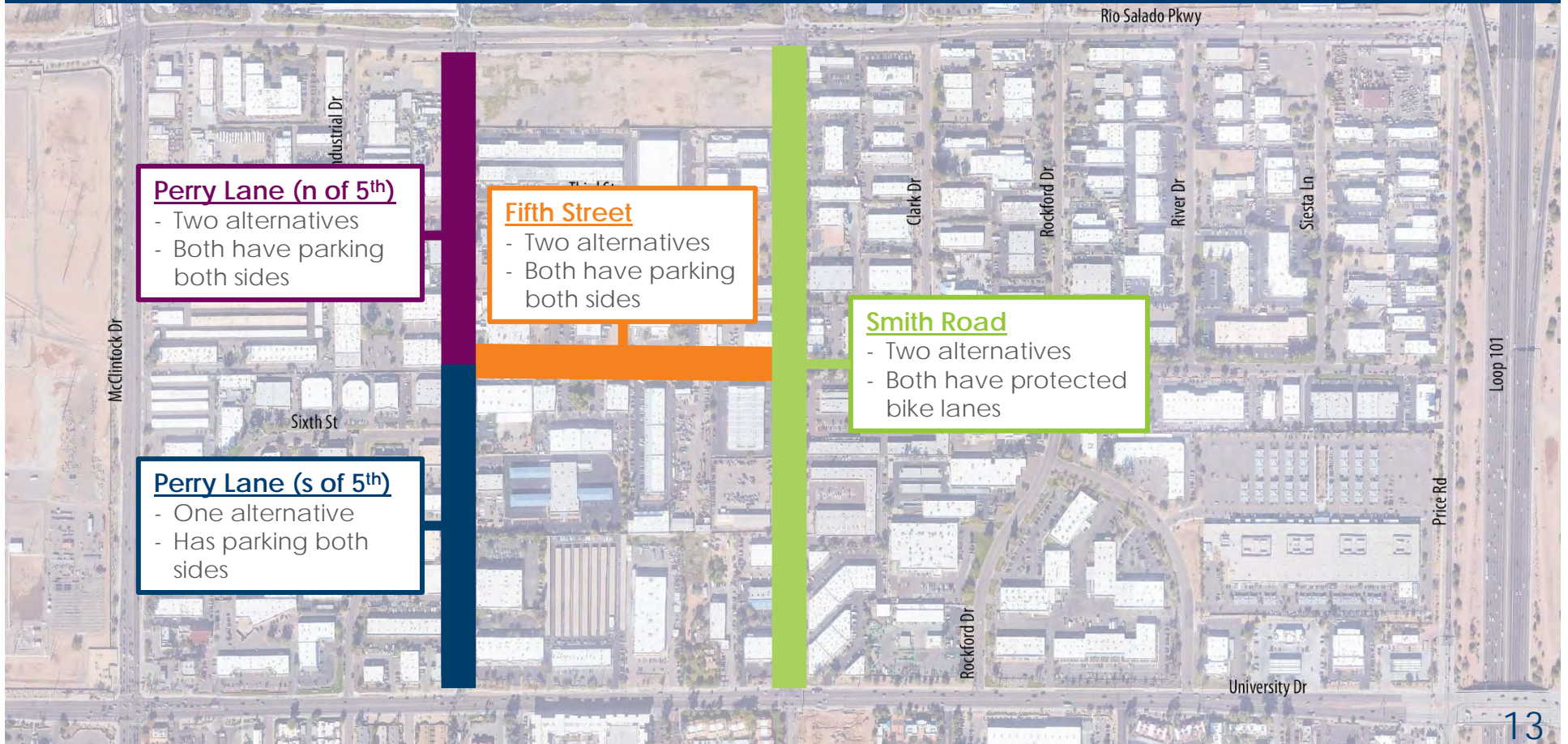
Ratings are qualitative relative scores using a three-step scale:

L - low

M - medium

H - high

Streetscape Alternatives



Perry Lane



- Make sidewalk improvements (ADA)
- Complete full street section north of 5th Street
- Mitigate stormwater runoff and on-street ponding



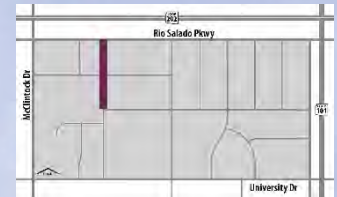
Photos,
South of 5th Street (left)
North of 3rd Street (right)



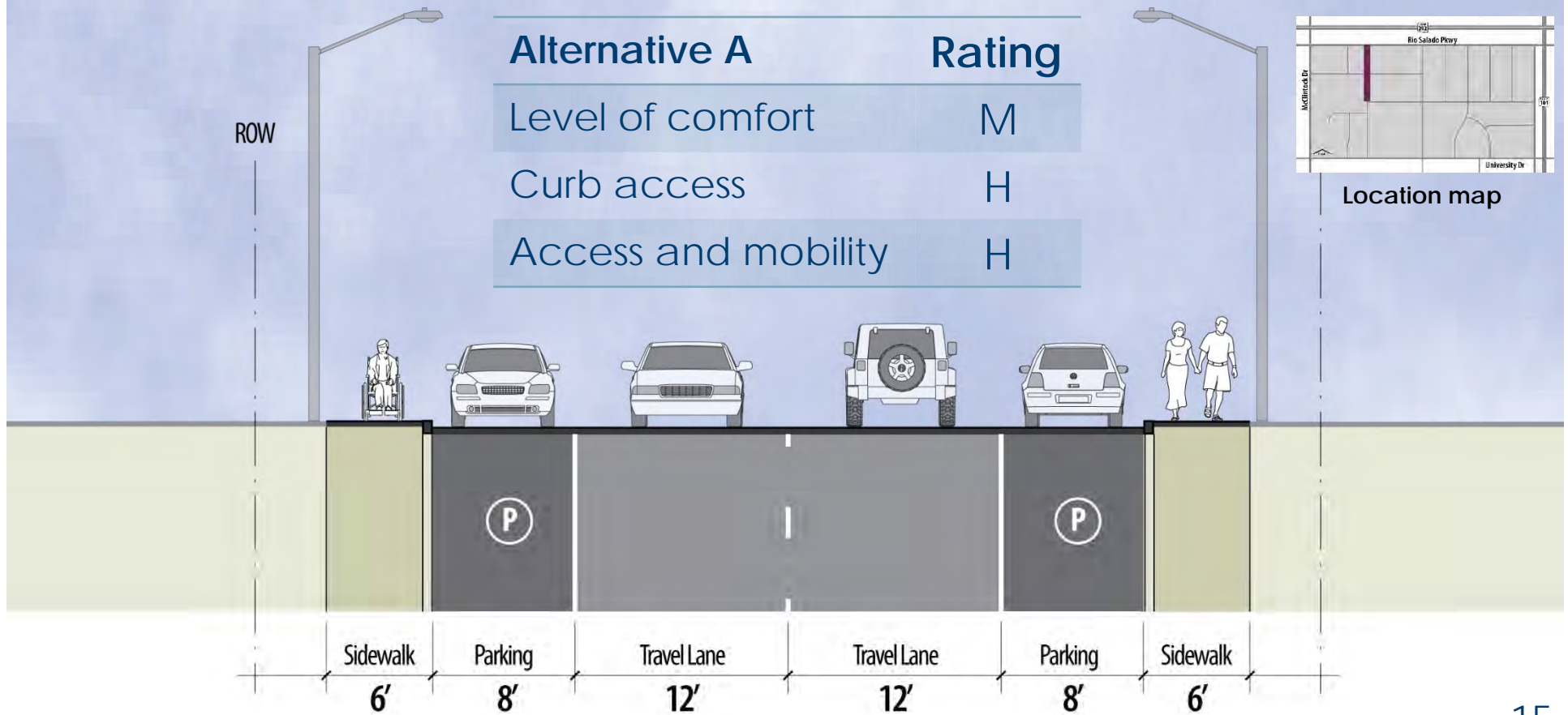
Perry Lane (north of Fifth St)



Alternative A	Rating
Level of comfort	M
Curb access	H
Access and mobility	H



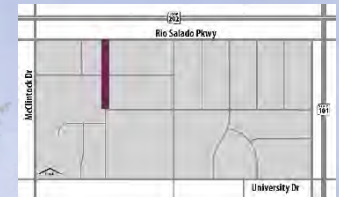
Location map



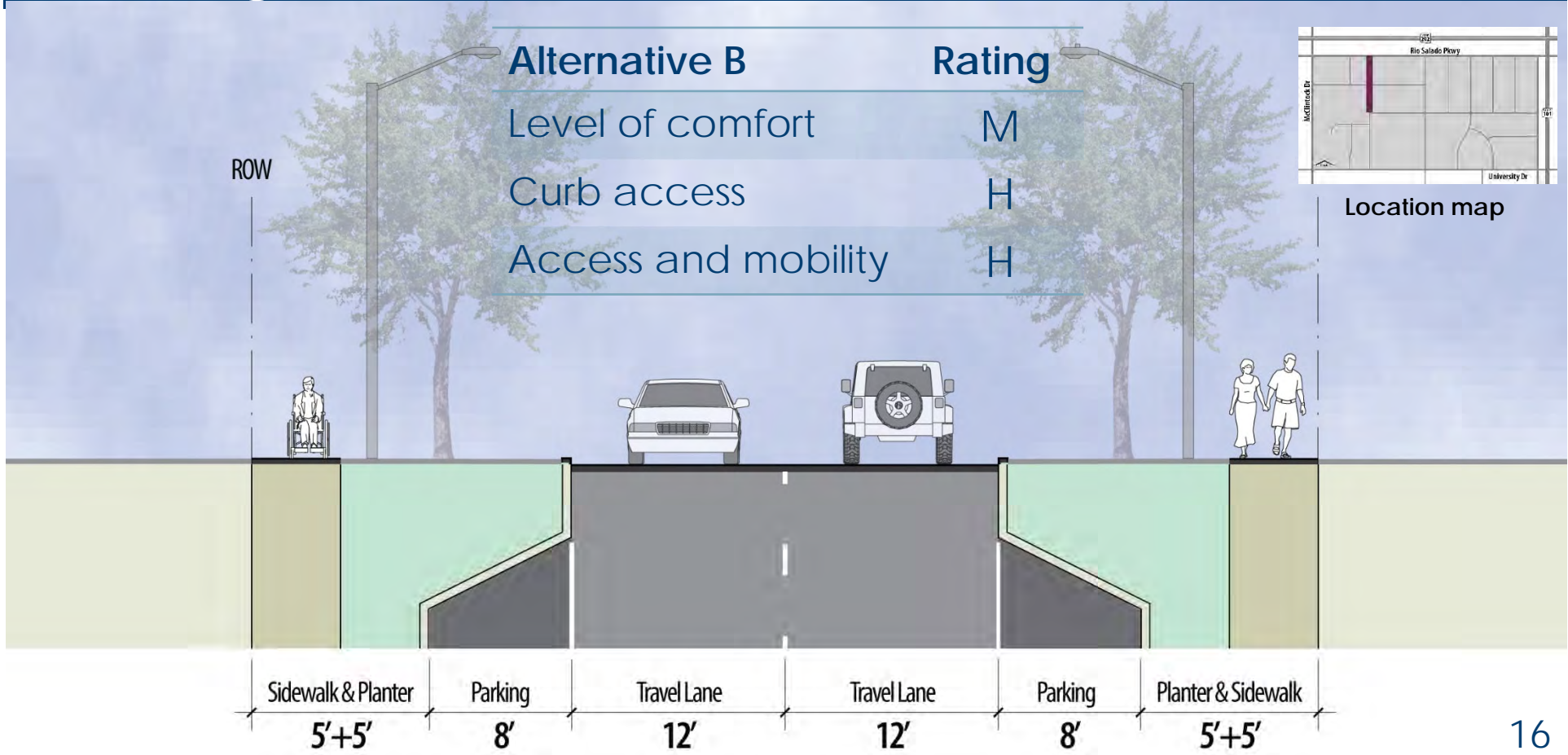
Perry Lane (north of Fifth St)



Alternative B	Rating
Level of comfort	M
Curb access	H
Access and mobility	H



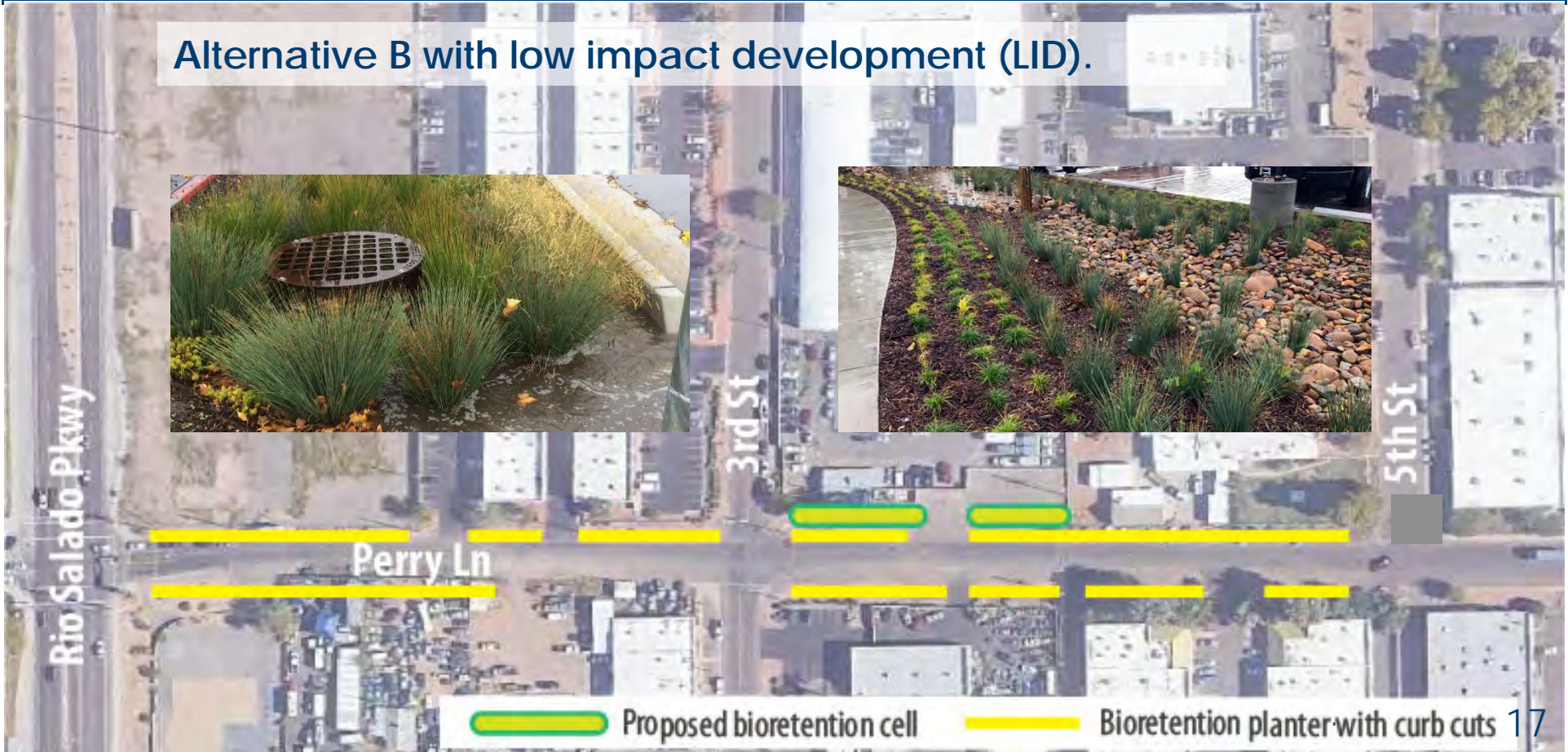
Location map



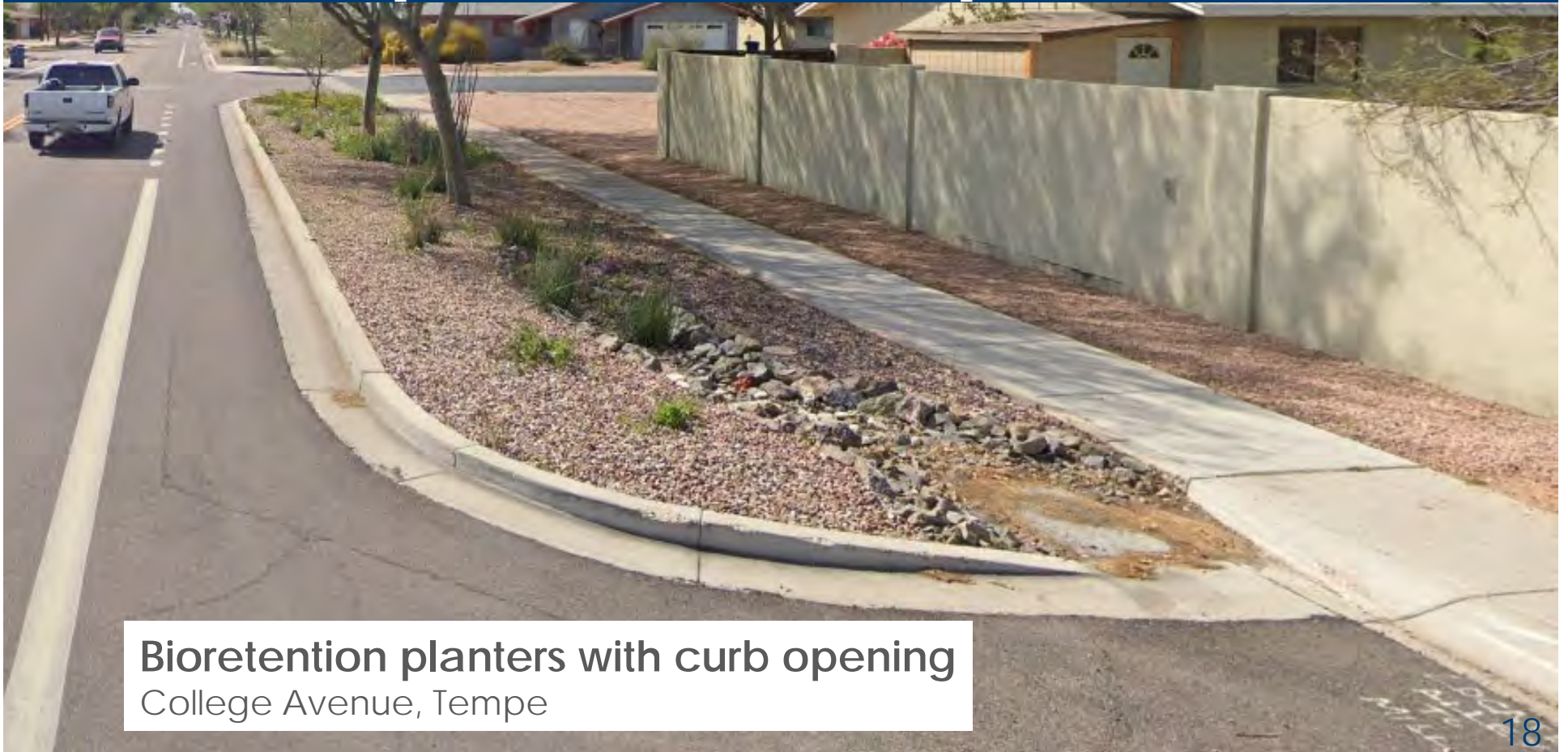
Perry Lane (north of Fifth St)



Alternative B with low impact development (LID).

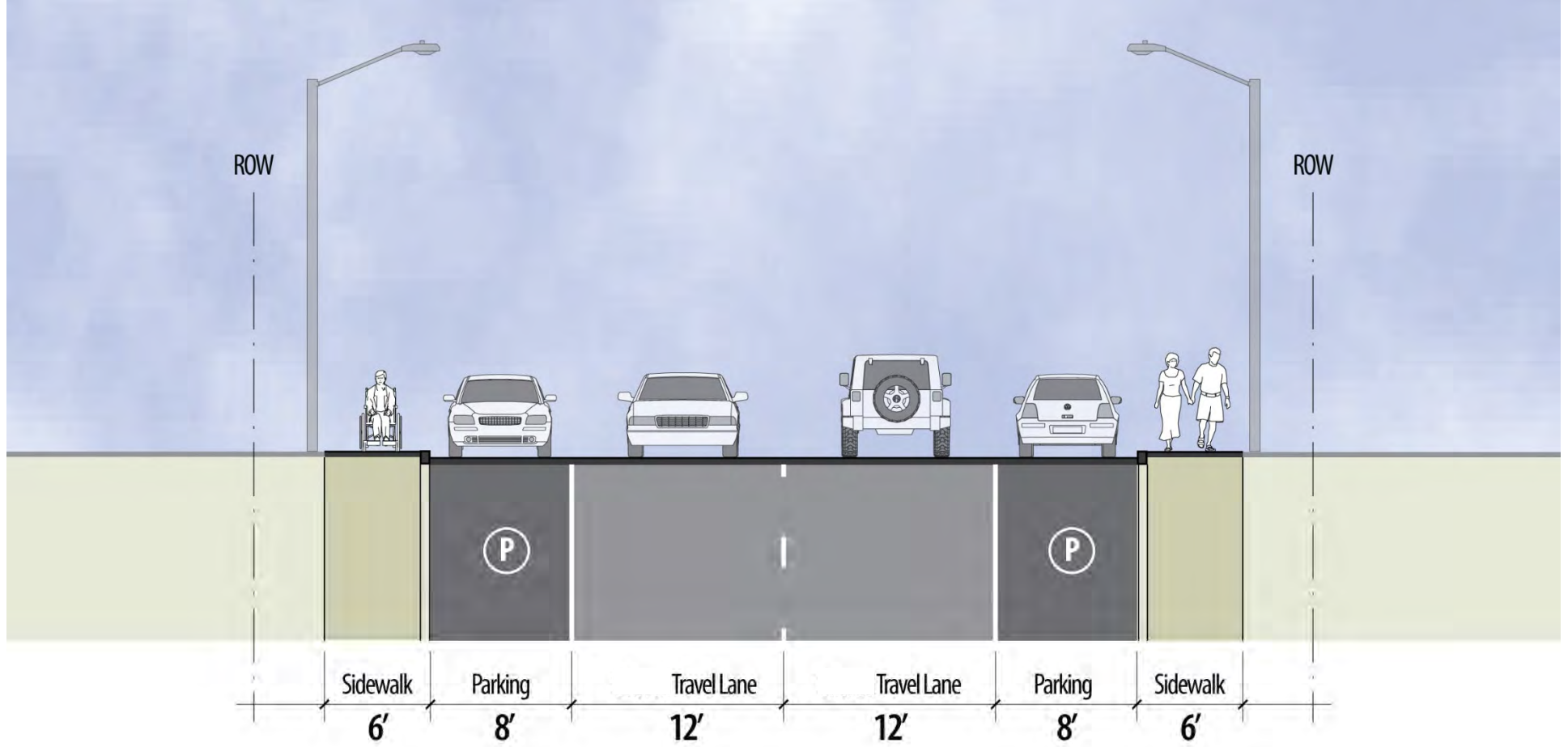


Low Impact Development



Bioretention planters with curb opening
College Avenue, Tempe

Perry Lane (south of Fifth St)



Fifth Street



- Make sidewalk improvements (ADA)
- Maintain on-street parking



Photos, Fifth Street



Fifth Street (Perry to Smith)



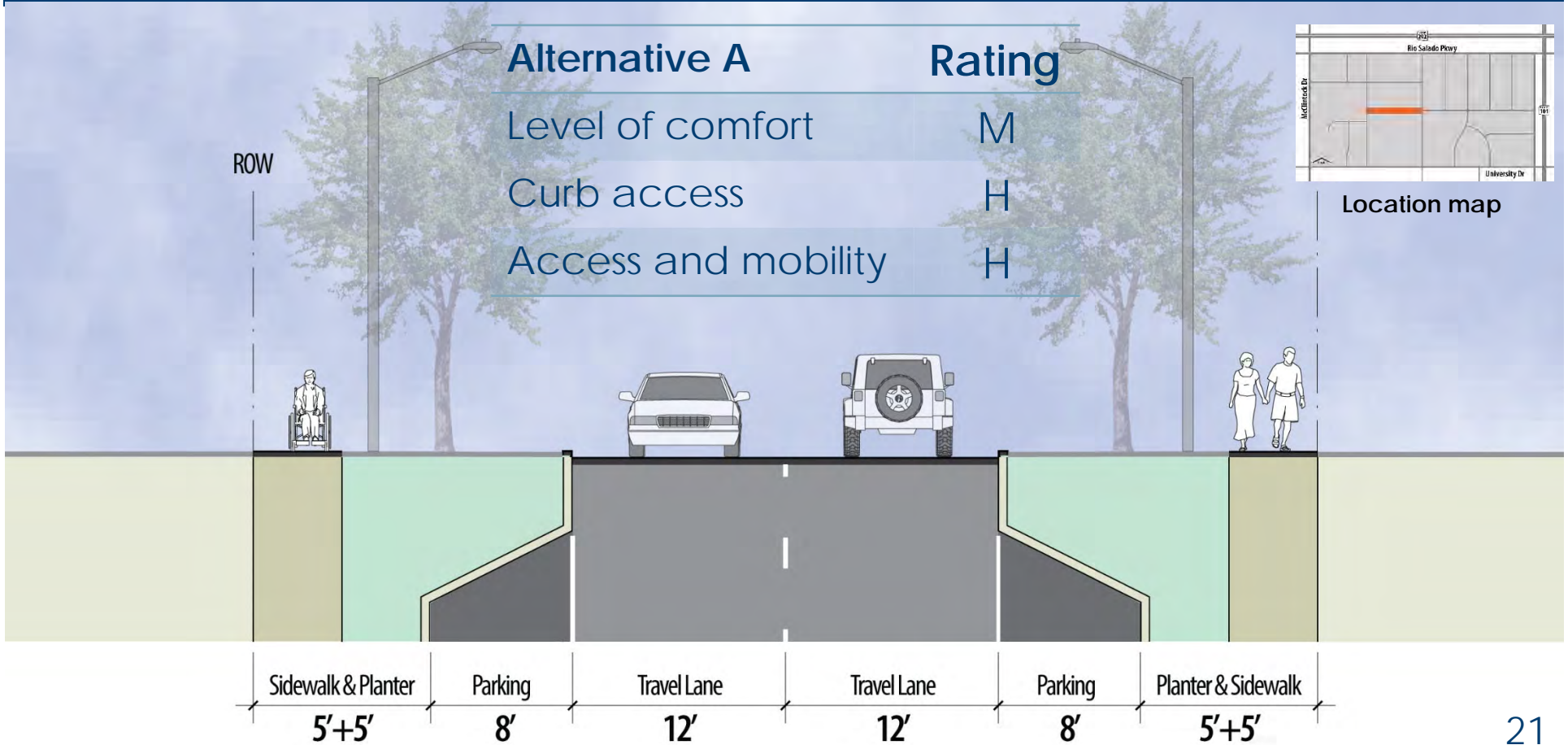
Alternative A

Rating

Level of comfort	M
Curb access	H
Access and mobility	H



Location map



Fifth Street (Perry to Smith)



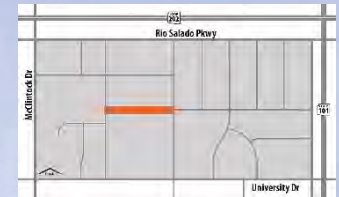
Alternative A with low impact development (LID).



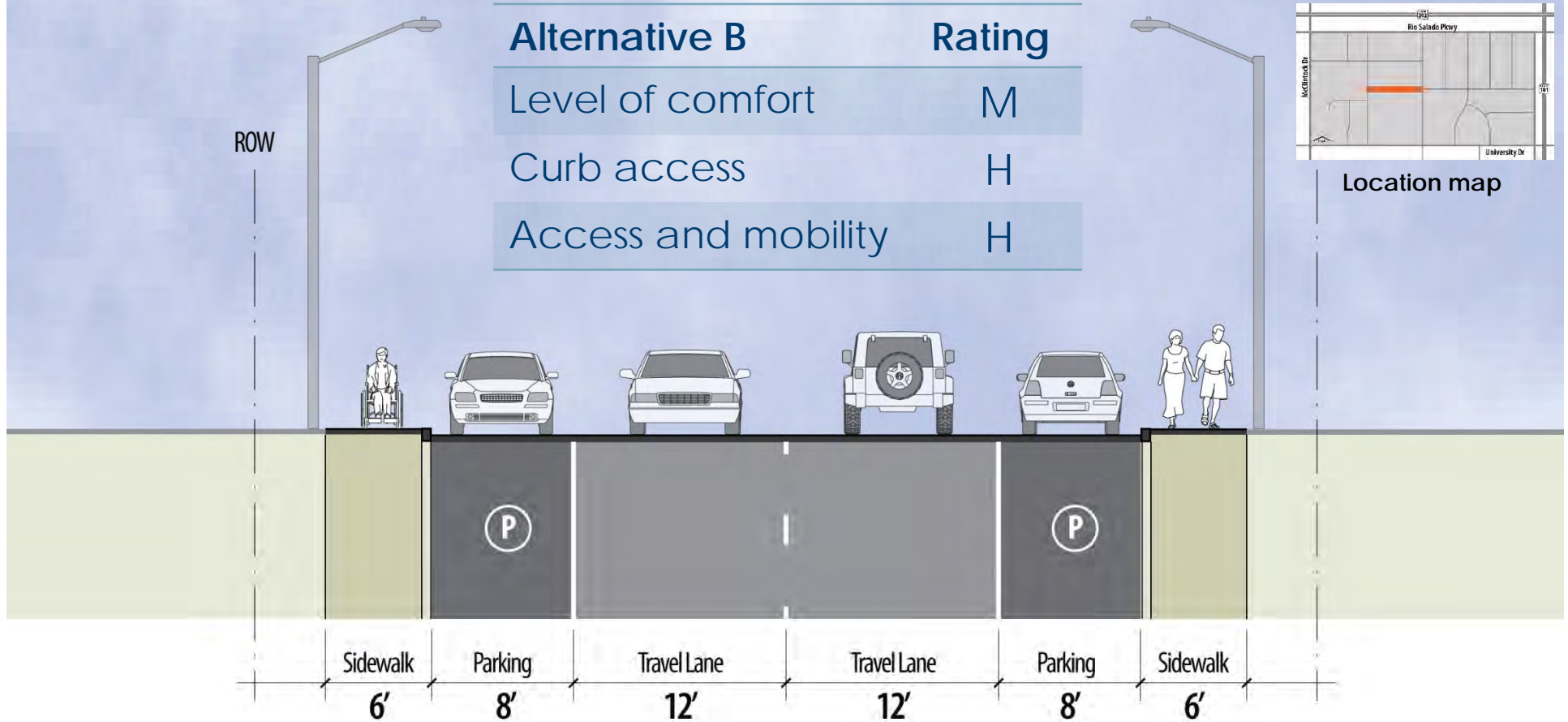
Fifth Street (Perry to Smith)



Alternative B	Rating
Level of comfort	M
Curb access	H
Access and mobility	H



Location map



Smith Road



- Make sidewalk improvements (ADA)
- Add striping for protected bicycle lanes
- Improve bus stops with shelters and benches

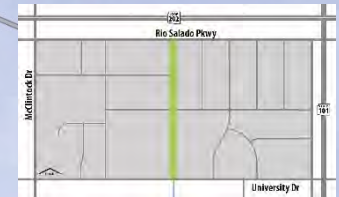
Photos,
Smith Road looking south (left), looking north (bottom)



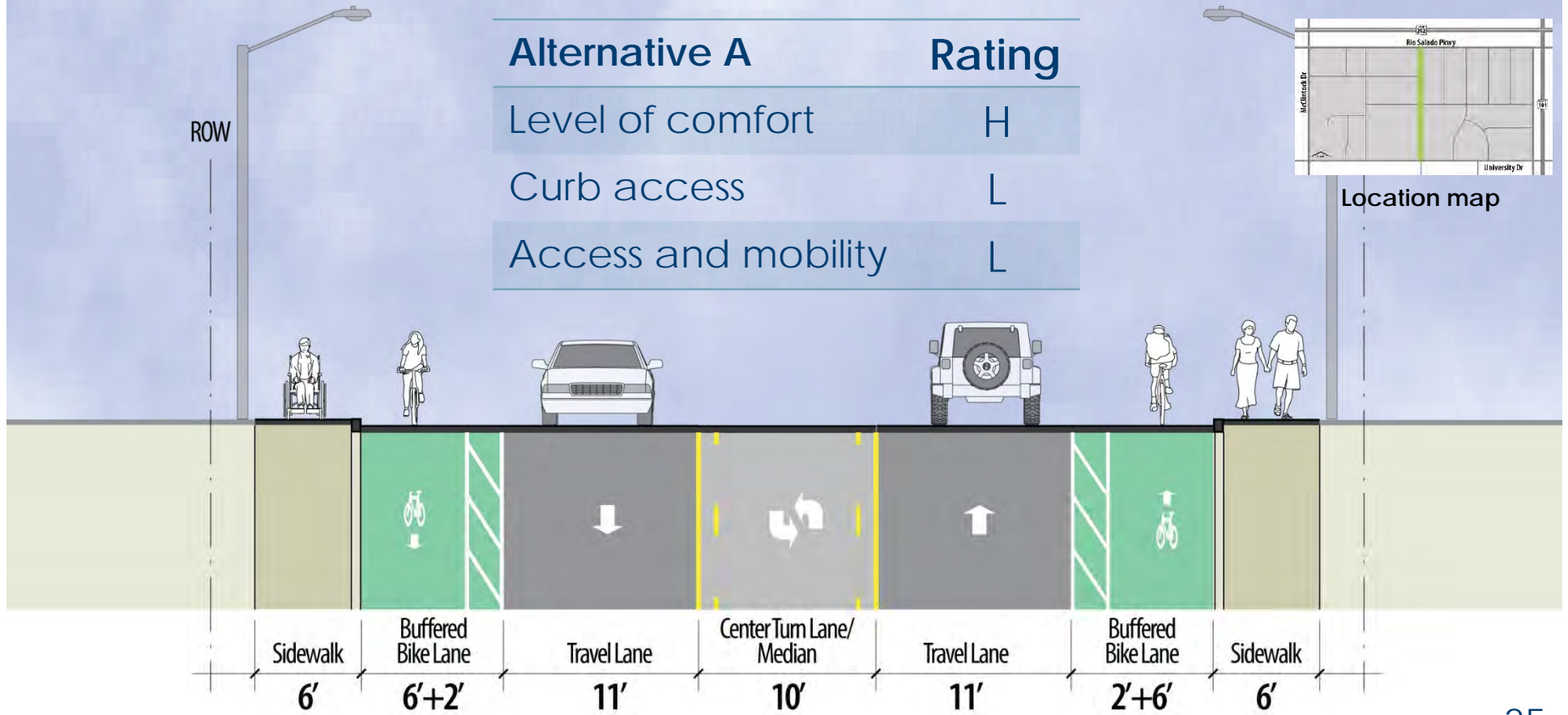
Smith Road



Alternative A	Rating
Level of comfort	H
Curb access	L
Access and mobility	L



Location map



Smith Road



Alternative B

Rating

Level of comfort

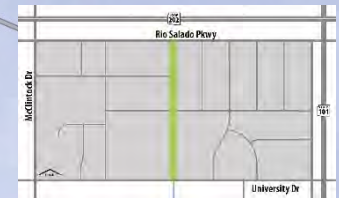
H

Curb access

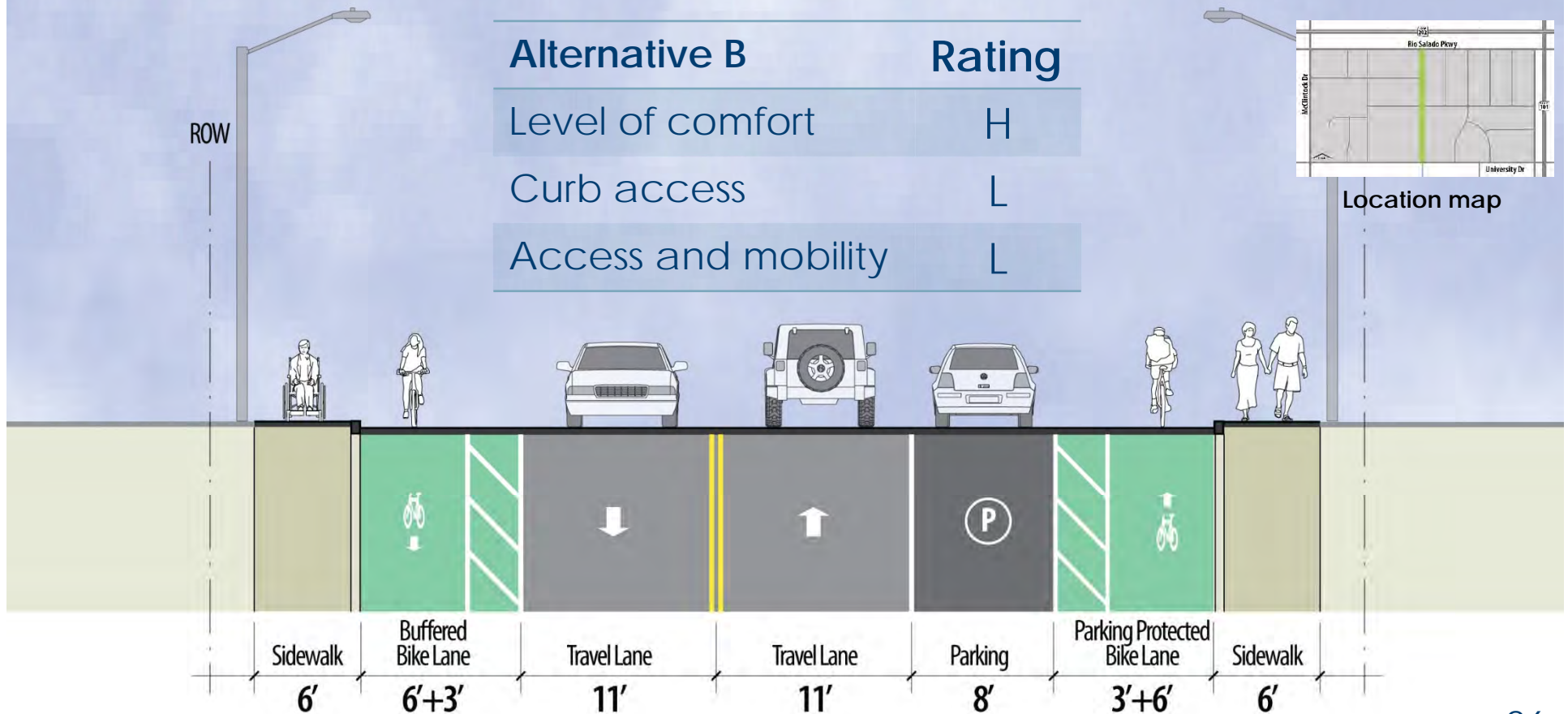
L

Access and mobility

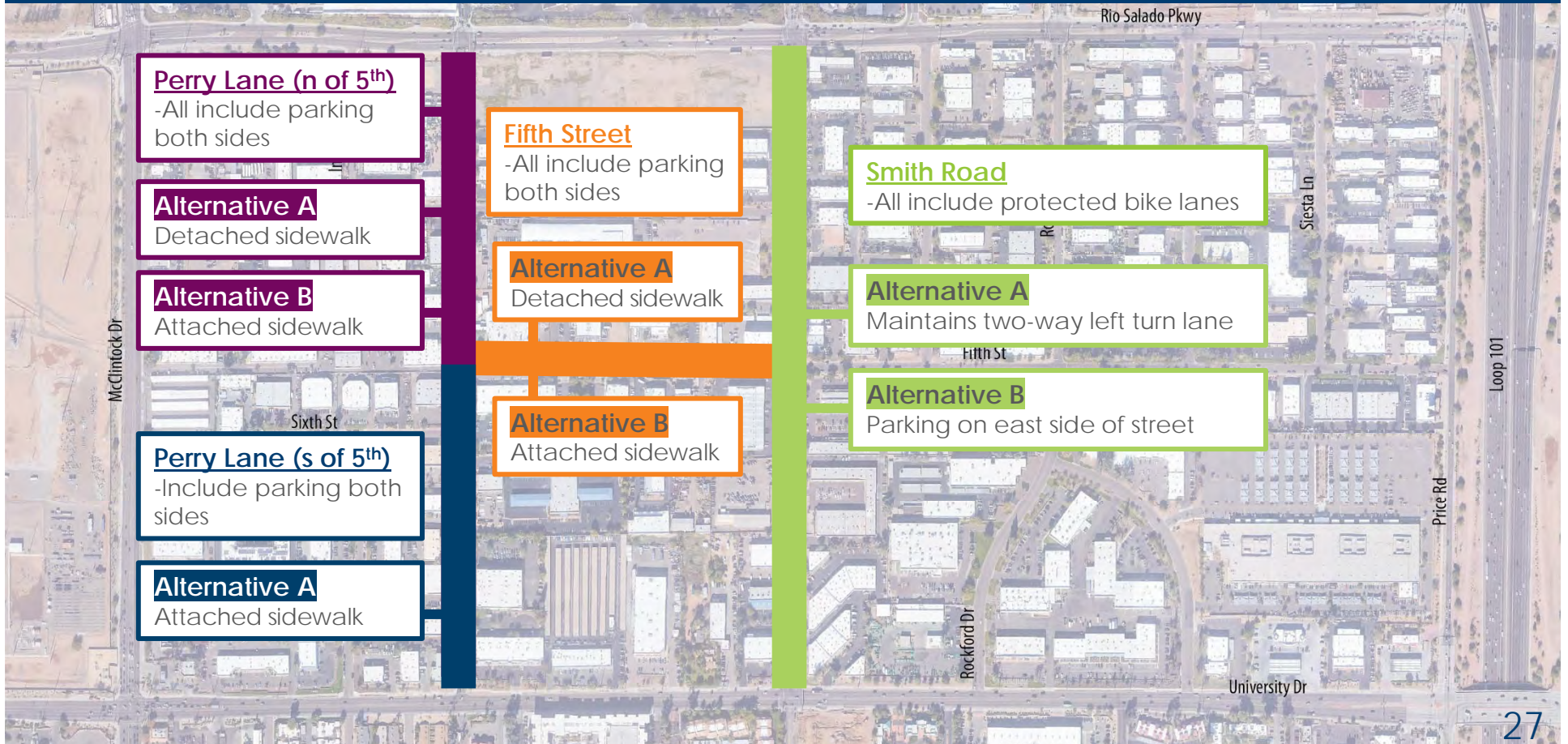
L



Location map



Streetscape Alternatives



Lighting



Prioritize at

- Smith Road bicycle route
- Primary pedestrian priority routes

Photo,
South River Drive streetlight fixture

Lighting



Water and Wastewater

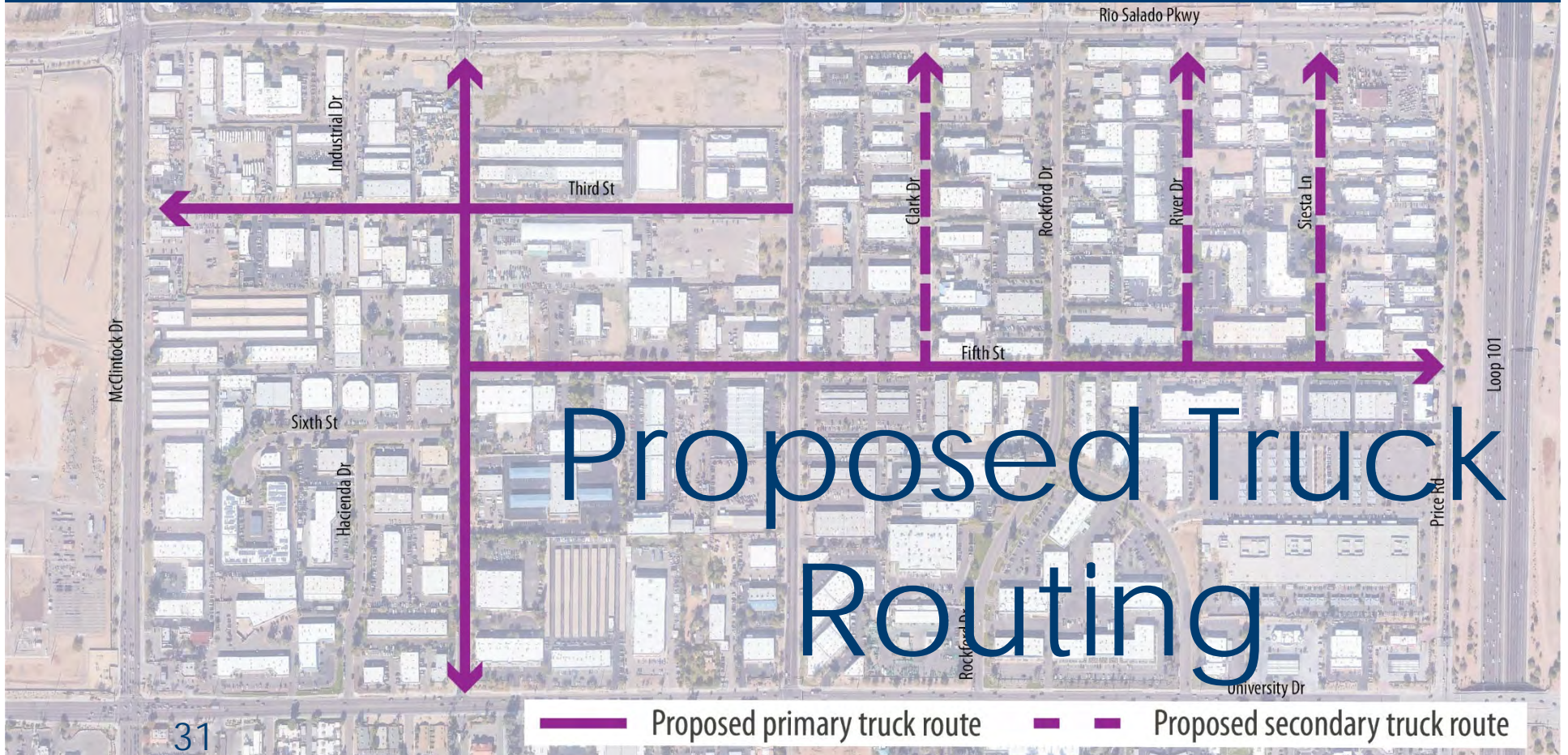


- Review Master Plan recommendations
- Review planned land uses to assess possible system capacity issues
- Recommendations to address identified issues



Photo,
South River Drive fire hydrant

Truck Traffic



Additional Projects



- Projects identified in the Tempe Transportation Plan
 - Bike lane improvements at McClintock and Rio Salado Parkway
 - Sidewalk improvements along McClintock Drive (east-side)
 - Smith Road bus stop shelters



Photos,

Rio Salado Parkway, looking east towards McClintock Drive (top)

University Drive, looking west towards McClintock Drive (bottom) 32

Long-term Focus

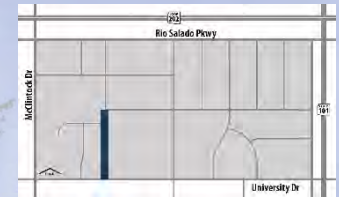


- Planning horizon of 2040
- Actions may be implemented through:
 - Capital Investment Plan projects,
 - as opportunities arise, and
 - as part of redevelopment.

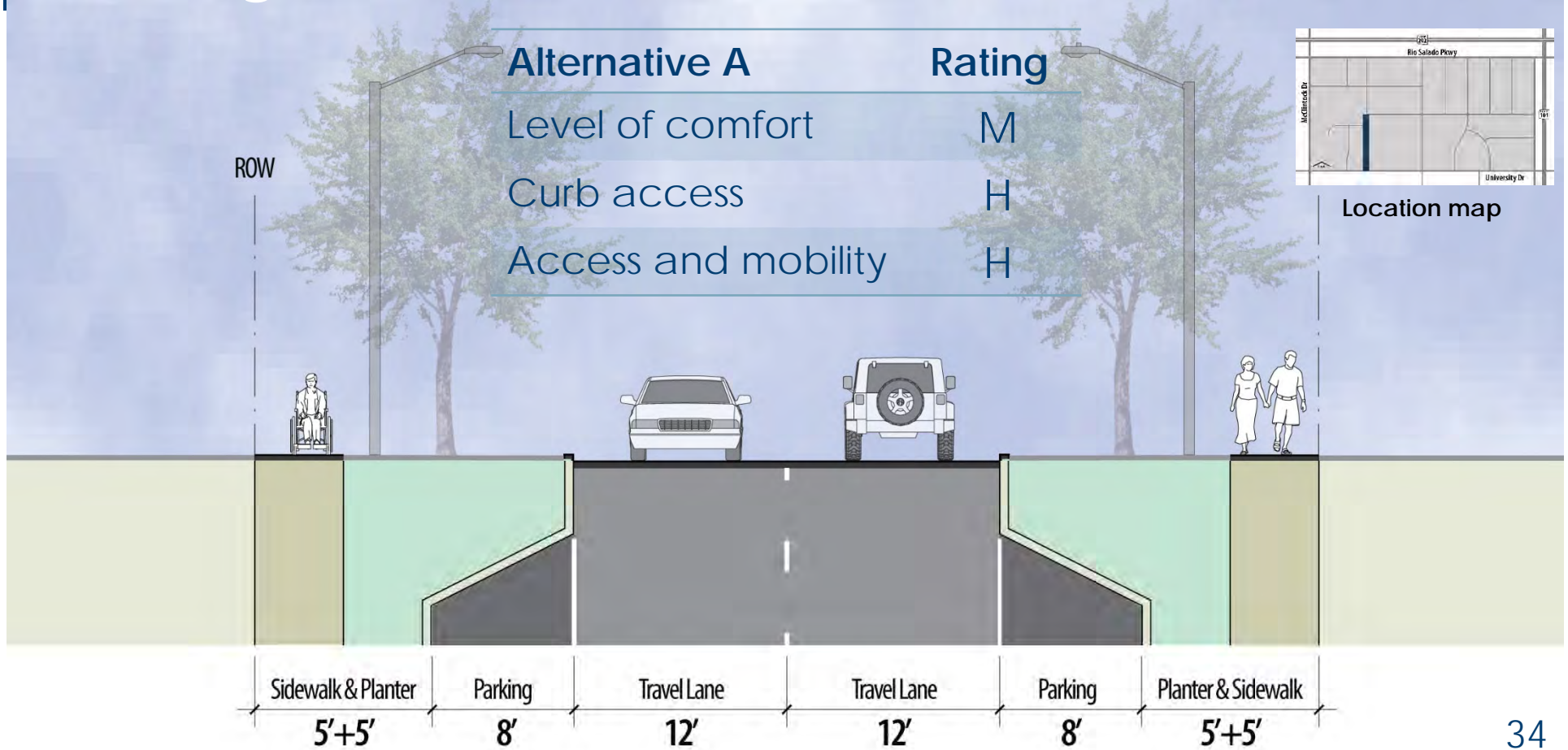
Perry Lane (south of Fifth St)



Alternative A	Rating
Level of comfort	M
Curb access	H
Access and mobility	H



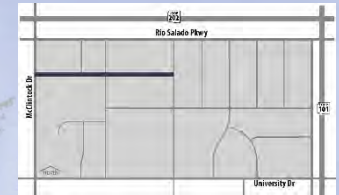
Location map



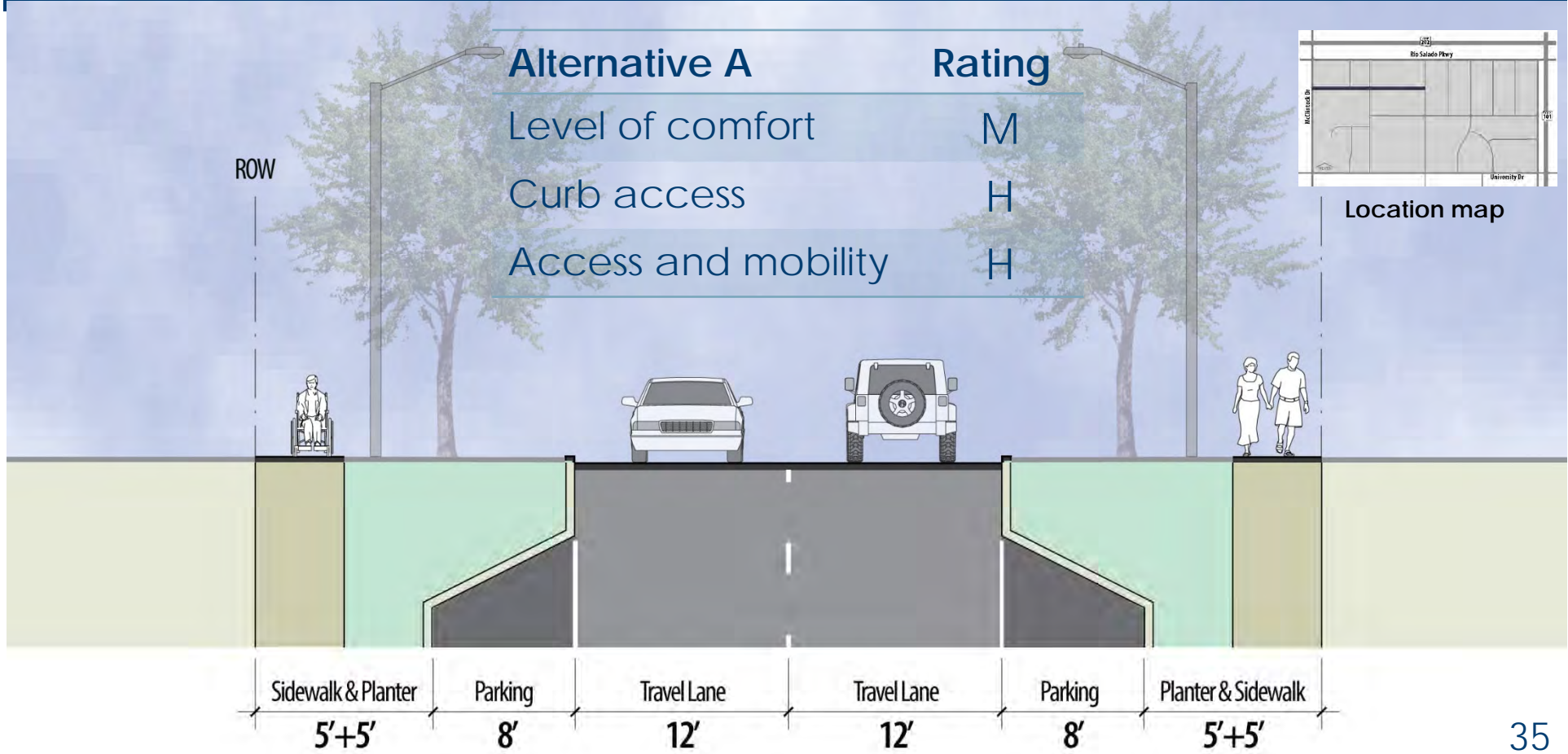
3rd Street (McClintock to Smith)



Alternative A	Rating
Level of comfort	M
Curb access	H
Access and mobility	H



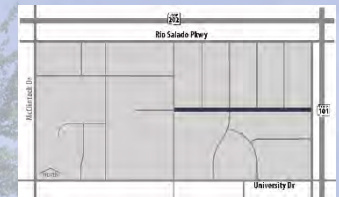
Location map



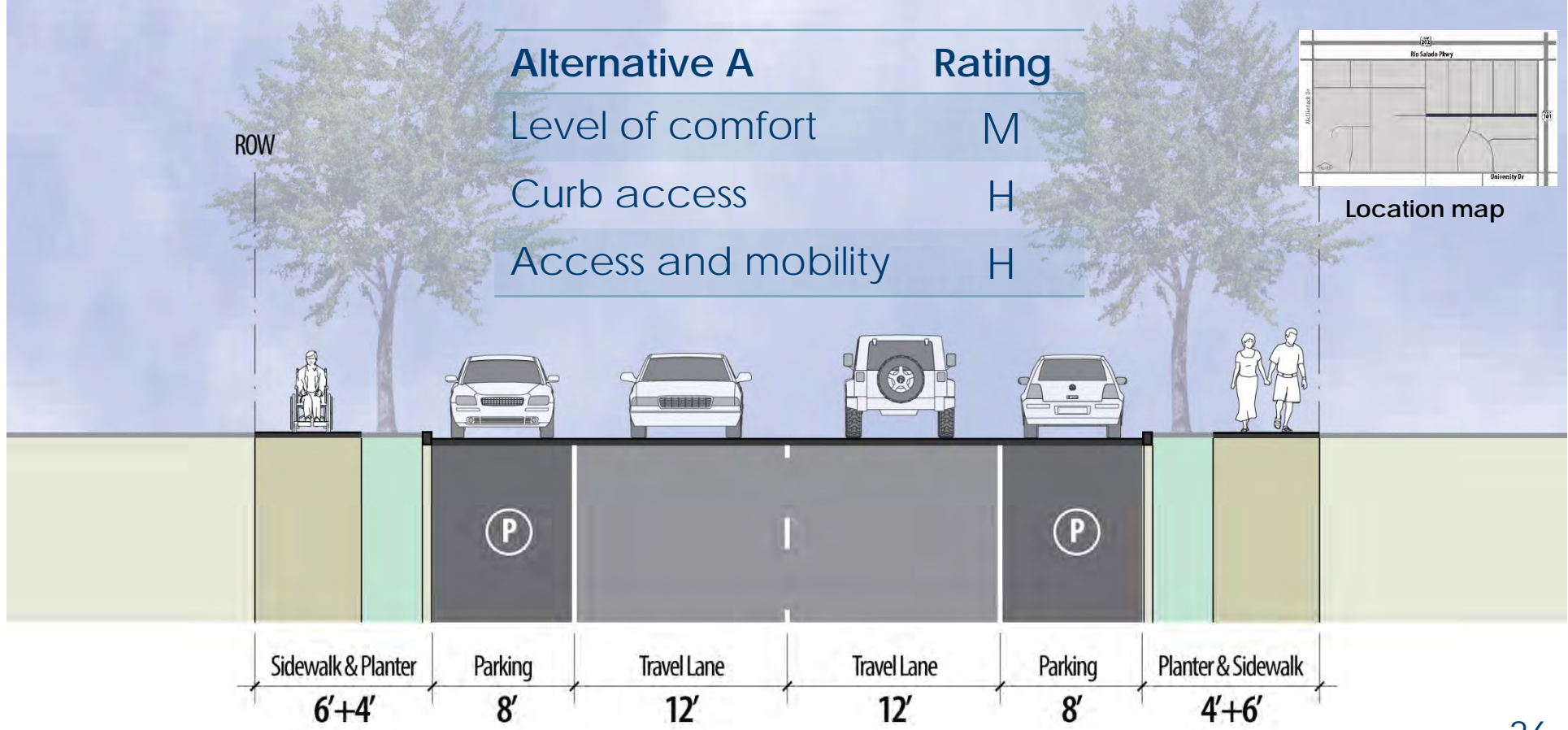
Fifth Street (Smith to Price)



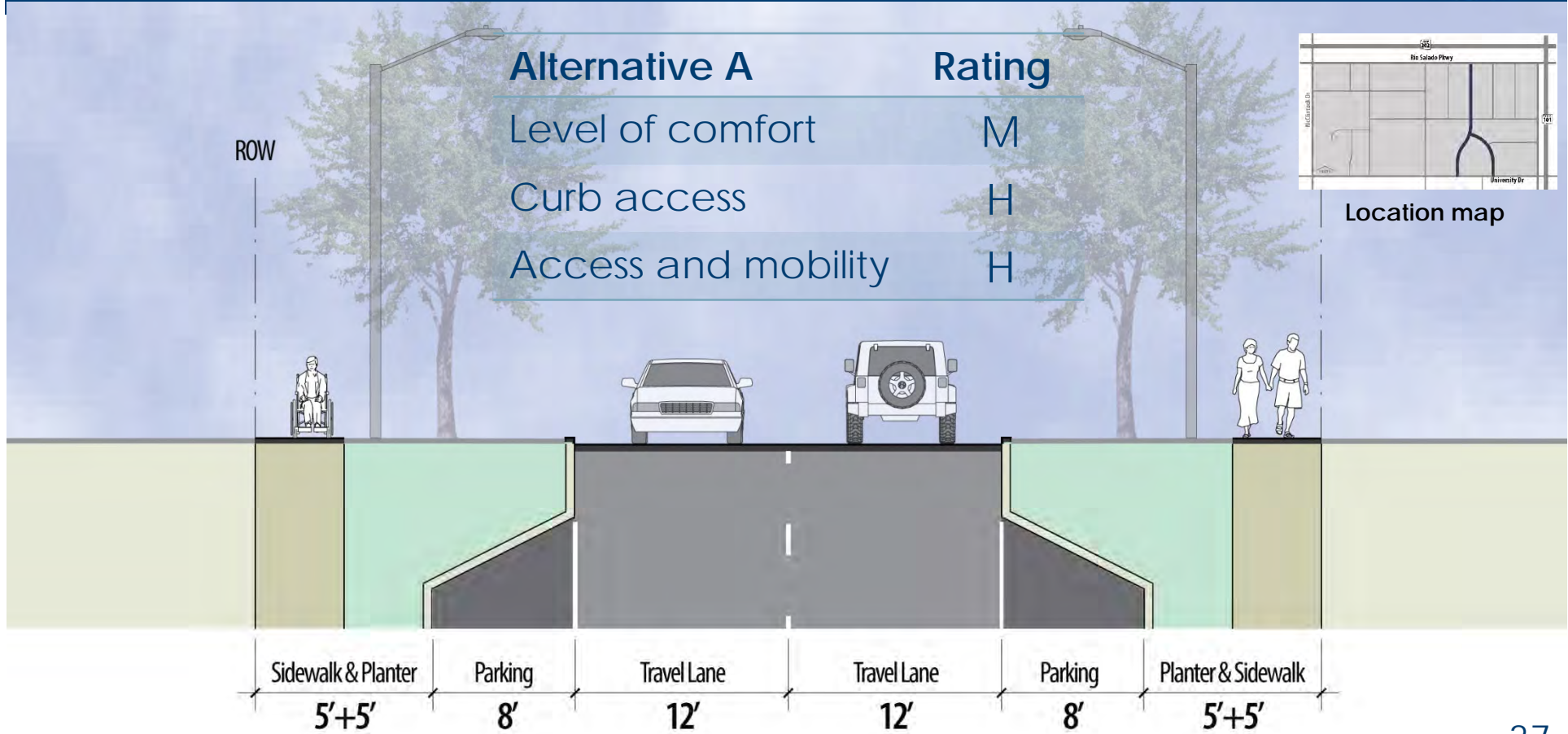
Alternative A	Rating
Level of comfort	M
Curb access	H
Access and mobility	H



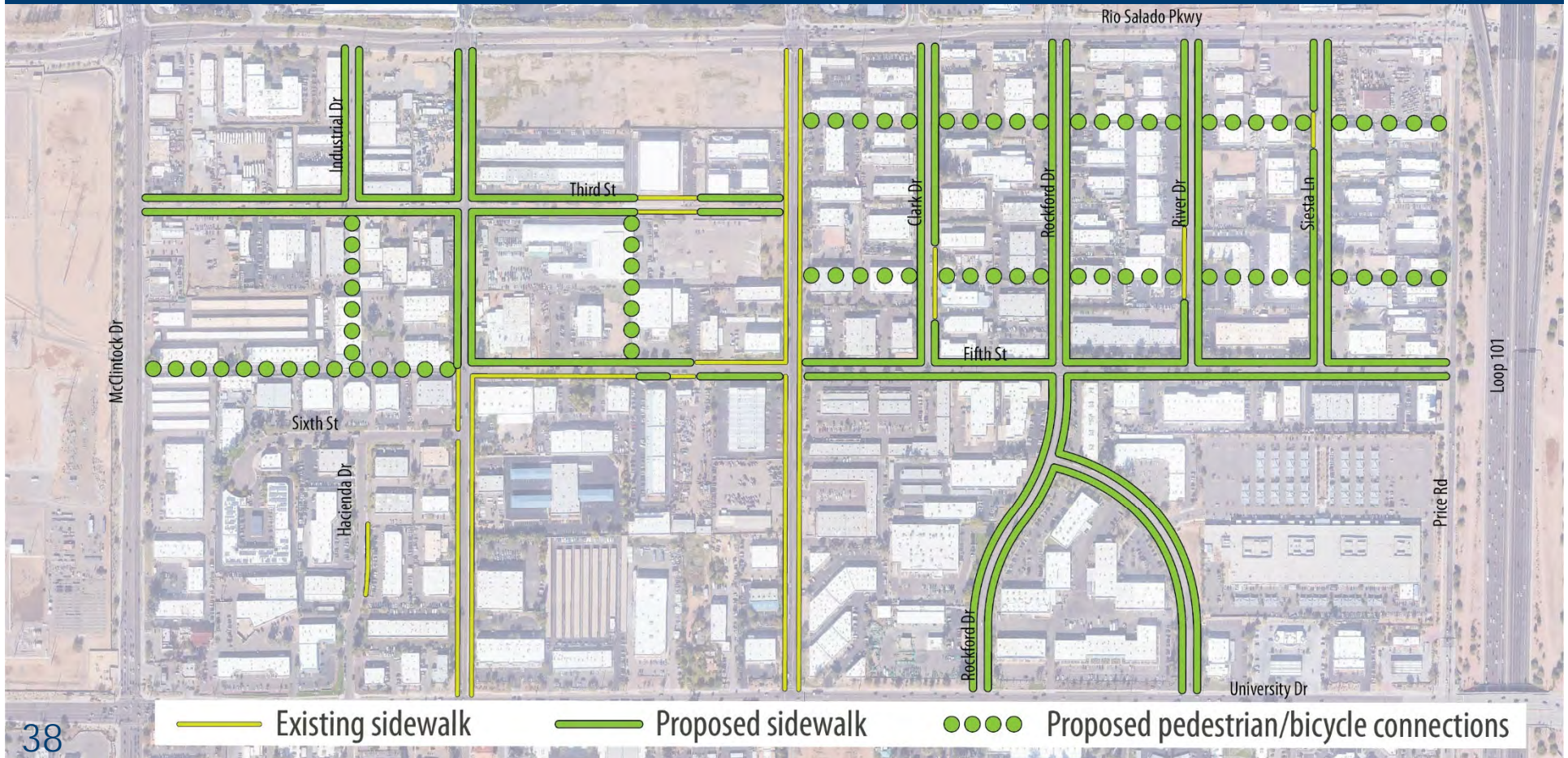
Location map



Rockford and River Drive



Ultimate Pedestrian Network

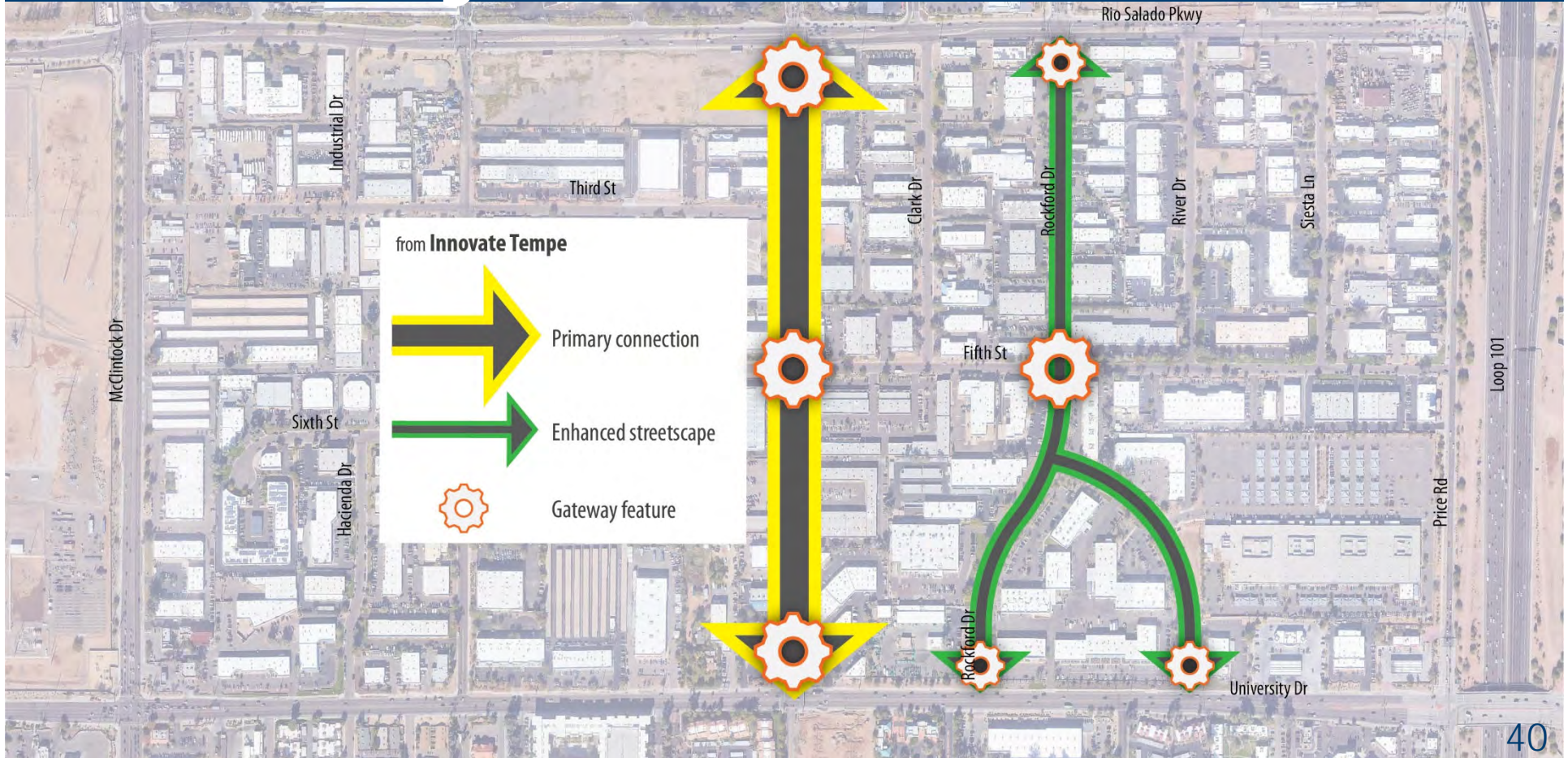


Lighting



- Long-term improve lighting to City standards for the entire area

Gateways



Additional Considerations



Public meeting follow-up survey:

- Opportunity to provide input on information presented today
- Visit tempe.gov/SmithHub to take the survey

Next Steps



- Prepare a prioritized list of projects and cost estimates to support both short- and long-term planning for the area
- Present list at second public meeting planned for July 16

Questions?

Raising Your Hand

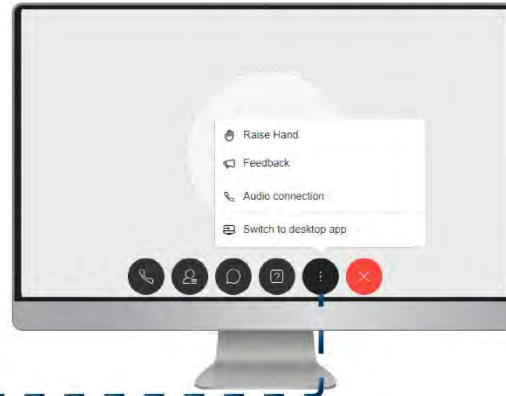


Issues? Call Webex Help:



866.229.3239

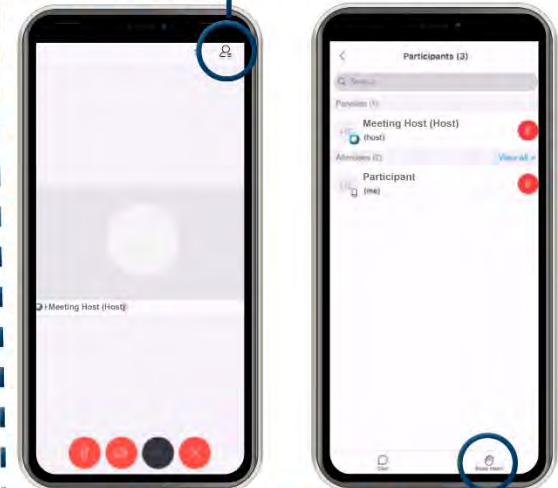
Internet Browser

1. Select  icon
2. Select “ Raise Hand”
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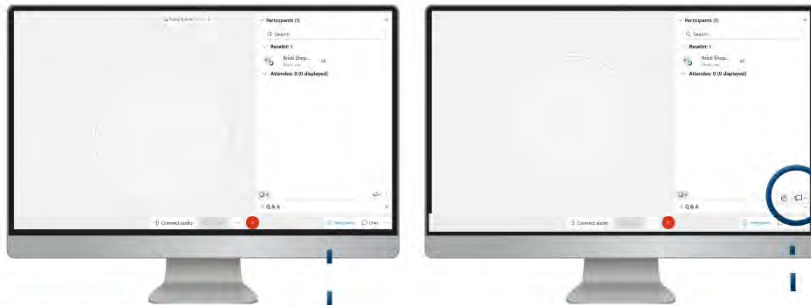
Mobile

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Webex Software

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Asking A Question



Issues? Call Webex Help:
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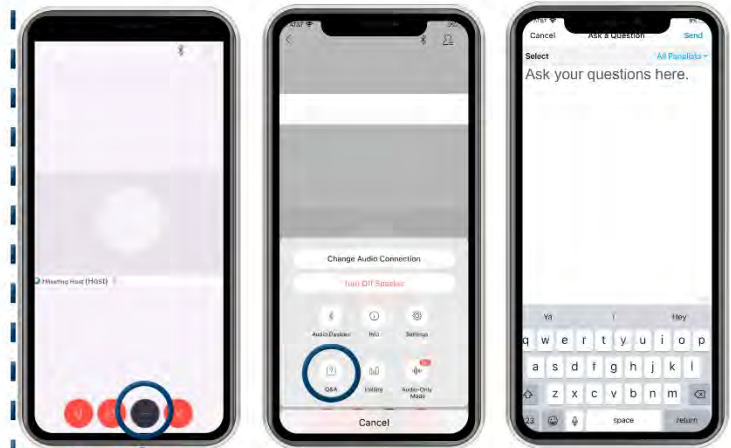
Internet

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Mobile

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2. Select icon
3. Type your question in the box
4. Select recipients
5. Click "Send"



Webex Software

1. Select icon
2. Type your question
3. Select recipient
4. Click "Send"



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Visit tempe.gov/SmithHub to take the survey!



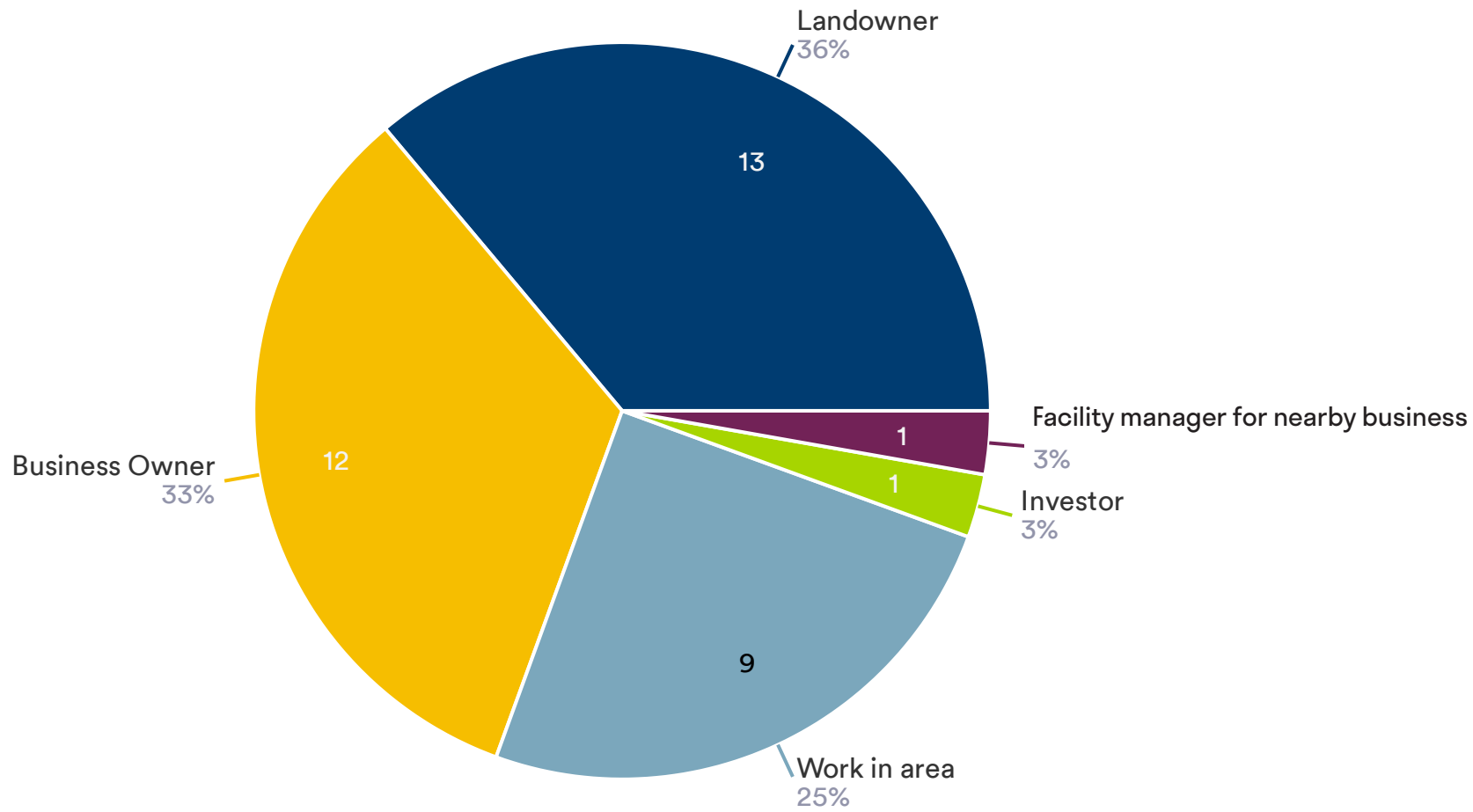
Appendix C – Public Comments

Tempe Smith Innovation Hub Infrastructure Master Plan

Tempe Smith Innovation Hub Infrastructure Master Plan

2. How do you associate with the Smith Innovation Hub? (check all that apply)

36 Responses

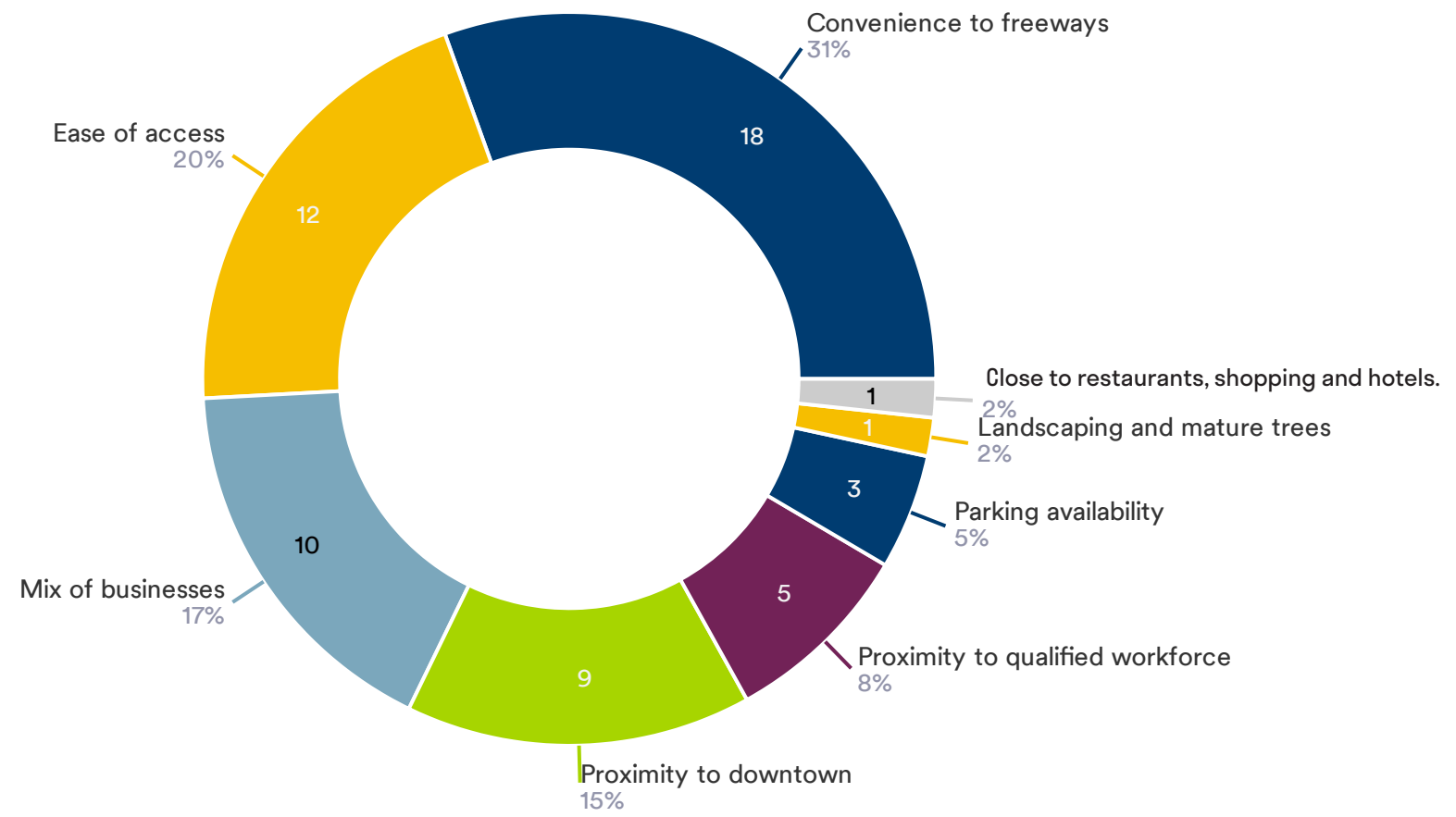


- Landowner
- Business Owner
- Work in area
- Investor
- Facility manager for nearby business

Tempe Smith Innovation Hub Infrastructure Master Plan

4. What do you like about the Smith Innovation Hub? (check all that apply)

59 Responses- 1 Empty



- Convenience to freeways
- Ease of access
- Mix of businesses
- Proximity to downtown
- Proximity to qualified workforce
- Parking availability
- Landscaping and mature trees
- Close to restaurants, shopping and hotels.

Tempe Smith Innovation Hub Infrastructure Master Plan

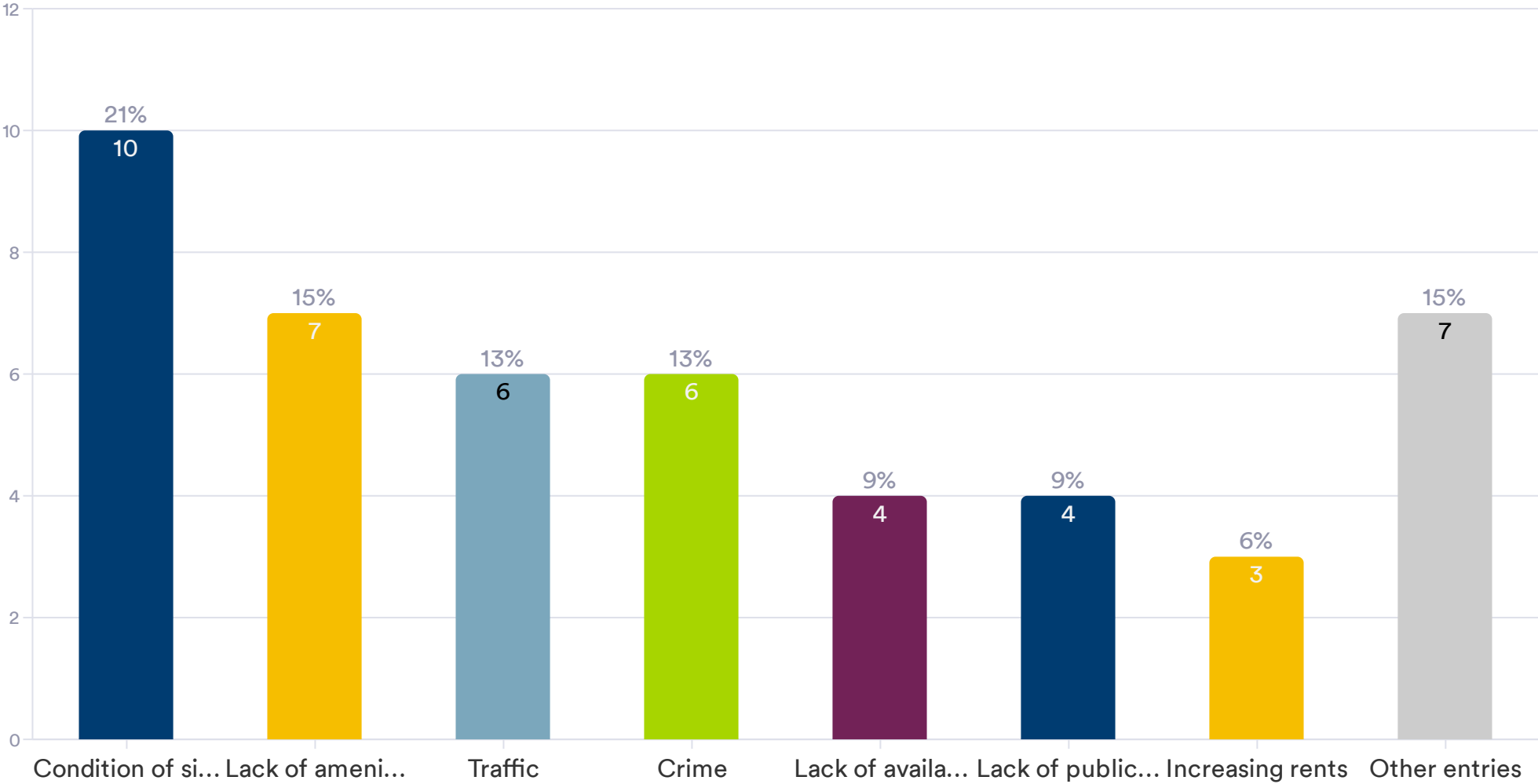
How many years have you owned property or owned a business in the Smith Innovation Hub?

Years	Months
2	3
31	
8	
40	
3	3
3	
35	
24	
13	
14	
11	
30	
7	
16	8
30	
12	

Tempe Smith Innovation Hub Infrastructure Master Plan

6. What are the most significant challenge(s) facing businesses in the Smith Innovation Hub? Please select up to 3 that you consider to be of high importance.

47 Responses



● Condition of sidewalks ● Lack of amenities to attract employees ● Traffic ● Crime ● Lack of available parking ● Lack of public transit ● Increasing rents ● Other entries

6. What are the most significant challenge(s) facing businesses in the Smith Innovation Hub? Please select up to 3 that you consider to be of high importance.

47 Responses

Other Entries
Homeless population
Lack of walkability
Lack of safe access for Semi Delivery Trucks on South Bound Price Rd
Lack of public infrastructure reinvestment coupled with limited private ownership reinvestment.
Poor quality of nearby housing stock.
Addition of traffic lights on Rio Salado.
More electrical power - currently investigating this with SRP to support our business expansion. Also, homelessness is pretty high in the area and although we've had no issues so far we run a night shift and have had people shining flashlights into our building to see what they can see

Tempe Smith Innovation Hub Infrastructure Master Plan

7. What makes Smith Innovation Hub an attractive place for you to do business? Please describe.

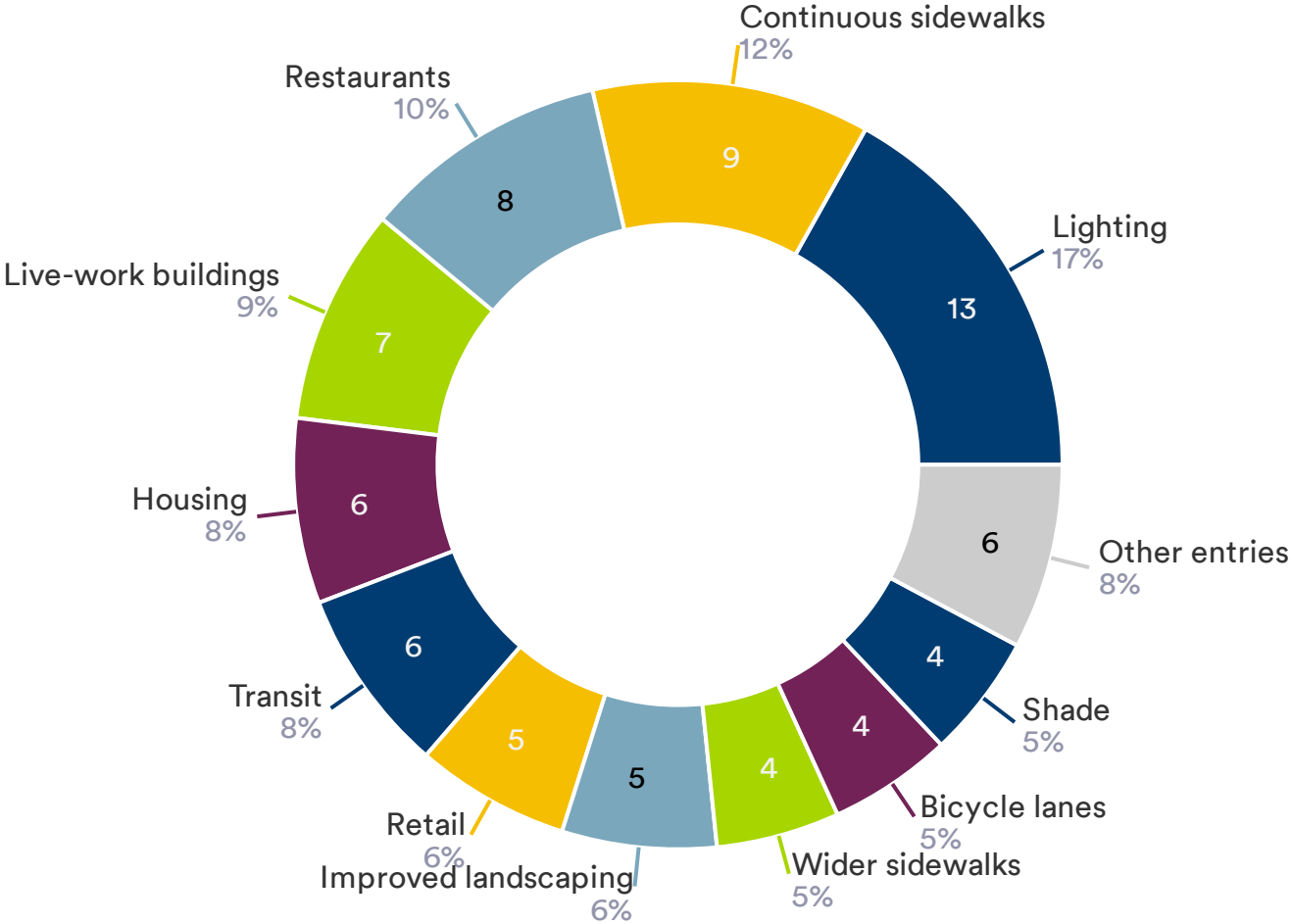
16 Responses- 3 Empty

	Comment
1	proximity to freeway
2	Close proximity to various amenities along the north side. easy access to shopping, retail and dining. Close to freeways.
3	Great logistical location. Great mix of businesses allows us the opportunity to have several vendors close by within the same park.
4	Its dead center of the valley
5	"Location is fantastic. Close to all that Tempe Marketplace offers...Would like opportunity to develop more multistory uses."
6	Attractive because of the nearby large scale retail, office and dense multifamily near the hub. Smaller scaled retail, office and multifamily development needs to be invited/encouraged/guided to occur within the hub. Smaller projects cannot carry the public infrastructure costs that large scale can support. Encouraging land assemblage can help with getting some larger projects in the hub.
7	We relocated from our previous office within the Hub about 4 Years ago. It made sense for us to stay in this area because of its central location to our restaurants and our team was already used to the commute. We liked the progress and clean up of the area over the past several Years and felt it would be a great place to own property as well.
8	Access to the Loop 101 & 202.
9	Proximity to freeways, and PHX airport. Also hotels for business visitors close to Hub
10	The proximity to the freeways, the Airport, and the Tempe Market Place. I would love to see condos or townhouses which would help attract quality employees and keep the neighborhood a bit safer. The need for updated lighting and continuous sidewalks is the biggest need. Good public transportation will help us all attract more employees.
11	It is a great central location. The Tempe Town lake is close by as well as ASU.
12	Location, Location, Location.
13	Location, location, location - we're a manufacturer of metal products and a CNC machining job shop, within 25 minutes of our location we have all of the support industries we need. Access to restaurants is good from our location for our employees but could get better with closer options
14	industrial area close to core freeways and resources
15	East Valley location with access to the 101 & 202 freeways
16	Location

Tempe Smith Innovation Hub Infrastructure Master Plan

8. What would you like to see more of in the Smith Innovation Hub area? (check all that apply)

77 Responses



- Lighting
- Continuous sidewalks
- Restaurants
- Live-work buildings
- Housing
- Transit
- Retail
- Improved landscaping
- Wider sidewalks
- Bicycle lanes
- Shade
- Other entries

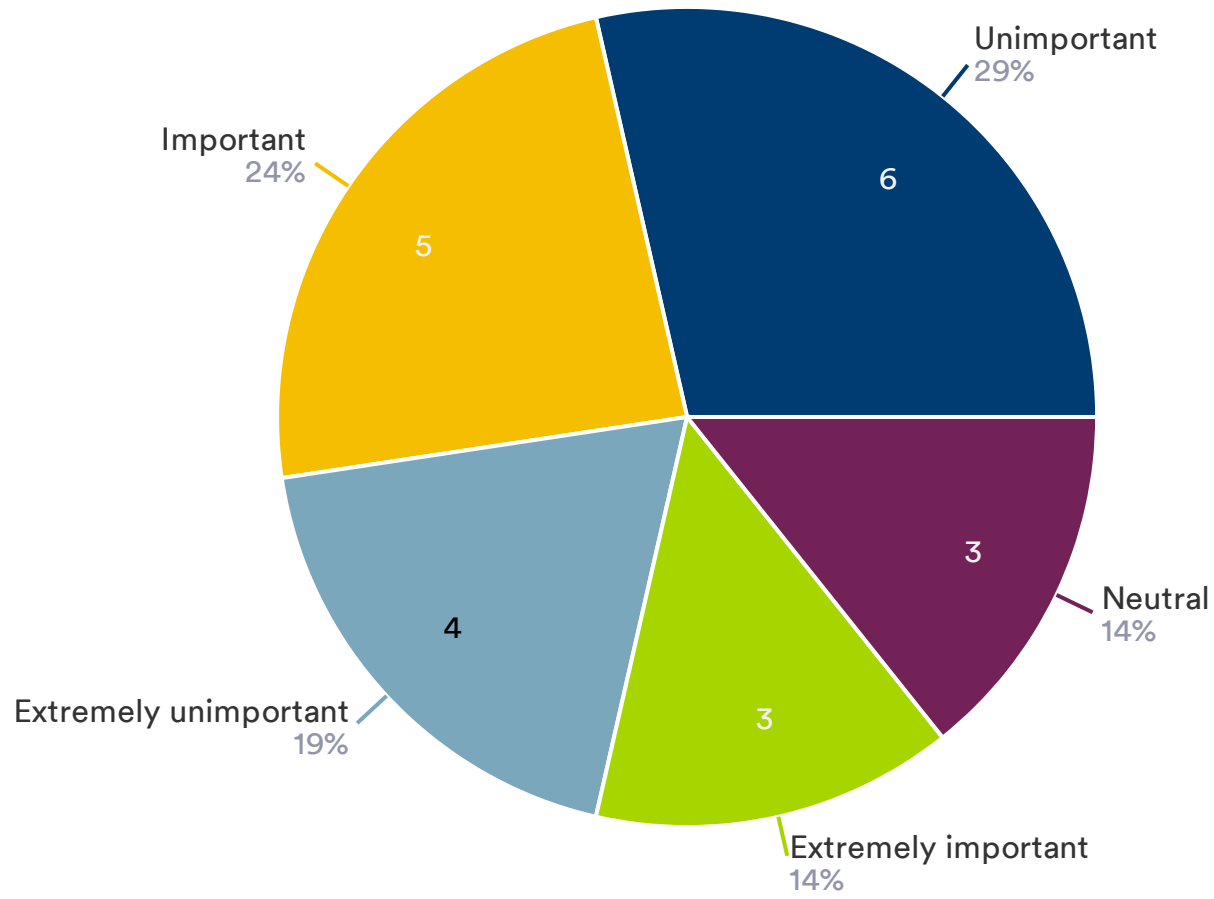
8. What would you like to see more of in the Smith Innovation Hub area? (check all that apply)

77 Responses

Other Entries
Wider roads or dedicated lane to Semi - Truck Delivery - Pick up in perimeter roads of the SIH, especially 101 access road businesses
Higher density capability - 4 - 6 story applications
Smaller setbacks and less onsite landscaping. This is infill, not suburbia.
Less people rummaging through our dumpster, sleeping in the corners and trespassing.
None of that. this is an industrial/office area and should stay that way!!
Major Street & Sidewalk Improvements on Western Half

9. How important is on-street parking for you or your business?

21 Responses



● Unimportant ● Important ● Extremely unimportant ● Extremely important ● Neutral

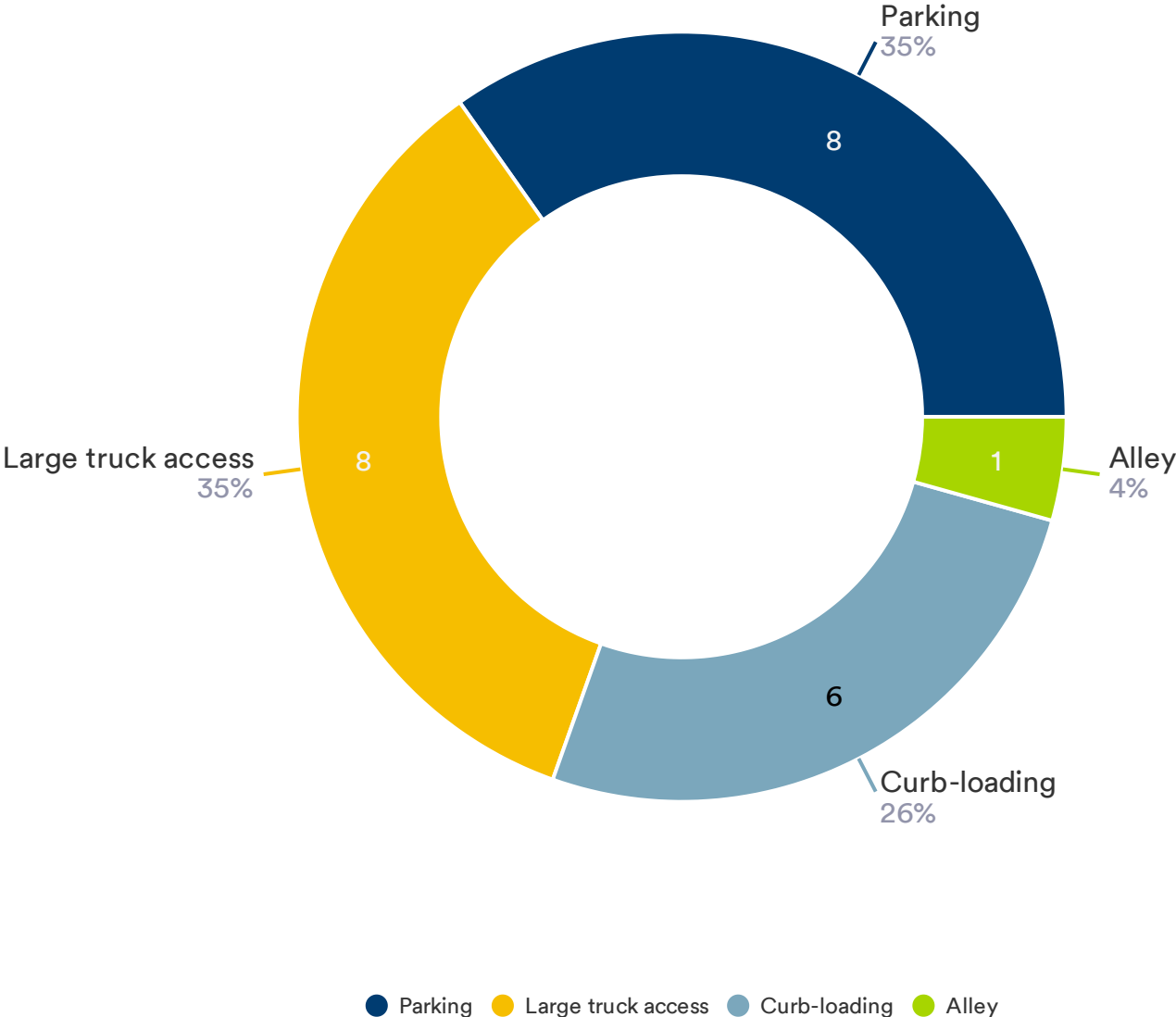
If it is important, what is the location of the on-street parking you use?

7 Responses- 12 Empty

	Comment
1	Perry & Industrial
2	Siesta Lane and 5th St, Price Rd would be ideal
3	overflow parking on Slesta Ln.
4	3rd Street
5	215 S Rockford Drive
6	5th Street
7	Industrail / 3rd

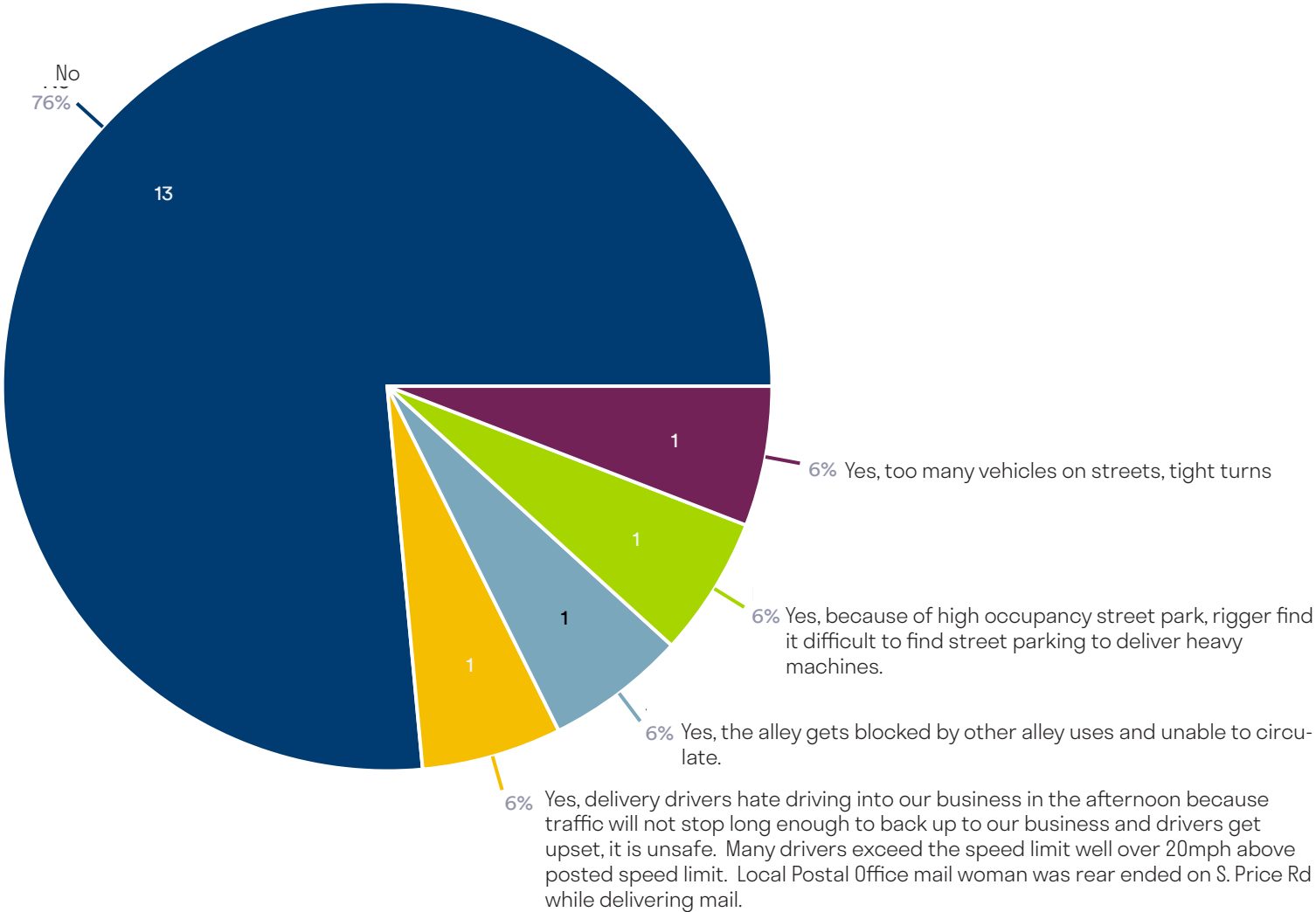
10. What delivery access needs does your business require?

23 Responses- 4 Empty



11. Have any of your delivery drivers told you about, or have you observed, difficulty finding a convenient and legal place to load and unload?

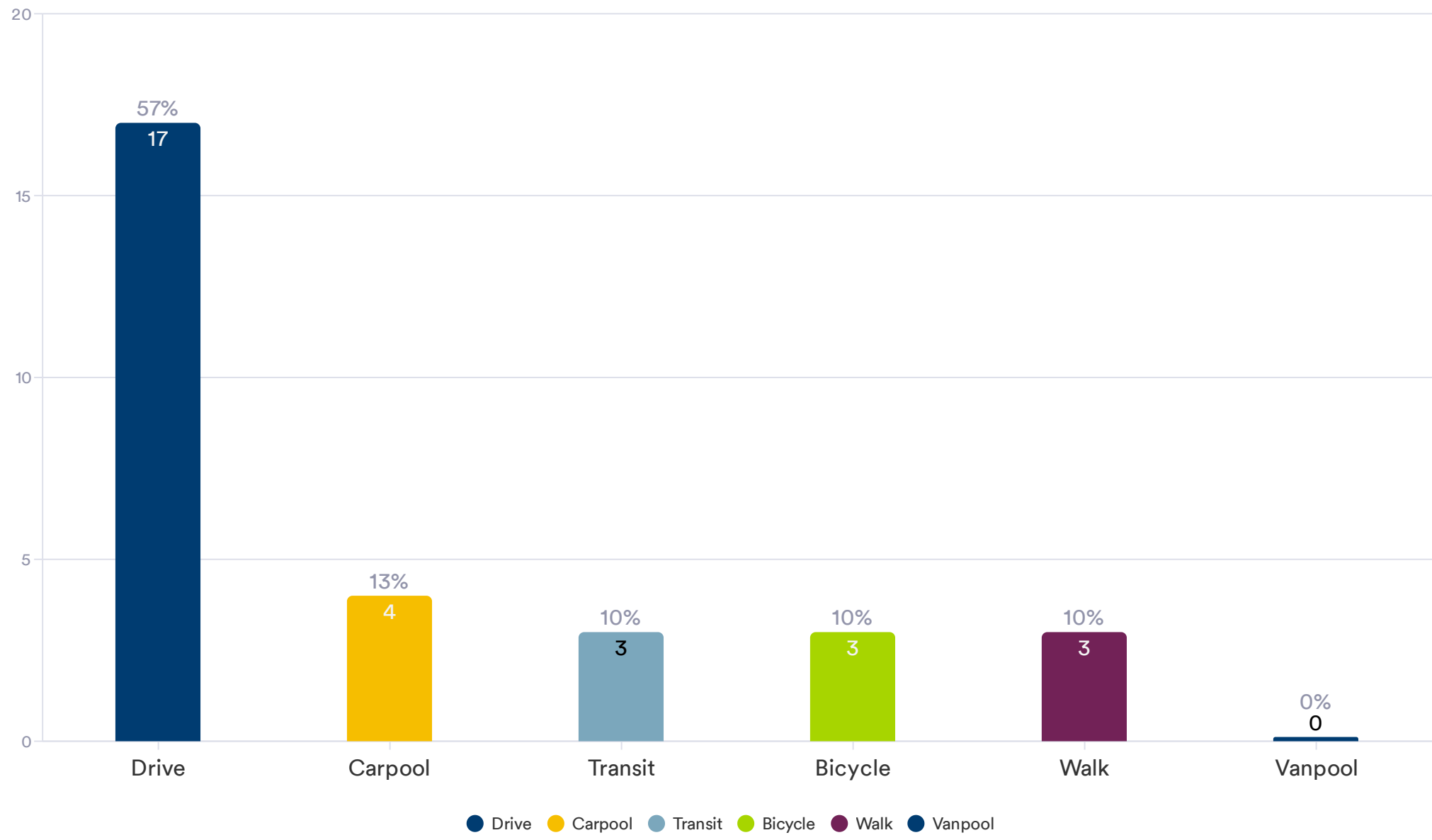
17 Responses- 2 Empty



Tempe Smith Innovation Hub Infrastructure Master Plan

12. To the best of your knowledge, please note the methods of transportation your employees use to get to your business (check all that apply).

30 Responses- 2 Empty





Smith Hub Infrastructure Master Plan Survey Results - June 2021

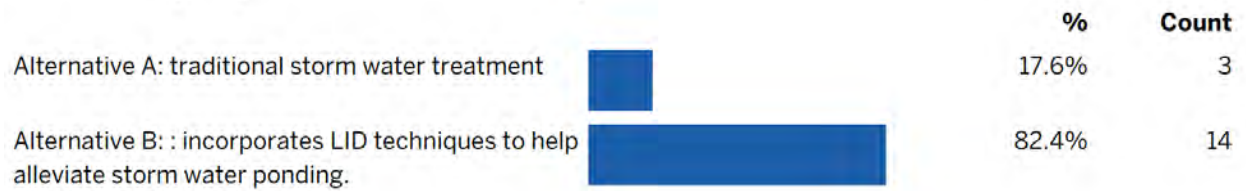
A total of 17 unduplicated survey responses were received.

Short-term improvements proposed for Perry Lane north of 5th Street include correcting the gap in right-of-way width, curb and gutter installation, sidewalks, on-street parking, and stormwater improvements to address on-street ponding that occurs with heavy rainfall events.

Alternative A uses traditional stormwater treatment, while Alternative B considers low-impact development (LID) techniques to supplement stormwater facilities and provide water quality treatment, decreased flow, groundwater recharge, and/or sediment removal for runoff.

Both alternatives will add more authorized parking to the street section. Alternative A offers more parking, whereas Alternative B would convert some parking to curb bulbs to integrate natural drainage facilities, as well as provide traffic calming.

1. Please select your preferred alternative for Perry Lane (Alternative A vs Alternative B).



Responses: 17

2. Please provide any additional comments on the Perry Lane alternatives shown above.

- I'm not on Perry but noted that Rockford Drive just added trees to the sidewalk area. These trees are going to grow into the street and the City will require more burdensome maintenance of the landscaping. Small business owners are trying to run a business and keep getting sidelined by city inspectors that want landscaping pruned. They cost money to install and maintain. Not all business can incur these sideline costs.
- Not only is B more aesthetically pleasing but it seems safer because of the buffer of the trees. I'd also be more likely to walk than take my car if there was some shade.



Public Comments

Virtual Public Meeting | June 4, 2021

Number	Commenter	Comment	Response
1	Max Rudolph	Are there any plans for street improvement along Rio Salado such as a bike line or landscaping changes?	Rio Salado has bike lanes, I believe in this section, so we have those up there already. Other improvements that the City is looking at in this area is a long-term improvement to extend the streetcar this far to the east. That is something that is long-term planning but we are considering right now. Otherwise, Rio Salado will be a four-lane arterial with the raised medians with the bike lanes that are there today.
2	Marcus Newton	Perry Ln., North of fifth Street should be a priority. It is a dangerous situation with flooding at fifth and no sidewalks additionally no real lights. There are pedestrians walking in the middle of the street with no lights it is extremely dangerous. The only real grocery store is Target and you have all those apartments that are right down the street from Perry Street to Target. Optimistically what kind of timing do you see?	<p>I know we have talked about this in the past with you as well, and it is certainly an issue that we are concerned about. As far as the timing goes, this plan will set up priorities for the City and private development to look at contributing to for this area. We will begin to request funding through the Capital Improvement Project budget in future years so some of this will take some time and some things can be done more quickly than others.</p> <p>The Capital Program does include an item for street lighting and the location of the street lighting will really depend on what is prioritized out of this study. Once we get to a conclusion, once the study is completed and all the infrastructure needs are identified and they are prioritized, then we will make a decision about where to invest those funds. Now the input from the</p>



Number	Commenter	Comment	Response
			<p>public is a super important piece of that, so if there are locations in this area that are of concern to the residents or the users of the area, let us make sure that you provide those comments to the team. Those comments will be part of the criteria that we use to determine where the infrastructure investment will be made.</p>
3	Mark Davis	<p>The question I have was really tied to the time frame that is being discussed and the time frame that is part of the definition. It is more of a shorter-term time frame defined as five to ten years. I understood that from the presentation that that was tied to the concept of making an initial investment where the critical, more focused areas are and then the longer-term investment happening with private development to fill in where the less critical locations are.</p> <p>I just want to get a better understanding from staff to understand the perspective of the time frame and the perspective of the time frame in terms of development that is expected to happen in this corridor. You talked about that initial map that showed the mixed use happening and allowing the mixed use along the Rio Salado piece and dividing it south, so I would expect development to occur on the fringes and then maybe work its way to the core over</p>	<p>With respect to development the expectation for when development will occur, part of it is if you build it, they will come. That is one of the challenges with enticing development into the hub, is the lack of infrastructure. That is part of why the City initiated this study.</p> <p>Several projects have already come out of the ground in the last few years in the area. There is a lot of interest in the area, and our department continues to meet with potential investors and developers that are interested in making enhancements in this area. Some things will be happening sooner rather than later, but it is again, just to remind everyone, it is all privately held land, so the City does not own the land. We are not doing RFPs on City land in this area so we do not control those time frames necessarily, but we are doing all that we can to garner interest and attract investment to the area because we see a tremendous potential there. There are many positive things going on there today and there will be some new projects coming online that I cannot discuss now but are exciting for the area. The other thing I will say is that for this plan, the combination as you mentioned mark, is a combination of investment between privately held</p>



Number	Commenter	Comment	Response
		<p>time, as well as interim incremental development happening in that process too.</p> <p>I just want to get my mind around that time frame, the time frame of these capital improvements, the time frame of short-term/long-term, and then also how that ties in with a possible time frame for the extension of the streetcar and the associated infrastructure improvements that that are tied to that expansion.</p>	<p>land and development and the City, so part of what we are doing with this plan is helping us identify and prioritize specific items that we can invest in and that we can ask private development to invest in as that becomes appropriate. Some of that will happen in the next few years and then some of these items will be over a much longer-term. It is very important area of focus for us and there is a lot of interest and some new projects that will be coming online that we will be announcing in the next few months.</p> <p>We have our Capital Program, and it takes a while for us to create the Capital Program. There are literally hundreds of projects competing for dollars and we try to do a five-year forecast, several of the operating departments have 10-year forecasts, but we only put together a five-year program for publishing. Council will see it in five-year increments and the competition is stiff. Based on the goals that council has set, the priorities that they have set overall, and the vision for the community, their projects will move around in the CIP. Typically, our Capital Program time frame is five years, and five years is a short-term plan. I know it sounds like a long time, but just as an example, we are working at Clark Park and we spent a year doing planning and we'll spend another year doing design, and then we'll roll into construction so it's not unusual for what we consider a near-term project to be in year four or five of the CIP so that we have time to do our due diligence up front, such as knowing all the utility conflicts and working with utilities and in rights-of-way. There is just a lot of fatal flaws that a project</p>



Number	Commenter	Comment	Response
			<p>sometimes run into that we want to address up front. Some of these projects that we will recommend will end up in our longer-term Capital Program, a 10-year program, but you will not see them in the five-year that we publish.</p>
4	Mark Davis	<p>When I am looking at the different drawings the HDR put together, I am trying to think should I also be looking at it in terms of five years from now, or should I be thinking 10 years from now in terms of these alternatives? That is the context I am thinking about as well. I think your answer helps me understand that you should be looking at it from more of a five-year perspective.</p>	<p>The recommendations that are coming from this study will be prioritized, and you will see some of them in five years, you will see some of them in ten years, but you will not see all of them uh in five or ten years. They will be prioritized, and they will work them through the Capital Program. Some of them you may never see as conditions or development in the hub occur. We might then end up making a modification to the plan, so it is evolving. Planning is always an exercise in evolution, but you will see some in five, some in ten, and some in 15 or not at all.</p> <p>At the end of the study there will be a prioritization and the team will make some recommendations on what the highest priority infrastructure is based on whatever criteria that was established, public safety usually being one of the highest.</p>
5	Mark Davis	<p>I guess the concept is that today's conditions we know are going to be changing in the future, as you see with the market station project bringing over 300 apartments into in the north side of the hub, with possible future housing projects down the road. This opens that concept, so I am just trying</p>	<p>Part of what it looks like depends on how we work with the development community. The General Plan is a guiding document but then there are times when there is some idea, a better idea and the general document is flexible enough to allow for a change in a use or a change in the in that overall vision.</p>



Number	Commenter	Comment	Response
		<p>to think, should I be looking at the streetscape improvements from the perspective of what works best for industrial parking needs and/or office parking needs versus future residential interest? That is where I think it is there is a “do I think about it in today's lens or maybe what the general plan wants it to look like 10 years from now”. I suspect it is a little bit of the ladder, of what that future vision wants to look like.</p>	
6	Anthony Spinato	<p>As a property owner, are any of these improvements such as sidewalks going to be at the property owners' expense, or are all updates funded by the City of Tempe?</p>	<p>This plan is a guide for the City to prioritize its investment but it is also a guide, as developers assemble certain parcels and redevelop certain areas over time, to make certain improvements to their existing properties. There's opportunity in some cases to ask them to contribute to it, but it will not be like an improvement district where every business is asked to financially contribute if that is what you are thinking. That will not be the case, we are not suggesting something like that. We are really looking at development by development and the City having a very heavy role in funding and implementing these prioritized infrastructure projects.</p>
7	Gretchen Reinhardt	<p>Is Smith understood as a connection to the Rio Salado path (like Rockford was mentioned to be)? If absolutely should be as it is THE connector route currently from both the Alegre and Escalante Neighborhood areas.</p>	<p>I think that is the way that we are headed is that Smith would be one of the bike connectors to get people from university into marketplace.</p>



Number	Commenter	Comment	Response
8	Gretchen Reinhardt	What improvements to pedestrian crossing lights do you see - particularly along Rio Salado and University? The existing light at Smith is not designed well for bicycles (cross a lane of turning vehicles).	When you notice something like that please let us know and we will look at what is going on out there. We retime our signals and we try to retime all the signals by a corridor every three to five years, but we certainly can look at ones individually as problems are noted. We don't have a plan right now to go through and make any changes, but if you let us know we'll certainly take a look at it and see what we can do to help.
9	Gretchen Reinhardt	The City does however own the streetscape for transportation improvements, correct?	There are times when we work with the developer and the developer will provide improvements in the right-of-way as part of an agreement and then those improvements are turned over to the City for ownership and maintenance. Anything in the right-of-way, unless we have an agreement with someone else, the City is responsible for operating and maintaining.
10	Mark Davis	So, the initial survey that that was conducted, were the results shared? I think Michael LaBianca was saying that 43 percent like on-street parking and was a strong priority. I believe he said other questions that were built into there that I thought were insightful. In fact, I remember reading that questionnaire and just thinking, putting it aside and then thinking about answers, and then picking it back up again because it was a pretty good survey. I am curious how many people responded to it and	We had a total of 19 responses from organizations, although it varies by question. We had different responses to the different questions, so it looks like we had uh as many as 77 responses to one question. We can provide the specific statistics as to the results of that survey. For others on the presentation, this survey was distributed to businesses and property owners within the Smith and asked questions such as parking, types of amenities that they feel are lacking, and the types of amenities that draw them investment or business to the Smith. We did ask specifically about parking and asked for participants to respond where they felt that parking was necessary and critical. All that information was considered as we developed the



Number	Commenter	Comment	Response
		what were some of the other results that helped develop some of this today?	alternatives for the study. We can provide that information as part of the project web page.
11	Jorge Garcia	Has the City considered widening S. Price Rd or making it more user friendly and safe for the businesses located on this street?	South Price Road is part of the Loop 101 freeway so anything we did would be in conjunction with ADOT. I know that ADOT just finished a study on the frontage road but it is mostly to do with how traffic operates at the ramp and the frontage connection merge points. I know ADOT was looking at it from a capacity standpoint, I do not think we need any more lanes on the road. It is a tough one to slow down with as it is and the fact that it is right next to the freeway, but again it is an ADOT facility that we would have to work with them on.
12	Jorge Garcia	Can the City or ADOT do something to increase the safety on S. Price Rd, the mail man has been rear ended on this street.	If you could forward exactly what the concern is and where it is located, we can look at it. Again, south Price Road is an ADOT facility that we would work with them to try and develop some kind of solution, but I need a little bit more information on what was happening where and then we can take a look at it.

3. Not only is this good for safety but also allows for additional parking. That is needed, especially as the area is developed. The planters add shade and beautification.
4. This area is extremely hot and unpleasant to walk
5. This should be a first-priority project. Why-Public Safety. My office is just on the corner of fifth and Perry. Multiple times a day and all hours, I have used this roadway. It's a large apartment complex on the south side of University, and Perry Lane is the most direct route to Tempe Marketplace for them. Many times I see people walking with groceries since Target is the only grocery store around. The lighting in this area is abysmal. There are no sidewalks; therefore, pedestrians walk in the street, and when they are wearing very dark clothing, it's very unsafe. I had quite a scare one night with a pedestrian that I could barely see; it was a dark night, rainy. When it rains, it floods. The very middle of the street is the only part that doesn't flood- forcing pedestrians and bikes to use the middle of the street. I have been bringing this dangerous situation to everyone in the City's attention. Taking care of this right away is not just an 'improvement project' it is a public safety project. It's amazing how the government will quickly shut any company or event down for public safety, but bureaucracy slows progress when they have a glaring problem like this.
6. We need shade and plants/trees in the Tempe for a multitude of reasons.
7. With the on-street parking contemplated for Perry, the disconnected sidewalk doesn't seem to make sense. Pushing the sidewalk to along the street and utilizing traditional stormwater treatment should allow buildings to be built closer to the street and really activate the area as well as allow for the building and awning to help with shade.

Perry Lane south of 5th Street has existing gutter, curb, and sidewalk. Alternative A would add additional parking along this section, and address Americans with Disabilities Act issues with existing sidewalks and street crossings.

3. **Are there other improvements you would like to see on this section of Perry Lane? Please explain.**
 1. A better defined landscape plan to help developers clearly understand the expectations.
 2. Bike lanes will always be beneficial in an urban setting to combat motorized traffic.
 3. I am in favor of all streets being lined with trees or shade areas. As the area is improved, there will be more traffic, both pedestrians and vehicles. Plan for future growth now as it is being re-imagined.

4. I think that your alternate "B" would take care of the safety problem, and add a sense of neighborhood and should be completed as soon as possible
5. No comment.
6. Trees as in the previous question

Short-term improvements proposed for Fifth Street, between Perry Lane and Smith Road, complete the existing sidewalk gaps. Both alternatives will allow authorized parking. Alternative A would complete sidewalks at the back of the curb and rely on traditional stormwater treatment. Alternative B would build detached sidewalks which would allow for LID techniques to supplement stormwater facilities and provide water quality treatment, decreased flow, groundwater recharge, and/or sediment removal for runoff.

4. Please select your preferred alternative for Fifth Street (Alternative A vs Alternative B).



Responses: 16

5. Please provide any additional comments on the Fifth Street alternatives shown above.

1. As explained above, alternative B is the only answer. Alternative A is a stop gap measure. When the option to advance is presented, take it. Improve infrastructure as much as the budget will allow.
2. The addition of the landscaping adds a thoughtful, modern appeal into a sterile industrial park. Giving the park a bit more of a neighborhood feel.
3. this is confusing, I want the low impact development.
4. Why can't there be a mix of both. Can you add some runoff into the A scenario?

Short-term improvements proposed for Smith Road, from University Drive to Rio Salado Parkway, would restripe the existing roadway between curbs. All of the alternatives introduce protected bicycle lanes, as part of the Bikelt Reflector Bike Boulevard being developed throughout Tempe. Alternative A eliminates the authorized on-street parking south of Fifth Street, maintains the two-way left turn lane, and provides protected bicycle lanes with an effective 8' width (6' bike lane with 2' buffer). Alternative B maintains some parking on the northbound lane and provides protected bicycle lanes with an effective 9' width (6' bike lane with 3' buffer).

6. Please select your preferred alternative for Smith Road (Alternative A vs Alternative B).



Responses: 17

7. Please provide any additional comments on the Smith Road alternatives shown above.

1. Any time a bicyclist has to pass a parked car there is a chance of injury. On a street like that, cars parked on the street are not thinking about bicyclists when they open their door.
2. Buffered bike lanes are much safer for cyclists.
3. Having a business in this neighborhood and knowing how many delivery vehicles, which are usually larger, keeping the turn lanes is a must. I heard on the presentation that they believe that it would not affect traffic much have worked here for years, and I don't believe that. Also, recently the neighborhood traffic is increased significantly with the increase of door dash/Uber eats services, and I think that trend will continue.
4. I think that some of these improvements are to aid Tempe Marketplace, not help Smith Hub. We have delivery trucks that already have a hard time with the on street parking and adding a bike lane doesn't help that in any way.
5. I've walked this area many times and it's hot and very uncomfortable and very unwalkable. smith road is the obviously the center of the smith hub, it should set an example for the future of the smith hub as a mixed and multimodal hub. Tempe market place is technically in the last mile of smith and apache light rail station and this corridor should be highly walkable and bike friendly.

6. Traffic study will need to dictate whether or not a turn lane is necessary but I do not believe it will be. Parking will become a higher priority in these areas as things are redeveloped.

Long-term proposed improvements include changes to Perry Lane south of 5th Street, 3rd Street from McClintock to Smith Road, Fifth Street from Smith to Price Road, and Rockford and River Drive. These improvements would introduce detached sidewalks to these street sections.

8. Please provide any comments on the long-term improvements proposed on these streets.

1. Adding landscaping and sidewalks will help this area improve. I believe these changes will help attract more customer-focused businesses and, in turn, help attract better employees. I've been a proponent of additional retail/restaurant with possible residential living above shops.
2. if the smith hub is going to be a mixed use and multi modal hub its very important to include bike infrastructure and to make improvements that will encourage new housing. It takes more than paint to create a new community and the smith hub needs a completely new identity. it also has to compensate for trucks and industrial uses which makes trees and green infrastructure even more important.
3. Is there any way to make the sidewalk permeable for seepage of water back into the ground or add areas for runoff?
4. Same comment as before. This does not assist the business in any way. It only helps Pedestrian traffic. And that pedestrian traffic doesn't aid Smith Hub. This is being done to aid the mall and businesses to the north of Smith Hub. I haven't seen who will pay for this or who is required to maintain the landscaping. I assume our land will be lost in this sidewalk/planter area and we will not be reimbursed for it. Or do we have to pay for the sidewalks, trees and planters?

Smith Innovation Hub businesses are valued members of the Tempe community, providing jobs and contributing to the tax base for key City services. A goal is to retain and expand existing Smith Industrial Hub businesses while attracting new innovators and educators. The Smith Innovation Hub Design Guidelines recommend developing the Smith Innovation Hub identity.

9. What would you suggest the Smith Innovation Hub implement to help build its identity? (Please rank in order of importance)

1. Gateway Entrances
2. Public Art
3. Branding
4. Design Standards
5. Other
6. Business Association

If you answered "other," what element would you suggest to help build identity?

1. Go above and beyond to make this carbon neutral, climate change mitigating, green, sustainable, etc.
2. Green space and smaller development
3. Green space, park space if you are building residential.
4. Help the homeless community. They are on our property six days a week and have to be asked to leave.
5. Street and sidewalk improvements with the addition of landscaping is the priority. Having an area that is attractive with easily access will certainly have the effect of attracting customer focus businesses that will be a service all the residents of the area and possibly attract a mix of residential and business cooperatives.

10. What area(s) do you feel should be addressed to improve the Smith Innovation Hub? (Please rank in order of importance)

1. Sidewalk shade
2. Road Improvements
3. Sidewalks
4. Street lighting
5. Crime and safety
6. Public art
7. Bicycle lanes
8. More transit
9. Open Space

The Tempe Urban Forest Master Plan notes the importance of shade along Tempe streets; shade encourages increased pedestrian and cyclist activity and can decrease the exposure of vulnerable populations, including the young and elderly, to extreme heat when they are walking next to roads that radiate heat. Constrained right-of-way, utilities, and truck activity can be impediments to shade tree placement.

11. In these instances, do you think shade structures are a good alternative to shade trees?



Responses: 17

12. Please share any other comments you have regarding the Smith Hub.

1. Adding additional shade is not just practical it's also aesthetically pleasing to see structures or landscaping that provides it. Having areas that provide shade is now just more inviting and has a tranquil feel even if you're not using it. I prefer to see landscaping and trees far more than a structure. It is bringing nature into a place where it is badly needed.
2. In most cases urban environments need to engage the street and quite often the building and / or building elements themselves need to be used to supplement the shade provided by landscaping or the buildings get too disconnected from the street.
3. shade structures could help unify the smith hub and build it's brand and identity. smith road and 5th is obviously the center of the smith hub and should represent something and should be the base of the smith hub.
4. Shade structures invite more of the homeless population to the area. With the proximity to the freeway already so close (and that being a hub on University/Price for that population due to the freeway traffic). Trees are a better complement to the area, and also help the environment more.
5. The trucks are already hitting the tree branches next to the road and now you are having them as a requirement?



Appendix B. Public Meeting #2 Summary Report



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Tempe Smith Innovation Hub

Public Involvement Summary for July 2021 Public Meeting

August 2021

Prepared by:

HDR
20 E. Thomas Rd.
Phoenix, AZ 85012

In cooperation with:

City of Tempe



Contents

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Appendices

Appendix A: Meeting Notifications

Appendix B: Meeting Materials

Appendix C: Summary of Public Questions/Comments and Responses



1 Introduction

The Innovation Hub Initiative was approved by Tempe City Council on March 1, 2018. It is an economic development initiative to enhance key employment corridors to promote new investment, job creation and placemaking that attracts and retains a quality workforce. Eight hubs were identified, and the Smith Innovation Hub (SIH) was selected for the pilot project.

The SIH is approximately 302 acres (1/2 square mile) with mostly light industrial and office uses. It is bounded by Rio Salado Parkway, Price Road (State Route 101 Loop), University Drive and McClintock Drive. It was selected for the pilot area due to its unique innovation ecosystem near current and planned transit investments, adjacency to the ASU Novus Innovation Corridor and other amenities and variety of uses already in place.

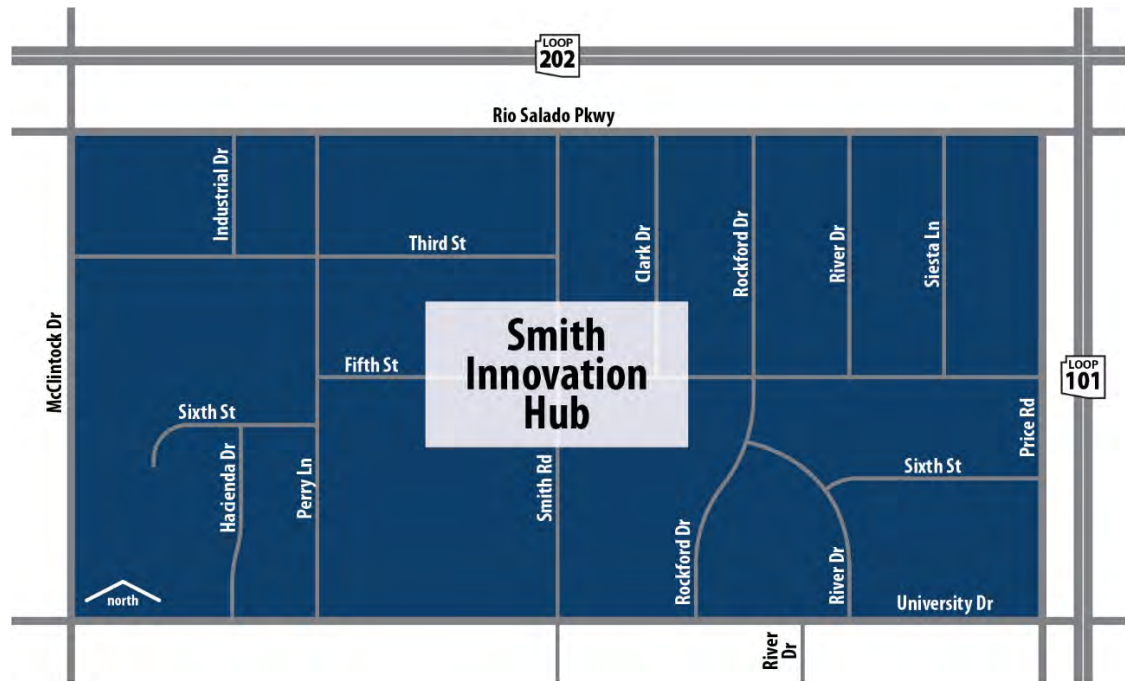
1.1. Smith Innovation Hub Infrastructure Master Plan

The SIH Infrastructure Master Plan (the Plan) is planned to help guide the redevelopment of the SIH, consistent with the *Tempe Smith Industrial Innovation Hub Development Guidelines* (2020) and other relevant City of Tempe land use plans and policy guidance.

The purpose of the Plan is to help guide the redevelopment of the SIH by identifying and prioritizing infrastructure needs for both short- and long-term planning for the area. The Plan will look at infrastructure needs including streetscape, water, sewer, freight mobility, vehicle circulation, lighting, active transportation, and transit amenities.



Figure 1. Smith Innovation Hub



2 Public Meeting

The study team, in collaboration with the City of Tempe, held a virtual public meeting on Friday, July 30, 2021 at 9 a.m. at the Hilton Garden Inn (86 S Rockford Dr, Tempe, AZ 85281). To participate, the public was invited to attend in-person or to view the pre-recorded meeting online. The meeting focused on an overview of the SIH, the study process, and the recommended alternatives within the study area. Following the presentation, there was an opportunity for the public to ask questions or provide verbal comments.

2.1. Public Meeting Notification

2.1.1. Direct Mailer

The City of Tempe developed a direct mailer that was sent to all businesses and residents near the SIH. The mailing zone parameters were Tempe Town Lake to the north, Apache Boulevard to the south, Price Road to the west, and McClintock Drive to the east. The direct mailer, which was distributed on July 15, 2021, included a brief overview of the study and details on how to attend the public meeting and provide comments. A copy of this mailer can be found in Appendix A.



2.1.2. Study Webpage

The study webpage, tempe.gov/smithhub, was updated on July 15, 2021, and included information about the study and details for the in-person public meeting.

2.1.3. Nextdoor

Two Nextdoor posts were published on the City of Tempe’s account. The first post on July 16, 2021 shared study and public meeting information and included a link to the eblast that was distributed for more information. The post had a total of 32 views. The second post on August 10, 2021 served as a survey reminder and had a total of 25 views. A copy of the posts can be found in Appendix A.

2.1.4. City of Tempe Eblast

The City of Tempe sent an e-blast on August 10, 2021. The e-blast included project information, details on the pre-recorded public meeting, as well as how to comment. This e-blast was sent to over 3,000 contacts. A copy of the e-blast can be found in Appendix A.

2.2. Public Meeting Format

The public meeting provided an opportunity for people to listen to a presentation on the study, make comments and ask questions.

Attendees could participate by either attending the in-person public meeting on July 30, 2021 at 9 a.m. at the Hilton Garden Inn (86 S Rockford Dr, Tempe, AZ 85281) or could watch the pre-recorded public meeting online. Comments and questions were accepted live, following the presentation at the in-person meeting and continued to be accepted through the online comment form until August 16, 2021. All questions and comments provided at the in-person public meeting were recorded and can be found in Appendix C. Over 20 people attended the in-person public meeting and over 70 viewed the pre-recorded public meeting.

2.3. Public Meeting Materials

2.3.1. Presentation

A copy of the presentation was made available to the public through the study webpage. In addition to the PDF of the presentation, a pre-recorded public meeting was uploaded to the study webpage on July 29, 2021. A copy of the presentation is available in Appendix B.



2.3.2. Fact Sheet

A fact sheet was made available at the in-person public meeting, posted online and shared through the email notification. The fact sheet provided information on the study, a map of the study area and details on next steps. A copy of the fact sheet can be found in Appendix B.

3 Public Comments

3.1. In-Person Meeting Questions/Comments

Fifteen questions/comments were submitted by members of the public during the in-person public meeting and were responded to by the project team on July 30, 2021. A summary of those questions and answers can be found in Appendix C.

3.2. Online Comments

Comments on the recommended alternatives were accepted through an online comment form both during and following the in-person public meeting. The comment form opened on July 30, 2021 and closed on August 16, 2021. A total of 117 comments were received. A summary of those comments can be found in Appendix C.



Appendix A – Meeting Notifications



Smith Innovation Hub

**Help shape the future of
the Smith Innovation Hub!**

Tempe is developing a master plan for the Smith Innovation Hub that will guide future city and private development infrastructure investment in the area. Share your input with us:

1. Attend a public meeting on Friday, July 30 at 9 a.m. at the Hilton Garden Inn, 86 S. Rockford Drive
**Masks are requested for those who are not fully vaccinated.*
2. Provide feedback on the draft plan July 30-Aug. 16 at tempe.gov/SmithHub

Take the survey, view a recorded overview of the plan and get meeting details:



tempe.gov/SmithHub

Contact:

Project information: Jill Buschbacher, Economic Development Program Manager
Jill_Buschbacher@tempe.gov or 480-350-8812

Meeting materials or accommodations: Shauna Warner, Neighborhood Services
Shauna_Warner@tempe.gov or 480-350-8883.

The Smith Innovation Hub Infrastructure Master Plan will identify infrastructure needs for the area, ensuring it aligns with the community's vision, and will include specific projects, cost estimates and a prioritized list of infrastructure improvements.

It may include recommendations for new lighting, shade, sidewalk or road improvements, bike lanes, landscaping or water/sewer upgrades. The final plan is anticipated by early fall 2021.

Las juntas serán en inglés. Para información en español, llama a 480-350-4311. Para participar, encontrar materiales del proyecto y comentar por internet del 30 de julio-16 de Agosto, visite tempe.gov/SmithHub.



City of Tempe
Neighborhood Services
21 E. 6th Street, 2nd Floor
Tempe, Arizona 85281

Nextdoor Posts

City of Tempe
Public Information Officer TaiAnna Yee • 16 Jul

Public Meeting
Friday, July 30, 9 a.m.
Hilton Garden Inn
86 S. Rockford Drive
Comment online: July 30-Aug. 16

July 30 at 9 a.m.: Smith Innovation Hub public meeting. Help us shape the future of the Smith Innovation Hub - attend a public meeting to review the draft infrastructure master plan on Friday, July 30, at 9 a.m. at the Hilton Garden Inn, 86 S. Rockford Drive. The Smith Innovation Hub master plan will identify potential needs
See more...

Tempe drafts Smith Innovation Hub infrastructure master plan
mailchi.mp

Posted to **Subscribers of City of Tempe** in 14 neighborhoods



City of Tempe

Public Information Officer TaiAnna Yee • 10 Aug



1 week left to comment on Smith Hub draft plan. Comment on the draft Smith Innovation Hub Infrastructure Master Plan by Monday, Aug. 16. The master plan will identify potential needs for the area, including lighting, sidewalk or road improvements, bike lanes and landscaping. Details:

See more...



Tempe plans improvements for the Smith Innovation Hub

mailchi.mp

From: [Halloran, Ken](#)
To: [LaBianca, Michael](#); [Shepherd, Kristi](#)
Subject: FW: Help shape the future of the Smith Innovation Hub
Date: Thursday, August 12, 2021 8:36:40 AM

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

FYI...

From: City of Tempe <webmaster@tempe.gov>
Sent: Tuesday, August 10, 2021 3:00 PM
To: Halloran, Ken <Ken_Halloran@tempe.gov>
Subject: Help shape the future of the Smith Innovation Hub





Help shape the future of the Smith Innovation Hub!

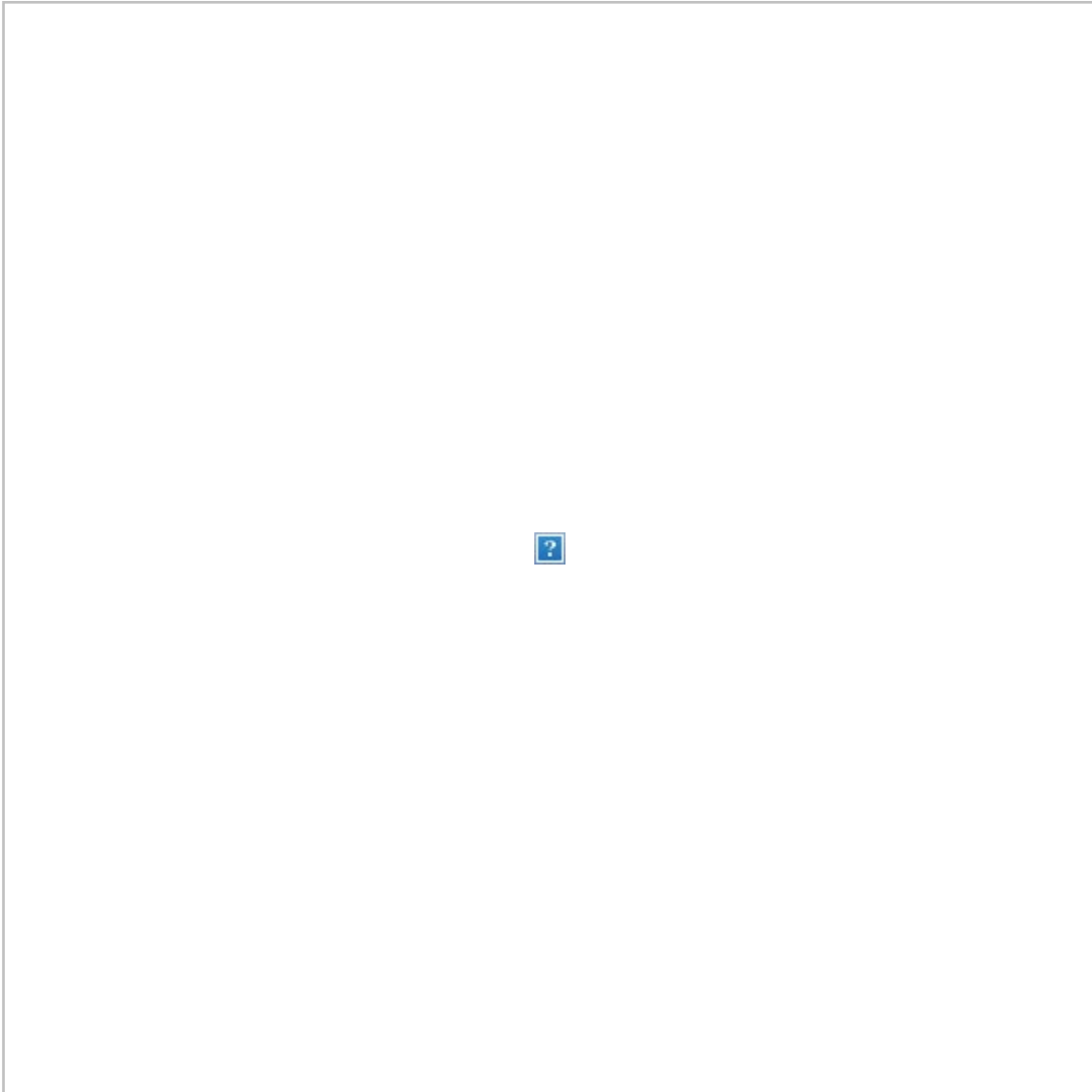
Online input closes Monday, Aug. 16

Post Date: 08/10/2021

There is only one week left to provide your input on the Smith Innovation Hub Infrastructure Master Plan! The plan that will identify potential needs for the area, including lighting, sidewalk or road improvements, bike lanes, landscaping and water/sewer upgrades.

GET INVOLVED

Watch a pre-recorded project overview presentation.



Read the project fact sheet.

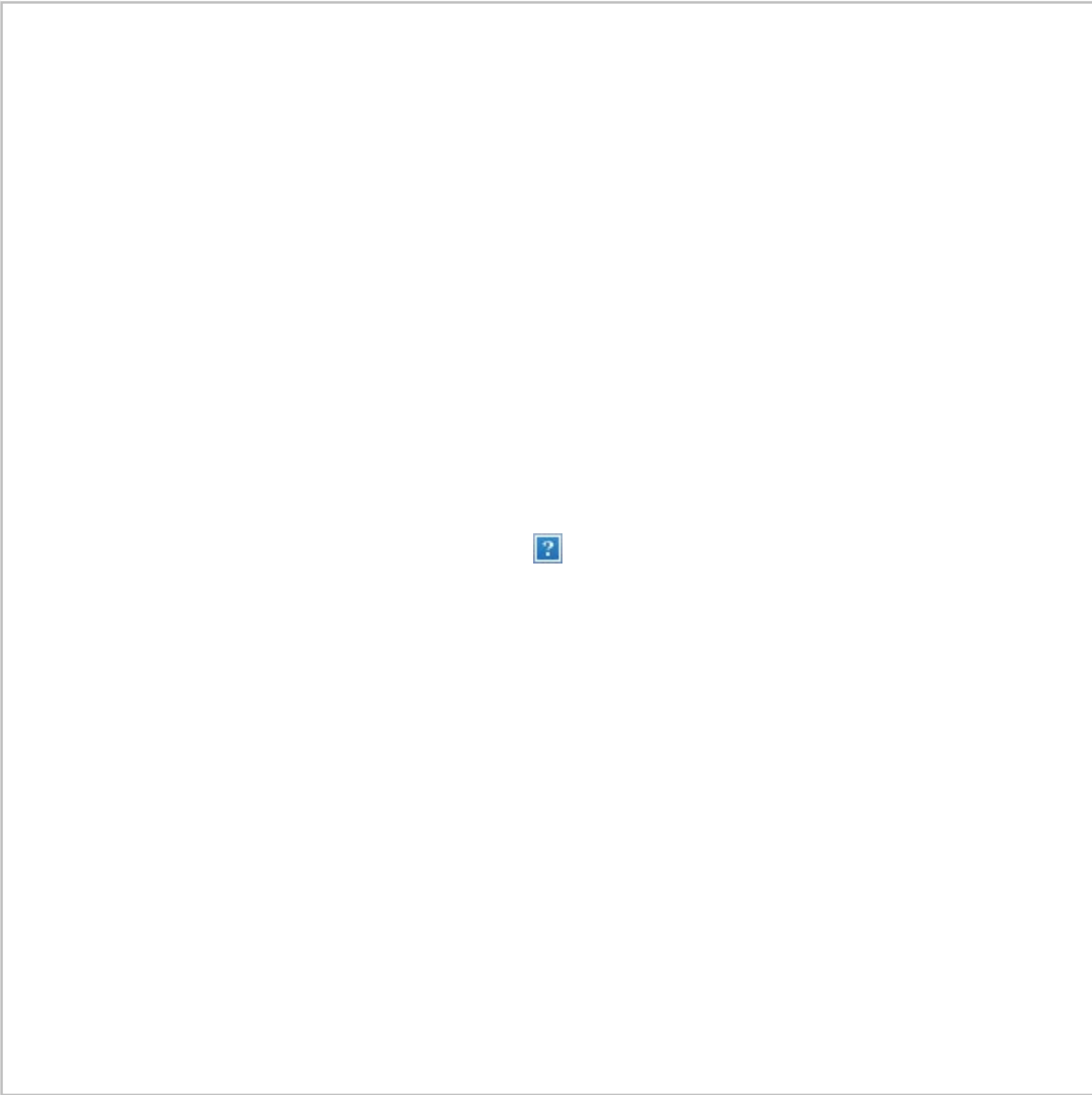
[Smith Innovation Hub Fact Sheet PDF](#)

Visit the project website

tempe.gov/SmithHub

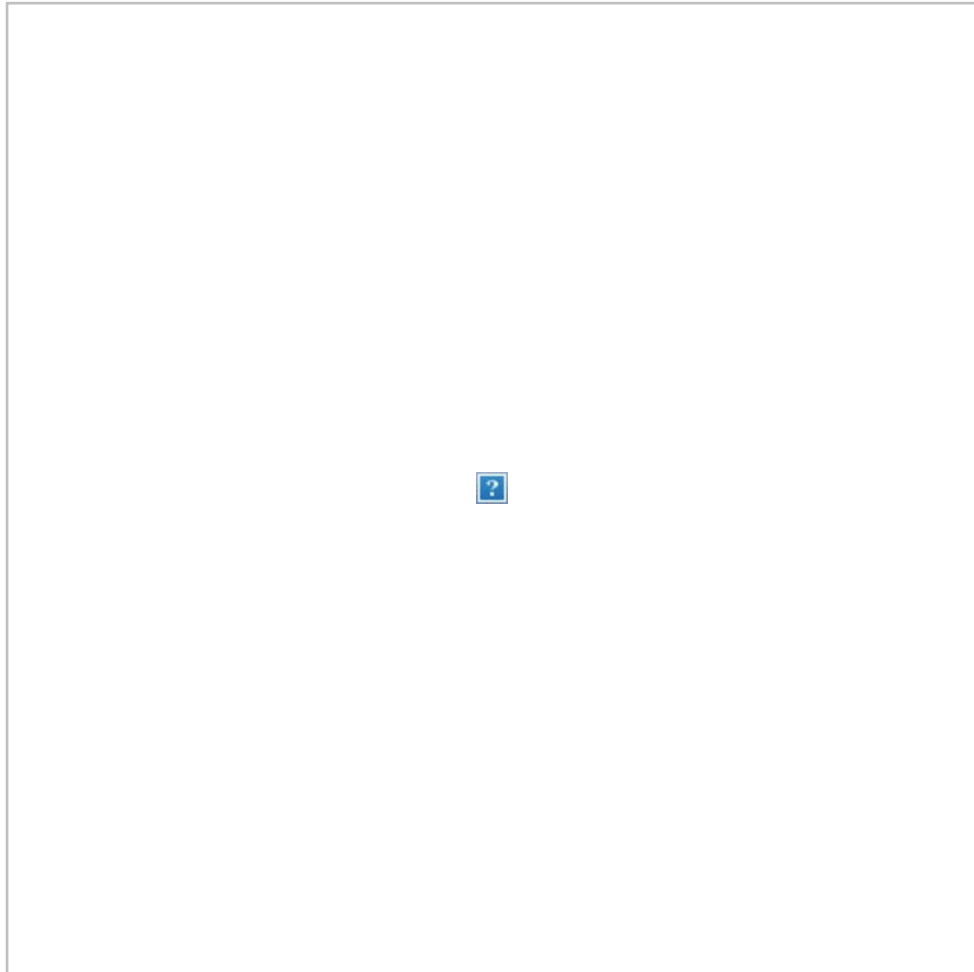
Provide your input through Monday, Aug. 16

[Comment Online](#)



Located between Rio Salado Parkway and University Drive to the

north and south and McClintock Drive and Loop 101 to the west and east, the Smith Innovation Hub is made up of mostly light industrial and office uses.



The master plan will help identify area needs, ensuring it aligns with the community's vision, and will include specific projects, cost estimates and a prioritized list of infrastructure improvements.

The goal of the Innovation Hub is to enhance the employment corridor to promote new investment, job creation and placemaking that attracts and retains a quality workforce.

The draft master plan was developed based previous rounds of input

from the area businesses and neighborhoods. The final plan is anticipated by early fall 2021. The plan will guide future city and private development infrastructure investment in the area.

The master plan will address several [Tempe City Council priorities](#), including reducing traffic delays, creating a 20-minute city, and increasing right of way landscaping and tree/shade canopy coverage. The plan also aligns with the city's economic development goals of retaining and attracting jobs and business investment in our community.

Para información en español, por favor llama a 480-350-4311. Para participar y ver los materiales del proyecto, visite tempe.gov/SmithHub. Puede compartir sus comentarios por internet del 30 de julio – 16 de agosto.

[Sign up to get the latest information in your inbox.](#)



Tempe makes waves as a technology and business magnet, an inclusive, caring community and a hub for recreation and adventure.



Contact: TaiAnna Yee

City of Tempe

Public Information Officer

TaiAnna_Yee@tempe.gov

480-350-8551



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21 E 6th St
Tempe, AZ 85281-3679

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Appendix B – Meeting Materials

Smith Innovation Hub Infrastructure Master Plan

Public Meeting #2

July 30, 2021



Tempe

Making waves in the desert

Welcome

Following the presentation, the study team will be available for questions or comments.

LOOP
202

Rio Salado Pkwy

Industrial Dr

Third St

Clark Dr

Rockford Dr

River Dr

Siesta Ln

McClintock Dr

Fifth St

Smith
Innovation
Hub

LOOP
101

Sixth St

Hacienda Dr

Perry Ln

Smith Rd

Rockford Dr

River Dr

Sixth St

Price Rd



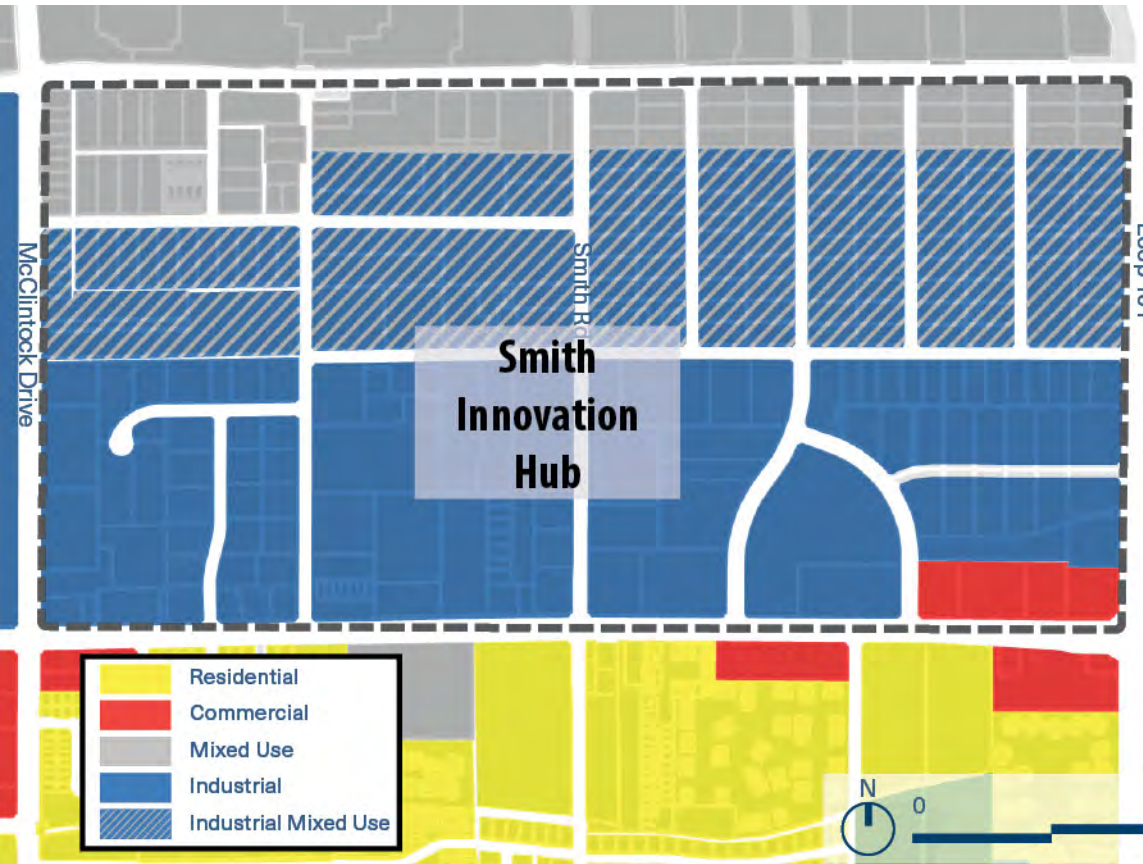
University Dr

River
Dr



- Guide public and private infrastructure improvements
- Identify and prioritize infrastructure needs for short- and long-term timeframes
- Provide planning-level costs and prepare an implementation plan

Background



SMITH INNOVATION HUB POTENTIAL LAND USES



Note: "Mixed use" may be either vertical or horizontal mixed use.



Excerpt from Bikelt map showing Smith Road as future bicycle boulevard through SIH.

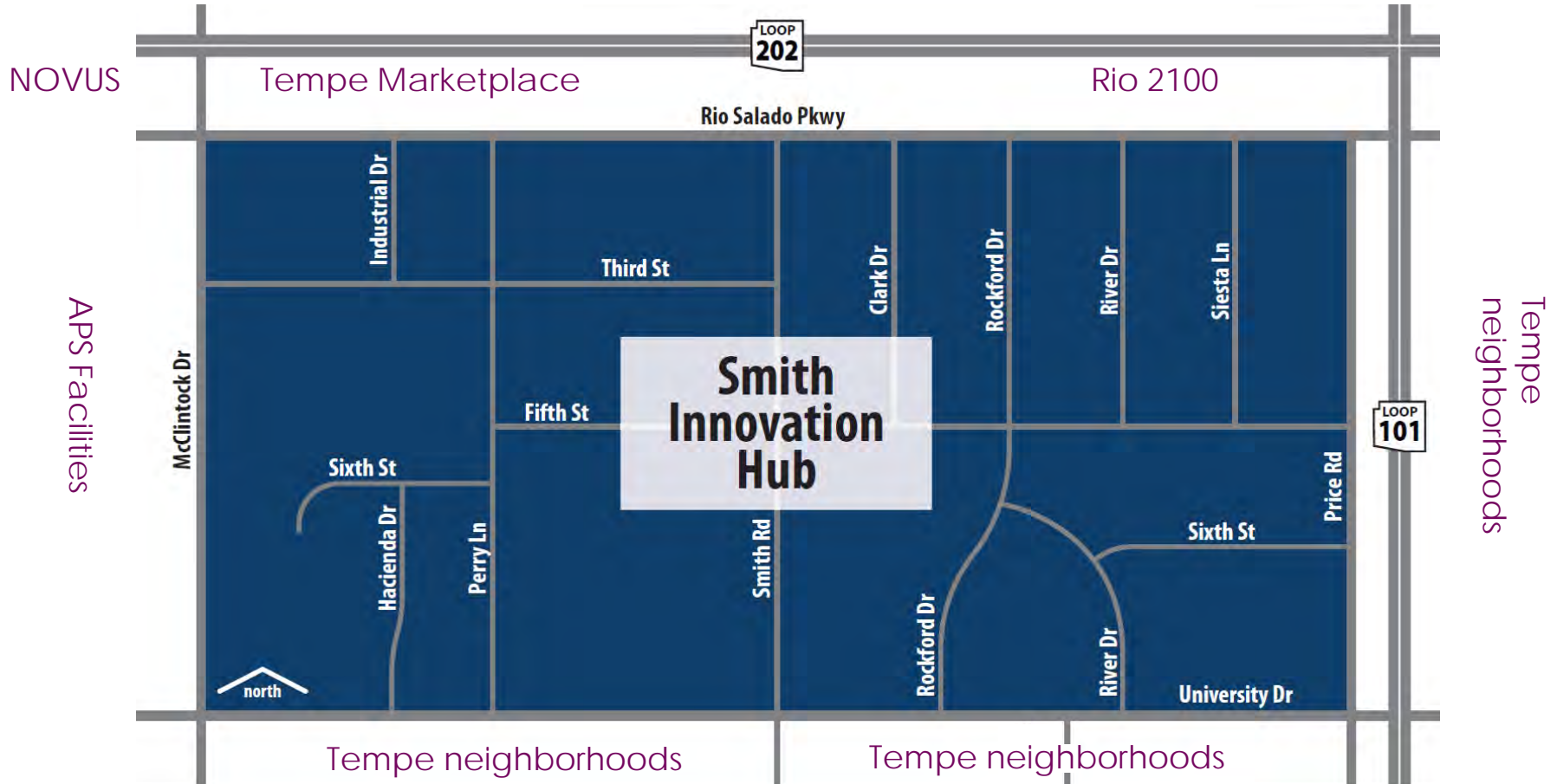
Existing Conditions



- Approximately 250 unique employers; over 5,000 employees
- Majority single-story buildings
- Adaptive reuse occurring (Circuit Tempe, Circa '78)



Surrounding Community

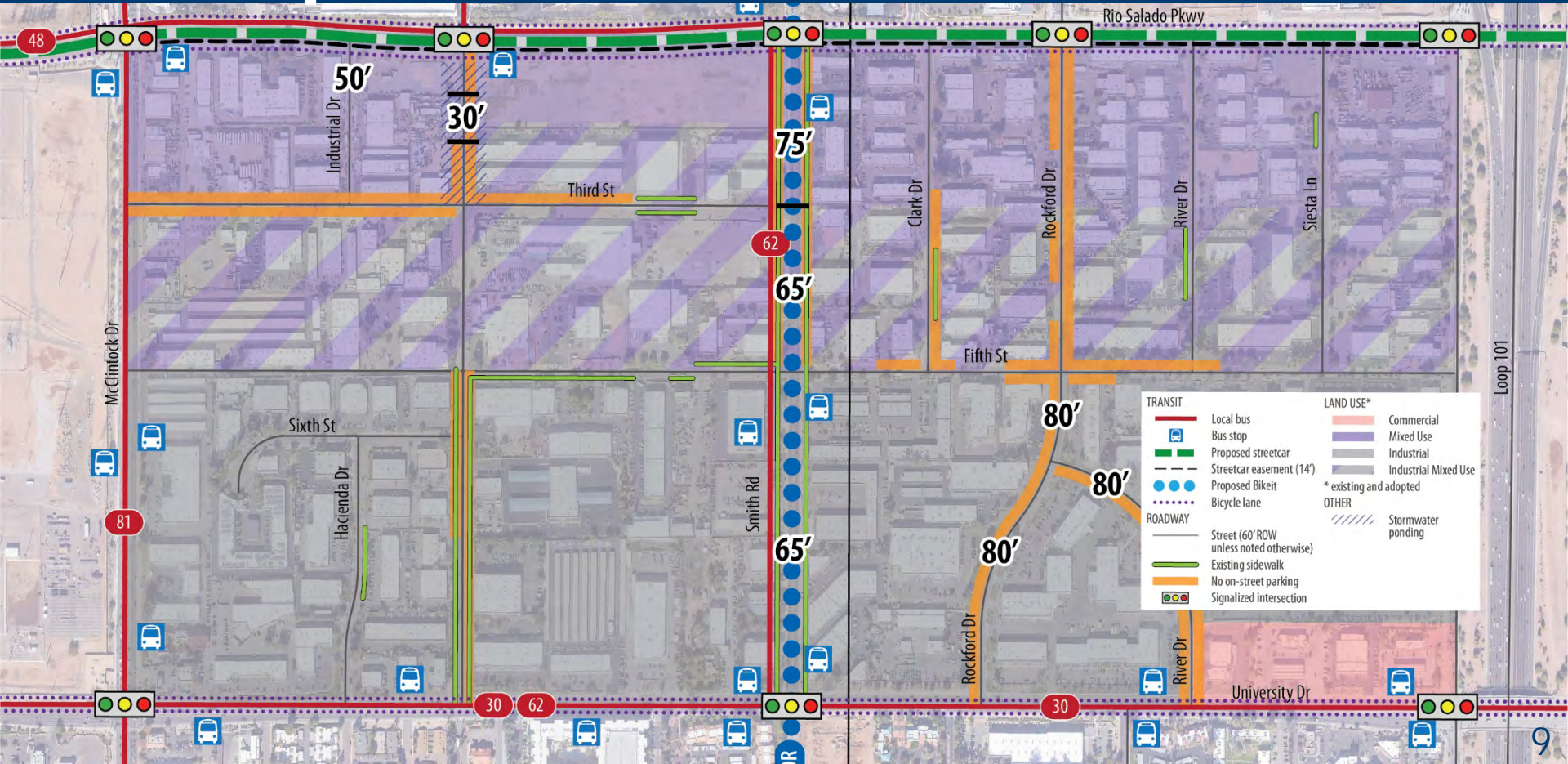


Adjacent Neighborhoods



- Escalante and Alegre parks communities
- Population nearly 9,000
- Transit and bike to work at 1 ½ times the City's rate
- Walk to work less than City's rate

Transportation Overview



TRANSIT		LAND USE*	
	Local bus		Commercial
	Bus stop		Mixed Use
	Proposed streetcar		Industrial
	Streetcar easement (14')		Industrial Mixed Use
	Proposed Bikeway	* existing and adopted	
	Bicycle lane	OTHER	
	Street (60' ROW unless noted otherwise)		Stormwater ponding
	Existing sidewalk		
	No on-street parking		
	Signalized intersection		



- Next five years (2026)
- Planning-level information to begin budgeting and implementing improvements
- Current (and future) users

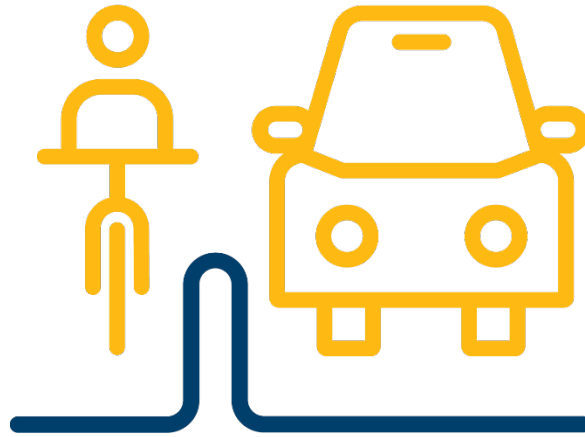


- Use this plan as a guide
- Projects will be phased in over time as funding becomes available
- Private development may provide opportunities to implement infrastructure or fund improvements

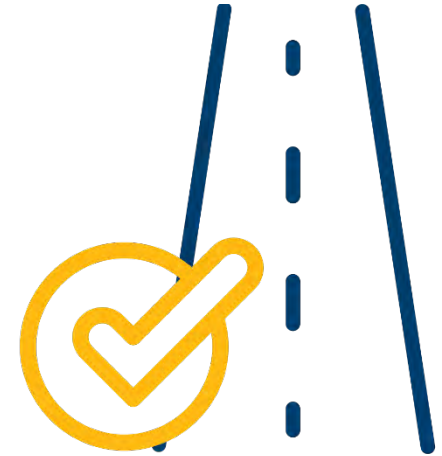
Priorities



Safety



Pedestrian and
Bicycle Comfort/
Accessibility



Business Access

Streetscape Criteria



General criteria for the comparison of alternatives

Criteria	User Groups	Rating
Level of comfort	Bicyclist and pedestrian	L, M, H
Curb access (parking, p/u, transit)	All	L, M, H
Access and mobility	Business	L, M, H

Ratings are qualitative relative scores using a three-step scale:

L - low

M - medium

H - high

Streetscape Recommendations



Perry Lane (n of 5th)
- Low Impact Development
- Parking on both sides of street

Fifth Street
- Parking on both sides of street

Smith Road
- Protected bike lanes
- Two-way left turn lane

Perry Lane (s of 5th)
- Parking both sides of street

Perry Lane



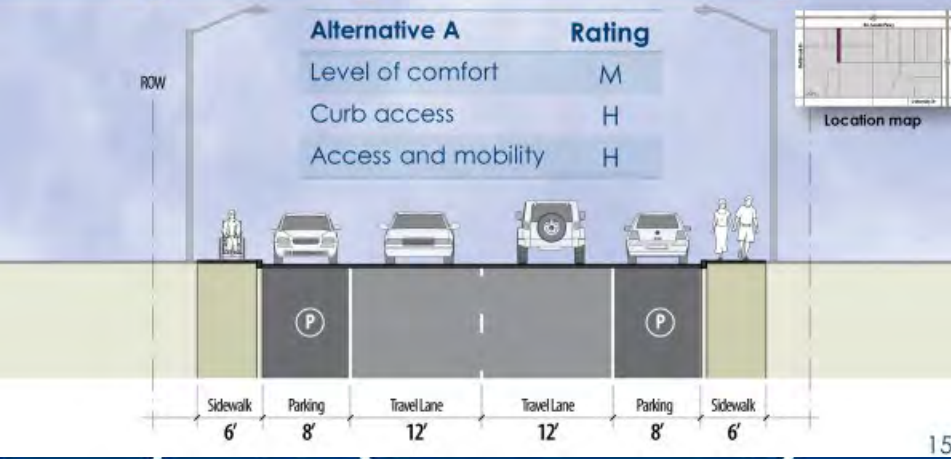
- Make sidewalk improvements (ADA)
- Complete full street section north of 5th Street
- Mitigate stormwater runoff and on-street ponding



Photos, Perry Lane
South of 5th Street (left)
North of 3rd Street (right)



Perry Lane (north of Fifth St)



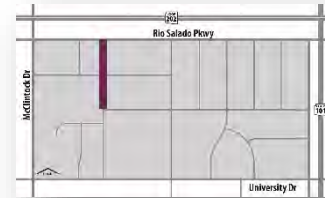
- Both Alternatives offer varying degrees of on-street parking
- Alternative A – includes attached sidewalks
- Alternative B – includes detached sidewalks and Low-impact Development

Perry Lane (north of Fifth St)



Meeting #1 – Survey Responses

- 82% of respondents preferred Alternative B, incorporating Low-Impact Development
- Respondents liked shade and parking aspects
- Concern with cost and maintenance of landscape in right-of-way



Location map

Note:

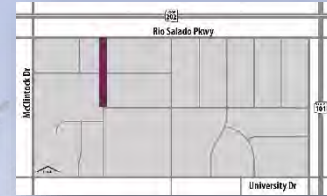
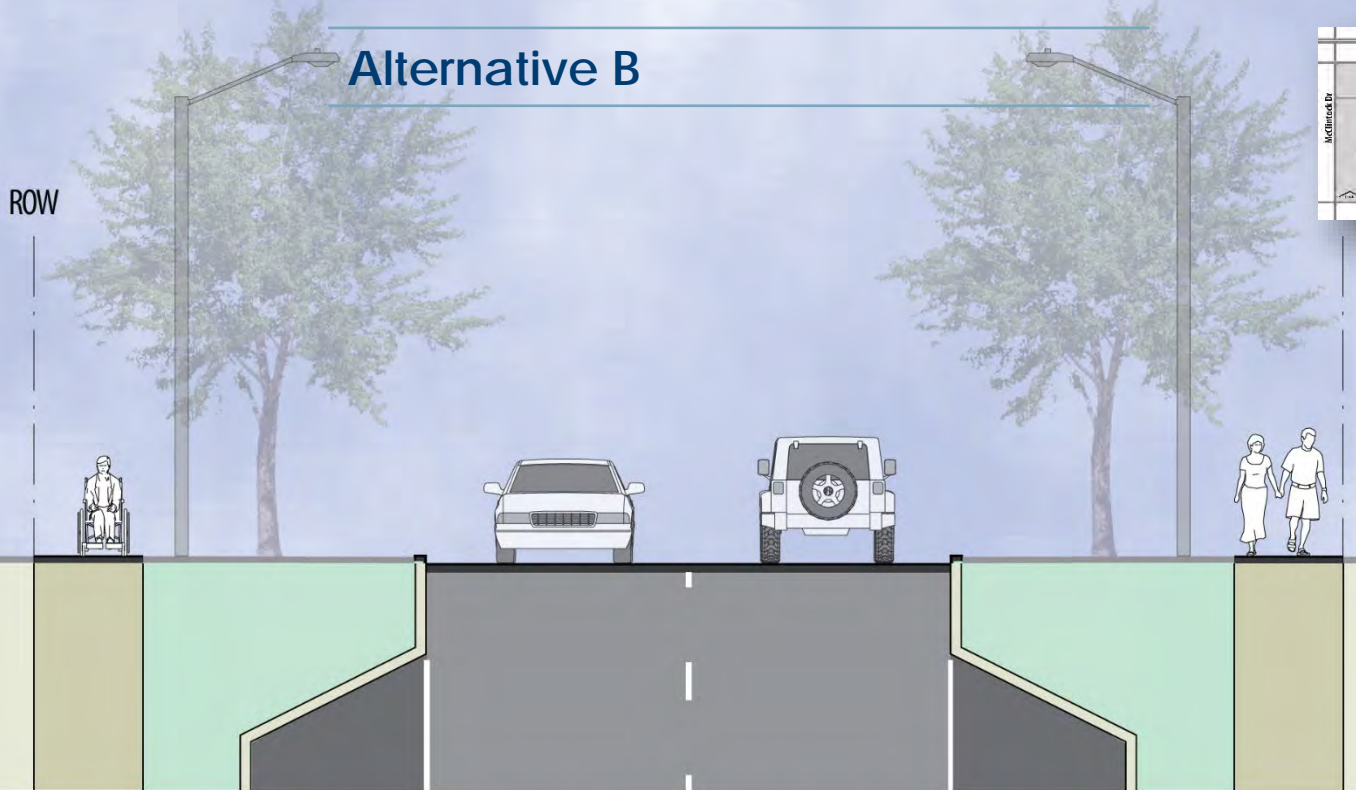
Excerpts from comments; all comments posted on project webpage.

Perry Lane (north of Fifth St)



Alternative B

ROW



Location map



Perry Lane (north of Fifth St)



Alternative B with low impact development (LID).



College Avenue, Tempe

Rio Salado Pkwy

3rd St

Perry Ln

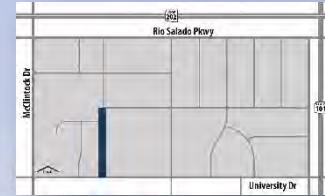
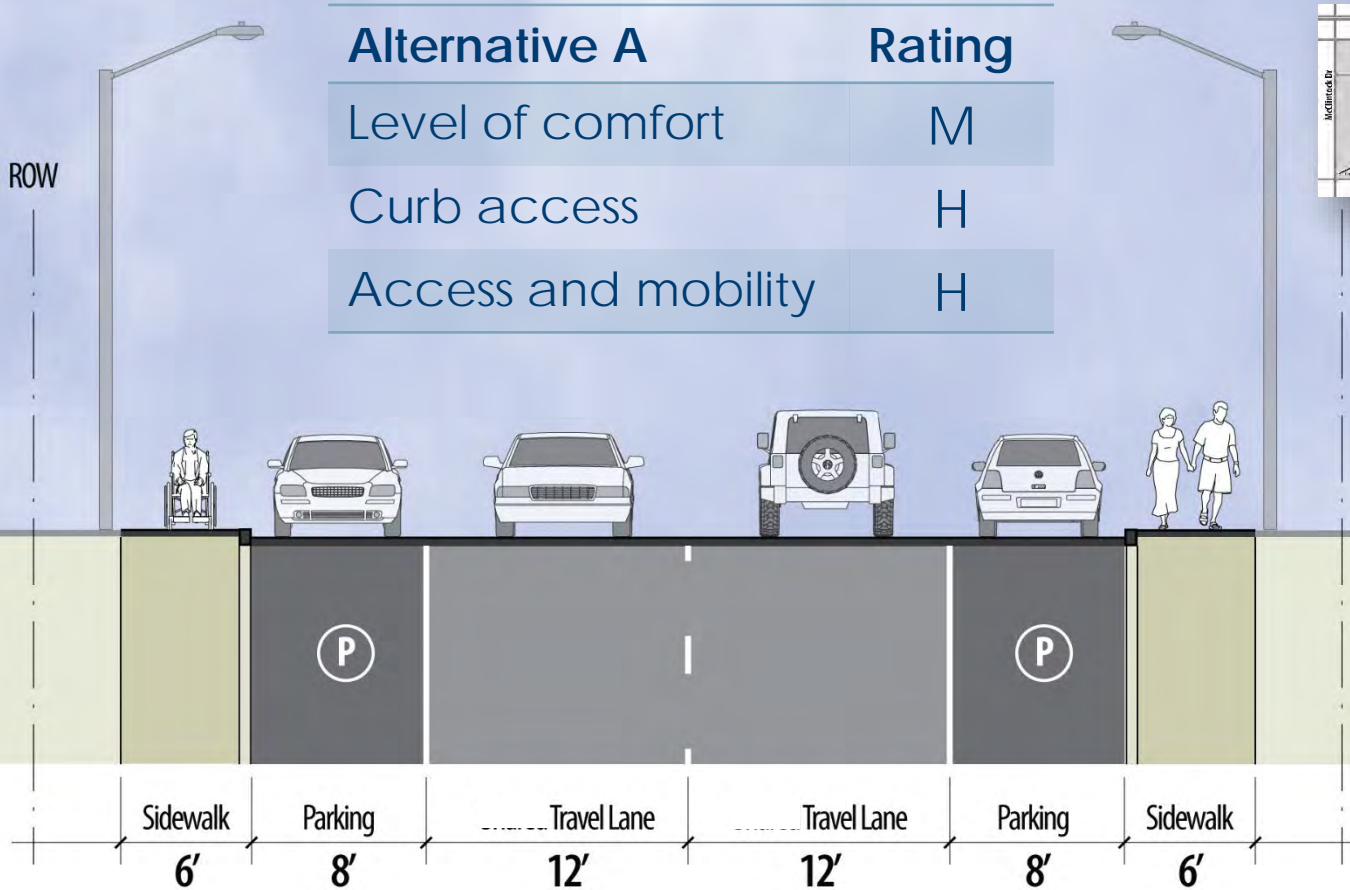


Proposed bioretention cell



Bioretention planter with curb cuts

Perry Lane (south of Fifth St)



Location map

Fifth Street



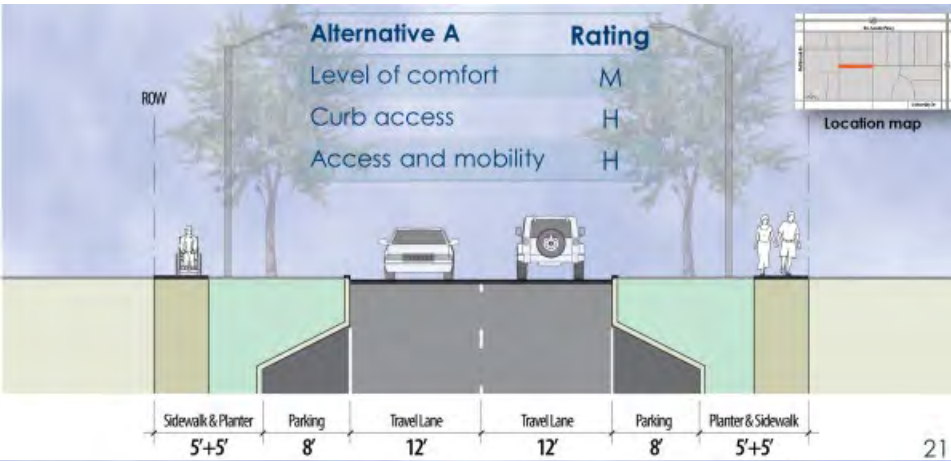
- Make sidewalk improvements (ADA)
- Maintain on-street parking



Photos, Fifth Street



Fifth Street (Perry to Smith)



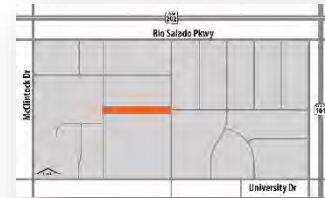
- Alternatives offer varying degrees of on-street parking
- Alternative A – includes detached sidewalks and Low-impact Development
- Alternative B – includes attached sidewalks

Fifth Street (Perry to Smith)



Meeting #1 – Survey Responses

- 56% of respondents preferred Alternative A with continuous curbside parking
- Respondents liked the additional landscaping offered with Alt B
- Recommendation is hybrid 'Alt C', with detached sidewalk and on-street parking

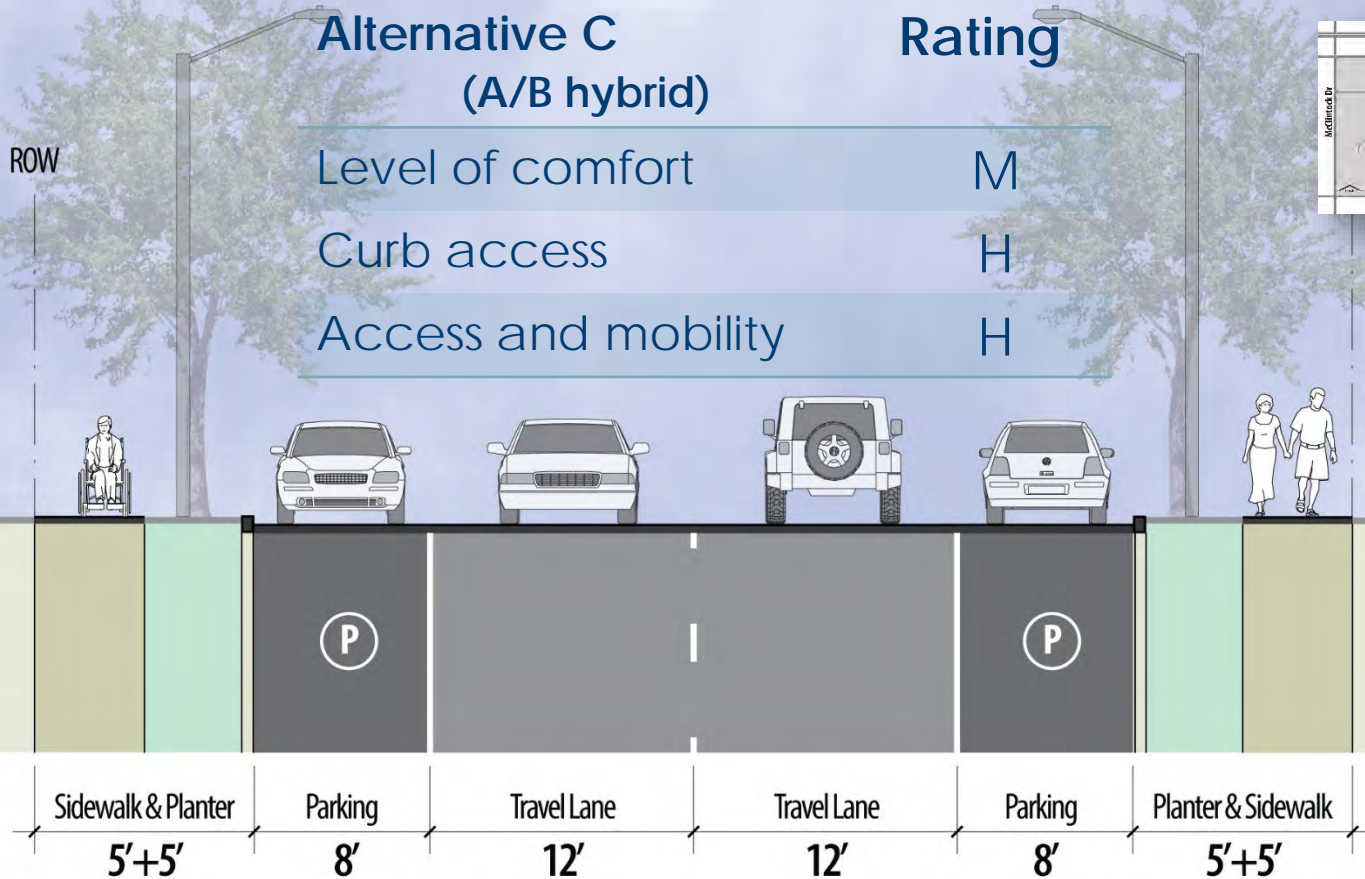


Location map

Note:

Excerpts from comments; all comments posted on project webpage.

Fifth Street (Perry to Smith)

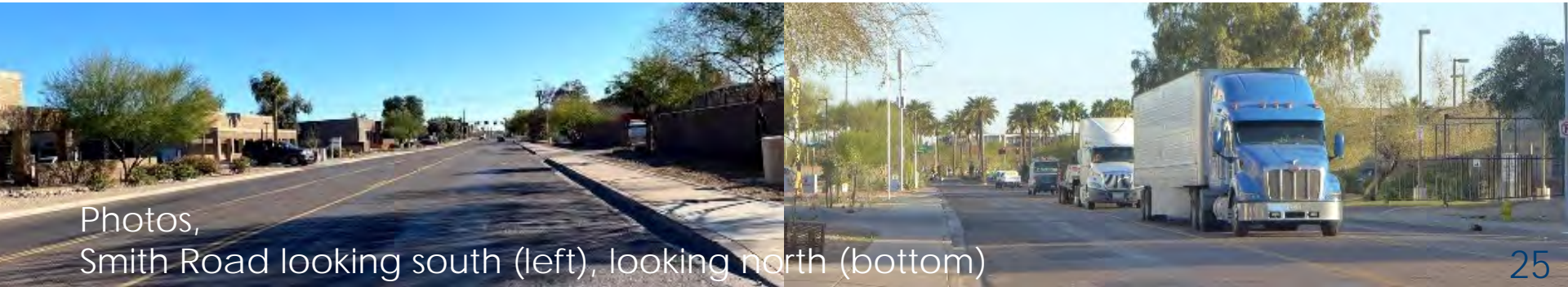


Location map

Smith Road

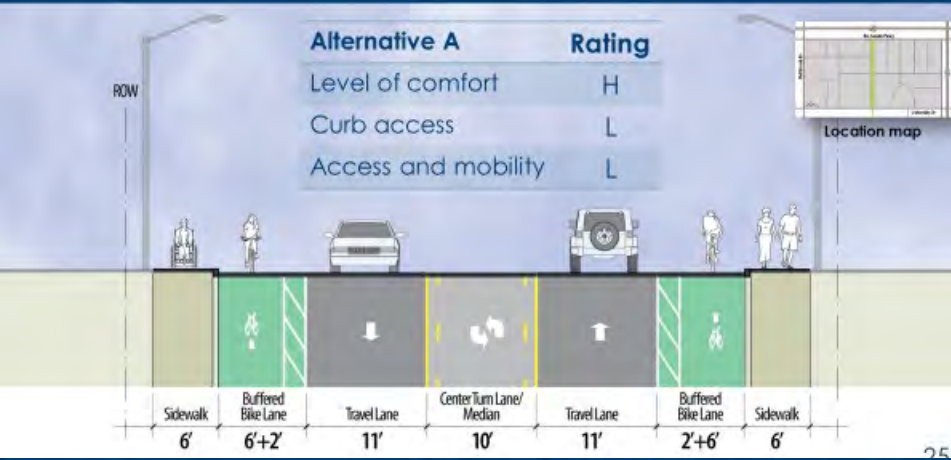


- Make sidewalk improvements (ADA)
- Add striping for protected bicycle lanes
- Improve bus stops with shelters and benches



Photos,
Smith Road looking south (left), looking north (bottom)

Smith Road



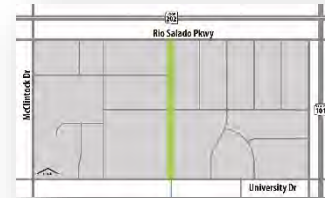
- Both Alternatives include bicycle lanes
- Alternative A – includes Two-way Left Turn Lane
- Alternative B – includes parking on one side of street

Smith Road



Meeting #1 – Survey Responses

- Alternative A with two-way left turn lane received majority approval (65%)
- Concerns regarding trucks and Two-way Left Turn Lane (TWLTL)
- Concerns with bicycles and safety with delivery trucks

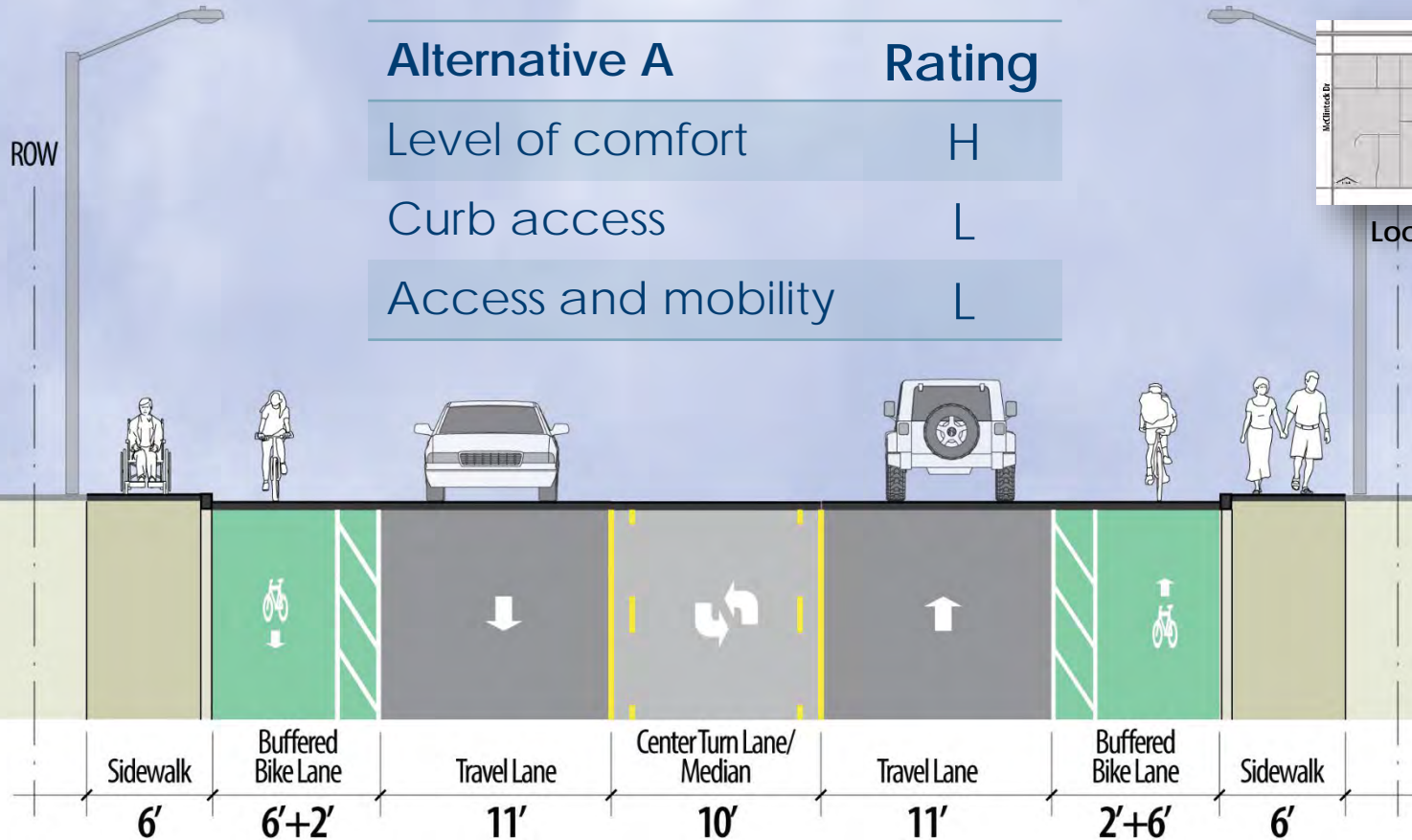


Location map

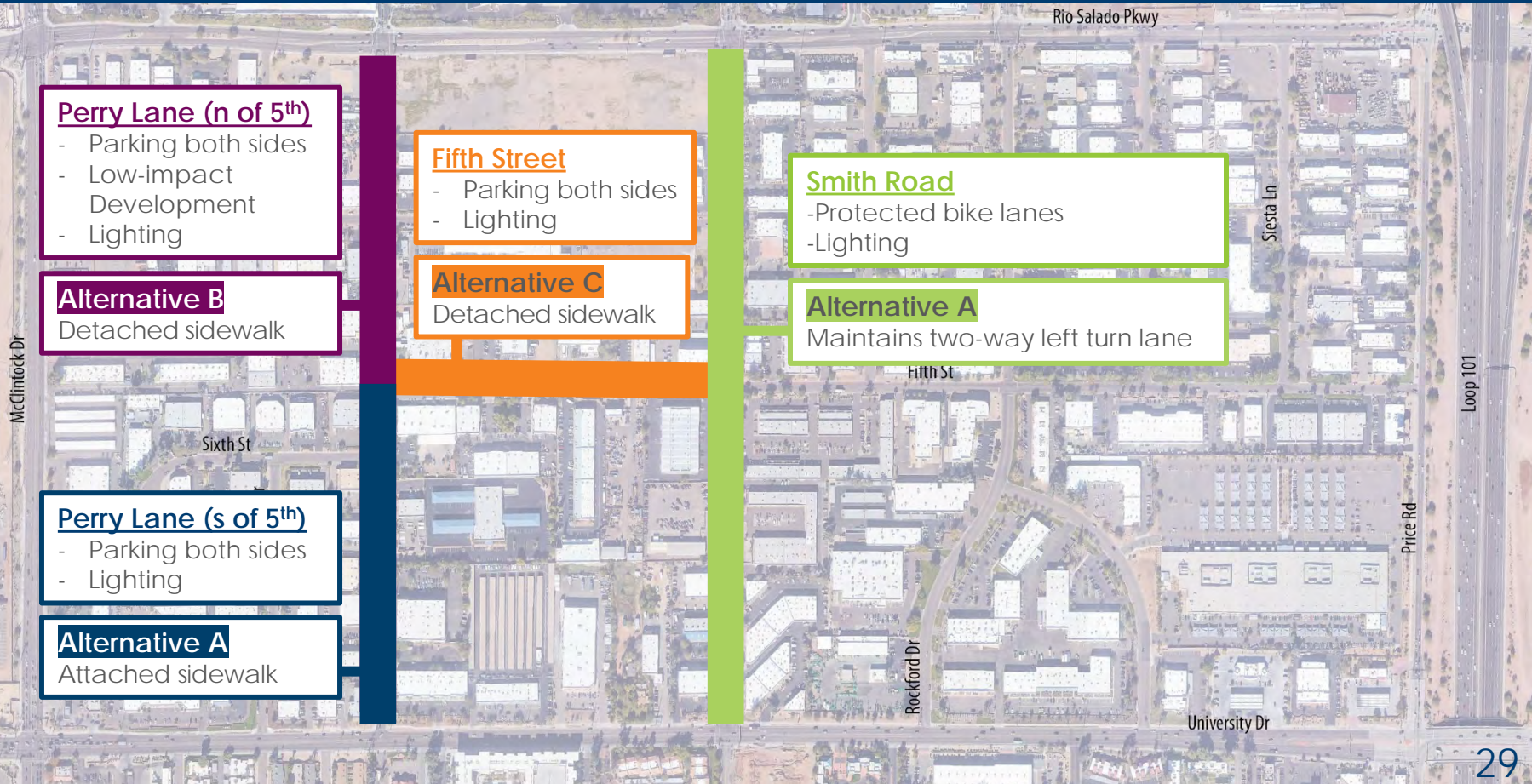
Note:

Excerpts from comments; all comments posted on project webpage.

Smith Road



Streetscape Summary



Perry Lane (n of 5th)

- Parking both sides
- Low-impact Development
- Lighting

Alternative B

Detached sidewalk

Perry Lane (s of 5th)

- Parking both sides
- Lighting

Alternative A

Attached sidewalk

Fifth Street

- Parking both sides
- Lighting

Alternative C

Detached sidewalk

Smith Road

- Protected bike lanes
- Lighting

Alternative A

Maintains two-way left turn lane



Photo,
South River Drive

Prioritize at

- Smith Road bicycle route
- Perry and Fifth pedestrian priority routes
- Recommended truck routes (proposed)

Lighting



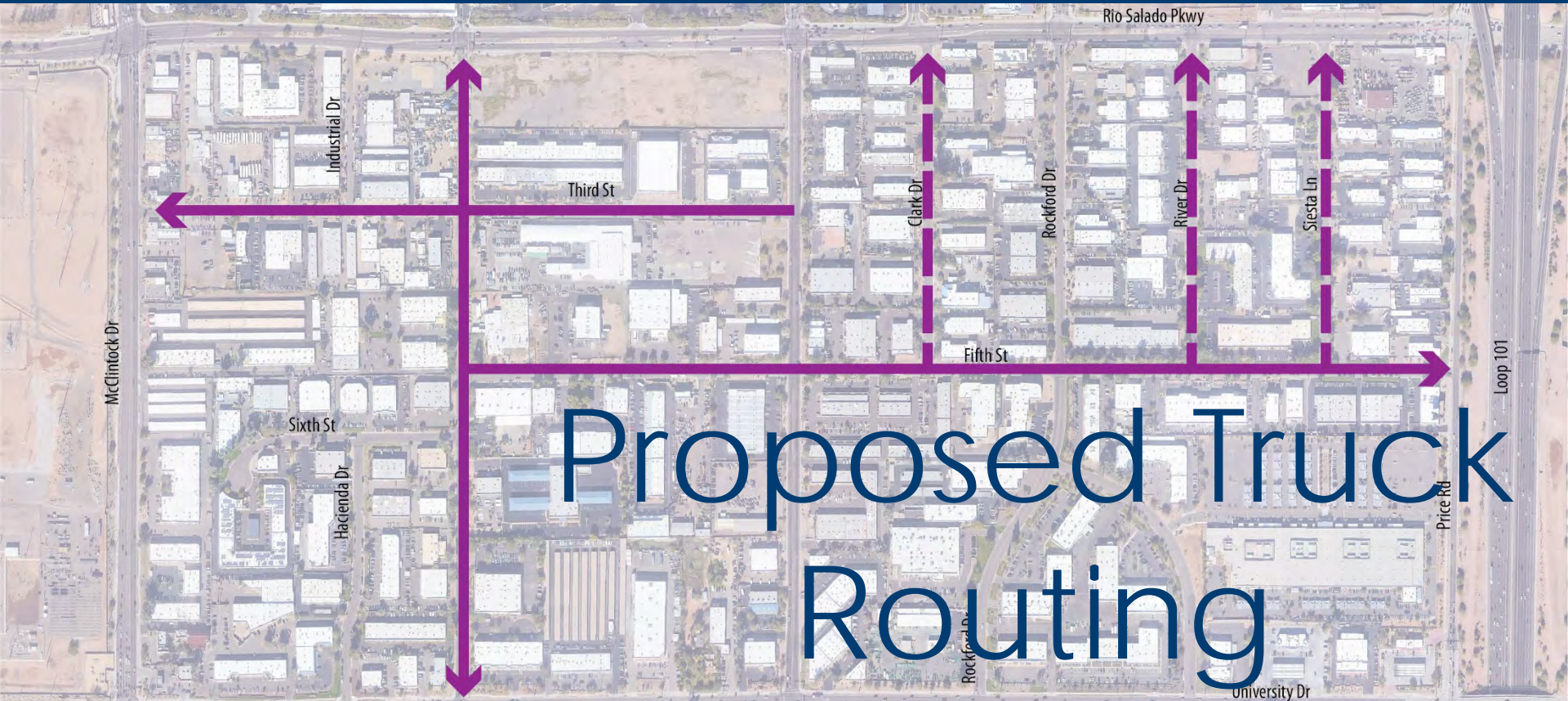


- Master Plan recommendations
- No significant capacity issues as a result of planned land uses
- Identified projects include upsizing pipes^a
 - 6-inch to 8-inch [2,200 linear feet, total]
 - 8-inch to 12-inch [6,000 linear feet, total]

Note:

a. These improvements are anticipated with new development.

Truck Traffic



Proposed Truck Routing

- Proposed primary truck route
- - - Proposed secondary truck route

Additional Identified Projects



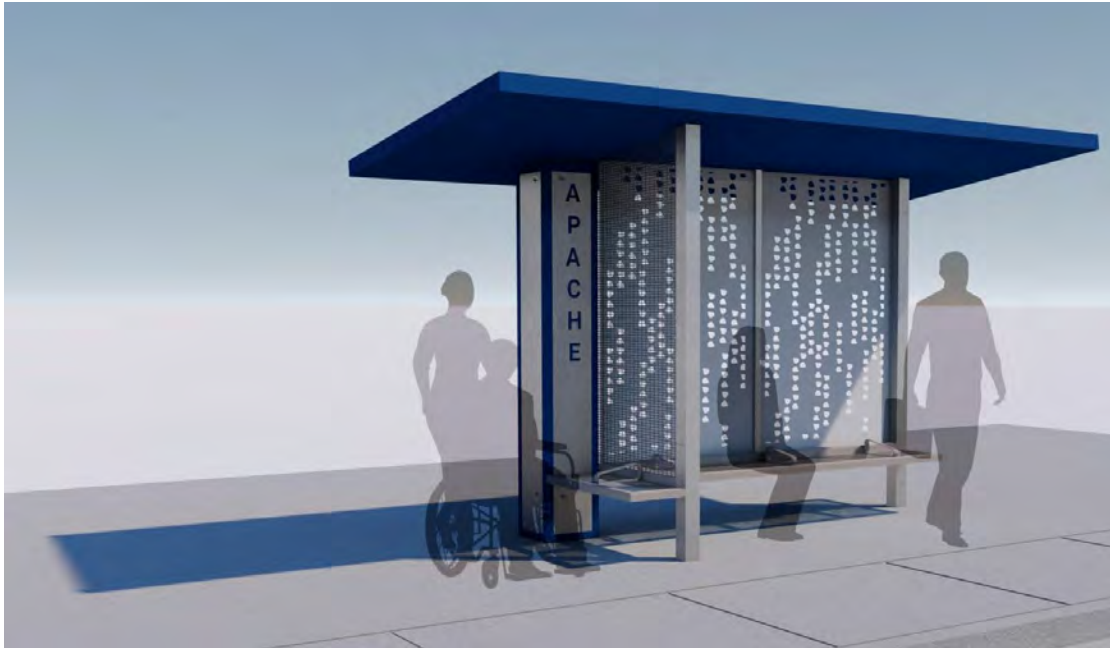
Tempe Transportation Plan (2015):

- Bike lane improvements at the Rio Salado Parkway and University Drive intersections with McClintock Drive
- Sidewalk improvements along east side of McClintock Drive south of Third Street



*Photos,
Rio Salado Parkway, looking east towards McClintock Drive (top)
University Drive, looking west towards McClintock Drive (bottom)*

Bus Shelters



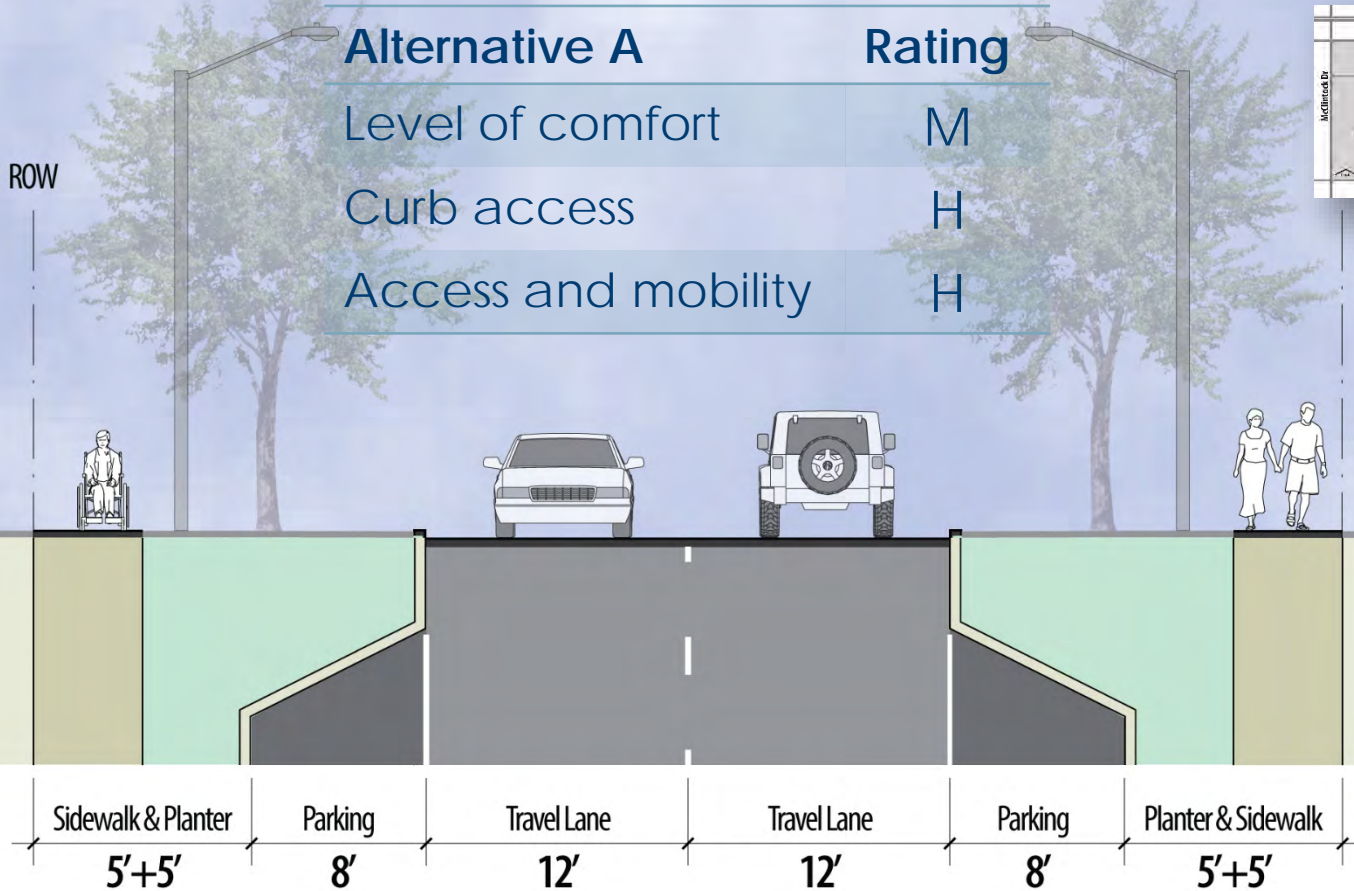
- Tempe Bus Route 62
- Install appropriate bus shelters and amenities at four stops on Smith Road

Tempe Transit Shelter (5' x 10', small shelter),
Designing Tempe's New Transit Shelters (2020).



- Planning horizon of 2040
- Actions may be implemented through:
 - Capital Investment Plan projects,
 - as opportunities arise, and
 - as part of redevelopment.

Perry Lane (south of Fifth St)



Alternative A

Rating

Level of comfort

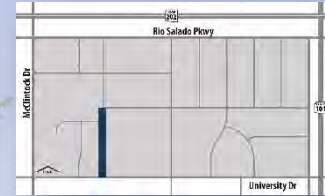
M

Curb access

H

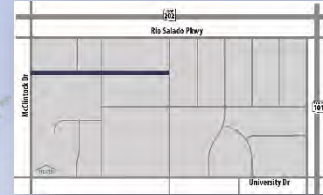
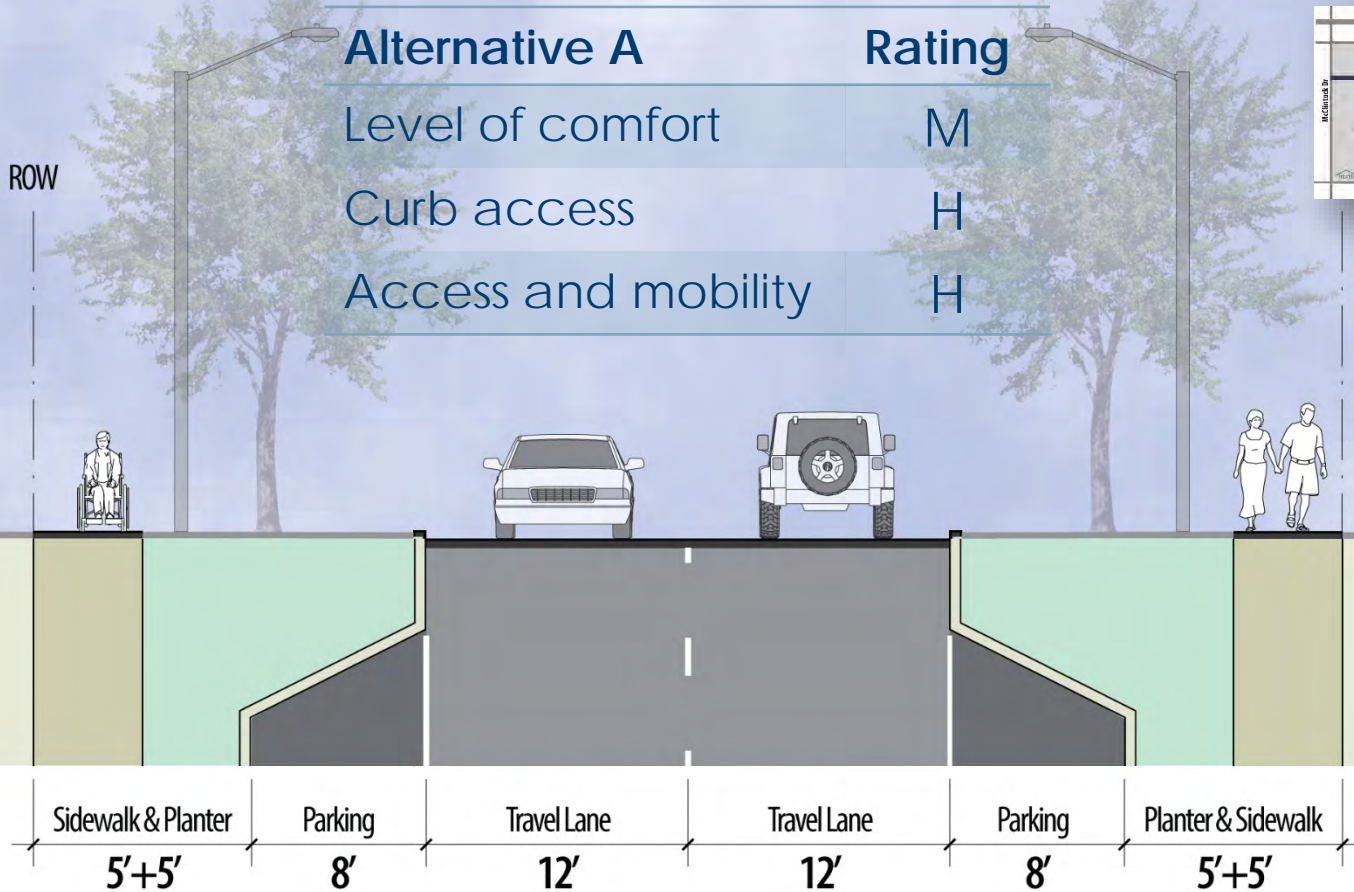
Access and mobility

H



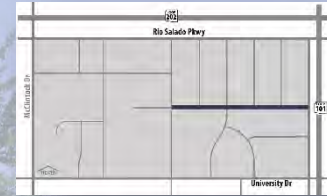
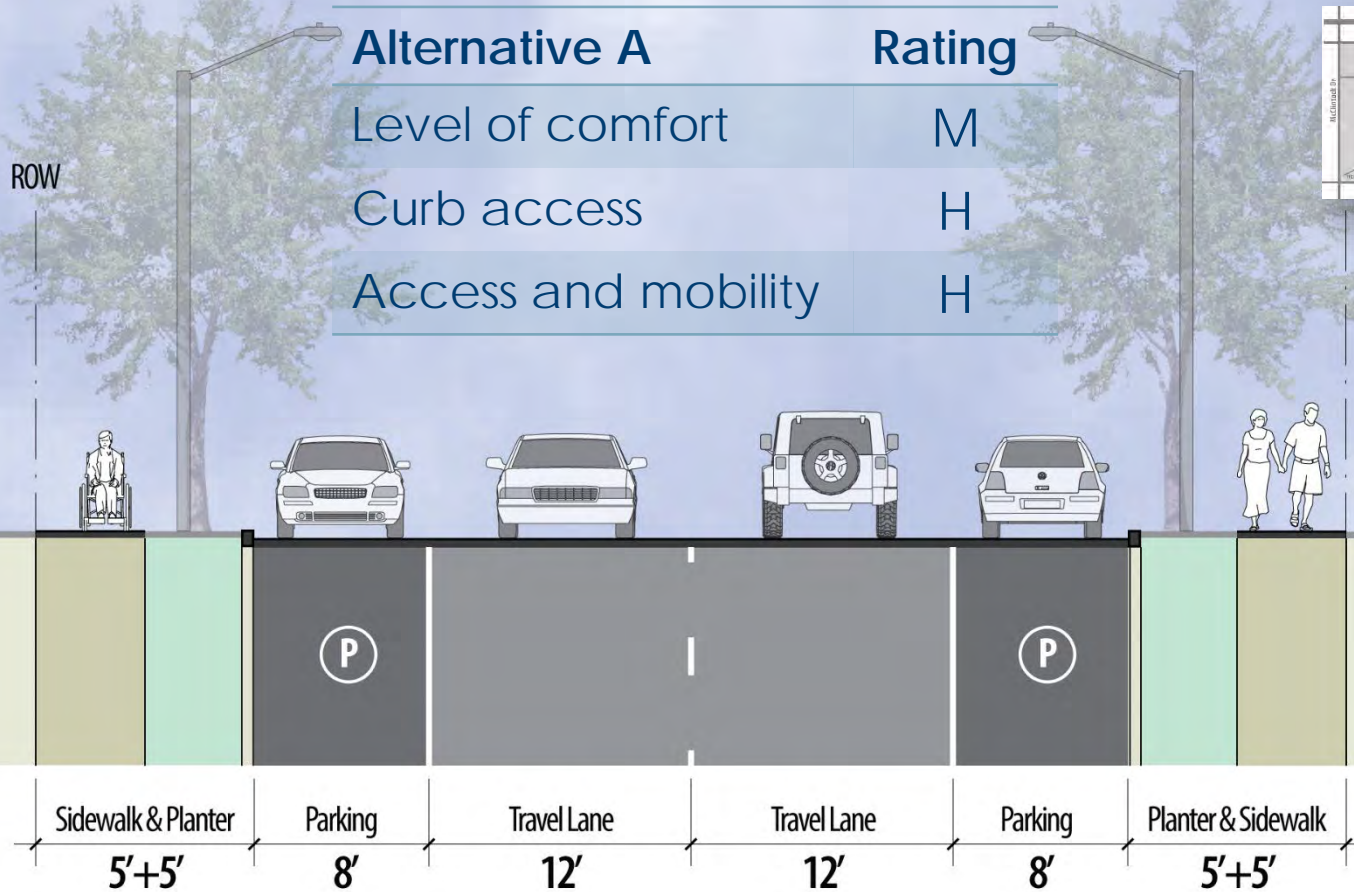
Location map

3rd Street (McClintock to Smith)



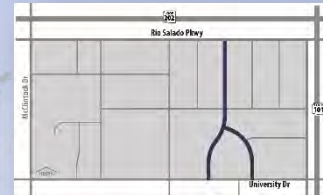
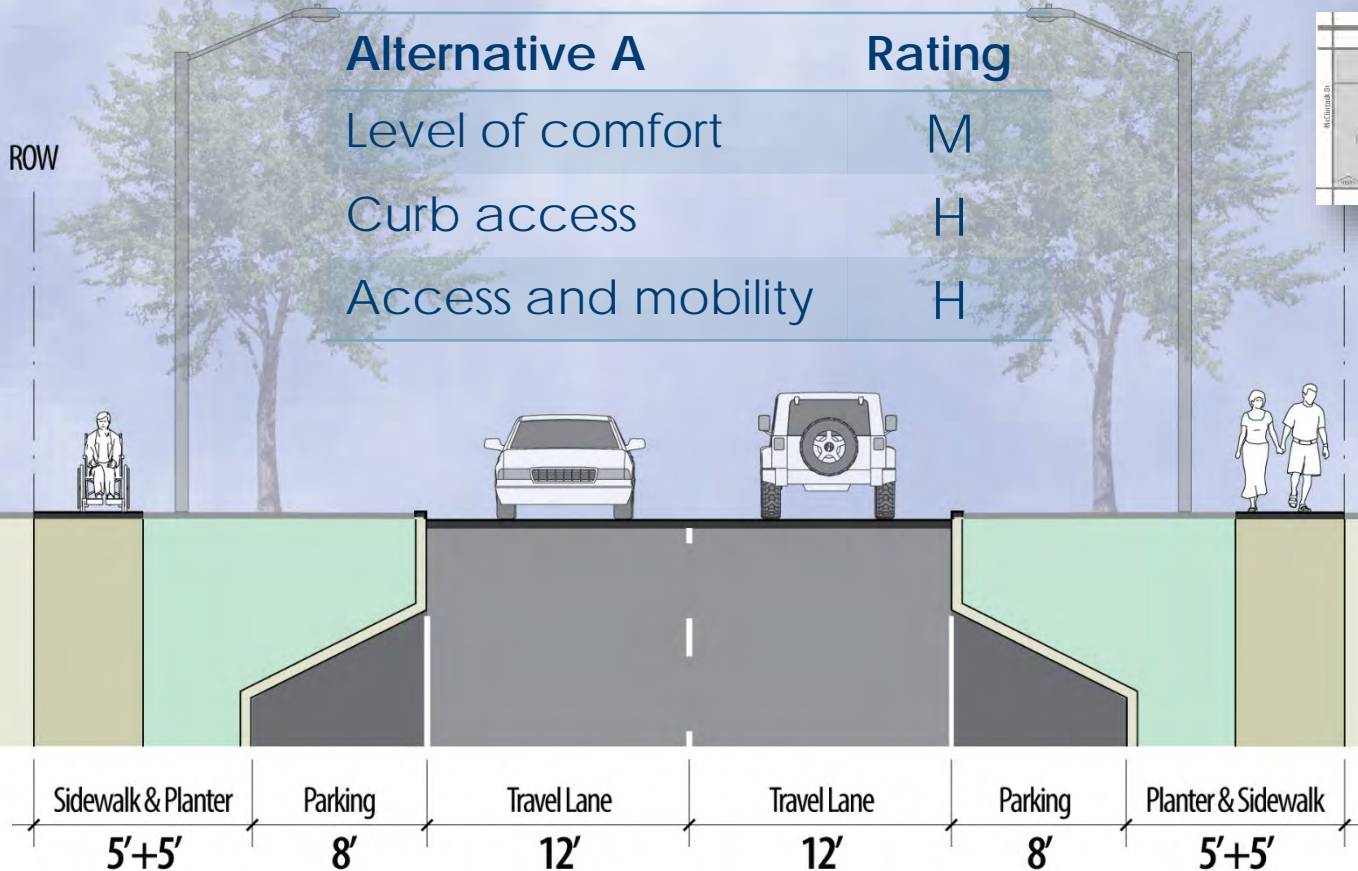
Location map

Fifth Street (Smith to Price)



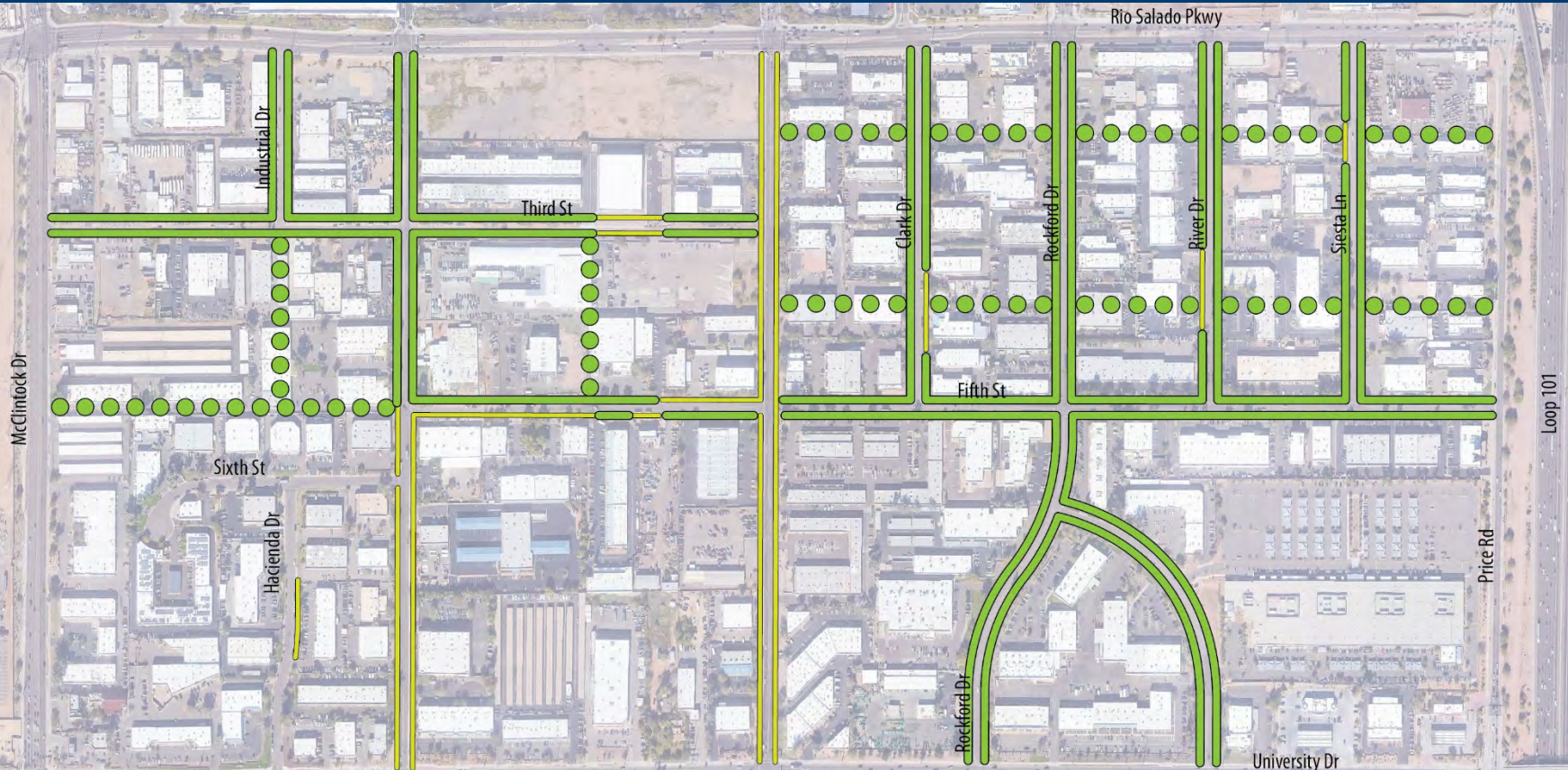
Location map

Rockford and River Drive



Location map

Ultimate Pedestrian Network

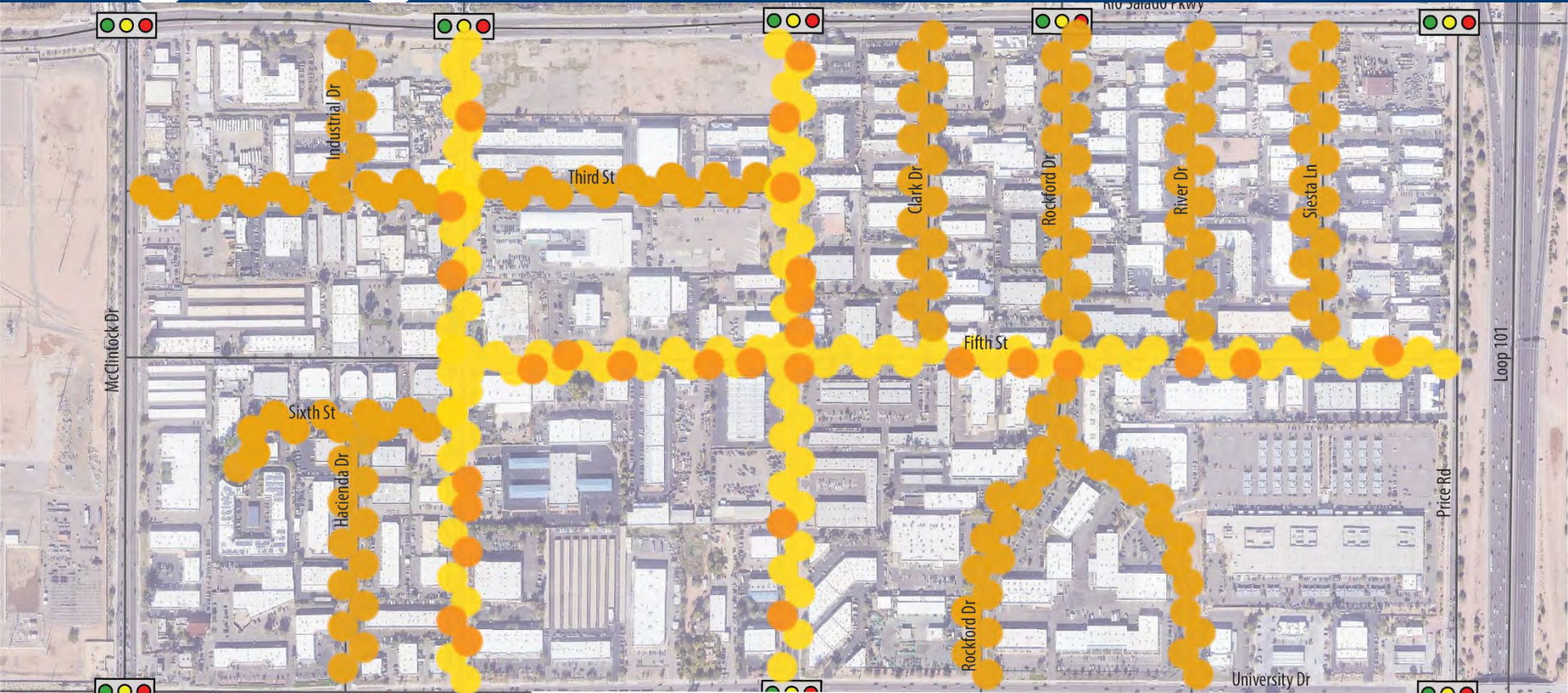


Existing sidewalk

Proposed sidewalk

Proposed pedestrian/bicycle connections

Lighting



- Existing lighting
- Short-term lights
- Long-term lights



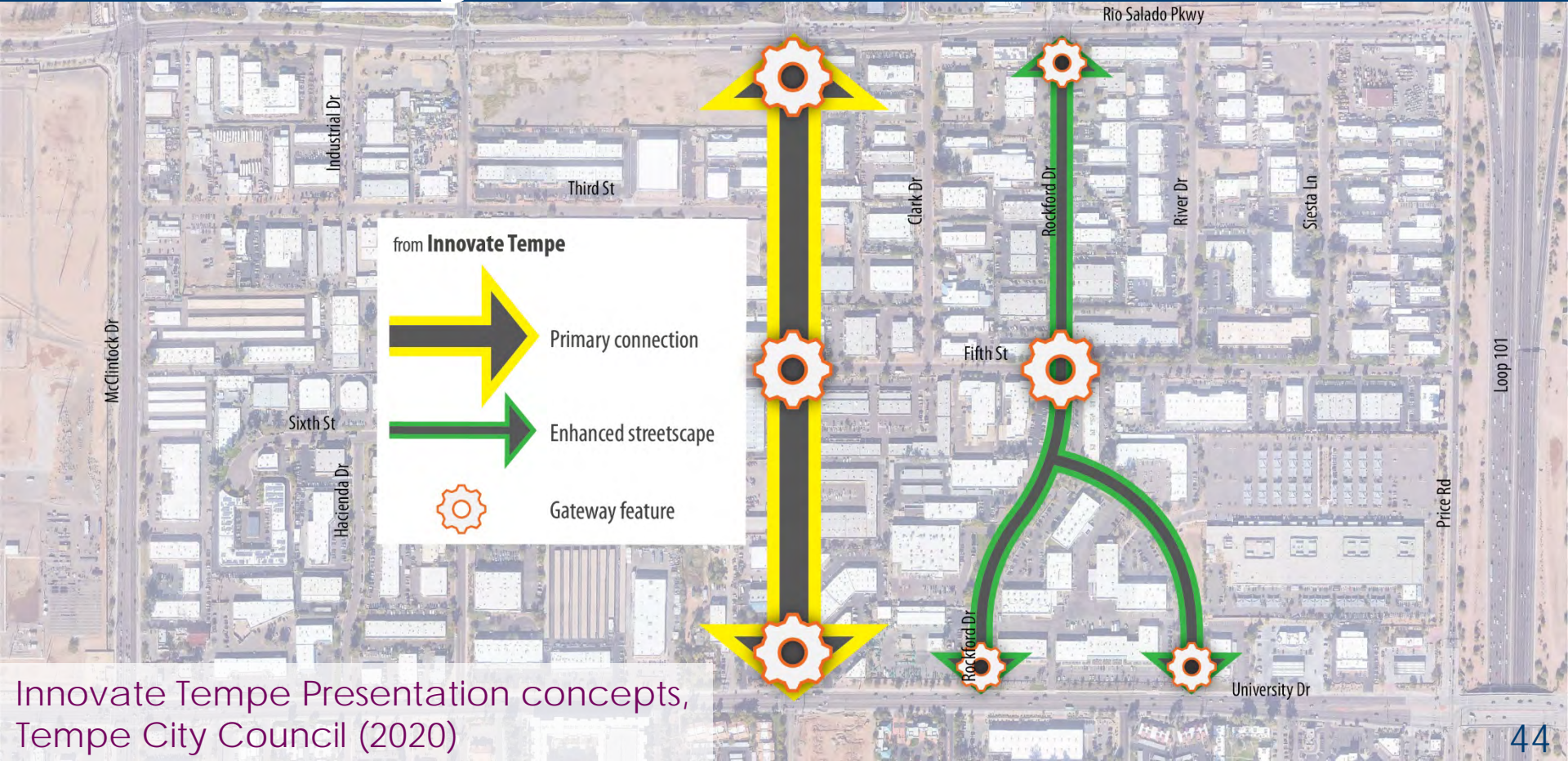
Aspects to Help Build an Identity – Survey Responses (ranked by importance)

1. Gateway Entrances
2. Public Art
3. Branding
4. Design Standards

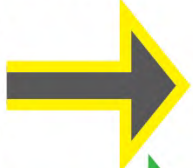


Notes:

Above are the top four (also noted were [5] 'Other' and [6] 'Business Association').

Gateway Entrances



from **Innovate Tempe**

-  Primary connection
-  Enhanced streetscape
-  Gateway feature

Innovate Tempe Presentation concepts,
Tempe City Council (2020)



Public meeting #2 comment form:

- Provide input on information presented today
- Visit tempe.gov/SmithHub to comment



- Prepare the Smith Innovation Hub Infrastructure Master Plan with a finalized list of prioritized projects and cost estimates for supporting both short- and long-term planning for the area
- Final plan presented to City Council – Sept/Oct 2021

Questions?

Project Contacts



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Visit tempe.gov/SmithHub to take the survey!

Smith Innovation Hub

Project Overview

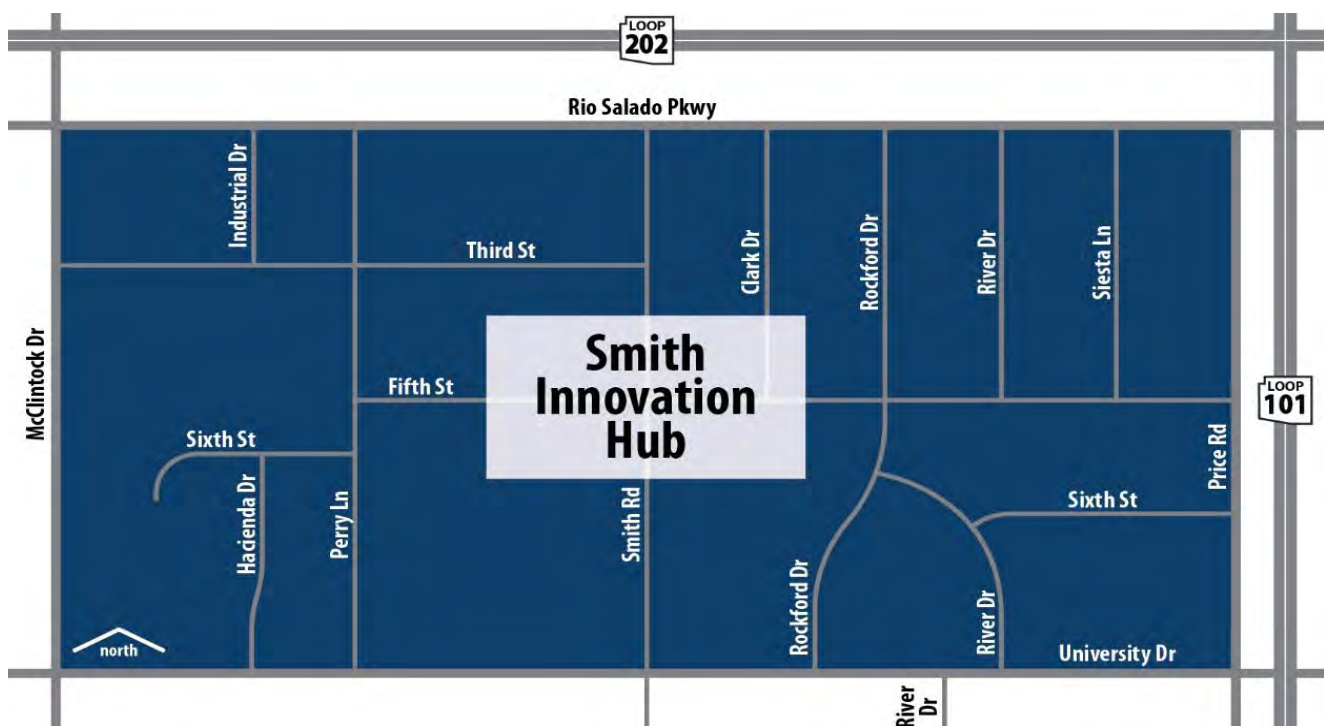
The Smith Innovation Hub (SIH) Infrastructure Master Plan (Plan) will identify and prioritize infrastructure needs for the Smith Hub area. It will be used as a guide for both the City of Tempe as it budgets for capital projects and private developers as they bring new projects online in the area. Public meetings, online surveys, and comments help ensure the plan aligns with the community's vision as well as previously adopted development and policy guidelines.

The plan will help identify area needs and will include specific projects, cost estimates and a prioritized list of short and long-term infrastructure improvements. Improvements could include streetscape, water, sewer, freight mobility, vehicle flow, lighting, active transportation and transit amenities.

The goal of the Innovation Hub is to enhance the employment corridor to promote new investment, job creation and placemaking that attracts and retains a quality workforce.

We want to hear from you!

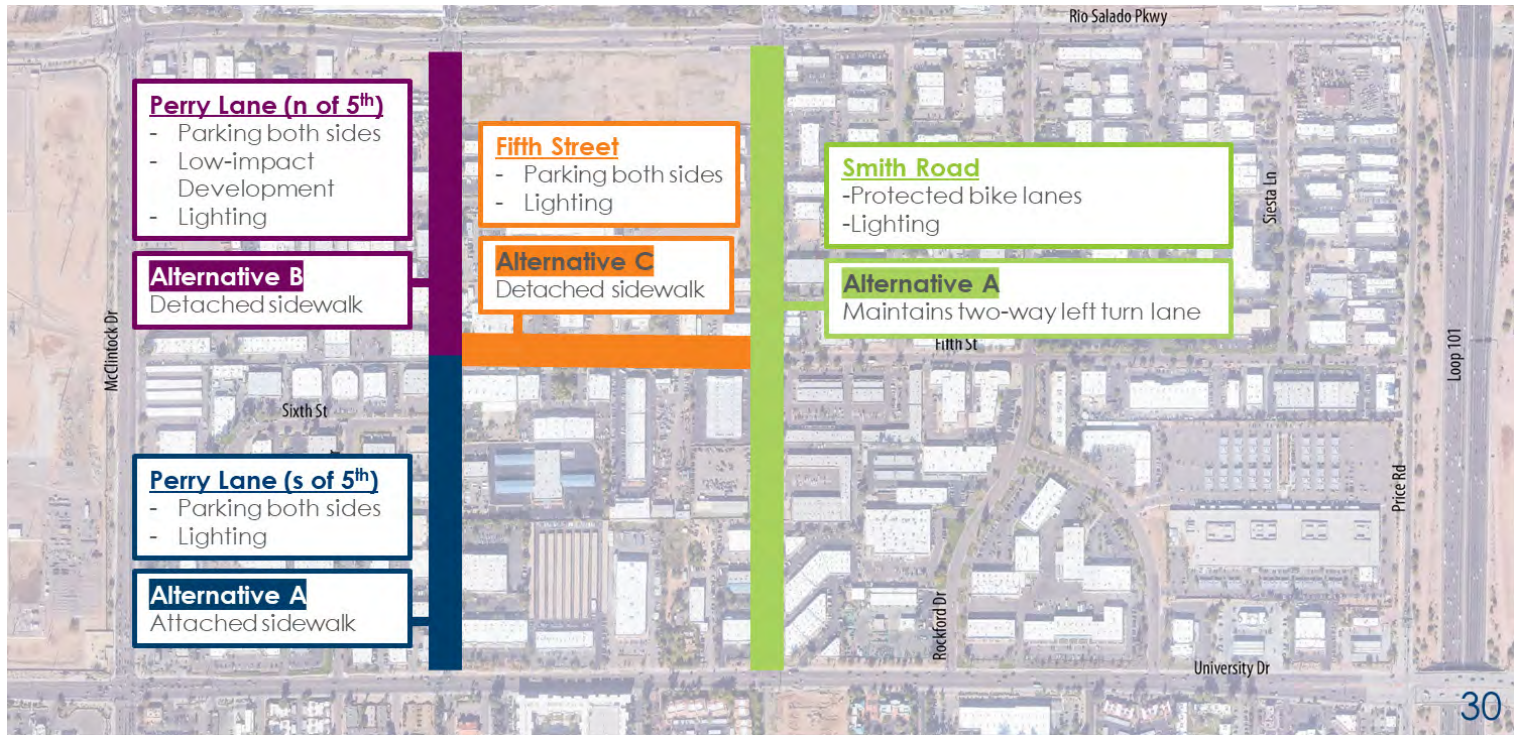
Public input on the proposed alternatives is open through Monday, August 16, 2021. If you would like to submit a comment or ask a question, visit tempe.gov/SmithHub or use the QR code.



Current Status

The City of Tempe is reviewing alternatives for the area based on the study team's recommendations and feedback received from businesses, landowners and the public.

Recommended Alternatives



Next Steps

The study team, in collaboration with the City of Tempe, will prepare the Smith Innovation Hub Infrastructure Master Plan with a finalized list of prioritized projects and cost estimates to support both short- and long-term planning for the area. The final plan will be presented to Tempe City Council for review and approval in fall of 2021.

Implementation

Projects will be phased in over time as funding becomes available using this plan as a guide for many years to come. City staff will also continue to work with private developers to provide opportunities to implement infrastructure or fund improvements.

Learn more: tempe.gov/SmithHub

Connect with us:

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Economic Development Program Manager

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480-350-8812





Appendix C – Public Comments



Public Comments

In-person Public Meeting Q&A – July 30, 2021

Number	Question/Comment	Response
1	How did Perry end up with the stormwater ponding that we see today?	This was an existing condition when this street was annexed into the City.
2	In the short term: are you recommending no on-street parking along Smith?	Correct. We estimate a loss of approximately 90 on-street parking spaces total. Overall if all short-term projects were implemented, on-street parking in the Smith would be reduced by 5 percent (approximately 20 spaces)
3	Is funding in place for these proposed improvements?	This would come with more discussion of the CIP and will be discussed at City Council meetings.
4	For the mixed use between 5 th St and River Dr: What would be converted?	Through private development actions, we anticipate a mixture of housing, retail, industrial, and office uses.
5	For the bike route at Smith and Rio Salado, what is the route to go north through Tempe Marketplace? Are there any improvements planned to connect this bike route through Tempe Marketplace?	There are two bike access points to Tempe Marketplace, one to the west of the Smith Road, and one to the east (at the northern end of Rockford Drive)
6	On 5 th Street, I like the idea of the landscape strip and detached sidewalk. Are there any concerns about trucks parking on the road?	The types of trees recommended for this area would be selected with parking and trucks in mind.
7	If we were to add a driveway on Smith, would it be our (the businessowner) responsibility, or the City's?	The City is available to discuss these cases with business owners.
8	What is proposed for the southwest corner of Smith and Rio Salado?	There is a housing project including retail and a hotel proposed for this area.
9	I recognize the five projects recommended in the short term with City funding, but are the remaining identified improvements going to be able to be included sooner?	These projects are constantly being reevaluated, and the City will take public input into consideration for the prioritization of these projects.



Number	Question/Comment	Response
10	Are there any plans for bike infrastructure on Perry or 5th Street?	Not at this time, we are proposing to direct traffic onto Smith Road, connecting to the existing east-west bike routes that currently exist on University and Rio Salado Parkway (as well as the Rio Salado Multi-use path.
11	About the bikeability on Smith Road: Can we add shade somehow? There appears to be none proposed.	Due to right of way constraints and adjacent businesses, there is not a lot of opportunity for additional landscaping. We are proposing shaded bus shelters.
12	Can you describe what the gateways would include?	Signs and art could be included.
13	Are there any major changes planned at Industrial Drive and Rio Salado in the next couple years?	The streetcar line may extend to Rio Salado 5-10 years from now.
14	Mark Davis is a property owner in the Smith. He is encouraging others to advocate for more attention on projects in the Smith. He would like to organize an advocacy group.	No response required.
15	You mentioned that possible improvements along Rio Salado may include a bike lane. What do you think long term improvements would look like?	The plan in the short term is to address the existing gaps in the bike lanes including the eastbound approach to McClintock Drive.



Public Comments

Online Public Comments: July 30 – August 16, 2021

First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
Juliana	Blazuk	Resident	With a protected bike lane on Smith Road that extends to the light rail on Apache Blvd, we can provide equal access to safe transportation for all. As a Tempe resident, working in mobility with a partner who bikes often, this is particularly important.
Chelsea	Shields	Visit often	Please protect the bike path. It's important that it remains and extends all the way to the light rail stop on Apache. Thank you.
Ryan	Johnson	Resident	<p>I am a resident of The Level at 901 Smith, and my backyard opens up to Smith. I don't own a car and I get around primarily by bike to Tempe Marketplace, the light rail, work, and other places around Tempe.</p> <p>Every day is more dangerous than it should be to bike around. There is racing on the streets, including on April 11, when I was awoken by a driver who crashed into the entrance of The Level.</p> <p>Also, cars pass aggressively on Smith. That is even though my class 3 ebikes go up to 28mph and the speed limit is only 25mph.</p> <p>I'm deeply committed to Tempe, as my family has been since my mom and my grandma went to ASU. My company, Culdesac, chose Tempe to be the city to launch our first community in, and we couldn't be more excited. People and business are relocating to Tempe because they're so excited for this lifestyle.</p> <p>But Tempe has a long way to go to be a world class biking city. The Smith bike lane can get us started. What would serve the community</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			best is a fully protected bike lane, with bidirectional traffic flow on one side of the street, and with the lane extending all the way to Apache.
Lydia	Hensel	Work in the area	Having bike lanes more prominent, abundant, and obvious protects bikers, pedestrians, and drivers by reducing accident and crash risks. It also encourages more green and carbon-reducing modes of transportation and increases walkability of the city. It also makes the roads less of an eyesore and increases attractiveness of the area.
Armando	Hernandez	Business owner	<p>As small business owners opening a new restaurant at Apache Blvd and Smith Rd, it's really important for us to attract as many customers as possible. We are writing to ask the City to support a protected bike lane from Rio Salado to Apache Blvd.</p> <p>Cocina Chiwas will be located at Culdesac and we are taking a big risk to bring a new restaurant concept to the Apache corridor. Our food will celebrate Northern Mexican cuisine - we have already gotten national attention with our existing restaurant concepts and we expect to attract people from all around the Phoenix Valley and the U.S. to eat at Cocina Chiwas.</p> <p>It's a car-free neighborhood. The more people who bike to visit our restaurant, the more customers we can have. The national visitors will also get to enjoy safely riding down Smith Rd to the Rio Salado trail to visit downtown Tempe. It's a win-win for everyone.</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
Alexandria	Sharpe	future resident	<p>Greetings,</p> <p>I am a future founding member of Culdesac in Tempe and have signed my lease for a Fall 2022 move-in. I look forward to a protected bike lane on Smith Road that will extend to the light rail on Apache Blvd so that I can continue to live car-free, keep a low carbon footprint, and easily support local businesses. I have lived in many places around the world and two of my favorites have been Boulder, Colorado and Valencia, Spain particularly because they made being a bike commuter very easy and safe. It is not only great for health, but for community building as well. I plan to make Tempe my long-term home and I urge the City to start construction on the protected bike lane for its citizens as soon as possible.</p> <p>Thanks so much for your time, Alexandria</p>
Brittany	Chase	Friend lives in area	Please & thank you.
Ric	Castillo	Work in the area Frequent Visitor	<p>The sheer safety mathematics of an automobile versus...anything that isn't an automobile...constitutes one of the purest cases of demonstrable willful bliss in our wheeled society. No one should be at a severe disadvantage for electing a human-powered mode of transportation. Imagine that — to have an entire region primarily built in a way that is literally hostile to people. We did this. We own this disaster. We fix it. We must, instead, at a granular level, commit to a different way, block by block, to replace inertia and ignorance into a less destructive and dangerous transportation future.</p> <p>So, friends, leaders, and even the morbidly curious, we ask for three simple small steps to demonstrate this new commitment to human-centricity in the Smith Innovation Corridor:</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			<p>First, for the love of Salt, give us a protected bicycle lane on Smith Road. Can we have a planter? No planters available - too expensive in the post-pandemic supply chain? Alright then, what about bollards? No bollards available? Bollocks! Okay, how about pavement stoppers (doled out like candy in parking lots to save cars from other cars)? Yes! Save bicyclists... from cars...by threatening massive wheel or substantial undercarriage damage, and enough friction to slow a vehicle from a lethal 40 to a slightly-less-lethal 35? No pavement stoppers in the budget? Fine, give us hideous plungers that provide the illusion of protection. It's still better than a simple strip of reflective paint that merely 'implies' a barrier, provided your vehicle is even low enough to see it (...looking at you, literally any SUV)!</p> <p>Secondly, extend the bike lane from Rio Salado Pkwy. to Apache Blvd. so it reaches the light rail. Multimodal is what that federal funding was for -- don't be the butt of every train joke visitors to our city might crack because it's a cute use of perhaps 20% of our interagency budget to expand and maintain over the next decade [fact check me here, I might have invented this percentage]. This is one of those things that's been kind of ignored so long -- like the seam in the ceiling that bubbles once-a-monsoon, or the downloads folder on your MacBook. Complete the square, cross the "T," or mind a "p" and "q," just do the thing.</p> <p>Finally... start yesterday, not 2026. We can bikeshed all day; the best antidote to planning paralysis is actually doing the thing. Let's do the thing. Thank you.</p>
Hanna	Griffin	Resident	I bike to school and work and don't feel comfortable on the current streets. Updated bike lanes are MUCH needed.
Jordyn	Hitzeman	Resident	I am currently an ASU student and community advocate for transportation equity. I recently attended a meeting on the Smith Innovation hub but I saw that the bike lane on Smith doesn't extend all the way to Apache where the light rail is, leaving a crucial hole in the



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			connection of low income individuals on bikes to affordable, efficient public transportation. Please consider plans to extend the Smith bike lane Apache to provide equitable transportation for all residents of Tempe.
Malkanthi	De Silva	Business owner	As a business owner in Tempe, many of my customers are students and bike riders. I believe in making the streets safer for all bikers, and I specifically support a protected bicycle lane on Smith Road.
Lisa	Han	Resident	<p>Hello. I would like to express my support for a protected bike lane that would extend from Rio Salado all the way to the light rail. I bike this route frequently and I believe this would be a great help!</p> <p>Thanks, Lisa</p>
Madeleine	Zheng	Work in the area Resident	I would really like to see a protected bike lane and for it to go all the way south to the light rail (extended from Rio Salado to Apache Blvd) as I am a student in the area and rely on riding my bike to get to school and work. I think a protected bike lane would really benefit students and other individuals that live in the area.
Emily	Shaw	Work in the area Resident	With a protected bike lane on Smith Road that extends to the light rail on Apache Blvd, we can provide equal access to safe transportation for all. Bike lanes are greatly beneficial in making sure everyone has access to transportation and can help remove cars and lower emissions city wide.
Justin	Graham	Work in the area	<p>I work along Apache Blvd (at Smith Rd.) and frequently take a combination of light rail and bicycle to work, in addition to biking around the neighborhood for lunch and simple errands. I write to advocate strongly for extending a protected bicycle lane south from University along Smith Rd. to the light rail station at Smith-Martin.</p> <p>This will be a key step in connecting the neighborhoods of Escalante and the emerging Smith Innovation Hub to the activity and transit of Apache. The connection to the light rail and downtown Tempe's boundless opportunities represent a valuable opportunity that can be unlocked through a true, protected bike line that the residents and employees along the Smith corridor can access. Tempe has gotten a great start, and</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			<p>speaking from the perspective of my business as a developer I know a well protected bike lane heading north from the light rail on Smith would make us even more interested in continuing our investments along the corridor. The road represents a great place for Tempe to take a bold step to creating real best-in-class bike infrastructure with a protected lane that continues to keep the city at the top of the pack ahead of other municipalities competing for the same jobs and employers that understand the value of deeply designed and connected bike and transit infrastructure.</p> <p>Thank you and I am hopeful to be taking a protected bike lane north from the Smith-Martin station in the coming years!</p>
Drena	Kusari	Resident	This is incredibly important for Tempe to become a world class, forward thinking city in which people want to live and dwell. If we want to compete with the likes of San Francisco, Denver, New York and Austin, this needs to happen. Please make it happen!
		Property owner	A good bike lane, better lighted walkway from apache to Rio Salado would help. Mixed use with some restaurants / amenities would be a better plan for residents nearby.
Taylor	Hou	Resident	I'm considering renting at culdesac for my company of 100+ remote workers so with a protected bike lane on Smith Road that extends to the light rail on Apache Blvd, I can make Tempe a destination for my remote team, while making Tempe a safer place for all riders.
Hannah	Najera	Work in the area Resident	This is a major issue that needs to be dealt with and I believe that putting up the safety bike lane would keep the place safe and make a lot of students feel more comfortable living here.
Audra	Davis	Work in the area	I live and work in Tempe, it's such a joy. Being close enough to bike my commute is been one of my favorite things about being here and I've gotten familiar with the roads. It would be a great service to the community if we had a protected bike lane. I often feel unsafe and frustrated with our roads and there's too many bikers getting killed, why wouldn't we be interested in protecting the lives of those who chose to



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			ride their bike, the gov suggests people to choose alternative, healthier options rather than driving. Having protected, reasonably sized bike lanes, could really change things.
Howard	Gossack	Business owner Work in the area	As a member of the pedicab industry since 1990, I have seen the numerous benefits to not just a bike lane in any given area but a protected bike lane. In real terms, we have seen substantial positive growth in visitors to that area along with a serious uptick in growth for the local business community served by these roadways. Creating a bike lane with the highest level of safety is crucial to making a statement about your City. I have seen first hand very strong decisions regarding visiting an area based solely on the acceptance of bikes. I welcome any questions you may have as we have seen both sides of this issue in the various markets we have provided service since 1990.
Aimee	Esposito	Organization leader and urban/tree advocate	I would like to see a protected bike lane on Smith Road that extends to the light rail on Apache Blvd. Protecting our cyclists creates more access and makes it safer for exploring the city and including placemaking like enjoying local art and tree installations along the way. Protected bike lanes mean more people being comfortable with cycling and therefore having an affordable and healthy way to commute.
David "lee"	Phemister	Resident	For me as an avid bike commuter it is important to me that the bike path a fully protected and that it extends all the way to the light rail stop on Apache. I would also be good if there was someway to regulate speeding down Smith. There are a lot of people to drag race right on that road leaving tempe Marketplace. Also I would like to tender the thought of signage that states bicycles and pedestrians have the right of way. Thank you Lee phemister
Nate	Maruca	Work in the area	I am the Principal at Thew Elementary in the Tempe Elementary School District a and have served the Thew community for the past 7 years. In my time working at Thew I've seen how important it is for the



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			<p>community, our families and students to have safe places to ride bikes to get to and from where they are going. Due to the large number of families that live within walking and biking distance of Thew we've held bike safety classes and even partnered with Phoenix Children's Hospital to hold a bike rodeo which focused on bike safety in the neighborhood. Having protected bike lanes on Smith would help encourage kids and families to safely utilize bike transportation. Our kids and families deserve to be protected and research shows these lanes do just that. If you have further questions, please feel free to contact me.</p> <p>Thank you, Nathan Maruca</p>
Makenna	Miller	Work in the area Resident	As an ASU student that often uses bikes as my primary form of transportation, I feel a protected bike lane from the Apache light rail to Tempe marketplace could be incredibly beneficial to the community. I have to commute to the marketplace for groceries, school supplies, work, ect but often feel unsafe due to the lack protection for bikers. If the bike lanes were protected I would feel much safer and would commute more regularly.
Kristina	Floor	Landscape Architect	Tempe has always been a leader when it comes to supporting pedestrian and multi-modal access - let's complete the loop by implementing this plan!
Duarte	Pinheiro	Property owner Property Management Co.	A bike lane up Smith Martain Lane would be nice.
Gabriel	Saia	Property owner Business owner Work in the area	Dear City - I am in support of the consultant's short-term and long-term recommendations for the Smith Innovation Hub. I believe that the prosed street, lighting, storm water, and sidewalk project would greatly enhance the attractiveness of the Smith in attracting high caliber employment and mix uses. Its a special corner of Tempe that will only get better with time and with the City's help.
Robert erhardt	Erhardt	Future Culdesac Resident	Hello SIH,



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			Please consider creating a protected bike lane on Smith Road. As anyone knows paint and pylons really do not create any type of true safety and feeling of security while bike riding. Paint does not stop cars and trucks from plowing into bike-riders. Please take a look at what the Dutch have done. Thank you!
Ty	Templeton	Work in the area	<p>I love riding my bike around Tempe, but there are various areas that are not as rideable as others. I think extending the proposed bike lane on smith road would significantly increase the amount of bike use in the area, this decreasing car traffic and the negatives associated with it.</p> <p>Some ideas for the extension include:</p> <ul style="list-style-type: none">- Make the bike lane protected (and not just buffered)- Build it ASAP (2026 is just too long to wait)- add murals and art to the barrier <p>The bike lane will make Tempe safer, more bike-able, and more livable for everyone.</p>
Jazmine	Reyes	Resident	As a resident, I am excited for this project as it will play a vital role in the continuous growth and relevance of Tempe. It is about time the city makes a meaningful investment in improving our infrastructure. Other than business space, how will this hub be utilized by the public? I think this project has a lot of potential to attract tourist and Arizonans from other cities.
Nadia	Shovkovy	Resident	A protected bike lane would make car-free residents and students feel much safer. As a future college student, I want to ensure that this is a privilege that I will receive. I'd like to feel safe commuting and see the City of Tempe set the standard for how we treat bicyclists.
Dakota	Disanto	Resident	We need a safe transportation bike route between Escalante and Tempe Marketplace.
Michael	Nassief	Resident	I think the community would benefit so much more by extending the bike lane from rio salado parkway to Apache blvd, and by having it protected



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			with a physical barrier instead of just a buffer zone. This makes the streets safer for people on bikes and in cars.
Morgan	Winburn	Work in the area	Putting in a bike lane it will be an added benefit to the neighborhood.
Mark	Borger	Work in the area	I bike to work to Tempe High Five days a week.
Jada	Delaney	Friend	Please extend the bike lane along the full extent of Smith rd. in Tempe. Well structured and protected bike lines are crucial with the greater Phoenix metro area given the increasing population density in urban and city regions. This includes bike lanes on major arterial roads to neighborhood streets. The bike lanes being protected is an important aspect of these bike lanes. I would suggest vegetative buffered that function as water basins and drainage. Or shorter boarder walls that feature local art. There are ways to ensure the safety of all modes of transportation with addressing the social and ecological needs of Tempe.
Jeff	Berens	Property owner Business owner	Hello, I am the owner of a Tempe business and I'm writing in support of bike lanes on Smith. Specifically, my hope is that Tempe accelerates the construction of these bike lanes, extends them south to connect to the light rail station, and improves their design to meet best practices (ie allows safe use by all ages and abilities). These changes are essential for safety, fostering more economic activity in the area, and achieving Tempe's sustainability goals. Thanks for your support making Tempe an even better place to live and work. -Jeff
Scott	Harris	Business owner	Thank you for the opportunity to provide input on the Smith Hub. This is a great location that will only get better with the improvements planned. To that end, it would be great to see additional bike lanes for easy access from neighboring communities.



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			Best, Scott Harris Peloton
		Resident	A strong infrastructure for biking is necessary to begin an equitable transition to a sustainable city. I support the bike lane on Smith Road and the extension from Rio Salado to Apache blvd. I would love to see other principles of sustainability integrated into it as well. A protected bike lane to ensure riders' safety and the inclusion of local art would be great. The inclusion of green infrastructure would also help thermal comfort during summer months.
Leslie	Voorhees	Property owner Business owner Work in the area Resident	I recently moved to Tempe and re-located my business from California to Arizona. We try to bike as much as possible, and protected bike lanes are very important to us and I think vital to Tempe as it expands. There is a huge need for a dedicated bike track on smith road. We are looking for a new place to locate our business and would consider moving to the Smith Innovation Hub if there was a bike lane.
Calley	Means	Property owner Business owner	Hello - we recently relocated our business to Tempe and bought a house in Tempe. We are regular bikers and think it is vital to have a protected bike lane and Smith Road. https://www.bizjournals.com/phoenix/news/2021/03/26/destination-arizona-wedding-dress-company-relocate.html
Angelo	Mellos	Potential resident	I'm one of those workers who can live anywhere. I'm anticipating moving to Tempe soon, but a big part of the draw is being able to get around easily and safely without a car.
Alex	Baker	Shop in area	As someone who routinely access the area around Smith Innovation Hub for certain shopping needs, I wish the area was more walkable and connected better to public transit, esp. the streetcar.



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
Leah	Jameson	I commute through this area by bike.	I'm very glad to hear about the bike lane on Smith Rd. Extending the bike lane from Rio Salado to Apache Blvd would make my commute safer and make bicycle riders more comfortable while visiting the area.
Erin	Boyd	Work in the area	<p>I live in Scottsdale, and I commute to Tempe by bicycle to work just south of the Smith Innovation Hub. I commute via the Greenbelt, and it's an idyllic. It has tons of greenery and the notable absence of cars. I feel happy and safe. It's the best way to start the day.</p> <p>When I reach Tempe, I start to get a slight feeling of dread - since I have to share the road with cars at fast speeds. While it is delightful to ride along the Rio Salado multi-use path and use the McClintock underpass, I then have to cut south at Tempe Marketplace to reach my destination. There is no protected south-bound bike lane, and it's scary.</p> <p>I commend the City of Tempe for the tremendous planning and hard work that has gone into the Smith Innovation Hub Master Plan. There's a huge opportunity to make the Smith Innovation Hub a center for economic growth for Tempe, and attracting new jobs and residents.</p> <p>While the proposed bike lane would be an improvement to the current state of Smith Rd, it doesn't go far enough. I'm writing to ask the city to extend the proposed Smith Bike lane south to Apache Blvd. This is not only where I work, but also where more than 1,000 residents will be moving into Culdesac as my neighbors. As a car-free neighborhood, we have an opportunity to make Smith Rd a bicycle highway for a new generation of Tempe residents who will bike to their jobs and support local businesses. Ten customers who arrive by bike can fit into a parking space of one customer who arrives by car!</p> <p>Furthermore, a connection to the light rail is essential for transportation equity. The City of Tempe Smith Innovation Hub Master plan states that the Escalante and Alegre neighborhood residents use transit and bike 1.5x the rate of others in Tempe. It will be very important to provide safe</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			<p>passage to the Smith-Martin/Apache light rail.</p> <p>I urge the City of Tempe to consider a protected bike lanes as the safest mode of transportation for cyclists and pedestrians, which are proven to result in fewer deaths and serious injuries. Research shows that painted only bike lanes provide little to no improvement on road safety. We can do better, and we must do better.</p> <p>Finally, I am concerned that the current plan removes parking, which has been noted by many neighbors as a key feature to supporting a bike lane on Smith Rd. The ideal design would have two car lanes, a parking lane, and then a protected barrier (perhaps a planter with local art) to separate a two-way cycle track on one side of the road with fewer intersections. This is the safest, most efficient design that preserves parking.</p> <p>While I realize funding is limited and needed for many important initiatives led by the City of Tempe, the timing could not be more critical to start the Smith Bike lane as soon as possible. The infrastructure investment of the Smith Bike Lane will have many positive ripple effects for the Smith Innovation Hub: a) It will attract start-ups and companies who seek to attract employees looking for a more active lifestyle; b) It will be a destination for tourists and residents for daily commutes and weekend rides; c) It can be combined with other plans, such as the Gateway Entrance project with local art on the bikeway.</p> <p>There's an entire community ready to get behind it and support this effort - the time is now to harness this energy and momentum to keep Tempe residents safe, and to put Tempe on the map for world-class bicycle infrastructure.</p>
Jack	Brittain	Resident	I applaud the City of Tempe for the visionary plan to develop the Smith Innovation Hub. I have been involved in economic development with the State of Utah for over 20 years and have seen firsthand what focused,



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			<p>collaborative development and support for innovation can do for a community. Salt Lake City has been transformed by the efforts of an aligned community supporting innovation and company creation, which in turn has significantly increased venture capital and the number of high-tech companies in the metro area, including high-tech, highly paid career employment. I think, over a 20 year period, the Smith Innovation Hub can do something similar for Tempe. It certainly makes Tempe an attractive location within the Phoenix Metro area.</p> <p>I realize there are many tradeoffs to be made in any plan and many constituencies to consider. I am committed to a future residence in Culdesac, a new carless community in Tempe. I will also be moving a small company when I relocate. The attractions are the Culdesac location on the light rail line and its commitment to alternative transportation, including e-bikes and shared car services. For me, one of the most critical elements of our living plan is the Smith Road route to the Tempe Marketplace. We have been to Tempe many times in the past few years - - our son was a student at ASU and is now an executive for DoorDash in Tempe -- and have explored the Smith Road corridor. It leaves a lot to be desired as a safe thoroughfare that encourages active lifestyles. There are huge redevelopment opportunities along the Smith Road corridor between University and Apache to provide walkable and bikeable neighborhoods for the people who work in the Smith Innovation Hub. A vision that does not include providing attractive neighborhoods for employees is incomplete and starts to be a handicap for the businesses you hope to attract.</p> <p>As the Smith Innovation Hub develops, it seems to me that what you want is a bicycle highway that maximizes the use of bicycles and discourages automobile and truck traffic. That highway is going to be Smith Road, and that it is right up the center of the Smith Innovation Hub is both practical and symbolic. It is symbolic, if it is truly dedicated to bicycles, that Tempe is at the forefront of developing coherent</p>



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			<p>communities that feel and are "local," with residence, work, and lifestyle blending together. It is also practical in that it makes bicycles -- and anyone who has been to Amsterdam or Copenhagen can appreciate what mass bicycle transit has the potential to be -- a vital part of the plan.</p> <p>Buffered bike lanes are about accommodating car traffic, not bikes. They are surely not as safe as a protected bike lane and they also tend to result in bicycles moving onto sidewalks and endangering pedestrians. We are talking about one street that shows a commitment and support for what is one of the most promising options for lowered carbon and healthy lifestyles, e-bikes. To not go ahead with protected bike lanes and a bike-privileged transportation corridor is a huge missed opportunity.</p> <p>I applauded how comprehensive the proposal is and whatever is done, it will be an enhancement to Tempe. It makes me even more excited about our planned relocation. In addition to what is proposed, I hope the Council can see the wisdom in two enhancements: (1) extending the Smith Road bicycle corridor to Apache to include what is going to be an important residential community serving the Smith Innovation Hub; and, (2) enhancing the commitment to the bicycle corridor by making the bike lanes protected, which is a commitment to privileging bicycle riders and encouraging the use of bikes by future residents of the area. We have already made a commitment to living car-free. Our next choice is whether it is safe and convenient to bike on Smith Road or whether we should plan to use shared car or car services to go to and back to the Temple Marketplace. With a committed bike corridor, we will be biking.</p>
Michael	Gandolfi	Resident	<p>Dear Team,</p> <p>I am a recent graduate of ASU and will be living in Culdesac starting this summer. I am writing to you to show my support for a two-lane protected bike lane from Culdesac to Tempe Marketplace; specifically, on Smith Rd. from Rio Salado to Apache Blvd. I think a protected bike lane is</p>



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			very important to the Culdesac community given that no residents will have cars.
Brittany	Lawber	Resident	It would make everything safer
Mary	Ngo	Resident	<p>Dear City of Tempe,</p> <p>My name is Mary and I'm a future founding resident of Culdesac Tempe.</p> <p>What drew me towards Tempe (and Culdesac) is its promise for a car-free, human-friendly community to live. With car-free comes environmentally-friendly alternatives as a means of transportation-- bicycling around town is one of them.</p> <p>City of Tempe, I ask you to prioritize this: protect the bike lanes on Smith Rd from Rio Salado to Apache Blvd. We need two-way bike lanes connected to public transit to promote equitable transportation access for all people. Just having the painted yellow lines isn't enough to ensure road safety-- the bike lanes *need* to be protected.</p> <p>If Tempe's vision as a city is to become a leader in "urban living", then please prioritize the protected bike lanes as it adds to Tempe being a space where car-free transportation is safe and secure .</p> <p>Thank you, Mary</p>
Breanna	Wood	Bird?	A lane for the birds
David	Boyce	urban transportation expert	I am writing this comment as a volunteer urban transportation expert with Culdesac. I understand that the City of Tempe has proposed a Buffered Bike Lane connecting Culdesac to Tempe Marketplace and the Rio Salado multi-use path. I recommend that this proposal be upgraded to a Protected Bike Lane for the following reasons:



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			<p>1. The residents of Culdesac will use the bike lane as their primary access to Tempe Marketplace. They will not have cars available in their residential community. Bikes will be a primary mode of access.</p> <p>2. The plan developed by the City of Tempe does not address the connection from Apache Boulevard to University Drive. This connection is a key part of the Culdesac to Rio Salado scheme.</p> <p>3. The City of Tempe plan does not discuss Protected Protected Bike Lanes at all. What are the costs and benefits of Protected versus Buffered Bike Lanes? What is the effect of Culdesac's offer of \$100,000 contribution to the project costs, and what additional benefits could be achieved? These questions must be considered before going forward with this plan.</p> <p>David Boyce, Ph.D. Emeritus Transportation Engineering University of Illinois Chicago</p>
Lior	Glogau	Live in the area	<p>Hello! So exciting for a bike lane to be constructed. I personally ride through that area often to work and school and a bike lane would help me feel so much safer and more confident on the road. Even better, the bike lane should be protected (not just buffered)!</p> <p>Further, the timeline of having it done by 2026 is just too far off. So many residents and employees that rely on this path could benefit from the safety and confidence a bike lane provides. Plus, an established bike lane is aligned with the City of Tempe's sustainability goals and could help set trends for more sustainable habits for our residents. To foster a sense of belonging and ownership, it would be amazing to have residents add murals and art to the barrier, sweat equity could really encourage the use of more bikes and less cars.</p> <p>Altogether, a great bike lane will encourage and happier, healthier, cleaner lifestyle for people and our environment, make Tempe more livable, and forge new connections. Please consider expediting the</p>



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			deadline to bring these benefits to life ASAP. Thank you! -Lior
Shantaija	Riggins	Resident	Make more bike lanes for us bikers
Dakota	Lippincott	Resident	As a resident of the City of Tempe, I'd like to request that the new bike lane being built on Smith Road be extended from Rio Salado to Apache Blvd. This bike lane should also be protected (not just buffered), and the schedule for its construction should be accelerated (2026 is too long from now). Thank you!
Brian	Kocour	Commercial Real Estate Broker	I am writing in support of proposing a buffered bike lane on Smith Road from University to Rio Salado Blvd. I believe this will create more safety for bike riders and create a road map for Tempe, AZ to be a safe place to ride your bike.
Charles	Gallagher	Work in the area Resident	So you give me the opportunity to talk about my opinion regarding this Smith development yet as soon as a minute is up from not typing but instead I'm having to be interrupted by someone. I go back to continuing and nothing is there everything I just spent the last half hour confiding in you my independent view not once but twice now this is the third time but this time I will give you the cliff note version. Governments, since George Bush Jr. And the 2007 recession there was a lot of steps taken to pull our nation financially out of what very well could have been a depression instead a recession. But measures were taken to prevent it from happening. Due to predatory lending and the government over site in the methods in which citizen's Were being allowed to qualify based on their net income and either didn't explain clearly or the buyers understood and felt they could make the balloon payment. Unfortunately a large majority of the people that purchased homes during that time lost their homes. Causing the recession. Now COVID caused our unemployment to sky rocket. So to combat the unemployment trend jobs had to be made this come in the play. Real estate. Think of every thing that goes into building homes in



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			<p>the form of condos which some will have the first floor retail shops and restrautns to make it your personal Utopia. Well the unemployment rate dropped every thing needed to build a nice new looking condo from fasteners to appliances . so they started building all over the united states and they all started seeing recovery in the economy and the employment sector. Banks and lending institutions are all for it money flowing threw the economy ,however, what happens when the building construction starts wrapping up. Suppliers start laying off construction workers start getting laid off money isn't flowing threw the economy and contenuies to become less. And less. Because most every one has a home they own probably 25% of the population rent and can't qualify for a mortgage loan so now.we have all of these butiful state of the art dwellings to believed in. Not getting sold this going on all over the united states. Now the lenders and finantial institutions are not getting the return the were expecting 2hich means their invewters are not seeing the yield on their investment and its unexceptible and some are seeing losses in their investment. People who had the means to purchase the propertiesnthat were sold now whatch the value of their homes alplumit but still obligated where they paid 400,000.00 now their being sold for 25 pectent of wha5 they originally paid for.it. so now you have people u0s8de down and guess what people DEPRESSION OUR ECONOMY IS GOING TO COLLAPS. SO THAT IS WHAT I HAVE TO TELL YOU. ENJOY IT WHILE IT.LAST OR TAKE MEASURES IN STOCKING RATIONS WEPONS AND HYDRATION EQUIPMENT. ALL THE BOOKS YOU CAN FIND ON LIVING OFF THE LAND AND HOW TO BUILDNSHELTER.DRY OUT MEAT AND SO ON be cause THIS FALSE UTOPIA. IM SORRY TO SAY IS THE BEGINNING TO THE END. AND THATS MY OPINION AND BELIEFE. BUT HAY TRUMP PULLED US OUT OF A POSSIBLE RESESSION AND bidden doesn't have a clue and you people are to foolish to believe this may and I give it a 75 % reality in the happening of our financial and ways of our life as we know.it.</p>



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Riley	Wilson	Resident	I want to be able to ride birds more places, if we can't ride on sidewalks we need somewhere to ride. Birds are innovative and useful for college students and anyone looking for a fun safe ride.
Timara	Crichlow	Work in the area	As a student and employee at ASU, I have a vested interest in the safety of the area. With better bike infrastructure, commuters like myself would be more likely to bike rather than drive in Tempe. This would contribute less pollution in Tempe, which is a win-win. I believe the proposed bike lane is a good start, however it could be improved by extending it from Rio Salado to Apache, protecting the bike lane instead of simply buffering it, and adding public art to the buffers. This will make Tempe a safer and healthier place to live and work!
Alexa	C	Work in the area	<p>The city of Tempe should extend the proposed bike lane from rio salado to Apache blvd!</p> <p>Examples of why this would be good / should be done:</p> <ul style="list-style-type: none">- the bike lane should be protected (and not just buffered)- please build it ASAP (2026 is just too long to wait)- and the bike lane will make Tempe safer, more bike-able and more livable for everyone- also add murals and art to the barrier
Jennifer	Rode	Resident	I have lived in Tempe, specifically Alegre neighborhood, and worked at ASU since 2012, and I am a co-lead for the Alegre Neighborhood Association. Biking has been an influential part of my experience as a Tempe resident, from commuting to work, taking my kids to preschool, running errands, and exercising. When the weather is nice, I love to take my kids on bike rides, and my 8 year old is able to keep up pretty well now – his record distance is 11.5 miles, starting from our house and traveling along the Rio Salado Bike Path. But as a parent, the joy of riding with him is tainted by the stress of accessing the Rio Salado Bike Path – which requires riding close to motorists who are frequently unaware of cyclists, especially children (to clarify, we ride on sidewalks, not the street). A side-by-side protected and separated bike lane along Smith Rd



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			<p>would be an ideal solution for safely accessing the amenities in North Tempe that we love (Tempe Marketplace, Rio Salado Bike Path, Tempe Town Lake), and would make northeast Tempe safer for all cyclists, not just families.</p> <p>The proposal to develop the Smith Innovation Hub and add a protected bike lane on Smith Rd is an exciting prospect for us in Alegre Neighborhood. For this to effectively provide equitable access to residents in Alegre and Escalante (and other residents south of University Dr), it's critical that the protected bike lane on Smith extends from Rio Salado to Apache Blvd to connect to the light rail and existing bike lane network. Apparently Smith Rd is getting significant attention this year, because our neighborhood proposal to add a mosaic to the standpipe at Smith/Don Carlos through the city's Neighborhood Grant Program was approved. You can see our application here for more details: https://www.tempe.gov/government/community-development/neighborhood-services/neighborhood-grant-program/grant-allocations/2021-22-funded-grant-applications. The mosaic installation will be complete by June 2022, and I am eager to see it coupled with a protected bike lane that distinguishes the neighborhoods proximate to the Smith Innovation Hub as attractive and safe places to live, work, and play.</p>
Nolan williams	Williams	I live in Tempe and want to be able to get to Smith Innovation Hub without a car	<p>Historically, innovation happened in places like Athens, Florence, and Rome. Places that were dense and walkable, and had diverse incomes and interests among residents. Smith road is not walkable and has very little residential density. Smith should have mixed use zoning and building height/density limits similar to or higher than Mill Ave.</p> <p>Getting to Smith via public transit or bike from my home in Daly Park or from downtown is not easy. Smith Innovation hub needs to prioritize protected bike and micro-mobility lanes, dense urban canopy, and . Smith also needs infrastructure that will prepare it for streetcar installments (which should NOT share space with cars) and possible</p>



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			<p>future pedestrianization.</p> <p>The city should also expand the housing stock controlled by The Affiliate by building mixed use apartments in the innovation hub, and should find land where it could build more emergency shelter units for the city's homeless.</p>
Bobby	Chen	Resident	<p>My name is Bobby and I will be moving to Tempe after I graduate next year in 2022. I was born in Mesa and grew up in Chandler.</p> <p>I am currently a student at Harvard College, and I have very much enjoyed the biking infrastructure around Boston, MA. While the streets of Boston are not as organized and grid-like as Tempe, the streets in Boston have great bike lanes that are buffered from car lanes and make commuting by bike a lot more safe and pleasant.</p> <p>I love Tempe, but I dislike how living in Tempe (and Phoenix in general) makes car ownership a necessity. Driving is bad for the environment and I wish I could commute by bike or rail more often. Adding a protected bike lane in Tempe would be a great step towards diversifying commuting options and reducing car congestion across the city.</p>
Trent	Steen	Future Resident	<p>Hi! I'm Trent, and I'll be a future resident at Culdesac Tempe when they open. As someone who doesn't own a car, protected bike lanes on Smith Rd from Rio Salado to Apache Blvd would make my life much easier in Tempe and let me spend a lot more time around the city and exploring local businesses. What you're doing with Culdesac is awesome, and I'd love to see more of it.</p>
		Work in the area	<p>I would feel better going to and from classes if the bike lane was protected instead of buffered.</p>
Luis	Gomez	Work in the area Resident	<p>Dedicated bike lane please</p>
Mike	Funk	Business owner	<p>I am in favor of extending the protected bike lane south to Apache Boulevard and beating up the timeframe,... Please and thank you!</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
Matt	Friedman	Resident	I think it's very important for the safety of our citizens to get this project up and running!
Mike	Funk	Business owner	I am in favor of extending the protected bike lane south to Apache Boulevard and beating up the timeframe,... Please and thank you!
Katherine	Torgerson	Work in the area	I almost get ran over daily
Roxanne	Amor-Ross	My daughter attends university in Tempe and we are considering relocating there.	My daughter lives in Tempe and bikes everywhere. We're considering buying property or living in the area. A safe reliable infrastructure that supports biking and walking are key criteria for us! The extended bike lane would attract us more strongly to the area. We'd like the bike lane to be protected (and not just buffered) and hope that the building would take place in the immediate future. Waiting for 2026 seems an unnecessary amount of time and far too long in terms of the change cities are capable of. The bike lane would make Tempe safer, more bike-able and more livable for everyone. And added bonus that would increase community member well-being would be to add murals and art to the barrier. We're looking forward to see what Tempe prioritizes!
Cindy	Jimenez	Pedestrian	Building a bike lane will make Tempe safer and should be done in a timely manner(NOW).
Jake	Ross	Resident	I would like for the bike lane to be protected (and not just buffered) - to build it ASAP (2026 is just too long to wait) - the bike lane will make Tempe safer, more bike-able and more livable for everyone :) - add murals and art to the barrier
Adrienne	Kirschner	Grandparent of ASU resident	My granddaughter is a student at ASU. When asked if she would like a car or a bicycle she opted for the bicycle. She majors in sustainability and interns at Cal de Sac which supports reduced use of autos and higher use of bicycles. She lives her beliefs. How much safer she would be if there were more safe bike lanes in Tempe. She bicycles from her dorm to work, back to campus, to buy groceries, and to attend religious services. I am certain that once she graduates all of these bicycle habits will remain with her--providing she hasn't had any bicycle accidents along the way.



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			<p>I applaud Tempe for its current bicycle lanes, but urge you to do much more and sooner rather than later. These students will take their bike riding habits with them as they move into the world. Tempe can set the stage for sustainable transportation, even if in a small way, by providing safe, barrier enforced bicycle lanes. Bicycle lane barriers don't need to be an eyesore. Mural contests extolling the beauty of our desert landscape, while also supporting artist students can be beautiful.</p> <p>I am particularly concerned with the proposed Smith road bicycle lane proposed for 2026! How about tomorrow! Too often our politicians at every level make promises they don't have to fulfill because they date them far enough in the future to be the next office holder's problem. Show some commitment, built the Smith road bike lane now, with barricades to protect our young riders, (and the older ones as well), all the way to Apache Lane and more.</p> <p>I ask this as an Arizona Resident, as the grandmother of one ASU graduate and an ASU honor student. Don't put off until tomorrow that which can serve the community today.</p> <p>Respectfully, Dr. Adrienne Kirschner</p>
Warren	Schultz	future resident of Culdesac	<p>I am looking forward to experiencing car-free living when I am able to move into Cyldesac in Tempe. When I lived and worked in New York City I commuted by bicycle. Most of the bike lanes I traveled there were not protected when I first moved there. But more and more protected lanes were built over the years. The safety they offered made biking much more stress-free and encouraged more residents to bike in the city. I think protected lanes will have the same effect in Tempe.</p>
Navid	Askarinya	Resident	<p>I am commenting to request the city to prioritize a protected (explicitly protected, and not just buffered) bike lane on Smith Road, from University to Rio Salado. As a future resident of the car-less culdesac community I would hope that the city would prioritize future residents needs for safety and access. Protected bike lanes save lives first and foremost and additionally provide the access and peace of mind to residents who use alternative transportation. This is not just safety and</p>



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			<p>access for car-less residents, but for current residents as well who are looking to utilize alternate transportation. A clearly protected bike lane (and not just a buffer) gives people the peace of mind and encourages them to make more car-free decisions.</p> <p>Thank you for your time and I appreciate your consideration for this request.</p>
Todd	Gunter	Work in the area	I volunteer at the Escalate Garden and I have always fond bicycling in Tempe to be a bit risky. I think that a designated bike lane on Smith would be a great move towards making cycling in Tempe safer.
Isaac	Coello	Work in the area	<p>for the bike lane to be protected (and not just buffered) to build it ASAP (2026 is just too long to wait) the bike lane will make Tempe safer, more bike-able and more livable for everyone :)</p> <p>add murals and art to the barrier</p>
Elliott	Jin	Resident Future Resident	<p>Hello, my name is Elliott and I'm a future Tempe resident (I've signed a lease in zip code 85281 starting in 2022). I teach at an online school for computer science, and in the past I've also worked as a product manager and a software engineer.</p> <p>I currently live in San Francisco, but my significant other and I are moving to Tempe next year because we believe it will be a hub for innovation and an exemplar for cities throughout the US.</p> <p>I'm writing to urge the City of Tempe to prioritize a protected (rather than buffered) bike lane on Smith Road. Based on recent research (Marshall et al. 2019), cities with protected bike lanes had significantly fewer deaths and injuries compared to the average city. I was very impressed by Tempe's commitment to road safety for all road users, and I believe such a protected bike lane is strongly aligned with the ethical and data-driven approach outlined in Vision Zero.</p>



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			<p>Furthermore, I'd like to urge the City to prioritize extending the bike lane south to Apache Blvd, so as to connect to the light rail. By connecting the bike lane network to public transit, the City can promote equitable access to transportation for everyone.</p> <p>Finally, given the significant benefits of these infrastructure improvements (as well as the significant costs if they're not implemented), I urge the City to accelerate the timeline for these projects so as to accelerate the timeline towards equal transportation access and improved transit safety.</p> <p>Thank you for your consideration, and I look forward to becoming a Tempe resident soon.</p> <p>Regards, Elliott</p>
Erik	Gillberg	Resident	<p>Hello! I am excited to be moving to Tempe soon to live and work. I want to live without a car so that I can feel like I am contributing to positive action in response to climate change. I'm writing to support the idea of a protected bike lane from Smith Rd from Rio Salado to Apache Blvd because I know from experience and reports how much safer protected bike lanes are for everyone including drivers of cars whose lives are ruined by accidents with bicycles that could be avoided. Thank you for your consideration.</p>
Timothy	Moran	Business owner Son attending ASU	<p>I manage an single rider electrical vehicle company. Most Arizona cities are doing a great job of increasing density within their city borders, but not a great job planning the transportation. I understand that infrastructure is fixed but it needs to be adjusted to help reduce congestion. Bike lanes and preferred parking for electric single rider vehicles would go a long way in helping cities address these problems.</p>
Molly	Lara	Remote worker	Smith Innovation Hub Team,



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			<p>My name is Molly and I've had the amazing opportunity be closely connected with AZ for the past 5 years by way of work. My current company is headquartered in Tempe and I visit often.</p> <p>I am continuously impressed by Tempe's innovation and most recently, the commitment to building a car-free city. To fully support this initiative, it's important to create a protected bike lane on Smith Road and extend the bike lane from Rio Salado to Apache Blvd so it reaches the light rail. In its current state, the Smith Bike Lane is very dangerous - there is little space for bikes and I've been forced to take alternative routes to avoid biking on the sidewalk (especially after the sun goes down).</p> <p>This commitment will encourage remote workers to spend more time in Tempe to safely experience Tempe Marketplace and the River Walk and ultimately support a viable car-free culture.</p> <p>I look forward to seeing and contributing to continued growth in the area.</p> <p>All the best, Molly</p> <p>By doing this, the city will keep people safe and attract more remote workers,</p>
Cherise	Bangerter	Tourist	<p>When I visit Tempe, I use an eBike to get around to save costs and carbon footprint. It would be much easier if there was a protected bike line on Smith Rd, from Rio Salado to Apache. It would make my travel much safer when I visit. The bike lane should be on just one side of the road to preserve parking, and also allow artwork and plants to preserve/enhance the beauty of Tempe. Could we get this bike lane as soon as possible rather than waiting for a matter of years?</p>



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Sam	Albertsen	Work in the area Resident	Make Tempe a bike-able city! I bike to work every day, and everyone I know is progressively getting more into biking in general. Anything the city can do to foster this transition will help residents be safer and happier, help small businesses generate foot-traffic, and reduce city-wide pollution and smog :)
Austin	Ballecer	Resident	Adding a bike lane sooner rather than later will make tempe more bike-able and live able for everyone. Adding protection to the bike lanes will also add areas for murals and other art forms to decorate the city.
Vanessa	Valenzuela Erickson	Work in the area	I work near Apache and Smith and have friends that live on Smith just north of University so I frequent the area often. As an individual trying to do my part to curb traffic and pollution, I often get around by bike and scooter. As a mother who wants to get home to her family each day, a protected bike lane on Smith would allow me to feel safer when biking to work, meetings, coffee chats, and friends' homes all in the area. As the head of HR for our business, adding better and safer connection for Smith to the incredible amenities at Tempe Marketplace and surrounding area will help us attract and keep talent in the area - the sooner the better. Thank you for your consideration and efforts.
Kimberly	Nikolaev	Property owner Business owner Work in the area	Please proceed with funding this area is in need of care. it is a jewel in the Tempe portfolio of properties and unique in AZ
Michelle	Tan	Work in the area	Hi, My name is Michelle and I come to the Tempe area for work pretty frequently. I love biking in Tempe but not having a protected bike lane on Smith road makes it difficult to feel safe while biking around the cars that are passing at high speeds. It would be great to see this built as soon as possible. I have a lot of friends moving to Tempe and see a lot of cool companies moving to Tempe. I think all of them, and myself as a business traveller, would benefit from a bike lane that allows people to get around easily.



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			Thanks for your support! Michelle
Isabella	Tsark	Resident	Building a bike lane on smith road is a key part of making Tempe a more bikeable city. This road should be built as soon as possible, and there should be a separation barrier between the bike lane and the road to keep bikers protected from vehicles. Additionally, if the barrier could be decorated with artwork this would be ideal. Thank you!
Alexandra	Ramey	Work in the area	Please make a protected bike lane as soon as possible! Biking can not only help Tempe reach its climate goals, but also promote public health and build community. Bike infrastructure can make biking safer, more popular, and more accessible. We need a protected bike lane to extend from Rio Salado to Apache to make this happen.
Trevor	Harper	Resident	<p>I am writing you about the extension of a bike lane. The bike lane going in is on Smith Road and as an avid biker (I do not even own a car!) in the city I would love to see an extension from Rio Solado to Apache Blvd.</p> <p>Tempe/Phoenix does not just need more bike lanes but they need to be strategically planned out as well as having:</p> <ul style="list-style-type: none">--More protected bike lanes, not just buffered--this should be a priority. DO NOT WAIT UNTIL 2026. Tempe/Phoenix should be a bike capitol of the country because of our glorious weather and the fact it is so flat. We need to take priority away from cars and give it to bikes.--Tempe/the world needs to cut carbon emissions and prioritizing PROTECTED bike lanes is a great place to start. We need to tap into the interested but timid demographic of people in regards to bikes.



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			--When the barrier is built, enlist local elementary schools to paint it so it is colorful and not an eyesore.
Noah	Taetle	Resident	I would like to see a protected bike lane on Smith that offers more safety and security to bicyclists and makes biking more accessible to the community.
Tiffany	Ramos	Work in the area	Please extend the bike lane on Smith road from Rio Salado to apache blvd. ASAP! The bike lane is currently unprotected and this addition would help Tempe be a safer more enjoyable place to live.
Danielle	Prasad	Resident	The bike lane along Smith Road is absolutely necessary. As an ASU sustainability major, I recognize the importance of increasing bike lanes not only to encourage sustainability but also so vulnerable and underrepresented communities are able to easily commute. Increasing public transportation along with bike lanes is the future if we want to ensure a safe environment for future generations. Many people might not be on board yet, but so many college students like myself would greatly appreciate the bike lane.
Matthew	Salenger	Work in the area Resident As co-chair of CVAC and interested in how our area develops	<p>The residents of North Tempe have been asking for north-south bike lanes on Dorsey & Smith for more than 20 years. Protected bike lanes should extend from Rio Salado south to Apache at the least, with plans to create bike pathways further south past the rail tracks.</p> <p>This will help spur greater development, bike safety (and therefore greater bike use), and truly make Tempe more livable. Such bike lanes help us become the 15 minute city and with Tempe's Vision Zero resolution.</p> <p>I also live in Hudson Manor and my family really struggles with the lack of bike pathway to get to Tempe Town Lake. We would ride our bikes more if these north-south pathways existed.</p> <p>Therefore I am very much in favor of the proposed bike lanes on Smith, and want to see that plus what I mentioned above.</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
Enrique	Favaro	Work in the area Resident	<p>I currently work in the area near Apache and the 101 and I have either lived in/attended school/worked in Tempe my entire life.</p> <p>I love riding my bike, just a couple years ago I averaged about 30 miles of biking per day. In November of 2020, just days before Thanksgiving, I was biking to work (in Tempe) and I was hit by a driver running a red light on a Ford Expedition. I can attest that if there is no physical barrier then space and air is not sufficient enough to stop a 5000lbs SUV going 20-30 mph.</p> <p>I encourage the City of Tempe to build a protected bike lane on Smith Rd that has a physical barrier. The barrier should be more meaningful than the bike lanes on 3rd avenue in Phoenix so that it can actually protect bicyclists (see this article https://www.phoenixnewtimes.com/news/phoenix-3rd-avenue-bike-lane-bollards-damaged-by-car-drivers-11563192). The motorist damage is sufficient evidence that Arizona is in dire need of better bike infrastructure as a whole - this physically protected bike lane improvement on smith road are a great way to pave the way forward.</p> <p>From my experiences biking in Spain and France, I saw more instances of 2 way bike lanes on one side of the road. While I think the research on the effectiveness of 2-way or 1-way protected bike lanes is still too indecisive, I had my favorite biking experiences on 2-way bike lanes. When well designed as in my experience in Barcelona, unique traffic control measures leveraging the 2-way design allowed for a safer biking experience alongside vehicles and pedestrians from my perspective. I imagine this would be more cost efficient to build a single meaningful barrier than 2 separate ones.</p> <p>It would be best in my opinion to construct this as soon as possible, especially to incentivize more development less reliant on cars in that area and encourage more similar bike lanes throughout Tempe.</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
Aman	Grover	Work in the area	I believe a protected bike lane on Smith, and not just a buffered one, will be so important to the safety of people on the road. Having biked down this road myself tons of times, it really just felt so unsafe and dangerous with cars rushing past me. I would hope this experience can be improved to promote more bike usage in Tempe!
Andrea	Castro	Work in the area Resident	Please do a bike lane extension, protect the bike lane, add art, and build it ASAP
Sophia	Shovkovy	Work in the area	As someone with a friend who was hit by a car while riding a bike, I deeply understand the value of protected bike lanes and I urge the city of Tempe to prioritize it as well. I bike through Smith frequently and would feel so much safer in a protected bike lane that is distinctly separated from passing cars.
Mike	Schwartz	Resident	Hi! I'm the Environmental, Social, and Governance Reporting Manager at Republic Services and I'm really excited to have signed a lease to live at Culdesac in 2022. I'm so impressed with the city having embraced this car-free community and I can't wait to see how Tempe continues to support sustainable lifestyles. I'm coming to the area from NYC, where I ride a bike every day, and I see how dangerous it is for cyclists to be forced to share the road with motor vehicles. I've had my share of run-ins when there are no protected lanes available, and I want to save the lives (and, yes, insurance rates) of the people of Tempe. Now is the time to commit to the creation of protected bike lanes on Smith Rd from Rio Salado to Apache Blvd, to continue to support Culdesac, the community being build there, and the hundreds of housing units that come along with it. The promise of this bike lane will ensure a safe transit-way for Culdesac and the surrounding communities to get to Tempe Marketplace. Thanks for your support, Mike
Jacob	Seliger	Work in the area	Please install a protected bike lane between Culdesac and Tempe Marketplace: my partner and I plan to move to Culdesac, and both of us plan to bike to Tempe Marketplace. But biking safely is vital: only



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			<p>protected bike lanes really work. I know because I currently live in Scottsdale, and the routes from Old Town Scottsdale to Tempe are perilous; I've ridden them anyway, but would rather not risk life to do so.</p> <p>Thank you!</p>
Duke	Dieugenio	Work in the area Resident	<p>It's important to me that the Smith Innovation Hub is safely accessible by bicycle. Separate bicycle facilities make things less stressful for cars and bikers alike, and the road is currently wide enough to accommodate a protected bikeway, parking, and car traffic. If we follow the proposed layout, trucks will just park in the bike lane and make it more dangerous and confusing for everyone.</p>
Sierra	Ross	Work in the area	<p>I'm an ASU student that lives in the area and works in the Smith innovation hub. I'm proudly car-free and bike everywhere. The most efficient way to get to work for me is on smith road between University dr and Apache. A protected (not just buffered :)) bike lane would not only improve my safety in Tempe but my happiness to live and work here. Please extend it from rio salado to apache (because business yo!) and construct as soon as possible so more residents and visitors can be safe, be happy, and enjoy the area</p>
Mark	Davis	Property owner	<p>I am very happy that focus, strategy and direction is being implemented in these recommendation. My comment is that one of the highest priority projects should be the sidewalk along McClintock between 3rd Street to Rio Salado. It is the front door of the SIH and it is used frequently. I would NOT like to advance the bike route/Street improvements extension in the Short Term unless there is a clear path to get through Tempe Marketplace to the lake. Bikes get tot he lake at the McClintock traffic light because there is no clear path to get through the marketplace. Defer this to the Long Term. I would prefer to have the highest priority shifted to lighting throughout the SIH rather than the partial lighting project as well as funding a marketing and placemaking branding strategy. Thank you for putting this plan together!</p>
Ashley	Toft	Scooter user	<p>Bird is the word</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
Anders	Engnell	Work in the area Resident	I live and work along near the Smith Innovation Hub and regularly use it as a bike route to light rail, to Tempe Marketplace, and to Tempe Town lake paths. Many of my friends and community members in Escalante use it as well, and we'd love to have a safer route to access all these amenities! This is an issue of transit equity and and amenity access, as I know many families with children and elderly who use this route. Thank you for considering this!
Natalie	Hull	Business owner Work in the area Resident Family goes to school in area	It's necessary & will only help community
Zach	Gault	Work in the area	This project would be a great improvement to the area!! Please approve!
Sarah	Starsky	Resident	Let's make Tempe more bike friendly! This would help the community in so many ways and encourage folks in the area to use other forms of transportation and can also be used for recreation!
Lavanya	Sunder	Resident	<p>I'm very excited about the Smith Innovation Hub, and can't wait to bike to it!</p> <p>I strongly want the bike lane to be explicitly protected, not just buffered. Buffered, non protected bike lanes are not safer for bikers, and at times can be MORE unsafe for bikers because drivers pay less attention to the lane. I think we need a protected bike lane to help their goal of Vision Zero. With the recent Baseline biker death, this is all the more important and something important to implement as soon as possible.</p>
Jordan	Hunter	Work in the area	As someone who bikes Smith Rd 4-5 times per week, Smith is the best way to get to Tempe Marketplace and the Rio Salado Pathway from Apache. And all the people who would use the Smith bike lane live south of University in the Escalante community.
Jasmine	Little	Work in the area	I want to see a protected bike lane on Smith from Apache up to Rio Salado. I work and live in the area and there's no good way to bike north to Tempe marketplace, where I like to go frequently for shopping and movies. It's very unsafe biking up McClintock and Smith and I know one



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			day I'll get hit by a car on these dangerous roads. It's sad that a resident needs to feel unsafe just trying to get from point A to B because the city won't prioritize safe infrastructure for residents using all types of mobility options, not just cars. Please put in a protected bike lane, it will increase business to the area and will create a great way to access the Rio Salado bike path
Merrill	Darcey	Resident	This is a land locked area. This does not offer anyone to travel by bicycle from either north or south. Tempe Marketplace is a barrier to the Rio Salado/Town lake bike path in which you have to cut through the mall. There is an advantage that north bound cyclists can traverse from the Smith Metro Station, but bike lanes are sorely lacking from Apache Blvd. Very few cyclists will enter this area from University or McClintock. Being so this is too car dependent. Ideally any success regarding cyclists to visit the area for work or retail emphasis should be in connecting a major bicycle route north south from Country Club with an overpass or underpass crossing the Union Pacific Railroad Tracks to connect to the majority of Tempe residents. Also an additional pedestrian bridge to cross the lake to join up to Indian Bend Greenbelt which will attract Scottsdale residents. A truly innovative suggestion.
Tim	Kelly	Work in the area building tenant - small business owner	we are on the S. side of rio salado, right on rio salado pkwy. the plan shows mixed use here. mixed use is putting a priority on residential. there's zero residential here. what is going to happen to the existing buildings? are they going to forced into residential? any residential here is just asking for trouble. tempe is allowing residential as fast and as high up as it can go all around this area. putting residential right up against commercial, industrial and manufacturing is going to make for owners/renters who were sold this cherry pie and got a mud pie. would you like to live right next door to a CNC shop that runs their machines 24/7? or a shop that manufactures long strips of materials and has 53' long bed trailers pulling in and out, lining the street all day? this is what your saying in your plans.....



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			leave it as is and put in your pretty lights and sidewalks and leave it an industrial/commercial area tempe needs centrally located.
Max	Rudolph	Property owner	<p>The redevelopment of the Smith is a much needed and well encouraged change! As a property owner, I do have concerns over funding and timing of street and streetscape improvements. Most of the streetscape improvements revolve around adding sidewalk & landscape to where there isn't any. How is this intended to be paid for? Is Tempe going to take the lead and get crucial areas done or rely on developers to complete the improvements as they revitalize the areas? If it's the later, will the City of Tempe be contributing to these costs or will it fully be the responsibility of the developer? Additionally, will the City expect the developers to extend sidewalks and street scape beyond their development site or will sidewalks abruptly halt? If forcing the Developers to extend, is the City going to reimburse the cost of the extensions, is that going to fall on the current property owners or will the Developer be solely responsible for the cost?</p>
Rhonda	Steele	I frequent businesses in the area, and travel through those areas by bike and car to access other areas - including Marketplace Mall and 202 bike path.	<p>I like the thinking I'm seeing here. Protected sidewalks and clear areas for bicycles are always a good idea. I also like the evening out of the lighting situation.</p> <p>Frankly, anything that can make the area more pedestrian / bike friendly and add a few landscaping features to help the land breathe seems like a good idea.</p> <p>Thank you for making the study results available. I'll be interested in seeing the prioritization/planning docs on horizon.</p>
David	Sokolowski	visitor	<p>If more shade was provided on smith road people would be more likely to travel between Tempe market place and the light rail station. It's especially hot during the middle of the day and more shade would create a more walkable area. half of the parking spaces could be used to shade both the vehicles and the east sidewalk in the afternoon. I would like to see some side walk improvements in the area so that residents can safely</p>



First Name	Last Name	How do you associate with the Smith Innovation Hub?	Comment
			walk to Tempe marketplace and future streetcar. I've walked the area many times and it doesn't feel safe sharing the road with large trucks, if the city wants to encourage people to live, work, and play, then you need sidewalks and trees.



Appendix C. Right-of-Way Acquisition



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Memo

Date: Tuesday, October 19, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: **Right-of-Way Acquisition**

Introduction

This document contains the program estimate for the subject property right-of-way cost for the Tempe Smith Innovation Hub Infrastructure Master plan. The area evaluated is an approximately 180-foot by 30-foot rectangular area of land on Perry Lane between Third Street and Rio Salado Parkway. Land values varied significantly for GID-zoned properties in Tempe.

The square foot cost for property in the area is based on past sales according to an appraiser who works in the area. Costs were also added for TCE work area and the improvements impacted by the acquisition. There are vehicles on the property that will also need to be relocated, so a value was placed on personal property relocations.

Figure 1. Subject properties





File #		1	2
Owner Name		Quemado Partnership	
Mailing Address		17929 N 99th ST Scottsdale, AZ 85255	
Situs Address		110 S Perry Lane, Tempe 85281	202 S Perry Lane, Tempe 85281
Zoning		GID- General Industrial District	
Tax Map		132-41-001F	132-41-001L
Tax Lot		F	L
Current Use		Vehicle Repair and Storage	
Land Acquisition	Area (sq. ft.)	1900	3500
	Value (\$15/sq. ft.)	\$28,500	\$52,500
Permanent Easement	Area (sq. ft.)	NA	NA
	Area (sq. ft.) ^a	600	1,200
Temporary Easement	Value (\$3/sq. ft.) ^b	\$1,800	\$3,600
	Total Land Value	\$30,300	\$56,100
Improvement Cost ^c	Length (linear ft.)	60	120
	Cost	\$2,400	\$4,800
	Description	Security Fencing	Security Fencing
Damages		NA	NA
Appraisal	Hrs	12	12
	Cost (\$120/hr)	\$1,440	\$1,440
Review	Hrs	5	5
	Cost (\$120/hr)	\$600	\$600
Acquisition	Hrs	4	4
	Cost (\$120/hr)	\$480	\$480
Relocation Study	Hrs	NA	NA
Relocation Asst	Hrs	NA	NA
Relocation Benefits ^d		\$200	\$500
Demolition Cost		NA	NA
Title Insurance Cost		\$125	\$125
RW HQ Cost		NA	NA
Legal and Contingencies		NA	NA
Miscellaneous Cost		NA	NA
Sub-Total		\$35,545	\$64,045
Total		\$99,590	

^a This is the area 10-feet beyond Fee area needed for work area.

^b Value of Temporary Easement is based on 10% of the Fee value for use of property (based on a one year project).

^c Cost of the improvements within the fee area. Security Fencing. Cost based on a new replacement fence with depreciation reduction of existing fence. Value based on Marshall & Swift valuations guide.

^d Cost of relocation of personal property within the acquisition area.



Appendix D. Lighting Memo



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Memo

Date: Tuesday, October 19, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: **Lighting**

Introduction

The City of Tempe is developing plans to upgrade the existing roadway layout to better serve the area for bicycles and pedestrians. There is some existing sidewalk and roadway lighting throughout the area. The existing lighting is inadequate per the City of Tempe Public Works Department Engineering Design Criteria and IESNA lighting design standards.

Objective

The objective of this report is to outline the upgrades required for the lighting system to bring the roadway lighting into compliance with the City of Tempe Lighting Design Standards.

Lighting Analysis

The typical roadway sections were analyzed to verify the lighting requirements are met on the variable, non-standard roadway sections prevalent in this area. The lighting criteria for this are per the COT Engineering Design Criteria are a minimum average illumination of 1.2 f.c. The existing lighting is inconsistent and it is not possible to analyze without a full model. In order to bring up to COT lighting standards, an analysis was performed utilizing the proposed typical sections for different areas within the Innovation Hub. The fixture utilized in the analysis was the American Electric Autobahn ATBO 20BLED 7,950 Lumen Discrete LED fixture mounted at 30' mounting height on a 4.5' mast arm per COT Standards. The sections were broken down for analysis as follows:

- S Perry Ln – E Rio Salado Pkwy to E 5th St
 - 40' Section Width
 - Bi-Directional Bike Lane
 - One-Way Vehicle Traffic



- Single Side Sidewalk
- Single Sided Lighting
 - 19' Maximum Luminaire Spacing.
 - 1.2fc Avg Illumination
 - 1.3 Avg/Min Ratio
- S Perry Ln – E 5th St to E University Dr
 - 40' Section Width
 - Bi-Directional Bike Lane
 - Bi-Directional Vehicle Traffic
 - Two Side Sidewalk
 - Opposite Staggered Lighting
 - 19' Maximum Luminaire Spacing
 - 1.2fc Avg Illumination
 - 1.4 Avg/Min Ratio
- 5th St E – Perry Ln to Price Rd
 - 40' Section Width
 - Bi-Directional Bike Lane
 - Bi-Directional Vehicle Traffic
 - Two Side Sidewalk
 - Opposite Staggered Lighting
 - 19' Maximum Luminaire Spacing
 - 1.2fc Avg Illumination
 - 1.4 Avg/Min Ratio
- Smith Rd – E Rio Salado Pkwy to E University Dr
 - 48' Section Width
 - Bi-Directional Bike Lane
 - Bi-Directional Vehicle Traffic
 - Two Side Sidewalk
 - Opposite Staggered Lighting
 - 19' Maximum Luminaire Spacing
 - 1.2fc Avg Illumination
 - 1.4 Avg/Min Ratio



City of Tempe lighting standards specify 175' luminaire spacing for opposite staggered configuration. This spacing was utilized for the proposed spacing and electrical estimate for the 40' and 48' width roadway segments. It was assumed the North section of Perry Ln would be expanded to match the right of way and roadway section width of the southern section of Perry Ln.

Cost Estimate

The cost estimate for this project utilized recent bid prices for similar poles, fixtures, concrete, conduit, conductor, services, and pull boxes. The average installed cost estimate per pole ranges from approximately \$10,200 to approximately \$10,500 per pole based on complexity of the segment. This cost can be reduced slightly as a new service was assumed for each roadway segment for phased construction of the roadways. The recommended locations for lighting services in this area are the intersection of Perry Ln and 5th St and a second service at Smith Rd and 5th St. The Perry Ln and 5th St service can serve the extents of Perry Ln and 5th St from Perry Ln to Smith Rd. The Service at Smith Rd and 5th St is a good central location that can serve the extents of both Smith Rd and 5th St.

The cost breakdowns are as follows:

- S Perry Ln – E Rio Salado Pkwy to E 5th St
 - Cost of Lighting: \$156,520.10
 - Cost per pole: \$10,434.67
- S Perry Ln – E 5th St to E University Dr
 - Cost of Lighting: \$163,163.00
 - Cost per pole: \$10,197.69
- 5th St E – Perry Ln to Price Rd
 - Cost of Lighting: \$465,731.75
 - Cost per pole: \$10,349.59
- Smith Rd – E Rio Salado Pkwy to E University Dr
 - Cost of Lighting: \$293,923.85
 - Cost per pole: \$10,497.28

Based on the inconsistent spacing of the existing luminaires, it was assumed that all existing luminaires would be removed and new luminaires would be installed per COT luminaire spacing standards.



Appendix E. Drainage Memo



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Memo

Date: Wednesday, October 20, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: **Drainage**

This memorandum summarizes the work performed under the drainage task for the Smith Innovation Hub Infrastructure Master Plan design. The scope of work for this task is to assess the capacity of the current drainage system and the impacts resulting from proposed improvements to the infrastructure in this area. This was accomplished by developing a detailed account of the current facilities located within the proposed Hub and updating drainage facilities as well as incorporating Low Impact Development techniques to convey both onsite and offsite flows in order to maintain City of Tempe drainage criteria including stormwater spread and depths within the roadway.

Project Location and Description

The project is located within the Smith Innovation Hub which is a 0.5 square mile area bounded by the Rio Salado Parkway to the north, Price Road to the East, University Drive to the south, and McClintock Drive to the west. The project is located within the City of Tempe in Maricopa County, Arizona. A map of the study area depicting proposed roadway and drainage improvements is attached as Exhibit 1A.

Existing Conditions

The Smith Innovation Hub is a primarily commercial/industrial district with multiple warehouses and office buildings. A vast majority of the surface is impermeable with strips of vegetation constructed on the edges of property boundaries. The Smith Innovation Hub is currently zoned as a General Industrial District with Commercial Shopping and Services and Agricultural zoning on the southern edge of the Hub. The land coverage in the area surrounding the Hub can be classified as multi-family Residential, Heavy and General Industrial, and Regional Commercial Center (Tempe Marketplace). Refer to Exhibit 2 for a visual representation of land use zoning for the project site.

According to the Flood Control District of Maricopa County's Flo-2D Web Viewer (FCDMC Viewer) for the 028_Tempe_A100-Year 24-Hour storm model, large flows



from the vicinity of Rockford Drive and E. 6th Street proceed to the west along 5th Street until reaching the 5th Street and Perry Lane intersection. At this location, storm water is conveyed southwest toward the 6th Street sump. The collected flows are conveyed to a drywell directly to the south according to available GIS data. Street flooding may also be observed between the Perry Lane and 5th Street and the Perry Lane and 3rd Street intersections. Refer to Exhibit 3 for existing drainage infrastructure within the Hub as well as key locations where current drainage issues have been observed.

Onsite and offsite flow is captured using a combination of onsite drywells and inlets connecting to the storm drain trunk lines on Rio Salado Parkway and McClintock Drive via 18" RCP. The excess flows not captured onsite at each property are conveyed along the streets until reaching the nearest inlet.

Storm Drain inlets observed onsite include 10' curb opening inlets, 5' curb opening inlets, combination inlets, and slotted drain.

10' curb inlets are found along the northern boundary of the Smith Innovation Hub where interior streets intersect with Rio Salado Parkway. For example, River Drive at Rio Salado Parkway and Siesta Lane at Rio Salado Parkway have inlets along the eastern and western curb just south of the intersection to collect flows running down the street from the south. The exception to these inlets along the northern boundary of the Hub is Perry Lane where there is currently neither inlets nor curb and gutter. These northern boundary inlets connect with 18" RCP laterals to the trunk line along Rio Salado Parkway. The RCP trunk line along Rio Salado Parkway varies in size from 24" to 60" in diameter as it continues from east to west toward the intersection of McClintock Drive and Rio Salado Parkway until its ultimate outfall at the Salt River.

Figure 1. Typical Curb Opening Inlet Found at Siesta Lane and Rio Salado Parkway



Combination inlets and slotted drain may be found along the western boundary of the Hub where the interior streets intersect with McClintock Drive. An example being the inlets and slotted drains present at the 3rd Street and McClintock Drive intersection. These inlets connect via an 18" RCP lateral to the McClintock storm drain trunk line



which varies in size from 24" to 42" RCP as it continues from south to north toward the intersection of McClintock Drive and Rio Salado Parkway.

Figure 2. Typical Combination Inlet with Slotted Drain found at 3rd Street and McClintock



There is a second trunk line that runs north under McClintock Drive that runs parallel to the line that the Hub inlets connect to. This second trunk line varies in size from 24" to 42" RCP and continues north to the Karsten Outfall after connecting with the Rio Salado Parkway and other McClintock Drive trunk line.

All three of the trunk lines along Rio Salado Parkway and McClintock Drive intersect at the intersection of McClintock Drive and Rio Salado Parkway before heading north with a 72" RCP toward the 66" RCP Karsten Outfall into the Salt River. Existing storm drain infrastructure may be found on Exhibit 3.

Within the Smith Innovation Hub, there is one storm drain line currently in place. A 2,350' storm drain line varying from 27" to 36" RCP runs west under 5th Street before heading north under Smith Road. This line starts at a pair of inlets at the intersection of 5th Street and Rockford Drive and terminates with a connection to the Rio Salado trunk line. Several curb inlets connect to this trunk line draining flows from Smith Road and 5th Street.

Onsite flow is also captured by detention/retention facilities and drywells located within individual properties. There are multiple properties with depressed parking lots and/or grassy areas with drywells to drain runoff produced from within the property before it has a chance to overflow onto the street. Other properties contain swales on site to retain runoff or utilize a pond like at The Circuit located at 615 S River Road.

Perry Lane north of 5th Street is currently devoid of curb and gutter with roadway runoff sheet flowing to the bare ground on either side of the roadway in existing conditions. This leads to ponding on the roadway and shoulders of the roadway after storm events.



Analysis

The analysis for storm drain improvements was completed using topographic survey, GIS data acquired from the City of Tempe, FCDMC Viewer, field reconnaissance and the proposed street improvement plans for the current project. All hydrologic and hydraulic calculations were developed according to the City of Tempe Engineering Design Criteria along with Maricopa Hydrology and Hydraulic Manuals. Point precipitation was provided by NOAA 14. Runoff for each delineated drainage area was updated to current Maricopa County standards and an analysis of existing size and capacity of inlets was developed.

The proposed street improvements were then compared with the current location of existing inlets. Improvements to Perry Lane north of 5th Street include curb and gutter and will necessitate new inlets to drain runoff. Proposed roadway improvements to other streets within the Hub will necessitate new inlets and LID features like bioswales and bioretention cells, as well as tree box filters to drain sumps and potential runoff trapping locations from bumpouts, etc.

The existing inlets were analyzed by delineating watershed subbasins within the Smith Innovation Hub based on roadway geometry and existing topography. These subbasin areas were then analyzed using the Rational Method with rainfall data provided by NOAA 14 to calculate 10 yr and 100 yr flows. A C- Value of 0.95 was used for impervious pavement surfaces with a C value of 0.45 applied for pervious areas which were mostly undeveloped desert type areas. Time of concentrations for the smaller subbasins (<10 acres) was assumed to be 10 minutes, medium subbasins (10 to 20 acres) are assumed to have a TC of 15 mins, and larger subbasins (>20 acres) are assumed to have a TC of 30 mins. These assumptions are based on the relatively flat grade for the Hub as well as flowpath length. The delineations used for analysis may be found on Exhibit 4.

Table 1. Peak flows (cfs) using Rational Method

Subbasin ID	Contributing Area (ac)	Composite "C"	Q ₁₀	Q ₁₀₀
1	1.7	0.95	6	9
2	1.8	0.95	6	9
3	2.0	0.95	7	11
4	1.0	0.90	3	5
5	6.3	0.72	20	32
6	13.5	0.49	28	45
7	2.6	0.95	5	7
8	1.5	0.95	5	8
9	5.0	0.95	17	27
10	6.3	0.95	21	34
11	6.1	0.95	21	33



Subbasin ID	Contributing Area (ac)	Composite "C"	Q ₁₀	Q ₁₀₀
12	5.7	0.95	19	30
13	6.1	0.95	20	32
14	6.3	0.90	21	34
15	6.2	0.84	20	32
16	6.3	0.95	19	30
17	4.6	0.95	15	24
18	2.6	0.95	9	14
19	0.7	0.95	2	4
20	2.3	0.95	8	12
21	1.7	0.95	6	9
22	5.8	0.95	20	31
23	8.2	0.95	28	44
24	8.1	0.93	27	43
25	24.7	0.95	67	107
26	19.3	0.95	54	86
27	9.9	0.95	33	53
28	2.6	0.95	9	14
29	7.3	0.95	25	39
30	2.3	0.95	8	12
31	2.7	0.95	9	15
32	6.7	0.93	23	36
33	50.4	0.95	93	147
34	2.5	0.95	8	13
35	3.6	0.95	12	19
36	14.0	0.95	39	62
37	0.8	0.86	3	4
38	15.0	0.95	38	60
39	6.3	0.93	21	34
40	6.4	0.95	21	34
41	6.7	0.95	23	36
42	3.7	0.95	13	20
43	0.6	0.95	2	3
44	2.6	0.95	9	14

The FCDMC Viewer for the 100-Year 24-Hour storm indicates significant flows from the vicinity of Rockford Drive and 6th Street proceed to the west along 5th Street until reaching the 5th Street and Perry Lane intersection. At this point, flows proceed southwest toward the 6th Street sump. Street flooding can be observed between the Perry Lane and 5th Street and the Perry Lane and 3rd Street intersections.



Recommendations

The area in the vicinity of Rockford and 6th Street experiences large runoff volumes from the surrounding properties contributing to the street. A pair of inlets at the northern and southern side of the Smith Road and 5th Street intersection is recommended to capture additional flow. These inlets would need to be connected to the existing 27" SD line along 5th street via 18" RCP from the inlets to a new storm manhole. Bioswales, Bioretention cells, and Tree Filter Boxes are recommended to be installed along 5th Street to capture, treat, and infiltrate runoff. Proposed drainage improvements on 5th Street may be found on Exhibit 1B.

Furthermore, curb and gutter is recommended to be placed along the northern half of Perry Lane along the eastern and western sides of the roadway. Additional pairs of inlets are recommended to be installed on the southern side of the Rio Salado Parkway and Perry Lane intersection and the 3rd Street and Perry Lane intersection. Three inlets are recommended to be placed at the northwest, northeast, and southeast corners of the Perry Lane and 5th Street intersection. These new inlets will connect to an existing 36" lateral at Rio Salado via an 18 inch and 24-inch RCP pipe. Bioswales, Bioretention cells, and Tree Filter Boxes are recommended to be installed along Perry Lane to capture, treat, and infiltrate runoff. Proposed drainage improvements on Perry Lane North may be found on Exhibit 1C.

Bioswales with curb cuts to allow runoff to enter are recommended at locations where planters are being proposed as well as raised medians. The proposed landscaping will reduce the peak onsite runoff by reducing impervious land coverage and will also allow for natural infiltration of both on-site and off-site storm runoff. Infiltration is maximized by placing the curb opening outlet parallel to the roadway and forcing the storm water to pond within the landscaping area to the elevation of the proposed gutter line before discharging into the roadway. Based on conservative numbers, soil infiltration will account for an estimated 5-10% reduction in peak flows. It is the intention of the Engineer to maximize the infiltration capacity within the landscaping area by scarification and partial removal of the existing aggregate base course after the existing pavement is removed. Furthermore, the landscaping will be developed with a 6" depression and graded to convey captured storm water along and reduce spread developing along the proposed roadway. Tree box filters will be proposed where trees are proposed and there is enough space for the chambers of the tree box filter to fit. These tree box filters will provide sediment filtering and runoff treatment before the runoff is carried by underdrain to the storm drain network or infiltrated into the ground.

At the existing sumps that are determined by the roadway profile, the proposed landscaping will incorporate grate inlets to work in conjunction with the slotted drains to improve water surface elevations during storm events and improve any potential flooding to those features within the area. Grate inlets and slotted drains will be sized



with a 50% clogging factor. All onsite flows will be conveyed and discharged through the system before offsite peak flows from outside the boundaries of the Hub enter.

The proposed drainage features have been sized to intercept the 10-yr peak flows calculated using the Rational Method. The hydrologic and hydraulic analysis performed for this project is documented in the appendices. However, based upon the peak flow rates and volumes listed in Table 1, temporary ponding may occur because of the limited transport capacity of the existing trunk line storm drains that were designed to convey smaller peak flows.

The proposed alternatives which incorporate sidewalk bumpouts and planters that protrude into the parking lane will use curb openings to capture and convey flow to bioswales or Tree Box Filters. These openings will be placed at low points to drain runoff that may be trapped otherwise by the new curb geometry. Alternatives which do not incorporate bumpouts or planters in the parking lanes or roadway will not have to account for obstructions to the gutter flow paths.

Estimated Cost of Improvements

The proposed drainage infrastructure improvements along Perry Lane and 5th Street will cost a total of approximately \$268,580.00. This estimate includes the cost of proposed pipes, concrete catch basins, and storm drain manholes. Unit prices have been estimated using ADOT's Estimated Engineering Construction Cost historical price tool.

The cost for proposed bioswales has not been included in this drainage estimate and are instead accounted for in the roadway improvement cost estimate. Those estimates include the cost of curbing and the proposed landscaping that each bioswale location is comprised of.

The costs and quantities for the Perry Lane and 5th Street segments have been itemized in Tables 2 and 3 below.

Table 2. 5th Street Drainage Quantities and Cost Estimate

Item	Unit	Quantity	Unit Cost	Cost
Pipe, Reinforced Concrete, 18"	L.Ft.	40	\$120.00	\$4,800.00
Concrete Catch Basin	Each	2	\$6,500.00	\$13,000.00
Manhole	Each	1	\$5,500.00	\$5,500.00
			Total	\$23,300.00

**Table 3.** Perry Lane Drainage Quantities and Cost Estimate

Item	Unit	Quantity	Unit Cost	Cost
Pipe, Reinforced Concrete, 18"	L.Ft.	834	\$120.00	\$100,080.00
Pipe, Reinforced Concrete, 24"	L.Ft.	640	\$130.00	\$83,200.00
Concrete Catch Basin	Each	7	\$6,500.00	\$45,500.00
Manhole	Each	5	\$5,500.00	\$27,500.00
			Total	\$256,280.00

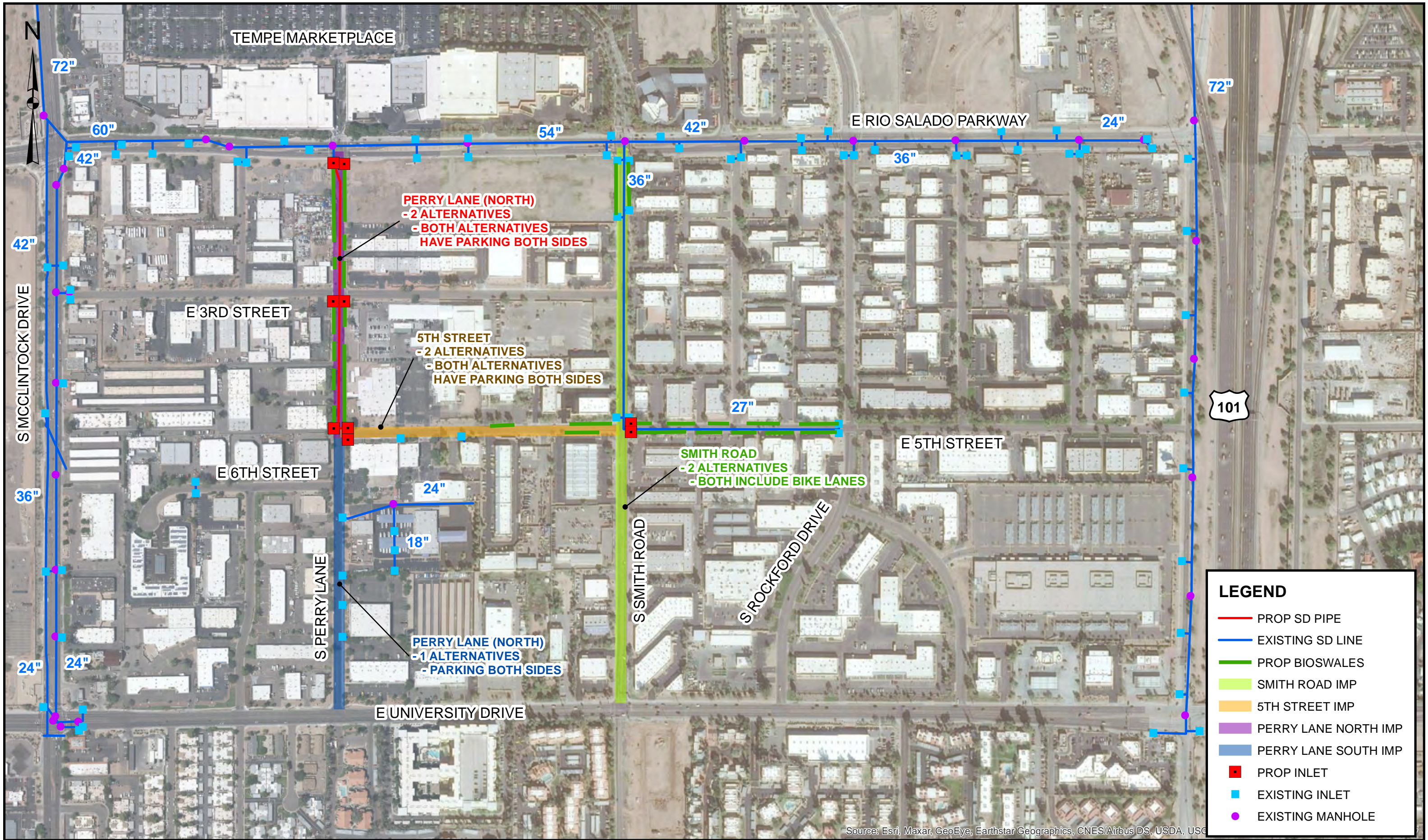
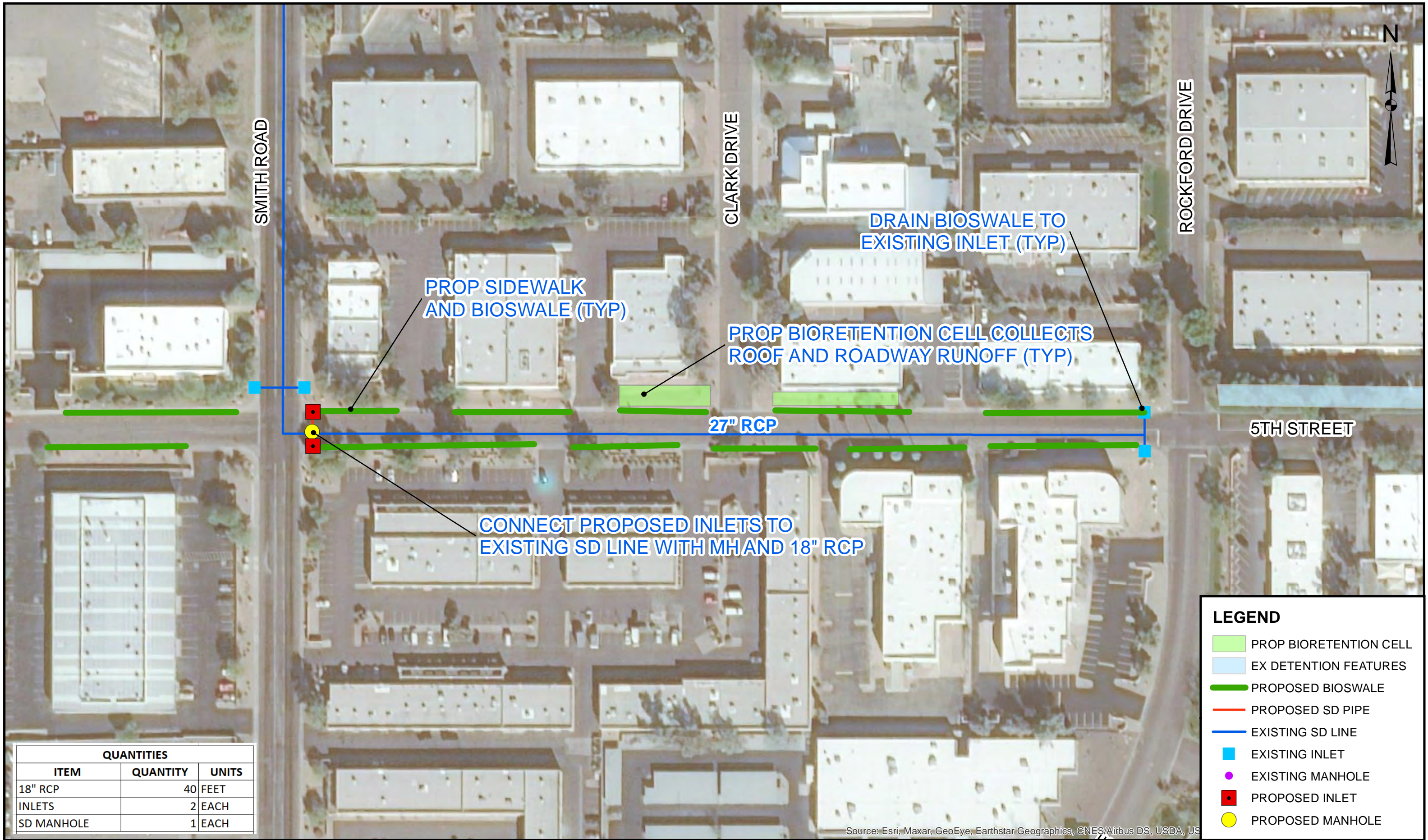


EXHIBIT 1A - PROPOSED DRAINAGE AND ROADWAY IMPROVEMENTS OVERVIEW



LEGEND

- PROP BIORETENTION CELL
- EX DETENTION FEATURES
- PROPOSED BIOSWALE
- PROPOSED SD PIPE
- EXISTING SD LINE
- EXISTING INLET
- EXISTING MANHOLE
- PROPOSED INLET
- PROPOSED MANHOLE

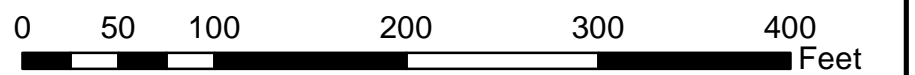
QUANTITIES		
ITEM	QUANTITY	UNITS
18" RCP	40	FEET
INLETS	2	EACH
SD MANHOLE	1	EACH

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, US

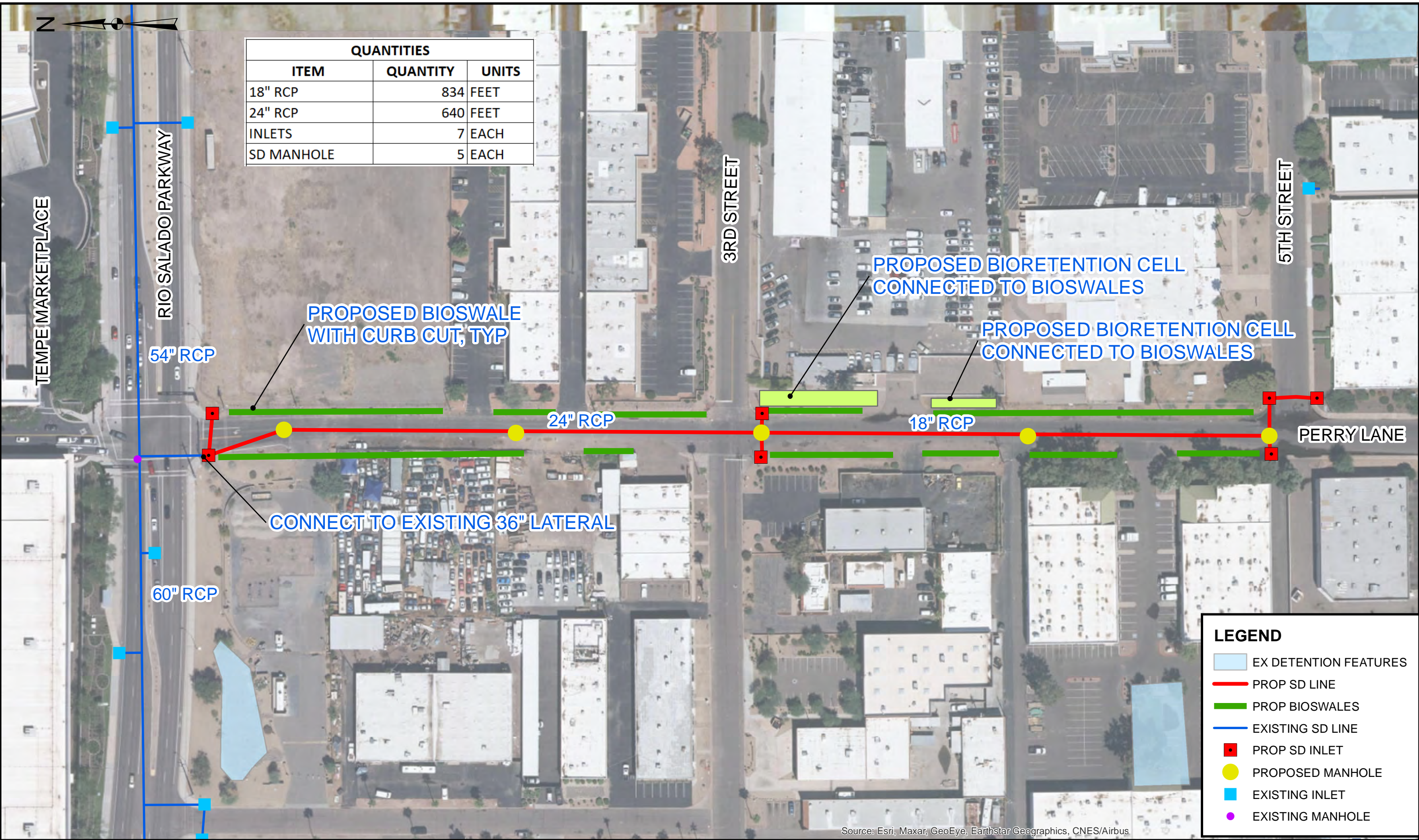
EXHIBIT 1B - PROPOSED 5TH STREET DRAINAGE IMPROVEMENTS



SMITH INNOVATION HUB
 PROJECT NUMBER : 10290347
 DATE: 5/13/2021



QUANTITIES		
ITEM	QUANTITY	UNITS
18" RCP	834	FEET
24" RCP	640	FEET
INLETS	7	EACH
SD MANHOLE	5	EACH

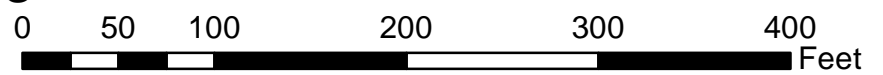


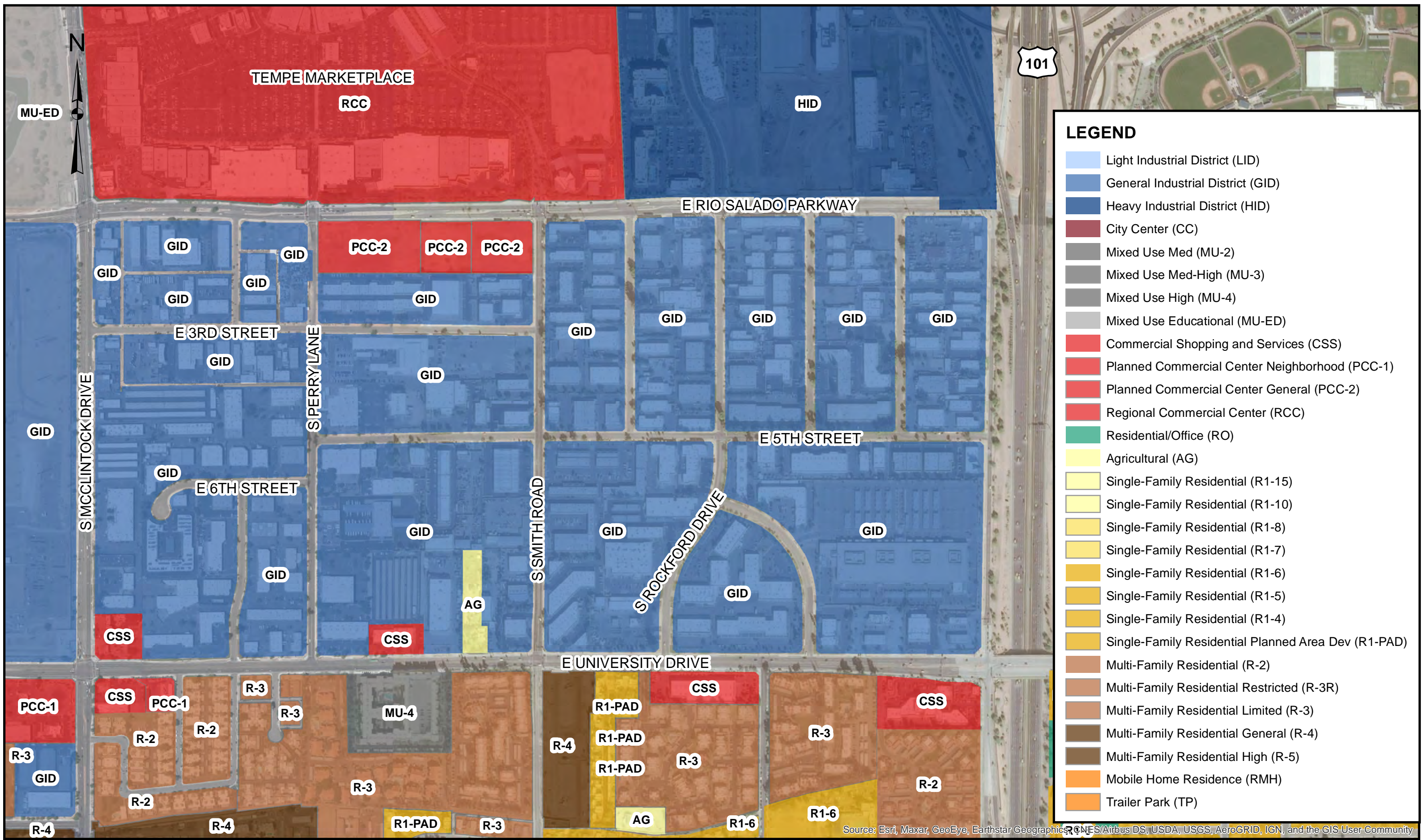
LEGEND

- EX DETENTION FEATURES
- PROP SD LINE
- PROP BIOSWALES
- EXISTING SD LINE
- PROP SD INLET
- PROPOSED MANHOLE
- EXISTING INLET
- EXISTING MANHOLE

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus

EXHIBIT 1C - PROPOSED PERRY LANE DRAINAGE IMPROVEMENTS





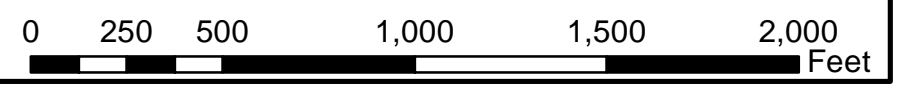
LEGEND

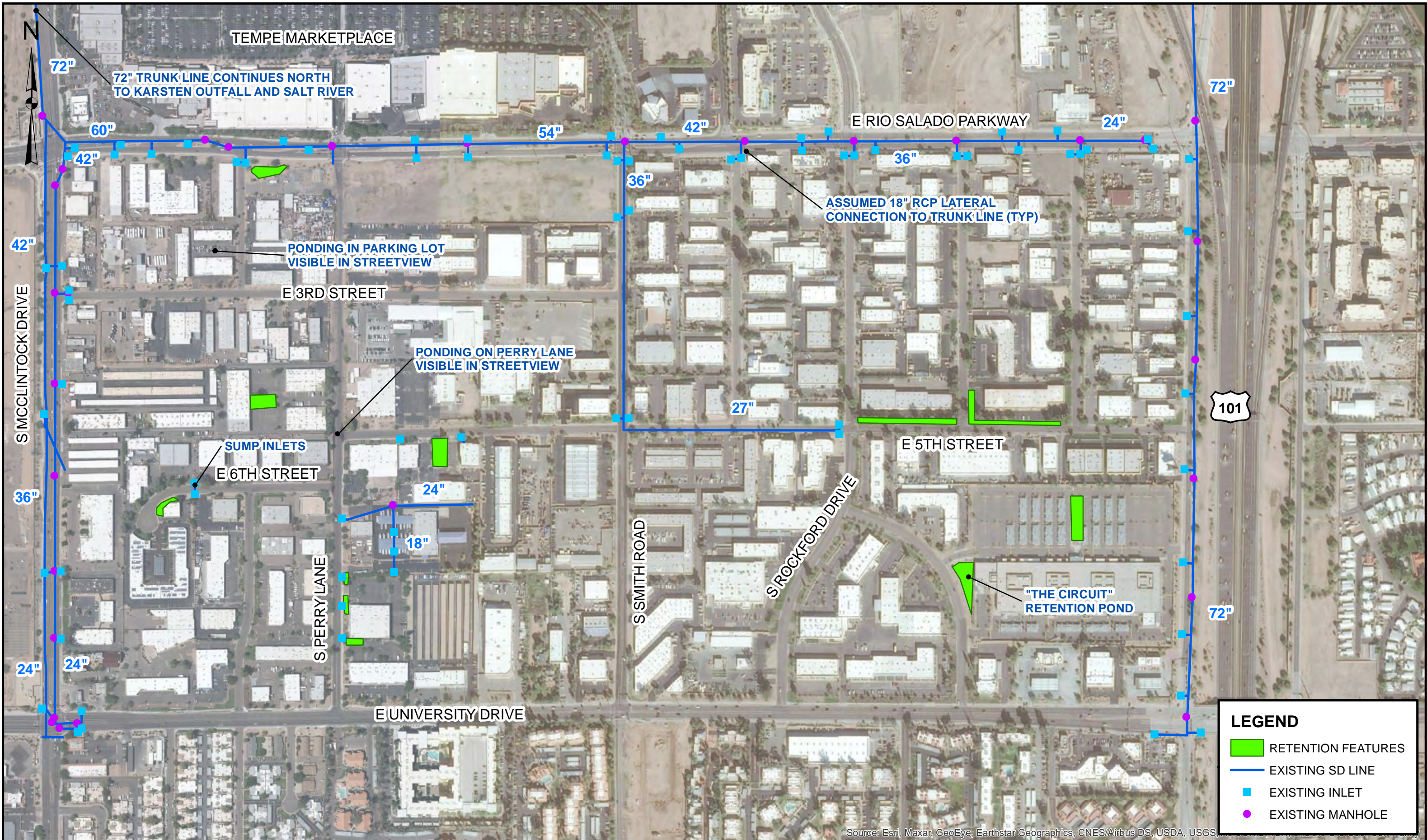
- Light Industrial District (LID)
- General Industrial District (GID)
- Heavy Industrial District (HID)
- City Center (CC)
- Mixed Use Med (MU-2)
- Mixed Use Med-High (MU-3)
- Mixed Use High (MU-4)
- Mixed Use Educational (MU-ED)
- Commercial Shopping and Services (CSS)
- Planned Commercial Center Neighborhood (PCC-1)
- Planned Commercial Center General (PCC-2)
- Regional Commercial Center (RCC)
- Residential/Office (RO)
- Agricultural (AG)
- Single-Family Residential (R1-15)
- Single-Family Residential (R1-10)
- Single-Family Residential (R1-8)
- Single-Family Residential (R1-7)
- Single-Family Residential (R1-6)
- Single-Family Residential (R1-5)
- Single-Family Residential (R1-4)
- Single-Family Residential Planned Area Dev (R1-PAD)
- Multi-Family Residential (R-2)
- Multi-Family Residential Restricted (R-3R)
- Multi-Family Residential Limited (R-3)
- Multi-Family Residential General (R-4)
- Multi-Family Residential High (R-5)
- Mobile Home Residence (RMH)
- Trailer Park (TP)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

EXHIBIT 2 - EXISTING ZONING MAP

*NOTE: ZONING SHAPEFILE COURTESY OF CITY OF TEMPE



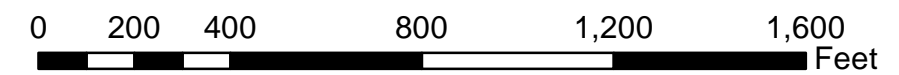


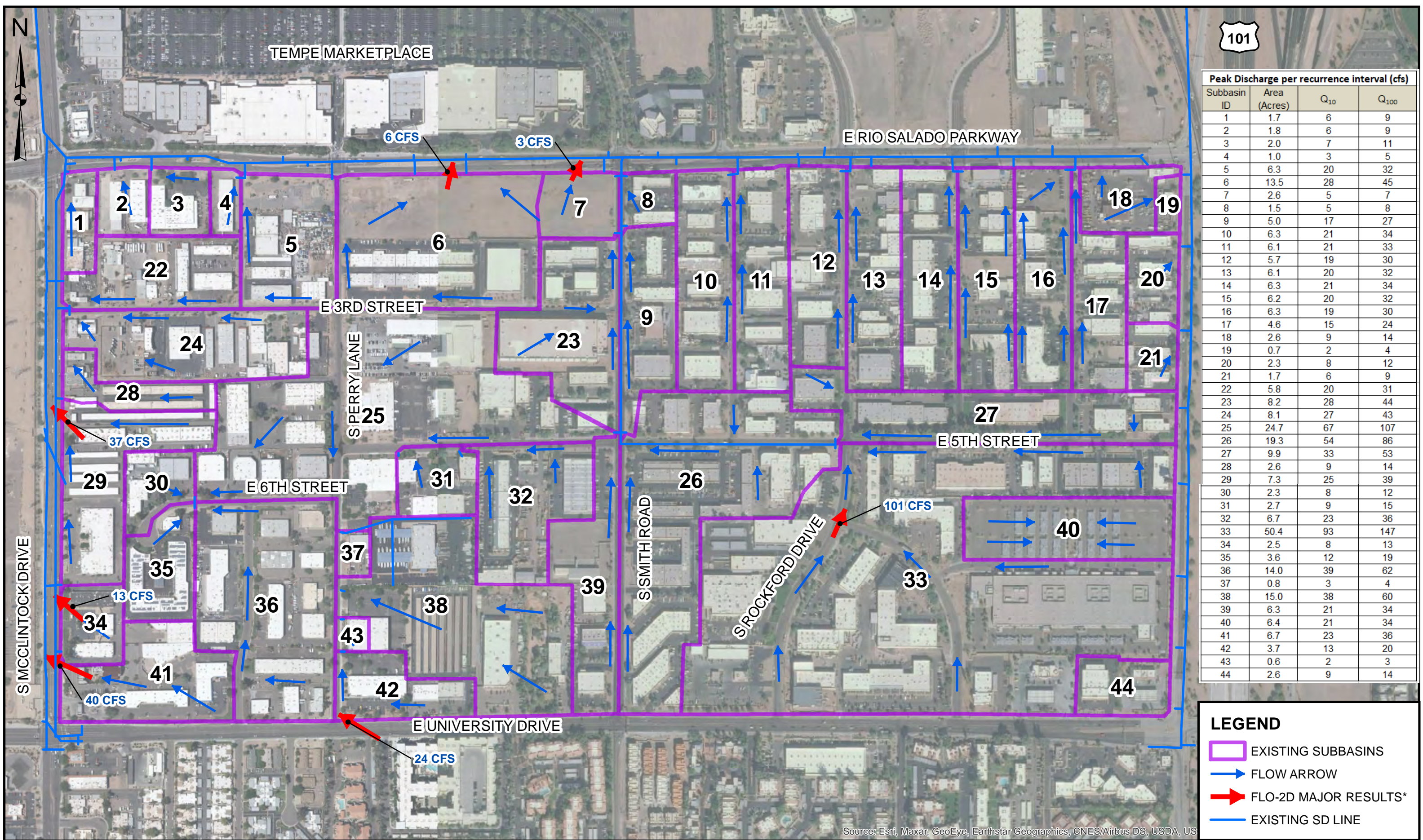
LEGEND

- RETENTION FEATURES
- EXISTING SD LINE
- EXISTING INLET
- EXISTING MANHOLE

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS

EXHIBIT 3 - EXISTING DRAINAGE FEATURES





Peak Discharge per recurrence interval (cfs)			
Subbasin ID	Area (Acres)	Q ₁₀	Q ₁₀₀
1	1.7	6	9
2	1.8	6	9
3	2.0	7	11
4	1.0	3	5
5	6.3	20	32
6	13.5	28	45
7	2.6	5	7
8	1.5	5	8
9	5.0	17	27
10	6.3	21	34
11	6.1	21	33
12	5.7	19	30
13	6.1	20	32
14	6.3	21	34
15	6.2	20	32
16	6.3	19	30
17	4.6	15	24
18	2.6	9	14
19	0.7	2	4
20	2.3	8	12
21	1.7	6	9
22	5.8	20	31
23	8.2	28	44
24	8.1	27	43
25	24.7	67	107
26	19.3	54	86
27	9.9	33	53
28	2.6	9	14
29	7.3	25	39
30	2.3	8	12
31	2.7	9	15
32	6.7	23	36
33	50.4	93	147
34	2.5	8	13
35	3.6	12	19
36	14.0	39	62
37	0.8	3	4
38	15.0	38	60
39	6.3	21	34
40	6.4	21	34
41	6.7	23	36
42	3.7	13	20
43	0.6	2	3
44	2.6	9	14

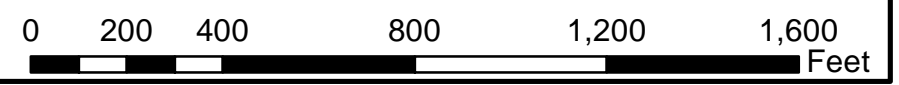
LEGEND

- EXISTING SUBBASINS
- ➔ FLOW ARROW
- ➔ FLO-2D MAJOR RESULTS*
- EXISTING SD LINE

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, US

EXHIBIT 4 - EXISTING CONDITIONS DELINEATION

*NOTE: FLO-2D RESULTS ARE FROM THE "TEMPE ADMS/P"
 FLO-2D MODEL - "028_TEMPE A STUDY FOR 100YR24HR WITH WALLS".



Computation Sheet

Project Tempe Smith Innovation Hub
Subject Existing Rational Onsite
Task Onsite Rational Calculations
Job No. 10290347

Computed AST **Date** 4/6/2021
Checked AC **Date** 4/12/2021
Doc. ID

Precipitation Data (Small Subbasin)

I (10 yr-10 min) =	3.55	in/hr
I (25 yr-10 min) =	4.36	in/hr
I (50 yr-10 min) =	5.00	in/hr
I (100 yr-10 min) =	5.63	in/hr
P (10 yr-2 hr) =	1.37	in
P (25 yr-2 hr) =	1.68	in
P (50 yr-2 hr) =	1.91	in
P (100 yr-2 hr) =	2.15	in

Formulae

$$C_{COMPOSIT} = (A_{PAVED} * C_{PAVED} + A_{UN-PAVED} * C_{UN-PAVED}) / A_{TOTAL}$$

$$Q_i = A_{TOTAL} * C_{COMPOSIT} * I$$

$$V_{F, FLUSH} = A_{TOTAL} * C_{COMPOSIT} * P_{F, FLUSH}$$

$$V = A_{TOTAL} * C_{COMPOSIT} * P$$

Parameters

- A - Drainage area (Paved, Un-paved and Total), in acres (ac)
- C - Runoff coefficient (C_{PAVED} = 0.95, C_{UN-PAVED} = 0.45)
- I - Rainfall intensity for a specific storm freq. w/ 5 min duration (in/hr)
- P - Total precipitation for a specific storm freq. and duration (ft)
- P_{F, FLUSH} - First Flush precipitation (0.5 in = 0.0416 ft), in feet
- Q_i - Peak flow, for a specific storm freq. w/ 5 min duration (cfs)
- V_{F, FLUSH} - First Flush runoff volume
- V - Runoff volume, for a specific storm freq. and duration (ac-ft)

Precipitation Data (Medium Subbasin)

I (10 yr-15 min) =	2.93	in/hr
I (25 yr-15 min) =	3.60	in/hr
I (50 yr-15 min) =	4.13	in/hr
I (100 yr-15 min) =	4.66	in/hr

Precipitation Data (Large Subbasin)

I (10 yr-30 min) =	1.98	in/hr
I (25 yr-30 min) =	2.43	in/hr
I (50 yr-30 min) =	2.78	in/hr
I (100 yr-30 min) =	3.14	in/hr

Subbasin ID	Total		Paved		Un-paved		Total		Comp.		Q ¹⁰ _i (cfs)	Q ²⁵ _i (cfs)	Q ⁵⁰ _i (cfs)	Q ¹⁰⁰ _i (cfs)	V _{F, FLUSH} (ac-ft)	V ¹⁰ _{2hr} (ac-ft)	V ⁵⁰ _{2hr} (ac-ft)	V ¹⁰⁰ _{2hr} (ac-ft)	Notes	Seq. Number
	Area (sqft)	C	Area (sqft)	C	Area (acres)	C	Area (cfs)	C												
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)			
1	74053.91	74054	0.95	0	0.45	1.700	0.95	5.74	7.05	8.08	9.10	0.068	0.185	0.258	0.290	on-grade	C&G (B) 6in			
2	76966.17	76966	0.95	0	0.45	1.767	0.95	5.96	7.32	8.40	9.46	0.070	0.192	0.268	0.301					
3	88641.15	88641	0.95	0	0.45	2.035	0.95	6.87	8.43	9.67	10.89	0.081	0.221	0.308	0.347					
4	43862.38	43862	0.95	0	0.45	1.007	0.95	3.40	4.18	4.79	5.39	0.040	0.110	0.153	0.172					
5	276498.2	246236	0.95	30262	0.45	6.348	0.90	20.29	24.91	28.57	32.17	0.239	0.653	0.910	1.024					
6	586692	311221	0.95	275471	0.45	13.469	0.72	28.42	34.92	40.06	45.20	0.405	1.108	1.544	1.738					
7	113594.5	8687	0.95	104908	0.45	2.608	0.49	4.54	5.58	6.39	7.20	0.054	0.146	0.204	0.229					
8	65404.23	65404	0.95	0	0.45	1.501	0.95	5.07	6.22	7.13	8.03	0.060	0.163	0.228	0.256					
9	217765.8	217766	0.95	0	0.45	4.999	0.95	16.86	20.71	23.75	26.74	0.198	0.543	0.756	0.851					
10	273369.7	273370	0.95	0	0.45	6.276	0.95	21.17	26.00	29.82	33.57	0.249	0.681	0.949	1.069					
11	265691.3	265691	0.95	0	0.45	6.099	0.95	20.57	25.27	28.98	32.63	0.242	0.662	0.923	1.039					
12	248027.5	248028	0.95	0	0.45	5.694	0.95	19.21	23.59	27.05	30.46	0.226	0.618	0.861	0.970					
13	264186.3	264186	0.95	0	0.45	6.065	0.95	20.46	25.13	28.81	32.44	0.241	0.658	0.918	1.033					
14	273393.2	273393	0.95	0	0.45	6.276	0.95	21.17	26.00	29.82	33.57	0.249	0.681	0.950	1.069					
15	271496	246290	0.95	25206	0.45	6.233	0.90	19.92	24.46	28.05	31.59	0.234	0.641	0.893	1.006					
16	272727.2	213885	0.95	58842	0.45	6.261	0.84	18.68	22.94	26.30	29.61	0.220	0.601	0.838	0.943					
17	198704	198704	0.95	0	0.45	4.562	0.95	15.39	18.90	21.67	24.40	0.181	0.495	0.690	0.777					
18	112997.5	112998	0.95	0	0.45	2.594	0.95	8.75	10.75	12.33	13.88	0.103	0.282	0.393	0.442					
19	30424.24	30424	0.95	0	0.45	0.698	0.95	2.36	2.90	3.32	3.74	0.028	0.076	0.106	0.119					
20	101360	101360	0.95	0	0.45	2.327	0.95	7.85	9.64	11.06	12.45	0.093	0.253	0.352	0.397					
21	73532.06	73532	0.95	0	0.45	1.688	0.95	5.70	7.00	8.02	9.03	0.067	0.184	0.256	0.288					
22	253331.2	253331	0.95	0	0.45	5.816	0.95	19.62	24.09	27.63	31.11	0.231	0.631	0.880	0.990					
23	358152.8	358153	0.95	0	0.45	8.222	0.95	27.73	34.06	39.06	43.98	0.326	0.892	1.244	1.400					
24	353563.6	353564	0.95	0	0.45	8.117	0.95	27.38	33.63	38.56	43.42	0.322	0.881	1.228	1.382					
25	1076095	1040605	0.95	35490	0.45	24.704	0.93	67.32	82.71	94.89	107.07	0.958	2.623	3.657	4.117					
26	842188.1	842188	0.95	0	0.45	19.334	0.95	53.82	66.13	75.86	85.60	0.766	2.097	2.924	3.291					
27	431662.6	431663	0.95	0	0.45	9.910	0.95	33.43	41.05	47.08	53.01	0.393	1.075	1.499	1.687					
28	112149.5	112150	0.95	0	0.45	2.575	0.95	8.69	10.67	12.24	13.78	0.102	0.280	0.390	0.439					
29	320133	320133	0.95	0	0.45	7.349	0.95	24.79	30.44	34.91	39.31	0.291	0.798	1.112	1.251					
30	101541.7	101542	0.95	0	0.45	2.331	0.95	7.87	9.66	11.08	12.47	0.093	0.253	0.353	0.397					
31	118511	118511	0.95	0	0.45	2.721	0.95	9.18	11.28	12.93	14.56	0.108	0.296	0.412	0.464					
32	292348.9	292349	0.95	0	0.45	6.711	0.95	22.64	27.80	31.88	35.90	0.266	0.728	1.015	1.143					
33	2195829	2118572	0.95	77258	0.45	50.409	0.93	92.83	113.92	130.33	147.21	1.954	5.353	7.462	8.400					
34	107198.5	107199	0.95	0	0.45	2.461	0.95	8.30	10.20	11.69	13.17	0.098	0.267	0.373	0.419					
35	157756.5	157757	0.95	0	0.45	3.622	0.95	12.22	15.01	17.21	19.38	0.144	0.393	0.548	0.617					
36	609855.7	609856	0.95	0	0.45	14.000	0.95	38.97	47.88	54.93	61.98	0.555	1.519	2.117	2.383					

Computation Sheet

Project Tempe Smith Innovation Hub
Subject Existing Rational Onsite
Task Onsite Rational Calculations
Job No. 10290347

Computed AST **Date** 4/6/2021
Checked AC **Date** 4/12/2021
Doc. ID

Precipitation Data (Small Subbasin)

I (10 yr-10 min) =	3.55	in/hr
I (25 yr-10 min) =	4.36	in/hr
I (50 yr-10 min) =	5.00	in/hr
I (100 yr-10 min) =	5.63	in/hr
P (10 yr-2 hr) =	1.37	in
P (25 yr-2 hr) =	1.68	in
P (50 yr-2 hr) =	1.91	in
P (100 yr-2 hr) =	2.15	in

Formulae

$$C_{COMPOSIT} = (A_{PAVED} * C_{PAVED} + A_{UN-PAVED} * C_{UN-PAVED}) / A_{TOTAL}$$

$$Q_i = A_{TOTAL} * C_{COMPOSIT} * I$$

$$V_{F, FLUSH} = A_{TOTAL} * C_{COMPOSIT} * P_{F, FLUSH}$$

$$V = A_{TOTAL} * C_{COMPOSIT} * P$$

Parameters

- A - Drainage area (Paved, Un-paved and Total), in acres (ac)
- C - Runoff coefficient (C_{PAVED} = 0.95, C_{UN-PAVED} = 0.45)
- I - Rainfall intensity for a specific storm freq. w/ 5 min duration (in/hr)
- P - Total precipitation for a specific storm freq. and duration (ft)
- P_{F, FLUSH} - First Flush precipitation (0.5 in = 0.0416 ft), in feet
- Q_i - Peak flow, for a specific storm freq. w/ 5 min duration (cfs)
- V_{F, FLUSH} - First Flush runoff volume
- V - Runoff volume, for a specific storm freq. and duration (ac-ft)

Precipitation Data (Medium Subbasin)

I (10 yr-15 min) =	2.93	in/hr
I (25 yr-15 min) =	3.60	in/hr
I (50 yr-15 min) =	4.13	in/hr
I (100 yr-15 min) =	4.66	in/hr

Precipitation Data (Large Subbasin)

I (10 yr-30 min) =	1.98	in/hr
I (25 yr-30 min) =	2.43	in/hr
I (50 yr-30 min) =	2.78	in/hr
I (100 yr-30 min) =	3.14	in/hr

Subbasin ID	Total		Paved		Un-paved		Total Comp.		Q ¹⁰ _i (cfs)	Q ²⁵ _i (cfs)	Q ⁵⁰ _i (cfs)	Q ¹⁰⁰ _i (cfs)	V _{F, FLUSH} (ac-ft)	V ¹⁰ _{2hr} (ac-ft)	V ⁵⁰ _{2hr} (ac-ft)	V ¹⁰⁰ _{2hr} (ac-ft)	Notes		Seq. Number
	Area (sqft)	C	Area (sqft)	C	Area (sqft)	C	Area (acres)	C									Condition	Boundary	
37	33328.38	0.95	33328	0.95	0	0.45	0.765	0.95	2.58	3.17	3.64	4.10	0.031	0.083	0.116	0.131			
38	654402.3	0.95	542055	0.95	112348	0.45	15.023	0.86	37.86	46.52	53.36	60.21	0.539	1.476	2.057	2.315			
39	275900.9	0.95	275901	0.95	0	0.45	6.334	0.95	21.37	26.24	30.09	33.88	0.251	0.687	0.958	1.079			
40	279714.5	0.95	270263	0.95	9452	0.45	6.421	0.93	21.20	26.04	29.86	33.62	0.249	0.682	0.951	1.070			
41	290974.7	0.95	290975	0.95	0	0.45	6.680	0.95	22.53	27.67	31.73	35.73	0.265	0.725	1.011	1.137			
42	162905.5	0.95	162906	0.95	0	0.45	3.740	0.95	12.62	15.50	17.77	20.01	0.149	0.406	0.566	0.637			
43	24324.06	0.95	24324	0.95	0	0.45	0.558	0.95	1.89	2.32	2.66	2.99	0.023	0.061	0.085	0.096			
44	115291.6	0.95	115292	0.95	0	0.45	2.647	0.95	8.93	10.97	12.58	14.16	0.105	0.288	0.401	0.451			



Appendix F. Traffic Memo



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Memo

Date: Tuesday, October 19, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: **Traffic**

Introduction

This technical memo summarizes the planning-level analysis conducted of the existing traffic conditions in the Smith Innovation Hub and the surrounding streets. In support of the Smith Innovation Hub Infrastructure Master Plan, 24-hour traffic counts, including vehicular classification data, were collected at six locations within the Smith Innovation Hub in March 2021. Field visits were also conducted to make observations about existing traffic conditions. The purpose of this analysis is to inform recommendations for proposed streetscape improvements within the Smith Innovation Hub.

Existing Conditions

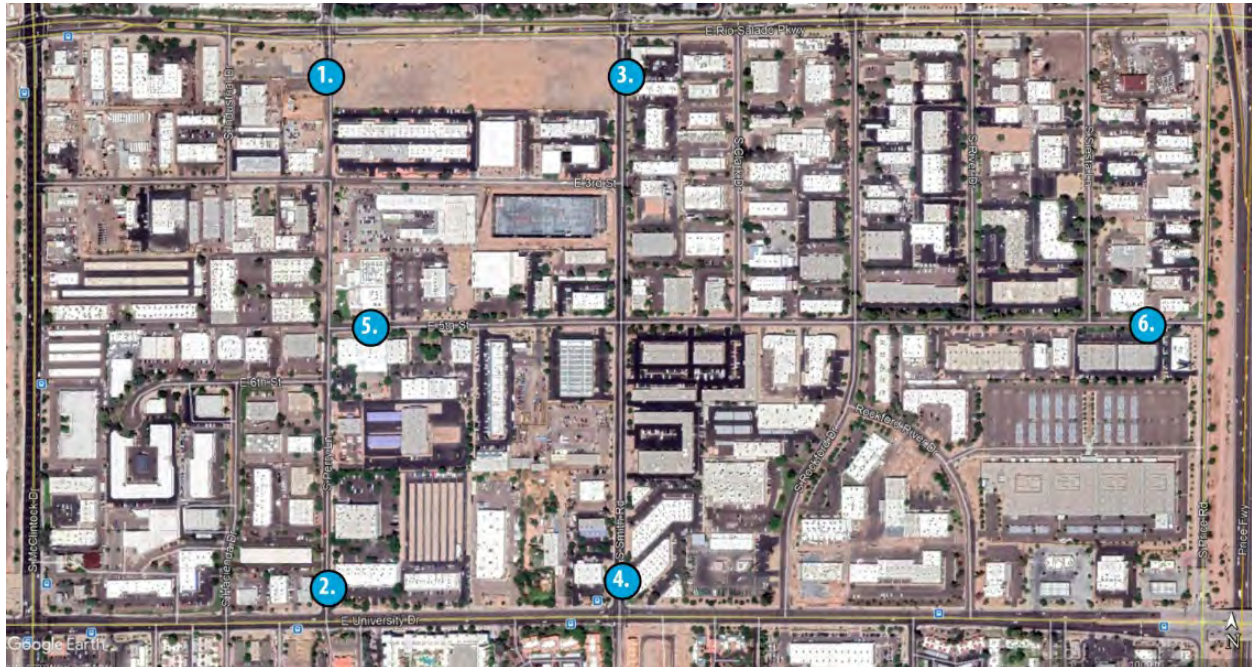
Traffic counts were collected on Tuesday, March 9th, 2021 for a period of 24 hours at the following six locations within the Smith Innovation Hub:

1. Perry Lane south of Rio Salado Parkway
2. Perry Lane north of University Drive
3. Smith Road south of Rio Salado Parkway
4. Smith Road north of University Drive
5. 5th Street east of Perry Lane
6. 5th Street west of Price Road

Figure 1 shows the traffic count locations.



Figure 1. Locations of Traffic Counts Collected



These locations were selected to be representative of the main entrances/exits of the Smith Innovation hub, and key locations within the site. The counts identified traffic classifications as bicycles (when operating in the street, as opposed to on sidewalks), buses, cars and trailers, and 10 categories of trucks (with varying number of axles). The traffic counts provided directional splits (northbound, southbound, eastbound, or westbound) as well as a combined total bi-directional count.

Existing traffic counts along the streets bordering the site were also considered. MAG (Maricopa Association of Governments) 24-hour traffic counts (recorded in 2018 or 2019) for Rio Salado Parkway, University Drive, McClintock Drive, and Price Road were reviewed to characterize traffic patterns in the area.

A site visit was conducted on Friday, March 5th, 2021 to observe traffic patterns in the Smith Innovation Hub. These observations, along with other observations made during subsequent field visits, were documented in a field observation memo dated March 19th, 2021. The most pertinent traffic-related observations are summarized below.

- Significant use of on-street parking was observed throughout the site, though surface parking lots are prevalent in the area.
- Vehicles observed parking in areas prohibited by “no parking” signage.
- Bicyclists and pedestrians were observed in various locations throughout the site, despite the lack of sidewalk facilities in many cases.



- Large trucks were observed staging for deliveries and pick-ups in the Smith Road two-way-left-turn-lane in the northern segment of Smith Road. In one instance, a truck was observed parked in the two-way-left-turn-lane for over an hour.

Traffic Analysis

Existing traffic counts for internal site streets and streets bordering the site, as well as field observations were used to analyze the traffic patterns in the Smith Innovation Hub area. Traffic pattern observations are summarized below

- Approximately 11% to 20% of all traffic is classified as large trucks, depending on the location within the site.
- Most count locations measured between 5 and 17 bicyclists per day, depending on location within the site.
- Traffic internal to the site peaks in the mid-day between 11AM and 4PM, while traffic on the streets surrounding the site have much more noticeable AM and PM peaks at 7AM to 8AM and 5PM to 6PM.
- Commercial traffic internal to the site trends earlier in the afternoon, while passenger cars internal to the site trend later in the day.
- Approximately 100 buses per day were counted along Smith Road.

Recommendations

Streetscape improvement recommendations are consistent with the Smith Industrial Innovation Hub General Plan Amendment goals to “Invest in amenities and infrastructure to support Smith Innovation Hub, such as lighting, sidewalks, road improvements, shade, transit, public art and bike lanes.” Short term traffic-related streetscape improvements are summarized below.

- Right-of-way acquisition to accommodate street improvements including curb and gutter, on-street parking, and sidewalks on Perry lane north of Fifth Street.
- Pavement marking improvements to include on-street parking along the remainder of Perry Lane, and along Fifth Street from Perry Lane to Smith Road to accommodate additional on-street parking usage in the area.
- Pavement marking improvements to include protected bike lanes along Smith Road to implement the Bikelt! bicycle route improvements through the Smith Innovation Hub.
- Pavement marking improvements to maintain the two-way-left-turn-lane along Smith Road to accommodate truck traffic and facilitate business access.



- Sidewalk and ramp improvements along Smith Road, Perry Lane, and Fifth Street to accommodate and promote increased pedestrian activity in the area.
- Bus shelter improvements along Smith Road to provide shade at the existing (four) bus stops and accommodate and promote increased pedestrian activity in the area.

Appendix F-1: SIH Traffic Counts

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-001
Smith Rd north of University Dr
33.423587, -111.900480
Latitude: 0' 0.0000 Undefined

Northbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	3	1	3	1	0	0	0	0	0	0	0	0	8
01:00	0	0	1	0	2	0	0	0	0	0	0	0	0	3
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	1	0	3	0	0	0	0	0	0	0	0	6
04:00	1	12	3	0	4	0	0	0	0	0	0	0	0	20
05:00	0	32	15	3	12	0	0	2	1	0	0	0	0	65
06:00	0	42	15	2	13	0	0	0	0	0	0	0	0	72
07:00	0	74	13	4	29	1	0	1	4	0	0	0	0	126
08:00	0	77	27	4	29	2	0	2	0	0	0	0	0	141
09:00	3	73	29	5	26	1	0	2	0	0	0	0	0	139
10:00	1	96	14	2	28	3	1	1	1	0	0	0	0	147
11:00	1	121	20	6	35	2	0	0	0	0	0	0	1	186
12 PM	1	136	35	5	18	2	0	1	1	0	0	0	0	199
13:00	1	107	25	2	23	1	0	1	1	0	0	0	0	161
14:00	1	130	18	4	20	2	0	2	0	0	0	0	0	177
15:00	1	138	31	5	24	0	0	0	0	0	0	0	0	199
16:00	0	124	22	2	17	0	0	1	1	0	0	0	0	167
17:00	0	128	17	2	14	1	0	0	1	0	0	0	0	163
18:00	0	106	17	2	14	0	0	0	0	0	0	0	0	139
19:00	1	90	11	2	11	1	0	0	0	0	0	0	0	116
20:00	0	48	5	1	3	0	0	0	0	0	0	0	0	57
21:00	0	26	2	2	0	0	0	0	0	0	0	0	0	30
22:00	0	27	0	2	1	0	0	0	0	0	0	0	0	30
23:00	0	16	3	2	0	1	0	0	0	0	0	0	0	22
Day Total	11	1609	325	60	327	17	1	13	10	0	0	0	1	2374
Percent	0.5%	67.8%	13.7%	2.5%	13.8%	0.7%	0.0%	0.5%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	11:00	09:00	11:00	11:00	10:00	10:00	05:00	07:00				11:00	11:00
Vol.	3	121	29	6	35	3	1	2	4				1	186
PM Peak	12:00	15:00	12:00	12:00	15:00	12:00		14:00	12:00					12:00
Vol.	1	138	35	5	24	2		2	1					199
Grand Total	11	1609	325	60	327	17	1	13	10	0	0	0	1	2374
Percent	0.5%	67.8%	13.7%	2.5%	13.8%	0.7%	0.0%	0.5%	0.4%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-001
Smith Rd north of University Dr
33.423587, -111.900480
Latitude: 0' 0.0000 Undefined

Southbound

Start Time	Bikes	Cars & Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	15	1	2	1	0	0	0	1	0	0	0	0	20
01:00	0	1	1	0	1	0	0	0	0	0	0	0	0	3
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
03:00	0	4	0	0	1	0	0	0	0	0	0	0	0	5
04:00	0	2	1	1	0	0	0	1	0	0	0	0	0	5
05:00	0	5	6	1	3	1	0	0	0	0	0	0	0	16
06:00	1	7	5	2	10	0	1	1	0	0	0	0	0	27
07:00	0	23	7	4	12	2	0	1	1	0	0	0	0	50
08:00	0	27	18	3	11	1	0	1	1	0	0	0	0	62
09:00	1	38	10	3	26	1	0	1	0	0	0	0	0	80
10:00	0	60	12	2	23	0	0	2	0	0	0	0	0	99
11:00	0	77	18	3	27	0	0	0	1	0	0	0	0	126
12 PM	0	99	17	4	26	3	0	0	3	0	0	0	0	152
13:00	0	100	30	6	24	3	0	2	1	0	0	0	0	166
14:00	0	113	25	3	32	0	0	0	1	0	0	0	0	174
15:00	0	141	34	3	30	0	0	0	1	0	0	0	0	209
16:00	0	155	38	3	29	0	0	1	0	0	0	0	0	226
17:00	1	146	16	2	23	0	0	0	0	0	0	0	0	188
18:00	0	118	18	2	19	0	0	0	0	0	0	0	0	157
19:00	0	106	15	2	7	0	0	0	0	0	0	0	0	130
20:00	0	82	13	2	3	0	0	0	0	0	0	0	0	100
21:00	0	65	6	2	4	1	0	0	0	0	0	0	0	78
22:00	0	39	5	2	1	0	0	0	0	0	0	0	0	47
23:00	0	28	2	2	1	0	0	0	0	0	0	0	0	33
Day Total	3	1452	298	54	315	12	1	10	10	0	0	0	0	2155
Percent	0.1%	67.4%	13.8%	2.5%	14.6%	0.6%	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	11:00	08:00	07:00	11:00	07:00	06:00	10:00	00:00					11:00
Vol.	1	77	18	4	27	2	1	2	1					126
PM Peak	17:00	16:00	16:00	13:00	14:00	12:00		13:00	12:00					16:00
Vol.	1	155	38	6	32	3		2	3					226
Grand Total	3	1452	298	54	315	12	1	10	10	0	0	0	0	2155
Percent	0.1%	67.4%	13.8%	2.5%	14.6%	0.6%	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-001
Smith Rd north of University Dr
33.423587, -111.900480
Latitude: 0' 0.0000 Undefined

Northbound, Southbound

Start Time	Bikes	Cars & Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	18	2	5	2	0	0	0	1	0	0	0	0	28
01:00	0	1	2	0	3	0	0	0	0	0	0	0	0	6
02:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
03:00	0	6	1	0	4	0	0	0	0	0	0	0	0	11
04:00	1	14	4	1	4	0	0	1	0	0	0	0	0	25
05:00	0	37	21	4	15	1	0	2	1	0	0	0	0	81
06:00	1	49	20	4	23	0	1	1	0	0	0	0	0	99
07:00	0	97	20	8	41	3	0	2	5	0	0	0	0	176
08:00	0	104	45	7	40	3	0	3	1	0	0	0	0	203
09:00	4	111	39	8	52	2	0	3	0	0	0	0	0	219
10:00	1	156	26	4	51	3	1	3	1	0	0	0	0	246
11:00	1	198	38	9	62	2	0	0	1	0	0	0	1	312
12 PM	1	235	52	9	44	5	0	1	4	0	0	0	0	351
13:00	1	207	55	8	47	4	0	3	2	0	0	0	0	327
14:00	1	243	43	7	52	2	0	2	1	0	0	0	0	351
15:00	1	279	65	8	54	0	0	0	1	0	0	0	0	408
16:00	0	279	60	5	46	0	0	2	1	0	0	0	0	393
17:00	1	274	33	4	37	1	0	0	1	0	0	0	0	351
18:00	0	224	35	4	33	0	0	0	0	0	0	0	0	296
19:00	1	196	26	4	18	1	0	0	0	0	0	0	0	246
20:00	0	130	18	3	6	0	0	0	0	0	0	0	0	157
21:00	0	91	8	4	4	1	0	0	0	0	0	0	0	108
22:00	0	66	5	4	2	0	0	0	0	0	0	0	0	77
23:00	0	44	5	4	1	1	0	0	0	0	0	0	0	55
Day Total	14	3061	623	114	642	29	2	23	20	0	0	0	1	4529
Percent	0.3%	67.6%	13.8%	2.5%	14.2%	0.6%	0.0%	0.5%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	11:00	08:00	11:00	11:00	07:00	06:00	08:00	07:00				11:00	11:00
Vol.	4	198	45	9	62	3	1	3	5				1	312
PM Peak	12:00	15:00	15:00	12:00	15:00	12:00		13:00	12:00					15:00
Vol.	1	279	65	9	54	5		3	4					408
Grand Total	14	3061	623	114	642	29	2	23	20	0	0	0	1	4529
Percent	0.3%	67.6%	13.8%	2.5%	14.2%	0.6%	0.0%	0.5%	0.4%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-002
Smith Rd south of Rio Salado Pkwy
33.428314, -111.900481
Latitude: 0' 0.0000 Undefined

Northbound

Start Time	Bikes	Cars & Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	2	1	2	0	0	0	0	0	0	0	0	0	5
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
04:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
05:00	0	12	3	1	0	0	0	1	1	0	0	0	0	18
06:00	0	14	5	3	8	2	0	0	0	0	0	0	0	32
07:00	0	35	8	3	9	0	0	0	0	0	0	0	0	55
08:00	1	35	17	1	14	0	0	1	0	0	0	0	0	69
09:00	0	60	12	4	11	1	0	1	1	0	0	0	0	90
10:00	0	86	18	6	19	1	0	1	0	0	0	0	0	131
11:00	0	115	29	3	18	0	0	1	1	0	0	0	0	167
12 PM	0	140	22	3	18	0	0	3	1	0	0	0	0	187
13:00	0	105	20	2	30	2	0	2	0	0	0	0	0	161
14:00	0	146	18	3	23	0	0	0	0	0	0	0	0	190
15:00	0	148	19	2	16	0	0	0	0	0	0	0	0	185
16:00	0	140	17	3	19	0	0	2	2	0	0	0	0	183
17:00	0	140	14	2	13	0	1	0	0	0	0	0	0	170
18:00	0	111	18	2	9	0	0	0	0	0	0	0	0	140
19:00	0	100	8	2	9	0	0	0	0	0	0	0	0	119
20:00	1	48	5	2	2	0	0	0	0	0	0	0	0	58
21:00	0	38	1	2	0	0	0	0	0	0	0	0	0	41
22:00	0	15	1	2	1	0	0	0	0	0	0	0	0	19
23:00	0	10	1	2	0	0	0	0	0	0	0	0	0	13
Day Total	2	1511	237	50	220	6	1	12	6	0	0	0	0	2045
Percent	0.1%	73.9%	11.6%	2.4%	10.8%	0.3%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	10:00	10:00	06:00		05:00	05:00					11:00
Vol.	1	115	29	6	19	2		1	1					167
PM Peak	20:00	15:00	12:00	12:00	13:00	13:00	17:00	12:00	16:00					14:00
Vol.	1	148	22	3	30	2	1	3	2					190
Grand Total	2	1511	237	50	220	6	1	12	6	0	0	0	0	2045
Percent	0.1%	73.9%	11.6%	2.4%	10.8%	0.3%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-002
Smith Rd south of Rio Salado Pkwy
33.428314, -111.900481
Latitude: 0' 0.0000 Undefined

Southbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	8	0	0	0	0	0	0	1	0	0	0	0	9
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
04:00	0	4	2	0	0	0	0	0	1	0	0	0	0	7
05:00	1	13	7	1	3	0	0	0	0	0	0	0	0	25
06:00	0	15	10	2	4	2	0	1	0	0	0	0	0	34
07:00	1	53	20	2	8	2	0	1	1	0	0	0	0	88
08:00	0	41	11	3	12	3	0	1	0	0	0	0	0	71
09:00	0	55	12	4	7	2	0	0	1	0	0	0	0	81
10:00	0	72	20	3	12	0	0	0	0	0	0	0	0	107
11:00	2	76	17	3	11	0	1	0	0	0	0	0	0	110
12 PM	1	115	16	4	14	1	0	0	0	0	0	0	0	151
13:00	0	108	16	1	22	1	0	2	0	0	0	0	0	150
14:00	1	97	18	4	15	0	0	0	0	0	0	0	0	135
15:00	1	106	14	3	14	2	0	1	0	0	0	0	0	141
16:00	0	110	14	4	8	0	1	0	0	0	0	0	0	137
17:00	0	107	13	1	6	0	1	0	0	0	0	0	0	128
18:00	0	108	11	2	4	0	0	0	0	0	0	0	0	125
19:00	0	87	6	2	3	0	0	0	0	0	0	0	0	98
20:00	0	80	9	2	1	0	0	0	0	0	0	0	0	92
21:00	0	54	5	2	0	0	1	0	0	0	0	0	0	62
22:00	0	29	1	2	1	0	0	0	0	0	0	0	0	33
23:00	0	19	1	2	1	0	0	0	0	0	0	0	0	23
Day Total	7	1361	224	47	146	13	4	6	4	0	0	0	0	1812
Percent	0.4%	75.1%	12.4%	2.6%	8.1%	0.7%	0.2%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	07:00	09:00	08:00	08:00	11:00	06:00	00:00					11:00
Vol.	2	76	20	4	12	3	1	1	1					110
PM Peak	12:00	12:00	14:00	12:00	13:00	15:00	16:00	13:00						12:00
Vol.	1	115	18	4	22	2	1	2						151
Grand Total	7	1361	224	47	146	13	4	6	4	0	0	0	0	1812
Percent	0.4%	75.1%	12.4%	2.6%	8.1%	0.7%	0.2%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-002
Smith Rd south of Rio Salado Pkwy
33.428314, -111.900481
Latitude: 0' 0.0000 Undefined

Northbound, Southbound

Start Time	Bikes	Cars & Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	10	1	2	0	0	0	0	1	0	0	0	0	14
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	5	1	0	1	0	0	0	0	0	0	0	0	7
04:00	0	9	2	0	0	0	0	0	1	0	0	0	0	12
05:00	1	25	10	2	3	0	0	1	1	0	0	0	0	43
06:00	0	29	15	5	12	4	0	1	0	0	0	0	0	66
07:00	1	88	28	5	17	2	0	1	1	0	0	0	0	143
08:00	1	76	28	4	26	3	0	2	0	0	0	0	0	140
09:00	0	115	24	8	18	3	0	1	2	0	0	0	0	171
10:00	0	158	38	9	31	1	0	1	0	0	0	0	0	238
11:00	2	191	46	6	29	0	1	1	1	0	0	0	0	277
12 PM	1	255	38	7	32	1	0	3	1	0	0	0	0	338
13:00	0	213	36	3	52	3	0	4	0	0	0	0	0	311
14:00	1	243	36	7	38	0	0	0	0	0	0	0	0	325
15:00	1	254	33	5	30	2	0	1	0	0	0	0	0	326
16:00	0	250	31	7	27	0	1	2	2	0	0	0	0	320
17:00	0	247	27	3	19	0	2	0	0	0	0	0	0	298
18:00	0	219	29	4	13	0	0	0	0	0	0	0	0	265
19:00	0	187	14	4	12	0	0	0	0	0	0	0	0	217
20:00	1	128	14	4	3	0	0	0	0	0	0	0	0	150
21:00	0	92	6	4	0	0	1	0	0	0	0	0	0	103
22:00	0	44	2	4	2	0	0	0	0	0	0	0	0	52
23:00	0	29	2	4	1	0	0	0	0	0	0	0	0	36
Day Total	9	2872	461	97	366	19	5	18	10	0	0	0	0	3857
Percent	0.2%	74.5%	12.0%	2.5%	9.5%	0.5%	0.1%	0.5%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	11:00	10:00	10:00	06:00	11:00	08:00	09:00					11:00
Vol.	2	191	46	9	31	4	1	2	2					277
PM Peak	12:00	12:00	12:00	12:00	13:00	13:00	17:00	13:00	16:00					12:00
Vol.	1	255	38	7	52	3	2	4	2					338
Grand Total	9	2872	461	97	366	19	5	18	10	0	0	0	0	3857
Percent	0.2%	74.5%	12.0%	2.5%	9.5%	0.5%	0.1%	0.5%	0.3%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-003
5th St west of Price Rd
33.425656, -111.893092
Latitude: 0' 0.0000 Undefined

Eastbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	3	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	1	0	1	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
04:00	0	2	0	0	3	0	0	0	0	0	0	0	0	5
05:00	1	5	2	0	2	0	0	0	0	0	0	0	0	10
06:00	0	11	6	0	7	0	0	1	0	0	0	0	0	25
07:00	1	15	13	0	10	0	0	2	0	0	0	0	0	41
08:00	0	27	12	4	9	0	0	0	0	0	0	0	0	52
09:00	0	31	13	1	19	0	0	0	0	0	0	0	0	64
10:00	1	30	5	0	15	0	0	0	0	0	0	0	0	51
11:00	0	52	13	1	21	0	0	1	0	0	0	0	0	88
12 PM	1	59	15	2	28	0	0	3	1	0	0	0	0	109
13:00	3	52	15	1	25	0	0	0	1	0	0	0	0	97
14:00	2	85	15	0	26	0	0	3	0	0	0	0	0	131
15:00	0	73	22	0	32	0	0	0	0	0	0	0	0	127
16:00	2	123	26	1	14	0	0	0	0	0	0	0	0	166
17:00	2	85	19	1	17	0	0	1	0	0	0	0	0	125
18:00	1	69	9	0	14	0	0	0	0	0	0	0	0	93
19:00	1	24	3	0	5	0	0	0	0	0	0	0	0	33
20:00	0	8	1	0	1	0	0	0	0	0	0	0	0	10
21:00	0	9	1	0	2	0	0	0	0	0	0	0	0	12
22:00	0	8	1	0	1	0	0	0	0	0	0	0	0	10
23:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Day Total	15	775	192	13	252	0	0	11	2	0	0	0	0	1260
Percent	1.2%	61.5%	15.2%	1.0%	20.0%	0.0%	0.0%	0.9%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	05:00	11:00	07:00	08:00	11:00			07:00						11:00
Vol.	1	52	13	4	21			2						88
PM Peak	13:00	16:00	16:00	12:00	15:00			12:00	12:00					16:00
Vol.	3	123	26	2	32			3	1					166
Grand Total	15	775	192	13	252	0	0	11	2	0	0	0	0	1260
Percent	1.2%	61.5%	15.2%	1.0%	20.0%	0.0%	0.0%	0.9%	0.2%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-003
5th St west of Price Rd
33.425656, -111.893092
Latitude: 0' 0.0000 Undefined

Westbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	2	2	0	1	0	0	0	0	0	0	0	0	5
06:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
07:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
08:00	0	9	4	0	0	0	0	0	0	0	0	0	0	13
09:00	0	13	2	0	2	0	0	0	0	0	0	0	0	17
10:00	0	13	5	0	3	0	0	0	0	0	0	0	0	21
11:00	0	15	3	0	1	0	0	2	0	0	0	0	0	21
12 PM	2	18	5	0	3	0	0	0	0	0	0	0	0	28
13:00	0	14	2	0	1	0	1	0	0	0	0	0	0	18
14:00	0	14	2	0	1	1	0	0	0	0	0	0	0	18
15:00	0	15	5	0	0	0	0	0	0	0	0	0	0	20
16:00	0	15	6	0	2	0	0	0	0	0	0	0	0	23
17:00	0	20	2	1	0	0	0	0	0	0	0	0	0	23
18:00	0	15	3	0	0	0	0	0	0	0	0	0	0	18
19:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
20:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
21:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
22:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Day Total	2	191	44	1	15	1	1	2	0	0	0	0	0	257
Percent	0.8%	74.3%	17.1%	0.4%	5.8%	0.4%	0.4%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.		11:00 15	10:00 5		10:00 3			11:00 2						10:00 21
PM Peak Vol.	12:00 2	17:00 20	16:00 6	17:00 1	12:00 3	14:00 1	13:00 1							12:00 28
Grand Total	2	191	44	1	15	1	1	2	0	0	0	0	0	257
Percent	0.8%	74.3%	17.1%	0.4%	5.8%	0.4%	0.4%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-003
5th St west of Price Rd
33.425656, -111.893092
Latitude: 0' 0.0000 Undefined

Eastbound, Westbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	3	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	1	0	1	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	3	2	0	1	0	0	0	0	0	0	0	0	6
04:00	0	2	0	0	3	0	0	0	0	0	0	0	0	5
05:00	1	7	4	0	3	0	0	0	0	0	0	0	0	15
06:00	0	15	7	0	7	0	0	1	0	0	0	0	0	30
07:00	1	21	14	0	10	0	0	2	0	0	0	0	0	48
08:00	0	36	16	4	9	0	0	0	0	0	0	0	0	65
09:00	0	44	15	1	21	0	0	0	0	0	0	0	0	81
10:00	1	43	10	0	18	0	0	0	0	0	0	0	0	72
11:00	0	67	16	1	22	0	0	3	0	0	0	0	0	109
12 PM	3	77	20	2	31	0	0	3	1	0	0	0	0	137
13:00	3	66	17	1	26	0	1	0	1	0	0	0	0	115
14:00	2	99	17	0	27	1	0	3	0	0	0	0	0	149
15:00	0	88	27	0	32	0	0	0	0	0	0	0	0	147
16:00	2	138	32	1	16	0	0	0	0	0	0	0	0	189
17:00	2	105	21	2	17	0	0	1	0	0	0	0	0	148
18:00	1	84	12	0	14	0	0	0	0	0	0	0	0	111
19:00	1	33	3	0	5	0	0	0	0	0	0	0	0	42
20:00	0	10	1	0	1	0	0	0	0	0	0	0	0	12
21:00	0	13	1	0	2	0	0	0	0	0	0	0	0	16
22:00	0	8	1	0	2	0	0	0	0	0	0	0	0	11
23:00	0	2	0	1	0	0	0	0	0	0	0	0	0	3
Day Total	17	966	236	14	267	1	1	13	2	0	0	0	0	1517
Percent	1.1%	63.7%	15.6%	0.9%	17.6%	0.1%	0.1%	0.9%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	05:00	11:00	08:00	08:00	11:00			11:00						11:00
Vol.	1	67	16	4	22			3						109
PM Peak	12:00	16:00	16:00	12:00	15:00	14:00	13:00	12:00	12:00					16:00
Vol.	3	138	32	2	32	1	1	3	1					189
Grand Total	17	966	236	14	267	1	1	13	2	0	0	0	0	1517
Percent	1.1%	63.7%	15.6%	0.9%	17.6%	0.1%	0.1%	0.9%	0.1%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-004
5th St east of Perry Ln
33.425603, -111.903845
Latitude: 0' 0.0000 Undefined

Eastbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	3	2	2	0	0	0	0	0	0	0	0	0	0	7
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	2	0	1	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00	1	4	2	0	2	0	0	0	0	0	0	0	0	9
06:00	1	14	4	0	2	1	0	0	0	0	0	0	0	22
07:00	3	9	3	1	8	0	0	0	0	0	0	0	0	24
08:00	2	24	7	1	6	1	0	0	0	0	0	0	0	41
09:00	8	21	8	1	10	0	0	0	0	1	0	0	0	49
10:00	5	24	5	0	12	1	0	0	0	0	0	0	0	47
11:00	9	32	9	1	5	1	0	0	0	0	0	0	0	57
12 PM	8	31	3	0	11	2	0	0	0	0	0	0	0	55
13:00	8	28	13	1	8	2	0	1	0	0	0	1	0	62
14:00	5	31	8	2	10	2	0	2	1	0	0	0	0	61
15:00	14	23	11	0	14	0	2	1	0	0	0	0	0	65
16:00	7	23	11	1	7	0	0	0	0	0	0	0	0	49
17:00	10	23	3	0	6	0	0	0	0	0	0	0	0	42
18:00	12	17	2	1	1	0	0	0	0	0	0	0	0	33
19:00	10	7	1	0	1	0	0	0	0	0	0	0	0	19
20:00	12	9	0	0	0	0	0	0	0	0	0	0	0	21
21:00	10	6	1	0	0	0	0	0	0	0	0	0	0	17
22:00	6	4	1	0	0	1	0	0	0	0	0	1	0	13
23:00	8	4	0	0	0	1	0	0	0	0	0	0	0	13
Day Total	142	340	97	9	104	12	2	4	1	1	0	2	0	714
Percent	19.9%	47.6%	13.6%	1.3%	14.6%	1.7%	0.3%	0.6%	0.1%	0.1%	0.0%	0.3%	0.0%	
AM Peak	11:00	11:00	11:00	07:00	10:00	06:00				09:00				11:00
Vol.	9	32	9	1	12	1				1				57
PM Peak	15:00	12:00	13:00	14:00	15:00	12:00	15:00	14:00	14:00			13:00		15:00
Vol.	14	31	13	2	14	2	2	2	1			1		65
Grand Total	142	340	97	9	104	12	2	4	1	1	0	2	0	714
Percent	19.9%	47.6%	13.6%	1.3%	14.6%	1.7%	0.3%	0.6%	0.1%	0.1%	0.0%	0.3%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-004
5th St east of Perry Ln
33.425603, -111.903845
Latitude: 0' 0.0000 Undefined

Westbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	3	1	0	0	0	0	0	0	0	0	0	0	4
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	1	0	0	0	1	0	0	0	0	0	0	0	2
06:00	0	5	0	0	5	1	1	0	1	0	0	0	0	13
07:00	0	6	2	1	3	2	0	1	1	0	0	0	0	16
08:00	0	6	8	1	4	0	0	0	0	0	0	0	0	19
09:00	0	11	10	0	9	0	0	1	0	0	0	0	0	31
10:00	0	11	6	0	8	0	0	0	0	0	0	0	0	25
11:00	0	24	9	1	8	1	0	0	0	0	0	0	0	43
12 PM	0	26	7	1	7	0	0	0	0	0	0	0	0	41
13:00	0	18	9	0	6	0	0	3	0	0	0	0	0	36
14:00	0	26	7	1	5	0	0	2	2	0	0	0	0	43
15:00	0	24	5	0	10	0	0	0	0	0	0	0	0	39
16:00	0	23	6	1	9	0	0	0	0	0	0	0	0	39
17:00	1	19	9	0	3	0	0	0	0	0	0	0	0	32
18:00	0	9	0	0	3	0	0	0	0	0	0	0	0	12
19:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
20:00	0	5	2	0	1	0	0	0	0	0	0	0	0	8
21:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Day Total	1	240	81	6	82	5	1	7	4	0	0	0	0	427
Percent	0.2%	56.2%	19.0%	1.4%	19.2%	1.2%	0.2%	1.6%	0.9%	0.0%	0.0%	0.0%	0.0%	
AM Peak		11:00	09:00	07:00	09:00	07:00	06:00	07:00	06:00					11:00
Vol.		24	10	1	9	2	1	1	1					43
PM Peak	17:00	12:00	13:00	12:00	15:00			13:00	14:00					14:00
Vol.	1	26	9	1	10			3	2					43
Grand Total	1	240	81	6	82	5	1	7	4	0	0	0	0	427
Percent	0.2%	56.2%	19.0%	1.4%	19.2%	1.2%	0.2%	1.6%	0.9%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-004
5th St east of Perry Ln
33.425603, -111.903845
Latitude: 0' 0.0000 Undefined

Eastbound, Westbound

Start Time	Bikes	Cars & Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	3	5	3	0	0	0	0	0	0	0	0	0	0	11
01:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
02:00	0	1	2	0	2	0	0	0	0	0	0	0	0	5
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
05:00	1	5	2	0	2	1	0	0	0	0	0	0	0	11
06:00	1	19	4	0	7	2	1	0	1	0	0	0	0	35
07:00	3	15	5	2	11	2	0	1	1	0	0	0	0	40
08:00	2	30	15	2	10	1	0	0	0	0	0	0	0	60
09:00	8	32	18	1	19	0	0	1	0	1	0	0	0	80
10:00	5	35	11	0	20	1	0	0	0	0	0	0	0	72
11:00	9	56	18	2	13	2	0	0	0	0	0	0	0	100
12 PM	8	57	10	1	18	2	0	0	0	0	0	0	0	96
13:00	8	46	22	1	14	2	0	4	0	0	0	1	0	98
14:00	5	57	15	3	15	2	0	4	3	0	0	0	0	104
15:00	14	47	16	0	24	0	2	1	0	0	0	0	0	104
16:00	7	46	17	2	16	0	0	0	0	0	0	0	0	88
17:00	11	42	12	0	9	0	0	0	0	0	0	0	0	74
18:00	12	26	2	1	4	0	0	0	0	0	0	0	0	45
19:00	10	15	1	0	1	0	0	0	0	0	0	0	0	27
20:00	12	14	2	0	1	0	0	0	0	0	0	0	0	29
21:00	10	9	1	0	0	0	0	0	0	0	0	0	0	20
22:00	6	8	1	0	0	1	0	0	0	0	0	1	0	17
23:00	8	7	0	0	0	1	0	0	0	0	0	0	0	16
Day Total	143	580	178	15	186	17	3	11	5	1	0	2	0	1141
Percent	12.5%	50.8%	15.6%	1.3%	16.3%	1.5%	0.3%	1.0%	0.4%	0.1%	0.0%	0.2%	0.0%	
AM Peak	11:00	11:00	09:00	07:00	10:00	06:00	06:00	07:00	06:00	09:00				11:00
Vol.	9	56	18	2	20	2	1	1	1	1				100
PM Peak	15:00	12:00	13:00	14:00	15:00	12:00	15:00	13:00	14:00			13:00		14:00
Vol.	14	57	22	3	24	2	2	4	3			1		104
Grand Total	143	580	178	15	186	17	3	11	5	1	0	2	0	1141
Percent	12.5%	50.8%	15.6%	1.3%	16.3%	1.5%	0.3%	1.0%	0.4%	0.1%	0.0%	0.2%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-005
Perry Ln north of University Dr
33.423168, -111.904697
Latitude: 0' 0.0000 Undefined

Northbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	5	0	0	1	0	0	0	0	0	0	0	0	6
01:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
04:00	0	5	5	0	1	0	0	0	0	0	0	0	0	11
05:00	0	20	10	0	8	0	0	0	0	0	0	0	0	38
06:00	0	19	11	0	21	0	0	0	0	0	0	0	0	51
07:00	0	27	9	1	14	0	0	0	0	0	0	0	0	51
08:00	0	43	17	1	33	0	0	0	0	0	0	0	0	94
09:00	0	27	18	1	17	1	0	1	1	0	0	0	0	66
10:00	0	23	9	1	11	0	0	1	1	0	0	0	0	46
11:00	0	39	11	5	14	0	0	1	0	0	0	0	0	70
12 PM	0	37	10	0	20	2	0	0	0	0	0	0	0	69
13:00	0	49	10	1	14	3	0	1	1	1	0	0	0	80
14:00	0	51	11	0	11	2	0	0	1	0	0	0	0	76
15:00	0	51	8	2	16	1	0	1	0	0	0	0	0	79
16:00	0	43	9	1	9	0	0	1	0	0	0	0	0	63
17:00	1	42	2	0	2	0	0	0	0	0	0	0	0	47
18:00	0	50	3	0	3	0	0	0	0	0	0	0	0	56
19:00	0	41	5	1	0	0	0	0	0	0	0	0	0	47
20:00	0	38	1	0	1	0	0	0	1	0	0	0	0	41
21:00	0	30	2	0	0	0	0	0	0	0	0	0	0	32
22:00	0	19	3	0	0	0	0	0	0	0	0	0	0	22
23:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
Day Total	1	674	157	14	197	9	0	6	5	1	0	0	0	1064
Percent	0.1%	63.3%	14.8%	1.3%	18.5%	0.8%	0.0%	0.6%	0.5%	0.1%	0.0%	0.0%	0.0%	
AM Peak		08:00	09:00	11:00	08:00	09:00		09:00	09:00					08:00
Vol.		43	18	5	33	1		1	1					94
PM Peak	17:00	14:00	14:00	15:00	12:00	13:00		13:00	13:00	13:00				13:00
Vol.	1	51	11	2	20	3		1	1	1				80
Grand Total	1	674	157	14	197	9	0	6	5	1	0	0	0	1064
Percent	0.1%	63.3%	14.8%	1.3%	18.5%	0.8%	0.0%	0.6%	0.5%	0.1%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-005
Perry Ln north of University Dr
33.423168, -111.904697
Latitude: 0' 0.0000 Undefined

Southbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	5	0	0	1	0	0	0	0	0	0	0	0	6
01:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	1	1	0	0	0	0	1	0	0	0	0	0	3
05:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
06:00	0	6	4	0	7	2	0	0	0	0	0	0	0	19
07:00	0	11	6	0	14	0	0	1	0	0	0	0	0	32
08:00	0	16	12	0	9	1	0	0	1	0	0	0	0	39
09:00	1	24	18	1	18	0	0	0	0	0	0	0	0	62
10:00	1	46	15	2	10	1	0	0	1	0	0	0	0	76
11:00	0	66	8	1	13	1	0	0	0	0	0	0	0	89
12 PM	0	79	11	0	20	0	0	0	0	0	0	0	0	110
13:00	0	60	19	0	12	0	0	3	0	0	0	0	0	94
14:00	0	77	20	0	19	0	0	3	1	0	0	0	0	120
15:00	0	86	19	1	20	0	0	0	0	0	0	0	0	126
16:00	0	84	17	0	14	1	0	0	0	0	0	0	0	116
17:00	0	87	4	0	4	0	0	0	0	0	0	0	0	95
18:00	0	59	4	0	6	0	0	0	0	0	0	0	0	69
19:00	0	74	3	0	2	0	0	0	0	0	0	0	0	79
20:00	2	58	2	0	1	1	1	1	0	0	0	0	0	66
21:00	0	45	1	0	2	0	0	0	0	0	0	0	0	48
22:00	0	36	2	0	0	0	0	0	0	0	0	0	0	38
23:00	0	17	1	0	1	0	0	0	0	0	0	0	0	19
Day Total	4	951	169	5	173	7	1	9	3	0	0	0	0	1322
Percent	0.3%	71.9%	12.8%	0.4%	13.1%	0.5%	0.1%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	11:00	09:00	10:00	09:00	06:00		04:00	08:00					11:00
Vol.	1	66	18	2	18	2		1	1					89
PM Peak	20:00	17:00	14:00	15:00	12:00	16:00	20:00	13:00	14:00					15:00
Vol.	2	87	20	1	20	1	1	3	1					126
Grand Total	4	951	169	5	173	7	1	9	3	0	0	0	0	1322
Percent	0.3%	71.9%	12.8%	0.4%	13.1%	0.5%	0.1%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-005
Perry Ln north of University Dr
33.423168, -111.904697
Latitude: 0' 0.0000 Undefined

Northbound, Southbound

Start Time	Bikes	Cars & Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	10	0	0	2	0	0	0	0	0	0	0	0	12
01:00	0	9	3	0	0	0	0	0	0	0	0	0	0	12
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
04:00	0	6	6	0	1	0	0	1	0	0	0	0	0	14
05:00	0	26	10	0	8	0	0	0	0	0	0	0	0	44
06:00	0	25	15	0	28	2	0	0	0	0	0	0	0	70
07:00	0	38	15	1	28	0	0	1	0	0	0	0	0	83
08:00	0	59	29	1	42	1	0	0	1	0	0	0	0	133
09:00	1	51	36	2	35	1	0	1	1	0	0	0	0	128
10:00	1	69	24	3	21	1	0	1	2	0	0	0	0	122
11:00	0	105	19	6	27	1	0	1	0	0	0	0	0	159
12 PM	0	116	21	0	40	2	0	0	0	0	0	0	0	179
13:00	0	109	29	1	26	3	0	4	1	1	0	0	0	174
14:00	0	128	31	0	30	2	0	3	2	0	0	0	0	196
15:00	0	137	27	3	36	1	0	1	0	0	0	0	0	205
16:00	0	127	26	1	23	1	0	1	0	0	0	0	0	179
17:00	1	129	6	0	6	0	0	0	0	0	0	0	0	142
18:00	0	109	7	0	9	0	0	0	0	0	0	0	0	125
19:00	0	115	8	1	2	0	0	0	0	0	0	0	0	126
20:00	2	96	3	0	2	1	1	1	1	0	0	0	0	107
21:00	0	75	3	0	2	0	0	0	0	0	0	0	0	80
22:00	0	55	5	0	0	0	0	0	0	0	0	0	0	60
23:00	0	27	2	0	1	0	0	0	0	0	0	0	0	30
Day Total	5	1625	326	19	370	16	1	15	8	1	0	0	0	2386
Percent	0.2%	68.1%	13.7%	0.8%	15.5%	0.7%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	11:00	09:00	11:00	08:00	06:00		04:00	10:00					11:00
Vol.	1	105	36	6	42	2		1	2					159
PM Peak	20:00	15:00	14:00	15:00	12:00	13:00	20:00	13:00	14:00	13:00				15:00
Vol.	2	137	31	3	40	3	1	4	2	1				205
Grand Total	5	1625	326	19	370	16	1	15	8	1	0	0	0	2386
Percent	0.2%	68.1%	13.7%	0.8%	15.5%	0.7%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-006
Perry Ln south of Rio Salado Pkwy
33.428328, -111.904680
Latitude: 0' 0.0000 Undefined

Northbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:00	0	1	0	0	2	0	0	0	0	0	0	0	0	3
06:00	0	3	0	0	11	2	0	0	0	0	0	0	0	16
07:00	0	6	6	0	3	4	0	0	0	0	0	0	0	19
08:00	0	17	8	0	8	1	0	0	1	0	0	0	0	35
09:00	0	26	10	0	7	0	0	1	0	1	0	0	0	45
10:00	0	29	9	0	4	0	0	0	0	0	0	0	0	42
11:00	1	53	11	1	15	2	0	1	0	0	0	0	0	84
12 PM	0	51	11	1	15	2	0	0	1	0	0	0	0	81
13:00	0	43	7	0	11	0	0	0	0	0	0	0	0	61
14:00	1	35	6	0	12	0	0	1	0	0	0	0	0	55
15:00	3	59	18	1	11	2	0	2	0	0	0	0	0	96
16:00	0	57	12	1	10	3	0	1	1	0	0	0	0	85
17:00	0	67	6	0	6	1	0	0	0	0	0	0	0	80
18:00	0	36	3	0	2	0	0	0	0	0	0	0	0	41
19:00	0	36	3	0	1	1	0	0	0	0	0	0	0	41
20:00	0	19	2	0	1	0	0	0	0	0	0	0	0	22
21:00	0	18	1	0	0	0	0	0	0	0	0	0	0	19
22:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
Day Total	5	564	117	4	119	18	0	6	3	1	0	0	0	837
Percent	0.6%	67.4%	14.0%	0.5%	14.2%	2.2%	0.0%	0.7%	0.4%	0.1%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	11:00	11:00	11:00	07:00		09:00	08:00	09:00				11:00
Vol.	1	53	11	1	15	4		1	1	1				84
PM Peak	15:00	17:00	15:00	12:00	12:00	16:00		15:00	12:00					15:00
Vol.	3	67	18	1	15	3		2	1					96
Grand Total	5	564	117	4	119	18	0	6	3	1	0	0	0	837
Percent	0.6%	67.4%	14.0%	0.5%	14.2%	2.2%	0.0%	0.7%	0.4%	0.1%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-006
Perry Ln south of Rio Salado Pkwy
33.428328, -111.904680
Latitude: 0' 0.0000 Undefined

Southbound

Start Time	Bikes	Cars & Trls	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	2	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
05:00	1	6	1	0	6	0	0	0	0	0	0	0	0	14
06:00	0	15	8	0	8	1	0	0	0	0	0	0	0	32
07:00	1	23	15	0	6	0	0	0	0	0	0	0	0	45
08:00	0	29	12	0	6	1	0	0	0	0	0	0	0	48
09:00	0	44	15	2	10	0	0	0	0	0	0	0	0	71
10:00	0	52	6	2	10	0	0	0	0	0	0	0	0	70
11:00	0	73	9	0	10	0	0	0	0	0	0	0	0	92
12 PM	0	63	16	1	8	1	0	1	0	0	0	0	0	90
13:00	0	54	13	0	11	1	0	2	1	0	0	0	0	82
14:00	0	57	13	0	9	0	0	1	0	0	0	0	0	80
15:00	1	42	16	0	10	0	0	0	0	0	0	0	0	69
16:00	0	54	6	2	6	0	0	0	0	0	0	0	0	68
17:00	0	56	1	0	4	0	0	0	0	0	0	0	0	61
18:00	1	43	7	0	1	0	0	0	0	0	0	0	0	52
19:00	0	56	2	0	2	0	0	0	0	0	0	0	0	60
20:00	3	39	1	0	0	0	0	0	0	0	0	0	0	43
21:00	1	24	3	0	0	0	0	0	0	0	0	0	0	28
22:00	0	15	0	0	0	0	0	0	0	0	0	0	0	15
23:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
Day Total	8	756	144	7	108	4	0	4	1	0	0	0	0	1032
Percent	0.8%	73.3%	14.0%	0.7%	10.5%	0.4%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	05:00	11:00	07:00	09:00	09:00	06:00								11:00
Vol.	1	73	15	2	10	1								92
PM Peak	20:00	12:00	12:00	16:00	13:00	12:00		13:00	13:00					12:00
Vol.	3	63	16	2	11	1		2	1					90
Grand Total	8	756	144	7	108	4	0	4	1	0	0	0	0	1032
Percent	0.8%	73.3%	14.0%	0.7%	10.5%	0.4%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	

Field Data Services of Arizona

31894 Whitetail Ln.
Temecula, CA 92592
520.316.6745

Site Code: Tues 03/09/21
Station ID: 21-1116-006
Perry Ln south of Rio Salado Pkwy
33.428328, -111.904680
Latitude: 0' 0.0000 Undefined

Northbound, Southbound

Start Time	Bikes	Cars & Tlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Total
03/09/21	0	2	1	0	0	0	0	0	0	0	0	0	0	3
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	1	0	1	0	0	0	0	0	0	0	0	2
05:00	1	7	1	0	8	0	0	0	0	0	0	0	0	17
06:00	0	18	8	0	19	3	0	0	0	0	0	0	0	48
07:00	1	29	21	0	9	4	0	0	0	0	0	0	0	64
08:00	0	46	20	0	14	2	0	0	1	0	0	0	0	83
09:00	0	70	25	2	17	0	0	1	0	1	0	0	0	116
10:00	0	81	15	2	14	0	0	0	0	0	0	0	0	112
11:00	1	126	20	1	25	2	0	1	0	0	0	0	0	176
12 PM	0	114	27	2	23	3	0	1	1	0	0	0	0	171
13:00	0	97	20	0	22	1	0	2	1	0	0	0	0	143
14:00	1	92	19	0	21	0	0	2	0	0	0	0	0	135
15:00	4	101	34	1	21	2	0	2	0	0	0	0	0	165
16:00	0	111	18	3	16	3	0	1	1	0	0	0	0	153
17:00	0	123	7	0	10	1	0	0	0	0	0	0	0	141
18:00	1	79	10	0	3	0	0	0	0	0	0	0	0	93
19:00	0	92	5	0	3	1	0	0	0	0	0	0	0	101
20:00	3	58	3	0	1	0	0	0	0	0	0	0	0	65
21:00	1	42	4	0	0	0	0	0	0	0	0	0	0	47
22:00	0	20	1	0	0	0	0	0	0	0	0	0	0	21
23:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
Day Total	13	1320	261	11	227	22	0	10	4	1	0	0	0	1869
Percent	0.7%	70.6%	14.0%	0.6%	12.1%	1.2%	0.0%	0.5%	0.2%	0.1%	0.0%	0.0%	0.0%	
AM Peak	05:00	11:00	09:00	09:00	11:00	07:00		09:00	08:00	09:00				11:00
Vol.	1	126	25	2	25	4		1	1	1				176
PM Peak	15:00	17:00	15:00	16:00	12:00	12:00		13:00	12:00					12:00
Vol.	4	123	34	3	23	3		2	1					171
Grand Total	13	1320	261	11	227	22	0	10	4	1	0	0	0	1869
Percent	0.7%	70.6%	14.0%	0.6%	12.1%	1.2%	0.0%	0.5%	0.2%	0.1%	0.0%	0.0%	0.0%	

Appendix F-2: MAG Traffic Counts

Location Info	
Location ID	35699_NB
Type	LINK
Functional Class	-
Located On	McClintock Dr
Between	Rio Salado Pkwy AND University Dr
Direction	NB
Community	Tempe
MPO_ID	
HPMS ID	
Agency	Maricopa Association of Governments

Count Data Info	
Start Date	11/20/2019
End Date	11/21/2019
Start Time	12:00 AM
End Time	12:00 AM
Direction	
Notes	
Count Source	
File Name	31-11-20-19.xls
Weather	
Study	
Owner	qsun
QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	30	37	17	18	102
01:00 - 02:00	22	19	19	25	85
02:00 - 03:00	18	11	13	19	61
03:00 - 04:00	13	15	16	22	66
04:00 - 05:00	22	43	40	63	168
05:00 - 06:00	50	67	121	123	361
06:00 - 07:00	124	182	252	269	827
07:00 - 08:00	291	336	330	295	1252
08:00 - 09:00	269	278	276	241	1064
09:00 - 10:00	173	198	179	158	708
10:00 - 11:00	173	170	152	185	680
11:00 - 12:00	200	192	189	178	759
12:00 - 13:00	184	205	184	165	738
13:00 - 14:00	183	182	186	158	709
14:00 - 15:00	148	192	180	192	712
15:00 - 16:00	198	187	248	200	833
16:00 - 17:00	232	228	239	215	914
17:00 - 18:00	255	220	250	227	952
18:00 - 19:00	238	228	201	172	839
19:00 - 20:00	179	153	154	144	630
20:00 - 21:00	143	121	146	126	536
21:00 - 22:00	117	105	87	76	385
22:00 - 23:00	71	68	58	49	246
23:00 - 24:00	43	33	31	50	157
TOTAL					13784

Location Info		Count Data Info	
Location ID	35699_SB	Start Date	11/20/2019
Type	LINK	End Date	11/21/2019
Functional Class	-	Start Time	12:00 AM
Located On	McClintock Dr	End Time	12:00 AM
Between	Rio Salado Pkwy AND University Dr	Direction	
Direction	SB	Notes	
Community	Tempe	Count Source	
MPO_ID		File Name	31-11-20-19.xls
HPMS ID		Weather	
Agency	Maricopa Association of Governments	Study	
		Owner	qsun
		QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	46	34	25	19	124
01:00 - 02:00	33	23	26	23	105
02:00 - 03:00	12	21	7	25	65
03:00 - 04:00	12	18	15	17	62
04:00 - 05:00	12	23	28	23	86
05:00 - 06:00	49	30	62	82	223
06:00 - 07:00	78	86	96	122	382
07:00 - 08:00	144	158	179	170	651
08:00 - 09:00	165	155	200	180	700
09:00 - 10:00	141	147	151	146	585
10:00 - 11:00	155	140	157	160	612
11:00 - 12:00	169	191	191	171	722
12:00 - 13:00	164	210	187	205	766
13:00 - 14:00	192	189	210	236	827
14:00 - 15:00	211	263	265	301	1040
15:00 - 16:00	330	388	400	422	1540
16:00 - 17:00	430	461	449	518	1858
17:00 - 18:00	461	495	457	442	1855
18:00 - 19:00	434	449	360	286	1529
19:00 - 20:00	253	218	196	182	849
20:00 - 21:00	177	183	145	155	660
21:00 - 22:00	122	136	107	112	477
22:00 - 23:00	108	94	76	74	352
23:00 - 24:00	81	54	54	41	230
TOTAL					16300

Location Info		Count Data Info	
Location ID	35740	Start Date	9/25/2019
Type	LINK	End Date	9/26/2019
Functional Class	-	Start Time	12:00 AM
Located On	Price Rd	End Time	12:00 AM
Between	Rio Salado Pkwy AND University Dr	Direction	1-WAY
Direction	1-WAY	Notes	
Community	Tempe	Count Source	
MPO_ID		File Name	29-9-25-19.xls
HPMS ID		Weather	
Agency	Maricopa Association of Governments	Study	
		Owner	qsun
		QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	34	23	22	26	105
01:00 - 02:00	15	22	11	11	59
02:00 - 03:00	11	16	13	7	47
03:00 - 04:00	13	11	7	6	37
04:00 - 05:00	9	10	27	22	68
05:00 - 06:00	26	37	59	58	180
06:00 - 07:00	57	74	91	121	343
07:00 - 08:00	132	181	167	176	656
08:00 - 09:00	171	146	127	122	566
09:00 - 10:00	106	115	118	97	436
10:00 - 11:00	106	111	121	127	465
11:00 - 12:00	155	149	144	161	609
12:00 - 13:00	127	151	176	182	636
13:00 - 14:00	184	183	199	193	759
14:00 - 15:00	209	220	219	246	894
15:00 - 16:00	240	220	248	221	929
16:00 - 17:00	240	244	255	253	992
17:00 - 18:00	264	230	249	274	1017
18:00 - 19:00	246	287	273	180	986
19:00 - 20:00	192	203	178	119	692
20:00 - 21:00	132	135	111	138	516
21:00 - 22:00	123	118	103	112	456
22:00 - 23:00	101	61	83	56	301
23:00 - 24:00	60	54	35	29	178
TOTAL					11927

Location Info		Count Data Info	
Location ID	30464_EB	Start Date	2/20/2019
Type	LINK	End Date	2/21/2019
Functional Class	5	Start Time	12:00 AM
Located On	Rio Salado Pkwy	End Time	12:00 AM
Between	McClintock Dr AND Loop 101 Fwy	Direction	
Direction	EB	Notes	
Community	Tempe	Count Source	
MPO_ID		File Name	30464_EB.xlsx
HPMS ID		Weather	
Agency	Maricopa Association of Governments	Study	
		Owner	tra2018
		QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	21	17	20	12	70
01:00 - 02:00	5	5	14	8	32
02:00 - 03:00	8	12	13	7	40
03:00 - 04:00	6	11	9	13	39
04:00 - 05:00	8	12	10	19	49
05:00 - 06:00	31	50	88	99	268
06:00 - 07:00	74	96	109	144	423
07:00 - 08:00	97	109	103	110	419
08:00 - 09:00	110	133	113	128	484
09:00 - 10:00	121	130	95	140	486
10:00 - 11:00	123	120	126	138	507
11:00 - 12:00	132	174	180	183	669
12:00 - 13:00	192	200	224	221	837
13:00 - 14:00	194	216	179	169	758
14:00 - 15:00	211	198	217	281	907
15:00 - 16:00	272	283	269	332	1156
16:00 - 17:00	323	398	315	351	1387
17:00 - 18:00	327	375	321	370	1393
18:00 - 19:00	299	319	265	202	1085
19:00 - 20:00	216	199	141	175	731
20:00 - 21:00	157	169	126	114	566
21:00 - 22:00	120	206	190	93	609
22:00 - 23:00	86	59	55	58	258
23:00 - 24:00	42	31	21	27	121
TOTAL					13294

Location Info	
Location ID	30464_WB
Type	LINK
Functional Class	5
Located On	Rio Salado Pkwy
Between	McClintock Dr AND Loop 101 Fwy
Direction	WB
Community	Tempe
MPO_ID	
HPMS ID	
Agency	Maricopa Association of Governments

Count Data Info	
Start Date	2/20/2019
End Date	2/21/2019
Start Time	12:00 AM
End Time	12:00 AM
Direction	
Notes	
Count Source	
File Name	30464_WB.xlsx
Weather	
Study	
Owner	tra2018
QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	12	12	9	6	39
01:00 - 02:00	11	8	5	10	34
02:00 - 03:00	3	10	3	6	22
03:00 - 04:00	6	8	6	10	30
04:00 - 05:00	13	20	20	21	74
05:00 - 06:00	30	39	57	108	234
06:00 - 07:00	124	190	275	336	925
07:00 - 08:00	359	444	503	458	1764
08:00 - 09:00	467	422	374	306	1569
09:00 - 10:00	256	163	135	143	697
10:00 - 11:00	139	165	138	154	596
11:00 - 12:00	156	173	213	184	726
12:00 - 13:00	205	167	179	175	726
13:00 - 14:00	169	166	162	170	667
14:00 - 15:00	149	169	195	165	678
15:00 - 16:00	205	164	206	149	724
16:00 - 17:00	221	160	157	166	704
17:00 - 18:00	243	213	193	193	842
18:00 - 19:00	202	198	194	138	732
19:00 - 20:00	144	160	107	109	520
20:00 - 21:00	99	96	103	87	385
21:00 - 22:00	98	71	62	69	300
22:00 - 23:00	39	48	45	29	161
23:00 - 24:00	23	38	26	14	101
TOTAL					13250

Location Info		Count Data Info	
Location ID	35784_EB	Start Date	3/21/2018
Type	LINK	End Date	3/22/2018
Functional Class	-	Start Time	12:00 AM
Located On	University Dr	End Time	12:00 AM
Between	McClintock Dr AND Price Rd	Direction	
Direction	EB	Notes	
Community	Tempe	Count Source	
MPO_ID		File Name	30-03-21-2018.xls
HPMS ID		Weather	
Agency	Maricopa Association of Governments	Study	
		Owner	qsun
		QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	58	55	50	38	201
01:00 - 02:00	46	34	21	28	129
02:00 - 03:00	30	32	32	25	119
03:00 - 04:00	20	19	26	26	91
04:00 - 05:00	28	25	34	43	130
05:00 - 06:00	36	70	77	67	250
06:00 - 07:00	106	89	114	117	426
07:00 - 08:00	132	170	181	158	641
08:00 - 09:00	121	189	173	171	654
09:00 - 10:00	187	185	196	199	767
10:00 - 11:00	205	236	223	221	885
11:00 - 12:00	227	210	268	232	937
12:00 - 13:00	256	255	234	272	1017
13:00 - 14:00	309	307	294	281	1191
14:00 - 15:00	280	333	338	315	1266
15:00 - 16:00	356	380	357	383	1476
16:00 - 17:00	447	454	440	527	1868
17:00 - 18:00	530	462	501	510	2003
18:00 - 19:00	452	422	330	290	1494
19:00 - 20:00	291	263	271	241	1066
20:00 - 21:00	235	233	222	200	890
21:00 - 22:00	219	196	159	151	725
22:00 - 23:00	175	164	167	160	666
23:00 - 24:00	117	95	94	67	373
TOTAL					19265

Location Info		Count Data Info	
Location ID	35784_WB	Start Date	3/21/2018
Type	LINK	End Date	3/22/2018
Functional Class	-	Start Time	12:00 AM
Located On	University Dr	End Time	12:00 AM
Between	McClintock Dr AND Price Rd	Direction	
Direction	WB	Notes	
Community	Tempe	Count Source	
MPO_ID		File Name	30-03-21-2018.xls
HPMS ID		Weather	
Agency	Maricopa Association of Governments	Study	
		Owner	qsun
		QC Status	Accepted

Interval: 15 mins					
Time	15 Min				Hourly Count
	1st	2nd	3rd	4th	
00:00 - 01:00	38	32	45	41	156
01:00 - 02:00	30	38	27	23	118
02:00 - 03:00	24	19	19	18	80
03:00 - 04:00	16	17	33	39	105
04:00 - 05:00	26	52	97	104	279
05:00 - 06:00	98	153	239	277	767
06:00 - 07:00	277	298	473	519	1567
07:00 - 08:00	476	447	415	403	1741
08:00 - 09:00	388	407	390	333	1518
09:00 - 10:00	325	301	300	299	1225
10:00 - 11:00	296	241	248	268	1053
11:00 - 12:00	226	270	325	287	1108
12:00 - 13:00	266	249	243	246	1004
13:00 - 14:00	271	246	250	258	1025
14:00 - 15:00	232	255	243	252	982
15:00 - 16:00	228	235	244	216	923
16:00 - 17:00	253	242	240	240	975
17:00 - 18:00	234	256	263	271	1024
18:00 - 19:00	271	196	234	237	938
19:00 - 20:00	229	230	204	172	835
20:00 - 21:00	165	165	151	153	634
21:00 - 22:00	121	119	133	117	490
22:00 - 23:00	115	124	100	76	415
23:00 - 24:00	51	63	49	36	199
TOTAL					19161



Appendix G. Safety Memo



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Memo

Date: Tuesday, October 19, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: **Safety**

Introduction

This technical memo summarizes the planning-level analysis conducted of the existing safety conditions in the Smith Innovation Hub and the surrounding streets. The City of Tempe provided the latest 5 calendar years (2015-2019) of ADOT (Arizona Department of Transportation) crash data for the Smith Innovation Hub project site and bordering streets. Field visits were also conducted to make observations about existing safety conditions.

The purpose of this analysis is to inform recommendations for proposed streetscape improvements within the Smith Innovation Hub. The arterial streets bordering the Smith Innovation Hub were not the focus of this study, however, intersections where the Smith Innovation Hub internal streets intersect with the bordering streets were included in the analysis. These arterial streets are under the management of the City of Tempe; with the exception that Price Road, along the eastern border of the Smith Innovation Hub, is managed by ADOT.

Existing Conditions

The crash data was narrowed down to crashes that occurred on the internal site streets plus crashes that occurred at intersections of the internal site streets with bordering streets. However, crashes internal to the site were the main focus of this study.

Figure 1 shows the location of all crashes internal to the site for the 5 year period.



Figure 2. Crashes By Street

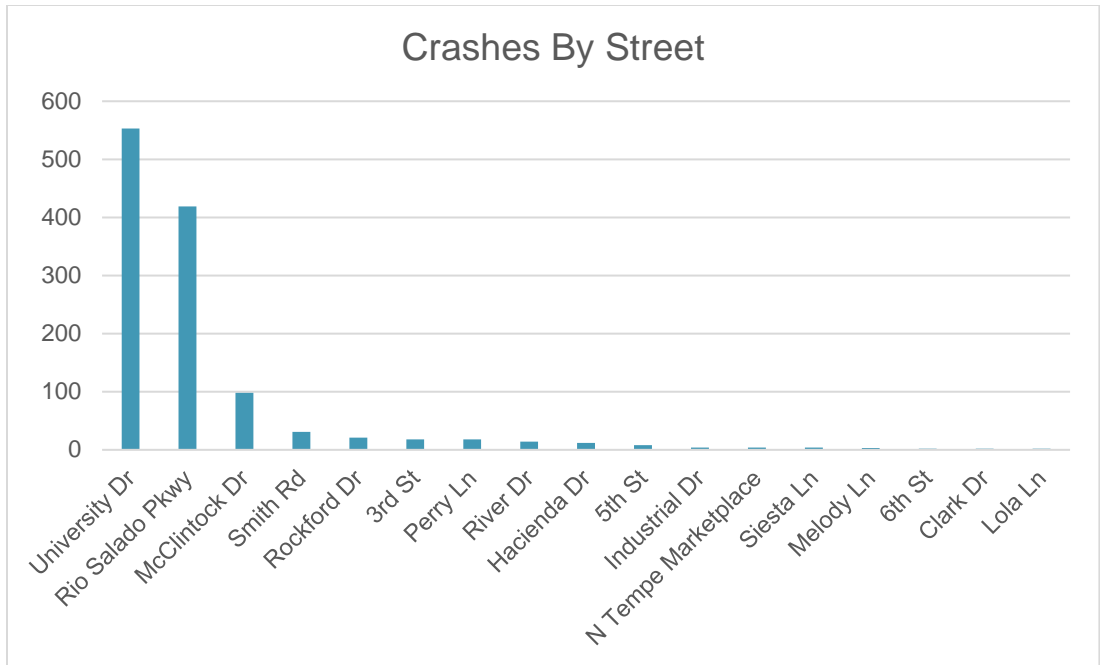


Figure 2 shows that the number of bordering street intersection crashes is far greater than the internal site crashes. The rest of the crash analysis is focused on the crashes occurring internal to the site, which are most relevant to the safety conditions within the Smith Innovation Hub.



Figure 3. Crashes By Street Internal to Site

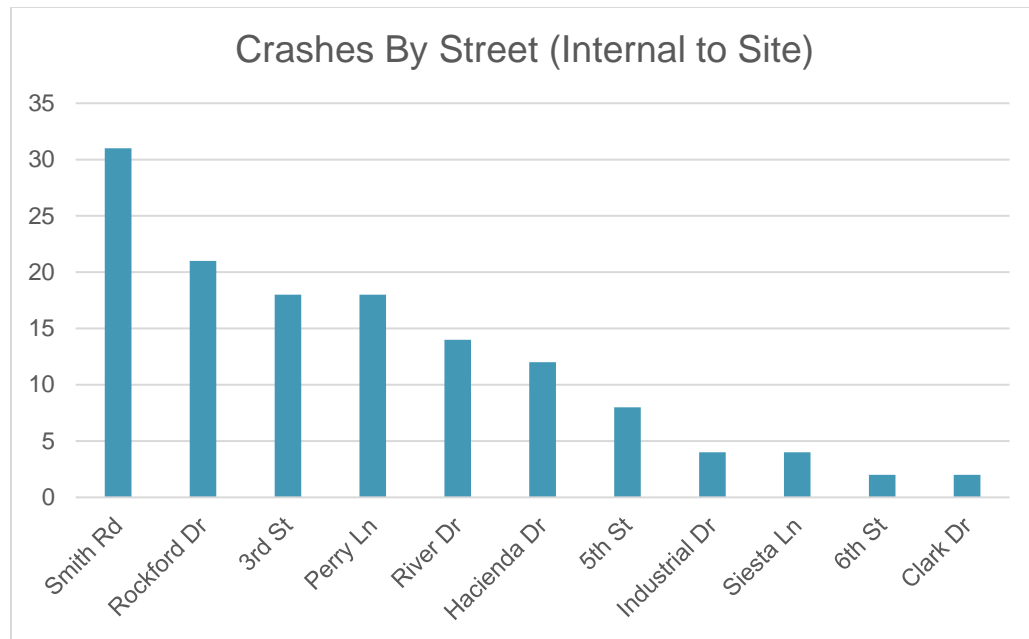


Figure 3 shows the number of crashes that occurred on internal site streets. Smith Road had the highest number of crashes with 31 crashes occurring over the five-year time period.

Figure 4. Crash Severity Internal to Site

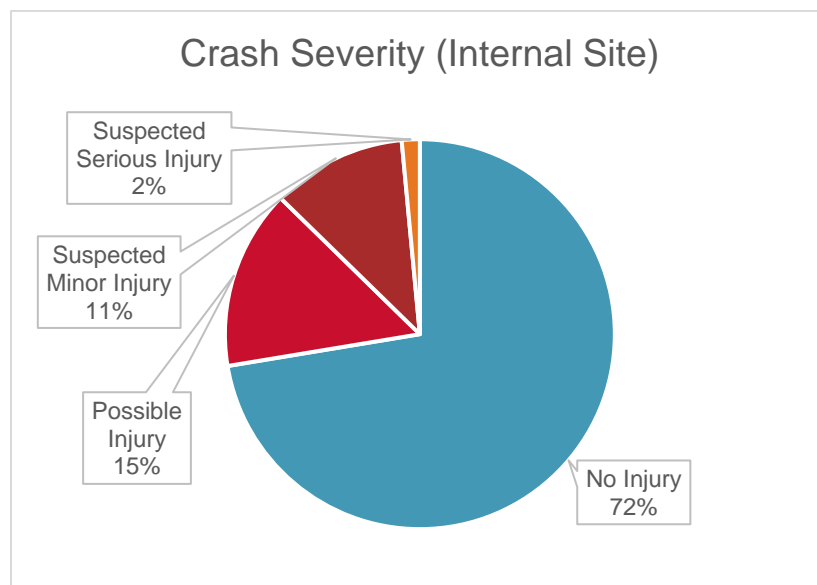


Figure 4 shows the breakdown of crash severity for the Smith Innovation Hub crashes. 72 percent of crashes during the five-year study period were no injury / property damage only crashes.



Figure 5. Crash Manner Internal to Site

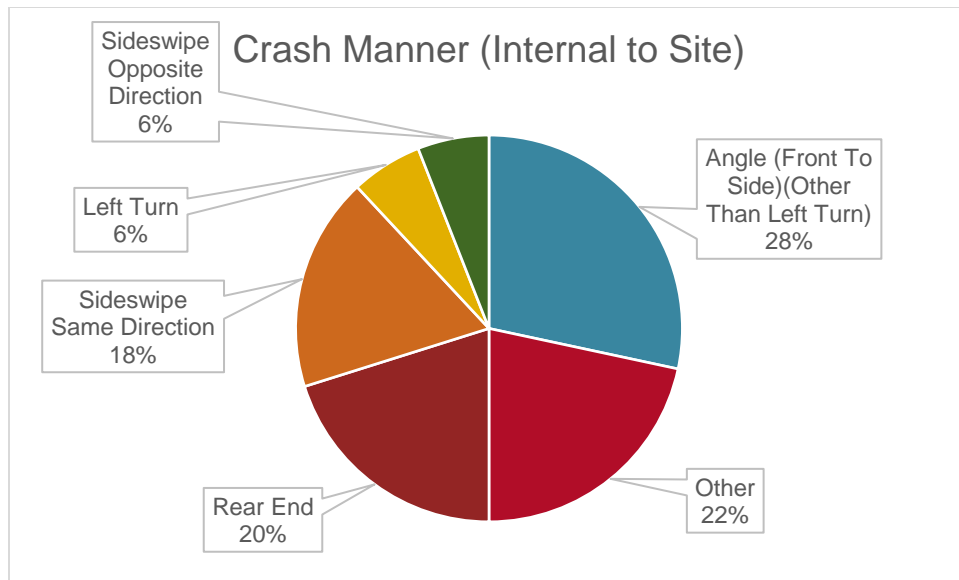


Figure 5 shows the breakdown of the manner of crashes in the Smith Innovation Hub. The most common types of crashes were angle (28 percent), rear end (20 percent), and sideswipe same direction (18 percent).

Figure 6. Crash Factors Internal to Site

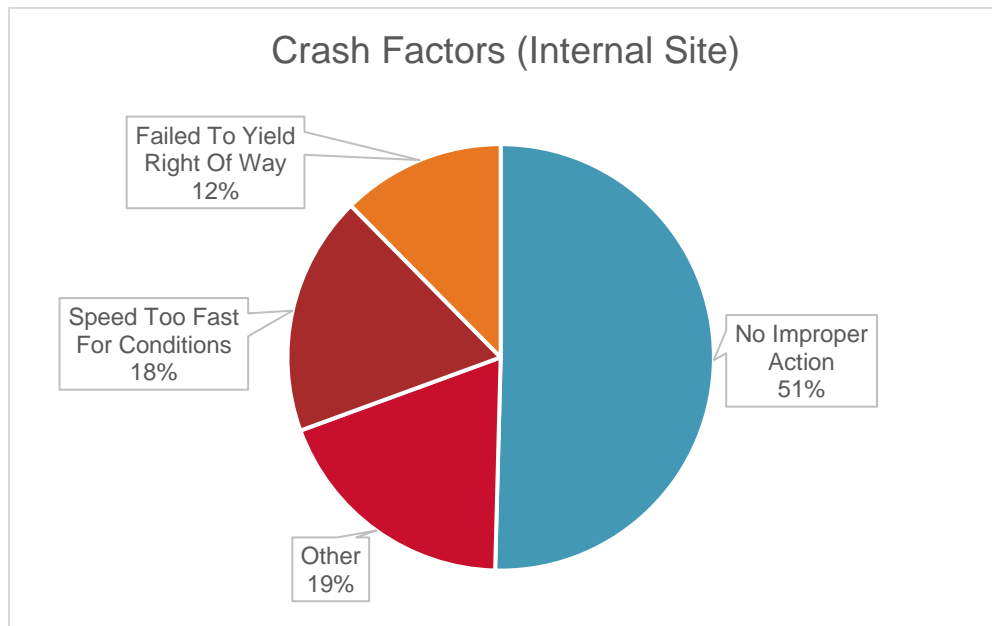


Figure 6 shows the percentages of crash causes. No improper action was reported as the most common crash cause (51 percent), followed by speed too fast for conditions (18 percent), and failed to yield right of way (12 percent).



Figure 7. Pedestrian / Bike Involved Crashes

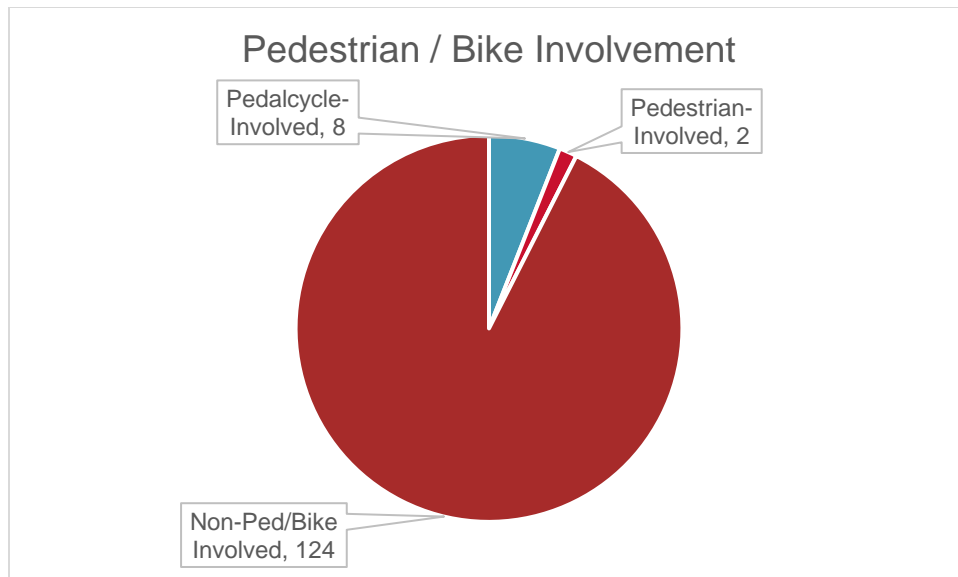


Figure 7 shows the number of pedestrian or bicycle-involved crashes internal to the site. Two pedestrian-involved crashes occurred during the five-year study period, both of them occurring on Smith Road. Eight pedalcycle-involved crashes occurred during the five-year study period, with six of them occurring on Perry Lane, and the other two occurring on Smith Road.

Recommendations

Streetscape improvement recommendations are consistent with the Smith Industrial Innovation Hub General Plan Amendment goals to “Invest in amenities and infrastructure to support Smith Innovation Hub, such as lighting, sidewalks, road improvements, shade, transit, public art and bike lanes.” Proposed additional residential, retail, and office land use in the area warrants additional improvements to enhance safety for bicyclists and pedestrians.

No conclusions were drawn as a result of the crash data analysis that indicate conditions that can be remedied by countermeasures. However, streetscape improvements that may be implemented in the short-term to improve safety are summarized below.

- Pavement marking improvements to include protected bike lanes along Smith Road to enhance bike safety in the area.
- Sidewalk and ramp improvements along Smith Road, Perry Lane, and 5th Street to enhance pedestrian safety in the area.
- Street lighting improvements along Smith Road, Perry Lane, and 5th Street to enhance visibility and safety in the area.

Appendix G-1: Crash Data

Incident ID	Incident Microfilm	Incident Date & Time	Incident On Road	Incident Crossing Feature	Incident Offset	Incident Injury Severity Description	Incident First Harmful Description	Incident Collision Manner Desc	Incident Light Condition Desc	Incident Weather Desc	Incident Intersection Desc	Incident Junction Condition Desc	Incident Traffic Way Type Desc	Incident File Number	Incident Officer Nbr	Unit Body Style	Unit Travel Direction Desc	Unit Action Desc	Unit Road Condition Desc	Unit Surface Condition Desc	Unit Env Condition Desc	Unit Defect Desc1	Unit Number	Unit Event Sequence Desc1	Unit Event Sequence Desc2	Unit Event Sequence Desc3	Unit Event Sequence Desc4	Unit Event Sequence Desc5	Unit Event Sequence Desc6	Unit Event Sequence Desc7	Unit Event Sequence Desc8	Unit Event Sequence Desc9	Unit Event Sequence Desc10	Person Type Desc	Person Safety Device Desc	Person Violation Desc1	Person Physical Desc1	Person Physical Desc2	Person Physical Desc3	Person Physical Desc4	Person Physical Desc5	Person Physical Desc6	Person Physical Desc7	Person Physical Desc8	Person Physical Desc9	Person Physical Desc10	Longitude	X	Y	Geocode On Road	Geocode Crossing Feature	Geocode Offset (miles)	Offset (miles)					
250639		1/23/2015 11:48:00 AM	07 ROCKFORD DR	University Dr		50 - No Injury	Motor Vehicle In Transport	Sideways Same Direction	Daylight	Clear	T Intersection	Intersection Related Non Interchange	Two Way Not Divided	1510035	0729	Truck Lx Luch Wagon	2 - South	Making Right Turn	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence											33.4225378	-111.8960396	70567.4138	881305.963	Rockford Dr	University Dr	0.010416687							
250649		1/23/2015 11:48:00 AM	07 ROCKFORD DR	University Dr		50 - No Injury	Motor Vehicle In Transport	Sideways Same Direction	Daylight	Clear	T Intersection	Intersection Related Non Interchange	Two Way Not Divided	1510035	0729	Passenger 4Dw Station Wagon 4	2 - South	Stopped In Trafficway	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence												33.4225378	-111.8960396	70567.4138	881305.963	Rockford Dr	University Dr	0.010416687						
250748		2/2/2015 6:33:00 PM	07 ROCKFORD DR	University Dr		100 - No Injury	Motor Vehicle In Transport	Sideways Same Direction	Dark	Clear	Not At An Intersection	Not Junction Related	Two Way Not Divided	1514702	0729	Passenger 34W Van 3 4 Ton	1 - North	Overtaking	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence												33.4227378	-111.8960396	70567.6843	881305.963	Rockford Dr	University Dr	0.018983934						
250749		2/2/2015 6:33:00 PM	07 ROCKFORD DR	University Dr		100 - No Injury	Motor Vehicle In Transport	Sideways Same Direction	Dark	Clear	Not At An Intersection	Not Junction Related	Two Way Not Divided	1514702	0729	Passenger 4Dsw Sedan 4 Dr	1 - North	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence												33.4227378	-111.8960396	70567.6843	881305.963	Rockford Dr	University Dr	0.018983934						
250779		5/18/2015 9:53:00 PM	07 SMITH RD	No Salado Pkwy		0 - No Injury	Motor Vehicle In Transport	Left Turn	Dark Lighted	Clear	Four Way Intersection	Intersection Not Interchange	Two Way Divided Positive Median Barrier	1562305	0729	Passenger 4Dsw Sedan 4 Dr	3 - East	Making Left Turn	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence													33.4262029	-111.9004556	70494.8244	882178.408	Smith Rd	No Salado Pkwy	0	0				
250779		5/18/2015 9:53:00 PM	07 SMITH RD	No Salado Pkwy		0 - No Injury	Motor Vehicle In Transport	Left Turn	Dark Lighted	Clear	Four Way Intersection	Intersection Not Interchange	Two Way Divided Positive Median Barrier	1562305	0729	Passenger 4Dsw Sedan 4 Dr	4 - West	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence													33.4262029	-111.9004556	70494.8244	882178.408	Smith Rd	No Salado Pkwy	0	0				
250849		8/5/2015 9:40:00 AM	07 BRD ST	Perry Ln		-40 - Possible Injury	Motor Vehicle In Transport	Rear End	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided	1594525	0729	Passenger 2Dw Hatchback 3 Dr	3 - East	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	Brakes	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence														33.4274306	-111.9049456	70375.5793	883044.234	Brd St	Perry Ln	-0.012120060				
250849		8/5/2015 9:40:00 AM	07 BRD ST	Perry Ln		-40 - Possible Injury	Motor Vehicle In Transport	Rear End	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided	1594525	0729	Passenger 4Dsw Sedan 4 Dr	3 - East	Other	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	No Impairment Action	0 - No Apparent Influence														33.4274306	-111.9049456	70375.5793	883044.234	Brd St	Perry Ln	-0.012120060				
3011621		10/16/2015 5:43:00 PM	07 SMITH RD	University Dr		70 - No Injury	Motor Vehicle In Transport	Rear End	Dark Lighted	Rain	Four Way Intersection	Intersection Related Non Interchange	Two Way Divided Unprotected Painted 4 Feet Median	1512784	0729	Passenger 12Pu Pickup 1 2 Ton	2 - South	Stopped In Trafficway	No Contributing Circumstances	Wet	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence														33.4223108	-111.9004556	70494.1238	881181.4340	Smith Rd	University Dr	0.014204544				
3011621		10/16/2015 5:43:00 PM	07 SMITH RD	University Dr		70 - No Injury	Motor Vehicle In Transport	Rear End	Dark Lighted	Rain	Four Way Intersection	Intersection Related Non Interchange	Two Way Divided Unprotected Painted 4 Feet Median	1512784	0729	Passenger 12Pu Pickup 1 2 Ton	2 - South	Stopped In Trafficway	No Contributing Circumstances	Wet	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	No Impairment Action	0 - No Apparent Influence														33.4223108	-111.9004556	70494.1238	881181.4340	Smith Rd	University Dr	0.014204544				
301814		11/20/2015 2:30:00 PM	07 SMITH RD	No Salado Pkwy		-110 - Possible Injury	Motor Vehicle In Transport	Rear End	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided With Continuous Left Turn Lane	1514322	0729	Passenger 12Pu Pickup 1 2 Ton	1 - North	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence															33.4288229	-111.9004556	70494.5771	883030.0199	Smith Rd	No Salado Pkwy	-0.220333333			
301814		11/20/2015 2:30:00 PM	07 SMITH RD	No Salado Pkwy		-110 - Possible Injury	Motor Vehicle In Transport	Rear End	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided With Continuous Left Turn Lane	1514322	0729	Passenger Cp Coupe	1 - North	Stopped In Trafficway	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Speed Too Fast For Conditions	0 - No Apparent Influence															33.4288229	-111.9004556	70494.5771	883030.0199	Smith Rd	No Salado Pkwy	-0.220333333			
301813		11/30/2015 1:44:00 PM	07 PERRY LN	No Salado Pkwy		0 - No Injury	Motor Vehicle In Transport	Other	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided	1514243	0729	Passenger Cp Coupe	3 - East	Crossing Road	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								None Used	Other	0 - No Apparent Influence															33.4292929	-111.9004556	70383.2554	883707.5287	Perry Ln	No Salado Pkwy	0.00060907			
301813		11/30/2015 1:44:00 PM	07 PERRY LN	No Salado Pkwy		0 - No Injury	Motor Vehicle In Transport	Other	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided	1514243	0729	Passenger 4Dsw Sedan 4 Dr	2 - South	Making Right Turn	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	No Impairment Action	0 - No Apparent Influence															33.4292929	-111.9004556	70383.2554	883707.5287	Perry Ln	No Salado Pkwy	0.00060907			
305030		1/1/2016 7:48:00 PM	07 SMITH RD	No Salado Pkwy		-20 - No Injury	Motor Vehicle In Transport	Sideways Opposite Direction	Dark Lighted	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided	16443	0729	Passenger 4Dw Sedan 4 Dr	2 - South	Backing	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Other	0 - No Apparent Influence															33.4292929	-111.9004556	70494.7920	88309.004	Smith Rd	No Salado Pkwy	-0.003797479			
305030		1/1/2016 7:48:00 PM	07 SMITH RD	No Salado Pkwy		-20 - No Injury	Motor Vehicle In Transport	Sideways Opposite Direction	Dark Lighted	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided	16443	0729	Passenger 4Dsw Sedan 4 Dr	1 - North	Stopped In Trafficway	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	No Impairment Action	0 - No Apparent Influence															33.4292929	-111.9004556	70494.7920	88309.004	Smith Rd	No Salado Pkwy	-0.003797479			
306130		2/27/2016 9:09:00 PM	07 SMITH RD	No Salado Pkwy		0 - No Injury	Motor Vehicle In Transport	Sideways Same Direction	Dark Lighted	Clear	Four Way Intersection	Intersection Not Interchange	Two Way Divided Positive Median Barrier	1624234	0729	Passenger 4Dsw Sedan 4 Dr	2 - South	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Unsafe Lane Change	0 - No Apparent Influence																33.4292929	-111.9004556	70494.8244	882178.408	Smith Rd	No Salado Pkwy	0	0	
306130		2/27/2016 9:09:00 PM	07 SMITH RD	No Salado Pkwy		0 - No Injury	Motor Vehicle In Transport	Sideways Same Direction	Dark Lighted	Clear	Four Way Intersection	Intersection Not Interchange	Two Way Divided Positive Median Barrier	1624234	0729	Passenger 4Dsw Sedan 4 Dr	2 - South	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	No Impairment Action	0 - No Apparent Influence															33.4292929	-111.9004556	70494.8244	882178.408	Smith Rd	No Salado Pkwy	0	0		
306130		3/1/2016 4:58:00 PM	07 ROCKFORD DR	University Dr		41 - No Injury	Motor Vehicle In Transport	Other	Daylight	Clear	T Intersection	Intersection Related Non Interchange	Two Way Not Divided	1625418	0729	Passenger Cp Coupe	1 - North	Backing	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Other	0 - No Apparent Influence															33.4225153	-111.8960396	70567.3208	881146.97	Rockford Dr	University Dr	0.007765120			
306130		3/1/2016 4:58:00 PM	07 ROCKFORD DR	University Dr		41 - No Injury	Motor Vehicle In Transport	Other	Daylight	Clear	T Intersection	Intersection Related Non Interchange	Two Way Not Divided	1625418	0729	Passenger Cp Coupe	2 - South	Stopped In Trafficway	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	No Impairment Action	0 - No Apparent Influence																33.4225153	-111.8960396	70567.3208	881146.97	Rockford Dr	University Dr	0.007765120		
309630		5/18/2016 11:49:00 AM	07 PERRY LN	No Salado Pkwy		-1	Motor Vehicle In Transport	Other	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided With Continuous Left Turn Lane	1658114	0729	Invalid	4 - West	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Not Applicable	Other	0 - No Apparent Influence															33.4292929	-111.9004556	70383.2554	883806.3857	Perry Ln	No Salado Pkwy	-0.201130004			
309630		5/18/2016 11:49:00 AM	07 PERRY LN	No Salado Pkwy		-1	Motor Vehicle In Transport	Other	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided With Continuous Left Turn Lane	1658114	0729	Passenger 12Pu Pickup 1 2 Ton	1 - North	Making Right Turn	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle In Transport								Shoulder And Lap Belt	No Impairment Action	0 - No Apparent Influence																33.4292929	-111.9004556	70383.2554	883806.3857	Perry Ln	No Salado Pkwy	-0.201130004		
309630		5/18/2016 11:49:00 AM	07 PERRY LN	No Salado Pkwy		-1	Motor Vehicle In Transport	Other	Daylight	Clear	Four Way Intersection	Intersection Related Non Interchange	Two Way Not Divided With Continuous Left Turn Lane	1658114	0729	Passenger Sw Station Wagon	4 - West	Making Left Turn	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport								Shoulder And Lap Belt	Failed To Yield Right Of Way	0 - No Apparent Influence																	33.4292929	-111.9004556	70383.2554	883806.3857	Perry Ln	No Salado Pkwy	-0.201130004	
309841		6/2/2016 11:38:00 AM	07 6TH ST	Nacunda Dr		0 - Possible Injury	Motor Vehicle In Transport	Left Turn	Daylight	Clear	T Intersection	Intersection Not Interchange	Two Way Not Divided	1664952	0729	Passenger 4Dsw Sedan 4 Dr	3 - East	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	2	Motor Vehicle																																		



Appendix H. Water Memo



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Memo

Date: Tuesday, October 19, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: **Water Infrastructure**

Scope of Work

This technical memo summarizes the planning level analysis conducted to evaluate the impact of proposed land usage changes on the City of Tempe's existing water infrastructure. The proposed land use changes are outlined in the Smith Industrial Innovation Hub General Plan Amendment. This memo also describes the findings the analysis, including recommendations to accommodate the potential water usage changes as a result of the land use changes.

Approach

To perform the water infrastructure planning analysis, the City's hydraulic model was used. The City's water system has been modeled using InfoWater. The applicable design criteria used to complete the analysis was reviewed and adopted from the City's current Water and Sewer Master Plan, dated 2016 and the City's Engineering Design Criteria. Table 1 provides basic design parameters used for this analysis.

Table 1. Proposed Land Usage and Estimated Demand

Design Parameter	Value
Mixed Usage Unit Production Rate (Average)	4,200 gal/acre-d
Industrial Usage Unit Production Rate (Average)	3,150 gal/acre-d
Non-residential fire flow	3,500 gpm for three hours
Pressure (Max/Min) Minimum Pressure with Fire Flow	40 psi, 100 psi 20 psi
Maximum Velocity	5 ft/s



The proposed land usage, corresponding acreage and estimated demand are all summarized in Table 2. Demand for each numbered development listed in Table 2 was determined. Using the City's current InfoWater hydraulic model, the Max Day Demand (MDD) scenario was analyzed which multiplies allocated demand values by a factor of 1.55. The diurnal curve built into the model adds an additional maximum factor of 1.39 resulting in a peaking factor of about 2.15.

New demands for this study were applied to nodes surrounding each development. Nodes with existing demands leading to service lines in a proposed development were prioritized for application of new demands. If the aforementioned criteria didn't exist, new demands were applied to nodes with existing demands adjacent to the proposed numbered area.

A fire flow analysis was conducted during the MDD scenario mentioned to investigate whether proposed mixed land usage will allow the existing water infrastructure to meet the City's non-residential fire flow requirement (3,500 gpm flow for three hours).

Table 2. Proposed Land Usage and Estimated Demand

ID	Land Usage	Density	Acres	Average Demand (gpm)
1	Mixed Use	High Density Urban Core (>65 du/acre)	2.08	6
2	Mixed Use	High Density Urban Core (>65 du/acre)	4.12	12
3	Mixed Use	High Density Urban Core (>65 du/acre)	4.16	12
4	Mixed Use	High Density Urban Core (>65 du/acre)	1.96	6
5	Mixed Use	High Density Urban Core (>65 du/acre)	3.04	9
6	Industrial Mixed Use	Medium Density (up to 15 du/acre)	6.92	14
7	Industrial Mixed Use	Medium Density (up to 15 du/acre)	10.20	21
10	Industrial Mixed Use	Medium Density (up to 15 du/acre)	16.31	34
9	Industrial Mixed Use	Medium Density (up to 15 du/acre)	8.48	18
8	Mixed Use	High Density (up to 65 du/acre)	8.62	25
11	Mixed Use	High Density (up to 65 du/acre)	2.99	9
13	Mixed Use	High Density (up to 65 du/acre)	3.24	9
15	Mixed Use	High Density (up to 65 du/acre)	3.31	10
17	Mixed Use	High Density Urban Core (>65 du/acre)	3.30	10
19	Mixed Use	High Density Urban Core (>65 du/acre)	3.39	10

**Table 2.** Proposed Land Usage and Estimated Demand

ID	Land Usage	Density	Acres	Average Demand (gpm)
12	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.85	21
14	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.93	21
16	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.93	21
18	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.97	21
20	Industrial Mixed Use	Medium Density (up to 15 du/acre)	10.03	21

Results and Discussion

Compared to the existing land usage, the proposed land usage didn't cause any significant change in pressure or velocity in the system under MDD scenario. None of the pipes in the area exceeded more than 5 ft/s velocity and pressure at all nodes in the area varied between 40 to 80 psi. Accordingly, all criteria imposed by the city on pipe pressure and velocity can be met under MDD scenario for the proposed mixed-industrial land usage (Tables 3 and 4).

Table 3. Model output for MDD Scenario: Pipe Velocity

Velocity	No. of Pipes (Current Usage)	No. of Pipes (Proposed Usage)
> 5 ft/s	0	0
> 10 ft/s	0	0
> 15 ft/s	0	0



Table 4. Model Output for MDD Scenario: Pipe Pressure

Pressure	No. of Pipes (Current Usage)	No. of Pipes (Proposed Usage)
< 20 psi	0	0
20-40 psi	0	0
40-80 psi	5238	5238
> 80 psi	0	0

The fire flow analysis showed that even without incorporating the proposed land usage, several of the existing fire hydrants currently cannot meet the city's non-residential fire flow requirement as shown in Figure 1. The majority of the fire hydrants not being able to meet the non-residential fire flow requirement are located northwest of the proposed Smith Innovation Hub, adjacent to the intersection of McClintock Drive, and Fifth Street and Perry Lane and Third Street. Additionally, these fire hydrants were predominantly supplied from 6-inch lines while one-third of the hydrants were receiving supply from 8-inch lines.

Applying the revised demand resulting from the proposed land usage, the conditions deteriorated slightly (Figure 2). However, by increasing the size of the identified 6-inch and 8-inch lines (supplying water to the fire hydrants that are unable to meet non-residential fire flow) to 8-inch and 12-inch lines respectively, all fire hydrants within the area will be able to meet the fire flow requirement of the City (Figure 3). An assumption was made that all individual fire hydrants should be capable of providing the 3,500 gpm fire flow individually or in other words, the fire flow will not be split between multiple hydrants. Note that the pipes identified for upsizing includes both water mains and laterals connecting to fire hydrants. A conservative approach was considered to upsize any lateral connecting to a single fire hydrant that are not being able to supply 3,500 gpm. A more practical option would be to further evaluate these individual dead-end hydrant lines, as the area densifies, to ensure that fire flow requirements will be met.

Figure 1. Current Available Fire Flow



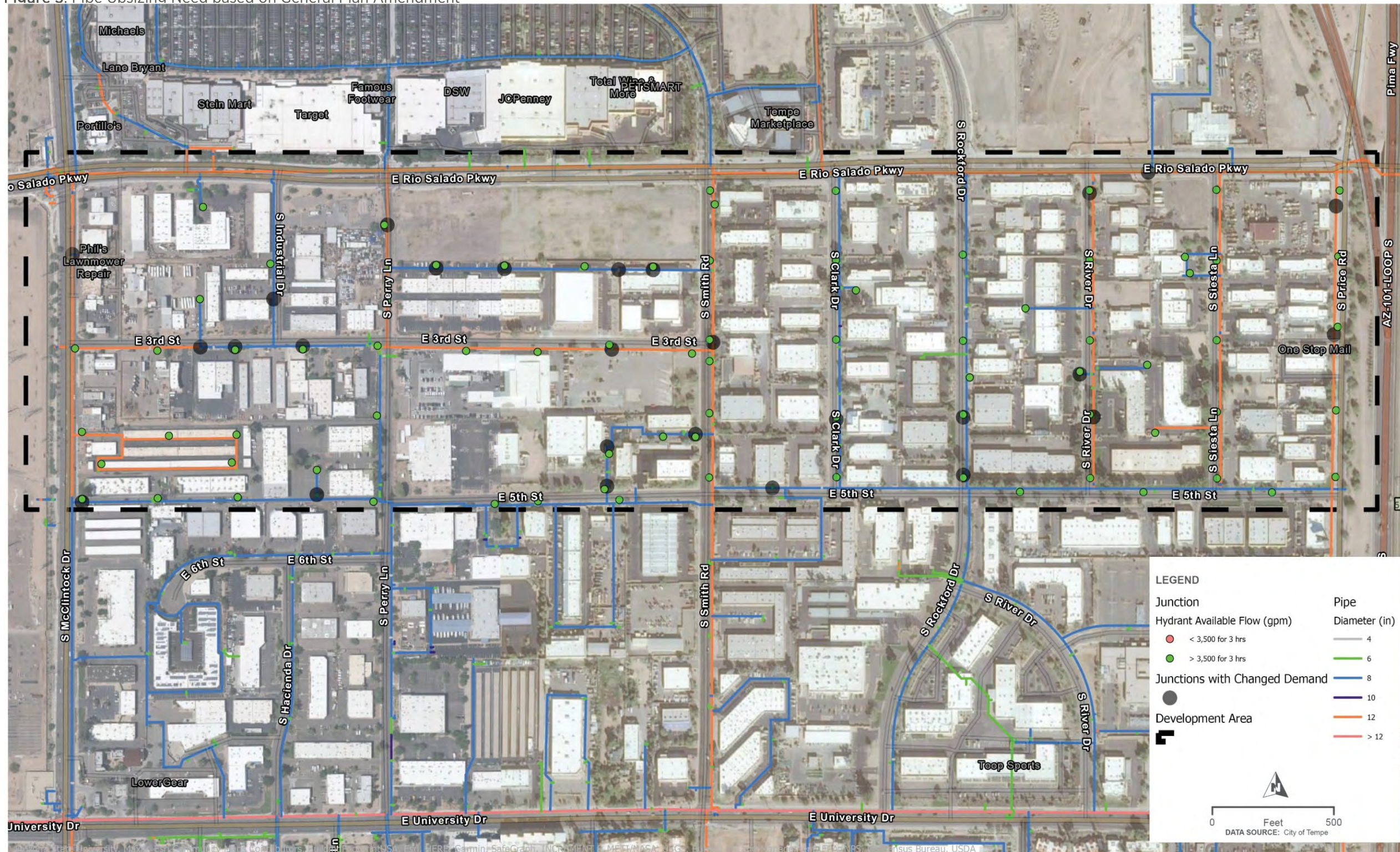


Figure 2. Fire Projections based on General Plan Amendment





Figure 3. Pipe Upsizing Need based on General Plan Amendment



PIPE UPSIZING TO MEET FLOW
CITY OF TEMPE





Recommendations

In order to meet the demand from proposed land usage and to supply the required fire flow, any 6-inch looped mains will be upsized to a minimum of 8-inches as development occurs, specific locations that will require larger diameter mains are as follows:-

- The existing 8-inch main on McClintock Drive and any 6-inch looped mains off McClintock should be replaced with a 12-inch line and 8-inch lines respectively. These lines serve users located east of McClintock Drive located between Third and Fifth Street.
- The two 8-inch lines on River Drive and Siesta Lane between Rio Salado Parkway and Fifth Street should be replaced with 12-inch mains.
- Individual dead-end hydrant lines will need to be evaluated as the area densifies to ensure that fire flow requirements will be met.
- Any City Project that would include significant street work on Perry Between Third and Fifth Street should include replacement of the waterline to 8-inch minimum. Similarly, if private development projects occur along this area prior to a City project, replacement would also be required.
- Per input obtained from the City, any Project that would include significant street work on Fifth Street Between Perry Lane and Smith Road should include replacement of the existing 8-inch waterline due to break history.
- The total length of these two new 8-inch section of pipes on Perry Lane and Fifth Street are approximately 670 and 1,300 Linear Feet (LF) respectively.



Appendix I. Wastewater Memo



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Memo

Date: Tuesday, October 19, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: **Wastewater Infrastructure**

Scope of Work

This technical memo summarizes the planning level analysis conducted to evaluate the impact of proposed land usage changes on the City of Tempe's (City's) existing sewer infrastructure. The proposed land use changes are outlined in the Smith Industrial Innovation Hub General Plan Amendment. This memo also describes the findings the analysis, including recommendations to accommodate the potential sewer flow loading changes as a result of the land use changes.

Approach

To perform the sewer collection system planning analysis, the City's hydraulic model was used. The City's sewer system has been modeled using InfoSWMM. The applicable evaluation criteria used to complete the analysis was reviewed and adopted from the City's current Water and Sewer Master Plan (Master Plan), dated 2016, and the City's Engineering Design Criteria, dated 2015. Table 1 provides basic design parameters used for this analysis. The Engineering Design Criteria includes stricter d/D values and are typically used to size new gravity mains. The Master Plan criteria are less strict and are typically used to evaluate existing gravity mains.

Table 1. System Evaluation Criteria

Parameter			Value
Mixed Usage Unit Production Rate (Average) ¹			1,975 gal/acre-d
Industrial Usage Unit Production Rate (Average) ¹			1,480 gal/acre-d
Maximum Depth under Peak Wet Weather Flow Conditions	Design Criteria ²	Diameter <= 15"	d/D > 0.50
		Diameter > 15"	d/D > 0.70
	Evaluation Criteria ¹	All Diameters	d/D > 0.90

¹ Source: City of Tempe 2016 Water and Sewer Master Plan

² Source: City of Tempe Engineering Design Criteria, 2015

gal = gallon; acre-d = acre per day; d/D = flow depth verses gravity main diameter



The proposed land usage, corresponding acreage, estimated sewer flow loading, and estimated number of dwelling units are summarized in Table 2. Projected flow loading for each numbered development listed in Table 2 was calculated based on the production rates shown in Table 1.

Table 2. Proposed Land Usage and Estimated Demand and Equivalent Dwelling Units

ID	Land Usage	Density	Acres	Sewer Flow (gpm)	Equivalent Dwelling Units
1	Mixed Use	High Density Urban Core (>65 du/acre)	2.08	2.82	> 135
2	Mixed Use	High Density Urban Core (>65 du/acre)	4.12	5.64	> 268
3	Mixed Use	High Density Urban Core (>65 du/acre)	4.16	5.64	> 270
4	Mixed Use	High Density Urban Core (>65 du/acre)	1.96	2.82	> 127
5	Mixed Use	High Density Urban Core (>65 du/acre)	3.04	4.23	> 198
6	Industrial Mixed Use	Medium Density (up to 15 du/acre)	6.92	6.58	104
7	Industrial Mixed Use	Medium Density (up to 15 du/acre)	10.2	9.87	153
8	Mixed Use	High Density (up to 65 du/acre)	8.62	11.8	560
9	Industrial Mixed Use	Medium Density (up to 15 du/acre)	8.48	8.46	127
10	Industrial Mixed Use	Medium Density (up to 15 du/acre)	16.3	16.0	245
11	Mixed Use	High Density (up to 65 du/acre)	2.99	4.23	194
12	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.85	9.87	148
13	Mixed Use	High Density (up to 65 du/acre)	3.24	4.23	211
14	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.93	9.87	149
15	Mixed Use	High Density (up to 65 du/acre)	3.31	4.70	215
16	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.93	9.87	149
17	Mixed Use	High Density Urban Core (>65 du/acre)	3.30	4.70	> 215
18	Industrial Mixed Use	Medium Density (up to 15 du/acre)	9.97	9.87	150
19	Mixed Use	High Density Urban Core (>65 du/acre)	3.39	4.70	> 220
20	Industrial Mixed Use	Medium Density (up to 15 du/acre)	10.0	9.87	150
			Total	146	> 3,990

Additionally, the Arizona Administrative Code (AAC), Section R18-9-E301, was used to develop peaking factors for the projected development flows. The AAC includes equations for estimating peaking factors for flows from new developments based on the population of the development. Based on the number of dwelling units in the proposed development, > 3,990 as shown in Table 2, and using the estimate of 2.2 people per dwelling unit from the Master Plan, the development population was estimated at approximately 8,780. Then, the equation below from the Section R18-9-E301 of the ACC was used to calculate the peaking factor.



$$PF = 6.330 * p^{-0.231} + 1.094$$

Where:

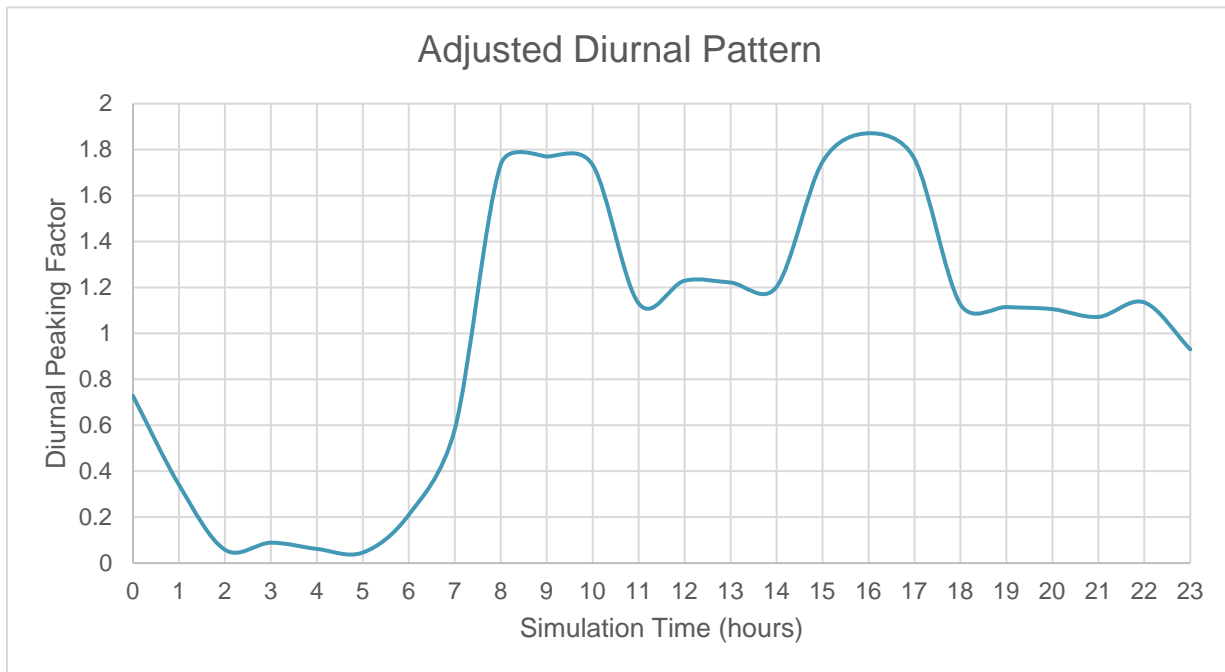
PF = Dry weather peaking factor

p = Upstream population

The resulting peaking factor of approximately 1.9 was calculated, meaning peak development flows could be estimated at 1.9 times the magnitude of average dry weather flows. Accordingly, the diurnal curve included in the City's current InfoSWMM hydraulic model for the area of the system that includes the development location was adjusted to include a peaking factor of 1.9 as shown in Figure 1.

Sewer flow loading for this study was applied to model nodes surrounding each development parcel using existing laterals as a guideline. Nodes with existing flow loading from the development area were replaced with the projected flow values shown in Table 2.

Figure 1. InfoSWMM Model Sewer Flow Loading Diurnal Pattern



Results and Discussion

Model results indicate that the sewer collection system downstream of the development location is projected to satisfy the evaluation criteria with the addition of the development flow loading under existing and buildout peak wet weather flow (PWWF) conditions. The development is served by a trunk sewer that generally runs southeast to northwest along Rio Salado Parkway (27-inch), Perry Lane (21-inch), 5th Street (21-inch) and Smith Road (21-inch). Due to the proximity of the development to



this high capacity infrastructure, the addition of the development flows does not result in a significant sewer flow increase relative to the capacity of the large diameter trunk mains.

To evaluate the projected impact of development flows on the downstream collection system infrastructure, the hydraulic model, updated with the projected development flow loading, was run for existing and buildout PWWF conditions, which represents the highest flow loading scenario included in the InfoSWMM hydraulic model. Model results for the existing and buildout PWWF scenarios for the local collection system which conveys flows from the development location are included in Table 3. A map showing identification for model pipes is included in Appendix A.

Model results indicate increased flow depth verses gravity main diameter (d/D) with the addition of the development flow loading. The results indicate that the addition of development flows is not projected to increase the number of gravity mains in the distribution system that exceed the gravity main d/D design criteria of 0.50 (for mains less than or equal to 15-inch) and 0.70 (for gravity mains greater than 15-inch). Model results indicate that five 15-inch gravity mains in 5th Street east of Smith Road are projected to experience d/D over 0.50 under existing wet weather flow conditions. Addition of the development flows is projected to slightly increase peak flows, but no flows result in d/D greater than 0.56 in any of these gravity mains. Additionally, one gravity main greater than 15-inch in 5th Street west of Smith Road is projected to experience d/D greater than 0.70 under existing peak wet weather flow conditions. Addition of the development flows is projected to slightly increase peak flows, but no flows result in d/D greater than 0.78 in any of these gravity mains. Furthermore, none of the local gravity mains serving the development location are projected to exceed the 0.90 d/D Master Plan evaluation criteria under existing or buildout peak wet weather flow conditions after development flows are added to the system.

Table 3. Hydraulic Model Results Existing and Buildout Peak Wet Weather Flow

Model ID	Diameter (in)	d/D Existing PWWF		d/D Buildout PWWF	
		2016 MP Model	2016 MP + Development	2016 MP Model	2016 MP + Development
CDT-94721	10	0.14	0.19	0.17	0.22
CDT-101529	12	0.31	0.37	0.35	0.41
CDT-101531	12	0.29	0.34	0.32	0.38
CDT-84837	12	0.29	0.36	0.31	0.37
CDT-77401	12	0.26	0.32	0.30	0.36
CDT-79901	12	0.26	0.33	0.28	0.35
CDT-87943	12	0.27	0.33	0.29	0.34
CDT-93227	12	0.24	0.31	0.28	0.34



Model ID	Diameter (in)	d/D Existing PWWF		d/D Buildout PWWF	
		2016 MP Model	2016 MP + Development	2016 MP Model	2016 MP + Development
CDT-101271	12	0.27	0.31	0.29	0.33
CDT-96815	12	0.24	0.30	0.25	0.31
CDT-94925	12	0.23	0.29	0.23	0.28
CDT-91569	12	0.23	0.28	0.23	0.27
CDT-96805	12	0.23	0.26	0.22	0.26
CDT-96807	12	0.22	0.25	0.21	0.24
CDT-79729	12	0.14	0.19	0.17	0.22
CDT-98745	12	0.19	0.21	0.19	0.21
CDT-82123	12	0.12	0.17	0.15	0.19
CDT-95093	12	0.12	0.17	0.15	0.19
CDT-93697	15	0.54	0.54	0.56	0.56
CDT-83569	15	0.53	0.53	0.55	0.55
CDT-96821	15	0.51	0.51	0.53	0.53
CDT-96819	15	0.50	0.50	0.52	0.52
CDT-96817	15	0.50	0.50	0.52	0.52
CDT-77927	15	0.46	0.46	0.47	0.48
CDT-97895	21	0.73	0.76	0.75	0.78
CDT-98015	21	0.64	0.67	0.65	0.68
CDT-98259	21	0.58	0.60	0.60	0.61
CDT-97821	21	0.55	0.57	0.56	0.58
CDT-98133	21	0.54	0.56	0.55	0.57
CDT-97697	21	0.49	0.52	0.51	0.53
CDT-98079	27	0.40	0.42	0.41	0.43
CDT-97805	27	0.38	0.41	0.40	0.43
CDT-98151	27	0.38	0.41	0.39	0.43
CDT-105869	27	0.38	0.41	0.40	0.42
CDT-98199	27	0.38	0.40	0.39	0.41
CDT-98441	27	0.38	0.40	0.39	0.40
CDT-98045	27	0.37	0.39	0.38	0.40
CDT-98233	27	0.37	0.39	0.38	0.40
CDT-97929	27	0.35	0.37	0.36	0.39
CDT-99445	27	0.20	0.23	0.21	0.23

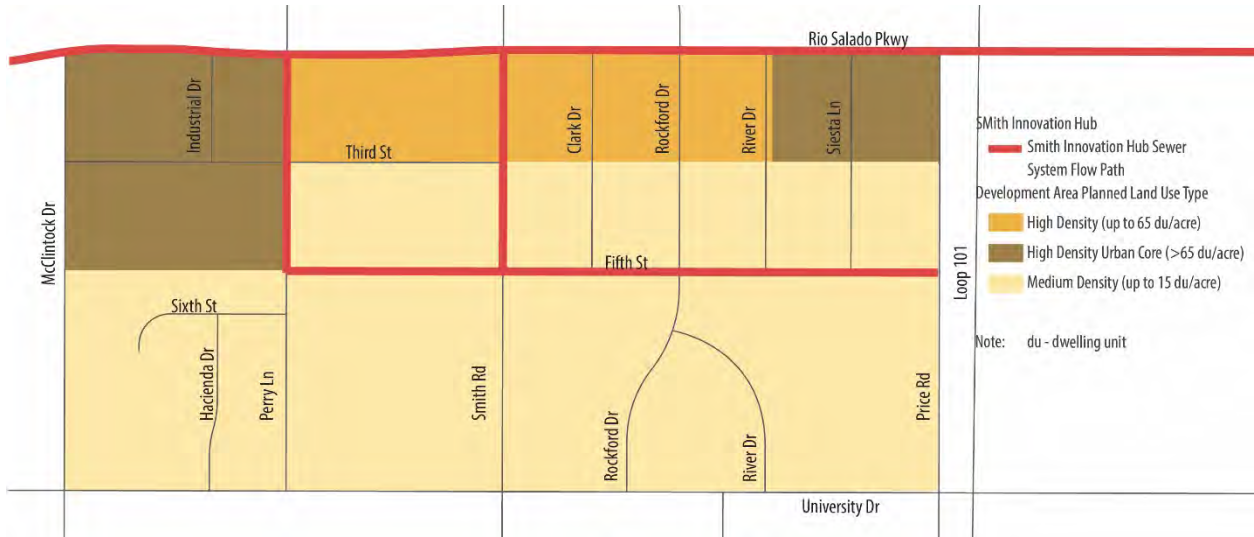


Figure 2. Tempe Smith Innovation Hub Development Parcels and Local Sewer System

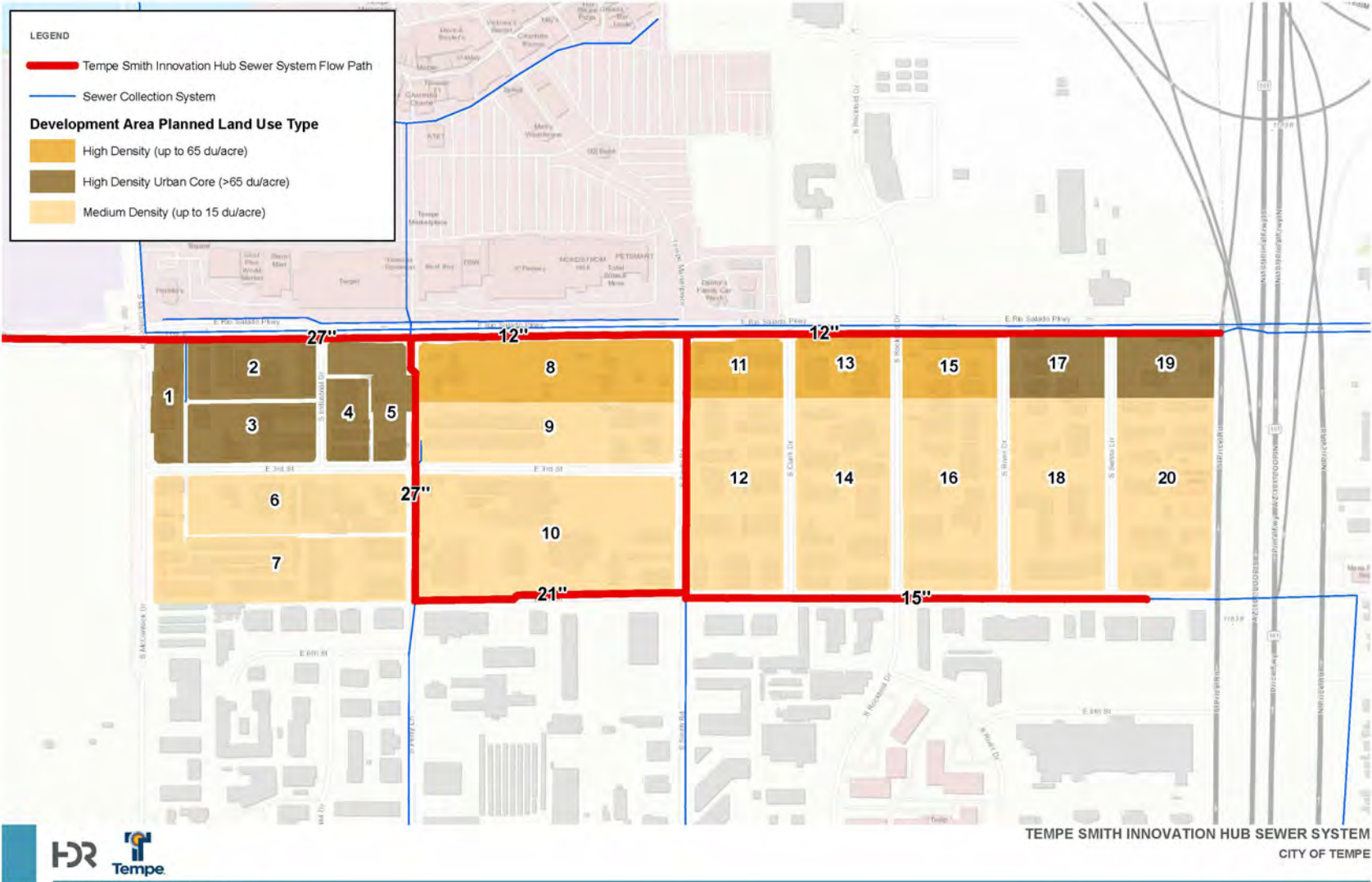
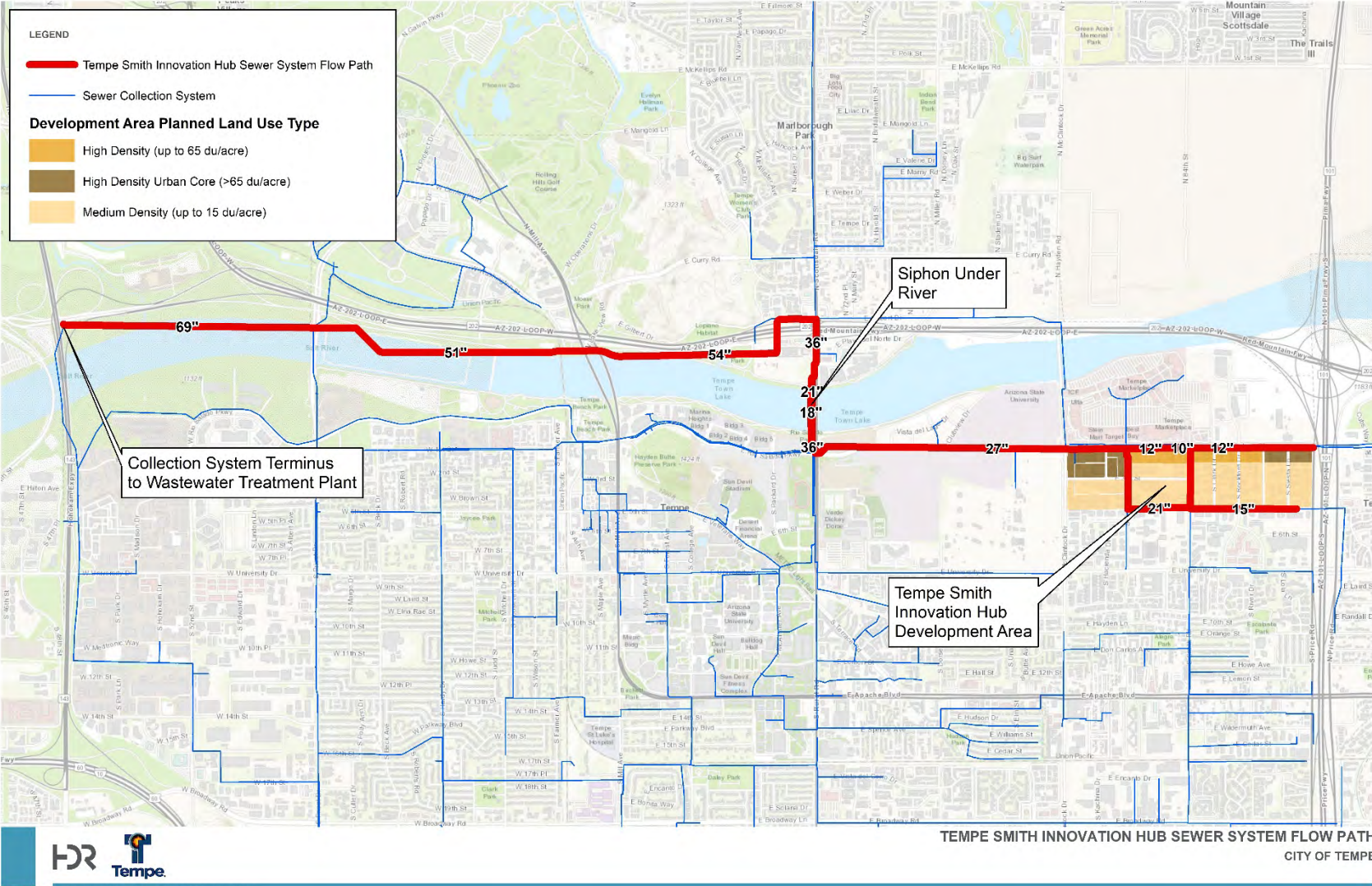


Figure 3. Tempe Smith Innovation Hub Flow Path





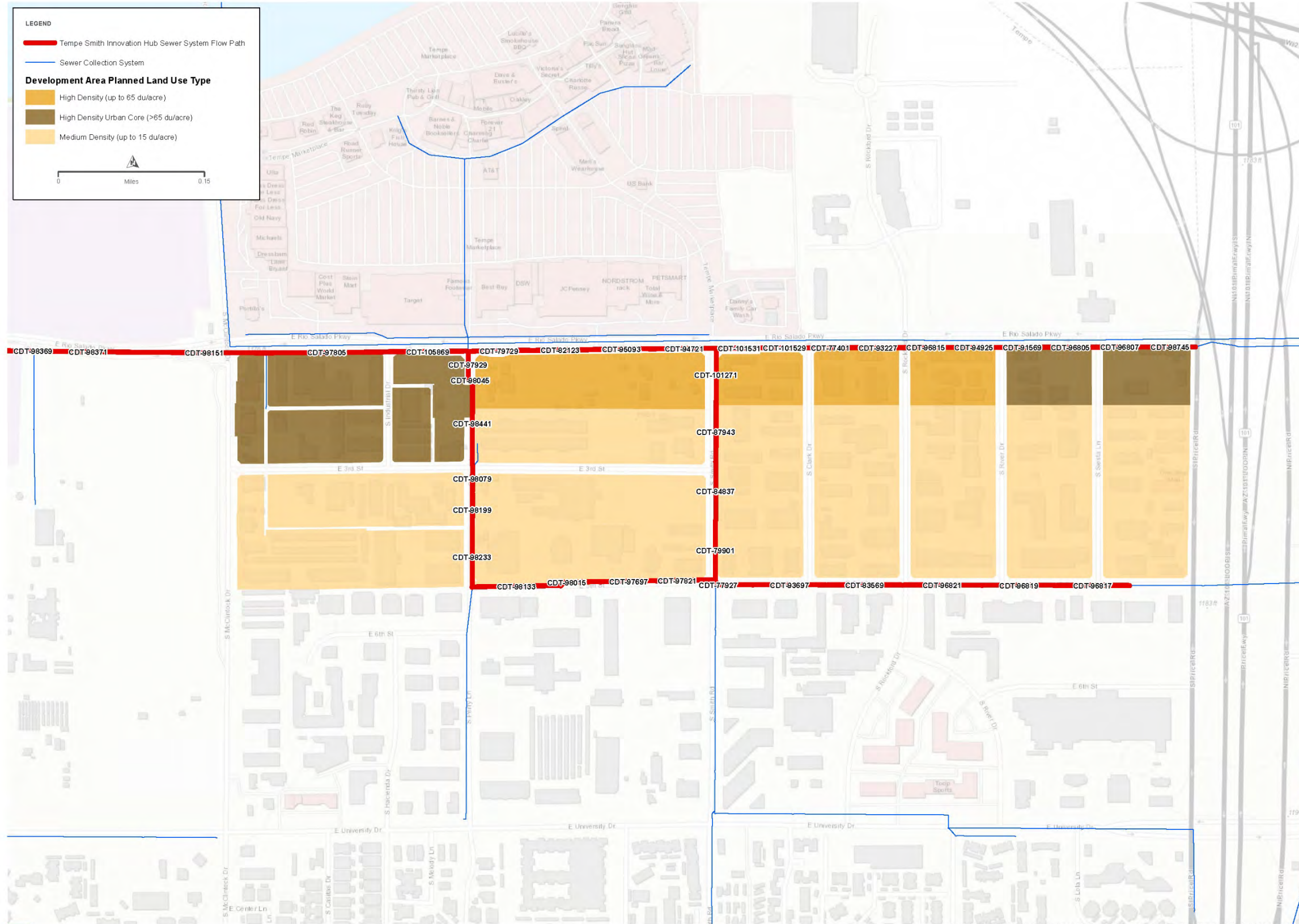
Recommendations

The hydraulic model results indicate that the addition of development flows is not projected to significantly impact the local collection system serving the development area. Model results indicate that a few gravity mains surrounding the development location are currently at design capacity, but the addition of development flows are not projected to significantly increase flows in these mains. Additionally, all local gravity mains serving the development location are projected to satisfy the peak wet weather flow evaluation criteria from the Master Plan following the addition of development flow loading for existing and buildout conditions.

Assuming that the development area sewer flows are loaded on the collection system employing the same strategy used in the existing system, no system improvements are recommended based on the model analysis.



Attachment A. Hydraulic Model ID Maps





Appendix J. Field Observations Memo



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Memo

Date: Wednesday, October 20, 2021

Project: Smith Innovation Hub Infrastructure Master Plan

To: Project File

From: HDR

Subject: Field visit observations and inquiries

Questions or follow-up items:

Ref	Responsible:	Action Item
1.	<i>tbd</i>	<i>Have there been parking enforcement issues related to either (1) truck parking in the TWLTL on South Smith Road; or (2) parking within 30 feet of the pavement (as posted along South Perry Lane)?</i>
2.	<i>tbd</i>	Have new businesses or adaptive reuse businesses in the Smith Innovation Hub requested relief from current City of Tempe parking space requirements?
3.	<i>CoT; Mark Weber</i>	CoT Database indicates there are two storm water outfalls into the Salt River; a 66-in. storm drain and a 36-in. drain. The 66-in. pipe is identified as a 72-in diameter immediately upstream from the outfall, clarification of this issue is requested.

Memo Purpose: Document field observations and questions as a result of HDR team members site visit to the Smith Innovation Hub in support of the Infrastructure Master Plan.

HDR team member observations of the Smith Innovation Hub (for reference, Questions or follow-up items are copied above).

Note: [#] References refer to numbered photos included as Exhibits at the end of this memo.

General

- There is inconsistency with sidewalks on most of the streets.
- The area has relatively mild slopes (generally slopes to the Northwest).
- Land use is predominately commercial with most surfaces built upon or paved;
 - Observed very little greenspace in comparison to paved surfaces.
 - It is expected that runoff rates will be fairly significant.
- Curb inlets (5-ft vertical curb opening) were generally located at locations where the interior streets met the perimeter roads (McClintock, Rio Salado, University Dr).



- Curb inlets were also observed mid-block on several of the East-West streets. (E 5th Street and E 6th Street).
- The observed alleys do not look promising as ped/bike routes; they do not 'seem' public, and their routes do not appear to serve the anticipated needs of the area.
- Based on CoT GIS data the following drainage comments are noted:
 - Perimeter curb inlets connect to the trunk lines on Rio Salado and McClintock.
 - There is a storm drain line on 5th Street starting at Rockford Drive (27 in.) that runs west to east until turning north at Smith Road. That trunk line continues north to connect to the Rio Salado trunk line as a 36 in. line.
 - The Rio Salado and McClintock trunk lines meet and then travel north along McClintock to outfall on the west side of McClintock into the Salt River. [15]
 - There are two outfalls into the Salt River; one is a 66-in. storm drain and the other a 36-in. drain. It should be noted the 66-in. pipe is identified as a 72-in. diameter immediately upstream from the outfall (HDR will coordinate with COP to confirm pipe size). The 36-in pipe appears to terminate at the McClintock alignment and therefore does not provide drainage outfall to the project.
- Properties in the SIH seems to have done a good job integrating the runoff retention as either ditches along the roads, small ponds, or sunken greenspace with inlets; lots of curb openings used to convey water to these features.
- Properties in the western half of the Smith Innovation Hub tended to have parking lots lower than the adjacent roadway.
- The northern half of Perry Lane was the only street observed without some sort of curb; other streets had either vertical curb or roll curb.
- Ponding may be seen at E 5th St and Perry Lane as well as 300 feet to the north in Google Streetview photos, presumably taken following some rainfall. [16]
- Significant on street parking utilization noted during field visit (e.g., 3/11/21 at approximately 10am).

Smith Road

- Semi trucks were observed parking in the two-way turn lane (TWTL) in the northern segment of Smith Road (north of 3rd Street). [7]
 - Not clear if the trucks were loading/unloading from the street, staging, or just idle (as many as three at one time were observed early in the day).
 - One truck parked in center turn lane just north of 5th Street remained there for entire site visit (1+ hour).
- Even though Smith is the busiest street vehicle-wise, it still feels like it wants to be the main bike/ped thoroughfare as well.



- No furniture at bus stops, just concrete pads and signs (there appears ample room for shelters and furniture). [11]
- A pair of curb inlets were observed located at the northern approach of the intersection of E 5th Street and Smith Road
- Consistent sidewalks, although some sections are in poor shape.
- Observed bus service along Smith. [10]
- Bicyclist and pedestrians observed along Smith.

Perry Lane

- Vehicles are parking in parking restricted areas where signs state "no parking within 30 ft of pavement" (another "no parking" sign appeared to be removed and was laying in the no parking zone). [12]
- Observed a fire hydrant very close to the edge of pavement. [5]
- Observed bicyclists along Perry. [3]
- South of University, Perry is the entry drive for an apartment complex, so residential south of there (south of Hayden Ln?), would divert towards Smith to go north (or McClintock). Once across University, if Perry were improved with pedestrian and bicycle amenities people may be 'encouraged' to migrate over to Perry and then north (Perry Lane has a signal at Rio Salado Drive, and retail stores at the Tempe Marketplace are located adjacent to Perry Lane entry.)
- 'Loved the food court' (not literally though; it was past lunchtime).
- The area really does have a good vibe; residential, when it arrives, will inevitably result in conflicts with existing commercial activities, and planning will need to consider this, and mitigations to limit developing issues.
- On street parking is permitted but may not be necessary for many businesses (surface parking lots are prevalent in the area). [1]
- Light traffic at time of visit (mid-day Friday); some truck traffic observed.
- North of 5th St: no sidewalks, unpaved shoulder. Sidewalks begin south of 5th. [4]
- Pedestrians observed walking north towards Tempe Marketplace on unpaved shoulder.
- Next to Smith Road, Perry Lane is a primary candidate for upgraded bike/pedestrian facilities; it provides a more centralized connection to Tempe Marketplace (versus Smith Road).



6th Street

- Large development under construction at South Rockford Drive and 6th Street. [2]
- ‘The Circuit Tempe’ (615 South River Drive): example of adaptive reuse project. [9]
 - Conversion of an aging manufacturing facility to collaborative office space.
 - Sold in 2016 for \$46M; 100 percent occupied by two national credit tenants: Oscar Health (largest employer in the area) and On Q Financial.
- Observed large utility boxes adjacent to the curb where a sidewalk would go.
- Observed active construction grading, presumably for an existing building parking area.

5th Street

- Observed on-street parking near 5th Street Commerce Center. [1]
- No sidewalks east of South Smith Road.
- Some sidewalks west of South Smith Road, though lots of gaps.
- Pedestrians walking in street on north side.
- Not sure extension of bike route/path through alley on west end of 5th Street to South McClintock Drive is feasible.

3rd Street

- Gaps in sidewalk network throughout
- Cars are parked straddling the curb on the north side of the road, west of Perry Lane.
- At E 3rd and McClintock, there were double grates as well as slotted drain at the curb inlet locations. Not typical for the area, may indicate a lot of flow reaches this location. [13]

South Siesta Lane

- Observed very little on-street parking usage. There are many parking lots along South Siesta Lane. Also observed vehicles speeding quickly south on Siesta Lane, off of Rio Salado Parkway. Poor sight distance from certain driveways due to vegetation/ landscaping.



South River Drive

- Observed lots of on-street parking usage, though there are several nearby parking lots that had empty spaces. Also noticed lots of vehicles speeding quickly south on River Drive, off of Rio Salado Parkway.
- Pedestrians observed walking in the street (both sides).

South Rockford Drive

- Observed some construction in the sidewalk across from 640 Rockford Dr. [2]
- Observed new landscaping between the sidewalk and road. Observed some foot traffic. [2]

South Clark Drive

- Observed lots of on-street parking usage.

South Hacienda Drive

- Noticed cars speeding quickly north on Hacienda, off of University. Observed a pedestrian walking a dog along Hacienda.

South Industrial Drive

- Lots of on-street parking on both sides of the street. Feels crowded. Sight distance from driveways is limited due to on-street parking as well.



Appendix K. Project Planning-Level Cost Estimate



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	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL AMOUNT
PERRY LANE NORTH ALTERNATIVE A					
1	PERRY LANE NORTH ALTERNATIVE A ROADWAY RECONSTRUCTION (INCLUDES ROADWAY EXCAVATION, SUBGRADE PREPARATION, AGGREGATE BASE COURSE, ASPHALT CONCRETE PAVEMENT, CURB & GUTTER)	LF	1,300	\$417	\$542,100
2	CONCRETE SIDEWALK, COT T-345, 5 FT WIDE	LF	2,400	\$40	\$96,000
3	DRIVEWAY ENTRANCE, COT T-320 (INCLUDES DEMOLIATION OF PAVEMENT AND GUTTER, GRADING, NEW RAMP AND SIDEWALK)	EA	9	\$6,250	\$56,250
4	DRAINAGE IMPROVEMENTS (INCLUDES PIPES, CATCHBASINS, MANHOLES)	LS	1	\$256,300	\$256,300
5	TRAFFIC CONTROL	LS	1	\$25,000	\$25,000
6	WHITE STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	5,200	\$1	\$2,600
7	YELLOW STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	325	\$1	\$163
8	SIGN, POST & FOUNDATION (SPEED LIMIT SIGNS, STOP SIGNS)	EA	5	\$500	\$2,500
9	STREET LIGHTING IMPROVEMENTS (INCLUDING LUMINAIRE POLE ASSEMBLY, PULL BOX, CONDUIT, WIRE, SERVICE)	LS	1	\$142,300	\$142,300
10	RIGHT-OF-WAY ACQUISITION	LS	1	\$98,880	\$98,880
11	WATER/WASTEWATER SYSTEM IMPROVEMENTS	LS	1	\$126,470	\$126,470
PERRY LANE NORTH ALTERNATIVE A SUBTOTAL					\$1,348,563
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 269,712.50
	CONTINGENCY			25.0%	\$ 337,140.63
	TOTAL				\$1,955,416
PERRY LANE NORTH ALTERNATIVE B					
1	PERRY LANE NORTH ALTERNATIVE B ROADWAY RECONSTRUCTION (INCLUDES ROADWAY EXCAVATION, SUBGRADE PREPARATION, AGGREGATE BASE COURSE, ASPHALT CONCRETE PAVEMENT, CURB & GUTTER)	LF	1,300	\$392	\$509,600
2	CONCRETE SIDEWALK, COT T-345, 6 FT WIDE	LF	2,400	\$48	\$115,200
3	DRIVEWAY ENTRANCE, COT T-320 (INCLUDES DEMOLIATION OF PAVEMENT AND GUTTER, GRADING, NEW RAMP AND SIDEWALK)	EA	9	\$8,750	\$78,750
4	20-FOOT BULB OUT (INCLUDES DEMOLIATION OF PAVEMENT AND CURB, NEW CURB, LANDSCAPE)	EA	18	\$2,000	\$36,000
5	LANDSCAPE AND IRRIGATION ALLOWANCE	LF	2,600	\$50	\$130,000
6	DRAINAGE IMPROVEMENTS (INCLUDES PIPES, CATCHBASINS, MANHOLES)	LS	1	\$256,300	\$256,300
7	TRAFFIC CONTROL	LS	1	\$25,000	\$25,000
8	WHITE STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	5,200	\$1	\$2,600
9	YELLOW STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	325	\$1	\$163
10	SIGN, POST & FOUNDATION (SPEED LIMIT SIGNS, STOP SIGNS)	EA	5	\$500	\$2,500
11	STREET LIGHTING IMPROVEMENTS (INCLUDING LUMINAIRE POLE ASSEMBLY, PULL BOX, CONDUIT, WIRE, SERVICE)	LS	1	\$142,300	\$142,300
12	RIGHT-OF-WAY ACQUISITION	LS	1	\$98,880	\$98,880
13	WATER/WASTEWATER SYSTEM IMPROVEMENTS	LS	1	\$126,470	\$126,470
PERRY LANE NORTH ALTERNATIVE B SUBTOTAL					\$1,523,763
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 304,752.50
	CONTINGENCY			25.0%	\$ 380,940.63
	TOTAL				\$2,209,456
PERRY LANE SOUTH (1,350 LF)					
1	DRIVEWAY ENTRANCE, COT T-320 (INCLUDES DEMOLIATION OF PAVEMENT AND GUTTER, GRADING, NEW RAMP AND SIDEWALK)	EA	9	\$6,250	\$56,250
2	REMOVE TRAFFIC MARKINGS	LF	250	\$1	\$125
3	WHITE STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	5,000	\$1	\$2,500
4	YELLOW STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	313	\$1	\$157
5	SIGN, POST & FOUNDATION (SPEED LIMIT SIGNS, STOP SIGNS)	EA	5	\$500	\$2,500

	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL AMOUNT
6	STREET LIGHTING IMPROVEMENTS (INCLUDING LUMINAIRE POLE ASSEMBLY, PULL BOX, CONDUIT, WIRE, SERVICE)	LS	1	\$148,300	\$148,300
PERRY LANE SOUTH SUBTOTAL					\$209,832
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 41,966.30
	CONTINGENCY			25.0%	\$ 52,457.88
	TOTAL				\$304,256
FIFTH STREET (PERRY TO SMITH) ALTERNATIVE A					
1	CONCRETE SIDEWALK, COT T-345, 5 FT WIDE	LF	1,000	\$40	\$40,000
2	DRIVEWAY ENTRANCE, COT T-320 (INCLUDES DEMOLITION OF PAVEMENT AND GUTTER, GRADING, NEW RAMP AND SIDEWALK)	EA	8	\$8,750	\$70,000
3	20-FOOT BULB OUT (INCLUDES DEMOLITION OF PAVEMENT AND CURB, NEW CURB, LANDSCAPE)	EA	22	\$2,000	\$44,000
4	LANDSCAPE AND IRRIGATION ALLOWANCE	LF	2,600	\$50	\$130,000
5	DRAINAGE IMPROVEMENTS (INCLUDES PIPES, CATCHBASINS, MANHOLES)	LS	1	\$23,300	\$23,300
6	TRAFFIC CONTROL	LS	1	\$5,000	\$5,000
7	WHITE STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	5,200	\$1	\$2,600
8	YELLOW STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	325	\$1	\$163
9	SIGN, POST & FOUNDATION (SPEED LIMIT SIGNS, STOP SIGNS)	EA	5	\$500	\$2,500
10	STREET LIGHTING IMPROVEMENTS (INCLUDING LUMINAIRE POLE ASSEMBLY, PULL BOX, CONDUIT, WIRE, SERVICE)	LS	1	\$423,400	\$423,400
11	WATER/WASTEWATER SYSTEM IMPROVEMENTS	LS	1	\$244,104	\$244,104
FIFTH STREET ALTERNATIVE A SUBTOTAL					\$985,067
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 197,013.30
	CONTINGENCY			25.0%	\$ 246,266.63
	TOTAL				\$1,428,346
FIFTH STREET (PERRY TO SMITH) ALTERNATIVE B					
1	CONCRETE SIDEWALK, COT T-345, 6 FT WIDE	LF	1,000	\$48	\$48,000
2	DRIVEWAY ENTRANCE, COT T-320 (INCLUDES DEMOLITION OF PAVEMENT AND GUTTER, GRADING, NEW RAMP AND SIDEWALK)	EA	8	\$6,250	\$50,000
3	DRAINAGE IMPROVEMENTS (INCLUDES PIPES, CATCHBASINS, MANHOLES)	LS	1	\$23,300	\$23,300
4	TRAFFIC CONTROL	LS	1	\$5,000	\$5,000
5	WHITE STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	5,200	\$1	\$2,600
6	YELLOW STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	325	\$1	\$163
7	SIGN, POST & FOUNDATION (SPEED LIMIT SIGNS, STOP SIGNS)	EA	5	\$500	\$2,500
8	STREET LIGHTING IMPROVEMENTS (INCLUDING LUMINAIRE POLE ASSEMBLY, PULL BOX, CONDUIT, WIRE, SERVICE)	LS	1	\$423,400	\$423,400
9	WATER/WASTEWATER SYSTEM IMPROVEMENTS	LS	1	\$244,104	\$244,104
FIFTH STREET ALTERNATIVE B SUBTOTAL					\$799,067
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 159,813.30
	CONTINGENCY			25.0%	\$ 199,766.63
	TOTAL				\$1,158,646
SMITH ROAD ALTERNATIVE A					
1	DRIVEWAY ENTRANCE, COT T-320 (INCLUDES DEMOLITION OF PAVEMENT AND GUTTER, GRADING, NEW RAMP AND SIDEWALK)	EA	19	\$6,250	\$118,750
2	REMOVE TRAFFIC MARKINGS	LF	2,500	\$1	\$1,250
3	TRAFFIC CONTROL	LS	1	\$10,000	\$10,000
4	WHITE STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	20,000	\$1	\$10,000
5	YELLOW STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	6,250	\$1	\$3,125
6	BIKE LANE SYMBOL PREFORMED	EA	4	\$500	\$2,000
7	PAVEMENT SYMBOL, 50' GREEN BIKE LANE	EA	4	\$20	\$80

	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL AMOUNT
8	SIGN, POST & FOUNDATION (NO PARKING ALLOWED SIGNS, TWO-WAY-LEFT-TURN-LANE SIGNS, BIKE LANE SIGNS, SPEED LIMIT SIGNS, STOP	EA	20	\$500	\$10,000
9	STREET LIGHTING IMPROVEMENTS (INCLUDING LUMINAIRE POLE ASSEMBLY, PULL BOX, CONDUIT, WIRE, SERVICE)	LS	1	\$267,200	\$267,200
10	BUS STOP (INCLUDES CONCRETE PAD, SHELTER, BENCH, TRASH RECEPTACLE)	EA	4	\$30,000	\$120,000
SMITH ROAD ALTERNATIVE A SUBTOTAL					\$542,405
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 108,481.00
	CONTINGENCY			25.0%	\$ 135,601.25
	TOTAL				\$786,487
SMITH ROAD ALTERNATIVE B					
1	DRIVEWAY ENTRANCE, COT T-320 (INCLUDES DEMOLITION OF PAVEMENT AND GUTTER, GRADING, NEW RAMP AND SIDEWALK)	EA	19	\$6,250	\$118,750
2	REMOVE TRAFFIC MARKINGS	LF	2,500	\$1	\$1,250
3	TRAFFIC CONTROL	LS	1	\$10,000	\$10,000
4	WHITE STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	25,000	\$1	\$12,500
5	YELLOW STRIPE 90 MIL THERMOPLASTIC 4" EQUIV	LF	5,000	\$1	\$2,500
6	BIKE LANE SYMBOL PREFORMED	EA	4	\$500	\$2,000
7	PAVEMENT SYMBOL, 50' GREEN BIKE LANE	EA	4	\$20	\$80
8	SIGN, POST & FOUNDATION (BIKE LANE SIGNS, SPEED LIMIT SIGNS, STOP SIGNS)	EA	10	\$500	\$5,000
9	STREET LIGHTING IMPROVEMENTS (INCLUDING LUMINAIRE POLE ASSEMBLY, PULL BOX, CONDUIT, WIRE, SERVICE)	LS	1	\$267,200	\$267,200
10	BUS STOP (INCLUDES CONCRETE PAD, SHELTER, BENCH, TRASH RECEPTACLE)	EA	4	\$30,000	\$120,000
SMITH ROAD ALTERNATIVE B SUBTOTAL					\$539,280
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 107,856.00
	CONTINGENCY			25.0%	\$ 134,820.00
	TOTAL				\$781,956
ADA CORNER RAMP IMPROVEMENTS					
	SIDEWALK RAMP, MODIFIED COT T-328 (INCLUDES SAWCUT AND REMOVE AC PAVEMENT, REMOVE CONCRETE SIDEWALK, REMOVE CURB)	EA	14	\$4,250	\$59,500
	STRIPING, CROSSWALK	LF	1,400	\$2	\$2,100
ADA CORNER RAMP IMPROVEMENTS SUBTOTAL					\$61,600
	UNIDENTIFIED ITEM ALLOWANCE			20.0%	\$ 12,320.00
	CONTINGENCY			25.0%	\$ 15,400.00
	TOTAL				\$89,320



Appendix L. Broadband



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Appendix L – Broadband

As part of a broadband masterplan initiative, it is essential to identify the key stakeholders, initiatives, and assets. These include:

Internal and Cooperating Stakeholders:

- Elected Officials (Mayor/Council) – Set official policy and priorities, provide funding, public face of support
- City Manager – Direct staffing priorities, provide institutional and organizational support across departments
- Community Development – Planning expertise, project assistance team, building code expertise
- Communications and Media Relations – Public outreach, presentation/literature development, web development, and support
- Economic Development – Existing relationships and knowledge of business, development expertise
- Engineering and Transportation – Existing physical infrastructure, project design, and delivery management expertise
- Financial Services – Budgeting, financial analysis and risk/benefit analysis and reporting, fiscal impact analysis
- Fire and Medical Services – User of broadband, eligible funding entity for multiple grant programs
- Human Services – Existing partnerships with community organizations, potential grant eligibility
- Information Technology – Staff expertise, technical assistance
- Municipal Utilities – potential grant eligibility, potential user of broadband
- Police – User of broadband, eligible funding entity for multiple grant programs
- Sustainable Tempe – Alignment with guiding principles, potential grant assistance
- Valley Metro – End user, eligible funding entity for multiple grant programs

External Stakeholders

With the City's investment in the development of the Tempe Smith Innovation Hub one of the most important steps in the planning process has been the continued engagement of external stakeholders. The external stakeholders in this instance are a combination of business owners that own or lease space within the Tempe Smith Innovation Hub, customers who will ultimately benefit from the goods or services that are attracted to the area, and the general public who have a desire to see positive development within the Smith Hub. The perspective of external stakeholders helps influence the specific plans for the area, assist with determining infrastructure needs and wants, identify potential funding opportunities that can help with redevelopment efforts, and assist with potential funding

opportunities, such as grants. Including these stakeholders in the planning process will ultimately help provide a perspective that will strength the validity of the entire plan.

Public agency stakeholders

Public agency stakeholders, such as other local municipalities, can assist with the rollout of new technologies and provide potential partnerships that can aid in the improvement of public services. It is recommended that the following agencies be engaged throughout the planning process to determine interest and potential teaming opportunities in the future:

Maricopa County - Maricopa County is a potential end user of the expansion of broadband in the area and the City could utilize their technical expertise to determine sharing opportunities as well as the potential for teaming opportunities for partnerships and grant applications.

Arizona Department of Transportation (ADOT)- Teaming with ADOT could provide the Smith Hub with opportunities to share existing infrastructure to expand their broadband networks. There is also the potential for teaming opportunities for partnerships and grant applications. This partnership is particularly relevant, as the Smith Hub's eastern border is the L101 Price Road frontage road.

Arizona State University (ASU)- There are opportunities to team with ASU to utilize their technical expertise, and to capitalize on potential teaming opportunities for partnerships and grant applications.

Private stakeholders

Based upon information obtained from the FCC (Federal Communications Commission) website, there are currently seven independent broadband providers (Figure 1) within the Tempe Smith Innovation Hub. These include:

- Cox Communications – Cable
- Triad Wireless – Fixed Wireless
- Lumen Technologies Inc., - Telecommunications
- Gutierrez-Palmenberg, Inc. – Fixed Wireless
- ViaSat, Inc. – Satellite
- Hughes Network Systems – Satellite
- VSAT Systems, LLC – Satellite

All seven of these broadband providers should be engaged through the outreach process to determine the breadth of their system, what infrastructure could be added to the Smith Hub to further deploy broadband and new technologies, as well as to gauge their desire to assist with the Smith Hub planning process.

A concern expressed by City staff was the lack of reliable cell service in and around the Smith Innovation Hub, particularly for first responders in Tempe Marketplace to the north of the Smith Hub. However, a search of multiple cell provider maps indicates a minimum of 4G coverage throughout the adjacent area (Figure 2 and Figure 3). Since future connectivity to IoT applications, particularly vehicle and other non-fixed assets, will be via wireless communications, engagement with cell providers will be essential in order to ensure the proper assets are available to support these connections.

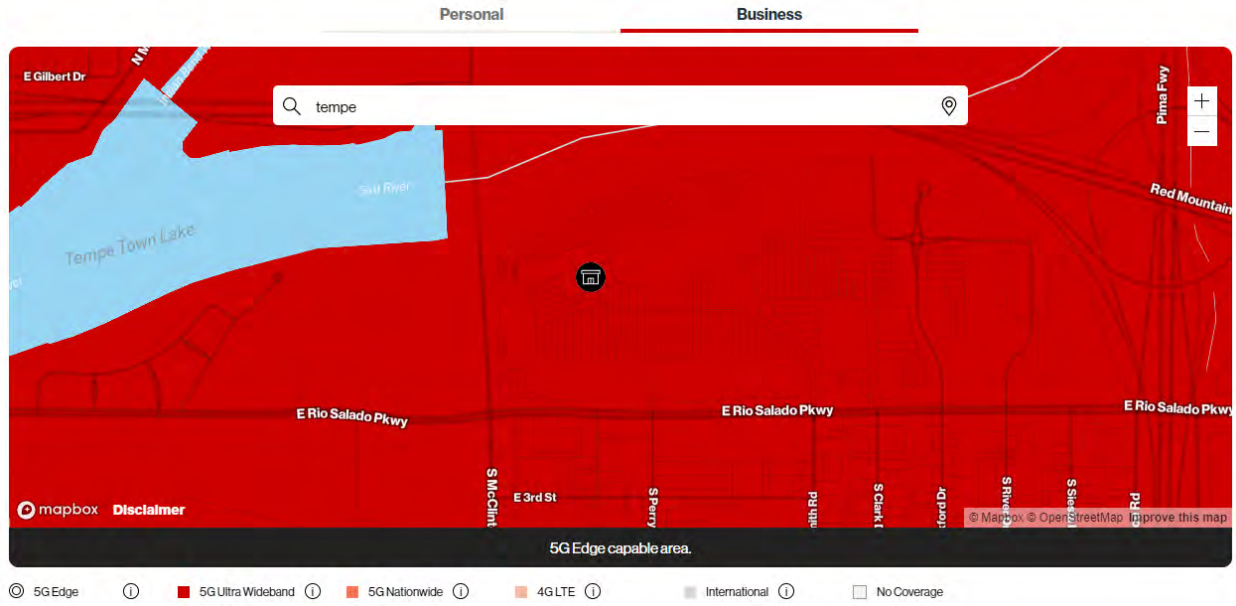


Figure 2- Verizon Reported Cell Coverage (Source: www.verizon.com/coverage-map/)

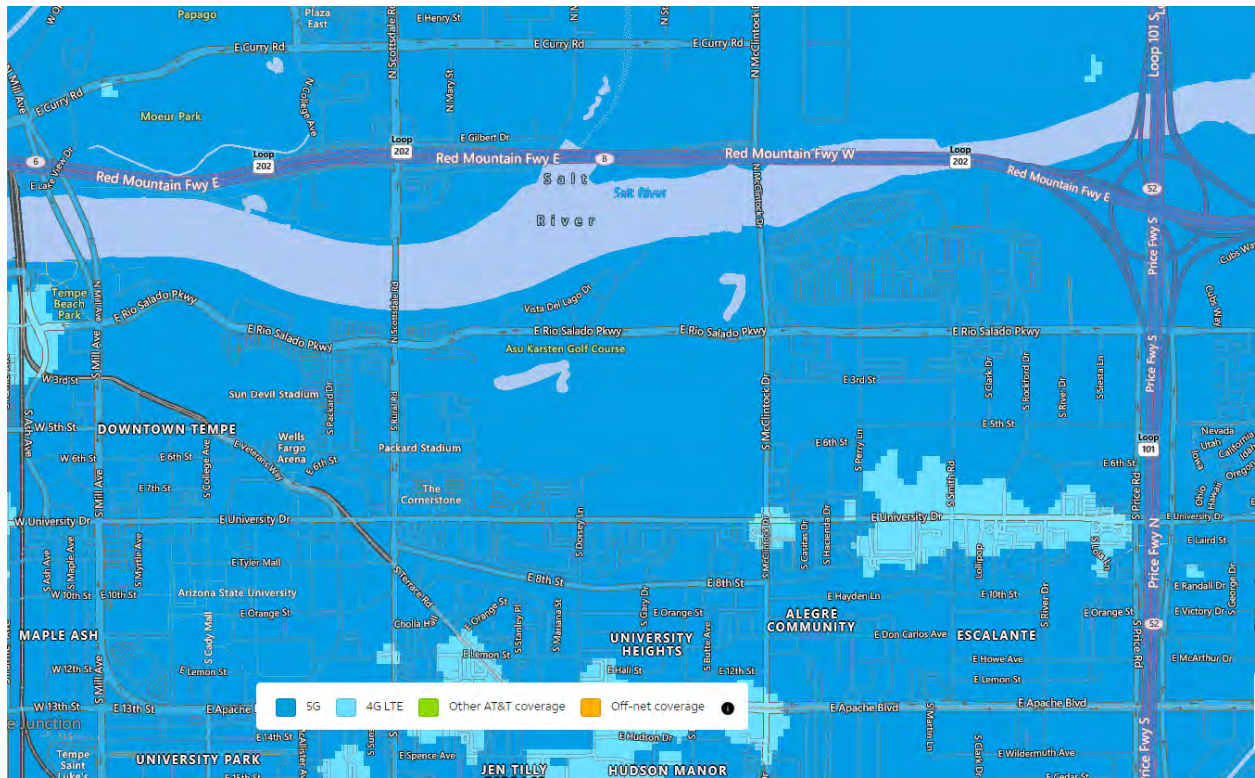


Figure 3- AT&T Reported Cell Coverage (Source: <https://www.att.com/maps/wireless-coverage.html>)

This memo and appendix establish the need for a City broadband masterplan. To help identify the next steps for the development and implementation of a broadband masterplan, some suggestions for consideration are included below.

1. Establish a formal internal group, and identify a champion for the broadband masterplan
 - a. Establish a vision and goals
 - i. Outreach to City Departments to determine City Needs
 1. Transportation Division
 2. Engineering Division
 3. Fire Department
 4. Emergency Medical Services
 5. Police Department
 6. (others as appropriate)
 - b. Formalize the vision and goals with policy
 - c. Determine what the city's role is going to be in the broadband masterplan development and implementation
 - i. Organizational Structure of the development and implementation group
 1. Public only
 - a. City lead
 - b. Others lead
 2. Private only
 3. Public-private Partnership
 4. Quasi-public
 - d. Establish roles, responsibilities, and timelines
 - e. Meet regularly
2. Review and Update Policies
 - a. Existing federal/state/local rules/limitations/opportunities
 - b. Propose new
 - i. MOU (Memorandum of Understanding)/Cooperative agreements
 - ii. Zoning
 - iii. Building standards
 - iv. Update and formalize Dig Once Policy
3. Identify and engage internal stakeholders
 - a. Identify assets
 - i. Staff
 - ii. Expertise

- iii. Budget
- iv. Infrastructure
- 4. Identify and engage external stakeholders
 - a. Interview stakeholders
 - b. Establish working group
 - c. Identify assets
 - i. Staff
 - ii. Expertise
 - iii. Infrastructure
 - iv. Other
- 5. Identify funding opportunities and strategies
 - a. Existing committed funding- City, other public/private
 - b. State programs
 - c. Federal programs
 - d. Known/planned private investment
 - e. Partnership opportunities